

DOE / MSU COMPOSITE MATERIAL FATIGUE DATABASE March 31, 2010 Version 19.0

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FOREWORD

The database is now divided into two parts: Part I covers recently tested materials of current or potential use in wind blades; Part II covers a broad variety of industry supplied and MSU fabricated materials, many of which are of interest now primarily in establishing trends of properties with materials and process parameters.

| | |
|---|------------------------|
| DOE/MSU Composite Material Database Introduction | 1 |
| Data Reduction | 4 |
| Publications | 5 |
| Detailed Reports | 5 |
| Conference Papers | 5 |
| Student Thesis | 8 |
| Material Manufacturers and Contact Information | 9 |
| For further information, assistance, comments or suggestions, please contact: | 10 |
| PART 1: RECENT TESTS AND MATERIALS | 11 |
| MATERIAL WS1 | 15 |
| MATERIAL E-LT-5500-VE | 16 |
| MATERIAL E-LT-5500-EP | 17 |
| MATERIAL P2B | 19 |
| MATERIAL P2C | 25 |
| MATERIAL QQ1 | 25 |
| MATERIAL QQ2 | 33 |
| MATERIAL QQ4L | 33 |
| MATERIAL QQ4 | 33 |
| MATERIAL QQ4M | 34 |
| MATERIAL TT1A | 34 |
| MATERIAL TT1AH | 34 |
| MATERIAL TT | 35 |
| VARIABLE AMPLITUDE LOADING | 36 |
| MATERIAL DD5P | 39 |
| MATERIAL DD11 | 40 |
| MATERIAL DD16 | 41 |
| Wisperx and Modified Spectrum Tests | 59 |
| Residual Strength Tests, DD16 | 62 |
| Material DD16 | 65 |
| Material 45D2 | 95 |
| Material 45D | 96 |
| Material 45DE | 96 |
| Material W45 | 97 |
| FGI-1708 | 97 |
| Material TR-1 | 98 |
| SAERTEX +45/-45 I | 99 |
| Ply Drop Fatigue Tests | 101 |
| Adhesive Shear Lap Testing | 128 |
| PART II: EARLIER MATERIALS | 132 |
| SUMMARIES OF EARLIER MATERIALS | 133 |
| COMMERCIAL MATERIAL FATIGUE TESTS | 153 |
| MATERIAL A | 153 |
| MATERIAL B | 153 |

| | |
|--|---------------------|
| MATERIAL F | 154 |
| MATERIAL G | 155 |
| MATERIAL H | 155 |
| MATERIAL J | 156 |
| MATERIAL L | 157 |
| MATERIAL M | 158 |
| MATERIAL N | 158 |
| MATERIAL P | 159 |
| MATERIAL R | 160 |
| MATERIAL T | 161 |
| MATERIAL U | 161 |
| MATERIAL V | 161 |
| MATERIAL W | 162 |
| MATERIAL X | 162 |
| MATERIAL Y | 164 |
| MATERIAL EE | 165 |
| MATERIAL EEAV | 166 |
| MATERIAL EEAP | 166 |
| MATERIAL EEBP | 167 |
| MATERIAL EECp | 167 |
| MATERIAL HH | 168 |
| MATERIAL CYC | 168 |
| MATERIAL MM1 | 169 |
| MATERIAL MM2 | 170 |
| SUMMARY OF MSU MANUFACTURED MATERIAL FATIGUE TESTS | 171 |
| MATERIAL AA | 171 |
| MATERIAL AA2 | 178 |
| MATERIAL AA3 | 181 |
| MATERIAL AA4 | 182 |
| MATERIAL BB | 182 |
| MATERIAL CC | 183 |
| MATERIAL CC2 | 183 |
| MATERIAL CC3 | 184 |
| MATERIAL CH | 184 |
| MATERIAL CH2 | 185 |
| MATERIAL CH3 | 186 |
| MATERIAL CH4 | 186 |
| MATERIAL CH5 | 187 |
| MATERIAL CH6 | 188 |
| MATERIAL CH7 | 189 |
| MATERIAL CH8 | 190 |
| MATERIAL CH9 | 190 |
| MATERIAL CH10 | 191 |
| MATERIAL CH11 | 191 |

| | |
|-----------------------|----------------------------|
| MATERIAL CH12 | <u>192</u> |
| MATERIAL CH13 | <u>194</u> |
| MATERIAL CH14 | <u>195</u> |
| MATERIAL CH15 | <u>196</u> |
| MATERIAL CH16 | <u>196</u> |
| MATERIAL CH17 | <u>197</u> |
| MATERIAL CH18 | <u>197</u> |
| MATERIAL CH19 | <u>198</u> |
| MATERIAL CH20 | <u>199</u> |
| MATERIAL CH23 | <u>199</u> |
| MATERIAL DD | <u>199</u> |
| MATERIAL DD2 | <u>200</u> |
| MATERIAL DD2A | <u>200</u> |
| MATERIAL DD4 | <u>201</u> |
| MATERIAL DD5 | <u>201</u> |
| MATERIAL DD5E | <u>202</u> |
| MATERIAL DD5E3 | <u>203</u> |
| MATERIAL DD5E4 | <u>203</u> |
| MATERIAL DD5P | <u>205</u> |
| MATERIAL DD5V | <u>210</u> |
| MATERIAL DD5V2 | <u>210</u> |
| MATERIAL DD5V3 | <u>212</u> |
| MATERIAL DD5CYC | <u>212</u> |
| MATERIAL DD6 | <u>213</u> |
| MATERIAL DD7 | <u>214</u> |
| MATERIAL DD8 | <u>214</u> |
| MATERIAL DD8A | <u>215</u> |
| MATERIAL DD8B | <u>215</u> |
| MATERIAL DD9 | <u>215</u> |
| MATERIAL DD10 | <u>215</u> |
| MATERIAL DD11 | <u>216</u> |
| MATERIAL DD11A | <u>217</u> |
| MATERIAL DD11E3 | <u>217</u> |
| MATERIAL DD11E4 | <u>218</u> |
| MATERIAL DD12 | <u>218</u> |
| MATERIAL DD13 | <u>218</u> |
| MATERIAL DD14 | <u>219</u> |
| MATERIAL DD15 | <u>219</u> |
| MATERIAL DD16 | <u>219</u> |
| MATERIAL DD17 | <u>220</u> |
| MATERIAL DD17A | <u>220</u> |
| MATERIAL DD18 | <u>221</u> |
| MATERIAL DD18A | <u>222</u> |
| MATERIAL DD19 | <u>222</u> |

| | |
|----------------------------------|---------------------|
| MATERIAL DD19A | 223 |
| MATERIAL DD19B | 224 |
| MATERIAL DD20 | 224 |
| MATERIAL DD20A | 225 |
| MATERIAL DD22 | 225 |
| MATERIAL DD24 | 225 |
| MATERIAL DD25 | 226 |
| MATERIAL DD25A | 226 |
| MATERIAL DD25B | 226 |
| MATERIAL DD25D | 227 |
| MATERIAL DD26 | 227 |
| MATERIAL DD27A | 228 |
| MATERIAL DD27B | 228 |
| MATERIAL DD27C | 229 |
| MATERIAL FFA | 229 |
| MATERIAL FFB | 229 |
| MATERIAL FFC | 231 |
| MATERIAL FFD | 231 |
| MATERIAL FFF | 232 |
| MATERIAL GG | 232 |
| 0° UNIDIRECTIONAL TESTS | 233 |
| MATERIAL A060 | 233 |
| MATERIAL A130 | 233 |
| MATERIAL A130C | 234 |
| MATERIAL A130G | 235 |
| MATERIAL A260 | 235 |
| MATERIAL CM1701A | 235 |
| MATERIAL D072A | 236 |
| MATERIAL D092 | 236 |
| MATERIAL D092B | 237 |
| MATERIAL D092D | 238 |
| MATERIAL D092F | 238 |
| MATERIAL D092G | 238 |
| MATERIAL D155 | 239 |
| MATERIAL D155B | 240 |
| MATERIAL D155C | 241 |
| MATERIAL D155G | 241 |
| MATERIAL D155H | 243 |
| MATERIAL D155J | 243 |
| MATERIAL D155K | 244 |
| MATERIAL DB120 | 244 |
| MATERIAL DB240 | 245 |
| BALANCED ANGLE PLY TESTING | 246 |
| MATERIAL D155B | 246 |

| | |
|---|---------------------|
| MATERIAL 10D155 | 246 |
| MATERIAL 20D155 | 246 |
| MATERIAL 30D155 | 247 |
| MATERIAL 40D155 | 247 |
| MATERIAL 45D155 | 248 |
| MATERIAL 45D155V2 | 249 |
| MATERIAL 45D155P2 | 249 |
| MATERIAL 45D155V | 249 |
| MATERIAL 50D155 | 250 |
| MATERIAL 60D155 | 250 |
| MATERIAL 70D155 | 251 |
| MATERIAL 80D155 | 251 |
| MATERIAL 90D155 | 252 |
| MATERIAL 90D155V2 | 252 |
| MATERIAL 90D155V | 253 |
| MATERIAL 90D155E2 | 253 |
| 0/90 WOVEN ROVING | 254 |
| MATERIAL ROV1 | 254 |
| MATERIAL ROV2 | 254 |
| MATERIAL ROV3 | 255 |
| MATERIAL ROV4 | 255 |
| (0) ₂ and (90) ₄ HIGH CYCLE TESTS | 256 |
| MATERIAL (0) ₂ | 256 |
| MATERIAL (90) ₄ | 259 |
| GLASS ROVING TESTS | 262 |
| D155 STRAND TESTS | 262 |
| DB120 Fabric Strands | 270 |
| Owens Corning 990-BC-2385-4093, 208 Fiber Strand | 272 |
| D155 FIBER STRAND - FIBER VOLUME EFFECT TESTING | 278 |
| MATERIAL D155-VF50 | 278 |
| MATERIAL D155-VF56 | 279 |
| MATERIAL D155-VF61 | 279 |
| MATERIAL D155-VF66 | 280 |
| RESIDUAL STRENGTH | 282 |
| MATERIAL DD16A | 282 |
| Environmental testing of different matrix materials in [0/±45/0] _s | 285 |
| Materials DD5P and DD11 Static Tests | 297 |
| DD5P Static and Fatigue Tests | 301 |
| Material DD5P2 Static and Fatigue Tests | 303 |
| MATERIAL DD5V Static and Fatigue Tests | 304 |
| MATERIAL DD5V2 Static and Fatigue Tests | 305 |
| MATERIALS DD5V3, DD5E3, DD5E4, DD11E3 AND DD11E4 Static Tests | 307 |
| Neat Resin Tests | 310 |
| STRESS RUPTURE TESTING | 312 |

| | |
|---|---------------------|
| Effect of In-Plane Fiber Waviness | 317 |
| Strain Energy Release Rate Testing | 326 |
| Mode I, G_{IC} | 328 |
| ENF, G_{IIC} | 335 |
| Mixed-Mode, G_I and G_{II} | 338 |
| Mode I, G_{IC} Environmentally Conditioned | 341 |
| ENF, G_{IIC} Environmentally Conditioned | 344 |
| Newport NCT300-D1-E300 1M Carbon Unidirectional Prepreg, $[0]_{20}$ | 345 |
| Newport NCT307-D1-34-600 Glass Unidirectional Prepreg, $[0]_{20}$ | 345 |
| GLASS PREPREG | 347 |
| MATERIAL M9.6/32%/1200/G UNI GLASS | 347 |
| MATERIAL M9.6/32%/1200/G UNI GLASS | 347 |
| MATERIAL M9.6/35%/BB600/G ± 45 GLASS | 347 |
| MATERIAL M9.6/35%/BB600/G ± 45 GLASS | 348 |
| MATERIAL GGP1 | 348 |
| MATERIAL GGP2 | 349 |
| MATERIAL GGP4 | 349 |
| CARBON PREPREG | 351 |
| MATERIAL M9.1/40%/500/C UNI CARBON | 351 |
| MATERIAL M9.1/40%/500/C UNI CARBON | 351 |
| MATERIAL M9.1/40%/500/C UNI CARBON | 351 |
| MATERIAL M9.1/40%/500/C UNI CARBON | 352 |
| MATERIAL SE84LV/HSC | 352 |
| MATERIAL SE84LV/SC300C | 352 |
| MATERIAL Fortafil prepreg | 352 |
| CARBON AND GLASS HYBRID | 353 |
| MATERIAL CG | 353 |
| MATERIAL CA | 354 |
| MATERIAL JJ | 354 |
| MATERIAL UNI21 | 354 |
| MATERIAL UNI21 | 355 |
| MATERIAL UNI25 (XP33FBUD25) | 355 |
| MATERIAL UNI25A | 356 |
| MATERIAL CGB | 356 |
| MATERIAL CGB2 | 357 |
| MATERIAL CGB3 | 357 |
| MATERIAL CGB4 | 357 |
| MATERIAL CGB5 | 358 |
| MATERIAL CGB6 | 358 |
| MATERIAL CGD4 | 358 |
| MATERIAL CGD4E | 359 |
| MATERIAL CGD5E | 360 |
| MATERIAL CGD5E2 | 360 |
| MATERIAL ACM-13-2 | 360 |

| | |
|--|----------------------------|
| MATERIAL UT70-60 | <u>361</u> |
| MATERIAL CGF1 | <u>361</u> |
| CARBON AND CARBON/GLASS HYBRID COMPRESSION COUPONS | <u>363</u> |
| FIBERGLASS MATERIALS WITH PLY DROPS | <u>369</u> |
| MATERIAL ESA | <u>369</u> |
| MATERIAL ESB | <u>369</u> |
| MATERIAL | <u>370</u> |
| MATERIAL ESC | <u>370</u> |
| MATERIAL ESE | <u>370</u> |
| MATERIAL ESF | <u>370</u> |
| MATERIAL ESG | <u>371</u> |
| MATERIAL ESH | <u>371</u> |
| MATERIAL ESH1 | <u>371</u> |
| MATERIAL ESH2 | <u>372</u> |
| MATERIAL ESH3 | <u>372</u> |
| MATERIAL ESI1 | <u>372</u> |
| MATERIAL ESI2 | <u>372</u> |
| MATERIAL ESI3 | <u>373</u> |
| MATERIAL ESI4 | <u>373</u> |
| MATERIAL ESJ | <u>373</u> |
| MATERIAL ESK | <u>373</u> |
| MATERIAL ESL | <u>373</u> |
| MATERIAL ESN | <u>374</u> |
| MATERIAL ESO | <u>374</u> |
| MATERIAL ESP | <u>374</u> |
| MATERIAL ESQ | <u>375</u> |
| MATERIAL ESS | <u>375</u> |
| MATERIAL EST | <u>375</u> |
| END OF DATABASE | <u>376</u> |

DOE/MSU Composite Material Database Introduction

A detailed guide to use of the database and test methods may be found in the detailed reports listed at the end of this section. Presently there are over 200 materials which have been tested for this database. Presently, over 13,000 tests have been performed. Test methods are outlined in papers listed at the end of this section. Additions to the current version of the database include spectrum loading, delamination resistance, large tow carbon fiber composites and stress rupture.

Materials presently in the database include lay-up combinations of 0° , $\pm 45^\circ$ and $0^\circ/\pm 45^\circ$ fabrics tested in the strongest (longitudinal) and weakest (transverse) directions. The commercial materials were generally hand lay-up and the MSU were resin transfer molded (RTM). The database contains results from cyclic fatigue tests using a constant stress amplitude sine waveform with R-values of 0.1 (tension-tension), 10 (compression-compression) and -1 (tension-compression). The $(0)_2$ and $(90)_4$ high cycle (typically 100 million cycle range), part of the database has R-values of: 0.1, 0.5, 2, 10, -0.5 and -1.

The R-value is defined by:

$$R = \frac{\text{Minimum cyclic stress}}{\text{Maximum cyclic stress}} \quad (1)$$

where tensile stress is treated as a positive value and the compressive stress is negative. Thermal failures of the polymer matrix materials were avoided by using forced air cooling and low testing frequencies, generally less than 20 Hz, with specialized test geometries for higher frequencies. Generally the tension ($R = 0.1$) coupons used a 100 mm gage length and the compression ($R = 10$) and reversed ($R = -1$) coupons used a 13 mm gage length with unsupported edges and a 25 mm width.

Each test material was given a letter or letter and number designation which uniquely identified the material and individual test coupons. All materials are E - glass or carbon fabric reinforced thermoset polymer matrix composites unless otherwise noted. A brief description of the database structure and the description of each composite is given below.

Table 1 summarizes fabric properties for Part 1 of the database.

Tables 2 and 3 summarizes the material properties of industrial materials typical of those used in the wind turbine blade structures and provided by various blade manufacturers. This summary lists the material, fiber volume fraction, ultimate compressive strength, compressive fatigue sensitivity coefficient (b_c), compressive strain for failure at one million cycles, ultimate tensile strength, tensile fatigue sensitivity coefficient (b_t), tensile strain for failure at one million cycles and the initial elastic modulus in the direction tested.

Tables 4 through 17 summarize the materials included in this database by fiber volume fraction (V_f), ply configuration, matrix material and description of the fabric used including fabric manufacturer. Additional information about the material is listed before the material test summary.

Table 18 summarizes the static longitudinal, transverse and simulated shear properties for seven fabrics used in the MSU manufactured composites. These properties have been used in hand calculations and standard laminate analysis programs for fiber volume fractions between 0.44 and 0.49. It should be noted that this table was generated with a coupon testing rate of 0.25 mm/s, which enhanced data acquisition, versus the standard database rate of 13 mm/s.

Tables 19 and 20 summarize the 3-D properties and strengths of a D155 composite.

The individual coupon test results are listed and summarized using eight columns with the following example data structure:

| (Col.1) TEST & SAMPLE ID # | (Col.2) STRESS Max./Min MPa | (Col.3) R | (Col.4) Q Hz | (Col.5) E GPa | (Col.6) e % | (Col.7) CYCLES TO FAIL | (Col.8) NOTES |
|-------------------------------------|--------------------------------------|--------------|--------------------|---------------------|-------------------|------------------------------|------------------|
| 63 102J | 561 | * | 25 | 23.7 | 1.60 | 1 | 25 |
| 70 105J | 129/13 | 0.1 | 10 | 26.2 | 0.31 | 11,000,000 | 25 R |
| 86 101NT | 54/5 | 0.1 | 1 | 8.62 | 1.34 | 6,479 | 25 |
| 149 132N | 86/9 | -1 | 5 | 22.8 | 0.36 | 105,505 | 25 |
| 215 125P | -207/-21 | 10 | 10 | 28.0 | -0.63 | 14,121 | 25 |

Col. 1: Lists the MSU mechanical test reference number and the test coupon reference label. If the sample ID label is succeeded by the letter T, the material was tested in the transverse direction or ninety degrees to the major zero degree fiber direction.

Col. 2: This column indicates the maximum and minimum stress in megapascals (MPa) which was applied to the coupon. A positive number indicates tension while a negative number indicates compression. For a compressive, one cycle test, the stress listed as maximum is actually the minimum stress. (1 MPa = 145.0326 psi) All tests were initially performed using English (psi) units. Since conversions always round up or down, for more exact stresses, the fatigue stress levels were usually run at discrete levels (eg 20000, 22500, 25000, 27500 and 30000 psi levels)

Col. 3: Indicates the R - value of the fatigue test. An asterisk indicates a static, single cycle tension or compression test.

Col. 4: Lists the cyclic sine wave frequency (Hz) at which the coupon was tested in fatigue or, in the case of a static test, the constant displacement ramp rate in millimeters per second (mm/s).

Col. 5: Lists the initial (first cycle) measured elastic modulus (E) of the coupon in the direction tested, in gigapascals (GPa).

Col. 6: Indicates the initial (first cycle) absolute maximum fatigue running strain (ϵ) in percent or the percent strain to failure for a static test.

Col. 7: Indicates the total cycles to failure for the test coupon, where failure is defined as the inability of the test coupon to support the maximum absolute applied fatigue load.

Col. 8: Lists the test coupon width in millimeters (mm) and any other notation for comments.

The notations used in column 8 are summarized below:

H - Coupon had a 12.7 mm diameter circular hole in the middle of the gage length

R - Run out, coupon has significant fatigue cycles but has not yet failed, test stopped.

Z - Double coupon thickness, two coupons bonded together to increase thickness

- Coupons were post cured at a temperature of 110°C which was higher than the standard post curing temperature of 60°C.

± 45 - Test coupon was tested with all the fibers orientated in the ± 45 direction to obtain shear properties.

ZERO - Test coupon was tested with all fibers orientated in the zero degree load axis.

Fabrics were taken apart and orientated in the zero direction.

90 - Test coupon was tested with all the fibers orientated in the 90 degree or transverse to the axis of loading.

tab - Coupon had additional tab material in the gripped area of the composite

tow - A complete glass strand from a particular fabric.

---- - Indicates that a value was unavailable.

Other notations used in the test material summary tables include:

V_F - Fiber volume content of the material in percent

UCS - Ultimate Compressive Strength of the material in MPa

UTS - Ultimate Tensile Strength of the material in MPa

b - fatigue sensitivity coefficient from a linear regression curve fit to the S-N data. Assuming a linear S - N curve on the semi - log plot, yields the equation, $S / S_o = 1 - b \log N$, where S is the maximum stress, S_o is the single cycle strength and N is the total cycles to failure.

b_C - Slope of the compressive fatigue ($R = 10$) trend line on a semi - log graph (compressive fatigue sensitivity coefficient)

b_T - Slope of the tensile fatigue ($R = 0.1$) trend line on a semi - log graph (tensile fatigue sensitivity coefficient)

b_R - Slope of the reversed loading ($R = -1$) fatigue trend line on a semi - log graph (completely reversed loading fatigue sensitivity coefficient)

E - Epoxy matrix material is used in the composite

P - Polyester matrix material is used in the composite

V - Vinyl ester matrix material is used in the composite

S.D. - Sample statistical standard deviation (Population = $N-1$)

Data Reduction

Notes on the listed database values and measured or calculated strains listed in reports.

Static strength

The static tensile and compressive tests were performed at various displacement rates. A rate of 12.5 mm/second was chosen for most of the tests as being at the same strain rate as the fatigue tests. ASTM and ISO standards require slower displacement rates. Slower rates will produce lower static stresses. The ramp rate used is recorded in the “Q” column with units of mm/second.

Elastic Modulus

The elastic (Young’s) modulus is calculated by a least squares fit of tensile stress-strain data between strains of 0 and 0.3 percent for glass fiber composites. The modulus for carbon fiber composites were calculated using tensile data between 0.1 and 0.4 percent strain. A very slow ramp rate for modulus determination was on the order of 0.002 mm/second. This slow rate was used to ensure that the clip-on extensometer did not slip and easy data acquisition. Some test coupons used back-to-back mounted strain gages for confirmation of the extensometer measurements and where the coupon gage length was too short for use of the clip-on gage.

Strain

The static tensile strains listed in the database are from measured values from a clip-on extensometer or bonded strain gages. The recorded initial fatigue strains in the database are measured over the first 2 to 10 fatigue cycles. This initial maximum fatigue strain will increase as the test continues, due to matrix cracking, delamination and fiber failure. Strain gages were used on static compression tests due to the short compression gage lengths. The listed strains for compression and reversed loading tests were calculated from the tensile modulus.

Calculating Tensile and Compression Strains

Due to the non-linear stress-strain behavior of carbon composites at higher tensile strains, the initial modulus cannot be used to calculate the maximum tensile fatigue strains. Strains were measured with bonded-on strain gages on at least three coupons to failure. Averaging the stress-strain data of these tests was performed and generated a strain “look-up” table. Values from these tables were used to determine the fatigue strains.

Publications

Some of the fatigue data and the testing procedures followed to produce this database were discussed in the following reports (some of the references are available online at the MSU Composites web page www.coe.montana.edu/composites/ or Sandia National Laboratories web page, <http://www.sandia.gov/wind/>):

Detailed Reports

Mandell, J.F., Samborsky, D.D., and Cairns, D.S. "Fatigue of Composite Materials and Substructures for Wind Turbine Blades," Contractor Report SAND2002-0771, Sandia National Laboratories, Albuquerque, NM (2002).

Wahl, N.K., Mandell, J.F., and Samborsky, D.D., "Spectrum Fatigue Lifetime and Residual Strength for Fiberglass Laminates," Contractor Report SAND2002-0546, Sandia National Laboratories, Albuquerque, NM (2002).

Mandell, J. F., Samborsky, D. D., Combs, D.W., Scott, M.E., and Cairns, D. S, "Fatigue of Composite Material Beam Elements Representative of Wind Turbine Blade Substructure," NREL Contractor Report SR-500-24379, November 1998.

Mandell, J.F., and D.D. Samborsky, "DOE/MSU Composite Material Fatigue Database: Test Methods, Materials, and Analysis," Contractor Report SAND97-3002, Sandia National Laboratories, Albuquerque, NM (1997).

Mandell, J.F., Reed, R.M. Jr. and Samborsky, D.D., "Fatigue of Fiberglass Wind Turbine Blade Materials," Contractor Report SAND92-7005, Sandia National Laboratories, Albuquerque, NM (1992).

Conference Papers

Samborsky, D.D., Agastra, P., and Mandell, J.F., "Fatigue Trends for Wind Blade Infusion Resins and Fabrics", 2010 AIAA SDM, Orlando, Wind Energy Session

Sears, A.T., Samborsky, D.D., Agastra, P., and Mandell, J.F., "Fatigue Results and Analysis for Thick Adhesive Notched Lap Shear Test", 2010 AIAA SDM, Orlando, Wind Energy Session

Agastra, P. and Mandell, J. F., Seattle, Paper 398, "Testing and Simulation of Damage Growth at Ply Drops in Wind Turbine Blade Laminates", SAMPE 2010

Agastra, P., Samborsky, D.D., and Mandell, J.F., "Fatigue Resistance of Fiberglass Laminates at Thick Material Transitions," 2009 AIAA SDM Wind Energy Special Session, Palm Springs, May 2009, paper AIAA-2009-2411.

Samborsky, D.D., Sears, A.T., Mandell, J.F., and Kils, O., "Static and Fatigue Testing of Thick Adhesive Joints for Wind Turbine Blades," AIAA/ASME 2009 Wind Energy Symposium, Orlando, Florida January 5-8, 2009

Mandell, J.F., Samborsky, D.D., Agastra, P., "Composite Materials Fatigue Issues in Wind Turbine Blade Construction," SAMPE 2008, Long Beach, May 18-22, 2008.

Samborsky, D. D., Agastra, P., and Mandell, J. F., "Effects of Glass Fabric and Laminate Construction on the Fatigue of Resin Infused Blade Materials," 2008 ASME Wind Energy Symposium, ASME/AIAA, Reno, NV(2008).

Samborsky, D. D., Wilson, T. J., and Mandell, J. F. "Comparison of Tensile Fatigue Resistance and Constant Life Diagrams for Several Potential Wind Turbine Blade Materials," 2007 ASME Wind Energy Symposium, ASME/AIAA, Reno, NV(2007).

Samborsky, D.D., Avery, D.P., Agastra, P., and Mandell, J.F., "Delamination and Failure at Ply Drops in Carbon Fiber Laminates Under Static and Fatigue Loading," 2006 ASME Wind Energy Symposium, ASME/AIAA., AIAA-2006, January 2006.

Sutherland, Herbert, J. and Mandell, John, F., "Optimized Goodman Diagram for the Analysis of Fiberglass Composites Used in Wind Turbine Blades," 2005 ASME Wind Energy Symposium, ASME/AIAA., AIAA-2005-0196, pp.18-27, (2005).

Nijssen, Rogier P.L., Samborsky, Daniel D., Mandell, John F., van Delft, Don R.V., "Strength Degradation and Simple Load Spectrum Tests in Rotor Blade Composites," 2005 ASME Wind Energy Symposium, ASME/AIAA., AIAA-2005-0197, pp. 28-38, (2005).

Avery, D. P., Samborsky D. D., Mandell, J. F. and Cairns, D. S., "Compression Strength of Carbon Fiber Laminates Containing Flaws with Fiber Waviness," 2004 ASME Wind Energy Symposium, ASME/AIAA., AIAA-2004-0174, pp. 54-63, (2004).

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Mandell, J.F., Cairns, D.S., Samborsky, D.D., Morehead, R.B., and Haugen, D.J., "Prediction of Delamination in Wind Turbine Blade Structural Details," Journal of Solar Energy Engineering, ASME, Vol. 125, No. 4, pp. 522-530. November 2003. (2003)

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Orozco, Ricardo, "Effects of Toughened Matrix Resins on Composite Materials for Wind Turbine Blades," M.S. Thesis, Department of Chemical Engineering, Montana State University, 1999.

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Wei, Guangxi, "High Cycle Longitudinal and Transverse Fatigue of Unidirectional Glass/Polyester Composites," M.S. Thesis, Department of Chemical Engineering, Montana State University, 1995.

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Pan, Rena, "Fatigue Behavior of Glass Fiber Reinforced Composite Materials for Wind Turbine Blades," M.S. Thesis, Department of Chemical Engineering, Montana State University, 1994.

Creed, Richard, "High Cycle Tensile Fatigue of Unidirectional Fiberglass Composite Tested at High Frequency," M.S. Thesis, Department of Chemical Engineering, Montana State University, 1993.

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Material Manufacturers and Contact Information

Glass fabrics used in this database were obtained from the following companies:

Saint-Gobain BTI, www.sgtf.com/ (formerly Brunswick Technologies Inc.)
 CollinsCraft Composites Group Inc., Walhalla, SC, www.cofab.com
 Owens Corning Fabrics (Knytex), New Braunfels, Texas, www.owenscorning.com
 Ahlstrom Glassfibre Oy, www.ahlstrom.com
 Saertex, www.saertex.com
 Vectorply, Phenix City, Alabama, www.vectorply.com
 Fiber Glass Industries, Amsterdam, NY, www.fiberglassindustries.com

Carbon fabrics were obtained from:

Textile Products Inc., Anaheim, CA, www.textileproducts.com
 Zoltek Corporation, Saint Louis, MO, www.zoltek.com
 Toray Industries Inc., www.toray.co.jp/e/

Prepreg materials were obtained from:

Hexcel Corporation, www.hexcelcomposites.com
 Structural Polymer Systems Limited (SP Systems) , www.spsystems.com
 Newport Adhesives and Composites, Inc., www.newportad.com

Resin systems were obtained from:

Polyester

Interplastics Corporation, www.interplastic.com
 Alpha Owens Corning, www.aoc-resins.com
 Ashland Chemicals, www.ashland.com

Vinyl esters

Dow Chemical Inc., www.dow.com
 Reichhold, www.Reichhold.com

Epoxy

Shell Chemical, www.shell.com
 Applied Poleramic Incorporated, Benicia, CA, www.appliedpolaramic.com
 Jeffco Products, www.jeffcoproducts.com
 Gurit Holding AG (formerly SP Systems) , www.gurit.com/
 Huntsman International LLC, www.huntsman.com

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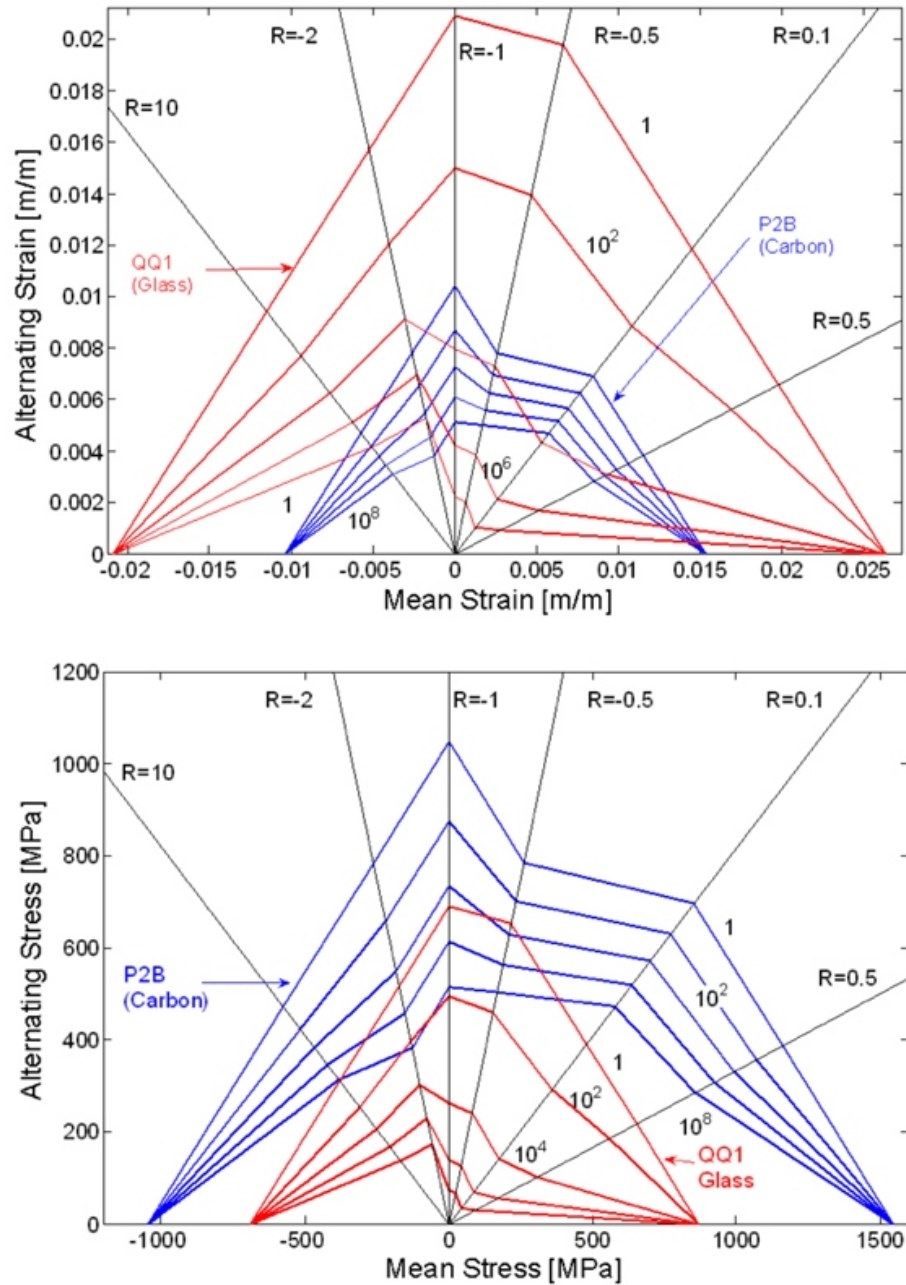
Dr. John Mandell, JohnM@coe.montana.edu

MSU Composites Group Homepage: www.coe.montana.edu/composites/

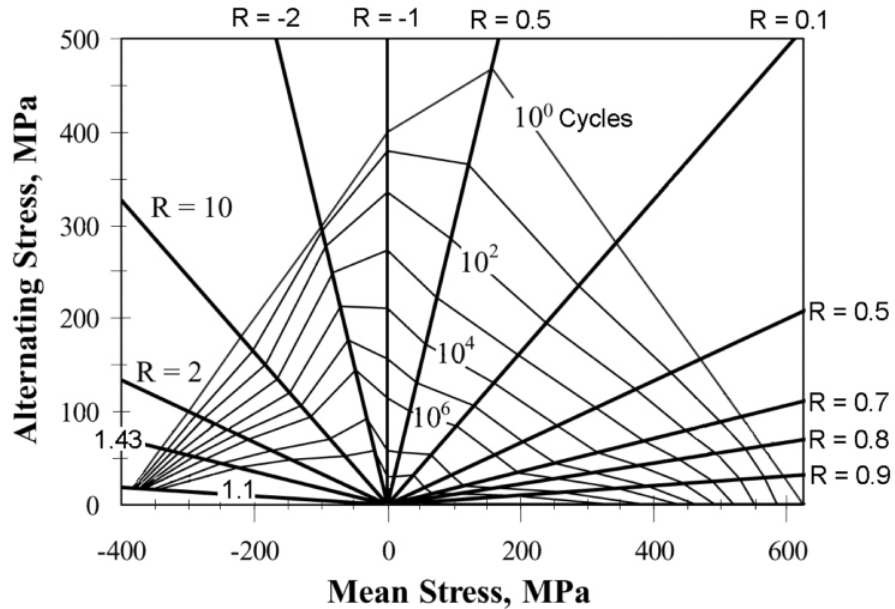
Montana State University, Chemical and Biological Engineering Department
306 Cobleigh Hall, Bozeman, Montana, USA, 59717, ph: 406-994-2221

PART 1: RECENT TESTS AND MATERIALS

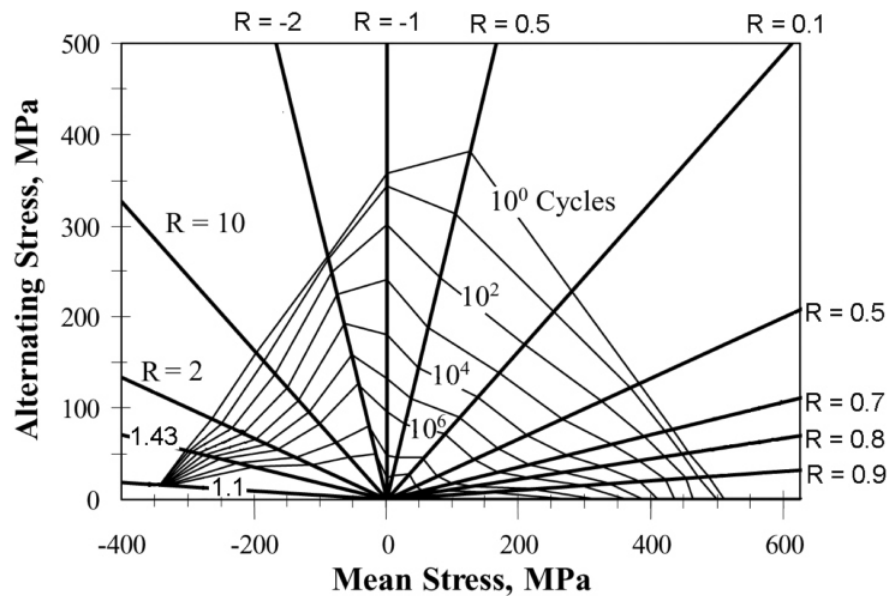
Constant Life Diagrams for Materials QQ1(E-glass/epoxy)
and P2B (Carbon/glass hybrid)



Goodman Diagrams for Material DD16 (E-glass/polyester)



(a) Mean Lifetime



(b) 95/95 Lifetime

Mean and 95/95 Goodman Diagrams for Material DD16

Table 1. Laminate Analysis and FEA Input Ply Properties in Material Principle Directions for Fabrics and Prepregs Used in the Database Part 1 Materials (static longitudinal, transverse and simulated shear properties).

| All fabrics = Prime 20 epoxy resin | | | Longitudinal Direction | | | | | | | | Shear | Transverse Direction | | | |
|------------------------------------|--------------------|------------------|------------------------|-----------------------|-----------------|------------------------|-------------------------|-----------------------|-------------------------|-----------------------|------------------------|-------------------------|---------------------|-------------------------|---------------------|
| | | | Elastic Constants | | | | Tension | | Compression | | | Tension | | Compression | |
| Fabric | lay-up | V _F % | E _L GPa | E _T GPa | υ _{LT} | G _{LT} GPa | UTS _L MPa | ε _{max} % | UCS _L MPa | ε _{min} % | τ _{TU} MPa | UTS _T MPa | ε _U % | UCS _T MPa | ε _U % |
| U14EU920-00940-T1300-100000 | [0] ₂ | 52 | 38.4 | 12.0 | 0.27 | ---- | 863 | 2.71 | -583 | -1.58 | ---- | 66.7 | 0.63 | -197 | -1.40 |
| S15EU980-01660-T1300-088000 | [0] ₂ | 60 | 45.9 | 15.8 | 0.26 | ---- | 1233 | 2.80 | -676 | -1.65 | ---- | 41.9 | 0.29 | -150 | -0.98 |
| VectorPly E-LT-5500 | [0] ₂ | 54 | 41.8 | 14.0 | 0.28 | ---- | 1151 | 2.97 | -740 | -1.79 | ---- | 59.0 | 0.46 | -202 | -1.47 |
| VU-90079-00830-01270-000000 | [±45] ₄ | 51 | 13.8 | 11.8 | ---- | ---- | 95.4 | 1.46 | -166 | -1.44 | ---- | 94.7 | 1.11 | -157 | -1.50 |
| DBM1708 | [±45] ₄ | 44 | 13.6 | 13.3 | ---- | ---- | 144 | 2.16 | -213 | -1.80 | ---- | 87.5 | 1.61 | -203 | -1.68 |
| Prepreg | | | | | | | | | | | | | | | |
| NB307-D1 7781 497A | 0/90 | 39 | 19.2 | 19.2 | 0.13 | 3.95 | 337 | 2.21 | -497 | -2.60 | 115 | 337 | 2.21 | -497 | -2.60 |
| NCT307-D1-34-600 Carbon | [0] ₄ | 53 | 123 | 8.20 | 0.31 | 4.71 | 1979 | 1.32 | -1000 | -0.90 | 103 | 59.9 | 0.76 | -223 | -2.72 |
| NCT307-D1-E300 Glass | [0] ₄ | 47 | 35.5 | 8.33 | 0.33 | 4.12 | 1005 | 2.83 | -788 | -2.22 | 112 | 51.2 | 0.74 | -168 | -2.02 |

Notes: All coupons for this Table were tested at 0.25 mm/s, with a 100 mm gage length. Compression tests used a 13 mm gage length with unsupported edges following ASTM D6641.

E_L - Longitudinal modulus, ν_{LT} - Poisson's ratio, G_{LT} and τ_{TU} - Shear modulus and ultimate shear stress from a simulated shear (±45) ASTM D3518 test.

UTS_L - Ultimate longitudinal tensile strength, ε_{MAX} - Ultimate tensile strain, UCS_L - Ultimate longitudinal compressive strength

ε_{MIN} - Ultimate compressive strain.

NB307-D1 7781 497A - 0/90 woven glass prepreg, NCT307-D1-34-600 - unidirectional carbon (G300) prepreg FAW=300 g/m².

Fabric information

Saertex U14EU920-00940-T1300-100000 0's- (0's-864g/m², 90's-79 g/m², stitching 12 g/m², total - 955 g/m²)

Saertex S15EU980-01660-T1300-088000 (0's-1632 g/m², 90's-32 g/m², stitch-18 g/m², Total-1682 g/m²)

VectorPly E-LT-5500, (0's-1728 g/m², 90's-114 g/m², stitching = 33 g/m², total- 1875 g/m²)

Saertex 45's - VU-90079-00830-01270-000000 (45's -802 g/m², 90's - 21 g/m², stitching - 6 g/m², total - 831 g/m²)

Owens Corning (Knytex) 45's - DBM-1708, (45's - 584 g/m², RM - 256 g/m², stitch - 17 g/m², total - 857 g/m²)

MATERIAL WS1

Lay-up = ($\pm 45/0/\mp 45$), Owens Corning HiPer-Tex Windstrand, $V_F = 0.605$, Ave. thickness = 2.56 mm, S.D. = 0.04 mm, 49.4% zeros and 50.6% $\pm 45^\circ$ s

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11412 | WS1-190 | 920 | * | 13 | ---- | 2.51 | 1 |
| 11413 | WS1-191 | 819 | * | 13 | ---- | 2.51 | 1 |
| 11414 | WS1-192 | 872 | * | 13 | ---- | 2.67 | 1 |
| 11415 | WS1-114 | 941 | * | 13 | 4.78 | 2.98 | 1 |
| 11416 | WS1-101 | 890 | * | 13 | 4.64 | 2.85 | 1 |
| 11417 | WS1-102 | 848 | * | 13 | 4.52 | 2.8 | 1 |
| 11418 | WS1-100 | 727 | * | 0.03 | 4.88 | 3.05 | 1 |
| 11419 | WS1-103 | 789 | * | 0.03 | ---- | 2.42 | 1 |
| 11420 | WS1-139 | 842 | * | 0.03 | ---- | 2.58 | 1 |
| 11421 | WS1-140 | 764 | * | 0.03 | ---- | 2.34 | 1 |
| 11422 | WS1-116 | 276/28 | 0.1 | 3 | ---- | 0.85 | 1963214 |
| 11423 | WS1-113 | 414/41 | 0.1 | 2 | ---- | 1.27 | 32820 |
| 11424 | WS1-115 | 414/41 | 0.1 | 2 | ---- | 1.27 | 48140 |
| 11425 | WS1-112 | 414/41 | 0.1 | 2 | ---- | 1.27 | 40093 |
| 11426 | WS1-108 | 345/35 | 0.1 | 3 | 4.85 | 1.08 | 336594 |
| 11427 | WS1-110 | 345/35 | 0.1 | 2 | ---- | 1.06 | 372184 |
| 11428 | WS1-111 | 345/35 | 0.1 | 2 | ---- | 1.06 | 242418 |
| 11429 | WS1-105 | 483/48 | 0.1 | 1 | ---- | 1.48 | 7186 |
| 11430 | WS1-106 | 483/48 | 0.1 | 1 | ---- | 1.48 | 2509 |
| 11431 | WS1-109 | 276/28 | 0.1 | 3 | 4.73 | 0.91 | 1323671 |
| 11432 | WS1-107 | 483/48 | 0.1 | 2 | ---- | 1.48 | 14394 |
| 11433 | WS1-104 | 414/41 | 0.1 | 2 | ---- | 1.23 | 24302 |
| 11434 | WS1-155 | 690/69 | 0.1 | 1 | ---- | 2.11 | 430 |
| 11435 | WS1-156 | 690/69 | 0.1 | 1 | ---- | 2.11 | 60 |
| 11436 | WS1-157 | 690/69 | 0.1 | 1 | ---- | 2.11 | 219 |
| 11437 | WS1-138 | 621/62 | 0.1 | 2 | ---- | 1.90 | 1189 |
| 11438 | WS1-137 | 621/62 | 0.1 | 2 | ---- | 1.90 | 1609 |
| 11439 | WS1-136 | 621/62 | 0.1 | 2 | ---- | 1.90 | 1670 |
| 11440 | WS1-154 | 241/24 | 0.1 | 3 | ---- | 0.74 | 8408052 |
| 11441 | WS1-153 | 276/28 | 0.1 | 3 | ---- | 0.85 | 2457593 |
| 11442 | WS1-214 | -753 | * | 13 | ---- | -2.3 | 1 |
| 11443 | WS1-205 | -742 | * | 13 | ---- | -2.3 | 1 |
| 11444 | WS1-223 | -762 | * | 13 | ---- | -2.3 | 1 |
| 11445 | WS1-225 | -762 | * | 13 | ---- | -2.34 | 1 |
| 11446 | WS1-220 | -483/-48 | 10 | 1 | ---- | -1.48 | 2143 |
| 11447 | WS1-217 | -483/-48 | 10 | 2 | ---- | -1.48 | 4010 |
| 11448 | WS1-208 | -483/-48 | 10 | 2 | ---- | -1.48 | 1194 |
| 11449 | WS1-215 | -414/-41 | 10 | 2 | ---- | -1.27 | 54247 |
| 11450 | WS1-224 | -414/-41 | 10 | 2 | ---- | -1.27 | 18992 |
| 11451 | WS1-221 | -414/-41 | 10 | 2 | ---- | -1.27 | 41626 |
| 11452 | WS1-219 | -345/-35 | 10 | 2 | ---- | -1.06 | 1421204 |
| 11453 | WS1-216 | -345/-35 | 10 | 2 | ---- | -1.06 | 820033 |
| 11454 | WS1-222 | -345/-35 | 10 | 2 | ---- | -1.06 | 2061530 |
| 11455 | WS1-200 | -552/-55 | 10 | 1 | ---- | -1.69 | 43 |
| 11456 | WS1-212 | -552/-55 | 10 | 1 | ---- | -1.69 | 241 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11457 | WS1-204 | -552/-55 | 10 | 1 | ---- | -1.69 | 97 |
| 11458 | WS1-218 | 276/-276 | -1 | 1 | ---- | 0.85 | 5268 |
| 11459 | WS1-213 | 207/-207 | -1 | 2 | ---- | 0.64 | 249282 |

MATERIAL E-LT-5500-VE

E-glass/vinyl ester laminate based on 0° Vectorply E-LT-5500 and ±45° Knytex DBM-1708, Lay-up: [±45/0/±45/0/±45], 66%-0°, Fiber volume fraction and thickness: 0.55 and 4.59 mm, Matrix: vinyl ester resin (Ashland Momentum 411-200), $V_f = 0.55$, thickness = 4.60 mm (supplied by GEC as material EL-T-5500/VE9) Process, cure and post-cure temperature: Infusion (TPI SCRIMP™), 60°C and 82°C, Laminate fabricated by: TPI (Supplied by Global Energy Concepts/BSDS Program as material EL-T-5500/VE)

| | | | | | | | |
|-------|--------|--------|-----|------|------|------|---------|
| 11537 | VE-182 | 676 | * | 0.02 | 33.3 | 2.5 | 1 |
| 11538 | VE-106 | 656 | * | 0.13 | 30.3 | 2.47 | 1 |
| 11539 | VE-125 | 627 | * | 0.13 | 32.7 | 2.38 | 1 |
| 11540 | VE-116 | 705 | * | 0.13 | 33.6 | 2.64 | 1 |
| 11541 | VE-108 | 622 | * | 0.13 | ---- | 2.34 | 1 |
| 11542 | VE-190 | 552/55 | 0.1 | 1 | ---- | 2.15 | 228 |
| 11543 | VE-186 | 483/48 | 0.1 | 2 | ---- | 1.94 | 673 |
| 11544 | VE-187 | 483/48 | 0.1 | 2 | ---- | 1.94 | 975 |
| 11545 | VE-171 | 483/48 | 0.1 | 2 | ---- | 1.94 | 486 |
| 11546 | VE-170 | 414/41 | 0.1 | 2 | ---- | 1.71 | 1666 |
| 11547 | VE-189 | 414/41 | 0.1 | 2 | ---- | 1.71 | 1595 |
| 11548 | VE-188 | 414/41 | 0.1 | 2 | ---- | 1.71 | 1044 |
| 11549 | VE-172 | 345/35 | 0.1 | 2 | ---- | 1.44 | 4303 |
| 11550 | VE-173 | 345/35 | 0.1 | 2 | ---- | 1.44 | 3253 |
| 11551 | VE-174 | 345/35 | 0.1 | 2 | ---- | 1.44 | 3891 |
| 11552 | VE-181 | 276/28 | 0.1 | 2 | 31.6 | 1.17 | 15490 |
| 11553 | VE-183 | 276/28 | 0.1 | 2 | ---- | 1.17 | 12135 |
| 11554 | VE-175 | 276/28 | 0.1 | 2 | ---- | 1.17 | 16258 |
| 11555 | VE-178 | 207/21 | 0.1 | 3 | ---- | 0.88 | 90748 |
| 11556 | VE-179 | 207/21 | 0.1 | 3 | ---- | 0.88 | 115190 |
| 11557 | VE-177 | 172/17 | 0.1 | 5 | ---- | 0.73 | 409092 |
| 11558 | VE-176 | 172/17 | 0.1 | 5 | ---- | 0.73 | 645463 |
| 11559 | VE-128 | 138/14 | 0.1 | 5 | ---- | 0.58 | 1500000 |
| 11560 | VE-185 | 345/35 | 0.1 | 2 | ---- | 1.44 | 7286 |
| 11561 | VE-184 | 345/35 | 0.1 | 2 | ---- | 1.44 | 6982 |
| 11562 | VE-220 | 207/21 | 0.1 | 2 | ---- | 0.88 | 184487 |
| 11563 | VE-211 | 276/28 | 0.1 | 2 | ---- | 1.17 | 20620 |
| 11564 | VE-219 | 276/28 | 0.1 | 2 | ---- | 1.17 | 17615 |
| 11565 | VE-218 | 276/82 | 0.1 | 2 | ---- | 1.17 | 19091 |
| 11566 | VE-208 | 207/21 | 0.1 | 3 | ---- | 0.88 | 162416 |
| 11567 | VE-217 | 207/21 | 0.1 | 3 | ---- | 0.88 | 211015 |
| 11568 | VE-200 | 414/41 | 0.1 | 2 | ---- | 1.71 | 2491 |
| 11569 | VE-209 | 414/41 | 0.1 | 2 | ---- | 1.71 | 1559 |
| 11570 | VE-202 | 855 | * | 13 | 30.7 | 2.7 | 1 |
| 11571 | VE-201 | 763 | * | 13 | 31.2 | 2.4 | 1 |
| 11572 | VE-203 | 811 | * | 13 | 29.5 | 2.4 | 1 |
| 11573 | VE-215 | 172/17 | 0.1 | 4 | ---- | 0.73 | 1431704 |
| 11574 | VE-205 | 172/17 | 0.1 | 4 | ---- | 0.73 | 1134970 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11575 | VE-206 | 345/35 | 0.1 | 2 | ---- | 1.44 | 9166 |
| 11576 | VE-207 | 414/41 | 0.1 | 2 | ---- | 1.71 | 1549 |
| 11577 | VE-216 | 483/48 | 0.1 | 1 | ---- | 1.94 | 596 |
| 11578 | VE-213 | 483/48 | 0.1 | 1 | ---- | 1.94 | 951 |
| 11579 | VE-212 | 483/48 | 0.1 | 1 | ---- | 1.94 | 494 |
| 11580 | VE-214 | 552/55 | 0.1 | 1 | ---- | 2.15 | 227 |
| 11581 | VE-204 | 552/55 | 0.1 | 1 | ---- | 2.15 | 251 |
| 11582 | VE-230 | 552/55 | 0.1 | 1 | ---- | 2.15 | 133 |
| 11583 | VE-245 | 621/62 | 0.1 | 1 | ---- | 2.33 | 92 |
| 11584 | VE-240 | 621/62 | 0.1 | 1 | ---- | 2.33 | 112 |
| 11585 | VE-241 | 621/62 | 0.1 | 1 | ---- | 2.33 | 87 |
| 11586 | VE-242 | 690/69 | 0.1 | 1 | ---- | 2.61 | 35 |
| 11587 | VE-244 | 690/69 | 0.1 | 1 | ---- | 2.61 | 14 |
| 11588 | VE-243 | 690/69 | 0.1 | 1 | ---- | 2.61 | 38 |
| 11589 | VE-161 | -615 | * | 13 | ---- | -1.92 | 1 |
| 11590 | VE-173 | -685 | * | 13 | ---- | -2.13 | 1 |
| 11591 | VE-174 | -663 | * | 13 | ---- | -2.06 | 1 |
| 11592 | VE-151 | -717 | * | 13 | ---- | -2.23 | 1 |
| 11593 | VE-157 | -552/-55 | 10 | 1 | ---- | -1.72 | 242 |
| 11594 | VE-163 | -552/-55 | 10 | 1 | ---- | -1.72 | 81 |
| 11595 | VE-160 | -552/-55 | 10 | 1 | ---- | -1.72 | 1095 |
| 11596 | VE-166 | -483/-48 | 10 | 1 | ---- | -1.5 | 3110 |
| 11597 | VE-133 | -483/-48 | 10 | 1 | ---- | -1.5 | 1265 |
| 11598 | VE-162 | -483/-48 | 10 | 1 | ---- | -1.5 | 712 |
| 11599 | VE-140 | -414/-41 | 10 | 2 | ---- | -1.29 | 30875 |
| 11600 | VE-152 | -414/-41 | 10 | 2 | ---- | -1.29 | 57183 |
| 11601 | VE-170 | -345/-35 | 10 | 3 | ---- | -1.07 | 41810 |
| 11602 | VE-143 | -345/-35 | 10 | 3 | ---- | -1.07 | 209634 |
| 11603 | VE-164 | -345/-35 | 10 | 3 | ---- | -1.07 | 110976 |
| 11604 | VE-168 | -276/-28 | 10 | 3 | ---- | -0.86 | 481283 |
| 11605 | VE-143 | -345/-35 | 10 | 3 | ---- | -1.07 | 209634 |
| 11606 | VE-167 | -276/-28 | 10 | 3 | ---- | -0.86 | 6500000 RO |

MATERIAL E-LT-5500-EP

E-glass/epoxy laminate based on 0° Vectorply E-LT-5500 and ±45° Knytex DBM-1708, Lay-up: [±45/0/±45/0/±45], 66%-0°, Fiber volume fraction and thickness: 0.55 and 4.59 mm, Matrix: epoxy (Huntsman Araldite LY1564/hardener XB3485), Process, cure and post-cure temperature: Infusion (TPI SCRIMP™), 60°C and 82°C, Laminate fabricated by: TPI (Supplied by Global Energy Concepts/BSDS Program as material EL-T-5500/epoxy)

| | | | | | | | |
|-------|--------|--------|-----|------|------|------|-----|
| 11607 | EP-190 | 820 | * | 13 | ---- | 3.28 | 1 |
| 11608 | EP-191 | 819 | * | 13 | ---- | 3.4 | 1 |
| 11609 | EP-192 | 872 | * | 13 | ---- | 3.4 | 1 |
| 11610 | EP-111 | 709 | * | 0.02 | 29.2 | 2.93 | 1 |
| 11611 | EP-113 | 736 | * | 0.13 | 30.0 | 3.04 | 1 |
| 11612 | EP-114 | 751 | * | 0.13 | ---- | 3.12 | 1 |
| 11613 | EP-124 | 690/69 | 0.1 | 1 | ---- | 2.82 | 70 |
| 11614 | EP-125 | 69069 | 0.1 | 1 | ---- | 2.82 | 91 |
| 11615 | EP-122 | 621/62 | 0.1 | 1 | ---- | 2.49 | 163 |
| 11616 | EP-123 | 621/62 | 0.1 | 1 | ---- | 2.49 | 244 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11617 | EP-121 | 552/55 | 0.1 | 1 | ---- | 2.18 | 729 |
| 11618 | EP-120 | 552/55 | 0.1 | 1 | ---- | 2.18 | 1291 |
| 11619 | EP-119 | 552/55 | 0.1 | 1 | ---- | 2.18 | 854 |
| 11620 | EP-116 | 483/48 | 0.1 | 2 | ---- | 1.88 | 4815 |
| 11621 | EP-118 | 483/48 | 0.1 | 2 | ---- | 1.88 | 2230 |
| 11622 | EP-117 | 483/48 | 0.1 | 2 | ---- | 1.88 | 2999 |
| 11623 | EP-112 | 414/41 | 0.1 | 2 | ---- | 1.59 | 6445 |
| 11624 | EP-110 | 414/41 | 0.1 | 2 | ---- | 1.59 | 13151 |
| 11625 | EP-109 | 414/41 | 0.1 | 2 | ---- | 1.59 | 11105 |
| 11626 | EP-104 | 345/35 | 0.1 | 2 | ---- | 1.31 | 67165 |
| 11627 | EP-105 | 345/35 | 0.1 | 2 | 28.8 | 1.34 | 41511 |
| 11628 | EP-106 | 345/35 | 0.1 | 2 | 30.8 | 1.31 | 23455 |
| 11629 | EP-103 | 276/28 | 0.1 | 3 | ---- | 1.02 | 389501 |
| 11630 | EP-107 | 276/28 | 0.1 | 3 | 28.1 | 1.09 | 248599 |
| 11631 | EP-108 | 276/28 | 0.1 | 3 | ---- | 1.02 | 614113 |
| 11632 | EP-102 | 207/21 | 0.1 | 4 | ---- | 0.75 | 1821361 |
| 11633 | EP-101 | 207/21 | 0.1 | 4 | ---- | 0.75 | 3117135 |
| 11634 | EP-193 | 758/76 | 0.1 | 1 | ---- | 3.15 | 40 |
| 11635 | EP-195 | 621/62 | 0.1 | 1 | ---- | 2.49 | 201 |
| 11636 | EP-196 | 690/69 | 0.1 | 1 | ---- | 2.82 | 27 |
| 11637 | EP-197 | 758/76 | 0.1 | 1 | ---- | 3.15 | 19 |
| 11638 | EP-230 | -514 | * | 13 | ---- | -1.75 | 1 |
| 11639 | EP-214 | -488 | * | 13 | ---- | -1.66 | 1 |
| 11640 | EP-224 | -478 | * | 13 | ---- | -1.63 | 1 |
| 11641 | EP-229 | -501 | * | 13 | ---- | -1.70 | 1 |
| 11642 | EP-203 | -619 | * | 13 | ---- | -2.11 | 1 |
| 11643 | EP-223 | -616 | * | 13 | ---- | -2.10 | 1 |
| 11644 | EP-206 | -662 | * | 13 | ---- | -2.25 | 1 |
| 11645 | EP-201 | -539 | * | 13 | ---- | -1.84 | 1 |
| 11646 | EP-202 | -345/-35 | 10 | 3 | ---- | -1.17 | 4122 |
| 11647 | EP-207 | -207/-21 | 10 | 5 | ---- | -0.70 | 1500000 |
| 11648 | EP-200 | -207/-21 | 10 | 5 | ---- | -0.70 | 2500000 |
| 11649 | EP-208 | -483/-48 | 10 | 1 | ---- | -1.64 | 17 |
| 11650 | EP-240 | -483/-48 | 10 | 1 | ---- | -1.64 | 83 |
| 11651 | EP-204 | -483/-48 | 10 | 1 | ---- | -1.64 | 36 |
| 11652 | EP-237 | -483/-48 | 10 | 1 | ---- | -1.64 | 63 |
| 11653 | EP-242 | -483/-48 | 10 | 1 | ---- | -1.64 | 14 |
| 11654 | EP-217 | -345/-35 | 10 | 2 | ---- | -1.17 | 18834 |
| 11655 | EP-215 | -345/-35 | 10 | 2 | ---- | -1.17 | 13878 |
| 11656 | EP-218 | -276/-28 | 10 | 3 | ---- | -0.86 | 682544 |

MATERIAL P2B

Lay-up = ($\pm 45/0_{8C}/\mp 45$), Newport carbon NB307-D1-34-600 G300 prepreg 0° , 300 g/m^2 with glass 0/90 prepreg, NB307-D1-7781-497A for $\pm 45^\circ$, 298 g/m^2 , $V_F = 0.549$, Ave. thickness = 2.82 mm, S.D. = 0.04 mm. (85% carbon fabric by volume). (P2BT = Ave. thickness = 3.019 mm, S.D. = 0.08 mm)

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 9249 | P2B-402 | 1597 | * | 13 | 98.2 | 1.49 | 1 19 |
| 9250 | P2B-400 | 1405 | * | 13 | 96.4 | 1.31 | 1 19 |
| 9251 | P2B-401 | 1487 | * | 13 | 95.4 | 1.39 | 1 19 |
| 9252 | P2B-178 | 1605 | * | 13 | 107 | 1.35 | 1 19 |
| 9253 | P2B-1100 | 1664 | * | 1 | 107 | 1.42 | 1 12 |
| 9254 | P2B-1102 | 1544 | * | 1 | ---- | 1.45 | 1 12 |
| 9255 | P2B-900 | 1597 | * | 6.35 | ---- | 1.49 | 1 20 |
| 9256 | P2B-901 | 1473 | * | 6.35 | ---- | 1.38 | 1 20 |
| 9257 | P2B-902 | 1582 | * | 6.35 | ---- | 1.48 | 1 20 |
| 9258 | P2B-903 | 1605 | * | 6.35 | ---- | 1.50 | 1 20 |
| 9259 | P2B-904 | 1594 | * | 6.35 | ---- | 1.49 | 1 20 |
| 9260 | P2B-905 | 1500 | * | 13 | ---- | 1.40 | 1 20 |
| 9261 | P2B-906 | 1520 | * | 13 | ---- | 1.42 | 1 20 |
| 9262 | P2B-907 | 1665 | * | 13 | ---- | 1.56 | 1 20 |
| 9263 | P2B-908 | 1495 | * | 13 | ---- | 1.40 | 1 20 |
| 9264 | P2B-909 | 1549 | * | 13 | ---- | 1.45 | 1 20 |
| 9265 | P2B-910 | 1511 | * | 0.01 | ---- | 1.41 | 1 20 |
| 9266 | P2B-911 | 1501 | * | 0.01 | ---- | 1.40 | 1 20 |
| 9267 | P2B-912 | 1559 | * | 0.01 | ---- | 1.46 | 1 20 |
| 9268 | P2B-913 | 1497 | * | 0.01 | ---- | 1.40 | 1 20 |
| 9269 | P2B-914 | 1514 | * | 0.01 | ---- | 1.42 | 1 20 |
| 9270 | P2B-307 | 1103/110 | 0.1 | 1 | ---- | 1.10 | 449693 19 |
| 9271 | P2B-303 | 1034/103 | 0.1 | 1 | ---- | 1.03 | 5000000 19 R |
| 9272 | P2B-293 | 1172/117 | 0.1 | 1 | ---- | 1.10 | 4172383 19 |
| 9273 | P2B-170 | 1241/124 | 0.1 | 1 | ---- | 1.16 | 665487 19 |
| 9274 | P2B-176 | 1379/138 | 0.1 | 1 | ---- | 1.29 | 780 19 |
| 9275 | P2B-180 | 1379/138 | 0.1 | 1 | ---- | 1.29 | 1030 19 |
| 9276 | P2B-173 | 1379/138 | 0.1 | 1 | ---- | 1.29 | 372 19 |
| 9277 | P2B-182 | 1310/131 | 0.1 | 1 | ---- | 1.23 | 1782 19 |
| 9278 | P2B-174 | 1310/131 | 0.1 | 1 | ---- | 1.23 | 2711 19 |
| 9279 | P2B-181 | 1310/131 | 0.1 | 1 | ---- | 1.23 | 619 19 |
| 9280 | P2B-638 | 1310/131 | 0.1 | 1 | ---- | 1.23 | 926 19 |
| 11311 | P2B-639 | 1241/124 | 0.1 | 1 | ---- | 1.16 | 31542 19 |
| 11312 | P2B-172 | 1448/145 | 0.1 | 1 | 100 | 1.35 | 4 19 |
| 11313 | P2B-175 | 1448/145 | 0.1 | 1 | 97.3 | 1.36 | 2 19 |
| 11314 | P2B-179 | 1413/141 | 0.1 | 1 | 99.2 | 1.32 | 797 19 |
| 11315 | P2B-611 | 1413/141 | 0.1 | 1 | ---- | 1.32 | 32 19 |
| 11316 | P2B-624 | 1413/141 | 0.1 | 1 | ---- | 1.32 | 99 19 |
| 11317 | P2B-618 | 1276/128 | 0.1 | 2 | ---- | 1.19 | 18903 19 |
| 11318 | P2B-617 | 1241/124 | 0.1 | 2 | ---- | 1.16 | 19 |
| 11319 | P2B-640 | 1241/124 | 0.1 | 2 | ---- | 1.16 | 7140 19 |
| 11320 | P2B-644 | 1241/124 | 0.1 | 1 | ---- | 1.16 | 77938 19 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11321 | P2B-620 | 1379/690 | 0.5 | 1 | ---- | 1.29 | 270 19 |
| 11322 | P2B-609 | 1379/690 | 0.5 | 1 | ---- | 1.29 | 120 19 |
| 11323 | P2B-615 | 1379/690 | 0.5 | 1 | ---- | 1.29 | 359 19 |
| 11324 | P2B-610 | 1310/655 | 0.5 | 1 | ---- | 1.23 | 865 19 |
| 11325 | P2B-608 | 1310/655 | 0.5 | 1 | ---- | 1.23 | 1103 19 |
| 11326 | P2B-614 | 1310/655 | 0.5 | 1 | ---- | 1.23 | 1512 19 |
| 11327 | P2B-643 | 1276/638 | 0.5 | 3 | ---- | 1.19 | 2557899 19 |
| 11328 | P2B-631 | 1310/655 | 0.5 | 1 | ---- | 1.23 | 2809 19 |
| 11329 | P2B-540 | 1276/638 | 0.5 | 3 | ---- | 1.19 | 714513 19 |
| 11330 | P2B-637 | 1310/655 | 0.5 | 1 | ---- | 1.23 | 5561 19 |
| 11331 | P2B-630 | 1276/638 | 0.5 | 2 | ---- | 1.19 | 1000000 19 RO |
| 11332 | P2B-210 | -1079 | * | 13 | ---- | -1.06 | 1 25 |
| 11333 | P2B-211 | -1062 | * | 13 | ---- | -1.04 | 1 25 |
| 11334 | P2B-580 | -1052 | * | 13 | ---- | -1.03 | 1 25 |
| 11335 | P2B-579 | -1022 | * | 13 | ---- | -1.00 | 1 25 |
| 11336 | P2B-584 | -1070 | * | 13 | ---- | -1.05 | 1 25 |
| 11337 | P2B-740 | -1002 | * | 13 | ---- | -0.98 | 1 25 |
| 11338 | P2B-741 | -1025 | * | 13 | ---- | -1.00 | 1 25 |
| 11339 | P2B-742 | -1039 | * | 13 | ---- | -1.02 | 1 25 |
| 11340 | P2B-743 | -1189 | * | 13 | ---- | -1.17 | 1 25 |
| 11341 | P2B-744 | -1113 | * | 13 | ---- | -1.09 | 1 25 |
| 11342 | P2B-745 | -962 | * | 13 | ---- | -0.94 | 1 25 |
| 11343 | P2B-746 | -1069 | * | 13 | ---- | -1.05 | 1 25 |
| 11344 | P2B-747 | -1069 | * | 13 | ---- | -1.05 | 1 25 |
| 11345 | P2B-748 | -983 | * | 13 | ---- | -0.96 | 1 25 |
| 11346 | P2B-749 | -1069 | * | 13 | ---- | -1.05 | 1 25 |
| 11347 | P2B-750 | -1090 | * | 13 | ---- | -1.07 | 1 25 |
| 11348 | P2B-751 | -958 | * | 13 | ---- | -0.94 | 1 25 |
| 11349 | P2B-752 | -1003 | * | 13 | ---- | -0.98 | 1 25 |
| 11350 | P2B-753 | -1036 | * | 13 | ---- | -1.02 | 1 25 |
| 11351 | P2B-585 | -896/-90 | 10 | 1 | ---- | -0.88 | 141 25 |
| 11352 | P2B-583 | -896/-90 | 10 | 1 | ---- | -0.88 | 43 25 |
| 11353 | P2B-212 | -896/-90 | 10 | 1 | ---- | -0.88 | 65 25 |
| 11354 | P2B-213 | -827/-83 | 10 | 3 | ---- | -0.81 | 344025 25 |
| 11355 | P2B-203 | -827/-83 | 10 | 3 | ---- | -0.81 | 43173 25 |
| 11356 | P2B-204 | -827/-83 | 10 | 3 | ---- | -0.81 | 182396 25 |
| 11357 | P2B-205 | -793/-79 | 10 | 4 | ---- | -0.78 | 383644 25 |
| 11358 | P2B-207 | -758/-76 | 10 | 4 | ---- | -0.74 | 625816 25 |
| 11359 | P2B-206 | -758/-76 | 10 | 4 | ---- | -0.74 | 1926512 25 |
| 11360 | P2B-313A | -758/-76 | 10 | 4 | ---- | -0.74 | 3122463 25 |
| 11361 | P2B-582 | -862/-86 | 10 | 1 | ---- | -0.84 | 1350 25 |
| 11362 | P2B-589 | -862/-86 | 10 | 1 | ---- | -0.84 | 2495 25 |
| 11363 | P2B-586 | -862/-86 | 10 | 1 | ---- | -0.84 | 4950 25 |
| 11364 | P2B-208 | 517/-517 | -1 | 2 | ---- | -0.51 | 2000000 25 R |
| 11365 | P2B-221 | 690/-690 | -1 | 2 | ---- | -0.68 | 104909 25 |
| 11366 | P2B-300 | 793/-793 | -1 | 1 | ---- | -0.78 | 1362 25 |
| 11367 | P2B-313 | 793/-793 | -1 | 1 | ---- | -0.78 | 329 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11368 | P2B-306 | 793/-793 | -1 | 1 | ---- | -0.78 | 9862 25 |
| 11369 | P2B-309 | 793/-793 | -1 | 1 | ---- | -0.78 | 3160 25 |
| 11370 | P2B-309A | 690/-690 | -1 | 2 | ---- | -0.68 | 273100 25 |
| 11371 | P2B-303A | 690/-690 | -1 | 2 | ---- | -0.68 | 739691 25 |
| 11372 | P2B-310 | 586/-586 | -1 | 3 | ---- | -0.57 | 739284 25 |
| 11373 | P2B-581 | 621/-621 | -1 | 3 | ---- | -0.61 | 367170 25 |
| 11374 | P2B-592 | 621/621 | -1 | 2 | ---- | -0.61 | 1116740 25 |
| 11375 | P2B-305A | 827/-827 | -1 | 1 | ---- | -0.81 | 152 25 |
| 11376 | P2B-215 | 827/-827 | -1 | 1 | ---- | -0.81 | 73 25 |
| 11377 | P2B-301 | 827/-827 | -1 | 1 | ---- | -0.81 | 5231 25 |
| 11378 | P2B-325 | 827/-827 | -1 | 1 | ---- | -0.81 | 409 25 |
| 11379 | P2BX-110 | 621/-621 | -1 | 1 | ---- | -0.61 | 643945 25 |
| 11380 | P2B-270 | 621/-621 | -1 | 1 | ---- | -0.61 | 235636 25 |
| 11381 | P2BX-108 | 724/-724 | -1 | 1 | ---- | -0.71 | 13033 25 |
| 11382 | P2B-508 | 724/-724 | -1 | 1 | ---- | -0.71 | 21138 25 |
| 11383 | P2B-333 | 793/-396 | -0.5 | 2 | ---- | 0.74 | 2000000 25 R |
| 11384 | P2B-593 | 896/-448 | -0.5 | 1 | ---- | 0.84 | 515 25 |
| 11385 | P2B-596 | 896/-448 | -0.5 | 1 | ---- | 0.84 | 276 25 |
| 11386 | P2B-595 | 896/-448 | -0.5 | 1 | ---- | 0.84 | 1587 25 |
| 11387 | P2B-591 | 827/-414 | -0.5 | 1 | ---- | 0.77 | 3929 25 |
| 11388 | P2B-590 | 827/-414 | -0.5 | 1 | ---- | 0.77 | 6413 25 |
| 11389 | P2B-594 | 827/-414 | -0.5 | 1 | ---- | 0.77 | 3127 25 |
| 11390 | P2B-588 | 793/-396 | -0.5 | 1 | ---- | 0.74 | 30412 25 |
| 11391 | P2B-266 | 793/-396 | -0.5 | 1 | ---- | 0.74 | 68639 25 |
| 11392 | P2B-271 | 276/-552 | -2 | 2 | ---- | -0.54 | 1608703 25 |
| 11393 | P2B-302 | 448/-896 | -2 | 1 | ---- | -0.88 | 413 25 |
| 11394 | P2B-261 | 448/-896 | -2 | 1 | ---- | -0.88 | 143 25 |
| 11395 | P2B-334 | 448/-896 | -2 | 1 | ---- | -0.88 | 39 25 |
| 11396 | P2B-250 | 431/-862 | -2 | 1 | ---- | -0.84 | 404 25 |
| 11397 | P2B-326 | 431/-862 | -2 | 1 | ---- | -0.84 | 153 25 |
| 11398 | P2B-327 | 431/-862 | -2 | 1 | ---- | -0.84 | 1898 25 |
| 11399 | P2B-321 | 414/-827 | -2 | 1 | ---- | -0.81 | 2870 25 |
| 11400 | P2B-330 | 414/-827 | -2 | 1 | ---- | -0.81 | 1280 25 |
| 11401 | P2B-329 | 414/-827 | -2 | 1 | ---- | -0.81 | 940 25 |
| 11402 | P2B-317 | 396/-793 | -2 | 1 | ---- | -0.78 | 164 25 |
| 11403 | P2B-332 | 396/-793 | -2 | 1 | ---- | -0.78 | 12734 25 |
| 11404 | P2B-324 | 396/-793 | -2 | 1 | ---- | -0.78 | 2806 25 |
| 11405 | P2B-322 | 396/-793 | -2 | 1 | ---- | -0.78 | 1088 25 |
| 11406 | P2B-320 | 345/-690 | -2 | 1 | ---- | -0.68 | 27179 25 |
| 11407 | P2B-258 | 345/-690 | -2 | 1 | ---- | -0.68 | 9789 25 |
| 11408 | P2B-265 | 345/-690 | -2 | 1 | ---- | -0.68 | 215833 25 |
| 11409 | P2B-268 | 310/-621 | -2 | 1 | ---- | -0.61 | 414342 25 |
| 11410 | P2B-551 | 310/-621 | -2 | 2 | ---- | -0.61 | 141199 25 |
| 11411 | P2B-556 | 310/-621 | -2 | 1 | ---- | -0.61 | 51941 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| Tests 9984 - 10034, 10263 - 10312, 10391 list Material P2B tested in the transverse direction | | | | | | | |
| 9984 | P2BT-101 | 81 | * | 13 | ---- | 0.88 | 1 |
| 9985 | P2BT-102 | 79 | * | 13 | ---- | 0.87 | 1 |
| 9986 | P2BT-103 | 85 | * | 13 | ---- | 0.93 | 1 |
| 9987 | P2BT-604 | 79 | * | 13 | 8.33 | 0.95 | 1 |
| 9988 | P2BT-603 | 77 | * | 13 | 8.88 | 0.87 | 1 |
| 9989 | P2BT-605 | 78 | * | 13 | 8.81 | 0.88 | 1 |
| 9990 | P2BT-606 | 78 | * | 13 | 9.17 | 0.85 | 1 |
| 9991 | P2BT-607 | 79 | * | 13 | 9.07 | 0.87 | 1 |
| 9992 | P2BT-245 | 79 | * | 13 | ---- | 2.57 | 1 |
| 9993 | P2BT-104 | -236 | * | 13 | ---- | -2.57 | 1 |
| 9994 | P2BT-105 | -235 | * | 13 | ---- | -2.68 | 1 |
| 9995 | P2BT-106 | -245 | * | 13 | ---- | -2.76 | 1 |
| 9996 | P2BT-252 | -253 | * | 13 | ---- | -2.63 | 1 |
| 9997 | P2BT-253 | -241 | * | 13 | ---- | -2.70 | 1 |
| 9998 | P2BT-254 | -248 | * | 13 | ---- | -2.53 | 1 |
| 9999 | P2BT-277 | -232 | * | 13 | ---- | -2.58 | 1 |
| 10000 | P2BT-278 | -237 | * | 13 | ---- | -2.55 | 1 |
| 10001 | P2BT-279 | -234 | * | 13 | ---- | -0.87 | 1 |
| 10002 | P2BT-107 | 34/3 | 0.1 | 6 | ---- | 0.38 | 6100000 runout |
| 10003 | P2BT-110 | 41/4 | 0.1 | 3 | ---- | 0.45 | 87777 |
| 10004 | P2BT-111 | 41/4 | 0.1 | 3 | ---- | 0.45 | 32867 |
| 10005 | P2BT-113 | 41/4 | 0.1 | 3 | ---- | 0.45 | 251368 |
| 10006 | P2BT-108 | 48/5 | 0.1 | 4 | ---- | 0.53 | 31608 |
| 10007 | P2BT-109 | 48/5 | 0.1 | 3 | ---- | 0.53 | 21719 |
| 10008 | P2BT-114 | 48/5 | 0.1 | 2 | ---- | 0.53 | 59791 |
| 10009 | P2BT-115 | 38/4 | 0.1 | 5 | ---- | 0.41 | 1874026 |
| 10010 | P2BT-117 | 38/4 | 0.1 | 5 | ---- | 0.41 | 2754613 |
| 10011 | P2BT-118 | 38/4 | 0.1 | 5 | ---- | 0.41 | 15000000 runout |
| 10012 | P2BT-140 | 55/6 | 0.1 | 1 | ---- | 0.60 | 4988 |
| 10013 | P2BT-141 | 55/6 | 0.1 | 1 | ---- | 0.60 | 1419 |
| 10014 | P2BT-142 | 55/6 | 0.1 | 1 | ---- | 0.60 | 2672 |
| 10015 | P2BT-143 | 69/7 | 0.1 | 1 | ---- | 0.75 | 5 |
| 10016 | P2BT-259 | 69/7 | 0.1 | 1 | ---- | 0.75 | 17 |
| 10017 | P2BT-258 | 69/7 | 0.1 | 1 | ---- | 0.75 | 24 |
| 10018 | P2BT-255 | 62/6 | 0.1 | 1 | ---- | 0.68 | 1321 |
| 10019 | P2BT-256 | 62/6 | 0.1 | 1 | ---- | 0.68 | 1601 |
| 10020 | P2BT-257 | 62/6 | 0.1 | 1 | ---- | 0.68 | 1425 |
| 10021 | P2BT-164 | 41/-21 | -0.5 | 3 | ---- | 0.45 | 21660 |
| 10022 | P2BT-119 | 34/-17 | -0.5 | 3 | ---- | 0.38 | 115332 |
| 10023 | P2BT-120 | 34/-17 | -0.5 | 4 | ---- | 0.38 | 30191 |
| 10024 | P2BT-121 | 34/-17 | -0.5 | 3 | ---- | 0.38 | 152017 |
| 10025 | P2BT-122 | 28/-14 | -0.5 | 4 | ---- | 0.30 | 2844641 |
| 10026 | P2BT-123 | 28/-14 | -0.5 | 10 | ---- | 0.30 | 25000000 runout |
| 10027 | P2BT-127 | 41/-21 | -0.5 | 2 | ---- | 0.45 | 40474 |
| 10028 | P2BT-128 | 41/-21 | -0.5 | 2 | ---- | 0.45 | 29978 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 10029 | P2BT-124 | 52/-26 | -0.5 | 2 | ---- | 0.56 | 1838 |
| 10030 | P2BT-125 | 52/-26 | -0.5 | 1 | ---- | 0.56 | 2588 |
| 10031 | P2BT-126 | 52/-26 | -0.5 | 1 | ---- | 0.56 | 3876 |
| 10032 | P2BT-145 | 62/-31 | -0.5 | 1 | ---- | 0.68 | 133 |
| 10033 | P2BT-146 | 62/-31 | -0.5 | 1 | ---- | 0.68 | 183 |
| 10034 | P2BT-147 | 62/-31 | -0.5 | 1 | ---- | 0.68 | 82 |
| 10391 | P2BT-288 | 69/-35 | -0.5 | 1 | ---- | 0.75 | 8 |
| 10263 | P2BT-286 | 69/-35 | -0.5 | 1 | ---- | 0.75 | 3 |
| 10264 | P2BT-284 | 69/-35 | -0.5 | 1 | ---- | 0.75 | 13 |
| 10265 | P2BT-129 | 41/21 | 0.5 | 10 | ---- | 0.45 | 4000000 runout |
| 10266 | P2BT-130 | 55/28 | 0.5 | 4 | ---- | 0.60 | 887124 |
| 10267 | P2BT-131 | 55/28 | 0.5 | 4 | ---- | 0.60 | 119784 |
| 10268 | P2BT-132 | 55/28 | 0.5 | 4 | ---- | 0.60 | 52671 |
| 10269 | P2BT-133 | 55/28 | 0.5 | 5 | ---- | 0.60 | 1691128 |
| 10270 | P2BT-134 | 69/34 | 0.5 | 3 | ---- | 0.75 | 1554 |
| 10271 | P2BT-135 | 62/31 | 0.5 | 2 | ---- | 0.68 | 9779 |
| 10272 | P2BT-136 | 62/31 | 0.5 | 2 | ---- | 0.68 | 15796 |
| 10273 | P2BT-137 | 62/31 | 0.5 | 1 | ---- | 0.68 | 4631 |
| 10274 | P2BT-138 | 69/34 | 0.5 | 1 | ---- | 0.75 | 410 |
| 10275 | P2BT-139 | 69/34 | 0.5 | 1 | ---- | 0.75 | 121 |
| 10276 | P2BT-272 | 41/21 | 0.5 | 10 | ---- | 0.45 | 17454004 |
| 10277 | P2BT-271 | 41/21 | 0.5 | 5 | ---- | 0.45 | 10462540 |
| 10278 | P2BT-311 | 76/38 | 0.5 | 1 | ---- | 0.83 | 7 |
| 10279 | P2BT-218 | 76/38 | 0.5 | 1 | ---- | 0.83 | 35 |
| 10280 | P2BT-312 | 76/38 | 0.5 | 1 | ---- | 0.83 | 12 |
| 10281 | P2BT-200 | 41/21 | 0.5 | 7 | ---- | 0.45 | 6907194 |
| 10282 | P2BT-144 | -138/-14 | 10 | 3 | ---- | -1.50 | 85041 |
| 10283 | P2BT-116 | -138/-14 | 10 | 3 | ---- | -1.50 | 35660 |
| 10284 | P2BT-148 | -138/-14 | 10 | 2 | ---- | -1.50 | 67853 |
| 10285 | P2BT-150 | -165/-17 | 10 | 2 | ---- | -1.80 | 1036 |
| 10286 | P2BT-151 | -165/-17 | 10 | 2 | ---- | -1.80 | 2631 |
| 10287 | P2BT-152 | -165/-17 | 10 | 2 | ---- | -1.80 | 887 |
| 10288 | P2BT-153 | -110/-11 | 10 | 5 | ---- | -1.20 | 4430670 |
| 10289 | P2BT-154 | -110/-11 | 10 | 7 | ---- | -1.20 | 9000000 |
| 10290 | P2BT-156 | -179/-18 | 10 | 1 | ---- | -1.95 | 53 |
| 10291 | P2BT-157 | -179/-18 | 10 | 1 | ---- | -1.95 | 150 |
| 10292 | P2BT-158 | -179/-18 | 10 | 1 | ---- | -1.95 | 190 |
| 10293 | P2BT-159 | -152/-15 | 10 | 3 | ---- | -1.65 | 20303 |
| 10294 | P2BT-160 | -152/-15 | 10 | 3 | ---- | -1.65 | 7276 |
| 10295 | P2BT-161 | -152/-15 | 10 | 3 | ---- | -1.65 | 4039 |
| 10296 | P2BT-162 | -124/-12 | 10 | 4 | ---- | -1.35 | 1019422 |
| 10297 | P2BT-163 | -124/-12 | 10 | 4 | ---- | -1.35 | 1926041 |
| 10298 | P2BT-299 | -124/-12 | 10 | 2 | ---- | -1.35 | 1115014 |
| 10299 | P2BT-275 | -193/-19 | 10 | 1 | ---- | -2.11 | 6 |
| 10300 | P2BT-287 | -193/-19 | 10 | 1 | ---- | -2.11 | 12 |
| 10301 | P2BT-307 | -193/-19 | 10 | 1 | ---- | -2.11 | 29 |
| 10302 | P2BT-201 | 34/-34 | -1 | 4 | ---- | 0.38 | 1296811 |
| 10303 | P2BT-202 | 41/-41 | -1 | 3 | ---- | 0.45 | 11894 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---------|---------|----------|--------|-------------------|----------------------------|
| 10304 | P2BT-203 | 41/-41 | -1 | 3 | ---- | 0.45 | 7921 |
| 10305 | P2BT-204 | 38/-38 | -1 | 4 | ---- | 0.41 | 127945 |
| 10306 | P2BT-205 | 41/-41 | -1 | 3 | ---- | 0.45 | 27317 |
| 10307 | P2BT-206 | 38/-38 | -1 | 5 | ---- | 0.41 | 79240 |
| 10308 | P2BT-207 | 38/-38 | -1 | 4 | ---- | 0.41 | 116614 |
| 10309 | P2BT-208 | 34/-34 | -1 | 5 | ---- | 0.38 | 452257 |
| 10310 | P2BT-209 | 34/-34 | -1 | 5 | ---- | 0.38 | 217161 |
| 10311 | P2BT-211 | 31/-31 | -1 | 5 | ---- | 0.34 | 1066480 |
| 10312 | P2BT-213 | 55/-55 | -1 | 2 | ---- | 0.60 | 2976 |
| 10313 | P2BT-214 | 55/-55 | -1 | 2 | ---- | 0.60 | 721 |
| 10314 | P2BT-215 | 55/-55 | -1 | 2 | ---- | 0.60 | 873 |
| 10315 | P2BT-212 | 31/-31 | -1 | 5 | ---- | 0.34 | 1029645 |
| 10316 | P2BT-219 | 62/-62 | -1 | 1 | ---- | 0.68 | 242 |
| 10317 | P2BT-220 | 62/-62 | -1 | 1 | ---- | 0.68 | 85 |
| 10318 | P2BT-221 | 62/-62 | -1 | 1 | ---- | 0.68 | 200 |
| 10319 | P2BT-222 | 69/-69 | -1 | 1 | ---- | 0.75 | 17 |
| 10320 | P2BT-223 | 69/-69 | -1 | 1 | ---- | 0.75 | 45 |
| 10321 | P2BT-224 | 69/-69 | -1 | 1 | ---- | 0.75 | 8 |
| 10322 | P2BT-225 | 31/31 | -1 | 7 | ---- | 0.34 | 8985486 |
| 10323 | P2BT-273 | 28/-28 | -1 | 8 | ---- | 0.30 | 1115570 |
| 10324 | P2BT-274 | 28/-28 | -1 | 4 | ---- | 0.30 | 7303482 |
| 10325 | P2BT-232 | 69/48 | 0.7 | 3 | ---- | 0.75 | 91 |
| 10326 | P2BT-231 | 69/48 | 0.7 | 3 | ---- | 0.75 | 301 |
| 10327 | P2BT-230 | 69/48 | 0.7 | 3 | ---- | 0.75 | 161 |
| 10328 | P2BT-229 | 76/53 | 0.7 | 2 | ---- | 0.83 | 140 |
| 10329 | P2BT-228 | 76/53 | 0.7 | 2 | ---- | 0.83 | 11 |
| 10330 | P2BT-227 | 76/53 | 0.7 | 2 | ---- | 0.83 | 83 |
| 10331 | P2BT-226 | 62/43 | 0.7 | 4 | ---- | 0.68 | 2041885 |
| 10332 | P2BT-210 | 55/39 | 0.7 | 6 | ---- | 0.60 | 2917683 |
| 10333 | P2BT-235 | 66/46 | 0.7 | 4 | ---- | 0.71 | 6740 |
| 10334 | P2BT-234 | 66/46 | 0.7 | 3 | ---- | 0.71 | 43012 |
| 10335 | P2BT-233 | 66/46 | 0.7 | 3 | ---- | 0.71 | 236573 |
| 10336 | P2BT-236 | 62/43 | 0.7 | 4 | ---- | 0.68 | 176270 |
| 10337 | P2BT-237 | 62/43 | 0.7 | 4 | ---- | 0.68 | 522012 |
| 10338 | P2BT-248 | 55/39 | 0.7 | 8 | ---- | 0.60 | 12358506 |
| 10339 | P2BT-244 | 55/39 | 0.7 | 7 | ---- | 0.60 | 1946318 |
| 10340 | P2BT-155 | -41/21 | -2 | 8 | ---- | -0.45 | 15426813 |
| 10341 | P2BT-238 | -138/69 | -2 | 1 | ---- | -1.50 | 14 |
| 10342 | P2BT-239 | -124/62 | -2 | 1 | ---- | -1.35 | 105 |
| 10343 | P2BT-240 | -124/62 | -2 | 1 | ---- | -1.35 | 31 |
| 10344 | P2BT-241 | -83/41 | -2 | 1 | ---- | -0.90 | 6484 |
| 10345 | P2BT-242 | -83/41 | -2 | 2 | ---- | -0.90 | 3880 |
| 10346 | P2BT-243 | -55/28 | -2 | 3 | ---- | -0.60 | 532728 |
| 10347 | P2BT-246 | -55/28 | -2 | 3 | ---- | -0.60 | 574618 |
| 10348 | P2BT-247 | -55/28 | -2 | 5 | ---- | -0.60 | 240574 |
| 10349 | P2BT-249 | -83/41 | -2 | 2 | ---- | -0.90 | 11724 |
| 10350 | P2BT-250 | -48/24 | -2 | 5 | ---- | -0.53 | 3470221 |
| 10351 | P2BT-270 | -69/34 | -2 | 2 | ---- | -0.75 | 34998 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---------|---------|----------|--------|-------------------|----------------------------|
| 10352 | P2BT-300 | -69/34 | -2 | 2 | ---- | -0.75 | 14394 |
| 10353 | P2BT-251 | -69/34 | -2 | 3 | ---- | -0.75 | 51030 |
| 10354 | P2BT-298 | -110/55 | -2 | 1 | ---- | -1.20 | 212 |
| 10355 | P2BT-297 | -110/55 | -2 | 1 | ---- | -1.20 | 289 |
| 10356 | P2BT-296 | -110/55 | -2 | 1 | ---- | -1.20 | 123 |
| 10357 | P2BT-295 | -69/34 | -2 | 2 | ---- | -0.75 | 22153 |
| 10358 | P2BT-289 | -138/69 | -2 | 1 | ---- | -1.50 | 9 |
| 10359 | P2BT-290 | -138/69 | -2 | 1 | ---- | -1.50 | 6 |
| 10360 | P2BT-291 | -124/62 | -2 | 1 | ---- | -1.35 | 26 |
| 10361 | P2BT-292 | -97/48 | -2 | 2 | ---- | -1.05 | 920 |
| 10362 | P2BT-293 | -97/48 | -2 | 2 | ---- | -1.05 | 1103 |
| 10363 | P2BT-294 | -97/48 | -2 | 2 | ---- | -1.05 | 1360 |
| 10364 | P2BT-217 | -48/24 | -2 | 5 | ---- | -0.53 | 1930312 |

MATERIAL P2C

Prepreg E-glass/epoxy (dispersed fibers in 0° plies), Lay-up and %-0° material: [$\pm 45/0_4$]s, 81%-0°, Fiber volume fraction and thickness: 0.43 and 2.75 mm, Prepreg: 0°-Newport NCT-307-D1-E300 M1; $\pm 45^\circ$ -NB307-D1-7781-497A (woven, cut at $\pm 45^\circ$), Process and cure conditions: vacuum bag, 3 hrs. at 121°C
Laminate fabricated by: MSU

| | | | | | | | |
|-------|---------|-----|----|-------|------|------|--------|
| 11657 | P2C-609 | 77 | 8 | 2 | ---- | 1.79 | 51149 |
| 11658 | P2C-606 | 77 | 8 | 2 | ---- | 1.79 | 91760 |
| 11659 | P2C-605 | 67 | 7 | 2 | ---- | 1.53 | 430915 |
| 11660 | P2C-603 | 67 | 7 | 2 | ---- | 1.53 | 392203 |
| 11661 | P2C-607 | 67 | 7 | 2 | 27.1 | 1.71 | 271098 |
| 11662 | P2C-612 | 109 | 11 | 0.025 | 26.3 | 2.6 | 1 |
| 11663 | P2C-610 | 116 | 12 | 0.025 | 27.5 | 2.78 | 1 |
| 11664 | P2C-613 | 110 | 11 | 0.025 | 27 | 2.64 | 1 |
| 11665 | P2C-608 | 133 | 13 | 13 | ---- | 3.21 | 1 |
| 11666 | P2C-602 | 77 | 8 | 2 | ---- | 1.79 | 77278 |

MATERIAL QQ1

Lay-up = [$\pm 45/0_4/\pm 45$], $V_F = 0.52$, Ave. thickness = 4.088 mm, S.D. = 0.132 mm (range = 3.937 - 4.242 mm (50% - 54% V_F), Vantico TDT 177-155 Epoxy Resin, Saertex U14EU920-00940-T1300-100000 0's (0°-864g/m², 90°-79 g/m², stitching 12 g/m²), VU-90079-00830-01270-000000 45's (800 g/m²), (full lay-up = [$\pm 45/90/-45/0/90/0/90/90/0/90/0/+45/90/-45$] with fabric stitching 90's. $\pm 45/90/-45 = \pm 45$ degree fabric, 0/90 = 0 degree fabric)

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|--------|----|
| 9281 | QQ1-100 | 855 | * | 13 | 34.6 | 2.47 | 1 | 25 |
| 9282 | QQ1-102 | 846 | * | 13 | 31.7 | 2.67 | 1 | 25 |
| 9283 | QQ1-101 | 827 | * | 13 | 32.6 | 2.54 | 1 | 25 |
| 9284 | QQ1-105 | 448/45 | 0.1 | 2 | 34.7 | 1.33 | 1109 | 25 |
| 9285 | QQ1-104 | 448/45 | 0.1 | 2 | 33.8 | 1.38 | 679 | 25 |
| 9286 | QQ1-103 | 448/45 | 0.1 | 2 | 34.1 | 1.4 | 915 | 25 |
| 9287 | QQ1-109 | 241/24 | 0.1 | 4 | 32.2 | 0.77 | 43719 | 25 |
| 9288 | QQ1-106 | 241/24 | 0.1 | 4 | 34.5 | 0.72 | 34816 | 25 |
| 9289 | QQ1-107 | 241/24 | 0.1 | 4 | 32.6 | 0.76 | 32000 | 25 |
| 9290 | QQ1-112 | 172/17 | 0.1 | 5 | 32.3 | 0.53 | 329999 | 25 |
| 9291 | QQ1-111 | 172/17 | 0.1 | 4 | 31.7 | 0.54 | 137319 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 9292 | QQ1-108 | 172/17 | 0.1 | 5 | 32 | 0.54 | 388653 25 |
| 9293 | QQ1-113 | 155/16 | 0.1 | 6 | 32.6 | 0.47 | 710181 25 |
| 9294 | QQ1-110 | 138/14 | 0.1 | 8 | 33.6 | 0.4 | 2471561 25 |
| 9295 | QQ1-123 | 138/14 | 0.1 | 10 | 33.6 | 0.41 | 3580200 25 |
| 9296 | QQ1-117 | 138/14 | 0.1 | 8 | 33.6 | 0.41 | 4657452 25 |
| 9297 | QQ1-151 | 138/14 | 0.1 | 8 | ---- | 0.41 | 4571967 25 |
| 9298 | QQ1-119 | 483/48 | 0.1 | 1 | ---- | 1.4575632 | 805 25 |
| 9299 | QQ1-120 | 517/52 | 0.1 | 1 | ---- | 1.560166 | 567 25 |
| 9300 | QQ1-121 | 552/55 | 0.1 | 1 | ---- | 1.6657865 | 330 25 |
| 9301 | QQ1-118 | 552/55 | 0.1 | 1 | ---- | 1.6657865 | 306 25 |
| 9302 | QQ1-122 | 345/35 | 0.1 | 1 | ---- | 1.0411166 | 8431 25 |
| 9303 | QQ1-116 | 345/35 | 0.1 | 1 | ---- | 1.0411166 | 3038 25 |
| 9304 | QQ1-115 | 345/35 | 0.1 | 1 | ---- | 1.0411166 | 6911 25 |
| 9305 | QQ1-127 | 621/62 | 0.1 | 1 | ---- | 1.8740098 | 202 25 |
| 9306 | QQ1-132 | 621/62 | 0.1 | 1 | ---- | 1.8740098 | 133 25 |
| 9307 | QQ1-146 | 621/62 | 0.1 | 1 | ---- | 1.8740098 | 165 25 |
| 9308 | QQ1-467 | 758/76 | 0.1 | 1 | ---- | 2.2874387 | 29 25 |
| 9309 | QQ1-472 | 758/76 | 0.1 | 1 | ---- | 2.2874387 | 36 25 |
| 9310 | QQ1-473 | 758/76 | 0.1 | 1 | ---- | 2.2874387 | 27 25 |
| 9311 | QQ1-458 | 690/69 | 0.1 | 1 | ---- | 2.0822331 | 90 25 |
| 9312 | QQ1-459 | 690/69 | 0.1 | 1 | ---- | 2.0822331 | 105 25 |
| 9313 | QQ1-465 | 690/69 | 0.1 | 1 | ---- | 2.0822331 | 110 25 |
| 9314 | QQ1-535 | 868 | * | 13 | ---- | 2.6193889 | 1 19 |
| 9315 | QQ1-506 | 913 | * | 13 | ---- | 2.7551867 | 1 19 |
| 9316 | QQ1-553 | 827 | * | 13 | ---- | 2.50 | 1 19 |
| 9830 | QQ1-551 | 922 | * | 13 | ---- | 2.78 | 1 19 |
| 9831 | QQ1-550 | 855 | * | 13 | ---- | 2.58 | 1 19 |
| 9832 | QQ1-552 | 907 | * | 13 | ---- | 2.74 | 1 19 |
| 9833 | QQ1-134 | -670 | * | 13 | ---- | 2.13 | 1 25 |
| 9834 | QQ1-133 | -700 | * | 13 | ---- | 1.96 | 1 25 |
| 9835 | QQ1-131 | -639 | * | 13 | ---- | 2.01 | 1 25 |
| 9836 | QQ1-130 | -653 | * | 13 | ---- | 2.10 | 1 25 |
| 9837 | QQ1-125 | -414/-41 | 10 | 3 | ---- | 1.24 | 21260 25 |
| 9838 | QQ1-139 | -414/-41 | 10 | 3 | ---- | 1.24 | 106621 25 |
| 9839 | QQ1-136 | -711 | * | 13 | ---- | 1.92 | 1 25 |
| 9840 | QQ1-137 | -414/-41 | 10 | 2 | ---- | 1.24 | 75482 25 |
| 9841 | QQ1-138 | -345/-35 | 10 | 4 | ---- | 1.04 | 10000000 25 R |
| 9842 | QQ1-150 | -345/-35 | 10 | 4 | ---- | 1.04 | 1336243 25 |
| 9843 | QQ1-152 | -345/-35 | 10 | 6 | ---- | 1.04 | 4477245 25 |
| 9844 | QQ1-182 | -482/-48 | 10 | 2 | ---- | -1.45 | 5277 25 |
| 9845 | QQ1-179 | -482/-48 | 10 | 1 | ---- | -1.45 | 13413 25 |
| 9846 | QQ1-181 | -482/-48 | 10 | 1 | ---- | -1.45 | 4350 25 |
| 9847 | QQ1-192 | -552/-55 | 10 | 1 | ---- | -1.66 | 302 25 |
| 9848 | QQ1-140 | -552/-55 | 10 | 1 | ---- | -1.66 | 241 25 |
| 9849 | QQ1-142 | -552/-55 | 10 | 1 | ---- | -1.66 | 724 25 |
| 9850 | QQ1-438 | -621/-62 | 10 | 1 | ---- | -1.87 | 3 25 |
| 9851 | QQ1-501 | -621/-62 | 10 | 1 | ---- | -1.87 | 21 25 |
| 9852 | QQ1-502 | -621/-62 | 10 | 1 | ---- | -1.87 | 12 25 |
| 9853 | QQ1-542 | -586/-59 | 10 | 1 | ---- | -1.76 | 42 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 9854 | QQ1-515 | -586/-59 | 10 | 1 | ---- | -1.76 | 16 25 |
| 9855 | QQ1-516 | -586/-59 | 10 | 1 | ---- | -1.76 | 21 25 |
| 9856 | QQ1-545 | -706 | * | 13 | ---- | -2.13 | 1 25 |
| 9857 | QQ1-548 | -654 | * | 13 | ---- | -1.97 | 1 25 |
| 9858 | QQ1-549 | -719 | * | 13 | ---- | -2.17 | 1 25 |
| 9859 | QQ1-546 | -725 | * | 13 | ---- | -2.18 | 1 25 |
| 9860 | QQ1-547 | -720 | * | 13 | ---- | -2.17 | 1 25 |
| 9861 | QQ1-156 | 345/-345 | -1 | 2 | ---- | 1.04 | 684 25 |
| 9862 | QQ1-158 | 345/-345 | -1 | 1 | ---- | 1.04 | 1026 25 |
| 9863 | QQ1-159 | 241/-241 | -1 | 1 | ---- | 0.75 | 30112 25 |
| 9864 | QQ1-160 | 241/-241 | -1 | 1 | ---- | 0.75 | 9262 25 |
| 9865 | QQ1-161 | 241/-241 | -1 | 1 | ---- | 0.75 | 18804 25 |
| 9866 | QQ1-163 | 138/-138 | -1 | 2 | ---- | 0.41 | 964770 25 |
| 9867 | QQ1-136 | 138/-138 | -1 | 3 | ---- | 0.41 | 1676204 25 |
| 9868 | QQ1-129 | 138/-138 | -1 | 4 | ---- | 0.41 | 921000 25 R |
| 9869 | QQ1-416 | 293/-293 | -1 | 1 | ---- | 0.88 | 8985 25 |
| 9870 | QQ1-414 | 293/-293 | -1 | 1 | ---- | 0.88 | 2485 25 |
| 9871 | QQ1-439 | 293/-293 | -1 | 1 | ---- | 0.88 | 5303 25 |
| 10160 | QQ1-429 | 345/-345 | -1 | 1 | ---- | 1.04 | 1196 25 |
| 10161 | QQ1-415 | 414/-414 | -1 | 1 | ---- | 1.25 | 240 25 |
| 10162 | QQ1-420 | 414/-414 | -1 | 1 | ---- | 1.25 | 687 25 |
| 10163 | QQ1-422 | 414/-414 | -1 | 1 | ---- | 1.25 | 835 25 |
| 10164 | QQ1-404 | 190/-190 | -1 | 2 | ---- | 0.57 | 181582 25 |
| 10165 | QQ1-413 | 190/-190 | -1 | 2 | ---- | 0.57 | 63109 25 |
| 10166 | QQ1-449 | 190/-190 | -1 | 2 | ---- | 0.57 | 122166 25 |
| 10167 | QQ1-143 | 483/-483 | -1 | 1 | ---- | 1.46 | 129 25 |
| 10168 | QQ1-141 | 483/-483 | -1 | 1 | ---- | 1.46 | 207 25 |
| 10169 | QQ1-128 | 483/-483 | -1 | 1 | ---- | 1.46 | 71 25 |
| 10170 | QQ1-195 | 103/-103 | -1 | 6 | ---- | 0.31 | 7430694 25 |
| 10171 | QQ1-466 | 552/-552 | -1 | 1 | ---- | 1.67 | 79 25 |
| 10172 | QQ1-411 | 552/-552 | -1 | 1 | ---- | 1.67 | 36 25 |
| 10173 | QQ1-421 | 552/-552 | -1 | 1 | ---- | 1.67 | 28 25 |
| 10174 | QQ1-462 | 103/-103 | -1 | 6 | ---- | 0.31 | 4219214 25 |
| 10175 | QQ1-543 | 586/-586 | -1 | 1 | ---- | 1.77 | 9 25 |
| 10176 | QQ1-544 | 586/-586 | -1 | 1 | ---- | 1.77 | 3 25 |
| 10177 | QQ1-507 | 586/-586 | -1 | 1 | ---- | 1.77 | 5 25 |
| 10178 | QQ1-431 | -414/207 | -2 | 2 | ---- | -1.25 | 2934 25 |
| 10179 | QQ1-407 | -345/173 | -2 | 2 | ---- | -1.04 | 204734 25 |
| 10180 | QQ1-409 | -345/173 | -2 | 1 | ---- | -1.04 | 297709 25 |
| 10181 | QQ1-406 | -345/173 | -2 | 1 | ---- | -1.04 | 126870 25 |
| 10182 | QQ1-430 | -414/207 | -2 | 1 | ---- | -1.25 | 1432 25 |
| 10183 | QQ1-434 | -414/207 | -2 | 1 | ---- | -1.25 | 7863 25 |
| 10184 | QQ1-433 | -483/242 | -2 | 1 | ---- | -1.46 | 434 25 |
| 10185 | QQ1-418 | -483/242 | -2 | 1 | ---- | -1.46 | 217 25 |
| 10186 | QQ1-425 | -483/242 | -2 | 1 | ---- | -1.46 | 349 25 |
| 10187 | QQ1-435 | -379/190 | -2 | 2 | ---- | -1.14 | 133724 25 |
| 10188 | QQ1-424 | -379/190 | -2 | 1 | ---- | -1.14 | 4503 25 |
| 10189 | QQ1-428 | -310/155 | -2 | 2 | ---- | -0.94 | 970241 25 |
| 10190 | QQ1-436 | -276/138 | -2 | 2 | ---- | -0.83 | 2211570 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 10191 | QQ1-449 | -276/138 | -2 | 2 | ---- | -0.83 | 5874773 25 |
| 10192 | QQ1-470 | -379/190 | -2 | 1 | ---- | -1.14 | 21425 25 |
| 10193 | QQ1-423 | -552/276 | -2 | 1 | ---- | -1.67 | 95 25 |
| 10194 | QQ1-442 | -552/276 | -2 | 1 | ---- | -1.67 | 113 25 |
| 10195 | QQ1-457 | -552/276 | -2 | 1 | ---- | -1.67 | 103 25 |
| 10196 | QQ1-456 | -379/190 | -2 | 1 | ---- | -1.14 | 10093 25 |
| 10197 | QQ1-440 | -621/311 | -2 | 1 | ---- | -1.88 | 35 25 |
| 10198 | QQ1-474 | -621/311 | -2 | 1 | ---- | -1.88 | 7 25 |
| 10199 | QQ1-401 | -621/311 | -2 | 1 | ---- | -1.88 | 4 25 |
| 10200 | QQ1-503 | -379/190 | -2 | 1 | ---- | -1.14 | 24373 25 |
| 10201 | QQ1-405 | 345/-173 | -0.5 | 2 | ---- | 1.04 | 4741 25 |
| 10202 | QQ1-426 | 172/-86 | -0.5 | 2 | ---- | 0.52 | 1500000 25 |
| 10203 | QQ1-480 | 241/-121 | -0.5 | 2 | ---- | 0.73 | 55321 25 |
| 10204 | QQ1-479 | 241/-121 | -0.5 | 2 | ---- | 0.73 | 81753 25 |
| 10205 | QQ1-478 | 241/-121 | -0.5 | 2 | ---- | 0.73 | 52538 25 |
| 10206 | QQ1-477 | 207/-104 | -0.5 | 2 | ---- | 0.62 | 102990 25 |
| 10207 | QQ1-476 | 207/-104 | -0.5 | 2 | ---- | 0.62 | 89247 25 |
| 10208 | QQ1-475 | 207/-104 | -0.5 | 2 | ---- | 0.62 | 152321 25 |
| 10209 | QQ1-178 | 345/-173 | -0.5 | 2 | ---- | 1.04 | 8471 25 |
| 10210 | QQ1-183 | 345/-173 | -0.5 | 2 | ---- | 1.04 | 6545 25 |
| 10211 | QQ1-184 | 414/-207 | -0.5 | 1 | ---- | 1.25 | 1531 25 |
| 10212 | QQ1-187 | 414/-207 | -0.5 | 1 | ---- | 1.25 | 925 25 |
| 10213 | QQ1-193 | 414/-207 | -0.5 | 1 | ---- | 1.25 | 1856 25 |
| 10214 | QQ1-176 | 483/-242 | -0.5 | 1 | ---- | 1.46 | 637 25 |
| 10215 | QQ1-189 | 483/-242 | -0.5 | 1 | ---- | 1.46 | 702 25 |
| 10216 | QQ1-194 | 483/-242 | -0.5 | 1 | ---- | 1.46 | 394 25 |
| 10217 | QQ1-173 | 552/-276 | -0.5 | 1 | ---- | 1.67 | 304 25 |
| 10218 | QQ1-196 | 552/-276 | -0.5 | 1 | ---- | 1.67 | 222 25 |
| 10219 | QQ1-172 | 552/-276 | -0.5 | 1 | ---- | 1.67 | 235 25 |
| 10220 | QQ1-188 | 621/-311 | -0.5 | 1 | ---- | 1.87 | 131 25 |
| 10221 | QQ1-191 | 621/-311 | -0.5 | 1 | ---- | 1.87 | 123 25 |
| 10222 | QQ1-145 | 621/-311 | -0.5 | 1 | ---- | 1.87 | 151 25 |
| 10223 | QQ1-186 | 172/-86 | -0.5 | 4 | ---- | 0.52 | 706194 25 |
| 10224 | QQ1-471 | 172/-86 | -0.5 | 6 | ---- | 0.52 | 2317160 25 |
| 10225 | QQ1-419 | 690/-345 | -0.5 | 1 | ---- | 2.08 | 54 25 |
| 10226 | QQ1-427 | 690/-345 | -0.5 | 1 | ---- | 2.08 | 48 25 |
| 10227 | QQ1-441 | 690/-345 | -0.5 | 1 | ---- | 2.08 | 23 25 |
| 10228 | QQ1-487 | 138/-69 | -0.5 | 7 | ---- | 0.42 | 5232471 25 |
| 10229 | QQ1-190 | 345/173 | 0.5 | 4 | ---- | 1.04 | 15634 25 |
| 10230 | QQ1-175 | 345/173 | 0.5 | 3 | ---- | 1.04 | 29491 25 |
| 10231 | QQ1-174 | 483/242 | 0.5 | 2 | ---- | 1.46 | 2290 25 |
| 10232 | QQ1-177 | 483/242 | 0.5 | 3 | ---- | 1.46 | 3532 25 |
| 10233 | QQ1-185 | 483/242 | 0.5 | 2 | ---- | 1.46 | 2042 25 |
| 10234 | QQ1-171 | 552/276 | 0.5 | 1 | ---- | 1.67 | 1156 25 |
| 10235 | QQ1-144 | 552/276 | 0.5 | 1 | ---- | 1.67 | 1358 25 |
| 10236 | QQ1-469 | 552/276 | 0.5 | 1 | ---- | 1.67 | 1636 25 |
| 10237 | QQ1-463 | 621/311 | 0.5 | 1 | ---- | 1.87 | 585 25 |
| 10238 | QQ1-468 | 621/311 | 0.5 | 1 | ---- | 1.87 | 647 25 |
| 10239 | QQ1-452 | 621/311 | 0.5 | 1 | ---- | 1.87 | 788 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 10240 | QQ1-454 | 690/345 | 0.5 | 1 | ---- | 2.08 | 101 25 |
| 10241 | QQ1-464 | 690/345 | 0.5 | 1 | ---- | 2.08 | 271 25 |
| 10242 | QQ1-180 | 690/345 | 0.5 | 1 | ---- | 2.08 | 218 25 |
| 10243 | QQ1-453 | 414/207 | 0.5 | 4 | ---- | 1.25 | 9653 25 |
| 10244 | QQ1-402 | 414/207 | 0.5 | 4 | ---- | 1.25 | 5608 25 |
| 10245 | QQ1-408 | 414/207 | 0.5 | 3 | ---- | 1.25 | 6127 25 |
| 10246 | QQ1-403 | 345/173 | 0.5 | 3 | ---- | 1.04 | 13889 25 |
| 10247 | QQ1-455 | 241/121 | 0.5 | 5 | ---- | 0.73 | 661028 25 |
| 10248 | QQ1-412 | 241/121 | 0.5 | 6 | ---- | 0.73 | 431732 25 |
| 10249 | QQ1-460 | 241/121 | 0.5 | 5 | ---- | 0.73 | 786904 25 |
| 10250 | QQ1-461 | 293/147 | 0.5 | 4 | ---- | 0.89 | 48687 25 |
| 10251 | QQ1-451 | 293/147 | 0.5 | 4 | ---- | 0.89 | 63294 25 |
| 10252 | QQ1-450 | 758/379 | 0.5 | 1 | ---- | 2.28 | 18 25 |
| 10253 | QQ1-410 | 758/379 | 0.5 | 1 | ---- | 2.28 | 8 25 |
| 10254 | QQ1-437 | 758/379 | 0.5 | 1 | ---- | 2.28 | 4 25 |
| 10255 | QQ1-485 | 207/104 | 0.5 | 8 | ---- | 0.63 | 5767494 25 |
| 10256 | QQ1-491 | 207/104 | 0.5 | 8 | ---- | 0.63 | 1609983 25 |
| 10257 | QQ1-486 | 293/147 | 0.5 | 4 | ---- | 0.89 | 94057 25 |
| 9872 | QQ1T-101 | -280 | 13 | | ---- | -1.62 | 1 15 |
| 9873 | QQ1T-102 | -277 | 13 | | ---- | -1.60 | 1 15 |
| 9874 | QQ1T-103 | -288 | 13 | | ---- | -1.66 | 1 15 |
| 9875 | QQ1T-104 | -300 | 13 | | ---- | -1.74 | 1 15 |
| 9876 | QQ1T-451 | -268 | 13 | | ---- | -1.55 | 1 15 |
| 9877 | QQ1T-455 | -257 | 13 | | ---- | -1.49 | 1 15 |
| 9878 | QQ1T-454 | -268 | 13 | | ---- | -1.55 | 1 15 |
| 9879 | QQ1T-453 | -267 | 13 | | ---- | -1.55 | 1 15 |
| 9880 | QQ1T-452 | -261 | 13 | | ---- | -1.51 | 1 15 |
| 9881 | QQ1T-108 | 150 | 13 | 19.2 | 0.78 | | 1 15 |
| 9882 | QQ1T-107 | 151 | 13 | 15.8 | 0.96 | | 1 15 |
| 9883 | QQ1T-106 | 137 | 13 | 17.6 | 0.73 | | 1 15 |
| 9884 | QQ1T-105 | 147 | 13 | 16.6 | 0.89 | | 1 15 |
| 9885 | QQ1T-632 | 146 | 13 | 16.1 | 0.84 | | 1 15 |
| 9886 | QQ1T-633 | 147 | 13 | | 0.91 | | 1 15 |
| 9887 | QQ1T-631 | 140 | 13 | | 0.81 | | 1 15 |
| 9888 | QQ1T-446 | 163 | 13 | | 0.94 | | 1 15 |
| 9889 | QQ1T-450 | 146 | 13 | | 0.85 | | 1 15 |
| 9890 | QQ1T-449 | 149 | 13 | | 0.86 | | 1 15 |
| 9891 | QQ1T-448 | 145 | 13 | | 0.84 | | 1 15 |
| 9892 | QQ1T-447 | 162 | 13 | | 0.94 | | 1 15 |
| 9893 | QQ1T-310 | 96.5/9.7 | 0.1 | 1 | ---- | 0.56 | 62 15 |
| 9894 | QQ1T-311 | 96.5/9.7 | 0.1 | 1 | ---- | 0.56 | 287 15 |
| 9895 | QQ1T-312 | 96.5/9.7 | 0.1 | 1 | ---- | 0.56 | 208 15 |
| 9896 | QQ1T-313 | 82.7/8.3 | 0.1 | 1 | ---- | 0.48 | 3627 15 |
| 9897 | QQ1T-314 | 82.7/8.3 | 0.1 | 1 | ---- | 0.48 | 2336 15 |
| 9898 | QQ1T-315 | 82.7/8.3 | 0.1 | 1 | ---- | 0.48 | 1095 15 |
| 9899 | QQ1T-301 | 69.0/6.9 | 0.1 | 1 | ---- | 0.40 | 17549 15 |
| 9900 | QQ1T-308 | 69.0/6.9 | 0.1 | 1 | ---- | 0.40 | 8825 15 |
| 9901 | QQ1T-309 | 69.0/6.9 | 0.1 | 1 | ---- | 0.40 | 8289 15 |
| 9902 | QQ1T-304 | 51.7/5.2 | 0.1 | 4 | ---- | 0.30 | 398920 15 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------------|---------|----------|--------|-------------------|----------------------------|
| 9903 | QQ1T-303 | 51.7/5.2 | 0.1 | 3 | ---- | 0.30 | 194107 15 |
| 9904 | QQ1T-302 | 51.7/5.2 | 0.1 | 3 | ---- | 0.30 | 149945 15 |
| 9905 | QQ1T-306 | 41.4/4.1 | 0.1 | 5 | ---- | 0.24 | 3901051 15 |
| 9906 | QQ1T-305 | 41.4/4.1 | 0.1 | 5 | ---- | 0.24 | 4667537 15 |
| 9907 | QQ1T-307 | 41.4/4.1 | 0.1 | 10 | ---- | 0.24 | 9707130 15 |
| 9908 | QQ1T-434 | 110/11.0 | 0.1 | 1 | ---- | 0.64 | 52 15 |
| 9909 | QQ1T-435 | 110/11.0 | 0.1 | 1 | ---- | 0.64 | 45 15 |
| 9910 | QQ1T-436 | 110/11.0 | 0.1 | 1 | ---- | 0.64 | 8 15 |
| 9911 | QQ1T-316 | 69.0/-34.5 | -0.5 | 1 | ---- | 0.40 | 2868 15 |
| 9912 | QQ1T-317 | 69.0/-34.5 | -0.5 | 1 | ---- | 0.40 | 5085 15 |
| 9913 | QQ1T-318 | 69.0/-34.5 | -0.5 | 1 | ---- | 0.40 | 3476 15 |
| 9914 | QQ1T-319 | 51.7/-25.9 | -0.5 | 4 | ---- | 0.30 | 51543 15 |
| 9915 | QQ1T-320 | 51.7/-25.9 | -0.5 | 3 | ---- | 0.30 | 38220 15 |
| 9916 | QQ1T-321 | 51.7/-25.9 | -0.5 | 3 | ---- | 0.30 | 25040 15 |
| 9917 | QQ1T-322 | 34.5/-17.2 | -0.5 | 5 | ---- | 0.20 | 630522 15 |
| 9918 | QQ1T-323 | 34.5/-17.2 | -0.5 | 5 | ---- | 0.20 | 1649942 15 |
| 9919 | QQ1T-324 | 34.5/-17.2 | -0.5 | 5 | ---- | 0.20 | 3249939 15 |
| 9920 | QQ1T-385 | 82.7/-41.4 | -0.5 | 1 | ---- | 0.48 | 269 15 |
| 9921 | QQ1T-383 | 82.7/-41.4 | -0.5 | 1 | ---- | 0.48 | 867 15 |
| 9922 | QQ1T-384 | 82.7/-41.4 | -0.5 | 1 | ---- | 0.48 | 670 15 |
| 9923 | QQ1T-421 | 96.5/-48.3 | -0.5 | 1 | ---- | 0.56 | 114 15 |
| 9924 | QQ1T-422 | 96.5/-48.3 | -0.5 | 1 | ---- | 0.56 | 486 15 |
| 9925 | QQ1T-423 | 96.5/-48.3 | -0.5 | 1 | ---- | 0.56 | 158 15 |
| 9926 | QQ1T-445 | 124/-62.1 | -0.5 | 1 | ---- | 0.72 | 11 15 |
| 9927 | QQ1T-444 | 124/-62.1 | -0.5 | 1 | ---- | 0.72 | 4 15 |
| 9928 | QQ1T-443 | 124/-62.1 | -0.5 | 1 | ---- | 0.72 | 64 15 |
| 9929 | QQ1T-326 | 34.5/-34.5 | -1 | 4 | ---- | 0.20 | 643462 15 |
| 9930 | QQ1T-327 | 34.5/-34.5 | -1 | 4 | ---- | 0.20 | 1011467 15 |
| 9931 | QQ1T-328 | 34.5/-34.5 | -1 | 4 | ---- | 0.20 | 413001 15 |
| 9932 | QQ1T-325 | 51.7/-51.7 | -1 | 2 | ---- | 0.30 | 21363 15 |
| 9933 | QQ1T-332 | 51.7/-51.7 | -1 | 2 | ---- | 0.30 | 59373 15 |
| 9934 | QQ1T-333 | 51.7/-51.7 | -1 | 2 | ---- | 0.30 | 25129 15 |
| 9935 | QQ1T-329 | 41.4/-41.4 | -1 | 3 | ---- | 0.24 | 164739 15 |
| 9936 | QQ1T-330 | 41.4/-41.4 | -1 | 3 | ---- | 0.24 | 235916 15 |
| 9937 | QQ1T-331 | 41.4/-41.4 | -1 | 3 | ---- | 0.24 | 483868 15 |
| 9938 | QQ1T-337 | 69.0/-69.0 | -1 | 1 | ---- | 0.40 | 1479 15 |
| 9939 | QQ1T-338 | 69.0/-69.0 | -1 | 1 | ---- | 0.40 | 5425 15 |
| 9940 | QQ1T-339 | 69.0/-69.0 | -1 | 1 | ---- | 0.40 | 2702 15 |
| 9941 | QQ1T-347 | 86.2/-86.2 | -1 | 1 | ---- | 0.50 | 628 15 |
| 9942 | QQ1T-348 | 86.2/-86.2 | -1 | 1 | ---- | 0.50 | 531 15 |
| 9943 | QQ1T-349 | 86.2/-86.2 | -1 | 1 | ---- | 0.50 | 483 15 |
| 9944 | QQ1T-388 | 82.7/-82.7 | -1 | 1 | ---- | 0.48 | 443 15 |
| 9945 | QQ1T-387 | 82.7/-82.7 | -1 | 1 | ---- | 0.48 | 1302 15 |
| 9946 | QQ1T-386 | 82.7/-82.7 | -1 | 1 | ---- | 0.48 | 1609 15 |
| 9947 | QQ1T-418 | 96.5/-96.5 | -1 | 1 | ---- | 0.56 | 88 15 |
| 9948 | QQ1T-419 | 96.5/-96.5 | -1 | 1 | ---- | 0.56 | 548 15 |
| 9949 | QQ1T-420 | 96.5/-96.5 | -1 | 1 | ---- | 0.56 | 359 15 |
| 9950 | QQ1T-417 | 27.6/-27.6 | -1 | 5 | ---- | 0.16 | 6502949 15 |
| 9951 | QQ1T-424 | 27.6/-27.6 | -1 | 5 | ---- | 0.16 | 5000000 runout |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------------|---------|----------|--------|-------------------|----------------------------|
| 9952 | QQ1T-442 | 110/-110 | -1 | 1 | ---- | 0.64 | 13 15 |
| 9953 | QQ1T-441 | 110/-110 | -1 | 1 | ---- | 0.64 | 48 15 |
| 9954 | QQ1T-440 | 110/-110 | -1 | 1 | ---- | 0.64 | 27 15 |
| 9955 | QQ1T-334 | -172/-17.2 | 10 | 1 | ---- | -1.00 | 1210 15 |
| 9956 | QQ1T-335 | -172/-17.2 | 10 | 2 | ---- | -1.00 | 2859 15 |
| 9957 | QQ1T-336 | -172/-17.2 | 10 | 2 | ---- | -1.00 | 966 15 |
| 9958 | QQ1T-342 | -138/-13.8 | 10 | 4 | ---- | -0.80 | 241866 15 |
| 9959 | QQ1T-343 | -138/-13.8 | 10 | 4 | ---- | -0.80 | 825628 15 |
| 9960 | QQ1T-344 | -138/-13.8 | 10 | 4 | ---- | -0.80 | 267425 15 |
| 9961 | QQ1T-345 | -124/-12.4 | 10 | 6 | ---- | -0.72 | 1924718 15 |
| 9962 | QQ1T-346 | -124/-12.4 | 10 | 6 | ---- | -0.72 | 7345474 15 |
| 9963 | QQ1T-341 | -124/-12.4 | 10 | 6 | ---- | -0.72 | 10000000 runout |
| 9964 | QQ1T-340 | -103/-10.3 | 10 | 6 | ---- | -0.60 | 10000000 runout |
| 9965 | QQ1T-391 | -155/-15.5 | 10 | 4 | ---- | -0.90 | 27153 15 |
| 9966 | QQ1T-390 | -155/-15.5 | 10 | 4 | ---- | -0.90 | 63190 15 |
| 9967 | QQ1T-389 | -155/-15.5 | 10 | 4 | ---- | -0.90 | 35299 15 |
| 9968 | QQ1T-398 | -190/-19.0 | 10 | 1 | ---- | -1.10 | 213 15 |
| 9969 | QQ1T-397 | -190/-19.0 | 10 | 1 | ---- | -1.10 | 153 15 |
| 9970 | QQ1T-396 | -190/-19.0 | 10 | 1 | ---- | -1.10 | 546 15 |
| 9971 | QQ1T-395 | -207/-20.7 | 10 | 1 | ---- | -1.20 | 32 15 |
| 9972 | QQ1T-394 | -207/-20.7 | 10 | 1 | ---- | -1.20 | 7 15 |
| 9973 | QQ1T-393 | -207/-20.7 | 10 | 1 | ---- | -1.20 | 38 15 |
| 9974 | QQ1T-350 | -82.7/41.4 | -2 | 2 | ---- | -0.48 | 42626 15 |
| 9975 | QQ1T-351 | -69.0/34.5 | -2 | 4 | ---- | -0.40 | 2052270 15 |
| 9976 | QQ1T-352 | -75.8/37.9 | -2 | 3 | ---- | -0.44 | 260627 15 |
| 9977 | QQ1T-353 | -75.8/37.9 | -2 | 3 | ---- | -0.44 | 623080 15 |
| 9978 | QQ1T-354 | -75.8/37.9 | -2 | 3 | ---- | -0.44 | 336937 15 |
| 9979 | QQ1T-356 | -82.7/41.4 | -2 | 3 | ---- | -0.48 | 96448 15 |
| 9980 | QQ1T-357 | -82.7/41.4 | -2 | 3 | ---- | -0.48 | 129491 15 |
| 9981 | QQ1T-355 | -69.0/34.5 | -2 | 5 | ---- | -0.40 | 710789 15 |
| 9982 | QQ1T-359 | -96.5/48.3 | -2 | 1 | ---- | -0.56 | 15031 15 |
| 9983 | QQ1T-360 | -96.5/48.3 | -2 | 2 | ---- | -0.56 | 14062 15 |
| 10111 | QQ1T-362 | -96.5/48.3 | -2 | 1 | ---- | -0.56 | 28509 15 |
| 10112 | QQ1T-364 | -69.0/34.5 | -2 | 4 | ---- | -0.40 | 479006 15 |
| 10113 | QQ1T-380 | -138/69.0 | -2 | 1 | ---- | -0.80 | 1050 15 |
| 10114 | QQ1T-381 | -138/69.0 | -2 | 1 | ---- | -0.80 | 1496 15 |
| 10115 | QQ1T-382 | -138/69.0 | -2 | 1 | ---- | -0.80 | 986 15 |
| 10116 | QQ1T-401 | -172/86.2 | -2 | 1 | ---- | -1.00 | 187 15 |
| 10117 | QQ1T-400 | -172/86.2 | -2 | 1 | ---- | -1.00 | 90 15 |
| 10118 | QQ1T-399 | -172/86.2 | -2 | 1 | ---- | -1.00 | 137 15 |
| 10119 | QQ1T-427 | -55.2/27.6 | -2 | 5 | ---- | -0.32 | 4700080 15 |
| 10120 | QQ1T-426 | -55.2/27.6 | -2 | 5 | ---- | -0.32 | 6518369 15 |
| 10121 | QQ1T-437 | -190/94.8 | -2 | 1 | ---- | -1.10 | 59 15 |
| 10122 | QQ1T-438 | -190/94.8 | -2 | 1 | ---- | -1.10 | 41 15 |
| 10123 | QQ1T-439 | -190/94.8 | -2 | 1 | ---- | -1.10 | 36 15 |
| 10124 | QQ1T-363 | 51.7/25.9 | 0.5 | 7 | ---- | 0.30 | 4057993 15 |
| 10125 | QQ1T-365 | 51.7/25.9 | 0.5 | 7 | ---- | 0.30 | 2034287 15 |
| 10126 | QQ1T-366 | 51.7/25.9 | 0.5 | 7 | ---- | 0.30 | 5014836 15 |
| 10127 | QQ1T-367 | 62.1/31.0 | 0.5 | 4 | ---- | 0.36 | 329588 15 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|-----------|---------|----------|--------|-------------------|----------------------------|
| 10128 | QQ1T-368 | 62.1/31.0 | 0.5 | 4 | ---- | 0.36 | 457698 15 |
| 10129 | QQ1T-369 | 62.1/31.0 | 0.5 | 4 | ---- | 0.36 | 279068 15 |
| 10130 | QQ1T-371 | 82.7/41.4 | 0.5 | 2 | ---- | 0.48 | 16189 15 |
| 10131 | QQ1T-370 | 82.7/41.4 | 0.5 | 2 | ---- | 0.48 | 10671 15 |
| 10132 | QQ1T-372 | 82.7/41.4 | 0.5 | 2 | ---- | 0.48 | 14236 15 |
| 10133 | QQ1T-376 | 110/55.2 | 0.5 | 1 | ---- | 0.64 | 98 15 |
| 10134 | QQ1T-375 | 110/55.2 | 0.5 | 1 | ---- | 0.64 | 131 15 |
| 10135 | QQ1T-374 | 110/55.2 | 0.5 | 1 | ---- | 0.64 | 100 15 |
| 10136 | QQ1T-379 | 96.5/48.3 | 0.5 | 2 | ---- | 0.56 | 2747 15 |
| 10137 | QQ1T-377 | 96.5/48.3 | 0.5 | 2 | ---- | 0.56 | 261 15 |
| 10138 | QQ1T-378 | 96.5/48.3 | 0.5 | 2 | ---- | 0.56 | 723 15 |
| 10139 | QQ1T-428 | 124/62.1 | 0.5 | 1 | ---- | 0.72 | 9 15 |
| 10140 | QQ1T-429 | 124/62.1 | 0.5 | 1 | ---- | 0.72 | 81 15 |
| 10141 | QQ1T-430 | 124/62.1 | 0.5 | 1 | ---- | 0.72 | 14 15 |
| 10142 | QQ1T-392 | 62.1/43.4 | 0.7 | 7 | ---- | 0.36 | 4491416 15 |
| 10143 | QQ1T-402 | 96.5/67.6 | 0.7 | 3 | ---- | 0.56 | 39312 15 |
| 10144 | QQ1T-403 | 96.5/67.6 | 0.7 | 3 | ---- | 0.56 | 4981 15 |
| 10145 | QQ1T-404 | 96.5/67.6 | 0.7 | 2 | ---- | 0.56 | 9218 15 |
| 10146 | QQ1T-405 | 82.7/57.9 | 0.7 | 4 | ---- | 0.48 | 59934 15 |
| 10147 | QQ1T-406 | 82.7/57.9 | 0.7 | 4 | ---- | 0.48 | 40671 15 |
| 10148 | QQ1T-407 | 82.7/57.9 | 0.7 | 4 | ---- | 0.48 | 100171 15 |
| 10149 | QQ1T-408 | 69.0/48.3 | 0.7 | 5 | ---- | 0.40 | 7272919 15 |
| 10150 | QQ1T-409 | 75.8/53.1 | 0.7 | 4 | ---- | 0.44 | 113255 15 |
| 10151 | QQ1T-410 | 75.8/53.1 | 0.7 | 4 | ---- | 0.44 | 138624 15 |
| 10152 | QQ1T-411 | 75.8/53.1 | 0.7 | 4 | ---- | 0.44 | 260891 15 |
| 10153 | QQ1T-412 | 110/77.2 | 0.7 | 1 | ---- | 0.64 | 149 15 |
| 10154 | QQ1T-413 | 110/77.2 | 0.7 | 1 | ---- | 0.64 | 329 15 |
| 10155 | QQ1T-414 | 110/77.2 | 0.7 | 1 | ---- | 0.64 | 784 15 |
| 10156 | QQ1T-415 | 69.0/48.3 | 0.7 | 5 | ---- | 0.40 | 1455858 15 |
| 10157 | QQ1T-416 | 69.0/48.3 | 0.7 | 5 | ---- | 0.40 | 2028820 15 |
| 10158 | QQ1T-431 | 124/86.9 | 0.7 | 1 | ---- | 0.72 | 12 15 |
| 10159 | QQ1T-432 | 124/86.9 | 0.7 | 1 | ---- | 0.72 | 6 15 |
| 10393 | QQ1T-433 | 124/86.9 | 0.7 | 1 | ---- | 0.72 | 3 15 |
| 10258 | QQ1T-610 | 149 | * | 13 | 18.0 | 0.83 | 1 15 |
| 10259 | QQ1T-614 | 154 | * | 13 | 18.4 | 0.84 | 1 15 |
| 10260 | QQ1T-613 | 138 | * | 13 | 16.6 | 0.83 | 1 15 |
| 10261 | QQ1T-612 | 148 | * | 13 | 17.8 | 0.83 | 1 15 |
| 10262 | QQ1T-611 | 148 | * | 13 | 18.9 | 0.78 | 1 15 |

MATERIAL QQ2

E-glass/epoxy laminate based on 0° Saertex U14EU920-00940-T1300-100000 and $\pm 45^\circ$ Saertex VU-90079-00830-01270-000000, Lay-up and % 0o-material: $[\pm 45/0/\pm 45]_s$, 64%-0°, Fiber volume fraction and thickness: 0.52 and 3.96 mm, Matrix: epoxy (Huntsman/Vantico TDT 177-155), Process, cure, and post-cure temperatures: VARTM, RT, 6 hours at 70°C, Laminate fabricated by: MSU

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 11460 | QQ2-160 | 542 | * | 13 | ---- | 2.32 | 1 |
| 11461 | QQ2-153 | 172/17 | 0.1 | 4 | 22.9 | 0.82 | 204625 |
| 11462 | QQ2-152 | 172/17 | 0.1 | 4 | ---- | 0.82 | 132171 |
| 11463 | QQ2-150 | 172/17 | 0.1 | 2 | ---- | 0.82 | 88760 |
| 11464 | QQ2-146 | 276/28 | 0.1 | 2 | 24.2 | 1.3 | 3248 |
| 11465 | QQ2-151 | 276/28 | 0.1 | 2 | ---- | 1.3 | 4446 |
| 11466 | QQ2-149 | 276/28 | 0.1 | 2 | ---- | 1.3 | 2971 |
| 11467 | QQ2-147 | 121/12 | 0.1 | 5 | 22.9 | 0.52 | 5000000 RO |
| 11468 | QQ2-104 | 138/14 | 0.1 | 5 | ---- | 0.66 | 1085534 |
| 11469 | QQ2-113 | -345/-35 | 0.1 | 1 | ---- | -1.47 | 552 |
| 11470 | QQ2-115 | -414/-41 | 0.1 | 1 | ---- | -1.78 | 163 |

MATERIAL QQ4L

E-glass/epoxy laminate based on 0° Saertex S15EU980-01660-T1300-088000 and $\pm 45^\circ$ Knytex DBM-1708 Lay-up and % 0°-material: $[\pm 45/0/\pm 45/0/\pm 45]$, 56%-0°, Fiber volume fraction and thickness: 0.40 and 5.70 mm Matrix: epoxy (Huntsman/Vantico TDT 177-155), Process, cure, and post-cure temperatures: VARTM, RT, 70°C Laminate fabricated by: MSU

| | | | | | | | |
|-------|----------|--------|-----|----|------|------|---------|
| 11471 | QQ4L-107 | 673 | * | 13 | ---- | 3.13 | 1 |
| 11472 | QQ4L-103 | 649 | * | 13 | ---- | 3.02 | 1 |
| 11473 | QQ4L-104 | 698 | * | 13 | ---- | 3.25 | 1 |
| 11474 | QQ4L-102 | 345/35 | 0.1 | 3 | 3.00 | 1.75 | 43303 |
| 11475 | QQ4L-101 | 293/29 | 0.1 | 4 | ---- | 1.36 | 157677 |
| 11476 | QQ4L-106 | 293/29 | 0.1 | 4 | ---- | 1.36 | 123928 |
| 11477 | QQ4L-110 | 293/29 | 0.1 | 4 | 3.09 | 1.46 | 138722 |
| 11478 | QQ4L-108 | 241/24 | 0.1 | 4 | 3.25 | 1.13 | 1128827 |
| 11479 | QQ4L-105 | 241/24 | 0.1 | 4 | ---- | 1.12 | 955910 |
| 11480 | QQ4L-100 | 241/24 | 0.1 | 5 | ---- | 1.12 | 1008882 |

MATERIAL QQ4

E-glass/epoxy laminate based on 0° Saertex S15EU980-01660-T1300-088000 and $\pm 45^\circ$ Knytex DBM-1708 Lay-up and % 0°-material: $[\pm 45/0/\pm 45/0/\pm 45]$, 56%-0°, Fiber volume fraction and thickness: 0.57 and 4.03 mm Matrix: epoxy (Huntsman/Vantico TDT 177-155), Process, cure, and post-cure temperatures: VARTM, RT, 70°C Laminate fabricated by: MSU

| | | | | | | | |
|-------|---------|--------|-----|----|------|------|-------------|
| 11481 | QQ4-133 | 241/24 | 0.1 | 3 | 30.5 | 0.86 | 147136 |
| 11482 | QQ4-128 | 241/24 | 0.1 | 3 | ---- | 0.76 | 66756 |
| 11483 | QQ4-132 | 241/24 | 0.1 | 3 | ---- | 0.76 | 155378 |
| 11484 | QQ4-130 | 345/35 | 0.1 | 2 | 33.1 | 1.12 | 7081 |
| 11485 | QQ4-129 | 986 | * | 13 | 31.9 | 3.1 | 1 |
| 11486 | QQ4-131 | 138/14 | 0.1 | 6 | ---- | 0.43 | 11000000 RO |
| 11487 | QQ4-127 | 138/14 | 0.1 | 6 | ---- | 0.43 | 8200000 RO |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| 11488 | QQ4-124 | 345/34 | 0.1 | 2 | ---- | 1.12 | 6949 |
| 11489 | QQ4-120 | 190/19 | 0.1 | 4 | ---- | 0.6 | 574433 |
| 11490 | QQ4-125 | 190/19 | 0.1 | 4 | ---- | 0.6 | 836243 |

MATERIAL QQ4M

E-glass/epoxy laminate based on 0° Saertex S15EU980-01660-T1300-088000 and ±45° Knytex DBM-1708

Lay-up and % 0°-material: [±45/0/±45/0/±45], 56%-0°, Fiber volume fraction and thickness: 0.46 and 4.85 mm

Matrix: epoxy (Prime 20LV with slow hardener), Process, cure, and post-cure temperatures: VARTM, RT, 80°C

Laminate fabricated by: MSU

| | | | | | | | |
|-------|----------|--------|-----|----|------|------|---------|
| 11491 | QQ4M-107 | 781 | * | 13 | 25.8 | 3.05 | 1 |
| 11492 | QQ4M-104 | 800 | * | 13 | 25.7 | 3.12 | 1 |
| 11493 | QQ4M-112 | 207/21 | 0.1 | 4 | ---- | 0.89 | 276206 |
| 11494 | QQ4M-108 | 241/24 | 0.1 | 4 | ---- | 1.06 | 74523 |
| 11495 | QQ4M-106 | 241/24 | 0.1 | 4 | 25.2 | 1.04 | 149099 |
| 11496 | QQ4M-113 | 172/17 | 0.1 | 4 | ---- | 0.67 | 1383582 |
| 11497 | QQ4M-109 | 345/35 | 0.1 | 3 | ---- | 1.48 | 9427 |
| 11498 | QQ4M-119 | 207/21 | 0.1 | 5 | ---- | 0.89 | 526719 |
| 11499 | QQ4M-111 | 345/35 | 0.1 | 3 | ---- | 1.48 | 6879 |

MATERIAL TT1A

E-glass/epoxy laminate based on 0° Vectorply E-LT-5500 and ±45° Saertex VU-90079-00830-01270-000000, Lay-up: [±45/0/±45/0/±45], 66%-0°, Fiber volume fraction and thickness: 0.55 and 4.59 mm, Matrix: epoxy (Huntsman/Vantico TDT 177-155), Process, cure and post-cure temperature: Infusion VARTM, post cured 6 hrs. at 70°C, Laminate fabricated by MSU.

| | | | | | | | |
|-------|----------|--------|-----|----|------|------|---------|
| 11500 | TT1A-101 | 898 | * | 13 | ---- | 3.24 | 1 |
| 11501 | TT1A-104 | 899 | * | 13 | ---- | 3.25 | 1 |
| 11502 | TT1A-102 | 345/35 | 0.1 | 3 | 28 | 1.32 | 96221 |
| 11503 | TT1A-107 | 241/24 | 0.1 | 4 | 25.9 | 0.98 | 2747438 |
| 11504 | TT1A-108 | 241/24 | 0.1 | 4 | ---- | 0.87 | 1383716 |
| 11505 | TT1A-103 | 276/28 | 0.1 | 4 | ---- | 1 | 309647 |
| 11506 | TT1A-105 | 276/28 | 0.1 | 4 | ---- | 1 | 694319 |
| 11507 | TT1A-106 | 276/28 | 0.1 | 4 | 29.2 | 1.01 | 371223 |
| 11508 | TT1A-100 | 241/24 | 0.1 | 3 | ---- | 0.87 | 1708313 |
| 11509 | TT1A-115 | 414/41 | 0.1 | 3 | ---- | 1.49 | 22146 |
| 11510 | TT1A-114 | 414/41 | 0.1 | 3 | ---- | 1.49 | 8299 |
| 11511 | TT1A-117 | 345/35 | 0.1 | 3 | ---- | 1.24 | 185153 |

MATERIAL TT1AH

E-glass/epoxy laminate based on 0° Vectorply E-LT-5500 and ±45° Saertex VU-90079-00830-01270-000000, Lay-up: [±45/0/±45/0/±45], 66%-0°, Fiber volume fraction and thickness: 0.63 and 3.98 mm, Matrix: epoxy (Huntsman/Vantico TDT 177-155), Process, cure and post-cure temperature: Infusion VARTM, post cured 6 hrs. at 70°C, Laminate fabricated by MSU.

| | | | | | | | |
|-------|------------|-----|---|------|------|------|---|
| 11512 | TT1A-H-106 | 967 | * | 0.02 | ---- | 3.07 | 1 |
| 11513 | TT1A-H-102 | 837 | * | 0.02 | ---- | 2.66 | 1 |
| 11514 | TT1A-H-109 | 788 | * | 0.02 | ---- | 2.5 | 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| 11515 | TT1A-H-100 | 345/35 | ---- | 2 | 32.2 | 1.21 | 11679 |
| 11516 | TT1A-H-114 | 345/35 | ---- | 2 | ---- | 1.1 | 17128 |
| 11517 | TT1A-H-108 | 345/35 | ---- | 2 | ---- | 1.1 | 10741 |
| 11518 | TT1A-H-107 | 276/28 | ---- | 3 | ---- | 0.88 | 118045 |
| 11519 | TT1A-H-112 | 276/28 | ---- | 3 | ---- | 0.88 | 60601 |
| 11520 | TT1A-H-113 | 276/28 | ---- | 3 | ---- | 0.88 | 44467 |
| 11521 | TT1A-H-104 | 207/21 | ---- | 4 | ---- | 0.66 | 886747 |
| 11522 | TT1A-H-110 | 207/21 | ---- | 4 | 30.8 | 0.73 | 1331737 |
| 11523 | TT1A-H-101 | 207/21 | ---- | 4 | ---- | 0.66 | 372171 |
| 11524 | TT1A-H-111 | 207/21 | ---- | 4 | 31.5 | 0.71 | 277104 |
| 11525 | TT1A-H-103 | 172/17 | ---- | 5 | ---- | 0.55 | 1300000 RO |
| 11526 | TT1A-H-130 | 915 | ---- | 13 | ---- | 2.91 | 1 |
| 11527 | TT1A-H-124 | 932 | ---- | 13 | ---- | 2.96 | 1 |
| 11528 | TT1A-H-105 | 941 | ---- | 13 | ---- | 2.99 | 1 |

MATERIAL TT

E-glass/vinyl ester laminate based on 0° Vectorply E-LT-5500 and $\pm 45^\circ$ Knytex DBM-1708, Lay-up: $[\pm 45/0/\pm 45/0/\pm 45]$, 66%-0°, Fiber volume fraction and thickness: 0.55 and 4.59 mm, Matrix: Epoxy (Prime 20LV with slow hardener), $V_f = 0.55$, thickness = 4.60 mm, Process, cure and post-cure temperature: Infusion VARTM, 6 hours at 80°C, Laminate fabricated by MSU

| | | | | | | | |
|-------|------|-----|-----|------|------|------|---------|
| 11529 | TT8 | 854 | 13 | 0.02 | 28.1 | 2.95 | 1 |
| 11530 | TT12 | 841 | 13 | 0.02 | 28.8 | 2.8 | 1 |
| 11531 | TT7 | 878 | 13 | 0.02 | 30 | 3.03 | 1 |
| 11532 | TT4 | 414 | 0.1 | 3 | ---- | 1.43 | 13119 |
| 11533 | TT5 | 276 | 0.1 | 4 | ---- | 0.95 | 584490 |
| 11534 | TT6 | 276 | 0.1 | 4 | ---- | 0.95 | 302214 |
| 11535 | TT9 | 414 | 0.1 | 3 | ---- | 1.43 | 26747 |
| 11536 | TT2 | 207 | 0.1 | 4 | ---- | 0.71 | 2808912 |

| | |
|---------|---|
| COMP1- | [1.0, 0.1] X10 + [0.75, 0.075] X 1000 |
| COMP2- | [1.0, 0.1] X10 + [0.75, 0.075] X 100 |
| COMP3- | [1.0, 0.1] X10 + [0.75, 0.075] X 10 |
| COMP4- | [1.0, 0.1] X10 + [0.75, 0.075] X 10000 |
| LOAD1- | [1.0, 0.1] X10 + [0.7917, 0.0792] X1000 |
| LOAD2- | [1.0, 0.1] X10 + [0.5833, 0.0583] X1000 |
| LOAD3- | [1.0, 0.1] X10 + [0.50, 0.05] X1000 |
| LOAD4- | [1.0, 0.1] X10 + [0.7368, 0.0737] X1000 |
| LOAD5- | [1.0, 0.1] X10 + [0.6316, 0.0632] X1000 |
| LOAD6- | [1.0, 0.1] X10 + [0.8571, 0.0858] X1000 |
| LOAD7- | [1.0, 0.5] X10 + [0.7917, 0.0792] X1000 |
| LOAD8- | [1.0, 0.5] X10 + [0.5833, 0.2917] X1000 |
| LOAD9- | [1.0, 0.5] X10 + [0.7368, 0.3684] X1000 |
| LOAD10- | [1.0, 0.1] X1000 |
| LOAD11- | [1.0, 0.5] X1000 |
| LOAD12- | [1.0, 0.5] X10 + [0.5833, 0.2917] X100 |
| LOAD13- | [1.0, 0.5] X10 + [0.5833, 0.2917] X1000 |
| LOAD14- | [1.0, 0.5] X10 + [0.7368, 0.3684] X1000 |
| LOAD15- | [1.0, 0.5] X10 + [0.7368, 0.3686] X100 |
| LOAD16- | [1.0, 0.5] X10 + [0.5833, 0.2917] X10000 |
| LOAD17- | [1.0, 0.5] X10 + [0.7368, 0.3684] X10000 |
| LOAD18- | [1.0, 0.1] X10 + [0.5833, 0.0583] X1000 |
| RAND1- | [0.7917, 0.0792] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND2- | [0.5833, 0.0583] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND3- | [0.50, 0.05] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND4- | [0.7368, 0.037] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND5- | [0.6315, 0.0632] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND6- | [0.8571, 0.0857] with [1, 0.1] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND7- | [0.7917, 0.0792] with [1, 0.5] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |

| | |
|-----------|---|
| RAND8- | [0.5833, 0.2917] with [1, 0.5] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RAND9- | [0.7368, 0.3684] with [1, 0.5] at (25, 88, 129, 136, 212, 346, 582, 860, 922 and 992 cycles), 1010 total cycles per pass. |
| RANDOM1- | [0.632, 0.0632] with [1, 0.1] at (24, 61, 166, 263, 358, 637, 826, 834, 905 and 909 cycles), 996 total cycles per pass. |
| RANDOM2- | [0.632, 0.0632] with [1, 0.1] at (24, 61, 166, 263, 358, 637, 826, 834, 905 and 909 cycles), 1011 total cycles per pass. |
| RANDOM3- | [1, 0.1] X10 + [0.632, 0.0632] X1000 |
| REVERS- | [1.0, -1.0] X1000 |
| R10IN100- | [1.0, 0.1] X10 + [0.6316, 0.0632] X1000 |
| R10LD1- | [1.0, 0.1] X10 + [0.6316, 0.0632] X100 |
| R10LD2- | [1.0, 0.1] X10 + [0.6316, 0.0632] X10 |
| R11IN100- | [1.0, 0.1] X1 + [0.6316, 0.0632] X100 |
| RVR1- | [1.0, -1.0] X10 + [0.6, -0.6] X 10 |
| RVR2- | [1.0, -1.0] X10 + [0.6, -0.6] X 100 |
| RVR3- | [1.0, -1.0] X10 + [0.6, -0.6] X 1000 |
| RVR4- | [1.0, -1.0] X10 + [0.6, -0.6] X 10000 |

MODIFIED AND UNMODIFIED WISPERX SPECTRA.

Copies of WISPER and WISPERX data files were obtained over the Internet from NLR in the Netherlands. at <http://www.nlr.nl/public/>. Copies of the NLR papers on WISPER and WISPERX can also be downloaded from this site. WISPERX is included in its entirety in NLR TP 91476. Page 27 of NLR TP 91476 gives addresses and phone numbers for requesting copies of WISPER and WISPERX on magnetic media. Complete cycles to failure are reported. A segment is defined as the stress path from one stress point to the next (local maximum to local minimum, or visa versa). The number of segments divided by 2 equal the number of cycles to failure listed in the data.

UNMODIFIED WISPERX

The WISPERX file contains a data stream of peaks and valleys for a loading sequence between values of 1 to 64. Compression was defined as values 1 to 25 and tensile as 25 to 64, with a zero stress value defined as 25. The WISPERX file was recalculated to values between 0.0 and 1.0 by the expression $y = (x-25)/(64-25)$, where each file entry was input as the variable x. The very first entry in the unmodified WISPERX file was 25; consequently, the first entry in the recalculated wisperx file was 0.0. That is, the first entry is a no-load condition. This new file would have a maximum entry of 1.0 and a minimum entry of -0.6154. This spectra has 12831 cycles (25662 segments).

The other four spectra were then created (modified) from this recalculated data file (wisperx).

Wispk (MOD2):

Consider the waveform to be a sequence of peaks and valleys. The first entry is zero, symbolizing a no-load starting point. Each following even numbered entry, (eg. 2nd, 4th, 6th values in the stream) would be peaks while the odd entries (3rd, 5th, 7th values) would be valleys. The peak and its following valley (eg, the 2nd and 3rd values in the stream) values were considered to define the max and min of a cycle. Wispk was constructed by reading each peak value from the recalculated WISPERX file and calculating a new valley value by multiplying the cycle's peak value by 0.1. This then gives the constant R-value of 0.1. The peak value and the new valley value were saved to a new file, Wispk. The old valley values were never used. This spectra has 12831 cycles (25662 segments).

Wismix (MOD3):

This was an attempt to provide a mix of only 0.1 and 0.5 R-values. This was created similar to that for the Wispk waveform. Each peak and valley value were read and used to calculate an R-value of the original WISPERX file (would be the same in the recalculated WISPERX file, wisperx). A comparison was made of the original R-value to R-values of 0.1 and 0.5. If the original were closer to 0.1 than to 0.5 the cycle was forced to an R-value of 0.1 by replacing the valley value by 0.1 multiplied by the peak value. Conversely, if the original R-value were closer to 0.5 than to 0.1, the cycle was forced to an R-value of 0.5 by replacing the valley value by 0.5 multiplied by the peak value. This spectra has 12687 cycles (25374 segments).

MOD1 SPECTRA (WisxR01 and WisxR05)

WisxR01 (MOD1, R=0.1):

This waveform was created by reading the maximum and minimum for each cycle. The cycle was retained if it was tension-tension. Each remaining valley value was replaced with 0.1 multiplied by the peak value. This waveform would be similar to Wispk, with the exception of the removal of the handful of cycles that were reversing cycles. Unfortunately, the single large event (largest peak value) is followed by a compressive minimum load. The method used to create this file then removed the largest event. This waveform is of constant R-value, 0.1. This spectra has 12687 cycles (25374 segments).

WisxR05 (MOD1, R=0.5):

Nearly the same process, as described in WisxR01, was used to create this waveform. The only exception is that the retained cycle's valley values were replaced with 0.5 multiplied by the peak value. This waveform is of constant R-value, 0.5. This spectra has 12687 cycles (25374 segments).

| Test and coupon # | Comment | Maximum Stress, MPa | 39 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| MATERIAL DD5P | | | | | | | | | |
|---------------|-----|--------------------|-----------|-----|----|-------|--------|--------|----|
| 7510 | 6 | 1 cycle | 766 | * | 13 | ---- | ---- | 1 | WR |
| 7511 | 7 | 1 cycle | 813 | * | 13 | ---- | ---- | 1 | WR |
| 7512 | 8 | 1 cycle | 824 | * | 13 | ---- | ---- | 1 | WR |
| 7513 | 85 | 1 cycle | 716 | * | 13 | ---- | ---- | 1 | WR |
| 7514 | 105 | 1 cycle | 741 | * | 13 | ---- | ---- | 1 | WR |
| 7515 | 2 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 4717 | WR |
| 7516 | 3 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 2711 | WR |
| 7517 | 4 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1812 | WR |
| 7518 | 9 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 3711 | WR |
| 7519 | 32 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 4221 | WR |
| 7520 | 70 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1743 | WR |
| 7521 | 71 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1767 | WR |
| 7522 | 72 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1017 | WR |
| 7523 | 75 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1515 | WR |
| 7524 | 84 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1697 | WR |
| 7525 | 103 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1496 | WR |
| 7526 | 106 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 5660 | WR |
| 7527 | 97 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 4024 | 4020 | 8044 | WR |
| 7528 | 99 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 5956 | 5950 | 11906 | WR |
| 7529 | 48 | 2 block, 10H/56L | 414 / 241 | 0.1 | 10 | 8610 | 44720 | 53330 | WR |
| 7530 | 38 | 2 block, 10H/56L | 414 / 241 | 0.1 | 10 | 10100 | 52468 | 62568 | WR |
| 7531 | 73 | 2 block, 10H/56L | 414 / 241 | 0.1 | 10 | 1130 | 5824 | 6954 | WR |
| 7532 | 74 | 2 block, 10H/56L | 414 / 241 | 0.1 | 10 | 1980 | 10244 | 12224 | WR |
| 7533 | 76 | 2 block, 10H/56L | 414 / 241 | 0.1 | 10 | 1190 | 6188 | 7378 | WR |
| 7534 | 40 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 5040 | 56336 | 61376 | WR |
| 7535 | 44 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 6440 | 72016 | 78456 | WR |
| 7536 | 90 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 720 | 7952 | 8672 | WR |
| 7537 | 101 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 5337 | 59696 | 65033 | WR |
| 7538 | 104 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 2380 | 26544 | 28924 | WR |
| 7539 | 77 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 1080 | 11984 | 13064 | WR |
| 7540 | 20 | 2 block, 5H/56L | 414 / 241 | 0.1 | 10 | 7950 | 88928 | 96878 | WR |
| 7541 | 28 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 7855 | 87808 | 95663 | WR |
| 7542 | 25 | 2 block, 5H/165L | 414 / 241 | 0.1 | 10 | 6880 | 226061 | 232941 | WR |
| 7543 | 26 | 2 block, 5H/165L | 414 / 241 | 0.1 | 10 | 6415 | 211530 | 217945 | WR |
| 7544 | 39 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 4340 | 144622 | 148962 | WR |
| 7545 | 46 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 3920 | 130594 | 134514 | WR |
| 7546 | 78 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 1150 | 38076 | 39226 | WR |
| 7547 | 94 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 782 | 26052 | 26834 | WR |
| 7548 | 23 | 2 block, 5H/1500L | 414 / 241 | 0.1 | 10 | 2025 | 607500 | 609525 | WR |
| 7549 | 24 | 2 block, 5H/1500L | 414 / 241 | 0.1 | 10 | 3090 | 925500 | 928590 | WR |
| 7550 | 27 | 2 block, 5H/500L | 414 / 241 | 0.1 | 10 | 2850 | 285000 | 287850 | WR |
| 7551 | 36 | 2 block, 5H/500L | 414 / 241 | 0.1 | 10 | 3270 | 327000 | 330270 | WR |
| 7552 | 37 | 2 block, 10H/667L | 414 / 241 | 0.1 | 10 | 2860 | 189428 | 192288 | WR |
| 7553 | 41 | 2 block, 10H/667L | 414 / 241 | 0.1 | 10 | 1727 | 114057 | 115784 | WR |
| 7554 | 82 | 2 block, 10H/667L | 414 / 241 | 0.1 | 10 | 520 | 34017 | 34537 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 40 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| | | | | | | | | | |
|------|-----|--------------------|-----------|-----|----|------|---------|---------|----|
| 7555 | 95 | 2 block, 10H/667L | 414 / 241 | 0.1 | 10 | 903 | 60030 | 60933 | WR |
| 7556 | 42 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 3670 | 366000 | 369670 | WR |
| 7557 | 45 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 2780 | 277000 | 279780 | WR |
| 7558 | 79 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 470 | 46000 | 46470 | WR |
| 7559 | 89 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 293 | 28527 | 28820 | WR |
| 7560 | 100 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 2416 | 241000 | 243416 | WR |
| 7561 | 43 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 1960 | 588000 | 589960 | WR |
| 7562 | 47 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 1330 | 399000 | 400330 | WR |
| 7563 | 92 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 1102 | 330000 | 331102 | WR |
| 7564 | 96 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 710 | 213000 | 213710 | WR |
| 7565 | 22 | 2 block, 5H/4500L | 414 / 241 | 0.1 | 10 | 1600 | 1435500 | 1437100 | WR |
| 7566 | 29 | 2 block, 5H/45000L | 414 / 241 | 0.1 | 10 | 400 | 1800000 | 1800400 | WR |
| 7567 | 19 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 670 | 594000 | 594670 | WR |
| 7568 | 81 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 30 | 25918 | 25948 | WR |
| 7569 | 91 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 50 | 45000 | 45050 | WR |
| 7570 | 102 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 795 | 711000 | 711795 | WR |
| 7571 | 107 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 680 | 609298 | 609978 | WR |
| 7572 | 31 | constant amplitude | 241 | 0.1 | 10 | | 4501339 | 4501339 | WR |
| 7573 | 83 | constant amplitude | 241 | 0.1 | 10 | | 628444 | 628444 | WR |
| 7574 | 93 | constant amplitude | 241 | 0.1 | 10 | | 1407916 | 1407916 | WR |
| 7575 | 98 | constant amplitude | 241 | 0.1 | 10 | | 3403091 | 3403091 | WR |
| 7576 | 17 | constant amplitude | 241 | 0.1 | 10 | | 3096821 | 3096821 | WR |
| 7577 | 18 | constant amplitude | 241 | 0.1 | 30 | | 1709382 | 1709382 | WR |
| 7578 | 11 | constant amplitude | 500 | 0.1 | 10 | 877 | | 877 | WR |
| 7579 | 13 | constant amplitude | 500 | 0.1 | 10 | 584 | | 584 | WR |
| 7580 | 14 | constant amplitude | 690 | 0.1 | 10 | 28 | | 28 | WR |
| 7581 | 33 | constant amplitude | 690 | 0.1 | 10 | 67 | | 67 | WR |
| 7582 | 34 | constant amplitude | 500 | 0.1 | 10 | 1113 | | 1113 | WR |
| 7583 | 35 | constant amplitude | 690 | 0.1 | 10 | 39 | | 39 | WR |
| 7584 | 86 | constant amplitude | 500 | 0.1 | 10 | 463 | | 463 | WR |
| 7585 | 87 | constant amplitude | 500 | 0.1 | 10 | 527 | | 527 | WR |

MATERIAL DD11

| | | | | | | | | | |
|------|-----|--------------------|-----------|-----|----|------|--------|--------|----|
| 7586 | 114 | 1 cycle | 508 | * | 13 | 1 | | 1 | WR |
| 7587 | 115 | 1 cycle | 577 | * | 13 | 1 | | 1 | WR |
| 7588 | 108 | constant amplitude | 414 | 0.1 | 10 | 97 | | 97 | WR |
| 7589 | 111 | constant amplitude | 414 | 0.1 | 10 | 226 | | 226 | WR |
| 7590 | 123 | constant amplitude | 414 | 0.1 | 10 | 801 | | 801 | WR |
| 7591 | 124 | constant amplitude | 414 | 0.1 | 10 | 392 | | 392 | WR |
| 7592 | 119 | constant amplitude | 414 | 0.1 | 10 | 29 | | 29 | WR |
| 7593 | 109 | constant amplitude | 241 | 0.1 | 10 | | 217518 | 217518 | WR |
| 7594 | 110 | constant amplitude | 241 | 0.1 | 10 | | 208911 | 208911 | WR |
| 7595 | 127 | constant amplitude | 241 | 0.1 | 10 | | 107287 | 107287 | WR |
| 7596 | 116 | constant amplitude | 472 | 0.1 | 10 | 37 | | 37 | WR |
| 7597 | 117 | constant amplitude | 341 | 0.1 | 10 | 2729 | | 2729 | WR |
| 7598 | 118 | constant amplitude | 462 | 0.1 | 10 | 78 | | 78 | WR |
| 7599 | 122 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 368 | 360 | 728 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 41 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| | | | | | | | | | |
|------|-----|--------------------|-----------|-----|----|------|-------|-------|----|
| 7600 | 120 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 576 | 6384 | 6960 | WR |
| 7601 | 126 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 237 | 2576 | 2813 | WR |
| 7602 | 112 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 21 | 668 | 689 | WR |
| 7603 | 121 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 88 | 8000 | 8088 | WR |
| 7604 | 125 | 2 block, 10H/112L | 386 / 225 | 0.1 | 10 | 1228 | 13664 | 14892 | WR |
| 7605 | 113 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 104 | 30000 | 30104 | WR |

MATERIAL DD16

| | | | | | | | | | |
|------|------|---------|------|---|----|------|------|---|----|
| 7606 | 128 | 1 cycle | 493 | * | 13 | ---- | ---- | 1 | WR |
| 7607 | 141 | 1 cycle | 524 | * | 13 | ---- | ---- | 1 | WR |
| 7608 | 173 | 1 cycle | 493 | * | 13 | ---- | ---- | 1 | WR |
| 7609 | 268 | 1 cycle | 473 | * | 13 | ---- | ---- | 1 | WR |
| 7610 | 269 | 1 cycle | 468 | * | 13 | ---- | ---- | 1 | WR |
| 7611 | 270 | 1 cycle | 465 | * | 13 | ---- | ---- | 1 | WR |
| 7612 | 271 | 1 cycle | 489 | * | 13 | ---- | ---- | 1 | WR |
| 7613 | 272 | 1 cycle | 473 | * | 13 | ---- | ---- | 1 | WR |
| 7614 | 273 | 1 cycle | 646 | * | 13 | ---- | ---- | 1 | WR |
| 7615 | 274 | 1 cycle | 680 | * | 13 | ---- | ---- | 1 | WR |
| 7616 | 296 | 1 cycle | 489 | * | 13 | ---- | ---- | 1 | WR |
| 7617 | 306 | 1 cycle | 673 | * | 13 | ---- | ---- | 1 | WR |
| 7618 | 329 | 1 cycle | 542 | * | 13 | ---- | ---- | 1 | WR |
| 7619 | 349 | 1 cycle | 558 | * | 13 | ---- | ---- | 1 | WR |
| 7620 | 283 | 1 cycle | 649 | * | 13 | ---- | ---- | 1 | WR |
| 7621 | 383 | 1 cycle | 652 | * | 13 | ---- | ---- | 1 | WR |
| 7622 | 410 | 1 cycle | 638 | * | 13 | ---- | ---- | 1 | WR |
| 7623 | 430 | 1 cycle | 598 | * | 13 | ---- | ---- | 1 | WR |
| 7624 | 479 | 1 cycle | 657 | * | 13 | ---- | ---- | 1 | WR |
| 7625 | 474 | 1 cycle | 629 | * | 13 | ---- | ---- | 1 | WR |
| 7626 | 635 | 1 cycle | 670 | * | 13 | ---- | ---- | 1 | WR |
| 7627 | 652 | 1 cycle | 619 | * | 13 | ---- | ---- | 1 | WR |
| 7628 | 653 | 1 cycle | 676 | * | 13 | ---- | ---- | 1 | WR |
| 7629 | 655 | 1 cycle | 688 | * | 13 | ---- | ---- | 1 | WR |
| 7630 | 666 | 1 cycle | 670 | * | 13 | ---- | ---- | 1 | WR |
| 7631 | 671 | 1 cycle | 687 | * | 13 | ---- | ---- | 1 | WR |
| 7632 | 726a | 1 cycle | 647 | * | 13 | ---- | ---- | 1 | WR |
| 7633 | 739 | 1 cycle | 644 | * | 13 | ---- | ---- | 1 | WR |
| 7634 | 756 | 1 cycle | 664 | * | 13 | ---- | ---- | 1 | WR |
| 7635 | 765 | 1 cycle | 621 | * | 13 | ---- | ---- | 1 | WR |
| 7636 | 774 | 1 cycle | 686 | * | 13 | ---- | ---- | 1 | WR |
| 7637 | 783 | 1 cycle | 696 | * | 13 | ---- | ---- | 1 | WR |
| 7662 | 646 | 1 cycle | 569 | * | 13 | ---- | ---- | 1 | WR |
| 7083 | 1463 | 1 cycle | 671 | * | 13 | ---- | ---- | 1 | CA |
| 7638 | 812 | 1 cycle | -399 | * | 13 | ---- | ---- | 1 | WR |
| 7639 | 818 | 1 cycle | -396 | * | 13 | ---- | ---- | 1 | WR |
| 7640 | 824 | 1 cycle | -405 | * | 13 | ---- | ---- | 1 | WR |
| 7641 | 830 | 1 cycle | -368 | * | 13 | ---- | ---- | 1 | WR |
| 7642 | 831 | 1 cycle | -410 | * | 13 | ---- | ---- | 1 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 42 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| | | | | | | | | | |
|------|------|--------------------|----------|-----|----|------|--------|--------|----|
| 7643 | 832 | 1 cycle | -368 | * | 13 | ---- | ---- | 1 | WR |
| 7644 | 833 | 1 cycle | -416 | * | 13 | ---- | ---- | 1 | WR |
| 7645 | 834 | 1 cycle | -379 | * | 13 | ---- | ---- | 1 | WR |
| 7646 | 835 | 1 cycle | -435 | * | 13 | ---- | ---- | 1 | WR |
| 7647 | 865 | 1 cycle | -427 | * | 13 | ---- | ---- | 1 | WR |
| 7648 | 866 | 1 cycle | -408 | * | 13 | ---- | ---- | 1 | WR |
| 7649 | 867 | 1 cycle | -406 | * | 13 | ---- | ---- | 1 | WR |
| 7650 | 868 | 1 cycle | -387 | * | 13 | ---- | ---- | 1 | WR |
| 7651 | 869 | 1 cycle | -419 | * | 13 | ---- | ---- | 1 | WR |
| 7652 | 880 | 1 cycle | -371 | * | 13 | ---- | ---- | 1 | WR |
| 7653 | 881 | 1 cycle | -404 | * | 13 | ---- | ---- | 1 | WR |
| 7654 | 882 | 1 cycle | -427 | * | 13 | ---- | ---- | 1 | WR |
| 7655 | 883 | 1 cycle | -397 | * | 13 | ---- | ---- | 1 | WR |
| 7656 | 884 | 1 cycle | -421 | * | 13 | ---- | ---- | 1 | WR |
| 7657 | 885 | 1 cycle | -394 | * | 13 | ---- | ---- | 1 | WR |
| 7658 | 886 | 1 cycle | -411 | * | 13 | ---- | ---- | 1 | WR |
| 7659 | 887 | 1 cycle | -374 | * | 13 | ---- | ---- | 1 | WR |
| 7660 | 888 | 1 cycle | -415 | * | 13 | ---- | ---- | 1 | WR |
| 7661 | 889 | 1 cycle | -413 | * | 13 | ---- | ---- | 1 | WR |
| 8900 | 949 | 1 cycle | -367 | * | 13 | ---- | ---- | 1 | CA |
| 7082 | 1450 | 1 cycle | -414 | * | 13 | ---- | ---- | 1 | CA |
| 7663 | 139 | constant amplitude | 330 / 33 | 0.1 | 10 | ---- | ---- | 2297 | WR |
| 7664 | 140 | constant amplitude | 323 / 32 | 0.1 | 10 | ---- | ---- | 1914 | WR |
| 7665 | 151 | constant amplitude | 205 / 21 | 0.1 | 10 | ---- | ---- | 274271 | WR |
| 7666 | 152 | constant amplitude | 202 / 20 | 0.1 | 10 | ---- | ---- | 294549 | WR |
| 7667 | 153 | constant amplitude | 201 / 20 | 0.1 | 10 | ---- | ---- | 382826 | WR |
| 7668 | 484 | constant amplitude | 327 / 33 | 0.1 | 10 | ---- | ---- | 936 | WR |
| 7669 | 485 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 286613 | WR |
| 7670 | 486 | constant amplitude | 413 / 41 | 0.1 | 10 | ---- | ---- | 1119 | WR |
| 7671 | 282 | constant amplitude | 413 / 41 | 0.1 | 10 | ---- | ---- | 85 | WR |
| 7672 | 284 | constant amplitude | 242 / 24 | 0.1 | 10 | ---- | ---- | 109547 | WR |
| 7673 | 297 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 491 | WR |
| 7674 | 298 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 356 | WR |
| 7675 | 302 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 54487 | WR |
| 7676 | 305 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 121190 | WR |
| 7677 | 308 | constant amplitude | 412 / 41 | 0.1 | 10 | ---- | ---- | 91 | WR |
| 7678 | 309 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 373306 | WR |
| 7679 | 313 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 429 | WR |
| 7680 | 321 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 2611 | WR |
| 7681 | 323 | constant amplitude | 242 / 24 | 0.1 | 10 | ---- | ---- | 16884 | WR |
| 7682 | 325 | constant amplitude | 327 / 33 | 0.1 | 10 | ---- | ---- | 8653 | WR |
| 7683 | 326 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 104679 | WR |
| 7684 | 344 | constant amplitude | 183 / 18 | 0.1 | 10 | ---- | runout | 561088 | WR |
| 7685 | 363 | constant amplitude | 327 / 33 | 0.1 | 10 | ---- | ---- | 3139 | WR |
| 7686 | 376 | constant amplitude | 327 / 33 | 0.1 | 10 | ---- | ---- | 1706 | WR |
| 7687 | 378 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 261287 | WR |
| 7688 | 391 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 421272 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 43 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| | | | | | | | | | |
|------|-----|--------------------|----------|-----|----|------|------|---------|--------|
| 7689 | 433 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 757 | WR |
| 7690 | 434 | constant amplitude | 331 / 33 | 0.1 | 10 | ---- | ---- | 3744 | WR |
| 7691 | 435 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 181518 | WR |
| 7692 | 436 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 1137595 | WR |
| 7693 | 554 | constant amplitude | 326 / 33 | 0.1 | 10 | ---- | ---- | 763 | WR |
| 7694 | 577 | constant amplitude | 410 / 41 | 0.1 | 10 | ---- | ---- | 310 | WR |
| 7695 | 578 | constant amplitude | 410 / 41 | 0.1 | 10 | ---- | ---- | 274 | WR |
| 7696 | 579 | constant amplitude | 410 / 41 | 0.1 | 10 | ---- | ---- | 283 | WR |
| 7697 | 580 | constant amplitude | 410 / 41 | 0.1 | 10 | ---- | ---- | 334 | WR |
| 7698 | 581 | constant amplitude | 324 / 32 | 0.1 | 10 | ---- | ---- | 4375 | WR |
| 7699 | 582 | constant amplitude | 325 / 33 | 0.1 | 10 | ---- | ---- | 4190 | WR |
| 7700 | 583 | constant amplitude | 325 / 33 | 0.1 | 10 | ---- | ---- | 2620 | WR |
| 7701 | 584 | constant amplitude | 325 / 33 | 0.1 | 10 | ---- | ---- | 1306 | WR |
| 7702 | 585 | constant amplitude | 240 / 24 | 0.1 | 10 | ---- | ---- | 186268 | WR |
| 7703 | 586 | constant amplitude | 240 / 24 | 0.1 | 10 | ---- | ---- | 89527 | WR |
| 7704 | 587 | constant amplitude | 240 / 24 | 0.1 | 10 | ---- | ---- | 35109 | WR |
| 7705 | 588 | constant amplitude | 240 / 24 | 0.1 | 10 | ---- | ---- | 187293 | WR |
| 7706 | 589 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 697446 | WR |
| 7707 | 590 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 436185 | WR |
| 7708 | 591 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 732874 | WR |
| 7709 | 592 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 366748 | WR |
| 7710 | 607 | constant amplitude | 326 / 33 | 0.1 | 10 | ---- | ---- | 1690 | WR |
| 7711 | 609 | constant amplitude | 240 / 24 | 0.1 | 10 | ---- | ---- | 58826 | WR |
| 7712 | 611 | constant amplitude | 206 / 21 | 0.1 | 10 | ---- | ---- | 318890 | WR |
| 7713 | 129 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 78 | WR |
| 7714 | 130 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 149 | WR |
| 7715 | 131 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 141377 | WR |
| 7716 | 138 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 143456 | WR |
| 7717 | 147 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 31943 | WR |
| 7718 | 148 | constant amplitude | 414 / 24 | 0.1 | 10 | ---- | ---- | 155 | WR |
| 7719 | 160 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 495397 | WR |
| 7720 | 161 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 1722 | WR |
| 7721 | 168 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 744 | WR |
| 7722 | 169 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 588371 | WR |
| 7723 | 171 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 3152 | WR |
| 7724 | 172 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 162 | WR |
| 7725 | 174 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 37855 | WR |
| 7726 | 606 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 286 | load10 |
| 7727 | 608 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 1794 | load10 |
| 7728 | 610 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 43618 | load10 |
| 7729 | 605 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 783 | load10 |
| 7730 | 616 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 1081 | load10 |
| 7731 | 618 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 769 | load10 |
| 7732 | 620 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 234 | load10 |
| 7733 | 622 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 290 | load10 |
| 7734 | 624 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 161 | load10 |
| 7735 | 626 | constant amplitude | 207 / 41 | 0.1 | 10 | ---- | ---- | 496355 | load10 |

| Test and coupon # | | Comment | Maximum Stress, MPa | 44 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|------|--------------------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
| 7736 | 628 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 129134 | load10 |
| 7737 | 630 | constant amplitude | 241 / 54 | 0.1 | 10 | ---- | ---- | 57742 | load10 |
| 7738 | 633 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 43491 | load10 |
| 7739 | 612 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 418886 | load10 |
| 7740 | 617 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 2433 | load10 |
| 7741 | 619 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 2329 | load10 |
| 7742 | 621 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 180 | load10 |
| 7743 | 623 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 311 | load10 |
| 7744 | 625 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 41493 | load10 |
| 7745 | 627 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 598609 | load10 |
| 7746 | 629 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 78888 | load10 |
| 7747 | 632 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 37576 | load10 |
| 7748 | 634 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 163745 | load10 |
| 7749 | 744 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 642 | load10 |
| 7750 | 745 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 1290 | load10 |
| 7751 | 746 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 31733 | load10 |
| 7752 | 747 | constant amplitude | 207 / 21 | 0.1 | 10 | ---- | ---- | 544532 | load10 |
| 7753 | 784 | constant amplitude | 414 / 41 | 0.1 | 10 | ---- | ---- | 343 | load10 |
| 7754 | 788 | constant amplitude | 328 / 33 | 0.1 | 10 | ---- | ---- | 815 | load10 |
| 7755 | 792 | constant amplitude | 241 / 24 | 0.1 | 10 | ---- | ---- | 115525 | load10 |
| 7133 | 1467 | constant amplitude | 131 / 13 | 0.1 | 15 | ---- | ---- | 18875235 | CA |
| 7134 | 1470 | constant amplitude | 131 / 13 | 0.1 | 10 | ---- | ---- | 11498621 | CA |
| 7135 | 1476 | constant amplitude | 131 / 13 | 0.1 | 15 | ---- | ---- | 6512715 | CA |
| 8794 | 1457 | constant amplitude | 155 / 16 | 0.1 | 6 | ---- | ---- | 2845820 | CA |
| 8828 | 1466 | constant amplitude | 155 / 16 | 0.1 | 6 | ---- | ---- | 3772282 | CA |
| 7756 | 636 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 464516 | load11 |
| 7757 | 638 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 460884 | load11 |
| 7758 | 640 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 98521 | load11 |
| 7759 | 642 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 5801 | load11 |
| 7760 | 644 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 24381 | load11 |
| 7761 | 648 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 438 | load11 |
| 7762 | 650 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 1169 | load11 |
| 7763 | 641 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 7421 | load11 |
| 7764 | 643 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 6548 | load11 |
| 7765 | 645 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 19568 | load11 |
| 7766 | 647 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 2609 | load11 |
| 7767 | 649 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 2507 | load11 |
| 7768 | 651 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 1475 | load11 |
| 7769 | 672 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 1400 | load11 |
| 7770 | 673 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 100193 | load11 |
| 7771 | 717 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 2886 | load11 |
| 7772 | 718 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 1412 | load11 |
| 7773 | 719 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 21037 | load11 |
| 7774 | 720 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 120101 | load11 |
| 7775 | 721 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 272818 | load11 |
| 7776 | 722 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 545546 | load11 |
| 7777 | 785 | constant amplitude | 414 / 207 | 0.5 | 10 | ---- | ---- | 400 | load11 |

| Test and coupon # | Comment | Maximum Stress, MPa | 45 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|-----|--------------------|------------|-----|----|------|------|---------|--------|
| 7778 | 789 | constant amplitude | 328 / 164 | 0.5 | 10 | ---- | ---- | 11812 | load11 |
| 7779 | 796 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 11608 | load10 |
| 7780 | 797 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 2463 | load10 |
| 7781 | 798 | constant amplitude | -276 / -28 | 10 | 10 | ---- | ---- | 2727 | load10 |
| 7782 | 799 | constant amplitude | -280 / -28 | 10 | 10 | ---- | ---- | 5904 | load10 |
| 7783 | 800 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 5123 | load10 |
| 7784 | 801 | constant amplitude | -242 / -28 | 10 | 10 | ---- | ---- | 379064 | load10 |
| 7785 | 802 | constant amplitude | -244 / -24 | 10 | 10 | ---- | ---- | 54873 | load10 |
| 7786 | 803 | constant amplitude | -243 / -24 | 10 | 10 | ---- | ---- | 11145 | load10 |
| 7787 | 804 | constant amplitude | -243 / -24 | 10 | 10 | ---- | ---- | 11738 | load10 |
| 7788 | 805 | constant amplitude | -245 / -25 | 10 | 10 | ---- | ---- | 21240 | load10 |
| 7789 | 806 | constant amplitude | -259 / -26 | 10 | 10 | ---- | ---- | 5010 | load10 |
| 7790 | 807 | constant amplitude | -211 / -21 | 10 | 10 | ---- | ---- | 487946 | load10 |
| 7791 | 808 | constant amplitude | -214 / -21 | 10 | 10 | ---- | ---- | 993821 | load10 |
| 7792 | 809 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 1859843 | load10 |
| 7793 | 810 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 1747111 | load10 |
| 7794 | 811 | constant amplitude | -209 / -21 | 10 | 10 | ---- | ---- | 1464645 | load10 |
| 7795 | 813 | constant amplitude | -276 / -28 | 10 | 10 | ---- | ---- | 2469 | load10 |
| 7796 | 814 | constant amplitude | -276 / -28 | 10 | 10 | ---- | ---- | 4353 | load10 |
| 7797 | 816 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 3850 | load10 |
| 7798 | 817 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 15393 | load10 |
| 7799 | 819 | constant amplitude | -243 / -24 | 10 | 10 | ---- | ---- | 14172 | load10 |
| 7800 | 820 | constant amplitude | -243 / -24 | 10 | 10 | ---- | ---- | 36657 | load10 |
| 7801 | 821 | constant amplitude | -241 / -24 | 10 | 10 | ---- | ---- | 6704 | load10 |
| 7802 | 822 | constant amplitude | -242 / -24 | 10 | 10 | ---- | ---- | 9235 | load10 |
| 7803 | 823 | constant amplitude | -243 / -24 | 10 | 10 | ---- | ---- | 67973 | load10 |
| 7804 | 825 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 1505733 | load10 |
| 7805 | 826 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 1980344 | load10 |
| 7806 | 827 | constant amplitude | -210 / -21 | 10 | 10 | ---- | ---- | 1037244 | load10 |
| 7807 | 828 | constant amplitude | -215 / -21 | 10 | 10 | ---- | ---- | 1508674 | load10 |
| 7808 | 829 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 842537 | load10 |
| 7809 | 920 | constant amplitude | -324 / -32 | 10 | 10 | ---- | ---- | 131 | load10 |
| 7810 | 921 | constant amplitude | -322 / -32 | 10 | 10 | ---- | ---- | 364 | load10 |
| 7811 | 922 | constant amplitude | -323 / -32 | 10 | 10 | ---- | ---- | 415 | load10 |
| 7812 | 923 | constant amplitude | -335 / -34 | 10 | 10 | ---- | ---- | 334 | load10 |
| 7813 | 924 | constant amplitude | -323 / -32 | 10 | 10 | ---- | ---- | 533 | load10 |
| 7814 | 925 | constant amplitude | -322 / -32 | 10 | 10 | ---- | ---- | 1019 | load10 |
| 7815 | 926 | constant amplitude | -322 / -32 | 10 | 10 | ---- | ---- | 327 | load10 |
| 7816 | 927 | constant amplitude | -333 / -33 | 10 | 10 | ---- | ---- | 322 | load10 |
| 7817 | 928 | constant amplitude | -323 / -32 | 10 | 10 | ---- | ---- | 433 | load10 |
| 7818 | 929 | constant amplitude | -325 / -33 | 10 | 10 | ---- | ---- | 104 | load10 |
| 7819 | 855 | constant amplitude | -278 / -28 | 10 | 10 | ---- | ---- | 4063 | load10 |
| 7820 | 856 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 4410 | load10 |
| 7821 | 857 | constant amplitude | -275 / -28 | 10 | 10 | ---- | ---- | 1957 | load10 |
| 7822 | 858 | constant amplitude | -277 / -28 | 10 | 10 | ---- | ---- | 8288 | load10 |
| 7823 | 859 | constant amplitude | -276 / -28 | 10 | 10 | ---- | ---- | 10692 | load10 |
| 7824 | 860 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 2021912 | load10 |

| Test and coupon # | Comment | Maximum Stress, MPa | 46 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|------|--------------------|------------|-----|----|------|------|----------|--------|
| 7825 | 861 | constant amplitude | -216 / -22 | 10 | 10 | ---- | ---- | 943072 | load10 |
| 7826 | 862 | constant amplitude | -208 / -21 | 10 | 10 | ---- | ---- | 205084 | load10 |
| 7827 | 863 | constant amplitude | -216 / -22 | 10 | 10 | ---- | ---- | 1884110 | load10 |
| 7828 | 864 | constant amplitude | -207 / -21 | 10 | 10 | ---- | ---- | 235297 | load10 |
| 7136 | 1455 | constant amplitude | -179 / -18 | 10 | 12 | ---- | ---- | 5988139 | CA |
| 8791 | 1469 | constant amplitude | -179 / -18 | 10 | 15 | ---- | ---- | 17223430 | CA |
| 7829 | 335 | constant amplitude | 413 / 207 | 0.5 | 10 | ---- | ---- | 4701 | WR |
| 7830 | 336 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 32173 | WR |
| 7831 | 337 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 1469317 | WR |
| 7832 | 343 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 350682 | WR |
| 7833 | 346 | constant amplitude | 413 / 207 | 0.5 | 10 | ---- | ---- | 3836 | WR |
| 7834 | 347 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 20006 | WR |
| 7835 | 408 | constant amplitude | 413 / 207 | 0.5 | 10 | ---- | ---- | 2290 | WR |
| 7836 | 409 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 49288 | WR |
| 7837 | 412 | constant amplitude | 242 / 121 | 0.5 | 10 | ---- | ---- | 829489 | WR |
| 7838 | 416 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 74500 | WR |
| 7839 | 417 | constant amplitude | 413 / 207 | 0.5 | 10 | ---- | ---- | 4100 | WR |
| 7840 | 418 | constant amplitude | 242 / 121 | 0.5 | 10 | ---- | ---- | 1559097 | WR |
| 7841 | 426 | constant amplitude | 248 / 124 | 0.5 | 10 | ---- | ---- | 808064 | WR |
| 7842 | 429 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 33362 | WR |
| 7843 | 431 | constant amplitude | 412 / 206 | 0.5 | 10 | ---- | ---- | 2469 | WR |
| 7844 | 487 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 21452 | WR |
| 7845 | 488 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 156860 | WR |
| 7846 | 556 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 15905 | WR |
| 7847 | 557 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 38319 | WR |
| 7848 | 558 | constant amplitude | 327 / 163 | 0.5 | 10 | ---- | ---- | 8357 | WR |
| 7849 | 559 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 31685 | WR |
| 7850 | 560 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 21025 | WR |
| 7851 | 561 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 48516 | WR |
| 7852 | 562 | constant amplitude | 326 / 163 | 0.5 | 10 | ---- | ---- | 24391 | WR |
| 7853 | 563 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 1051280 | WR |
| 7854 | 564 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 1988538 | WR |
| 7855 | 565 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 1119777 | WR |
| 7856 | 566 | constant amplitude | 241 / 120 | 0.5 | 10 | ---- | ---- | 280171 | WR |
| 7857 | 568 | constant amplitude | 240 / 120 | 0.5 | 10 | ---- | ---- | 1749635 | WR |
| 7858 | 569 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 763276 | WR |
| 7859 | 570 | constant amplitude | 241 / 121 | 0.5 | 10 | ---- | ---- | 2470072 | WR |
| 7860 | 571 | constant amplitude | 412 / 206 | 0.5 | 10 | ---- | ---- | 1652 | WR |
| 7861 | 572 | constant amplitude | 411 / 206 | 0.5 | 10 | ---- | ---- | 2513 | WR |
| 7862 | 573 | constant amplitude | 411 / 206 | 0.5 | 10 | ---- | ---- | 2519 | WR |
| 7863 | 576 | constant amplitude | 412 / 206 | 0.5 | 10 | ---- | ---- | 2755 | WR |
| 7864 | 793 | constant amplitude | 239 / 120 | 0.5 | 10 | ---- | ---- | 334060 | WR |
| 6872 | 1416 | constant amplitude | 517 / 259 | 0.5 | 1 | ---- | ---- | 184 | CA |
| 6873 | 1402 | constant amplitude | 517 / 259 | 0.5 | 1 | ---- | ---- | 51 | CA |
| 6874 | 1426 | constant amplitude | 483 / 241 | 0.5 | 1 | ---- | ---- | 222 | CA |
| 6970 | 1409 | constant amplitude | 483 / 241 | 0.5 | 1 | ---- | ---- | 269 | CA |
| 6971 | 1434 | constant amplitude | 483 / 241 | 0.5 | 1 | ---- | ---- | 198 | CA |

| Test and coupon # | | Comment | Maximum Stress, MPa | 47 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|------|--------------------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
| 6972 | 1420 | constant amplitude | 207 / 103 | 0.5 | 10 | ---- | ---- | 892881 | CA |
| 6973 | 1412 | constant amplitude | 207 / 103 | 0.5 | 10 | ---- | ---- | 642097 | CA |
| 8901 | 1130 | constant amplitude | 172 / -172 | -1 | 4 | ---- | ---- | 529682 | RVR4 |
| 8902 | 1131 | constant amplitude | 172 / -172 | -1 | 5 | ---- | ---- | 19978 | RVR4 |
| 8903 | 1132 | constant amplitude | 172 / -172 | -1 | 5 | ---- | ---- | 55248 | RVR1 |
| 8904 | 1133 | constant amplitude | 106 / -106 | -1 | 5 | ---- | ---- | 1756651 | REVERS |
| 8905 | 1134 | constant amplitude | 190 / -190 | -1 | 5 | ---- | ---- | 23623 | RVR1 |
| 7003 | 1439 | constant amplitude | 345 / -345 | -1 | 1 | ---- | ---- | 47 | CA |
| 7004 | 1441 | constant amplitude | 345 / -345 | -1 | 1 | ---- | ---- | 129 | CA |
| 7005 | 1338 | constant amplitude | 310 / -310 | -1 | 1 | ---- | ---- | 432 | CA |
| 7006 | 1330 | constant amplitude | 310 / -310 | -1 | 1 | ---- | ---- | 965 | CA |
| 7007 | 1036 | constant amplitude | 310 / -310 | -1 | 1 | ---- | ---- | 68 | CA |
| 7008 | 1323 | constant amplitude | 310 / -310 | -1 | 1 | ---- | ---- | 499 | CA |
| 7009 | 1319 | constant amplitude | 310 / -310 | -1 | 1 | ---- | ---- | 144 | CA |
| 7010 | 1335 | constant amplitude | 276 / -276 | -1 | 1 | ---- | ---- | 1168 | CA |
| 7011 | 1340 | constant amplitude | 276 / -276 | -1 | 1 | ---- | ---- | 907 | CA |
| 7012 | 1332 | constant amplitude | 276 / -276 | -1 | 1 | ---- | ---- | 736 | CA |
| 7013 | 1312 | constant amplitude | 276 / -276 | -1 | 1 | ---- | ---- | 1640 | CA |
| 7014 | 1316 | constant amplitude | 276 / -276 | -1 | 1 | ---- | ---- | 1476 | CA |
| 7015 | 1341 | constant amplitude | 241 / -241 | -1 | 1 | ---- | ---- | 8666 | CA |
| 7016 | 1333 | constant amplitude | 241 / -241 | -1 | 1 | ---- | ---- | 5264 | CA |
| 7017 | 1337 | constant amplitude | 241 / -241 | -1 | 1 | ---- | ---- | 5234 | CA |
| 7018 | 1331 | constant amplitude | 241 / -241 | -1 | 1 | ---- | ---- | 4566 | CA |
| 7019 | 1311 | constant amplitude | 241 / -241 | -1 | 1 | ---- | ---- | 4673 | CA |
| 7020 | 1334 | constant amplitude | 179 / -179 | -1 | 1 | ---- | ---- | 42885 | CA |
| 7021 | 1035 | constant amplitude | 179 / -179 | -1 | 1 | ---- | ---- | 41052 | CA |
| 7022 | 1339 | constant amplitude | 179 / -179 | -1 | 1 | ---- | ---- | 40255 | CA |
| 7023 | 1336 | constant amplitude | 179 / -179 | -1 | 1 | ---- | ---- | 55702 | CA |
| 7024 | 1322 | constant amplitude | 148 / -148 | -1 | 1 | ---- | ---- | 224458 | CA |
| 7025 | 1310 | constant amplitude | 148 / -148 | -1 | 1 | ---- | ---- | 205884 | CA |
| 8816 | 1453 | constant amplitude | 100 / -100 | -1 | 4 | ---- | ---- | 5609823 | CA |
| 8817 | 1468 | constant amplitude | 276 / -276 | -1 | 0.1 | ---- | ---- | 2120 | CA |
| 8819 | 1438 | constant amplitude | 179 / -179 | -1 | 0.1 | ---- | ---- | 31761 | CA |
| 8793 | 1471 | constant amplitude | 241 / -241 | -1 | 0.1 | ---- | ---- | 4710 | CA |
| 8814 | 1473 | constant amplitude | 276 / -276 | -1 | 0.1 | ---- | ---- | 573 | CA |
| 7026 | 1452 | constant amplitude | 148 / -148 | -1 | 1 | ---- | ---- | 133387 | CA |
| 8792 | 1458 | constant amplitude | 100 / -100 | -1 | 5 | ---- | ---- | 5268431 | CA |
| 7879 | 892 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 130733 | load11 |
| 7880 | 893 | constant amplitude | -276 / -138 | 2 | 8 | ---- | runout | 62258 | load11 |
| 7881 | 894 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 158396 | load11 |
| 7882 | 895 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 1442932 | load11 |
| 7883 | 896 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 162400 | load11 |
| 7884 | 897 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 46304 | load11 |
| 7885 | 898 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 192595 | load11 |
| 7886 | 899 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 48990 | load11 |
| 7887 | 905 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 1190152 | load11 |
| 7888 | 906 | constant amplitude | -241 / -121 | 2 | 10 | ---- | runout | 10000000 | load11 |

| Test and coupon # | Comment | Maximum Stress, MPa | 48 | | R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|-------------|-----|---------|---------|---------------|--------------|--------------|---------|
| | | | | | | | | | | |
| 7889 | 907 | constant amplitude | -276 / -138 | 2 | 10 | ---- | runout | 4950838 | load11 | |
| 7890 | 908 | constant amplitude | -276 / -138 | 2 | 10 | ---- | runout | 11829100 | load11 | |
| 7891 | 909 | constant amplitude | -276 / -138 | 2 | 10 | ---- | ---- | 2738468 | load11 | |
| 7893 | 919 | constant amplitude | -207 / -104 | 2 | 10 | ---- | runout | 4013900 | load11 | |
| 8500 | 901 | constant amplitude | -241 / -120 | 2 | 8 | ---- | ---- | 2659182 | load 11 | |
| 7077 | 1446 | constant amplitude | -345 / -172 | 2 | 1 | ---- | ---- | 42573 | CA | |
| 7078 | 1464 | constant amplitude | -345 / -172 | 2 | 1 | ---- | ---- | 21573 | CA | |
| 7079 | 1443 | constant amplitude | -345 / -172 | 2 | 1 | ---- | ---- | 26048 | CA | |
| 7080 | 1475 | constant amplitude | -345 / -172 | 2 | 1 | ---- | ---- | 41991 | CA | |
| 7081 | 1474 | constant amplitude | -345 / -172 | 2 | 1 | ---- | ---- | 5501 | CA | |
| 8640 | 1079 | constant amplitude | -276 / 138 | -2 | 5 | ---- | ---- | 21788 | WR | |
| 8641 | 1062 | constant amplitude | -276 / 138 | -2 | 5 | ---- | ---- | 17972 | WR | |
| 8642 | 1085 | constant amplitude | -276 / 138 | -2 | 5 | ---- | ---- | 25640 | WR | |
| 8643 | 1083 | constant amplitude | -276 / 138 | -2 | 5 | ---- | ---- | 24394 | WR | |
| 8644 | 1072 | constant amplitude | -276 / 138 | -2 | 5 | ---- | ---- | 23111 | WR | |
| 8645 | 1068 | constant amplitude | -241 / 121 | -2 | 5 | ---- | ---- | 159710 | WR | |
| 8646 | 1078 | constant amplitude | -241 / 121 | -2 | 5 | ---- | ---- | 137447 | WR | |
| 8647 | 1082 | constant amplitude | -241 / 121 | -2 | 5 | ---- | ---- | 165947 | WR | |
| 8648 | 1070 | constant amplitude | -241 / 121 | -2 | 5 | ---- | ---- | 84977 | WR | |
| 8649 | 1086 | constant amplitude | -241 / 121 | -2 | 5 | ---- | ---- | 127101 | WR | |
| 8650 | 1064 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 554277 | WR | |
| 8651 | 1066 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 262203 | WR | |
| 8652 | 1076 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 368220 | WR | |
| 8653 | 1400 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 711338 | WR | |
| 8654 | 1071 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 490579 | WR | |
| 8737 | 1033 | constant amplitude | -172 / 86 | -2 | 4 | ---- | ---- | 3446107 | CA | |
| 8738 | 1329 | constant amplitude | -172 / 86 | -2 | 4 | ---- | ---- | 2227927 | CA | |
| 8739 | 1024 | constant amplitude | -241 / 121 | -2 | 2 | ---- | ---- | 38977 | CA | |
| 8740 | 1318 | constant amplitude | -241 / 121 | -2 | 2 | ---- | ---- | 67004 | CA | |
| 8741 | 1034 | constant amplitude | -207 / 103 | -2 | 3 | ---- | ---- | 384495 | CA | |
| 8742 | 1315 | constant amplitude | -207 / 103 | -2 | 3 | ---- | ---- | 329984 | CA | |
| 8743 | 1327 | constant amplitude | -207 / 103 | -2 | 3 | ---- | ---- | 192304 | CA | |
| 8744 | 1342 | constant amplitude | -207 / 103 | -2 | 5 | ---- | ---- | 599421 | CA | |
| 8795 | 1317 | constant amplitude | -207 / 103 | -2 | 4 | ---- | ---- | 674584 | CA | |
| 6974 | 1462 | constant amplitude | -414 / 207 | -2 | 1 | ---- | ---- | 37 | CA | |
| 6975 | 1478 | constant amplitude | -414 / 207 | -2 | 1 | ---- | ---- | 80 | CA | |
| 6976 | 1437 | constant amplitude | -345 / 172 | -2 | 1 | ---- | ---- | 1403 | CA | |
| 6977 | 1449 | constant amplitude | -345 / 172 | -2 | 1 | ---- | ---- | 1876 | CA | |
| 6978 | 1445 | constant amplitude | -345 / 172 | -2 | 1 | ---- | ---- | 530 | CA | |
| 6979 | 1451 | constant amplitude | -345 / 172 | -2 | 1 | ---- | ---- | 823 | CA | |
| 6980 | 1381 | constant amplitude | -345 / 172 | -2 | 1 | ---- | ---- | 2069 | CA | |
| 6981 | 1479 | constant amplitude | -172 / 86.2 | -2 | 5 | ---- | ---- | 1630027 | CA | |
| 8709 | 1303 | constant amplitude | 379 / 303 | 0.8 | 5 | ---- | ---- | 72754 | WR | |
| 8710 | 1302 | constant amplitude | 379 / 303 | 0.8 | 5 | ---- | ---- | 24594 | WR | |
| 8711 | 1301 | constant amplitude | 379 / 303 | 0.8 | 5 | ---- | ---- | 52850 | WR | |
| 8712 | 1300 | constant amplitude | 379 / 303 | 0.8 | 5 | ---- | ---- | 73169 | WR | |
| 8713 | 1069 | constant amplitude | 379 / 303 | 0.8 | 5 | ---- | ---- | 32085 | WR | |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 49 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|------|--------------------|---------------------|---------|------------|---------------|--------------|--------------|---------|
| 8714 | 1135 | constant amplitude | 328 / 262 | 0.8 | 5 | ---- | ---- | 117106 | WR |
| 8715 | 1080 | constant amplitude | 328 / 262 | 0.8 | 5 | ---- | ---- | 315997 | WR |
| 8716 | 1060 | constant amplitude | 328 / 262 | 0.8 | 5 | ---- | ---- | 98079 | WR |
| 8717 | 1081 | constant amplitude | 328 / 262 | 0.8 | 5 | ---- | ---- | 211964 | WR |
| 8718 | 1063 | constant amplitude | 328 / 262 | 0.8 | 5 | ---- | ---- | 87083 | WR |
| 8719 | 1075 | constant amplitude | 276 / 221 | 0.8 | 5 | ---- | ---- | 2114295 | WR |
| 8720 | 1077 | constant amplitude | 276 / 221 | 0.8 | 5 | ---- | ---- | 530891 | WR |
| 8721 | 1073 | constant amplitude | 276 / 221 | 0.8 | 5 | ---- | ---- | 1387190 | WR |
| 8722 | 1056 | constant amplitude | 276 / 221 | 0.8 | 5 | ---- | ---- | 273495 | WR |
| 8723 | 1065 | constant amplitude | 276 / 221 | 0.8 | 5 | ---- | ---- | 1052100 | WR |
| 8724 | 1306 | constant amplitude | 448 / 359 | 0.8 | 5 | ---- | ---- | 5013 | WR |
| 8725 | 1305 | constant amplitude | 448 / 359 | 0.8 | 5 | ---- | ---- | 7291 | WR |
| 8726 | 1304 | constant amplitude | 448 / 359 | 0.8 | 5 | ---- | ---- | 14203 | WR |
| 8727 | 1328 | constant amplitude | 448 / 359 | 0.8 | 5 | ---- | ---- | 6562 | WR |
| 8728 | 1314 | constant amplitude | 448 / 359 | 0.8 | 5 | ---- | ---- | 12782 | WR |
| 8746 | 1380 | constant amplitude | 517 / 465 | 0.9 | 8 | ---- | ---- | 96 | CA |
| 8774 | 1360 | constant amplitude | 500 / 400 | 0.8 | 1 | ---- | ---- | 1023 | CA |
| 8775 | 1361 | constant amplitude | 500 / 400 | 0.8 | 1 | ---- | ---- | 571 | CA |
| 8776 | 1366 | constant amplitude | 500 / 400 | 0.8 | 1 | ---- | ---- | 109 | CA |
| 8777 | 1352 | constant amplitude | 474 / 379 | 0.8 | 2 | ---- | ---- | 6400 | CA |
| 8778 | 1372 | constant amplitude | 474 / 379 | 0.8 | 2 | ---- | ---- | 991 | CA |
| 8779 | 1347 | constant amplitude | 474 / 379 | 0.8 | 2 | ---- | ---- | 4924 | CA |
| 8639 | 1378 | constant amplitude | 207 / 165 | 0.8 | 10 | ---- | runout | 30400000 | CA |
| 8736 | 1430 | constant amplitude | 241 / 193 | 0.8 | 10 | ---- | ---- | 8183853 | CA |
| 8747 | 1383 | constant amplitude | 517 / 465 | 0.9 | 2 | ---- | ---- | 121 | CA |
| 8748 | 1353 | constant amplitude | 517 / 465 | 0.9 | 2 | ---- | ---- | 1084 | CA |
| 8749 | 1356 | constant amplitude | 517 / 465 | 0.9 | 2 | ---- | ---- | 132 | CA |
| 8750 | 1371 | constant amplitude | 517 / 465 | 0.9 | 2 | ---- | ---- | 40 | CA |
| 8751 | 1377 | constant amplitude | 483 / 434 | 0.9 | 8 | ---- | ---- | 7147 | CA |
| 8752 | 1379 | constant amplitude | 483 / 434 | 0.9 | 5 | ---- | ---- | 7003 | CA |
| 8753 | 1364 | constant amplitude | 483 / 434 | 0.9 | 5 | ---- | ---- | 1203 | CA |
| 8754 | 1374 | constant amplitude | 483 / 434 | 0.9 | 5 | ---- | ---- | 8831 | CA |
| 8755 | 1367 | constant amplitude | 483 / 434 | 0.9 | 8 | ---- | ---- | 14680 | CA |
| 8756 | 1359 | constant amplitude | 448 / 403 | 0.9 | 8 | ---- | ---- | 52960 | CA |
| 8757 | 1386 | constant amplitude | 448 / 403 | 0.9 | 10 | ---- | ---- | 157229 | CA |
| 8758 | 1385 | constant amplitude | 448 / 403 | 0.9 | 8 | ---- | ---- | 30502 | CA |
| 8759 | 1370 | constant amplitude | 448 / 403 | 0.9 | 8 | ---- | ---- | 13497 | CA |
| 8760 | 1355 | constant amplitude | 448 / 403 | 0.9 | 8 | ---- | ---- | 35815 | CA |
| 8761 | 1373 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 671191 | CA |
| 8762 | 1357 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 613322 | CA |
| 8763 | 1384 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 558916 | CA |
| 8764 | 1348 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 454082 | CA |
| 8765 | 1363 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 234196 | CA |
| 8766 | 1346 | constant amplitude | 379 / 341 | 0.9 | 10 | ---- | ---- | 301526 | CA |
| 8767 | 1354 | constant amplitude | 345 / 310 | 0.9 | 10 | ---- | ---- | 1572555 | CA |
| 8772 | 1395 | constant amplitude | 345 / 310 | 0.9 | 10 | ---- | ---- | 5370234 | CA |
| 8773 | 1396 | constant amplitude | 345 / 310 | 0.9 | 10 | ---- | ---- | 2115248 | CA |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 50 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-------|--------------------|---------------------|---------|------------|---------------|--------------|--------------|---------|
| 8768 | 1369 | constant amplitude | -379 / -345 | 1.1 | 10 | ---- | runout | 2560000 | CA |
| 8769 | 1349 | constant amplitude | -379 / -345 | 1.1 | 10 | ---- | runout | 1835000 | CA |
| 8770 | 1368 | constant amplitude | -379 / -345 | 1.1 | 10 | ---- | ---- | 802554 | CA |
| 8771 | 1382 | constant amplitude | -414 / -376 | 1.1 | 10 | ---- | ---- | 95 | CA |
| 8790 | 1392 | constant amplitude | -379 / -345 | 1.1 | 10 | ---- | ---- | 8180513 | CA |
| 8638 | 1376 | constant amplitude | -345 / -313 | 1.1 | 5 | ---- | runout | 1000000 | CA |
| 8780 | 1362 | constant amplitude | 345 / 241 | 0.7 | 5 | ---- | ---- | 38952 | CA |
| 8781 | 1390 | constant amplitude | 345 / 241 | 0.7 | 5 | ---- | ---- | 12916 | CA |
| 8782 | 1389 | constant amplitude | 345 / 241 | 0.7 | 4 | ---- | ---- | 11660 | CA |
| 8783 | 1350 | constant amplitude | 345 / 241 | 0.7 | 4 | ---- | ---- | 23795 | CA |
| 8784 | 1393 | constant amplitude | 345 / 241 | 0.7 | 4 | ---- | ---- | 20486 | CA |
| 8785 | 1387 | constant amplitude | 276 / 193 | 0.7 | 8 | ---- | ---- | 284155 | CA |
| 8786 | 1391 | constant amplitude | 276 / 193 | 0.7 | 10 | ---- | ---- | 233225 | CA |
| 8787 | 1358 | constant amplitude | 276 / 193 | 0.7 | 10 | ---- | ---- | 139848 | CA |
| 8788 | 1365 | constant amplitude | 276 / 193 | 0.7 | 10 | ---- | ---- | 295783 | CA |
| 8789 | 1365a | constant amplitude | 276 / 193 | 0.7 | 10 | ---- | ---- | 221172 | CA |
| 8745 | 1388 | constant amplitude | 207 / 145 | 0.7 | 10 | ---- | ---- | 805419 | CA |
| 6813 | 1422 | constant amplitude | 517 / 362 | 0.7 | 1 | ---- | ---- | 439 | CA |
| 6814 | 1375 | constant amplitude | 517 / 362 | 0.7 | 1 | ---- | ---- | 296 | CA |
| 6815 | 1419 | constant amplitude | 517 / 362 | 0.7 | 1 | ---- | ---- | 833 | CA |
| 6816 | 1407 | constant amplitude | 483 / 338 | 0.7 | 1 | ---- | ---- | 370 | CA |
| 6817 | 1403 | constant amplitude | 483 / 338 | 0.7 | 1 | ---- | ---- | 689 | CA |
| 6818 | 1418 | constant amplitude | 448 / 314 | 0.7 | 1 | ---- | ---- | 4565 | CA |
| 6861 | 1417 | constant amplitude | 414 / 290 | 0.7 | 2 | ---- | ---- | 2119 | CA |
| 6862 | 1424 | constant amplitude | 414 / 290 | 0.7 | 2 | ---- | ---- | 2053 | CA |
| 6863 | 1425 | constant amplitude | 414 / 290 | 0.7 | 2 | ---- | ---- | 5418 | CA |
| 6864 | 1401 | constant amplitude | 414 / 290 | 0.7 | 2 | ---- | ---- | 8231 | CA |
| 6865 | 1429 | constant amplitude | 414 / 290 | 0.7 | 2 | ---- | ---- | 4459 | CA |
| 6866 | 1427 | constant amplitude | 207 / 145 | 0.7 | 8 | ---- | ---- | 3953754 | CA |
| 6867 | 1408 | constant amplitude | -345 / -241 | 1.43 | 4 | ---- | ---- | 16738 | CA |
| 6868 | 1404 | constant amplitude | -345 / -241 | 1.43 | 4 | ---- | ---- | 74420 | CA |
| 6869 | 1406 | constant amplitude | -345 / -241 | 1.43 | 4 | ---- | ---- | 288974 | CA |
| 6870 | 1428 | constant amplitude | -345 / -241 | 1.43 | 5 | ---- | ---- | 96477 | CA |
| 6871 | 1345 | constant amplitude | -310 / -217 | 1.43 | 5 | ---- | ---- | 4000000 | runout |
| 6887 | 1432 | constant amplitude | -310 / -217 | 1.43 | 10 | ---- | ---- | 30000000 | runout |
| 6982 | 1460 | constant amplitude | 414 / -207 | -0.5 | 1 | ---- | ---- | 97 | CA |
| 6983 | 1442 | constant amplitude | 414 / -207 | -0.5 | 1 | ---- | ---- | 173 | CA |
| 6984 | 1465 | constant amplitude | 345 / -172 | -0.5 | 1 | ---- | ---- | 246 | CA |
| 6985 | 1440 | constant amplitude | 345 / -172 | -0.5 | 1 | ---- | ---- | 399 | CA |
| 6986 | 1448 | constant amplitude | 345 / -172 | -0.5 | 1 | ---- | ---- | 653 | CA |
| 6987 | 1454 | constant amplitude | 345 / -172 | -0.5 | 1 | ---- | ---- | 221 | CA |
| 6988 | 1444 | constant amplitude | 345 / -172 | -0.5 | 1 | ---- | ---- | 201 | CA |
| 6989 | 1436 | constant amplitude | 276 / -138 | -0.5 | 1 | ---- | ---- | 1242 | CA |
| 6990 | 1400 | constant amplitude | 276 / -138 | -0.5 | 1 | ---- | ---- | 1487 | CA |
| 6991 | 1405 | constant amplitude | 276 / -138 | -0.5 | 1 | ---- | ---- | 3107 | CA |
| 6992 | 1421 | constant amplitude | 276 / -138 | -0.5 | 1 | ---- | ---- | 984 | CA |
| 6993 | 1433 | constant amplitude | 276 / -138 | -0.5 | 1 | ---- | ---- | 1747 | CA |

| Test and coupon # | Comment | Maximum Stress, MPa | 51 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|------|---------------------|------------|------|----|------|--------|--------|----|
| 6994 | 1431 | constant amplitude | 207 / -103 | -0.5 | 2 | ---- | ---- | 12820 | CA |
| 6995 | 1410 | constant amplitude | 207 / -103 | -0.5 | 2 | ---- | ---- | 21667 | CA |
| 6996 | 1415 | constant amplitude | 207 / -103 | -0.5 | 2 | ---- | ---- | 8069 | CA |
| 6997 | 1423 | constant amplitude | 207 / -103 | -0.5 | 2 | ---- | ---- | 9950 | CA |
| 6998 | 1413 | constant amplitude | 207 / -103 | -0.5 | 2 | ---- | ---- | 17384 | CA |
| 6999 | 1411 | constant amplitude | 138 / -69 | -0.5 | 5 | ---- | ---- | 935087 | CA |
| 7000 | 1414 | constant amplitude | 138 / -69 | -0.5 | 5 | ---- | ---- | 437781 | CA |
| 7001 | 1435 | constant amplitude | 138 / -69 | -0.5 | 4 | ---- | ---- | 388817 | CA |
| 7002 | 1136 | constant amplitude | 138 / -69 | -0.5 | 4 | ---- | ---- | 760124 | CA |
| 7894 | 132 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 72 | 7000 | 7072 | WR |
| 7895 | 133 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 40 | 1002 | 1042 | WR |
| 7896 | 134 | 2 block, 10H/3000L | 414 / 241 | 0.1 | 10 | 54 | 15000 | 15054 | WR |
| 7897 | 135 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 230 | 2464 | 2694 | WR |
| 7898 | 136 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 13 | 9000 | 9013 | WR |
| 7899 | 137 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 130 | 120 | 250 | WR |
| 7900 | 142 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 22 | 18000 | 18022 | WR |
| 7901 | 143 | 2 block, 10H/1000L | 414 / 241 | 0.1 | 10 | 60 | 5000 | 5060 | WR |
| 7902 | 144 | 2 block, 10H/334L | 414 / 241 | 0.1 | 10 | 117 | 3674 | 3791 | WR |
| 7903 | 145 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 91 | 1008 | 1099 | WR |
| 7904 | 146 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 286 | 280 | 566 | WR |
| 7905 | 149 | 2 block, 10H/52L | 414 / 241 | 0.1 | 10 | 182 | 936 | 1118 | WR |
| 7906 | 150 | 2 block, 10H/52L | 414 / 241 | 0.1 | 10 | 195 | 988 | 1183 | WR |
| 7907 | 154 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 432 | 43000 | 43432 | WR |
| 7908 | 155 | 2 block, 10H/112L | 328 / 207 | 0.1 | 10 | 1077 | 11984 | 13061 | WR |
| 7909 | 156 | 2 block, 10H/9000L | 328 / 207 | 0.1 | 10 | 120 | 92379 | 92499 | WR |
| 7910 | 157 | 2 block, 10H/3000L | 328 / 207 | 0.1 | 10 | 554 | 162287 | 162841 | WR |
| 7911 | 158 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 1840 | 1830 | 3670 | WR |
| 7912 | 159 | 2 block, 10H/334L | 328 / 207 | 0.1 | 10 | 1062 | 35404 | 36466 | WR |
| 7913 | 162 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1432 | 143000 | 144432 | WR |
| 7914 | 163 | 2 block, 10H/112L | 328 / 207 | 0.1 | 10 | 2119 | 23632 | 25751 | WR |
| 7915 | 164 | 2 block, 10H/9000L | 328 / 207 | 0.1 | 10 | 270 | 239206 | 239476 | WR |
| 7916 | 165 | 2 block, 10H/3000L | 328 / 207 | 0.1 | 10 | 406 | 120000 | 120406 | WR |
| 7917 | 166 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 4249 | 4240 | 8489 | WR |
| 7918 | 167 | 2 block, 10H/334L | 328 / 207 | 0.1 | 10 | 932 | 31062 | 31994 | WR |
| 7919 | 170 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 3552 | 3550 | 7102 | WR |
| 7920 | 175 | 2 block, 10H/667L | 328 / 207 | 0.1 | 10 | 987 | 65366 | 66353 | WR |
| 7921 | 176 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 349 | 34000 | 34349 | WR |
| 7922 | 177 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 656 | 65000 | 65656 | WR |
| 7923 | 178 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 197 | 19000 | 19197 | WR |
| 7924 | 180 | 2 block, 20H/10L | 328 / 207 | 0.1 | 10 | 2418 | 1200 | 3618 | WR |
| 7925 | 181 | 2 block, 10H/250L | 328 / 207 | 0.1 | 10 | 2207 | 54750 | 56957 | WR |
| 7926 | 182 | 2 block, 10H/40L | 328 / 207 | 0.1 | 10 | 2419 | 9640 | 12059 | WR |
| 7927 | 183 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 510 | 50906 | 51416 | WR |
| 7928 | 184 | 2 block, 10H/667L | 328 / 207 | 0.1 | 10 | 359 | 23345 | 23704 | WR |
| 7929 | 186 | 2 block, 10H/33000L | 328 / 207 | 0.1 | 10 | 106 | 330000 | 330106 | WR |
| 7930 | 187 | 2 block, 10H/33000L | 328 / 207 | 0.1 | 10 | 42 | 165000 | 165042 | WR |
| 7931 | 188 | 2 block, 10H/50000L | 328 / 207 | 0.1 | 10 | 30 | 139982 | 140012 | WR |

| Test and coupon # | | Comment | Maximum Stress, MPa | 52 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|---------------------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | | R value | Freq Hz | | | | |
| 7932 | 189 | 2 block, 10H/60000L | 328 / 207 | 0.1 | 10 | 50 | 295894 | 295944 | WR |
| 7933 | 190 | 2 block, 10H/20000L | 328 / 207 | 0.1 | 10 | 150 | 297672 | 297822 | WR |
| 7934 | 191 | 2 block, 10H/50000L | 328 / 207 | 0.1 | 10 | 30 | 101013 | 101043 | WR |
| 7935 | 192 | 2 block, 10H/33000L | 328 / 207 | 0.1 | 10 | 50 | 158561 | 158611 | WR |
| 7936 | 193 | 2 block, 10H/60000L | 328 / 207 | 0.1 | 10 | 20 | 91339 | 91359 | WR |
| 7937 | 194 | 2 block, 10H/1000L | 328 / 241 | 0.1 | 10 | 140 | 13016 | 13156 | WR |
| 7938 | 195 | 2 block, 10H/3000L | 328 / 241 | 0.1 | 10 | 150 | 44460 | 44610 | WR |
| 7939 | 196 | 2 block, 10H/5000L | 328 / 241 | 0.1 | 10 | 40 | 17361 | 17401 | WR |
| 7940 | 198 | 2 block, 10H/500L | 328 / 241 | 0.1 | 10 | 250 | 12114 | 12364 | WR |
| 7941 | 199 | 2 block, 10H/100L | 328 / 241 | 0.1 | 10 | 364 | 3600 | 3964 | WR |
| 7942 | 200 | 2 block, 10H/10L | 328 / 241 | 0.1 | 10 | 1357 | 1350 | 2707 | WR |
| 7943 | 201 | 2 block, 10H/500L | 328 / 241 | 0.1 | 10 | 100 | 4774 | 4874 | WR |
| 7944 | 202 | 2 block, 10H/1000L | 328 / 241 | 0.1 | 10 | 100 | 9359 | 9459 | WR |
| 7945 | 203 | 2 block, 10H/5000L | 328 / 241 | 0.1 | 10 | 40 | 15564 | 15604 | WR |
| 7946 | 204 | 2 block, 10H/3000L | 328 / 241 | 0.1 | 10 | 110 | 30522 | 30632 | WR |
| 7947 | 205 | 2 block, 0H/100L | 241 | 0.1 | 10 | ---- | ---- | 15680 | WR |
| 7948 | 206 | 2 block, 10H/0L | 328 | 0.1 | 10 | ---- | ---- | 1339 | WR |
| 7949 | 211 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 98 | 90 | 188 | WR |
| 7950 | 212 | 2 block, 10H/10L | 414 / 241 | 0.1 | 10 | 72 | 70 | 142 | WR |
| 7951 | 215 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 17 | 9000 | 9017 | WR |
| 7952 | 275 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 274 | 3024 | 3298 | WR |
| 7953 | 300 | 2 block, 10H/9000L | 414 / 241 | 0.1 | 10 | 40 | 27155 | 27195 | WR |
| 7954 | 304 | 2 block, 10H/112L | 414 / 241 | 0.1 | 10 | 312 | 3472 | 3784 | WR |
| 7955 | 307 | 2 block, 10H/90L | 414 / 241 | 0.1 | 10 | 44 | 360 | 404 | WR |
| 7956 | 209 | 2 block, 10H/10L | 328 / 241 | 0.1 | 10 | 583 | 580 | 1163 | WR |
| 7957 | 210 | 2 block, 10H/10L | 328 / 241 | 0.1 | 10 | 1815 | 1810 | 3625 | WR |
| 7958 | 217 | 2 block, 10H/3000L | 328 / 241 | 0.1 | 10 | 60 | 17063 | 17123 | WR |
| 7959 | 213 | 2 block, 10H/0L | 328 | 0.1 | 10 | ---- | ---- | 3306 | WR |
| 7960 | 214 | 2 block, 10H/0L | 328 | 0.1 | 10 | ---- | ---- | 2078 | WR |
| 7961 | 207 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 2163 | 2160 | 4323 | WR |
| 7962 | 208 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 2326 | 2320 | 4646 | WR |
| 7963 | 216 | 2 block, 10H/9000L | 328 / 207 | 0.1 | 10 | 85 | 72000 | 72085 | WR |
| 7964 | 218 | 2 block, 10H/3000L | 328 / 207 | 0.1 | 10 | 110 | 31739 | 31849 | WR |
| 7965 | 219 | 2 block, 10H/5000L | 328 / 207 | 0.1 | 10 | 80 | 39441 | 39521 | WR |
| 7966 | 229 | 2 block, 10H/60000L | 328 / 207 | 0.1 | 10 | 20 | 61684 | 61704 | WR |
| 7967 | 230 | 2 block, 10H/50000L | 328 / 207 | 0.1 | 10 | 70 | 319095 | 319165 | WR |
| 7968 | 232 | 2 block, 10H/9000L | 328 / 207 | 0.1 | 10 | 100 | 81000 | 81100 | WR |
| 7969 | 233 | 2 block, 10H/50000L | 328 / 207 | 0.1 | 10 | 50 | 202625 | 202675 | WR |
| 7970 | 234 | 2 block, 10H/9000L | 328 / 207 | 0.1 | 10 | 210 | 180000 | 180210 | WR |
| 7971 | 235 | 2 block, 10H/33000L | 328 / 207 | 0.1 | 10 | 30 | 82555 | 82585 | WR |
| 7972 | 246 | 2 block, 10H/10L | 241 / 207 | 0.1 | 10 | 67370 | 67365 | 134735 | WR |
| 7973 | 247 | 2 block, 10H/9000L | 241 / 207 | 0.1 | 10 | 600 | 535083 | 535683 | WR |
| 7974 | 248 | 2 block, 10H/33000L | 241 / 207 | 0.1 | 10 | 100 | 307196 | 307296 | WR |
| 7975 | 249 | 2 block, 10H/60000L | 241 / 207 | 0.1 | 10 | 30 | 137575 | 137605 | WR |
| 7976 | 250 | 2 block, 10H/9000L | 241 / 207 | 0.1 | 10 | 580 | 518806 | 519386 | WR |
| 7977 | 251 | 2 block, 10H/60000L | 241 / 207 | 0.1 | 10 | 40 | 198456 | 198496 | WR |
| 7978 | 252 | 2 block, 10H/10L | 241 / 207 | 0.1 | 10 | 37306 | 37300 | 74606 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 53 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|-----|---------------------|-----------|-----|----|-------|--------|--------|----------|
| 7979 | 253 | 2 block, 10H/9000L | 241 / 207 | 0.1 | 10 | 410 | 366273 | 366683 | WR |
| 7980 | 254 | 2 block, 10H/33000L | 241 / 207 | 0.1 | 10 | 90 | 274261 | 274351 | WR |
| 7981 | 255 | 2 block, 20H/10L | 241 / 207 | 0.1 | 10 | 26342 | 13170 | 39512 | WR |
| 7982 | 256 | 2 block, 10H/10L | 414 / 328 | 0.1 | 10 | 42 | 40 | 82 | WR |
| 7983 | 257 | 2 block, 10H/1000L | 414 / 328 | 0.1 | 10 | 10 | 603 | 613 | WR |
| 7984 | 258 | 2 block, 10H/100L | 414 / 328 | 0.1 | 10 | 20 | 145 | 165 | WR |
| 7985 | 259 | 2 block, 10H/100L | 414 / 328 | 0.1 | 10 | 39 | 300 | 339 | WR |
| 7986 | 260 | 2 block, 10H/1000L | 414 / 328 | 0.1 | 10 | 20 | 1268 | 1288 | WR |
| 7987 | 310 | 2 block, 10H/10L | 414 / 328 | 0.1 | 10 | 141 | 140 | 281 | WR |
| 7988 | 311 | 2 block, 10H/90L | 414 / 328 | 0.1 | 10 | 173 | 1530 | 1703 | WR |
| 7989 | 312 | 2 block, 10H/990L | 414 / 328 | 0.1 | 10 | 10 | 517 | 527 | WR |
| 7990 | 261 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 519 | 510 | 1029 | WR |
| 7991 | 263 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 942 | 94100 | 95042 | WR |
| 7992 | 264 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 90 | 8900 | 8990 | WR |
| 7993 | 265 | 2 block, 10H/10000L | 328 / 207 | 0.1 | 10 | 120 | 110187 | 110307 | WR |
| 7994 | 267 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 340 | 33037 | 33377 | WR |
| 7995 | 279 | 2 block, 10H/5000L | 328 / 241 | 0.1 | 10 | 150 | 71692 | 71842 | WR |
| 7996 | 280 | 2 block, 10H/1000L | 328 / 241 | 0.1 | 10 | 80 | 7892 | 7972 | WR |
| 7997 | 350 | 2 block, 10H/10L | 328 / 241 | 0.1 | 10 | 5749 | 5740 | 11489 | WR |
| 7998 | 351 | 2 block, 10H/90L | 328 / 241 | 0.1 | 10 | 1899 | 17010 | 18909 | WR |
| 7999 | 281 | 2 block, 10H/100L | 328 / 207 | 0.1 | 10 | 2543 | 25400 | 27943 | WR |
| 8000 | 276 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 359 | 35000 | 35359 | WR |
| 8001 | 287 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 408 | 40800 | 41208 | random1 |
| 8002 | 288 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 288 | 28840 | 29128 | random1 |
| 8003 | 289 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 81 | 8100 | 8181 | onecycle |
| 8004 | 290 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 175 | 17448 | 17623 | random1 |
| 8005 | 291 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 610 | 60710 | 61320 | WR |
| 8006 | 294 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 540 | 53027 | 53567 | WR |
| 8007 | 295 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 442 | 44166 | 44608 | random1 |
| 8008 | 314 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 335 | 33528 | 33863 | random2 |
| 8009 | 315 | 2 block, 10H/10L | 328 / 207 | 0.1 | 10 | 2174 | 2170 | 4344 | WR |
| 8010 | 316 | 2 block, 10H/90L | 328 / 207 | 0.1 | 10 | 1762 | 15840 | 17602 | WR |
| 8011 | 317 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 464 | 46400 | 46864 | random2 |
| 8012 | 320 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 301 | 30100 | 30401 | onecycle |
| 8013 | 322 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 441 | 44103 | 44544 | random2 |
| 8014 | 324 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 127 | 12700 | 12827 | onecycle |
| 8015 | 327 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 480 | 48211 | 48691 | random2 |
| 8016 | 328 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 799 | 79000 | 79799 | WR |
| 8017 | 330 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 379 | 37932 | 38311 | random2 |
| 8018 | 331 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 980 | 98000 | 98980 | random3 |
| 8019 | 332 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 278 | 27800 | 28078 | onecycle |
| 8020 | 333 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 510 | 51000 | 51510 | random3 |
| 8021 | 334 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 591 | 59082 | 59673 | random2 |
| 8022 | 353 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 350 | 35002 | 35352 | random3 |
| 8023 | 354 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 832 | 83248 | 84080 | random2 |
| 8024 | 368 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 551 | 55063 | 55614 | onecycle |
| 8025 | 369 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 312 | 31000 | 31312 | WR |

| Test and coupon # | | Comment | Maximum Stress, MPa | 54 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|---------------------|---------------------|---------------|---------|---------------|--------------|--------------|----------|
| 8026 | 370 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 584 | 58400 | 58984 | onecycle |
| 8027 | 371 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 257 | 25700 | 25957 | onecycle |
| 8028 | 372 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 750 | 75006 | 75756 | random3 |
| 8029 | 373 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 479 | 47874 | 48353 | random3 |
| 8030 | 374 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1470 | 146350 | 147820 | WR |
| 8031 | 375 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 561 | 56122 | 56683 | random3 |
| 8032 | 377 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 670 | 67000 | 67670 | onecycle |
| 8033 | 379 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 606 | 60600 | 61206 | onecycle |
| 8034 | 380 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 699 | 69875 | 70574 | random3 |
| 8035 | 381 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 630 | 63002 | 63632 | random3 |
| 8036 | 382 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 301 | 30100 | 30401 | onecycle |
| 8037 | 384 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 681 | 68100 | 68781 | onecycle |
| 8038 | 385 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 364 | 36388 | 36752 | random3 |
| 8039 | 386 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 454 | 45000 | 45454 | WR |
| 8040 | 387 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 460 | 46001 | 46461 | random3 |
| 8041 | 388 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 1698 | 169800 | 171498 | onecycle |
| 8042 | 389 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 510 | 51005 | 51515 | random3 |
| 8043 | 390 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 869 | 86907 | 87776 | random3 |
| 8044 | 392 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 755 | 75500 | 76255 | onecycle |
| 8045 | 393 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 407 | 40700 | 41107 | onecycle |
| 8046 | 394 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 720 | 71039 | 71759 | WR |
| 8047 | 395 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 306 | 30600 | 30906 | onecycle |
| 8048 | 396 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 800 | 80004 | 80804 | random3 |
| 8049 | 397 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 993 | 99000 | 99993 | WR |
| 8050 | 398 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 369 | 36860 | 37229 | random3 |
| 8051 | 399 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 598 | 59800 | 60398 | WR |
| 8052 | 411 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 460 | 46000 | 46460 | random3 |
| 8053 | 432 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 447 | 44600 | 45047 | WR |
| 8054 | 437 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1282 | 128000 | 129282 | WR |
| 8055 | 277 | 2 block, 10H/1000L | 241 / 207 | 0.1 | 10 | 1320 | 131237 | 132557 | WR |
| 8056 | 278 | 2 block, 10H/100L | 241 / 207 | 0.1 | 10 | 34940 | 349366 | 384306 | WR |
| 8057 | 285 | 2 block, 10H/1000L | 241 / 207 | 0.1 | 10 | 7060 | 706997 | 714057 | WR |
| 8058 | 299 | 2 block, 10H/990L | 241 / 207 | 0.1 | 10 | 5970 | 590898 | 596868 | WR |
| 8059 | 301 | 2 block, 10H/90L | 241 / 207 | 0.1 | 10 | 10170 | 91462 | 101632 | WR |
| 8060 | 303 | 2 block, 10H/49990L | 241 / 207 | 0.1 | 10 | 60 | 264911 | 264971 | WR |
| 8061 | 318 | 2 block, 10H/90L | 241 / 207 | 0.1 | 10 | 1610 | 14403 | 16013 | WR |
| 8062 | 319 | 2 block, 10H/990L | 241 / 207 | 0.1 | 10 | 1980 | 195842 | 197822 | WR |
| 8063 | 339 | 2 block, 10H/1000L | 328 / 207 | 0.5 | 10 | 1630 | 16200 | 17830 | WR |
| 8064 | 348 | 2 block, 10H/1000L | 328 / 207 | 0.5 | 10 | 1790 | 179000 | 180790 | WR |
| 8065 | 352 | 2 block, 10H/1000L | 328 / 207 | 0.5 | 10 | 1710 | 171000 | 172710 | WR |
| 8066 | 400 | 2 block, 10H/10L | 414 / 328 | 0.5 | 10 | 1292 | 1290 | 2582 | WR |
| 8067 | 401 | 2 block, 10H/50L | 414 / 328 | 0.5 | 10 | 879 | 4350 | 5229 | WR |
| 8068 | 402 | 2 block, 10H/100L | 414 / 328 | 0.5 | 10 | 560 | 5576 | 6136 | WR |
| 8069 | 403 | 2 block, 10H/1000L | 414 / 328 | 0.5 | 10 | 165 | 16000 | 16165 | WR |
| 8070 | 404 | 2 block, 10H/10L | 414 / 328 | 0.5 | 10 | 2266 | 2260 | 4526 | WR |
| 8071 | 405 | 2 block, 10H/50L | 414 / 328 | 0.5 | 10 | 2352 | 11750 | 14102 | WR |
| 8072 | 406 | 2 block, 10H/100L | 414 / 328 | 0.5 | 10 | 872 | 8700 | 9572 | WR |

| Test and coupon # | | Comment | Maximum Stress, MPa | 55 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|---------------------|---------------------|---------------|---------|---------------|--------------|--------------|----------|
| 8073 | 407 | 2 block, 10H/1000L | 414 / 328 | 0.5 | 10 | 240 | 23256 | 23496 | WR |
| 8074 | 413 | 2 block, 10H/10L | 414 / 241 | 0.5 | 10 | 3233 | 3230 | 6463 | WR |
| 8075 | 414 | 2 block, 10H/1000L | 414 / 241 | 0.5 | 10 | 267 | 26000 | 26267 | WR |
| 8076 | 415 | 2 block, 10H/10000L | 414 / 241 | 0.5 | 10 | 175 | 170000 | 170175 | WR |
| 8077 | 419 | 2 block, 10H/10000L | 414 / 241 | 0.5 | 10 | 91 | 90000 | 90091 | WR |
| 8078 | 420 | 2 block, 10H/1000L | 414 / 241 | 0.5 | 10 | 258 | 25000 | 25258 | WR |
| 8079 | 421 | 2 block, 10H/10L | 414 / 241 | 0.5 | 10 | 2800 | 2800 | 5600 | WR |
| 8080 | 422 | 2 block, 10H/10L | 328 / 241 | 0.5 | 10 | 14325 | 14320 | 28645 | WR |
| 8081 | 423 | 2 block, 10H/100L | 328 / 241 | 0.5 | 10 | 22439 | 224300 | 246739 | WR |
| 8082 | 424 | 2 block, 10H/1000L | 328 / 241 | 0.5 | 10 | 1939 | 193000 | 194939 | WR |
| 8083 | 425 | 2 block, 10H/1000L | 328 / 241 | 0.5 | 10 | 1481 | 148000 | 149481 | WR |
| 8084 | 427 | 2 block, 10H/100L | 328 / 241 | 0.5 | 10 | 16397 | 163900 | 180297 | WR |
| 8085 | 428 | 2 block, 10H/10L | 328 / 241 | 0.5 | 10 | 47833 | 47830 | 95663 | WR |
| 8086 | 345 | 2 block, 10H/90L | 328 / 241 | 0.5 | 10 | 80180 | 721620 | 801800 | WR |
| 8087 | 438 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 432 | 43206 | 43638 | rand2 |
| 8088 | 444 | 2 block, 10H/1000L | 414 / 261 | 0.1 | 10 | 24 | 2383 | 2407 | rand5 |
| 8089 | 445 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 156 | 15629 | 15785 | rand5 |
| 8090 | 446 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 291 | 29134 | 29425 | rand5 |
| 8091 | 447 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 810 | 81086 | 81896 | rand5 |
| 8092 | 448 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 231 | 23134 | 23365 | rand5 |
| 8093 | 449 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 331 | 33134 | 33465 | rand5 |
| 8094 | 450 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 201 | 20127 | 20328 | rand5 |
| 8095 | 451 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 136 | 13576 | 13712 | rand5 |
| 8096 | 452 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 369 | 36851 | 37220 | rand5 |
| 8097 | 453 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 125 | 12469 | 12594 | rand5 |
| 8098 | 454 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 509 | 50912 | 51421 | rand5 |
| 8099 | 455 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 289 | 28912 | 29201 | rand5 |
| 8100 | 456 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 269 | 26851 | 27120 | rand5 |
| 8101 | 457 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 122 | 12209 | 12331 | rand5 |
| 8102 | 483 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 349 | 34949 | 35298 | rand5 |
| 8103 | 526 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 470 | 46982 | 47452 | rand5 |
| 8104 | 529 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 119 | 11851 | 11970 | rand5 |
| 8105 | 532 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 131 | 13134 | 13265 | rand5 |
| 8106 | 535 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 105 | 10548 | 10653 | rand5 |
| 8107 | 538 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 141 | 14087 | 14228 | rand5 |
| 8108 | 541 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 122 | 12209 | 12331 | rand5 |
| 8109 | 544 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 53 | 5342 | 5395 | rand5 |
| 8110 | 547 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 463 | 46342 | 46805 | rand5 |
| 8111 | 550 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 70 | 6982 | 7052 | rand5 |
| 8112 | 553 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 206 | 20576 | 20782 | rand5 |
| 8113 | 480 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 469 | 46900 | 47369 | onecycle |
| 8114 | 481 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 528 | 52876 | 53404 | random2 |
| 8115 | 482 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 320 | 32007 | 32327 | random3 |
| 8116 | 524 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 227 | 22674 | 22901 | onecycle |
| 8117 | 525 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 340 | 34008 | 34348 | load5 |
| 8118 | 527 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 393 | 39300 | 39693 | onecycle |
| 8119 | 528 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 192 | 19209 | 19401 | load5 |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 56 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|--------------------|---------------------|---------|------------|---------------|--------------|--------------|----------|
| 8120 | 530 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 233 | 23300 | 23533 | onecycle |
| 8121 | 531 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1150 | 115005 | 116155 | load5 |
| 8122 | 533 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 550 | 55019 | 55569 | onecycle |
| 8123 | 534 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 240 | 24008 | 24248 | load5 |
| 8124 | 536 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 261 | 26153 | 26414 | onecycle |
| 8125 | 537 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 220 | 22001 | 22221 | load5 |
| 8126 | 539 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 469 | 46900 | 47369 | onecycle |
| 8127 | 540 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 58 | 5834 | 5892 | load5 |
| 8128 | 542 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 239 | 23900 | 24139 | onecycle |
| 8129 | 543 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 260 | 25951 | 26211 | load5 |
| 8130 | 545 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 241 | 24060 | 24301 | onecycle |
| 8131 | 546 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 179 | 17908 | 18087 | load5 |
| 8132 | 548 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 198 | 19800 | 19998 | onecycle |
| 8133 | 549 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 310 | 31007 | 31317 | load5 |
| 8134 | 551 | 2 block, 1H/100L | 328 / 207 | 0.1 | 10 | 138 | 13767 | 13905 | onecycle |
| 8135 | 552 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 254 | 25393 | 25647 | load5 |
| 8136 | 593 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1020 | 102006 | 103026 | load5 |
| 8137 | 595 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 410 | 41006 | 41416 | load5 |
| 8138 | 597 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 1850 | 185004 | 186854 | load5 |
| 8139 | 599 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 2120 | 212007 | 214127 | load5 |
| 8140 | 601 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 490 | 49001 | 49491 | load5 |
| 8141 | 603 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 500 | 50008 | 50508 | load5 |
| 8142 | 594 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 379 | 37000 | 37379 | WR |
| 8143 | 596 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 310 | 30570 | 30880 | WR |
| 8144 | 598 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 324 | 32000 | 32324 | WR |
| 8145 | 600 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 853 | 85000 | 85853 | WR |
| 8146 | 602 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 310 | 30952 | 31262 | WR |
| 8147 | 604 | 2 block, 10H/1000L | 328 / 207 | 0.1 | 10 | 390 | 38919 | 39309 | WR |
| 8148 | 657 | 2 block, 10H/90L | 414 / 241 | 0.5 | 10 | 490 | 4411 | 4901 | load12 |
| 8149 | 658 | 2 block, 10H/90L | 414 / 241 | 0.5 | 10 | 1130 | 10178 | 11308 | load12 |
| 8150 | 665 | 2 block, 10H/90L | 328 / 241 | 0.5 | 10 | 3230 | 29073 | 32303 | load15 |
| 8151 | 659 | 2 block, 10H/990L | 414 / 241 | 0.5 | 10 | 310 | 30695 | 31005 | load13 |
| 8152 | 660 | 2 block, 10H/990L | 414 / 241 | 0.5 | 10 | 440 | 43565 | 44005 | load13 |
| 8153 | 662 | 2 block, 10H/990L | 328 / 241 | 0.5 | 10 | 2800 | 277206 | 280006 | load14 |
| 8154 | 663 | 2 block, 10H/990L | 328 / 241 | 0.5 | 10 | 3360 | 332645 | 336005 | load14 |
| 8155 | 669 | 2 block, 10H/990L | 414 / 241 | 0.5 | 10 | 70 | 6934 | 7004 | load18 |
| 8156 | 667 | 2 block, 10H/9990L | 414 / 241 | 0.5 | 10 | 120 | 119888 | 120008 | load16 |
| 8157 | 668 | 2 block, 10H/9990L | 414 / 241 | 0.5 | 10 | 41 | 41388 | 41429 | load16 |
| 8158 | 670 | 2 block, 10H/9990L | 414 / 241 | 0.5 | 10 | 70 | 69935 | 70005 | load16 |
| 8159 | 674 | 2 block, 10H/9990L | 328 / 241 | 0.5 | 10 | 350 | 349656 | 350006 | load17 |
| 8160 | 675 | 2 block, 10H/9990L | 328 / 241 | 0.5 | 10 | 160 | 160773 | 160933 | load17 |
| 8161 | 836 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 3030 | 303000 | 306030 | comp1 |
| 8162 | 837 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 2500 | 250000 | 252500 | comp1 |
| 8163 | 838 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 2200 | 220005 | 222205 | comp1 |
| 8164 | 839 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 4590 | 459006 | 463596 | comp1 |
| 8165 | 840 | 2 block, 10H/100L | -276 / -207 | 10 | 10 | 2651 | 26508 | 29159 | comp2 |
| 8166 | 841 | 2 block, 10H/100L | -276 / -207 | 10 | 10 | 8311 | 83107 | 91418 | comp2 |

| Test and coupon # | Comment | Maximum Stress, MPa | 57 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|-----|---------------------|-------------|----|----|-------|---------|---------|--------|
| 8167 | 842 | 2 block, 10H/100L | -276 / -207 | 10 | 10 | 9890 | 98903 | 108793 | comp2 |
| 8168 | 843 | 2 block, 10H/100L | -276 / -207 | 10 | 10 | 10920 | 109206 | 120126 | comp2 |
| 8169 | 844 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 1684 | 1684 | 3368 | comp3 |
| 8170 | 845 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 11151 | 11151 | 22302 | comp3 |
| 8171 | 846 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 4374 | 4374 | 8748 | comp3 |
| 8172 | 847 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 290 | 290007 | 290297 | comp4 |
| 8173 | 848 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 330 | 330003 | 330333 | comp4 |
| 8174 | 849 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 2030 | 2030002 | 2032032 | comp4 |
| 8175 | 850 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 630 | 63000 | 63630 | comp1 |
| 8176 | 851 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 7430 | 743010 | 750440 | comp1 |
| 8177 | 852 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 4780 | 478000 | 482780 | comp1 |
| 8178 | 853 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 400 | 40007 | 40407 | comp1 |
| 8179 | 854 | 2 block, 10H/1000L | -276 / -207 | 10 | 10 | 680 | 68001 | 68681 | comp1 |
| 8180 | 870 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 1171 | 1170 | 2341 | comp3 |
| 8181 | 871 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 2675 | 2674 | 5349 | comp3 |
| 8182 | 872 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 1685 | 1684 | 3369 | comp3 |
| 8183 | 873 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 3362 | 3362 | 6724 | comp3 |
| 8184 | 874 | 2 block, 10H/10L | -276 / -207 | 10 | 10 | 9812 | 9812 | 19624 | comp3 |
| 8185 | 875 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 990 | 990000 | 990990 | comp4 |
| 8186 | 876 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 1398 | 1397653 | 1399051 | comp4 |
| 8187 | 877 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 153 | 155364 | 155517 | comp4 |
| 8188 | 878 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 728 | 727806 | 728534 | comp4 |
| 8189 | 879 | 2 block, 10H/10000L | -276 / -207 | 10 | 10 | 640 | 640008 | 640648 | comp4 |
| 8190 | 930 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 324 | 3200 | 3524 | r10ld1 |
| 8191 | 931 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 1080 | 10800 | 11880 | r10ld1 |
| 8192 | 932 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 670 | 6700 | 7370 | r10ld1 |
| 8193 | 933 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 212 | 2100 | 2312 | r10ld1 |
| 8194 | 934 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 1815 | 18100 | 19915 | r10ld1 |
| 8195 | 935 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 427 | 4200 | 4627 | r10ld1 |
| 8196 | 936 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 462 | 4600 | 5062 | r10ld1 |
| 8197 | 937 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 877 | 8700 | 9577 | r10ld1 |
| 8198 | 938 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 90 | 900 | 990 | r10ld1 |
| 8199 | 939 | 2 block, 10H/100L | -328 / -207 | 10 | 8 | 505 | 5000 | 5505 | r10ld1 |
| 8200 | 940 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 546 | 540 | 1086 | r10ld2 |
| 8201 | 941 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 2053 | 2050 | 4103 | r10ld2 |
| 8202 | 942 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 1235 | 1230 | 2465 | r10ld2 |
| 8203 | 943 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 452 | 450 | 902 | r10ld2 |
| 8204 | 944 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 1402 | 1400 | 2802 | r10ld2 |
| 8205 | 945 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 334 | 330 | 664 | r10ld2 |
| 8206 | 946 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 525 | 520 | 1045 | r10ld2 |
| 8207 | 947 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 239 | 230 | 469 | r10ld2 |
| 8208 | 948 | 2 block, 10H/10L | -328 / -207 | 10 | 8 | 690 | 690 | 1380 | r10ld2 |
| 8209 | 950 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 21 | 20000 | 20021 | r10ld3 |
| 8210 | 951 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 139 | 130000 | 130139 | r10ld3 |
| 8211 | 952 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 688 | 680000 | 680688 | r10ld3 |
| 8212 | 953 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 272 | 270000 | 270272 | r10ld3 |
| 8213 | 956 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 73 | 70000 | 70073 | r10ld3 |

| Test and coupon # | Comment | Maximum Stress, MPa | 58 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|------|---------------------|-------------|----|---|-------|--------|--------|--------|
| 8214 | 957 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 12 | 10000 | 10012 | r10ld3 |
| 8215 | 958 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 31 | 30000 | 30031 | r10ld3 |
| 8216 | 959 | 2 block, 10H/10000L | -328 / -207 | 10 | 8 | 80 | 80004 | 80084 | r10ld3 |
| 8217 | 960 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 171 | 17000 | 17171 | load5 |
| 8218 | 961 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 128 | 12000 | 12128 | load5 |
| 8219 | 962 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 84 | 8000 | 8084 | load5 |
| 8220 | 963 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 244 | 24000 | 24244 | load5 |
| 8221 | 964 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 87 | 8000 | 8087 | load5 |
| 8222 | 965 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 254 | 25000 | 25254 | load5 |
| 8223 | 966 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 69 | 6000 | 6069 | load5 |
| 8224 | 967 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 81 | 8000 | 8081 | load5 |
| 8225 | 968 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 1220 | 122000 | 123220 | load5 |
| 8226 | 969 | 2 block, 10H/1000L | -328 / -207 | 10 | 8 | 591 | 590000 | 590591 | load5 |
| 8227 | 1087 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 25430 | 25420 | 50850 | WR |
| 8228 | 1088 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 16536 | 16530 | 33066 | WR |
| 8229 | 1089 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 11467 | 11460 | 22927 | WR |
| 8230 | 1090 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 8779 | 8770 | 17549 | WR |
| 8231 | 1091 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 18018 | 18010 | 36028 | WR |
| 8232 | 1092 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 16674 | 16670 | 33344 | WR |
| 8233 | 1093 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 24781 | 24780 | 49561 | WR |
| 8234 | 1094 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 34040 | 34030 | 68070 | WR |
| 8235 | 1095 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 19245 | 19240 | 38485 | WR |
| 8236 | 1096 | 2 block, 10H/10L | 172 / 103 | -1 | 5 | 22190 | 22180 | 44370 | WR |
| 8237 | 1097 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 7581 | 75800 | 83381 | WR |
| 8238 | 1098 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 14380 | 143781 | 158161 | WR |
| 8239 | 1099 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 6405 | 64000 | 70405 | WR |
| 8240 | 1100 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 13142 | 131400 | 144542 | WR |
| 8241 | 1101 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 7191 | 71900 | 79091 | WR |
| 8242 | 1102 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 5291 | 52900 | 58191 | WR |
| 8243 | 1103 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 10150 | 101488 | 111638 | WR |
| 8244 | 1104 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 4283 | 42800 | 47083 | WR |
| 8245 | 1105 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 7100 | 70018 | 77118 | WR |
| 8246 | 1106 | 2 block, 10H/100L | 172 / 103 | -1 | 5 | 4003 | 40000 | 44003 | WR |
| 8247 | 1107 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 1671 | 167000 | 168671 | WR |
| 8248 | 1108 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2470 | 246518 | 248988 | WR |
| 8249 | 1109 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2425 | 242000 | 244425 | WR |
| 8250 | 1110 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 1641 | 164000 | 165641 | WR |
| 8251 | 1111 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2836 | 283000 | 285836 | WR |
| 8252 | 1112 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 3848 | 384000 | 387848 | WR |
| 8253 | 1113 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2621 | 262000 | 264621 | WR |
| 8254 | 1114 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2600 | 259000 | 261600 | WR |
| 8255 | 1115 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 2110 | 210319 | 212429 | WR |
| 8256 | 1116 | 2 block, 10H/1000L | 172 / 103 | -1 | 5 | 1050 | 104409 | 105459 | WR |
| 8257 | 1117 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 860 | 853094 | 853954 | WR |
| 8258 | 1118 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 430 | 423228 | 423658 | WR |
| 8259 | 1119 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 960 | 950993 | 951953 | WR |
| 8260 | 1120 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 760 | 750198 | 750958 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 59 R value | Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|
|-------------------|---------|---------------------|---------------|---------|---------------|--------------|--------------|---------|

| | | | | | | | | | |
|------|------|---------------------|-----------|----|---|-----|--------|--------|----|
| 8261 | 1121 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 770 | 762262 | 763032 | WR |
| 8262 | 1122 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 550 | 542948 | 543498 | WR |
| 8263 | 1123 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 750 | 749389 | 750139 | WR |
| 8264 | 1124 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 690 | 683831 | 684521 | WR |
| 8265 | 1125 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 470 | 464239 | 464709 | WR |
| 8266 | 1126 | 2 block, 10H/10000L | 172 / 103 | -1 | 5 | 700 | 600096 | 600796 | WR |

3 Block Tests, Tests numbered 8267 through 8277

| | | | | | | | | | |
|------|-----|----------------|-------------|-----|----|------|------|------|----|
| 8267 | 179 | 10H/100M/1000L | 414/328/207 | 0.1 | 10 | 62 | 6000 | 6662 | WR |
| 8268 | 439 | 10H/10M/100L | 414/328/241 | 0.1 | 10 | 394 | 390 | 4684 | WR |
| 8269 | 440 | 10M/10H/100L | 328/414/241 | 0.1 | 10 | 820 | 811 | 9731 | WR |
| 8270 | 441 | 10H/100L/10M | 414/241/328 | 0.1 | 10 | 219 | 2100 | 2529 | WR |
| 8271 | 442 | 10H/10M/100L | 414/328/241 | 0.1 | 10 | 270 | 260 | 3130 | WR |
| 8272 | 443 | 100L/10M/10H | 241/328/414 | 0.1 | 10 | 4200 | 420 | 5037 | WR |
| 8273 | 489 | 10H/10M/100L | 414/328/241 | 0.1 | 10 | 113 | 110 | 1323 | WR |
| 8274 | 490 | 10M/10H/100L | 328/414/241 | 0.1 | 10 | 180 | 174 | 2054 | WR |
| 8275 | 491 | 100L/10M/10H | 241/328/414 | 0.1 | 10 | 160 | 1600 | 1920 | WR |
| 8276 | 492 | 10M/10H/100L | 414/328/241 | 0.1 | 10 | 120 | 123 | 1443 | WR |
| 8277 | 493 | 100L/10M/10H | 241/328/414 | 0.1 | 10 | 160 | 1634 | 1954 | WR |

Wisperx and Modified Spectrum Tests

| | | | | | | | | | |
|------|------|---------|-----|----|----|------|------|----------|---------|
| 8278 | 654 | Wisperx | 410 | SP | 10 | ---- | ---- | 14090 | Wisperx |
| 8279 | 656 | Wisperx | 353 | SP | 10 | ---- | ---- | 13404 | Wisperx |
| 8280 | 676 | Wisperx | 410 | SP | 10 | ---- | ---- | 15090 | Wisperx |
| 8281 | 661 | Wisperx | 326 | SP | 10 | ---- | ---- | 160725 | Wisperx |
| 8906 | 1009 | Wisperx | 188 | SP | 10 | ---- | ---- | 7484384 | Wisperx |
| 8907 | 1010 | Wisperx | 184 | SP | 10 | ---- | ---- | 14977940 | Runout |
| 8908 | 1011 | Wisperx | 263 | SP | 10 | ---- | ---- | 824525 | Wisperx |
| 8909 | 1012 | Wisperx | 269 | SP | 10 | ---- | ---- | 1707027 | Wisperx |
| 8910 | 1013 | Wisperx | 253 | SP | 8 | ---- | ---- | 1519172 | Wisperx |
| 8911 | 1014 | Wisperx | 251 | SP | 8 | ---- | ---- | 1045051 | Wisperx |
| 8912 | 1015 | Wisperx | 252 | SP | 8 | ---- | ---- | 261291 | Wisperx |
| 8913 | 1017 | Wisperx | 283 | SP | 5 | ---- | ---- | 70139 | Wisperx |
| 8914 | 1018 | Wisperx | 269 | SP | 5 | ---- | ---- | 135228 | Wisperx |
| 8915 | 1019 | Wisperx | 354 | SP | 5 | ---- | ---- | 41142 | Wisperx |
| 8916 | 1020 | Wisperx | 352 | SP | 5 | ---- | ---- | 6944 | Wisperx |
| 8917 | 1021 | Wisperx | 353 | SP | 5 | ---- | ---- | 15792 | Wisperx |
| 8918 | 1022 | Wisperx | 293 | SP | 5 | ---- | ---- | 350506 | Wisperx |
| 8919 | 1023 | Wisperx | 282 | SP | 10 | ---- | ---- | 88602 | Wisperx |
| 8920 | 1024 | Wisperx | 283 | SP | 10 | ---- | ---- | 57179 | Wisperx |
| 8921 | 1025 | Wisperx | 351 | SP | 10 | ---- | ---- | 18584 | Wisperx |
| 8922 | 1026 | Wisperx | 351 | SP | 10 | ---- | ---- | 42339 | Wisperx |
| 8282 | 713 | WisxR01 | 394 | SP | 10 | ---- | ---- | 893 | WisxR01 |
| 8283 | 714 | WisxR01 | 389 | SP | 10 | ---- | ---- | 504 | WisxR01 |
| 8284 | 723 | WisxR01 | 403 | SP | 10 | ---- | ---- | 1227 | WisxR01 |
| 8285 | 740 | WisxR01 | 395 | SP | 10 | ---- | ---- | 620 | WisxR01 |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 60 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|---------|---------------------|---------|------------|---------------|--------------|--------------|---------|
| 8286 | 741 | WisxR01 | 396 | SP | 10 | ---- | ---- | 1120 | WisxR01 |
| 8287 | 742 | WisxR01 | 394 | SP | 10 | ---- | ---- | 818 | WisxR01 |
| 8288 | 743 | WisxR01 | 395 | SP | 10 | ---- | ---- | 624 | WisxR01 |
| 8289 | 786 | WisxR01 | 405 | SP | 10 | ---- | ---- | 1713 | WisxR01 |
| 8290 | 711 | WisxR01 | 322 | SP | 10 | ---- | ---- | 3963 | WisxR01 |
| 8291 | 712 | WisxR01 | 321 | SP | 10 | ---- | ---- | 4457 | WisxR01 |
| 8292 | 724 | WisxR01 | 325 | SP | 10 | ---- | ---- | 4330 | WisxR01 |
| 8293 | 726 | WisxR01 | 322 | SP | 10 | ---- | ---- | 3973 | WisxR01 |
| 8294 | 735 | WisxR01 | 322 | SP | 10 | ---- | ---- | 1977 | WisxR01 |
| 8295 | 736 | WisxR01 | 321 | SP | 10 | ---- | ---- | 11721 | WisxR01 |
| 8296 | 737 | WisxR01 | 322 | SP | 10 | ---- | ---- | 6742 | WisxR01 |
| 8297 | 738 | WisxR01 | 322 | SP | 10 | ---- | ---- | 14445 | WisxR01 |
| 8298 | 790 | WisxR01 | 321 | SP | 10 | ---- | ---- | 12294 | WisxR01 |
| 8299 | 709 | WisxR01 | 237 | SP | 10 | ---- | ---- | 392963 | WisxR01 |
| 8300 | 710 | WisxR01 | 237 | SP | 10 | ---- | ---- | 77859 | WisxR01 |
| 8301 | 716 | WisxR01 | 238 | SP | 10 | ---- | ---- | 201697 | WisxR01 |
| 8302 | 725 | WisxR01 | 239 | SP | 10 | ---- | ---- | 128215 | WisxR01 |
| 8303 | 727 | WisxR01 | 237 | SP | 10 | ---- | ---- | 491135 | WisxR01 |
| 8304 | 728 | WisxR01 | 237 | SP | 10 | ---- | ---- | 116302 | WisxR01 |
| 8305 | 729 | WisxR01 | 237 | SP | 10 | ---- | ---- | 153229 | WisxR01 |
| 8306 | 730 | WisxR01 | 237 | SP | 10 | ---- | ---- | 165568 | WisxR01 |
| 8307 | 794 | WisxR01 | 236 | SP | 10 | ---- | ---- | 104636 | WisxR01 |
| 8308 | 707 | WisxR01 | 204 | SP | 10 | ---- | ---- | 2502591 | WisxR01 |
| 8309 | 708 | WisxR01 | 203 | SP | 10 | ---- | ---- | 1523103 | WisxR01 |
| 8310 | 715 | WisxR01 | 204 | SP | 10 | ---- | ---- | 1231745 | WisxR01 |
| 8311 | 732 | WisxR01 | 203 | SP | 10 | ---- | ---- | 609578 | WisxR01 |
| 8312 | 733 | WisxR01 | 203 | SP | 10 | ---- | ---- | 202727 | WisxR01 |
| 8313 | 734 | WisxR01 | 204 | SP | 10 | ---- | ---- | 2231997 | WisxR01 |
| 8314 | 677 | WisxR05 | 408 | SP | 10 | ---- | ---- | 1874 | WisxR05 |
| 8315 | 678 | WisxR05 | 409 | SP | 10 | ---- | ---- | 2812 | WisxR05 |
| 8316 | 679 | WisxR05 | 409 | SP | 10 | ---- | ---- | 6270 | WisxR05 |
| 8317 | 680 | WisxR05 | 408 | SP | 10 | ---- | ---- | 2768 | WisxR05 |
| 8318 | 682 | WisxR05 | 409 | SP | 10 | ---- | ---- | 2680 | WisxR05 |
| 8319 | 683 | WisxR05 | 408 | SP | 10 | ---- | ---- | 2102 | WisxR05 |
| 8320 | 684 | WisxR05 | 410 | SP | 10 | ---- | ---- | 1397 | WisxR05 |
| 8321 | 685 | WisxR05 | 399 | SP | 10 | ---- | ---- | 956 | WisxR05 |
| 8322 | 686 | WisxR05 | 410 | SP | 10 | ---- | ---- | 3915 | WisxR05 |
| 8323 | 687 | WisxR05 | 325 | SP | 10 | ---- | ---- | 40997 | WisxR05 |
| 8324 | 688 | WisxR05 | 324 | SP | 10 | ---- | ---- | 51690 | WisxR05 |
| 8325 | 689 | WisxR05 | 324 | SP | 10 | ---- | ---- | 28166 | WisxR05 |
| 8326 | 690 | WisxR05 | 324 | SP | 10 | ---- | ---- | 34678 | WisxR05 |
| 8327 | 691 | WisxR05 | 324 | SP | 10 | ---- | ---- | 42728 | WisxR05 |
| 8328 | 692 | WisxR05 | 324 | SP | 10 | ---- | ---- | 42077 | WisxR05 |
| 8329 | 693 | WisxR05 | 326 | SP | 10 | ---- | ---- | 204617 | WisxR05 |
| 8330 | 694 | WisxR05 | 325 | SP | 10 | ---- | ---- | 64030 | WisxR05 |
| 8331 | 695 | WisxR05 | 324 | SP | 10 | ---- | ---- | 61941 | WisxR05 |
| 8332 | 696 | WisxR05 | 324 | SP | 10 | ---- | ---- | 24102 | WisxR05 |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 61 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|-----|---------|---------------------|---------|------------|---------------|--------------|--------------|---------|
| 8333 | 697 | WisxR05 | 239 | SP | 10 | ---- | ---- | 1268170 | WisxR05 |
| 8334 | 698 | WisxR05 | 239 | SP | 10 | ---- | ---- | 851414 | WisxR05 |
| 8335 | 700 | WisxR05 | 240 | SP | 10 | ---- | ---- | 5040003 | WisxR05 |
| 8336 | 701 | WisxR05 | 240 | SP | 10 | ---- | ---- | 3466288 | WisxR05 |
| 8337 | 702 | WisxR05 | 240 | SP | 10 | ---- | ---- | 1620900 | WisxR05 |
| 8338 | 703 | WisxR05 | 239 | SP | 10 | ---- | ---- | 1002695 | WisxR05 |
| 8339 | 704 | WisxR05 | 240 | SP | 10 | ---- | ---- | 993446 | WisxR05 |
| 8340 | 705 | WisxR05 | 239 | SP | 10 | ---- | ---- | 1130037 | WisxR05 |
| 8341 | 706 | WisxR05 | 239 | SP | 10 | ---- | ---- | 2387020 | WisxR05 |
| 8342 | 787 | WisxR05 | 409 | SP | 10 | ---- | ---- | 1349 | WisxR05 |
| 8343 | 791 | WisxR05 | 323 | SP | 10 | ---- | ---- | 63945 | WisxR05 |
| 8344 | 795 | WisxR05 | 238 | SP | 10 | ---- | ---- | 862547 | WisxR05 |
| 8345 | 748 | Wisxmix | 407 | SP | 10 | ---- | ---- | 2211 | Wisxmix |
| 8346 | 749 | Wisxmix | 407 | SP | 10 | ---- | ---- | 3313 | Wisxmix |
| 8347 | 750 | Wisxmix | 407 | SP | 10 | ---- | ---- | 1744 | Wisxmix |
| 8348 | 751 | Wisxmix | 408 | SP | 10 | ---- | ---- | 2260 | Wisxmix |
| 8349 | 752 | Wisxmix | 407 | SP | 10 | ---- | ---- | 2058 | Wisxmix |
| 8350 | 753 | Wisxmix | 407 | SP | 10 | ---- | ---- | 5679 | Wisxmix |
| 8351 | 754 | Wisxmix | 408 | SP | 10 | ---- | ---- | 3634 | Wisxmix |
| 8352 | 755 | Wisxmix | 407 | SP | 10 | ---- | ---- | 1705 | Wisxmix |
| 8353 | 757 | Wisxmix | 323 | SP | 10 | ---- | ---- | 8425 | Wisxmix |
| 8354 | 758 | Wisxmix | 323 | SP | 10 | ---- | ---- | 17202 | Wisxmix |
| 8355 | 759 | Wisxmix | 323 | SP | 10 | ---- | ---- | 17170 | Wisxmix |
| 8356 | 760 | Wisxmix | 323 | SP | 10 | ---- | ---- | 49795 | Wisxmix |
| 8357 | 761 | Wisxmix | 322 | SP | 10 | ---- | ---- | 15763 | Wisxmix |
| 8358 | 762 | Wisxmix | 322 | SP | 10 | ---- | ---- | 29281 | Wisxmix |
| 8359 | 763 | Wisxmix | 323 | SP | 10 | ---- | ---- | 9075 | Wisxmix |
| 8360 | 764 | Wisxmix | 323 | SP | 10 | ---- | ---- | 45756 | Wisxmix |
| 8361 | 766 | Wisxmix | 237 | SP | 10 | ---- | ---- | 259709 | Wisxmix |
| 8362 | 767 | Wisxmix | 237 | SP | 10 | ---- | ---- | 625695 | Wisxmix |
| 8363 | 768 | Wisxmix | 237 | SP | 10 | ---- | ---- | 157203 | Wisxmix |
| 8364 | 769 | Wisxmix | 237 | SP | 10 | ---- | ---- | 373607 | Wisxmix |
| 8365 | 770 | Wisxmix | 237 | SP | 10 | ---- | ---- | 477747 | Wisxmix |
| 8366 | 771 | Wisxmix | 237 | SP | 10 | ---- | ---- | 165811 | Wisxmix |
| 8367 | 772 | Wisxmix | 237 | SP | 10 | ---- | ---- | 534391 | Wisxmix |
| 8368 | 773 | Wisxmix | 237 | SP | 10 | ---- | ---- | 763579 | Wisxmix |
| 8369 | 775 | Wisxmix | 204 | SP | 10 | ---- | ---- | 2883840 | Wisxmix |
| 8370 | 776 | Wisxmix | 202 | SP | 10 | ---- | ---- | 1085994 | Wisxmix |
| 8371 | 777 | Wisxmix | 204 | SP | 10 | ---- | ---- | 1803131 | Wisxmix |
| 8372 | 778 | Wisxmix | 204 | SP | 10 | ---- | ---- | 1005992 | Wisxmix |
| 8373 | 779 | Wisxmix | 205 | SP | 10 | ---- | ---- | 496982 | Wisxmix |
| 8374 | 780 | Wisxmix | 203 | SP | 10 | ---- | ---- | 1701443 | Wisxmix |
| 8375 | 781 | Wisxmix | 204 | SP | 10 | ---- | ---- | 2392836 | Wisxmix |
| 8376 | 782 | Wisxmix | 203 | SP | 10 | ---- | ---- | 2079241 | Wisxmix |
| 8377 | 970 | Wispk | 403 | SP | 10 | ---- | ---- | 3844 | Wispk |
| 8378 | 971 | Wispk | 341 | SP | 10 | ---- | ---- | 1276 | Wispk |
| 8379 | 972 | Wispk | 343 | SP | 10 | ---- | ---- | 2325 | Wispk |

| Test and coupon # | | Comment | Maximum Stress, MPa | R value | 62 Freq Hz | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------------------|------|--------------------|---------------------|---------|------------|---------------|--------------|--------------|---------|
| 8380 | 973 | Wispk | 344 | SP | 10 | ---- | ---- | 2448 | Wispk |
| 8381 | 974 | Wispk | 407 | SP | 10 | ---- | ---- | 3130 | Wispk |
| 8382 | 975 | Wispk | 403 | SP | 10 | ---- | ---- | 4044 | Wispk |
| 8383 | 976 | Wispk | 403 | SP | 10 | ---- | ---- | 2806 | Wispk |
| 8384 | 977 | Wispk | 405 | SP | 10 | ---- | ---- | 5722 | Wispk |
| 8385 | 978 | Wispk | 406 | SP | 10 | ---- | ---- | 3233 | Wispk |
| 8386 | 979 | Wispk | 402 | SP | 10 | ---- | ---- | 3203 | Wispk |
| 8387 | 980 | Wispk | 298 | SP | 10 | ---- | ---- | 167885 | Wispk |
| 8388 | 981 | Wispk | 298 | SP | 10 | ---- | ---- | 155850 | Wispk |
| 8389 | 982 | Wispk | 297 | SP | 10 | ---- | ---- | 195616 | Wispk |
| 8390 | 983 | Wispk | 301 | SP | 10 | ---- | ---- | 86293 | Wispk |
| 8391 | 984 | Wispk | 297 | SP | 10 | ---- | ---- | 298800 | Wispk |
| 8392 | 985 | Wispk | 298 | SP | 10 | ---- | ---- | 169839 | Wispk |
| 8393 | 986 | Wispk | 297 | SP | 10 | ---- | ---- | 68426 | Wispk |
| 8394 | 987 | Wispk | 297 | SP | 10 | ---- | ---- | 231019 | Wispk |
| 8395 | 988 | Wispk | 297 | SP | 10 | ---- | ---- | 144430 | Wispk |
| 8396 | 989 | Wispk | 297 | SP | 10 | ---- | ---- | 80980 | Wispk |
| 8397 | 990 | Wispk | 254 | SP | 10 | ---- | ---- | 195751 | Wispk |
| 8398 | 991 | Wispk | 255 | SP | 10 | ---- | ---- | 598438 | Wispk |
| 8399 | 992 | Wispk | 256 | SP | 10 | ---- | ---- | 876955 | Wispk |
| 8400 | 993 | Wispk | 253 | SP | 10 | ---- | ---- | 1231928 | Wispk |
| 8401 | 995 | Wispk | 254 | SP | 10 | ---- | ---- | 312744 | Wispk |
| 8402 | 996 | Wispk | 259 | SP | 10 | ---- | ---- | 432307 | Wispk |
| 8403 | 997 | Wispk | 256 | SP | 10 | ---- | ---- | 912240 | Wispk |
| 8404 | 998 | Wispk | 255 | SP | 10 | ---- | ---- | 680774 | Wispk |
| 8405 | 999 | Wispk | 256 | SP | 10 | ---- | ---- | 248429 | Wispk |
| 8406 | 1000 | Wispk | 335 | SP | 10 | ---- | ---- | 14371 | Wispk |
| 8407 | 1001 | Wispk | 335 | SP | 10 | ---- | ---- | 26045 | Wispk |
| 8408 | 1002 | Wispk | 341 | SP | 10 | ---- | ---- | 18334 | Wispk |
| 8409 | 1003 | Wispk | 340 | SP | 10 | ---- | ---- | 24906 | Wispk |
| 8410 | 1004 | Wispk | 339 | SP | 10 | ---- | ---- | 6048 | Wispk |
| 8411 | 1005 | Wispk | 341 | SP | 10 | ---- | ---- | 13058 | Wispk |
| 8412 | 1006 | Wispk | 343 | SP | 10 | ---- | ---- | 24196 | Wispk |
| 8413 | 1007 | Wispk | 185 | SP | 10 | ---- | ---- | 14130978 | Wispk |
| 8414 | 1016 | Wispk | 185 | SP | 10 | ---- | ---- | 12289518 | Wispk |
| Residual Strength Tests, DD16 | | | | | | | | | |
| 8415 | 236 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 446342 | WR |
| 8416 | 237 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 200016 | WR |
| 8417 | 237r | one cycle | 417 | 13 | * | ---- | ---- | 1 | WR |
| 8418 | 238 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 100009 | WR |
| 8419 | 238r | one cycle | 452 | 13 | * | ---- | ---- | 1 | WR |
| 8420 | 239 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 111838 | WR |
| 8421 | 240 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 300010 | WR |
| 8422 | 240r | one cycle | 451 | 13 | * | ---- | ---- | 1 | WR |
| 8423 | 241 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 130521 | WR |
| 8424 | 242 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 133659 | WR |

| Test and coupon # | Comment | Maximum Stress, MPa | 63 | | # High Cycles | # Low Cycles | Total Cycles | program |
|-------------------|---------|---------------------|---------|---------|---------------|--------------|--------------|---------|
| | | | R value | Freq Hz | | | | |

| | | | | | | | | | |
|------|------|--------------------|-----|-----|----|------|------|--------|----|
| 8425 | 243 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 100010 | WR |
| 8426 | 243r | one cycle | 403 | 13 | * | ---- | ---- | 1 | WR |
| 8427 | 244 | constant amplitude | 207 | 0.1 | 10 | ---- | ---- | 38964 | WR |
| 8428 | 245 | constant amplitude | 207 | 0.1 | | ---- | ---- | 50008 | WR |
| 8429 | 245r | one cycle | 450 | 13 | * | ---- | ---- | 1 | WR |
| 8430 | 459 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 100 | WR |
| 8431 | 459r | one cycle | 654 | 13 | * | ---- | ---- | 1 | WR |
| 8432 | 460 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 478 | WR |
| 8433 | 461 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 810 | WR |
| 8434 | 462 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 100 | WR |
| 8435 | 462r | one cycle | 661 | 13 | * | ---- | ---- | 1 | WR |
| 8436 | 463 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 100 | WR |
| 8437 | 462r | one cycle | 660 | 13 | * | ---- | ---- | 1 | WR |
| 8438 | 464 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 1000 | WR |
| 8439 | 464r | one cycle | 661 | 13 | * | ---- | ---- | 1 | WR |
| 8440 | 465 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 7752 | WR |
| 8441 | 466 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 1000 | WR |
| 8442 | 466r | one cycle | 589 | 13 | * | ---- | ---- | 1 | WR |
| 8443 | 467 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 9811 | WR |
| 8444 | 468 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 1000 | WR |
| 8445 | 468r | one cycle | 571 | 13 | * | ---- | ---- | 1 | WR |
| 8446 | 469 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 10000 | WR |
| 8447 | 469r | one cycle | 650 | 13 | * | ---- | ---- | 1 | WR |
| 8448 | 470 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 100000 | WR |
| 8449 | 470r | one cycle | 590 | 13 | * | ---- | ---- | 1 | WR |
| 8450 | 471 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 100000 | WR |
| 8451 | 471r | one cycle | 639 | 13 | * | ---- | ---- | 1 | WR |
| 8452 | 472 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 10000 | WR |
| 8453 | 472r | one cycle | 649 | 13 | * | ---- | ---- | 1 | WR |
| 8454 | 473 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 10000 | WR |
| 8455 | 473r | one cycle | 654 | 13 | * | ---- | ---- | 1 | WR |
| 8456 | 475 | constant amplitude | 328 | 0.1 | 10 | ---- | ---- | 10000 | WR |
| 8457 | 475r | one cycle | 633 | 13 | * | ---- | ---- | 1 | WR |
| 8458 | 476 | constant amplitude | 241 | 0.1 | 10 | ---- | ---- | 100000 | WR |
| 8459 | 476r | one cycle | 599 | 13 | * | ---- | ---- | 1 | WR |
| 8460 | 477 | constant amplitude | 414 | 0.1 | 10 | ---- | ---- | 1000 | WR |
| 8461 | 477r | one cycle | 662 | 13 | * | ---- | ---- | 1 | WR |
| 8462 | 494 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 9596 | WR |
| 8463 | 495 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 9872 | WR |
| 8464 | 496 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 12289 | WR |
| 8465 | 497 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 8981 | WR |
| 8466 | 498 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 8899 | WR |
| 8467 | 499 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 32810 | WR |
| 8468 | 500 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 20000 | WR |
| 8469 | 500r | one cycle | 560 | 13 | * | ---- | ---- | 1 | WR |
| 8470 | 501 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8471 | 501r | one cycle | 501 | 13 | * | ---- | ---- | 1 | WR |

| | | | | | | | | | |
|------|------|--------------------|-----|-----|----|------|------|-------|----|
| 8472 | 502 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 12442 | WR |
| 8473 | 503 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 5336 | WR |
| 8474 | 504 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8475 | 504r | one cycle | 585 | 13 | * | ---- | ---- | 1 | WR |
| 8476 | 505 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 9800 | WR |
| 8477 | 506 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 11920 | WR |
| 8478 | 507 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 3769 | WR |
| 8479 | 508 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 8254 | WR |
| 8480 | 509 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 20000 | WR |
| 8481 | 509r | one cycle | 469 | 13 | * | ---- | ---- | 1 | WR |
| 8482 | 510 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8483 | 510r | one cycle | 498 | 13 | * | ---- | ---- | 1 | WR |
| 8484 | 511 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 18330 | WR |
| 8485 | 512 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 8643 | WR |
| 8486 | 513 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8487 | 513r | one cycle | 590 | 13 | * | ---- | ---- | 1 | WR |
| 8488 | 514 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 11418 | WR |
| 8489 | 515 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10814 | WR |
| 8490 | 516 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 7732 | WR |
| 8491 | 517 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 13968 | WR |
| 8492 | 518 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 8684 | WR |
| 8493 | 519 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8494 | 519r | one cycle | 540 | 13 | * | ---- | ---- | 1 | WR |
| 8495 | 520 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 7107 | WR |
| 8496 | 521 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 7189 | WR |
| 8497 | 522 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 10000 | WR |
| 8498 | 522r | one cycle | 403 | 13 | * | ---- | ---- | 1 | WR |
| 8499 | 523 | constant amplitude | 328 | 0.5 | 10 | ---- | ---- | 13784 | WR |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 65 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|

Material DD16

| | | | | | | | | | | | | |
|--|-----------|-----|-----|------|--------|------|------|------|------|---|------|--|
| Tests 10394 - 10486 are static tensile (STT) or static compression (STC) tests | | | | | | | | | | | | |
| 10394 | DD16-4001 | STT | 700 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10395 | DD16-4148 | STT | 709 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10396 | DD16-4115 | STT | 710 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10397 | DD16-4228 | STT | 716 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10398 | DD16-4012 | STT | 735 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10399 | DD16-4033 | STT | 742 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10400 | DD16-4219 | STT | 749 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10401 | DD16-4111 | STT | 758 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10402 | DD16-4077 | STT | 765 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10403 | DD16-4019 | STT | 766 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10404 | DD16-4231 | STT | 792 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10405 | DD16-7112 | STT | 684 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10406 | DD16-7077 | STT | 685 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10407 | DD16-7160 | STT | 687 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10408 | DD16-7121 | STT | 690 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10409 | DD16-7109 | STT | 692 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10410 | DD16-7058 | STT | 695 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10411 | DD16-7034 | STT | 696 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10412 | DD16-7172 | STT | 698 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10413 | DD16-7030 | STT | 712 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10414 | DD16-7133 | STT | 722 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10415 | DD16-3179 | STT | 666 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10416 | DD16-3184 | STT | 672 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10417 | DD16-3053 | STT | 681 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10418 | DD16-3104 | STT | 693 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10419 | DD16-3189 | STT | 701 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10420 | DD16-3123 | STT | 701 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10421 | DD16-3137 | STT | 710 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10422 | DD16-3142 | STT | 715 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10423 | DD16-3203 | STT | 716 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10424 | DD16-3087 | STT | 717 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10425 | DD16-3122 | STT | 741 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10426 | DD16-3127 | STT | 748 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10427 | DD16-3151 | STT | 768 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10428 | DD16-3152 | STT | 773 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10429 | DD16-3173 | STT | 775 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 66 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10430 | DD16-3226 | STC | -384 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10431 | DD16-3108 | STC | -407 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10432 | DD16-3132 | STC | -407 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10433 | DD16-3113 | STC | -419 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10434 | DD16-3082 | STC | -420 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10435 | DD16-3048 | STC | -425 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10436 | DD16-3128 | STC | -428 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10437 | DD16-3016 | STC | -428 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10438 | DD16-3231 | STC | -438 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10439 | DD16-3118 | STC | -438 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10440 | DD16-3133 | STC | -446 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10441 | DD16-3022 | STC | -448 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10442 | DD16-3208 | STC | -456 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10443 | DD16-3168 | STC | -461 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10444 | DD16-3103 | STC | -483 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10445 | DD16-3227 | STC | -395 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10446 | DD16-3147 | STC | -401 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10447 | DD16-3038 | STC | -402 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10448 | DD16-3093 | STC | -402 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10449 | DD16-3222 | STC | -406 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10450 | DD16-3033 | STC | -408 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10451 | DD16-3213 | STC | -410 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10452 | DD16-3043 | STC | -438 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10453 | DD16-3217 | STC | -441 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10454 | DD16-3027 | STC | -484 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10455 | DD16-4062 | STC | -381 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10456 | DD16-4066 | STC | -389 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10457 | DD16-4186 | STC | -396 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10458 | DD16-4230 | STC | -397 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10459 | DD16-4212 | STC | -404 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10460 | DD16-4185 | STC | -410 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10461 | DD16-4150 | STC | -418 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10462 | DD16-4126 | STC | -420 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10463 | DD16-4072 | STC | -427 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10464 | DD16-4224 | STC | -430 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10465 | DD16-4091 | STC | -448 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10466 | DD16-4095 | STC | -461 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10467 | DD16-5087 | STC | -412 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 67 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|---|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10468 | DD16-5046 | STC | -419 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10469 | DD16-5068 | STC | -379 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10470 | DD16-5173 | STC | -369 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10471 | DD16-5199 | STC | -378 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10472 | DD16-5111 | STC | -361 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10473 | DD16-5004 | STC | -371 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10474 | DD16-5129 | STC | -360 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10475 | DD16-5165 | STC | -391 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10476 | DD16-5027 | STC | -386 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10477 | DD16-7189 | STC | -348 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10478 | DD16-7202 | STC | -368 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10479 | DD16-7146 | STC | -383 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10480 | DD16-7011 | STC | -384 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10481 | DD16-7154 | STC | -387 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10482 | DD16-7071 | STC | -390 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10483 | DD16-7083 | STC | -392 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10484 | DD16-7191 | STC | -394 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10485 | DD16-7184 | STC | -400 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| 10486 | DD16-7145 | STC | -401 | ---- | static | ---- | ---- | ---- | 12.5 | 1 | ---- | |
| Tests 10487 - 10837 are constant amplitude (CA) tests | | | | | | | | | | | | |
| 10487 | DD16-4040 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 72056 | ---- | |
| 10488 | DD16-4074 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 97443 | ---- | |
| 10489 | DD16-4081 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 72381 | ---- | |
| 10490 | DD16-4092 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 174306 | ---- | |
| 10491 | DD16-4109 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1667 | ---- | |
| 10492 | DD16-4118 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1031 | ---- | |
| 10493 | DD16-4130 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 140069 | ---- | |
| 10494 | DD16-4142 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 93156 | ---- | |
| 10495 | DD16-4149 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 79321 | ---- | |
| 10496 | DD16-4152 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1416 | ---- | |
| 10497 | DD16-4156 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1862 | ---- | |
| 10498 | DD16-4160 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 85924 | ---- | |
| 10499 | DD16-4162 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 2322 | ---- | |
| 10500 | DD16-4169 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 85396 | ---- | |
| 10501 | DD16-4170 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 2407 | ---- | |
| 10502 | DD16-4173 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 2141 | ---- | |
| 10503 | DD16-4191 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1891 | ---- | |
| 10504 | DD16-4200 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 73422 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 68 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10505 | DD16-4210 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1237 | ---- | |
| 10506 | DD16-4222 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1333 | ---- | |
| 10507 | DD16-8232 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 42189 | ---- | |
| 10508 | DD16-6027 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 68147 | ---- | |
| 10509 | DD16-6117 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 50331 | ---- | |
| 10510 | DD16-6141 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 66854 | ---- | |
| 10511 | DD16-6171 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 127923 | ---- | |
| 10512 | DD16-6004 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 26599 | ---- | |
| 10513 | DD16-6045 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 99155 | ---- | |
| 10514 | DD16-6049 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 34705 | ---- | |
| 10515 | DD16-6053 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 30690 | ---- | |
| 10516 | DD16-6067 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 68832 | ---- | |
| 10517 | DD16-6095 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 47809 | ---- | |
| 10518 | DD16-6108 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 37679 | ---- | |
| 10519 | DD16-6119 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 60017 | ---- | |
| 10520 | DD16-6146 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 53139 | ---- | |
| 10521 | DD16-6153 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 22551 | ---- | |
| 10522 | DD16-6046 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 56805 | ---- | |
| 10523 | DD16-6050 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 22650 | ---- | |
| 10524 | DD16-6054 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 28910 | ---- | |
| 10525 | DD16-6061 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 45311 | ---- | |
| 10526 | DD16-6098 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 64266 | ---- | |
| 10527 | DD16-6155 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 39349 | ---- | |
| 10528 | DD16-6157 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 41133 | ---- | |
| 10529 | DD16-6180 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 45950 | ---- | |
| 10530 | DD16-6189 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 39391 | ---- | |
| 10531 | DD16-6089 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 57605 | ---- | |
| 10532 | DD16-6174 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 25804 | ---- | |
| 10533 | DD16-6056 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 23696 | ---- | |
| 10534 | DD16-6044 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 37300 | ---- | |
| 10535 | DD16-6142 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 34860 | ---- | |
| 10536 | DD16-6079 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 10533 | ---- | |
| 10537 | DD16-6019 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 14994 | ---- | |
| 10538 | DD16-6081 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 9480 | ---- | |
| 10539 | DD16-8057 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 79509 | ---- | |
| 10540 | DD16-8062 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 125080 | ---- | |
| 10541 | DD16-8079 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 235683 | ---- | |
| 10542 | DD16-8087 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 846 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 69 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10543 | DD16-8113 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 732 | ---- | |
| 10544 | DD16-8122 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1019 | ---- | |
| 10545 | DD16-8126 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1184 | ---- | |
| 10546 | DD16-8132 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 928 | ---- | |
| 10547 | DD16-8149 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 88266 | ---- | |
| 10548 | DD16-8157 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1327 | ---- | |
| 10549 | DD16-8161 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 58927 | ---- | |
| 10550 | DD16-8167 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1476 | ---- | |
| 10551 | DD16-8183 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 4414 | ---- | |
| 10552 | DD16-8188 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1480 | ---- | |
| 10553 | DD16-8192 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 95640 | ---- | |
| 10554 | DD16-8206 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 75207 | ---- | |
| 10555 | DD16-8219 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 74550 | ---- | |
| 10556 | DD16-8223 | CA | 340 | ---- | 0.1 | ---- | 1 | ---- | ---- | 756 | ---- | |
| 10557 | DD16-8226 | CA | 200 | ---- | 0.1 | ---- | 3 | ---- | ---- | 77221 | ---- | |
| 10558 | DD16-4036 | CA | 225 | ---- | 0.1 | ---- | 3 | ---- | ---- | 103102 | ---- | |
| 10559 | DD16-4071 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 103006 | ---- | |
| 10560 | DD16-4089 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 75110 | ---- | |
| 10561 | DD16-4050 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 38317 | ---- | |
| 10562 | DD16-4203 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 56870 | ---- | |
| 10563 | DD16-4198 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 20324 | ---- | |
| 10564 | DD16-4223 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 41619 | ---- | |
| 10565 | DD16-4028 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 22335 | ---- | |
| 10566 | DD16-4226 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 43051 | ---- | |
| 10567 | DD16-4038 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 50802 | ---- | |
| 10568 | DD16-4054 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 41445 | ---- | |
| 10569 | DD16-4069 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 81707 | ---- | |
| 10570 | DD16-4121 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 71728 | ---- | |
| 10571 | DD16-4132 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 83483 | ---- | |
| 10572 | DD16-4137 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 58720 | ---- | |
| 10573 | DD16-4184 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 35554 | ---- | |
| 10574 | DD16-4112 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 72568 | ---- | |
| 10575 | DD16-4064 | CA | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 47592 | ---- | |
| 10576 | DD16-4123 | CA | 325 | ---- | 0.1 | ---- | 3 | ---- | ---- | 4038 | ---- | |
| 10577 | DD16-4117 | CA | 377 | ---- | 0.1 | ---- | 1 | ---- | ---- | 627 | ---- | |
| 10578 | DD16-4007 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1156 | ---- | |
| 10579 | DD16-4026 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 978 | ---- | |
| 10580 | DD16-4225 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 852 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 70 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10581 | DD16-4056 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1009 | ---- | |
| 10582 | DD16-4197 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 733 | ---- | |
| 10583 | DD16-4060 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 776 | ---- | |
| 10584 | DD16-4159 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 758 | ---- | |
| 10585 | DD16-4140 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1414 | ---- | |
| 10586 | DD16-4020 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 969 | ---- | |
| 10587 | DD16-4015 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 864 | ---- | |
| 10588 | DD16-4079 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 471 | ---- | |
| 10589 | DD16-4085 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 915 | ---- | |
| 10590 | DD16-4016 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1029 | ---- | |
| 10591 | DD16-4102 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 1173 | ---- | |
| 10592 | DD16-4138 | CA | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 975 | ---- | |
| 10593 | DD16-5103 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 177 | ---- | |
| 10594 | DD16-5158 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 252 | ---- | |
| 10595 | DD16-5172 | CA | -290 | ---- | 10 | ---- | 1 | ---- | ---- | 337 | ---- | |
| 10596 | DD16-5104 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 402 | ---- | |
| 10597 | DD16-5182 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 404 | ---- | |
| 10598 | DD16-5095 | CA | -290 | ---- | 10 | ---- | 1 | ---- | ---- | 446 | ---- | |
| 10599 | DD16-5161 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 493 | ---- | |
| 10600 | DD16-5171 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 814 | ---- | |
| 10601 | DD16-5094 | CA | -290 | ---- | 10 | ---- | 1 | ---- | ---- | 849 | ---- | |
| 10602 | DD16-5093 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 1068 | ---- | |
| 10603 | DD16-5079 | CA | -260 | ---- | 10 | ---- | 3 | ---- | ---- | 1760 | ---- | |
| 10604 | DD16-5099 | CA | -260 | ---- | 10 | ---- | 3 | ---- | ---- | 2760 | ---- | |
| 10605 | DD16-5166 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 3578 | ---- | |
| 10606 | DD16-5084 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 4102 | ---- | |
| 10607 | DD16-5082 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 4999 | ---- | |
| 10608 | DD16-5178 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 21818 | ---- | |
| 10609 | DD16-5163 | CA | -260 | ---- | 10 | ---- | 3 | ---- | ---- | 126913 | ---- | |
| 10610 | DD16-5115 | CA | -250 | ---- | 10 | ---- | 3 | ---- | ---- | 786306 | ---- | |
| 10611 | DD16-5105 | CA | -260 | ---- | 10 | ---- | 1 | ---- | ---- | 13889 | ---- | |
| 10612 | DD16-5146 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 148065 | ---- | |
| 10613 | DD16-5018 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 191956 | ---- | |
| 10614 | DD16-5058 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 794406 | ---- | |
| 10615 | DD16-5076 | CA | -280 | ---- | 10 | ---- | 1 | ---- | ---- | 591 | ---- | |
| 10616 | DD16-5135 | CA | -250 | ---- | 10 | ---- | 3 | ---- | ---- | 225931 | ---- | |
| 10617 | DD16-5162 | CA | -250 | ---- | 10 | ---- | 3 | ---- | ---- | 14833 | ---- | |
| 10618 | DD16-5191 | CA | -250 | ---- | 10 | ---- | 3 | ---- | ---- | 673272 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 71 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10619 | DD16-5184 | CA | 260 | ---- | 10 | ---- | 1 | ---- | ---- | 1262 | ---- | |
| 10620 | DD16-7053 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 123295 | ---- | |
| 10621 | DD16-7199 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 27946 | ---- | |
| 10622 | DD16-7001 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 41724 | ---- | |
| 10623 | DD16-7045 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 109092 | ---- | |
| 10624 | DD16-7097 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 22670 | ---- | |
| 10625 | DD16-7044 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 20526 | ---- | |
| 10626 | DD16-7070 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 54711 | ---- | |
| 10627 | DD16-7125 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 111567 | ---- | |
| 10628 | DD16-7129 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 30767 | ---- | |
| 10629 | DD16-7185 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 30743 | ---- | |
| 10630 | DD16-7206 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 10663 | ---- | |
| 10631 | DD16-7057 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 25914 | ---- | |
| 10632 | DD16-7069 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 51349 | ---- | |
| 10633 | DD16-7079 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 74275 | ---- | |
| 10634 | DD16-7157 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 47496 | ---- | |
| 10635 | DD16-7130 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 7063 | ---- | |
| 10636 | DD16-7139 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 20894 | ---- | |
| 10637 | DD16-7163 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 18880 | ---- | |
| 10638 | DD16-7087 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 829 | ---- | |
| 10639 | DD16-7018 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 597 | ---- | |
| 10640 | DD16-7054 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 520 | ---- | |
| 10641 | DD16-7068 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 481 | ---- | |
| 10642 | DD16-7173 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 804 | ---- | |
| 10643 | DD16-7187 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 829 | ---- | |
| 10644 | DD16-7047 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 694 | ---- | |
| 10645 | DD16-7013 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 1080 | ---- | |
| 10646 | DD16-7131 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 678 | ---- | |
| 10647 | DD16-7175 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 898 | ---- | |
| 10648 | DD16-7205 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 565 | ---- | |
| 10649 | DD16-7106 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 139 | ---- | |
| 10650 | DD16-7165 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 355 | ---- | |
| 10651 | DD16-7036 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 525 | ---- | |
| 10652 | DD16-7177 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 254 | ---- | |
| 10653 | DD16-7082 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 39137 | ---- | |
| 10654 | DD16-7035 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 51492 | ---- | |
| 10655 | DD16-7196 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 153282 | ---- | |
| 10656 | DD16-7198 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 87719 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 72 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------------|
| 10657 | DD16-7006 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 17432 | ---- | |
| 10658 | DD16-7020 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 25774 | ---- | |
| 10659 | DD16-7028 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 42937 | ---- | |
| 10660 | DD16-7122 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 35012 | ---- | |
| 10661 | DD16-7186 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 126056 | ---- | |
| 10662 | DD16-7010 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 154051 | ---- | |
| 10663 | DD16-7144 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 27165 | ---- | |
| 10664 | DD16-7156 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 186916 | ---- | |
| 10665 | DD16-7108 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 21915 | ---- | |
| 10666 | DD16-7190 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 88841 | ---- | |
| 10667 | DD16-7062 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 90312 | ---- | |
| 10668 | DD16-7168 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 84027 | ---- | |
| 10669 | DD16-7141 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 1209 | ---- | |
| 10670 | DD16-7103 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 497 | ---- | |
| 10671 | DD16-7088 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 403 | ---- | |
| 10672 | DD16-7117 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 937 | ---- | |
| 10673 | DD16-7137 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 1594 | ---- | |
| 10674 | DD16-7170 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 3427 | ---- | |
| 10675 | DD16-7075 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 458 | ---- | |
| 10676 | DD16-7050 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 1095 | ---- | |
| 10677 | DD16-7064 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 536 | ---- | |
| 10678 | DD16-7055 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 2994 | ---- | |
| 10679 | DD16-7014 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 955 | ---- | |
| 10680 | DD16-7182 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 138 | ---- | |
| 10681 | DD16-7041 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 1679 | ---- | |
| 10682 | DD16-7059 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 453 | ---- | |
| 10683 | DD16-7167 | CA | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 713 | ---- | |
| 10684 | DD16-6172 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 19961 | ---- | |
| 10685 | DD16-6147 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 25668 | ---- | |
| 10686 | DD16-6173 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 148909 | ---- | no postcure |
| 10687 | DD16-6165 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 560157 | ---- | no postcure |
| 10688 | DD16-6093 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 35866 | ---- | no postcure |
| 10689 | DD16-6084 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 28687 | ---- | no postcure |
| 10690 | DD16-6133 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 88756 | ---- | no postcure |
| 10691 | DD16-6206 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 30520 | ---- | no postcure |
| 10692 | DD16-6126 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 110835 | ---- | no postcure |
| 10693 | DD16-6162 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 126114 | ---- | no postcure |
| 10694 | DD16-6058 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 48460 | ---- | no postcure |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 73 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------------|
| 10695 | DD16-6105 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 72733 | ---- | no postcure |
| 10696 | DD16-6030 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 27326 | ---- | no postcure |
| 10697 | DD16-6176 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 84983 | ---- | no postcure |
| 10698 | DD16-6116 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 108615 | ---- | no postcure |
| 10699 | DD16-6137 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 178688 | ---- | no postcure |
| 10700 | DD16-6006 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 14732 | ---- | |
| 10701 | DD16-6032 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 46843 | ---- | |
| 10702 | DD16-6076 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 63764 | ---- | |
| 10703 | DD16-6106 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 516152 | ---- | |
| 10704 | DD16-6163 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 65976 | ---- | |
| 10705 | DD16-6038 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 35247 | ---- | |
| 10706 | DD16-6001 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 18691 | ---- | |
| 10707 | DD16-6148 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 85373 | ---- | |
| 10708 | DD16-6094 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 222567 | ---- | |
| 10709 | DD16-6037 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 40809 | ---- | |
| 10710 | DD16-6177 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 16140 | ---- | |
| 10711 | DD16-6196 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 85052 | ---- | |
| 10712 | DD16-6149 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 46987 | ---- | |
| 10713 | DD16-6017 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 63741 | ---- | |
| 10714 | DD16-6007 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 26361 | ---- | |
| 10715 | DD16-6060 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 28582 | ---- | |
| 10716 | DD16-6109 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 75412 | ---- | |
| 10717 | DD16-6143 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 105995 | ---- | |
| 10718 | DD16-6175 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 76408 | ---- | |
| 10719 | DD16-6016 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 2632 | ---- | no postcure |
| 10720 | DD16-6082 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 3058 | ---- | no postcure |
| 10721 | DD16-6118 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 2572 | ---- | no postcure |
| 10722 | DD16-6134 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 1760 | ---- | no postcure |
| 10723 | DD16-6080 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 852 | ---- | no postcure |
| 10724 | DD16-6166 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 1632 | ---- | no postcure |
| 10725 | DD16-6033 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 515 | ---- | no postcure |
| 10726 | DD16-6129 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 1065 | ---- | no postcure |
| 10727 | DD16-6152 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 2309 | ---- | no postcure |
| 10728 | DD16-6024 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 95 | ---- | no postcure |
| 10729 | DD16-6029 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 707 | ---- | no postcure |
| 10730 | DD16-6051 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 545 | ---- | no postcure |
| 10731 | DD16-6144 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 841 | ---- | no postcure |
| 10732 | DD16-6135 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 273 | ---- | no postcure |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 74 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------------|
| 10733 | DD16-6190 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 725 | ---- | no postcure |
| 10734 | DD16-6010 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 419 | ---- | no postcure |
| 10735 | DD16-6160 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 189 | ---- | no postcure |
| 10736 | DD16-6047 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 609 | ---- | no postcure |
| 10737 | DD16-6204 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 588 | ---- | no postcure |
| 10738 | DD16-6115 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 1092 | ---- | no postcure |
| 10739 | DD16-6012 | CA | -240 | ---- | 10 | ---- | 1 | ---- | ---- | 52 | ---- | no postcure |
| 10740 | DD16-6069 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 56244 | ---- | |
| 10741 | DD16-4232 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 37832 | ---- | |
| 10742 | DD16-4192 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 2059514 | ---- | Runout |
| 10743 | DD16-4083 | CA | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 458614 | ---- | |
| 10744 | DD16-4099 | CA | -260 | ---- | 10 | ---- | 2 | ---- | ---- | 3153279 | ---- | Runout |
| 10745 | DD16-4022 | CA | -270 | ---- | 10 | ---- | 2 | ---- | ---- | 13000 | ---- | |
| 10746 | DD16-4093 | CA | -270 | ---- | 10 | ---- | 3 | ---- | ---- | 583847 | ---- | |
| 10747 | DD16-4010 | CA | -275 | ---- | 10 | ---- | 3 | ---- | ---- | 456369 | ---- | Runout |
| 10748 | DD16-4008 | CA | -285 | ---- | 10 | ---- | 2 | ---- | ---- | 13331 | ---- | |
| 10749 | DD16-4164 | CA | -285 | ---- | 10 | ---- | 2 | ---- | ---- | 16406 | ---- | |
| 10750 | DD16-4059 | CA | -290 | ---- | 10 | ---- | 2 | ---- | ---- | 13519 | ---- | |
| 10751 | DD16-4209 | CA | -300 | ---- | 10 | ---- | 2 | ---- | ---- | 579 | ---- | |
| 10752 | DD16-4199 | CA | -300 | ---- | 10 | ---- | 2 | ---- | ---- | 5237 | ---- | |
| 10753 | DD16-4204 | CA | -300 | ---- | 10 | ---- | 2 | ---- | ---- | 7963 | ---- | |
| 10754 | DD16-4221 | CA | -300 | ---- | 10 | ---- | 2 | ---- | ---- | 8273 | ---- | |
| 10755 | DD16-4196 | CA | -325 | ---- | 10 | ---- | 2 | ---- | ---- | 245 | ---- | |
| 10756 | DD16-4101 | CA | -325 | ---- | 10 | ---- | 2 | ---- | ---- | 8226 | ---- | |
| 10757 | DD16-4004 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 13 | ---- | |
| 10758 | DD16-4018 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 82 | ---- | |
| 10759 | DD16-4023 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 101 | ---- | |
| 10760 | DD16-4218 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 239 | ---- | |
| 10761 | DD16-4143 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 793 | ---- | |
| 10762 | DD16-4009 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 902 | ---- | |
| 10763 | DD16-4063 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 1249 | ---- | |
| 10764 | DD16-4100 | CA | -330 | ---- | 10 | ---- | 2 | ---- | ---- | 4087 | ---- | |
| 10765 | DD16-4214 | CA | -350 | ---- | 10 | ---- | 2 | ---- | ---- | 7 | ---- | |
| 10766 | DD16-4144 | CA | -350 | ---- | 10 | ---- | 2 | ---- | ---- | 19 | ---- | |
| 10767 | DD16-4070 | CA | -350 | ---- | 10 | ---- | 2 | ---- | ---- | 376 | ---- | |
| 10768 | DD16-6198 | CA | 230 | ---- | 10 | ---- | 3 | ---- | ---- | 13425 | ---- | no postcure |
| 10769 | DD16-8066 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 2405 | ---- | |
| 10770 | DD16-8069 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 141124 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 75 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10771 | DD16-8075 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 73992 | ---- | |
| 10772 | DD16-8083 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 24711 | ---- | |
| 10773 | DD16-8091 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 30887 | ---- | |
| 10774 | DD16-8098 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 19953 | ---- | |
| 10775 | DD16-8102 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 1078 | ---- | |
| 10776 | DD16-8106 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 154 | ---- | |
| 10777 | DD16-8119 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 29174 | ---- | |
| 10778 | DD16-8129 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 1176 | ---- | |
| 10779 | DD16-8136 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 165 | ---- | |
| 10780 | DD16-8142 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 5 | ---- | |
| 10781 | DD16-8153 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 133 | ---- | |
| 10782 | DD16-8178 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 1057 | ---- | |
| 10783 | DD16-8198 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 39286 | ---- | |
| 10784 | DD16-8202 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 2729 | ---- | |
| 10785 | DD16-8213 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 50802 | ---- | |
| 10786 | DD16-8216 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 1183 | ---- | |
| 10787 | DD16-8229 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 644 | ---- | |
| 10788 | DD16-8002 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 119 | ---- | |
| 10789 | DD16-8007 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 781 | ---- | |
| 10790 | DD16-8011 | CA | 180 | ---- | -1 | ---- | 1 | ---- | ---- | 41312 | ---- | |
| 10791 | DD16-8016 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 219 | ---- | |
| 10792 | DD16-8025 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 158 | ---- | |
| 10793 | DD16-8032 | CA | 180 | ---- | -1 | ---- | 3 | ---- | ---- | 71219 | ---- | |
| 10794 | DD16-8035 | CA | 240 | ---- | -1 | ---- | 1 | ---- | ---- | 1093 | ---- | |
| 10795 | DD16-8040 | CA | 270 | ---- | -1 | ---- | 1 | ---- | ---- | 443 | ---- | |
| 10796 | DD16-4003 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 15621 | ---- | |
| 10797 | DD16-4024 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 61670 | ---- | |
| 10798 | DD16-4030 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 100605 | ---- | |
| 10799 | DD16-4035 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 71387 | ---- | |
| 10800 | DD16-4053 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 110276 | ---- | |
| 10801 | DD16-5013 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 492 | ---- | |
| 10802 | DD16-5043 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 397 | ---- | |
| 10803 | DD16-5075 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 435 | ---- | |
| 10804 | DD16-5092 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 121 | ---- | |
| 10805 | DD16-5123 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 85 | ---- | |
| 10806 | DD16-5133 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 130 | ---- | |
| 10807 | DD16-5152 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 266 | ---- | |
| 10808 | DD16-5174 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 508 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 76 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10809 | DD16-5189 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 611 | ---- | |
| 10810 | DD16-5202 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 196 | ---- | |
| 10811 | DD16-3079 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 295 | ---- | |
| 10812 | DD16-3077 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 445 | ---- | |
| 10813 | DD16-3069 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 834 | ---- | |
| 10814 | DD16-3059 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1106 | ---- | |
| 10815 | DD16-3064 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1408 | ---- | |
| 10816 | DD16-3145 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2344 | ---- | |
| 10817 | DD16-3009 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 829 | ---- | |
| 10818 | DD16-3012 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1389 | ---- | |
| 10819 | DD16-3120 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1459 | ---- | |
| 10820 | DD16-3007 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 935 | ---- | |
| 10821 | DD16-3023 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1772 | ---- | |
| 10822 | DD16-3019 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2013 | ---- | |
| 10823 | DD16-3005 | CA | 276 | ---- | -1 | ---- | 3 | ---- | ---- | 1171 | ---- | |
| 10824 | DD16-3034 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1314 | ---- | |
| 10825 | DD16-3014 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2035 | ---- | |
| 10826 | DD16-3010 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 3131 | ---- | |
| 10827 | DD16-3186 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1771 | ---- | |
| 10828 | DD16-3028 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2469 | ---- | |
| 10829 | DD16-3218 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 705 | ---- | |
| 10830 | DD16-3140 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1612 | ---- | |
| 10831 | DD16-3150 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 910 | ---- | |
| 10832 | DD16-3065 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 904 | ---- | |
| 10833 | DD16-3096 | CA | 148 | ---- | -1 | ---- | 3 | ---- | ---- | 233837 | ---- | |
| 10834 | DD16-3106 | CA | 148 | ---- | -1 | ---- | 3 | ---- | ---- | 413959 | ---- | |
| 10835 | DD16-3176 | CA | 148 | ---- | -1 | ---- | 3 | ---- | ---- | 452898 | ---- | |
| 10836 | DD16-3116 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 60403 | ---- | |
| 10837 | DD16-3182 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 34184 | ---- | |
| 10838 | DD16-3188 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 103856 | ---- | |
| 10839 | DD16-3092 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 50108 | ---- | |
| 10840 | DD16-3101 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 174476 | ---- | |
| 10841 | DD16-3212 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 39515 | ---- | |
| 10842 | DD16-3172 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 193117 | ---- | |
| 10843 | DD16-3183 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 46977 | ---- | |
| 10844 | DD16-3187 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 44053 | ---- | |
| 10845 | DD16-3246 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 123554 | ---- | |
| 10846 | DD16-3243 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 94103 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 77 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|

| | | | | | | | | | | | | |
|-------|-----------|----|-----|------|----|------|---|------|------|--------|------|--|
| 10847 | DD16-3242 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 95723 | ---- | |
| 10848 | DD16-3249 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 92368 | ---- | |
| 10849 | DD16-3037 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 62384 | ---- | |
| 10850 | DD16-3032 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 109920 | ---- | |
| 10851 | DD16-3192 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 96122 | ---- | |
| 10852 | DD16-3131 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2155 | ---- | |
| 10853 | DD16-3171 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1687 | ---- | |
| 10854 | DD16-3111 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 728 | ---- | |
| 10855 | DD16-3211 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1378 | ---- | |
| 10856 | DD16-3206 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 718 | ---- | |
| 10857 | DD16-3031 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2163 | ---- | |
| 10858 | DD16-3011 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 793 | ---- | |
| 10859 | DD16-3256 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1912 | ---- | |
| 10860 | DD16-3141 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2055 | ---- | |
| 10861 | DD16-3156 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 2870 | ---- | |
| 10862 | DD16-3259 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 752 | ---- | |
| 10863 | DD16-3241 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1129 | ---- | |
| 10864 | DD16-3258 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1185 | ---- | |
| 10865 | DD16-3257 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1468 | ---- | |
| 10866 | DD16-3126 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1046 | ---- | |
| 10867 | DD16-3181 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1852 | ---- | |
| 10868 | DD16-3097 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 941 | ---- | |
| 10869 | DD16-3236 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 366 | ---- | |
| 10870 | DD16-3260 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1687 | ---- | |
| 10871 | DD16-3252 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1939 | ---- | |
| 10872 | DD16-3247 | CA | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1655 | ---- | |
| 10873 | DD16-3143 | CA | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 69477 | ---- | |

Tests 10874 - 11005 are residual strength tensile tests (RSTT) or residual strength compression tests (RSTC)

| | | | | | | | | | | | | |
|-------|-----------|------|-----|-----|----|--------|---|------|------|-------|---|--|
| 10874 | DD16-3158 | RSTT | 179 | 395 | -1 | static | 3 | ---- | 12.5 | 70672 | 1 | |
| 10875 | DD16-3124 | RSTT | 179 | 404 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10876 | DD16-3229 | RSTT | 276 | 417 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10877 | DD16-3219 | RSTT | 179 | 432 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10878 | DD16-3154 | RSTT | 179 | 455 | -1 | static | 3 | ---- | 12.5 | 70672 | 1 | |
| 10879 | DD16-3190 | RSTT | 179 | 457 | -1 | static | 3 | ---- | 12.5 | 44170 | 1 | |
| 10880 | DD16-3115 | RSTT | 179 | 481 | -1 | static | 3 | ---- | 12.5 | 44170 | 1 | |
| 10881 | DD16-3234 | RSTT | 276 | 484 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10882 | DD16-3125 | RSTT | 179 | 495 | -1 | static | 3 | ---- | 12.5 | 44170 | 1 | |
| 10883 | DD16-3209 | RSTT | 179 | 500 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 78 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10884 | DD16-3228 | RSTT | 276 | 516 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10885 | DD16-3205 | RSTT | 276 | 520 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |
| 10886 | DD16-3230 | RSTT | 179 | 549 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10887 | DD16-3233 | RSTT | 276 | 553 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10888 | DD16-3194 | RSTT | 276 | 584 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10889 | DD16-3134 | RSTT | 276 | 595 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10890 | DD16-3235 | RSTT | 276 | 604 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10891 | DD16-3175 | RSTT | 276 | 609 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10892 | DD16-3200 | RSTT | 276 | 613 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10893 | DD16-3215 | RSTT | 276 | 679 | -1 | static | 1 | ---- | 12.5 | 184 | 1 | |
| 10894 | DD16-3204 | RSTT | 276 | 683 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10895 | DD16-4114 | RSTT | 240 | 432 | 0.1 | static | 3 | ---- | 12.5 | 27469 | 1 | |
| 10896 | DD16-4047 | RSTT | 240 | 438 | 0.1 | static | 3 | ---- | 12.5 | 27491 | 1 | |
| 10897 | DD16-4182 | RSTT | 240 | 472 | 0.1 | static | 3 | ---- | 12.5 | 27468 | 1 | |
| 10898 | DD16-4032 | RSTT | 240 | 483 | 0.1 | static | 3 | ---- | 12.5 | 44436 | 1 | |
| 10899 | DD16-4201 | RSTT | 240 | 491 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10900 | DD16-4073 | RSTT | 380 | 493 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10901 | DD16-4031 | RSTT | 240 | 502 | 0.1 | static | 3 | ---- | 12.5 | 27469 | 1 | |
| 10902 | DD16-4017 | RSTT | 380 | 504 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10903 | DD16-4127 | RSTT | 240 | 522 | 0.1 | static | 3 | ---- | 12.5 | 43950 | 1 | |
| 10904 | DD16-4211 | RSTT | 240 | 525 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10905 | DD16-4146 | RSTT | 240 | 545 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10906 | DD16-4124 | RSTT | 240 | 549 | 0.1 | static | 3 | ---- | 12.5 | 27569 | 1 | |
| 10907 | DD16-4057 | RSTT | 380 | 567 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10908 | DD16-4041 | RSTT | 240 | 575 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10909 | DD16-4098 | RSTT | 380 | 585 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10910 | DD16-4183 | RSTT | 380 | 610 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10911 | DD16-4133 | RSTT | 380 | 645 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10912 | DD16-4125 | RSTT | 380 | 650 | 0.1 | static | 1 | ---- | 12.5 | 468 | 1 | |
| 10913 | DD16-4084 | RSTT | 369 | 661 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10914 | DD16-4167 | RSTT | 380 | 671 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10915 | DD16-4215 | RSTT | 380 | 695 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10916 | DD16-4067 | RSTT | 380 | 701 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10917 | DD16-4027 | RSTT | 380 | 738 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10918 | DD16-4165 | RSTT | 380 | 745 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10919 | DD16-7153 | RSTT | -240 | 610 | 10 | static | 3 | ---- | 12.5 | 39864 | 1 | |
| 10920 | DD16-7203 | RSTT | -240 | 615 | 10 | static | 3 | ---- | 12.5 | 23044 | 1 | |
| 10921 | DD16-7120 | RSTT | -240 | 627 | 10 | static | 3 | ---- | 12.5 | 37152 | 1 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 79 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10922 | DD16-7008 | RSTT | -240 | 638 | 10 | static | 3 | ---- | 12.5 | 39864 | 1 | |
| 10923 | DD16-7060 | RSTT | -240 | 643 | 10 | static | 3 | ---- | 12.5 | 15945 | 1 | |
| 10924 | DD16-7192 | RSTT | -240 | 659 | 10 | static | 3 | ---- | 12.5 | 9218 | 1 | |
| 10925 | DD16-7201 | RSTT | -300 | 677 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 10926 | DD16-7022 | RSTT | -240 | 683 | 10 | static | 3 | ---- | 12.5 | 9218 | 1 | |
| 10927 | DD16-7115 | RSTT | -240 | 687 | 10 | static | 3 | ---- | 12.5 | 23046 | 1 | |
| 10928 | DD16-7193 | RSTT | -300 | 704 | 10 | static | 1 | ---- | 12.5 | 123 | 1 | |
| 10929 | DD16-7061 | RSTT | -300 | 711 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 10930 | DD16-7067 | RSTT | -300 | 716 | 10 | static | 1 | ---- | 12.5 | 494 | 1 | |
| 10931 | DD16-7148 | RSTT | -300 | 721 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 10932 | DD16-7092 | RSTT | -300 | 731 | 10 | static | 1 | ---- | 12.5 | 223 | 1 | |
| 10933 | DD16-7040 | RSTT | -300 | 740 | 10 | static | 1 | ---- | 12.5 | 123 | 1 | |
| 10934 | DD16-7147 | RSTT | -300 | 740 | 10 | static | 1 | ---- | 12.5 | 890 | 1 | |
| 10935 | DD16-3072 | RSTC | 179 | -365 | -1 | static | 3 | ---- | 12.5 | 70672 | 1 | |
| 10936 | DD16-3061 | RSTC | 276 | -298 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10937 | DD16-3051 | RSTC | 276 | -313 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |
| 10938 | DD16-3207 | RSTC | 276 | -328 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |
| 10939 | DD16-3202 | RSTC | 276 | -340 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |
| 10940 | DD16-3052 | RSTC | 276 | -365 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10941 | DD16-3121 | RSTC | 276 | -368 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10942 | DD16-3081 | RSTC | 276 | -369 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10943 | DD16-3041 | RSTC | 276 | -371 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10944 | DD16-3057 | RSTC | 179 | -380 | -1 | static | 3 | ---- | 12.5 | 44171 | 1 | |
| 10945 | DD16-3191 | RSTC | 179 | -386 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10946 | DD16-3047 | RSTC | 276 | -388 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10947 | DD16-3244 | RSTC | 276 | -389 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10948 | DD16-3112 | RSTC | 276 | -391 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10949 | DD16-3102 | RSTC | 179 | -401 | -1 | static | 3 | ---- | 12.5 | 17761 | 1 | |
| 10950 | DD16-3146 | RSTC | 276 | -404 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |
| 10951 | DD16-3163 | RSTC | 179 | -410 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10952 | DD16-3245 | RSTC | 276 | -418 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10953 | DD16-3067 | RSTC | 276 | -420 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10954 | DD16-3107 | RSTC | 276 | -423 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10955 | DD16-3255 | RSTC | 276 | -424 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10956 | DD16-3094 | RSTC | 179 | -426 | -1 | static | 3 | ---- | 12.5 | 17668 | 1 | |
| 10957 | DD16-3157 | RSTC | 179 | -428 | -1 | static | 3 | ---- | 12.5 | 44171 | 1 | |
| 10958 | DD16-3098 | RSTC | 179 | -434 | -1 | static | 3 | ---- | 12.5 | 70672 | 1 | |
| 10959 | DD16-3062 | RSTC | 276 | -447 | -1 | static | 1 | ---- | 12.5 | 1184 | 1 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 80 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 10960 | DD16-3250 | RSTC | 276 | -449 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10961 | DD16-3036 | RSTC | 276 | -453 | -1 | static | 1 | ---- | 12.5 | 296 | 1 | |
| 10962 | DD16-3042 | RSTC | 276 | -455 | -1 | static | 1 | ---- | 12.5 | 740 | 1 | |
| 10963 | DD16-3024 | RSTC | 179 | -456 | -1 | static | 3 | ---- | 12.5 | 70672 | 1 | |
| 10964 | DD16-4087 | RSTC | 380 | -335 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10965 | DD16-4206 | RSTC | 380 | -348 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10966 | DD16-4044 | RSTC | 380 | -351 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10967 | DD16-4145 | RSTC | 380 | -357 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10968 | DD16-4122 | RSTC | 240 | -367 | 0.1 | static | 3 | ---- | 12.5 | 27469 | 1 | |
| 10969 | DD16-4139 | RSTC | 240 | -389 | 0.1 | static | 3 | ---- | 12.5 | 10987 | 1 | |
| 10970 | DD16-4104 | RSTC | 240 | -389 | 0.1 | static | 3 | ---- | 12.5 | 48161 | 1 | |
| 10971 | DD16-4011 | RSTC | 240 | -393 | 0.1 | static | 3 | ---- | 12.5 | 10987 | 1 | |
| 10972 | DD16-4034 | RSTC | 380 | -397 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10973 | DD16-4229 | RSTC | 380 | -397 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10974 | DD16-4107 | RSTC | 380 | -400 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10975 | DD16-4141 | RSTC | 380 | -408 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10976 | DD16-4043 | RSTC | 380 | -411 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10977 | DD16-4166 | RSTC | 380 | -415 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10978 | DD16-4190 | RSTC | 380 | -416 | 0.1 | static | 1 | ---- | 12.5 | 750 | 1 | |
| 10979 | DD16-4188 | RSTC | 380 | -421 | 0.1 | static | 1 | ---- | 12.5 | 469 | 1 | |
| 10980 | DD16-4025 | RSTC | 380 | -424 | 0.1 | static | 1 | ---- | 12.5 | 188 | 1 | |
| 10981 | DD16-4134 | RSTC | 240 | -431 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10982 | DD16-4194 | RSTC | 240 | -431 | 0.1 | static | 3 | ---- | 12.5 | 27468 | 1 | |
| 10983 | DD16-4106 | RSTC | 240 | -433 | 0.1 | static | 3 | ---- | 12.5 | 27469 | 1 | |
| 10984 | DD16-4154 | RSTC | 240 | -434 | 0.1 | static | 3 | ---- | 12.5 | 10988 | 1 | |
| 10985 | DD16-4096 | RSTC | 240 | -457 | 0.1 | static | 3 | ---- | 12.5 | 43950 | 1 | |
| 10986 | DD16-4110 | RSTC | 240 | -469 | 0.1 | static | 3 | ---- | 12.5 | 27469 | 1 | |
| 10987 | DD16-7135 | RSTC | -240 | -306 | 10 | static | 3 | ---- | 12.5 | 23044 | 1 | |
| 10988 | DD16-7093 | RSTC | -240 | -330 | 10 | static | 3 | ---- | 12.5 | 36872 | 1 | |
| 10989 | DD16-7002 | RSTC | -240 | -335 | 10 | static | 3 | ---- | 12.5 | 15945 | 1 | |
| 10990 | DD16-7089 | RSTC | -300 | -336 | 10 | static | 1 | ---- | 12.5 | 494 | 1 | |
| 10991 | DD16-7194 | RSTC | -240 | -344 | 10 | static | 3 | ---- | 12.5 | 23044 | 1 | |
| 10992 | DD16-7116 | RSTC | -240 | -360 | 10 | static | 3 | ---- | 12.5 | 39864 | 1 | |
| 10993 | DD16-7134 | RSTC | -240 | -360 | 10 | static | 3 | ---- | 12.5 | 9218 | 1 | |
| 10994 | DD16-7051 | RSTC | -240 | -361 | 10 | static | 3 | ---- | 12.5 | 23044 | 1 | |
| 10995 | DD16-7029 | RSTC | -300 | -363 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 10996 | DD16-7140 | RSTC | -240 | -368 | 10 | static | 3 | ---- | 12.5 | 36872 | 1 | |
| 10997 | DD16-7015 | RSTC | -240 | -371 | 10 | static | 3 | ---- | 12.5 | 9218 | 1 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 81 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|

| | | | | | | | | | | | | |
|-------|-----------|------|------|------|----|--------|---|------|------|-------|---|--|
| 10998 | DD16-7005 | RSTC | -300 | -372 | 10 | static | 1 | ---- | 12.5 | 124 | 1 | |
| 10999 | DD16-7195 | RSTC | -240 | -375 | 10 | static | 3 | ---- | 12.5 | 23044 | 1 | |
| 11000 | DD16-7024 | RSTC | -300 | -375 | 10 | static | 1 | ---- | 12.5 | 123 | 1 | |
| 11001 | DD16-7078 | RSTC | -300 | -385 | 10 | static | 1 | ---- | 12.5 | 223 | 1 | |
| 11002 | DD16-7179 | RSTC | -300 | -387 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 11003 | DD16-7085 | RSTC | -240 | -388 | 10 | static | 3 | ---- | 12.5 | 9218 | 1 | |
| 11004 | DD16-7031 | RSTC | -300 | -389 | 10 | static | 1 | ---- | 12.5 | 309 | 1 | |
| 11005 | DD16-7099 | RSTC | -300 | -391 | 10 | static | 1 | ---- | 12.5 | 123 | 1 | |

Tests 11006 - 11089 list residual strength tests which prematurely failed before the required number of cycles (PRSTT - tension , PRSTC - compression)

| | | | | | | | | | | | | |
|-------|-----------|-------|------|------|-----|------|---|------|------|-------|------|--|
| 11006 | DD16-3135 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 54682 | ---- | |
| 11007 | DD16-3030 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 59776 | ---- | |
| 11008 | DD16-3078 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 53874 | ---- | |
| 11009 | DD16-3074 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 62499 | ---- | |
| 11010 | DD16-3070 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 61739 | ---- | |
| 11011 | DD16-3148 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 36943 | ---- | |
| 11012 | DD16-3054 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 35776 | ---- | |
| 11013 | DD16-3063 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 65319 | ---- | |
| 11014 | DD16-3071 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 59600 | ---- | |
| 11015 | DD16-3055 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 49275 | ---- | |
| 11016 | DD16-3100 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 68895 | ---- | |
| 11017 | DD16-3058 | PRSTC | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 62564 | ---- | |
| 11018 | DD16-3253 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 880 | ---- | |
| 11019 | DD16-3086 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 690 | ---- | |
| 11020 | DD16-3216 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 724 | ---- | |
| 11021 | DD16-3091 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 742 | ---- | |
| 11022 | DD16-3056 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 748 | ---- | |
| 11023 | DD16-3193 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 471 | ---- | |
| 11024 | DD16-3046 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 627 | ---- | |
| 11025 | DD16-3021 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 926 | ---- | |
| 11026 | DD16-3254 | PRSTC | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1064 | ---- | |
| 11027 | DD16-4029 | PRSTC | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 390 | ---- | |
| 11028 | DD16-4193 | PRSTC | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 672 | ---- | |
| 11029 | DD16-4216 | PRSTC | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 738 | ---- | |
| 11030 | DD16-7200 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 24603 | ---- | |
| 11031 | DD16-7111 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 12104 | ---- | |
| 11032 | DD16-7149 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 9780 | ---- | |
| 11033 | DD16-7016 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 14100 | ---- | |
| 11034 | DD16-7017 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 18954 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 82 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|

| | | | | | | | | | | | | |
|-------|-----------|-------|------|------|-----|------|---|------|------|-------|------|--|
| 11035 | DD16-7169 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 35635 | ---- | |
| 11036 | DD16-7207 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 23106 | ---- | |
| 11037 | DD16-7132 | PRSTC | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 8144 | ---- | |
| 11038 | DD16-7086 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 166 | ---- | |
| 11039 | DD16-7105 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 643 | ---- | |
| 11040 | DD16-7123 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 374 | ---- | |
| 11041 | DD16-7127 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 333 | ---- | |
| 11042 | DD16-7138 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 454 | ---- | |
| 11043 | DD16-7197 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 493 | ---- | |
| 11044 | DD16-7049 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 38 | ---- | |
| 11045 | DD16-7052 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 251 | ---- | |
| 11046 | DD16-7104 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 197 | ---- | |
| 11047 | DD16-7151 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 467 | ---- | |
| 11048 | DD16-7174 | PRSTC | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 203 | ---- | |
| 11049 | DD16-3170 | PRSTT | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 35706 | ---- | |
| 11050 | DD16-3149 | PRSTT | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 38400 | ---- | |
| 11051 | DD16-3195 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 404 | ---- | |
| 11052 | DD16-3224 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 699 | ---- | |
| 11053 | DD16-3237 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 512 | ---- | |
| 11054 | DD16-3238 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 616 | ---- | |
| 11055 | DD16-3220 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 616 | ---- | |
| 11056 | DD16-3144 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 629 | ---- | |
| 11057 | DD16-3232 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 760 | ---- | |
| 11058 | DD16-3180 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1159 | ---- | |
| 11059 | DD16-3240 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 335 | ---- | |
| 11060 | DD16-3165 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 920 | ---- | |
| 11061 | DD16-3210 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 981 | ---- | |
| 11062 | DD16-3139 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 1055 | ---- | |
| 11063 | DD16-3239 | PRSTT | 276 | ---- | -1 | ---- | 1 | ---- | ---- | 543 | ---- | |
| 11064 | DD16-4052 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 44999 | ---- | |
| 11065 | DD16-4177 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 23289 | ---- | |
| 11066 | DD16-4207 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 30068 | ---- | |
| 11067 | DD16-4208 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 43512 | ---- | |
| 11068 | DD16-4195 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 24030 | ---- | |
| 11069 | DD16-4227 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 28179 | ---- | |
| 11070 | DD16-4176 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 5473 | ---- | |
| 11071 | DD16-4061 | PRSTT | 240 | ---- | 0.1 | ---- | 3 | ---- | ---- | 31726 | ---- | |
| 11072 | DD16-4113 | PRSTT | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 732 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 83 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|--|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 11073 | DD16-7161 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 27745 | ---- | |
| 11074 | DD16-7023 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 31198 | ---- | |
| 11075 | DD16-7043 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 38245 | ---- | |
| 11076 | DD16-7074 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 25898 | ---- | |
| 11077 | DD16-7110 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 32030 | ---- | |
| 11078 | DD16-7118 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 14948 | ---- | |
| 11079 | DD16-7025 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 8378 | ---- | |
| 11080 | DD16-7096 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 12232 | ---- | |
| 11081 | DD16-7098 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 14293 | ---- | |
| 11082 | DD16-7124 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 13182 | ---- | |
| 11083 | DD16-7150 | PRSTT | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 30749 | ---- | |
| 11084 | DD16-7076 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 401 | ---- | |
| 11085 | DD16-7032 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 117 | ---- | |
| 11086 | DD16-7152 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 244 | ---- | |
| 11087 | DD16-7048 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 267 | ---- | |
| 11088 | DD16-7208 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 118 | ---- | |
| 11089 | DD16-7081 | PRSTT | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 341 | ---- | |
| Tests 11090 - 11201 involve two constant amplitude block tests (block 1 for a set number of cycles and then block2 to failure) | | | | | | | | | | | | |
| 11090 | DD16-6199 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 45329 | |
| 11091 | DD16-6025 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 14099 | |
| 11092 | DD16-6021 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 13232 | |
| 11093 | DD16-6031 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 64474 | |
| 11094 | DD16-6168 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 62391 | |
| 11095 | DD16-6170 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 29136 | |
| 11096 | DD16-6181 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 26523 | |
| 11097 | DD16-6088 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 110413 | |
| 11098 | DD16-6123 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 70130 | |
| 11099 | DD16-6193 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 37402 | |
| 11100 | DD16-6124 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 18833 | |
| 11101 | DD16-6103 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 16720 | |
| 11102 | DD16-6018 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 9159 | |
| 11103 | DD16-6131 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 22191 | 19126 | |
| 11104 | DD16-6028 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 28813 | |
| 11105 | DD16-6057 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 38726 | |
| 11106 | DD16-6090 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 22304 | |
| 11107 | DD16-6130 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 43427 | |
| 11108 | DD16-6169 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 22585 | |
| 11109 | DD16-6194 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 24406 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 84 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------------|
| 11110 | DD16-6138 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 8876 | 4918 | no postcure |
| 11111 | DD16-6136 | TC | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35506 | 2768 | no postcure |
| 11112 | DD16-6182 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 370734 | |
| 11113 | DD16-6188 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 49089 | |
| 11114 | DD16-6101 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 304043 | |
| 11115 | DD16-6184 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 59140 | |
| 11116 | DD16-6113 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 248693 | |
| 11117 | DD16-6013 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 181036 | |
| 11118 | DD16-6015 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 16911 | 96231 | |
| 11119 | DD16-6035 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 57569 | |
| 11120 | DD16-6062 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 93813 | |
| 11121 | DD16-6064 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 68203 | |
| 11122 | DD16-6073 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 465377 | |
| 11123 | DD16-6164 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 90125 | |
| 11124 | DD16-6092 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 161249 | |
| 11125 | DD16-6071 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 100550 | |
| 11126 | DD16-6145 | CT | 200 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 79295 | |
| 11127 | DD16-6183 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 67479 | |
| 11128 | DD16-6202 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 42277 | 78167 | |
| 11129 | DD16-6121 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 67643 | 167550 | |
| 11130 | DD16-6110 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 67643 | 289600 | |
| 11131 | DD16-6036 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 67643 | 601530 | |
| 11132 | DD16-6070 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 67643 | 327452 | |
| 11133 | DD16-6077 | CT | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 67643 | 53639 | |
| 11134 | DD16-4002 | HL | 380 | ---- | 0.1 | ---- | 1 | ---- | ---- | 628 | ---- | |
| 11135 | DD16-4037 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 188 | 76869 | |
| 11136 | DD16-4065 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 469 | 55084 | |
| 11137 | DD16-4078 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 469 | 55434 | |
| 11138 | DD16-4080 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 188 | 59730 | |
| 11139 | DD16-4103 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 188 | 99458 | |
| 11140 | DD16-4116 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 750 | 25476 | |
| 11141 | DD16-4129 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 188 | 90177 | |
| 11142 | DD16-4147 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 750 | 54713 | |
| 11143 | DD16-4175 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 469 | 8136 | |
| 11144 | DD16-4180 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 750 | 17124 | |
| 11145 | DD16-4220 | HL | 380 | 240 | 0.1 | 0.1 | 1 | 3 | ---- | 469 | 24472 | |
| 11146 | DD16-3136 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 296 | 54195 | |
| 11147 | DD16-3197 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 29399 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 85 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|-------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 11148 | DD16-3221 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 18507 | |
| 11149 | DD16-3161 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 91848 | |
| 11150 | DD16-3198 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 38386 | |
| 11151 | DD16-3167 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 163307 | |
| 11152 | DD16-3248 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 1184 | 59041 | |
| 11153 | DD16-3162 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 1184 | 24771 | |
| 11154 | DD16-3117 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 296 | 38874 | |
| 11155 | DD16-3066 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 296 | 49453 | |
| 11156 | DD16-3153 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 296 | 73187 | |
| 11157 | DD16-3166 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 54670 | |
| 11158 | DD16-3177 | HL | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 740 | 34869 | |
| 11159 | DD16-7084 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 33054 | |
| 11160 | DD16-7019 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 73229 | |
| 11161 | DD16-7063 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 57312 | |
| 11162 | DD16-7046 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 10276 | |
| 11163 | DD16-7166 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 37178 | |
| 11164 | DD16-7178 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 51763 | |
| 11165 | DD16-7009 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 63057 | |
| 11166 | DD16-7037 | HL | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 223 | 101167 | |
| 11167 | DD16-4005 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 11637 | 86 | |
| 11168 | DD16-4039 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 46548 | 212 | |
| 11169 | DD16-4051 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 29093 | 91 | |
| 11170 | DD16-4086 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 11637 | 212 | |
| 11171 | DD16-4088 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 29093 | 209 | |
| 11172 | DD16-4108 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 46548 | 105 | |
| 11173 | DD16-4135 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 11647 | 517 | |
| 11174 | DD16-4163 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 29093 | 487 | |
| 11175 | DD16-4171 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 46548 | 487 | |
| 11176 | DD16-4213 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 29093 | 14 | |
| 11177 | DD16-4217 | LH | 240 | 380 | 0.1 | 0.1 | 3 | 1 | ---- | 11637 | 162 | |
| 11178 | DD16-7204 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 15945 | 508 | |
| 11179 | DD16-7012 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 15945 | 365 | |
| 11180 | DD16-7066 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 39864 | 998 | |
| 11181 | DD16-7080 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 39864 | 22 | |
| 11182 | DD16-7183 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 63782 | 322 | |
| 11183 | DD16-7007 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 63782 | 2 | |
| 11184 | DD16-7162 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 15945 | 114 | |
| 11185 | DD16-7136 | LH | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 15945 | 41 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 86 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|---|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------------|
| 11186 | DD16-3099 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 2212 | |
| 11187 | DD16-3105 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 2147 | |
| 11188 | DD16-3088 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 95 | |
| 11189 | DD16-3119 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 2228 | |
| 11190 | DD16-3089 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 1352 | |
| 11191 | DD16-3174 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 70672 | 882 | |
| 11192 | DD16-3185 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 2 | |
| 11193 | DD16-3214 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 259 | |
| 11194 | DD16-3049 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 70672 | 1091 | |
| 11195 | DD16-3223 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 347 | |
| 11196 | DD16-3164 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 117 | |
| 11197 | DD16-3199 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 70672 | 148 | |
| 11198 | DD16-3084 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 53 | |
| 11199 | DD16-3129 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 70672 | 2552 | |
| 11200 | DD16-3130 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 44170 | 973 | |
| 11201 | DD16-3114 | LH | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 554 | |
| Tests 11202 - 11228 list two block tests which failed in the first block (PHL - high low), (PLH - low high) | | | | | | | | | | | | |
| 11202 | DD16-7003 | PHL | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 111 | ---- | |
| 11203 | DD16-7056 | PHL | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 630 | ---- | |
| 11204 | DD16-7102 | PHL | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 463 | ---- | |
| 11205 | DD16-7026 | PHL | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 188 | ---- | |
| 11206 | DD16-7095 | PHL | -300 | ---- | 10 | ---- | 1 | ---- | ---- | 208 | ---- | |
| 11207 | DD16-6008 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 18150 | ---- | |
| 11208 | DD16-6042 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 38806 | ---- | |
| 11209 | DD16-6104 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 18353 | ---- | |
| 11210 | DD16-6111 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 15581 | ---- | |
| 11211 | DD16-6154 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 6885 | ---- | |
| 11212 | DD16-6022 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 6767 | ---- | |
| 11213 | DD16-6096 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 26947 | ---- | |
| 11214 | DD16-6151 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 67223 | ---- | |
| 11215 | DD16-6122 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 12431 | ---- | |
| 11216 | DD16-6120 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 21138 | ---- | no postcure |
| 11217 | DD16-6065 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 6999 | ---- | no postcure |
| 11218 | DD16-6128 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 32285 | ---- | |
| 11219 | DD16-6205 | PLH | 240 | ---- | 10 | ---- | 3 | ---- | ---- | 25800 | ---- | |
| 11220 | DD16-3083 | PLH | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 14575 | ---- | |
| 11221 | DD16-3109 | PLH | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 29163 | ---- | |
| 11222 | DD16-3225 | PLH | 179 | ---- | -1 | ---- | 3 | ---- | ---- | 13237 | ---- | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 87 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|---|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 11223 | DD16-7107 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 13879 | ---- | |
| 11224 | DD16-7180 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 15945 | ---- | |
| 11225 | DD16-7128 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 7536 | ---- | |
| 11226 | DD16-7004 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 9928 | ---- | |
| 11227 | DD16-7142 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 17068 | ---- | |
| 11228 | DD16-7158 | PLH | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 15277 | ---- | |
| Tests 11229 - 11236 lists repeated constant amplitude block tests (block 1 for 296 cycles, block 2 for 30 cycles) start over and repeat block 1 and 2 to failure | | | | | | | | | | | | |
| 11229 | DD16-3044 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 771 | 35336 | |
| 11230 | DD16-3001 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 592 | 19568 | |
| 11231 | DD16-3090 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 586 | 17668 | |
| 11232 | DD16-3017 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 423 | 17668 | |
| 11233 | DD16-3025 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 864 | 35336 | |
| 11234 | DD16-3039 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 922 | 53004 | |
| 11235 | DD16-3169 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 637 | 35336 | |
| 11236 | DD16-3080 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 592 | 22477 | |
| Tests 11237 - 11245 lists repeated constant amplitude block tests (block 1 for 30 cycles, block 2 for 1767 cycles) start over and repeat block 1 and 2 to failure | | | | | | | | | | | | |
| 11237 | DD16-3075 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 296 | 17271 | |
| 11238 | DD16-3160 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 280 | 15903 | |
| 11239 | DD16-3110 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 381 | 21204 | |
| 11240 | DD16-3013 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 485 | 28272 | |
| 11241 | DD16-3095 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 62 | 3534 | |
| 11242 | DD16-3085 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 267 | 14136 | |
| 11243 | DD16-3000 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 360 | 20719 | |
| 11244 | DD16-3002 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 455 | 26505 | |
| 11245 | DD16-3020 | RBS1 | 276 | 179 | -1 | -1 | 1 | 3 | ---- | 361 | 21204 | |
| Tests 11246 - 11252 lists repeated constant amplitude block tests (block 1 for 17668 cycles, block 2 for 296 cycles) start over and repeat B1 and B2 to failure | | | | | | | | | | | | |
| 11246 | DD16-3159 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 24477 | 296 | |
| 11247 | DD16-3029 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 35301 | 296 | |
| 11248 | DD16-3155 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 41836 | 592 | |
| 11249 | DD16-3073 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 17668 | 112 | |
| 11250 | DD16-3018 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 70672 | 928 | |
| 11251 | DD16-3008 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 35336 | 332 | |
| 11252 | DD16-3060 | RBS2 | 179 | 276 | -1 | -1 | 3 | 1 | ---- | 29630 | 296 | |
| Tests 11253 - 11278 list two block tests, block 1 and then block 2 to failure | | | | | | | | | | | | |
| 11253 | DD16-8005 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 15217 | 28171 | |
| 11254 | DD16-8014 | TN | 200 | 180 | 0.1 | ---- | 3 | ---- | ---- | 46064 | ---- | |
| 11255 | DD16-8019 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 38042 | 5008 | |
| 11256 | DD16-8095 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 15217 | 15526 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 88 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|---|-----------|------------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
| 11257 | DD16-8052 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 38041 | 42277 | |
| 11258 | DD16-8117 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 60866 | ---- | |
| 11259 | DD16-8147 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 15217 | 9035 | |
| 11260 | DD16-8164 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 38042 | 79890 | |
| 11261 | DD16-8180 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 15217 | 8058 | |
| 11262 | DD16-8209 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 60866 | 622 | |
| 11263 | DD16-8231 | TN | 200 | 180 | 0.1 | -1 | 3 | 3 | ---- | 38042 | 25592 | |
| 11264 | DD16-8012 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 10248 | 188372 | |
| 11265 | DD16-8020 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 40993 | 230306 | |
| 11266 | DD16-8030 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 25621 | 11457 | |
| 11267 | DD16-8037 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 40993 | 3699 | |
| 11268 | DD16-8045 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 10248 | 12390 | |
| 11269 | DD16-8105 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 25621 | 34377 | |
| 11270 | DD16-8116 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 40993 | 65506 | |
| 11271 | DD16-8185 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 10248 | 43049 | |
| 11272 | DD16-8225 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 25621 | 71974 | |
| 11273 | DD16-8227 | NT | 180 | 200 | -1 | 0.1 | 3 | 3 | ---- | 10248 | 25190 | |
| 11274 | DD16-8093 | PNT | 180 | 200 | -1 | 0.1 | 3 | ---- | ---- | 39291 | ---- | |
| 11275 | DD16-8172 | PNT | 180 | 200 | -1 | 0.1 | 3 | ---- | ---- | 39304 | ---- | |
| 11276 | DD16-8207 | PNT | 180 | 200 | -1 | 0.1 | 3 | ---- | ---- | 20762 | ---- | |
| 11277 | DD16-8029 | PTN | 200 | 180 | 0.1 | -1 | 3 | ---- | ---- | 30762 | ---- | |
| 11278 | DD16-8138 | PTN | 200 | 180 | 0.1 | -1 | 3 | ---- | ---- | 53976 | ---- | |
| Tests 11279 - 11283 lists repeated constant amplitude repeated block tests (block 1 for 888 cycles, block 2 for 1691cycles) repeat B1-B2 to failure | | | | | | | | | | | | |
| 11279 | DD16-6187 | RB0.02S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 71928 | 118871 | |
| 11280 | DD16-6127 | RB0.02S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 1026528 | 1892499 | |
| 11281 | DD16-6099 | RB0.02S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 2401152 | 4416647 | |
| 11282 | DD16-6132 | RB0.02S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 320568 | 549233 | |
| 11283 | DD16-6002 | RB0.02S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 3552 | 2979 | |
| Tests 11284 - 11288 lists repeated constant amplitude repeated block tests (block 1 for 8876 cycles, block 2 for 16911cycles) repeat B1-B2 to failure | | | | | | | | | | | | |
| 11284 | DD16-6005 | RB0.2S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35504 | 17577 | |
| 11285 | DD16-6014 | RB0.2S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35504 | 20015 | |
| 11286 | DD16-6150 | RB0.2S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 142016 | 171099 | |
| 11287 | DD16-6201 | RB0.2S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 35504 | 19793 | |
| 11288 | DD16-6052 | RB0.2S0.1 | 200 | 240 | 0.1 | 10 | 3 | 3 | ---- | 16911 | 8204 | |
| Tests 11289 - 11293 lists repeated constant amplitude repeated block tests (block 1 for 1691 cycles, block 2 for 888 cycles) repeat B1-B2 to failure | | | | | | | | | | | | |
| 11289 | DD16-6068 | RB0.02S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 1550761 | 799200 | |
| 11290 | DD16-6192 | RB0.02S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 290665 | 150072 | |
| 11291 | DD16-6100 | RB0.02S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 355271 | 174048 | |

| Test | Sample ID | Test Type | Smax Block 1, MPa | Smax Block 2, MPa | R-value Block 1 | R-value Block 2 | 89 Frequency Block 1, Hz | Frequency Block 2, Hz | Displacement Rate, mm/s | Cycles to Failure or in Block 1 | Cycles in Block 2 | Notes |
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|
|------|-----------|-----------|-------------------------|-------------------------|--------------------|--------------------|-----------------------------------|--------------------------|----------------------------|---------------------------------------|----------------------|-------|

| | | | | | | | | | | | | |
|-------|-----------|-----------|-----|-----|----|-----|---|---|------|--------|--------|--|
| 11292 | DD16-6034 | RB0.02S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 514925 | 256632 | |
| 11293 | DD16-6167 | RB0.02S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 204623 | 107448 | |

Tests 11294 - 11298 lists repeated constant amplitude repeated block tests (block 1 for 16911 cycles, block 2 for 8876 cycles) repeat B1-B2 to failure

| | | | | | | | | | | | | |
|-------|-----------|-----------|-----|-----|----|-----|---|------|------|-------|-------|--|
| 11294 | DD16-6179 | RB0.2S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 71160 | 35504 | |
| 11295 | DD16-6023 | RB0.2S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 21979 | 8876 | |
| 11296 | DD16-6020 | RB0.2S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 24923 | 8876 | |
| 11297 | DD16-6011 | RB0.2S10 | 240 | 200 | 10 | 0.1 | 3 | 3 | ---- | 23167 | 8876 | |
| 11298 | DD16-6043 | PRB0.2S10 | 240 | 200 | 10 | 0.1 | 3 | ---- | ---- | 16871 | ---- | |

Tests 11299 - 11303 lists repeated constant amplitude repeated block tests (block 1 for 223 cycles, block 2 for 15945 cycles) repeat B1-B2 to failure

| | | | | | | | | | | | | |
|-------|-----------|---------|------|------|----|----|---|---|------|-----|-------|--|
| 11299 | DD16-7181 | RB0.2S1 | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 451 | 31890 | |
| 11300 | DD16-7159 | RB0.2S1 | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 224 | 15945 | |
| 11301 | DD16-7090 | RB0.2S1 | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 691 | 47835 | |
| 11302 | DD16-7091 | RB0.2S1 | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 670 | 47835 | |
| 11303 | DD16-7176 | RB0.2S1 | -300 | -240 | 10 | 10 | 1 | 3 | ---- | 323 | 15945 | |

Tests 11304 - 11315 lists repeated constant amplitude repeated block tests (block 2 for 15945 cycles, block 1 for 223 cycles) repeat B2-B1 to failure

| | | | | | | | | | | | | |
|-------|-----------|----------|------|------|----|------|---|------|------|-------|------|--|
| 11304 | DD16-7042 | RB0.2S2 | -240 | -300 | 10 | 10 | 1 | 1 | ---- | 22532 | 223 | |
| 11305 | DD16-7143 | RB0.2S2 | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 31890 | 373 | |
| 11306 | DD16-7021 | RB0.2S2 | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 15945 | 216 | |
| 11307 | DD16-7027 | RB0.2S2 | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 47835 | 533 | |
| 11308 | DD16-7039 | RB0.2S2 | -240 | -300 | 10 | 10 | 3 | 1 | ---- | 47906 | 669 | |
| 11309 | DD16-7113 | PRB0.2S2 | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 6097 | ---- | |
| 11310 | DD16-7073 | PRB0.2S2 | -240 | ---- | 10 | ---- | 3 | ---- | ---- | 13872 | ---- | |

Adhesive Joint Tests

Tests 11667 - 11904 cover adhesive joint tests detailed in: "Composite Materials Fatigue Issues in Wind Turbine Blade Construction," John F. Mandell, Daniel D. Samborsky, and Pancasatya Agastra, SAMPE 2008, Long Beach, May 18-22, 2008.

Geometry "A" = 45-U-, Geometry "B" = 90-U-, Geometry "C" = 45-R-, Geometry "D" = 90-R-

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles |
|-------|----------|-------------|---|--------------|----------------|----------------|--------|
| 11667 | 45-U-076 | 50.12 | * | 0.0254 | 8447 | | 1 |
| 11668 | 45-U-087 | 51.05 | * | 0.0254 | 7482 | | 1 |
| 11669 | 45-U-039 | 50.12 | * | 0.0254 | 7130 | | 1 |
| 11670 | 45-U-079 | 50.25 | * | 0.0254 | 8300 | | 1 |
| 11671 | 45-U-041 | 50.49 | * | 0.0254 | 6450 | | 1 |
| 11672 | 45-U-040 | 51.00 | * | 0.0254 | 7402 | | 1 |
| 11673 | 45-U-042 | 50.09 | * | 0.0254 | 4920 | | 1 |
| 11674 | 45-U-052 | 50.03 | * | 0.0254 | 7455 | | 1 |
| 11675 | 45-U-056 | 50.39 | * | 0.0254 | 8007 | | 1 |
| 11676 | 45-U-050 | 50.38 | * | 0.0254 | 6552 | | 1 |
| 11677 | 45-U-075 | 50.26 | * | 0.0254 | 7157 | | 1 |
| 11678 | 45-U-055 | 50.25 | * | 0.0254 | 7433 | | 1 |
| 11679 | 45-U-054 | 50.30 | * | 0.0254 | 7357 | | 1 |
| 11680 | 45-U-053 | 50.48 | * | 0.0254 | 4964 | | 1 |
| 11681 | 45-U-045 | 50.21 | * | 0.0254 | 5111 | | 1 |
| 11682 | 45-U-086 | 50.12 | * | 0.0254 | 6325 | | 1 |
| 11683 | 45-U-051 | 50.74 | * | 0.0254 | 7353 | | 1 |
| 11684 | 45-U-044 | 50.88 | * | 0.0254 | 8056 | | 1 |
| 11685 | 45-U-043 | 50.51 | * | 0.0254 | 7775 | | 1 |
| 11686 | 45-U-078 | 50.57 | * | 0.0254 | 7335 | | 1 |
| 11687 | 45-U-065 | 50.07 | * | 13 | 6125 | | 1 |
| 11688 | 45-U-060 | 50.36 | * | 13 | 6770 | | 1 |
| 11689 | 45-U-061 | 50.20 | * | 13 | 7571 | | 1 |
| 11690 | 45-U-058 | 49.75 | * | 13 | 4773 | | 1 |
| 11691 | 45-U-059 | 50.36 | * | 13 | 6846 | | 1 |
| 11692 | 45-U-066 | 50.79 | * | 13 | 6770 | | 1 |
| 11693 | 45-U-067 | 50.85 | * | 13 | 6245 | | 1 |
| 11694 | 45-U-046 | 50.55 | * | 13 | 5996 | | 1 |
| 11695 | 45-U-057 | 51.12 | * | 13 | 6917 | | 1 |
| 11696 | 45-U-049 | 50.88 | * | 13 | 10226 | | 1 |
| 11697 | 45-U-047 | 50.73 | * | 13 | 7357 | | 1 |
| 11698 | 45-U-064 | 50.8 | * | 13 | 6775 | | 1 |
| 11699 | 45-U-048 | 50.53 | * | 13 | 5689 | | 1 |
| 11700 | 45-U-062 | 50.55 | * | 13 | 7090 | | 1 |
| 11701 | 45-U-063 | 50.68 | * | 13 | 6294 | | 1 |

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles |
|-------|----------|-------------|-----|--------------|----------------|----------------|--------|
| 11702 | 45-U-091 | 50.55 | 0.1 | 2 | 4124 | 41 | 2773 |
| 11703 | 45-U-084 | 50.96 | 0.1 | 2 | 3438 | 343 | 46560 |
| 11704 | 45-U-074 | 50.1 | 0.1 | 2 | 3438 | 343 | 127 |
| 11705 | 45-U-095 | 51.44 | 0.1 | 2 | 3438 | 343 | 11794 |
| 11706 | 45-U-085 | 50.7 | 0.1 | 2 | 3438 | 343 | 22074 |
| 11707 | 45-U-090 | 50.54 | 0.1 | 2 | 3438 | 343 | 246 |
| 11708 | 45-U-089 | 50.42 | 0.1 | 5 | 2749 | 27 | 80643 |
| 11709 | 45-U-073 | 50.6 | 0.1 | 5 | 2749 | 27 | 520839 |
| 11710 | 45-U-088 | 50.76 | 0.1 | 5 | 2749 | 27 | 342499 |
| 11711 | 45-U-100 | 50.86 | 0.1 | 5 | 2749 | 27 | 156550 |
| 11712 | 45-U-094 | 50.88 | 0.1 | 5 | 2749 | 27 | 204907 |
| 11713 | 90-U-022 | 50.93 | * | 0.0254 | 3625 | | 1 |
| 11714 | 90-U-014 | 51.03 | * | 0.0254 | 6388 | | 1 |
| 11715 | 90-U-016 | 51.23 | * | 0.0254 | 9003 | | 1 |
| 11716 | 90-U-013 | 51.24 | * | 0.0254 | 5120 | | 1 |
| 11717 | 90-U-024 | 50.93 | * | 0.0254 | 7540 | | 1 |
| 11718 | 90-U-020 | 51.19 | * | 0.0254 | 8082 | | 1 |
| 11719 | 90-U-021 | 50.76 | * | 0.0254 | 8483 | | 1 |
| 11720 | 90-U-025 | 51.25 | * | 0.0254 | 6134 | | 1 |
| 11721 | 90-U-017 | 51.07 | * | 0.0254 | 7598 | | 1 |
| 11722 | 90-U-018 | 50.89 | * | 0.0254 | 7922 | | 1 |
| 11723 | 90-U-006 | 51.02 | * | 0.0254 | 7802 | | 1 |
| 11724 | 90-U-019 | 51.13 | * | 0.0254 | 6668 | | 1 |
| 11725 | 90-U-007 | 50.77 | * | 0.0254 | 6259 | | 1 |
| 11726 | 90-U-009 | 50.07 | * | 0.0254 | 7295 | | 1 |
| 11727 | 90-U-012 | 51.29 | * | 0.0254 | 6801 | | 1 |
| 11728 | 90-U-015 | 51 | * | 0.0254 | 5996 | | 1 |
| 11729 | 90-U-005 | 51.24 | * | 0.0254 | 7611 | | 1 |
| 11730 | 90-U-011 | 50.73 | * | 0.0254 | 4969 | | 1 |
| 11731 | 90-U-010 | 50.95 | * | 0.0254 | 8759 | | 1 |
| 11732 | 90-U-008 | 50.98 | * | 0.0254 | 7286 | | 1 |
| 11733 | 90-U-048 | 50.92 | * | 13 | 5556 | | 1 |
| 11734 | 90-U-038 | 51.13 | * | 13 | 4533 | | 1 |
| 11735 | 90-U-035 | 51.17 | * | 13 | 8492 | | 1 |
| 11736 | 90-U-040 | 50.77 | * | 13 | 3701 | | 1 |
| 11737 | 90-U-032 | 51.23 | * | 13 | 8812 | | 1 |
| 11738 | 90-U-052 | 50.95 | * | 13 | 8372 | | 1 |
| 11739 | 90-U-042 | 51.15 | * | 13 | 5102 | | 1 |
| 11740 | 90-U-049 | 50.82 | * | 13 | 5925 | | 1 |
| 11741 | 90-U-043 | 51.24 | * | 13 | 7593 | | 1 |
| 11742 | 90-U-045 | 51.17 | * | 13 | 7664 | | 1 |
| 11743 | 90-U-044 | 51.2 | * | 13 | 8443 | | 1 |
| 11744 | 90-U-050 | 50.84 | * | 13 | 6276 | | 1 |
| 11745 | 90-U-030 | 51.09 | * | 13 | 5925 | | 1 |

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles |
|-------|----------|-------------|-----|--------------|----------------|----------------|---------|
| 11746 | 90-U-051 | 51.05 | * | 13 | 6917 | | 1 |
| 11747 | 90-U-031 | 51.02 | * | 13 | 7348 | | 1 |
| 11748 | 90-U-046 | 51.01 | 0.1 | 2 | 3438 | 343 | 33911 |
| 11749 | 90-U-041 | 50.66 | 0.1 | 2 | 3438 | 343 | 48450 |
| 11750 | 90-U-039 | 51.29 | 0.1 | 2 | 3438 | 343 | 11005 |
| 11751 | 90-U-036 | 49.97 | 0.1 | 2 | 3438 | 343 | 9373 |
| 11752 | 90-U-037 | 51.27 | 0.1 | 5 | 2749 | 276 | 1827361 |
| 11753 | 90-U-028 | 50.98 | 0.1 | 5 | 2749 | 276 | 423203 |
| 11754 | 90-U-034 | 50.99 | 0.1 | 5 | 2749 | 276 | 259986 |
| 11755 | 90-U-033 | 51.22 | 0.1 | 5 | 2749 | 276 | 1533952 |
| 11756 | 90-U-029 | 50.88 | 0.1 | 5 | 2749 | 276 | 40571 |
| 11757 | 45-R-085 | 50.37 | * | 0.0254 | 26529 | | 1 |
| 11758 | 45-R-087 | 51.46 | * | 0.0254 | 30199 | | 1 |
| 11759 | 45-R-088 | 51.44 | * | 0.0254 | 27343 | | 1 |
| 11760 | 45-R-093 | 51.18 | * | 0.0254 | 26458 | | 1 |
| 11761 | 45-R-098 | 51.46 | * | 0.0254 | 28108 | | 1 |
| 11762 | 45-R-100 | 51.28 | * | 0.0254 | 28602 | | 1 |
| 11763 | 45-R-082 | 51.33 | * | 0.0254 | 30128 | | 1 |
| 11764 | 45-R-099 | 51.41 | * | 0.0254 | 31582 | | 1 |
| 11765 | 45-R-092 | 51 | * | 0.0254 | 28980 | | 1 |
| 11766 | 45-R-089 | 51.1 | * | 0.0254 | 31182 | | 1 |
| 11767 | 45-R-058 | 51.31 | * | 0.0254 | 31578 | | 1 |
| 11768 | 45-R-091 | 51.36 | * | 0.0254 | 30270 | | 1 |
| 11769 | 45-R-083 | 51.26 | * | 0.0254 | 29914 | | 1 |
| 11770 | 45-R-086 | 51.33 | * | 0.0254 | 28531 | | 1 |
| 11771 | 45-R-095 | 51.36 | * | 0.0254 | 28691 | | 1 |
| 11772 | 45-R-097 | 51.38 | * | 0.0254 | 29318 | | 1 |
| 11773 | 45-R-084 | 51.38 | * | 0.0254 | 25324 | | 1 |
| 11774 | 45-R-096 | 51.33 | * | 0.0254 | 29180 | | 1 |
| 11775 | 45-R-090 | 51.28 | * | 0.0254 | 27628 | | 1 |
| 11776 | 45-R-094 | 51.36 | * | 0.0254 | 32238 | | 1 |
| 11777 | 45-R-052 | 51.88 | * | 13 | 31138 | | 1 |
| 11778 | 45-R-046 | 52.14 | * | 13 | 26961 | | 1 |
| 11779 | 45-R-047 | 51.27 | * | 13 | 29679 | | 1 |
| 11780 | 45-R-051 | 52.04 | * | 13 | 25301 | | 1 |
| 11781 | 45-R-050 | 51.18 | * | 13 | 27334 | | 1 |
| 11782 | 45-R-048 | 51.3 | * | 13 | 26316 | | 1 |
| 11783 | 45-R-049 | 51.88 | * | 13 | 28922 | | 1 |
| 11784 | 45-R-059 | 51.3 | * | 13 | 29625 | | 1 |
| 11785 | 45-R-061 | 51.03 | * | 13 | 21432 | | 1 |
| 11786 | 45-R-060 | 51.3 | * | 13 | 28838 | | 1 |
| 11787 | 45-R-055 | 51.27 | * | 13 | 30048 | | 1 |
| 11788 | 45-R-054 | 52.16 | * | 13 | 27076 | | 1 |
| 11789 | 45-R-053 | 51.09 | * | 13 | 29060 | | 1 |

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles | |
|-------|----------|-------------|-----|--------------|----------------|----------------|---------|--------|
| 11790 | 45-R-056 | 51.3 | * | 13 | 26485 | | 1 | |
| 11791 | 45-R-057 | 51.23 | * | 13 | 32103 | | 1 | |
| 11792 | 45-R-013 | 51.56 | 0.1 | 2.5 | 19572 | 1957 | 7529 | |
| 11793 | 45-R-017 | 51.54 | 0.1 | 2.5 | 19572 | 1957 | 1282 | |
| 11794 | 45-R-015 | 51.38 | 0.1 | 2.5 | 19572 | 1957 | 4189 | |
| 11795 | 45-R-019 | 51.52 | 0.1 | 2.5 | 19572 | 1957 | 6394 | |
| 11796 | 45-R-018 | 51.46 | 0.1 | 2.5 | 19572 | 1957 | 6048 | |
| 11797 | 45-R-043 | 51.59 | 0.1 | 2.5 | 19572 | 1957 | 6518 | |
| 11798 | 45-R-014 | 50.62 | 0.1 | 4 | 14012 | 1401 | 159482 | |
| 11799 | 45-R-042 | 51.36 | 0.1 | 4 | 14012 | 1401 | 373817 | |
| 11800 | 45-R-044 | 51.16 | 0.1 | 4 | 14012 | 1401 | 128804 | |
| 11801 | 45-R-020 | 51.36 | 0.1 | 5 | 12611 | 1261 | 409608 | |
| 11802 | 45-R-016 | 51.36 | 0.1 | 5 | 12611 | 1261 | 632713 | |
| 11803 | 45-R-003 | 50.86 | 0.1 | 5 | 12611 | 1261 | 868845 | |
| 11804 | 45-R-004 | 51.55 | 0.1 | 5 | 12611 | 1261 | 1157910 | |
| 11805 | 45-R-007 | 51.37 | 0.1 | 5 | 12611 | 1261 | 813107 | |
| 11806 | 45-R-005 | 51.44 | 0.1 | 5 | 12611 | 1261 | 915098 | |
| 11807 | 45-R-045 | 51.77 | 0.1 | 6 | 11210 | 1121 | 2500000 | runout |
| 11808 | 45-R-008 | 51.51 | 0.1 | 2.5 | 16810 | 1681 | 14564 | |
| 11809 | 45-R-001 | 51.30 | 0.1 | 2.5 | 16810 | 1681 | 93481 | |
| 11810 | 45-R-006 | 51.38 | 0.1 | 2.5 | 16810 | 1681 | 34855 | |
| 11811 | 45-R-002 | 51.07 | -1 | 3 | 12611 | -12611 | 28409 | |
| 11812 | 45-R-009 | 51.31 | -1 | 3 | 12611 | -12611 | 62337 | |
| 11813 | 45-R-011 | 51.33 | -1 | 3 | 9808 | -9808 | 517191 | |
| 11814 | 45-R-012 | 51.38 | -1 | 3 | 9808 | -9808 | 484707 | |
| 11815 | 45-R-080 | 51.3 | -1 | 3 | 9808 | -9808 | 369968 | |
| 11816 | 45-R-079 | 51.34 | -1 | 3 | 9808 | -9808 | 397667 | |
| 11817 | 45-R-078 | 51.24 | -1 | 3 | 9808 | -9808 | 536458 | |
| 11818 | 45-R-081 | 51.47 | -1 | 3 | 9808 | -9808 | 349989 | |
| 11819 | 45-R-074 | 50.9 | -1 | 4 | 8407 | -8407 | 1400000 | runout |
| 11820 | 45-R-010 | 51.44 | -1 | 4 | 8407 | -8407 | 1000000 | runout |
| 11821 | 45-R-071 | 51.6 | -1 | 1 | 16681 | -16681 | 1031 | |
| 11822 | 45-R-069 | 51.28 | -1 | 1 | 16681 | -16681 | 6620 | |
| 11823 | 45-R-068 | 52.04 | -1 | 1 | 16681 | -16681 | 8015 | |
| 11824 | 45-R-067 | 51.38 | -1 | 1 | 16681 | -16681 | 4248 | |
| 11825 | 45-R-062 | 51.37 | -1 | 1 | 16681 | -16681 | 3605 | |
| 11826 | 45-R-063 | 51.51 | -1 | 1 | 16681 | -16681 | 5618 | |
| 11827 | 45-R-075 | 51.35 | -1 | 3 | 12611 | -12611 | 30175 | |
| 11828 | 45-R-073 | 51.51 | -1 | 3 | 12611 | -12611 | 93928 | |
| 11829 | 45-R-076 | 51.5 | -1 | 3 | 12611 | -12611 | 68914 | |
| 11830 | 45-R-071 | 51.44 | -1 | 3 | 12611 | -12611 | 87217 | |
| 11831 | 90-R-016 | 51.59 | * | 0.0254 | 22681 | | 1 | |
| 11832 | 90-R-015 | 50.7 | * | 0.0254 | 20951 | | 1 | |
| 11833 | 90-R-017 | 50.65 | * | 0.0254 | 23691 | | 1 | |

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles |
|-------|----------|-------------|-----|--------------|----------------|----------------|--------|
| 11834 | 90-R-30 | 51.49 | * | 0.0254 | 21405 | | 1 |
| 11835 | 90-R-018 | 51.05 | * | 0.0254 | 12958 | | 1 |
| 11836 | 90-R-31 | 51.31 | * | 0.0254 | 14074 | | 1 |
| 11837 | 90-R-035 | 50.65 | * | 0.0254 | 21343 | | 1 |
| 11838 | 90-R-012 | 51.41 | * | 0.0254 | 21320 | | 1 |
| 11839 | 90-R-011 | 51.26 | * | 0.0254 | 20884 | | 1 |
| 11840 | 90-R-32 | 50.65 | * | 0.0254 | 20400 | | 1 |
| 11841 | 90-R-057 | 51.31 | * | 0.0254 | 20413 | | 1 |
| 11842 | 90-R-091 | 51.33 | * | 0.0254 | 21810 | | 1 |
| 11843 | 90-R-092 | 51.33 | * | 0.0254 | 19087 | | 1 |
| 11844 | 90-R-087 | 51.41 | * | 0.0254 | 22241 | | 1 |
| 11845 | 90-R-101 | 51.61 | * | 0.0254 | 21529 | | 1 |
| 11846 | 90-R-069 | 51.54 | * | 0.0254 | 22206 | | 1 |
| 11847 | 90-R-054 | 51.56 | * | 0.0254 | 20422 | | 1 |
| 11848 | 90-R-086 | 51.79 | * | 0.0254 | 20662 | | 1 |
| 11849 | 90-R-052 | 51.31 | * | 0.0254 | 22206 | | 1 |
| 11850 | 90-R-053 | 51.13 | * | 0.0254 | 19247 | | 1 |
| 11851 | 90-R-33 | 51.08 | * | 13 | 19844 | | 1 |
| 11852 | 90-R-070 | 51.26 | * | 13 | 20653 | | 1 |
| 11853 | 90-R-064 | 51.09 | * | 13 | 22254 | | 1 |
| 11854 | 90-R-059 | 51.09 | * | 13 | 25146 | | 1 |
| 11855 | 90-R-093 | 51.27 | * | 13 | 20542 | | 1 |
| 11856 | 90-R-105 | 51.14 | * | 13 | 17686 | | 1 |
| 11857 | 90-R-014 | 50.88 | * | 13 | 22432 | | 1 |
| 11858 | 90-R-073 | 50.94 | * | 13 | 16579 | | 1 |
| 11859 | 90-R-063 | 51.18 | * | 13 | 21467 | | 1 |
| 11860 | 90-R-028 | 50.65 | * | 13 | 13487 | | 1 |
| 11861 | 90-R-068 | 51.09 | * | 13 | 25186 | | 1 |
| 11862 | 90-R-090 | 51.28 | * | 13 | 14821 | | 1 |
| 11863 | 90-R-055 | 51.18 | * | 13 | 11899 | | 1 |
| 11864 | 90-R-067 | 51.24 | * | 13 | 21467 | | 1 |
| 11865 | 90-R-089 | 50.46 | * | 13 | 23193 | | 1 |
| 11866 | 90-R-044 | 50.88 | 0.1 | 2 | 13718 | 1372 | 30773 |
| 11867 | 90-R-001 | 50.91 | 0.1 | 2 | 13718 | 1372 | 1989 |
| 11868 | 90-R-004 | 50.99 | 0.1 | 2 | 13718 | 1372 | 14838 |
| 11869 | 90-R-042 | 51.32 | 0.1 | 2 | 13718 | 1372 | 6627 |
| 11870 | 90-R-045 | 50.91 | 0.1 | 2 | 13718 | 1372 | 9403 |
| 11871 | 90-R-043 | 51.37 | 0.1 | 2 | 13718 | 1372 | 5478 |
| 11872 | 90-R-081 | 51.12 | 0.1 | 2 | 11432 | 1143 | 76230 |
| 11873 | 90-R-003 | 50.66 | 0.1 | 3 | 11432 | 1143 | 21229 |
| 11874 | 90-R-079 | 46.94 | 0.1 | 3 | 11432 | 1143 | 35104 |
| 11875 | 90-R-078 | 51.28 | 0.1 | 3 | 11432 | 1143 | 113595 |
| 11876 | 90-R-080 | 51.12 | 0.1 | 3 | 11432 | 1143 | 8229 |
| 11877 | 90-R-084 | 50.7 | 0.1 | 3 | 11432 | 1143 | 15033 |

| Test | Coupon | Width mm | R | Rate mm/s | Max. Load N | Min. Load N | Cycles |
|-------|----------|-------------|-----|--------------|----------------|----------------|---------|
| 11878 | 90-R-048 | 51.14 | 0.1 | 4 | 9146 | 915 | 629500 |
| 11879 | 90-R-094 | 51.46 | 0.1 | 4 | 9146 | 915 | 406215 |
| 11880 | 90-R-002 | 50.99 | 0.1 | 4 | 9146 | 915 | 2995 |
| 11881 | 90-R-049 | 50.77 | 0.1 | 4 | 9146 | 915 | 951364 |
| 11882 | 90-R-056 | 50.62 | 0.1 | 4 | 9146 | 915 | 147693 |
| 11883 | 90-R-058 | 51.08 | 0.1 | 4 | 9146 | 915 | 1091937 |
| 11884 | 90-R-095 | 51.38 | -1 | 4 | 9146 | -9146 | 73628 |
| 11885 | 90-R-020 | 51.37 | -1 | 4 | 9146 | -9146 | 103914 |
| 11886 | 90-R-061 | 51.22 | -1 | 4 | 9146 | -9146 | 34563 |
| 11887 | 90-R-019 | 50.38 | -1 | 4 | 9146 | -9146 | 47742 |
| 11888 | 90-R-060 | 51.28 | -1 | 4 | 8007 | -8007 | 358250 |
| 11889 | 90-R-096 | 51.29 | -1 | 4 | 8007 | -8007 | 408415 |
| 11890 | 90-R-021 | 51.13 | -1 | 4 | 8007 | -8007 | 149655 |
| 11891 | 90-R-083 | 51.17 | -1 | 4 | 8007 | -8007 | 18343 |
| 11892 | 90-R-041 | 51.45 | -1 | 4 | 8007 | -8007 | 174155 |
| 11893 | 90-R-076 | 51.59 | -1 | 4 | 8007 | -8007 | 132708 |
| 11894 | 90-R-047 | 51.26 | -1 | 4 | 8007 | -8007 | 33513 |
| 11895 | 90-R-046 | 50.9 | -1 | 4 | 9146 | -9146 | 56754 |
| 11896 | 90-R-071 | 50.67 | -1 | 4 | 9146 | -9146 | 8525 |
| 11897 | 90-R-104 | 51.07 | -1 | 4 | 9146 | -9146 | 78850 |
| 11898 | 90-R-103 | 51.31 | -1 | 3 | 11432 | -11432 | 7378 |
| 11899 | 90-R-077 | 51.41 | -1 | 3 | 11432 | -11432 | 3740 |
| 11900 | 90-R-072 | 50.81 | -1 | 3 | 11432 | -11432 | 5104 |
| 11901 | 90-R-102 | 50.91 | -1 | 3 | 11432 | -11432 | 4375 |
| 11902 | 90-R-074 | 50.19 | -1 | 3 | 11432 | -11432 | 4945 |
| 11903 | 90-R-040 | 51.16 | -1 | 3 | 11432 | -11432 | 420 |
| 11904 | 90-R-034 | 51.24 | -1 | 3 | 11432 | -11432 | 8937 |

Material 45D2, (RM/-45/+45)/(-45/+45/RM)3, 6 layers total, FGI-1708, derakane 8084 with luperox DDM-9, vacuum bag, post cure 90 deg C for 24 hours, Vf = 44.44% for a thickness=4.41mm

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 11905 | 45D2-118 | 205 | * | 13 | 15.7 | | 1 |
| 11906 | 45D2-117 | 201 | * | 13 | 15.0 | | 1 |
| 11907 | 45D2-124 | 216 | * | 13 | | | 1 |
| 11908 | 45D2-108 | 103 | 0.1 | 1.5 | | 1.21 | 3346 |
| 11909 | 45D2-109 | 103 | 0.1 | 1.5 | 13.8 | 1.21 | 3688 |
| 11910 | 45D2-101 | 103 | 0.1 | 1.5 | | 1.21 | 4456 |
| 11911 | 45D2-105 | 86 | 0.1 | 2 | | 0.8 | 18997 |
| 11912 | 45D2-103 | 86 | 0.1 | 2.5 | | 0.8 | 13255 |
| 11913 | 45D2-100 | 86 | 0.1 | 2.5 | | 0.8 | 14274 |
| 11914 | 45D2-131 | 69 | 0.1 | 3 | | 0.57 | 328175 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 11915 | 45D2-104 | 69 | 0.1 | 3 | | 0.57 | 160303 |
| 11916 | 45D2-126 | 69 | 0.1 | 4 | | 0.57 | 269578 |

Material 45D, (RM/-45/+45)/(-45/+45/RM)3, 6 layers total, FGI-1708, derakane momentum 411-350, Vacuum bag, post cure 100 deg C for 24 hours, Vf = 46.3% for a thickness=4.12mm

| | | | | | | | |
|-------|---------|-----|-----|-----|------|------|---------|
| 11917 | 45D-101 | 235 | * | 13 | 17.5 | | 1 |
| 11918 | 45D-113 | 230 | * | 13 | 15.0 | | 1 |
| 11919 | 45D-118 | 250 | * | 13 | | | 1 |
| 11920 | 45D-100 | 103 | 0.1 | 1.5 | | 0.8 | 12933 |
| 11921 | 45D-111 | 103 | 0.1 | 1.5 | | 0.8 | 12753 |
| 11922 | 45D-114 | 103 | 0.1 | 1.5 | | 0.8 | 11880 |
| 11923 | 45D-122 | 86 | 0.1 | 2.5 | 18.3 | 0.61 | 88679 |
| 11924 | 45D-132 | 86 | 0.1 | 2.5 | | 0.61 | 115795 |
| 11925 | 45D-131 | 86 | 0.1 | 2.5 | | 0.61 | 68305 |
| 11926 | 45D-110 | 69 | 0.1 | 3.5 | | 0.45 | 1047664 |
| 11927 | 45D-121 | 69 | 0.1 | 3 | | 0.45 | 876458 |
| 11928 | 45D-120 | 69 | 0.1 | 4 | | 0.45 | 568002 |

Material 45DE, (RM/-45/+45)/(-45/+45/RM)3, 6 layers total, FGI-1708, derakane 8084 with 6 parts per hundred (which works out to 5.7%) ETBN, vacuum bag, post cure 90 deg C for 24 hours, Vf = 42.5% for a thickness=4.54mm

| | | | | | | | |
|-------|----------|-----|-----|-----|------|------|--------|
| 11929 | 45DE-111 | 221 | * | 13 | 13.5 | | 1 |
| 11930 | 45DE-110 | 222 | * | 13 | 14.3 | | 1 |
| 11931 | 45DE-112 | 224 | * | 13 | | | 1 |
| 11932 | 45DE-131 | 103 | 0.1 | 1.5 | | 1.23 | 5225 |
| 11933 | 45DE-130 | 103 | 0.1 | 1.5 | | 1.23 | 4747 |
| 11934 | 45DE-129 | 103 | 0.1 | 1.5 | | 1.23 | 3413 |
| 11935 | 45DE-134 | 86 | 0.1 | 2.5 | 12.9 | 0.84 | 39253 |
| 11936 | 45DE-103 | 86 | 0.1 | 2.5 | | 0.84 | 33040 |
| 11937 | 45DE-132 | 86 | 0.1 | 2.5 | | 0.84 | 38282 |
| 11938 | 45DE-108 | 69 | 0.1 | 3.5 | | 0.62 | 389688 |
| 11939 | 45DE-100 | 69 | 0.1 | 3 | | 0.62 | 629523 |
| 11940 | 45DE-106 | 69 | 0.1 | 4 | | 0.62 | 414991 |

Windstrand

Material W45, (-45/+45)6, 6 layers total, windstrand 45's, hexion L135i resin, vacuum bag, cure 21C for 24 hrs then post cure 90 deg C for 24 hours, Vf = 49.45% for a thickness=4.06mm

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 11941 | W45-107 | 215 | * | 13 | 18.6 | | 1 |
| 11942 | W45-111 | 224 | * | 13 | 15.0 | | 1 |
| 11943 | W45-101 | 230 | * | 13 | | | 1 |
| 11944 | W45-127 | 121 | 0.1 | 1 | 16.7 | 1.15 | 2768 |
| 11945 | W45-113 | 121 | 0.1 | 1 | 15.5 | 1.32 | 2469 |
| 11946 | W45-120 | 121 | 0.1 | 1 | 18.1 | 1.23 | 1776 |
| 11947 | W45-134 | 103 | 0.1 | 1.5 | | 0.99 | 21899 |
| 11948 | W45-125 | 103 | 0.1 | 1.5 | | 0.99 | 15614 |
| 11949 | W45-121 | 103 | 0.1 | 1.5 | | 0.99 | 48805 |
| 11950 | W45-123 | 86 | 0.1 | 3 | | 0.73 | 138035 |
| 11951 | W45-100 | 86 | 0.1 | 3 | | 0.73 | 800853 |
| 11952 | W45-114 | 86 | 0.1 | 2.5 | | 0.73 | 206665 |
| 11953 | W45-105 | 69 | 0.1 | 3.5 | | 0.58 | 5650000 runout |
| 11954 | W45-106 | 69 | 0.1 | 4 | | 0.58 | 7000000 runout |

FGI-1708 Hexion, (+/-45)3S, Hexion resin, label Material DH, VF=44%

| | | | | | | | |
|-------|-------|------|-----|-----|------|------|---------|
| 11955 | DH144 | 228 | * | 13 | 13.2 | 4.2 | 1 |
| 11956 | DH128 | 225 | * | 13 | 13.7 | 3.9 | 1 |
| 11957 | DH134 | 220 | * | 13 | 13.3 | 3.8 | 1 |
| 11958 | DH150 | 222 | * | 13 | 13.4 | 3.9 | 1 |
| 11959 | DH123 | 103 | 0.1 | 1.5 | | 1.1 | 4696 |
| 11960 | DH119 | 103 | 0.1 | 1.5 | | 1.1 | 5708 |
| 11961 | DH129 | 103 | 0.1 | 1 | | 1.1 | 3452 |
| 11962 | DH139 | 69 | 0.1 | 2.5 | | 0.63 | 338407 |
| 11963 | DH145 | 69 | 0.1 | 2.5 | | 0.63 | 604738 |
| 11964 | DH135 | 69 | 0.1 | 2.5 | | 0.63 | 185702 |
| 11965 | DH126 | 59 | 0.1 | 3 | | 0.51 | 3530222 |
| 11966 | DH136 | 62 | 0.1 | 3 | | 0.55 | 988122 |
| 11967 | DH133 | 86 | 0.1 | 2 | | 0.87 | 21013 |
| 11968 | DH144 | 86 | 0.1 | 2 | | 0.87 | 30102 |
| 11969 | DH140 | 86 | 0.1 | 2 | | 0.87 | 21404 |
| 11970 | DH102 | 124 | 0.1 | 1 | | 1.35 | 1286 |
| 11971 | DH114 | 124 | 0.1 | 1 | | 1.35 | 1462 |
| 11972 | DH117 | 124 | 0.1 | 1 | | 1.35 | 742 |
| 11973 | DH124 | -86 | 10 | 4 | | 0.87 | 3084233 |
| 11974 | DH108 | -103 | 10 | 2.5 | | 1.1 | 203222 |
| 11975 | DH109 | -103 | 10 | 2.5 | | 1.1 | 38141 |
| 11976 | DH120 | -103 | 10 | 2.5 | | 1.1 | 64545 |
| 11977 | DH142 | -103 | 10 | 2.5 | | 1.1 | 309255 |
| 11978 | DH105 | -103 | 10 | 2.5 | | 1.1 | 337923 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 11979 | DH116 | -120 | * | 13 | | 1.65 | 1 |
| 11980 | DH127 | -214 | * | 13 | | 1.6 | 1 |
| 11981 | DH121 | -205 | * | 13 | | 1.52 | 1 |
| 11982 | DH115 | -211 | * | 13 | | 1.58 | 1 |
| 11983 | DH118 | -124 | * | 13 | | 1.32 | 1452 |
| 11984 | DH125 | -124 | * | 13 | | 1.32 | 2632 |
| 11985 | DH138 | -124 | * | 13 | | 1.32 | 812 |
| 11986 | DH131 | 69 | -1 | 1 | | 0.63 | 8593 |
| 11987 | DH107 | 69 | -1 | 1 | | 0.63 | 14867 |
| 11988 | DH104 | 69 | -1 | 1 | | 0.63 | 6483 |
| 11989 | DH130 | 52 | -1 | 1.5 | | 0.44 | 285363 |
| 11990 | DH143 | 52 | -1 | 1.5 | | 0.44 | 229030 |
| 11991 | DH141 | 52 | -1 | 1.5 | | 0.44 | 385140 |
| 11992 | DH151 | 86 | -1 | 1 | | 0.87 | 937 |
| 11993 | DH103 | 86 | -1 | 1 | | 0.87 | 723 |
| 11994 | DH112 | 86 | -1 | 1 | | 0.87 | 872 |
| 11995 | DH132 | 103 | -1 | 1 | | 1.1 | 513 |
| 11996 | DH137 | 103 | -1 | 1 | | 1.1 | 245 |
| 11997 | DH110 | 103 | -1 | 1 | | 1.1 | 313 |
| 11998 | DH140 | 41 | -1 | 2.5 | | 0.35 | 3000000 runout |

Material TR-1, [rm/-45/+45)/(-45/+45/rm)]3, FGI-1708, Hexion UP TR-1, infused,
postcure=90C 24 hrs, 100C 1 hr , $V_F = 44.3\%$ for 4.52 mm

| | | | | | | | |
|-------|--------|-----|-----|--------|------|------|--------|
| 11999 | TR1-35 | 217 | * | 0.0254 | | 3.15 | 1 |
| 12000 | TR1-36 | 197 | * | 0.0254 | | 2.85 | 1 |
| 12001 | TR1-37 | 216 | * | 0.0254 | | 3.13 | 1 |
| 12002 | TR1-35 | 217 | * | 13 | 14.8 | 3.4 | 1 |
| 12003 | TR1-36 | 197 | * | 13 | 15.1 | 3.1 | 1 |
| 12004 | TR1-37 | 216 | * | 13 | 13.2 | 3.3 | 1 |
| 12005 | TR1-32 | 207 | * | 13 | | 3.2 | 1 |
| 12006 | TR1-33 | 231 | * | 13 | | 3.6 | 1 |
| 12007 | TR1-4 | 69 | 0.1 | 2.5 | | 0.61 | 53802 |
| 12008 | TR1-3 | 69 | 0.1 | 2.5 | | 0.61 | 89015 |
| 12009 | TR1-5 | 59 | 0.1 | 3 | | 0.48 | 303559 |
| 12010 | TR1-8 | 59 | 0.1 | 3 | | 0.48 | 657933 |
| 12011 | TR1-7 | 59 | 0.1 | 3 | | 0.48 | 385680 |
| 12012 | TR1-19 | 103 | 0.1 | 1.5 | | 1.11 | 2105 |
| 12013 | TR1-18 | 103 | 0.1 | 1.5 | | 1.11 | 1393 |
| 12014 | TR1-17 | 103 | 0.1 | 1.5 | | 1.11 | 1680 |
| 12015 | TR1-16 | 86 | 0.1 | 2 | | 0.84 | 9005 |
| 12016 | TR1-27 | 86 | 0.1 | 2 | | 0.84 | 7381 |
| 12017 | TR1-10 | 86 | 0.1 | 2 | | 0.84 | 3073 |
| 12018 | TR1-30 | 69 | 0.1 | 2.5 | | 0.61 | 69655 |

Saertex (+/-45)_{3S}, VF = 44.95% for 4.20 mm thickness, Hexion resin
 SAERTEX +45/-45 IN WARP DIRECTION

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 12019 | SWA100 | 166 | * | 13 | | 2.6 | 1 |
| 12020 | SWA14 | 173 | * | 13 | | 2.8 | 1 |
| 12021 | SWA5 | 177 | * | 13 | | 3.2 | 1 |
| 12022 | SWA10 | 103 | 0.1 | 2 | 11.9 | 1.57 | 1014 |
| 12023 | SWA15 | 103 | 0.1 | 0.5 | 12.1 | 1.57 | 2199 |
| 12024 | SWA19 | 103 | 0.1 | 0.5 | 12.7 | 1.57 | 5597 |
| 12025 | SWA8 | 86 | 0.1 | 1.2 | | 1.09 | 34736 |
| 12026 | SWA11A | 86 | 0.1 | 1 | | 1.09 | 50065 |
| 12027 | SWA12 | 86 | 0.1 | 1.2 | | 1.09 | 30256 |
| 12028 | SWA9 | 69 | 0.1 | 1.5 | | 0.76 | 644311 |
| 12029 | SWA18 | 69 | 0.1 | 2 | | 0.76 | 454263 |
| 12030 | SWA3 | 69 | 0.1 | 2 | | 0.76 | 406501 |
| 12031 | SWA2 | 52 | 0.1 | 6 | | 0.51 | 25000000 runout |
| 12032 | SWA41 | -177 | * | 13 | | | 1 |
| 12033 | SWA42 | -176 | * | 13 | | | 1 |
| 12034 | SWA43 | -173 | * | 13 | | | 1 |
| 12035 | SWA44 | -176 | * | 13 | | | 1 |
| 12036 | SWA32 | -103 | 10 | 2 | | 1.57 | 35840 |
| 12037 | SWA37 | -86 | 10 | 2 | | 1.09 | 1271690 |
| 12038 | SWA107 | -86 | 10 | 2 | | 1.09 | 1933734 |
| 12039 | SWA34 | -86 | 10 | 2 | | 1.09 | 1497069 |
| 12040 | SWA39 | -103 | 10 | 2 | | 1.57 | 26850 |
| 12041 | SWA41 | -103 | 10 | 2 | | 1.57 | 40606 |
| 12042 | SWA40 | -86 | 10 | 2 | | 1.09 | 619662 |
| 12043 | SWA37 | -86 | 10 | 2 | | 1.09 | 1271690 |
| 12044 | SWA1 | 52 | -1 | 0.5 | | 0.51 | 57742 |
| 12045 | SWA17 | 52 | -1 | 0.5 | | 0.51 | 45137 |
| 12046 | SWA11 | 69 | -1 | 0.5 | | 0.76 | 2446 |
| 12047 | SWA13 | 69 | -1 | 0.5 | | 0.76 | 2341 |
| 12048 | SWA6 | 69 | -1 | 0.5 | | 0.76 | 2447 |
| 12049 | SWA7 | 52 | -1 | 1 | | 0.51 | 50277 |
| 12050 | SWA30 | 41 | -1 | 2 | | 0.41 | 508474 |
| 12051 | SWA4 | 41 | -1 | 2 | | 0.41 | 505117 |
| 12052 | SWA151 | 34 | -1 | 3 | | 0.34 | 900000 runout |

SAERTEX FABRIC IN WEFT DIRECTION

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 12053 | SWB100 | 180 | * | 0.0254 | 11.9 | 1.51 | 1 |
| 12054 | SWB8 | 161 | * | 13 | 11.95 | 1.35 | 1 |
| 12055 | SWB9 | 177 | * | 13 | 12.4 | 1.49 | 1 |
| 12056 | SWB10 | 161 | * | 13 | 11.3 | 1.35 | 1 |
| 12057 | SWB4 | 69 | 0.1 | 2 | | 0.58 | 53674 |
| 12058 | SWB2 | 69 | 0.1 | 2 | | 0.58 | 87301 |
| 12059 | SWB1 | 69 | 0.1 | 2 | | 0.58 | 88263 |
| 12060 | SWB3 | 69 | 0.1 | 1 | | 0.58 | 7591 |
| 12061 | SWB6 | 86 | 0.1 | 1 | | 0.72 | 11171 |
| 12062 | SWB7 | 86 | 0.1 | 1 | | 0.72 | 6483 |
| 12063 | SWB11 | 59 | 0.1 | 3 | | 0.50 | 566554 |
| 12064 | SWB12 | 59 | 0.1 | 3 | | 0.50 | 345213 |
| 12065 | SWB5 | 52 | 0.1 | 4 | | 0.44 | 4581395 |
| 12066 | SWB13 | 59 | 0.1 | 3 | | 0.50 | 6688035 |

Ply Drop Fatigue Tests

The following ply drop results were discussed in the following paper - SAMPE 2010, Seattle, Paper 398, "Testing and Simulation of Damage Growth at Ply Drops in Wind Turbine Blade Laminates", Agastra, P. and Mandell, J. F.

PD202EP-HX_02

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 5.08 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|--------|-------------------------|------------------------|------------------------|
| thick | 13.63 | | 25.94 |
| | | 13.62 | 26.15 |
| thin | 11.08 | | 26.01 |
| | | 11.34 | 26.29 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 800 | 0 | 0 | 0 |
| 4740 | 2.8 | 1.61 | 2.21 |
| 18560 | 4.18 | 4.03 | 4.11 |
| 28000 | 5.97 | 5.87 | 5.92 |
| 36050 | 7.53 | 6.82 | 7.18 |
| 57220 | 8.8 | 9.72 | 9.26 |
| 91140 | 9.94 | 12.08 | 11.01 |
| 146400 | 10.58 | 12.08 | 11.33 |
| 233630 | 12.74 | 13.63 | 13.19 |

PD204UP-TR1_02

| | | |
|------------------|------------------------------|----|
| Resin | UP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.38 | | 25.36 |
| | | 13.55 | 25.02 |
| thin | 11.05 | | 25.36 |
| | | 11.05 | 25.1 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 327 | 0 | 0 | 0 |
| 588 | 3.8 | 3.32 | 3.56 |
| 19433 | 7.9 | 8.72 | 8.31 |
| 55873 | 20.61 | 19.43 | 20.02 |
| 72541 | 42.63 | 42.7 | 42.67 |

PD204UP-TR1_05

| | | |
|------------------|------------------------------|----|
| Resin | UP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 13.79 | | 26.7 | |
| | | 13.71 | 26.78 | |
| thin | 11.26 | | 25.84 | |
| | | 11.19 | 25.89 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 2.02 | 2.54 | 2.28 | |
| 6616 | 7 | 3.18 | 5.09 | |
| 8382 | 7 | 5.78 | 6.39 | |
| 24818 | 14.03 | 11.79 | 12.91 | |
| 29380 | 15.18 | 15.47 | 15.33 | |
| 39462 | 19.9 | 16.61 | 18.26 | |
| 44981 | 26.2 | 19.69 | 22.95 | |
| 47355 | 28.68 | 23.63 | 26.16 | |
| 55372 | 41.92 | 40.8 | 41.36 | |
| 57364 | 46.61 | 44.54 | 45.58 | |
| 60086 | 51.02 | 50.32 | 50.67 | |

PD204VE-411_01

| | | |
|------------------|------------------------------|----|
| Resin | VE-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 12.56 | | 26.43 | |
| | | 12.62 | 26.77 | |
| thin | 10.76 | | 26.28 | |
| | | 10.28 | 26.46 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 0 | 0 | 0 | |
| 19545 | 5.13 | 5.42 | 5.28 | |
| 41220 | 10.27 | 7.57 | 8.92 | |
| 97428 | 12.38 | 13.04 | 12.71 | |
| 125925 | 54.28 | 51.39 | 52.84 | |

PD204VE-411_02

| | | |
|------------------|-------|----|
| Resin | VE-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |

Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.95 | | 26.34 |
| | | 13.01 | 26.72 |
| thin | 10.44 | | 26.55 |
| | | 10.44 | 26.83 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 900 | 0 | 0 |
| | 14410 | 4.6 | 3.56 |
| | 38865 | 6.4 | 5.63 |
| | 151729 | 18.83 | 15.78 |
| | 179100 | 43.49 | 38.54 |
| | 207211 | 49.08 | 45.96 |

PD204VE-8084_01

Resin VE-2
 Gage Length 10.16 cm
 No. of Ply Drops 2
 f= 3
 R= 0.1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.79 | | 26.1 |
| | | 13.67 | 26.89 |
| thin | 11.32 | | 26.86 |
| | | 11.22 | 26.37 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 467 | 0 | 0 |
| | 3503 | 1.7 | 1.61 |
| | 14239 | 3.12 | 1.61 |
| | 29680 | 6.79 | 2.65 |
| | 44153 | 8.9 | 4.36 |
| | 62837 | 11.54 | 7.28 |
| | 92020 | 11.54 | 10.39 |
| | 113024 | 11.54 | 10.39 |
| | 134608 | 13.85 | 12.34 |
| | 184422 | 13.85 | 13.95 |
| | 220020 | 13.85 | 13.95 |
| | 261765 | 13.85 | 13.95 |
| | 283233 | 13.85 | 13.95 |
| | 293713 | 19.34 | 16.06 |
| | 325144 | 19.34 | 16.06 |
| | 368849 | 21.76 | 20.87 |
| | 405996 | 21.76 | 24.61 |
| | 428496 | 23.53 | |
| | 439296 | 28.45 | |
| | 450096 | 36.95 | |
| | 461256 | 38.01 | |
| | 482789 | 51.92 | 54.06 |

PD204VE-8084_04

| | | |
|------------------|------------------------------|----|
| Resin | VE-2 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 13.79 | | 25.95 | |
| | | 13.89 | 25.8 | |
| thin | 11.41 | | 26.02 | |
| | | 11.49 | 25.97 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 451 | 0 | 0 | 0 | |
| 8495 | 1.54 | 2.58 | 2.06 | |
| 70882 | 4.5 | 5.08 | 4.79 | |
| 92098 | 4.5 | 7.36 | 5.93 | |
| 132449 | 8.56 | 10.17 | 9.37 | |
| 199641 | 11.93 | 12.45 | 12.19 | |
| 265063 | 14.14 | 16.16 | 15.15 | |
| 348746 | 16.34 | 23.25 | 19.8 | |
| 451446 | 30.24 | 34.8 | 32.52 | |
| 469025 | 41.02 | 44.8 | 42.91 | |
| 473445 | 46.58 | 49.07 | 47.83 | |
| 476995 | 49.41 | 50.5 | 49.96 | |

PD204EP-HX_03

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 13.97 | | 25.97 | |
| | | 14.02 | 26.22 | |
| thin | 11.66 | | 25.88 | |
| | | 11.54 | 26.3 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1760 | 0 | 0 | 0 | |
| 15636 | 5.01 | 2.12 | 3.57 | |
| 197239 | 11.52 | 9.32 | 10.42 | |
| 233869 | 12.89 | 12.95 | 12.92 | |
| 260000 | 14.47 | 12.95 | 13.71 | |
| 275719 | 15.55 | 12.95 | 14.25 | |
| 303027 | 17.45 | 13.91 | 15.68 | |
| 365920 | 22.63 | 20.18 | 21.41 | |
| 404707 | 26.04 | 22.92 | 24.48 | |

| | | | |
|--------|-------|-------|-------|
| 477262 | 33.9 | 30.83 | 32.37 |
| 517345 | 36.12 | 34.24 | 35.18 |

PD204EP-HX_04

| | | | |
|------------------|------------------------------|----|--|
| Resin | EP-1 | | |
| Gage Length | 10.16 | cm | |
| No. of Ply Drops | 2 | | |
| f= | 3 | | |
| R= | 0.1 | | |
| Pmax= | 44.5 | kN | |
| Uni: | Vectorply E-LT5500 (D) | | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 13.9 | | 25.85 | |
| | | 13.95 | 25.89 | |
| thin | 11.62 | | 26.15 | |
| | | 11.65 | 26.17 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 713 | 0 | 0 | 0 | |
| 31765 | 6.31 | 4.09 | 5.2 | |
| 85991 | 9.45 | 9.44 | 9.45 | |
| 213403 | 25.27 | 17.69 | 21.48 | |
| 243840 | 26.83 | 22.94 | 24.89 | |
| 279072 | 28.72 | 25.01 | 26.87 | |
| 339740 | 34.61 | 32.65 | 33.63 | |
| 373654 | 39.92 | 38.69 | 39.31 | |
| 378153 | 43.96 | 40.72 | 42.34 | |
| 491280 | 56.63 | 55.53 | 56.08 | |

PD204EP-HX_05

| | | | |
|------------------|------------------------------|----|--|
| Resin | EP-1 | | |
| Gage Length | 10.16 | cm | |
| No. of Ply Drops | 2 | | |
| f= | 3 | | |
| R= | 0.1 | | |
| Pmax= | 44.5 | kN | |
| Uni: | Vectorply E-LT5500 (D) | | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 13.78 | | 26.29 | |
| | | 13.83 | 26.36 | |
| thin | 11.41 | | 26.17 | |
| | | 11.29 | 26.21 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 559 | 0 | 0 | 0 | |
| 38776 | 6.65 | 3.28 | 4.97 | |
| 85758 | 10.82 | 6.95 | 8.89 | |
| 119841 | 12.14 | 9.58 | 10.86 | |
| 148896 | 17.46 | 13.48 | 15.47 | |
| 223483 | 24.18 | 19.95 | 22.07 | |
| 250855 | 27.54 | 27.23 | 27.39 | |
| 267001 | 28.26 | 30.13 | 29.2 | |
| 319233 | 29.51 | 34.18 | 31.85 | |

| | | | |
|--------|-------|-------|-------|
| 366254 | 35.97 | 35.24 | 35.61 |
| 483702 | 45.27 | 46.84 | 46.06 |

PD204EP-HX_09 55.6 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|--------|-------------------------|------------------------|------------------------|--|
| thick | 13.88 | | 26.16 | |
| | | 13.9 | 26.45 | |
| thin | 11.41 | | 26.24 | |
| | | 11.59 | 26.49 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 0 | 0 | 0 | |
| 6915 | 1.74 | 2.71 | 2.23 | |
| 14202 | 2.85 | 3.84 | 3.35 | |
| 26232 | 2.85 | 5.86 | 4.36 | |
| 34707 | 4.07 | 7.76 | 5.92 | |
| 61899 | 16.89 | 18.79 | 17.84 | |
| 74633 | 23.82 | 23.93 | 23.88 | |
| 86818 | 31.58 | 30.43 | 31.01 | |
| 104069 | 52.43 | 52.19 | 52.31 | |

PD204EP-HX_15_55.6kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 13.79 | | 26.7 | |
| | | 13.71 | 26.78 | |
| thin | 11.26 | | 25.84 | |
| | | 11.19 | 25.89 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 1.64 | 1.76 | 1.7 | |
| 1493 | 3.91 | 4.11 | 4.01 | |
| 11319 | 5.57 | 4.11 | 4.84 | |
| 28087 | 10.17 | 4.11 | 7.14 | |
| 37793 | 14.33 | 7.44 | 10.89 | |
| 52497 | 20.91 | 16.65 | 18.78 | |
| 58467 | 24.86 | 19.96 | 22.41 | |
| 62317 | 29.44 | 28.07 | 28.76 | |
| 66666 | 30.98 | 32.07 | 31.53 | |
| 68615 | 35.58 | 35.67 | 35.63 | |

| | | | |
|-------|-------|-------|-------|
| 75099 | 47.65 | 46.67 | 47.16 |
| 76894 | 50.72 | 50.46 | 50.59 |

PD204EP-HX_07 56.6 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 13.82 | | 26 | |
| | | 13.76 | 26.39 | |
| thin | 11.59 | | 26.02 | |
| | | 11.42 | 26.32 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 0 | 0 | 0 | |
| 675 | 3.09 | 2.58 | 2.84 | |
| 1542 | 4.58 | 2.58 | 3.58 | |
| 3569 | 5.88 | 3.94 | 4.91 | |
| 8191 | 5.88 | 6.07 | 5.98 | |
| 13775 | 8.8 | 7.71 | 8.26 | |
| 18912 | 10.84 | 9.07 | 9.96 | |
| 27131 | 11.33 | 11.46 | 11.4 | |
| 40169 | 20.76 | 19.33 | 20.05 | |
| 45478 | 22.29 | 20.03 | 21.16 | |
| 51265 | 27.33 | 21.84 | 24.59 | |
| 53879 | 30.1 | 25.37 | 27.74 | |
| 59281 | 33.14 | 29.42 | 31.28 | |
| 69029 | 44.9 | 44.27 | 44.59 | |
| 76587 | 54.03 | 53.7 | 53.87 | |

PD204EP-HX_08 66.7 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 66.7 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 13.72 | | 26.42 | |
| | | 13.92 | 26.62 | |
| thin | 11.48 | | 26.19 | |
| | | 11.36 | 26.4 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 0 | 0 | 0 | |
| 692 | 5.91 | 3.24 | 4.58 | |
| 1362 | 7.36 | 5.81 | 6.59 | |
| 2044 | 8.93 | 8.8 | 8.87 | |

| | | | |
|-------|-------|-------|-------|
| 3406 | 13.4 | 8.87 | 11.14 |
| 3805 | 15.73 | 8.87 | 12.3 |
| 4571 | 19.31 | 11.19 | 15.25 |
| 5635 | 19.98 | 14.5 | 17.24 |
| 6663 | 24.71 | 18.55 | 21.63 |
| 7784 | 27.34 | 18.55 | 22.95 |
| 10519 | 35.53 | 30.9 | 33.22 |
| 10936 | 35.53 | 34.2 | 34.87 |
| 11437 | 37.29 | 35.81 | 36.55 |
| 12126 | 41.94 | 37.5 | 39.72 |
| 12449 | 44.38 | 40.76 | 42.57 |
| 12801 | 44.38 | 44.14 | 44.26 |
| 13192 | 46.11 | 47.34 | 46.73 |
| 13631 | 49.36 | 48.47 | 48.92 |
| 14255 | 51.89 | 48.47 | 50.18 |
| 14457 | 53.19 | 49.96 | 51.58 |

PD204EP-HX_14_66.7kN_R=0.1

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | cm |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 66.7 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.96 | | 25.95 |
| | | 14.05 | 25.82 |
| thin | 11.13 | | 25.98 |
| | | 11.22 | 25.98 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 131 | 2.15 | 2.92 | 2.54 |
| 1439 | 3.31 | 5.02 | 4.17 |
| 1972 | 7.04 | 6.04 | 6.54 |
| 2629 | 9.87 | 6.04 | 7.96 |
| 3676 | 9.87 | 9.82 | 9.85 |
| 7028 | 14.54 | 9.82 | 12.18 |
| 10721 | 17.98 | 11.66 | 14.82 |
| 13178 | 23.01 | 15.81 | 19.41 |
| 14663 | 26.22 | 20.73 | 23.48 |
| 15545 | 29.46 | 24.23 | 26.85 |
| 16805 | 36.33 | 34.79 | 35.56 |
| 17138 | 41.22 | 36.98 | 39.1 |
| 17380 | 41.33 | 40.94 | 41.14 |
| 17756 | 45.93 | 42.65 | 44.29 |
| 18027 | 49.84 | 43.85 | 46.85 |

PD204EP-HX_11 44.5 kN R=10

| | | |
|------------------|-------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 3 | |

R= 10
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 13.88 | 26.13 | |
| | | 13.74 | 26.16 |
| thin | 11.58 | 26.15 | |
| | | 11.65 | 26.14 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 2018 | 0.73 | 0 | 0.37 |
| 139408 | 2.05 | 1.6 | 1.83 |
| 207160 | 2.05 | 6.12 | 4.09 |
| 415081 | 7.63 | 10.46 | 9.05 |
| 666235 | 14.18 | 14.18 | 14.18 |
| 800836 | 18.38 | 18.11 | 18.25 |
| 935800 | 25.34 | 25.21 | 25.28 |
| 1033634 | 47.75 | 47.42 | 47.59 |

PD204EP-HX_10 44.5 kN R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 1
 R= -1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.79 | 26.14 | |
| | | 13.78 | 26.14 |
| thin | 11.61 | 26.14 | |
| | | 11.68 | 26.16 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 153 | 0 | 0 | 0 |
| 278 | 2.57 | 0 | 1.29 |
| 497 | 4.32 | 2.7 | 3.51 |
| 951 | 6.22 | 4.33 | 5.28 |
| 1468 | 9.91 | 7.36 | 8.64 |
| 2423 | 12.58 | 10.72 | 11.65 |
| 3159 | 15.43 | 15.59 | 15.51 |
| 3554 | 18.53 | 16.72 | 17.63 |
| 4995 | 24.24 | 25.29 | 24.77 |
| 6387 | 33.81 | 35.77 | 34.79 |
| 7136 | 40 | 42.45 | 41.23 |
| 7640 | 44.16 | 48.44 | 46.3 |
| 8309 | 48.47 | 51.96 | 50.22 |

PD204EP-HX_12_44.5kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 1

R= -1
Pmax= 44.5 kN
Uni: Vectorply E-LT5500 (D)
Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|-------|
| thick | 13.86 | | 26.14 | |
| | | 13.99 | 26.2 | |
| thin | 11.83 | | 26.13 | |
| | | 11.61 | 26.16 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 54 | 0 | 0 | 0 |
| | 679 | 1.94 | 0 | 0.97 |
| | 1071 | 3.44 | 3.06 | 3.25 |
| | 1829 | 5.18 | 3.06 | 4.12 |
| | 2436 | 7.27 | 3.06 | 5.17 |
| | 3200 | 9.43 | 6.95 | 8.19 |
| | 3969 | 11.47 | 7.96 | 9.72 |
| | 4744 | 13.13 | 7.96 | 10.55 |
| | 6219 | 15.82 | 10.29 | 13.06 |
| | 7815 | 18.23 | 14.76 | 16.5 |
| | 9299 | 20.9 | 17.7 | 19.3 |
| | 10623 | 25.83 | 22.67 | 24.25 |
| | 11294 | 29.05 | 25.75 | 27.4 |
| | 12319 | 33.04 | 29.68 | 31.36 |
| | 13379 | 37.82 | 35.71 | 36.77 |
| | 14615 | 42.91 | 45.4 | 44.16 |
| | 15336 | 46.78 | 49.52 | 48.15 |
| | 15635 | 51.4 | 51.11 | 51.26 |

PD404EP-HX_01

Resin EP-1
Gage Length 10.16 in
No. of Ply Drops 2
f= 3
R= 0.1
Pmax= 44.5 kN
Uni: Vectorply E-LT5500 (D)
Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|-------|
| thick | 15.45 | | 27.11 | |
| | | 15.95 | 26.67 | |
| thin | 11.4 | | 26.72 | |
| | | 11.13 | 26.34 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 18 | 0 | 0 | 0 |
| | 300 | 3.68 | 4.48 | 4.08 |
| | 1458 | 6.13 | 5.03 | 5.58 |
| | 9942 | 7.37 | 6.47 | 6.92 |
| | 22839 | 11.36 | 8.56 | 9.96 |
| | 45916 | 19.9 | 15.24 | 17.57 |
| | 60590 | 22.61 | 17.94 | 20.28 |
| | 75361 | 26.65 | 22.34 | 24.5 |
| | 100558 | 33.19 | 33.9 | 33.55 |

| | | | |
|--------|-------|-------|-------|
| 111460 | 39.51 | 41 | 40.26 |
| 118922 | 45.46 | 44.94 | 45.2 |
| 128044 | 50.63 | 50.21 | 50.42 |

PD404EP-HX_03 55.6 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 16.24 | | 26.32 | |
| | | 15.96 | 26.58 | |
| thin | 11.23 | | 26.39 | |
| | | 11.37 | 26.59 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 1 | 6.98 | 4.83 | 5.91 | |
| 1754 | 8.52 | 9.22 | 8.87 | |
| 5040 | 12.21 | 13.11 | 12.66 | |
| 7110 | 16.33 | 14.37 | 15.35 | |
| 11614 | 23 | 17.36 | 20.18 | |
| 16484 | 31.68 | 26.25 | 28.97 | |
| 18331 | 35.78 | 30.15 | 32.97 | |
| 19348 | 38.39 | 37.06 | 37.73 | |
| 20442 | 42.68 | 39.27 | 40.98 | |
| 21904 | 48 | 42.8 | 45.4 | |
| 22328 | 49.66 | 46.18 | 47.92 | |

PD404EP-HX_05 55.6 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 4 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | | |
|-------|-------------------------|------------------------|------------------------|--|
| thick | 16.25 | | 25.84 | |
| | | 16.25 | 26.34 | |
| thin | 11.38 | | 26.09 | |
| | | 11.42 | 26.33 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| 15 | 0 | 0 | 0 | |
| 437 | 2.04 | 2.48 | 2.26 | |
| 2522 | 6.73 | 4.39 | 5.56 | |
| 5960 | 16.29 | 12.42 | 14.36 | |
| 6977 | 19.78 | 15.61 | 17.7 | |
| 7511 | 24 | 20.02 | 22.01 | |
| 8060 | 28.37 | 27.61 | 27.99 | |

| | | | |
|-------|-------|-------|-------|
| 8374 | 31.73 | 31.78 | 31.76 |
| 8579 | 34.96 | 33.91 | 34.44 |
| 9174 | 42.67 | 39.71 | 41.19 |
| 9534 | 45.51 | 42.53 | 44.02 |
| 9882 | 49.33 | 44.81 | 47.07 |
| 10297 | 51.77 | 48.4 | 50.09 |

PD104EP-HX_02 55.6 kN

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 1 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 12.81 | | 26.48 |
| | | 12.82 | 26.38 |
| thin | 11.57 | | 26.04 |
| | | 11.5 | 25.91 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 134 | 0 | 0 | 0 |
| 2115 | 2.02 | 2.49 | 2.26 |
| 6004 | 3.22 | 2.84 | 3.03 |
| 70114 | 5.27 | 4.66 | 4.97 |
| 141100 | 6.45 | 8.72 | 7.59 |
| 253662 | 8.46 | 11.95 | 10.21 |
| 398428 | 11.77 | 14.13 | 12.95 |
| 775073 | 14.85 | 15.1 | 14.98 |
| 1049482 | 16.35 | 15.1 | 15.73 |
| 1206668 | 18.34 | 15.52 | 16.93 |
| 1342270 | 23.37 | 16.23 | 19.8 |
| 1466716 | 24.72 | 20.68 | 22.7 |
| 1518892 | 25.92 | 23.79 | 24.86 |
| 1594087 | 27.57 | 24.73 | 26.15 |
| 1715211 | 28.36 | 27.51 | 27.94 |
| 1980923 | 34.01 | 32.05 | 33.03 |
| 2067112 | 35.74 | 35.85 | 35.8 |
| 2221594 | 36.85 | 39.98 | 38.42 |
| 2329704 | 43.59 | 45.82 | 44.71 |
| 2388702 | 55.85 | 61.54 | 58.7 |

PD104EP-HX_04_55.6kN_R=-1

| | | |
|------------------|------------------------------|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 1 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

thickness (mm) width (mm)

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| thick | 12.93 | | 26.89 | |
| | | 12.89 | 27.03 | |
| thin | 11.42 | | 26.96 | |
| | | 11.57 | 27.08 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 1 | 0 | 0 | 0 |
| | 131 | 0 | 2.36 | 1.18 |
| | 414 | 1.93 | 3.36 | 2.65 |
| | 1001 | 4.04 | 5.23 | 4.64 |
| | 2012 | 5.94 | 8.05 | 7 |
| | 2615 | 7.57 | 10.41 | 8.99 |
| | 4926 | 9.63 | 10.41 | 10.02 |
| | 7676 | 13.11 | 12.5 | 12.81 |
| | 11392 | 20.4 | 19.17 | 19.79 |
| | 13020 | 25.43 | 0 | 25.43 |
| | 16140 | 36.91 | 0 | 36.91 |
| | 17700 | 45.22 | 0 | 45.22 |
| | 20542 | 57.79 | 53.68 | 55.74 |

PD104EP-HX_05_55.6kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 1
 f= 1
 R= -1
 Pmax= 55.6 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| | thickness (mm) | width (mm) | | |
| thick | 12.9 | | 26.01 | |
| | | 12.74 | 25.86 | |
| thin | 11.31 | | 25.9 | |
| | | 11.56 | 25.77 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 1 | 0 | 0 | 0 |
| | 106 | 1.37 | 1.24 | 1.31 |
| | 295 | 3.94 | 2.65 | 3.3 |
| | 663 | 6.97 | 3.6 | 5.29 |
| | 1480 | 9.63 | 7.1 | 8.37 |
| | 3666 | 14.71 | 9.54 | 12.13 |
| | 5813 | 16.67 | 12.6 | 14.64 |
| | 9286 | 26.48 | 21.2 | 23.84 |
| | 11557 | 36.89 | 35.82 | 36.36 |
| | 12153 | 41.27 | 38.1 | 39.69 |
| | 13835 | 56.58 | 54.96 | 55.77 |

PD204UP-TR1_04_44.5kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 0.5
 R= -1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)

Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.79 | 26.7 | |
| | | 13.71 | 26.78 |
| thin | 11.26 | 25.84 | |
| | | 11.19 | 25.89 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 41 | 1.97 | 1.53 | 1.75 |
| 126 | 3.38 | 2.75 | 3.07 |
| 176 | 5.87 | 2.75 | 4.31 |
| 289 | 5.87 | 4.22 | 5.05 |
| 391 | 7.37 | 5.94 | 6.66 |
| 582 | 8.23 | 7.49 | 7.86 |
| 751 | 9.73 | 9.72 | 9.73 |
| 877 | 12.39 | 14.35 | 13.37 |
| 966 | 16.16 | 14.35 | 15.26 |
| 1064 | 18.56 | 16.79 | 17.68 |
| 1296 | 24.64 | 21.08 | 22.86 |
| 1406 | 27.64 | 24.28 | 25.96 |
| 1595 | 31.19 | 29.29 | 30.24 |
| 1742 | 37.14 | 33.74 | 35.44 |
| 1935 | 41.17 | 37.55 | 39.36 |
| 2056 | 43.59 | 40.98 | 42.29 |
| 2274 | 48.12 | 46.56 | 47.34 |
| 2397 | 49.94 | 49.34 | 49.64 |

PD204UP-TR1_06_44.5kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 0.5
 R= -1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.43 | 25.93 | |
| | | 13.57 | 26.12 |
| thin | 10.87 | 26.04 | |
| | | 11.1 | 26.08 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 40 | 1.37 | 2.29 | 1.83 |
| 200 | 3.25 | 6.14 | 4.7 |
| 360 | 4.97 | 6.75 | 5.86 |
| 450 | 6.79 | 7.33 | 7.06 |
| 642 | 8.21 | 8.47 | 8.34 |
| 814 | 10.07 | 12.29 | 11.18 |
| 930 | 16.33 | 16.02 | 16.18 |
| 1059 | 20.5 | 18.38 | 19.44 |
| 1147 | 22.82 | 22.45 | 22.64 |
| 1259 | 26.19 | 26.56 | 26.38 |

| | | | |
|------|-------|-------|-------|
| 1343 | 28.85 | 29.09 | 28.97 |
| 1597 | 35.52 | 34.98 | 35.25 |
| 1677 | 37.95 | 37.57 | 37.76 |
| 1766 | 40.69 | 40.01 | 40.35 |
| 1855 | 44.08 | 43.13 | 43.61 |
| 1934 | 46.04 | 45.82 | 45.93 |
| 2024 | 48.02 | 47.92 | 47.97 |
| 2145 | 50.11 | 49.06 | 49.59 |

PD104UP-TR1_01_44.5kN_R=-1

| | | |
|------------------|------------------------------|----|
| Resin | UP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 1 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 11.92 | 26 | |
| | | 12.08 | 26.02 |
| thin | 10.68 | 26.02 | |
| | | 10.86 | 26.04 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 235 | 1.95 | 2.53 | 2.24 |
| 651 | 3.46 | 3.67 | 3.57 |
| 1571 | 4.69 | 4.84 | 4.77 |
| 2072 | 6.67 | 7.15 | 6.91 |
| 2978 | 8.66 | 8.6 | 8.63 |
| 4208 | 9.69 | 11.24 | 10.47 |
| 8017 | 22.67 | 24.34 | 23.51 |
| 8593 | 24.39 | 28.73 | 26.56 |
| 9176 | 28.43 | 30.47 | 29.45 |
| 9892 | 33.34 | 36.41 | 34.88 |
| 10462 | 37.11 | 39.5 | 38.31 |
| 12641 | 50.86 | 49.04 | 49.95 |

PD104UP-TR1_02_55.6kN_R=-1

| | | |
|------------------|------------------------------|----|
| Resin | UP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 1 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 55.6 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 11.86 | 26.25 | |
| | | 11.86 | 26.17 |
| thin | 10.7 | 26.12 | |
| | | 10.65 | 26.27 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |

| | | | |
|------|-------|-------|-------|
| 1 | 0 | 0 | 0 |
| 146 | 1.57 | 1.41 | 1.49 |
| 305 | 4.84 | 1.41 | 3.13 |
| 568 | 8.45 | 3.61 | 6.03 |
| 799 | 10.33 | 7.47 | 8.9 |
| 1153 | 14.6 | 9.44 | 12.02 |
| 2590 | 32.85 | 32.05 | 32.45 |
| 2820 | 37.76 | 36.85 | 37.31 |
| 3041 | 46.12 | 45 | 45.56 |
| 3517 | 54.7 | 51.4 | 53.05 |

PD104UP-TR1_05_55.6kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 1
 f= 1
 R= -1
 Pmax= 55.6 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.25 | | 26.06 |
| | | 12.1 | 25.96 |
| thin | 10.76 | | 26.01 |
| | | 10.54 | 25.96 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 |
| 97 | 1.79 | 1.68 | 1.74 |
| 367 | 4.08 | 8.8 | 6.44 |
| 623 | 7.01 | 11.19 | 9.1 |
| 1051 | 15.27 | 19.23 | 17.25 |
| 1414 | 24.48 | 27.31 | 25.9 |
| 1712 | 31.44 | 33.59 | 32.52 |
| 2021 | 40.47 | 46.32 | 43.4 |
| 2210 | 51.44 | 54.84 | 53.14 |

PD104UP-TR1_03_44.5kN_R=0.1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 1
 f= 3
 R= 0.1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1708 (M)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 11.87 | | 26.17 |
| | | 11.79 | 26.12 |
| thin | 10.77 | | 26.22 |
| | | 10.65 | 26.23 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |

| | | | |
|--------|-------|-------|-------|
| 25141 | 2.61 | 1.88 | 2.25 |
| 58398 | 4.2 | 6.46 | 5.33 |
| 130860 | 10.19 | 9.6 | 9.9 |
| 243472 | 11.97 | 13.25 | 12.61 |
| 341352 | 23.61 | 26.36 | 24.99 |
| 374652 | 31.22 | 34.9 | 33.06 |
| 392652 | 37.83 | 40.55 | 39.19 |
| 410652 | 46.47 | 43.27 | 44.87 |

PD104UP-TR1_04_44.5kN_R=0.1

| | | |
|------------------|------------------------------|----|
| Resin | UP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 1 | |
| f= | 3 | |
| R= | 0.1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Fiber Glass Ind. SX-1708 (M) | |

| | thickness (mm) | width (mm) | |
|--------|-------------------------|------------------------|------------------------|
| thick | 12.2 | 26.13 | |
| | | 12.02 | 26.13 |
| thin | 10.71 | 26.12 | |
| | | 10.82 | 26.09 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 1 | 0 | 0 | 0 |
| 8111 | 2 | 1.57 | 1.79 |
| 18068 | 3.23 | 4.3 | 3.77 |
| 27266 | 3.23 | 6.25 | 4.74 |
| 45164 | 5.55 | 7.5 | 6.53 |
| 182443 | 8.4 | 10.41 | 9.41 |
| 408003 | 8.4 | 17.83 | 13.12 |
| 505659 | 12.49 | 22.07 | 17.28 |
| 573172 | 34.46 | 29.62 | 32.04 |
| 583351 | 36.52 | 33.74 | 35.13 |
| 601243 | 39.9 | 37.99 | 38.95 |
| 622933 | 53.99 | 46 | 50 |

PD204MAT_45S_03_44.5kN_R=-1

| | | |
|------------------|---|----|
| Resin | pDCPD | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 44.5 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Saertex VU-90079-00830-01270-000000 (L) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.15 | 25.99 | |
| | | 12.15 | 26.28 |
| thin | 10.07 | 26.01 | |
| | | 9.92 | 26.29 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |

| | | | |
|-------|-------|-------|-------|
| 48 | 0 | 0 | 0 |
| 321 | 2.81 | 1.75 | 2.28 |
| 1231 | 8.51 | 6.18 | 7.35 |
| 2186 | 13.74 | 10.14 | 11.94 |
| 3359 | 17.26 | 16.49 | 16.88 |
| 5109 | 24.46 | 19.58 | 22.02 |
| 7113 | 31.92 | 26.85 | 29.39 |
| 8327 | 37.99 | 32.36 | 35.18 |
| 8886 | 41.05 | 36.21 | 38.63 |
| 10634 | 46.98 | 43.41 | 45.2 |
| 11416 | 47.93 | 46.44 | 47.19 |

PD204MAT_45S_04_44.5kN_R=-1

Resin pDCPD
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 1
 R= -1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.16 | 26.01 | |
| | | 12.32 | 26.3 |
| thin | 9.94 | 26.07 | |
| | | 9.84 | 26.23 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 8 | 0 | 0 | 0 |
| 36 | 0.77 | 0.69 | 0.73 |
| 227 | 2.89 | 0.69 | 1.79 |
| 1282 | 5.73 | 9.36 | 7.55 |
| 2654 | 13.12 | 14.58 | 13.85 |
| 3952 | 16.95 | 17.46 | 17.21 |
| 6377 | 24.77 | 26.5 | 25.64 |
| 8283 | 31.81 | 32.66 | 32.24 |
| 9027 | 37.88 | 37.84 | 37.86 |
| 10598 | 47.65 | 44.08 | 45.87 |

PD204EP-HX_45S_01_44.5kN_R=-1

Resin
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 1
 R= -1
 Pmax= 44.5 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|----------------|------------|-------|
| thick | 12.94 | | 25.95 |
| | | 12.84 | 25.98 |
| thin | 10.49 | | 25.91 |

| | 10.3 | 25.96 | |
|-------|-------------------------|------------------------|------------------------|
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 14 | 0 | 0 | 0 |
| 268 | 2.06 | 1.64 | 1.85 |
| 415 | 4.47 | 2.41 | 3.44 |
| 668 | 6.32 | 3.69 | 5.01 |
| 1059 | 7.9 | 6.51 | 7.21 |
| 2343 | 13.43 | 12.18 | 12.81 |
| 3055 | 17.03 | 15.43 | 16.23 |
| 3953 | 21.31 | 19.2 | 20.26 |
| 5144 | 33.42 | 30.01 | 31.72 |
| 5504 | 39.34 | 35.99 | 37.67 |
| 5910 | 43.9 | 42.1 | 43 |
| 6211 | 47.31 | 47.55 | 47.43 |

PD204EP-HX_45S_02_44.5kN_R=-1

Resin

Gage Length 10.16 in

No. of Ply Drops 2

f= 1

R= -1

Pmax= 44.5 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.06 | 26.29 | |
| | | 13.08 | 26.27 |
| thin | 10.58 | 26.35 | |
| | | 10.59 | 26.28 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 23 | 0 | 0 | 0 |
| 402 | 5.64 | 5.18 | 5.41 |
| 1966 | 11.76 | 9.79 | 10.78 |
| 2542 | 14.85 | 11.13 | 12.99 |
| 4392 | 23.39 | 17.33 | 20.36 |
| 5488 | 31 | 25.38 | 28.19 |
| 6090 | 36.57 | 31.63 | 34.1 |
| 6614 | 43.51 | 37.83 | 40.67 |
| 7170 | 49.6 | 42.72 | 46.16 |
| 7463 | 52.35 | 47.74 | 50.05 |

PD204MAT_45S_05_33.4kN_R=-1

Resin pDCPD

Gage Length 10.16 in

No. of Ply Drops 2

f= 1

R= -1

Pmax= 33.4 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

thickness (mm) width (mm)

120

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| thick | 12.29 | | 26.19 | |
| | | 12.3 | 26.2 | |
| thin | 9.85 | | 26.12 | |
| | | 10.03 | 26.21 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 44 | 0 | 0 | 0 |
| | 1653 | 0 | 3.06 | 1.53 |
| | 4659 | 6.25 | 5.52 | 5.89 |
| | 14010 | 6.25 | 9.46 | 7.86 |
| | 24672 | 10.05 | 10.91 | 10.48 |
| | 37203 | 12.81 | 17.24 | 15.03 |
| | 63576 | 17.71 | 22.46 | 20.09 |
| | 87077 | 22.84 | 25.28 | 24.06 |
| | 118323 | 26.04 | 28.81 | 27.43 |
| | 130549 | 34.85 | 37.78 | 36.32 |
| | 139500 | 39.44 | 41.63 | 40.54 |
| | 156863 | 46.82 | 46.88 | 46.85 |

PD204MAT_45S_06_33.4kN_R=-1

| | | |
|------------------|---|----|
| Resin | pDCPD | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 33.4 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Saertex VU-90079-00830-01270-000000 (L) | |

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| | thickness (mm) | width (mm) | | |
| thick | 12.41 | | 25.96 | |
| | | 12.21 | 26.1 | |
| thin | 9.88 | | 25.98 | |
| | | 9.86 | 26.13 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 21 | 0 | 0 | 0 |
| | 1012 | 0 | 1.79 | 0.9 |
| | 13549 | 10.59 | 6.08 | 8.34 |
| | 31207 | 14.79 | 10.31 | 12.55 |
| | 68117 | 22.84 | 22.05 | 22.45 |
| | 84562 | 27.13 | 27.06 | 27.1 |
| | 100060 | 30.19 | 27.06 | 28.63 |
| | 117246 | 35.64 | 35.54 | 35.59 |
| | 152185 | 48.39 | 44.36 | 46.38 |

PD204EP-HX_45S_05_33.4kN_R=-1

| | | |
|------------------|---|----|
| Resin | | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 1 | |
| R= | -1 | |
| Pmax= | 33.4 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Saertex VU-90079-00830-01270-000000 (L) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.06 | | 26.07 |
| | | 13.08 | 26.13 |
| thin | 10.52 | | 26.11 |
| | | 10.44 | 26.14 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 42 | | 0 | 0 |
| 323 | | 0 | 0 |
| 3813 | 5.41 | 4.37 | 4.89 |
| 10950 | 7.91 | 6.96 | 7.44 |
| 16971 | 11.28 | 7.56 | 9.42 |
| 20544 | 14.49 | 9.66 | 12.08 |
| 26675 | 17.3 | 10.4 | 13.85 |
| 45973 | 27.07 | 22.11 | 24.59 |
| 55305 | 36.32 | 32.31 | 34.32 |
| 61944 | 49.81 | 44.34 | 47.08 |
| 64990 | 51.98 | 49.74 | 50.86 |

PD204EP-HX_45S_06_33.4kN_R=-1

Resin

Gage Length 10.16 in

No. of Ply Drops 2

f= 1

R= -1

Pmax= 33.4 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.16 | | 26.05 |
| | | 12.89 | 26.1 |
| thin | 10.56 | | 26.05 |
| | | 10.62 | 26.09 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 108 | | 0 | 0 |
| 2439 | 3.63 | 1.23 | 2.43 |
| 10611 | 9.84 | 4.67 | 7.26 |
| 23856 | 18.14 | 11.15 | 14.65 |
| 32640 | 23.84 | 19.2 | 21.52 |
| 51921 | 44.53 | 47.05 | 45.79 |
| 55210 | 49.34 | 49.48 | 49.41 |

PD204EP-HX_16_33.4kN_R=-1

Resin EP-1

Gage Length 10.16 in

No. of Ply Drops 2

f= 1

R= -1

Pmax= 33.4 kN

Uni: Vectorply E-LT5500 (D)

Biax: Fiber Glass Ind. SX-1708 (M)

| thickness (mm) | width (mm) |
|----------------|------------|
|----------------|------------|

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| thick | 13.82 | | 25.97 | |
| | | 13.77 | 26.05 | |
| thin | 11.09 | | 26.13 | |
| | | 11.2 | 25.99 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 109 | 0 | 0 | 0 |
| | 430 | 0 | 0 | 0 |
| | 2024 | 1.76 | 2.06 | 1.91 |
| | 5355 | 2.96 | 3.63 | 3.3 |
| | 10243 | 6.57 | 6.14 | 6.36 |
| | 18333 | 9.66 | 7.21 | 8.44 |
| | 42589 | 12.07 | 12.02 | 12.05 |
| | 65959 | 20.23 | 17.55 | 18.89 |
| | 88380 | 27.46 | 24.25 | 25.86 |
| | 102923 | 34.91 | 31.35 | 33.13 |
| | 110135 | 38.73 | 35.67 | 37.2 |
| | 124864 | 48.49 | 44.8 | 46.65 |
| | 130694 | 50.61 | 48.74 | 49.68 |

PD204EP-HX_17_33.4kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 1
 R= -1
 Pmax= 33.4 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Fiber Glass Ind. SX-1 708 (M)

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| | thickness (mm) | width (mm) | | |
| thick | 14.06 | | 26.08 | |
| | | 13.94 | 26.36 | |
| thin | 11.37 | | 26.11 | |
| | | 11.23 | 26.35 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 46 | 0 | 0 | 0 |
| | 1026 | 0 | 0 | 0 |
| | 5612 | 3.36 | 0 | 1.68 |
| | 12217 | 6.25 | 1.88 | 4.07 |
| | 35447 | 11.12 | 3.26 | 7.19 |
| | 53482 | 16.51 | 7.74 | 12.13 |
| | 82590 | 23.1 | 16.19 | 19.65 |
| | 117632 | 38.35 | 33.02 | 35.69 |
| | 128732 | 45.4 | 42.92 | 44.16 |
| | 143561 | 51.49 | 49.96 | 50.73 |

PD204EP-HX_45S_07_22.2kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 22.2 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-

01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.04 | | 26.03 |
| | | 12.91 | 26.1 |
| thin | 10.57 | | 26.07 |
| | | 10.52 | 26.07 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 18189 | 0 | 0 |
| | 136907 | 5.79 | 2.9 |
| | 227699 | 8.34 | 4.17 |
| | 568472 | 12.35 | 8.39 |
| | 892549 | 15.58 | 11.94 |
| | 1104543 | 19.05 | 14.93 |
| | 1454411 | 26.19 | 22.75 |
| | 1834865 | 31.79 | 30.18 |
| | 2157200 | 42.76 | 35.53 |

PD204EP-HX_45S_08_22.2kN_R=-1

| | | |
|------------------|---|----|
| Resin | EP-1 | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 4 | |
| R= | -1 | |
| Pmax= | 22.2 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Saertex VU-90079-00830-01270-000000 (L) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.01 | | 26.08 |
| | | 12.96 | 26.08 |
| thin | 10.43 | | 26.2 |
| | | 10.55 | 26.23 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 3940 | 0 | 0 |
| | 48340 | 2.81 | 1.41 |
| | 273104 | 8.09 | 5.85 |
| | 624479 | 11 | 8.63 |
| | 1338161 | 15.23 | 12.12 |
| | 1836138 | 19.26 | 16.79 |
| | 2378397 | 24 | 22.98 |
| | 2770899 | 28.45 | 26.58 |
| | 3166979 | 31.4 | 31.27 |

PD204MAT_45S_07_22.2kN_R=-1

| | | |
|------------------|---|----|
| Resin | pDCPD | |
| Gage Length | 10.16 | in |
| No. of Ply Drops | 2 | |
| f= | 4 | |
| R= | -1 | |
| Pmax= | 22.2 | kN |
| Uni: | Vectorply E-LT5500 (D) | |
| Biax: | Saertex VU-90079-00830-01270-000000 (L) | |

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.22 | | 26.18 |
| | | 12.04 | 26.33 |
| thin | 10.13 | | 26.35 |
| | | 9.94 | 26.4 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 39917 | 0 | 0 |
| | 179036 | 1.72 | 2.79 |
| | 527672 | 3.66 | 4.13 |
| | 1598329 | 5.18 | 6.4 |
| | 2339701 | 6 | 6.75 |

PD204MAT_45S_08_22.2kN_R=-1

Resin pDCPD
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 22.2 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 12.26 | | 26.25 |
| | | 12.43 | 26.32 |
| thin | 10.18 | | 26.27 |
| | | 9.8 | 26.4 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 21360 | 0 | 0 |
| | 88803 | 1.23 | 2.53 |
| | 1634702 | 3.53 | 5.72 |
| | 2371926 | 5.51 | 5.72 |
| | 2736522 | 5.51 | 7.79 |

PD204EP-HX_45S_09_20.7kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 20.7 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|-------|-------------------------|------------------------|------------------------|
| thick | 13.05 | | 26.05 |
| | | 13.03 | 26.08 |
| thin | 10.22 | | 26.04 |
| | | 10.29 | 26.07 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| | 24240 | 0 | 0 |
| | 113620 | 4.93 | 1.85 |

320162

7.97

5.83

6.9

PD204EP-HX_45S_10_15.6kN_R=-1

Resin EP-1

Gage Length 10.16 in

No. of Ply Drops 2

f= 4

R= -1

Pmax= 15.6 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 12.95 | | 25.93 |
| | | 13.27 | 26.05 |
| thin | 10.44 | | 26.09 |
| | | 10.58 | 26.13 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 33000 | | 0 | 0 |
| 392603 | | 1.9 | 1.54 |
| 1005388 | | 1.9 | 1.54 |

PD204EP-HX_45S_11_17.8kN_R=-1

Resin EP-1

Gage Length 10.16 in

No. of Ply Drops 2

f= 4

R= -1

Pmax= 17.8 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 12.95 | | 26.19 |
| | | 12.92 | 26.18 |
| thin | 10.55 | | 26.17 |
| | | 10.52 | 26.17 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 90720 | | 0 | 0 |
| 1270040 | | 1.28 | 2.23 |
| 3649874 | | 1.28 | 2.23 |
| 6519014 | | 1.28 | 2.23 |

PD204EP-HX_45S_12_20.0kN_R=-1

Resin EP-1

Gage Length 10.16 in

No. of Ply Drops 2

f= 4

R= -1

Pmax= 20 kN

Uni: Vectorply E-LT5500 (D)

Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 12.95 | 26.19 | |
| | | 12.92 | 26.18 |
| thin | 10.55 | 26.17 | |
| | | 10.52 | 26.17 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 12720 | 0 | 0 | 0 |
| 156825 | 3.46 | 0 | 1.73 |
| 634572 | 6.21 | 1.84 | 4.03 |
| 841111 | 8.32 | 4.55 | 6.44 |
| 1528794 | 13.01 | 5.63 | 9.32 |
| 2031662 | 16.22 | 8.18 | 12.2 |
| 2465723 | 16.93 | 12.77 | 14.85 |
| 3378708 | 18.42 | 16.86 | 17.64 |
| 4134232 | 24.76 | 19.38 | 22.07 |
| 5231294 | 33.04 | 26.03 | 29.54 |
| 5931129 | 36.37 | 34.98 | 35.68 |
| 6510261 | 42.76 | 41.01 | 41.89 |
| 6661983 | 43.45 | 42.74 | 43.1 |

PD204UP-TR1_45S_13kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 13 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | thickness (mm) | width (mm) | |
|---------|-------------------------|------------------------|------------------------|
| thick | 12.99 | 26.04 | |
| | | 12.96 | 26.17 |
| thin | 10.56 | 26.11 | |
| | | 10.49 | 26.07 |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) |
| 9765 | 0 | 0 | 0 |
| 649845 | 5.52 | 0 | 2.76 |
| 1344774 | 5.52 | 4.86 | 5.19 |
| 2664783 | 7.08 | 5.67 | 6.38 |

PD204UP-TR1_45S_15kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 15 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

thickness (mm) width (mm)

| | | | | |
|-------|-------------------------|------------------------|------------------------|------|
| thick | 12.85 | | 26.08 | |
| | | 12.98 | 25.96 | |
| thin | 10.42 | | 26.22 | |
| | | 10.45 | 26.16 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 10930 | 0 | 0 | 0 |
| | 110770 | 5.05 | 3.54 | 4.3 |
| | 337682 | 7.78 | 6.86 | 7.32 |
| | 639444 | 10.06 | 9.87 | 9.97 |

PD204UP-TR1_45S_14kN_R=-1

Resin UP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 f= 4
 R= -1
 Pmax= 14 kN
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | | | | |
|-------|-------------------------|------------------------|------------------------|------|
| | thickness (mm) | width (mm) | | |
| thick | 12.48 | | 26.2 | |
| | | 12.87 | 26.09 | |
| thin | 10.49 | | 26.17 | |
| | | 10.42 | 26.06 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 177657 | 0 | 0 | 0 |
| | 562617 | 1.77 | 4.77 | 3.27 |
| | 1170325 | 6.22 | 8.61 | 7.42 |
| | 1474238 | 6.22 | 10.21 | 8.22 |

PD204EP-HX_45S_19kN_R=-1

Resin EP-1
 Gage Length 10.16 in
 No. of Ply Drops 2
 R= -1
 Pmax= 19 kN
 f= 4
 Uni: Vectorply E-LT5500 (D)
 Biax: Saertex VU-90079-00830-01270-000000 (L)

| | | | | |
|-------|-------------------------|------------------------|------------------------|-------|
| | thickness (mm) | width (mm) | | |
| thick | 13.03 | | 26.12 | |
| | | 12.81 | 26.15 | |
| thin | 10.57 | | 26.18 | |
| | | 10.32 | 26.2 | |
| cycle | front crack length (mm) | rear crack length (mm) | avg. crack length (mm) | |
| | 82287 | 0 | 0 | 0 |
| | 741087 | 3.59 | 3.11 | 3.35 |
| | 861087 | 4.36 | 3.79 | 4.08 |
| | 1016995 | 5.69 | 4.94 | 5.32 |
| | 1372099 | 9.37 | 5.16 | 7.27 |
| | 2668393 | 12.6 | 9.27 | 10.94 |

Adhesive Shear Lap Testing

The following results are detailed in the following paper: "Fatigue Results and Analysis for Thick Adhesive Notched Lap Shear Test", Sears, A.T., Samborsky, D.D., Agastra, P., and Mandell, J.F., 2010 AIAA SDM, Orlando, Wind Energy Session

| Peel plies used | | | | | | | |
|----------------------------|---------|----------|-----------------|--------------------|-----------------------------|-----|--------|
| EPE = Econo Ply E peel ply | | | | | | | |
| ES = Econostitch peel ply | | | | | | | |
| SF - Super Ply F | | | | | | | |
| Rate of testing effects | coupon | Peel Ply | shear length mm | Shear Strength MPa | speed mm/s, or Frequency Hz | R | cycles |
| ADH-1 | 0.5-200 | SF | 12.1 | 20.70 | 0.0254 | * | 1 |
| ADH-1 | 0.5-201 | SF | 12.1 | 20.50 | 0.0254 | * | 1 |
| ADH-1 | 0.5-202 | SF | 12.1 | 18.40 | 0.0254 | * | 1 |
| ADH-1 | 0.5-203 | SF | 12.1 | 21.10 | 0.0254 | * | 1 |
| ADH-1 | 0.5-204 | SF | 12.6 | 19.80 | 0.127 | * | 1 |
| ADH-1 | 0.5-205 | SF | 12.3 | 19.40 | 0.127 | * | 1 |
| ADH-1 | 0.5-206 | SF | 12.3 | 19.30 | 0.127 | * | 1 |
| ADH-1 | 0.5-207 | SF | 12.5 | 18.40 | 0.127 | * | 1 |
| ADH-1 | 0.5-208 | SF | 12.6 | 21.10 | 2.54 | * | 1 |
| ADH-1 | 0.5-209 | SF | 12.1 | 17.90 | 2.54 | * | 1 |
| ADH-1 | 0.5-210 | SF | 12.2 | 18.30 | 2.54 | * | 1 |
| ADH-1 | 0.5-211 | SF | 12.5 | 17.40 | 2.54 | * | 1 |
| | | | | | | | |
| ADH-1 | 301 | EPE | 13.7 | 20.30 | 0.0254 | * | 1 |
| ADH-1 | 302 | EPE | 12.9 | 22.80 | 0.0254 | * | 1 |
| ADH-1 | 303 | EPE | 12.9 | 24.00 | 0.0254 | * | 1 |
| ADH-1 | 304 | EPE | 13.5 | 22.40 | 0.0254 | * | 1 |
| ADH-1 | 305 | EPE | 13.7 | 21.50 | 0.0254 | * | 1 |
| ADH-1 | 306 | EPE | 13.5 | 21.10 | 0.0254 | * | 1 |
| ADH-1 | 316 | EPE | 25.0 | 14.50 | 0.0254 | * | 1 |
| ADH-1 | 317 | EPE | 25.6 | 15.10 | 0.0254 | * | 1 |
| ADH-1 | 318 | EPE | 25.1 | 16.10 | 0.0254 | * | 1 |
| ADH-1 | 309 | EPE | 25.5 | 8.48 | 2 | 0.1 | 12924 |
| ADH-1 | 311 | EPE | 25.3 | 8.10 | 2 | 0.1 | 18339 |
| ADH-1 | 315 | EPE | 25.7 | 6.80 | 3 | 0.1 | 108094 |
| ADH-1 | 313 | EPE | 25.4 | 6.87 | 3 | 0.1 | 80858 |
| ADH-1 | 356 | EPE | 26.3 | 5.79 | 3 | 0.1 | 196872 |
| ADH-1 | 357 | EPE | 25.2 | 5.14 | 4 | 0.1 | 478998 |
| ADH-1 | 360 | EPE | 26.3 | 7.98 | 1 | 0.1 | 5642 |
| ADH-1 | 314 | EPE | 25.6 | 6.13 | 2 | -1 | 22258 |
| ADH-1 | 307 | EPE | 25.5 | 4.99 | 2 | -1 | 46369 |
| ADH-1 | 308 | EPE | 25.2 | 4.80 | 2 | -1 | 128076 |
| ADH-1 | 310 | EPE | 25.0 | 8.46 | 1 | -1 | 1319 |
| ADH-1 | 312 | EPE | 26.1 | 7.94 | 1 | -1 | 3006 |
| ADH-1 | 361 | EPE | 25.9 | 4.86 | 2 | -1 | 72167 |
| ADH-1 | 359 | EPE | 25.9 | 8.07 | 1 | -1 | 1373 |
| ADH-1 | 362 | EPE | 25.9 | 6.27 | 1 | -1 | 14040 |
| ADH-1 | 363 | EPE | 26.2 | 3.42 | 4 | -1 | 400000 |
| ADH-1 | 350 | EPE | 25.9 | 37.90 | 0.0254 | * | 1 |
| ADH-1 | 351 | EPE | 25.7 | 34.80 | 0.0254 | * | 1 |

| | | | | | | | |
|-------|------------|-----|------|-------|--------|-----|---------|
| ADH-1 | 352 | EPE | 26.1 | 37.80 | 0.0254 | * | 1 |
| ADH-1 | 354 | EPE | 26.0 | 27.60 | 1 | 10 | 2995 |
| ADH-1 | 353 | EPE | 25.3 | 13.40 | 2 | 10 | 175000 |
| ADH-1 | 355 | EPE | 25.7 | 27.90 | 1 | 10 | 5032 |
| ADH-1 | 358 | EPE | 26.3 | 16.70 | 2 | 10 | 1500000 |
| | | | | | | | |
| ADH-2 | SS7 | SF | 25.4 | 11.30 | 0.0254 | * | 1 |
| ADH-2 | SS4 | SF | 26.5 | 9.18 | 0.0254 | * | 1 |
| ADH-2 | SS3 | SF | 25.5 | 9.92 | 0.0254 | * | 1 |
| ADH-2 | SS64 | SF | 25.5 | 13.10 | 0.0254 | * | 1 |
| ADH-2 | SS61 | SF | 25.5 | 13.70 | 0.0254 | * | 1 |
| ADH-2 | 70 | SF | 25.7 | 10.30 | 0.0254 | * | 1 |
| ADH-2 | 71 | SF | 26.2 | 12.60 | 0.0254 | * | 1 |
| ADH-2 | 72 | SF | 24.6 | 9.52 | 0.0254 | * | 1 |
| ADH-2 | 73 | SF | 25.8 | 10.70 | 0.0254 | * | 1 |
| ADH-2 | 74 | SF | 24.6 | 10.70 | 0.0254 | * | 1 |
| ADH-2 | 75 | SF | 26.1 | 13.70 | 0.0254 | * | 1 |
| ADH-2 | 76 | SF | 26.2 | 11.80 | 0.0254 | * | 1 |
| ADH-2 | 77 | SF | 26.0 | 12.70 | 0.0254 | * | 1 |
| ADH-2 | 78 | SF | 25.9 | 10.70 | 0.0254 | * | 1 |
| ADH-2 | 79 | SF | 25.9 | 11.70 | 0.0254 | * | 1 |
| ADH-2 | 80 | SF | 26.0 | 13.20 | 0.0254 | * | 1 |
| ADH-2 | 81 | SF | 25.9 | 13.10 | 0.0254 | * | 1 |
| ADH-2 | SS5 | SF | 25.5 | 4.17 | 2 | 0.1 | 504895 |
| ADH-2 | SS2 | SF | 26.3 | 4.15 | 3 | 0.1 | 82203 |
| ADH-2 | SS6 | SF | 26.8 | 5.59 | 2 | 0.1 | 51313 |
| ADH-2 | SS1 | SF | 25.4 | 5.66 | 2 | 0.1 | 9823 |
| ADH-2 | SS8 | SF | 25.5 | 5.76 | 2 | 0.1 | 30271 |
| ADH-2 | SS60 | SF | 25.1 | 6.42 | 4 | 0.1 | 286535 |
| ADH-2 | SS68 | SF | 25.0 | 6.31 | 4 | 0.1 | 1500000 |
| ADH-2 | SS69 | SF | 25.2 | 6.33 | 3 | -1 | 38091 |
| ADH-2 | SS65 | SF | 25.4 | 6.32 | 3 | -1 | 32000 |
| | | | | | | | |
| ADH-1 | H-EPE-05-1 | EPE | 13.4 | 21.70 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-05-2 | EPE | 12.6 | 21.20 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-05-3 | EPE | 13.4 | 20.30 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-05-4 | EPE | 12.5 | 20.10 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-05-5 | EPE | 13.2 | 19.70 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-1 | EPE | 25.7 | 12.40 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-2 | EPE | 25.8 | 13.40 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-3 | EPE | 25.7 | 12.30 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-4 | EPE | 25.6 | 12.50 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-5 | EPE | 25.8 | 14.80 | 0.0254 | * | 1 |
| ADH-1 | H-ES-05-1 | ES | 11.3 | 23.30 | 0.0254 | * | 1 |
| ADH-1 | H-ES-05-2 | ES | 13.4 | 19.60 | 0.0254 | * | 1 |
| ADH-1 | H-ES-05-3 | ES | 13.4 | 17.70 | 0.0254 | * | 1 |
| ADH-1 | H-ES-05-4 | ES | 11.2 | 25.10 | 0.0254 | * | 1 |
| ADH-1 | H-ES-05-5 | ES | 13.1 | 18.10 | 0.0254 | * | 1 |
| ADH-1 | H-ES-1-1 | ES | 24.9 | 14.20 | 0.0254 | * | 1 |
| ADH-1 | H-ES-1-2 | ES | 24.9 | 12.70 | 0.0254 | * | 1 |
| ADH-1 | H-ES-1-3 | ES | 25.4 | 12.70 | 0.0254 | * | 1 |
| ADH-1 | H-ES-1-4 | ES | 25.4 | 12.60 | 0.0254 | * | 1 |
| ADH-1 | H-ES-1-5 | ES | 25.4 | 13.40 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-05-1 | EPE | 13.7 | 26.40 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-05-2 | EPE | 13.3 | 31.40 | 0.0254 | * | 1 |

| | | | | | | | |
|-------|------------|-----|------|-------|--------|---|---|
| ADH-2 | M-EPE-05-3 | EPE | 13.5 | 30.10 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-05-4 | EPE | 13.6 | 31.20 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-05-5 | EPE | 13.5 | 28.20 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-1-1 | EPE | 25.6 | 21.60 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-1-2 | EPE | 25.9 | 25.70 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-1-3 | EPE | 25.8 | 23.60 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-1-4 | EPE | 25.7 | 21.80 | 0.0254 | * | 1 |
| ADH-2 | M-EPE-1-5 | EPE | 26.0 | 22.10 | 0.0254 | * | 1 |
| ADH-2 | M-ES-05-1 | ES | 13.4 | 26.90 | 0.0254 | * | 1 |
| ADH-2 | M-ES-05-2 | ES | 13.2 | 31.60 | 0.0254 | * | 1 |
| ADH-2 | M-ES-05-3 | ES | 12.8 | 30.00 | 0.0254 | * | 1 |
| ADH-2 | M-ES-05-4 | ES | 13.2 | 31.60 | 0.0254 | * | 1 |
| ADH-2 | M-ES-05-5 | ES | 13.8 | 26.30 | 0.0254 | * | 1 |
| ADH-2 | M-ES-1-1 | ES | 25.1 | 24.20 | 0.0254 | * | 1 |
| ADH-2 | M-ES-1-2 | ES | 25.2 | 20.20 | 0.0254 | * | 1 |
| ADH-2 | M-ES-1-3 | ES | 25.3 | 23.40 | 0.0254 | * | 1 |
| ADH-2 | M-ES-1-4 | ES | 25.4 | 18.40 | 0.0254 | * | 1 |
| ADH-2 | M-ES-1-5 | ES | 25.6 | 19.90 | 0.0254 | * | 1 |
| ADH-4 | R102-1 | EPE | 12.3 | 21.70 | 0.001 | * | 1 |
| ADH-4 | R102-2 | EPE | 12.6 | 23.60 | 0.001 | * | 1 |
| ADH-4 | R102-3 | EPE | 12.2 | 28.80 | 0.001 | * | 1 |
| ADH-4 | R102-4 | EPE | 12.5 | 25.30 | 0.001 | * | 1 |
| ADH-4 | R102-5 | EPE | 13.2 | 22.70 | 0.001 | * | 1 |
| ADH-4 | R102-6 | EPE | 13.3 | 24.50 | 0.001 | * | 1 |
| ADH-5 | R405-10 | EPE | 12.5 | 29.20 | 0.001 | * | 1 |
| ADH-5 | R405-11 | EPE | 12.6 | 26.60 | 0.001 | * | 1 |
| ADH-5 | R405-12 | EPE | 12.5 | 28.00 | 0.001 | * | 1 |
| ADH-5 | R405-13 | EPE | 12.5 | 26.60 | 0.001 | * | 1 |
| ADH-5 | R405-14 | EPE | 12.8 | 26.40 | 0.001 | * | 1 |
| ADH-5 | R405-15 | EPE | 12.7 | 31.10 | 0.001 | * | 1 |
| ADH-3 | E-20 | EPE | 12.4 | 20.10 | 0.001 | * | 1 |
| ADH-3 | E-21 | EPE | 13.7 | 19.10 | 0.001 | * | 1 |
| ADH-3 | E-22 | EPE | 13.7 | 17.80 | 0.001 | * | 1 |
| ADH-3 | E-23 | EPE | 12.6 | 17.30 | 0.001 | * | 1 |
| ADH-3 | E-24 | EPE | 12.6 | 17.10 | 0.001 | * | 1 |
| ADH-3 | E-25 | EPE | 12.3 | 20.90 | 0.001 | * | 1 |
| ADH-1 | H170-fs | EPE | 13.0 | 18.90 | 0.001 | * | 1 |
| ADH-1 | H171-fs | EPE | 13.1 | 18.20 | 0.001 | * | 1 |
| ADH-1 | H172-fs | EPE | 12.6 | 16.90 | 0.001 | * | 1 |
| ADH-1 | H173-fs | EPE | 12.5 | 16.90 | 0.001 | * | 1 |
| ADH-1 | H174-fs | EPE | 12.6 | 21.30 | 0.001 | * | 1 |
| ADH-1 | H175-fs | EPE | 12.6 | 18.00 | 0.001 | * | 1 |
| ADH-1 | H180 | EPE | 13.0 | 19.80 | 0.001 | * | 1 |
| ADH-1 | H181 | EPE | 13.2 | 20.70 | 0.001 | * | 1 |
| ADH-1 | H182 | EPE | 12.7 | 21.70 | 0.001 | * | 1 |
| ADH-1 | H183 | EPE | 12.8 | 21.70 | 0.001 | * | 1 |

Adhesive Thickness Tests, all tests had a 25.4 mm shear length

| Adhesive | Coupon | Peel Ply | adhesive thickness mm | shear strength MPa | Testing rate mm/s | | cycles |
|----------|-----------|----------|-----------------------------|--------------------------|-------------------------|---|--------|
| ADH-1 | H-EPE-1-1 | EPE | 3.25 | 12.40 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-2 | EPE | 3.25 | 13.40 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-3 | EPE | 3.25 | 12.30 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-1-4 | EPE | 3.25 | 12.50 | 0.0254 | * | 1 |

| | | | | | | | |
|-------|-----------|-----|------|-------|--------|---|---|
| ADH-1 | H-EPE-1-5 | EPE | 3.25 | 14.80 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-316 | EPE | 3.25 | 14.50 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-317 | EPE | 3.25 | 15.10 | 0.0254 | * | 1 |
| ADH-1 | H-EPE-318 | EPE | 3.25 | 16.10 | 0.0254 | * | 1 |
| ADH-1 | 2x-1 | EPE | 6.50 | 10.90 | 0.0254 | * | 1 |
| ADH-1 | 2x-2 | EPE | 6.50 | 9.46 | 0.0254 | * | 1 |
| ADH-1 | 2x-3 | EPE | 6.50 | 9.43 | 0.0254 | * | 1 |
| ADH-1 | 2x-4 | EPE | 6.50 | 11.00 | 0.0254 | * | 1 |
| ADH-1 | 2x-5 | EPE | 6.50 | 9.49 | 0.0254 | * | 1 |
| ADH-1 | 2x-6 | EPE | 6.50 | 10.10 | 0.0254 | * | 1 |
| ADH-1 | 3x-1 | EPE | 9.75 | 8.87 | 0.0254 | * | 1 |
| ADH-1 | 3x-2 | EPE | 9.75 | 9.74 | 0.0254 | * | 1 |
| ADH-1 | 3x-3 | EPE | 9.75 | 9.64 | 0.0254 | * | 1 |
| ADH-1 | 3x-4 | EPE | 9.75 | 7.76 | 0.0254 | * | 1 |
| ADH-1 | 3x-5 | EPE | 9.75 | 8.72 | 0.0254 | * | 1 |
| ADH-1 | 3x-6 | EPE | 9.75 | 7.47 | 0.0254 | * | 1 |

The following tests had mild steel adherends

| Coupon | | | metal thickness mm | Max Shear, MPa | rate mm/s | R | cycles to fail |
|--------|--------|------|--------------------------|-------------------|--------------|-----|-------------------|
| ADH-3 | SSM107 | ---- | 4.8 | 7.85 | 0.0254 | * | 1 |
| ADH-3 | SSM111 | ---- | 4.8 | 8.52 | 0.0254 | * | 1 |
| ADH-3 | SSM104 | ---- | 4.8 | 9.78 | 0.0254 | * | 1 |
| ADH-3 | SSM102 | ---- | 4.8 | 4.61 | 0.0254 | * | 1 |
| ADH-3 | SSM103 | ---- | 4.8 | 11.20 | 0.0254 | * | 1 |
| ADH-3 | SSM108 | ---- | 4.8 | 9.70 | 0.0254 | * | 1 |
| ADH-3 | SSM109 | ---- | 4.8 | 6.19 | 2 | 0.1 | 13743 |
| ADH-3 | SSM106 | ---- | 4.8 | 6.32 | 2 | 0.1 | 1077 |
| ADH-3 | SSM101 | ---- | 4.8 | 6.40 | 2 | 0.1 | 3138 |
| ADH-3 | SSM112 | ---- | 4.8 | 5.34 | 5 | 0.1 | 97074 |
| ADH-3 | SSM110 | ---- | 4.8 | 4.26 | 5 | 0.1 | 53456 |
| ADH-3 | SSM105 | ---- | 4.8 | 4.17 | 5 | 0.1 | 745062 |
| ADH-3 | SSM4 | ---- | 2.5 | 2.81 | 6 | 0.1 | 10000000 |
| ADH-3 | SSM5 | ---- | 2.5 | 4.29 | 6 | 0.1 | 162401 |
| ADH-3 | SSM6 | ---- | 2.5 | 4.41 | 6 | 0.1 | 125553 |
| ADH-3 | SSM7 | ---- | 2.5 | 4.43 | 5 | 0.1 | 59372 |
| ADH-2 | M-206S | ---- | 4.8 | 13.60 | 0.0254 | * | 1 |
| ADH-2 | M-200S | ---- | 4.8 | 13.20 | 0.0254 | * | 1 |
| ADH-2 | M-205S | ---- | 4.8 | 15.10 | 0.0254 | * | 1 |
| ADH-2 | M-201S | ---- | 4.8 | 6.42 | 4 | 0.1 | 1688979 |
| ADH-2 | M-202S | ---- | 4.8 | 8.46 | 3 | 0.1 | 30614 |
| ADH-2 | M-203S | ---- | 4.8 | 8.42 | 3 | 0.1 | 17126 |
| ADH-2 | M-204S | ---- | 4.8 | 7.71 | 3 | 0.1 | 109873 |

PART II: EARLIER MATERIALS

SUMMARIES OF EARLIER MATERIALS

Table 2. Lay-up and Summary of Commercial Composite Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|----------|--------------------|--------------------------------------|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|---|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| A | 30 | [0] ₅ | P | -313 | -1.5 | ---- | ---- | 566 | 2.6 | 0.111 | 0.87 | 21.5 | 407 g/m ² 0's, A1012, CoRezyn 63-AX-050 polyester |
| B | 25 | [0] ₅ | V | -287 | -1.4 | ---- | ---- | 581 | 2.8 | 0.135 | 0.99 | 21.0 | 407 g/m ² 0's, A1012, Hetron 922L-25 Vinyl ester |
| F | 35 | [(±45/0) ₃] _S | P | -364 | -2.1 | ---- | ---- | 357 | 2.1 | 0.130 | 0.48 | 17.2 | 1,081 g/m ² Triax (48%- 0's), Hexcel XH120 Center two plies dropped off (6 plies→ 4 plies), CoRezyn 63-A-X-050 polyester resin |
| G | 36 | [(0/±45) ₃] _S | P | -258 | -1.4 | ---- | ---- | 361 | 1.9 | 0.129 | 0.45 | 19.3 | |
| H | 39 | [(±45/0) ₃] _S | P | -435 | -1.8 | 0.10 | -0.72 | 513 | 2.1 | 0.114 | 0.52 | 24.0 | 1,081 g/m ² Triax , (70%- 0's, 30%- ±45's), Hexcel XH120, Center two plies have butt joint (6 plies → 4 plies) |
| J | 39 | [(0/±45) ₃] _S | P | -410 | -1.7 | ---- | ---- | 440 | 1.8 | 0.118 | 0.52 | 24.2 | |
| L | 51 | [0] ₃ | P | -407 | -1.2 | ---- | ---- | 742 | 2.4 | 0.135 | 0.70 | 33.6 | 0's - A260's |
| M | 38 | [0/±45] ₄ | V | -286 | -1.4 | ---- | ---- | 516 | 2.5 | 0.141 | 0.40 | 20.7 | 747 g/m ² Triax (50%-0's) |
| N | 37 | [0/±45] ₄ | P | -318 | -1.7 | 0.096 | -0.70 | 468 | 2.4 | 0.140 | 0.46 | 19.3 | |
| NT | | [90/∓45] ₄ | | -131 | -1.6 | ---- | ---- | 87 | 1.1 | 0.100 | 0.43 | 8.1 | |
| P | 40 | [(0/±45)/M/0] _S | V | -466 | -2.1 | 0.094 | -0.66 | 667 | 3.0 | 0.134 | 0.48 | 22.5 | 747 g/m ² Triax (0/±45), 203 g/m ² Mat(M), 0's -A260 (69%-0's) |
| R | 30 | [0/±45] ₄ | P | -330 | -2.0 | ---- | ---- | 441 | 2.7 | 0.104 | 0.98 | 16.5 | 0's - DN105, 45 - DB120 (47%-0's) |
| T | 30 | [0/±45] ₅ | P | -290 | -1.6 | ---- | ---- | 362 | 2.1 | 0.116 | 0.65 | 17.7 | Folded edge Triax (CDB200), CoRezyn 63-AX-051 polyester resin |
| U | 27 | [0/±45] ₅ | P | -354 | -1.7 | ---- | ---- | 372 | 1.8 | 0.138 | 0.36 | 21.2 | Cut edge Triax (CDB222), CoRezyn 63-AX-051 polyester resin |

Matrix Abbreviations: P -Polyester, V-Vinyl ester

Table 3. Lay-up and Summary of Commercial Composite Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|----------|--------------------|---|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|--|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| V | 33 | [0/±45] _s | P | -379 | -1.9 | ---- | ---- | 374 | 1.9 | 0.133 | 0.43 | 20.0 | Folded edge Triax (CDB222), CoRezyn 63-AX-051 polyester resin |
| W | 33 | [0/±45] _s | P | -336 | -1.7 | ---- | ---- | 341 | 1.8 | 0.116 | 0.64 | 19.3 | Cut edge Triax (CDB200), CoRezyn 63-AX-051 polyester resin |
| X | 35 | [0 ₂ /M/±45/0 ₂] | P | -438 | -1.2 | 0.070 | -1.00 | 612 | 2.4 | 0.091 | 1.05 | 25.4 | 85%-0's (A260), 10%-±45's (407 g/m ²), 5%-Mat(M) (203 g/m ²) |
| XT | | 90 ₂ /M/∓45/90 ₂ | | -159 | -1.2 | ---- | ---- | 43 | 0.52 | 0.110 | 0.23 | 8.3 | |
| Y | 34 | [0 ₂ /M/±45/0 ₂] | E | -454 | -1.8 | 0.059 | -1.00 | 626 | 2.5 | 0.102 | 0.97 | 25.0 | |
| YT | | 90 ₂ /M/∓45/90 ₂ | | -107 | -1.5 | ---- | ---- | 34 | 0.49 | 0.106 | 0.17 | 7.0 | |
| EE | 54 | [M/±45/0] _s | E | -538 | -1.7 | ---- | ---- | 543 | 1.7 | 0.132 | 0.60 | 31.4 | 65%-0's, 18%- 45's, 17%- Mat |
| EEAV | 48 | [M/±45/0] _s | V | -645 | -2.3 | 0.077 | -1.30 | 583 | 2.1 | 0.100 | 0.75 | 28.2 | 71%-0's, 18%- 45's, 11%- Mat |
| EEAP | 49 | [M/±45/0] _s | P | -729 | -2.5 | 0.088 | -1.25 | 511 | 1.8 | 0.101 | 0.82 | 29.0 | 70%-0's, 19%- 45's, 11%- Mat |
| EEBP | 43 | [M/±45/0] _s | V | -417 | -1.6 | ---- | ---- | 515 | 1.9 | 0.100 | 0.75 | 26.6 | 57%-0's, 26%- 45's, 17%- Mat |
| EECP | 49 | [M/±45/0] _s | V | -419 | -1.5 | ---- | ---- | 526 | 1.9 | 0.100 | 0.70 | 28.3 | 65%-0's, 20%- 45's, 15%- Mat |
| HH | 21 | Short fiber | T | ---- | ---- | ---- | ---- | 147 | 0.75 | 0.063 | 0.45 | 19.6 | Injection molded short carbon fiber |
| CYC | 65 | [(±45) ₂ /(0) ₁₀] _s | T | -668 | -0.66 | 0.055 | -0.45 | ---- | ---- | ---- | ---- | 102 | Injected molded carbon fiber |
| MM1 | 55 | (0) _N | E | -714 | -1.8 | ---- | ---- | 1036 | 2.6 | 0.122 | 0.69 | 40.0 | From Infusion spar cap |
| MM2 | 54 | (0) _N | E | -809 | -2.0 | ---- | ---- | 924 | 2.3 | 0.113 | 0.71 | 40.0 | From Wet Lay-up spar cap |

Matrix Abbreviations: E -Epoxy, P -Polyester, V-Vinyl ester, T - Thermoplastic
Materials EE, EEAV, EEAP, EEBP and EECP were obtained from a production wind turbine blade.

Table 4. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|----------|--------------------|--|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|--------------------------------------|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _c | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| AA | 31 | [(±45/0) ₃ (∓45/0) ₂] | P | -320 | -1.7 | 0.062 | -0.95 | 448 | 2.4 | 0.140 | 0.50 | 18.8 | CDB200 Triax (48% 0's, 52% ±45) |
| AA2 | 42 | [(0/±45) ₂] _S | P | -316 | -1.4 | ---- | ---- | 484 | 2.2 | ---- | ---- | 22.8 | CDB200 Triax (48% 0's, 52% ±45) |
| AA3 | 48 | [(±45/0) ₃] _S | P | -284 | -1.8 | ---- | ---- | 478 | 2.0 | 0.113 | 0.32 | 24.7 | CDB200 Triax (48% 0's, 52% ±45) |
| AA4 | 38 | [(±45/0) ₂] _S | P | -449 | -1.2 | ---- | ---- | 377 | 1.8 | 0.105 | 0.64 | 21.5 | TV3400 Triax (BTI)(50% 0's, 50% ±45) |
| BB | 43 | [±45/0 ₂ /+45] _S | P | -308 | -1.3 | ---- | ---- | 725 | 2.9 | 0.131 | 0.80 | 25.2 | 0's-A130 (62%), 45's-DB120 |
| CC | 40 | [±45/0 ₂ /+45] _S | P | -459 | -2.1 | ---- | ---- | 570 | 2.6 | 0.121 | 0.80 | 21.7 | 0's-D100 (55%), 45's-DB120 |
| CC2 | 46 | [±45/0 ₃ /+45] _S | P | -527 | -2.0 | ---- | ---- | 711 | 2.7 | 0.118 | 0.79 | 26.6 | 0's-D100 (63%), 45's-DB120 |
| CC3 | 44 | [0/±45/0 ₂ /+45] _S | P | -541 | -2.1 | ---- | ---- | 682 | 2.6 | 0.112 | 0.85 | 26.3 | 0's-D100 (63%), 45's-DB120 |
| CH | 47 | [(±45) ₃] _S | P | -178 | -1.3 | 0.105 | -0.50 | 145 | 1.1 | 0.104 | 0.46 | 13.6 | 45's-DB240 |
| CH2 | 44 | [±45/0/±45] _S | P | -342 | -2.1 | 0.110 | -0.70 | 362 | 2.2 | 0.127 | 0.65 | 16.7 | 0's-D155 (24%), 45's-DB240 |
| CH3 | 42 | [±45/0/±45] _S | P | -318 | -1.9 | 0.127 | -0.60 | 336 | 3 | 0.112 | 0.64 | 16.8 | 0's-D155 (24%), 45's-DB240 |
| CH4 | 39 | [(±45) ₄] _S | P | -171 | -1.5 | 0.112 | -0.48 | 155 | 6 | 0.124 | 0.48 | 11.4 | 45's-DB120 |
| CH5 | 28 | [(±45) ₃] _S | P | -190 | -2.2 | 0.105 | -0.85 | 139 | 9 | 0.123 | 0.54 | 8.5 | 45's-DB120 |
| CH6 | 44 | [±45/0/±45] _S | P | -408 | -1.9 | 0.100 | -0.80 | 502 | 3.1 | 0.139 | 0.50 | 21.5 | 0's-D155 (39%), 45's-DB120 |
| CH7 | 55 | [(±45) ₂] _S | P | -168 | -1.0 | 0.113 | -0.30 | 114 | 5 | 0.110 | 0.27 | 17.0 | 45's-DB400 |
| CH8 | 37 | [(±45) ₂] _S | P | -146 | -1.5 | 0.151 | -0.35 | 93 | 10 | 0.113 | 0.38 | 10.0 | 45's-DB400 |
| CH9 | 40 | [(±45) ₃] _S | P | -174 | -1.7 | 0.106 | -0.67 | 151 | 7 | 0.133 | 0.51 | 10.3 | 45's-DB120 |
| CH10 | 32 | [(±45) ₃] _S | P | -163 | -2.0 | 0.126 | -0.64 | 120 | 7 | 0.108 | 0.58 | 8.1 | 45's-DB240 |
| CH11 | 50 | [(±45) ₂] _S | P | -189 | -1.4 | 0.106 | -0.58 | 134 | 6 | 0.114 | 0.38 | 13.4 | 45's-DB240 |
| CH12 | 33 | [±45/0/±45] _S | P | -451 | -2.6 | 0.092 | -1.15 | 398 | 6 | 0.099 | 0.94 | 17.4 | 0's-D155 (39%), 45's-DB120 |

Matrix Abbreviations: P -Ortho-polyester (CoRezyn 63-AX-051)

Owens Corning Fabrics: D100 - 339 g/m², D155 - 527 g/m², DB120 - 393 g/m², DB240 - 837 g/m², DB400 - 1349 g/m², CDB200 (Triax) - 759 g/m²

Brunswick Technologies Inc. Fabric - TV3400 (Triax) - 1150 g/m²

Table 5. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|----------|--------------------|--|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|-------------------------------|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _c | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| CH13 | 51 | [±45/0/±45] _S | P | -385 | -1.7 | 0.107 | -0.60 | 423 | 2.8 | 0.138 | 0.48 | 23.2 | 0's-D155 (24%), 45's-DB240 |
| CH14 | 39 | [±45/0/±45] _S | P | -412 | -2.0 | 0.081 | -1.00 | 517 | 3.4 | 0.134 | 0.75 | 21.0 | 0's-D155 (39%), 45's-DB120 |
| CH15 | 32 | [±45/0/±45] _S | P | -345 | -2.3 | 0.100 | -1.02 | 309 | 3.6 | 0.103 | 0.85 | 14.8 | 0's-D092 (28%), 45's-DB120 |
| CH16 | 34 | [±45/0/±45] _S | P | -309 | -1.7 | 0.085 | -0.80 | 360 | 2.8 | 0.129 | 0.68 | 18.5 | 0's-D092 (28%), 45's-DB120 |
| CH17 | 42 | [±45/0/±45] _S | P | -301 | -1.7 | 0.079 | -0.94 | 359 | 3.6 | 0.139 | 0.40 | 17.6 | 0's-D092 (28%), 45's-DB120 |
| CH18 | 45 | [±45/0/±45] _S | P | -298 | -1.7 | 0.105 | -0.74 | 294 | 3.1 | 0.129 | 0.50 | 17.2 | 0's-D092 (16%), 45's-DB240 |
| CH19 | 33 | [±45/0/±45] _S | P | -252 | -2.1 | 0.122 | -0.65 | 193 | 3.9 | 0.102 | 0.70 | 11.9 | 0's-D092 (16%), 45's-DB240 |
| CH20 | 26 | [(±45 ₃) _S | P | -230 | -2.1 | ---- | ---- | 133 | 1.6 | 0.118 | 0.38 | 10.9 | 45's-DBM1204B |
| CH23 | 32 | [±45/0/±45] _S | P | -448 | -2.4 | 0.106 | -0.90 | 394 | 2.2 | 0.140 | 0.40 | 18.5 | 0's-D155 (39%), 45's-DBM1204B |
| CH25 | 32 | (±45) ₇ | P | -172 | -1.8 | ---- | ---- | 92.7 | 1.0 | ---- | ---- | 9.50 | 45's-DB120 |
| CH26 | 33 | (±45) ₃ /0/(±45) ₃ | P | -313 | -2.5 | ---- | ---- | 260 | 2.1 | ---- | ---- | 12.5 | 0's-D155(10%), 45's-DB240 |
| CH27 | 35 | (±45) ₂ /0/±45/0/(±45) ₂ | P | -418 | -2.9 | ---- | ---- | 417 | 2.9 | ---- | ---- | 14.5 | 0's-D155 (20%), 45's-DB240 |
| CH28 | 38 | ±45/0/±45/0/±45/0/±45 | P | -475 | -2.6 | ---- | ---- | 564 | 3.1 | ---- | ---- | 18.0 | 0's-D155 (32%), 45's-DB240 |
| DD | 51 | (0/±45/0 ₃ /±45/0) | P | -788 | -2.5 | ---- | ---- | 910 | 2.9 | 0.135 | 0.60 | 31.3 | 0's-D155 (76%), 45's-DB120 |
| DD2 | 44 | (0/±45/0) _S | P | -581 | -2.2 | 0.079 | -1.15 | 752 | 2.8 | 0.110 | 0.95 | 27.0 | 0's-D155 (72%), 45's-DB120 |
| DD2A | 45 | (0/±45/0) _S | P | ---- | ---- | ---- | ---- | 986 | 3.5 | 0.122 | 0.94 | 28.0 | |
| DD4 | 48 | (0/±45/0) _S | P | -541 | -1.8 | ---- | ---- | 886 | 2.9 | 0.136 | 0.55 | 31.0 | |
| DD5 | 37 | (0/±45/0) _S | P | -534 | -2.1 | ---- | ---- | 724 | 2.9 | 0.104 | 1.15 | 25.2 | |
| DD5E | 36 | (0/±45/0) _S | E | -521 | -2.2 | 0.056 | -1.42 | 674 | 2.9 | 0.110 | 1.20 | 23.6 | |
| DD5E3 | 36 | (0/±45/0) _S | E3 | -583 | -2.5 | 0.072 | -1.36 | 776 | 3.3 | ---- | ---- | 23.8 | |

Matrix Abbreviations: E -Epoxy (Shell Epon 9410), E3 - SP Systems Prime 20 Epoxy, P -Ortho-polyester (CoRezyn 63-AX-051)
Owens Corning Fabrics: D092 - 310 g/m², D155 - 527 g/m², DB120 - 393 g/m², DB240 - 837 g/m², DBM1204B -420 g/m²

Table 6. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|---|--------------------|---------------------------|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|---|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| DD5E4 | 35 | (0/±45/0) _S | E4 | -584 | -2.3 | ---- | ---- | 757 | 3.2 | ---- | ---- | 23.7 | 0's-D155 (72%), 45's-DB120 |
| DD5P | 37 | (0/±45/0) _S | P | -574 | -2.4 | 0.072 | -1.35 | 661 | 2.8 | 0.101 | 1.16 | 24.2 | |
| DD5PT | | (90/∓45/90) _S | | -148 | -1.7 | ---- | ---- | 66 | 0.61 | 0.100 | 0.30 | 8.80 | |
| DD5V | 37 | (0/±45/0) _S | V | -530 | -2.2 | 0.057 | -1.48 | 675 | 3.2 | 0.102 | 1.11 | 23.7 | |
| DD5V2 | 35 | (0/±45/0) _S | V2 | -605 | -2.7 | 0.064 | -1.66 | 787 | 3.4 | 0.102 | 1.39 | 22.3 | |
| DD5V3 | 36 | (0/±45/0) _S | V3 | -601 | -2.4 | | | 796 | 3.1 | | | 24.9 | |
| DD6 | 32 | (0/±45/0) _S | P | -505 | -2.4 | 0.071 | -1.40 | 605 | 2.7 | 0.100 | 1.15 | 21.1 | |
| DD7 | 54 | (0/±45/0) _S | P | -581 | -1.8 | 0.072 | -1.03 | 832 | 2.7 | 0.147 | 0.40 | 32.0 | |
| DD8 | 44 | (0/±45/0) _S | P | -582 | -2.2 | ---- | ---- | 778 | 2.4 | 0.102 | 0.90 | 27.1 | |
| DD8A | 45 | (0/±45/0) _S | P | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 29.8 | 0's-D155 (no weft stitching thread), DB120 (tested at R=0.1, 345 MPa) |
| DD8B | 43 | (0/±45/0) _S | P | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 26.2 | 0's-D155 (no stitching), DB120 (no stitching <u>between</u> +45 and -45 plies) (tested at R=0.1, 345 MPa) |
| DD9 | 56 | (0/±45/0) _S | P | -556 | -1.6 | ---- | ---- | 907 | 2.6 | 0.137 | 0.46 | 34.6 | 0's-D155 (72%), 45's-DB120 All fabric weft stitching thread was removed |
| DD10 | 62 | (0/±45/0) _S | P | -552 | -1.3 | 0.053 | -0.90 | 956 | 2.3 | 0.143 | 0.35 | 42.5 | |
| DD11 | 30 | (0/±45/0) _S | P | -319 | -1.6 | 0.090 | -0.70 | 592 | 3.0 | 0.100 | 1.20 | 20.0 | 0's-A130 (68%), 45's-DB120 |
| DD11A | 29 | (±45/0 ₄ /∓45) | P | -350 | -1.8 | ---- | ---- | 604 | 3.1 | ---- | ---- | 19.5 | |
| DD11E3 | 32 | (0/±45/0) _S | E3 | -265 | -1.3 | 0.090 | -0.58 | 624 | 3.1 | ---- | ---- | 20.4 | |
| DD11E4 | 34 | (0/±45/0) _S | E4 | -318 | -1.3 | ---- | ---- | ---- | ---- | ---- | ---- | 23.8 | |
| DD12 | 41 | (0/±45/0) _S | P | -302 | -1.1 | ---- | ---- | 723 | 2.7 | 0.114 | 0.85 | 26.4 | |
| Matrix Abbreviations:E3 - SP Systems Prime 20 Epoxy, E4 -Jeffco 1401-12/4101-17 Epoxy, P -Ortho-polyester (COR63AX051), V-Vinyl ester (Derakane 411C), V2 -Vinyl ester (Derakane 8084), V3 - Reichhold DION 9800 Urethane-modified Vinyl Ester. Owens Corning Fabrics: A130 - 444 g/m ² , D155 - 527 g/m ² , DB120 - 393 g/m ² | | | | | | | | | | | | | |

Table 7. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

| Material | V_F , % | Ply Configuration | Matrix | R = 10 | | | | R = 0.1 | | | | E, GPa | Fabric Description |
|----------|-----------|--------------------------------------|--------|----------|--------------------|-------|---------------------------------|----------|--------------------|-------|---------------------------------|--------|--|
| | | | | UCS, MPa | ϵ_{MIN} % | b_C | ϵ for 10^6 cycles, % | UTS, MPa | ϵ_{MAX} % | b_T | ϵ for 10^6 cycles, % | | |
| DD13 | 46 | (0/±45/0) _S | P | -314 | -1.1 | 0.094 | -0.45 | 821 | 2.8 | 0.130 | 0.80 | 29.5 | 0'S-CM1701 (72%), 45'S-DB120 |
| DD14 | 43 | (0/±45/0) _S | P | -428 | -1.7 | ---- | ---- | 728 | 2.9 | 0.133 | 0.60 | 25.1 | |
| DD15 | 37 | (0/±45/0) _S | P | -428 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | |
| DD16 | 36 | (90/0/±45/0) _S | P | -418 | -2.3 | 0.074 | -1.28 | 672 | 2.9 | 0.120 | 0.103 | 18.3 | 0's-D155 (53%), 90's-D155 (26%) 45's-DB120 (21%) |
| DD17 | 38/53 | (0/±45/0) _S | P | -420 | -1.9 | 0.082 | -0.96 | 782 | 3.5 | 0.148 | 0.45 | 22.3 | 0's-D155 (72%), 45's-DB120 Has surface indentation (flaw) |
| DD17A | 34/42 | (0/±45/0) _S | P | -265 | -1.1 | 0.074 | -0.63 | 646 | 3.0 | 0.121 | 0.80 | 23.4 | 0's-A130 (68%), 45's-DB120 Has surface indentation (flaw) |
| DD18 | 34/40 | (0/±45/0) _S | P | -508 | -2.3 | ---- | ---- | 730 | 3.5 | 0.116 | 1.00 | 22.6 | 0's-D155 (72%), 45's-DB120, Has center flaw, one 90° (D155) tow |
| DD18A | 36/43 | (0/±45/0) _S | P | -325 | -1.4 | ---- | ---- | 700 | 3.1 | 0.120 | 0.90 | 22.7 | 0's-D155 (68%), 45's-DB120, Has center flaw, one 90°(D155) tow across width |
| DD19 | 34/47 | (0/±45/0) _S | P | -375 | -1.7 | 0.073 | -0.96 | 710 | 3.3 | 0.129 | 0.75 | 22.0 | 0's-D155 (72%), 45's-DB120, Has center flaw, two 90° (D155) tows across width |
| DD19A | 35/50 | (0/±45/0) _S | P | -293 | -1.3 | 0.079 | -0.66 | 651 | 3.1 | 0.140 | 0.60 | 23.2 | 0's-A130 (68%), 45's-DB120, Has center flaw, two 90°(D155) tows across width |
| DD19B | 35/50 | (0/±45/0) _S | P | ---- | ---- | ---- | ---- | 694 | 3.0 | 0.134 | 0.70 | 24.5 | 0's-A130 (68%), 45's-DB120, Has centered 8 mm x 19 mm flaw (two 0°(D155) tows) |
| DD20 | 34 | [0 ₂ /±45/0] _S | P | -313 | -1.4 | ---- | ---- | 587 | 2.8 | 0.137 | 0.50 | 22.2 | 0's - Collins Craft A1010 (73%), 45's -DB120 |
| DD20A | 38 | | | ---- | ---- | ---- | ---- | 639 | 2.7 | 0.140 | 0.55 | 25.5 | |

Matrix Abbreviations: P -Ortho-polyester (CoRezyn 63-AX-051). Owens Corning Fabrics: A130 - 444 g/m², CM1701 - 587 g/m², D155 - 527 g/m², DB120 - 393 g/m², D092 - 310 g/m². CollinsCraft Fabrics - A1010 - 351 g/m²

Table 8. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

[illegible]

Table 9. Lay-up and Summary of MSU Manufactured (RTM) Fiberglass Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|------|--------------------|---------------------------------------|--------|---------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|--|
| | V _F , % | Ply Configuration | Matrix | UCS MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| FFA | 36 | (±45/0/0/±45) _S | P | -553 | -2.3 | ---- | ---- | 716 | 3.0 | 0.123 | 0.80 | 24.2 | 0's-D155 (56%), 45's-DB120 (44%) |
| FFB | 36 | (0/±45/0/±45) _S | P | -506 | -2.2 | ---- | ---- | 621 | 2.9 | 0.112 | 0.80 | 23.4 | |
| FFC | 36 | (0/±45/±45/0) _S | P | -499 | -2.2 | ---- | ---- | 624 | 2.9 | 0.121 | 0.79 | 22.9 | |
| FFD | 36 | (0/0/±45/±45) _S | P | -542 | -2.4 | ---- | ---- | 636 | 2.9 | 0.120 | 0.83 | 23.1 | |
| FFF | 36 | (±45/±45/0/0) _S | P | -596 | -2.5 | ---- | ---- | 664 | 2.9 | 0.123 | 0.80 | 23.9 | |
| GG | 40 | (0 ₂ /±45/0 ₂) | P | -628 | -2.2 | ---- | ---- | 970 | 3.4 | 0.116 | 1.10 | 28.0 | 0's-D155 (84%), 45's-DB120 (16%) |
| ROV2 | 35 | (0/90) ₄ | P | -244 | -1.1 | ---- | ---- | 362 | 1.7 | 0.110 | 0.72 | 21.5 | 0/90, 600 g/m ² , balanced construction |
| ROV3 | 40 | (0/90) ₅ | P | -203 | -0.97 | ---- | ---- | 422 | 2.0 | 0.120 | 0.65 | 20.9 | 0/90, 814 g/m ² , balanced construction |
| ROV4 | 53 | (0/90) ₈ | P | -314 | -1.2 | ---- | ---- | 505 | 1.9 | 0.150 | 0.35 | 26.7 | 0/90, 814 g/m ² , balanced construction |

Matrix Abbreviations: P -Ortho-polyester (CoRezyn 63-AX-051). Owens Corning Fabrics: D155 - 527 g/m², DB120 - 393 g/m², DB240 - 837 g/m².

Table 10. Lay-up and Summary of MSU Manufactured (RTM) Unidirectional Fiberglass Materials

| | | | | R = 10 | | | | R = 0.1 | | | | | |
|----------|--------------------|-------------------|--------|----------|--------------------|----------------|---------------------------------|----------|--------------------|----------------|---------------------------------|--------|--|
| Material | V _F , % | Ply Configuration | Matrix | UCS, MPa | ε _{MIN} % | b _c | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric Description |
| A060 | 46 | [0] ₁₀ | P | -315 | -1.0 | ---- | ---- | 579 | 1.8 | 0.094 | 0.80 | 31.4 | 0's - A060 (100%) |
| A130 | 53 | [0] ₈ | P | -334 | -0.87 | ---- | ---- | 868 | 2.4 | ---- | ---- | 38.2 | 0's - A130 (100%) |
| A130C | 36 | [0] ₆ | P | -373 | -1.2 | 0.062 | -0.70 | 728 | 2.5 | 0.091 | 1.10 | 31.6 | |
| A130G | 55 | [0] ₁₄ | P | -423 | -0.95 | ---- | ----- | 1,203 | 2.7 | 0.133 | 0.70 | 44.4 | |
| A260 | 37 | [0] ₄ | P | -440 | -1.4 | ---- | ----- | 776 | 2.8 | 0.090 | 1.11 | 31.1 | 0's - A260 (100%) |
| CM1701 | 38 | [0] ₅ | P | -573 | -1.9 | 0.084 | -0.93 | 796 | 2.7 | 0.126 | 0.64 | 30.5 | 0's - CM1701A (100%) |
| DO72A | 33 | [0] ₁₀ | P | -560 | -2.0 | 0.075 | -1.11 | 799 | 2.8 | 0.106 | 1.04 | 28.3 | 0's - DO72 (100%) |
| DO92 | 39 | [0] ₁₀ | P | -773 | -2.4 | ---- | ---- | 952 | 2.9 | ---- | ---- | 32.9 | 0's - DO92 (100%) |
| DO92B | 39 | [0] ₉ | P | -675 | -2.0 | ---- | ----- | 908 | 2.8 | 0.104 | 1.03 | 33.8 | |
| DO92D | 33 | [0] ₇ | P | -540 | -2.1 | ---- | ----- | 731 | 2.9 | 0.090 | 1.25 | 25.4 | |
| DO92F | 49 | [0] ₁₂ | P | -679 | -1.7 | ---- | ----- | 1,112 | 2.9 | 0.121 | 0.70 | 40.8 | |
| DO92G | 52 | [0] ₁₄ | P | -692 | -1.6 | 0.085 | -0.97 | 1,163 | 2.8 | 0.132 | 0.60 | 44.5 | |
| D155 | 45 | [0] ₆ | P | -746 | -2.2 | ---- | ---- | 987 | 2.9 | ---- | ---- | 34.7 | 0's-D155 (100%) |
| D155B | 40 | [0] ₅ | P | -653 | -2.1 | 0.077 | -1.10 | 854 | 3.0 | 0.102 | 1.12 | 31.5 | |
| D155C | 47 | [0] ₇ | P | -794 | -2.0 | ---- | ----- | 1,187 | 3.5 | 0.120 | 0.90 | 38.9 | |
| D155G | 58 | [0] ₈ | P | -765 | -1.6 | 0.057 | -1.00 | 1,314 | 2.8 | 0.138 | 0.64 | 47.0 | |
| D155H | 51 | [0] ₇ | P | -755 | -2.0 | ---- | ----- | 1,121 | 2.8 | 0.099 | 1.07 | 38.3 | 0's-D155 (100%) All fabric weft stitching removed |
| D155J | 58 | [0] ₉ | P | -776 | -1.6 | ---- | ----- | 1,142 | 2.6 | 0.108 | 0.80 | 47.9 | |
| D155K | 33 | [0] ₇ | P | -551 | -2.0 | ---- | ---- | 861 | 3.1 | 0.114 | 0.98 | 28.1 | 0's-D155 (100%) |

Matrix Abbreviations: P -Ortho-polyester (CoRezyn 63-AX-051)
Owens Corning Fabrics: A060-206 g/m² , A130 - 444 g/m² , CM1701 - 587 g/m² , D072 - 230 g/m² , D092 - 310 g/m² , D155 - 527 g/m² , DB120 - 393 g/m²

Table 11. Lay-up and Summary of Fiberglass Materials with Symmetric Angle Plies

| | | | | R = 10 | | | | R = 0.1 | | | | | | |
|----------|---------------------|-------------------------|--------|------------|-----------------------|----------------|------------------------------------|-------------|-----------------------|----------------|------------------------------------|-----------|-----------------|---|
| Material | V _F % | Angle of D155 fabric | Matrix | UCS MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} % | b _T | ε for 10 ⁶ cycles, % | E, GPa | v _{XY} | Fabric Description |
| D155B2 | 40 | (0) ₅ | P | -653 | -2.1 | 0.077 | -1.10 | 773 | 2.6 | 0.093 | 1.12 | 29.3 | 0.32 | D155 Fabric (100%) fabric orientated to balanced angles |
| 10D155 | 35 | (±10) ₃ | P | -384 | -1.4 | ---- | ----- | 277 | 0.99 | 0.068 | 0.62 | 27.9 | 0.38 | |
| 20D155 | 38 | (±20) ₃ | P | -287 | -1.2 | ---- | ----- | 268 | 1.2 | 0.079 | 0.55 | 24.2 | 0.56 | |
| 30D155 | 40 | (±30) ₃ | P | -176 | -0.99 | 0.065 | -0.48 | 186 | 1.5 | 0.098 | 0.43 | 17.7 | 0.67 | |
| 40D155 | 39 | (±40) ₃ | P | -132 | -1.2 | 0.095 | -0.50 | 144 | 14 | 0.109 | 0.41 | 11.4 | 0.62 | |
| 45D155 | 39 | (±45) ₃ | P | -138 | -1.4 | 0.089 | -0.65 | 107 | 24 | 0.109 | 0.40 | 9.79 | 0.57 | |
| 50D155 | 38 | (±50) ₃ | P | -138 | -1.6 | 0.085 | -0.78 | 65 | 19 | 0.092 | 0.38 | 8.62 | 0.51 | |
| 60D155 | 40 | (±60) ₃ | P | -141 | -1.8 | 0.081 | -0.94 | 37 | 0.64 | 0.074 | 0.25 | 7.65 | 0.35 | |
| 70D155 | 39 | (±70) ₃ | P | -136 | -1.9 | ---- | ----- | 27 | 0.47 | 0.076 | 0.19 | 7.24 | 0.21 | |
| 80D155 | 37 | (±80) ₃ | P | -153 | -2.1 | ---- | ----- | 26 | 0.35 | 0.087 | 0.17 | 7.16 | 0.10 | |
| 90D155 | 37 | (90) ₆ | P | -123 | -1.7 | 0.062 | -1.07 | 26 | 0.35 | 0.081 | 0.19 | 7.24 | 0.09 | |
| 45D155P2 | 36 | (±45) ₃ | P2 | -149 | -1.5 | 0.085 | -0.71 | 136 | 14 | 0.119 | 0.45 | 10.3 | 0.57 | |
| 45D155V2 | 40 | (±45) ₃ | V2 | -160 | -1.4 | ---- | ---- | 96 | 11 | 0.109 | 0.35 | 11.4 | 0.56 | |
| 45D155V | 41 | (±45) ₃ | V | -154 | -1.4 | ---- | ---- | 121 | 20 | 0.110 | 0.40 | 10.7 | ---- | |
| 90D155V2 | 37 | (90) ₆ | V2 | -171 | -1.9 | ---- | ---- | 54 | 0.59 | 0.107 | 0.21 | 8.85 | ---- | |
| 90D155V | 41 | (90) ₆ | V | -167 | -1.6 | ---- | ---- | 49 | 0.57 | 0.108 | 0.18 | 10.3 | ---- | |
| 90D155E2 | 36 | (90) ₆ | E2 | -152 | -2.1 | ---- | ---- | 40 | 0.55 | 0.110 | 0.18 | 7.28 | ---- | |

Matrix Abbreviations: E2 -Epoxy (SC14), P -Ortho-polyester (CoRezyn 63-AX-051), P2 -Iso-polyester (CoRezyn 75-AQ-010), V-Vinyl ester (Derakane 411C), V2 -Vinyl ester (Derakane 8084). All R = 10 test coupons were 25 mm wide with a 13 mm gage length and unsupported edges.

v_{XY} - Poissons Ratio

Table 12. Lay-up and Summary of R = -1 Materials

| Material | V _F , % | Ply Configuration | Matrix | b _R , ¹ | ε for 10 ⁶ cycles, % | E, GPa | |
|----------|--------------------|--|--------|-------------------------------|---------------------------------|--------|---|
| H | 39 | [(±45/0) ₃] _S | P | 0.092 | 0.42 | 24.0 | 1,081 g/m ² Triax (70%- 0's, 30%- ±45's), Hexcel XH120, Center two plies have butt joint (6 plies → 4 plies) |
| N | 37 | [0/±45] ₄ | P | 0.123 | 0.30 | 21.0 | 747 g/m ² Triax (50%-0's) |
| P | 40 | [(0/±45)/M/0] _S | V | 0.106 | 0.41 | 28.9 | 747 g/m ² Triax (0/±45), 203 g/m ² Mat(M), 0's -A260 (69%-0's) |
| EEAV | 48 | [M/±45/0] _S | V | 0.100 | 0.70 | 28.2 | 71%-0's, 18%- 45's, 11%- Mat |
| AA | 31 | [(±45/0) ₃ (∓45/0) ₂] | P | 0.134 | 0.40 | 18.8 | CDB200 Triax (48% 0's, 52% ±45) |
| DD4 | 48 | (0/±45/0) _S | P | 0.125 | 0.50 | 31.0 | 0's-D155 (72%), 45's-DB120 |
| DD5E | 36 | | E2 | 0.109 | 0.65 | 23.6 | |
| DD5P | 37 | | P | 0.117 | 0.57 | 24.2 | |
| DD5V2 | 35 | | V2 | 0.117 | 0.68 | 22.3 | |
| DD16 | 33 | (90/0/±45/0) _S | P | 0.124 | 0.64 | 18.2 | 0's-D155 (53%), 90's-D155 (26%) 45's-DB120 (21%) |
| DD11 | 30 | (0/±45/0) _S | P | 0.095 | 0.60 | 20.0 | 0's-A130 (68%), 45's-DB120 |
| DD11E3 | 32 | | E3 | 0.087 | 0.55 | 20.4 | |
| 45D155 | 39 | (±45) ₃ | P | 0.148 | 0.25 | 9.79 | D155 Fabric (100%) fabric orientated to balanced angles |

¹ No static test values were used in the linear regression curve fit. All test coupons were 25 mm wide with a 13 mm gage length with unsupported edges.
Matrix Abbreviations: E2 -Epoxy (SC14), E3 - SP Systems Prime 20 Epoxy, P -Ortho-polyester (CoRezyn 63-AX-051), V-Vinyl ester (Derakane 411C), V2 -Vinyl ester (Derakane 8084), E3 - SP Systems Prime 20 Epoxy

Table 13. Lay-up and Summary of High Cycle Materials

[illegible]

Table 14. Lay-up and Summary of Glass Prepreg Materials

| | | | R = 10 | | | | R = 0.1 | | | | | |
|-------------|--------------------|--|---------|--------------------|----------------|---------------------------------|----------|----------------------|----------------|---------------------------------|--------|---|
| Material | V _F , % | Ply Configuration | UCS MPa | ε _{MIN} % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{Max} , % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Prepreg Description |
| PP | 56 | 0 ₁₅ | -788 | -1.7 | ---- | ---- | 1287 | 2.7 | 0.119 | 0.78 | 47.0 | 3M-SP250E Prepreg |
| PP45 | 54 | (±45) _{2S} | -160 | -0.9 | ---- | ---- | 155 | 0.87 | 0.101 | 0.34 | 17.9 | |
| PPDD5 | 56 | (0 ₃ /±45/0 ₃) _S | -796 | -2.0 | ---- | ---- | 1088 | 2.8 | 0.122 | 0.74 | 39.6 | |
| Hexcel M9.6 | 48 | 0 ₃ | -505 | -1.2 | ---- | ---- | 1166 | 2.7 | ---- | ---- | 43.0 | Hexcel M9.6/32%/1200/G |
| | 46 | (±45) _{2S} | -153 | -1.3 | ---- | ---- | 160 | 1.6 | 0.114 | 0.42 | 11.7 | Hexcel M9.6/35%/BB600/G |
| | 59 | (±45) _{2S} | -147 | -0.93 | ---- | ---- | 142 | 0.9 | 0.107 | 0.32 | 15.8 | |
| GGP1 | 68 | (0/±45/0) | -617 | -1.5 | ---- | ---- | 1348 | 3.2 | ---- | ---- | 42.2 | 0 - Hexcel M9.6/32%/1200/G ±45 - Hexcel M9.6/35%/BB600/G |
| GGP2 | 51 | | -729 | -2.1 | ---- | ---- | 1002 | 3.0 | ---- | ---- | 35.1 | |
| GGP4 | 53 | (±45/0/±45) | -277 | -1 | ---- | ---- | 778 | 2.8 | 0.107 | 1.01 | 27.9 | |

Table 15. Lay-up and Summary of Carbon Materials.

| | | | R = 10 | | | | R = 0.1 | | | | | |
|----------------|--------------------|---------------------|---------|----------------------|----------------|---------------------------------|----------|----------------------|----------------|---------------------------------|--------|--|
| Material | V _F , % | Ply Configuration | UCS MPa | ε _{Min} , % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{Max} , % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric or Prepreg Description |
| PREPREG | | | | | | | | | | | | |
| M9.1/40%/500/C | 52 | 0 | ---- | ---- | ---- | ---- | 1765 | 1.6 | ---- | ---- | 112 | Hexcel M9.1/40%/500/C |
| | 50 | 0 ₃ | -744 | -0.7 | ---- | ---- | 1813 | 1.5 | ---- | ---- | 106 | |
| | 50 | 0 ₄ | -788 | -0.71 | ---- | ---- | 1664 | 1.4 | ---- | ---- | 111 | |
| | 49 | (±45) _{2S} | ---- | ---- | ---- | ---- | 110 | 0.8 | ---- | ---- | 13.4 | |
| SE84LV/HSC | 54 | (0) _{3C} | ---- | ---- | ---- | ---- | 2125 | 1.8 | ---- | ---- | 124 | SP - SE84LV/HSC/450/400/37% |
| SE84LV/SC300C | 53 | (0) _{5C} | -1310 | -1.1 | ---- | ---- | 1743 | 1.4 | ---- | ---- | 125 | SE84LV/SC300C/300/400/37% |
| Fortafil | 53 | (0) _{9C} | ---- | ---- | ---- | ---- | 1703 | 1.5 | ---- | ---- | 117 | Fortafil 8804 resin, 38%, 150 g/m ² |
| FABRICS | | | | | | | | | | | | |
| CA | 48 | 0 ₁₂ | -578 | -0.49 | ---- | ---- | 1511 | 1.3 | 0.071 | 0.71 | 119 | AS4-6K (TPI 4416), Derakane 8084 |
| UNI21 | 32 | 0 | -357 | -0.69 | ---- | ---- | 657 | ---- | ---- | ---- | 51.6 | Zoltek UNI21 Carbon , Derakane 8084 |
| | 40 | 0 ₄ | -542 | -0.64 | 0.068 | -0.35 | 965 | 1.2 | ---- | ---- | 84.1 | |
| UNI25 | 45 | 0 | ---- | ---- | ---- | ---- | 1270 | 1.4 | 0.038 | 1.10 | 88.0 | Zoltek UNI25 Carbon , Derakane 8084 |
| UNI25A | 45 | 0 ₄ | -535 | -0.62 | 0.054 | -0.41 | 895 | 1.1 | ---- | ---- | 86.2 | |

Table 16. Lay-up and Summary of Hybrid Materials Manufactured Using Carbon and Glass Prepregs.

| | | | R = 10 | | | | R = 0.1 | | | | | |
|---------------------------------|--------------------|--|--------|----------------------|----------------|---------------------------------|----------|----------------------|----------------|---------------------------------|--------|--|
| Material | V _F , % | Ply Configuration | UCS | ε _{Min} , % | b _C | ε for 10 ⁶ cycles, % | UTS, MPa | ε _{MAX} , % | b _T | ε for 10 ⁶ cycles, % | E, GPa | Fabric or Prepreg Description |
| CGB2 | 52 | (0 _C /±45 _G /0 _C) | -610 | -0.90 | ---- | ---- | 1330 | 2.0 | ---- | ---- | 68.0 | C -Hexcel M9.1/40%/500/C |
| CGB3 | 50 | (±45 _G /0 _{3C} /±45 _G) | -647 | -0.90 | 0.049 | -0.63 | 1356 | 1.9 | ---- | ---- | 71.5 | ±45 -Hexcel glass M9.6/35%/BB600/G |
| CGB4 | 43 | [±45 _G /0 _{5C} /±45 _G] | -828 | -1.0 | ---- | ---- | 1325 | 1.7 | ---- | ---- | 82.2 | G= Hexcel glass M9.6/35%/BB600/G, C = SP carbon SE84LV/HSC/450/400/37%, (72% Toray T600 Fiber Carbon) |
| CGB5 | 49 | [±45 _G /0 _{5C} /±45 _G] | -831 | -1.2 | ---- | ---- | 1130 | 1.7 | | ---- | 69.9 | G= Hexcel glass M9.6/35%/BB600/G, C = SP Systems carbon SE84LV/SC300C/300/400/37% (63% Toray S300 Fiber Carbon) |
| CGB6 (has dry DB120 ±45°) | 65 | [±45 _G /0 _{5C} /±45 _G] | -1027 | -1.0 | ---- | ---- | 1948 | 2.0 | | ---- | 102 | G= Owens Corning Fabrics DB120 45's, C = SP Systems carbon prepreg SE84LV/HSC/450/400/37% (80% T600 Fiber Carbon) |

Table 17. Lay-up and Summary of Hybrid Materials Manufactured Using Carbon and Glass Fabrics.

[illegible]

Table 18. Laminate Analysis and FEA Input Ply Properties in Material Principle Directions for E - Glass and carbon fabrics used in the MSU RTM composites (static longitudinal, transverse and simulated shear properties).

| | | | Longitudinal Direction | | | | | | | | Shear | Transverse Direction | | | |
|--------------------------------------|---------------------|------------------|------------------------|-----------------------|-----------------|------------------------|-------------------------|-----------------------|-------------------------|-----------------------|------------------------|-------------------------|---------------------|-------------------------|---------------------|
| | | | Elastic Constants | | | | Tension | | Compression | | | Tension | | Compression | |
| Fabric or Prepreg ¹ | lay-up | V _F % | E _L GPa | E _T GPa | ν _{LT} | G _{LT} GPa | UTS _L MPa | ε _{max} % | UCS _L MPa | ε _{min} % | τ _{TU} MPa | UTS _T MPa | ε _U % | UCS _T MPa | ε _U % |
| A130 | [0] ₈ | 45 | 36.3 | 8.76 | 0.32 | 3.48 | 858 | 2.53 | -334 | -0.92 | 85.3 | 33.8 | 0.39 | -93.3 | -1.05 |
| D092 | [0] ₁₀ | 45 | 35.3 | 8.76 | 0.31 | 4.15 | 959 | 2.98 | -773 | -2.19 | 141 | 38.3 | 0.44 | -133 | -1.52 |
| D155 | [0] ₆ | 45 | 35.0 | 8.99 | 0.31 | 4.10 | 987 | 2.83 | -746 | -2.02 | 97.7 | 27.2 | 0.32 | -123 | -1.67 |
| DB120* | [0] ₁₆ | 44 | 26.6 | 7.52 | 0.39 | 4.12 | 610 | 2.49 | -551 | -2.08 | 84.9 | 24.9 | 0.33 | -114 | -2.00 |
| DB240* | [0] ₈ | 46 | 31.0 | 7.34 | 0.35 | 3.74 | 697 | 2.67 | -528 | -1.74 | 68.7 | 19.7 | 0.27 | -122 | -1.69 |
| 0/90ROV* | [0/90] ₄ | 49 | 23.9 | 23.9 | 0.26 | 4.08 | 382 | 2.27 | -223 | -0.93 | 99.1 | 382 | 2.27 | -223 | -0.93 |
| UNI25 | [0] | 45 | 89.7 | 6.80 | 0.27 | 2.36 | 1213 | 1.35 | -535 | -0.60 | 30 | 20.5 | 0.31 | -100 | -1.47 |
| ACM-13-2 | [0] ₄ | 43 | 91.6 | 6.46 | 0.28 | 3.34 | 1317 | 1.3 | -797 | -0.87 | 86 | 18.2 | 0.28 | -115 | -1.80 |
| UT70-60 | [0] ₄ | 41 | 97.4 | 6.44 | 0.28 | 2.88 | 1848 | 1.8 | -904 | -0.93 | 67 | 22.9 | 0.36 | -129 | -2.01 |
| NB307-D1 7781 497A ¹ | 0/90 | 39 | 19.2 | 19.2 | 0.13 | 3.95 | 337 | 2.21 | -497 | -2.60 | 115 | 337 | 2.21 | -497 | -2.60 |
| NCT307-D1-34-600 Carbon ¹ | [0] ₄ | 53 | 123 | 8.20 | 0.31 | 4.71 | 1979 | 1.32 | -1000 | -0.90 | 103 | 59.9 | 0.76 | -223 | -2.72 |
| NCT307-D1-E300 Glass ¹ | [0] ₄ | 47 | 35.5 | 8.33 | 0.33 | 4.12 | 1005 | 2.83 | -788 | -2.22 | 112 | 51.2 | 0.74 | -168 | -2.02 |
| M9.1 carbon ¹ | [0] | 50 | 115 | 7.77 | 0.33 | 3.71 | 1813 | 1.58 | -744 | -0.65 | 110 | 23.5 | 0.30 | -104 | -1.34 |
| M9.6 glass ¹ | [0] | 44 | 43.0 | 9.77 | 0.32 | 3.31 | 1166 | 2.71 | -505 | -1.2 | 81 | 36.3 | 0.37 | -174 | -1.78 |

Notes: All coupons for this Table were tested at 0.25 mm/s, with a 100 mm gage length. Compression tests used a 13 mm gage length with unsupported edges.

E_L - Longitudinal modulus, ν_{LT} - Poisson's ratio, G_{LT} and τ_{TU} - Shear modulus and ultimate shear stress from a simulated shear (±45) ASTM D3518 test.

UTS_L - Ultimate longitudinal tensile strength, ε_{MAX} - Ultimate tensile strain, UCS_L - Ultimate longitudinal compressive strength

ε_{MIN} - Ultimate compressive strain. Coupons had a 13 mm compression gage length.

* DB120 and DB240 fabrics were separated into a +45° and a -45° orientation and then rotated to 0 degrees to form a unidirectional material. The reasoning behind the testing of the DB120 and DB240 fabrics is that the fabric stitching operation causes a noticeable waviness in the fabric. If the properties of straight fiber tows are used to model the ±45 directions, the calculated values would be higher than what actually would be present due to this in-plane waviness. The 0°/90° ROV material was tested as a balanced 0°/90° fabric. Toray ACM-13-2 = 300-48K-10C carbon(FAW=600 g/m²), Toray UT70-60 = T700S-12K-50C carbon(FAW=600 g/m²), M9.1 carbon = Hexcel carbon prepreg M9.1/40%/500/C, M9.6 glass = Hexcel glass prepreg M9.6/32%/1200/G NB307-D1 7781 497A - 0/90 woven glass prepreg, NCT307-D1-34-600 - unidirectional carbon (G300) prepreg FAW=300 g/m².

The properties in Table 18 are for materials with a fiber volume content of about 45%. The elastic constants can be adjusted to other fiber contents using an approximate micromechanics theory such as Halpin Tsai. The longitudinal modulus, E_L , would adjust approximately linearly with fiber volume fraction, V_f , over the range of 20 to 60 percent fiber. Thus, the following equations (2-5) can be used to adjust for other fiber volumes.

The * in the formulae indicates the property at the 45 percent fiber volume from Table 17. The transverse modulus, E_T , and shear modulus, G_{LT} , would change less rapidly with fiber content. The following adjustments should provide approximate values at different fiber contents, assuming that the fiber modulus and Poisson's ratio are 68.9 GPa and 0.22 respectively, and the matrix modulus and Poisson's ratio are 3.1 GPa and 0.35 respectively. More information about these calculations can be found in the References.

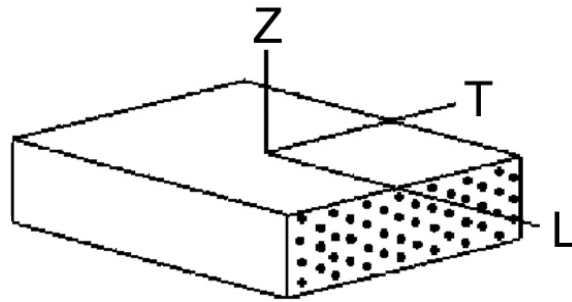
Equations for adjustment of material properties from a fiber volume of 45 percent (Table 18).

$$\frac{E_L}{E_L^*} = \left(\frac{1}{32.71} \right) (3.1 + 65.8 V_F)$$

$$\frac{E_T}{E_T^*} = \left(\frac{1}{2.206} \right) \left(\frac{1 + 0.836 V_F}{1 - 0.836 V_F} \right)$$

$$\frac{G_{LT}}{G_{LT}^*} = \left(\frac{1}{2.809} \right) \left(\frac{1 + 1.672 V_F}{1 - 0.836 V_F} \right)$$

$$\frac{\nu_{LT}}{\nu_{LT}^*} = \left(\frac{1}{0.318} \right) (0.35 - 0.15 V_F)$$



Composite Directions

Table 19. Physical 3-D Constants of Material D155, $V_F = 36$ and 44%.

| Physical Constants of Material D155, $V_F = 36\%$ | | | |
|---|---------------------|---------|--------------------|
| Property and test plane | Test Values | Average | Standard Deviation |
| E_L , GPa (LT plane) | 28.1, 27.0, 29.8 | 28.3 | 1.4 |
| E_L , GPa (LZ plane) | 28.0, 28.3, 27.6 | 28.0 | 0.4 |
| E_T , GPa (TZ plane) | 8.00, 7.31, 7.93 | 7.75 | 0.38 |
| E_Z , GPa (ZX plane) | 7.10, 7.65, 7.38 | 7.38 | 0.28 |
| NU_{LT} | 0.329, 0.320, 0.301 | 0.32 | 0.01 |
| NU_{LZ} | 0.305, 0.338, 0.331 | 0.33 | 0.02 |
| NU_{TZ} | 0.466, 0.395, 0.449 | 0.44 | 0.04 |
| G_{LT} , GPa | 3.31, 3.35, 3.23 | 3.30 | 0.06 |
| G_{LZ} , GPa | 3.03, 2.72, 2.70 | 2.82 | 0.19 |
| G_{TZ} , GPa | 2.78, 3.12, 1.76 | 2.55 | 0.71 |
| Physical Constants of Material D155, $V_F = 44\%$ | | | |
| Property and test plane | Test Values | Average | Standard Deviation |
| E_L , GPa (LT plane) | 31.9, 35.4, 33.6 | 33.6 | 1.8 |
| E_L , GPa (LZ plane) | 34.5, 34.3, 34.5 | 34.4 | 0.1 |
| E_T , GPa (TZ plane) | 8.14, 8.96, 7.52 | 8.21 | 0.72 |
| E_Z , GPa (ZX plane) | 7.58, 8.00, 8.00 | 7.86 | 0.24 |
| NU_{LT} | 0.289, 0.291, 0.290 | 0.29 | 0.01 |
| NU_{LZ} | 0.302, 0.314, 0.308 | 0.31 | 0.01 |
| NU_{TZ} | 0.373, 0.371, 0.366 | 0.37 | 0.01 |
| G_{LT} , GPa | 5.76, 3.94, 3.74 | 4.48 | 1.11 |
| G_{LZ} , GPa | 3.88, 4.40, 3.07 | 3.78 | 0.67 |
| G_{TZ} , GPa | 2.96, 2.70, 2.20 | 2.62 | 0.39 |
| Shear properties determined by V-notched beam (ASTM 5379) | | | |

Table 20. Physical 3-D Strengths of Material D155, $V_F = 36$ and 44%.

| Strengths of Material D155, $V_F = 36\%$ | | | |
|---|------------------------------|---------|--------------------|
| Property and test plane | Test Values | Average | Standard Deviation |
| UTS _L , MPa (LT plane) | 891, 814, 883, 838 | 856 | 37 |
| UTS _L , MPa (LZ plane) | 679, 672, 685, 646 | 671 | 17 |
| UTS _T , MPa (TZ plane) | 26.6, 36.0, 30.4, 32.9, 29.0 | 31.0 | 3.6 |
| UTS _Z , MPa (ZT plane) | 21.7, 18.7, 20.4, 18.1 | 19.7 | 1.6 |
| UTS _Z , MPa (ZL plane) | 19.4, 17.7, 22.3, 17.1, 15.2 | 18.4 | 2.7 |
| τ_{LT} , MPa | 95.1, 82.1, 78.8 | 85.3 | 8.7 |
| τ_{LZ} , MPa | 79.6, 77.3, 77.1, 63.2 | 74.3 | 7.5 |
| τ_{TZ} , MPa | 19.9, 17.6, 12.0 | 16.5 | 4.0 |
| Strengths of Material D155, $V_F = 44\%$ | | | |
| Property and test plane | Test Values | Average | Standard Deviation |
| UTS _L , MPa (LT plane) | 991, 1000, 1045 | 1,012 | 29 |
| UTS _L , MPa (LZ plane) | 881, 855, 896 | 877 | 21 |
| UTS _T , MPa (TZ plane) | 33.3, 29.3, 28.6, 32.1, 29.7 | 30.6 | 2.0 |
| UTS _Z , MPa (ZT plane) | 12.0, 13.4, 13.4, 12.3 | 12.8 | 0.7 |
| τ_{LT} , MPa | 67.5, 79.1, 73.1 | 73.2 | 5.8 |
| τ_{LZ} , MPa | 75.0, 66.2, 70.8 | 70.7 | 4.4 |
| τ_{TZ} , MPa | 13.6, 17.0, 20.1 | 16.9 | 3.3 |
| Shear properties determined by V-notched beam (ASTM 5379) | | | |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

COMMERCIAL MATERIAL FATIGUE TESTS

MATERIAL A

Lay-up = [0]₅, V_F = 0.30, Ave. thickness = 3.68 mm, S.D. = 0.13 mm, CoRezyn 63-AX-050 Polyester

| | | | | | | | | |
|-----|------|--------|-----|----|------|------|-----------|--------|
| 5 | 105A | 125/13 | 0.1 | 10 | ---- | ---- | 1,996,768 | 25 tab |
| 6 | 108A | 190/19 | 0.1 | 5 | ---- | ---- | 593,319 | 25 tab |
| 7 | 110A | 335/34 | 0.1 | 1 | ---- | ---- | 674 | 25 tab |
| 23 | 111A | 279/28 | 0.1 | 5 | 20.0 | 1.40 | 17,700 | 50 tab |
| 25 | 112A | 212/21 | 0.1 | 10 | 22.3 | ---- | 138,596 | 50 tab |
| 30 | 121A | 591 | * | 13 | 22.4 | 2.83 | 1 | 25 tab |
| 31 | 120A | 567 | * | 13 | 19.9 | 2.82 | 1 | 25 tab |
| 32 | 119A | 538 | * | 13 | 20.4 | 2.64 | 1 | 25 tab |
| 36 | 114A | 186/19 | 0.1 | 10 | 21.0 | 0.90 | 1,612,585 | 50 tab |
| 37 | 113A | 186/19 | 0.1 | 10 | 22.6 | 0.85 | 920,132 | 50 tab |
| 97 | 137A | 548 | * | 6 | 22.0 | 2.20 | 1 | 25 tab |
| 98 | 136A | 579 | * | 6 | 23.2 | 2.30 | 1 | 25 tab |
| 180 | 138A | -323 | * | 6 | ---- | ---- | 1 | 25 tab |
| 181 | 139A | -319 | * | 6 | ---- | ---- | 1 | 25 tab |
| 182 | 140A | -298 | * | 6 | ---- | ---- | 1 | 25 tab |

The following tests (2914-2925) were thickness tapered (versus standard ASTM D3039 coupons)

| | | | | | | | | |
|------|------|--------|-----|----|------|------|------------|----------|
| 2914 | 301A | 551 | * | 13 | ---- | ---- | 1 | 25 tab |
| 2915 | 309A | 552 | * | 13 | ---- | ---- | 1 | 25 tab |
| 2916 | 303A | 611 | * | 13 | ---- | ---- | 1 | 25 tab |
| 2917 | 305A | 345/35 | 0.1 | 2 | 22.8 | 1.63 | 2,080 | 25 tab |
| 2918 | 304A | 345/35 | 0.1 | 2 | 25.8 | 1.44 | 1,244 | 25 tab |
| 2919 | 308A | 345/35 | 0.1 | 2 | 25.8 | 1.35 | 779 | 25 tab |
| 2920 | 306A | 276/28 | 0.1 | 4 | 22.4 | 1.23 | 19,034 | 25 tab |
| 2921 | 311A | 276/28 | 0.1 | 4 | 24.0 | 1.12 | 38,474 | 25 tab |
| 2922 | 307A | 190/19 | 0.1 | 12 | 23.8 | 0.66 | 18,865,901 | 25 tab |
| 2923 | 310A | 207/21 | 0.1 | 12 | 28.9 | 0.72 | 3,000,000 | 25 R tab |
| 2924 | 312A | 276/28 | 0.1 | 5 | 22.2 | 1.20 | 21,100 | 25 tab |
| 2925 | 316A | 207/21 | 0.1 | 12 | ---- | ---- | 8,266,515 | 25 tab |

MATERIAL B

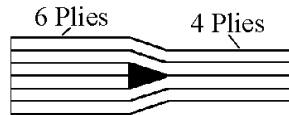
Lay-up = [0]₅, V_F = 0.248, Ave. thickness = 3.45 mm, S.D. = 0.26 mm, Hetron 922L-25 Vinyl ester

| | | | | | | | | |
|----|------|--------|-----|-----|------|------|---------|--------|
| 9 | 103B | 370/37 | 0.1 | 1 | 21.8 | 2.06 | 2,584 | 25 tab |
| 12 | 108B | 267/27 | 0.1 | 5 | 22.5 | 1.21 | 9,173 | 25 tab |
| 13 | 109B | 328/33 | 0.1 | 5 | 20.9 | 1.60 | 2,640 | 25 tab |
| 15 | 111B | 387/39 | 0.1 | 0.1 | 18.6 | 1.82 | 7 | 25 tab |
| 16 | 112B | 256/26 | 0.1 | 5 | 20.1 | 1.29 | 38,133 | 25 tab |
| 17 | 113B | 332/33 | 0.1 | 5 | 21.4 | 1.53 | 2,841 | 25 tab |
| 18 | 114B | 372/37 | 0.1 | 1 | 19.5 | 1.90 | 415 | 25 tab |
| 20 | 116B | 321/32 | 0.1 | 5 | 19.2 | 1.6 | 3,008 | 25 tab |
| 21 | 107B | 321/32 | 0.1 | 4 | 22.6 | 1.4 | 32,640 | 25 tab |
| 22 | 117B | 229/23 | 0.1 | 10 | ---- | ---- | 655,147 | 50 tab |
| 24 | 118B | 343/34 | 0.1 | 1 | 16.3 | 2.12 | 981 | 50 tab |
| 26 | 119B | 571/57 | * | 13 | 22.3 | 2.63 | 1 | 25 tab |
| 27 | 123B | 622 | * | 13 | 21.4 | 2.73 | 1 | 25 tab |
| 28 | 124B | 571 | * | 13 | 21.2 | 2.76 | 1 | 25 tab |
| 29 | 125B | 582 | * | 13 | 22.8 | 2.77 | 1 | 25 tab |
| 33 | 120B | 229/23 | 0.1 | 10 | 21.2 | 1.08 | 16,156 | 50 tab |
| 34 | 121B | 237/24 | 0.1 | 5 | 19.2 | 1.24 | 206,864 | 50 tab |
| 35 | 122B | 229/23 | 0.1 | 10 | 23.1 | 0.99 | 671,330 | 50 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 154 E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------|----------------------------|-----|---------|-----------------|--------|-------------------|----------------------------|
| | | | | | | | | |
| 38 | 126B | 190/19 | 0.1 | 10 | 20.8 | 0.90 | 2,310,849 | 50 tab |
| 39 | 129B | 154/15 | 0.1 | 15 | 19.9 | 0.76 | 40,000,000 | 50 R tab |
| 40 | 130B | 188/19 | 0.1 | 10 | 22.6 | 0.79 | 7,475,243 | 50 tab |
| 56 | 135B | 187/19 | 0.1 | 10 | 22.3 | 0.84 | 2,720,584 | 25 tab |
| 57 | 133B | 152/15 | 0.1 | 15 | 21.7 | 0.70 | 37,906,456 | 25 R tab |
| 58 | 127B | 619 | * | 25 | 22.4 | 2.90 | 1 | 25 tab |
| 61 | 137B | 568 | * | 25 | 20.3 | 2.79 | 1 | 25 tab |
| 64 | 138B | 245 | * | 25 | ---- | ---- | 1 | 25 tab |
| 66 | 138B | 343/34 | 0.1 | 1 | 20.9 | 1.64 | 6,085 | 25 tab |
| 99 | 128B | 560 | * | 6 | 19.9 | 2.82 | 1 | 25 tab |
| 100 | 131B | 559 | * | 6 | 24.4 | 2.29 | 1 | 25 tab |
| 183 | 139B | -265 | * | 6 | ---- | ---- | 1 | 25 tab |
| 184 | 140B | -283 | * | 6 | ---- | ---- | 1 | 25 tab |
| 185 | 141B | -278 | * | 6 | ---- | ---- | 1 | 25 tab |
| 186 | 142B | -303 | * | 6 | ---- | ---- | 1 | 25 tab |
| 187 | 143B | -307 | * | 6 | ---- | ---- | 1 | 25 tab |

MATERIAL F

Lay-up = $[(\pm 45/0)_3]_S$, $V_F = 0.350$, Had two center triax plies dropped, Ave. thickness = 4.88 mm (thin), 7.24 mm (thick), S.D. = 0.13 mm (thin) 0.16 mm (thick), CoRezyn 63-AX-050 Polyester. Maximum stress and strain recorded on smallest cross sectional area.

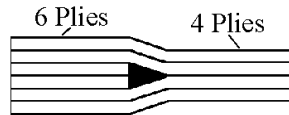


| | | | | | | | | |
|---|------|--------|-----|----|------|------|-----------|--------|
| 41 | 105F | 370 | * | 13 | 17.8 | 2.80 | 1 | 25 tab |
| Test numbers 44 and 55 do not have a ply drop and are of the thin (4 ply) sections. | | | | | | | | |
| 44 | 106F | 363 | * | 13 | 14.6 | 2.55 | 1 | 25 tab |
| 45 | 108F | 339 | * | 13 | 19.2 | 2.37 | 1 | 25 tab |
| 47 | 109F | 195/20 | 0.1 | 5 | ---- | ---- | 2,689 | 25 tab |
| 49 | 101F | 102/10 | 0.1 | 5 | ---- | ---- | 95,101 | 50 tab |
| 51 | 104F | 78/8 | 0.1 | 10 | ---- | ---- | 1,615,838 | 50 tab |
| 53 | 103F | 78/8 | 0.1 | 10 | ---- | ---- | 2,487,507 | 50 tab |
| 55 | 111F | 102/10 | 0.1 | 10 | ---- | ---- | 108,029 | 25 tab |
| 188 | 119F | -373 | * | 6 | ---- | ---- | 1 | 25 tab |
| 189 | 120F | -364 | * | 6 | ---- | ---- | 1 | 25 tab |
| 190 | 121F | -340 | * | 6 | ---- | ---- | 1 | 25 tab |
| 191 | 122F | -378 | * | 6 | ---- | ---- | 1 | 25 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL G

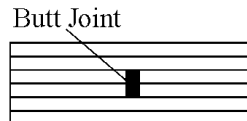
Lay-up = $[(0/\pm 45)_3]_S$, $V_F = 0.360$, Has two center triax plies dropped, Ave. thickness = 4.83 mm (thin), 7.26 mm (thick), S.D. = 0.13 mm (thin) 0.17 mm (thick). CoRezyn 63-AX-050 Polyester. Maximum stress, strain and modulus were recorded on smallest cross sectional area.



| | | | | | | | | |
|---|------|--------|-----|----|------|------|------------|--------|
| 42 | 105G | 397 | * | 13 | 15.9 | 2.49 | 1 | 25 tab |
| 43 | 106G | 366 | * | 13 | 16.4 | 2.71 | 1 | 25 tab |
| 46 | 108G | 332 | * | 25 | ---- | ---- | 1 | 25 tab |
| 48 | 107G | 190/19 | 0.1 | 5 | ---- | ---- | 2,637 | 25 tab |
| 50 | 101G | 103/10 | 0.1 | 10 | ---- | ---- | 69,052 | 50 tab |
| 52 | 102G | 77/8 | 0.1 | 10 | ---- | ---- | 1,669,945 | 50 tab |
| Test numbers 54 and 67 do not have a ply drop and are of the thin (4 ply) sections. | | | | | | | | |
| 54 | 109G | 103 | 0.1 | 10 | ---- | ---- | 65,372 | 25 tab |
| 67 | 110G | 78 | 0.1 | 10 | 17.8 | 0.43 | 11,160,358 | 25 tab |
| 107 | 104G | 352/35 | * | 6 | 19.6 | 1.50 | 1 | 25 tab |
| 108 | 105G | 358/36 | * | 6 | 20.4 | 1.75 | 1 | 25 tab |
| Tests 1925 - 1927 used the smaller cross sectional area with no joint. | | | | | | | | |
| 1925 | 200G | -266 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1926 | 201G | -228 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1927 | 202G | -280 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL H

Lay-up = $[(\pm 45/0)_3]_S$, $V_F = 0.389$, Ave. thickness = 6.58 mm, S.D. = 0.4 mm, Had two center triax plies cut to simulate a butt joint. CoRezyn 63-AX-050 Polyester. Stress, strain and modulus were recorded the on average cross sectional area, no reduction multiplier was used to account for the center cut plies.



| | | | | | | | | |
|----|------|--------|-----|----|------|------|--------|--------|
| 59 | 101H | 429 | * | 25 | 25.8 | 2.24 | 1 | 25 tab |
| 60 | 102H | 597 | * | 25 | 18.8 | 2.42 | 1 | 25 tab |
| 69 | 104H | 172/17 | 0.1 | 5 | 25.2 | 0.68 | 45,360 | 25 tab |

Tests 71, 72, 73 and 74 did not have a joint in the test gage section

| | | | | | | | | |
|----|------|-----|---|---|------|------|---|--------|
| 71 | 106H | 485 | * | 5 | 24.6 | 2.1+ | 1 | 25 tab |
| 72 | 107H | 592 | * | 6 | ---- | ---- | 1 | 25 tab |
| 73 | 108H | 531 | * | 6 | ---- | ---- | 1 | 25 tab |
| 74 | 109H | 598 | * | 6 | ---- | ---- | 1 | 25 tab |

Test 75 is a transverse test, tested in the $[(\pm 45/90)_3]_S$ direction

| | | | | | | | | |
|-----|-------|----------|-----|----|------|------|------------|----------|
| 75 | 110HT | 47 | * | 6 | ---- | ---- | 1 | 25 tab |
| 76 | 105H | 86/9 | 0.1 | 10 | 28.2 | 0.30 | 10,000,000 | 25 R tab |
| 89 | 111H | 87/9 | 0.1 | 15 | 23.4 | 0.43 | 20,500,167 | 25 tab |
| 91 | 113H | 207/21 | 0.1 | 1 | 27.2 | 0.73 | 16,137 | 25 tab |
| 92 | 114H | 131/13 | 0.1 | 10 | 24.0 | 0.60 | 69,425 | 25 tab |
| 95 | 115H | 162/16 | 0.1 | 10 | 20.8 | 0.76 | 11,417 | 25 tab |
| 144 | 121H | 103/-103 | -1 | 5 | 25.0 | 0.41 | 1,824,012 | 25 tab |
| 147 | 122H | 138/-138 | -1 | 5 | 25.2 | 0.55 | 21,713 | 25 tab |
| 148 | 117H1 | 138/-138 | -1 | 5 | 23.2 | 0.59 | 15,930 | 25 tab |
| 192 | 116H | -431 | * | 6 | ---- | ---- | 1 | 25 tab |
| 193 | 117H | -425 | * | 6 | ---- | ---- | 1 | 25 tab |

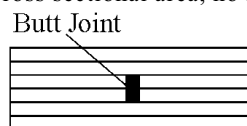
Tests 221 and 222 involved coupons with a center 13 mm diameter hole, gross section stresses and no joint.

| | | | | | | | | |
|-----|-------|------|---|----|------|------|---|----------|
| 221 | 117H2 | -262 | * | 10 | ---- | ---- | 1 | 50 H tab |
|-----|-------|------|---|----|------|------|---|----------|

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 156 E GPa | | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|------|----------------------------|-----|---------|-----------------|-------|--------|-------------------|----------------------------|
| | | | | | | | | | |
| 222 | 119H | -153/-15 | 10 | 5 | ---- | ---- | | 2,400 | 50 HR tab |
| 235 | 123H | -138/-14 | 10 | 15 | 25.8 | -0.51 | | 19,996 | 25 tab |
| Tests 236, 238, 240, 241, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253 do not have a joint | | | | | | | | | |
| 236 | 126H | -138/-14 | 10 | 20 | 24.5 | -0.38 | | 4,385,009 | 25 R tab |
| 238 | 120H | -207/-21 | 10 | 15 | 27.7 | ---- | | 91,656 | 25 tab |
| 239 | 116H | -138/-14 | 10 | 15 | 24.5 | -0.56 | | 6,000,000 | 25 R tab |
| 240 | 119H | -138/-14 | 10 | 20 | 23.5 | -0.58 | | 30,000,000 | 25 HR tab |
| 241 | 133H | 138/14 | 0.1 | 15 | ---- | ---- | | 1,401,491 | 25 tab |
| 242 | 137H | 138/14 | 0.1 | 15 | ---- | ---- | | 5,420,000 | 25 R tab |
| 243 | 136H | 172/17 | 0.1 | 10 | ---- | ---- | | 502,598 | 25 tab |
| 244 | 131H | 172/17 | 0.1 | 10 | ---- | ---- | | 1,104,989 | 25 tab |
| 245 | 132H | 207/21 | 0.1 | 10 | 24.8 | 0.86 | | 96,327 | 25 tab |
| 246 | 135H | 207/21 | 0.1 | 10 | 25.0 | 0.83 | | 79,610 | 25 tab |
| 247 | 130H | 241/24 | 0.1 | 10 | 25.7 | 0.95 | | 15,703 | 25 tab |
| 248 | 139H | 276/28 | 0.1 | 5 | 23.2 | 1.20 | | 2,921 | 25 tab |
| 249 | 143H | 276/28 | 0.1 | 5 | 27.7 | 1.04 | | 1,668 | 25 tab |
| 250 | 140H | 345/35 | 0.1 | 5 | 23.4 | 1.53 | | 742 | 25 tab |
| 251 | 138H | -207/-21 | 10 | 15 | 26.8 | -0.76 | | 4,578 | 25 tab |
| 252 | 141H | -207/-21 | 10 | 15 | 24.6 | -0.85 | | 3,918 | 25 tab |
| 253 | 149H | 138/14 | 0.1 | 20 | 23.8 | 0.57 | | 8,222,998 | 25 tab |
| 254 | 150H | 138/14 | 0.1 | 15 | ---- | ---- | | 11,500,000 | 25 R tab |
| Tests 258, 259 and 260 do not have a joint | | | | | | | | | |
| 258 | 118H | 707 | * | 6 | 24.2 | ---- | | 1 | 25 tab |
| 259 | 150H | 734 | * | 6 | 27.7 | ---- | | 1 | 25 tab |
| 260 | 151H | 744 | * | 6 | 28.8 | ---- | | 1 | 25 tab |
| 269 | 125H | 446 | * | 6 | 24.2 | ---- | | 1 | 25 tab |
| 270 | 128H | 438 | * | 6 | 25.0 | ---- | | 1 | 25 tab |
| 4773 | 305H | 103/-103 | -1 | 4 | ---- | ---- | | 530,122 | 25 |
| 4774 | 302H | 103/-103 | -1 | 4 | ---- | ---- | | 379,953 | 25 |
| 4775 | 303H | 138/-103 | -1 | 2 | ---- | ---- | | 31,448 | 25 |

MATERIAL J

Lay-up = $[(0/\pm 45)_3]_S$, $V_F = 0.386$, Ave. thickness = 6.63 mm, S.D. = 0.52 mm, CoRezyn 63-AX-050 Polyester,
Stress and strain recorded on average cross sectional area, no multiplier was used to account for the center cut plies.



| | | | | | | | | | |
|--|------|----------|-----|----|------|------|--|------------|-----------|
| 62 | 101J | 475 | * | 25 | 27.0 | 2.83 | | 1 | 25 tab |
| 63 | 102J | 398 | * | 25 | 23.7 | 2.60 | | 1 | 25 tab |
| 68 | 104J | 172/17 | 0.1 | 5 | 22.8 | 0.77 | | 17,882 | 25 tab |
| 70 | 105J | 86/9 | 0.1 | 10 | 26.2 | 0.31 | | 11,000,000 | 25 R tab |
| 81 | 106J | 65/7 | 0.1 | 15 | 22.6 | 0.26 | | 18,000,000 | 25 R tab |
| 82 | 107J | 75/8 | 0.1 | 15 | 27.3 | 0.28 | | 30,300,000 | 25 R tab |
| 93 | 108J | 124/12 | 0.1 | 10 | 23.1 | 0.54 | | 153,500 | 25 R tab |
| 127 | 110J | 103/10 | 0.1 | 15 | 24.2 | 0.42 | | 1,460,000 | 25 tab |
| 194 | 111J | -403 | * | 6 | ---- | ---- | | 1 | 25 tab |
| 195 | 112J | -417 | * | 6 | ---- | ---- | | 1 | 25 tab |
| Tests 220 and 223 involved coupons with a center 13 mm diameter hole, gross section stresses and no joint. | | | | | | | | | |
| 220 | 113J | -169 | * | 3 | ---- | ---- | | 1 | 50 H tab |
| 223 | 114J | -102/-10 | 10 | 10 | ---- | ---- | | 6,500,000 | 50 HR tab |
| Tests 261, 262, 263 do not have a joint | | | | | | | | | |
| 261 | 140J | 723 | * | 6 | 26.3 | ---- | | 1 | 25 tab |
| 262 | 141J | 711 | * | 6 | 25.7 | ---- | | 1 | 25 tab |

| | | | | | | | | |
|-----|------|-----|---|---|------|------|---|--------|
| 263 | 142J | 689 | * | 6 | 24.2 | ---- | 1 | 25 tab |
| 268 | 115J | 446 | * | 6 | 24.5 | ---- | 1 | 25 tab |

MATERIAL L

Lay-up = $[0]_3$, $V_F = 0.509$, Ave. thickness = 2.46 mm, S.D. = 0.26 mm, Polyester

| | | | | | | | | |
|-----|------|--------|-----|----|------|------|---------|--------|
| 77 | 101L | 410/41 | 0.1 | 1 | 35.4 | 1.18 | 2,580 | 25 tab |
| 78 | 103L | 406/41 | 0.1 | 1 | 30.9 | 1.32 | 593 | 25 tab |
| 79 | 102L | 276/28 | 0.1 | 5 | 31.5 | 0.87 | 59,081 | 25 tab |
| 80 | 104L | 266/27 | 0.1 | 5 | 29.0 | 0.97 | 45,848 | 25 tab |
| 83 | 109L | 325/33 | 0.1 | 10 | 34.5 | 0.91 | 153,402 | 25 tab |
| 84 | 127L | 259/26 | 0.1 | 10 | 32.4 | 0.93 | 856,066 | 25 tab |
| 101 | 117L | 740/74 | * | 6 | 30.8 | 2.40 | 1 | 25 tab |
| 102 | 119L | 745/75 | * | 6 | 36.6 | 2.21 | 1 | 25 tab |
| 196 | 122L | -325 | * | 6 | ---- | ---- | 1 | 25 tab |
| 197 | 123L | -332 | * | 6 | ---- | ---- | 1 | 25 tab |
| 198 | 125L | -328 | * | 6 | ---- | ---- | 1 | 25 tab |
| 199 | 126L | -351 | * | 6 | ---- | ---- | 1 | 25 tab |
| 231 | 126L | -361 | * | 6 | ---- | ---- | 1 | 50 tab |
| 232 | 127L | -444 | * | 6 | ---- | ---- | 1 | 50 tab |
| 233 | 128L | -416 | * | 6 | ---- | ---- | 1 | 50 tab |

The following tensile coupons in this material were thickness tapered (versus standard ASTM D3039)

| | | | | | | | | |
|------|------|--------|-----|----|------|------|---------|--------|
| 2926 | 130L | 807 | * | 13 | 37.4 | 2.20 | 1 | 25 tab |
| 2927 | 134L | 767 | * | 13 | 31.9 | 2.45 | 1 | 25 tab |
| 2928 | 133L | 683 | * | 13 | 39.6 | 1.75 | 1 | 25 tab |
| 2929 | 131L | 414/41 | 0.1 | 2 | 39.4 | 1.10 | 1,651 | 25 tab |
| 2930 | 106L | 414/41 | 0.1 | 2 | 40.0 | 1.09 | 2,814 | 25 tab |
| 2931 | 125L | 414/41 | 0.1 | 2 | 43.3 | 1.03 | 4,755 | 25 tab |
| 2932 | 111L | 345/35 | 0.1 | 4 | 38.5 | 0.92 | 14,578 | 25 tab |
| 2933 | 135L | 345/35 | 0.1 | 4 | 39.1 | 0.91 | 9,731 | 25 tab |
| 2934 | 129L | 276/28 | 0.1 | 10 | 38.4 | 0.74 | 187,213 | 25 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | 158 E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|-----------------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|-----------------|--------|-------------------|----------------------------|

MATERIAL M

Lay-up = [0/±45]₄, V_F = 0.381, Ave. thickness = 3.10 mm, S.D. = 0.10 mm, Vinyl ester

| | | | | | | | | |
|-----|------|--------|-----|----|------|------|------------|--------|
| 129 | 101M | 69/7 | 0.1 | 15 | 21.4 | 0.32 | 17,764,694 | 50 tab |
| 130 | 102M | 76/8 | 0.1 | 15 | 21.0 | 0.36 | 6,899,599 | 50 tab |
| 131 | 104M | 525 | * | 60 | 21.0 | 2.62 | 1 | 50 tab |
| 132 | 113M | 507 | * | 60 | 20.2 | 2.90 | 1 | 50 tab |
| 133 | 112M | 138/14 | 0.1 | 10 | 21.6 | 0.66 | 18,650 | 50 tab |
| 134 | 106M | 138/14 | 0.1 | 10 | 21.2 | 0.66 | 22,360 | 50 tab |
| 135 | 109M | 207/21 | 0.1 | 5 | 19.3 | 1.12 | 2,319 | 50 tab |
| 136 | 103M | 207/21 | 0.1 | 5 | 19.1 | 1.12 | 2,855 | 50 tab |
| 137 | 114M | 276/28 | 0.1 | 5 | 20.1 | 1.43 | 687 | 50 tab |
| 138 | 105M | 276/28 | 0.1 | 5 | 19.2 | 1.44 | 879 | 50 tab |
| 139 | 115M | 103/10 | 0.1 | 15 | 21.0 | 0.49 | 86,249 | 50 tab |
| 140 | 107M | 103/10 | 0.1 | 15 | 20.9 | 0.49 | 174,168 | 50 tab |
| 141 | 118M | 86/9 | 0.1 | 15 | 20.5 | 0.41 | 397,000 | 50 tab |
| 142 | 110M | 86/9 | 0.1 | 15 | 22.4 | 0.39 | 266,000 | 50 tab |
| 143 | 108M | 76/8 | 0.1 | 15 | 21.4 | 0.36 | 2,498,512 | 50 tab |
| 200 | 124M | -275 | * | 6 | ---- | ---- | 1 | 25 tab |
| 201 | 123M | -295 | * | 6 | ---- | ---- | 1 | 25 tab |
| 202 | 122M | -289 | * | 6 | ---- | ---- | 1 | 25 tab |
| 203 | 125M | -284 | * | 6 | ---- | ---- | 1 | 25 tab |
| 228 | 126M | -267 | * | 3 | ---- | ---- | 1 | 50 tab |
| 229 | 127M | -291 | * | 6 | ---- | ---- | 1 | 50 tab |
| 230 | 128M | -301 | * | 6 | ---- | ---- | 1 | 50 tab |

MATERIAL N

Lay-up = [0/±45]₄, V_F = 0.366, Ave. thickness = 3.23 mm, S.D. = 0.08 mm, Polyester

Tests 85 - 88, 96, 105, 106, 109, 110, 114, 3054 were transverse tests, tested in the [90/±45]₄ direction

| | | | | | | | | |
|-----|-------|--------|-----|----|------|------|------------|----------|
| 85 | 111NT | 86 | * | 6 | ---- | 3.28 | 1 | 25 tab |
| 86 | 101NT | 54/5 | 0.1 | 1 | 8.62 | 1.34 | 6,479 | 25 tab |
| 87 | 102NT | 68/7 | 0.1 | 1 | 7.86 | 1.70 | 470 | 50 tab |
| 88 | 104NT | 35/4 | 0.1 | 5 | 8.55 | 0.45 | 511,047 | 50 tab |
| 96 | 103NT | 21/2 | 0.1 | 15 | 9.10 | 0.23 | 34,000,000 | 50 R tab |
| 103 | 011N | 482 | * | 6 | 20.9 | 2.97 | 1 | 25 tab |
| 104 | 012N | 468 | * | 6 | 20.9 | 2.84 | 1 | 25 tab |
| 105 | 113NT | 87 | * | 6 | 6.90 | 3.82 | 1 | 25 tab |
| 106 | 114NT | 90 | * | 6 | 9.17 | 2.29 | 1 | 25 tab |
| 109 | 111NT | 54/5 | 0.1 | 1 | 8.83 | 1.15 | 7,950 | 50 tab |
| 110 | 112NT | 68/7 | 0.1 | 1 | 6.69 | 1.42 | 711 | 50 tab |
| 111 | 117N | 388/39 | 0.1 | 1 | 17.0 | 2.74 | 27 | 25 tab |
| 112 | 116N | 276/28 | 0.1 | 1 | 18.2 | 1.63 | 626 | 25 tab |
| 113 | 120N | 276/28 | 0.1 | 5 | 17.3 | 1.70 | 811 | 25 tab |
| 114 | 114NT | 35/4 | 0.1 | 15 | 8.20 | 0.42 | 1,634,579 | 50 tab |
| 115 | 118N | 207/21 | 0.1 | 5 | 19.2 | 1.08 | 5,684 | 25 tab |
| 116 | 119N | 207/21 | 0.1 | 5 | 19.7 | 1.05 | 4,871 | 25 tab |
| 117 | 010N | 138/14 | 0.1 | 10 | 20.1 | 0.73 | 25,371 | 50 tab |
| 118 | 009N | 138/14 | 0.1 | 10 | 19.5 | 0.71 | 25,781 | 50 tab |
| 119 | 129N | 138/14 | 0.1 | 10 | 20.4 | 0.69 | 37,597 | 50 tab |
| 120 | 128N | 138/14 | 0.1 | 10 | 19.2 | 0.72 | 29,230 | 50 tab |
| 121 | 131N | 103/10 | 0.1 | 15 | 18.4 | 0.56 | 231,826 | 50 tab |
| 122 | 130N | 86/9 | 0.1 | 15 | 19.8 | 0.42 | 1,336,695 | 50 tab |
| 123 | 006N | 345/35 | 0.1 | 1 | 19.2 | 1.82 | 150 | 50 tab |
| 124 | 126N | 76/8 | 0.1 | 15 | 19.7 | 0.39 | 1,648,137 | 50 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 159 E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-------|----------------------------|-----|---------|-----------------|--------|-------------------|----------------------------|
| 125 | 008N | 69/7 | 0.1 | 15 | 19.9 | 0.34 | 7,825,000 | 50 tab |
| 126 | 121N | 103/10 | 0.1 | 15 | 19.0 | 0.54 | 165,980 | 50 tab |
| 128 | 127N | 69/7 | 0.1 | 15 | 19.3 | 0.35 | 4,005,593 | 50 tab |
| 145 | 116N | 462 | * | 60 | 20.2 | 2.81 | 1 | 50 tab |
| 146 | 117N | 459 | * | 60 | 18.9 | 2.75 | 1 | 50 tab |
| For reversed and compression loading, a gage length of 38 mm was used. | | | | | | | | |
| 149 | 132N | 86/-86 | -1 | 5 | 22.8 | 0.36 | 105,505 | 50 tab |
| 150 | 133N | 86/-86 | -1 | 10 | 21.5 | 0.38 | 240,528 | 50 tab |
| 151 | 134N | 138/-138 | -1 | 5 | 21.5 | 0.61 | 5,570 | 50 tab |
| 152 | 137N | 138/-138 | -1 | 5 | 24.6 | 0.56 | 13,337 | 50 tab |
| 153 | 135N | 69/-69 | -1 | 15 | 21.9 | 0.29 | 1,189,053 | 50 tab |
| 154 | 136N | 69/-69 | -1 | 15 | 23.4 | 0.29 | 1,282,726 | 50 tab |
| 155 | 138N | -138/-14 | 10 | 15 | 23.5 | -0.61 | 1,098,374 | 50 tab |
| 156 | 139N | -103/-10 | 10 | 20 | 23.5 | -0.44 | 26,707,000 | 50 R tab |
| 158 | 145N | -103/-10 | 10 | 20 | 25.6 | -0.41 | 25,738,868 | 50 tab |
| 159 | 140N | -138/-14 | 10 | 15 | 23.5 | -0.60 | 367,505 | 50 tab |
| 160 | 143N | -172/-17 | 10 | 10 | 25.0 | -0.69 | 292,181 | 50 tab |
| 161 | 142N | -172/-17 | 10 | 10 | 23.7 | -0.74 | 32,227 | 50 tab |
| 208 | 151N | -318 | * | 13 | ---- | ---- | 1 | 25 tab |
| 209 | 152N | -334 | * | 13 | ---- | ---- | 1 | 25 tab |
| 210 | 153N | -301 | * | 13 | ---- | ---- | 1 | 25 tab |
| 3054 | 201NT | -131 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL P

Lay-up = [0/±45/M/0]_S, V_F = 0.404, Ave. thickness = 3.78 mm, S.D. = 0.23 mm, Vinyl ester

| | | | | | | | | |
|--|------|----------|-----|----|------|-------|------------|----------|
| 163 | 108P | 612 | * | 60 | 28.1 | 2.73 | 1 | 25 tab |
| 164 | 107P | 716 | * | 60 | 26.8 | 2.89 | 1 | 25 tab |
| 165 | 105P | 103/10 | 0.1 | 15 | 23.3 | 0.44 | 2,808,490 | 50 tab |
| 166 | 108P | 103/10 | 0.1 | 15 | 27.8 | 0.38 | 5,985,000 | 50 tab |
| 168 | 101P | 276/28 | 0.1 | 5 | 22.1 | 1.27 | 7,251 | 50 tab |
| 169 | 103P | 276/28 | 0.1 | 5 | 24.6 | 1.12 | 6,354 | 50 tab |
| 170 | 102P | 207/21 | 0.1 | 10 | 26.1 | 0.82 | 38,469 | 50 tab |
| 171 | 106P | 207/21 | 0.1 | 10 | 26.3 | 0.80 | 28,198 | 50 tab |
| 172 | 107P | 345/35 | 0.1 | 5 | 25.9 | 1.40 | 1,467 | 50 tab |
| 173 | 104P | 345/35 | 0.1 | 5 | 24.0 | 1.45 | 1,773 | 50 tab |
| 174 | 111P | 414/41 | 0.1 | 5 | 19.0 | 2.22 | 296 | 50 tab |
| 175 | 112P | 138/14 | 0.1 | 15 | 26.9 | 0.52 | 900,000 | 50 tab |
| 176 | 126P | 674 | * | 60 | 28.8 | 2.60 | 1 | 25 tab |
| 177 | 115P | 414/41 | 0.1 | 5 | 29.1 | 0.93 | 216 | 50 tab |
| 178 | 113P | 138/14 | 0.1 | 15 | 23.4 | 0.60 | 715,000 | 50 tab |
| 179 | 116P | 76/-76 | -1 | 20 | 29.2 | 0.26 | 15,000,000 | 50 R tab |
| For reversed and compression loading, a gage length of 38 mm was used. | | | | | | | | |
| 204 | 132P | -288 | * | 6 | ---- | ---- | 1 | 25 tab |
| 205 | 133P | -333 | * | 6 | ---- | ---- | 1 | 25 tab |
| 206 | 136P | -319 | * | 6 | ---- | ---- | 1 | 25 tab |
| 207 | 137P | -343 | * | 6 | ---- | ---- | 1 | 25 tab |
| 211 | 120P | 138/-138 | -1 | 10 | 29.4 | 0.44 | 139,604 | 50 tab |
| 212 | 123P | 207/-207 | -1 | 5 | 29.5 | 0.70 | 938 | 50 tab |
| 213 | 121P | 207/-207 | -1 | 5 | 27.2 | 0.74 | 1,320 | 50 tab |
| 214 | 122P | 138/-138 | -1 | 10 | 28.3 | 0.46 | 76,483 | 50 tab |
| 215 | 125P | -207/-21 | 10 | 10 | 28.0 | -0.63 | 14,121 | 50 tab |
| 216 | 124P | -138/-14 | 10 | 20 | 30.9 | -0.40 | 6,000,000 | 50 R tab |
| 217 | 119P | -207/-21 | 10 | 10 | 30.4 | -0.63 | 21,177 | 50 tab |
| 218 | 117P | -172/-17 | 10 | 20 | 25.0 | -0.82 | 1,094,359 | 50 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 160 E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------|----------------------------|----|---------|-----------------|--------|-------------------|----------------------------|
| 219 | 118P | -172/-17 | 10 | 20 | 31.4 | -0.51 | 8,020,000 | 50 R tab |
| 224 | 119P | -138/-14 | 10 | 20 | ---- | ---- | 1,189,000 | 50 R tab |
| 225 | 130P | -396 | * | 3 | ---- | ---- | 1 | 50 tab |
| 226 | 131P | -477 | * | 6 | ---- | ---- | 1 | 50 tab |
| 227 | 132P | -526 | * | 6 | ---- | ---- | 1 | 50 tab |

MATERIAL R

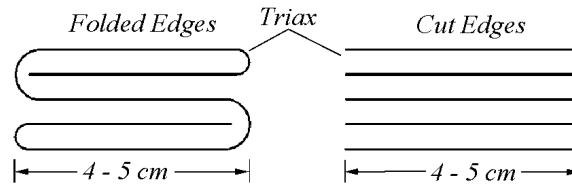
Lay-up = [0/±45]₄, V_F = 0.300, Ave. thickness = 3.56 mm, S.D. = 0.07 mm, Polyester

| | | | | | | | | |
|------|------|--------|-----|----|------|------|-----------|--------|
| 237 | 109R | 138/14 | 0.1 | 15 | 16.0 | 0.93 | 8,170,168 | 50 tab |
| 255 | 101R | 412 | * | 6 | 16.6 | 2.50 | 1 | 25 tab |
| 256 | 102R | 427 | * | 6 | 16.6 | 2.63 | 1 | 25 tab |
| 257 | 107R | 138/14 | 0.1 | 15 | 17.0 | 0.82 | 7,842,000 | 50 tab |
| 264 | 105R | 276/28 | 0.1 | 5 | 14.8 | 2.13 | 925 | 50 tab |
| 265 | 111R | 483 | * | 6 | 17.7 | 3.41 | 1 | 50 tab |
| 266 | 108R | 207/21 | 0.1 | 10 | 16.3 | 1.31 | 6,967 | 50 tab |
| 267 | 104R | 207/21 | 0.1 | 10 | 16.9 | 1.31 | 6,035 | 50 tab |
| 271 | 103R | 138/14 | 0.1 | 15 | 15.7 | 0.90 | 820,153 | 50 tab |
| 272 | 112R | 172/17 | 0.1 | 15 | 17.1 | 1.0 | 972,000 | 50 tab |
| 273 | 106R | 190/19 | 0.1 | 10 | ---- | ---- | 230,233 | 50 tab |
| 274 | 110R | 190/19 | 0.1 | 10 | ---- | ---- | 115,056 | 50 tab |
| 276 | 114R | 155/16 | 0.1 | 15 | ---- | ---- | 4,932,613 | 50 tab |
| 277 | 118R | 345/35 | 0.1 | 1 | 17.4 | 2.52 | 60 | 50 tab |
| 278 | 117R | 345/35 | 0.1 | 1 | ---- | ---- | 41 | 50 tab |
| 279 | 125R | 276/28 | 0.1 | 2 | ---- | ---- | 1,072 | 50 tab |
| 280 | 126R | 207/21 | 0.1 | 7 | ---- | ---- | 17,096 | 50 tab |
| 281 | 119R | 190/19 | 0.1 | 10 | ---- | ---- | 505,551 | 50 tab |
| 282 | 124R | 155/16 | 0.1 | 15 | ---- | ---- | 1,942,442 | 50 tab |
| 284 | 120R | 436 | * | 6 | ---- | ---- | 1 | 50 tab |
| 285 | 121R | 426 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1928 | 200R | -287 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1929 | 201R | -297 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1930 | 202R | -286 | * | 13 | ---- | ---- | 1 | 25 tab |
| 3080 | 403R | -317 | * | 13 | ---- | ---- | 1 | 25 tab |
| 3081 | 402R | -321 | * | 13 | ---- | ---- | 1 | 25 tab |
| 3082 | 401R | -353 | * | 13 | ---- | ---- | 1 | 25 tab |
| 4460 | 405R | 207/21 | 0.1 | 4 | ---- | ---- | 10,713 | 50 tab |
| 4461 | 406R | 207/21 | 0.1 | 4 | ---- | ---- | 202,846 | 50 tab |
| 4462 | 407R | 207/21 | 0.1 | 4 | ---- | ---- | 35,270 | 50 tab |
| 4463 | 408R | 207/21 | 0.1 | 4 | ---- | ---- | 43,407 | 50 tab |
| 4464 | 409R | 190/19 | 0.1 | 4 | ---- | ---- | 473,815 | 50 tab |
| 4465 | 410R | 190/19 | 0.1 | 4 | ---- | ---- | 519,652 | 50 tab |
| 4466 | 411R | 276/28 | 0.1 | 2 | ---- | ---- | 2,473 | 50 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL T

Lay-up = $[0/\pm 45]_5$, $V_F = 0.302$, Ave. thickness = 4.34 mm, S.D. = 0.22 mm, Polyester. Materials T, U, V and W involved folded fabric edges (T and U) and cut fabric edges to study coupon edge effects.



| | | | | | | | | |
|------|------|--------|-----|----|------|------|-----------|--------|
| 1306 | T1 | 366 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1307 | T2 | 145/15 | 0.1 | 15 | ---- | ---- | 64,333 | 50 tab |
| 1308 | T3 | 100/10 | 0.1 | 15 | ---- | ---- | 701,345 | 50 tab |
| 1309 | T5 | 86/9 | 0.1 | 15 | ---- | ---- | 2,069,625 | 50 tab |
| 1310 | T6 | 101/10 | 0.1 | 15 | ---- | ---- | 1,731,348 | 50 tab |
| 1311 | T7 | 145/15 | 0.1 | 10 | ---- | ---- | 56,979 | 50 tab |
| 1312 | T8 | 107/11 | 0.1 | 15 | ---- | ---- | 615,110 | 50 tab |
| 1313 | T9 | 369 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1916 | T200 | 252 | * | 13 | 17.7 | 3.47 | 1 | 25 tab |
| 1917 | T201 | -313 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1918 | T202 | -267 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL U

Lay-up = $[0/\pm 45]_5$, $V_F = 0.273$, Ave. thickness = 4.55 mm, S.D. = 0.18 mm, Polyester. Materials T, U, V and W involved folded fabric edges (T and U) and cut fabric edges to study test coupon edge effects.

| | | | | | | | | |
|------|------|--------|-----|----|------|------|-----------|--------|
| 1314 | U1 | 336 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1315 | U2 | 138/14 | 0.1 | -- | ---- | ---- | 14,573 | 50 tab |
| 1316 | U3 | 102/10 | 0.1 | -- | ---- | ---- | 114,237 | 50 tab |
| 1317 | U4 | 86/9 | 0.1 | 15 | ---- | ---- | 400,500 | 50 tab |
| 1318 | U5 | 69/7 | 0.1 | 15 | ---- | ---- | 2,278,230 | 50 tab |
| 1319 | U6 | 102/10 | 0.1 | 15 | ---- | ---- | 178,679 | 50 tab |
| 1320 | U7 | 69/7 | 0.1 | 10 | ---- | ---- | 2,422,608 | 50 tab |
| 1321 | U8 | 138/14 | 0.1 | 10 | ---- | ---- | 16,591 | 50 tab |
| 1322 | U9 | 421 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1931 | U200 | 416 | * | 13 | 21.2 | 2.51 | 1 | 25 tab |
| 1932 | U201 | -364 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1933 | U202 | -345 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL V

Lay-up = $[0/\pm 45]_5$, $V_F = 0.338$, Ave. thickness = 3.33 mm, S.D. = 0.30 mm, Polyester. Materials T, U, V and W involved folded fabric edges (T and U) and cut fabric edges to study test coupon edge effects.

| | | | | | | | | |
|------|-----|--------|-----|----|------|------|---------|--------|
| 1323 | V1 | 460 | * | 6 | 19.7 | 2.4 | 1 | 50 tab |
| 1324 | V2 | 489 | * | 6 | 19.8 | 2.5 | 1 | 50 tab |
| 1325 | V3 | 138/14 | 0.1 | 5 | ---- | ---- | 28,861 | 50 tab |
| 1326 | V4 | 138/14 | 0.1 | 5 | ---- | ---- | 35,501 | 50 tab |
| 1327 | V5 | 172/17 | 0.1 | 1 | ---- | ---- | 11,273 | 50 tab |
| 1328 | V6 | 172/17 | 0.1 | 1 | ---- | ---- | 12,339 | 50 tab |
| 1329 | V7 | 103/10 | 0.1 | 10 | ---- | ---- | 123,370 | 50 tab |
| 1330 | V8 | 103/10 | 0.1 | 10 | ---- | ---- | 111,873 | 50 tab |
| 1331 | V9 | 86/9 | 0.1 | 15 | ---- | ---- | 950,987 | 50 tab |
| 1332 | V10 | 86/9 | 0.1 | 15 | ---- | ---- | 871,319 | 50 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 162 | | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| | | | | | E GPa | e % | | |
| 1333 | V11 | 69/7 | 0.1 | 15 | ---- | ---- | 7,871,024 | 50 tab |
| 1334 | V15 | 86/9 | 0.1 | 15 | ---- | ---- | 848,378 | 50 tab |
| 1335 | V16 | 86/9 | 0.1 | 15 | ---- | ---- | 791,827 | 50 tab |
| 1336 | V17 | 103/10 | 0.1 | 10 | ---- | ---- | 222,481 | 50 tab |
| 1337 | V18 | 172/17 | 0.1 | 1 | ---- | ---- | 11,370 | 50 tab |
| 1338 | V20 | 138/14 | 0.1 | 5 | ---- | ---- | 23,829 | 50 tab |
| 1339 | V27 | 382 | * | 6 | 18.5 | 2.1 | 1 | 25 tab |
| 1340 | V30 | 377 | * | 6 | 19.7 | 1.91 | 1 | 25 tab |
| 1341 | V31 | 393 | * | 6 | 20.1 | 1.96 | 1 | 25 tab |
| 1919 | V200 | -363 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1920 | V201 | -392 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1921 | V202 | -383 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL W

Lay-up = $[0/\pm 45]_5$, $V_F = 0.327$, Ave. thickness = 3.43 mm, S.D. = 0.07 mm, Polyester. Materials T, U, V and W involved folded fabric edges (T and U) and cut fabric edges to study coupon edge effects.

| | | | | | | | | |
|------|------|--------|-----|----|------|------|------------|----------|
| 1342 | W1 | 172/17 | 0.1 | 2 | 19.0 | 0.91 | 25,839 | 50 tab |
| 1343 | W2 | 172/17 | 0.1 | 2 | 19.1 | 0.9 | 30,040 | 50 tab |
| 1344 | W5 | 138/14 | 0.1 | 10 | ---- | ---- | 311,392 | 50 tab |
| 1345 | W6 | 138/14 | 0.1 | 10 | ---- | ---- | 154,745 | 50 tab |
| 1346 | W7 | 103/10 | 0.1 | 15 | ---- | ---- | 5,040,762 | 50 tab |
| 1347 | W8 | 359 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1348 | W9 | 435 | * | 6 | ---- | ---- | 1 | 50 tab |
| 1349 | W10 | 121/12 | 0.1 | 10 | ---- | ---- | 502,900 | 50 tab |
| 1350 | W11 | 121/12 | 0.1 | 10 | ---- | ---- | 1,071,927 | 50 tab |
| 1351 | W12 | 103/10 | 0.1 | 15 | ---- | ---- | 3,464,238 | 50 tab |
| 1352 | W13 | 86/9 | 0.1 | 15 | ---- | ---- | 27,537,000 | 50 R tab |
| 1922 | W200 | -302 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1923 | W201 | -355 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1924 | W202 | -351 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL X

Lay-up = $[0_2/M/\pm 45/0_2]$, $V_F = 0.352$, Ave. thickness = 4.52 mm, S.D. = 0.24 mm, Polyester

| | | | | | | | | |
|-----|------|--------|-----|----|------|------|-----------|--------|
| 304 | 107X | 624 | * | 13 | 25.6 | 2.59 | 1 | 25 tab |
| 305 | 102X | 595 | * | 13 | 23.7 | 2.51 | 1 | 25 tab |
| 306 | 103X | 617 | * | 13 | 24.6 | 2.97 | 1 | 25 tab |
| 309 | 112X | 276/28 | 0.1 | 10 | 23.0 | 1.26 | 255,862 | 25 tab |
| 310 | 105X | 414/41 | 0.1 | 5 | 25.5 | 1.76 | 1,753 | 25 tab |
| 311 | 106X | 414/41 | 0.1 | 5 | 23.0 | 1.86 | 953 | 25 tab |
| 312 | 104X | 345/35 | 0.1 | 5 | 25.9 | 1.32 | 15,414 | 25 tab |
| 313 | 108X | 345/35 | 0.1 | 5 | 25.2 | 1.36 | 11,550 | 25 tab |
| 314 | 101X | 241/24 | 0.1 | 20 | 25.4 | 0.94 | 6,492,710 | 25 tab |
| 315 | 109X | 276/28 | 0.1 | 10 | 26.3 | 1.06 | 127,309 | 25 tab |

Tests 316-320, 328, 330-335, 337, 363, 485-489, 1837, 1838 were transverse tests, tested in the $[90_2/M/\pm 45/90_2]$ direction

| | | | | | | | | |
|-----|-------|--------|-----|----|------|------|------------|----------|
| 316 | 116XT | 39 | * | 13 | 7.7 | 0.83 | 1 | 25 tab |
| 317 | 118XT | 45 | * | 13 | 7.6 | 0.72 | 1 | 25 tab |
| 318 | 117XT | 43 | * | 13 | 7.9 | 0.92 | 1 | 25 tab |
| 319 | 119XT | 28/3 | 0.1 | 2 | 9.0 | 0.28 | 1,083 | 25 tab |
| 320 | 124XT | 21/2 | 0.1 | 15 | 8.3 | 0.24 | 50,606 | 25 tab |
| 321 | 110X | 241/24 | 0.1 | 20 | 25.0 | 0.97 | 5,000,000 | 25 R tab |
| 322 | 114X | 241/24 | 0.1 | 20 | 26.0 | 0.91 | 21,000,000 | 25 R tab |
| 323 | 113X | 241/24 | 0.1 | 20 | 26.7 | 0.90 | 20,000,000 | 25 R tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| | | | | | | | | |
| 327 | 151X | -241/-24 | 10 | 10 | 27.4 | -0.84 | 3,175,600 | 25 tab |
| 328 | 126XT | 19/2 | 0.1 | 15 | 9.1 | 0.25 | 614,730 | 50 tab |
| 329 | 142X | -207/-21 | 10 | 25 | 26.3 | -0.68 | 21,000,000 | 25 R tab |
| 330 | 130XT | 19/2 | 0.1 | 10 | 8.6 | 0.27 | 436,440 | 50 tab |
| 331 | 132XT | 17/2 | 0.1 | 20 | 8.3 | 0.21 | 785,700 | 50 R tab |
| 332 | 128XT | 17/2 | 0.1 | 20 | 8.5 | 0.23 | 1,132,780 | 50 R tab |
| 333 | 134XT | 28/3 | 0.1 | 2 | 8.3 | 0.37 | 2,074 | 50 tab |
| 334 | 129XT | 28/3 | 0.1 | 2 | 8.4 | 0.34 | 1,545 | 50 tab |
| 335 | 135XT | 17/2 | 0.1 | 20 | 7.3 | 0.24 | 897,103 | 50 tab |
| 336 | 144X | -241/-24 | 10 | 10 | 26.7 | -0.94 | 3,500,000 | 25 R tab |
| 337 | 133XT | 14/1 | 0.1 | 15 | 8.0 | 0.19 | 10,377,400 | 50 tab |
| 363 | 131XT | 14/1 | 0.1 | 15 | 8.0 | 0.17 | 11,247,700 | 50 tab |
| 378 | 159X | -435 | * | 13 | 25.0 | -1.74 | 1 | 25 Z |
| 379 | 158X | -430 | * | 13 | 26.8 | -1.70 | 1 | 25 Z |
| 380 | 165X | -450 | * | 13 | 26.1 | -1.98 | 1 | 25 Z |
| 381 | 161X | -310/-31 | 10 | 2 | 23.4 | -1.41 | 12,455 | 25 Z |
| 382 | 164X | -310/-31 | 10 | 2 | 25.7 | -1.37 | 12,865 | 25 Z |
| 383 | 157X | -276/-28 | 10 | 5 | 24.8 | -1.20 | 271,161 | 25 Z |
| 384 | 160X | -276/-28 | 10 | 5 | 24.2 | -1.07 | 333,581 | 25 Z |
| 385 | 156X | -276/-28 | 10 | 10 | 25.9 | -1.10 | 161,397 | 25 Z |
| 386 | 162X | -241/-24 | 10 | 10 | 26.1 | -0.93 | 1,472,970 | 25 Z |
| 482 | 139X | 414/41 | 0.1 | 5 | 25.6 | 1.67 | 1,223 | 25 tab |
| 483 | 152X | 345/35 | 0.1 | 5 | 25.7 | 1.45 | 11,786 | 25 tab |
| 484 | 153X | 276/28 | 0.1 | 10 | 26.6 | 1.06 | 169,031 | 25 tab |
| 485 | 136XT | 24/2 | 0.1 | 5 | 9.3 | 0.26 | 21,745 | 50 tab |
| 486 | 123XT | 24/2 | 0.1 | 5 | 9.0 | 0.25 | 15,040 | 50 tab |
| 487 | 125XT | 47 | * | 13 | 10.1 | 0.52 | 1 | 25 tab |
| 488 | 120XT | 24/2 | 0.1 | 5 | 10.1 | 0.24 | 18,858 | 25 tab |
| 489 | 121XT | 19/2 | 0.1 | 10 | 9.5 | 0.22 | 587,181 | 25 tab |
| 705 | 177X | -310/-31 | 10 | 2 | 24.5 | 1.39 | 14,129 | 25 tab |
| 1837 | 201XT | -170 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1838 | 127XT | -149 | * | 13 | ---- | ---- | 1 | 25 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | 164 | | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|-----|---|-------------------|----------------------------|
| | | | | E | e | | |
| | | | | GPa | % | | |

MATERIAL Y

Lay-up = $[0_2/M/\pm 45/0_2]$, $V_F = 0.345$, Ave. thickness = 4.62 mm, S.D. = 0.48 mm, Epoxy

| | | | | | | | | |
|---|-------|----------|-----|-----|------|------|------------|----------|
| 286 | 111Y | 583 | * | 100 | 23.1 | 2.72 | 1 | 25 tab |
| 287 | 117Y | 591 | * | 100 | 21.3 | 3.12 | 1 | 25 tab |
| 288 | 105Y | 611 | * | 100 | 22.5 | 2.91 | 1 | 25 tab |
| 289 | 112Y | 276/28 | 0.1 | 25 | 27.4 | 0.53 | 251,141 | 25 tab |
| 290 | 108Y | 207/21 | 0.1 | 25 | 24.4 | 0.79 | 1,412,113 | 25 tab |
| 291 | 118Y | 345/35 | 0.1 | 15 | 23.6 | 1.33 | 23,109 | 25 tab |
| 292 | 113Y | 345/35 | 0.1 | 15 | 25.9 | 1.28 | 18,000 | 25 tab |
| 293 | 104Y | 345/35 | 0.1 | 15 | 23.9 | 1.24 | 16,762 | 25 tab |
| 294 | 116Y | 414/41 | 0.1 | 4 | 27.2 | 1.83 | 628 | 25 tab |
| 295 | 106Y | 276/28 | 0.1 | 25 | 25.1 | 1.11 | 73,530 | 25 tab |
| 296 | 102Y | 414/41 | 0.1 | 4 | 22.4 | 1.71 | 821 | 25 tab |
| 297 | 107Y | 276/28 | 0.1 | 25 | 20.8 | 1.27 | 128,578 | 25 tab |
| 298 | 115Y | 276/28 | 0.1 | 25 | 20.4 | 0.93 | 237,864 | 25 tab |
| 299 | 119Y | 207/21 | 0.1 | 25 | 25.9 | 0.77 | 1,607,127 | 25 tab |
| 300 | 114Y | 661 | * | 13 | 24.3 | 2.80 | 1 | 25 tab |
| 301 | 110Y | 687 | * | 13 | 28.1 | 2.54 | 1 | 25 tab |
| 302 | 109Y | 620 | * | 13 | 24.2 | 2.56 | 1 | 25 tab |
| 303 | 101Y | 207/21 | 0.1 | 15 | 25.3 | 0.87 | 15,000,000 | 25 R tab |
| 481 | 170Y | -276/-28 | 10 | 5 | 24.3 | 1.13 | 62,517 | 25 tab |
| 490 | 125Y | 414/41 | 0.1 | 4 | 29.7 | 1.70 | 1,486 | 25 tab |
| 491 | 121Y | 345/35 | 0.1 | 5 | 29.7 | 1.54 | 36,812 | 25 tab |
| 493 | 123Y | 276/28 | 0.1 | 5 | 28.7 | 1.01 | 423,059 | 25 tab |
| 494 | 127Y | 207/21 | 0.1 | 15 | 26.6 | 0.86 | 10,000,000 | 25 R tab |
| Tests 495 - 512, 1839 - 1841 were transverse tests tested in the $[90_2/M/\pm 45/90_2]$ direction | | | | | | | | |
| 495 | 141YT | 29 | * | 13 | 7.7 | 0.67 | 1 | 50 tab |
| 496 | 145YT | 29 | * | 13 | 7.5 | 0.79 | 1 | 50 tab |
| 497 | 146YT | 30 | * | 13 | 6.8 | 0.85 | 1 | 50 tab |
| 498 | 152YT | 21/2 | 0.1 | 2 | 7.1 | 0.48 | 4,103 | 50 tab |
| 499 | 144YT | 21/2 | 0.1 | 2 | 7.0 | 0.41 | 2,716 | 50 tab |
| 500 | 147YT | 17/2 | 0.1 | 10 | 6.5 | 0.34 | 26,513 | 50 tab |
| 501 | 143YT | 17/2 | 0.1 | 10 | 7.5 | 0.29 | 47,049 | 50 tab |
| 502 | 140YT | 24/2 | 0.1 | 1 | 7.2 | 1.35 | 208 | 50 tab |
| 503 | 151YT | 24/2 | 0.1 | 1 | 7.1 | 1.22 | 277 | 50 tab |
| 504 | 148YT | 14/1 | 0.1 | 15 | 6.9 | 0.25 | 252,205 | 50 tab |
| 505 | 142YT | 14/1 | 0.1 | 15 | 6.3 | 0.22 | 432,161 | 50 tab |
| 506 | 149YT | 14/1 | 0.1 | 15 | 6.9 | 0.20 | 657,472 | 50 tab |
| 507 | 157YT | 24/2 | 0.1 | 1 | 7.2 | 1.37 | 173 | 50 tab |
| 508 | 153YT | 21/2 | 0.1 | 2 | 6.6 | 0.37 | 2,033 | 50 tab |
| 509 | 155YT | 17/2 | 0.1 | 10 | 6.6 | 0.26 | 31,204 | 50 tab |
| 510 | 159YT | 33 | * | 13 | 7.6 | ---- | 1 | 50 tab |
| 511 | 161YT | 32 | * | 13 | 7.5 | ---- | 1 | 50 tab |
| 512 | 160YT | 35 | * | 13 | 7.5 | ---- | 1 | 50 tab |
| 543 | 168Y | -391 | * | 13 | ---- | ---- | 1 | 25 |
| 544 | 181Y | -389 | * | 13 | ---- | ---- | 1 | 25 |
| 545 | 176Y | -341 | * | 13 | ---- | ---- | 1 | 25 |
| 546 | 171Y | -369 | * | 13 | ---- | ---- | 1 | 25 |
| 547 | 172Y | -276/-28 | 10 | 10 | ---- | ---- | 87,235 | 25 |
| 548 | 167Y | -310/-31 | 10 | 5 | ---- | ---- | 354 | 25 |
| 549 | 166Y | -241/-24 | 10 | 20 | 21.5 | 1.18 | 4,000,000 | 25 R |
| 492 | 170Y | -276/-28 | 10 | 5 | 24.3 | 1.13 | 62,517 | 25 |
| 686 | 193Y | -329 | * | 13 | ---- | ---- | 1 | 25 Z |
| 687 | 182Y | -359 | * | 13 | ---- | ---- | 1 | 25 Z |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | 165 | | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| | | | | | E GPa | e % | | |
| 688 | 184Y | -355 | * | 13 | ---- | ---- | 1 | 25 Z |
| 689 | 178Y | -310/-31 | 10 | 2 | ---- | ---- | 568 | 25 Z |
| 690 | 197Y | -293/-29 | 10 | 2 | ---- | ---- | 12,145 | 25 Z |
| 691 | 200Y | -293/-29 | 10 | 5 | ---- | ---- | 3,011 | 25 Z |
| 692 | 190Y | -293/-29 | 10 | 2 | ---- | ---- | 4,652 | 25 Z |
| 693 | 187Y | -310/-31 | 10 | 2 | ---- | ---- | 672 | 25 Z |
| 694 | 199Y | -276/-28 | 10 | 10 | ---- | ---- | 187,512 | 25 Z |
| 695 | 196Y | -483 | * | 25 | ---- | ---- | 1 | 25 |
| 696 | 193Y | -450 | * | 25 | ---- | ---- | 1 | 25 |
| 697 | 192Y | -431 | * | 25 | ---- | ---- | 1 | 25 |
| 699 | 201Y | -258/-26 | 10 | 15 | ---- | ---- | 632,624 | 25 |
| 701 | 173Y | -258/-26 | 10 | 15 | 23.9 | -1.09 | 833,939 | 25 |
| 702 | 169Y | -258/-26 | 10 | 15 | 26.3 | -0.98 | 1,477,548 | 25 |
| 706 | 195Y | -241/-24 | 10 | 20 | ---- | ---- | 1,672,575 | 25 |
| 1839 | 201YT | -95 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1840 | 202YT | -116 | * | 13 | ---- | ---- | 1 | 25 tab |
| 1841 | 203YT | -112 | * | 13 | ---- | ---- | 1 | 25 tab |

MATERIAL EE

Lay-up = [M/±45/0]_S, V_F = 0.541, Ave. thickness = 3.53 mm, S.D. = 0.10 mm, Epoxy, Coupons taken from a pultruded blade section.

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|-----------|--------|
| 1178 | EE101 | 565 | * | 13 | 28.8 | 2.23 | 1 | 20 tab |
| 1179 | EE102 | 546 | * | 13 | 34.5 | 1.76 | 1 | 20 tab |
| 1180 | EE103 | 518 | * | 13 | 30.7 | 1.78 | 1 | 20 tab |
| 1181 | EE104 | 345/35 | 0.1 | 2 | 32.1 | 1.14 | 570 | 20 tab |
| 1182 | EE112 | 310/31 | 0.1 | 4 | 29.2 | 1.07 | 1,085 | 20 tab |
| 1183 | EE105 | 276/28 | 0.1 | 5 | 30.1 | 0.93 | 4,076 | 20 tab |
| 1184 | EE111 | 207/21 | 0.1 | 10 | 32.8 | 0.65 | 34,583 | 20 tab |
| 1185 | EE110 | 138/14 | 0.1 | 20 | 33.2 | 0.43 | 1,857,630 | 20 tab |
| 1186 | EE107 | 345/35 | 0.1 | 2 | ---- | ---- | 402 | 13 tab |
| 1187 | EE109 | 276/28 | 0.1 | 5 | ---- | ---- | 2,936 | 13 tab |
| 1188 | EE108 | 310/31 | 0.1 | 5 | ---- | ---- | 2,033 | 13 tab |
| 1189 | EE106 | 207/21 | 0.1 | 10 | ---- | ---- | 23,385 | 13 tab |
| 1190 | EE119 | 310/31 | 0.1 | 5 | ---- | ---- | 1,840 | 13 tab |
| 1191 | EE121 | 276/28 | 0.1 | 5 | ---- | ---- | 2,377 | 13 tab |
| 1192 | EE114 | 207/21 | 0.1 | 10 | ---- | ---- | 58,110 | 13 tab |
| 1193 | EE115 | 172/17 | 0.1 | 15 | ---- | ---- | 496,094 | 13 tab |
| 1194 | EE120 | 172/17 | 0.1 | 15 | ---- | ---- | 287,688 | 13 tab |
| 1195 | EE125 | 241/24 | 0.1 | 5 | ---- | ---- | 10,021 | 13 tab |
| 1196 | EE126 | 241/24 | 0.1 | 5 | ---- | ---- | 8,786 | 13 tab |
| 1197 | EE116 | 172/17 | 0.1 | 20 | ---- | ---- | 224,138 | 13 tab |
| 1198 | EE128 | -546 | * | 13 | ---- | ---- | 1 | 13 tab |
| 1199 | EE129 | -550 | * | 13 | ---- | ---- | 1 | 13 tab |
| 1200 | EE113 | 138/14 | 0.1 | 20 | ---- | ---- | 3,804,099 | 13 tab |
| 1201 | EE131 | -519 | * | 13 | ---- | ---- | 1 | 13 tab |
| 1202 | EE118 | 138/14 | 0.1 | 20 | ---- | ---- | 4,622,485 | 13 tab |
| 1203 | EE128 | 510 | * | 13 | ---- | ---- | 1 | 13 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | 166 | | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| | | | | E GPa | e % | | |

MATERIAL EEAV

Lay-up = [M/±45/0]_S, V_F = 0.480, Ave. thickness = 3.36 mm, S.D. = 0.24 mm, Vinyl ester, Coupons taken from a pultruded blade section.

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|------|
| 2716 | EEAV105 | 619 | * | 13 | 29.0 | 2.47 | 1 | 20 |
| 2717 | EEAV106 | 559 | * | 13 | 26.3 | 2.31 | 1 | 20 |
| 2718 | EEAV101 | 569 | * | 13 | 26.6 | 2.33 | 1 | 20 |
| 2719 | EEAV107 | 345/35 | 0.1 | 2 | 29.0 | 1.30 | 1,836 | 20 |
| 2720 | EEAV109 | 345/35 | 0.1 | 2 | 28.1 | 1.31 | 3,260 | 20 |
| 2721 | EEAV103 | 276/28 | 0.1 | 5 | 27.7 | 1.01 | 27,047 | 20 |
| 2722 | EEAV108 | 276/28 | 0.1 | 5 | 29.2 | 1.01 | 43,424 | 20 |
| 2723 | EEAV102 | 207/21 | 0.1 | 12 | 27.2 | 0.79 | 2,414,147 | 20 |
| 2724 | EEAV144 | 207/21 | 0.1 | 20 | 28.6 | 0.74 | 1,366,767 | 20 |
| 2725 | EEAV143 | 345/35 | 0.1 | 4 | 28.9 | 1.29 | 2,811 | 20 |
| 2726 | EEAV145 | 276/28 | 0.1 | 5 | 29.8 | 1.00 | 35,462 | 20 |
| 2737 | EEAV114 | -657 | * | 13 | ---- | ---- | 1 | 25 |
| 2738 | EEAV125 | -666 | * | 13 | ---- | ---- | 1 | 25 |
| 2739 | EEAV110 | -614 | * | 13 | ---- | ---- | 1 | 25 |
| 2746 | EEAV124 | -448/-45 | 10 | 5 | ---- | ---- | 7,498 | 25 |
| 2747 | EEAV126 | -448/-45 | 10 | 5 | ---- | ---- | 5,539 | 25 |
| 2748 | EEAV111 | -448/-45 | 10 | 5 | ---- | ---- | 3,169 | 25 |
| 2749 | EEAV115 | -345/-35 | 10 | 20 | ---- | ---- | 5,000,000 | 25 R |
| 2750 | EEAV113 | -396/-40 | 10 | 12 | ---- | ---- | 93,149 | 25 |
| 2751 | EEAV112 | -396/-40 | 10 | 12 | ---- | ---- | 38,280 | 25 |
| 2752 | EEAV117 | -396/-40 | 10 | 12 | ---- | ---- | 72,451 | 25 |
| 2753 | EEAV116 | 207/-207 | -1 | 5 | ---- | ---- | 145,367 | 25 |
| 2754 | EEAV122 | 207/-207 | -1 | 10 | ---- | ---- | 231,003 | 25 |
| 2755 | EEAV123 | 276/-276 | -1 | 2 | ---- | ---- | 1,866 | 25 |
| 2756 | EEAV121 | 276/-276 | -1 | 2 | ---- | ---- | 3,412 | 25 |
| 2757 | EEAV120 | 276/-276 | -1 | 2 | ---- | ---- | 2,875 | 25 |
| 2758 | EEAV119 | 207/-207 | -1 | 5 | ---- | ---- | 92,539 | 25 |
| 2759 | EEAV118 | 190/-190 | -1 | 10 | ---- | ---- | 74,105 | 25 |

Tests 2760 - 2765 were transverse tests tested in the [M/±45/90]_S direction

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 2760 | EEAV204T | 76 | * | 13 | 15.9 | 0.48 | 1 | 25 |
| 2761 | EEAV203T | 81 | * | 13 | 14.6 | 0.63 | 1 | 25 |
| 2762 | EEAV201T | 86 | * | 13 | 14.2 | 0.71 | 1 | 25 |
| 2763 | EEAV205T | -195 | * | 13 | ---- | ---- | 1 | 25 |
| 2764 | EEAV206T | -197 | * | 13 | ---- | ---- | 1 | 25 |
| 2765 | EEAV207T | -192 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL EEAP

Lay-up = [M/±45/0]_S, V_F = 0.490, Ave. thickness = 3.64 mm, S.D. = 0.10 mm, Polyester, Coupons taken from a pultruded blade section.

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----|
| 2797 | EEAP101 | 505 | * | 13 | 29.5 | 2.0 | 1 | 20 |
| 2798 | EEAP106 | 501 | * | 13 | 27.8 | 2.1 | 1 | 20 |
| 2799 | EEAP109 | 529 | * | 13 | 30.2 | 2.0 | 1 | 20 |
| 2800 | EEAP112 | 345/35 | 0.1 | 2 | 30.0 | 1.15 | 1,958 | 20 |
| 2801 | EEAP102 | 345/35 | 0.1 | 2 | 27.0 | 1.20 | 890 | 20 |
| 2802 | EEAP108 | 345/35 | 0.1 | 2 | 29.1 | 1.24 | 573 | 20 |
| 2803 | EEAP111 | 276/28 | 0.1 | 4 | 31.2 | 0.90 | 9,912 | 20 |
| 2804 | EEAP105 | 276/28 | 0.1 | 5 | 27.6 | 1.04 | 17,575 | 20 |
| 2805 | EEAP104 | 276/28 | 0.1 | 5 | 29.2 | 1.03 | 15,403 | 20 |
| 2806 | EEAP103 | 207/21 | 0.1 | 15 | 28.8 | 0.74 | 1,596,779 | 20 |

| | | 167 | | | | | | |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
| 2807 | EEAP110 | 207/21 | 0.1 | 15 | 28.3 | 0.73 | 2,483,304 | 20 |
| 2809 | EEAP122 | -716 | * | 13 | ---- | ---- | 1 | 25 |
| 2810 | EEAP119 | -750 | * | 13 | ---- | ---- | 1 | 25 |
| 2811 | EEAP125 | -721 | * | 13 | ---- | ---- | 1 | 25 |
| 2812 | EEAP123 | -448/-45 | 10 | 4 | ---- | ---- | 6,703 | 25 |
| 2813 | EEAP121 | -448/-45 | 10 | 4 | ---- | ---- | 16,229 | 25 |
| 2814 | EEAP124 | -448/-45 | 10 | 4 | ---- | ---- | 18,158 | 25 |
| 2815 | EEAP118 | -396/-40 | 10 | 10 | ---- | ---- | 110,507 | 25 |
| 2816 | EEAP116 | -396/-40 | 10 | 10 | ---- | ---- | 140,415 | 25 |
| 2817 | EEAP115 | -362/-36 | 10 | 10 | ---- | ---- | 696,647 | 25 |
| 2818 | EEAP120 | -396/-40 | 10 | 10 | ---- | ---- | 59,096 | 25 |
| 2819 | EEAP130 | -362/-36 | 15 | 15 | ---- | ---- | 1,445,447 | 25 |

MATERIAL EEBP

Lay-up = [M/±45/0]_S, V_F = 0.430, Ave. thickness = 2.90 mm, S.D. = 0.04 mm, Vinyl ester, Coupons taken from a pultruded blade section.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 2727 | EEB103 | 512 | * | 13 | 27.8 | 2.1 | 1 | 20 |
| 2728 | EEB101 | 513 | * | 13 | 27.5 | 2.3 | 1 | 20 |
| 2729 | EEB102 | 520 | * | 13 | 27.5 | 2.2 | 1 | 20 |
| 2730 | EEB105 | 276/28 | 0.1 | 5 | 24.6 | 1.21 | 8,392 | 20 |
| 2731 | EEB108 | 276/28 | 0.1 | 5 | 25.2 | 1.22 | 11,375 | 20 |
| 2732 | EEB106 | 345/35 | 0.1 | 2 | 27.5 | 1.40 | 504 | 20 |
| 2733 | EEB107 | 345/35 | 0.1 | 2 | 26.1 | 1.44 | 358 | 20 |
| 2734 | EEB109 | 207/21 | 0.1 | 10 | 26.8 | 0.81 | 365,195 | 20 |
| 2735 | EEB104 | 207/21 | 0.1 | 12 | 27.5 | 0.80 | 462,172 | 20 |
| 2736 | EEB141 | 276/28 | 0.1 | 4 | 25.8 | 1.20 | 12,141 | 20 |
| 2740 | EEB125 | -412 | * | 13 | ---- | ---- | 1 | 25 |
| 2741 | EEB126 | -449 | * | 13 | ---- | ---- | 1 | 25 |
| 2742 | EEB112 | -390 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL EECB

Lay-up = [M/±45/0]_S, V_F = 0.490, Ave. thickness = 2.48 mm, S.D. = 0.10 mm, Vinyl ester, Coupons taken from a pultruded blade section.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|-----------|----|
| 2703 | EEC123 | 546 | * | 13 | 27.4 | 2.4 | 1 | 20 |
| 2704 | EEC122 | 505 | * | 13 | 29.8 | 2.1 | 1 | 20 |
| 2705 | EEC132 | 526 | * | 13 | 27.9 | 2.2 | 1 | 20 |
| 2706 | EEC133 | 345/35 | 0.1 | 2 | 29.5 | 1.35 | 257 | 20 |
| 2707 | EEC128 | 345/35 | 0.1 | 2 | 27.5 | 1.41 | 149 | 20 |
| 2708 | EEC131 | 345/35 | 0.1 | 2 | 28.6 | 1.49 | 86 | 20 |
| 2709 | EEC126 | 276/28 | 0.1 | 4 | 28.4 | 1.07 | 5,070 | 20 |
| 2710 | EEC125 | 276/28 | 0.1 | 4 | 28.9 | 1.04 | 2,474 | 20 |
| 2711 | EEC130 | 276/28 | 0.1 | 4 | 27.3 | 1.08 | 3,114 | 20 |
| 2712 | EEC118 | 207/21 | 0.1 | 10 | 28.0 | 0.77 | 285,157 | 20 |
| 2713 | EEC120 | 207/21 | 0.1 | 10 | 29.0 | 0.77 | 141,150 | 20 |
| 2714 | EEC129 | 207/21 | 0.1 | 10 | 29.4 | 0.76 | 159,441 | 20 |
| 2715 | EEC127 | 172/17 | 0.1 | 20 | 27.1 | 0.68 | 1,293,553 | 20 |
| 2743 | EEC136 | -434 | * | 13 | ---- | ---- | 1 | 25 |
| 2744 | EEC101 | -436 | * | 13 | ---- | ---- | 1 | 25 |
| 2745 | EEC143 | -387 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL HH

Lay-up = Injected short carbon fiber (7 to 9 μm diameter fibers, 0.4 - 0.5 mm long,) reinforced thermoplastic, $V_F = 0.21$, Ave. thickness = 2.50 mm, S.D. = 0.04 mm. Poisson's ratio (XY) = 0.37. Test coupons taken from actual wind turbine blades.

| | | | | | | | | |
|------|------|---------|-----|------|------|------|-----------|---|
| 6200 | HH20 | 103/10 | 0.1 | 8 | — | 0.53 | 209,271 | 4 |
| 6201 | HH21 | 89.6/9 | 0.1 | 12 | — | 0.46 | 2,507,380 | 4 |
| 6202 | HH22 | 103/10 | 0.1 | 8 | — | 0.53 | 111,847 | 4 |
| 6203 | HH23 | 96.5/10 | 0.1 | 7 | — | 0.49 | 334,368 | 4 |
| 6204 | HH24 | 103/10 | 0.1 | 6 | — | 0.53 | 36,708 | 4 |
| 6205 | HH25 | 96.5/10 | 0.1 | 7 | — | 0.49 | 509,773 | 4 |
| 6206 | HH26 | 96.5/10 | 0.1 | 8 | — | 0.49 | 123,724 | 4 |
| 6207 | HH27 | 103/10 | 0.1 | 6 | — | 0.53 | 56,674 | 4 |
| 6208 | HH28 | 89.6/9 | 0.1 | 4 | — | 0.46 | 640,960 | 4 |
| 6209 | HH29 | 110/11 | 0.1 | 2 | — | 0.56 | 14,595 | 4 |
| 6210 | HH30 | 110/11 | 0.1 | 2 | — | 0.56 | 7,763 | 4 |
| 6211 | HH31 | 110/11 | 0.1 | 2 | — | 0.56 | 1,558 | 4 |
| 6212 | HH32 | 103/10 | 0.1 | 5 | — | 0.53 | 53,583 | 4 |
| 6213 | HH33 | 89.6/9 | 0.1 | 8 | — | 0.46 | 241,297 | 4 |
| 6214 | HH10 | 137 | * | 0.02 | 19.6 | 0.99 | 1 | 4 |
| 6215 | HH11 | 140 | * | 0.02 | 21.7 | 1 | 1 | 4 |
| 6216 | HH12 | 141 | * | 0.02 | 17.9 | 1.16 | 1 | 4 |
| 6217 | HH13 | 150 | * | 0.02 | 18.3 | 1.33 | 1 | 4 |
| 6218 | HH14 | 165 | * | 0.02 | 20.5 | 1.42 | 1 | 4 |
| 6219 | HH34 | 142 | * | 0.02 | 18.8 | 1.11 | 1 | 4 |
| 6220 | HH35 | 152 | * | 0.02 | 19.7 | 1.23 | 1 | 4 |
| 6221 | HH36 | 120 | * | 0.02 | 18.7 | 0.88 | 1 | 4 |
| 6222 | HH37 | 139 | * | 0.02 | 20.7 | 0.92 | 1 | 4 |
| 6223 | HH38 | 128 | * | 0.02 | 19.2 | 0.88 | 1 | 4 |
| 6224 | HH39 | 139 | * | 0.02 | 21.1 | 1.00 | 1 | 4 |
| 6225 | HH40 | 142 | * | 0.02 | 20.3 | 1.04 | 1 | 4 |
| 6226 | HH41 | 150 | * | 0.02 | 19.4 | 1.27 | 1 | 4 |
| 6227 | HH42 | 137 | * | 0.02 | 17.2 | 1.08 | 1 | 4 |
| 6228 | HH43 | 128 | * | 0.02 | 18.0 | 1.02 | 1 | 4 |
| 6229 | HH44 | 142 | * | 0.02 | 19.4 | 1.17 | 1 | 4 |
| 6230 | HH45 | 137 | * | 0.02 | 22.8 | 0.92 | 1 | 4 |
| 6231 | HH46 | 137 | * | 0.02 | 20.8 | 1.03 | 1 | 4 |
| 6232 | HH47 | 139 | * | 0.02 | 19.4 | 1.07 | 1 | 4 |
| 6233 | HH48 | 132 | * | 0.02 | 17.2 | 1.14 | 1 | 4 |
| 6234 | HH49 | 142 | * | 0.02 | 21.4 | 0.99 | 1 | 4 |

MATERIAL CYC

Lay-up = $[(\pm 45)_2 / (0)_{10}]_S$, (83% zero's) $V_F = 0.65$, Hexcel Carbon AS4C fibers, Ave. thickness = 3.54 mm, S.D. = 0.06 mm, Thermoplastic, Polybutylene Terephthalate

| | | | | | | | | |
|------|--------|----------|----|----|------|------|-----------|------|
| 8923 | 66-103 | -652 | * | 13 | ---- | ---- | 1 | 25 |
| 8924 | 66-106 | -642 | * | 13 | ---- | ---- | 1 | 25 |
| 8925 | 66-108 | -706 | * | 13 | ---- | ---- | 1 | 25 |
| 8926 | 66-109 | -671 | * | 13 | ---- | ---- | 1 | 25 |
| 8927 | 73-120 | -552/-55 | 10 | 1 | ---- | ---- | 2,196 | 25 |
| 8928 | 73-121 | -552/-55 | 10 | 1 | ---- | ---- | 470 | 25 |
| 8929 | 73-122 | -552/-55 | 10 | 1 | ---- | ---- | 191 | 25 |
| 8930 | 73-123 | -483/-48 | 10 | 2 | ---- | ---- | 15,647 | 25 |
| 8931 | 73-124 | -448/-45 | 10 | 8 | ---- | ---- | 4,000,000 | 25 R |
| 8932 | 71-100 | -483/-48 | 10 | 2 | ---- | ---- | 9,936 | 25 |

| TEST & SAMPLE | | STRESS | R | Q | 169 E | e | CYCLES | WIDTH |
|------------------|--------|------------------|----|------|----------|------|-----------|-------------------|
| ID # | | Max./Min. MPa | | Hz | GPa | % | TO FAIL | (mm) and Notes |
| 8933 | 71-101 | -448/-45 | 10 | 8 | ---- | ---- | 6,000,000 | 25 R |
| 8934 | 71-102 | -483/-48 | 10 | 2 | ---- | ---- | 45,241 | 25 |
| 8935 | 71-103 | -552/-55 | 10 | 1 | ---- | ---- | 703 | 25 |
| 8936 | 71-104 | -483/-48 | 10 | 2 | ---- | ---- | 27,246 | 25 |
| 8937 | 61-7 | 1154+ | * | 0.02 | 98.4 | 1.17 | 1 | 15 |
| 8938 | 75-1 | 1086+ | * | 0.02 | 105 | 1.04 | 1 | 15 |
| 8939 | 75-2 | 1255+ | * | 0.02 | 105 | 1.20 | 1 | 15 |
| 8940 | 65-103 | 1022+ | * | 0.02 | 91.8 | 1.10 | 1 | 20 |
| 8941 | 65-101 | 1094+ | * | 0.02 | 108 | 1.01 | 1 | 20 |
| 8942 | 65-102 | 1528 | * | 0.02 | 108 | 1.50 | 1 | 20 |
| 8943 | 61-1T | 64.5 | * | 13 | 12.7 | 0.51 | 1 | 25 transverse |
| 8944 | 61-3T | 64.6 | * | 13 | 12.6 | 0.51 | 1 | 25 transverse |
| 8945 | 61-4T | 69.4 | * | 13 | 11.4 | 0.61 | 1 | 25 transverse |

See also Material DD5CYC for tests with this resin system

MATERIAL MM1

Lay-up = [0_N], V_F = 0.55, Infusion, Sections from spar caps, Epoxy

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|----|
| 8955 | MM1-105 | 1046 | * | 13 | 39.2 | 2.61 | 1 | 25 |
| 8956 | MM1-104 | 1060 | * | 13 | 39.7 | 2.65 | 1 | 25 |
| 8957 | MM1-106 | 1002 | * | 13 | 41.5 | 2.50 | 1 | 25 |
| 8958 | MM1-110 | 621/62 | 0.1 | 1 | 43.0 | 1.44 | 1,787 | 25 |
| 8959 | MM1-108 | 621/62 | 0.1 | 1 | 38.0 | 1.66 | 1,971 | 25 |
| 8960 | MM1-103 | 621/62 | 0.1 | 1 | 36.9 | 1.77 | 1,990 | 25 |
| 8961 | MM1-109 | 517/52 | 0.1 | 1 | 39.5 | 1.34 | 8,754 | 25 |
| 8961 | MM1-107 | 517/52 | 0.1 | 1 | 39.7 | 1.29 | 5,967 | 25 |
| 8963 | MM1-111 | 517/52 | 0.1 | 1 | ---- | ---- | 11,051 | 25 |
| 8964 | MM1-100 | 345/35 | 0.1 | 2 | 43.5 | 0.80 | 279,554 | 25 |
| 8965 | MM1-113 | 345/35 | 0.1 | 2 | 39.3 | 0.86 | 206,631 | 25 |
| 8966 | MM1-112 | 345/35 | 0.1 | 2 | 40.6 | 0.87 | 358,126 | 25 |
| 8967 | MM1-102 | 310/31 | 0.1 | 2 | 39.9 | 0.78 | 817,702 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | 170 E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|-----------------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|-----------------|--------|-------------------|----------------------------|

MATERIAL MM2

Lay-up = [0_N], V_F = 0.53, Wet lay-up, Sections from spar caps, Epoxy

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|----|
| 8968 | MM2-111 | 957 | * | 13 | 40.3 | 2.38 | 1 | 25 |
| 8969 | MM2-107 | 912 | * | 13 | 38.4 | 2.27 | 1 | 25 |
| 8970 | MM2-108 | 904 | * | 13 | 41.1 | 2.25 | 1 | 25 |
| 8971 | MM2-110 | 621/62 | 0.1 | 1 | 41.8 | 1.49 | 280 | 25 |
| 8972 | MM2-109 | 621/62 | 0.1 | 1 | 38.2 | 1.60 | 334 | 25 |
| 8973 | MM2-114 | 621/62 | 0.1 | 1 | ---- | ---- | 391 | 25 |
| 8974 | MM2-106 | 552/55 | 0.1 | 1 | 42.9 | 1.30 | 2,231 | 25 |
| 8975 | MM2-104 | 517/52 | 0.1 | 1 | 39.6 | 1.34 | 2,432 | 25 |
| 8976 | MM2-112 | 517/52 | 0.1 | 1 | 38.2 | 1.37 | 1,940 | 25 |
| 8977 | MM2-101 | 517/52 | 0.1 | 1 | 40.9 | 1.30 | 6,008 | 25 |
| 8978 | MM2-113 | 483/48 | 0.1 | 1 | 42.4 | 1.16 | 6,720 | 25 |
| 8979 | MM2-119 | 483/48 | 0.1 | 1 | 40.1 | 1.20 | 16,313 | 25 |
| 8980 | MM2-118 | 414/41 | 0.1 | 1 | 41.4 | 0.98 | 49,724 | 25 |
| 8981 | MM2-116 | 414/41 | 0.1 | 1 | 38.6 | 1.07 | 65,894 | 25 |
| 8982 | MM2-105 | 414/41 | 0.1 | 1 | 41.6 | 1.02 | 35,734 | 25 |
| 8983 | MM2-117 | 345/35 | 0.1 | 2 | 39.4 | 0.87 | 373,374 | 25 |
| 8984 | MM2-102 | 345/35 | 0.1 | 2 | 37.4 | 0.94 | 974,498 | 25 |
| 8985 | MM2-115 | 345/35 | 0.1 | 2 | 37.3 | 0.93 | 450,026 | 25 |

SUMMARY OF MSU MANUFACTURED MATERIAL FATIGUE TESTS

MATERIAL AA

Lay-up = $[(\pm 45/0)_2, (\pm 45/0)_2]$, $V_F = 0.315$, Ave. thickness = 4.37 mm, S.D. = 0.11 mm,
CoRezyn 63-AX-051 Polyester

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 339 | 101AA | 443 | * | 13 | 17.3 | 2.73 | 1 25 tab |
| 340 | 102AA | 453 | * | 13 | 16.7 | 2.90 | 1 25 tab |
| 341 | 103AA | 448 | * | 13 | 17.0 | 2.82 | 1 25 tab |
| 342 | 104AA | 387 | * | 13 | 16.7 | 2.81 | 1 25 tab |
| 343 | 110AA | 241/24 | 0.1 | 5 | 16.9 | 1.53 | 1,741 25 tab |
| 344 | 111AA | 241/24 | 0.1 | 5 | 17.5 | 1.61 | 1,459 25 tab |
| 345 | 106AA | 172/17 | 0.1 | 10 | 17.9 | 1.08 | 11,293 25 tab |
| 346 | 108AA | 172/17 | 0.1 | 10 | 16.8 | 1.12 | 14,316 25 tab |
| 347 | 109AA | 103/10 | 0.1 | 20 | 17.0 | 0.63 | 366,798 25 tab |
| 348 | 105AA | 138/14 | 0.1 | 15 | 18.1 | 0.82 | 81,207 25 tab |
| 349 | 107AA | 241/24 | 0.1 | 15 | 17.3 | 1.65 | 1,051 25 tab |
| 350 | 112AA | 103/10 | 0.1 | 20 | 16.8 | 0.64 | 352,093 25 tab |
| 351 | 116AA | 138/14 | 0.1 | 20 | 16.7 | 0.90 | 55,485 25 tab |
| 352 | 113AA | 138/14 | 0.1 | 15 | 16.9 | 0.86 | 65,926 25 tab |
| 353 | 123AA | -288 | * | 13 | 17.1 | -1.06 | 1 25 tab |
| 354 | 129AA | -284 | * | 13 | 18.4 | -1.02 | 1 25 tab |
| 355 | 119AA | -310 | * | 13 | 19.2 | -0.90 | 1 25 tab |
| 356 | 122AA | -138/-14 | 10 | 15 | 20.1 | -0.68 | 4,658,000 25 R tab |
| 357 | 126AA | -241/-24 | 10 | 5 | 18.8 | -1.36 | 8,700 25 tab |
| 358 | 118AA | -241/-24 | 10 | 5 | 19.9 | -1.24 | 9,419 25 tab |
| 359 | 128AA | -207/-21 | 10 | 10 | 19.2 | -1.31 | 64,783 25 tab |
| 360 | 127AA | -207/-21 | 10 | 10 | 19.3 | -1.36 | 75,000 25 tab |
| 361 | 121AA | -172/-17 | 10 | 15 | 20.0 | -0.91 | 5,000,000 25 R tab |
| 362 | 124AA | -172/-17 | 10 | 10 | 18.2 | -0.91 | 3,477,199 25 tab |
| 364 | 134AA | -327 | * | 13 | 19.4 | -1.75 | 1 25 Z tab |
| 365 | 133AA | -347 | * | 13 | 17.7 | -2.00 | 1 25 Z tab |
| 366 | 137AA | -366 | * | 13 | 19.1 | ---- | 1 25 Z tab |
| 367 | 132AA | -276/-28 | 10 | 3 | 19.6 | -1.60 | 547 25 Z tab |
| 368 | 131AA | -276/-28 | 10 | 3 | 18.3 | -1.61 | 462 25 Z tab |
| 369 | 135AA | -241/-24 | 10 | 5 | ---- | ---- | 5,973 25 Z tab |
| 370 | 125AA | -190/-19 | 10 | 10 | 18.3 | -1.23 | 167,058 25 Z tab |
| 371 | 120AA | -190/-19 | 10 | 10 | 18.4 | -1.04 | 139,700 25 ZR tab |

The following coupons with a 13 mm diameter hole are listed using the NET area stress. These coupons (excluding the “#” tests) had an average hole diameter of 13.0 mm and a standard deviation of 0.4 mm.

| | | | | | | | |
|-----|-------|----------|-----|----|------|------|------------------|
| 372 | 141AA | 207/21 | 0.1 | 13 | 18.3 | 0.83 | 1,200 50 HR tab |
| 373 | 130AA | -190/-19 | 10 | 5 | ---- | ---- | 151,283 25 Z tab |
| 374 | 143AA | 164/16 | 0.1 | 20 | 17.8 | 0.75 | 4,000 50 RH tab |
| 375 | 145AA | 121/12 | 0.1 | 5 | 19.7 | 0.48 | 42,000 50 RH tab |
| 376 | 146AA | 121/12 | 0.1 | 10 | 18.8 | 0.49 | 34,500 50 RH tab |
| 377 | 144AA | 103/10 | 0.1 | 15 | 19.7 | 0.40 | 97,692 50 H tab |
| 387 | 150AA | 444 | * | 13 | 19.4 | 2.04 | 1 25 |
| 388 | 152AA | 468 | * | 13 | 17.9 | 2.47 | 1 25 |

Tests listed with a “#” indicate coupons post cured at 120 °C rather than the standard 60 °C. The average hole diameter for the tests with a “#” was 12.86 mm with a standard deviation of 0.41 mm.

| | | | | | | | |
|-----|-------|-----|---|----|------|------|---------|
| 389 | 153AA | 373 | * | 13 | 19.7 | 2.70 | 1 50 H# |
| 390 | 161AA | 369 | * | 13 | 20.5 | 2.80 | 1 50 H# |
| 391 | 160AA | 370 | * | 13 | 21.6 | 2.60 | 1 50 H# |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 392 | 159AA | 241/24 | 0.1 | 2 | 19.8 | 1.18 | 328 50 H# |
| 393 | 157AA | 241/24 | 0.1 | 2 | 20.9 | 1.11 | 270 50 H# |
| 394 | 156AA | 172/17 | 0.1 | 5 | 19.7 | 0.86 | 5,032 50 H# |
| 395 | 155AA | 172/17 | 0.1 | 5 | 20.4 | 0.75 | 4,620 50 H# |
| 396 | 158AA | 138/14 | 0.1 | 5 | 20.2 | 0.64 | 19,409 50 H# |
| 397 | 154AA | 138/14 | 0.1 | 5 | 20.3 | 0.66 | 24,375 50 H# |
| 398 | 163AA | 103/10 | 0.1 | 15 | 21.3 | 0.49 | 168,606 50 H# |
| 399 | 164AA | 103/10 | 0.1 | 15 | 21.2 | 0.48 | 154,275 50 H# |
| 400 | 167AA | 241/24 | 0.1 | 2 | 17.4 | 1.36 | 392 50 H# |
| 401 | 165AA | 172/17 | 0.1 | 5 | 17.9 | 0.91 | 2,163 50 H# |
| 402 | 182AA | 352 | * | 13 | ---- | ---- | 1 50 H |
| 403 | 181AA | 350 | * | 13 | 18.7 | 2.31 | 1 50 H |
| 404 | 168AA | 353 | * | 13 | 18.3 | 2.57 | 1 50 H |
| 405 | 169AA | 103/10 | 0.1 | 15 | 20.2 | 0.41 | 100,806 50 H |
| 406 | 166AA | 172/17 | 0.1 | 2 | 18.8 | 0.86 | 2,030 50 H |
| 407 | 184AA | 241/24 | 0.1 | 2 | 19.7 | 1.14 | 280 50 H |
| 408 | 183AA | 86/9 | 0.1 | 20 | 18.9 | 0.46 | 355,500 50 H |
| Tests involving compression or reversed loading used a 25 mm gage length | | | | | | | |
| 409 | 170AA | -205 | * | 13 | 19.8 | -1.38 | 1 50 H |
| 410 | 185AA | 86/9 | 0.1 | 20 | 18.3 | 0.37 | 395,450 50 H |
| 411 | 173AA | -257 | * | 13 | 20.8 | -1.30 | 1 50 HZ |
| 412 | 175AA | -257 | * | 13 | 19.5 | -1.25 | 1 50 HZ |
| 413 | 178AA | -243 | * | 13 | 20.0 | -1.23 | 1 50 HZ |
| 414 | 176AA | -207/-21 | 10 | 2 | 19.9 | -0.98 | 483 50 HZ |
| 415 | 180AA | -138/-14 | 10 | 5 | 19.0 | -0.52 | 39,859 50 HZ |
| 416 | 188AA | 103/10 | 0.1 | 20 | 18.9 | 0.57 | 289,500 25 tab |
| 417 | 185AA | 103/10 | 0.1 | 25 | 16.6 | 0.62 | 252,137 25 tab |
| 418 | 162AA | 86/9 | 0.1 | 20 | 22.6 | 0.44 | 152,641 50 H# |
| 419 | 190AA | 138/14 | 0.1 | 5 | 17.2 | 0.68 | 7,527 50 H |
| 420 | 189AA | 138/14 | 0.1 | 5 | 17.3 | 0.66 | 7,294 50 H |
| 421 | 192AA | -207/-21 | 10 | 2 | 19.4 | -0.70 | 508 50 HZ |
| 422 | 196AA | -138/-14 | 10 | 5 | 20.8 | -0.45 | 45,064 50 HZ |
| 423 | 187AA | 86/9 | 0.1 | 10 | 19.8 | 0.46 | 1,097,890 25 tab |
| 424 | 197AA | 86/9 | 0.1 | 15 | 16.5 | 0.54 | 1,110,190 25 tab |
| 425 | 171AA | -207/-21 | 10 | 10 | 18.7 | -1.08 | 59,130 25 Z |
| 426 | 191AA | -207/-21 | 10 | 2 | 19.8 | -0.69 | 446 50 HZ |
| 427 | 193AA | -138/-14 | 10 | 5 | 20.0 | -0.48 | 45,833 50 HZ |
| 428 | 194AA | -172/-17 | 10 | 5 | 18.3 | -0.66 | 8,338 50 HZ |
| 429 | 202AA | -371 | * | 13 | 17.9 | -2.41 | 1 25 Z |
| 430 | 203AA | -327 | * | 13 | 19.0 | -2.20 | 1 25 Z |
| 431 | 195AA | -172/-17 | 10 | 10 | 18.6 | -0.64 | 5,439 50 HZ |
| 432 | 204AA | -190/-19 | 10 | 10 | 18.1 | -1.05 | 172,910 25 Z |
| 433 | 200AA | -121/-12 | 10 | 10 | 19.2 | -0.46 | 1,400,699 50 HZ |
| 434 | 186AA | 86/9 | 0.1 | 20 | 19.2 | 0.46 | 1,063,690 25 tab |
| 435 | 205AA | -190/-19 | 10 | 25 | 16.9 | -1.11 | 240,000 25 Z |
| 436 | 198AA | -121/-21 | 10 | 15 | 15.2 | -0.48 | 820,290 50 HZ |
| 437 | 187AA | 172/17 | 0.1 | 10 | 16.6 | 1.04 | 17,149 25 tab |
| 438 | 209AA | 241/24 | 0.1 | 2 | 16.9 | 1.43 | 187 50 H |
| 439 | 210AA | 103/10 | 0.1 | 15 | 16.7 | 0.62 | 61,628 50 H |
| 440 | 207AA | 172/17 | 0.1 | 10 | 18.1 | 0.72 | 2,757 50 H |
| 441 | 211AA | 172/17 | 0.1 | 5 | 18.9 | 0.76 | 2,700 50 H |
| 442 | 206AA | 138/14 | 0.1 | 5 | 17.8 | 0.63 | 9,650 50 H |
| 443 | 208AA | 86/9 | 0.1 | 15 | 17.9 | 0.45 | 276,248 50 H |
| 444 | 213AA | 241/24 | 0.1 | 2 | 18.6 | 1.15 | 237 50 H |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 445 | 218AA | -276/-28 | 10 | 1 | 18.1 | -1.56 | 380 25 Z |
| 446 | 238AA | -241/-24 | 10 | 5 | 18.6 | -1.29 | 11,145 25 Z |
| 447 | 199AA | -172/-17 | 10 | 5 | 21.3 | -0.64 | 7,345 50 HZ |
| 449 | 240AA | 207/-207 | -1 | 1 | 19.0 | 1.38 | 195 25 Z |
| 450 | 230AA | 207/-207 | -1 | 1 | 20.8 | 1.22 | 191 25 Z |
| 451 | 239AA | 190/-190 | -1 | 2 | 17.9 | 1.27 | 296 25 Z |
| 452 | 232AA | 172/-172 | -1 | 1 | 17.4 | 1.07 | 509 25 Z |
| 453 | 221AA | 172/-172 | -1 | 1 | 18.3 | 1.01 | 438 25 Z |
| 454 | 216AA | 138/-138 | -1 | 1 | 19.0 | 0.78 | 1,850 25 Z |
| 455 | 217AA | 138/-138 | -1 | 1 | 17.3 | 0.86 | 2,493 25 Z |
| 456 | 241AA | 190/-190 | -1 | 1 | 17.9 | 1.40 | 232 25 Z |
| 457 | 136AA | 138/-138 | -1 | 1 | ---- | ---- | 1,897 25 Z tab |
| 458 | 224AA | 138/-138 | -1 | 1 | 19.6 | 0.51 | 753 50 HZ |
| 459 | 231AA | 86/-86 | -1 | 1 | 21.8 | 0.28 | 33,341 50 HZ |
| 460 | 222AA | 172/-172 | -1 | 1 | 16.3 | 0.71 | 160 50 HZ |
| 461 | 228AA | 172/-172 | -1 | 1 | 21.7 | 0.58 | 218 50 HZ |
| 462 | 227AA | 172/-172 | -1 | 1 | 22.7 | 0.55 | 176 50 HZ |
| 463 | 229AA | 138/-138 | -1 | 1 | 19.7 | 0.49 | 860 50 HZ |
| 464 | 225AA | 138/-138 | -1 | 1 | 20.5 | 0.50 | 891 50 HZ |
| 465 | 223AA | 103/-103 | -1 | 1 | 20.1 | 0.39 | 8,513 50 HZ |
| 466 | 236AA | 103/-103 | -1 | 1 | 19.7 | 0.37 | 8,262 50 HZ |
| 467 | 235AA | 86/-86 | -1 | 1 | 22.0 | 0.29 | 33,347 50 HZ |
| 468 | 237AA | 103/-103 | -1 | 1 | 19.1 | 0.34 | 11,756 50 HZ |
| 469 | 242AA | 207/-207 | -1 | 1 | 19.0 | 1.20 | 168 25 Z tab |
| 470 | 226AA | 190/-190 | -1 | 1 | 18.0 | 1.17 | 208 25 Z tab |
| 471 | 242AA | 172/-172 | -1 | 1 | 18.4 | 1.08 | 376 25 Z tab |
| 472 | 220AA | 103/-103 | -1 | 1 | 18.6 | 0.58 | 25,488 25 Z tab |
| 473 | 219AA | 103/-103 | -1 | 1 | 18.8 | 0.57 | 21,992 25 Z tab |
| 474 | 234AA | 86/-86 | -1 | 2 | 19.2 | 0.32 | 56,945 50 HZ |
| 475 | 233AA | -121/-21 | 10 | 10 | 20.5 | -0.57 | 10,000 50 HZ R |
| 476 | 274AA | -190/-19 | 10 | 15 | 18.5 | -1.23 | 153,542 25 Z tab |
| 477 | 115AA | 86/9 | -1 | 5 | 18.8 | 0.45 | 456,549 25 tab |
| 478 | 117AA | 86/9 | -1 | 5 | 17.4 | 0.49 | 187,649 25 tab |
| 479 | 269AA | 86/9 | -1 | 5 | 20.5 | 0.44 | 236,152 25 |
| 480 | 271AA | 103/10 | -1 | 2 | 18.5 | 0.56 | 34,956 25 |
| Tests 513 - 527 involved a gage length of 76 mm (volume effect tests). | | | | | | | |
| 513 | 275AA | 506 | * | 13 | 22.8 | 2.25 | 1 25 |
| 514 | 276AA | 510 | * | 13 | 21.6 | 2.36 | 1 25 |
| 515 | 277AA | 518 | * | 13 | 22.1 | 2.35 | 1 25 |
| 516 | 278AA | 524 | * | 13 | 22.5 | 2.34 | 1 25 |
| 517 | 279AA | 517 | * | 13 | 21.9 | 2.37 | 1 25 |
| 518 | 280AA | 552 | * | 13 | 23.0 | 2.40 | 1 25 |
| 519 | 281AA | 530 | * | 13 | 23.5 | 2.26 | 1 25 |
| 520 | 282AA | 540 | * | 13 | 22.4 | 2.41 | 1 25 |
| 521 | 283AA | 491 | * | 13 | 22.4 | 2.20 | 1 25 |
| 522 | 284AA | 557 | * | 13 | 23.7 | 2.35 | 1 25 |
| 523 | 285AA | 536 | * | 13 | 22.8 | 2.35 | 1 25 |
| 524 | 286AA | 542 | * | 13 | 23.3 | 2.32 | 1 25 |
| 525 | 287AA | 506 | * | 13 | 24.0 | 2.10 | 1 25 |
| 526 | 288AA | 512 | * | 13 | 21.4 | 2.39 | 1 25 |
| 527 | 289AA | 507 | * | 13 | 23.0 | 2.21 | 1 25 |
| Tests 528 - 542 involved a gage length of 38 mm and a coupon width of 13 mm (volume effect tests). | | | | | | | |
| 528 | 296AA | 476 | * | 6 | 21.1 | 2.24 | 1 13 |
| 529 | 301AA | 511 | * | 6 | 22.6 | 2.27 | 1 13 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 530 | 293AA | 479 | * | 6 | 21.9 | 2.19 | 1 13 |
| 531 | 299AA | 579 | * | 6 | 23.7 | 2.75 | 1 13 |
| 532 | 298AA | 501 | * | 6 | 22.3 | 2.25 | 1 13 |
| 533 | 304AA | 500 | * | 6 | 22.7 | 2.21 | 1 13 |
| 534 | 297AA | 554 | * | 6 | 25.9 | 2.29 | 1 13 |
| 535 | 290AA | 526 | * | 6 | 22.1 | 2.39 | 1 13 |
| 536 | 303AA | 513 | * | 6 | 23.7 | 2.17 | 1 13 |
| 537 | 295AA | 543 | * | 6 | 23.7 | 2.30 | 1 13 |
| 538 | 291AA | 498 | * | 6 | 23.2 | 2.14 | 1 13 |
| 539 | 300AA | 484 | * | 6 | 24.0 | 2.02 | 1 13 |
| 540 | 292AA | 478 | * | 6 | 23.2 | 2.05 | 1 13 |
| 541 | 294AA | 517 | * | 6 | 22.1 | 2.33 | 1 13 |
| 542 | 302AA | 538 | * | 6 | 23.2 | 2.10 | 1 13 |
| Tests 550 - 565 involved a gage length of 114 mm and a coupon width of 38 mm (volume effect tests). | | | | | | | |
| 550 | 306AA | 551 | * | 19 | 22.0 | 2.60 | 1 38 |
| 551 | 310AA | 537 | * | 19 | 20.8 | 2.59 | 1 38 |
| 552 | 314AA | 539 | * | 19 | 21.2 | 2.54 | 1 38 |
| 553 | 312AA | 578 | * | 19 | 23.9 | 2.43 | 1 38 |
| 554 | 307AA | 534 | * | 19 | 22.4 | 2.39 | 1 38 |
| 555 | 318AA | 539 | * | 19 | 21.4 | 2.52 | 1 38 |
| 556 | 316AA | 530 | * | 19 | 21.9 | 2.42 | 1 38 |
| 557 | 320AA | 509 | * | 19 | 22.3 | 2.28 | 1 38 |
| 558 | 308AA | 584 | * | 19 | 22.8 | 2.56 | 1 38 |
| 559 | 315AA | 541 | * | 19 | 23.0 | 2.35 | 1 38 |
| 560 | 305AA | 559 | * | 19 | 23.0 | 2.43 | 1 38 |
| 561 | 311AA | 548 | * | 19 | 21.5 | 2.54 | 1 38 |
| 562 | 319AA | 555 | * | 19 | 21.4 | 2.59 | 1 38 |
| 563 | 313AA | 519 | * | 19 | 21.2 | 2.45 | 1 38 |
| 564 | 309AA | 552 | * | 19 | 22.6 | 2.45 | 1 38 |
| 565 | 336AA | 529 | * | 19 | 20.8 | 2.54 | 1 38 |
| Tests 566 - 580 involved a gage length of 152 mm and a coupon width of 50 mm (volume effect tests). | | | | | | | |
| 566 | 324AA | 533 | * | 25 | 21.0 | 2.54 | 1 50 |
| 567 | 329AA | 540 | * | 25 | 20.7 | 2.62 | 1 50 |
| 568 | 334AA | 547 | * | 25 | 20.8 | 2.63 | 1 50 |
| 569 | 322AA | 557 | * | 25 | 21.6 | 2.58 | 1 50 |
| 570 | 333AA | 550 | * | 25 | 21.5 | 2.55 | 1 50 |
| 571 | 331AA | 511 | * | 25 | 21.1 | 2.42 | 1 50 |
| 572 | 327AA | 544 | * | 25 | 22.0 | 2.47 | 1 50 |
| 573 | 325AA | 514 | * | 25 | 22.4 | 2.29 | 1 50 |
| 574 | 330AA | 523 | * | 25 | 21.8 | 2.40 | 1 50 |
| 575 | 321AA | 546 | * | 25 | 21.8 | 2.50 | 1 50 |
| 576 | 332AA | 548 | * | 25 | 22.1 | 2.48 | 1 50 |
| 577 | 326AA | 528 | * | 25 | 20.8 | 2.50 | 1 50 |
| 578 | 323AA | 561 | * | 25 | 23.4 | 2.39 | 1 50 |
| 579 | 337AA | 518 | * | 25 | 21.9 | 2.37 | 1 50 |
| 580 | 335AA | 550 | * | 25 | 21.8 | 2.53 | 1 50 |
| Tests 581 - 595 involved a gage length of 19 mm and a coupon width of 6 mm (volume effect tests). | | | | | | | |
| 581 | 338AA | 517 | * | 3 | ---- | ---- | 1 6 |
| 582 | 339AA | 503 | * | 3 | ---- | ---- | 1 6 |
| 583 | 340AA | 468 | * | 3 | ---- | ---- | 1 6 |
| 584 | 341AA | 490 | * | 3 | ---- | ---- | 1 6 |
| 585 | 342AA | 546 | * | 3 | ---- | ---- | 1 6 |
| 586 | 343AA | 508 | * | 3 | ---- | ---- | 1 6 |
| 587 | 344AA | 559 | * | 3 | ---- | ---- | 1 6 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 588 | 345AA | 569 | * | 3 | ---- | 1 | 6 |
| 589 | 346AA | 539 | * | 3 | ---- | 1 | 6 |
| 590 | 347AA | 535 | * | 3 | ---- | 1 | 6 |
| 591 | 348AA | 524 | * | 3 | ---- | 1 | 6 |
| 592 | 349AA | 473 | * | 3 | ---- | 1 | 6 |
| 593 | 350AA | 555 | * | 3 | ---- | 1 | 6 |
| 594 | 351AA | 571 | * | 3 | ---- | 1 | 6 |
| 595 | 352AA | 498 | * | 3 | ---- | 1 | 6 |
| Tests 596 - 610 involved a gage length of 38 mm and a coupon width of 13 mm (volume effect tests). | | | | | | | |
| 596 | 353AA | 481 | * | 6 | ---- | 1 | 13 |
| 597 | 354AA | 575 | * | 6 | ---- | 1 | 13 |
| 598 | 355AA | 519 | * | 6 | ---- | 1 | 13 |
| 599 | 356AA | 506 | * | 6 | ---- | 1 | 13 |
| 600 | 357AA | 568 | * | 6 | ---- | 1 | 13 |
| 601 | 358AA | 508 | * | 6 | ---- | 1 | 13 |
| 602 | 359AA | 573 | * | 6 | ---- | 1 | 13 |
| 603 | 360AA | 482 | * | 6 | ---- | 1 | 13 |
| 604 | 361AA | 532 | * | 6 | ---- | 1 | 13 |
| 605 | 362AA | 491 | * | 6 | ---- | 1 | 13 |
| 606 | 363AA | 519 | * | 6 | ---- | 1 | 13 |
| 607 | 364AA | 522 | * | 6 | ---- | 1 | 13 |
| 608 | 365AA | 497 | * | 6 | ---- | 1 | 13 |
| 609 | 366AA | 490 | * | 6 | ---- | 1 | 13 |
| 610 | 367AA | 528 | * | 6 | ---- | 1 | 13 |
| Tests 611 - 625 involved a gage length of 57 mm and a coupon width of 19 mm (volume effect tests). | | | | | | | |
| 611 | 368AA | 556 | * | 10 | ---- | 1 | 19 |
| 612 | 369AA | 528 | * | 10 | ---- | 1 | 19 |
| 613 | 370AA | 536 | * | 10 | ---- | 1 | 19 |
| 614 | 371AA | 565 | * | 10 | ---- | 1 | 19 |
| 615 | 372AA | 483 | * | 10 | ---- | 1 | 19 |
| 616 | 373AA | 528 | * | 10 | ---- | 1 | 19 |
| 617 | 374AA | 544 | * | 10 | ---- | 1 | 19 |
| 618 | 375AA | 547 | * | 10 | ---- | 1 | 19 |
| 619 | 376AA | 561 | * | 10 | ---- | 1 | 19 |
| 620 | 377AA | 506 | * | 10 | ---- | 1 | 19 |
| 621 | 378AA | 559 | * | 10 | ---- | 1 | 19 |
| 622 | 379AA | 563 | * | 10 | ---- | 1 | 19 |
| 623 | 380AA | 532 | * | 10 | ---- | 1 | 19 |
| 624 | 381AA | 543 | * | 10 | ---- | 1 | 19 |
| 625 | 382AA | 530 | * | 10 | ---- | 1 | 19 |
| Tests 626 - 640 involved a gage length of 95 mm and a coupon width of 32 mm (volume effect tests). | | | | | | | |
| 626 | 383AA | 539 | * | 16 | ---- | 1 | 32 |
| 627 | 384AA | 572 | * | 16 | ---- | 1 | 32 |
| 628 | 385AA | 549 | * | 16 | ---- | 1 | 32 |
| 629 | 386AA | 508 | * | 16 | ---- | 1 | 32 |
| 630 | 387AA | 554 | * | 16 | ---- | 1 | 32 |
| 631 | 388AA | 533 | * | 16 | ---- | 1 | 32 |
| 632 | 389AA | 555 | * | 16 | ---- | 1 | 32 |
| 633 | 390AA | 526 | * | 16 | ---- | 1 | 32 |
| 634 | 391AA | 503 | * | 16 | ---- | 1 | 32 |
| 635 | 392AA | 520 | * | 16 | ---- | 1 | 32 |
| 636 | 393AA | 525 | * | 16 | ---- | 1 | 32 |
| 637 | 394AA | 497 | * | 16 | ---- | 1 | 32 |
| 638 | 395AA | 527 | * | 16 | ---- | 1 | 32 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 639 | 396AA | 511 | * | 16 | ---- | 1 | 32 |
| 640 | 397AA | 519 | * | 16 | ---- | 1 | 32 |
| Tests 641 - 655 involved a gage length of 114 mm and a coupon width of 38 mm (volume effect tests). | | | | | | | |
| 641 | 398AA | 525 | * | 19 | ---- | 1 | 38 |
| 642 | 399AA | 509 | * | 19 | ---- | 1 | 38 |
| 643 | 400AA | 555 | * | 19 | ---- | 1 | 38 |
| 644 | 401AA | 553 | * | 19 | ---- | 1 | 38 |
| 645 | 402AA | 544 | * | 19 | ---- | 1 | 38 |
| 646 | 403AA | 491 | * | 19 | ---- | 1 | 38 |
| 647 | 404AA | 521 | * | 19 | ---- | 1 | 38 |
| 648 | 405AA | 514 | * | 19 | ---- | 1 | 38 |
| 649 | 406AA | 532 | * | 19 | ---- | 1 | 38 |
| 650 | 407AA | 513 | * | 19 | ---- | 1 | 38 |
| 651 | 408AA | 527 | * | 19 | ---- | 1 | 38 |
| 652 | 409AA | 542 | * | 19 | ---- | 1 | 38 |
| 653 | 410AA | 492 | * | 19 | ---- | 1 | 38 |
| 654 | 411AA | 522 | * | 19 | ---- | 1 | 38 |
| 655 | 412AA | 477 | * | 19 | ---- | 1 | 38 |
| Tests 656 - 670 involved a gage length of 10 mm and a coupon width of 3 mm (volume effect tests). | | | | | | | |
| 656 | 413AA | 380 | * | 2 | ---- | 1 | 3 |
| 657 | 414AA | 468 | * | 2 | ---- | 1 | 3 |
| 658 | 415AA | 389 | * | 2 | ---- | 1 | 3 |
| 659 | 416AA | 357 | * | 2 | ---- | 1 | 3 |
| 660 | 417AA | 365 | * | 2 | ---- | 1 | 3 |
| 661 | 418AA | 448 | * | 2 | ---- | 1 | 3 |
| 662 | 419AA | 378 | * | 2 | ---- | 1 | 3 |
| 663 | 420AA | 476 | * | 2 | ---- | 1 | 3 |
| 664 | 421AA | 456 | * | 2 | ---- | 1 | 3 |
| 665 | 422AA | 384 | * | 2 | ---- | 1 | 3 |
| 666 | 423AA | 354 | * | 2 | ---- | 1 | 3 |
| 667 | 424AA | 441 | * | 2 | ---- | 1 | 3 |
| 668 | 425AA | 394 | * | 2 | ---- | 1 | 3 |
| 669 | 426AA | 437 | * | 2 | ---- | 1 | 3 |
| 670 | 427AA | 386 | * | 2 | ---- | 1 | 3 |
| Tests 671 - 685 involved a gage length of 133 mm and a coupon width of 44 mm (volume effect tests). | | | | | | | |
| 671 | 428AA | 537 | * | 22 | ---- | 1 | 44 |
| 672 | 429AA | 528 | * | 22 | ---- | 1 | 44 |
| 673 | 430AA | 503 | * | 22 | ---- | 1 | 44 |
| 674 | 431AA | 540 | * | 22 | ---- | 1 | 44 |
| 675 | 432AA | 520 | * | 22 | ---- | 1 | 44 |
| 676 | 433AA | 546 | * | 22 | ---- | 1 | 44 |
| 677 | 434AA | 535 | * | 22 | ---- | 1 | 44 |
| 678 | 435AA | 546 | * | 22 | ---- | 1 | 44 |
| 679 | 436AA | 559 | * | 22 | ---- | 1 | 44 |
| 680 | 437AA | 525 | * | 22 | ---- | 1 | 44 |
| 681 | 438AA | 547 | * | 22 | ---- | 1 | 44 |
| 682 | 439AA | 533 | * | 22 | ---- | 1 | 44 |
| 683 | 440AA | 523 | * | 22 | ---- | 1 | 44 |
| 684 | 441AA | 520 | * | 22 | ---- | 1 | 44 |
| 685 | 442AA | 552 | * | 22 | ---- | 1 | 44 |
| Tests 707 - 716 involved a gage length of 13 mm and a coupon width of 3 mm (width effect tests). | | | | | | | |
| 707 | 464AA | -323 | * | 2 | ---- | 1 | 3 |
| 708 | 465AA | -371 | * | 2 | ---- | 1 | 3 |
| 709 | 466AA | -311 | * | 2 | ---- | 1 | 3 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 710 | 467AA | -313 | * | 2 | ---- | 1 | 3 |
| 711 | 468AA | -330 | * | 2 | ---- | 1 | 3 |
| 712 | 469AA | -305 | * | 2 | ---- | 1 | 3 |
| 713 | 470AA | -319 | * | 2 | ---- | 1 | 3 |
| 714 | 471AA | -304 | * | 2 | ---- | 1 | 3 |
| 715 | 472AA | -326 | * | 2 | ---- | 1 | 3 |
| 716 | 473AA | -334 | * | 2 | ---- | 1 | 3 |
| Tests 717 - 726 involved a gage length of 13 mm and a coupon width of 25 mm (width effect tests). | | | | | | | |
| 717 | 474AA | -311 | * | 13 | ---- | 1 | 25 |
| 718 | 475AA | -313 | * | 13 | ---- | 1 | 25 |
| 719 | 476AA | -311 | * | 13 | ---- | 1 | 25 |
| 720 | 477AA | -302 | * | 13 | ---- | 1 | 25 |
| 721 | 478AA | -307 | * | 13 | ---- | 1 | 25 |
| 722 | 479AA | -306 | * | 13 | ---- | 1 | 25 |
| 723 | 480AA | -302 | * | 13 | ---- | 1 | 25 |
| 724 | 481AA | -320 | * | 13 | ---- | 1 | 25 |
| 725 | 482AA | -316 | * | 13 | ---- | 1 | 25 |
| 726 | 483AA | -313 | * | 13 | ---- | 1 | 25 |
| Tests 727 - 746 involved a gage length of 13 mm and a coupon width of 19 mm (width effect tests). | | | | | | | |
| 727 | 484AA | -321 | * | 10 | ---- | 1 | 19 |
| 728 | 485AA | -334 | * | 10 | ---- | 1 | 19 |
| 729 | 486AA | -333 | * | 10 | ---- | 1 | 19 |
| 730 | 487AA | -329 | * | 10 | ---- | 1 | 19 |
| 731 | 488AA | -337 | * | 10 | ---- | 1 | 19 |
| 732 | 489AA | -314 | * | 10 | ---- | 1 | 19 |
| 733 | 490AA | -325 | * | 10 | ---- | 1 | 19 |
| 734 | 491AA | -322 | * | 10 | ---- | 1 | 19 |
| 735 | 492AA | -331 | * | 10 | ---- | 1 | 19 |
| 736 | 493AA | -323 | * | 10 | ---- | 1 | 19 |
| 737 | 494AA | -320 | * | 10 | ---- | 1 | 19 |
| 738 | 495AA | -318 | * | 10 | ---- | 1 | 19 |
| 739 | 496AA | -316 | * | 10 | ---- | 1 | 19 |
| 740 | 497AA | -331 | * | 10 | ---- | 1 | 19 |
| 741 | 498AA | -323 | * | 10 | ---- | 1 | 19 |
| 742 | 499AA | -332 | * | 10 | ---- | 1 | 19 |
| 743 | 500AA | -327 | * | 10 | ---- | 1 | 19 |
| 744 | 501AA | -313 | * | 10 | ---- | 1 | 19 |
| 745 | 502AA | -322 | * | 10 | ---- | 1 | 19 |
| 746 | 503AA | -320 | * | 10 | ---- | 1 | 19 |
| Tests 747 - 756 involved a gage length of 13 mm and a coupon width of 13 mm (width effect tests). | | | | | | | |
| 747 | 504AA | -358 | * | 6 | ---- | 1 | 13 |
| 748 | 505AA | -330 | * | 6 | ---- | 1 | 13 |
| 749 | 506AA | -347 | * | 6 | ---- | 1 | 13 |
| 750 | 507AA | -335 | * | 6 | ---- | 1 | 13 |
| 751 | 508AA | -351 | * | 6 | ---- | 1 | 13 |
| 752 | 509AA | -353 | * | 6 | ---- | 1 | 13 |
| 753 | 510AA | -355 | * | 6 | ---- | 1 | 13 |
| 754 | 511AA | -329 | * | 6 | ---- | 1 | 13 |
| 755 | 512AA | -339 | * | 6 | ---- | 1 | 13 |
| 756 | 513AA | -354 | * | 6 | ---- | 1 | 13 |
| Tests 757 - 766 involved a gage length of 13 mm and a coupon width of 44 mm (width effect tests). | | | | | | | |
| 757 | 514AA | -264 | * | 22 | ---- | 1 | 44 |
| 758 | 515AA | -262 | * | 22 | ---- | 1 | 44 |
| 759 | 516AA | -265 | * | 22 | ---- | 1 | 44 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 760 | 517AA | -263 | * | 22 | ---- | 1 | 44 |
| 761 | 518AA | -267 | * | 22 | ---- | 1 | 44 |
| 762 | 519AA | -273 | * | 22 | ---- | 1 | 44 |
| 763 | 520AA | -266 | * | 22 | ---- | 1 | 44 |
| 764 | 521AA | -264 | * | 22 | ---- | 1 | 44 |
| 765 | 522AA | -269 | * | 22 | ---- | 1 | 44 |
| 766 | 523AA | -266 | * | 22 | ---- | 1 | 44 |
| Tests 1233 - 1242 involved a gage length of 13 mm and a coupon width of 50 mm (width effect tests). | | | | | | | |
| 1233 | 443AA | -254 | * | 25 | ---- | 1 | 50 |
| 1234 | 444AA | -250 | * | 25 | ---- | 1 | 50 |
| 1235 | 445AA | -250 | * | 25 | ---- | 1 | 50 |
| 1236 | 446AA | -250 | * | 13 | ---- | 1 | 50 |
| 1237 | 447AA | -249 | * | 25 | ---- | 1 | 50 |
| 1238 | 448AA | -251 | * | 25 | ---- | 1 | 50 |
| 1239 | 449AA | -252 | * | 25 | ---- | 1 | 50 |
| 1240 | 450AA | -256 | * | 25 | ---- | 1 | 50 |
| 1241 | 451AA | -249 | * | 25 | ---- | 1 | 50 |
| 1242 | 452AA | -250 | * | 25 | ---- | 1 | 50 |
| Tests 1243 - 1253 involved a gage length of 13 mm and a coupon width of 6 mm (width effect tests). | | | | | | | |
| 1243 | 453AA | -374 | * | 13 | ---- | 1 | 6 |
| 1244 | 454AA | -356 | * | 13 | ---- | 1 | 6 |
| 1245 | 455AA | -368 | * | 13 | ---- | 1 | 6 |
| 1246 | 456AA | -375 | * | 13 | ---- | 1 | 6 |
| 1247 | 457AA | -390 | * | 13 | ---- | 1 | 6 |
| 1248 | 458AA | -366 | * | 13 | ---- | 1 | 6 |
| 1249 | 459AA | -356 | * | 13 | ---- | 1 | 6 |
| 1250 | 460AA | -366 | * | 13 | ---- | 1 | 6 |
| 1251 | 461AA | -380 | * | 13 | ---- | 1 | 6 |
| 1252 | 462AA | -364 | * | 13 | ---- | 1 | 6 |
| 1253 | 463AA | -372 | * | 13 | ---- | 1 | 6 |

MATERIAL AA2

Lay-up = [(0/±45)₂]_s, V_F = 0.419, Ave. thickness = 2.63 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

Tests 767 - 776 involved a gage length of 13 mm and a coupon width of 50 mm (width effect tests).

| | | | | | | | |
|-----|--------|------|---|----|------|---|----|
| 767 | 524AA2 | -298 | * | 25 | ---- | 1 | 50 |
| 768 | 525AA2 | -298 | * | 25 | ---- | 1 | 50 |
| 769 | 526AA2 | -301 | * | 25 | ---- | 1 | 50 |
| 770 | 527AA2 | -312 | * | 25 | ---- | 1 | 50 |
| 771 | 528AA2 | -315 | * | 25 | ---- | 1 | 50 |
| 772 | 529AA2 | -294 | * | 25 | ---- | 1 | 50 |
| 773 | 530AA2 | -300 | * | 25 | ---- | 1 | 50 |
| 774 | 531AA2 | -298 | * | 25 | ---- | 1 | 50 |
| 775 | 532AA2 | -305 | * | 25 | ---- | 1 | 50 |
| 776 | 533AA2 | -319 | * | 25 | ---- | 1 | 50 |

Tests 777 - 786 involved a gage length of 13 mm and a coupon width of 25 mm (width effect tests).

| | | | | | | | |
|-----|--------|------|---|----|------|---|----|
| 777 | 534AA2 | -308 | * | 13 | ---- | 1 | 25 |
| 778 | 535AA2 | -315 | * | 13 | ---- | 1 | 25 |
| 779 | 536AA2 | -315 | * | 13 | ---- | 1 | 25 |
| 780 | 537AA2 | -307 | * | 13 | ---- | 1 | 25 |
| 781 | 538AA2 | -317 | * | 13 | ---- | 1 | 25 |
| 782 | 539AA2 | -328 | * | 13 | ---- | 1 | 25 |
| 783 | 540AA2 | -313 | * | 13 | ---- | 1 | 25 |
| 784 | 541AA2 | -313 | * | 13 | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 785 | 542AA2 | -322 | * | 13 | ---- | ---- | 1 | 25 |
| 786 | 543AA2 | -322 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 787 - 796 involved a gage length of 13 mm and a coupon width of 12 mm (width effect tests). | | | | | | | | |
| 787 | 544AA2 | -315 | * | 6 | ---- | ---- | 1 | 13 |
| 788 | 545AA2 | -337 | * | 6 | ---- | ---- | 1 | 13 |
| 789 | 546AA2 | -327 | * | 6 | ---- | ---- | 1 | 13 |
| 790 | 547AA2 | -300 | * | 6 | ---- | ---- | 1 | 13 |
| 791 | 548AA2 | -330 | * | 6 | ---- | ---- | 1 | 13 |
| 792 | 549AA2 | -324 | * | 6 | ---- | ---- | 1 | 13 |
| 793 | 550AA2 | -340 | * | 6 | ---- | ---- | 1 | 13 |
| 794 | 551AA2 | -298 | * | 6 | ---- | ---- | 1 | 13 |
| 795 | 552AA2 | -305 | * | 6 | ---- | ---- | 1 | 13 |
| 796 | 553AA2 | -309 | * | 6 | ---- | ---- | 1 | 13 |
| Tests 797 - 806 involved a gage length of 13 mm and a coupon width of 38 mm (width effect tests). | | | | | | | | |
| 797 | 554AA2 | -310 | * | 19 | ---- | ---- | 1 | 38 |
| 798 | 555AA2 | -317 | * | 19 | ---- | ---- | 1 | 38 |
| 799 | 556AA2 | -289 | * | 19 | ---- | ---- | 1 | 38 |
| 800 | 557AA2 | -293 | * | 19 | ---- | ---- | 1 | 38 |
| 801 | 558AA2 | -299 | * | 19 | ---- | ---- | 1 | 38 |
| 802 | 559AA2 | -295 | * | 19 | ---- | ---- | 1 | 38 |
| 803 | 560AA2 | -296 | * | 19 | ---- | ---- | 1 | 38 |
| 804 | 561AA2 | -312 | * | 19 | ---- | ---- | 1 | 38 |
| 805 | 562AA2 | -301 | * | 19 | ---- | ---- | 1 | 38 |
| 806 | 563AA2 | -282 | * | 19 | ---- | ---- | 1 | 38 |
| Tests 807 - 827 involved a gage length of 13 mm and a coupon width of 19 mm (width effect tests). | | | | | | | | |
| 807 | 564AA2 | -311 | * | 10 | ---- | ---- | 1 | 19 |
| 808 | 565AA2 | -290 | * | 10 | ---- | ---- | 1 | 19 |
| 809 | 566AA2 | -286 | * | 10 | ---- | ---- | 1 | 19 |
| 810 | 567AA2 | -282 | * | 10 | ---- | ---- | 1 | 19 |
| 811 | 568AA2 | -286 | * | 10 | ---- | ---- | 1 | 19 |
| 812 | 569AA2 | -282 | * | 10 | ---- | ---- | 1 | 19 |
| 813 | 570AA2 | -314 | * | 10 | ---- | ---- | 1 | 19 |
| 814 | 571AA2 | -276 | * | 10 | ---- | ---- | 1 | 19 |
| 815 | 572AA2 | -275 | * | 10 | ---- | ---- | 1 | 19 |
| 816 | 573AA2 | -276 | * | 10 | ---- | ---- | 1 | 19 |
| 817 | 574AA2 | -287 | * | 10 | ---- | ---- | 1 | 19 |
| 818 | 575AA2 | -266 | * | 10 | ---- | ---- | 1 | 19 |
| 819 | 576AA2 | -314 | * | 10 | ---- | ---- | 1 | 19 |
| 820 | 577AA2 | -252 | * | 10 | ---- | ---- | 1 | 19 |
| 821 | 578AA2 | -288 | * | 10 | ---- | ---- | 1 | 19 |
| 822 | 579AA2 | -297 | * | 10 | ---- | ---- | 1 | 19 |
| 823 | 580AA2 | -318 | * | 10 | ---- | ---- | 1 | 19 |
| 824 | 581AA2 | -278 | * | 10 | ---- | ---- | 1 | 19 |
| 825 | 582AA2 | -281 | * | 10 | ---- | ---- | 1 | 19 |
| 826 | 583AA2 | -302 | * | 10 | ---- | ---- | 1 | 19 |
| 827 | 584AA2 | -310 | * | 10 | ---- | ---- | 1 | 19 |
| Tests 828 - 837 involved a gage length of 13 mm and a coupon width of 6 mm (width effect tests). | | | | | | | | |
| 828 | 585AA2 | -209 | * | 13 | ---- | ---- | 1 | 6 |
| 829 | 586AA2 | -230 | * | 13 | ---- | ---- | 1 | 6 |
| 830 | 587AA2 | -215 | * | 13 | ---- | ---- | 1 | 6 |
| 831 | 588AA2 | -213 | * | 13 | ---- | ---- | 1 | 6 |
| 832 | 589AA2 | -221 | * | 13 | ---- | ---- | 1 | 6 |
| 833 | 590AA2 | -211 | * | 13 | ---- | ---- | 1 | 6 |
| 834 | 591AA2 | -226 | * | 13 | ---- | ---- | 1 | 6 |

| | | | | | | | | |
|--|--------|------|---|----|------|------|---|----|
| 835 | 592AA2 | -244 | * | 13 | ---- | ---- | 1 | 6 |
| 836 | 593AA2 | -216 | * | 13 | ---- | ---- | 1 | 6 |
| 837 | 594AA2 | -221 | * | 13 | ---- | ---- | 1 | 6 |
| Tests 838 - 847 involved a gage length of 13 mm and a coupon width of 4 mm (width effect tests). | | | | | | | | |
| 838 | 595AA2 | -281 | * | 2 | ---- | ---- | 1 | 4 |
| 839 | 596AA2 | -239 | * | 2 | ---- | ---- | 1 | 4 |
| 840 | 597AA2 | -252 | * | 2 | ---- | ---- | 1 | 4 |
| 841 | 598AA2 | -271 | * | 2 | ---- | ---- | 1 | 4 |
| 842 | 599AA2 | -222 | * | 2 | ---- | ---- | 1 | 4 |
| 843 | 600AA2 | -235 | * | 2 | ---- | ---- | 1 | 4 |
| 844 | 601AA2 | -236 | * | 2 | ---- | ---- | 1 | 4 |
| 845 | 602AA2 | -241 | * | 2 | ---- | ---- | 1 | 4 |
| 846 | 603AA2 | -260 | * | 2 | ---- | ---- | 1 | 4 |
| 847 | 604AA2 | -232 | * | 2 | ---- | ---- | 1 | 4 |
| Tests 848 - 857 involved a gage length of 13 mm and a coupon width of 32 mm (width effect tests). | | | | | | | | |
| 848 | 605AA2 | -318 | * | 16 | ---- | ---- | 1 | 32 |
| 849 | 606AA2 | -293 | * | 16 | ---- | ---- | 1 | 32 |
| 850 | 607AA2 | -281 | * | 16 | ---- | ---- | 1 | 32 |
| 851 | 608AA2 | -275 | * | 16 | ---- | ---- | 1 | 32 |
| 852 | 609AA2 | -272 | * | 16 | ---- | ---- | 1 | 32 |
| 853 | 610AA2 | -283 | * | 16 | ---- | ---- | 1 | 32 |
| 854 | 611AA2 | -320 | * | 16 | ---- | ---- | 1 | 32 |
| 855 | 612AA2 | -262 | * | 16 | ---- | ---- | 1 | 32 |
| 856 | 613AA2 | -304 | * | 16 | ---- | ---- | 1 | 32 |
| 857 | 614AA2 | -303 | * | 16 | ---- | ---- | 1 | 32 |
| Tests 858 - 867 involved a gage length of 13 mm and a coupon width of 44 mm (width effect tests). | | | | | | | | |
| 858 | 615AA2 | -268 | * | 22 | ---- | ---- | 1 | 44 |
| 859 | 616AA2 | -304 | * | 22 | ---- | ---- | 1 | 44 |
| 860 | 617AA2 | -322 | * | 22 | ---- | ---- | 1 | 44 |
| 861 | 618AA2 | -294 | * | 22 | ---- | ---- | 1 | 44 |
| 862 | 619AA2 | -306 | * | 22 | ---- | ---- | 1 | 44 |
| 863 | 620AA2 | -269 | * | 22 | ---- | ---- | 1 | 44 |
| 864 | 621AA2 | -283 | * | 22 | ---- | ---- | 1 | 44 |
| 865 | 622AA2 | -309 | * | 22 | ---- | ---- | 1 | 44 |
| 866 | 623AA2 | -305 | * | 22 | ---- | ---- | 1 | 44 |
| 867 | 624AA2 | -317 | * | 22 | ---- | ---- | 1 | 44 |
| 868 | 625AA2 | 423 | * | 22 | ---- | ---- | 1 | 25 |
| 869 | 630AA2 | 448 | * | 22 | ---- | ---- | 1 | 25 |
| Tests 870 - 877 involved a gage length of 76 mm and a coupon width of 25 mm (standard test). | | | | | | | | |
| 870 | 626AA2 | 517 | * | 13 | 23.0 | 2.67 | 1 | 25 |
| 871 | 627AA2 | 462 | * | 13 | 23.2 | 2.10 | 1 | 25 |
| 872 | 628AA2 | 494 | * | 13 | 22.7 | 2.18 | 1 | 25 |
| 873 | 629AA2 | 463 | * | 13 | 22.1 | 2.10 | 1 | 25 |
| 877 | 630AA2 | 430 | * | 13 | 21.1 | 2.04 | 1 | 25 |
| Tests 879 - 888 involved a gage length of 76 mm and a coupon width of 25 mm (volume effect tests). | | | | | | | | |
| 879 | 631AA2 | 478 | * | 13 | ---- | ---- | 1 | 25 |
| 880 | 632AA2 | 478 | * | 13 | ---- | ---- | 1 | 25 |
| 881 | 633AA2 | 431 | * | 13 | ---- | ---- | 1 | 25 |
| 882 | 634AA2 | 489 | * | 13 | ---- | ---- | 1 | 25 |
| 883 | 635AA2 | 563 | * | 13 | ---- | ---- | 1 | 25 |
| 884 | 636AA2 | 420 | * | 13 | ---- | ---- | 1 | 25 |
| 885 | 637AA2 | 529 | * | 13 | ---- | ---- | 1 | 25 |
| 886 | 638AA2 | 524 | * | 13 | ---- | ---- | 1 | 25 |
| 887 | 639AA2 | 448 | * | 13 | ---- | ---- | 1 | 25 |
| 888 | 640AA2 | 446 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 890 - 906 involved a gage length of 38 mm and a coupon width of 13 mm (volume effect tests). | | | | | | | | |
| 890 | 642AA2 | 506 | * | 6 | ---- | ---- | 1 | 13 |
| 891 | 643AA2 | 486 | * | 6 | ---- | ---- | 1 | 13 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 892 | 644AA2 | 494 | * | 6 | ---- | ---- | 1 | 13 |
| 893 | 645AA2 | 494 | * | 6 | ---- | ---- | 1 | 13 |
| 895 | 647AA2 | 462 | * | 6 | ---- | ---- | 1 | 13 |
| 896 | 648AA2 | 437 | * | 6 | ---- | ---- | 1 | 13 |
| 897 | 649AA2 | 439 | * | 6 | ---- | ---- | 1 | 13 |
| 898 | 650AA2 | 506 | * | 6 | ---- | ---- | 1 | 13 |
| 900 | 652AA2 | 428 | * | 6 | ---- | ---- | 1 | 13 |
| 901 | 653AA2 | 469 | * | 6 | ---- | ---- | 1 | 13 |
| 902 | 654AA2 | 479 | * | 6 | ---- | ---- | 1 | 13 |
| 903 | 655AA2 | 472 | * | 6 | ---- | ---- | 1 | 13 |
| 904 | 656AA2 | 509 | * | 6 | ---- | ---- | 1 | 13 |
| 905 | 657AA2 | 474 | * | 6 | ---- | ---- | 1 | 13 |
| 906 | 658AA2 | 451 | * | 6 | ---- | ---- | 1 | 13 |
| Tests 907 - 916 involved a gage length of 95 mm and a coupon width of 32 mm (volume effect tests). | | | | | | | | |
| 907 | 659AA2 | -297 | * | 16 | ---- | ---- | 1 | 32 |
| 908 | 660AA2 | -297 | * | 16 | ---- | ---- | 1 | 32 |
| 909 | 661AA2 | -295 | * | 16 | ---- | ---- | 1 | 32 |
| 910 | 662AA2 | -297 | * | 16 | ---- | ---- | 1 | 32 |
| 911 | 663AA2 | -299 | * | 16 | ---- | ---- | 1 | 32 |
| 912 | 664AA2 | -290 | * | 16 | ---- | ---- | 1 | 32 |
| 913 | 665AA2 | -303 | * | 16 | ---- | ---- | 1 | 32 |
| 914 | 666AA2 | -292 | * | 16 | ---- | ---- | 1 | 32 |
| 915 | 667AA2 | -294 | * | 16 | ---- | ---- | 1 | 32 |
| 916 | 668AA2 | -296 | * | 16 | ---- | ---- | 1 | 32 |
| Tests 917 - 926 involved a gage length of 114 mm and a coupon width of 38 mm (volume effect tests). | | | | | | | | |
| 917 | 669AA2 | -277 | * | 19 | ---- | ---- | 1 | 38 |
| 918 | 670AA2 | -279 | * | 19 | ---- | ---- | 1 | 38 |
| 919 | 671AA2 | -282 | * | 19 | ---- | ---- | 1 | 38 |
| 920 | 672AA2 | -281 | * | 19 | ---- | ---- | 1 | 38 |
| 921 | 673AA2 | -283 | * | 19 | ---- | ---- | 1 | 38 |
| 922 | 674AA2 | -278 | * | 19 | ---- | ---- | 1 | 38 |
| 923 | 675AA2 | -287 | * | 19 | ---- | ---- | 1 | 38 |
| 924 | 676AA2 | -276 | * | 19 | ---- | ---- | 1 | 38 |
| 925 | 677AA2 | -281 | * | 19 | ---- | ---- | 1 | 38 |
| 926 | 678AA2 | -276 | * | 19 | ---- | ---- | 1 | 38 |

MATERIAL AA3

Lay-up = [(±45/0)₃]_S, V_F = 0.480, Ave. thickness = 3.45 mm, S.D. = 0.15 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|-----|------|------|---------|-----|
| 2367 | AA3104 | 482 | * | 0.5 | 23.7 | 2.3 | 1 | 25 |
| 2368 | AA3110 | 463 | * | 0.5 | 25.2 | 2.4 | 1 | 25 |
| 2369 | AA3109 | 489 | * | 0.5 | 25.3 | 2.2 | 1 | 25 |
| 2370 | AA3106 | 241/24 | 0.1 | 4 | 26.5 | 0.91 | 3,572 | 25 |
| 2371 | AA3113 | 241/24 | 0.1 | 4 | 25.8 | 0.94 | 4,447 | 25 |
| 2372 | AA3111 | 241/24 | 0.1 | 4 | 22.7 | 1.06 | 2,986 | 25 |
| 2373 | AA3114 | 172/17 | 0.1 | 8 | 23.9 | 0.81 | 25,183 | 25 |
| 2374 | AA3108 | 172/17 | 0.1 | 8 | 29.5 | 0.57 | 17,683 | 25 |
| 2375 | AA3102 | 172/17 | 0.1 | 8 | 23.4 | 0.81 | 23,753 | 25 |
| 2376 | AA3107 | 103/10 | 0.1 | 15 | 25.2 | 0.44 | 900,000 | 25R |
| 2377 | AA3115 | 310/31 | 0.1 | 2 | 26.5 | 1.39 | 493 | 25 |
| 2378 | AA3112 | 310/31 | 0.1 | 2 | 24.7 | 1.26 | 626 | 25 |
| 2379 | AA3103 | 310/31 | 0.1 | 2 | 25.2 | 1.23 | 812 | 25 |
| 2627 | AA3301 | -340 | * | 13 | ---- | ---- | 1 | 25 |
| 2628 | AA3302 | -283 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 2629 | AA3303 | -280 | * | 13 | ---- | ---- | 1 | 25 |
| 2630 | AA3304 | -233 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL AA4

Lay-up = $[(\pm 45/0)_2]_S$, $V_F = 0.326$, Ave. thickness = 5.12 mm, S.D. = 0.13 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 3513 | AA4104 | 310 | * | 13 | 22.0 | 2 | 1 | 25 |
| 3514 | AA4101 | 427 | * | 13 | 21.9 | 2.10 | 1 | 25 |
| 3515 | AA4102 | 365 | * | 13 | 21.4 | 1.85 | 1 | 25 |
| 3516 | AA4107 | 404 | * | 13 | 20.5 | 2.19 | 1 | 25 |
| 3517 | AA4109 | 241/24 | 0.1 | 2 | 18.3 | 1.36 | 1,203 | 25 |
| 3518 | AA4113 | 241/24 | 0.1 | 2 | 21.2 | 1.19 | 3,002 | 25 |
| 3519 | AA4111 | 241/24 | 0.1 | 2 | 19.5 | 1.42 | 2,752 | 25 |
| 3520 | AA4110 | 207/21 | 0.1 | 4 | 22.0 | 1.08 | 24,288 | 25 |
| 3521 | AA4112 | 207/21 | 0.1 | 4 | 19.1 | 1.15 | 19,180 | 25 |
| 3522 | AA4116 | 207/21 | 0.1 | 4 | 18.5 | 1.26 | 15,966 | 25 |
| 3523 | AA4120 | 172/17 | 0.1 | 5 | 20.5 | 0.90 | 179,566 | 25 |
| 3524 | AA4118 | 172/17 | 0.1 | 5 | ---- | ---- | 127,836 | 25 |
| 3829 | AA4136 | -413 | * | 13 | ---- | ---- | 1 | 25 |
| 3830 | AA4133 | -442 | * | 13 | ---- | ---- | 1 | 25 |
| 3831 | AA4131 | -493 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL BB

Lay-up = $[\pm 45/0_2/+45]_S$, $V_F = 0.430$, Ave. thickness = 2.67 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|-----|-------|--------|-----|----|------|------|-----------|--------|
| 927 | BB101 | 734 | * | 13 | 23.9 | 3.37 | 1 | 25 |
| 928 | BB102 | 728 | * | 13 | 24.8 | 2.94 | 1 | 25 |
| 929 | BB103 | 735 | * | 13 | 24.8 | 3.37 | 1 | 25 |
| 930 | BB113 | 703 | * | 13 | 25.9 | 2.91 | 1 | 25 tab |
| 931 | BB109 | 414/41 | 0.1 | 2 | 25.4 | 1.63 | 550 | 25 tab |
| 932 | BB119 | 414/41 | 0.1 | 2 | 23.8 | 1.74 | 673 | 25 tab |
| 933 | BB118 | 414/41 | 0.1 | 2 | 25.0 | 1.71 | 512 | 25 tab |
| 934 | BB117 | 345/35 | 0.1 | 5 | 26.5 | 1.23 | 1,810 | 25 tab |
| 935 | BB124 | 345/35 | 0.1 | 5 | 27.3 | 1.26 | 2,415 | 25 tab |
| 936 | BB115 | 345/35 | 0.1 | 5 | 23.8 | 1.45 | 2,585 | 25 tab |
| 937 | BB123 | 276/28 | 0.1 | 10 | 26.8 | 1.09 | 18,755 | 25 tab |
| 938 | BB112 | 276/28 | 0.1 | 10 | 24.1 | 1.14 | 12,437 | 25 tab |
| 939 | BB114 | 276/28 | 0.1 | 10 | 25.2 | 1.20 | 11,302 | 25 tab |
| 940 | BB110 | 207/21 | 0.1 | 15 | 26.3 | 0.85 | 494,149 | 25 tab |
| 941 | BB116 | 207/21 | 0.1 | 15 | 25.8 | 0.80 | 197,629 | 25 tab |
| 942 | BB111 | 207/21 | 0.1 | 15 | 25.8 | 0.81 | 390,137 | 25 tab |
| 943 | BB108 | 241/24 | 0.1 | 15 | 24.6 | 1.12 | 66,612 | 25 tab |
| 944 | BB121 | 241/24 | 0.1 | 15 | 24.3 | 1.02 | 47,939 | 25 tab |
| 945 | BB107 | 241/24 | 0.1 | 15 | 24.3 | 1.09 | 84,343 | 25 tab |
| 946 | BB122 | 193/19 | 0.1 | 20 | 25.2 | 0.78 | 1,100,000 | 25 tab |
| 947 | BB106 | 193/19 | 0.1 | 20 | 25.2 | 0.78 | 921,400 | 25 tab |
| 948 | BB120 | 193/19 | 0.1 | 20 | 25.6 | 0.82 | 1,320,150 | 25 tab |

Tests 949 - 955 were transverse tests tested in the $[\pm 45/90_2/+45]_S$ direction

| | | | | | | | | |
|-----|--------|------|---|----|------|------|---|--------|
| 949 | BB113T | 101 | * | 13 | 11.3 | 1.00 | 1 | 25 tab |
| 950 | BB112T | 104 | * | 13 | 11.3 | 0.94 | 1 | 25 tab |
| 951 | BB111T | 111 | * | 13 | 11.3 | 0.99 | 1 | 25 tab |
| 952 | BB120T | -225 | * | 13 | 12.5 | 1.81 | 1 | 25 |
| 953 | BB128T | -229 | * | 13 | 11.2 | 1.86 | 1 | 25 |
| 954 | BB127T | -244 | * | 13 | 12.2 | 1.99 | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| 955 | BB135T | -294 | * | 13 | ---- | 1 | 25 |
| 956 | BB141 | -325 | * | 13 | ---- | 1 | 25 |
| 957 | BB143 | -291 | * | 13 | ---- | 1 | 25 |
| 958 | BB105 | 193/19 | 0.1 | 15 | 26.0 | 707,401 | 25 tab |

MATERIAL CC

Lay-up = $[\pm 45/0_2/+45]_S$, $V_F = 0.397$, Ave. thickness = 2.44 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|---------|--------|
| 959 | CC105 | 574 | * | 13 | 21.0 | 2.74 | 1 | 25 |
| 960 | CC107 | 562 | * | 13 | 21.1 | 2.70 | 1 | 25 |
| 961 | CC102 | 574 | * | 13 | 20.6 | 2.78 | 1 | 25 |
| 962 | CC119 | 345/35 | 0.1 | 2 | 22.5 | 1.63 | 174 | 25 tab |
| 963 | CC108 | 345/35 | 0.1 | 2 | 21.0 | 1.84 | 124 | 25 tab |
| 964 | CC121 | 345/35 | 0.1 | 2 | 21.7 | 1.79 | 223 | 25 tab |
| 965 | CC118 | 276/28 | 0.1 | 4 | 21.9 | 1.55 | 1,787 | 25 tab |
| 966 | CC113 | 276/28 | 0.1 | 4 | 23.3 | 1.47 | 2,637 | 25 tab |
| 967 | CC104 | 276/28 | 0.1 | 4 | 21.2 | 1.30 | 3,029 | 25 tab |
| 968 | CC116 | 241/24 | 0.1 | 10 | 21.6 | 1.12 | 8,838 | 25 tab |
| 969 | CC117 | 241/24 | 0.1 | 10 | 23.3 | 1.14 | 6,956 | 25 tab |
| 970 | CC103 | 241/24 | 0.1 | 10 | 22.3 | 1.08 | 12,015 | 25 tab |
| 971 | CC112 | 207/21 | 0.1 | 15 | 21.9 | 0.99 | 25,203 | 25 tab |
| 972 | CC120 | 207/21 | 0.1 | 15 | 21.9 | 1.02 | 48,080 | 25 tab |
| 973 | CC124 | 207/21 | 0.1 | 15 | 21.6 | 1.05 | 32,670 | 25 tab |
| 974 | CC106 | 172/17 | 0.1 | 10 | 21.8 | 0.84 | 228,453 | 25 tab |
| 975 | CC114 | 172/17 | 0.1 | 15 | 23.2 | 0.74 | 205,864 | 25 tab |
| 976 | CC110 | 241/24 | 0.1 | 10 | ---- | ---- | 27,772 | 25 tab |
| 977 | CC115 | 207/21 | 0.1 | 10 | ---- | ---- | 158,287 | 25 tab |
| 978 | CC123 | 207/21 | 0.1 | 15 | ---- | ---- | 133,440 | 25 tab |
| 979 | CC109 | 207/21 | 0.1 | 15 | ---- | ---- | 243,962 | 25 tab |
| 980 | CC137 | 207/21 | 0.1 | 15 | ---- | ---- | 531,499 | 25 |
| 981 | CC135 | 207/21 | 0.1 | 15 | 20.7 | 1.00 | 631,495 | 25 |
| 982 | CC130 | 207/21 | 0.1 | 15 | 20.2 | 1.02 | 486,225 | 25 |
| 983 | CC134 | 276/28 | 0.1 | 10 | ---- | ---- | 50,289 | 25 |
| 984 | CC131 | 276/28 | 0.1 | 10 | ---- | ---- | 30,467 | 25 |
| 985 | CC133 | 276/28 | 0.1 | 10 | ---- | ---- | 38,977 | 25 |
| 986 | CC132 | 345/35 | 0.1 | 2 | ---- | ---- | 2,979 | 25 |
| 987 | CC143 | 345/35 | 0.1 | 2 | ---- | ---- | 4,476 | 25 |
| 988 | CC144 | 345/35 | 0.1 | 2 | ---- | ---- | 4,807 | 25 |
| 989 | CC142 | 531 | * | 13 | ---- | ---- | 1 | 25 |
| 990 | CC140 | 562 | * | 13 | ---- | ---- | 1 | 25 |
| 3052 | CC160 | -475 | * | 13 | ---- | ---- | 1 | 25 |
| 3053 | CC161 | -442 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CC2

Lay-up = $[\pm 45/0_3/+45]_S$, $V_F = 0.461$, Ave. thickness = 2.69 mm, S.D. = 0.03 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|-----|--------|--------|-----|----|------|------|---------|----|
| 991 | CC2101 | 746 | * | 13 | 27.0 | 2.78 | 1 | 25 |
| 992 | CC2103 | 730 | * | 13 | 26.9 | 2.86 | 1 | 25 |
| 993 | CC2102 | 701 | * | 13 | 27.0 | 2.81 | 1 | 25 |
| 994 | CC2105 | 414/41 | 0.1 | 5 | 25.6 | 1.62 | 4,104 | 25 |
| 995 | CC2106 | 276/28 | 0.1 | 15 | ---- | ---- | 168,303 | 25 |
| 996 | CC2116 | 276/28 | 0.1 | 10 | ---- | ---- | 132,591 | 25 |
| 997 | CC2108 | 276/28 | 0.1 | 10 | ---- | ---- | 176,536 | 25 |
| 998 | CC2111 | 414/41 | 0.1 | 15 | ---- | ---- | 2,231 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 999 | CC2113 | 414/41 | 0.1 | 4 | ---- | ---- | 2,820 | 25 |
| 1000 | CC2107 | 345/35 | 0.1 | 10 | ---- | ---- | 21,413 | 25 |
| 1001 | CC2117 | 345/35 | 0.1 | 10 | ---- | ---- | 16,914 | 25 |
| 1002 | CC2110 | 345/35 | 0.1 | 10 | ---- | ---- | 21,965 | 25 |
| 1003 | CC2109 | 207/21 | 0.1 | 20 | ---- | ---- | 1,873,767 | 25 |
| 1004 | CC2115 | 683 | * | 13 | ---- | ---- | 1 | 25 |
| 1005 | CC2114 | 695 | * | 13 | ---- | ---- | 1 | 25 |
| 1006 | CC2112 | 735 | * | 13 | ---- | ---- | 1 | 25 |
| 1842 | CC2201 | -555 | * | 13 | ---- | ---- | 1 | 25 |
| 1843 | CC2202 | -500 | * | 13 | ---- | ---- | 1 | 25 |
| 1844 | CC2119 | -526 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CC3

Lay-up = $[0/\pm 45/0_2/+45]_S$, $V_F = 0.444$, Ave. thickness = 2.74 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|-----|------|------|-----------|----|
| 1007 | CC3101 | 690 | * | 0.5 | 26.1 | 2.64 | 1 | 25 |
| 1008 | CC3102 | 657 | * | 0.5 | 25.8 | 2.54 | 1 | 25 |
| 1009 | CC3103 | 700 | * | 0.5 | 26.9 | 2.60 | 1 | 25 |
| 1010 | CC3107 | 414/41 | 0.1 | 5 | ---- | ---- | 1,324 | 25 |
| 1011 | CC3104 | 414/41 | 0.1 | 5 | ---- | ---- | 5,122 | 25 |
| 1012 | CC3105 | 414/41 | 0.1 | 5 | ---- | ---- | 4,241 | 25 |
| 1013 | CC3108 | 276/28 | 0.1 | 10 | ---- | ---- | 186,787 | 25 |
| 1014 | CC3106 | 276/28 | 0.1 | 10 | ---- | ---- | 226,915 | 25 |
| 1015 | CC3109 | 276/28 | 0.1 | 10 | ---- | ---- | 169,059 | 25 |
| 1016 | CC3111 | 414/41 | 0.1 | 5 | ---- | ---- | 4,469 | 25 |
| 1017 | CC3110 | 345/35 | 0.1 | 5 | ---- | ---- | 26,235 | 25 |
| 1018 | CC3113 | 345/35 | 0.1 | 5 | ---- | ---- | 31,512 | 25 |
| 1019 | CC3112 | 345/35 | 0.1 | 5 | ---- | ---- | 28,465 | 25 |
| 1020 | CC3121 | 241/24 | 0.1 | 15 | ---- | ---- | 371,472 | 25 |
| 1021 | CC3120 | 241/24 | 0.1 | 20 | ---- | ---- | 428,636 | 25 |
| 1022 | CC3124 | 207/21 | 0.1 | 15 | ---- | ---- | 2,016,665 | 25 |
| 1848 | CC3200 | -570 | * | 13 | ---- | ---- | 1 | 25 |
| 1849 | CC3201 | -539 | * | 13 | ---- | ---- | 1 | 25 |
| 1850 | CC3202 | -513 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CH

Lay-up = $[(\pm 45)]_S$, $V_F = 0.469$, Ave. thickness = 3.86 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|-----------|------|
| 1254 | CH108 | 135 | * | 13 | 15.4 | 1.2 | 1 | 25 |
| 1255 | CH119 | 162 | * | 13 | 13.7 | 1.7 | 1 | 25 |
| 1256 | CH112 | 139 | * | 13 | 12.8 | 1.5 | 1 | 25 |
| 1257 | CH111 | 103/10 | 0.1 | 2 | 13.4 | 0.97 | 3,591 | 25 |
| 1258 | CH105 | 103/10 | 0.1 | 2 | 12.3 | 0.93 | 1,545 | 25 |
| 1259 | CH116 | 86/9 | 0.1 | 5 | 13.5 | 0.64 | 2,886 | 25 |
| 1260 | CH109 | 69/7 | 0.1 | 5 | 13.5 | 0.51 | 37,378 | 25 |
| 1261 | CH117 | 52/5 | 0.1 | 15 | 11.7 | 0.44 | 5,000,000 | 25 R |
| 1262 | CH114 | 103/10 | 0.1 | 2 | 13.6 | 0.94 | 920 | 25 |
| 1263 | CH113 | 86/9 | 0.1 | 4 | 14.1 | 0.91 | 5,340 | 25 |
| 1264 | CH107 | 86/9 | 0.1 | 4 | 14.3 | 0.92 | 4,604 | 25 |
| 1265 | CH104 | 69/7 | 0.1 | 5 | 13.8 | 0.59 | 73,763 | 25 |
| 1266 | CH106 | 69/7 | 0.1 | 5 | 14.3 | 0.64 | 28,432 | 25 |
| 1267 | CH128 | 137 | * | 13 | 13.7 | 1.4 | 1 | 25 |
| 1268 | CH125 | 62/6 | 0.1 | 10 | 14.1 | 0.51 | 327,862 | 25 |
| 1269 | CH126 | 62/6 | 0.1 | 10 | 13.0 | 0.60 | 250,000 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1270 | CH110 | 62/6 | 0.1 | 10 | 14.0 | 0.55 | 171,332 | 25 |
| 1271 | CH131 | -190 | * | 0.1 | ---- | ---- | 1 | 25 |
| 1272 | CH141 | -179 | * | 0.1 | ---- | ---- | 1 | 25 |
| 1273 | CH152 | -171 | * | 0.1 | ---- | ---- | 1 | 25 |
| 1274 | CH137 | -124/-12 | 10 | 2 | ---- | ---- | 433 | 25 |
| 1275 | CH134 | -124/-12 | 10 | 2 | ---- | ---- | 870 | 25 |
| 1276 | CH136 | -86/-9 | 10 | 5 | ---- | ---- | 61,185 | 25 |
| 1277 | CH138 | -86/-9 | 10 | 10 | ---- | ---- | 31,317 | 25 |
| 1278 | CH139 | -69/-7 | 10 | 20 | ---- | ---- | 1,317,352 | 25 |
| 1279 | CH145 | -103/-10 | 10 | 5 | ---- | ---- | 5,030 | 25 |
| 1280 | CH144 | -103/-10 | 10 | 5 | ---- | ---- | 9,428 | 25 |
| 1281 | CH152 | -124/-12 | 10 | 2 | ---- | ---- | 956 | 25 |
| 1282 | CH132 | -103/-10 | 10 | 5 | ---- | ---- | 6,653 | 25 |
| 1283 | CH133 | -69/-7 | 10 | 20 | ---- | ---- | 1,125,335 | 25 |
| 1284 | CH135 | -86/-9 | 10 | 10 | ---- | ---- | 76,452 | 25 |
| 1851 | CH146 | -171 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CH2

Layout = $[(\pm 45/0/\pm 45)]_S$, $V_F = 0.441$, Ave. thickness = 3.78 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|---|---------|----------|-----|----|------|------|-----------|----|
| 1125 | CH2116 | 354 | * | 13 | 16.0 | 2.21 | 1 | 25 |
| 1153 | CH2101 | 365 | * | 13 | 17.2 | 2.12 | 1 | 25 |
| 1154 | CH2107 | 367 | * | 13 | 17.9 | 2.05 | 1 | 25 |
| 1155 | CH2103 | 241/24 | 0.1 | 2 | 16.4 | 1.80 | 396 | 25 |
| 1356 | CH2112 | 241/24 | 0.1 | 2 | 16.2 | 2.20 | 221 | 25 |
| 1357 | CH2109 | 207/21 | 0.1 | 4 | 16.6 | 1.79 | 2,148 | 25 |
| 1358 | CH2115 | 207/21 | 0.1 | 4 | 16.5 | 1.77 | 1,917 | 25 |
| 1359 | CH2113 | 172/17 | 0.1 | 5 | 15.9 | 1.34 | 11,276 | 25 |
| 1360 | CH2106 | 138/14 | 0.1 | 5 | 16.7 | 1.10 | 40,073 | 25 |
| 1361 | CH2111 | 103/10 | 0.1 | 20 | 17.2 | 0.64 | 1,855,170 | 25 |
| 1362 | CH2117 | 207/21 | 0.1 | 2 | 16.8 | 1.72 | 1,342 | 25 |
| 1363 | CH2114 | 172/17 | 0.1 | 4 | 17.0 | 1.25 | 9,910 | 25 |
| 1364 | CH2105 | 172/17 | 0.1 | 4 | 17.4 | 1.23 | 8,987 | 25 |
| 1365 | CH2110 | 138/14 | 0.1 | 10 | 14.8 | 1.14 | 54,659 | 25 |
| 1366 | CH2108 | 138/14 | 0.1 | 5 | 16.9 | 0.97 | 37,586 | 25 |
| 1367 | CH2102 | 121/12 | 0.1 | 10 | 18.0 | 0.77 | 97,564 | 25 |
| tests 1368, 1370, 1371, 1375 were transverse tests tested in the $[(\pm 45/90/\pm 45)]_S$ direction | | | | | | | | |
| 1368 | CH2149T | 117 | * | 13 | 12.4 | 2.64 | 1 | 25 |
| 1369 | CH2104 | 370 | * | 13 | 16.5 | 2.85 | 1 | 25 |
| 1370 | CH2146T | 134 | * | 13 | 12.6 | ---- | 1 | 25 |
| 1371 | CH2147T | 122 | * | 13 | 12.3 | ---- | 1 | 25 |
| 1372 | CH2129 | -342 | * | 13 | ---- | ---- | 1 | 25 |
| 1373 | CH2130 | -333 | * | 13 | ---- | ---- | 1 | 25 |
| 1374 | CH2128 | -350 | * | 13 | ---- | ---- | 1 | 25 |
| 1375 | CH2146T | -171 | * | 13 | ---- | ---- | 1 | 25 |
| 1376 | CH2127 | -276/-28 | 10 | 2 | ---- | ---- | 39 | 25 |
| 1377 | CH2156 | -207/-21 | 10 | 2 | ---- | ---- | 848 | 25 |
| 1378 | CH2126 | -207/-21 | 10 | 2 | ---- | ---- | 1,972 | 25 |
| 1379 | CH2118 | -207/-21 | 10 | 2 | ---- | ---- | 2,458 | 25 |
| 1380 | CH2141 | -172/-17 | 10 | 5 | ---- | ---- | 19,691 | 25 |
| 1381 | CH2122 | -172/-17 | 10 | 5 | ---- | ---- | 15,420 | 25 |
| 1382 | CH2119 | -138/-14 | 10 | 20 | ---- | ---- | 871,785 | 25 |
| 1383 | CH2121 | -172/-17 | 10 | 5 | ---- | ---- | 14,149 | 25 |
| 1384 | CH2133 | -155/-16 | 10 | 10 | ---- | ---- | 166,026 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 1385 | CH2125 | -155/-16 | 10 | 15 | ---- | ---- | 83,700 | 25 |

MATERIAL CH3

Lay-up = $[(\pm 45/0/\pm 45)]_S$, $V_F = 0.415$, Ave. thickness = 4.19 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|---------|----|
| 1386 | CH3105 | -326 | * | 13 | ---- | ---- | 1 | 25 |
| 1387 | CH3117 | -319 | * | 13 | ---- | ---- | 1 | 25 |
| 1388 | CH3111 | -309 | * | 13 | ---- | ---- | 1 | 25 |
| 1389 | CH3106 | -207/-21 | 10 | 2 | ---- | ---- | 238 | 25 |
| 1390 | CH3109 | -207/-21 | 10 | 2 | ---- | ---- | 159 | 25 |
| 1391 | CH3110 | -172/-17 | 10 | 5 | ---- | ---- | 1,331 | 25 |
| 1392 | CH3115 | -172/-17 | 10 | 4 | ---- | ---- | 760 | 25 |
| 1393 | CH3108 | -138/-14 | 10 | 5 | ---- | ---- | 23,189 | 25 |
| 1394 | CH3102 | -138/-14 | 10 | 5 | ---- | ---- | 14,301 | 25 |
| 1395 | CH3103 | -207/-21 | 10 | 2 | ---- | ---- | 264 | 25 |
| 1396 | CH3104 | -172/-17 | 10 | 4 | ---- | ---- | 982 | 25 |
| 1397 | CH3107 | -138/-14 | 10 | 10 | ---- | ---- | 27,750 | 25 |
| 1398 | CH3101 | -121/-12 | 10 | 15 | ---- | ---- | 141,901 | 25 |
| 1399 | CH3112 | -121/-12 | 10 | 15 | ---- | ---- | 81,244 | 25 |
| 1400 | CH3118 | -121/-12 | 10 | 20 | ---- | ---- | 164,715 | 25 |
| 1472 | CH3124 | 333 | * | 13 | 17.3 | 2.71 | 1 | 25 |
| 1473 | CH3135 | 340 | * | 13 | 16.5 | 2.85 | 1 | 25 |
| 1474 | CH3131 | 336 | * | 13 | 16.1 | 2.74 | 1 | 25 |
| 1475 | CH3125 | 241/24 | 0.1 | 2 | 16.6 | 2.23 | 173 | 25 |
| 1476 | CH3132 | 241/24 | 0.1 | 2 | 16.1 | 2.85 | 174 | 25 |
| 1477 | CH3136 | 241/24 | 0.1 | 2 | 15.9 | 2.26 | 134 | 25 |
| 1478 | CH3122 | 207/21 | 0.1 | 2 | 16.8 | 1.59 | 1,166 | 25 |
| 1479 | CH3134 | 207/21 | 0.1 | 2 | 17.0 | 1.69 | 1,270 | 25 |
| 1480 | CH3128 | 207/21 | 0.1 | 2 | 15.6 | 1.82 | 814 | 25 |
| 1481 | CH3119 | 172/17 | 0.1 | 5 | 17.8 | 1.19 | 8,478 | 25 |
| 1482 | CH3129 | 172/17 | 0.1 | 4 | 16.6 | 1.35 | 12,387 | 25 |
| 1483 | CH3123 | 172/17 | 0.1 | 5 | 18.3 | 1.25 | 14,410 | 25 |
| 1484 | CH3126 | 138/14 | 0.1 | 10 | 17.2 | 0.95 | 282,621 | 25 |
| 1485 | CH3121 | 138/14 | 0.1 | 5 | 15.7 | 1.04 | 200,174 | 25 |
| 1486 | CH3130 | 138/14 | 0.1 | 10 | 18.1 | 0.91 | 429,020 | 25 |

MATERIAL CH4

Lay-up = $[(\pm 45)_4]_S$, $V_F = 0.395$, Ave. thickness = 2.92 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|----|----|------|------|---------|----|
| 1445 | CH4123 | -173 | * | 13 | ---- | ---- | 1 | 25 |
| 1446 | CH4133 | -171 | * | 13 | ---- | ---- | 1 | 25 |
| 1447 | CH4129 | -173 | * | 13 | ---- | ---- | 1 | 25 |
| 1448 | CH4140 | -124/-12 | 10 | 2 | ---- | ---- | 144 | 25 |
| 1449 | CH4134 | -124/-12 | 10 | 1 | ---- | ---- | 188 | 25 |
| 1450 | CH4141 | -124/-12 | 10 | 1 | ---- | ---- | 256 | 25 |
| 1451 | CH4137 | -103/-10 | 10 | 2 | ---- | ---- | 1,313 | 25 |
| 1452 | CH4142 | -103/-10 | 10 | 2 | ---- | ---- | 1,883 | 25 |
| 1453 | CH4126 | -103/-10 | 10 | 2 | ---- | ---- | 873 | 25 |
| 1454 | CH4128 | -86/-9 | 10 | 5 | ---- | ---- | 21,748 | 25 |
| 1455 | CH4130 | -86/-9 | 10 | 5 | ---- | ---- | 13,364 | 25 |
| 1456 | CH4131 | -86/-9 | 10 | 4 | ---- | ---- | 11,200 | 25 |
| 1457 | CH4125 | -69/-7 | 10 | 15 | ---- | ---- | 206,018 | 25 |
| 1458 | CH4135 | -69/-7 | 10 | 10 | ---- | ---- | 564,767 | 25 |
| 1459 | CH4122 | -69/-7 | 10 | 15 | ---- | ---- | 485,632 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1509 | CH4106 | 160 | * | 13 | 11.0 | 6.41 | 1 | 25 |
| 1510 | CH4114 | 157 | * | 13 | 11.2 | 5.15 | 1 | 25 |
| 1511 | CH4115 | 149 | * | 13 | 11.4 | 6.35 | 1 | 25 |
| 1512 | CH4117 | 103/10 | 0.1 | 2 | 11.4 | 1.70 | 198 | 25 |
| 1513 | CH4107 | 103/10 | 0.1 | 2 | 11.0 | 1.80 | 287 | 25 |
| 1514 | CH4110 | 103/10 | 0.1 | 2 | 12.4 | 1.40 | 314 | 25 |
| 1515 | CH4118 | 86/9 | 0.1 | 4 | 11.7 | 1.38 | 1,319 | 25 |
| 1516 | CH4111 | 86/9 | 0.1 | 2 | 12.1 | 0.99 | 2,311 | 25 |
| 1517 | CH4113 | 86/9 | 0.1 | 4 | 10.9 | 1.24 | 1,186 | 25 |
| 1518 | CH4102 | 69/7 | 0.1 | 10 | 11.2 | 0.82 | 7,072 | 25 |
| 1519 | CH4119 | 69/7 | 0.1 | 10 | 10.7 | 0.79 | 10,172 | 25 |
| 1520 | CH4103 | 69/7 | 0.1 | 10 | 12.2 | 0.64 | 15,843 | 25 |
| 1521 | CH4101 | 52/5 | 0.1 | 20 | 11.1 | 0.52 | 342,135 | 25 |
| 1522 | CH4116 | 52/5 | 0.1 | 20 | ---- | ---- | 224,519 | 25 |
| 1523 | CH4104 | 52/5 | 0.1 | 20 | 12.2 | 0.47 | 1,136,938 | 25 |

MATERIAL CH5

Lay-up = $[(\pm 45)_3]_S$, $V_F = 0.279$, Ave. thickness = 3.05 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|---------|----|
| 1460 | CH5126 | -190 | * | 13 | ---- | ---- | 1 | 25 |
| 1461 | CH5123 | -190 | * | 13 | ---- | ---- | 1 | 25 |
| 1462 | CH5119 | -190 | * | 13 | ---- | ---- | 1 | 25 |
| 1463 | CH5127 | -86/-9 | 10 | 10 | ---- | ---- | 131,302 | 25 |
| 1464 | CH5128 | -121/-12 | 10 | 2 | ---- | ---- | 1,548 | 25 |
| 1465 | CH5129 | -121/-12 | 10 | 2 | ---- | ---- | 2,777 | 25 |
| 1466 | CH5125 | -121/-12 | 10 | 2 | ---- | ---- | 2,989 | 25 |
| 1467 | CH5118 | -103/-10 | 10 | 4 | ---- | ---- | 12,027 | 25 |
| 1468 | CH5120 | -103/-10 | 10 | 5 | ---- | ---- | 9,130 | 25 |
| 1469 | CH5121 | -103/-10 | 10 | 5 | ---- | ---- | 18,621 | 25 |
| 1470 | CH5122 | -86/-9 | 10 | 15 | ---- | ---- | 329,191 | 25 |
| 1471 | CH5124 | -86/-9 | 10 | 15 | ---- | ---- | 277,202 | 25 |
| 1524 | CH5112 | 147 | * | 13 | 9.8 | 4.12 | 1 | 25 |
| 1525 | CH5103 | 134 | * | 13 | 7.5 | ---- | 1 | 25 |
| 1526 | CH5105 | 137 | * | 13 | 9.0 | ---- | 1 | 25 |
| 1527 | CH5115 | 86/9 | 0.1 | 2 | 8.3 | ---- | 1,140 | 25 |
| 1528 | CH5101 | 86/9 | 0.1 | 2 | 8.3 | ---- | 1,310 | 25 |
| 1529 | CH5106 | 86/9 | 0.1 | 2 | 8.1 | 1.69 | 749 | 25 |
| 1530 | CH5102 | 69/7 | 0.1 | 4 | 8.1 | 0.95 | 11,184 | 25 |
| 1531 | CH5113 | 69/7 | 0.1 | 5 | 8.8 | 0.90 | 17,929 | 25 |
| 1532 | CH5104 | 69/7 | 0.1 | 4 | 9.0 | 0.90 | 14,588 | 25 |
| 1533 | CH5114 | 52/5 | 0.1 | 15 | 8.7 | 0.63 | 113,426 | 25 |
| 1534 | CH5107 | 52/5 | 0.1 | 12 | 8.5 | 0.63 | 282,007 | 25 |
| 1535 | CH5111 | 52/5 | 0.1 | 10 | 8.3 | 0.65 | 181,712 | 25 |

Tests 3557 - 3583 involved a gage length of 13 mm (strain rate effect tests).

| 3557 | CH5121 | -194 | * | 0.025 | ---- | ---- | 1 | 25 tab |
|--------------------------|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3558 | CH5144 | -202 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3559 | CH5142 | -189 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3560 | CH5122 | -214 | * | 0.254 | ---- | ---- | 1 | 25 tab |
| 3561 | CH5123 | -207 | * | 0.254 | ---- | ---- | 1 | 25 tab |
| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
| 3562 | CH5135 | -213 | * | 0.254 | ---- | ---- | 1 | 25 tab |

| | | | | | | | | |
|------|--------|------|---|------|------|------|---|--------|
| 3563 | CH5145 | -213 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3564 | CH5147 | -206 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3565 | CH5146 | -219 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3566 | CH5148 | -230 | * | 6.35 | ---- | ---- | 1 | 25 tab |
| 3567 | CH5124 | -225 | * | 6.35 | ---- | ---- | 1 | 25 tab |
| 3568 | CH5133 | -216 | * | 6.35 | ---- | ---- | 1 | 25 tab |
| 3569 | CH5140 | -223 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3570 | CH5141 | -225 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3571 | CH5143 | -243 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3572 | CH5118 | -227 | * | 19.1 | ---- | ---- | 1 | 25 tab |
| 3573 | CH5125 | -224 | * | 19.1 | ---- | ---- | 1 | 25 tab |
| 3574 | CH5132 | -207 | * | 19.1 | ---- | ---- | 1 | 25 tab |
| 3575 | CH5120 | -242 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3576 | CH5136 | -242 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3577 | CH5137 | -211 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3578 | CH5138 | -223 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3579 | CH5139 | -238 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3580 | CH5116 | -215 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3581 | CH5136 | -241 | * | 127 | ---- | ---- | 1 | 25 tab |
| 3582 | CH5126 | -239 | * | 127 | ---- | ---- | 1 | 25 tab |
| 3583 | CH5127 | -228 | * | 127 | ---- | ---- | 1 | 25 tab |

Tests 3557 - 3583 involved a gage length of 100 mm (strain rate effect tests).

| | | | | | | | | |
|------|--------|-----|---|-------|------|------|---|--------|
| 3584 | CH5105 | 120 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3585 | CH5114 | 120 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3586 | CH5111 | 120 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3587 | CH5112 | 125 | * | 0.254 | ---- | ---- | 1 | 25 tab |
| 3588 | CH5110 | 126 | * | 0.254 | ---- | ---- | 1 | 25 tab |
| 3589 | CH5109 | 126 | * | 0.254 | ---- | ---- | 1 | 25 tab |
| 3590 | CH5107 | 126 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3591 | CH5108 | 137 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3592 | CH5102 | 131 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3593 | CH5103 | 137 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3594 | CH5113 | 135 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3595 | CH5106 | 136 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3596 | CH5101 | 137 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3597 | CH5104 | 142 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3598 | CH5114 | 131 | * | 63.5 | ---- | ---- | 1 | 25 tab |

MATERIAL CH6

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.441$, Ave. thickness = 2.26 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|----|----|------|------|--------|----|
| 1416 | CH6106 | -413 | * | 13 | ---- | ---- | 1 | 25 |
| 1417 | CH6114 | -381 | * | 13 | ---- | ---- | 1 | 25 |
| 1418 | CH6105 | -428 | * | 13 | ---- | ---- | 1 | 25 |
| 1419 | CH6103 | -207/-21 | 10 | 5 | ---- | ---- | 15,707 | 25 |
| 1420 | CH6117 | -207/-21 | 10 | 10 | ---- | ---- | 20,605 | 25 |
| 1421 | CH6107 | -207/-21 | 10 | 5 | ---- | ---- | 38,711 | 25 |
| 1422 | CH6101 | -241/-24 | 10 | 4 | ---- | ---- | 10,088 | 25 |
| 1423 | CH6112 | -241/-24 | 10 | 4 | ---- | ---- | 11,950 | 25 |
| 1424 | CH6102 | -241/-24 | 10 | 4 | ---- | ---- | 8,842 | 25 |
| 1425 | CH6109 | -276/-28 | 10 | 2 | ---- | ---- | 2,727 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|-----------|----|
| 1426 | CH6110 | -276/-28 | 10 | 2 | ---- | ---- | 1,373 | 25 |
| 1427 | CH6119 | -276/-28 | 10 | 2 | ---- | ---- | 840 | 25 |
| 1428 | CH6104 | -172/-17 | 10 | 20 | ---- | ---- | 880,742 | 25 |
| 1429 | CH6118 | -172/-17 | 10 | 20 | ---- | ---- | 1,628,900 | 25 |
| 1487 | CH6123 | 510 | * | 13 | 22.5 | 3.34 | 1 | 25 |
| 1488 | CH6128 | 500 | * | 13 | 21.6 | 2.98 | 1 | 25 |
| 1489 | CH6133 | 495 | * | 13 | 22.9 | 3.24 | 1 | 25 |
| 1490 | CH6140 | 345/35 | 0.1 | 2 | 20.9 | 2.11 | 284 | 25 |
| 1491 | CH6127 | 345/35 | 0.1 | 2 | 20.0 | 2.24 | 189 | 25 |
| 1492 | CH6134 | 345/35 | 0.1 | 2 | 21.2 | 2.04 | 246 | 25 |
| 1493 | CH6139 | 310/31 | 0.1 | 2 | 20.3 | 1.81 | 561 | 25 |
| 1494 | CH6124 | 310/31 | 0.1 | 2 | 20.9 | 1.76 | 758 | 25 |
| 1495 | CH6138 | 310/31 | 0.1 | 2 | 20.5 | 1.78 | 619 | 25 |
| 1496 | CH6130 | 276/28 | 0.1 | 4 | 20.3 | 1.64 | 2,224 | 25 |
| 1497 | CH6131 | 276/28 | 0.1 | 4 | 21.1 | 1.60 | 1,490 | 25 |
| 1498 | CH6125 | 276/28 | 0.1 | 4 | 22.4 | 1.41 | 2,153 | 25 |
| 1499 | CH6126 | 241/24 | 0.1 | 5 | 21.8 | 1.30 | 4,278 | 25 |
| 1500 | CH6129 | 241/24 | 0.1 | 10 | 21.0 | 1.29 | 6,877 | 25 |
| 1501 | CH6135 | 207/21 | 0.1 | 10 | 23.0 | 1.04 | 13,309 | 25 |
| 1502 | CH6132 | 207/21 | 0.1 | 5 | 22.1 | 1.04 | 15,150 | 25 |
| 1503 | CH6141 | 207/21 | 0.1 | 5 | 22.4 | 1.06 | 11,807 | 25 |
| 1504 | CH6122 | 172/17 | 0.1 | 5 | 21.7 | 0.87 | 44,634 | 25 |
| 1505 | CH6136 | 172/17 | 0.1 | 10 | 22.1 | 0.86 | 37,335 | 25 |
| 1506 | CH6137 | 138/14 | 0.1 | 10 | 22.5 | 0.67 | 224,743 | 25 |
| 1507 | CH6142 | 138/14 | 0.1 | 10 | 21.1 | 0.69 | 138,170 | 25 |
| 1508 | CH6148 | 121/12 | 0.1 | 20 | 20.5 | 0.59 | 419,563 | 25 |

MATERIAL CH7

Lay-up = $[(\pm 45)_2]_s$, $V_F = 0.546$, Ave. thickness = 3.86 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|---------|----|
| 1401 | CH7110 | -174 | * | 13 | ---- | ---- | 1 | 25 |
| 1402 | CH7114 | -164 | * | 13 | ---- | ---- | 1 | 25 |
| 1403 | CH7109 | -165 | * | 13 | ---- | ---- | 1 | 25 |
| 1404 | CH7107 | -103/-10 | 10 | 2 | ---- | ---- | 1,918 | 25 |
| 1405 | CH7102 | -103/-10 | 10 | 2 | ---- | ---- | 1,763 | 25 |
| 1406 | CH7106 | -103/-10 | 10 | 2 | ---- | ---- | 3,055 | 25 |
| 1407 | CH7108 | -86/-9 | 10 | 5 | ---- | ---- | 16,492 | 25 |
| 1408 | CH7104 | -86/-9 | 10 | 5 | ---- | ---- | 20,747 | 25 |
| 1409 | CH7111 | -86/-9 | 10 | 5 | ---- | ---- | 15,719 | 25 |
| 1410 | CH7150 | -69/-7 | 10 | 20 | ---- | ---- | 96,260 | 25 |
| 1411 | CH7112 | -69/-7 | 10 | 20 | ---- | ---- | 278,521 | 25 |
| 1412 | CH7101 | -69/-7 | 10 | 15 | ---- | ---- | 167,393 | 25 |
| 1413 | CH7122 | 112 | * | 13 | 13.8 | 1.75 | 1 | 25 |
| 1414 | CH7126 | 107 | * | 13 | 15.4 | ---- | 1 | 25 |
| 1415 | CH7128 | 113 | * | 13 | 15.4 | ---- | 1 | 25 |
| 1536 | CH7115 | 115 | * | 13 | 15.7 | 4.80 | 1 | 25 |
| 1537 | CH7117 | 116 | * | 13 | 17.9 | ---- | 1 | 25 |
| 1538 | CH7127 | 112 | * | 13 | 18.6 | ---- | 1 | 25 |
| 1539 | CH7125 | 69/7 | 0.1 | 5 | 16.3 | 0.55 | 4,943 | 25 |
| 1540 | CH7120 | 69/7 | 0.1 | 5 | 17.2 | 0.49 | 3,145 | 25 |
| 1541 | CH7119 | 69/7 | 0.1 | 5 | 17.5 | 0.49 | 3,797 | 25 |
| 1542 | CH7121 | 52/5 | 0.1 | 10 | 17.8 | 0.32 | 92,285 | 25 |
| 1543 | CH7116 | 52/5 | 0.1 | 10 | 16.5 | 0.34 | 62,832 | 25 |
| 1544 | CH7123 | 52/5 | 0.1 | 10 | 15.2 | 0.34 | 116,214 | 25 |
| 1545 | CH7130 | 83/8 | 0.1 | 2 | 19.0 | 0.70 | 418 | 25 |
| 1546 | CH7118 | 83/8 | 0.1 | 2 | 18.2 | 0.57 | 521 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL CH8

Lay-up = $[(\pm 45)_2]_s$, $V_F = 0.366$, Ave. thickness = 5.89 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|-----------|----|
| 1430 | CH8141 | -145 | * | 13 | ---- | ---- | 1 | 25 |
| 1431 | CH8128 | -145 | * | 13 | ---- | ---- | 1 | 25 |
| 1432 | CH8122 | -148 | * | 13 | ---- | ---- | 1 | 25 |
| 1433 | CH8136 | -103/-10 | 10 | 4 | ---- | ---- | 191 | 25 |
| 1434 | CH8126 | -103/-10 | 10 | 2 | ---- | ---- | 99 | 25 |
| 1435 | CH8125 | -103/-10 | 10 | 2 | ---- | ---- | 215 | 25 |
| 1436 | CH8129 | -86/-9 | 10 | 2 | ---- | ---- | 1,242 | 25 |
| 1437 | CH8121 | -86/-9 | 10 | 2 | ---- | ---- | 862 | 25 |
| 1438 | CH8127 | -86/-9 | 10 | 2 | ---- | ---- | 719 | 25 |
| 1439 | CH8130 | -69/-7 | 10 | 4 | ---- | ---- | 2,509 | 25 |
| 1440 | CH8139 | -69/-7 | 10 | 4 | ---- | ---- | 3,894 | 25 |
| 1441 | CH8135 | -69/-7 | 10 | 4 | ---- | ---- | 1,784 | 25 |
| 1442 | CH8124 | -52/-5 | 10 | 5 | ---- | ---- | 11,312 | 25 |
| 1443 | CH8123 | -52/-5 | 10 | 5 | ---- | ---- | 8,752 | 25 |
| 1444 | CH8132 | -52/-5 | 10 | 5 | ---- | ---- | 36,219 | 25 |
| 1547 | CH8107 | 91 | * | 13 | 9.4 | 5.86 | 1 | 25 |
| 1548 | CH8104 | 97 | * | 13 | 9.8 | 6.70 | 1 | 25 |
| 1549 | CH8118 | 90 | * | 13 | 11.9 | 7.43 | 1 | 25 |
| 1550 | CH8116 | 52/5 | 0.1 | 4 | 9.0 | 0.61 | 8,968 | 25 |
| 1551 | CH8102 | 52/5 | 0.1 | 4 | 10.0 | 0.60 | 9,804 | 25 |
| 1552 | CH8106 | 52/5 | 0.1 | 5 | 8.6 | 0.65 | 10,105 | 25 |
| 1553 | CH8105 | 62/6 | 0.1 | 2 | 12.4 | 0.60 | 1,756 | 25 |
| 1554 | CH8113 | 62/6 | 0.1 | 2 | 9.5 | 0.90 | 1,333 | 25 |
| 1555 | CH8119 | 62/6 | 0.1 | 2 | 9.2 | 0.82 | 1,691 | 25 |
| 1556 | CH8115 | 41/4 | 0.1 | 10 | 10.7 | 0.42 | 59,831 | 25 |
| 1557 | CH8114 | 41/4 | 0.1 | 10 | 11.1 | 0.40 | 50,912 | 25 |
| 1558 | CH8103 | 41/4 | 0.1 | 10 | 9.4 | 0.43 | 70,962 | 25 |
| 1559 | CH8101 | 34/3 | 0.1 | 15 | 9.3 | 0.37 | 1,480,988 | 25 |

MATERIAL CH9

Lay-up = $[(\pm 45)_3]_s$, $V_F = 0.400$, Ave. thickness = 2.13 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 1560 | CH9106 | 157 | * | 13 | 10.4 | 7.70 | 1 | 25 |
| 1561 | CH9113 | 144 | * | 13 | 10.1 | 5.17 | 1 | 25 |
| 1562 | CH9105 | 151 | * | 13 | 10.6 | 9.15 | 1 | 25 |
| 1563 | CH9110 | 103/10 | 0.1 | 2 | 10.0 | 1.80 | 250 | 25 |
| 1564 | CH9101 | 103/10 | 0.1 | 2 | 10.6 | 1.70 | 285 | 25 |
| 1565 | CH9114 | 103/10 | 0.1 | 2 | 10.8 | 2.00 | 294 | 25 |
| 1566 | CH9108 | 86/9 | 0.1 | 2 | 10.1 | 1.30 | 1,503 | 25 |
| 1567 | CH9112 | 86/9 | 0.1 | 2 | 10.8 | 1.17 | 1,901 | 25 |
| 1568 | CH9103 | 86/9 | 0.1 | 2 | 10.4 | 1.32 | 2,357 | 25 |
| 1569 | CH9107 | 69/7 | 0.1 | 5 | 9.7 | 0.97 | 11,702 | 25 |
| 1570 | CH9109 | 52/5 | 0.1 | 20 | 11.5 | 0.46 | 868,713 | 25 |
| 1571 | CH9102 | 69/7 | 0.1 | 5 | 8.1 | 0.90 | 8,369 | 25 |
| 1572 | CH9115 | 69/7 | 0.1 | 5 | 10.3 | 0.83 | 13,987 | 25 |
| 1573 | CH9116 | 52/5 | 0.1 | 15 | 10.1 | 0.54 | 937,400 | 25 |
| 1643 | CH9144 | -172 | * | 13 | ---- | ---- | 1 | 25 |
| 1644 | CH9136 | -176 | * | 13 | ---- | ---- | 1 | 25 |
| 1645 | CH9133 | -175 | * | 13 | ---- | ---- | 1 | 25 |

| | | | | | | | | |
|------|--------|----------|----|----|------|------|---------|----|
| 1646 | CH9132 | -121/-12 | 10 | 2 | ---- | ---- | 299 | 25 |
| 1647 | CH9137 | -121/-12 | 10 | 4 | ---- | ---- | 738 | 25 |
| 1648 | CH9145 | -121/-12 | 10 | 2 | ---- | ---- | 352 | 25 |
| 1649 | CH9143 | -103/-10 | 10 | 4 | ---- | ---- | 5,842 | 25 |
| 1650 | CH9140 | -103/-10 | 10 | 4 | ---- | ---- | 1,801 | 25 |
| 1651 | CH9134 | -103/-10 | 10 | 2 | ---- | ---- | 2,917 | 25 |
| 1652 | CH9130 | -86/-9 | 10 | 10 | ---- | ---- | 68,643 | 25 |
| 1653 | CH9138 | -86/-9 | 10 | 10 | ---- | ---- | 39,626 | 25 |
| 1654 | CH9131 | -86/-9 | 10 | 5 | ---- | ---- | 46,815 | 25 |
| 1655 | CH9141 | -76/-8 | 10 | 10 | ---- | ---- | 522,908 | 25 |

MATERIAL CH10

Lay-up = $[(\pm 45)_3]_s$, $V_F = 0.317$, Ave. thickness = 5.56 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|------|-----|----|-----|------|---------|----|
| 1574 | CH10114 | 124 | * | 13 | 7.6 | 7.17 | 1 | 25 |
| 1575 | CH10105 | 122 | * | 13 | 7.4 | 6.42 | 1 | 25 |
| 1576 | CH10115 | 116 | * | 13 | 7.7 | 8.12 | 1 | 25 |
| 1577 | CH10113 | 69/7 | 0.1 | 4 | 8.1 | 1.16 | 4,432 | 25 |
| 1578 | CH10119 | 69/7 | 0.1 | 4 | 7.9 | 1.30 | 2,609 | 25 |
| 1579 | CH10110 | 69/7 | 0.1 | 2 | 8.3 | 1.05 | 5,331 | 25 |
| 1580 | CH10109 | 86/9 | 0.1 | 1 | 8.2 | 1.81 | 201 | 25 |
| 1581 | CH10104 | 86/9 | 0.1 | 1 | 7.3 | 2.00 | 114 | 25 |
| 1582 | CH10118 | 86/9 | 0.1 | 1 | 7.8 | 1.89 | 187 | 25 |
| 1583 | CH10117 | 52/5 | 0.1 | 5 | 8.5 | 0.67 | 506,181 | 25 |
| 1584 | CH10103 | 59/6 | 0.1 | 5 | 9.2 | 0.76 | 72,644 | 25 |
| 1585 | CH10108 | 59/6 | 0.1 | 5 | 9.1 | 0.75 | 63,552 | 25 |
| 1586 | CH10121 | 59/6 | 0.1 | 4 | 8.0 | 0.85 | 32,735 | 25 |

The compression gage length for the CH10 coupons was 19 mm instead of the standard 13 mm due to hydraulic grip space restrictions (grip heads would impact with a 13 mm gage length).

| | | | | | | | | |
|------|---------|----------|----|----|------|------|---------|----|
| 1668 | CH10153 | -167 | * | 13 | ---- | ---- | 1 | 25 |
| 1669 | CH10132 | -158 | * | 13 | ---- | ---- | 1 | 25 |
| 1670 | CH10142 | -164 | * | 13 | ---- | ---- | 1 | 25 |
| 1671 | CH10130 | -121/-12 | 10 | 1 | ---- | ---- | 93 | 25 |
| 1672 | CH10149 | -121/-12 | 10 | 1 | ---- | ---- | 48 | 25 |
| 1673 | CH10151 | -121/-12 | 10 | 1 | ---- | ---- | 62 | 25 |
| 1674 | CH10139 | -103/-10 | 10 | 1 | ---- | ---- | 510 | 25 |
| 1675 | CH10146 | -103/-10 | 10 | 1 | ---- | ---- | 843 | 25 |
| 1676 | CH10133 | -103/-10 | 10 | 1 | ---- | ---- | 709 | 25 |
| 1677 | CH10138 | -86/-9 | 10 | 2 | ---- | ---- | 2,914 | 25 |
| 1678 | CH10131 | -86/-9 | 10 | 2 | ---- | ---- | 3,996 | 25 |
| 1679 | CH10155 | -86/-9 | 10 | 2 | ---- | ---- | 1,948 | 25 |
| 1680 | CH10135 | -69/-7 | 10 | 5 | ---- | ---- | 25,535 | 25 |
| 1681 | CH10144 | -69/-7 | 10 | 5 | ---- | ---- | 15,850 | 25 |
| 1682 | CH10134 | -69/-7 | 10 | 5 | ---- | ---- | 20,095 | 25 |
| 1683 | CH10145 | -52/-5 | 10 | 15 | ---- | ---- | 948,262 | 25 |

MATERIAL CH11

Lay-up = $[(\pm 45)_2]_s$, $V_F = 0.495$, Ave. thickness = 2.41 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|------|-----|----|------|------|--------|----|
| 1587 | CH11114 | 128 | * | 13 | 13.0 | 6.78 | 1 | 25 |
| 1588 | CH11111 | 143 | * | 13 | 13.0 | 6.00 | 1 | 25 |
| 1589 | CH11105 | 132 | * | 13 | 13.0 | ---- | 1 | 25 |
| 1590 | CH11113 | 86/9 | 0.1 | 4 | 14.0 | 0.98 | 861 | 25 |
| 1591 | CH11109 | 86/9 | 0.1 | 4 | 13.8 | 1.00 | 1,207 | 25 |
| 1592 | CH11101 | 86/9 | 0.1 | 4 | 13.1 | 0.97 | 1,310 | 25 |
| 1593 | CH11102 | 69/7 | 0.1 | 4 | 15.2 | 0.58 | 13,430 | 25 |
| 1594 | CH11107 | 69/7 | 0.1 | 4 | 14.0 | 0.60 | 18,411 | 25 |

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|---------|----|
| 1595 | CH11106 | 69/7 | 0.1 | 4 | 12.0 | 0.73 | 11,934 | 25 |
| 1596 | CH11103 | 59/6 | 0.1 | 12 | 14.0 | 0.49 | 85,334 | 25 |
| 1597 | CH11104 | 59/6 | 0.1 | 15 | 13.6 | 0.48 | 120,347 | 25 |
| 1598 | CH11110 | 59/6 | 0.1 | 15 | 12.8 | 0.51 | 68,035 | 25 |
| 1599 | CH11112 | 52/5 | 0.1 | 15 | 13.0 | 0.42 | 356,380 | 25 |
| 1656 | CH11120 | -190 | * | 13 | ---- | ---- | 1 | 25 |
| 1657 | CH11129 | -188 | * | 13 | ---- | ---- | 1 | 25 |
| 1658 | CH11125 | -188 | * | 13 | ---- | ---- | 1 | 25 |
| 1659 | CH11116 | -121/-12 | 10 | 2 | ---- | ---- | 1,285 | 25 |
| 1660 | CH11115 | -121/-12 | 10 | 2 | ---- | ---- | 1,821 | 25 |
| 1661 | CH11118 | -121/-12 | 10 | 2 | ---- | ---- | 1,122 | 25 |
| 1662 | CH11124 | -103/-10 | 10 | 5 | ---- | ---- | 16,602 | 25 |
| 1663 | CH11123 | -103/-10 | 10 | 5 | ---- | ---- | 12,602 | 25 |
| 1664 | CH11121 | -103/-10 | 10 | 5 | ---- | ---- | 21,683 | 25 |
| 1665 | CH11117 | -86/-9 | 10 | 10 | ---- | ---- | 71,004 | 25 |
| 1666 | CH11128 | -86/-9 | 10 | 12 | ---- | ---- | 168,236 | 25 |
| 1667 | CH11126 | -86/-9 | 10 | 10 | ---- | ---- | 302,383 | 25 |

MATERIAL CH12

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.328$, Ave. thickness = 3.00 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|-------|-----------|----|
| 1600 | CH12114 | 391 | * | 13 | 15.8 | 5.49 | 1 | 25 |
| 1601 | CH12109 | 412 | * | 13 | 18.0 | 6.82 | 1 | 25 |
| 1602 | CH12116 | 393 | * | 13 | 16.0 | 5.92 | 1 | 25 |
| 1603 | CH12121 | 276/28 | 0.1 | 2 | 11.4 | 1.94 | 2,415 | 25 |
| 1604 | CH12108 | 276/28 | 0.1 | 2 | 17.7 | 1.99 | 1,325 | 25 |
| 1605 | CH12118 | 276/28 | 0.1 | 2 | 17.9 | 1.85 | 2,803 | 25 |
| 1606 | CH12102 | 207/21 | 0.1 | 10 | 18.6 | 1.20 | 108,802 | 25 |
| 1607 | CH12101 | 207/21 | 0.1 | 10 | 18.6 | 1.29 | 65,123 | 25 |
| 1608 | CH12117 | 207/21 | 0.1 | 10 | 18.2 | 1.29 | 82,951 | 25 |
| 1609 | CH12107 | 190/19 | 0.1 | 10 | 18.8 | 1.13 | 244,866 | 25 |
| 1610 | CH12119 | 172/17 | 0.1 | 15 | 16.3 | 1.19 | 476,154 | 25 |
| 1611 | CH12106 | 241/24 | 0.1 | 4 | 17.9 | 1.49 | 9,523 | 25 |
| 1612 | CH12105 | 241/24 | 0.1 | 4 | 17.5 | 1.60 | 4,914 | 25 |
| 1613 | CH12120 | 172/17 | 0.1 | 10 | 18.7 | 1.00 | 389,771 | 25 |
| 1684 | CH12143 | -442 | * | 13 | ---- | ---- | 1 | 25 |
| 1685 | CH12144 | -455 | * | 13 | ---- | ---- | 1 | 25 |
| 1686 | CH12133 | -455 | * | 13 | ---- | ---- | 1 | 25 |
| 1687 | CH12123 | -276/-28 | 10 | 4 | ---- | ---- | 4,326 | 25 |
| 1688 | CH12135 | -276/-28 | 10 | 2 | ---- | ---- | 7,611 | 25 |
| 1689 | CH12124 | -276/-28 | 10 | 4 | ---- | ---- | 8,723 | 25 |
| 1693 | CH12137 | -241/-24 | 10 | 15 | ---- | ---- | 116,437 | 25 |
| 1694 | CH12129 | -207/-21 | 10 | 15 | 18.9 | -1.09 | 1,712,433 | 25 |
| 1695 | CH12126 | -207/-21 | 10 | 15 | ---- | ---- | 663,181 | 25 |
| 1696 | CH12131 | -310/-31 | 10 | 2 | ---- | ---- | 4,295 | 25 |
| 1697 | CH12140 | -310/-31 | 10 | 2 | ---- | ---- | 3,815 | 25 |
| 1698 | CH12127 | -310/-31 | 10 | 2 | ---- | ---- | 1,465 | 25 |
| 1699 | CH12128 | -241/-24 | 10 | 10 | ---- | ---- | 64,663 | 25 |
| 1700 | CH12146 | -345/-35 | 10 | 1 | ---- | ---- | 887 | 25 |
| 1701 | CH12144 | -345/-35 | 10 | 1 | ---- | ---- | 266 | 25 |
| 1702 | CH12145 | -345/-35 | 10 | 1 | ---- | ---- | 394 | 25 |

Tests 3199 - 3219 involved a gage length of 100 mm (coupon width effect tests).

| | | | | | | | | |
|------|--------|-----|---|----|------|------|---|----|
| 3199 | CH1225 | 331 | * | 13 | ---- | ---- | 1 | 51 |
| 3200 | CH1226 | 317 | * | 13 | ---- | ---- | 1 | 51 |
| 3201 | CH1227 | 295 | * | 13 | ---- | ---- | 1 | 51 |
| 3202 | CH1231 | 321 | * | 13 | ---- | ---- | 1 | 38 |
| 3203 | CH1232 | 316 | * | 13 | ---- | ---- | 1 | 38 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|---------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3204 | CH1233 | 299 | * | 13 | ---- | ---- | 1 | 38 |
| 3205 | CH1234 | 308 | * | 13 | ---- | ---- | 1 | 32 |
| 3206 | CH1235 | 304 | * | 13 | ---- | ---- | 1 | 32 |
| 3207 | CH1236 | 310 | * | 13 | ---- | ---- | 1 | 32 |
| 3208 | CH1237 | 304 | * | 13 | ---- | ---- | 1 | 25 |
| 3209 | CH1238 | 304 | * | 13 | ---- | ---- | 1 | 25 |
| 3210 | CH1239 | 301 | * | 13 | ---- | ---- | 1 | 25 |
| 3211 | CH1240 | 306 | * | 13 | ---- | ---- | 1 | 19 |
| 3212 | CH1241 | 297 | * | 13 | ---- | ---- | 1 | 19 |
| 3213 | CH1242 | 309 | * | 13 | ---- | ---- | 1 | 19 |
| 3214 | CH1243 | 287 | * | 13 | ---- | ---- | 1 | 13 |
| 3215 | CH1244 | 273 | * | 13 | ---- | ---- | 1 | 13 |
| 3216 | CH1245 | 278 | * | 13 | ---- | ---- | 1 | 13 |
| 3217 | CH1246 | 251 | * | 13 | ---- | ---- | 1 | 6 |
| 3218 | CH1247 | 255 | * | 13 | ---- | ---- | 1 | 6 |
| 3219 | CH1248 | 219 | * | 13 | ---- | ---- | 1 | 6 |
| Tests 3220 - 3243 involved a gage length of 13 mm (coupon width effect tests). | | | | | | | | |
| 3220 | CH12121 | -312 | * | 13 | ---- | ---- | 1 | 51 |
| 3221 | CH12122 | -323 | * | 13 | ---- | ---- | 1 | 51 |
| 3222 | CH12123 | -330 | * | 13 | ---- | ---- | 1 | 51 |
| 3223 | CH12124 | -333 | * | 13 | ---- | ---- | 1 | 44 |
| 3224 | CH12125 | -288 | * | 13 | ---- | ---- | 1 | 44 |
| 3225 | CH12126 | -335 | * | 13 | ---- | ---- | 1 | 44 |
| 3226 | CH12127 | -336 | * | 13 | ---- | ---- | 1 | 38 |
| 3227 | CH12128 | -397 | * | 13 | ---- | ---- | 1 | 38 |
| 3228 | CH12129 | -401 | * | 13 | ---- | ---- | 1 | 38 |
| 3229 | CH1210 | -384 | * | 13 | ---- | ---- | 1 | 32 |
| 3230 | CH1211 | -401 | * | 13 | ---- | ---- | 1 | 32 |
| 3231 | CH1212 | -382 | * | 13 | ---- | ---- | 1 | 32 |
| 2141 | CH1213 | -359 | * | 13 | ---- | ---- | 1 | 25 |
| 2142 | CH1214 | -358 | * | 13 | ---- | ---- | 1 | 25 |
| 2143 | CH1215 | -352 | * | 13 | ---- | ---- | 1 | 25 |
| 3235 | CH1216 | -356 | * | 13 | ---- | ---- | 1 | 19 |
| 3236 | CH1217 | -351 | * | 13 | ---- | ---- | 1 | 19 |
| 3237 | CH1218 | -354 | * | 13 | ---- | ---- | 1 | 19 |
| 3238 | CH1219 | -354 | * | 13 | ---- | ---- | 1 | 13 |
| 3239 | CH1220 | -328 | * | 13 | ---- | ---- | 1 | 13 |
| 3240 | CH1221 | -334 | * | 13 | ---- | ---- | 1 | 13 |
| 3241 | CH1222 | -308 | * | 13 | ---- | ---- | 1 | 6 |
| 3242 | CH1223 | -352 | * | 13 | ---- | ---- | 1 | 6 |
| 3243 | CH1224 | -299 | * | 13 | ---- | ---- | 1 | 6 |
| Tests 3301 - 3318 involved a gage length of 100 mm (strain rate effect tests). | | | | | | | | |
| 3301 | CH12001 | 366 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3302 | CH12002 | 328 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3303 | CH12003 | 345 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3304 | CH12004 | 387 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3305 | CH12005 | 388 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3306 | CH12006 | 379 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3307 | CH12007 | 430 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3308 | CC12008 | 413 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3309 | CH12009 | 419 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3310 | CH12010 | 440 | * | 25 | ---- | ---- | 1 | 25 |
| 3311 | CH12011 | 420 | * | 25 | ---- | ---- | 1 | 25 |
| 3312 | CH12012 | 443 | * | 25 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|---------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3313 | CH12013 | 455 | * | 64 | ---- | ---- | 1 | 25 |
| 3314 | CH12014 | 480 | * | 64 | ---- | ---- | 1 | 25 |
| 3315 | CH12015 | 472 | * | 64 | ---- | ---- | 1 | 25 |
| 3316 | CH12016 | 437 | * | 127 | ---- | ---- | 1 | 25 |
| 3317 | CH12017 | 485 | * | 127 | ---- | ---- | 1 | 25 |
| 3318 | CH12018 | 484 | * | 127 | ---- | ---- | 1 | 25 |
| Tests 3319 - 3336 involved a gage length of 13 mm (strain rate effect tests). | | | | | | | | |
| 3319 | CH12025 | -408 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3320 | CH12026 | -444 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3321 | CH12027 | -377 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3322 | CH12028 | -415 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3323 | CH12029 | -426 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3324 | CH12030 | -443 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3325 | CH12031 | -447 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3326 | CH12032 | -468 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3327 | CH12033 | -424 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3232 | CH12013 | -359 | * | 13 | ---- | ---- | 1 | 25 |
| 3233 | CH12014 | -358 | * | 13 | ---- | ---- | 1 | 25 |
| 3234 | CH12015 | -352 | * | 13 | ---- | ---- | 1 | 25 |
| 3328 | CH12034 | -482 | * | 25 | ---- | ---- | 1 | 25 |
| 3329 | CH12035 | -500 | * | 25 | ---- | ---- | 1 | 25 |
| 3330 | CH12036 | -492 | * | 25 | ---- | ---- | 1 | 25 |
| 3331 | CH12037 | -438 | * | 64 | ---- | ---- | 1 | 25 |
| 3332 | CH12038 | -402 | * | 64 | ---- | ---- | 1 | 25 |
| 3333 | CH12039 | -402 | * | 64 | ---- | ---- | 1 | 25 |
| 3334 | CH12040 | -455 | * | 127 | ---- | ---- | 1 | 25 |
| 3335 | CH12041 | -449 | * | 127 | ---- | ---- | 1 | 25 |
| 3336 | CH12042 | -454 | * | 127 | ---- | ---- | 1 | 25 |

MATERIAL CH13

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.509$, Ave. thickness = 3.28 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|------|
| 1614 | CH13113 | 428 | * | 13 | 23.0 | ---- | 1 | 25 |
| 1615 | CH13108 | 420 | * | 13 | 23.2 | ---- | 1 | 25 |
| 1616 | CH13107 | 420 | * | 13 | 22.6 | 2.81 | 1 | 25 |
| 1617 | CH13104 | 276/28 | 0.1 | 2 | 22.5 | 1.68 | 449 | 25 |
| 1618 | CH13114 | 276/28 | 0.1 | 1 | 24.4 | 1.75 | 301 | 25 |
| 1619 | CH13111 | 276/28 | 0.1 | 1 | 23.5 | 1.81 | 363 | 25 |
| 1620 | CH13103 | 207/21 | 0.1 | 4 | 23.2 | 1.24 | 4,078 | 25 |
| 1621 | CH13109 | 207/21 | 0.1 | 4 | 23.0 | 1.24 | 3,466 | 25 |
| 1622 | CH13106 | 207/21 | 0.1 | 4 | 23.3 | 1.24 | 4,587 | 25 |
| 1623 | CH13112 | 138/14 | 0.1 | 10 | 23.2 | 0.70 | 37,685 | 25 |
| 1624 | CH13102 | 138/14 | 0.1 | 5 | 23.1 | 0.74 | 31,299 | 25 |
| 1625 | CH13105 | 138/14 | 0.1 | 5 | 23.8 | 0.70 | 44,571 | 25 |
| 1626 | CH13101 | 103/10 | 0.1 | 20 | 23.2 | 0.50 | 1,067,315 | 25 |
| 1703 | CH13127 | -406 | * | 13 | ---- | ---- | 1 | 25 |
| 1704 | CH13128 | -378 | * | 13 | ---- | ---- | 1 | 25 |
| 1705 | CH13126 | -370 | * | 13 | ---- | ---- | 1 | 25 |
| 1706 | CH13125 | -241/-24 | 10 | 2 | ---- | ---- | 933 | 25 |
| 1707 | CH13121 | -241/-24 | 10 | 2 | ---- | ---- | 2,759 | 25 |
| 1708 | CH13115 | -241/-24 | 10 | 4 | ---- | ---- | 4,163 | 25 |
| 1709 | CH13116 | -207/-21 | 10 | 10 | ---- | ---- | 8,887 | 25 |
| 1710 | CH13123 | -138/-14 | 10 | 15 | ---- | ---- | 2,000,000 | 25 R |
| 1711 | CH13119 | -207/-21 | 10 | 10 | ---- | ---- | 10,738 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 1712 | CH13120 | -207/-21 | 10 | 10 | ---- | ---- | 15,164 | 25 |
| 1713 | CH13122 | -172/-17 | 10 | 15 | ---- | ---- | 109,685 | 25 |
| 1714 | CH13118 | -172/-17 | 10 | 10 | ---- | ---- | 61,058 | 25 |
| 1715 | CH13124 | -172/-17 | 10 | 10 | ---- | ---- | 228,268 | 25 |
| 1716 | CH13117 | -276/-28 | 10 | 1 | ---- | ---- | 174 | 25 |
| 1717 | CH13110 | -276/-28 | 10 | 1 | ---- | ---- | 104 | 25 |
| 1718 | CH13140 | -276/-28 | 10 | 1 | ---- | ---- | 212 | 25 |

MATERIAL CH14

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.392$, Ave. thickness = 2.49 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|------|
| 1627 | CH14112 | 548 | * | 13 | 23.0 | 3.06 | 1 | 25 |
| 1628 | CH14106 | 499 | * | 13 | 21.3 | 3.41 | 1 | 25 |
| 1629 | CH14105 | 504 | * | 13 | 22.5 | 3.69 | 1 | 25 |
| 1630 | CH14104 | 345/35 | 0.1 | 1 | 20.6 | 2.05 | 283 | 25 |
| 1631 | CH14103 | 345/35 | 0.1 | 1 | 22.1 | 1.87 | 121 | 25 |
| 1632 | CH14116 | 345/35 | 0.1 | 2 | 21.0 | 2.17 | 266 | 25 |
| 1633 | CH14107 | 276/28 | 0.1 | 4 | 19.7 | 1.65 | 2,344 | 25 |
| 1634 | CH14110 | 276/28 | 0.1 | 4 | 20.0 | 1.56 | 1,280 | 25 |
| 1635 | CH14113 | 276/28 | 0.1 | 4 | 21.2 | 1.56 | 1,709 | 25 |
| 1636 | CH14118 | 207/21 | 0.1 | 10 | 20.1 | 1.12 | 11,600 | 25 |
| 1637 | CH14119 | 207/21 | 0.1 | 10 | 21.6 | 1.10 | 17,423 | 25 |
| 1638 | CH14102 | 207/21 | 0.1 | 10 | 21.4 | 1.00 | 22,579 | 25 |
| 1639 | CH14115 | 138/14 | 0.1 | 20 | 19.8 | 0.73 | 2,054,772 | 25 |
| 1640 | CH14120 | 172/17 | 0.1 | 10 | 17.7 | 0.90 | 69,782 | 25 |
| 1641 | CH14111 | 172/17 | 0.1 | 10 | 21.7 | 0.89 | 57,256 | 25 |
| 1642 | CH14101 | 172/17 | 0.1 | 10 | 22.7 | 0.84 | 57,107 | 25 |
| 1719 | CH14134 | -398 | * | 13 | ---- | ---- | 1 | 25 |
| 1720 | CH14124 | -401 | * | 13 | ---- | ---- | 1 | 25 |
| 1721 | CH14123 | -437 | * | 13 | ---- | ---- | 1 | 25 |
| 1722 | CH14139 | -310/-31 | 10 | 2 | ---- | ---- | 903 | 25 |
| 1723 | CH14140 | -310/-31 | 10 | 2 | ---- | ---- | 2,756 | 25 |
| 1724 | CH14129 | -310/-31 | 10 | 2 | ---- | ---- | 1,188 | 25 |
| 1725 | CH14133 | -276/-28 | 10 | 5 | ---- | ---- | 10,716 | 25 |
| 1726 | CH14125 | -276/-28 | 10 | 4 | ---- | ---- | 16,008 | 25 |
| 1727 | CH14128 | -276/-28 | 10 | 5 | ---- | ---- | 11,756 | 25 |
| 1728 | CH14131 | -241/-24 | 10 | 10 | ---- | ---- | 58,134 | 25 |
| 1729 | CH14132 | -241/-24 | 10 | 5 | ---- | ---- | 86,421 | 25 |
| 1730 | CH14130 | -241/-24 | 10 | 10 | ---- | ---- | 78,283 | 25 |
| 1731 | CH14126 | -207/-21 | 10 | 20 | ---- | ---- | 3,000,000 | 25 R |

MATERIAL CH15

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.324$, Ave. thickness = 2.51 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|----|----|------|------|-----|----|
| 1732 | CH15139 | -332 | * | 13 | ---- | ---- | 1 | 25 |
| 1733 | CH15138 | -374 | * | 13 | ---- | ---- | 1 | 25 |
| 1734 | CH15128 | -331 | * | 13 | ---- | ---- | 1 | 25 |
| 1735 | CH15142 | -241/-24 | 10 | 2 | ---- | ---- | 996 | 25 |
| 1736 | CH15143 | -241/-24 | 10 | 2 | ---- | ---- | 542 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1737 | CH15147 | -241/-24 | 10 | 2 | ---- | ---- | 1,345 | 25 |
| 1738 | CH15141 | -207/-21 | 10 | 4 | ---- | ---- | 4,825 | 25 |
| 1739 | CH15123 | -207/-21 | 10 | 4 | ---- | ---- | 9,366 | 25 |
| 1740 | CH15122 | -207/-21 | 10 | 5 | ---- | ---- | 10,507 | 25 |
| 1741 | CH15145 | -172/-17 | 10 | 5 | ---- | ---- | 61,865 | 25 |
| 1742 | CH15144 | -172/-17 | 10 | 10 | ---- | ---- | 54,046 | 25 |
| 1743 | CH15137 | -172/-17 | 10 | 10 | ---- | ---- | 41,806 | 25 |
| 1744 | CH15136 | -138/-14 | 10 | 20 | ---- | ---- | 5,000,000 | 25 R |
| 1800 | CH15105 | 327 | * | 13 | 14.0 | 3.45 | 1 | 25 |
| 1801 | CH15121 | 308 | * | 13 | 15.3 | ---- | 1 | 25 |
| 1802 | CH15114 | 296 | * | 13 | 15.2 | 3.79 | 1 | 25 |
| 1803 | CH15118 | 207/21 | 0.1 | 2 | 13.6 | 2.10 | 403 | 25 |
| 1804 | CH15116 | 207/21 | 0.1 | 2 | 15.0 | 1.87 | 608 | 25 |
| 1805 | CH15113 | 207/21 | 0.1 | 2 | 14.3 | 2.09 | 270 | 25 |
| 1806 | CH15115 | 172/17 | 0.1 | 4 | 14.5 | 1.44 | 18,054 | 25 |
| 1807 | CH15117 | 172/17 | 0.1 | 4 | 13.4 | 1.56 | 16,456 | 25 |
| 1808 | CH15104 | 172/17 | 0.1 | 4 | 15.0 | 1.58 | 11,511 | 25 |
| 1809 | CH15103 | 138/14 | 0.1 | 10 | 15.7 | 1.07 | 132,279 | 25 |
| 1810 | CH15106 | 138/14 | 0.1 | 10 | 16.4 | 0.99 | 350,007 | 25 |
| 1811 | CH15102 | 138/14 | 0.1 | 10 | 15.3 | 1.01 | 465,775 | 25 |
| 1812 | CH15101 | 121/12 | 0.1 | 12 | 15.4 | 0.88 | 1,029,975 | 25 |

MATERIAL CH16

Lay-up = $[\pm 45/0/\pm 45]_S$, $V_F = 0.343$, Ave. thickness = 2.36 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|---------|----|
| 1745 | CH16136 | -325 | * | 13 | ---- | ---- | 1 | 25 |
| 1746 | CH16122 | -295 | * | 13 | ---- | ---- | 1 | 25 |
| 1747 | CH16133 | -307 | * | 13 | ---- | ---- | 1 | 25 |
| 1748 | CH16123 | -241/-24 | 10 | 1 | ---- | ---- | 371 | 25 |
| 1749 | CH16129 | -241/-24 | 10 | 2 | ---- | ---- | 1,216 | 25 |
| 1750 | CH16138 | -241/-24 | 10 | 1 | ---- | ---- | 1,010 | 25 |
| 1751 | CH16124 | -207/-21 | 10 | 4 | ---- | ---- | 7,458 | 25 |
| 1752 | CH16130 | -207/-21 | 10 | 4 | ---- | ---- | 11,541 | 25 |
| 1753 | CH16128 | -207/-21 | 10 | 4 | ---- | ---- | 7,137 | 25 |
| 1754 | CH16139 | -172/-17 | 10 | 5 | ---- | ---- | 162,300 | 25 |
| 1755 | CH16132 | -172/-17 | 10 | 12 | ---- | ---- | 109,008 | 25 |
| 1756 | CH16135 | -172/-17 | 10 | 10 | ---- | ---- | 155,530 | 25 |
| 1757 | CH16120 | -155/-16 | 10 | 15 | ---- | ---- | 596,803 | 25 |
| 1813 | CH16102 | 366 | * | 13 | 19.4 | 3.13 | 1 | 25 |
| 1814 | CH16104 | 362 | * | 13 | 17.1 | ---- | 1 | 25 |
| 1815 | CH16105 | 353 | * | 13 | 18.3 | 2.43 | 1 | 25 |
| 1816 | CH16101 | 241/24 | 0.1 | 1 | 18.8 | 1.73 | 151 | 25 |
| 1817 | CH16115 | 241/24 | 0.1 | 1 | 18.3 | 1.89 | 421 | 25 |
| 1818 | CH16118 | 241/24 | 0.1 | 1 | 19.9 | 1.66 | 580 | 25 |
| 1819 | CH16106 | 207/21 | 0.1 | 2 | 18.5 | 1.51 | 2,805 | 25 |
| 1820 | CH16112 | 207/21 | 0.1 | 2 | 19.0 | 1.48 | 1,746 | 25 |
| 1821 | CH16116 | 207/21 | 0.1 | 2 | 17.9 | 1.59 | 1,203 | 25 |
| 1822 | CH16119 | 172/17 | 0.1 | 4 | 17.3 | 1.21 | 5,928 | 25 |
| 1823 | CH16103 | 172/17 | 0.1 | 4 | 20.8 | 1.07 | 3,595 | 25 |
| 1824 | CH16109 | 172/17 | 0.1 | 4 | 21.6 | 1.01 | 4,508 | 25 |
| 1825 | CH16107 | 138/14 | 0.1 | 5 | 17.5 | 0.89 | 36,647 | 25 |
| 1826 | CH16110 | 138/14 | 0.1 | 5 | 17.7 | 0.93 | 47,119 | 25 |
| 1827 | CH16108 | 138/14 | 0.1 | 5 | 16.3 | 0.95 | 34,528 | 25 |
| 1828 | CH16113 | 121/12 | 0.1 | 10 | 18.2 | 0.75 | 163,247 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1829 | CH16140 | 103/10 | 0.1 | 15 | 17.1 | 0.66 | 1,247,001 | 25 |

MATERIAL CH17

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.423$, Ave. thickness = 1.96 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|----|
| 1758 | CH17130 | -303 | * | 13 | ---- | ---- | 1 | 25 |
| 1759 | CH17142 | -309 | * | 13 | ---- | ---- | 1 | 25 |
| 1760 | CH17144 | -292 | * | 13 | ---- | ---- | 1 | 25 |
| 1761 | CH17154 | -241/-24 | 10 | 2 | ---- | ---- | 822 | 25 |
| 1762 | CH17123 | -241/-24 | 10 | 2 | ---- | ---- | 1,359 | 25 |
| 1763 | CH17125 | -241/-24 | 10 | 2 | ---- | ---- | 1,847 | 25 |
| 1764 | CH17141 | -207/-21 | 10 | 5 | ---- | ---- | 2,279 | 25 |
| 1765 | CH17138 | -207/-21 | 10 | 4 | ---- | ---- | 1,767 | 25 |
| 1766 | CH17140 | -207/-21 | 10 | 4 | ---- | ---- | 7,278 | 25 |
| 1767 | CH17124 | -172/-17 | 10 | 5 | ---- | ---- | 227,223 | 25 |
| 1768 | CH17134 | -172/-17 | 10 | 15 | ---- | ---- | 149,828 | 25 |
| 1769 | CH17146 | -172/-17 | 10 | 10 | ---- | ---- | 83,725 | 25 |
| 1770 | CH17137 | -155/-17 | 10 | 20 | ---- | ---- | 4,030,851 | 25 |
| 1901 | CH17201 | 363 | * | 13 | 16.0 | 4.28 | 1 | 25 |
| 1902 | CH17217 | 345 | * | 13 | 17.7 | 3.14 | 1 | 25 |
| 1903 | CH17202 | 369 | * | 13 | 18.1 | 3.32 | 1 | 25 |
| 1904 | CH17205 | 207/21 | 0.1 | 2 | 18.0 | 1.53 | 1,521 | 25 |
| 1905 | CH17209 | 207/21 | 0.1 | 2 | 18.6 | 1.40 | 841 | 25 |
| 1906 | CH17212 | 207/21 | 0.1 | 2 | 15.7 | 1.70 | 657 | 25 |
| 1907 | CH17213 | 172/17 | 0.1 | 4 | 18.0 | 1.20 | 4,396 | 25 |
| 1908 | CH17206 | 172/17 | 0.1 | 5 | 18.7 | 1.17 | 2,826 | 25 |
| 1909 | CH17216 | 172/17 | 0.1 | 5 | 17.1 | 1.26 | 5,024 | 25 |
| 1910 | CH17214 | 138/14 | 0.1 | 5 | 17.6 | 0.89 | 28,190 | 25 |
| 1911 | CH17210 | 138/14 | 0.1 | 5 | 16.6 | 1.02 | 34,959 | 25 |
| 1912 | CH17203 | 138/14 | 0.1 | 5 | 17.4 | 0.98 | 21,682 | 25 |
| 1913 | CH17208 | 121/12 | 0.1 | 5 | 18.7 | 0.74 | 44,730 | 25 |
| 1914 | CH17207 | 103/10 | 0.1 | 5 | 18.5 | 0.61 | 183,268 | 25 |
| 1915 | CH17215 | 103/10 | 0.1 | 5 | 17.2 | 0.65 | 196,692 | 25 |

MATERIAL CH18

Lay-up = [$\pm 45/0/\pm 45$]s, $V_F = 0.451$, Ave. thickness = 3.10 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|----|----|------|------|-----------|----|
| 1771 | CH18125 | -300 | * | 13 | ---- | ---- | 1 | 25 |
| 1772 | CH18127 | -280 | * | 13 | ---- | ---- | 1 | 25 |
| 1773 | CH18129 | -313 | * | 13 | ---- | ---- | 1 | 25 |
| 1774 | CH18124 | -241/-24 | 10 | 1 | ---- | ---- | 120 | 25 |
| 1775 | CH18121 | -241/-24 | 10 | 1 | ---- | ---- | 99 | 25 |
| 1776 | CH18120 | -241/-24 | 10 | 1 | ---- | ---- | 94 | 25 |
| 1777 | CH18122 | -207/-21 | 10 | 2 | ---- | ---- | 1,077 | 25 |
| 1778 | CH18123 | -207/-21 | 10 | 2 | ---- | ---- | 783 | 25 |
| 1779 | CH18138 | -207/-21 | 10 | 2 | ---- | ---- | 1,103 | 25 |
| 1780 | CH18118 | -172/-17 | 10 | 4 | ---- | ---- | 17,383 | 25 |
| 1781 | CH18117 | -172/-17 | 10 | 5 | ---- | ---- | 14,090 | 25 |
| 1782 | CH18136 | -172/-17 | 10 | 10 | ---- | ---- | 18,452 | 25 |
| 1783 | CH18128 | -138/-14 | 10 | 15 | ---- | ---- | 64,880 | 25 |
| 1784 | CH18119 | -138/-14 | 10 | 10 | ---- | ---- | 82,563 | 25 |
| 1785 | CH18126 | -121/-12 | 10 | 15 | ---- | ---- | 1,295,428 | 25 |
| 1872 | CH18214 | 286 | * | 13 | 14.0 | 3.24 | 1 | 25 |
| 1873 | CH18203 | 302 | * | 13 | 17.5 | 2.98 | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1874 | CH18212 | 295 | * | 13 | 17.0 | 3.10 | 1 | 25 |
| 1875 | CH18202 | 207/21 | 0.1 | 2 | 17.1 | 1.87 | 343 | 25 |
| 1876 | CH18208 | 207/21 | 0.1 | 2 | 16.1 | 1.93 | 187 | 25 |
| 1877 | CH18205 | 207/21 | 0.1 | 2 | 17.5 | 1.87 | 269 | 25 |
| 1878 | CH18206 | 172/17 | 0.1 | 4 | 17.6 | 1.45 | 1,360 | 25 |
| 1879 | CH18209 | 172/17 | 0.1 | 4 | 18.1 | 1.44 | 1,424 | 25 |
| 1880 | CH18207 | 172/17 | 0.1 | 4 | 17.7 | 1.40 | 1,875 | 25 |
| 1881 | CH18211 | 138/14 | 0.1 | 4 | 15.8 | 1.12 | 12,279 | 25 |
| 1882 | CH18201 | 138/14 | 0.1 | 5 | 20.3 | 0.94 | 7,623 | 25 |
| 1883 | CH18220 | 138/14 | 0.1 | 4 | 17.7 | 1.10 | 8,671 | 25 |
| 1884 | CH18204 | 103/10 | 0.1 | 5 | 17.7 | 0.69 | 119,853 | 25 |
| 1885 | CH18210 | 103/10 | 0.1 | 5 | 17.3 | 0.73 | 73,139 | 25 |
| 1886 | CH18213 | 86/9 | 0.1 | 10 | 17.4 | 0.56 | 585,178 | 25 |

MATERIAL CH19

Lay-up = $[\pm 45/0/\pm 45]_s$, $V_F = 0.330$, Ave. thickness = 4.60 mm, S.D. = 0.19 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|---------|----|
| 1786 | CH19142 | -256 | * | 13 | ---- | ---- | 1 | 25 |
| 1787 | CH19128 | -253 | * | 13 | ---- | ---- | 1 | 25 |
| 1788 | CH19127 | -245 | * | 13 | ---- | ---- | 1 | 25 |
| 1789 | CH19147 | -172/-17 | 10 | 1 | ---- | ---- | 167 | 25 |
| 1790 | CH19134 | -176/-18 | 10 | 1 | ---- | ---- | 82 | 25 |
| 1791 | CH19136 | -172/-17 | 10 | 1 | ---- | ---- | 56 | 25 |
| 1792 | CH19125 | -138/-14 | 10 | 2 | ---- | ---- | 476 | 25 |
| 1793 | CH19141 | -138/-14 | 10 | 1 | ---- | ---- | 801 | 25 |
| 1794 | CH19132 | -138/-14 | 10 | 1 | ---- | ---- | 1,702 | 25 |
| 1795 | CH19143 | -103/-10 | 10 | 4 | ---- | ---- | 28,708 | 25 |
| 1796 | CH19122 | -103/-10 | 10 | 5 | ---- | ---- | 14,379 | 25 |
| 1797 | CH19137 | -103/-10 | 10 | 10 | ---- | ---- | 51,234 | 25 |
| 1798 | CH19130 | -86/-9 | 10 | 10 | ---- | ---- | 928,343 | 25 |
| 1799 | CH19120 | -86/-9 | 10 | 15 | ---- | ---- | 622,350 | 25 |
| 1887 | CH19201 | 192 | * | 13 | 11.7 | 3.88 | 1 | 25 |
| 1888 | CH19210 | 196 | * | 13 | 10.8 | 3.85 | 1 | 25 |
| 1889 | CH19207 | 191 | * | 13 | 11.6 | 3.87 | 1 | 25 |
| 1890 | CH19202 | 121/12 | 0.1 | 4 | 12.3 | 1.21 | 5,507 | 25 |
| 1891 | CH19214 | 121/12 | 0.1 | 2 | 12.1 | 1.35 | 4,586 | 25 |
| 1892 | CH19206 | 121/12 | 0.1 | 2 | 11.9 | 1.13 | 5,100 | 25 |
| 1893 | CH19209 | 103/10 | 0.1 | 5 | 12.3 | 1.05 | 32,613 | 25 |
| 1894 | CH19204 | 103/10 | 0.1 | 5 | 12.7 | 0.99 | 17,152 | 25 |
| 1895 | CH19203 | 86/9 | 0.1 | 10 | 11.7 | 0.78 | 324,779 | 25 |
| 1896 | CH19205 | 103/10 | 0.1 | 5 | 11.7 | 1.05 | 27,183 | 25 |
| 1897 | CH19208 | 86/9 | 0.1 | 10 | 11.2 | 0.83 | 278,576 | 25 |
| 1898 | CH19220 | 86/9 | 0.1 | 12 | 12.2 | 0.82 | 423,198 | 25 |
| 1899 | CH19211 | 138/14 | 0.1 | 1 | 12.0 | 1.43 | 850 | 25 |
| 1900 | CH19212 | 138/14 | 0.1 | 1 | 11.7 | 1.55 | 1,414 | 25 |

MATERIAL CH20

Lay-up = $[(\pm 45)_3]_s$, $V_F = 0.260$, Ave. thickness = 3.76 mm, S.D. = 0.15 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|----|
| 3003 | CH20116 | 136 | * | 13 | 10.9 | 1.60 | 1 | 25 |
| 3004 | CH20121 | 141 | * | 13 | 10.2 | 1.40 | 1 | 25 |
| 3005 | CH20115 | 124 | * | 13 | 10.6 | 1.70 | 1 | 25 |
| 3006 | CH20101 | 51.7/6 | 0.1 | 12 | 12.0 | 0.52 | 136,994 | 25 |
| 3007 | CH20107 | 86/9 | 0.1 | 2 | 10.5 | 1.09 | 1,458 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3008 | CH20105 | 86/9 | 0.1 | 2 | 11.9 | 0.96 | 1,169 | 25 |
| 3009 | CH20106 | 86/9 | 0.1 | 2 | 10.0 | 1.25 | 1,456 | 25 |
| 3010 | CH20119 | 69.0/7 | 0.1 | 4 | 11.3 | 0.76 | 9,530 | 25 |
| 3011 | CH20113 | 51.7/5 | 0.1 | 4 | 10.4 | 0.56 | 199,855 | 25 |
| 3012 | CH20110 | 69.0/7 | 0.1 | 5 | 10.6 | 0.83 | 10,324 | 25 |
| 3013 | CH20114 | 69.0/7 | 0.1 | 4 | 10.4 | 0.82 | 7,214 | 25 |
| 3014 | CH20131 | -232 | * | 13 | ---- | ---- | 1 | 25 |
| 3015 | CH20130 | -233 | * | 13 | ---- | ---- | 1 | 25 |
| 3016 | CH20132 | -224 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CH23

Lay-up = $[\pm 45/0/\pm 45]_s$, $V_F = 0.320$, Ave. thickness = 2.95 mm, S.D. = 0.13 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|---------|----|
| 3017 | CH23111 | 410 | * | 13 | 20.0 | 2.15 | 1 | 25 |
| 3018 | CH23112 | 369 | * | 13 | 17.0 | 2.37 | 1 | 25 |
| 3019 | CH23103 | 402 | * | 13 | 20.6 | 2.10 | 1 | 25 |
| 3020 | CH23104 | 276/28 | 0.1 | 2 | 21.2 | 1.51 | 331 | 25 |
| 3021 | CH23118 | 207/21 | 0.1 | 4 | 17.2 | 1.35 | 2,311 | 25 |
| 3022 | CH23119 | 207/21 | 0.1 | 4 | 17.8 | 1.29 | 2,596 | 25 |
| 3023 | CH23110 | 207/21 | 0.1 | 4 | 18.3 | 1.24 | 3,577 | 25 |
| 3024 | CH23114 | 138/14 | 0.1 | 5 | 19.5 | 0.76 | 84,094 | 25 |
| 3025 | CH23106 | 138/14 | 0.1 | 5 | 18.2 | 0.79 | 69,137 | 25 |
| 3026 | CH23147 | -207/-21 | 10 | 5 | ---- | ---- | 147,440 | 25 |
| 3027 | CH23141 | -207/-21 | 10 | 5 | ---- | ---- | 81,067 | 25 |
| 3028 | CH23160 | -444 | * | 13 | ---- | ---- | 1 | 25 |
| 3029 | CH23148 | -464 | * | 13 | ---- | ---- | 1 | 25 |
| 3030 | CH23144 | -435 | * | 13 | ---- | ---- | 1 | 25 |
| 3031 | CH23168 | -276/-28 | 10 | 4 | ---- | ---- | 7,443 | 25 |
| 3032 | CH23143 | -276/-28 | 10 | 4 | ---- | ---- | 1,786 | 25 |
| 3033 | CH23161 | -276/-28 | 10 | 4 | ---- | ---- | 6,288 | 25 |
| 3034 | CH23143 | -207/-21 | 10 | 10 | ---- | ---- | 128,233 | 25 |
| 3035 | CH23121 | 276/28 | 0.1 | 1 | 21.4 | 1.66 | 77 | 25 |
| 3036 | CH23109 | 276/28 | 0.1 | 2 | 18.4 | 1.93 | 403 | 25 |
| 3037 | CH23115 | 138/14 | 0.1 | 10 | 18.1 | 0.79 | 98,304 | 25 |

MATERIAL DD

Lay-up = $[0/\pm 45/0_3/\pm 45/0]$, $V_F = 0.509$, Ave. thickness = 2.67 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|---------|----|
| 1023 | DD101 | 903 | * | 13 | 31.9 | 2.84 | 1 | 22 |
| 1024 | DD103 | 893 | * | 13 | 29.0 | 3.07 | 1 | 22 |
| 1025 | DD102 | 934 | * | 13 | 30.6 | 3.10 | 1 | 22 |
| 1026 | DD112 | 552/55 | 0.1 | 2 | 31.4 | 1.76 | 1,065 | 22 |
| 1027 | DD114 | 552/55 | 0.1 | 2 | 32.3 | 1.70 | 807 | 22 |
| 1028 | DD108 | 552/55 | 0.1 | 2 | 28.9 | 1.90 | 631 | 22 |
| 1029 | DD118 | 483/48 | 0.1 | 5 | 30.5 | 1.58 | 3,044 | 22 |
| 1030 | DD113 | 483/48 | 0.1 | 5 | 30.9 | 1.56 | 1,937 | 22 |
| 1031 | DD117 | 483/48 | 0.1 | 5 | 30.5 | 1.58 | 2,377 | 22 |
| 1032 | DD116 | 414/41 | 0.1 | 5 | 31.3 | 1.32 | 4,997 | 22 |
| 1033 | DD119 | 414/41 | 0.1 | 5 | 32.4 | 1.27 | 8,143 | 22 |
| 1034 | DD115 | 345/35 | 0.1 | 5 | 32.4 | 1.06 | 25,503 | 22 |
| 1035 | DD104 | 345/35 | 0.1 | 5 | 30.1 | 1.14 | 28,657 | 22 |
| 1036 | DD110 | 276/28 | 0.1 | 15 | 35.2 | 0.78 | 64,373 | 22 |
| 1037 | DD111 | 276/28 | 0.1 | 15 | 29.7 | 0.92 | 87,936 | 22 |
| 1038 | DD106 | 207/21 | 0.1 | 15 | 32.7 | 0.63 | 704,401 | 22 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1039 | DD109 | 207 | 0.1 | 15 | 30.6 | 0.68 | 1,062,397 | 22 |
| 1040 | DD107 | 207 | 0.1 | 20 | 32.6 | 0.63 | 947,447 | 22 |
| 1123 | DD105 | -781 | * | 13 | ---- | ---- | 1 | 25 |
| 1124 | DD201 | -795 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD2

Lay-up = $[0/\pm 45/0]_s$, $V_F = 0.441$, Ave. thickness = 2.64 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|-----------|----|
| 1043 | DD2106 | 767 | * | 13 | 28.6 | 2.70 | 1 | 22 |
| 1044 | DD2102 | 757 | * | 13 | 30.0 | 2.53 | 1 | 25 |
| 1045 | DD2114 | 731 | * | 13 | 25.7 | 2.90 | 1 | 22 |
| 1046 | DD2105 | 414/41 | 0.1 | 5 | 27.2 | 1.52 | 9,691 | 25 |
| 1047 | DD2113 | 414/41 | 0.1 | 5 | 25.9 | 1.61 | 6,904 | 22 |
| 1048 | DD2107 | 483/48 | 0.1 | 4 | 27.9 | 1.80 | 883 | 22 |
| 1049 | DD2117 | 483/48 | 0.1 | 4 | 26.1 | 1.85 | 1,055 | 22 |
| 1050 | DD2108 | 276/28 | 0.1 | 15 | 25.2 | 1.10 | 766,525 | 22 |
| 1051 | DD2110 | 345/35 | 0.1 | 15 | 27.2 | 1.27 | 71,702 | 22 |
| 1052 | DD2111 | 345/35 | 0.1 | 20 | 28.9 | 1.19 | 59,123 | 22 |
| 1053 | DD2109 | 345/35 | 0.1 | 15 | 27.9 | 1.23 | 62,149 | 22 |
| 1060 | DD2115 | 276/28 | 0.1 | 15 | 24.7 | 1.11 | 655,028 | 22 |
| 1078 | DD2116 | 276/28 | 0.1 | 20 | 25.5 | 1.08 | 697,390 | 22 |
| 1285 | DD2171 | -579 | * | 13 | ---- | ---- | 1 | 25 |
| 1286 | DD2164 | -609 | * | 13 | ---- | ---- | 1 | 25 |
| 1287 | DD2170 | -554 | * | 13 | ---- | ---- | 1 | 25 |
| 1288 | DD2163 | -414/-41 | 10 | 2 | ---- | ---- | 2,311 | 25 |
| 1289 | DD2169 | -414/-41 | 10 | 5 | ---- | ---- | 3,675 | 25 |
| 1290 | DD2168 | -379/-38 | 10 | 5 | ---- | ---- | 24,450 | 25 |
| 1291 | DD2167 | -379/-38 | 10 | 5 | ---- | ---- | 18,781 | 25 |
| 1292 | DD2152 | -345/-35 | 10 | 15 | ---- | ---- | 82,800 | 25 |
| 1293 | DD2153 | -372/-37 | 10 | 10 | ---- | ---- | 19,205 | 25 |
| 1294 | DD2161 | -310/-31 | 10 | 20 | ---- | ---- | 636,142 | 25 |
| 1295 | DD2158 | -310/-31 | 10 | 20 | ---- | ---- | 868,215 | 25 |
| 1296 | DD2173 | -345/-35 | 10 | 15 | ---- | ---- | 111,458 | 25 |
| 1297 | DD2176 | -414/-41 | 10 | 5 | ---- | ---- | 3,775 | 25 |
| 1298 | DD2162 | -345/-35 | 10 | 10 | ---- | ---- | 147,520 | 25 |
| 1299 | DD2165 | -310/-31 | 10 | 20 | ---- | ---- | 1,054,781 | 25 |

MATERIAL DD2A

Lay-up = $[0/\pm 45/0]_s$, $V_F = 0.447$, Ave. thickness = 2.61 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

Due to variations of ultimate strengths with the D155 fabrics (roll-to-roll), a second batch of coupons were manufactured and tested.

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|--------|
| 4037 | DD2A200 | 345/35 | 0.1 | 5 | 28.3 | 1.29 | 124,809 | 22 tab |
| 4038 | DD2A201 | 345/35 | 0.1 | 4 | 29.1 | 1.33 | 126,545 | 22 tab |
| 4039 | DD2A202 | 345/35 | 0.1 | 4 | 28.5 | 1.28 | 153,886 | 22 tab |
| 4040 | DD2A204 | 1,015 | * | 13 | 31.5 | 3.2 | 1 | 22 tab |
| 4041 | DD2A205 | 944 | * | 13 | 26.9 | 3.5 | 1 | 22 tab |
| 4042 | DD2A207 | 998 | * | 13 | 29.4 | 3.4 | 1 | 22 tab |
| 4043 | DD2A206 | 276/28 | 0.1 | 10 | 27.2 | 1.02 | 1,490,033 | 22 tab |
| 4044 | DD2A208 | 276/28 | 0.1 | 8 | 28.7 | 0.99 | 564,480 | 22 tab |
| 4864 | DD2A212 | 276/28 | 0.1 | 8 | 28.6 | 1.00 | 1,849,488 | 25 tab |

MATERIAL DD4

Lay-up = $[0/\pm 45/0]_s$, $V_F = 0.481$, Ave. thickness = 2.36 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 1061 | DD4108 | 276/28 | 0.1 | 15 | 27.7 | 1.00 | 106,008 | 22 |
| 1062 | DD4103 | 276/28 | 0.1 | 15 | 28.6 | 0.97 | 74,777 | 22 |
| 1063 | DD4102 | 414/41 | 0.1 | 5 | 29.3 | 1.41 | 6,714 | 22 |
| 1064 | DD4113 | 414/41 | 0.1 | 5 | 32.2 | 1.28 | 8,257 | 22 |
| 1065 | DD4109 | 414/41 | 0.1 | 5 | 30.7 | 1.35 | 8,821 | 22 |
| 1066 | DD4117 | 903 | * | 13 | 27.9 | 3.30 | 1 | 22 |
| 1067 | DD4101 | 901 | * | 13 | 31.0 | 2.91 | 1 | 22 |
| 1068 | DD4114 | 880 | * | 13 | 29.4 | 2.99 | 1 | 22 |
| 1069 | DD4110 | 517/52 | 0.1 | 4 | 35.5 | 1.46 | 1,438 | 22 |
| 1070 | DD4120 | 517/52 | 0.1 | 4 | ---- | ---- | 1,284 | 22 |
| 1071 | DD4104 | 345/35 | 0.1 | 10 | 33.9 | 1.02 | 18,821 | 22 |
| 1072 | DD4111 | 345/35 | 0.1 | 10 | 34.8 | 0.99 | 18,293 | 22 |
| 1073 | DD4106 | 345/35 | 0.1 | 10 | ---- | ---- | 22,542 | 22 |
| 1074 | DD4118 | 276/28 | 0.1 | 15 | 32.7 | 0.84 | 118,241 | 22 |
| 1075 | DD4115 | 207/21 | 0.1 | 15 | 31.6 | 0.66 | 278,835 | 22 |
| 1076 | DD4116 | 207/21 | 0.1 | 20 | 28.3 | 0.73 | 386,766 | 22 |
| 1077 | DD4105 | 193/19 | 0.1 | 20 | ---- | ---- | 2,426,414 | 22 |
| 1304 | DD4130 | -515 | * | 13 | ---- | ---- | 1 | 25 |
| 1305 | DD4131 | -519 | * | 13 | ---- | ---- | 1 | 25 |
| 3083 | DD4163 | -590 | * | 13 | ---- | ---- | 1 | 25 |
| 3084 | DD4156 | -514 | * | 13 | ---- | ---- | 1 | 25 |
| 3085 | DD4151 | -566 | * | 13 | ---- | ---- | 1 | 25 |
| 3105 | DD4191 | 345/-345 | -1 | 2 | ---- | ---- | 972 | 25 |
| 3106 | DD4160 | 345/-345 | -1 | 2 | ---- | ---- | 793 | 25 |
| 3107 | DD4165 | 345/-345 | -1 | 2 | ---- | ---- | 1,436 | 25 |
| 3108 | DD4106 | 861 | * | -- | ---- | ---- | 1 | 25 |
| 3109 | DD4158 | 207/-207 | -1 | 5 | ---- | ---- | 83,385 | 25 |
| 3110 | DD4157 | 276/-276 | -1 | 4 | ---- | ---- | 13,351 | 25 |
| 3111 | DD4167 | 276/-276 | -1 | 4 | ---- | ---- | 17,873 | 25 |
| 3112 | DD4159 | 276/-276 | -1 | 4 | ---- | ---- | 9,178 | 25 |
| 3113 | DD4150 | 172/-172 | -1 | 8 | ---- | ---- | 218,504 | 25 |
| 3114 | DD4162 | 207/-207 | -1 | 5 | ---- | ---- | 47,671 | 25 tab |
| 3115 | DD4152 | 207/-207 | -1 | 4 | ---- | ---- | 63,270 | 25 tab |
| 3116 | DD4161 | 138/-138 | -1 | 12 | ---- | ---- | 2,000,000 | 25 R tab |

MATERIAL DD5

Lay-up = [0/±45/0]_s, V_F = 0.374, Ave. thickness = 2.97 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|-----------|------|
| 1079 | DD5113 | 703 | * | 13 | 26.6 | 2.78 | 1 | 22 |
| 1080 | DD5108 | 740 | * | 13 | 23.8 | 3.10 | 1 | 22 |
| 1081 | DD5112 | 729 | * | 13 | 23.7 | 3.08 | 1 | 22 |
| 1082 | DD5109 | 207/21 | 0.1 | 20 | 25.2 | 0.82 | 5,000,000 | 22 R |
| 1083 | DD5107 | 483/48 | 0.1 | 2 | 24.1 | 2.00 | 2,386 | 22 |
| 1084 | DD5116 | 483/48 | 0.1 | 2 | 27.9 | 1.72 | 2,650 | 22 |
| 1085 | DD5106 | 483/48 | 0.1 | 2 | 26.8 | 1.80 | 1,996 | 22 |
| 1086 | DD5119 | 414/41 | 0.1 | 5 | 24.7 | 1.67 | 20,246 | 22 |
| 1087 | DD5117 | 276/28 | 0.1 | 20 | 24.1 | 1.20 | 1,500,000 | 22 R |
| 1088 | DD5104 | 414/41 | 0.1 | 15 | 25.4 | 1.63 | 14,980 | 22 |
| 1089 | DD5102 | 414/41 | 0.1 | 15 | 28.1 | 1.47 | 12,469 | 22 |
| 1090 | DD5118 | 276/28 | 0.1 | 20 | 26.7 | 1.03 | 1,103,247 | 22 |
| 1091 | DD5114 | 345/35 | 0.1 | 15 | 22.9 | 1.51 | 127,898 | 22 |
| 1092 | DD5103 | 345/35 | 0.1 | 15 | 23.0 | 1.50 | 145,581 | 22 |
| 1093 | DD5105 | 345/35 | 0.1 | 15 | 25.2 | 1.37 | 169,754 | 22 |
| 1094 | DD5115 | 276/28 | 0.1 | 20 | ---- | ---- | 1,033,583 | 22 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 1302 | DD5130 | -553 | * | 13 | ---- | ---- | 1 | 25 |
| 1303 | DD5131 | -514 | * | 13 | ---- | ---- | 1 | 25 |
| 1835 | DD5105 | -781 | * | 13 | ---- | ---- | 1 | 25 |
| 1836 | DD5201 | -795 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD5E

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.362$, Ave. thickness = 3.10 mm, S.D. = 0.07 mm, Epon 9410 Epoxy

| | | | | | | | | |
|------|----------|----------|-----|----|------|------|-----------|--------|
| 1859 | DD5E406 | 680 | * | 13 | 22.8 | 2.98 | 1 | 22 |
| 1860 | DD5E403 | 662 | * | 13 | 22.8 | 2.90 | 1 | 22 |
| 1861 | DD5E408 | 682 | * | 13 | 24.4 | 2.80 | 1 | 22 |
| 1940 | DD5E419 | -528 | * | 13 | 27.2 | ---- | 1 | 25 |
| 1942 | DD5E415 | -531 | * | 13 | 27.2 | ---- | 1 | 25 |
| 1943 | DD5E418 | -503 | * | 13 | 25.3 | ---- | 1 | 25 |
| 1962 | DD5E424 | -345/-35 | 10 | 10 | ---- | ---- | 334,460 | 25 |
| 1963 | DD5E424 | -345/-35 | 10 | 5 | ---- | ---- | 1,176,784 | 25 |
| 1964 | DD5E420 | -379/-38 | 10 | 4 | ---- | ---- | 85,056 | 25 |
| 1965 | DD5E426 | -379/-38 | 10 | 4 | ---- | ---- | 59,318 | 25 |
| 1966 | DD5E422 | -379/-38 | 10 | 4 | ---- | ---- | 143,526 | 25 |
| 1967 | DD5E416 | -414/-41 | 10 | 2 | ---- | ---- | 5,232 | 25 |
| 1968 | DD5E425 | -414/-41 | 10 | 2 | ---- | ---- | 7,541 | 25 |
| 1970 | DD5E421 | -345/-35 | 10 | 10 | ---- | ---- | 1,740,718 | 25 R |
| 1971 | DD5E428 | -414/-41 | 10 | 4 | ---- | ---- | 3,855 | 25 |
| 1982 | DD5E411 | 276/28 | 0.1 | 10 | 23.3 | 1.19 | 348,038 | 22 tab |
| 1983 | DD5E409 | 276/28 | 0.1 | 10 | 21.5 | 1.31 | 498,494 | 22 tab |
| 1984 | DD5E401 | 276/28 | 0.1 | 10 | 23.9 | 1.24 | 899,308 | 22 tab |
| 1985 | DD5E412 | 345/35 | 0.1 | 5 | 23.4 | 1.51 | 34,642 | 22 tab |
| 1986 | DD5E405 | 345/35 | 0.1 | 5 | 22.3 | 1.54 | 67,480 | 22 tab |
| 1987 | DD5E410 | 414/41 | 0.1 | 2 | 22.7 | 1.83 | 878 | 22 tab |
| 1988 | DD5E414 | 414/41 | 0.1 | 2 | 24.4 | 1.76 | 2,429 | 22 |
| 1989 | DD5E407 | 345/35 | 0.1 | 5 | 22.7 | 1.54 | 52,731 | 22 |
| 1990 | DD5E402 | 483/48 | 0.1 | 1 | 21.8 | 2.28 | 69 | 22 tab |
| 1991 | DD5E413 | 241/24 | 0.1 | 15 | 21.6 | 1.19 | 2,441,330 | 22 |
| 2986 | DD5E251 | 310/-310 | -1 | 2 | ---- | ---- | 1,387 | 25 |
| 2987 | DD5E261 | 310/-310 | -1 | 2 | ---- | ---- | 380 | 25 |
| 2988 | DD5E254 | 310/-310 | -1 | 2 | ---- | ---- | 1,130 | 25 |
| 2989 | DD5E252 | 207/-207 | -1 | 4 | ---- | ---- | 23,990 | 25 |
| 2990 | DD5E259 | 207/-207 | -1 | 4 | ---- | ---- | 31,172 | 25 |
| 2991 | DD5E252 | 207/-207 | -1 | 4 | ---- | ---- | 92,394 | 25 |
| 2992 | DD5E260 | 172/-172 | -1 | 5 | ---- | ---- | 191,803 | 25 |
| 2993 | DD5E258 | 276/-276 | -1 | 2 | ---- | ---- | 1,072 | 25 |
| 2994 | DD5E256 | 276/-276 | -1 | 2 | ---- | ---- | 601 | 25 |
| 2995 | DD5E257 | 276/-276 | -1 | 2 | ---- | ---- | 2,665 | 25 |
| 2996 | DD5E262 | 155/-155 | -1 | 10 | ---- | ---- | 1,060,993 | 25 |
| 2997 | DD5E263 | 172/-172 | -1 | 10 | ---- | ---- | 168,947 | 25 |
| 2998 | DD5E250 | 172/-172 | -1 | 10 | ---- | ---- | 305,106 | 25 |
| 2999 | DD5E270 | 155/-155 | -1 | 12 | ---- | ---- | 1,463,729 | 25 |
| 3000 | DD5E286T | 76 | * | 13 | 7.31 | 1.04 | 1 | 25 |
| 3001 | DD5E281T | 73 | * | 13 | 8.76 | 0.84 | 1 | 25 |
| 3002 | DD5E280T | 64 | * | 13 | 7.24 | 0.89 | 1 | 25 |

MATERIAL DD5E3

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.358$, Ave. thickness = 3.14 mm, S.D. = 0.08 mm, Prime 20 Epoxy

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 8686 | DD5E3-110 | -558 | * | 13 | ---- | ---- | 1 | 25 |
| 8732 | DD5E3-109 | -628 | * | 13 | ---- | ---- | 1 | 25 |
| 8733 | DD5E3-108 | -579 | * | 13 | ---- | ---- | 1 | 25 |
| 8734 | DD5E3-106 | -568 | * | 13 | ---- | ---- | 1 | 25 |
| 8735 | DD5E3-107 | -345/-35 | 10 | 4 | ---- | ---- | 238,243 | 25 |
| 8655 | DD5E3-112 | -345/-35 | 10 | 4 | ---- | ---- | 506,692 | 25 |
| 8656 | DD5E3-111 | -345/-35 | 10 | 4 | ---- | ---- | 148,535 | 25 |
| 8657 | DD5E3-113 | -310/-31 | 10 | 6 | ---- | ---- | 1,698,851 | 25 |
| 8666 | DD5E3-117 | -414/-41 | 10 | 2 | ---- | ---- | 14,696 | 25 |
| 8667 | DD5E3-127 | -414/-41 | 10 | 2 | ---- | ---- | 6,857 | 25 |
| 8668 | DD5E3-148 | -414/-41 | 10 | 2 | ---- | ---- | 4,644 | 25 |
| 8706 | DD5E3-139 | -310/-31 | 10 | 6 | ---- | ---- | 5,286,161 | 25 |
| 8707 | DD5E3-140 | -310/-31 | 10 | 6 | ---- | ---- | 3,370,820 | 25 |
| 8694 | DD5E3-124 | -483/-48 | 10 | 1 | ---- | ---- | 165 | 25 |
| 8695 | DD5E3-126 | -483/-48 | 10 | 1 | ---- | ---- | 48 | 25 |
| 8696 | DD5E3-128 | -483/-48 | 10 | 1 | ---- | ---- | 21 | 25 |
| 8658 | DD5E3-102 | 310/-310 | -1 | 1 | ---- | ---- | 2,760 | 25 |
| 8659 | DD5E3-104 | 207/-207 | -1 | 3 | ---- | ---- | 318,717 | 25 |
| 8660 | DD5E3-103 | 207/-207 | -1 | 3 | ---- | ---- | 363,610 | 25 |
| 8661 | DD5E3-119 | 207/-207 | -1 | 2 | ---- | ---- | 280,106 | 25 |
| 8662 | DD5E3-120 | 310/-310 | -1 | 1 | ---- | ---- | 3,397 | 25 |
| 8663 | DD5E3-123 | 310/-310 | -1 | 1 | ---- | ---- | 8,244 | 25 |
| 8664 | DD5E3-130 | 172/-172 | -1 | 4 | ---- | ---- | 1,948,998 | 25 |
| 8665 | DD5E3-133 | 172/-172 | -1 | 5 | ---- | ---- | 3,170,897 | 25 |
| 8697 | DD5E3-122 | 414/-414 | -1 | 1 | ---- | ---- | 93 | 25 |
| 8698 | DD5E3-105 | 414/-414 | -1 | 1 | ---- | ---- | 22 | 25 |
| 8699 | DD5E3-116 | 414/-414 | -1 | 1 | ---- | ---- | 35 | 25 |
| 6793 | DD5E3-152 | 758 | * | 13 | 23.5 | 3.23 | 1 | 25 |
| 6794 | DD5E3-151 | 779 | * | 13 | 23.8 | 3.27 | 1 | 25 |
| 6795 | DD5E3-150 | 791 | * | 13 | 24.2 | 3.26 | 1 | 25 |
| 10374 | DD5E3-330 | -414/-41 | 10 | 3 | ---- | ---- | 3,331 | 25 |
| 10375 | DD5E3-331 | -379/-38 | 10 | 4 | ---- | ---- | 17,797 | 25 |
| 10376 | DD5E3-339 | -345/-35 | 10 | 3 | ---- | ---- | 157,762 | 25 |
| 10377 | DD5E3-332 | -345/-35 | 10 | 3 | ---- | ---- | 465,515 | 25 |
| 10378 | DD5E3-334 | -345/-35 | 10 | 4 | ---- | ---- | 286,557 | 25 |
| 10379 | DD5E3-337 | -379/-38 | 10 | 2 | ---- | ---- | 50,604 | 25 |
| 10380 | DD5E3-338 | -379/-38 | 10 | 2 | ---- | ---- | 54,304 | 25 |

MATERIAL DD5E4

Lay-up = [0/±45/0]_S, V_F = 0.35, Ave. thickness = 3.20 mm, S.D. = 0.08 mm, Jeffco 1401-12 epoxy

Tests 6796 - 6898 used 1401-17 hardener and were room temperature cure materials only.

| | | | | | | | | |
|------|-----------|-----|---|----|------|------|---|----|
| 6796 | DD5E4-106 | 752 | * | 13 | 24.8 | 3.03 | 1 | 25 |
| 6797 | DD5E4-105 | 725 | * | 13 | 22.7 | 3.2 | 1 | 25 |
| 6798 | DD5E4-104 | 793 | * | 13 | 24.0 | 3.0 | 1 | 25 |

Tests 6799 - 6802 used 1401-17 hardener and were room temperature cure materials only.

| | | | | | | | | |
|------|-----------|------|---|----|------|------|---|----|
| 6799 | DD5E4-100 | -533 | * | 13 | 23.5 | -2.0 | 1 | 25 |
| 6800 | DD5E4-101 | -421 | * | 13 | ---- | ---- | 1 | 25 |
| 6801 | DD5E4-102 | -531 | * | 13 | ---- | ---- | 1 | 25 |
| 6802 | DD5E4-103 | -456 | * | 13 | ---- | ---- | 1 | 25 |

Tests 7093 - 7097 used Jeffco 4101-18 hardener and were post cured for 14 hours at 50C and 2 hours at 85C

| | | | | | | | | |
|------|-----------|------|---|----|------|------|---|----|
| 7093 | DD5E4-210 | -580 | * | 13 | 23.8 | -2.4 | 1 | 25 |
| 7094 | DD5E4-211 | -578 | * | 13 | ---- | ---- | 1 | 25 |
| 7095 | DD5E4-212 | -575 | * | 13 | ---- | ---- | 1 | 25 |

| | | | | | | | | |
|---|-----------|----------|----|----|------|------|---------|------|
| 7096 | DD5E4-214 | -572 | * | 13 | ---- | ---- | 1 | 25 |
| 7097 | DD5E4-215 | -595 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 8801 - 8805 used Jeffco 4102 hardener and were post cured for 14 hours at 60C and 2 hours at 85C | | | | | | | | |
| 8801 | DD5E4-221 | -595 | * | 13 | 22.9 | -2.6 | 1 | 25 |
| 8802 | DD5E4-222 | -604 | * | 13 | ---- | ---- | 1 | 25 |
| 8803 | DD5E4-223 | -601 | * | 13 | ---- | ---- | 1 | 25 |
| 8804 | DD5E4-224 | -585 | * | 13 | ---- | ---- | 1 | 25 |
| 8805 | DD5E4-225 | -607 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 8811 - 8815 used 1401-17 hardener and were post cured for 14 hours at 60C and 2 hours at 85C. | | | | | | | | |
| 8811 | DD5E4-231 | -594 | * | 13 | 24.4 | -2.4 | 1 | 25 |
| 8812 | DD5E4-232 | -567 | * | 13 | ---- | ---- | 1 | 25 |
| 8813 | DD5E4-233 | -568 | * | 13 | ---- | ---- | 1 | 25 |
| 8814 | DD5E4-234 | -583 | * | 13 | ---- | ---- | 1 | 25 |
| 8815 | DD5E4-235 | -562 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 7084 - 7087, 10381 - 10387 used 1401-17 hardener, and post cured for 14 hours at 60C and 2 hours at 85C | | | | | | | | |
| 7084 | DD5E4-201 | -533 | * | 13 | 24.4 | -2.4 | 1 | 25 |
| 7085 | DD5E4-202 | -535 | * | 13 | ---- | ---- | 1 | 25 |
| 7086 | DD5E4-203 | -562 | * | 13 | ---- | ---- | 1 | 25 |
| 7087 | DD5E4-204 | -569 | * | 13 | ---- | ---- | 1 | 25 |
| 10381 | DD5E4-310 | -379/-38 | 10 | 3 | ---- | ---- | 86,481 | 25 |
| 10382 | DD5E4-311 | -379/-38 | 10 | 3 | ---- | ---- | 20,718 | 25 |
| 10383 | DD5E4-314 | -379/-38 | 10 | 3 | ---- | ---- | 20,000 | 25 R |
| 10384 | DD5E4-317 | -362/-36 | 10 | 4 | ---- | ---- | 192,134 | 25 |
| 10385 | DD5E4-318 | -362/-36 | 10 | 4 | ---- | ---- | 320,026 | 25 |
| 10386 | DD5E4-313 | -632/-63 | 10 | 4 | ---- | ---- | 253,637 | 25 |
| 10387 | DD5E4-316 | -379/-38 | 10 | 2 | ---- | ---- | 25,520 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| MATERIAL DD5P | | | | | | | |
| Lay-up = [0/±45/0] _s , V _F = 0.372, Ave. thickness = 3.02 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester | | | | | | | |
| 1853 | DD5P206 | 683 | * | 13 | 23.6 | 2.94 | 1 22 |
| 1854 | DD5P209 | 682 | * | 13 | 24.7 | 2.76 | 1 22 |
| 1855 | DD5P214 | 617 | * | 13 | 22.3 | 2.78 | 1 22 |
| 1871 | DD5P201 | 241/24 | 0.1 | 15 | 25.7 | 0.95 | 8,000,000 22 R |
| 1937 | DD5P221 | -581 | * | 13 | 26.3 | ---- | 1 25 |
| 1938 | DD5P228 | -557 | * | 13 | 25.0 | ---- | 1 25 |
| 1939 | DD5P219 | -586 | * | 13 | 25.2 | ---- | 1 25 |
| 1953 | DD5P215 | -414/-41 | 10 | 2 | ---- | ---- | 5,041 25 |
| 1954 | DD5P224 | -414/-41 | 10 | 2 | ---- | ---- | 9,422 25 |
| 1955 | DD5P218 | -414/-41 | 10 | 2 | ---- | ---- | 8,491 25 |
| 1956 | DD5P223 | -379/-38 | 10 | 5 | ---- | ---- | 178,704 25 |
| 1957 | DD5P225 | -379/-38 | 10 | 5 | ---- | ---- | 63,853 25 |
| 1958 | DD5P216 | -379/-38 | 10 | 4 | ---- | ---- | 72,641 25 |
| 1959 | DD5P217 | -345/-35 | 10 | 10 | ---- | ---- | 344,570 25 |
| 1960 | DD5P226 | -345/-35 | 10 | 10 | ---- | ---- | 424,220 25 |
| 1961 | DD5P227 | -345/-35 | 10 | 15 | ---- | ---- | 661,103 25 |
| 1973 | DD5P207 | 483/48 | 0.1 | 1 | 24.3 | 2.20 | 86 22 tab |
| 1974 | DD5P205 | 414/41 | 0.1 | 2 | 23.5 | 1.85 | 2,102 22 tab |
| 1975 | DD5P208 | 414/41 | 0.1 | 2 | 24.3 | 1.74 | 1,045 22 tab |
| 1976 | DD5P212 | 345/35 | 0.1 | 4 | 23.9 | 1.48 | 36,290 22 tab |
| 1977 | DD5P204 | 345/35 | 0.1 | 5 | 23.5 | 1.67 | 43,703 22 tab |
| 1978 | DD5P203 | 345/35 | 0.1 | 5 | 24.4 | 1.43 | 28,269 22 |
| 1979 | DD5P210 | 276/28 | 0.1 | 10 | 22.7 | 1.24 | 857,025 22 |
| 1980 | DD5P211 | 276/28 | 0.1 | 10 | 23.0 | 1.22 | 357,553 22 tab |
| 1981 | DD5P213 | 276/28 | 0.1 | 10 | 21.3 | 1.18 | 481,129 22 tab |
| 2965 | DD5P255 | 414/-414 | -1 | 2 | ---- | ---- | 21 25 |
| 2966 | DD5P259 | 345/-345 | -1 | 2 | ---- | ---- | 634 25 |
| 2967 | DD5P260 | 345/-345 | -1 | 1 | ---- | ---- | 121 25 |
| 2968 | DD5P251 | 345/-345 | -1 | 2 | ---- | ---- | 810 25 |
| 2969 | DD5P250 | 310/-310 | -1 | 2 | ---- | ---- | 1,360 25 |
| 2970 | DD5P254 | 310/-310 | -1 | 1 | ---- | ---- | 163 25 |
| 2971 | DD5P252 | 276/-276 | -1 | 2 | ---- | ---- | 5,179 25 |
| 2972 | DD5P253 | 276/-276 | -1 | 2 | ---- | ---- | 2,038 25 |
| 2973 | DD5P257 | 276/-276 | -1 | 2 | ---- | ---- | 2,131 25 |
| 2974 | DD5P256 | 207/-207 | -1 | 4 | ---- | ---- | 16,718 25 |
| 2975 | DD5P261 | 207/-207 | -1 | 4 | ---- | ---- | 26,796 25 |
| 2976 | DD5P258 | 155/-155 | -1 | 10 | ---- | ---- | 986,000 25 R |
| 2977 | DD5P262 | 172/-172 | -1 | 5 | ---- | ---- | 106,267 25 |
| 2978 | DD5P257 | 172/-172 | -1 | 4 | ---- | ---- | 79,563 25 |
| 2979 | DD5P162 | 155/-155 | -1 | 10 | ---- | ---- | 561,486 25 |
| Tests 2980 - 2985 were transverse tests tested in the [90/±45/90] _s direction | | | | | | | |
| 2980 | DD5P263T | 53 | * | 13 | 8.96 | 0.59 | 1 25 |
| 2981 | DD5P264T | 54 | * | 13 | 8.83 | 0.61 | 1 25 |
| 2982 | DD5P265T | 56 | * | 13 | 8.89 | 0.63 | 1 25 |
| 2983 | DD5P269T | -170 | * | 13 | ---- | ---- | 1 25 |
| 2984 | DD5P267T | -153 | * | 13 | ---- | ---- | 1 25 |
| 2985 | DD5P266T | -163 | * | 13 | ---- | ---- | 1 25 |
| Tests 3150 - 3180 involved a gage length of 13 mm (width effect tests). | | | | | | | |
| 3150 | DD5P001 | -591 | * | 13 | ---- | ---- | 1 51 |
| 3151 | DD5P002 | -662 | * | 13 | ---- | ---- | 1 51 |
| 3152 | DD5P003 | -674 | * | 13 | ---- | ---- | 1 51 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|---------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3153 | DD5P004 | -622 | * | 13 | ---- | ---- | 1 | 51 |
| 3154 | DD5P005 | -624 | * | 13 | ---- | ---- | 1 | 44 |
| 3155 | DD5P006 | -616 | * | 13 | ---- | ---- | 1 | 44 |
| 3156 | DD5P007 | -671 | * | 13 | ---- | ---- | 1 | 44 |
| 3157 | DD5P008 | -649 | * | 13 | ---- | ---- | 1 | 44 |
| 3158 | DD5P009 | -597 | * | 13 | ---- | ---- | 1 | 38 |
| 3159 | DD5P010 | -604 | * | 13 | ---- | ---- | 1 | 38 |
| 3160 | DD5P011 | -638 | * | 13 | ---- | ---- | 1 | 38 |
| 3161 | DD5P012 | -695 | * | 13 | ---- | ---- | 1 | 38 |
| 3162 | DD5P013 | -649 | * | 13 | ---- | ---- | 1 | 32 |
| 3163 | DD5P014 | -648 | * | 13 | ---- | ---- | 1 | 32 |
| 3164 | DD5P015 | -666 | * | 13 | ---- | ---- | 1 | 32 |
| 3165 | DD5P016 | -650 | * | 13 | ---- | ---- | 1 | 32 |
| 3166 | DD5P061 | -687 | * | 13 | ---- | ---- | 1 | 25 |
| 3167 | DD5P062 | -634 | * | 13 | ---- | ---- | 1 | 25 |
| 3168 | DD5P063 | -671 | * | 13 | ---- | ---- | 1 | 25 |
| 3169 | DD5P021 | -588 | * | 13 | ---- | ---- | 1 | 19 |
| 3170 | DD5P022 | -580 | * | 13 | ---- | ---- | 1 | 19 |
| 3171 | DD5P023 | -630 | * | 13 | ---- | ---- | 1 | 19 |
| 3172 | DD5P024 | -610 | * | 13 | ---- | ---- | 1 | 19 |
| 3173 | DD5P025 | -614 | * | 13 | ---- | ---- | 1 | 13 |
| 3174 | DD5P026 | -550 | * | 13 | ---- | ---- | 1 | 13 |
| 3175 | DD5P027 | -581 | * | 13 | ---- | ---- | 1 | 13 |
| 3176 | DD5P028 | -607 | * | 13 | ---- | ---- | 1 | 13 |
| 3177 | DD5P029 | -495 | * | 13 | ---- | ---- | 1 | 6 |
| 3178 | DD5P030 | -549 | * | 13 | ---- | ---- | 1 | 6 |
| 3179 | DD5P031 | -539 | * | 13 | ---- | ---- | 1 | 6 |
| 3180 | DD5P032 | -519 | * | 13 | ---- | ---- | 1 | 6 |
| Tests 3181 - 3198 involved a gage length of 100 mm (width effect tests). | | | | | | | | |
| 3181 | DD5P28 | 853 | * | 13 | ---- | ---- | 1 | 38 |
| 3182 | DD5P29 | 861 | * | 13 | ---- | ---- | 1 | 38 |
| 3183 | DD5P30 | 825 | * | 13 | ---- | ---- | 1 | 38 |
| 3184 | DD5P31 | 824 | * | 13 | ---- | ---- | 1 | 32 |
| 3185 | DD5P32 | 843 | * | 13 | ---- | ---- | 1 | 32 |
| 3186 | DD5P33 | 840 | * | 13 | ---- | ---- | 1 | 32 |
| 3187 | DD5P13 | 852 | * | 13 | ---- | ---- | 1 | 25 |
| 3188 | DD5P14 | 774 | * | 13 | ---- | ---- | 1 | 25 |
| 3189 | DD5P15 | 825 | * | 13 | ---- | ---- | 1 | 25 |
| 3190 | DD5P037 | 787 | * | 13 | ---- | ---- | 1 | 19 |
| 3191 | DD5P038 | 814 | * | 13 | ---- | ---- | 1 | 19 |
| 3192 | DD5P039 | 792 | * | 13 | ---- | ---- | 1 | 19 |
| 3193 | DD5P040 | 737 | * | 13 | ---- | ---- | 1 | 13 |
| 3194 | DD5P041 | 792 | * | 13 | ---- | ---- | 1 | 13 |
| 3195 | DD5P042 | 683 | * | 13 | ---- | ---- | 1 | 13 |
| 3196 | DD5P043 | 536 | * | 13 | ---- | ---- | 1 | 6 |
| 3197 | DD5P044 | 526 | * | 13 | ---- | ---- | 1 | 6 |
| 3198 | DD5P045 | 537 | * | 13 | ---- | ---- | 1 | 6 |
| Tests 3244 - 3276 involved a gage length of 13 mm (strain rate effect tests). | | | | | | | | |
| 3244 | DD5P17 | -502 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3245 | DD5P18 | -492 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3246 | DD5P19 | -497 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3247 | DD5P40 | -582 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3248 | DD5P41 | -591 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3249 | DD5P42 | -528 | * | 0.025 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3250 | DD5P43 | -626 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3251 | DD5P44 | -592 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3252 | DD5P45 | -547 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3253 | DD5P46 | -585 | * | 1.27 | ---- | ---- | 1 | 25 |
| 3254 | DD5P47 | -578 | * | 1.27 | ---- | ---- | 1 | 25 |
| 3255 | DD5P48 | -577 | * | 1.27 | ---- | ---- | 1 | 25 |
| 3256 | DD5P49 | -588 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3257 | DD5P50 | -628 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3258 | DD5P51 | -581 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3259 | DD5P52 | -653 | * | 6.35 | ---- | ---- | 1 | 25 |
| 3260 | DD5P53 | -624 | * | 6.35 | ---- | ---- | 1 | 25 |
| 3261 | DD5P54 | -674 | * | 6.35 | ---- | ---- | 1 | 25 |
| 3262 | DD5P55 | -671 | * | 13 | ---- | ---- | 1 | 25 |
| 3263 | DD5P56 | -662 | * | 13 | ---- | ---- | 1 | 25 |
| 3264 | DD5P57 | -656 | * | 13 | ---- | ---- | 1 | 25 |
| 3265 | DD5P58 | -697 | * | 19 | ---- | ---- | 1 | 25 |
| 3266 | DD5P59 | -689 | * | 19 | ---- | ---- | 1 | 25 |
| 3267 | DD5P60 | -676 | * | 19 | ---- | ---- | 1 | 25 |
| 3268 | DD5P61 | -678 | * | 25 | ---- | ---- | 1 | 25 |
| 3269 | DD5P62 | -692 | * | 25 | ---- | ---- | 1 | 25 |
| 3270 | DD5P63 | -675 | * | 25 | ---- | ---- | 1 | 25 |
| 3271 | DD5P64 | -692 | * | 64 | ---- | ---- | 1 | 25 |
| 3272 | DD5P65 | -671 | * | 64 | ---- | ---- | 1 | 25 |
| 3273 | DD5P66 | -709 | * | 64 | ---- | ---- | 1 | 25 |
| 3274 | DD5P67 | -697 | * | 127 | ---- | ---- | 1 | 25 |
| 3275 | DD5P68 | -704 | * | 127 | ---- | ---- | 1 | 25 |
| 3276 | DD5P69 | -665 | * | 127 | ---- | ---- | 1 | 25 |
| Tests 3277 - 3300 involved a gage length of 100 mm (strain rate effect tests). | | | | | | | | |
| 3277 | DD5P1 | 552 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3278 | DD5P2 | 592 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3279 | DD5P3 | 585 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 3280 | DD5P4 | 624 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3281 | DD5P5 | 614 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3282 | DD5P6 | 610 | * | 0.025 | ---- | ---- | 1 | 25 |
| 3283 | DD5P7 | 730 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3284 | DD5P8 | 722 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3285 | DD5P9 | 705 | * | 0.25 | ---- | ---- | 1 | 25 |
| 3286 | DD5P10 | 748 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3287 | DD5P11 | 736 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3288 | DD5P12 | 757 | * | 2.54 | ---- | ---- | 1 | 25 |
| 3289 | DD5P13 | 852 | * | 13 | ---- | ---- | 1 | 25 |
| 3290 | DD5P14 | 834 | * | 13 | ---- | ---- | 1 | 25 |
| 3291 | DD5P15 | 825 | * | 13 | ---- | ---- | 1 | 25 |
| 3292 | DD5P16 | 763 | * | 25 | ---- | ---- | 1 | 25 |
| 3293 | DD5P17 | 778 | * | 25 | ---- | ---- | 1 | 25 |
| 3294 | DD5P18 | 841 | * | 25 | ---- | ---- | 1 | 25 |
| 3295 | DD5P19 | 810 | * | 64 | ---- | ---- | 1 | 25 |
| 3296 | DD5P20 | 919 | * | 64 | ---- | ---- | 1 | 25 |
| 3297 | DD5P21 | 876 | * | 64 | ---- | ---- | 1 | 25 |
| 3298 | DD5P22 | 916 | * | 127 | ---- | ---- | 1 | 25 |
| 3299 | DD5P23 | 903 | * | 127 | ---- | ---- | 1 | 25 |
| 3300 | DD5P24 | 895 | * | 127 | ---- | ---- | 1 | 25 |
| Tests 3455 - 3533 involved different coupon geometries (standard and mini-coupon) and frequencies. | | | | | | | | |
| 3455 | DD5P550 | 414/41 | 0.1 | 2 | 26.7 | 1.58 | 8,157 | 22 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3456 | DD5P520 | 414/41 | 0.1 | 2 | 26.6 | 1.64 | 12,185 | 22 |
| 3457 | DD5P524 | 414/41 | 0.1 | 2 | 23.6 | 1.70 | 11,533 | 22 |
| 3458 | DD5P511 | 414/41 | 0.1 | 2 | 23.6 | 1.71 | 6,716 | 22 |
| 3459 | DD5P555 | 414/41 | 0.1 | 2 | 24.2 | 1.72 | 12,041 | 22 |
| 3460 | DD5P510 | 414/41 | 0.1 | 2 | 26.0 | 1.61 | 7,640 | 22 |
| 3461 | DD5P501 | 414/41 | 0.1 | 2 | 23.5 | 1.67 | 11,085 | 22 |
| 3462 | DD5P551 | 414/41 | 0.1 | 2 | 25.3 | 1.65 | 9,930 | 22 |
| 3463 | DD5P533 | 414/41 | 0.1 | 2 | 25.3 | 1.66 | 9,191 | 22 |
| 3464 | DD5P517 | 414/41 | 0.1 | 2 | 24.2 | 1.73 | 9,067 | 22 |
| 3465 | DD5P542 | 310/31 | 0.1 | 10 | 25.9 | 1.26 | 514,201 | 22 |
| 3466 | DD5P508 | 310/31 | 0.1 | 10 | 23.1 | 1.28 | 285,386 | 22 |
| 3467 | DD5P521 | 310/31 | 0.1 | 10 | 23.6 | 1.22 | 351,717 | 22 |
| 3468 | DD5P560 | 310/31 | 0.1 | 10 | 24.0 | 1.31 | 345,652 | 22 |
| 3469 | DD5P519 | 310/31 | 0.1 | 10 | 24.3 | 1.34 | 749,084 | 22 |
| 3470 | DD5P544 | 310/31 | 0.1 | 10 | 24.3 | 1.28 | 579,002 | 22 tab |
| 3471 | DD5P504 | 414/41 | 0.1 | 2 | 23.5 | 1.69 | 9,912 | 22 tab |
| 3472 | DD5P564 | 414/41 | 0.1 | 2 | ---- | ---- | 16,271 | 22 tab |
| 3473 | DD5P503 | 414/41 | 0.1 | 2 | ---- | ---- | 5,305 | 22 tab |
| 3474 | DD5P515 | 414/41 | 0.1 | 2 | ---- | ---- | 10,499 | 22 tab |
| 3475 | DD5P525 | 310/31 | 0.1 | 10 | ---- | ---- | 342,738 | 22 tab |
| 3476 | DD5P540 | 310/31 | 0.1 | 10 | ---- | ---- | 228,420 | 22 tab |
| 3477 | DD5P506 | 310/31 | 0.1 | 10 | ---- | ---- | 376,933 | 22 tab |
| 3478 | DD5P541 | 414/41 | 0.1 | 2 | ---- | ---- | 8,883 | 22 tab |
| 3479 | DD5P502 | 310/31 | 0.1 | 10 | 24.6 | 1.30 | 403,000 | 22 tab |
| 3498 | DD5P605 | 241/24 | 0.1 | 30 | ---- | ---- | 2,820,426 | 8 tab |
| 3499 | DD5P601 | 207/21 | 0.1 | 40 | ---- | 0.89 | 10,027,337 | 8 tab |
| 3500 | DD5P602 | 241/24 | 0.1 | 20 | ---- | ---- | 1,548,025 | 8 tab |
| 3501 | DD5P601 | 241/24 | 0.1 | 25 | ---- | ---- | 348,666 | 8 tab |
| 3502 | DD5P606 | 241/24 | 0.1 | 20 | ---- | ---- | 1,016,251 | 8 tab |
| 3530 | DD5P614 | 241/24 | 0.1 | 25 | 23.6 | 1.04 | 2,312,896 | 8 tab |
| 3531 | DD5P612 | 207/21 | 0.1 | 40 | ---- | 0.91 | 22,002,386 | 8 tab |
| 3525 | DD5P603 | 193/19 | 0.1 | 45 | 23.6 | 0.82 | 39,082,107 | 8 tab |
| 3526 | DD5P610 | 414/41 | 0.1 | 2 | ---- | ---- | 8,123 | 8 tab |
| 3527 | DD5P604 | 414/41 | 0.1 | 2 | ---- | ---- | 18,264 | 8 tab |
| 3528 | DD5P613 | 414/41 | 0.1 | 2 | ---- | ---- | 8,358 | 8 tab |
| 3529 | DD5P643 | 241/24 | 0.1 | 10 | ---- | ---- | 2,668,144 | 8 tab |
| 3532 | DD5P628 | 241/24 | 0.1 | 10 | ---- | ---- | 2,823,516 | 8 tab |
| 3533 | DD5P599 | 241/24 | 0.1 | 10 | ---- | ---- | 3,554,421 | 8 tab |
| Tests 3534 - 3556 were run at different frequencies to study thermal and mechanical effects. | | | | | | | | |
| 3534 | DD5P635 | 310/31 | 0.1 | 10 | ---- | ---- | 594,298 | 8 tab |
| 3535 | DD5P634 | 310/31 | 0.1 | 10 | ---- | ---- | 537,593 | 8 tab |
| 3536 | DD5P631 | 310/31 | 0.1 | 10 | ---- | ---- | 252,317 | 8 tab |
| 3537 | DD5P637 | 310/31 | 0.1 | 10 | ---- | ---- | 296,456 | 8 tab |
| 3538 | DD5P636 | 310/31 | 0.1 | 10 | ---- | ---- | 275,551 | 8 tab |
| 3539 | DD5P627 | 310/31 | 0.1 | 10 | ---- | ---- | 261,531 | 8 tab |
| 3540 | DD5P638 | 310/31 | 0.1 | 5 | ---- | ---- | 379,674 | 8 tab |
| 3541 | DD5P629 | 310/31 | 0.1 | 5 | ---- | ---- | 240,098 | 8 tab |
| 3542 | DD5P642 | 310/31 | 0.1 | 5 | ---- | ---- | 458,684 | 8 tab |
| 3543 | DD5P570 | 310/31 | 0.1 | 2 | ---- | ---- | 304,764 | 8 tab |
| 3544 | DD5P571 | 310/31 | 0.1 | 2 | ---- | ---- | 227,372 | 8 tab |
| 3545 | DD5P563 | 310/31 | 0.1 | 2 | ---- | ---- | 247,249 | 8 tab |
| 3546 | DD5P633 | 310/31 | 0.1 | 20 | ---- | ---- | 404,285 | 8 tab |
| 3547 | DD5P622 | 310/31 | 0.1 | 20 | ---- | ---- | 432,281 | 8 tab |
| 3548 | DD5P630 | 310/31 | 0.1 | 20 | ---- | ---- | 731,478 | 8 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3549 | DD5P620 | 310/31 | 0.1 | 2 | ---- | ---- | 196,929 | 8 tab |
| 3550 | DD5P623 | 310/31 | 0.1 | 30 | ---- | ---- | 59,971 | 8 tab |
| 3554 | DD5P509 | 310/31 | 0.1 | 1 | 25.6 | 1.21 | 284,133 | 22 tab |
| 3555 | DD5P580 | 310/31 | 0.1 | 1 | ---- | ---- | 213,190 | 22 tab |
| 3556 | DD5P581 | 310/31 | 0.1 | 1 | ---- | ---- | 198,210 | 22 tab |
| Tests 3850 - 3869 were transverse tests tested in the $[90/\pm 45/90]_S$ direction | | | | | | | | |
| 3850 | DD5P624T | -145 | * | 13 | ---- | ---- | 1 | 25 |
| 3851 | DD5P633T | -142 | * | 13 | ---- | ---- | 1 | 25 |
| 3852 | DD5P625T | -158 | * | 13 | ---- | ---- | 1 | 25 |
| 3853 | DD5P601T | 67 | * | 13 | 9.21 | 1.33 | 1 | 25 |
| 3854 | DD5P602T | 65 | * | 13 | 8.84 | 1.28 | 1 | 25 |
| 3855 | DD5P603T | 66 | * | 13 | 9.31 | 1.35 | 1 | 25 |
| 3856 | DD5P604T | 24/2 | 0.1 | 10 | 8.46 | 0.29 | 3,846,149 | 25 |
| 3857 | DD5P605T | 31/3 | 0.1 | 5 | 8.62 | 0.45 | 160,829 | 25 |
| 3858 | DD5P606T | 31/3 | 0.1 | 5 | 8.33 | 0.48 | 84,821 | 25 |
| 3859 | DD5P607T | 35/4 | 0.1 | 5 | 9.20 | 0.57 | 39,239 | 25 |
| 3860 | DD5P608T | 31/3 | 0.1 | 5 | 8.61 | 0.50 | 105,856 | 25 |
| 3861 | DD5P609T | 28/3 | 0.1 | 5 | 8.33 | 0.33 | 329,077 | 25 |
| 3862 | DD5P610T | 35/4 | 0.1 | 5 | 8.67 | 0.54 | 25,383 | 25 |
| 3863 | DD5P611T | 35/4 | 0.1 | 5 | 8.63 | 0.65 | 39,867 | 25 |
| 3864 | DD5P617T | 38/4 | 0.1 | 2 | 8.73 | 1.10 | 4,765 | 25 |
| 3865 | DD5P612T | 38/4 | 0.1 | 2 | 9.05 | 1.09 | 10,816 | 25 |
| 3866 | DD5P615T | 41/4 | 0.1 | 2 | 8.93 | 1.25 | 7,778 | 25 |
| 3867 | DD5P614T | 28/3 | 0.1 | 5 | 9.37 | 0.32 | 4,025,994 | 25 |
| 3868 | DD5P616T | 28/3 | 0.1 | 7 | 8.84 | 0.34 | 930,682 | 25 |
| 3869 | DD5P613T | 38/4 | 0.1 | 4 | 8.40 | ---- | 9,712 | 25 |
| 3982 | DD5P661 | 207/21 | 0.1 | 25 | ---- | ---- | 8,672,644 | 8 tab |
| 3983 | DD5P632 | 207/21 | 0.1 | 25 | ---- | ---- | 9,754,976 | 8 tab |
| 3984 | DD5P660 | 207/21 | 0.1 | 25 | ---- | ---- | 11,452,158 | 8 tab |
| 3985 | DD5P664 | 172/17 | 0.1 | 60 | ---- | ---- | 112,139,744 | 8 R tab |
| 3986 | DD5P641 | 172/17 | 0.1 | 60 | ---- | ---- | 78,244,896 | 8 tab |
| 3987 | DD5P639 | 172/17 | 0.1 | 60 | ---- | ---- | 110,000,000 | 8 R tab |
| 3988 | DD5P674 | 138/-138 | -1 | 15 | ---- | ---- | 6,276,710 | 8 tab |
| 3989 | DD5P670 | 138/-138 | -1 | 15 | ---- | ---- | 3,601,668 | 8 tab |
| 3990 | DD5P671 | 138/-138 | -1 | 15 | ---- | ---- | 6,071,355 | 8 tab |
| 4016 | DD5P662 | 103/-103 | -1 | 30 | ---- | ---- | 100,000,000 | 8 R tab |
| 4017 | DD5P677 | 121/-121 | -1 | 15 | ---- | ---- | 18,077,742 | 8 tab |
| 4018 | DD5P690 | 121/-121 | -1 | 15 | ---- | ---- | 32,308,210 | 8 tab |
| 4120 | DD5P666 | 241/121 | 0.5 | 40 | ---- | ---- | 100,000,000 | 8 R tab |
| 4121 | DD5P675 | 379/190 | 0.5 | 10 | ---- | ---- | 438,618 | 8 tab |
| 4122 | DD5P672 | 379/190 | 0.5 | 10 | ---- | ---- | 610,270 | 8 tab |
| 4123 | DD5P667 | 379/190 | 0.5 | 10 | ---- | ---- | 297,323 | 8 tab |
| 4124 | DD5P673 | 310/155 | 0.5 | 30 | ---- | ---- | 13,320,248 | 8 tab |
| 4125 | DD5P669 | 310/155 | 0.5 | 40 | ---- | ---- | 3,809,795 | 8 tab |
| 4126 | DD5P640 | 310/155 | 0.5 | 40 | ---- | ---- | 8,730,709 | 8 tab |
| 4127 | DD5P665 | 276/138 | 0.5 | 40 | ---- | ---- | 30,480,698 | 8 tab |
| 4128 | DD5P676 | 276/138 | 0.5 | 40 | ---- | ---- | 26,841,282 | 8 tab |
| 4129 | DD5P700 | 276/138 | 0.5 | 50 | ---- | ---- | 47,918,327 | 8 tab |
| 4222 | DD5P751 | -470 | * | 13 | ---- | ---- | 1 | 8 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 4223 | DD5P752 | -481 | * | 13 | ---- | ---- | 1 | 8 |
| 4224 | DD5P750 | -556 | * | 13 | ---- | ---- | 1 | 8 |
| 4225 | DD5P753 | -533 | * | 13 | ---- | ---- | 1 | 8 |
| 4230 | DD5P712 | 742 | * | 13 | ---- | ---- | 1 | 8 |
| 4231 | DD5P754 | 770 | * | 13 | ---- | ---- | 1 | 8 |
| 4232 | DD5P756 | 750 | * | 13 | ---- | ---- | 1 | 8 |
| 4233 | DD5P757 | 752 | * | 13 | ---- | ---- | 1 | 8 |
| 4859 | DD59801 | -310/-31 | 10 | 10 | ---- | ---- | 2,747,477 | 25 |
| 4860 | DD5P802 | -310/-31 | 10 | 10 | ---- | ---- | 1,143,005 | 25 |
| 4861 | DD5P803 | -310/-31 | 10 | 10 | ---- | ---- | 531,709 | 25 |

MATERIAL DD5V

Lay-up = [0/±45/0]_S, V_F = 0.368, Ave. thickness = 3.05 mm, S.D. = 0.09 mm, Derakane 411-C-50 Vinyl ester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|--------|
| 1856 | DD5V311 | 688 | * | 13 | 23.4 | 3.00 | 1 | 22 |
| 1857 | DD5V308 | 672 | * | 13 | 22.5 | 3.39 | 1 | 22 |
| 1858 | DD5V303 | 664 | * | 13 | 21.7 | 3.10 | 1 | 22 |
| 1862 | DD5V309 | 483/48 | 0.1 | 2 | 22.5 | 2.30 | 283 | 22 |
| 1863 | DD5V306 | 414/41 | 0.1 | 4 | 22.1 | 1.89 | 5,751 | 22 |
| 1864 | DD5V301 | 414/41 | 0.1 | 2 | 28.3 | 1.66 | 8,529 | 22 |
| 1865 | DD5V302 | 276/28 | 0.1 | 10 | 25.8 | 1.08 | 392,541 | 22 |
| 1866 | DD5V312 | 345/35 | 0.1 | 5 | 22.9 | 1.56 | 54,570 | 22 |
| 1867 | DD5V313 | 345/35 | 0.1 | 5 | 24.3 | 1.46 | 68,513 | 22 |
| 1868 | DD5V314 | 345/35 | 0.1 | 5 | 24.2 | 1.52 | 58,782 | 22 |
| 1869 | DD5V310 | 241/24 | 0.1 | 15 | 23.4 | 1.02 | 3,673,144 | 22 |
| 1870 | DD5V350 | 276/28 | 0.1 | 5 | 23.0 | 1.30 | 618,125 | 22 |
| 1934 | DD5V315 | -519 | * | 13 | ---- | ---- | 1 | 25 |
| 1935 | DD5V318 | -533 | * | 13 | ---- | ---- | 1 | 25 |
| 1936 | DD5V316 | -538 | * | 13 | ---- | ---- | 1 | 25 |
| 1944 | DD5V329 | -414/-41 | 10 | 5 | ---- | ---- | 9,981 | 25 |
| 1945 | DD5V317 | -414/-41 | 10 | 4 | ---- | ---- | 18,310 | 25 |
| 1946 | DD5V327 | -414/-41 | 10 | 5 | ---- | ---- | 11,920 | 25 |
| 1947 | DD5V325 | -345/-35 | 10 | 10 | ---- | ---- | 1,462,167 | 25 |
| 1948 | DD5V325 | -345/-35 | 10 | 20 | ---- | ---- | 943,258 | 25 |
| 1949 | DD5V319 | -379/-38 | 10 | 5 | ---- | ---- | 179,421 | 25 |
| 1950 | DD5V324 | -379/-38 | 10 | 5 | ---- | ---- | 84,516 | 25 |
| 1951 | DD5V322 | -379/-38 | 10 | 5 | ---- | ---- | 73,591 | 25 |
| 1952 | DD5V321 | -379/-38 | 10 | 5 | ---- | ---- | 107,610 | 25 |
| 1972 | DD5V304 | 345/35 | 0.1 | 5 | 23.9 | 1.44 | 42,916 | 22 tab |

MATERIAL DD5V2

Lay-up = [0/±45/0]_S, V_F = 0.352, Ave. thickness = 3.18 mm, S.D. = 0.09 mm, Derakane 8084 Epoxy Vinyl ester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|--------|
| 4367 | DD5V2101 | 276/28 | 0.1 | 10 | ---- | ---- | 3,326,186 | 22 tab |
| 4368 | DD5V2102 | 414/41 | 0.1 | 4 | 21.4 | 1.94 | 20,070 | 22 tab |
| 4369 | DD5V2103 | 414/41 | 0.1 | 3 | 22.9 | 1.89 | 35,015 | 22 tab |
| 4370 | DD5V2114 | 345/35 | 0.1 | 5 | 21.6 | 1.61 | 454,290 | 22 tab |
| 4371 | DD5V2110 | 345/35 | 0.1 | 5 | 23.2 | 1.53 | 228,519 | 22 tab |
| 4372 | DD5V2112 | 345/35 | 0.1 | 5 | 22.2 | 1.62 | 375,206 | 22 tab |
| 4373 | DD5V2113 | 414/41 | 0.1 | 4 | ---- | ---- | 18,445 | 22 tab |
| 4374 | DD5V2109 | 798 | * | 13 | 22.2 | 3.4 | 1 | 22 tab |
| 4375 | DD5V2108 | 757 | * | 13 | 21.0 | 3.3 | 1 | 22 tab |
| 4376 | DD5V2111 | 807 | * | 13 | 24.1 | 3.3 | 1 | 22 tab |
| 4377 | DD5V2115 | 276/28 | 0.1 | 7 | 22.5 | 1.25 | 3,738,875 | 22 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 4378 | DD5V2150 | -629 | * | 13 | ---- | ---- | 1 | 25 |
| 4379 | DD5V2153 | -597 | * | 13 | ---- | ---- | 1 | 25 |
| 4380 | DD5V2156 | -588 | * | 13 | ---- | ---- | 1 | 25 |
| 4381 | DD5V2157 | -414/-41 | 10 | 6 | ---- | ---- | 366,453 | 25 |
| 4382 | DD5V2151 | -414/-41 | 10 | 6 | ---- | ---- | 122,340 | 25 |
| 4383 | DD5V2158 | -414/-41 | 10 | 5 | ---- | ---- | 63,740 | 25 |
| 4384 | DD5V2155 | -448/-45 | 10 | 2 | ---- | ---- | 4,337 | 25 |
| 4385 | DD5V2152 | -448/-45 | 10 | 3 | ---- | ---- | 11,119 | 25 |
| 4386 | DD5V2154 | -448/-45 | 10 | 3 | ---- | ---- | 12,549 | 25 |
| 4387 | DD5V2170 | -379/-38 | 10 | 5 | ---- | ---- | 783,925 | 25 |
| 4388 | DD5V2160 | -379/-38 | 10 | 6 | ---- | ---- | 91,821 | 25 |
| 4389 | DD5V2161 | 345/-345 | -1 | 1 | ---- | ---- | 765 | 25 |
| 4390 | DD5V2162 | 345/-345 | -1 | 1 | ---- | ---- | 549 | 25 |
| 4391 | DD5V2168 | 345/-345 | -1 | 1 | ---- | ---- | 984 | 25 |
| 4392 | DD5V2167 | 310/-310 | -1 | 2 | ---- | ---- | 1,675 | 25 |
| 4393 | DD5V2166 | 310/-310 | -1 | 1 | ---- | ---- | 1,463 | 25 |
| 4394 | DD5V2165 | 310/-310 | -1 | 2 | ---- | ---- | 3,443 | 25 |
| 4395 | DD5V2164 | 207/-207 | -1 | 5 | ---- | ---- | 46,477 | 25 |
| 4396 | DD5V2164 | 172/-172 | -1 | 5 | ---- | ---- | 471,449 | 25 |
| 4397 | DD5V2172 | 172/-172 | -1 | 5 | ---- | ---- | 342,089 | 25 |
| 4398 | DD5V2174 | 172/-172 | -1 | 6 | ---- | ---- | 941,295 | 25 |
| Tests 5955 - 5972 involved a gage length of 100 mm (strain rate effect tests). | | | | | | | | |
| 5955 | DD5V200 | 619 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5956 | DD5V201 | 542 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5957 | DD5V202 | 578 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5958 | DD5V203 | 622 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5959 | DD5V204 | 611 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5960 | DD5V205 | 594 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5961 | DD5V206 | 736 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5962 | DD5V207 | 614 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5963 | DD5V208 | 678 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5964 | DD5V209 | 733 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5965 | DD5V210 | 786 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5966 | DD5V211 | 755 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5967 | DD5V212 | 802 | * | 13 | ---- | ---- | 1 | 25 |
| 5968 | DD5V213 | 731 | * | 13 | ---- | ---- | 1 | 25 |
| 5969 | DD5V214 | 772 | * | 13 | ---- | ---- | 1 | 25 |
| 5970 | DD5V215 | 795 | * | 64 | ---- | ---- | 1 | 25 |
| 5971 | DD5V216 | 805 | * | 64 | ---- | ---- | 1 | 25 |
| 5972 | DD5V217 | 836 | * | 64 | ---- | ---- | 1 | 25 |
| Tests 5973 - 5999 involved a gage length of 13 mm (strain rate effect tests). | | | | | | | | |
| 5973 | DD5V220 | -453 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5974 | DD5V221 | -467 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5975 | DD5V222 | -434 | * | 0.0025 | ---- | ---- | 1 | 25 |
| 5976 | DD5V223 | -484 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5977 | DD5V224 | -498 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5978 | DD5V225 | -497 | * | 0.025 | ---- | ---- | 1 | 25 |
| 5979 | DD5V226 | -473 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5980 | DD5V227 | -501 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5981 | DD5V228 | -511 | * | 0.25 | ---- | ---- | 1 | 25 |
| 5982 | DD5V229 | -542 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5983 | DD5V230 | -531 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5984 | DD5V231 | -527 | * | 2.54 | ---- | ---- | 1 | 25 |
| 5985 | DD5V232 | -531 | * | 6.35 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 5986 | DD5V233 | -546 | * | 6.35 | ---- | ---- | 1 | 25 |
| 5987 | DD5V234 | -521 | * | 6.35 | ---- | ---- | 1 | 25 |
| 5988 | DD5V235 | -536 | * | 13 | ---- | ---- | 1 | 25 |
| 5989 | DD5V236 | -554 | * | 13 | ---- | ---- | 1 | 25 |
| 5990 | DD5V237 | -545 | * | 13 | ---- | ---- | 1 | 25 |
| 5991 | DD5V238 | -545 | * | 25 | ---- | ---- | 1 | 25 |
| 5992 | DD5V239 | -561 | * | 25 | ---- | ---- | 1 | 25 |
| 5993 | DD5V240 | -581 | * | 25 | ---- | ---- | 1 | 25 |
| 5994 | DD5V241 | -583 | * | 64 | ---- | ---- | 1 | 25 |
| 5995 | DD5V242 | -572 | * | 64 | ---- | ---- | 1 | 25 |
| 5996 | DD5V243 | -586 | * | 64 | ---- | ---- | 1 | 25 |
| 5997 | DD5V244 | -614 | * | 127 | ---- | ---- | 1 | 25 |
| 5998 | DD5V245 | -573 | * | 127 | ---- | ---- | 1 | 25 |
| 5999 | DD5V246 | -575 | * | 127 | ---- | ---- | 1 | 25 |
| Tests 6602-6604 were preformed at the same time as carbon compression coupons were tested for comparison | | | | | | | | |
| 6602 | DD5V21100 | -568 | * | 13 | ---- | ---- | 1 | 25 |
| 6603 | DD5V21101 | -567 | * | 13 | ---- | ---- | 1 | 25 |
| 6604 | DD5V21102 | -592 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD5V3

Lay-up = [0/±45/0]_s, V_F = 0.363, Ave. thickness = 3.08 mm, S.D. = 0.09 mm, Reichhold Dion 9800 Special Urethane-modified Vinyl Ester

| | | | | | | | | |
|-------|-----------|----------|----|----|------|------|-----------|------|
| 6803 | DD5V3-166 | 810 | * | 13 | 26.6 | 3.0 | 1 | 25 |
| 6804 | DD5V3-164 | 786 | * | 13 | 24.4 | 3.1 | 1 | 25 |
| 6805 | DD5V3-165 | 793 | * | 13 | 23.8 | 3.0 | 1 | 25 |
| 6806 | DD5V3-160 | -579 | * | 13 | ---- | ---- | 1 | 25 |
| 6807 | DD5V3-161 | -633 | * | 13 | ---- | ---- | 1 | 25 |
| 6808 | DD5V3-162 | -576 | * | 13 | ---- | ---- | 1 | 25 |
| 6809 | DD5V3-163 | -616 | * | 13 | ---- | ---- | 1 | 25 |
| 10366 | DD5V3-310 | -379/-38 | 10 | 4 | ---- | ---- | 1,897,586 | 25 |
| 10367 | DD5V3-311 | -414/-41 | 10 | 3 | ---- | ---- | 14,143 | 25 |
| 10368 | DD5V3-312 | -414/-41 | 10 | 3 | ---- | ---- | 21,173 | 25 R |
| 10369 | DD5V3-313 | -396/-40 | 10 | 3 | ---- | ---- | 78,206 | 25 |
| 10370 | DD5V3-314 | -396/-40 | 10 | 3 | ---- | ---- | 1,765 | 25 |
| 10371 | DD5V3-315 | -396/-40 | 10 | 3 | ---- | ---- | 54,781 | 25 |
| 10372 | DD5V3-317 | -379/-38 | 10 | 4 | ---- | ---- | 282,291 | 25 |
| 10373 | DD5V3-318 | -379/-38 | 10 | 4 | ---- | ---- | 306,492 | 25 |

MATERIAL DD5CYC

Lay-up = [0/±45/0]_s, V_F = 0.36, Ave. thickness = 3.19 mm, S.D. = 0.107 mm, Cyclics Thermoplastic resin

| | | | | | | | | |
|-------|----------|-----|-----|-----|------|------|--------|----|
| 10086 | DD5CYC1 | 827 | * | 13 | 22.9 | 3.48 | 1 | 10 |
| 10087 | DD5CYC2 | 414 | 0.1 | 2 | 24.7 | 1.74 | 1984 | 10 |
| 10088 | DD5CYC3 | 414 | 0.1 | 2 | ---- | 1.74 | 1709 | 10 |
| 10089 | DD5CYC4 | 414 | 0.1 | 2 | ---- | 1.74 | 2813 | 10 |
| 10090 | DD5CYC5 | 310 | 0.1 | 2.5 | ---- | 1.30 | 30770 | 10 |
| 10091 | DD5CYC6 | 172 | 0.1 | 3.5 | ---- | 0.72 | 762063 | 10 |
| 10092 | DD5CYC7 | 172 | 0.1 | 3.5 | ---- | 0.72 | 598895 | 10 |
| 10093 | DD5CYC8 | 241 | 0.1 | 2.5 | ---- | 1.01 | 71668 | 10 |
| 10094 | DD5CYC9 | 241 | 0.1 | 2.5 | ---- | 1.01 | 61079 | 10 |
| 10095 | DD5CYC10 | 172 | 0.1 | 3.5 | ---- | 0.72 | 408030 | 10 |
| 10096 | DD5CYC12 | 843 | * | 13 | ---- | 3.55 | 1 | 10 |
| 10097 | DD5CYC13 | 860 | * | 13 | ---- | 3.62 | 1 | 10 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 10098 | DD5CYC14 | 812 | * | 13 | ---- | 3.41 | 1 | 10 |
| 10099 | DD5CYC19 | 155 | 0.1 | 6 | ---- | 0.65 | 3000000 | 10 R |
| 10100 | DD5CYC15 | -482 | * | 13 | ---- | -2.02 | 1 | 10 |
| 10101 | DD5CYC16 | -484 | * | 13 | ---- | -2.04 | 1 | 10 |
| 10102 | DD5CYC17 | -466 | * | 13 | ---- | -1.96 | 1 | 10 |
| 10103 | DD5CYC18 | -462 | * | 13 | ---- | -1.94 | 1 | 10 |
| 10104 | DD5CYC35 | 310 | 10 | 3 | ---- | -1.30 | 3000000 | 10 R |
| 10105 | DD5CYC34 | 345 | 10 | 2 | ---- | -1.45 | 626848 | 10 |
| 10106 | DD5CYC36 | 414 | 10 | 1 | ---- | -1.74 | 818 | 10 |
| 10107 | DD5CYC43 | 379 | 10 | 1 | ---- | -1.59 | 3116 | 10 |
| 10108 | DD5CYC37 | 345 | 10 | 2 | ---- | -1.45 | 148446 | 10 |
| 10109 | DD5CYC50 | 379 | 10 | 2 | ---- | -1.59 | 8019 | 10 |
| 10110 | DD5CYC52 | 414 | 10 | 2 | ---- | -1.74 | 284 | 10 |

MATERIAL DD6

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.318$, Ave. thickness = 3.53 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|-----------|------|
| 1095 | DD6116 | 602 | * | 13 | 20.9 | 2.88 | 1 | 22 |
| 1096 | DD6104 | 609 | * | 13 | 22.6 | 2.69 | 1 | 22 |
| 1097 | DD6106 | 603 | * | 13 | 23.8 | 2.53 | 1 | 22 |
| 1098 | DD6101 | 414/41 | 0.1 | 5 | 22.3 | 1.85 | 928 | 22 |
| 1099 | DD6108 | 414/41 | 0.1 | 2 | 21.4 | 1.94 | 841 | 22 |
| 1100 | DD6111 | 414/41 | 0.1 | 2 | 19.8 | 2.09 | 1,302 | 22 |
| 1101 | DD6113 | 345/35 | 0.1 | 5 | 19.3 | 1.79 | 17,421 | 22 |
| 1102 | DD6103 | 345/35 | 0.1 | 10 | 19.5 | 1.76 | 26,109 | 22 |
| 1103 | DD6112 | 345/35 | 0.1 | 10 | 19.2 | 1.79 | 18,696 | 22 |
| 1104 | DD6102 | 276/28 | 0.1 | 15 | 21.5 | 1.28 | 193,637 | 22 |
| 1105 | DD6110 | 276/28 | 0.1 | 10 | 20.4 | 1.35 | 406,267 | 22 |
| 1106 | DD6107 | 276/28 | 0.1 | 15 | 22.7 | 1.22 | 300,000 | 22 R |
| 1121 | DD6121 | -447 | * | 13 | ---- | ---- | 1 | 25 |
| 1122 | DD6150 | -448 | * | 13 | ---- | ---- | 1 | 25 |
| 1126 | DD6126 | -447 | * | 13 | ---- | ---- | 1 | 25 |
| 1127 | DD6143 | -448 | * | 13 | ---- | ---- | 1 | 25 |
| 1128 | DD6130 | -449 | * | 13 | ---- | ---- | 1 | 25 |
| 1129 | DD6128 | -460 | * | 13 | ---- | ---- | 1 | 25 |
| 1140 | DD6118 | -276/-28 | 10 | 15 | ---- | ---- | 1,918,022 | 25 |
| 1142 | DD6125 | -276/-28 | 10 | 20 | ---- | ---- | 1,223,779 | 25 |
| 1145 | DD6124 | -345/-35 | 10 | 10 | ---- | ---- | 54,759 | 25 |
| 1146 | DD6123 | -345/-35 | 10 | 15 | ---- | ---- | 35,062 | 25 |
| 1150 | DD6109 | -379/-38 | 10 | 10 | ---- | ---- | 15,355 | 25 |
| 1151 | DD6114 | -379/-38 | 10 | 10 | ---- | ---- | 10,750 | 25 |
| 1158 | DD6133 | -345/-35 | 10 | 10 | ---- | ---- | 42,786 | 25 |
| 1159 | DD6132 | -310/-31 | 10 | 15 | ---- | ---- | 423,811 | 25 |
| 1160 | DD6105 | -379/-38 | 10 | 5 | ---- | ---- | 9,779 | 25 |
| 1161 | DD6131 | -310/-31 | 10 | 15 | ---- | ---- | 324,531 | 25 |
| 1166 | DD6141 | -475 | * | 13 | ---- | ---- | 1 | 25 |
| 1167 | DD6139 | -310/-31 | 10 | 20 | ---- | ---- | 284,644 | 25 |
| 1170 | DD6115 | -276/-28 | 10 | 20 | ---- | ---- | 2,012,851 | 25 |
| 1171 | DD6130 | -414/-41 | 10 | 4 | ---- | ---- | 1,883 | 25 |
| 1172 | DD6148 | -414/-41 | 10 | 4 | ---- | ---- | 2,341 | 25 |
| 1300 | DD6143 | -510 | * | 13 | ---- | ---- | 1 | 25 |
| 1301 | DD6145 | -529 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL DD7

Lay-up = [0/±45/0]_s, V_F = 0.543, Ave. thickness = 2.11 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|----------|-----|----|------|------|-----------|----|
| 1107 | DD7105 | 837 | * | 13 | 36.5 | 2.80 | 1 | 22 |
| 1108 | DD7113 | 824 | * | 13 | 30.7 | 2.69 | 1 | 22 |
| 1109 | DD7107 | 826 | * | 13 | 30.3 | 2.73 | 1 | 22 |
| 1110 | DD7112 | 839 | * | 13 | 32.4 | 2.59 | 1 | 22 |
| 1111 | DD7108 | 483/48 | 0.1 | 2 | 32.5 | 1.48 | 978 | 22 |
| 1112 | DD7103 | 483/48 | 0.1 | 2 | 32.4 | 1.52 | 784 | 22 |
| 1113 | DD7111 | 414/41 | 0.1 | 5 | 28.9 | 1.43 | 3,379 | 22 |
| 1114 | DD7110 | 414/41 | 0.1 | 5 | ---- | ---- | 2,916 | 22 |
| 1115 | DD7106 | 345/35 | 0.1 | 10 | ---- | ---- | 9,304 | 22 |
| 1116 | DD7109 | 345/35 | 0.1 | 10 | ---- | ---- | 14,481 | 22 |
| 1117 | DD7104 | 276/28 | 0.1 | 10 | ---- | ---- | 29,331 | 22 |
| 1118 | DD7114 | 276/28 | 0.1 | 10 | ---- | ---- | 25,746 | 22 |
| 1119 | DD7102 | 207/21 | 0.1 | 20 | ---- | ---- | 127,887 | 22 |
| 1120 | DD7115 | 207/21 | 0.1 | 20 | ---- | ---- | 94,292 | 22 |
| 1143 | DD7131 | -276/-28 | 10 | 20 | ---- | ---- | 2,761,322 | 25 |
| 1144 | DD7129 | -310/-31 | 10 | 20 | ---- | ---- | 4,919,032 | 25 |
| 1147 | DD7124 | -577 | * | 13 | ---- | ---- | 1 | 25 |
| 1148 | DD7133 | -605 | * | 13 | ---- | ---- | 1 | 25 |
| 1149 | DD7118 | -562 | * | 13 | ---- | ---- | 1 | 25 |
| 1353 | DD7101 | -379/-38 | 10 | 10 | ---- | ---- | 45,445 | 25 |
| 1156 | DD7131 | -379/-38 | 10 | 10 | ---- | ---- | 66,177 | 25 |
| 1157 | DD7132 | -379/-38 | 10 | 10 | ---- | ---- | 52,848 | 25 |
| 1163 | DD7122 | -345/-35 | 10 | 10 | ---- | ---- | 928,436 | 25 |
| 1164 | DD7128 | -345/-35 | 10 | 15 | ---- | ---- | 511,438 | 25 |
| 1165 | DD7133 | -448/-45 | 10 | 4 | ---- | ---- | 843 | 25 |
| 1168 | DD7140 | -345/-35 | 10 | 20 | ---- | ---- | 781,113 | 25 |
| 1169 | DD7130 | -448/-45 | 10 | 4 | ---- | ---- | 1,307 | 25 |
| 1173 | DD7117 | -414/-41 | 10 | 5 | ---- | ---- | 10,902 | 25 |
| 1174 | DD7119 | -414/-41 | 10 | 5 | ---- | ---- | 8,454 | 25 |
| 1175 | DD7137 | -310/-31 | 10 | 20 | ---- | ---- | 5,322,151 | 25 |

MATERIAL DD8

Lay-up = [0/±45/0]_s, V_F = 0.436, Ave. thickness = 2.67 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester
Material is the same as DD2 except that all the fabric stitching (D155 and DB120) was removed.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|------|
| 1204 | DD8105 | 483/48 | 0.1 | 4 | ---- | ---- | 12,460 | 22 |
| 1206 | DD8106 | 483/48 | 0.1 | 4 | ---- | ---- | 7,139 | 22 |
| 1207 | DD8109 | 414/41 | 0.1 | 10 | 22.0 | 1.88 | 63,076 | 22 |
| 1209 | DD8102 | 414/41 | 0.1 | 10 | ---- | ---- | 46,816 | 22 |
| 1210 | DD8101 | 345/35 | 0.1 | 10 | ---- | ---- | 298,339 | 22 |
| 1211 | DD8111 | 345/35 | 0.1 | 15 | ---- | ---- | 567,522 | 22 |
| 1212 | DD8103 | 483/48 | 0.1 | 4 | 22.9 | 1.31 | 5,846 | 22 |
| 1213 | DD8104 | 276/38 | 0.1 | 15 | ---- | ---- | 33,425 | 22 R |
| 1214 | DD8121 | 345/35 | 0.1 | 10 | ---- | ---- | 462,481 | 22 |
| 1215 | DD8108 | 741 | * | 13 | 30.3 | 2.44 | 1 | 22 |
| 1216 | DD8115 | 698 | * | 13 | 30.8 | 2.27 | 1 | 22 |
| 1217 | DD8120 | 818 | * | 13 | 28.3 | 2.33 | 1 | 22 |
| 1218 | DD8117 | 856 | * | 13 | 28.1 | 2.44 | 1 | 22 |
| 1833 | DD8112 | -587 | * | 13 | ---- | ---- | 1 | 25 |
| 1834 | DD8143 | -576 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD8A

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.447$, Ave. thickness = 2.61 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester
Stitching was removed from the D155 fabric. The DB120 fabric was not altered

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|---------|--------|
| 4031 | DD8A103 | 345/35 | 0.1 | 5 | 31.3 | 1.15 | 475,424 | 22 tab |
| 4032 | DD8A105 | 345/35 | 0.1 | 5 | 29.4 | 1.22 | 385,518 | 22 tab |
| 4033 | DD8A104 | 345/35 | 0.1 | 5 | 28.7 | 1.27 | 321,056 | 22 tab |

MATERIAL DD8B

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.441$, Ave. thickness = 2.64 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester
Stitching was removed from the D155 fabric. The DB120 stitch which stitches the +45 to the -45 ply was removed.
Each +45 and -45 ply still had their individual ply stitch intact.

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|---------|--------|
| 4034 | DD8B102 | 345/35 | 0.1 | 5 | 26.0 | 1.29 | 366,371 | 22 tab |
| 4035 | DD8B105 | 345/35 | 0.1 | 5 | 24.7 | 1.37 | 244,659 | 22 tab |
| 4036 | DD8B104 | 345/35 | 0.1 | 5 | 27.8 | 1.22 | 199,990 | 22 tab |

MATERIAL DD9

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.560$, Ave. thickness = 2.03 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester
Material is the same as DD7 except that all the fabric stitching (D155 and DB120) was removed.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 1219 | DD9101 | 414/41 | 0.1 | 10 | 34.5 | 1.20 | 8,603 | 22 |
| 1220 | DD9109 | 483/48 | 0.1 | 5 | 33.9 | 1.42 | 2,695 | 22 |
| 1221 | DD9116 | 414/41 | 0.1 | 5 | 33.8 | 1.23 | 6,359 | 22 |
| 1223 | DD9103 | 345/35 | 0.1 | 10 | 33.2 | 1.04 | 29,276 | 22 |
| 1224 | DD9104 | 207/21 | 0.1 | 15 | 34.6 | 0.60 | 432,809 | 22 |
| 1226 | DD9107 | 944 | * | 13 | ---- | ---- | 1 | 22 |
| 1227 | DD9109 | 903 | * | 13 | ---- | ---- | 1 | 22 |
| 1228 | DD9110 | 873 | * | 13 | ---- | ---- | 1 | 22 |
| 1229 | DD9114 | 483/48 | 0.1 | 4 | 35.6 | 1.36 | 3,294 | 22 |
| 1230 | DD9113 | 345/35 | 0.1 | 10 | 36.8 | 0.93 | 38,377 | 22 |
| 1231 | DD9106 | 276/28 | 0.1 | 10 | ---- | ---- | 94,262 | 22 |
| 1232 | DD9113 | 207/21 | 0.1 | 10 | ---- | ---- | 432,480 | 22 |
| 1830 | DD9200 | -513 | * | 13 | ---- | ---- | 1 | 25 |
| 1831 | DD9202 | -603 | * | 13 | ---- | ---- | 1 | 25 |
| 1832 | DD9201 | -552 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD10

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.622$, Ave. thickness = 1.73 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester
Material had all the fabric stitching (D155 and DB120) removed.

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|------------|------|
| 2820 | DD10110 | 1,045 | * | 13 | 42.8 | 2.45 | 1 | 22 |
| 2821 | DD10109 | 888 | * | 13 | 42.6 | 2.08 | 1 | 22 |
| 2822 | DD10108 | 935 | * | 13 | 39.1 | 2.40 | 1 | 22 |
| 2823 | DD10107 | 483/48 | 0.1 | 4 | 43.0 | 1.12 | 3,132 | 22 |
| 2824 | DD10105 | 483/48 | 0.1 | 4 | 40.0 | 1.20 | 2,128 | 22 |
| 2825 | DD10102 | 414/41 | 0.1 | 5 | 42.6 | 1.18 | 7,291 | 22 |
| 2826 | DD10101 | 414/41 | 0.1 | 5 | 43.7 | 1.11 | 11,251 | 22 |
| 2827 | DD10103 | 276/28 | 0.1 | 10 | 43.7 | 0.59 | 72,116 | 22 |
| 2828 | DD10104 | 276/28 | 0.1 | 10 | 43.2 | 0.66 | 94,297 | 22 |
| 2829 | DD10106 | 276/28 | 0.1 | 10 | 44.6 | 0.64 | 152,411 | 22 |
| 2866 | DD10127 | -525 | * | 13 | ---- | ---- | 1 | 25 |
| 2867 | DD10121 | -557 | * | 13 | ---- | ---- | 1 | 25 |
| 2868 | DD10125 | -607 | * | 13 | ---- | ---- | 1 | 25 |
| 2869 | DD10124 | -362/-36 | 10 | 20 | ---- | ---- | 10,000,000 | 25 R |
| 2870 | DD10122 | -414/-41 | 10 | 2 | ---- | ---- | 266 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 2871 | DD10123 | -379/-38 | 10 | 12 | ---- | 798,311 | 25 |
| 2872 | DD10128 | -379/-38 | 10 | 12 | ---- | 576,424 | 25 |
| 2873 | DD10126 | -379/-38 | 10 | 12 | ---- | 1,678,467 | 25 |
| 2874 | DD10130 | -518 | * | 13 | ---- | 1 | 25 Z |
| 2875 | DD10131 | -553 | * | 13 | ---- | 1 | 25 Z |
| 2963 | DD10401 | -379/-38 | 10 | 12 | ---- | 844,707 | has stitch |
| 2964 | DD10402 | -379/-38 | 10 | 12 | ---- | 553,651 | has stitch |

MATERIAL DD11

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.304$, Ave. thickness = 3.19 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|--|----------|----------|-----|----|------|------|-----------|------|
| 2853 | DD11101 | 543 | * | 13 | 20.1 | 2.70 | 1 | 22 |
| 2854 | DD11110 | 642 | * | 13 | 19.3 | 3.20 | 1 | 22 |
| 2855 | DD11102 | 589 | * | 13 | 18.8 | 3.13 | 1 | 22 |
| 2856 | DD11103 | 276/28 | 0.1 | 5 | 21.7 | 1.28 | 328,394 | 22 |
| 2857 | DD11104 | 276/28 | 0.1 | 5 | 20.0 | 1.45 | 144,473 | 22 |
| 2858 | DD11105 | 414/41 | 0.1 | 1 | 19.9 | 2.08 | 602 | 22 |
| 2859 | DD11107 | 414/41 | 0.1 | 1 | 17.4 | 2.40 | 859 | 22 |
| 2860 | DD11108 | 414/41 | 0.1 | 1 | 21.0 | 2.00 | 359 | 22 |
| 2861 | DD11109 | 345/35 | 0.1 | 2 | 19.0 | 1.90 | 5,733 | 22 |
| 2862 | DD11106 | 345/35 | 0.1 | 2 | 20.3 | 1.78 | 4,560 | 22 |
| 2863 | DD11114 | 241/24 | 0.1 | 12 | 20.7 | 1.20 | 3,880,803 | 22 |
| 2864 | DD11111 | 276/28 | 0.1 | 5 | 20.1 | 1.38 | 109,080 | 22 |
| 2865 | DD11118 | 345/35 | 0.1 | 2 | 20.8 | 1.75 | 3,741 | 22 |
| 2876 | DD11128 | -331 | * | 13 | ---- | ---- | 1 | 25 |
| 2877 | DD11129 | -314 | * | 13 | ---- | ---- | 1 | 25 |
| 2878 | DD11120 | -310 | * | 13 | ---- | ---- | 1 | 25 |
| 2879 | DD11125 | -241/-24 | 10 | 1 | ---- | ---- | 189 | 25 |
| 2880 | DD11127 | -207/-21 | 10 | 2 | ---- | ---- | 2,411 | 25 |
| 2881 | DD11122 | -207/-21 | 10 | 2 | ---- | ---- | 1,882 | 25 |
| 2882 | DD11121 | -207/-21 | 10 | 2 | ---- | ---- | 1,530 | 25 |
| 2883 | DD11124 | -172/-17 | 10 | 10 | ---- | ---- | 137,454 | 25 |
| 2884 | DD11126 | -172/-17 | 10 | 10 | ---- | ---- | 87,211 | 25 |
| 2885 | DD11123 | -172/-17 | 10 | 10 | ---- | ---- | 123,600 | 25 |
| 2886 | DD11131 | -155/-16 | 10 | 12 | ---- | ---- | 356,114 | 25 |
| Tests 3992 - 4002 were transverse tests tested in the $[90/\pm 45/90]_S$ direction | | | | | | | | |
| 3992 | DD11T309 | 35/4 | 0.1 | 1 | 7.84 | 1.47 | 21 | 25 |
| 3993 | DD11T308 | 21/2 | 0.1 | 4 | ---- | ---- | 69,027 | 25 |
| 3994 | DD11T310 | 21/2 | 0.1 | 5 | 8.00 | 0.25 | 112,343 | 25 |
| 3995 | DD11T315 | 21/2 | 0.1 | 5 | 7.94 | 0.26 | 104,931 | 25 |
| 3996 | DD11T313 | 17/2 | 0.1 | 10 | 7.62 | 0.22 | 4,000,000 | 25 R |
| 3997 | DD11T312 | 24/2 | 0.1 | 5 | 8.19 | 0.30 | 24,784 | 25 |
| 3998 | DD11T301 | 24/2 | 0.1 | 4 | 7.41 | 0.31 | 10,054 | 25 |
| 3999 | DD11T305 | 24/2 | 0.1 | 4 | 7.65 | 0.31 | 8,202 | 25 |
| 4000 | DD11T311 | 42/4 | * | 13 | 7.43 | 0.68 | 1 | 25 |
| 4001 | DD11T307 | 43/4 | * | 13 | 8.32 | 0.53 | 1 | 25 |
| 4002 | DD11T306 | 34/3 | * | 13 | 7.64 | 0.46 | 1 | 25 |
| 4325 | DD11224 | 103/-103 | -1 | 5 | ---- | ---- | 1,695,591 | 25 |
| 4322 | DD11227 | 138/-138 | -1 | 5 | ---- | ---- | 79,076 | 25 |
| 4323 | DD11221 | 103/-103 | -1 | 5 | ---- | ---- | 1,767,448 | 25 |
| 4328 | DD11213 | 138/-138 | -1 | 5 | ---- | ---- | 40,380 | 25 |
| 4329 | DD11219 | 138/-138 | -1 | 5 | ---- | ---- | 118,395 | 25 |
| 4330 | DD11210 | 138/-138 | -1 | 5 | ---- | ---- | 32,677 | 25 |
| 4331 | DD11212 | 121/-121 | -1 | 5 | ---- | ---- | 269,627 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 4332 | DD11215 | 121/-121 | -1 | 5 | ---- | ---- | 406,842 | 25 |
| 4333 | DD11214 | 121/-121 | -1 | 5 | ---- | ---- | 464,001 | 25 |
| 4334 | DD11223 | 103/-103 | -1 | 5 | ---- | ---- | 2,148,180 | 25 |
| 4336 | DD11225 | 172/-172 | -1 | 5 | ---- | ---- | 9,734 | 25 |
| 4337 | DD11220 | 172/-172 | -1 | 5 | ---- | ---- | 11,680 | 25 |
| 4338 | DD11217 | 172/-172 | -1 | 3 | ---- | ---- | 6,888 | 25 |
| 4339 | DD11218 | 207/-207 | -1 | 1 | ---- | ---- | 1,144 | 25 |
| 4340 | DD11211 | 207/-207 | -1 | 1 | ---- | ---- | 987 | 25 |
| 4341 | DD11216 | 207/-207 | -1 | 1 | ---- | ---- | 2,953 | 25 |
| 4365 | DD11244 | 138/-138 | -1 | 10 | ---- | ---- | 1,023,726 | 25 |
| 4366 | DD11240 | 138/-138 | -1 | 10 | ---- | ---- | 8,000,000 | 25 R |

MATERIAL DD11A

Lay-up = ($\pm 45/0_4/\mp 45$), $V_F = 0.289$, Ave. thickness = 3.38 mm, S.D. = 0.14 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 2942 | DD11A102 | -309 | * | 13 | ---- | ---- | 1 | 25 |
| 2954 | DD11A101 | -413 | * | 13 | ---- | ---- | 1 | 25 |
| 2955 | DD11A106 | -327 | * | 13 | ---- | ---- | 1 | 25 |
| 3551 | DD11A112 | 629 | * | 13 | 18.3 | 3.40 | 1 | 25 |
| 3552 | DD11A110 | 595 | * | 13 | 20.4 | 2.93 | 1 | 25 |
| 3553 | DD11A111 | 589 | * | 13 | 19.9 | 3.03 | 1 | 25 |

MATERIAL DD11E3

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.315$, Ave. thickness = 3.07 mm, S.D. = 0.08 mm, Prime 20 Epoxy

| | | | | | | | | |
|-------|------------|----------|----|----|------|------|-----------|----|
| 8669 | DD11E3-112 | -247 | * | 13 | ---- | ---- | 1 | 25 |
| 8670 | DD11E3-137 | -172/-17 | 10 | 2 | ---- | ---- | 3,171 | 25 |
| 8671 | DD11E3-127 | -103/-10 | 10 | 6 | ---- | ---- | 3,316,245 | 25 |
| 8672 | DD11E3-111 | -138/-14 | 10 | 4 | ---- | ---- | 628,028 | 25 |
| 8673 | DD11E3-125 | -138/-14 | 10 | 4 | ---- | ---- | 142,149 | 25 |
| 8674 | DD11E3-116 | -138/-14 | 10 | 4 | ---- | ---- | 73,148 | 25 |
| 8675 | DD11E3-134 | -172/-17 | 10 | 1 | ---- | ---- | 4,063 | 25 |
| 8676 | DD11E3-124 | -172/-17 | 10 | 1 | ---- | ---- | 7,803 | 25 |
| 8677 | DD11E3-133 | -224 | * | 13 | ---- | ---- | 1 | 25 |
| 8678 | DD11E3-135 | -276 | * | 13 | ---- | ---- | 1 | 25 |
| 8679 | DD11E3-110 | -311 | * | 13 | ---- | ---- | 1 | 25 |
| 8680 | DD11E3-147 | -103/-10 | 10 | 6 | ---- | ---- | 6,853,926 | 25 |
| 8700 | DD11E3-118 | -207/-21 | 10 | 1 | ---- | ---- | 68 | 25 |
| 8701 | DD11E3-139 | -207/-21 | 10 | 1 | ---- | ---- | 81 | 25 |
| 8702 | DD11E3-132 | -207/-21 | 10 | 1 | ---- | ---- | 53 | 25 |
| 8681 | DD11E3-128 | 103/-103 | -1 | 3 | ---- | ---- | 4,879,300 | 25 |
| 8682 | DD11E3-131 | 138/-138 | -1 | 2 | ---- | ---- | 17,757 | 25 |
| 8683 | DD11E3-115 | 138/-138 | -1 | 2 | ---- | ---- | 35,759 | 25 |
| 8684 | DD11E3-130 | 138/-138 | -1 | 2 | ---- | ---- | 64,341 | 25 |
| 8685 | DD11E3-148 | 103/-103 | -1 | 4 | ---- | ---- | 1,850,142 | 25 |
| 8703 | DD11E3-114 | 172/-172 | -1 | 1 | ---- | ---- | 646 | 25 |
| 8704 | DD11E3-122 | 172/-172 | -1 | 1 | ---- | ---- | 3,778 | 25 |
| 8705 | DD11E3-123 | 172/-172 | -1 | 1 | ---- | ---- | 1,680 | 25 |
| 6810 | DD11E3-151 | 655 | * | 13 | 20.5 | 3.19 | 1 | 25 |
| 6811 | DD11E3-150 | 589 | * | 13 | 20.4 | 2.89 | 1 | 25 |
| 6812 | DD11E3-152 | 629 | * | 13 | 20.2 | 3.1 | 1 | 25 |
| 10388 | DD11E3-330 | -241/-24 | 10 | 1 | ---- | ---- | 9 | 25 |
| 10389 | DD11E3-331 | -172/-17 | 10 | 2 | ---- | ---- | 14,155 | 25 |
| 10390 | DD11E3-332 | -138/-14 | 10 | 4 | ---- | ---- | 100,092 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL DD11E4

Lay-up = [0/±45/0]_s, V_F = 0.34, Ave. thickness = 2.84 mm, S.D. = 0.05 mm, Jeffco 1401-12 epoxy

Tests 7088 - 7092 used 1401-17 hardener and were post cured for 14 hours at 50C and 2 hours at 85C

| | | | | | | | | |
|------|------------|------|---|----|------|------|---|----|
| 7088 | DD11E4-205 | -319 | * | 13 | 24.1 | -1.3 | 1 | 25 |
| 7089 | DD11E4-206 | -313 | * | 13 | ---- | ---- | 1 | 25 |
| 7090 | DD11E4-207 | -287 | * | 13 | ---- | ---- | 1 | 25 |
| 7091 | DD11E4-207 | -305 | * | 13 | ---- | ---- | 1 | 25 |
| 7092 | DD11E4-209 | -288 | * | 13 | ---- | ---- | 1 | 25 |

Tests 8796 - 8800 used Jeffco 4102 hardener and were post cured for 14 hours at 60C and 2 hours at 85C

| | | | | | | | | |
|------|------------|------|---|----|------|------|---|----|
| 8796 | DD11E4-216 | -342 | * | 13 | 24.3 | -1.4 | 1 | 25 |
| 8797 | DD11E4-217 | -328 | * | 13 | ---- | ---- | 1 | 25 |
| 8798 | DD11E4-218 | -361 | * | 13 | ---- | ---- | 1 | 25 |
| 8799 | DD11E4-219 | -357 | * | 13 | ---- | ---- | 1 | 25 |
| 8800 | DD11E4-220 | -312 | * | 13 | ---- | ---- | 1 | 25 |

Tests 8806 - 8810 used 1401-17 hardener and were post cured for 14 hours at 60C and 2 hours at 85C.

| | | | | | | | | |
|------|------------|------|---|----|------|------|---|----|
| 8806 | DD11E4-226 | -311 | * | 13 | 23.1 | -1.3 | 1 | 25 |
| 8807 | DD11E4-227 | -336 | * | 13 | ---- | ---- | 1 | 25 |
| 8808 | DD11E4-228 | -328 | * | 13 | ---- | ---- | 1 | 25 |
| 8809 | DD11E4-229 | -271 | * | 13 | ---- | ---- | 1 | 25 |
| 8810 | DD11E4-230 | -318 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD12

Lay-up = [0/±45/0]_s, V_F = 0.407, Ave. thickness = 2.40 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|----|
| 2842 | DD12108 | 708 | * | 13 | 26.0 | 2.71 | 1 | 22 |
| 2843 | DD12110 | 731 | * | 13 | 26.7 | 2.73 | 1 | 22 |
| 2844 | DD12112 | 729 | * | 13 | 26.7 | 2.74 | 1 | 22 |
| 2845 | DD12103 | 414/41 | 0.1 | 2 | 26.4 | 1.53 | 4,967 | 22 |
| 2846 | DD12107 | 276/28 | 0.1 | 12 | 29.3 | 0.94 | 272,993 | 22 |
| 2847 | DD12109 | 276/28 | 0.1 | 12 | 24.6 | 1.12 | 252,590 | 22 |
| 2848 | DD12104 | 241/24 | 0.1 | 12 | 26.3 | 0.90 | 721,943 | 22 |
| 2849 | DD12111 | 345/35 | 0.1 | 5 | 24.7 | 1.46 | 27,280 | 22 |
| 2850 | DD12106 | 345/35 | 0.1 | 5 | 25.8 | 1.42 | 55,126 | 22 |
| 2851 | DD12105 | 345/35 | 0.1 | 5 | 26.6 | 1.49 | 50,100 | 22 |
| 2852 | DD12101 | 276/28 | 0.1 | 5 | 27.0 | 1.05 | 199,436 | 22 |
| 2897 | DD12132 | -339 | * | 13 | ---- | ---- | 1 | 25 |
| 2898 | DD12131 | -273 | * | 13 | ---- | ---- | 1 | 25 |
| 2899 | DD12130 | -293 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD13

Lay-up = [0/±45/0]_s, V_F = 0.460, Ave. thickness = 2.13 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----|
| 2830 | DD13111 | 855 | * | 13 | 29.6 | 2.89 | 1 | 22 |
| 2831 | DD13110 | 799 | * | 13 | 30.4 | 2.63 | 1 | 22 |
| 2832 | DD13113 | 809 | * | 13 | 32.9 | 2.56 | 1 | 22 |
| 2833 | DD13101 | 414/41 | 0.1 | 4 | 26.2 | 1.60 | 5,769 | 22 |
| 2834 | DD13102 | 414/41 | 0.1 | 4 | 29.0 | 1.39 | 7,805 | 22 |
| 2835 | DD13107 | 345/35 | 0.1 | 5 | 29.3 | 1.26 | 17,253 | 22 |
| 2836 | DD13108 | 207/21 | 0.1 | 12 | 27.6 | 0.77 | 1,397,049 | 22 |
| 2837 | DD13106 | 345/35 | 0.1 | 5 | 31.2 | 1.15 | 28,437 | 22 |
| 2838 | DD13105 | 345/35 | 0.1 | 5 | 26.9 | 1.49 | 19,323 | 22 |
| 2839 | DD13113 | 276/28 | 0.1 | 10 | 28.9 | 0.97 | 145,120 | 22 |
| 2840 | DD13114 | 276/28 | 0.1 | 10 | 30.2 | 0.91 | 85,412 | 22 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2841 | DD13115 | 276/28 | 0.1 | 10 | 31.7 | 0.89 | 124,822 | 22 |
| 2887 | DD13129 | -319 | * | 13 | ---- | ---- | 1 | 25 |
| 2888 | DD13122 | -311 | * | 13 | ---- | ---- | 1 | 25 |
| 2889 | DD13124 | -312 | * | 13 | ---- | ---- | 1 | 25 |
| 2890 | DD13130 | -207/-21 | 10 | 2 | ---- | ---- | 1,870 | 25 |
| 2891 | DD13123 | -207/-21 | 10 | 2 | ---- | ---- | 9,529 | 25 |
| 2892 | DD13127 | -207/-21 | 10 | 2 | ---- | ---- | 4,017 | 25 |
| 2893 | DD13120 | -172/-17 | 10 | 10 | ---- | ---- | 59,117 | 25 |
| 2894 | DD13131 | -172/-17 | 10 | 10 | ---- | ---- | 35,801 | 25 |
| 2895 | DD13128 | -172/-17 | 10 | 12 | ---- | ---- | 45,057 | 25 |
| 2896 | DD13126 | -155/-16 | 10 | 10 | ---- | ---- | 443,122 | 25 |

MATERIAL DD14

Lay-up = [0/±45/0]_S, V_F = 0.425, Ave. thickness = 2.71 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|--------|
| 2956 | DD14301 | -452 | * | 13 | ---- | ---- | 1 | 25 |
| 2957 | DD14303 | -385 | * | 13 | ---- | ---- | 1 | 25 |
| 2958 | DD14302 | -447 | * | 13 | ---- | ---- | 1 | 25 |
| 4064 | DD14112 | 794 | * | 13 | 25.7 | 3.11 | 1 | 22 tab |
| 4065 | DD14106 | 754 | * | 13 | 25.5 | 3.05 | 1 | 22 tab |
| 4066 | DD14105 | 637 | * | 13 | 23.3 | 2.80 | 1 | 22 tab |
| 4067 | DD14111 | 345/35 | 0.1 | 2 | 25.4 | 1.48 | 5,851 | 22 tab |
| 4068 | DD14107 | 345/35 | 0.1 | 2 | 26.0 | 1.38 | 8,812 | 22 tab |
| 4069 | DD14109 | 345/35 | 0.1 | 2 | 24.1 | 1.56 | 6,090 | 22 tab |
| 4070 | DD14104 | 276/28 | 0.1 | 6 | 23.9 | 1.09 | 26,391 | 22 tab |
| 4071 | DD14103 | 276/28 | 0.1 | 5 | 25.7 | 1.13 | 25,357 | 22 tab |
| 4072 | DD14102 | 207/21 | 0.1 | 10 | 25.4 | 0.78 | 432,261 | 22 tab |
| 4073 | DD14101 | 276/28 | 0.1 | 5 | 25.5 | 1.20 | 47,275 | 22 tab |
| 4074 | DD14110 | 207/21 | 0.1 | 10 | 25.1 | 0.85 | 513,840 | 22 tab |
| 4075 | DD14108 | 207/21 | 0.1 | 10 | 26.0 | 0.80 | 210,479 | 22 tab |

MATERIAL DD15

Lay-up = [0/±45/0]_S, V_F = 0.368, Ave. thickness = 3.13 mm, S.D. = 0.18 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|------|---|----|------|------|---|----|
| 2959 | DD15302 | -435 | * | 13 | ---- | ---- | 1 | 25 |
| 2960 | DD15301 | -411 | * | 13 | ---- | ---- | 1 | 25 |
| 2961 | DD15303 | -471 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD16

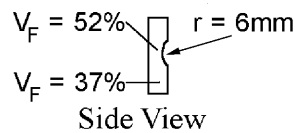
Lay-up = [90/0/±45/0]_S, V_F = 0.333, Ave. thickness = 4.62 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester.
See the residual strength section of this database for additional tests.

| | | | | | | | | |
|---|---------|--------|-----|----|------|------|---------|------|
| 3650 | DD16102 | 284/28 | 0.1 | 2 | 17.1 | 1.83 | 32,965 | 25 |
| 3654 | DD16108 | 204/20 | 0.1 | 10 | 18.1 | 1.26 | 844,744 | 25 |
| 3655 | DD16101 | 206/21 | 0.1 | 10 | 18.9 | 1.24 | 274,618 | 25 |
| 3656 | DD16103 | 204/20 | 0.1 | 10 | 18.2 | 1.27 | 658,704 | 25 |
| 3657 | DD16106 | 214/21 | 0.1 | 10 | 18.6 | 1.30 | 523,116 | 25 |
| 3651 | DD16105 | 284/28 | 0.1 | 2 | 19.0 | 1.68 | 29,313 | 25 |
| Test 3690 and 3691 had four additional 90 plies on the outside over a 25 mm length. | | | | | | | | |
| 3690 | DD16200 | 310/31 | 0.1 | 10 | ---- | ---- | 560,000 | 25 R |
| 3691 | DD16202 | 310/31 | 0.1 | 10 | ---- | ---- | 396,989 | 25 R |
| 3832 | DD16150 | -394 | * | 13 | ---- | ---- | 1 | 25 |
| 3833 | DD16151 | -406 | * | 13 | ---- | ---- | 1 | 25 |
| 3834 | DD16152 | -454 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 6068 | DD16205 | -414 | * | 13 | ---- | 1 | 25 |
| 6069 | DD16216 | -388 | * | 13 | ---- | 1 | 25 |
| 6070 | DD16221 | -394 | * | 13 | ---- | 1 | 25 |
| 6071 | DD16215 | -446 | * | 13 | ---- | 1 | 25 |
| 6072 | DD16222 | -276/-28 | 10 | 2 | ---- | 41,771 | 25 |
| 6073 | DD16217 | -241/-24 | 10 | 5 | ---- | 174,382 | 25 |
| 6074 | DD16208 | -276/-28 | 10 | 2 | ---- | 20,148 | 25 |
| 6075 | DD16204 | -276/-28 | 10 | 2 | ---- | 13,173 | 25 |
| 6076 | DD16209 | -276/-28 | 10 | 4 | ---- | 8,358 | 25 |
| 6077 | DD16201 | -241/-24 | 10 | 8 | ---- | 464,269 | 25 |
| 6078 | DD16206 | -241/-24 | 10 | 6 | ---- | 670,467 | 25 |
| 6079 | DD16220 | -207/-21 | 10 | 12 | ---- | 12,328,786 | 25 |

MATERIAL DD17

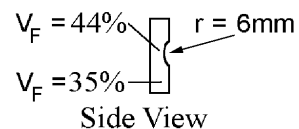
lay-up = $[0/\pm 45/0]_S$, $V_F = 0.37, 0.52$, Ave. thickness = 2.90 mm, 2.09 mm (indentation) S.D. = 0.05 mm, 0.07 mm (indentation), CoRezyn 63-AX-051 Polyester. This material had a surface indentation to locally raise the V_F . The listed stress does NOT take into account the indentation. (the average stress increase due to this indentation = 1.39)



| | | | | | | | |
|------|---------|----------|-----|----|------|-----------|--------|
| 3694 | DD17104 | 445/45 | 0.1 | 2 | ---- | 1,317 | 25 tab |
| 3696 | DD17106 | 448/45 | 0.1 | 2 | ---- | 1,210 | 25 tab |
| 3697 | DD17107 | 333/33 | 0.1 | 2 | ---- | 8,591 | 25 tab |
| 3698 | DD17108 | 328/33 | 0.1 | 2 | ---- | 7,151 | 25 tab |
| 3699 | DD17109 | 165/17 | 0.1 | 10 | ---- | 198,817 | 25 tab |
| 3700 | DD17110 | 111/11 | 0.1 | 12 | ---- | 889,958 | 25 tab |
| 3701 | DD17111 | 108/11 | 0.1 | 12 | ---- | 2,048,532 | 25 tab |
| 3702 | DD17112 | 165/17 | 0.1 | 12 | ---- | 218,200 | 25 tab |
| 3703 | DD17101 | 787 | * | 13 | ---- | 1 | 25 tab |
| 3704 | DD17102 | 784 | * | 13 | ---- | 1 | 25 tab |
| 3705 | DD17103 | 775 | * | 13 | ---- | 1 | 25 tab |
| 3706 | DD17118 | 166/17 | 0.1 | 10 | ---- | 225,558 | 25 tab |
| 3707 | DD17118 | 334/33 | 0.1 | 2 | ---- | 5,342 | 25 tab |
| 3950 | DD17211 | -394 | * | 13 | ---- | 1 | 25 Z |
| 3951 | DD17213 | -427 | * | 13 | ---- | 1 | 25 Z |
| 3952 | DD17210 | -440 | * | 13 | ---- | 1 | 25 Z |
| 3953 | DD17206 | -276/-28 | 10 | 4 | ---- | 8,751 | 25 Z |
| 3954 | DD17202 | -276/-28 | 10 | 4 | ---- | 21,582 | 25 Z |
| 3955 | DD17208 | -276/-28 | 10 | 3 | ---- | 4,910 | 25 Z |
| 3956 | DD17207 | -207/-21 | 10 | 20 | ---- | 1,184,170 | 25 Z |
| 3957 | DD17214 | -207/-21 | 10 | 20 | ---- | 5,357,313 | 25 Z |
| 3958 | DD17209 | -207/-21 | 10 | 20 | ---- | 890,895 | 25 Z |

MATERIAL DD17A

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.350, 0.440$, Ave. thickness = 2.83 mm, 2.29 mm (indentation) S.D. = 0.15 mm, 0.06 mm (indentation), CoRezyn 63-AX-051 Polyester. This material has a surface indentation to raise the V_F . The listed stress does NOT take into account the indentation. (the average stress increase due to this indentation = 1.24)

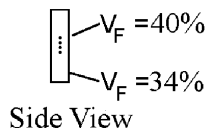


| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3875 | DD17A127 | 414/41 | 0.1 | 2 | 24.3 | 1.87 | 870 | 25 |
| 3876 | DD17A106 | 414/41 | 0.1 | 2 | 24.5 | 1.88 | 993 | 25 |
| 3877 | DD17A116 | 414/41 | 0.1 | 2 | 22.5 | 2.10 | 440 | 25 R |
| 3878 | DD17A112 | 345/35 | 0.1 | 4 | 23.1 | 1.65 | 1,637 | 25 |
| 3879 | DD17A103 | 345/35 | 0.1 | 4 | 26.1 | 1.52 | 7,677 | 25 |
| 3880 | DD17A113 | 345/35 | 0.1 | 4 | 23.2 | 1.60 | 3,156 | 25 |
| 3881 | DD17A102 | 345/35 | 0.1 | 4 | 23.8 | 1.52 | 2,866 | 25 |
| 3882 | DD17A109 | 276/28 | 0.1 | 5 | 22.4 | 1.30 | 23,820 | 25 |
| 3883 | DD17A101 | 276/28 | 0.1 | 4 | 22.1 | 1.33 | 52,327 | 25 |
| 3884 | DD17A107 | 276/28 | 0.1 | 4 | 22.1 | 1.29 | 15,558 | 25 |
| 3885 | DD17A111 | 207/21 | 0.1 | 5 | 23.2 | 0.97 | 385,099 | 25 |
| 3886 | DD17A128 | 207/21 | 0.1 | 5 | 24.3 | 0.92 | 186,232 | 25 |
| 3887 | DD17A110 | 207/21 | 0.1 | 5 | 22.6 | 0.96 | 119,502 | 25 |
| 3888 | DD17A122 | 207/21 | 0.1 | 5 | 25.5 | 0.97 | 170,000 | 25 R |
| 3889 | DD17A125 | 681 | * | 13 | 23.2 | 3.05 | 1 | 25 |
| 3890 | DD17A121 | 621 | * | 13 | 22.5 | 3.01 | 1 | 25 |
| 3891 | DD17A120 | 636 | * | 13 | 24.3 | 2.92 | 1 | 25 |
| 3892 | DD17A123 | 207/21 | 0.1 | 5 | 23.0 | 0.96 | 584,702 | 25 tab |
| 3893 | DD17A104 | 276/28 | 0.1 | 2 | 25.2 | 1.18 | 65,356 | 25 tab |
| 3894 | DD17A108 | 190/19 | 0.1 | 8 | 22.6 | 0.86 | 843,279 | 25 tab |
| 3895 | DD17A119 | 190/19 | 0.1 | 8 | 21.1 | 0.94 | 510,998 | 25 tab |
| 3896 | DD17A117 | 172/17 | 0.1 | 8 | 22.9 | 0.80 | 6,125,824 | 25 tab |
| 3897 | DD17A115 | 345/35 | 0.1 | 2 | 24.3 | 1.64 | 2,414 | 25 tab |
| 3898 | DD17A126 | 345/35 | 0.1 | 3 | 22.5 | 1.70 | 12,349 | 25 tab |
| 3899 | DD17A114 | 276/28 | 0.1 | 4 | 23.6 | 1.20 | 43,591 | 25 tab |
| 3959 | DD17A209 | -207/-21 | 10 | 2 | ---- | ---- | 118 | 25 Z |
| 3960 | DD17A214 | -207/-21 | 10 | 4 | ---- | ---- | 584 | 25 Z |
| 3961 | DD17A215 | -207/-21 | 10 | 2 | ---- | ---- | 506 | 25 Z |
| 3962 | DD17A210 | -138/-14 | 10 | 10 | ---- | ---- | 1,496,838 | 25 Z |
| 3963 | DD17A208 | -138/-14 | 10 | 25 | ---- | ---- | 20,000,000 | 25 Z R |
| 3964 | DD17A221 | -138/-14 | 10 | 15 | ---- | ---- | 499,160 | 25 Z |
| 3965 | DD17A213 | -297 | * | 13 | ---- | ---- | 1 | 25 Z |
| 3966 | DD17A216 | -243 | * | 13 | ---- | ---- | 1 | 25 Z |
| 3967 | DD17A217 | -255 | * | 13 | ---- | ---- | 1 | 25 Z |
| 3968 | DD17A218 | -138/-14 | 10 | 10 | ---- | ---- | 1,296,088 | 25 Z |

MATERIAL DD18

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.34, 0.40$, Ave. thickness = 3.35 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester.

This material has a mid-laminate 90 degree D155 ply, 4 mm long and across the width of the coupon, to locally raise the V_F .



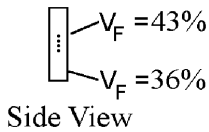
| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|----|
| 3722 | DD18107 | 241/24 | 0.1 | 10 | 21.2 | 1.12 | 268,555 | 25 |
| 3723 | DD18112 | 241/24 | 0.1 | 10 | 22.5 | 1.15 | 328,011 | 25 |
| 3724 | DD18111 | 241/24 | 0.1 | 10 | 21.5 | 1.24 | 463,110 | 25 |
| 3725 | DD18110 | 414/41 | 0.1 | 2 | 24.6 | 1.91 | 12,899 | 25 |
| 3726 | DD18109 | 414/41 | 0.1 | 2 | 22.8 | 1.99 | 10,402 | 25 |
| 3727 | DD18108 | 414/41 | 0.1 | 2 | 22.9 | 2.05 | 8,310 | 25 |
| 3728 | DD18105 | 345/35 | 0.1 | 5 | 23.0 | 1.66 | 49,566 | 25 |
| 3729 | DD18104 | 345/35 | 0.1 | 5 | 23.7 | 1.47 | 25,373 | 25 |
| 3730 | DD18106 | 345/35 | 0.1 | 5 | 22.1 | 1.48 | 45,228 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3731 | DD18103 | 754 | * | 13 | 22.3 | 3.40 | 1 | 25 |
| 3732 | DD18102 | 708 | * | 13 | 21.8 | 3.30 | 1 | 25 |
| 3733 | DD18101 | 727 | * | 13 | 22.2 | ---- | 1 | 25 |
| 3734 | DD18140 | 207/21 | 0.1 | 12 | 23.3 | 0.90 | 2,661,881 | 25 |
| 3835 | DD18150 | -575 | * | 13 | ---- | ---- | 1 | 25 |
| 3836 | DD18151 | -466 | * | 13 | ---- | ---- | 1 | 25 |
| 3837 | DD18152 | -484 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD18A

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.36, 0.43$, Ave. thickness = 2.78 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester.

This material has a mid-laminate 90 degree D155 ply, 4 mm long and across the width of the coupon, to locally raise the V_F .

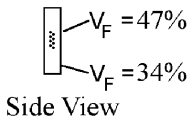


| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----------|
| 3900 | DD18A115 | 190/19 | 0.1 | 10 | 21.0 | 0.95 | 1,750,000 | 25 R tab |
| 3901 | DD18A112 | 414/41 | 0.1 | 2 | 22.2 | 2.13 | 913 | 25 tab |
| 3902 | DD18A101 | 345/35 | 0.1 | 4 | 21.5 | 1.79 | 5,846 | 25 tab |
| 3903 | DD18A108 | 276/28 | 0.1 | 5 | 23.1 | 1.18 | 78,800 | 25 tab |
| 3904 | DD18A104 | 414/41 | 0.1 | 2 | 22.6 | 1.96 | 1,508 | 25 tab |
| 3905 | DD18A113 | 414/41 | 0.1 | 2 | 21.7 | 2.00 | 815 | 25 tab |
| 3906 | DD18A106 | 207/21 | 0.1 | 8 | 22.0 | 1.15 | 654,689 | 25 tab |
| 3907 | DD18A110 | 345/35 | 0.1 | 4 | 22.3 | 1.67 | 3,418 | 25 tab |
| 3908 | DD18A114 | 345/35 | 0.1 | 3 | 24.3 | 1.55 | 8,292 | 25 tab |
| 3909 | DD18A105 | 276/28 | 0.1 | 5 | 24.4 | 1.22 | 65,338 | 25 tab |
| 3910 | DD18A103 | 276/28 | 0.1 | 5 | 22.5 | 1.29 | 67,612 | 25 tab |
| 3911 | DD18A102 | 207/21 | 0.1 | 8 | 23.2 | 0.99 | 3,000,000 | 25 R tab |
| 3913 | DD18A150 | 716 | * | 13 | 23.1 | 3.20 | 1 | 25 tab |
| 3914 | DD18A151 | 716 | * | 13 | 23.3 | 3.07 | 1 | 25 tab |
| 3915 | DD18A152 | 667 | * | 13 | 23.3 | 3.06 | 1 | 25 tab |
| 3941 | DD18A140 | -320 | * | 13 | ---- | ---- | 1 | 25 |
| 3942 | DD18A111 | -338 | * | 13 | ---- | ---- | 1 | 25 |
| 3943 | DD18A141 | -318 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD19

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.34, 0.47$, Ave. thickness = 3.39 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester.

This material has two mid-laminate 90 degree plies, 4 mm long and across the width of the coupon, to locally raise the V_F .

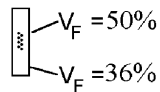


| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----|
| 3710 | DD19107 | 414/41 | 0.1 | 2 | 22.0 | 2.17 | 2,235 | 25 |
| 3711 | DD19106 | 241/24 | 0.1 | 8 | 21.8 | 1.23 | 57,266 | 25 |
| 3712 | DD19109 | 241/24 | 0.1 | 5 | 21.4 | 1.24 | 92,441 | 25 |
| 3713 | DD19108 | 241/24 | 0.1 | 5 | 21.8 | 1.20 | 77,008 | 25 |
| 3714 | DD19111 | 155/16 | 0.1 | 12 | 22.6 | 0.75 | 1,354,001 | 25 |
| 3715 | DD19110 | 155/16 | 0.1 | 12 | 24.3 | 0.68 | 955,238 | 25 |
| 3716 | DD19101 | 155/16 | 0.1 | 12 | 20.5 | 0.83 | 3,104,534 | 25 |
| 3717 | DD19112 | 345/35 | 0.1 | 2 | ---- | ---- | 9,055 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 3718 | DD19119 | 345/35 | 0.1 | 1 | ---- | 8,722 | 25 |
| 3719 | DD19105 | 716 | * | 13 | 21.2 | 3.4 | 1 25 |
| 3720 | DD19104 | 706 | * | 13 | 21.5 | 3.3 | 1 25 |
| 3721 | DD19103 | 707 | * | 13 | 22.4 | 3.2 | 1 25 |
| 3838 | DD19120 | -400 | * | 13 | ---- | ---- | 1 25 |
| 3839 | DD19121 | -332 | * | 13 | ---- | ---- | 1 25 |
| 3840 | DD19126 | -392 | * | 13 | ---- | ---- | 1 25 |
| 3944 | DD19124 | -207/-21 | 10 | 10 | ---- | 93,523 | 25 |
| 3945 | DD19125 | -207/-21 | 10 | 15 | ---- | 3,000,000 | 25 |
| 3946 | DD19127 | -276/-28 | 10 | 10 | ---- | 27,769 | 25 |
| 3947 | DD19122 | -276/-28 | 10 | 5 | ---- | 1,397 | 25 |
| 3948 | DD19123 | -276/-28 | 10 | 5 | ---- | 18,564 | 25 |
| 3949 | DD19131 | -241/-24 | 10 | 5 | ---- | 5,710 | 25 |

MATERIAL DD19A

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.346, 0.50$, Ave. thickness = 2.78 mm, S.D. = 0.03 mm, CoRezyn 63-AX-051 Polyester.
This material has two mid-laminate 90 degree plies, 4 mm wide, to locally raise the V_F .



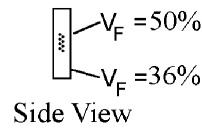
Side View

| | | | | | | | | |
|--|-----------|----------|-----|----|------|------|------------|----------|
| 3916 | DD19A140 | 207/21 | 0.1 | 7 | 23.7 | 0.88 | 31,090 | 25 tab |
| 3917 | DD19A117 | 138/14 | 0.1 | 6 | 23.9 | 0.58 | 1,250,000 | 25 R tab |
| 3918 | DD19A118 | 345/35 | 0.1 | 2 | 24.0 | 1.50 | 877 | 25 tab |
| 3919 | DD19A106 | 345/35 | 0.1 | 2 | 24.6 | 1.61 | 1,088 | 25 tab |
| 3920 | DD19A128 | 345/35 | 0.1 | 2 | 21.9 | 1.69 | 1,590 | 25 tab |
| 3921 | DD19A127 | 276/28 | 0.1 | 4 | 22.4 | 1.34 | 8,594 | 25 tab |
| 3922 | DD19A121 | 276/28 | 0.1 | 4 | 22.8 | 1.35 | 31,283 | 25 tab |
| 3923 | DD19A122 | 276/28 | 0.1 | 5 | 23.5 | 1.36 | 11,012 | 25 tab |
| 3924 | DD19A111 | 207/21 | 0.1 | 7 | 23.4 | 0.96 | 108,773 | 25 tab |
| 3925 | DD19A116 | 207/21 | 0.1 | 7 | 22.2 | 1.11 | 72,092 | 25 tab |
| 3926 | DD19A119 | 172/17 | 0.1 | 8 | 23.9 | 0.83 | 143,171 | 25 tab |
| 3927 | DD19A110 | 646 | * | 13 | 23.3 | 3.01 | 1 | 25 tab |
| 3928 | DD19A114 | 647 | * | 13 | 21.8 | 3.18 | 1 | 25 tab |
| 3929 | DD19A115 | 661 | * | 13 | 22.6 | 3.0 | 1 | 25 tab |
| 3930 | DD19A126 | 172/17 | 0.1 | 5 | ---- | ---- | 95,294 | 25 tab |
| 3931 | DD19A113 | -328 | * | 13 | ---- | ---- | 1 | 25 |
| 3932 | DD19A124 | -299 | * | 13 | ---- | ---- | 1 | 25 |
| 3933 | DD19A123 | -252 | * | 13 | ---- | ---- | 1 | 25 |
| 3934 | DD19A109 | -172/-17 | 10 | 10 | ---- | ---- | 88,437 | 25 |
| 3935 | DD19A102 | -138/-14 | 10 | 10 | ---- | ---- | 4,312,570 | 25 |
| 3936 | DD19A103 | -138/-14 | 10 | 20 | ---- | ---- | 12,000,000 | 25 R |
| 3937 | DD19A104 | -172/-17 | 10 | 10 | ---- | ---- | 62,730 | 25 |
| 3940 | DD19A101 | -172/-17 | 10 | 10 | ---- | ---- | 124,618 | 25 |
| Tests 3972 - 3981 were transverse tests tested in the $[90/\pm 45/90]_S$ direction | | | | | | | | |
| 3972 | DD19AT107 | 69 | * | 13 | 11.1 | 0.64 | 1 | 25 |
| 3973 | DD19AT102 | 68 | * | 13 | 9.74 | 0.71 | 1 | 25 |
| 3974 | DD19AT101 | 68 | * | 13 | 9.60 | 0.74 | 1 | 25 |
| 3975 | DD19AT106 | 17/2 | 0.1 | 20 | 11.2 | 0.16 | 4,000,000 | 25 R |
| 3976 | DD19AT104 | 38/4 | 0.1 | 2 | 10.5 | 0.37 | 13,061 | 25 |
| 3977 | DD19AT103 | 35/4 | 0.1 | 4 | 10.7 | 0.34 | 39,706 | 25 |
| 3978 | DD19AT110 | 35/4 | 0.1 | 4 | 10.1 | 0.34 | 85,033 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3979 | DD19AT109 | 28/3 | 0.1 | 12 | 10.5 | 0.26 | 930,960 | 25 |
| 3980 | DD19AT108 | 28/3 | 0.1 | 12 | 10.8 | 0.26 | 2,571,689 | 25 |
| 3981 | DD19AT105 | 28/3 | 0.1 | 15 | 11.8 | 0.24 | 2,461,981 | 25 |

MATERIAL DD19B

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.35, 0.44$, Ave. thickness = 2.78 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester,
This material had two 8 mm x 19 mm internal (between center 0° plies and centered side-to-side) D155 fabric
patches to raise the V_F without any test coupon edge effects.



| | | | | | | | | |
|------|----------|--------|-----|----|------|------|---------|----------|
| 4003 | DD19B117 | 276/28 | 0.1 | 4 | 24.1 | 1.09 | 27,705 | 25 tab |
| 4004 | DD19B113 | 276/28 | 0.1 | 4 | 22.7 | 1.25 | 50,000 | 25 R tab |
| 4005 | DD19B109 | 276/28 | 0.1 | 4 | 22.2 | 1.20 | 18,014 | 25 tab |
| 4006 | DD19B110 | 276/28 | 0.1 | 4 | 26.2 | 1.13 | 10,666 | 25 tab |
| 4007 | DD19B105 | 241/24 | 0.1 | 4 | 25.8 | 1.03 | 46,870 | 25 tab |
| 4008 | DD19B115 | 207/21 | 0.1 | 5 | 25.3 | 0.88 | 123,726 | 25 tab |
| 4009 | DD19B112 | 207/21 | 0.1 | 7 | 26.4 | 0.78 | 711,185 | 25 tab |
| 4010 | DD19B114 | 241/24 | 0.1 | 4 | 23.8 | 1.07 | 17,022 | 25 tab |
| 4011 | DD19B111 | 241/24 | 0.1 | 4 | 22.5 | 1.15 | 62,757 | 25 tab |
| 4012 | DD19B101 | 697 | * | 13 | 26.1 | 2.94 | 1 | 25 tab |
| 4013 | DD19B106 | 693 | * | 13 | 25.3 | 2.87 | 1 | 25 tab |
| 4014 | DD19B107 | 691 | * | 13 | 23.8 | 3.02 | 1 | 25 tab |
| 4015 | DD19B119 | 207/21 | 0.1 | 6 | 24.4 | 0.80 | 377,162 | 25 tab |

MATERIAL DD20

Lay-up = $[0_2/\pm 45/0]_S$, $V_F = 0.342$, Ave. thickness = 2.89 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|---------|--------|
| 4019 | DD20101 | 584 | * | 13 | 22.6 | 2.8 | 1 | 22 tab |
| 4020 | DD20105 | 582 | * | 13 | 23.1 | 2.6 | 1 | 22 tab |
| 4021 | DD20108 | 594 | * | 13 | 23.2 | 2.8 | 1 | 22 tab |
| 4022 | DD20103 | 310/31 | 0.1 | 2 | 22.6 | 1.55 | 8,408 | 22 tab |
| 4023 | DD20102 | 310/31 | 0.1 | 4 | 22.0 | 1.58 | 4,899 | 22 tab |
| 4024 | DD20109 | 310/31 | 0.1 | 4 | 22.9 | 1.46 | 5,860 | 22 tab |
| 4025 | DD20104 | 207/21 | 0.1 | 5 | 23.3 | 0.96 | 27,916 | 22 tab |
| 4026 | DD20106 | 172/17 | 0.1 | 10 | 21.7 | 0.83 | 87,234 | 22 tab |
| 4027 | DD20112 | 172/17 | 0.1 | 5 | 20.0 | 0.89 | 65,250 | 22 tab |
| 4028 | DD20111 | 138/14 | 0.1 | 7 | 22.8 | 0.63 | 484,310 | 22 tab |
| 4029 | DD20110 | 138/14 | 0.1 | 7 | 21.2 | 0.69 | 459,000 | 22 tab |
| 4030 | DD20107 | 138/14 | 0.1 | 7 | 20.9 | 0.70 | 362,971 | 22 tab |
| 4206 | DD20143 | -337 | * | 13 | ---- | ---- | 1 | 25 |
| 4207 | DD20142 | -313 | * | 13 | ---- | ---- | 1 | 25 |
| 4208 | DD20141 | -294 | * | 13 | ---- | ---- | 1 | 25 |
| 4209 | DD20140 | -308 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD20A

Lay-up = $[0_2/\pm 45/0]_S$, $V_F = 0.377$, Ave. thickness = 2.66 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester.

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 4054 | DD20A112 | 653 | * | 13 | 25.7 | 2.69 | 1 | 22 tab |
| 4055 | DD20A110 | 645 | * | 13 | 24.5 | 2.76 | 1 | 22 tab |
| 4056 | DD20A108 | 619 | * | 13 | 24.3 | 2.64 | 1 | 22 tab |
| 4057 | DD20A104 | 310/31 | 0.1 | 3 | 26.7 | 1.35 | 5,006 | 22 tab |
| 4058 | DD20A102 | 310/31 | 0.1 | 3 | 25.4 | 1.35 | 6,014 | 22 tab |
| 4059 | DD20A109 | 310/31 | 0.1 | 3 | 25.6 | 1.41 | 5,207 | 22 tab |
| 4060 | DD20A106 | 207/21 | 0.1 | 8 | 25.0 | 0.83 | 38,386 | 22 tab |
| 4061 | DD20A111 | 207/21 | 0.1 | 8 | 26.4 | 0.80 | 24,080 | 22 tab |
| 4062 | DD20A107 | 207/21 | 0.1 | 8 | 25.2 | 0.88 | 44,850 | 22 tab |
| 4063 | DD20A101 | 138/14 | 0.1 | 12 | 24.1 | 0.60 | 1,209,687 | 22 tab |
| 4076 | DD20A103 | 172/17 | 0.1 | 10 | ---- | ---- | 46,058 | 22 tab |

MATERIAL DD22

Lay-up = $[0_2/\pm 45/0]_S$, $V_F = 0.307$, Ave. thickness = 2.86 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|--------|
| 4045 | DD22112 | 564 | * | 13 | 21.0 | 2.8 | 1 | 22 tab |
| 4046 | DD22103 | 551 | * | 13 | 19.5 | 2.86 | 1 | 22 tab |
| 4047 | DD22109 | 533 | * | 13 | 21.1 | 2.61 | 1 | 22 tab |
| 4048 | DD22110 | 207/21 | 0.1 | 5 | 20.3 | 1.06 | 1,873,215 | 22 tab |
| 4049 | DD22104 | 276/28 | 0.1 | 4 | 18.2 | 1.67 | 62,055 | 22 tab |
| 4050 | DD22106 | 276/28 | 0.1 | 3 | 19.2 | 1.61 | 88,185 | 22 tab |
| 4051 | DD22102 | 276/28 | 0.1 | 3 | 19.5 | 1.54 | 58,843 | 22 tab |
| 4052 | DD22105 | 241/24 | 0.1 | 4 | 18.4 | 1.27 | 384,914 | 22 tab |
| 4053 | DD22111 | 241/24 | 0.1 | 10 | 19.3 | 1.25 | 960,823 | 22 tab |
| 4210 | DD22140 | -372 | * | 13 | ---- | ---- | 1 | 25 |
| 4211 | DD22141 | -416 | * | 13 | ---- | ---- | 1 | 25 |
| 4212 | DD22142 | -398 | * | 13 | ---- | ---- | 1 | 25 |
| 4213 | DD22143 | -370 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD24

Lay-up = $[0/\pm 45/0_3/\pm 45/0]$, $V_F = 0.389$, Ave. thickness = 2.59 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----------|
| 4130 | DD24124 | 345/35 | 0.1 | 8 | ---- | ---- | 40,767 | 22 tab |
| 4131 | DD24131 | 345/35 | 0.1 | 8 | 22.5 | 1.53 | 17,433 | 22 tab |
| 4132 | DD24129 | 345/35 | 0.1 | 8 | 24.7 | 1.50 | 20,925 | 22 tab |
| 4133 | DD24125 | 276/28 | 0.1 | 8 | 21.8 | 1.31 | 190,571 | 22 tab |
| 4134 | DD24130 | 241/24 | 0.1 | 12 | 22.9 | 1.08 | 696,493 | 22 tab |
| 4135 | DD24128 | 241/24 | 0.1 | 12 | 23.3 | 1.12 | 314,716 | 22 tab |
| 4136 | DD24115 | 746 | * | 13 | 25.9 | 3.0 | 1 | 22 tab |
| 4137 | DD24117 | 704 | * | 13 | ---- | ---- | 1 | 22 tab |
| 4138 | DD24114 | 739 | * | 13 | 26.8 | 3.0 | 1 | 22 tab |
| 4139 | DD24127 | 207/21 | 0.1 | 12 | 23.6 | 0.88 | 5,000,000 | 22 R tab |
| 4164 | DD24106 | -528 | * | 13 | ---- | ---- | 1 | 25 |
| 4165 | DD24105 | -537 | * | 13 | ---- | ---- | 1 | 25 |
| 4166 | DD24104 | -500 | * | 13 | ---- | ---- | 1 | 25 |
| 4167 | DD24107 | -477 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL DD25
Lay-up = [0/±45/0]_S, V_F = 0.455, Ave. thickness = 2.89 mm, S.D. = 0.14 mm, Glass Veil, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|----------|-----|----|------|------|-----------|----------|
| 4140 | DD25102 | 814 | * | 13 | 28.4 | 3.0 | 1 | 22 tab |
| 4141 | DD25105 | 682 | * | 13 | 28.0 | 3.1 | 1 | 22 tab |
| 4142 | DD25108 | 733 | * | 13 | 27.2 | 2.7 | 1 | 22 tab |
| 4143 | DD25109 | 345/35 | 0.1 | 7 | 27.7 | 1.42 | 1,621 | 22 tab |
| 4144 | DD25106 | 207/21 | 0.1 | 10 | 29.2 | 0.73 | 205,450 | 22 tab |
| 4145 | DD25107 | 172/17 | 0.1 | 12 | 26.0 | 0.67 | 5,000,000 | 22 R tab |
| 4146 | DD25101 | 276/28 | 0.1 | 5 | 25.7 | 1.10 | 37,442 | 22 tab |
| 4147 | DD25110 | 276/28 | 0.1 | 5 | 29.3 | 0.99 | 50,003 | 22 tab |
| 4148 | DD25111 | 276/28 | 0.1 | 5 | 29.7 | 1.01 | 48,799 | 22 tab |
| 4149 | DD25114 | 207/21 | 0.1 | 12 | 30.4 | 0.68 | 778,703 | 22 tab |
| 4150 | DD25104 | 345/35 | 0.1 | 2 | 27.0 | 1.37 | 8,578 | 22 tab |
| 4151 | DD25113 | 345/35 | 0.1 | 2 | 28.8 | 1.22 | 17,706 | 22 tab |
| 4152 | DD25103 | 207/21 | 0.1 | 8 | 27.7 | 0.78 | 982,766 | 22 tab |
| 4160 | DD25130 | -498 | * | 13 | ---- | ---- | 1 | 25 |
| 4161 | DD25131 | -505 | * | 13 | ---- | ---- | 1 | 25 |
| 4162 | DD25132 | -464 | * | 13 | ---- | ---- | 1 | 25 |
| 4163 | DD25133 | -465 | * | 13 | ---- | ---- | 1 | 25 |
| 4173 | DD25132 | -241/-24 | 10 | 15 | ---- | ---- | 1,322,357 | 25 |
| 4174 | DD25136 | -241/-24 | 10 | 15 | ---- | ---- | 524,658 | 25 |

MATERIAL DD25A

Lay-up = [0/±45/0]_S, V_F = 0.493, Ave. thickness = 2.67 mm, S.D. = 0.08 mm, Polyester Veil, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|--------|
| 4153 | DD25A113 | 790 | * | 13 | 27.6 | 3.0 | 1 | 22 tab |
| 4154 | DD25A112 | 780 | * | 13 | 28.8 | 2.8 | 1 | 22 tab |
| 4155 | DD25A111 | 778 | * | 13 | 27.3 | 2.9 | 1 | 22 tab |
| 4183 | DD25A101 | 207/21 | 0.1 | 10 | 28.0 | 0.74 | 1,015,979 | 22 tab |
| 4184 | DD25A108 | 241/24 | 0.1 | 10 | 27.7 | 0.86 | 503,924 | 22 tab |
| 4185 | DD25A104 | 241/24 | 0.1 | 10 | 27.7 | 0.91 | 740,566 | 22 tab |
| 4186 | DD25A109 | 241/24 | 0.1 | 12 | ---- | ---- | 1,178,054 | 22 tab |
| 4187 | DD25A106 | 276/28 | 0.1 | 10 | 28.6 | 1.01 | 135,192 | 22 tab |
| 4188 | DD25A110 | 276/28 | 0.1 | 4 | 29.5 | 0.97 | 146,154 | 22 tab |
| 4189 | DD25A102 | 276/28 | 0.1 | 4 | 29.5 | 0.99 | 253,259 | 22 tab |
| 4190 | DD25A103 | 345/35 | 0.1 | 4 | 29.5 | 1.23 | 20,249 | 22 tab |
| 4191 | DD25A107 | 345/35 | 0.1 | 4 | 28.5 | 1.24 | 44,823 | 22 tab |
| 4192 | DD25A105 | 345/35 | 0.1 | 4 | 29.3 | 1.20 | 44,578 | 22 tab |
| 4218 | DD25A160 | -679 | * | 13 | ---- | ---- | 1 | 25 |
| 4219 | DD25A161 | -657 | * | 13 | ---- | ---- | 1 | 25 |
| 4220 | DD25A163 | -608 | * | 13 | ---- | ---- | 1 | 25 |
| 4221 | DD25A162 | -570 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD25B

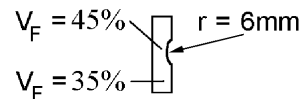
Lay-up = [0/±45/0]_S, V_F = 0.308, Ave. thickness = 4.27 mm, S.D. = 0.06 mm, Polyester Veil, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----------|
| 4156 | DD25B104 | 486 | * | 13 | 18.2 | 2.7 | 1 | 22 tab |
| 4157 | DD25B103 | 540 | * | 13 | 19.7 | 2.9 | 1 | 22 tab |
| 4158 | DD25B111 | 516 | * | 13 | 19.0 | 2.8 | 1 | 22 tab |
| 4159 | DD25B102 | 207/21 | 0.1 | 10 | 20.2 | 1.07 | 1,200,000 | 22 R tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 4168 | DD25B130 | -437 | * | 13 | ---- | ---- | 1 | 25 |
| 4169 | DD25B131 | -363 | * | 13 | ---- | ---- | 1 | 25 |
| 4170 | DD25B132 | -453 | * | 13 | ---- | ---- | 1 | 25 |
| 4171 | DD25B133 | -422 | * | 13 | ---- | ---- | 1 | 25 |
| 4175 | DD25B110 | 241/24 | 0.1 | 5 | ---- | ---- | 118,550 | 22 tab |
| 4176 | DD25B108 | 241/24 | 0.1 | 10 | 18.5 | 1.38 | 178,659 | 22 tab |
| 4177 | DD25B112 | 241/24 | 0.1 | 10 | 17.5 | 1.46 | 70,464 | 22 tab |
| 4178 | DD25B107 | 276/28 | 0.1 | 4 | 20.1 | 1.41 | 49,497 | 22 tab |
| 4179 | DD25B106 | 276/28 | 0.1 | 4 | 19.1 | 1.48 | 17,956 | 22 tab |
| 4180 | DD25B105 | 276/28 | 0.1 | 4 | 19.3 | 1.52 | 41,266 | 22 tab |
| 4182 | DD25B109 | 310/31 | 0.1 | 2 | 21.2 | 1.54 | 5,663 | 22 tab |

MATERIAL DD25D

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.35, 0.45$, Ave. thickness = 3.96 mm, 2.55 mm (indentation) S.D. = 0.09 mm, 0.06 mm (indentation), Polyester veil, CoRezyn 63-AX-051 Polyester. This material has a surface indentation to raise the V_F . The listed stress does NOT take into account the indentation. (the average stress increase due to this indentation = 1.55)



| | | | | | | | | |
|------|----------|--------|-----|----|------|------|---------|----|
| 4234 | DD25D102 | 516 | * | 13 | 25.5 | 2.15 | 1 | 25 |
| 4235 | DD25D101 | 179/18 | 0.1 | 5 | 23.1 | 1.17 | 110,424 | 25 |
| 4236 | DD25D110 | 181/18 | 0.1 | 4 | 25.0 | 0.94 | 180,832 | 25 |
| 4237 | DD25D112 | 155/16 | 0.1 | 7 | 22.0 | 0.83 | 584,489 | 25 |
| 4238 | DD25D111 | 155/16 | 0.1 | 8 | ---- | ---- | 252,968 | 25 |
| 4239 | DD25D108 | 176/18 | 0.1 | 4 | ---- | ---- | 66,875 | 25 |
| 4240 | DD25D105 | 153/15 | 0.1 | 8 | ---- | ---- | 182,727 | 25 |
| 4241 | DD25D104 | 156/16 | 0.1 | 5 | ---- | ---- | 347,113 | 25 |
| 4242 | DD25D107 | 180/18 | 0.1 | 5 | ---- | ---- | 159,308 | 25 |
| 4243 | DD25D117 | 451 | * | 13 | ---- | ---- | 1 | 25 |
| 4244 | DD25D118 | 467 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DD26

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.473$, Ave. thickness = 2.61 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester. Same fabric as DD25, but with a different binder used for general purpose polyester resins.

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|--------|
| 4245 | DD26116 | 849 | * | 13 | 32.0 | 2.65 | 1 | 22 tab |
| 4246 | DD26101 | 808 | * | 13 | 30.4 | 2.70 | 1 | 22 tab |
| 4247 | DD26110 | 902 | * | 13 | 29.6 | 3.05 | 1 | 22 tab |
| 4248 | DD26115 | 414/41 | 0.1 | 4 | 32.4 | 1.45 | 10,628 | 22 tab |
| 4249 | DD26114 | 414/41 | 0.1 | 4 | 28.8 | 1.53 | 13,112 | 22 tab |
| 4250 | DD26111 | 414/41 | 0.1 | 4 | 29.0 | 1.45 | 9,883 | 22 tab |
| 4251 | DD26112 | 345/35 | 0.1 | 8 | 28.8 | 1.25 | 39,204 | 22 tab |
| 4252 | DD26113 | 345/35 | 0.1 | 8 | 30.1 | 1.20 | 44,872 | 22 tab |
| 4253 | DD26104 | 241/24 | 0.1 | 12 | 30.1 | 0.80 | 780,507 | 22 tab |
| 4254 | DD26103 | 345/35 | 0.1 | 5 | 30.7 | 1.24 | 92,698 | 22 tab |
| 4255 | DD26107 | 241/24 | 0.1 | 12 | 28.1 | 0.90 | 609,415 | 22 tab |
| 4256 | DD26105 | 241/24 | 0.1 | 10 | 29.6 | 0.83 | 2,019,100 | 22 tab |
| 4257 | DD26106 | 241/24 | 0.1 | 10 | 30.5 | 0.83 | 1,568,929 | 22 tab |
| 4258 | DD26126 | -563 | * | 13 | ---- | ---- | 1 | 25 |
| 4259 | DD26127 | -593 | * | 13 | ---- | ---- | 1 | 25 |
| 4260 | DD26125 | -519 | * | 13 | ---- | ---- | 1 | 25 |
| 4261 | DD26129 | -594 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 4262 | DD26124 | -310/-31 | 10 | 10 | ---- | ---- | 103,105 | 25 |
| 4263 | DD26120 | -241/-24 | 10 | 12 | ---- | ---- | 20,000,000 | 25 R |
| 4268 | DD26130 | -276/-28 | 10 | 12 | ---- | ---- | 2,851,058 | 25 |
| 4264 | DD26121 | -276/-28 | 10 | 12 | ---- | ---- | 2,185,867 | 25 |
| 4265 | DD26122 | -276/-28 | 10 | 12 | ---- | ---- | 1,343,877 | 25 |
| 4172 | DD26132 | -276/-28 | 10 | 12 | ---- | ---- | 363,720 | 25 R |

MATERIAL DD27A

Lay-up = [0/±45]_S, V_F = 0.320, Ave. thickness = 4.08 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|--------|
| 5933 | DD27A112 | 555 | * | 13 | 21.3 | 2.99 | 1 | 22 tab |
| 5934 | DD27A103 | 574 | * | 13 | 21.5 | 2.91 | 1 | 22 tab |
| 5935 | DD27A107 | 207/21 | 0.1 | 3 | 19.1 | 1.22 | 11,981 | 22 tab |
| 5936 | DD27A109 | 570 | * | 13 | 22.1 | 3.07 | 1 | 22 tab |
| 5937 | DD27A101 | 207/21 | 0.1 | 3 | 20.4 | 1.09 | 16,202 | 22 tab |
| 5938 | DD27A110 | 138/14 | 0.1 | 4 | 21.9 | 0.63 | 381,380 | 22 tab |
| 5939 | DD27A108 | 207/21 | 0.1 | 3 | 20.1 | 1.17 | 17,327 | 22 tab |
| 5940 | DD27A114 | 138/14 | 0.1 | 6 | 20.7 | 0.67 | 468,496 | 22 tab |
| 5941 | DD27A111 | 138/14 | 0.1 | 6 | 19.5 | 0.75 | 256,311 | 22 tab |
| 5942 | DD27A104 | 276/28 | 0.1 | 1 | 21.4 | 1.35 | 2,115 | 22 tab |
| 5943 | DD27A106 | 276/28 | 0.1 | 1 | 18.2 | 1.62 | 1,585 | 22 tab |
| 5944 | DD27A130 | -383 | * | 13 | ---- | ---- | 1 | 25 |
| 5945 | DD27A127 | -394 | * | 13 | ---- | ---- | 1 | 25 |
| 5946 | DD27A122 | -365 | * | 13 | ---- | ---- | 1 | 25 |
| 5950 | DD27A102 | 103/10 | 0.1 | 8 | 20.3 | 0.53 | 2,780,943 | 22 tab |
| 5951 | DD27A105 | 103/10 | 0.1 | 8 | 19.7 | 0.54 | 1,889,675 | 22 tab |
| 5901 | DD27A131 | 103/10 | 0.1 | 8 | 20.1 | 0.52 | 1,299,207 | 22 tab |

MATERIAL DD27B

Lay-up = [0/±45]_S, V_F = 0.420, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|--------|
| 5920 | DD27B101 | 658 | * | 13 | 25.5 | 3.1 | 1 | 22 tab |
| 5921 | DD27B107 | 679 | * | 13 | 24.4 | 2.9 | 1 | 22 tab |
| 5922 | DD27B102 | 665 | * | 13 | 26.4 | 2.8 | 1 | 22 tab |
| 5923 | DD27B106 | 345/35 | 0.1 | 1 | 26.3 | 1.43 | 1,918 | 22 tab |
| 5924 | DD27B112 | 345/35 | 0.1 | 1 | 24.9 | 1.56 | 2,312 | 22 tab |
| 5925 | DD27B110 | 345/35 | 0.1 | 1 | 25.8 | 1.64 | 3,316 | 22 tab |
| 5926 | DD27B104 | 276/28 | 0.1 | 2 | 26.1 | 1.10 | 13,355 | 22 tab |
| 5927 | DD27B109 | 276/28 | 0.1 | 2 | 25.6 | 1.13 | 10,804 | 22 tab |
| 5928 | DD27B108 | 172/17 | 0.1 | 5 | 27.9 | 0.65 | 633,513 | 22 tab |
| 5929 | DD27B103 | 276/28 | 0.1 | 2 | 24.7 | 1.17 | 11,011 | 22 tab |
| 5930 | DD27B105 | 207/21 | 0.1 | 4 | 25.0 | 0.87 | 105,010 | 22 tab |
| 5931 | DD27B111 | 207/21 | 0.1 | 4 | 26.3 | 0.89 | 127,727 | 22 tab |
| 5932 | DD27B113 | 207/21 | 0.1 | 4 | 26.4 | 0.84 | 122,565 | 22 tab |
| 5947 | DD27B120 | -329 | * | 13 | ---- | ---- | 1 | 25 |
| 5948 | DD27B127 | -324 | * | 13 | ---- | ---- | 1 | 25 |
| 5949 | DD27B131 | -311 | * | 13 | ---- | ---- | 1 | 25 |
| 5952 | DD27B133 | 138/14 | 0.1 | 8 | 26.3 | 0.54 | 1,432,060 | 22 tab |
| 5953 | DD27B134 | 172/17 | 0.1 | 5 | 25.6 | 0.68 | 497,241 | 22 tab |
| 5954 | DD27B135 | 138/14 | 0.1 | 8 | 26.8 | 0.50 | 2,067,242 | 22 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL DD27C

Lay-up = $[0/\pm 45]_S$, $V_F = 0.431$, Ave. thickness = 3.08 mm, S.D. = 0.09 mm, Derakane 8084 vinyl ester

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 6581 | DD27C101 | 809 | * | 13 | 27.5 | 3 | 1 | 25 |
| 6582 | DD27C102 | 722 | * | 13 | 26.0 | 2.9 | 1 | 25 |
| 6583 | DD27C103 | 721 | * | 13 | 26.0 | 2.8 | 1 | 25 |
| 6584 | DD27C108 | -393 | * | 13 | ---- | ---- | 1 | 25 |
| 6585 | DD27C107 | -436 | * | 13 | ---- | ---- | 1 | 25 |
| 6586 | DD27C106 | -420 | * | 13 | ---- | ---- | 1 | 25 |
| 6587 | DD27C105 | -441 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL FFA

Lay-up = $[\pm 45/0/0/\pm 45]_S$, $V_F = 0.364$, Ave. thickness = 3.78 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester.
The FFA, FFB, FFC, FFD and FFF materials involved the same fabrics with the lay-up orientation changed to investigate ply sequence fatigue differences.

| | | | | | | | | |
|---|--------|--------|-----|----|------|------|------------|------|
| 3337 | FFA104 | 721 | * | 13 | 24.3 | 3.00 | 1 | 25 |
| 3338 | FFA112 | 717 | * | 13 | 23.6 | 3.03 | 1 | 25 |
| 3339 | FFA106 | 710 | * | 13 | 24.8 | 2.90 | 1 | 25 |
| 3340 | FFA109 | 414/41 | 0.1 | 2 | 23.6 | 1.98 | 1,832 | 25 |
| 3341 | FFA102 | 414/41 | 0.1 | 2 | 23.8 | 2.14 | 757 | 25 |
| 3342 | FFA114 | 414/41 | 0.1 | 2 | 25.0 | 2.05 | 926 | 25 |
| 3343 | FFA111 | 345/35 | 0.1 | 4 | 24.9 | 1.63 | 4,233 | 25 |
| 3344 | FFA118 | 276/28 | 0.1 | 4 | 25.9 | 1.21 | 30,201 | 25 |
| 3345 | FFA115 | 345/35 | 0.1 | 2 | 24.8 | 1.63 | 4,642 | 25 |
| 3346 | FFA107 | 276/28 | 0.1 | 4 | 24.3 | 1.29 | 37,675 | 25 |
| 3347 | FFA113 | 345/35 | 0.1 | 2 | 24.9 | 1.63 | 2,420 | 25 |
| 3348 | FFA105 | 276/28 | 0.1 | 4 | 23.6 | 1.28 | 18,064 | 25 |
| 3349 | FFA103 | 172/17 | 0.1 | 10 | 23.9 | 0.78 | 10,000,000 | 25 R |
| 3350 | FFA110 | 207/21 | 0.1 | 10 | 23.7 | 0.93 | 1,123,713 | 25 |
| 3351 | FFA116 | 207/21 | 0.1 | 12 | 23.7 | 0.99 | 372,007 | 25 |
| 3352 | FFA117 | 207/21 | 0.1 | 12 | 22.8 | 1.02 | 612,692 | 25 |
| 3370 | FFA153 | 207/21 | 0.1 | 12 | ---- | ---- | 926,563 | 25 |
| 3371 | FFA108 | 345/35 | 0.1 | 2 | ---- | ---- | 2,039 | 25 |
| Tests 3373 - 3377 were run at 20 Hz to observe thermal failures | | | | | | | | |
| 3373 | FFA160 | 207/21 | 0.1 | 20 | ---- | ---- | 42,809 | 25 |
| 3374 | FFA155 | 345/35 | 0.1 | 20 | ---- | ---- | 820 | 25 |
| 3375 | FFA152 | 276/28 | 0.1 | 20 | ---- | ---- | 5,899 | 25 |
| 3376 | FFA151 | 172/17 | 0.1 | 20 | ---- | ---- | 157,623 | 25 |
| 3377 | FFA154 | 138/14 | 0.1 | 20 | ---- | ---- | 5,000,000 | 25 |
| 3424 | FFA150 | -557 | * | 13 | ---- | ---- | 1 | 25 |
| 3425 | FFA152 | -558 | * | 13 | ---- | ---- | 1 | 25 |
| 3426 | FFA151 | -544 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL FFB

Lay-up = $[0/\pm 45/0/\pm 45/0]_S$, $V_F = 0.361$, Ave. thickness = 3.81 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester.
The FFA, FFB, FFC, FFD and FFF materials involved the same fabrics with the lay-up orientation changed to investigate ply orientation fatigue differences.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|-----|----|
| 3353 | FFB136 | 599 | * | 13 | 24.1 | 3 | 1 | 25 |
| 3354 | FFB132 | 607 | * | 13 | 23.4 | 2.9 | 1 | 25 |
| 3355 | FFB138 | 657 | * | 13 | 24.9 | 2.8 | 1 | 25 |
| 3356 | FFB128 | 414/41 | 0.1 | 2 | 23.6 | 1.97 | 803 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|--------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 3357 | FFB141 | 414/41 | 0.1 | 2 | 23.9 | 2.04 | 1,391 | 25 |
| 3358 | FFB134 | 345/35 | 0.1 | 2 | 23.4 | 1.68 | 2,293 | 25 |
| 3359 | FFB130 | 345/35 | 0.1 | 2 | 23.4 | 1.68 | 1,909 | 25 |
| 3360 | FFB142 | 276/28 | 0.1 | 4 | 22.3 | 1.41 | 16,986 | 25 |
| 3361 | FFB140 | 276/28 | 0.1 | 2 | 24.4 | 1.23 | 22,313 | 25 |
| 3362 | FFB131 | 207/21 | 0.1 | 12 | 23.3 | 0.98 | 486,273 | 25 |
| 3363 | FFB127 | 207/21 | 0.1 | 12 | 21.0 | 1.03 | 393,660 | 25 |
| 3364 | FFB139 | 207/21 | 0.1 | 12 | 23.6 | 0.95 | 540,700 | 25 |
| Tests 3365 - 3368 were notched on the edges to reduce the stress concentration at the grips. | | | | | | | | |
| 3365 | FFB137 | 276/28 | 0.1 | 4 | ---- | ---- | 54,111 | 15 |
| 3366 | FFB133 | 207/21 | 0.1 | 12 | ---- | ---- | 849,853 | 15 |
| 3367 | FFB129 | 414/41 | 0.1 | 1 | ---- | ---- | 925 | 15 |
| 3368 | FFB125 | 345/35 | 0.1 | 2 | ---- | ---- | 5,420 | 15 |
| 3369 | FFB135 | 635 | * | 13 | ---- | ---- | 1 | 25 |
| 3427 | FFB114 | -517 | * | 13 | ---- | ---- | 1 | 25 |
| 3428 | FFB109 | -507 | * | 13 | ---- | ---- | 1 | 25 |
| 3429 | FFB115 | -495 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL FFC

Lay-up = [0/±45/±45/0]_s, V_F = 0.361, Ave. thickness = 3.81 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester.
The FFA, FFB, FFC, FFD and FFF materials involved the same fabrics with the lay-up orientation changed to investigate ply orientation fatigue differences.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 3378 | FFC117 | 648 | * | 13 | 23.6 | 2.90 | 1 | 25 |
| 3379 | FFC111 | 620 | * | 13 | ---- | ---- | 1 | 6 |
| 3380 | FFC104 | 604 | * | 13 | ---- | ---- | 1 | 6 |
| 3381 | FFC114 | 414/41 | 0.1 | 1 | 23.1 | 2.00 | 508 | 25 |
| 3382 | FFC110 | 414/41 | 0.1 | 1 | ---- | ---- | 692 | 25 |
| 3383 | FFC107 | 345/35 | 0.1 | 2 | 22.6 | 1.71 | 1,621 | 25 |
| 3384 | FFC108 | 345/35 | 0.1 | 2 | ---- | ---- | 3,371 | 25 |
| 3385 | FFC109 | 276/28 | 0.1 | 4 | ---- | ---- | 31,551 | 25 |
| 3386 | FFC118 | 276/28 | 0.1 | 4 | ---- | ---- | 24,762 | 25 |
| 3387 | FFC103 | 414/41 | 0.1 | 1 | ---- | ---- | 788 | 25 |
| 3388 | FFC115 | 345/35 | 0.1 | 2 | ---- | ---- | 2,895 | 25 |
| 3389 | FFC105 | 276/28 | 0.1 | 4 | ---- | ---- | 27,395 | 25 |
| 3390 | FFC101 | 207/21 | 0.1 | 12 | ---- | ---- | 417,819 | 25 |
| 3391 | FFC112 | 207/21 | 0.1 | 12 | ---- | ---- | 414,180 | 25 |
| 3392 | FFC113 | 207/21 | 0.1 | 21 | 22.4 | 0.93 | 649,406 | 25 |
| 3430 | FFC134 | -517 | * | 13 | ---- | ---- | 1 | 25 |
| 3431 | FFC128 | -476 | * | 13 | ---- | ---- | 1 | 25 |
| 3432 | FFC136 | -505 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL FFD

Lay-up = [0/0/±45/±45]_s, V_F = 0.359, Ave. thickness = 3.83 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester.
The FFA, FFB, FFC, FFD and FFF materials involved the same fabrics with the lay-up orientation changed to investigate ply orientation fatigue differences.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|-----------|----|
| 3393 | FFD112 | 676 | * | 13 | 24.0 | 2.90 | 1 | 25 |
| 3394 | FFD106 | 630 | * | 13 | ---- | ---- | 1 | 25 |
| 3395 | FFD107 | 602 | * | 13 | ---- | ---- | 1 | 25 |
| 3396 | FFD110 | 414/41 | 0.1 | 2 | 22.2 | 2.18 | 533 | 25 |
| 3397 | FFD111 | 414/41 | 0.1 | 2 | ---- | ---- | 793 | 6 |
| 3398 | FFD104 | 414/41 | 0.1 | 2 | ---- | ---- | 912 | 6 |
| 3399 | FFD102 | 345/35 | 0.1 | 2 | ---- | ---- | 3,683 | 6 |
| 3400 | FFD105 | 345/35 | 0.1 | 2 | ---- | ---- | 2,923 | 6 |
| 3401 | FFD114 | 345/35 | 0.1 | 2 | ---- | ---- | 3,993 | 6 |
| 3402 | FFD115 | 276/28 | 0.1 | 4 | ---- | ---- | 24,441 | 6 |
| 3403 | FFD116 | 276/28 | 0.1 | 4 | ---- | ---- | 32,380 | 6 |
| 3404 | FFD101 | 276/28 | 0.1 | 4 | ---- | ---- | 21,567 | 6 |
| 3405 | FFD103 | 207/21 | 0.1 | 12 | ---- | ---- | 1,099,442 | 6 |
| 3406 | FFD117 | 207/21 | 0.1 | 12 | ---- | ---- | 466,758 | 6 |
| 3407 | FFD104 | 207/21 | 0.1 | 12 | ---- | ---- | 650,603 | 6 |
| 3433 | FFD133 | -547 | * | 13 | ---- | ---- | 1 | 25 |
| 3434 | FFD141 | -549 | * | 13 | ---- | ---- | 1 | 25 |
| 3435 | FFD138 | -530 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL FFF

Lay-up = $[\pm 45/\pm 45/0]_S$, $V_F = 0.365$, Ave. thickness = 3.77 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester.
The FFA, FFB, FFC, FFD and FFF materials involved the same fabrics with the lay-up orientation changed to investigate ply orientation fatigue differences.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 3408 | FFF110 | 640 | * | 13 | ---- | ---- | 1 | 6 |
| 3409 | FFF106 | 643 | * | 13 | ---- | ---- | 1 | 6 |
| 3410 | FFF122 | 708 | * | 13 | 23.9 | 2.9 | 1 | 25 |
| 3411 | FFF108 | 414/41 | 0.1 | 1 | ---- | ---- | 683 | 6 |
| 3412 | FFF107 | 414/41 | 0.1 | 1 | ---- | ---- | 810 | 6 |
| 3413 | FFF114 | 414/41 | 0.1 | 2 | ---- | ---- | 1,587 | 6 |
| 3415 | FFF112 | 345/35 | 0.1 | 2 | ---- | ---- | 7,694 | 6 |
| 3416 | FFF117 | 345/35 | 0.1 | 2 | ---- | ---- | 5,602 | 6 |
| 3417 | FFF113 | 345/35 | 0.1 | 2 | ---- | ---- | 8,381 | 6 |
| 3418 | FFF115 | 276/28 | 0.1 | 4 | ---- | ---- | 30,596 | 6 |
| 3419 | FFF109 | 276/28 | 0.1 | 5 | ---- | ---- | 30,569 | 6 |
| 3420 | FFF132 | 276/28 | 0.1 | 5 | ---- | ---- | 26,561 | 6 |
| 3421 | FFF116 | 207/21 | 0.1 | 12 | ---- | ---- | 374,533 | 6 |
| 3422 | FFF111 | 207/21 | 0.1 | 12 | ---- | ---- | 665,573 | 6 |
| 3423 | FFF143 | 207/21 | 0.1 | 20 | ---- | ---- | 684,496 | 6 |
| 3436 | FFF125 | -605 | * | 13 | ---- | ---- | 1 | 25 |
| 3437 | FFF134 | -627 | * | 13 | ---- | ---- | 1 | 25 |
| 3438 | FFF129 | -555 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL GG

Lay-up = $[0_2/\pm 45/0_2]$, $V_F = 0.401$, Ave. thickness = 2.46 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|---------|----|
| 3439 | GG110 | 1087 | * | 13 | ---- | ---- | 1 | 22 |
| 3440 | GG104 | 933 | * | 13 | 27.8 | 3.4 | 1 | 22 |
| 3441 | GG102 | 891 | * | 13 | 27.3 | 3.3 | 1 | 22 |
| 3442 | GG107 | 483/48 | 0.1 | 2 | 28.3 | 2.00 | 16,881 | 22 |
| 3443 | GG106 | 483/48 | 0.1 | 2 | 29.0 | 2.01 | 7,897 | 22 |
| 3444 | GG101 | 414/41 | 0.1 | 2 | 27.6 | 1.68 | 47,335 | 22 |
| 3445 | GG105 | 414/41 | 0.1 | 4 | 27.3 | 1.73 | 62,970 | 22 |
| 3446 | GG108 | 345/35 | 0.1 | 5 | 27.1 | 1.35 | 390,948 | 22 |
| 3447 | GG109 | 345/35 | 0.1 | 5 | 28.4 | 1.26 | 680,831 | 22 |
| 3448 | GG103 | 345/35 | 0.1 | 5 | 28.5 | 1.31 | 814,868 | 22 |
| 3449 | GG116 | 483/48 | 0.1 | 2 | 28.4 | 1.97 | 13,403 | 22 |
| 3450 | GG117 | 414/ | 0.1 | 2 | 28.3 | 1.66 | 42,910 | 22 |
| 3451 | GG130 | -623 | * | 13 | ---- | ---- | 1 | 25 |
| 3452 | GG131 | -644 | * | 13 | ---- | ---- | 1 | 25 |
| 3453 | GG132 | -617 | * | 13 | ---- | ---- | 1 | 25 |
| 3454 | GG118 | 980 | * | 13 | 28.5 | 3.44 | 1 | 22 |

0° UNIDIRECTIONAL TESTS

Materials A130, D092A, D155A, DB120A and DB240A were tested in the longitudinal (0°), transverse (90°) and (±45°) fiber directions for material properties. Fabrics DB120A and DB240A were unstitched into +45° and -45° plies, rotated to the 0° direction and tested as a unidirectional fabric. In the notes column, ZERO indicates a unidirectional 0° test, 90 indicates a transverse test and ±45 indicates a simulated shear test (ASTM D3518). These tests are summarized in Table 17.

MATERIAL A060

Lay-up = [0]₁₀, V_F = 0.463, Ave. thickness = 1.76 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|------|
| 3038 | A060104 | -317 | * | 13 | ---- | ---- | 1 | 25 |
| 3039 | A060106 | -278 | * | 13 | ---- | ---- | 1 | 25 |
| 3040 | A060101 | -219 | * | 13 | ---- | ---- | 1 | 25 |
| 3041 | A060119 | -440 | * | 13 | ---- | ---- | 1 | 25 Z |
| 3042 | A060120 | -322 | * | 13 | ---- | ---- | 1 | 25 Z |
| 3068 | A060117 | 624 | * | 13 | 31.4 | 2.00 | 1 | 25 |
| 3069 | A060113 | 586 | * | 13 | 29.4 | 2.05 | 1 | 25 |
| 3070 | A060114 | 529 | * | 13 | 32.0 | 1.70 | 1 | 25 |
| 3071 | A060116 | 345/35 | 0.1 | 5 | 27.6 | 1.21 | 13,952 | 25 |
| 3072 | A060118 | 345/35 | 0.1 | 5 | 33.9 | 1.04 | 7,687 | 25 |
| 3073 | A060110 | 241/24 | 0.1 | 12 | 31.8 | 0.72 | 1,900,000 | 25 R |
| 3074 | A060118 | 241/24 | 0.1 | 12 | 32.5 | 0.74 | 1,284,494 | 25 |
| 3075 | A060111 | 345/35 | 0.1 | 5 | 32.5 | 1.14 | 36,913 | 25 |
| 3076 | A060115 | 310/31 | 0.1 | 10 | 31.4 | 0.99 | 84,367 | 25 |

MATERIAL A130

Lay-up = [0]₈, V_F = 0.534, Ave. thickness = 2.62 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester

Tests 2036 - 2054 in this section were done for Table 17. Compression tests involved a 13 mm gage length.

Tests with a ZERO comment were tested in the longitudinal 0° direction. A ±45 comment indicates that a ±45° laminate was tested and a 90 indicates a transverse or 90° fiber direction test

| | | | | | | | | |
|------|--------|------|---|------|------|------|---|------|
| 2036 | A13001 | 840 | * | 0.25 | 38.8 | 2.20 | 1 | ZERO |
| 2037 | A13002 | 852 | * | 0.25 | 38.4 | 2.80 | 1 | ZERO |
| 2038 | A13003 | 881 | * | 0.25 | 37.5 | 2.60 | 1 | ZERO |
| 2039 | A13004 | 81 | * | 0.25 | 11.2 | ---- | 1 | ±45 |
| 2040 | A13005 | 87 | * | 0.25 | 11.4 | ---- | 1 | ±45 |
| 2041 | A13006 | 88 | * | 0.25 | 11.4 | ---- | 1 | ±45 |
| 2042 | A13007 | -300 | * | 0.25 | 29.1 | ---- | 1 | ZERO |
| 2043 | A13008 | -337 | * | 0.25 | 28.4 | ---- | 1 | ZERO |
| 2044 | A13009 | -364 | * | 0.25 | 32.1 | ---- | 1 | ZERO |
| 2045 | A13010 | -91 | * | 0.25 | 11.9 | ---- | 1 | ±45 |
| 2046 | A13011 | -85 | * | 0.25 | 11.9 | ---- | 1 | ±45 |
| 2047 | A13012 | -90 | * | 0.25 | 10.6 | ---- | 1 | ±45 |
| 2048 | A13013 | -98 | * | 0.25 | 7.79 | ---- | 1 | 90 |
| 2049 | A13014 | -89 | * | 0.25 | 6.69 | ---- | 1 | 90 |
| 2050 | A13015 | -93 | * | 0.25 | 8.27 | ---- | 1 | 90 |
| 2051 | A13016 | 34 | * | 0.25 | 8.48 | 0.37 | 1 | 90 |
| 2052 | A13017 | 34 | * | 0.25 | 9.03 | 0.36 | 1 | 90 |
| 2053 | A13050 | 900 | * | 0.25 | 35.3 | 2.71 | 1 | ZERO |
| 2054 | A13051 | 92 | * | 0.25 | 11.0 | ---- | 1 | ±45 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL A130C

Lay-up = $[0]_6$, $V_F = 0.356$, Ave. thickness = 2.97 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester,

| | | | | | | | | |
|------|----------|----------|-----|----|------|------|-----------|------|
| 2415 | A130C110 | 682 | * | 13 | 29.9 | 2.30 | 1 | 25 |
| 2416 | A130C112 | 756 | * | 13 | 30.2 | 2.50 | 1 | 25 |
| 2417 | A130C113 | 745 | * | 13 | 29.9 | 2.50 | 1 | 25 |
| 2418 | A130C104 | 414/41 | 0.1 | 5 | 31.0 | 1.33 | 15,268 | 25 |
| 2419 | A130C109 | 414/41 | 0.1 | 5 | 33.1 | 1.25 | 17,020 | 25 |
| 2420 | A130C106 | 483/48 | 0.1 | 2 | 34.1 | 1.42 | 2,781 | 25 |
| 2421 | A130C108 | 483/48 | 0.1 | 2 | 32.0 | 1.51 | 1,986 | 25 |
| 2422 | A130C102 | 345/35 | 0.1 | 8 | 29.8 | 1.16 | 425,772 | 25 |
| 2423 | A130C103 | 483/48 | 0.1 | 2 | 32.5 | 1.49 | 3,521 | 25 |
| 2424 | A130C111 | 414/41 | 0.1 | 5 | 31.5 | 1.31 | 37,072 | 25 |
| 2425 | A130C101 | 345/35 | 0.1 | 10 | 33.9 | 1.12 | 854,215 | 25 |
| 2426 | A130C118 | 310/31 | 0.1 | 10 | 31.6 | 0.98 | 4,377,528 | 25 |
| 2427 | A130C119 | 345/35 | 0.1 | 10 | 31.6 | 1.09 | 841,256 | 25 |
| 2631 | A130C301 | -356 | * | 3 | ---- | ---- | 1 | 25 |
| 2632 | A130C302 | -347 | * | 3 | ---- | ---- | 1 | 25 |
| 2633 | A130C303 | -394 | * | 3 | ---- | ---- | 1 | 25 |
| 2634 | A130C304 | -324 | * | 3 | ---- | ---- | 1 | 25 |
| 2900 | A130C144 | -207/-21 | 10 | 12 | ---- | ---- | 484,312 | 25 |
| 2901 | A130C141 | -207/-21 | 10 | 12 | ---- | ---- | 4,000,000 | 25 R |
| 2902 | A130C148 | -276/-28 | 10 | 5 | ---- | ---- | 161,152 | 25 |
| 2903 | A130C145 | -442 | * | 13 | ---- | ---- | 1 | 25 |
| 2904 | A130C146 | -345/-35 | 10 | 1 | ---- | ---- | 94 | 25 |
| 2905 | A130C143 | -310/-31 | 10 | 2 | ---- | ---- | 2,799 | 25 |
| 2906 | A130C149 | -310/-31 | 10 | 2 | ---- | ---- | 916 | 25 |
| 2907 | A130C147 | -310/-31 | 10 | 2 | ---- | ---- | 452 | 25 |
| 2908 | A130C142 | -276/-28 | 10 | 10 | ---- | ---- | 71,475 | 25 |
| 2909 | A130C149 | -345/-35 | 10 | 1 | ---- | ---- | 71 | 25 |
| 2910 | A130C151 | -276/-28 | 10 | 10 | ---- | ---- | 62,465 | 25 |

Tests 3077 - 3079 were manufactured with epoxy to see if this matrix increased the compressive strength

| | | | | | | | | |
|------|-----------|------|---|----|------|------|---|----------|
| 3077 | A130C103E | -287 | * | 13 | ---- | ---- | 1 | 25 Epoxy |
| 3078 | A130C102E | -262 | * | 13 | ---- | ---- | 1 | 25 Epoxy |
| 3079 | A130C301E | -296 | * | 13 | ---- | ---- | 1 | 25 Epoxy |

Tests 5727 - 5738 involved removing the weaving stitch prior to RTM to improve the compressive strength properties by reducing the out-of-plane fiber angles. The weft was a number of glass fibers with a thermoplastic bead, which was heated and impregnated part of the A130 strands.

Tests 5727 were the control coupons

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 5727 | A130C401 | -349 | * | 13 | ---- | ---- | 1 | 25 |
| 5728 | A130C402 | -385 | * | 13 | ---- | ---- | 1 | 25 |
| 5729 | A130C403 | -371 | * | 13 | ---- | ---- | 1 | 25 |
| 5730 | A130C404 | -330 | * | 13 | ---- | ---- | 1 | 25 |

Tests 5731 - 5734 had the thermoplastic bead burned off, but the glass stitching thread remained

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 5731 | A130C405 | -395 | * | 13 | ---- | ---- | 1 | 25 |
| 5732 | A130C406 | -466 | * | 13 | ---- | ---- | 1 | 25 |
| 5733 | A130C407 | -545 | * | 13 | ---- | ---- | 1 | 25 |
| 5734 | A130C408 | -509 | * | 13 | ---- | ---- | 1 | 25 |

Tests 5735 - 5738 had the thermoplastic bead burned off and the glass stitching thread removed

| | | | | | | | | |
|------|----------|------|---|----|------|------|---|----|
| 5735 | A130C409 | -515 | * | 13 | ---- | ---- | 1 | 25 |
| 5736 | A130C410 | -483 | * | 13 | ---- | ---- | 1 | 25 |
| 5737 | A130C411 | -477 | * | 13 | ---- | ---- | 1 | 25 |
| 5738 | A130C412 | -509 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL A130G

Lay-up = $[0]_{14}$, $V_F = 0.55$, Ave. thickness = 4.38 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|------|
| 2401 | A130G113 | 1186 | * | 13 | 45.3 | 2.61 | 1 | 25 |
| 2402 | A130G103 | 1150 | * | 13 | 43.7 | 2.60 | 1 | 25 |
| 2403 | A130G109 | 1272 | * | 13 | 47.6 | 2.67 | 1 | 25 |
| 2404 | A130G114 | 690/69 | 0.1 | 2 | 48.0 | 1.43 | 938 | 25 |
| 2405 | A130G108 | 690/69 | 0.1 | 2 | 45.2 | 1.52 | 507 | 25 |
| 2406 | A130G112 | 690/69 | 0.1 | 2 | 48.3 | 1.44 | 1,546 | 25 |
| 2407 | A130G107 | 552/55 | 0.1 | 4 | 45.0 | 1.22 | 5,452 | 25 |
| 2408 | A130G110 | 552/55 | 0.1 | 4 | 43.2 | 1.28 | 2,952 | 25 |
| 2409 | A130G105 | 552/55 | 0.1 | 4 | 40.0 | 1.37 | 4,864 | 25 |
| 2410 | A130G101 | 414/41 | 0.1 | 5 | 42.4 | 0.97 | 45,710 | 25 |
| 2411 | A130G102 | 414/41 | 0.1 | 5 | 40.0 | 1.03 | 32,282 | 25 |
| 2412 | A130G115 | 276/28 | 0.1 | 15 | 46.9 | 0.57 | 4,847,670 | 25 R |
| 2413 | A130G104 | 414/41 | 0.1 | 4 | 45.5 | 0.91 | 28,621 | 25 |
| 2114 | A130G106 | 345/35 | 0.1 | 8 | 40.5 | 0.85 | 413,627 | 25 |
| 2635 | A130G301 | -488 | * | 3 | ---- | ---- | 1 | 25 |
| 2636 | A130G302 | -414 | * | 3 | ---- | ---- | 1 | 25 |
| 2637 | A130G303 | -369 | * | 3 | ---- | ---- | 1 | 25 |
| 2638 | A130G304 | -422 | * | 3 | ---- | ---- | 1 | 25 |

MATERIAL A260

Lay-up = $[0]_4$, $V_F = 0.368$, Ave. thickness = 3.71 mm, S.D. = 0.13 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|------|
| 3086 | A260109 | -396 | * | 13 | ---- | ---- | 1 | 25 |
| 3087 | A260118 | -357 | * | 13 | ---- | ---- | 1 | 25 |
| 3088 | A260105 | -540 | * | 13 | ---- | ---- | 1 | 25 |
| 3089 | A260102 | -422 | * | 13 | ---- | ---- | 1 | 25 |
| 3090 | A260108 | -460 | * | 13 | ---- | ---- | 1 | 25 |
| 3091 | A260120 | -470 | * | 13 | ---- | ---- | 1 | 25 |
| 3092 | A260124 | 833 | * | 13 | 31.2 | 2.70 | 1 | 25 |
| 3093 | A260122 | 690 | * | 13 | 23.4 | 2.90 | 1 | 25 |
| 3094 | A260126 | 805 | * | 13 | 27.3 | 2.90 | 1 | 25 |
| 3095 | A260127 | 345/35 | 0.1 | 5 | 29.9 | 0.99 | 3,000,000 | 25 R |
| 3096 | A260123 | 448/45 | 0.1 | 5 | 29.0 | 1.35 | 51,850 | 25 |
| 3097 | A260125 | 448/45 | 0.1 | 8 | 32.1 | 1.42 | 27,702 | 25 |
| 3098 | A260128 | 448/45 | 0.1 | 5 | 28.5 | 1.40 | 17,163 | 25 |
| 3099 | A260121 | 379/38 | 0.1 | 10 | 31.9 | 1.14 | 191,959 | 25 |
| 3100 | A260133 | 552/55 | 0.1 | 2 | 35.9 | 1.36 | 4,207 | 25 |
| 3101 | A260120 | 552/55 | 0.1 | 2 | 32.5 | 1.79 | 1,448 | 25 |
| 3102 | A260130 | 552/55 | 0.1 | 2 | 36.4 | 1.52 | 3,348 | 25 |
| 3103 | A260132 | 379/38 | 0.1 | 10 | 32.1 | 1.21 | 640,153 | 25 |
| 3104 | A260134 | 379/38 | 0.1 | 10 | 34.3 | 1.20 | 455,258 | 25 |

MATERIAL CM1701A

Lay-up = $[0]_5$, $V_F = 0.38$, Ave. thickness = 3.20 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|------|---|----|------|------|---|----|
| 2911 | CMA101 | -604 | * | 13 | ---- | ---- | 1 | 25 |
| 2912 | CMA102 | -573 | * | 13 | ---- | ---- | 1 | 25 |
| 2913 | CMA103 | -542 | * | 13 | ---- | ---- | 1 | 25 |
| 2935 | CMA116 | 874 | * | 13 | 32.4 | 2.70 | 1 | 25 |
| 2936 | CMA113 | 784 | * | 13 | 28.6 | 2.75 | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2937 | CMA107 | 730 | * | 13 | 29.2 | 2.50 | 1 | 25 |
| 2938 | CMA112 | 483/48 | 0.1 | 2 | 29.8 | 1.63 | 784 | 25 |
| 2939 | CMA106 | 483/48 | 0.1 | 2 | 38.3 | 1.29 | 1,940 | 25 |
| 2940 | CMA105 | 483/48 | 0.1 | 2 | 33.2 | 1.46 | 1,574 | 25 |
| 2941 | CMA111 | 414/41 | 0.1 | 5 | 29.3 | 1.54 | 17,955 | 25 |
| 2943 | CMA110 | 414/41 | 0.1 | 4 | 26.8 | 1.60 | 6,418 | 25 |
| 2945 | CMA117 | 345/35 | 0.1 | 5 | 28.0 | 1.19 | 26,217 | 25 |
| 2946 | CMA108 | 345/35 | 0.1 | 5 | 32.3 | 1.00 | 38,086 | 25 |
| 2947 | CMA114 | 276/28 | 0.1 | 10 | 28.8 | 0.89 | 81,998 | 25 |
| 2948 | CMA119 | 276/28 | 0.1 | 10 | 29.1 | 0.92 | 117,831 | 25 |
| 2615 | CMA101 | -604 | * | 13 | ---- | ---- | 1 | 25 |
| 2616 | CMA102 | -573 | * | 13 | ---- | ---- | 1 | 25 |
| 2617 | CMA103 | -542 | * | 13 | ---- | ---- | 1 | 25 |
| 2949 | CMA121 | -345/-35 | 10 | 4 | ---- | ---- | 42,588 | 25 |
| 2950 | CMA125 | -345/-35 | 10 | 4 | ---- | ---- | 13,272 | 25 |
| 2951 | CMA127 | -345/-35 | 10 | 4 | ---- | ---- | 80,669 | 25 |
| 2952 | CMA123 | -310/-31 | 10 | 10 | ---- | ---- | 105,995 | 25 |
| 2953 | CMA132 | -310/-31 | 10 | 12 | ---- | ---- | 532,367 | 25 |
| 2962 | CMA134 | -310/-31 | 10 | 10 | ---- | ---- | 460,941 | 25 |

MATERIAL D072A

Lay-up = [0]₁₀, V_F = 0.330, Ave. thickness = 3.30 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|----------|-----|----|------|------|---------|----|
| 3043 | D072A118 | -608 | * | 13 | ---- | ---- | 1 | 25 |
| 3044 | D072A123 | -562 | * | 13 | ---- | ---- | 1 | 25 |
| 3045 | D072A122 | -508 | * | 13 | ---- | ---- | 1 | 25 |
| 3046 | D072A120 | -345/-35 | 10 | 5 | ---- | ---- | 87,741 | 25 |
| 3047 | D072A119 | -414/-41 | 10 | 3 | ---- | ---- | 9,757 | 25 |
| 3048 | D072A117 | -414/-41 | 10 | 4 | ---- | ---- | 2,192 | 25 |
| 3049 | D072A116 | -345/-35 | 10 | 5 | ---- | ---- | 79,404 | 25 |
| 3050 | D072A121 | -414/-41 | 10 | 4 | ---- | ---- | 6,097 | 25 |
| 3051 | D072A115 | -345/-35 | 10 | 5 | ---- | ---- | 136,908 | 25 |
| 3055 | D072A110 | 812 | * | 13 | 28.3 | 2.87 | 1 | 25 |
| 3056 | D072A109 | 789 | * | 13 | 29.3 | 2.70 | 1 | 25 |
| 3057 | D072A108 | 796 | * | 13 | 27.8 | 2.90 | 1 | 25 |
| 3058 | D072A107 | 483/48 | 0.1 | 4 | 26.8 | 1.83 | 9,586 | 25 |
| 3059 | D072A106 | 483/48 | 0.1 | 4 | 26.7 | 1.91 | 8,838 | 25 |
| 3060 | D072A105 | 310/31 | 0.1 | 10 | 28.2 | 0.96 | 929,460 | 25 |
| 3061 | D072A101 | 483/48 | 0.1 | 4 | 31.7 | 1.63 | 5,993 | 25 |
| 3062 | D072A102 | 345/35 | 0.1 | 5 | 27.7 | 1.14 | 195,791 | 25 |
| 3063 | D072A111 | 414/41 | 0.1 | 5 | 31.3 | 1.32 | 28,168 | 25 |
| 3064 | D072A112 | 414/41 | 0.1 | 5 | 26.9 | 1.47 | 34,247 | 25 |
| 3065 | D072A121 | 414/41 | 0.1 | 5 | 28.4 | 1.40 | 23,522 | 25 |
| 3066 | D072A118 | 345/35 | 0.1 | 10 | 26.3 | 1.30 | 162,352 | 25 |
| 3067 | D072A123 | 345/35 | 0.1 | 10 | 27.7 | 1.29 | 237,010 | 25 |

MATERIAL D092

Lay-up = [0]₁₀, V_F = 0.385, Ave. thickness = 3.10 mm, S.D. = 0.07 mm, CoRezyn 63-AX-051 Polyester
Tests 1992 - 2013 in this section were done for Table 17. Compression tests involved a 13 mm gage length.

| | | | | | | | | |
|------|--------|-----|---|------|------|------|---|------|
| 1992 | D09201 | 929 | * | 0.25 | 35.1 | 2.82 | 1 | ZERO |
| 1993 | D09202 | 926 | * | 0.25 | 36.8 | 2.87 | 1 | ZERO |
| 1994 | D09203 | 911 | * | 0.25 | 34.3 | 3.14 | 1 | ZERO |
| 1995 | D09204 | 134 | * | 0.25 | 12.2 | ---- | 1 | ±45 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 1996 | D09205 | 37 | * | 0.25 | 10.1 | 0.35 | 1 90 |
| 1997 | D09208 | -761 | * | 0.25 | 28.4 | -2.6 | 1 ZERO |
| 1998 | D09209 | -745 | * | 0.25 | 30.6 | -2.4 | 1 ZERO |
| 1999 | D09210 | -783 | * | 0.25 | 31.8 | -2.5 | 1 ZERO |
| 2000 | D09211 | -130 | * | 0.25 | 12.3 | ---- | 1 ±45 |
| 2001 | D09212 | -129 | * | 0.25 | 10.9 | ---- | 1 ±45 |
| 2002 | D09213 | -130 | * | 0.25 | 11.1 | ---- | 1 ±45 |
| 2003 | D09214 | -141 | * | 0.25 | 7.38 | -1.91 | 1 90 |
| 2004 | D09215 | 40 | * | 0.25 | 7.10 | 0.56 | 1 90 |
| 2005 | D09216 | -130 | * | 0.25 | 7.65 | -1.91 | 1 90 |
| 2006 | D09217 | 150 | * | 0.25 | 9.44 | ---- | 1 ±45 |
| 2007 | D09250 | -816 | * | 0.25 | 32.5 | -1.63 | 1 ZERO |
| 2008 | D09251 | -758 | * | 0.25 | 31.4 | -1.47 | 1 ZERO |
| 2009 | D09252 | -127 | * | 0.25 | 6.62 | -1.92 | 1 90 |
| 2010 | D09253 | -129 | * | 0.25 | 14.2 | ---- | 1 ±45 |
| 2011 | D09254 | 1041 | * | 0.25 | 34.9 | 3.09 | 1 ZERO |
| 2012 | D09255 | 140 | * | 0.25 | 12.5 | ---- | 1 ±45 |
| 2013 | D09256 | 38 | * | 0.25 | 9.79 | 0.37 | 1 90 |

MATERIAL D092B

Lay-up = [0]₉, V_F = 0.388, Ave. thickness = 2.76 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | |
|------|----------|--------|-----|----|------|------|---------------|
| 2144 | D092B105 | 994 | * | 13 | 35.6 | 2.80 | 1 25 tab |
| 2145 | D092B104 | 907 | * | 13 | 32.9 | 2.86 | 1 25 tab |
| 2146 | D092B106 | 959 | * | 13 | 34.7 | 2.80 | 1 25 tab |
| 2147 | D092B107 | 552/55 | 0.1 | 4 | 36.1 | 1.60 | 8,610 25 tab |
| 2148 | D092B109 | 552/55 | 0.1 | 4 | 32.9 | 1.70 | 12,301 25 tab |
| 2149 | D092B110 | 414/41 | 0.1 | 15 | 36.8 | 1.13 | 302,338 25 |
| 2150 | D092B103 | 414/41 | 0.1 | 15 | 32.6 | 1.21 | 259,952 25 |
| 2151 | D092B111 | 414/41 | 0.1 | 15 | 31.9 | 1.30 | 236,479 25 |
| 2152 | D092B108 | 345/35 | 0.1 | 15 | 33.9 | 1.04 | 1,557,555 25 |
| 2153 | D092B101 | 345/35 | 0.1 | 15 | 32.0 | 1.09 | 957,554 25 |
| 2154 | D092B102 | 345/35 | 0.1 | 15 | 35.7 | 0.98 | 1,847,878 25 |
| 2380 | D092B230 | 878 | * | 13 | 33.4 | 2.62 | 1 25 |
| 2381 | D092B208 | 875 | * | 13 | 34.3 | 2.55 | 1 25 |
| 2382 | D092B204 | 834 | * | 13 | 34.1 | 2.45 | 1 25 |
| 2383 | D092B216 | 552/55 | 0.1 | 4 | 34.0 | 1.62 | 2,914 25 |
| 2384 | D092B210 | 552/55 | 0.1 | 4 | 32.2 | 1.71 | 3,142 25 |
| 2385 | D092B201 | 552/55 | 0.1 | 4 | 33.9 | 1.63 | 3,756 25 |
| 2386 | D092B213 | 414/41 | 0.1 | 10 | 32.9 | 1.26 | 126,113 25 |
| 2387 | D092B203 | 414/41 | 0.1 | 5 | 33.9 | 1.22 | 165,310 25 |
| 2388 | D092B205 | 345/35 | 0.1 | 12 | 33.7 | 1.02 | 892,557 25 |
| 2389 | D092B209 | 345/35 | 0.1 | 12 | 32.4 | 1.06 | 1,112,027 25 |
| 2390 | D092B211 | 414/41 | 0.1 | 10 | 33.2 | 1.25 | 171,967 25 |
| 2639 | D092B301 | -684 | * | 13 | ---- | ---- | 1 25 |
| 2640 | D092B302 | -710 | * | 13 | ---- | ---- | 1 25 |
| 2641 | D092B303 | -708 | * | 13 | ---- | ---- | 1 25 |
| 2642 | D092B305 | -630 | * | 3 | ---- | ---- | 1 25 |
| 2643 | D092B306 | -610 | * | 3 | ---- | ---- | 1 25 |
| 2644 | D092B308 | -705 | * | 3 | ---- | ---- | 1 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL D092D

Lay-up = $[0]_7$, $V_F = 0.333$, Ave. thickness = 2.64 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|---------|----|
| 2391 | D092D105 | 736 | * | 13 | 25.4 | 2.89 | 1 | 25 |
| 2392 | D092D107 | 722 | * | 13 | 25.6 | 2.81 | 1 | 25 |
| 2393 | D092D111 | 734 | * | 13 | 25.8 | 2.84 | 1 | 25 |
| 2394 | D092D108 | 482/48 | 0.1 | 2 | 24.4 | 1.98 | 3,342 | 25 |
| 2395 | D092D110 | 482/48 | 0.1 | 4 | 23.6 | 2.04 | 2,650 | 25 |
| 2396 | D092D103 | 414/41 | 0.1 | 8 | 25.4 | 1.63 | 113,301 | 25 |
| 2397 | D092D109 | 345/35 | 0.1 | 10 | 25.6 | 1.35 | 813,359 | 25 |
| 2398 | D092D104 | 414/41 | 0.1 | 8 | 27.4 | 1.51 | 75,856 | 25 |
| 2399 | D092D102 | 345/35 | 0.1 | 12 | 24.3 | 1.42 | 291,147 | 25 |
| 2400 | D092D106 | 345/35 | 0.1 | 15 | 26.1 | 1.30 | 948,810 | 25 |
| 2645 | D092D301 | -574 | * | 3 | ---- | ---- | 1 | 25 |
| 2646 | D092D302 | -515 | * | 3 | ---- | ---- | 1 | 25 |
| 2647 | D092D303 | -532 | * | 3 | ---- | ---- | 1 | 25 |
| 2648 | D092D304 | -538 | * | 3 | ---- | ---- | 1 | 25 |

MATERIAL D092F

Lay-up = $[0]_{12}$, $V_F = 0.492$, Ave. thickness = 3.00 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|---------|--------|
| 2178 | D092F110 | 1090 | * | 13 | 35.9 | 3.04 | 1 | 25 |
| 2179 | D092F112 | 1105 | * | 13 | 40.5 | 2.85 | 1 | 25 tab |
| 2180 | D092F103 | 1141 | * | 13 | 41.8 | 2.85 | 1 | 25 |
| 2181 | D092F111 | 1203 | * | 13 | 42.2 | 2.86 | 1 | 25 tab |
| 2182 | D092F107 | 414/41 | 0.1 | 15 | 44.1 | 0.97 | 221,920 | 25 |
| 2183 | D092F109 | 414/41 | 0.1 | 15 | 39.9 | 1.03 | 92,864 | 25 |
| 2184 | D092F105 | 414/41 | 0.1 | 15 | 37.2 | 1.12 | 138,489 | 25 |
| 2185 | D092F106 | 345/35 | 0.1 | 15 | 42.6 | 0.81 | 864,540 | 25 |
| 2186 | D092F101 | 345/35 | 0.1 | 15 | 38.3 | 0.90 | 387,503 | 25 |
| 2187 | D092F102 | 552/55 | 0.1 | 4 | 41.8 | 1.32 | 15,665 | 25 tab |
| 2188 | D092F124 | 552/55 | 0.1 | 4 | 44.6 | 1.24 | 31,284 | 25 tab |
| 2653 | D092F123 | -615 | * | 3 | ---- | ---- | 1 | 25 |
| 2654 | D092F126 | -692 | * | 3 | ---- | ---- | 1 | 25 |
| 2655 | D092F122 | -697 | * | 3 | ---- | ---- | 1 | 25 |
| 2656 | D092F121 | -712 | * | 3 | ---- | ---- | 1 | 25 |

MATERIAL D092G

Lay-up = $[0]_{14}$, $V_F = 0.520$, Ave. thickness = 3.25 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----------|
| 2155 | D092G113 | 1,130 | * | 13 | 42.2 | 2.70 | 1 | 25 tab |
| 2156 | D092G105 | 1,206 | * | 13 | 43.3 | 2.80 | 1 | 25 tab |
| 2157 | D092G103 | 1,182 | * | 13 | 41.8 | 2.80 | 1 | 25 tab |
| 2158 | D092G109 | 690/69 | 0.1 | 2 | 43.2 | 1.62 | 484 | 25 tab |
| 2159 | D092G112 | 414/41 | 0.1 | 4 | 44.1 | 0.94 | 12,691 | 25 tab |
| 2160 | D092G106 | 414/41 | 0.1 | 4 | 45.0 | 0.90 | 15,436 | 25 tab |
| 2161 | D092G101 | 552/55 | 0.1 | 1 | 46.0 | 1.31 | 2,113 | 25 tab |
| 2162 | D092G104 | 552/55 | 0.1 | 2 | 45.4 | 1.22 | 2,942 | 25 tab |
| 2163 | D092G102 | 414/41 | 0.1 | 2 | 43.4 | 0.97 | 11,735 | 25 tab |
| 2164 | D092G110 | 552/55 | 0.1 | 2 | 47.2 | 1.20 | 2,700 | 25 tab |
| 2165 | D092G108 | 276/28 | 0.1 | 10 | 44.5 | 0.62 | 261,247 | 25 tab |
| 2166 | D092G111 | 207/21 | 0.1 | 10 | 44.0 | 0.47 | 3,000,000 | 25 R tab |
| 2167 | D092G114 | 276/28 | 0.1 | 10 | 47.7 | 0.58 | 159,725 | 25 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2168 | D092G107 | 276/28 | 0.1 | 10 | 50.0 | 0.55 | 95,939 | 25 tab |
| 2169 | D092G205 | 276/28 | 0.1 | 15 | 50.7 | 0.55 | 472,372 | 25 tab |
| 2170 | D092G207 | 276/28 | 0.1 | 10 | 51.1 | 0.56 | 494,104 | 25 tab |
| 2171 | D092G206 | 276/28 | 0.1 | 10 | 50.7 | 0.53 | 368,039 | 25 tab |
| 2173 | D092G201 | 414/41 | 0.1 | 10 | 46.8 | 0.90 | 36,932 | 25 tab |
| 2174 | D092G202 | 414/41 | 0.1 | 4 | 49.2 | 0.90 | 29,096 | 25 tab |
| 2175 | D092G204 | 276/28 | 0.1 | 10 | 49.1 | 0.56 | 700,000 | 25 R tab |
| 2177 | D092G105 | 345/35 | 0.1 | 12 | 46.1 | 0.81 | 478,382 | 25 tab |
| 2354 | D092G205 | 1196 | * | 13 | 44.5 | 2.89 | 1 | 25 tab |
| 2355 | D092G209 | 1133 | * | 13 | 43.4 | 2.61 | 1 | 25 tab |
| 2356 | D092G201 | 1161 | * | 13 | 45.0 | 2.60 | 1 | 25 tab |
| 2357 | D092G212 | 276/38 | 0.1 | 12 | 47.8 | 0.58 | 874,379 | 25 tab |
| 2358 | D092G207 | 552/55 | 0.1 | 5 | 47.5 | 1.16 | 12,811 | 25 tab |
| 2359 | D092G202 | 552/55 | 0.1 | 5 | 41.5 | 1.33 | 9,807 | 25 tab |
| 2360 | D092G211 | 552/55 | 0.1 | 5 | 45.2 | 1.22 | 9,091 | 25 tab |
| 2361 | D092G216 | 690/69 | 0.1 | 2 | 42.1 | 1.64 | 1,360 | 25 tab |
| 2362 | D092G215 | 690/69 | 0.1 | 2 | 45.9 | 1.50 | 2,083 | 25 tab |
| 2363 | D092G214 | 414/41 | 0.1 | 10 | 41.9 | 0.99 | 113,852 | 25 tab |
| 2364 | D092G210 | 414/41 | 0.1 | 10 | 43.0 | 0.96 | 92,451 | 25 tab |
| 2365 | D092G213 | 276/28 | 0.1 | 15 | 45.6 | 0.60 | 6,654,291 | 25 tab |
| 2366 | D092G203 | 414/41 | 0.1 | 10 | 44.5 | 0.93 | 135,121 | 25 tab |
| 2649 | D092G301 | -658 | * | 3 | ---- | ---- | 1 | 25 |
| 2650 | D092G302 | -645 | * | 3 | ---- | ---- | 1 | 25 |
| 2651 | D092G303 | -629 | * | 3 | ---- | ---- | 1 | 25 |
| 2652 | D092G304 | -837 | * | 3 | ---- | ---- | 1 | 25 |
| 2786 | D092G130 | -621/-62 | 10 | 4 | ---- | ---- | 13,859 | 25 |
| 2787 | D092G120 | -621/-62 | 10 | 5 | ---- | ---- | 7,978 | 25 |
| 2789 | D092G126 | -621/-62 | 10 | 5 | ---- | ---- | 6,124 | 25 |
| 2790 | D092G131 | -552/-55 | 10 | 12 | ---- | ---- | 19,386 | 25 |
| 2791 | D092G123 | -552/-55 | 10 | 12 | ---- | ---- | 27,412 | 25 |
| 2792 | D092G124 | -552/-55 | 10 | 12 | ---- | ---- | 11,391 | 25 |
| 2793 | D092G132 | -414/-41 | 10 | 12 | ---- | ---- | 1,864,286 | 25 |
| 2794 | D092G128 | -483/-48 | 10 | 10 | ---- | ---- | 481,468 | 25 |
| 2795 | D092G121 | -483/-48 | 10 | 10 | ---- | ---- | 298,071 | 25 |
| 2796 | D092G127 | -483/-48 | 10 | 10 | ---- | ---- | 331,041 | 25 |

MATERIAL D155

Lay-up = $[0]_6$, $V_F = 0.45$, Ave. thickness = 2.74 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

Tests 2014 - 2035 in this section were done for Table 17. Compression tests involved a 13 mm gage length.

| | | | | | | | | |
|------|--------|------|---|------|------|-------|---|------|
| 2014 | D15501 | 984 | * | 0.25 | 39.0 | 2.90 | 1 | ZERO |
| 2015 | D15502 | 898 | * | 0.25 | 36.3 | 2.69 | 1 | ZERO |
| 2016 | D15503 | 976 | * | 0.25 | 38.9 | 2.87 | 1 | ZERO |
| 2017 | D15504 | 93 | * | 0.25 | 12.8 | ---- | 1 | ±45 |
| 2018 | D15505 | 25 | * | 0.25 | 9.12 | 0.43 | 1 | 90 |
| 2019 | D15506 | 30 | * | 0.25 | 9.24 | 0.37 | 1 | 90 |
| 2022 | D15509 | -109 | * | 0.25 | 14.0 | -3.2 | 1 | ±45 |
| 2023 | D15510 | -106 | * | 0.25 | 15.1 | -3.72 | 1 | ±45 |
| 2024 | D15511 | -122 | * | 0.25 | 8.31 | -1.62 | 1 | 90 |
| 2025 | D15512 | -118 | * | 0.25 | 7.65 | -1.43 | 1 | 90 |
| 2026 | D15513 | -727 | * | 0.25 | 32.1 | -2.48 | 1 | ZERO |
| 2027 | D15514 | -710 | * | 0.25 | 31.8 | -1.77 | 1 | ZERO |
| 2028 | D15515 | -756 | * | 0.25 | 29.6 | -1.34 | 1 | ZERO |
| 2029 | D15516 | 104 | * | 0.25 | 12.3 | ---- | 1 | ±45 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 2030 | D15517 | 103 | * | 0.25 | 10.8 | ---- | 1 | ±45 |
| 2031 | D15550 | -730 | * | 0.25 | 32.3 | -2.18 | 1 | ZERO |
| 2032 | D15551 | -807 | * | 0.25 | 33.0 | -2.14 | 1 | ZERO |
| 2033 | D15552 | -147 | * | 0.25 | 7.72 | -1.96 | 1 | 90 |
| 2034 | D15553 | 1088 | * | 0.25 | 39.0 | 2.85 | 1 | ZERO |
| 2035 | D15554 | 86 | * | 0.25 | 13.2 | ---- | 1 | ±45 |

MATERIAL D155B

Lay-up = [0]₅, V_F = 0.399, Ave. thickness = 2.70 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|----------|-----|----|------|------|-----------|--------|
| 2110 | D155B65 | 935 | * | 13 | 34.8 | 2.80 | 1 | 25 tab |
| 2111 | D155B71 | 961 | * | 13 | 29.6 | 3.25 | 1 | 25 tab |
| 2112 | D155B61 | 911 | * | 13 | 33.8 | 2.80 | 1 | 25 |
| 2113 | D155B60 | 552/55 | 0.1 | 2 | 31.9 | 1.86 | 1,831 | 25 |
| 2114 | D155B72 | 552/55 | 0.1 | 2 | 29.8 | 1.92 | 3,911 | 25 |
| 2115 | D155B63 | 414/41 | 0.1 | 5 | 31.9 | 1.44 | 85,156 | 25 |
| 2116 | D155B70 | 414/41 | 0.1 | 10 | 28.6 | 1.49 | 108,103 | 25 |
| 2117 | D155B69 | 276/28 | 0.1 | 20 | 28.5 | 1.08 | 8,000,000 | 25 |
| 2118 | D155B68 | 552/55 | 0.1 | 4 | 30.9 | 1.83 | 6,582 | 25 tab |
| 2119 | D155B66 | 690/69 | 0.1 | 1 | 32.2 | 2.32 | 139 | 25 |
| 2120 | D155B62 | 345/35 | 0.1 | 10 | 33.0 | 1.10 | 1,230,231 | 25 tab |
| 2121 | D155B64 | 414/41 | 0.1 | 10 | 33.0 | 1.28 | 75,774 | 25 tab |
| 2122 | D155B67 | 345/35 | 0.1 | 12 | 29.5 | 1.19 | 721,864 | 25 tab |
| 2123 | D155B81 | 345/35 | 0.1 | 10 | 32.5 | 1.15 | 572,173 | 25 |
| 2203 | D155B200 | 755 | * | 13 | 31.1 | 2.43 | 1 | 25 |
| 2204 | D155B209 | 779 | * | 13 | 28.2 | 2.76 | 1 | 25 |
| 2205 | D155B215 | 785 | * | 13 | 28.5 | 2.75 | 1 | 25 |
| 2206 | D155B201 | 483/48 | 0.1 | 4 | 32.6 | 1.48 | 6,979 | 25 |
| 2207 | D155B207 | 483/48 | 0.1 | 4 | 33.1 | 1.46 | 16,497 | 25 |
| 2208 | D155B205 | 414/41 | 0.1 | 7 | 32.2 | 1.28 | 82,605 | 25 |
| 2209 | D155B203 | 414/41 | 0.1 | 8 | 36.8 | 1.13 | 68,483 | 25 |
| 2236 | D155B212 | 345/35 | 0.1 | 15 | 33.6 | 1.02 | 967,901 | 25 |
| 2237 | D155B210 | 345/35 | 0.1 | 15 | 30.1 | 1.15 | 1,104,634 | 25 |
| 2338 | D155B202 | 483/48 | 0.1 | 5 | 30.4 | 1.59 | 19,814 | 25 |
| 2339 | D155B213 | 552/55 | 0.1 | 3 | 32.2 | 1.71 | 2,141 | 25 |
| 2340 | D155B208 | 552/55 | 0.1 | 4 | 30.3 | 1.82 | 2,305 | 25 |
| 2341 | D155B211 | 552/55 | 0.1 | 4 | 31.8 | 1.73 | 1,733 | 25 |
| 2342 | D155B214 | 414/41 | 0.1 | 10 | 30.8 | 1.34 | 48,181 | 25 |
| 2657 | D155B301 | -620 | * | 3 | ---- | ---- | 1 | 25 |
| 2658 | D155B302 | -666 | * | 3 | ---- | ---- | 1 | 25 |
| 2659 | D155B303 | -642 | * | 3 | ---- | ---- | 1 | 25 |
| 2660 | D155B304 | -656 | * | 3 | ---- | ---- | 1 | 25 |
| 2776 | D155B174 | -681 | * | 3 | ---- | ---- | 1 | 25 |
| 2777 | D155B177 | -517/-52 | 10 | 1 | ---- | ---- | 178 | 25 |
| 2778 | D155B175 | -414/-41 | 10 | 10 | ---- | ---- | 76,348 | 25 |
| 2779 | D155B178 | -414/-41 | 10 | 10 | ---- | ---- | 61,956 | 25 |
| 2780 | D155B180 | -345/-35 | 10 | 12 | ---- | ---- | 954,990 | 25 |
| 2781 | D155B176 | -345/-35 | 10 | 12 | ---- | ---- | 893,962 | 25 |
| 2782 | D155B173 | -345/-35 | 10 | 12 | ---- | ---- | 1,121,768 | 25 |
| 2783 | D155B181 | -414/-41 | 10 | 10 | ---- | ---- | 172,874 | 25 |
| 2784 | D155B179 | -483/-48 | 10 | 2 | ---- | ---- | 886 | 25 |
| 3735 | D155B222 | 831 | * | 13 | 32.8 | ---- | 1 | 25 |
| 3736 | D155B223 | 845 | * | 13 | ---- | ---- | 1 | 25 |
| 3737 | D155B218 | 775 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3738 | D155B218 | 843 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL D155C

Lay-up = $[0]_7$, $V_F = 0.474$, Ave. thickness = 2.99 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----|
| 2124 | D155C111 | 1189 | * | 13 | 33.6 | 3.57 | 1 | 25 |
| 2125 | D155C109 | 1184 | * | 13 | 32.3 | 3.66 | 1 | 25 |
| 2126 | D155C107 | 1188 | * | 13 | 34.6 | 3.43 | 1 | 25 |
| 2127 | D155C101 | 827/83 | 0.1 | 2 | 32.5 | 2.55 | 315 | 25 |
| 2128 | D155C105 | 552/55 | 0.1 | 5 | 34.0 | 1.59 | 11,103 | 25 |
| 2129 | D155C110 | 552/55 | 0.1 | 5 | 33.4 | 1.62 | 10,021 | 25 |
| 2130 | D155C106 | 414/41 | 0.1 | 12 | 33.7 | 1.24 | 189,546 | 25 |
| 2131 | D155C104 | 345/35 | 0.1 | 15 | 35.6 | 1.01 | 1,276,914 | 25 |
| 2132 | D155C108 | 414/41 | 0.1 | 10 | 37.0 | 1.23 | 133,885 | 25 |
| 2133 | D155C100 | 414/41 | 0.1 | 10 | 34.3 | 1.24 | 206,447 | 25 |
| 2134 | D155C114 | 552/55 | 0.1 | 4 | 32.1 | 1.68 | 14,762 | 25 |
| 2135 | D155C102 | 345/35 | 0.1 | 12 | 35.1 | 0.99 | 854,271 | 25 |
| 2136 | D155C103 | 345/35 | 0.1 | 12 | 32.2 | 1.04 | 644,464 | 25 |

The following D155C2 plate was thickness tapered, which raised the fiber volume fraction of the material due to removal of matrix rich layers on the surfaces.

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----|
| 2220 | D155C202 | 1129 | * | 13 | 43.0 | 2.62 | 1 | 25 |
| 2221 | D155C205 | 1208 | * | 13 | 42.6 | 2.83 | 1 | 25 |
| 2222 | D155C203 | 1152 | * | 13 | 43.8 | 2.63 | 1 | 25 |
| 2223 | D155C206 | 552/55 | 0.1 | 5 | 46.7 | 1.18 | 19,546 | 25 |
| 2224 | D155C207 | 552/55 | 0.1 | 5 | 43.0 | 1.28 | 19,611 | 25 |
| 2225 | D155C209 | 552/55 | 0.1 | 5 | 46.7 | 1.09 | 25,014 | 25 |
| 2227 | D155C210 | 345/35 | 0.1 | 10 | 41.4 | 0.83 | 1,369,554 | 25 |
| 2228 | D155C213 | 345/35 | 0.1 | 12 | 43.4 | 0.75 | 1,251,972 | 25 |
| 2229 | D155C211 | 690/69 | 0.1 | 2 | 42.5 | 1.65 | 3,370 | 25 |
| 2230 | D155C208 | 690/69 | 0.1 | 2 | 42.8 | 1.61 | 2,480 | 25 |
| 2231 | D155C201 | 414/41 | 0.1 | 5 | 45.0 | 0.92 | 196,825 | 25 |
| 2232 | D155C212 | 414/41 | 0.1 | 10 | 43.4 | 0.95 | 278,697 | 25 |
| 2233 | D155C204 | 414/41 | 0.1 | 10 | 41.8 | 0.99 | 188,541 | 25 |
| 2234 | D155C216 | 690/69 | 0.1 | 2 | 40.5 | 1.70 | 3,610 | 25 |
| 2235 | D155C217 | 345/35 | 0.1 | 15 | 42.4 | 0.81 | 1,182,710 | 25 |
| 2661 | D155C301 | -847 | * | 3 | ---- | ---- | 1 | 25 |
| 2662 | D155C302 | -734 | * | 3 | ---- | ---- | 1 | 25 |
| 2663 | D155C303 | -752 | * | 3 | ---- | ---- | 1 | 25 |
| 2664 | D155C304 | -841 | * | 3 | ---- | ---- | 1 | 25 |

MATERIAL D155G

Lay-up = $[0]_8$, $V_F = 0.584$, Ave. thickness = 2.81 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|--------|
| 2189 | D155G104 | 1318 | * | 13 | 48.4 | 2.72 | 1 | 25 tab |
| 2190 | D155G110 | 1320 | * | 13 | 48.2 | 2.74 | 1 | 25 tab |
| 2191 | D155G115 | 1303 | * | 13 | 46.7 | 2.80 | 1 | 25 tab |
| 2192 | D155G103 | 690/69 | 0.1 | 4 | 49.8 | 1.39 | 4,546 | 25 tab |
| 2193 | D155G107 | 690/69 | 0.1 | 2 | 46.3 | 1.49 | 1,839 | 25 tab |
| 2194 | D155G106 | 552/55 | 0.1 | 5 | 49.0 | 1.13 | 14,842 | 25 tab |
| 2195 | D155G109 | 552/55 | 0.1 | 5 | 51.3 | 1.08 | 10,796 | 25 tab |
| 2196 | D155G108 | 345/35 | 0.1 | 12 | 52.6 | 0.66 | 137,665 | 25 tab |
| 2197 | D155G105 | 345/35 | 0.1 | 12 | 46.2 | 0.75 | 164,363 | 25 tab |
| 2198 | D155G114 | 276/28 | 0.1 | 12 | 44.2 | 0.62 | 1,154,036 | 25 tab |
| 2199 | D155G102 | 276/28 | 0.1 | 12 | 41.4 | 0.66 | 817,204 | 25 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2200 | D155G101 | 345/35 | 0.1 | 10 | 44.5 | 0.78 | 169,202 | 25 tab |
| 2201 | D155G112 | 690/69 | 0.1 | 2 | 45.2 | 1.53 | 2,546 | 25 tab |
| 2202 | D155G113 | 552/55 | 0.1 | 5 | 43.7 | 1.26 | 11,201 | 25 tab |
| 2665 | D155G301 | -729 | * | 13 | ---- | ---- | 1 | 25 |
| 2666 | D155G302 | -647 | * | 13 | ---- | ---- | 1 | 25 |
| 2667 | D155G303 | -698 | * | 13 | ---- | ---- | 1 | 25 |
| 2668 | D155G354 | -783 | * | 13 | ---- | ---- | 1 | 25 |
| 2766 | D155G305 | -552/-55 | 10 | 12 | ---- | ---- | 38,446 | 25 |
| 2767 | D155G306 | -552/-55 | 10 | 12 | ---- | ---- | 130,068 | 25 |
| 2768 | D155G309 | -552/-55 | 10 | 12 | ---- | ---- | 57,998 | 25 |
| 2770 | D155G307 | -483/-48 | 10 | 12 | ---- | ---- | 161,615 | 25 |
| 2771 | D155G305 | -483/-48 | 10 | 12 | ---- | ---- | 74,321 | 25 |
| 2772 | D155G304 | -730 | * | 13 | ---- | ---- | 1 | 25 |
| 2773 | D155G316 | -621/-62 | 10 | 1 | ---- | ---- | 90 | 25 |
| 2774 | D155G320 | -621/-62 | 10 | 1 | ---- | ---- | 136 | 25 |
| 2775 | D155G310 | -621/-62 | 10 | 1 | ---- | ---- | 62 | 25 |
| 3117 | D155G315 | -821 | * | 13 | ---- | ---- | 1 | 25 |
| 3118 | D155G302 | -752 | * | 13 | ---- | ---- | 1 | 25 |
| 3119 | D155G310 | -722 | * | 13 | ---- | ---- | 1 | 25 |
| Tests 3599 - 3613 involved a gage length of 13 mm (strain rate effect tests). | | | | | | | | |
| 3599 | D155G314 | -627 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3600 | D155G321 | -660 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3601 | D155G323 | -654 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3602 | D155G311 | -739 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3603 | D155G322 | -723 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3604 | D155G324 | -701 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3605 | D155G317 | -673 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3606 | D155G313 | -762 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3607 | D155G319 | -784 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3608 | D155G335 | -757 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3609 | D155G330 | -776 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3610 | D155G333 | -768 | * | 25.4 | ---- | ---- | 1 | 25 tab |
| 3611 | D155G332 | -735 | * | 127 | ---- | ---- | 1 | 25 tab |
| 3612 | D155G331 | -796 | * | 127 | ---- | ---- | 1 | 25 tab |
| 3613 | D155G336 | -755 | * | 127 | ---- | ---- | 1 | 25 tab |
| Tests 3614 - 3625 involved a gage length of 100 mm (strain rate effect tests). | | | | | | | | |
| 3614 | D155G217 | 964 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3615 | D155G219 | 833 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3616 | D155G214 | 897 | * | 0.025 | ---- | ---- | 1 | 25 tab |
| 3617 | D155G216 | 1086 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3618 | D155G221 | 1143 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3619 | D155G222 | 1061 | * | 2.54 | ---- | ---- | 1 | 25 tab |
| 3620 | D155G223 | 1140 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3621 | D155G226 | 1222 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3622 | D155G225 | 1024 | * | 12.7 | ---- | ---- | 1 | 25 tab |
| 3623 | D155G224 | 1086 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3624 | D155G218 | 1100 | * | 63.5 | ---- | ---- | 1 | 25 tab |
| 3625 | D155G220 | 1136 | * | 63.5 | ---- | ---- | 1 | 25 tab |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL D155H

Lay-up = $[0]_7$, $V_F = 0.515$, Ave. thickness = 2.93 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester, No Stitching. Stitching in the D155 fabric was removed to study this effect.

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|------------|
| 2210 | D155H106 | 961 | * | 13 | 34.3 | 2.80 | 1 | 25 |
| 2211 | D155H111 | 886 | * | 13 | 33.1 | 2.68 | 1 | 25 |
| 2212 | D155H103 | 903 | * | 13 | 34.7 | 2.61 | 1 | 25 |
| 2215 | D155H108 | 552/55 | 0.1 | 5 | 34.4 | 1.60 | 39,227 | 25 |
| 2216 | D155H109 | 552/55 | 0.1 | 5 | 35.4 | 1.56 | 22,154 | 25 |
| 2217 | D155H122 | 1076 | * | 13 | 40.1 | 2.98 | 1 | has stitch |
| 2218 | D155H121 | 1178 | * | 13 | 40.7 | 2.89 | 1 | has stitch |
| 2219 | D155H120 | 1109 | * | 13 | 40.5 | 2.74 | 1 | has stitch |
| 2226 | D155H102 | 552/55 | 0.1 | 5 | 33.9 | 1.62 | 41,215 | 25 |
| 2344 | D155H210 | 483 | 0.1 | 10 | 37.0 | 1.30 | 156,200 | 25 |
| 2346 | D155H204 | 1101 | * | 13 | 41.7 | 2.63 | 1 | 25 |
| 2347 | D155H203 | 483/48 | 0.1 | 15 | 38.8 | 1.24 | 128,523 | 25 |
| 2348 | D155H208 | 483/48 | 0.1 | 12 | 39.7 | 1.21 | 195,322 | 25 |
| 2349 | D155H209 | 414/41 | 0.1 | 15 | 40.0 | 1.04 | 3,219,571 | 25 |
| 2350 | D155H201 | 414/41 | 0.1 | 15 | 40.5 | 1.02 | 1,211,477 | 25 |
| 2351 | D155H212 | 690/69 | 0.1 | 4 | 42.0 | 1.64 | 2,953 | 25 |
| 2352 | D155H206 | 690/69 | 0.1 | 4 | 41.4 | 1.67 | 2,264 | 25 |
| 2353 | D155H207 | 690/69 | 0.1 | 4 | 40.7 | 1.70 | 1,822 | 25 |
| 2669 | D155H301 | -718 | * | 3 | ---- | ---- | 1 | 25 |
| 2670 | D155H302 | -686 | * | 3 | ---- | ---- | 1 | 25 |
| 2671 | D155H303 | -623 | * | 3 | ---- | ---- | 1 | has stitch |
| 2672 | D155H304 | -864 | * | 3 | ---- | ---- | 1 | has stitch |
| 2673 | D155H305 | -795 | * | 3 | ---- | ---- | 1 | has stitch |
| 2674 | D155H306 | -846 | * | 3 | ---- | ---- | 1 | has stitch |

MATERIAL D155J

Lay-up = $[0]_9$, $V_F = 0.583$, Ave. thickness = 3.54 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester, No Stitching. Stitching in the D155 fabric was removed to study this effect.

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|---------|----|
| 2428 | D155J111 | 1,098 | * | 13 | 49.8 | 2.65 | 1 | 25 |
| 2429 | D155J114 | 1,190 | * | 13 | 47.5 | 2.51 | 1 | 25 |
| 2430 | D155J101 | 1,140 | * | 13 | 48.6 | 2.43 | 1 | 25 |
| 2431 | D155J103 | 690/69 | 0.1 | 5 | 44.9 | 1.54 | 6,213 | 25 |
| 2432 | D155J115 | 690/69 | 0.1 | 5 | 50.0 | 1.38 | 7,977 | 25 |
| 2433 | D155J106 | 690/69 | 0.1 | 5 | 46.8 | 1.47 | 4,784 | 25 |
| 2434 | D155J108 | 552/55 | 0.1 | 5 | 50.0 | ---- | 20,345 | 25 |
| 2435 | D155J105 | 552/55 | 0.1 | 5 | 50.0 | 1.10 | 73,109 | 25 |
| 2436 | D155J109 | 414/41 | 0.1 | 12 | 47.0 | 0.88 | 684,350 | 25 |
| 2437 | D155J113 | 552/55 | 0.1 | 5 | 47.8 | 1.15 | 35,652 | 25 |
| 2438 | D155J116 | 414/41 | 0.1 | 12 | 47.8 | 0.79 | 912,579 | 25 |
| 2439 | D155J107 | 552/55 | 0.1 | 5 | 45.2 | 1.22 | 89,980 | 25 |
| 2440 | D155J104 | 414/41 | 0.1 | 12 | 47.3 | 0.86 | 485,216 | 25 |
| 2675 | D155J301 | -826 | * | 3 | ---- | ---- | 1 | 25 |
| 2676 | D155J302 | -704 | * | 3 | ---- | ---- | 1 | 25 |
| 2677 | D155J303 | -796 | * | 3 | ---- | ---- | 1 | 25 |
| 2678 | D155J304 | -777 | * | 3 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL D155K

Lay-up = $[0]_7$, $V_F = 0.328$, Ave. thickness = 4.45 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|--------|-----|----|------|------|-----------|----|
| 3673 | D155K110 | 872 | * | 13 | 28.5 | 3.15 | 1 | 25 |
| 3674 | D155K111 | 881 | * | 13 | 29.6 | 2.98 | 1 | 25 |
| 3675 | D155K109 | 830 | * | 13 | 28.5 | 2.91 | 1 | 25 |
| 3676 | D155K108 | 414/41 | 0.1 | 2 | 27.1 | 1.58 | 7,569 | 25 |
| 3677 | D155K112 | 414/41 | 0.1 | 4 | 28.7 | 1.54 | 13,447 | 25 |
| 3678 | D155K101 | 414/41 | 0.1 | 4 | 26.3 | 1.59 | 6,267 | 25 |
| 3679 | D155K113 | 276/28 | 0.1 | 12 | 28.5 | 0.97 | 764,138 | 25 |
| 3680 | D155K102 | 276/28 | 0.1 | 12 | 26.7 | 1.01 | 1,305,237 | 25 |
| 3681 | D155K103 | 276/28 | 0.1 | 12 | 28.6 | 0.96 | 1,733,768 | 25 |
| 3682 | D155K105 | 345/35 | 0.1 | 6 | 30.1 | 1.18 | 175,689 | 25 |
| 3683 | D155K104 | 345/35 | 0.1 | 6 | 27.9 | 1.26 | 106,359 | 25 |
| 3684 | D155K107 | 345/35 | 0.1 | 6 | 26.9 | 1.29 | 152,853 | 25 |
| 3685 | D155K106 | 483/48 | 0.1 | 1 | 28.1 | 2.12 | 576 | 25 |
| 3686 | D155K120 | 483/48 | 0.1 | 1 | 27.3 | 1.90 | 2,594 | 25 |
| 3687 | D155K121T | 23.8 | * | 13 | 8.00 | 0.30 | 1 | 25 |
| 3688 | D155K122T | 24.9 | * | 13 | 8.36 | 0.29 | 1 | 25 |
| 3689 | D155K123T | 18.9 | * | 13 | 8.52 | 0.22 | 1 | 25 |
| 3841 | D155K125 | -500 | * | 13 | ---- | ---- | 1 | 25 |
| 3842 | D155K126 | -624 | * | 13 | ---- | ---- | 1 | 25 |
| 3843 | D155K127 | -527 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL DB120

Lay-up = $[0]_{16}$, $V_F = 0.44$, Ave. thickness = 2.69 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

Tests 2055 - 2074 in this section were done for Table 17. Compression tests involved a 13 mm gage length.

± 45 degree fabric was separated into +45 and -45 degree plies and rotated to 0 degrees.

| | | | | | | | | |
|------|---------|------|---|------|------|-------|---|----------|
| 2055 | DB12001 | 610 | * | 0.25 | 26.5 | 2.65 | 1 | ZERO |
| 2056 | DB12002 | 596 | * | 0.25 | 26.8 | 2.41 | 1 | ZERO |
| 2057 | DB12003 | 83 | * | 0.25 | 9.45 | ---- | 1 | ± 45 |
| 2058 | DB12004 | 85 | * | 0.25 | 9.10 | ---- | 1 | ± 45 |
| 2059 | DB12005 | 85 | * | 0.25 | 9.86 | ---- | 1 | ± 45 |
| 2060 | DB12006 | 87 | * | 0.25 | 8.89 | ---- | 1 | ± 45 |
| 2061 | DB12007 | 26 | * | 0.25 | 7.24 | 0.39 | 1 | 90 |
| 2062 | DB12008 | -554 | * | 0.25 | 18.9 | ---- | 1 | ZERO |
| 2063 | DB12009 | -555 | * | 0.25 | 19.7 | ---- | 1 | ZERO |
| 2064 | DB12010 | -545 | * | 0.25 | 19.4 | ---- | 1 | ZERO |
| 2065 | DB12011 | -116 | * | 0.25 | 8.83 | ---- | 1 | ± 45 |
| 2066 | DB12012 | -120 | * | 0.25 | 9.86 | ---- | 1 | ± 45 |
| 2067 | DB12013 | -123 | * | 0.25 | 9.31 | ---- | 1 | ± 45 |
| 2068 | DB12014 | -120 | * | 0.25 | 6.96 | -2.20 | 1 | 90 |
| 2069 | DB12015 | -117 | * | 0.25 | 6.41 | -1.70 | 1 | 90 |
| 2070 | DB12016 | -104 | * | 0.25 | 6.55 | -2.10 | 1 | 90 |
| 2071 | DB12017 | 616 | * | 0.25 | 24.8 | 2.60 | 1 | ZERO |
| 2072 | DB12018 | 24 | * | 0.25 | 7.72 | 0.32 | 1 | 90 |
| 2073 | DB12050 | 619 | * | 0.25 | 28.2 | 2.30 | 1 | ZERO |
| 2074 | DB12051 | 104 | * | 0.25 | 9.72 | ---- | 1 | ± 45 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL DB240

Lay-up = $[0]_8$, $V_F = 0.46$, Ave. thickness = 2.77 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester
 Tests 2075 - 2093 in this section were done for Table 17. Compression tests involved a 13 mm gage length.
 ± 45 degree fabric was separated into +45 and -45 degree plies and rotated to 0 degrees.

| | | | | | | | | |
|------|---------|------|---|------|------|-------|---|----------|
| 2075 | DB24001 | 701 | * | 0.25 | 30.8 | 2.60 | 1 | ZERO |
| 2076 | DB24002 | 715 | * | 0.25 | 30.1 | 2.60 | 1 | ZERO |
| 2077 | DB24003 | 669 | * | 0.25 | 31.1 | 2.50 | 1 | ZERO |
| 2078 | DB24004 | 69 | * | 0.25 | 10.9 | ---- | 1 | ± 45 |
| 2079 | DB24005 | 69 | * | 0.25 | 10.1 | ---- | 1 | ± 45 |
| 2080 | DB24006 | 68 | * | 0.25 | 9.90 | ---- | 1 | ± 45 |
| 2081 | DB24007 | -551 | * | 0.25 | 25.9 | -1.60 | 1 | ZERO |
| 2082 | DB24008 | -507 | * | 0.25 | 24.8 | -1.70 | 1 | ZERO |
| 2083 | DB24009 | -557 | * | 0.25 | 25.6 | -1.60 | 1 | ZERO |
| 2084 | DB24010 | -122 | * | 0.25 | 11.0 | ---- | 1 | ± 45 |
| 2085 | DB24011 | -101 | * | 0.25 | 10.3 | ---- | 1 | ± 45 |
| 2086 | DB24012 | -128 | * | 0.25 | 10.3 | ---- | 1 | ± 45 |
| 2087 | DB24013 | -125 | * | 0.25 | 6.32 | -1.80 | 1 | 90 |
| 2088 | DB24014 | -118 | * | 0.25 | 6.69 | -1.65 | 1 | 90 |
| 2089 | DB24015 | -122 | * | 0.25 | 7.08 | -1.62 | 1 | 90 |
| 2090 | DB24016 | 20 | * | 0.25 | 7.58 | 0.29 | 1 | 90 |
| 2091 | DB24017 | 19 | * | 0.25 | 7.10 | 0.26 | 1 | 90 |
| 2092 | DB24050 | 703 | * | 0.25 | 32.2 | 2.85 | 1 | ZERO |
| 2093 | DB24051 | 70 | * | 0.25 | 10.1 | ---- | 1 | ± 45 |

BALANCED ANGLE PLY TESTING

The angled materials in this section were constructed using the D155 fabric.

MATERIAL D155B (baseline 0° behavior)

Lay-up = $[0]_5$, $V_F = 0.399$, Ave. thickness = 2.70 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|----|
| 2203 | D155B200 | 755 | * | 13 | 31.1 | 2.43 | 1 | 25 |
| 2204 | D155B209 | 779 | * | 13 | 28.2 | 2.76 | 1 | 25 |
| 2205 | D155B215 | 785 | * | 13 | 28.5 | 2.75 | 1 | 25 |
| 2206 | D155B201 | 483/48 | 0.1 | 4 | 32.6 | 1.48 | 6,979 | 25 |
| 2207 | D155B207 | 483/48 | 0.1 | 4 | 33.1 | 1.46 | 16,497 | 25 |
| 2208 | D155B205 | 414/41 | 0.1 | 7 | 32.2 | 1.28 | 82,605 | 25 |
| 2209 | D155B203 | 414/41 | 0.1 | 8 | 36.8 | 1.13 | 68,483 | 25 |
| 2236 | D155B212 | 345/35 | 0.1 | 15 | 33.6 | 1.02 | 967,901 | 25 |
| 2237 | D155B210 | 345/35 | 0.1 | 15 | 30.1 | 1.15 | 1,104,634 | 25 |
| 2338 | D155B202 | 483/48 | 0.1 | 5 | 30.4 | 1.59 | 19,814 | 25 |
| 2339 | D155B213 | 552/55 | 0.1 | 3 | 32.2 | 1.71 | 2,141 | 25 |
| 2340 | D155B208 | 552/55 | 0.1 | 4 | 30.3 | 1.82 | 2,305 | 25 |
| 2341 | D155B211 | 552/55 | 0.1 | 4 | 31.8 | 1.73 | 1,733 | 25 |
| 2342 | D155B214 | 414/41 | 0.1 | 10 | 30.8 | 1.34 | 48,181 | 25 |

MATERIAL 10D155

Lay-up = $[\pm 10]_3$, $V_F = 0.355$, Ave. thickness = 3.47 mm, S.D. = 0.17 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|--------|-----|----|------|------|-----------|----|
| 2513 | 10D155122 | 271 | * | 13 | 28.6 | 0.90 | 1 | 25 |
| 2514 | 10D155127 | 303 | * | 13 | 28.5 | 1.00 | 1 | 25 |
| 2515 | 10D155120 | 249 | * | 13 | 25.5 | 0.95 | 1 | 25 |
| 2566 | 10D155128 | 172/17 | 0.1 | 10 | 27.9 | 0.60 | 167,538 | 25 |
| 2569 | 10D155213 | 172/17 | 0.1 | 8 | 26.1 | 0.66 | 178,266 | 25 |
| 2570 | 10D155208 | 172/17 | 0.1 | 10 | 29.2 | 0.64 | 207,957 | 25 |
| 2571 | 10D155205 | 284 | * | 13 | 29.0 | 0.98 | 1 | 25 |
| 2572 | 10D155209 | 207/21 | 0.1 | 5 | 29.4 | 0.71 | 18,193 | 25 |
| 2573 | 10D155210 | 207/21 | 0.1 | 5 | 32.3 | 0.64 | 21,780 | 25 |
| 2574 | 10D155212 | 207/21 | 0.1 | 5 | 29.3 | 0.72 | 16,360 | 25 |
| 2575 | 10D155215 | 155/16 | 0.1 | 12 | 29.5 | 0.53 | 1,764,883 | 25 |
| 2583 | 10D155114 | -405 | * | 13 | ---- | ---- | 1 | 25 |
| 2584 | 10D155106 | -343 | * | 13 | ---- | ---- | 1 | 25 |
| 2585 | 10D155112 | -406 | * | 13 | ---- | ---- | 1 | 25 |
| 2586 | 10D155113 | -381 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 20D155

Lay-up = $[\pm 20]_3$, $V_F = 0.384$, Ave. thickness = 3.21 mm, S.D. = 0.14 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|--------|-----|----|------|------|---------|----|
| 2510 | 20D155101 | 244 | * | 13 | 24.3 | 1.08 | 1 | 25 |
| 2511 | 20D155104 | 269 | * | 13 | 23.2 | 1.20 | 1 | 25 |
| 2512 | 20D155107 | 290 | * | 13 | 25.1 | 1.40 | 1 | 25 |
| 2558 | 20D155113 | 172/17 | 0.1 | 5 | 26.9 | 0.71 | 21,427 | 25 |
| 2559 | 20D155112 | 172/17 | 0.1 | 7 | 25.3 | 0.69 | 38,475 | 25 |
| 2560 | 20D155111 | 138/14 | 0.1 | 12 | 24.5 | 0.58 | 835,986 | 25 |
| 2561 | 20D155108 | 172/17 | 0.1 | 7 | 24.8 | 0.76 | 25,475 | 25 |
| 2562 | 20D155106 | 207/21 | 0.1 | 2 | 27.0 | 0.83 | 2,244 | 25 |
| 2563 | 20D155110 | 207/21 | 0.1 | 2 | 23.8 | 0.90 | 860 | 25 |
| 2564 | 20D155116 | 207/21 | 0.1 | 2 | 25.8 | 0.88 | 2,779 | 25 |
| 2565 | 20D155102 | 138/14 | 0.1 | 15 | 24.1 | 0.56 | 742,154 | 25 |
| 2587 | 20D155301 | -284 | * | 13 | ---- | ---- | 1 | 25 |
| 2588 | 20D155302 | -289 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
| 2589 | 20D155303 | -271 | * | 13 | ---- | ---- | 1 | 25 |
| 2590 | 20D155304 | -303 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 30D155

Lay-up = $[\pm 30]_3$, $V_F = 0.396$, Ave. thickness = 3.11 mm, S.D. = 0.14 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|----------|-----|----|------|------|-----------|------|
| 2507 | 30D155107 | 183 | * | 13 | 17.8 | 1.40 | 1 | 25 |
| 2508 | 30D155104 | 184 | * | 13 | 16.1 | 1.60 | 1 | 25 |
| 2509 | 30D155113 | 141 | * | 13 | 18.1 | 1.60 | 1 | 25 |
| 2537 | 30D155114 | 103/10 | 0.1 | 5 | 18.3 | 0.56 | 15,975 | 25 |
| 2538 | 30D155110 | 103/10 | 0.1 | 8 | 17.2 | 0.63 | 25,545 | 25 |
| 2539 | 30D155112 | 69/7 | 0.1 | 15 | 19.7 | 0.37 | 2,525,000 | 25 R |
| 2540 | 30D155111 | 69/7 | 0.1 | 25 | 17.0 | 0.37 | 2,000,000 | 25 R |
| 2541 | 30D155109 | 86/9 | 0.1 | 20 | 16.4 | 0.52 | 84,851 | 25 |
| 2542 | 30D155108 | 86/9 | 0.1 | 20 | 18.8 | 0.42 | 214,208 | 25 |
| 2543 | 30D155115 | 86/9 | 0.1 | 20 | 17.4 | 0.50 | 168,607 | 25 |
| 2544 | 30D155116 | 121/12 | 0.1 | 5 | 17.1 | 0.78 | 9,028 | 25 |
| 2545 | 30D155101 | 121/12 | 0.1 | 6 | 18.0 | 0.74 | 12,509 | 25 |
| 2546 | 30D155102 | 121/12 | 0.1 | 5 | 18.6 | 0.71 | 11,345 | 25 |
| 2547 | 30D155103 | 103/10 | 0.1 | 6 | 16.8 | 0.62 | 42,426 | 25 |
| 2591 | 30D155301 | -195 | * | 13 | ---- | ---- | 1 | 25 |
| 2592 | 30D155302 | -168 | * | 13 | ---- | ---- | 1 | 25 |
| 2593 | 30D155303 | -169 | * | 13 | ---- | ---- | 1 | 25 |
| 2594 | 30D155304 | -173 | * | 13 | ---- | ---- | 1 | 25 |
| 4445 | 30D155130 | -103/-10 | 10 | 4 | ---- | ---- | 28,562 | 25 |
| 4446 | 30D155130 | -103/-10 | 10 | 4 | ---- | ---- | 45,437 | 25 |
| 4447 | 30D155132 | -103/-10 | 10 | 4 | ---- | ---- | 44,837 | 25 |
| 4448 | 30D155133 | -90/-9 | 10 | 7 | ---- | ---- | 150,426 | 25 |
| 4449 | 30D155134 | -90/-9 | 10 | 8 | ---- | ---- | 142,051 | 25 |
| 4450 | 30D155135 | -90/-9 | 10 | 6 | ---- | ---- | 269,359 | 25 |
| 4451 | 30D155136 | -83/-8 | 10 | 10 | ---- | ---- | 530,475 | 25 |

MATERIAL 40D155

Lay-up = $[\pm 40]_3$, $V_F = 0.389$, Ave. thickness = 3.17 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|----------|-----|----|------|------|---------|----|
| 2504 | 40D155110 | 147 | * | 13 | 11.5 | 14 | 1 | 25 |
| 2505 | 40D155105 | 142 | * | 13 | 11.2 | 16 | 1 | 25 |
| 2506 | 40D155102 | 142 | * | 13 | 11.4 | 11 | 1 | 25 |
| 2516 | 40D155103 | 86/9 | 0.1 | 4 | 10.8 | 0.89 | 7,598 | 25 |
| 2517 | 40D155104 | 86/9 | 0.1 | 4 | 11.8 | 0.97 | 6,950 | 25 |
| 2518 | 40D155106 | 86/9 | 0.1 | 4 | 12.2 | 0.93 | 3,054 | 25 |
| 2519 | 40D155107 | 69/7 | 0.1 | 5 | 11.7 | 0.69 | 27,264 | 25 |
| 2520 | 40D155108 | 55/6 | 0.1 | 12 | 12.3 | 0.46 | 631,703 | 25 |
| 2521 | 40D155109 | 55/6 | 0.1 | 15 | 11.9 | 0.49 | 275,777 | 25 |
| 2522 | 40D155111 | 69/7 | 0.1 | 5 | 11.8 | 0.67 | 36,776 | 25 |
| 2523 | 40D155112 | 69/7 | 0.1 | 8 | 12.0 | 0.62 | 34,920 | 25 |
| 2524 | 40D155113 | 55/6 | 0.1 | 20 | 11.1 | 0.52 | 857,164 | 25 |
| 2595 | 40D155301 | -131 | * | 13 | ---- | ---- | 1 | 25 |
| 2596 | 40D155302 | -135 | * | 13 | ---- | ---- | 1 | 25 |
| 2597 | 40D155303 | -127 | * | 13 | ---- | ---- | 1 | 25 |
| 2598 | 40D155304 | -134 | * | 13 | ---- | ---- | 1 | 25 |
| 4452 | 40D155137 | -103/-10 | 10 | 2 | ---- | ---- | 635 | 25 |
| 4453 | 40D155136 | -90/-9 | 10 | 4 | ---- | ---- | 5,021 | 25 |
| 4454 | 40D155135 | -90/-9 | 10 | 4 | ---- | ---- | 4,073 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-----------------------|----|---------|----------|--------|-------------------|----------------------------|
| 4455 | 40D155134 | -90/-9 | 10 | 4 | ---- | ---- | 2,494 | 25 |
| 4456 | 40D155133 | -69/-7 | 10 | 6 | ---- | ---- | 60,384 | 25 |
| 4457 | 40D155132 | -69/-7 | 10 | 6 | ---- | ---- | 82,612 | 25 |
| 4458 | 40D155131 | -69/-7 | 10 | 6 | ---- | ---- | 129,706 | 25 |
| 4459 | 40D155140 | -59/-6 | 10 | 10 | ---- | ---- | 460,369 | 25 |
| 4467 | 40D155141 | -59/-6 | 10 | 10 | ---- | ---- | 611,713 | 25 |

MATERIAL 45D155

Lay-up = $[\pm 45]_3$, $V_F = 0.389$, Ave. thickness = 3.17 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|---------|-----|----|------|------|-----------|------|
| 2441 | 45D155112 | 106 | * | 13 | 9.66 | 22.0 | 1 | 25 |
| 2442 | 45D155105 | 107 | * | 13 | 10.3 | 24.9 | 1 | 25 |
| 2443 | 45D155108 | 108 | * | 13 | 9.97 | 24.0 | 1 | 25 |
| 2444 | 45D155104 | 55/6 | 0.1 | 12 | 10.2 | 0.65 | 12,908 | 25 |
| 2445 | 45D155106 | 55/6 | 0.1 | 10 | 9.55 | 0.68 | 15,899 | 25 |
| 2446 | 45D155113 | 41/4 | 0.1 | 15 | 10.4 | 0.41 | 394,632 | 25 |
| 2447 | 45D155111 | 55/6 | 0.1 | 10 | 9.91 | 0.64 | 10,671 | 25 |
| 2448 | 45D155110 | 41/4 | 0.1 | 20 | 9.33 | 0.43 | 748,125 | 25 |
| 2449 | 45D155102 | 34/3 | 0.1 | 20 | 9.10 | 0.38 | 2,167,690 | 25 R |
| 2450 | 45D155107 | 41/4 | 0.1 | 12 | 10.6 | 0.42 | 507,811 | 25 |
| 2451 | 45D155114 | 69/7 | 0.1 | 2 | 9.06 | 0.92 | 1,885 | 25 |
| 2452 | 45D155109 | 69/7 | 0.1 | 2 | 9.65 | 0.97 | 1,639 | 25 |
| 2453 | 45D155103 | 69/7 | 0.1 | 2 | 9.40 | 0.99 | 3,669 | 25 |
| 2599 | 45D155301 | -139 | * | 13 | ---- | ---- | 1 | 25 |
| 2600 | 45D155302 | -135 | * | 13 | ---- | ---- | 1 | 25 |
| 2601 | 45D155303 | -135 | * | 13 | ---- | ---- | 1 | 25 |
| 2602 | 45D155304 | -142 | * | 13 | ---- | ---- | 1 | 25 |
| 4399 | 45D155140 | -97/-10 | 10 | 2 | ---- | ---- | 1,236 | 25 |
| 4400 | 45D155143 | -69/-7 | 10 | 5 | ---- | ---- | 523,409 | 25 |
| 4401 | 45D155141 | -69/-7 | 10 | 10 | ---- | ---- | 597,040 | 25 |
| 4402 | 45D155142 | -69/-7 | 10 | 10 | ---- | ---- | 362,225 | 25 |
| 4403 | 45D155149 | -69/-7 | 10 | 10 | ---- | ---- | 367,979 | 25 |
| 4404 | 45D155145 | 34/-34 | -1 | 5 | ---- | ---- | 153,354 | 25 |
| 4405 | 45D155148 | 34/-34 | -1 | 5 | ---- | ---- | 64,588 | 25 |
| 4406 | 45D155144 | 34/-34 | -1 | 5 | ---- | ---- | 114,603 | 25 |
| 4407 | 45D155146 | -83/-8 | 10 | 8 | ---- | ---- | 19,588 | 25 |
| 4408 | 45D155147 | -83/-8 | 10 | 5 | ---- | ---- | 34,052 | 25 |
| 4409 | 45D155120 | -83/-8 | 10 | 5 | ---- | ---- | 28,684 | 25 |
| 4410 | 45D155119 | -97/-10 | 10 | 2 | ---- | ---- | 3,655 | 25 |
| 4411 | 45D155115 | -97/-10 | 10 | 2 | ---- | ---- | 4,822 | 25 |
| 4412 | 45D155121 | 28/-28 | -1 | 10 | ---- | ---- | 705,984 | 25 |
| 4413 | 45D155116 | 28/-28 | -1 | 10 | ---- | ---- | 791,693 | 25 |
| 4414 | 45D155164 | 41/-41 | -1 | 2 | ---- | ---- | 12,406 | 25 |
| 4415 | 45D155160 | 41/-41 | -1 | 2 | ---- | ---- | 10,061 | 25 |
| 4416 | 45D155161 | 41/-41 | -1 | 2 | ---- | ---- | 19,692 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL 45D155V2

Lay-up = $[\pm 45]_3$, $V_F = 0.397$, Ave. thickness = 3.10 mm, S.D. = 0.10 mm, Derakane 8084 Epoxy Vinyl ester

| | | | | | | | | |
|------|------------|--------|-----|----|------|------|-----------|------|
| 4417 | 45D155V349 | -69/-7 | 10 | 12 | ---- | ---- | 2,569,227 | 25 |
| 4418 | 45D155V322 | -83/-8 | 10 | 5 | ---- | ---- | 148,697 | 25 |
| 4419 | 45D155V326 | -83/-8 | 10 | 5 | ---- | ---- | 82,143 | 25 |
| 4420 | 45D155V344 | -83/-8 | 10 | 5 | ---- | ---- | 267,226 | 25 |
| 4421 | 45D155V320 | -69/-7 | 10 | 10 | ---- | ---- | 1,700,116 | 25 |
| 4422 | 45D155V325 | -69/-7 | 10 | 12 | ---- | ---- | 1,154,414 | 25 |
| 4423 | 45D155V330 | -151 | * | 13 | ---- | ---- | 1 | 25 |
| 4424 | 45D155V329 | -148 | * | 13 | ---- | ---- | 1 | 25 |
| 4425 | 45D155V331 | -149 | * | 13 | ---- | ---- | 1 | 25 |
| 4426 | 45D155V314 | 136 | * | 13 | 9.9 | ---- | 1 | 25 |
| 4427 | 45D155V313 | 129 | * | 13 | 10.6 | ---- | 1 | 25 |
| 4428 | 45D155V316 | 141 | * | 13 | 11.0 | ---- | 1 | 25 |
| 4429 | 45D155V315 | 48/5 | 0.1 | 5 | 10.1 | 0.53 | 137,932 | 25 |
| 4430 | 45D155V311 | 48/5 | 0.1 | 5 | ---- | ---- | 262,388 | 25 |
| 4431 | 45D155V301 | 48/5 | 0.1 | 5 | 10.9 | 0.49 | 321,891 | 25 |
| 4432 | 45D155V304 | 55/6 | 0.1 | 5 | ---- | ---- | 27,606 | 25 |
| 4433 | 45D155V303 | 41/4 | 0.1 | 10 | 9.5 | 0.51 | 770,759 | 25 |
| 4434 | 45D155V302 | 41/4 | 0.1 | 10 | 9.5 | 0.50 | 1,233,580 | 25 |
| 4435 | 45D155V310 | 41/4 | 0.1 | 10 | 10.6 | 0.44 | 1,289,647 | 25 |
| 4436 | 45D155V161 | -69/-7 | 10 | 10 | ---- | ---- | 4,975,500 | 25 R |

MATERIAL 45D155P2

Lay-up = $[\pm 45]_3$, $V_F = 0.404$, Ave. thickness = 3.05 mm, S.D. = 0.02 mm, CoRezyn 75-AQ-010 Isopolyester

| | | | | | | | | |
|------|----------|------|-----|----|------|------|---------|----|
| 4622 | ISO45114 | 55/6 | 0.1 | 3 | 11.9 | 0.57 | 4,934 | 25 |
| 4623 | ISO45101 | 55/6 | 0.1 | 2 | 10.9 | 0.63 | 5,740 | 25 |
| 4624 | ISO45102 | 41/4 | 0.1 | 5 | 11.7 | 0.39 | 202,047 | 25 |
| 4625 | ISO45103 | 41/4 | 0.1 | 5 | 11.3 | 0.42 | 192,822 | 25 |
| 4626 | ISO45111 | 41/4 | 0.1 | 5 | 11.5 | 0.40 | 179,293 | 25 |
| 4627 | ISO45110 | 38/4 | 0.1 | 7 | 11.3 | 0.37 | 811,700 | 25 |
| 4628 | ISO45112 | 55/6 | 0.1 | 2 | 11.8 | 0.58 | 6,965 | 25 |
| 4629 | ISO45109 | 48/5 | 0.1 | 3 | ---- | ---- | 21,334 | 25 |
| 4630 | ISO45108 | 48/5 | 0.1 | 2 | 10.8 | 0.54 | 17,395 | 25 |
| 4631 | ISO45107 | 48/5 | 0.1 | 2 | ---- | ---- | 9,479 | 25 |
| 4632 | ISO45106 | 38/4 | 0.1 | 4 | 10.8 | 0.41 | 422,361 | 25 |
| 4633 | ISO45105 | 95 | * | 13 | 12.0 | 13 | 1 | 25 |
| 4634 | ISO45104 | 97 | * | 13 | 12.0 | 14 | 1 | 25 |
| 4635 | ISO45113 | 96 | * | 13 | 11.3 | 14 | 1 | 25 |
| 4636 | ISO45119 | -156 | * | 13 | ---- | ---- | 1 | 25 |
| 4637 | ISO45116 | -165 | * | 13 | ---- | ---- | 1 | 25 |
| 4638 | ISO45115 | -158 | * | 13 | ---- | ---- | 1 | 25 |
| 4639 | ISO45117 | -161 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 45D155V

Lay-up = $[45]_3$, $V_F = 0.411$, Ave. thickness = 3.00 mm, S.D. = 0.07 mm, Derakane 411C-50 vinyl ester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|------|
| 4869 | 41145113 | 41.4/4 | 0.1 | 10 | 10.2 | 0.40 | 4,000,000 | 25 R |
| 4870 | 41145101 | 69/7 | 0.1 | 2 | 10.5 | 0.84 | 4,581 | 25 |
| 4871 | 41145109 | 130 | * | 13 | 10.8 | 21 | 1 | 25 |
| 4872 | 41145106 | 118 | * | 13 | 10.1 | 15 | 1 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-----------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 4873 | 41145107 | 116 | * | 13 | 10.5 | 23 | 1 | 25 |
| 4874 | 41145105 | 55.2/6 | 0.1 | 3 | 10.5 | 0.64 | 38,539 | 25 |
| 4875 | 41145104 | 55.2/6 | 0.1 | 4 | 10.8 | 0.61 | 51,501 | 25 |
| 4876 | 41145102 | 55.2/6 | 0.1 | 3 | 11.4 | 0.60 | 62,968 | 25 |
| 4877 | 41145110 | 69/7 | 0.1 | 2 | 11.2 | 0.86 | 7,247 | 25 |
| 4879 | 41145112 | 69/7 | 0.1 | 2 | ---- | ---- | 6,339 | 25 |
| 5908 | 41145116 | -155 | * | 13 | ---- | ---- | 1 | 25 |
| 5909 | 41145115 | -153 | * | 13 | ---- | ---- | 1 | 25 |
| 5910 | 41145119 | -154 | * | 13 | ---- | ---- | 1 | 25 |
| 5911 | 41145118 | -154 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 50D155

Lay-up = $[\pm 50]_3$, $V_F = 0.381$, Ave. thickness = 3.23 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|----------|-----|----|------|------|-----------|----|
| 2454 | 50D155114 | 67 | * | 13 | 8.33 | 20 | 1 | 25 |
| 2455 | 50D155113 | 67 | * | 13 | 8.39 | 19 | 1 | 25 |
| 2456 | 50D155107 | 63 | * | 13 | 8.43 | 17 | 1 | 25 |
| 2457 | 50D155104 | 35/4 | 0.1 | 20 | 8.62 | 0.41 | 136,803 | 25 |
| 2458 | 50D155116 | 35/4 | 0.1 | 15 | 9.00 | 0.41 | 72,943 | 25 |
| 2459 | 50D155115 | 35/4 | 0.1 | 15 | 8.32 | 0.42 | 96,273 | 25 |
| 2460 | 50D155111 | 28/3 | 0.1 | 15 | 8.11 | 0.36 | 1,855,523 | 25 |
| 2461 | 50D155106 | 41/4 | 0.1 | 5 | 8.81 | 0.48 | 11,555 | 25 |
| 2462 | 50D155108 | 41/4 | 0.1 | 7 | 8.74 | 0.52 | 11,608 | 25 |
| 2463 | 50D155112 | 41/4 | 0.1 | 4 | 8.90 | 0.53 | 11,509 | 25 |
| 2464 | 50D155105 | 28/3 | 0.1 | 15 | 8.42 | 0.37 | 1,159,160 | 25 |
| 2465 | 50D155101 | 58 | * | 13 | 8.43 | 30.0 | 1 | 25 |
| 2466 | 50D155102 | 67 | * | 13 | 9.52 | 22.2 | 1 | 25 |
| 2603 | 50D155301 | -132 | * | 13 | ---- | ---- | 1 | 25 |
| 2604 | 50D155302 | -142 | * | 13 | ---- | ---- | 1 | 25 |
| 2605 | 50D155303 | -139 | * | 13 | ---- | ---- | 1 | 25 |
| 2606 | 50D155304 | -138 | * | 13 | ---- | ---- | 1 | 25 |
| 4468 | 50D155134 | -90/-9 | 10 | 3 | ---- | ---- | 10,617 | 25 |
| 4469 | 50D155133 | -90/-9 | 10 | 3 | ---- | ---- | 9,472 | 25 |
| 4470 | 50D155132 | -90/-9 | 10 | 3 | ---- | ---- | 11,783 | 25 |
| 4471 | 50D155131 | -69/-7 | 10 | 8 | ---- | ---- | 2,313,976 | 25 |
| 4472 | 50D155135 | -79/-8 | 10 | 4 | ---- | ---- | 38,964 | 25 |
| 4473 | 50D155136 | -76/-8 | 10 | 4 | ---- | ---- | 128,196 | 25 |
| 4613 | 50D155137 | -79/-8 | 10 | 4 | ---- | ---- | 83,779 | 25 |
| 4619 | 50D155145 | -100/-10 | 10 | 2 | ---- | ---- | 2,213 | 25 |

MATERIAL 60D155

Lay-up = $[\pm 60]_3$, $V_F = 0.396$, Ave. thickness = 3.11 mm, S.D. = 0.14 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|------|-----|----|------|------|---------|----|
| 2482 | 60D155103 | 37 | * | 13 | 7.02 | 0.65 | 1 | 25 |
| 2483 | 60D155106 | 34 | * | 13 | 7.04 | 0.65 | 1 | 25 |
| 2484 | 60D155101 | 36 | * | 13 | 7.44 | 0.62 | 1 | 25 |
| 2576 | 60D155146 | 40 | * | 13 | 7.99 | 0.60 | 1 | 25 |
| 2548 | 60D155108 | 24/2 | 0.1 | 10 | 8.00 | 0.31 | 23,872 | 25 |
| 2549 | 60D155115 | 24/2 | 0.1 | 15 | 8.33 | 0.32 | 35,211 | 25 |
| 2550 | 60D155113 | 24/2 | 0.1 | 10 | 8.26 | 0.32 | 17,122 | 25 |
| 2551 | 60D155104 | 21/2 | 0.1 | 20 | 7.81 | 0.27 | 160,347 | 25 |
| 2552 | 60D155105 | 21/2 | 0.1 | 15 | 8.30 | 0.25 | 369,336 | 25 |
| 2553 | 60D155109 | 28/3 | 0.1 | 4 | 8.20 | 0.38 | 4,716 | 25 |
| 2554 | 60D155107 | 28/3 | 0.1 | 5 | 7.75 | 0.37 | 3,715 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-----------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2555 | 60D155110 | 28/3 | 0.1 | 5 | 7.23 | 0.36 | 2,270 | 25 |
| 2556 | 60D155116 | 19/2 | 0.1 | 15 | 7.24 | 0.25 | 1,915,213 | 25 |
| 2557 | 60D155102 | 21/2 | 0.1 | 10 | 7.33 | 0.27 | 217,771 | 25 |
| 2607 | 60D155301 | -144 | * | 13 | ---- | ---- | 1 | 25 |
| 2608 | 60D155302 | -133 | * | 13 | ---- | ---- | 1 | 25 |
| 2609 | 60D155303 | -143 | * | 13 | ---- | ---- | 1 | 25 |
| 2610 | 60D155304 | -144 | * | 13 | ---- | ---- | 1 | 25 |
| 4437 | 60D155162 | -103/-10 | 10 | 4 | ---- | ---- | 2,461 | 25 |
| 4438 | 60D155141 | -103/-10 | 10 | 4 | ---- | ---- | 1,786 | 25 |
| 4439 | 60D155166 | -103/-10 | 10 | 4 | ---- | ---- | 4,011 | 25 |
| 4440 | 60D155160 | -86/-9 | 10 | 6 | ---- | ---- | 19,416 | 25 |
| 4441 | 60D155165 | -86/-9 | 10 | 6 | ---- | ---- | 21,746 | 25 |
| 4442 | 60D155142 | -86/-9 | 10 | 6 | ---- | ---- | 33,065 | 25 |
| 4443 | 60D155114 | -79/-8 | 10 | 10 | ---- | ---- | 573,969 | 25 |
| 4444 | 60D155164 | -79/-8 | 10 | 10 | ---- | ---- | 434,136 | 25 |

MATERIAL 70D155

Lay-up = $[\pm 70]_3$, $V_F = 0.389$, Ave. thickness = 3.17 mm, S.D. = 0.04 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|----------|-----|----|------|------|-----------|----|
| 2485 | 70D155101 | 28 | * | 13 | 6.67 | 0.49 | 1 | 25 |
| 2486 | 70D155104 | 27 | * | 13 | 6.86 | 0.46 | 1 | 25 |
| 2487 | 70D155107 | 26 | * | 13 | 6.51 | 0.44 | 1 | 25 |
| 2577 | 70D155141 | 30 | * | 13 | 7.51 | 0.49 | 1 | 25 |
| 2525 | 70D155111 | 17/2 | 0.1 | 10 | 7.84 | 0.21 | 30,672 | 25 |
| 2526 | 70D155109 | 17/2 | 0.1 | 12 | 8.16 | 0.19 | 51,196 | 25 |
| 2527 | 70D155106 | 17/2 | 0.1 | 12 | 7.90 | 0.23 | 43,825 | 25 |
| 2528 | 70D155110 | 14/1 | 0.1 | 20 | 7.31 | 0.19 | 1,045,443 | 25 |
| 2529 | 70D155108 | 17/2 | 0.1 | 15 | 7.14 | 0.28 | 27,455 | 25 |
| 2530 | 70D155103 | 16/2 | 0.1 | 20 | 7.47 | 0.20 | 296,781 | 25 |
| 2531 | 70D155102 | 19/2 | 0.1 | 5 | 7.09 | 0.27 | 8,217 | 25 |
| 2532 | 70D155134 | 19/2 | 0.1 | 5 | 7.21 | 0.26 | 10,888 | 25 |
| 2533 | 70D155123 | 19/2 | 0.1 | 5 | 7.19 | 0.27 | 27,256 | 25 |
| 2534 | 70D155121 | 16/2 | 0.1 | 15 | 6.66 | 0.24 | 246,630 | 25 |
| 2535 | 70D155122 | 16/2 | 0.1 | 15 | 7.17 | 0.22 | 421,514 | 25 |
| 2611 | 70D155301 | -133 | * | 13 | ---- | ---- | 1 | 25 |
| 2612 | 70D155302 | -136 | * | 13 | ---- | ---- | 1 | 25 |
| 2613 | 70D155303 | -138/-14 | * | 13 | ---- | ---- | 1 | 25 |
| 2614 | 70D155304 | -138/-14 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 80D155

Lay-up = $[\pm 80]_3$, $V_F = 0.371$, Ave. thickness = 3.32 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|------|-----|----|------|------|-------|----|
| 2488 | 80D155105 | 27 | * | 13 | 7.79 | 0.38 | 1 | 25 |
| 2489 | 80D155103 | 25 | * | 13 | 7.00 | 0.34 | 1 | 25 |
| 2490 | 80D155101 | 24 | * | 13 | 7.05 | 0.37 | 1 | 25 |
| 2536 | 80D155141 | 27 | * | 13 | 7.75 | 0.38 | 1 | 25 |
| 2580 | 80D155201 | 26 | * | 13 | 9.30 | 0.30 | 1 | 25 |
| 2581 | 80D155202 | 26 | * | 13 | 8.15 | 0.34 | 1 | 25 |
| 2582 | 80D155203 | 27 | * | 13 | 8.65 | 0.34 | 1 | 25 |
| 2494 | 80D155120 | 26 | * | 13 | 6.95 | 0.35 | 1 | 25 |
| 2495 | 80D155122 | 24 | * | 13 | 6.43 | 0.35 | 1 | 25 |
| 2491 | 80D155102 | 17/2 | 0.1 | 2 | 7.59 | 0.24 | 2,096 | 25 |
| 2492 | 80D155112 | 17/2 | 0.1 | 2 | 6.79 | 0.25 | 865 | 25 |
| 2493 | 80D155104 | 17/2 | 0.1 | 2 | 7.35 | 0.24 | 3,673 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-----------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2496 | 80D155121 | 12/1 | 0.1 | 25 | 7.49 | 0.15 | 8,000,000 | 25 R |
| 2497 | 80D155106 | 16/2 | 0.1 | 5 | 8.42 | 0.19 | 34,973 | 25 |
| 2498 | 80D155109 | 16/2 | 0.1 | 15 | 7.02 | 0.20 | 16,756 | 25 |
| 2499 | 80D155111 | 16/2 | 0.1 | 10 | 7.81 | 0.20 | 24,111 | 25 |
| 2500 | 80D155123 | 14/1 | 0.1 | 10 | 7.42 | 0.18 | 135,541 | 25 |
| 2501 | 80D155145 | 14/1 | 0.1 | 10 | 7.06 | 0.18 | 261,230 | 25 |
| 2502 | 80D155146 | 14/1 | 0.1 | 10 | 7.20 | 0.18 | 186,407 | 25 |
| 2619 | 80D155205 | -148 | * | 13 | ---- | ---- | 1 | 25 |
| 2620 | 80D155206 | -146 | * | 13 | ---- | ---- | 1 | 25 |
| 2621 | 80D155207 | -156 | * | 13 | ---- | ---- | 1 | 25 |
| 2622 | 80D155208 | -162 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 90D155

Lay-up = $[\pm 90]_3$, $V_F = 0.371$, Ave. thickness = 3.32 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|-----------|--------|-----|----|------|------|------------|------|
| 2467 | 90D155105 | 27 | * | 13 | 7.21 | 0.38 | 1 | 25 |
| 2468 | 90D155110 | 26 | * | 13 | 7.30 | 0.34 | 1 | 25 |
| 2469 | 90D155104 | 24 | * | 13 | 6.44 | 0.34 | 1 | 25 |
| 2579 | 90D155141 | 29 | * | 13 | 9.04 | 0.34 | 1 | 25 |
| 2470 | 90D155101 | 17/2 | 0.1 | 5 | 7.23 | 0.24 | 17,903 | 25 |
| 2471 | 90D155102 | 17/2 | 0.1 | 5 | 7.60 | 0.24 | 22,344 | 25 |
| 2472 | 90D155103 | 17/2 | 0.1 | 5 | 7.00 | 0.25 | 27,113 | 25 |
| 2473 | 90D155107 | 14/1 | 0.1 | 15 | 7.31 | 0.17 | 612,541 | 25 |
| 2474 | 90D155108 | 19/2 | 0.1 | 2 | 7.62 | 0.25 | 783 | 25 |
| 2475 | 90D155113 | 19/2 | 0.1 | 2 | 7.58 | 0.24 | 1,800 | 25 |
| 2476 | 90D155109 | 19/2 | 0.1 | 2 | 7.05 | 0.25 | 1,179 | 25 |
| 2477 | 90D155125 | 14/1 | 0.1 | 20 | 6.97 | 0.20 | 1,190,051 | 25 |
| 2578 | 90D155130 | 14/1 | 0.1 | 20 | 7.45 | 0.19 | 1,712,400 | 25 |
| 2479 | 90D155120 | 28 | * | 13 | 7.50 | 0.41 | 1 | 25 |
| 2480 | 90D155122 | 28 | * | 13 | 7.24 | 0.40 | 1 | 25 |
| 2481 | 90D155121 | 27 | * | 13 | 6.89 | 0.40 | 1 | 25 |
| 2623 | 90D155112 | -108 | * | 13 | ---- | ---- | 1 | 25 |
| 2624 | 90D155111 | -129 | * | 13 | ---- | ---- | 1 | 25 |
| 2625 | 90D155301 | -126 | * | 13 | ---- | ---- | 1 | 25 |
| 2626 | 90D155302 | -128 | * | 13 | ---- | ---- | 1 | 25 |
| 4614 | 90D155139 | -66/-7 | 10 | 15 | ---- | ---- | 20,000,000 | 25 R |
| 4615 | 90D155130 | -90/-9 | 10 | 5 | ---- | ---- | 39,215 | 25 |
| 4616 | 90D155131 | -79/-8 | 10 | 8 | ---- | ---- | 400,785 | 25 |
| 4617 | 90D155132 | -79/-8 | 10 | 10 | ---- | ---- | 515,123 | 25 |
| 4618 | 90D155133 | -79/-8 | 10 | 10 | ---- | ---- | 780,009 | 25 R |
| 4620 | 90D155134 | -90/-9 | 10 | 5 | ---- | ---- | 27,023 | 25 |
| 4621 | 90D155139 | -90/-9 | 10 | 5 | ---- | ---- | 26,104 | 25 |

MATERIAL 90D155V2

Lay-up = $[90]_6$, $V_F = 0.372$, Ave. thickness = 3.31 mm, S.D. = 0.09 mm, Derakane 8084 vinyl ester

| | | | | | | | | |
|------|-----------|--------|-----|----|------|------|-----------|------|
| 4760 | 808490207 | 17.2/2 | 0.1 | 15 | 8.72 | 0.20 | 2,000,000 | 25 R |
| 4761 | 808490213 | 51.1 | * | 13 | 9.32 | 0.56 | 1 | 25 |
| 4762 | 808490211 | 34.5/3 | 0.1 | 2 | 8.61 | 0.41 | 1,486 | 25 |
| 4763 | 808490215 | 27.6/3 | 0.1 | 2 | 9.32 | 0.32 | 85,350 | 25 |
| 4764 | 808490214 | 20.7/2 | 0.1 | 5 | 9.12 | 0.23 | 248,600 | 25 |
| 4765 | 808490212 | 20.7/2 | 0.1 | 7 | 8.76 | 0.24 | 153,624 | 25 |
| 4766 | 808490209 | 20.7/2 | 0.1 | 10 | 8.74 | 0.24 | 2,163,003 | 25 |
| 4767 | 808490208 | 27.6/3 | 0.1 | 5 | 9.38 | 0.30 | 10,162 | 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-----------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 4768 | 808490206 | 27.6/3 | 0.1 | 5 | 8.70 | 0.33 | 19,542 | 25 |
| 4769 | 808490216 | 34.5/3 | 0.1 | 1 | 8.42 | 0.41 | 422 | 25 |
| 4770 | 808490202 | 34.5/3 | 0.1 | 1 | 8.25 | 0.43 | 548 | 25 |
| 4771 | 808490217 | 55.8 | * | 13 | 9.66 | 0.58 | 1 | 25 |
| 4772 | 808490201 | 52.0 | * | 13 | 8.09 | 0.64 | 1 | 25 |
| 5912 | 808490218 | -175 | * | 13 | ---- | ---- | 1 | 25 |
| 5913 | 808490219 | -172 | * | 13 | ---- | ---- | 1 | 25 |
| 5914 | 808490221 | -172 | * | 13 | ---- | ---- | 1 | 25 |
| 5915 | 808490200 | -166 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 90D155V

Lay-up = [90]₆, V_F = 0.413, Ave. thickness = 2.98 mm, S.D. = 0.10 mm, Derakane 411C-50 vinyl ester

| | | | | | | | | |
|------|----------|--------|-----|----|------|------|-----------|------|
| 4776 | 41190130 | 43.8 | * | 13 | 7.63 | 0.40 | 1 | 25 |
| 4777 | 41190140 | 51.2 | * | 13 | 9.81 | 0.52 | 1 | 25 |
| 4778 | 41190136 | 52.8 | * | 13 | 10.3 | 0.51 | 1 | 25 |
| 4779 | 41190141 | 20.7/2 | 0.1 | 10 | 11.8 | 0.19 | 223,965 | 25 |
| 4780 | 41190131 | 20.7/2 | 0.1 | 8 | 13.0 | 0.19 | 184,528 | 25 |
| 4781 | 41190149 | 20.7/2 | 0.1 | 10 | 11.1 | 0.19 | 138,110 | 25 |
| 4782 | 41190148 | 27.6/3 | 0.1 | 5 | 9.42 | 0.31 | 2,730 | 25 |
| 4783 | 41190135 | 27.6/3 | 0.1 | 5 | 10.8 | 0.26 | 15,581 | 25 |
| 4784 | 41190134 | 27.6/3 | 0.1 | 4 | 10.1 | 0.28 | 12,939 | 25 |
| 4785 | 41190147 | 24.1/2 | 0.1 | 5 | 8.21 | 0.31 | 77,719 | 25 |
| 4786 | 41190146 | 24.1/2 | 0.1 | 8 | 11.8 | 0.25 | 52,833 | 25 |
| 4787 | 41190138 | 24.1/2 | 0.1 | 4 | 10.1 | 0.24 | 30,181 | 25 |
| 4788 | 41190137 | 17.2/2 | 0.1 | 15 | 10.3 | 0.17 | 2,000,000 | 25 R |
| 5916 | 41190145 | -173 | * | 13 | ---- | ---- | 1 | 25 |
| 5917 | 41190144 | -164 | * | 13 | ---- | ---- | 1 | 25 |
| 5918 | 41190132 | -173 | * | 13 | ---- | ---- | 1 | 25 |
| 5919 | 41190139 | -158 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL 90D155E2

Lay-up = [90]₆, V_F = 0.361, Ave. thickness = 3.41 mm, S.D. = 0.20 mm, SC14 epoxy

| | | | | | | | | |
|------|-----------|--------|-----|-----|------|------|-----------|------|
| 4789 | SC1490216 | 27.6/3 | 0.1 | 0.1 | 9.29 | 0.35 | 254 | 25 |
| 4790 | SC1490215 | 20.7/2 | 0.1 | 0.1 | 5.48 | 0.40 | 1,161 | 25 |
| 4791 | SC1490207 | 38.2 | * | 13 | 6.72 | 0.57 | 1 | 25 |
| 4792 | SC1490204 | 39.8 | * | 13 | 7.20 | 0.55 | 1 | 25 |
| 4793 | SC1490208 | 43 | * | 13 | 8.34 | 0.52 | 1 | 25 |
| 4794 | SC1490206 | 13.8/1 | 0.1 | 15 | 9.10 | 0.15 | 3,000,000 | 25 R |
| 4795 | SC1490209 | 20.7/2 | 0.1 | 3 | 5.30 | 0.40 | 8,141 | 25 |
| 4796 | SC1490213 | 17.2/2 | 0.1 | 5 | 7.30 | 0.26 | 292,196 | 25 |
| 4797 | SC1490210 | 20.7/2 | 0.1 | 3 | 8.06 | 0.27 | 27,984 | 25 |
| 4798 | SC1490212 | 26.1/3 | 0.1 | 3 | 5.93 | 0.44 | 402 | 25 |
| 5904 | SC1490211 | -151 | * | 13 | ---- | ---- | 1 | 25 |
| 5905 | SC1490201 | -153 | * | 13 | ---- | ---- | 1 | 25 |
| 5906 | SC1490203 | -151 | * | 13 | ---- | ---- | 1 | 25 |
| 5907 | SC1490205 | -151 | * | 13 | ---- | ---- | 1 | 25 |

0/90 WOVEN ROVING

MATERIAL ROV1 (0/90 ROVING)

Lay-up = $[0/90]_4$, $V_F = 0.486$, Ave. thickness = 2.96 mm, S.D. = 0.16 mm, CoRezyn 63-AX-051 Polyester.

Tests 2095 - 2108 in this section were done for Table 17. Compression tests involved a 13 mm gage length.

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 2094 | ROV01 | 380 | * | 0.25 | 22.8 | 2.40 | 1 ZERO |
| 2095 | ROV02 | 364 | * | 0.25 | 22.5 | 2.20 | 1 ZERO |
| 2096 | ROV03 | 374 | * | 0.25 | 24.8 | 2.20 | 1 ZERO |
| 2097 | ROV04 | 97 | * | 0.25 | 11.0 | ---- | 1 ±45 |
| 2098 | ROV05 | 102 | * | 0.25 | 11.4 | ---- | 1 ±45 |
| 2099 | ROV06 | 99 | * | 0.25 | 11.4 | ---- | 1 ±45 |
| 2100 | ROV07 | -213 | * | 0.25 | 20.3 | ---- | 1 ZERO |
| 2101 | ROV08 | -230 | * | 0.25 | 21.6 | ---- | 1 ZERO |
| 2102 | ROV09 | -240 | * | 0.25 | 23.9 | ---- | 1 ZERO |
| 2103 | ROV10 | 98 | * | 0.25 | 10.6 | ---- | 1 ±45 |
| 2104 | ROV11 | -100 | * | 0.25 | 11.2 | ---- | 1 ±45 |
| 2105 | ROV12 | -97 | * | 0.25 | 11.3 | ---- | 1 ±45 |
| 2106 | ROV50 | -207 | * | 0.25 | 13.7 | ---- | 1 ZERO |
| 2107 | ROV51 | 410 | * | 0.25 | 25.4 | --- | 1 ZERO |
| 2108 | ROV52 | 102 | * | 0.25 | 13.9 | ---- | 1 ±45 |

MATERIAL ROV2 (0/90 ROVING)

Lay-up = $[0/90]_4$, $V_F = 0.353$, Ave. thickness = 4.08 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | |
|------|--------|--------|-----|----|------|------|----------------|
| 4193 | ROV217 | 326 | * | 13 | ---- | ---- | 1 25 |
| 4194 | ROV215 | 103/10 | 0.1 | 10 | ---- | ---- | 3,200,000 25 R |
| 4195 | ROV218 | 380 | * | 13 | 21.0 | 1.9 | 1 25 |
| 4196 | ROV206 | 381 | * | 13 | 21.6 | 1.8 | 1 25 |
| 4197 | ROV205 | 241/24 | 0.1 | 1 | 21.3 | 1.45 | 1,642 25 |
| 4198 | ROV201 | 172/17 | 0.1 | 3 | 21.7 | 0.96 | 13,794 25 |
| 4199 | ROV200 | 138/14 | 0.1 | 5 | 21.2 | 0.74 | 608,189 25 |
| 4200 | ROV204 | 172/17 | 0.1 | 2 | 22.4 | 0.87 | 40,071 25 |
| 4201 | ROV203 | 172/17 | 0.1 | 3 | 23.1 | 0.89 | 63,917 25 |
| 4202 | ROV214 | 138/14 | 0.1 | 10 | 21.2 | 0.78 | 723,201 25 |
| 4203 | ROV212 | 138/14 | 0.1 | 10 | 21.0 | 0.81 | 483,611 25 |
| 4204 | ROV207 | 241/24 | 0.1 | 1 | 20.9 | 1.50 | 1,043 25 |
| 4205 | ROV219 | 241/24 | 0.1 | 1 | 20.7 | 1.58 | 494 25 |
| 4226 | ROV231 | -266 | * | 13 | ---- | ---- | 1 25 |
| 4227 | ROV230 | -245 | * | 13 | ---- | ---- | 1 25 |
| 4228 | ROV232 | -217 | * | 13 | ---- | ---- | 1 25 |
| 4229 | ROV238 | -247 | * | 13 | ---- | ---- | 1 25 |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL ROV3 (0/90 ROVING)

Lay-up = [0/90]₅, V_F = 0.40, Ave. thickness = 3.15 mm, S.D. = 0.05 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----|
| 4284 | ROV3106 | 406 | * | 13 | 21.1 | 2.3 | 1 | 25 |
| 4285 | ROV3109 | 443 | * | 13 | 21.4 | 2.4 | 1 | 25 |
| 4286 | ROV3103 | 416 | * | 13 | 21.0 | 2.3 | 1 | 25 |
| 4287 | ROV3107 | 207/21 | 0.1 | 2 | 20.1 | 1.35 | 3,055 | 25 |
| 4288 | ROV3112 | 207/21 | 0.1 | 2 | 21.5 | 1.26 | 8,236 | 25 |
| 4289 | ROV3108 | 207/21 | 0.1 | 3 | 20.9 | 1.34 | 3,720 | 25 |
| 4290 | ROV3114 | 172/17 | 0.1 | 4 | 20.0 | 1.10 | 23,506 | 25 |
| 4291 | ROV3110 | 172/17 | 0.1 | 4 | 20.2 | 1.06 | 14,233 | 25 |
| 4292 | ROV3111 | 172/17 | 0.1 | 4 | 20.7 | 1.03 | 28,712 | 25 |
| 4293 | ROV3102 | 103/10 | 0.1 | 10 | 21.2 | 0.58 | 4,320,474 | 25 |
| 4294 | ROV3113 | 138/14 | 0.1 | 6 | 19.9 | 0.85 | 351,549 | 25 |
| 4295 | ROV3115 | 138/14 | 0.1 | 6 | 22.0 | 0.79 | 690,805 | 25 |
| 4296 | ROV3104 | 138/14 | 0.1 | 6 | 21.1 | 0.80 | 216,248 | 25 |
| 4297 | ROV3101 | 138/14 | 0.1 | 6 | 20.7 | 0.84 | 264,008 | 25 |
| 4314 | ROV3130 | -201 | * | 13 | ---- | ---- | 1 | 25 |
| 4315 | ROV3131 | -204 | * | 13 | ---- | ---- | 1 | 25 |
| 4316 | ROV3132 | -204 | * | 13 | ---- | ---- | 1 | 25 |
| 4320 | ROV3105 | 103/10 | 0.1 | 10 | 21.7 | 0.61 | 4,855,537 | 25 |
| 4327 | ROV3130 | 103/10 | 0.1 | 8 | 21.0 | 0.63 | 5,981,053 | 25 |

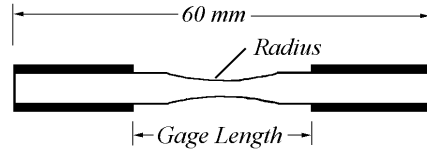
MATERIAL ROV4 (0/90 ROVING)

Lay-up = [0/90]₈, V_F = 0.53, Ave. thickness = 3.71 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|-----|----|------|------|-----------|----|
| 4298 | ROV4109 | 207/21 | 0.1 | 2 | 27.5 | 1.04 | 1,501 | 25 |
| 4299 | ROV4110 | 207/21 | 0.1 | 2 | 28.1 | 1.05 | 1,558 | 25 |
| 4300 | ROV4111 | 207/21 | 0.1 | 2 | 26.4 | 1.11 | 2,319 | 25 |
| 4301 | ROV4106 | 172/17 | 0.1 | 3 | 28.1 | 0.83 | 4,371 | 25 |
| 4302 | ROV4105 | 172/17 | 0.1 | 3 | 24.4 | 0.98 | 3,514 | 25 |
| 4303 | ROV4114 | 172/17 | 0.1 | 3 | 26.8 | 0.90 | 4,498 | 25 |
| 4304 | ROV4115 | 138/14 | 0.1 | 5 | 27.0 | 0.67 | 14,689 | 25 |
| 4305 | ROV4107 | 138/14 | 0.1 | 5 | 28.1 | 0.65 | 8,459 | 25 |
| 4306 | ROV4113 | 138/14 | 0.1 | 5 | 27.2 | 0.67 | 11,994 | 25 |
| 4307 | ROV4112 | 103/10 | 0.1 | 6 | 25.1 | 0.51 | 68,112 | 25 |
| 4308 | ROV4104 | 502 | * | 13 | 25.3 | 2.2 | 1 | 25 |
| 4309 | ROV4108 | 524 | * | 13 | 24.3 | 2.4 | 1 | 25 |
| 4310 | ROV4102 | 488 | * | 13 | 25.4 | 2.1 | 1 | 25 |
| 4311 | ROV4117 | 103/10 | 0.1 | 5 | 28.0 | 0.47 | 76,081 | 25 |
| 4312 | ROV4116 | 103/10 | 0.1 | 5 | 27.7 | 0.46 | 147,753 | 25 |
| 4313 | ROV4103 | 86/9 | 0.1 | 15 | 26.7 | 0.36 | 1,965,313 | 25 |
| 4317 | ROV4130 | -351 | * | 13 | ---- | ---- | 1 | 25 |
| 4318 | ROV4131 | -302 | * | 13 | ---- | ---- | 1 | 25 |
| 4319 | ROV4132 | -289 | * | 13 | ---- | ---- | 1 | 25 |
| 4321 | ROV4101 | 86/9 | 0.1 | 15 | 26.9 | 0.35 | 924,136 | 25 |
| 4324 | ROV4120 | 86/9 | 0.1 | 10 | 27.2 | 0.36 | 273,658 | 25 |
| 4326 | ROV4121 | 86/9 | 0.1 | 5 | 27.1 | 0.35 | 1,135,918 | 25 |

(0)₂ and (90)₄ HIGH CYCLE TESTS

This series of tests studied two basic composite materials, a (0)₂ and a (90)₄ laminate, at R values of 2, 10, -1, 0.1 and 0.5. The Fatigue tests were carried out to 100 million cycles and involved testing frequencies up to 100 Hz. Smaller and thinner composites were necessary to avoid thermal fatigue failures.



| Gage Length, Radius and Width of [0] ₂ and [90] ₄ Test Coupons | | | |
|--|-------------|-----------|-------|
| Direction and R value | Gage Length | Radius | Width |
| [0], R = 2, 10 | 5 mm | No radius | 6 mm |
| [90], R = 2, 10, -1 | 5 mm | | 19 mm |
| [90], R = 0.1, 0.5 | 25 mm | | 19 mm |
| [0], R = 0.1, 0.5 | 10 mm | 17 mm | 6 mm |
| [0], R = -1 | 5 mm | | |

| | | | | | | | |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL (0)₂

Lay-up = (0)₂, V_F = 0.48 - 0.52, Average Thickness (Non-Tapered Coupons) = 0.815 mm, S.D. = 0.051 mm (min = 0.711 mm, max = 0.889 mm), Owens Corning D155 Fabric (527 g/m²), CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|--------|--------|-----|------|------|------|---------|-------|
| 5001 | CT4 | 1627 | * | 6 | 46.2 | 3.53 | 1 | 6 tab |
| 5002 | AT2 | 1517 | * | 6 | 46.2 | 3.28 | 1 | 6 tab |
| 5003 | AT26 | 1393 | * | 3 | 46.2 | 3.01 | 1 | 6 tab |
| 5004 | CT3 | 1344 | * | 0.01 | 46.2 | 2.91 | 1 | 6 tab |
| 5146 | TF514 | 1332 | * | 5 | 39 | 2.88 | 1 | 6 tab |
| 5148 | TF504 | 1398 | * | 5 | 39 | 3.03 | 1 | 6 tab |
| 5149 | TF505 | 1329 | * | 5 | 39 | 2.88 | 1 | 6 tab |
| 2248 | TF501A | 1274 | * | 5 | 39 | 2.76 | 1 | 6 tab |
| 2249 | TF502A | 1589 | * | 5 | 39 | 3.43 | 1 | 6 tab |
| 2250 | TF503A | 1496 | * | 5 | 39 | 3.23 | 1 | 6 tab |
| 2251 | TF510 | 1249 | * | 5 | 39 | 2.70 | 1 | 6 tab |
| 2252 | AT5 | 1270 | * | 0.5 | 46.2 | 2.75 | 1 | 6 tab |
| 2253 | AT4 | 1343 | * | 0.5 | 46.2 | 2.91 | 1 | 6 tab |
| 2254 | T1 | 1684 | * | 5 | 46.2 | 3.64 | 1 | 6 tab |
| 2255 | TFT5 | 1692 | * | 5 | 39 | 3.66 | 1 | 6 tab |
| 2256 | TF501 | 1713 | * | 5 | 39 | 3.70 | 1 | 6 tab |
| 2257 | TF502 | 1391 | * | 5 | 39 | 3.01 | 1 | 6 tab |
| 5005 | AT27 | 690/69 | 0.1 | 20 | 46.2 | 1.49 | 2,982 | 6 tab |
| 5006 | CT1 | 690/69 | 0.1 | 20 | 46.2 | 1.49 | 45,845 | 6 tab |
| 5007 | AT19 | 469/47 | 0.1 | 60 | 46.2 | 1.01 | 157,502 | 6 tab |

| TEST & SAMPLE ID # | | STRESS. Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------|-----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 5008 | AT18 | 469/47 | 0.1 | 60 | 46.2 | 1.01 | 702,844 | 6 tab |
| 5009 | AT23 | 414/41 | 0.1 | 80 | 46.2 | 0.90 | 602,984 | 6 tab |
| 5010 | AT20 | 414/41 | 0.1 | 80 | 46.2 | 0.90 | 2,269,945 | 6 tab |
| 5011 | CT5 | 310/31 | 0.1 | 100 | 46.2 | 0.67 | 5,902,329 | 6 tab |
| 5012 | CT7 | 310/31 | 0.1 | 100 | 46.2 | 0.67 | 78,810,903 | 6 R tab |
| 5013 | CT2 | 310/31 | 0.1 | 100 | 46.2 | 0.67 | 110,539,817 | 6 R tab |
| 2258 | T1 | 345/35 | 0.1 | 60 | 46.2 | 0.60 | 5,151,390 | 6 tab |
| 2259 | T2 | 345/35 | 0.1 | 40 | 46.2 | 0.60 | 772,447 | 6 tab |
| 2260 | FT6 | 538/54 | 0.1 | 60 | 46.2 | 1.16 | 144,728 | 6 tab |
| 2261 | TF503 | 345/35 | 0.1 | 60 | 46.2 | 0.75 | 6,889,310 | 6 R tab |
| 2262 | TF506 | 538/54 | 0.1 | 60 | 46.2 | 1.16 | 891,716 | 6 tab |
| 2263 | AT3 | 207/21 | 0.1 | 100 | 46.2 | 0.45 | 14,715,704 | 6 R tab |
| 2264 | AT21 | 414/41 | 0.1 | 80 | 46.2 | 0.90 | 80,439 | 6 tab |
| 2265 | AT22 | 414/41 | 0.1 | 80 | 46.2 | 0.90 | 98,566 | 6 tab |
| 5014 | TF513 | 1310 | * | 5 | 39.2 | 3.31 | 1 | 6 tab |
| 5015 | TF512 | 1426 | * | 5 | 39.2 | 3.64 | 1 | 6 tab |
| 5016 | TF515 | 1396 | * | 5 | 39.2 | 3.56 | 1 | 6 tab |
| 5017 | TF516 | 1295 | * | 20 | 39.2 | 3.34 | 1 | 6 tab |
| 5018 | TF525 | 602/301 | 0.5 | 60 | 39.2 | 1.54 | 235,881 | 6 tab |
| 5019 | TF526 | 602/301 | 0.5 | 60 | 39.2 | 1.54 | 284,150 | 6 tab |
| 2266 | TF524 | 602/301 | 0.5 | 40 | 39.2 | 1.54 | 2,513,501 | 6 tab |
| 5020 | TF527 | 606/303 | 0.5 | 60 | 39.2 | 1.54 | 850,428 | 6 tab |
| 5021 | TF521 | 535/268 | 0.5 | 80 | 39.2 | 1.36 | 417,082 | 6 tab |
| 5022 | TF528 | 535/268 | 0.5 | 80 | 39.2 | 1.36 | 1,095,381 | 6 tab |
| 5023 | TF522 | 535/268 | 0.5 | 80 | 39.2 | 1.36 | 4,112,276 | 6 tab |
| 2267 | TF517 | 535/268 | 0.5 | 60 | 39.2 | 1.36 | 486,856 | 6 tab |
| 2268 | TF518 | 535/268 | 0.5 | 60 | 39.2 | 1.36 | 368,725 | 6 tab |
| 5024 | TF529 | 468/234 | 0.5 | 100 | 39.2 | 1.19 | 11,927,857 | 6 tab |
| 5025 | TF520 | 468/234 | 0.5 | 100 | 39.2 | 1.19 | 16,711,593 | 6 tab |
| 5026 | TF519 | 401/200 | 0.5 | 100 | 39.2 | 1.02 | 100,686,430 | 6 R tab |
| 2269 | TF507 | 717/359 | 0.5 | 40 | 39.2 | 1.82 | 474,816 | 6 tab |
| 2270 | TF508 | 627/314 | 0.5 | 60 | 39.2 | 1.60 | 11,276,771 | 6 tab |
| 2271 | TF504A | 807/404 | 0.5 | 40 | 39.2 | 2.06 | 245,223 | 6 tab |
| 2272 | TF505A | 627/314 | 0.5 | 60 | 39.2 | 1.60 | 3,527,508 | 6 tab |
| Brackets after the sample ID indicate the coupon fiber volume in the radius | | | | | | | | |
| 5027 | AC14 (57) | -742 | * | 0.8 | 35.6 | -2.09 | 1 | 6 tab |
| 5028 | AC17 (46) | -741 | * | 0.8 | 35.6 | -2.09 | 1 | 6 tab |
| 5029 | AC13 (45) | -683 | * | 0.8 | 35.6 | -1.93 | 1 | 6 tab |
| 5030 | AC11 (48) | -414/-41 | 10 | 40 | 35.6 | -1.17 | 8,226 | 6 tab |
| 5031 | AC12 (49) | -414/-41 | 10 | 40 | 35.6 | -1.17 | 10,886 | 6 tab |
| 5032 | AC8 (61) | -414/-41 | 10 | 40 | 35.6 | -1.17 | 19,210 | 6 tab |
| 5033 | AC15 (61) | -345/-35 | 10 | 60 | 35.6 | -0.97 | 337,992 | 6 tab |
| 5034 | AC16 (46) | -345/-35 | 10 | 60 | 35.6 | -0.97 | 375,478 | 6 tab |
| 5035 | AC7 (50) | -345/-35 | 10 | 60 | 35.6 | -0.97 | 587,407 | 6 tab |
| 5036 | AC30 (48) | -276/-28 | 10 | 100 | 35.6 | -0.78 | 103,112,335 | 6 R tab |
| 5037 | AC10 (51) | -276/-28 | 10 | 100 | 35.6 | -0.78 | 103,573,682 | 6 R tab |
| 2273 | AC2 | -414/-41 | 10 | 40 | 35.6 | -1.17 | 2,688 | 6 tab |
| 2274 | AC1 | -345/-35 | 10 | 60 | 35.6 | -0.97 | 76,726 | 6 tab |
| 2275 | C2A | -264/-26 | 10 | 80 | 35.6 | -0.74 | 13,990,000 | 6 tab |
| 2276 | C6 | -207/-21 | 10 | 100 | 35.6 | -0.58 | 51,028,261 | 6 R tab |
| 2277 | 7A | -207/-21 | 10 | 20 | 35.6 | -0.58 | 10,188,794 | 6 R tab |
| 2278 | WA1 | -276/-28 | 10 | 30 | 35.6 | -0.78 | 12,635,375 | 6 R tab |
| 2279 | WA4 | -276/-28 | 10 | 30 | 35.6 | -0.78 | 9,707,898 | 6 R tab |
| 2280 | WA5 | -345/-35 | 10 | 30 | 35.6 | -0.97 | 52,740 | 6 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|----------------------------|----|---------|----------|--------|-------------------|----------------------------|
| 2281 | WA10 | -276/-28 | 10 | 30 | 35.6 | -0.78 | 10,106,247 | 6 tab |
| 2282 | CC3 | -345/-35 | 10 | 60 | 35.6 | -0.97 | 69,631 | 6 tab |
| 2283 | CC4 | -345/-35 | 10 | 10 | 35.6 | -0.97 | 781,804 | 6 R tab |
| 2284 | CC5 | -379/-38 | 10 | 10 | 35.6 | -1.06 | 4,021 | 6 tab |
| 2285 | CC6 | -379/-38 | 10 | 10 | 35.6 | -1.06 | 496,974 | 6 tab |
| 2286 | CC7 | -379/-38 | 10 | 50 | 35.6 | -1.06 | 12,660 | 6 tab |
| 2287 | CC8 | -379/-38 | 10 | 10 | 35.6 | -1.06 | 3,638,153 | 6 tab |
| 2288 | CC9 | -379/-38 | 10 | 50 | 35.6 | -1.06 | 4,765 | 6 tab |
| 2289 | CC10 | -379/-38 | 10 | 50 | 35.6 | -1.06 | 8,349 | 6 tab |
| 2290 | CC11 | -379/-38 | 10 | 10 | 35.6 | -1.06 | 1,336,317 | 6 tab |
| 2291 | CC12 | -379/-38 | 10 | 30 | 35.6 | -1.06 | 10,192 | 6 tab |
| 2292 | CC13 | -379/-38 | 10 | 30 | 35.6 | -1.06 | 6,550 | 6 tab |
| 2293 | C2 | -345/-35 | 10 | 30 | 35.6 | -0.97 | 37,274 | 6 tab |
| 2294 | FC1 | -234/-23 | 10 | 60 | 35.6 | -0.66 | 23,110,567 | 6 tab |
| 5038 | AC19 (49) | -552/-276 | 2 | 60 | 35.4 | -1.56 | 9,255 | 6 tab |
| 5039 | AC26 (49) | -552/-276 | 2 | 60 | 35.4 | -1.56 | 12,319 | 6 tab |
| 5040 | AC29 (49) | -552/-276 | 2 | 60 | 35.4 | -1.56 | 22,071 | 6 tab |
| 5041 | AC20 (51) | -552/-276 | 2 | 60 | 35.4 | -1.56 | 46,085 | 6 tab |
| 5042 | AC21 (47) | -483/-242 | 2 | 80 | 35.4 | -1.36 | 11,347 | 6 tab |
| 5043 | AC24 (52) | -483/-242 | 2 | 80 | 35.4 | -1.36 | 38,158 | 6 tab |
| 5044 | AC31 (44) | -483/-242 | 2 | 80 | 35.4 | -1.36 | 45,312 | 6 tab |
| 5045 | AC22 (46) | -483/-242 | 2 | 80 | 35.4 | -1.36 | 103,970 | 6 tab |
| 5046 | AC32 (46) | -448/-224 | 2 | 100 | 35.4 | -1.26 | 17,937 | 6 tab |
| 5047 | AC35 (48) | -448/-224 | 2 | 100 | 35.4 | -1.26 | 3,891,657 | 6 tab |
| 5048 | AC25 (49) | -448/-224 | 2 | 100 | 35.4 | -1.26 | 100,081,219 | 6 R tab |
| 5049 | AC23 (50) | -414/-207 | 2 | 100 | 35.4 | -1.17 | 107,413,026 | 6 R tab |
| 2295 | AC34 | -448/-224 | 2 | 100 | 35.4 | -1.26 | 403,736 | 6 tab |
| 2296 | AC33 | -448/-224 | 2 | 100 | 35.4 | -1.26 | 34,426 | 6 tab |
| 2297 | AC32 | -448/-224 | 2 | 100 | 35.4 | -1.26 | 17,937 | 6 tab |
| 5050 | TCT1 | 1367 | * | 20 | 39.2 | 3.49 | 1 | 6 tab |
| 5051 | TCT2 | 1387 | * | 20 | 39.2 | 3.54 | 1 | 6 tab |
| 5052 | TCT3 | 1279 | * | 20 | 39.2 | 3.26 | 1 | 6 tab |
| 5053 | TCT4 | 1527 | * | 20 | 39.2 | 3.89 | 1 | 6 tab |
| 5054 | TCC1 | -646 | * | 20 | 41.2 | -1.57 | 1 | 6 tab |
| 5055 | TCC2 | -463 | * | 20 | 41.2 | -1.13 | 1 | 6 tab |
| 5056 | TCC3 | -689 | * | 20 | 41.2 | -1.68 | 1 | 6 tab |
| 5057 | TCC4 | -537 | * | 20 | 41.2 | -1.30 | 1 | 6 tab |
| 2298 | 0STC1 | -481 | * | 0.2 | -- | ---- | 1 | 6 tab |
| 2299 | 0STC3 | -478 | * | 0.2 | -- | ---- | 1 | 6 tab |
| 2300 | 0FTC1 | -513 | * | 5 | -- | ---- | 1 | 6 tab |
| 2301 | 0FTC2 | -534 | * | 5 | -- | ---- | 1 | 6 tab |
| 2302 | AC36 | -592 | * | 5 | -- | ---- | 1 | 6 tab |
| 2303 | AC37 | -639 | * | 5 | -- | ---- | 1 | 6 tab |
| 2304 | 9A | -501 | * | 5 | -- | ---- | 1 | 6 tab |
| 2305 | 10A | -500 | * | 5 | -- | ---- | 1 | 6 tab |
| 2306 | 13A | -502 | * | 5 | -- | ---- | 1 | 6 tab |
| 2307 | WA7 | -613 | * | 5 | -- | ---- | 1 | 6 tab |
| 2308 | WA8 | -588 | * | 5 | -- | ---- | 1 | 6 tab |
| 2309 | WA9 | -596 | * | 5 | -- | ---- | 1 | 6 tab |
| 2310 | TC1 | 293/-293 | -1 | 20 | -- | ---- | 3,596 | 6 tab |
| 2311 | 0FTS4 | 267/-267 | -1 | 10 | -- | ---- | 146,258 | 6 tab |
| 5058 | TC15 (45) | 264/-264 | -1 | 30 | 40.2 | 0.66 | 124,950 | 6 tab |
| 5059 | TC16 (45) | 264/-264 | -1 | 30 | 40.2 | 0.66 | 337,226 | 6 tab |
| 5060 | TC13 (45) | 264/-264 | -1 | 30 | 40.2 | 0.66 | 437,113 | 6 tab |
| 2312 | TC14 | 264/-264 | -1 | 30 | 40.2 | 0.66 | 1,260,397 | 6 tab |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 2313 | TC12 | 234/-234 | -1 | 30 | 40.2 | 0.58 | 754,410 | 6 tab |
| 5061 | TC11 (40) | 234/-234 | -1 | 30 | 40.2 | 0.58 | 591,914 | 6 tab |
| 5062 | TC7 (40) | 234/-234 | -1 | 30 | 40.2 | 0.58 | 781,045 | 6 tab |
| 5063 | TC9 (40) | 234/-234 | -1 | 30 | 40.2 | 0.58 | 1,981,821 | 6 tab |
| 5064 | TC22 | 205/-205 | -1 | 40 | 40.2 | 0.51 | 2,037,672 | 6 tab |
| 5065 | TC18 (35) | 205/-205 | -1 | 40 | 40.2 | 0.51 | 6,141,627 | 6 tab |
| 5066 | TC6 (35) | 205/-205 | -1 | 40 | 40.2 | 0.51 | 7,080,727 | 6 tab |
| 5067 | TC10 (35) | 205/-205 | -1 | 40 | 40.2 | 0.51 | 7,605,707 | 6 tab |
| 5068 | TC21 | 176/-176 | -1 | 50 | 40.2 | 0.44 | 10,382,631 | 6 tab |
| 5069 | TC19 | 176/-176 | -1 | 50 | 40.2 | 0.44 | 17,272,745 | 6 tab |
| 5070 | TC20 | 176/-176 | -1 | 50 | 40.2 | 0.44 | 100,000,000 | 6 R tab |
| 2314 | 0FTC11 | 160/-160 | -1 | 60 | 40.2 | 0.40 | 25,924,921 | 6 R tab |
| 2315 | 0FTC12 | 187/-187 | -1 | 40 | 40.2 | 0.47 | 4,850,470 | 6 tab |
| 2316 | 0FTS19 | 187/-187 | -1 | 30 | 40.2 | 0.47 | 3,267,903 | 6 tab |
| 2317 | 0FTC20 | 187/-187 | -1 | 30 | 40.2 | 0.47 | 6,909,213 | 6 tab |
| 5071 | TC601 | 1618 | * | 20 | 40.2 | 4.02 | 1 | 6 tab |
| 5072 | TC602 | 1382 | * | 20 | 40.2 | 3.44 | 1 | 6 tab |
| 5073 | TC603 | 1410 | * | 20 | 40.2 | 3.51 | 1 | 6 tab |
| 5074 | TC604 | -746 | * | 20 | 40.2 | -1.86 | 1 | 6 tab |
| 5075 | TC605 | -716 | * | 20 | 40.2 | -1.78 | 1 | 6 tab |
| 5076 | TC606 | -687 | * | 20 | 40.2 | -1.71 | 1 | 6 tab |
| 5077 | TC608 | 294/-147 | -0.5 | 20 | 40.2 | 0.73 | 54,401 | 6 tab |
| 5078 | TC609 | 294/-147 | -0.5 | 20 | 40.2 | 0.73 | 151,631 | 6 tab |
| 5079 | TC613 | 294/-147 | -0.5 | 20 | 40.2 | 0.73 | 2,215,625 | 6 tab |
| 5080 | TC610 | 257/-129 | -0.5 | 20 | 40.2 | 0.64 | 338,635 | 6 tab |
| 5081 | TC611 | 257/-129 | -0.5 | 20 | 40.2 | 0.64 | 677,151 | 6 tab |
| 5082 | TC616 | 257/-129 | -0.5 | 20 | 40.2 | 0.64 | 4,237,939 | 6 tab |
| 5083 | TC614 | 257/-129 | -0.5 | 20 | 40.2 | 0.64 | 4,554,382 | 6 tab |
| 5084 | TC612 | 220/-110 | -0.5 | 20 | 40.2 | 0.55 | 3,089,148 | 6 tab |
| 5085 | TC615 | 220/-110 | -0.5 | 20 | 40.2 | 0.55 | 11,113,718 | 6 R tab |

MATERIAL (90)₄

Lay-up = (90)₄, $V_F = 0.381$, Average Thickness = 1.38 mm, S.D. = 0.15 mm (min = 1.07 mm, max = 1.75 mm)
Hexcel D100 Fabric (340 g/m²), CoRezyn 63-AX-051 Polyester

| | | | | | | | | |
|------|---------|--------|----|----|-----|-------|---------|--------|
| 2318 | 90CF7 | -111 | * | 4 | 9.0 | -1.23 | 1 | 13 tab |
| 2319 | 90CF6 | -127 | * | 4 | 9.0 | -1.41 | 1 | 13 tab |
| 2320 | 90CF5 | -112 | * | 4 | 9.0 | -1.24 | 1 | 13 tab |
| 2321 | 90CF4 | -128 | * | 4 | 9.0 | -1.42 | 1 | 13 tab |
| 2322 | 90CF4A | -157 | * | 4 | 9.0 | -1.74 | 1 | 13 tab |
| 2323 | 90CF2 | -136 | * | 4 | 9.0 | -1.51 | 1 | 13 tab |
| 2324 | 90CF8 | -110 | * | 4 | 9.0 | -1.22 | 1 | 13 tab |
| 2325 | 90CF6A | -136 | * | 4 | 9.0 | -1.51 | 1 | 13 tab |
| 5086 | 90CF6T | -145 | * | 4 | 9.0 | -1.61 | 1 | 13 tab |
| 5087 | 90CF5T | -160 | * | 4 | 9.0 | -1.78 | 1 | 13 tab |
| 5088 | 90CF7T | -124 | * | 4 | 9.0 | -1.38 | 1 | 13 tab |
| 2326 | 90CF4A | -76/-8 | 10 | 40 | 9.0 | -0.84 | 76,674 | 13 tab |
| 5089 | 90CF10T | -70/-7 | 10 | 50 | 9.0 | -0.79 | 13,122 | 13 tab |
| 5090 | 90CF17T | -70/-7 | 10 | 50 | 9.0 | -0.79 | 33,632 | 13 tab |
| 5091 | 90CF15T | -70/-7 | 10 | 50 | 9.0 | -0.79 | 268,262 | 13 tab |
| 5092 | 90CF12T | -64/-6 | 10 | 70 | 9.0 | -0.72 | 290,252 | 13 tab |
| 5093 | 90CF11T | -64/-6 | 10 | 70 | 9.0 | -0.72 | 697,512 | 13 tab |

| TEST & SAMPLE ID # | | STRESS | R | Q | E | e | CYCLES | | WIDTH | | | |
|--------------------------|----------|-----------|-----|-----|-----|-------|-------------|-----|-----------|---|---------|------|
| | | Max./Min. | | | | | Hz | GPa | | % | TO FAIL | (mm) |
| | | MPa | | | | | | | | | | |
| | | | | | | | | | and Notes | | | |
| 5094 | 90CF18T | -64/-6 | 10 | 70 | 9.0 | -0.72 | 1,330,488 | | 13 tab | | | |
| 2327 | 90CF19 | -59/-6 | 10 | 70 | 9.0 | -0.65 | 1,407,676 | | 13 tab | | | |
| 2328 | 90CF16 | -59/-6 | 10 | 70 | 9.0 | -0.65 | 2,218,971 | | 13 tab | | | |
| 2329 | 90CF13 | -59/-6 | 10 | 100 | 9.0 | -0.65 | 45,789,443 | | 13 tab | | | |
| 5095 | 90CF21T | -59/-6 | 10 | 100 | 9.0 | -0.65 | 12,000,998 | | 13 tab | | | |
| 5096 | 90CF9T | -59/-6 | 10 | 100 | 9.0 | -0.65 | 34,986,168 | | 13 tab | | | |
| 5097 | 90CF20T | -55/-6 | 10 | 100 | 9.0 | -0.65 | 107,839,549 | | 13 R tab | | | |
| 2330 | 90CF22 | -55/-6 | 10 | 100 | 9.0 | -0.65 | 15,368,000 | | 13 R tab | | | |
| 5098 | CF501T | -113 | * | 20 | 9.0 | -1.26 | 1 | | 13 tab | | | |
| 5099 | CF502T | -113 | * | 20 | 9.0 | -1.26 | 1 | | 13 tab | | | |
| 5100 | CF503T | -121 | * | 20 | 9.0 | -1.34 | 1 | | 13 tab | | | |
| 5101 | CF504T | -115 | * | 20 | 9.0 | -1.27 | 1 | | 13 tab | | | |
| 5102 | CF518T | -88/-44 | 2 | 40 | 9.0 | -0.98 | 121,730 | | 13 tab | | | |
| 5103 | CF514T | -88/-44 | 2 | 40 | 9.0 | -0.98 | 511,744 | | 13 tab | | | |
| 5104 | CF517T | -88/-44 | 2 | 40 | 9.0 | -0.98 | 621,878 | | 13 tab | | | |
| 5105 | CF513T | -82/-41 | 2 | 60 | 9.0 | -0.92 | 853,552 | | 13 tab | | | |
| 5106 | CF512T | -82/-41 | 2 | 60 | 9.0 | -0.92 | 2,675,404 | | 13 tab | | | |
| 5107 | CF507T | -82/-41 | 2 | 60 | 9.0 | -0.92 | 3,705,190 | | 13 tab | | | |
| 5108 | CF511T | -76/-38 | 2 | 80 | 9.0 | -0.85 | 31,971,669 | | 13 tab | | | |
| 5109 | CF519T | -76/-38 | 2 | 80 | 9.0 | -0.85 | 100,682,804 | | 13 R tab | | | |
| 2331 | 90CF505 | -76/-38 | 2 | 70 | 9.0 | -0.79 | 11,667,961 | | 13 tab | | | |
| 5110 | 90FT5T | 22 | * | 20 | 8.6 | 0.25 | 1 | | 13 tab | | | |
| 5111 | 90FT6T | 18 | * | 20 | 8.6 | 0.21 | 1 | | 13 tab | | | |
| 5112 | 90FT7T | 23 | * | 20 | 8.6 | 0.27 | 1 | | 13 tab | | | |
| 5113 | 90FT1T | 22 | * | 20 | 8.6 | 0.36 | 1 | | 13 tab | | | |
| 2332 | 90FT12 | 18 | * | 1 | 8.6 | 0.21 | 1 | | 13 tab | | | |
| 5114 | 90FT18TA | 14/1 | 0.1 | 60 | 8.6 | 0.16 | 9,383 | | 13 tab | | | |
| 6131 | 90FT9 | 14/1 | 0.1 | 30 | 8.6 | 0.16 | 3,257 | | 13 tab | | | |
| 2333 | 90FT11 | 13/1 | 0.1 | 40 | 8.6 | 0.14 | 2,720,600 | | 13 R tab | | | |
| 5115 | 90FT15A | 13/1 | 0.1 | 60 | 8.6 | 0.15 | 34,592 | | 13 tab | | | |
| 5116 | 90FT3T | 13/1 | 0.1 | 60 | 8.6 | 0.15 | 31,952 | | 13 tab | | | |
| 5117 | 90FT26T | 12/1 | 0.1 | 80 | 8.6 | 0.14 | 3,895,837 | | 13 tab | | | |
| 5118 | 90FT17 | 12/1 | 0.1 | 80 | 8.6 | 0.14 | 2,372,150 | | 13 tab | | | |
| 5119 | 90FT15T | 12/1 | 0.1 | 80 | 8.6 | 0.14 | 13,531,172 | | 13 tab | | | |
| 5120 | 90FT8T | 12/1 | 0.1 | 100 | 8.6 | 0.14 | 2,987,855 | | 13 tab | | | |
| 2334 | 90FT12 | 12/1 | 0.1 | 80 | 8.6 | 0.14 | 3,810,385 | | 13 tab | | | |
| 5121 | 90FT4T | 11/1 | 0.1 | 100 | 8.6 | 0.13 | 21,111,725 | | 13 tab | | | |
| 5122 | 90FT11T | 11/1 | 0.1 | 100 | 8.6 | 0.12 | 102,350,298 | | 13 R tab | | | |
| 2343 | 90FT15 | 14/1 | 0.1 | 30 | 8.6 | 0.16 | 9,383 | | 13 tab | | | |
| 2336 | 90FT13 | 11/1 | 0.1 | 40 | 8.6 | 0.12 | 1,813,684 | | 13 tab | | | |
| 2337 | 90FT14A | 12/1 | 0.1 | 40 | 8.6 | 0.14 | 2,372,150 | | 13 tab | | | |
| 2679 | 90FT8 | 12/1 | 0.1 | 80 | 8.6 | 0.14 | 2,987,855 | | 13 tab | | | |
| 2680 | 90FT10 | 10/1 | 0.1 | 100 | 8.6 | 0.11 | 208,516 | | 13 tab | | | |
| 2681 | 90FT13A | 13/1 | 0.1 | 70 | 8.6 | 0.15 | 2,759 | | 13 tab | | | |
| 2682 | 90FT14 | 13/1 | 0.1 | 40 | 8.6 | 0.15 | 385 | | 13 tab | | | |
| 2683 | 90FT15 | 12/1 | 0.1 | 70 | 8.6 | 0.14 | 1,471 | | 13 tab | | | |
| 2684 | 90FT20 | 12/1 | 0.1 | 60 | 8.6 | 0.14 | 647 | | 13 tab | | | |
| 2685 | 90TCA1 | 19/2 | 0.1 | 40 | 8.6 | 0.21 | 1,707,026 | | 13 tab | | | |
| 2686 | 90TCB1 | 21/2 | 0.1 | 40 | 8.6 | 0.23 | 49,498 | | 13 tab | | | |
| 2687 | 90FTC2 | 24/2 | 0.1 | 80 | 8.6 | 0.27 | 112,928 | | 13 tab | | | |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---------|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 2688 | 90FTC3 | 24/2 | 0.1 | 80 | 8.6 | 0.27 | 46,842 | 13 tab |
| 2689 | 90FT18 | 20 | * | 1 | 8.6 | 0.22 | 1 | 13 tab |
| 2690 | 90FT19B | 19 | * | 1 | 8.6 | 0.21 | 1 | 13 tab |
| 2691 | 90FT14 | 23 | * | 1 | 8.6 | 0.26 | 1 | 13 tab |
| 5123 | TI501T | 21 | * | 20 | 8.7 | 0.24 | 1 | 13 tab |
| 5124 | TI502T | 21 | * | 20 | 8.7 | 0.25 | 1 | 13 tab |
| 5125 | TI503T | 23 | * | 20 | 8.7 | 0.27 | 1 | 13 tab |
| 5126 | TI509T | 15/8 | 0.5 | 60 | 8.7 | 0.18 | 53,275 | 13 tab |
| 5127 | TI507T | 15/8 | 0.5 | 60 | 8.7 | 0.18 | 114,090 | 13 tab |
| 5128 | TI505T | 15/8 | 0.5 | 60 | 8.7 | 0.18 | 528,634 | 13 tab |
| 5129 | TI508T | 14/7 | 0.5 | 80 | 8.7 | 0.16 | 1,308,671 | 13 tab |
| 5130 | TI504T | 14/7 | 0.5 | 80 | 8.7 | 0.16 | 1,665,220 | 13 tab |
| 5131 | TI506T | 14/7 | 0.5 | 80 | 8.7 | 0.16 | 9,806,694 | 13 tab |
| 5132 | TK514T | 10/5 | 0.5 | 80 | 8.7 | 0.15 | 31,443,023 | 13 tab |
| 2692 | TK515T | 10/5 | 0.5 | 80 | 8.7 | 0.15 | 34,693,646 | 13 tab |
| 5133 | TK513T | 11/6 | 0.5 | 80 | 8.7 | 0.15 | 50,666,199 | 13 tab |
| 5134 | TCH2T | 18 | * | 20 | 8.8 | 0.21 | 1 | 13 tab |
| 5135 | TCH3T | 19 | * | 20 | 8.8 | 0.19 | 1 | 13 tab |
| 5136 | TCH4T | 17 | * | 20 | 8.8 | 0.19 | 1 | 13 tab |
| 2693 | 90FT16 | 21 | * | 5 | 8.8 | 0.24 | 1 | 13 tab |
| 2694 | 90FT17 | 19 | * | 5 | 8.8 | 0.22 | 1 | 13 tab |
| 2695 | 90FTC1 | 23 | * | 5 | 9.27 | 0.25 | 1 | 13 tab |
| 5137 | TCH11T | 8/-8 | -1 | 20 | 8.8 | 0.09 | 45,172 | 13 tab |
| 5138 | TCH12T | 8/-8 | -1 | 30 | 8.8 | 0.09 | 151,465 | 13 tab |
| 5139 | TCH10T | 8/-8 | -1 | 30 | 8.8 | 0.09 | 794,513 | 13 tab |
| 5140 | TCH14T | 7/-7 | -1 | 60 | 8.8 | 0.08 | 47,385 | 13 tab |
| 5141 | TCH13T | 7/-7 | -1 | 60 | 8.8 | 0.08 | 1,043,369 | 13 tab |
| 5142 | TCH16T | 7/-7 | -1 | 60 | 8.8 | 0.08 | 3,009,395 | 13 tab |
| 5143 | TCH7T | 7/-7 | -1 | 60 | 8.8 | 0.08 | 3,973,407 | 13 tab |
| 5144 | TCH15T | 6/-6 | -1 | 80 | 8.8 | 0.07 | 11,733,016 | 13 tab |
| 5145 | TCH19T | 6/-6 | -1 | 100 | 8.8 | 0.07 | 100,151,319 | 13 R tab |

GLASS ROVING TESTS

D155 STRAND TESTS

Owens Corning Fabrics roving number E-450-PVE, Catalog Number OC107B-AC-450, OC111A-AB-450, 2000 fibers (average fiber diameter = 15.98 μm , standard deviation = 1.53 μm , maximum = 19.4 μm , minimum = 12.5 μm , sample size = 14,000) The following six D155 fabric rolls were obtained over the time period of 1993 to 2000 (Quality control static tests). All Strand tests were performed at a displacement rate of 13 mm/second with a 25 mm gage section.

| TEST & SAMPLE ID # | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-------------------|---|---------|----------|--------|-------------------|----------------------------|

D155 Roll 1

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 3739 | D155TA1 | 1054 | * | 13 | --- | -- | 1 | tow |
| 3740 | D155TA2 | 1061 | * | 13 | --- | -- | 1 | tow |
| 3741 | D155TA3 | 993 | * | 13 | --- | -- | 1 | tow |
| 3742 | D155TA4 | 940 | * | 13 | --- | -- | 1 | tow |
| 3743 | D155TA5 | 1015 | * | 13 | --- | -- | 1 | tow |
| 3744 | D155TA6 | 967 | * | 13 | --- | -- | 1 | tow |
| 3745 | D155TA7 | 973 | * | 13 | --- | -- | 1 | tow |
| 3746 | D155TA8 | 1014 | * | 13 | --- | -- | 1 | tow |
| 3747 | D155TA9 | 987 | * | 13 | --- | -- | 1 | tow |
| 3748 | D155TA10 | 1054 | * | 13 | --- | -- | 1 | tow |
| 3749 | D155TA11 | 1019 | * | 13 | --- | -- | 1 | tow |
| 3750 | D155TA12 | 1084 | * | 13 | --- | -- | 1 | tow |
| 3751 | D155TA13 | 970 | * | 13 | --- | -- | 1 | tow |
| 3752 | D155TA14 | 1084 | * | 13 | --- | -- | 1 | tow |
| 3753 | D155TA15 | 975 | * | 13 | --- | -- | 1 | tow |
| 3754 | D155TA16 | 1064 | * | 13 | --- | -- | 1 | tow |
| 3755 | D155TA17 | 982 | * | 13 | --- | -- | 1 | tow |
| 3756 | D155TA18 | 999 | * | 13 | --- | -- | 1 | tow |
| 3757 | D155TA19 | 1015 | * | 13 | --- | -- | 1 | tow |
| 3758 | D155TA20 | 981 | * | 13 | --- | -- | 1 | tow |
| 3759 | D155TA21 | 1012 | * | 13 | --- | -- | 1 | tow |
| 3760 | D155TA22 | 1040 | * | 13 | --- | -- | 1 | tow |
| 3761 | D155TA23 | 1081 | * | 13 | --- | -- | 1 | tow |
| 3762 | D155TA24 | 1036 | * | 13 | --- | -- | 1 | tow |
| 3763 | D155TA25 | 1010 | * | 13 | --- | -- | 1 | tow |
| 3764 | D155TA26 | 912 | * | 13 | --- | -- | 1 | tow |
| 3765 | D155TA27 | 922 | * | 13 | --- | -- | 1 | tow |
| 3766 | D155TA28 | 1051 | * | 13 | --- | -- | 1 | tow |
| 3767 | D155TA29 | 991 | * | 13 | --- | -- | 1 | tow |
| 3768 | D155TA30 | 995 | * | 13 | --- | -- | 1 | tow |

D155 Roll 2

| | | | | | | | | |
|------|---------|------|---|----|-----|----|---|-----|
| 3769 | D155TB1 | 1401 | * | 13 | --- | -- | 1 | tow |
| 3770 | D155TB2 | 1310 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3771 | D155TB3 | 1431 | * | 13 | --- | -- | 1 | tow |
| 3772 | D155TB4 | 1403 | * | 13 | --- | -- | 1 | tow |
| 3773 | D155TB5 | 1380 | * | 13 | --- | -- | 1 | tow |
| 3774 | D155TB6 | 1347 | * | 13 | --- | -- | 1 | tow |
| 3775 | D155TB7 | 1398 | * | 13 | --- | -- | 1 | tow |
| 3776 | D155TB8 | 1361 | * | 13 | --- | -- | 1 | tow |
| 3777 | D155TB9 | 1386 | * | 13 | --- | -- | 1 | tow |
| 3778 | D155TB10 | 1362 | * | 13 | --- | -- | 1 | tow |
| 3779 | D155TB11 | 1339 | * | 13 | --- | -- | 1 | tow |
| 3780 | D155TB12 | 1413 | * | 13 | --- | -- | 1 | tow |
| 3781 | D155TB13 | 1352 | * | 13 | --- | -- | 1 | tow |
| 3782 | D155TB14 | 1366 | * | 13 | --- | -- | 1 | tow |
| 3783 | D155TB15 | 1459 | * | 13 | --- | -- | 1 | tow |
| 3784 | D155TB16 | 1412 | * | 13 | --- | -- | 1 | tow |
| 3785 | D155TB17 | 1279 | * | 13 | --- | -- | 1 | tow |
| 3786 | D155TB18 | 1381 | * | 13 | --- | -- | 1 | tow |
| 3787 | D155TB19 | 1416 | * | 13 | --- | -- | 1 | tow |
| 3788 | D155TB20 | 1420 | * | 13 | --- | -- | 1 | tow |
| 3789 | D155TB21 | 1322 | * | 13 | --- | -- | 1 | tow |
| 3790 | D155TB22 | 1263 | * | 13 | --- | -- | 1 | tow |
| 3791 | D155TB23 | 1353 | * | 13 | --- | -- | 1 | tow |
| 3792 | D155TB24 | 1446 | * | 13 | --- | -- | 1 | tow |
| 3793 | D155TB25 | 1411 | * | 13 | --- | -- | 1 | tow |
| 3794 | D155TB26 | 1310 | * | 13 | --- | -- | 1 | tow |
| 3795 | D155TB27 | 1378 | * | 13 | --- | -- | 1 | tow |
| 3796 | D155TB28 | 1372 | * | 13 | --- | -- | 1 | tow |
| 3797 | D155TB29 | 1349 | * | 13 | --- | -- | 1 | tow |
| 3798 | D155TB30 | 1319 | * | 13 | --- | -- | 1 | tow |

D155 Roll 3

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 3799 | D155TC1 | 1419 | * | 13 | --- | -- | 1 | tow |
| 3800 | D155TC2 | 1256 | * | 13 | --- | -- | 1 | tow |
| 3801 | D155TC3 | 1356 | * | 13 | --- | -- | 1 | tow |
| 3802 | D155TC4 | 1375 | * | 13 | --- | -- | 1 | tow |
| 3803 | D155TC5 | 1322 | * | 13 | --- | -- | 1 | tow |
| 3804 | D155TC6 | 1410 | * | 13 | --- | -- | 1 | tow |
| 3805 | D155TC7 | 1407 | * | 13 | --- | -- | 1 | tow |
| 3806 | D155TC8 | 1392 | * | 13 | --- | -- | 1 | tow |
| 3807 | D155TC9 | 1467 | * | 13 | --- | -- | 1 | tow |
| 3808 | D155TC10 | 1456 | * | 13 | --- | -- | 1 | tow |
| 3809 | D155TC11 | 1444 | * | 13 | --- | -- | 1 | tow |
| 3810 | D155TC12 | 1367 | * | 13 | --- | -- | 1 | tow |
| 3811 | D155TC13 | 1399 | * | 13 | --- | -- | 1 | tow |
| 3812 | D155TC14 | 1336 | * | 13 | --- | -- | 1 | tow |
| 3813 | D155TC15 | 1429 | * | 13 | --- | -- | 1 | tow |
| 3814 | D155TC16 | 1326 | * | 13 | --- | -- | 1 | tow |
| 3815 | D155TC17 | 1404 | * | 13 | --- | -- | 1 | tow |
| 3816 | D155TC18 | 1353 | * | 13 | --- | -- | 1 | tow |
| 3817 | D155TC19 | 1456 | * | 13 | --- | -- | 1 | tow |
| 3818 | D155TC20 | 1336 | * | 13 | --- | -- | 1 | tow |
| 3819 | D155TC21 | 1366 | * | 13 | --- | -- | 1 | tow |
| 3820 | D155TC22 | 1379 | * | 13 | --- | -- | 1 | tow |
| 3821 | D155TC23 | 1325 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 3822 | D155TC24 | 1250 | * | 13 | --- | -- | 1 | tow |
| 3823 | D155TC25 | 1358 | * | 13 | --- | -- | 1 | tow |
| 3824 | D155TC26 | 1401 | * | 13 | --- | -- | 1 | tow |
| 3825 | D155TC27 | 1345 | * | 13 | --- | -- | 1 | tow |
| 3826 | D155TC28 | 1387 | * | 13 | --- | -- | 1 | tow |
| 3827 | D155TC29 | 1428 | * | 13 | --- | -- | 1 | tow |
| 3828 | D155TC30 | 1350 | * | 13 | --- | -- | 1 | tow |

D155 Roll 4 (Owens Corning 3002395001)

| | | | | | | | | |
|------|----------|--------|-----|----|-----|----|-------------|-----|
| 4474 | D155TD1 | 1117 | * | 13 | --- | -- | 1 | tow |
| 4475 | D155TD2 | 1096 | * | 13 | --- | -- | 1 | tow |
| 4476 | D155TD3 | 1123 | * | 13 | --- | -- | 1 | tow |
| 4477 | D155TD4 | 1089 | * | 13 | --- | -- | 1 | tow |
| 4478 | D155TD5 | 1078 | * | 13 | --- | -- | 1 | tow |
| 4479 | D155TD6 | 1077 | * | 13 | --- | -- | 1 | tow |
| 4480 | D155TD7 | 1075 | * | 13 | --- | -- | 1 | tow |
| 4481 | D155TD8 | 1119 | * | 13 | --- | -- | 1 | tow |
| 4482 | D155TD9 | 1108 | * | 13 | --- | -- | 1 | tow |
| 4483 | D155TD10 | 1170 | * | 13 | --- | -- | 1 | tow |
| 4484 | D155TD11 | 534/53 | 0.1 | 10 | --- | -- | 603,854 | tow |
| 4485 | D155TD12 | 534/53 | 0.1 | 10 | --- | -- | 900,234 | tow |
| 4486 | D155TD13 | 534/53 | 0.1 | 10 | --- | -- | 470,103 | tow |
| 4487 | D155TD14 | 534/53 | 0.1 | 10 | --- | -- | 1,503,261 | tow |
| 4488 | D155TD15 | 534/53 | 0.1 | 10 | --- | -- | 852,853 | tow |
| 4489 | D155TD16 | 667/67 | 0.1 | 5 | --- | -- | 101,867 | tow |
| 4490 | D155TD17 | 667/67 | 0.1 | 5 | --- | -- | 15,456 | tow |
| 4491 | D155TD18 | 667/67 | 0.1 | 5 | --- | -- | 10,218 | tow |
| 4492 | D155TD19 | 667/67 | 0.1 | 5 | --- | -- | 10,426 | tow |
| 4493 | D155TD20 | 667/67 | 0.1 | 5 | --- | -- | 20,883 | tow |
| 4494 | D155TD21 | 667/67 | 0.1 | 5 | --- | -- | 59,688 | tow |
| 4495 | D155TD22 | 445/45 | 0.1 | 20 | --- | -- | 4,002,694 | tow |
| 4496 | D155TD23 | 445/45 | 0.1 | 20 | --- | -- | 6,168,942 | tow |
| 4497 | D155TD24 | 445/45 | 0.1 | 20 | --- | -- | 2,727,395 | tow |
| 4498 | D155TD25 | 445/45 | 0.1 | 20 | --- | -- | 5,748,860 | tow |
| 4499 | D155TD26 | 445/45 | 0.1 | 20 | --- | -- | 3,634,752 | tow |
| 4500 | D155TD27 | 356/36 | 0.1 | 50 | --- | -- | 41,981,341 | tow |
| 4501 | D155TD28 | 356/36 | 0.1 | 50 | --- | -- | 23,548,030 | tow |
| 4502 | D155TD29 | 356/36 | 0.1 | 50 | --- | -- | 67,748,394 | tow |
| 4503 | D155TD30 | 356/36 | 0.1 | 50 | --- | -- | 71,247,839 | tow |
| 4504 | D155TD31 | 356/36 | 0.1 | 50 | --- | -- | 12,245,917 | tow |
| 4505 | D155TD32 | 311/31 | 0.1 | 80 | --- | -- | 169,484,151 | tow |
| 4506 | D155TD33 | 311/31 | 0.1 | 80 | --- | -- | 254,226,085 | tow |
| 4507 | D155TD34 | 311/31 | 0.1 | 80 | --- | -- | 382,095,430 | tow |
| 4508 | D155TD35 | 311/31 | 0.1 | 80 | --- | -- | 180,760,560 | tow |
| 4509 | D155TD36 | 311/31 | 0.1 | 80 | --- | -- | 671,734,540 | tow |
| 4563 | D155TD37 | 778/78 | 0.1 | 2 | --- | -- | 526 | tow |
| 4564 | D155TD38 | 778/78 | 0.1 | 2 | --- | -- | 375 | tow |
| 4565 | D155TD39 | 778/78 | 0.1 | 2 | --- | -- | 160 | tow |
| 4567 | D155TD40 | 778/78 | 0.1 | 2 | --- | -- | 433 | tow |
| 4568 | D155TD41 | 778/78 | 0.1 | 2 | --- | -- | 544 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|-------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|-------------------|---|---------|----------|--------|-------------------|----------------------------|

D155 Roll 4B (Owens Corning 3002395001)

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 4640 | D155TD42 | 1212 | * | 13 | --- | -- | 1 | tow |
| 4641 | D155TD43 | 1287 | * | 13 | --- | -- | 1 | tow |
| 4642 | D155TD44 | 1278 | * | 13 | --- | -- | 1 | tow |
| 4643 | D155TD45 | 1187 | * | 13 | --- | -- | 1 | tow |
| 4644 | D155TD46 | 1187 | * | 13 | --- | -- | 1 | tow |
| 4645 | D155TD47 | 1195 | * | 13 | --- | -- | 1 | tow |
| 4646 | D155TD48 | 1212 | * | 13 | --- | -- | 1 | tow |
| 4647 | D155TD49 | 1212 | * | 13 | --- | -- | 1 | tow |
| 4648 | D155TD50 | 1187 | * | 13 | --- | -- | 1 | tow |
| 4649 | D155TD51 | 1295 | * | 13 | --- | -- | 1 | tow |
| 4650 | D155TD52 | 1183 | * | 13 | --- | -- | 1 | tow |
| 4651 | D155TD53 | 1195 | * | 13 | --- | -- | 1 | tow |
| 4652 | D155TD54 | 1241 | * | 13 | --- | -- | 1 | tow |
| 4653 | D155TD55 | 1095 | * | 13 | --- | -- | 1 | tow |
| 4654 | D155TD56 | 1183 | * | 13 | --- | -- | 1 | tow |
| 4655 | D155TD57 | 1145 | * | 13 | --- | -- | 1 | tow |
| 4656 | D155TD58 | 1187 | * | 13 | --- | -- | 1 | tow |
| 4657 | D155TD59 | 1053 | * | 13 | --- | -- | 1 | tow |
| 4658 | D155TD60 | 1087 | * | 13 | --- | -- | 1 | tow |
| 4659 | D155TD61 | 1303 | * | 13 | --- | -- | 1 | tow |
| 4660 | D155TD62 | 1204 | * | 13 | --- | -- | 1 | tow |
| 4661 | D155TD63 | 1212 | * | 13 | --- | -- | 1 | tow |
| 4662 | D155TD64 | 1145 | * | 13 | --- | -- | 1 | tow |
| 4663 | D155TD65 | 1062 | * | 13 | --- | -- | 1 | tow |
| 4664 | D155TD66 | 1157 | * | 13 | --- | -- | 1 | tow |
| 4665 | D155TD67 | 1287 | * | 13 | --- | -- | 1 | tow |
| 4666 | D155TD68 | 1250 | * | 13 | --- | -- | 1 | tow |
| 4667 | D155TD69 | 1129 | * | 13 | --- | -- | 1 | tow |
| 4668 | D155TD70 | 1274 | * | 13 | --- | -- | 1 | tow |
| 4669 | D155TD71 | 1254 | * | 13 | --- | -- | 1 | tow |

D155 Roll 5 (Owens Corning 3504830021, manufactured 1/23/97)

| | | | | | | | | |
|------|-----------|------|---|----|-----|----|---|-----|
| 4510 | D155TE551 | 1220 | * | 13 | --- | -- | 1 | tow |
| 4511 | D155TE546 | 1208 | * | 13 | --- | -- | 1 | tow |
| 4512 | D155TE515 | 1205 | * | 13 | --- | -- | 1 | tow |
| 4513 | D155TE527 | 1182 | * | 13 | --- | -- | 1 | tow |
| 4514 | D155TE547 | 1193 | * | 13 | --- | -- | 1 | tow |
| 4515 | D155TE516 | 1161 | * | 13 | --- | -- | 1 | tow |
| 4516 | D155TE564 | 1181 | * | 13 | --- | -- | 1 | tow |
| 4517 | D155TE555 | 1143 | * | 13 | --- | -- | 1 | tow |
| 4518 | D155TE572 | 1157 | * | 13 | --- | -- | 1 | tow |
| 4519 | D155TE548 | 1122 | * | 13 | --- | -- | 1 | tow |
| 4520 | D155TE549 | 1246 | * | 13 | --- | -- | 1 | tow |
| 4521 | D155TE566 | 1203 | * | 13 | --- | -- | 1 | tow |
| 4522 | D155TE556 | 1276 | * | 13 | --- | -- | 1 | tow |
| 4523 | D155TE559 | 1205 | * | 13 | --- | -- | 1 | tow |
| 4524 | D155TE517 | 1164 | * | 13 | --- | -- | 1 | tow |
| 4525 | D155TE534 | 1233 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 4526 | D155TE538 | 1124 | * | 13 | --- | -- | 1 | tow |
| 4527 | D155TE532 | 1162 | * | 13 | --- | -- | 1 | tow |
| 4528 | D155TE520 | 1142 | * | 13 | --- | -- | 1 | tow |
| 4529 | D155TE550 | 1171 | * | 13 | --- | -- | 1 | tow |
| 4530 | D155TE557 | 1193 | * | 13 | --- | -- | 1 | tow |
| 4531 | D155TE563 | 1264 | * | 13 | --- | -- | 1 | tow |
| 4532 | D155TE539 | 1090 | * | 13 | --- | -- | 1 | tow |
| 4533 | D155TE567 | 1128 | * | 13 | --- | -- | 1 | tow |
| 4534 | D155TE554 | 1139 | * | 13 | --- | -- | 1 | tow |
| 4535 | D155TE569 | 1146 | * | 13 | --- | -- | 1 | tow |
| 4536 | D155TE558 | 1195 | * | 13 | --- | -- | 1 | tow |
| 4537 | D155TE576 | 1249 | * | 13 | --- | -- | 1 | tow |
| 4538 | D155TE570 | 1151 | * | 13 | --- | -- | 1 | tow |
| 4539 | D155TE571 | 1201 | * | 13 | --- | -- | 1 | tow |
| 4540 | D155TE553 | 778/78 | 0.1 | 5 | --- | -- | 11,640 | tow |
| 4541 | D155TE552 | 778/78 | 0.1 | 5 | --- | -- | 2,983 | tow |
| 4542 | D155TE518 | 778/78 | 0.1 | 5 | --- | -- | 4,596 | tow |
| 4543 | D155TE561 | 778/78 | 0.1 | 5 | --- | -- | 3,678 | tow |
| 4544 | D155TE562 | 778/78 | 0.1 | 5 | --- | -- | 4,817 | tow |
| 4546 | D155TE509 | 667/67 | 0.1 | 5 | --- | -- | 30,953 | tow |
| 4547 | D155TE505 | 667/67 | 0.1 | 5 | --- | -- | 10,943 | tow |
| 4548 | D155TE512 | 667/67 | 0.1 | 5 | --- | -- | 19,520 | tow |
| 4549 | D155TE511 | 667/67 | 0.1 | 5 | --- | -- | 10,173 | tow |
| 4550 | D155TE510 | 667/67 | 0.1 | 5 | --- | -- | 14,350 | tow |
| 4551 | D155TE531 | 534/53 | 0.1 | 10 | --- | -- | 858,810 | tow |
| 4552 | D155TE542 | 534/53 | 0.1 | 10 | --- | -- | 159,944 | tow |
| 4553 | D155TE541 | 534/53 | 0.1 | 10 | --- | -- | 254,240 | tow |
| 4554 | D155TE525 | 534/53 | 0.1 | 10 | --- | -- | 386,380 | tow |
| 4555 | D155TE533 | 534/53 | 0.1 | 10 | --- | -- | 235,364 | tow |
| 4556 | D155TE514 | 534/53 | 0.1 | 10 | --- | -- | 525,623 | tow |
| 4557 | D155TE591 | 445/45 | 0.1 | 20 | --- | -- | 3,218,504 | tow |
| 4558 | D155TE592 | 445/45 | 0.1 | 20 | --- | -- | 3,924,363 | tow |
| 4559 | D155TE596 | 445/45 | 0.1 | 20 | --- | -- | 2,319,792 | tow |
| 4560 | D155TE593 | 445/45 | 0.1 | 20 | --- | -- | 6,759,244 | tow |
| 4561 | D155TE597 | 445/45 | 0.1 | 20 | --- | -- | 2,535,198 | tow |
| 4562 | D155TE598 | 445/45 | 0.1 | 20 | --- | -- | 4,468,170 | tow |

D155 Roll 5B (Owens Corning 3504830021, manufactured 1/23/97)

| | | | | | | | | |
|------|-----------|------|---|----|-----|----|---|-----|
| 4670 | D155TE99 | 1412 | * | 13 | --- | -- | 1 | tow |
| 4671 | D155TE100 | 1408 | * | 13 | --- | -- | 1 | tow |
| 4672 | D155TE101 | 1462 | * | 13 | --- | -- | 1 | tow |
| 4673 | D155TE102 | 1362 | * | 13 | --- | -- | 1 | tow |
| 4674 | D155TE103 | 1391 | * | 13 | --- | -- | 1 | tow |
| 4675 | D155TE104 | 1454 | * | 13 | --- | -- | 1 | tow |
| 4676 | D155TE105 | 1462 | * | 13 | --- | -- | 1 | tow |
| 4677 | D155TE106 | 1420 | * | 13 | --- | -- | 1 | tow |
| 4678 | D155TE107 | 1437 | * | 13 | --- | -- | 1 | tow |
| 4679 | D155TE108 | 1375 | * | 13 | --- | -- | 1 | tow |
| 4680 | D155TE109 | 1475 | * | 13 | --- | -- | 1 | tow |
| 4681 | D155TE110 | 1350 | * | 13 | --- | -- | 1 | tow |
| 4682 | D155TE111 | 1337 | * | 13 | --- | -- | 1 | tow |
| 4683 | D155TE112 | 1370 | * | 13 | --- | -- | 1 | tow |
| 4684 | D155TE113 | 1375 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 4685 | D155TE114 | 1445 | * | 13 | --- | -- | 1 | tow |
| 4686 | D155TE115 | 1342 | * | 13 | --- | -- | 1 | tow |
| 4687 | D155TE116 | 1356 | * | 13 | --- | -- | 1 | tow |
| 4688 | D155TE117 | 1387 | * | 13 | --- | -- | 1 | tow |
| 4689 | D155TE118 | 1475 | * | 13 | --- | -- | 1 | tow |
| 4690 | D155TE119 | 1429 | * | 13 | --- | -- | 1 | tow |
| 4691 | D155TE120 | 1417 | * | 13 | --- | -- | 1 | tow |
| 4692 | D155TE121 | 1387 | * | 13 | --- | -- | 1 | tow |
| 4693 | D155TE122 | 1371 | * | 13 | --- | -- | 1 | tow |
| 4694 | D155TE123 | 1446 | * | 13 | --- | -- | 1 | tow |
| 4695 | D155TE124 | 1404 | * | 13 | --- | -- | 1 | tow |
| 4696 | D155TE125 | 1362 | * | 13 | --- | -- | 1 | tow |
| 4697 | D155TE126 | 1342 | * | 13 | --- | -- | 1 | tow |
| 4698 | D155TE127 | 1471 | * | 13 | --- | -- | 1 | tow |
| 4699 | D155TE128 | 1396 | * | 13 | --- | -- | 1 | tow |

D155 Roll 6 (Owens Corning 3415534012, manufactured 3/29/99)

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 4700 | D155TF1 | 1195 | * | 13 | --- | -- | 1 | tow |
| 4701 | D155TF2 | 1262 | * | 13 | --- | -- | 1 | tow |
| 4702 | D155TF3 | 1171 | * | 13 | --- | -- | 1 | tow |
| 4759 | D155TF4 | 1171 | * | 13 | --- | -- | 1 | tow |
| 4703 | D155TF5 | 1321 | * | 13 | --- | -- | 1 | tow |
| 4704 | D155TF6 | 1237 | * | 13 | --- | -- | 1 | tow |
| 4705 | D155TF7 | 1171 | * | 13 | --- | -- | 1 | tow |
| 4706 | D155TF8 | 1204 | * | 13 | --- | -- | 1 | tow |
| 4707 | D155TF9 | 1208 | * | 13 | --- | -- | 1 | tow |
| 4708 | D155TF10 | 1154 | * | 13 | --- | -- | 1 | tow |
| 4709 | D155TF11 | 1287 | * | 13 | --- | -- | 1 | tow |
| 4710 | D155TF12 | 1188 | * | 13 | --- | -- | 1 | tow |
| 4711 | D155TF13 | 1197 | * | 13 | --- | -- | 1 | tow |
| 4712 | D155TF14 | 1171 | * | 13 | --- | -- | 1 | tow |
| 4713 | D155TF15 | 1229 | * | 13 | --- | -- | 1 | tow |
| 4714 | D155TF16 | 1208 | * | 13 | --- | -- | 1 | tow |
| 4715 | D155TF17 | 1213 | * | 13 | --- | -- | 1 | tow |
| 4716 | D155TF18 | 1229 | * | 13 | --- | -- | 1 | tow |
| 4717 | D155TF19 | 1146 | * | 13 | --- | -- | 1 | tow |
| 4718 | D155TF20 | 1204 | * | 13 | --- | -- | 1 | tow |
| 4719 | D155TF21 | 1262 | * | 13 | --- | -- | 1 | tow |
| 4720 | D155TF22 | 1183 | * | 13 | --- | -- | 1 | tow |
| 4721 | D155TF23 | 1487 | * | 13 | --- | -- | 1 | tow |
| 4722 | D155TF24 | 1296 | * | 13 | --- | -- | 1 | tow |
| 4723 | D155TF25 | 1137 | * | 13 | --- | -- | 1 | tow |
| 4724 | D155TF26 | 1204 | * | 13 | --- | -- | 1 | tow |
| 4725 | D155TF27 | 1271 | * | 13 | --- | -- | 1 | tow |
| 4726 | D155TF28 | 1314 | * | 13 | --- | -- | 1 | tow |
| 4727 | D155TF29 | 1246 | * | 13 | --- | -- | 1 | tow |
| 4728 | D155TF30 | 1246 | * | 13 | --- | -- | 1 | tow |

D155 Roll 6B (Owens Corning 3415534012, manufactured 3/29/99)

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 4729 | D155TF31 | 1404 | * | 13 | --- | -- | 1 | tow |
| 4730 | D155TF32 | 1262 | * | 13 | --- | -- | 1 | tow |
| 4731 | D155TF33 | 1221 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 4732 | D155TF34 | 1350 | * | 13 | --- | -- | 1 | tow |
| 4733 | D155TF35 | 1179 | * | 13 | --- | -- | 1 | tow |
| 4734 | D155TF36 | 1146 | * | 13 | --- | -- | 1 | tow |
| 4735 | D155TF37 | 1338 | * | 13 | --- | -- | 1 | tow |
| 4736 | D155TF38 | 1221 | * | 13 | --- | -- | 1 | tow |
| 4737 | D155TF39 | 1262 | * | 13 | --- | -- | 1 | tow |
| 4738 | D155TF40 | 1362 | * | 13 | --- | -- | 1 | tow |
| 4739 | D155TF41 | 1254 | * | 13 | --- | -- | 1 | tow |
| 4740 | D155TF42 | 1396 | * | 13 | --- | -- | 1 | tow |
| 4741 | D155TF43 | 1313 | * | 13 | --- | -- | 1 | tow |
| 4742 | D155TF44 | 1346 | * | 13 | --- | -- | 1 | tow |
| 4743 | D155TF45 | 1387 | * | 13 | --- | -- | 1 | tow |
| 4744 | D155TF46 | 1279 | * | 13 | --- | -- | 1 | tow |
| 4745 | D155TF47 | 1287 | * | 13 | --- | -- | 1 | tow |
| 4746 | D155TF48 | 1362 | * | 13 | --- | -- | 1 | tow |
| 4747 | D155TF49 | 1096 | * | 13 | --- | -- | 1 | tow |
| 4748 | D155TF50 | 1296 | * | 13 | --- | -- | 1 | tow |
| 4749 | D155TF51 | 1246 | * | 13 | --- | -- | 1 | tow |
| 4750 | D155TF52 | 1304 | * | 13 | --- | -- | 1 | tow |
| 4751 | D155TF53 | 1287 | * | 13 | --- | -- | 1 | tow |
| 4752 | D155TF54 | 1304 | * | 13 | --- | -- | 1 | tow |
| 4753 | D155TF55 | 1237 | * | 13 | --- | -- | 1 | tow |
| 4754 | D155TF56 | 1267 | * | 13 | --- | -- | 1 | tow |
| 4755 | D155TF57 | 1304 | * | 13 | --- | -- | 1 | tow |
| 4756 | D155TF58 | 1338 | * | 13 | --- | -- | 1 | tow |
| 4757 | D155TF59 | 1304 | * | 13 | --- | -- | 1 | tow |
| 4758 | D155TF60 | 1262 | * | 13 | --- | -- | 1 | tow |

D155 Roll 6C (Owens Corning 3415534012, manufactured 3/29/99)

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 4800 | D155TF61 | 1393 | * | 13 | --- | -- | 1 | tow |
| 4801 | D155TF62 | 1260 | * | 13 | --- | -- | 1 | tow |
| 4802 | D155TF63 | 1268 | * | 13 | --- | -- | 1 | tow |
| 4803 | D155TF64 | 1410 | * | 13 | --- | -- | 1 | tow |
| 4804 | D155TF65 | 1385 | * | 13 | --- | -- | 1 | tow |
| 4805 | D155TF66 | 1443 | * | 13 | --- | -- | 1 | tow |
| 4806 | D155TF67 | 1402 | * | 13 | --- | -- | 1 | tow |
| 4807 | D155TF68 | 1260 | * | 13 | --- | -- | 1 | tow |
| 4808 | D155TF69 | 1318 | * | 13 | --- | -- | 1 | tow |
| 4809 | D155TF70 | 1310 | * | 13 | --- | -- | 1 | tow |
| 4810 | D155TF71 | 1314 | * | 13 | --- | -- | 1 | tow |
| 4811 | D155TF72 | 1331 | * | 13 | --- | -- | 1 | tow |
| 4812 | D155TF73 | 1277 | * | 13 | --- | -- | 1 | tow |
| 4813 | D155TF74 | 1302 | * | 13 | --- | -- | 1 | tow |
| 4814 | D155TF75 | 1393 | * | 13 | --- | -- | 1 | tow |
| 4815 | D155TF76 | 1064 | * | 13 | --- | -- | 1 | tow |
| 4816 | D155TF77 | 1210 | * | 13 | --- | -- | 1 | tow |
| 4817 | D155TF78 | 1293 | * | 13 | --- | -- | 1 | tow |
| 4818 | D155TF79 | 1314 | * | 13 | --- | -- | 1 | tow |
| 4819 | D155TF80 | 1310 | * | 13 | --- | -- | 1 | tow |
| 4820 | D155TF81 | 1427 | * | 13 | --- | -- | 1 | tow |
| 4821 | D155TF82 | 1306 | * | 13 | --- | -- | 1 | tow |
| 4822 | D155TF83 | 1277 | * | 13 | --- | -- | 1 | tow |
| 4823 | D155TF84 | 1343 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 4824 | D155TF85 | 1368 | * | 13 | --- | -- | 1 | tow |
| 4825 | D155TF86 | 1268 | * | 13 | --- | -- | 1 | tow |
| 4826 | D155TF87 | 1335 | * | 13 | --- | -- | 1 | tow |
| 4827 | D155TF88 | 1331 | * | 13 | --- | -- | 1 | tow |
| 4828 | D155TF89 | 1352 | * | 13 | --- | -- | 1 | tow |
| 4829 | D155TF90 | 1310 | * | 13 | --- | -- | 1 | tow |

D155 Roll 6D (Owens Corning 3415534012, manufactured 3/29/99)

| | | | | | | | | |
|------|-----------|------|---|----|-----|----|---|-----|
| 4830 | D155TF91 | 1168 | * | 13 | --- | -- | 1 | tow |
| 4831 | D155TF92 | 1368 | * | 13 | --- | -- | 1 | tow |
| 4832 | D155TF93 | 1389 | * | 13 | --- | -- | 1 | tow |
| 4833 | D155TF94 | 1298 | * | 13 | --- | -- | 1 | tow |
| 4834 | D155TF95 | 1285 | * | 13 | --- | -- | 1 | tow |
| 4835 | D155TF96 | 1364 | * | 13 | --- | -- | 1 | tow |
| 4836 | D155TF97 | 1318 | * | 13 | --- | -- | 1 | tow |
| 4837 | D155TF98 | 1310 | * | 13 | --- | -- | 1 | tow |
| 4838 | D155TF99 | 1326 | * | 13 | --- | -- | 1 | tow |
| 4839 | D155TF100 | 1343 | * | 13 | --- | -- | 1 | tow |
| 4840 | D155TF101 | 1310 | * | 13 | --- | -- | 1 | tow |
| 4841 | D155TF102 | 1410 | * | 13 | --- | -- | 1 | tow |
| 4862 | D155TF103 | 1343 | * | 13 | --- | -- | 1 | tow |
| 4842 | D155TF104 | 1335 | * | 13 | --- | -- | 1 | tow |
| 4843 | D155TF105 | 1210 | * | 13 | --- | -- | 1 | tow |
| 4844 | D155TF106 | 1160 | * | 13 | --- | -- | 1 | tow |
| 4845 | D155TF107 | 1385 | * | 13 | --- | -- | 1 | tow |
| 4846 | D155TF108 | 1110 | * | 13 | --- | -- | 1 | tow |
| 4847 | D155TF109 | 1352 | * | 13 | --- | -- | 1 | tow |
| 4848 | D155TF110 | 1298 | * | 13 | --- | -- | 1 | tow |
| 4849 | D155TF111 | 1343 | * | 13 | --- | -- | 1 | tow |
| 4850 | D155TF112 | 1352 | * | 13 | --- | -- | 1 | tow |
| 4851 | D155TF113 | 1318 | * | 13 | --- | -- | 1 | tow |
| 4852 | D155TF114 | 1352 | * | 13 | --- | -- | 1 | tow |
| 4853 | D155TF115 | 1335 | * | 13 | --- | -- | 1 | tow |
| 4854 | D155TF116 | 1356 | * | 13 | --- | -- | 1 | tow |
| 4855 | D155TF117 | 1285 | * | 13 | --- | -- | 1 | tow |
| 4856 | D155TF118 | 1293 | * | 13 | --- | -- | 1 | tow |
| 4857 | D155TF119 | 1243 | * | 13 | --- | -- | 1 | tow |
| 4858 | D155TF120 | 1335 | * | 13 | --- | -- | 1 | tow |

D155 Roll 8 (Owens Corning 991782496011, manufactured 1/25/00)

| | | | | | | | | |
|------|----------|------|---|----|-----|----|---|-----|
| 6900 | D155TG1 | 1520 | * | 13 | --- | -- | 1 | tow |
| 6901 | D155TG2 | 1306 | * | 13 | --- | -- | 1 | tow |
| 6902 | D155TG3 | 1400 | * | 13 | --- | -- | 1 | tow |
| 6903 | D155TG4 | 1358 | * | 13 | --- | -- | 1 | tow |
| 6904 | D155TG5 | 1514 | * | 13 | --- | -- | 1 | tow |
| 6905 | D155TG6 | 1467 | * | 13 | --- | -- | 1 | tow |
| 6906 | D155TG7 | 1349 | * | 13 | --- | -- | 1 | tow |
| 6907 | D155TG8 | 1451 | * | 13 | --- | -- | 1 | tow |
| 6948 | D155TG9 | 1336 | * | 13 | --- | -- | 1 | tow |
| 6949 | D155TG10 | 1424 | * | 13 | --- | -- | 1 | tow |
| 6950 | D155TG11 | 1438 | * | 13 | --- | -- | 1 | tow |
| 6951 | D155TG12 | 1496 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 6952 | D155TG13 | 1370 | * | 13 | --- | -- | 1 | tow |
| 6953 | D155TG14 | 1423 | * | 13 | --- | -- | 1 | tow |
| 6954 | D155TG15 | 1388 | * | 13 | --- | -- | 1 | tow |
| 6955 | D155TG16 | 1356 | * | 13 | --- | -- | 1 | tow |
| 6956 | D155TG17 | 1458 | * | 13 | --- | -- | 1 | tow |
| 6957 | D155TG18 | 1511 | * | 13 | --- | -- | 1 | tow |
| 6958 | D155TG19 | 1446 | * | 13 | --- | -- | 1 | tow |
| 6959 | D155TG20 | 1472 | * | 13 | --- | -- | 1 | tow |
| 6960 | D155TG21 | 1397 | * | 13 | --- | -- | 1 | tow |
| 6961 | D155TG22 | 1451 | * | 13 | --- | -- | 1 | tow |
| 6962 | D155TG23 | 1467 | * | 13 | --- | -- | 1 | tow |
| 6963 | D155TG24 | 1415 | * | 13 | --- | -- | 1 | tow |
| 6964 | D155TG25 | 1553 | * | 13 | --- | -- | 1 | tow |
| 6965 | D155TG26 | 1394 | * | 13 | --- | -- | 1 | tow |
| 6966 | D155TG27 | 1424 | * | 13 | --- | -- | 1 | tow |
| 6967 | D155TG28 | 1418 | * | 13 | --- | -- | 1 | tow |
| 6968 | D155TG29 | 1296 | * | 13 | --- | -- | 1 | tow |
| 6969 | D155TG30 | 1402 | * | 13 | --- | -- | 1 | tow |

DB120 Fabric Strands

Individual strands were taken out of stitched DB120 fabric.

Owens Corning Fibers Roving number E-1200-PVE, catalog number OC-380-JC-451 (1200). (750 fibers, 16 μ m average diameter)

DB120 Roll 5

| | | | | | | | | |
|------|-----------|-----|---|----|-----|----|---|-----|
| 4569 | DB120TA1 | 370 | * | 13 | --- | -- | 1 | tow |
| 4570 | DB120TA2 | 317 | * | 13 | --- | -- | 1 | tow |
| 4571 | DB120TA3 | 374 | * | 13 | --- | -- | 1 | tow |
| 4572 | DB120TA4 | 389 | * | 13 | --- | -- | 1 | tow |
| 4573 | DB120TA5 | 396 | * | 13 | --- | -- | 1 | tow |
| 4574 | DB120TA6 | 377 | * | 13 | --- | -- | 1 | tow |
| 4575 | DB120TA7 | 284 | * | 13 | --- | -- | 1 | tow |
| 4576 | DB120TA8 | 329 | * | 13 | --- | -- | 1 | tow |
| 4577 | DB120TA9 | 310 | * | 13 | --- | -- | 1 | tow |
| 4578 | DB120TA10 | 370 | * | 13 | --- | -- | 1 | tow |
| 4579 | DB120TA11 | 378 | * | 13 | --- | -- | 1 | tow |
| 4580 | DB120TA12 | 314 | * | 13 | --- | -- | 1 | tow |
| 4581 | DB120TA13 | 304 | * | 13 | --- | -- | 1 | tow |
| 4582 | DB120TA14 | 373 | * | 13 | --- | -- | 1 | tow |
| 4583 | DB120TA15 | 348 | * | 13 | --- | -- | 1 | tow |
| 4584 | DB120TA16 | 375 | * | 13 | --- | -- | 1 | tow |
| 4585 | DB120TA17 | 344 | * | 13 | --- | -- | 1 | tow |
| 4586 | DB120TA18 | 305 | * | 13 | --- | -- | 1 | tow |
| 4587 | DB120TA19 | 371 | * | 13 | --- | -- | 1 | tow |
| 4588 | DB120TA20 | 393 | * | 13 | --- | -- | 1 | tow |
| 4589 | DB120TA21 | 351 | * | 13 | --- | -- | 1 | tow |
| 4590 | DB120TA22 | 350 | * | 13 | --- | -- | 1 | tow |
| 4591 | DB120TA23 | 332 | * | 13 | --- | -- | 1 | tow |
| 4592 | DB120TA24 | 293 | * | 13 | --- | -- | 1 | tow |
| 4593 | DB120TA25 | 387 | * | 13 | --- | -- | 1 | tow |
| 4594 | DB120TA26 | 347 | * | 13 | --- | -- | 1 | tow |
| 4595 | DB120TA27 | 358 | * | 13 | --- | -- | 1 | tow |
| 4596 | DB120TA28 | 364 | * | 13 | --- | -- | 1 | tow |
| 4597 | DB120TA29 | 307 | * | 13 | --- | -- | 1 | tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
| 4598 | DB120TA30 | 320 | * | 13 | --- | -- | 1 | tow |
| 4599 | DB120TA31 | 403 | * | 13 | --- | -- | 1 | tow |
| 4600 | DB120TA32 | 377 | * | 13 | --- | -- | 1 | tow |
| 4601 | DB120TA33 | 346 | * | 13 | --- | -- | 1 | tow |
| 4602 | DB120TA34 | 352 | * | 13 | --- | -- | 1 | tow |
| 4603 | DB120TA35 | 377 | * | 13 | --- | -- | 1 | tow |
| 4604 | DB120TA36 | 317 | * | 13 | --- | -- | 1 | tow |
| 4605 | DB120TA37 | 376 | * | 13 | --- | -- | 1 | tow |
| 4606 | DB120TA38 | 366 | * | 13 | --- | -- | 1 | tow |
| 4607 | DB120TA39 | 319 | * | 13 | --- | -- | 1 | tow |
| 4608 | DB120TA40 | 330 | * | 13 | --- | -- | 1 | tow |
| 4609 | DB120TA41 | 351 | * | 13 | --- | -- | 1 | tow |
| 4610 | DB120TA42 | 358 | * | 13 | --- | -- | 1 | tow |
| 4611 | DB120TA43 | 376 | * | 13 | --- | -- | 1 | tow |
| 4612 | DB120TA44 | 339 | * | 13 | --- | -- | 1 | tow |

Owens Corning 990-BC-2385-4093, 208 Fiber Strand

(Average fiber diameter = 10.66 μm , standard deviation = 0.93 μm , maximum = 13.96 μm , minimum = 8.33 μm , sample size = 1,939). The average area used for stress calculations was 0.003999 mm^2 (for 45 fibers). A nominal 45 fiber strand, impregnated with CoRezyn 63-AX-051 orthothalic polyester resin, was manufactured from this strand. The gage length of these coupons were 25 \pm 5 mm. The listed stress (IN BRACKETS) was calculated from microscope and weight samples taken from the individual coupons. The notes column also lists the number of fibers in the gage length if there were not 45 fibers present (F44 = 44 fibers). Strain was calculated using an E = 72.4 GPa.

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|--|-----|---------|----------|--------|-------------------|----------------------------|
| 4900 | STR63 | 1266 (3309) | * | 120 | ---- | 4.57 | 1 | tow |
| 4901 | STR60 | 1506 (3128) | * | 120 | ---- | 4.32 | 1 | tow |
| 4902 | STR54 | 1383 (3145) | * | 120 | ---- | 4.34 | 1 | tow |
| 4903 | STR52 | 1181 (2967) | * | 120 | ---- | 4.10 | 1 | tow |
| 4904 | STR40 | 1376 (3061) | * | 120 | ---- | 4.23 | 1 | tow F47 |
| 4905 | STR44 | 1687 (3258) | * | 120 | ---- | 4.50 | 1 | tow F48 |
| 4906 | STR33 | 1281 (3142) | * | 120 | ---- | 4.34 | 1 | tow |
| 4907 | STR17 | 1367 (3216) | * | 120 | ---- | 4.44 | 1 | tow |
| 4908 | STR14 | 1189 (2991) | * | 120 | ---- | 4.13 | 1 | tow |
| 4909 | STR12 | 1126 (2984) | * | 120 | ---- | 4.12 | 1 | tow |
| 4910 | STR10 | 1214 (3218) | * | 120 | ---- | 4.44 | 1 | tow |
| 4911 | STR152 | 1349 (3309) | * | 120 | ---- | 4.57 | 1 | tow |
| 4912 | STR141 | 1344 (3330) | * | 120 | ---- | 4.60 | 1 | tow |
| 4913 | STR133 | 1300 (2943) | * | 120 | ---- | 4.06 | 1 | tow F44 |
| 4914 | STR122 | 1285 (3377) | * | 120 | ---- | 4.66 | 1 | tow F42 |
| 4915 | STR71 | 1192 (2871) | * | 120 | ---- | 3.97 | 1 | tow |
| 4916 | STR102 | 1261 (3135) | * | 120 | ---- | 4.33 | 1 | tow |
| 4917 | STR11 | 300 (757) | 0.1 | 200 | ---- | 1.05 | 1,100,000,000 | tow R F41 |
| 4918 | STR16 | 500 (1226) | 0.1 | 80 | ---- | 1.69 | 3,151,637 | tow F40 |
| 4919 | STR13 | 500 (1270) | 0.1 | 80 | ---- | 1.75 | 521,416 | tow |
| 4920 | STR19 | 500 (1299) | 0.1 | 80 | ---- | 1.79 | 1,887,512 | tow |
| 4921 | STR61 | 500 (1208) | 0.1 | 80 | ---- | 1.67 | 10,590,546 | tow |
| 4922 | STR34 | 500 (1153) | 0.1 | 80 | ---- | 1.59 | 660,762 | tow |
| 4923 | STR43 | 500(1282) | 0.1 | 80 | ---- | 1.77 | 2,970,613 | tow F44 |
| 4924 | STR51 | 500 (1318) | 0.1 | 80 | ---- | 1.82 | 6,271,853 | tow |
| 4925 | STR32 | 500 (1342) | 0.1 | 80 | ---- | 1.85 | 1,163,044 | tow |
| 4926 | STR64 | 500 (1308) | 0.1 | 80 | ---- | 1.81 | 2,371,532 | tow F44 |
| 4927 | STR42 | 500 (1007) | 0.1 | 80 | ---- | 1.39 | 23,198,205 | tow F51 |
| 4928 | STR50 | 500 (1355) | 0.1 | 80 | ---- | 1.87 | 877,701 | tow |
| 4929 | STR31 | 500 (1301) | 0.1 | 80 | ---- | 1.80 | 1,867,185 | tow |
| 4930 | STR53 | 400 (983) | 0.1 | 100 | ---- | 1.36 | 21,256,335 | tow |
| 4931 | STR41 | 400 (907) | 0.1 | 100 | ---- | 1.25 | 541,168,069 | tow F48 |
| 4932 | STR154 | 700 (1686) | 0.1 | 50 | ---- | 2.33 | 28,026 | tow |
| 4933 | STR150 | 700 (1634) | 0.1 | 50 | ---- | 2.26 | 117,135 | tow |
| 4934 | STR153 | 700 (1699) | 0.1 | 50 | ---- | 2.35 | 87,956 | tow |
| 4935 | STR143 | 700 (1739) | 0.1 | 50 | ---- | 2.40 | 820,108 | tow |
| 4936 | STR121 | 700 (1664) | 0.1 | 50 | ---- | 2.30 | 37,208 | tow |

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|--|-----|---------|----------|--------|-------------------|----------------------------|
| 4937 | STR130 | 700 (1725) | 0.1 | 50 | ---- | 2.38 | 119,137 | tow |
| 4938 | STR151 | 700 (1710) | 0.1 | 50 | ---- | 2.36 | 834,738 | tow |
| 4939 | STR72 | 700 (1734) | 0.1 | 50 | ---- | 2.40 | 446,679 | tow |
| 4940 | STR120 | 700 (1730) | 0.1 | 50 | ---- | 2.39 | 174,072 | tow |
| 4941 | STR132 | 700 (1720) | 0.1 | 50 | ---- | 2.38 | 204,871 | tow |
| 4942 | STR144 | 700 (1756) | 0.1 | 50 | ---- | 2.43 | 154,706 | tow |
| 4943 | STR123 | 700 (1717) | 0.1 | 50 | ---- | 2.37 | 14,218 | tow |
| 4944 | STR140 | 600 (1422) | 0.1 | 100 | ---- | 1.96 | 2,313,678 | tow |
| 4945 | STR84 | 600 (1535) | 0.1 | 100 | ---- | 2.12 | 4,138,791 | tow |
| 4946 | STR83 | 600 (1420) | 0.1 | 100 | ---- | 1.96 | 3,185,311 | tow |
| 4947 | STR131 | 600 (1466) | 0.1 | 100 | ---- | 2.02 | 2,564,971 | tow |
| 4948 | STR94 | 600 (1437) | 0.1 | 100 | ---- | 1.98 | 19,248,908 | tow |
| 4949 | STR30 | 400 (981) | 0.1 | 120 | ---- | 1.36 | 1,000,000,000 | tow R |
| 4950 | STR134 | 450 (1178) | 0.1 | 150 | ---- | 1.63 | 1,000,000,000 | tow R |
| 4951 | STR142 | 1396 (3424) | * | 120 | ---- | 4.73 | 1 | tow |
| 4952 | STR90 | 1284 (3149) | * | 120 | ---- | 4.35 | 1 | tow |
| 4953 | STR70 | 1335 (3349) | * | 120 | ---- | 4.63 | 1 | tow F44 |
| 4954 | STR109 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 255,520,000 | tow |
| 4955 | STR62 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 332,300,000 | tow |
| 4956 | STR180 | 600 (1493) | 0.1 | 100 | ---- | 2.06 | 680,779 | tow |
| 4957 | STR190 | 600 (1398) | 0.1 | 100 | ---- | 1.93 | 917,943 | tow |
| 4958 | STR194 | 600 (1398) | 0.1 | 100 | ---- | 1.93 | 1,667,477 | tow |
| 4959 | STR182 | 600 (1531) | 0.1 | 100 | ---- | 2.11 | 369,667 | tow |
| 4960 | STR183 | 600 (1437) | 0.1 | 100 | ---- | 1.99 | 1,077,008 | tow |
| 4961 | STR80 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 827,220,000 | tow |
| 4962 | STR100 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 10,000,000,000 | tow R |
| 4963 | STR73 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 5,000,000,000 | tow R |
| 4964 | STR103 | 400 (981) | 0.1 | 200 | ---- | 1.36 | 10,000,000,000 | tow R |
| 4965 | STR93 | 600 (1433) | 0.1 | 100 | ---- | 1.98 | 6,123,489 | tow |
| 4966 | STR74 | 600 (1484) | 0.1 | 100 | ---- | 2.05 | 2,798,167 | tow |
| 4967 | STR170 | 475 (1124) | 0.1 | 200 | ---- | 1.55 | 92,310,139 | tow |
| 4968 | STR161 | 475 (1147) | 0.1 | 200 | ---- | 1.58 | 8,164,732 | tow |
| 4969 | STR173 | 475 (1160) | 0.1 | 200 | ---- | 1.60 | 11,348,757 | tow |
| 4970 | STR164 | 475 (1190) | 0.1 | 200 | ---- | 1.64 | 157,165,630 | tow |
| 4971 | STR92 | 475 (1181) | 0.1 | 200 | ---- | 1.63 | 221,007,402 | tow |
| 4972 | STR104 | 600 (1421) | 0.1 | 100 | ---- | 1.96 | 37,141,573 | tow F47 |
| 4973 | STR82 | 600 (1456) | 0.1 | 100 | ---- | 2.01 | 7,375,336 | tow |
| 4974 | STR91 | 600 (1366) | 0.1 | 100 | ---- | 1.89 | 39,267,215 | tow F47 |
| 4975 | STR9 | 475 (1134) | 0.1 | 200 | ---- | 1.57 | 262,049,575 | tow |
| 4976 | STR15 | 475 (1175) | 0.1 | 200 | ---- | 1.62 | 572,535,000 | tow |
| 4977 | STR201 | 475 (1156) | 0.1 | 200 | ---- | 1.60 | 123,108,655 | tow F46 |
| 4978 | STR202 | 475 (996) | 0.1 | 200 | ---- | 1.38 | 104,584,113 | tow F50 |
| 4979 | STR21 | 475 (1106) | 0.1 | 200 | ---- | 1.53 | 85,419,550 | tow |
| 4980 | STR22 | 475 (1212) | 0.1 | 200 | ---- | 1.67 | 424,245,141 | tow |
| 4981 | STR47 | 475 (1138) | 0.1 | 200 | ---- | 1.57 | 21,256,335 | tow |
| 4982 | STR203 | 900 (2255) | 0.1 | 20 | ---- | 3.11 | 17,497 | tow |
| 4983 | STR204 | 900 (2179) | 0.1 | 20 | ---- | 3.01 | 824 | tow |

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--------|--|-----|---------|----------|--------|-------------------|----------------------------|
| 4984 | STR205 | 900 (2200) | 0.1 | 20 | ---- | 3.04 | 14,796 | tow |
| 4985 | STR206 | 900 (2227) | 0.1 | 20 | ---- | 3.08 | 7,317 | tow |
| 4986 | STR207 | 900 (2280) | 0.1 | 20 | ---- | 3.15 | 19,412 | tow |
| 4987 | STR208 | 900 (2179) | 0.1 | 20 | ---- | 3.01 | 1,899 | tow |
| 4988 | STR209 | 900 (2119) | 0.1 | 20 | ---- | 2.93 | 34,730 | tow |
| 4989 | STR210 | 900 (2187) | 0.1 | 20 | ---- | 3.02 | 8,531 | tow |
| 4990 | STR240 | 800 (1901) | 0.1 | 20 | ---- | 2.63 | 178,922 | tow |
| 4991 | STR241 | 800 (1954) | 0.1 | 20 | ---- | 2.70 | 161,812 | tow |
| 4992 | STR242 | 800 (2007) | 0.1 | 20 | ---- | 2.77 | 26,774 | tow |
| 4993 | STR243 | 800 (1997) | 0.1 | 20 | ---- | 2.76 | 63,052 | tow |
| 4994 | STR244 | 800 (2060) | 0.1 | 20 | ---- | 2.85 | 14,997 | tow |
| 4995 | STR245 | 800 (2049) | 0.1 | 20 | ---- | 2.83 | 38,614 | tow |
| 4996 | STR246 | 800 (1962) | 0.1 | 20 | ---- | 2.71 | 84,357 | tow |
| 4997 | STR247 | 800 (2059) | 0.1 | 20 | ---- | 2.84 | 101,444 | tow |
| 4998 | STR125 | 450 (1104) | 0.1 | 200 | ---- | 1.52 | 2,000,000,000 | tow R |
| 4999 | STR221 | 600 (1440) | 0.1 | 200 | ---- | 1.99 | 8,891,725 | tow |
| 5000 | STR217 | 650 (1594) | 0.1 | 100 | ---- | 2.20 | 606,191 | tow |
| 5147 | STR219 | 650 (1594) | 0.1 | 100 | ---- | 2.20 | 5,922,625 | tow |

Tests 6273 - 6325 were impregnated with Derakane 8084 vinyl ester resin

| | | | | | | | | |
|------|--------|-------------|-----|-----|------|------|--------|---------|
| 6273 | STRD1 | 1678 (2987) | * | 120 | ---- | 4.13 | 1 | tow F62 |
| 6274 | STRD6 | 2007 (3632) | * | 120 | ---- | 5.02 | 1 | tow F61 |
| 6275 | STRD12 | 1664 (3061) | * | 120 | ---- | 4.23 | 1 | tow F60 |
| 6276 | STRD20 | 1584 (3299) | * | 120 | ---- | 4.56 | 1 | tow F53 |
| 6277 | STRD26 | 1437 (3051) | * | 120 | ---- | 4.21 | 1 | tow F52 |
| 6278 | STRD33 | 1694 (3895) | * | 120 | ---- | 5.38 | 1 | tow F48 |
| 6279 | STRD52 | 1903 (4118) | * | 120 | ---- | 5.69 | 1 | tow F51 |
| 6280 | STRD57 | 1528 (3372) | * | 120 | ---- | 4.66 | 1 | tow F50 |
| 6281 | STRD66 | 1910 (4216) | * | 120 | ---- | 5.82 | 1 | tow F50 |
| 6282 | STRD2 | 1515 (2698) | 0.1 | 5 | ---- | 3.73 | 324 | tow F62 |
| 6283 | STRD3 | 1515 (2698) | 0.1 | 5 | ---- | 3.73 | 726 | tow F62 |
| 6284 | STRD4 | 1515 (2698) | 0.1 | 5 | ---- | 3.73 | 143 | tow F62 |
| 6285 | STRD5 | 1515 (2698) | 0.1 | 5 | ---- | 3.73 | 509 | tow F62 |
| 6286 | STRD7 | 1515 (2698) | 0.1 | 5 | ---- | 3.73 | 109 | tow F61 |
| 6287 | STRD53 | 1000 (2207) | 0.1 | 5 | ---- | 3.05 | 864 | tow F50 |
| 6288 | STRD54 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 6344 | tow F50 |
| 6289 | STRD55 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 3565 | tow F50 |
| 6290 | STRD56 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 2211 | tow F50 |
| 6291 | STRD58 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 4181 | tow F50 |
| 6292 | STRD59 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 3011 | tow F50 |
| 6293 | STRD60 | 1000 (2207) | 0.1 | 10 | ---- | 3.05 | 1452 | tow F50 |
| 6294 | STRD40 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 25641 | tow F51 |
| 6295 | STRD41 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 57871 | tow F51 |
| 6296 | STRD42 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 24185 | tow F51 |
| 6297 | STRD43 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 40864 | tow F51 |
| 6298 | STRD44 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 248955 | tow F51 |

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|--------|--|-----|---------|----------|--------|-------------------|----------------------------|
| 6299 | STRD45 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 36010 | tow F51 |
| 6300 | STRD46 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 124774 | tow F51 |
| 6301 | STRD47 | 907 (1962) | 0.1 | 100 | ---- | 2.71 | 306126 | tow F51 |
| 6302 | STRD22 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 12487238 | tow F53 |
| 6303 | STRD23 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 4117339 | tow F53 |
| 6304 | STRD24 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 8107379 | tow F53 |
| 6305 | STRD25 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 1556365 | tow F52 |
| 6306 | STRD27 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 6448807 | tow F52 |
| 6307 | STRD28 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 13798486 | tow F52 |
| 6308 | STRD29 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 22108521 | tow F52 |
| 6309 | STRD30 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 14543062 | tow F52 |
| 6310 | STRD31 | 808 (1717) | 0.1 | 200 | ---- | 2.37 | 82468252 | tow F52 |
| 6311 | STRD48 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 64717861 | tow F51 |
| 6312 | STRD49 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 18724895 | tow F51 |
| 6313 | STRD50 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 13205451 | tow F51 |
| 6314 | STRD51 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 20584548 | tow F51 |
| 6315 | STRD68 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 135488968 | tow F50 |
| 6316 | STRD69 | 680 (1472) | 0.1 | 200 | ---- | 2.03 | 46800241 | tow F50 |
| 6317 | STRD21 | 594 (1457) | 0.1 | 200 | ---- | 2.01 | 654193316 | tow F53 |
| Tests 6319 and 6324 were tested for residual strength after fatigue cycling | | | | | | | | |
| 6318 | STRD61 | 556 (1226) | 0.1 | 200 | ---- | 1.69 | 4000000000 | tow F50 |
| 6319 | STRD61 | 1434 (3166) | * | 120 | ---- | 4.37 | 1 | residual |
| 6320 | STRD67 | 556 (1226) | 0.1 | 200 | ---- | 1.69 | 851213784 | tow F50 |
| 6321 | STRD70 | 528 (1165) | 0.1 | 200 | ---- | 1.61 | 4248137040 | tow F50 |
| 6322 | STRD71 | 528 (1165) | 0.1 | 200 | ---- | 1.61 | 1098324825 | tow F50 |
| 6323 | STRD72 | 528 (1165) | 0.1 | 200 | ---- | 1.61 | 1300000000 | tow F50 |
| 6324 | STRD72 | 1640 (3620) | * | 120 | ---- | 5 | 1 | residual |
| 6325 | STRD73 | 551 (1128) | 0.1 | 200 | ---- | 1.56 | 1600000000 | tow F50 |
| Tests performed with S2-glass, 8.549 micron ave diameter, sd=0.435 AGY - S2 glass, iso-polyester resin | | | | | | | | |
| 6326 | S1 | 1709 (4443) | * | 120 | 5.16 | 1 | | Tow F67 |
| 6327 | S7 | 1769 (4599) | * | 120 | | 5.34 | 1 | Tow F67 |
| 6328 | S15 | 1733 (4440) | * | 120 | | 5.15 | 1 | Tow F68 |
| 6329 | S16 | 1905 (4953) | * | 120 | | 5.75 | 1 | Tow F67 |
| 6330 | S27 | 1611 (4127) | * | 120 | | 4.79 | 1 | Tow F68 |
| 6331 | S28 | 1848 (4734) | * | 120 | | 5.49 | 1 | Tow F68 |
| 6332 | S39 | 1677 (4296) | * | 120 | | 4.98 | 1 | Tow F68 |
| 6333 | S40 | 1632 (4181) | * | 120 | | 4.85 | 1 | Tow F68 |
| 6334 | S46 | 1844 (4794) | * | 120 | | 5.56 | 1 | Tow F67 |
| 6335 | S2 | 900 (2340) | 0.1 | 20 | | 2.72 | 711105 | Tow F67 |
| 6336 | S3 | 900 (2340) | 0.1 | 20 | | 2.72 | 628600 | Tow F67 |
| 6337 | S4 | 900 (2340) | 0.1 | 20 | | 2.72 | 3331137 | Tow F67 |
| 6338 | S5 | 900 (2340) | 0.1 | 20 | | 2.72 | 3790717 | Tow F67 |
| 6339 | S6 | 900 (2340) | 0.1 | 20 | | 2.72 | 8779713 | Tow F67 |
| 6340 | S8 | 900 (2340) | 0.1 | 20 | | 2.72 | 5652675 | Tow F67 |
| 6341 | S9 | 800 (2080) | 0.1 | 30 | | 2.41 | 26800378 | Tow F67 |

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----|--|-----|---------|----------|--------|-------------------|----------------------------|
| 6342 | S10 | 800 (2080) | 0.1 | 30 | | 2.41 | 5718150 | Tow F67 |
| 6343 | S11 | 800 (2080) | 0.1 | 30 | | 2.41 | 17342399 | Tow F67 |
| 6344 | S12 | 800 (2080) | 0.1 | 30 | | 2.38 | 3987507 | Tow F68 |
| 6345 | S13 | 800 (2080) | 0.1 | 30 | | 2.38 | 7334600 | Tow F68 |
| 6346 | S14 | 800 (2080) | 0.1 | 30 | | 2.38 | 10567152 | Tow F68 |
| 6347 | S17 | 700 (1793) | 0.1 | 50 | | 2.11 | 104448523 | Tow F67 |
| 6348 | S18 | 700 (1793) | 0.1 | 50 | | 2.08 | 84964915 | Tow F68 |
| 6349 | S19 | 700 (1793) | 0.1 | 50 | | 2.08 | 267557522 | Tow F68 |
| 6350 | S20 | 700 (1793) | 0.1 | 50 | | 2.08 | 856152723 | Tow F68 |
| 6351 | S21 | 700 (1793) | 0.1 | 50 | | 2.08 | 1126988000 | Tow F68 |
| 6352 | S22 | 700 (1793) | 0.1 | 50 | | 2.08 | 124627243 | Tow F68 |
| 6353 | S23 | 1200 (3074) | 0.1 | 5 | | 3.57 | 12345 | Tow F68 |
| 6354 | S24 | 1200 (3074) | 0.1 | 5 | | 3.57 | 1871 | Tow F68 |
| 6355 | S25 | 1200 (3074) | 0.1 | 5 | | 3.57 | 4389 | Tow F68 |
| 6356 | S26 | 1200 (3074) | 0.1 | 5 | | 3.57 | 19111 | Tow F68 |
| 6357 | S29 | 1200 (3074) | 0.1 | 5 | | 3.57 | 5080 | Tow F68 |
| 6358 | S30 | 1200 (3074) | 0.1 | 5 | | 3.57 | 8468 | Tow F68 |
| 8946 | S31 | 1050 (2690) | 0.1 | 10 | | 3.12 | 376,540 | Tow F68 |
| 8947 | S32 | 1050 (2690) | 0.1 | 10 | | 3.12 | 51,159 | Tow F68 |
| 8948 | S33 | 1050 (2690) | 0.1 | 10 | | 3.12 | 647,617 | Tow F68 |
| 8949 | S34 | 1050 (2690) | 0.1 | 10 | | 3.12 | 73,320 | Tow F68 |
| 8950 | S35 | 1050 (2690) | 0.1 | 10 | | 3.12 | 155,543 | Tow F68 |
| 8951 | S36 | 1050 (2690) | 0.1 | 10 | | 3.12 | 267,005 | Tow F68 |
| 8952 | S37 | 600 (1537) | 0.1 | 150 | | 1.78 | 2,393,015,962 | Tow F68 |
| 8953 | S38 | 600 (1537) | 0.1 | 150 | | 1.78 | 1,123,015,962 | Tow F68 |
| 8954 | S41 | 600 (1537) | 0.1 | 150 | | 1.78 | 283,626,104 | Tow F68 |

Isopolyester Corezyn coupons, E=3.4899 GPa, sd=88.96 MPa, n=10
coupons are 1.63 mm wide x 0.249 mm thick

| | | | | | | | | |
|------|-------|--------------|---|-----|------|------|---|----------------|
| 6359 | iso1a | 3174 (67.19) | * | 120 | 3.49 | 2.05 | 1 | mold1 coupons |
| 6360 | iso1b | 2910 (61.89) | * | 120 | 3.49 | 1.88 | 1 | |
| 6361 | iso1c | 2963 (59.65) | * | 120 | 3.49 | 1.91 | 1 | |
| 6362 | iso1d | 2838 (57.14) | * | 120 | 3.49 | 1.83 | 1 | |
| 6363 | iso1e | 3291 (66.26) | * | 120 | 3.49 | 2.12 | 1 | |
| 6364 | iso1f | 2400 (42.98) | * | 120 | 3.49 | 1.55 | 1 | |
| 6365 | iso1g | 2611 (56.92) | * | 120 | 3.49 | 1.69 | 1 | |
| 6366 | iso1h | 2541 (63.69) | * | 120 | 3.49 | 1.64 | 1 | |
| 6367 | iso1i | 2895 (55.82) | * | 120 | 3.49 | 1.87 | 1 | |
| 6368 | iso1j | 2706 (54.27) | * | 120 | 3.49 | 1.75 | 1 | |
| 6369 | iso1k | 2953 (61.70) | * | 120 | 3.49 | 1.91 | 1 | |
| 6370 | iso2a | 2412 (52.69) | * | 120 | 3.49 | 1.56 | 1 | mold 2 coupons |
| 6371 | iso2b | 2685 (58.16) | * | 120 | 3.49 | 1.73 | 1 | |
| 6372 | iso2c | 2412 (51.61) | * | 120 | 3.49 | 1.56 | 1 | |
| 6373 | iso2d | 2412 (51.60) | * | 120 | 3.49 | 1.56 | 1 | |
| 6374 | iso2e | 2435 (52.07) | * | 120 | 3.49 | 1.57 | 1 | |

| TEST & SAMPLE ID # | | MAX. Load grams (stress, MPa) | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------|--|-----|---------|----------|--------|-------------------|----------------------------|
| 6375 | iso2f | 2661 (57.69) | * | 120 | 3.49 | 1.72 | 1 | |
| 6376 | iso2g | 2423 (52.92) | * | 120 | 3.49 | 1.56 | 1 | |
| 6377 | iso2h | 2480 (54.06) | * | 120 | 3.49 | 1.60 | 1 | |
| 6378 | iso2i | 2579 (51.69) | * | 120 | 3.49 | 1.67 | 1 | |
| 6379 | iso2j | 2573 (51.56) | * | 120 | 3.49 | 1.66 | 1 | |
| 6380 | iso2k | 2636 (52.87) | * | 120 | 3.49 | 1.70 | 1 | |
| 6381 | iso2l | 2443 (51.04) | * | 120 | 3.49 | 1.58 | 1 | |
| 6382 | iso30 | 780 (18.79) | 0.1 | 25 | 3.49 | 0.50 | 162715811 | |
| 6383 | iso31 | 1080 (26.01) | 0.1 | 15 | 3.49 | 0.70 | 1266997 | |
| 6384 | iso32 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 90180 | |
| 6385 | iso33 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 9142686 | |
| 6386 | iso34 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 67517489 | |
| 6387 | iso35 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 587462 | |
| 6388 | iso36 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 3678254 | |
| 6389 | iso37 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 7065978 | |
| 6390 | iso38 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 2825622 | |
| 6391 | iso39 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 572502 | |
| 6392 | iso40 | 780 (18.77) | 0.1 | 25 | 3.49 | 0.50 | 18642852 | |
| 6393 | iso41 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 46711 | |
| 6394 | iso42 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 234420 | |
| 6395 | iso43 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 5946 | |
| 6396 | iso44 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 15207 | |
| 6397 | iso45 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 787768 | |
| 6398 | iso46 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 261335 | |
| 6399 | iso47 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 1108 | |
| 6555 | iso48 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 854 | |
| 6556 | iso49 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 3541 | |
| 6653 | iso50 | 1080 (25.99) | 0.1 | 15 | 3.49 | 0.70 | 4520 | |
| 6679 | iso51 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 45 | |
| 6703 | iso52 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 509 | |
| 6704 | iso53 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 366 | |
| 6705 | iso54 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 844 | |
| 6706 | iso55 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 87 | |
| 6707 | iso56 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 1256 | |
| 6748 | iso57 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 1846 | |
| 6749 | iso58 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 26 | |
| 6750 | iso59 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 35 | |
| 6751 | iso60 | 1500 (36.10) | 0.1 | 1 | 3.49 | 0.97 | 911 | |
| 6752 | iso61 | 1800 (43.32) | 0.1 | 1 | 3.49 | 1.16 | 9 | |
| 6753 | iso62 | 1800 (43.32) | 0.1 | 1 | 3.49 | 1.16 | 14 | |
| 6754 | iso63 | 1800 (43.32) | 0.1 | 1 | 3.49 | 1.16 | 21 | |
| 6755 | iso64 | 1800 (43.32) | 0.1 | 1 | 3.49 | 1.16 | 46 | |
| 6788 | iso65 | 1800 (43.32) | 0.1 | 1 | 3.49 | 1.16 | 68 | |
| 6789 | iso3a | 3067 (56.95) | * | 120 | 3.49 | 1.98 | 1 | mold 3 coupons |
| 6827 | iso3b | 3180 (59.05) | * | 120 | 3.49 | 2.05 | 1 | |
| 6828 | iso3c | 3185 (63.87) | * | 120 | 3.49 | 2.06 | 1 | |
| 6829 | iso3d | 2477 (47.77) | * | 120 | 3.49 | 1.60 | 1 | |
| 6830 | iso3e | 2454 (47.33) | * | 120 | 3.49 | 1.58 | 1 | |
| 6831 | iso3f | 2498 (50.09) | * | 120 | 3.49 | 1.61 | 1 | |

D155 FIBER STRAND - FIBER VOLUME EFFECT TESTING

A glass strand was removed from the Owens Corning Fabric (D155) and impregnated with polyester resin at four different fiber volume fractions: 0.50 (approximately), 0.56, 0.61 and 0.66. This was to observe the effect of increasing fiber volume in the individual strands on the fatigue performance. The manufacturing was achieved by impregnating the strand with polyester resin and then drawing it into a metal capillary tube to cure. The D155-VF50 strand was drawn through the tube, but not cured within, which created a larger range of resin contents with a fiber volume fraction of 0.50 being the maximum. The D155-VF50 strand manufacturing was the same as all the other D155 strand tests (static and fatigue) in the fatigue database.

MATERIAL D155-VF50

Lay-up = D155 Tow impregnated with CoRezyn 63-AX-051 polyester resin. $V_F = 0.45$ to 0.50 .

| TEST & SAMPLE ID # | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------------------|------|---------|----------|--------|-------------------|----------------------------|
| 6400 | 6k1 | 1147 | * | 13 | ---- | ---- | 1 Tow |
| 6401 | 6k2 | 1193 | * | 13 | ---- | ---- | 1 Tow |
| 6402 | 6k3 | 1167 | * | 13 | ---- | ---- | 1 Tow |
| 6403 | 6k4 | 1278 | * | 13 | ---- | ---- | 1 Tow |
| 6404 | 6k5 | 1261 | * | 13 | ---- | ---- | 1 Tow |
| 6405 | 6k6 | 1206 | * | 13 | ---- | ---- | 1 Tow |
| 6406 | 6k7 | 667 | 0.1 | 10 | ---- | ---- | 15,997 Tow |
| 6407 | 6k8 | 667 | 0.1 | 10 | ---- | ---- | 11,353 Tow |
| 6408 | 6k9 | 667 | 0.1 | 10 | ---- | ---- | 27,483 Tow |
| 6409 | 6k10 | 667 | 0.1 | 10 | ---- | ---- | 17,628 Tow |
| 6410 | 6k11 | 667 | 0.1 | 10 | ---- | ---- | 70,000 Tow |
| 6411 | 6k12 | 534 | 0.1 | 15 | ---- | ---- | 343,667 Tow |
| 6412 | 6k13 | 534 | 0.1 | 15 | ---- | ---- | 577,139 Tow |
| 6413 | 6k14 | 534 | 0.1 | 15 | ---- | ---- | 178,556 Tow |
| 6414 | 6k15 | 534 | 0.1 | 15 | ---- | ---- | 759,224 Tow |
| 6415 | 6k16 | 534 | 0.1 | 15 | ---- | ---- | 360,357 Tow |
| 6416 | 6k30 | 890 | 0.1 | 1 | ---- | ---- | 89 Tow |
| 6417 | 6k31 | 890 | 0.1 | 1 | ---- | ---- | 161 Tow |
| 6418 | 6k32 | 890 | 0.1 | 1 | ---- | ---- | 99 Tow |
| 6419 | 6k33 | 890 | 0.1 | 1 | ---- | ---- | 244 Tow |
| 6420 | 6k34 | 890 | 0.1 | 1 | ---- | ---- | 1,031 Tow |
| 6421 | 6k35 | 1001 | 0.1 | 1 | ---- | ---- | 43 Tow |
| 6422 | 6k36 | 1001 | 0.1 | 1 | ---- | ---- | 22 Tow |
| 6423 | 6k37 | 1001 | 0.1 | 1 | ---- | ---- | 19 Tow |
| 6424 | 6k38 | 1001 | 0.1 | 1 | ---- | ---- | 18 Tow |
| 6425 | 6k39 | 1001 | 0.1 | 1 | ---- | ---- | 35 Tow |
| 6426 | 6k80 | 356 | 0.1 | 25 | ---- | ---- | 9,809,128 Tow |
| 6427 | 6k81 | 356 | 0.1 | 25 | ---- | ---- | 20,685,678 Tow |
| 6428 | 6k82 | 356 | 0.1 | 25 | ---- | ---- | 10,963,354 Tow |
| 6429 | 6k83 | 356 | 0.1 | 25 | ---- | ---- | 6,923,727 Tow |
| 6430 | 6k84 | 356 | 0.1 | 25 | ---- | ---- | 6,292,156 Tow |
| 6431 | 6k85 | 445 | 0.1 | 15 | ---- | ---- | 1,854,765 Tow |
| 6432 | 6k86 | 445 | 0.1 | 15 | ---- | ---- | 817,124 Tow |
| 6433 | 6k87 | 445 | 0.1 | 15 | ---- | ---- | 1,132,367 Tow |
| 6434 | 6k88 | 445 | 0.1 | 15 | ---- | ---- | 1,027,096 Tow |
| 6435 | 6k89 | 445 | 0.1 | 15 | ---- | ---- | 509,088 Tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|--|-------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|--|-------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL D155-VF56

Lay-up = D155 Tow impregnated with CoRezyn 63-AX-051 polyester resin.

Average $V_F = 0.56$, S.D. = 0.009, min = 0.543, max = 0.584.

| | | | | | | | | |
|------|-----|------|-----|----|------|------|------------|-----|
| 6436 | 4x | 1232 | * | 13 | ---- | ---- | 1 | Tow |
| 6437 | 6x | 1230 | * | 13 | ---- | ---- | 1 | Tow |
| 6438 | 12x | 1208 | * | 13 | ---- | ---- | 1 | Tow |
| 6439 | 17x | 1222 | * | 13 | ---- | ---- | 1 | Tow |
| 6440 | 18x | 1207 | * | 13 | ---- | ---- | 1 | Tow |
| 6441 | 27x | 778 | 0.1 | 5 | ---- | ---- | 9,302 | Tow |
| 6442 | 28x | 778 | 0.1 | 5 | ---- | ---- | 5,230 | Tow |
| 6443 | 46x | 778 | 0.1 | 5 | ---- | ---- | 2,131 | Tow |
| 6444 | 36x | 778 | 0.1 | 5 | ---- | ---- | 5,691 | Tow |
| 6445 | 45x | 778 | 0.1 | 5 | ---- | ---- | 2,625 | Tow |
| 6446 | 47x | 667 | 0.1 | 7 | ---- | ---- | 22,943 | Tow |
| 6447 | 49x | 667 | 0.1 | 7 | ---- | ---- | 21,805 | Tow |
| 6448 | 44x | 667 | 0.1 | 7 | ---- | ---- | 11,222 | Tow |
| 6449 | 43x | 667 | 0.1 | 7 | ---- | ---- | 32,491 | Tow |
| 6450 | 59x | 667 | 0.1 | 7 | ---- | ---- | 15,061 | Tow |
| 6451 | 48x | 534 | 0.1 | 10 | ---- | ---- | 63,975 | Tow |
| 6452 | 52x | 534 | 0.1 | 10 | ---- | ---- | 212,610 | Tow |
| 6453 | 58x | 534 | 0.1 | 10 | ---- | ---- | 52,326 | Tow |
| 6454 | 57x | 356 | 0.1 | 20 | ---- | ---- | 6,578,336 | Tow |
| 6455 | 53x | 445 | 0.1 | 10 | ---- | ---- | 713,957 | Tow |
| 6456 | 51x | 445 | 0.1 | 10 | ---- | ---- | 609,384 | Tow |
| 6457 | 54x | 445 | 0.1 | 10 | ---- | ---- | 476,462 | Tow |
| 6458 | 55x | 445 | 0.1 | 10 | ---- | ---- | 325,807 | Tow |
| 6459 | 56x | 356 | 0.1 | 20 | ---- | ---- | 1,529,184 | Tow |
| 6460 | 42x | 356 | 0.1 | 20 | ---- | ---- | 4,231,823 | Tow |
| 6461 | 74x | 356 | 0.1 | 20 | ---- | ---- | 2,585,711 | Tow |
| 6462 | 75x | 356 | 0.1 | 20 | ---- | ---- | 3,562,790 | Tow |
| 6463 | 50x | 289 | 0.1 | 50 | ---- | ---- | 11,296,036 | Tow |
| 6464 | 70x | 289 | 0.1 | 50 | ---- | ---- | 71,487,444 | Tow |
| 6465 | 71x | 289 | 0.1 | 50 | ---- | ---- | 25,158,816 | Tow |
| 6466 | 72x | 289 | 0.1 | 50 | ---- | ---- | 52,054,868 | Tow |
| 6467 | 73x | 289 | 0.1 | 50 | ---- | ---- | 42,239,581 | Tow |

MATERIAL D155-VF61

Lay-up = D155 Tow impregnated with CoRezyn 63-AX-051 polyester resin. Average $V_F = 0.614$, S.D. = 0.015, min = 0.616, max = 0.637.

| | | | | | | | | |
|------|------|------|-----|----|------|------|---------|-----|
| 6468 | 7501 | 1188 | * | 13 | ---- | ---- | 1 | Tow |
| 6469 | 7503 | 1213 | * | 13 | ---- | ---- | 1 | Tow |
| 6470 | 7505 | 1116 | * | 13 | ---- | ---- | 1 | Tow |
| 6471 | 7507 | 1216 | * | 13 | ---- | ---- | 1 | Tow |
| 6472 | 7508 | 1201 | * | 13 | ---- | ---- | 1 | Tow |
| 6473 | 7509 | 1122 | * | 13 | ---- | ---- | 1 | Tow |
| 6474 | 7510 | 667 | 0.1 | 5 | ---- | ---- | 11,306 | Tow |
| 6475 | 7511 | 667 | 0.1 | 5 | ---- | ---- | 5,044 | Tow |
| 6476 | 7513 | 667 | 0.1 | 5 | ---- | ---- | 5,914 | Tow |
| 6477 | 7514 | 667 | 0.1 | 5 | ---- | ---- | 6,952 | Tow |
| 6478 | 7515 | 667 | 0.1 | 5 | ---- | ---- | 8,436 | Tow |
| 6479 | 7516 | 534 | 0.1 | 10 | ---- | ---- | 174,587 | Tow |
| 6480 | 7519 | 534 | 0.1 | 10 | ---- | ---- | 98,826 | Tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------|-------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 6481 | 7521 | 534 | 0.1 | 10 | ---- | ---- | 116,190 | Tow |
| 6482 | 7522 | 534 | 0.1 | 10 | ---- | ---- | 51,571 | Tow |
| 6483 | 7523 | 534 | 0.1 | 10 | ---- | ---- | 37,775 | Tow |
| 6484 | 7524 | 445 | 0.1 | 15 | ---- | ---- | 266,352 | Tow |
| 6485 | 7525 | 445 | 0.1 | 15 | ---- | ---- | 874,815 | Tow |
| 6486 | 7526 | 445 | 0.1 | 15 | ---- | ---- | 342,830 | Tow |
| 6487 | 7529 | 445 | 0.1 | 15 | ---- | ---- | 366,220 | Tow |
| 6488 | 7530 | 445 | 0.1 | 15 | ---- | ---- | 440,352 | Tow |
| 6489 | 7531 | 289 | 0.1 | 30 | ---- | ---- | 19,145,514 | Tow |
| 6490 | 7532 | 289 | 0.1 | 30 | ---- | ---- | 23,049,604 | Tow |
| 6491 | 7533 | 289 | 0.1 | 30 | ---- | ---- | 12,041,322 | Tow |
| 6492 | 7534 | 289 | 0.1 | 30 | ---- | ---- | 38,545,410 | Tow |
| 6493 | 7537 | 356 | 0.1 | 20 | ---- | ---- | 4,198,555 | Tow |
| 6494 | 7538 | 356 | 0.1 | 20 | ---- | ---- | 7,886,207 | Tow |
| 6495 | 7541 | 356 | 0.1 | 20 | ---- | ---- | 6,958,772 | Tow |
| 6496 | 7590 | 778 | 0.1 | 1 | ---- | ---- | 347 | Tow |
| 6497 | 7579 | 778 | 0.1 | 1 | ---- | ---- | 512 | Tow |
| 6498 | 7577 | 778 | 0.1 | 1 | ---- | ---- | 531 | Tow |
| 6499 | 7576 | 778 | 0.1 | 1 | ---- | ---- | 497 | Tow |
| 6500 | 7575 | 778 | 0.1 | 1 | ---- | ---- | 405 | Tow |

MATERIAL D155-VF66

Lay-up = D155 Tow impregnated with CoRezyn 63-AX-051 polyester resin. Average $V_F = 0.663$, S.D. = 0.006, min = 0.639, max = 0.705.

| | | | | | | | | |
|------|------|------|-----|----|------|------|------------|-----|
| 6501 | 7025 | 1171 | * | 13 | ---- | ---- | 1 | Tow |
| 6502 | 7065 | 1197 | * | 13 | ---- | ---- | 1 | Tow |
| 6503 | 7095 | 1171 | * | 13 | ---- | ---- | 1 | Tow |
| 6504 | 7155 | 1179 | * | 13 | ---- | ---- | 1 | Tow |
| 6505 | 7174 | 1289 | * | 13 | ---- | ---- | 1 | Tow |
| 6506 | 7194 | 1210 | * | 13 | ---- | ---- | 1 | Tow |
| 6507 | 7204 | 1276 | * | 13 | ---- | ---- | 1 | Tow |
| 6508 | 7005 | 667 | 0.1 | 5 | ---- | ---- | 11,970 | Tow |
| 6509 | 7015 | 667 | 0.1 | 5 | ---- | ---- | 6,654 | Tow |
| 6510 | 7035 | 667 | 0.1 | 5 | ---- | ---- | 4,798 | Tow |
| 6511 | 7045 | 667 | 0.1 | 5 | ---- | ---- | 3,789 | Tow |
| 6512 | 7055 | 667 | 0.1 | 5 | ---- | ---- | 14,218 | Tow |
| 6513 | 7075 | 534 | 0.1 | 10 | ---- | ---- | 87,147 | Tow |
| 6514 | 7085 | 534 | 0.1 | 10 | ---- | ---- | 21,667 | Tow |
| 6515 | 7105 | 534 | 0.1 | 10 | ---- | ---- | 13,688 | Tow |
| 6516 | 7115 | 534 | 0.1 | 10 | ---- | ---- | 77,953 | Tow |
| 6517 | 7125 | 534 | 0.1 | 10 | ---- | ---- | 49,829 | Tow |
| 6518 | 7135 | 445 | 0.1 | 10 | ---- | ---- | 109,805 | Tow |
| 6519 | 7145 | 445 | 0.1 | 10 | ---- | ---- | 46,681 | Tow |
| 6520 | 7165 | 445 | 0.1 | 10 | ---- | ---- | 169,231 | Tow |
| 6521 | 7184 | 445 | 0.1 | 10 | ---- | ---- | 676,855 | Tow |
| 6522 | 7214 | 445 | 0.1 | 10 | ---- | ---- | 63,406 | Tow |
| 6523 | 7265 | 356 | 0.1 | 15 | ---- | ---- | 1,002,081 | Tow |
| 6524 | 7285 | 356 | 0.1 | 15 | ---- | ---- | 1,380,127 | Tow |
| 6525 | 7295 | 356 | 0.1 | 15 | ---- | ---- | 1,747,378 | Tow |
| 6526 | 7305 | 356 | 0.1 | 15 | ---- | ---- | 2,464,214 | Tow |
| 6527 | 7315 | 356 | 0.1 | 15 | ---- | ---- | 1,244,966 | Tow |
| 6528 | 7325 | 289 | 0.1 | 25 | ---- | ---- | 21,453,280 | Tow |
| 6529 | 7345 | 289 | 0.1 | 25 | ---- | ---- | 15,997,106 | Tow |

| TEST & SAMPLE ID # | | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------|-------------------|-----|---------|----------|--------|-------------------|----------------------------|
| 6530 | 7355 | 289 | 0.1 | 25 | ---- | ---- | 10,738,800 | Tow |
| 6531 | 7365 | 289 | 0.1 | 25 | ---- | ---- | 6,269,025 | Tow |
| 6532 | 7375 | 289 | 0.1 | 25 | ---- | ---- | 16,818,682 | Tow |
| 6533 | 7224 | 245 | 0.1 | 40 | ---- | ---- | 163,451,124 | Tow |
| 6534 | 7244 | 245 | 0.1 | 40 | ---- | ---- | 92,509,644 | Tow |
| 6535 | 7254 | 245 | 0.1 | 40 | ---- | ---- | 13,752,070 | Tow |
| 6536 | 7001 | 890 | 0.1 | 1 | ---- | ---- | 18 | Tow |
| 6537 | 7002 | 890 | 0.1 | 1 | ---- | ---- | 12 | Tow |
| 6538 | 7003 | 890 | 0.1 | 1 | ---- | ---- | 17 | Tow |
| 6539 | 7004 | 778 | 0.1 | 1 | ---- | ---- | 347 | Tow |
| 6540 | 7005 | 778 | 0.1 | 1 | ---- | ---- | 254 | Tow |
| 6541 | 7006 | 778 | 0.1 | 1 | ---- | ---- | 304 | Tow |
| 6542 | 7007 | 245 | 0.1 | 40 | ---- | ---- | 8,785,729 | Tow |
| 6543 | 7008 | 245 | 0.1 | 40 | ---- | ---- | 15,879,432 | Tow |
| 6544 | 7511 | 245 | 0.1 | 40 | ---- | ---- | 40,284,284 | Tow |
| 6545 | 7512 | 245 | 0.1 | 40 | ---- | ---- | 70,326,223 | Tow |

| TEST & SAMPLE ID # | MAX. Load N | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-------------------|---|---------|----------|--------|-------------------|----------------------------|

RESIDUAL STRENGTH

(Covering test numbered 5150 - 5234)

MATERIAL DD16A

Lay-up = [90/0/±45/0]_S, V_F = 0.389, Ave. thickness = 3.95 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester

Additional tests are also listed under prior DD16 tests

Tests 5150 - 5188 were baseline static strength and fatigue tests

| | | | | | | | | |
|------|------|--------|-----|----|------|------|-----------|-----|
| 5150 | R59 | 661 | * | 13 | ---- | ---- | 1 | 8 |
| 5151 | R27 | 658 | * | 13 | ---- | ---- | 1 | 8 |
| 5152 | R26 | 657 | * | 13 | ---- | ---- | 1 | 8 |
| 5153 | R16 | 701 | * | 13 | ---- | ---- | 1 | 8 |
| 5154 | R102 | 685 | * | 13 | ---- | ---- | 1 | 8 |
| 5155 | R61 | 686 | * | 13 | ---- | ---- | 1 | 8 |
| 5156 | R120 | 658 | * | 13 | ---- | ---- | 1 | 8 |
| 5157 | R121 | 678 | * | 13 | ---- | ---- | 1 | 8 |
| 5158 | R122 | 683 | * | 13 | ---- | ---- | 1 | 8 |
| 5159 | R123 | 691 | * | 13 | ---- | ---- | 1 | 8 |
| 5160 | R124 | 625 | * | 13 | ---- | ---- | 1 | 8 |
| 5161 | R125 | 675 | * | 13 | ---- | ---- | 1 | 8 |
| 5162 | R42 | 684 | * | 13 | ---- | ---- | 1 | 8 |
| 5163 | R74 | 673 | * | 13 | ---- | ---- | 1 | 8 |
| 5164 | R56 | 705 | * | 13 | ---- | ---- | 1 | 8 |
| 5165 | R71 | 674 | * | 13 | ---- | ---- | 1 | 8 |
| 5166 | R110 | 664 | * | 13 | ---- | ---- | 1 | 8 |
| 5167 | R111 | 665 | * | 13 | ---- | ---- | 1 | 8 |
| 5168 | R21 | 665 | * | 13 | ---- | ---- | 1 | 8 |
| 5169 | R11 | 680 | * | 13 | ---- | ---- | 1 | 8 |
| 5170 | R35 | 207/21 | 0.1 | 10 | ---- | ---- | 192,780 | 8 |
| 5171 | R58 | 207/21 | 0.1 | 10 | ---- | ---- | 636,742 | 8 R |
| 5172 | R22 | 207/21 | 0.1 | 10 | ---- | ---- | 1,694,879 | 8 |
| 5173 | R57 | 207/21 | 0.1 | 10 | ---- | ---- | 961,214 | 8 |
| 5174 | R44 | 276/28 | 0.1 | 6 | ---- | ---- | 38,152 | 8 |
| 5175 | R23 | 241/24 | 0.1 | 8 | ---- | ---- | 104,645 | 8 |
| 5176 | R13 | 241/24 | 0.1 | 8 | ---- | ---- | 256,923 | 8 |
| 5177 | R46 | 241/24 | 0.1 | 8 | ---- | ---- | 169,108 | 8 |
| 5178 | R7 | 241/24 | 0.1 | 8 | ---- | ---- | 236,617 | 8 |
| 5179 | R48 | 241/24 | 0.1 | 8 | ---- | ---- | 176,479 | 8 |
| 5180 | R50 | 241/24 | 0.1 | 8 | ---- | ---- | 149,778 | 8 |
| 5181 | R43 | 241/24 | 0.1 | 8 | ---- | ---- | 325,439 | 8 |
| 5182 | R41 | 241/24 | 0.1 | 8 | ---- | ---- | 78,445 | 8 |
| 5183 | R64 | 241/24 | 0.1 | 8 | ---- | ---- | 52,320 | 8 |
| 5184 | R68 | 241/24 | 0.1 | 8 | ---- | ---- | 67857 | 8 |
| 5185 | R77 | 241/24 | 0.1 | 8 | ---- | ---- | 116,518 | 8 |
| 5186 | R52 | 241/24 | 0.1 | 8 | ---- | ---- | 157,118 | 8 |
| 5187 | R78 | 241/24 | 0.1 | 8 | ---- | ---- | 382,653 | 8 |
| 5188 | R62 | 241/24 | 0.1 | 8 | ---- | ---- | 105,738 | 8 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

Test coupons were selected for three testing sequences: 50,000, 100,000 and 200,000 cycles at a maximum stress of 241 MPa (R = 0.1), after which the test coupon was statically tested for residual strength. Test coupons which failed prior to the completion of the designated number of cycles are listed, but should not be used in the baseline fatigue behavior due to sample biasing.

Tests 5189 - 5205, 100,000 cycles at 241 MPa, R=0.1

Tests 5189 - 5193 failed prior to completion of the 100,000 cycle sequence

| | | | | | | | | |
|------|-----|--------|-----|---|------|------|--------|-----|
| 5189 | R3 | 241/24 | 0.1 | 8 | ---- | ---- | 94,718 | 8 X |
| 5190 | R65 | 241/24 | 0.1 | 8 | ---- | ---- | 88,082 | 8 X |
| 5191 | R60 | 241/24 | 0.1 | 8 | ---- | ---- | 83,962 | 8 X |
| 5192 | R8 | 241/24 | 0.1 | 8 | ---- | ---- | 82,768 | 8 X |
| 5193 | R38 | 241/24 | 0.1 | 8 | ---- | ---- | 66,757 | 8 X |

Tests 5194 - 5205 were cycled for 100,000 cycles at 241/24 MPa and then tested for residual strength

| | | | | | | | | |
|------|------|--------|-----|----|------|------|---------|------|
| 5194 | R5 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R5 | 602 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5195 | R34 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R34 | 543 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5196 | R101 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R101 | 583 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5197 | R63 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R63 | 423 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5198 | R29 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R29 | 482 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5199 | R19 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R19 | 623 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5200 | R6 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R6 | 563 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5201 | R24 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R24 | 314 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5202 | R39 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R39 | 571 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5203 | R72 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R72 | 454 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5204 | R45 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R45 | 480 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5205 | R54 | 241/24 | 0.1 | 8 | ---- | ---- | 100,000 | 8 |
| | R54 | 270 | * | 13 | ---- | ---- | 1 | 8 RS |

Tests 5206 - 5217, 50,000 cycles

| | | | | | | | | |
|------|-----|--------|-----|----|------|------|--------|------|
| 5206 | R12 | 241/24 | 0.1 | 8 | ---- | ---- | 50,000 | 8 |
| | R12 | 485 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5207 | R10 | 241/24 | 0.1 | 8 | ---- | ---- | 50,000 | 8 |
| | R10 | 554 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5208 | R20 | 241/24 | 0.1 | 8 | ---- | ---- | 50,000 | 8 |
| | R20 | 628 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5209 | R31 | 241/24 | 0.1 | 8 | ---- | ---- | 50,000 | 8 |
| | R31 | 583 | * | 13 | ---- | ---- | 1 | 8 RS |
| 5210 | R67 | 241/24 | 0.1 | 8 | ---- | ---- | 50,000 | 8 |
| | R67 | 427 | * | 13 | ---- | ---- | 1 | 8 RS |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|--------|---------|----------|--------|-------------------|----------------------------|
| 5211 | R53 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R53 | 540 | * | 13 | ---- | 1 | 8 RS |
| 5212 | R28 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R28 | 568 | * | 13 | ---- | 1 | 8 RS |
| 5213 | R32 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R32 | 583 | * | 13 | ---- | 1 | 8 RS |
| 5214 | R37 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R37 | 582 | * | 13 | ---- | 1 | 8 RS |
| 5215 | R66 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R66 | 566 | * | 13 | ---- | 1 | 8 RS |
| 5216 | R117 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R117 | 529 | * | 13 | ---- | 1 | 8 RS |
| 5217 | R79 | 241/24 | 0.1 | 8 | ---- | 50,000 | 8 |
| | R79 | 568 | * | 13 | ---- | 1 | 8 RS |
| Tests 5218 - 5234, 200,000 cycles | | | | | | | |
| Tests 5218 - 5228 failed prior to completion of the 200,000 cycle sequence | | | | | | | |
| 5218 | R17 | 241/24 | 0.1 | 8 | ---- | 162,465 | 8 X |
| 5219 | R47 | 241/24 | 0.1 | 8 | ---- | 47,182 | 8 X |
| 5220 | R25 | 241/24 | 0.1 | 8 | ---- | 177,640 | 8 X |
| 5221 | R55 | 241/24 | 0.1 | 8 | ---- | 93,300 | 8 X |
| 5222 | R9 | 241/24 | 0.1 | 8 | ---- | 84,703 | 8 X |
| 5223 | R36 | 241/24 | 0.1 | 8 | ---- | 168,069 | 8 X |
| 5224 | R15 | 241/24 | 0.1 | 8 | ---- | 93,877 | 8 X |
| 5225 | R75 | 241/24 | 0.1 | 8 | ---- | 113,114 | 8 X |
| 5226 | R40 | 241/24 | 0.1 | 8 | ---- | 60,592 | 8 X |
| 5227 | R70 | 241/24 | 0.1 | 8 | ---- | 103,240 | 8 X |
| 5228 | R18 | 241/24 | 0.1 | 8 | ---- | 133,677 | 8 X |
| Tests 5229 - 5234 were cycled for 200,000 cycles at 241/24 MPa and then tested for residual strength | | | | | | | |
| 5229 | R51 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R51 | 249 | * | 13 | ---- | 1 | 8 RS |
| 5230 | R4 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R4 | 464 | * | 13 | ---- | 1 | 8 RS |
| 5231 | R73 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R73 | 269 | * | 13 | ---- | 1 | 8 RS |
| 5232 | R14 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R14 | 541 | * | 13 | ---- | 1 | 8 RS |
| 5233 | R33 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R33 | 298 | * | 13 | ---- | 1 | 8 RS |
| 5234 | R69 | 241/24 | 0.1 | 8 | ---- | 200,000 | 8 |
| | R69 | 337 | * | 13 | ---- | 1 | 8 RS |

Environmental testing of different matrix materials in $[0/\pm 45/0]_S$, $[90/\pm 45/90]_S$, and $[\pm 45]_3$ laminates.

Tests 5235 through 5714 involved static tests of five different matrix materials at different temperatures (25, 40, 55 and 70 °C) and different moisture contents. For composite moisture gain, the test coupons were placed in a distilled water bath at a temperature of 50 °C for 1,200 hours (433 hours for the Iso-Polyester). The temperature that the coupons were tested at is listed in the last data column. Moisture gain was calculated by weight percent. Materials used D155 0° and DB120 ±45° fabrics

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.354$, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, CoRezyn 63-AX-051 Polyester | | | | | | | |
| Tests 5235 - 5246 were dry control coupons (no moisture gain) | | | | | | | |
| 5235 | p-t-1 | 478 | * | 0.1 | 23.7 | ---- | 1 25 °C |
| 5236 | p-t-2 | 489 | * | 0.1 | 23.4 | ---- | 1 25 °C |
| 5237 | p-t-3 | 495 | * | 0.1 | 22.9 | ---- | 1 25 °C |
| 5238 | p-t-15 | 477 | * | 0.1 | 21.9 | ---- | 1 40 °C |
| 5239 | p-t-5 | 517 | * | 0.1 | 22.7 | ---- | 1 40 °C |
| 5240 | p-t-6 | 496 | * | 0.1 | 23.5 | ---- | 1 40 °C |
| 5241 | p-t-7 | 460 | * | 0.1 | 22.0 | ---- | 1 55 °C |
| 5242 | p-t-8 | 482 | * | 0.1 | 23.5 | ---- | 1 55 °C |
| 5243 | p-t-9 | 497 | * | 0.1 | 23.9 | ---- | 1 55 °C |
| 5244 | p-t-10 | 422 | * | 0.1 | 19.9 | ---- | 1 70 °C |
| 5245 | p-t-11 | 432 | * | 0.1 | 22.2 | ---- | 1 70 °C |
| 5246 | p-t-12 | 403 | * | 0.1 | 20.5 | ---- | 1 70 °C |
| Tests 5247 - 5258 had an average moisture gain of 0.92% (conditioned 1,200 hours in 50°C water (DI)) | | | | | | | |
| 5247 | w-p-t-1 | 434 | * | 0.1 | 20.3 | ---- | 1 25 °C |
| 5248 | w-p-t-2 | 441 | * | 0.1 | 21.2 | ---- | 1 25 °C |
| 5249 | w-p-t-3 | 455 | * | 0.1 | 23.0 | ---- | 1 25 °C |
| 5250 | w-p-t-4 | 444 | * | 0.1 | 20.6 | ---- | 1 40 °C |
| 5251 | w-p-t-5 | 442 | * | 0.1 | 22.7 | ---- | 1 40 °C |
| 5252 | w-p-t-6 | 411 | * | 0.1 | 20.2 | ---- | 1 40 °C |
| 5253 | w-p-t-7 | 409 | * | 0.1 | 22.2 | ---- | 1 55 °C |
| 5254 | w-p-t-8 | 387 | * | 0.1 | 22.5 | ---- | 1 55 °C |
| 5255 | w-p-t-9 | 401 | * | 0.1 | 20.8 | ---- | 1 55 °C |
| 5256 | w-p-t-10 | 390 | * | 0.1 | 21.4 | ---- | 1 70 °C |
| 5257 | w-p-t-11 | 392 | * | 0.1 | 21.3 | ---- | 1 70 °C |
| 5258 | w-p-t-12 | 383 | * | 0.1 | 21.1 | ---- | 1 70 °C |
| Tests 5259 - 5270 were dry control coupons (no moisture gain) | | | | | | | |
| 5259 | p-c-1 | -604 | * | 13 | ---- | ---- | 1 25 °C |
| 5260 | p-c-2 | -634 | * | 13 | ---- | ---- | 1 25 °C |
| 5261 | p-c-3 | -641 | * | 13 | ---- | ---- | 1 25 °C |
| 5262 | p-c-4 | -522 | * | 13 | ---- | ---- | 1 40 °C |
| 5263 | p-c-5 | -591 | * | 13 | ---- | ---- | 1 40 °C |
| 5264 | p-c-6 | -580 | * | 13 | ---- | ---- | 1 40 °C |
| 5265 | p-c-7 | -455 | * | 13 | ---- | ---- | 1 55 °C |
| 5266 | p-c-8 | -480 | * | 13 | ---- | ---- | 1 55 °C |
| 5267 | p-c-9 | -437 | * | 13 | ---- | ---- | 1 55 °C |
| 5268 | p-c-10 | -348 | * | 13 | ---- | ---- | 1 70 °C |
| 5269 | p-c-11 | -388 | * | 13 | ---- | ---- | 1 70 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5270 | p-c-12 | -405 | * | 13 | ---- | 1 | 70 °C |
| Tests 5271 - 5282 had an average moisture gain of 0.87% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5271 | w-p-c-1 | -327 | * | 13 | ---- | 1 | 25 °C |
| 5272 | w-p-c-2 | -341 | * | 13 | ---- | 1 | 25 °C |
| 5273 | w-p-c-3 | -334 | * | 13 | ---- | 1 | 25 °C |
| 5274 | w-p-c-4 | -306 | * | 13 | ---- | 1 | 40 °C |
| 5275 | w-p-c-5 | -307 | * | 13 | ---- | 1 | 40 °C |
| 5276 | w-p-c-6 | -317 | * | 13 | ---- | 1 | 40 °C |
| 5277 | w-p-c-10 | -266 | * | 13 | ---- | 1 | 55 °C |
| 5278 | w-p-c-11 | -277 | * | 13 | ---- | 1 | 55 °C |
| 5279 | w-p-c-12 | -268 | * | 13 | ---- | 1 | 55 °C |
| 5280 | w-p-c-7 | -240 | * | 13 | ---- | 1 | 70 °C |
| 5281 | w-p-c-8 | -243 | * | 13 | ---- | 1 | 70 °C |
| 5282 | w-p-c-9 | -243 | * | 13 | ---- | 1 | 70 °C |

Lay-up = [90/±45/90]_s, V_F = 0.354, Ave. thickness = 3.15 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

Tests 5283 - 5294 were dry control coupons (no moisture gain)

| | | | | | | | | |
|------|---------|------|---|-----|------|------|---|-------|
| 5283 | p-tt-1 | 78.7 | * | 0.1 | 8.9 | ---- | 1 | 25 °C |
| 5284 | p-tt-2 | 75.0 | * | 0.1 | 9.6 | ---- | 1 | 25 °C |
| 5285 | p-tt-3 | 68.5 | * | 0.1 | 9.3 | ---- | 1 | 25 °C |
| 5715 | 1T01 | 68.2 | * | 0.1 | 10.7 | 2.26 | 1 | 25 °C |
| 5716 | 1T02 | 75.2 | * | 0.1 | 10.5 | 3.14 | 1 | 25 °C |
| 5717 | 1T03 | 77.8 | * | 0.1 | 10.1 | 3.51 | 1 | 25 °C |
| 5286 | p-tt-4 | 86.0 | * | 0.1 | 8.3 | ---- | 1 | 40 °C |
| 5287 | p-tt-5 | 84.7 | * | 0.1 | 8.8 | ---- | 1 | 40 °C |
| 5288 | p-tt-6 | 85.1 | * | 0.1 | 8.3 | ---- | 1 | 40 °C |
| 5289 | p-tt-7 | 84.1 | * | 0.1 | 6.1 | ---- | 1 | 55 °C |
| 5290 | p-tt-8 | 84.0 | * | 0.1 | 6.0 | ---- | 1 | 55 °C |
| 5291 | p-tt-9 | 81.1 | * | 0.1 | 6.3 | ---- | 1 | 55 °C |
| 5292 | p-tt-10 | 70.8 | * | 0.1 | 4.7 | ---- | 1 | 70 °C |
| 5293 | p-tt-11 | 72.3 | * | 0.1 | 5.3 | ---- | 1 | 70 °C |
| 5294 | p-tt-12 | 70.6 | * | 0.1 | 3.8 | ---- | 1 | 70 °C |

Tests 5295 - 5306 had an average moisture gain of 0.92% (conditioned 1,200 hours in 50 °C water (DI))

| | | | | | | | | |
|------|-----------|------|---|-----|------|------|---|-------|
| 5295 | w-p-tt-1 | 56.4 | * | 0.1 | 7.3 | ---- | 1 | 25 °C |
| 5296 | w-p-tt-2 | 55.8 | * | 0.1 | 7.1 | ---- | 1 | 25 °C |
| 5297 | w-p-tt-3 | 56.3 | * | 0.1 | 7.0 | ---- | 1 | 25 °C |
| 5839 | 1t04 | 77.2 | * | 0.1 | 8.94 | 2.95 | 1 | 25 °C |
| 5840 | 1t05 | 71.9 | * | 0.1 | 8.68 | 2.78 | 1 | 25 °C |
| 5841 | 1t06 | 75.8 | * | 0.1 | 9.02 | 2.79 | 1 | 25 °C |
| 5298 | w-p-tt-4 | 59.2 | * | 0.1 | 6.1 | ---- | 1 | 40 °C |
| 5299 | w-p-tt-5 | 58.5 | * | 0.1 | 6.2 | ---- | 1 | 40 °C |
| 5300 | w-p-tt-6 | 59.2 | * | 0.1 | 5.8 | ---- | 1 | 40 °C |
| 5301 | w-p-tt-7 | 53.1 | * | 0.1 | 5.4 | ---- | 1 | 55 °C |
| 5302 | w-p-tt-8 | 54.2 | * | 0.1 | 5.4 | ---- | 1 | 55 °C |
| 5303 | w-p-tt-9 | 53.8 | * | 0.1 | 5.4 | ---- | 1 | 55 °C |
| 5304 | w-p-tt-10 | 47.2 | * | 0.1 | 3.8 | ---- | 1 | 70 °C |
| 5305 | w-p-tt-11 | 48.5 | * | 0.1 | 3.7 | ---- | 1 | 70 °C |
| 5306 | w-p-tt-12 | 50.9 | * | 0.1 | 3.4 | ---- | 1 | 70 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| Lay-up = $[\pm 45]_3$, $V_F = 0.279$, Ave. thickness = 3.12 mm, S.D. = 0.08 mm, CoRezyn 63-AX-051 Polyester | | | | | | | |
| Tests 5307 - 5318 were dry control coupons (no moisture gain) | | | | | | | |
| 5307 | p-45t-1 | 111 | * | 0.1 | 10.2 | ---- | 1 25 °C |
| 5308 | p-45t-2 | 115 | * | 0.1 | 11.3 | ---- | 1 25 °C |
| 5309 | p-45t-3 | 111 | * | 0.1 | 11.3 | ---- | 1 25 °C |
| 5310 | p-45t-4 | 108 | * | 0.1 | 8.9 | ---- | 1 40 °C |
| 5311 | p-45t-5 | 105 | * | 0.1 | 10.1 | ---- | 1 40 °C |
| 5312 | p-45t-6 | 108 | * | 0.1 | 9.2 | ---- | 1 40 °C |
| 5313 | p-45t-7 | 91.5 | * | 0.1 | 7.6 | ---- | 1 55 °C |
| 5314 | p-45t-8 | 90.3 | * | 0.1 | 7.7 | ---- | 1 55 °C |
| 5315 | p-45t-9 | 88.9 | * | 0.1 | 7.3 | ---- | 1 55 °C |
| 5316 | p-45t-10 | 72.8 | * | 0.1 | 5.1 | ---- | 1 70 °C |
| 5317 | p-45t-11 | 72.4 | * | 0.1 | 4.9 | ---- | 1 70 °C |
| 5318 | p-45t-12 | 72.9 | * | 0.1 | 5.4 | ---- | 1 70 °C |
| Tests 5319 - 5330 had an average moisture gain of 0.86% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5319 | w-p-45t-1 | 65.8 | * | 0.1 | 7.6 | ---- | 1 25 °C |
| 5320 | w-p-45t-2 | 69.4 | * | 0.1 | 7.7 | ---- | 1 25 °C |
| 5321 | w-p-45t-3 | 66.6 | * | 0.1 | 7.5 | ---- | 1 25 °C |
| 5322 | w-p-45t-4 | 68.5 | * | 0.1 | 6.1 | ---- | 1 40 °C |
| 5323 | w-p-45t-5 | 69.2 | * | 0.1 | 7.1 | ---- | 1 40 °C |
| 5324 | w-p-45t-6 | 64.6 | * | 0.1 | 6.2 | ---- | 1 40 °C |
| 5325 | w-p-45t-7 | 58.7 | * | 0.1 | 5.4 | ---- | 1 55 °C |
| 5326 | w-p-45t-8 | 59.6 | * | 0.1 | 5.1 | ---- | 1 55 °C |
| 5327 | w-p-45t-9 | 61.2 | * | 0.1 | 5.5 | ---- | 1 55 °C |
| 5328 | w-p-45t-10 | 43.5 | * | 0.1 | 3.0 | ---- | 1 70 °C |
| 5329 | w-p-45t-11 | 45.1 | * | 0.1 | 3.3 | ---- | 1 70 °C |
| 5330 | w-p-45t-12 | 46.2 | * | 0.1 | 3.0 | ---- | 1 70 °C |
| Lay-up = $[0/\pm 45/0]_8$, $V_F = 0.354$, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, Derakane 411C-50, vinyl ester | | | | | | | |
| Tests 5331 - 5342 were dry control coupons (no moisture gain) | | | | | | | |
| 5331 | 411-t-1 | 599 | * | 0.1 | 27.0 | ---- | 1 25 °C |
| 5332 | 411-t-2 | 525 | * | 0.1 | 25.6 | ---- | 1 25 °C |
| 5333 | 411-t-3 | 621 | * | 0.1 | 25.9 | ---- | 1 25 °C |
| 5334 | 411-t-4 | 546 | * | 0.1 | 24.6 | ---- | 1 40 °C |
| 5335 | 411-t-5 | 518 | * | 0.1 | 25.4 | ---- | 1 40 °C |
| 5336 | 411-t-6 | 595 | * | 0.1 | 25.2 | ---- | 1 40 °C |
| 5337 | 411-t-7 | 546 | * | 0.1 | 25.6 | ---- | 1 55 °C |
| 5338 | 411-t-8 | 558 | * | 0.1 | 25.4 | ---- | 1 55 °C |
| 5339 | 411-t-9 | 562 | * | 0.1 | 24.5 | ---- | 1 55 °C |
| 5340 | 411-t-10 | 463 | * | 0.1 | 30.0 | ---- | 1 70 °C |
| 5341 | 411-t-11 | 538 | * | 0.1 | 27.9 | ---- | 1 70 °C |
| 5342 | 411-t-12 | 502 | * | 0.1 | 23.2 | ---- | 1 70 °C |
| Tests 5343 - 5354 had an average moisture gain of 0.34% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5343 | w-411-t-1 | 445 | * | 0.1 | 24.3 | ---- | 1 25 °C |
| 5344 | w-411-t-2 | 441 | * | 0.1 | 25.9 | ---- | 1 25 °C |
| 5345 | w-411-t-3 | 417 | * | 0.1 | 23.3 | ---- | 1 25 °C |
| 5346 | w-411-t-4 | 413 | * | 0.1 | 25.9 | ---- | 1 40 °C |
| 5347 | w-411-t-5 | 434 | * | 0.1 | 25.0 | ---- | 1 40 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5348 | w-411-t-6 | 409 | * | 0.1 | 26.3 | ---- | 1 40 °C |
| 5349 | w-411-t-7 | 405 | * | 0.1 | 25.9 | ---- | 1 55 °C |
| 5350 | w-411-t-8 | 384 | * | 0.1 | 25.1 | ---- | 1 55 °C |
| 5351 | w-411-t-9 | 383 | * | 0.1 | 23.9 | ---- | 1 55 °C |
| 5352 | w-411-t-10 | 378 | * | 0.1 | 25.5 | ---- | 1 70 °C |
| 5353 | w-411-t-11 | 381 | * | 0.1 | 26.4 | ---- | 1 70 °C |
| 5354 | w-411-t-12 | 380 | * | 0.1 | 24.1 | ---- | 1 70 °C |
| Tests 5355 - 5366 were dry control coupons (no moisture gain) | | | | | | | |
| 5355 | 411-c-1 | -555 | * | 13 | ---- | ---- | 1 25 °C |
| 5356 | 411-c-2 | -509 | * | 13 | ---- | ---- | 1 25 °C |
| 5357 | 411-c-3 | -594 | * | 13 | ---- | ---- | 1 25 °C |
| 5358 | 411-c-4 | -505 | * | 13 | ---- | ---- | 1 40 °C |
| 5359 | 411-c-5 | -513 | * | 13 | ---- | ---- | 1 40 °C |
| 5360 | 411-c-6 | -504 | * | 13 | ---- | ---- | 1 40 °C |
| 5361 | 411-c-7 | -438 | * | 13 | ---- | ---- | 1 55 °C |
| 5362 | 411-c-8 | -447 | * | 13 | ---- | ---- | 1 55 °C |
| 5363 | 411-c-9 | -492 | * | 13 | ---- | ---- | 1 55 °C |
| 5364 | 411-c-10 | -445 | * | 13 | ---- | ---- | 1 70 °C |
| 5365 | 411-c-11 | -453 | * | 13 | ---- | ---- | 1 70 °C |
| 5366 | 411-c-12 | -447 | * | 13 | ---- | ---- | 1 70 °C |
| Tests 5367 - 5378 had an average moisture gain of 0.32% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5367 | w-411-c-1 | -519 | * | 13 | ---- | ---- | 1 25 °C |
| 5368 | w-411-c-2 | -536 | * | 13 | ---- | ---- | 1 25 °C |
| 5369 | w-411-c-3 | -508 | * | 13 | ---- | ---- | 1 25 °C |
| 5370 | w-411-c-4 | -522 | * | 13 | ---- | ---- | 1 40 °C |
| 5371 | w-411-c-5 | -514 | * | 13 | ---- | ---- | 1 40 °C |
| 5372 | w-411-c-6 | -505 | * | 13 | ---- | ---- | 1 40 °C |
| 5373 | w-411-c-10 | -516 | * | 13 | ---- | ---- | 1 55 °C |
| 5374 | w-411-c-11 | -477 | * | 13 | ---- | ---- | 1 55 °C |
| 5375 | w-411-c-12 | -486 | * | 13 | ---- | ---- | 1 55 °C |
| 5376 | w-411-c-7 | -455 | * | 13 | ---- | ---- | 1 70 °C |
| 5377 | w-411-c-8 | -475 | * | 13 | ---- | ---- | 1 70 °C |
| 5378 | w-411-c-9 | -494 | * | 13 | ---- | ---- | 1 70 °C |
| Lay-up = [90/±45/90] _S , V _F = 0.354, Ave. thickness = 3.15 mm, S.D. = 0.10 mm, Derakane 411C-50 | | | | | | | |
| Tests 5379 - 5390, 5718 - 7520 were dry control coupons (no moisture gain) | | | | | | | |
| 5379 | 411-tt-1 | 56.9 | * | 0.1 | 11.1 | ---- | 1 25 °C |
| 5380 | 411-tt-2 | 56.2 | * | 0.1 | 11.7 | ---- | 1 25 °C |
| 5381 | 411-tt-3 | 54.8 | * | 0.1 | 12.4 | ---- | 1 25 °C |
| 5382 | 411-tt-4 | 61.5 | * | 0.1 | 10.9 | ---- | 1 40 °C |
| 5383 | 411-tt-5 | 62.3 | * | 0.1 | 10.3 | ---- | 1 40 °C |
| 5384 | 411-tt-6 | 63.3 | * | 0.1 | 10.8 | ---- | 1 40 °C |
| 5385 | 411-tt-7 | 63.2 | * | 0.1 | 6.9 | ---- | 1 55 °C |
| 5386 | 411-tt-8 | 61.5 | * | 0.1 | 7.1 | ---- | 1 55 °C |
| 5387 | 411-tt-9 | 61.5 | * | 0.1 | 7.3 | ---- | 1 55 °C |
| 5388 | 411-tt-10 | 60.4 | * | 0.1 | 6.6 | ---- | 1 70 °C |
| 5389 | 411-tt-11 | 52.6 | * | 0.1 | 6.0 | ---- | 1 70 °C |
| 5390 | 411-tt-12 | 56.4 | * | 0.1 | 6.4 | ---- | 1 70 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5718 | ts4111 | 57.6 | * | 0.1 | 9.3 | 4.39 | 1 25 °C |
| 5719 | ts4112 | 54.8 | * | 0.1 | 9.2 | 4.92 | 1 25 °C |
| 5720 | ts4113 | 56.6 | * | 0.1 | 9.5 | 4.01 | 1 25 °C |
| Tests 5391 - 5402 had an average moisture gain of 0.34% (conditioned 1,200 hours in 50°C water (DI)) | | | | | | | |
| 5391 | w-411-tt-1 | 51.1 | * | 0.1 | 8.6 | ---- | 1 25 °C |
| 5392 | w-411-tt-2 | 51.4 | * | 0.1 | 8.2 | ---- | 1 25 °C |
| 5393 | w-411-tt-3 | 50.9 | * | 0.1 | 8.5 | ---- | 1 25 °C |
| 5394 | w-411-tt-4 | 56 | * | 0.1 | 8.5 | ---- | 1 40 °C |
| 5395 | w-411-tt-5 | 55.5 | * | 0.1 | 8.2 | ---- | 1 40 °C |
| 5396 | w-411-tt-6 | 50.9 | * | 0.1 | 8.4 | ---- | 1 40 °C |
| 5397 | w-411-tt-7 | 48.4 | * | 0.1 | 8.1 | ---- | 1 55 °C |
| 5398 | w-411-tt-8 | 52.1 | * | 0.1 | 7.9 | ---- | 1 55 °C |
| 5399 | w-411-tt-9 | 52.1 | * | 0.1 | 8.2 | ---- | 1 55 °C |
| 5400 | w-411-tt-10 | 52.6 | * | 0.1 | 7.3 | ---- | 1 70 °C |
| 5401 | w-411-tt-11 | 52 | * | 0.1 | 7.5 | ---- | 1 70 °C |
| 5402 | w-411-tt-12 | 50.1 | * | 0.1 | 7.2 | ---- | 1 70 °C |

Lay-up = $[\pm 45]_3$, $V_F = 0.279$, Ave. thickness = 3.12 mm, S.D. = 0.08 mm, Derakane 411C-50 vinyl ester

Tests 5403 - 5414 were dry control coupons (no moisture gain)

| | | | | | | | |
|------|------------|-----|---|-----|------|------|---------|
| 5403 | 411-45t-1 | 140 | * | 0.1 | 11.0 | ---- | 1 25 °C |
| 5404 | 411-45t-2 | 133 | * | 0.1 | 10.8 | ---- | 1 25 °C |
| 5405 | 411-45t-3 | 130 | * | 0.1 | 10.9 | ---- | 1 25 °C |
| 5406 | 411-45t-4 | 121 | * | 0.1 | 10.5 | ---- | 1 40 °C |
| 5407 | 411-45t-5 | 121 | * | 0.1 | 10.6 | ---- | 1 40 °C |
| 5408 | 411-45t-6 | 123 | * | 0.1 | 9.8 | ---- | 1 40 °C |
| 5409 | 411-45t-7 | 112 | * | 0.1 | 9.8 | ---- | 1 55 °C |
| 5410 | 411-45t-8 | 116 | * | 0.1 | 9.6 | ---- | 1 55 °C |
| 5411 | 411-45t-9 | 117 | * | 0.1 | 10 | ---- | 1 55 °C |
| 5412 | 411-45t-10 | 103 | * | 0.1 | 9.7 | ---- | 1 70 °C |
| 5413 | 411-45t-11 | 100 | * | 0.1 | 8.5 | ---- | 1 70 °C |
| 5414 | 411-45t-12 | 100 | * | 0.1 | 8.9 | ---- | 1 70 °C |

Tests 5415 - 5426 had an average moisture gain of 0.24% (conditioned 1,200 hours in 50°C water (DI))

| | | | | | | | |
|------|--------------|-----|---|-----|------|------|---------|
| 5415 | w-411-45t-1 | 135 | * | 0.1 | 11.4 | ---- | 1 25 °C |
| 5416 | w-411-45t-2 | 135 | * | 0.1 | 11.4 | ---- | 1 25 °C |
| 5417 | w-411-45t-3 | 133 | * | 0.1 | 10.2 | ---- | 1 25 °C |
| 5418 | w-411-45t-4 | 129 | * | 0.1 | ---- | ---- | 1 40 °C |
| 5419 | w-411-45t-5 | 125 | * | 0.1 | 9.7 | ---- | 1 40 °C |
| 5420 | w-411-45t-6 | 127 | * | 0.1 | 9.5 | ---- | 1 40 °C |
| 5421 | w-411-45t-7 | 110 | * | 0.1 | 9.0 | ---- | 1 55 °C |
| 5422 | w-411-45t-8 | 119 | * | 0.1 | 9.2 | ---- | 1 55 °C |
| 5423 | w-411-45t-9 | 121 | * | 0.1 | 10.3 | ---- | 1 55 °C |
| 5424 | w-411-45t-10 | 110 | * | 0.1 | 9.2 | ---- | 1 70 °C |
| 5425 | w-411-45t-11 | 112 | * | 0.1 | 9.2 | ---- | 1 70 °C |
| 5426 | w-411-45t-12 | 112 | * | 0.1 | 9.3 | ---- | 1 70 °C |

| TEST & SAMPLE ID # | | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
| Lay-up = [0/±45/0] _s , V _F = 0.354, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, SC-14 Epoxy | | | | | | | | |
| Tests 5427 - 5438 were dry control coupons (no moisture gain) | | | | | | | | |
| 5427 | sc14-t-1 | 696 | * | 0.1 | 26.6 | ---- | 1 | 25 °C |
| 5428 | sc14-t-2 | 727 | * | 0.1 | 28.0 | ---- | 1 | 25 °C |
| 5429 | sc14-t-3 | 648 | * | 0.1 | 24.6 | ---- | 1 | 25 °C |
| 5430 | sc14-t-4 | 561 | * | 0.1 | 25.1 | ---- | 1 | 40 °C |
| 5431 | sc14-t-5 | 603 | * | 0.1 | 25.3 | ---- | 1 | 40 °C |
| 5432 | sc14-t-6 | 572 | * | 0.1 | 25.8 | ---- | 1 | 40 °C |
| 5433 | sc14-t-7 | 584 | * | 0.1 | 24.2 | ---- | 1 | 55 °C |
| 5434 | sc14-t-8 | 548 | * | 0.1 | 27.0 | ---- | 1 | 55 °C |
| 5435 | sc14-t-9 | 578 | * | 0.1 | 23.5 | ---- | 1 | 55 °C |
| 5436 | sc14-t-10 | 570 | * | 0.1 | 23.5 | ---- | 1 | 70 °C |
| 5437 | sc14-t-11 | 569 | * | 0.1 | 23.4 | ---- | 1 | 70 °C |
| 5438 | sc14-t-12 | 595 | * | 0.1 | 24.8 | ---- | 1 | 70 °C |
| Tests 5439 - 5450 had an average moisture gain of 1.34% (conditioned 1,200 hours in 50°C water (DI)) | | | | | | | | |
| 5439 | w-sc14-t-1 | 569 | * | 0.1 | 25.0 | ---- | 1 | 25 °C |
| 5440 | w-sc14-t-2 | 437 | * | 0.1 | 23.9 | ---- | 1 | 25 °C |
| 5441 | w-sc14-t-3 | 454 | * | 0.1 | 24.3 | ---- | 1 | 25 °C |
| 5442 | w-sc14-t-4 | 426 | * | 0.1 | 23.6 | ---- | 1 | 40 °C |
| 5443 | w-sc14-t-5 | 428 | * | 0.1 | 25.4 | ---- | 1 | 40 °C |
| 5444 | w-sc14-t-6 | 434 | * | 0.1 | 23.3 | ---- | 1 | 40 °C |
| 5445 | w-sc14-t-7 | 396 | * | 0.1 | 23.5 | ---- | 1 | 55 °C |
| 5446 | w-sc14-t-8 | 404 | * | 0.1 | 25.5 | ---- | 1 | 55 °C |
| 5447 | w-sc14-t-9 | 408 | * | 0.1 | 23.8 | ---- | 1 | 55 °C |
| 5448 | w-sc14-t-10 | 362 | * | 0.1 | 22.1 | ---- | 1 | 70 °C |
| 5449 | w-sc14-t-11 | 351 | * | 0.1 | 21.8 | ---- | 1 | 70 °C |
| 5450 | w-sc14-t-12 | 357 | * | 0.1 | 23.1 | ---- | 1 | 70 °C |
| Tests 5451 - 5462 were dry control coupons (no moisture gain) | | | | | | | | |
| 5451 | sc14-c-1 | -563 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5452 | sc14-c-2 | -508 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5453 | sc14-c-3 | -532 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5454 | sc14-c-4 | -511 | * | 13 | ---- | ---- | 1 | 40 °C |
| 5455 | sc14-c-5 | -555 | * | 13 | ---- | ---- | 1 | 40 °C |
| 5456 | sc14-c-6 | -537 | * | 13 | ---- | ---- | 1 | 40 °C |
| 5457 | sc14-c-7 | -492 | * | 13 | ---- | ---- | 1 | 55 °C |
| 5458 | sc14-c-8 | -464 | * | 13 | ---- | ---- | 1 | 55 °C |
| 5459 | sc14-c-9 | -480 | * | 13 | ---- | ---- | 1 | 55 °C |
| 5460 | sc14-c-10 | -414 | * | 13 | ---- | ---- | 1 | 70 °C |
| 5461 | sc14-c-11 | -406 | * | 13 | ---- | ---- | 1 | 70 °C |
| 5462 | sc14-c-12 | -424 | * | 13 | ---- | ---- | 1 | 70 °C |
| Tests 5463 - 5474 had an average moisture gain of 1.41% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | | |
| 5463 | w-sc14-c-1 | -454 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5464 | w-sc14-c-2 | -456 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5465 | w-sc14-c-3 | -462 | * | 13 | ---- | ---- | 1 | 25 °C |
| 5466 | w-sc14-c-4 | -428 | * | 13 | ---- | ---- | 1 | 40 °C |
| 5467 | w-sc14-c-5 | -334 | * | 13 | ---- | ---- | 1 | 40 °C |
| 5468 | w-sc14-c-6 | -412 | * | 13 | ---- | ---- | 1 | 40 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5469 | w-sc14-c-10 | -318 | * | 13 | ---- | 1 | 55 °C |
| 5470 | w-sc14-c-11 | -371 | * | 13 | ---- | 1 | 55 °C |
| 5471 | w-sc14-c-12 | -368 | * | 13 | ---- | 1 | 55 °C |
| 5472 | w-sc14-c-7 | -375 | * | 13 | ---- | 1 | 70 °C |
| 5473 | w-sc14-c-8 | -293 | * | 13 | ---- | 1 | 70 °C |
| 5474 | w-sc14-c-9 | -349 | * | 13 | ---- | 1 | 70 °C |

Lay-up = $[90/\pm 45/90]_S$, $V_F = 0.355$, Ave. thickness = 3.15 mm, S.D. = 0.10 mm, SC-14 Epoxy

Tests 5475 - 5486, 5721 - 5723 were dry control coupons (no moisture gain)

| | | | | | | | | |
|------|------------|------|---|-----|-----|------|---|-------|
| 5475 | sc14-tt-14 | 86.6 | * | 0.1 | 9.1 | ---- | 1 | 25 °C |
| 5476 | sc14-tt-2 | 92.4 | * | 0.1 | 9.5 | ---- | 1 | 25 °C |
| 5477 | sc14-tt-3 | 91.8 | * | 0.1 | 8.8 | ---- | 1 | 25 °C |
| 5478 | sc14-tt-4 | 97 | * | 0.1 | 8.7 | ---- | 1 | 40 °C |
| 5479 | sc14-tt-5 | 89.7 | * | 0.1 | 8.4 | ---- | 1 | 40 °C |
| 5480 | sc14-tt-6 | 92.1 | * | 0.1 | 8.2 | ---- | 1 | 40 °C |
| 5481 | sc14-tt-7 | 93.4 | * | 0.1 | 7.9 | ---- | 1 | 55 °C |
| 5482 | sc14-t-8 | 93.1 | * | 0.1 | 7.6 | ---- | 1 | 55 °C |
| 5483 | sc14-t-9 | 88.3 | * | 0.1 | 7.7 | ---- | 1 | 55 °C |
| 5484 | sc14-tt-10 | 100 | * | 0.1 | 7.6 | ---- | 1 | 70 °C |
| 5485 | sc14-tt-11 | 93.4 | * | 0.1 | 7.4 | ---- | 1 | 70 °C |
| 5486 | sc14-tt-12 | 90.1 | * | 0.1 | 7.6 | ---- | 1 | 70 °C |
| 5721 | tsc141 | 109 | * | 0.1 | 9.4 | 3.21 | 1 | 25 °C |
| 5722 | tsc142 | 121 | * | 0.1 | 9.5 | 4.73 | 1 | 25 °C |
| 5723 | tsc143 | 104 | * | 0.1 | 9.4 | 3.45 | 1 | 25 °C |

Tests 5487 - 5498 had an average moisture gain of 1.34% (conditioned 1,200 hours in 50 °C water (DI))

| | | | | | | | | |
|------|--------------|------|---|-----|-----|------|---|-------|
| 5487 | w-sc14-tt-1 | 76.2 | * | 0.1 | 8.6 | ---- | 1 | 25 °C |
| 5488 | w-sc14-tt-2 | 70.1 | * | 0.1 | 8.2 | ---- | 1 | 25 °C |
| 5489 | w-sc14-tt-3 | 69.9 | * | 0.1 | 7.8 | ---- | 1 | 25 °C |
| 5490 | w-sc14-tt-4 | 73.9 | * | 0.1 | 7.5 | ---- | 1 | 40 °C |
| 5491 | w-sc14-tt-5 | 68.3 | * | 0.1 | 7.1 | ---- | 1 | 40 °C |
| 5492 | w-sc14-tt-6 | 76.9 | * | 0.1 | 7.1 | ---- | 1 | 40 °C |
| 5493 | w-sc14-tt-7 | 68.1 | * | 0.1 | 6.3 | ---- | 1 | 55 °C |
| 5494 | w-sc14-tt-8 | 66.1 | * | 0.1 | 6.8 | ---- | 1 | 55 °C |
| 5495 | w-sc14-tt-9 | 71.1 | * | 0.1 | 6.3 | ---- | 1 | 55 °C |
| 5496 | w-sc14-tt-10 | 66.8 | * | 0.1 | 5.2 | ---- | 1 | 70 °C |
| 5497 | w-sc14-tt-11 | 67.3 | * | 0.1 | 5.1 | ---- | 1 | 70 °C |
| 5498 | w-sc14-tt-12 | 70.4 | * | 0.1 | 5.5 | ---- | 1 | 70 °C |

Lay-up = $[\pm 45]_3$, $V_F = 0.280$, Ave. thickness = 3.12 mm, S.D. = 0.08 mm, SC-14 Epoxy

Tests 5499 - 5510 were dry control coupons (no moisture gain)

| | | | | | | | | |
|------|------------|------|---|-----|-----|------|---|-------|
| 5499 | sc14-45t-1 | 92 | * | 0.1 | 9.6 | ---- | 1 | 25 °C |
| 5500 | sc14-45t-2 | 87.6 | * | 0.1 | 9.2 | ---- | 1 | 25 °C |
| 5501 | sc14-45t-3 | 92.7 | * | 0.1 | 8.8 | ---- | 1 | 25 °C |
| 5502 | sc14-45t-4 | 85.9 | * | 0.1 | 8.6 | ---- | 1 | 40 °C |
| 5503 | sc14-45t-5 | 84 | * | 0.1 | 7.4 | ---- | 1 | 40 °C |
| 5504 | sc14-45t-6 | 85.1 | * | 0.1 | 7.7 | ---- | 1 | 40 °C |
| 5505 | sc14-45t-7 | 75.7 | * | 0.1 | 6.4 | ---- | 1 | 55 °C |
| 5506 | sc14-45t-8 | 79.9 | * | 0.1 | 7.1 | ---- | 1 | 55 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5507 | sc14-45t-9 | 74.7 | * | 0.1 | 6.9 | ---- | 1 55 °C |
| 5508 | sc14-45t-10 | 64.2 | * | 0.1 | 6.4 | ---- | 1 70 °C |
| 5509 | sc14-45t-11 | 73.6 | * | 0.1 | 6.7 | ---- | 1 70 °C |
| 5510 | sc14-45t-12 | 64.9 | * | 0.1 | 5.7 | ---- | 1 70 °C |
| Tests 5511 - 5522 had an average moisture gain of 1.24% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5511 | w-sc1445t1 | 93.1 | * | 0.1 | 8.1 | ---- | 1 25 °C |
| 5512 | w-sc1445t2 | 81.4 | * | 0.1 | 7.8 | ---- | 1 25 °C |
| 5513 | w-sc1445t3 | 89 | * | 0.1 | 8.2 | ---- | 1 25 °C |
| 5514 | w-sc1445t4 | 84 | * | 0.1 | 7.2 | ---- | 1 40 °C |
| 5515 | w-sc1445t5 | 73.7 | * | 0.1 | 6.8 | ---- | 1 40 °C |
| 5516 | w-sc1445t6 | 75.4 | * | 0.1 | 6.5 | ---- | 1 40 °C |
| 5517 | w-sc1445t7 | 66.4 | * | 0.1 | 6.1 | ---- | 1 55 °C |
| 5518 | w-sc1445t8 | 67.6 | * | 0.1 | 6.0 | ---- | 1 55 °C |
| 5519 | w-sc1445t9 | 65 | * | 0.1 | 5.7 | ---- | 1 55 °C |
| 5520 | w-sc1445t10 | 55 | * | 0.1 | 4.0 | ---- | 1 70 °C |
| 5521 | w-sc1445t11 | 51.9 | * | 0.1 | 3.8 | ---- | 1 70 °C |
| 5522 | w-sc1445t12 | 49.5 | * | 0.1 | 3.5 | ---- | 1 70 °C |
| Lay-up = [0/±45/0] _s , V _F = 0.354, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, Derakane 8084 vinyl ester | | | | | | | |
| Tests 5523 - 5534 were dry control coupons (no moisture gain) | | | | | | | |
| 5523 | 8084-t-1 | 698 | * | 0.1 | 24.9 | ---- | 1 25 °C |
| 5524 | 8084-t-2 | 684 | * | 0.1 | 25.1 | ---- | 1 25 °C |
| 5525 | 8084-t-3 | 539 | * | 0.1 | 23.9 | ---- | 1 25 °C |
| 5526 | 8084-t-4 | 480 | * | 0.1 | 22.9 | ---- | 1 40 °C |
| 5527 | 8084-t-5 | 471 | * | 0.1 | 24.0 | ---- | 1 40 °C |
| 5528 | 8084-t-6 | 550 | * | 0.1 | 24.4 | ---- | 1 40 °C |
| 5529 | 8084-t-7 | 532 | * | 0.1 | 24.4 | ---- | 1 55 °C |
| 5530 | 8084-t-8 | 656 | * | 0.1 | 23.6 | ---- | 1 55 °C |
| 5531 | 8084-t-9 | 588 | * | 0.1 | 24.1 | ---- | 1 55 °C |
| 5532 | 8084-t-10 | 556 | * | 0.1 | 23.5 | ---- | 1 70 °C |
| 5533 | 8084-t-11 | 536 | * | 0.1 | 22.5 | ---- | 1 70 °C |
| 5534 | 8084-t-12 | 550 | * | 0.1 | 22.3 | ---- | 1 70 °C |
| Tests 5535 - 5546 had an average moisture gain of 0.44% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5535 | w-8084-t-1 | 461 | * | 0.1 | 25.6 | ---- | 1 25 °C |
| 5536 | w-8084-t-2 | 463 | * | 0.1 | 25.1 | ---- | 1 25 °C |
| 5537 | w-8084-t-3 | 472 | * | 0.1 | 24.3 | ---- | 1 25 °C |
| 5538 | w-8084-t-4 | 443 | * | 0.1 | 24.6 | ---- | 1 40 °C |
| 5539 | w-8084-t-5 | 435 | * | 0.1 | 23.6 | ---- | 1 40 °C |
| 5540 | w-8084-t-6 | 436 | * | 0.1 | 24.8 | ---- | 1 40 °C |
| 5541 | w-8084-t-7 | 423 | * | 0.1 | 23.9 | ---- | 1 55 °C |
| 5542 | w-8084-t-8 | 419 | * | 0.1 | 24.9 | ---- | 1 55 °C |
| 5543 | w-8084-t-9 | 413 | * | 0.1 | 26.2 | ---- | 1 55 °C |
| 5544 | w-8084-t-10 | 379 | * | 0.1 | 23.8 | ---- | 1 70 °C |
| 5545 | w-8084-t-11 | 397 | * | 0.1 | 24.2 | ---- | 1 70 °C |
| 5546 | w-8084-t-12 | 393 | * | 0.1 | 24.4 | ---- | 1 70 °C |
| Tests 5547 - 5558 were dry control coupons (no moisture gain) | | | | | | | |
| 5547 | 8084-c-1 | -600 | * | 13 | ---- | ---- | 1 25 °C |
| 5548 | 8084-c-2 | -569 | * | 13 | ---- | ---- | 1 25 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5549 | 8084-c-3 | -611 | * | 13 | ---- | 1 | 25 °C |
| 5550 | 8084-c-4 | -494 | * | 13 | ---- | 1 | 40 °C |
| 5551 | 8084-c-5 | -478 | * | 13 | ---- | 1 | 40 °C |
| 5552 | 8084-c-6 | -470 | * | 13 | ---- | 1 | 40 °C |
| 5553 | 8084-c-7 | -464 | * | 13 | ---- | 1 | 55 °C |
| 5554 | 8084-c-8 | -444 | * | 13 | ---- | 1 | 55 °C |
| 5555 | 8084-c-9 | -455 | * | 13 | ---- | 1 | 55 °C |
| 5556 | 8084-c-10 | -445 | * | 13 | ---- | 1 | 70 °C |
| 5557 | 8084-c-11 | -444 | * | 13 | ---- | 1 | 70 °C |
| 5558 | 8084-c-12 | -449 | * | 13 | ---- | 1 | 70 °C |
| Tests 5559 - 5570 had an average moisture gain of 0.42% (conditioned 1,200 hours in 50 °C water (DI)) | | | | | | | |
| 5559 | w-8084-c-1 | -521 | * | 13 | ---- | 1 | 25 °C |
| 5560 | w-8084-c-2 | -492 | * | 13 | ---- | 1 | 25 °C |
| 5561 | w-8084-c-3 | -513 | * | 13 | ---- | 1 | 25 °C |
| 5562 | w-8084-c-4 | -487 | * | 13 | ---- | 1 | 40 °C |
| 5563 | w-8084-c-5 | -502 | * | 13 | ---- | 1 | 40 °C |
| 5564 | w-8084-c-6 | -450 | * | 13 | ---- | 1 | 40 °C |
| 5565 | w-8084-c-10 | -431 | * | 13 | ---- | 1 | 55 °C |
| 5566 | w-8084-c-11 | -466 | * | 13 | ---- | 1 | 55 °C |
| 5567 | w-8084-c-12 | -465 | * | 13 | ---- | 1 | 55 °C |
| 5568 | w-8084-c-7 | -414 | * | 13 | ---- | 1 | 70 °C |
| 5569 | w-8084-c-8 | -435 | * | 13 | ---- | 1 | 70 °C |
| 5570 | w-8084-c-9 | -388 | * | 13 | ---- | 1 | 70 °C |

Lay-up = [90/±45/90]_S, V_F = 0.355, Ave. thickness = 3.15 mm, S.D. = 0.10 mm, Derakane 8084 vinyl ester

Tests 5571 - 5582, 5724 - 5726 were dry control coupons (no moisture gain)

| | | | | | | | | |
|------|------------|------|---|-----|------|------|---|-------|
| 5571 | 8084-tt-1 | 79.5 | * | 0.1 | 12.8 | ---- | 1 | 25 °C |
| 5572 | 8084-tt-2 | 82.8 | * | 0.1 | 12.3 | ---- | 1 | 25 °C |
| 5573 | 8084-tt-3 | 82 | * | 0.1 | 13.0 | ---- | 1 | 25 °C |
| 5574 | 8084-tt-4 | 87.2 | * | 0.1 | 11.0 | ---- | 1 | 40 °C |
| 5575 | 8084-tt-5 | 82.6 | * | 0.1 | 10.7 | ---- | 1 | 40 °C |
| 5576 | 8084-tt-13 | 62.6 | * | 0.1 | 10.4 | ---- | 1 | 40 °C |
| 5577 | 8084-tt-7 | 80.5 | * | 0.1 | 8.3 | ---- | 1 | 55 °C |
| 5578 | 8084-tt-8 | 89.4 | * | 0.1 | 8.2 | ---- | 1 | 55 °C |
| 5579 | 8084-tt-9 | 83.1 | * | 0.1 | 7.9 | ---- | 1 | 55 °C |
| 5580 | 8084-tt-10 | 58.3 | * | 0.1 | 6.2 | ---- | 1 | 70 °C |
| 5581 | 8084-tt-11 | 59.3 | * | 0.1 | 6.2 | ---- | 1 | 70 °C |
| 5582 | 8084-tt-12 | 57.6 | * | 0.1 | 6.2 | ---- | 1 | 70 °C |
| 5724 | t80841 | 62.7 | * | 0.1 | 8.6 | 3.7 | 1 | 25 °C |
| 5725 | t80842 | 62.9 | * | 0.1 | 8.3 | 4.4 | 1 | 25 °C |
| 5726 | t80843 | 63.3 | * | 0.1 | 8.1 | 4.2 | 1 | 25 °C |

Tests 5583 - 5594 had an average moisture gain of 0.44% (conditioned 1,200 hours in 50 °C water (DI))

| | | | | | | | | |
|------|-------------|------|---|-----|-----|------|---|-------|
| 5583 | w-8084-tt-1 | 47.5 | * | 0.1 | 8.4 | ---- | 1 | 25 °C |
| 5584 | w-8084-tt-2 | 48.4 | * | 0.1 | 8.5 | ---- | 1 | 25 °C |
| 5585 | w-8084-tt-3 | 49.5 | * | 0.1 | 8.3 | ---- | 1 | 25 °C |
| 5586 | w-8084-tt-4 | 51.3 | * | 0.1 | 8.3 | ---- | 1 | 40 °C |
| 5587 | w-8084-tt-5 | 49.5 | * | 0.1 | 7.4 | ---- | 1 | 40 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5588 | w-8084-tt-6 | 49.7 | * | 0.1 | 8.0 | ---- | 1 40 °C |
| 5589 | w-8084-tt-7 | 49.2 | * | 0.1 | 7.3 | ---- | 1 55 °C |
| 5590 | w-8084-tt-8 | 53.1 | * | 0.1 | 7.3 | ---- | 1 55 °C |
| 5591 | w-8084-tt-9 | 45.7 | * | 0.1 | 7.4 | ---- | 1 55 °C |
| 5592 | w-8084-tt-10 | 53.4 | * | 0.1 | 6.6 | ---- | 1 70 °C |
| 5593 | w-8084-tt-11 | 51.2 | * | 0.1 | 7.0 | ---- | 1 70 °C |
| 5594 | w-8084-tt-12 | 52 | * | 0.1 | 6.8 | ---- | 1 70 °C |

Lay-up = $[\pm 45]_3$, $V_F = 0.280$, Ave. thickness = 3.12 mm, S.D. = 0.08 mm, Derakane 8084 vinyl ester

Tests 5595 - 5606 were dry control coupons (no moisture gain)

| | | | | | | | |
|------|-------------|-----|---|-----|------|------|---------|
| 5595 | 8084-45t-1 | 122 | * | 0.1 | 9.7 | ---- | 1 25 °C |
| 5596 | 8084-45t-2 | 134 | * | 0.1 | 10.4 | ---- | 1 25 °C |
| 5597 | 8084-45t-3 | 125 | * | 0.1 | 10.8 | ---- | 1 25 °C |
| 5598 | 8084-45t-4 | 118 | * | 0.1 | 9.0 | ---- | 1 40 °C |
| 5599 | 8084-45t-5 | 117 | * | 0.1 | 9.6 | ---- | 1 40 °C |
| 5600 | 8084-45t-6 | 116 | * | 0.1 | 9.3 | ---- | 1 40 °C |
| 5601 | 8084-45t-7 | 113 | * | 0.1 | 8.7 | ---- | 1 55 °C |
| 5602 | 8084-45t-8 | 114 | * | 0.1 | 8.6 | ---- | 1 55 °C |
| 5603 | 8084-45t-9 | 113 | * | 0.1 | 8.5 | ---- | 1 55 °C |
| 5604 | 8084-45t-10 | 100 | * | 0.1 | 7.4 | ---- | 1 70 °C |
| 5605 | 8084-45t-11 | 104 | * | 0.1 | 7.8 | ---- | 1 70 °C |
| 5606 | 8084-45t-12 | 103 | * | 0.1 | 7.3 | ---- | 1 70 °C |

Tests 5607 - 5618 had an average moisture gain of 0.38% (conditioned 1,200 hours in 50°C water (DI))

| | | | | | | | |
|------|---------------|-----|---|-----|------|------|---------|
| 5607 | w-8084-45t-1 | 115 | * | 0.1 | 10.3 | ---- | 1 25 °C |
| 5608 | w-8084-45t-2 | 115 | * | 0.1 | 10.1 | ---- | 1 25 °C |
| 5609 | w-8084-45t-3 | 116 | * | 0.1 | 10.3 | ---- | 1 25 °C |
| 5610 | w-8084-45t-4 | 108 | * | 0.1 | 9.6 | ---- | 1 40 °C |
| 5611 | w-8084-45t-5 | 112 | * | 0.1 | 10.1 | ---- | 1 40 °C |
| 5612 | w-8084-45t-6 | 110 | * | 0.1 | 9.7 | ---- | 1 40 °C |
| 5613 | w-8084-45t-7 | 102 | * | 0.1 | 9.1 | ---- | 1 55 °C |
| 5614 | w-8084-45t-8 | 102 | * | 0.1 | 9.4 | ---- | 1 55 °C |
| 5615 | w-8084-45t-9 | 101 | * | 0.1 | 9.4 | ---- | 1 55 °C |
| 5616 | w-8084-45t-10 | 95 | * | 0.1 | 8.0 | ---- | 1 70 °C |
| 5617 | w-8084-45t-11 | 88 | * | 0.1 | 7.3 | ---- | 1 70 °C |
| 5618 | w-8084-45t-12 | 94 | * | 0.1 | 7.8 | ---- | 1 70 °C |

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.354$, Ave. thickness = 3.16 mm, S.D. = 0.11 mm, CoRezyn -AQ-051 Iso-Polyester

Tests 5619 - 5630 were dry control coupons (no moisture gain)

| | | | | | | | |
|------|---------|-----|---|-----|------|------|---------|
| 5619 | tp-t-1 | 694 | * | 0.1 | 24.9 | ---- | 1 25 °C |
| 5620 | tp-t-2 | 652 | * | 0.1 | 23.8 | ---- | 1 25 °C |
| 5621 | tp-t-3 | 557 | * | 0.1 | 23.9 | ---- | 1 25 °C |
| 5622 | tp-t-4 | 656 | * | 0.1 | 23.9 | ---- | 1 40 °C |
| 5623 | tp-t-5 | 578 | * | 0.1 | 25.3 | ---- | 1 40 °C |
| 5624 | tp-t-6 | 646 | * | 0.1 | 25.0 | ---- | 1 40 °C |
| 5625 | tp-t-7 | 629 | * | 0.1 | 23.8 | ---- | 1 55 °C |
| 5626 | tp-t-8 | 607 | * | 0.1 | 24.0 | ---- | 1 55 °C |
| 5627 | tp-t-9 | 660 | * | 0.1 | 24.2 | ---- | 1 55 °C |
| 5628 | tp-t-10 | 601 | * | 0.1 | 24.2 | ---- | 1 70 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5629 | tp-t-11 | 529 | * | 0.1 | 23.5 | ---- | 1 70 °C |
| 5630 | tp-t-12 | 601 | * | 0.1 | 23.0 | ---- | 1 70 °C |
| Tests 5631 - 5642 had an average moisture gain of 0.5% (conditioned 430 hours in 50 °C water (DI)) | | | | | | | |
| 5631 | w-tp-t-1 | 582 | * | 0.1 | 26.6 | ---- | 1 25 °C |
| 5632 | w-tp-t-2 | 635 | * | 0.1 | 24.1 | ---- | 1 25 °C |
| 5633 | w-tp-t-3 | 531 | * | 0.1 | 25.5 | ---- | 1 25 °C |
| 5634 | w-tp-t-4 | 618 | * | 0.1 | 25.0 | ---- | 1 40 °C |
| 5636 | w-tp-t-6 | 628 | * | 0.1 | 25.0 | ---- | 1 40 °C |
| 5637 | w-tp-t-7 | 609 | * | 0.1 | 24.9 | ---- | 1 55 °C |
| 5638 | w-tp-t-8 | 599 | * | 0.1 | 25.2 | ---- | 1 55 °C |
| 5639 | w-tp-t-9 | 618 | * | 0.1 | 25.0 | ---- | 1 55 °C |
| 5640 | w-tp-t-10 | 557 | * | 0.1 | 22.8 | ---- | 1 70 °C |
| 5641 | w-tp-t-11 | 553 | * | 0.1 | 24.4 | ---- | 1 70 °C |
| 5642 | w-tp-t-12 | 541 | * | 0.1 | 23.0 | ---- | 1 70 °C |
| Tests 5643 - 5654 were dry control coupons (no moisture gain) | | | | | | | |
| 5643 | tp-c-1 | -531 | * | 13 | ---- | ---- | 1 25 °C |
| 5644 | tp-c-2 | -574 | * | 13 | ---- | ---- | 1 25 °C |
| 5645 | tp-c-3 | -626 | * | 13 | ---- | ---- | 1 25 °C |
| 5646 | tp-c-4 | -559 | * | 13 | ---- | ---- | 1 40 °C |
| 5647 | tp-c-5 | -525 | * | 13 | ---- | ---- | 1 40 °C |
| 5648 | tp-c-6 | -569 | * | 13 | ---- | ---- | 1 40 °C |
| 5649 | tp-c-7 | -545 | * | 13 | ---- | ---- | 1 55 °C |
| 5650 | tp-c-8 | -536 | * | 13 | ---- | ---- | 1 55 °C |
| 5651 | tp-c-9 | -540 | * | 13 | ---- | ---- | 1 55 °C |
| 5652 | tp-c-10 | -494 | * | 13 | ---- | ---- | 1 70 °C |
| 5653 | tp-c-11 | -500 | * | 13 | ---- | ---- | 1 70 °C |
| 5654 | tp-c-12 | -494 | * | 13 | ---- | ---- | 1 70 °C |
| Tests 5655 - 5666 had an average moisture gain of 0.5% (conditioned 430 hours in 50 °C water (DI)) | | | | | | | |
| 5655 | w-tp-c-1 | -595 | * | 13 | ---- | ---- | 1 25 °C |
| 5656 | w-tp-c-2 | -583 | * | 13 | ---- | ---- | 1 25 °C |
| 5657 | w-tp-c-3 | -547 | * | 13 | ---- | ---- | 1 25 °C |
| 5658 | w-tp-c-4 | -534 | * | 13 | ---- | ---- | 1 40 °C |
| 5659 | w-tp-c-5 | -495 | * | 13 | ---- | ---- | 1 40 °C |
| 5660 | w-tp-c-6 | -580 | * | 13 | ---- | ---- | 1 40 °C |
| 5661 | w-tp-c-10 | -476 | * | 13 | ---- | ---- | 1 55 °C |
| 5662 | w-tp-c-11 | -514 | * | 13 | ---- | ---- | 1 55 °C |
| 5663 | w-tp-c-12 | -539 | * | 13 | ---- | ---- | 1 55 °C |
| 5664 | w-tp-c-7 | -480 | * | 13 | ---- | ---- | 1 70 °C |
| 5665 | w-tp-c-8 | -499 | * | 13 | ---- | ---- | 1 70 °C |
| 5666 | w-tp-c-9 | -509 | * | 13 | ---- | ---- | 1 70 °C |
| Lay-up = [90/±45/90] _S , V _F = 0.355, Ave. thickness = 3.15 mm, S.D. = 0.10 mm, CoRezyn Iso-Polyester | | | | | | | |
| Tests 5667 - 5678 were dry control coupons (no moisture gain) | | | | | | | |
| 5667 | tp-tt-1 | 67.8 | * | 0.1 | 9.2 | ---- | 1 25 °C |
| 5668 | tp-tt-2 | 68.4 | * | 0.1 | 9.0 | ---- | 1 25 °C |
| 5669 | tp-tt-3 | 64.8 | * | 0.1 | 9.3 | ---- | 1 25 °C |
| 5670 | tp-tt-4 | 71.7 | * | 0.1 | 8.3 | ---- | 1 40 °C |
| 5671 | tp-tt-5 | 68.5 | * | 0.1 | 8.8 | ---- | 1 40 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5672 | tp-tt-6 | 68.1 | * | 0.1 | 8.3 | ---- | 1 40 °C |
| 5673 | tp-tt-7 | 64.4 | * | 0.1 | 7.7 | ---- | 1 55 °C |
| 5674 | tp-tt-8 | 69.9 | * | 0.1 | 7.9 | ---- | 1 55 °C |
| 5675 | tp-tt-9 | 68.8 | * | 0.1 | 7.9 | ---- | 1 55 °C |
| 5676 | tp-tt-10 | 69.1 | * | 0.1 | 7.4 | ---- | 1 70 °C |
| 5677 | tp-tt-11 | 71.7 | * | 0.1 | 7.2 | ---- | 1 70 °C |
| 5678 | tp-tt-12 | 70.3 | * | 0.1 | 7.4 | ---- | 1 70 °C |
| Tests 5679 - 5690 had an average moisture gain of 0.5% (conditioned 430 hours in 50 °C water (DI)) | | | | | | | |
| 5679 | w-tp-tt-1 | 64.8 | * | 0.1 | 9.4 | ---- | 1 25 °C |
| 5680 | w-tp-tt-2 | 68.8 | * | 0.1 | 9.7 | ---- | 1 25 °C |
| 5681 | w-tp-tt-3 | 66.6 | * | 0.1 | 9.1 | ---- | 1 25 °C |
| 5682 | w-tp-tt-4 | 66.6 | * | 0.1 | 9.0 | ---- | 1 40 °C |
| 5683 | w-tp-tt-5 | 69 | * | 0.1 | 9.1 | ---- | 1 40 °C |
| 5684 | w-tp-tt-6 | 70.8 | * | 0.1 | 9.0 | ---- | 1 40 °C |
| 5685 | w-tp-tt-7 | 67.9 | * | 0.1 | 8.5 | ---- | 1 55 °C |
| 5686 | w-tp-tt-8 | 66.3 | * | 0.1 | 8.9 | ---- | 1 55 °C |
| 5687 | w-tp-tt-9 | 61.6 | * | 0.1 | 8.4 | ---- | 1 55 °C |
| 5688 | w-tp-tt-10 | 64.6 | * | 0.1 | 7.6 | ---- | 1 70 °C |
| 5689 | w-tp-tt-11 | 66.2 | * | 0.1 | 7.6 | ---- | 1 70 °C |
| 5690 | w-tp-tt-12 | 67.7 | * | 0.1 | 7.1 | ---- | 1 70 °C |

Lay-up = [± 45]₃, $V_F = 0.280$, Ave. thickness = 3.12 mm, S.D. = 0.08 mm, CoRezyn Iso-Polyester

Tests 5691 - 5702 were dry control coupons (no moisture gain)

| | | | | | | | |
|------|-----------|------|---|-----|------|------|---------|
| 5691 | tp-45t-1 | 133 | * | 0.1 | 11.5 | ---- | 1 25 °C |
| 5692 | tp-45t-2 | 135 | * | 0.1 | 12.3 | ---- | 1 25 °C |
| 5693 | tp-45t-3 | 132 | * | 0.1 | 11.2 | ---- | 1 25 °C |
| 5694 | tp-45t-4 | 124 | * | 0.1 | 11.5 | ---- | 1 40 °C |
| 5695 | tp-45t-5 | 127 | * | 0.1 | 10.7 | ---- | 1 40 °C |
| 5696 | tp-45t-6 | 128 | * | 0.1 | 10.0 | ---- | 1 40 °C |
| 5697 | tp-45t-7 | 116 | * | 0.1 | 10.1 | ---- | 1 55 °C |
| 5698 | tp-45t-8 | 116 | * | 0.1 | 10.2 | ---- | 1 55 °C |
| 5699 | tp-45t-9 | 114 | * | 0.1 | 10.0 | ---- | 1 55 °C |
| 5700 | tp-45t-10 | 93.2 | * | 0.1 | 8.9 | ---- | 1 70 °C |
| 5701 | tp-45t-11 | 93.2 | * | 0.1 | 9.6 | ---- | 1 70 °C |
| 5702 | tp-45t-12 | 100 | * | 0.1 | 8.8 | ---- | 1 70 °C |

Tests 5703 - 5714 had an average moisture gain of 0.28% (conditioned 430 hours in 50 °C water (DI))

| | | | | | | | |
|------|-------------|------|---|-----|------|------|---------|
| 5703 | w-tp-45t-1 | 131 | * | 0.1 | 11.9 | ---- | 1 25 °C |
| 5704 | w-tp-45t-2 | 125 | * | 0.1 | 12.0 | ---- | 1 25 °C |
| 5705 | w-tp-45t-3 | 132 | * | 0.1 | 12.1 | ---- | 1 25 °C |
| 5706 | w-tp-45t-4 | 124 | * | 0.1 | 11.3 | ---- | 1 40 °C |
| 5707 | w-tp-45t-5 | 126 | * | 0.1 | 10.8 | ---- | 1 40 °C |
| 5708 | w-tp-45t-6 | 122 | * | 0.1 | 10.5 | ---- | 1 40 °C |
| 5709 | w-tp-45t-7 | 114 | * | 0.1 | 10.0 | ---- | 1 55 °C |
| 5710 | w-tp-45t-8 | 107 | * | 0.1 | 9.9 | ---- | 1 55 °C |
| 5711 | w-tp-45t-9 | 110 | * | 0.1 | 9.2 | ---- | 1 55 °C |
| 5712 | w-tp-45t-10 | 94.8 | * | 0.1 | 7.7 | ---- | 1 70 °C |
| 5713 | w-tp-45t-11 | 96.8 | * | 0.1 | 7.5 | ---- | 1 70 °C |
| 5714 | w-tp-45t-12 | 102 | * | 0.1 | 8.9 | ---- | 1 70 °C |

Materials DD5P and DD11 Static Tests (15355 hours in water)

Tests 5739 through 5838 involved (0/±45/0) laminates with D155/DB120 and A130/DB120 fabrics. These laminates were placed in distilled water and monitored for moisture absorption and ultimate compressive strength changes with moisture content. Two of these laminates were taken out of the water, bonded back-to-back, and compression tested. The back-to-back configuration gave the coupon added buckling resistance and simulated Material DD5P (denoted with a “D” for D155) and Material DD11 (denoted with an “A” for A130).

Fiber volume fractions for these tests were between 0.34 and 0.38.

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Test Temperature |
|---|-----------------------|------|---------|----------|--------|-------------------|---------------------|
| Tests 5739 - 5746 control group, no moisture conditioning, after 24 hours at 40 °C | | | | | | | |
| 5739 | D6456 | -497 | * | 13 | ---- | 1 | 25 °C |
| 5740 | D6327 | -565 | * | 13 | ---- | 1 | 25 °C |
| 5741 | D6533 | -532 | * | 13 | ---- | 1 | 25 °C |
| 5742 | D6212 | -476 | * | 13 | ---- | 1 | 25 °C |
| 5743 | A6034 | -274 | * | 13 | ---- | 1 | 25 °C |
| 5744 | A6140 | -302 | * | 13 | ---- | 1 | 25 °C |
| 5745 | A5962 | -211 | * | 13 | ---- | 1 | 25 °C |
| 5746 | A5974 | -272 | * | 13 | ---- | 1 | 25 °C |
| Tests 5747-5754 were tested after 24 hours in 40 °C water, (D-0.20% moisture gain, A-0.29% moisture gain) | | | | | | | |
| 5747 | D6229 | -492 | * | 13 | ---- | 1 | 25 °C |
| 5748 | D6517 | -529 | * | 13 | ---- | 1 | 25 °C |
| 5749 | D6559 | -533 | * | 13 | ---- | 1 | 25 °C |
| 5750 | D5866 | -509 | * | 13 | ---- | 1 | 25 °C |
| 5751 | A6046 | -239 | * | 13 | ---- | 1 | 25 °C |
| 5752 | A6236 | -334 | * | 13 | ---- | 1 | 25 °C |
| 5753 | A6141 | -272 | * | 13 | ---- | 1 | 25 °C |
| 5754 | A6147 | -205 | * | 13 | ---- | 1 | 25 °C |
| Tests 5755-5765 were tested after 144 hours in 40 °C water, (D-0.47% moist. gain, A-0.54% moist. gain) | | | | | | | |
| 5755 | D6229 | -665 | * | 13 | ---- | 1 | 25 °C |
| 5756 | D6194 | -464 | * | 13 | ---- | 1 | 25 °C |
| 5757 | D6112 | -517 | * | 13 | ---- | 1 | 25 °C |
| 5758 | D6205 | -464 | * | 13 | ---- | 1 | 25 °C |
| 5759 | A6070 | -250 | * | 13 | ---- | 1 | 25 °C |
| 5760 | A6090 | -314 | * | 13 | ---- | 1 | 25 °C |
| 5761 | A6236 | -288 | * | 13 | ---- | 1 | 25 °C |
| 5762 | A5950 | -295 | * | 13 | ---- | 1 | 25 °C |
| 5763 | D6441 | -519 | * | 13 | ---- | 1 | 0 °C |
| 5764 | D6365 | -486 | * | 13 | ---- | 1 | 0 °C |
| 5765 | D6369 | -452 | * | 13 | ---- | 1 | 0 °C |
| Tests 5766-5773 were tested after 1315 hours in 40 °C water,(D-0.61% moist. gain, A-0.73% moist. gain) | | | | | | | |
| 5766 | D6443 | -471 | * | 13 | ---- | 1 | 25 °C |
| 5767 | D6489 | -519 | * | 13 | ---- | 1 | 25 °C |
| 5768 | D6846 | -474 | * | 13 | ---- | 1 | 25 °C |
| 5769 | D6590 | -420 | * | 13 | ---- | 1 | 25 °C |
| 5770 | A6570 | -213 | * | 13 | ---- | 1 | 25 °C |
| 5771 | A5976 | -211 | * | 13 | ---- | 1 | 25 °C |
| 5772 | A6021 | -260 | * | 13 | ---- | 1 | 25 °C |
| 5773 | A6228 | -191 | * | 13 | ---- | 1 | 25 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| Tests 5774-5779 control group, no moisture conditioning, after 1315 hours at 40 °C | | | | | | | |
| 5774 | D6490 | -509 | * | 13 | ---- | 1 | 25 °C |
| 5775 | D6370 | -404 | * | 13 | ---- | 1 | 25 °C |
| 5776 | D5924 | -621 | * | 13 | ---- | 1 | 25 °C |
| 5777 | A6119 | -283 | * | 13 | ---- | 1 | 25 °C |
| 5778 | A5980 | -261 | * | 13 | ---- | 1 | 25 °C |
| 5779 | A6007 | -279 | * | 13 | ---- | 1 | 25 °C |
| Tests 5780-5786 control group, no moisture conditioning, after 2000 hours at 40 °C, 2650 hours at 20 °C | | | | | | | |
| 5780 | D6210 | -560 | * | 13 | ---- | 1 | 25 °C |
| 5781 | D6401 | -568 | * | 13 | ---- | 1 | 25 °C |
| 5782 | D6219 | -539 | * | 13 | ---- | 1 | 25 °C |
| 5783 | A5970 | -218 | * | 13 | ---- | 1 | 25 °C |
| 5784 | A6070 | -307 | * | 13 | ---- | 1 | 25 °C |
| 5785 | A5983 | -300 | * | 13 | ---- | 1 | 25 °C |
| Tests 5786-5801 were tested after 2000 hours in 40 °C water and 2650 hours in 20 °C water, (D-0.62% moisture gain, A-0.64% moisture gain) | | | | | | | |
| 5786 | D6212 | -405 | * | 13 | ---- | 1 | 25 °C |
| 5787 | D6220 | -393 | * | 13 | ---- | 1 | 25 °C |
| 5788 | D6171 | -473 | * | 13 | ---- | 1 | 25 °C |
| 5789 | D6794 | -413 | * | 13 | ---- | 1 | 25 °C |
| 5790 | D5978 | -352 | * | 13 | ---- | 1 | 50 °C |
| 5791 | D6349 | -414 | * | 13 | ---- | 1 | 50 °C |
| 5792 | D6491 | -423 | * | 13 | ---- | 1 | 50 °C |
| 5793 | D6270 | -423 | * | 13 | ---- | 1 | 50 °C |
| 5794 | A6008 | -228 | * | 13 | ---- | 1 | 25 °C |
| 5795 | A6506 | -267 | * | 13 | ---- | 1 | 25 °C |
| 5796 | A6119 | -240 | * | 13 | ---- | 1 | 25 °C |
| 5797 | A6034 | -224 | * | 13 | ---- | 1 | 25 °C |
| 5798 | A6149 | -176 | * | 13 | ---- | 1 | 50 °C |
| 5799 | A6396 | -125 | * | 13 | ---- | 1 | 50 °C |
| 5800 | A6223 | -216 | * | 13 | ---- | 1 | 50 °C |
| 5801 | A6149 | -179 | * | 13 | ---- | 1 | 50 °C |
| Tests 5802-5817 were tested after 2000 hours in 40 °C water and 13355 hours in 20 °C water, (D-0.97% moisture gain, A-1.01% moisture gain) | | | | | | | |
| 5802 | D6223 | -442 | * | 13 | ---- | 1 | 25 °C |
| 5803 | D6883 | -406 | * | 13 | ---- | 1 | 25 °C |
| 5804 | D6037 | -404 | * | 13 | ---- | 1 | 25 °C |
| 5805 | D5992 | -366 | * | 13 | ---- | 1 | 25 °C |
| 5806 | A6026 | -163 | * | 13 | ---- | 1 | 25 °C |
| 5807 | A5972 | -215 | * | 13 | ---- | 1 | 25 °C |
| 5808 | A6188 | -229 | * | 13 | ---- | 1 | 25 °C |
| 5809 | A6061 | -203 | * | 13 | ---- | 1 | 25 °C |
| 5810 | D5864 | -377 | * | 13 | ---- | 1 | 50 °C |
| 5811 | D5960 | -332 | * | 13 | ---- | 1 | 50 °C |
| 5812 | D5842 | -309 | * | 13 | ---- | 1 | 50 °C |
| 5813 | D6316 | -375 | * | 13 | ---- | 1 | 50 °C |
| 5814 | A5975 | -132 | * | 13 | ---- | 1 | 50 °C |
| 5815 | A6218 | -154 | * | 13 | ---- | 1 | 50 °C |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| 5816 | A5894 | -188 | * | 13 | ---- | 1 | 50 °C |
| 5817 | A6165 | -225 | * | 13 | ---- | 1 | 50 °C |
| Tests 5818-5786 control group, no moisture conditioning, after 2000 hours at 40 °C, 13355 hours at 20 °C | | | | | | | |
| 5818 | D6394 | -448 | * | 13 | ---- | 1 | 25 °C |
| 5819 | D6248 | -361 | * | 13 | ---- | 1 | 25 °C |
| 5820 | D6265 | -434 | * | 13 | ---- | 1 | 25 °C |
| 5821 | D6472 | -583 | * | 13 | ---- | 1 | 25 °C |
| 5822 | D6485 | -532 | * | 13 | ---- | 1 | 25 °C |
| 5823 | D6428 | -559 | * | 13 | ---- | 1 | 25 °C |
| 5824 | D6183 | -516 | * | 13 | ---- | 1 | 50 °C |
| 5825 | D6351 | -468 | * | 13 | ---- | 1 | 50 °C |
| 5826 | D6217 | -542 | * | 13 | ---- | 1 | 50 °C |
| 5827 | D6411 | -430 | * | 13 | ---- | 1 | 50 °C |
| 5828 | D6530 | -405 | * | 13 | ---- | 1 | 50 °C |
| 5829 | A6040 | -250 | * | 13 | ---- | 1 | 25 °C |
| 5830 | A6161 | -283 | * | 13 | ---- | 1 | 25 °C |
| 5831 | A6008 | -298 | * | 13 | ---- | 1 | 25 °C |
| 5832 | A6036 | -222 | * | 13 | ---- | 1 | 25 °C |
| 5833 | A5911 | -249 | * | 13 | ---- | 1 | 25 °C |
| 5834 | A5951 | -251 | * | 13 | ---- | 1 | 50 °C |
| 5835 | A6259 | -270 | * | 13 | ---- | 1 | 50 °C |
| 5836 | A6079 | -232 | * | 13 | ---- | 1 | 50 °C |
| 5837 | A6420 | -264 | * | 13 | ---- | 1 | 50 °C |
| 5838 | A6056 | -233 | * | 13 | ---- | 1 | 50 °C |

| Compression Testing Summary of Coupons (0/±45/0) Exposed to 20 - 40 °C Distilled Water (D155 and A130 0° fabrics with DB120 ±45° fabric, V _F = 0.35, Tests 5739 - 5838) | | | | | | | |
|--|----------------------------|------------------------------------|-------------|--------------------------------------|-------------|--------------------------------------|-------------|
| Exposure Time, hours | Test Temperature, °C | Average Moisture Gain (S.D.), % | | D155 Ave. strength (S.D.), MPa | % Change | A130 Ave. strength (S.D.), MPa | % Change |
| | | D155 | A130 | | | | |
| 0 | 20 | 0 | 0 | 517 (39) | -- | 265 (39) | -- |
| 24 | 20 | 0.20 (0.01) | 0.29 (0.03) | 516 (19) | -0.3 | 262 (55) | -0.8 |
| 144 | 20 | 0.47 (0.01) | 0.54 (0.02) | 481 (30) | -6.9 | 286 (27) | 8.4 |
| 1,315 | 20 | 0.61 (0.06) | 0.73 (0.04) | 471(35) | -9.0 | 219 (26) | -17 |
| 4,650 | 20 | 0.62 (0.11) | 0.64 (0.08) | 420 (31) | -19 | 240 (17) | -9.3 |
| 4,650 | 50 | 0.62 | 0.64 | 403 (30) | -15 | 174 (32) | -30 |
| 15,355 | 20 | 0.94 (0.25) | 1.02 (0.05) | 404 (31) | -22 | 202 (28) | -23 |
| 15,355 | 50 | 0.99 (0.22) | 0.99 (0.04) | 348 (34) | -26 | 175 (40) | -30 |
| Baseline D155 modulus = 24.8 GPa, Baseline A130 modulus = 23.7 GPa at 1% moisture - D155 = 24.8 GPa, at 1% moisture - A130 = 19.9 GPa Coupons were tested in a double thickness configuration at 13 mm/s with a 13 mm gage length. | | | | | | | |

| Compression Testing Summary of Dry Control Coupons (0/±45/0) (D155 and A130 0° fabric with DB120 ±45° fabric, $V_F = 0.35$) | | | | | |
|---|-------------------------|--------------------------------|----------|--------------------------------|----------|
| Exposure Time, hours | Testing Temperature, °C | D155 Ave. strength (S.D.), MPa | % Change | A130 Ave. strength (S.D.), MPa | % Change |
| 0 | 20 | 517 (39) | -- | 265 (39) | -- |
| 1,315 dry control | 20 | 511 (89) | -1.2 | 274 (10) | +3.8 |
| 4,650 dry control | 20 | 556 (13) | +7.4 | 275 (40) | +3.9 |
| 15,355 dry control | 20 | 486 (86) | -6.4 | 260 (30) | +1.6 |
| 15,355 dry control | 50 | 472 (57) | -9.6 | 250 (17) | -5.8 |

DD5P Static and Fatigue Tests (7200 hours in water)

Tests 4880 - 4899, 5860 - 5899 involved full thickness DD5P coupons which were immersed in distilled water for a total of 300 days. The first 91 days were at a temperature of 40 °C with the remaining time at room temperature (18-22 °C). **These “WET” coupons averaged 1.0 percent moisture absorption at the time of testing.** All the tensile coupons in this series were dog boned shaped with a minimum width of 22 mm. The compression coupons were 25 mm wide and involved a gage length of 13 mm. The last column of data lists the temperature that the test was run under, and whether or not the coupon was “DRY” (not soaked in water, ~0 % moisture content) or WET (coupons that were soaked in distilled water, as described above). For “Wet” coupons, the fatigue tests were performed with the gage section of the test coupon in a sealed plastic bag containing a water soaked cotton fabric.

Material DD5P Environmental

Lay-up = [0/±45/0]_S, V_F = 0.357 (dry), Ave. thickness (dry) = 3.13 mm, S.D. (dry) = 0.004 mm,

V_F = 0.379 (wet) Ave. thickness (wet) = 2.95 mm, S.D. (wet) = 0.004 mm, CoRezyn 63-AX-051 Polyester

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|---|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| “WET” coupons averaged 1.0 percent moisture absorption at the time of testing. | | | | | | | |
| 4880 | DD5P820 | 310/31 | 0.1 | 3 | 21.6 | 1.62 | 178,431 50 °C Dry |
| 4881 | DD5P816 | 310/31 | 0.1 | 3 | 20.8 | 1.64 | 233,742 50 °C Dry |
| 4882 | DD5P816 | 310/31 | 0.1 | 3 | 21.1 | 1.52 | 246,075 50 °C Dry |
| 4883 | DD5P819 | 710 | * | 13 | 19.5 | 3.6 | 1 50 °C Dry |
| 4884 | DD5P814 | 730 | * | 13 | 22.3 | 3.3 | 1 50 °C Dry |
| 4885 | DD5P817 | 742 | * | 13 | 22.3 | 3.4 | 1 50 °C Dry |
| 4886 | DD5P812 | 414/41 | 0.1 | 2 | 22.1 | 2.21 | 4,207 50 °C Dry |
| 4887 | DD5P821 | 414/41 | 0.1 | 2 | 22 | 2.03 | 3,614 50 °C Dry |
| 4888 | DD5P818 | 414/41 | 0.1 | 2 | 21.5 | 1.86 | 1,132 50 °C Dry |
| 4891 | DD5P908W | 241/24 | 0.1 | 5 | ---- | ---- | 2,145,373 50 °C Wet |
| 4892 | DD5P900W | 310/31 | 0.1 | 3 | 20 | 1.42 | 17,971 50 °C Wet |
| 4893 | DD5P901W | 241/24 | 0.1 | 5 | 20.6 | 1.19 | 1,733,316 50 °C Wet |
| 4894 | DD5P902W | 241/24 | 0.1 | 5 | 20.8 | 1.22 | 2,033,339 50 °C Wet |
| 4895 | DD5P903W | 310/31 | 0.1 | 3 | 21.3 | 1.51 | 45,534 50 °C Wet |
| 4896 | DD5P904W | 310/31 | 0.1 | 3 | 20 | 1.54 | 35,346 50 °C Wet |
| 4897 | DD5P905W | 693 | * | 13 | 21.6 | ---- | 1 50 °C Wet |
| 4898 | DD5P907W | 688 | * | 13 | 22 | ---- | 1 50 °C Wet |
| 4899 | DD5P906W | 734 | * | 13 | 21 | ---- | 1 50 °C Wet |
| 5860 | DD5P909W | -345/-35 | 10 | 1 | ---- | ---- | 16 50 °C Wet |
| 5861 | DD5P910W | -426 | * | 13 | ---- | ---- | 1 50 °C Wet |
| 5862 | DD5P911W | -384 | * | 13 | ---- | ---- | 1 50 °C Wet |
| 5863 | DD5P912W | -401 | * | 13 | ---- | ---- | 1 50 °C Wet |
| 5864 | DD5P913W | -381 | * | 13 | ---- | ---- | 1 50 °C Wet |
| 5865 | DD5P914W | -276/-28 | 10 | 2 | ---- | ---- | 1,410 50 °C Wet |
| 5866 | DD5P915W | -207/-21 | 10 | 2 | ---- | ---- | 37,673 50 °C Wet |
| 5867 | DD5P916W | -207/-21 | 10 | 5 | ---- | ---- | 44,469 50 °C Wet |
| 5868 | DD5P917W | -207/-21 | 10 | 5 | ---- | ---- | 54,737 50 °C Wet |
| 5869 | DD5P918W | -165/-17 | 10 | 8 | ---- | ---- | 190,729 50 °C Wet |
| 5870 | DD5P919W | -165/-17 | 10 | 10 | ---- | ---- | 342,905 50 °C Wet |
| 5871 | DD5P920W | -165/-17 | 10 | 10 | ---- | ---- | 141,564 50 °C Wet |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| 5872 | DD5P921 | -345/-35 | 10 | 1 | ---- | 130 | 50 °C Dry |
| 5873 | DD5P930 | -207/-21 | 10 | 5 | ---- | 124,290 | 50 °C Dry |
| 5874 | DD5P926 | -207/-21 | 10 | 5 | ---- | 173,669 | 50 °C Dry |
| 5875 | DD5P929 | -207/-21 | 10 | 5 | ---- | 482,504 | 50 °C Dry |
| 5876 | DD5P924 | -276/-28 | 10 | 4 | ---- | 98,038 | 50 °C Dry |
| 5877 | DD5P931 | -276/-28 | 10 | 5 | ---- | 74,728 | 50 °C Dry |
| 5878 | DD5P925 | -276/-28 | 10 | 5 | ---- | 49,636 | 50 °C Dry |
| 5879 | DD5P923 | -508 | * | 13 | ---- | 1 | 50 °C Dry |
| 5880 | DD5P922 | -488 | * | 13 | ---- | 1 | 50 °C Dry |
| 5881 | DD5P927 | -500 | * | 13 | ---- | 1 | 50 °C Dry |
| 5900 | DD5P963 | -165/-17 | 10 | 8 | ---- | 1,109,352 | 50 °C Dry |
| 5882 | DD5P928 | -379/-38 | 10 | 5 | ---- | 48,127 | 20 °C Dry |
| 5883 | DD5P932 | -345/-35 | 10 | 5 | ---- | 164,214 | 20 °C Dry |
| 5884 | DD5P933 | -345/-35 | 10 | 5 | ---- | 288,708 | 20 °C Dry |
| 5885 | DD5P945 | -345/-35 | 10 | 10 | ---- | 198,403 | 20 °C Dry |
| 5898 | DD5P940 | -651 | * | 13 | ---- | 1 | 20 °C Dry |
| 5886 | DD5P944 | -578 | * | 13 | ---- | 1 | 20 °C Dry |
| 5887 | DD5P937 | -661 | * | 13 | ---- | 1 | 20 °C Dry |
| 5892 | DD5P936 | -632 | * | 13 | ---- | 1 | 20 °C Dry |
| 5888 | DD5P957W | -523 | * | 13 | ---- | 1 | 20 °C Wet |
| 5889 | DD5P956W | -542 | * | 13 | ---- | 1 | 20 °C Wet |
| 5890 | DD5P955W | -539 | * | 13 | ---- | 1 | 20 °C Wet |
| 5891 | DD5P964W | -527 | * | 13 | ---- | 1 | 20 °C Wet |
| 5893 | DD5P963W | -276/-28 | 10 | 5 | ---- | 333,063 | 20 °C Wet |
| 5894 | DD5P958W | -310/-31 | 10 | 3 | ---- | 16,432 | 20 °C Wet |
| 5895 | DD5P959W | -276/-28 | 10 | 5 | ---- | 836,080 | 20 °C Wet |
| 5896 | DD5P960W | -310/-31 | 10 | 3 | ---- | 27,564 | 20 °C Wet |
| 5897 | DD5P961W | -310/-31 | 10 | 3 | ---- | 22,185 | 20 °C Wet |
| 5899 | DD5P962W | -276/-28 | 10 | 5 | ---- | 637,232 | 20 °C Wet |
| 6046 | DD5P963W | -241/-24 | 10 | 8 | ---- | 2,680,397 | 20 °C Wet |
| 6047 | DD5P964W | -241/-24 | 10 | 10 | ---- | 3,830,537 | 20 °C Wet |
| 6048 | DD5P965W | -241/-24 | 10 | 10 | ---- | 2,878,393 | 20 °C Wet |
| 6000 | DD5P208D | -625 | * | 13 | ---- | 1 | 20 °C Dry |
| 6001 | DD5P209D | -651 | * | 13 | ---- | 1 | 20 °C Dry |
| 6002 | DD5P200D | -676 | * | 13 | ---- | 1 | 20 °C Dry |
| 6003 | DD5P201D | -658 | * | 13 | ---- | 1 | 20 °C Dry |
| 6159 | DD5P970D | -300/-30 | 10 | 8 | ---- | 1,649,390 | 20 °C Dry |
| 6160 | DD5P971D | -300/-30 | 10 | 8 | ---- | 1,134,606 | 20 °C Dry |
| 6161 | DD5P972D | -300/-30 | 10 | 8 | ---- | 3,668,551 | 20 °C Dry |
| 6162 | DD5P966W | -138/-14 | 10 | 8 | ---- | 1,033,796 | 50 °C Wet |
| 6163 | DD5P967W | -138/-14 | 10 | 8 | ---- | 803,542 | 50 °C Wet |
| 6164 | DD5P968W | -138/-14 | 10 | 8 | ---- | 1,613,405 | 50 °C Wet |
| 6165 | DD5P975D | -165/-17 | 10 | 7 | ---- | 857,946 | 50 °C Dry |
| 6166 | DD5P976D | -165/-17 | 10 | 7 | ---- | 1,342,208 | 50 °C Dry |
| 6167 | DD5P977D | -165/-17 | 10 | 7 | ---- | 506,222 | 50 °C Dry |

Material DD5P2 Static and Fatigue Tests (1900 hours)

Lay-up = $[0/\pm 45/0]_s$, $V_F = 0.350$, Ave. thickness = 3.20 mm, S.D. = 0.09 mm, CoRezyn 75-AQ-010, Iso-Polyester. "Wet" coupons were soaked in distilled water at 50 °C for 1450 hours, and then stored in 18 °C distilled water until tested (1 to 78 days). The soaking time at 18° C added approximately 0.04% moisture pickup. These Iso-polyester "wet" coupons averaged 0.55% moisture content.

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| 6004 | DD5P2209D | -633 | * | 13 | ---- | 1 | 20 °C Dry |
| 6005 | DD5P2300D | -605 | * | 13 | ---- | 1 | 20 °C Dry |
| 6006 | DD5P2315D | -605 | * | 13 | ---- | 1 | 20 °C Dry |
| 6007 | DD5P2308D | -600 | * | 13 | ---- | 1 | 20 °C Dry |
| 6027 | DD5P2309D | -414/-41 | 10 | 4 | ---- | 42,269 | 20 °C Dry |
| 6028 | DD5P2304D | -414/-41 | 10 | 4 | ---- | 114,581 | 20 °C Dry |
| 6029 | DD5P2310D | -414/-41 | 10 | 5 | ---- | 98,665 | 20 °C Dry |
| 6030 | DD5P2305D | -379/-38 | 10 | 5 | ---- | 1,606,325 | 20 °C Dry |
| 6031 | DD5P2303D | -379/-38 | 10 | 7 | ---- | 268,662 | 20 °C Dry |
| 6032 | DD5P2311D | -379/-38 | 10 | 5 | ---- | 113,712 | 20 °C Dry |
| 6016 | DD5P2400W | -552 | * | 13 | ---- | 1 | 20 °C Wet |
| 6017 | DD5P2401W | -592 | * | 13 | ---- | 1 | 20 °C Wet |
| 6018 | DD5P2402W | -624 | * | 13 | ---- | 1 | 20 °C Wet |
| 6019 | DD5P2403W | -574 | * | 13 | ---- | 1 | 20 °C Wet |
| 6020 | DD5P2404W | -414/-41 | 10 | 2 | ---- | 4,640 | 20 °C Wet |
| 6021 | DD5P2405W | -414/-41 | 10 | 2 | ---- | 23,953 | 20 °C Wet |
| 6022 | DD5P2406W | -345/-35 | 10 | 4 | ---- | 403,790 | 20 °C Wet |
| 6025 | DD5P2407W | -345/-35 | 10 | 8 | ---- | 305,627 | 20 °C Wet |
| 6026 | DD5P2408W | -414/-41 | 10 | 8 | ---- | 290,137 | 20 °C Wet |
| 6080 | DD5P2455W | -345/-35 | 10 | 7 | ---- | 341,327 | 20 °C Wet |
| 6089 | DD5P2515W | -567 | * | 13 | ---- | 1 | 50 °C Wet |
| 6090 | DD5P2525W | -524 | * | 13 | ---- | 1 | 50 °C Wet |
| 6091 | DD5P2535W | -561 | * | 13 | ---- | 1 | 50 °C Wet |
| 6092 | DD5P2545W | -545 | * | 13 | ---- | 1 | 50 °C Wet |
| 6101 | DD5P2320 | -507 | * | 13 | ---- | 1 | 50 °C Dry |
| 6102 | DD5P2301 | -531 | * | 13 | ---- | 1 | 50 °C Dry |
| 6103 | DD5P2302 | -518 | * | 13 | ---- | 1 | 50 °C Dry |
| 6104 | DD5P2319 | -547 | * | 13 | ---- | 1 | 50 °C Dry |
| 6113 | DD5P2500 | -379/-38 | 10 | 3 | ---- | 4,511 | 50 °C Wet |
| 6114 | DD5P2501 | -345/-35 | 10 | 6 | ---- | 342,487 | 50 °C Wet |
| 6115 | DD5P2502 | -379/-38 | 10 | 2 | ---- | 940 | 50 °C Wet |
| 6116 | DD5P2379 | -379/-38 | 10 | 2 | ---- | 1,169 | 50 °C Wet |
| 6117 | DD5P2504 | -379/-38 | 10 | 2 | ---- | 3,719 | 50 °C Wet |
| 6118 | DD5P2505 | -362/-36 | 10 | 5 | ---- | 8,886 | 50 °C Wet |
| 6119 | DD5P2506 | -362/-36 | 10 | 5 | ---- | 11,943 | 50 °C Wet |
| 6120 | DD5P2507 | -362/-36 | 10 | 4 | ---- | 3,212 | 50 °C Wet |
| 6121 | DD5P2508 | -345/-35 | 10 | 6 | ---- | 108,682 | 50 °C Wet |
| 6122 | DD5P2509 | -345/-35 | 10 | 5 | ---- | 50,688 | 50 °C Wet |
| 6123 | DD5P2510 | -362/-36 | 10 | 4 | ---- | 10,095 | 50 °C Wet |
| 6124 | DD5P2511 | -328/-33 | 10 | 7 | ---- | 50,204 | 50 °C Wet |
| 6125 | DD5P2512 | -328/-33 | 10 | 5 | ---- | 126,010 | 50 °C Wet |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| 6126 | DD5P2513 | -310/-31 | 10 | 10 | ---- | 145,133 | 50 °C Wet |
| 6127 | DD5P2514 | -310/-31 | 10 | 8 | ---- | 131,655 | 50 °C Wet |
| 6128 | DD5P2515 | -293/-29 | 10 | 8 | ---- | 389,941 | 50 °C Wet |
| 6129 | DD5P2516 | -276/-28 | 10 | 8 | ---- | 118,715 | 50 °C Wet |
| 6130 | DD5P2517 | -276/-28 | 10 | 8 | ---- | 4,771,884 | R 50°C Wet |

MATERIAL DD5V Static and Fatigue Tests (1900 hours)

Lay-up = [0/±45/0]_s, $V_F = 0.355$, Ave. thickness = 3.15 mm, S.D. = 0.07 mm, Derakane 411C Vinyl ester. “Wet” coupons were soaked in distilled water at 50 °C for 1450 hours, and then stored in 18 °C distilled water until tested (1 to 78 days). The soaking time at 18° C added approximately 0.05% moisture pickup. For “Wet” coupons, the fatigue tests were performed with the gage section of the test coupon in a sealed plastic bag containing a water soaked cotton fabric. These vinyl ester “wet” coupons averaged 0.52% moisture content.

| | | | | | | | |
|------|----------|----------|----|----|------|-----------|-----------|
| 6008 | DD5V306D | -573 | * | 13 | ---- | 1 | 20 °C Dry |
| 6009 | DD5V300D | -537 | * | 13 | ---- | 1 | 20 °C Dry |
| 6010 | DD5V309D | -563 | * | 13 | ---- | 1 | 20 °C Dry |
| 6011 | DD5V302D | -576 | * | 13 | ---- | 1 | 20 °C Dry |
| 6060 | DD5V337D | -310/-31 | 10 | 8 | ---- | 5,861,932 | 20 °C Dry |
| 6061 | DD5V311D | -414/-41 | 10 | 2 | ---- | 5,144 | 20 °C Dry |
| 6062 | DD5V333D | -379/-38 | 10 | 4 | ---- | 155,965 | 20 °C Dry |
| 6063 | DD5V352D | -379/-38 | 10 | 4 | ---- | 55,556 | 20 °C Dry |
| 6064 | DD5V349D | -379/-38 | 10 | 4 | ---- | 68,683 | 20 °C Dry |
| 6065 | DD5V358D | -345/-35 | 10 | 6 | ---- | 495,336 | 20 °C Dry |
| 6066 | DD5V332D | -345/-35 | 10 | 6 | ---- | 318,116 | 20 °C Dry |
| 6067 | DD5V357D | -345/-35 | 10 | 6 | ---- | 1,573,249 | 20 °C Dry |
| 6049 | DD5V400W | -310/-31 | 10 | 7 | ---- | 2,214,422 | 20 °C Wet |
| 6050 | DD5V401W | -310/-31 | 10 | 10 | ---- | 4,484,198 | 20 °C Wet |
| 6051 | DD5V402W | -345/-35 | 10 | 5 | ---- | 3,189,655 | 20 °C Wet |
| 6052 | DD5V403W | -345/-35 | 10 | 6 | ---- | 1,225,419 | 20 °C Wet |
| 6053 | DD5V433W | -345/-35 | 10 | 6 | ---- | 699,399 | 20 °C Wet |
| 6054 | DD5V404W | -379/-38 | 10 | 4 | ---- | 107,281 | 20 °C Wet |
| 6055 | DD5V405W | -379/-38 | 10 | 5 | ---- | 631,735 | 20 °C Wet |
| 6056 | DD5V406W | -379/-38 | 10 | 5 | ---- | 72,852 | 20 °C Wet |
| 6057 | DD5V407W | -414/-41 | 10 | 2 | ---- | 7,754 | 20 °C Wet |
| 6058 | DD5V408W | -414/-41 | 10 | 2 | ---- | 33,452 | 20 °C Wet |
| 6059 | DD5V409W | -414/-41 | 10 | 2 | ---- | 2,625 | 20 °C Wet |
| 6081 | DD5VS1W | -583 | * | 13 | ---- | 1 | 20 °C Wet |
| 6082 | DD5VS2W | -583 | * | 13 | ---- | 1 | 20 °C Wet |
| 6083 | DD5VS3W | -567 | * | 13 | ---- | 1 | 20 °C Wet |
| 6084 | DD5VS4W | -552 | * | 13 | ---- | 1 | 20 °C Wet |
| 6093 | DD5V515W | -506 | * | 13 | ---- | 1 | 50 °C Wet |
| 6094 | DD5V525W | -550 | * | 13 | ---- | 1 | 50 °C Wet |
| 6095 | DD5V535W | -485 | * | 13 | ---- | 1 | 50 °C Wet |
| 6096 | DD5V545W | -486 | * | 13 | ---- | 1 | 50 °C Wet |
| 6109 | DD5V355 | -526 | * | 13 | ---- | 1 | 50 °C Dry |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| 6110 | DD5V348 | -348 | * | 13 | ---- | 1 | 50 °C Dry |
| 6111 | DD5V362 | -513 | * | 13 | ---- | 1 | 50 °C Dry |
| 6112 | DD5V360 | -461 | * | 13 | ---- | 1 | 50 °C Dry |
| 6149 | DD5V550W | -345/-35 | 10 | 1 | ---- | 11,488 | 50 °C Wet |
| 6150 | DD5V551W | -310/-31 | 10 | 1 | ---- | 929,383 | 50 °C Wet |
| 6151 | DD5V552W | -345/-35 | 10 | 1 | ---- | 58,219 | 50 °C Wet |
| 6153 | DD5V554W | -310/-31 | 10 | 1 | ---- | 1,033,946 | 50 °C Wet |
| 6154 | DD5V555W | -345/-35 | 10 | 1 | ---- | 75,412 | 50 °C Wet |
| 6155 | DD5V556W | -310/-31 | 10 | 1 | ---- | 361,247 | 50 °C Wet |
| 6156 | DD5V557W | -379/-38 | 10 | 1 | ---- | 8,974 | 50 °C Wet |
| 6157 | DD5V558W | -379/-38 | 10 | 1 | ---- | 8,456 | 50 °C Wet |
| 6158 | DD5V557W | -379/-38 | 10 | 1 | ---- | 3,746 | 50 °C Wet |

MATERIAL DD5V2 Static and Fatigue Tests (1900 hours in water)

Lay-up = $[0/\pm 45/0]_s$, $V_F = 0.352$, Ave. thickness = 3.17 mm, S.D. = 0.10 mm, Derakane 8084 Vinyl ester. “Wet” coupons were soaked in distilled water at 50 °C for 1450 hours, and then stored in 18 °C distilled water until tested (1 to 78 days). The soaking time at 18 °C added approximately 0.05% moisture pickup. These vinyl ester “wet” coupons averaged 0.56% moisture content.

| | | | | | | | |
|------|-----------|----------|----|----|------|-----------|-----------|
| 6012 | DD5V2316D | -548 | * | 13 | ---- | 1 | 20 °C Dry |
| 6013 | DD5V2324D | -526 | * | 13 | ---- | 1 | 20 °C Dry |
| 6014 | DD5V2322D | -552 | * | 13 | ---- | 1 | 20 °C Dry |
| 6015 | DD5V2301D | -549 | * | 13 | ---- | 1 | 20 °C Dry |
| 6033 | DD5V2303D | -379/-38 | 10 | 5 | ---- | 37,911 | 20 °C Dry |
| 6034 | DD5V2319D | -379/-38 | 10 | 5 | ---- | 83,282 | 20 °C Dry |
| 6035 | DD5V2320D | -345/-35 | 10 | 5 | ---- | 2,990,932 | 20 °C Dry |
| 6036 | DD5V2314D | -379/-38 | 10 | 5 | ---- | 38,458 | 20 °C Dry |
| 6037 | DD5V2305D | -345/-35 | 10 | 8 | ---- | 92,551 | 20 °C Dry |
| 6038 | DD5V2326D | -345/-35 | 10 | 8 | ---- | 95,007 | 20 °C Dry |
| 6039 | DD5V2400W | -345/-35 | 10 | 3 | ---- | 36,356 | 20 °C Wet |
| 6040 | DD5V2401W | -345/-35 | 10 | 4 | ---- | 109,166 | 20 °C Wet |
| 6041 | DD5V2402W | -310/-31 | 10 | 5 | ---- | 267,627 | 20 °C Wet |
| 6042 | DD5V2403W | -345/-35 | 10 | 5 | ---- | 26,901 | 20 °C Wet |
| 6043 | DD5V2404W | -310/-31 | 10 | 6 | ---- | 738,698 | 20 °C Wet |
| 6045 | DD5V2406W | -310/-31 | 10 | 7 | ---- | 4,298,318 | 20 °C Wet |
| 6085 | DD5V2S1W | -559 | * | 13 | ---- | 1 | 20 °C Wet |
| 6086 | DD5V2S2W | -565 | * | 13 | ---- | 1 | 20 °C Wet |
| 6087 | DD5V2S3W | -562 | * | 13 | ---- | 1 | 20 °C Wet |
| 6088 | DD5V2S4W | -551 | * | 13 | ---- | 1 | 20 °C Wet |
| 6097 | DD5V2515W | -500 | * | 13 | ---- | 1 | 50 °C Wet |
| 6098 | DD5V2525W | -535 | * | 13 | ---- | 1 | 50 °C Wet |
| 6099 | DD5V2535W | -493 | * | 13 | ---- | 1 | 50 °C Wet |
| 6100 | DD5V2545W | -497 | * | 13 | ---- | 1 | 50 °C Wet |
| 6105 | DD5V2323 | -537 | * | 13 | ---- | 1 | 50 °C Dry |
| 6106 | DD5V2309 | -494 | * | 13 | ---- | 1 | 50 °C Dry |
| 6107 | DD5V2312 | -504 | * | 13 | ---- | 1 | 50 °C Dry |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|------------------------------|
| 6108 | DD5V2311 | -473 | * | 13 | ---- | 1 | 50 °C Dry |
| 6135 | DD5V2501W | -379/-38 | 10 | 1 | ---- | 512 | 50 °C Wet |
| 6136 | DD5V2502W | -379/-38 | 10 | 1 | ---- | 163 | 50 °C Wet |
| 6137 | DD5V2503W | -310/-31 | 10 | 5 | ---- | 39,410 | 50 °C Wet |
| 6138 | DD5V2504W | -310/-31 | 10 | 5 | ---- | 7,982 | 50 °C Wet |
| 6139 | DD5V2505W | -276/-28 | 10 | 5 | ---- | 754,430 | 50 °C Wet |
| 6140 | DD5V2506W | -276/-28 | 10 | 5 | ---- | 876,228 | 50 °C Wet |
| 6141 | DD5V2507W | -276/-28 | 10 | 8 | ---- | 416,277 | 50 °C Wet |
| 6142 | DD5V2508W | -310/-31 | 10 | 2 | ---- | 118,792 | 50 °C Wet |
| 6143 | DD5V2509W | -310/-31 | 10 | 2 | ---- | 166,097 | 50 °C Wet |
| 6144 | DD5V2510W | -379/-28 | 10 | 1 | ---- | 203 | 50 °C Wet |
| 6145 | DD5V2511W | -259/-26 | 10 | 8 | ---- | 5,983,320 | 50 °C Wet |
| 6146 | DD5V2512W | -379/-38 | 10 | 1 | ---- | 798 | 20 °C Wet |
| 6147 | DD5V2513W | -379/-38 | 10 | 1 | ---- | 28,466 | 20 °C Wet |
| 6148 | DD5V2514W | -379/-38 | 10 | 1 | ---- | 19,548 | 20 °C Wet |

MATERIALS DD5V3, DD5E3, DD5E4, DD11E3 AND DD11E4 Static Tests

Material DD5V3

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.36$, Ave. thickness = 3.08 mm, S.D. = 0.09 mm, Reichhold Dion 9800 Special Urethane-modified Vinyl Ester. "Wet" coupons were soaked in distilled water at 50 °C for 1450 hours, and then stored in 18 °C distilled water until tested (1 to 78 days). For "Wet" coupons, the fatigue tests were performed with the gage section of the test coupon in a sealed plastic bag containing a water soaked cotton fabric. These vinyl ester "wet" coupons averaged 0.52% moisture content.

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|------------------------------|
| 8820 | DD5V3-305 | -612 | * | 13 | ---- | 1 | 20C Dry |
| 8821 | DD5V3-306 | -590 | * | 13 | ---- | 1 | 20C Dry |
| 8822 | DD5V3-304 | -533 | * | 13 | ---- | 1 | 20C Dry |
| 8823 | DD5V3-302 | -629 | * | 13 | ---- | 1 | 20C Dry |
| 8824 | DD5V3-303 | -519 | * | 13 | ---- | 1 | 50C Dry |
| 8825 | DD5V3-301 | -594 | * | 13 | ---- | 1 | 50C Dry |
| 8826 | DD5V3-307 | -562 | * | 13 | ---- | 1 | 50C Dry |
| 8827 | DD5V3-300 | -588 | * | 13 | ---- | 1 | 50C Dry |
| 8828 | DD5V3-354w | -591 | * | 13 | ---- | 1 | 20C Wet |
| 8829 | DD5V3-359w | -547 | * | 13 | ---- | 1 | 20C Wet |
| 8830 | DD5V3-356w | -546 | * | 13 | ---- | 1 | 20C Wet |
| 8831 | DD5V3-357w | -595 | * | 13 | ---- | 1 | 20C Wet |
| 8832 | DD5V3-350w | -567 | * | 13 | ---- | 1 | 50C Wet |
| 8833 | DD5V3-352w | -614 | * | 13 | ---- | 1 | 50C Wet |
| 8834 | DD5V3-362w | -605 | * | 13 | ---- | 1 | 50C Wet |
| 8835 | DD5V3-355w | -610 | * | 13 | ---- | 1 | 50C Wet |

Material DD11E3

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.32$, Ave. thickness = 3.07 mm, S.D. = 0.08 mm, Prime 20 Epoxy

| | | | | | | | |
|------|-------------|------|---|----|------|---|---------|
| 8836 | DD11E3-319 | -314 | * | 13 | ---- | 1 | 20C Dry |
| 8837 | DD11E3-320 | -281 | * | 13 | ---- | 1 | 20C Dry |
| 8838 | DD11E3-317 | -288 | * | 13 | ---- | 1 | 20C Dry |
| 8839 | DD11E3-318 | -269 | * | 13 | ---- | 1 | 20C Dry |
| 8840 | DD11E3-316 | -215 | * | 13 | ---- | 1 | 50C Dry |
| 8841 | DD11E3-301 | -213 | * | 13 | ---- | 1 | 50C Dry |
| 8842 | DD11E3-302 | -208 | * | 13 | ---- | 1 | 50C Dry |
| 8843 | DD11E3-300 | -225 | * | 13 | ---- | 1 | 50C Dry |
| 8844 | DD11E3-355w | -118 | * | 13 | ---- | 1 | 50C Wet |
| 8845 | DD11E3-354w | -118 | * | 13 | ---- | 1 | 50C Wet |
| 8846 | DD11E3-353w | -142 | * | 13 | ---- | 1 | 50C Wet |
| 8847 | DD11E3-352w | -135 | * | 13 | ---- | 1 | 50C Wet |
| 8848 | DD11E3-351w | -284 | * | 13 | ---- | 1 | 20C Wet |
| 8849 | DD11E3-350w | -214 | * | 13 | ---- | 1 | 20C Wet |
| 8850 | DD11E3-357w | -243 | * | 13 | ---- | 1 | 20C Wet |
| 8851 | DD11E3-356w | -217 | * | 13 | ---- | 1 | 20C Wet |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|------------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|------------------------------|

Material DD5E3

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.36$, Ave. thickness = 3.14 mm, S.D. = 0.08 mm, Prime 20 Epoxy

| | | | | | | | |
|------|------------|------|---|----|------|---|---------|
| 8852 | DD5E3-304 | -642 | * | 13 | ---- | 1 | 20C Dry |
| 8853 | DD5E3-305 | -608 | * | 13 | ---- | 1 | 20C Dry |
| 8854 | DD5E3-322 | -645 | * | 13 | ---- | 1 | 20C Dry |
| 8855 | DD5E3-319 | -595 | * | 13 | ---- | 1 | 20C Dry |
| 8856 | DD5E3-320 | -561 | * | 13 | ---- | 1 | 50C Dry |
| 8857 | DD5E3-321 | -563 | * | 13 | ---- | 1 | 50C Dry |
| 8858 | DD5E3-303 | -537 | * | 13 | ---- | 1 | 50C Dry |
| 8859 | DD5E3-323 | -516 | * | 13 | ---- | 1 | 50C Dry |
| 8860 | DD5E3-357w | -364 | * | 13 | ---- | 1 | 50C Wet |
| 8861 | DD5E3-356w | -383 | * | 13 | ---- | 1 | 50C Wet |
| 8862 | DD5E3-355w | -391 | * | 13 | ---- | 1 | 50C Wet |
| 8863 | DD5E3-354w | -337 | * | 13 | ---- | 1 | 50C Wet |
| 8864 | DD5E3-353w | -519 | * | 13 | ---- | 1 | 20C Wet |
| 8865 | DD5E3-352w | -503 | * | 13 | ---- | 1 | 20C Wet |
| 8866 | DD5E3-351w | -471 | * | 13 | ---- | 1 | 20C Wet |
| 8867 | DD5E3-350w | -483 | * | 13 | ---- | 1 | 20C Wet |

Material DD11E4

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.34$, Ave. thickness = 2.84 mm, S.D. = 0.05 mm, Jeffco 1401-12 Epoxy

| | | | | | | | |
|------|-------------|------|---|----|------|---|---------|
| 8868 | DD11E4-309 | -267 | * | 13 | ---- | 1 | 50C Dry |
| 8869 | DD11E4-308 | -255 | * | 13 | ---- | 1 | 50C Dry |
| 8870 | DD11E4-307 | -281 | * | 13 | ---- | 1 | 50C Dry |
| 8871 | DD11E4-306 | -228 | * | 13 | ---- | 1 | 50C Dry |
| 8872 | DD11E4-305 | -289 | * | 13 | ---- | 1 | 20C Dry |
| 8873 | DD11E4-304 | -299 | * | 13 | ---- | 1 | 20C Dry |
| 8874 | DD11E4-302 | -312 | * | 13 | ---- | 1 | 20C Dry |
| 8875 | DD11E4-303 | -309 | * | 13 | ---- | 1 | 20C Dry |
| 8876 | DD11E4-360w | -201 | * | 13 | ---- | 1 | 50C Wet |
| 8877 | DD11E4-361w | -205 | * | 13 | ---- | 1 | 50C Wet |
| 8878 | DD11E4-362w | -181 | * | 13 | ---- | 1 | 50C Wet |
| 8879 | DD11E4-363w | -285 | * | 13 | ---- | 1 | 50C Wet |
| 8880 | DD11E4-364w | -348 | * | 13 | ---- | 1 | 20C Wet |
| 8881 | DD11E4-365w | -250 | * | 13 | ---- | 1 | 20C Wet |
| 8882 | DD11E4-366w | -298 | * | 13 | ---- | 1 | 20C Wet |
| 8883 | DD11E4-367w | -292 | * | 13 | ---- | 1 | 20C Wet |

Material DD5E4

Lay-up = $[0/\pm 45/0]_S$, $V_F = 0.35$, Ave. thickness = 3.20 mm, S.D. = 0.08 mm, Jeffco 1401-12 Epoxy

| | | | | | | | |
|------|-----------|------|---|----|------|---|---------|
| 8884 | DD5E4-307 | -560 | * | 13 | ---- | 1 | 20C Dry |
| 8885 | DD5E4-306 | -659 | * | 13 | ---- | 1 | 20C Dry |
| 8886 | DD5E4-305 | -649 | * | 13 | ---- | 1 | 20C Dry |
| 8887 | DD5E4-302 | -625 | * | 13 | ---- | 1 | 20C Dry |
| 8888 | DD5E4-303 | -556 | * | 13 | ---- | 1 | 50C Dry |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | Temperature and condition |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|------------------------------|
| 8889 | DD5E4-304 | -570 | * | 13 | ---- | 1 | 50C Dry |
| 8890 | DD5E4-311 | -539 | * | 13 | ---- | 1 | 50C Dry |
| 8891 | DD5E4-300 | -546 | * | 13 | ---- | 1 | 50C Dry |
| 8892 | DD5E4-377w | -317 | * | 13 | ---- | 1 | 50C Wet |
| 8893 | DD5E4-376w | -401 | * | 13 | ---- | 1 | 50C Wet |
| 8894 | DD5E4-375w | -316 | * | 13 | ---- | 1 | 50C Wet |
| 8895 | DD5E4-374w | -290 | * | 13 | ---- | 1 | 50C Wet |
| 8896 | DD5E4-373w | -471 | * | 13 | ---- | 1 | 20C Wet |
| 8897 | DD5E4-372w | -548 | * | 13 | ---- | 1 | 20C Wet |
| 8898 | DD5E4-371w | -505 | * | 13 | ---- | 1 | 20C Wet |
| 8899 | DD5E4-370w | -521 | * | 13 | ---- | 1 | 20C Wet |

25 mm wide coupons, 13 mm gage length, 13 mm/s ramp rate.

| Resin system in (0/±45/0) _s Lay-up | 0° fabric | Moisture pick-up, % | 20°C Dry | 20°C Wet | 60°C Dry | 60°C Wet |
|---|--------------|------------------------|----------|----------|----------|----------|
| Reichhold DION 9800 special (HDT=115C) | D155 | 0.28 | 591 (42) | 570 (27) | 566 (34) | 599 (22) |
| SP Systems Prime 20, 7 hours 65°C (HDT=54C, Tg=68C) | D155 | 1.24 | 623 (25) | 494 (21) | 544 (22) | 369 (24) |
| | A130 | 1.79 | 288 (19) | 240 (33) | 215 (7) | 128 (12) |
| Jeffco 1401-12 resin, 4101- 17 hardener, 14 hrs at 60C (HDT=???) | D155 | 1.55 | 623 (44) | 512 (32) | 553 (14) | 331 (48) |
| | A130 | 1.72 | 302 (10) | 297 (40) | 258 (23) | 218 (46) |
| Brackets indicate the sample standard deviation. | | | | | | |
| Reichhold coupons were conditioned in 65°C water for 728 hours. All other resin systems were conditioned in 65°C water for 193 hours and then 20°C water for an additional 535 hours. | | | | | | |

Neat Resin Tests

Maximum stress column lists the maximum stress / yield stress. The listed yield stress was determined using the 0.2% strain offset method. Heat deflection temperature was measured using ASTM D648.

CoRezyn 63-AX-051 (Interplastics Corporation)

Heat deflection temperature (3 tests) - 53.6 °C, 55.3 °C, 55.1 °C

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
| 5842 poly1 | 59.6/47.4 | * | 0.1 | 3.01 | 2.4 | 1 | 11 |
| 5843 poly2 | 48.3/41.7 | * | 0.1 | 3.25 | 1.66 | 1 | 11 |
| 5844 poly3 | 54.3/46.5 | * | 0.1 | 3.29 | 1.93 | 1 | 11 |

Derakane 411C-50 (Dow Chemical)

Heat deflection temperature (3 tests) - 73.5 °C, 80.2 °C, 79.6 °C

| | | | | | | | |
|------------|-----------|---|-----|------|------|---|----|
| 5845 411C1 | 57.2/47.1 | * | 0.1 | 3.26 | 2.02 | 1 | 11 |
| 5846 411C2 | 58.8/53.2 | * | 0.1 | 3.16 | 2.14 | 1 | 11 |
| 5847 411C3 | 57.1/50.9 | * | 0.1 | 3.21 | 2.02 | 1 | 11 |

Derakane 8084 (Dow Chemical)

Heat deflection temperature (3 tests) - 72.6 °C, 74.7 °C, 75.2 °C

| | | | | | | | |
|------------|-----------|---|-----|------|------|---|----|
| 5848 80841 | 75.1/58.4 | * | 0.1 | 3.04 | 3.36 | 1 | 11 |
| 5849 80842 | 73.8/54.5 | * | 0.1 | 3.33 | 2.95 | 1 | 11 |
| 5850 80843 | 68.8/52.6 | * | 0.1 | 3.38 | 2.6 | 1 | 11 |

System 41 (System Three)

Heat deflection temperature (3 tests) - 59.4 °C, 52.9 °C, 53.3 °C

| | | | | | | | |
|------------|-----------|---|-----|------|------|---|----|
| 5851 sys31 | 51.1/51.1 | * | 0.1 | 3.59 | 1.54 | 1 | 11 |
| 5852 sys32 | 53.1/53.1 | * | 0.1 | 3.63 | 1.58 | 1 | 11 |
| 5853 sys33 | 53.6/53.6 | * | 0.1 | 3.49 | 1.67 | 1 | 11 |

SC-12 (Applied Pleramic Inc.)

Heat deflection temperature (3 tests) - 92.7 °C, 94.8 °C, 95.0 °C

| | | | | | | | |
|------------|------|---|-----|------|------|---|----|
| 5854 sc121 | 41.1 | * | 0.1 | 3.48 | 1.26 | 1 | 11 |
| 5855 sc122 | 48.5 | * | 0.1 | 3.43 | 1.55 | 1 | 11 |
| 5856 sc123 | 43.4 | * | 0.1 | 3.52 | 1.32 | 1 | 11 |

SC-14 (Applied Pleramic Inc.)

Heat deflection temperature (3 tests) - 80.5 °C, 82.7 °C, 84.3 °C

| | | | | | | | |
|------------|-----------|---|-----|------|------|---|----|
| 5857 sc141 | 72.1/50.1 | * | 0.1 | 2.83 | 3.68 | 1 | 11 |
| 5858 sc142 | 66.3/46.8 | * | 0.1 | 2.76 | 3.15 | 1 | 11 |
| 5859 sc143 | 66.3/48.6 | * | 0.1 | 2.82 | 3.09 | 1 | 11 |

| Summary of Physical Properties of Matrix and Adhesive Materials [Manufacturer listed values] | | | | | |
|--|---|--|---------------------------------------|--|---------------------------------|
| | CoRezyn® 75-AQ-010 Iso- Polyester | CoRezyn® 63-AX-051 Ortho- Polyester | Derakane® 411PC-100 Vinyl Ester | Derakane® 8084 Epoxy Vinyl Ester | Hysol EA9309.2NA Adhesive |
| Tensile Modulus, GPa | 3.54, s=0.11 [5.6] | 3.88, s = 0.4, [4.69] | 3.21 s = 0.04 | 3.25 s = 0.15 [3.17] | 2.36, s = 0.1, [2.34] |
| Tensile Strength, MPa | 59.6, s=7.1 [75.9] | 54.1, s = 4.6, [58] | 57.7 s = 0.8 | 72.6 s = 2.7 [69-76] | 44, s = 1.4, [38] |
| Tensile Elongation, % | 2.09, s=0.3 [2.4] | 1.8, s = 0.2, [1.6] | 5.8 s = 1.3 | 3.10 s =0.6 [10- 12] | 3.7, s = 0.2, [4.8] |
| Flexural Modulus, GPa | [5.4] | [3.72] | 3.17 | [3.03] | --- |
| Flexural Strength, MPa | [149] | [89] | 122 | [110 - 124] | --- |
| Shear Modulus, GPa | (1.68) | 1.15, s = 0.28 | (0.96) | (0.98) | 0.74, s = 0.35, [0.89] |
| Shear Strength, MPa | --- | 32.4, s = 2.1 | --- | --- | 37.0, s = 2.8 |
| Compressive Strength, MPa | --- | 159, s = 10 | --- | --- | 108, s = 12, [53] |
| Density, g/cm ³ | [1.05 - 1.09] | 1.16, s = 0.01 | 1.18 | 1.08 | 1.27, s = 0.02 |
| Nuxy | 0.35, s = 0.01 | 0.35, s = 0.01 | 0.34 s = 0.01 | 0.343 s = 0.01 | 0.34, s = 0.01 |
| Heat Distortion Temperature, °C | [101] | 55 s = 1 [67] | 78, s = 4 | 74, s = 1 [77-82] | [79] |
| Note: Ultimate strength values are variable (fracture mechanics) | | | | | |

STRESS RUPTURE TESTING

Test numbers 7100 to 7255 (inclusive) involved stress rupture tensile testing of fiberglass materials. The tests were performed on an Instron 8562 screw driven testing machine. The machine was set up to place the test coupon under a specific load as quickly as possible, with no overshooting. Static ultimate tests were performed in approximately 0.3 seconds to obtain short-time strength values designated So. These ultimate strength tests were run at a constant displacement rate, 13 mm/sec for a 100 mm gage length, to failure. The time in seconds at which the material failed was recorded. Testing temperature was 16 to 21°C with a relative humidity less than 30 percent.

MATERIAL CH25

Lay-up = $(\pm 45)_7$, $V_F = 0.315$, Ave. thickness = 3.21 mm, S.D. = 0.06 mm, CoRezyn 63-AX-051 Polyester

| Test and Sample Number | | Maximum Stress MPa | S/S ₀ | E GPa | Time to Failure seconds |
|---------------------------|---------|--------------------------|------------------|----------|-------------------------------|
| 7100 | CH25-1 | 93.5 | 1.01 | ---- | 0.3* |
| 7101 | CH25-3 | 92.4 | 1.00 | ---- | 0.3* |
| 7102 | CH25-4 | 93.0 | 1.00 | ---- | 0.3* |
| 7103 | CH25-5 | 92.3 | 0.99 | ---- | 0.3* |
| 7104 | CH25-6 | 92.1 | 0.99 | ---- | 0.3* |
| 7105 | CH25-7 | 79.3 | 0.85 | ---- | 1,222 |
| 7106 | CH25-8 | 79.3 | 0.85 | 9.39 | 4,077 |
| 7107 | CH25-9 | 79.3 | 0.85 | 9.27 | 4,390 |
| 7108 | CH25-10 | 79.3 | 0.85 | 9.33 | 308 |
| 7109 | CH25-11 | 79.3 | 0.85 | 9.61 | 904 |
| 7110 | CH25-12 | 75.8 | 0.82 | 9.10 | 4,226 |
| 7111 | CH25-13 | 75.8 | 0.82 | 9.20 | 6,809 |
| 7112 | CH25-14 | 75.8 | 0.82 | 9.02 | 8,595 |
| 7113 | CH25-15 | 74.1 | 0.80 | 9.85 | 23,220 |
| 7114 | CH25-16 | 74.1 | 0.80 | 9.67 | 7,515 |
| 7115 | CH25-17 | 74.1 | 0.80 | 9.16 | 18,020 |
| 7116 | CH25-18 | 68.9 | 0.74 | 10.26 | 615,900 |
| 7117 | CH25-19 | 72.4 | 0.78 | 9.45 | 73,116 |
| 7118 | CH25-20 | 72.4 | 0.78 | 9.41 | 88,734 |
| 7119 | CH25-21 | 72.4 | 0.78 | 10.25 | 236,280 |

*The time listed is the total test time under ramp loading.

MATERIAL CH26

Lay-up = $[(\pm 45)_3/0/(\pm 45)_3]$, $V_F = 0.330$, Ave. thickness = 5.07 mm, S.D. = 0.10 mm, CoRezyn 63-AX-051 Polyester

| | | | | | |
|------|---------|-----|------|-------|-------|
| 7120 | CH26-1 | 273 | 1.05 | 12.07 | 0.3* |
| 7121 | CH26-2 | 242 | 0.93 | 11.73 | 0.3* |
| 7122 | CH26-3 | 273 | 1.05 | 12.60 | 0.3* |
| 7123 | CH26-4 | 266 | 1.02 | 13.05 | 0.3* |
| 7124 | CH26-5 | 248 | 0.95 | 13.38 | 0.3* |
| 7125 | CH26-6 | 228 | 0.87 | 13.29 | 37 |
| 7126 | CH26-7 | 207 | 0.79 | 12.20 | 51 |
| 7127 | CH26-8 | 172 | 0.66 | 11.49 | 3,838 |
| 7128 | CH26-9 | 190 | 0.73 | 12.98 | 592 |
| 7129 | CH26-10 | 172 | 0.66 | 13.06 | 9,960 |

| Test and Sample Number | Maximum Stress MPa | S/S ₀ | E GPa | Time to Failure seconds |
|---------------------------|--------------------------|------------------|----------|-------------------------------|
| 7130 CH26-11 | 155 | 0.60 | 12.87 | 171,796 |
| 7131 CH26-12 | 155 | 0.60 | 12.24 | 702,840 |
| 7132 CH26-13 | 190 | 0.73 | 11.96 | 14 |
| 7133 CH26-14 | 190 | 0.73 | 11.94 | 1,029 |
| 7134 CH26-15 | 190 | 0.73 | 13.25 | 449 |
| 7135 CH26-16 | 172 | 0.66 | 13.37 | 17,580 |
| 7136 CH26-17 | 207 | 0.79 | 11.75 | 45 |

*The time listed is the total test time under ramp loading.

MATERIAL CH27

Lay-up = $[(\pm 45)_2/0/\pm 45/0/(\pm 45)_2]$, $V_F = 0.346$, Ave. thickness = 3.23 mm, S.D. = 0.09 mm, CoRezyn 63-AX-051 Polyester

| | | | | |
|--------------|-----|------|-------|---------|
| 7138 CH27-1 | 417 | 1.00 | 14.57 | 0.3* |
| 7139 CH27-2 | 421 | 1.01 | 15.30 | 0.3* |
| 7140 CH27-3 | 412 | 0.99 | 14.66 | 0.3* |
| 7141 CH27-4 | 418 | 1.00 | 14.79 | 0.3* |
| 7142 CH27-5 | 379 | 0.91 | 13.36 | 12 |
| 7143 CH27-6 | 379 | 0.91 | 15.71 | 10 |
| 7144 CH27-7 | 362 | 0.87 | 15.63 | 12 |
| 7145 CH27-8 | 310 | 0.74 | 13.83 | 202 |
| 7146 CH27-9 | 310 | 0.74 | 14.30 | 258 |
| 7147 CH27-10 | 293 | 0.70 | 14.06 | 741 |
| 7148 CH27-11 | 293 | 0.70 | 14.04 | 672 |
| 7149 CH27-12 | 293 | 0.70 | 14.20 | 2,685 |
| 7150 CH27-13 | 276 | 0.66 | 13.29 | 1,127 |
| 7151 CH27-14 | 276 | 0.66 | 16.45 | 7,117 |
| 7152 CH27-15 | 276 | 0.66 | 15.73 | 5,971 |
| 7153 CH27-16 | 310 | 0.74 | 13.85 | 881 |
| 7154 CH27-17 | 328 | 0.79 | 14.47 | 88 |
| 7155 CH27-18 | 328 | 0.79 | 16.55 | 129 |
| 7156 CH27-19 | 328 | 0.79 | 12.96 | 45 |
| 7157 CH27-20 | 259 | 0.62 | 13.96 | 70,260 |
| 7158 CH27-21 | 259 | 0.62 | 13.92 | 15,840 |
| 7159 CH27-22 | 259 | 0.62 | 13.85 | 67,090 |
| 7160 CH27-23 | 241 | 0.58 | 13.87 | 358,200 |
| 7161 CH27-24 | 241 | 0.58 | 14.89 | 780,840 |

*The time listed is the total test time under ramp loading.

MATERIAL CH28

Lay-up = $[\pm 45/0/\pm 45/0/\pm 45/0/\pm 45]$, $V_F = 0.376$, Ave. thickness = 3.17 mm, S.D. = 0.12 mm, CoRezyn 63-AX-051 Polyester

| | | | | |
|--------------|-----|------|-------|------|
| 7162 CH28-1 | 596 | 1.05 | 19.21 | 0.3* |
| 7163 CH28-2 | 584 | 1.03 | 16.59 | 0.3* |
| 7164 CH28-3 | 579 | 1.02 | 17.98 | 0.3* |
| 7165 CH28-4 | 594 | 1.05 | 16.31 | 0.3* |
| 7166 CH28-5 | 637 | 1.12 | 19.66 | 0.3* |
| 7167 CH28-8 | 507 | 0.89 | 16.49 | 0.3* |
| 7168 CH28-10 | 507 | 0.89 | 16.49 | 0.3* |

| Test and Sample Number | Maximum Stress MPa | S/S ₀ | E | Time to GPa | Failure seconds |
|---------------------------|--------------------------|------------------|------|----------------|--------------------|
| 7169 | CH28-9 | 507 | 0.89 | 17.22 | 0.3* |
| 7170 | CH28-6 | 591 | 1.04 | 18.80 | 0.3* |
| 7171 | CH28-7 | 507 | 0.89 | 20.96 | 91 |
| 7172 | CH28-11 | 507 | 0.89 | 15.64 | 14 |
| 7173 | CH28-12 | 448 | 0.79 | 19.31 | 4,815 |
| 7174 | CH28-13 | 448 | 0.79 | 18.45 | 22,253 |
| 7175 | CH28-14 | 448 | 0.79 | 17.32 | 33 |
| 7176 | CH28-15 | 448 | 0.79 | 16.90 | 30 |
| 7177 | CH28-16 | 448 | 0.79 | 18.59 | 374 |
| 7178 | CH28-17 | 476 | 0.84 | 17.76 | 62 |
| 7179 | CH28-18 | 476 | 0.84 | 18.17 | 101 |
| 7180 | CH28-19 | 476 | 0.84 | 17.17 | 30 |
| 7181 | CH28-20 | 476 | 0.84 | 17.70 | 22 |
| 7182 | CH28-21 | 421 | 0.74 | 18.63 | 40 |
| 7183 | CH28-22 | 421 | 0.74 | 20.47 | 1,415 |
| 7184 | CH28-23 | 421 | 0.74 | 18.41 | 212,076 |
| 7185 | CH28-24 | 421 | 0.74 | 20.53 | 78,372 |
| 7186 | CH28-25 | 386 | 0.68 | 19.06 | 101,952 |
| 7187 | CH28-26 | 386 | 0.68 | 14.87 | 7,560 |
| 7188 | CH28-27 | 386 | 0.68 | 17.59 | 1,736,244 |

*The time listed is the total test time under ramp loading.

MATERIAL DD11

Lay-up = [0/±45/0]_s, V_F = 0.330, Ave. thickness = 3.08 mm, S.D. = 0.16 mm, CoRezyn 63-AX-051 Polyester

| | | | | | |
|------|---------|-----|------|-------|---------|
| 7189 | DD11-1 | 606 | 1.08 | 20.82 | 0.3* |
| 7190 | DD11-2 | 516 | 0.92 | 17.36 | 0.3* |
| 7191 | DD11-3 | 595 | 1.06 | 20.69 | 0.3* |
| 7192 | DD11-4 | 497 | 0.89 | 16.25 | 0.3* |
| 7193 | DD11-5 | 580 | 1.04 | 19.31 | 0.3* |
| 7194 | DD11-24 | 580 | 1.04 | 20.28 | 0.3* |
| 7195 | DD11-25 | 606 | 1.08 | 20.46 | 0.3* |
| 7196 | DD11-26 | 611 | 1.09 | 18.19 | 0.3* |
| 7197 | DD11-6 | 461 | 0.82 | 19.59 | 747 |
| 7198 | DD11-7 | 452 | 0.81 | 20.51 | 47 |
| 7199 | DD11-8 | 492 | 0.88 | 22.25 | 289 |
| 7200 | DD11-9 | 424 | 0.76 | 19.12 | 3,660 |
| 7201 | DD11-10 | 391 | 0.70 | 19.92 | 3,784 |
| 7202 | DD11-11 | 388 | 0.69 | 18.76 | 6,415 |
| 7203 | DD11-13 | 319 | 0.57 | 18.13 | 112,715 |
| 7204 | DD11-14 | 366 | 0.65 | 19.98 | 43500 |
| 7205 | DD11-15 | 367 | 0.66 | 19.98 | 263,700 |
| 7206 | DD11-16 | 450 | 0.80 | 19.58 | 14 |
| 7207 | DD11-17 | 515 | 0.92 | 21.82 | 13 |
| 7208 | DD11-18 | 476 | 0.85 | 2.08 | 53 |
| 7209 | DD11-19 | 346 | 0.62 | 18.58 | 438,882 |
| 7210 | DD11-20 | 351 | 0.63 | 17.77 | 91,500 |

| Test and Sample Number | | Maximum Stress MPa | S/S ₀ | E GPa | Time to Failure seconds |
|---------------------------|---------|--------------------------|------------------|----------|-------------------------------|
| 7211 | DD11-21 | 396 | 0.71 | 19.58 | 158,610 |
| 7212 | DD11-22 | 371 | 0.66 | 20.45 | 105,799 |
| 7213 | DD11-27 | 444 | 0.79 | 18.17 | 121 |
| 7214 | DD11-28 | 447 | 0.80 | 19.36 | 218 |

*The time listed is the total test time under ramp loading.

MATERIAL DD16

Lay-up = [90/0/±45/0]_s, V_F = 0.405, Ave. thickness = 3.62 mm, S.D. = 0.13 mm, CoRezyn 63-AX-051 Polyester.

| | | | | | |
|------|----------|-----|------|-------|---------|
| 7215 | DD16A-1 | 683 | 1.00 | 22.29 | 0.3* |
| 7216 | DD16A-2 | 692 | 1.02 | 22.57 | 0.3* |
| 7217 | DD16A-3 | 664 | 0.98 | 21.76 | 0.3* |
| 7218 | DD16A-4 | 532 | 0.78 | 22.96 | 359 |
| 7219 | DD16A-5 | 522 | 0.77 | 22.34 | 88 |
| 7220 | DD16A-6 | 535 | 0.79 | 20.47 | 47 |
| 7221 | DD16A-7 | 525 | 0.77 | 20.94 | 112 |
| 7222 | DD16A-8 | 515 | 0.76 | 21.22 | 258 |
| 7223 | DD16A-9 | 478 | 0.70 | 20.98 | 518 |
| 7224 | DD16A-10 | 454 | 0.67 | 21.07 | 2,335 |
| 7225 | DD16A-11 | 446 | 0.66 | 20.82 | 4,265 |
| 7226 | DD16A-12 | 479 | 0.70 | 22.65 | 2,515 |
| 7227 | DD16A-14 | 408 | 0.60 | 20.38 | 5,677 |
| 7228 | DD16A-15 | 422 | 0.62 | 21.90 | 6,856 |
| 7229 | DD16A-16 | 426 | 0.63 | 22.68 | 13,758 |
| 7230 | DD16A-17 | 403 | 0.59 | 22.19 | 244,800 |

MATERIAL A130

Lay-up = [0]₆, V_F = 0.333, Ave. thickness = 3.00 mm, S.D. = 0.16 mm, CoRezyn 63-AX-051 Polyester

| | | | | | |
|------|-------------|-----|--|-------|--------|
| 7231 | A130-090-1 | 518 | | 19.93 | 0.3* |
| 7232 | A130-090-2 | 537 | | 19.73 | 0.3* |
| 7233 | A130-090-3 | 493 | | 19.00 | 0.3* |
| 7234 | A130-090-4 | 459 | | 21.63 | 114 |
| 7235 | A130-090-5 | 431 | | 19.36 | 43 |
| 7236 | A130-090-6 | 427 | | 19.85 | 186 |
| 7237 | A130-090-7 | 349 | | 18.18 | 2,905 |
| 7238 | A130-090-8 | 338 | | 18.23 | 1,861 |
| 7239 | A130-090-9 | 401 | | 20.83 | 6,091 |
| 7240 | A130-090-10 | 373 | | 19.81 | 6,932 |
| 7241 | A130-090-11 | 384 | | 20.76 | 9,250 |
| 7242 | A130-090-12 | 341 | | 18.51 | 22,271 |
| 7243 | A130-090-13 | 362 | | 19.20 | 3,622 |
| 7244 | A130-090-14 | 378 | | 20.79 | 34,052 |
| 7245 | A130-090-15 | 374 | | 22.26 | 20,394 |

*The time listed is the total test time under ramp loading.

MATERIAL ROV4 (0/90 ROVING)

Lay-up = $[0/90]_8$, $V_F = 0.523$, Ave. thickness = 3.74 mm, S.D. = 0.15 mm, CoRezyn 63-AX-051 Polyester

| Test and Sample Number | | Maximum Stress MPa | S/S ₀ | E GPa | Time to Failure seconds |
|---------------------------|----------|--------------------------|------------------|----------|-------------------------------|
| 7246 | ROV4-150 | 482 | 1.23 | 21.97 | 0.3* |
| 7247 | ROV4-151 | 477 | 1.21 | 25.14 | 0.3* |
| 7248 | ROV4-152 | 498 | 1.27 | 23.65 | 0.3* |
| 7249 | ROV4-153 | 414 | 1.05 | 28.09 | 8 |
| 7250 | ROV4-154 | 345 | 0.88 | 24.28 | 5,144 |
| 7251 | ROV4-155 | 342 | 0.87 | 23.75 | 1,599 |
| 7252 | ROV4-156 | 345 | 0.88 | 23.03 | 1,422 |
| 7253 | ROV4-157 | 310 | 0.79 | 27.01 | 27,600 |
| 7254 | ROV4-158 | 310 | 0.79 | 27.90 | 107,119 |
| 7255 | ROV4-159 | 310 | 0.79 | 24.56 | 7,128 |

*The time listed is the total test time under ramp loading.

Effect of In-Plane Fiber Waviness

Static Compressive Strength

One External Layer of Induced Waviness

Lay-up = (0*/±45/0/0/∓45/0), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following plates/materials listed below: 0AS9, 64, 16, 24, 33, 1MS8, 74, 65, 32, 20, 71, 69, 31.

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| V _F = 53.0, Amplitude = 0 mm, Wavelength = 0 mm, Wave Severity = 0 mm/mm, Maximum Angle = 0 Degrees | | | | | | | |
| 2696 | 0AS9-1 | -482 | * | 13 | ---- | 1 | |
| 2697 | 0AS9-2 | -530 | * | 13 | ---- | 1 | |
| 2698 | 0AS9-3 | -538 | * | 13 | ---- | 1 | |
| 2699 | 0AS9-4 | -538 | * | 13 | ---- | 1 | |
| V _F = 49.7, Amplitude = 1.92 mm, Wavelength = 34.80 mm, Wave Severity = 0.055 mm/mm, Maximum Angle = 9.7 Degrees | | | | | | | |
| 2700 | 64-1 | -465 | * | 13 | ---- | 1 | |
| 2701 | 64-2 | -464 | * | 13 | ---- | 1 | |
| 2702 | 64-3 | -500 | * | 13 | ---- | 1 | |
| 3120 | 64-4 | -469 | * | 13 | ---- | 1 | |
| V _F = 52.3, Amplitude = 1.98 mm, Wavelength = 52.00 mm, Wave Severity = 0.038 mm/mm, Maximum Angle = 7.8 Degrees | | | | | | | |
| 3121 | 16-1 | -509 | * | 13 | ---- | 1 | |
| 3122 | 16-2 | -492 | * | 13 | ---- | 1 | |
| 3123 | 16-3 | -526 | * | 13 | ---- | 1 | |
| 3124 | 16-4 | -493 | * | 13 | ---- | 1 | |
| V _F = 51.6, Amplitude = 1.96 mm, Wavelength = 65.98 mm, Wave Severity = 0.030 mm/mm, Maximum Angle = 6.7 Degrees | | | | | | | |
| 3125 | 24-1 | -539 | * | 13 | ---- | 1 | |
| 3126 | 24-2 | -533 | * | 13 | ---- | 1 | |
| 3127 | 24-3 | -515 | * | 13 | ---- | 1 | |
| 3128 | 24-4 | -517 | * | 13 | ---- | 1 | |
| V _F = 50.1, Amplitude = 2.26 mm, Wavelength = 98.12 mm, Wave Severity = 0.023 mm/mm, Maximum Angle = 4.6 Degrees | | | | | | | |
| 3129 | 33-1 | -514 | * | 13 | ---- | 1 | |
| 3130 | 33-2 | -516 | * | 13 | ---- | 1 | |
| 3131 | 33-3 | -486 | * | 13 | ---- | 1 | |
| 3132 | 33-4 | -528 | * | 13 | ---- | 1 | |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| V _F =48.6 , Amplitude = 4.06 mm, Wavelength = 37.65 mm, Wave Severity = 0.108 mm/mm, Maximum Angle= 18.4 Degrees | | | | | | | |
| 3133 | 1MS8-1 | -418 | * | 13 | ---- | 1 | |
| 3134 | 1MS8-2 | -431 | * | 13 | ---- | 1 | |
| 3135 | 1MS8-3 | -409 | * | 13 | ---- | 1 | |
| 3136 | 1MS8-4 | -416 | * | 13 | ---- | 1 | |
| V _F =47.9 , Amplitude =3.88 mm, Wavelength = 50.10 mm, Wave Severity = 0.077 mm/mm, Maximum Angle= 12.9 Degrees | | | | | | | |
| 3137 | 74-1 | -486 | * | 13 | ---- | 1 | |
| 3138 | 74-2 | -416 | * | 13 | ---- | 1 | |
| 3139 | 74-3 | -401 | * | 13 | ---- | 1 | |
| 3140 | 74-4 | -485 | * | 13 | ---- | 1 | |
| V _F = 47.8, Amplitude = 4.02 mm, Wavelength = 67.96 mm, Wave Severity = 0.059 mm/mm, Maximum Angle= 9.7 Degrees | | | | | | | |
| 3141 | 65-1 | -532 | * | 13 | ---- | 1 | |
| 3142 | 65-2 | -491 | * | 13 | ---- | 1 | |
| 3143 | 65-3 | -482 | * | 13 | ---- | 1 | |
| 3144 | 65-4 | -478 | * | 13 | ---- | 1 | |
| V _F = 51.3, Amplitude = 4.20 mm, Wavelength = 102.38 mm, Wave Severity = 0.041 mm/mm, Maximum Angle = 8.0 Degrees | | | | | | | |
| 3145 | 32-1 | -545 | * | 13 | ---- | 1 | |
| 3146 | 32-2 | -479 | * | 13 | ---- | 1 | |
| 3147 | 32-3 | -528 | * | 13 | ---- | 1 | |
| 3148 | 32-4 | -490 | * | 13 | ---- | 1 | |
| V _F = 51.1, Amplitude = 5.98 mm, Wavelength = 35.70 mm, Wave Severity = 0.168 mm/mm, Maximum Angle = 26.8 Degrees | | | | | | | |
| 3149 | 20-1 | -322 | * | 13 | ---- | 1 | |
| 3372 | 20-2 | -400 | * | 13 | ---- | 1 | |
| 3414 | 20-3 | -378 | * | 13 | ---- | 1 | |
| 3626 | 20-4 | -392 | * | 13 | ---- | 1 | |
| V _F = 48.1, Amplitude = 6.14 mm, Wavelength = 50.70 mm, Wave Severity = 0.121 mm/mm, Maximum Angle = 20.2 Degrees | | | | | | | |
| 3627 | 71-1 | -431 | * | 13 | ---- | 1 | |
| 3628 | 71-2 | -418 | * | 13 | ---- | 1 | |
| 3629 | 71-3 | -428 | * | 13 | ---- | 1 | |
| 3630 | 71-4 | -428 | * | 13 | ---- | 1 | |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| V _F = 48.7, Amplitude = 5.58 mm, Wavelength = 68.60 mm, Wave Severity = 0.081 mm/mm, Maximum Angle = 13.6 Degrees | | | | | | | |
| 3631 | 69-1 | -412 | * | 13 | ---- | 1 | |
| 3632 | 69-2 | -487 | * | 13 | ---- | 1 | |
| 3633 | 69-3 | -451 | * | 13 | ---- | 1 | |
| 3634 | 69-4 | -438 | * | 13 | ---- | 1 | |

V_F = 49.0, Amplitude = 6.04 mm, Wavelength = 97.92 mm, Wave Severity = 0.062 mm/mm, Maximum Angle = 10.3 Degrees

| | | | | | | | |
|------|------|------|---|----|------|---|--|
| 3635 | 31-1 | -496 | * | 13 | ---- | 1 | |
| 3636 | 31-2 | -515 | * | 13 | ---- | 1 | |
| 3637 | 31-3 | -496 | * | 13 | ---- | 1 | |
| 3638 | 31-4 | -498 | * | 13 | ---- | 1 | |

One Internal Layer of Induced Waviness

Lay-up = (0/±45/0*/0/∓45/0), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This covers plate/material 67.

V_F = 47.2, Amplitude = 6.04 mm, Wavelength = 37.30 mm, Wave Severity = 0.162 mm/mm, Maximum Angle = 28.3 Degrees

| | | | | | | | |
|------|------|------|---|----|------|---|--|
| 3639 | 67-1 | -431 | * | 13 | ---- | 1 | |
| 3640 | 67-2 | -427 | * | 13 | ---- | 1 | |
| 3641 | 67-3 | -401 | * | 13 | ---- | 1 | |
| 3642 | 67-4 | -418 | * | 13 | ---- | 1 | |

Two Internal Layers of Induced Waviness

Lay-up = (0/±45/0*/0*/∓45/0), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following materials listed below: 62, 60, 58.

V_F = 47.6, Amplitude = 1.98 mm, Wavelength = 34.16 mm, Wave Severity = 0.058 mm/mm, Maximum Angle = 9.8 Degrees

| | | | | | | | |
|------|------|------|---|----|------|---|--|
| 3643 | 62-1 | -446 | * | 13 | ---- | 1 | |
| 3644 | 62-2 | -457 | * | 13 | ---- | 1 | |
| 3645 | 62-3 | -417 | * | 13 | ---- | 1 | |
| 3646 | 62-4 | -428 | * | 13 | ---- | 1 | |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

$V_F = 46.6$, Amplitude = 4.00 mm, Wavelength = 37.40 mm, Wave Severity = 0.107 mm/mm, Maximum Angle = 18.3 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 3647 | 60-1 | -378 | * | 13 | ---- | ---- | 1 |
| 3648 | 60-2 | -347 | * | 13 | ---- | ---- | 1 |
| 3649 | 60-3 | -319 | * | 13 | ---- | ---- | 1 |
| 3661 | 60-4 | -304 | * | 13 | ---- | ---- | 1 |

$V_F = 49.8$, Amplitude = 5.96 mm, Wavelength = 39.10 mm, Wave Severity = 0.152 mm/mm, Maximum Angle = 26.1 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 3692 | 58-1 | -312 | * | 13 | ---- | ---- | 1 |
| 3693 | 58-2 | -298 | * | 13 | ---- | ---- | 1 |
| 3695 | 58-3 | -283 | * | 13 | ---- | ---- | 1 |
| 2243 | 58-4 | -291 | * | 13 | ---- | ---- | 1 |

Three Layers of Induced Waviness

Lay-up = (0*/ ± 45 /0*/0*/ ∓ 45 /0), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following materials listed below: 63, 61, 59

$V_F = 41.3$, Amplitude = 2.02 mm, Wavelength = 35.73 mm, Wave Severity = 0.057 mm/mm, Maximum Angle = 9.4 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 3848 | 63-1 | -414 | * | 13 | ---- | ---- | 1 |
| 3849 | 63-2 | -406 | * | 13 | ---- | ---- | 1 |
| 3870 | 63-3 | -390 | * | 13 | ---- | ---- | 1 |
| 3871 | 63-4 | -386 | * | 13 | ---- | ---- | 1 |

$V_F = 42.5$, Amplitude = 4.00 mm, Wavelength = 33.51 mm, Wave Severity = 0.119 mm/mm, Maximum Angle = 18.0 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 3872 | 61-1 | -295 | * | 13 | ---- | ---- | 1 |
| 3873 | 61-2 | -297 | * | 13 | ---- | ---- | 1 |
| 3874 | 61-3 | -311 | * | 13 | ---- | ---- | 1 |
| 3912 | 61-4 | -298 | * | 13 | ---- | ---- | 1 |

$V_F = 42.1$, Amplitude = 5.99 mm, Wavelength = 38.60 mm, Wave Severity = 0.155 mm/mm, Maximum Angle = 25.4 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 3991 | 59-1 | -246 | * | 13 | ---- | ---- | 1 |
| 4113 | 59-2 | -274 | * | 13 | ---- | ---- | 1 |
| 4114 | 59-3 | -270 | * | 13 | ---- | ---- | 1 |
| 4115 | 59-4 | -234 | * | 13 | ---- | ---- | 1 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|-----------------------|------|---------|----------|--------|-------------------|----------------------------|
| Four Layers of Induced Waviness | | | | | | | |
| Lay-up = (0*/±45/0*/0*/±45/0*), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following materials listed below: 39, 40, 38, 44, 41, 43. | | | | | | | |
| V _F = 38.7, Amplitude = 1.97 mm, Wavelength = 34.52 mm, Wave Severity = 0.057 mm/mm, Maximum Angle = 10.0 Degrees | | | | | | | |
| 4116 | 39-1 | -344 | * | 13 | ---- | 1 | |
| 4117 | 39-2 | -319 | * | 13 | ---- | 1 | |
| 4118 | 39-4 | -320 | * | 13 | ---- | 1 | |
| 4119 | 39-5 | -337 | * | 13 | ---- | 1 | |
| V _F = 38.7, Amplitude = 4.01 mm, Wavelength = 37.20 mm, Wave Severity = 0.108 mm/mm, Maximum Angle = 18.4 Degrees | | | | | | | |
| 4269 | 40-1 | -241 | * | 13 | ---- | 1 | |
| 4270 | 40-2 | -229 | * | 13 | ---- | 1 | |
| 4271 | 40-3 | -241 | * | 13 | ---- | 1 | |
| 4272 | 40-4 | -230 | * | 13 | ---- | 1 | |
| V _F = 34.8, Amplitude = 6.22 mm, Wavelength = 38.13 mm, Wave Severity = 0.163 mm/mm, Maximum Angle = 29.1 Degrees | | | | | | | |
| 4273 | 38-1 | -178 | * | 13 | ---- | 1 | |
| 4274 | 38-2 | -176 | * | 13 | ---- | 1 | |
| 4275 | 38-3 | -182 | * | 13 | ---- | 1 | |
| 4276 | 38-4 | -182 | * | 13 | ---- | 1 | |
| V _F = 42.0, Amplitude = 2.22 mm, Wavelength = 102.0 mm, Wave Severity = 0.022 mm/mm, Maximum Angle = 4.9 Degrees | | | | | | | |
| 4277 | 44-1 | -373 | * | 13 | ---- | 1 | |
| 4278 | 44-2 | -488 | * | 13 | ---- | 1 | |
| 4279 | 44-3 | -466 | * | 13 | ---- | 1 | |
| 4280 | 44-4 | -459 | * | 13 | ---- | 1 | |
| V _F = 39.8, Amplitude = 4.04 mm, Wavelength = 101.5 mm, Wave Severity = 0.040 mm/mm, Maximum Angle = 6.4 Degrees | | | | | | | |
| 4281 | 41-1 | -410 | * | 13 | ---- | 1 | |
| 4282 | 41-2 | -458 | * | 13 | ---- | 1 | |
| 4283 | 41-3 | -377 | * | 13 | ---- | 1 | |
| 4335 | 41-4 | -384 | * | 13 | ---- | 1 | |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

$V_F = 37.4$, Amplitude = 6.29 mm, Wavelength = 101.0 mm, Wave Severity = 0.062 mm/mm, Maximum Angle = 11.9 Degrees

| | | | | | | |
|------|------|------|---|----|------|---|
| 4342 | 43-1 | -349 | * | 13 | ---- | 1 |
| 4343 | 43-2 | -333 | * | 13 | ---- | 1 |
| 4344 | 43-3 | -330 | * | 13 | ---- | 1 |
| 4345 | 43-4 | -295 | * | 13 | ---- | 1 |

Four Layers of Induced Waviness

Lay-up = (0*/ ± 45 /0*/0*/ ∓ 45 /0*), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. Dow Derakane 8084 Vinyl Ester Resin Matrix. This includes the following materials listed below: 51C, 55, 53, 52, 48, 49, 50.

$V_F = 53.5$, Amplitude = 0 mm, Wavelength = 0 mm, Wave Severity = 0 mm/mm, Maximum Angle = 0 Degrees

| | | | | | | |
|------|-------|------|---|----|------|---|
| 4346 | 51C-1 | -523 | * | 13 | ---- | 1 |
| 4347 | 51C-2 | -562 | * | 13 | ---- | 1 |
| 4348 | 51C-3 | -558 | * | 13 | ---- | 1 |
| 4349 | 51C-4 | -540 | * | 13 | ---- | 1 |

$V_F = 41.6$, Amplitude = 2.04 mm, Wavelength = 37.05 mm, Wave Severity = 0.055 mm/mm, Maximum Angle = 9.1 Degrees

| | | | | | | |
|------|------|------|---|----|------|---|
| 4350 | 55-1 | -424 | * | 13 | ---- | 1 |
| 4351 | 55-2 | -389 | * | 13 | ---- | 1 |
| 4352 | 55-3 | -439 | * | 13 | ---- | 1 |
| 4353 | 55-4 | -427 | * | 13 | ---- | 1 |

$V_F = 39.2$, Amplitude = 4.17 mm, Wavelength = 37.28 mm, Wave Severity = 0.112 mm/mm, Maximum Angle = 19.9 Degrees

| | | | | | | |
|------|------|------|---|----|------|---|
| 4354 | 53-1 | -271 | * | 13 | ---- | 1 |
| 4355 | 53-2 | -299 | * | 13 | ---- | 1 |
| 4356 | 53-3 | -268 | * | 13 | ---- | 1 |
| 4357 | 53-4 | -287 | * | 13 | ---- | 1 |

$V_F = 37.4$, Amplitude = 6.11 mm, Wavelength = 37.03 mm, Wave Severity = 0.165 mm/mm, Maximum Angle = 26.8 Degrees

| | | | | | | |
|------|------|------|---|----|------|---|
| 4358 | 52-1 | -238 | * | 13 | ---- | 1 |
| 4359 | 52-2 | -232 | * | 13 | ---- | 1 |
| 4360 | 52-3 | -224 | * | 13 | ---- | 1 |
| 4361 | 52-4 | -238 | * | 13 | ---- | 1 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

$V_F = 37.9$, Amplitude = 2.22 mm, Wavelength = 101.8 mm, Wave Severity = 0.022 mm/mm, Maximum Angle = 3.5 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 4362 | 48-1 | -539 | * | 13 | ---- | ---- | 1 |
| 4363 | 48-2 | -583 | * | 13 | ---- | ---- | 1 |
| 4364 | 48-3 | -568 | * | 13 | ---- | ---- | 1 |
| 4545 | 48-4 | -562 | * | 13 | ---- | ---- | 1 |

$V_F = 37.6$, Amplitude = 4.08 mm, Wavelength = 102.3 mm, Wave Severity = 0.040 mm/mm, Maximum Angle = 4.9 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 4566 | 49-1 | -480 | * | 13 | ---- | ---- | 1 |
| 4799 | 49-2 | -456 | * | 13 | ---- | ---- | 1 |
| 4863 | 49-3 | -420 | * | 13 | ---- | ---- | 1 |
| 4865 | 49-4 | -441 | * | 13 | ---- | ---- | 1 |

$V_F = 40.4$, Amplitude = 6.03 mm, Wavelength = 101.1 mm, Wave Severity = 0.060 mm/mm, Maximum Angle = 8.3 Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 4866 | 50-1 | -396 | * | 13 | ---- | ---- | 1 |
| 4867 | 50-2 | -423 | * | 13 | ---- | ---- | 1 |
| 4868 | 50-3 | -423 | * | 13 | ---- | ---- | 1 |
| 4878 | 50-4 | -387 | * | 13 | ---- | ---- | 1 |

Compression Fatigue Tests

Four Layers of Induced Waviness

Lay-up = (0*/ \pm 45/0*/0*/ \mp 45/0*), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following materials listed below: 40, 66, 68.

$V_F = 38.7$, Amplitude = 4.01 mm, Wavelength = 37.20 mm, Wave Severity = 0.108 mm/mm, Maximum Angle = Degrees

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 4889 | 40-1 | -241 | * | 13 | ---- | ---- | 1 |
| 4890 | 40-2 | -229 | * | 13 | ---- | ---- | 1 |
| 6132 | 40-3 | -241 | * | 13 | ---- | ---- | 1 |
| 5635 | 40-4 | -230 | * | 13 | ---- | ---- | 1 |

$V_F = 42.5$, Amplitude = 3.99 mm, Wavelength = 36.45 mm, Wave Severity = 0.109 mm/mm, Maximum Angle = Degrees

| | | | | | | | |
|------|------|------|----|---|------|------|-----------|
| 5902 | 66-1 | -138 | 10 | 5 | ---- | ---- | 347549 |
| 5903 | 66-2 | -138 | 10 | 5 | ---- | ---- | 192168 |
| 6023 | 66-3 | -138 | 10 | 5 | ---- | ---- | 208206 |
| 6024 | 66-4 | -103 | 10 | 5 | ---- | ---- | 4500000 R |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|-----------------------|---|---------|----------|--------|-------------------|----------------------------|

Tensile Tests

Lay-up = (0*/±45/0*/0*/±45/0*), All 0's = D155 fabric, 45's = DB120 fabric, 0* ply has induced waviness. CoRezyn 63-AX-051 Polyester Resin Matrix. This includes the following materials listed below: 72, 56, 73, 70.

$V_F = 51.0$, Amplitude = 0 mm, Wavelength = 0 mm, Wave Severity = 0 mm/mm, Maximum Angle = 0 Degrees

| | | | | | | | |
|------|------|-----|---|----|------|------|---|
| 6134 | 72-1 | 941 | * | 13 | ---- | ---- | 1 |
| 6168 | 72-2 | 980 | * | 13 | ---- | ---- | 1 |
| 6832 | 72-3 | 990 | * | 13 | ---- | ---- | 1 |
| 6833 | 72-4 | 975 | * | 13 | ---- | ---- | 1 |

$V_F = 55.3$, Amplitude = 0 mm, Wavelength = straightened from 33.92 mm to 0 mm, Wave Severity = 0 mm/mm, Maximum Angle = 0 Degrees. Fibers from wavy coupons were straightened and then RTM. Test the effect of disturbing the fiber tows.

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 6834 | 56-1 | 977 | * | 13 | ---- | ---- | 1 |
| 6840 | 56-2 | 1006 | * | 13 | ---- | ---- | 1 |
| 6846 | 56-3 | 1017 | * | 13 | ---- | ---- | 1 |
| 6879 | 56-4 | 979 | * | 13 | ---- | ---- | 1 |

$V_F = 44.5$, Amplitude = 1.42 mm, Wavelength = 101.2 mm, Wave Severity = 0.014 mm/mm, Maximum Angle = 1.9 Degrees

| | | | | | | | |
|------|------|-----|---|----|------|------|---|
| 7137 | 73-1 | 871 | * | 13 | ---- | ---- | 1 |
| 7256 | 73-2 | 826 | * | 13 | ---- | ---- | 1 |
| 7257 | 73-3 | 780 | * | 13 | ---- | ---- | 1 |
| 6557 | 73-4 | 839 | * | 13 | ---- | ---- | 1 |

$V_F = 44.6$, Amplitude = 3.91 mm, Wavelength = 36.63 mm, Wave Severity = 0.107 mm/mm, Maximum Angle = 16.2 Degrees

| | | | | | | | |
|------|------|-----|---|----|------|------|---|
| 3652 | 70-1 | 486 | * | 13 | ---- | ---- | 1 |
| 3653 | 70-2 | 500 | * | 13 | ---- | ---- | 1 |
| 3938 | 70-3 | 547 | * | 13 | ---- | ---- | 1 |
| 3939 | 70-4 | 514 | * | 13 | ---- | ---- | 1 |

Off Axis Ply Tests

$V_F = 37.7\%$, 3.05 mm

Lay-up = (10/±45/10)_S, 10 - D155 fabric, 45's- DB120 fabric, CoRezyn 63-AX-051 Polyester Resin

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 6760 | 10-1 | -345 | * | 13 | ---- | ---- | 1 |
| 6761 | 10-2 | -313 | * | 13 | ---- | ---- | 1 |
| 6762 | 10-3 | -317 | * | 13 | ---- | ---- | 1 |
| 6763 | 10-4 | -300 | * | 13 | ---- | ---- | 1 |
| 6776 | 10P1 | 219 | * | 13 | 23.5 | 0.93 | 1 |
| 6777 | 10P2 | 218 | * | 13 | 22.0 | 1.0 | 1 |
| 6778 | 10P3 | 231 | * | 13 | 23.4 | 0.99 | 1 |

| TEST & SAMPLE ID # | MAX. STRESS MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|-----------------------|---|---------|----------|--------|-------------------|----------------------------|
| Lay-up = (30/±45/30) _S , 30 - D155 fabric, 45's- DB120 fabric, CoRezyn 63-AX-051 Polyester Resin | | | | | | | |
| 6764 30-1 | -156 | * | 13 | ---- | ---- | 1 | |
| 6765 30-2 | -164 | * | 13 | ---- | ---- | 1 | |
| 6766 30-3 | -159 | * | 13 | ---- | ---- | 1 | |
| 6767 30-4 | -161 | * | 13 | ---- | ---- | 1 | |
| 6779 30P1 | 101 | * | 13 | 13.6 | 0.75 | 1 | |
| 6780 30P2 | 98.2 | * | 13 | 12.3 | 0.80 | 1 | |
| 6781 30P3 | 95.7 | * | 13 | 11.2 | 0.86 | 1 | |
| Lay-up = (10/±45/10) _S , 10 - D155 fabric, 45's- DB120 fabric, Dow Derakane 8084 Vinyl Ester Resin | | | | | | | |
| 6768 10D5 | -434 | * | 13 | ---- | ---- | 1 | |
| 6769 10D6 | -419 | * | 13 | ---- | ---- | 1 | |
| 6770 10D7 | -383 | * | 13 | ---- | ---- | 1 | |
| 6771 10D8 | -397 | * | 13 | ---- | ---- | 1 | |
| Lay-up = (30/±45/30) _S , 30 - D155 fabric, 45's- DB120 fabric, Dow Derakane 8084 Vinyl Ester Resin | | | | | | | |
| 6772 30D5 | -187 | * | 13 | ---- | ---- | 1 | |
| 6773 30D6 | -191 | * | 13 | ---- | ---- | 1 | |
| 6774 30D7 | -193 | * | 13 | ---- | ---- | 1 | |
| 6775 30D8 | -192 | * | 13 | ---- | ---- | 1 | |

Strain Energy Release Rate Testing

Double cantilever beam (DCB) and end notched flexure (ENF) tests were performed for the calculation of G_{IC} and G_{IIIC} respectively. The modified beam theory method was used for the calculation of G_{IC} and is detailed in Reference 19.

The distance of the initial crack front from the Teflon film (providing the initial crack) is listed in the “a” column. An “a” value of 0.0 mm indicates that this test was the initial test with no extension of the crack from the Teflon film. This initial DCB test also has a coupon label with the letter “a”. Subsequent tests (labeled b, c, d...) were then performed and show the effects of fiber bridging and other crack blunting mechanisms which develop as the crack extends (R-curve behavior). For the ENF tests, h is the half thickness of the test coupon (total thickness = 2h) and “C” is the distance the starter crack is from the nearest bending support.

Summary of Mode I and II Results for Tests 7260 to 7509 (tested at ambient conditions).

| Resin | V_F , % | Crack interface | G_{IC} initial, J/m^2 | G_{IC} (ave), J/m^2 | G_{IIIC} , J/m^2 |
|--|-----------|-----------------|---------------------------|-------------------------|----------------------|
| Derakane 8084(V) | 36 | [0/0] | 344 (7) | 595 (133) | 2638 (567) |
| Derakane 411C50 (V) | 36 | [0/0] | 234 | 396 | 2557 |
| System 41(E) | 36 | [0/0] | 219 (22) | 231 (38) | 3776 |
| SC-14 (E) | 36 | [0/0] | 638 (58) | 638 (157) | 3223 (520) |
| Iso-polyester 75-AQ-010 | 36 | [0/0] | 200 (23) | 321 (96) | 1359 (459) |
| Ortho-polyester 63-AX-051 (P) | 40 | [0/0] | 153 (10) | 196 (99) | 977 (229) |
| | 40 | [0/0] | ---- | 490 (3) | 1430 (35) |
| | 40 | [+45/-45] | ---- | 780 (4) | 2270 (53) |
| | 36 | [0/0] | 138 (56) | 379 (81) | 1293 (259) |
| | 26 | [+45/-45] | 140 (41) | 1028 (97) | 2001 (286) |
| | 35 | [45/45] | 249 ¹ (75) | 462 (107) | ---- |
| | 35 | [90/45] | 273 ² (41) | 420 (75) | 942 (261) |
| | 36 | [0/0] | 176 ³ | ----- | ----- |
| NOTE: values in brackets indicate the standard deviation. 0° and 90° fabrics were D155 and 45° fabrics were DB120, both from Owens Corning Fabrics, except as noted. | | | | | |
| ¹ The average initiation G_{IC} from the starter strip was 236 J/m^2 . | | | | | |
| ² The average initiation G_{IC} from the starter strip was 191 J/m^2 . | | | | | |
| ³ Using UC1018V unidirectional fabric. | | | | | |

Results for G_{IC} and G_{IIC} for different environmental conditioning
(water absorption and test temperature) tests 8609 to 8637.

| | | | | | |
|--|-------------------------------------|-------|-------|------------------------|--------------------------------|
| Resin systems | Ortho-polyester | 411 | 8084 | SC14 | iso-polyester |
| Conditioning | 50°C distilled water for 1000 hours | | | | 50°C distilled water 889 hours |
| Test Temp | 50°C | | | | |
| moisture, % | 1.81 | 0.42 | 0.53 | 2.18 | 0.25 |
| Initial G _{IC} J/m ² | 580 | 558 | 918 | 886 | 419 |
| G _{IIC} J/m ² | 773 | 2173 | 2523 | 841 | 1752 |
| | | | | | |
| Conditioning | 50°C distilled water for 2900 hours | | | | |
| Test Temp | 50°C | | | | |
| moisture, % | 2.16 | 0.54 | 0.69 | 2.9 | ---- |
| Initial G _{IC} J/m ² | 409 | 578 | 822 | 874 | ---- |
| G _{IIC} J/m ² | 1338 | 2785* | 2174* | 1717 | ---- |
| | | | | | |
| Conditioning | 50°C dry for 1000 hours | | | 50°C dry for 889 hours | |
| Test Temp | 50°C | | | | |
| Initial G _{IC} J/m ² | 259 | 482 | 781 | 861 | 302.6 |
| G _{IIC} J/m ² | 1372 | 2481 | 2529 | 1654 | 2386 |
| | | | | | |
| Conditioning | 20°C dry | | | | |
| Test Temp | 20°C dry | | | | |
| Initial G _{IC} J/m ² | 159 | 396 | 595 | 638 | 200 |
| G _{IIC} J/m ² | 977 | 2557 | 2638 | 3223 | 1359 |
| | | | | | |
| Conditioning | 20°C dry | | | | |
| Test Temp | -20 to -35°C | | | | |
| Initial G _{IC} J/m ² | 214 | 385 | 468 | 570 | 239 |
| G _{IIC} J/m ² | 1112 | 1967 | 2485 | 2202 | 1484 |
| * Test coupon failed in tension instead of interlaminar fracture | | | | | |

Mode I, G_{IC}

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|---|----------|-------|-------|---------|-----------|-----------------------------|
| Ortho-polyester CoRezyn 63-AX-051, [0] ₆ , D155 fabric | | | | | | |
| 7260 | DCB1011a | 0.37 | 0.0 | 22.7 | 25.15 | 162 |
| 7261 | DCB1011b | 0.37 | 1.7 | 22.4 | 25.15 | 179 |
| 7262 | DCB1011c | 0.37 | 5.6 | 29.6 | 25.15 | 361 |
| 7263 | DCB1011d | 0.37 | 9.3 | 32.0 | 25.15 | 450 |
| 7264 | DCB1011e | 0.37 | 14.5 | 33.4 | 25.15 | 573 |
| 7265 | DCB1012a | 0.36 | 0.0 | 21.3 | 24.8 | 152 |
| 7266 | DCB1013a | 0.36 | 0.0 | 21.7 | 24.8 | 139 |
| 7267 | DCB1014a | 0.37 | 0.0 | 22.4 | 25.3 | 157 |
| 7268 | DCB1014b | 0.37 | 1.2 | 19.9 | 25.3 | 138 |
| Ortho-polyester CoRezyn 63-AX-051 resin with the bonded fabric (Collins Craft UC1018V) with polyester veil (initial crack is between the Veil-Veil interface), [0] ₆ | | | | | | |
| 7269 | DCB1111a | 0.38 | 0.0 | 47.1 | 25.4 | 202 |
| 7270 | DCB1111b | 0.38 | 0.8 | 49.6 | 25.4 | 258 |
| 7271 | DCB1111c | 0.38 | 1.8 | 52.3 | 25.4 | 315 |
| 7272 | DCB1111d | 0.38 | 3.4 | 54.4 | 25.4 | 351 |
| 7273 | DCB1111e | 0.38 | 5.0 | 61.4 | 25.4 | 506 |
| 7274 | DCB1112a | 0.37 | 0.0 | 49.2 | 25.4 | 229 |
| 7275 | DCB1112b | 0.37 | 3.6 | 49.0 | 25.4 | 294 |
| 7276 | DCB1112c | 0.37 | 8.3 | 50.3 | 25.4 | 340 |
| Ortho-polyester CoRezyn 63-AX-051 resin with the bonded fabric (Collins Craft UC1018GV) with glass veil (initial crack is between the Veil-Veil interface), [0] ₆ | | | | | | |
| 7277 | DCB1121a | 0.37 | 0.0 | 46.1 | 25.4 | 209 |
| 7278 | DCB1121b | 0.37 | 2.1 | 57.1 | 25.4 | 360 |
| 7279 | DCB1121c | 0.37 | 4.8 | 57.4 | 25.4 | 405 |
| 7280 | DCB1121d | 0.37 | 7.5 | 56.1 | 25.4 | 453 |
| 7281 | DCB1122a | 0.36 | 0.0 | 47.2 | 25.2 | 167 |
| 7282 | DCB1122b | 0.36 | 2.9 | 47.2 | 25.2 | 187 |
| 7283 | DCB1122c | 0.36 | 7.7 | 55.3 | 25.2 | 325 |
| Ortho-polyester CoRezyn 63-AX-051 resin with the bonded fabric (Collins Craft UC1018GV) with glass veil (initial crack is between the glass-glass interface), [0] ₆ | | | | | | |
| 7284 | DCB1131a | 0.37 | 0.0 | 36.2 | 25.4 | 130 |
| 7285 | DCB1131b | 0.37 | 4.1 | 30.7 | 25.4 | 116 |
| 7286 | DCB1131c | 0.37 | 8.7 | 34.3 | 25.4 | 182 |
| 7287 | DCB1132a | 0.38 | 0.0 | 33.7 | 25.5 | 98.0 |
| 7288 | DCB1132b | 0.38 | 2.7 | 39.2 | 25.5 | 165 |
| 7289 | DCB1132c | 0.38 | 5.8 | 44.4 | 25.5 | 241 |
| Polyester PET P460, [0] ₆ , D155 fabric | | | | | | |
| 7290 | DCB1021a | 0.34 | 0.0 | 20.3 | 25.4 | 111 |
| 7291 | DCB1021b | 0.34 | 2.8 | 27.2 | 25.4 | 220 |
| 7292 | DCB1021c | 0.34 | 3.3 | 33.9 | 25.4 | 357 |
| 7293 | DCB1022a | 0.36 | 0.0 | 28.1 | 25.6 | 232 |
| 7294 | DCB1022b | 0.36 | 1.6 | 29.9 | 25.6 | 297 |
| 7295 | DCB1023a | 0.36 | 0.0 | 20.0 | 25.2 | 116 |
| 7296 | DCB1023b | 0.36 | 1.3 | 21.6 | 25.2 | 133 |
| 7297 | DCB1025a | 0.33 | 0.0 | 84.4 | 25.3 | 139 |
| 7298 | DCB1025b | 0.33 | 1.7 | 78.0 | 25.3 | 239 |
| 7299 | DCB1026a | 0.31 | 0.0 | 100.4 | 25.2 | 121 |

| Test | Coupon | V _F | a, mm | load, N | width, mm | G _{IC} , J/m ² |
|---|----------|----------------|-------|---------|-----------|------------------------------------|
| 7300 | DCB1026b | 0.31 | 9.2 | 117.2 | 25.2 | 205 |
| 7301 | DCB1026c | 0.31 | 13.4 | 91.2 | 25.2 | 261 |
| Polyester Arotran Q6038, [0] ₆ , D155 fabric | | | | | | |
| 7302 | DCB1061a | 0.35 | 0.0 | 86.3 | 23.7 | 153 |
| 7303 | DCB1061b | 0.35 | 5.3 | 88.7 | 23.7 | 309 |
| 7304 | DCB1061c | 0.35 | 8.6 | 68.5 | 23.7 | 243 |
| Vinyl ester Swancorp 980 (batch a), [0] ₆ , D155 fabric | | | | | | |
| 7305 | DCB1031a | 0.32 | 0.0 | 138.8 | 25.1 | 1308 |
| 7306 | DCB1031b | 0.32 | 2.8 | 169.5 | 25.1 | 1758 |
| 7307 | DCB1031c | 0.32 | 6.8 | 164.7 | 25.1 | 2001 |
| 7308 | DCB1031d | 0.32 | 11.9 | 163.1 | 25.1 | 2407 |
| 7309 | DCB1032a | 0.32 | 0.0 | 158.2 | 25.3 | 1635 |
| 7310 | DCB1032b | 0.32 | 2.5 | 169.9 | 25.3 | 1666 |
| 7311 | DCB1032c | 0.32 | 4.9 | 161.5 | 25.3 | 1937 |
| 7312 | DCB1032d | 0.32 | 8.7 | 157.0 | 25.3 | 1945 |
| 7313 | DCB1032e | 0.32 | 10.4 | 155.2 | 25.3 | 2356 |
| 7314 | DCB1033a | 0.32 | 0.0 | 183.6 | 25.3 | 1754 |
| 7315 | DCB1033b | 0.32 | 1.1 | 191.0 | 25.3 | 2030 |
| 7316 | DCB1033c | 0.32 | 5.9 | 190.4 | 25.3 | 2396 |
| 7317 | DCB1034a | 0.31 | 0.0 | 142.0 | 25.2 | 1066 |
| 7318 | DCB1034b | 0.31 | 1.7 | 172.5 | 25.2 | 1906 |
| 7319 | DCB1032c | 0.31 | 5.8 | 195.2 | 25.2 | 2593 |
| Vinyl ester Swancorp 980 (batch b), [0] ₆ , D155 fabric | | | | | | |
| 7320 | DCB9801a | 0.36 | 0.0 | 85.8 | 25.5 | 670 |
| 7321 | DCB9801b | 0.36 | 4.9 | 85.8 | 25.5 | 846 |
| 7322 | DCB9801c | 0.36 | 13.2 | 68.9 | 25.5 | 762 |
| 7323 | DCB9801d | 0.36 | 25.9 | 64.5 | 25.5 | 935 |
| 7324 | DCB9802a | 0.37 | 0.0 | 70.7 | 25.5 | 641 |
| 7325 | DCB9802b | 0.37 | 5.7 | 63.6 | 25.5 | 723 |
| 7326 | DCB9802c | 0.37 | 15.8 | 57.4 | 25.5 | 759 |
| 7327 | DCB9803a | 0.37 | 0.0 | 99.6 | 25.9 | 1070 |
| 7328 | DCB9803b | 0.37 | 5.4 | 73.8 | 25.9 | 786 |
| 7329 | DCB9803c | 0.37 | 10.9 | 67.2 | 25.9 | 889 |
| Vinyl ester Swancorp 901& 980 (batch b), [0] ₆ , D155 fabric | | | | | | |
| 7330 | DCB1001a | 0.33 | 0.0 | 63.6 | 25.5 | 552 |
| 7331 | DCB1001b | 0.33 | 7.3 | 63.6 | 25.5 | 694 |
| 7332 | DCB1001c | 0.33 | 13.7 | 51.6 | 25.5 | 667 |
| 7333 | DCB1002a | 0.33 | 0.0 | 62.3 | 25.4 | 560 |
| 7334 | DCB1002b | 0.33 | 6.7 | 56.1 | 25.4 | 597 |
| 7335 | DCB1002c | 0.33 | 16.8 | 48.1 | 25.4 | 605 |
| 7336 | DCB1003a | 0.34 | 0.0 | 69.4 | 25.5 | 595 |
| 7337 | DCB1003b | 0.34 | 5.3 | 68.1 | 25.5 | 733 |
| 7338 | DCB1003c | 0.34 | 13.2 | 60.0 | 25.5 | 709 |
| Vinyl ester Derakane 8084, [0] ₆ , D155 fabric | | | | | | |
| 7339 | DCB1091a | 0.39 | 0.0 | 58.1 | 25.5 | 348 |
| 7340 | DCB1091b | 0.39 | 2.8 | 63.7 | 25.5 | 442 |
| 7341 | DCB1091c | 0.39 | 6.1 | 71.5 | 25.5 | 669 |
| 7342 | DCB1091d | 0.39 | 8.6 | 48.0 | 25.5 | 382 |
| 7343 | DCB1091e | 0.39 | 10.8 | 54.2 | 25.5 | 517 |
| 7344 | DCB1092a | 0.40 | 0.0 | 54.5 | 25.4 | 335 |

| Test | Coupon | V _F | a, mm | load, N | width, mm | G _{IC} , J/m ² |
|---|----------|----------------|-------|---------|-----------|------------------------------------|
| 7345 | DCB1092b | 0.40 | 2.9 | 66.0 | 25.4 | 671 |
| 7346 | DCB1092c | 0.40 | 10.5 | 50.6 | 25.4 | 481 |
| 7347 | DCB1093a | 0.40 | 0.0 | 56.0 | 25.2 | 347 |
| 7348 | DCB1093b | 0.40 | 3.8 | 73.5 | 25.2 | 673 |
| 7349 | DCB1093c | 0.40 | 7.1 | 72.3 | 25.2 | 797 |
| Vinyl ester Derakane 411C50, [0] ₆ , D155 fabric | | | | | | |
| 7350 | DCB1101a | 0.39 | 0.0 | 45.6 | 25.3 | 231 |
| 7351 | DCB1101b | 0.39 | 3.5 | 61.6 | 25.3 | 493 |
| 7352 | DCB1101c | 0.39 | 5.5 | 59.6 | 25.3 | 600 |
| 7353 | DCB1101d | 0.39 | 7.9 | 54.4 | 25.3 | 549 |
| 7354 | DCB1101e | 0.39 | 11.7 | 63.3 | 25.3 | 821 |
| 7355 | DCB1102a | 0.39 | 0.0 | 44.2 | 25.3 | 238 |
| 7356 | DCB1102b | 0.39 | 4.4 | 46.5 | 25.3 | 298 |
| 7357 | DCB1102c | 0.39 | 8.2 | 54.0 | 25.3 | 493 |
| Vinyl ester Swancorp 901, [0] ₆ , D155 fabric | | | | | | |
| 7358 | DCB9011a | 0.37 | 0.0 | 49.8 | 25.5 | 193 |
| 7359 | DCB9011b | 0.37 | 8.5 | 61.8 | 25.5 | 414 |
| 7360 | DCB9011c | 0.37 | 20.3 | 44.9 | 25.5 | 312 |
| 7361 | DCB9012a | 0.37 | 0.0 | 50.3 | 25.5 | 230 |
| 7362 | DCB9012b | 0.37 | 2.0 | 52.1 | 25.5 | 293 |
| 7363 | DCB9012c | 0.37 | 4.4 | 56.1 | 25.5 | 376 |
| 7364 | DCB9013a | 0.36 | 0.0 | 39.6 | 25.5 | 200 |
| 7365 | DCB9013b | 0.36 | 2.2 | 48.9 | 25.5 | 311 |
| 7366 | DCB9013c | 0.36 | 4.5 | 40.9 | 25.5 | 276 |
| Epoxy System 41, [0] ₆ , D155 fabric | | | | | | |
| 7367 | DCB1041a | 0.34 | 0.0 | 78.0 | 24.9 | 240 |
| 7368 | DCB1041b | 0.34 | 4.1 | 73.5 | 24.9 | 263 |
| 7369 | DCB1041c | 0.34 | 9.3 | 66.8 | 24.9 | 280 |
| 7370 | DCB1041d | 0.34 | 13.6 | 59.1 | 24.9 | 302 |
| 7371 | DCB1041e | 0.34 | 22.1 | 58.9 | 24.9 | 383 |
| 7372 | DCB1042a | 0.33 | 0.0 | 87.1 | 25.8 | 220 |
| 7373 | DCB1042b | 0.33 | 3.5 | 81.4 | 25.8 | 240 |
| 7374 | DCB1042c | 0.33 | 5.6 | 68.4 | 25.8 | 228 |
| 7375 | DCB1043a | 0.33 | 0.0 | 69.2 | 28 | 196 |
| 7376 | DCB1043b | 0.33 | 3.3 | 74.8 | 28 | 189 |
| 7377 | DCB1043c | 0.33 | 7.2 | 78.7 | 28 | 261 |
| Epoxy SC14, [0] ₆ , D155 fabric | | | | | | |
| 7378 | DCB1071a | 0.36 | 0.0 | 109.9 | 24.7 | 703 |
| 7379 | DCB1071b | 0.36 | 3.0 | 83.8 | 24.7 | 589 |
| 7380 | DCB1071c | 0.36 | 9.9 | 83.6 | 24.7 | 742 |
| 7381 | DCB1071d | 0.36 | 15.2 | 60.9 | 24.7 | 607 |
| 7382 | DCB1071e | 0.36 | 19.6 | 55.0 | 24.7 | 626 |
| 7383 | DCB1072a | 0.37 | 0.0 | 96.8 | 24.7 | 591 |
| 7384 | DCB1072b | 0.37 | 1.2 | 78.4 | 24.7 | 511 |
| 7385 | DCB1073c | 0.36 | 6.7 | 87.3 | 24.7 | 743 |
| 7386 | DCB1073d | 0.36 | 14.9 | 63.4 | 24.7 | 491 |
| 7387 | DCB1073a | 0.36 | 0.0 | 88.2 | 25 | 621 |
| 7388 | DCB1073b | 0.36 | 5.9 | 84.5 | 25 | 814 |
| 7389 | DCB1073c | 0.36 | 9.6 | 64.4 | 25 | 642 |

| Test | Coupon | V _F | a, mm | load, N | width, mm | G _{IC} , J/m ² |
|--|----------|----------------|-------|---------|-----------|------------------------------------|
| Epoxy SC12, [0] ₆ , D155 fabric | | | | | | |
| 7390 | DCB1081a | 0.40 | 0.0 | 61.4 | 25.3 | 379 |
| 7391 | DCB1081b | 0.40 | 4.1 | 56.8 | 25.3 | 445 |
| 7392 | DCB1081c | 0.40 | 10.2 | 57.6 | 25.3 | 592 |
| 7393 | DCB1081d | 0.40 | 13.7 | 44.7 | 25.3 | 490 |
| 7394 | DCB1081e | 0.40 | 26.0 | 47.7 | 25.3 | 649 |
| 7395 | DCB1082a | 0.40 | 0.0 | 55.8 | 25.3 | 315 |
| 7396 | DCB1082b | 0.40 | 4.7 | 55.5 | 25.3 | 409 |
| 7397 | DCB1082c | 0.40 | 7.6 | 46.8 | 25.3 | 371 |
| Polyurethane Poly 15-D65, [0] ₆ , D155 fabric | | | | | | |
| 7398 | DCB1051a | 0.31 | 0.0 | 190.2 | 25.7 | 2411 |
| 7399 | DCB1051b | 0.31 | 3.1 | 173.7 | 25.7 | 2752 |
| 7400 | DCB1051c | 0.31 | 7.7 | 145.2 | 25.7 | 2407 |
| 7401 | DCB1051d | 0.31 | 17.8 | 139.5 | 25.7 | 2480 |
| 7402 | DCB1052a | 0.30 | 0.0 | 205.0 | 25.6 | 2914 |
| Ortho-polyester CoRezsyn 63-AX-051, [0] ₁₀ | | | | | | |
| 7403 | DCB502a | 0.39 | 8.8 | 82.5 | 26.4 | 263 |
| 7404 | DCB502b | 0.39 | 24.5 | 65.2 | 26.4 | 288 |
| 7405 | DCB502c | 0.39 | 36.3 | 56.5 | 26.4 | 349 |
| 7406 | DCB502d | 0.39 | 46.1 | 54.3 | 26.4 | 450 |
| 7407 | DCB502e | 0.39 | 58.0 | 43.4 | 26.4 | 388 |
| 7408 | DCB502f | 0.39 | 67.5 | 45.6 | 26.4 | 528 |
| 7409 | DCB503b | 0.39 | 18.4 | 72.7 | 26.2 | 326 |
| 7410 | DCB503c | 0.39 | 31.2 | 54.3 | 26.2 | 298 |
| 7411 | DCB503d | 0.39 | 43.7 | 50.9 | 26.2 | 379 |
| 7412 | DCB504a | 0.40 | 8.1 | 97.6 | 26.2 | 458 |
| 7413 | DCB504b | 0.40 | 18.6 | 78.3 | 26.2 | 398 |
| 7414 | DCB504c | 0.40 | 30.5 | 59.8 | 26.2 | 350 |
| 7415 | DCB504d | 0.40 | 42.1 | 47.8 | 26.2 | 340 |
| 7416 | DCB505b | 0.39 | 13.5 | 137.4 | 26.4 | 286 |
| 7417 | DCB505c | 0.39 | 23.6 | 103.3 | 26.4 | 286 |
| 7418 | DCB505d | 0.39 | 32.5 | 78.1 | 26.4 | 360 |
| 7419 | DCB505e | 0.39 | 39.3 | 70.1 | 26.4 | 313 |
| 7420 | DCB505f | 0.39 | 49.9 | 70.9 | 26.4 | 452 |
| 7421 | DCB506a | 0.39 | 4.8 | 162.5 | 26.5 | 385 |
| 7422 | DCB506b | 0.39 | 11.9 | 160.1 | 26.5 | 406 |
| 7423 | DCB506c | 0.39 | 18.5 | 148.7 | 26.5 | 525 |
| 7424 | DCB506d | 0.39 | 24.9 | 123.7 | 26.5 | 521 |
| 7425 | DCB511a | 0.42 | 0.0 | 118.4 | 26.4 | 220 |
| 7426 | DCB515a | 0.46 | 0.0 | 37.1 | 25.5 | 130 |
| 7427 | DCB516a | 0.46 | 0.0 | 39.5 | 25.5 | 103 |
| 7428 | DCB517a | 0.46 | 0.0 | 35.5 | 25.6 | 99.1 |
| Ortho-polyester CoRezsyn 63-AX-051, [±45] ₁₀ | | | | | | |
| 7429 | DCB210a | 0.29 | 0.0 | 99.7 | 26.7 | 160 |
| 7430 | DCB210b | 0.29 | 0.4 | 110 | 26.7 | 657 |
| 7431 | DCB210c | 0.29 | 0.8 | 115 | 26.7 | 1070 |
| 7432 | DCB210d | 0.29 | 1.9 | 70.7 | 26.7 | 879 |
| 7433 | DCB211a | 0.29 | 0.0 | 71.2 | 27.0 | 203 |
| 7434 | DCB211b | 0.29 | 0.2 | 85.0 | 27.0 | 273 |
| 7435 | DCB211c | 0.29 | 0.4 | 106 | 27.0 | 463 |

| Test | Coupon | V _F | a, mm | load, N | width, mm | G _{IC} , J/m ² |
|---|---------|----------------|-------|---------|-----------|------------------------------------|
| 7436 | DCB211d | 0.29 | 0.7 | 114 | 27.0 | 771 |
| 7437 | DCB211e | 0.29 | 1.2 | 103 | 27.0 | 1074 |
| 7438 | DCB211f | 0.29 | 1.8 | 85.9 | 27.0 | 1137 |
| 7439 | DCB211g | 0.29 | 2.7 | 67.6 | 27.0 | 1051 |
| 7440 | DCB211h | 0.29 | 3.2 | 58.7 | 27.0 | 999 |
| Ortho-polyester CoRezyn 63-AX-051, [0/0/±45] _S Tests 7441 - 7443 had a higher fiber volume fraction. | | | | | | |
| 7441 | DCB303a | 0.38 | 0.0 | 25.5 | 26.9 | 106 |
| 7442 | DCB306a | 0.38 | 0.0 | 25.7 | 27.4 | 127 |
| 7443 | DCB403a | 0.38 | 0.0 | 22.1 | 28.5 | 106 |
| Ortho-polyester CoRezyn 63-AX-051, [(45),(90) ₂ ,(45)] ₄ | | | | | | |
| 7444 | DCB600a | 0.35 | 0.0 | 113 | 26.9 | 235 |
| 7445 | DCB600b | 0.35 | 0.5 | 123 | 26.9 | 296 |
| 7446 | DCB600c | 0.35 | 2.9 | 127 | 26.9 | 326 |
| 7447 | DCB600d | 0.35 | 3.7 | 137 | 26.9 | 399 |
| 7448 | DCB600e | 0.35 | 5.2 | 140 | 26.9 | 429 |
| 7449 | DCB608a | 0.35 | 0.0 | 108 | 26.9 | 225 |
| 7450 | DCB608b | 0.35 | 0.4 | 114 | 26.9 | 262 |
| 7451 | DCB608c | 0.35 | 1.6 | 122 | 26.9 | 328 |
| 7452 | DCB608d | 0.35 | 3.3 | 133 | 26.9 | 397 |
| 7453 | DCB611a | 0.35 | 0.0 | 115 | 26.9 | 247 |
| 7454 | DCB611b | 0.35 | 0.9 | 123 | 26.9 | 318 |
| 7455 | DCB611c | 0.35 | 3.3 | 132 | 26.9 | 376 |
| 7456 | DCB611d | 0.35 | 4.5 | 138 | 26.9 | 450 |
| 7457 | DCB611e | 0.35 | 6.2 | 151 | 26.9 | 565 |
| Ortho-polyester CoRezyn 63-AX-051, [(45) ₉ , 90, (45)] ₈ | | | | | | |
| 7458 | DCB705 | 0.35 | 5.0 | 87.3 | 25.4 | 424 |
| 7459 | DCB751 | 0.35 | 0.0 | 62.7 | 25.4 | 181 |
| 7460 | DCB751b | 0.35 | 1.0 | 76.3 | 25.4 | 308 |
| 7461 | DCB751c | 0.35 | 3.2 | 79.6 | 25.4 | 348 |
| 7462 | DCB751d | 0.35 | 4.0 | 91.2 | 25.4 | 498 |
| 7463 | DCB752 | 0.35 | 0.0 | 56.0 | 25.4 | 132 |
| 7464 | DCB752b | 0.35 | 2.1 | 81.1 | 25.4 | 311 |
| 7465 | DCB752c | 0.35 | 4.3 | 91.0 | 25.4 | 406 |
| 7466 | DCB752d | 0.35 | 6.1 | 92.5 | 25.4 | 435 |
| 7467 | DCB750c | 0.35 | 2.6 | 96.5 | 25.4 | 370 |
| 7468 | DCB750d | 0.35 | 6.8 | 99.1 | 25.4 | 432 |
| 7469 | DCB780a | 0.35 | 0.0 | 64.5 | 25.4 | 261 |
| 7470 | DCB780b | 0.35 | 1.6 | 66.5 | 25.4 | 300 |
| 7471 | DCB780c | 0.35 | 3.5 | 74.6 | 25.4 | 400 |
| 7472 | DCB780d | 0.35 | 5.8 | 83.0 | 25.4 | 506 |
| 7473 | DCB780e | 0.35 | 6.7 | 87.8 | 25.4 | 604 |
| 7474 | DCB781a | 0.35 | 2.6 | 81.8 | 25.4 | 390 |
| 7258 | DCB781b | 0.35 | 6.1 | 104 | 25.4 | 696 |

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|---|----------|-------|-------|---------|-----------|-----------------------------|
| SP Systems Prime20 Epoxy, [0] ₁₀ D155 | | | | | | |
| 8986 | DCB01p | 34.8 | 30.33 | 109 | 26.0 | 285 |
| 8987 | DCB02p | 35.9 | 24.27 | 116 | 26.4 | 230 |
| 8988 | DCB03p | 33.0 | 29.02 | 105 | 26.2 | 208 |
| 8989 | DCB04p | 36.8 | 29.67 | 121 | 26.1 | 394 |
| 8990 | DCB05p | 36.7 | 30.01 | 119 | 25.6 | 399 |
| 8991 | DCB06p | 35.9 | 55.51 | 76 | 25.5 | 490 |
| 8992 | DCB07p | 35.8 | 55.69 | 56 | 22.9 | 321 |
| 8993 | DCB08p | 36.1 | 52.74 | 80 | 25.6 | 498 |
| 8994 | DCB09p | 33.8 | 53.66 | 73 | 25.8 | 350 |
| 8995 | DCB11p | 35.3 | 29.24 | 138 | 25.9 | 448 |
| 8996 | DCB12p | 35.3 | 28.79 | 115 | 26.0 | 298 |
| 8997 | DCB13p | 33 | 28.18 | 119 | 26.0 | 258 |
| 8998 | DCB14p | 33.2 | 26.53 | 150 | 26.4 | 362 |
| 8999 | DCB15p | 35.9 | 26.42 | 145 | 25.6 | 445 |
| Derakane 411C50 Vinyl Ester, [0] ₁₀ D155 | | | | | | |
| 9000 | DCB01p | 34.7 | 58.7 | 49 | 26.3 | 192 |
| 9001 | DCB02p | 37.2 | 61.36 | 58 | 26.2 | 362 |
| 9002 | DCB03p | 34.6 | 57.72 | 45 | 26.1 | 161 |
| 9003 | DCB04p | 37.1 | 57.97 | 49 | 26.1 | 229 |
| 9004 | DCB05p | 34.6 | 58.33 | 47 | 26.1 | 174 |
| 9005 | DCB06p | 35.3 | 31.04 | 85 | 25.8 | 190 |
| 9006 | DCB07p | 35.6 | 29.08 | 95 | 26.2 | 210 |
| 9007 | DCB08p | 35 | 25.99 | 95 | 25.9 | 170 |
| 9008 | DCB09p | 36.3 | 27.17 | 88 | 26.2 | 168 |
| 9009 | DCB10p | 36.5 | 28.16 | 88 | 26.0 | 183 |
| Derakane 411C50 Vinyl Ester, [0] ₁₂ D155 | | | | | | |
| 9010 | g3_DCB01 | 39.6 | 27.88 | 112 | 25.7 | 213 |
| 9011 | g3_DCB02 | 40.1 | 28.01 | 99 | 25.9 | 172 |
| 9012 | g3_DCB03 | 41.2 | 29.25 | 95 | 25.9 | 180 |
| Isophthalic polyester, [0] ₁₀ D155 | | | | | | |
| 9013 | DCB01p | 33.8 | 26.96 | 79 | 25.3 | 130 |
| 9014 | DCB02p | 33.7 | 26.18 | 83 | 24.9 | 139 |
| 9015 | DCB03p | 33.9 | 24.1 | 69 | 25.3 | 82 |
| 9016 | DCB04p | 34.4 | 24.32 | 88 | 25.4 | 140 |
| 9017 | DCB05p | 35.3 | 25.75 | 63 | 24.9 | 88 |
| 9018 | ENF01p | 31.9 | 34.92 | 59 | 24.9 | 101 |
| 9019 | ENF02p | 32.6 | 26.51 | 76 | 25.2 | 106 |
| 9020 | ENF03p | 34.2 | 33.73 | 56 | 24.9 | 104 |
| 9021 | ENF04p | 32.7 | 26.04 | 81 | 24.9 | 120 |
| 9022 | ENF05p | 35.9 | 24.21 | 94 | 24.9 | 187 |
| 9023 | MMB04p1 | 35.6 | 22.86 | 81 | 25.3 | 119 |
| 9024 | MMB05p1 | 31.5 | 31.03 | 79 | 24.9 | 142 |
| 9025 | MMB06p | 32 | 23.22 | 81 | 24.7 | 95 |
| 9026 | MMB07p1 | 33.6 | 25.64 | 82 | 24.9 | 129 |
| 9027 | MMB08p1 | 35.3 | 24.65 | 62 | 24.8 | 81 |
| 9028 | MMB09p | 34.3 | 22.48 | 86 | 25.1 | 120 |
| 9029 | MMB10p | 34.7 | 21.55 | 99 | 25.4 | 147 |
| 9030 | MMB11p1 | 33.4 | 26.45 | 69 | 24.9 | 96 |
| 9031 | MMB12p1 | 31.6 | 35.99 | 55 | 25.0 | 91 |

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|--|----------|-------|-------|---------|-----------|-----------------------------|
| 9032 | MMB13p | 35.2 | 24.34 | 71 | 25.1 | 101 |
| Isophthalic polyester, [0] ₁₆ D155 | | | | | | |
| 9036 | DCBHFV01 | 51.4 | 29.02 | 80 | 24.5 | 94 |
| 9037 | DCBHFV02 | 54.4 | 23.41 | 103 | 26.0 | 106 |
| 9038 | DCBHFV03 | 54.3 | 24.11 | 112 | 25.5 | 136 |
| 9039 | DCBHFV04 | 51.5 | 29.59 | 111 | 25.6 | 175 |
| 9040 | DCBHFV05 | 54.5 | 26.13 | 107 | 25.9 | 141 |
| 9041 | DCBHFV06 | 53.8 | 24.82 | 112 | 25.1 | 146 |
| 9042 | DCBHFV07 | 53.9 | 24.48 | 109 | 25.5 | 129 |
| 9043 | DCBHFV08 | 54.1 | 25.89 | 102 | 25.2 | 130 |
| 9044 | DCBHFV09 | 54.3 | 26.43 | 116 | 25.5 | 172 |
| 9045 | DCBHFV10 | 51.1 | 29.41 | 92 | 25.8 | 113 |
| 9046 | DCBHFV11 | 54.5 | 25.29 | 101 | 25.0 | 125 |
| 9047 | DCBHFV12 | 53.7 | 26.73 | 107 | 25.6 | 145 |
| 9048 | DCBHFV13 | 51.2 | 29.09 | 121 | 25.6 | 189 |
| 9049 | ENFHFV1p | 54.4 | 26.51 | 102 | 25.2 | 138 |
| 9050 | ENFHFV2p | 53.6 | 26.06 | 115 | 25.3 | 164 |
| 9051 | ENFHFV3p | 54.5 | 25.21 | 113 | 25.6 | 149 |
| 9052 | ENFHFV4p | 53.8 | 24.05 | 113 | 24.6 | 146 |
| 9053 | ENFHFV5p | 54.5 | 25.08 | 106 | 25.2 | 137 |
| 9054 | ENFHFV6p | 54.4 | 23.22 | 109 | 25.5 | 120 |
| 9055 | ENFHFV7p | 52 | 24.07 | 137 | 25.6 | 187 |
| 9056 | ENFHFV8p | 54.7 | 25.59 | 113 | 25.7 | 156 |
| 9057 | ENFHFV9p | 50.9 | 28.06 | 117 | 25.6 | 172 |
| Newport Composite NCT307-D1 34-600 G300, [0] ₂₀ | | | | | | |
| 9033 | DCB01 | 65.3 | 26.22 | 297 | 25.9 | 357 |
| 9034 | DCB02 | 65.8 | 21.42 | 368 | 26.9 | 370 |
| 9035 | DCB03 | 66.4 | 22.57 | 316 | 25.1 | 349 |
| Jeffco Epoxy, [0] ₁₀ D155 | | | | | | |
| 9058 | DCB01p | 31.9 | 27.19 | 103 | 24.4 | 186 |
| 9059 | DCB02p | 32.1 | 23.88 | 108 | 24.6 | 161 |
| 9060 | DCB03p | 32.2 | 30.69 | 72 | 23.8 | 121 |
| 9061 | DCB04p | 32.2 | 28.97 | 99 | 23.2 | 216 |
| 9062 | DCB05p | 32.1 | 22.21 | 168 | 24.0 | 361 |
| 9063 | DCB06p | 32.1 | 30.49 | 108 | 24.2 | 260 |
| Reichold Vinyl Ester, [0] ₁₀ D155 | | | | | | |
| 9064 | DCB01p | 33.8 | 21.47 | 112 | 25.0 | 161 |
| 9065 | DCB02p | 33.7 | 21.19 | 109 | 25.0 | 148 |
| 9066 | DCB03p | 34.4 | 21.74 | 146 | 24.8 | 297 |
| 9067 | DCB04p | 36.3 | 20.56 | 95 | 25.0 | 131 |

ENF, G_{IIC}

| Test | Coupon | V_F | C, mm | load, N | h, mm | E, GPa | G_{IIC} J/m ² |
|--|---------|-------|-------|---------|-------|--------|----------------------------|
| Ortho-polyester CoRezyn 63-AX-051, [0] ₆ | | | | | | | |
| 7475 | ENF1012 | 0.40 | 37.7 | 382 | 1.69 | 33.15 | 1169 |
| 7476 | ENF1013 | 0.39 | 23.3 | 507 | 1.72 | 32.56 | 724 |
| 7477 | ENF1014 | 0.40 | 18.6 | 734 | 1.68 | 33.36 | 1037 |
| Polyester PET-P460, [0] ₆ | | | | | | | |
| 7478 | ENF1021 | 0.40 | 21.8 | 818 | 1.7 | 32.92 | 1729 |
| 7479 | ENF1022 | 0.39 | 35.5 | 538 | 1.73 | 32.42 | 1848 |
| 7480 | ENF1023 | 0.39 | 38.6 | 463 | 1.73 | 32.31 | 1679 |
| 7481 | ENF1025 | 0.35 | 39 | 552 | 1.89 | 29.41 | 2072 |
| Polyester Arotran Q6038, [0] ₆ | | | | | | | |
| 7482 | ENF1061 | 0.33 | 10.2 | 836 | 1.97 | 28.04 | 305 |
| Vinylester Swancorp 980 (batch a), [0] ₆ | | | | | | | |
| 7483 | ENF1031 | 0.35 | 18.9 | 1219 | 1.91 | 29.21 | 2358 |
| 7484 | ENF1032 | 0.33 | 26.7 | 1005 | 1.95 | 28.4 | 3017 |
| 7485 | ENF1033 | 0.33 | 31.3 | 983 | 1.96 | 28.29 | 3972 |
| Vinylester Derakane 411C50, [0] ₆ | | | | | | | |
| 7486 | ENF1101 | 0.43 | 24.9 | 801 | 1.56 | 35.45 | 2620 |
| 7487 | ENF1102 | 0.43 | 37 | 534 | 1.57 | 35.22 | 2495 |
| Vinylester Derakane 8084, [0] ₆ | | | | | | | |
| 7488 | ENF1091 | 0.43 | 18.6 | 934 | 1.57 | 35.17 | 1992 |
| 7489 | ENF1092 | 0.43 | 26.5 | 805 | 1.54 | 35.86 | 3054 |
| 7490 | ENF1093 | 0.43 | 30.9 | 681 | 1.57 | 35.29 | 2867 |
| Epoxy System 41, [0] ₆ | | | | | | | |
| 7491 | ENF1041 | 0.35 | 17.4 | 1383 | 1.89 | 29.39 | 2593 |
| 7492 | ENF1043 | 0.35 | 29.5 | 1005 | 1.89 | 29.53 | 3776 |
| Epoxy SC14, [0] ₆ | | | | | | | |
| 7493 | ENF1071 | 0.39 | 18.9 | 1174 | 1.72 | 32.64 | 2769 |
| 7494 | ENF1072 | 0.39 | 29.1 | 814 | 1.72 | 32.63 | 3110 |
| 7495 | ENF1073 | 0.39 | 31.9 | 832 | 1.71 | 32.65 | 3791 |
| Epoxy SC12, [0] ₆ | | | | | | | |
| 7496 | ENF1081 | 0.43 | 24.1 | 787 | 1.57 | 35.27 | 2350 |
| 7497 | ENF1082 | 0.43 | 29.8 | 690 | 1.57 | 35.17 | 2710 |
| Polyurethane Poly 15-D65, [0] ₆ | | | | | | | |
| 7498 | ENF1051 | 0.32 | 23.3 | 1192 | 1.99 | 27.6 | 3145 |
| Ortho-polyester 63-AX-051, (0/0) crack interface, [0] ₁₀ | | | | | | | |
| 7499 | ENF502 | 0.39 | 40.56 | 873 | 2.68 | ---- | 1170 |
| 7500 | ENF504 | 0.41 | 24.77 | 1189 | 2.51 | ---- | 1265 |
| 7501 | ENF507 | 0.42 | 31.37 | 848 | 2.46 | ---- | 1073 |
| 7502 | ENF508 | 0.42 | 24.87 | 1310 | 2.44 | ---- | 1663 |
| Ortho-polyester 63-AX-051, (+45/-45) crack interface | | | | | | | |
| 7503 | ENF202 | 0.28 | 25.40 | 3860 | 6.31 | ---- | 1786 |
| 7504 | ENF203 | 0.28 | 12.70 | 4688 | 6.3 | ---- | 1745 |
| 7505 | ENF204 | 0.28 | 28.09 | 4143 | 6.43 | ---- | 2343 |
| 7506 | ENF205 | 0.28 | 28.73 | 3801 | 6.36 | ---- | 2130 |
| Ortho-Polyester 63-AX-051, (90/45) crack interface, [(±45) ₉ , 90, (±45) ₈] | | | | | | | |
| 7507 | ENF831 | 0.35 | 1.6 | 873 | 24.1 | ---- | 762 |
| 7508 | ENF828 | 0.35 | 0.9 | 854 | 24.1 | ---- | 822 |
| 7509 | ENF827 | 0.35 | 0.7 | 1054 | 23.9 | ---- | 1241 |

| Test | Coupon | V _F | C, mm | h, mm | load, N | G _{IIC} J/m ² |
|--|----------|----------------|-------|-------|---------|-----------------------------------|
| Prime20 Epoxy, [0] ₁₀ D155 | | | | | | |
| 9068 | ENF01 | 34.8 | 28.36 | 25.89 | 2,226 | 4,208 |
| 9069 | ENF02 | 34.8 | 29.11 | 26.51 | 2,169 | 4,031 |
| 9070 | ENF03 | 35.6 | 27.27 | 26.20 | 2,194 | 3,968 |
| 9071 | ENF04 | 32.9 | 26.80 | 25.27 | 2,442 | 4,020 |
| 9072 | ENF05 | 33.1 | 27.29 | 25.65 | 2,448 | 4,139 |
| 9073 | ENF06 | 34.8 | 31.00 | 26.02 | 2,022 | 4,096 |
| 9074 | ENF07 | 35.9 | 25.33 | 26.36 | 2,360 | 4,030 |
| 9075 | ENF08 | 33.0 | 29.52 | 26.15 | 2,188 | 3,691 |
| 9076 | ENF09 | 36.8 | 32.53 | 26.06 | 1,795 | 4,190 |
| 9077 | ENF10 | 36.7 | 32.86 | 25.61 | 1,750 | 4,161 |
| Vinyl Ester, [0] ₁₀ D155 | | | | | | |
| 9078 | ENF01 | 35.6 | 27.61 | 26.27 | 1,954 | 3,180 |
| 9079 | ENF02 | 36.2 | 28.39 | 25.79 | 1,871 | 3,361 |
| 9080 | ENF03 | 36.2 | 28.16 | 26.28 | 1,923 | 3,367 |
| 9081 | ENF04 | 34.8 | 27.16 | 26.31 | 2,092 | 3,295 |
| 9082 | ENF05 | 36.6 | 26.88 | 26.23 | 1,931 | 3,209 |
| Isophthalic polyester, [0] ₁₀ D155 | | | | | | |
| 9083 | ENF07 | 35.4 | 26.21 | 24.96 | 1,407 | 1,814 |
| 9084 | ENF08 | 32.8 | 26.56 | 25.33 | 1,753 | 2,232 |
| 9085 | ENF09 | 34.6 | 28.95 | 24.44 | 1,249 | 1,689 |
| 9086 | ENF10 | 35.0 | 27.68 | 25.21 | 1,289 | 1,595 |
| 9087 | ENF11 | 34.2 | 25.28 | 25.25 | 1,484 | 1,655 |
| Newport Composite NCT307-D1 34-600 G300, [0] ₂₀ | | | | | | |
| 9088 | ENF01 | 65.7 | 19.90 | 25.37 | 2,718 | 704 |
| 9089 | ENF02 | 65.8 | 23.62 | 25.00 | 2,402 | 774 |
| 9090 | ENF03 | 65.6 | 25.47 | 25.30 | 2,271 | 769 |
| 9091 | ENF04 | 65.1 | 24.91 | 25.40 | 2,431 | 821 |
| 9092 | ENF05 | 66.0 | 24.12 | 25.32 | 2,471 | 838 |
| 9093 | ENF06 | 66.0 | 20.28 | 24.77 | 2,891 | 875 |
| 9094 | ENF07 | 65.4 | 24.92 | 25.34 | 2,341 | 776 |
| 9095 | ENF08 | 65.9 | 19.89 | 25.44 | 2,905 | 806 |
| 9096 | ENF09 | 65.6 | 19.14 | 25.45 | 2,959 | 770 |
| 9097 | ENF10 | 65.9 | 19.75 | 25.30 | 2,917 | 811 |
| Isophthalic polyester, [0] ₁₆ D155 | | | | | | |
| 9098 | ENFHFV1 | 54.4 | 27.96 | 25.16 | 1,600 | 1,467 |
| 9099 | ENFHFV2 | 53.6 | 29.29 | 25.32 | 1,523 | 1,396 |
| 9100 | ENFHFV3 | 54.5 | 26.93 | 25.64 | 1,565 | 1,260 |
| 9101 | ENFHFV4 | 53.8 | 26.21 | 24.61 | 1,594 | 1,311 |
| 9102 | ENFHFV5 | 54.5 | 26.76 | 25.22 | 1,499 | 1,194 |
| 9103 | ENFHFV06 | 54.4 | 24.29 | 25.51 | 1,774 | 1,333 |
| 9104 | ENFHFV07 | 52.0 | 27.36 | 25.60 | 1,661 | 1,337 |
| 9105 | ENFHFV08 | 54.7 | 26.92 | 25.68 | 1,548 | 1,241 |
| 9106 | ENFHFV09 | 50.9 | 31.82 | 25.56 | 1,496 | 1,402 |
| 9107 | ENFHFV10 | 52.5 | 38.59 | 25.14 | 1,025 | 1,086 |

| Test | Coupon | V_F | C, mm | h, mm | load, N | G_{IIC} J/m ² |
|--|--------|-------|-------|-------|---------|----------------------------|
| Jeffco Epoxy, [0] ₁₀ D155 | | | | | | |
| 9108 | ENF01p | 31.9 | 27.66 | 24.40 | 2,191 | 3,384 |
| 9109 | ENF02p | 32.1 | 24.79 | 24.61 | 2,254 | 2,900 |
| 9110 | ENF03p | 32.2 | 30.73 | 23.80 | 1,857 | 3,225 |
| 9111 | ENF04p | 32.2 | 32.28 | 23.18 | 1,534 | 2,546 |
| 9112 | ENF05p | 32.1 | 28.98 | 24.04 | 1,785 | 2,571 |
| 9113 | ENF06p | 32.1 | 35.59 | 24.17 | 1,484 | 2,640 |
| Reichold Vinyl Ester, [0] ₁₀ D155 | | | | | | |
| 9114 | ENF01p | 33.8 | 21.98 | 25.03 | 2,048 | 2,122 |
| 9115 | ENF02p | 33.7 | 21.48 | 25.04 | 2,082 | 2,086 |
| 9116 | ENF03p | 34.4 | 25.96 | 24.83 | 1,793 | 2,415 |
| 9117 | ENF04p | 36.3 | 21.35 | 25.01 | 2,252 | 3,008 |

Mixed-Mode, G_I and G_{II}

| Test | Coupon | V_F % | a, mm | width, mm | load, N | G_{IC} , J/m ² | G_{IIC} , J/m ² |
|---------------------------------------|--------|------------|----------|--------------|------------|--------------------------------|---------------------------------|
| Prime20 Epoxy, [0] ₁₀ D155 | | | | | | | |
| c=18.89 mm | | | | | | | |
| 9118 | MMB01 | 34.0 | 25.40 | 26.39 | 1,869 | 69 | 4,114 |
| 9119 | MMB02 | 34.6 | 26.42 | 25.44 | 1,658 | 65 | 3,932 |
| 9120 | MMB03 | 33.7 | 28.01 | 26.23 | 1,625 | 61 | 3,685 |
| 9121 | MMB04 | 36.0 | 24.41 | 25.71 | 1,712 | 66 | 3,972 |
| 9122 | MMB05 | 35.5 | 28.52 | 25.61 | 1,470 | 63 | 3,839 |
| 9123 | MMB06 | 36.1 | 26.31 | 25.81 | 1,581 | 65 | 3,927 |
| 9124 | MMB07 | 33.1 | 26.69 | 26.08 | 1,710 | 60 | 3,580 |
| 9125 | MMB08 | 37.0 | 29.50 | 25.55 | 1,238 | 53 | 3,290 |
| 9126 | MMB09 | 34.3 | 25.28 | 25.78 | 1,760 | 65 | 3,866 |
| 9127 | MMB10 | 34.0 | 27.14 | 24.68 | 1,559 | 62 | 3,709 |
| c=23.885 mm | | | | | | | |
| 9128 | MMB11 | 34.8 | 25.42 | 25.81 | 1,374 | 410 | 2,858 |
| 9129 | MMB12 | 36.0 | 25.02 | 25.63 | 1,428 | 480 | 3,359 |
| 9130 | MMB13 | 35.6 | 27.10 | 25.62 | 1,264 | 422 | 2,985 |
| 9131 | MMB14 | 35.4 | 29.62 | 25.74 | 1,143 | 396 | 2,835 |
| 9132 | MMB15 | 35.4 | 26.91 | 25.99 | 1,265 | 398 | 2,807 |
| 9133 | MMB16 | 35.0 | 29.32 | 24.94 | 1,266 | 489 | 3,487 |
| 9134 | MMB17 | 33.8 | 27.49 | 25.67 | 1,419 | 468 | 3,289 |
| 9135 | MMB18 | 33.8 | 26.84 | 25.46 | 1,281 | 373 | 2,613 |
| 9136 | MMB19 | 33.3 | 26.74 | 25.99 | 1,577 | 515 | 3,594 |
| 9137 | MMB20 | 36.9 | 29.73 | 25.79 | 1,171 | 468 | 3,367 |
| c=32.695 mm | | | | | | | |
| 9138 | MMB21 | 36.6 | 29.94 | 25.92 | 694 | 777 | 1,445 |
| 9139 | MMB22 | 34.5 | 29.16 | 25.79 | 687 | 623 | 1,144 |
| 9140 | MMB23 | 33.5 | 28.79 | 25.8 | 811 | 783 | 1,430 |
| 9141 | MMB24 | 33.9 | 27.43 | 26.02 | 786 | 681 | 1,237 |
| 9142 | MMB25 | 32.6 | 27.53 | 25.75 | 817 | 680 | 1,227 |
| 9143 | MMB26 | 34.3 | 25.32 | 25.71 | 849 | 733 | 1,317 |
| 9144 | MMB27 | 35.0 | 23.36 | 25.86 | 942 | 812 | 1,444 |
| 9145 | MMB28 | 36.6 | 29.08 | 26.12 | 766 | 890 | 1,648 |
| 9146 | MMB29 | 36.4 | 28.43 | 26.37 | 818 | 938 | 1,730 |
| 9147 | MMB30 | 34.6 | 24.98 | 25.79 | 789 | 625 | 1,122 |
| c=45.60 | | | | | | | |
| 9148 | MMB31 | 36.1 | 26.73 | 25.87 | 500 | 1,029 | 776 |
| 9149 | MMB32 | 34.8 | 24.36 | 26.12 | 516 | 827 | 611 |
| 9150 | MMB33 | 32.9 | 26.63 | 25.56 | 517 | 867 | 644 |
| 9151 | MMB34 | 35.3 | 24.24 | 26.26 | 569 | 1,017 | 752 |
| 9152 | MMB35 | 35.6 | 26.98 | 26.06 | 530 | 1,119 | 844 |
| 9153 | MMB36 | 33.2 | 25.35 | 26.27 | 479 | 662 | 489 |
| 9154 | MMB37 | 34.8 | 27.37 | 25.27 | 395 | 634 | 477 |
| 9155 | MMB38 | 37.0 | 20.54 | 25.78 | 624 | 1,085 | 788 |
| 9156 | MMB39 | 36.0 | 27.99 | 26.27 | 408 | 718 | 545 |
| 9157 | MMB40 | 36.9 | 27.84 | 25.52 | 453 | 994 | 757 |

| Test | Coupon | V _F % | a, mm | width, mm | load, N | G _{IC} , J/m ² | G _{IIC} , J/m ² |
|---|--------|---------------------|----------|--------------|------------|---------------------------------------|--|
| c=58.92 mm | | | | | | | |
| 9158 | MMB41 | 33.4 | 25.37 | 26.24 | 369 | 849 | 383 |
| 9159 | MMB42 | 36.6 | 25.42 | 25.59 | 231 | 454 | 208 |
| 9160 | MMB43 | 33.9 | 27.23 | 25.73 | 294 | 664 | 304 |
| 9161 | MMB44 | 35.3 | 26.30 | 26.26 | 306 | 725 | 332 |
| 9162 | MMB45 | 35.4 | 28.81 | 26.21 | 314 | 919 | 427 |
| 9163 | MMB46 | 35.8 | 26.49 | 25.42 | 279 | 677 | 311 |
| 9164 | MMB47 | 35.1 | 29.24 | 26.06 | 282 | 747 | 347 |
| 9165 | MMB48 | 34.8 | 29.52 | 25.69 | 311 | 931 | 433 |
| 9166 | MMB49 | 36.3 | 30.45 | 22.31 | 241 | 880 | 413 |
| 9167 | MMB50 | 35.7 | 26.10 | 26.06 | 308 | 759 | 348 |
| Vinyl Ester, [0]10 D155 | | | | | | | |
| c=23.54 mm | | | | | | | |
| 9168 | MMB01 | 35.2 | 27.33 | 26.29 | 1,130 | 292 | 2,201 |
| 9169 | MMB02 | 33.9 | 27.53 | 26.44 | 1,232 | 313 | 2,352 |
| 9170 | MMB04 | 36.7 | 28.64 | 26.36 | 961 | 257 | 1,963 |
| 9171 | MMB05 | 34.5 | 26.74 | 26.38 | 1,282 | 338 | 2,537 |
| c=32.93 mm | | | | | | | |
| 9172 | MMB06 | 34.3 | 25.92 | 26.22 | 688 | 490 | 867 |
| 9173 | MMB07 | 36.8 | 26.99 | 26.06 | 715 | 703 | 1,264 |
| 9174 | MMB08 | 34.8 | 26.64 | 26.02 | 604 | 420 | 748 |
| 9175 | MMB09 | 36.6 | 28.50 | 26.17 | 652 | 629 | 1,139 |
| 9176 | MMB10 | 36.5 | 28.51 | 26.12 | 685 | 694 | 1,256 |
| c=45.09 mm | | | | | | | |
| 9177 | MMB11p | 34.6 | 26.96 | 26.22 | 463 | 742 | 573 |
| 9178 | MMB12p | 36.1 | 28.05 | 26.27 | 314 | 414 | 323 |
| 9179 | MMB13p | 36.8 | 29.41 | 26.28 | 281 | 379 | 299 |
| 9180 | MMB14p | 36.3 | 27.37 | 26.24 | 374 | 569 | 443 |
| 9181 | MMB15p | 36.5 | 26.62 | 26.2 | 387 | 590 | 458 |
| c=58.49 mm | | | | | | | |
| 9182 | MMB16p | 36.6 | 26.00 | 26.26 | 171 | 240 | 112 |
| 9183 | MMB17p | 35.8 | 28.57 | 26.17 | 194 | 346 | 163 |
| 9184 | MMB18p | 36.0 | 30.03 | 25.86 | 217 | 494 | 235 |
| 9185 | MMB19p | 36.2 | 26.85 | 26.41 | 224 | 418 | 196 |
| 9186 | MMB20p | 35.9 | 27.97 | 26.16 | 216 | 416 | 196 |
| c=18.89 mm | | | | | | | |
| 9187 | MMB16p | 34.6 | 26.52 | 26.21 | 1,401 | 44 | 2,655 |
| 9188 | MMB17p | 37.0 | 29.42 | 26.15 | 1,201 | 47 | 2,935 |
| 9189 | MMB18p | 36.2 | 26.94 | 26.16 | 1,424 | 53 | 3,253 |
| 9190 | MMB19p | 36.8 | 29.80 | 26.14 | 1,217 | 49 | 3,044 |
| 9191 | MMB20p | 37.4 | 27.31 | 26.29 | 1,270 | 47 | 2,909 |
| Isophthalic polyester, [0] ₁₀ D155 | | | | | | | |
| c=51.36 mm | | | | | | | |
| 9192 | MMB20p | 35.8 | 23.76 | 24.97 | 165 | 151 | 88 |
| 9193 | MMB21p | 33.5 | 24.00 | 25.16 | 178 | 147 | 84 |
| 9194 | MMB22p | 33.7 | 23.60 | 25.25 | 142 | 91 | 52 |
| 9195 | MMB23p | 35.1 | 21.17 | 25.12 | 182 | 140 | 80 |

| Test | Coupon | V _F % | a, mm | width, mm | load, N | G _{IC} , J/m ² | G _{IIC} , J/m ² |
|------|-------------|---------------------|----------|--------------|------------|---------------------------------------|--|
| 9196 | MMB24p | 31.7 | 24.13 | 24.97 | 192 | 150 | 86 |
| 9197 | MMB25p | 34.4 | 30.42 | 25.15 | 134 | 137 | 82 |
| | c=42.05 mm | | | | | | |
| 9198 | MMB14p | 33.5 | 26.63 | 25.38 | 256 | 193 | 174 |
| 9199 | MMB15p | 32.2 | 26.55 | 25.35 | 317 | 263 | 235 |
| 9201 | MMB17p | 32.8 | 25.54 | 25.16 | 285 | 212 | 189 |
| 9202 | MMB18p | 34.6 | 27.48 | 25.14 | 211 | 154 | 140 |
| 9203 | MMB19p | 32.3 | 27.21 | 24.87 | 251 | 181 | 162 |
| | c=32.14 mm | | | | | | |
| 9204 | MMB32p | 34.2 | 23.46 | 25.25 | 515 | 244 | 456 |
| 9205 | MMB33p | 34.5 | 23.13 | 24.84 | 353 | 118 | 221 |
| 9206 | MMB34p | 33.9 | 23.13 | 25.04 | 456 | 186 | 346 |
| 9207 | MMB35p | 34.5 | 22.17 | 24.98 | 489 | 209 | 386 |
| 9208 | MMB36p | 34.5 | 26.20 | 25.23 | 464 | 248 | 473 |
| | c=25.835 mm | | | | | | |
| 9209 | MMB40 | 35.3 | 27.14 | 25.14 | 629 | 185 | 854 |
| 9210 | MMB41 | 34.7 | 23.76 | 25.16 | 865 | 262 | 1,181 |
| 9211 | MMB42 | 33.6 | 28.47 | 24.87 | 647 | 190 | 877 |
| 9212 | MMB43 | 35.5 | 24.78 | 24.94 | 717 | 210 | 958 |
| | c=19.51 mm | | | | | | |
| 9213 | MMB26p | 33.8 | 27.14 | 25.14 | 860 | 31 | 1,180 |
| 9214 | MMB27p | 34.1 | 24.63 | 25 | 955 | 33 | 1,245 |
| 9215 | MMB28p | 35.5 | 24.63 | 25.2 | 865 | 30 | 1,135 |
| 9216 | MMB30p | 35.6 | 24.67 | 25.08 | 970 | 39 | 1,459 |
| 9217 | MMB31p | 33.5 | 25.81 | 25.11 | 1,205 | 54 | 2,043 |

Mode I, G_{IC} Environmentally Conditioned

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|--|--------|-------|-------|---------|-----------|-----------------------------|
| Ortho-polyester 63-AX-051, (0/0) crack interface, $[0]_6$, dry conditioned tested at 50°C | | | | | | |
| 8609 | DCB1Da | 0.35 | 0.0 | 44.4 | 25.5 | 263 |
| 8501 | DCB1Db | 0.35 | 11.9 | 46.2 | 25.5 | 444 |
| 8502 | DCB1Dc | 0.35 | 22.4 | 36.7 | 25.5 | 466 |
| 8503 | DCB2Da | 0.38 | 0.0 | 52.4 | 25.3 | 346 |
| 8504 | DCB2Db | 0.38 | 9.3 | 56.9 | 25.3 | 565 |
| 8505 | DCB2Dc | 0.38 | 21.5 | 39.2 | 25.3 | 474 |
| 8506 | DCB3Da | 0.38 | 0.0 | 44.9 | 25.5 | 252 |
| 8507 | DCB3Db | 0.38 | 3.8 | 49.8 | 25.5 | 372 |
| 8508 | DCB3Dc | 0.38 | 8.6 | 45.6 | 25.5 | 384 |
| 8509 | DCB4Da | 0.37 | 0.0 | 37.8 | 25.2 | 175 |
| 8510 | DCB4Db | 0.37 | 4.2 | 58.2 | 25.2 | 471 |
| 8511 | DCB4Dc | 0.37 | 10.3 | 57.3 | 25.2 | 529 |
| Derakane 411, (0/0) crack interface, $[0]_6$, dry conditioned tested at 50°C | | | | | | |
| 8512 | DCB1Da | 0.40 | 0.0 | 54.7 | 25.5 | 510 |
| 8513 | DCB1Db | 0.40 | 7.0 | 56.4 | 25.5 | 590 |
| 8514 | DCB1Dc | 0.40 | 15.1 | 39.9 | 25.5 | 584 |
| 8515 | DCB2Da | 0.39 | 0.0 | 53.8 | 25.2 | 411 |
| 8516 | DCB2Db | 0.39 | 2.3 | 47.1 | 25.2 | 411 |
| 8517 | DCB2Dc | 0.39 | 8.2 | 48.4 | 25.2 | 603 |
| 8518 | DCB3Da | 0.39 | 0.0 | 57.2 | 25.5 | 525 |
| 8519 | DCB3Db | 0.39 | 4.2 | 52.7 | 25.5 | 544 |
| 8520 | DCB3Dc | 0.39 | 8.5 | 49.6 | 25.5 | 596 |
| 8521 | DCB4Da | 0.40 | 0.0 | 56.4 | 25.3 | 686 |
| 8522 | DCB4Db | 0.40 | 10.8 | 39.2 | 25.3 | 517 |
| 8523 | DCB4Dc | 0.40 | 17.6 | 39.3 | 25.3 | 676 |
| Derakane 8084, (0/0) crack interface, $[0]_6$, dry conditioned tested at 50°C | | | | | | |
| 8524 | DCB1Da | 0.36 | 0.0 | 79.1 | 25.5 | 870 |
| 8525 | DCB1Db | 0.36 | 7.0 | 61.3 | 25.5 | 771 |
| 8526 | DCB1Dc | 0.36 | 17.7 | 50.7 | 25.5 | 751 |
| 8527 | DCB2Da | 0.37 | 0.0 | 71.6 | 25.6 | 770 |
| 8528 | DCB2Db | 0.37 | 5.9 | 67.6 | 25.6 | 917 |
| 8529 | DCB2Dc | 0.37 | 12.5 | 51.1 | 25.6 | 796 |
| 8530 | DCB3Da | 0.38 | 0.0 | 82.7 | 25.6 | 667 |
| 8531 | DCB3Db | 0.38 | 5.2 | 77.3 | 25.6 | 740 |
| 8532 | DCB3Dc | 0.38 | 9.3 | 75.9 | 25.6 | 909 |
| 8533 | DCB4Da | 0.37 | 0.0 | 79.5 | 25.5 | 818 |
| 8534 | DCB4Db | 0.37 | 8.1 | 60.6 | 25.5 | 676 |
| 8535 | DCB4Dc | 0.37 | 25.3 | 43.3 | 25.5 | 726 |
| Epoxy SC-14, (0/0) crack interface, $[0]_6$, dry conditioned tested at 50°C | | | | | | |
| 8536 | DCB1Da | 0.33 | 0.0 | 72.5 | 25.6 | 737 |
| 8537 | DCB1Db | 0.33 | 7.4 | 99.6 | 25.6 | 1487 |
| 8538 | DCB1Dc | 0.33 | 13.6 | 90.7 | 25.6 | 1736 |
| 8539 | DCB2Da | 0.33 | 0.0 | 88.9 | 25.6 | 1036 |
| 8540 | DCB2Db | 0.33 | 6.5 | 93.3 | 25.6 | 1401 |
| 8541 | DCB2Dc | 0.33 | 13.7 | 89.8 | 25.6 | 1660 |
| 8542 | DCB3Da | 0.34 | 0.0 | 81.7 | 25.6 | 887 |
| 8543 | DCB3Db | 0.34 | 8.9 | 89.7 | 25.6 | 1385 |

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|--|--------|-------|-------|---------|-----------|-----------------------------|
| 8544 | DCB3Dc | 0.34 | 16.0 | 79.9 | 25.6 | 1452 |
| 8545 | DCB4Da | 0.34 | 0.0 | 80.5 | 25.6 | 782 |
| 8546 | DCB4Db | 0.34 | 4.5 | 82.7 | 25.6 | 1269 |
| 8547 | DCB4Dc | 0.34 | 13.2 | 75.5 | 25.6 | 1338 |
| Iso-polyester, (0/0) crack interface, $[0]_6$, dry conditioned tested at 50°C | | | | | | |
| 8548 | DCB1Da | 0.39 | 0.0 | 51.9 | 26.8 | 311 |
| 8549 | DCB1Db | 0.39 | 2.7 | 61.1 | 26.8 | 489 |
| 8550 | DCB1Dc | 0.39 | 9.2 | 48.7 | 26.8 | 437 |
| 8551 | DCB2Da | 0.42 | 0.0 | 46.9 | 26.8 | 339 |
| 8552 | DCB2Db | 0.42 | 4.2 | 46.6 | 26.8 | 430 |
| 8553 | DCB2Dc | 0.42 | 8.3 | 47.9 | 26.8 | 539 |
| 8554 | DCB3Da | 0.42 | 0.0 | 37.5 | 26.8 | 258 |
| 8555 | DCB3Db | 0.42 | 3.3 | 39.3 | 26.8 | 358 |
| 8556 | DCB3Dc | 0.42 | 7.6 | 37.0 | 26.8 | 340 |
| Ortho-polyester, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | |
| 8557 | DCB7Wa | 0.35 | 0 | 53.8 | 25.5 | 580 |
| 8558 | DCB7Wb | 0.35 | 4.7 | 50.7 | 25.5 | 523 |
| 8559 | DCB7Wc | 0.35 | 12.2 | 38.0 | 25.5 | 570 |
| Derakane 411, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | |
| 8560 | DCB6Wa | 0.37 | 0 | 59.6 | 25.5 | 558 |
| 8561 | DCB6Wb | 0.37 | 7.0 | 53.3 | 25.5 | 521 |
| 8562 | DCB6Wc | 0.37 | 11.4 | 44.4 | 25.5 | 587 |
| Derakane 8084, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | |
| 8563 | DCB5Wa | 0.37 | 0 | 73.8 | 25.6 | 921 |
| 8564 | DCB5Wb | 0.37 | 8.4 | 63.6 | 25.6 | 946 |
| 8565 | DCB5Wc | 0.37 | 18.0 | 52.4 | 25.6 | 856 |
| 8566 | DCB6Wa | 0.37 | 0 | 66.2 | 25.6 | 915 |
| 8567 | DCB6Wb | 0.37 | 12.0 | 53.3 | 25.6 | 730 |
| 8568 | DCB6Wc | 0.37 | 29.4 | 44.3 | 25.6 | 791 |
| Epoxy SC-14, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | |
| 8569 | DCB5Wa | 0.34 | 0.0 | 66.2 | 25.8 | 734 |
| 8570 | DCB6Wa | 0.33 | 0 | 78.2 | 25.9 | 1161 |
| 8571 | DCB6Wb | 0.33 | 10.4 | 64.4 | 25.9 | 1108 |
| 8572 | DCB6Wc | 0.33 | 16.1 | 58.9 | 25.9 | 1253 |
| Ortho-polyester, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 2900 hours, tested at 50°C | | | | | | |
| 8573 | DCB5Wa | 0.37 | 0 | 39.1 | 25.5 | 309 |
| 8574 | DCB5Wb | 0.37 | 3.7 | 42.4 | 25.5 | 452 |
| 8575 | DCB5Wc | 0.37 | 8.0 | 43.7 | 25.5 | 584 |
| 8576 | DCB6Wa | 0.37 | 0 | 53.8 | 25.5 | 551 |
| 8577 | DCB6Wb | 0.37 | 12.4 | 46.6 | 25.5 | 500 |
| 8578 | DCB6Wc | 0.37 | 18.7 | 42.1 | 25.5 | 532 |
| 8579 | DCB8Wa | 0.37 | 0 | 40.9 | 25.2 | 366 |
| 8580 | DCB8Wb | 0.37 | 6.7 | 43.5 | 25.2 | 484 |
| 8581 | DCB8Wc | 0.37 | 15.5 | 35.6 | 25.2 | 483 |
| Derakane 411, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 2900 hours, tested at 50°C | | | | | | |
| 8582 | DCB7Wa | 0.38 | 0 | 55.9 | 25.6 | 467 |
| 8583 | DCB7Wb | 0.38 | 3.9 | 56.5 | 25.6 | 599 |
| 8584 | DCB7Wc | 0.38 | 16.8 | 47.0 | 25.6 | 765 |
| 8585 | DCB8Wa | 0.37 | 0 | 61.0 | 25.6 | 688 |
| 8586 | DCB8Wb | 0.37 | 3.6 | 56.8 | 25.6 | 682 |

| Test | Coupon | V_F | a, mm | load, N | width, mm | G_{IC} , J/m ² |
|--|----------|-------|-------|---------|-----------|-----------------------------|
| 8587 | DCB8Wc | 0.37 | 9.0 | 52.6 | 25.6 | 787 |
| Derakane 8084, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 2900 hours, tested at 50°C | | | | | | |
| 8588 | DCB7Wa | 0.37 | 0 | 84.4 | 25.6 | 711 |
| 8589 | DCB7Wb | 0.37 | 4.2 | 80.0 | 25.6 | 802 |
| 8590 | DCB7Wc | 0.37 | 10.0 | 72.0 | 25.6 | 902 |
| 8591 | DCB8Wa | 0.37 | 0 | 91.4 | 25.5 | 932 |
| 8592 | DCB8Wb | 0.37 | 3.2 | 79.9 | 25.5 | 875 |
| 8593 | DCB8Wc | 0.37 | 12.0 | 69.1 | 25.5 | 1062 |
| Epoxy SC-14, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 2900 hours, tested at 50°C | | | | | | |
| 8594 | DCB7Wa | 0.34 | 0 | 76.2 | 25.5 | 932 |
| 8595 | DCB7Wb | 0.34 | 4.2 | 60.9 | 25.5 | 802 |
| 8596 | DCB7Wc | 0.34 | 8.0 | 63.2 | 25.5 | 889 |
| 8597 | DCB8Wa | 0.37 | 0 | 66.4 | 25.5 | 1198 |
| 8598 | DCB8Wb | 0.37 | 2.3 | 72.5 | 25.5 | 816 |
| 8599 | DCB8Wc | 0.37 | 5.1 | 78.4 | 25.5 | 1141 |
| Iso-polyester, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 889 hours, tested at 50°C | | | | | | |
| 8600 | DCBis1Wa | 0.42 | 0 | 46.3 | 26.8 | 350 |
| 8601 | DCBis1Wb | 0.42 | 3.3 | 52.3 | 26.8 | 521 |
| 8602 | DCBis1Wc | 0.42 | 8.3 | 58.3 | 26.8 | 828 |
| 8603 | DCBis2Wa | 0.43 | 0 | 44.9 | 26.8 | 469 |
| 8604 | DCBis2Wb | 0.43 | 2.6 | 42.2 | 26.8 | 434 |
| 8605 | DCBis2Wc | 0.43 | 10.4 | 39.6 | 26.8 | 446 |
| 8606 | DCBis3Wa | 0.42 | 0 | 59.1 | 26.7 | 438 |
| 8607 | DCBis3Wb | 0.42 | 4.2 | 53.9 | 26.7 | 535 |
| 8608 | DCBis3Wc | 0.42 | 8.0 | 59.2 | 26.7 | 607 |

ENF, G_{IIC} Environmentally Conditioned

| Test | Coupon | V_F | C, mm | load, N | h, mm | E, GPa | G_{IIC} J/m ² |
|--|---------|-------|-------|---------|-------|--------|----------------------------|
| Ortho-polyester, (0/0) crack interface, $[0]_6$, dry control tested at 50°C | | | | | | | |
| 8610 | ENF1D | 0.38 | 22.2 | 841 | 3.53 | 31.9 | 1733 |
| 8611 | ENF2D | 0.41 | 20.2 | 801 | 3.30 | 33.8 | 1505 |
| 8612 | ENF3D | 0.41 | 14.2 | 988 | 3.28 | 34.2 | 1139 |
| 8613 | ENF4D | 0.39 | 15.9 | 907 | 3.43 | 32.7 | 1112 |
| Derakane 411, (0/0) crack interface, $[0]_6$, dry control tested at 50°C | | | | | | | |
| 8614 | ENF1D | 0.43 | 24.5 | 832 | 3.12 | 35.7 | 2665 |
| 8615 | ENF2D | 0.42 | 18.8 | 979 | 3.23 | 34.6 | 2047 |
| 8616 | ENF3D | 0.43 | 19.9 | 925 | 3.18 | 35.2 | 2077 |
| 8617 | ENF4D | 0.43 | 41.9 | 525 | 3.12 | 35.7 | 3136 |
| Derakane 8084, (0/0) crack interface, $[0]_6$, dry control tested at 50°C | | | | | | | |
| 8618 | ENF1D | 0.39 | 24.8 | 939 | 3.48 | 32.3 | 2761 |
| 8619 | ENF2D | 0.4 | 19.2 | 992 | 3.38 | 33.3 | 1938 |
| 8620 | ENF3D | 0.41 | 15.9 | 1161 | 3.33 | 33.7 | 1886 |
| 8621 | ENF4D | 0.4 | 50.8 | 498 | 3.35 | 33.5 | 3531 |
| Epoxy SC-14, (0/0) crack interface, $[0]_6$, dry control tested at 50°C | | | | | | | |
| 8622 | ENF1D | 0.35 | 37.7 | 587 | 3.76 | 29.6 | 2153 |
| 8623 | ENF2D | 0.35 | 24.9 | 805 | 3.76 | 29.7 | 1762 |
| 8624 | ENF3D | 0.35 | 22.1 | 836 | 3.73 | 29.8 | 1503 |
| 8625 | ENF4D | 0.36 | 18.5 | 872 | 3.66 | 30.6 | 1197 |
| Iso-polyester, (0/0) crack interface, $[0]_6$, dry control tested at 50°C | | | | | | | |
| 8626 | ENF501D | 0.42 | 40.4 | 494 | 3.20 | 34.9 | 2176 |
| 8627 | ENF502D | 0.45 | 40.4 | 498 | 2.97 | 37.1 | 2595 |
| 7259 | ENF503D | 0.45 | 40.4 | 876 | 2.97 | 37.1 | 8074 |
| Ortho-polyester, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | | |
| 8628 | ENF7W | 0.38 | 22.8 | 547 | 3.53 | 31.9 | 773 |
| Derakane 411, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | | |
| 8629 | ENF5W | 0.39 | 24.2 | 841 | 3.43 | 32.7 | 2152 |
| 8630 | ENF6W | 0.4 | 25.6 | 787 | 3.38 | 33.2 | 2193 |
| Derakane 8084, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | | |
| 8631 | ENF5W | 0.4 | 21.4 | 939 | 3.40 | 32.9 | 2131 |
| 8632 | ENF6W | 0.4 | 30.1 | 770 | 3.35 | 33.4 | 2915 |
| Epoxy SC14, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | | |
| 8633 | ENF5W | 0.35 | 15.7 | 850 | 3.73 | 29.8 | 777 |
| 8634 | ENF6W | 0.35 | 22.0 | 663 | 3.78 | 29.5 | 904 |
| Iso-polyester, (0/0) crack interface, $[0]_6$, wet conditioned in 50°C water for 1000 hours, tested at 50°C | | | | | | | |
| 8635 | ENF1W | 0.45 | 40.4 | 383 | 2.95 | 37.4 | 1563 |
| 8636 | ENF2W | 0.46 | 40.4 | 418 | 2.90 | 37.8 | 1942 |
| 8637 | ENF3W | 0.45 | 40.4 | 818 | 2.97 | 37.1 | 7097 |

Newport NCT300-D1-E300 1M Carbon Unidirectional Prepreg, $[0]_{20}$

| Test | Coupon | V_F | a, mm | Load N | width mm | G_{IC} J/m ² | G_{IIC} J/m ² |
|-------|--------|-------|-------|-----------|-------------|------------------------------|-------------------------------|
| 10035 | DCB02 | 50 | 31.59 | 109 | 24.8 | 364 | ---- |
| 10036 | DCB03 | 50 | 32.99 | 109 | 24.4 | 414 | ---- |
| 10037 | DCB04 | 50 | 31.88 | 109 | 24.8 | 358 | ---- |
| 10038 | DCB05 | 50 | 33.19 | 105 | 24.5 | 384 | ---- |
| 10039 | DCB06 | 50 | 33.91 | 91.7 | 24.5 | 342 | ---- |
| 10040 | DCB07 | 50 | 32.85 | 114 | 24.0 | 452 | ---- |
| 10041 | DCB08 | 50 | 28.82 | 109 | 24.3 | 327 | ---- |
| 10042 | DCB09 | 50 | 30.20 | 109 | 24.5 | 348 | ---- |
| 10043 | DCB10 | 50 | 30.50 | 107 | 24.2 | 333 | ---- |
| 10044 | DCB11 | 50 | 32.63 | 100 | 24.2 | 342 | ---- |
| 10045 | DCB12 | 50 | 31.14 | 111 | 24.2 | 387 | ---- |
| 10046 | DCB13 | 50 | 28.99 | 109 | 24.3 | 322 | ---- |
| 10047 | DCB14 | 50 | 31.13 | 109 | 24.5 | 372 | ---- |
| 10048 | ENF01 | 50 | 24.85 | 1772 | 24.6 | ---- | 2455 |
| 10049 | ENF02 | 50 | 24.00 | 1833 | 24.8 | ---- | 2324 |
| 10050 | ENF03 | 50 | 24.30 | 1591 | 24.5 | ---- | 2210 |
| 10051 | ENF04 | 50 | 29.66 | 1497 | 24.5 | ---- | 2615 |
| 10052 | ENF05 | 50 | 26.78 | 1673 | 24.4 | ---- | 2557 |
| 10053 | ENF06 | 50 | 26.61 | 1577 | 24.6 | ---- | 2202 |
| 10054 | ENF07 | 50 | 21.87 | 1988 | 24.3 | ---- | 2442 |
| 10055 | ENF08 | 50 | 22.46 | 1688 | 24.8 | ---- | 2087 |
| 10056 | ENF09 | 50 | 26.61 | 1623 | 24.4 | ---- | 2463 |
| 10057 | ENF10 | 50 | 24.15 | 1758 | 24.4 | ---- | 2248 |
| 10058 | ENF11 | 50 | 22.77 | 1810 | 24.2 | ---- | 2257 |
| 10059 | ENF12 | 50 | 21.19 | 1760 | 24.1 | ---- | 2049 |
| 10392 | ENF13 | 50 | 26.61 | 1484 | 24.4 | ---- | 2063 |

Newport NCT307-D1-34-600 Glass Unidirectional Prepreg, $[0]_{20}$

| | | | | | | | |
|-------|-------|----|-------|------|-------|------|------|
| 10060 | DCB01 | 50 | 30.09 | 292 | 24.73 | 440 | ---- |
| 10061 | DCB02 | 50 | 31.87 | 226 | 24.64 | 289 | ---- |
| 10062 | DCB03 | 50 | 28.58 | 272 | 24.48 | 358 | ---- |
| 10063 | DCB04 | 50 | 31.08 | 272 | 24.91 | 397 | ---- |
| 10064 | DCB05 | 50 | 27.78 | 238 | 24.70 | 254 | ---- |
| 10065 | DCB06 | 50 | 29.91 | 276 | 24.67 | 386 | ---- |
| 10066 | DCB07 | 50 | 33.48 | 268 | 24.73 | 436 | ---- |
| 10067 | DCB08 | 50 | 27.73 | 275 | 24.81 | 332 | ---- |
| 10068 | DCB09 | 50 | 31.65 | 266 | 24.72 | 394 | ---- |
| 10069 | DCB10 | 50 | 31.12 | 215 | 24.47 | 284 | ---- |
| 10070 | DCB11 | 50 | 33.89 | 244 | 24.71 | 387 | ---- |
| 10071 | DCB12 | 50 | 31.22 | 277 | 24.67 | 417 | ---- |
| 10072 | ENF01 | 50 | 22.83 | 3937 | 24.61 | ---- | 1850 |
| 10073 | ENF02 | 50 | 24.11 | 3636 | 24.72 | ---- | 1686 |
| 10074 | ENF03 | 50 | 23.09 | 4105 | 24.84 | ---- | 1955 |

| Test | Coupon | V_F | a, mm | Load N | width mm | G_{IC} J/m ² | G_{IIC} J/m ² |
|-------|--------|-------|-------|-----------|-------------|------------------------------|-------------------------------|
| 10075 | ENF04 | 50 | 21.15 | 4224 | 24.58 | ---- | 1798 |
| 10076 | ENF05 | 50 | 24.09 | 3930 | 24.86 | ---- | 1936 |
| 10077 | ENF06 | 50 | 24.64 | 3397 | 24.55 | ---- | 1715 |
| 10078 | ENF07 | 50 | 26.70 | 3558 | 24.62 | ---- | 1978 |
| 10079 | ENF08 | 50 | 24.48 | 3673 | 24.81 | ---- | 1749 |
| 10080 | ENF09 | 50 | 24.31 | 3758 | 24.88 | ---- | 1786 |
| 10081 | ENF10 | 50 | 28.17 | 3218 | 24.56 | ---- | 1849 |
| 10082 | ENF11 | 50 | 31.57 | 2922 | 24.60 | ---- | 1801 |
| 10083 | ENF12 | 50 | 27.15 | 3442 | 24.72 | ---- | 1876 |
| 10084 | ENF13 | 50 | 26.76 | 3427 | 24.74 | ---- | 1852 |
| 10085 | ENF14 | 50 | 22.84 | 3798 | 24.23 | ---- | 1781 |

GLASS PREPREG

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| MATERIAL M9.6/32%/1200/G UNI GLASS | | | | | | | |
| Lay-up = $[0]_3$, $V_F = 0.480$, Ave. thickness = 2.21 mm, S.D. = 0.14 mm, 0° - M9.6/32%/1200/G, Hexcel prepreg, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth was used. Burn off = 49.52% for 2.464 mm | | | | | | | |
| 6614 | 0-1 | -500 | * | 13 | | ---- | 125 |
| 6615 | 0-2 | -514 | * | 13 | | ---- | 125 |
| 6169 | 0-3 | -559 | * | 13 | | ---- | 125 |
| 6616 | 0-4 | -446 | * | 13 | | ---- | 125 |
| 6696 | 0-9 | 1180 | * | 0.02 | | 44.0 2.2+ | 125 |
| 6697 | 0-10 | 1152 | * | 0.02 | | 42.0 2.1+ | 125 |
| Tests 6693 - 6695 were in the transverse direction $(90)_3$ | | | | | | | |
| 6693 | 90-1 | 31.8 | * | 0.02 | | 9.24 0.33 | 125 |
| 6694 | 90-2 | 37.3 | * | 0.02 | | 9.68 0.38 | 125 |
| 6695 | 90-3 | 39.7 | * | 0.02 | | 10.4 0.36 | 125 |
| 6824 | 90-150 | -183 | * | 13 | | ---- | 125 |
| 6825 | 90-152 | -158 | * | 13 | | ---- | 125 |
| 6826 | 90-151 | -180 | * | 13 | | ---- | 125 |

MATERIAL M9.6/32%/1200/G UNI GLASS

Lay-up = $[(\pm 45_G)_{2S}]$, 0° - M9.6/32%/1200/G Hexcel Glass prepreg, $V_F = 0.423$, Ave. thickness = 7.69 mm, S.D. = 0.06 mm, Epoxy, Two hours at 100 °C, 560 mm Hg vacuum. (ASTM D3518 Shear modulus (G) tests). First cracking was at approximately 0.6%.

| | | | | | | | |
|------|----------|------|---|------|--|-----------|--------------|
| 6711 | TGPP-1 | 80.0 | * | 0.02 | | 10.6 2.0 | 125 G = 3.29 |
| 6712 | TGPP-2 | 81.4 | * | 0.02 | | 10.7 1.62 | 125 G = 3.31 |
| 6713 | TGPP-3 | 82.8 | * | 0.02 | | 10.7 2.11 | 125 G = 3.33 |
| 6783 | TGPP-200 | ---- | * | 0.02 | | 11.4 ---- | 150 G = 3.51 |

MATERIAL M9.6/35%/BB600/G ± 45 GLASS

Lay-up = $[(\pm 45_G)_{2S}]$, M9.6/35%/BB600/G 45° Hexcel Glass prepreg, $V_F = 0.46$, Ave. thickness = 2.07 mm, S.D. = 0.06 mm, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. No breather cloth was used. Burn off = 2.07 mm = 45.87%

| | | | | | | | |
|------|-------|--------|-----|------|--|-----------|----------|
| 6641 | 45B10 | 148 | * | 0.13 | | 11.2 1.5 | 125 |
| 6642 | 45B9 | 170 | * | 13 | | 12.7 1.5 | 125 |
| 6643 | 45B12 | 166 | * | 13 | | 11.7 1.6 | 125 |
| 6644 | 45B7 | 155 | * | 13 | | 11.5 1.5 | 125 |
| 6645 | 45B6 | 86.2/9 | 0.1 | 2 | | 12.1 1.03 | 5,64525 |
| 6646 | 45B17 | 86.2/9 | 0.1 | 1 | | 11.7 1.08 | 4,08225 |
| 6647 | 45B13 | 86.2/9 | 0.1 | 1 | | 11.3 1.15 | 3,92425 |
| 6648 | 45B1 | 69.0/7 | 0.1 | 2 | | 11.9 0.69 | 65,76525 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| N vs E data, 1=1.7299, 10=1.7166, 100=1.726, 500=1.72, 10000=1.5214, 59000=1.29 | | | | | | | |
| 6649 | 45B16 | 69.0/7 | 0.1 | 2 | | 11.2 0.79 | 57,06925 |
| 6650 | 45B15 | 69.0/7 | 0.1 | 2 | | 11.4 0.80 | 41,22825 |
| 6651 | 45B5 | 51.7/5 | 0.1 | 3 | | 11.6 0.52 | 2,455,69725 |
| 6652 | 45B4 | 51.7/5 | 0.1 | 3 | | 11.6 0.52 | 2,210,03225 |
| 6637 | 45B30 | -162 | * | 13 | | ---- ---- | 125 |
| 6638 | 45B26 | -146 | * | 13 | | ---- ---- | 125 |
| 6639 | 45B27 | -148 | * | 13 | | ---- ---- | 125 |
| 6640 | 45B23 | -155 | * | 13 | | ---- ---- | 125 |

MATERIAL M9.6/35%/BB600/G ±45 GLASS

Lay-up = $[(\pm 45_G)_{2S}]$, M9.6/35%/BB600/G 45° Hexcel Glass prepreg, $V_F = 0.593$, Ave. thickness = 1.61 mm, S.D. = 0.04 mm, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. Breather cloth was used. Burn off = 1.52 mm = 62.85%

| | | | | | | | |
|------|-------|------|-----|----|--|-----------|-------------|
| 6625 | 45A17 | 51.7 | 0.1 | 3 | | 15.6 0.40 | 1,010,76625 |
| 6626 | 45A14 | 51.7 | 0.1 | 3 | | 16.1 0.38 | 1,070,43225 |
| 6627 | 45A13 | 69.0 | 0.1 | 2 | | 17.1 0.53 | 36,49525 |
| 6628 | 45A11 | 69.0 | 0.1 | 2 | | 15.6 0.61 | 30,14525 |
| 6629 | 45A1 | 141 | * | 13 | | 16.1 0.90 | 125 |
| 6630 | 45A15 | 141 | * | 13 | | 14.9 0.95 | 125 |
| 6613 | 45A12 | 145 | * | 13 | | 16.0 0.91 | 125 |
| 6632 | 45A4 | 86.2 | 0.1 | 1 | | 16.0 0.8 | 3,53525 |
| 6633 | 45A8 | 86.2 | 0.1 | 1 | | 15.6 0.8 | 2,65425 |
| 6634 | 45A9 | 86.2 | 0.1 | 1 | | 15.0 0.89 | 3,26925 |
| 6635 | 45A10 | 69.0 | 0.1 | 1 | | 16.3 0.57 | 36,49425 |
| 6636 | 45A3 | 44.8 | 0.1 | 4 | | 15.5 0.29 | 6,713,85425 |
| 6621 | 45A24 | -148 | * | 13 | | ---- ---- | 125 |
| 6622 | 45A26 | -144 | * | 13 | | ---- ---- | 125 |
| 6623 | 45A20 | -145 | * | 13 | | ---- ---- | 125 |
| 6624 | 45A30 | -152 | * | 13 | | ---- ---- | 125 |

MATERIAL GGP1

Lay-up = $[0/\pm 45/0]$, $V_F = 0.675$, Ave. thickness = 1.80 mm, S.D. = 0.04 mm, 0° - M9.6/32%/1200/G, $\pm 45^\circ$ - M9.6/35%/BB600/G Hexcel prepreg, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. Bleeder cloth was used.

| | | | | | | | |
|------|----------|------|---|------|--|-----------|---------|
| 6606 | GGP1-101 | -579 | * | 13 | | ---- ---- | 125 |
| 6607 | GGP1-102 | -640 | * | 13 | | ---- ---- | 125 |
| 6608 | GGP1-103 | -610 | * | 13 | | ---- ---- | 125 |
| 6609 | GGP1-104 | -638 | * | 13 | | ---- ---- | 125 |
| 6678 | GGP1-100 | 1208 | * | 0.02 | | 42.9 3.2 | 120 tab |
| 6718 | GGP1-106 | 1355 | * | 13 | | 42.7 3.2 | 120 tab |
| 6719 | GGP1-107 | 1480 | * | 13 | | 41.1 3.4 | 120 tab |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL GGP2

Lay-up = $[0/\pm 45/0]$, $V_F = 0.506$, Ave. thickness = 2.41 mm, S.D. = 0.05 mm, 0° - M9.6/32%/1200/G, $\pm 45^\circ$ - M9.6/35%/BB600/G Hexcel prepreg, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. Same as GGP1 except that there was no bleeder cloth used. Burn off coupon = 69.73% for 1.745 mm

| | | | | | | | |
|------|----------|--------|-----|----|------|------|-------------|
| 6610 | GGP2-103 | -723 | * | 13 | ---- | ---- | 125 |
| 6611 | GGP2-102 | -693 | * | 13 | ---- | ---- | 125 |
| 6612 | GGP2-101 | -779 | * | 13 | ---- | ---- | 125 |
| 6613 | GGP2-100 | -721 | * | 13 | ---- | ---- | 125 |
| 6723 | GGP2-107 | 973 | * | 13 | 35.1 | 2.78 | 120 tab |
| 6724 | GGP2-106 | 1016 | * | 13 | 32.7 | 3.1 | 120 tab |
| 6725 | GGP2-105 | 1017 | * | 13 | 34.1 | 3.0 | 120 tab |
| 6899 | GGP2-104 | 446/45 | 0.1 | 3 | 36.9 | 1.23 | 3,615,00120 |
| 7132 | GGP2-105 | 517/52 | 0.1 | 2 | 37.9 | 1.42 | 417,52120 |
| 6908 | GGP2-106 | 758/76 | 0.1 | 1 | 35.5 | 2.14 | 68720 |
| 6909 | GGP2-102 | 758/76 | 0.1 | 1 | 33.2 | 2.33 | 1,38720 |

Tests 6720 - 6722 were in the transverse direction (90/ $\pm 45/90$)

| | | | | | | | |
|------|-----------|------|---|----|------|------|---------|
| 6720 | GGP2-201T | 56.3 | * | 13 | 12.8 | 0.44 | 125 tab |
| 6721 | GGP2-202T | 54.3 | * | 13 | 11.0 | 0.49 | 125 tab |
| 6722 | GGP2-203T | 58.5 | * | 13 | 11.5 | 0.50 | 125 tab |
| 6756 | GGP2-110T | -172 | * | 13 | ---- | ---- | 125 |
| 6757 | GGP2-111T | -172 | * | 13 | ---- | ---- | 125 |
| 6758 | GGP2-112T | -151 | * | 13 | ---- | ---- | 125 |
| 6759 | GGP2-113T | -161 | * | 13 | ---- | ---- | 125 |

MATERIAL GGP4

Lay-up = $[\pm 45/0/\pm 45]$, $V_F = 0.533$, Ave. thickness = 1.85 mm, S.D. = 0.06 mm, 0° - M9.6/32%/1200/G, $\pm 45^\circ$ - M9.6/35%/BB600/G Hexcel prepreg, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum, No bleeder cloth was used. Burn off = 54.36% for 1.81 mm

| | | | | | | | |
|------|--------|--------|-----|------|------|------|---------------|
| 6546 | GGP42 | 861 | * | 13 | 28.7 | 3.0 | 120 tab |
| 6547 | GGP41 | 414/41 | 0.1 | 2 | 26.0 | 1.76 | 27,22220 tab |
| 6548 | GGP43 | 414/41 | 0.1 | 2 | 29.5 | 1.54 | 47,27120 tab |
| 6549 | GGP44 | 345/35 | 0.1 | 3 | 30.2 | 1.27 | 102,64020 tab |
| 6550 | GGP45 | 345/35 | 0.1 | 3 | 26.8 | 1.43 | 73,11320 tab |
| 6551 | GGP46 | 414/41 | 0.1 | 2 | 27.2 | 1.67 | 18,73520 tab |
| 6552 | GGP47 | 345/35 | 0.1 | 3 | 28.3 | 1.38 | 159,75020 tab |
| 6553 | GGP48 | 763 | * | 13 | 25.4 | 3 | 120 tab |
| 6554 | GGP49 | 826 | * | 13 | 26.4 | 3.1 | 120 tab |
| 6617 | GGP430 | -269 | * | 13 | ---- | ---- | 125 |
| 6618 | GGP431 | -275 | * | 13 | ---- | ---- | 125 |
| 6619 | GGP432 | -279 | * | 13 | ---- | ---- | 125 |
| 6620 | GGP433 | -287 | * | 13 | ---- | ---- | 125 |
| 6677 | GGP47 | 661 | * | 0.01 | 32.0 | 2.6 | 125 tab |
| 6881 | GGP420 | 483/48 | 0.1 | 2 | 27.7 | 2.05 | 11,31725 |
| 6882 | GGP421 | 483/48 | 0.1 | 2 | 28.3 | 2.03 | 3,37625 |
| 6883 | GGP422 | 483/48 | 0.1 | 2 | 28.2 | 2.03 | 6,87025 |
| 6884 | GGP410 | 241/24 | 0.1 | 3 | 27.6 | 0.93 | 1,500,00025 R |
| 6885 | GGP411 | 237/24 | 0.1 | 6 | 26.6 | 0.97 | 4,000,00025 R |
| 6886 | GGP412 | 552/55 | 0.1 | 1 | 28.2 | 2.15 | 1,69025 |
| 6921 | GGP421 | 552/55 | 0.1 | 1 | 27.4 | 2.23 | 1,07425 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

CARBON PREPREG

MATERIAL M9.1/40%/500/C UNI CARBON

Layup = [0], $V_F = 0.516$, Ave. thickness = 0.523 mm, S.D. = 0.014 mm, M9.1/40%/500/C Hexcel prepreg, Epoxy.
Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth was used.

| | | | | | | | |
|------|-------|------|---|------|------|------|------------|
| 6698 | 0C-1 | 1641 | * | 0.02 | 124 | 1.25 | 125NU=0.36 |
| 6699 | 0C-10 | 1462 | * | 0.02 | 107 | 1.36 | 125 |
| 6700 | 0C-3 | 1855 | * | 0.02 | 114 | 1.54 | 125 |
| 6701 | 0C-7 | 2030 | * | 0.02 | ---- | ---- | 125 |
| 6702 | 0C-9 | 1838 | * | 0.02 | ---- | ---- | 125 |
| 6717 | 0C-4 | 1761 | * | 0.02 | 103 | 1.52 | 125 |

MATERIAL M9.1/40%/500/C UNI CARBON

Lay-up = [0]₃, $V_F = 0.497$, Ave. thickness = 1.63 mm, S.D. = 0.06 mm, M9.1/40%/500/C Hexcel prepreg, Epoxy.
Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth was used.

| | | | | | | | |
|---|---------|-------|---|------|------|------|-------------|
| 6684 | 03-1 | 1925 | * | 0.02 | 105 | 1.54 | 125NU= 0.31 |
| 6685 | 03-2 | 1591 | * | 0.02 | 97.8 | 1.43 | 125NU=0.35 |
| 6726 | 03-4 | 1923 | * | 13 | 114 | 1.5 | 120 tab |
| 6790 | 03-124 | -718 | * | 13 | ---- | ---- | 125 |
| 6791 | 03-126 | -768 | * | 13 | ---- | ---- | 125 |
| 6792 | 03-127 | -762 | * | 13 | ---- | ---- | 125 |
| 6819 | 03-128 | -728 | * | 13 | ---- | ---- | 125 |
| Tests 6686 - 6689, 6820 - 6823 were in the transverse direction (90) ₃ | | | | | | | |
| 6686 | 03-T1 | 19.7 | * | 0.02 | 8.05 | 0.24 | 125 |
| 6687 | 03-T2 | 18.5 | * | 0.02 | 7.49 | 0.23 | 125 |
| 6688 | 03-T5 | 25.7 | * | 0.02 | 7.64 | 0.30 | 125 |
| 6689 | 03-T6 | 29.9 | * | 0.02 | 7.82 | 0.27 | 125 |
| 6820 | 03-T132 | -105 | * | 13 | ---- | ---- | 125 |
| 6821 | 03-T131 | -109 | * | 13 | ---- | ---- | 125 |
| 6822 | 03-130 | -94.3 | * | 13 | ---- | ---- | 125 |
| 6823 | 03-T129 | -107 | * | 13 | ---- | ---- | 125 |

MATERIAL M9.1/40%/500/C UNI CARBON

Lay-up = [0]₄, $V_F = 0.501$, Ave. thickness = 2.16 mm, S.D. = 0.05 mm, M9.1/40%/500/C Hexcel prepreg, Epoxy.
Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth was used.

| | | | | | | | |
|---|---------|------|---|----|------|------|---------|
| 6683 | 04-1 | 1544 | * | 13 | 103 | 1.33 | 120 tab |
| 6727 | 04-2 | 1785 | * | 13 | 116 | 1.45 | 120 tab |
| 6728 | 04-3 | 1663 | * | 13 | 115 | 1.35 | 120 tab |
| 6732 | 04-210 | -742 | * | 13 | ---- | ---- | 125 |
| 6733 | 04-211 | -841 | * | 13 | ---- | ---- | 125 |
| 6734 | 04-212 | -731 | * | 13 | ---- | ---- | 125 |
| 6735 | 04-213 | -837 | * | 13 | ---- | ---- | 125 |
| Tests 6736- 6739 were in the transverse direction (90) ₄ | | | | | | | |
| 6736 | 904-203 | -115 | * | 13 | ---- | ---- | 125 |
| 6737 | 904-206 | -132 | * | 13 | ---- | ---- | 125 |
| 6738 | 904-202 | -147 | * | 13 | ---- | ---- | 125 |
| 6739 | 904-201 | -144 | * | 13 | ---- | ---- | 125 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--|----------------------------|-----|---------|----------|--------|-------------------|----------------------------|
| MATERIAL M9.1/40%/500/C UNI CARBON | | | | | | | |
| Lay-up = $[\pm 45]_{2S}$, $V_F = 0.490$, Ave. thickness = 4.40 mm, S.D. = 0.02mm, M9.1/40%/500/C Hexcel prepreg, Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth was used. (ASTM D3518 Shear modulus (G) tests) | | | | | | | |
| 6786 | 45-203 | 106 | * | 13 | | 13.6 2.14 | 125 G=3.75 |
| 6785 | 45-202 | 108 | * | 13 | | 11.9 2.1 | 125 G=3.54 |
| 6782 | 45-201 | 109 | * | 13 | | 15.5 0.86 | 125 G=4.05 |
| 6787 | 45-300 | 116 | * | 13 | | 12.4 3.2 | 150 G=3.49 |

MATERIAL SE84LV/HSC

Lay-up = $[0_{3C}]$, C = SP Systems carbon prepreg SE84LV/HSC/450/400/37%, $V_F = 0.54$, Ave. thickness = 1.35 mm, S.D. = 0.12 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 103 kPa over pressure. No bleeder cloth. 61% carbon 0's/vol.

| | | | | | | | |
|------|-----|------|---|----|--|---------|-----|
| 6888 | 102 | 1998 | * | 13 | | 109 1.9 | 125 |
| 6889 | 103 | 1782 | * | 13 | | 136 1.4 | 125 |
| 6890 | 101 | 2596 | * | 13 | | 126 2.1 | 125 |

MATERIAL SE84LV/SC300C

Lay-up = $[0_{5C}]$, C = SP Systems carbon prepreg SE84LV/SC300C/300/400/37%, $V_F = 0.53$, Ave. thickness = 1.46 mm, S.D. = 0.17 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 103 kPa over pressure. No bleeder cloth. 61% carbon 0's/vol.

| | | | | | | | |
|------|-----|------|---|----|--|---------|-----|
| 6891 | 101 | 1564 | * | 13 | | 116 1.4 | 125 |
| 6892 | 103 | 1463 | * | 13 | | 103 1.5 | 125 |
| 6893 | 104 | 2203 | * | 13 | | 155 1.5 | 125 |

MATERIAL Fortafil prepreg

Lay-up = $[0_{9C}]$, C = Fortafil carbon prepreg 150 g/m² areal weight uni's, 38% resin, $V_F = 0.53$, Ave. thickness = 1.34 mm, S.D. = 0.03 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 103 kPa over pressure. No bleeder cloth.

| | | | | | | | |
|------|-----|------|---|----|--|---------|-----|
| 6894 | 104 | 1773 | * | 13 | | 114 1.6 | 125 |
| 6895 | 100 | 1629 | * | 13 | | 118 1.4 | 125 |
| 6896 | 103 | 1706 | * | 13 | | 119 1.5 | 125 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

CARBON AND GLASS HYBRIDS

MATERIAL DD23

Lay-up = $[0_2/\pm 45/0/0_C]_S$, 0_C - AS4-6K Carbon (TPI STYLE 4416), 220 g/m², 0 - D155, ± 45 - DB120. $V_F = 0.45$, Ave. thickness = 3.65 mm, S.D. = 0.11 mm, Derakane 411C-50 vinyl ester.

| | | | | | | | | |
|------|---------|--------|-----|-----|------|------|-----------|--------|
| 4077 | DD23105 | 649 | * | 13 | 27.8 | ---- | 1 | 25 tab |
| 4078 | DD23106 | 276/28 | 0.1 | 10 | 28.9 | 0.96 | 1,681,606 | 25 tab |
| 4079 | DD23111 | 622 | * | 13 | 28.1 | ---- | 1 | 25 tab |
| 4080 | DD23107 | 685 | * | 13 | 27.1 | ---- | 1 | 25 tab |
| 4081 | DD23104 | 414/41 | 0.1 | 2 | 26.3 | 1.65 | 2,803 | 25 tab |
| 4082 | DD23110 | 634 | * | 13 | 27.9 | ---- | 1 | 25 tab |
| 4083 | DD23102 | 414/41 | 0.1 | 2 | 25.1 | 1.68 | 451 | 25 tab |
| 4084 | DD23103 | 345/35 | 0.1 | 4 | 28.6 | 1.17 | 295,281 | 25 tab |
| 4085 | DD23109 | 345/35 | 0.1 | 5 | 25.8 | 1.14 | 197,270 | 25 tab |
| 4086 | DD23108 | 647 | * | 0.1 | 26.1 | ---- | 1 | 25 tab |
| 4087 | DD23112 | 310/31 | 0.1 | 5 | 28.1 | 1.12 | 526,418 | 25 tab |
| 4088 | DD23101 | 310/31 | 0.1 | 10 | 26.6 | 1.08 | 493,197 | 25 tab |
| 4101 | DD23122 | 379/38 | 0.1 | 4 | 27.1 | 1.47 | 14,350 | 25 tab |
| 4102 | DD23121 | 379/38 | 0.1 | 4 | 28.0 | 1.37 | 22,335 | 25 tab |
| 4103 | DD23120 | 345/35 | 0.1 | 4 | 28.9 | 1.17 | 119,009 | 25 tab |
| 4104 | DD23119 | 379/38 | 0.1 | 2 | 27.6 | 1.42 | 4,324 | 25 tab |
| 4214 | DD23143 | -467 | * | 13 | ---- | ---- | 1 | 25 |
| 4215 | DD23142 | -498 | * | 13 | ---- | ---- | 1 | 25 |
| 4216 | DD23141 | -505 | * | 13 | ---- | ---- | 1 | 25 |
| 4217 | DD23140 | -504 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CG

Lay-up = $[0_2/0_{2C}/0/0_{2C}/0_2]_S$, Glass = D155, C = AS4-6K Carbon (TPI STYLE 4416), 220g/m², $V_F = 0.56$, Ave. thickness = 2.66 mm, S.D. = 0.06 mm, Derakane 8084 vinyl ester.

| | | | | | | | | |
|------|-------|--------|-----|----|------|------|-----------|--------|
| 4089 | CG110 | 934 | * | 13 | 72.5 | 1.29 | 1 | 25 tab |
| 4090 | CG106 | 861 | * | 13 | 65.5 | 1.31 | 1 | 25 tab |
| 4091 | CG104 | 414/41 | 0.1 | 12 | 65.8 | 0.59 | 1,368,362 | 25 tab |
| 4092 | CG109 | 552/55 | 0.1 | 8 | 63.7 | 0.79 | 141,368 | 25 tab |
| 4093 | CG101 | 552/55 | 0.1 | 9 | 68.3 | 0.89 | 55,233 | 25 tab |
| 4094 | CG112 | 483/48 | 0.1 | 10 | 61.4 | 0.73 | 253,069 | 25 tab |
| 4095 | CG108 | 552/55 | 0.1 | 5 | 64.4 | 0.81 | 109,701 | 25 tab |
| 4096 | CG105 | 414/41 | 0.1 | 12 | 71.4 | 0.56 | 1,900,285 | 25 tab |
| 4097 | CG107 | 690/69 | 0.1 | 2 | 62.4 | 1.02 | 1,969 | 25 tab |
| 4098 | CG111 | 690/69 | 0.1 | 2 | 64.8 | 0.94 | 13,577 | 25 tab |
| 4099 | CG113 | 690/69 | 0.1 | 2 | 62.0 | 1.04 | 10,770 | 25 tab |
| 4100 | CG103 | 965 | * | 13 | 63.5 | 1.52 | 1 | 25 tab |
| 6654 | CG133 | -490 | * | 13 | ---- | ---- | 1 | 25 |
| 6655 | CG132 | -568 | * | 13 | ---- | ---- | 1 | 25 |
| 6656 | CG131 | -463 | * | 13 | ---- | ---- | 1 | 25 |
| 6657 | CG130 | -378 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL CA

Lay-up = (0)₁₂, AS4-6K Carbon (TPI STYLE 4416), 220g/m², V_F = 0.48, Ave. thickness = 2.82 mm, S.D. = 0.24 mm, Derakane 8084 vinyl ester.

| | | | | | | | | |
|------|-------|----------|-----|----|------|------|-----------|----------|
| 4105 | CA113 | 1504 | * | 13 | 112 | 1.34 | 1 | 18 tab |
| 4106 | CA109 | 1666 | * | 13 | 112 | 1.49 | 1 | 18 tab |
| 4107 | CA111 | 1364 | * | 13 | 118 | 1.15 | 1 | 18 tab |
| 4108 | CA110 | 1207/121 | 0.1 | 1 | 154 | 0.90 | 9 | 18 tab |
| 4109 | CA112 | 1034/103 | 0.1 | 5 | 112 | 0.82 | 28,497 | 18 tab |
| 4110 | CA108 | 862/86 | 0.1 | 12 | 112 | 0.70 | 1,030,350 | 18 tab |
| 4111 | CA106 | 862/86 | 0.1 | 12 | 118 | 0.68 | 77,101 | 18 R tab |
| 4112 | CA107 | 862/86 | 0.1 | 10 | 113 | 0.70 | 2,364,140 | 18 tab |
| 6668 | CA160 | -558 | * | 13 | ---- | ---- | 1 | 25 |
| 6669 | CA161 | -564 | * | 13 | ---- | ---- | 1 | 25 |
| 6670 | CA163 | -570 | * | 13 | ---- | ---- | 1 | 25 |
| 6671 | CA162 | -619 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL JJ

Lay-up = (±45/0_{3C}/±45), UNI21 Carbon (Zoltek), 595 g/m², V_F = 0.46, Ave. thickness = 3.19 mm, S.D. = 0.03 mm, Derakane 8084 vinyl ester. Fiber waviness was present in the laminate.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|-----------|----------|
| 6170 | JJ1100 | ---- | * | 13 | 64.1 | ---- | 1 | 20 tab |
| 6171 | JJ1102 | 725 | * | 13 | 53.6 | 1.3 | 1 | 20 tab |
| 6172 | JJ1103 | 1016 | * | 13 | 55.7 | 1.7 | 1 | 20 tab |
| 6173 | JJ1104 | 950 | * | 13 | 62.5 | 1.5 | 1 | 20 tab |
| 6174 | JJ1105 | 690/69 | 0.1 | 1 | 72.2 | 1.04 | 214 | 20 tab |
| 6175 | JJ1109 | 552/55 | 0.1 | 5 | 59.9 | 0.85 | 2,300,000 | 20 tab R |
| 6558 | JJ1107 | 690/69 | 0.1 | 1 | 64.1 | 1.1 | 434 | 20 tab |
| 6559 | JJ1120 | 844 | * | 13 | 51.2 | 1.6 | 1 | 20 tab |
| 6560 | JJ1121 | 690/69 | 0.1 | 1 | 44.3 | 1.45 | 15 | 20 tab |
| 6561 | JJ1122 | 690/69 | 0.1 | 1 | 48.4 | 1.44 | 579 | 20 tab |
| 6562 | JJ1126 | 621/62 | 0.1 | 3 | 55.6 | 1.2 | 21,801 | 20 tab |
| 6563 | JJ1130 | -388 | * | 13 | ---- | ---- | 1 | 25 |
| 6564 | JJ1131 | -469 | * | 13 | ---- | ---- | 1 | 25 |
| 6565 | JJ1132 | -456 | * | 13 | ---- | ---- | 1 | 25 |
| 6566 | JJ1133 | -329 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL UNI21

Lay-up = (0), UNI21 Carbon (Zoltek), 595 g/m², V_F = 0.316, Ave. thickness = 1.22 mm, S.D. = 0.003 mm, Derakane 8084 vinyl ester.

| | | | | | | | | |
|------|-----------|------|---|----|------|------|---|--------|
| 6240 | UNI21-53 | 821 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6241 | UNI21-54 | 572 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6242 | UNI21-55 | 486 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6605 | UNI21-163 | -339 | * | 13 | ---- | ---- | 1 | 25 |
| 6658 | UNI21-164 | -362 | * | 13 | ---- | ---- | 1 | 25 |
| 6659 | UNI21-165 | -373 | * | 13 | ---- | ---- | 1 | 25 |
| 6660 | UNI21-166 | -353 | * | 13 | ---- | ---- | 1 | 25 |
| 6661 | UNI21-161 | 695 | * | 13 | 50.9 | 1.4 | 1 | 25 tab |
| 6662 | UNI21-160 | 703 | * | 13 | 52.5 | 1.3 | 1 | 25 tab |
| 6663 | UNI21-162 | 667 | * | 13 | 51.6 | 1.2 | 1 | 25 tab |

fiber waviness is a problem with this fabric, producing random edge induced failures

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL UNI21

Lay-up = (0)₄, UNI21 Carbon (Zoltek), 712 g/m², V_F = 0.40, Ave. thickness = 3.84 mm, S.D. = 0.08 mm, Derakane 8084 vinyl ester.

| | | | | | | | | |
|------|------------|----------|----|----|------|------|-----------|--------|
| 6178 | UNI21-114A | 971 | * | 13 | 80.8 | 1.2 | 1 | 4 tab |
| 6179 | UNI21-114B | 1128 | * | 13 | 83.9 | 1.34 | 1 | 13 tab |
| 6180 | UNI21-101B | 1051 | * | 13 | 69.1 | 1.5 | 1 | 4 tab |
| 6181 | UNI21-100A | 942 | * | 13 | 90.9 | 1.04 | 1 | 4 tab |
| 6182 | UNI21-113A | 807 | * | 13 | 89.2 | 0.91 | 1 | 4 tab |
| 6183 | UNI21-113B | 893 | * | 13 | 90.8 | 1.0 | 1 | 4 tab |
| 6184 | UNI21-166 | -509 | * | 13 | ---- | ---- | 1 | 25 |
| 6185 | UNI21-165 | -599 | * | 13 | ---- | ---- | 1 | 25 |
| 6186 | UNI21-164 | -507 | * | 13 | ---- | ---- | 1 | 25 |
| 6187 | UNI21-168 | -551 | * | 13 | ---- | ---- | 1 | 25 |
| 6192 | UNI21-156 | -414/-41 | 10 | 1 | ---- | ---- | 7 | 25 |
| 6193 | UNI21-163 | -345/-35 | 10 | 4 | ---- | ---- | 78,890 | 25 |
| 6194 | UNI21-148 | -324/-32 | 10 | 5 | ---- | ---- | 1,961,937 | 25 |
| 6195 | UNI21-162 | -345/-35 | 10 | 1 | ---- | ---- | 39 | 25 |
| 6196 | UNI21-161 | -345/-35 | 10 | 3 | ---- | ---- | 52,667 | 25 |
| 6197 | UNI21-160 | -345/-35 | 10 | 4 | ---- | ---- | 240,249 | 25 |
| 6198 | UNI21-156 | -345/-35 | 10 | 1 | ---- | ---- | 211 | 25 |
| 6237 | UNI21-167 | -345/-35 | 10 | 2 | ---- | ---- | 9,254 | 25 |

Tests 6253 - 6260 were transverse tests tested in the [90]₄ direction

| | | | | | | | | |
|------|------------|------|---|----|------|------|---|----|
| 6253 | UNI21-200T | 17.1 | * | 13 | 6.2 | 0.28 | 1 | 25 |
| 6254 | UNI21-201T | 23.0 | * | 13 | 6.4 | 0.36 | 1 | 25 |
| 6255 | UNI21-202T | 22.1 | * | 13 | 6.7 | 0.33 | 1 | 25 |
| 6256 | UNI21-203T | 20.4 | * | 13 | 6.7 | 0.31 | 1 | 25 |
| 6257 | UNI21-205T | -125 | * | 13 | ---- | ---- | 1 | 25 |
| 6258 | UNI21-206T | -120 | * | 13 | ---- | ---- | 1 | 25 |
| 6259 | UNI21-207T | -110 | * | 13 | ---- | ---- | 1 | 25 |
| 6260 | UNI21-208T | -128 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL UNI25 (XP33FBUD25)

Lay-up = (0), UNI25 (XP33FBUD25) Carbon (Zoltek), same base material as the UNI21 material, just a tighter stitching pattern. 712 g/m², V_F = 0.45, Ave. thickness = 1.09 mm, S.D. = 0.003 mm, Derakane 8084 vinyl ester

| | | | | | | | | |
|------|----------|----------|-----|----|------|------|-----------|----------|
| 6243 | UNI25-53 | 1222 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6244 | UNI25-54 | 1254 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6245 | UNI25-55 | 965/97 | 0.1 | 3 | ---- | ---- | 3,000,000 | 25 tab R |
| 6246 | UNI25-56 | 1069/107 | 0.1 | 2 | ---- | ---- | 174,838 | 25 tab |
| 6247 | UNI25-57 | 1103/110 | 0.1 | 2 | ---- | ---- | 517 | 25 tab |
| 6248 | UNI25-58 | 1069/107 | 0.1 | 2 | ---- | ---- | 23,261 | 25 tab |
| 6249 | UNI25-60 | 1069/107 | 0.1 | 2 | ---- | ---- | 1,490 | 25 tab |
| 6250 | UNI25-61 | 1162 | * | 13 | ---- | ---- | 1 | 25 tab |
| 6251 | UNI25-62 | 1034/103 | 0.1 | 2 | ---- | ---- | 22,094 | 25 tab |
| 6252 | UNI25-63 | 945/95 | 0.1 | 3 | ---- | ---- | 1,500,000 | 25 tab R |

Test 6269 also generated a Poisson's ratio, $\nu_{LT} = 0.27$

| | | | | | | | | |
|------|-----------|----------|-----|------|------|------|---------|--------|
| 6269 | UNI25-52 | 1442 | * | 0.05 | 88.0 | 1.53 | 1 | 25 tab |
| 6270 | UNI25-65 | 1103/110 | 0.1 | 1 | ---- | ---- | 828 | 25 tab |
| 6271 | UNI25-66 | 1034/103 | 0.1 | 3 | ---- | ---- | 58,819 | 25 tab |
| 6272 | UNI25-67 | 1034/103 | 0.1 | 3 | ---- | ---- | 127,748 | 25 tab |
| 6664 | UNI25-160 | -368 | * | 13 | ---- | ---- | 1 | 25 |
| 6665 | UNI25-161 | -333 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|------|---------|----------|--------|-------------------|----------------------------|
| 6666 | UNI25-162 | -344 | * | 13 | ---- | ---- | 1 25 |
| 6667 | UNI25-163 | -337 | * | 13 | ---- | ---- | 1 25 |

MATERIAL UNI25A

Lay-up = (0)₄, UNI25 Carbon (Zoltek), same base material as the UNI21 material, just a tighter stitching.

712 g/m², V_F = 0.45, Ave. thickness = 4.11 mm, S.D. = 0.07 mm, Derakane 8084 vinyl ester

| | | | | | | | |
|------|-----------|----------|----|----|------|------|-----------------|
| 6188 | UNI25A133 | -508 | * | 13 | ---- | ---- | 1 25 |
| 6189 | UNI25A132 | -510 | * | 13 | ---- | ---- | 1 25 |
| 6190 | UNI25A134 | -543 | * | 13 | ---- | ---- | 1 25 |
| 6191 | UNI25A135 | -578 | * | 13 | ---- | ---- | 1 25 |
| 6199 | UNI25A136 | -345/-35 | 10 | 3 | ---- | ---- | 24,407 25 |
| 6235 | UNI25A137 | -345/-35 | 10 | 3 | ---- | ---- | 5,640 25 |
| 6236 | UNI25A130 | -345/-35 | 10 | 3 | ---- | ---- | 11,766 25 |
| 6238 | UNI25A143 | -345/-35 | 10 | 10 | ---- | ---- | 20,000,000 25 R |
| 6239 | UNI25A142 | -379/-38 | 10 | 5 | ---- | ---- | 1,334,553 25 |
| 6176 | UNI25A145 | -379/-38 | 10 | 5 | ---- | ---- | 4,000,000 25 R |

Tests 6261 - 6268 were transverse tests tested in the [90]₄ direction

| | | | | | | | |
|------|------------|------|---|----|------|------|------|
| 6261 | UNI25A200T | 19.2 | * | 13 | 6.6 | 0.29 | 1 25 |
| 6262 | UNI25A201T | 21.0 | * | 13 | 6.9 | 0.31 | 1 25 |
| 6263 | UNI25A202T | 21.2 | * | 13 | 6.7 | 0.31 | 1 25 |
| 6264 | UNI25A203T | 20.7 | * | 13 | 6.8 | 0.31 | 1 25 |
| 6265 | UNI25A208T | -104 | * | 13 | ---- | ---- | 1 25 |
| 6266 | UNI25A207T | -90 | * | 13 | ---- | ---- | 1 25 |
| 6267 | UNI25A206T | -103 | * | 13 | ---- | ---- | 1 25 |
| 6268 | UNI25A205T | -104 | * | 13 | ---- | ---- | 1 25 |
| 6672 | UNI25A180 | 832 | * | 13 | 86.2 | 1 | 1 13 |
| 6673 | UNI25A181 | 858 | * | 13 | 86.2 | 1 | 1 13 |
| 6674 | UNI25A182 | 996 | * | 13 | 86.1 | 1.2 | 1 13 |

MATERIAL CGB

Lay-up = (0_{2C}/±45/0_{2C}), Hexcel carbon prepreg 0°, M9.1/40%/500/C, 500 g/m², Hexcel glass prepreg ±45°, M9.6/35%/BB600/G, 610 g/m², V_F = 0.50, Ave. thickness = 2.69 mm, S.D. = 0.08 mm. Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth.

| | | | | | | | |
|------|--------|----------|----|------|------|------|------------|
| 6567 | CGB101 | 1633 | * | 13 | 97.1 | 1.48 | 1 21 tab |
| 6568 | CGB102 | 1582 | * | 13 | 102 | 1.4 | 1 21 tab |
| 6569 | CGB103 | 1605 | * | 13 | 95.1 | 1.5 | 1 21 tab |
| 6570 | CGB137 | -625 | * | 13 | ---- | ---- | 1 25 |
| 6571 | CGB126 | -648 | * | 13 | ---- | ---- | 1 25 |
| 6572 | CGB139 | -583 | * | 13 | ---- | ---- | 1 25 |
| 6573 | CGB138 | -593 | * | 13 | ---- | ---- | 1 25 |
| 6675 | CGB107 | 1493 | * | 0.02 | 98.3 | 1.45 | 1 25 tab |
| 6835 | CCB131 | -483/-48 | 10 | 4 | ---- | ---- | 8,867 25 |
| 6836 | CGB122 | -483/-48 | 10 | 4 | ---- | ---- | 6,482 25 |
| 6837 | CGB129 | -483/-48 | 10 | 4 | ---- | ---- | 2,018 25 |
| 6838 | CGB128 | -448/-45 | 10 | 6 | ---- | ---- | 611,283 25 |
| 6839 | CGB121 | -448/-45 | 10 | 6 | ---- | ---- | 87,489 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL CGB2

Lay-up = $(0_C/\mp 45/0_C)$, Hexcel carbon prepreg 0° , M9.1/40%/500/C, 500 g/m², Hexcel glass prepreg $\pm 45^\circ$, M9.6/35%/BB600/G, 610 g/m², $V_F = 0.52$, Ave. thickness = 1.54 mm, S.D. = 0.04 mm. Epoxy. Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth.

| | | | | | | | | |
|------|---------|------|---|------|------|------|---|--------|
| 6574 | CGB2101 | 1374 | * | 13 | 68.4 | 2.0 | 1 | 21 tab |
| 6575 | CGB2102 | 1417 | * | 13 | 67.2 | 2.1 | 1 | 21 tab |
| 6576 | CGB2103 | 1419 | * | 13 | 66.6 | 2.1 | 1 | 21 tab |
| 6577 | CGB2139 | -670 | * | 13 | ---- | ---- | 1 | 25 |
| 6578 | CGB2124 | -613 | * | 13 | ---- | ---- | 1 | 25 |
| 6579 | CGB2126 | -607 | * | 13 | ---- | ---- | 1 | 25 |
| 6580 | CGB2125 | -551 | * | 13 | ---- | ---- | 1 | 25 |
| 6676 | CGB2104 | 1108 | * | 0.02 | 69.7 | 1.52 | 1 | 25 tab |

MATERIAL CGB3

Lay-up = $[\pm 45_G/0_{3C}/\mp 45_G]$, G = Hexcel glass prepreg M9.6/35%/BB600/G 45's, C = Hexcel carbon prepreg M9.1/40%/500/C, $V_F = 0.496$, Ave. thickness = 2.60 mm, S.D. = 0.03 mm, Two hours at 100 °C, 560 mm Hg vacuum. No bleeder cloth.

| | | | | | | | | |
|------|---------|----------|----|----|------|------|-----------|--------|
| 6690 | CGB3100 | 1210 | * | 13 | 63.6 | 1.90 | 1 | 25 tab |
| 6691 | CGB3103 | 1246 | * | 13 | 70.7 | 1.76 | 1 | 25 tab |
| 6692 | CGB3101 | 1169 | * | 13 | 63.2 | 1.67 | 1 | 25 tab |
| 6744 | CGB3104 | -499 | * | 13 | ---- | ---- | 1 | 25 |
| 6745 | CGB3107 | -616 | * | 13 | ---- | ---- | 1 | 25 |
| 6746 | CGB3109 | -534 | * | 13 | ---- | ---- | 1 | 25 |
| 6747 | CGB3105 | -502 | * | 13 | ---- | ---- | 1 | 25 |
| 6841 | CGB3141 | -448/-45 | 10 | 6 | ---- | ---- | 1,005,000 | 25R |
| 6842 | CGB3140 | -517/-52 | 10 | 1 | ---- | ---- | 2,445 | 25 |
| 6843 | CGB3137 | -483/-48 | 10 | 4 | ---- | ---- | 450,000 | 25R |
| 6897 | CGB3205 | 1314 | * | 13 | 70.6 | 1.9 | 1 | 25 |
| 6898 | CGB3204 | 1423 | * | 13 | 73.5 | 1.9 | 1 | 25 |
| 7027 | CGB3206 | 1333 | * | 13 | 71.5 | 1.9 | 1 | 25 |
| 7028 | CGB3207 | -648 | * | 13 | ---- | ---- | 1 | 25 |
| 7029 | CGB3208 | -639 | * | 13 | ---- | ---- | 1 | 25 |
| 7030 | CGB3210 | -632 | * | 13 | ---- | ---- | 1 | 25 |
| 7031 | CGB3218 | -667 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CGB4

Lay-up = $[\pm 45_G/0_{3C}/\pm 45_G]$, G = Hexcel glass prepreg M9.6/35%/BB600/G 45's, C = SP Systems carbon prepreg SE84LV/HSC/450/400/37%, $V_F = 0.43$, Ave. thickness = 4.05 mm, S.D. = 0.05 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 103 kPa over pressure. No bleeder cloth. 61% carbon 0's/vol.

| | | | | | | | | |
|------|-----|------|---|----|------|------|---|----|
| 7032 | 101 | 1317 | * | 13 | 81.8 | 1.6 | 1 | 13 |
| 7033 | 200 | 1614 | * | 13 | 83.0 | 2 | 1 | 13 |
| 7034 | 102 | 1205 | * | 13 | 82.3 | 1.5 | 1 | 13 |
| 7035 | 104 | 1261 | * | 13 | 81.7 | 1.6 | 1 | 13 |
| 7036 | 115 | -705 | * | 13 | ---- | ---- | 1 | 25 |
| 7037 | 126 | -873 | * | 13 | ---- | ---- | 1 | 25 |
| 7038 | 118 | -873 | * | 13 | ---- | ---- | 1 | 25 |
| 7039 | 119 | -859 | * | 13 | ---- | ---- | 1 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL CGB5

Lay-up = [$\pm 45_G/0_{5C}/\pm 45_G$], G = Hexcel glass prepreg M9.6/35%/BB600/G 45's, C = SP Systems carbon prepreg SE84LV/SC300C/300/400/37%, $V_F = 0.49$, Ave. thickness = 2.73 mm, S.D. = 0.06 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 103 kPa over pressure. No bleeder cloth. 63.5% carbon 0's/vol

| | | | | | | | | |
|------|-----|------|---|----|------|------|---|----|
| 7040 | 101 | 1063 | * | 13 | 67.2 | 1.6 | 1 | 13 |
| 7041 | 102 | 1167 | * | 13 | 73.5 | 1.6 | 1 | 13 |
| 7042 | 105 | 1160 | * | 13 | 69.1 | 1.7 | 1 | 13 |
| 7043 | 130 | -662 | * | 13 | ---- | ---- | 1 | 25 |
| 7044 | 137 | -688 | * | 13 | ---- | ---- | 1 | 25 |
| 7045 | 138 | -675 | * | 13 | ---- | ---- | 1 | 25 |
| 7046 | 132 | -650 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CGB6

Lay-up = [$\pm 45_G/0_{6C}/\pm 45_G$], G = DB120 glass fabric 45's, C = SP Systems carbon prepreg SE84LV/HSC450/450/400/37%, $V_F = 0.646$, Ave. thickness = 3.20 mm, S.D. = 0.09 mm, Epoxy. Three hours at 100 °C, 560 mm Hg vacuum, 276 kPa over pressure. No bleeder cloth (used dry DB120's).

| | | | | | | | | |
|------|-----|-------|---|----|------|------|---|----|
| 7047 | 108 | 2000 | * | 13 | 106 | 1.9 | 1 | 13 |
| 7048 | 109 | 1939 | * | 13 | 100 | 2.0 | 1 | 13 |
| 7049 | 101 | 1905 | * | 13 | 98.9 | 2.0 | 1 | 13 |
| 7050 | 121 | -825 | * | 13 | ---- | ---- | 1 | 25 |
| 7051 | 126 | -1136 | * | 13 | ---- | ---- | 1 | 25 |
| 7052 | 127 | -1014 | * | 13 | ---- | ---- | 1 | 25 |
| 7053 | 130 | -1132 | * | 13 | ---- | ---- | 1 | 25 |

MATERIAL CGD4

Lay-up = ($\pm 45/0_{3C}/\pm 45$), Toray carbon fabric 0°, ACM-13-2 (300-48K-10C yarn) 600g/m², DB120 $\pm 45^\circ$, 393 g/m², $V_F = 0.51$, Ave. thickness = 2.54 mm, S.D. = 0.17 mm. Derakane 8084 vinyl ester.

Tests 6847 - 6859 involved coupons taken from CGD4 plate 1.

| | | | | | | | | |
|------|---------|----------|----|-----|------|------|-----------|------|
| 6847 | CGD4311 | -573 | * | 13 | ---- | ---- | 1 | 25 |
| 6848 | CGD4307 | -628 | * | 13 | ---- | ---- | 1 | 25 |
| 6849 | CGD4305 | -489 | * | 13 | ---- | ---- | 1 | 25 |
| 6850 | CGD4304 | -442 | * | 13 | ---- | ---- | 1 | 25 |
| 6851 | CGD4323 | -414/-41 | 10 | 3 | ---- | ---- | 47,832 | 25 |
| 6853 | CGD4303 | -414/-41 | 10 | 3 | ---- | ---- | 2,540 | 25 |
| 6854 | CGD4316 | -414/-41 | 10 | 3 | ---- | ---- | 9,518 | 25 |
| 6855 | CGD4317 | -393/- | 10 | 6 | ---- | ---- | 1,138,917 | 25 |
| 6852 | CGD4327 | 1081 | * | 13 | 83.9 | 1.3 | 1 | 25 |
| 6855 | CGD4324 | 1179 | * | 13 | 80.5 | 1.5 | 1 | 25 |
| 6856 | CGD4325 | 1104 | * | 13 | 82.6 | 1.4 | 1 | 25 |
| 6857 | CGD4326 | 1018 | * | 0.1 | 81.7 | 1.27 | 1 | 25 |
| 6858 | CGD4313 | -393/-39 | 10 | 8 | ---- | ---- | 656,841 | 25 |
| 6859 | CGD4314 | -393/-39 | 10 | 8 | ---- | ---- | 6,000,000 | 25 R |

Tests 6930 - 6946 involved coupons taken from CGD4 plate 2.

| | | | | | | | | |
|------|---------|----------|----|----|------|------|-----------|----|
| 6930 | CGD4401 | -611 | * | 13 | ---- | ---- | 1 | 25 |
| 6931 | CGD4408 | -626 | * | 13 | ---- | ---- | 1 | 25 |
| 6932 | CGD4406 | -572 | * | 13 | ---- | ---- | 1 | 25 |
| 6933 | CGD4403 | -541 | * | 13 | ---- | ---- | 1 | 25 |
| 6934 | CGD4402 | -414/-41 | 10 | 3 | ---- | ---- | 1,171,500 | 25 |
| 6935 | CGD4404 | -414/-41 | 10 | 3 | ---- | ---- | 8,159 | 25 |
| 6936 | CGD4405 | -414/-41 | 10 | 3 | ---- | ---- | 865,497 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 6937 | CGD4407 | -414/-41 | 10 | 3 | ---- | ---- | 64,312 25 |
| 6938 | CGD4409 | -414/-41 | 10 | 3 | ---- | ---- | 158,965 25 |
| 6939 | CGD4410 | -414/-41 | 10 | 3 | ---- | ---- | 32,561 25 |
| 6940 | CGD4412 | -414/-41 | 10 | 3 | ---- | ---- | 4,153 25 |
| 6941 | CGD4413 | -414/-41 | 10 | 3 | ---- | ---- | 10,842 25 |
| 6942 | CGD4414 | -483/-48 | 10 | 3 | ---- | ---- | 442 25 |
| 6943 | CGD4415 | -483/-48 | 10 | 3 | ---- | ---- | 49 25 |
| 6944 | CGD4416 | -414/-41 | 10 | 3 | ---- | ---- | 54,768 25 |
| 6945 | CGD4417 | -414/-41 | 10 | 3 | ---- | ---- | 17,155 25 |
| 6946 | CGD4419 | -414/-41 | 10 | 3 | ---- | ---- | 2,000,000 25 R |

MATERIAL CGD4E

Lay-up = ($\pm 45/0_{3C}/\mp 45$), Toray carbon fabric 0°, ACM-13-2 (300-48K-10C yarn) 600g/m², DB120 $\pm 45^\circ$, 393 g/m², V_F = 0.50, Ave. thickness = 2.61 mm, S.D. = 0.12 mm. SP Systems Prime 20 Epoxy resin.

| | | | | | | | | |
|------|----------|----------|----|----|------|-------|-----------|----|
| 6910 | CGD4E104 | 1170 | * | 13 | 89.9 | 1.33 | 1 | 25 |
| 6911 | CGD4E101 | 1145 | * | 13 | 85.2 | 1.39 | 1 | 25 |
| 6912 | CGD4E102 | 1162 | * | 13 | 79.0 | 1.50 | 1 | 25 |
| 6913 | CGD4E106 | -707 | * | 13 | ---- | -0.83 | 1 | 25 |
| 6914 | CGD4E110 | -734 | * | 13 | ---- | -0.87 | 1 | 25 |
| 6915 | CGD4E107 | -722 | * | 13 | ---- | -0.85 | 1 | 25 |
| 6916 | CGD4E109 | -665 | * | 13 | ---- | -0.79 | 1 | 25 |
| 6917 | CGD4E108 | -590 | * | 13 | ---- | -0.70 | 1 | 25 |
| 6918 | CGD4E114 | -552/-52 | 10 | 1 | ---- | ---- | 669 | 25 |
| 6919 | CGD4E122 | -483/-48 | 10 | 2 | ---- | ---- | 11,889 | 25 |
| 6920 | CGD4E121 | -483/-48 | 10 | 4 | ---- | ---- | 311,905 | 25 |
| 6921 | CGD4E111 | -483/-48 | 10 | 2 | ---- | ---- | 29,006 | 25 |
| 6922 | CGD4E111 | -483/-48 | 10 | 6 | ---- | ---- | 3,000,000 | 25 |
| 6923 | CGD4E115 | -483/-48 | 10 | 4 | ---- | ---- | 47,787 | 25 |
| 6924 | CGD4E113 | -483/-48 | 10 | 4 | ---- | ---- | 110,770 | 25 |
| 6925 | CGD4E120 | -483/-48 | 10 | 4 | ---- | ---- | 293,388 | 25 |
| 6926 | CGD4E119 | -483/-48 | 10 | 4 | ---- | ---- | 61,019 | 25 |
| 6927 | CGD4E118 | -483/-48 | 10 | 4 | ---- | ---- | 43,901 | 25 |
| 6928 | CGD4E112 | -483/-48 | 10 | 4 | ---- | ---- | 22,128 | 25 |
| 6929 | CGD4E116 | -483/-48 | 10 | 4 | ---- | ---- | 215,197 | 25 |
| 8687 | CGD4E160 | 345/-345 | -1 | 2 | ---- | ---- | 3,417,374 | 25 |
| 8688 | CGD4E161 | 414/-414 | -1 | 3 | ---- | ---- | 181,525 | 25 |
| 8689 | CGD4E173 | 414/-414 | -1 | 3 | ---- | ---- | 151,105 | 25 |
| 8690 | CGD4E170 | 414/-414 | -1 | 2 | ---- | ---- | 214,413 | 25 |
| 8691 | CGD4E169 | 448/-448 | -1 | 2 | ---- | ---- | 47,595 | 25 |
| 8692 | CGD4E172 | 448/-448 | -1 | 2 | ---- | ---- | 32,210 | 25 |
| 8693 | CGD4E167 | 448/-448 | -1 | 2 | ---- | ---- | 80,004 | 25 |
| 8708 | CGD4E162 | 345/-345 | -1 | 4 | ---- | ---- | 1,630,782 | 25 |
| 8729 | CGD4E163 | 483/-483 | -1 | 1 | ---- | ---- | 323 | 25 |
| 8730 | CGD4E164 | 483/-483 | -1 | 1 | ---- | ---- | 7,109 | 25 |
| 8731 | CGD4E165 | 483/-483 | -1 | 1 | ---- | ---- | 19,798 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL CGD5E

Lay-up = ($\pm 45/0_{3C}/\mp 45$), Fortafil 652 carbon fabric 0° , 450 g/m^2 , DB120 $\pm 45^\circ$, 393 g/m^2 , $V_F = 0.349$, Ave. thickness = 3.03 mm, S.D. = 0.05 mm. SP Systems Prime 20 Epoxy resin.

| | | | | | | | |
|------|-----|------|---|----|------|------|------|
| 7054 | 103 | 766 | * | 13 | 46.1 | 1.7 | 1 25 |
| 7055 | 102 | 724 | * | 13 | 48.8 | 1.5 | 1 25 |
| 7056 | 101 | 818 | * | 13 | 50.8 | 1.6 | 1 25 |
| 7057 | 104 | 748 | * | 13 | 49.8 | 1.5 | 1 25 |
| 7058 | 115 | -606 | * | 13 | ---- | ---- | 1 25 |
| 7059 | 116 | -547 | * | 13 | ---- | ---- | 1 25 |
| 7060 | 117 | -532 | * | 13 | ---- | ---- | 1 25 |
| 7061 | 118 | -573 | * | 13 | ---- | ---- | 1 25 |

MATERIAL CGD5E2

Lay-up = ($\pm 45/0_{3C}/\mp 45$), Fortafil 652 carbon fabric 0° , 450 g/m^2 , DB120 $\pm 45^\circ$, 393 g/m^2 , $V_F = 0.508$, Ave. thickness = 2.27 mm, S.D. = 0.05 mm. SP Systems Prime 20 Epoxy resin.

| | | | | | | | |
|------|-----|------|---|----|------|------|------|
| 7062 | 103 | 1082 | * | 13 | 76.5 | 1.5 | 1 25 |
| 7063 | 106 | 1166 | * | 13 | 75.5 | 1.6 | 1 25 |
| 7064 | 104 | 1159 | * | 13 | 72.6 | 1.6 | 1 25 |
| 7065 | 120 | -532 | * | 13 | ---- | ---- | 1 25 |
| 7066 | 122 | -556 | * | 13 | ---- | ---- | 1 25 |
| 7067 | 123 | -575 | * | 13 | ---- | ---- | 1 25 |
| 7068 | 121 | -522 | * | 13 | ---- | ---- | 1 25 |

MATERIAL ACM-13-2

Lay-up = [$(\pm 45_C)_{2S}$], C = Toray ACM-13-2 (300-48K-10C) carbon fabric (FAW=600 g/m^2), $V_F = 0.46$, Ave. thickness = 5.96 mm, S.D. = 0.27 mm, Derakane 8084 vinyl ester. (ASTM D3518 Shear modulus (G) tests)

| | | | | | | | |
|------|-----|------|---|------|------|------|---------------|
| 6708 | G-1 | 89.0 | * | 0.02 | 11.6 | 3.1 | 1 25 G = 3.25 |
| 6709 | G-2 | 83.0 | * | 0.02 | 12.3 | 1.3 | 1 25 G = 3.45 |
| 6710 | G-3 | 85.6 | * | 0.02 | 12.5 | 1.64 | 1 25 G = 3.33 |

Tests 9802 - 9815 had the following lay-up: Lay-up = (0_4), Toray ACM-13-2 (300-48K-10C) carbon fabric (FAW=600 g/m^2), $V_F = 0.43$, Ave. thickness = 3.18 mm, S.D. = 0.09 mm, Derakane 8084 vinyl ester.

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 9802 | 201 | -813 | * | 13 | ---- | ---- | 1 |
| 9803 | 202 | -740 | * | 13 | ---- | ---- | 1 |
| 9804 | 203 | -817 | * | 13 | ---- | ---- | 1 |
| 9805 | 204 | -819 | * | 13 | ---- | ---- | 1 |
| 9806 | 212 | 1293 | * | 13 | 92.9 | 1.3 | 1 |
| 9807 | 213 | 1399 | * | 13 | 89.8 | 1.4 | 1 |
| 9808 | 214 | 1260 | * | 13 | 92.0 | 1.2 | 1 |
| 9809 | 205T | -113 | * | 13 | ---- | ---- | 1 |
| 9810 | 206T | -117 | * | 13 | ---- | ---- | 1 |
| 9811 | 207T | -116 | * | 13 | ---- | ---- | 1 |
| 9812 | 208T | -115 | * | 13 | ---- | ---- | 1 |
| 9813 | 209T | 17.4 | * | 13 | 6.35 | 0.28 | 1 |
| 9814 | 210T | 18.8 | * | 13 | 6.87 | 0.28 | 1 |
| 9815 | 211T | 18.3 | * | 13 | 6.17 | 0.29 | 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL UT70-60

Lay-up = $[(\pm 45_C)_{2S}]$, C = Toray UT70-60 (T700S-12K) carbon fabric (FAW=600 g/m²), V_F = 0.35, Ave. thickness = 8.23 mm, S.D. = 0.03 mm, Derakane 8084 vinyl ester. (ASTM D3518 Shear modulus (G) tests)

| | | | | | | | |
|------|----------|------|---|------|------|------|-------------|
| 6714 | T700-1 | 64.4 | * | 0.02 | 10.9 | 1.25 | 1 25 G=3.05 |
| 6715 | T700-2 | 68.6 | * | 0.02 | 10.2 | 1.61 | 1 25 G=2.74 |
| 6716 | T700-3 | 66.9 | * | 0.02 | 9.77 | 1.87 | 1 25 G=2.69 |
| 6784 | T700-200 | ---- | * | 0.02 | 10.4 | ---- | 1 50 G=3.03 |

Tests 9816 - 2829 had the following lay-up: Lay-up = (0)₄, Toray UT70-60 (T700S-12K) carbon fabric (FAW=600 g/m²), V_F = 0.41, Ave. thickness = 3.24 mm, S.D. = 0.20 mm, Derakane 8084 vinyl ester.

| | | | | | | | |
|------|------|------|---|----|------|------|---|
| 9816 | 205 | -923 | * | 13 | ---- | ---- | 1 |
| 9817 | 206 | -963 | * | 13 | ---- | ---- | 1 |
| 9818 | 207 | -896 | * | 13 | ---- | ---- | 1 |
| 9819 | 208 | -835 | * | 13 | ---- | ---- | 1 |
| 9820 | 212 | 1819 | * | 13 | 97.0 | 1.7 | 1 |
| 9821 | 213 | 1767 | * | 13 | 98.4 | 1.8 | 1 |
| 9821 | 214 | 1959 | * | 13 | 96.9 | 1.9 | 1 |
| 9822 | 201T | -120 | * | 13 | ---- | ---- | 1 |
| 9823 | 202T | -128 | * | 13 | ---- | ---- | 1 |
| 9824 | 203T | -137 | * | 13 | ---- | ---- | 1 |
| 9825 | 204T | -132 | * | 13 | ---- | ---- | 1 |
| 9826 | 209T | 24.3 | * | 13 | 6.12 | 0.39 | 1 |
| 9827 | 210T | 23.9 | * | 13 | 6.08 | 0.40 | 1 |
| 9829 | 211T | 20.6 | * | 13 | 7.11 | 0.30 | 1 |

MATERIAL CGF1

Lay-up = $(\pm 45/0_{6C}/\mp 45)$, T600 carbon fabric 0°, 532/m², Saertex $\pm 45^\circ$, 800 g/m², V_F = 0.504, Ave. thickness = 4.67 mm, S.D. = 0.14 mm. Araldite Epoxy LY 1564SP with XB3416 Hardener. (67% carbon fabric by volume).

| | | | | | | | |
|------|----------|------|-----|----|------|------|---------------|
| 9218 | CGF1-130 | 1034 | 0.1 | 1 | ---- | ---- | 245 18 |
| 9219 | CGF1-131 | 1034 | 0.1 | 1 | ---- | ---- | 160 18 |
| 9220 | CGF1-133 | 965 | 0.1 | 2 | ---- | ---- | 413 18 |
| 9221 | CGF1-134 | 965 | 0.1 | 2 | ---- | ---- | 158 18 |
| 9222 | CGF1-135 | 1034 | 0.1 | 1 | 77.1 | 1.18 | 115 18 |
| 9223 | CGF1-139 | 1034 | 0.1 | 1 | 76.8 | 1.14 | 5 18 |
| 9224 | CGF1-150 | -690 | 10 | 1 | ---- | ---- | 27 18 |
| 9225 | CGF1-157 | -586 | 10 | 1 | ---- | ---- | 53 18 |
| 9226 | CGF1-164 | -586 | 10 | 1 | ---- | ---- | 39 18 |
| 9227 | CGF1-165 | -586 | 10 | 1 | ---- | ---- | 118 18 |
| 9228 | CGF1-158 | -414 | 10 | 2 | ---- | ---- | 500,000 18 R |
| 9229 | CGF1-154 | -522 | * | 13 | ---- | ---- | 1 18 has wave |
| 9230 | CGF1-160 | -672 | * | 13 | ---- | ---- | 1 18 |
| 9231 | CGF1-155 | -613 | * | 13 | ---- | ---- | 1 18 |
| 9232 | CGF1-167 | -552 | 10 | 1 | ---- | ---- | 141 18 |
| 9233 | CGF1-152 | -517 | 10 | 3 | ---- | ---- | 450,955 18 |
| 9234 | CGF1-159 | -517 | 10 | 1 | ---- | ---- | 411 18 |
| 9235 | CGF1-169 | -517 | 10 | 2 | ---- | ---- | 2,222 18 |
| 9236 | CGF1-174 | -561 | * | 13 | ---- | ---- | 1 18 |
| 9237 | CGF1-166 | -773 | * | 13 | ---- | ---- | 1 18 |
| 9238 | CGF1-163 | -766 | * | 13 | ---- | ---- | 1 18 |
| 9239 | CGF1-170 | -625 | * | 13 | ---- | ---- | 1 18 |
| 9240 | CGF1-171 | -889 | * | 13 | ---- | ---- | 1 18 |
| 9241 | CGF1-172 | -651 | * | 13 | ---- | ---- | 1 18 |

| TEST & SAMPLE ID # | | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 9242 | CGF1-172 | -632 | * | 13 | | ---- | ---- | 1 18 |
| 9243 | CGF1-175 | -629 | * | 13 | | ---- | ---- | 1 18 |
| 9244 | CGF1-176 | -623 | * | 13 | | ---- | ---- | 1 18 |
| 9245 | CGF1-177 | -621 | * | 13 | | ---- | ---- | 1 18 |
| 9246 | CGF1-178 | -513 | * | 13 | | ---- | ---- | 1 18 |
| 9247 | CGF1-179 | -453 | * | 13 | | ---- | ---- | 1 18 |
| 9248 | CGF1-180 | -711 | * | 13 | | ---- | ---- | 1 18 |

| | | | | | | | |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

CARBON AND CARBON/GLASS HYBRID COMPRESSION COUPONS

| Test | Lay-up | Coupon | Stress, MPa | R ratio | mm/s | L, mm | Strain to Failure, % | Cycles |
|--|---|--------|----------------|------------|------|-------|----------------------------|--------|
| Carbon Prepreg (0°) = NCT307-D1-34-600, Glass Prepreg (±45°) = NB307-D1-7781-497-A | | | | | | | | |
| 9549 | | n6 | -916 | | 13 | 100 | -0.91 | 1 |
| 9550 | [±45/0 ₁₃ /±45] | n2 | -743 | | 13 | 100 | -0.74 | 1 |
| 9551 | | n3 | -783 | | 13 | 100 | -0.78 | 1 |
| 9552 | | n5 | -873 | | 13 | 100 | -0.87 | 1 |
| 9553 | | m14 | -673 | | 13 | 100 | -0.67 | 1 |
| 9554 | [±45/0 ₂ */0 ₉ /0 ₂ */±45] | m10 | -641 | | 13 | 100 | -0.64 | 1 |
| 9555 | | m2 | -567 | | 13 | 100 | -0.57 | 1 |
| 9556 | | m15 | -588 | | 13 | 100 | -0.59 | 1 |
| 9557 | | o14 | -433 | | 13 | 100 | -0.43 | 1 |
| 9558 | [±45/0 ₅ /0 ₃ */0 ₅ /±45] | o15 | -505 | | 13 | 100 | -0.50 | 1 |
| 9559 | | o6 | -364 | | 13 | 100 | -0.36 | 1 |
| 9560 | | o3 | -417 | | 13 | 100 | -0.42 | 1 |
| 9561 | | T1 | -853 | | 13 | 100 | -0.85 | 1 |
| 9562 | [±45/0 ₁₀ /±45] | T2 | -743 | | 13 | 100 | -0.74 | 1 |
| 9563 | | T3 | -886 | | 13 | 100 | -0.88 | 1 |
| 9564 | | T4 | -822 | | 13 | 100 | -0.82 | 1 |
| 9565 | | T5 | -861 | | 13 | 100 | -0.86 | 1 |
| 9566 | | R1 | -616 | | 13 | 100 | -0.61 | 1 |
| 9567 | [±45/0*/0 ₁₀ /0*/±45] | R2 | -606 | | 13 | 100 | -0.60 | 1 |
| 9568 | | R3 | -849 | | 13 | 100 | -0.85 | 1 |
| 9569 | | R4 | -836 | | 13 | 100 | -0.83 | 1 |
| 9570 | | R5 | -806 | | 13 | 100 | -0.80 | 1 |
| 9571 | | R6 | -640 | | 13 | 100 | -0.64 | 1 |
| 9572 | | P1 | -533 | | 13 | 100 | -0.53 | 1 |
| 9573 | [±45/0 ₅ /0*/0 ₅ /±45] | P2 | -687 | | 13 | 100 | -0.69 | 1 |
| 9574 | | P3 | -645 | | 13 | 100 | -0.64 | 1 |
| 9575 | | P4 | -741 | | 13 | 100 | -0.74 | 1 |
| 9576 | | P5 | -743 | | 13 | 100 | -0.74 | 1 |
| 9577 | | P6 | -639 | | 13 | 100 | -0.64 | 1 |
| 9578 | | Q1 | -466 | | 13 | 100 | -0.47 | 1 |
| 9579 | [±45/0 ₅ /0 ₂ */0 ₅ /±45] | Q1 | -544 | | 13 | 100 | -0.54 | 1 |
| 9580 | | Q3 | -539 | | 13 | 100 | -0.54 | 1 |
| 9581 | | Q4 | -438 | | 13 | 100 | -0.44 | 1 |
| 9582 | | Q5 | -507 | | 13 | 100 | -0.51 | 1 |
| 9583 | | Q6 | -447 | | 13 | 100 | -0.45 | 1 |

| | | | | | | | |
|--|---------------------------|----|-------|-----|-----|-------|---|
| 9584 | | BB | -771 | 13 | 100 | -0.77 | 1 |
| 9585 | | BB | -834 | 13 | 100 | -0.83 | 1 |
| 9586 | | BB | -862 | 13 | 100 | -0.86 | 1 |
| 9587 | | BB | -721 | 13 | 100 | -0.72 | 1 |
| 9588 | | BB | -756 | 13 | 100 | -0.75 | 1 |
| 9589 | [±45/0 ₈ /±45] | BB | -616 | 13 | 100 | -0.62 | 1 |
| 9590 | | BB | -890 | 13 | 100 | -0.89 | 1 |
| 9591 | | BB | -1040 | 6 | 100 | -1.04 | 1 |
| 9592 | | BB | -1094 | 6 | 100 | -1.09 | 1 |
| 9593 | | BB | -1163 | 6 | 100 | -1.16 | 1 |
| 9594 | | BB | -1045 | 6 | 100 | -1.04 | 1 |
| 9595 | | BB | -651 | 13 | 100 | -0.65 | 1 |
| 9596 | | BB | -654 | 13 | 100 | -0.65 | 1 |
| 9597 | | DD | -833 | 13 | 100 | -0.83 | 1 |
| 9598 | | DD | -851 | 13 | 100 | -0.85 | 1 |
| 9599 | | DD | -841 | 13 | 100 | -0.84 | 1 |
| 9600 | | DD | -939 | 13 | 100 | -0.94 | 1 |
| 9601 | | DD | -853 | 13 | 100 | -0.85 | 1 |
| 9602 | | DD | -910 | 13 | 100 | -0.91 | 1 |
| 9603 | | DD | -940 | 13 | 100 | -0.94 | 1 |
| 9604 | | DD | -837 | 13 | 100 | -0.84 | 1 |
| 9605 | | DD | -810 | 13 | 100 | -0.81 | 1 |
| 9606 | | DD | -851 | 13 | 100 | -0.85 | 1 |
| 9607 | | DD | -962 | 13 | 100 | -0.96 | 1 |
| 9608 | [±45/0 ₈ /±45] | DD | -879 | 13 | 100 | -0.88 | 1 |
| 9609 | | DD | -889 | 13 | 100 | -0.89 | 1 |
| 9610 | | DD | -809 | 13 | 100 | -0.81 | 1 |
| 9611 | | DD | -826 | 13 | 100 | -0.82 | 1 |
| 9612 | | DD | -956 | 13 | 100 | -0.95 | 1 |
| 9613 | | DD | -937 | 13 | 100 | -0.93 | 1 |
| 9614 | | DD | -902 | 13 | 100 | -0.90 | 1 |
| 9615 | | DD | -918 | 13 | 100 | -0.92 | 1 |
| 9616 | | DD | -827 | 13 | 100 | -0.83 | 1 |
| 9617 | | DD | -943 | 13 | 100 | -0.94 | 1 |
| 9618 | | DD | -950 | 13 | 100 | -0.95 | 1 |
| 9619 | | DD | -883 | 13 | 100 | -0.88 | 1 |
| 9620 | | DD | -852 | 0.1 | 100 | -0.85 | 1 |
| 9621 | | DD | -906 | 0.1 | 100 | -0.90 | 1 |
| 9622 | | DD | -889 | 13 | 100 | -0.89 | 1 |
| 9623 | | DD | -838 | 0.1 | 100 | -0.84 | 1 |
| 9624 | | DD | -1027 | 13 | 100 | -1.03 | 1 |
| 9625 | | DD | -827 | 13 | 100 | -0.83 | 1 |
| 9626 | | DD | -980 | 13 | 100 | -0.98 | 1 |
| 9627 | | DD | -974 | 13 | 100 | -0.97 | 1 |
| 9628 | | DD | -889 | 13 | 100 | -0.89 | 1 |
| 9629 | | DD | -849 | 13 | 100 | -0.85 | 1 |
| 9630 | | DD | -887 | 13 | 100 | -0.89 | 1 |
| Carbon Prepreg (0°) = NCT307-D1-34-600 | | | | | | | |
| 9631 | 0 ₄₂ | K | -392 | 13 | 114 | -0.34 | 1 |
| 9632 | | K | -515 | 13 | 114 | -0.45 | 1 |
| 9633 | | K | -473 | 13 | 114 | -0.41 | 1 |
| 9634 | 0 ₁₅ | LL | -953 | 13 | 114 | -0.83 | 1 |
| 9635 | | LL | -891 | 13 | 114 | -0.78 | 1 |
| 9636 | | LL | -963 | 13 | 114 | -0.84 | 1 |
| 9637 | | LL | -737 | 19 | 114 | -0.64 | 1 |
| 9638 | | LL | -671 | 32 | 114 | -0.59 | 1 |
| 9639 | | LL | -734 | 25 | 114 | -0.64 | 1 |
| 9640 | | LL | -935 | 38 | 114 | -0.82 | 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
| 9641 | | | LL | -907 | | 19 114 | -0.79 1 |
| 9642 | | | LL | -982 | | 25 114 | -0.86 1 |
| 9643 | | | LL | -976 | | 19 114 | -0.85 1 |
| 9644 | | | LL | -904 | | 32 114 | -0.79 1 |
| 9645 | | | LL | -945 | | 38 114 | -0.83 1 |
| 9646 | | | LL | -1012 | | 38 114 | -0.88 1 |
| 9647 | | | LL | -911 | | 25 114 | -0.80 1 |
| 9648 | | | LL | -936 | | 32 114 | -0.82 1 |
| 9649 | | | LL | -862 | | 32 114 | -0.75 1 |
| 9650 | | | Z1 | -974 | | 13 114 | -0.85 1 |
| 9651 | | | Z2 | -967 | | 13 114 | -0.84 1 |
| 9652 | 0 ₁₀ | | Z3 | -857 | | 13 114 | -0.75 1 |
| 9653 | | | Z4 | -848 | | 13 114 | -0.74 1 |
| 9654 | | | Z5 | -1076 | | 13 114 | -0.94 1 |
| 9655 | | | Z6 | -1046 | | 13 114 | -0.91 1 |
| 9656 | | | CC | -988 | | 13 114 | -0.86 1 |
| 9657 | 0 ₂₀ | | CC | -994 | | 13 114 | -0.87 1 |
| 9658 | | | CC | -995 | | 13 114 | -0.87 1 |
| 9659 | | | CC | -989 | | 13 114 | -0.86 1 |
| 9660 | | | CC | -1088 | | 13 114 | -0.95 1 |
| 9661 | | | 51 | -532 | | 114 | -0.47 1 |
| 9662 | 0 ₈₅ | | 52 | -546 | | 114 | -0.48 1 |
| 9663 | | | 53 | -647 | | 114 | -0.57 1 |
| 9664 | | | 41 | -497 | | 114 | -0.43 1 |
| 9665 | | | 42 | -572 | | 114 | -0.50 1 |
| 9666 | | | 43 | -606 | | 114 | -0.53 1 |
| 9667 | | | 44 | -675 | | 114 | -0.59 1 |
| 9668 | | | 1 | -414 | | 114 | -0.36 1 |
| 9669 | | | 2 | -575 | | 114 | -0.50 1 |
| 9670 | | | 3 | -357 | | 114 | -0.31 1 |
| Carbon Prepreg (0°) = NCT307-D1-34-600, Glass Prepreg (±45) = NB307-D1-7781-497-A | | | | | | | |
| 9671 | | | DD | -898 | | 13 100 | -0.90 1 |
| 9672 | | | DD | -904 | | 13 100 | -0.90 1 |
| 9673 | | | DD | -302 | | 25 100 | -0.30 1 |
| 9674 | | | DD | -653 | | 13 100 | -0.65 1 |
| 9675 | | | DD | -890 | | 13 100 | -0.89 1 |
| 9676 | [±45/0 ₈ /±45] | | DD | -638 | | 13 100 | -0.64 1 |
| 9677 | | | DD | -954 | | 38 100 | -0.95 1 |
| 9678 | | | DD | -290 | | 19 100 | -0.29 1 |
| 9679 | | | DD | -284 | | 100 | -0.28 1 |
| 9680 | | | DD | -304 | | 100 | -0.30 1 |
| 9681 | | | DD | -1300 | | 100 | -1.30 1 |
| 9682 | | | DD | -1161 | | 100 | -1.16 1 |
| 9683 | | | DD | -590 | | 100 | -0.59 1 |
| 9684 | | | DD | -787 | | 100 | -0.79 1 |
| 9685 | | | DD | -1084 | | 100 | -1.08 1 |
| 9686 | | | DD | -632 | | 100 | -0.63 1 |
| 9687 | | | DD | -1202 | | 100 | -1.20 1 |
| 9688 | | | DD | -898 | 0.1 | 2 100 | -0.90 1276 |
| 9689 | | | DD | -904 | 0.1 | 2 100 | -0.90 3953 |
| 9690 | | | DD | -302 | 0.1 | 3 100 | -0.30 142000 |
| 9691 | | | DD | -653 | 0.1 | 2 100 | -0.65 1000 |
| 9692 | | | DD | -890 | 0.1 | 100 | -0.89 1 |
| Carbon Prepreg (0°) = SE84LV/HSC/450/400/37±3%, Glass Prepreg (±45)= M9.6/35%/BB600/G | | | | | | | |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|---|---|---------|----------|--------|-------------------|----------------------------|
| 9693 | | | 1c | -505 | | 13 89 | -0.57 1 |
| 9694 | | | 1c | -546 | | 13 89 | -0.61 1 |
| 9695 | | | 1c | -569 | | 13 89 | -0.64 1 |
| 9696 | | | 1c | -551 | | 13 89 | -0.62 1 |
| 9697 | [±45/0/0*/0 ₇]s | | 1c | -565 | | 13 89 | -0.64 1 |
| 9698 | | | 1c | -516 | | 13 89 | -0.58 1 |
| 9699 | | | 1c | -591 | | 13 89 | -0.66 1 |
| 9700 | | | 2c | -519 | | 13 89 | -0.58 1 |
| 9701 | | | 2c | -608 | | 13 89 | -0.68 1 |
| 9702 | | | 2c | -569 | | 13 89 | -0.64 1 |
| 9703 | | | 2c | -570 | | 13 89 | -0.64 1 |
| 9704 | | | 2c | -508 | | 13 89 | -0.57 1 |
| 9705 | | | 2c | -552 | | 13 89 | -0.62 1 |
| 9706 | | | 2c | -536 | | 13 89 | -0.60 1 |
| 9707 | [±45/0 ₄ /0*/0 ₄ /±45] _s | | 4c | -669 | | 13 89 | -0.75 1 |
| 9708 | | | 4c | -652 | | 13 89 | -0.73 1 |
| 9709 | | | 4c | -645 | | 13 89 | -0.73 1 |
| 9710 | | | 4c | -551 | | 13 89 | -0.62 1 |
| 9711 | | | 4c | -607 | | 13 89 | -0.68 1 |
| 9712 | | | 4c | -647 | | 13 89 | -0.73 1 |
| 9713 | | | 4c | -640 | | 13 89 | -0.72 1 |
| 9714 | | | C | -871 | | 13 89 | -0.63 1 |
| 9715 | | | C | -906 | | 13 89 | -0.58 1 |
| 9716 | | | C | -846 | | 13 89 | -0.62 1 |
| 9717 | [±45/0 ₈ /±45] | | C | -889 | | 13 89 | -0.64 1 |
| 9718 | | | C | -816 | | 13 89 | -0.58 1 |
| 9719 | | | C | -910 | | 13 89 | -0.62 1 |
| 9720 | | | C | -808 | | 13 89 | -0.57 1 |
| 9721 | | | C | -926 | | 13 89 | -0.64 1 |
| 9722 | | | C | -880 | | 13 89 | -0.59 1 |
| 9723 | | | C | -760 | | 13 89 | -0.62 1 |
| 9724 | | | NC | -687 | | 13 89 | -0.77 1 |
| 9725 | | | NC | -620 | | 13 89 | -0.70 1 |
| 9726 | | | NC | -723 | | 13 89 | -0.81 1 |
| 9727 | [±45/0 ₈ /±45] _s | | NC | -726 | | 13 89 | -0.82 1 |
| 9728 | | | NC | -692 | | 13 89 | -0.78 1 |
| 9729 | | | NC | -711 | | 13 89 | -0.80 1 |
| 9730 | | | NC | -748 | | 13 89 | -0.84 1 |
| 9731 | | | NC | -813 | | 13 89 | -0.92 1 |
| 9732 | | | NC | -957 | | 13 89 | -1.08 1 |
| 9733 | | | NC | -972 | | 13 89 | -1.09 1 |
| 9734 | | | C | -745 | | 13 89 | -0.84 1 |
| 9735 | | | B-B | -651 | | 13 89 | -0.73 1 |
| 9736 | | | 2 | -633 | | 13 89 | -0.71 1 |
| 9737 | [±45/0 ₄ /0*/0 ₄ /±45] | | 2 | -718 | | 13 89 | -0.81 1 |
| 9738 | | | 2 | -630 | | 13 89 | -0.71 1 |
| 9739 | | | 2 | -725 | | 13 89 | -0.82 1 |
| 9740 | | | 2 | -764 | | 13 89 | -0.86 1 |
| 9741 | | | 2 | -598 | | 13 89 | -0.67 1 |
| 9742 | | | 2A | -610 | | 13 89 | -0.69 1 |
| 9743 | | [±45/0*/0 ₈ /±45] _s | 2A | -421 | | 13 89 | -0.47 1 |
| 9744 | | | 2A | -658 | | 13 89 | -0.74 1 |
| 9745 | | | 2A | -640 | | 13 89 | -0.72 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|---|---|---|---------|----------|--------|-------------------|----------------------------|
| 9746 | [±45/0/0 ₂ */0 ₆ /±45] _S | | 3 | -500 | | 13 89 | -0.56 1 |
| 9747 | | | 3 | -489 | | 13 89 | -0.55 1 |
| 9748 | | | 3 | -483 | | 13 89 | -0.54 1 |
| 9749 | | | 3 | -478 | | 13 89 | -0.54 1 |
| 9750 | [±45/0 ₃ /0 ₂ */0 ₄ /±45] _S | | 4 | -413 | | 13 89 | -0.46 1 |
| 9751 | | | 4 | -358 | | 13 89 | -0.40 1 |
| 9752 | | | 4 | -432 | | 13 89 | -0.49 1 |
| 9753 | | | 4 | -386 | | 13 89 | -0.43 1 |
| 9754 | [±45/0 ₈ /±45] | | C05 | -468 | | 13 89 | -0.53 1 |
| 9755 | | | C05 | -526 | | 13 89 | -0.59 1 |
| 9756 | | | C05 | -596 | | 13 89 | -0.67 1 |
| 9757 | | | C05 | -656 | | 13 89 | -0.74 1 |
| 9758 | | | C05 | -780 | | 13 89 | -0.88 1 |
| 9759 | | | C05 | -724 | | 13 89 | -0.81 1 |
| 9760 | | | C05 | -697 | | 13 89 | -0.78 1 |
| 9761 | | | C05 | -638 | | 13 89 | -0.72 1 |
| Carbon Prepreg (0°) = SE84LV/S300C/300/400/37, Glass Prepreg (±45) = M9.6/35%/BB600/G | | | | | | | |
| 9762 | [±45/0/0*/0 ₇ /±45] | | 8 | -582 | | 13 125 | -0.47 1 |
| 9763 | | | 8 | -619 | | 13 125 | -0.50 1 |
| 9764 | | | 9 | -569 | | 13 125 | -0.46 1 |
| 9765 | | | 9 | -614 | | 13 125 | -0.49 1 |
| 9766 | | | 10 | -526 | | 13 125 | -0.42 1 |
| 9767 | | | 10 | -518 | | 13 125 | -0.42 1 |
| 9768 | | | 11 | -576 | | 13 125 | -0.46 1 |
| 9769 | | | 11 | -568 | | 13 125 | -0.46 1 |
| 9770 | | | 12 | -591 | | 13 125 | -0.47 1 |
| 9771 | | | 12 | -576 | | 13 125 | -0.46 1 |
| Carbon Prepreg (0°) = SE84LV/S300C/300/400/37 | | | | | | | |
| 9772 | [0/0*/0 ₇] | | 1 | -613 | | 13 125 | -0.49 1 |
| 9773 | | | 1 | -636 | | 13 125 | -0.51 1 |
| 9774 | [0 ₂ /0*/0 ₆] | | 2 | -627 | | 13 125 | -0.50 1 |
| 9775 | | | 2 | -609 | | 13 125 | -0.49 1 |
| 9776 | [0 ₃ /0*/0 ₅] | | 3 | -652 | | 13 125 | -0.52 1 |
| 9777 | | | 3 | -627 | | 13 125 | -0.50 1 |
| 9778 | [0 ₄ /0*/0 ₄] | | 4 | -581 | | 13 125 | -0.47 1 |
| 9779 | | | 4 | -757 | | 13 125 | -0.61 1 |
| 9780 | [0/0 ₂ */0 ₆] | | 5 | -644 | | 13 125 | -0.52 1 |
| 9781 | | | 5 | -582 | | 13 125 | -0.47 1 |
| 9782 | [0 ₅ /0 ₂ */0 ₂] | | 6 | -587 | | 13 125 | -0.47 1 |
| 9783 | | | 6 | -579 | | 13 125 | -0.47 1 |
| 9784 | [0 ₃ /0 ₂ */0 ₄] | | 7 | -542 | | 13 125 | -0.43 1 |
| 9785 | | | 7 | -556 | | 13 125 | -0.45 1 |
| Carbon Fabric (0°) = UNI-25, Glass Fabric (±45) = DB-120, Prime 20 Epoxy Resin | | | | | | | |
| 9786 | [±45/0 ₇ /±45] | | HL-4 | -677 | | 13 81 | -0.84 1 |
| 9787 | | | HL-4 | -666 | | 13 81 | -0.82 1 |
| 9788 | | | HL-4 | -553 | | 13 81 | -0.68 1 |
| 9789 | | | HL-4 | -625 | | 13 81 | -0.77 1 |
| 9790 | [±45/0 ₇ /±45] | | HL-3 | -410 | | 13 81 | -0.51 1 |
| 9791 | | | HL-3 | -496 | | 13 81 | -0.61 1 |
| 9792 | | | HL-3 | -513 | | 13 81 | -0.64 1 |
| 9793 | | | HL-3 | -454 | | 13 81 | -0.56 1 |
| 9794 | [±45/0*/0 ₆ /0*/±45] | | HL-2 | -593 | | 13 81 | -0.73 1 |
| 9795 | | | HL-2 | -529 | | 13 81 | -0.66 1 |
| 9796 | | | HL-2 | -502 | | 13 81 | -0.62 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes | |
|--------------------------|--|---|---------|----------|--------|-------------------|----------------------------|---|
| 9797 | | | HL-2 | -532 | | 13 81 | -0.66 | 1 |
| 9798 | | | HL-1 | -524 | | 13 81 | -0.65 | 1 |
| 9799 | [±45/0 ₃ /0*/0 ₃ /±45] | | HL-1 | -527 | | 13 81 | -0.65 | 1 |
| 9800 | | | HL-1 | -608 | | 13 81 | -0.75 | 1 |
| 9801 | | | HL-1 | -555 | | 13 81 | -0.69 | 1 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

FIBERGLASS MATERIALS WITH PLY DROPS

MATERIAL ESA

Lay-up = [0*/(0/±45/0)s] Single Exterior Ply Drop, $V_F = 0.35$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|----------|-----|----|------|-------|--------|----|
| 9317 | ESA113 | 452 | * | 1 | 23.1 | 1.96 | 1 | |
| 9318 | ESA108 | 207/21 | 0.1 | 2 | ---- | 0.90 | 2001 | 39 |
| 9319 | ESA109 | 138/14 | 0.1 | 5 | ---- | 0.60 | 110000 | 36 |
| 9320 | ESA111 | 121/12 | 0.1 | 8 | ---- | 0.52 | 175000 | 8 |
| 9321 | ESA112 | 103/10 | 0.1 | 3 | ---- | 0.45 | 400000 | |
| 9322 | ESA102 | 207/21 | 0.1 | 2 | 23.4 | 0.90 | 1301 | 45 |
| 9323 | ESA104 | 207/21 | 0.1 | 1 | ---- | 0.90 | 1001 | 45 |
| 9324 | ESA110 | 138/14 | 0.1 | 5 | 23.4 | 0.60 | 85000 | 13 |
| 9325 | ESA103 | 138/14 | 0.1 | 5 | ---- | 0.60 | 40000 | 17 |
| 9326 | ESA107 | -276/-28 | 10 | 1 | ---- | -1.19 | 318 | |
| 9327 | ESA101 | -207/-21 | 10 | 2 | ---- | -0.90 | 20000 | 11 |
| 9328 | ESA105 | -138/-14 | 10 | 5 | ---- | -0.60 | 252222 | 0 |
| 9329 | ESA106 | -172/-17 | 10 | 5 | 24.1 | -0.75 | 102000 | 7 |
| 9330 | ESA202 | 410 | * | 13 | ---- | 1.77 | 1 | |
| 9331 | ESA203 | 416 | * | 13 | ---- | 1.80 | 1 | |
| 9332 | ESA204 | 436 | * | 13 | ---- | 1.89 | 1 | |
| 9333 | ESA205 | 423 | * | 13 | ---- | 1.83 | 1 | |
| 9334 | ESA207 | 477 | * | 13 | ---- | 2.07 | 1 | |

MATERIAL ESB

Lay-up = [0/0*/±45/0/0/±45/0] Single Exterior Ply Drop, $V_F = 0.35$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|----------|-----|----|------|-------|--------|----|
| 9335 | ESB112 | 524 | * | 13 | 22.1 | 2.27 | 1 | |
| 9336 | ESB106 | 207/21 | 0.1 | 5 | 24.1 | 0.9 | 90001 | 32 |
| 9337 | ESB109 | 345/35 | 0.1 | 2 | ---- | 1.49 | 7326 | 18 |
| 9338 | ESB114 | 276/28 | 0.1 | 5 | 24.1 | 1.19 | 50000 | 11 |
| 9339 | ESB115 | 276/28 | 0.1 | 5 | ---- | 1.19 | 45000 | 11 |
| 9340 | ESB101 | 345/35 | 0.1 | 5 | ---- | 1.49 | 10000 | 30 |
| 9341 | ESB102 | 310/31 | 0.1 | 5 | ---- | 1.34 | 20100 | 13 |
| 9342 | ESB113 | 310/31 | 0.1 | 5 | 23.4 | 1.34 | 15000 | 31 |
| 9343 | ESB105 | 310/31 | 0.1 | 5 | 22.8 | 1.34 | 15000 | 24 |
| 9344 | ESB110 | 276/28 | 0.1 | 5 | ---- | 1.19 | 44342 | 11 |
| 9345 | ESB103 | -276/-28 | 10 | 1 | ---- | -1.19 | 409 | |
| 9346 | ESB111 | -241/-24 | 10 | 7 | ---- | -1.04 | 30996 | |
| 9347 | ESB107 | -241/-24 | 10 | 7 | ---- | -1.04 | 187000 | 0 |
| 9348 | ESB308 | 671 | * | 13 | ---- | ---- | 1 | |
| 9349 | ESB305 | 664 | * | 13 | ---- | ---- | 1 | |
| 9350 | ESB310 | 276/28 | 0.1 | 5 | ---- | ---- | 241679 | |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL ESB

Lay-up = [0/0*/±45/0/0/±45/0] Single Exterior Ply Drop, $V_F = 0.44$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|
| 9351 | ESB409 | 753 | * | 6 | 25.5 | 2.95 | 1 |
| 9352 | ESB411 | 788 | * | 6 | 26.2 | 3.09 | 1 |
| 9353 | ESB405 | 758 | * | 6 | ---- | 2.97 | 1 |
| 9354 | ESB407 | 414/41 | 0.1 | 8 | ---- | 1.62 | 2401 |
| 9355 | ESB403 | 207/21 | 0.1 | 12 | ---- | 0.81 | 1060000 |
| 9356 | ESB404 | 414/41 | 0.1 | 8 | 25.5 | 1.62 | 3567 |
| 9357 | ESB414 | 207/21 | 0.1 | 10 | ---- | 0.81 | 1277000 |
| 9358 | ESB401 | 276/28 | 0.1 | 8 | 25.5 | 1.08 | 58501 |
| 9359 | ESB402 | 276/28 | 0.1 | 8 | ---- | 1.08 | 164000 |

MATERIAL ESC

Lay-up = [0/±45/0/0*/0/±45/0] Single Center Ply Drop, $V_F = 0.35$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | |
|------|--------|--------|-----|---|------|------|----------|
| 9360 | ESC101 | 555 | * | 6 | 22.8 | 2.37 | 1 |
| 9361 | ESC110 | 345/35 | 0.1 | 2 | 24.1 | 1.47 | 8700 9 |
| 9362 | ESC109 | 345/35 | 0.1 | 2 | 23.4 | 1.47 | 4000 8 |
| 9363 | ESC108 | 276/28 | 0.1 | 5 | ---- | 1.18 | 41266 6 |
| 9364 | ESC104 | 276/28 | 0.1 | 5 | ---- | 1.18 | 20003 14 |
| 9365 | ESC107 | 345/35 | 0.1 | 5 | ---- | 1.47 | 10000 8 |
| 9366 | ESC105 | 276/28 | 0.1 | 5 | ---- | 1.18 | 25001 15 |

MATERIAL ESE

Lay-up = [0*/(0/±45/0)₃], Single Exterior Ply Drop, $V_F = 0.40$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | |
|------|--------|--------|-----|----|------|------|-----------|
| 9367 | ESE116 | 207/21 | 0.1 | 5 | ---- | 0.68 | 5000 33 |
| 9368 | ESE112 | 655 | * | 13 | 30.3 | 2.16 | 1 |
| 9369 | ESE114 | 207/21 | 0.1 | 4 | ---- | 0.68 | 5810 34 |
| 9370 | ESE110 | 138/14 | 0.1 | 5 | ---- | 0.45 | 100000 19 |
| 9371 | ESE111 | 138/14 | 0.1 | 5 | 32.4 | 0.45 | 10000 13 |
| 9372 | ESE106 | 121/12 | 0.1 | 5 | ---- | 0.40 | 101000 11 |
| 9373 | ESE117 | 138/14 | 0.1 | 5 | ---- | 0.45 | 100000 19 |

MATERIAL ESF

Lay-up = [0/0*/±45/0/(0/±45/0)₂], Single Interior Ply Drop, $V_F = 0.40$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | |
|------|--------|--------|-----|---|------|------|---------|
| 9374 | ESF110 | 207/21 | 0.1 | 5 | ---- | 0.67 | 34033 |
| 9375 | ESF105 | 276/28 | 0.1 | 5 | 31 | 0.89 | 74428 6 |
| 9376 | ESF113 | 276/28 | 0.1 | 5 | ---- | 0.89 | 45000 |
| 9377 | ESF106 | 276/28 | 0.1 | 5 | ---- | 0.89 | 45000 4 |
| 9378 | ESF109 | 345/35 | 0.1 | 5 | 31.7 | 1.11 | 8646 25 |
| 9379 | ESF108 | 276/28 | 0.1 | 5 | ---- | 0.89 | 9785 3 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL ESG

Lay-up = $[0^*/0^*/(0/\pm 45/0)_3]$, Two exterior ply drops, $V_F = 0.46$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|--------|----|
| 9380 | ESG104 | 345 | * | 13 | 29.6 | 1.16 | 1 | 2 |
| 9381 | ESG102 | 207/21 | 0.1 | 1 | ---- | 0.70 | 150 | 46 |
| 9382 | ESG107 | 138/14 | 0.1 | 4 | ---- | 0.47 | 30000 | 44 |
| 9383 | ESG105 | 138/14 | 0.1 | 5 | 29.6 | 0.47 | 50000 | 25 |
| 9384 | ESG106 | 103/10 | 0.1 | 5 | ---- | 0.35 | 225000 | 25 |
| 9385 | ESG101 | 121/12 | 0.1 | 1 | ---- | 0.41 | 42 | |

MATERIAL ESH

Lay-up = $[0/0^*/0^*/\pm 45/0/(0/\pm 45/0)_2]$, Two interior ply drops, $V_F = 0.45$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|----------|-----|----|-------|------|---------|----|
| 9386 | ESH202 | 634 | * | 13 | 33.09 | 1.92 | 1 | 35 |
| 9387 | ESH204 | 630 | * | 13 | 33.78 | 1.90 | 1 | |
| 9388 | ESH208 | 345/35 | 0.1 | 2 | 29.8 | 1.04 | 1300 | 3 |
| 9389 | ESH209 | 345/35 | 0.1 | 2 | ---- | 1.04 | 1350 | 33 |
| 9390 | ESH213 | 276/28 | 0.1 | 8 | 31.1 | 0.83 | 20000 | |
| 9391 | ESH205 | 276/28 | 0.1 | 8 | 29.9 | 0.83 | 40000 | 50 |
| 9392 | ESH211 | 379/38 | 0.1 | 2 | ---- | 1.15 | 57 | |
| 9393 | ESH212 | 379/38 | 0.1 | 2 | ---- | 1.15 | 63 | |
| 9394 | ESH207 | 276/28 | 0.1 | 4 | ---- | 0.83 | 15000 | 50 |
| 9395 | ESH210 | 207/21 | 0.1 | 6 | ---- | 0.63 | 92479 | |
| 9396 | ESH802 | -379 | * | 13 | ---- | ---- | 1 | |
| 9397 | ESH806 | -207/-21 | 10 | 10 | ---- | ---- | 1800000 | 25 |
| 9398 | ESH811 | -207/-21 | 10 | 10 | ---- | ---- | 258000 | 25 |
| 9399 | ESH809 | -155/-16 | 10 | 10 | ---- | ---- | 221000 | 25 |
| 9400 | ESH805 | -103/-10 | 10 | 10 | ---- | ---- | 1680000 | 0 |

MATERIAL ESH1

Lay-up = $[0/0^*/0^*/\pm 45/0/(0/\pm 45/0)_2]$, Two interior ply drops, $V_F = 0.52$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|----------|-----|----|-------|------|--------|----|
| 9401 | ESH301 | 733 | * | 6 | 32.4 | 2.36 | 1 | |
| 9402 | ESH312 | 770 | * | 6 | 31.02 | 2.48 | 1 | |
| 9403 | ESH313 | 798 | * | 6 | ---- | 2.57 | 1 | |
| 9404 | ESH304 | 414/41 | 0.1 | 2 | ---- | 1.33 | 1935 | |
| 9405 | ESH305 | 414/41 | 0.1 | 2 | ---- | 1.33 | 2021 | |
| 9406 | ESH303 | 414/41 | 0.1 | 2 | ---- | 1.33 | 2693 | |
| 9407 | ESH307 | 207/21 | 0.1 | 6 | ---- | 0.67 | 953762 | |
| 9408 | ESH311 | 345/35 | 0.1 | 2 | 30.33 | 1.11 | 3929 | |
| 9409 | ESH310 | 207/21 | 0.1 | 5 | ---- | 0.67 | 526064 | 50 |
| 9410 | ESH306 | 276/28 | 0.1 | 5 | 31.71 | 0.89 | 39000 | |
| 9411 | ESH314 | 276/28 | 0.1 | 5 | ---- | 0.89 | 82921 | 57 |
| 9412 | ESH309 | 276/28 | 0.1 | 5 | ---- | 0.89 | 56938 | |
| 9413 | ESH302 | 276/28 | 0.1 | 5 | ---- | 0.89 | 33000 | 45 |
| 9414 | ESH708 | -296 | * | 1 | ---- | ---- | 1 | |
| 9415 | ESH706 | -392 | * | 13 | ---- | ---- | 1 | |
| 9416 | ESH704 | -207/-21 | 10 | 5 | ---- | ---- | 30000 | 25 |
| 9417 | ESH703 | -207/-21 | 10 | 5 | ---- | ---- | 14377 | 25 |
| 9418 | ESH701 | -138/-14 | 10 | 5 | ---- | ---- | 361000 | 25 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|----------|---------|----------|--------|-------------------|----------------------------|
| 9419 | ESH707 | -138/-14 | 10 | 5 | ---- | 485000 | 25 |

MATERIAL ESH2

Lay-up = $[0/0^*/0^*/\pm 45/0/(0/\pm 45/0)_2]$, Two interior ply drops, $V_F = 0.35$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|-------|------|---------|----|
| 9420 | ESH407 | 207/21 | 0.1 | 5 | 27.58 | 0.75 | 731521 | |
| 9421 | ESH412 | 728 | * | 13 | 28.27 | 2.64 | 1 | |
| 9422 | ESH413 | 747 | * | 13 | ---- | 2.71 | 1 | |
| 9423 | ESH411 | 414/41 | 0.1 | 1 | ---- | 1.50 | 813 | |
| 9424 | ESH406 | 414/41 | 0.1 | 1 | ---- | 1.50 | 748 | |
| 9425 | ESH410 | 276/28 | 0.1 | 3 | ---- | 1.00 | 28019 | |
| 9426 | ESH405 | 276/28 | 0.1 | 3 | 27.58 | 1.00 | 30689 | 50 |
| 9427 | ESH404 | 207/21 | 0.1 | 8 | 28.78 | 0.75 | 1093000 | 53 |
| 9428 | ESH409 | 172/17 | 0.1 | 8 | 26.5 | 0.63 | 1100000 | |
| 9429 | ESH408 | 207/21 | 0.1 | 8 | 27.58 | 0.75 | 968675 | |
| 9430 | ESH403 | 207/21 | 0.1 | 8 | ---- | 0.75 | 685000 | |

MATERIAL ESH3

Lay-up = $[0/0^*/0^*/\pm 45/0/(0/\pm 45/0)_2]$, Two interior ply drops, $V_F = 0.32$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|--|
| 9431 | ESH612 | 172/17 | 0.1 | 12 | 20 | 0.78 | 1217000 | |
| 9432 | ESH607 | 460 | * | 13 | 22.1 | 2.09 | 1 | |
| 9433 | ESH603 | 464 | * | 13 | ---- | 2.10 | 1 | |
| 9434 | ESH606 | 505 | * | 13 | ---- | 2.29 | 1 | |
| 9435 | ESH608 | 276/28 | 0.1 | 3 | 21.4 | 1.25 | 12405 | |
| 9436 | ESH602 | 276/28 | 0.1 | 3 | ---- | 1.25 | 10207 | |
| 9437 | ESH601 | 310/31 | 0.1 | 2 | 23.4 | 1.41 | 2704 | |
| 9438 | ESH613 | 310/31 | 0.1 | 2 | ---- | 1.41 | 5632 | |
| 9439 | ESH614 | 276/28 | 0.1 | 4 | ---- | 1.25 | 19000 | |
| 9440 | ESH601 | 172/17 | 0.1 | 7 | ---- | 0.78 | 1106000 | |
| 9441 | ESH611 | 241/24 | 0.1 | 7 | 22.1 | 1.09 | 210000 | |
| 9442 | ESH605 | 241/24 | 0.1 | 6 | ---- | 1.09 | 32000 | |

MATERIAL ESI1

Lay-up = $[0/0^*/0^*/\pm 45/0/0/\pm 45/0]$, Two interior ply drops with 12 mm spacing between the ply drops, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|-------|----|
| 9443 | ESI1101 | 276/28 | 0.1 | 6 | 31 | 0.89 | 42500 | 8 |
| 9444 | ESI1104 | 310/31 | 0.1 | 6 | ---- | 1.00 | 9500 | 22 |
| 9445 | ESI1105 | 276/28 | 0.1 | 6 | ---- | 0.89 | 26380 | 18 |
| 9446 | ESI1103 | 276/28 | 0.1 | 6 | ---- | 0.89 | 96000 | 12 |

MATERIAL ESI2

Lay-up = $[0/0^*/0^*/\pm 45/0/0/\pm 45/0]$, Two interior ply drops with 24 mm spacing between the ply drops, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|-------|----|
| 9447 | ESI2107 | 310/31 | 0.1 | 6 | 31 | 1.00 | 1730 | 13 |
| 9448 | ESI2103 | 310/31 | 0.1 | 6 | ---- | 1.00 | 3829 | 15 |
| 9449 | ESI2102 | 276/28 | 0.1 | 6 | ---- | 0.89 | 19000 | 15 |
| 9450 | ESI2104 | 241/24 | 0.1 | 6 | ---- | 0.78 | 90000 | 15 |
| 9451 | ESI2106 | 276/28 | 0.1 | 6 | ---- | 0.89 | 19100 | 17 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL ESI3

Lay-up = [0/0*/0*/±45/0/0/±45/0], Two interior ply drops with 36 mm spacing between the ply drops, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|---------|----|
| 9452 | ESI3107 | 276/28 | 0.1 | 6 | 31 | 0.89 | 25000 | 20 |
| 9453 | ESI3104 | 276/28 | 0.1 | 6 | ---- | 0.89 | 52000 | 25 |
| 9454 | ESI3103 | 241/24 | 0.1 | 6 | ---- | 0.78 | 136000 | 18 |
| 9455 | ESI3108 | 207/21 | 0.1 | 6 | ---- | 0.67 | 1121809 | 9 |
| 9456 | ESI3106 | 241/24 | 0.1 | 6 | ---- | 0.78 | 130326 | |
| 9457 | ESI3102 | 276/28 | 0.1 | 6 | ---- | 0.89 | 87090 | 0 |

MATERIAL ESI4

Lay-up = [0/0*/0*/±45/0/0/±45/0], Two interior ply drops with 48 mm spacing between the ply drops, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|---------|--------|-----|---|------|------|--------|----|
| 9458 | ESI4108 | 276/28 | 0.1 | 6 | 31 | 0.89 | 9500 | 1 |
| 9459 | ESI4106 | 276/28 | 0.1 | 6 | ---- | 0.89 | 60000 | 5 |
| 9460 | ESI4107 | 276/28 | 0.1 | 6 | ---- | 0.89 | 10475 | 15 |
| 9461 | ESI4104 | 310/31 | 0.1 | 6 | ---- | 1.00 | 5447 | 13 |
| 9462 | ESI4103 | 276/28 | 0.1 | 6 | ---- | 0.89 | 36000 | 23 |
| 9463 | ESI4101 | 241/24 | 0.1 | 6 | ---- | 0.78 | 162000 | 20 |

MATERIAL ESJ

Lay-up = [0*/(0/±45/0)s], "Z-Spiking" of a single exterior ply drop, $V_F = 0.37$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|------|---|------|------|--------|---|
| 9464 | ESJ101 | 207/21 | 0.1 | 4 | ---- | 0.79 | 90000 | 6 |
| 9465 | ESJ108 | 276/28 | 0.1 | 4 | ---- | 1.05 | 31213 | 9 |
| 9466 | ESJ104 | 207/21 | 0.1 | 4 | ---- | 0.79 | 80000 | 9 |
| 9467 | ESJ106 | 207/21 | 0.1 | 4 | 26.2 | 0.79 | 110000 | 6 |
| 9468 | ESJ103 | ---- | ---- | | 26.7 | ---- | ---- | |

MATERIAL ESK

Lay-up = [0*/(0/±45/0)s], Single exterior ply drop, Hysol EA9309.2NA adhesive applied to ply drop before infusion of polyester resin, $V_F = 0.37$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|------|------|------|------|--------|----|
| 9469 | ESK104 | 207/21 | 0.1 | 4 | ---- | 0.71 | 30000 | 2 |
| 9470 | ESK105 | 276/28 | 0.1 | 2 | ---- | 0.95 | 809 | 40 |
| 9471 | ESK107 | 207/21 | 0.1 | 4 | ---- | 0.71 | 10000 | 38 |
| 9472 | ESK102 | 138/14 | 0.1 | 4 | 29.0 | 0.48 | 210000 | 3 |
| 9473 | ESK103 | ---- | ---- | ---- | 29.3 | ---- | ---- | |

MATERIAL ESL

Lay-up = [0/0*/±45/0/0/±45/0], Single interior ply drop, Hysol EA9309.2NA adhesive applied to ply drop before infusion of polyester resin, $V_F = 0.44$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|---|------|------|------|--|
| 9474 | ESL102 | 955 | * | 6 | 33.1 | 2.94 | 1 | |
| 9475 | ESL104 | 907 | * | 6 | 32.4 | 2.78 | 1 | |
| 9476 | ESL105 | 887 | * | 6 | ---- | 2.73 | 1 | |
| 9477 | ESL114 | 414/41 | 0.1 | 7 | 31.7 | 1.28 | 4600 | |
| 9478 | ESL108 | 414/41 | 0.1 | 7 | ---- | 1.28 | 4005 | |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|--------|---------|----------|--------|-------------------|----------------------------|
| 9479 | ESL109 | 414/41 | 0.1 | 7 | 31 | 1.28 | 4263 |
| 9480 | ESL116 | 276/28 | 0.1 | 7 | 32.4 | 0.85 | 64613 |
| 9481 | ESL112 | 172/17 | 0.1 | 12 | ---- | 0.53 | 998920 |
| 9482 | ESL115 | 207/21 | 0.1 | 10 | ---- | 0.64 | 922651 |
| 9483 | ESL110 | 276/28 | 0.1 | 7 | 31.7 | 0.85 | 116740 |
| 9484 | ESL113 | 276/28 | 0.1 | 7 | 32.5 | 0.85 | 108767 |
| 9485 | ESL111 | 552/55 | 0.1 | 2 | ---- | 1.70 | 311 |
| 9486 | ESL106 | 552/55 | 0.1 | 2 | ---- | 1.70 | 381 |
| 9487 | ESL103 | 241/24 | 0.1 | 4 | 29 | 0.83 | 67754 0 |
| 9488 | ESL107 | 241/24 | 0.1 | 4 | ---- | 0.83 | 365000 0 |
| 9489 | ESL102 | 276/28 | 0.1 | 4 | ---- | 0.95 | 83400 20 |
| 9490 | ESL101 | 276/28 | 0.1 | 4 | ---- | 0.95 | 80000 0 |

MATERIAL ESN

Lay-up = [0**/±45/0/0/±45/0], Outside zero degree layer used as a butt-joint, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|--------|----|
| 9491 | ESN101 | 276 | * | 13 | 24.1 | 1.14 | 1 | 50 |
| 9492 | ESN102 | 172/17 | 0.1 | 4 | 24.8 | 0.71 | 1500 | 21 |
| 9493 | ESN103 | 138/14 | 0.1 | 4 | ---- | 0.57 | 17000 | 41 |
| 9494 | ESN104 | 103/10 | 0.1 | 4 | ---- | 0.43 | 102000 | 16 |
| 9495 | ESN105 | 103/10 | 0.1 | 4 | ---- | 0.43 | 187000 | 20 |

MATERIAL ESO

Lay-up = [0/±45**/0/0/±45/0], Inside ±45° degree layer contains a butt-joint, $V_F = 0.36$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|---|------|------|--------|---|
| 9496 | ESO101 | 276/28 | 0.1 | 4 | 24.8 | 1.14 | 120440 | 0 |
| 9497 | ESO102 | 345/35 | 0.1 | 4 | 25.5 | 1.43 | 2443 | 0 |
| 9498 | ESO103 | 310/31 | 0.1 | 4 | ---- | 1.29 | 2297 | 0 |
| 9499 | ESO104 | 310/31 | 0.1 | 4 | ---- | 1.29 | 8379 | 0 |
| 9500 | ESO105 | 276/28 | 0.1 | 4 | ---- | 1.14 | 41808 | 0 |
| 9501 | ESO106 | 276/28 | 0.1 | 4 | ---- | 1.14 | 19500 | 0 |

MATERIAL ESP

Lay-up = [0/±45*/±45*/±45/0/(0/±45/0)₂], Two interior ±45° layers being dropped, $V_F = 0.38$, D155 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|---|------|------|--------|---|
| 9502 | ESP104 | 857 | * | 6 | 29 | ---- | 1 | 0 |
| 9503 | ESP103 | 850 | * | 6 | 31.3 | ---- | 1 | 0 |
| 9504 | ESP109 | 869 | * | 6 | 30.5 | ---- | 1 | 0 |
| 9505 | ESP113 | 414/41 | 0.1 | 2 | ---- | ---- | 1229 | 0 |
| 9506 | ESP108 | 207/21 | 0.1 | 5 | 30.9 | ---- | 648881 | 0 |
| 9507 | ESP105 | 207/21 | 0.1 | 5 | ---- | ---- | 229721 | 0 |
| 9508 | ESP106 | 414/41 | 0.1 | 2 | 31.9 | ---- | 2401 | 0 |
| 9509 | ESP107 | 276/28 | 0.1 | 4 | ---- | ---- | 10000 | 0 |

| TEST & SAMPLE ID # | STRESS Max./Min. MPa | R | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|
|--------------------------|----------------------------|---|---------|----------|--------|-------------------|----------------------------|

MATERIAL ESQ

Lay-up = $[0/0^*/0^*/\pm 45/0/(0/\pm 45/0)_2]$, Two interior ply drops, $V_F = 0.44$, A130 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|---------|----|
| 9510 | ESQ612 | 172/17 | 0.1 | 8 | 20 | 0.68 | 1217000 | |
| 9511 | ESQ607 | 544 | * | 13 | 22.1 | 2.13 | 1 | |
| 9512 | ESQ603 | 552 | * | 13 | ---- | 2.17 | 1 | |
| 9513 | ESQ606 | 548 | * | 13 | ---- | 2.15 | 1 | |
| 9514 | ESQ608 | 276/28 | 0.1 | 5 | 21.4 | 1.08 | 12405 | 80 |
| 9515 | ESQ602 | 276/28 | 0.1 | 5 | ---- | 1.08 | 10207 | 80 |
| 9516 | ESQ610 | 310/31 | 0.1 | 2 | 23.4 | 1.22 | 2704 | |
| 9517 | ESQ613 | 310/31 | 0.1 | 2 | ---- | 1.22 | 5632 | |
| 9518 | ESQ614 | 276/28 | 0.1 | 8 | ---- | 1.08 | 19000 | |
| 9519 | ESQ601 | 172/17 | 0.1 | 10 | ---- | 0.68 | 1106000 | |
| 9520 | ESQ611 | 241/24 | 0.1 | 10 | 22.1 | 0.95 | 210000 | |
| 9521 | ESQ605 | 241/24 | 0.1 | 10 | ---- | 0.95 | 32000 | |
| 9522 | ESQ609 | -400 | * | 13 | ---- | ---- | 1 | |
| 9523 | ESQ912 | 572 | * | 13 | 23.7 | ---- | 1 | |
| 9524 | ESQ910 | 552 | * | 13 | 23.6 | ---- | 1 | |
| 9525 | ESQ914 | 564 | * | 13 | ---- | ---- | 1 | |

MATERIAL ESS

Lay-up = $[0/0^*/\pm 45/0/(0/\pm 45/0)]$, One interior ply drop, $V_F = 0.38$, A130 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|----|------|------|--------|----|
| 9526 | ESS206 | 345/35 | 0.1 | 2 | 21.2 | 1.78 | 6684 | 38 |
| 9527 | ESS210 | 345/35 | 0.1 | 2 | 19.8 | 1.97 | 1338 | 70 |
| 9528 | ESS208 | 345/35 | 0.1 | 2 | 19.2 | 1.06 | 1169 | 24 |
| 9529 | ESS201 | 276/28 | 0.1 | 2 | 22.3 | 1.28 | 23857 | 5 |
| 9530 | ESS205 | 276/28 | 0.1 | 3 | 19.2 | 1.48 | 21615 | 10 |
| 9531 | ESS214 | 276/28 | 0.1 | 3 | 22.1 | 1.29 | 23299 | 29 |
| 9532 | ESS217 | 207/21 | 0.1 | 3 | 20.1 | 1.01 | 430974 | 40 |
| 9533 | ESS204 | 207/21 | 0.1 | 3 | 20.5 | 1.09 | 836025 | 24 |
| 9534 | ESS202 | 474 | * | 25 | 21.9 | 2.18 | 1 | |
| 9535 | ESS213 | 493 | * | 25 | 22.3 | 2.21 | 1 | |
| 9536 | ESS209 | 520 | * | 25 | 20.2 | 2.6 | 1 | |

MATERIAL EST

Lay-up = $[0/\pm 45/0^*/0^*/\pm 45/0]$, Double interior ply drop, $V_F = 0.42$, Collins Craft UC1701 and DB120 fabrics, CoRezyn 63-AX-051 Polyester.

| | | | | | | | | |
|------|--------|--------|-----|---|------|-------|--------|-----|
| 9537 | EST115 | 345/35 | 0.1 | 1 | 26.8 | 1.49 | 222 | 135 |
| 9538 | EST108 | 345/35 | 0.1 | 1 | 25.1 | 1.68 | 320 | 90 |
| 9539 | EST106 | 345/35 | 0.1 | 1 | 28.0 | 1.6 | 204 | 154 |
| 9540 | EST114 | 276/28 | 0.1 | 1 | 25.9 | 1.26 | 219 | 154 |
| 9541 | EST113 | 276/28 | 0.1 | 1 | 26.3 | 1.125 | 1525 | 154 |
| 9542 | EST111 | 276/28 | 0.1 | 1 | 25.5 | 1.148 | 3153 | 140 |
| 9543 | EST107 | 276/28 | 0.1 | 1 | 24.7 | 1.23 | 1827 | 140 |
| 9544 | EST104 | 207/21 | 0.1 | 5 | 25.0 | 0.84 | 134973 | 75 |
| 9545 | EST115 | 207/21 | 0.1 | 5 | 23.8 | 0.9 | 13601 | 22 |
| 9546 | EST112 | 207/21 | 0.1 | 5 | 30.7 | 0.78 | 138526 | 130 |
| 9547 | EST109 | 207/21 | 0.1 | 5 | 27.1 | 0.836 | 44174 | 90 |
| 9548 | EST102 | 172/17 | 0.1 | 5 | 28.3 | 0.66 | 950001 | 13 |

| TEST & SAMPLE ID # | STRESS R Max./Min. MPa | Q Hz | E GPa | e % | CYCLES TO FAIL | WIDTH (mm) and Notes |
|--------------------------|------------------------------|---------|----------|--------|-------------------|----------------------------|
|--------------------------|------------------------------|---------|----------|--------|-------------------|----------------------------|

END OF DATABASE