Vacuum Assisted Resin Transfer Molding Syensqo PRISM™ EP2400 toughened epoxy resin with Tenax™ Reinforcement Fabrics

NCAMP Project Number: NPN 072101

NCAMP Test Report Number: CAM-RP-2024-020 Rev N/C

Report Date: July 09, 2025

Testing Facility:

National Institute for Aviation Research
Wichita State University
1845 N. Fairmount
Wichita, KS 67260-0093

Test Panel Fabrication Facility:

Fiber Dynamics

3730 Midco,
Wichita, KS 67215

Distribution Statement A. Approved for public release; distribution is unlimited.

Prepared by: Michelle Man Digitally signed by Michelle Man Date: 2025.07.10 08:56:54 -05'00'

Michelle Man

Reviewed by: Royal Lovingfoss Digitally signed by Royal Lovingfoss Date: 2025.07.09 18:17:21 -05'00'

Royal Lovingfoss

Approved by: (NCAMP AER Signature on file, Form 289-3)

Ed Hooper (NCAMP AER)

REVISIONS:

Rev	By	Date	Pages Revised or Added
-	Michelle Man	07/09/2025	Document Initial Release

TABLE OF CONTENTS

1. Introduction 9
1.1 Scope 9
1.2 Symbols Used 10
1.3 References 12
1.4 Methodology 13
1.4.1 Process Definition 13
1.4.2 Specimen & Testing Details 15
1.4.2.1 Tabbing 15
1.4.2.2 Specimen Dimensions & Test Configuration 15
1.4.2.3 Specimen Strain Device Used 16
1.4.3 Test Matrix 17
1.4.4 Cured Laminate Physical Testing 24
1.4.5 Environmental Conditioning 25
1.4.6 Non-ambient Testing 26
1.4.7 Fluid Sensitivity Screening 27
1.4.8 Normalization Procedures 29
1.4.9 Inspection Verification 29
1.4.10 Material Pedigree Information 29
1.5 Discussion 30
1.5.1 Creasing in NMS 241/1 (0/90) Non-Crimp Fabric Layups 30
2. Test Results 32
2.1 Lamina Level Test Summary 32
2.2 Laminate Level Test Summary 35
2.3 Fluid Screening Summary 37
2.4 Individual Lamina Test Summaries 38
2.4.1 Biaxial Lamina Properties 38
2.4.1.1 Biaxial 0° Tension Properties (BA-0TEN) 38
2.4.1.2 Biaxial 0° Compression Properties (BA-0CLC) 39
2.4.1.3 Biaxial 90° Tension Properties (BA-90TEN) 40
2.4.1.4 Biaxial 90° Compression Properties (BA-90CLC) 41
2.4.1.5 Biaxial In-Plane Shear Properties (BA-IPS) 42
2.4.1.6 Biaxial Short Beam Strength Properties (BA-SBS) 43
2.4.1.7 Biaxial Flexural Strength Properties (BA-Flex) 44
2.4.3 Bidiagonal Lamina Properties 45
2.4.3.1 Bidiagonal 0° Tension Properties (BD-0TEN) 45
2.4.3.2 Bidiagonal 0° Compression Properties (BD-0CLC) 46
2.4.3.3 Bidiagonal In-Plane Shear Properties (BD-IPS) 47
2.4.3.4 Bidiagonal Short Beam Strength Properties (BD-SBS) 48
2.4.3.5 Bidiagonal Flexural Strength Properties (BD-Flex) 49
2.4.4 UD-Woven Lamina Properties 50
2.4.4.1 UD Woven 0/90° Unnotched Tension Properties (UD-UNT0) 50
2.4.4.2 UD Woven 0/90° Unnotched Compression Properties (UD-UNC0) 51
2.4.4.3 UD Woven 0° Tabbed Tension Properties (UD-0TEN) 52

2.4.4.4 UD Woven 0° Compression Modulus Only Properties (UD-0CLC) 53
2.4.4.5 UD Woven In-Plane Shear Properties (UD-IPS) 54
2.4.4.6 UD Woven Short Beam Strength Properties (UD-SBS) 55
2.4.4.7 UD Woven Flexural Strength Properties (UD-FLEX)..... 56
2.5 Individual Laminate Test Summaries..... 57
2.5.1 Unnotched Tension 1 Properties (UNT1) 57
2.5.2 Unnotched Tension 2 Properties (UNT2) 58
2.5.3 Unnotched Tension 3 Properties (UNT3) 59
2.5.4 Unnotched Compression 1 Properties (UNC1)..... 60
2.5.5 Unnotched Compression 2 Properties (UNC2)..... 61
2.5.6 Unnotched Compression 3 Properties (UNC3)..... 62
2.5.7 Laminate Short-Beam Strength Properties (SBS1) 63
2.5.8 Open-Hole Tension 1 Properties (OHT1) 64
2.5.9 Open-Hole Tension 2 Properties (OHT2) 65
2.5.10 Open-Hole Tension 3 Properties (OHT3) 66
2.5.11 Open-Hole Tension 4 Properties (OHT4) 67
2.5.12 Filled-Hole Tension 1 Properties (FHT1)..... 68
2.5.13 Filled-Hole Tension 2 Properties (FHT2)..... 69
2.5.14 Filled-Hole Tension 3 Properties (FHT3)..... 70
2.5.15 Open-Hole Compression 1 Properties (OHC1) 71
2.5.16 Open-Hole Compression 2 Properties (OHC2) 72
2.5.17 Open-Hole Compression 3 Properties (OHC3) 73
2.5.18 Open-Hole Compression 4 Properties (OHC4) 74
2.5.19 Filled-Hole Compression 1 Properties (FHC1) 75
2.5.20 Filled-Hole Compression 2 Properties (FHC2) 76
2.5.21 Filled-Hole Compression 3 Properties (FHC3) 77
2.5.22 Single-Shear Bearing 1 Properties (SSB1)..... 78
2.5.23 Single-Shear Bearing 2 Properties (SSB2)..... 79
2.5.24 Single-Shear Bearing 3 Properties (SSB3)..... 80
2.5.25 Compression After Impact 1 Properties (CAI1) 81
2.5.26 Biaxial Interlaminar Tension Properties (BA-ILT) 82
2.5.27 Bidiagonal Interlaminar Tension Properties (BD-ILT) 83
3. Individual Test Charts..... 84
3.1 Individual Lamina Test Charts 84
3.1.1 Biaxial Lamina Test Charts..... 85
3.1.1.1 Biaxial 0° Tension Properties (BA-0TEN)..... 85
3.1.1.2 Biaxial 0° Compression Properties (BA-0CLC) 86
3.1.1.3 Biaxial 90° Tension Properties (BA-90TEN)..... 87
3.1.1.4 Biaxial 90° Compression Properties (BA-90CLC) 88
3.1.1.5 Biaxial In-Plane Shear Properties (BA-IPS) 89
3.1.1.6 Biaxial Short Beam Strength Properties (BA-SBS) 91
3.1.1.7 Biaxial Flexural Strength Properties (BA-Flex)..... 92
3.1.2 Bidiagonal Lamina Test Charts 93
3.1.2.1 Bidiagonal 0° Tension Properties (BD-0TEN) 93
3.1.2.2 Bidiagonal 0° Compression Properties (BD-0CLC)..... 94

3.1.2.3 Bidiagonal In-Plane Shear Properties (BD-IPS) 95
3.1.2.4 Bidiagonal Short Beam Strength Properties (BD-SBS) 97
3.1.2.5 Bidiagonal Flexural Strength Properties (BD-Flex) 98
3.1.3 UD-Woven Lamina Test Charts 99
3.1.3.1 UD Woven 0/90° Unnotched Tension Properties (UD-UNT0) 99
3.1.3.2 UD Woven 0/90° Unnotched Compression Properties (UD-UNC0) 100
3.1.3.3 UD Woven 0° Tabbed Tension Properties (UD-0TEN) 101
3.1.3.4 UD Woven 0° Compression Modulus Only Properties (UD-0CLC) 102
3.1.3.5 UD Woven In-Plane Shear Properties (UD-IPS) 103
3.1.3.6 UD Woven Short Beam Strength Properties (UD-SBS) 105
3.1.3.7 UD Woven Flexural Strength Properties (UD-FLEX) 106
3.2 Individual Laminate Test Charts 107
3.2.1 Unnotched Tension 1 Properties (UNT1) 107
3.2.2 Unnotched Tension 2 Properties (UNT2) 108
3.2.3 Unnotched Tension 3 Properties (UNT3) 109
3.2.4 Unnotched Compression 1 Properties (UNC1) 110
3.2.5 Unnotched Compression 2 Properties (UNC2) 111
3.2.6 Unnotched Compression 3 Properties (UNC3) 112
3.2.7 Laminate Short-Beam Strength Properties (SBS1) 113
3.2.8 Open-Hole Tension 1 Properties (OHT1) 114
3.2.9 Open-Hole Tension 2 Properties (OHT2) 115
3.2.10 Open-Hole Tension 3 Properties (OHT3) 116
3.2.11 Open-Hole Tension 4 Properties (OHT4) 117
3.2.12 Filled-Hole Tension 1 Properties (FHT1) 118
3.2.13 Filled-Hole Tension 2 Properties (FHT2) 119
3.2.14 Filled-Hole Tension 3 Properties (FHT3) 120
3.2.15 Open-Hole Compression 1 Properties (OHC1) 121
3.2.16 Open-Hole Compression 2 Properties (OHC2) 122
3.2.17 Open-Hole Compression 3 Properties (OHC3) 123
3.2.18 Open-Hole Compression 4 Properties (OHC4) 124
3.2.19 Filled-Hole Compression 1 Properties (FHC1) 125
3.2.20 Filled-Hole Compression 2 Properties (FHC2) 126
3.2.21 Filled-Hole Compression 3 Properties (FHC3) 127
3.2.22 Single-Shear Bearing 1 Properties (SSB1) 128
3.2.23 Single-Shear Bearing 2 Properties (SSB2) 129
3.2.24 Single-Shear Bearing 3 Properties (SSB3) 130
3.2.25 Compression After Impact 1 Properties (CAI1) 131
3.2.26 Biaxial Interlaminar Tension Properties (BA-ILT) 132
3.2.27 Bidiagonal Interlaminar Tension Properties (BD-ILT) 133
4. Raw Data 134
4.1 Individual Lamina Raw Data 134
4.1.1 Biaxial Lamina Raw Data 135
4.1.1.1 Biaxial 0° Tension (BA-0TEN) 136
4.1.1.2 Biaxial 0° Compression (BA-0CLC) 144

4.1.1.3 Biaxial 90° Tension (BA-90TEN) 152
4.1.1.4 Biaxial 90° Compression (BA-90CLC) 160
4.1.1.5 Biaxial In-Plane Shear (BA-IPS) 168
4.1.1.6 Biaxial Short Beam Strength (BA-SBS) 180
4.1.1.7 Biaxial Flexural Strength (BA-Flex) 190
4.1.2 Bidiagonal Lamina Properties 192
4.1.2.1 Bidiagonal 0° Tension Properties (BD-0TEN) 193
4.1.2.2 Bidiagonal 0° Compression (BD-0CLC) 201
4.1.2.3 Bidiagonal In-Plane Shear (BD-IPS) 209
4.1.2.4 Bidiagonal Short Beam Strength (BD-SBS) 221
4.1.2.5 Bidiagonal Flexural Strength (BD-Flex) 231
4.1.3 UD-Woven Lamina Properties 233
4.1.3.1 UD Woven 0/90° Unnotched Tension (UD-UNT0) 234
4.1.3.2 UD Woven 0/90° Unnotched Compression (UD-UNC0) 242
4.1.3.3 UD Woven 0° Tabbed Tension (UD-0TEN) 250
4.1.3.4 UD Woven 0° Compression Modulus Only (UD-0CLC) 260
4.1.3.5 UD Woven In-Plane Shear (UD-IPS) 268
4.1.3.6 UD Woven Short Beam Strength (UD-SBS) 280
4.1.3.7 UD Woven Flexural Strength (UD-FLEX) 289
4.2 Individual Laminate Raw Data 291
4.2.1 Unnotched Tension 1 (UNT1) 292
4.2.2 Unnotched Tension 2 (UNT2) 300
4.2.3 Unnotched Tension 3 (UNT3) 306
4.2.4 Unnotched Compression 1 (UNC1) 312
4.2.5 Unnotched Compression 2 (UNC2) 320
4.2.6 Unnotched Compression 3 (UNC3) 324
4.2.7 Laminate Short-Beam Strength (SBS1) 328
4.2.8 Open-Hole Tension 1 (OHT1) 334
4.2.9 Open-Hole Tension 2 (OHT2) 342
4.2.10 Open-Hole Tension 3 (OHT3) 348
4.2.11 Open-Hole Tension 4 (OHT4) 354
4.2.12 Filled-Hole Tension 1 (FHT1) 358
4.2.13 Filled-Hole Tension 2 (FHT2) 366
4.2.14 Filled-Hole Tension 3 (FHT3) 372
4.2.15 Open-Hole Compression 1 (OHC1) 378
4.2.16 Open-Hole Compression 2 (OHC2) 386
4.2.17 Open-Hole Compression 3 (OHC3) 390
4.2.18 Open-Hole Compression 4 (OHC4) 394
4.2.19 Filled-Hole Compression 1 (FHC1) 398
4.2.20 Filled-Hole Compression 2 (FHC2) 404
4.2.21 Filled-Hole Compression 3 (FHC3) 408
4.2.22 Single-Shear Bearing 1 (SSB1) 412
4.2.23 Single-Shear Bearing 2 (SSB2) 418
4.2.24 Single-Shear Bearing 3 (SSB3) 422
4.2.25 Compression After Impact 1 (CAI1) 426
4.2.26 Biaxial Interlaminar Tension (BA-ILT) 430

4.2.27 Bidiagonal Interlaminar Tension (BD-ILT) 436
5. Additional Compression After Impact Data 442
6. Full Stress vs. Strain Curve 444
6.1 BA-0Ten – RTA 444
6.2 BA-90Ten – RTA 445
6.3 BD-0Ten – RTA 445
6.4 UD-0Ten – RTA 446
6.6 BA-0CLC – RTA 447
6.7 BA-90CLC – RTA 447
6.8 BD-0CLC – RTA 448
6.9 BA-IPS – RTA 449
6.10 BD-IPS – RTA 450
6.11 UD-IPS – RTA 451
6.12 BA-SBS – RTA 452
6.13 BD-SBS – RTA 453
6.14 UD-SBS – RTA 454
6.15 UD-UNC0 – RTA 455
6.16 UD-UNT0 – RTA 455
6.17 M-UNT1 – RTA 456
6.18 M-UNC1 – RTA 456
7. Fluid Sensitivity Comparison 457
7.1 Room Temperature Test Data 457
7.2 Elevated Temperature Test Data 460
7.3 Load Displacement Curves 463
8. Moisture Conditioning Charts 467
8.1 UD-0Ten - Thinnest Panel 467
8.2 UD-SBS- Thickest Panel 467
9. DMA Results 468
9.1 Ambient DMA Data 468
9.2 Wet DMA Data 472
10. Deviations 476

List of Tables

Table 1-1: Biaxial DRNF lamina level test 17
Table 1-2 Bidiagonal DRNF lamina level test 18
Table 1-3 Unidirectional DRWF lamina level test 19
Table 1-4: Combined preform laminate level test 23
Table 1-5: Cured Laminate Properties 24
Table 1-6: Fluid Sensitivity Screening 28
Table 2-1: Biaxial DRNF Lamina Summary Data 32
Table 2-2: Bidiagonal DRNF Lamina Summary Data 33
Table 2-3: Unidirectional DRWF Lamina Summary Data 34
Table 2-4: Laminate Summary Data 35
Table 2-5: Laminate Summary Data (continued) 36
Table 2-6 Fluid Screening Summary Data 37

List of Figures

Figure 1 Specimen Selection Methodology 14
Figure 2 Specimen Traceability Line 15
Figure 3 - Biaxial 0° Tension panel 30

1. Introduction

1.1 Scope

The test methods and results described in this document are intended to provide basic composite properties essential to most methods of analysis and are consistent with CMH-17-1—Composite Materials Handbook for Polymer Matrix Composites. This report contains material property data of common usefulness to wide range of projects. The lamina and laminate material property data have been generated with NCAMP oversight in accordance with NSP 100 NCAMP Standard Operating Procedures; the test panels and test specimens have been inspected by NCAMP Authorized Inspection Representatives (AIR) and the testing has been witnessed by NCAMP Authorized Engineering Representatives (AER). However, the data may not fulfill all the needs of any specific company's program; specific properties, environments, laminate architecture, and loading situations may require additional testing.

The use of NCAMP material and process specifications does not guarantee material or structural performance. Material users should be actively involved in evaluating material performance and quality including, but not limited to, performing regular purchaser quality control tests, performing periodic equivalency/additional testing, participating in material change management activities, conducting statistical process control, and conducting regular supplier audits.

The applicability of NCAMP material property data, material allowables, and specifications must be evaluated on a case-by-case basis by aircraft companies and certifying agencies. NCAMP assumes no liability whatsoever, expressed or implied, related to the use of the material property data, material allowables, and specifications.

This report contains material property data only. Statistical analysis of the data including the calculations of b-basis values is given in a separate report, Syensqo PRISM™ EP2400 toughened epoxy resin with Tenax™ Reinforcement Fabrics, Material Allowables Statistical Analysis Report NCP-RP-2024-009. The qualification material was procured to NCAMP Material Specification NMS 241F fabric procurement spec and NMS 241R resin procurement spec. The qualification test panels were cured in accordance with NCAMP Process Specification NPS 82401 Baseline “C” Cure Cycle. The NCAMP Test Plan NTP 2401Q1 was used for this qualification program.

Part fabricators that wish to utilize the material property data, allowables, and specifications may be able to do so by demonstrating the capability to reproduce the original material properties; a process known as equivalency. More information about this equivalency process including the test statistics and its limitations can be found in Section 6 of DOT/FAA/AR-03/19 and Section 8.4.1 of CMH-17-1. The applicability of equivalency process must be evaluated on program-by-program basis by the applicant and certifying agency. The applicant and certifying agency must agree that the equivalency test plan along with the equivalency process described in Section 6 of

DOT/FAA/AR-03/19 and Section 8.4.1 of CMH-17-1 are adequate for the given program.

Aircraft companies should not use the data published in this report without specifying relevant NCAMP Material Specification NMS 241 family series. The specifications may have additional requirements that are listed in the process control document (PCD), fiber specification, fiber PCD, and other raw material specifications and PCDs which impose essential quality controls on the raw materials and raw material manufacturing equipment and processes. *Aircraft companies and certifying agencies should assume that the material property data published in this report is not applicable when the material is not procured to NMS 241 series.* These specifications are a free, publicly available, non-proprietary aerospace industry material specification.

The data in this report is intended for general distribution to the public, either freely or at a price that does not exceed the cost of reproduction (e.g. printing) and distribution (e.g. postage).

1.2 Symbols Used

ν_{12}^{t}	major Poisson's ratio, tension
$\mu\varepsilon$	micro-strain
E_1^{c}	compressive modulus, longitudinal / warp direction
E_1^{t}	tensile modulus, longitudinal / warp direction
E_2^{c}	compressive modulus, transverse / fill direction
E_2^{t}	tensile modulus, transverse / fill direction
F_1^{cu}	ultimate compressive strength, longitudinal / warp direction
F_1^{tu}	ultimate tensile strength, longitudinal / warp direction
F_2^{cu}	ultimate compressive strength, transverse / fill direction
F_2^{tu}	ultimate tensile strength, transverse / fill direction
ν_{12}^{c}	major Poisson's Ratio, compression
ν_{21}^{c}	minor Poisson's Ratio, compression
$F_{12}^{s5\% \text{ strain}}$	in-plane shear strength at 5% strain
F_{12}^{smax}	in-plane shear peak strength before 5% strain
F_{12}^{su}	in-plane shear ultimate peak strength
$F_{12}^{s0.2\%}$	in-plane shear strength at 0.2% offset
G_{12}^{s}	in-plane shear modulus

Superscripts

c	compression
cu	compression ultimate
s	shear
su	shear ultimate
t	tension
tu	tension ultimate

Subscripts

1	axis; longitudinal / warp direction (parallel to warp direction of reinforcement)
2	axis; transverse / fill direction (parallel to fill direction of reinforcement)
12	in-plane

Acronyms and Definitions

ASTM	American Society for Testing and Materials
B – Basis	95% lower confidence limit on the tenth population percentile
CV	Coefficient of variation
CTA	cold temperature ambient
CPT	cured ply thickness
DRNF	dry reinforcement non-crimp fabric
DRWF	dry reinforcement woven fabric
ETA	elevated temperature ambient
ETW	elevated temperature wet
Gr/Ep	graphite/epoxy
norm	normalized
RF	reinforcement fabric
RTA	room temperature ambient
SACMA	Suppliers of Advanced Composite Materials Association
SRM	SACMA Recommended Method
Tply	thickness divided by the number of plies provides the thickness average per specimen
wet	specimen with an “equilibrium” moisture content
T, RH	temperature, relative humidity

1.3 References

ASTM Standards

All testing was in accordance with nationally recognized standards, methods and procedures. Specific mechanical property test methods applicable to the test program in this document include:

- ASTM D2344/D2344M-22 – Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates
- ASTM D3039/D3039M-17 – Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials
- ASTM D3418-15 - Standard Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry
- ASTM D3518/D3518M- 18 – Standard Test Method for In-Plane Shear Response of Polymer Matrix Composite Materials by Tensile Test of a ± 45º Laminate In-Plane Shear Strength and Modulus
- ASTM D5766/D5766M-23 – Standard Test Method for Open Hole Tensile Strength of Polymer Matrix Composite Laminates
- ASTM D5961/D5961M-23 – Standard Test Method for Bearing Response of Polymer Matrix Composite Laminates
- ASTM D6415-22 – Standard Test Method for Measuring the Curved Beam Strength of a Fiber-Reinforced Polymer-Matrix Composite
- ASTM D6484/D6484M-23 – Standard Test Method for Open-Hole Compressive Strength of Polymer Matrix Composite Laminates
- ASTM D6641/D6641M-23 – Standard Test Method for Determining the Compressive Properties of Polymer Matrix Composite Laminates Using a Combined Loading Compression (CLC) Test Fixture
- ASTM D6742/D6742M-23 – Standard Practice for Filled-Hole Tension and Compression Testing of Polymer Matrix Composite Laminates
- ASTM D7028-07(2015) – Standard Test Method for Glass Transition Temperature (DMA Tg) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)
- ASTM D7136/D7136M-20 – Standard Test Method for Measuring the Damage Resistance of a Fiber-Reinforced Polymer Matrix Composite to a Drop-Weight Impact Event
- ASTM D7137/D7137M-23 – Standard Test Method for Compressive Residual Strength Properties of Damaged Polymer Matrix Composite Plates
- ASTM D7264/D7264M-21 – Standard Test Method for Flexural Properties of Polymer Matrix Composite Materials

1.4 Methodology

1.4.1 Process Definition

Panels using three batches of material were fabricated by Fiber Dynamics at 3730 S Midco St., Wichita, KS 67215. The three batches of material were designed to fulfill base material qualification requirements.

Material description:

- Dry Reinforcement Woven Fabric (DRWF) – This material consists of a single layer of unidirectional tows (0°) woven / held together (with) a combifusible / bi-component yarn in the weft direction (90°). The material is effectively a unidirectional ply.
- Dry Reinforcement Non-Crimp Fabric Biaxial (DRNF) – This material consists of two layers of unidirectional tows, one oriented at 0 degrees and one at 90 degrees, stitched together with a thermoplastic yarn to form a “non-crimp fabric”. The material is composed from two unidirectional plies oriented at 0 and 90 degrees.
- Dry Reinforcement Non-Crimp Fabric Bidiagonal (DRNF) – This material consists of two layers of unidirectional tows, one oriented at +45 degrees and one at -45 degrees, stitched together with a thermoplastic yarn to form a “non-crimp fabric”. The material is composed from two unidirectional plies oriented at +45 and -45 degrees.

See fabric specific NMS 241F/X specifications for detailed reinforcement fabric construction.

The following constituent materials were characterized in the form of a VARTM processed panel:

Resin Name	Description About the Resin	Spec #
Solvay PRISM™ EP2400 Resin System	One Part toughened resin developed for RTM, VARTM and CAPRI processing.	NMS 241R/1

Fabric Name	Description About the Reinforcement	Spec #
Teijin Tenax™ Dry Reinforcement Woven Fabric (DRWF)	Fiber: Tenax™-E IMS65 E23 24K 830tex; Weft weaving yarn: Combifusible bonding yarn, 200 dtex Product areal weight 196 gsm	NMS 241F/3
Teijin Tenax™ Dry Reinforcement Non-Crimp Fabric Biaxial (DRNF)	Fiber: Tenax™-E IMS65 E23 24K 830tex; Stitching yarn: K203 (EP 1390) 33 dtex; (tricot loop 3.6 mm) Product areal weight (without binder): 392 gsm, Total areal weight: 402 gsm Stitched fiber angles: 0°/90° and 90°/0°	NMS 241F/1
Teijin Tenax™ Dry Reinforcement Non-Crimp Fabric Bidiagonal (DRNF)	Fiber: Tenax™-E IMS65 E23 24K 830tex; Stitching yarn: K203 (EP 1390) 33 dtex; (tricot pillar loop 4.0 mm) Product areal weight (without binder): 392 gsm, Total areal weight: 402 gsm Stitched fiber angles: +45°/-45° and -45°/+45°	NMS 241F/2

Multiple batches of each dry reinforcement and infusion resin were combined to produce multiple batches to be tested in this qualification. It was intended that at least three separate unique batches should be used to generate qualification data. Due to material shortage, batches D and E were added; all batches are defined below.

Laminate Test Batch	A	B	C	D	E
Dry Reinforcement	Material Lot 1	Material Lot 2	Material Lot 3	Material Lot 2	Material Lot 3
Resin Batch	1	2	3	1	1

For each combination of test, batch and condition, the specimens were selected from minimum two separate panels cured separately as shown in Figure 1-1 unless otherwise specified.

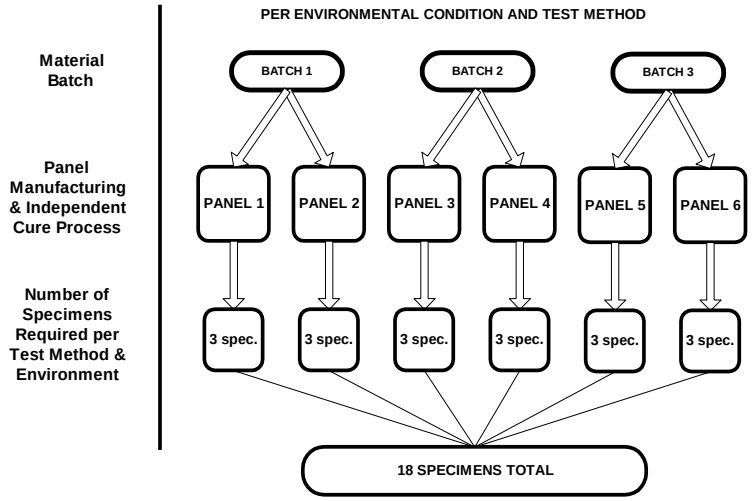


Figure 1 Specimen Selection Methodology

All panels were fabricated in accordance with NCAMP Process Specification NPS 82401, baseline cure cycle (C).

In order to facilitate individual specimen trace ability, individual specimen numbering and/or skewed lines were written or drawn across each sub-panel as shown in Figure 1-2.

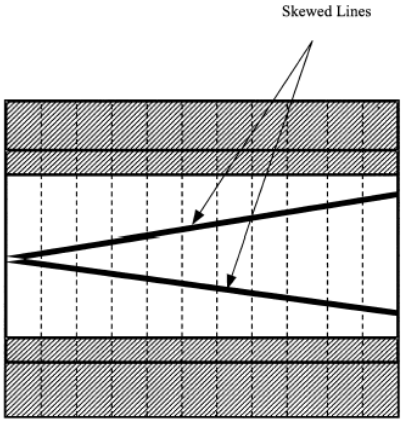


Figure 2 Specimen Traceability Line

1.4.2 Specimen & Testing Details

1.4.2.1 Tabbing

UD-0Ten coupons were tabbed with ±45° fiber glass tabstock with FM300 adhesive. Unbeveled tabs were used.

1.4.2.2 Specimen Dimensions & Test Configuration

For SBS specimens, a span of 4T was used for testing. The same T was used to compute the width and length of the specimen.

Caul plate was used on all flat laminates.

For filled-hole tension tests, the fasteners were installed to 85±5 in-lb above prevailing torque. For filled-hole compression and bearing tests, the fasteners were installed to 30±5 in-lb above prevailing torque. Fasteners were installed after moisture conditioning.

Unless otherwise specified, a tolerance of ±5°F applied to all temperature conditions specified in this document.

For filled-hole and bearing tests, the hole diameter was 0.25 in -0.000 +0.003 in. The following fasteners were used:

1) NASM 21297-04004 bolts with NASM 21084 nuts and MS21206 washers for FHT and FHC
2) NASM 21297-04016 bolts with MS 21084 nuts and MS21206 washers for SSB

1.4.2.3Specimen Strain Device Used

Uniaxial gages (where applicable) were used on:

All of CTD Tension specimens except 0° Tension specimens.

Two RTD Tension specimens except 0° Tension for obtaining full stress strain curves.

All conditions of combined loading compression specimens.

Two RTD Open Hole Compression specimens for detecting buckling.

CAI for balancing.

Biaxial gages were used on:

All conditions of IPS specimens.

All of CTD 0° Tension specimens.

Two RTD 0° Tension specimens for obtaining full stress strain curves.

Uniaxial Extensometers were used on:

All of RTD and ETW Tension specimens except Warp Tension specimens.

Biaxial Extensometers were used on:

All of RTD and ETW Warp Tension specimens.

1.4.3 Test Matrix

The tables below show the lay-ups and test matrices used for lamina and laminate level testing.

Fiber Layup	Test direction	Test Type	Property	Number of Batches x Number of Panels x Number of Test Specimens				
				Test Temperature/Moisture Condition				
				CTA (4)	RTA	ETA	ETW1	ETW2
$[0/90]_{4S}$	0°	ASTM D3039 Tension	Strength, Modulus, and Poisson's Ratio	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{4S}$	0°	ASTM D6641 Compression	Strength and Modulus		3x2x3 (1)	3x2x3	3x2x3	1x2x3
$[0/90]_{4S}$	90°	ASTM D3039 Tension	Strength and Modulus	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{4S}$	90°	ASTM D6641 Compression	Strength and Modulus		3x2x3 (1)	3x2x3	3x2x3	1x2x3
$[45/-45]_{3S}$ (rotated out of 0/90 and 90/0)	0°	ASTM D3518 In-Plane Shear (2)	Strength and Modulus	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{8S}$	0°	ASTM D2344 Short Beam	Strength	3x2x3	3x2x3	3x2x3	3x2x3	1x2x3
$[0/90]_{4S}$	0°	ASTM D7264 Flex (5)	Strength and Modulus		3x2x3			

Table 1-1: Biaxial DRNF lamina level test

Note 1: Back-to-back strain gages were used on the first two specimens. If no buckling is observed, the remaining modulus specimens were strain gaged on one side of the specimens only.
Note 2: Gripped (tab) length was 1.5±0.5" on each end of the 10" long specimen. Once the samples reached the 5% strain level, the actuator/crosshead displacement rate was increased to four times the initial rate. Testing continued at the higher strain rate until ultimate failure was observed.
Note 3: At least two specimens were gaged to obtain full stress-strain curve to failure. An appropriate extensometer was used in place of the strain gage for the remaining specimens.
Note 4: Strain gage was used in lieu of extensometers (where applicable) to avoid slippage due to frost formation.
Note 5: Procedure A. Span of 16:1. Specimens were taken from 0° CLC panels.

Fiber Layup	Test direction	Test Type	Property	Number of Batches x Number of Panels x Number of Test Specimens				
				Test Temperature/Moisture Condition				
				CTA (4)	RTA	ETA	ETW1	ETW2
$[0/90]_{4S}$ (BD rotated by 45°)	0°	ASTM D3039 Tension	Strength, Modulus, and Poisson's Ratio	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{4S}$ (BD rotated by 45°)	0°	ASTM D6641 Compression	Strength and Modulus		3x2x3 (1)	3x2x3	3x2x3	1x2x3
$[45/-45]_{3S}$	0°	ASTM D3518 In-Plane Shear (2)	Strength and Modulus	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{8S}$ (BD rotated by 45°)	0°	ASTM D2344 Short Beam	Strength	3x2x3	3x2x3	3x2x3	3x2x3	1x2x3
$[0/90]_{4S}$ (BD rotated by 45°)	0°	ASTM D7264 Flex (5)	Strength and Modulus		3x2x3			

Table 1-2 Bidiagonal DRNF lamina level test

Note 1: Back-to-back strain gages were used on the first two specimens. If no buckling is observed, the remaining modulus specimens were strain gaged on one side of the specimens only.
Note 2: Gripped (tab) length was 1.5±0.5" on each end of the 10" long specimen. Once the samples reached the 5% strain level, the actuator/crosshead displacement rate was increased by four times the initial rate. Testing continued at the higher strain rate until ultimate failure was observed.
Note 3: At least two specimens were gaged to obtain full stress-strain curve to failure. An appropriate extensometer was used in place of the strain gage for the remaining specimens.
Note 4: Strain gage was used in lieu of extensometers (where applicable) to avoid slippage due to frost formation.
Note 5: Procedure A. Span of 16:1. Specimens were taken from 0° CLC panels.

Fiber Layup	Test direction	Test Type	Property	Number of Batches x Number of Panels x Number of Test Specimens				
				Test Temperature/Moisture Condition				
				CTA (4)	RTA	ETA	ETW1	ETW2
$[0/90]_{4S}$	0°	ASTM D3039 Tension	Strength, Modulus, and Poisson's Ratio	3x2x3	3x2x3 (3)	3x2x3	3x2x3	
$[0/90]_{4S}$	0°	ASTM D6641 Compression (6)	Strength and Modulus		3x2x3 (1)	3x2x3	3x2x3	1x2x3
$[0]_{8}$	0°	ASTM D3039 Tabbed Tension	Strength and Modulus	3x2x3	3x2x3 (3)	3x2x3	3x2x3	1x2x3
$[0]_{16}$	0°	ASTM D6641 Compression	Modulus		3x2x3 (1)	3x2x3	3x2x3	1x2x3
$[45/-45]_{3S}$	0°	ASTM D3518 In-Plane Shear (2)	Strength and Modulus	3x2x3	3x2x3	3x2x3	3x2x3	
[0]32	0°	ASTM D2344 Short Beam	Strength	3x2x3	3x2x3	3x2x3	3x2x3	1x2x3
$[0/90]_{4S}$	0°	ASTM D7264 Flex (5)	Strength and Modulus		3x2x3			

Table 1-3 Unidirectional DRWF lamina level test

Note 1: Back-to-back strain gages were used on the first two specimens. If no buckling is observed, the remaining modulus specimens were strain gaged on one side of the specimens only.

Note 2: Gripped (tab) length was 1.5±0.5" on each end of the 10" long specimen. Once the samples reached the 5% strain level, the actuator/crosshead displacement rate can be increased by four times the initial rate. Testing continued at the higher strain rate until ultimate failure was observed.

Note 3: At least two specimens were gaged to obtain full stress-strain curve to failure. An appropriate extensometer was used in place of the strain gage for the remaining specimens.

Note 4: Strain gage was used in lieu of extensometers (where applicable) to avoid slippage due to frost formation.

Note 5: Procedure A. Span of 16:1. Specimens were taken from UNC0 panels

Note 6: Derived 0° lamina compressive strength ($F^{cu}_{0°\,plies}$) using the following:

$$F^{cu}_{0°\,plies} = F^{cu}_{0°/90°}\frac{E_1}{E_{0°/90°}}$$

Where:
$F^{cu}_{0°\,plies}$ is 0° ply strength
$F^{cu}_{0°/90°}$ is 0°/90° or 90°/0° cross-ply laminate strength
E_1 is 0° modulus
$E_{0°/90°}$is 0°/90° or 90°/0° cross-ply laminate modulus

Table 1-4 below summarizes the laminate level tests carried out. The construction of the laminates were done using a combination of the non-crimp and woven fabric forms to produce the desired quasi, soft, and hard orientation.
The layup angles 0/90, 90/0, 45/-45 and -45/45 refer to the specific DRNF, i.e. biaxial (0/90 or 90/0) and bidiagonal (45/-45 or -45/45) reinforcement fabric. The “ | “ indicate midplane symmetry of the layup sequence. The laminate stacking sequences in this program were not specific to any design. Therefore, careful consideration should be given to the validity of properties derived from this program based on the design specific laminates in a structure to be certified. The stacking sequences were chosen based on several factors; to assess the scope of material properties from a soft, quasi and hard construction; to assess the interactions of the different preforms; and to assess the process ability of the different preforms when used jointly.

Table 1-4 also emphasizes those properties and test condition combinations believed to constitute the worst case, which in general is cold dry/ambient for tension and hot wet for compression and other matrix dominated properties.

(%0°/%±45°/%90°) Actual Test Type	Test Type and Layup (5)	Property	Number of Batches x Number of Panels x Number of Test Specimens			
			Test Temperature/Moisture Condition			
			CTA	RTA	ETA	ETW1
(25/50/25 - QI) UNT1	ASTM D3039 Un-notched Tension [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength & modulus	3x2x3 (6)	3x2x3 (7)	3x2x3	3x2x3
(12.5/75/12.5) UNT2	ASTM D3039 Un-notched Tension [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength & modulus	3x2x3 (6)	3x2x3 (7)		3x2x3
(50/40/10) UNT3	ASTM D3039 Un-notched Tension [45/-45, 0, 0, 0/90, 45/-45, 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength & modulus	3x2x3 (6)	3x2x3 (7)		3x2x3
(25/50/25 - QI) UNC1	ASTM D6641 Un-notched Compression [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength & modulus		3x2x3 (4)	3x2x3	3x2x3 **(9)**
(12.5/75/12.5) UNC2	ASTM D6641 Un-notched Compression [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength & modulus		3x2x3 (4)		3x2x3
(50/40/10) UNC3	ASTM D6641 Un-notched Compression [45/-45, 0, 0, 0/90, 45/-45, 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength & modulus		3x2x3 (4)		3x2x3
(25/50/25 - QI) SBS1	ASTM D2344 Short Beam [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45] (specimens may be taken from UNC1 panels)	Strength		3x2x3	3x2x3	3x2x3
(25/50/25 - QI) OHT1	ASTM D5766 Open Hole Tension (1) [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength	3x2x3	3x2x3	3x2x3	3x2x3
(12.5/75/12.5) OHT2	ASTM D5766 Open Hole Tension (1) [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength	3x2x3	3x2x3		3x2x3
(50/40/10) OHT3	ASTM D5766 Open Hole Tension (1) [45/-45, 0, 0, 0/90, 45/-45, 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength	3x2x3	3x2x3		3x2x3

(37.5/25/37.5) OHT4	ASTM D5766 Open Hole Tension (1) [90/0, 45/-45, 0/90, 0/90 | 90/0, 90/0, -45/45, 0/90]			1x2x3		1x2x3
(25/50/25 - QI) FHT1	ASTM D6742 Filled Hole Tension (2) [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength	3x2x3	3x2x3	3x2x3	3x2x3
(12.5/75/12.5) FHT2	ASTM D6742 Filled Hole Tension (2) [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength	3x2x3	3x2x3		3x2x3
(50/40/10) FHT3	ASTM D6742 Filled Hole Tension (2) [45/-45, 0, 0, 0/90,45/-45 , 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength	3x2x3	3x2x3		3x2x3
(25/50/25 - QI) OHC1	ASTM D6484 Open Hole Compression (1) [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength		3x2x3 (4)	3x2x3	3x2x3 **(9)**
(12.5/75/12.5) OHC2	ASTM D6484 Open Hole Compression (1) [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength		3x2x3 (4)		3x2x3
(50/40/10) OHC3	ASTM D6484 Open Hole Compression (1) [45/-45, 0, 0, 0/90, 45/-45, 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength		3x2x3 (4)		3x2x3
(37.5/25/37.5) OHC4	ASTM D6484 Open Hole Compression (1) [90/0, 45/-45, 0/90, 0/90] | [90/0, 90/0, -45/45, 0/90]			1x2x3 (4)		1x2x3
(25/50/25 - QI) FHC1	ASTM D6742 Filled Hole Compression (2) [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength		3x2x3	3x2x3	3x2x3
(12.5/75/12.5) FHC2	ASTM D6742 Filled Hole Compression (2) [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength		3x2x3		3x2x3
(50/40/10) FHC3	ASTM D6742 Filled Hole Compression (2) [45/-45, 0, 0, 0/90, 45/-45 , 0, 0] **|** [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength		3x2x3		3x2x3
(25/50/25 - QI) SSB1	ASTM D5961 C Single Shear Bearing (3) [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	Strength & Deformation		3x2x3	3x2x3	3x2x3

(12.5/75/12.5) SSB2	ASTM D5961 C Single Shear Bearing (3) [45/-45, 0/90, 45/-45, 45/-45] | [-45/45, -45/45, 90/0, -45/45]	Strength & Deformation		3x2x3		3x2x3
(50/40/10) SSB3	ASTM D5961 C Single Shear Bearing (3) [45/-45, 0, 0, 0/90, 45/-45 , 0, 0] | [0, 0, -45/45, 90/0, 0, 0, -45/45]	Strength & Deformation		3x2x3		3x2x3
(50/0/50) ILT	ASTM D6415 Interlaminar Tension $[0/90]_{10S}$ (made from 0/90 biaxial RF)	Strength	1x1x6	1x1x6		1x1x6
(50/0/50) ILT	ASTM D6415 Interlaminar Tension $[0/90]_{10S}$ (made from rotated +45/-45 bidiagonal RF)	Strength	1x1x6	1x1x6		1x1x6
(25/50/25 - QI) CAI	ASTM D7136 & D7137 Compression After Impact (1500 in.lb/in) (8) [45/-45, 0/90], [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45], [90/0,-45/45]	Strength		1x1x6		1x1x6

Table 1-4: Combined preform laminate level test

(1) Open-hole configuration: 0.25” hole diameter, 1.5 inch width.
(2) Filled-hole test configuration: 0.25” diameter, see section 2 for fastener callout, 1.5” width.
(3) Single shear bearing test configuration: 0.25: hole diameter, 1.5” width, see section 2 for fastener callout, e/D=3, ASTM D5961-10 Procedure C
(4) Back-to-back strain gages were used on the first two specimens. If no buckling is observed, the remaining modulus specimens were strain gaged on one side of the specimens only.
(5) Loading direction is typically along the 0-degree direction; referencing the take up/production direction (this is similar to warp direction in traditional plain weave woven fabric).
(6) Strain gage was used in lieu of extensometers (where applicable) to avoid slippage due to frost formation.
(7) At least two specimens were gaged to obtain full stress-strain curve to failure. An appropriate extensometer was used in place of the strain gage for the remaining specimens.
(8) Back-to-back strain gages on two locations (a total of four strain gages) were needed on the first specimen. The specimen was equivalent to the test specimens in terms of material, layup, and geometry, and un-damaged. Alternatively, an instrumented metallic plate, equivalent in thickness to the test specimens to within ±.25 mm [±.010 in.], may be used.
(9) Repeat sampling for ETW2. Only one batch of material to be tested. (i.e. 1x2x3)

1.4.4 Cured Laminate Physical Testing

The properties in Table 1-5 were determined for each panel used for test coupons with the exception of Tg by DMA which were conducted on one laminate per batch from each oven cure conducted where that batch is present. The tests were performed by the National Institute for Aviation Research (NIAR) Composites Laboratory under the supervision of NCAMP.

Property	**Condition/Method** (Note 1)	**Min Replicates per panel**
Cured Ply Thickness	ASTM D3171-11	All data from mechanical test specimens
Laminate Density	ASTM D792-08	3
Fiber Volume, % by Volume	ASTM D3171-11 (Note 2)	3
Resin Content, % by Weight	ASTM D3171-11 (Note 2)	3
Void Content, % by Volume	ASTM D3171-11	Per Note 5
Ultrasonic Through Transmission, C-Scan	MIL-HDBK-787A (Note 3)	1
Glass Transition Temperature, Tg by DMA flexural loading	Dry and Wet – ASTM D7028	1 Dry, 1 Wet (Note 4)

Table 1-5: Cured Laminate Properties

Note 1: Standard allows variations in specimen form or test method, the specific parameters to be used will be specified in the test work instructions.

Note 2: Method II. To ensure that FV measurements are accurate, Method I shall be used to verify that use of Method II is appropriate. This shall be sampled based on NDI results and panel layup. Alternately, a minimum of 3 samples per layup sequence on a limited number of panels may be conducted. The difference in FV measured using Method 1 and Method 2 shall be ≤1%

Note 3: Five MHz is preferred for solid laminates. Panels with anomaly should be segregated. Microscopy images and void content may be taken from questionable areas. NCAMP must be involved in the review of all C-scans.

Note 4: Minimum total of 24 dry and 24 wet for each material system.

Note 5: Shall be obtained for laminates where C-scan indicates unexpected porosity is present.

1.4.5 Environmental Conditioning

The following tests were conducted at the following environmental conditions by the NIAR Composites Laboratory under the supervision of NCAMP.

CTA = -65±5°F, ambient
RTA = 70±10°F, ambient
ETA = 180±5°F, ambient
ETW1 = 180±5°F, wet (equilibrium moisture)
ETW2 = 250±5°F, wet (equilibrium moisture)

Within each test method and test environment, the failure mode was evaluated immediately after each test by an NCAMP staff engineer or NCAMP AER. All tested specimens were digitally photographed after each test in order to pictorially document failure modes.

For ambient testing, as-fabricated condition, specimens were kept at ambient laboratory condition defined as 70°F±10°F. Since moisture absorption and desorption rate is very slow at ambient temperature, there was no requirement to maintain relative humidity levels.

For wet conditioning, specimens will be conditioned to equilibrium at 160°F±5°F and 85% ± 5%. Effective moisture equilibrium is achieved when the average moisture content of the traveler specimen changes by less than 0.02% for two consecutive determinations which are 7 ±0.5 days apart and may be expressed by:

$$\frac{W_i - W_{i-1}}{W_b} < 0.0002$$

Where:

W_i = weight at current time

W_{i-1} = weight at previous time

W_b = baseline weight prior to conditioning

When representative specimens could not be measured to determine the moisture content (due to size, fastener and tab effects), traveler coupons of at least 1” by 1” by specimen thickness and weighing at least 15 grams were used to establish weight gain measurements. If the specimens or traveler coupons pass the criteria for two consecutive readings which are 7 ±0.5 days apart, the specimens were kept in the environmental chamber for up to an additional 60 days. Alternatively, the specimens may have been removed from the environmental chamber and placed in a sealed plastic bag along with a moist cotton towel for a maximum of 14 days until mechanical testing. Strain-gaged specimens were removed from the controlled environment for a maximum of 2 hours for application of gages in ambient laboratory conditions.

1.4.6 Non-ambient Testing

The chamber was of adequate size so that all test fixtures and load frame grips were contained within the chamber. For elevated temperature testing, the temperature chamber, test fixture, and grips were preheated to the specified temperature. Each specimen was heated to the required test temperature as verified by a thermocouple in direct contact with and taped to the specimen gage section. The heat-up time of the specimen did not exceed 5 minutes, unless otherwise specified in individual test summary sheets. The test was started 5^{+1}_{-0} minutes after the specimen reached the test temperature. During the test, the temperature, as measured on the specimen, was within ±5°F of the required test temperature.

For subzero temperature testing, each specimen was cooled to the required test temperature as verified by a thermocouple in direct contact with and taped to the specimen gage section. The test started 5^{+1}_{-0} minutes after the specimen reached the test temperature. During the test, the temperature, as measured on the specimen, was within ±5°F of the required test temperature.

For wet specimens, the moisture loss was determined by subjecting representative specimens to the same amount of time required to heat-up and fail the specimens. For filled-hole or bearing specimens, fasteners were removed prior to conducting moisture loss measurements. For tabbed specimens, representative coupons without tabs and having the same number of plies were used to conduct the moisture loss measurements. A minimum of one specimen or representative coupon was used to measure the moisture loss for every combination of test temperature and stacking sequence.

1.4.7 Fluid Sensitivity Screening

Table 1-6 lists the requirements for fluid sensitivity screening, that was tested on Unidirectional RF. ASTM D2344 Short Beam Strength testing was conducted on $[0°]_{15}$ lamina level specimens subjected to the conditions indicated, five replicates per fluid and one cure cycle. Specimens were cleaned with a dry towel prior to the tests. In addition to short beam strength, load versus displacement curves were plotted to aid in the identification of matrix/resin softening. Experience suggests that for the vast majority of epoxy resins, water is the fluid with the most deleterious effect on properties. Should screening tests for fluid sensitivity indicate this to be the case, further testing of this type might be unnecessary since exposure to water moisture to equilibrium level is an inherent part of the multi batch allowables test program. However, users must evaluate the applicability of the exposure conditions and time on case-by-case basis. For example, the exposure condition for jet fuel may not fully represent the condition of integral fuel tanks.

Extended Contact:	Exposure	Test Condition	Code
100 Low Lead Aviation Fuel (ASTM D910)	90 days min. @ 70°F±10°F	70°F	FS11RT
	90 days min. @ 70°F±10°F	180°F	FS11ET
ASTM D1655 Jet A Fuel (other jet fuel may be used but its type must be reported)	90 days min. @ 70°F±10°F	70°F	FS12RT
	90 days min. @ 70°F±10°F	180°F	FS12ET
MIL-PRF-5606 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	FS13RT
	90 days min. @ 70°F±10°F	180°F	FS13ET
MIL-PRF-83282 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	FS14RT
	90 days min. @ 70°F±10°F	180°F	FS14ET
MIL-PRF-7808 Engine Oil	90 days min. @ 70°F±10°F	70°F	FS15RT
	90 days min. @ 70°F±10°F	180°F	FS15ET
MIL-PRF-23699, Class STD Engine Oil	90 days min. @ 70°F±10°F	70°F	FS16RT
	90 days min. @ 70°F±10°F	180°F	FS16ET
Sea Water (ASTM D1141 or equiv.)	90 days min. @ 70°F±10°F	70°F	FS17RT
	90 days min. @ 70°F±10°F	180°F	FS17ET
Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	90 days min. @ 70°F±10°F	70°F	FS18RT
	90 days min. @ 70°F±10°F	180°F	FS18ET
50% Water with 50% Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	90 days min. @ 70°F±10°F	70°F	FS19RT
	90 days min. @ 70°F±10°F	180°F	FS19ET
Short Duration Contact:			
MEK washing fluid. ASTM D740	90 minutes min. @ 70°F±10°F	70°F	FS21RT
	90 minutes min. @ 70°F±10°F	180°F	FS21ET
Polypropylene Glycol Deicer (Type I) SAE AMS 1424	90 minutes min. @ 70°F±10°F	70°F	FS22RT
	90 minutes min. @ 70°F±10°F	180°F	FS22ET
Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F	70°F	FS23RT
	48±4 hours @70°F±10°F	180°F	FS23ET
Control Tests:			
Distilled Water	90 days min. at 70°F±10°F	70°F	FS31RT
	90 days min. at 70°F±10°F	180°F	FS31ET
Dry	Ambient	70°F	FS32RT
	Ambient	180°F	FS32ET
85% Relative Humidity	Per section 6.2	70°F	FS33RT
	Per section 6.2	180°F	FS33ET

Table 1-6: Fluid Sensitivity Screening

1.4.8 Normalization Procedures

Most lamina level tension and compression strength and modulus properties, and all laminate level properties were normalized according to nominal cured ply thickness. Lamina level properties that were not normalized include 90º tensile strength and modulus (unidirectional only), 90º compressive strength and modulus (unidirectional only), in-plane shear strength and modulus, Poisson's ratio, SBS, and ILT. After normalizing, data scatter reduced or remained the same. If data scatter increased significantly after normalizing, the reason was investigated. Wherever properties are normalized, both measured and normalized data were reported.

The theoretically calculated cured ply thickness of 0.007 inches for woven fabric (also known as uni-fabric) and 0.014 inches for non-crimp fabric has been used as the nominal cured ply thickness (CPT) for normalization purpose. For laminate stacking sequences of quasi, soft, and hard layups, a CPT of 0.014 inches was used for normalization if only non-crimp fabric were used. If non-crimp fabric and woven fabric was used, a CPT of 0.007 inches was used for normalization. See section 1.4.3 for test matrices and layup description. The following normalization formula was used:

Normalized Value = Measured Value x Measured CPT / Nominal CPT.

1.4.9 Inspection Verification

The qualification panels have been fabricated according to the requirements of the test plan and conformed by an NCAMP AIR. The test specimens and test setup have also been conformed by an NCAMP AIR.

Testing was witnessed by NCAMP. Test setup and witnessing was delegated to an NCAMP AER. Mechanical testing was carried out at the National Institute for Aviation Research, Wichita State University.

1.4.10 Material Pedigree Information

The PMC Data Collection Template includes the material pedigree information required, such as material and batch information, as well as panel fabrication record, environmental conditioning, test equipment, and test procedures.

1.5 Discussion

1.5.1 Creasing in NMS 241/1 (0/90) Non-Crimp Fabric Layups

During the fabrication of lamina preforms for Teijin Tenax NMS 241/1 non-crimp fabric (NCF) in the biaxial (0/90) layup configuration, a semi-recurring issue was observed; the presence of creases and ridges across the laminate stack, see figure below.

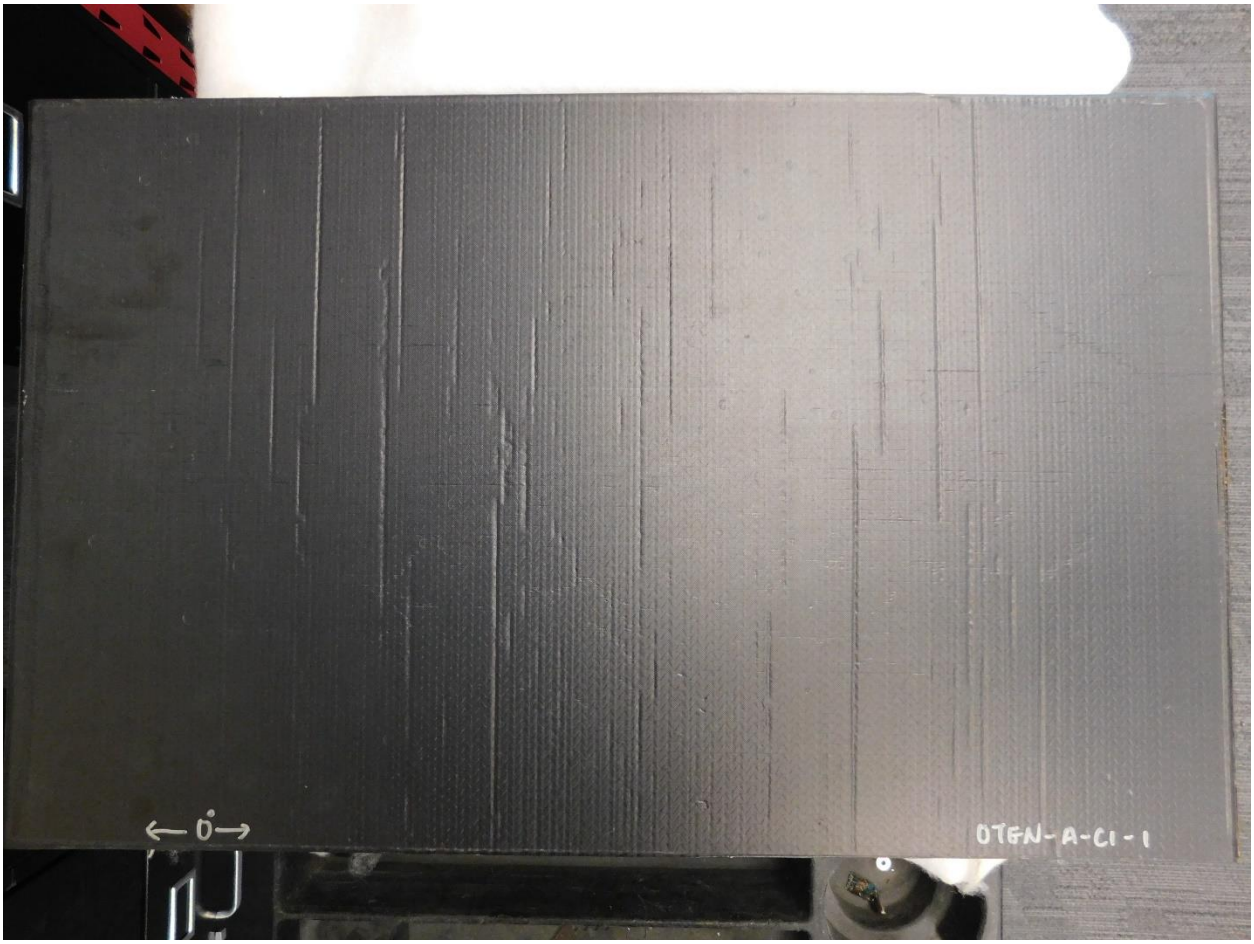


Figure 3 - Biaxial 0° Tension panel

These creases became noticeable during stacking of multi-ply laminates laid up in a (0/90)X orientation, with no ply rotation. The issue originates from the construction of NMS 241/1 fabric. The 90° tows in this fabric are stabilized by stitching, which introduces tension and produces small inconsistent gaps between adjacent tows in the 90° direction. When multiple (0/90) plies are stacked without rotation, random ply alignment can cause

creases to stack on top of each other from layer to layer. This random stacking can result in random creases, causing localized increase in thickness and visual surface creasing in the dry preform. These features are distributed randomly, with varying lengths and frequency of occurrence along the 90° fiber direction.

The mechanical impact of these stacking-induced defects is measurable. Tensile and compressive test data for the NMS 241/1 (0/90) lamina showed notable variability, particularly in the 90° direction. This suggests that the random ridge formations influence fiber straightness and resin distribution, leading to inconsistencies in mechanical response and higher variation from the mean.

However, this creasing issue is not expected to be prevalent in typical part construction. In real-world applications, the NMS 241 /1 (0/90) fabric is rarely used alone in a pure repeating layup. Instead, it is often combined with other reinforcement styles such as NMS 241/2 bidiagonal (±45) NCF or NMS 241/3 UD woven 0° fabric, or laid with ply rotation to create a more uniform laminate behavior.

To avoid the formation of creases and ridges in dry preforms, the following mitigation strategies are recommended:

- Avoid stacking multiple plies of NMS 241/1 (0/90) in a flat repeating layup without rotation.
- Alternate NMS 241/1 layers with ±45 styles like NMS 241/2 or UD woven fabrics like NMS 241 /3.
- Employ rotational stacking or shift ply positions to disrupt alignment of stitching gap patterns.

Teijin is also evaluating refinements to stitching pattern and tension in the NMS 241/1 construction to further reduce gap formation and improve stack uniformity in non-rotated layups.

In summary, while creases in NMS 241/1 layups can pose a problem under certain stacking conditions, the issue is manageable and uncommon in standard multi-directional laminates. Proper stacking methods and fabric combinations can effectively eliminate the concern, ensuring high-quality and consistent preform performance.

2. Test Results

2.1 Lamina Level Test Summary

Reinforcement : Tenax™ E Reinforcement Fabrics - DRNF IM BA **Matrix:** PRISM™ EP2400
Material Specification: NMS 241/1, NMS 241F/1 and NMS 241R/1
Process Specification: NPS 82401

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial Lamina Properties Summary

Tg(dry): 314°F **Tg(wet):** 275°F **Tg METHOD:** ASTM D7028

Date of fiber manufacture	Apr-Oct 2021	**Date of testing**	July 2023 to July 2024
Date of resin manufacture	2022 and 2023		
Date of composite manufacture	Mar to Dec 2023		

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.014 inch)

Properties	CTA (-65°F) Mean		RTA (70°F) Mean		ETA (180°F) Mean		ETW1 (180°F) Mean		ETW2 (250°F) Mean	
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F_1^{tu} [ksi]	196.2	180.1	207.3	190.7	211.5	193.9	206.9	190.3		
E_1^t [Msi]	12.49	11.47	12.49	11.50	12.17	11.16	12.22	11.24		
ν_{12}^{τ}		0.0400		0.0399		0.0280		0.0315		
F_2^{tu} [ksi]	214.1	198.8	223.8	208.6	228.4	211.3	222.9	208.4		
E_2^t [Msi]	12.74	11.84	12.74	11.85	12.50	11.56	12.52	11.67		
F_1^{cu} [ksi]			99.99	90.30	74.82	68.09	70.81	64.32	47.68	42.76
E_1^c [Msi]			11.20	10.12	11.08	10.07	11.35	10.32	11.20	10.04
F_2^{cu} [ksi]			106.5	96.44	82.81	73.86	80.83	72.78	56.81	50.66
E_2^c [Msi]			11.36	10.30	11.98	10.71	11.71	10.55	11.07	9.901
SBS [ksi]		9.876		10.01		7.313		6.317		3.622
$F_{12}^{s0.2\%}$ [ksi]		8.139		5.762		4.079		3.669		
$F_{12}^{s5\%strain}$ [ksi]		13.92		10.21		7.156		6.056		
G_{12}^s [Msi]		0.7199		0.5770		0.4282		0.3935		
Flex [ksi]			152.5	136.3						

Table 2-1: Biaxial DRNF Lamina Summary Data

Reinforcement : Tenax™ E Reinforcement Fabrics - DRNF IM BD **Matrix:** PRISM™ EP2400
Material Specificatior NMS 241/2, NMS 241F/2 and NMS 241R/1
Process Specificatior NPS 82401

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal Lamina Properties Summary

Tg(dry): 314°F **Tg(wet):** 274°F **Tg METHOD:** ASTM D7028

Date of fiber manufacture Apr-Oct 2021
Date of resin manufacture 2022 and 2023
Date of composite manufacture Mar to Dec 2023
Date of testing July 2023 to July 2024

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.014 inch)

	CTA (-65°F) Mean		RTA (70°F) Mean		ETA (180°F) Mean		ETW1 (180°F) Mean		ETW2 (250°F) Mean	
Properties	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	210.4	207.8	213.1	210.1	210.7	207.7	202.4	199.6		
E_1^{t} [Msi]	12.37	12.22	12.20	12.03	12.22	12.05	12.33	12.17		
ν_{12}^{τ}		0.0454		0.0345		0.0244		0.0292		
F_1^{cu} [ksi]			104.8	100.2	78.70	75.56	75.45	72.29	54.36	52.67
E_1^{c} [Msi]			11.43	10.93	11.56	11.11	11.88	11.38	11.44	11.08
SBS [ksi]		10.85		10.72		7.478		6.368		3.776
$F_{12}^{s0.2\%}$ [ksi]		8.658		6.101		4.341		3.946		
$F_{12}^{s5\%strain}$ [ksi]		15.49		10.78		7.590		6.477		
G_{12}^{s} [Msi]		0.7740		0.6197		0.4582		0.4262		
Flex [ksi]			161.4	154.2						

Table 2-2: Bidiagonal DRNF Lamina Summary Data

Reinforcement : Tenax™ E Reinforcement Fabrics - DRWF IM UD **Matrix:** PRISM™ EP2400
Material Specification: NMS 241/3, NMS 241F/3 and NMS 241R/1
Process Specification: NPS 82401

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD Lamina Properties Summary

Tg(dry): 328°F **Tg(wet):** 288°F **Tg METHOD:** ASTM D7028

Date of fiber manufacture Apr-Oct 2021
Date of resin manufacture 2022 and 2023
Date of composite manufacture Mar to Dec 2023
Date of testing July 2023 to July 2024

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.007 inch)

Properties	CTA (-65°F) Mean		RTA (70°F) Mean		ETA (180°F) Mean		ETW1 (180°F) Mean		ETW2 (250°F) Mean	
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F_1^{tu} [ksi]	417.8	415.6	427.0	421.9	412.1	409.8	391.6	390.4	350.8	348.9
E_1^{t} [Msi]	23.39	23.26	23.08	22.80	23.19	23.06	23.80	23.73	23.34	23.22
F_1^{cu} [ksi][1] from UNC0			189.2	186.1	133.0	131.8	118.4	117.0	59.02	59.55
E_1^{c} [Msi]			20.91	20.55	20.99	20.79	21.35	21.10	20.96	21.16
SBS [ksi]		16.23		11.69		6.974		5.736		3.419
UNT0 Strength [ksi]	209.3	210.5	210.8	212.3	205.8	207.2	201.2	202.5		
UNT0 Modulus [Msi]	12.15	12.23	12.06	12.14	11.95	12.01	11.98	12.06		
UNC0 Strength [ksi]			99.96	101.5	71.21	72.38	60.44	61.36	29.12	29.72
UNC0 Modulus [Msi]			11.05	11.21	11.24	11.42	10.89	11.06	10.34	10.56
$F_{12}^{s0.2\%}$ [ksi]		8.551		6.023		4.024		3.659		
$F_{12}^{s5\%strain}$ [ksi]		14.45		10.51		6.927		5.896		
G_{12}^{s} [Msi]		0.7621		0.6100		0.4282		0.3980		
Flex [ksi]			161.3	162.9						

1 Derived from cross-ply using backout factor. See Note 6 of Table 1-3 for equation used.

Table 2-3: Unidirectional DRWF Lamina Summary Data

2.2 Laminate Level Test Summary

Reinforcement : Tenax™ E Reinforcement Fabrics
Material Specification: NMS 241 series
Process Specification: NPS 82401
Matrix: PRISM™ EP2400

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF Laminate Properties Summary

Tg(dry): 319°F **Tg(wet):** 281°F **Tg METHOD:** ASTM D7028

Date of fiber manufacture	Apr-Oct 2021	**Date of testing**	July 2023 to July 2024
Date of resin manufacture	2022 and 2023		
Date of composite manufacture	Mar to Dec 2023		

LAMINATE MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.007 inch)

	Layup	25/50/25 (Quasi)		12.5/75/12.5 (Soft)		50/40/10 (Hard)	
Properties	**Test Condition**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
OHT Strength [ksi]	**CTA (-65°F)**	87.33	82.87	59.01	56.39	149.3	146.7
	RTA (70°F)	91.71	87.24	58.25	55.93	154.9	151.6
	ETA (180°F)	90.57	85.58				
	ETW1 (180°F)	92.05	87.38	58.03	55.60	179.9	177.2
OHT4* Strength [ksi]	**RTA (70°F)**	100.9	92.71				
	ETW1 (180°F)	123.9	114.9				
OHC Strength [ksi]	**RTA (70°F)**	48.04	44.71	38.48	36.72	61.95	60.71
	ETA (180°F)	37.97	35.27				
	ETW1 (180°F)	35.30	32.90	29.49	27.96	41.63	40.85
	ETW2 (250°F)	24.60	22.77				
OHC4* Strength [ksi]	**RTA (70°F)**	47.84	43.71				
	ETW1 (180°F)	38.08	34.94				
UNT Strength [ksi]	**CTA (-65°F)**	131.6	123.6	91.74	87.67	232.6	231.0
	RTA (70°F)	137.6	129.3	88.47	84.63	238.8	237.2
	ETA (180°F)	139.3	131.0				
	ETW1 (180°F)	136.7	128.5	74.38	71.12	218.7	217.5
UNT Modulus [Msi]	**CTA (-65°F)**	8.875	8.342	6.426	6.139	13.80	13.71
	RTA (70°F)	8.669	8.145	6.117	5.851	13.63	13.54
	ETA (180°F)	8.480	7.975				
	ETW1 (180°F)	8.459	7.948	5.717	5.466	13.09	13.01

* Layup percentage: 37.5/25/37.5

Table 2-4: Laminate Summary Data

Reinforcement : Tenax™ E Reinforcement Fabrics
Material Specification: NMS 241 series
Process Specification: NPS 82401

Matrix: PRISM™ EP2400

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF Laminate Properties Summary

Tg(dry): 319°F **Tg(wet):** 281°F **Tg METHOD:** ASTM D7028

Date of fiber manufacture Apr-Oct 2021
Date of resin manufacture 2022 and 2023
Date of composite manufacture Mar to Dec 2023

Date of testing July 2023 to July 2024

LAMINATE MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.007 inch)

	Layup	25/50/25 (Quasi)		12.5/75/12.5 (Soft)		50/40/10 (Hard)	
Properties	**Test Condition**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNC Strength [ksi]	**RTA (70°F)**	87.41	80.39	60.65	57.56	109.6	107.8
	ETA (180°F)	62.46	57.54				
	ETW1 (180°F)	55.56	51.58	36.13	34.43	65.88	64.91
	ETW2 (250°F)	27.94	25.89				
UNC Modulus [Msi]	**RTA (70°F)**	7.974	7.335	5.684	5.394	12.42	12.20
	ETA (180°F)	7.811	7.185				
	ETW1 (180°F)	7.551	7.018	5.496	5.236	12.55	12.36
	ETW2 (250°F)	6.141	5.689				
FHT Strength [ksi]	**CTA (-65°F)**	86.04	80.95	68.77	65.53	128.6	127.6
	RTA (70°F)	85.68	80.55	61.70	59.09	129.0	127.7
	ETA (180°F)	86.59	81.61				
	ETW1 (180°F)	87.77	82.98	56.60	54.13	136.7	135.7
FHC Strength [ksi]	**RTA (70°F)**	69.11	65.27	56.38	53.70	85.16	84.17
	ETA (180°F)	54.43	51.25				
	ETW1 (180°F)	48.96	45.98	38.74	36.93	56.71	56.00
SBS1 Strength [ksi]	**RTA (70°F)**		9.259				
	ETA (180°F)		6.688				
	ETW1 (180°F)		6.004				
SSB 2% Offset Strength [ksi]	**RTA (70°F)**	113.1	107.8	112.4	108.2	104.5	102.1
	ETA (180°F)	97.11	92.91				
	ETW1 (180°F)	99.85	94.30	96.20	92.15	88.02	85.87
SSB Ultimate Strength [ksi]	**RTA (70°F)**	134.0	127.6	137.5	132.4	130.0	127.0
	ETA (180°F)	115.1	110.1				
	ETW1 (180°F)	114.3	108.0	113.1	108.4	105.2	102.7
CAI Strength [ksi]	**RTA (70°F)**	37.81	35.63				
	ETW1 (180°F)	30.12	28.36				

Table 2-5: Laminate Summary Data (continued)

2.3 Fluid Screening Summary

Fluid Exposure	Exposure Duration	Average Short-Beam Strength With Fluid (ksi) tested at RTA	Average Short-Beam Strength With Fluid (ksi) tested at ETA
100 Low lead Fuel	90 days min @ 70°F ± 10F	11.76	7.744
Jet A Fuel		11.38	7.361
Mil-H-5606 Hydraulic Oil		11.29	7.425
Mil-H-83282 Hydraulic Oil		11.43	7.447
Engine Lube Oil Mil-L-7808		11.50	7.989
Engine Lube Oil Mil-L-23699		11.72	7.631
Salt Water		10.51	6.955
Skydrol LD-4		12.27	8.014
50% Water w/ 50% Skydrol		10.36	6.889
Distilled Water		10.91	6.904
MEK washing fluid	90 mins @ 70°F ± 10F	11.77	7.713
Polypropylene Glycol Deicer		11.75	7.456
Isopropyl Alcohol Deicing	48±4 hrs @ 70°F ± 10F	11.68	7.417
Dry 180°F	Per section 6.1 Test Plan	11.50	7.487
85% Relative Humidity 180°F		10.02	6.135

Table 2-6 Fluid Screening Summary Data

2.4 Individual Lamina Test Summaries

2.4.1 Biaxial Lamina Properties

2.4.1.1 Biaxial 0° Tension Properties (BA-0TEN)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial							**Tension, 1-axis** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]4S	
Resin content:	35.34 %wt		**Comp. density:** 1.525 g/cc						
Fiber volume:	55.42 %vol								
Ply count:	8								
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain						
Normalized by:	0.0140	in. CPT							
			CTA		**RTA**		**ETA**		**ETW1**	
Test Temperature [°F]			-65		70		180		180	
Moisture Conditioning			Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH									160F, 85%	
Source code			BA-0TEN-X-X-X-XB		BA-0TEN-X-X-X-XA		BA-0TEN-X-X-X-XC		BA-0TEN-X-X-X-XD	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	**Mean**		196.2	180.1	207.3	190.7	211.5	193.9	206.9	190.3
	Minimum		184.2	170.2	183.5	169.4	191.3	179.7	190.2	177.0
	Maximum		207.0	192.1	219.4	205.5	223.6	204.3	218.3	202.8
	C.V.(%)		3.368	3.681	4.055	4.183	3.629	3.443	3.418	3.509
	No. Specimens		18		18		21		18	
	No. FD Batches		3		3		3		3	
E_1^t [Msi]	**Mean**		12.49	11.47	12.49	11.50	12.17	11.16	12.22	11.24
	Minimum		11.74	10.68	11.63	10.72	12.05	10.65	12.08	10.97
	Maximum		13.32	12.30	12.99	12.26	12.45	11.44	12.52	11.82
	C.V.(%)		3.972	4.763	3.144	4.132	0.7590	1.659	0.8655	1.971
	No. Specimens		18		18		21		18	
	No. FD Batches		3		3		3		3	
ν_{12}^{τ}	**Mean**			0.0400		0.0399		0.0280		0.0315
	Minimum			0.0262		0.0272		0.0204		0.0245
	Maximum			0.0551		0.0512		0.0420		0.0384
	C.V.(%)			15.59		14.81		23.66		14.48
	No. Specimens		18		18		21		17	
	No. FD Batches		3		3		3		3	

2.4.1.2 Biaxial 0° Compression Properties (BA-0CLC)

Material: Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Resin content: 36.63 %wt **Comp. density:** 1.517 g/cc
Fiber volume: 54.04 %vol
Ply count: 8

Test method: ASTM D6641-23 **Modulus calculation:** 1000-3000 microstrain

Normalized by: 0.0140 in. CPT

Compression, 1-axis
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]4S

		RTA		ETA		ETW1		ETW2	
Test Temperature [°F]		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH						160F, 85%		160F, 85%	
Source code		BA-0CLC-X-X-X-XA		BA-0CLC-X-X-X-XC		BA-0CLC-X-X-X-XD		BA-0CLC-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{cu} [ksi]	**Mean**	99.99	90.30	74.82	68.09	70.81	64.32	47.68	42.76
	Minimum	89.63	79.15	60.37	55.93	62.66	57.79	42.29	37.54
	Maximum	114.8	103.3	87.89	80.31	77.76	70.93	54.92	49.34
	C.V.(%)	8.603	8.745	10.02	9.457	5.783	5.635	8.996	9.728
	No. Specimens	17		20		18		6	
	No. FD Batches	3		3		3		1	
E_1^c [Msi]	**Mean**	11.20	10.12	11.08	10.07	11.35	10.32	11.20	10.04
	Minimum	10.65	9.715	10.42	9.561	10.38	9.369	10.78	9.500
	Maximum	11.92	10.46	11.54	10.63	12.95	11.96	11.62	10.56
	C.V.(%)	2.576	2.599	3.034	2.729	6.192	6.711	2.990	3.916
	No. Specimens	18		18		18		6	
	No. FD Batches	3		3		3		1	

2.4.1.3 Biaxial 90° Tension Properties (BA-90TEN)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial							**Tension, 2-axis** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]4s		
Resin content:	35.08 %wt		**Comp. density:** 1.527 g/cc							
Fiber volume:	55.69 %vol									
Ply count:	8									
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0140	in. CPT								
			CTA		**RTA**		**ETA**		**ETW1**	
Test Temperature [°F]			-65		70		180		180	
Moisture Conditioning			Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH									160F, 85%	
Source code			BA-90TEN-X-X-X-XB		BA-90TEN-X-X-X-XA		BA-90TEN-X-X-X-XC		BA-90TEN-X-X-X-XD	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_2^{tu} [ksi]	**Mean**		214.1	198.8	223.8	208.6	228.4	211.3	222.9	208.4
	Minimum		193.9	183.2	200.7	193.8	211.7	191.3	209.7	193.8
	Maximum		222.7	210.1	244.3	228.7	257.8	237.5	234.3	218.2
	C.V.(%)		3.431	4.455	5.477	4.934	5.611	5.638	3.016	3.269
	No. Specimens		18		21		19		17	
	No. FD Batches		3		3		3		3	
E_2^t [Msi]	**Mean**		12.74	11.84	12.74	11.85	12.50	11.56	12.52	11.67
	Minimum		11.88	10.93	11.93	10.84	11.84	10.62	12.03	11.05
	Maximum		14.07	13.36	14.06	13.59	13.65	12.57	13.56	12.20
	C.V.(%)		4.942	6.165	5.175	5.728	3.868	4.376	2.974	2.637
	No. Specimens		18		19		19		18	
	No. FD Batches		3		3		3		3	

2.4.1.4 Biaxial 90° Compression Properties (BA-90CLC)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial							**Compression, 2-axis** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]4s		
Resin content:	36.88 %wt		**Comp. density:** 1.513 g/cc							
Fiber volume:	53.69 %vol									
Ply count:	8									
Test method:	ASTM D6641-23		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0140	in. CPT								
			RTA		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]			70		180		180		250	
Moisture Conditioning			Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH							160F, 85%		160F, 85%	
Source code			BA-90CLC-X-X-X-XA		BA-90CLC-X-X-X-XC		BA-90CLC-X-X-X-XD		BA-90CLC-X-X-X-XF	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_2^{cu} [ksi]	**Mean**		106.5	96.44	82.81	73.86	80.83	72.78	56.81	50.66
	Minimum		84.80	76.87	73.43	64.97	68.48	61.06	52.31	46.24
	Maximum		123.4	112.2	96.13	84.50	89.05	81.65	60.00	53.59
	C.V.(%)		9.253	9.152	8.983	8.814	8.195	8.195	5.384	5.541
	No. Specimens		20		20		19		7	
	No. FD Batches		3		3		3		1	
E_2^c [Msi]	**Mean**		11.36	10.30	11.98	10.71	11.71	10.55	11.07	9.901
	Minimum		10.72	9.707	10.99	9.587	11.22	10.01	10.32	9.333
	Maximum		12.73	11.19	14.33	12.82	12.74	11.66	12.04	10.69
	C.V.(%)		4.053	4.092	7.702	7.397	3.645	4.708	6.617	5.012
	No. Specimens		18		19		18		6	
	No. FD Batches		3		3		3		1	

2.4.1.5 Biaxial In-Plane Shear Properties (BA-IPS)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial			**In-Plane Shear** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [45/-45]3S	
Resin content:	35.67 %wt	**Comp. density:** 1.524 g/cc			
Fiber volume:	55.09 %vol				
Ply count:	6				
Test method:	ASTM D3518-18	**Modulus calculation:** 2000-6000 microstrain			
Normalized by:	NA				

		CTA		RTA		ETA		ETW1	
Test Temperature [°F]		-65		70		180		180	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH								160F, 85%	
Source code		BA-IPS-X-X-X-XB		BA-IPS-X-X-X-XA		BA-IPS-X-X-X-XC		BA-IPS-X-X-X-XD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
$F_{12}^{s0.2\%}$ [ksi]	**Mean**		8.139		5.762		4.079		3.669
	Minimum		7.692		5.494		3.858		3.467
	Maximum		8.508		6.061		4.345		3.808
	C.V.(%)		2.735		3.251		3.051		2.167
	No. Specimens		19		18		18		18
	No. FD Batches		3		3		3		3
$F_{12}^{s5\%strain}$ [ksi]	**Mean**		13.73		10.21		7.156		6.056
	Minimum		13.00		9.890		6.790		5.714
	Maximum		14.23		10.60		7.434		6.347
	C.V.(%)		2.674		2.350		2.497		2.765
	No. Specimens		18		18		18		18
	No. FD Batches		2		3		3		3
G_{12}^{s} [Msi]	**Mean**		0.720		0.577		0.428		0.394
	Minimum		0.680		0.541		0.403		0.363
	Maximum		0.755		0.611		0.458		0.409
	C.V.(%)		2.920		3.801		3.531		2.818
	No. Specimens		19		18		18		18
	No. FD Batches		3		3		3		3

2.4.1.6 Biaxial Short Beam Strength Properties (BA-SBS)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial								**Short-Beam Strength** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]8S	
Resin content:	34.30 %wt	**Comp. density:** 1.524 g/cc								
Fiber volume:	56.31 %vol									
Ply count:	16									
Test method:	ASTM D2344									
Normalized by:	NA									
		CTA		**RTA**		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]		-65		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%		160F, 85%	
Source code		BA-SBS-X-X-X-XB		BA-SBS-X-X-X-XA		BA-SBS-X-X-X-XC		BA-SBS-X-X-X-XD		BA-SBS-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS [ksi]	**Mean**		9.876		10.01		7.313		6.317		3.622
	Minimum		9.042		9.626		6.989		6.075		3.569
	Maximum		10.76		10.41		7.624		6.428		3.684
	C.V.(%)		5.130		2.526		1.926		1.406		1.261
	No. Specimens		18		18		19		18		6
	No. FD Batches		3		3		3		3		1

2.4.1.7 Biaxial Flexural Strength Properties (BA-Flex)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial								**Flexural Strength** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]4s		
Resin content:	(Note 1)		**Comp. density:** (Note 1)								
Fiber volume:	(Note 1)										
Ply count:	8										
Test method:	ASTM D7264-21		**Modulus calculation:** 1000-3000 microstrain								
Normalized by:	0.0140	in. CPT									
			RTA								
Test Temperature [°F]			70								
Moisture Conditioning			Ambient								
Equilibrium at T, RH											
Source code			BA-FLEX-X-X-X-XA								
			Normalized	**Measured**							
	Mean		152.5	136.3							
	Minimum		136.3	122.7							
FLEX Strength [ksi]	**Maximum**		184.3	164.9							
	C.V.(%)		8.354	8.185							
	No. Specimens			18							
	No. FD Batches			3							

Note 1: Coupons were sampled from BA-0CLC panel

2.4.3 Bidiagonal Lamina Properties

2.4.3.1Bidiagonal 0° Tension Properties (BD-0TEN)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal							**Tension, 1-axis** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal [0/90]4S			
Resin content:	31.80 %wt		**Comp. density:** 1.550 g/cc								
Fiber volume:	59.38 %vol										
Ply count:	8										
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain								
Normalized by:	0.0140	in. CPT									
			CTA		**RTA**		**ETA**		**ETW1**		
Test Temperature [°F]			-65		70		180		180		
Moisture Conditioning			Ambient		Ambient		Ambient		Equilibrium		
Equilibrium at T, RH									160F, 85%		
Source code			BD-0TEN-X-X-X-XB		BD-0TEN-X-X-X-XA		BD-0TEN-X-X-X-XC		BD-0TEN-X-X-X-XD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
	Mean		210.4	207.8	213.1	210.1	210.7	207.7	202.4	199.6	
	Minimum		193.7	192.5	193.2	193.2	199.1	199.1	188.5	190.7	
	Maximum		224.2	221.3	228.0	224.0	221.2	215.6	216.0	206.3	
F_1^{tu} [ksi]	**C.V.(%)**		4.226	4.327	4.313	3.539	3.451	2.582	4.426	2.661	
	No. Specimens		19		18		18		18		
	No. FD Batches		3		3		3		3		
	Mean		12.37	12.22	12.20	12.03	12.22	12.05	12.33	12.17	
	Minimum		11.62	11.37	11.43	10.95	11.89	11.49	11.99	11.68	
	Maximum		14.10	14.22	12.75	12.80	12.61	12.56	12.77	12.55	
E_1^t [Msi]	**C.V.(%)**		4.686	5.314	2.943	4.200	1.787	2.560	1.751	2.025	
	No. Specimens		18		18		18		18		
	No. FD Batches		3		3		3		3		
	Mean			0.0382		0.0345		0.0244		0.0292	
	Minimum			0.0260		0.0149		0.0164		0.0218	
	Maximum			0.0656		0.0504		0.0329		0.0341	
ν_{12}^t	**C.V.(%)**			27.30		28.34		20.39		14.90	
	No. Specimens		17		18		18		10		
	No. FD Batches		3		3		3		3		

2.4.3.2 Bidiagonal 0° Compression Properties (BD-0CLC)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal					**Compression, 1-axis** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal [0/90]4S			
Resin content:	33.40 %wt		**Comp. density:** 1.538 g/cc						
Fiber volume:	57.56 %vol								
Ply count:	8								
Test method:	ASTM D6641-23		**Modulus calculation:** 1000-3000 microstrain						
Normalized by:	0.0140	in. CPT							
			RTA		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]			70		180		180		250	
Moisture Conditioning			Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH							160F, 85%		160F, 85%	
Source code			BD-0CLC-X-X-X-XA		BD-0CLC-X-X-X-XC		BD-0CLC-X-X-X-XD		BD-0CLC-X-X-X-XF	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{cu} [ksi]	**Mean**		104.8	100.2	78.70	75.56	75.45	72.29	54.36	52.67
	Minimum		93.76	88.87	70.08	68.35	70.00	66.14	51.04	50.35
	Maximum		113.4	109.7	87.96	82.11	82.82	80.97	57.18	55.35
	C.V.(%)		5.139	5.236	5.957	5.144	4.509	4.609	3.669	3.231
	No. Specimens		18		18		19		6	
	No. FD Batches		3		3		3		1	
E_1^c [Msi]	**Mean**		11.43	10.93	11.56	11.11	11.88	11.38	11.44	11.08
	Minimum		11.08	10.49	10.40	10.02	10.99	10.66	10.85	10.60
	Maximum		12.28	12.05	12.29	12.39	12.62	12.58	11.89	11.51
	C.V.(%)		3.024	4.158	5.134	6.003	4.397	5.266	3.692	2.993
	No. Specimens		18		19		18		6	
	No. FD Batches		3		3		3		1	

2.4.3.3 Bidiagonal In-Plane Shear Properties (BD-IPS)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal				**In-Plane Shear** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal [45/-45]3S		
Resin content:	33.73 %wt	**Comp. density:** 1.542 g/cc					
Fiber volume:	57.45 %vol						
Ply count:	6						
Test method:	ASTM D3518-18	**Modulus calculation:** 2000-6000 microstrain					
Normalized by:	NA						
		CTA		**RTA**		**ETA**	**ETW1**
Test Temperature [°F]		-65		70		180	180
Moisture Conditioning		Ambient		Ambient		Ambient	Equilibrium
Equilibrium at T, RH							160F, 85%
Source code		BD-IPS-X-X-X-XB		BD-IPS-X-X-X-XA		BD-IPS-X-X-X-XC	BD-IPS-X-X-X-XD
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
$F_{12}^{s0.2\%}$ [ksi]	**Mean**		8.658		6.101		4.341		3.946
	Minimum		7.878		5.649		4.075		3.610
	Maximum		9.239		6.731		4.592		4.111
	C.V.(%)		4.173		4.561		3.112		3.073
	No. Specimens		18		19		18		18
	No. FD Batches		3		3		3		3
$F_{12}^{s5\% \text{ strain}}$ [ksi]	**Mean**		15.16		10.78		7.590		6.477
	Minimum		14.35		10.20		7.195		5.803
	Maximum		16.00		11.75		7.967		6.798
	C.V.(%)		3.848		4.118		2.540		3.615
	No. Specimens		18		19		18		18
	No. FD Batches		2		3		3		3
G_{12}^{s} [Msi]	**Mean**		0.7740		0.6197		0.4582		0.4262
	Minimum		0.6681		0.5509		0.4204		0.3870
	Maximum		0.8277		0.6869		0.4833		0.4462
	C.V.(%)		6.264		5.873		3.587		3.377
	No. Specimens		18		19		18		18
	No. FD Batches		3		3		3		3

2.4.3.4 Bidiagonal Short Beam Strength Properties (BD-SBS)

Short-Beam Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
[0/90]8S

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal										
Resin content:	33.73 %wt	**Comp. density:**	1.545 g/cc								
Fiber volume:	57.52 %vol										
Ply count:	16										
Test method:	ASTM D2344-16										
Normalized by:	NA										
		CTA		**RTA**		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]		-65		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%		160F, 85%	
Source code		BD-SBS-X-X-X-XB		BD-SBS-X-X-X-XA		BD-SBS-X-X-X-XC		BD-SBS-X-X-X-XD		BD-SBS-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS [ksi]	**Mean**		10.85		10.72		7.478		6.368		3.776
	Minimum		9.884		9.944		7.138		6.232		3.723
	Maximum		11.47		11.37		8.136		6.474		3.929
	C.V.(%)		3.431		3.364		2.711		1.190		2.095
	No. Specimens		18		19		18		18		6
	No. FD Batches		3		3		3		3		1

2.4.3.5 Bidiagonal Flexural Strength Properties (BD-Flex)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal							**Flexural Strength** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal [0/90]4s		
Resin content:	(Note 1)		**Comp. density:** (Note 1)							
Fiber volume:	(Note 1)									
Ply count:	8									
Test method:	ASTM D7264-21		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0140	in. CPT								
			RTA							
Test Temperature [°F]			70							
Moisture Conditioning			Ambient							
Equilibrium at T, RH										
Source code			BD-FLEX-X-X-X-XA							
			Normalized	**Measured**						
	Mean		161.4	154.2						
	Minimum		150.9	143.8						
FLEX Strength [ksi]	**Maximum**		170.5	163.6						
	C.V.(%)		3.797	3.674						
	No. Specimens			18						
	No. FD Batches			3						

Note 1: Coupons were sampled from BD-0CLC panel

2.4.4 UD-Woven Lamina Properties

2.4.4.1 UD Woven 0/90° Unnotched Tension Properties (UD-UNT0)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD							**Unnotched Tension 0**		
Resin content:	30.29 %wt		**Comp. density:** 1.546 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [0/90]4s		
Fiber volume:	60.56 %vol									
Ply count:	16									
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0070	in. CPT								
			CTA		**RTA**		**ETA**		**ETW1**	
Test Temperature [°F]			-65		70		180		180	
Moisture Conditioning			Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH									160F, 85%	
Source code			UD-UNT0-X-X-X-XB		UD-UNT0-X-X-X-XA		UD-UNT0-X-X-X-XC		UD-UNT0-X-X-X-XD	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNT0 Strength [ksi]	**Mean**		209.3	210.5	210.8	212.3	205.8	207.2	201.2	202.5
	Minimum		186.0	189.2	187.6	192.4	195.5	192.6	190.9	191.6
	Maximum		219.6	219.5	225.1	229.9	216.9	216.0	208.5	212.7
	C.V.(%)		3.932	3.267	5.493	4.865	2.599	2.951	3.110	3.099
	No. Specimens		18		18		19		18	
	No. FD Batches		4		3		4		4	
UNT0 Modulus [Msi]	**Mean**		12.15	12.23	12.06	12.14	11.95	12.01	11.98	12.06
	Minimum		11.76	11.55	11.77	11.59	11.71	11.37	11.82	11.66
	Maximum		12.62	12.71	12.39	12.54	12.39	12.59	12.25	12.48
	C.V.(%)		2.116	2.551	1.456	2.140	1.512	2.604	1.068	1.901
	No. Specimens		18		18		20		18	
	No. FD Batches		4		3		4		4	

2.4.4.2 UD Woven 0/90° Unnotched Compression Properties (UD-UNC0)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD		**Unnotched Compression 0/90** Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [0/90]4s
Resin content:	30.04 %wt	**Comp. density:** 1.544 g/cc	
Fiber volume:	60.83 %vol		
Ply count:	16		
Test method:	ASTM D6641-23	**Modulus calculation:** 1000-3000 microstrain	
Normalized by:	0.0070 in. CPT		

		RTA		ETA		ETW1		ETW2	
Test Temperature [°F]		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH						160F, 85%		160F, 85%	
Source code		UD-UNC0-X-X-X-XA		UD-UNC0-X-X-X-XC		UD-UNC0-X-X-X-XD		UD-UNC0-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNC0 Strength [ksi]	**Mean**	99.96	101.5	71.21	72.38	60.44	61.36	29.12	29.72
	Minimum	89.40	91.39	63.78	64.82	54.40	56.20	22.20	23.25
	Maximum	107.4	110.2	81.01	82.04	65.90	66.34	36.68	37.15
	C.V.(%)	5.198	4.460	5.552	6.351	5.683	5.393	17.44	16.29
	No. Specimens	18		18		18		10	
	No. FD Batches	3		3		3		1	
UNC0 Modulus [Msi]	**Mean**	11.05	11.21	11.24	11.42	10.89	11.06	10.34	10.56
	Minimum	10.55	10.62	10.49	10.60	10.12	10.19	9.296	9.629
	Maximum	11.58	11.67	12.23	12.29	11.68	11.90	12.12	12.08
	C.V.(%)	2.636	2.717	4.492	3.831	3.902	4.138	9.569	8.164
	No. Specimens	18		18		18		10	
	No. FD Batches	3		3		3		1	

2.4.4.3 UD Woven 0° Tabbed Tension Properties (UD-0TEN)

Material: Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Resin content: 31.49 %wt **Comp. density:** 1.547 g/cc
Fiber volume: 59.55 %vol
Ply count: 8

Test method: ASTM D3039-17 **Modulus calculation:** 1000-3000 microstrain

Normalized by: 0.0070 in. CPT

Tension, 1-axis
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [0]8

		CTA		RTA		ETA		ETW1		ETW2	
Test Temperature [°F]		-65		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%		160F, 85%	
Source code		UD-0TEN-X-X-X-XB		UD-0TEN-X-X-X-XA		UD-0TEN-X-X-X-XC		UD-0TEN-X-X-X-XD		UD-0TEN-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	**Mean**	417.8	415.6	427.0	421.9	412.1	409.8	391.6	390.4	350.8	348.9
	Minimum	379.1	374.5	372.4	371.6	376.5	376.7	344.8	344.3	334.0	338.6
	Maximum	453.5	464.4	459.4	455.1	442.5	438.1	442.4	440.8	367.7	361.0
	C.V.(%)	5.733	6.117	5.784	6.198	4.924	4.902	7.713	7.576	3.878	2.699
	No. Specimens	18		18		18		18		6	
	No. FD Batches	3		3		3		3		1	
E_1^t [Msi]	**Mean**	23.39	23.26	23.08	22.80	23.19	23.06	23.80	23.73	23.34	23.22
	Minimum	22.60	22.41	22.15	21.35	22.25	21.96	22.46	22.46	22.18	22.33
	Maximum	26.08	25.01	24.34	24.84	24.26	24.83	25.24	25.20	24.44	24.38
	C.V.(%)	3.385	3.395	2.595	3.598	2.539	3.416	3.666	3.764	4.319	3.925
	No. Specimens	18		18		18		18		6	
	No. FD Batches	3		3		3		3		1	

2.4.4.4 UD Woven 0° Compression Modulus Only Properties (UD-0CLC)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD					**Compression, 1-axis** Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [0]16			
Resin content:	31.18 %wt		**Comp. density:** 1.542 g/cc						
Fiber volume:	59.64 %vol								
Ply count:	16								
Test method:	ASTM D6641-23		**Modulus calculation:** 1000-3000 microstrain						
Normalized by:	0.0070	in. CPT							
			RTA		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]			70		180		180		250	
Moisture Conditioning			Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH							160F, 85%		160F, 85%	
Source code			UD-0CLC-X-X-X-XA		UD-0CLC-X-X-X-XC		UD-0CLC-X-X-X-XD		UD-0CLC-X-X-X-XF	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean		20.91	20.55	20.99	20.79	21.35	21.10	20.96	21.16
	Minimum		20.08	18.41	19.99	18.57	20.39	18.14	19.85	19.68
	Maximum		21.60	21.99	22.23	22.47	22.47	23.03	22.03	22.68
E_1^c [Msi]	**C.V.(%)**		1.810	4.734	2.883	4.505	2.290	6.041	3.763	4.553
	No. Specimens		18		18		18		6	
	No. FD Batches		4		4		4		1	

2.4.4.5 UD Woven In-Plane Shear Properties (UD-IPS)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD							**In-Plane Shear** Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [45/-45]3S	
Resin content:	31.19 %wt	**Comp. density:** 1.538 g/cc							
Fiber volume:	59.56 %vol								
Ply count:	12								
Test method:	ASTM D3518-18	**Modulus calculation:** 2000-6000 microstrain							
Normalized by:	NA								
		CTA		**RTA**		**ETA**		**ETW1**	
Test Temperature [°F]		-65		70		180		180	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH								160F, 85%	
Source code		UD-IPS-X-X-X-XB		UD-IPS-X-X-X-XA		UD-IPS-X-X-X-XC		UD-IPS-X-X-X-XD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
$F_{12}^{s0.2\%}$ [ksi]	**Mean**		8.551		6.023		4.024		3.659
	Minimum		8.207		5.876		3.898		3.515
	Maximum		8.969		6.387		4.172		3.809
	C.V.(%)		2.138		2.231		2.065		1.930
	No. Specimens		18		19		18		19
	No. FD Batches		3		3		3		3
$F_{12}^{s5\% \text{ strain}}$ [ksi]	**Mean**		14.45		10.51		6.927		5.896
	Minimum		13.97		10.21		6.706		5.683
	Maximum		15.39		11.37		7.164		6.100
	C.V.(%)		2.498		3.012		1.954		2.304
	No. Specimens		18		19		18		17
	No. FD Batches		2		3		3		3
G_{12}^{s} [Msi]	**Mean**		0.7621		0.6100		0.4282		0.3980
	Minimum		0.7410		0.5926		0.4135		0.3830
	Maximum		0.7977		0.6489		0.4466		0.4143
	C.V.(%)		1.899		2.198		2.048		2.004
	No. Specimens		18		19		18		19
	No. FD Batches		3		3		3		3

2.4.4.6 UD Woven Short Beam Strength Properties (UD-SBS)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Resin content:	31.93 %wt
Comp. density:	1.538 g/cc
Fiber volume:	58.83 %vol
Ply count:	32
Test method:	ASTM D2344-16
Normalized by:	NA

Short-Beam Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
[0]32

		CTA		RTA		ETA		ETW1		ETW2	
Test Temperature [°F]		-65		70		180		180		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%		160F, 85%	
Source code		UD-SBS-X-X-X-XB		UD-SBS-X-X-X-XA		UD-SBS-X-X-X-XC		UD-SBS-X-X-X-XD		UD-SBS-X-X-X-XF	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS [ksi]	**Mean**		16.23		11.69		6.974		5.736		3.419
	Minimum		14.79		11.17		6.497		5.185		3.175
	Maximum		17.43		12.11		7.503		6.047		3.650
	C.V.(%)		4.203		2.351		3.911		4.707		5.419
	No. Specimens		18		18		18		18		6
	No. FD Batches		3		3		3		3		1

2.4.4.7 UD Woven Flexural Strength Properties (UD-FLEX)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD							**Flexural Strength** Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD [0/90]4s	
Resin content:	(Note 1)		**Comp. density:** (Note 1)						
Fiber volume:	(Note 1)								
Ply count:	16								
Test method:	ASTM D7264-21		**Modulus calculation:** 1000-3000 microstrain						
Normalized by:	0.0070	in. CPT							
			RTA						
Test Temperature [°F]			70						
Moisture Conditioning			Ambient						
Equilibrium at T, RH									
Source code			UD-FLEX-X-X-X-XA						
			Normalized	**Measured**					
	Mean		161.3	162.9					
	Minimum		142.4	141.7					
FLEX Strength [ksi]	**Maximum**		174.6	178.0					
	C.V.(%)		5.792	6.675					
	No. Specimens			18					
	No. FD Batches			3					

Note 1: Coupons were sampled from UD-UNC0 panel

2.5 Individual Laminate Test Summaries

2.5.1 Unnotched Tension 1 Properties (UNT1)

Material: Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

Unnotched Tension 1
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
[45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]

Resin content: 34.56 %wt **Comp. density:** 1.524 g/cc
Fiber volume: 56.15 %vol
Ply count: 8

Test method: ASTM D3039-17 **Modulus calculation:** 1000-3000 microstrain

Normalized by: 0.0140 in. CPT

		CTA		RTA		ETA		ETW1	
Test Temperature [°F]		-65		70		180		180	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH								160F, 85%	
Source code		M-UNT1-X-X-X-XB		M-UNT1-X-X-X-XA		M-UNT1-X-X-X-XC		M-UNT1-X-X-X-XD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNT1 Strength [ksi]	**Mean**	131.6	123.6	137.6	129.3	139.3	131.0	136.7	128.5
	Minimum	117.5	113.5	127.0	121.4	129.1	121.9	127.8	120.3
	Maximum	138.7	132.2	143.5	135.4	146.5	137.9	143.5	136.3
	C.V.(%)	4.574	4.352	3.178	3.132	3.534	3.377	2.941	3.026
	No. Specimens	18		18		18		18	
	No. FD Batches	3		3		3		3	
UNT1 Modulus [Msi]	**Mean**	8.875	8.342	8.669	8.145	8.480	7.975	8.459	7.948
	Minimum	8.504	7.859	8.452	7.787	8.275	7.753	8.277	7.786
	Maximum	9.267	8.753	9.046	8.335	8.740	8.195	8.930	8.422
	C.V.(%)	2.322	2.284	1.716	1.680	1.744	1.783	2.055	2.039
	No. Specimens	18		18		18		18	
	No. FD Batches	3		3		3		3	

2.5.2 Unnotched Tension 2 Properties (UNT2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Unnotched Tension 2**			
Resin content:	33.67 %wt		**Comp. density:** 1.535 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF: [45/-45, 0/90, 45/-45, 45/-45]S			
Fiber volume:	57.26 %vol										
Ply count:	8										
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain								
Normalized by:	0.0140	in. CPT									
			CTA		**RTA**		**ETW1**				
Test Temperature [°F]			-65		70		180				
Moisture Conditioning			Ambient		Ambient		Equilibrium				
Equilibrium at T, RH							160F, 85%				
Source code			M-UNT2-X-X-X-XB		M-UNT2-X-X-X-XA		M-UNT2-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**			
UNT2 Strength [ksi]	**Mean**		91.74	87.67	88.47	84.63	74.38	71.12			
	Minimum		86.59	81.01	83.00	80.14	71.55	68.17			
	Maximum		98.23	96.13	90.59	88.57	81.70	76.41			
	C.V.(%)		3.525	4.788	2.351	2.922	3.372	3.228			
	No. Specimens		18		18		18				
	No. FD Batches		3		3		3				
UNT2 Modulus [Msi]	**Mean**		6.426	6.139	6.117	5.851	5.717	5.466			
	Minimum		6.230	5.872	5.963	5.618	5.507	5.230			
	Maximum		6.565	6.443	6.264	6.036	6.214	5.812			
	C.V.(%)		1.485	2.296	1.364	2.070	3.334	3.192			
	No. Specimens		18		18		18				
	No. FD Batches		3		3		3				

2.5.3 Unnotched Tension 3 Properties (UNT3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Unnotched Tension 3**			
Resin content:	31.01 %wt		**Comp. density:** 1.543 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF: [45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Fiber volume:	59.86 %vol										
Ply count:	20										
Test method:	ASTM D3039-17		**Modulus calculation:** 1000-3000 microstrain								
Normalized by:	0.0070	in. CPT									
			CTA		**RTA**		**ETW1**				
Test Temperature [°F]			-65		70		180				
Moisture Conditioning			Ambient		Ambient		Equilibrium				
Equilibrium at T, RH							160F, 85%				
Source code			M-UNT3-X-X-X-XB		M-UNT3-X-X-X-XA		M-UNT3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**			
UNT3 Strength [ksi]	**Mean**		232.6	231.0	238.8	237.2	218.7	217.5			
	Minimum		214.5	216.4	218.4	219.5	195.1	198.0			
	Maximum		251.9	246.2	254.5	252.2	233.8	232.5			
	C.V.(%)		4.377	3.602	4.592	4.173	5.083	4.519			
	No. Specimens		18		18		18				
	No. FD Batches		3		3		3				
UNT3 Modulus [Msi]	**Mean**		13.80	13.71	13.63	13.54	13.09	13.01			
	Minimum		13.12	13.01	13.12	12.58	12.43	12.12			
	Maximum		14.76	14.89	14.54	14.28	13.49	13.56			
	C.V.(%)		3.873	4.003	3.000	3.123	2.182	3.047			
	No. Specimens		18		18		19				
	No. FD Batches		3		3		3				

2.5.4 Unnotched Compression 1 Properties (UNC1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Unnotched Compression 1**		
Resin content:	35.18 %wt		**Comp. density:** 1.526 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF: [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]		
Fiber volume:	55.74 %vol									
Ply count:	8									
Test method:	ASTM D6641-23		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0140	in. CPT								
			RTA		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]			70		180		180		250	
Moisture Conditioning			Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH							160F, 85%		160F, 85%	
Source code			M-UNC1-X-X-X-XA		M-UNC1-X-X-X-XC		M-UNC1-X-X-X-XD		M-UNC1-X-X-X-XF	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNC1 Strength [ksi]	**Mean**		87.41	80.39	62.46	57.54	55.56	51.58	27.94	25.89
	Minimum		75.00	67.46	49.28	46.02	49.30	46.18	24.83	23.15
	Maximum		97.56	90.38	70.83	64.68	60.90	57.65	31.39	28.75
	C.V.(%)		6.606	7.793	8.385	7.670	5.918	7.305	7.202	6.764
	No. Specimens		18		20		18		10	
	No. FD Batches		3		3		3		1	
UNC1 Modulus [Msi]	**Mean**		7.974	7.335	7.811	7.185	7.551	7.018	6.141	5.689
	Minimum		7.566	6.466	7.068	6.026	6.824	5.860	5.341	4.998
	Maximum		8.307	7.777	9.402	8.714	8.447	8.144	6.758	6.158
	C.V.(%)		2.389	5.092	7.133	9.485	5.509	8.303	8.114	7.537
	No. Specimens		18		18		18		10	
	No. FD Batches		3		3		3		1	

2.5.5 Unnotched Compression 2 Properties (UNC2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Unnotched Compression 2** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90, 45/-45, 45/-45]S			
Resin content:	33.71 %wt		**Comp. density:** 1.530 g/cc							
Fiber volume:	57.10 %vol									
Ply count:	8									
Test method:	ASTM D6641-23		**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0140	in. CPT								
			RTA		**ETW1**					
Test Temperature [°F]			70		180					
Moisture Conditioning			Ambient		Equilibrium					
Equilibrium at T, RH					160F, 85%					
Source code			M-UNC2-X-X-X-XA		M-UNC2-X-X-X-XD					
			Normalized	**Measured**	**Normalized**	**Measured**				
UNC2 Strength [ksi]	**Mean**		60.65	57.56	36.13	34.43				
	Minimum		56.10	52.74	33.26	31.62				
	Maximum		64.28	61.94	38.72	37.62				
	C.V.(%)		3.691	4.079	4.679	5.006				
	No. Specimens		18		18					
	No. FD Batches		3		3					
UNC2 Modulus [Msi]	**Mean**		5.684	5.394	5.496	5.236				
	Minimum		5.505	5.159	5.176	4.828				
	Maximum		5.977	5.756	5.793	5.501				
	C.V.(%)		2.208	2.761	3.422	3.012				
	No. Specimens		18		18					
	No. FD Batches		3		3					

2.5.6 Unnotched Compression 3 Properties (UNC3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Unnotched Compression 3** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Resin content:	32.04 %wt	**Comp. density:** 1.538 g/cc							
Fiber volume:	58.79 %vol								
Ply count:	20								
Test method:	ASTM D6641-23	**Modulus calculation:** 1000-3000 microstrain							
Normalized by:	0.0070	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-UNC3-X-X-X-XA		M-UNC3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
UNC3 Strength [ksi]	**Mean**		109.6	107.8	65.88	64.91			
	Minimum		87.42	85.54	56.11	54.91			
	Maximum		130.3	126.3	76.64	74.23			
	C.V.(%)		11.55	11.75	8.599	8.624			
	No. Specimens		17		18				
	No. FD Batches		3		3				
UNC3 Modulus [Msi]	**Mean**		12.42	12.20	12.55	12.36			
	Minimum		12.05	11.67	11.58	11.34			
	Maximum		13.58	13.75	13.44	13.48			
	C.V.(%)		4.025	4.669	4.501	5.105			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.7 Laminate Short-Beam Strength Properties (SBS1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Laminate Short-Beam Strength**			
Resin content:	(Note 1)	**Comp. density:** (Note 1)				Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF			
Fiber volume:	(Note 1)					[45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]			
Ply count:	8								
Test method:	ASTM D2344-16								
Normalized by:	NA								
		RTA		**ETA**		**ETW1**			
Test Temperature [°F]		70		180		180			
Moisture Conditioning		Ambient		Ambient		Equilibrium			
Equilibrium at T, RH						160F, 85%			
Source code		M-SBS1-X-X-X-XA		M-SBS1-X-X-X-XC		M-SBS1-X-X-X-XD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
SBS1 Strength [ksi]	**Mean**		9.259		6.688		6.004		
	Minimum		8.179		6.084		5.073		
	Maximum		9.767		7.283		6.338		
	C.V.(%)		3.992		4.861		4.642		
	No. Specimens		18		18		18		
	No. FD Batches		3		3		3		

Note 1: Coupons were sampled from M-UNC1 panel

2.5.8 Open-Hole Tension 1 Properties (OHT1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Open-Hole Tension 1** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]		
Resin content:	34.00 %wt	**Comp. density:** 1.531 g/cc								
Fiber volume:	56.77 %vol									
Ply count:	8									
Test method:	ASTM D5766-23									
Normalized by:	0.0140	in. CPT								
		CTA		**RTA**		**ETA**		**ETW1**		
Test Temperature [°F]		-65		70		180		180		
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		
Equilibrium at T, RH								160F, 85%		
Source code		M-OHT1-X-X-X-XB		M-OHT1-X-X-X-XA		M-OHT1-X-X-X-XC		M-OHT1-X-X-X-XD		
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
OHT1 Strength [ksi]	**Mean**	87.33	82.87	91.71	87.24	90.57	85.58	92.05	87.38	
	Minimum	83.29	77.61	86.54	81.06	85.98	81.79	89.00	84.08	
	Maximum	93.04	88.84	95.12	91.11	96.86	91.44	95.61	91.38	
	C.V.(%)	3.914	4.431	2.849	3.367	2.740	2.976	2.281	2.398	
	No. Specimens	18		18		18		19		
	No. FD Batches	3		3		3		3		

2.5.9 Open-Hole Tension 2 Properties (OHT2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Open-Hole Tension 2** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90, 45/-45, 45/-45]S			
Resin content:	33.48 %wt	**Comp. density:**	1.534 g/cc						
Fiber volume:	57.45 %vol								
Ply count:	8								
Test method:	ASTM D5766-23								
Normalized by:	0.0140	in. CPT							
			CTA		**RTA**		**ETW1**		
Test Temperature [°F]			-65		70		180		
Moisture Conditioning			Ambient		Ambient		Equilibrium		
Equilibrium at T, RH							160F, 85%		
Source code			M-OHT2-X-X-X-XB		M-OHT2-X-X-X-XA		M-OHT2-X-X-X-XD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
OHT2 Strength [ksi]	**Mean**		59.01	56.39	58.25	55.93	58.03	55.60	
	Minimum		57.61	54.72	55.75	53.10	56.05	52.46	
	Maximum		60.42	58.86	61.99	60.01	59.98	58.14	
	C.V.(%)		1.265	2.003	2.602	3.250	1.919	2.758	
	No. Specimens		18		18		18		
	No. FD Batches		3		3		3		

2.5.10 Open-Hole Tension 3 Properties (OHT3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Open-Hole Tension 3** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Resin content:	31.45 %wt		**Comp. density:** 1.543 g/cc								
Fiber volume:	59.42 %vol										
Ply count:	20										
Test method:	ASTM D5766-23										
Normalized by:	0.0070	in. CPT									
			CTA		**RTA**		**ETW1**				
Test Temperature [°F]			-65		70		180				
Moisture Conditioning			Ambient		Ambient		Equilibrium				
Equilibrium at T, RH							160F, 85%				
Source code			M-OHT3-X-X-X-XB		M-OHT3-X-X-X-XA		M-OHT3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**			
OHT3 Strength [ksi]	**Mean**		149.3	146.7	154.9	151.6	179.9	177.2			
	Minimum		131.2	127.8	146.8	141.9	172.1	168.1			
	Maximum		168.9	167.3	169.2	168.7	186.8	185.2			
	C.V.(%)		7.678	8.510	4.470	5.349	1.956	2.638			
	No. Specimens		18		18		24				
	No. FD Batches		3		3		3				

2.5.11 Open-Hole Tension 4 Properties (OHT4)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Open-Hole Tension 4**			
						Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF			
Resin content:	33.97 %wt		**Comp. density:**	1.525 g/cc		[90/0, 45/-45, 0/90, 0/90 | 90/0, 90/0, -45/45, 0/90]			
Fiber volume:	56.59 %vol								
Ply count:	8								
Test method:	ASTM D5766-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-OHT4-X-X-X-XA		M-OHT4-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
OHT4 Strength [ksi]	**Mean**		100.9	92.71	123.9	114.9			
	Minimum		98.00	88.96	109.2	98.89			
	Maximum		105.9	97.28	129.4	121.6			
	C.V.(%)		2.845	3.599	6.068	7.398			
	No. Specimens		6		6				
	No. FD Batches		1		1				

2.5.12 Filled-Hole Tension 1 Properties (FHT1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Filled-Hole Tension 1**		
Resin content:	33.88 %wt		**Comp. density:** 1.533 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF: [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]		
Fiber volume:	57.06 %vol									
Ply count:	8									
Test method:	ASTM D6742-23									
Normalized by:	0.0140	in. CPT								
			CTA		**RTA**		**ETA**		**ETW1**	
Test Temperature [°F]			-65		70		180		180	
Moisture Conditioning			Ambient		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH									160F, 85%	
Source code			M-FHT1-X-X-X-XB		M-FHT1-X-X-X-XA		M-FHT1-X-X-X-XC		M-FHT1-X-X-X-XD	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
FHT1 Strength [ksi]	**Mean**		86.04	80.95	85.68	80.55	86.59	81.61	87.77	82.98
	Minimum		82.82	77.92	82.79	77.02	82.51	77.02	85.26	79.72
	Maximum		89.53	83.97	89.57	85.21	92.72	89.57	91.16	88.28
	C.V.(%)		2.253	2.383	2.246	2.836	3.316	4.201	1.853	2.661
	No. Specimens		18		18		18		18	
	No. FD Batches		3		3		3		3	

2.5.13 Filled-Hole Tension 2 Properties (FHT2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Filled-Hole Tension 2**			
Resin content:	33.25 %wt		**Comp. density:** 1.535 g/cc			Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF			
Fiber volume:	57.61 %vol					[45/-45, 0/90, 45/-45, 45/-45]S			
Ply count:	8								
Test method:	ASTM D6742-23								
Normalized by:	0.0140	in. CPT							
			CTA		**RTA**		**ETW1**		
Test Temperature [°F]			-65		70		180		
Moisture Conditioning			Ambient		Ambient		Equilibrium		
Equilibrium at T, RH							160F, 85%		
Source code			M-FHT2-X-X-X-XB		M-FHT2-X-X-X-XA		M-FHT2-X-X-X-XD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
FHT2 Strength [ksi]	**Mean**		68.77	65.53	61.70	59.09	56.60	54.13	
	Minimum		65.07	63.12	59.18	57.64	54.83	52.93	
	Maximum		72.38	68.91	63.38	60.79	57.51	55.35	
	C.V.(%)		2.716	2.024	2.090	1.371	1.244	1.659	
	No. Specimens		18		18		18		
	No. FD Batches		3		3		3		

2.5.14 Filled-Hole Tension 3 Properties (FHT3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Filled-Hole Tension 3**			
Resin content:	31.26 %wt		**Comp. density:** 1.543 g/cc			Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF			
Fiber volume:	59.69 %vol					[45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Ply count:	20								
Test method:	ASTM D6742-23								
Normalized by:	0.0070	in. CPT							
			CTA		**RTA**		**ETW1**		
Test Temperature [°F]			-65		70		180		
Moisture Conditioning			Ambient		Ambient		Equilibrium		
Equilibrium at T, RH							160F, 85%		
Source code			M-FHT3-X-X-X-XB		M-FHT3-X-X-X-XA		M-FHT3-X-X-X-XD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
FHT3 Strength [ksi]	**Mean**		128.6	127.6	129.0	127.7	136.7	135.7	
	Minimum		119.2	121.2	122.1	121.4	131.1	128.2	
	Maximum		138.3	139.3	135.8	135.2	143.8	143.5	
	C.V.(%)		4.150	3.839	3.386	3.362	2.987	3.020	
	No. Specimens		18		18		18		
	No. FD Batches		3		3		3		

2.5.15 Open-Hole Compression 1 Properties (OHC1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Open-Hole Compression 1**		
Resin content:	34.07 %wt		**Comp. density:** 1.531 g/cc					Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF: [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]		
Fiber volume:	56.70 %vol									
Ply count:	8									
Test method:	ASTM D6484-23									
Normalized by:	0.0140	in. CPT								
			RTA		**ETA**		**ETW1**		**ETW2**	
Test Temperature [°F]			70		180		180		250	
Moisture Conditioning			Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH							160F, 85%		160F, 85%	
Source code			M-OHC1-X-X-X-XA		M-OHC1-X-X-X-XC		M-OHC1-X-X-X-XD		M-OHC1-X-X-X-XF	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
OHC1 Strength [ksi]	**Mean**		48.04	44.71	37.97	35.27	35.30	32.90	24.60	22.77
	Minimum		44.33	41.94	34.33	31.85	32.29	30.42	24.14	22.12
	Maximum		51.33	48.37	42.26	39.72	38.34	35.69	25.12	23.63
	C.V.(%)		4.424	3.881	4.982	5.285	4.436	3.886	1.608	2.585
	No. Specimens		18		18		18		6	
	No. FD Batches		3		3		3		1	

2.5.16 Open-Hole Compression 2 Properties (OHC2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Open-Hole Compression 2** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90, 45/-45, 45/-45] S			
Resin content:	33.51 %wt	**Comp. density:**	1.535 g/cc						
Fiber volume:	57.37 %vol								
Ply count:	8								
Test method:	ASTM D6484-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-OHC2-X-X-X-XA		M-OHC2-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
OHC2 Strength [ksi]	**Mean**		38.48	36.72	29.49	27.96			
	Minimum		36.50	34.17	26.27	25.86			
	Maximum		40.62	38.66	31.59	29.47			
	C.V.(%)		3.314	3.779	4.605	3.124			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.17 Open-Hole Compression 3 Properties (OHC3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Open-Hole Compression 3** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0, 0, 0/90, 45/-45, 0,0]S		
Resin content:	31.62 %wt	**Comp. density:**	1.539 g/cc						
Fiber volume:	59.14 %vol								
Ply count:	20								
Test method:	ASTM D6484-23								
Normalized by:	0.0070	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-OHC3-X-X-X-XA		M-OHC3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
OHC3 Strength [ksi]	**Mean**		61.95	60.71	41.63	40.85			
	Minimum		58.66	57.05	38.03	37.38			
	Maximum		66.72	66.47	46.04	44.34			
	C.V.(%)		3.672	4.340	5.262	4.862			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.18 Open-Hole Compression 4 Properties (OHC4)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF					**Open-Hole Compression 4**			
						Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [90/0, 45/-45, 0/90, 0/90]			
Resin content:	33.97 %wt		**Comp. density:**	1.525 g/cc		[90/0, 90/0, -45/45, 0/90]			
Fiber volume:	56.59 %vol								
Ply count:	8								
Test method:	ASTM D6484-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-OHC4-X-X-X-XA		M-OHC4-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
OHC3 Strength [ksi]	**Mean**		47.84	43.71	38.08	34.94			
	Minimum		42.43	38.93	35.78	33.44			
	Maximum		52.61	47.46	40.44	36.88			
	C.V.(%)		6.906	6.310	5.037	3.458			
	No. Specimens		6		6				
	No. FD Batches		1		1				

2.5.19 Filled-Hole Compression 1 Properties (FHC1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF							**Filled-Hole Compression 1** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	
Resin content:	33.74 %wt	**Comp. density:**	1.530 g/cc						
Fiber volume:	57.03 %vol								
Ply count:	8								
Test method:	ASTM D6742-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETA**		**ETW1**		
Test Temperature [°F]			70		180		180		
Moisture Conditioning			Ambient		Ambient		Equilibrium		
Equilibrium at T, RH							160F, 85%		
Source code			M-FHC1-X-X-X-XA		M-FHC1-X-X-X-XC		M-FHC1-X-X-X-XD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
FHC1 Strength [ksi]	**Mean**		69.11	65.27	54.43	51.25	48.96	45.98	
	Minimum		64.28	59.76	50.51	47.55	45.47	42.07	
	Maximum		77.17	73.24	58.72	54.10	53.43	49.45	
	C.V.(%)		4.258	4.740	4.283	4.018	4.085	3.915	
	No. Specimens		17		18		18		
	No. FD Batches		3		3		3		

2.5.20 Filled-Hole Compression 2 Properties (FHC2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Filled-Hole Compression 2** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90, 45/-45, 45/-45]S		
Resin content:	33.33 %wt	**Comp. density:**	1.532 g/cc						
Fiber volume:	57.40 %vol								
Ply count:	8								
Test method:	ASTM D6742-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-FHC2-X-X-X-XA		M-FHC2-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
FHC2 Strength [ksi]	**Mean**		56.38	53.70	38.74	36.93			
	Minimum		53.57	50.66	35.70	34.47			
	Maximum		63.65	61.13	41.81	39.48			
	C.V.(%)		4.121	4.570	3.807	3.610			
	No. Specimens		21		21				
	No. FD Batches		3		3				

Some coupon failures occurred away from the hole and fastener. Data was retained for analysis.

2.5.21 Filled-Hole Compression 3 Properties (FHC3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Filled-Hole Compression 3** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Resin content:	31.50 %wt	**Comp. density:**	1.535 g/cc						
Fiber volume:	59.08 %vol								
Ply count:	20								
Test method:	ASTM D6742-23								
Normalized by:	0.0070	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-FHC3-X-X-X-XA		M-FHC3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
FHC3 Strength [ksi]	**Mean**		85.16	84.17	56.71	56.00			
	Minimum		74.23	74.18	53.06	52.33			
	Maximum		91.60	91.07	59.01	57.62			
	C.V.(%)		6.062	6.154	2.947	2.627			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.22 Single-Shear Bearing 1 Properties (SSB1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF								**Single-Shear Bearing 1**	
Resin content:	34.02 %wt		**Comp. density:** 1.534 g/cc						Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF	
Fiber volume:	56.88 %vol								[45/-45, 0/90], [45/-45, 90/0] | [0/90,-45/45], [90/0,-45/45]	
Ply count:	8									
Test method:	ASTM D5961-23									
Normalized by:	0.0140	in. CPT								
			RTA		**ETA**		**ETW1**			
Test Temperature [°F]			70		180		180			
Moisture Conditioning			Ambient		Ambient		Equilibrium			
Equilibrium at T, RH							160F, 85%			
Source code			M-SSB1-X-X-X-XA		M-SSB1-X-X-X-XC		M-SSB1-X-X-X-XD			
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
SSB1 2% Offset Strength [ksi]	**Mean**		113.1	107.8	97.11	92.91	99.85	94.30		
	Minimum		103.8	100.7	89.47	85.92	88.76	84.71		
	Maximum		119.3	114.9	106.9	101.9	107.9	99.96		
	C.V.(%)		3.968	4.045	5.015	4.934	4.236	4.248		
	No. Specimens		18		18		18			
	No. FD Batches		3		3		3			
SSB1 Ultimate Strength [ksi]	**Mean**		134.0	127.6	115.1	110.1	114.3	108.0		
	Minimum		126.8	120.5	110.3	105.8	106.8	102.0		
	Maximum		140.4	133.8	122.7	117.0	118.9	112.7		
	C.V.(%)		2.692	2.772	2.863	2.794	2.330	2.336		
	No. Specimens		18		18		18			
	No. FD Batches		3		3		3			

2.5.23 Single-Shear Bearing 2 Properties (SSB2)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Single-Shear Bearing 2** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90, 45/-45, 45/-45]S			
Resin content:	33.18 %wt	**Comp. density:**	1.537 g/cc						
Fiber volume:	57.70 %vol								
Ply count:	8								
Test method:	ASTM D5961-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-SSB2-X-X-X-XA		M-SSB2-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
SSB2 2% Offset Strength [ksi]	**Mean**		112.4	108.2	96.20	92.15			
	Minimum		106.8	101.7	71.10	69.20			
	Maximum		117.7	114.1	105.8	98.26			
	C.V.(%)		3.159	3.255	7.419	6.897			
	No. Specimens		18		18				
	No. FD Batches		3		3				
SSB2 Ultimate Strength [ksi]	**Mean**		137.5	132.4	113.1	108.4			
	Minimum		131.3	126.4	101.5	98.83			
	Maximum		144.0	137.7	120.8	115.3			
	C.V.(%)		2.471	2.458	4.083	3.314			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.24 Single-Shear Bearing 3 Properties (SSB3)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Single-Shear Bearing 3** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0, 0, 0/90, 45/-45,0,0]S			
Resin content:	32.53 %wt	**Comp. density:**	1.538 g/cc						
Fiber volume:	58.30 %vol								
Ply count:	20								
Test method:	ASTM D5961-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-SSB3-X-X-X-XA		M-SSB3-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
SSB3 2% Offset Strength [ksi]	**Mean**		104.5	102.1	88.02	85.87			
	Minimum		90.52	87.28	78.70	77.61			
	Maximum		114.4	110.2	98.21	94.98			
	C.V.(%)		5.229	4.983	5.892	6.106			
	No. Specimens		18		18				
	No. FD Batches		3		3				
SSB3 Ultimate Strength [ksi]	**Mean**		130.0	127.0	105.2	102.7			
	Minimum		123.9	119.5	101.1	97.73			
	Maximum		137.0	133.2	112.9	109.2			
	C.V.(%)		2.979	3.027	2.597	2.718			
	No. Specimens		18		18				
	No. FD Batches		3		3				

2.5.25 Compression After Impact 1 Properties (CAI1)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF						**Compression After Impact 1** Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF [45/-45, 0/90]3S		
Resin content:	33.75 %wt		**Comp. density:** 1.531 g/cc						
Fiber volume:	57.00 %vol								
Ply count:	12								
Test method:	ASTM D7136-20/D7137-23								
Normalized by:	0.0140	in. CPT							
			RTA		**ETW1**				
Test Temperature [°F]			70		180				
Moisture Conditioning			Ambient		Equilibrium				
Equilibrium at T, RH					160F, 85%				
Source code			M-CAI-X-X-X-XA		M-CAI-X-X-X-XD				
			Normalized	**Measured**	**Normalized**	**Measured**			
CAI1 Strength [ksi]	**Mean**		37.81	35.63	30.12	28.36			
	Minimum		35.53	33.39	28.65	26.97			
	Maximum		39.53	37.31	31.67	29.79			
	C.V.(%)		3.462	3.632	4.377	4.286			
	No. Specimens		6		6				
	No. FD Batches		1		1				

2.5.26 Biaxial Interlaminar Tension Properties (BA-ILT)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial					**Interlaminar Tension** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial [0/90]10S			
Resin content:	31.87 %wt	**Comp. density:** 1.544 g/cc							
Fiber volume:	59.12 %vol								
Ply count:	20								
Test method:	ASTM D6415-06a(2013)								
Normalized by:	NA								
		CTA		**RTA**		**ETW1**			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Ambient		Ambient		Equilibrium			
Equilibrium at T, RH						160F, 85%			
Source code		BA-ILT-X-X-X-XB		BA-ILT-X-X-X-XA		BA-ILT-X-X-X-XD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
	Mean		583.6		458.0		570.4		
	Minimum		545.9		323.7		545.4		
	Maximum		609.5		536.3		599.9		
CBS [lb]	**C.V.(%)**		4.581		20.62		3.681		
	No. Specimens		5		6		5		
	No. FD Batches		1		1		1		
	Mean		8.852		6.804		8.551		
	Minimum		8.336		4.726		8.289		
	Maximum		9.450		8.100		8.969		
ILT [ksi]	**C.V.(%)**		5.543		21.52		3.193		
	No. Specimens		5		6		5		
	No. FD Batches		1		1		1		

2.5.27 Bidiagonal Interlaminar Tension Properties (BD-ILT)

Material:	Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal					**Interlaminar Tension** Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal [0/90]10S			
Resin content:	30.56 %wt	**Comp. density:**	1.547 g/cc						
Fiber volume:	60.34 %vol								
Ply count:	20								
Test method:	ASTM D6415-06a(2013)								
Normalized by:	NA								
		CTA		**RTA**		**ETW1**			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Ambient		Ambient		Equilibrium			
Equilibrium at T, RH						160F, 85%			
Source code		BD-ILT-X-X-X-XB		BD-ILT-X-X-X-XA		BD-ILT-X-X-X-XD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
	Mean		538.0		460.1		514.5		
	Minimum		479.9		347.6		480.3		
	Maximum		564.7		528.5		546.7		
CBS [lb]	**C.V.(%)**		7.457		14.63		4.623		
	No. Specimens		4		5		5		
	No. FD Batch		1		1		1		
	Mean		7.414		6.214		6.995		
	Minimum		6.533		4.740		6.461		
	Maximum		7.861		7.174		7.447		
ILT [ksi]	**C.V.(%)**		8.173		14.49		5.147		
	No. Specimens		4		5		5		
	No. FD Batches		1		1		1		

3. Individual Test Charts

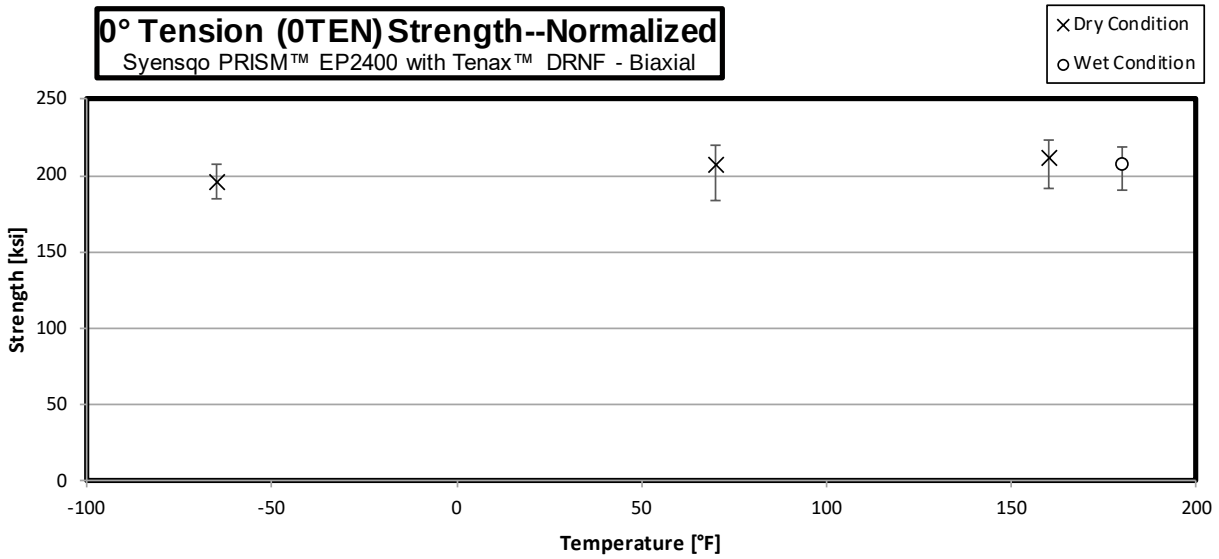
These charts combine all tested batches of data and plot the minimum and maximum strength and modulus range based on test temperature.

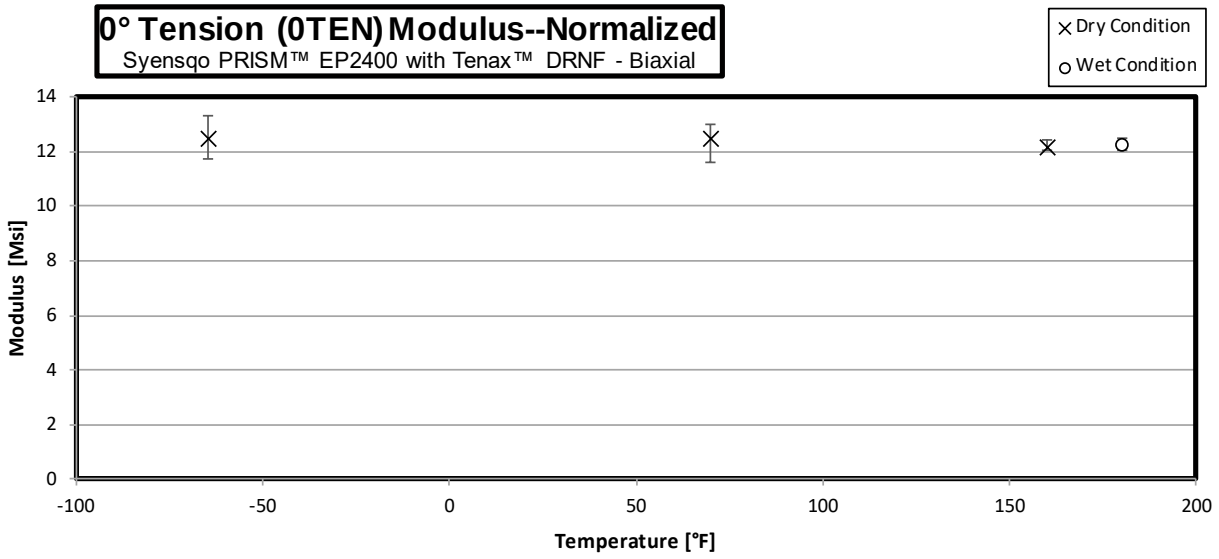
Test temperature for ETA is 180°F but is offset to 160°F to allow clarity when reviewing plots.

3.1 Individual Lamina Test Charts

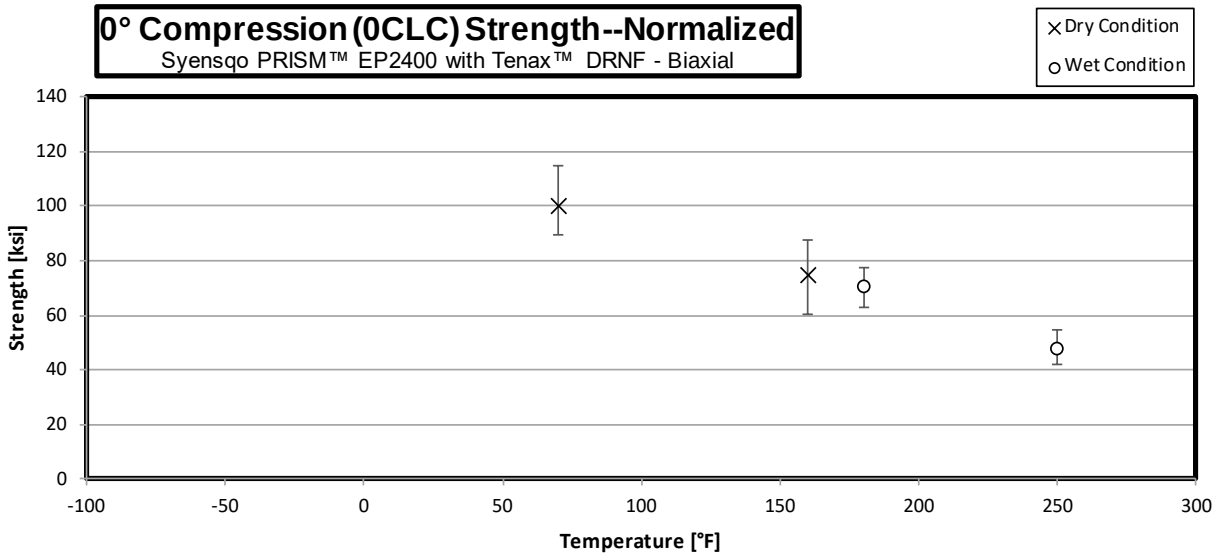
3.1.1 Biaxial Lamina Test Charts

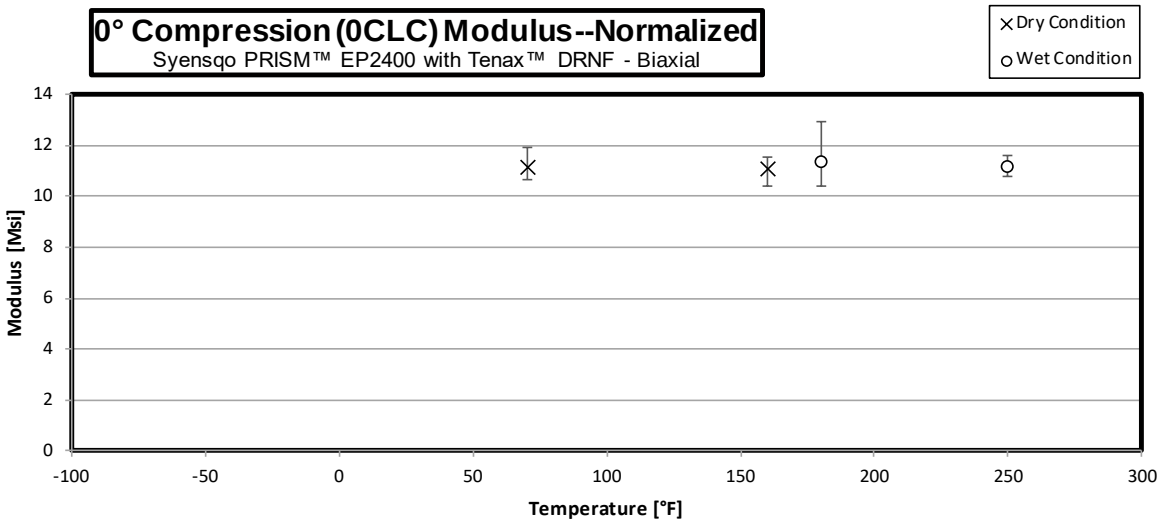
3.1.1.1 Biaxial 0° Tension Properties (BA-0TEN)



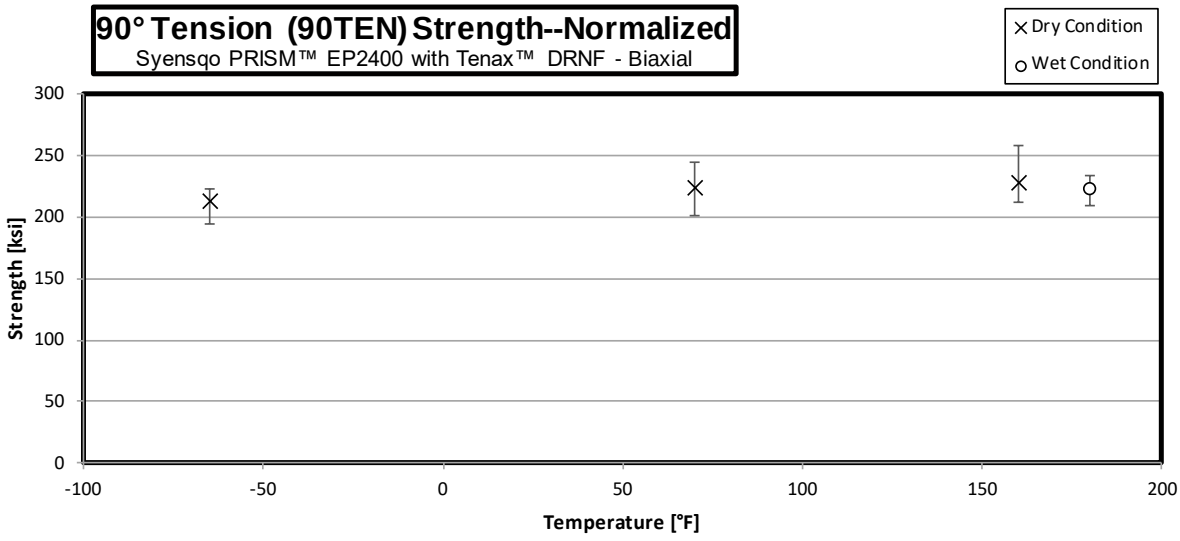


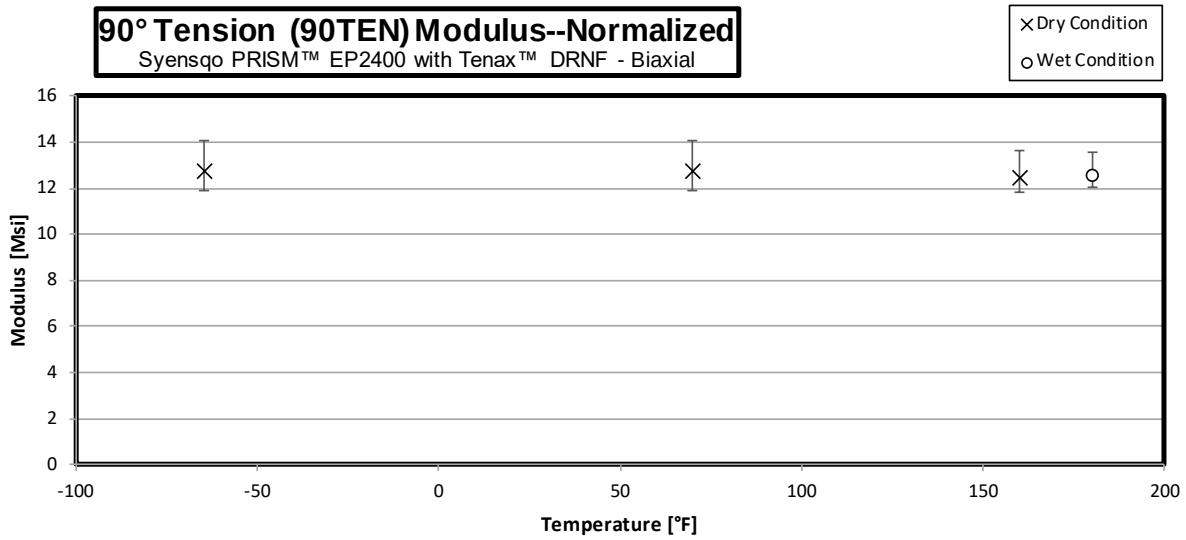
3.1.1.2 Biaxial 0° Compression Properties (BA-0CLC)



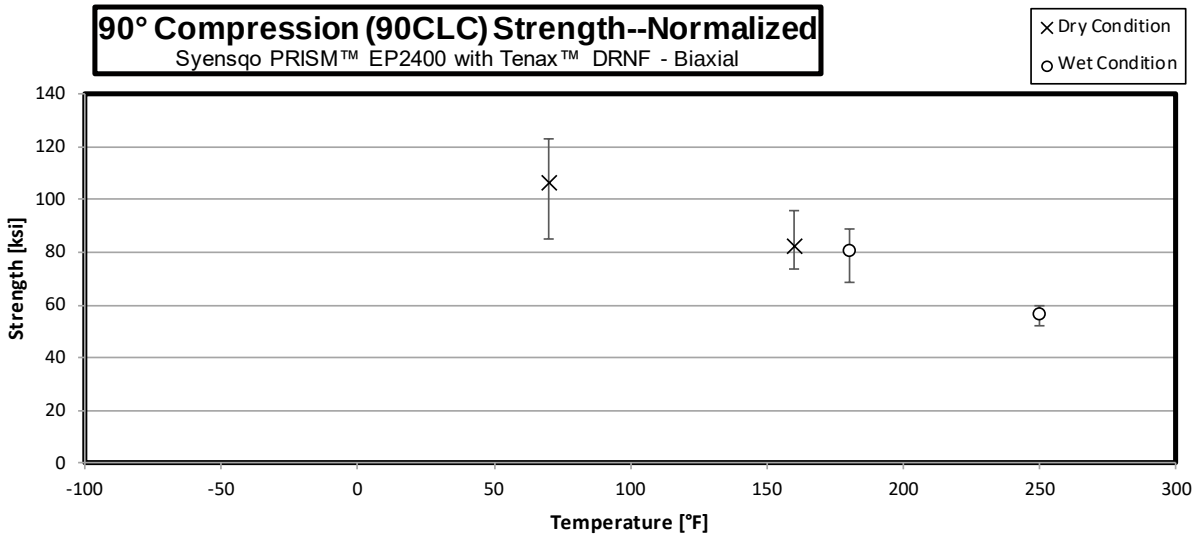


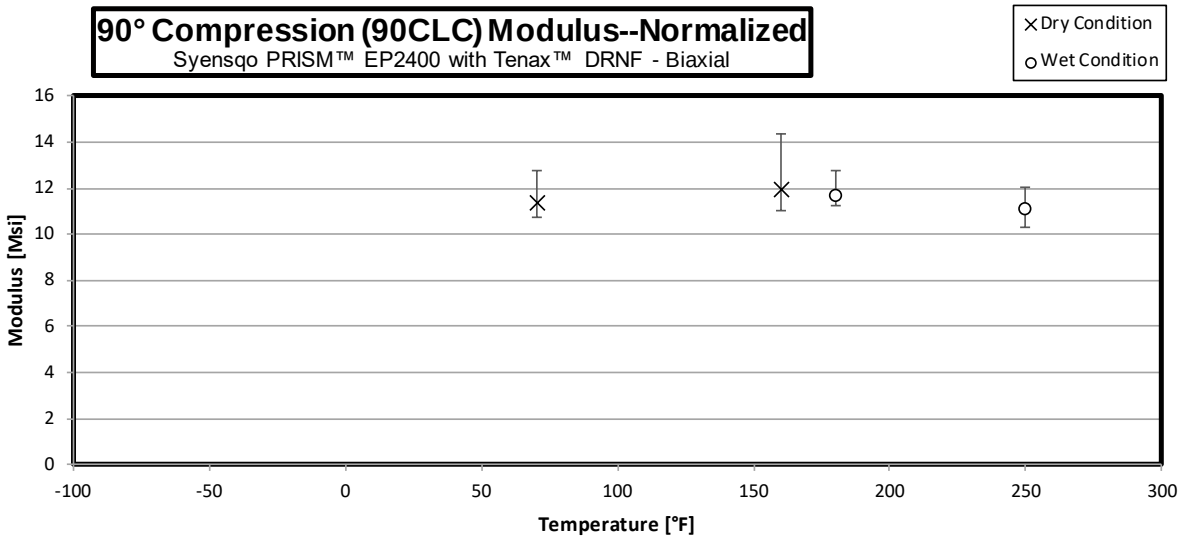
3.1.1.3 Biaxial 90° Tension Properties (BA-90TEN)



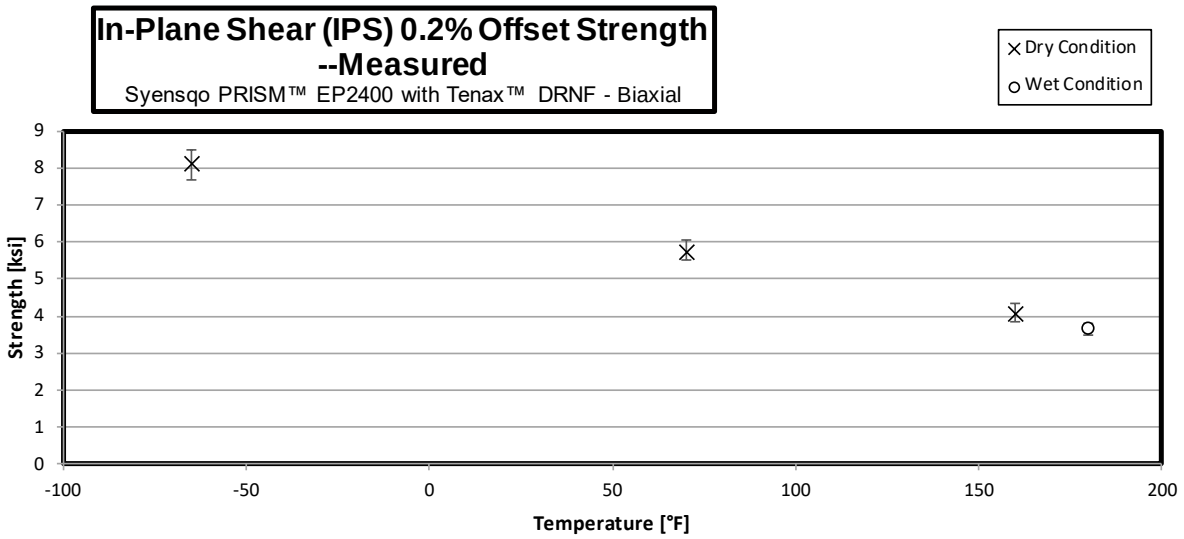


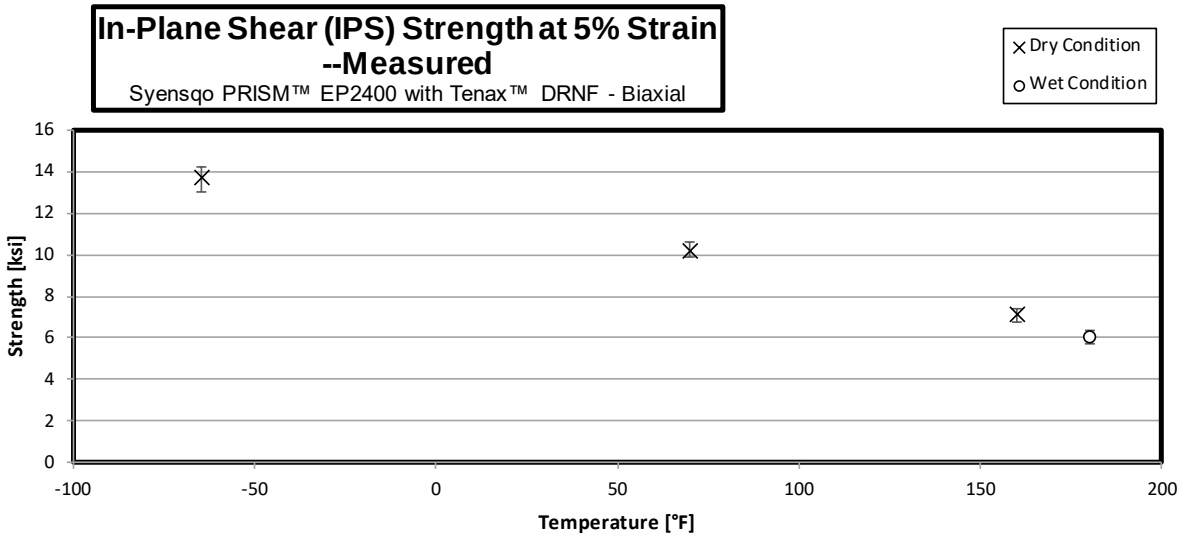
3.1.1.4 Biaxial 90° Compression Properties (BA-90CLC)

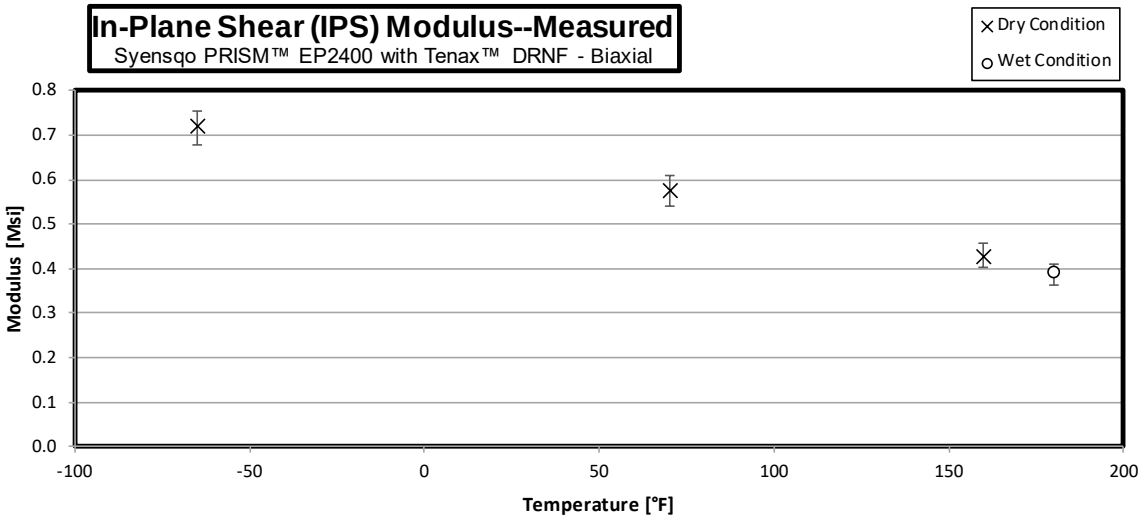




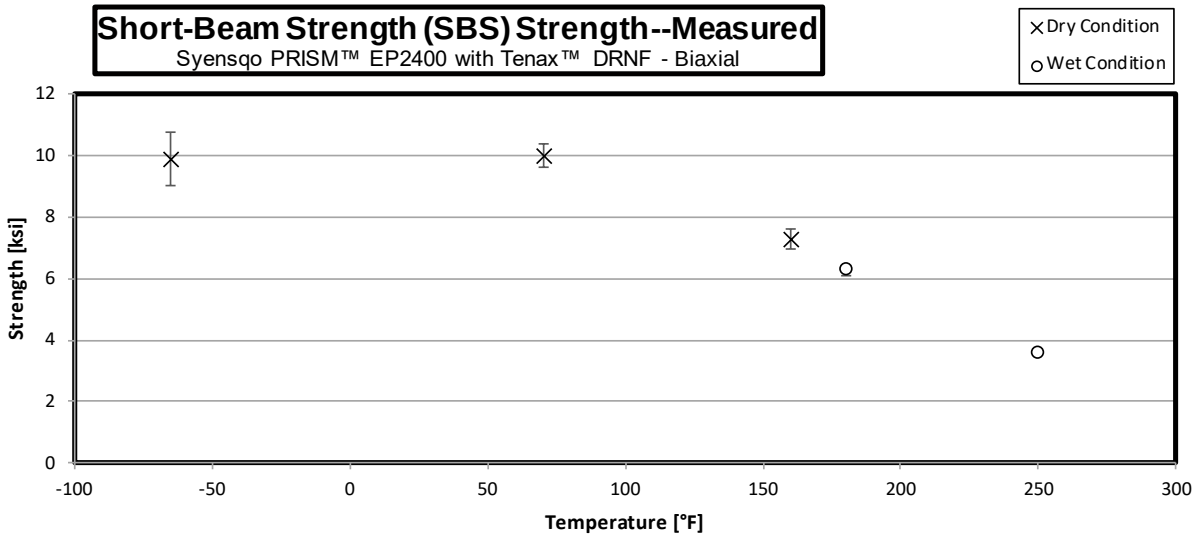
3.1.1.5 Biaxial In-Plane Shear Properties (BA-IPS)



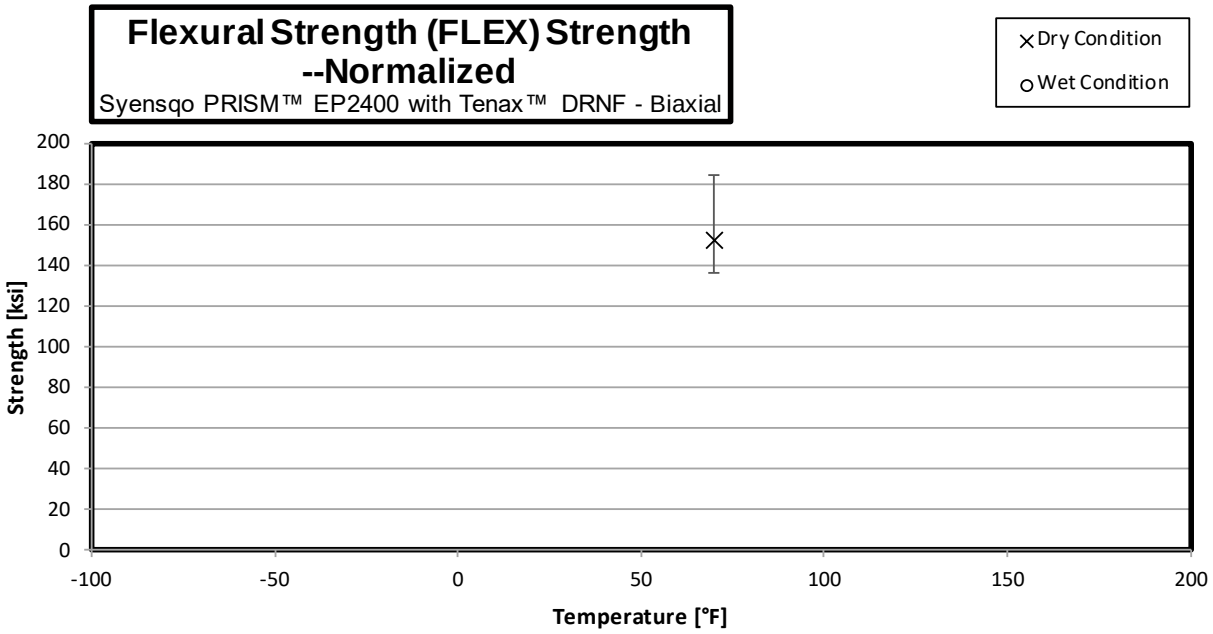



In-Plane Shear (IPS) Modulus--Measured
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Dry Condition
Wet Condition
Modulus [Msi]
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-100
-50
0
50
100
150
200
Temperature [°F]

3.1.1.6 Biaxial Short Beam Strength Properties (BA-SBS)

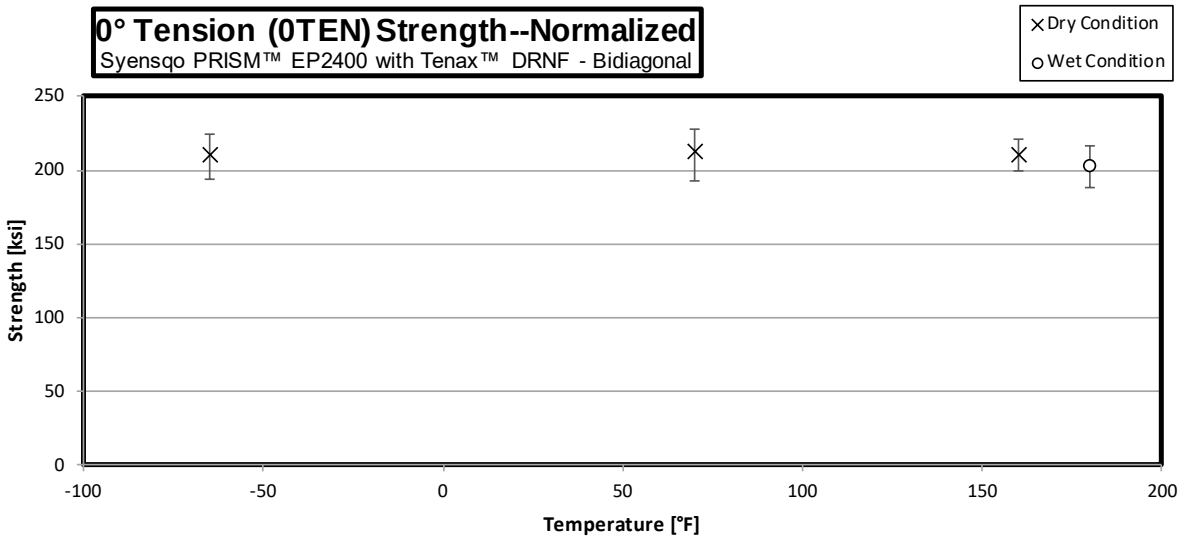


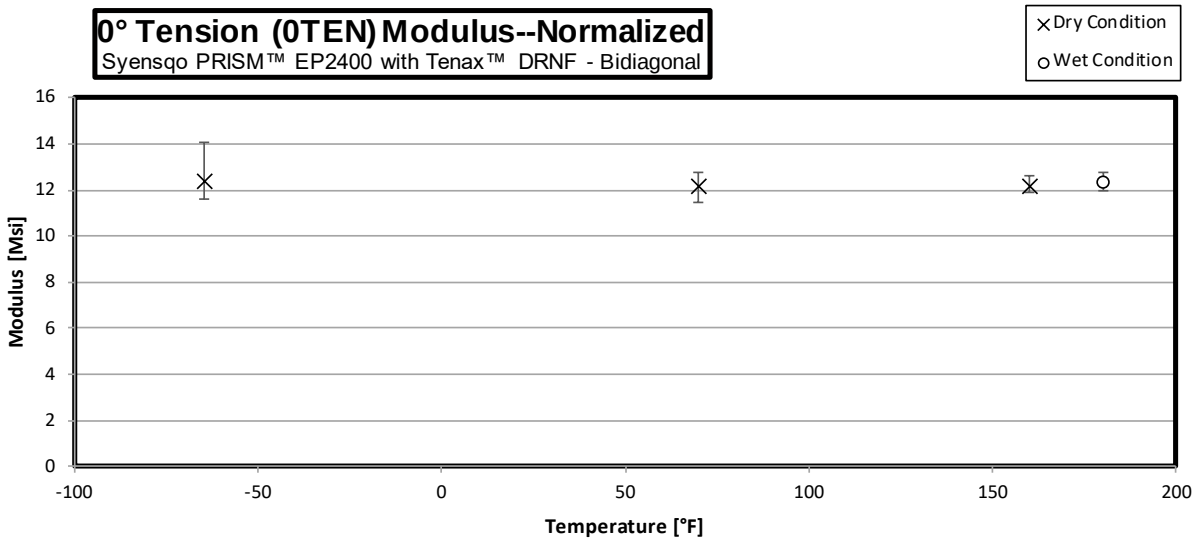
3.1.1.7 Biaxial Flexural Strength Properties (BA-Flex)



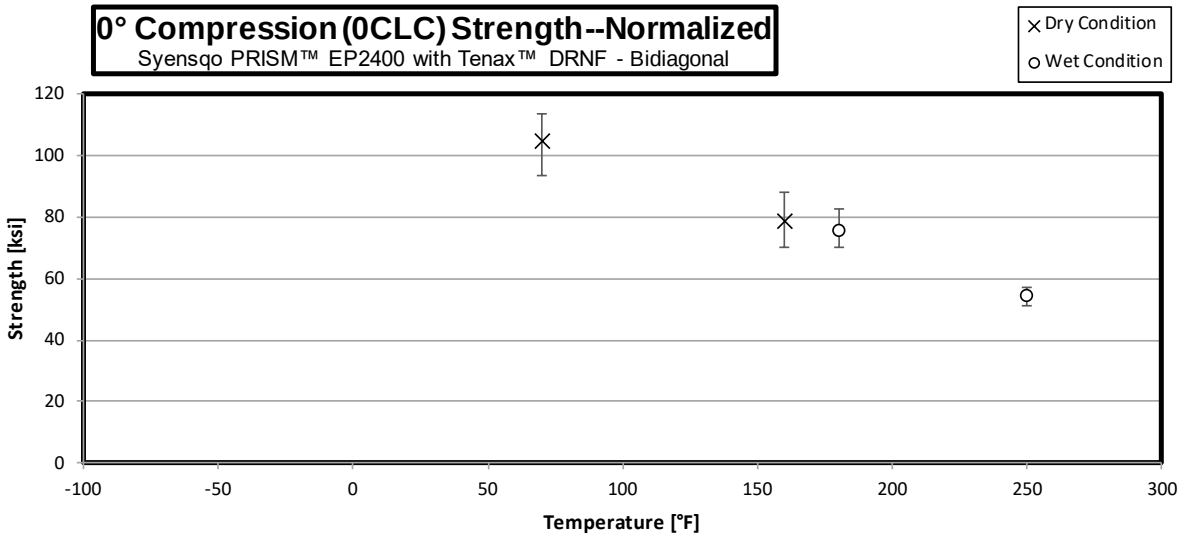
3.1.2 Bidiagonal Lamina Test Charts

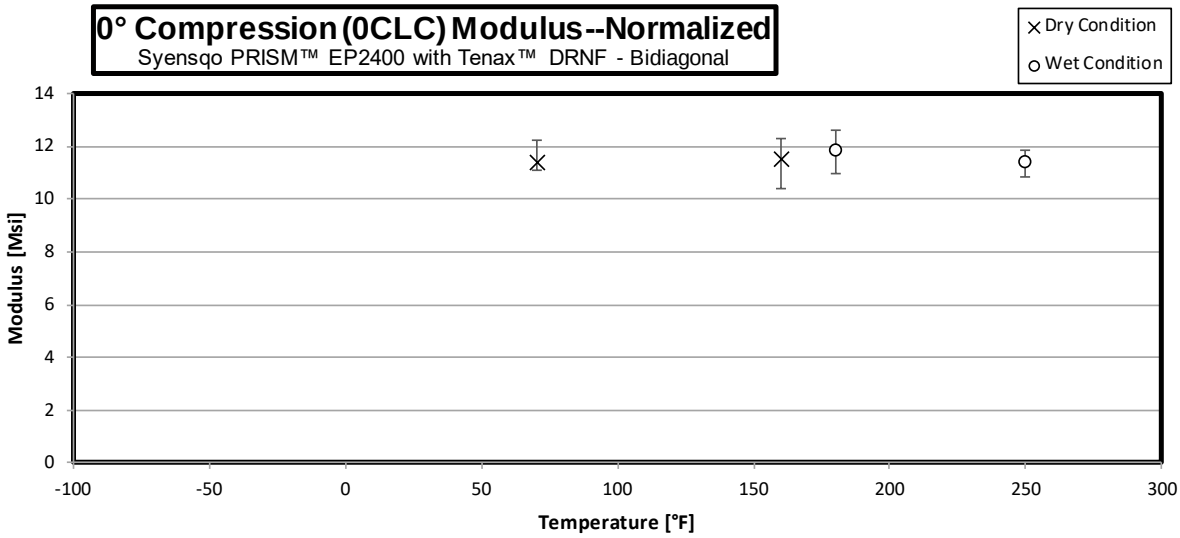
3.1.2.1Bidiagonal 0° Tension Properties (BD-0TEN)



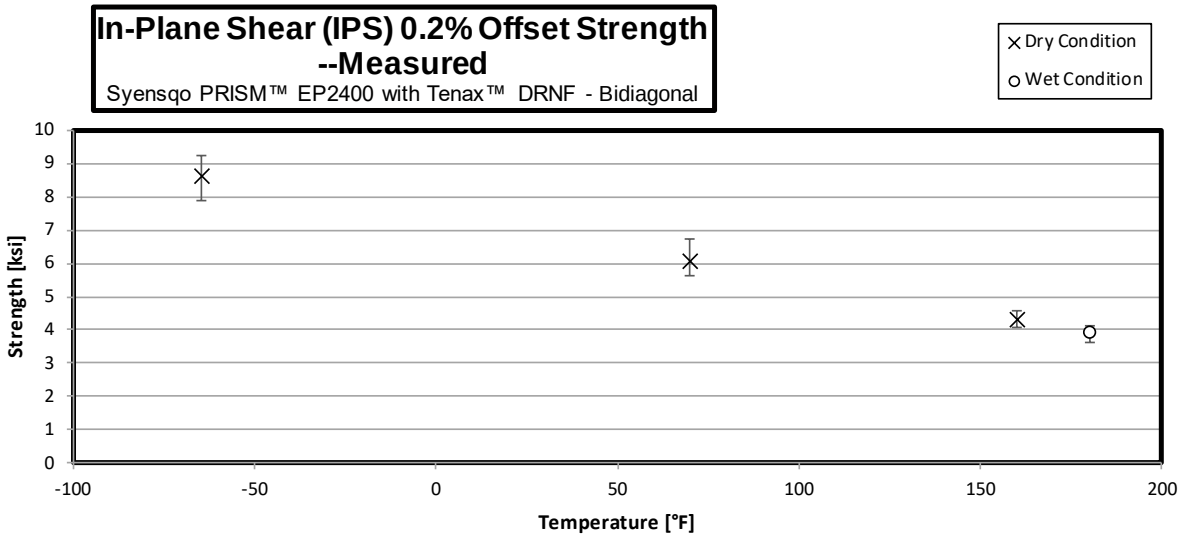


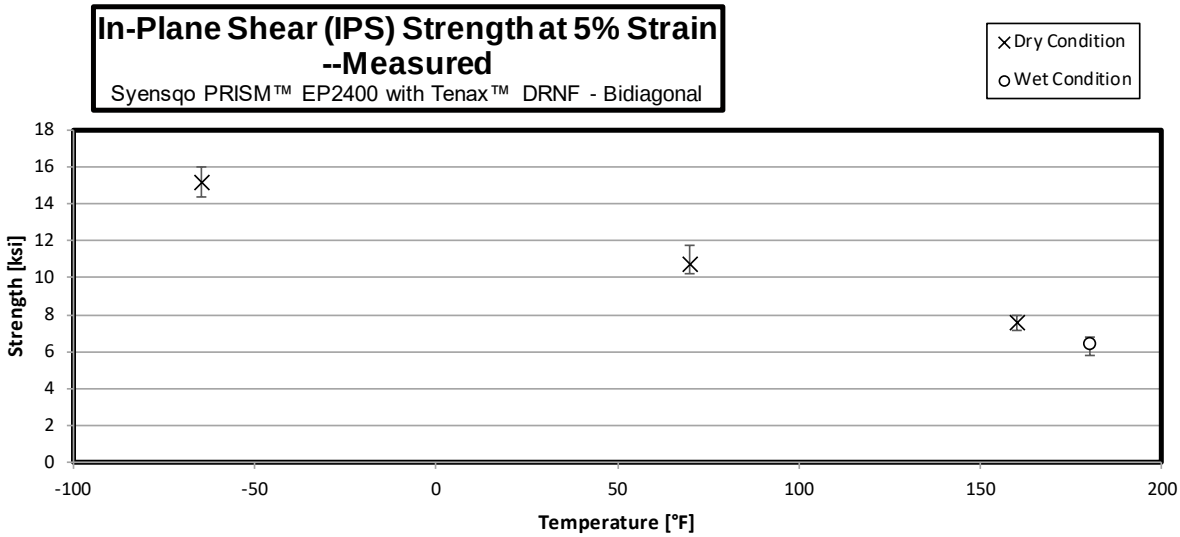
3.1.2.2 Bidiagonal 0° Compression Properties (BD-0CLC)

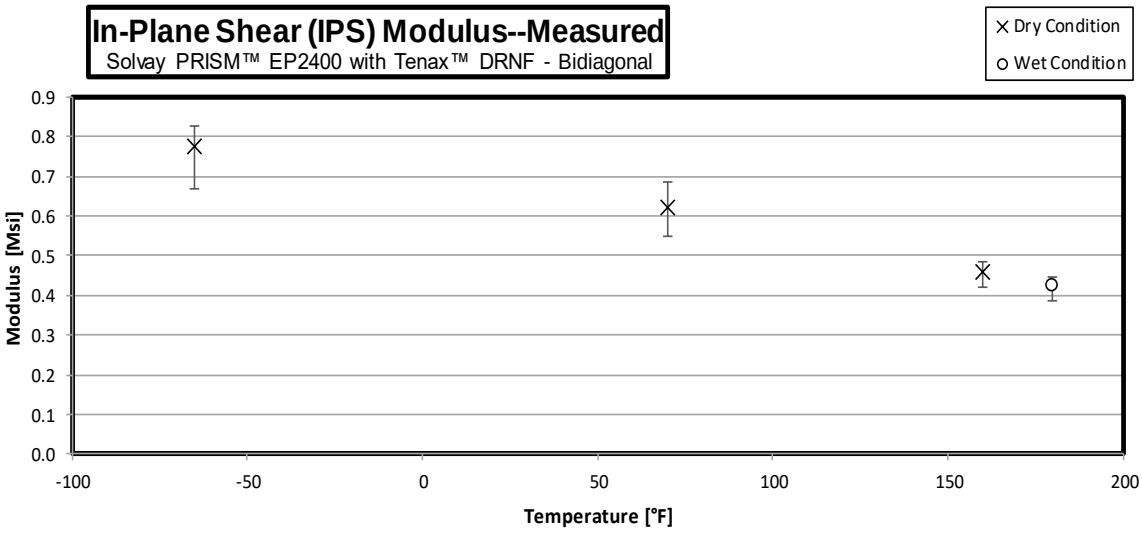




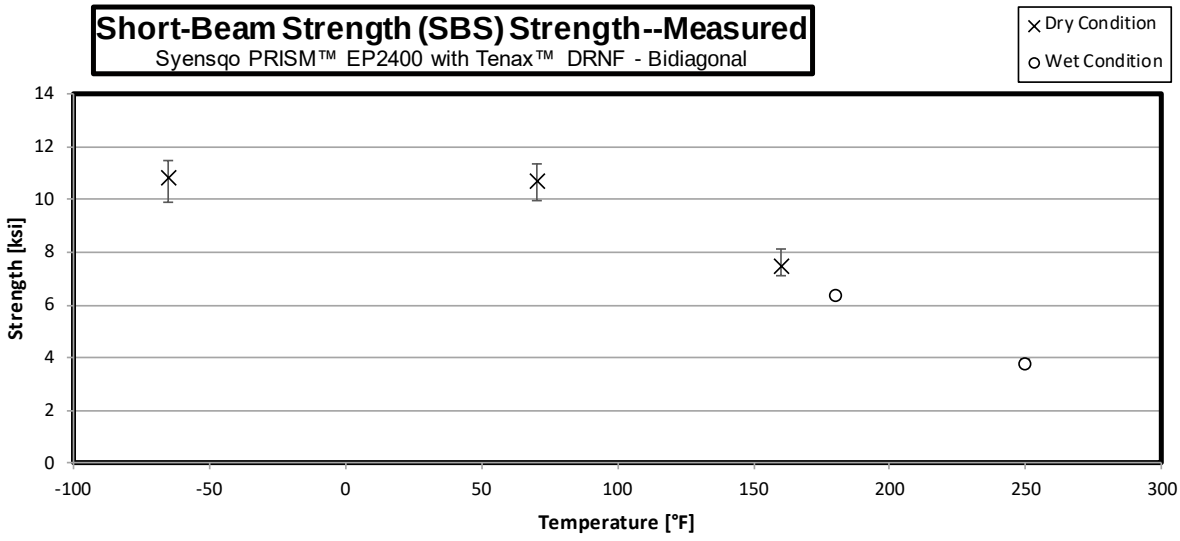
3.1.2.3 Bidiagonal In-Plane Shear Properties (BD-IPS)



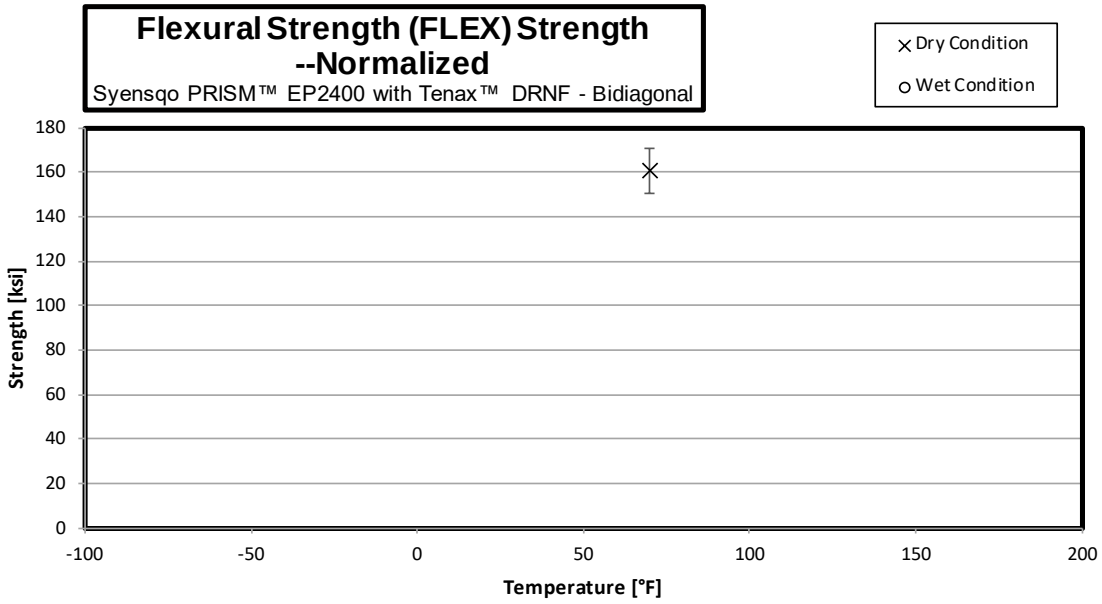



In-Plane Shear (IPS) Modulus--Measured
Solvay PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Dry Condition
Wet Condition
Modulus [Msi]
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-100
-50
0
50
100
150
200
Temperature [°F]

3.1.2.4 Bidiagonal Short Beam Strength Properties (BD-SBS)

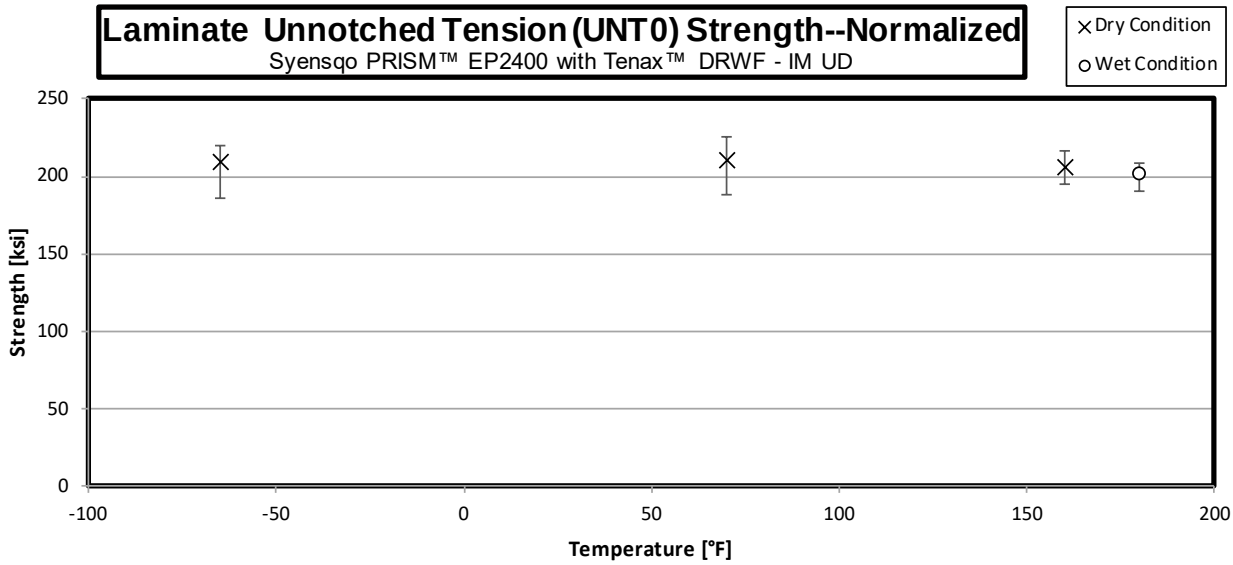


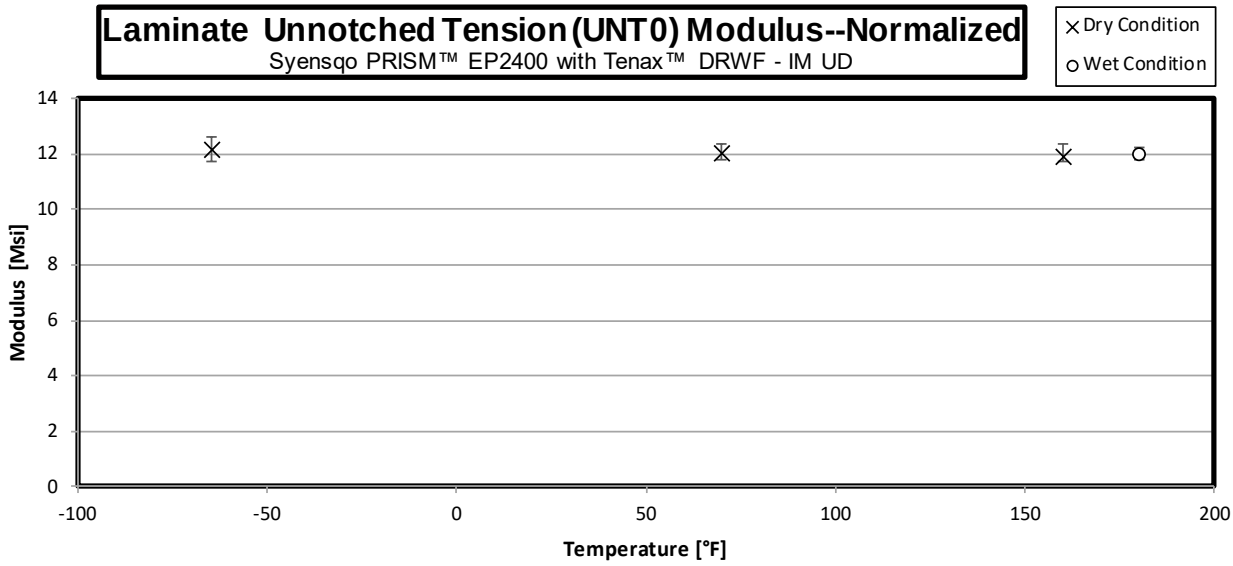
3.1.2.5 Bidiagonal Flexural Strength Properties (BD-Flex)



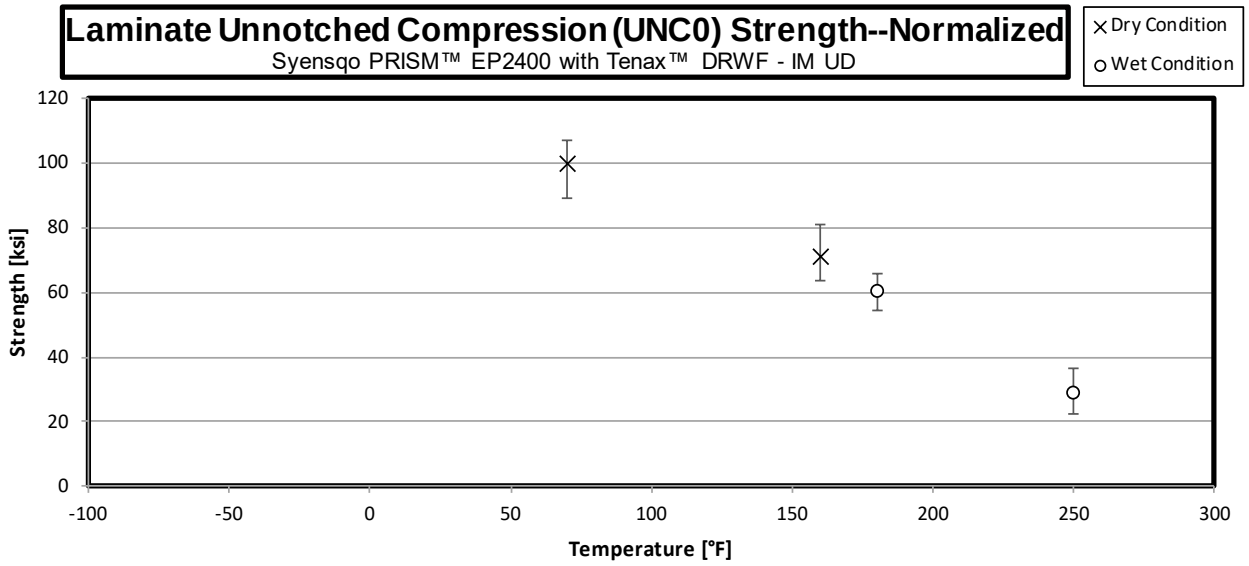
3.1.3 UD-Woven Lamina Test Charts

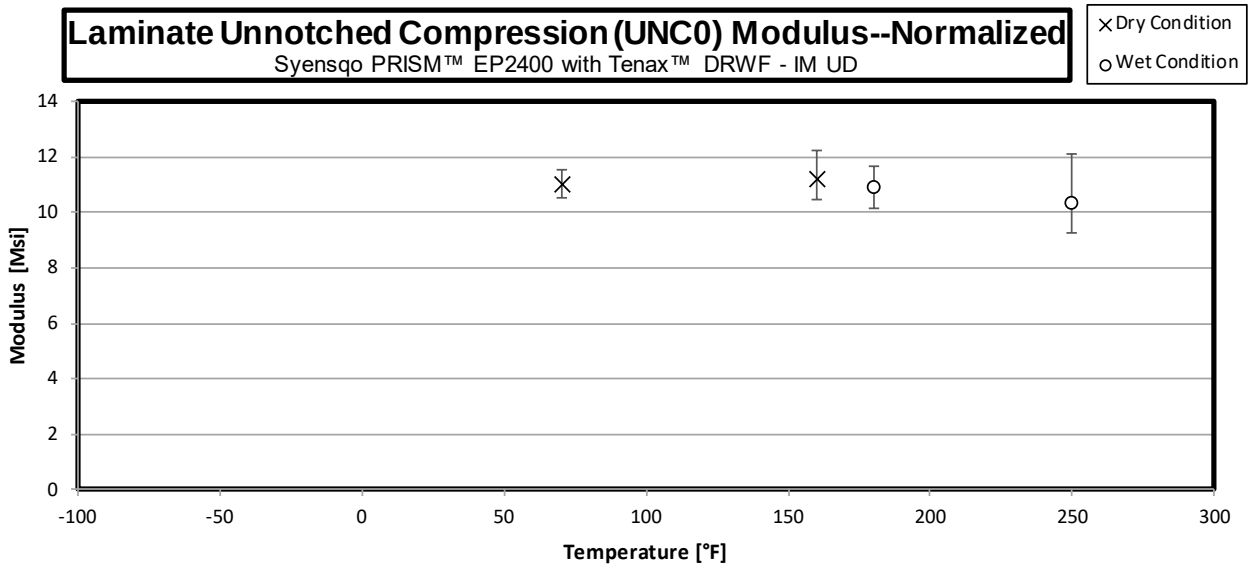
3.1.3.1 UD Woven 0/90° Unnotched Tension Properties (UD-UNT0)



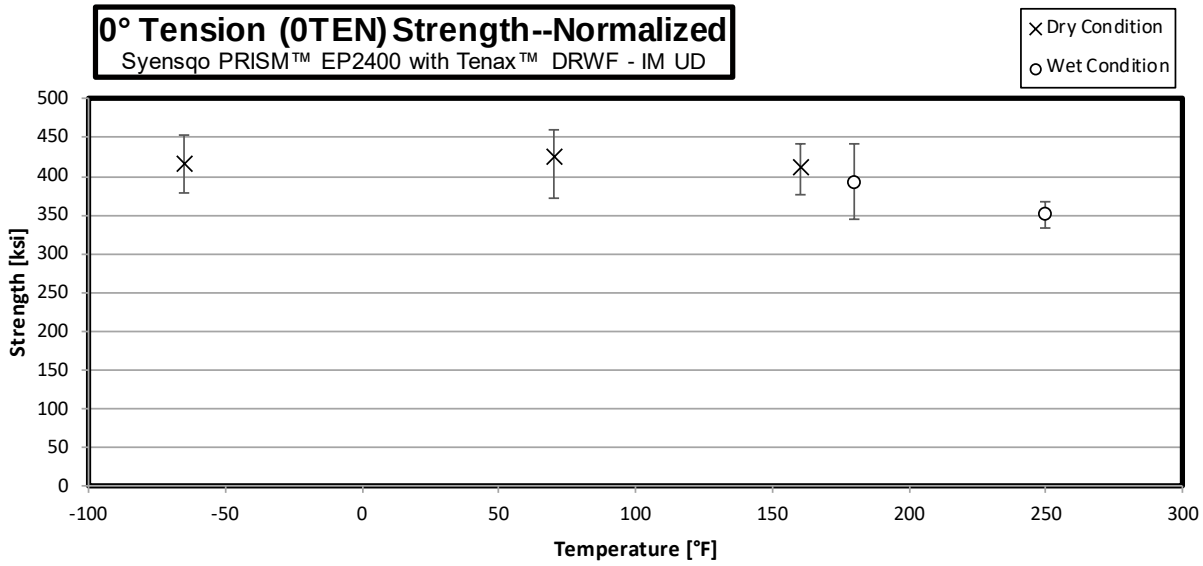


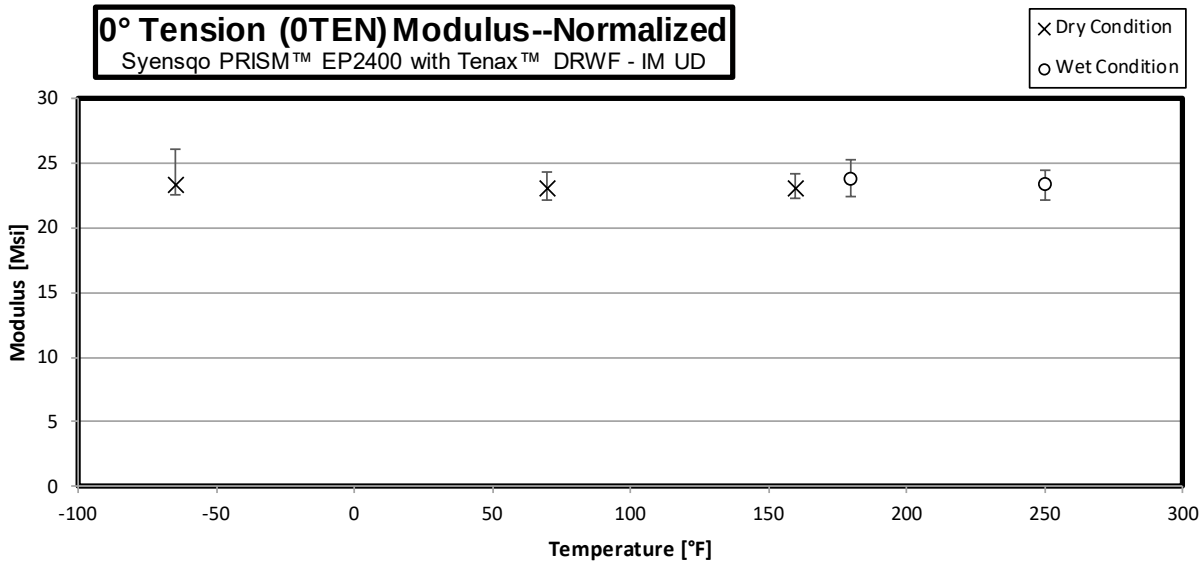
3.1.3.2 UD Woven 0/90° Unnotched Compression Properties (UD-UNC0)



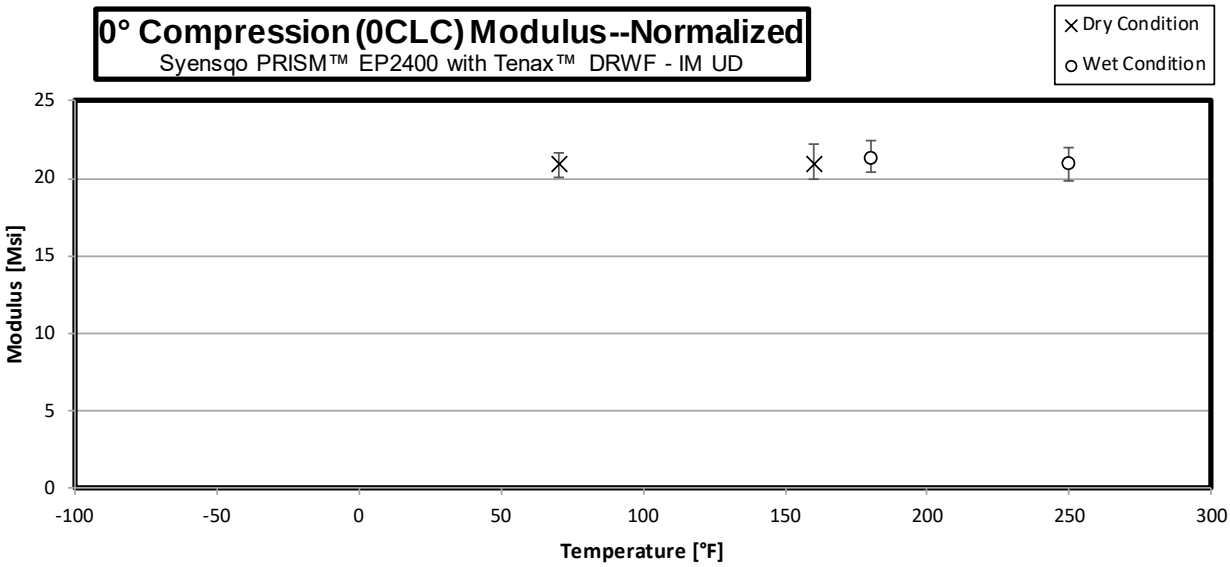


3.1.3.3 UD Woven 0° Tabbed Tension Properties (UD-0TEN)

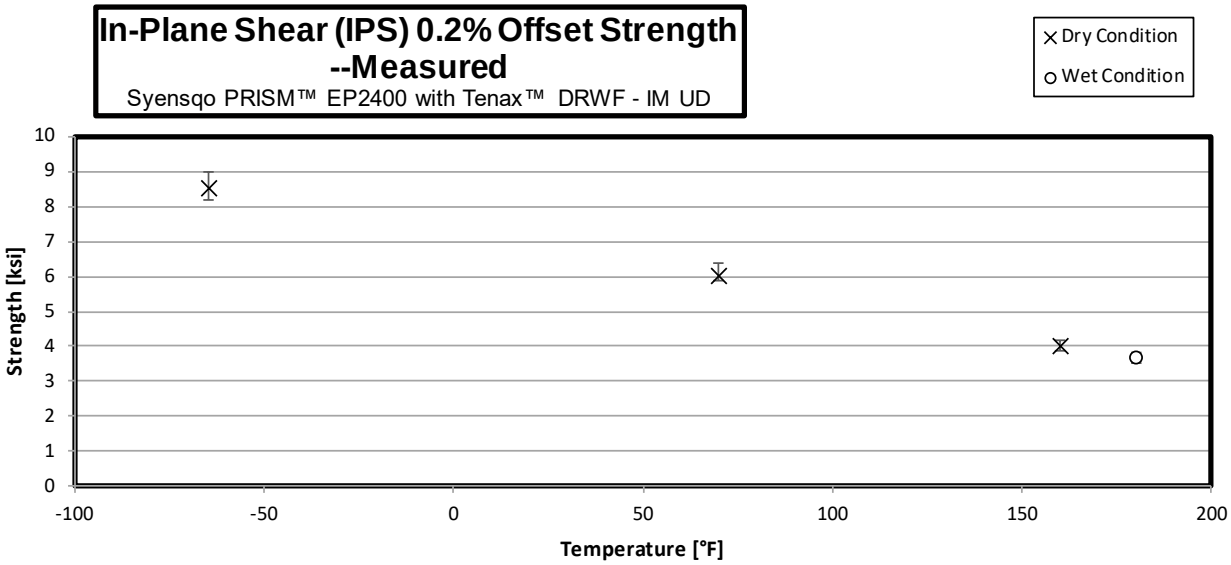


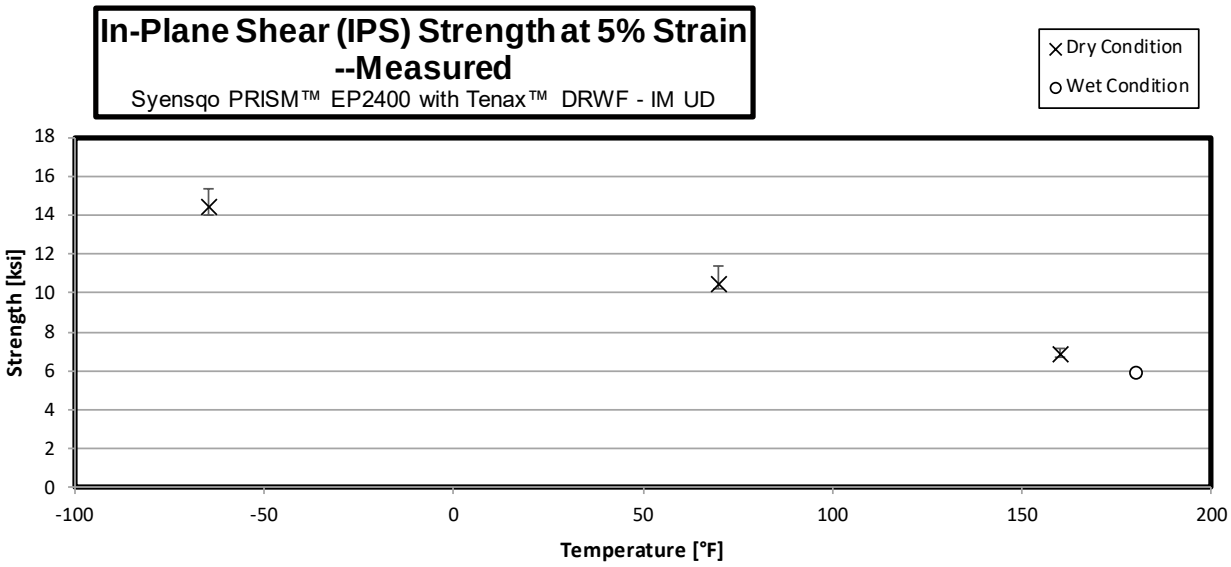


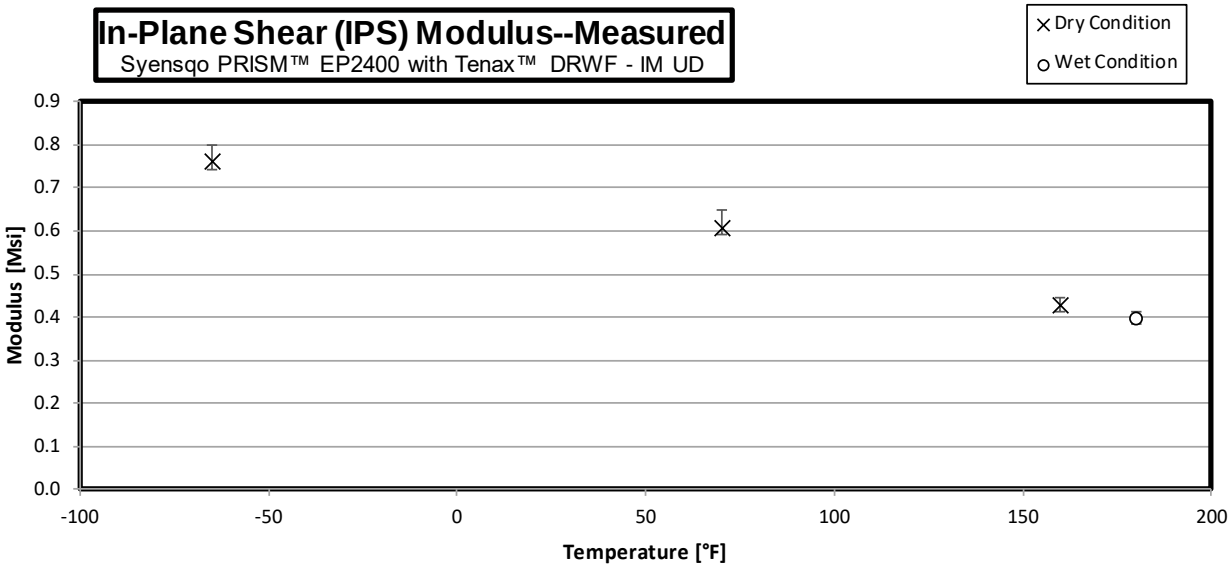
3.1.3.4 UD Woven 0° Compression Modulus Only Properties (UD-0CLC)



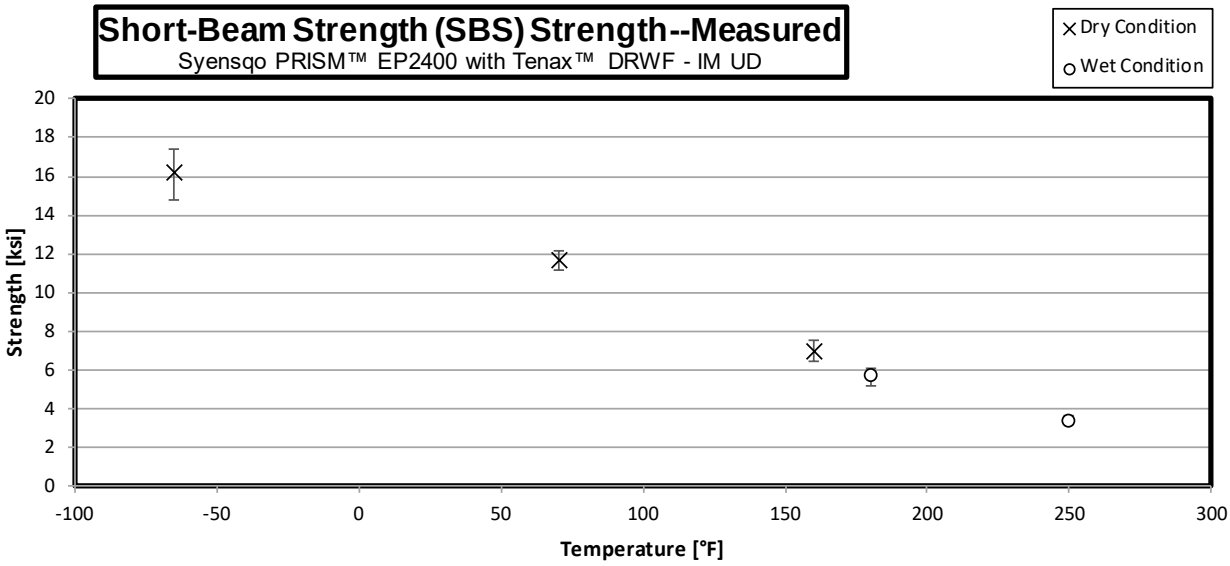
3.1.3.5 UD Woven In-Plane Shear Properties (UD-IPS)



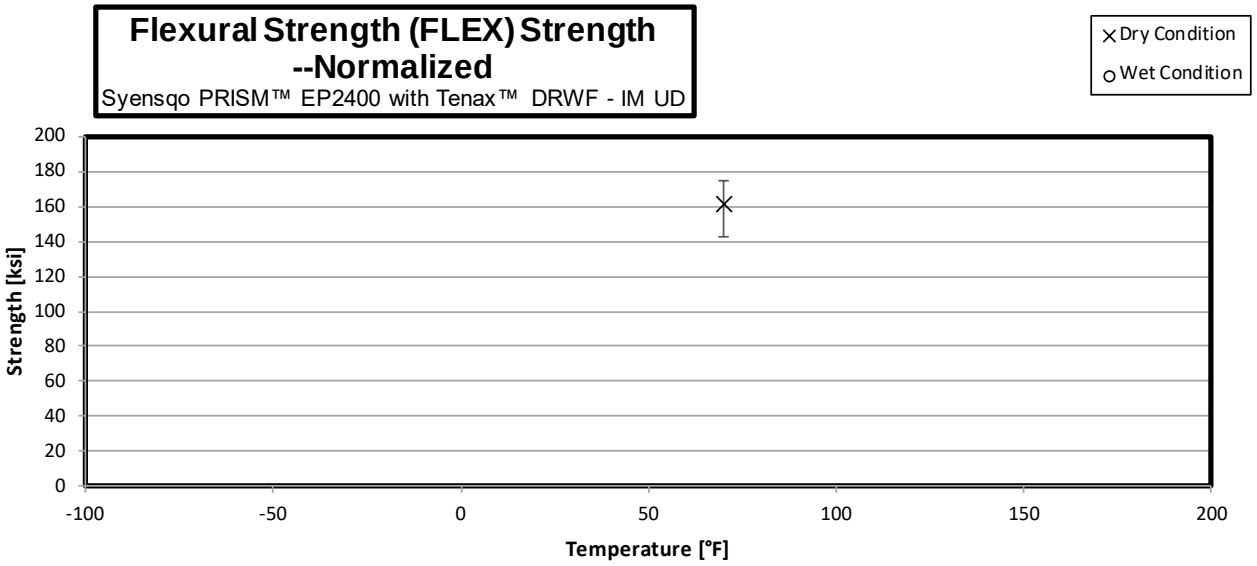



In-Plane Shear (IPS) Modulus--Measured
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Dry Condition
Wet Condition
Modulus [Msi]
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
-100
-50
0
50
100
150
200
Temperature [°F]

3.1.3.6 UD Woven Short Beam Strength Properties (UD-SBS)

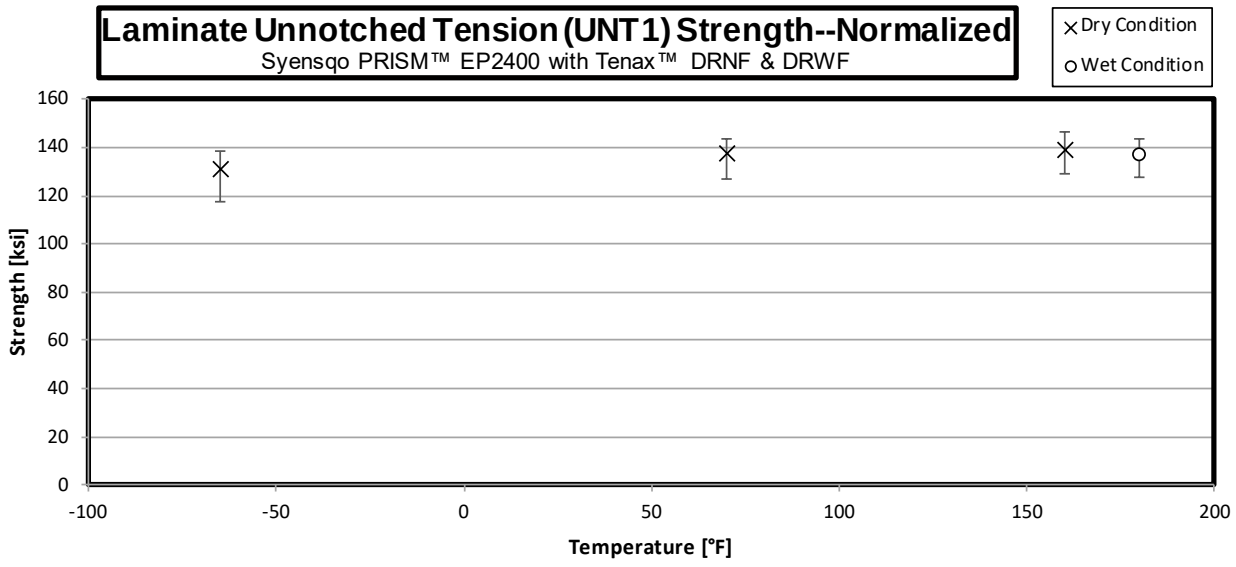


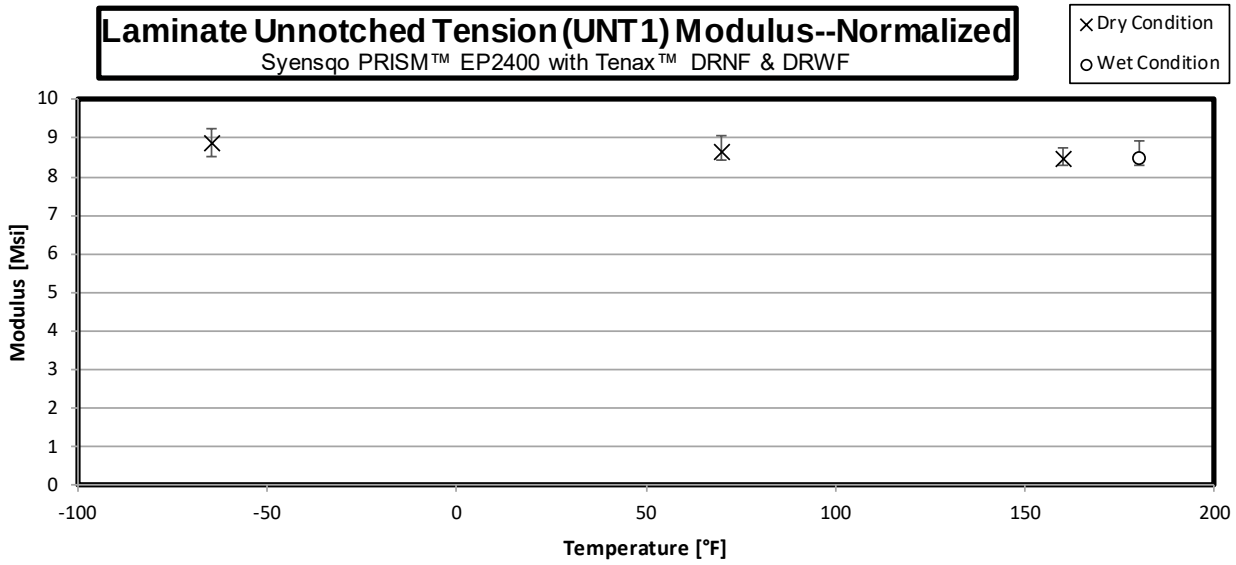
3.1.3.7 UD Woven Flexural Strength Properties (UD-FLEX)



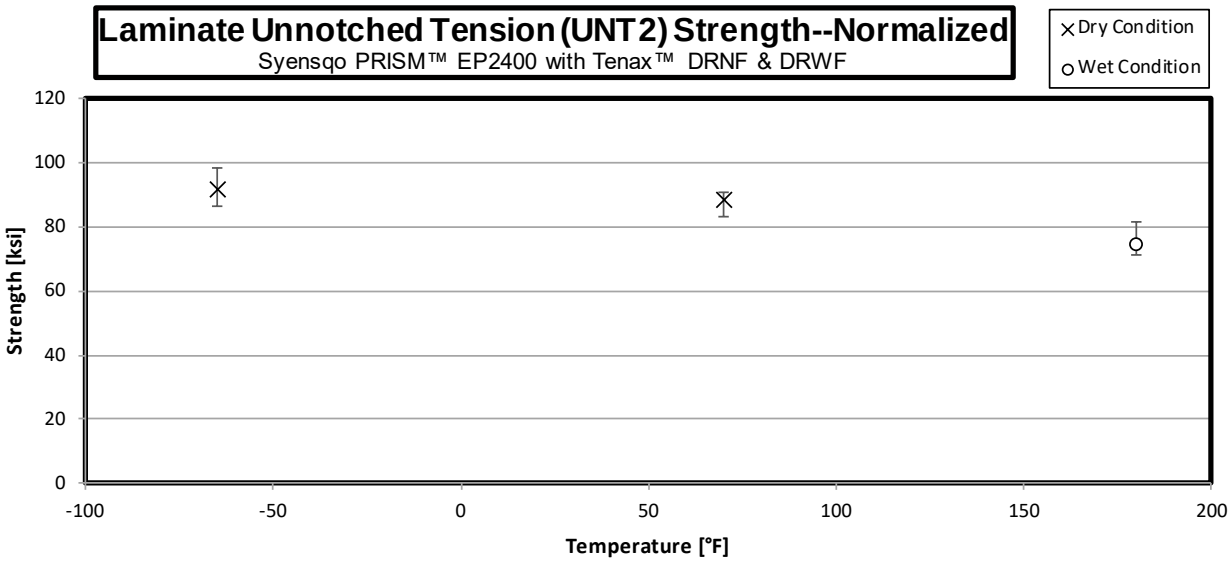
3.2 Individual Laminate Test Charts

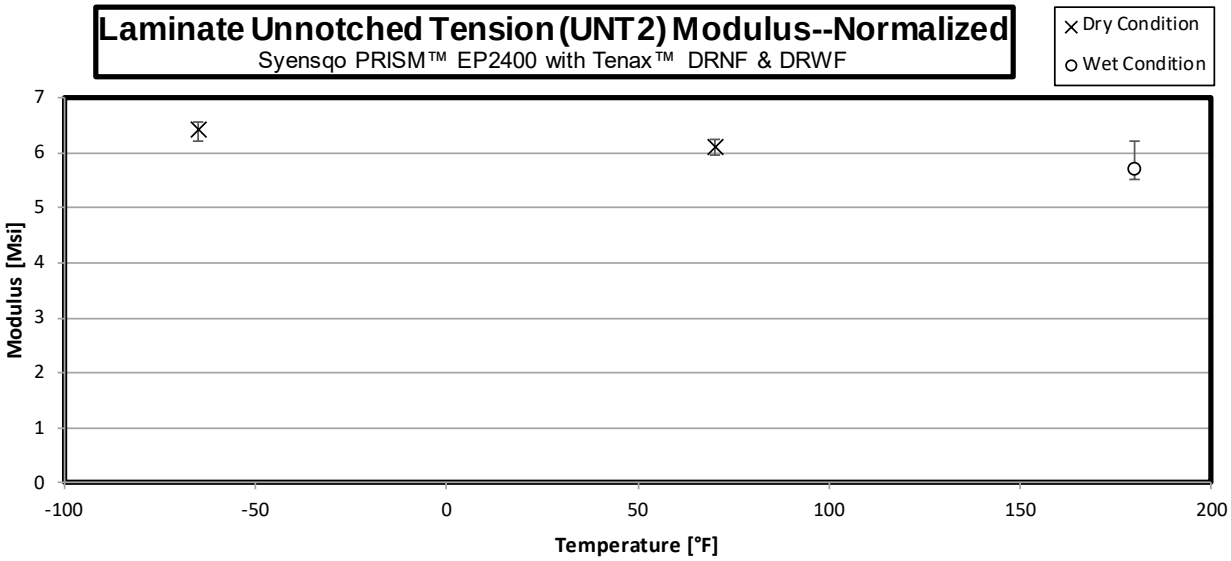
3.2.1 Unnotched Tension 1 Properties (UNT1)



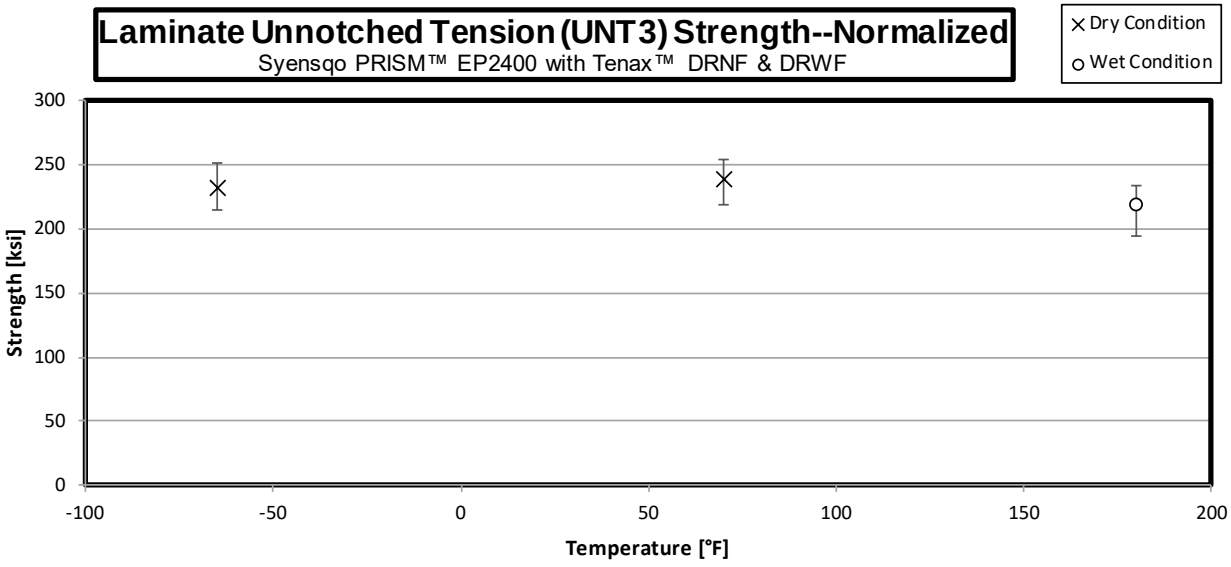


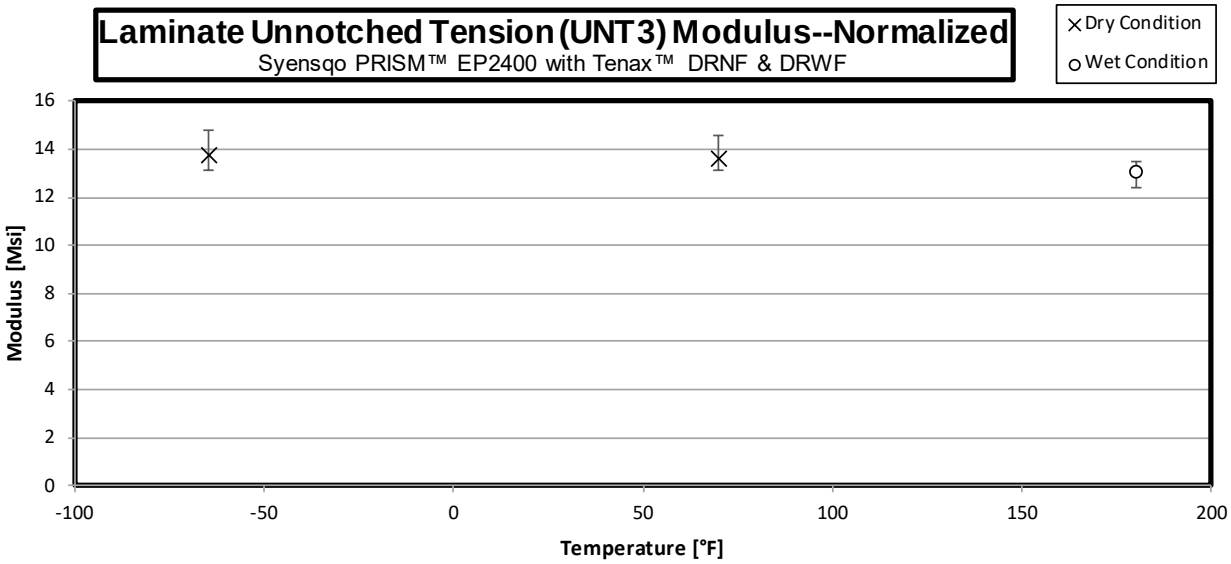
3.2.2 Unnotched Tension 2 Properties (UNT2)



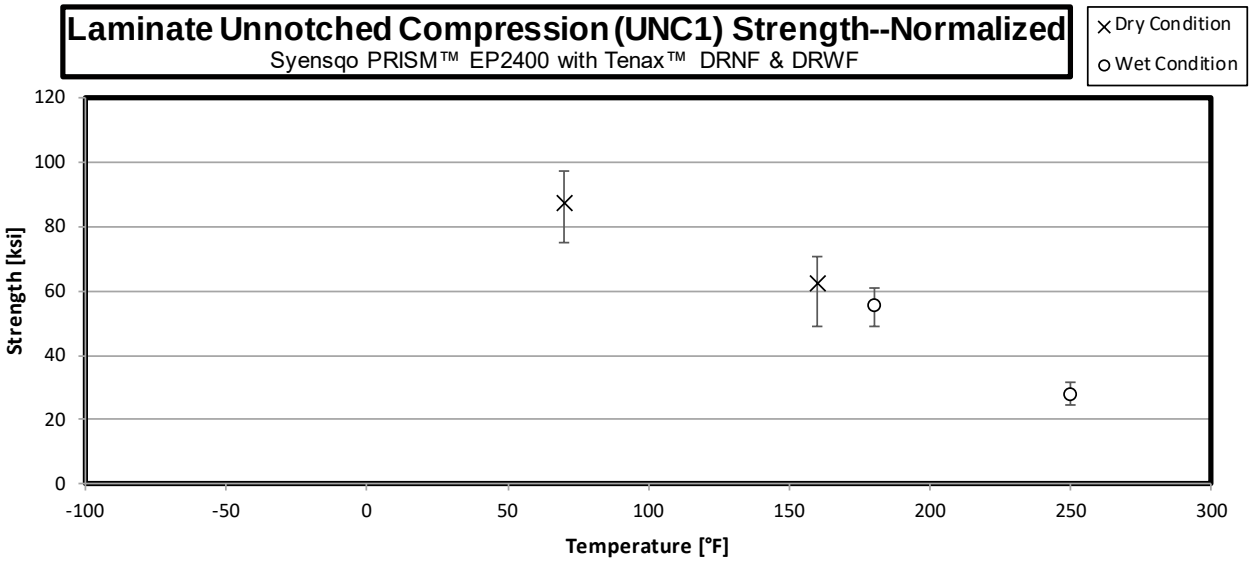


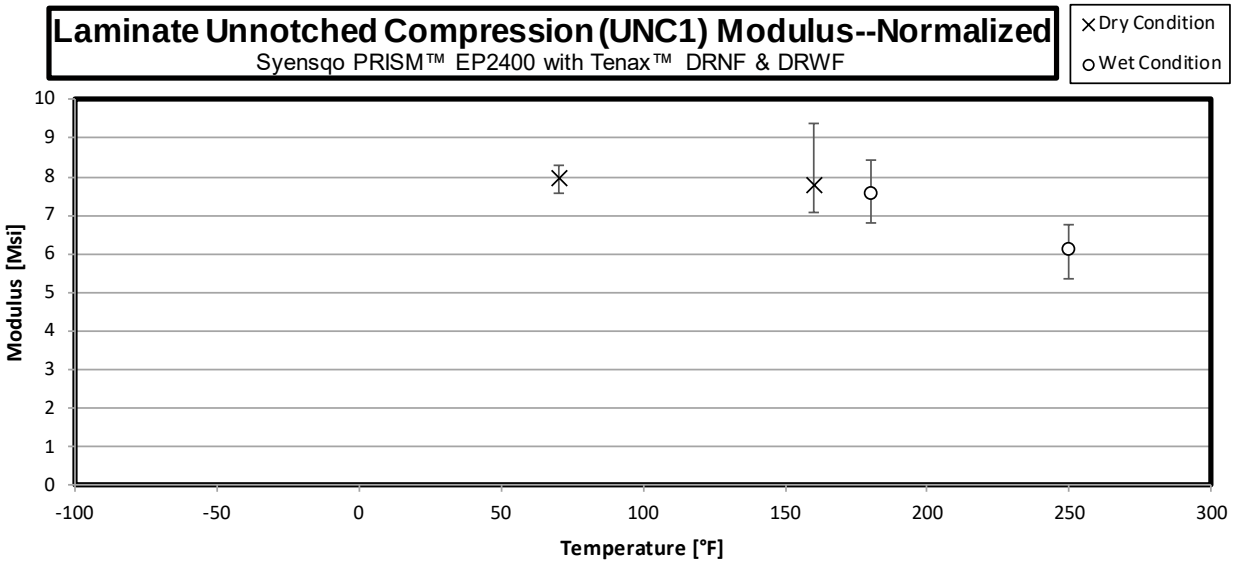
3.2.3 Unnotched Tension 3 Properties (UNT3)



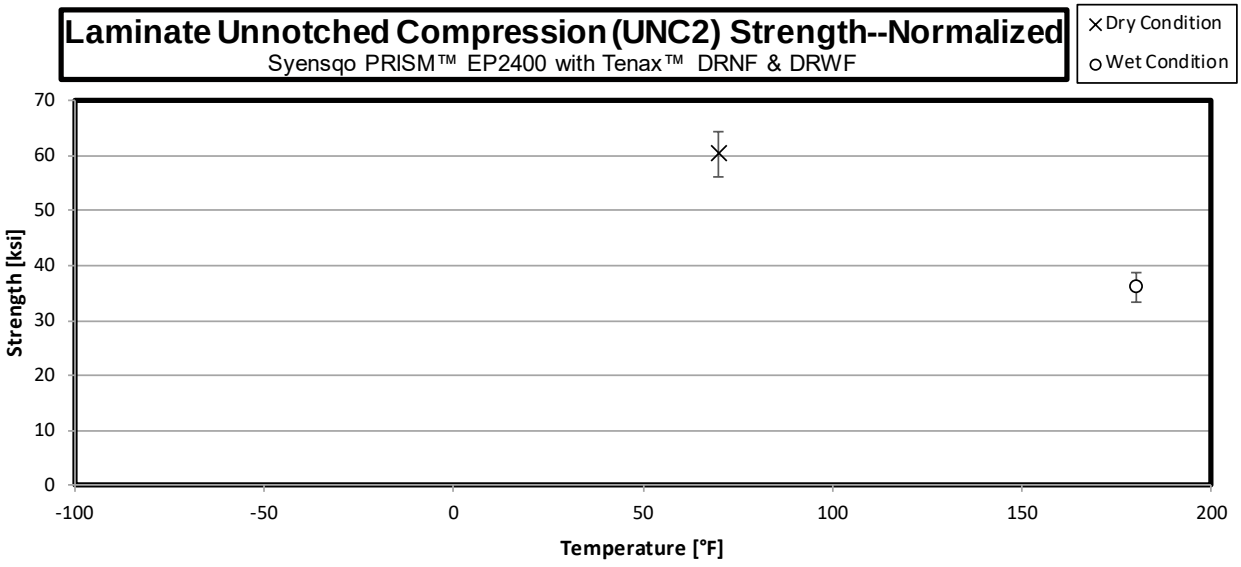


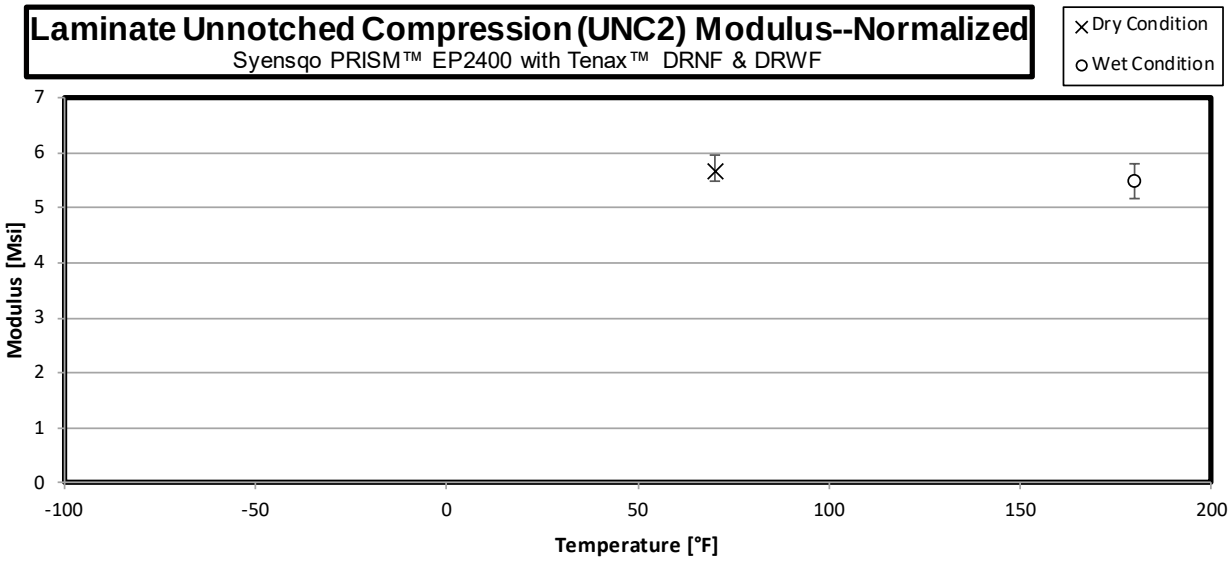
3.2.4 Unnotched Compression 1 Properties (UNC1)



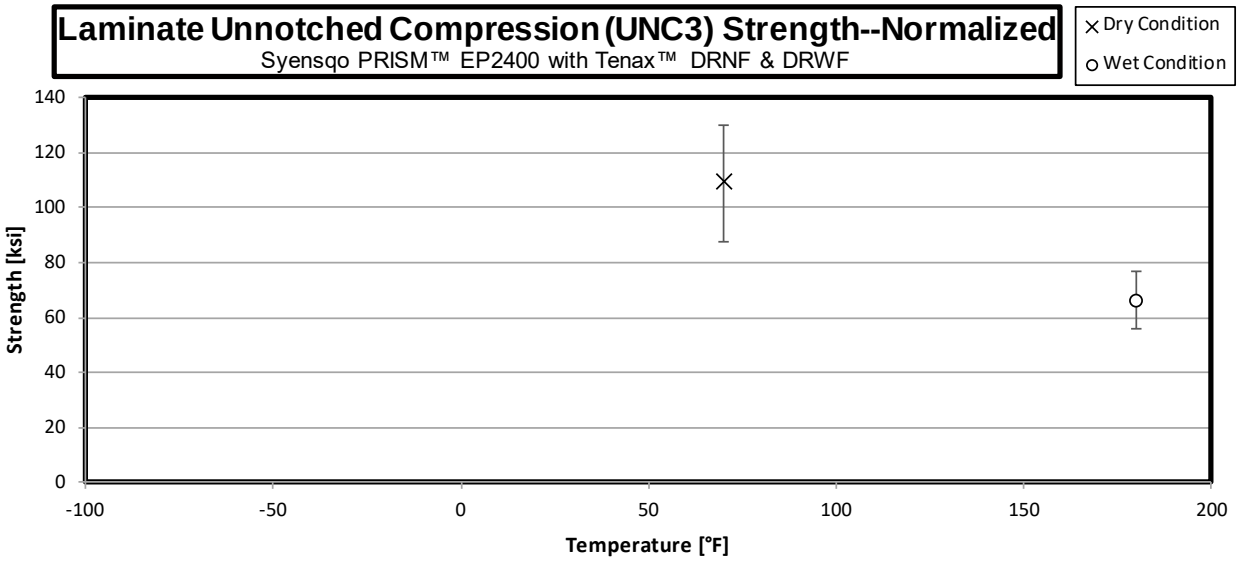


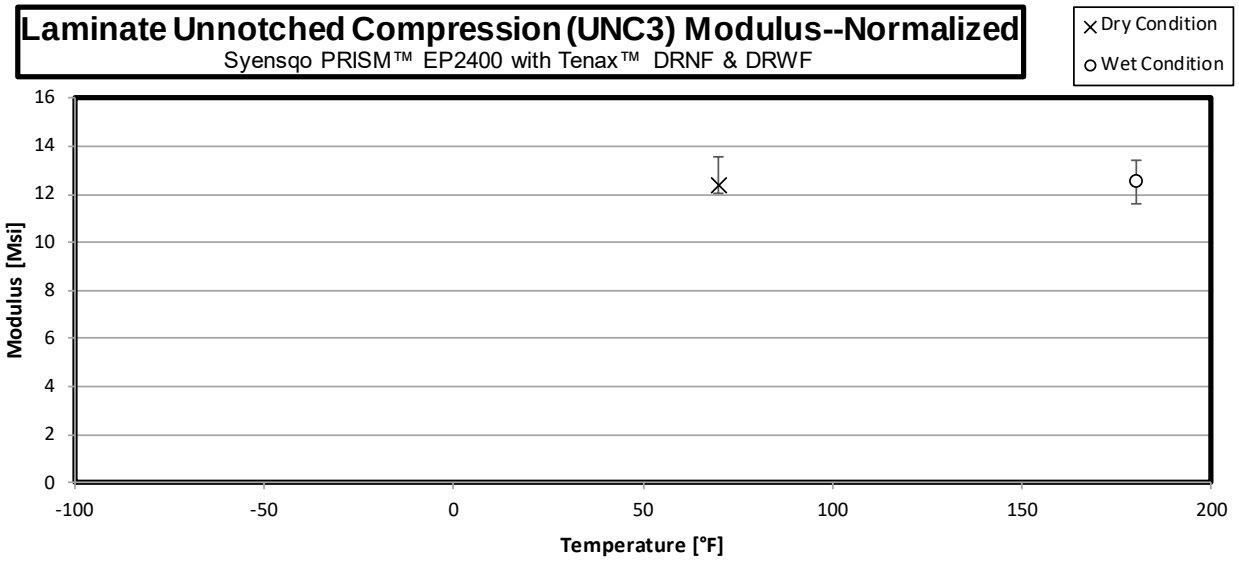
3.2.5 Unnotched Compression 2 Properties (UNC2)



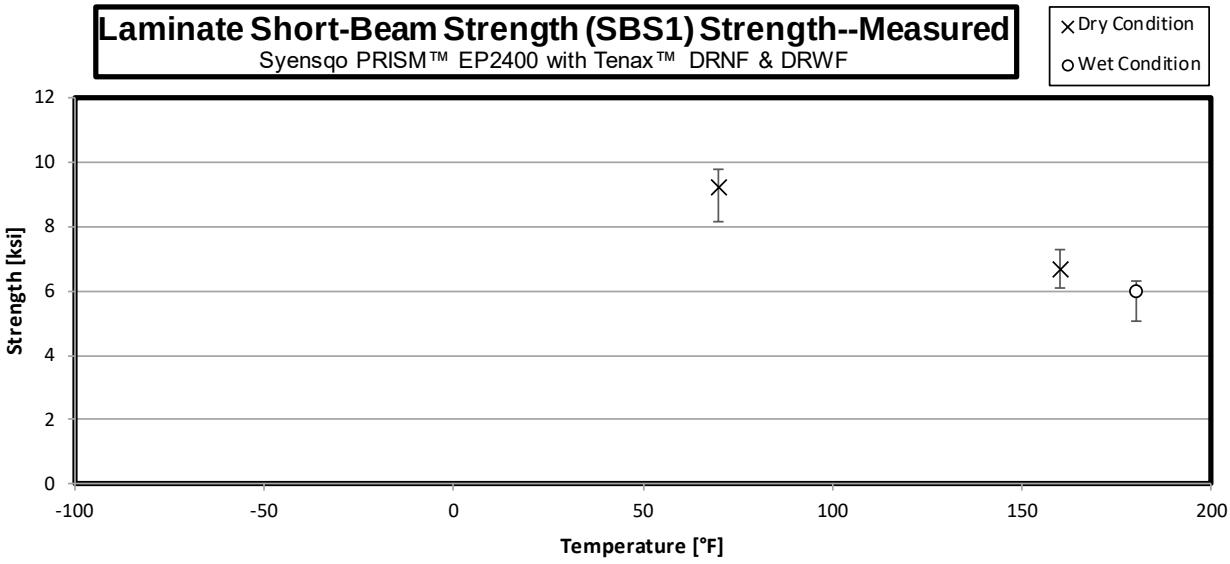


3.2.6 Unnotched Compression 3 Properties (UNC3)

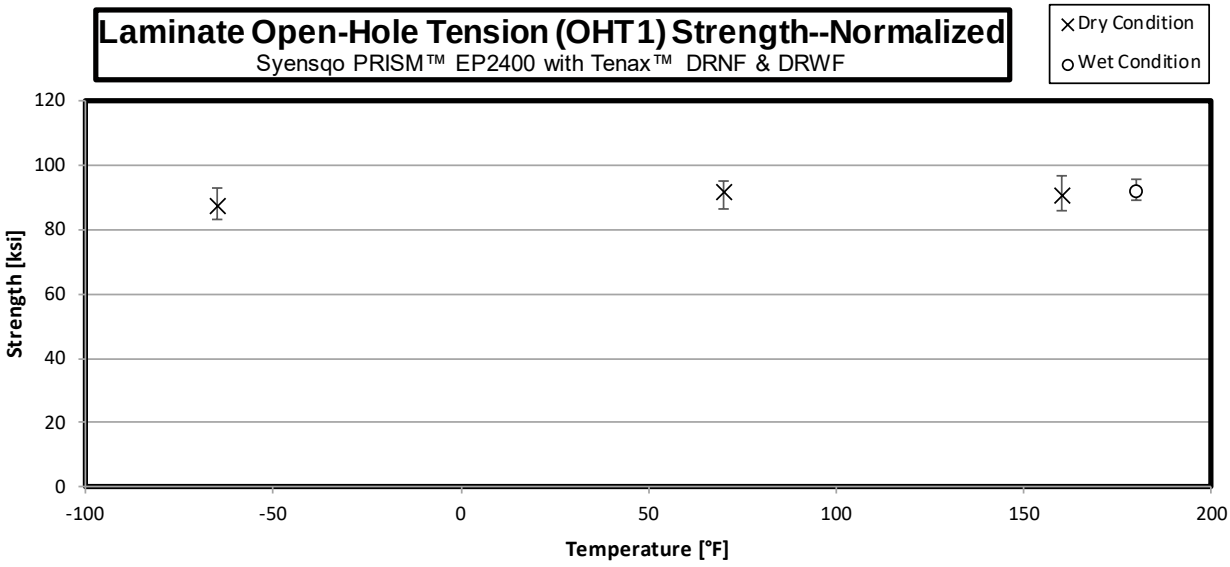




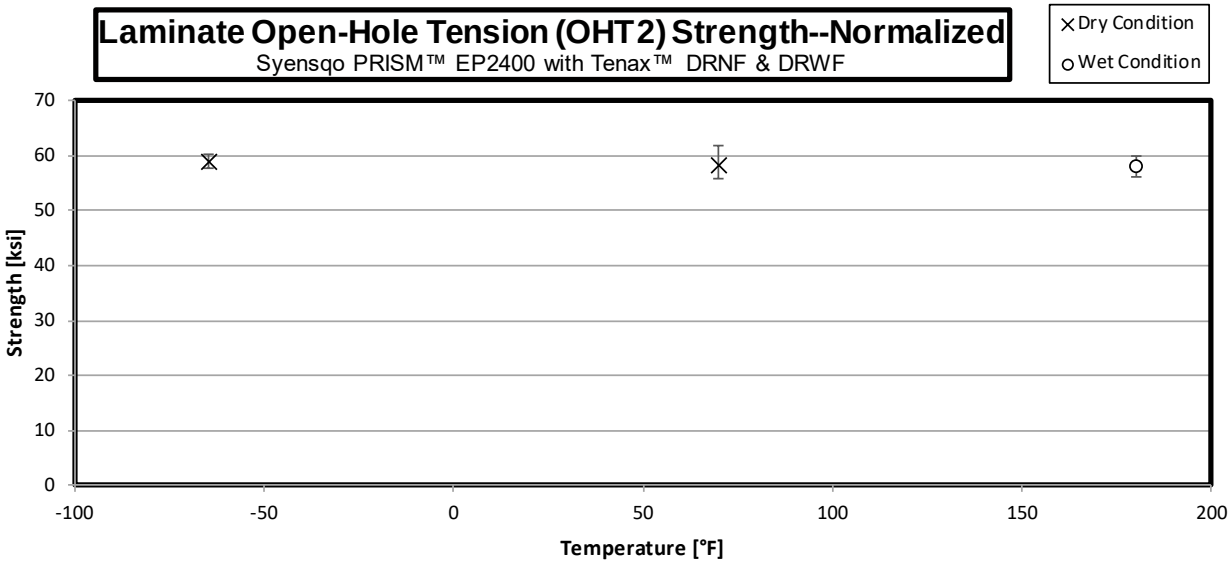
3.2.7 Laminate Short-Beam Strength Properties (SBS1)



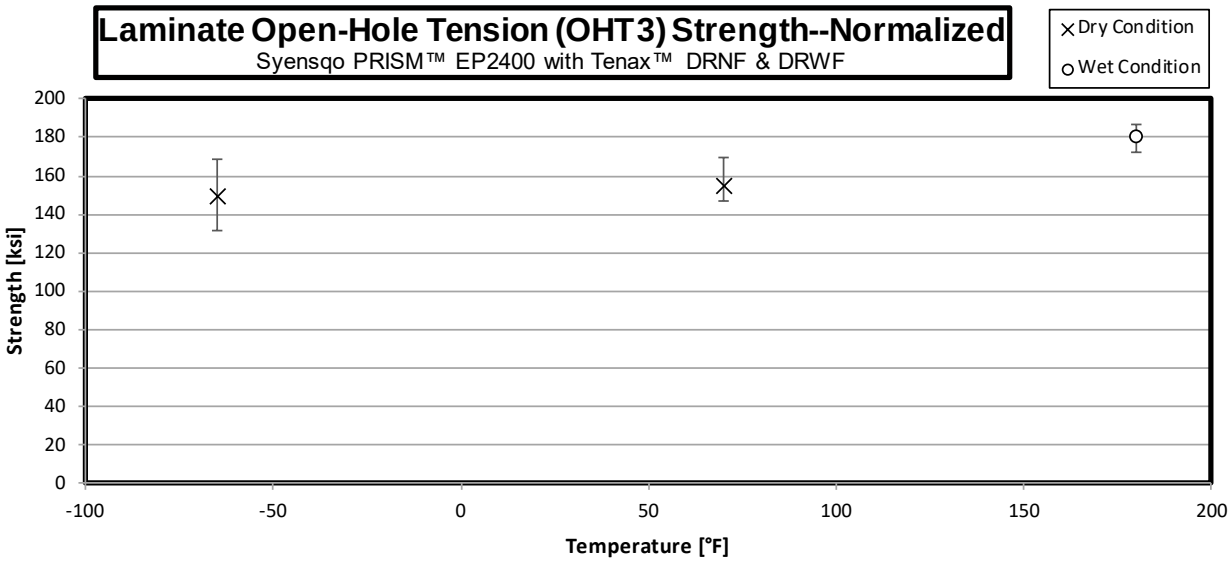
3.2.8 Open-Hole Tension 1 Properties (OHT1)



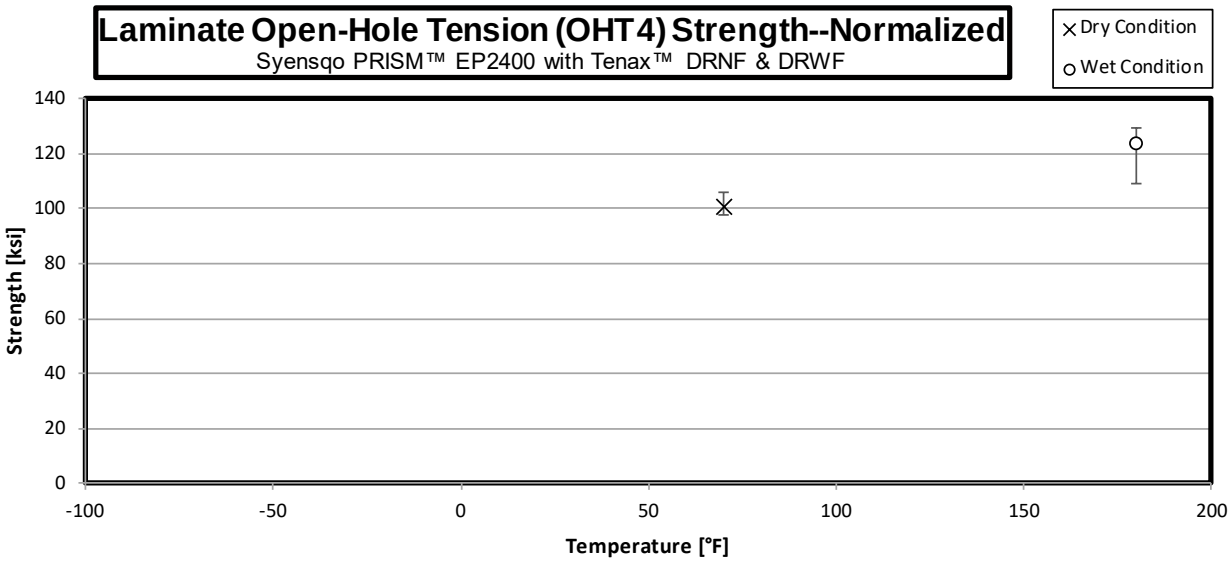
3.2.9 Open-Hole Tension 2 Properties (OHT2)



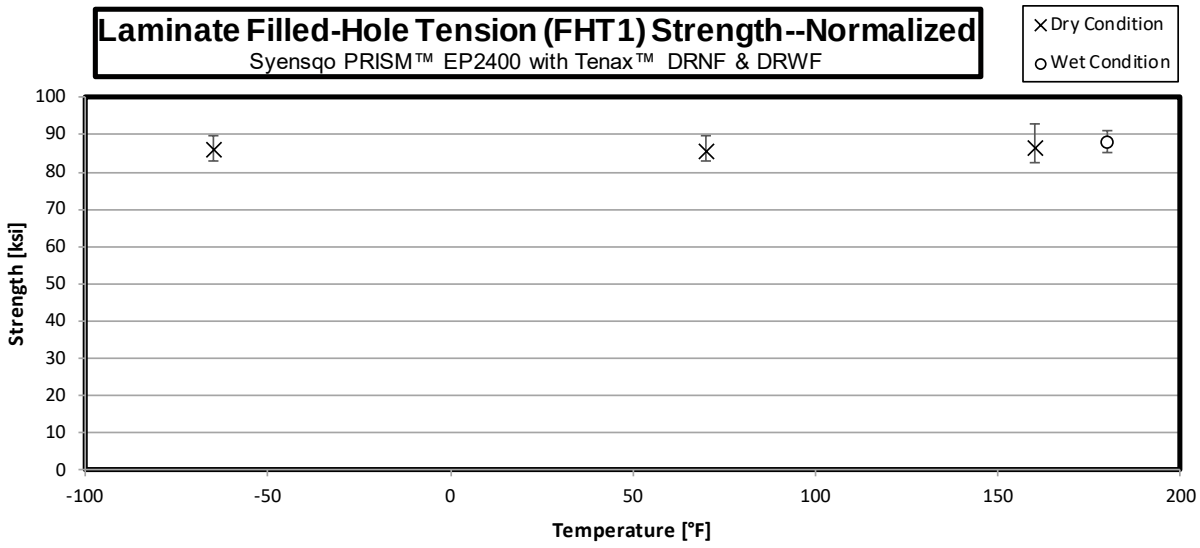
3.2.10 Open-Hole Tension 3 Properties (OHT3)



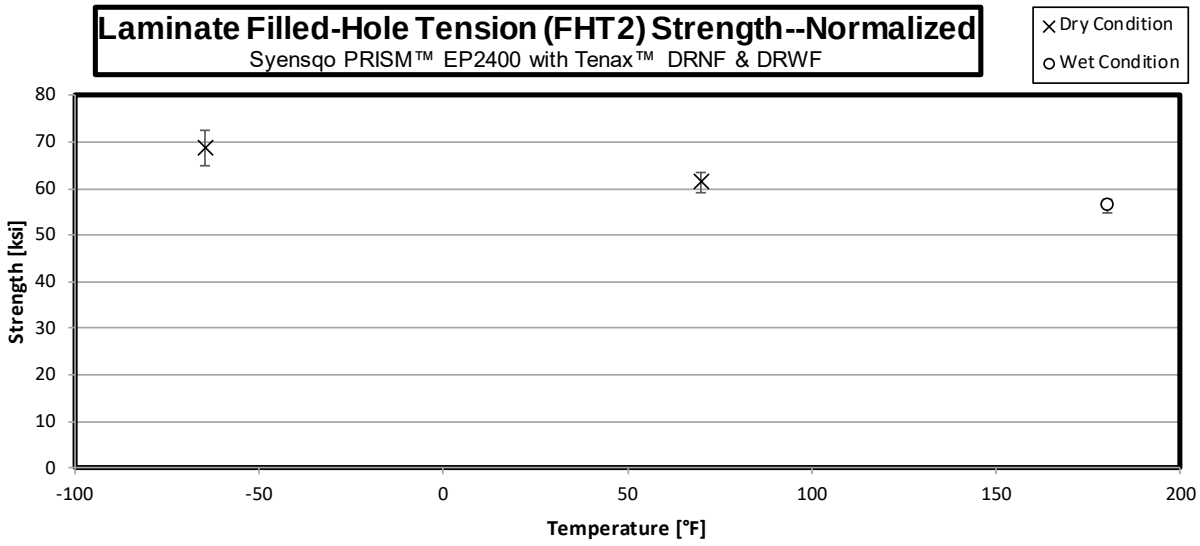
3.2.11 Open-Hole Tension 4 Properties (OHT4)



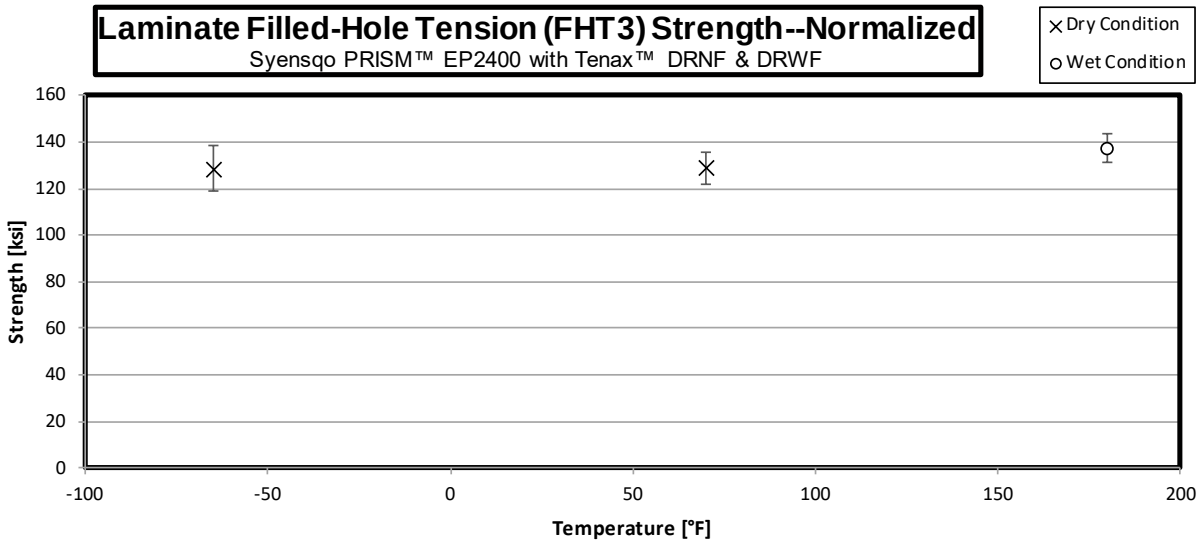
3.2.12 Filled-Hole Tension 1 Properties (FHT1)



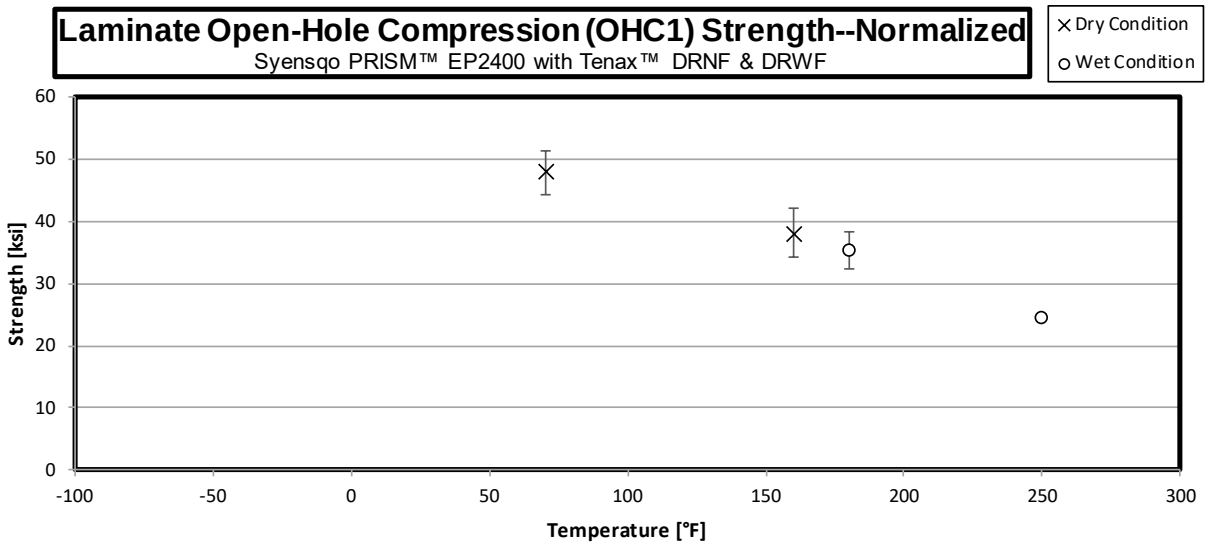
3.2.13 Filled-Hole Tension 2 Properties (FHT2)



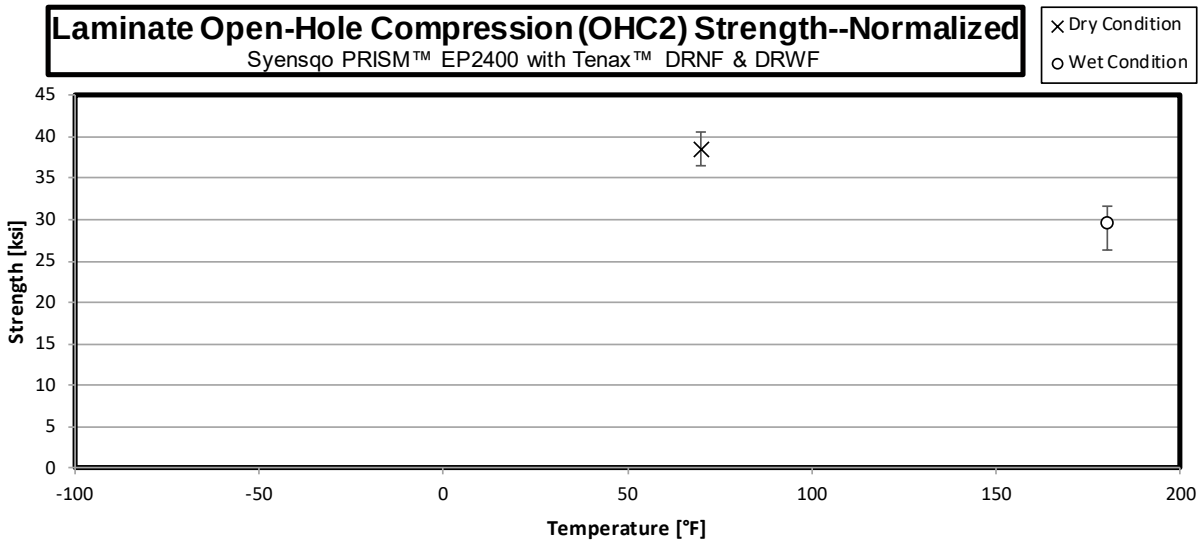
3.2.14 Filled-Hole Tension 3 Properties (FHT3)



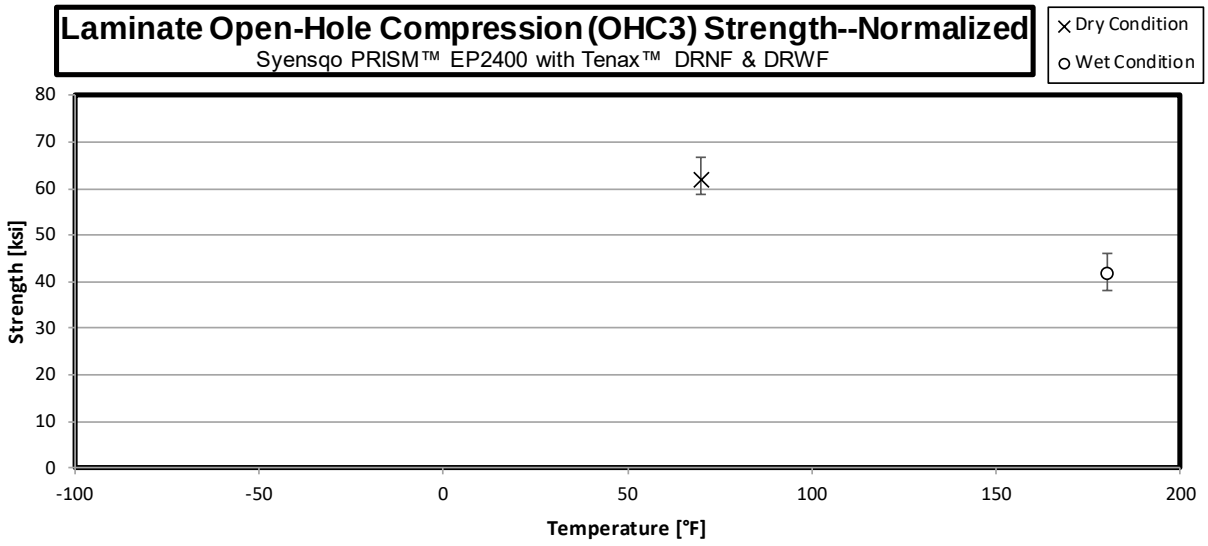
3.2.15 Open-Hole Compression 1 Properties (OHC1)



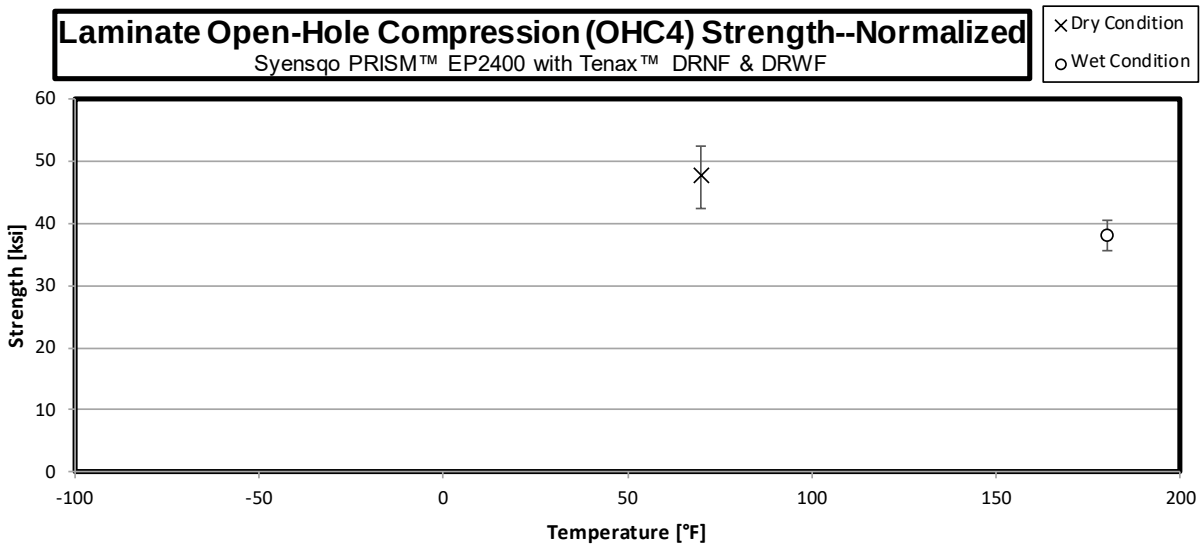
3.2.16 Open-Hole Compression 2 Properties (OHC2)



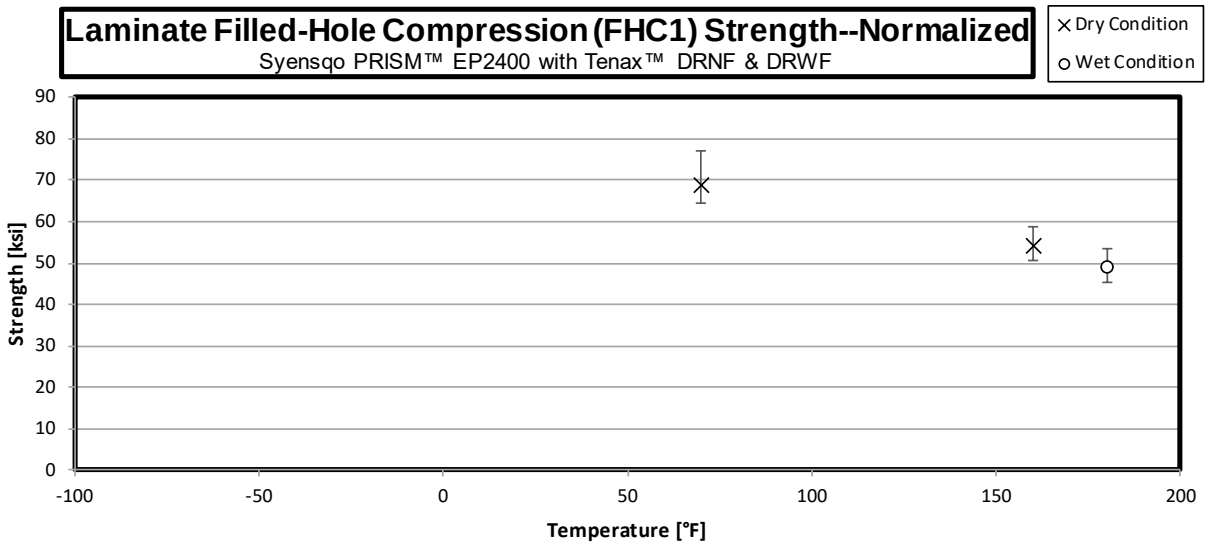
3.2.17 Open-Hole Compression 3 Properties (OHC3)



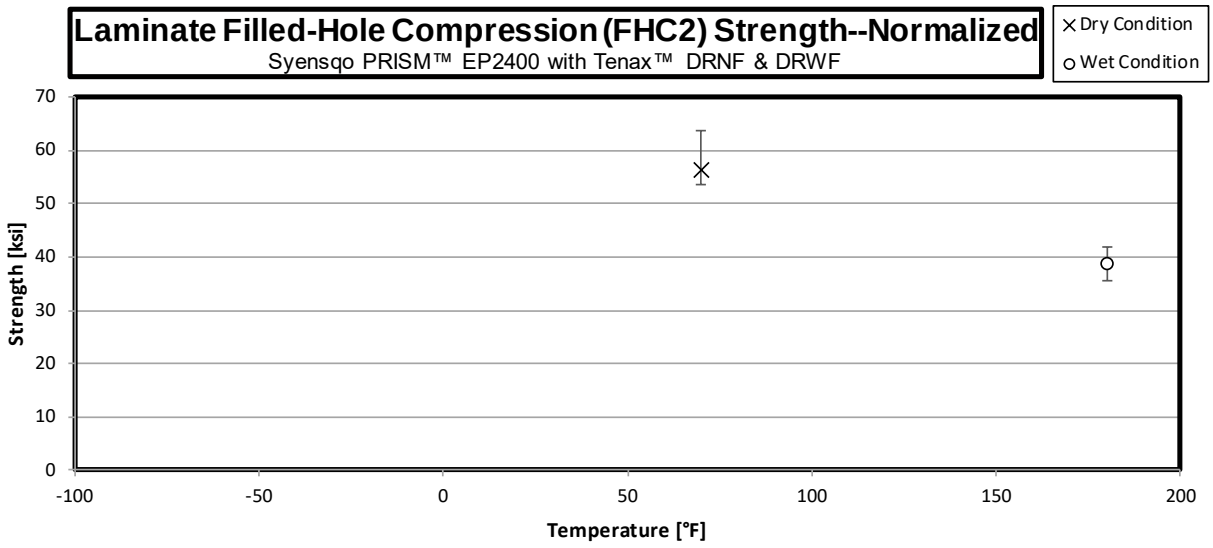
3.2.18 Open-Hole Compression 4 Properties (OHC4)



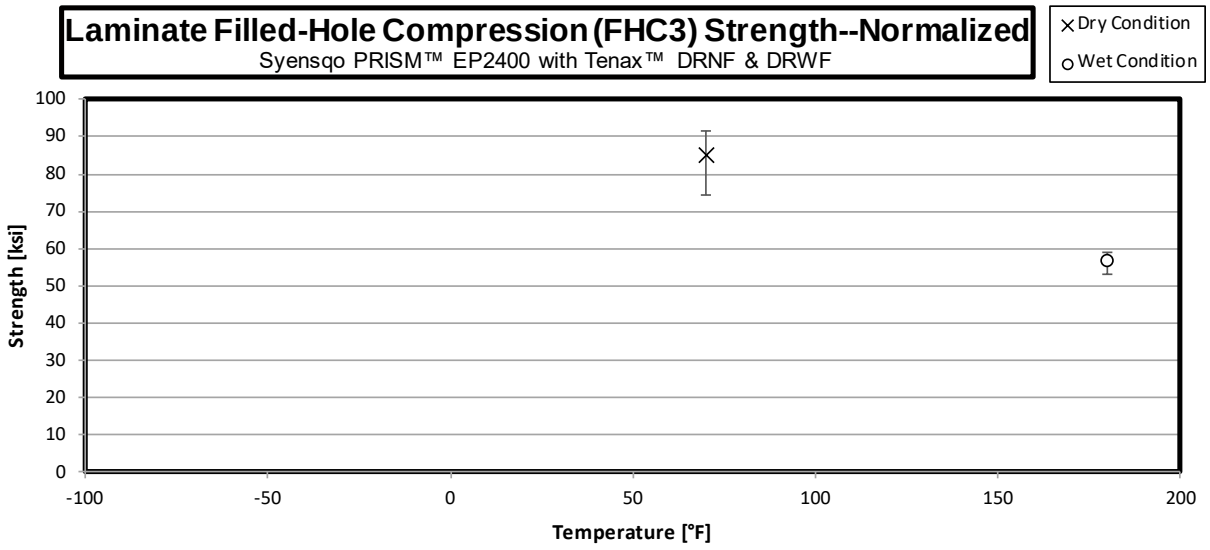
3.2.19 Filled-Hole Compression 1 Properties (FHC1)



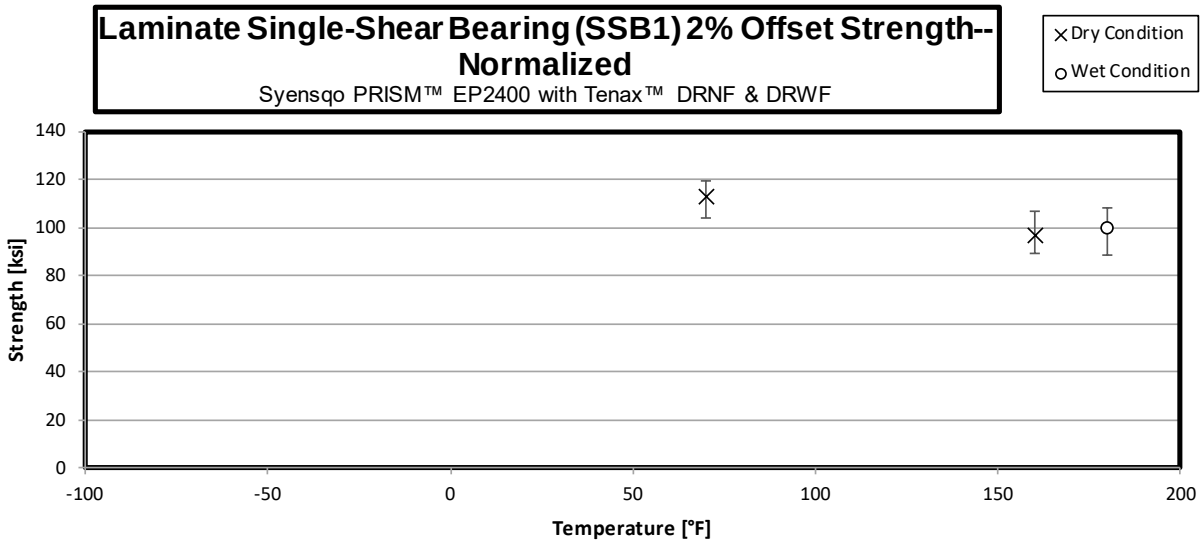
3.2.20 Filled-Hole Compression 2 Properties (FHC2)

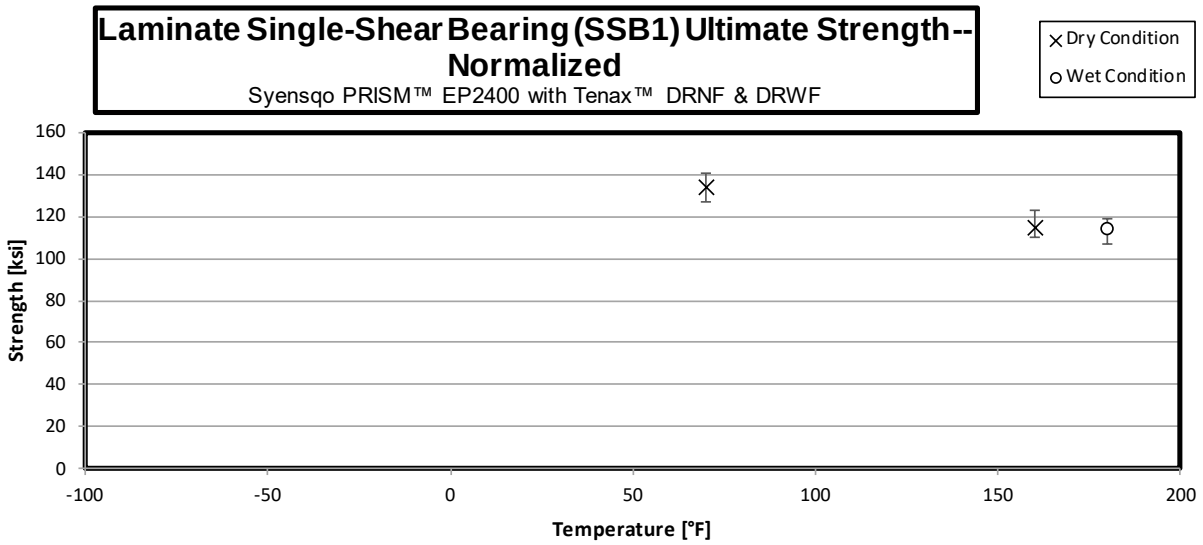


3.2.21 Filled-Hole Compression 3 Properties (FHC3)

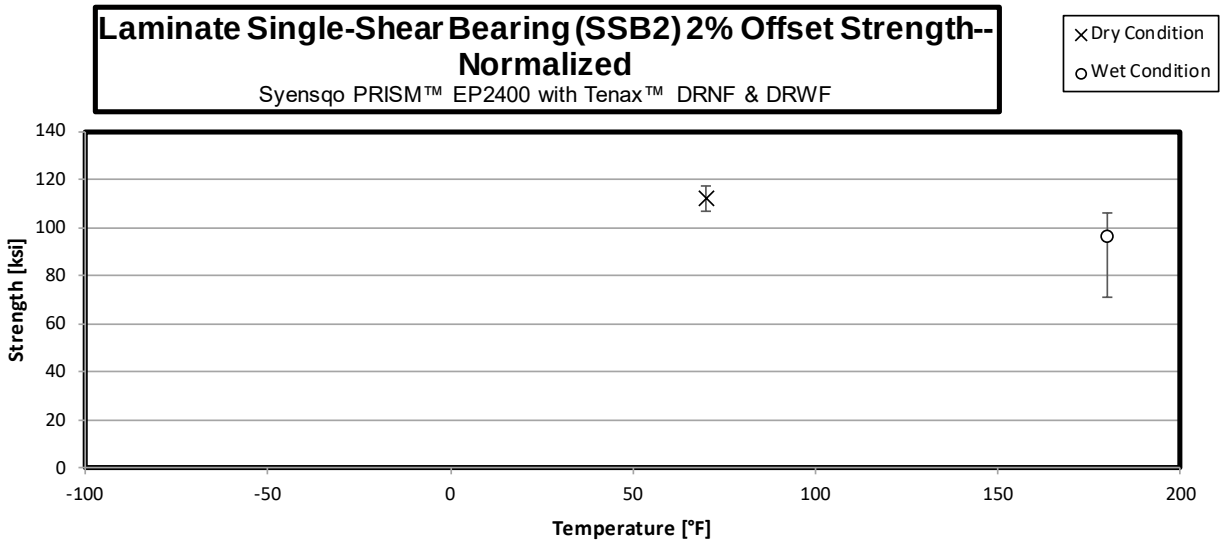


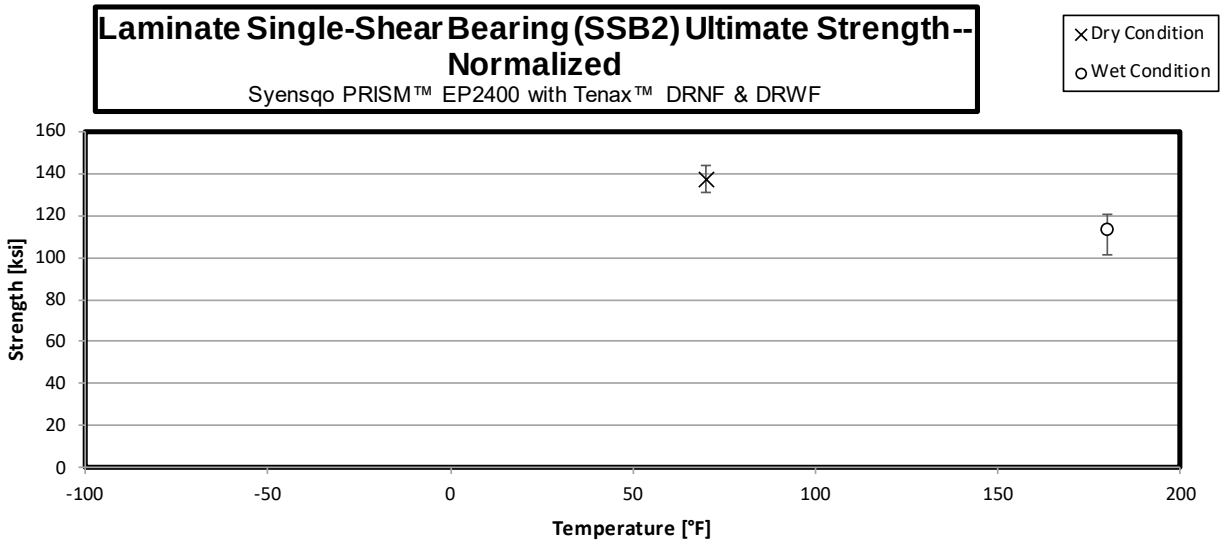
3.2.22 Single-Shear Bearing 1 Properties (SSB1)



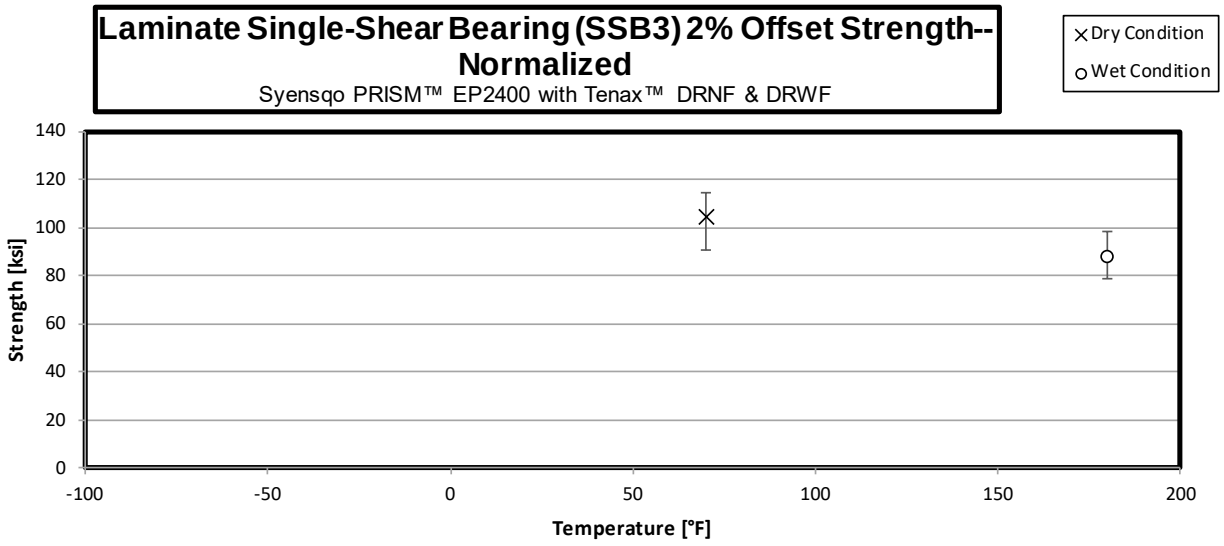


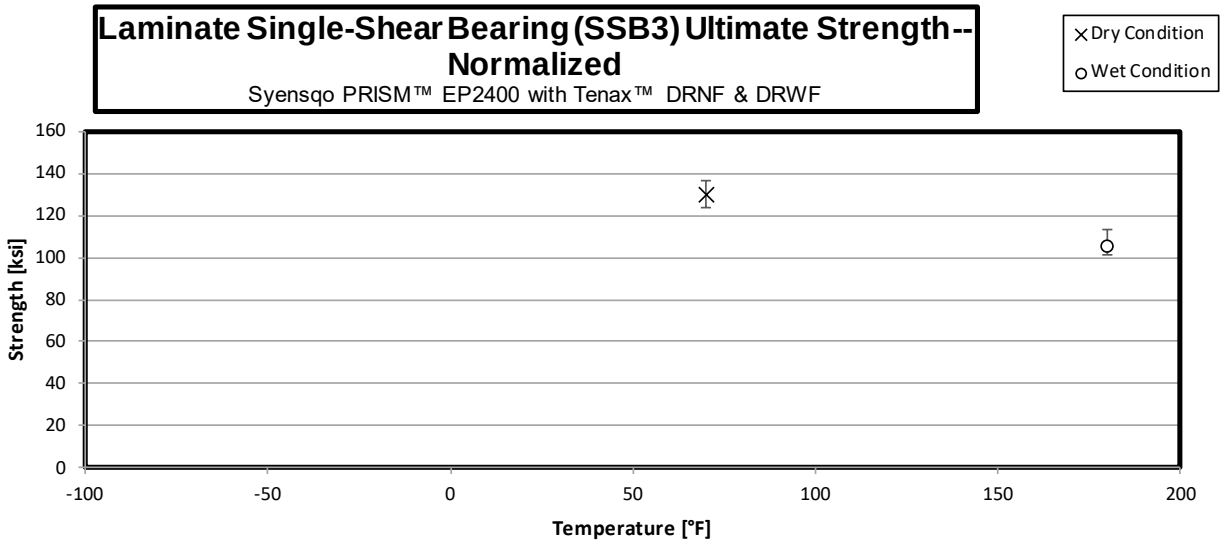
3.2.23 Single-Shear Bearing 2 Properties (SSB2)



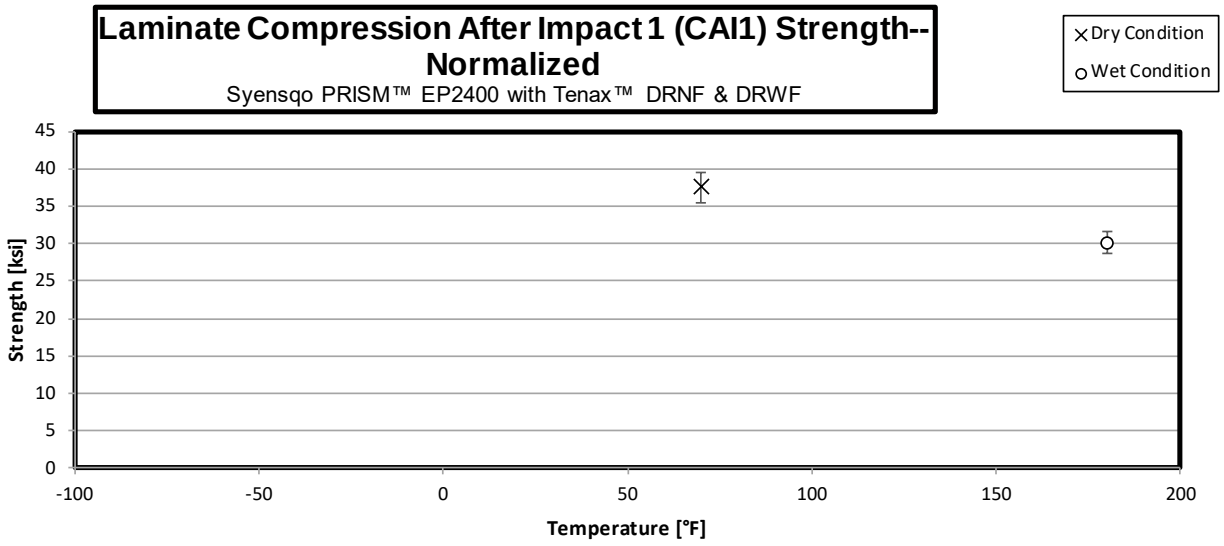


3.2.24 Single-Shear Bearing 3 Properties (SSB3)

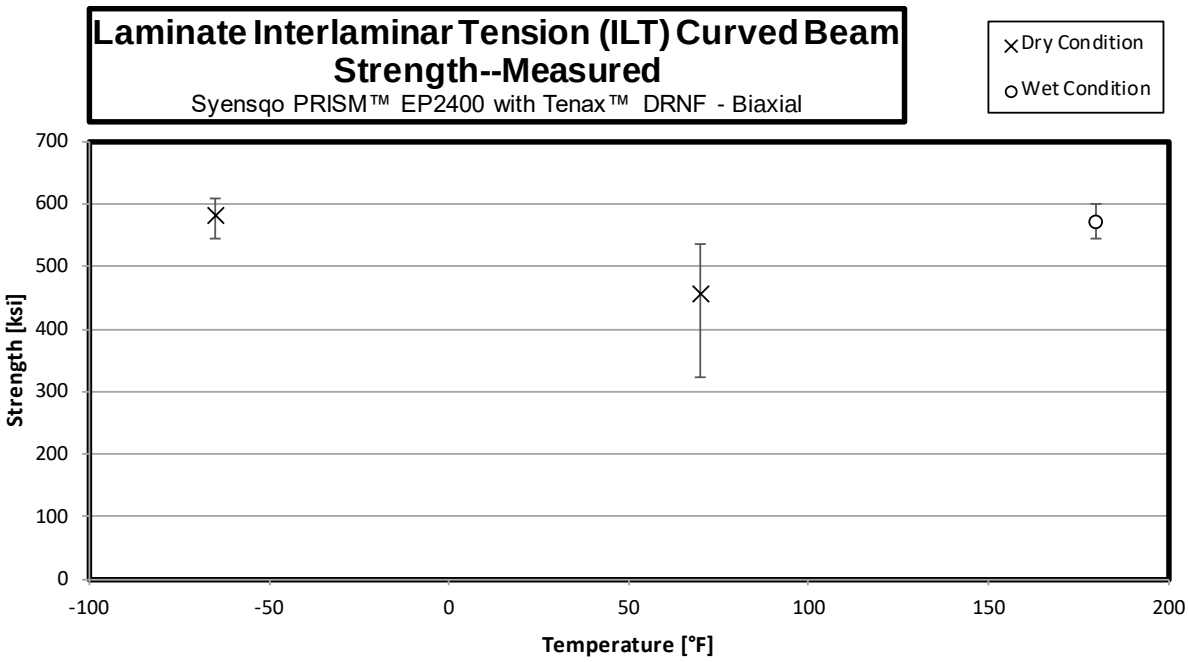


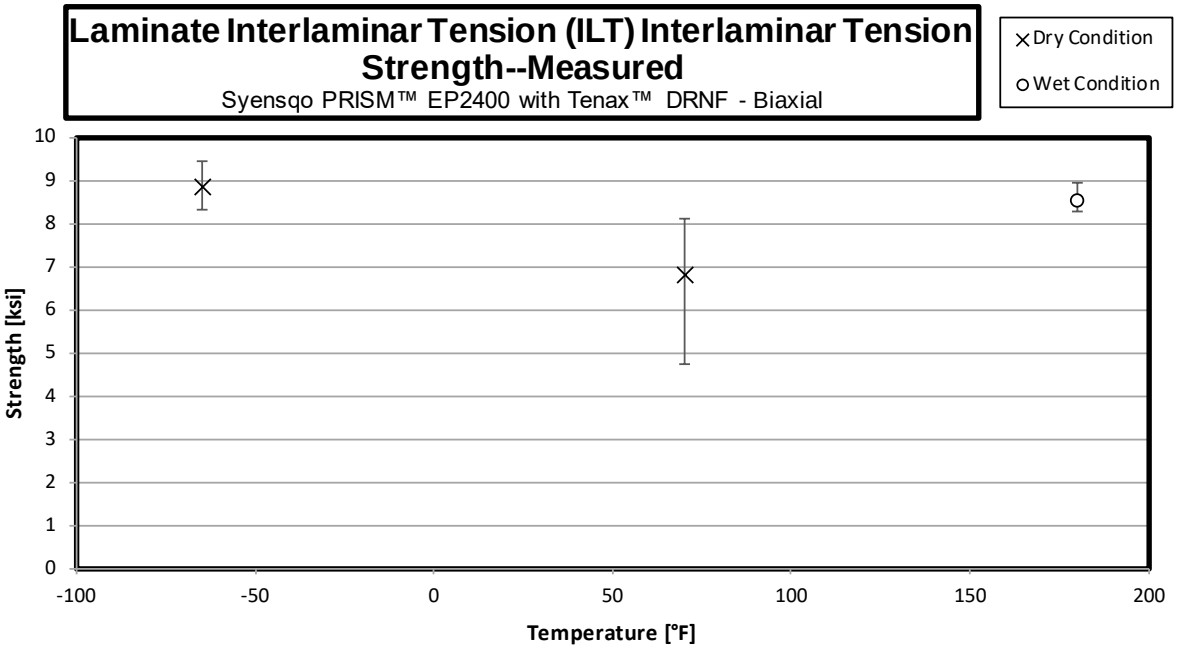


3.2.25 Compression After Impact 1 Properties (CAI1)

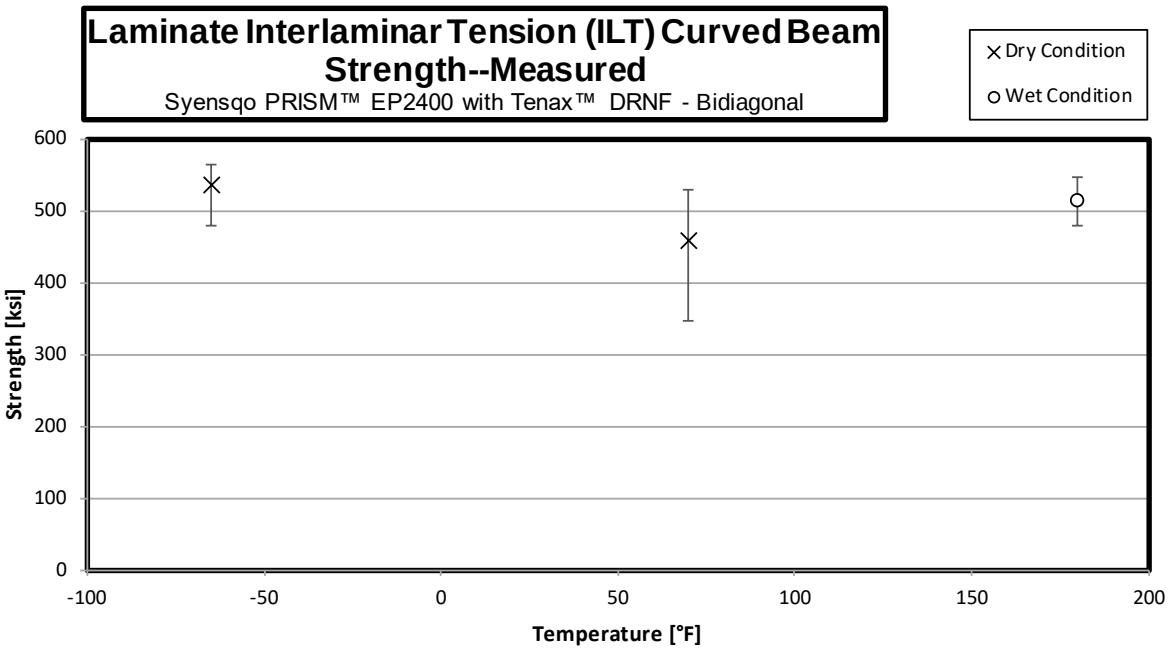


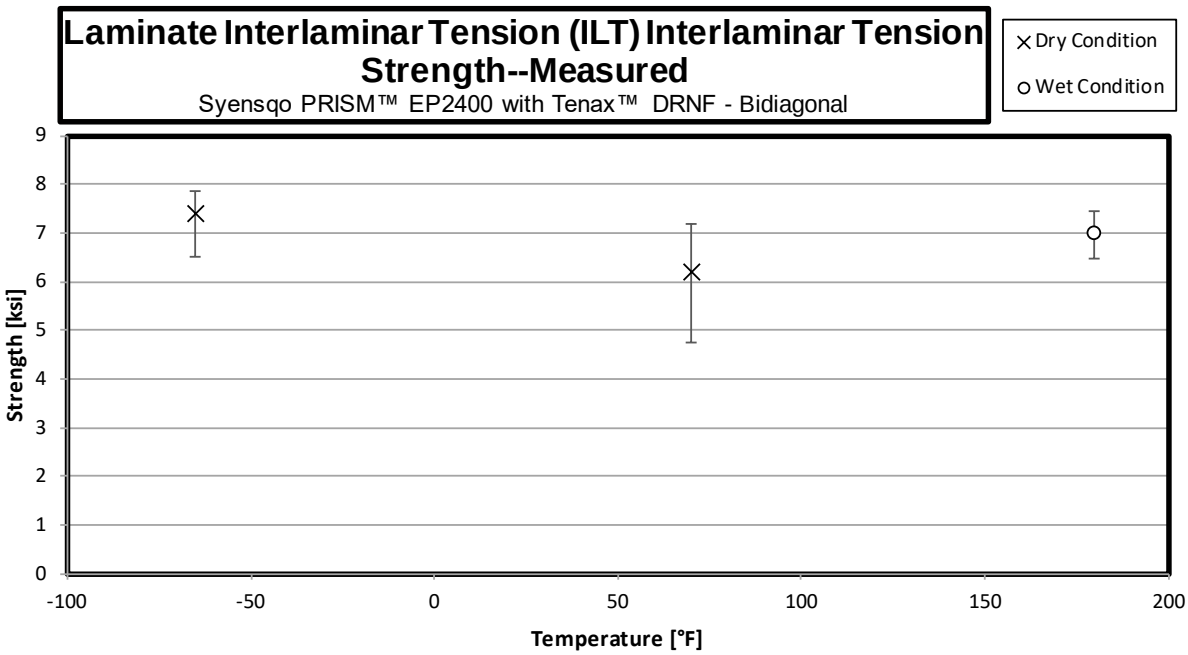
3.2.26 Biaxial Interlaminar Tension Properties (BA-ILT)





3.2.27 Bidiagonal Interlaminar Tension Properties (BD-ILT)





4. Raw Data

4.1 Individual Lamina Raw Data

4.1.1 Biaxial Lamina Raw Data

Biaxial dry reinforcement can be procured to NMS 241F/1 and resin can be procured to NMS 241R/1. Panel laminate specification limits can be found in NMS 241/1. Materials shall be processed according to NPS 82401.

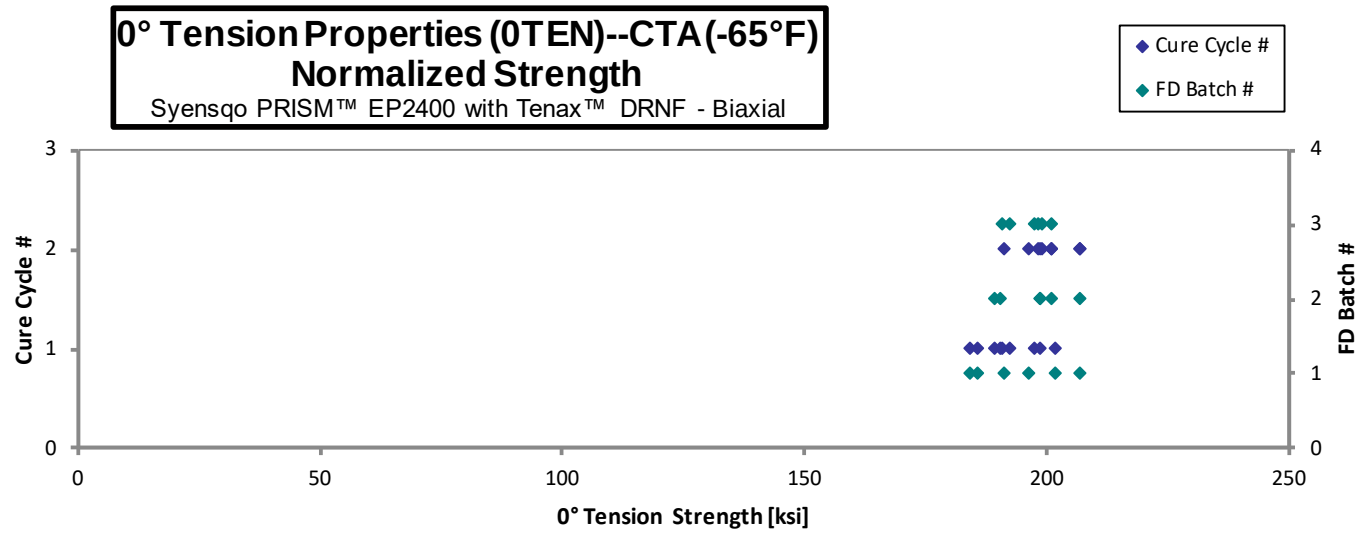
4.1.1.1 Biaxial 0° Tension (BA-0TEN)

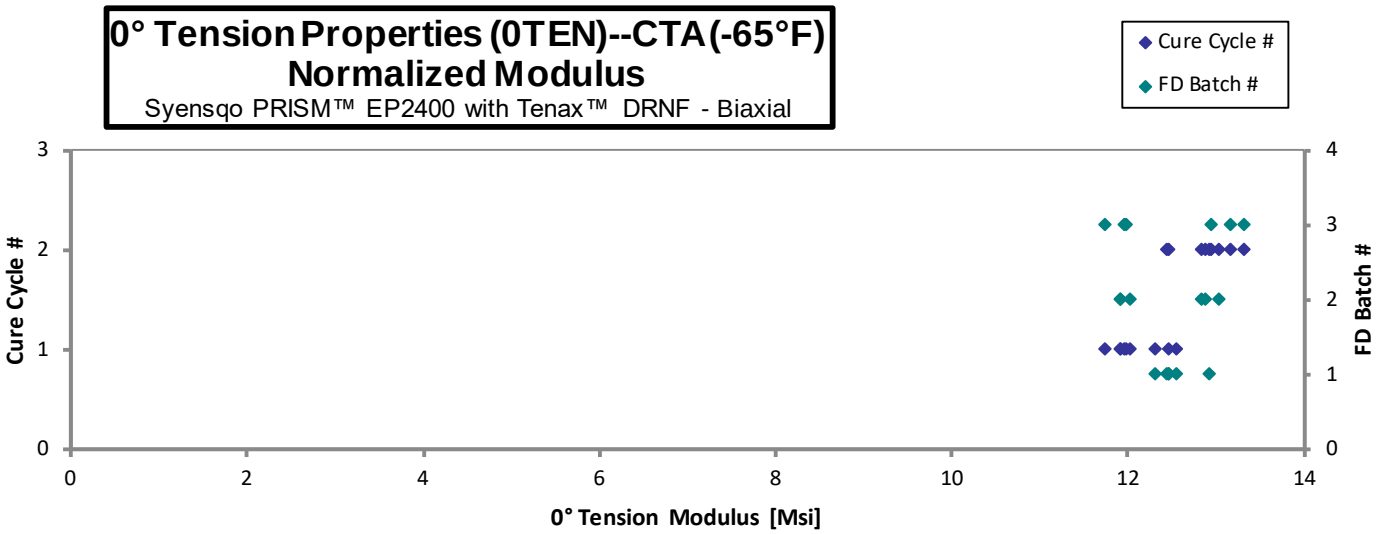
0° Tension Properties (0TEN)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0TEN-A-C1-1-1B	1	C1	1	170.2	11.28	0.0425	0.1224	8	LGM	0.0153	185.9	12.32
BA-0TEN-A-C1-1-2B	1	C1	1	185.3	11.52	0.0387	0.1220	8	LGM	0.0153	201.9	12.55
BA-0TEN-A-C1-1-3B	1	C1	1	171.7	11.61	0.0400	0.1201	8	LGM	0.0150	184.2	12.45
BA-0TEN-A-C2-1-1B	1	C2	2	192.1	12.00	0.0432	0.1207	8	LGM	0.0151	206.9	12.93
BA-0TEN-A-C2-1-2B	1	C2	2	179.1	11.68	0.0262	0.1195	8	LGB, LWT, LGM	0.0149	191.2	12.47
BA-0TEN-A-C2-1-3B	1	C2	2	183.0	11.60	0.0448	0.1201	8	LAT, LGM	0.0150	196.2	12.44
BA-0TEN-B-C1-1-1B	2	C1	1	179.1	10.73	0.0354	0.1243	8	LWB, LGB, LGT	0.0155	198.9	11.91
BA-0TEN-B-C1-1-2B	2	C1	1	173.9	10.86	0.0393	0.1228	8	LWB, LWT	0.0153	190.6	11.91
BA-0TEN-B-C1-1-3B	2	C1	1	170.7	10.85	0.0430	0.1241	8	LWB, LWT	0.0155	189.1	12.02
BA-0TEN-B-C2-1-1B	2	C2	2	180.2	11.64	0.0471	0.1235	8	LWB, LGT	0.0154	198.7	12.83
BA-0TEN-B-C2-1-2B	2	C2	2	182.3	11.82	0.0348	0.1236	8	LWB, LGT	0.0154	201.2	13.04
BA-0TEN-B-C2-1-3B	2	C2	2	189.4	11.79	0.0443	0.1225	8	LWB, LGT	0.0153	207.0	12.88
BA-0TEN-C-C1-1-1B	3	C1	1	174.7	10.95	0.0422	0.1223	8	LAT, LWB	0.0153	190.8	11.96
BA-0TEN-C-C1-1-2B	3	C1	1	179.5	10.68	0.0372	0.1231	8	LIT, LWB	0.0154	197.4	11.74
BA-0TEN-C-C1-1-3B	3	C1	1	173.7	10.81	0.0336	0.1240	8	LGB	0.0155	192.4	11.97
BA-0TEN-C-C2-1-1B	3	C2	2	186.5	12.17	0.0369	0.1192	8	LWT, LWB	0.0149	198.5	12.95
BA-0TEN-C-C2-1-2B	3	C2	2	187.9	12.30	0.0551	0.1200	8	LGT, LGB	0.0150	201.2	13.17
BA-0TEN-C-C2-1-3B	3	C2	2	183.1	12.25	0.0363	0.1218	8	LGM	0.0152	199.1	13.32

Average	**180.1**	**11.47**	**0.0400**	**$Average_{norm}$**	**0.0152**	**196.2**	**12.49**
Standard Dev.	**6.631**	**0.5465**	**0.0062**	**$Standard\ Dev._{norm}$**		**6.606**	**0.4962**
Coeff. of Var. [%]	**3.681**	**4.763**	**15.59**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.368**	**3.972**
Min.	**170.2**	**10.68**	**0.0262**	**Min.**	**0.0149**	**184.2**	**11.74**
Max.	**192.1**	**12.30**	**0.0551**	**Max.**	**0.0155**	**207.0**	**13.32**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

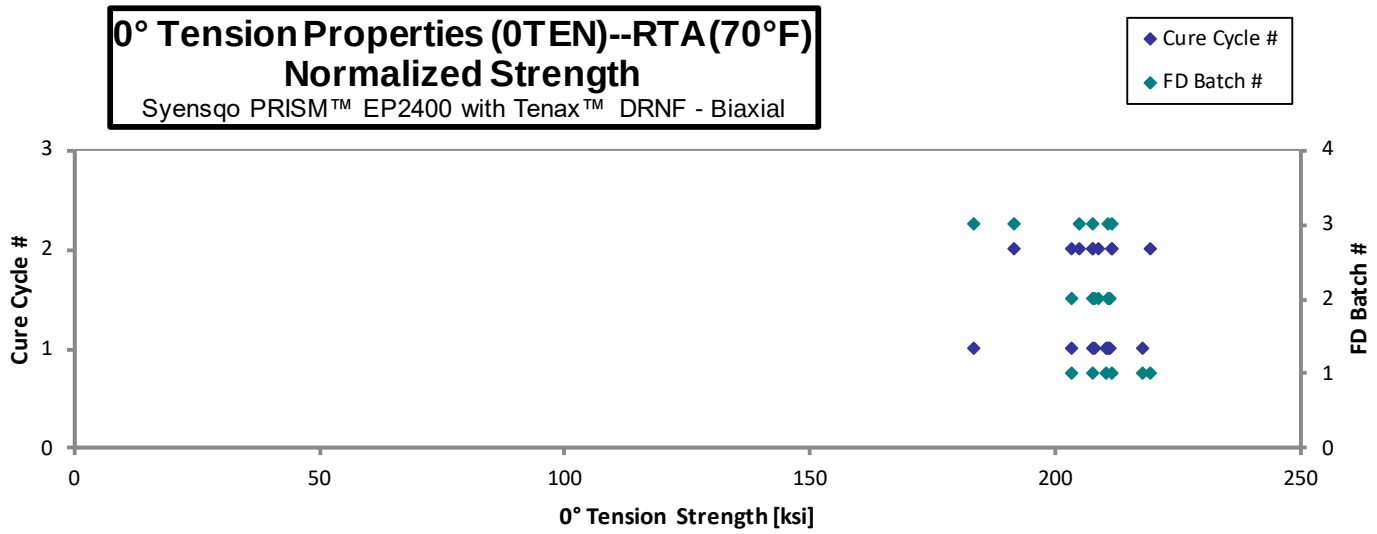
0° Tension Properties (0TEN)--RTA (70°F)
Strength & Modulus

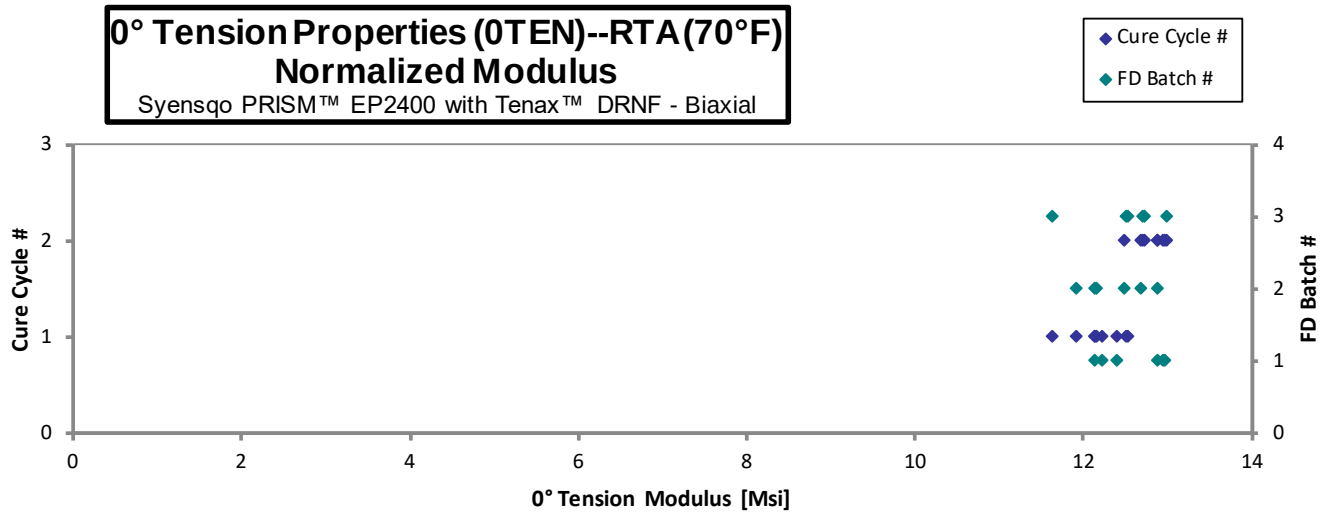
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0TEN-A-C1-1-1A	1	C1	1	200.8	11.20	0.0463	0.1214	8	LGM	0.0152	217.7	12.14
BA-0TEN-A-C1-1-2A	1	C1	1	191.0	11.09	0.0309	0.1234	8	LGT, LAB	0.0154	210.4	12.23
BA-0TEN-A-C1-1-3A	1	C1	1	188.2	11.46	0.0428	0.1211	8	LWT, LAB	0.0151	203.4	12.39
BA-0TEN-A-C2-1-1A	1	C2	2	200.1	12.26	0.0455	0.1184	8	LWT, LGB	0.0148	211.5	12.96
BA-0TEN-A-C2-1-2A	1	C2	2	205.5	12.13	0.0512	0.1196	8	LWB, LGM	0.0149	219.4	12.95
BA-0TEN-A-C2-1-3A	1	C2	2	193.7	12.00	0.0397	0.1201	8	LGT, LWT, LAB	0.0150	207.7	12.87
BA-0TEN-B-C1-1-1A	2	C1	1	190.0	10.93	0.0316	0.1246	8	LWT, LAB	0.0156	211.4	12.16
BA-0TEN-B-C1-1-2A	2	C1	1	189.9	10.92	0.0406	0.1245	8	LWT, LAB	0.0156	211.0	12.14
BA-0TEN-B-C1-1-3A	2	C1	1	188.7	10.80	0.0272	0.1236	8	LAT, LAB	0.0154	208.1	11.92
BA-0TEN-B-C2-1-1A	2	C2	2	186.0	11.60	0.0380	0.1225	8	LWT, LAB	0.0153	203.5	12.69
BA-0TEN-B-C2-1-2A	2	C2	2	188.5	11.32	0.0384	0.1235	8	LGT, LWB	0.0154	207.8	12.48
BA-0TEN-B-C2-1-3A	2	C2	2	189.9	11.71	0.0372	0.1233	8	LWT, LAB	0.0154	209.0	12.89
BA-0TEN-C-C1-1-1A	3	C1	1	169.4	11.54	0.0415	0.1213	8	LAT, LAB	0.0152	183.5	12.50
BA-0TEN-C-C1-1-2A	3	C1	1	195.3	11.59	0.0364	0.1210	8	LWT, LAB	0.0151	210.9	12.52
BA-0TEN-C-C1-1-3A	3	C1	1	191.4	10.72	0.0404	0.1216	8	LAT, LGB	0.0152	207.7	11.63
BA-0TEN-C-C2-1-1A	3	C2	2	195.2	11.74	0.0408	0.1215	8	LAT, LAB	0.0152	211.7	12.73
BA-0TEN-C-C2-1-2A	3	C2	2	190.0	12.04	0.0428	0.1209	8	LAT, LAB	0.0151	205.0	12.99
BA-0TEN-C-C2-1-3A	3	C2	2	179.4	11.89	0.0459	0.1196	8	LAT, LWB	0.0150	191.6	12.70

Average	**190.7**	**11.50**	**0.0399**	**$Average_{norm}$**	**0.0152**	**207.3**	**12.49**
Standard Dev.	**7.977**	**0.4751**	**0.0059**	**$Standard\ Dev._{norm}$**		**8.407**	**0.3928**
Coeff. of Var. [%]	**4.183**	**4.132**	**14.81**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.055**	**3.144**
Min.	**169.4**	**10.72**	**0.0272**	**Min.**	**0.0148**	**183.5**	**11.63**
Max.	**205.5**	**12.26**	**0.0512**	**Max.**	**0.0156**	**219.4**	**12.99**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

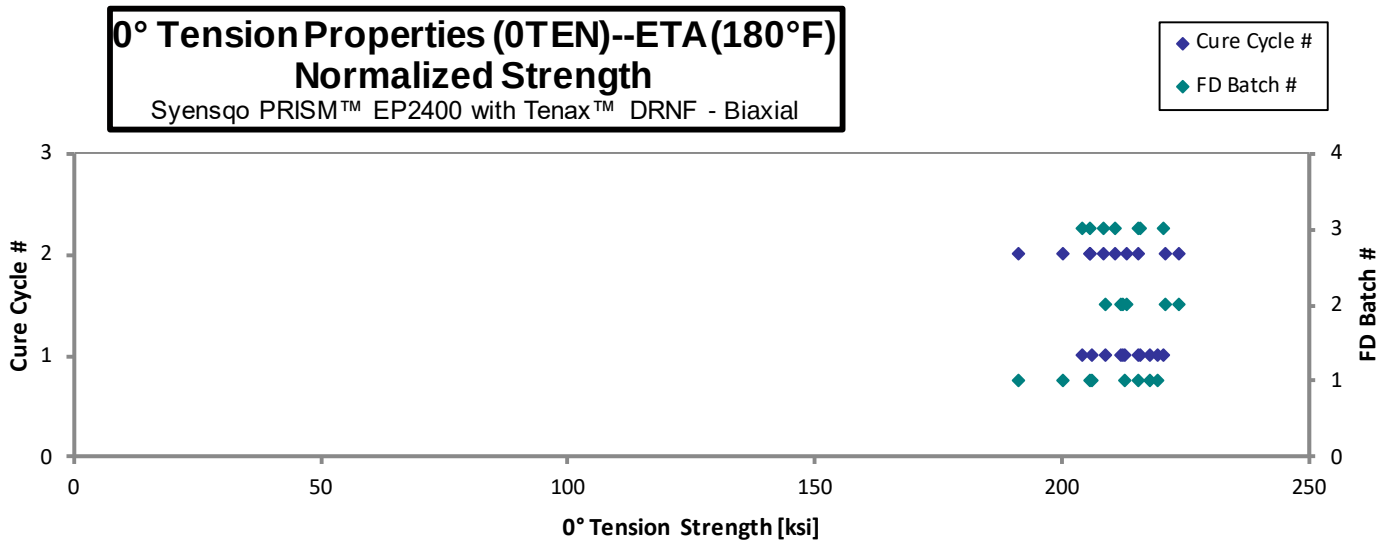
0° Tension Properties (0TEN)--ETA (180°F)
Strength & Modulus

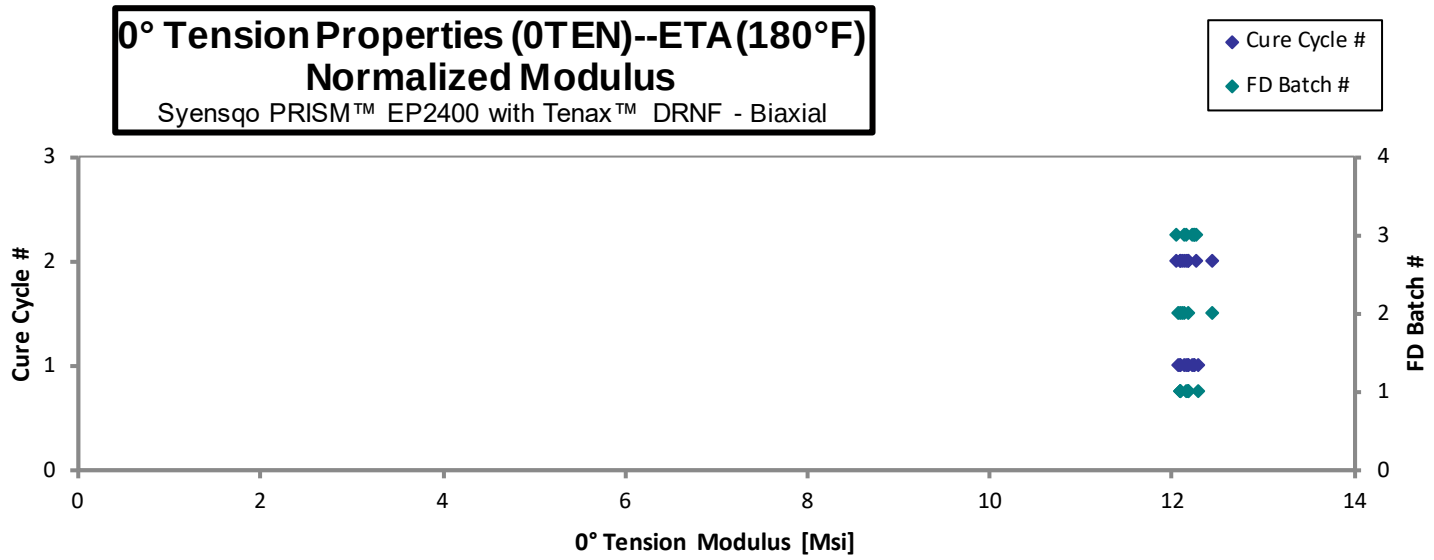
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0TEN-A-C1-1-1C	1	C1	1	192.9	10.98	0.0254	0.1235	8	LWT, LWB	0.0154	212.7	12.10
BA-0TEN-A-C1-1-2C	1	C1	1	188.1	11.20	0.0243	0.1229	8	LWT, LIB	0.0154	206.3	12.28
BA-0TEN-A-C1-1-3C	1	C1	1	197.2	11.02	0.0363	0.1238	8	LWT, LGB	0.0155	218.0	12.18
BA-0TEN-A-C1-1-4C	1	C1	1	201.8	11.12	0.0217	0.1218	8	LWT, LWB	0.0152	219.5	12.09
BA-0TEN-A-C2-1-1C	1	C2	2	204.1	11.44	0.0371	0.1184	8	LGM, LWB	0.0148	215.7	12.09
BA-0TEN-A-C2-1-2C	1	C2	2	179.7	11.43	0.0407	0.1192	8	LWB, LIT	0.0149	191.3	12.16
BA-0TEN-A-C2-1-3C	1	C2	2	186.4	11.33	0.0364	0.1204	8	LWT, LIB	0.0150	200.3	12.18
BA-0TEN-A-C2-1-4C	1	C2	2	190.9	11.31	0.0420	0.1206	8	LWB, LIT	0.0151	205.6	12.17
BA-0TEN-B-C1-1-1C	2	C1	1	193.5	11.12	0.0250	0.1228	8	LGB, LWT	0.0154	212.1	12.19
BA-0TEN-B-C1-1-2C	2	C1	1	193.8	11.07	0.0259	0.1228	8	LWT, LWB	0.0154	212.5	12.13
BA-0TEN-B-C1-1-3C	2	C1	1	184.5	10.65	0.0278	0.1269	8	LAB, LWT	0.0159	209.0	12.06
BA-0TEN-B-C2-1-1C	2	C2	2	204.3	11.37	0.0239	0.1226	8	LWB, LGT, LGM	0.0153	223.6	12.45
BA-0TEN-B-C2-1-2C	2	C2	2	203.6	11.13	0.0323	0.1215	8	LWB, LGT	0.0152	221.0	12.08
BA-0TEN-B-C2-1-3C	2	C2	2	193.4	10.98	0.0204	0.1236	8	LWT, LGB	0.0154	213.3	12.11
BA-0TEN-C-C1-1-1C	3	C1	1	186.1	11.13	0.0225	0.1230	8	LIB, LWT, LGM	0.0154	204.3	12.22
BA-0TEN-C-C1-1-2C	3	C1	1	200.4	11.04	0.0263	0.1232	8	LWT, LGM	0.0154	220.5	12.15
BA-0TEN-C-C1-1-3C	3	C1	1	195.6	11.09	0.0259	0.1236	8	LIB, LWT	0.0154	215.8	12.24
BA-0TEN-C-C1-1-4C	3	C1	1	196.5	11.18	0.0251	0.1228	8	LWT, LWB	0.0153	215.4	12.26
BA-0TEN-C-C2-1-1C	3	C2	2	193.8	11.40	0.0230	0.1204	8	LWT, LWB	0.0151	208.3	12.26
BA-0TEN-C-C2-1-2C	3	C2	2	191.2	11.19	0.0205	0.1206	8	LWT, LGB	0.0151	205.9	12.05
BA-0TEN-C-C2-1-3C	3	C2	2	194.6	11.20	0.0259	0.1213	8	LGT, LWB	0.0152	210.7	12.13

Average	**193.9**	**11.16**	**0.0280**	**$Average_{norm}$**	**0.0153**	**211.5**	**12.17**
Standard Dev.	**6.677**	**0.1852**	**0.0066**	**$Standard\ Dev._{norm}$**		**7.677**	**0.09238**
Coeff. of Var. [%]	**3.443**	**1.659**	**23.66**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.629**	**0.7590**
Min.	**179.7**	**10.65**	**0.0204**	**Min.**	**0.0148**	**191.3**	**12.05**
Max.	**204.3**	**11.44**	**0.0420**	**Max.**	**0.0159**	**223.6**	**12.45**
Number of Spec.	**21**	**21**	**21**	**Number of Spec.**	**21**	**21**	**21**


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

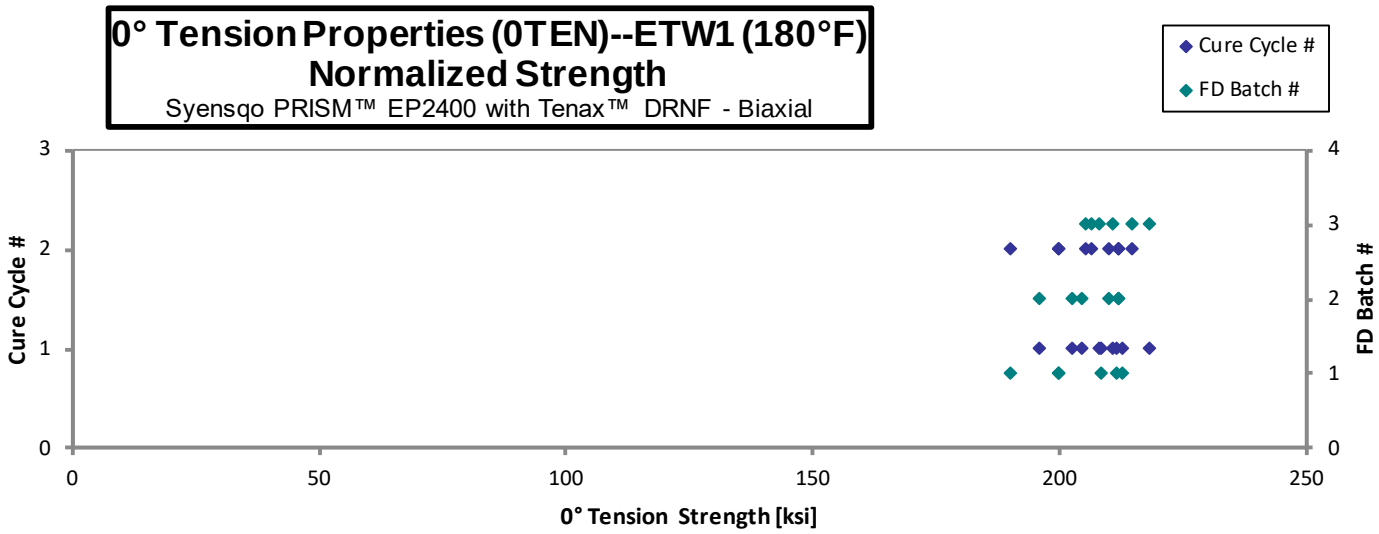
0° Tension Properties (0TEN)--ETW1 (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

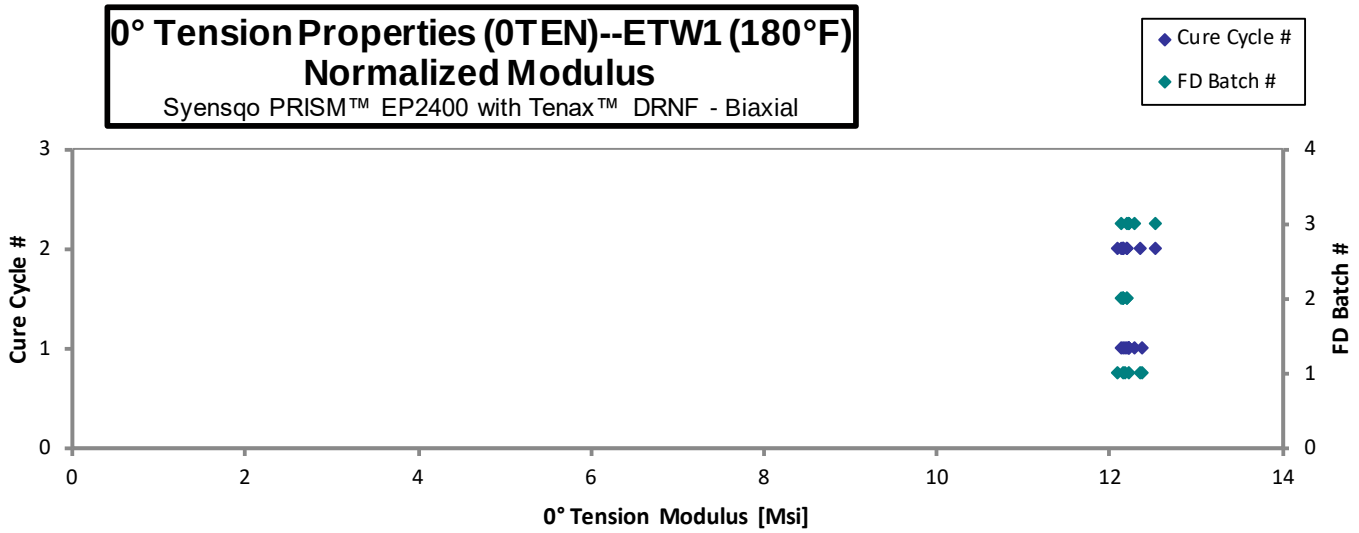
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0TEN-A-C1-1-1D	1	C1	1	192.0	11.21	0.0245	0.1216	8	LGM, LWB, LWT	0.0152	208.5	12.17
BA-0TEN-A-C1-1-2D	1	C1	1	195.2	11.36	0.0282	0.1220	8	LWT, LAB	0.0153	212.7	12.38
BA-0TEN-A-C1-1-3D	1	C1	1	193.1	11.16	0.0281	0.1227	8	LWT, LWB	0.0153	211.4	12.22
BA-0TEN-A-C2-1-1D	1	C2	2	186.0	11.49	0.0335	0.1204	8	LWT, LAB	0.0151	200.0	12.35
BA-0TEN-A-C2-1-2D*	1	C2	2	187.7	11.34		0.1193	8	LGM, LWT, LIB	0.0149	200.0	12.08
BA-0TEN-A-C2-1-3D	1	C2	2	178.4	11.41	0.0295	0.1194	8	M(A,L)WT, LAB	0.0149	190.2	12.16
BA-0TEN-B-C1-1-1D	2	C1	1	182.2	10.97	0.0350	0.1245	8	LWB, LAT	0.0156	202.5	12.20
BA-0TEN-B-C1-1-2D	2	C1	1	185.4	11.00	0.0321	0.1236	8	LWB, LAT	0.0155	204.6	12.14
BA-0TEN-B-C1-1-3D	2	C1	1	177.0	10.97	0.0372	0.1241	8	LWB, LAT	0.0155	196.0	12.15
BA-0TEN-B-C2-1-1D	2	C2	2	194.4	11.18	0.0248	0.1222	8	LGB, LWT	0.0153	212.1	12.20
BA-0TEN-B-C2-1-2D	2	C2	2	191.9	11.11	0.0326	0.1225	8	LGB, LGT	0.0153	209.9	12.15
BA-0TEN-B-C2-1-3D	2	C2	2	192.1	11.01	0.0384	0.1237	8	LWT, LAB	0.0155	212.1	12.16
BA-0TEN-C-C1-1-1D	3	C1	1	199.0	11.21	0.0307	0.1229	8	LGB, LAT	0.0154	218.3	12.29
BA-0TEN-C-C1-1-2D	3	C1	1	192.4	11.15	0.0383	0.1228	8	LGB, LWT	0.0153	211.0	12.23
BA-0TEN-C-C1-1-3D	3	C1	1	189.1	11.11	0.0258	0.1233	8	LGB, LAT	0.0154	208.1	12.23
BA-0TEN-C-C2-1-1D	3	C2	2	202.8	11.82	0.0368	0.1186	8	LGM, LWT, LWB	0.0148	214.8	12.52
BA-0TEN-C-C2-1-2D	3	C2	2	191.7	11.38	0.0290	0.1201	8	M(D,L)GM, LWT, LWB	0.0150	205.5	12.20
BA-0TEN-C-C2-1-3D	3	C2	2	195.5	11.48	0.0305	0.1184	8	LGM, LWT	0.0148	206.6	12.13

* Poisson's Ratio not reported due to non-linear data.

Average	**190.3**	**11.24**	**0.0315**	**$Average_{norm}$**	**0.0152**	**206.9**	**12.22**
Standard Dev.	**6.680**	**0.2216**	**0.0046**	**$Standard\ Dev._{norm}$**		**7.071**	**0.1058**
Coeff. of Var. [%]	**3.509**	**1.971**	**14.48**	**Coeff. of Var. [%]$_{norm}$**		**3.418**	**0.8655**
Min.	**177.0**	**10.97**	**0.0245**	**Min.**	**0.0148**	**190.2**	**12.08**
Max.	**202.8**	**11.82**	**0.0384**	**Max.**	**0.0156**	**218.3**	**12.52**
Number of Spec.	**18**	**18**	**17**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

4.1.1.2 Biaxial 0° Compression (BA-0CLC)

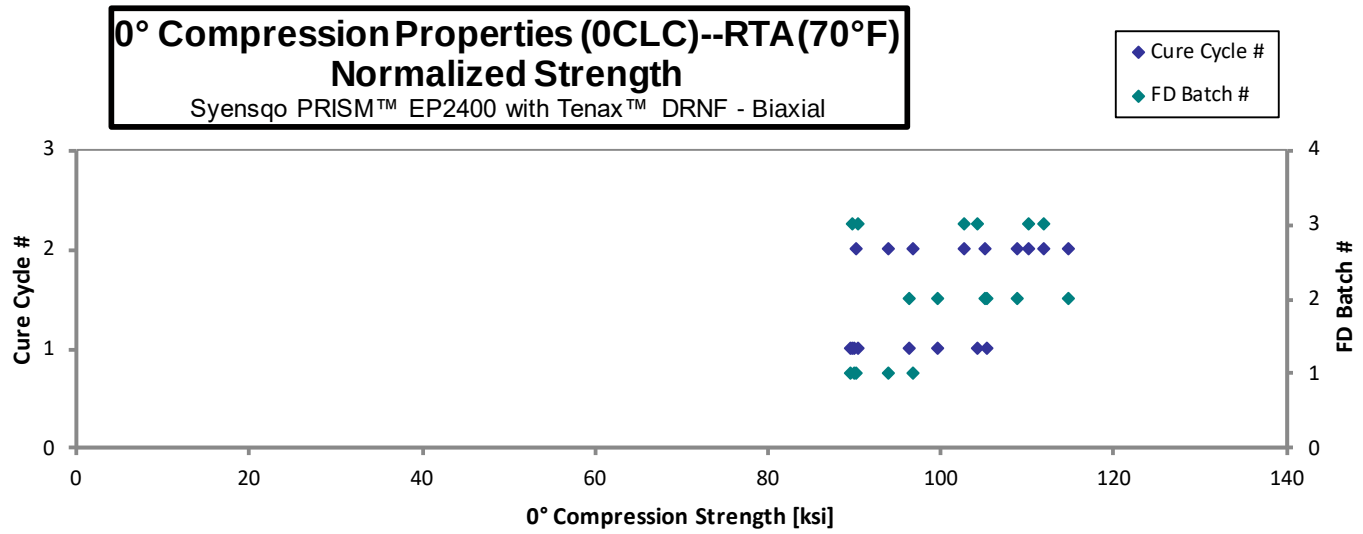
0° Compression Properties (0CLC)--RTA (70°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

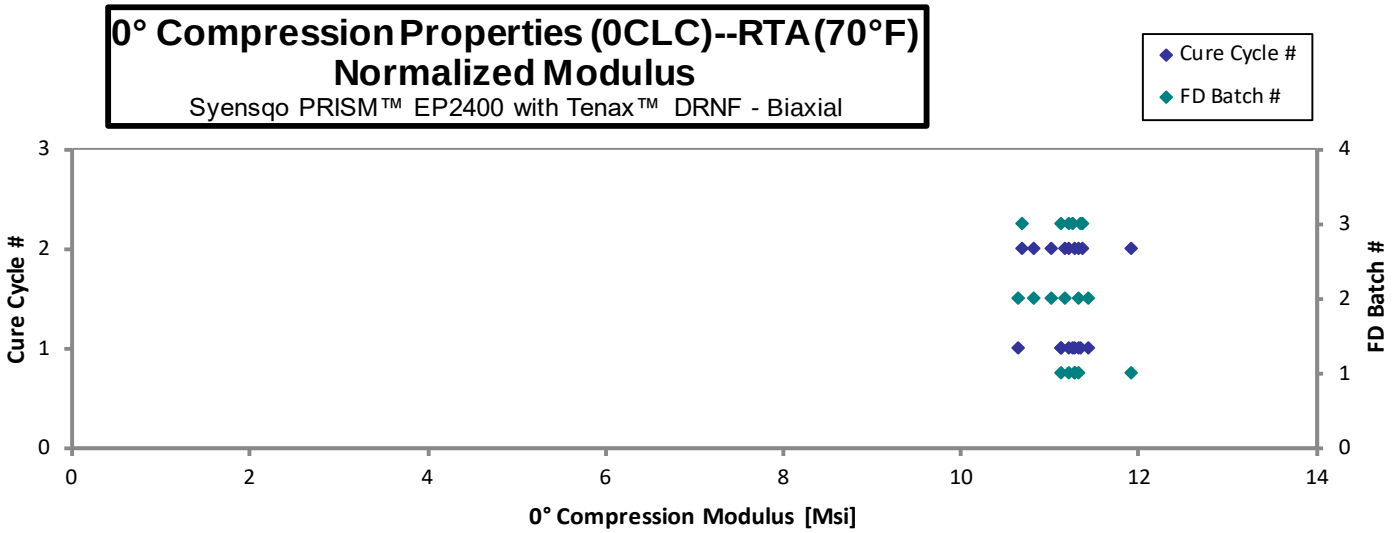
normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0CLC-A-C1-1-1A	1	C1	1		10.13	0.1231	8	HIT	0.0154		11.13
BA-0CLC-A-C1-1-2A	1	C1	1		10.24	0.1227	8	HIT	0.0153		11.22
BA-0CLC-A-C1-1-3A	1	C1	1	82.31	10.31	0.1226	8	BGM	0.0153	90.06	11.28
BA-0CLC-A-C1-1-4A	1	C1	1	81.71		0.1229	8	BGM	0.0154	89.63	
BA-0CLC-A-C2-1-1A	1	C2	2	84.44	9.886	0.1283	8	BGM	0.0160	96.73	11.32
BA-0CLC-A-C2-1-2A	1	C2	2	81.87	9.829	0.1287	8	BGM	0.0161	94.04	11.29
BA-0CLC-A-C2-1-3A	1	C2	2	79.15	10.46	0.1276	8	BGM	0.0159	90.13	11.92
BA-0CLC-B-C1-1-1A	2	C1	1	86.59	10.27	0.1245	8	BAT	0.0156	96.28	11.42
BA-0CLC-B-C1-1-2A	2	C1	1	90.13	10.24	0.1238	8	BGM	0.0155	99.60	11.32
BA-0CLC-B-C1-1-3A	2	C1	1	96.09	9.715	0.1227	8	BGM	0.0153	105.3	10.65
BA-0CLC-B-C2-1-1A	2	C2	2	93.59	9.805	0.1257	8	BGM, HAB, HIB	0.0157	105.1	11.01
BA-0CLC-B-C2-1-2A	2	C2	2	97.11	9.962	0.1257	8	BGM, HAB, HIB	0.0157	108.9	11.18
BA-0CLC-B-C2-1-3A	2	C2	2	103.3	9.745	0.1245	8	BGM, HAB, HIB	0.0156	114.8	10.83
BA-0CLC-C-C1-1-1A	3	C1	1	83.98	10.33	0.1206	8	BGM	0.0151	90.41	11.12
BA-0CLC-C-C1-1-2A	3	C1	1	96.01	10.45	0.1216	8	BGM ,HIT	0.0152	104.3	11.35
BA-0CLC-C-C1-1-3A	3	C1	1	83.34	10.45	0.1206	8	BGM	0.0151	89.74	11.26
BA-0CLC-C-C2-1-1A	3	C2	2	102.0	10.37	0.1228	8	BGM, HAT, HIT	0.0154	111.9	11.37
BA-0CLC-C-C2-1-2A	3	C2	2	99.45	10.13	0.1240	8	BGM, HAT, HIT, HIB	0.0155	110.1	11.22
BA-0CLC-C-C2-1-3A	3	C2	2		9.857	0.1215	8	HIT	0.0152		10.69
BA-0CLC-C-C2-1-4A	3	C2	2	94.03		0.1224	8	BGM, HIB	0.0153	102.8	

	Strength [ksi]	Modulus [Msi]
Average	**90.30**	**10.12**
Standard Dev.	**7.897**	**0.2631**
Coeff. of Var. [%]	**8.745**	**2.599**
Min.	**79.15**	**9.715**
Max.	**103.3**	**10.46**
Number of Spec.	**17**	**18**

	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	**0.0155**	**99.99**	**11.20**
Standard $Dev._{norm}$		**8.602**	**0.2885**
Coeff. of Var. $[\%]_{norm}$		**8.603**	**2.576**
Min.	**0.0151**	**89.63**	**10.65**
Max.	**0.0161**	**114.8**	**11.92**
Number of Spec.	**20**	**17**	**18**


0° Compression Properties (0CLC)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4


0° Compression Properties (0CLC)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

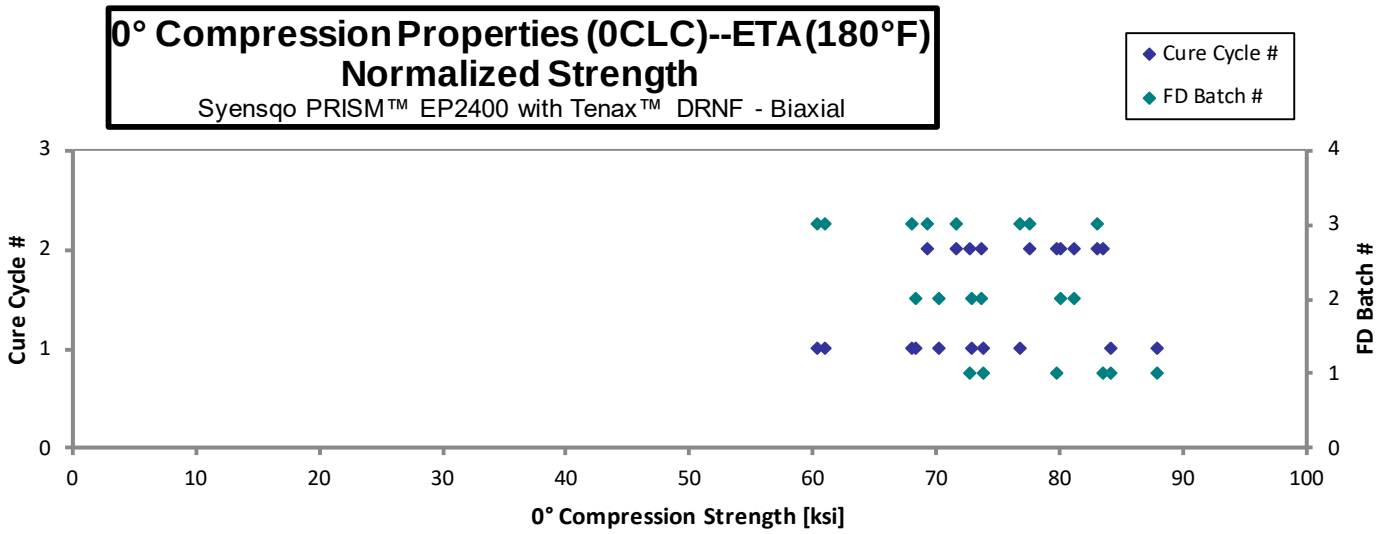
0° Compression Properties (0CLC)--ETA (180°F)
Strength & Modulus

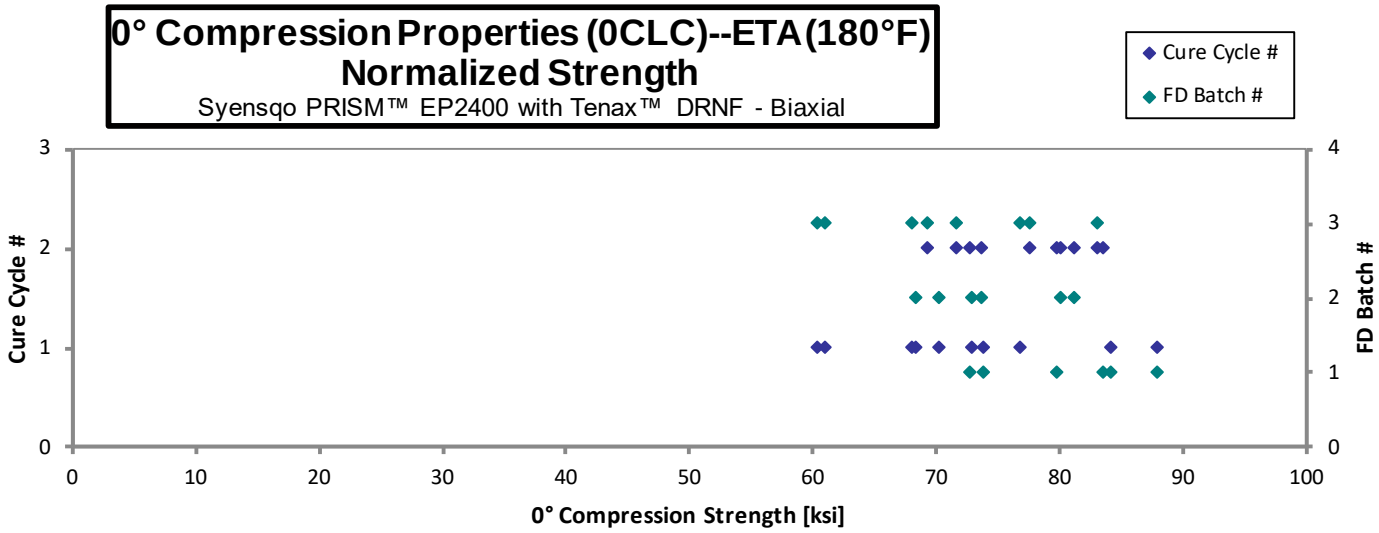
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0CLC-A-C1-1-1C	1	C1	1	76.52	10.49	0.1232	8	HAB, BGM	0.0154	84.19	11.54
BA-0CLC-A-C1-1-2C	1	C1	1	80.31	10.36	0.1226	8	HAB, BGM	0.0153	87.89	11.34
BA-0CLC-A-C1-1-3C	1	C1	1	67.53	10.10	0.1225	8	BGM	0.0153	73.83	11.04
BA-0CLC-A-C2-1-1C	1	C2	2	72.88	10.04	0.1285	8	BGM	0.0161	83.62	11.51
BA-0CLC-A-C2-1-2C	1	C2	2	65.19	10.33	0.1249	8	BGM	0.0156	72.67	11.52
BA-0CLC-A-C2-1-3C	1	C2	2	70.22	9.832	0.1273	8	BGM	0.0159	79.84	11.18
BA-0CLC-B-C1-1-1C	2	C1	1	64.10	10.02	0.1229	8	BGM	0.0154	70.31	10.99
BA-0CLC-B-C1-1-2C	2	C1	1	65.68	9.939	0.1243	8	BAT	0.0155	72.91	11.03
BA-0CLC-B-C1-1-3C	2	C1	1	61.88	9.561	0.1237	8	BGM	0.0155	68.35	10.56
BA-0CLC-B-C2-1-1C	2	C2	2	72.60	10.07	0.1235	8	BAB	0.0154	80.04	11.10
BA-0CLC-B-C2-1-2C	2	C2	2	67.00	10.10	0.1231	8	M(B,H)AB	0.0154	73.66	11.10
BA-0CLC-B-C2-1-3C	2	C2	2	72.91	10.15	0.1247	8	BAB	0.0156	81.20	11.31
BA-0CLC-C-C1-1-1C	3	C1	1	70.92	10.24	0.1213	8	BAB	0.0152	76.80	11.09
BA-0CLC-C-C1-1-2C	3	C1	1	63.14	9.900	0.1208	8	BAT	0.0151	68.09	10.67
BA-0CLC-C-C1-1-3C	3	C1	1	55.93	10.07	0.1209	8	BGM	0.0151	60.37	10.87
BA-0CLC-C-C1-1-4C	3	C1	1	56.13		0.1217	8	BGM	0.0152	60.97	
BA-0CLC-C-C2-1-1C	3	C2	2	76.63	9.901	0.1215	8	BAB	0.0152	83.14	10.74
BA-0CLC-C-C2-1-2C	3	C2	2	71.53	9.613	0.1214	8	BAT	0.0152	77.54	10.42
BA-0CLC-C-C2-1-3C	3	C2	2	66.32	10.63	0.1209	8	HAT	0.0151	71.61	11.48
BA-0CLC-C-C2-1-4C	3	C2	2	64.28		0.1209	8	BGM	0.0151	69.36	

Average	**68.09**	**10.07**	**$Average_{norm}$**	**0.0154**	**74.82**	**11.08**
Standard Dev.	**6.439**	**0.2749**	**$Standard\ Dev._{norm}$**		**7.500**	**0.3362**
Coeff. of Var. [%]	**9.457**	**2.729**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**10.02**	**3.034**
Min.	**55.93**	**9.561**	**Min.**	**0.0151**	**60.37**	**10.42**
Max.	**80.31**	**10.63**	**Max.**	**0.0161**	**87.89**	**11.54**
Number of Spec.	**20**	**18**	**Number of Spec.**	**20**	**20**	**18**


0° Compression Properties (0CLC)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4

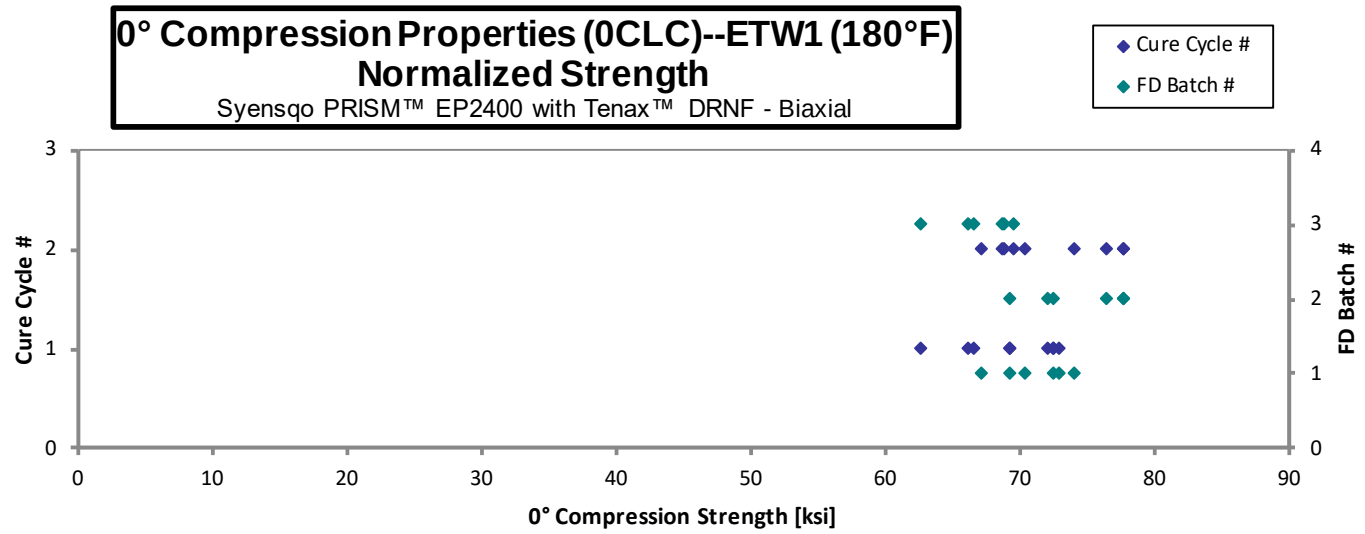

0° Compression Properties (0CLC)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4

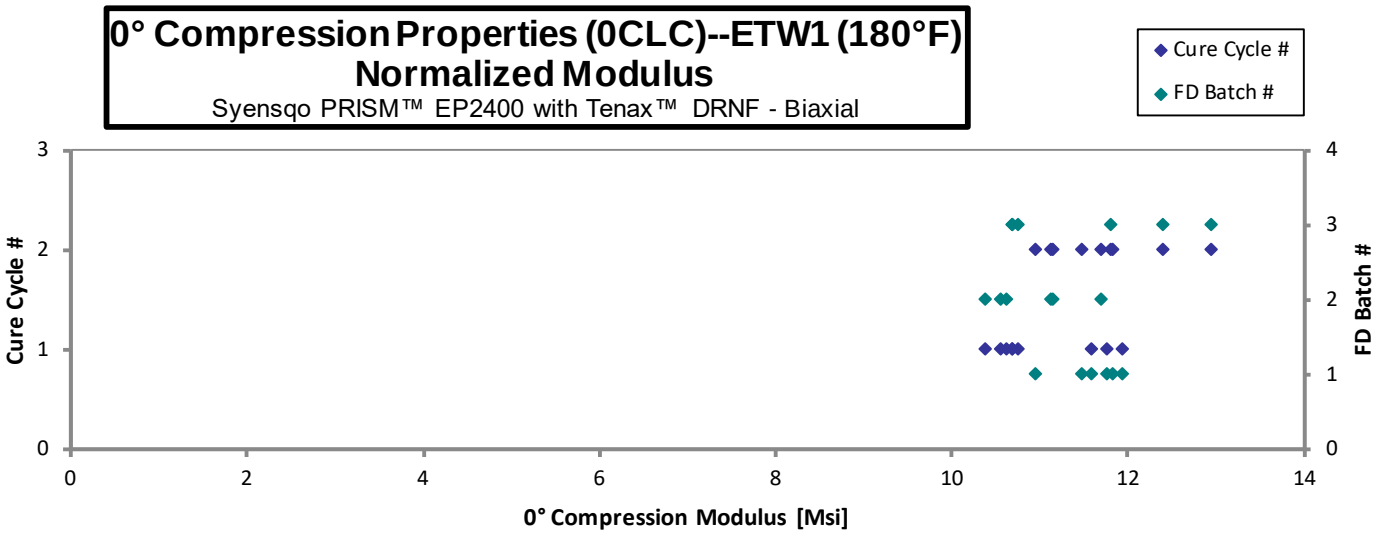
0° Compression Properties (0CLC)--ETW1 (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0CLC-A-C1-1-1D	1	C1	1	66.14	10.51	0.1235	8	HAT, HIT	0.0154	72.91	11.58
BA-0CLC-A-C1-1-2D	1	C1	1	63.77	10.82	0.1217	8	HAB	0.0152	69.31	11.76
BA-0CLC-A-C1-1-3D	1	C1	1	66.69	10.98	0.1218	8	HAB, HIT	0.0152	72.49	11.93
BA-0CLC-A-C2-1-1D	1	C2	2	60.84	10.22	0.1295	8	BAT	0.0162	70.34	11.82
BA-0CLC-A-C2-1-2D	1	C2	2	65.10	10.10	0.1274	8	HAB, HIB	0.0159	74.02	11.48
BA-0CLC-A-C2-1-3D	1	C2	2	59.72	9.738	0.1258	8	BAB	0.0157	67.10	10.94
BA-0CLC-B-C1-1-1D	2	C1	1	65.62	9.605	0.1238	8	BAB	0.0155	72.55	10.62
BA-0CLC-B-C1-1-2D	2	C1	1	62.86	9.593	0.1234	8	HAB, HIB	0.0154	69.24	10.57
BA-0CLC-B-C1-1-3D	2	C1	1	65.08	9.369	0.1241	8	HAT, BGM, HIB	0.0155	72.12	10.38
BA-0CLC-B-C2-1-1D	2	C2	2	70.04	10.54	0.1244	8	BAT, HIT	0.0155	77.76	11.70
BA-0CLC-B-C2-1-2D	2	C2	2	70.93	10.15	0.1228	8	BAT, HIT	0.0153	77.76	11.13
BA-0CLC-B-C2-1-3D	2	C2	2	70.14	10.24	0.1221	8	BGM	0.0153	76.46	11.16
BA-0CLC-C-C1-1-1D	3	C1	1	57.79	9.853	0.1214	8	BGM	0.0152	62.66	10.68
BA-0CLC-C-C1-1-2D	3	C1	1	61.35	9.908	0.1215	8	BGM	0.0152	66.55	10.75
BA-0CLC-C-C1-1-3D	3	C1	1	60.74	9.800	0.1221	8	BGM	0.0153	66.22	10.68
BA-0CLC-C-C2-1-1D	3	C2	2	63.78	10.83	0.1222	8	BGM	0.0153	69.59	11.81
BA-0CLC-C-C2-1-2D	3	C2	2	63.65	11.50	0.1208	8	BGM	0.0151	68.67	12.40
BA-0CLC-C-C2-1-3D	3	C2	2	63.62	11.96	0.1212	8	BGM	0.0152	68.87	12.95

Average	**64.32**	**10.32**	**Average$_{norm}$**	**0.0154**	**70.81**	**11.35**
Standard Dev.	**3.624**	**0.6924**	**Standard Dev.$_{norm}$**		**4.095**	**0.7030**
Coeff. of Var. [%]	**5.635**	**6.711**	**Coeff. of Var. [%]$_{norm}$**		**5.783**	**6.192**
Min.	**57.79**	**9.369**	**Min.**	**0.0151**	**62.66**	**10.38**
Max.	**70.93**	**11.96**	**Max.**	**0.0162**	**77.76**	**12.95**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Compression Properties (0CLC)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3
4


0° Compression Properties (0CLC)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

0° Compression Properties (0CLC)--ETW2 (250°F)
Strength & Modulus

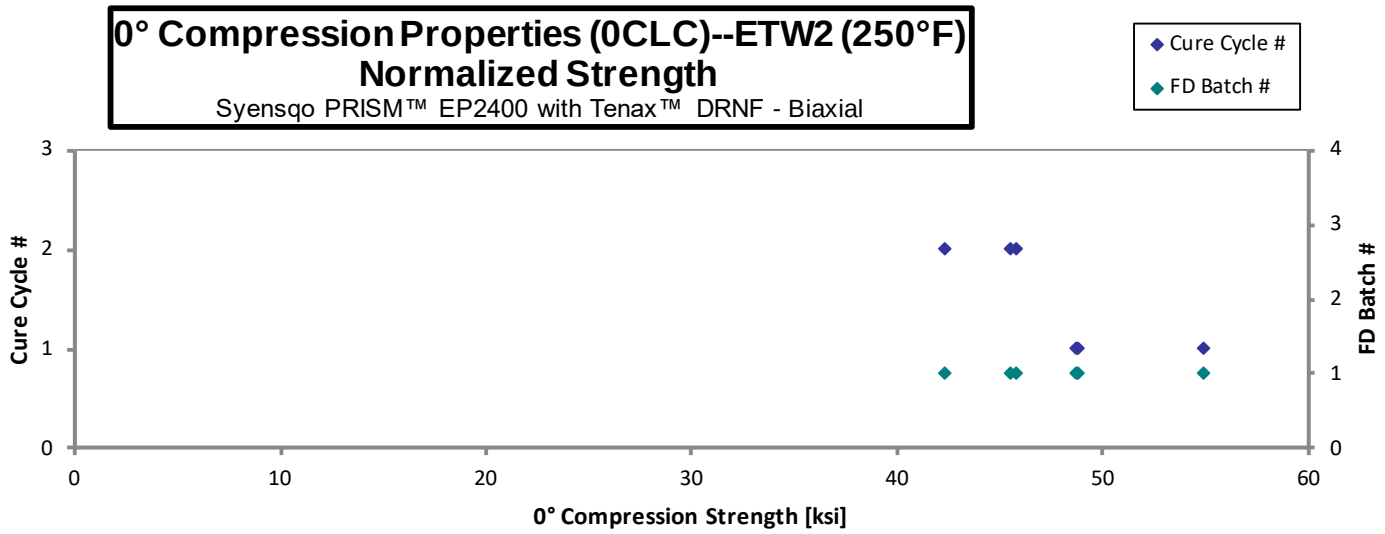
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

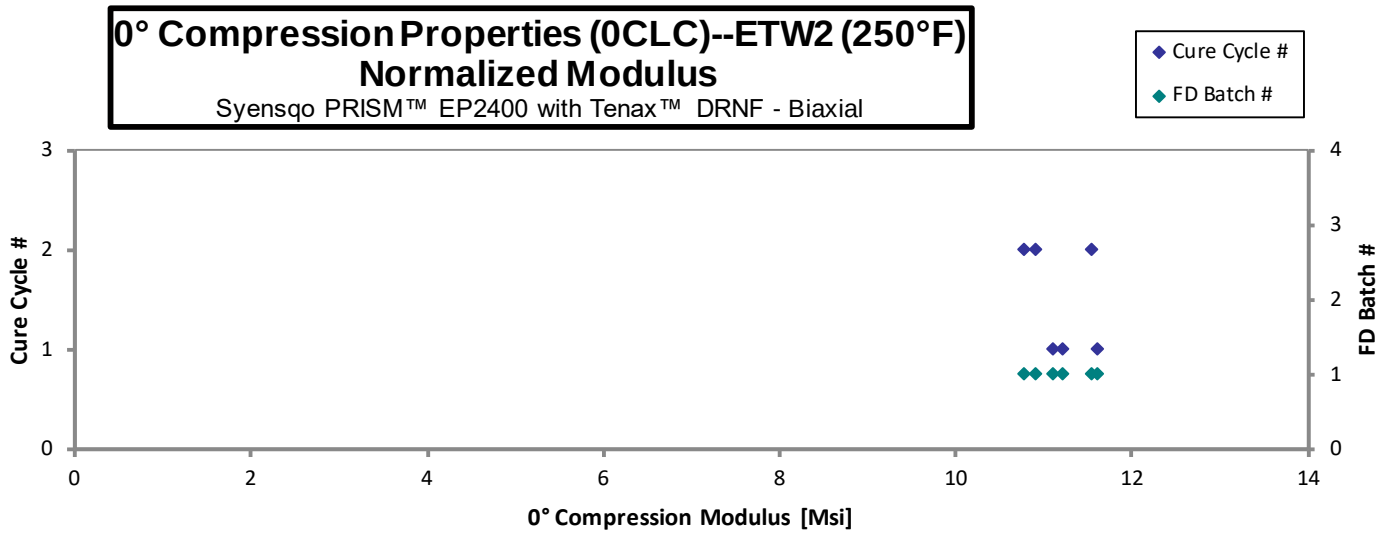
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-0CLC-A-C1-1-1F	1	C1	1	49.34	9.983	0.1247	8	BAT	0.0156	54.92	11.11
BA-0CLC-A-C1-1-2F	1	C1	1	44.26	10.56	0.1233	8	HAB	0.0154	48.72	11.62
BA-0CLC-A-C1-1-3F	1	C1	1	44.48	10.22	0.1229	8	BAT	0.0154	48.82	11.22
BA-0CLC-A-C2-1-1F	1	C2	2	40.15	9.500	0.1271	8	BAT	0.0159	45.55	10.78
BA-0CLC-A-C2-1-2F	1	C2	2	37.54	9.686	0.1262	8	BAT	0.0158	42.29	10.91
BA-0CLC-A-C2-1-3F	1	C2	2	40.78	10.27	0.1258	8	BAT	0.0157	45.80	11.54

Average	**42.76**	**10.04**	
Standard Dev.	**4.159**	**0.3930**	
Coeff. of Var. [%]	**9.728**	**3.916**	
Min.	**37.54**	**9.500**	
Max.	**49.34**	**10.56**	
Number of Spec.	**6**	**6**	

$Average_{norm}$	**0.0156**	**47.68**	**11.20**
$Standard\ Dev._{norm}$		**4.290**	**0.3348**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**8.996**	**2.990**
Min.	**0.0154**	**42.29**	**10.78**
Max.	**0.0159**	**54.92**	**11.62**
Number of Spec.	**6**	**6**	**6**


0° Compression Properties (0CLC)--ETW2 (250°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60


0° Compression Properties (0CLC)--ETW2 (250°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14

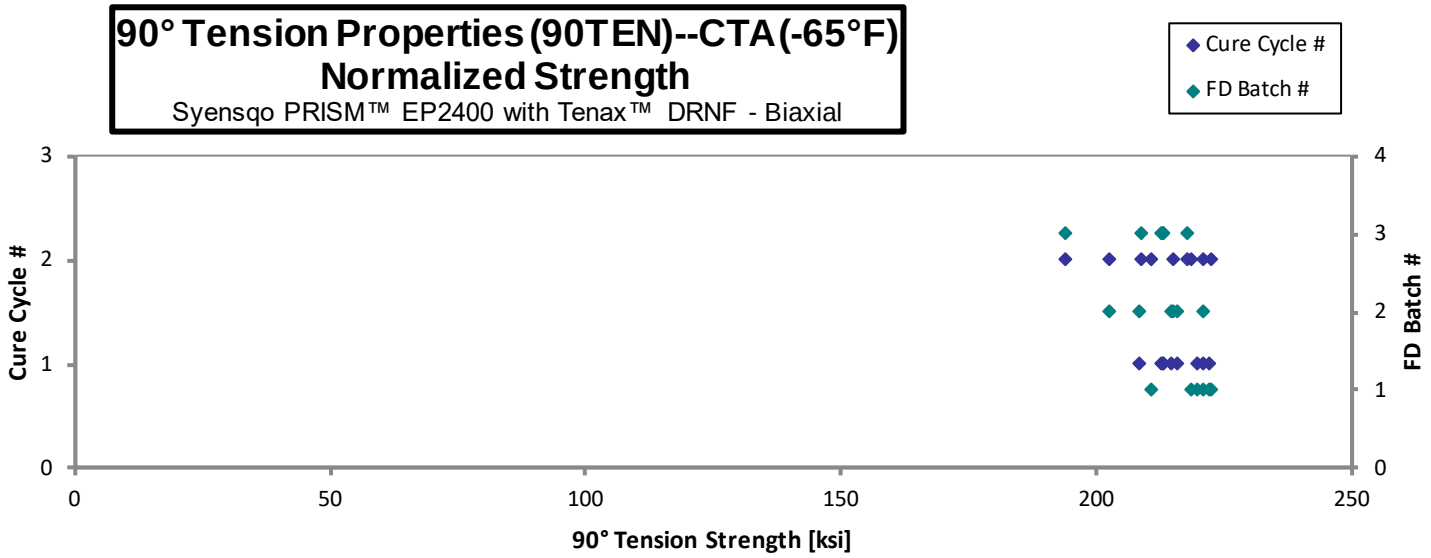
4.1.1.3 Biaxial 90° Tension (BA-90TEN)

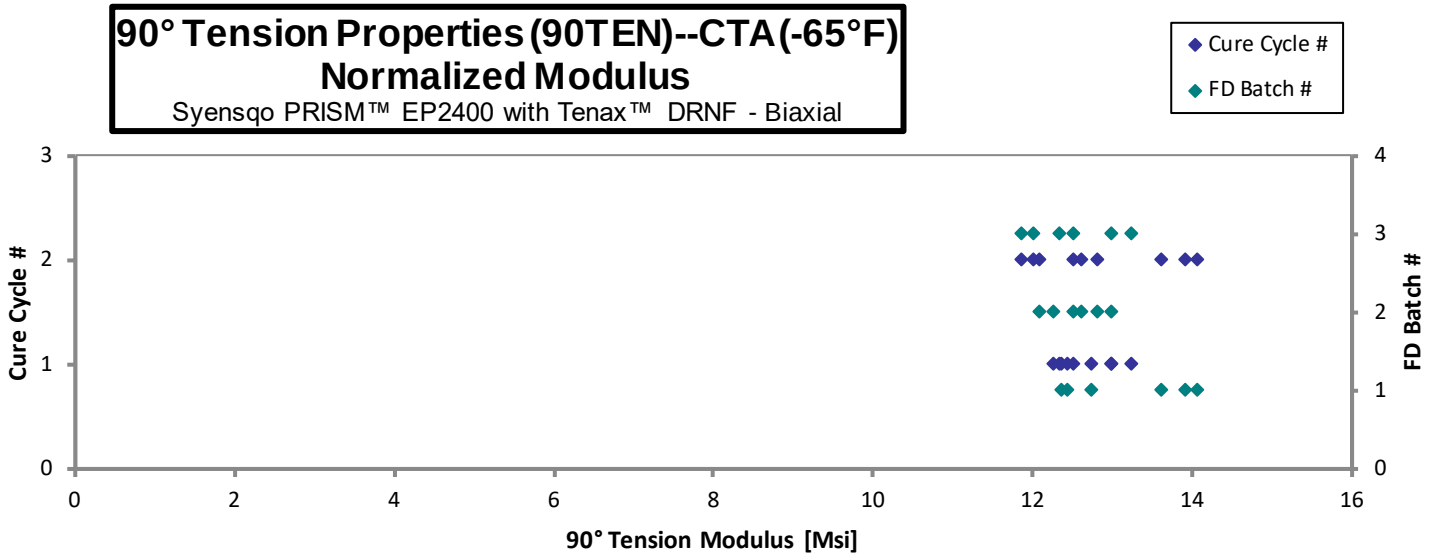
90° Tension Properties (90TEN)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90TEN-A-C1-1-1B	1	C1	1	208.5	11.67	0.1193	8	LIB, LAT	0.0149	222.0	12.43
BA-90TEN-A-C1-1-2B	1	C1	1	207.7	12.02	0.1187	8	LAB, LGM	0.0148	220.0	12.74
BA-90TEN-A-C1-1-3B	1	C1	1	207.5	11.60	0.1194	8	LAT, LGM	0.0149	221.1	12.36
BA-90TEN-A-C2-1-1B	1	C2	2	210.1	12.84	0.1187	8	LAT, LGM	0.0148	222.7	13.61
BA-90TEN-A-C2-1-2B	1	C2	2	200.3	13.36	0.1180	8	LWT, LGM, LAB	0.0147	211.0	14.07
BA-90TEN-A-C2-1-3B	1	C2	2	208.4	13.25	0.1176	8	LWB, LGM	0.0147	218.8	13.91
BA-90TEN-B-C1-1-1B	2	C1	1	191.4	11.16	0.1256	8	LWB, LAT	0.0157	214.6	12.51
BA-90TEN-B-C1-1-2B	2	C1	1	192.4	10.93	0.1256	8	LWB, LWT	0.0157	215.9	12.26
BA-90TEN-B-C1-1-3B	2	C1	1	183.9	11.47	0.1270	8	LWB, M(A,L)GT	0.0159	208.4	13.00
BA-90TEN-B-C2-1-1B	2	C2	2	196.3	11.40	0.1260	8	LGM, LWB	0.0158	220.9	12.83
BA-90TEN-B-C2-1-2B	2	C2	2	196.7	11.04	0.1226	8	LAT, LWB, LGM	0.0153	215.3	12.08
BA-90TEN-B-C2-1-3B	2	C2	2	183.2	11.40	0.1239	8	LAT, LWB	0.0155	202.7	12.61
BA-90TEN-C-C1-1-1B	3	C1	1		12.54	0.1182	8	LIT	0.0148		13.23
BA-90TEN-C-C1-1-2B	3	C1	1	200.0	11.58	0.1193	8	LAT, LWB	0.0149	213.0	12.33
BA-90TEN-C-C1-1-3B	3	C1	1	200.3	12.23	0.1190	8	LAT, LAB	0.0149	212.8	13.00
BA-90TEN-C-C1-1-4B	3	C1	1	202.4		0.1180	8	LAT, LAB	0.0148	213.3	
BA-90TEN-C-C2-1-1B	3	C2	2	199.9	11.49	0.1171	8	LWB, LAT	0.0146	209.0	12.02
BA-90TEN-C-C2-1-2B	3	C2	2	183.8	11.25	0.1182	8	LWB, LAT	0.0148	193.9	11.88
BA-90TEN-C-C2-1-3B	3	C2	2	205.8	11.82	0.1186	8	LWB, LWT	0.0148	218.0	12.52

Average	**198.8**	**11.84**	**Average$_{norm}$**	**0.0151**	**214.1**	**12.74**
Standard Dev.	**8.857**	**0.7297**	**Standard Dev.$_{norm}$**		**7.345**	**0.6298**
Coeff. of Var. [%]	**4.455**	**6.165**	**Coeff. of Var. [%]$_{norm}$**		**3.431**	**4.942**
Min.	**183.2**	**10.93**	**Min.**	**0.0146**	**193.9**	**11.88**
Max.	**210.1**	**13.36**	**Max.**	**0.0159**	**222.7**	**14.07**
Number of Spec.	**18**	**18**	**Number of Spec.**	**19**	**18**	**18**


90° Tension Properties (90TEN)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
50
100
150
200
250
90° Tension Strength [ksi]


90° Tension Properties (90TEN)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
2
4
6
8
10
12
14
16
90° Tension Modulus [Msi]

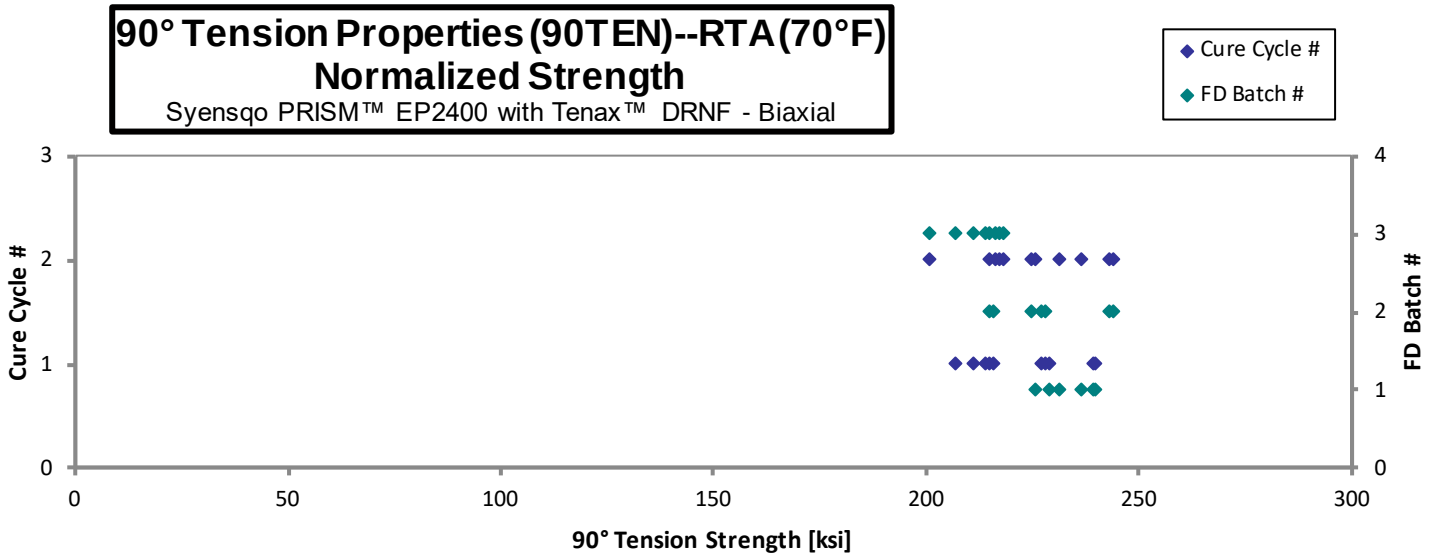
90° Tension Properties (90TEN)--RTA (70°F)
Strength & Modulus

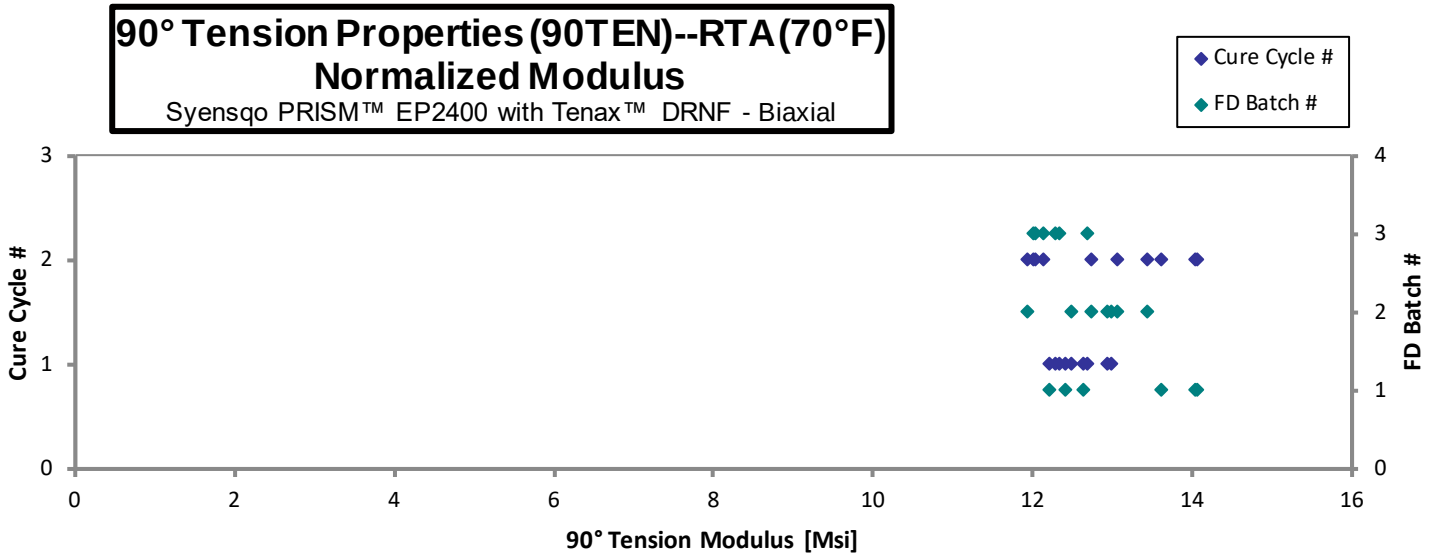
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90TEN-A-C1-1-1A	1	C1	1	218.2	11.63	0.1177	8	LWT, LWB	0.0147	229.3	12.22
BA-90TEN-A-C1-1-2A	1	C1	1	221.0	11.65	0.1217	8	LWT, LWB	0.0152	240.1	12.65
BA-90TEN-A-C1-1-3A	1	C1	1	225.2	11.69	0.1189	8	LWT, LWB	0.0149	239.2	12.41
BA-90TEN-A-C2-1-1A	1	C2	2	228.7	13.59	0.1158	8	LGT, LWB, LAT	0.0145	236.5	14.06
BA-90TEN-A-C2-1-2A	1	C2	2	215.0	12.97	0.1176	8	LWT, LWB	0.0147	225.7	13.61
BA-90TEN-A-C2-1-3A	1	C2	2	217.0	13.20	0.1193	8	LGB, LWT	0.0149	231.2	14.06
BA-90TEN-B-C1-1-1A	2	C1	1	206.7	11.79	0.1230	8	LGT, LWB	0.0154	227.1	12.95
BA-90TEN-B-C1-1-2A	2	C1	1	195.1	11.29	0.1238	8	LGM, LWT	0.0155	215.7	12.49
BA-90TEN-B-C1-1-3A	2	C1	1	205.3	11.68	0.1245	8	LGB, LWT	0.0156	228.1	12.98
BA-90TEN-B-C2-1-1A	2	C2	2	195.4	10.84	0.1233	8	LAT, LWB	0.0154	215.1	11.93
BA-90TEN-B-C2-1-2A	2	C2	2	216.9	11.60	0.1262	8	LWT, LWB	0.0158	244.3	13.07
BA-90TEN-B-C2-1-3A	2	C2	2	199.7	11.33	0.1260	8	LGB, LAT, LWB	0.0158	224.8	12.75
BA-90TEN-B-C2-1-4A	2	C2	2	214.3	11.85	0.1271	8	LWB, LAT	0.0159	243.2	13.45
BA-90TEN-C-C1-1-1A	3	C1	1	200.4	11.71	0.1179	8	LWB, LAT	0.0147	211.0	12.33
BA-90TEN-C-C1-1-2A	3	C1	1	204.2	11.72	0.1174	8	LWB, LIT	0.0147	214.1	12.29
BA-90TEN-C-C1-1-3A	3	C1	1	194.4	11.91	0.1193	8	LWT, LIB	0.0149	207.0	12.69
BA-90TEN-C-C1-1-4A	3	C1	1	204.4		0.1177	8	LWB, LAT	0.0147	214.7	
BA-90TEN-C-C2-1-1A	3	C2	2	209.7	11.78	0.1154	8	LWT, LAB	0.0144	216.1	12.14
BA-90TEN-C-C2-1-2A	3	C2	2	207.7	11.45	0.1177	8	LAB, LAT	0.0147	218.2	12.03
BA-90TEN-C-C2-1-3A	3	C2	2	207.2	11.44	0.1176	8	LWB, LIT	0.0147	217.5	12.01
BA-90TEN-C-C2-1-4A	3	C2	2	193.8		0.1160	8	LGM, LWB	0.0145	200.7	

Average	**208.6**	**11.85**	**Average$_{norm}$**	**0.0150**	**223.8**	**12.74**
Standard Dev.	**10.29**	**0.6787**	**Standard Dev.$_{norm}$**		**12.26**	**0.6594**
Coeff. of Var. [%]	**4.934**	**5.728**	**Coeff. of Var. [%]$_{norm}$**		**5.477**	**5.175**
Min.	**193.8**	**10.84**	**Min.**	**0.0144**	**200.7**	**11.93**
Max.	**228.7**	**13.59**	**Max.**	**0.0159**	**244.3**	**14.06**
Number of Spec.	**21**	**19**	**Number of Spec.**	**21**	**21**	**19**


90° Tension Properties (90TEN)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
50
100
150
200
250
300
90° Tension Strength [ksi]


90° Tension Properties (90TEN)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
2
4
6
8
10
12
14
16
90° Tension Modulus [Msi]

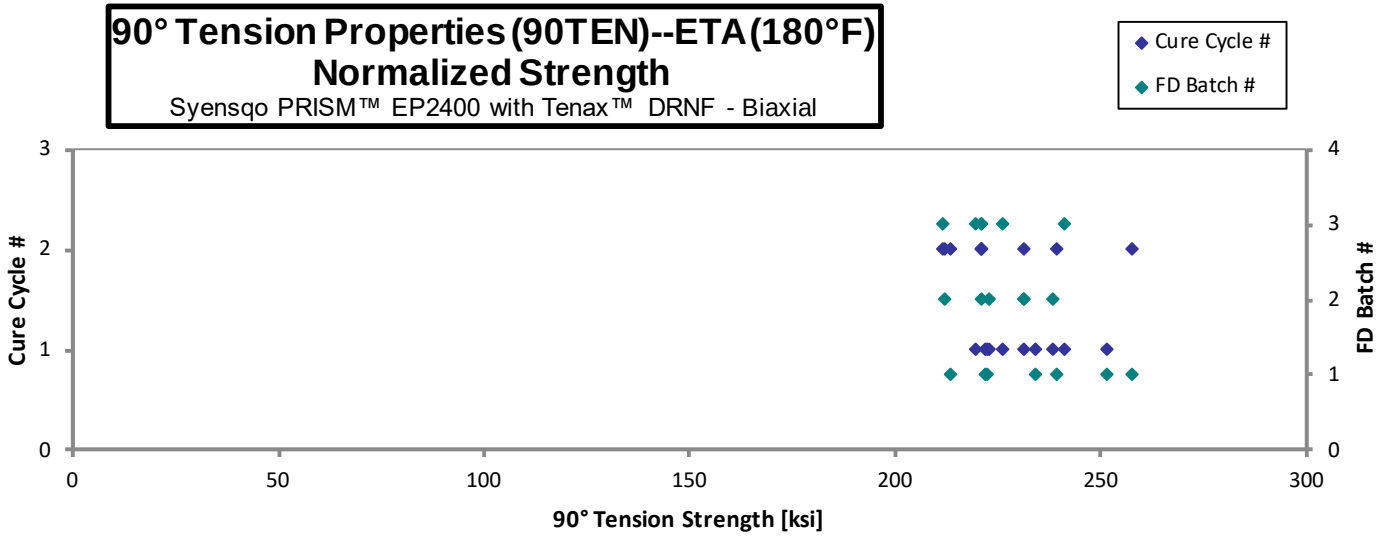
90° Tension Properties (90TEN)--ETA (180°F)
Strength & Modulus

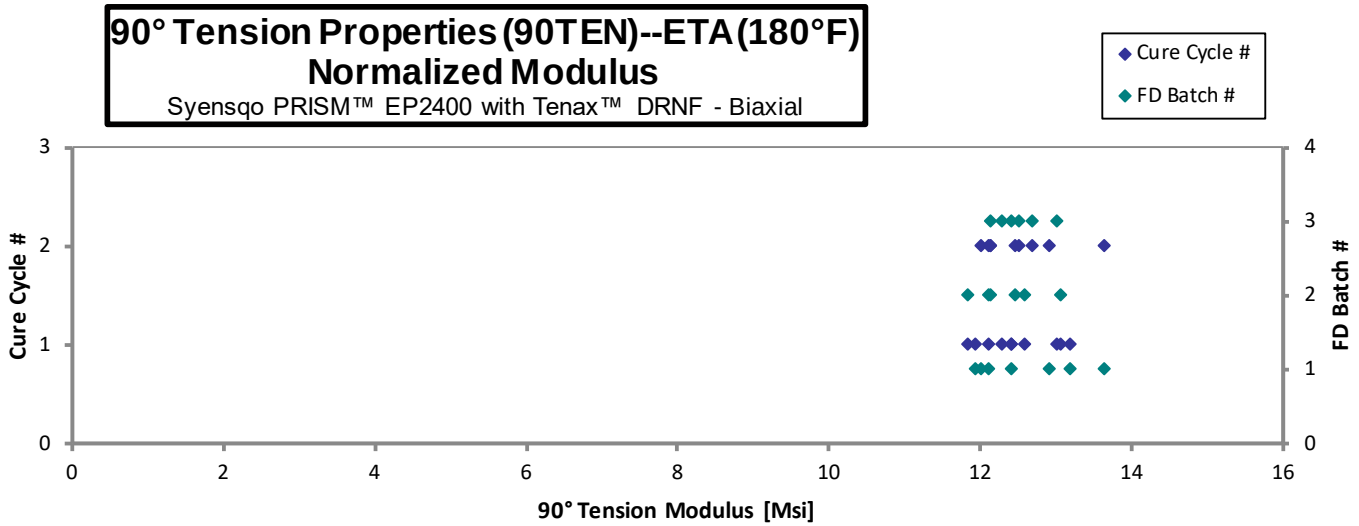
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90TEN-A-C1-1-1C	1	C1	1	207.8	11.14	0.1200	8	LAB, LWT, LGM	0.0150	222.6	11.94
BA-90TEN-A-C1-1-2C	1	C1	1	232.1	12.17	0.1214	8	LWT, LWB	0.0152	251.5	13.19
BA-90TEN-A-C1-1-3C	1	C1	1	207.3	11.29	0.1200	8	LWT	0.0150	222.2	12.10
BA-90TEN-A-C1-1-4C	1	C1	1	221.1	11.70	0.1188	8	LAT, LWB, LGM	0.0148	234.4	12.41
BA-90TEN-A-C2-1-1C	1	C2	2	224.4	12.11	0.1196	8	LWB, LWT	0.0149	239.6	12.93
BA-90TEN-A-C2-1-2C	1	C2	2	201.5	11.34	0.1187	8	LAT, LWB, LGM	0.0148	213.4	12.01
BA-90TEN-A-C2-1-3C	1	C2	2	237.5	12.57	0.1216	8	LWB, LWT, LGM	0.0152	257.8	13.65
BA-90TEN-B-C1-1-1C	2	C1	1	211.2	11.58	0.1264	8	LAT, LWB	0.0158	238.2	13.06
BA-90TEN-B-C1-1-2C	2	C1	1	206.6	11.24	0.1254	8	LAT, LWB	0.0157	231.3	12.58
BA-90TEN-B-C1-1-3C	2	C1	1	200.1	10.62	0.1249	8	LWT, LGB	0.0156	223.0	11.84
BA-90TEN-B-C2-1-1C	2	C2	2	210.0	11.30	0.1235	8	LWB, LWT	0.0154	231.6	12.46
BA-90TEN-B-C2-1-2C	2	C2	2	198.3	10.89	0.1249	8	LGM	0.0156	221.1	12.15
BA-90TEN-B-C2-1-3C	2	C2	2	191.3	10.92	0.1242	8	LWB, LAT	0.0155	212.1	12.11
BA-90TEN-C-C1-1-1C	3	C1	1	210.0	11.75	0.1172	8	LWT, LAB	0.0147	219.8	12.30
BA-90TEN-C-C1-1-2C	3	C1	1	223.8	12.06	0.1208	8	LAT, LAB	0.0151	241.5	13.01
BA-90TEN-C-C1-1-3C	3	C1	1	212.1	11.63	0.1194	8	LAT, LAB	0.0149	226.1	12.41
BA-90TEN-C-C2-1-1C	3	C2	2	208.7	11.99	0.1186	8	LWB	0.0148	220.9	12.70
BA-90TEN-C-C2-1-2C	3	C2	2	198.7	11.39	0.1193	8	LAT, LAB	0.0149	211.7	12.13
BA-90TEN-C-C2-1-3C	3	C2	2	211.8	11.99	0.1169	8	LWT, LAB	0.0146	221.0	12.51

Average	**211.3**	**11.56**	**$Average_{norm}$**	**0.0151**	**228.4**	**12.50**
Standard Dev.	**11.91**	**0.5060**	**$Standard\ Dev._{norm}$**		**12.82**	**0.4835**
Coeff. of Var. [%]	**5.638**	**4.376**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.611**	**3.868**
Min.	**191.3**	**10.62**	**Min.**	**0.0146**	**211.7**	**11.84**
Max.	**237.5**	**12.57**	**Max.**	**0.0158**	**257.8**	**13.65**
Number of Spec.	**19**	**19**	**Number of Spec.**	**19**	**19**	**19**


90° Tension Properties (90TEN)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Tension Strength [ksi]
0
50
100
150
200
250
300


90° Tension Properties (90TEN)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
16

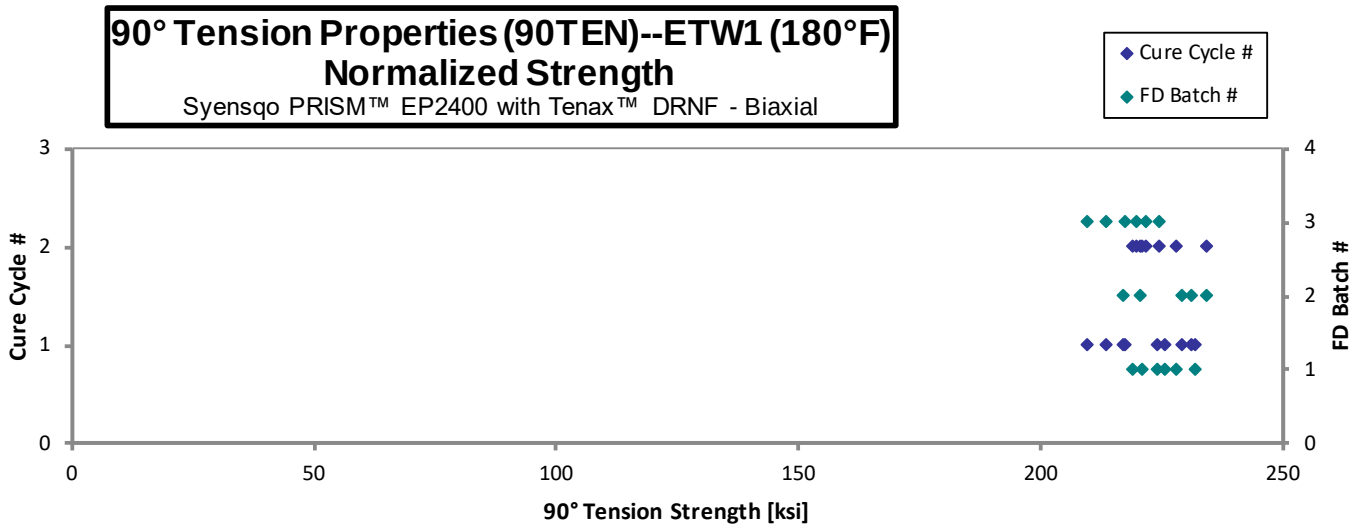
90° Tension Properties (90TEN)--ETW1 (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

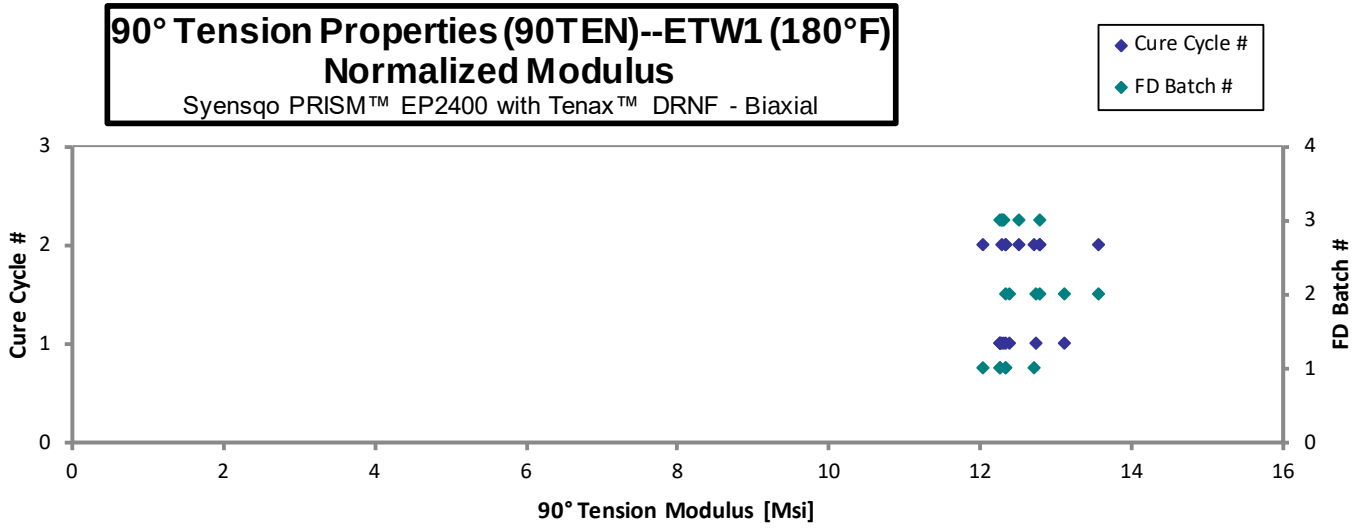
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90TEN-A-C1-1-1D	1	C1	1	212.8	11.62	0.1189	8	LGT, LWB	0.0149	225.9	12.34
BA-90TEN-A-C1-1-2D	1	C1	1	211.7	11.60	0.1186	8	LGM, LWB	0.0148	224.1	12.28
BA-90TEN-A-C1-1-3D	1	C1	1	218.2	11.54	0.1191	8	LGM, LWB	0.0149	232.1	12.28
BA-90TEN-A-C2-1-1D	1	C2	2	217.4	12.10	0.1176	8	LGT, LWB	0.0147	228.3	12.71
BA-90TEN-A-C2-1-2D	1	C2	2	210.7	11.58	0.1164	8	LGM, LWB	0.0145	218.9	12.03
BA-90TEN-A-C2-1-3D	1	C2	2	211.9	11.82	0.1168	8	LGM, LWB	0.0146	221.0	12.33
BA-90TEN-B-C1-1-1D	2	C1	1	208.1	11.47	0.1244	8	LWB, LWT	0.0156	231.1	12.74
BA-90TEN-B-C1-1-2D	2	C1	1	193.8	11.05	0.1255	8	LGB, LAB, LAT	0.0157	217.2	12.39
BA-90TEN-B-C1-1-3D	2	C1	1	203.6	11.65	0.1262	8	LGT, LWB, LAT	0.0158	229.4	13.12
BA-90TEN-B-C2-1-1D	2	C2	2	200.0	11.20	0.1235	8	LWB, LWT	0.0154	220.5	12.34
BA-90TEN-B-C2-1-2D*	2	C2	2		12.14	0.1251	8	LGT, LWB	0.0156		13.56
BA-90TEN-B-C2-1-3D	2	C2	2	209.8	11.45	0.1251	8	LGT, LWB	0.0156	234.3	12.79
BA-90TEN-C-C1-1-1D	3	C1	1	198.1	11.60	0.1186	8	LWB, LIT	0.0148	209.7	12.28
BA-90TEN-C-C1-1-2D	3	C1	1	206.3	11.67	0.1181	8	LWB, LAT	0.0148	217.5	12.30
BA-90TEN-C-C1-1-3D	3	C1	1	202.6	11.68	0.1181	8	LAT, LAB	0.0148	213.7	12.32
BA-90TEN-C-C2-1-1D	3	C2	2	214.2	12.20	0.1175	8	LGM, LWB	0.0147	224.7	12.80
BA-90TEN-C-C2-1-2D	3	C2	2	213.9	12.07	0.1161	8	LGM, LWT	0.0145	221.7	12.51
BA-90TEN-C-C2-1-3D	3	C2	2	209.0	11.68	0.1179	8	LGM, LAT	0.0147	220.0	12.30

* Strength not reported because there's no clear load drop.

	Strength [ksi]	Modulus [Msi]		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**208.4**	**11.67**	**$Average_{norm}$**	**0.0150**	**222.9**	**12.52**
Standard Dev.	**6.812**	**0.3078**	**Standard Dev.$_{norm}$**		**6.723**	**0.3724**
Coeff. of Var. [%]	**3.269**	**2.637**	**Coeff. of Var. [%]$_{norm}$**		**3.016**	**2.974**
Min.	**193.8**	**11.05**	**Min.**	**0.0145**	**209.7**	**12.03**
Max.	**218.2**	**12.20**	**Max.**	**0.0158**	**234.3**	**13.56**
Number of Spec.	**17**	**18**	**Number of Spec.**	**18**	**17**	**18**


90° Tension Properties (90TEN)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
50
100
150
200
250
90° Tension Strength [ksi]


90° Tension Properties (90TEN)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
2
4
6
8
10
12
14
16
90° Tension Modulus [Msi]

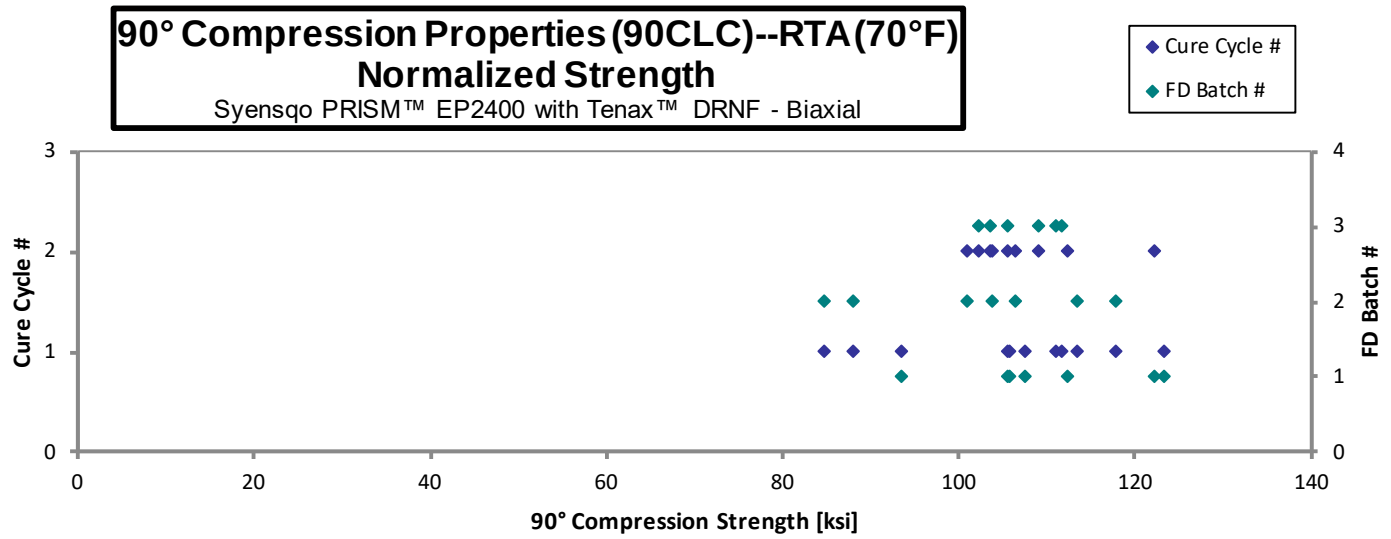
4.1.1.4 Biaxial 90° Compression (BA-90CLC)

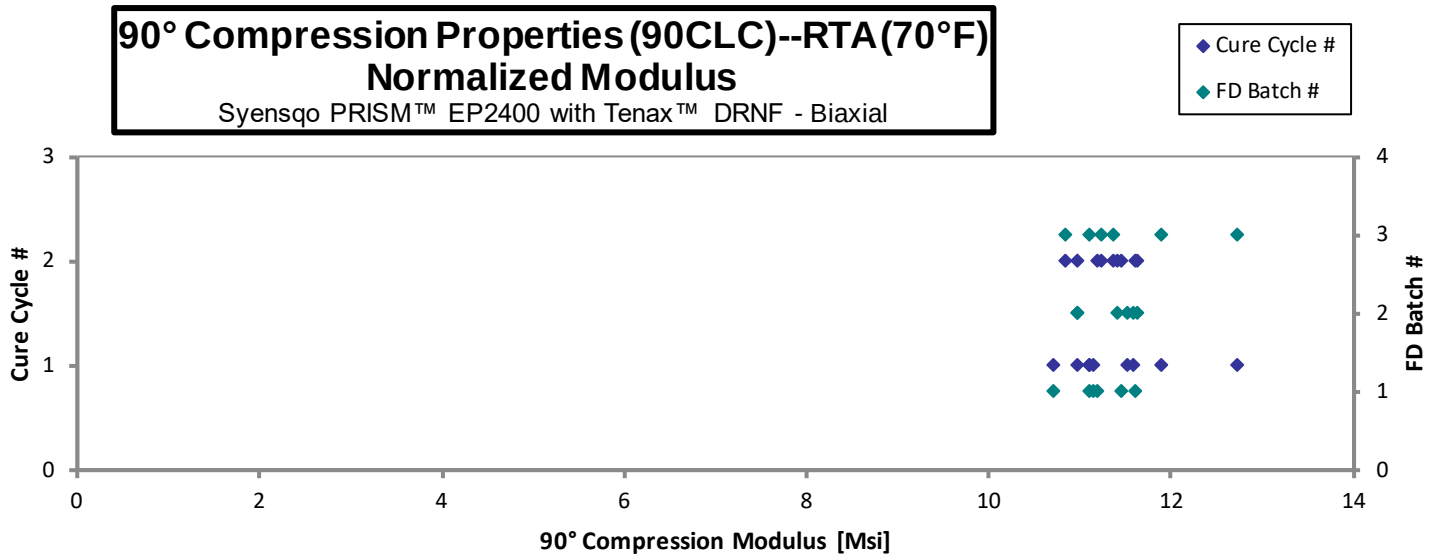
90° Compression Properties (90CLC)--RTA (70°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90CLC-A-C1-1-1A	1	C1	1	112.2	9.746	0.1232	8	HAB, BGM	0.0154	123.4	10.72
BA-90CLC-A-C1-1-2A	1	C1	1	84.74	10.11	0.1236	8	HAB, BGM	0.0154	93.50	11.15
BA-90CLC-A-C1-1-3A	1	C1	1	95.05	9.969	0.1247	8	HAB, BGM	0.0156	105.8	11.10
BA-90CLC-A-C1-1-4A	1	C1	1	95.97		0.1256	8	BGM	0.0157	107.6	
BA-90CLC-A-C2-1-1A	1	C2	2	96.71	10.63	0.1223	8	BGM	0.0153	105.6	11.61
BA-90CLC-A-C2-1-2A	1	C2	2	107.9	9.887	0.1269	8	HAB	0.0159	122.2	11.20
BA-90CLC-A-C2-1-3A	1	C2	2	97.77	9.981	0.1287	8	HAB, BGM	0.0161	112.3	11.46
BA-90CLC-B-C1-1-1A	2	C1	1	82.28	10.84	0.1199	8	BAB	0.0150	88.07	11.60
BA-90CLC-B-C1-1-2A	2	C1	1	105.7	10.23	0.1203	8	BAB	0.0150	113.5	10.98
BA-90CLC-B-C1-1-3A	2	C1	1	108.2	10.58	0.1219	8	BGM	0.0152	117.8	11.51
BA-90CLC-B-C1-1-4A	2	C1	1	76.87		0.1236	8	BAB	0.0154	84.80	
BA-90CLC-B-C2-1-1A	2	C2	2	94.15	10.30	0.1266	8	BAB	0.0158	106.4	11.64
BA-90CLC-B-C2-1-2A	2	C2	2	91.89	9.707	0.1266	8	BAB	0.0158	103.9	10.97
BA-90CLC-B-C2-1-3A	2	C2	2	89.09	10.06	0.1269	8	BAT	0.0159	101.0	11.41
BA-90CLC-C-C1-1-1A	3	C1	1	98.40	10.54	0.1264	8	BGM	0.0158	111.1	11.90
BA-90CLC-C-C1-1-2A	3	C1	1	93.56	9.837	0.1264	8	BAT	0.0158	105.6	11.10
BA-90CLC-C-C1-1-3A	3	C1	1	98.13	11.19	0.1275	8	BAT, HIT, HAT	0.0159	111.7	12.73
BA-90CLC-C-C2-1-1A	3	C2	2	98.78	10.46	0.1160	8	BAT, HIT	0.0145	102.3	10.84
BA-90CLC-C-C2-1-2A	3	C2	2	103.5	10.66	0.1180	8	BAT	0.0147	109.1	11.23
BA-90CLC-C-C2-1-3A	3	C2	2	97.95	10.74	0.1184	8	BAT, HIT	0.0148	103.6	11.36

Average	**96.44**	**10.30**	**Average$_{norm}$**	**0.0155**	**106.5**	**11.36**
Standard Dev.	**8.826**	**0.4216**	**Standard Dev.$_{norm}$**		**9.850**	**0.4605**
Coeff. of Var. [%]	**9.152**	**4.092**	**Coeff. of Var. [%]$_{norm}$**		**9.253**	**4.053**
Min.	**76.87**	**9.707**	**Min.**	**0.0145**	**84.80**	**10.72**
Max.	**112.2**	**11.19**	**Max.**	**0.0161**	**123.4**	**12.73**
Number of Spec.	**20**	**18**	**Number of Spec.**	**20**	**20**	**18**


90° Compression Properties (90CLC)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4

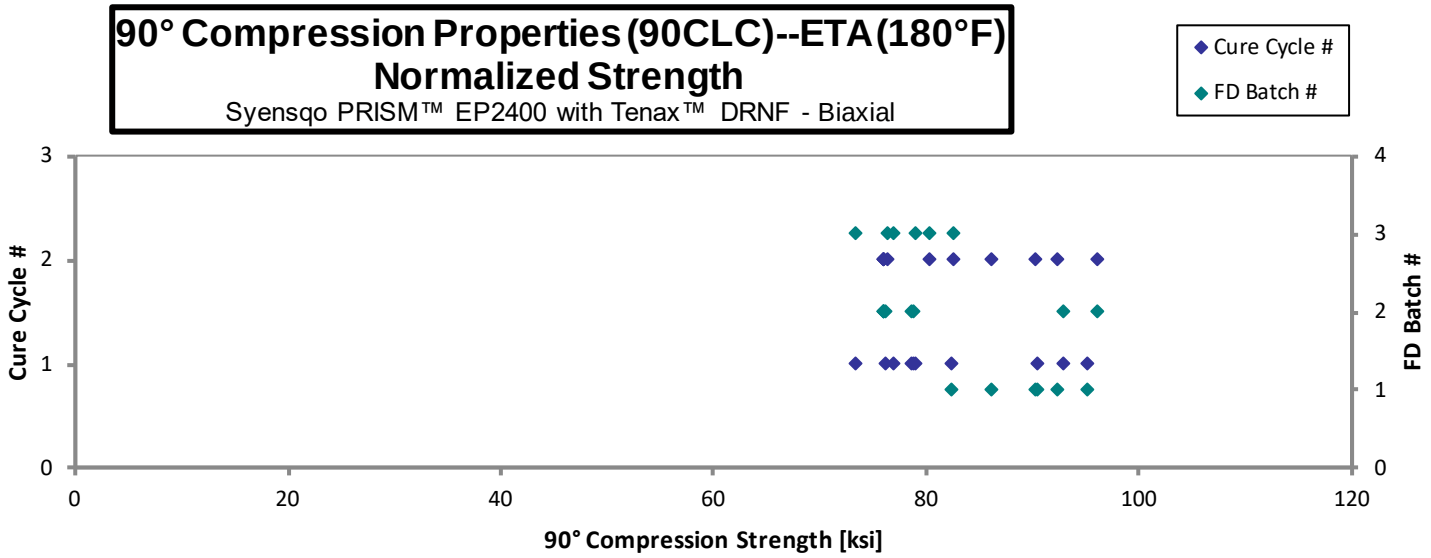

90° Compression Properties (90CLC)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

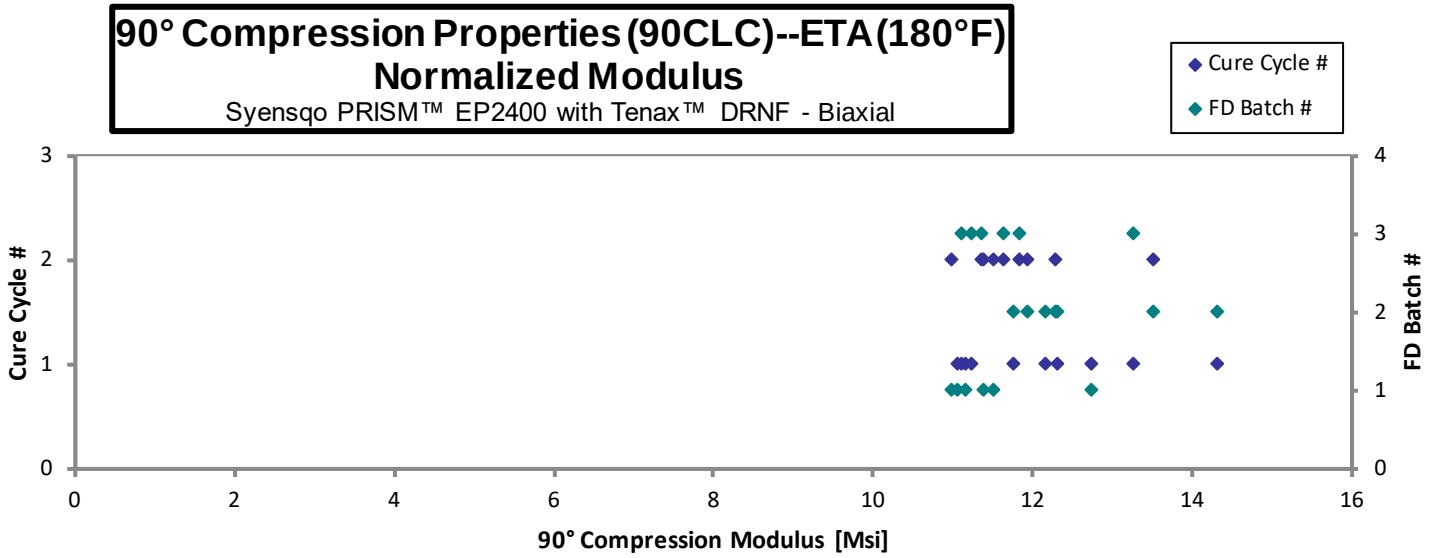
90° Compression Properties (90CLC)--ETA (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90CLC-A-C1-1-1C	1	C1	1	80.87	11.40	0.1253	8	BGM	0.0157	90.48	12.75
BA-90CLC-A-C1-1-2C	1	C1	1	73.00	9.884	0.1264	8	BGM	0.0158	82.40	11.16
BA-90CLC-A-C1-1-3C	1	C1	1	84.50	9.832	0.1261	8	HIB, HAB	0.0158	95.14	11.07
BA-90CLC-A-C2-1-1C	1	C2	2	80.61	9.587	0.1284	8	BGM, HAB	0.0161	92.41	10.99
BA-90CLC-A-C2-1-2C	1	C2	2	76.33	10.08	0.1265	8	BGM	0.0158	86.19	11.38
BA-90CLC-A-C2-1-3C	1	C2	2	81.14	10.35	0.1246	8	BGM	0.0156	90.24	11.51
BA-90CLC-B-C1-1-1C	2	C1	1	83.14	12.82	0.1252	8	BAB	0.0157	92.96	14.33
BA-90CLC-B-C1-1-2C	2	C1	1	68.13	10.88	0.1252	8	BAT	0.0156	76.13	12.16
BA-90CLC-B-C1-1-3C	2	C1	1	71.19	11.12	0.1241	8	BAT	0.0155	78.86	12.32
BA-90CLC-B-C1-1-4C	2	C1	1	71.74	10.73	0.1226	8	BAB	0.0153	78.55	11.75
BA-90CLC-B-C2-1-1C	2	C2	2	82.25	10.51	0.1309	8	BAT	0.0164	96.13	12.29
BA-90CLC-B-C2-1-2C	2	C2	2	65.37	11.62	0.1303	8	BAT	0.0163	76.06	13.52
BA-90CLC-B-C2-1-3C	2	C2	2	66.15	10.39	0.1286	8	BAT	0.0161	75.97	11.93
BA-90CLC-B-C2-1-4C	2	C2	2	64.97		0.1309	8	BAB	0.0164	75.96	
BA-90CLC-C-C1-1-1C	3	C1	1	69.02	9.975	0.1248	8	BAT, HAT, HIT	0.0156	76.92	11.12
BA-90CLC-C-C1-1-2C	3	C1	1	65.06	11.76	0.1264	8	BAT	0.0158	73.43	13.27
BA-90CLC-C-C1-1-3C	3	C1	1	71.74	10.20	0.1235	8	BAT, HAT, HIT	0.0154	79.08	11.24
BA-90CLC-C-C2-1-1C	3	C2	2	70.54	10.93	0.1214	8	M(B,H)AT, HIT	0.0152	76.46	11.85
BA-90CLC-C-C2-1-2C	3	C2	2	74.59	10.81	0.1206	8	BAB, HIT	0.0151	80.29	11.64
BA-90CLC-C-C2-1-3C	3	C2	2	76.93	10.59	0.1202	8	BGM	0.0150	82.53	11.36

Average	**73.86**	**10.71**	**$Average_{norm}$**	**0.0157**	**82.81**	**11.98**
Standard Dev.	**6.511**	**0.7921**	**$Standard\ Dev._{norm}$**		**7.439**	**0.9228**
Coeff. of Var. [%]	**8.814**	**7.397**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**8.983**	**7.702**
Min.	**64.97**	**9.587**	**Min.**	**0.0150**	**73.43**	**10.99**
Max.	**84.50**	**12.82**	**Max.**	**0.0164**	**96.13**	**14.33**
Number of Spec.	**20**	**19**	**Number of Spec.**	**20**	**20**	**19**


90° Compression Properties (90CLC)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


90° Compression Properties (90CLC)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

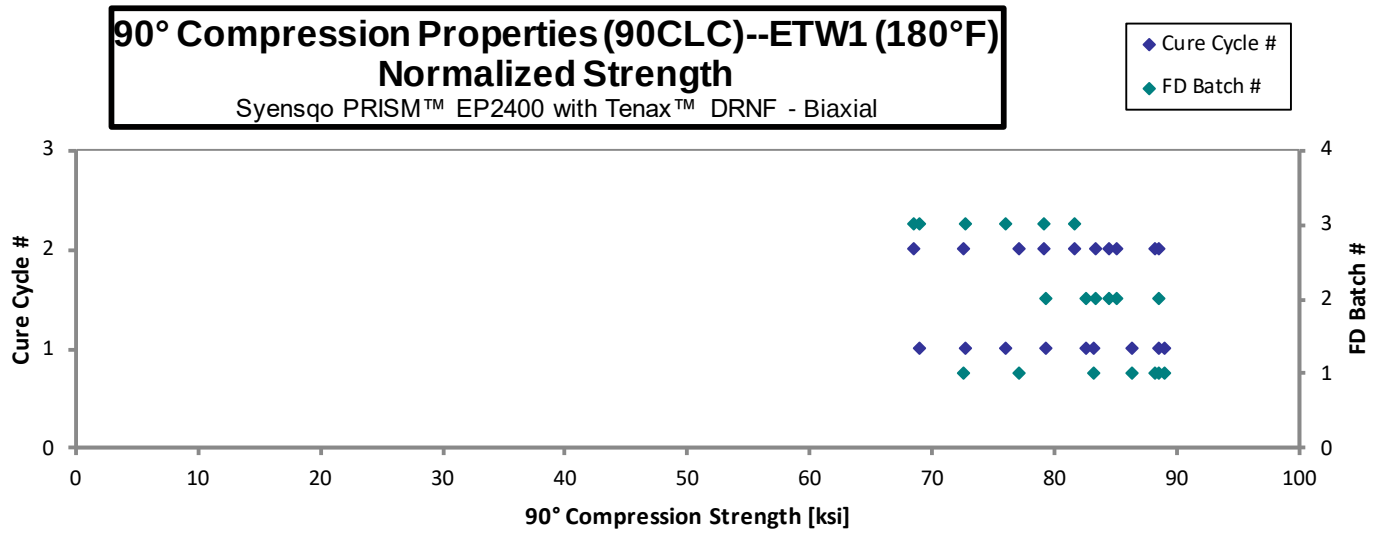
90° Compression Properties (90CLC)--ETW1 (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

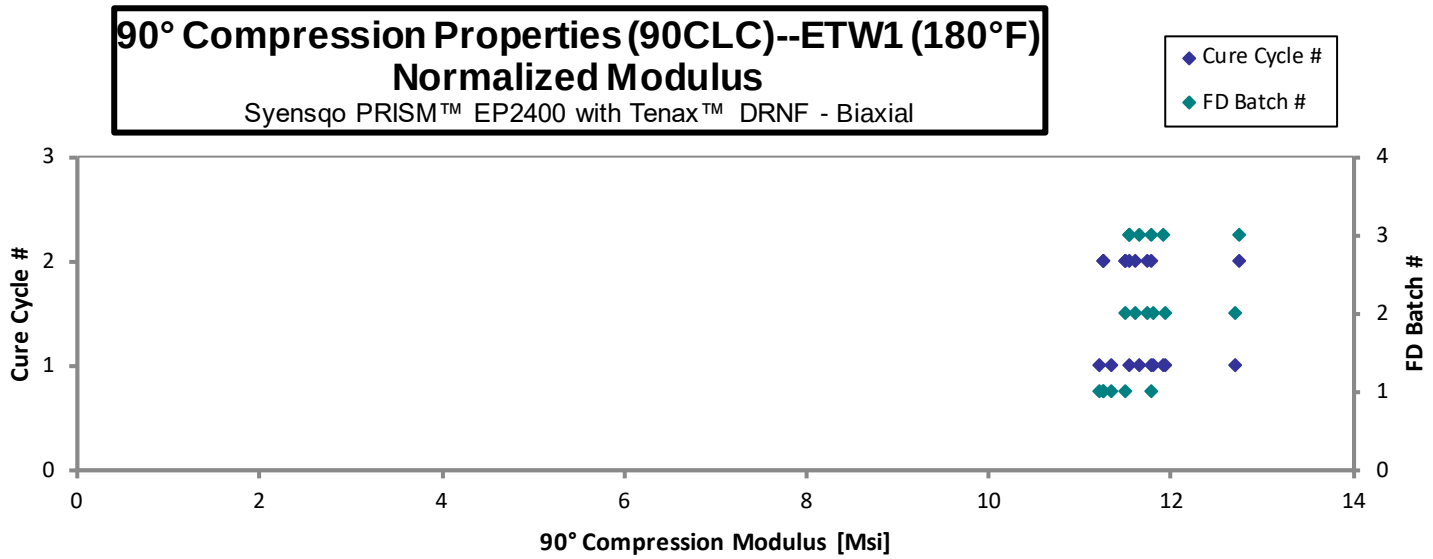
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90CLC-A-C1-1-1D	1	C1	1	75.46	10.68	0.1236	8	BAT	0.0154	83.24	11.78
BA-90CLC-A-C1-1-2D	1	C1	1	78.27	10.16	0.1237	8	HAT, HIT	0.0155	86.42	11.22
BA-90CLC-A-C1-1-3D	1	C1	1	80.60	10.27	0.1237	8	HAT, HIT	0.0155	89.05	11.35
BA-90CLC-A-C2-1-1D	1	C2	2	77.99	10.16	0.1268	8	HAT, HIT	0.0158	88.26	11.50
BA-90CLC-A-C2-1-2D	1	C2	2	69.70	10.17	0.1240	8	HAT, HIT	0.0155	77.16	11.25
BA-90CLC-A-C2-1-3D	1	C2	2	79.88	10.16	0.1241	8	HAT, HIT	0.0155	88.53	11.26
BA-90CLC-A-C2-1-5D	1	C2	2	65.62		0.1240	8	BAT	0.0155	72.64	
BA-90CLC-B-C1-1-1D	2	C1	1	72.42	10.79	0.1226	8	BAB	0.0153	79.28	11.81
BA-90CLC-B-C1-1-2D	2	C1	1	75.59	11.61	0.1225	8	BAB	0.0153	82.68	12.70
BA-90CLC-B-C1-1-3D	2	C1	1		10.94	0.1222	8	HIT	0.0153		11.94
BA-90CLC-B-C1-1-4D	2	C1	1	81.65		0.1215	8	M(B,H)AT, HIT	0.0152	88.58	
BA-90CLC-B-C2-1-1D	2	C2	2	72.57	10.01	0.1288	8	HAT, HIT	0.0161	83.42	11.51
BA-90CLC-B-C2-1-2D	2	C2	2	73.29	10.07	0.1291	8	BAT	0.0161	84.49	11.61
BA-90CLC-B-C2-1-3D	2	C2	2	74.25	10.24	0.1284	8	BAB	0.0160	85.09	11.73
BA-90CLC-C-C1-1-1D	3	C1	1	65.17	10.44	0.1250	8	BAT	0.0156	72.74	11.66
BA-90CLC-C-C1-1-2D	3	C1	1	61.06	10.55	0.1265	8	M(B,H)AT, HIT	0.0158	68.95	11.92
BA-90CLC-C-C1-1-3D	3	C1	1	67.43	10.25	0.1262	8	BAB, HAT	0.0158	75.96	11.55
BA-90CLC-C-C2-1-1D	3	C2	2	73.60	10.96	0.1205	8	M(B,H)AT, HIT	0.0151	79.18	11.79
BA-90CLC-C-C2-1-2D	3	C2	2	74.78	11.66	0.1224	8	M(B,H)AT, HIT	0.0153	81.69	12.74
BA-90CLC-C-C2-1-3D	3	C2	2	63.52	10.71	0.1208	8	HAT, HIT	0.0151	68.48	11.54

	Strength [ksi]	Modulus [Msi]
Average	72.78	10.55
Standard Dev.	5.964	0.4965
Coeff. of Var. [%]	8.195	4.708
Min.	61.06	10.01
Max.	81.65	11.66
Number of Spec.	19	18

	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	0.0155	80.83	11.71
$Standard\ Dev._{norm}$		6.624	0.4270
$Coeff.\ of\ Var.\ [\%]_{norm}$		8.195	3.645
Min.	0.0151	68.48	11.22
Max.	0.0161	89.05	12.74
Number of Spec.	20	19	18

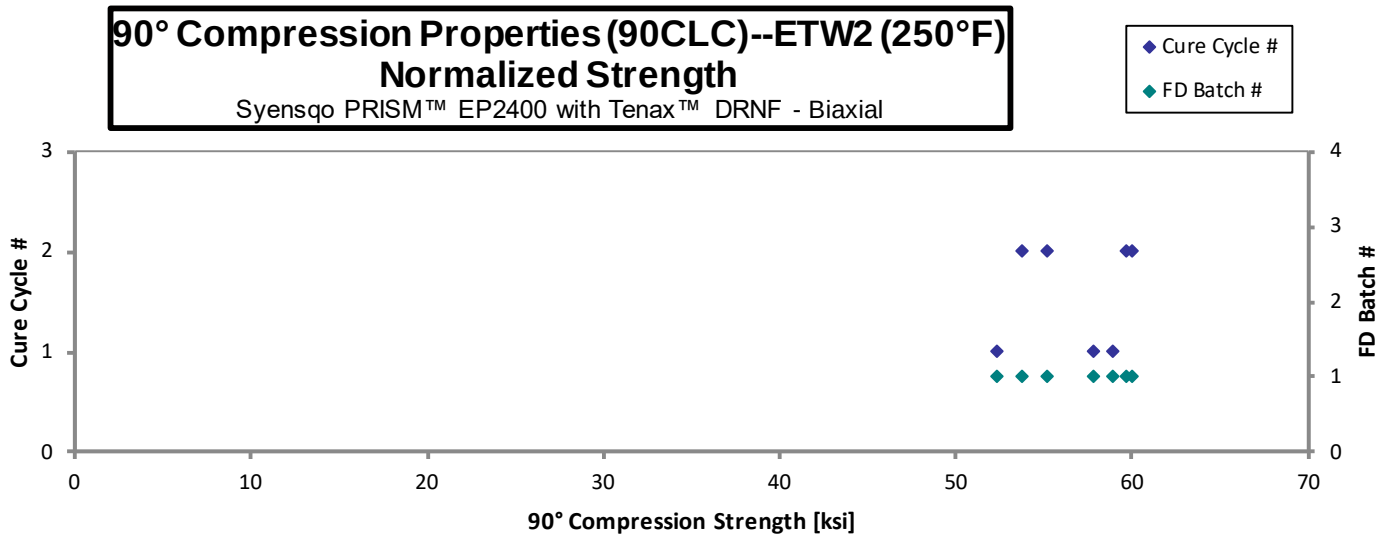

90° Compression Properties (90CLC)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4

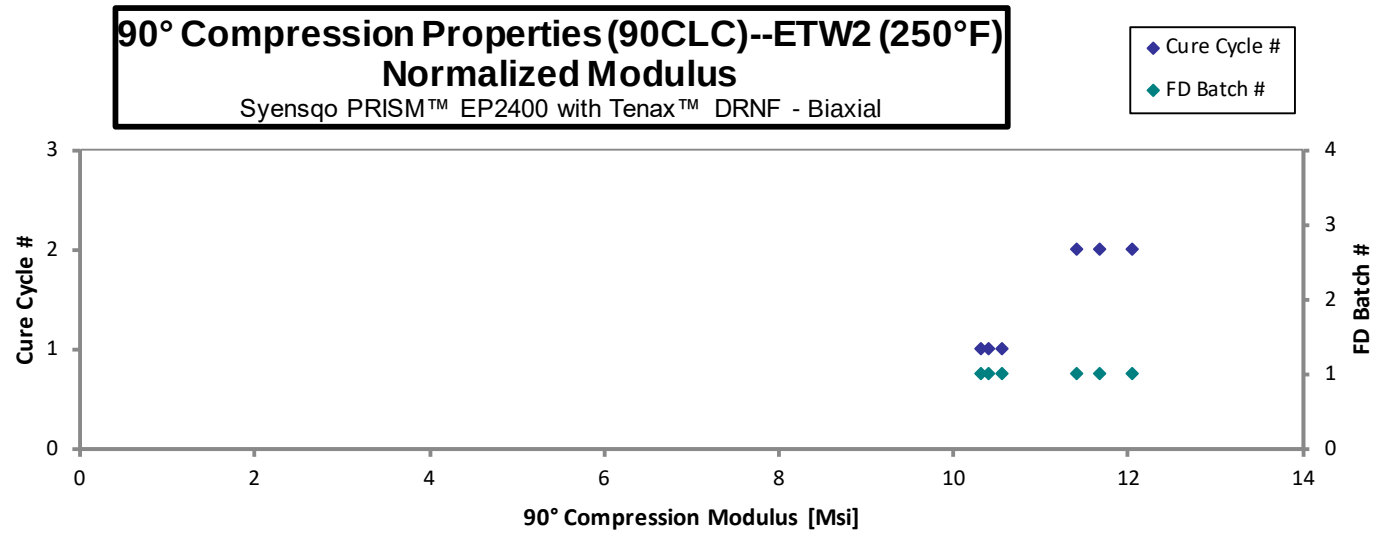

90° Compression Properties (90CLC)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

90° Compression Properties (90CLC)--ETW2 (250°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BA-90CLC-A-C1-1-1F	1	C1	1	48.28	9.748	0.1213	8	HGM	0.0152	52.31	10.56
BA-90CLC-A-C1-1-2F	1	C1	1	53.59	9.468	0.1231	8	BGM	0.0154	58.89	10.40
BA-90CLC-A-C1-1-3F	1	C1	1	52.25	9.333	0.1239	8	BAT	0.0155	57.79	10.32
BA-90CLC-A-C2-1-1F	1	C2	2	48.97	10.12	0.1263	8	BGM	0.0158	55.24	11.41
BA-90CLC-A-C2-1-2F	1	C2	2	46.24	10.04	0.1301	8	BAB	0.0163	53.73	11.67
BA-90CLC-A-C2-1-3F	1	C2	2	53.04	10.69	0.1261	8	HAT, HIT	0.0158	59.72	12.04
BA-90CLC-A-C2-1-4F	1	C2	2	52.25		0.1286	8	M(B,H)AB, HIB	0.0161	60.00	
			Average	**50.66**	**9.901**				**$Average_{norm}$**	**0.0157**	**56.81**	**11.07**
			Standard Dev.	**2.807**	**0.4962**				**$Standard\ Dev._{norm}$**		**3.059**	**0.7324**
			Coeff. of Var. [%]	**5.541**	**5.012**				**Coeff. of Var. [%]$_{norm}$**		**5.384**	**6.617**
			Min.	**46.24**	**9.333**				**Min.**	**0.0152**	**52.31**	**10.32**
			Max.	**53.59**	**10.69**				**Max.**	**0.0163**	**60.00**	**12.04**
			Number of Spec.	**7**	**6**				**Number of Spec.**	**7**	**7**	**6**


90° Compression Properties (90CLC)--ETW2 (250°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Strength [ksi]
0
10
20
30
40
50
60
70

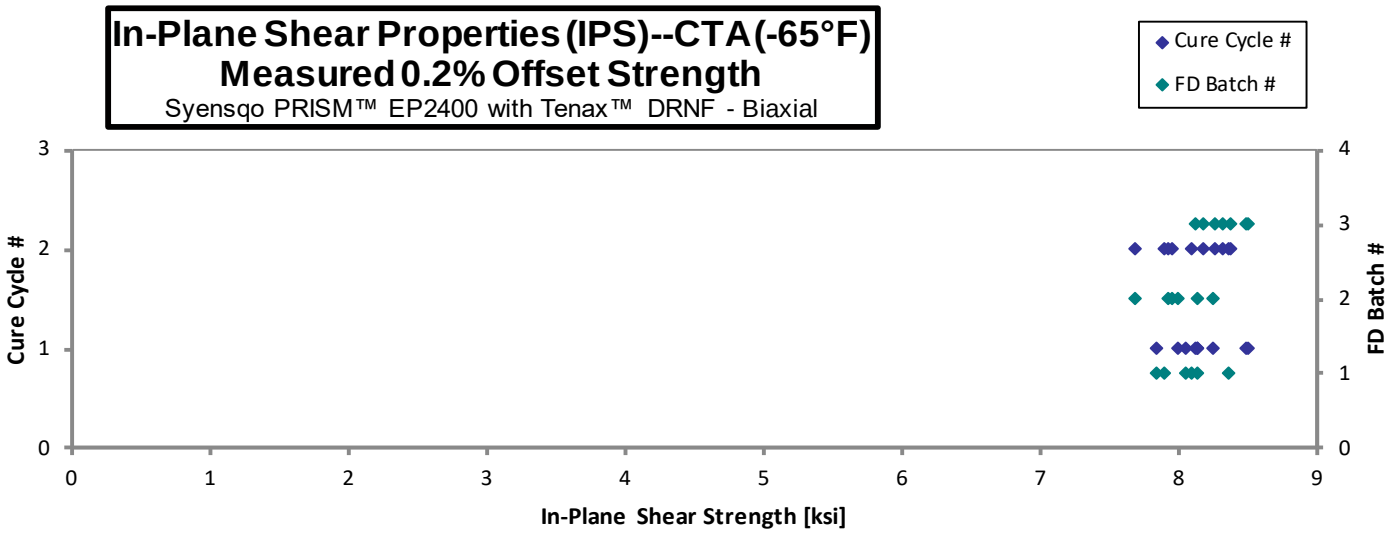

90° Compression Properties (90CLC)--ETW2 (250°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
90° Compression Modulus [Msi]
0
2
4
6
8
10
12
14

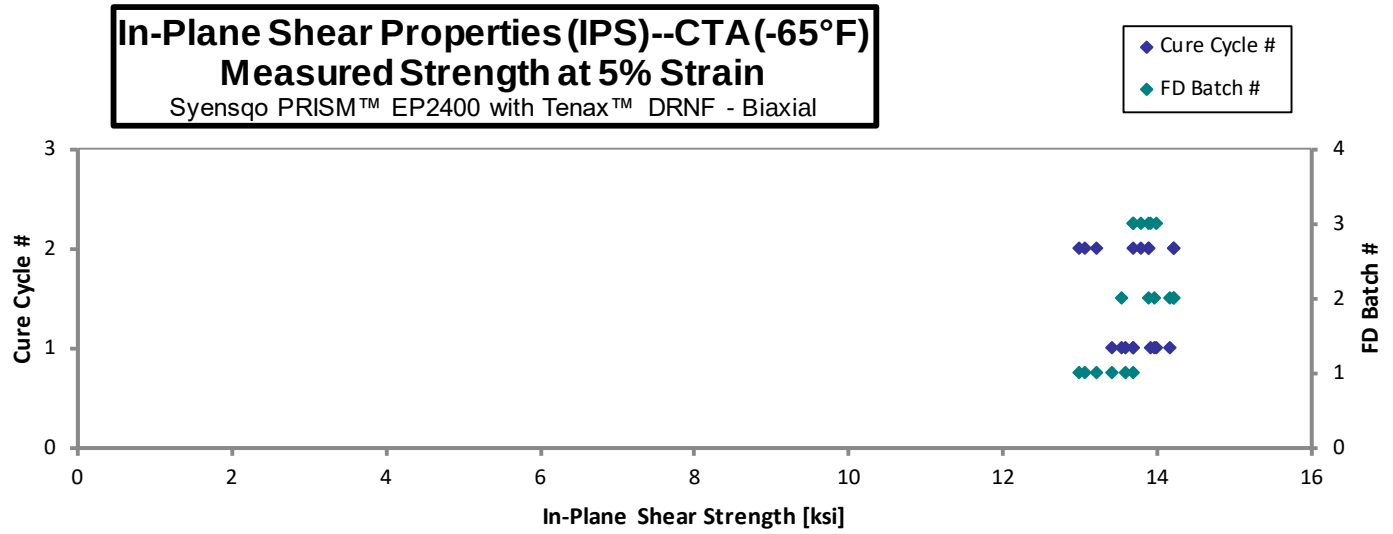
4.1.1.5 Biaxial In-Plane Shear (BA-IPS)

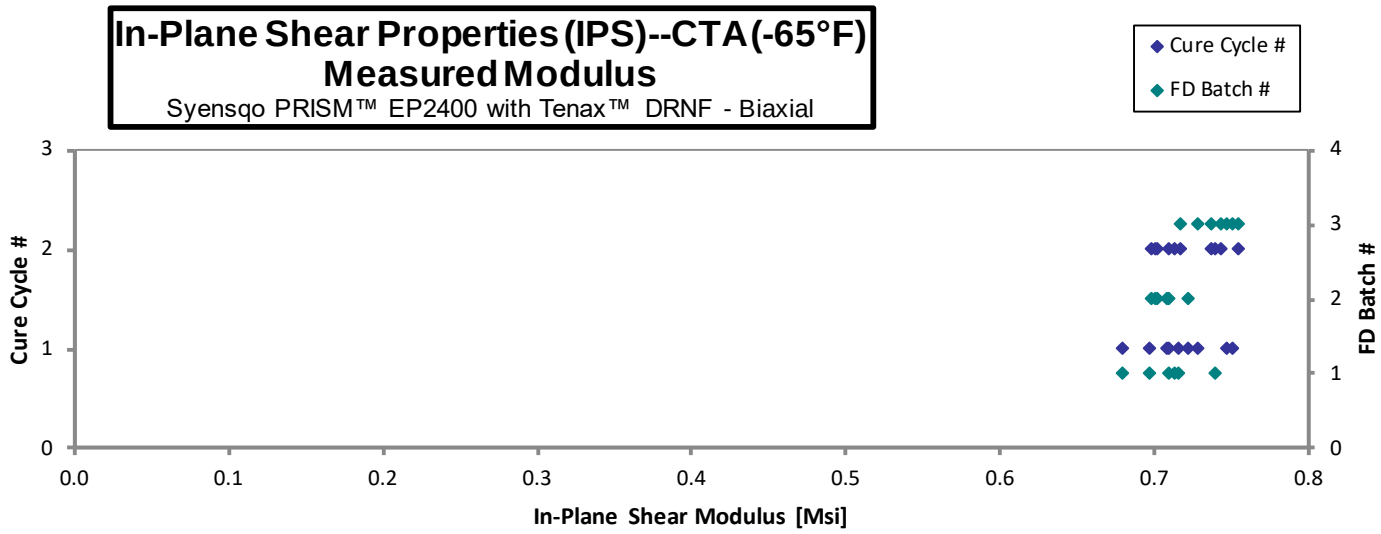
In-Plane Shear Properties (IPS)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi] [1]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-IPS-A-C1-1-1B	1	C1	1	8.050	13.70	0.716	0.0928	6	0.0155	AGB
BA-IPS-A-C1-1-2B	1	C1	1	8.134	13.42	0.680	0.0932	6	0.0155	AWB
BA-IPS-A-C1-1-3B	1	C1	1	7.843	13.60	0.697	0.0929	6	0.0155	AGB
BA-IPS-A-C2-1-1B	1	C2	2	8.370	13.00	0.740	0.0896	6	0.0149	AGM
BA-IPS-A-C2-1-2B	1	C2	2	8.093	13.06	0.710	0.0900	6	0.0150	AGB
BA-IPS-A-C2-1-3B	1	C2	2	7.897	13.23	0.713	0.0901	6	0.0150	AGB
BA-IPS-B-C1-1-1B	2	C1	1	8.135	13.55	0.708	0.0950	6	0.0158	AGB
BA-IPS-B-C1-1-2B	2	C1	1	8.256	14.18	0.722	0.0928	6	0.0155	AGB
BA-IPS-B-C1-1-3B	2	C1	1	8.005	13.96	0.709	0.0929	6	0.0155	AGB
BA-IPS-B-C2-1-1B	2	C2	2	7.957	14.23	0.702	0.0944	6	0.0157	AGB
BA-IPS-B-C2-1-2B	2	C2	2	7.692	13.90	0.698	0.0959	6	0.0160	AGB
BA-IPS-B-C2-1-3B	2	C2	2	7.929	14.22	0.701	0.0938	6	0.0156	AGT
BA-IPS-C-C1-1-1B	3	C1	1	8.120	13.70	0.728	0.0900	6	0.0150	AGM
BA-IPS-C-C1-1-2B	3	C1	1	8.508	14.00	0.751	0.0891	6	0.0149	AGT
BA-IPS-C-C1-1-3B	3	C1	1	8.487	13.92	0.747	0.0906	6	0.0151	AGM
BA-IPS-C-C2-1-1B	3	C2	2	8.180	13.80	0.718	0.0896	6	0.0149	AGM
BA-IPS-C-C2-1-2B	3	C2	2	8.268	13.90	0.738	0.0894	6	0.0149	AGM
BA-IPS-C-C2-1-3B [2]	3	C2	2	8.329		0.743	0.0884	6	0.0147	AGM
BA-IPS-C-C2-1-4B	3	C2	2	8.386	13.69	0.755	0.0884	6	0.0147	AGB
Average				**8.139**	**13.73**	**0.720**			**0.0153**	
Standard Dev.				**0.2226**	**0.3671**	**0.021**				
Coeff. of Var. [%]				**2.735**	**2.674**	**2.920**				
Min.				**7.692**	**13.00**	**0.680**			**0.0147**	
Max.				**8.508**	**14.23**	**0.755**			**0.0160**	
Number of Spec.				**19**	**18**	**19**			**19**	

[1] Unusual fluctuations were observed in the plot prior to and around 5% strain.
[2] Specimen failed before reaching 5% Strain


In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
9


In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12
14
16

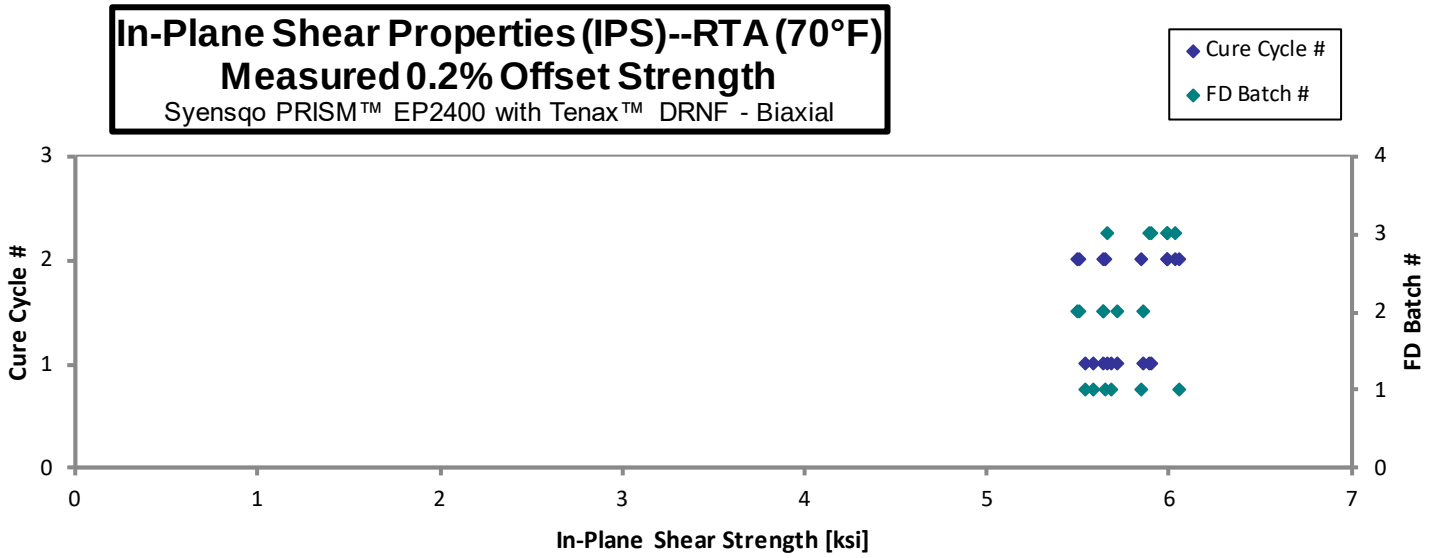

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0
1
2
3
4

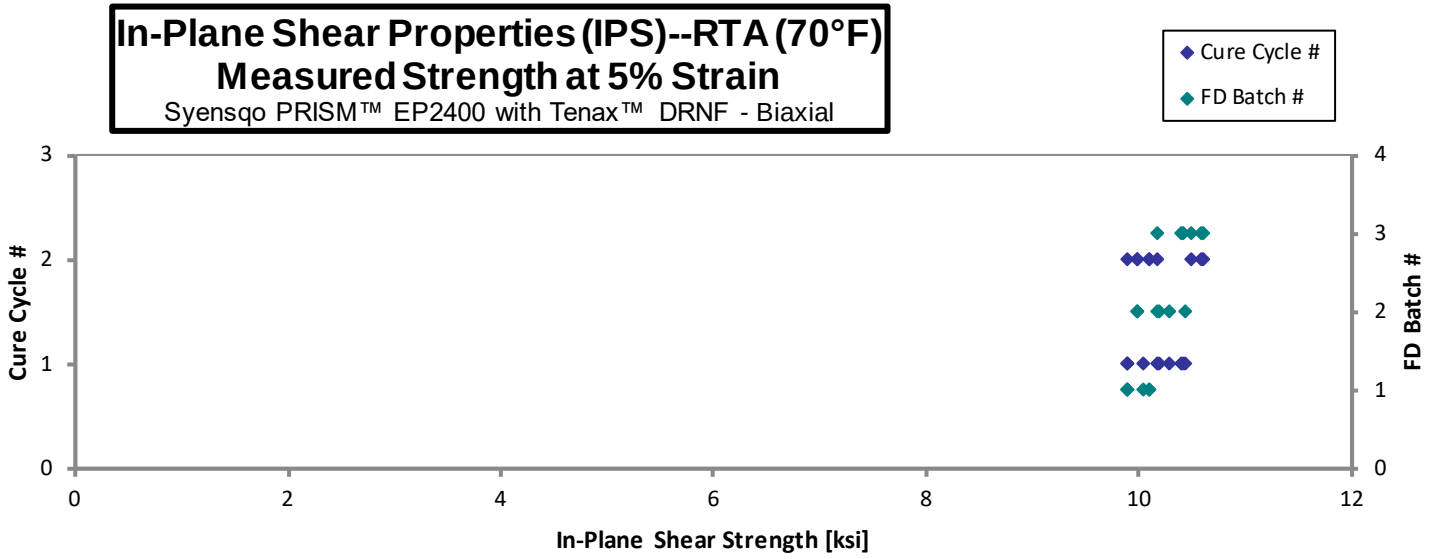
In-Plane Shear Properties (IPS)--RTA (70°F)
Strength & Modulus

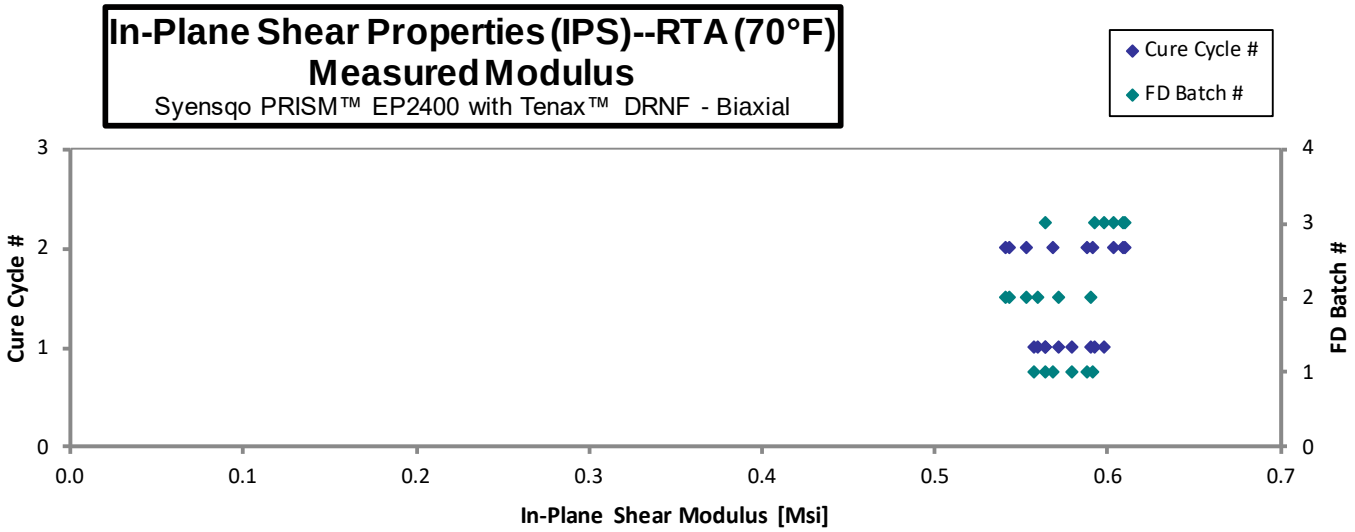
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-IPS-A-C1-1-1A	1	C1	1	5.681	10.05	0.579	0.0910	6	0.0152	AGT
BA-IPS-A-C1-1-2A	1	C1	1	5.586	9.897	0.564	0.0930	6	0.0155	AGB
BA-IPS-A-C1-1-3A	1	C1	1	5.545	9.902	0.558	0.0922	6	0.0154	AGB
BA-IPS-A-C2-1-1A	1	C2	2	6.061	10.10	0.588	0.0881	6	0.0147	AGB
BA-IPS-A-C2-1-2A	1	C2	2	5.846	10.10	0.592	0.0878	6	0.0146	AGT
BA-IPS-A-C2-1-3A	1	C2	2	5.648	9.890	0.569	0.0897	6	0.0149	AGT
BA-IPS-B-C1-1-1A	2	C1	1	5.715	10.29	0.571	0.0946	6	0.0158	AGT
BA-IPS-B-C1-1-2A	2	C1	1	5.856	10.44	0.590	0.0926	6	0.0154	AGT
BA-IPS-B-C1-1-3A	2	C1	1	5.639	10.19	0.560	0.0939	6	0.0157	AGB
BA-IPS-B-C2-1-1A	2	C2	2	5.645	10.19	0.553	0.0955	6	0.0159	AGT
BA-IPS-B-C2-1-2A	2	C2	2	5.494	9.990	0.541	0.0966	6	0.0161	AGM
BA-IPS-B-C2-1-3A	2	C2	2	5.513	9.993	0.544	0.0965	6	0.0161	AGB
BA-IPS-C-C1-1-1A	3	C1	1	5.662	10.17	0.564	0.0923	6	0.0154	AGT
BA-IPS-C-C1-1-2A	3	C1	1	5.904	10.43	0.598	0.0911	6	0.0152	AGM
BA-IPS-C-C1-1-3A	3	C1	1	5.888	10.41	0.593	0.0905	6	0.0151	AGB
BA-IPS-C-C2-1-1A	3	C2	2	6.036	10.60	0.611	0.0897	6	0.0150	AGT
BA-IPS-C-C2-1-2A	3	C2	2	5.994	10.59	0.603	0.0896	6	0.0149	AGT
BA-IPS-C-C2-1-3A	3	C2	2	5.994	10.50	0.609	0.0907	6	0.0151	AGT

Average	**5.762**	**10.21**	**0.577**	**0.0153**
Standard Dev.	**0.1873**	**0.2398**	**0.022**	
Coeff. of Var. [%]	**3.251**	**2.350**	**3.801**	
Min.	**5.494**	**9.890**	**0.541**	**0.0146**
Max.	**6.061**	**10.60**	**0.611**	**0.0161**
Number of Spec.	**18**	**18**	**18**	**18**


In-Plane Shear Properties (IPS)--RTA (70°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7

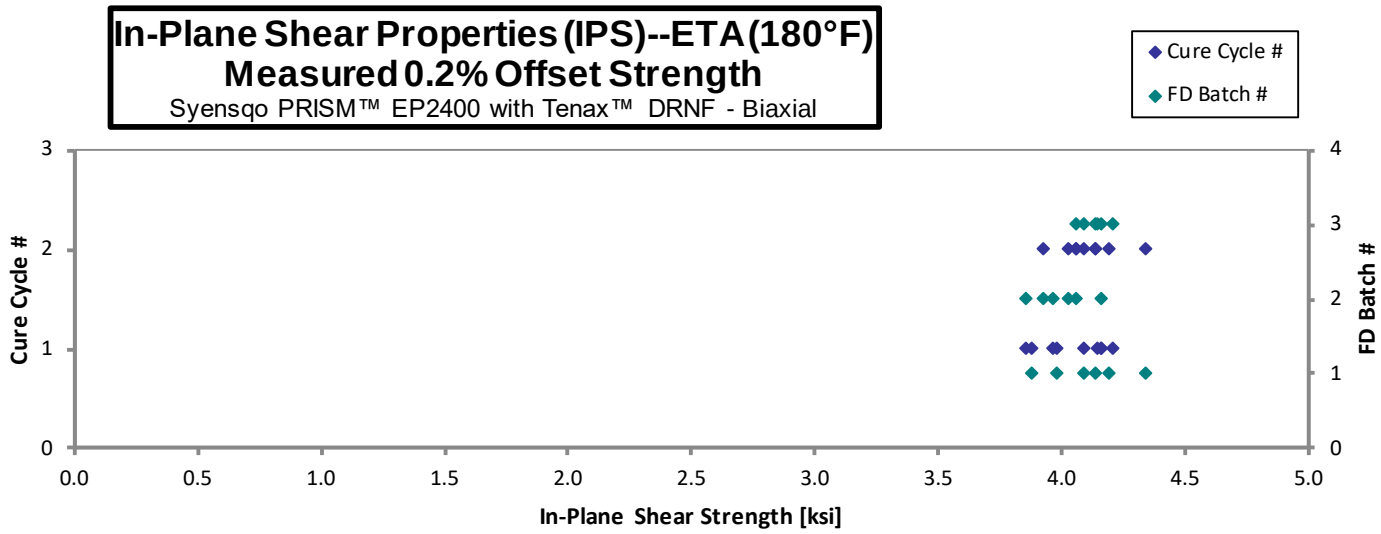

In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12

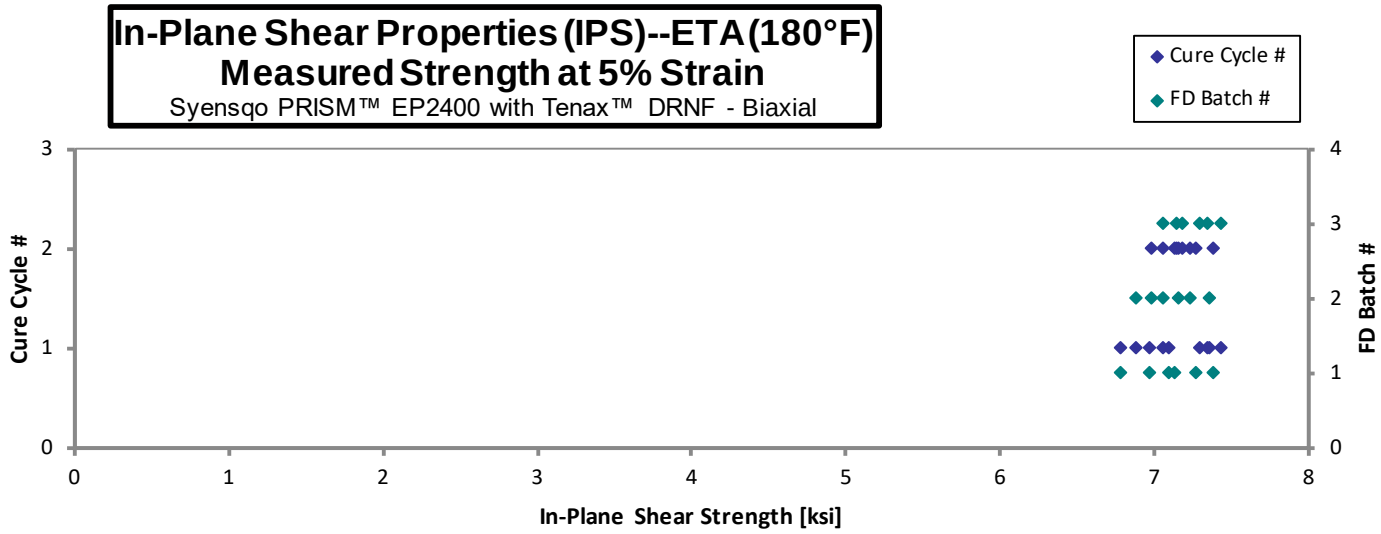

In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7

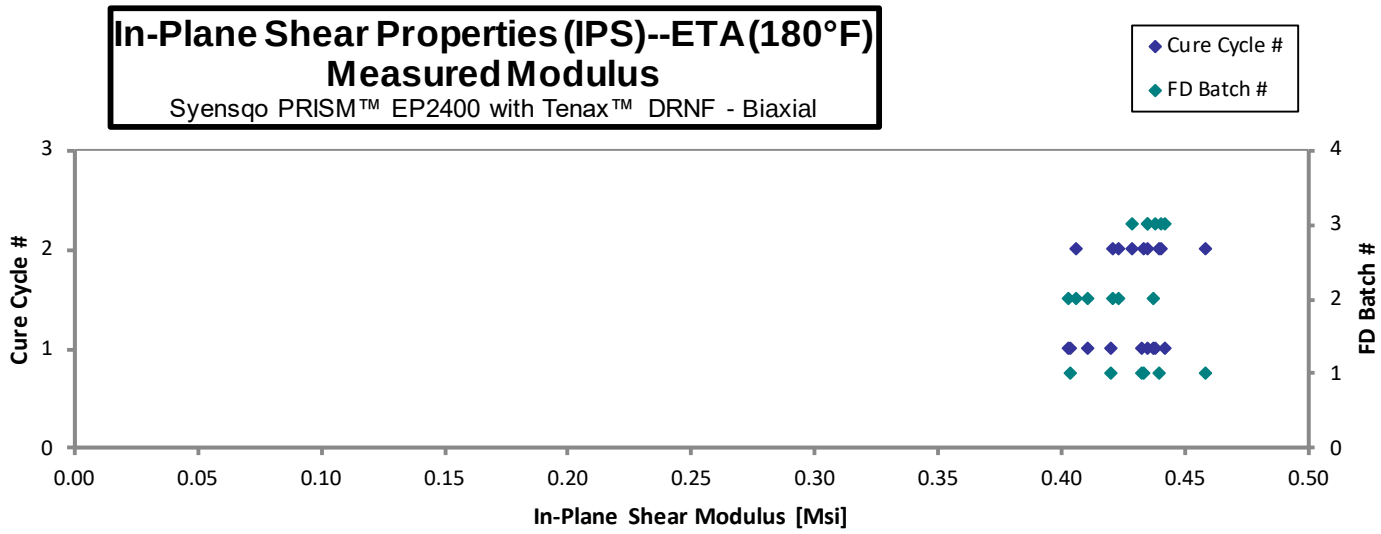
In-Plane Shear Properties (IPS)--ETA (180°F)
Strength & Modulus

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-IPS-A-C1-1-1C	1	C1	1	4.089	7.091	0.432	0.0938	6	0.0156	AGT
BA-IPS-A-C1-1-2C	1	C1	1	3.984	6.968	0.420	0.0928	6	0.0155	AGM
BA-IPS-A-C1-1-3C	1	C1	1	3.881	6.790	0.404	0.0943	6	0.0157	AGM
BA-IPS-A-C2-1-1C	1	C2	2	4.135	7.135	0.434	0.0891	6	0.0149	AGT
BA-IPS-A-C2-1-2C	1	C2	2	4.345	7.387	0.458	0.0896	6	0.0149	AGM
BA-IPS-A-C2-1-3C	1	C2	2	4.194	7.274	0.440	0.0881	6	0.0147	AGB
BA-IPS-B-C1-1-1C	2	C1	1	3.858	6.885	0.403	0.0933	6	0.0156	AGB
BA-IPS-B-C1-1-2C	2	C1	1	4.159	7.358	0.437	0.0931	6	0.0155	AGM
BA-IPS-B-C1-1-3C	2	C1	1	3.965	7.058	0.411	0.0925	6	0.0154	AGM
BA-IPS-B-C2-1-1C	2	C2	2	4.058	7.232	0.423	0.0960	6	0.0160	AGM
BA-IPS-B-C2-1-2C	2	C2	2	4.029	7.160	0.421	0.0950	6	0.0158	AGM
BA-IPS-B-C2-1-3C	2	C2	2	3.923	6.990	0.406	0.0962	6	0.0160	AGM
BA-IPS-C-C1-1-1C	3	C1	1	4.147	7.300	0.435	0.0908	6	0.0151	AGT
BA-IPS-C-C1-1-2C	3	C1	1	4.207	7.434	0.442	0.0909	6	0.0151	AGM
BA-IPS-C-C1-1-3C	3	C1	1	4.166	7.349	0.438	0.0917	6	0.0153	AGB
BA-IPS-C-C2-1-1C	3	C2	2	4.136	7.191	0.440	0.0900	6	0.0150	AGB
BA-IPS-C-C2-1-2C	3	C2	2	4.092	7.145	0.435	0.0892	6	0.0149	AGT
BA-IPS-C-C2-1-3C	3	C2	2	4.061	7.063	0.429	0.0906	6	0.0151	AGT
Average				**4.079**	**7.156**	**0.428**			**0.0153**	
Standard Dev.				**0.1244**	**0.1787**	**0.015**				
Coeff. of Var. [%]				**3.051**	**2.497**	**3.531**				
Min.				**3.858**	**6.790**	**0.403**			**0.0147**	
Max.				**4.345**	**7.434**	**0.458**			**0.0160**	
Number of Spec.				**18**	**18**	**18**			**18**	


In-Plane Shear Properties (IPS)--ETA (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
0
1
2
3
4


In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
0
1
2
3
4

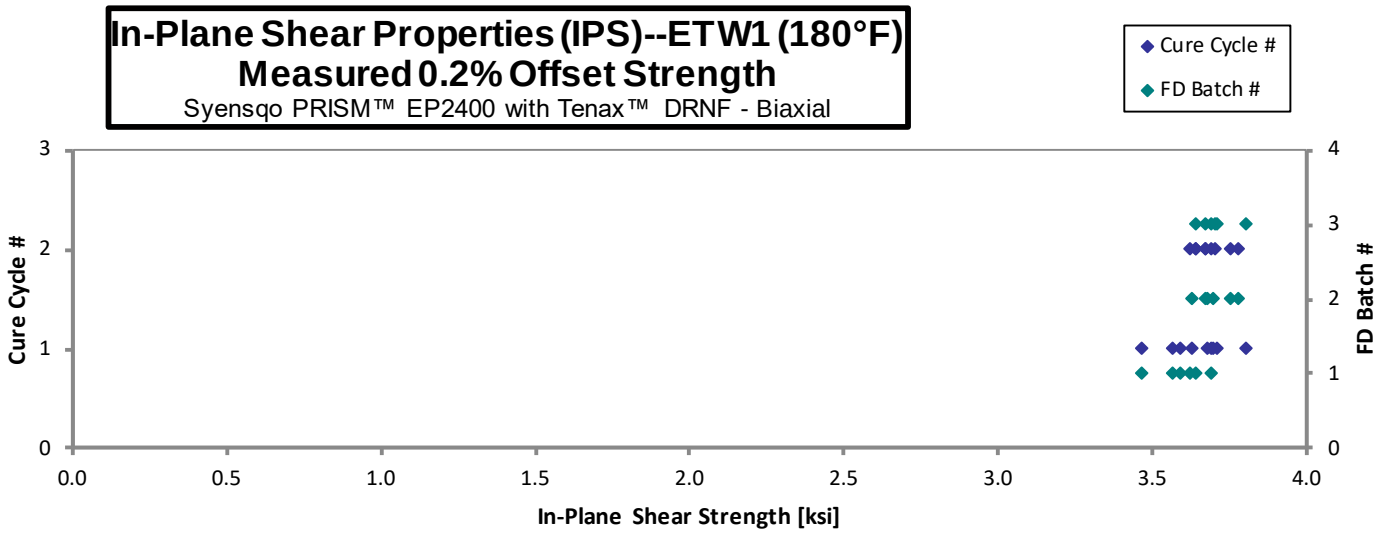

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50

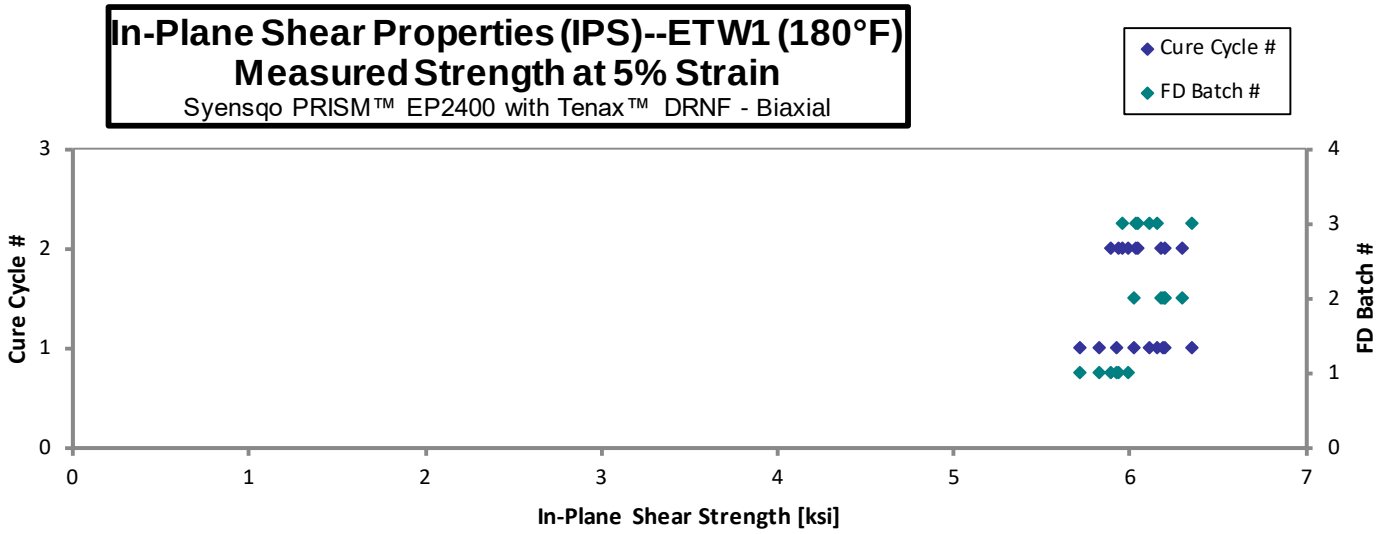
In-Plane Shear Properties (IPS)--ETW1 (180°F)
Strength & Modulus

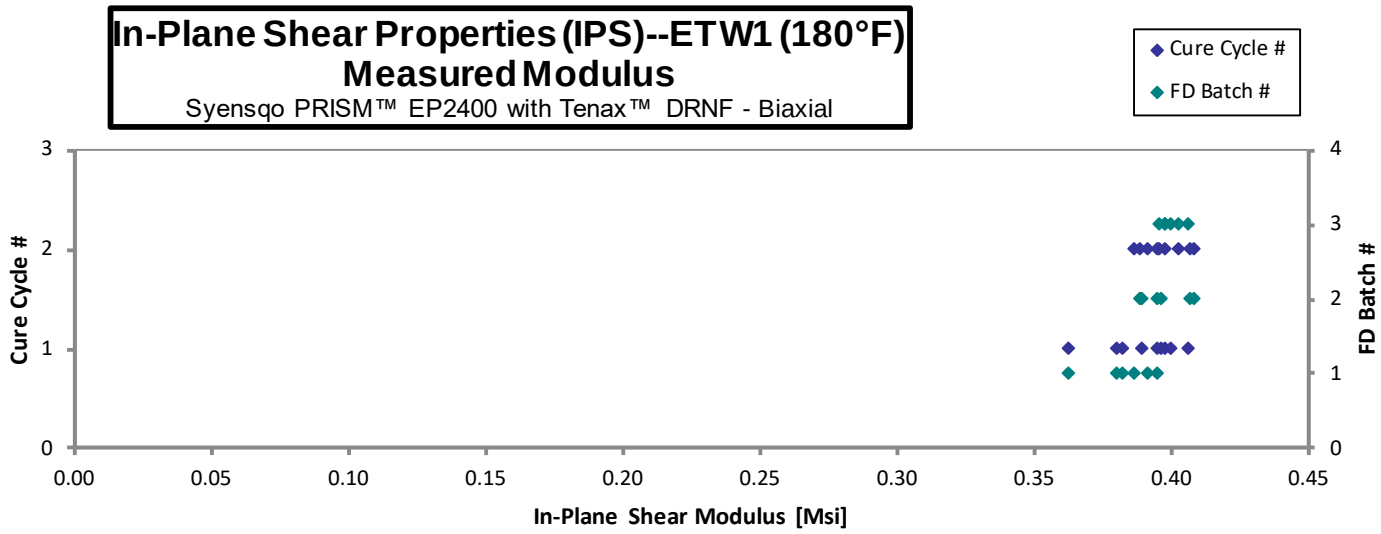
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-IPS-A-C1-1-1D	1	C1	1	3.467	5.714	0.363	0.0944	6	0.0157	AGM
BA-IPS-A-C1-1-2D	1	C1	1	3.565	5.823	0.383	0.0947	6	0.0158	AGT
BA-IPS-A-C1-1-3D	1	C1	1	3.595	5.920	0.380	0.0920	6	0.0153	AGT
BA-IPS-A-C2-1-1D	1	C2	2	3.693	5.988	0.395	0.0885	6	0.0147	AGT
BA-IPS-A-C2-1-2D	1	C2	2	3.623	5.893	0.391	0.0905	6	0.0151	AGM
BA-IPS-A-C2-1-3D	1	C2	2	3.641	5.933	0.387	0.0908	6	0.0151	AGT
BA-IPS-B-C1-1-1D	2	C1	1	3.631	6.022	0.389	0.0922	6	0.0154	AGM
BA-IPS-B-C1-1-2D	2	C1	1	3.683	6.185	0.395	0.0923	6	0.0154	AGM
BA-IPS-B-C1-1-3D	2	C1	1	3.699	6.199	0.396	0.0915	6	0.0152	AGT
BA-IPS-B-C2-1-1D	2	C2	2	3.784	6.293	0.409	0.0957	6	0.0160	AGB
BA-IPS-B-C2-1-2D	2	C2	2	3.757	6.203	0.407	0.0930	6	0.0155	AGB
BA-IPS-B-C2-1-3D	2	C2	2	3.674	6.182	0.389	0.0936	6	0.0156	AGB
BA-IPS-C-C1-1-1D	3	C1	1	3.695	6.159	0.400	0.0913	6	0.0152	AGT
BA-IPS-C-C1-1-2D	3	C1	1	3.709	6.110	0.398	0.0912	6	0.0152	AGM
BA-IPS-C-C1-1-3D	3	C1	1	3.808	6.347	0.406	0.0904	6	0.0151	AGB
BA-IPS-C-C2-1-1D	3	C2	2	3.644	5.956	0.398	0.0906	6	0.0151	AGM
BA-IPS-C-C2-1-2D	3	C2	2	3.674	6.039	0.396	0.0899	6	0.0150	AWT
BA-IPS-C-C2-1-3D	3	C2	2	3.705	6.050	0.403	0.0901	6	0.0150	AGB

Average	**3.669**	**6.056**	**0.394**	**0.0153**
Standard Dev.	**0.07952**	**0.1675**	**0.011**	
Coeff. of Var. [%]	**2.167**	**2.765**	**2.818**	
Min.	**3.467**	**5.714**	**0.363**	**0.0147**
Max.	**3.808**	**6.347**	**0.409**	**0.0160**
Number of Spec.	**18**	**18**	**18**	**18**


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
0
1
2
3
4
5
6
7

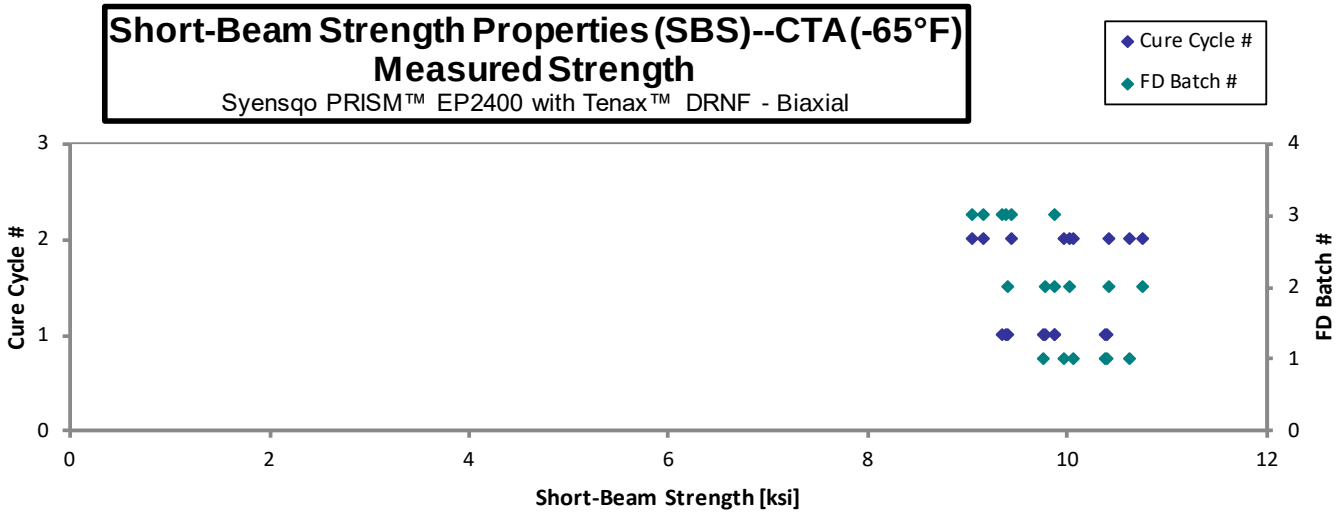

In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0
1
2
3
4

4.1.1.6 Biaxial Short Beam Strength (BA-SBS)

Short-Beam Strength Properties (SBS)--CTA (-65°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-SBS-A-C1-1-1B	1	C1	1	10.40	0.2428	16	0.0152	INTERLAMINAR SHEAR
BA-SBS-A-C1-1-2B	1	C1	1	10.37	0.2430	16	0.0152	INTERLAMINAR SHEAR
BA-SBS-A-C1-1-3B	1	C1	1	9.769	0.2428	16	0.0152	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-1B	1	C2	2	10.63	0.2361	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-2B	1	C2	2	10.07	0.2365	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-3B	1	C2	2	9.968	0.2374	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-2B	2	C1	1	9.882	0.2479	16	0.0155	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-3B	2	C1	1	9.788	0.2463	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-4B	2	C1	1	9.411	0.2460	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-1B	2	C2	2	10.42	0.2465	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-2B	2	C2	2	10.02	0.2456	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-3B	2	C2	2	10.76	0.2460	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-C-C1-1-1B	3	C1	1	9.392	0.2339	16	0.0146	INTERLAMINAR SHEAR
BA-SBS-C-C1-1-2B	3	C1	1	9.350	0.2323	16	0.0145	INTERLAMINAR SHEAR
BA-SBS-C-C1-1-3B	3	C1	1	9.873	0.2336	16	0.0146	INTERLAMINAR SHEAR
BA-SBS-C-C2-1-1B	3	C2	2	9.170	0.2350	16	0.0147	INTERLAMINAR SHEAR
BA-SBS-C-C2-1-2B	3	C2	2	9.042	0.2358	16	0.0147	INTERLAMINAR SHEAR
BA-SBS-C-C2-1-3B	3	C2	2	9.445	0.2350	16	0.0147	INTERLAMINAR SHEAR

Average	**9.876**	**0.0150**
Standard Dev.	**0.5066**	
Coeff. of Var. [%]	**5.130**	
Min.	**9.042**	**0.0145**
Max.	**10.76**	**0.0155**
Number of Spec.	**18**	**18**

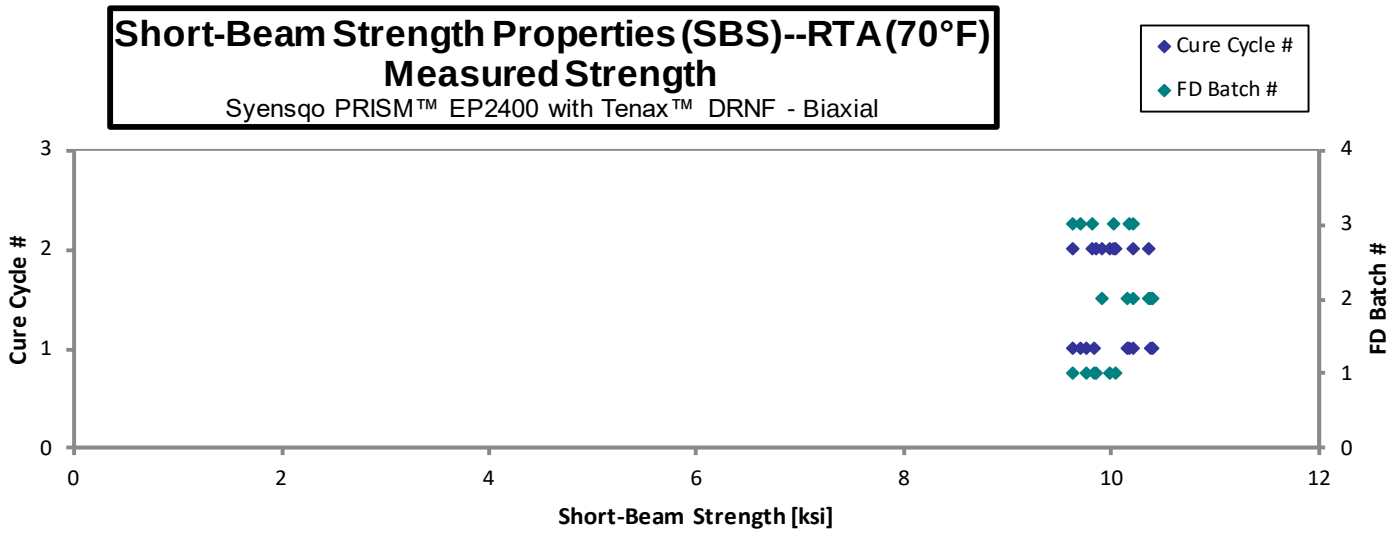

Short-Beam Strength Properties (SBS)--CTA (-65°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
6
8
10
12

Short-Beam Strength Properties (SBS)--RTA (70°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-SBS-A-C1-1-1A	1	C1	1	9.769	0.2425	16	0.0152	INTERLAMINAR SHEAR
BA-SBS-A-C1-1-2A	1	C1	1	9.841	0.2426	16	0.0152	INTERLAMINAR SHEAR
BA-SBS-A-C1-1-3A	1	C1	1	9.626	0.2423	16	0.0151	INTERLAMINAR SHEAR, COMPRESSION
BA-SBS-A-C2-1-1A	1	C2	2	9.863	0.2361	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-2A	1	C2	2	9.990	0.2369	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-3A	1	C2	2	10.05	0.2369	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-2A	2	C1	1	10.38	0.2489	16	0.0156	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-3A	2	C1	1	10.41	0.2487	16	0.0155	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-4A	2	C1	1	10.15	0.2471	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-1A	2	C2	2	9.907	0.2469	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-2A	2	C2	2	10.21	0.2467	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-B-C2-1-3A	2	C2	2	10.36	0.2457	16	0.0154	INTERLAMINAR SHEAR
BA-SBS-C-C1-1-1A	3	C1	1	9.709	0.2324	16	0.0145	INTERLAMINAR SHEAR, COMPRESSION
BA-SBS-C-C1-1-2A	3	C1	1	10.22	0.2313	16	0.0145	INTERLAMINAR SHEAR, COMPRESSION
BA-SBS-C-C1-1-4A	3	C1	1	10.17	0.2315	16	0.0145	INTERLAMINAR SHEAR, COMPRESSION
BA-SBS-C-C2-1-1A	3	C2	2	9.819	0.2388	16	0.0149	INTERLAMINAR SHEAR
BA-SBS-C-C2-1-2A	3	C2	2	9.627	0.2377	16	0.0149	INTERLAMINAR SHEAR
BA-SBS-C-C2-1-3A	3	C2	2	10.02	0.2368	16	0.0148	INTERLAMINAR SHEAR

Average	**10.01**	**0.0150**
Standard Dev.	**0.2527**	
Coeff. of Var. [%]	**2.526**	
Min.	**9.626**	**0.0145**
Max.	**10.41**	**0.0156**
Number of Spec.	**18**	**18**

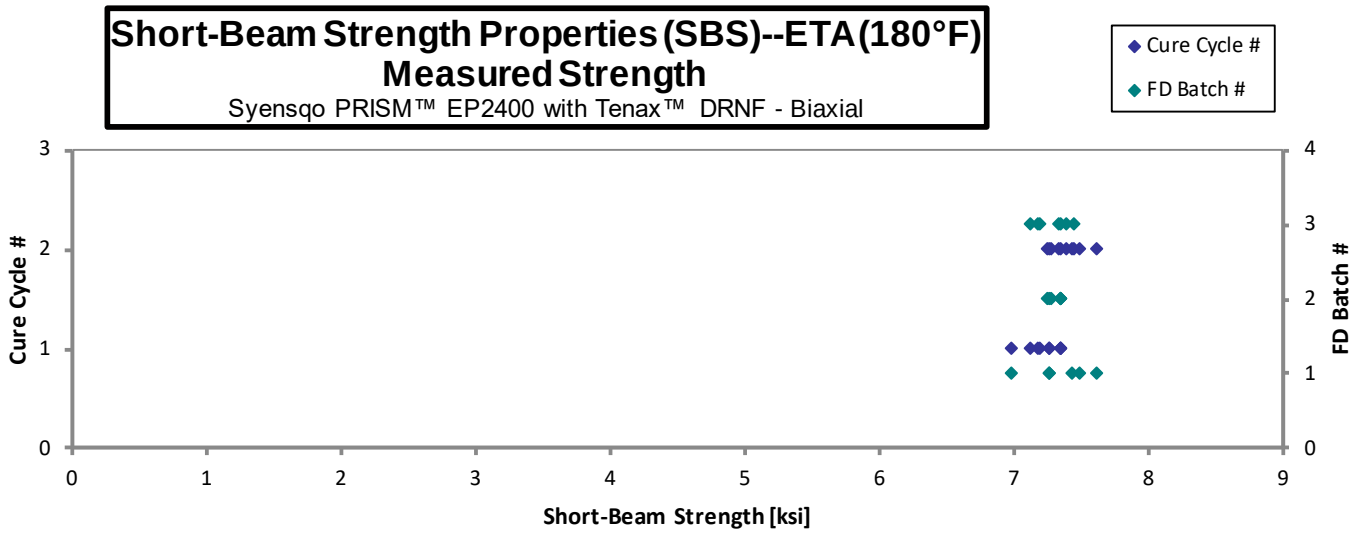

Short-Beam Strength Properties (SBS)--RTA (70°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
0
2
4
6
8
10
12

Short-Beam Strength Properties (SBS)--ETA (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-SBS-A-C1-1-1C	1	C1	1	6.989	0.2406	16	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-2C	1	C1	1	7.272	0.2402	16	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-3C	1	C1	1	7.269	0.2406	16	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C2-1-1C	1	C2	2	7.624	0.2379	16	0.0149	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-2C	1	C2	2	7.437	0.2376	16	0.0149	INTERLAMINAR SHEAR
BA-SBS-A-C2-1-3C	1	C2	2	7.494	0.2367	16	0.0148	INTERLAMINAR SHEAR
BA-SBS-B-C1-1-2C	2	C1	1	7.344	0.2452	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C1-1-3C	2	C1	1	7.349	0.2454	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C1-1-4C	2	C1	1	7.349	0.2447	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-1C	2	C2	2	7.258	0.2473	16	0.0155	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-2C	2	C2	2	7.279	0.2468	16	0.0154	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-3C	2	C2	2	7.265	0.2475	16	0.0155	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C1-1-1C	3	C1	1	7.120	0.2347	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C1-1-2C	3	C1	1	7.186	0.2323	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C1-1-4C	3	C1	1	7.193	0.2331	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C2-1-1C	3	C2	2	7.394	0.2354	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C2-1-2C	3	C2	2	7.334	0.2360	16	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C2-1-3C	3	C2	2	7.349	0.2366	16	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C2-1-4C	3	C2	2	7.446	0.2360	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**7.313**	**0.0150**
Standard Dev.	**0.1408**	
Coeff. of Var. [%]	**1.926**	
Min.	**6.989**	**0.0145**
Max.	**7.624**	**0.0155**
Number of Spec.	**19**	**19**

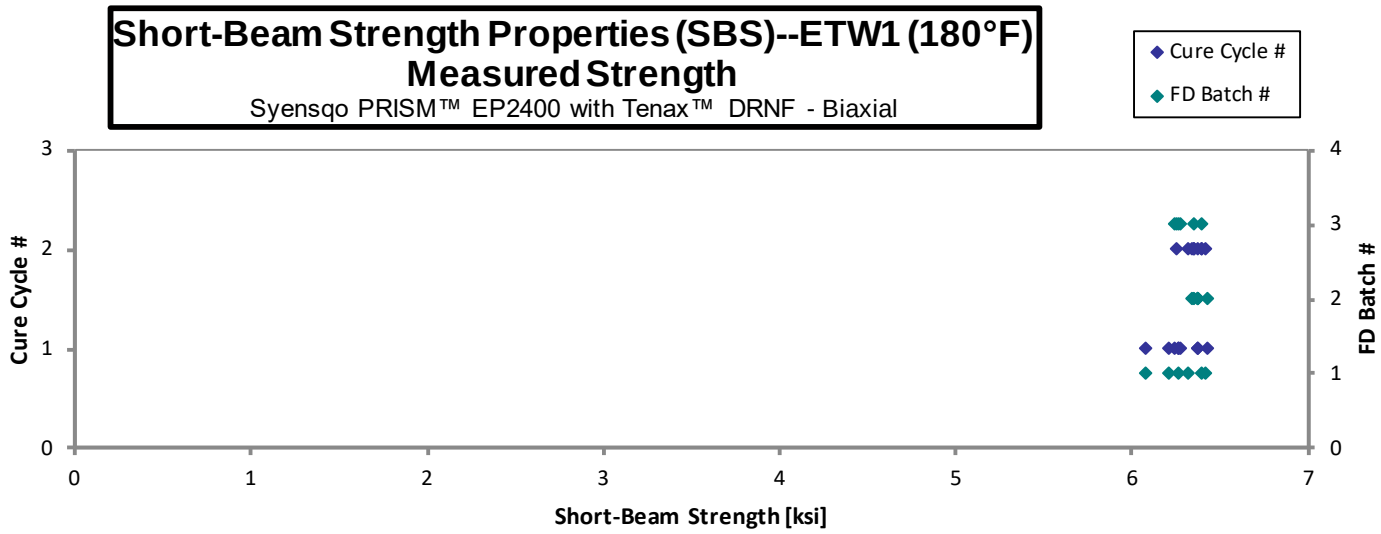

Short-Beam Strength Properties (SBS)--ETA (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7
8
9

Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-SBS-A-C1-1-1D	1	C1	1	6.075	0.2422	16	0.0151	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-2D	1	C1	1	6.213	0.2433	16	0.0152	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-3D	1	C1	1	6.263	0.2442	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C2-1-1D	1	C2	2	6.417	0.2366	16	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C2-1-2D	1	C2	2	6.393	0.2377	16	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-A-C2-1-3D	1	C2	2	6.324	0.2384	16	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-B-C1-1-1D	2	C1	1	6.375	0.2447	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-B-C1-1-2D	2	C1	1	6.428	0.2448	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-B-C1-1-3D	2	C1	1	6.379	0.2437	16	0.0152	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-1D	2	C2	2	6.355	0.2463	16	0.0154	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-2D	2	C2	2	6.338	0.2456	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-B-C2-1-3D	2	C2	2	6.370	0.2455	16	0.0153	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C1-1-1D	3	C1	1	6.238	0.2344	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-C-C1-1-2D	3	C1	1	6.260	0.2325	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-C-C1-1-3D	3	C1	1	6.275	0.2342	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-C-C2-1-1D	3	C2	2	6.259	0.2358	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-C-C2-1-2D	3	C2	2	6.350	0.2357	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-C-C2-1-3D	3	C2	2	6.397	0.2348	16	0.0147	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION

Average	**6.317**	**0.0150**
Standard Dev.	**0.08882**	
Coeff. of Var. [%]	**1.406**	
Min.	**6.075**	**0.0145**
Max.	**6.428**	**0.0154**
Number of Spec.	**18**	**18**

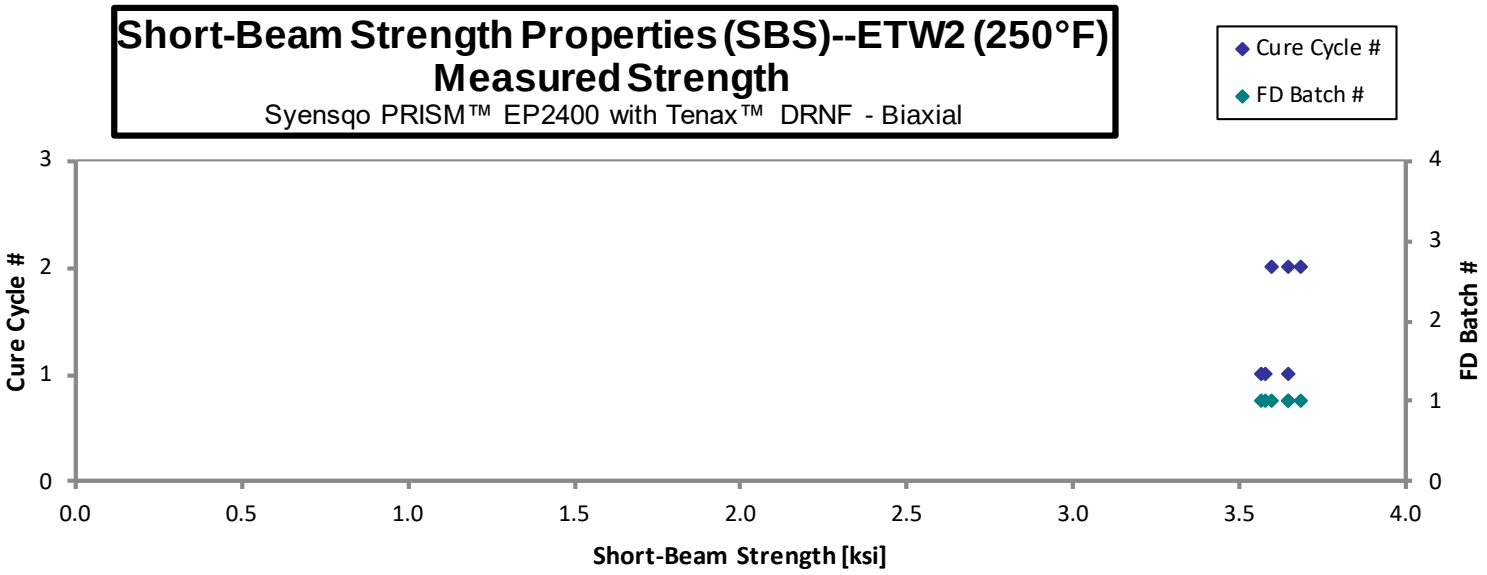

Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7

Short-Beam Strength Properties (SBS)--ETW2 (250°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-SBS-A-C1-1-2F	1	C1	1	3.648	0.2423	16	0.0151	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-3F	1	C1	1	3.569	0.2421	16	0.0151	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C1-1-4F	1	C1	1	3.582	0.2409	16	0.0151	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C2-1-1F	1	C2	2	3.684	0.2395	16	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BA-SBS-A-C2-1-2F	1	C2	2	3.597	0.2381	16	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BA-SBS-A-C2-1-3F	1	C2	2	3.651	0.2392	16	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION

Average	**3.622**	**0.0150**
Standard Dev.	**0.04565**	
Coeff. of Var. [%]	**1.261**	
Min.	**3.569**	**0.0149**
Max.	**3.684**	**0.0151**
Number of Spec.	**6**	**6**


Short-Beam Strength Properties (SBS)--ETW2 (250°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0

4.1.1.7 Biaxial Flexural Strength (BA-Flex)

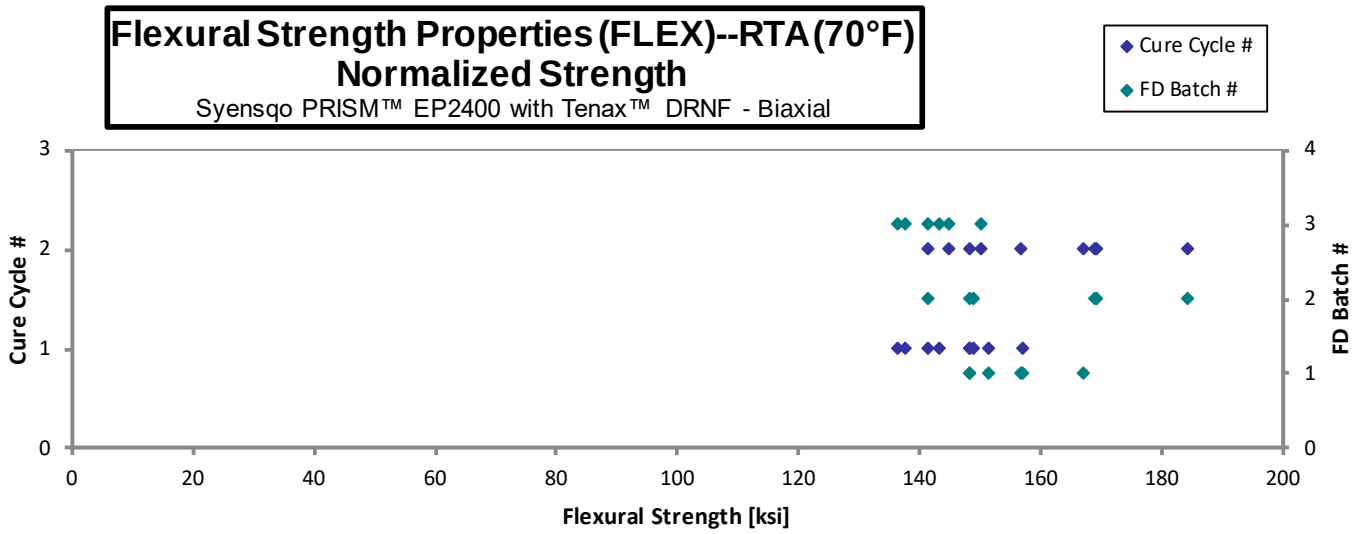
Flexural Strength Properties (FLEX)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
BA-FLEX-A-C1-K-1A	1	C1	1	132.7	0.1253	8	CAT	0.0157	148.4
BA-FLEX-A-C1-K-2A	1	C1	1	141.4	0.1244	8	CAT	0.0155	157.1
BA-FLEX-A-C1-K-3A	1	C1	1	136.4	0.1244	8	CAT	0.0156	151.6
BA-FLEX-A-C2-K-1A	1	C2	2	128.2	0.1295	8	CAT, SLM	0.0162	148.2
BA-FLEX-A-C2-K-2A	1	C2	2	137.0	0.1281	8	CAT, SLM	0.0160	156.6
BA-FLEX-A-C2-K-3A	1	C2	2	144.4	0.1296	8	CAT, SLM	0.0162	167.1
BA-FLEX-B-C1-K-1A	2	C1	1	124.6	0.1273	8	CAT, SLR	0.0159	141.6
BA-FLEX-B-C1-K-2A	2	C1	1	130.4	0.1275	8	CAT	0.0159	148.4
BA-FLEX-B-C1-K-3A	2	C1	1	132.0	0.1263	8	CAT	0.0158	148.8
BA-FLEX-B-C2-K-1A*	2	C2	2	152.7	0.1242	8	CAT	0.0155	169.4
BA-FLEX-B-C2-K-2A*	2	C2	2	150.7	0.1256	8	CAT	0.0157	169.1
BA-FLEX-B-C2-K-3A*	2	C2	2	164.9	0.1251	8	CAT	0.0156	184.3
BA-FLEX-C-C1-K-1A	3	C1	1	122.7	0.1244	8	CAT	0.0156	136.3
BA-FLEX-C-C1-K-2A	3	C1	1	130.8	0.1229	8	CAT	0.0154	143.4
BA-FLEX-C-C1-K-3A	3	C1	1	124.1	0.1243	8	CAT, TAB	0.0155	137.7
BA-FLEX-C-C2-K-1A	3	C2	2	130.7	0.1242	8	CAT, TAB	0.0155	144.9
BA-FLEX-C-C2-K-2A	3	C2	2	129.7	0.1221	8	CAT, TAB	0.0153	141.3
BA-FLEX-C-C2-K-3A	3	C2	2	140.1	0.1201	8	CAT, TAB	0.0150	150.2

* Reason for higher loads is unclear.

Average	**136.3**		**$Average_{norm}$**	**0.0157**	**152.5**
Standard Dev.	**11.16**		**$Standard\ Dev._{norm}$**		**12.74**
Coeff. of Var. [%]	**8.185**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**8.354**
Min.	**122.7**		**Min.**	**0.0150**	**136.3**
Max.	**164.9**		**Max.**	**0.0162**	**184.3**
Number of Spec.	**18**		**Number of Spec.**	**18**	**18**


Flexural Strength Properties (FLEX)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Flexural Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3
4

4.1.2 Bidiagonal Lamina Properties

Bidiagonal dry reinforcement can be procured to NMS 241F/2 and resin can be procured to NMS 241R/1. Panel laminate specification limits can be found in NMS 241/2. Materials shall be processed according to NPS 82401.

4.1.2.1 Bidiagonal 0° Tension Properties (BD-0TEN)

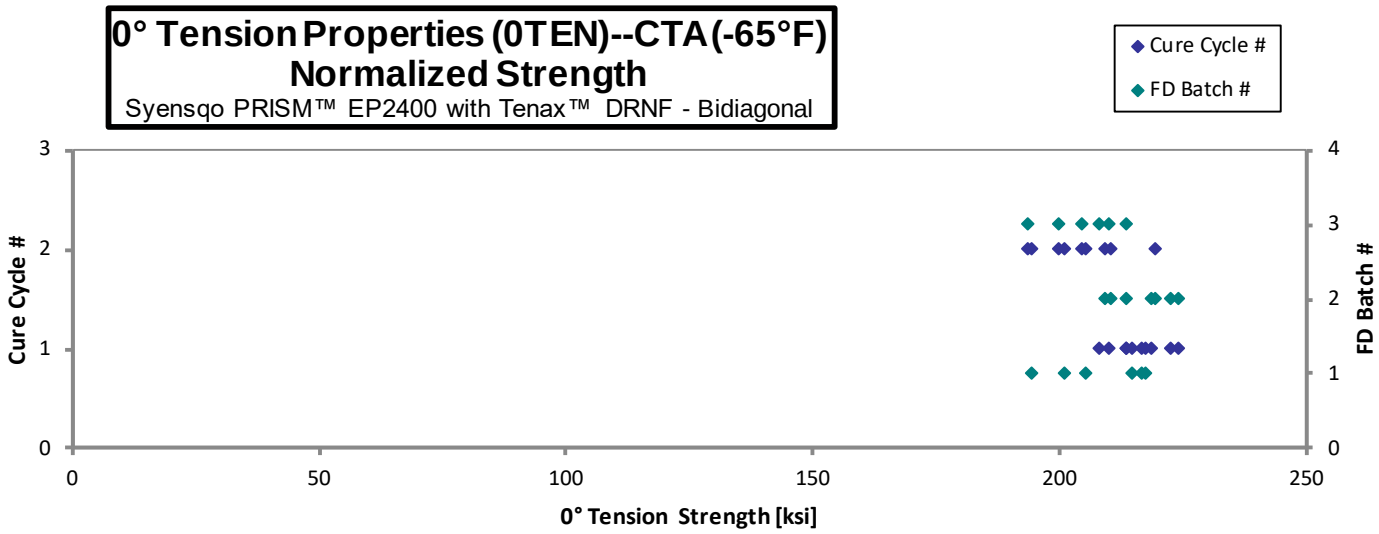
0° Tension Properties (0TEN)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

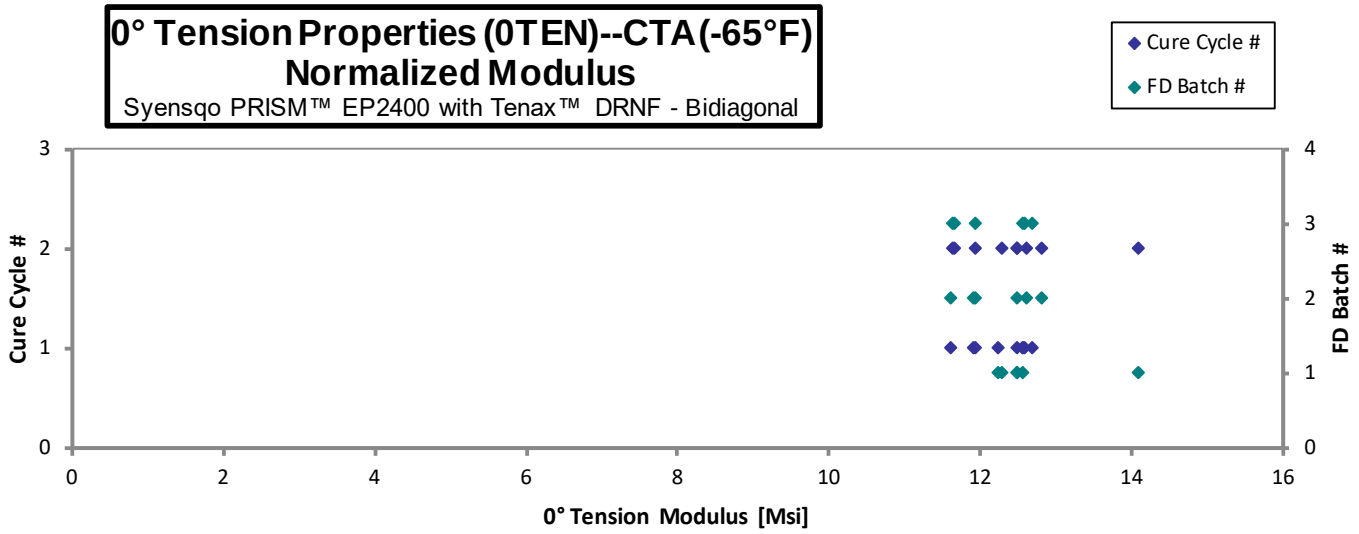
normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0TEN-A-C1-1-1B	1	C1	1	221.3	12.71	0.0376	0.1101	8	LAT, LGB	0.0138	217.6	12.50
BD-0TEN-A-C1-1-2B	1	C1	1	219.5	12.52	0.0419	0.1095	8	LGB	0.0137	214.7	12.24
BD-0TEN-A-C1-1-3B	1	C1	1	217.8	12.63	0.0377	0.1114	8	LAB	0.0139	216.6	12.56
BD-0TEN-A-C2-1-1B	1	C2	2	194.0	12.27	0.0412	0.1122	8	LGM	0.0140	194.3	12.29
BD-0TEN-A-C2-1-2B[1]	1	C2	2	202.8	14.22		0.1111	8	LWT, LAB	0.0139	201.2	14.10
BD-0TEN-A-C2-1-3B	1	C2	2	206.1	12.55	0.0340	0.1116	8	LWT, LAB	0.0139	205.3	12.49
BD-0TEN-B-C1-1-1B	2	C1	1	214.3	11.66	0.0360	0.1144	8	LWT, LWB	0.0143	218.9	11.91
BD-0TEN-B-C1-1-2B	2	C1	1	218.7	11.73	0.0401	0.1141	8	AIT, LGM, LWB	0.0143	222.8	11.95
BD-0TEN-B-C1-1-3B	2	C1	1	208.9	11.37	0.0372	0.1146	8	LGT, LWB, LGM	0.0143	213.7	11.62
BD-0TEN-B-C1-1-4B	2	C1	1	220.3			0.1140	8	LWB, LGT	0.0142	224.2	
BD-0TEN-B-C2-1-1B	2	C2	2	200.9	12.00	0.0268	0.1166	8	LWT, LAB	0.0146	209.1	12.49
BD-0TEN-B-C2-1-2B	2	C2	2	201.2	12.06	0.0394	0.1171	8	LWB	0.0146	210.3	12.61
BD-0TEN-B-C2-1-3B	2	C2	2	210.9	12.32	0.0572	0.1166	8	LAB, LWT	0.0146	219.6	12.83
BD-0TEN-C-C1-1-1B	3	C1	1	204.1	12.36	0.0279	0.1142	8	LGB, LGT	0.0143	208.1	12.60
BD-0TEN-C-C1-1-2B	3	C1	1	208.5	12.26	0.0260	0.1147	8	LAT, LWB, LAB	0.0143	213.6	12.55
BD-0TEN-C-C1-1-3B	3	C1	1	206.4	12.47	0.0656	0.1140	8	LAT, LWB	0.0142	210.0	12.69
BD-0TEN-C-C2-1-1B	3	C2	2	202.9	11.83	0.0326	0.1130	8	LAT, M(A,L)WB	0.0141	204.7	11.94
BD-0TEN-C-C2-1-2B	3	C2	2	196.8	11.46	0.0261	0.1139	8	LAT, LAB	0.0142	200.0	11.65
BD-0TEN-C-C2-1-3B	3	C2	2	192.5	11.58	0.0414	0.1127	8	LAT, LWB	0.0141	193.7	11.66

[1] Reason for high modulus unclear. Poissons Ratio not reported due to erroneously high value

Average	**207.8**	**12.22**	**0.0382**	**$Average_{norm}$**	**0.0142**	**210.4**	**12.37**
Standard Dev.	**8.991**	**0.6495**	**0.0104**	**$Standard\ Dev._{norm}$**		**8.893**	**0.5797**
Coeff. of Var. [%]	**4.327**	**5.314**	**27.30**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.226**	**4.686**
Min.	**192.5**	**11.37**	**0.0260**	**Min.**	**0.0137**	**193.7**	**11.62**
Max.	**221.3**	**14.22**	**0.0656**	**Max.**	**0.0146**	**224.2**	**14.10**
Number of Spec.	**19**	**18**	**17**	**Number of Spec.**	**19**	**19**	**18**


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

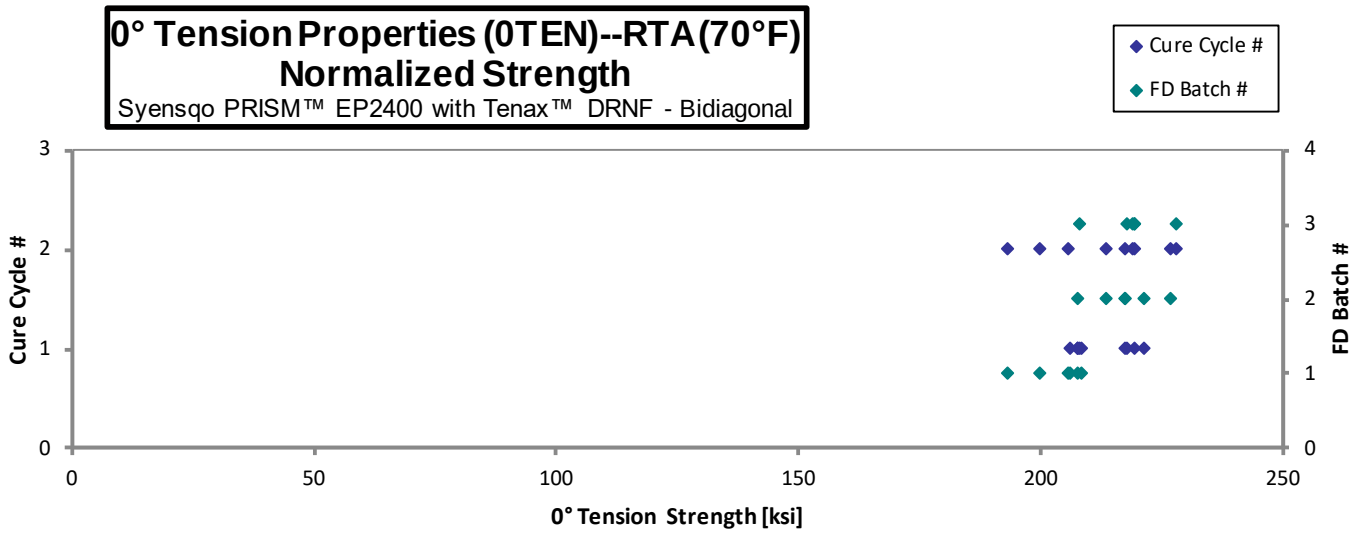
0° Tension Properties (0TEN)--RTA (70°F)
Strength & Modulus

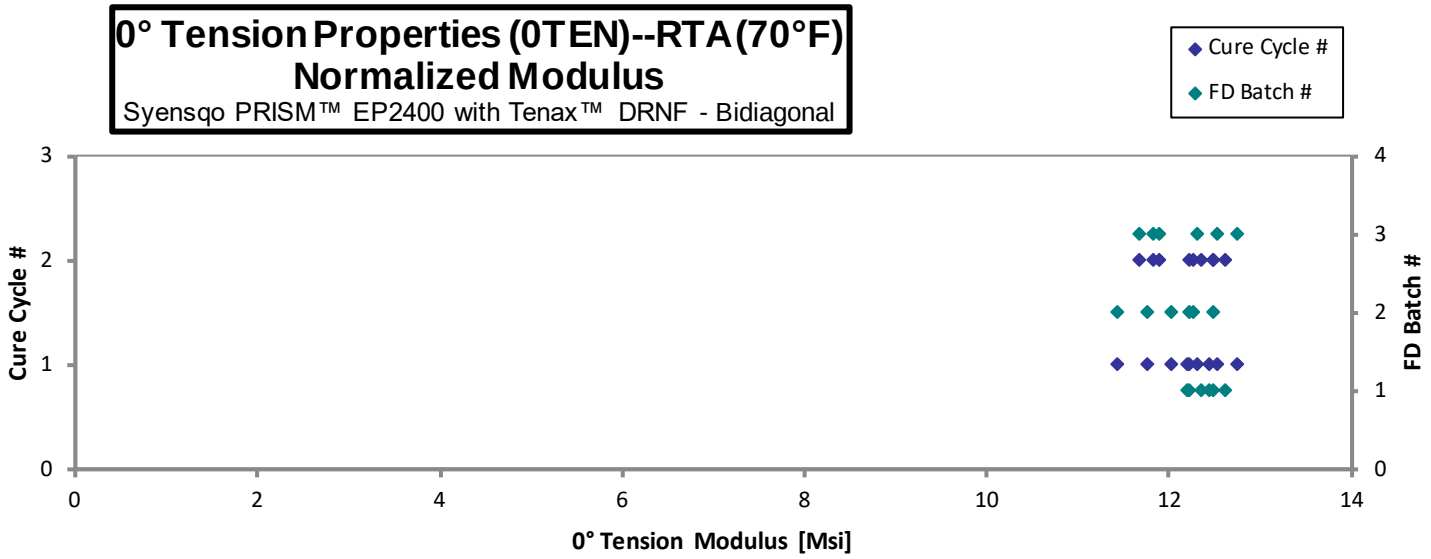
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0TEN-A-C1-1-1A	1	C1	1	210.6	12.47	0.0442	0.1096	8	LWT, LAT	0.0137	206.1	12.20
BD-0TEN-A-C1-1-2A	1	C1	1	211.6	12.41	0.0400	0.1103	8	LWT, LWB	0.0138	208.3	12.22
BD-0TEN-A-C1-1-3A	1	C1	1	210.7	12.62	0.0405	0.1104	8	LGM, LAB	0.0138	207.6	12.43
BD-0TEN-A-C2-1-1A	1	C2	2	207.4	12.47	0.0434	0.1111	8	LWB, LAB	0.0139	205.7	12.36
BD-0TEN-A-C2-1-2A	1	C2	2	193.2	12.49	0.0504	0.1120	8	LWT, LGM	0.0140	193.2	12.49
BD-0TEN-A-C2-1-3A	1	C2	2	202.7	12.80	0.0399	0.1104	8	LWT, LAB	0.0138	199.8	12.62
BD-0TEN-B-C1-1-1A	2	C1	1	199.1	10.95	0.0393	0.1169	8	LAB, LGT, LAT	0.0146	207.8	11.43
BD-0TEN-B-C1-1-2A	2	C1	1	210.5	11.63	0.0219	0.1158	8	LAT, LWB	0.0145	217.5	12.02
BD-0TEN-B-C1-1-3A	2	C1	1	214.7	11.40	0.0149	0.1155	8	M(A,L)WB, LGT	0.0144	221.5	11.76
BD-0TEN-B-C2-1-1A	2	C2	2	216.3	11.66	0.0272	0.1174	8	LWB, LIT	0.0147	226.7	12.22
BD-0TEN-B-C2-1-2A	2	C2	2	204.7	11.77	0.0351	0.1168	8	LWT, LAB	0.0146	213.5	12.28
BD-0TEN-B-C2-1-3A	2	C2	2	209.0	12.01	0.0299	0.1165	8	LGT, LAT	0.0146	217.5	12.49
BD-0TEN-C-C1-1-1A	3	C1	1	214.0	12.10	0.0362	0.1140	8	LWB, LAT	0.0142	217.8	12.32
BD-0TEN-C-C1-1-2A	3	C1	1	204.0	12.29	0.0304	0.1143	8	LAT, LWB	0.0143	208.1	12.54
BD-0TEN-C-C1-1-3A	3	C1	1	215.2	12.52	0.0451	0.1141	8	LAB,LWT	0.0143	219.3	12.75
BD-0TEN-C-C2-1-1A	3	C2	2	224.0	11.63	0.0316	0.1140	8	LGM, LWT	0.0143	228.0	11.83
BD-0TEN-C-C2-1-2A	3	C2	2	217.3	11.77	0.0165	0.1131	8	LGB, LGT	0.0141	219.5	11.89
BD-0TEN-C-C2-1-3A	3	C2	2	217.3	11.59	0.0349	0.1128	8	LWT, LGM	0.0141	218.9	11.68

Average	**210.1**	**12.03**	**0.0345**	**$Average_{norm}$**	**0.0142**	**213.1**	**12.20**
Standard Dev.	**7.437**	**0.5053**	**0.0098**	**$Standard\ Dev._{norm}$**		**9.194**	**0.3589**
Coeff. of Var. [%]	**3.539**	**4.200**	**28.34**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.313**	**2.943**
Min.	**193.2**	**10.95**	**0.0149**	**Min.**	**0.0137**	**193.2**	**11.43**
Max.	**224.0**	**12.80**	**0.0504**	**Max.**	**0.0147**	**228.0**	**12.75**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

0° Tension Properties (0TEN)--ETA (180°F)
Strength & Modulus

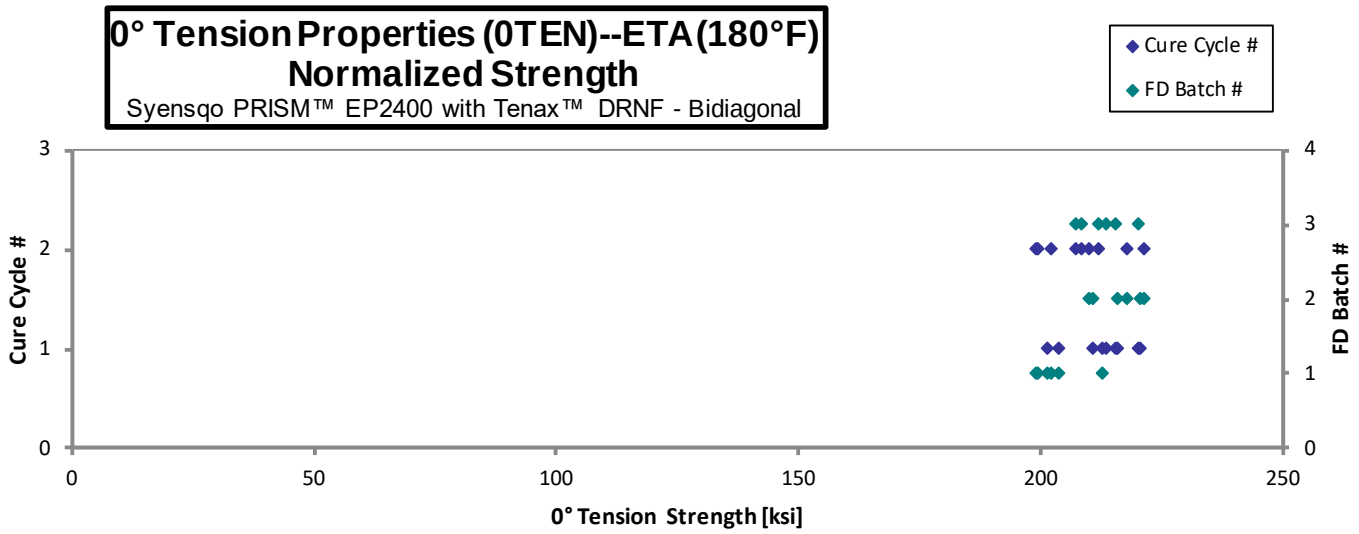
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

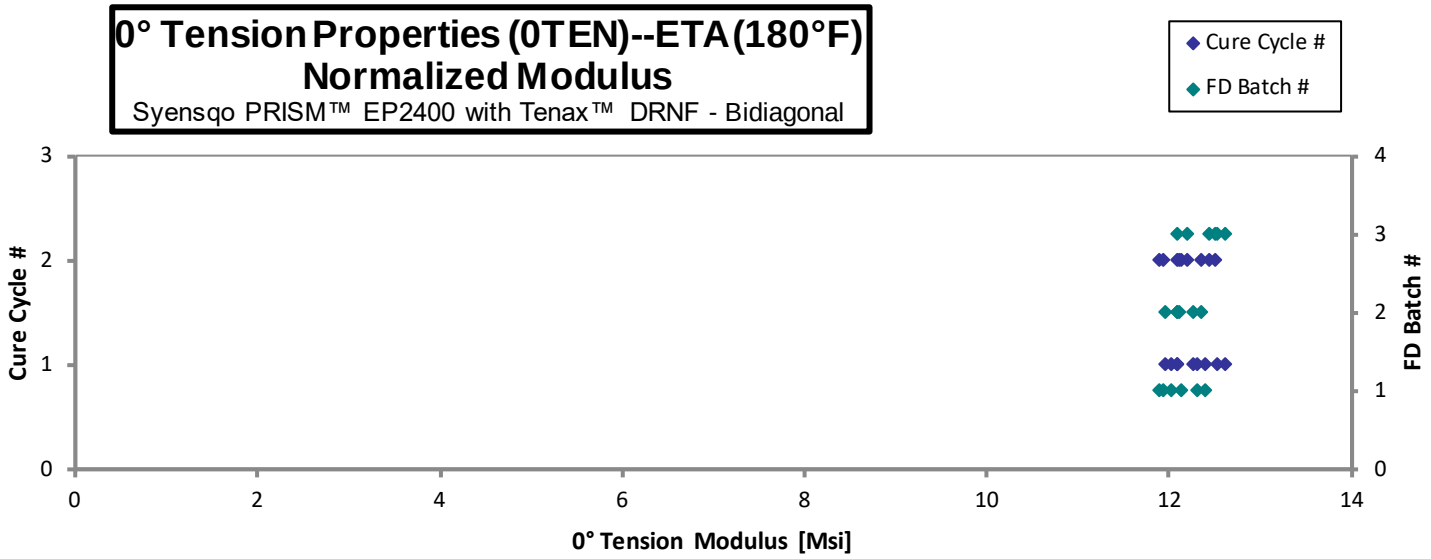
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0TEN-A-C1-1-1C	1	C1	1	203.6	12.44	0.0292	0.1108	8	LAT, LWB	0.0139	201.4	12.32
BD-0TEN-A-C1-1-2C	1	C1	1	207.6	12.26	0.0282	0.1099	8	LAT, LWB	0.0137	203.7	12.03
BD-0TEN-A-C1-1-3C	1	C1	1	215.6	12.56	0.0261	0.1105	8	LWT, LWB	0.0138	212.8	12.39
BD-0TEN-A-C2-1-1C	1	C2	2	200.6	12.02	0.0245	0.1112	8	LWT	0.0139	199.1	11.93
BD-0TEN-A-C2-1-2C	1	C2	2	199.1	12.12	0.0267	0.1121	8	LGT	0.0140	199.3	12.13
BD-0TEN-A-C2-1-3C	1	C2	2	203.9	11.98	0.0225	0.1112	8	LWB	0.0139	202.4	11.89
BD-0TEN-B-C1-1-1C	2	C1	1	210.6	11.80	0.0324	0.1148	8	LWT, LWB	0.0143	215.8	12.09
BD-0TEN-B-C1-1-2C	2	C1	1	215.6	11.97	0.0233	0.1147	8	LAT, LAB	0.0143	220.8	12.26
BD-0TEN-B-C1-1-3C	2	C1	1	204.3	11.59	0.0220	0.1155	8	LWT, LWB	0.0144	210.8	11.95
BD-0TEN-B-C2-1-1C	2	C2	2	213.1	11.90	0.0217	0.1163	8	LGB, LWT	0.0145	221.2	12.35
BD-0TEN-B-C2-1-2C	2	C2	2	207.5	11.54	0.0217	0.1176	8	LGT, LWB	0.0147	217.8	12.11
BD-0TEN-B-C2-1-3C	2	C2	2	199.5	11.49	0.0164	0.1179	8	LWB, LAT	0.0147	210.0	12.10
BD-0TEN-C-C1-1-1C	3	C1	1	211.9	11.99	0.0243	0.1129	8	LGM	0.0141	213.6	12.09
BD-0TEN-C-C1-1-2C	3	C1	1	209.4	12.16	0.0192	0.1153	8	LAB, LWT	0.0144	215.6	12.53
BD-0TEN-C-C1-1-3C	3	C1	1	215.3	12.34	0.0180	0.1145	8	LGB	0.0143	220.1	12.61
BD-0TEN-C-C2-1-1C	3	C2	2	205.9	12.36	0.0309	0.1134	8	LGT, LGM	0.0142	208.3	12.51
BD-0TEN-C-C2-1-2C	3	C2	2	205.4	12.31	0.0183	0.1132	8	LGM	0.0141	207.5	12.44
BD-0TEN-C-C2-1-3C	3	C2	2	209.7	12.07	0.0329	0.1132	8	LWT, LWB	0.0141	211.9	12.20

Average	**207.7**	**12.05**	**0.0244**
Standard Dev.	**5.363**	**0.3085**	**0.0050**
Coeff. of Var. [%]	**2.582**	**2.560**	**20.39**
Min.	**199.1**	**11.49**	**0.0164**
Max.	**215.6**	**12.56**	**0.0329**
Number of Spec.	**18**	**18**	**18**

$Average_{norm}$	**0.0142**	**210.7**	**12.22**
$Standard\ Dev._{norm}$		**7.270**	**0.2183**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.451**	**1.787**
Min.	**0.0137**	**199.1**	**11.89**
Max.	**0.0147**	**221.2**	**12.61**
Number of Spec.	**18**	**18**	**18**


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

0° Tension Properties (0TEN)--ETW1 (180°F)
Strength & Modulus

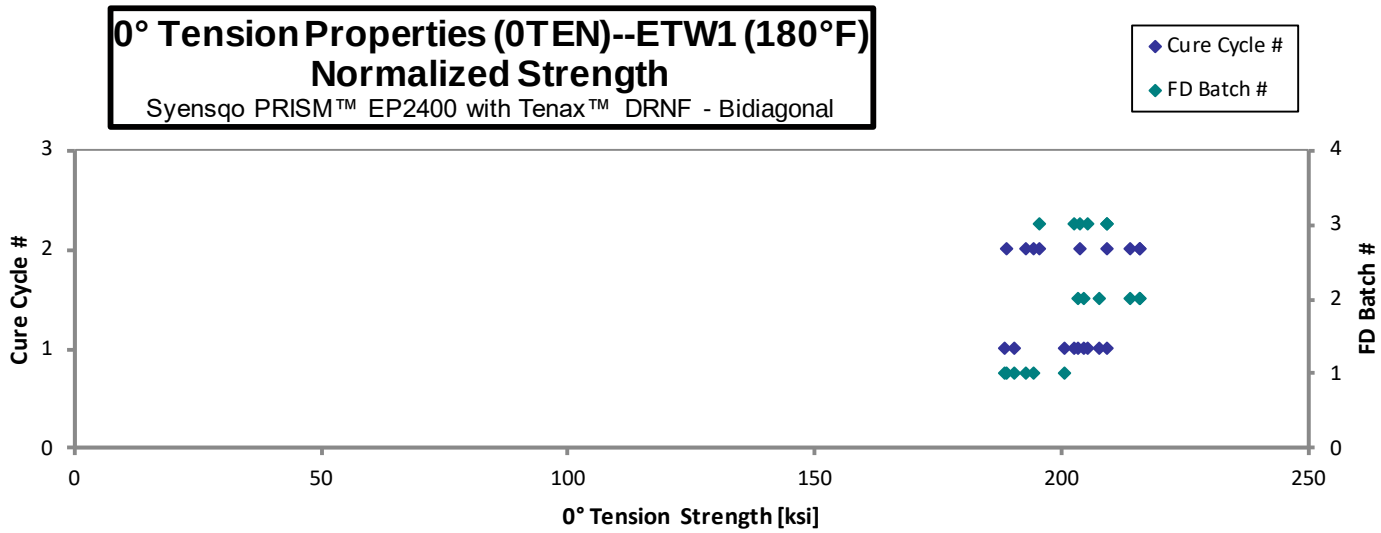
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

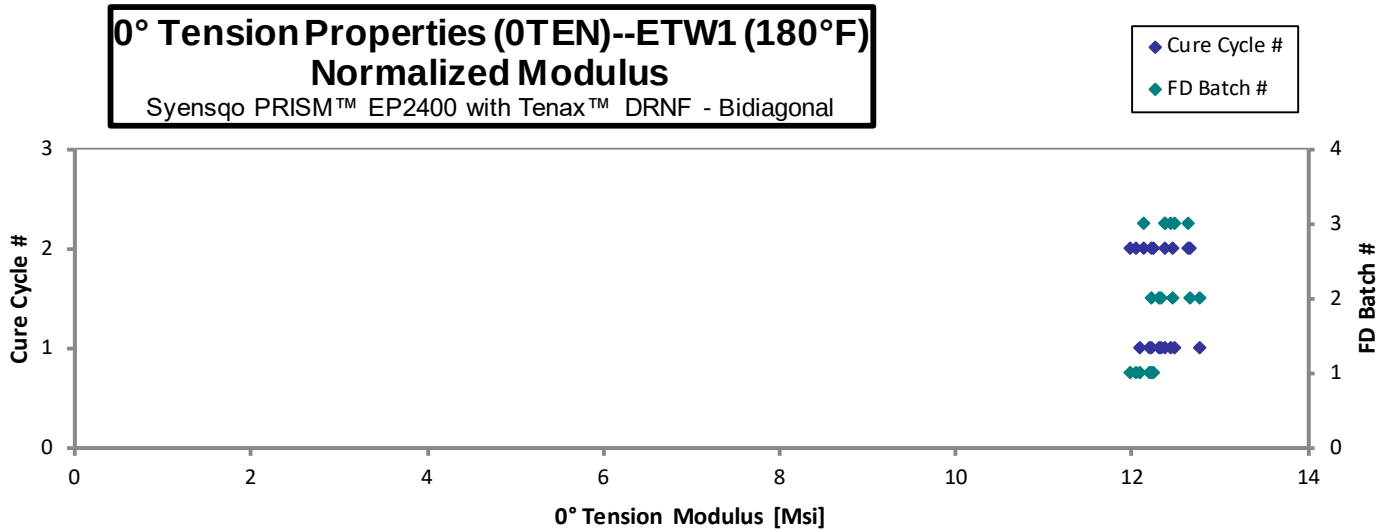
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0TEN-A-C1-1-1D	1	C1	1	203.7	12.39	0.0300	0.1104	8	M(D,L)GM, LWB	0.0138	200.7	12.21
BD-0TEN-A-C1-1-2D	1	C1	1	192.4	12.33	0.0218	0.1097	8	M(D,L)GM, LWT	0.0137	188.5	12.08
BD-0TEN-A-C1-1-3D	1	C1	1	194.3	12.49	0.0312	0.1097	8	DGT, LWT, LWB	0.0137	190.3	12.23
BD-0TEN-A-C2-1-1D	1	C2	2	190.7	12.15	0.0334	0.1110	8	DGB, LWT	0.0139	189.0	12.04
BD-0TEN-A-C2-1-2D	1	C2	2	192.9	11.99	0.0309	0.1120	8	M(D,L)GM	0.0140	192.9	11.99
BD-0TEN-A-C2-1-3D	1	C2	2	196.0	12.35		0.1111	8	M(D,L)GM	0.0139	194.4	12.25
BD-0TEN-B-C1-1-1D	2	C1	1	197.2	11.85	0.0263	0.1163	8	LWB, LAT	0.0145	204.8	12.31
BD-0TEN-B-C1-1-2D	2	C1	1	200.5	12.32		0.1161	8	LGM	0.0145	207.7	12.77
BD-0TEN-B-C1-1-3D	2	C1	1	196.4	11.90		0.1160	8	LWB, LAT	0.0145	203.3	12.32
BD-0TEN-B-C2-1-1D	2	C2	2	204.4	11.68	0.0230	0.1172	8	LGM	0.0147	214.0	12.23
BD-0TEN-B-C2-1-2D	2	C2	2	204.9	12.00	0.0280	0.1181	8	LWB, LGM	0.0148	216.0	12.65
BD-0TEN-B-C2-1-3D	2	C2	2	205.8	11.88	0.0335	0.1174	8	LAB	0.0147	215.7	12.46
BD-0TEN-C-C1-1-1D	3	C1	1	201.4	12.40		0.1128	8	LGT	0.0141	202.8	12.48
BD-0TEN-C-C1-1-2D	3	C1	1	205.4	12.16		0.1141	8	LAT, LWB	0.0143	209.2	12.39
BD-0TEN-C-C1-1-3D	3	C1	1	203.8	12.36	0.0341	0.1128	8	LGB, LWT	0.0141	205.3	12.45
BD-0TEN-C-C2-1-1D	3	C2	2	194.0	12.05		0.1129	8	DGM, LGT, LGB	0.0141	195.5	12.14
BD-0TEN-C-C2-1-2D	3	C2	2	206.3	12.19		0.1137	8	LWB, LIT	0.0142	209.4	12.37
BD-0TEN-C-C2-1-3D	3	C2	2	202.1	12.55		0.1129	8	LWT, LIB	0.0141	203.7	12.65

Poisson's Ratio note reported due to non-linear data

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**199.6**	**12.17**	**0.0292**	**$Average_{norm}$**	**0.0142**	**202.4**	**12.33**
Standard Dev.	**5.310**	**0.2464**	**0.0044**	**Standard $Dev._{norm}$**		**8.958**	**0.2160**
Coeff. of Var. [%]	**2.661**	**2.025**	**14.90**	**Coeff. of Var. $[\%]_{norm}$**		**4.426**	**1.751**
Min.	**190.7**	**11.68**	**0.0218**	**Min.**	**0.0137**	**188.5**	**11.99**
Max.	**206.3**	**12.55**	**0.0341**	**Max.**	**0.0148**	**216.0**	**12.77**
Number of Spec.	**18**	**18**	**10**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

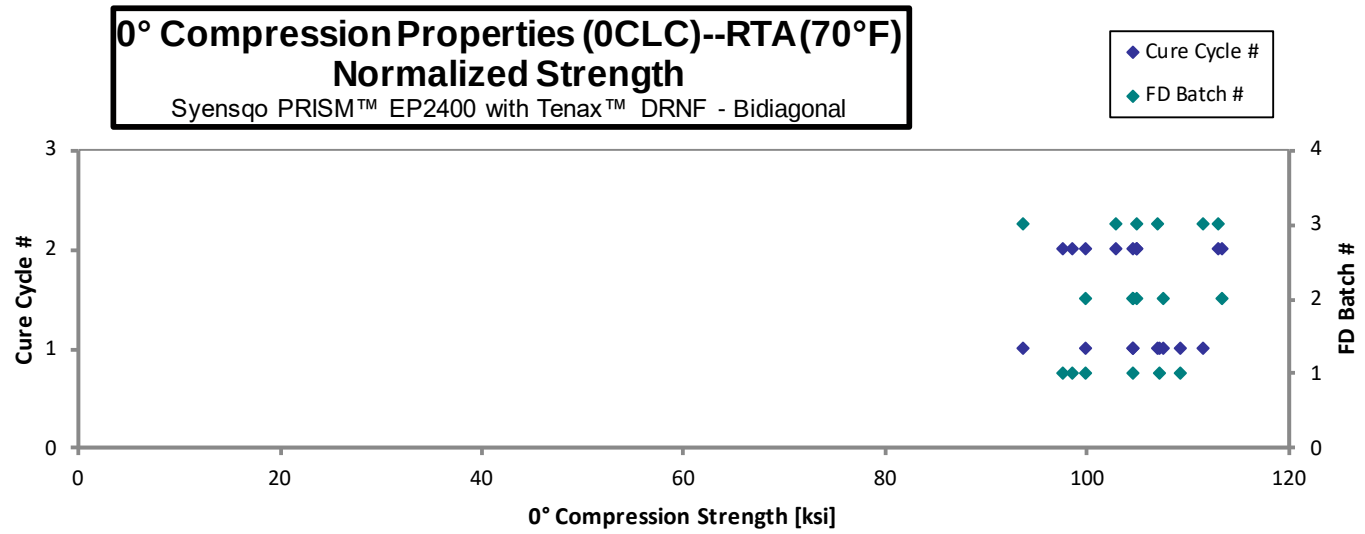
4.1.2.2Bidiagonal 0° Compression (BD-0CLC)

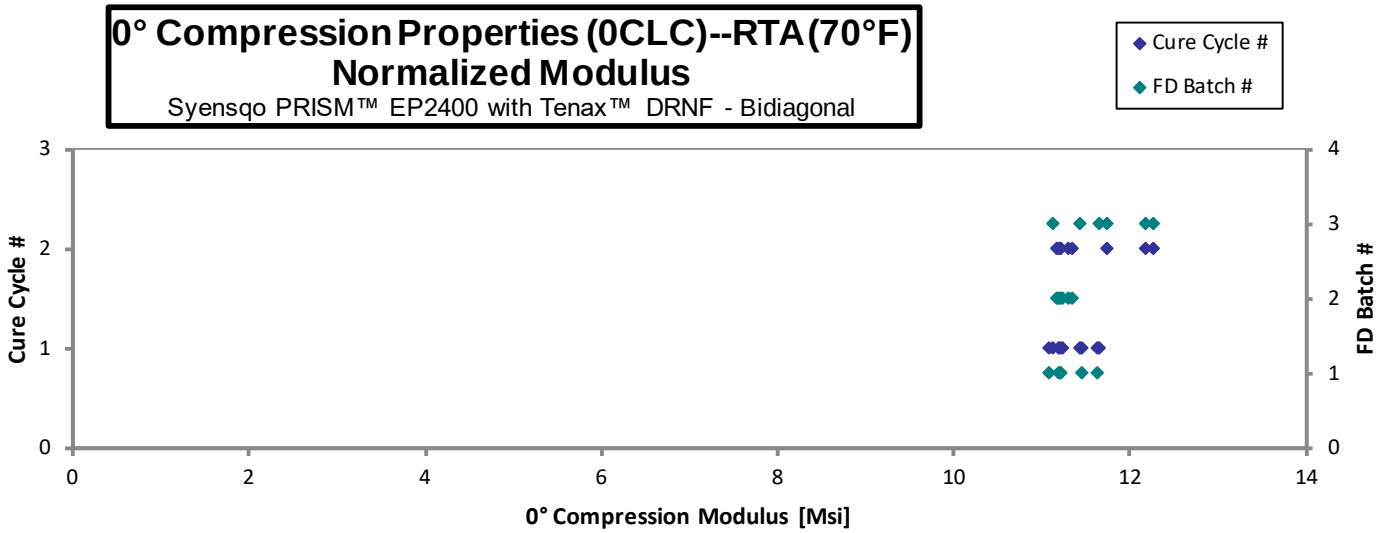
0° Compression Properties (0CLC)--RTA (70°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0CLC-A-C1-1-1A	1	C1	1	106.8	11.35	0.1147	8	BGM	0.0143	109.3	11.62
BD-0CLC-A-C1-1-2A	1	C1	1	104.3	10.79	0.1151	8	BGM	0.0144	107.2	11.08
BD-0CLC-A-C1-1-3A	1	C1	1	102.2	11.20	0.1146	8	BGM	0.0143	104.5	11.46
BD-0CLC-A-C2-1-1A	1	C2	2	95.00	10.79	0.1163	8	HIT, BGM	0.0145	98.60	11.20
BD-0CLC-A-C2-1-2A	1	C2	2	96.39	10.81	0.1160	8	BGM	0.0145	99.84	11.20
BD-0CLC-A-C2-1-3A	1	C2	2		10.84	0.1159	8	HIT	0.0145		11.22
BD-0CLC-A-C2-1-4A	1	C2	2	94.19		0.1162	8	BGM	0.0145	97.70	
BD-0CLC-B-C1-1-1A	2	C1	1	101.1	10.55	0.1192	8	M(B,H)AT, HIT	0.0149	107.7	11.23
BD-0CLC-B-C1-1-2A	2	C1	1	93.62	10.49	0.1195	8	M(B,H)AT, HIT	0.0149	99.87	11.19
BD-0CLC-B-C1-1-3A	2	C1	1	98.63	10.58	0.1189	8	M(B,H)AT, HIT	0.0149	104.7	11.23
BD-0CLC-B-C2-1-1A	2	C2	2	98.55	10.65	0.1189	8	BAB	0.0149	104.6	11.30
BD-0CLC-B-C2-1-2A	2	C2	2	99.21	10.56	0.1185	8	BGM, HIT, HIB	0.0148	104.9	11.17
BD-0CLC-B-C2-1-3A	2	C2	2	106.2	10.63	0.1196	8	HAT, HIT	0.0149	113.4	11.35
BD-0CLC-C-C1-1-1A	3	C1	1	104.1	10.86	0.1201	8	BAT, HIT	0.0150	111.6	11.65
BD-0CLC-C-C1-1-2A	3	C1	1	101.7	10.58	0.1179	8	BAT, HIT	0.0147	107.0	11.13
BD-0CLC-C-C1-1-3A	3	C1	1	88.87	10.83	0.1182	8	BAT	0.0148	93.76	11.43
BD-0CLC-C-C2-1-1A	3	C2	2	100.5	11.23	0.1170	8	BAT, HIT	0.0146	105.0	11.73
BD-0CLC-C-C2-1-2A	3	C2	2	109.7	11.91	0.1155	8	BAT, HIT	0.0144	113.1	12.28
BD-0CLC-C-C2-1-3A	3	C2	2	101.9	12.05	0.1131	8	BGM	0.0141	102.9	12.17

Average	**100.2**	**10.93**	**$Average_{norm}$**	**0.0146**	**104.8**	**11.43**
Standard Dev.	**5.244**	**0.4544**	**$Standard\ Dev._{norm}$**		**5.384**	**0.3455**
Coeff. of Var. [%]	**5.236**	**4.158**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.139**	**3.024**
Min.	**88.87**	**10.49**	**Min.**	**0.0141**	**93.76**	**11.08**
Max.	**109.7**	**12.05**	**Max.**	**0.0150**	**113.4**	**12.28**
Number of Spec.	**18**	**18**	**Number of Spec.**	**19**	**18**	**18**


0° Compression Properties (0CLC)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


0° Compression Properties (0CLC)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

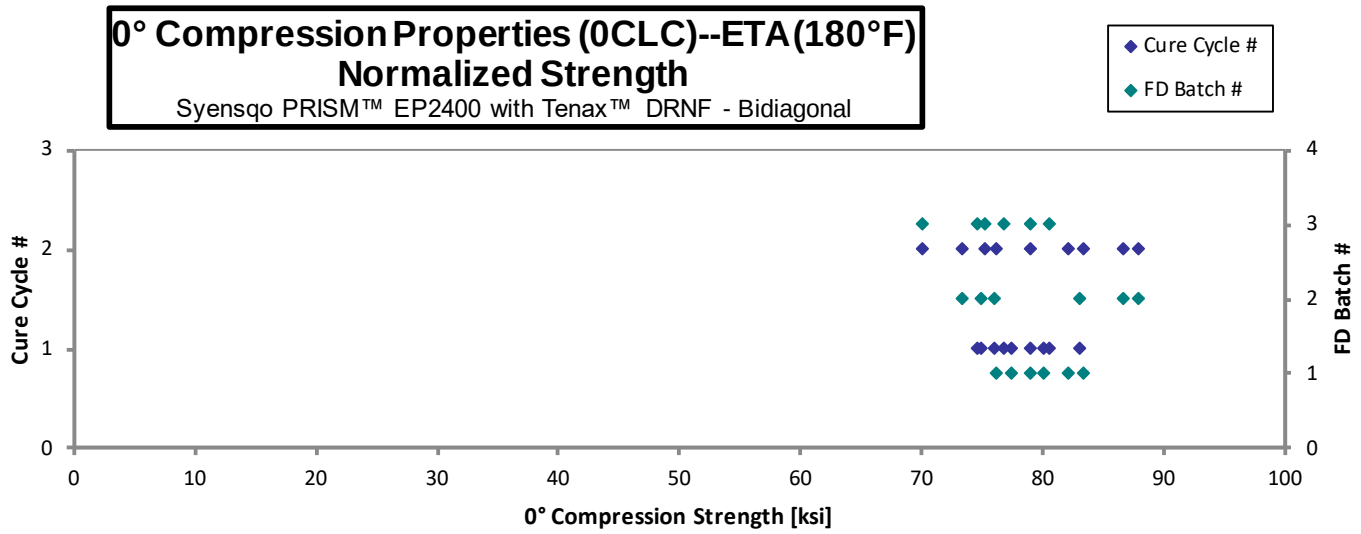
0° Compression Properties (0CLC)--ETA (180°F)
Strength & Modulus

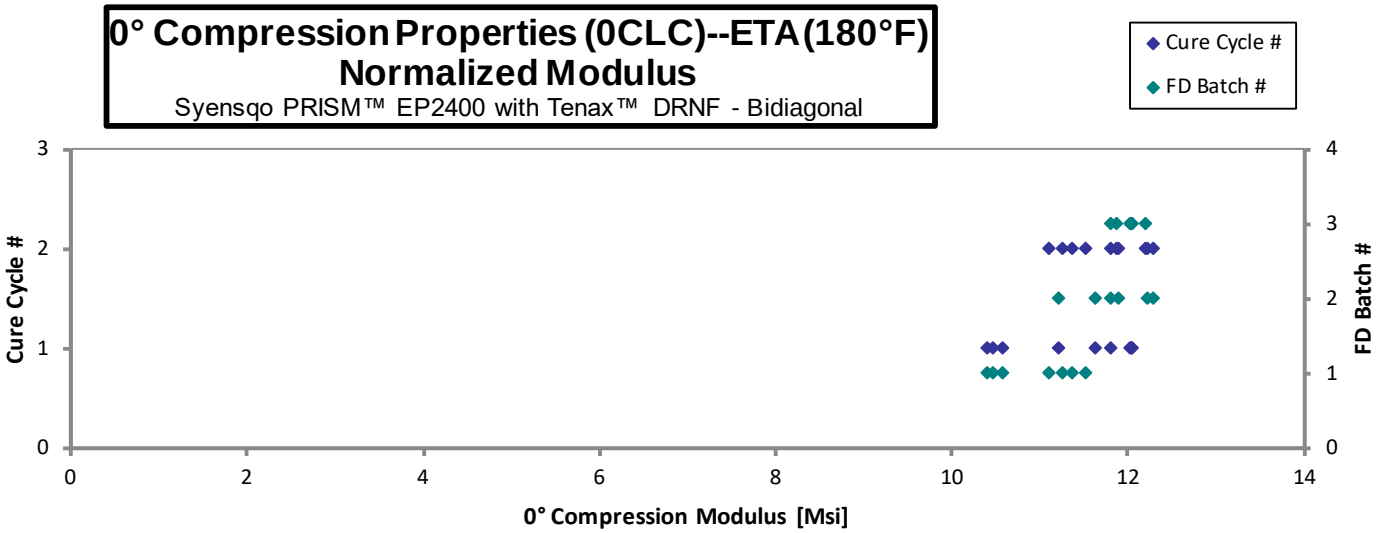
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0CLC-A-C1-1-1C	1	C1	1	75.31	10.11	0.1152	8	BGM	0.0144	77.44	10.40
BD-0CLC-A-C1-1-2C	1	C1	1	76.67	10.12	0.1171	8	BGM, HAT	0.0146	80.13	10.58
BD-0CLC-A-C1-1-3C	1	C1	1	75.72	10.02	0.1170	8	BGM	0.0146	79.08	10.46
BD-0CLC-A-C2-1-1C	1	C2	2		10.74	0.1174	8	CIT, CIB	0.0147		11.26
BD-0CLC-A-C2-1-2C	1	C2	2	73.21	11.06	0.1165	8	BGM	0.0146	76.17	11.51
BD-0CLC-A-C2-1-3C	1	C2	2	79.25	10.55	0.1179	8	BGM	0.0147	83.44	11.11
BD-0CLC-A-C2-1-4C	1	C2	2	78.56	10.88	0.1171	8	HAB, BGM	0.0146	82.12	11.38
BD-0CLC-B-C1-1-1C	2	C1	1	71.43	10.53	0.1192	8	M(B,H)AT, HIT	0.0149	76.02	11.21
BD-0CLC-B-C1-1-2C	2	C1	1	70.09	10.88	0.1197	8	BAT	0.0150	74.88	11.63
BD-0CLC-B-C1-1-3C	2	C1	1	78.03	11.08	0.1193	8	BAB, HIB	0.0149	83.14	11.80
BD-0CLC-B-C2-1-1C	2	C2	2	82.11	11.40	0.1200	8	M(B,H)GM, HAB, HIB	0.0150	87.96	12.21
BD-0CLC-B-C2-1-2C	2	C2	2	80.89	11.11	0.1200	8	BAB, HAT, HIT	0.0150	86.68	11.90
BD-0CLC-B-C2-1-3C	2	C2	2	68.35	11.45	0.1202	8	BAT	0.0150	73.35	12.29
BD-0CLC-C-C1-1-1C	3	C1	1	77.83	11.65	0.1158	8	BAB	0.0145	80.50	12.05
BD-0CLC-C-C1-1-2C	3	C1	1	72.17	11.65	0.1157	8	BAT	0.0145	74.58	12.04
BD-0CLC-C-C1-1-3C	3	C1	1	74.21	11.61	0.1161	8	BAB	0.0145	76.89	12.03
BD-0CLC-C-C2-1-1C	3	C2	2	75.88	11.92	0.1110	8	M(B,H)AT, HIT	0.0139	75.22	11.82
BD-0CLC-C-C2-1-2C	3	C2	2	71.20	12.39	0.1102	8	BAT	0.0138	70.08	12.19
BD-0CLC-C-C2-1-3C	3	C2	2	79.23	11.91	0.1116	8	BAB, HIB	0.0140	78.96	11.87

Average	**75.56**	**11.11**	**$Average_{norm}$**	**0.0146**	**78.70**	**11.56**
Standard Dev.	**3.887**	**0.6668**	**$Standard\ Dev._{norm}$**		**4.688**	**0.5938**
Coeff. of Var. [%]	**5.144**	**6.003**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.957**	**5.134**
Min.	**68.35**	**10.02**	**Min.**	**0.0138**	**70.08**	**10.40**
Max.	**82.11**	**12.39**	**Max.**	**0.0150**	**87.96**	**12.29**
Number of Spec.	**18**	**19**	**Number of Spec.**	**19**	**18**	**19**


0° Compression Properties (0CLC)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4


0° Compression Properties (0CLC)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

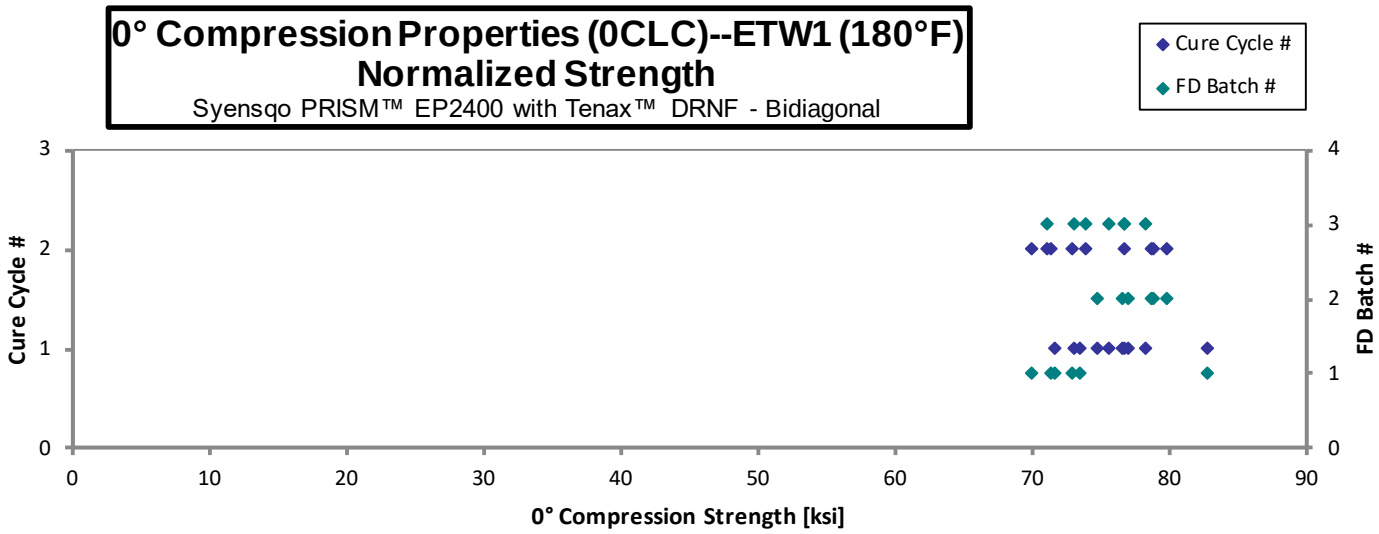
0° Compression Properties (0CLC)--ETW1 (180°F)
Strength & Modulus

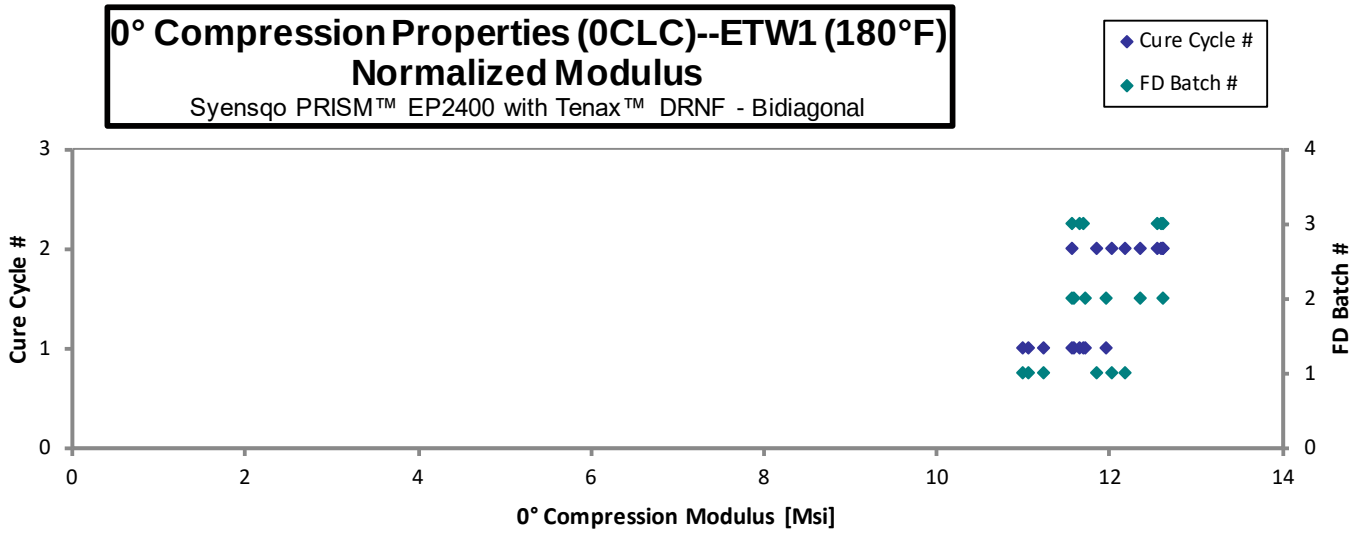
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0CLC-A-C1-1-1D	1	C1	1	69.52	10.66	0.1155	8	M(B,H)AB	0.0144	71.70	10.99
BD-0CLC-A-C1-1-2D	1	C1	1	80.97	10.99	0.1146	8	BGM	0.0143	82.82	11.24
BD-0CLC-A-C1-1-3D	1	C1	1	71.94	10.82	0.1144	8	BGM, HAT	0.0143	73.48	11.05
BD-0CLC-A-C2-1-1D	1	C2	2	69.56	11.31	0.1175	8	BAB	0.0147	72.95	11.86
BD-0CLC-A-C2-1-2D	1	C2	2	66.14	11.35	0.1185	8	BAT	0.0148	70.00	12.02
BD-0CLC-A-C2-1-3D	1	C2	2	67.60	11.52	0.1184	8	BAT	0.0148	71.45	12.17
BD-0CLC-B-C1-1-1D	2	C1	1	72.61	11.05	0.1189	8	M(B,H)AT, HIT	0.0149	77.07	11.73
BD-0CLC-B-C1-1-2D	2	C1	1	72.35	10.95	0.1186	8	M(B,H)AT	0.0148	76.63	11.59
BD-0CLC-B-C1-1-3D	2	C1	1	69.82	11.17	0.1199	8	M(B,H)AT	0.0150	74.74	11.96
BD-0CLC-B-C2-1-1D	2	C2	2	74.27	11.50	0.1203	8	BAT, HIT	0.0150	79.79	12.36
BD-0CLC-B-C2-1-2D	2	C2	2	72.94	11.68	0.1210	8	BGM	0.0151	78.82	12.62
BD-0CLC-B-C2-1-3D	2	C2	2	72.92	10.72	0.1209	8	HAT, HIT	0.0151	78.69	11.57
BD-0CLC-C-C1-1-1D	3	C1	1	72.74	11.26	0.1164	8	BAT	0.0146	75.62	11.70
BD-0CLC-C-C1-1-2D	3	C1	1	75.31	11.12	0.1165	8	BAB	0.0146	78.32	11.56
BD-0CLC-C-C1-1-3D	3	C1	1	69.99	11.17	0.1168	8	BAB, HIB	0.0146	73.01	11.65
BD-0CLC-C-C1-1-4D	3	C1	1	73.70		0.1166	8	BAB	0.0146	76.73	
BD-0CLC-C-C2-1-1D	3	C2	2	70.91	12.56	0.1123	8	BGM, HGM	0.0140	71.07	12.59
BD-0CLC-C-C2-1-2D	3	C2	2	76.48	12.50	0.1125	8	BAT, HIT	0.0141	76.80	12.55
BD-0CLC-C-C2-1-3D	3	C2	2	73.81	12.58	0.1122	8	BAT, HIT	0.0140	73.97	12.61

Average	**72.29**	**11.38**	**Average$_{norm}$**	**0.0146**	**75.45**	**11.88**
Standard Dev.	**3.332**	**0.5994**	**Standard Dev.$_{norm}$**		**3.402**	**0.5223**
Coeff. of Var. [%]	**4.609**	**5.266**	**Coeff. of Var. [%]$_{norm}$**		**4.509**	**4.397**
Min.	**66.14**	**10.66**	**Min.**	**0.0140**	**70.00**	**10.99**
Max.	**80.97**	**12.58**	**Max.**	**0.0151**	**82.82**	**12.62**
Number of Spec.	**19**	**18**	**Number of Spec.**	**19**	**19**	**18**


0° Compression Properties (0CLC)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3
4


0° Compression Properties (0CLC)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

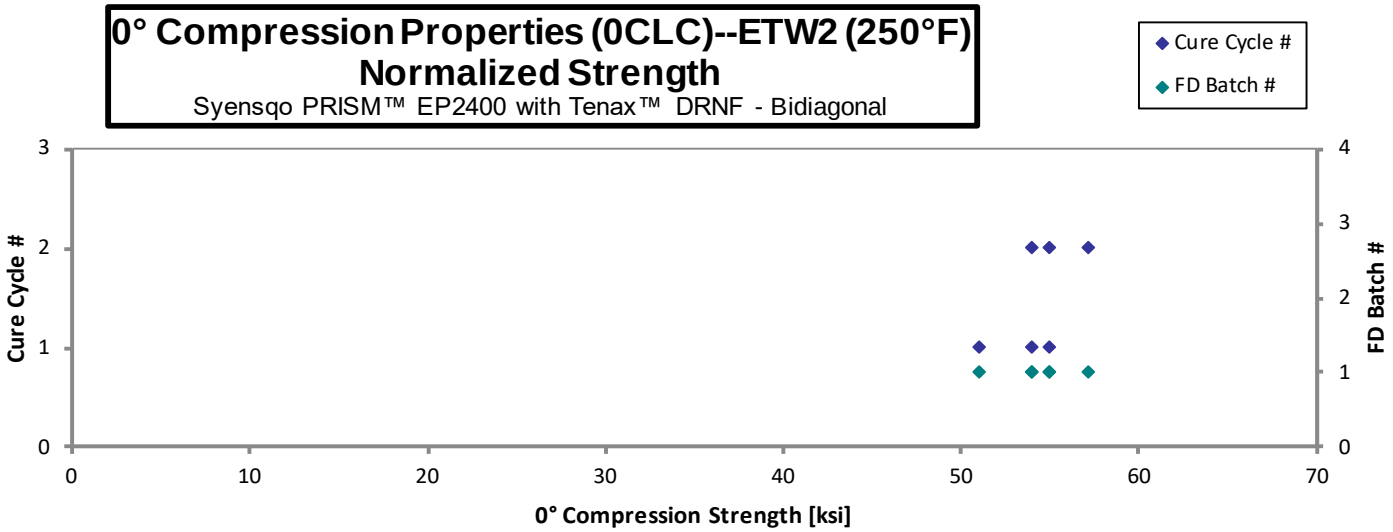
0° Compression Properties (0CLC)--ETW2 (250°F)
Strength & Modulus

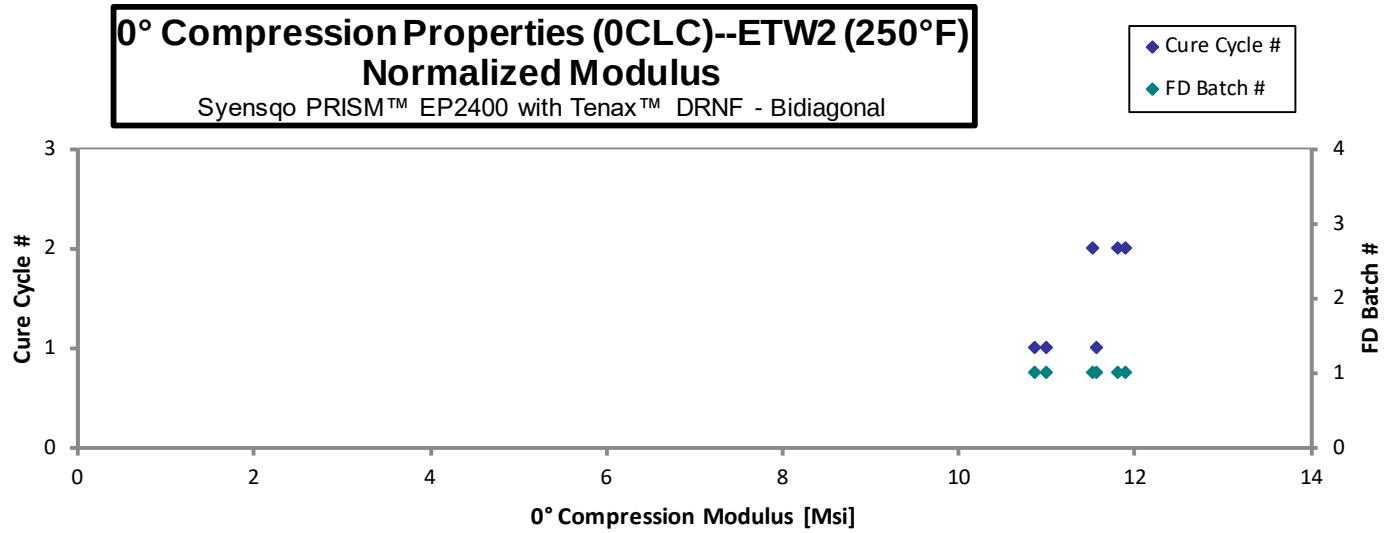
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
BD-0CLC-A-C1-1-1F	1	C1	1	53.65	10.60	0.1147	8	HGM	0.0143	54.93	10.85
BD-0CLC-A-C1-1-2F	1	C1	1	50.35	10.85	0.1136	8	HGM	0.0142	51.04	11.00
BD-0CLC-A-C1-1-3F	1	C1	1	52.51	11.25	0.1152	8	HGM	0.0144	54.00	11.57
BD-0CLC-A-C2-1-1F	1	C2	2	51.73	11.29	0.1170	8	M(B,H)GM	0.0146	54.04	11.80
BD-0CLC-A-C2-1-2F	1	C2	2	52.45	10.99	0.1174	8	HAT, HIT	0.0147	54.96	11.52
BD-0CLC-A-C2-1-3F	1	C2	2	55.35	11.51	0.1157	8	M(B,H)AT, HIT	0.0145	57.18	11.89

Average	**52.67**	**11.08**	**$Average_{norm}$**	**0.0144**	**54.36**	**11.44**
Standard Dev.	**1.702**	**0.3318**	**$Standard\ Dev._{norm}$**		**1.995**	**0.4224**
Coeff. of Var. [%]	**3.231**	**2.993**	**Coeff. of Var. $[\%]_{norm}$**		**3.669**	**3.692**
Min.	**50.35**	**10.60**	**Min.**	**0.0142**	**51.04**	**10.85**
Max.	**55.35**	**11.51**	**Max.**	**0.0147**	**57.18**	**11.89**
Number of Spec.	**6**	**6**	**Number of Spec.**	**6**	**6**	**6**


0° Compression Properties (0CLC)--ETW2 (250°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Strength [ksi]
0
10
20
30
40
50
60
70
0
1
2
3
4


0° Compression Properties (0CLC)--ETW2 (250°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

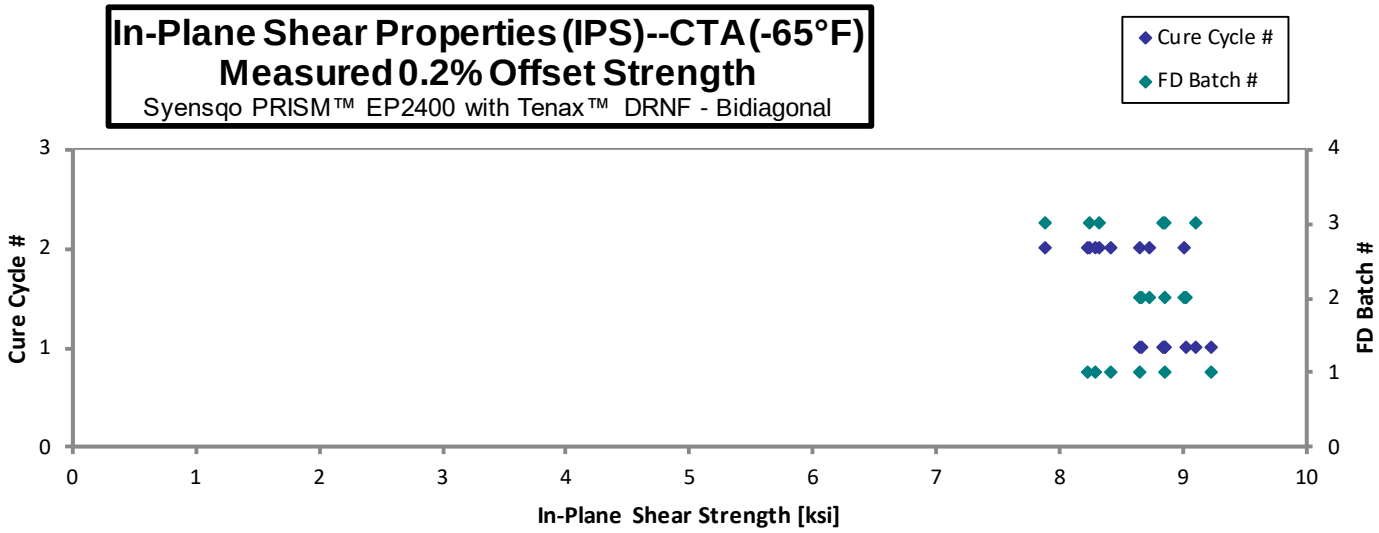
4.1.2.3 Bidiagonal In-Plane Shear (BD-IPS)

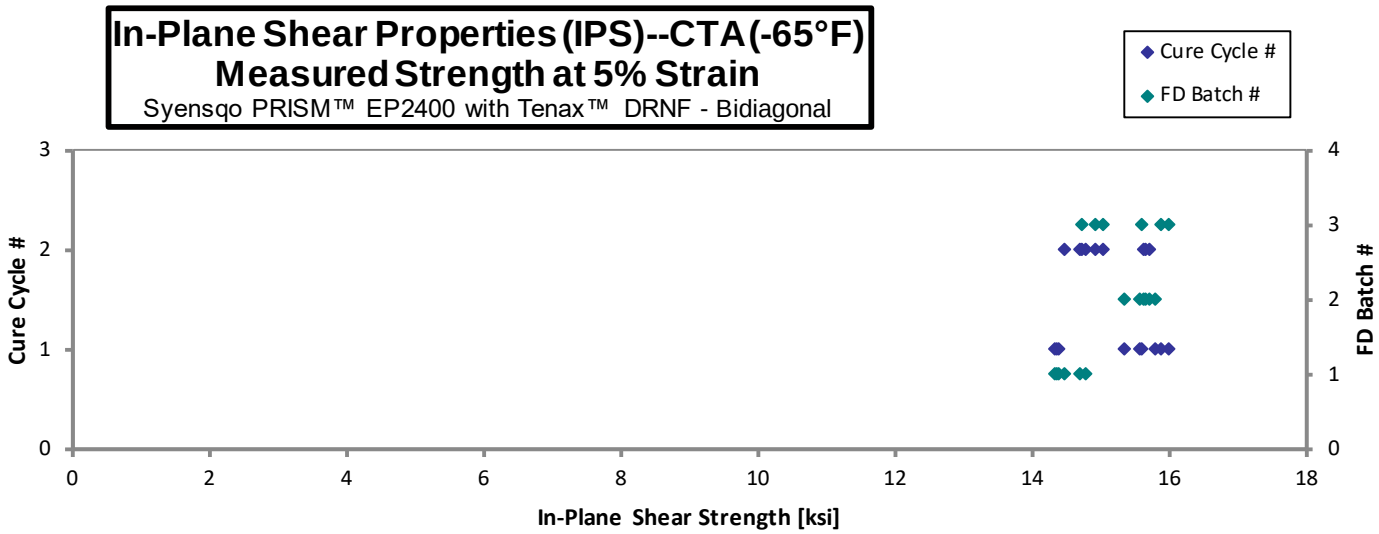
In-Plane Shear Properties (IPS)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

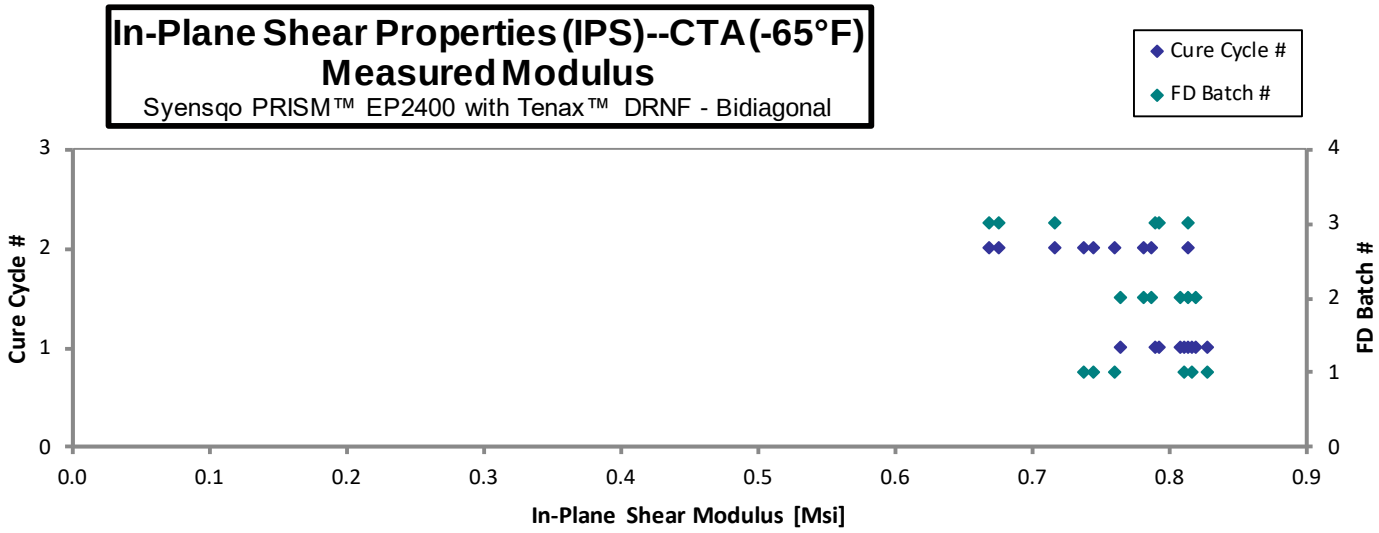
Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-IPS-A-C1-1-1B[1]	1	C1	1	8.649	14.35	0.8111	0.0841	6	0.0140	AGM
BD-IPS-A-C1-1-2B[1]	1	C1	1	8.850	14.35	0.8164	0.0841	6	0.0140	AGM
BD-IPS-A-C1-1-3B[1]	1	C1	1	9.239	14.38	0.8277	0.0840	6	0.0140	AGT
BD-IPS-A-C2-1-1B[1]	1	C2	2	8.286	14.47	0.7381	0.0900	6	0.0150	AGM
BD-IPS-A-C2-1-2B[1]	1	C2	2	8.229	14.70	0.7447	0.0891	6	0.0148	AGB
BD-IPS-A-C2-1-3B[1]	1	C2	2	8.419	14.79	0.7597	0.0890	6	0.0148	AGM
BD-IPS-B-C1-1-1B[1]	2	C1	1	8.860	15.36	0.8088	0.0866	6	0.0144	AWT
BD-IPS-B-C1-1-2B[1]	2	C1	1	8.662	15.57	0.7646	0.0858	6	0.0143	AGB
BD-IPS-B-C1-1-3B[1]	2	C1	1	9.022	15.79	0.8193	0.0859	6	0.0143	AGT
BD-IPS-B-C2-1-1B[1]	2	C2	2	8.734	15.72	0.7816	0.0887	6	0.0148	AWT
BD-IPS-B-C2-1-2B1	2	C2	2	8.650	15.63	0.7866	0.0883	6	0.0147	AGT
BD-IPS-B-C2-1-3B[1]	2	C2	2	9.009	15.66	0.8146	0.0883	6	0.0147	AGM
BD-IPS-C-C1-1-1B	3	C1	1	8.841	15.87	0.7899	0.0856	6	0.0143	AGB
BD-IPS-C-C1-1-2B	3	C1	1	9.102	16.00	0.8145	0.0841	6	0.0140	AGM
BD-IPS-C-C1-1-3B	3	C1	1	8.855	15.59	0.7929	0.0858	6	0.0143	AGM
BD-IPS-C-C2-1-1B	3	C2	2	7.878	14.74	0.6681	0.0979	6	0.0163	AGB
BD-IPS-C-C2-1-2B	3	C2	2	8.324	14.93	0.7166	0.0981	6	0.0164	AGM
BD-IPS-C-C2-1-3B	3	C2	2	8.242	15.04	0.6761	0.0972	6	0.0162	AWB

[1] Unusual fluctuations were observed in the plot prior to and around 5% strain.

Average	**8.658**	**15.16**	**0.7740**	**0.0147**
Standard Dev.	**0.3613**	**0.5834**	**0.04848**	
Coeff. of Var. [%]	**4.173**	**3.848**	**6.264**	
Min.	**7.878**	**14.35**	**0.6681**	**0.0140**
Max.	**9.239**	**16.00**	**0.8277**	**0.0164**
Number of Spec.	**18**	**18**	**18**	**18**


In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
9
10

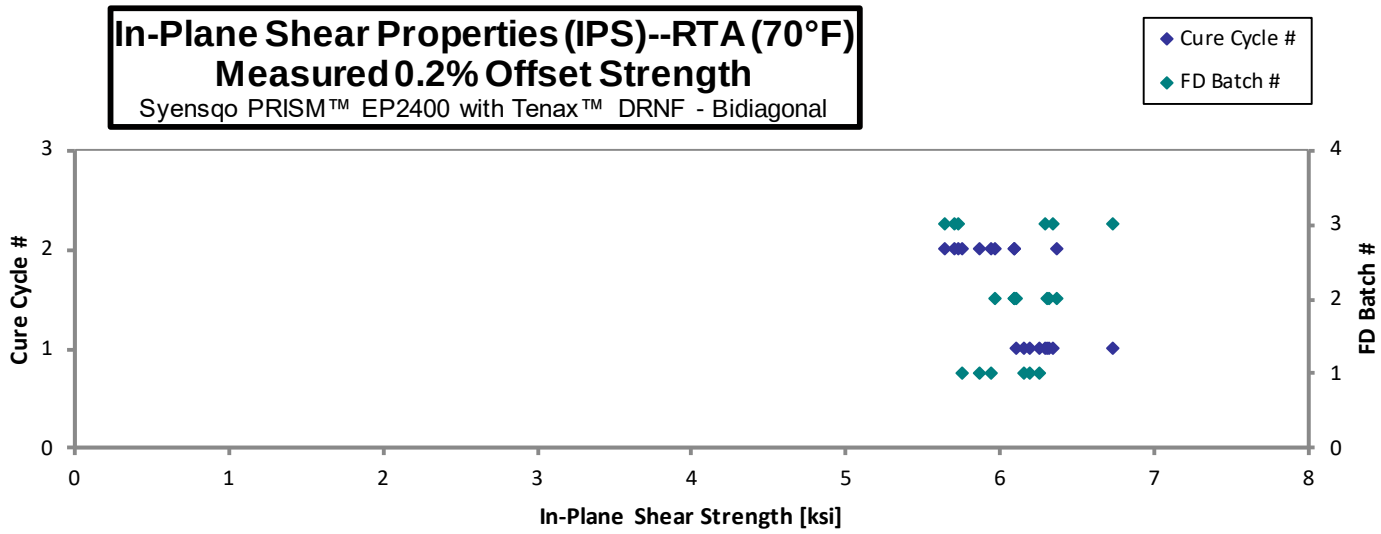

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12
14
16
18
0
1
2
3
4

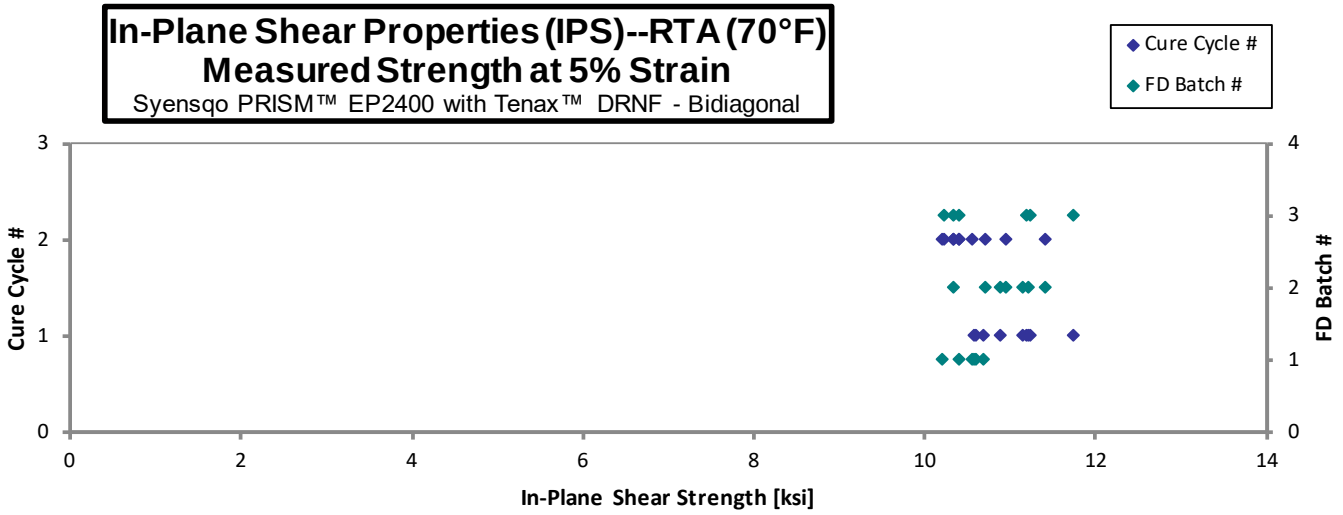

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0
1
2
3
4

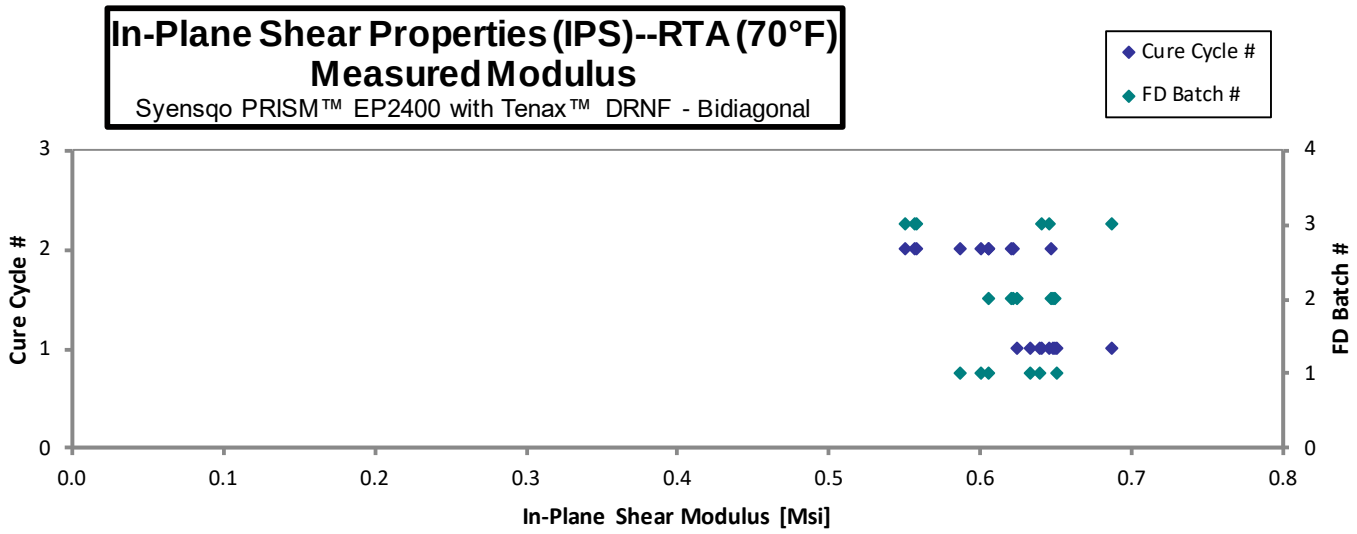
In-Plane Shear Properties (IPS)--RTA (70°F)
Strength & Modulus

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-IPS-A-C1-1-1A	1	C1	1	6.263	10.69	0.6509	0.0836	6	0.0139	AGT
BD-IPS-A-C1-1-2A	1	C1	1	6.155	10.57	0.6330	0.0852	6	0.0142	AGT
BD-IPS-A-C1-1-3A	1	C1	1	6.194	10.59	0.6401	0.0842	6	0.0140	AWB
BD-IPS-A-C2-1-1A	1	C2	2	5.943	10.56	0.6060	0.0876	6	0.0146	AGT
BD-IPS-A-C2-1-2A	1	C2	2	5.874	10.40	0.6006	0.0887	6	0.0148	AGB
BD-IPS-A-C2-1-3A	1	C2	2	5.763	10.20	0.5866	0.0903	6	0.0151	AGM
BD-IPS-B-C1-1-1A	2	C1	1	6.315	11.14	0.6494	0.0866	6	0.0144	AGM
BD-IPS-B-C1-1-2A	2	C1	1	6.311	11.21	0.6478	0.0870	6	0.0145	AGM
BD-IPS-B-C1-1-3A	2	C1	1	6.102	10.89	0.6248	0.0872	6	0.0145	AGT
BD-IPS-B-C2-1-1A	2	C2	2	5.974	10.70	0.6057	0.0894	6	0.0149	AGB
BD-IPS-B-C2-1-2A	2	C2	2	6.095	10.34	0.6225	0.0872	6	0.0145	AGB
BD-IPS-B-C2-1-3A	2	C2	2	6.099	10.94	0.6204	0.0879	6	0.0147	AGT
BD-IPS-B-C2-1-4A	2	C2	2	6.367	11.41	0.6466	0.0878	6	0.0146	AGM
BD-IPS-C-C1-1-1A	3	C1	1	6.296	11.23	0.6414	0.0872	6	0.0145	AGM
BD-IPS-C-C1-1-2A	3	C1	1	6.347	11.20	0.6455	0.0854	6	0.0142	AGB
BD-IPS-C-C1-1-3A	3	C1	1	6.731	11.75	0.6869	0.0848	6	0.0141	AGT
BD-IPS-C-C2-1-1A	3	C2	2	5.730	10.40	0.5586	0.0962	6	0.0160	AGM
BD-IPS-C-C2-1-2A	3	C2	2	5.712	10.33	0.5574	0.0965	6	0.0161	AGB
BD-IPS-C-C2-1-3A	3	C2	2	5.649	10.22	0.5509	0.0978	6	0.0163	AWT
			Average	**6.101**	**10.78**	**0.6197**			**0.0147**	
			Standard Dev.	**0.2783**	**0.4438**	**0.03640**				
			Coeff. of Var. [%]	**4.561**	**4.118**	**5.873**				
			Min.	**5.649**	**10.20**	**0.5509**			**0.0139**	
			Max.	**6.731**	**11.75**	**0.6869**			**0.0163**	
			Number of Spec.	**19**	**19**	**19**			**19**	


In-Plane Shear Properties (IPS)--RTA (70°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8


In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12
14

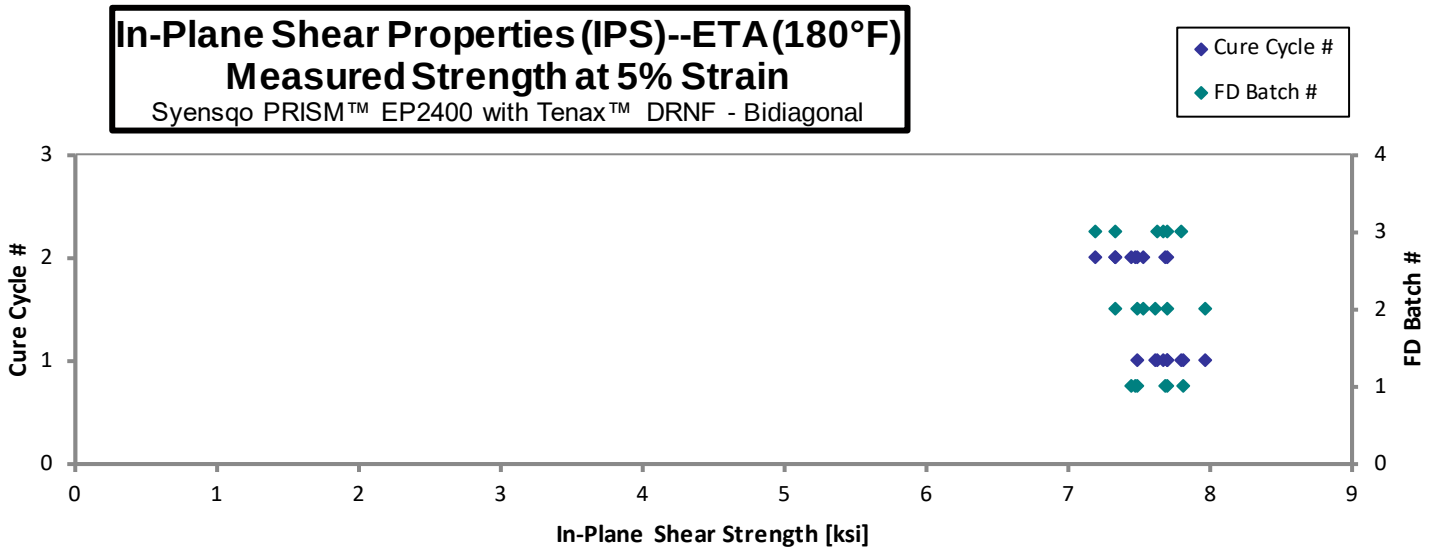

In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

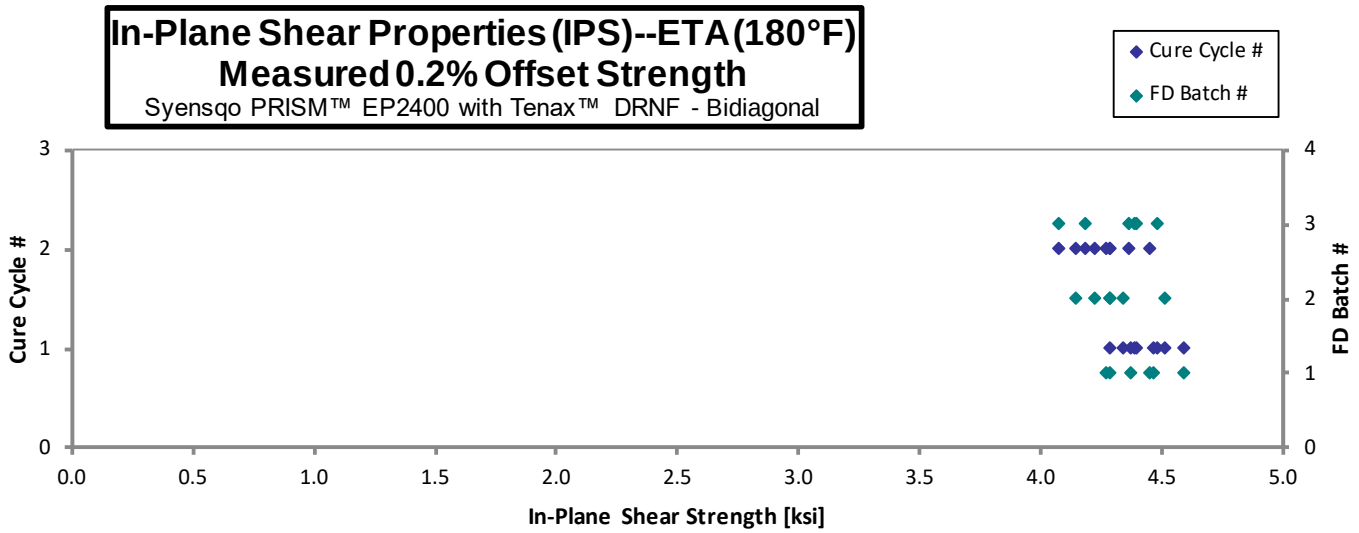
In-Plane Shear Properties (IPS)--ETA (180°F)
Strength & Modulus

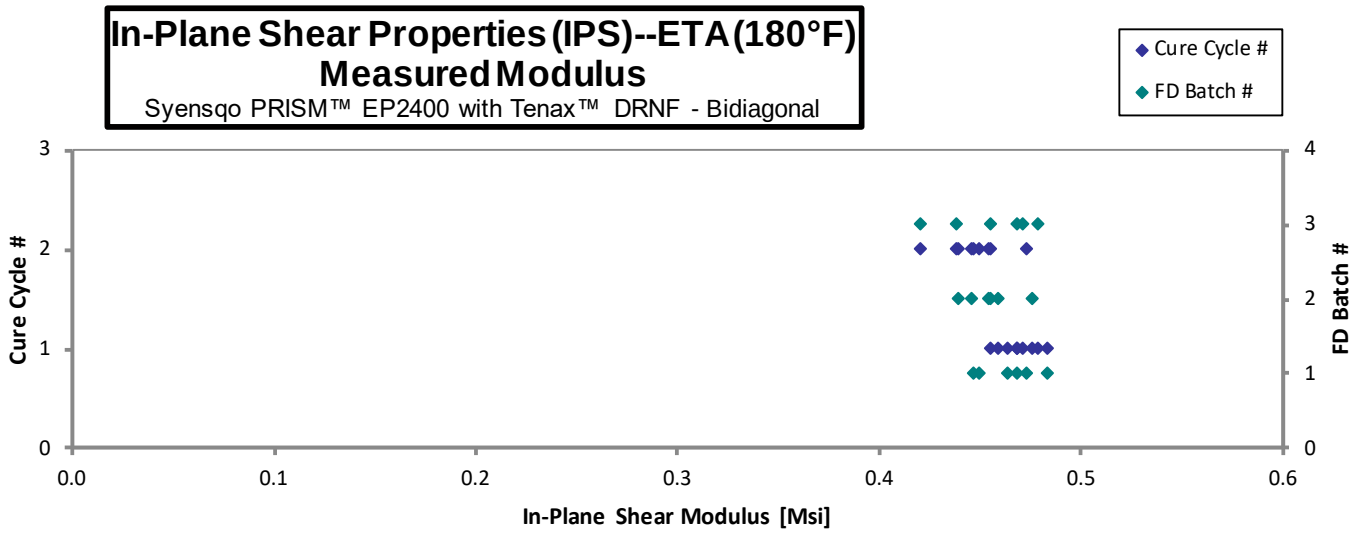
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-IPS-A-C1-1-1C	1	C1	1	4.372	7.496	0.4637	0.0835	6	0.0139	AGT
BD-IPS-A-C1-1-2C	1	C1	1	4.469	7.699	0.4684	0.0845	6	0.0141	AWT
BD-IPS-A-C1-1-3C	1	C1	1	4.592	7.820	0.4833	0.0849	6	0.0141	AGT
BD-IPS-A-C2-1-1C	1	C2	2	4.285	7.477	0.4471	0.0873	6	0.0145	AWB
BD-IPS-A-C2-1-2C	1	C2	2	4.271	7.452	0.4493	0.0895	6	0.0149	AGB
BD-IPS-A-C2-1-3C	1	C2	2	4.455	7.684	0.4729	0.0893	6	0.0149	AGM
BD-IPS-B-C1-1-1C	2	C1	1	4.518	7.967	0.4764	0.0861	6	0.0143	AGT
BD-IPS-B-C1-1-2C	2	C1	1	4.342	7.707	0.4593	0.0872	6	0.0145	AWT
BD-IPS-B-C1-1-3C	2	C1	1	4.285	7.614	0.4549	0.0875	6	0.0146	AGM
BD-IPS-B-C2-1-1C	2	C2	2	4.223	7.487	0.4456	0.0885	6	0.0147	AGM
BD-IPS-B-C2-1-2C	2	C2	2	4.150	7.338	0.4394	0.0900	6	0.0150	AGB
BD-IPS-B-C2-1-3C	2	C2	2	4.288	7.528	0.4545	0.0872	6	0.0145	AGT
BD-IPS-C-C1-1-1C	3	C1	1	4.481	7.798	0.4790	0.0844	6	0.0141	AGM
BD-IPS-C-C1-1-2C	3	C1	1	4.400	7.675	0.4708	0.0856	6	0.0143	AGT
BD-IPS-C-C1-1-3C	3	C1	1	4.386	7.632	0.4687	0.0850	6	0.0142	AGT
BD-IPS-C-C2-1-1C	3	C2	2	4.366	7.709	0.4555	0.0964	6	0.0161	AGM
BD-IPS-C-C2-1-2C	3	C2	2	4.075	7.195	0.4204	0.0977	6	0.0163	AGT
BD-IPS-C-C2-1-3C	3	C2	2	4.184	7.343	0.4381	0.0956	6	0.0159	AGM

Average	**4.341**	**7.590**	**0.4582**	**0.0147**
Standard Dev.	**0.1351**	**0.1928**	**0.01643**	
Coeff. of Var. [%]	**3.112**	**2.540**	**3.587**	
Min.	**4.075**	**7.195**	**0.4204**	**0.0139**
Max.	**4.592**	**7.967**	**0.4833**	**0.0163**
Number of Spec.	**18**	**18**	**18**	**18**


In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
9

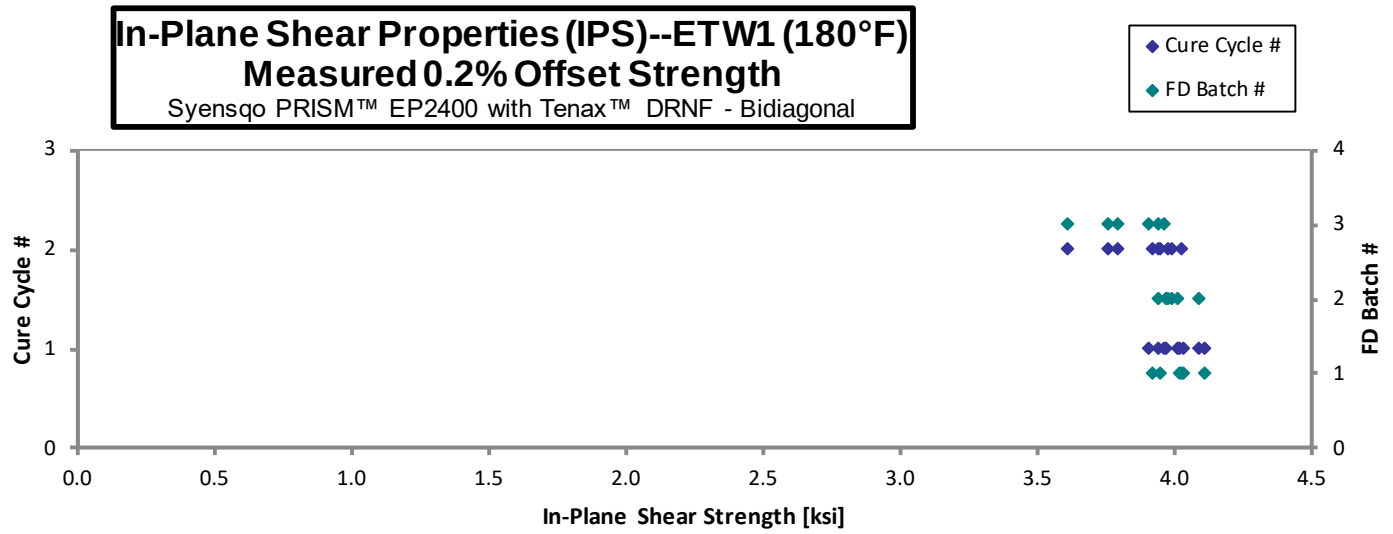

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0

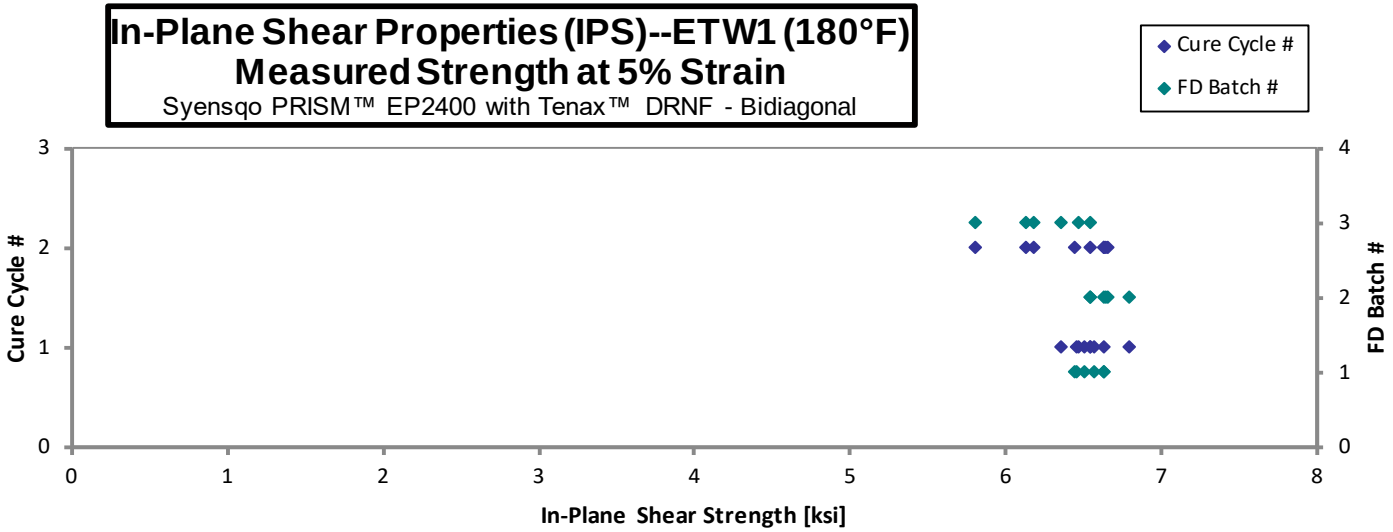

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6

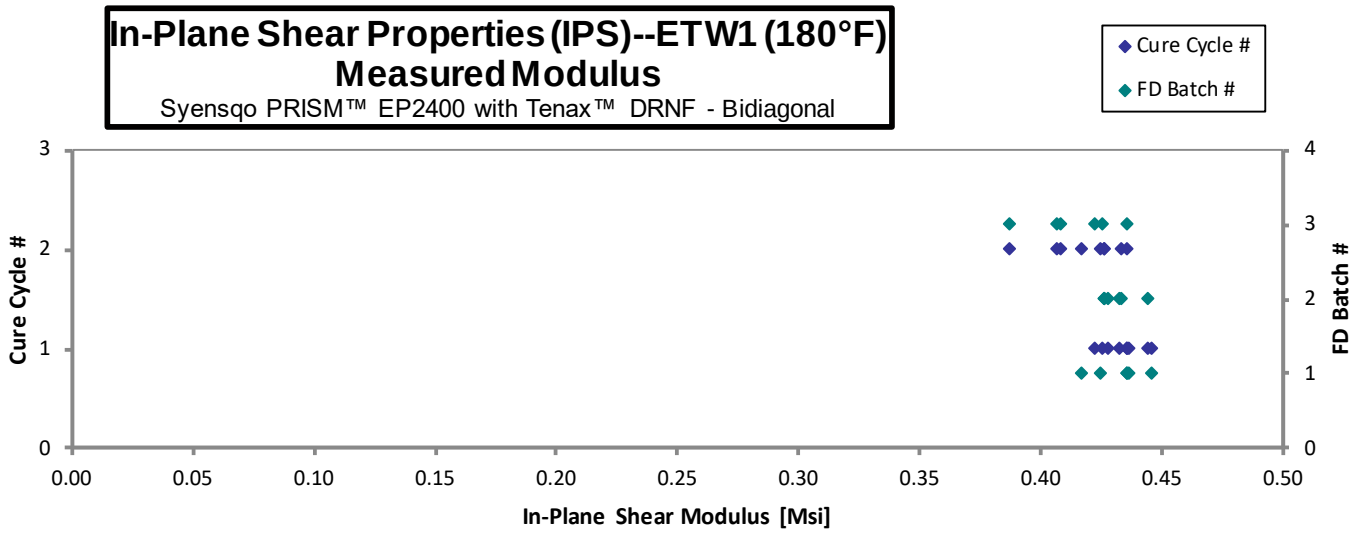
In-Plane Shear Properties (IPS)--ETW1 (180°F)
Strength & Modulus

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-IPS-A-C1-1-1D	1	C1	1	4.031	6.513	0.4366	0.0844	6	0.0141	AGT
BD-IPS-A-C1-1-2D	1	C1	1	4.022	6.457	0.4357	0.0853	6	0.0142	AWT
BD-IPS-A-C1-1-3D	1	C1	1	4.111	6.565	0.4462	0.0837	6	0.0139	AGT
BD-IPS-A-C2-1-1D	1	C2	2	4.026	6.631	0.4358	0.0875	6	0.0146	AGT
BD-IPS-A-C2-1-2D	1	C2	2	3.922	6.633	0.4169	0.0864	6	0.0144	AWT
BD-IPS-A-C2-1-3D	1	C2	2	3.952	6.448	0.4246	0.0868	6	0.0145	AGT
BD-IPS-B-C1-1-1D	2	C1	1	3.970	6.552	0.4281	0.0858	6	0.0143	AGT
BD-IPS-B-C1-1-2D	2	C1	1	4.094	6.798	0.4442	0.0864	6	0.0144	AGT
BD-IPS-B-C1-1-3D	2	C1	1	4.011	6.635	0.4323	0.0868	6	0.0145	AGT
BD-IPS-B-C2-1-1D	2	C2	2	3.944	6.545	0.4260	0.0870	6	0.0145	AGT
BD-IPS-B-C2-1-2D	2	C2	2	3.977	6.641	0.4262	0.0878	6	0.0146	AGM
BD-IPS-B-C2-1-3D	2	C2	2	3.989	6.662	0.4335	0.0866	6	0.0144	AGT
BD-IPS-C-C1-1-1D	3	C1	1	3.906	6.357	0.4254	0.0848	6	0.0141	AGT
BD-IPS-C-C1-1-2D	3	C1	1	3.943	6.475	0.4227	0.0852	6	0.0142	AGT
BD-IPS-C-C1-1-3D	3	C1	1	3.967	6.546	0.4356	0.0851	6	0.0142	AGM
BD-IPS-C-C2-1-1D	3	C2	2	3.610	5.803	0.3870	0.0967	6	0.0161	AGB
BD-IPS-C-C2-1-2D	3	C2	2	3.794	6.138	0.4083	0.0945	6	0.0157	AGB
BD-IPS-C-C2-1-3D	3	C2	2	3.758	6.184	0.4070	0.0953	6	0.0159	AGM
Average				**3.946**	**6.477**	**0.4262**			**0.0146**	
Standard Dev.				**0.1213**	**0.2342**	**0.01439**				
Coeff. of Var. [%]				**3.073**	**3.615**	**3.377**				
Min.				**3.610**	**5.803**	**0.3870**			**0.0139**	
Max.				**4.111**	**6.798**	**0.4462**			**0.0161**	
Number of Spec.				**18**	**18**	**18**			**18**	


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
0
1
2
3
4
5
6
7
8

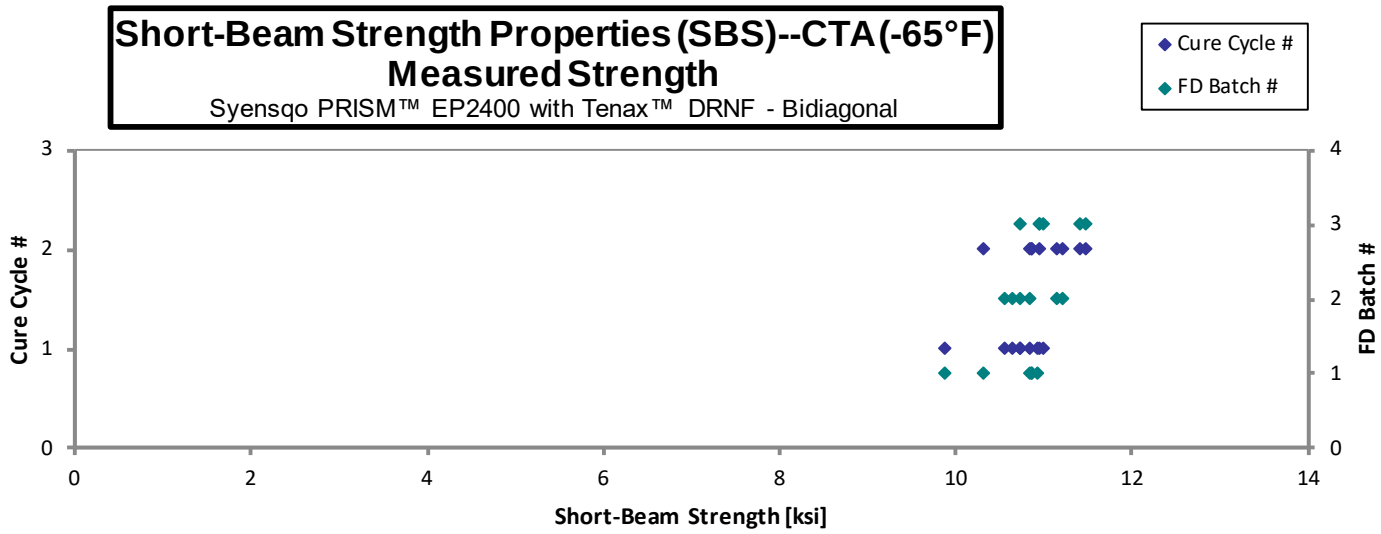

In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50

4.1.2.4 Bidiagonal Short Beam Strength (BD-SBS)

Short-Beam Strength Properties (SBS)--CTA (-65°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-SBS-A-C1-1-1B	1	C1	1	10.84	0.2337	16	0.0146	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-2B	1	C1	1	9.884	0.2328	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-3B	1	C1	1	10.92	0.2328	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-1B	1	C2	2	10.86	0.2228	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-2B	1	C2	2	10.32	0.2234	16	0.0140	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-3B	1	C2	2	10.86	0.2226	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-1B	2	C1	1	10.56	0.2275	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-2B	2	C1	1	10.64	0.2276	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-3B	2	C1	1	10.72	0.2269	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-1B	2	C2	2	11.22	0.2296	16	0.0143	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-2B	2	C2	2	11.15	0.2298	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-3B	2	C2	2	10.83	0.2300	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-1B	3	C1	1	10.99	0.2326	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-2B	3	C1	1	10.95	0.2330	16	0.0146	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-3B	3	C1	1	10.72	0.2320	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-2B	3	C2	2	10.96	0.2310	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-3B	3	C2	2	11.47	0.2300	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-4B	3	C2	2	11.41	0.2299	16	0.0144	INTERLAMINAR SHEAR

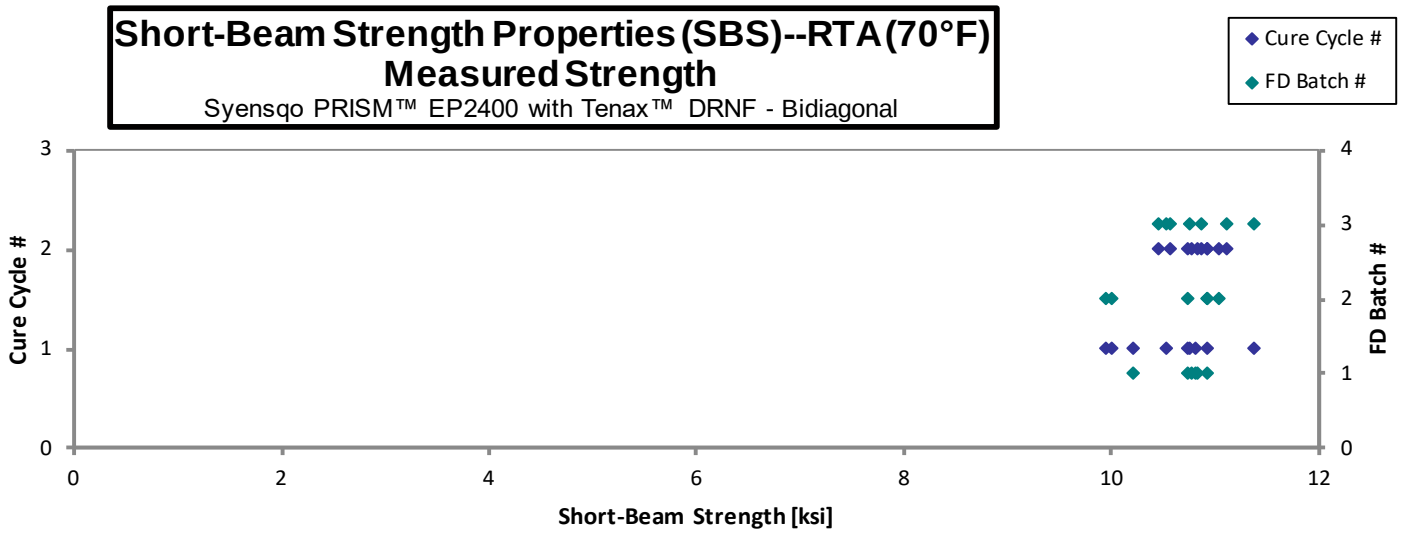
Average	**10.85**	**0.0143**
Standard Dev.	**0.3723**	
Coeff. of Var. [%]	**3.431**	
Min.	**9.884**	**0.0139**
Max.	**11.47**	**0.0146**
Number of Spec.	**18**	**18**


Short-Beam Strength Properties (SBS)--CTA (-65°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
4

Short-Beam Strength Properties (SBS)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-SBS-A-C1-1-1A	1	C1	1	10.22	0.2314	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-2A	1	C1	1	10.74	0.2307	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-3A	1	C1	1	10.81	0.2318	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-1A	1	C2	2	10.93	0.2233	16	0.0140	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-2A	1	C2	2	10.79	0.2221	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-3A	1	C2	2	10.84	0.2224	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-1A	2	C1	1	10.02	0.2279	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-2A	2	C1	1	9.944	0.2271	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-3A	2	C1	1	10.92	0.2274	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-1A	2	C2	2	10.73	0.2299	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-2A	2	C2	2	10.93	0.2310	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-3A	2	C2	2	11.04	0.2304	16	0.0144	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-1A	3	C1	1	10.76	0.2323	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-2A	3	C1	1	11.37	0.2325	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C1-1-3A	3	C1	1	10.53	0.2323	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-1A	3	C2	2	10.47	0.2328	16	0.0146	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-2A	3	C2	2	11.11	0.2322	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-3A	3	C2	2	10.57	0.2320	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-C-C2-1-4A	3	C2	2	10.87	0.2326	16	0.0145	INTERLAMINAR SHEAR

Average	**10.72**	**0.0143**
Standard Dev.	**0.3604**	
Coeff. of Var. [%]	**3.364**	
Min.	**9.944**	**0.0139**
Max.	**11.37**	**0.0146**
Number of Spec.	**19**	**19**

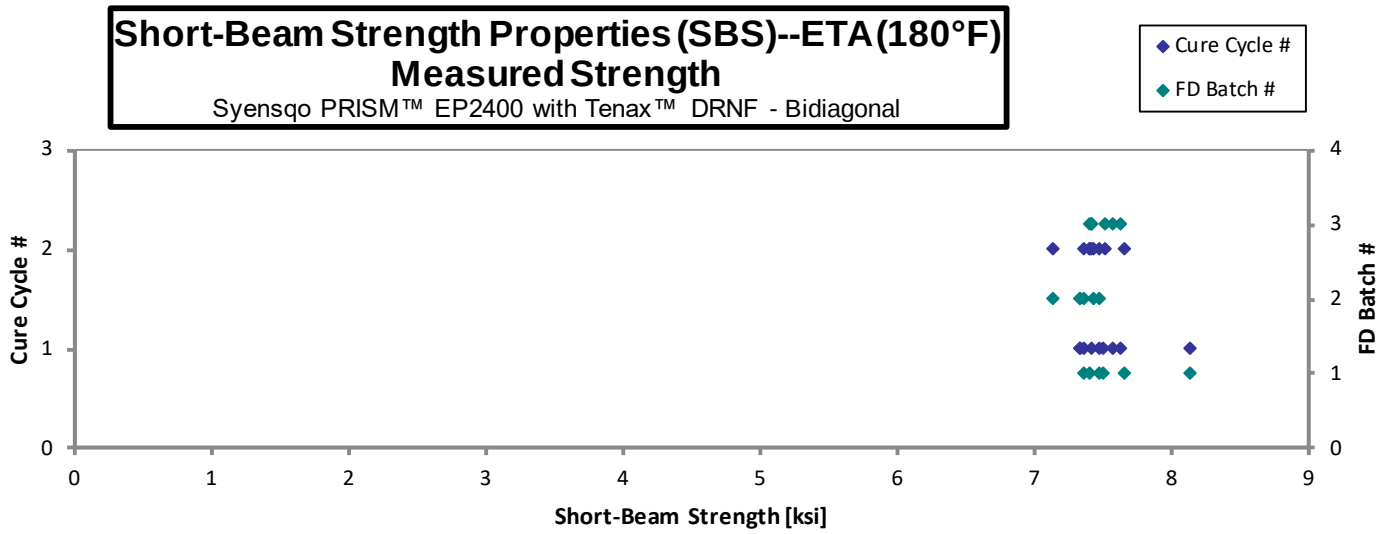

Short-Beam Strength Properties (SBS)--RTA (70°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
0
2
4
6
8
10
12

Short-Beam Strength Properties (SBS)--ETA (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-SBS-A-C1-1-1C	1	C1	1	8.136	0.2317	16	0.0145	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-2C	1	C1	1	7.508	0.2329	16	0.0146	INTERLAMINAR SHEAR
BD-SBS-A-C1-1-3C	1	C1	1	7.368	0.2329	16	0.0146	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-1C	1	C2	2	7.663	0.2229	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-2C	1	C2	2	7.482	0.2216	16	0.0139	INTERLAMINAR SHEAR
BD-SBS-A-C2-1-3C	1	C2	2	7.408	0.2242	16	0.0140	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-1C	2	C1	1	7.342	0.2270	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-2C	2	C1	1	7.471	0.2265	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-3C	2	C1	1	7.343	0.2284	16	0.0143	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-1C	2	C2	2	7.138	0.2288	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-B-C2-1-2C	2	C2	2	7.430	0.2308	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-B-C2-1-3C	2	C2	2	7.360	0.2308	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-1C	3	C1	1	7.626	0.2325	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-2C	3	C1	1	7.573	0.2324	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-3C	3	C1	1	7.419	0.2331	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-1C	3	C2	2	7.524	0.2294	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-2C	3	C2	2	7.406	0.2293	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-3C	3	C2	2	7.416	0.2288	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**7.478**	**0.0143**
Standard Dev.	**0.2028**	
Coeff. of Var. [%]	**2.711**	
Min.	**7.138**	**0.0139**
Max.	**8.136**	**0.0146**
Number of Spec.	**18**	**18**

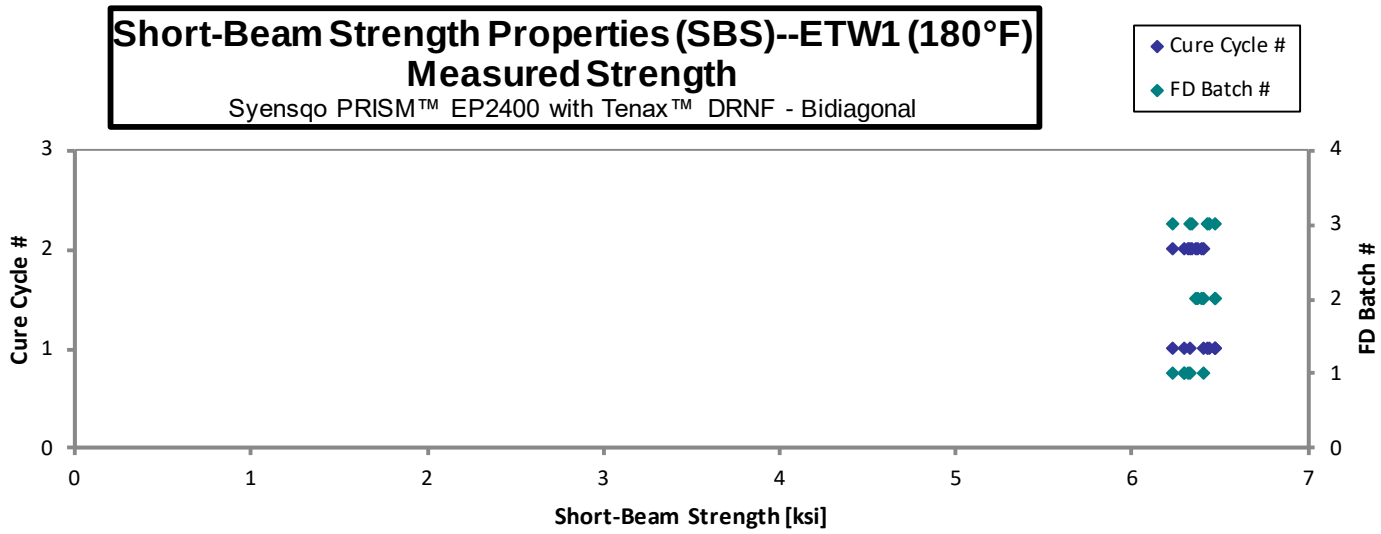

Short-Beam Strength Properties (SBS)--ETA (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7
8
9

Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-SBS-A-C1-1-1D	1	C1	1	6.232	0.2317	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BD-SBS-A-C1-1-2D	1	C1	1	6.298	0.2317	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C1-1-3D	1	C1	1	6.334	0.2319	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C2-1-1D	1	C2	2	6.320	0.2234	16	0.0140	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
BD-SBS-A-C2-1-2D	1	C2	2	6.412	0.2241	16	0.0140	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C2-1-3D	1	C2	2	6.302	0.2234	16	0.0140	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-B-C1-1-1D	2	C1	1	6.472	0.2262	16	0.0141	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-2D	2	C1	1	6.471	0.2264	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C1-1-3D	2	C1	1	6.412	0.2271	16	0.0142	INTERLAMINAR SHEAR
BD-SBS-B-C2-1-1D	2	C2	2	6.358	0.2304	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-B-C2-1-2D	2	C2	2	6.370	0.2295	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-B-C2-1-3D	2	C2	2	6.393	0.2303	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-1D	3	C1	1	6.441	0.2334	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-2D	3	C1	1	6.474	0.2336	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C1-1-3D	3	C1	1	6.429	0.2338	16	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-1D	3	C2	2	6.235	0.2280	16	0.0142	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-2D	3	C2	2	6.345	0.2286	16	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-C-C2-1-3D	3	C2	2	6.328	0.2297	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**6.368**	**0.0143**
Standard Dev.	**0.07579**	
Coeff. of Var. [%]	**1.190**	
Min.	**6.232**	**0.0140**
Max.	**6.474**	**0.0146**
Number of Spec.	**18**	**18**

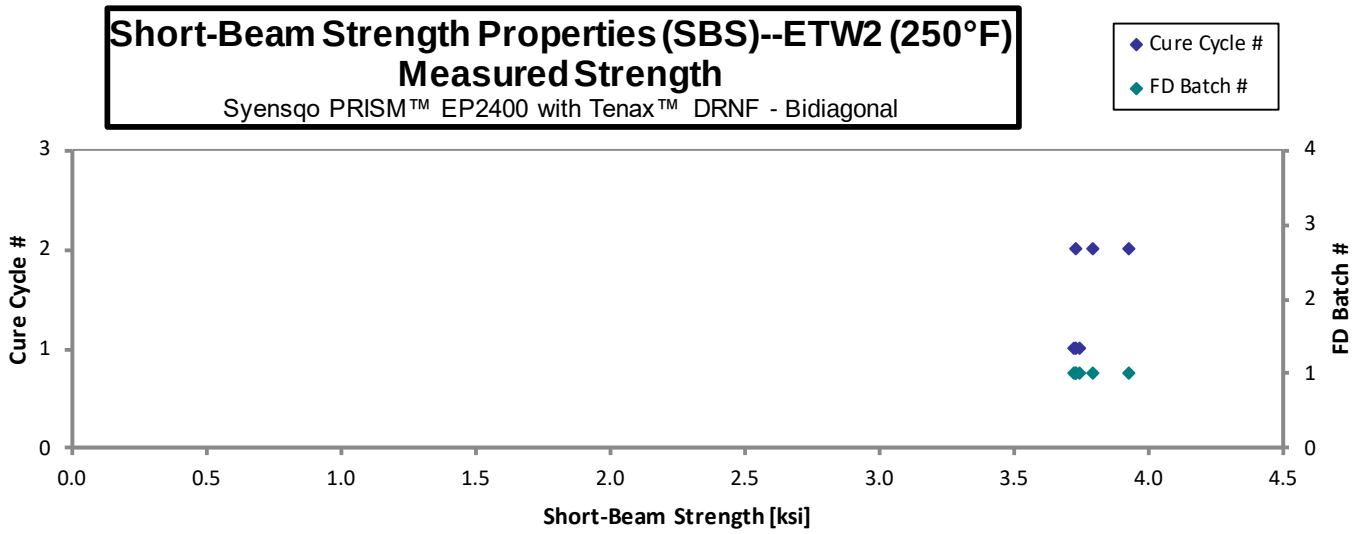

Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7

Short-Beam Strength Properties (SBS)--ETW2 (250°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-SBS-A-C1-1-1F	1	C1	1	3.723	0.2319	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C1-1-2F	1	C1	1	3.746	0.2313	16	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C1-1-3F	1	C1	1	3.733	0.2310	16	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C2-1-1F	1	C2	2	3.731	0.2236	16	0.0140	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C2-1-2F	1	C2	2	3.793	0.2232	16	0.0139	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
BD-SBS-A-C2-1-3F	1	C2	2	3.929	0.2222	16	0.0139	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**3.776**	**0.0142**
Standard Dev.	**0.07909**	
Coeff. of Var. [%]	**2.095**	
Min.	**3.723**	**0.0139**
Max.	**3.929**	**0.0145**
Number of Spec.	**6**	**6**


Short-Beam Strength Properties (SBS)--ETW2 (250°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
0
1
2
3
4

4.1.2.5 Bidiagonal Flexural Strength (BD-Flex)

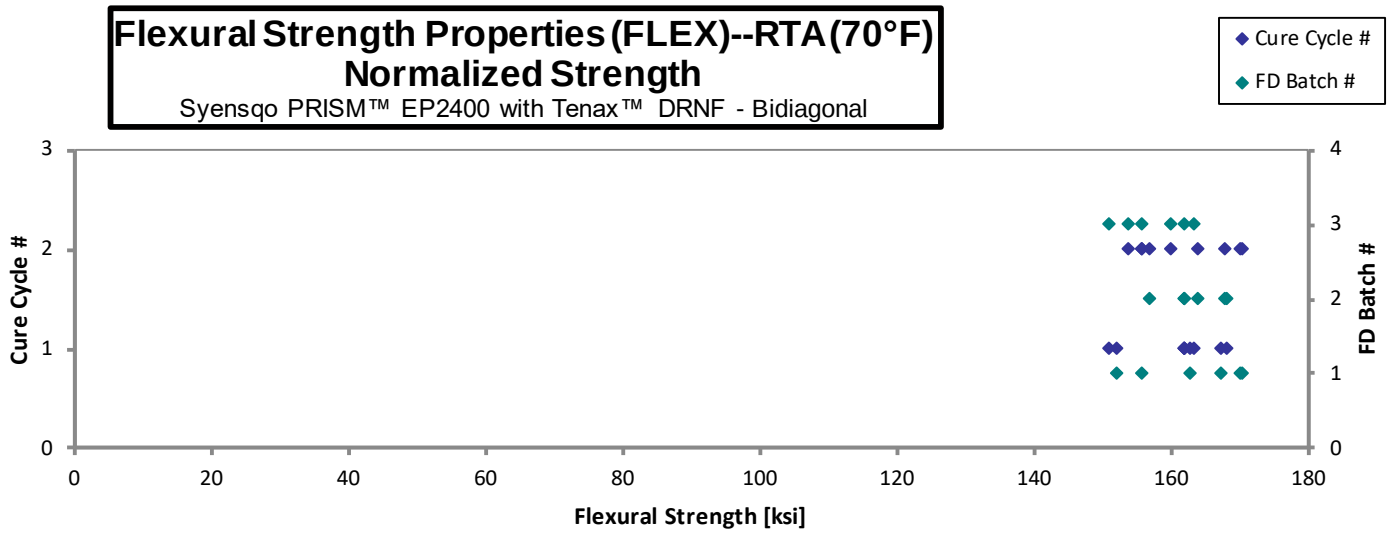
Flexural Strength Properties (FLEX)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
BD-FLEX-A-C1-K-1A	1	C1	1	158.5	0.1150	8	CAT	0.0144	162.8
BD-FLEX-A-C1-K-2A	1	C1	1	147.6	0.1154	8	CAT	0.0144	152.1
BD-FLEX-A-C1-K-3A	1	C1	1	161.2	0.1162	8	CAT	0.0145	167.2
BD-FLEX-A-C2-K-1A	1	C2	2	163.1	0.1168	8	CAT	0.0146	170.0
BD-FLEX-A-C2-K-2A	1	C2	2	163.6	0.1168	8	CAT	0.0146	170.5
BD-FLEX-A-C2-K-3A	1	C2	2	148.4	0.1175	8	CAT	0.0147	155.7
BD-FLEX-B-C1-K-1A	2	C1	1	152.4	0.1191	8	CAT	0.0149	162.1
BD-FLEX-B-C1-K-2A	2	C1	1	159.0	0.1186	8	CAT	0.0148	168.2
BD-FLEX-B-C1-K-3A	2	C1	1	152.9	0.1186	8	CAT	0.0148	162.0
BD-FLEX-B-C2-K-1A	2	C2	2	149.1	0.1179	8	CAT	0.0147	156.9
BD-FLEX-B-C2-K-2A	2	C2	2	155.1	0.1185	8	CAT	0.0148	164.1
BD-FLEX-B-C2-K-3A	2	C2	2	157.2	0.1196	8	CAT	0.0150	167.9
BD-FLEX-C-C1-K-1A	3	C1	1	143.8	0.1175	8	CAT	0.0147	150.9
BD-FLEX-C-C1-K-2A	3	C1	1	156.0	0.1172	8	CAT	0.0147	163.3
BD-FLEX-C-C1-K-3A	3	C1	1	155.7	0.1164	8	CAT	0.0146	161.8
BD-FLEX-C-C2-K-1A	3	C2	2	153.0	0.1171	8	CAT	0.0146	159.9
BD-FLEX-C-C2-K-2A	3	C2	2	147.7	0.1166	8	CAT	0.0146	153.7
BD-FLEX-C-C2-K-3A	3	C2	2	150.8	0.1158	8	CAT	0.0145	155.8

Average	**154.2**	
Standard Dev.	**5.664**	
Coeff. of Var. [%]	**3.674**	
Min.	**143.8**	
Max.	**163.6**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0147**	**161.4**
$Standard\ Dev._{norm}$		**6.127**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.797**
Min.	**0.0144**	**150.9**
Max.	**0.0150**	**170.5**
Number of Spec.	**18**	**18**


Flexural Strength Properties (FLEX)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Flexural Strength [ksi]
0
20
40
60
80
100
120
140
160
180
0
1
2
3
4

4.1.3 UD-Woven Lamina Properties

UD Woven dry reinforcement can be procured to NMS 241F/3 and resin can be procured to NMS 241R/1. Panel laminate specification limits can be found in NMS 241/3. Materials shall be processed according to NPS 82401.

4.1.3.1 UD Woven 0/90° Unnotched Tension (UD-UNT0)

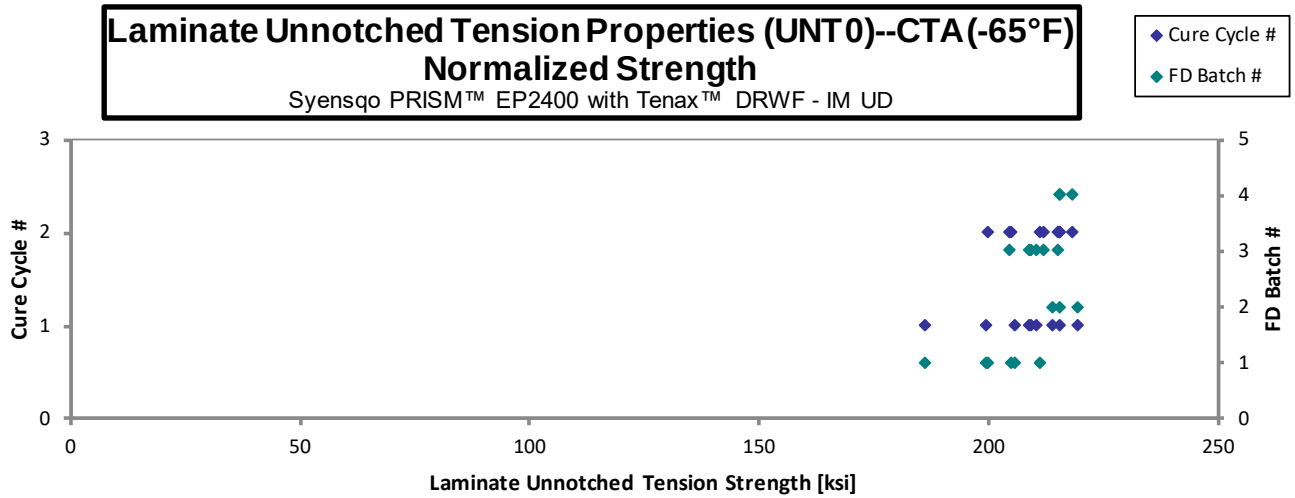
Laminate Unnotched Tension Properties (UNT0)--CTA (-65°F) Strength & Modulus

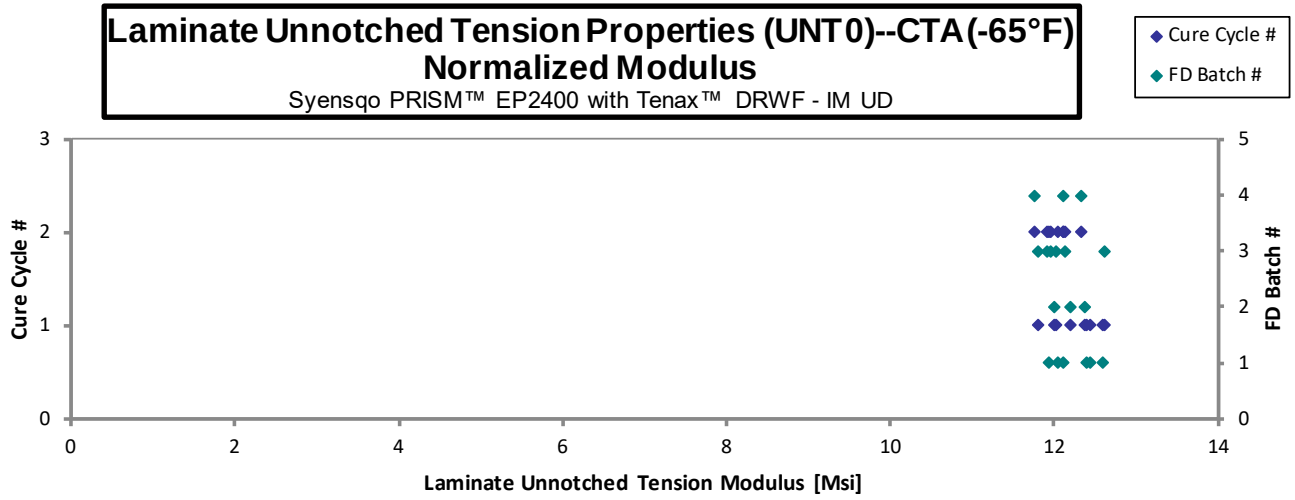
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNT0-A-C1-1-1B	1	C1	1	207.7	12.52	0.1110	16	LWT, LAB	0.0069	205.8	12.41
UD-UNT0-A-C1-1-2B	1	C1	1	200.6	12.67	0.1115	16	LAT, LWB	0.0070	199.6	12.61
UD-UNT0-A-C1-1-3B	1	C1	1	189.2	12.66	0.1101	16	LAT, LWB	0.0069	186.0	12.44
UD-UNT0-A-C2-1-1B	1	C2	2	214.2	12.21	0.1105	16	LAT, LAB	0.0069	211.3	12.04
UD-UNT0-A-C2-1-2B	1	C2	2	207.1	12.35	0.1082	16	LAT, LWB	0.0068	200.0	11.93
UD-UNT0-A-C2-1-3B	1	C2	2	212.1	12.52	0.1083	16	LWT, LAB	0.0068	205.1	12.11
UD-UNT0-B-C1-1-1B	2	C1	1	212.8	11.94	0.1126	16	LWB, LAT	0.0070	213.8	12.00
UD-UNT0-B-C1-1-2B	2	C1	1	218.1	12.11	0.1128	16	LWB, LAT, LGM	0.0071	219.6	12.20
UD-UNT0-B-C1-1-3B	2	C1	1	213.1	12.23	0.1133	16	LWB, LAT	0.0071	215.6	12.37
UD-UNT0-C-C1-1-1B	3	C1	1	211.7	12.17	0.1106	16	LWB, LAT	0.0069	209.0	12.02
UD-UNT0-C-C1-1-2B	3	C1	1	210.9	12.71	0.1112	16	LWB, LAT	0.0069	209.3	12.62
UD-UNT0-C-C1-1-3B	3	C1	1	213.0	11.95	0.1108	16	LWB, LAT	0.0069	210.6	11.82
UD-UNT0-C-C2-1-1B	3	C2	2	219.5	12.38	0.1098	16	LWB, LAT	0.0069	215.3	12.14
UD-UNT0-C-C2-1-2B	3	C2	2	207.1	12.10	0.1106	16	LWB, LAT	0.0069	204.5	11.95
UD-UNT0-C-C2-1-3B	3	C2	2	215.8	12.13	0.1100	16	LWB, LAT, LGM	0.0069	211.9	11.91
UD-UNT0-D-C2-1-1B	4	C2	2	211.6	12.12	0.1140	16	LWB, LAT	0.0071	215.4	12.34
UD-UNT0-D-C2-1-2B	4	C2	2	210.8	11.84	0.1145	16	LWB, LGM	0.0072	215.6	12.10
UD-UNT0-D-C2-1-3B	4	C2	2	214.4	11.55	0.1141	16	LWB, LAT	0.0071	218.4	11.76

Average	**210.5**	**12.23**	**Average$_{norm}$**	**0.0070**	**209.3**	**12.15**
Standard Dev.	**6.879**	**0.3120**	**Standard Dev.$_{norm}$**		**8.228**	**0.2572**
Coeff. of Var. [%]	**3.267**	**2.551**	**Coeff. of Var. [%]$_{norm}$**		**3.932**	**2.116**
Min.	**189.2**	**11.55**	**Min.**	**0.0068**	**186.0**	**11.76**
Max.	**219.5**	**12.71**	**Max.**	**0.0072**	**219.6**	**12.62**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT0)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
0
1
2
3
4
5


Laminate Unnotched Tension Properties (UNT0)--CTA(-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
0
1
2
3
4
5

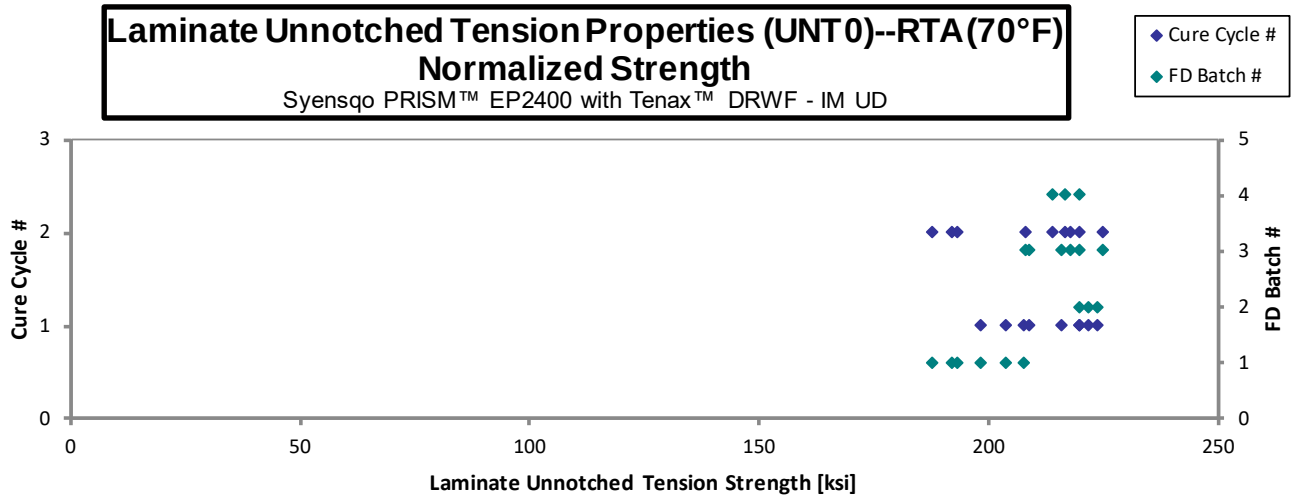
Laminate Unnotched Tension Properties (UNT0)--RTA
(70°F) Strength & Modulus

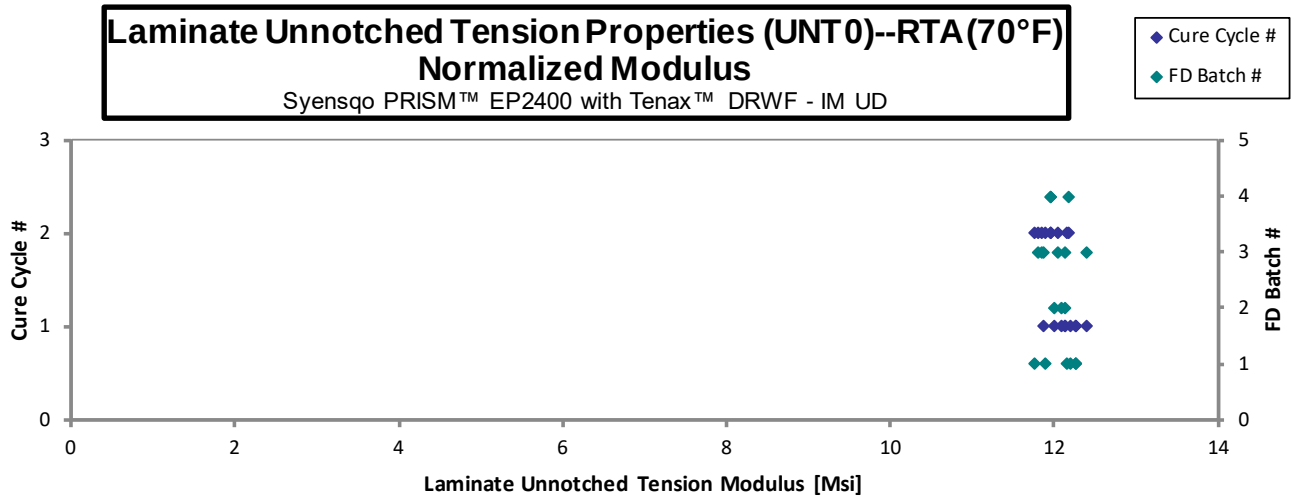
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNT0-A-C1-1-1A	1	C1	1	201.0	12.44	0.1105	16	LWT, LAB	0.0069	198.4	12.28
UD-UNT0-A-C1-1-2A	1	C1	1	211.2	12.46	0.1102	16	LAT, LAB	0.0069	207.7	12.26
UD-UNT0-A-C1-1-3A	1	C1	1	205.2	12.30	0.1112	16	LWT, LAB	0.0069	203.7	12.21
UD-UNT0-A-C2-1-1A	1	C2	2	199.4	12.14	0.1086	16	LWT, LAB	0.0068	193.4	11.77
UD-UNT0-A-C2-1-2A	1	C2	2	192.4	12.20	0.1092	16	LWT, LAB	0.0068	187.6	11.90
UD-UNT0-A-C2-1-3A	1	C2	2	195.2	12.35	0.1102	16	LAT, LWB	0.0069	192.0	12.15
UD-UNT0-B-C1-1-1A	2	C1	1	221.9	12.04	0.1130	16	LWT, LAB	0.0071	223.8	12.14
UD-UNT0-B-C1-1-2A	2	C1	1	221.9	12.01	0.1120	16	LWT, LWB	0.0070	221.9	12.01
UD-UNT0-B-C1-1-3A	2	C1	1	218.8	12.03	0.1125	16	LWT, LWB	0.0070	219.8	12.09
UD-UNT0-C-C1-1-1A	3	C1	1	220.0	12.37	0.1100	16	LWB, LAT	0.0069	216.0	12.14
UD-UNT0-C-C1-1-2A	3	C1	1	222.4	12.54	0.1106	16	LWB, LAT	0.0069	219.7	12.39
UD-UNT0-C-C1-1-3A	3	C1	1	211.9	12.04	0.1105	16	LWB, LAT	0.0069	209.0	11.87
UD-UNT0-C-C2-1-1A	3	C2	2	217.6	11.84	0.1121	16	LWB, LAT	0.0070	217.8	11.86
UD-UNT0-C-C2-1-2A	3	C2	2	229.9	12.05	0.1097	16	LWB, LWT, LGM	0.0069	225.1	11.80
UD-UNT0-C-C2-1-3A	3	C2	2	214.2	12.40	0.1089	16	LWB, LAT, LGM	0.0068	208.3	12.05
UD-UNT0-D-C2-1-1A	4	C2	2	207.5	11.59	0.1156	16	LWB, LGM, LAT, DGM	0.0072	214.1	11.96
UD-UNT0-D-C2-1-2A	4	C2	2	212.9	11.76	0.1140	16	LWB, LAT	0.0071	216.7	11.97
UD-UNT0-D-C2-1-3A	4	C2	2	217.2	12.03	0.1133	16	LWB, LAT	0.0071	219.8	12.17

Average	**212.3**	**12.14**	**Average$_{norm}$**	**0.0070**	**210.8**	**12.06**
Standard Dev.	**10.33**	**0.2599**	**Standard Dev.$_{norm}$**		**11.58**	**0.1756**
Coeff. of Var. [%]	**4.865**	**2.140**	**Coeff. of Var. [%]$_{norm}$**		**5.493**	**1.456**
Min.	**192.4**	**11.59**	**Min.**	**0.0068**	**187.6**	**11.77**
Max.	**229.9**	**12.54**	**Max.**	**0.0072**	**225.1**	**12.39**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT0)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
0
1
2
3
4
5


Laminate Unnotched Tension Properties (UNT0)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
0
1
2
3
4
5

Laminate Unnotched Tension Properties (UNT0)--ETA (180°F) Strength & Modulus

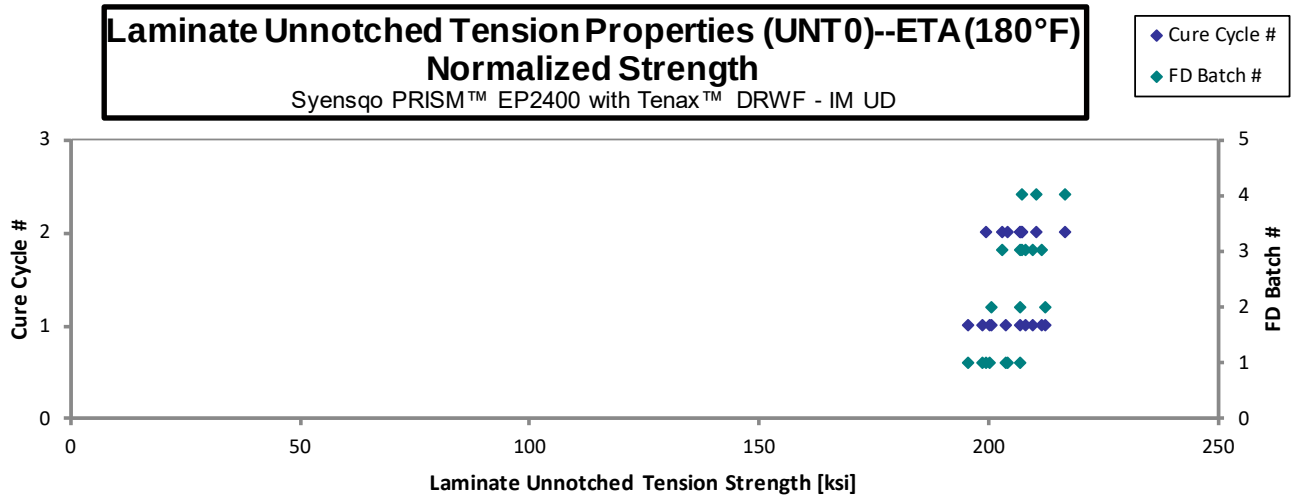
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

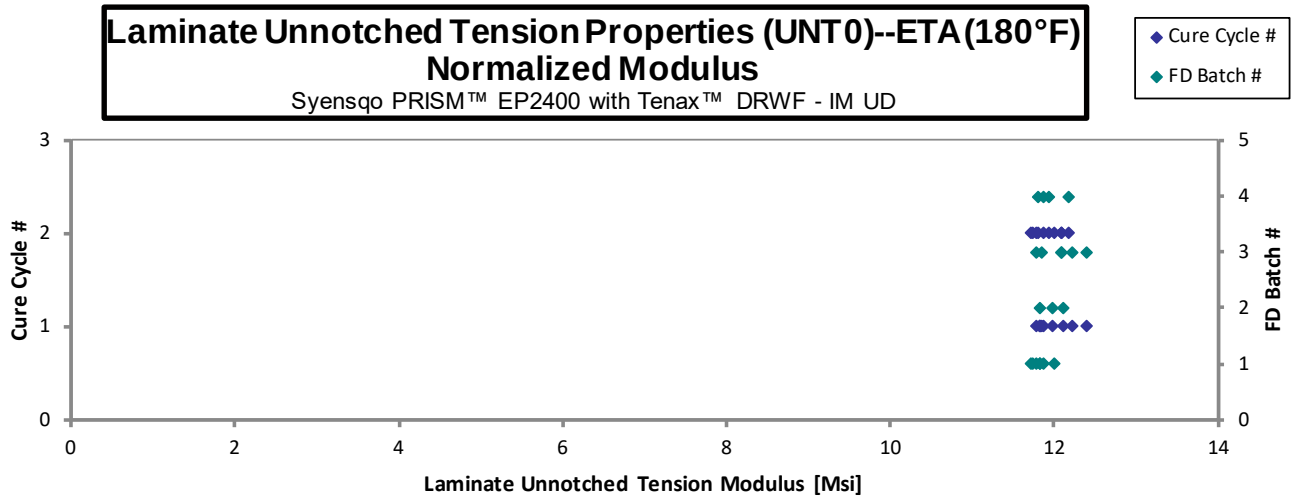
normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNT0-A-C1-1-1C	1	C1	1	192.6	11.69	0.1136	16	LWT, LIB	0.0071	195.5	11.87
UD-UNT0-A-C1-1-2C	1	C1	1	204.2	12.16	0.1090	16	LWT, LIB	0.0068	198.6	11.83
UD-UNT0-A-C1-1-3C	1	C1	1	207.2	11.98	0.1102	16	LWT, LWB	0.0069	203.8	11.79
UD-UNT0-A-C1-1-4C	1	C1	1	200.6	11.85	0.1119	16	LAT, LGB	0.0070	200.4	11.83
UD-UNT0-A-C2-1-1C	1	C2	2	212.6	12.34	0.1090	16	LWB	0.0068	206.9	12.00
UD-UNT0-A-C2-1-2C	1	C2	2	208.7	12.25	0.1071	16	LGM	0.0067	199.7	11.71
UD-UNT0-A-C2-1-3C	1	C2	2	210.8	12.12	0.1085	16	LAT, LWB	0.0068	204.2	11.74
UD-UNT0-B-C1-1-1C	2	C1	1	206.3	11.94	0.1124	16	LAT, LGM, LWB	0.0070	207.0	11.98
UD-UNT0-B-C1-1-2C	2	C1	1	213.7	12.20	0.1113	16	LAT, LWB	0.0070	212.3	12.12
UD-UNT0-B-C1-1-3C	2	C1	1	199.9	11.77	0.1126	16	LWB, LAT	0.0070	200.8	11.83
UD-UNT0-C-C1-1-1C	3	C1	1	216.0	12.46	0.1098	16	LWB, LAT	0.0069	211.8	12.21
UD-UNT0-C-C1-1-2C	3	C1	1	213.0	12.59	0.1102	16	LAT, LWT, LGM	0.0069	209.5	12.39
UD-UNT0-C-C1-1-3C	3	C1	1	212.6	12.09	0.1097	16	LAT, LAB	0.0069	208.2	11.84
UD-UNT0-C-C2-1-1C	3	C2	2	211.8	12.36	0.1096	16	LAB, LWT	0.0069	207.3	12.10
UD-UNT0-C-C2-1-2C	3	C2	2	204.6	12.19	0.1111	16	LWB, LGM	0.0069	202.8	12.08
UD-UNT0-C-C2-1-3C	3	C2	2	206.0	11.74	0.1124	16	LAT, LWB	0.0070	206.7	11.78
UD-UNT0-D-C2-1-1C	4	C2	2	212.6	11.64	0.1143	16	LWB, LGM, LAT	0.0071	216.9	11.88
UD-UNT0-D-C2-1-2C	4	C2	2		11.72	0.1141	16	LIT	0.0071		11.93
UD-UNT0-D-C2-1-3C	4	C2	2	199.5	11.37	0.1164	16	LAT, LWB, LGM	0.0073	207.3	11.81
UD-UNT0-D-C2-1-4C	4	C2	2	204.2	11.82	0.1153	16	LGB, LWT	0.0072	210.3	12.17

Average	**207.2**	**12.01**	
Standard Dev.	**6.115**	**0.3129**	
Coeff. of Var. [%]	**2.951**	**2.604**	
Min.	**192.6**	**11.37**	
Max.	**216.0**	**12.59**	
Number of Spec.	**19**	**20**	

$Average_{norm}$	**0.0070**	**205.8**	**11.95**
Standard $Dev._{norm}$		**5.348**	**0.1807**
Coeff. of Var. $[\%]_{norm}$		**2.599**	**1.512**
Min.	**0.0067**	**195.5**	**11.71**
Max.	**0.0073**	**216.9**	**12.39**
Number of Spec.	**20**	**19**	**20**


Laminate Unnotched Tension Properties (UNT0)--ETA(180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
0
1
2
3
4
5


Laminate Unnotched Tension Properties (UNT0)--ETA(180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
0
1
2
3
4
5

Laminate Unnotched Tension Properties (UNT0)--ETW1 (180°F) Strength & Modulus

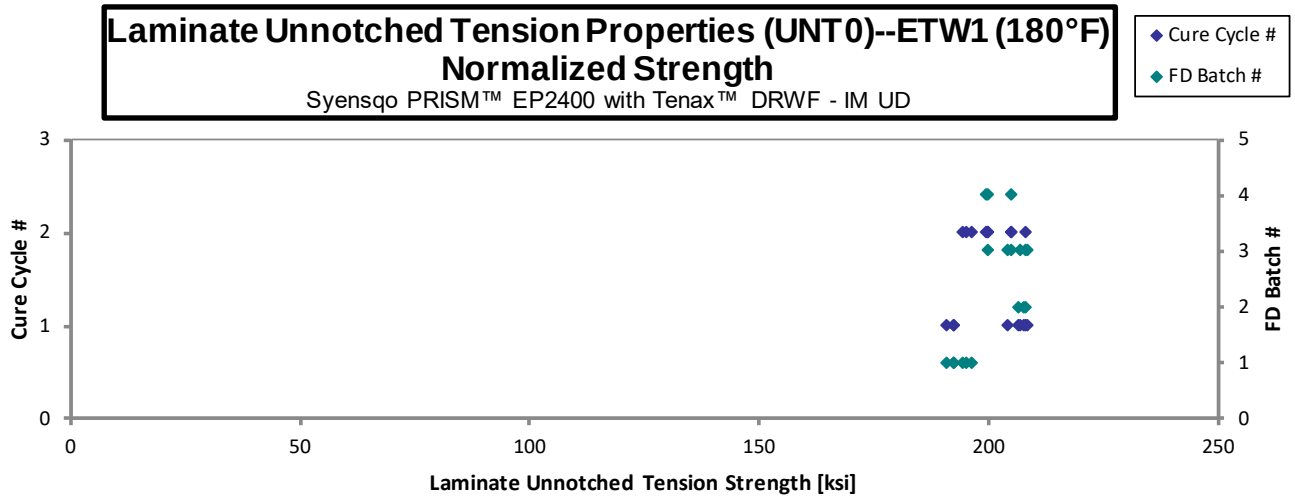
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

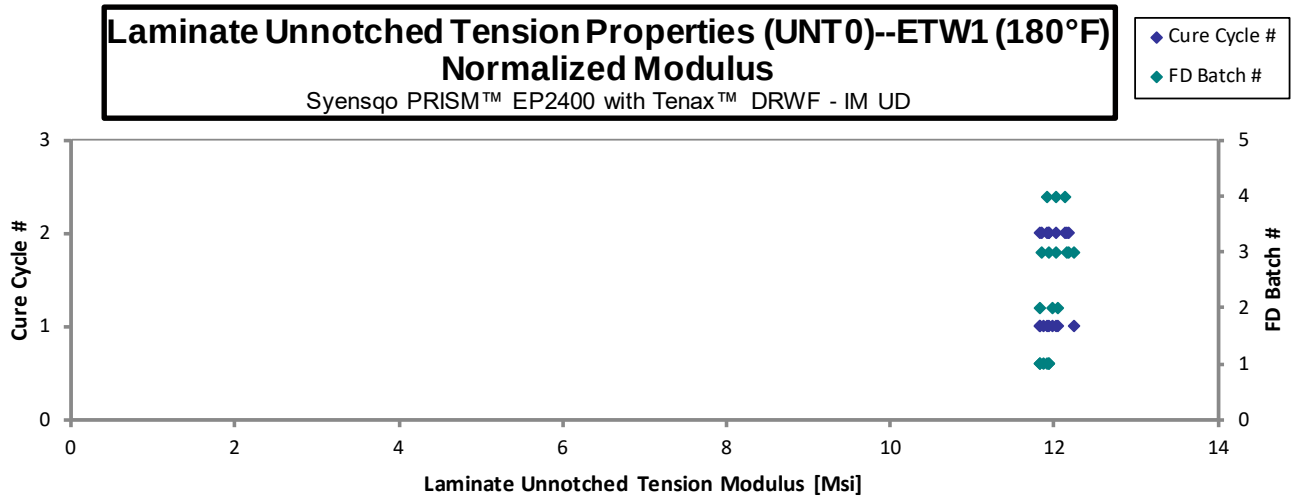
normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNT0-A-C1-1-1D	1	C1	1	194.2	11.94	0.1111	16	LWT, LWB, SGM	0.0069	192.5	11.84
UD-UNT0-A-C1-1-2D	1	C1	1	194.2	11.99	0.1110	16	LWT, LWB, SGM	0.0069	192.4	11.88
UD-UNT0-A-C1-1-3D	1	C1	1	191.6	11.96	0.1116	16	LWT, LWB, SGM	0.0070	190.9	11.92
UD-UNT0-A-C2-1-1D	1	C2	2	203.3	12.37	0.1072	16	LWT, LWB, SGM	0.0067	194.6	11.84
UD-UNT0-A-C2-1-2D	1	C2	2	200.5	12.21	0.1096	16	LWT, LWB, SGM	0.0069	196.2	11.95
UD-UNT0-A-C2-1-3D	1	C2	2	200.5	12.27	0.1090	16	LWT, LWB, SGM	0.0068	195.2	11.94
UD-UNT0-B-C1-1-1D	2	C1	1	206.1	11.94	0.1131	16	AGT, LWB, SGM	0.0071	208.0	12.05
UD-UNT0-B-C1-1-2D	2	C1	1	206.6	11.91	0.1127	16	LGT, LWB, SGM	0.0070	207.8	11.98
UD-UNT0-B-C1-1-3D	2	C1	1	203.7	11.66	0.1136	16	LWB, LAT, SGM	0.0071	206.6	11.82
UD-UNT0-C-C1-1-1D	3	C1	1	209.0	12.22	0.1094	16	LWB, LAT, SGM	0.0068	204.0	11.93
UD-UNT0-C-C1-1-2D	3	C1	1	212.7	12.27	0.1098	16	LWB, LAT, SGM	0.0069	208.5	12.03
UD-UNT0-C-C1-1-3D	3	C1	1	211.0	12.48	0.1099	16	LWB, LWT, SGM	0.0069	207.1	12.25
UD-UNT0-C-C2-1-1D	3	C2	2	201.2	11.93	0.1113	16	LGB, LWT, SGM	0.0070	199.9	11.85
UD-UNT0-C-C2-1-2D	3	C2	2	203.3	12.07	0.1129	16	LWT, LAB, SGM	0.0071	205.0	12.17
UD-UNT0-C-C2-1-3D	3	C2	2	211.6	12.34	0.1102	16	LWB, LAT, SGM	0.0069	208.2	12.15
UD-UNT0-D-C2-1-1D	4	C2	2	201.6	11.95	0.1139	16	LWT, LWB, SGM	0.0071	204.9	12.14
UD-UNT0-D-C2-1-2D	4	C2	2	197.4	11.78	0.1133	16	LWB, LAT, SGM	0.0071	199.7	11.92
UD-UNT0-D-C2-1-3D	4	C2	2	196.0	11.80	0.1140	16	LGT, LWT, LAB, SGM	0.0071	199.6	12.02

Average	**202.5**	**12.06**	
Standard Dev.	**6.276**	**0.2293**	
Coeff. of Var. [%]	**3.099**	**1.901**	
Min.	**191.6**	**11.66**	
Max.	**212.7**	**12.48**	
Number of Spec.	**18**	**18**	

$Average_{norm}$	**0.0070**	**201.2**	**11.98**
$Standard\ Dev._{norm}$		**6.257**	**0.1279**
Coeff. of Var. [%]$_{norm}$		**3.110**	**1.068**
Min.	**0.0067**	**190.9**	**11.82**
Max.	**0.0071**	**208.5**	**12.25**
Number of Spec.	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT0)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
0
1
2
3
4
5


Laminate Unnotched Tension Properties (UNT0)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
0
1
2
3
4
5

4.1.3.2UD Woven 0/90° Unnotched Compression (UD-UNC0)

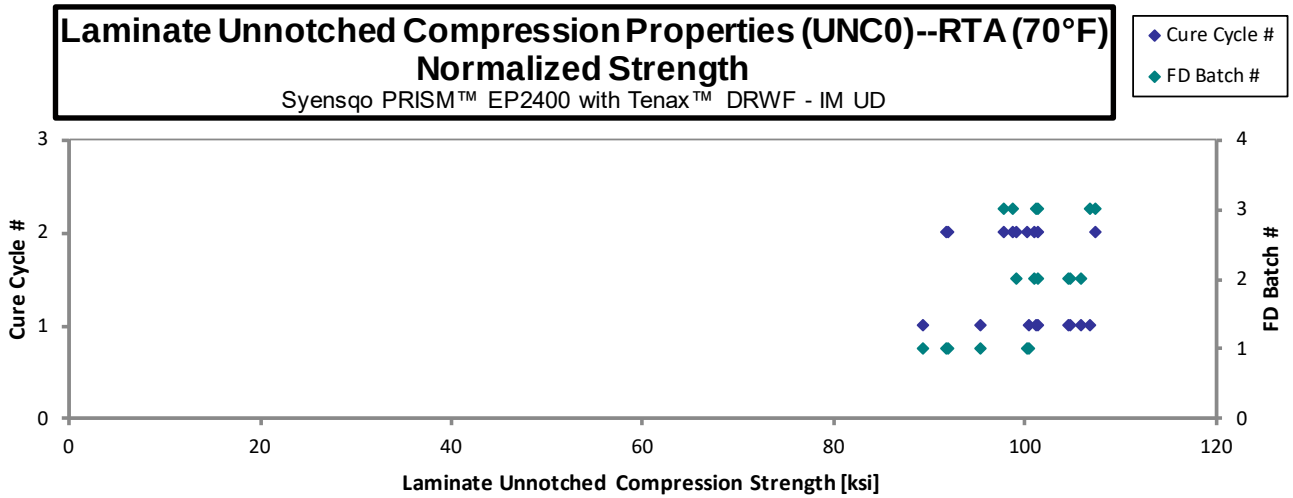
Laminate Unnotched Compression Properties (UNC0)--RTA (70°F) Strength & Modulus

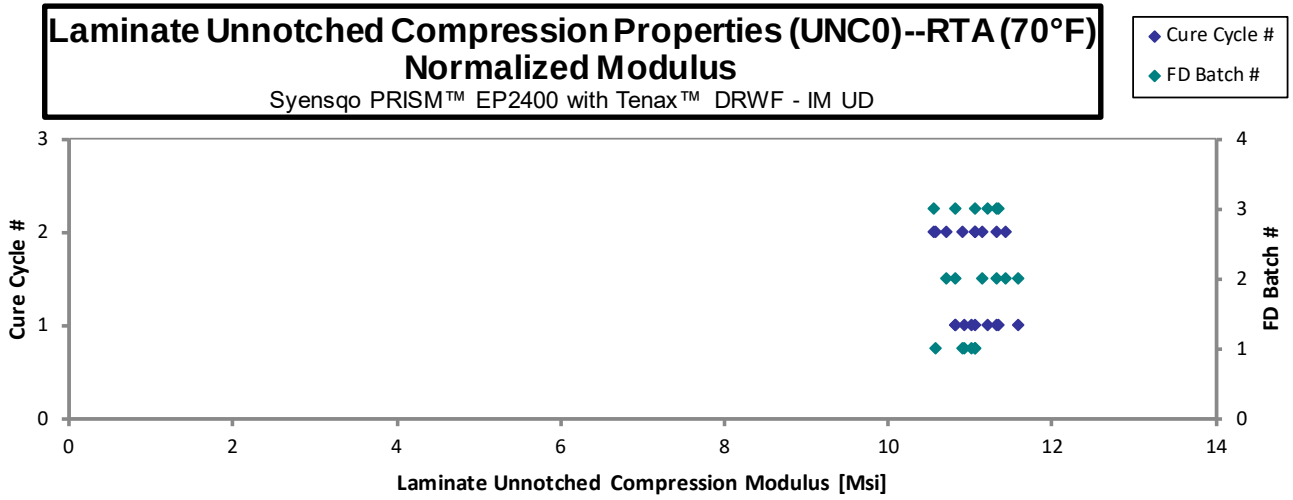
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNC0-A-C1-1-1A	1	C1	1		11.16	0.1105	16	HIT	0.0069		11.01
UD-UNC0-A-C1-1-2A	1	C1	1	103.7	11.40	0.1086	16	BGM	0.0068	100.5	11.05
UD-UNC0-A-C1-1-3A	1	C1	1	91.39	11.18	0.1096	16	HAB, BGM	0.0068	89.40	10.93
UD-UNC0-A-C1-1-4A	1	C1	1	98.38		0.1085	16	HIB, BGM	0.0068	95.32	
UD-UNC0-A-C2-1-1A	1	C2	2	97.05	11.53	0.1060	16	BGM	0.0066	91.83	10.91
UD-UNC0-A-C2-1-2A	1	C2	2	103.8	11.44	0.1082	16	BGM	0.0068	100.3	11.05
UD-UNC0-A-C2-1-3A	1	C2	2	96.04	11.04	0.1073	16	BGM	0.0067	92.00	10.57
UD-UNC0-B-C1-1-1A	2	C1	1	105.1	10.86	0.1116	16	BAB	0.0070	104.7	10.82
UD-UNC0-B-C1-1-2A	2	C1	1	106.3	11.37	0.1115	16	BAB	0.0070	105.8	11.31
UD-UNC0-B-C1-1-3A	2	C1	1	105.5	11.67	0.1111	16	M(B,H)AB	0.0069	104.6	11.58
UD-UNC0-B-C2-1-1A	2	C2	2	100.9	11.43	0.1121	16	BAT	0.0070	101.0	11.44
UD-UNC0-B-C2-1-2A	2	C2	2	101.7	11.18	0.1116	16	BAB, HIB	0.0070	101.3	11.14
UD-UNC0-B-C2-1-3A	2	C2	2	98.31	10.62	0.1130	16	BAB	0.0071	99.18	10.72
UD-UNC0-C-C1-1-1A	3	C1	1	101.3	11.33	0.1123	16	BGM	0.0070	101.5	11.35
UD-UNC0-C-C1-1-2A	3	C1	1	101.3	10.82	0.1119	16	M(B,H)AB, HIB	0.0070	101.2	10.81
UD-UNC0-C-C1-1-3A	3	C1	1	107.1	11.24	0.1118	16	BGM	0.0070	106.9	11.22
UD-UNC0-C-C2-1-1A	3	C2	2	99.76	10.67	0.1108	16	BGM	0.0069	98.68	10.55
UD-UNC0-C-C2-1-2A	3	C2	2	99.50	11.54	0.1100	16	BAB	0.0069	97.72	11.33
UD-UNC0-C-C2-1-3A	3	C2	2	110.2	11.36	0.1091	16	BAB	0.0068	107.4	11.07

Average	**101.5**	**11.21**	**Average$_{norm}$**	**0.0069**	**99.96**	**11.05**
Standard Dev.	**4.528**	**0.3046**	**Standard Dev.$_{norm}$**		**5.196**	**0.2912**
Coeff. of Var. [%]	**4.460**	**2.717**	**Coeff. of Var. [%]$_{norm}$**		**5.198**	**2.636**
Min.	**91.39**	**10.62**	**Min.**	**0.0066**	**89.40**	**10.55**
Max.	**110.2**	**11.67**	**Max.**	**0.0071**	**107.4**	**11.58**
Number of Spec.	**18**	**18**	**Number of Spec.**	**19**	**18**	**18**


Laminate Unnotched Compression Properties (UNC0)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
20
40
60
80
100
120
Laminate Unnotched Compression Strength [ksi]


Laminate Unnotched Compression Properties (UNC0)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
2
4
6
8
10
12
14
Laminate Unnotched Compression Modulus [Msi]

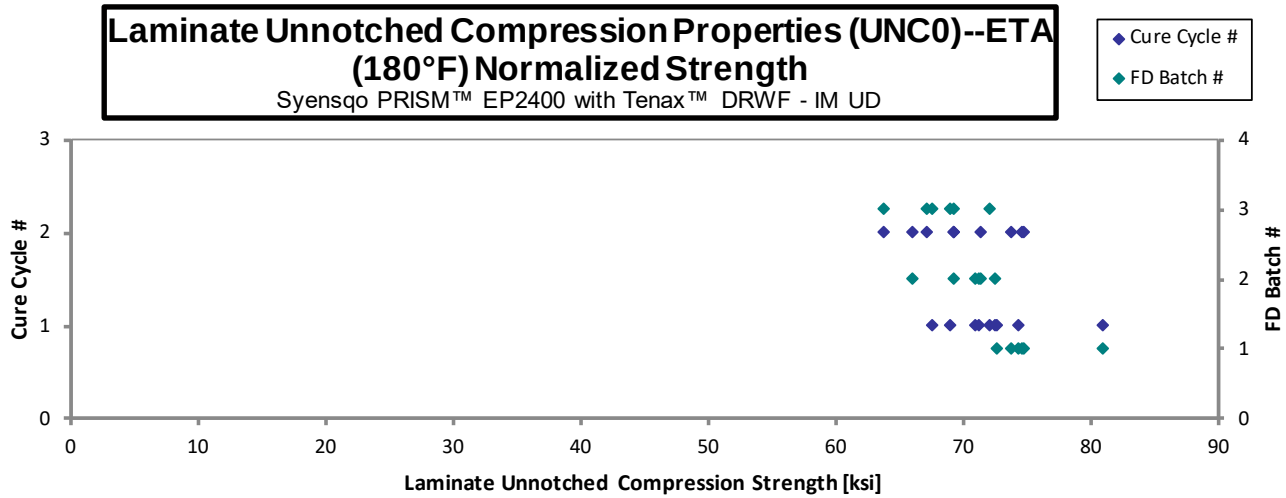
Laminate Unnotched Compression Properties (UNC0)--ETA (180°F) Strength & Modulus

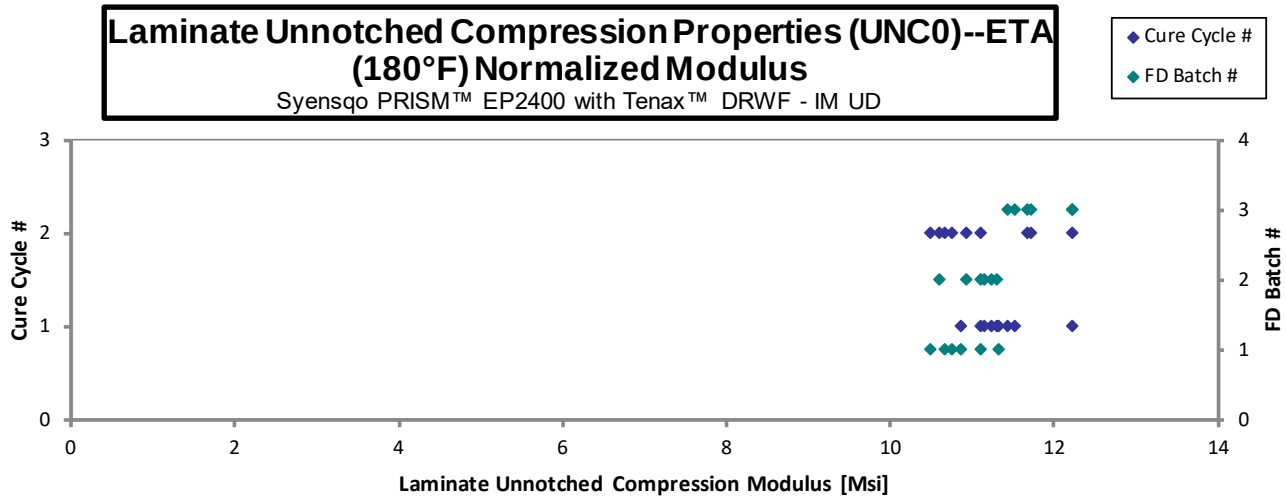
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNC0-A-C1-1-1C	1	C1	1	82.04	11.47	0.1106	16	BGM	0.0069	81.01	11.33
UD-UNC0-A-C1-1-2C	1	C1	1	76.36	11.15	0.1090	16	BGM, HAB	0.0068	74.31	10.85
UD-UNC0-A-C1-1-3C	1	C1	1	75.31	11.50	0.1082	16	BGM, HAB	0.0068	72.72	11.11
UD-UNC0-A-C2-1-1C	1	C2	2	77.50	11.17	0.1079	16	BGM	0.0067	74.67	10.76
UD-UNC0-A-C2-1-2C	1	C2	2	78.18	11.17	0.1071	16	BGM	0.0067	74.73	10.67
UD-UNC0-A-C2-1-3C	1	C2	2	76.79	10.91	0.1077	16	BGM	0.0067	73.82	10.49
UD-UNC0-B-C1-1-1C	2	C1	1	72.81	11.29	0.1115	16	M(B,H)GM	0.0070	72.49	11.24
UD-UNC0-B-C1-1-2C	2	C1	1	71.32	11.20	0.1115	16	BGM	0.0070	71.00	11.15
UD-UNC0-B-C1-1-3C	2	C1	1	71.41	11.33	0.1118	16	BGM, HIB, HIT	0.0070	71.30	11.31
UD-UNC0-B-C2-1-1C	2	C2	2	70.08	11.06	0.1107	16	HAB, HIB	0.0069	69.24	10.92
UD-UNC0-B-C2-1-2C	2	C2	2	72.50	11.28	0.1104	16	BAB, HIB	0.0069	71.46	11.12
UD-UNC0-B-C2-1-3C	2	C2	2	66.03	10.60	0.1119	16	DGM	0.0070	65.97	10.59
UD-UNC0-C-C1-1-1C	3	C1	1	72.61	11.59	0.1113	16	BAB	0.0070	72.14	11.52
UD-UNC0-C-C1-1-2C	3	C1	1	68.12	11.52	0.1111	16	HAB, HIB	0.0069	67.59	11.43
UD-UNC0-C-C1-1-3C	3	C1	1	68.91	12.22	0.1121	16	BGM	0.0070	68.96	12.23
UD-UNC0-C-C2-1-1C	3	C2	2	70.53	11.93	0.1101	16	BGM	0.0069	69.32	11.73
UD-UNC0-C-C2-1-2C	3	C2	2	64.82	11.86	0.1102	16	BGM	0.0069	63.78	11.67
UD-UNC0-C-C2-1-3C	3	C2	2	67.54	12.29	0.1115	16	M(B,H)GM	0.0070	67.23	12.23

Average	**72.38**	**11.42**	**Average$_{norm}$**	**0.0069**	**71.21**	**11.24**
Standard Dev.	**4.597**	**0.4374**	**Standard Dev.$_{norm}$**		**3.954**	**0.5050**
Coeff. of Var. [%]	**6.351**	**3.831**	**Coeff. of Var. [%]$_{norm}$**		**5.552**	**4.492**
Min.	**64.82**	**10.60**	**Min.**	**0.0067**	**63.78**	**10.49**
Max.	**82.04**	**12.29**	**Max.**	**0.0070**	**81.01**	**12.23**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC0)--ETA (180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC0)--ETA (180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

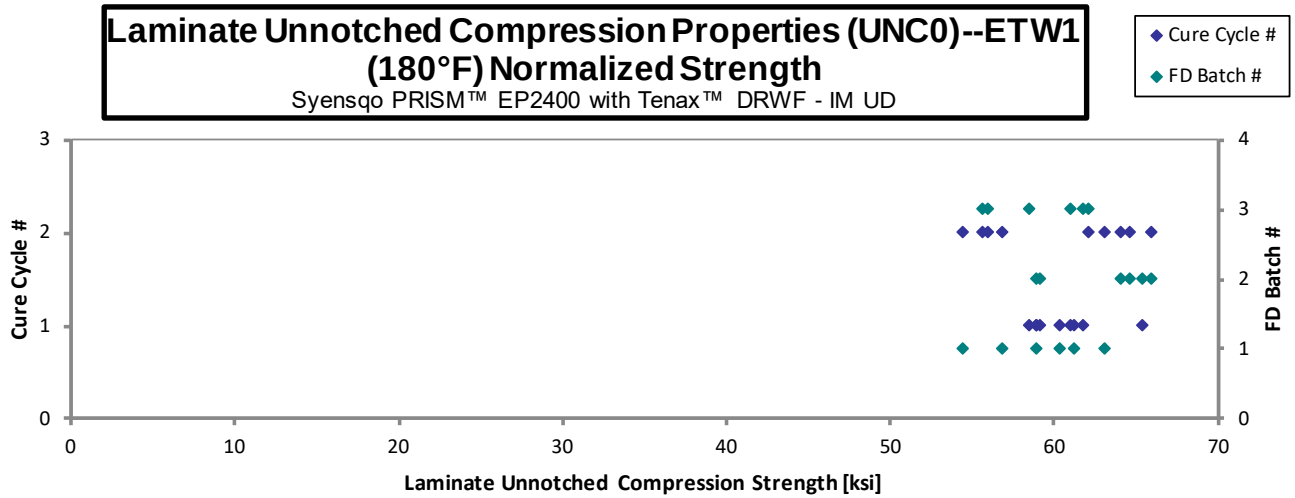
Laminate Unnotched Compression Properties (UNC0)-- ETW1 (180°F) Strength & Modulus

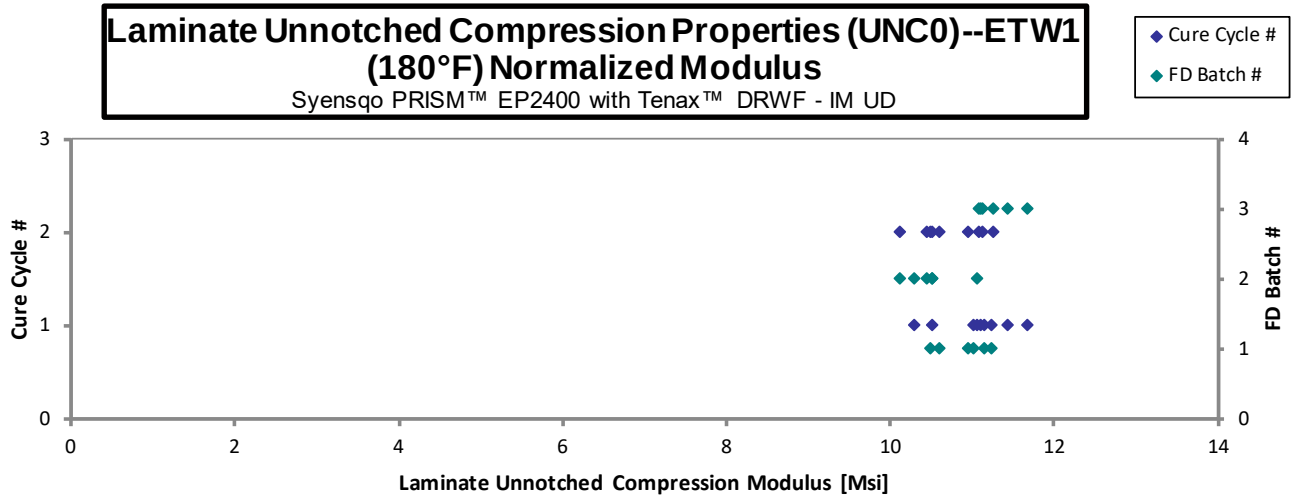
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNC0-A-C1-1-1D	1	C1	1	62.07	11.40	0.1104	16	BAT	0.0069	61.17	11.24
UD-UNC0-A-C1-1-2D	1	C1	1	61.13	11.28	0.1106	16	BAB	0.0069	60.36	11.14
UD-UNC0-A-C1-1-3D	1	C1	1	59.50	11.14	0.1109	16	BAB	0.0069	58.90	11.03
UD-UNC0-A-C2-1-1D	1	C2	2	65.77	10.93	0.1075	16	HGM	0.0067	63.14	10.49
UD-UNC0-A-C2-1-2D	1	C2	2	59.31	11.43	0.1074	16	BAT	0.0067	56.87	10.96
UD-UNC0-A-C2-1-3D	1	C2	2	57.04	11.12	0.1068	16	HGM	0.0067	54.40	10.61
UD-UNC0-B-C1-1-1D	2	C1	1	58.93	10.52	0.1120	16	BGM	0.0070	58.93	10.52
UD-UNC0-B-C1-1-2D	2	C1	1	66.34	11.21	0.1104	16	BGM, HAT, HIT, HIB	0.0069	65.39	11.05
UD-UNC0-B-C1-1-3D	2	C1	1	59.45	10.36	0.1113	16	BGM	0.0070	59.10	10.30
UD-UNC0-B-C2-1-1D	2	C2	2	66.32	10.19	0.1113	16	BGM	0.0070	65.90	10.12
UD-UNC0-B-C2-1-2D	2	C2	2	64.59	10.60	0.1112	16	BGM	0.0069	64.11	10.52
UD-UNC0-B-C2-1-3D	2	C2	2	64.82	10.46	0.1118	16	BGM	0.0070	64.68	10.44
UD-UNC0-C-C1-1-1D	3	C1	1	58.87	11.49	0.1114	16	HAT	0.0070	58.54	11.42
UD-UNC0-C-C1-1-2D	3	C1	1	62.15	11.90	0.1100	16	BGM	0.0069	61.02	11.68
UD-UNC0-C-C1-1-3D	3	C1	1	62.44	11.23	0.1107	16	BAB	0.0069	61.73	11.10
UD-UNC0-C-C2-1-1D	3	C2	2	62.89	11.40	0.1106	16	BAB, HIB	0.0069	62.11	11.26
UD-UNC0-C-C2-1-2D	3	C2	2	56.71	11.28	0.1105	16	HAB	0.0069	55.97	11.13
UD-UNC0-C-C2-1-3D	3	C2	2	56.20	11.19	0.1109	16	BGM	0.0069	55.66	11.08

Average	**61.36**	**11.06**	**Average$_{norm}$**	**0.0069**	**60.44**	**10.89**
Standard Dev.	**3.310**	**0.4578**	**Standard Dev.$_{norm}$**		**3.435**	**0.4250**
Coeff. of Var. [%]	**5.393**	**4.138**	**Coeff. of Var. [%]$_{norm}$**		**5.683**	**3.902**
Min.	**56.20**	**10.19**	**Min.**	**0.0067**	**54.40**	**10.12**
Max.	**66.34**	**11.90**	**Max.**	**0.0070**	**65.90**	**11.68**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC0)--ETW1 (180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
10
20
30
40
50
60
70


Laminate Unnotched Compression Properties (UNC0)--ETW1 (180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
2
4
6
8
10
12
14

Laminate Unnotched Compression Properties (UNC0)-- ETW2 (250°F) Strength & Modulus

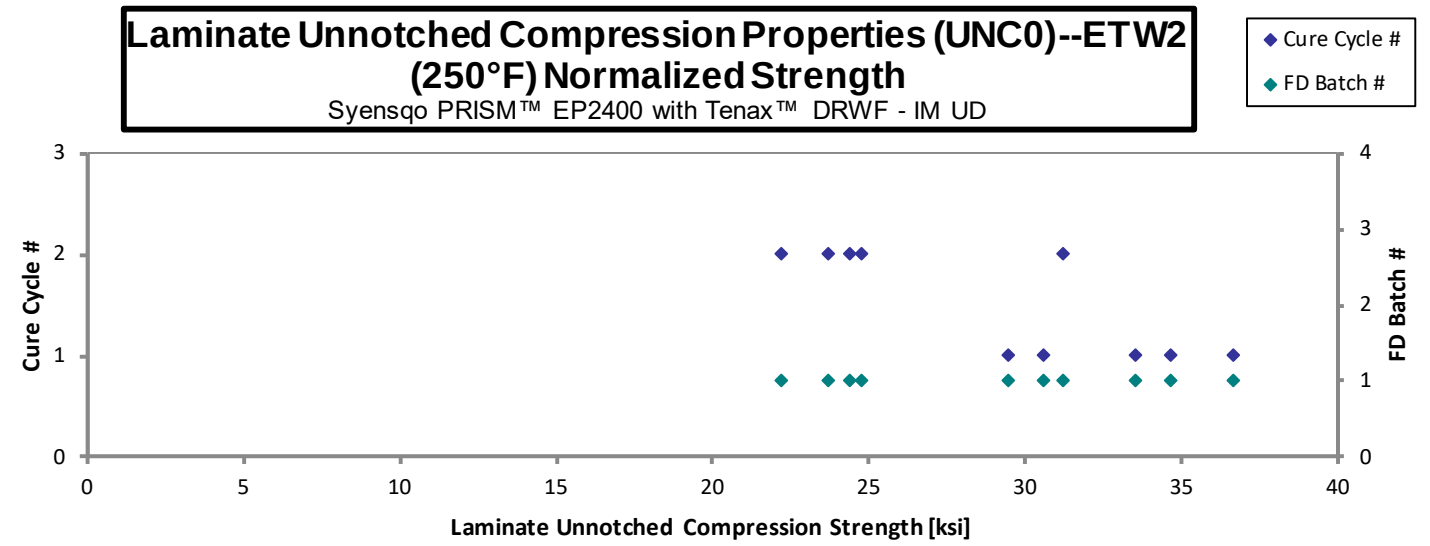
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

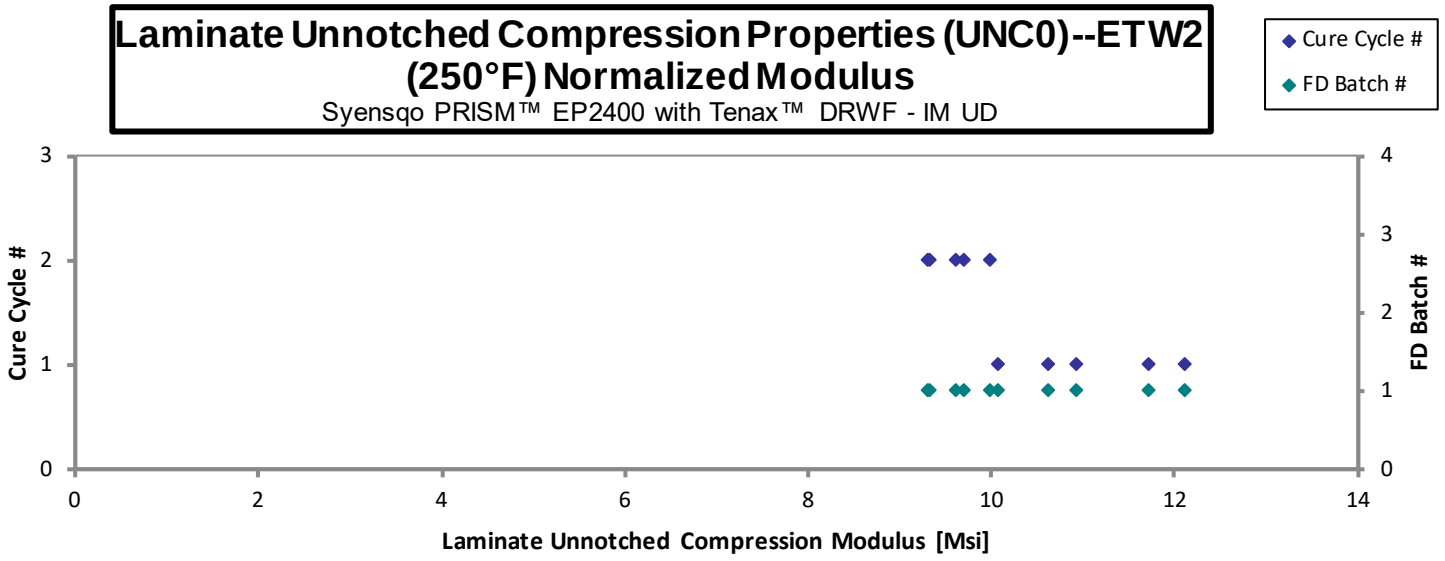
normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-UNC0-A-C1-1-1F	1	C1	1	37.15	11.87	0.1106	16	M(B,H)GM	0.0069	36.68	11.72
UD-UNC0-A-C1-1-2F	1	C1	1	33.40	12.08	0.1124	16	M(B,H)GM	0.0070	33.52	12.12
UD-UNC0-A-C1-1-3F	1	C1	1	31.06	10.80	0.1103	16	M(B,H)GM	0.0069	30.58	10.63
UD-UNC0-A-C1-1-4F	1	C1	1	34.85	11.00	0.1114	16	BGM	0.0070	34.65	10.94
UD-UNC0-A-C1-1-5F	1	C1	1	29.85	10.20	0.1106	16	BGM	0.0069	29.48	10.08
UD-UNC0-A-C2-1-1F	1	C2	2	23.25	10.06	0.1070	16	HGM	0.0067	22.20	9.604
UD-UNC0-A-C2-1-2F	1	C2	2	25.46	10.28	0.1089	16	M(B,H)GM	0.0068	24.75	9.989
UD-UNC0-A-C2-1-3F	1	C2	2	32.44	10.07	0.1078	16	BGM	0.0067	31.22	9.696
UD-UNC0-A-C2-1-4F	1	C2	2	25.23	9.644	0.1083	16	BAB	0.0068	24.40	9.326
UD-UNC0-A-C2-1-5F	1	C2	2	24.57	9.629	0.1081	16	BAB	0.0068	23.72	9.296

Source of data scatter is unclear.

Average	**29.72**	**10.56**	**$Average_{norm}$**	**0.0068**	**29.12**	**10.34**
Standard Dev.	**4.841**	**0.8624**	**$Standard\ Dev._{norm}$**		**5.079**	**0.9894**
Coeff. of Var. [%]	**16.29**	**8.164**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**17.44**	**9.569**
Min.	**23.25**	**9.629**	**Min.**	**0.0067**	**22.20**	**9.296**
Max.	**37.15**	**12.08**	**Max.**	**0.0070**	**36.68**	**12.12**
Number of Spec.	**10**	**10**	**Number of Spec.**	**10**	**10**	**10**


Laminate Unnotched Compression Properties (UNC0)--ETW2 (250°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
5
10
15
20
25
30
35
40
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC0)--ETW2 (250°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
2
4
6
8
10
12
14
0
1
2
3
4

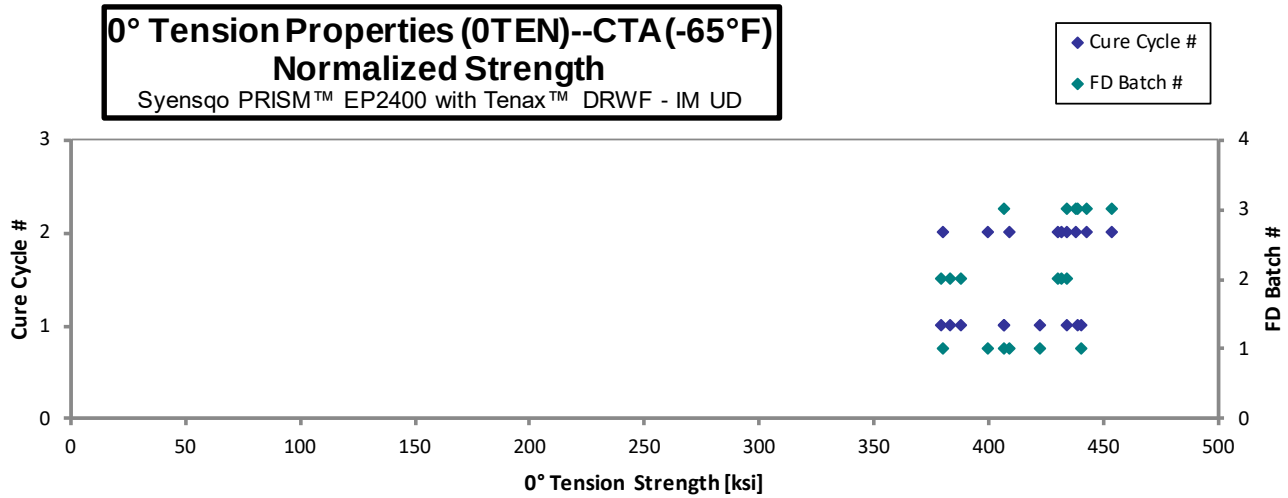
4.1.3.3UD Woven 0° Tabbed Tension (UD-0TEN)

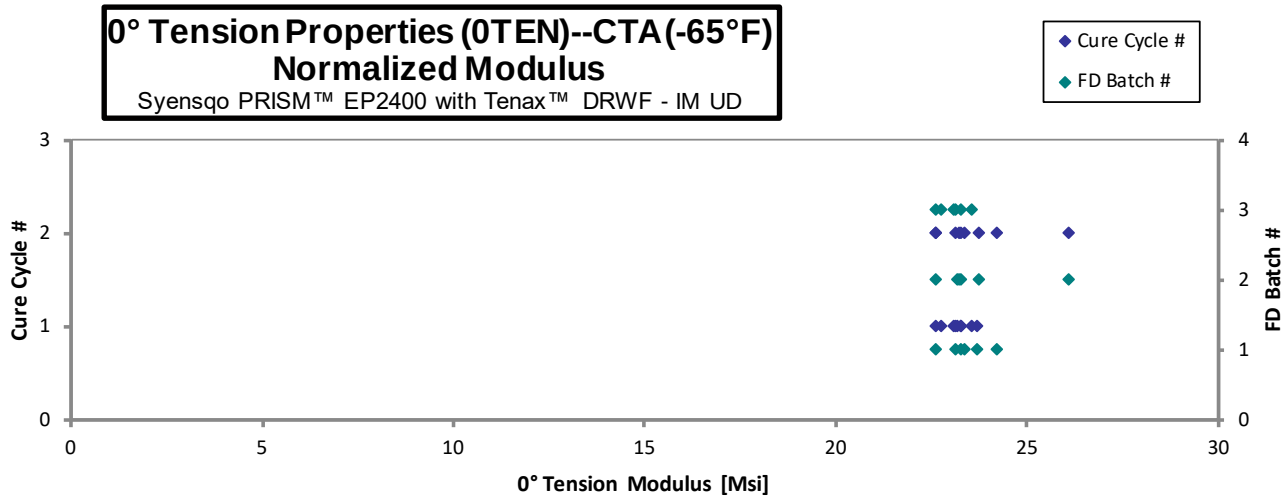
0° Tension Properties (0TEN)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-0TEN-A-C1-1-1B	1	C1	1	393.9	22.55	0.0579	8	XGM	0.0072	407.1	23.30
UD-0TEN-A-C1-1-2B	1	C1	1	415.1	22.73	0.0570	8	XGM	0.0071	422.7	23.15
UD-0TEN-A-C1-1-3B	1	C1	1	428.3	23.07	0.0576	8	XGM	0.0072	440.1	23.71
UD-0TEN-A-C2-1-1B	1	C2	2	374.5	23.87	0.0569	8	XGM	0.0071	380.3	24.24
UD-0TEN-A-C2-1-2B	1	C2	2	401.6	23.49	0.0557	8	XGM	0.0070	399.5	23.37
UD-0TEN-A-C2-1-3B	1	C2	2	407.9	22.55	0.0561	8	XGM	0.0070	408.9	22.60
UD-0TEN-B-C1-1-1B	2	C1	1	388.5	23.57	0.0553	8	XGM	0.0069	383.5	23.27
UD-0TEN-B-C1-1-2B	2	C1	1	381.7	22.79	0.0570	8	XGM	0.0071	388.3	23.19
UD-0TEN-B-C1-1-3B	2	C1	1	379.0	22.64	0.0560	8	XGM	0.0070	379.1	22.64
UD-0TEN-B-C2-1-1B	2	C2	2	425.8	22.78	0.0571	8	XGM	0.0071	434.0	23.22
UD-0TEN-B-C2-1-2B	2	C2	2	414.1	25.01	0.0584	8	XGM	0.0073	431.8	26.08
UD-0TEN-B-C2-1-3B	2	C2	2	415.1	22.91	0.0580	8	XGM	0.0073	430.2	23.74
UD-0TEN-C-C1-1-1B	3	C1	1	444.7	24.14	0.0547	8	XGM	0.0068	434.0	23.56
UD-0TEN-C-C1-1-2B	3	C1	1	464.4	24.44	0.0530	8	XGM	0.0066	439.1	23.11
UD-0TEN-C-C1-1-3B	3	C1	1	435.0	24.35	0.0524	8	XGM	0.0066	407.1	22.78
UD-0TEN-C-C2-1-1B	3	C2	2	439.6	22.41	0.0578	8	XGM	0.0072	453.5	23.12
UD-0TEN-C-C2-1-2B	3	C2	2	428.1	22.74	0.0573	8	XGM	0.0072	438.2	23.27
UD-0TEN-C-C2-1-3B	3	C2	2	442.8	22.64	0.0560	8	XGM	0.0070	442.5	22.63

Average	**415.6**	**23.26**	**Average$_{norm}$**	**0.0070**	**417.8**	**23.39**
Standard Dev.	**25.42**	**0.7897**	**Standard Dev.$_{norm}$**		**23.95**	**0.7917**
Coeff. of Var. [%]	**6.117**	**3.395**	**Coeff. of Var. [%]$_{norm}$**		**5.733**	**3.385**
Min.	**374.5**	**22.41**	**Min.**	**0.0066**	**379.1**	**22.60**
Max.	**464.4**	**25.01**	**Max.**	**0.0073**	**453.5**	**26.08**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
300
350
400
450
500
0
1
2
3
4


0° Tension Properties (0TEN)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
5
10
15
20
25
30
0
1
2
3
4

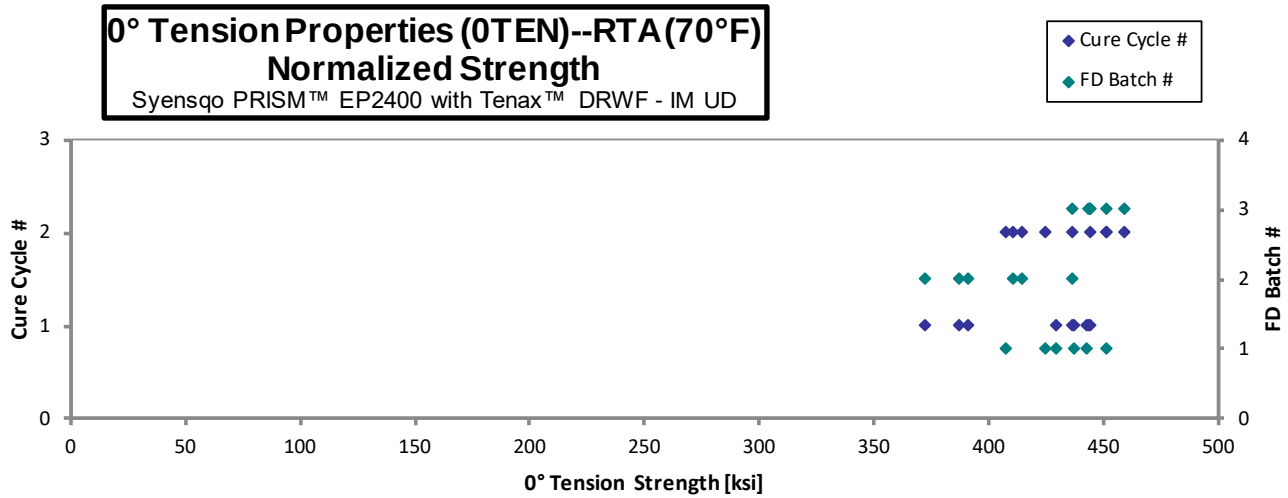
0° Tension Properties (0TEN)--RTA (70°F)
Strength & Modulus

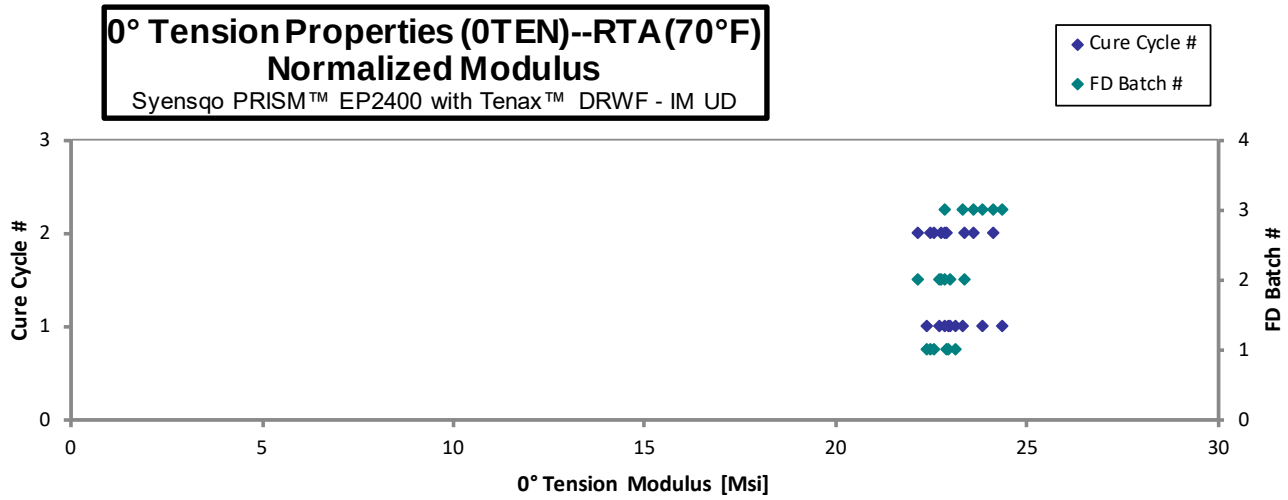
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-0TEN-A-C1-1-1A	1	C1	1	419.3	22.16	0.0585	8	XGM	0.0073	437.7	23.13
UD-0TEN-A-C1-1-2A	1	C1	1	444.1	23.02	0.0558	8	XGM	0.0070	442.6	22.95
UD-0TEN-A-C1-1-3A	1	C1	1	435.8	22.69	0.0552	8	XGM	0.0069	429.5	22.36
UD-0TEN-A-C2-1-1A	1	C2	2	425.7	22.53	0.0559	8	XGM	0.0070	424.7	22.48
UD-0TEN-A-C2-1-2A	1	C2	2	404.3	22.42	0.0564	8	XGM	0.0071	407.3	22.59
UD-0TEN-A-C2-1-3A	1	C2	2	455.1	23.06	0.0556	8	XGM	0.0070	451.8	22.90
UD-0TEN-B-C1-1-1A	2	C1	1	382.6	22.43	0.0567	8	XGM	0.0071	387.1	22.70
UD-0TEN-B-C1-1-2A	2	C1	1	371.6	22.81	0.0561	8	XGM	0.0070	372.4	22.87
UD-0TEN-B-C1-1-3A	2	C1	1	391.8	23.03	0.0559	8	XGM	0.0070	391.2	23.00
UD-0TEN-B-C2-1-1A	2	C2	2	419.7	22.47	0.0582	8	XGM	0.0073	436.2	23.35
UD-0TEN-B-C2-1-2A	2	C2	2	395.7	21.35	0.0581	8	XGM	0.0073	410.4	22.15
UD-0TEN-B-C2-1-3A	2	C2	2	397.0	21.80	0.0585	8	XGM	0.0073	414.3	22.75
UD-0TEN-C-C1-1-1A	3	C1	1	455.0	24.46	0.0546	8	XGM	0.0068	443.8	23.86
UD-0TEN-C-C1-1-2A	3	C1	1	445.8	24.84	0.0549	8	XGM	0.0069	436.8	24.34
UD-0TEN-C-C1-1-3A	3	C1	1	440.6	23.14	0.0565	8	XGM	0.0071	444.4	23.34
UD-0TEN-C-C2-1-1A	3	C2	2	418.6	22.71	0.0595	8	XGM	0.0074	444.4	24.11
UD-0TEN-C-C2-1-2A	3	C2	2	442.6	22.41	0.0571	8	XGM	0.0071	451.3	22.85
UD-0TEN-C-C2-1-3A	3	C2	2	449.3	23.11	0.0573	8	XGM	0.0072	459.4	23.63

Average	**421.9**	**22.80**	**Average$_{norm}$**	**0.0071**	**427.0**	**23.08**
Standard Dev.	**26.15**	**0.8205**	**Standard Dev.$_{norm}$**		**24.69**	**0.5988**
Coeff. of Var. [%]	**6.198**	**3.598**	**Coeff. of Var. [%]$_{norm}$**		**5.784**	**2.595**
Min.	**371.6**	**21.35**	**Min.**	**0.0068**	**372.4**	**22.15**
Max.	**455.1**	**24.84**	**Max.**	**0.0074**	**459.4**	**24.34**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
300
350
400
450
500
0
1
2
3
4


0° Tension Properties (0TEN)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
5
10
15
20
25
30
0
1
2
3
4

0° Tension Properties (0TEN)--ETA (180°F)
Strength & Modulus

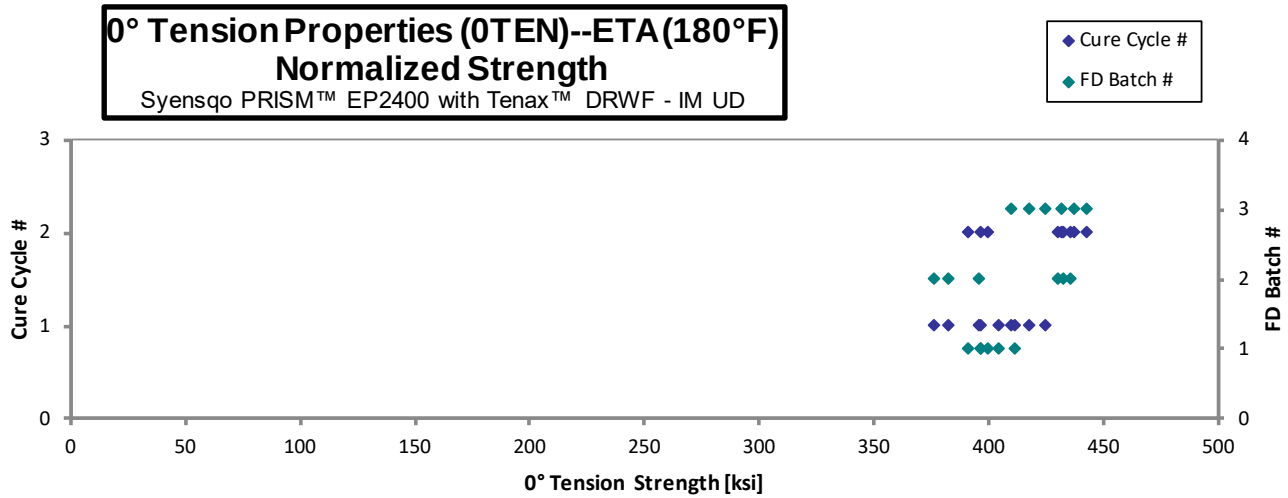
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

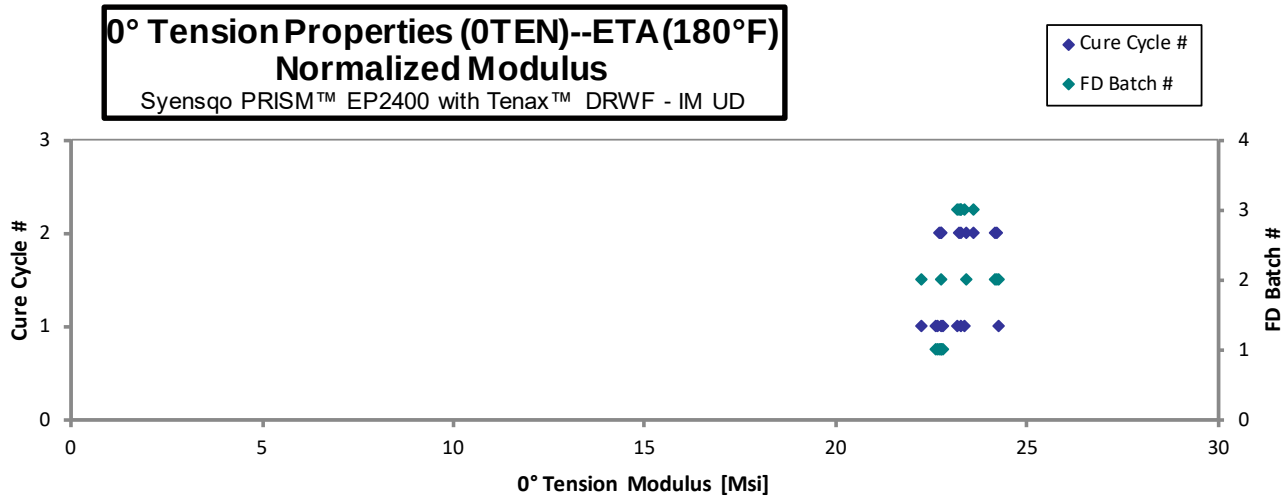
normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-0TEN-A-C1-1-1C	1	C1	1	393.5	22.65	0.0564	8	XGM	0.0071	396.6	22.83
UD-0TEN-A-C1-1-2C	1	C1	1	399.2	21.96	0.0578	8	XGM	0.0072	411.7	22.65
UD-0TEN-A-C1-1-3C	1	C1	1	403.8	22.59	0.0561	8	XGM	0.0070	404.1	22.61
UD-0TEN-A-C2-1-1C	1	C2	2	398.2	22.84	0.0558	8	XGM	0.0070	396.9	22.77
UD-0TEN-A-C2-1-2C	1	C2	2	399.5	22.72	0.0561	8	XGM	0.0070	400.0	22.75
UD-0TEN-A-C2-1-3C	1	C2	2	386.6	22.47	0.0566	8	XGM	0.0071	390.9	22.72
UD-0TEN-B-C1-1-1C	2	C1	1	376.7	22.26	0.0560	8	XGM	0.0070	376.5	22.25
UD-0TEN-B-C1-1-2C	2	C1	1	381.4	24.18	0.0562	8	XGM	0.0070	382.6	24.26
UD-0TEN-B-C1-1-3C	2	C1	1	391.5	22.53	0.0566	8	XGM	0.0071	395.5	22.76
UD-0TEN-B-C2-1-1C	2	C2	2	414.8	22.55	0.0581	8	XGM	0.0073	430.6	23.41
UD-0TEN-B-C2-1-2C	2	C2	2	422.3	23.44	0.0577	8	XGM	0.0072	435.4	24.16
UD-0TEN-B-C2-1-3C	2	C2	2	413.7	23.18	0.0586	8	XGM	0.0073	432.5	24.24
UD-0TEN-C-C1-1-1C	3	C1	1	431.0	23.73	0.0552	8	XGM	0.0069	424.9	23.39
UD-0TEN-C-C1-1-2C	3	C1	1	438.1	24.31	0.0534	8	XGM	0.0067	417.6	23.18
UD-0TEN-C-C1-1-3C	3	C1	1	437.1	24.83	0.0525	8	XGM	0.0066	409.9	23.28
UD-0TEN-C-C2-1-1C	3	C2	2	432.5	23.63	0.0559	8	XGM	0.0070	432.0	23.60
UD-0TEN-C-C2-1-2C	3	C2	2	424.3	22.53	0.0577	8	XGM	0.0072	437.3	23.22
UD-0TEN-C-C2-1-3C	3	C2	2	432.5	22.75	0.0573	8	XGM	0.0072	442.5	23.28

	Strength [ksi]	Modulus [Msi]
Average	409.8	23.06
Standard Dev.	20.09	0.7878
Coeff. of Var. [%]	4.902	3.416
Min.	376.7	21.96
Max.	438.1	24.83
Number of Spec.	18	18

	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	0.0070	412.1	23.19
$Standard\ Dev._{norm}$		20.29	0.5887
$Coeff.\ of\ Var.\ [\%]_{norm}$		4.924	2.539
Min.	0.0066	376.5	22.25
Max.	0.0073	442.5	24.26
Number of Spec.	18	18	18


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
300
350
400
450
500
0
1
2
3
4


0° Tension Properties (0TEN)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
5
10
15
20
25
30
0
1
2
3
4

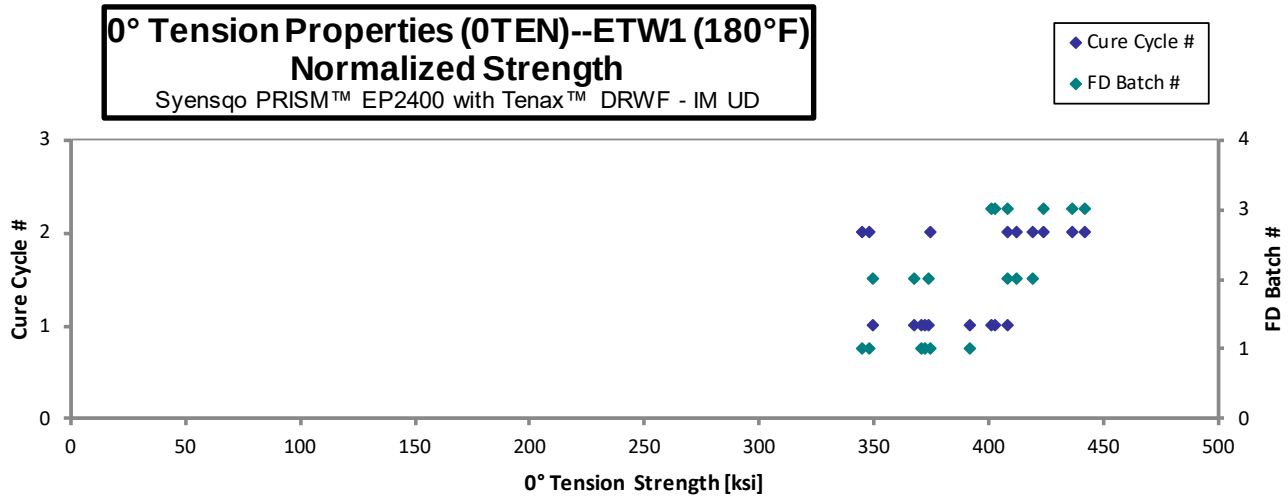
0° Tension Properties (0TEN)--ETW1 (180°F)
Strength & Modulus

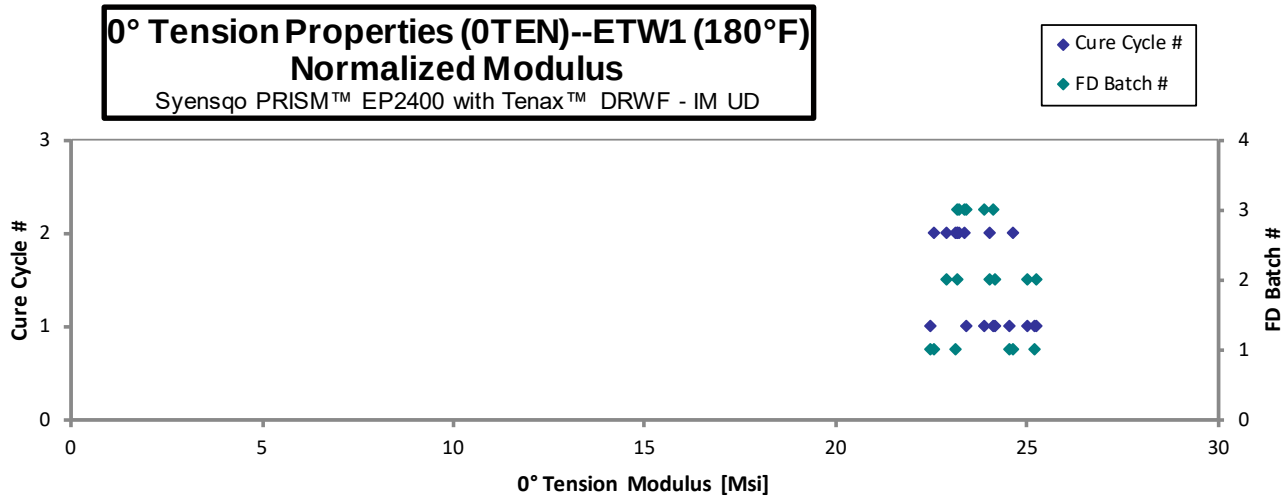
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-0TEN-A-C1-1-1D	1	C1	1	392.0	25.19	0.0560	8	XGM	0.0070	392.0	25.19
UD-0TEN-A-C1-1-2D	1	C1	1	371.8	24.60	0.0559	8	XGM	0.0070	370.8	24.54
UD-0TEN-A-C1-1-3D	1	C1	1	372.2	22.46	0.0560	8	XGM	0.0070	372.3	22.46
UD-0TEN-A-C2-1-1D	1	C2	2	353.6	23.51	0.0551	8	XGM	0.0069	347.8	23.12
UD-0TEN-A-C2-1-2D	1	C2	2	367.3	24.14	0.0572	8	XGM	0.0071	374.9	24.64
UD-0TEN-A-C2-1-3D	1	C2	2	350.4	22.96	0.0551	8	XGM	0.0069	344.8	22.59
UD-0TEN-B-C1-1-1D	2	C1	1	362.3	23.81	0.0568	8	XGM	0.0071	367.7	24.17
UD-0TEN-B-C1-1-2D	2	C1	1	373.2	25.20	0.0561	8	XGM	0.0070	373.8	25.24
UD-0TEN-B-C1-1-3D	2	C1	1	344.3	24.67	0.0568	8	XGM	0.0071	349.2	25.02
UD-0TEN-B-C2-1-1D	2	C2	2	396.4	22.49	0.0577	8	XGM	0.0072	408.4	23.17
UD-0TEN-B-C2-1-2D	2	C2	2	404.5	22.49	0.0571	8	XGM	0.0071	412.1	22.92
UD-0TEN-B-C2-1-3D	2	C2	2	410.7	23.52	0.0572	8	XGM	0.0071	419.4	24.02
UD-0TEN-C-C1-1-1D	3	C1	1	417.8	23.93	0.0548	8	XGM	0.0068	408.6	23.41
UD-0TEN-C-C1-1-2D	3	C1	1	403.1	23.89	0.0560	8	XGM	0.0070	402.9	23.88
UD-0TEN-C-C1-1-3D	3	C1	1	409.3	24.62	0.0549	8	XGM	0.0069	401.3	24.13
UD-0TEN-C-C2-1-1D	3	C2	2	424.6	23.28	0.0559	8	XGM	0.0070	424.0	23.24
UD-0TEN-C-C2-1-2D	3	C2	2	440.8	23.63	0.0555	8	XGM	0.0069	436.5	23.40
UD-0TEN-C-C2-1-3D	3	C2	2	433.6	22.73	0.0571	8	XGM	0.0071	442.4	23.19

Average	**390.4**	**23.73**	**$Average_{norm}$**	**0.0070**	**391.6**	**23.80**
Standard Dev.	**29.58**	**0.8932**	**$Standard\ Dev._{norm}$**		**30.20**	**0.8723**
Coeff. of Var. [%]	**7.576**	**3.764**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.713**	**3.666**
Min.	**344.3**	**22.46**	**Min.**	**0.0068**	**344.8**	**22.46**
Max.	**440.8**	**25.20**	**Max.**	**0.0072**	**442.4**	**25.24**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
300
350
400
450
500
0
1
2
3
4


0° Tension Properties (0TEN)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
5
10
15
20
25
30
0
1
2
3
4

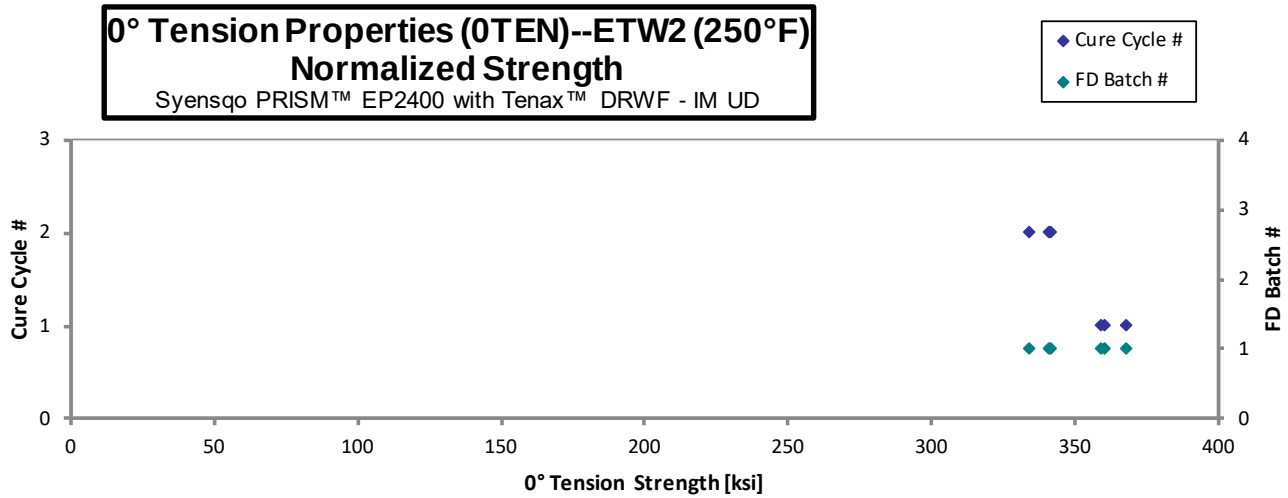
0° Tension Properties (0TEN)--ETW2 (250°F)
Strength & Modulus

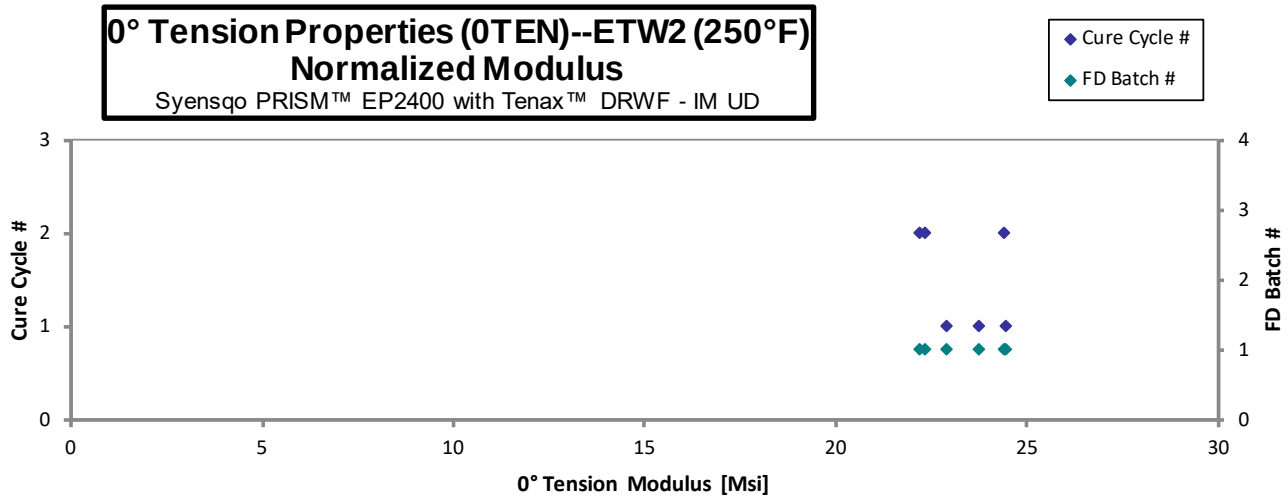
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
UD-0TEN-A-C1-1-1F	1	C1	1	350.7	23.19	0.0574	8	XGM	0.0072	359.6	23.77
UD-0TEN-A-C1-1-2F	1	C1	1	361.0	22.49	0.0571	8	XGM	0.0071	367.7	22.91
UD-0TEN-A-C1-1-3F	1	C1	1	358.6	24.29	0.0563	8	XGM	0.0070	360.7	24.44
UD-0TEN-A-C2-1-1F	1	C2	2	343.7	22.33	0.0556	8	XGM	0.0070	341.4	22.18
UD-0TEN-A-C2-1-2F	1	C2	2	338.6	22.65	0.0552	8	XGM	0.0069	334.0	22.34
UD-0TEN-A-C2-1-3F	1	C2	2	340.7	24.38	0.0561	8	XGM	0.0070	341.2	24.42

Average	**348.9**	**23.22**	**Average$_{norm}$**	**0.0070**	**350.8**	**23.34**
Standard Dev.	**9.417**	**0.9114**	**Standard Dev.$_{norm}$**		**13.60**	**1.008**
Coeff. of Var. [%]	**2.699**	**3.925**	**Coeff. of Var. [%]$_{norm}$**		**3.878**	**4.319**
Min.	**338.6**	**22.33**	**Min.**	**0.0069**	**334.0**	**22.18**
Max.	**361.0**	**24.38**	**Max.**	**0.0072**	**367.7**	**24.44**
Number of Spec.	**6**	**6**	**Number of Spec.**	**6**	**6**	**6**


0° Tension Properties (0TEN)--ETW2 (250°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Strength [ksi]
0
50
100
150
200
250
300
350
400


0° Tension Properties (0TEN)--ETW2 (250°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Tension Modulus [Msi]
0
5
10
15
20
25
30

4.1.3.4UD Woven 0° Compression Modulus Only (UD-0CLC)

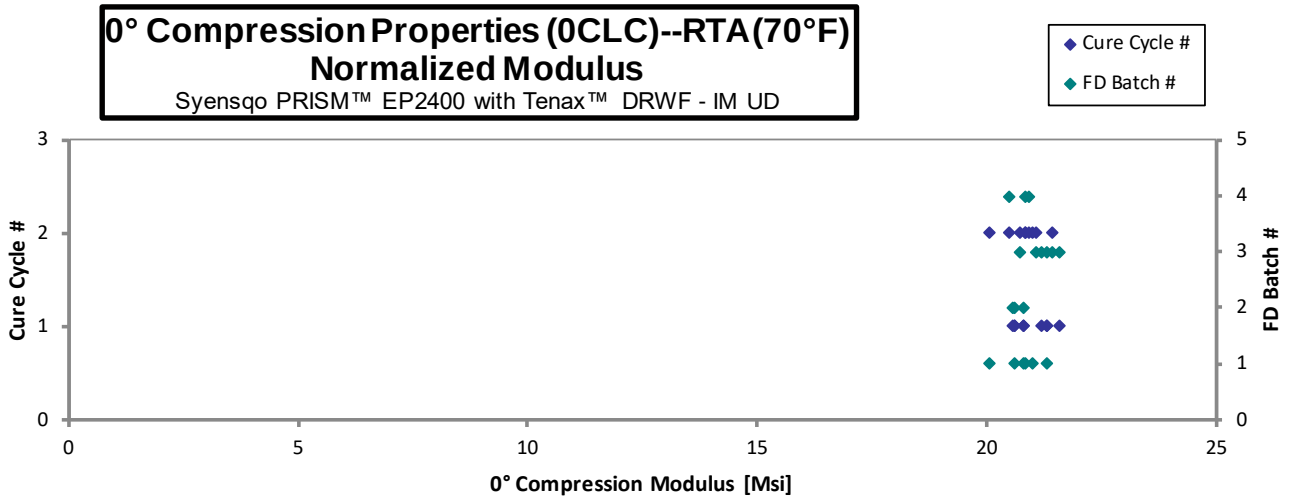
0° Compression Properties (0CLC)--RTA (70°F) Modulus

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
UD-0CLC-A-C1-1-1A	1	C1	1	21.29	0.1084	16	0.0068	20.60
UD-0CLC-A-C1-1-2A	1	C1	1	21.61	0.1078	16	0.0067	20.80
UD-0CLC-A-C1-1-3A	1	C1	1	21.99	0.1086	16	0.0068	21.32
UD-0CLC-A-C2-1-1A	1	C2	2	21.02	0.1110	16	0.0069	20.84
UD-0CLC-A-C2-1-2A	1	C2	2	21.29	0.1105	16	0.0069	21.00
UD-0CLC-A-C2-1-3A	1	C2	2	20.37	0.1104	16	0.0069	20.08
UD-0CLC-B-C1-1-1A	2	C1	1	20.38	0.1133	16	0.0071	20.61
UD-0CLC-B-C1-1-2A	2	C1	1	20.64	0.1130	16	0.0071	20.83
UD-0CLC-B-C1-1-3A	2	C1	1	20.56	0.1122	16	0.0070	20.59
UD-0CLC-C-C1-1-1A	3	C1	1	18.41	0.1291	16	0.0081	21.22
UD-0CLC-C-C1-1-2A	3	C1	1	18.60	0.1284	16	0.0080	21.32
UD-0CLC-C-C1-1-3A	3	C1	1	18.96	0.1276	16	0.0080	21.60
UD-0CLC-C-C2-1-1A	3	C2	2	21.04	0.1142	16	0.0071	21.44
UD-0CLC-C-C2-1-2A	3	C2	2	20.91	0.1129	16	0.0071	21.09
UD-0CLC-C-C2-1-3A	3	C2	2	20.67	0.1124	16	0.0070	20.74
UD-0CLC-D-C2-1-1A	4	C2	2	20.76	0.1128	16	0.0071	20.92
UD-0CLC-D-C2-1-2A	4	C2	2	20.94	0.1115	16	0.0070	20.84
UD-0CLC-D-C2-1-3A	4	C2	2	20.46	0.1122	16	0.0070	20.50

Average	**20.55**		**$Average_{norm}$**	**0.0071**	**20.91**
Standard Dev.	**0.9729**		**$Standard\ Dev._{norm}$**		**0.3784**
Coeff. of Var. [%]	**4.734**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.810**
Min.	**18.41**		**Min.**	**0.0067**	**20.08**
Max.	**21.99**		**Max.**	**0.0081**	**21.60**
Number of Spec.	**18**		**Number of Spec.**	**18**	**18**


0° Compression Properties (0CLC)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
1
2
3
4
5
0
5
10
15
20
25

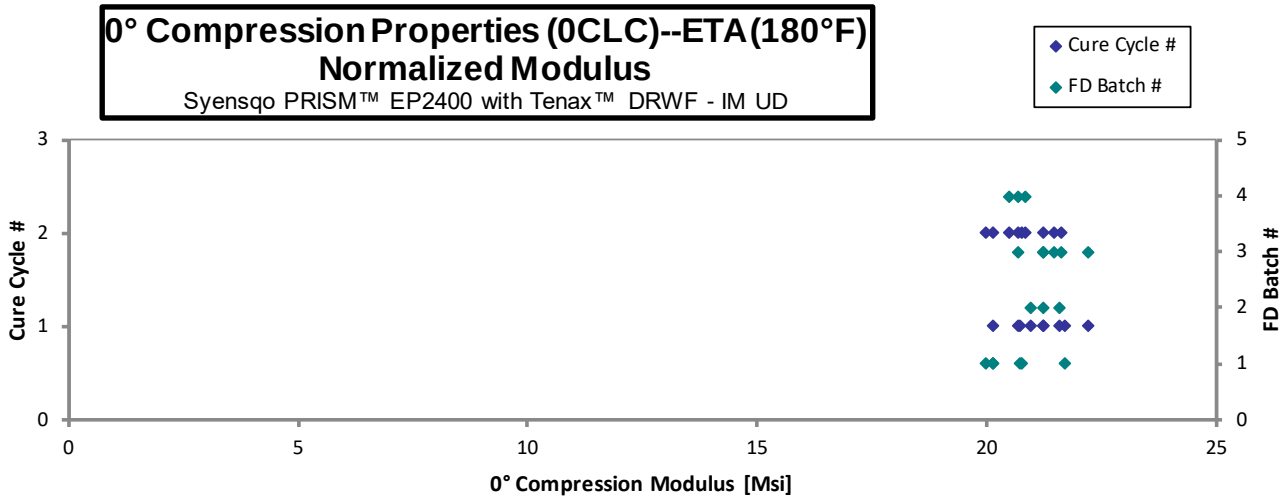
0° Compression Properties (0CLC)--ETA (180°F)
Modulus

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
UD-0CLC-A-C1-1-1C	1	C1	1	21.22	0.1095	16	0.0068	20.74
UD-0CLC-A-C1-1-2C	1	C1	1	20.71	0.1089	16	0.0068	20.13
UD-0CLC-A-C1-1-3C	1	C1	1	22.47	0.1083	16	0.0068	21.72
UD-0CLC-A-C2-1-1C	1	C2	2	20.30	0.1103	16	0.0069	19.99
UD-0CLC-A-C2-1-2C	1	C2	2	21.10	0.1102	16	0.0069	20.75
UD-0CLC-A-C2-1-3C	1	C2	2	20.23	0.1116	16	0.0070	20.15
UD-0CLC-B-C1-1-1C	2	C1	1	20.92	0.1122	16	0.0070	20.97
UD-0CLC-B-C1-1-2C	2	C1	1	21.10	0.1128	16	0.0070	21.24
UD-0CLC-B-C1-1-3C	2	C1	1	21.75	0.1112	16	0.0069	21.59
UD-0CLC-C-C1-1-1C	3	C1	1	18.57	0.1248	16	0.0078	20.70
UD-0CLC-C-C1-1-2C	3	C1	1	19.12	0.1244	16	0.0078	21.23
UD-0CLC-C-C1-1-3C	3	C1	1	19.66	0.1266	16	0.0079	22.23
UD-0CLC-C-C2-1-1C	3	C2	2	21.12	0.1127	16	0.0070	21.24
UD-0CLC-C-C2-1-2C	3	C2	2	21.51	0.1118	16	0.0070	21.47
UD-0CLC-C-C2-1-3C	3	C2	2	21.43	0.1130	16	0.0071	21.62
UD-0CLC-D-C2-1-1C	4	C2	2	20.79	0.1104	16	0.0069	20.49
UD-0CLC-D-C2-1-2C	4	C2	2	21.01	0.1104	16	0.0069	20.71
UD-0CLC-D-C2-1-3C	4	C2	2	21.15	0.1104	16	0.0069	20.84

Average	**20.79**	**$Average_{norm}$**	**0.0071**	**20.99**
Standard Dev.	**0.9365**	**$Standard\ Dev._{norm}$**		**0.6052**
Coeff. of Var. [%]	**4.505**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.883**
Min.	**18.57**	**Min.**	**0.0068**	**19.99**
Max.	**22.47**	**Max.**	**0.0079**	**22.23**
Number of Spec.	**18**	**Number of Spec.**	**18**	**18**

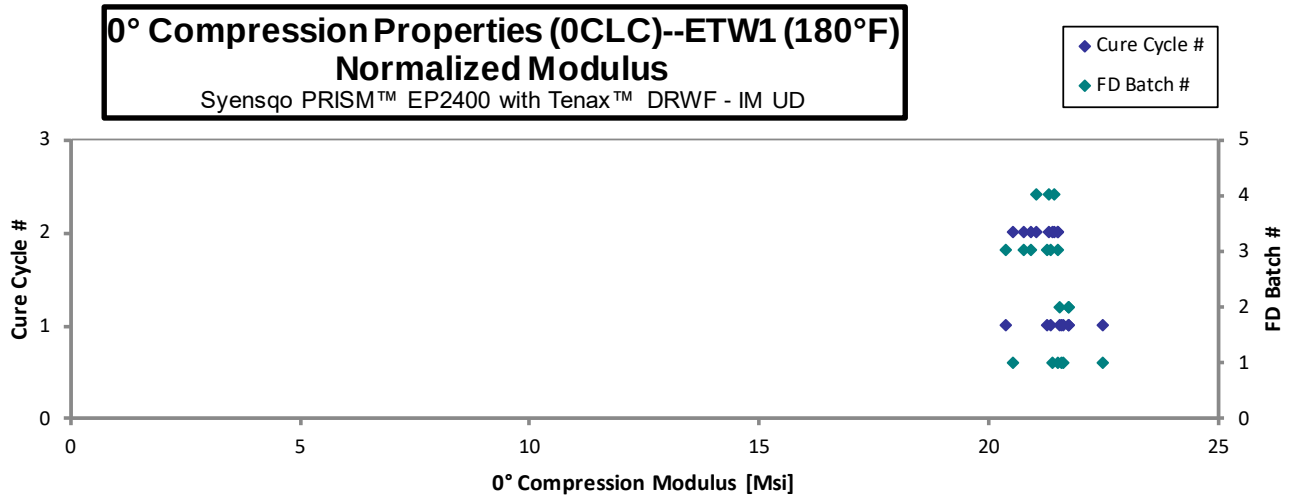

0° Compression Properties (0CLC)--ETA (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
5
10
15
20
25
1
2
3
4

0° Compression Properties (0CLC)--ETW1 (180°F)
Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
UD-0CLC-A-C1-1-1D	1	C1	1	23.03	0.1093	16	0.0068	22.47
UD-0CLC-A-C1-1-2D	1	C1	1	22.22	0.1090	16	0.0068	21.63
UD-0CLC-A-C1-1-3D	1	C1	1	22.25	0.1087	16	0.0068	21.59
UD-0CLC-A-C2-1-1D	1	C2	2	20.85	0.1103	16	0.0069	20.53
UD-0CLC-A-C2-1-2D	1	C2	2	21.74	0.1109	16	0.0069	21.53
UD-0CLC-A-C2-1-3D	1	C2	2	21.70	0.1105	16	0.0069	21.41
UD-0CLC-B-C1-1-1D	2	C1	1	21.30	0.1134	16	0.0071	21.56
UD-0CLC-B-C1-1-2D	2	C1	1	21.68	0.1123	16	0.0070	21.73
UD-0CLC-B-C1-1-3D	2	C1	1	21.60	0.1128	16	0.0071	21.76
UD-0CLC-C-C1-1-1D	3	C1	1	18.85	0.1265	16	0.0079	21.28
UD-0CLC-C-C1-1-2D	3	C1	1	18.14	0.1259	16	0.0079	20.39
UD-0CLC-C-C1-1-3D	3	C1	1	18.84	0.1269	16	0.0079	21.34
UD-0CLC-C-C2-1-1D	3	C2	2	20.71	0.1131	16	0.0071	20.91
UD-0CLC-C-C2-1-2D	3	C2	2	20.86	0.1115	16	0.0070	20.77
UD-0CLC-C-C2-1-3D	3	C2	2	21.58	0.1117	16	0.0070	21.53
UD-0CLC-D-C2-1-1D	4	C2	2	21.42	0.1114	16	0.0070	21.32
UD-0CLC-D-C2-1-2D	4	C2	2	21.57	0.1113	16	0.0070	21.44
UD-0CLC-D-C2-1-3D	4	C2	2	21.42	0.1101	16	0.0069	21.06

Average	**21.10**			
Standard Dev.	**1.274**			
Coeff. of Var. [%]	**6.041**			
Min.	**18.14**			
Max.	**23.03**			
Number of Spec.	**18**			
$Average_{norm}$	**0.0071**	**21.35**		
$Standard\ Dev._{norm}$		**0.4889**		
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.290**		
Min.	**0.0068**	**20.39**		
Max.	**0.0079**	**22.47**		
Number of Spec.	**18**	**18**		

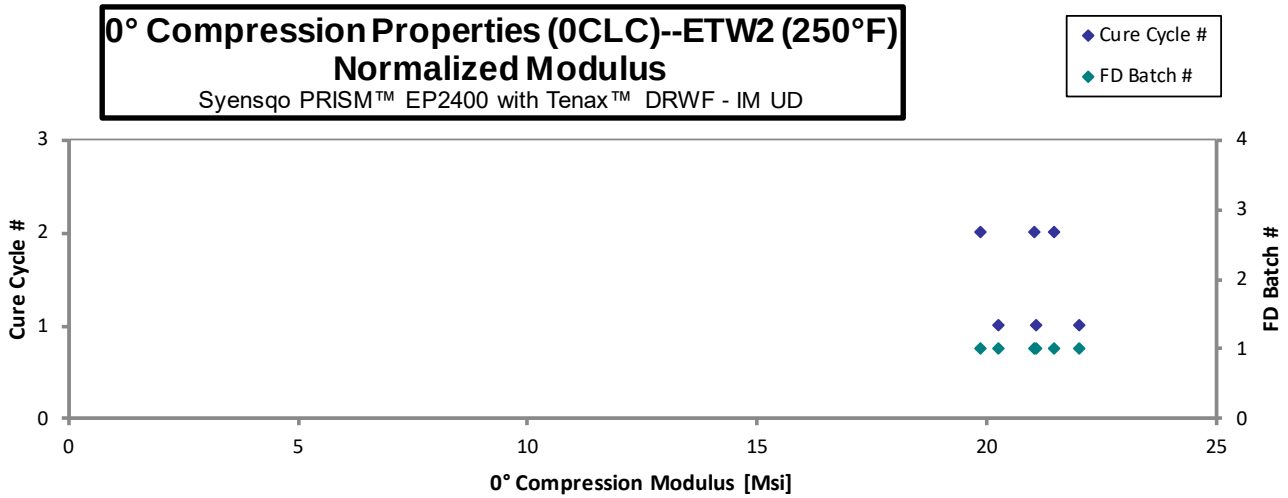

0° Compression Properties (0CLC)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
5
10
15
20
25
0
1
2
3
0
1
2
3
4
5

0° Compression Properties (0CLC)--ETW2 (250°F)
Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
UD-0CLC-A-C1-1-1F	1	C1	1	20.83	0.1090	16	0.0068	20.28
UD-0CLC-A-C1-1-2F	1	C1	1	21.21	0.1113	16	0.0070	21.07
UD-0CLC-A-C1-1-3F	1	C1	1	22.68	0.1088	16	0.0068	22.03
UD-0CLC-A-C2-1-1F	1	C2	2	21.26	0.1109	16	0.0069	21.05
UD-0CLC-A-C2-1-2F	1	C2	2	21.31	0.1128	16	0.0071	21.46
UD-0CLC-A-C2-1-3F	1	C2	2	19.68	0.1130	16	0.0071	19.85

	Modulus [Msi]		$Modulus_{norm}$ [Msi]
Average	21.16	$Average_{norm}$	20.96
Standard Dev.	0.9636	$Standard\ Dev._{norm}$	0.7887
Coeff. of Var. [%]	4.553	$Coeff.\ of\ Var.\ [\%]_{norm}$	3.763
Min.	19.68	Min.	19.85
Max.	22.68	Max.	22.03
Number of Spec.	6	Number of Spec.	6


0° Compression Properties (0CLC)--ETW2 (250°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0° Compression Modulus [Msi]
0
1
2
3
4
5
10
15
20
25

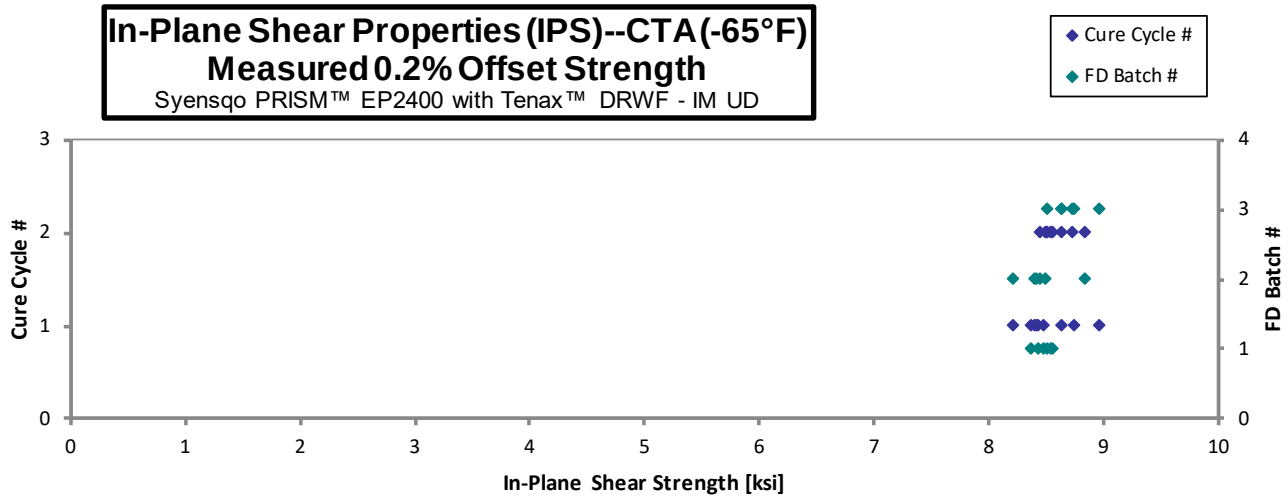
4.1.3.5UD Woven In-Plane Shear (UD-IPS)

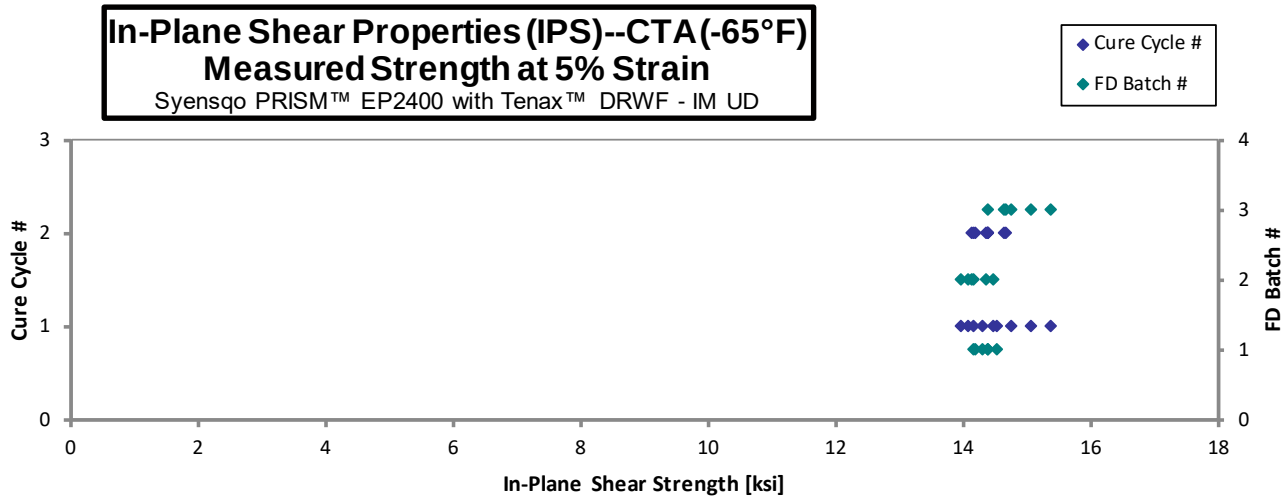
In-Plane Shear Properties (IPS)--CTA (-65°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

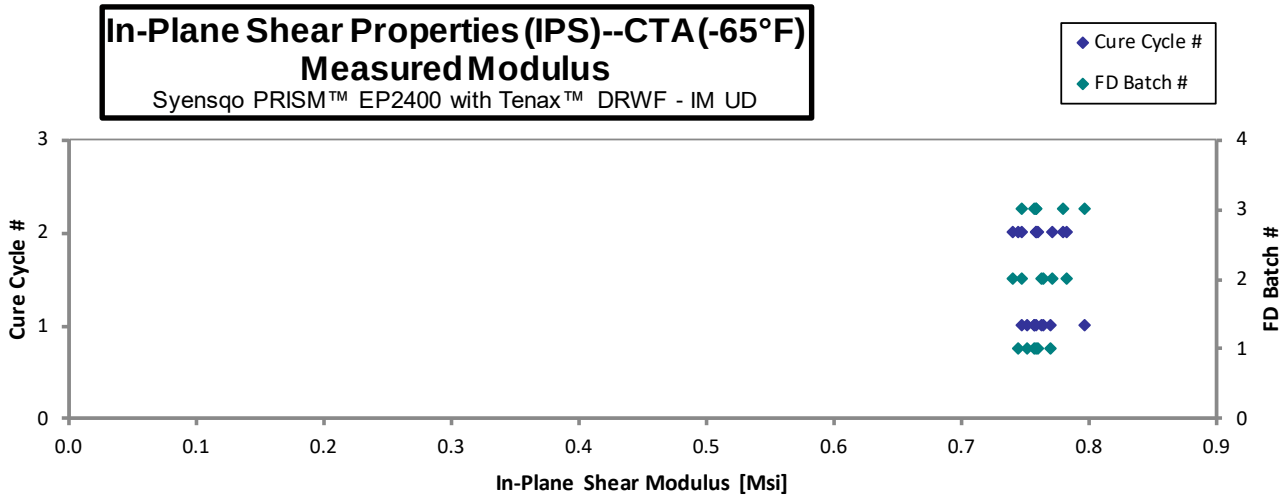
Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi] [1]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-IPS-A-C1-1-1B	1	C1	1	8.479	14.53	0.7705	0.0845	12	0.0070	AGT
UD-IPS-A-C1-1-2B	1	C1	1	8.440	14.29	0.7576	0.0851	12	0.0071	AGB
UD-IPS-A-C1-1-3B	1	C1	1	8.364	14.17	0.7520	0.0859	12	0.0072	AGT
UD-IPS-A-C2-1-1B	1	C2	2	8.561	14.38	0.7608	0.0846	12	0.0071	AWB
UD-IPS-A-C2-1-2B	1	C2	2	8.508	14.20	0.7452	0.0849	12	0.0071	AGB
UD-IPS-A-C2-1-3B	1	C2	2	8.545	14.38	0.7596	0.0853	12	0.0071	AGT
UD-IPS-B-C1-1-1B	2	C1	1	8.400	13.97	0.7641	0.0869	12	0.0072	AGT
UD-IPS-B-C1-1-2B	2	C1	1	8.411	14.48	0.7627	0.0857	12	0.0071	AWT
UD-IPS-B-C1-1-3B	2	C1	1	8.207	14.07	0.7471	0.0856	12	0.0071	AGM
UD-IPS-B-C2-1-1B	2	C2	2	8.454	14.16	0.7410	0.0845	12	0.0070	AGT
UD-IPS-B-C2-1-2B	2	C2	2	8.836	14.13	0.7831	0.0848	12	0.0071	AGT
UD-IPS-B-C2-1-3B	2	C2	2	8.491	14.35	0.7722	0.0833	12	0.0069	AGM
UD-IPS-C-C1-1-1B	3	C1	1	8.741	15.08	0.7577	0.0842	12	0.0070	AWB
UD-IPS-C-C1-1-2B	3	C1	1	8.630	14.75	0.7595	0.0852	12	0.0071	AGM
UD-IPS-C-C1-1-3B	3	C1	1	8.969	15.39	0.7977	0.0831	12	0.0069	AWB
UD-IPS-C-C2-1-1B	3	C2	2	8.640	14.40	0.7805	0.0859	12	0.0072	AGB
UD-IPS-C-C2-1-2B	3	C2	2	8.511	14.67	0.7589	0.0864	12	0.0072	AGM
UD-IPS-C-C2-1-3B	3	C2	2	8.729	14.66	0.7475	0.0863	12	0.0072	AGT

[1] Unusual fluctuations were observed in the plot prior to and around 5% strain.

Average	**8.551**	**14.45**	**0.7621**	**0.0071**
Standard Dev.	**0.1828**	**0.3610**	**0.01448**	
Coeff. of Var. [%]	**2.138**	**2.498**	**1.899**	
Min.	**8.207**	**13.97**	**0.7410**	**0.0069**
Max.	**8.969**	**15.39**	**0.7977**	**0.0072**
Number of Spec.	**18**	**18**	**18**	**18**

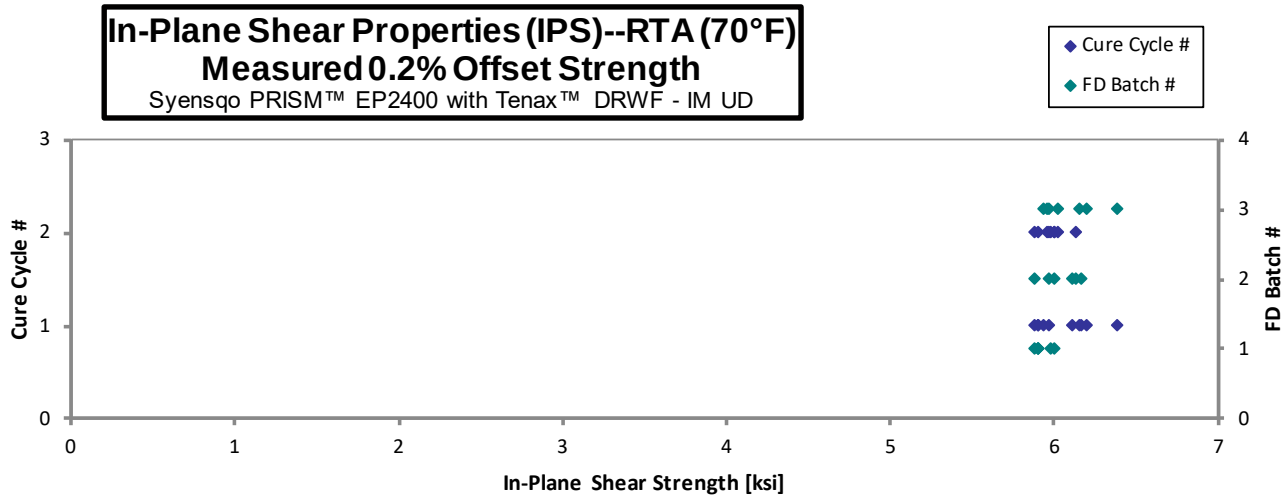

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
9
10

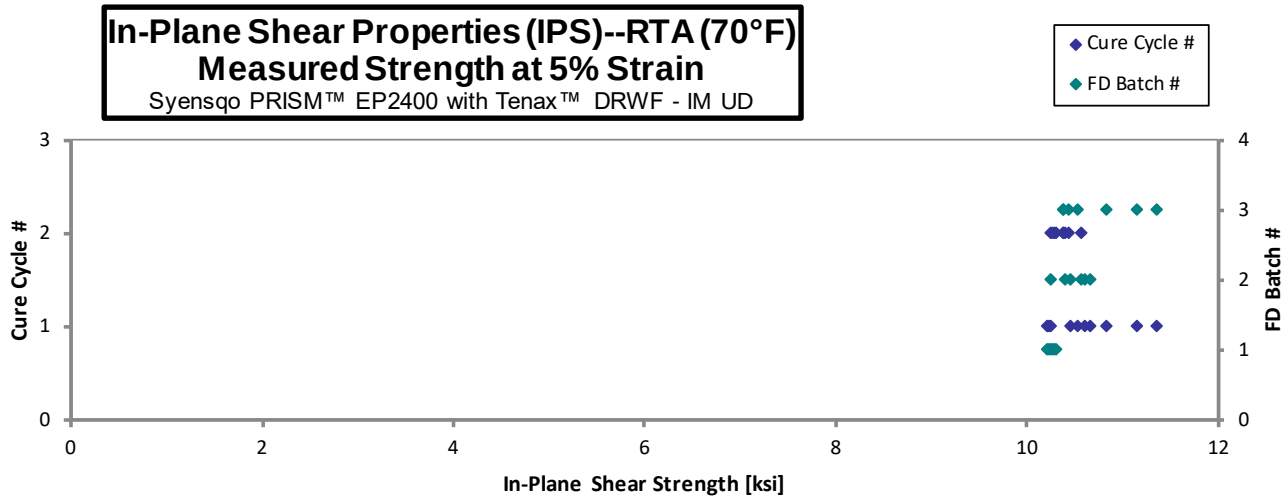

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12
14
16
18

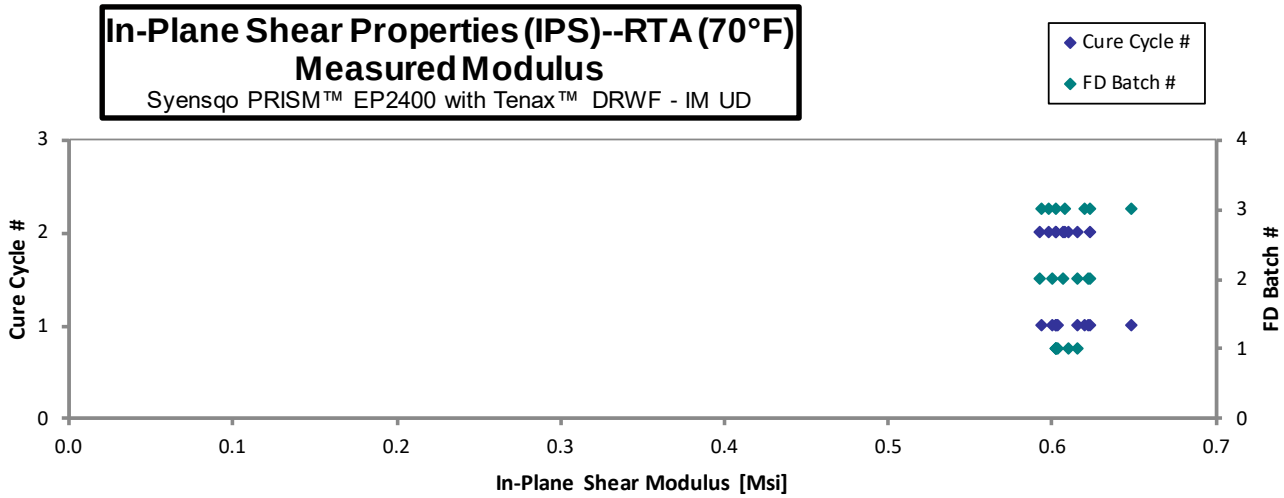

In-Plane Shear Properties (IPS)--CTA (-65°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9

In-Plane Shear Properties (IPS)--RTA (70°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-IPS-A-C1-1-1A	1	C1	1	5.907	10.23	0.6036	0.0851	12	0.0071	AGT
UD-IPS-A-C1-1-2A	1	C1	1	5.881	10.21	0.6022	0.0858	12	0.0071	AGT
UD-IPS-A-C1-1-3A	1	C1	1	5.902	10.26	0.6022	0.0851	12	0.0071	AGM
UD-IPS-A-C2-1-1A	1	C2	2	5.908	10.28	0.6020	0.0835	12	0.0070	AGT
UD-IPS-A-C2-1-2A	1	C2	2	5.976	10.32	0.6106	0.0846	12	0.0070	AGT
UD-IPS-A-C2-1-3A	1	C2	2	6.000	10.27	0.6154	0.0847	12	0.0071	AGT
UD-IPS-B-C1-1-1A	2	C1	1	6.108	10.67	0.6157	0.0854	12	0.0071	AGM
UD-IPS-B-C1-1-2A	2	C1	1	6.163	10.60	0.6218	0.0861	12	0.0072	AGB
UD-IPS-B-C1-1-3A	2	C1	1	5.967	10.45	0.6000	0.0862	12	0.0072	AGM
UD-IPS-B-C2-1-1A	2	C2	2	6.130	10.57	0.6228	0.0843	12	0.0070	AGB
UD-IPS-B-C2-1-2A	2	C2	2	5.999	10.41	0.6068	0.0849	12	0.0071	AGT
UD-IPS-B-C2-1-3A	2	C2	2	5.876	10.26	0.5926	0.0846	12	0.0070	AGB
UD-IPS-C-C1-1-1A	3	C1	1	6.160	10.84	0.6198	0.0852	12	0.0071	AGT
UD-IPS-C-C1-1-2A	3	C1	1	6.199	11.37	0.6233	0.0840	12	0.0070	AGM
UD-IPS-C-C1-1-3A	3	C1	1	6.387	11.16	0.6489	0.0828	12	0.0069	AGB
UD-IPS-C-C1-1-4A	3	C1	1	5.935	10.54	0.5941	0.0854	12	0.0071	AGB
UD-IPS-C-C2-1-1A	3	C2	2	5.957	10.38	0.5984	0.0863	12	0.0072	AGT
UD-IPS-C-C2-1-2A	3	C2	2	5.968	10.38	0.6022	0.0861	12	0.0072	AGB
UD-IPS-C-C2-1-3A	3	C2	2	6.019	10.44	0.6079	0.0866	12	0.0072	AGT
			Average	**6.023**	**10.51**	**0.6100**			**0.0071**	
			Standard Dev.	**0.1344**	**0.3165**	**0.01341**				
			Coeff. of Var. [%]	**2.231**	**3.012**	**2.198**				
			Min.	**5.876**	**10.21**	**0.5926**			**0.0069**	
			Max.	**6.387**	**11.37**	**0.6489**			**0.0072**	
			Number of Spec.	**19**	**19**	**19**			**19**	


In-Plane Shear Properties (IPS)--RTA (70°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7

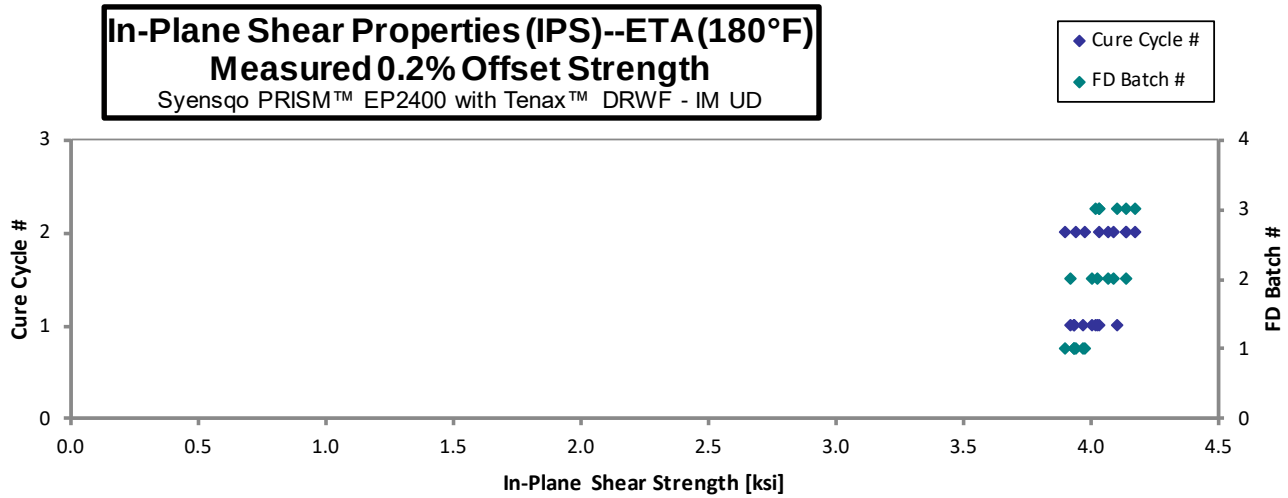

In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
2
4
6
8
10
12

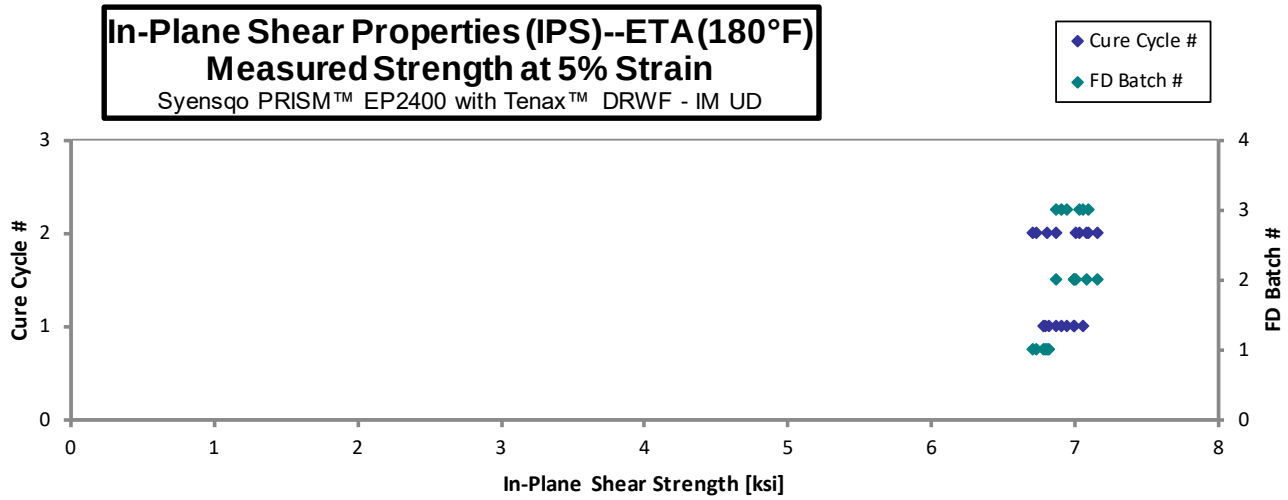

In-Plane Shear Properties (IPS)--RTA (70°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7

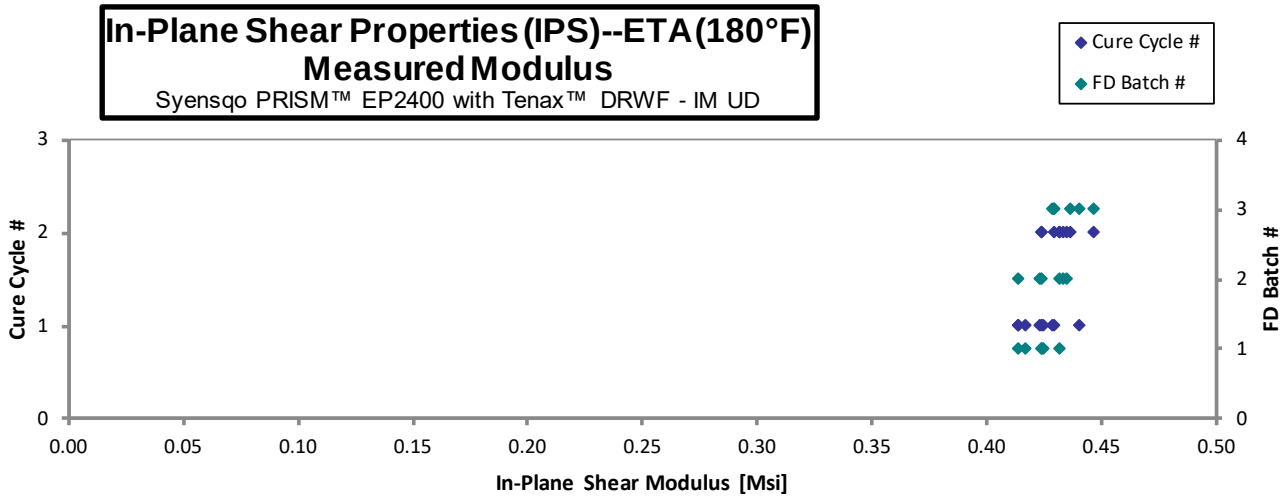
In-Plane Shear Properties (IPS)--ETA (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-IPS-A-C1-1-1C	1	C1	1	3.935	6.817	0.4139	0.0852	12	0.0071	AGT
UD-IPS-A-C1-1-2C	1	C1	1	3.972	6.784	0.4246	0.0842	12	0.0070	AGT
UD-IPS-A-C1-1-3C	1	C1	1	3.935	6.797	0.4166	0.0850	12	0.0071	AGT
UD-IPS-A-C2-1-1C	1	C2	2	3.942	6.734	0.4239	0.0844	12	0.0070	AGT
UD-IPS-A-C2-1-2C	1	C2	2	3.976	6.809	0.4318	0.0842	12	0.0070	AGM
UD-IPS-A-C2-1-3C	1	C2	2	3.898	6.706	0.4244	0.0864	12	0.0072	AGB
UD-IPS-B-C1-1-1C	2	C1	1	4.009	6.996	0.4235	0.0853	12	0.0071	AGT
UD-IPS-B-C1-1-2C	2	C1	1	3.924	6.868	0.4135	0.0864	12	0.0072	AGB
UD-IPS-B-C1-1-3C	2	C1	1	4.025	6.994	0.4241	0.0858	12	0.0072	AGT
UD-IPS-B-C2-1-1C	2	C2	2	4.143	7.164	0.4347	0.0834	12	0.0069	AGT
UD-IPS-B-C2-1-2C	2	C2	2	4.094	7.086	0.4336	0.0847	12	0.0071	AGT
UD-IPS-B-C2-1-3C	2	C2	2	4.073	7.005	0.4322	0.0844	12	0.0070	AGT
UD-IPS-C-C1-1-1C	3	C1	1	4.021	6.952	0.4288	0.0857	12	0.0071	AWT
UD-IPS-C-C1-1-2C	3	C1	1	4.104	7.054	0.4407	0.0851	12	0.0071	AGT
UD-IPS-C-C1-1-3C	3	C1	1	4.037	6.915	0.4295	0.0845	12	0.0070	AGM
UD-IPS-C-C2-1-1C	3	C2	2	4.172	7.101	0.4466	0.0856	12	0.0071	AGT
UD-IPS-C-C2-1-2C	3	C2	2	4.035	6.873	0.4292	0.0869	12	0.0072	AGT
UD-IPS-C-C2-1-3C	3	C2	2	4.140	7.036	0.4364	0.0858	12	0.0072	AGM

Average	**4.024**	**6.927**	**0.4282**	**0.0071**
Standard Dev.	**0.08309**	**0.1354**	**0.008769**	
Coeff. of Var. [%]	**2.065**	**1.954**	**2.048**	
Min.	**3.898**	**6.706**	**0.4135**	**0.0069**
Max.	**4.172**	**7.164**	**0.4466**	**0.0072**
Number of Spec.	**18**	**18**	**18**	**18**

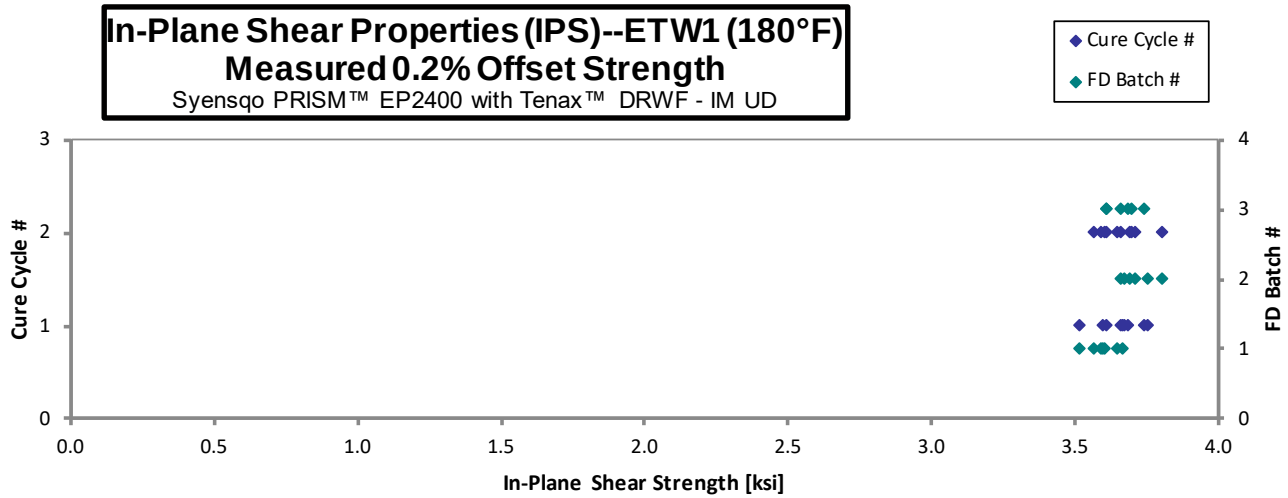

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
0
1
2
3
4

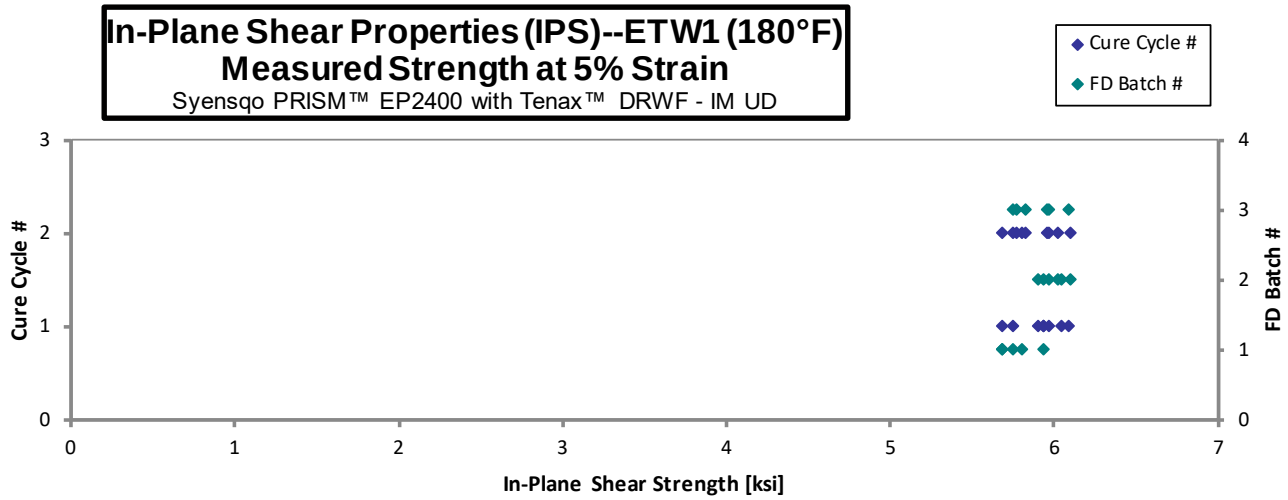

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7
8
0
1
2
3
4

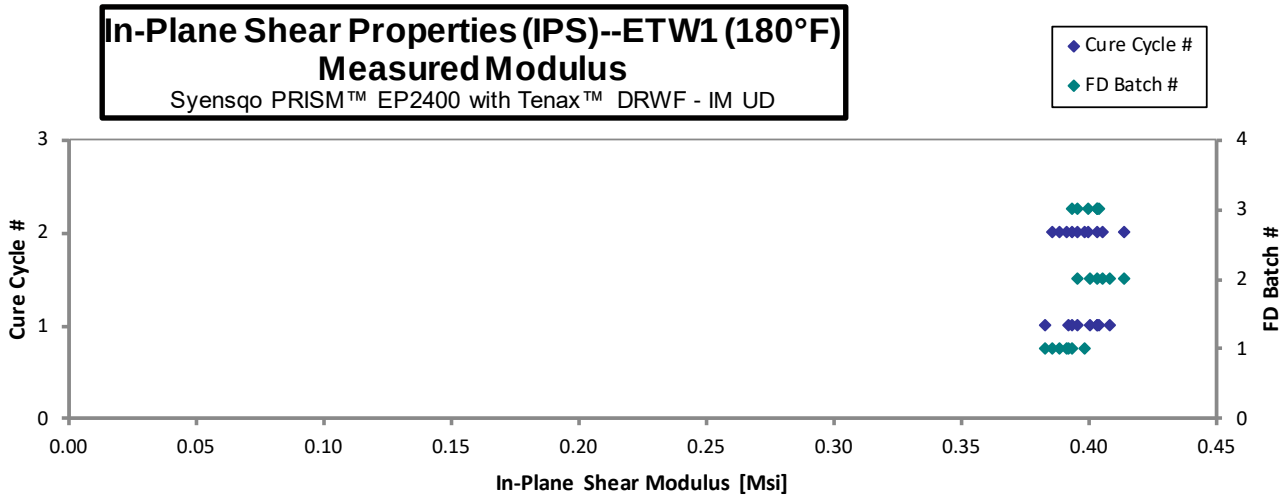

In-Plane Shear Properties (IPS)--ETA (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0.50

In-Plane Shear Properties (IPS)--ETW1 (180°F)
Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-IPS-A-C1-1-1D	1	C1	1	3.601		0.3918	0.0857	12	0.0071	AGT
UD-IPS-A-C1-1-2D	1	C1	1	3.669	5.938	0.3939	0.0837	12	0.0070	AGT
UD-IPS-A-C1-1-3D	1	C1	1	3.515	5.683	0.3830	0.0858	12	0.0072	AGT
UD-IPS-A-C2-1-1D	1	C2	2	3.606		0.3918	0.0853	12	0.0071	AGT
UD-IPS-A-C2-1-2D	1	C2	2	3.647	5.810	0.3988	0.0847	12	0.0071	AGM
UD-IPS-A-C2-1-3D	1	C2	2	3.592	5.754	0.3859	0.0854	12	0.0071	AGB
UD-IPS-A-C2-1-4D	1	C2	2	3.569	5.685	0.3887	0.0858	12	0.0072	AGT
UD-IPS-B-C1-1-1D	2	C1	1	3.676	5.934	0.4038	0.0846	12	0.0071	AGT
UD-IPS-B-C1-1-2D	2	C1	1	3.754	6.049	0.4082	0.0845	12	0.0070	AGT
UD-IPS-B-C1-1-3D	2	C1	1	3.665	5.908	0.4006	0.0846	12	0.0071	AGB
UD-IPS-B-C2-1-1D	2	C2	2	3.713	6.028	0.4053	0.0854	12	0.0071	AGT
UD-IPS-B-C2-1-2D	2	C2	2	3.692	5.972	0.3958	0.0853	12	0.0071	AGT
UD-IPS-B-C2-1-3D	2	C2	2	3.809	6.100	0.4143	0.0840	12	0.0070	AGM
UD-IPS-C-C1-1-1D	3	C1	1	3.611	5.751	0.3959	0.0855	12	0.0071	AGT
UD-IPS-C-C1-1-2D	3	C1	1	3.688	5.970	0.4033	0.0847	12	0.0071	AGT
UD-IPS-C-C1-1-3D	3	C1	1	3.743	6.089	0.4041	0.0840	12	0.0070	AGB
UD-IPS-C-C2-1-1D	3	C2	2	3.659	5.831	0.4000	0.0857	12	0.0071	AGT
UD-IPS-C-C2-1-2D	3	C2	2	3.700	5.953	0.4034	0.0855	12	0.0071	AGT
UD-IPS-C-C2-1-3D	3	C2	2	3.613	5.773	0.3936	0.0864	12	0.0072	AGT
			Average	**3.659**	**5.896**	**0.3980**			**0.0071**	
			Standard Dev.	**0.07062**	**0.1358**	**0.0080**				
			Coeff. of Var. [%]	**1.930**	**2.304**	**2.004**				
			Min.	**3.515**	**5.683**	**0.3830**			**0.0070**	
			Max.	**3.809**	**6.100**	**0.4143**			**0.0072**	
			Number of Spec.	**19**	**17**	**19**			**19**	


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured 0.2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0


In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Strength at 5% Strain
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
7

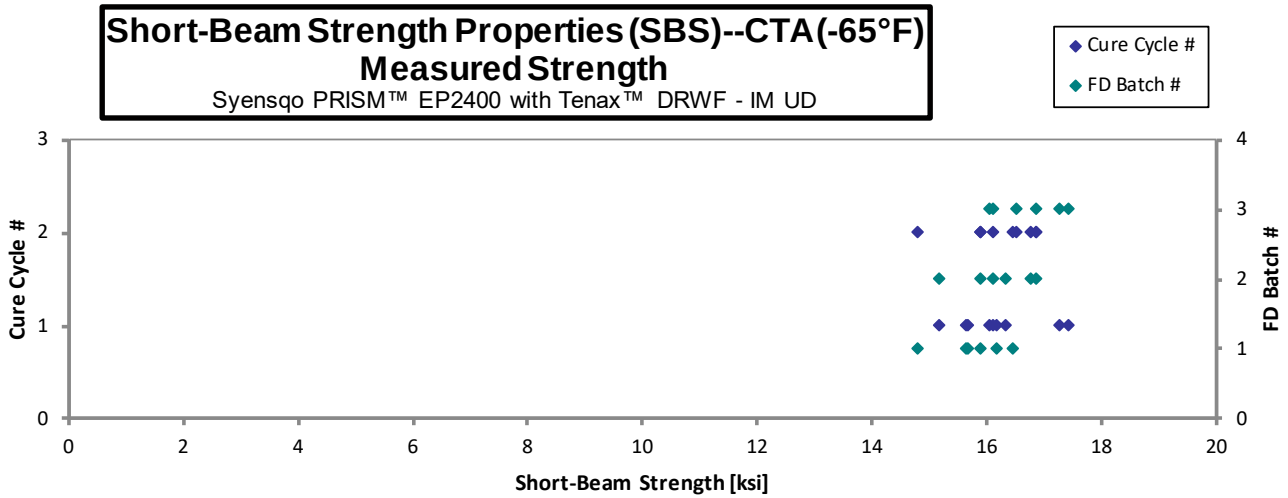

In-Plane Shear Properties (IPS)--ETW1 (180°F)
Measured Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
In-Plane Shear Modulus [Msi]
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
0.45
0
1
2
3
4

4.1.3.6UD Woven Short Beam Strength (UD-SBS)

Short-Beam Strength Properties (SBS)--CTA (-65°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-SBS-A-C1-1-1B	1	C1	1	15.69	0.2159	32	0.0067	INTERLAMINAR SHEAR
UD-SBS-A-C1-1-2B	1	C1	1	16.16	0.2102	32	0.0066	INTERLAMINAR SHEAR
UD-SBS-A-C1-1-3B	1	C1	1	15.65	0.2171	32	0.0068	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-2B	1	C2	2	15.89	0.2271	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-3B	1	C2	2	16.46	0.2281	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-4B	1	C2	2	14.79	0.2278	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-1B	2	C1	1	16.12	0.2283	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-2B	2	C1	1	15.18	0.2279	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-3B	2	C1	1	16.33	0.2267	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-1B	2	C2	2	15.89	0.2372	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-2B	2	C2	2	16.87	0.2359	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-3B	2	C2	2	16.78	0.2360	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-1B	3	C1	1	17.28	0.2276	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-2B	3	C1	1	17.43	0.2274	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-3B	3	C1	1	16.05	0.2278	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-1B	3	C2	2	16.13	0.2429	32	0.0076	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-2B	3	C2	2	16.53	0.2401	32	0.0075	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-4B	3	C2	2	16.86	0.2410	32	0.0075	INTERLAMINAR SHEAR

Average	**16.23**	**0.0072**
Standard Dev.	**0.6821**	
Coeff. of Var. [%]	**4.203**	
Min.	**14.79**	**0.0066**
Max.	**17.43**	**0.0076**
Number of Spec.	**18**	**18**

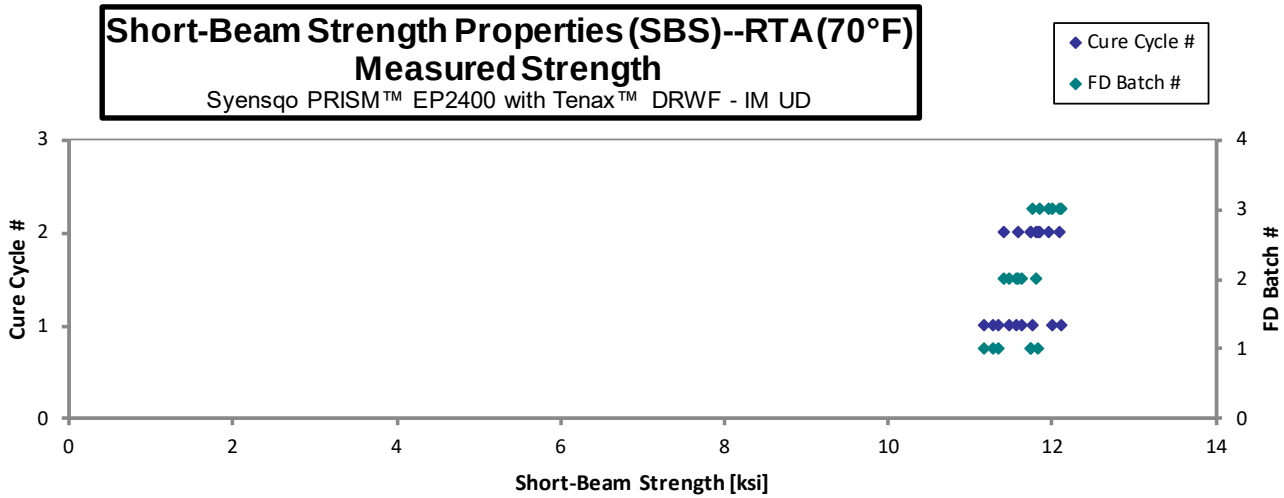

Short-Beam Strength Properties (SBS)--CTA (-65°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
0
2
4
6
8
10
12
14
16
18
20

Short-Beam Strength Properties (SBS)--RTA (70°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-SBS-A-C1-1-1A	1	C1	1	11.27	0.2071	32	0.0065	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
UD-SBS-A-C1-1-2A	1	C1	1	11.35	0.2162	32	0.0068	INTERLAMINAR SHEAR
UD-SBS-A-C1-1-3A	1	C1	1	11.17	0.2157	32	0.0067	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-1A	1	C2	2	11.83	0.2267	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-2A	1	C2	2	11.73	0.2270	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-4A	1	C2	2	11.73	0.2280	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-1A	2	C1	1	11.57	0.2302	32	0.0072	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-2A	2	C1	1	11.63	0.2278	32	0.0071	INTERLAMINAR SHEAR
UD-SBS-B-C1-1-3A	2	C1	1	11.47	0.2302	32	0.0072	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-1A	2	C2	2	11.42	0.2366	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-2A	2	C2	2	11.80	0.2366	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-B-C2-1-3A	2	C2	2	11.59	0.2377	32	0.0074	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-1A	3	C1	1	12.01	0.2310	32	0.0072	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-2A	3	C1	1	11.77	0.2303	32	0.0072	INTERLAMINAR SHEAR
UD-SBS-C-C1-1-3A	3	C1	1	12.11	0.2294	32	0.0072	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-1A	3	C2	2	11.96	0.2409	32	0.0075	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-2A	3	C2	2	12.08	0.2391	32	0.0075	INTERLAMINAR SHEAR
UD-SBS-C-C2-1-4A	3	C2	2	11.84	0.2402	32	0.0075	INTERLAMINAR SHEAR

Average	**11.69**	**0.0072**
Standard Dev.	**0.2748**	
Coeff. of Var. [%]	**2.351**	
Min.	**11.17**	**0.0065**
Max.	**12.11**	**0.0075**
Number of Spec.	**18**	**18**

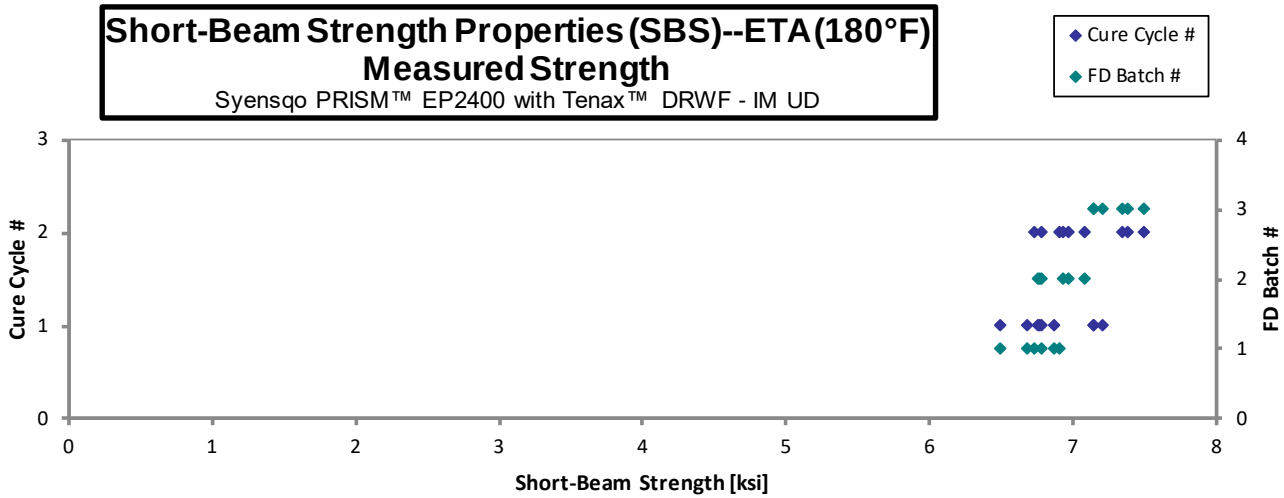

Short-Beam Strength Properties (SBS)--RTA (70°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
0
2
4
6
8
10
12
14

Short-Beam Strength Properties (SBS)--ETA (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-SBS-A-C1-1-1C	1	C1	1	6.869	0.2164	32	0.0068	INTERLAMINAR SHEAR
UD-SBS-A-C1-1-2C	1	C1	1	6.684	0.2148	32	0.0067	INTERLAMINAR SHEAR
UD-SBS-A-C1-1-3C	1	C1	1	6.497	0.2116	32	0.0066	INTERLAMINAR SHEAR
UD-SBS-A-C2-1-1C	1	C2	2	6.790	0.2275	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-3C	1	C2	2	6.738	0.2267	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-4C	1	C2	2	6.913	0.2290	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-2C	2	C1	1	6.782	0.2280	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-3C	2	C1	1	6.754	0.2279	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-4C	2	C1	1	6.770	0.2284	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C2-1-1C	2	C2	2	7.080	0.2333	32	0.0073	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C2-1-3C	2	C2	2	6.932	0.2339	32	0.0073	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C2-1-4C	2	C2	2	6.973	0.2340	32	0.0073	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C1-1-1C	3	C1	1	7.206	0.2286	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C1-1-2C	3	C1	1	7.142	0.2281	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
UD-SBS-C-C1-1-3C	3	C1	1	7.152	0.2283	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C2-1-2C	3	C2	2	7.351	0.2398	32	0.0075	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C2-1-3C	3	C2	2	7.503	0.2421	32	0.0076	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C2-1-4C	3	C2	2	7.390	0.2401	32	0.0075	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**6.974**	**0.0071**
Standard Dev.	**0.2728**	
Coeff. of Var. [%]	**3.911**	
Min.	**6.497**	**0.0066**
Max.	**7.503**	**0.0076**
Number of Spec.	**18**	**18**

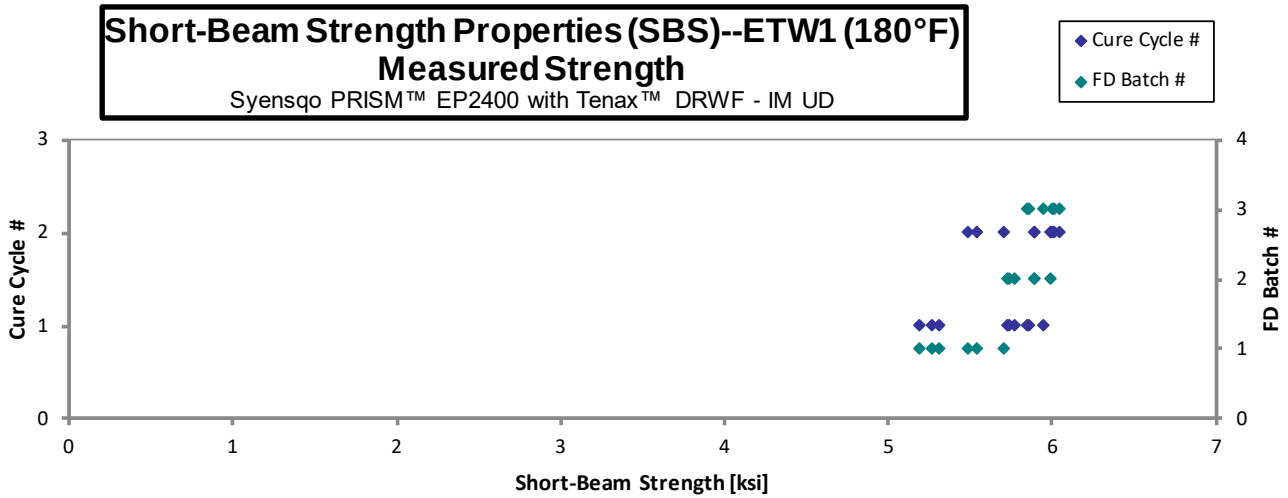

Short-Beam Strength Properties (SBS)--ETA (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7
8

Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Strength

Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-SBS-A-C1-1-1D	1	C1	1	5.308	0.2115	32	0.0066	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C1-1-2D	1	C1	1	5.185	0.2116	32	0.0066	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C1-1-3D	1	C1	1	5.272	0.2152	32	0.0067	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-1D	1	C2	2	5.705	0.2269	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-2D	1	C2	2	5.482	0.2302	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-3D	1	C2	2	5.544	0.2290	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-1D	2	C1	1	5.732	0.2302	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-2D	2	C1	1	5.741	0.2282	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C1-1-3D	2	C1	1	5.774	0.2294	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C2-1-1D	2	C2	2	5.892	0.2342	32	0.0073	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-B-C2-1-2D	2	C2	2	5.897	0.2365	32	0.0074	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
UD-SBS-B-C2-1-3D	2	C2	2	5.996	0.2345	32	0.0073	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C1-1-1D	3	C1	1	5.855	0.2277	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C1-1-2D	3	C1	1	5.844	0.2278	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C1-1-3D	3	C1	1	5.950	0.2281	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C2-1-1D	3	C2	2	6.005	0.2421	32	0.0076	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-C-C2-1-3D	3	C2	2	6.047	0.2415	32	0.0075	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
UD-SBS-C-C2-1-5D	3	C2	2	6.011	0.2416	32	0.0076	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION

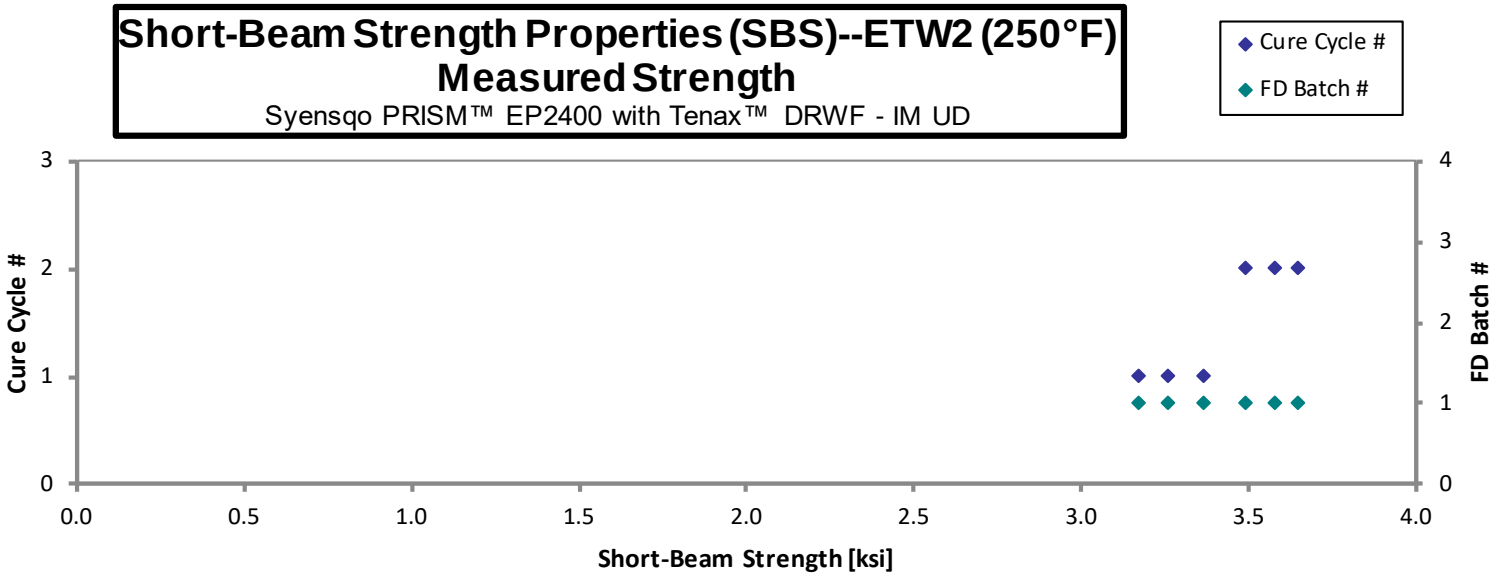
Average	**5.736**	**0.0072**
Standard Dev.	**0.2700**	
Coeff. of Var. [%]	**4.707**	
Min.	**5.185**	**0.0066**
Max.	**6.047**	**0.0076**
Number of Spec.	**18**	**18**


Short-Beam Strength Properties (SBS)--ETW1 (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7

Short-Beam Strength Properties (SBS)--ETW2 (250°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
UD-SBS-A-C1-1-3F	1	C1	1	3.175	0.2119	32	0.0066	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
UD-SBS-A-C1-1-4F	1	C1	1	3.259	0.2120	32	0.0066	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C1-1-5F	1	C1	1	3.364	0.2098	32	0.0066	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-1F	1	C2	2	3.650	0.2282	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-2F	1	C2	2	3.490	0.2283	32	0.0071	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
UD-SBS-A-C2-1-3F	1	C2	2	3.578	0.2290	32	0.0072	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**3.419**	**0.0069**
Standard Dev.	**0.1853**	
Coeff. of Var. [%]	**5.419**	
Min.	**3.175**	**0.0066**
Max.	**3.650**	**0.0072**
Number of Spec.	**6**	**6**



4.1.3.7UD Woven Flexural Strength (UD-FLEX)

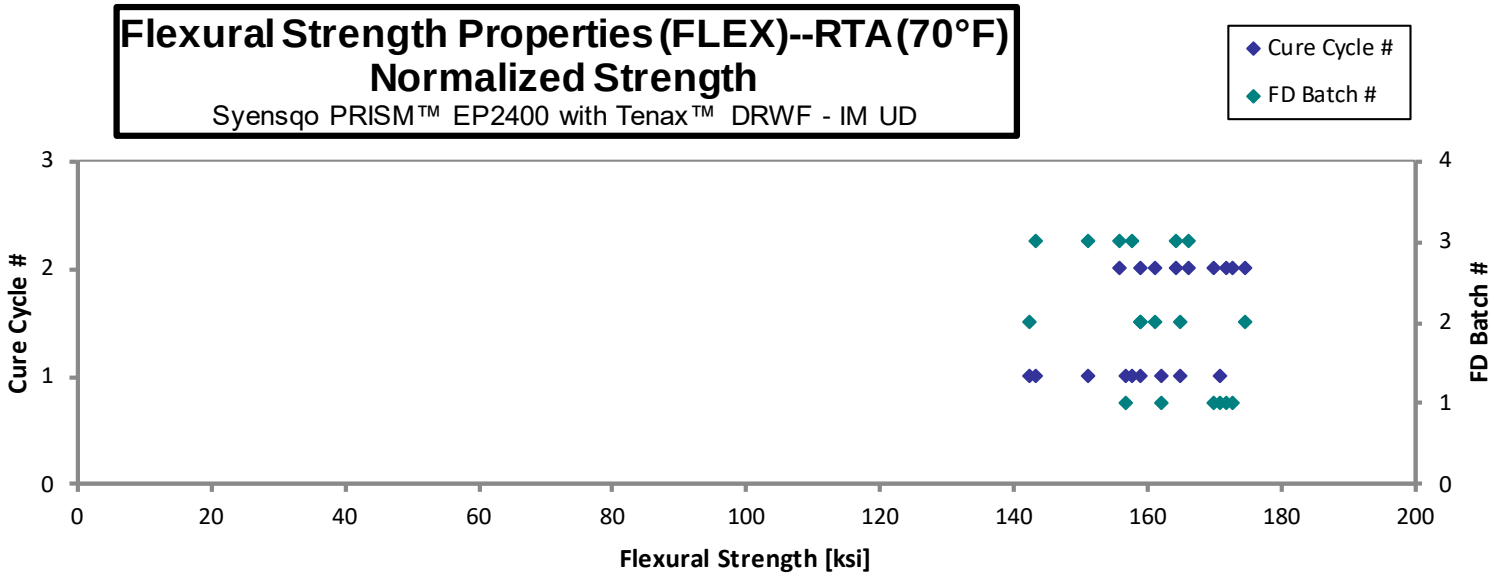
Flexural Strength Properties (FLEX)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
UD-FLEX-A-C1-L-1A	1	C1	1	177.5	0.1078	16	CAT	0.0067	170.8
UD-FLEX-A-C1-L-2A	1	C1	1	164.6	0.1102	16	CAT	0.0069	161.9
UD-FLEX-A-C1-L-3A	1	C1	1	158.2	0.1110	16	CAT	0.0069	156.8
UD-FLEX-A-C2-L-1A	1	C2	2	176.8	0.1088	16	CAT	0.0068	171.6
UD-FLEX-A-C2-L-2A	1	C2	2	176.1	0.1080	16	CAT	0.0068	169.9
UD-FLEX-A-C2-L-3A	1	C2	2	178.0	0.1087	16	CAT	0.0068	172.6
UD-FLEX-B-C1-L-1A	2	C1	1	157.5	0.1131	16	CAT	0.0071	159.1
UD-FLEX-B-C1-L-2A	2	C1	1	165.5	0.1116	16	CAT	0.0070	164.9
UD-FLEX-B-C1-L-3A	2	C1	1	141.7	0.1126	16	CAT	0.0070	142.4
UD-FLEX-B-C2-L-1A	2	C2	2	172.2	0.1135	16	CAT	0.0071	174.6
UD-FLEX-B-C2-L-2A	2	C2	2	158.1	0.1142	16	CAT	0.0071	161.3
UD-FLEX-B-C2-L-3A	2	C2	2	157.8	0.1129	16	CAT	0.0071	159.0
UD-FLEX-C-C1-L-1A	3	C1	1	142.6	0.1125	16	CAT	0.0070	143.2
UD-FLEX-C-C1-L-2A	3	C1	1	159.3	0.1108	16	CAT	0.0069	157.5
UD-FLEX-C-C1-L-3A	3	C1	1	154.7	0.1093	16	CAT	0.0068	151.0
UD-FLEX-C-C2-L-1A	3	C2	2	165.5	0.1113	16	CAT	0.0070	164.4
UD-FLEX-C-C2-L-2A	3	C2	2	157.5	0.1108	16	CAT	0.0069	155.8
UD-FLEX-C-C2-L-3A	3	C2	2	168.5	0.1104	16	CAT	0.0069	166.0

Average	**162.9**	
Standard Dev.	**10.87**	
Coeff. of Var. [%]	**6.675**	
Min.	**141.7**	
Max.	**178.0**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0069**	**161.3**
$Standard\ Dev._{norm}$		**9.34**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**5.792**
Min.	**0.0067**	**142.4**
Max.	**0.0071**	**174.6**
Number of Spec.	**18**	**18**


Flexural Strength Properties (FLEX)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRWF - IM UD
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Flexural Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3
4

4.2 Individual Laminate Raw Data

Laminate panels were done using a combination of the non-crimp and woven fabric forms to produce the desired quasi, soft, and hard orientation. See Section 1.4.3 and Table 1-4 for description.

4.2.1 Unnotched Tension 1 (UNT1)

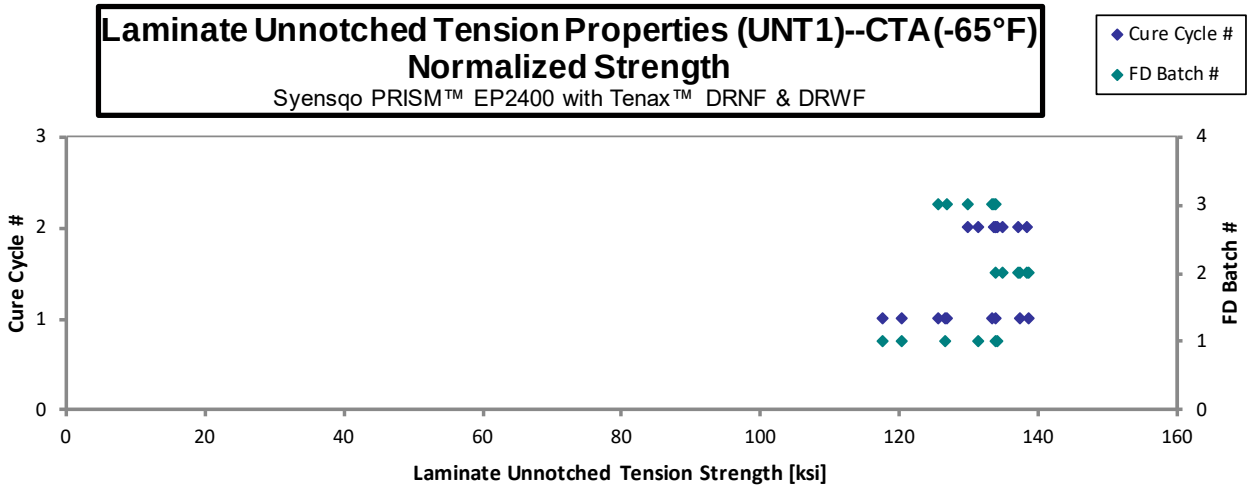
Laminate Unnotched Tension Properties (UNT1)--CTA (-65°F) Strength & Modulus

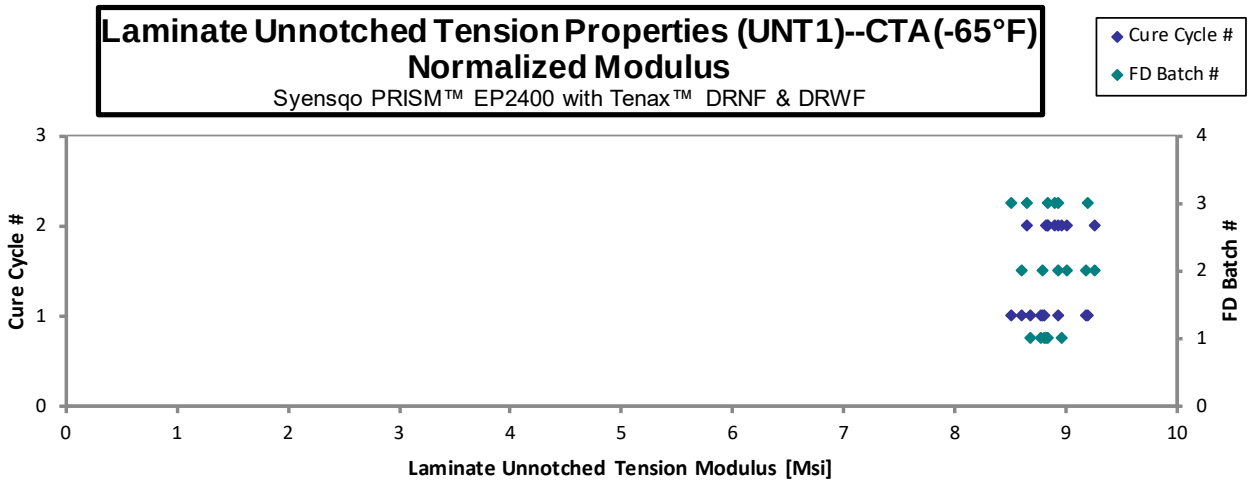
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT1-A-C1-1-1B	1	C1	1	121.4	8.323	0.1168	8	M(A,L)GT, M(A,L)WB	0.0146	126.6	8.678
M-UNT1-A-C1-1-2B	1	C1	1	113.5	8.481	0.1160	8	M(A,L)WB	0.0145	117.5	8.781
M-UNT1-A-C1-1-3B	1	C1	1	115.5	8.455	0.1167	8	M(A,L)WB	0.0146	120.3	8.806
M-UNT1-A-C2-1-1B	1	C2	2	125.6	8.276	0.1194	8	M(A,L)GM	0.0149	133.8	8.820
M-UNT1-A-C2-1-2B	1	C2	2	123.1	8.270	0.1197	8	M(A,L)GM	0.0150	131.5	8.839
M-UNT1-A-C2-1-3B	1	C2	2	124.2	8.299	0.1211	8	M(A,L)GB	0.0151	134.2	8.969
M-UNT1-B-C1-1-1B	2	C1	1	132.2	8.753	0.1176	8	M(A,L)GM	0.0147	138.7	9.187
M-UNT1-B-C1-1-2B	2	C1	1	130.0	8.142	0.1184	8	M(A,L)AB, M(A,L)WT	0.0148	137.4	8.603
M-UNT1-B-C1-1-3B	2	C1	1	126.8	8.323	0.1183	8	M(A,L)GM	0.0148	134.0	8.791
M-UNT1-B-C2-1-1B	2	C2	2	127.8	8.639	0.1202	8	M(A,L)GM	0.0150	137.1	9.267
M-UNT1-B-C2-1-2B	2	C2	2	126.5	8.445	0.1196	8	M(A,L)GM	0.0149	135.0	9.015
M-UNT1-B-C2-1-3B	2	C2	2	129.5	8.352	0.1198	8	M(A,L)GM	0.0150	138.5	8.932
M-UNT1-C-C1-1-1B	3	C1	1	116.4	8.279	0.1209	8	M(A,L)GT, M(A,L)WB	0.0151	125.6	8.936
M-UNT1-C-C1-1-2B	3	C1	1	123.2	7.859	0.1212	8	M(A,L)GT, M(A,L)WB	0.0152	133.3	8.504
M-UNT1-C-C1-1-3B	3	C1	1	116.0	8.425	0.1224	8	M(A,L)GT, M(A,L)WB	0.0153	126.8	9.209
M-UNT1-C-C2-1-1B	3	C2	2	126.0	8.317	0.1191	8	M(A,L)GM	0.0149	134.0	8.847
M-UNT1-C-C2-1-2B	3	C2	2	121.2	8.312	0.1200	8	M(A,L)GM	0.0150	129.9	8.905
M-UNT1-C-C2-1-3B	3	C2	2	126.8	8.205	0.1182	8	M(A,L)GT	0.0148	133.8	8.657

Average	**123.6**	**8.342**	**Average$_{norm}$**	**0.0149**	**131.6**	**8.875**
Standard Dev.	**5.381**	**0.1905**	**Standard Dev.$_{norm}$**		**6.017**	**0.2061**
Coeff. of Var. [%]	**4.352**	**2.284**	**Coeff. of Var. [%]$_{norm}$**		**4.574**	**2.322**
Min.	**113.5**	**7.859**	**Min.**	**0.0145**	**117.5**	**8.504**
Max.	**132.2**	**8.753**	**Max.**	**0.0153**	**138.7**	**9.267**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT1)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT1)--CTA(-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
10
0
1
2
3
4

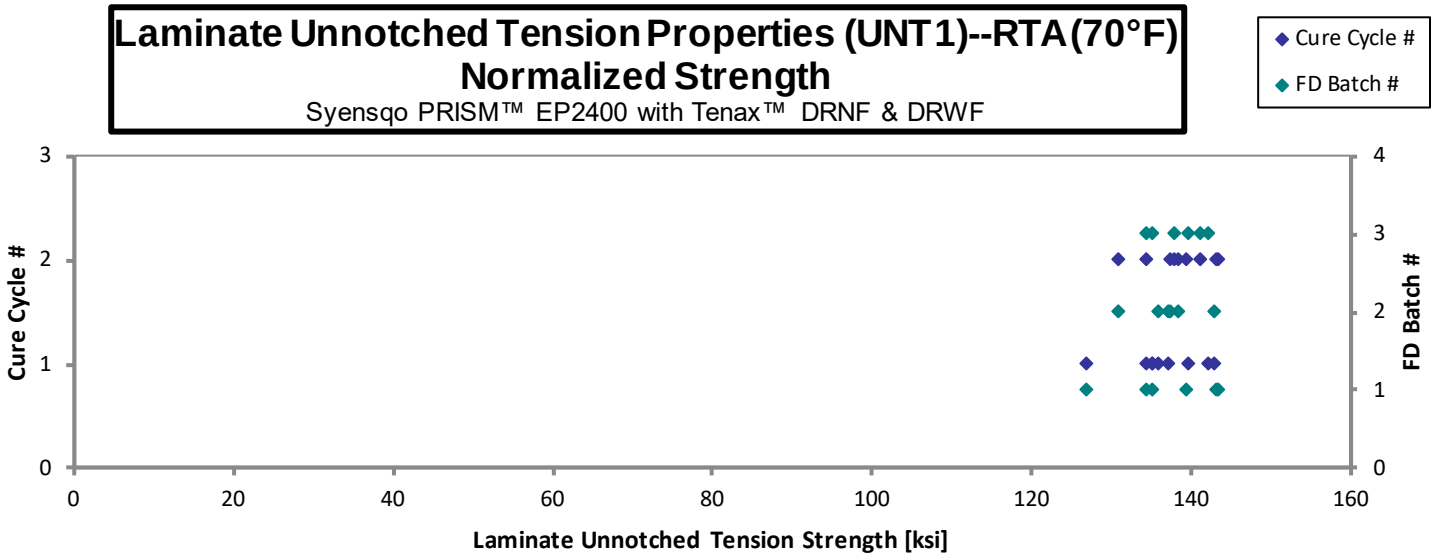
Laminate Unnotched Tension Properties (UNT1)--RTA (70°F) Strength & Modulus

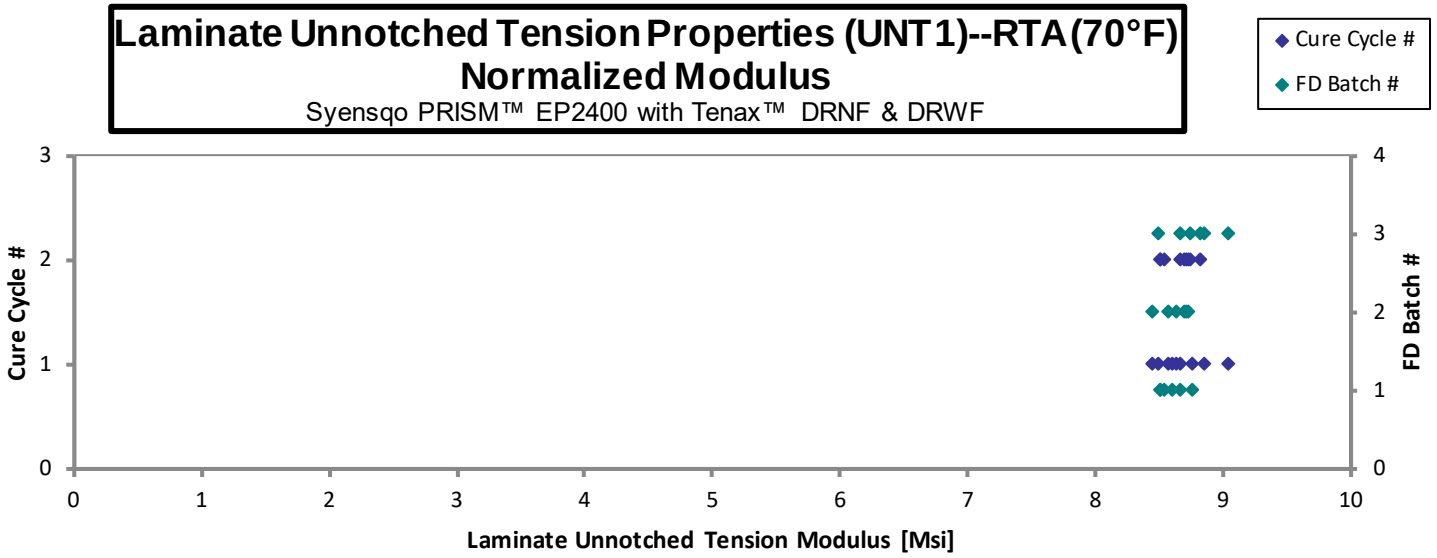
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT1-A-C1-1-1A	1	C1	1	121.4	8.221	0.1172	8	M(A,L)WB, M(A,L)GT	0.0146	127.0	8.602
M-UNT1-A-C1-1-2A	1	C1	1	129.6	8.307	0.1169	8	M(A,L)GB, LGT	0.0146	135.3	8.670
M-UNT1-A-C1-1-3A	1	C1	1	127.9	8.326	0.1178	8	M(A,L)WB, M(A,L)GT	0.0147	134.5	8.759
M-UNT1-A-C2-1-1A	1	C2	2	135.4	8.032	0.1187	8	LWB, M(A,L)GT	0.0148	143.5	8.510
M-UNT1-A-C2-1-2A	1	C2	2	135.3	8.047	0.1185	8	LWB, M(A,L)WT	0.0148	143.2	8.516
M-UNT1-A-C2-1-3A	1	C2	2	131.7	8.070	0.1185	8	AGB, M(A,L)WT	0.0148	139.4	8.539
M-UNT1-B-C1-1-1A	2	C1	1	134.8	8.140	0.1189	8	M(A,L)WB, M(A,L)WT	0.0149	143.0	8.639
M-UNT1-B-C1-1-2A	2	C1	1	129.2	8.084	0.1188	8	M(A,L)GM	0.0149	137.1	8.575
M-UNT1-B-C1-1-3A	2	C1	1	128.9	8.011	0.1182	8	M(A,L)WB, LWT	0.0148	136.0	8.452
M-UNT1-B-C2-1-1A	2	C2	2	129.8	8.173	0.1195	8	M(A,L)WT, LWB, DGM	0.0149	138.5	8.722
M-UNT1-B-C2-1-2A	2	C2	2	127.9	8.136	0.1203	8	M(A,L)WT, LWB, DGM	0.0150	137.4	8.737
M-UNT1-B-C2-1-3A	2	C2	2	121.8	8.092	0.1204	8	M(A,L)WT, LWB, DGM	0.0151	131.0	8.702
M-UNT1-C-C1-1-1A	3	C1	1	128.7	8.149	0.1217	8	LWB, LGT	0.0152	139.8	8.851
M-UNT1-C-C1-1-2A	3	C1	1	124.0	7.787	0.1222	8	M(A,L)WB, M(A,L)WT	0.0153	135.3	8.499
M-UNT1-C-C1-1-3A	3	C1	1	130.9	8.335	0.1216	8	M(A,L)WB, M(A,L)WT	0.0152	142.1	9.046
M-UNT1-C-C2-1-1A	3	C2	2	130.2	8.173	0.1187	8	M(A,L)WB, LWT	0.0148	138.0	8.661
M-UNT1-C-C2-1-2A	3	C2	2	127.0	8.325	0.1186	8	M(A,L)GM	0.0148	134.5	8.818
M-UNT1-C-C2-1-3A	3	C2	2	132.2	8.199	0.1195	8	M(A,L)GM	0.0149	141.1	8.751

Average	**129.3**	**8.145**	**$Average_{norm}$**	**0.0149**	**137.6**	**8.669**
Standard Dev.	**4.048**	**0.1368**	**$Standard\ Dev._{norm}$**		**4.373**	**0.1488**
Coeff. of Var. [%]	**3.132**	**1.680**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.178**	**1.716**
Min.	**121.4**	**7.787**	**Min.**	**0.0146**	**127.0**	**8.452**
Max.	**135.4**	**8.335**	**Max.**	**0.0153**	**143.5**	**9.046**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT1)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
20
40
60
80
100
120
140
160


Laminate Unnotched Tension Properties (UNT1)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
10

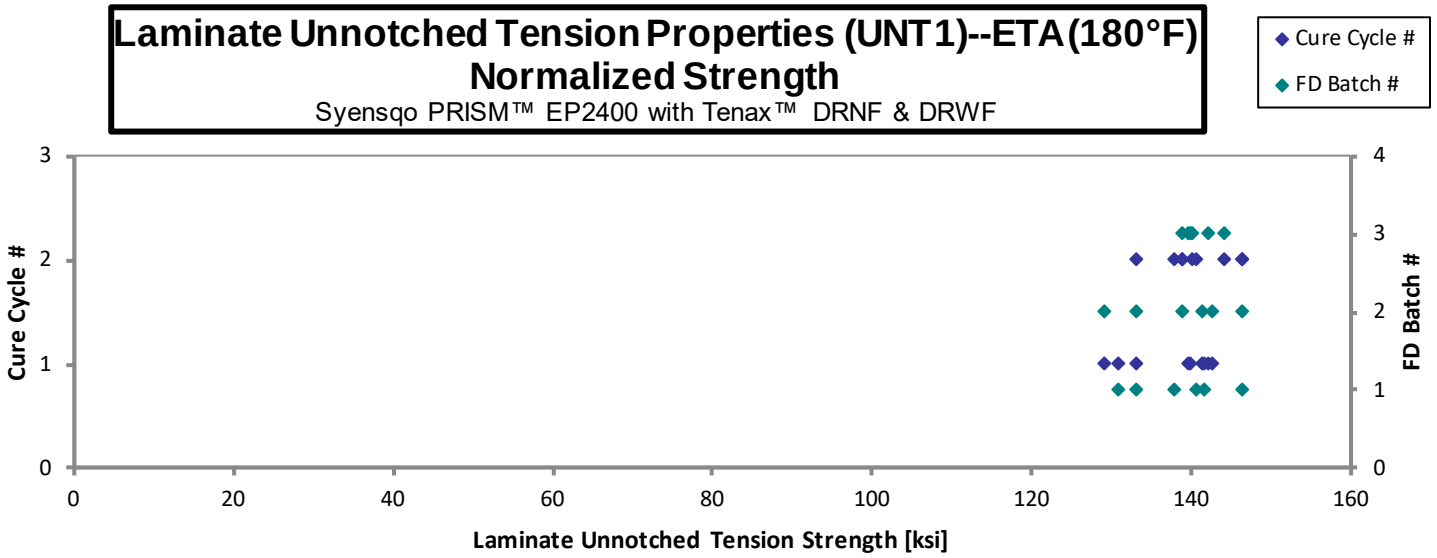
Laminate Unnotched Tension Properties (UNT1)--ETA (180°F) Strength & Modulus

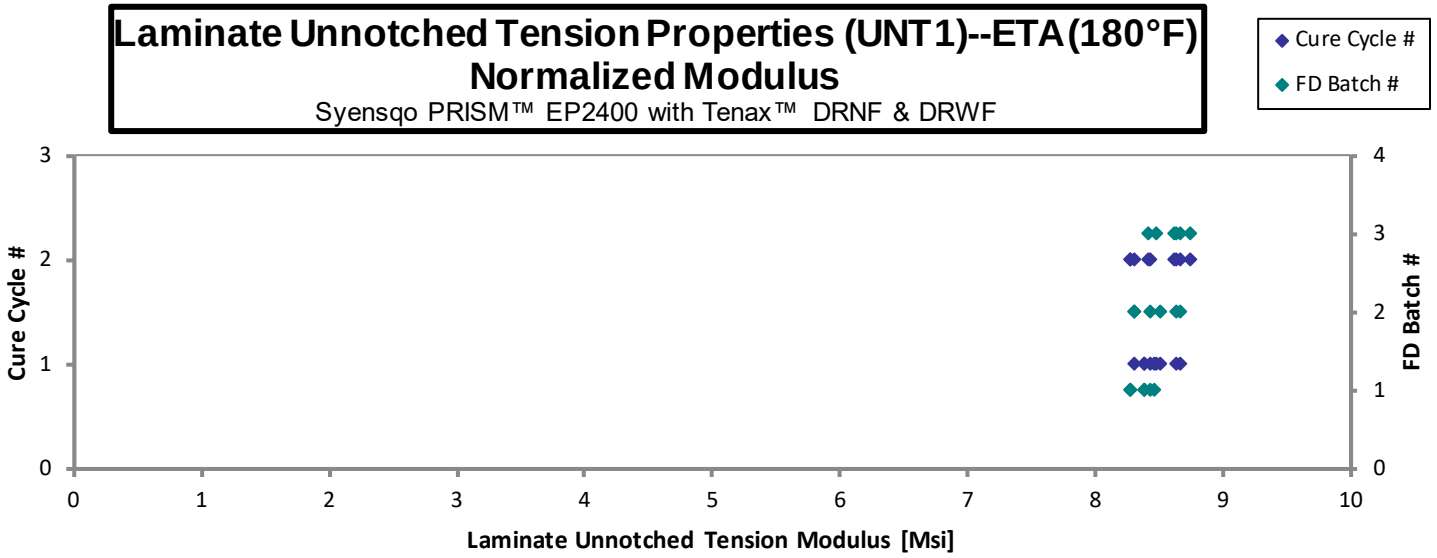
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT1-A-C1-1-1C	1	C1	1	125.9	8.149	0.1164	8	M(A,L)GM	0.0146	130.9	8.469
M-UNT1-A-C1-1-2C	1	C1	1	128.8	8.111	0.1159	8	M(A,L)GM	0.0145	133.3	8.391
M-UNT1-A-C1-1-3C	1	C1	1	137.0	8.107	0.1160	8	M(A,L)GM	0.0145	141.8	8.393
M-UNT1-A-C2-1-1C	1	C2	2	129.2	7.753	0.1196	8	M(A,L)GM	0.0149	137.9	8.278
M-UNT1-A-C2-1-2C	1	C2	2	132.6	7.945	0.1188	8	M(A,L)WB	0.0148	140.6	8.427
M-UNT1-A-C2-1-3C	1	C2	2	137.9	7.793	0.1189	8	M(A,L)WB	0.0149	146.4	8.275
M-UNT1-B-C1-1-1C	2	C1	1	132.5	7.786	0.1196	8	M(A,L)GM	0.0149	141.5	8.312
M-UNT1-B-C1-1-2C	2	C1	1	121.9	8.039	0.1186	8	M(A,L)GM	0.0148	129.1	8.511
M-UNT1-B-C1-1-3C	2	C1	1	133.3	7.880	0.1199	8	M(A,L)GM	0.0150	142.6	8.435
M-UNT1-B-C2-1-1C	2	C2	2	125.1	8.138	0.1192	8	M(A,D,L)GM	0.0149	133.2	8.661
M-UNT1-B-C2-1-2C	2	C2	2	129.8	8.066	0.1199	8	M(A,L)GM	0.0150	139.0	8.634
M-UNT1-B-C2-1-3C	2	C2	2	137.6	7.801	0.1192	8	M(A,L)WT, LWB	0.0149	146.5	8.301
M-UNT1-C-C1-1-1C	3	C1	1	131.7	7.996	0.1210	8	M(A,L)WT,M(A,L) GM	0.0151	142.2	8.635
M-UNT1-C-C1-1-2C	3	C1	1	127.2	7.884	0.1231	8	M(A,L)GM	0.0154	139.8	8.664
M-UNT1-C-C1-1-3C	3	C1	1	130.1	7.880	0.1205	8	M(A,L)GM, LWT	0.0151	140.0	8.480
M-UNT1-C-C2-1-1C	3	C2	2	136.2	7.941	0.1187	8	AGM	0.0148	144.3	8.414
M-UNT1-C-C2-1-2C	3	C2	2	130.2	8.091	0.1194	8	M(A,L)GM	0.0149	138.8	8.624
M-UNT1-C-C2-1-3C	3	C2	2	131.6	8.195	0.1195	8	M(A,L)GB, AGM	0.0149	140.3	8.740

Average	**131.0**	**7.975**	**Average$_{norm}$**	**0.0149**	**139.3**	**8.480**
Standard Dev.	**4.426**	**0.1422**	**Standard Dev.$_{norm}$**		**4.924**	**0.1479**
Coeff. of Var. [%]	**3.377**	**1.783**	**Coeff. of Var. [%]$_{norm}$**		**3.534**	**1.744**
Min.	**121.9**	**7.753**	**Min.**	**0.0145**	**129.1**	**8.275**
Max.	**137.9**	**8.195**	**Max.**	**0.0154**	**146.5**	**8.740**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT1)--ETA(180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
20
40
60
80
100
120
140
160


Laminate Unnotched Tension Properties (UNT1)--ETA(180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
10

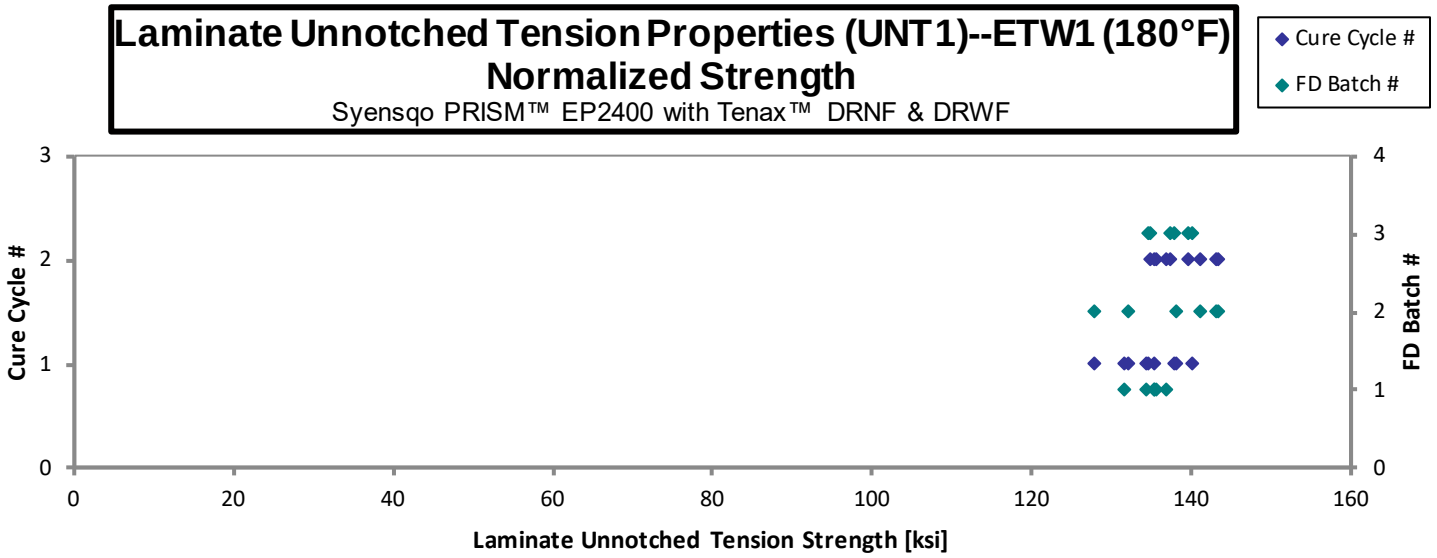
Laminate Unnotched Tension Properties (UNT1)--ETW1 (180°F) Strength & Modulus

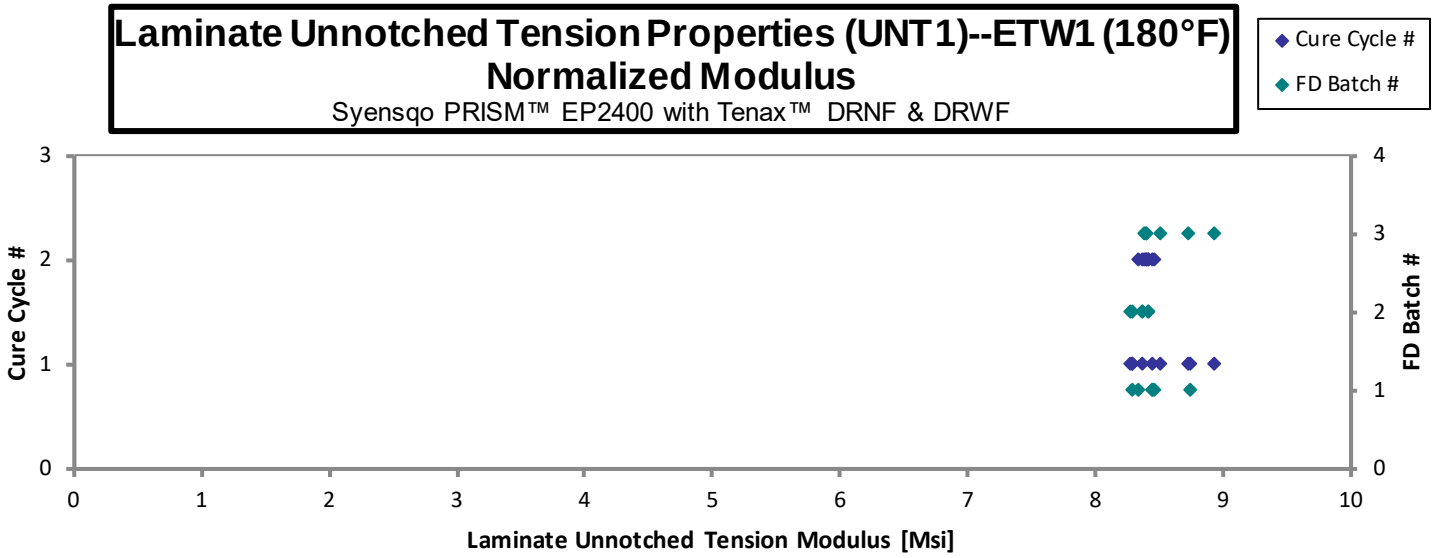
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT1-A-C1-1-1D	1	C1	1	130.4	8.422	0.1164	8	M(A,D,L)WB	0.0145	135.5	8.749
M-UNT1-A-C1-1-2D	1	C1	1	126.8	8.139	0.1162	8	M(A,D,L)WB	0.0145	131.6	8.446
M-UNT1-A-C1-1-3D	1	C1	1	130.0	8.021	0.1159	8	M(A,D,L)WT	0.0145	134.5	8.299
M-UNT1-A-C2-1-1D	1	C2	2	127.1	7.918	0.1196	8	M(A,D)WT, AWB	0.0150	135.8	8.456
M-UNT1-A-C2-1-2D	1	C2	2	126.0	7.870	0.1205	8	M(D,A,L)GM	0.0151	135.5	8.469
M-UNT1-A-C2-1-3D	1	C2	2	128.8	7.844	0.1190	8	M(D.A,L)WT , M(A,L)WB	0.0149	136.8	8.333
M-UNT1-B-C1-1-1D	2	C1	1	120.3	7.787	0.1191	8	M(A,D,L)GB	0.0149	127.8	8.277
M-UNT1-B-C1-1-2D	2	C1	1	124.7	7.820	0.1188	8	M(A,D,L)GM	0.0149	132.3	8.294
M-UNT1-B-C1-1-3D	2	C1	1	130.4	7.891	0.1188	8	M(A,L)GB	0.0149	138.3	8.370
M-UNT1-B-C2-1-1D	2	C2	2	136.3	7.971	0.1177	8	M(A,L)GM	0.0147	143.2	8.374
M-UNT1-B-C2-1-2D	2	C2	2	133.1	7.936	0.1187	8	M(A,L)WT	0.0148	141.1	8.413
M-UNT1-B-C2-1-3D	2	C2	2	133.9	7.853	0.1201	8	M(A,L)GM	0.0150	143.5	8.420
M-UNT1-C-C1-1-1D	3	C1	1	126.1	7.786	0.1225	8	M(A,L)GT	0.0153	138.0	8.515
M-UNT1-C-C1-1-2D	3	C1	1	128.8	8.198	0.1220	8	M(A,L)GB	0.0153	140.3	8.930
M-UNT1-C-C1-1-3D	3	C1	1	123.0	7.971	0.1227	8	M(A,L)GT	0.0153	134.7	8.730
M-UNT1-C-C2-1-1D	3	C2	2	128.4	7.839	0.1200	8	M(A,L)GB	0.0150	137.5	8.396
M-UNT1-C-C2-1-2D	3	C2	2	127.5	7.923	0.1186	8	M(A,L)WB, LWT	0.0148	135.0	8.390
M-UNT1-C-C2-1-3D	3	C2	2	130.8	7.873	0.1196	8	M(A,L)GM	0.0150	139.7	8.409

Average	**128.5**	**7.948**	**$Average_{norm}$**	**0.0149**	**136.7**	**8.459**
Standard Dev.	**3.888**	**0.1620**	**$Standard\ Dev._{norm}$**		**4.022**	**0.1738**
Coeff. of Var. [%]	**3.026**	**2.039**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.941**	**2.055**
Min.	**120.3**	**7.786**	**Min.**	**0.0145**	**127.8**	**8.277**
Max.	**136.3**	**8.422**	**Max.**	**0.0153**	**143.5**	**8.930**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT1)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT1)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
10
0
1
2
3
4

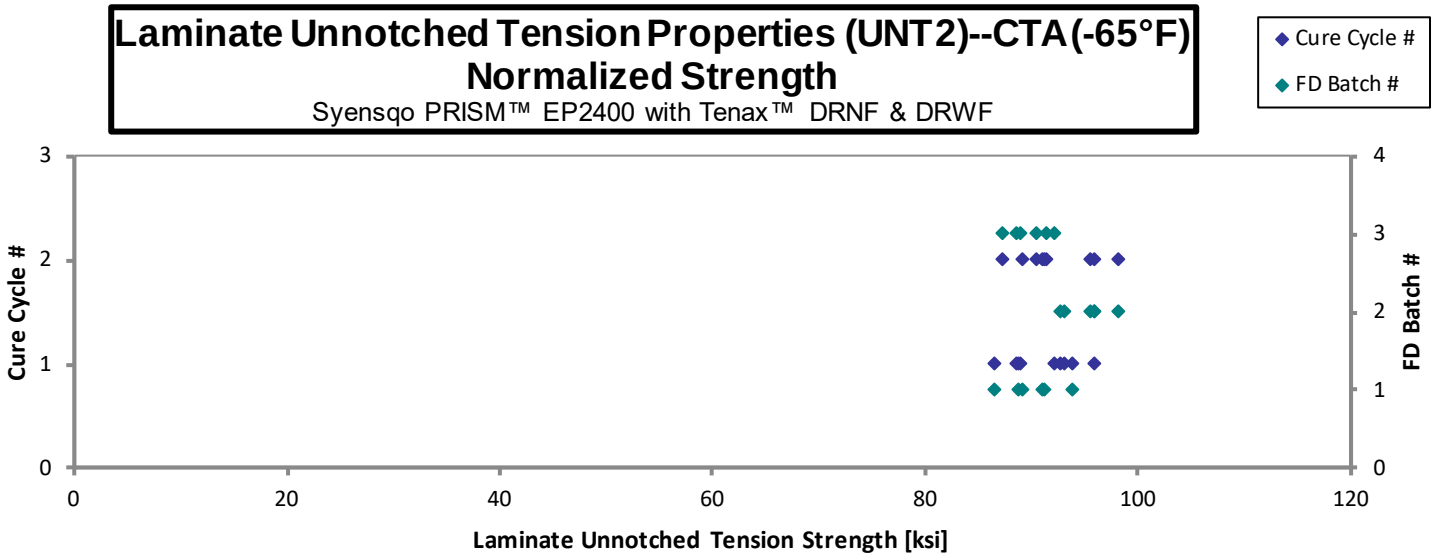
4.2.2 Unnotched Tension 2 (UNT2)

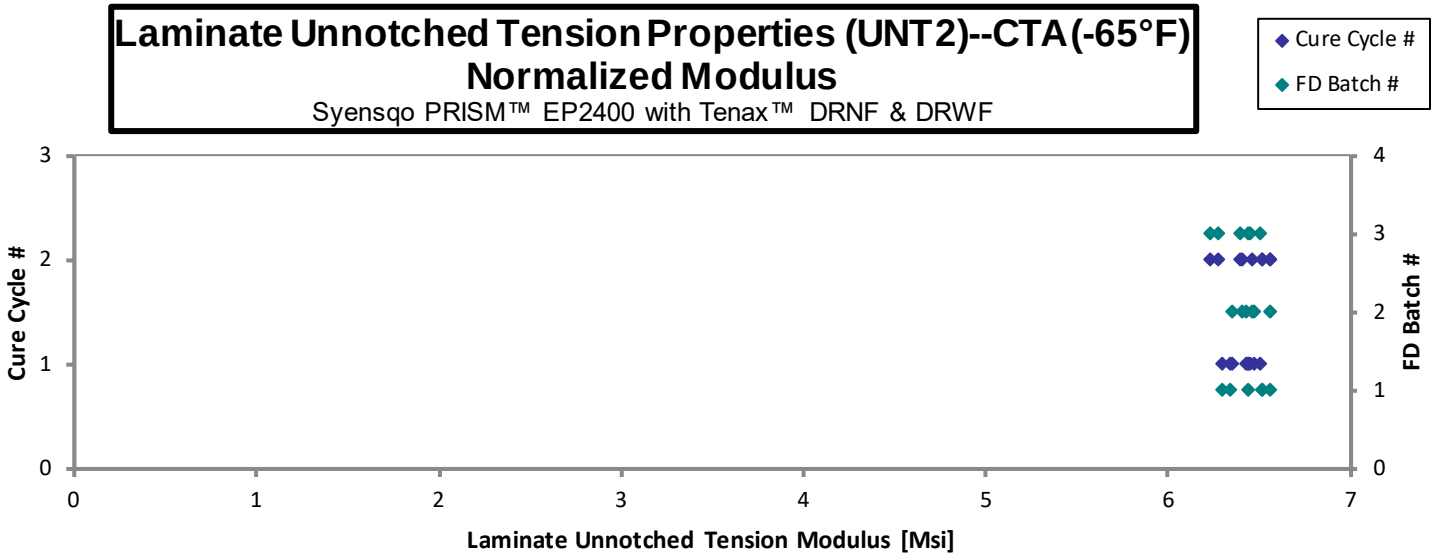
Laminate Unnotched Tension Properties (UNT2)--CTA
(-65°F) Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT2-A-C1-1-1B	1	C1	1	90.34	6.056	0.1164	8	M(A,L)GM	0.0146	93.88	6.294
M-UNT2-A-C1-1-2B	1	C1	1	85.47	6.198	0.1165	8	M(A,L)GT	0.0146	88.88	6.445
M-UNT2-A-C1-1-3B	1	C1	1	81.01	5.935	0.1197	8	M(A,L)WT	0.0150	86.59	6.344
M-UNT2-A-C2-1-1B	1	C2	2	84.43	6.207	0.1183	8	M(A,L)GM	0.0148	89.21	6.558
M-UNT2-A-C2-1-2B	1	C2	2	86.31	6.155	0.1185	8	M(A,L)GT	0.0148	91.32	6.513
M-UNT2-A-C2-1-3B	1	C2	2	86.17	6.159	0.1184	8	M(A,L)WB	0.0148	91.10	6.512
M-UNT2-B-C1-1-1B	2	C1	1	92.14	6.222	0.1166	8	M(A,L)GT	0.0146	95.89	6.476
M-UNT2-B-C1-1-2B	2	C1	1	90.50	6.258	0.1152	8	M(A,L)GT	0.0144	93.06	6.435
M-UNT2-B-C1-1-3B	2	C1	1	88.67	6.078	0.1171	8	M(A,L)GB	0.0146	92.68	6.353
M-UNT2-B-C2-1-1B	2	C2	2	94.11	6.443	0.1141	8	M(A,L)GT	0.0143	95.89	6.565
M-UNT2-B-C2-1-2B	2	C2	2	96.13	6.268	0.1145	8	M(A,L)GT	0.0143	98.23	6.405
M-UNT2-B-C2-1-3B	2	C2	2	93.15	6.302	0.1148	8	M(A,L)GT	0.0144	95.48	6.460
M-UNT2-C-C1-1-1B	3	C1	1	86.69	6.057	0.1191	8	M(A,L)GB	0.0149	92.16	6.439
M-UNT2-C-C1-1-2B	3	C1	1	84.81	6.156	0.1174	8	M(A,L)GM	0.0147	88.93	6.454
M-UNT2-C-C1-1-3B	3	C1	1	83.44	6.123	0.1190	8	M(A,L)GM	0.0149	88.68	6.507
M-UNT2-C-C2-1-1B	3	C2	2	85.32	5.872	0.1188	8	M(A,L)GM	0.0149	90.51	6.230
M-UNT2-C-C2-1-2B	3	C2	2	86.58	5.947	0.1182	8	M(A,L)WT	0.0148	91.39	6.277
M-UNT2-C-C2-1-3B	3	C2	2	82.88	6.068	0.1181	8	M(A,L)GT	0.0148	87.36	6.397

Average	**87.67**	**6.139**	**$Average_{norm}$**	**0.0147**	**91.74**	**6.426**
Standard Dev.	**4.198**	**0.1410**	**$Standard\ Dev._{norm}$**		**3.234**	**0.09540**
Coeff. of Var. [%]	**4.788**	**2.296**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.525**	**1.485**
Min.	**81.01**	**5.872**	**Min.**	**0.0143**	**86.59**	**6.230**
Max.	**96.13**	**6.443**	**Max.**	**0.0150**	**98.23**	**6.565**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT2)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT2)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
0
1
2
3
4

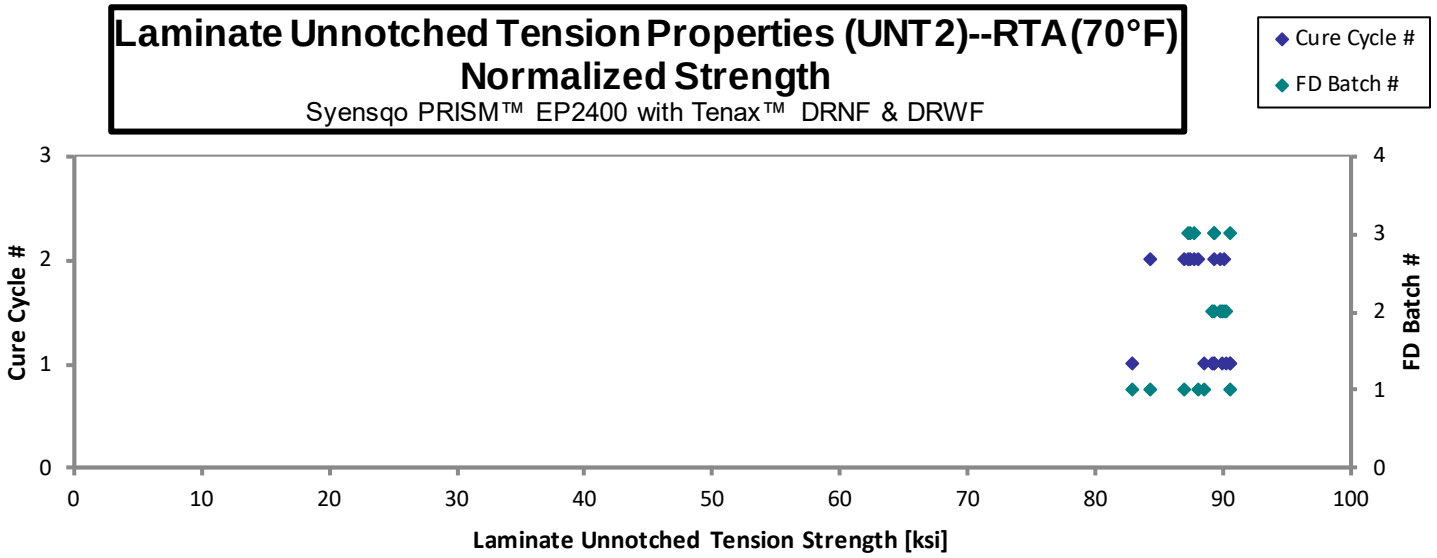
Laminate Unnotched Tension Properties (UNT2)--RTA (70°F) Strength & Modulus

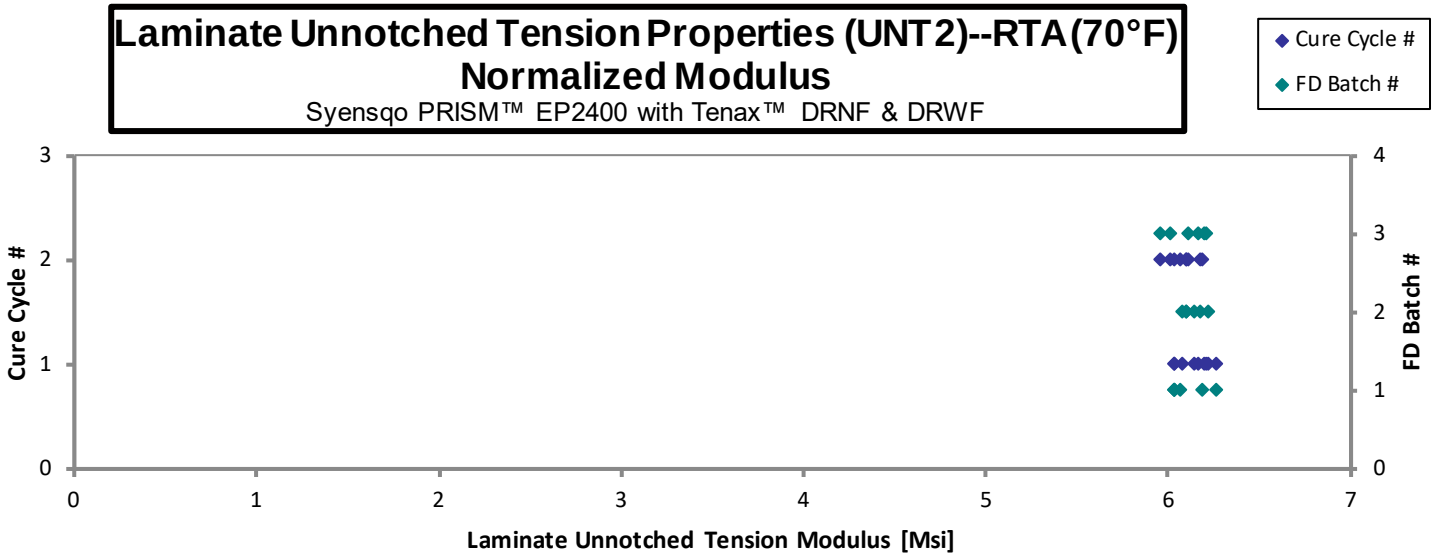
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT2-A-C1-1-1A	1	C1	1	85.36	5.816	0.1163	8	AGB	0.0145	88.63	6.038
M-UNT2-A-C1-1-2A	1	C1	1	86.87	6.008	0.1168	8	AGM	0.0146	90.58	6.264
M-UNT2-A-C1-1-3A	1	C1	1	80.14	5.826	0.1160	8	AGB	0.0145	83.00	6.034
M-UNT2-A-C2-1-1A	1	C2	2	82.75	5.735	0.1178	8	AGM	0.0147	87.01	6.030
M-UNT2-A-C2-1-2A	1	C2	2	80.57	5.795	0.1173	8	AWB	0.0147	84.40	6.071
M-UNT2-A-C2-1-3A	1	C2	2	84.51	5.933	0.1168	8	AGT	0.0146	88.13	6.188
M-UNT2-B-C1-1-1A	2	C1	1	86.68	5.840	0.1167	8	AGM	0.0146	90.28	6.082
M-UNT2-B-C1-1-2A	2	C1	1	86.57	5.962	0.1155	8	AWT	0.0144	89.24	6.145
M-UNT2-B-C1-1-3A	2	C1	1	86.34	5.971	0.1166	8	AGM	0.0146	89.90	6.217
M-UNT2-B-C2-1-1A	2	C2	2	87.84	6.036	0.1145	8	AWT	0.0143	89.83	6.173
M-UNT2-B-C2-1-2A	2	C2	2	87.28	5.961	0.1147	8	AWT	0.0143	89.38	6.104
M-UNT2-B-C2-1-3A	2	C2	2	88.57	5.990	0.1141	8	AWT	0.0143	90.20	6.100
M-UNT2-C-C1-1-1A	3	C1	1	83.47	5.792	0.1199	8	M(A,D,)GM	0.0150	89.36	6.201
M-UNT2-C-C1-1-2A	3	C1	1	84.59	5.758	0.1199	8	M(A,D,)GM	0.0150	90.59	6.166
M-UNT2-C-C1-1-3A	3	C1	1	83.98	5.833	0.1192	8	M(A,D,)GM	0.0149	89.37	6.207
M-UNT2-C-C2-1-1A	3	C2	2	82.47	5.618	0.1189	8	M(A,L)GM	0.0149	87.54	5.963
M-UNT2-C-C2-1-2A	3	C2	2	82.27	5.662	0.1188	8	M(A,L)GT	0.0149	87.29	6.008
M-UNT2-C-C2-1-3A	3	C2	2	83.08	5.786	0.1184	8	M(A,L)GB	0.0148	87.80	6.115

Average	**84.63**	**5.851**	**$Average_{norm}$**	**0.0146**	**88.47**	**6.117**
Standard Dev.	**2.473**	**0.1211**	**$Standard\ Dev._{norm}$**		**2.080**	**0.08344**
Coeff. of Var. [%]	**2.922**	**2.070**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.351**	**1.364**
Min.	**80.14**	**5.618**	**Min.**	**0.0143**	**83.00**	**5.963**
Max.	**88.57**	**6.036**	**Max.**	**0.0150**	**90.59**	**6.264**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT2)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT2)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
0
1
2
3
4

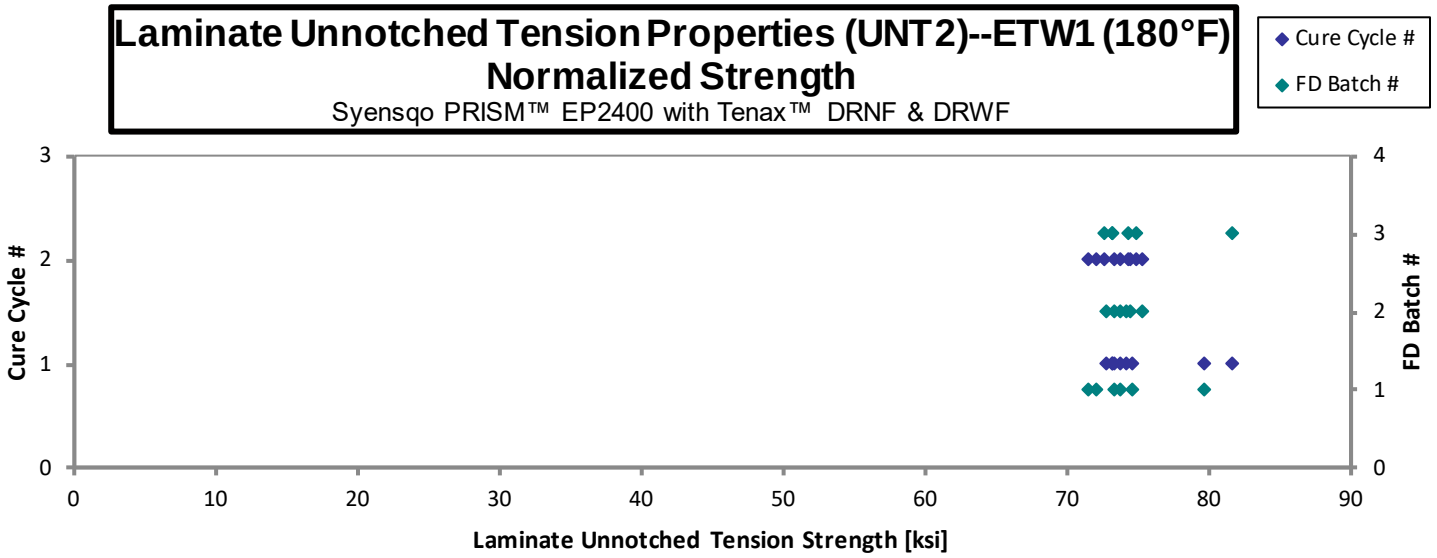
Laminate Unnotched Tension Properties (UNT2)--ETW1
(180°F) Strength & Modulus

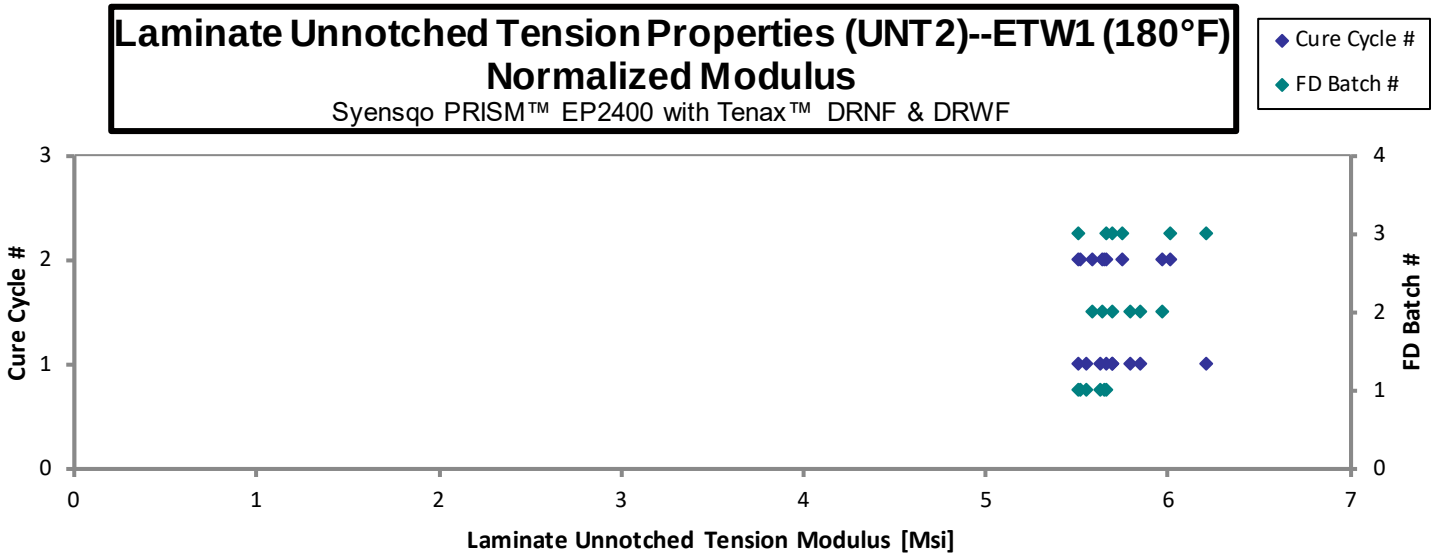
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT2-A-C1-1-1D	1	C1	1	76.25	5.318	0.1170	8	M(D,A)GT	0.0146	79.65	5.555
M-UNT2-A-C1-1-2D	1	C1	1	71.30	5.381	0.1173	8	M(D,A)GM	0.0147	74.64	5.633
M-UNT2-A-C1-1-3D	1	C1	1	70.08	5.382	0.1178	8	M(D,A)GB	0.0147	73.72	5.662
M-UNT2-A-C2-1-1D	1	C2	2	70.91	5.337	0.1158	8	M(D,A)GT	0.0145	73.34	5.520
M-UNT2-A-C2-1-2D	1	C2	2	68.49	5.234	0.1179	8	M(D,A)GM	0.0147	72.07	5.507
M-UNT2-A-C2-1-3D	1	C2	2	68.17	5.381	0.1176	8	M(D,A)WB	0.0147	71.55	5.647
M-UNT2-B-C1-1-1D	2	C1	1	69.96	5.473	0.1166	8	AWB	0.0146	72.81	5.696
M-UNT2-B-C1-1-2D	2	C1	1	72.05	5.679	0.1153	8	AGB	0.0144	74.18	5.847
M-UNT2-B-C1-1-3D	2	C1	1	70.88	5.603	0.1158	8	AGM	0.0145	73.29	5.794
M-UNT2-B-C2-1-1D	2	C2	2	71.97	5.495	0.1149	8	AGT	0.0144	73.82	5.636
M-UNT2-B-C2-1-2D	2	C2	2	72.19	5.791	0.1155	8	AGM	0.0144	74.44	5.971
M-UNT2-B-C2-1-3D	2	C2	2	72.62	5.389	0.1161	8	AGT	0.0145	75.30	5.588
M-UNT2-C-C1-1-1D	3	C1	1	69.04	5.371	0.1188	8	M(D,A)GM	0.0148	73.21	5.696
M-UNT2-C-C1-1-2D	3	C1	1	76.41	5.812	0.1198	8	M(D,A)GT	0.0150	81.70	6.214
M-UNT2-C-C1-1-3D	3	C1	1	69.51	5.230	0.1180	8	M(D,A)GT	0.0148	73.24	5.511
M-UNT2-C-C2-1-1D	3	C2	2	71.19	5.386	0.1178	8	M(D,A)GM	0.0147	74.89	5.666
M-UNT2-C-C2-1-2D	3	C2	2	69.86	5.656	0.1191	8	M(D,A)GB	0.0149	74.30	6.015
M-UNT2-C-C2-1-3D	3	C2	2	69.23	5.473	0.1176	8	M(D,A)GB	0.0147	72.68	5.746

Average	**71.12**	**5.466**	**Average$_{norm}$**	**0.0146**	**74.38**	**5.717**
Standard Dev.	**2.296**	**0.1745**	**Standard Dev.$_{norm}$**		**2.508**	**0.1906**
Coeff. of Var. [%]	**3.228**	**3.192**	**Coeff. of Var. [%]$_{norm}$**		**3.372**	**3.334**
Min.	**68.17**	**5.230**	**Min.**	**0.0144**	**71.55**	**5.507**
Max.	**76.41**	**5.812**	**Max.**	**0.0150**	**81.70**	**6.214**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT2)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT2)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
1
2
3
4
5
6
7
0
1
2
3
4

4.2.3 Unnotched Tension 3 (UNT3)

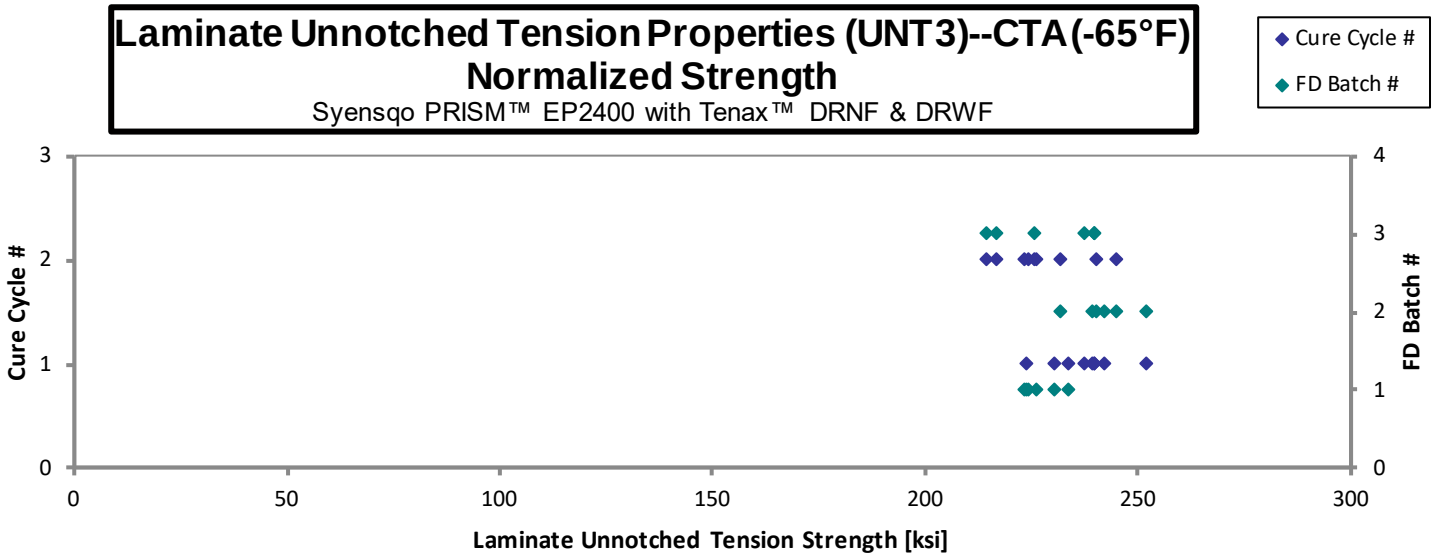
Laminate Unnotched Tension Properties (UNT3)--CTA
(-65°F) Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

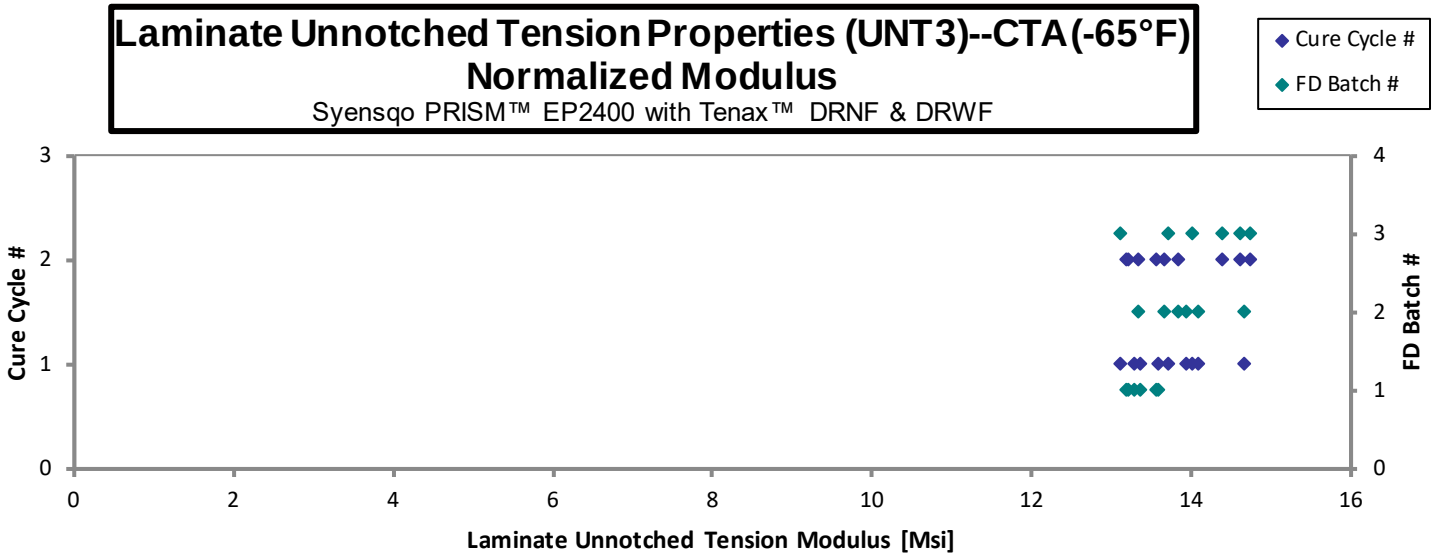
normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT3-A-C1-1-1B	1	C1	1	227.9	13.60	0.1376	20	M(A,D,L)GM	0.0069	223.9	13.36
M-UNT3-A-C1-1-2B	1	C1	1	238.3	13.87	0.1372	20	M(A,D,L)GM	0.0069	233.5	13.59
M-UNT3-A-C1-1-3B	1	C1	1	235.0	13.55	0.1373	20	M(A,D,L)GM	0.0069	230.5	13.29
M-UNT3-A-C2-1-1B	1	C2	2	223.4	13.21	0.1399	20	M(A,D,L)GM	0.0070	223.3	13.20
M-UNT3-A-C2-1-2B	1	C2	2	224.6	13.49	0.1409	20	M(A,D,L)GM	0.0070	226.1	13.58
M-UNT3-A-C2-1-3B	1	C2	2	228.1	13.43	0.1377	20	M(A,D,L)GM	0.0069	224.4	13.22
M-UNT3-B-C1-1-1B	2	C1	1	233.9	13.63	0.1433	20	M(A,D,L)GM	0.0072	239.3	13.95
M-UNT3-B-C1-1-2B	2	C1	1	246.2	14.35	0.1433	20	M(A,D,L)GM	0.0072	251.9	14.68
M-UNT3-B-C1-1-3B	2	C1	1	236.8	13.80	0.1432	20	M(A,D,L)GM	0.0072	242.1	14.11
M-UNT3-B-C2-1-1B	2	C2	2	234.6	13.01	0.1434	20	M(A,D,L)GM	0.0072	240.3	13.33
M-UNT3-B-C2-1-2B	2	C2	2	235.9	13.15	0.1454	20	M(A,D,L)GM	0.0073	245.0	13.66
M-UNT3-B-C2-1-3B	2	C2	2	220.7	13.17	0.1472	20	M(A,D,L)GM	0.0074	232.0	13.85
M-UNT3-C-C1-1-1B	3	C1	1	237.2	13.87	0.1416	20	M(A,D,L)GM	0.0071	239.8	14.03
M-UNT3-C-C1-1-2B	3	C1	1	239.5	13.09	0.1403	20	M(A,D,L)GM	0.0070	240.0	13.12
M-UNT3-C-C1-1-3B	3	C1	1	236.8	13.68	0.1405	20	M(A,D,L)GM	0.0070	237.7	13.73
M-UNT3-C-C2-1-1B	3	C2	2	225.5	14.39	0.1401	20	M(A,D,L)GM	0.0070	225.7	14.40
M-UNT3-C-C2-1-2B	3	C2	2	216.4	14.89	0.1388	20	M(A,D,L)GM	0.0069	214.5	14.76
M-UNT3-C-C2-1-3B	3	C2	2	217.3	14.67	0.1396	20	M(A,D,L)GM	0.0070	216.7	14.63

Average	**231.0**	**13.71**
Standard Dev.	**8.319**	**0.5489**
Coeff. of Var. [%]	**3.602**	**4.003**
Min.	**216.4**	**13.01**
Max.	**246.2**	**14.89**
Number of Spec.	**18**	**18**

$Average_{norm}$	**0.0070**	**232.6**	**13.80**
$Standard\ Dev._{norm}$		**10.181**	**0.53**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.377**	**3.87**
Min.	**0.0069**	**214.5**	**13.12**
Max.	**0.0074**	**251.9**	**14.76**
Number of Spec.	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT3)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
300
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT3)--CTA (-65°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

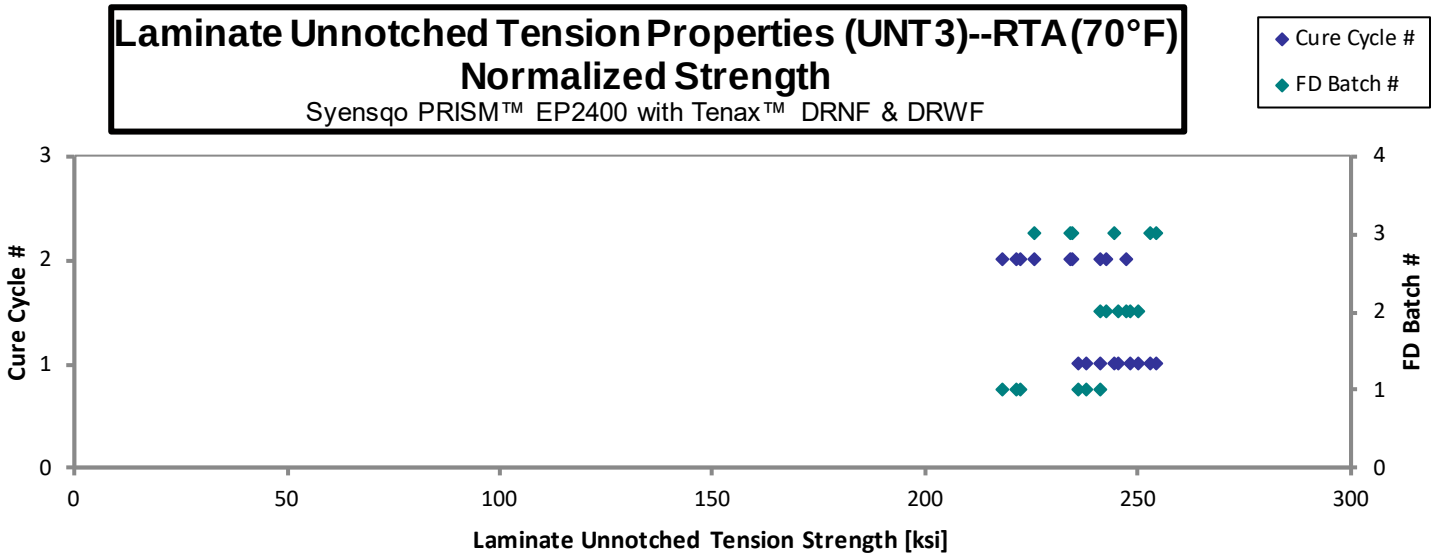
Laminate Unnotched Tension Properties (UNT3)--RTA (70°F) Strength & Modulus

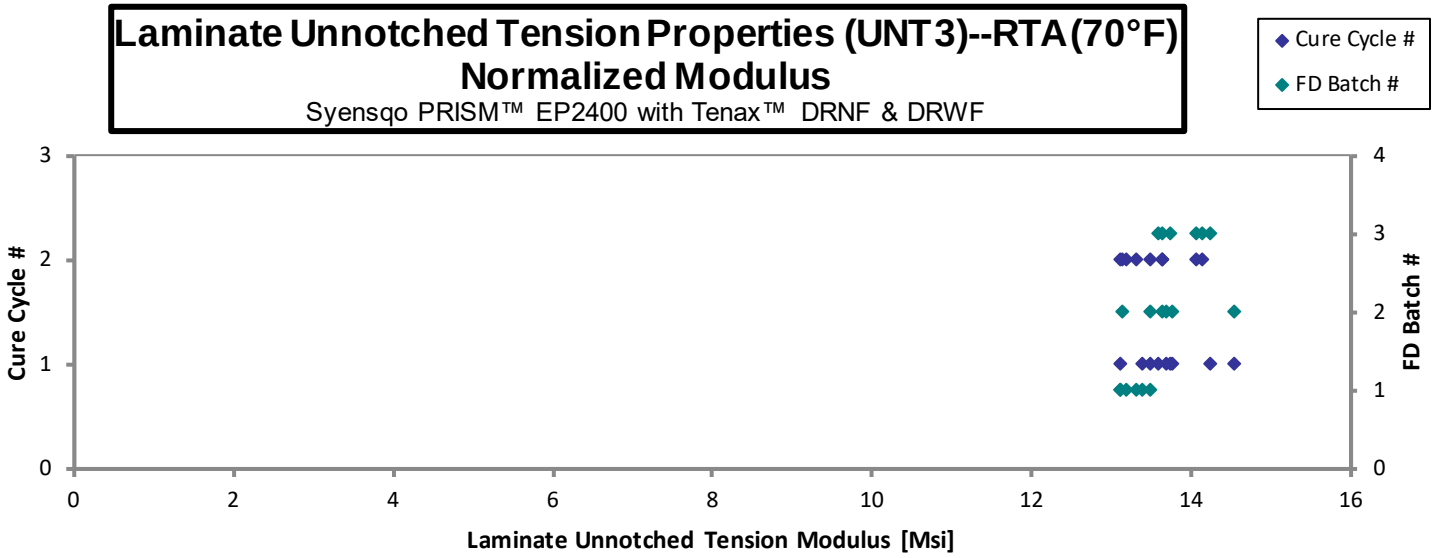
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT3-A-C1-1-1A	1	C1	1	240.6	13.66	0.1374	20	M(A,D,L)GM	0.0069	236.2	13.40
M-UNT3-A-C1-1-2A	1	C1	1	245.7	13.36	0.1375	20	M(A,D,L)GM	0.0069	241.2	13.12
M-UNT3-A-C1-1-3A	1	C1	1	242.8	13.76	0.1372	20	M(A,D,L)GM	0.0069	237.9	13.49
M-UNT3-A-C2-1-1A	1	C2	2	219.5	13.19	0.1393	20	M(A,D,L)GM	0.0070	218.4	13.13
M-UNT3-A-C2-1-2A	1	C2	2	223.4	13.26	0.1394	20	M(A,D,L)GM	0.0070	222.3	13.20
M-UNT3-A-C2-1-3A	1	C2	2	222.7	13.40	0.1392	20	M(A,D,L)GM	0.0070	221.4	13.32
M-UNT3-B-C1-1-1A	2	C1	1	240.8	13.29	0.1443	20	M(A,D,L)GM	0.0072	248.3	13.70
M-UNT3-B-C1-1-2A	2	C1	1	244.4	14.22	0.1432	20	M(A,D,L)GM	0.0072	250.0	14.54
M-UNT3-B-C1-1-3A	2	C1	1	241.0	13.53	0.1426	20	M(A,D,L)GM	0.0071	245.4	13.78
M-UNT3-B-C2-1-1A	2	C2	2	231.0	12.58	0.1461	20	M(A,D,L)GM	0.0073	241.1	13.13
M-UNT3-B-C2-1-2A	2	C2	2	239.8	13.07	0.1445	20	DGM, M(A,L)WT	0.0072	247.4	13.49
M-UNT3-B-C2-1-3A	2	C2	2	236.3	13.29	0.1437	20	DGM, M(A,L)WT	0.0072	242.5	13.64
M-UNT3-C-C1-1-1A	3	C1	1	252.1	14.10	0.1414	20	DGM	0.0071	254.5	14.24
M-UNT3-C-C1-1-2A	3	C1	1	252.2	13.55	0.1405	20	DGM	0.0070	253.1	13.60
M-UNT3-C-C1-1-3A	3	C1	1	243.7	13.70	0.1404	20	DGM	0.0070	244.3	13.74
M-UNT3-C-C2-1-1A	3	C2	2	234.3	13.64	0.1401	20	DGM	0.0070	234.5	13.65
M-UNT3-C-C2-1-2A	3	C2	2	222.6	13.86	0.1421	20	DGM	0.0071	225.8	14.06
M-UNT3-C-C2-1-3A	3	C2	2	236.4	14.28	0.1387	20	DGM, M(A,L)GB	0.0069	234.2	14.15

Average	**237.2**	**13.54**	**$Average_{norm}$**	**0.0070**	**238.8**	**13.63**
Standard Dev.	**9.898**	**0.4228**	**$Standard\ Dev._{norm}$**		**10.967**	**0.41**
Coeff. of Var. [%]	**4.173**	**3.123**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.592**	**3.00**
Min.	**219.5**	**12.58**	**Min.**	**0.0069**	**218.4**	**13.12**
Max.	**252.2**	**14.28**	**Max.**	**0.0073**	**254.5**	**14.54**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Tension Properties (UNT3)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
300
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT3)--RTA(70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

Laminate Unnotched Tension Properties (UNT3)--ETW1
(180°F) Strength & Modulus

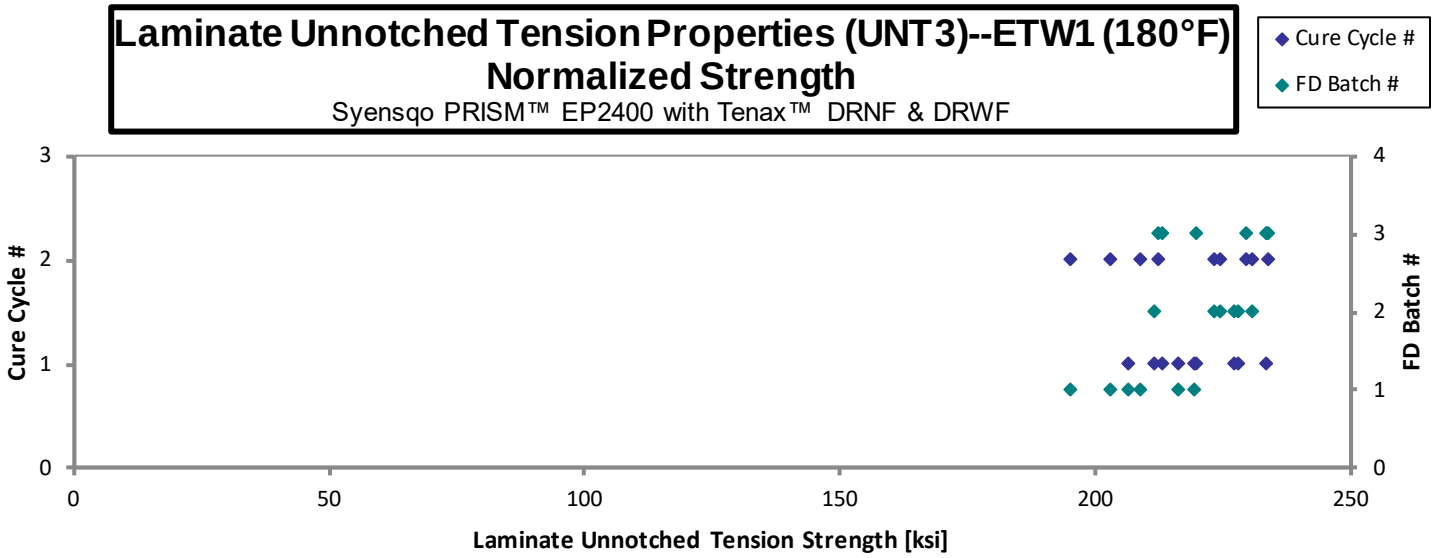
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

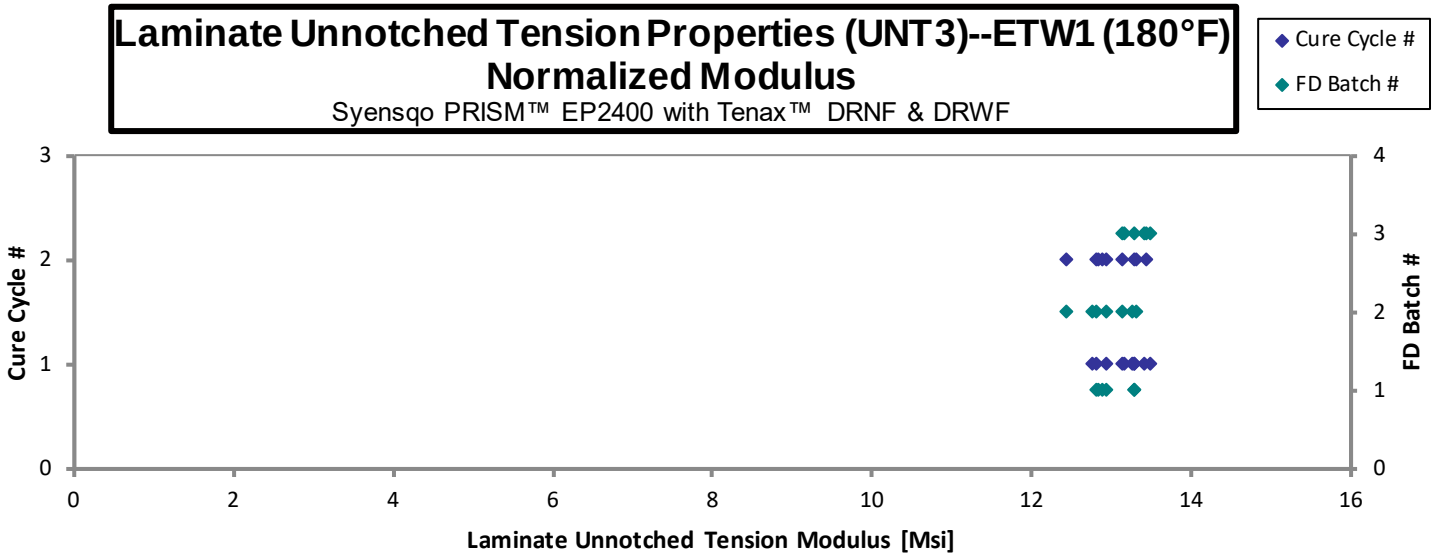
normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNT3-A-C1-1-1D	1	C1	1	210.2	13.53	0.1375	20	DGM	0.0069	206.5	13.29
M-UNT3-A-C1-1-2D	1	C1	1	220.7	13.56	0.1371	20	DGM	0.0069	216.2	13.29
M-UNT3-A-C1-1-3D	1	C1	1	223.2	13.16	0.1376	20	M(A,D)GM	0.0069	219.4	12.93
M-UNT3-A-C2-1-1D	1	C2	2	198.0	13.08	0.1380	20	DGM	0.0069	195.07	12.88
M-UNT3-A-C2-1-2D	1	C2	2	210.6	12.91	0.1389	20	M(D,A)WT	0.0069	209.0	12.81
M-UNT3-A-C2-1-3D	1	C2	2	201.8	12.76	0.1408	20	M(D,A)WB	0.0070	203.0	12.84
M-UNT3-B-C1-1-1D*	2	C1	1		12.38	0.1443	20	GIT	0.0072		12.76
M-UNT3-B-C1-1-2D	2	C1	1	206.4	12.50	0.1434	20	DGM	0.0072	211.5	12.81
M-UNT3-B-C1-1-3D	2	C1	1	223.8	13.06	0.1422	20	M(A,D)GM	0.0071	227.3	13.26
M-UNT3-B-C1-1-4D	2	C1	1	225.8	13.02	0.1413	20	M(D,A)GB	0.0071	227.9	13.14
M-UNT3-B-C2-1-1D	2	C2	2	223.0	12.88	0.1449	20	M(A,D)GM	0.0072	230.7	13.33
M-UNT3-B-C2-1-2D	2	C2	2	218.9	12.61	0.1436	20	M(D,A)GT	0.0072	224.6	12.94
M-UNT3-B-C2-1-3D	2	C2	2	217.8	12.12	0.1436	20	M(D,A)GT	0.0072	223.3	12.43
M-UNT3-C-C1-1-1D	3	C1	1	232.5	13.36	0.1405	20	DGM	0.0070	233.4	13.42
M-UNT3-C-C1-1-2D	3	C1	1	219.2	13.46	0.1403	20	DGM	0.0070	219.7	13.49
M-UNT3-C-C1-1-3D	3	C1	1	210.0	12.98	0.1421	20	DGM	0.0071	213.2	13.18
M-UNT3-C-C2-1-1D	3	C2	2	230.0	13.16	0.1398	20	M(A,D)GB	0.0070	229.6	13.14
M-UNT3-C-C2-1-2D	3	C2	2	229.8	13.20	0.1424	20	M(A,D)GT	0.0071	233.8	13.43
M-UNT3-C-C2-1-3D	3	C2	2	213.5	13.37	0.1393	20	DGM, GIT	0.0070	212.4	13.30

*Strength not reported because of unacceptable failure

	Strength [ksi]	Modulus [Msi]		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**217.5**	**13.01**	**Average$_{norm}$**	**0.0070**	**218.7**	**13.09**
Standard Dev.	**9.830**	**0.3963**	**Standard Dev.$_{norm}$**		**11.117**	**0.29**
Coeff. of Var. [%]	**4.519**	**3.047**	**Coeff. of Var. [%]$_{norm}$**		**5.083**	**2.18**
Min.	**198.0**	**12.12**	**Min.**	**0.0069**	**195.07**	**12.43**
Max.	**232.5**	**13.56**	**Max.**	**0.0072**	**233.8**	**13.49**
Number of Spec.	**18**	**19**	**Number of Spec.**	**19**	**18**	**19**


Laminate Unnotched Tension Properties (UNT3)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3
4


Laminate Unnotched Tension Properties (UNT3)--ETW1 (180°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Tension Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

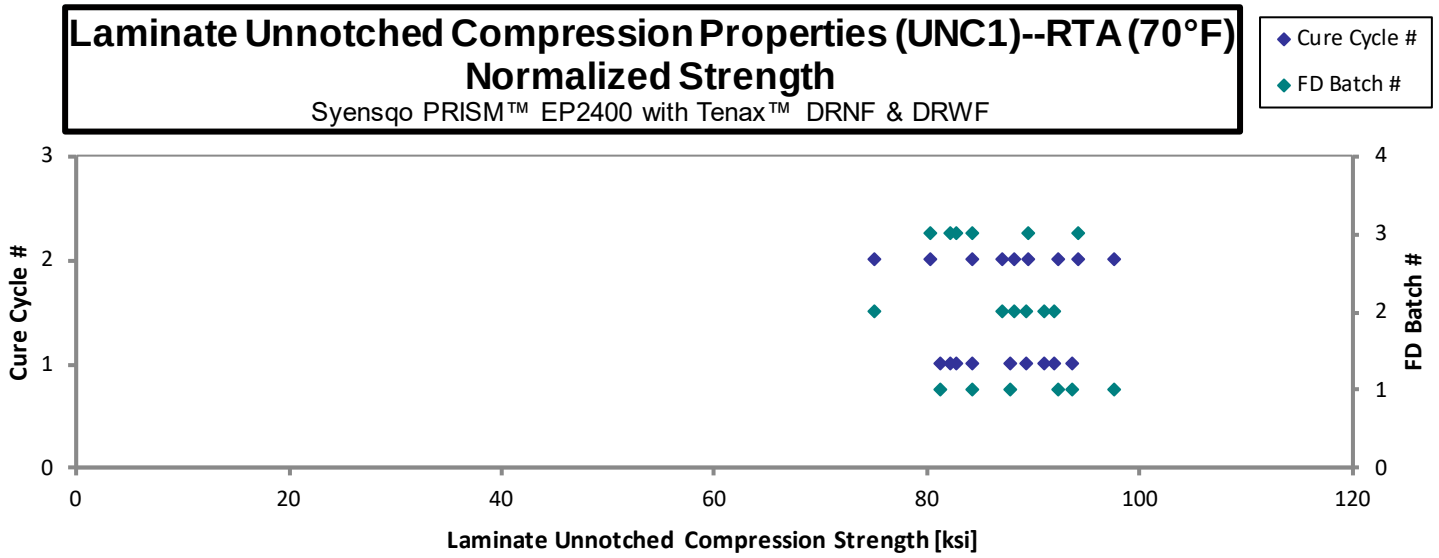
4.2.4 Unnotched Compression 1 (UNC1)

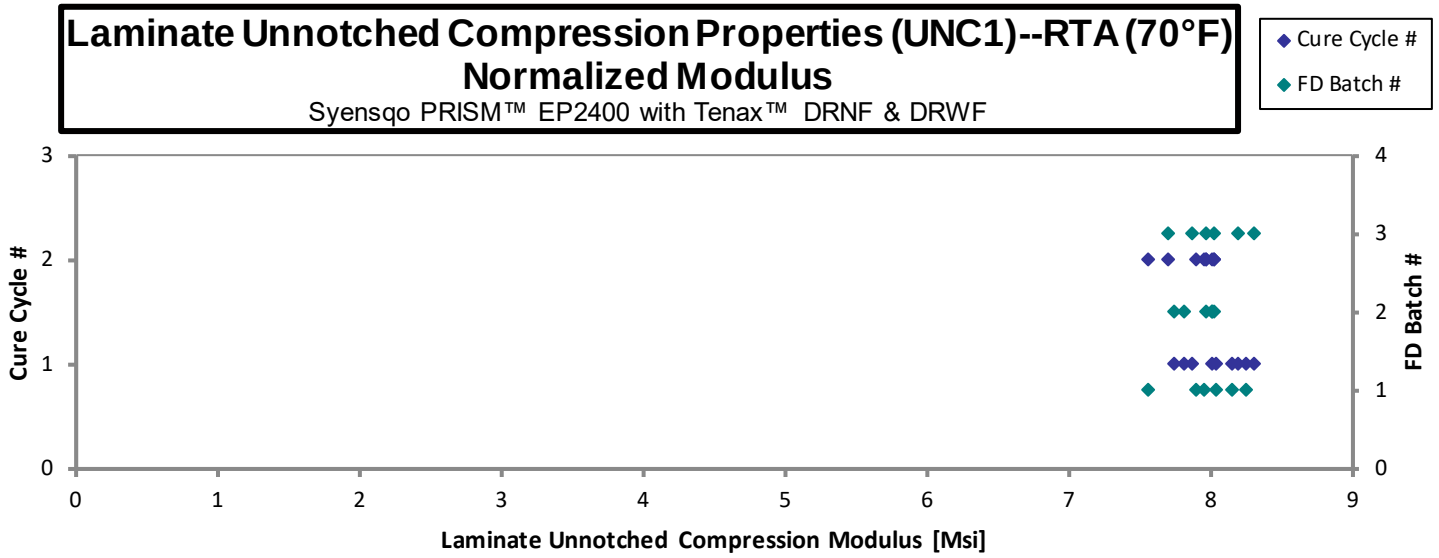
Laminate Unnotched Compression Properties (UNC1)--RTA (70°F) Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC1-A-C1-1-1A	1	C1	1	80.97	7.512	0.1217	8	BGM	0.0152	87.94	8.159
M-UNC1-A-C1-1-2A	1	C1	1	75.22	7.632	0.1210	8	BGM	0.0151	81.27	8.247
M-UNC1-A-C1-1-3A	1	C1	1	86.05	7.380	0.1220	8	BGM	0.0152	93.69	8.036
M-UNC1-A-C2-1-1A	1	C2	2	90.38	7.375	0.1209	8	BGM	0.0151	97.56	7.961
M-UNC1-A-C2-1-2A	1	C2	2	86.16	7.369	0.1201	8	BGM	0.0150	92.36	7.900
M-UNC1-A-C2-1-3A	1	C2	2	79.00	7.089	0.1195	8	BGM	0.0149	84.32	7.566
M-UNC1-B-C1-1-1A	2	C1	1	85.52	7.675	0.1170	8	BGM	0.0146	89.35	8.019
M-UNC1-B-C1-1-2A	2	C1	1	87.04	7.468	0.1172	8	BGM	0.0147	91.10	7.815
M-UNC1-B-C1-1-3A	2	C1	1	87.87	7.397	0.1173	8	BGM	0.0147	92.05	7.748
M-UNC1-B-C2-1-1A	2	C2	2	82.18	7.568	0.1188	8	BAT	0.0148	87.13	8.024
M-UNC1-B-C2-1-2A	2	C2	2	69.60	7.395	0.1207	8	BAT	0.0151	75.00	7.968
M-UNC1-B-C2-1-3A	2	C2	2	82.70	7.516	0.1194	8	BAT	0.0149	88.19	8.015
M-UNC1-C-C1-1-1A	3	C1	1	76.94	7.777	0.1196	8	BGM	0.0150	82.18	8.307
M-UNC1-C-C1-1-2A	3	C1	1	78.80	7.665	0.1198	8	BGM	0.0150	84.30	8.200
M-UNC1-C-C1-1-3A	3	C1	1	77.95	7.413	0.1190	8	BGM	0.0149	82.81	7.875
M-UNC1-C-C2-1-1A	3	C2	2	74.98	6.669	0.1338	8	BGM	0.0167	89.58	7.967
M-UNC1-C-C2-1-2A	3	C2	2	78.19	6.664	0.1349	8	BGM	0.0169	94.15	8.025
M-UNC1-C-C2-1-3A	3	C2	2	67.46	6.466	0.1334	8	BGM	0.0167	80.32	7.699

Average	**80.39**	**7.335**	**$Average_{norm}$**	**0.0152**	**87.41**	**7.974**
Standard Dev.	**6.265**	**0.3735**	**$Standard\ Dev._{norm}$**		**5.774**	**0.1905**
Coeff. of Var. [%]	**7.793**	**5.092**	**Coeff. of Var. [%]$_{norm}$**		**6.606**	**2.389**
Min.	**67.46**	**6.466**	**Min.**	**0.0146**	**75.00**	**7.566**
Max.	**90.38**	**7.777**	**Max.**	**0.0169**	**97.56**	**8.307**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC1)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC1)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
0
1
2
3
4

Laminate Unnotched Compression Properties (UNC1)--ETA (180°F) Strength & Modulus

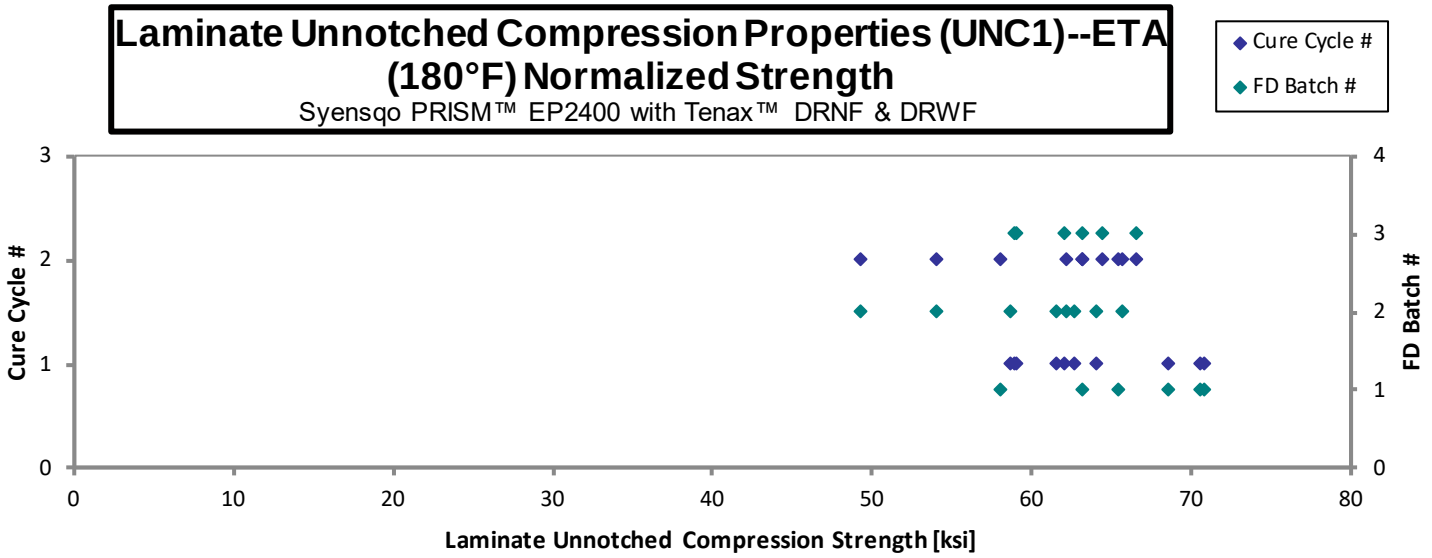
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

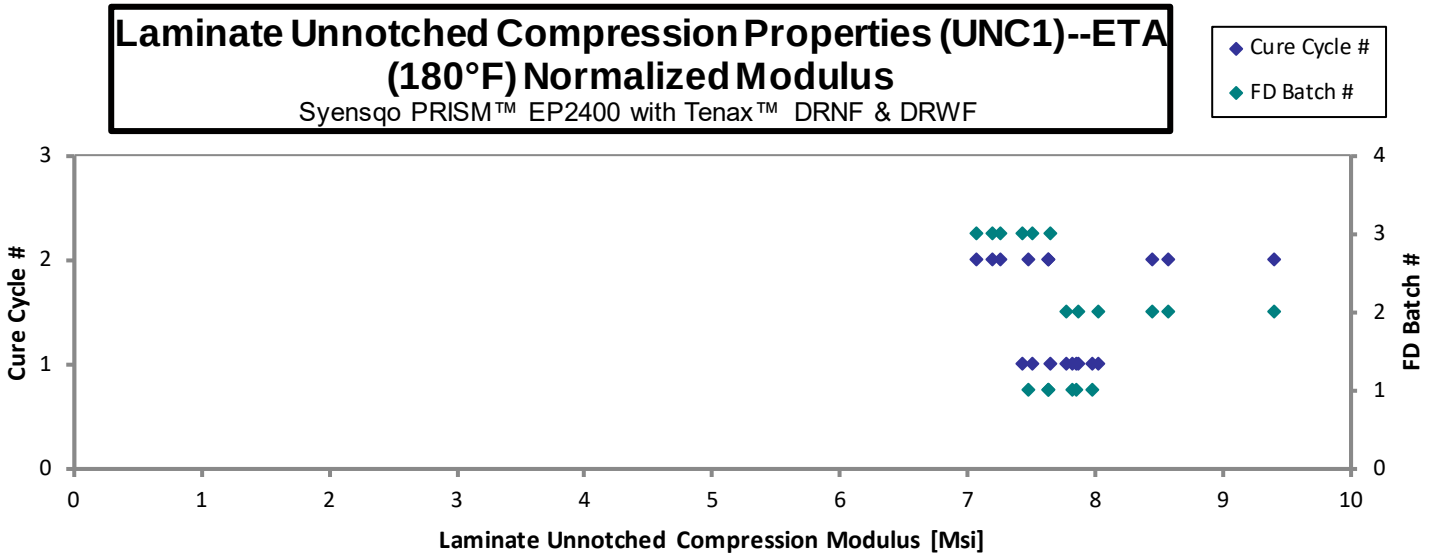
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC1-A-C1-1-1C	1	C1	1	64.68	7.138	0.1227	8	BGM	0.0153	70.83	7.817
M-UNC1-A-C1-1-2C	1	C1	1	63.30	7.150	0.1249	8	BGM	0.0156	70.58	7.973
M-UNC1-A-C1-1-3C	1	C1	1	60.22	6.899	0.1276	8	BGM	0.0159	68.59	7.858
M-UNC1-A-C2-1-1C	1	C2	2	59.01	6.974	0.1200	8	BAT	0.0150	63.23	7.472
M-UNC1-A-C2-1-2C	1	C2	2	60.70	7.090	0.1207	8	BAT	0.0151	65.42	7.641
M-UNC1-A-C2-1-3C	1	C2	2	53.62	7.051	0.1213	8	BAT	0.0152	58.04	7.633
M-UNC1-B-C1-1-1C	2	C1	1	60.35	7.724	0.1165	8	BAT	0.0146	62.75	8.031
M-UNC1-B-C1-1-2C	2	C1	1	61.17	7.519	0.1173	8	BAT	0.0147	64.04	7.872
M-UNC1-B-C1-1-3C	2	C1	1	56.79	7.527	0.1158	8	BGM	0.0145	58.70	7.781
M-UNC1-B-C1-1-4C	2	C1	1	60.06		0.1148	8	BGM	0.0144	61.57	
M-UNC1-B-C2-1-1C	2	C2	2	60.88	8.714	0.1209	8	M(B,H)GM	0.0151	65.69	9.402
M-UNC1-B-C2-1-2C	2	C2	2	50.80	8.061	0.1191	8	BAT	0.0149	54.03	8.573
M-UNC1-B-C2-1-3C	2	C2	2	46.02	7.887	0.1199	8	M(B,H)GM	0.0150	49.28	8.446
M-UNC1-B-C2-1-4C	2	C2	2	58.21		0.1197	8	BGM	0.0150	62.19	
M-UNC1-C-C1-1-1C	3	C1	1	55.21	7.025	0.1197	8	BGM	0.0150	59.01	7.509
M-UNC1-C-C1-1-2C	3	C1	1	55.76	7.232	0.1185	8	BGM	0.0148	58.97	7.649
M-UNC1-C-C1-1-3C	3	C1	1	58.89	7.047	0.1181	8	BGM	0.0148	62.09	7.430
M-UNC1-C-C2-1-1C	3	C2	2	54.62	6.096	0.1322	8	BGM	0.0165	64.44	7.193
M-UNC1-C-C2-1-2C	3	C2	2	56.58	6.162	0.1319	8	BGM	0.0165	66.62	7.256
M-UNC1-C-C2-1-3C	3	C2	2	53.86	6.026	0.1314	8	BGM	0.0164	63.17	7.068

Average	**57.54**	**7.185**	
Standard Dev.	**4.413**	**0.6815**	
Coeff. of Var. [%]	**7.670**	**9.485**	
Min.	**46.02**	**6.026**	
Max.	**64.68**	**8.714**	
Number of Spec.	**20**	**18**	

$Average_{norm}$	**0.0152**	**62.46**	**7.811**
$Standard\ Dev._{norm}$		**5.237**	**0.5572**
Coeff. of Var. [%]$_{norm}$		**8.385**	**7.133**
Min.	**0.0144**	**49.28**	**7.068**
Max.	**0.0165**	**70.83**	**9.402**
Number of Spec.	**20**	**20**	**18**


Laminate Unnotched Compression Properties (UNC1)--ETA (180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC1)--ETA (180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8
9
10
0
1
2
3
4

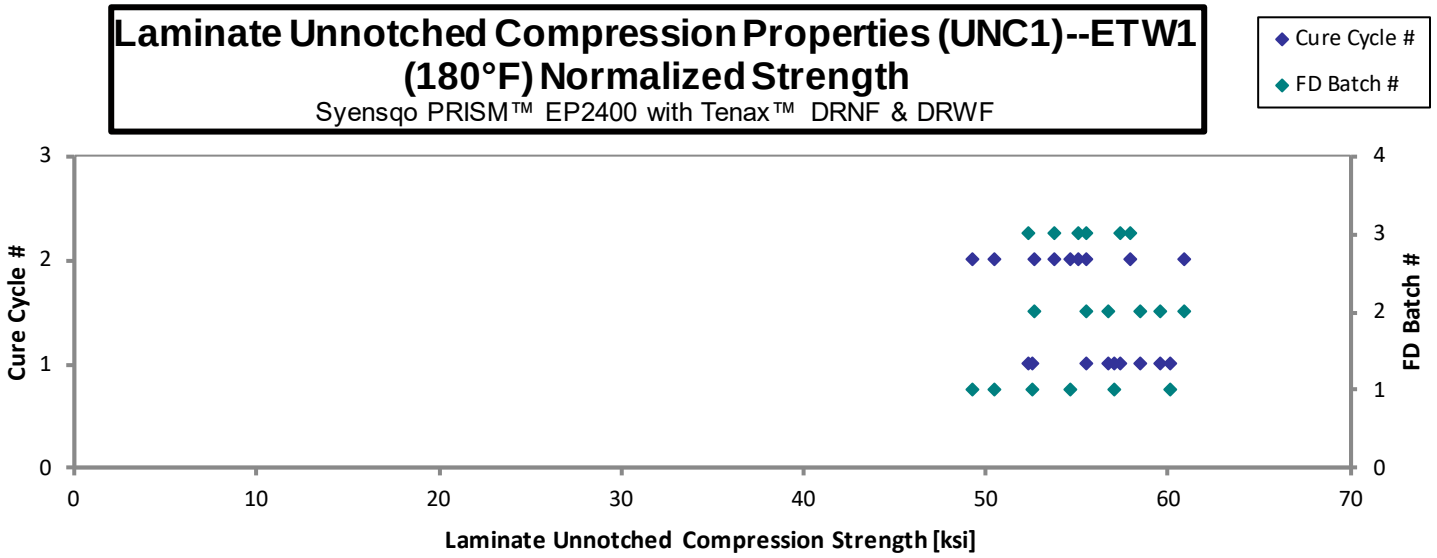
Laminate Unnotched Compression Properties (UNC1)-- ETW1 (180°F) Strength & Modulus

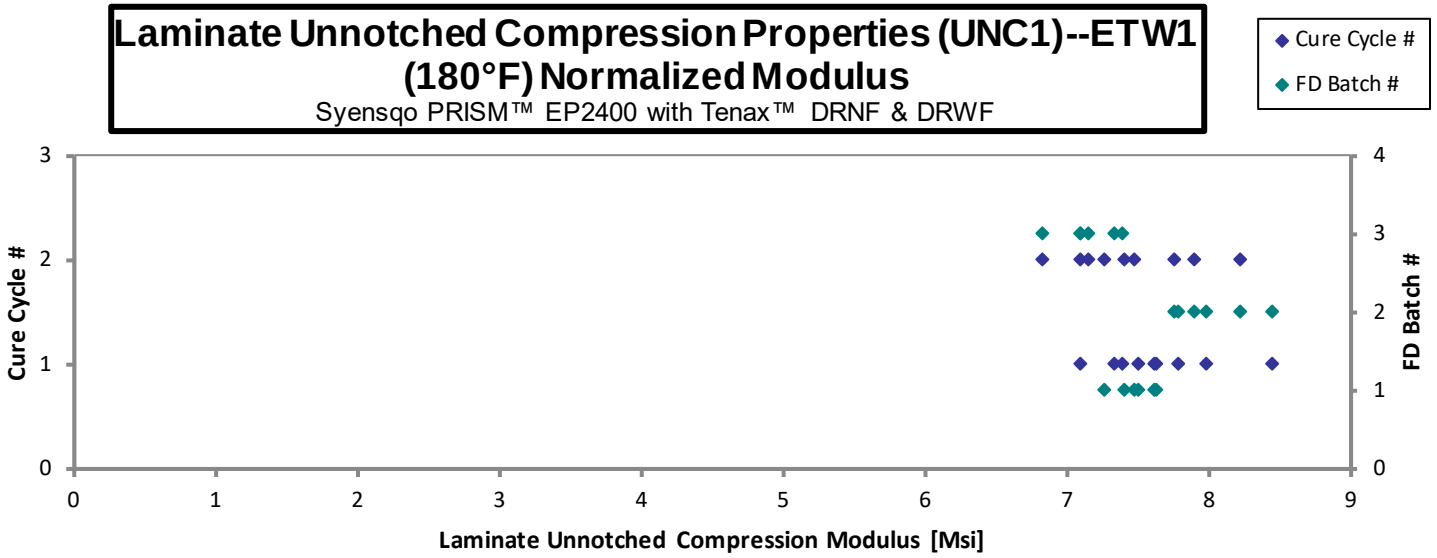
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC1-A-C1-1-1D	1	C1	1	55.93	6.986	0.1204	8	BGM	0.0150	60.10	7.508
M-UNC1-A-C1-1-2D	1	C1	1	48.93	7.099	0.1204	8	BGM	0.0151	52.60	7.631
M-UNC1-A-C1-1-3D	1	C1	1	53.16	7.093	0.1203	8	BGM	0.0150	57.10	7.619
M-UNC1-A-C2-1-1D	1	C2	2	50.57	6.915	0.1211	8	BGM	0.0151	54.69	7.479
M-UNC1-A-C2-1-2D	1	C2	2	47.58	6.849	0.1189	8	BGM	0.0149	50.49	7.269
M-UNC1-A-C2-1-3D	1	C2	2	46.40	6.978	0.1190	8	BGM	0.0149	49.30	7.413
M-UNC1-B-C1-1-1D	2	C1	1	54.55	7.489	0.1166	8	BGM	0.0146	56.77	7.794
M-UNC1-B-C1-1-2D	2	C1	1	57.29	7.679	0.1164	8	BGM	0.0146	59.55	7.981
M-UNC1-B-C1-1-3D	2	C1	1	56.34	8.144	0.1162	8	BGM	0.0145	58.44	8.447
M-UNC1-B-C2-1-1D	2	C2	2	48.98	7.647	0.1204	8	BGM	0.0150	52.64	8.219
M-UNC1-B-C2-1-2D	2	C2	2	52.41	7.321	0.1187	8	BGM	0.0148	55.52	7.756
M-UNC1-B-C2-1-3D	2	C2	2	57.65	7.484	0.1183	8	BGM	0.0148	60.90	7.906
M-UNC1-C-C1-1-1D	3	C1	1	53.99	6.675	0.1191	8	BGM	0.0149	57.43	7.100
M-UNC1-C-C1-1-2D	3	C1	1	49.53	6.998	0.1183	8	BGM	0.0148	52.29	7.388
M-UNC1-C-C1-1-3D	3	C1	1	51.82	6.857	0.1199	8	BGM	0.0150	55.47	7.339
M-UNC1-C-C2-1-1D	3	C2	2	49.80	6.100	0.1304	8	BGM	0.0163	57.98	7.103
M-UNC1-C-C2-1-2D	3	C2	2	46.18	6.147	0.1303	8	BGM	0.0163	53.72	7.150
M-UNC1-C-C2-1-3D	3	C2	2	47.32	5.860	0.1304	8	BGM	0.0163	55.10	6.824

Average	**51.58**	**7.018**	**Average$_{norm}$**	**0.0151**	**55.56**	**7.551**
Standard Dev.	**3.768**	**0.5827**	**Standard Dev.$_{norm}$**		**3.288**	**0.4160**
Coeff. of Var. [%]	**7.305**	**8.303**	**Coeff. of Var. [%]$_{norm}$**		**5.918**	**5.509**
Min.	**46.18**	**5.860**	**Min.**	**0.0145**	**49.30**	**6.824**
Max.	**57.65**	**8.144**	**Max.**	**0.0163**	**60.90**	**8.447**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC1)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
10
20
30
40
50
60
70


Laminate Unnotched Compression Properties (UNC1)--ETW1
(180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8
9

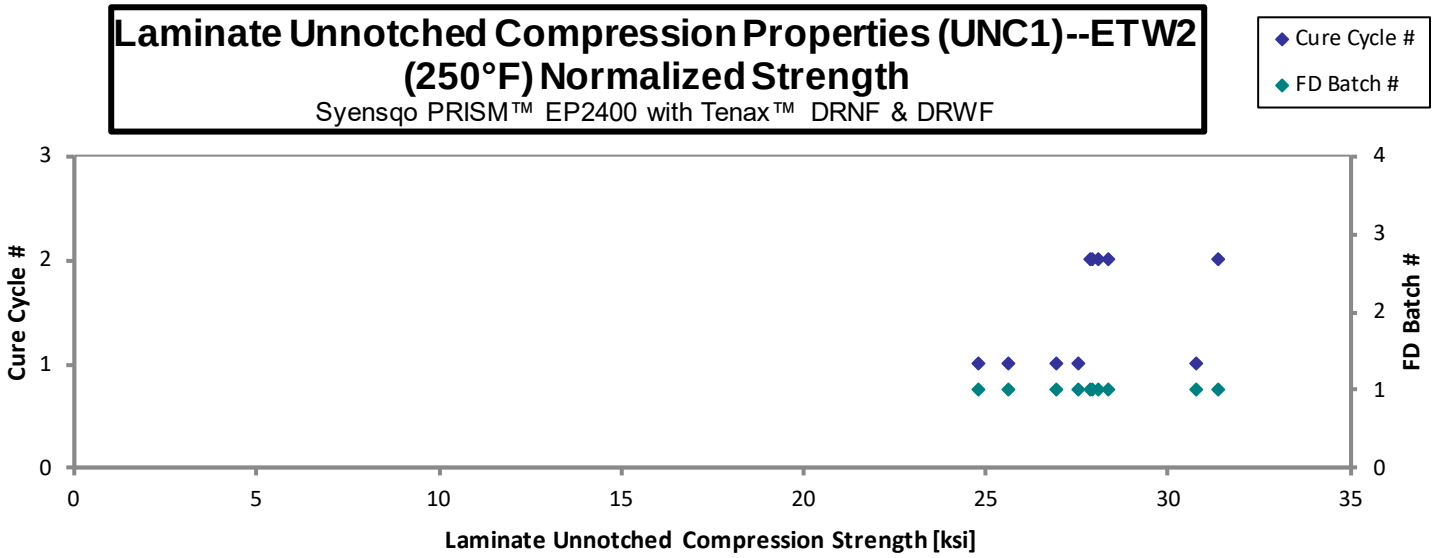
Laminate Unnotched Compression Properties (UNC1)-- ETW2 (250°F) Strength & Modulus

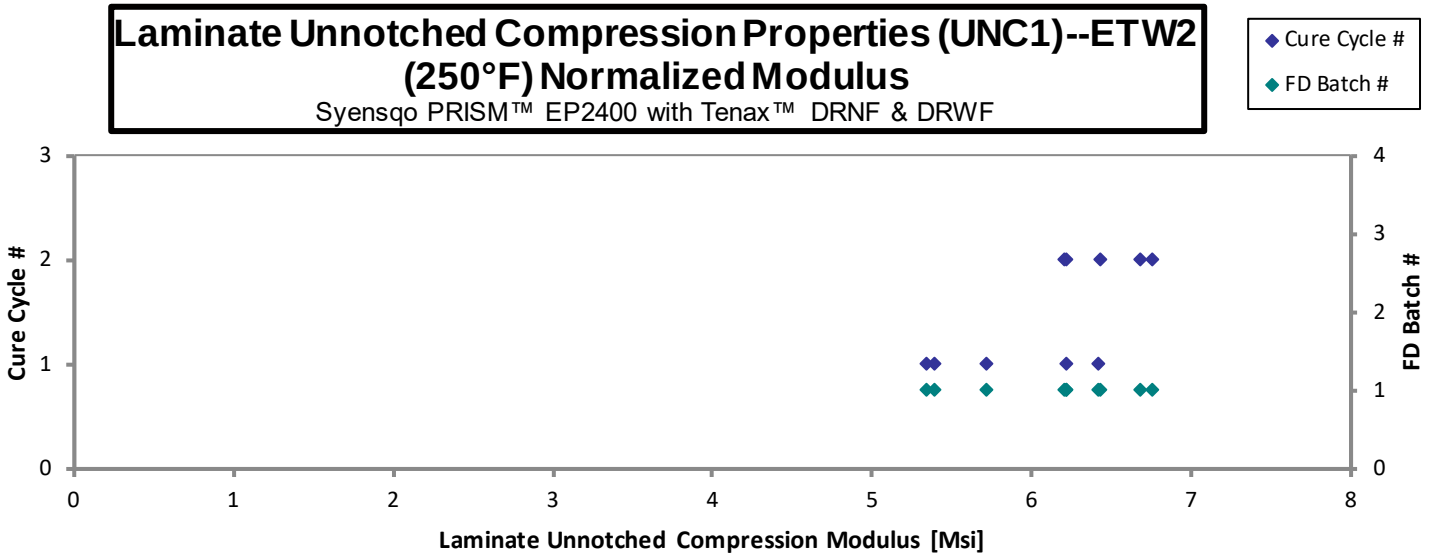
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC1-A-C1-1-1F	1	C1	1	28.75	5.813	0.1200	8	BGM	0.0150	30.79	6.225
M-UNC1-A-C1-1-2F	1	C1	1	23.98	4.998	0.1197	8	BGM	0.0150	25.63	5.341
M-UNC1-A-C1-1-3F	1	C1	1	25.74	6.002	0.1199	8	BAB	0.0150	27.55	6.422
M-UNC1-A-C1-1-4F	1	C1	1	23.15	5.030	0.1201	8	BGM	0.0150	24.83	5.395
M-UNC1-A-C1-1-5F	1	C1	1	25.06	5.320	0.1204	8	BGM	0.0150	26.94	5.718
M-UNC1-A-C2-1-1F	1	C2	2	28.60	6.158	0.1229	8	BAB	0.0154	31.39	6.758
M-UNC1-A-C2-1-2F	1	C2	2	25.58	5.910	0.1220	8	BAB	0.0153	27.86	6.438
M-UNC1-A-C2-1-3F	1	C2	2	26.04	5.748	0.1209	8	BAB	0.0151	28.10	6.203
M-UNC1-A-C2-1-4F	1	C2	2	25.85	5.759	0.1211	8	BAB	0.0151	27.94	6.225
M-UNC1-A-C2-1-5F	1	C2	2	26.10	6.154	0.1216	8	BAB	0.0152	28.34	6.682

Average	**25.89**	**5.689**	**Average$_{norm}$**	**0.0151**	**27.94**	**6.141**
Standard Dev.	**1.751**	**0.4288**	**Standard Dev.$_{norm}$**		**2.012**	**0.4983**
Coeff. of Var. [%]	**6.764**	**7.537**	**Coeff. of Var. [%]$_{norm}$**		**7.202**	**8.114**
Min.	**23.15**	**4.998**	**Min.**	**0.0150**	**24.83**	**5.341**
Max.	**28.75**	**6.158**	**Max.**	**0.0154**	**31.39**	**6.758**
Number of Spec.	**10**	**10**	**Number of Spec.**	**10**	**10**	**10**


Laminate Unnotched Compression Properties (UNC1)--ETW2 (250°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
5
10
15
20
25
30
35
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC1)--ETW2 (250°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8
0
1
2
3
4

4.2.5 Unnotched Compression 2 (UNC2)

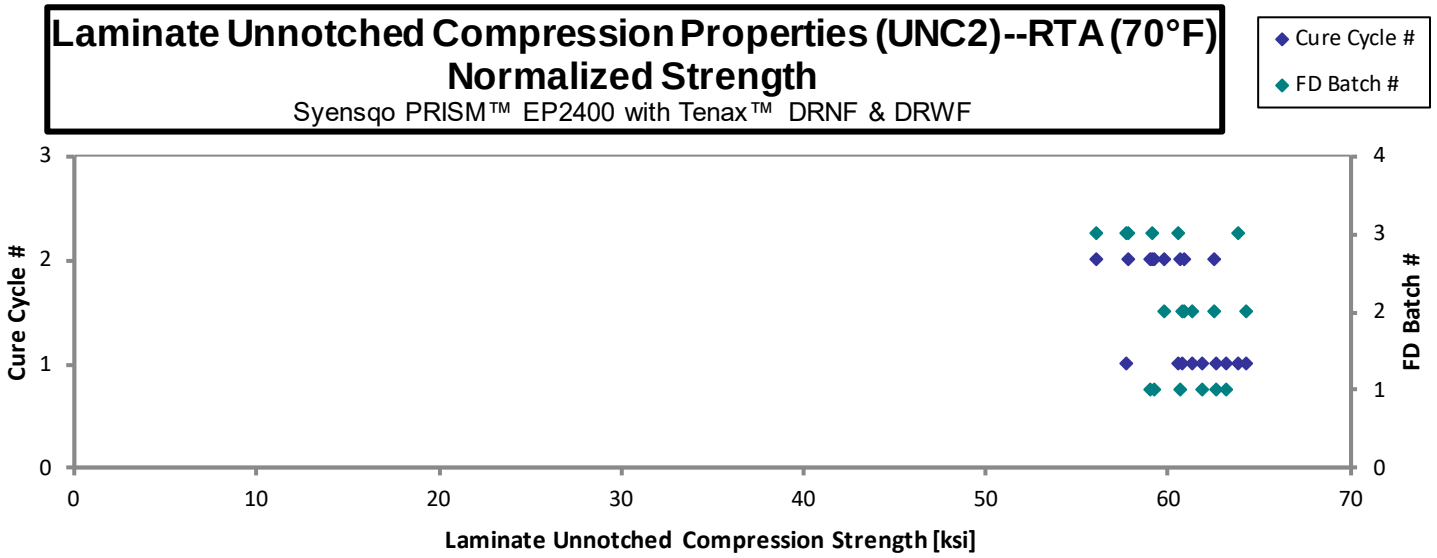
Laminate Unnotched Compression Properties (UNC2)--RTA (70°F) Strength & Modulus

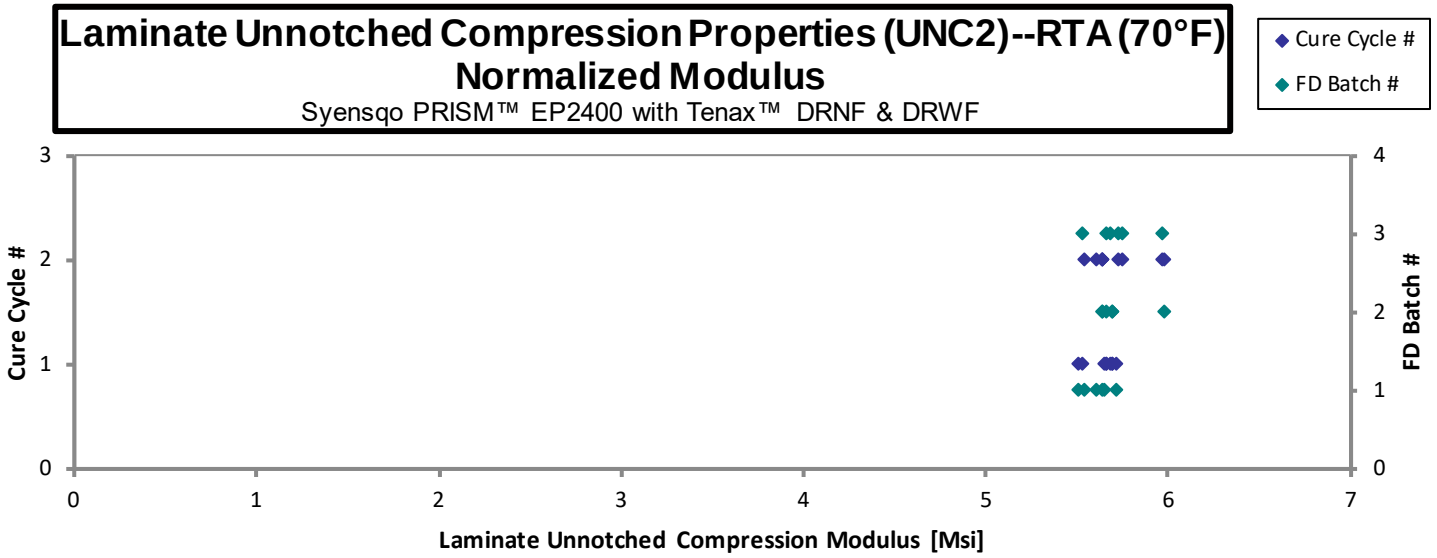
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC2-A-C1-1-1A	1	C1	1	59.36	5.167	0.1193	8	BGM	0.0149	63.24	5.505
M-UNC2-A-C1-1-2A	1	C1	1	59.00	5.320	0.1190	8	BGM	0.0149	62.69	5.653
M-UNC2-A-C1-1-3A	1	C1	1	57.63	5.321	0.1203	8	BGM	0.0150	61.91	5.715
M-UNC2-A-C2-1-1A	1	C2	2	57.57	5.445	0.1153	8	BGM	0.0144	59.28	5.607
M-UNC2-A-C2-1-2A	1	C2	2	58.74	5.456	0.1157	8	BGM	0.0145	60.70	5.638
M-UNC2-A-C2-1-3A	1	C2	2	57.49	5.390	0.1151	8	BGM	0.0144	59.07	5.539
M-UNC2-B-C1-1-1A	2	C1	1	61.94	5.490	0.1162	8	BGM	0.0145	64.28	5.697
M-UNC2-B-C1-1-2A	2	C1	1	59.03	5.455	0.1163	8	BGM	0.0145	61.31	5.666
M-UNC2-B-C1-1-3A	2	C1	1	59.01	5.522	0.1154	8	BGM	0.0144	60.81	5.691
M-UNC2-B-C2-1-1A	2	C2	2	58.03	5.378	0.1176	8	BGM	0.0147	60.90	5.644
M-UNC2-B-C2-1-2A	2	C2	2	57.15	5.385	0.1173	8	BGM	0.0147	59.84	5.639
M-UNC2-B-C2-1-3A	2	C2	2	60.20	5.756	0.1163	8	BGM	0.0145	62.51	5.977
M-UNC2-C-C1-1-1A	3	C1	1	58.51	5.210	0.1223	8	BGM	0.0153	63.88	5.689
M-UNC2-C-C1-1-2A	3	C1	1	56.50	5.285	0.1200	8	BGM	0.0150	60.55	5.663
M-UNC2-C-C1-1-3A	3	C1	1	53.80	5.159	0.1201	8	BGM	0.0150	57.68	5.530
M-UNC2-C-C2-1-1A	3	C2	2	52.74	5.402	0.1191	8	BGM	0.0149	56.10	5.746
M-UNC2-C-C2-1-2A	3	C2	2	55.16	5.351	0.1200	8	BGM	0.0150	59.10	5.732
M-UNC2-C-C2-1-3A	3	C2	2	54.24	5.606	0.1194	8	BGM	0.0149	57.80	5.974

Average	**57.56**	**5.394**	**Average$_{norm}$**	**0.0148**	**60.65**	**5.684**
Standard Dev.	**2.348**	**0.1489**	**Standard Dev.$_{norm}$**		**2.239**	**0.1255**
Coeff. of Var. [%]	**4.079**	**2.761**	**Coeff. of Var. [%]$_{norm}$**		**3.691**	**2.208**
Min.	**52.74**	**5.159**	**Min.**	**0.0144**	**56.10**	**5.505**
Max.	**61.94**	**5.756**	**Max.**	**0.0153**	**64.28**	**5.977**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC2)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
0
10
20
30
40
50
60
70
Laminate Unnotched Compression Strength [ksi]


Laminate Unnotched Compression Properties (UNC2)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
0
1
2
3
4
5
6
7
Laminate Unnotched Compression Modulus [Msi]

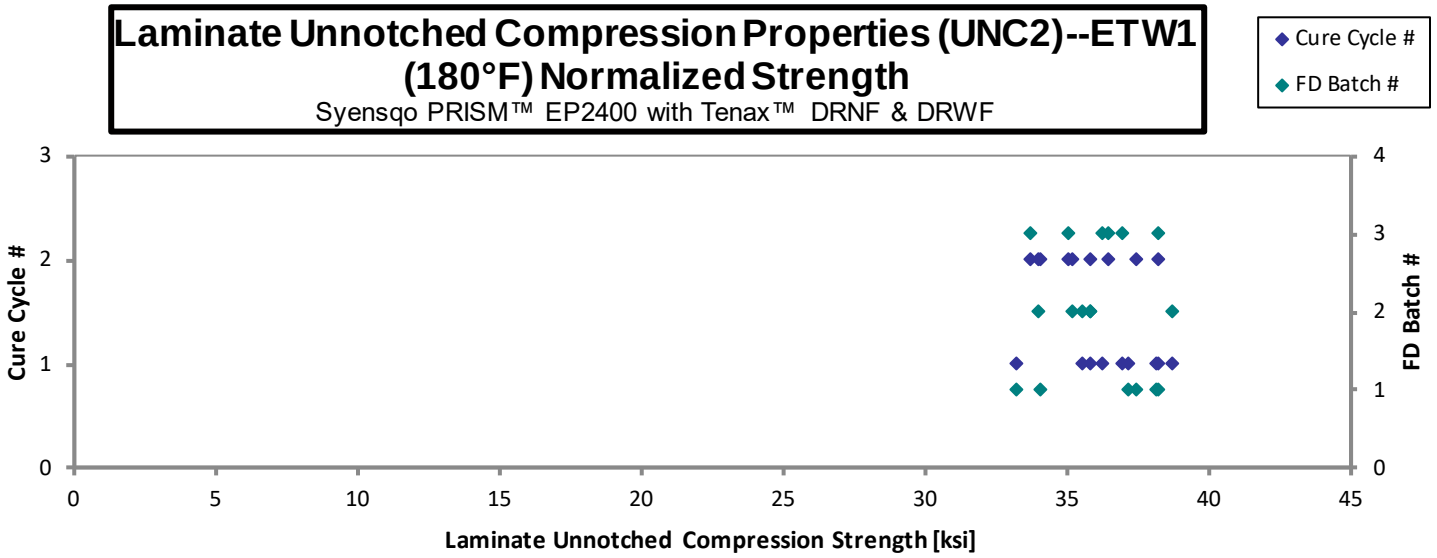
Laminate Unnotched Compression Properties (UNC2)-- ETW1 (180°F) Strength & Modulus

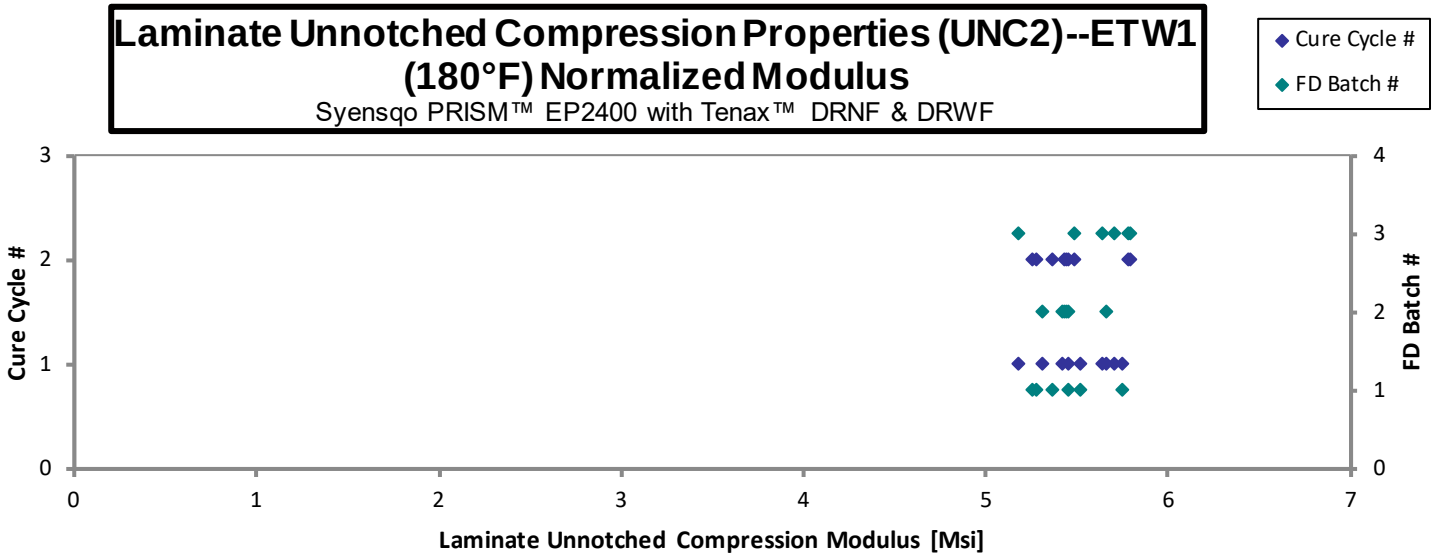
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC2-A-C1-1-1D	1	C1	1	36.59	5.224	0.1168	8	BGM	0.0146	38.16	5.449
M-UNC2-A-C1-1-2D	1	C1	1	35.45	5.473	0.1176	8	BAB	0.0147	37.21	5.745
M-UNC2-A-C1-1-3D	1	C1	1	31.71	5.258	0.1175	8	BAT	0.0147	33.26	5.515
M-UNC2-A-C2-1-1D	1	C2	2	36.25	5.201	0.1157	8	BGM, BAT	0.0145	37.44	5.371
M-UNC2-A-C2-1-2D	1	C2	2	32.97	5.086	0.1157	8	BAT	0.0145	34.06	5.255
M-UNC2-A-C2-1-3D	1	C2	2	36.62	5.051	0.1170	8	BAT, BGM	0.0146	38.26	5.278
M-UNC2-B-C1-1-1D	2	C1	1	34.90	5.167	0.1151	8	BGM	0.0144	35.86	5.308
M-UNC2-B-C1-1-2D	2	C1	1	37.62	5.501	0.1153	8	BGM	0.0144	38.72	5.662
M-UNC2-B-C1-1-3D	2	C1	1	34.53	5.266	0.1154	8	BAT	0.0144	35.57	5.424
M-UNC2-B-C2-1-1D	2	C2	2	34.62	5.267	0.1159	8	BAT	0.0145	35.81	5.448
M-UNC2-B-C2-1-2D	2	C2	2	33.84	5.215	0.1166	8	BGM	0.0146	35.23	5.429
M-UNC2-B-C2-1-3D	2	C2	2	32.82	5.264	0.1161	8	BAT	0.0145	34.01	5.456
M-UNC2-C-C1-1-1D	3	C1	1	35.65	4.828	0.1201	8	BGM	0.0150	38.22	5.176
M-UNC2-C-C1-1-2D	3	C1	1	34.37	5.239	0.1205	8	BGM	0.0151	36.98	5.637
M-UNC2-C-C1-1-3D	3	C1	1	33.38	5.251	0.1217	8	BGM	0.0152	36.28	5.707
M-UNC2-C-C2-1-1D	3	C2	2	32.63	5.386	0.1205	8	BGM	0.0151	35.09	5.793
M-UNC2-C-C2-1-2D	3	C2	2	31.62	5.421	0.1195	8	BGM	0.0149	33.74	5.786
M-UNC2-C-C2-1-3D	3	C2	2	34.26	5.152	0.1192	8	BGM	0.0149	36.47	5.484

Average	**34.43**	**5.236**	**Average$_{norm}$**	**0.0147**	**36.13**	**5.496**
Standard Dev.	**1.724**	**0.1577**	**Standard Dev.$_{norm}$**		**1.690**	**0.1881**
Coeff. of Var. [%]	**5.006**	**3.012**	**Coeff. of Var. [%]$_{norm}$**		**4.679**	**3.422**
Min.	**31.62**	**4.828**	**Min.**	**0.0144**	**33.26**	**5.176**
Max.	**37.62**	**5.501**	**Max.**	**0.0152**	**38.72**	**5.793**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC2)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
5
10
15
20
25
30
35
40
45
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC2)--ETW1
(180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
1
2
3
4
5
6
7
0
1
2
3
4

4.2.6 Unnotched Compression 3 (UNC3)

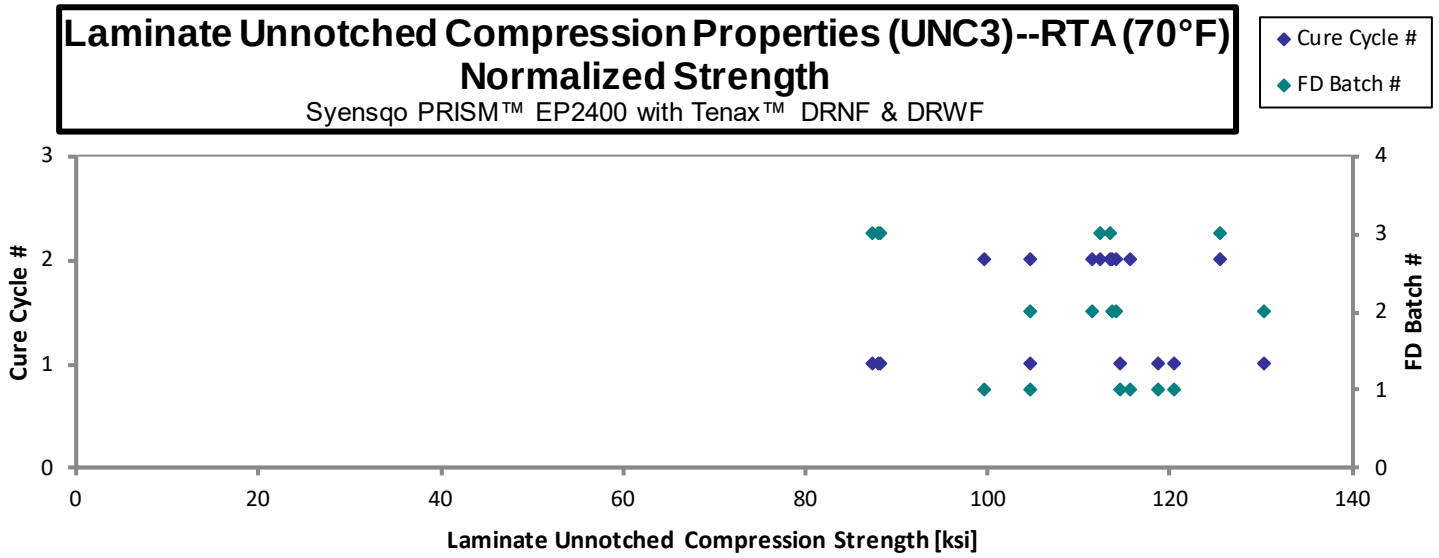
Laminate Unnotched Compression Properties (UNC3)--RTA
(70°F) Strength & Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

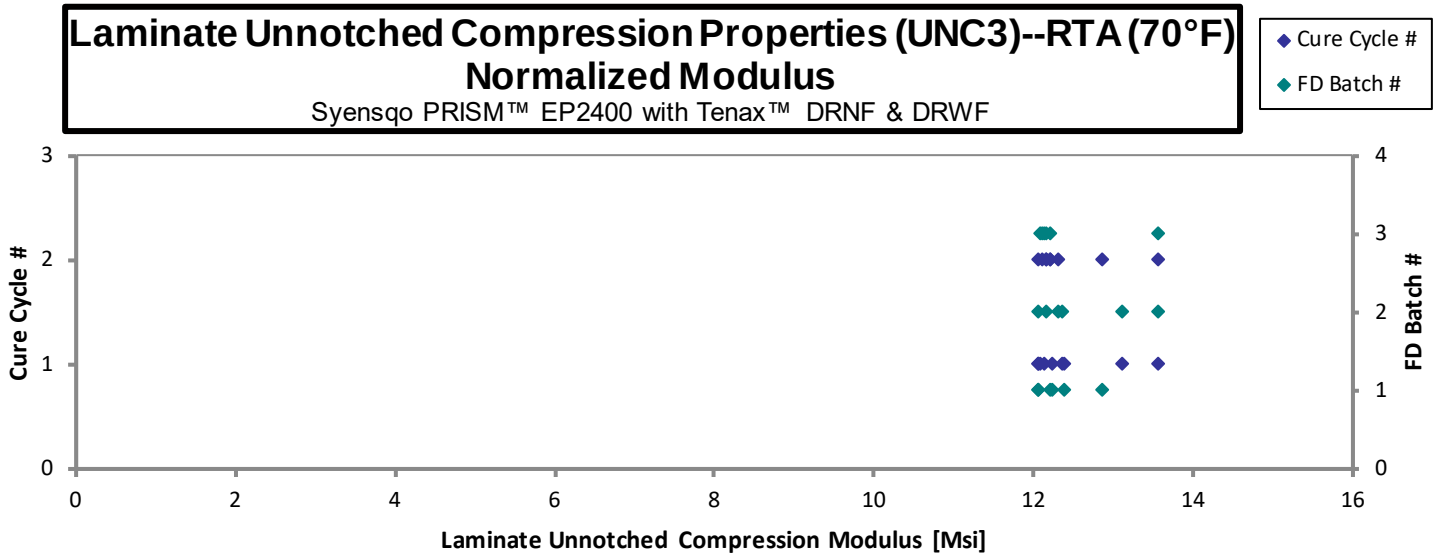
normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC3-A-C1-1-1A	1	C1	1	114.8	11.84	0.1447	20	BGM	0.0072	118.70	12.24
M-UNC3-A-C1-1-2A	1	C1	1	110.9	11.67	0.1448	20	BGM	0.0072	114.66	12.07
M-UNC3-A-C1-1-3A	1	C1	1	116.5	11.97	0.1448	20	BGM	0.0072	120.56	12.38
M-UNC3-A-C2-1-1A	1	C2	2	102.1	11.77	0.1435	20	BGM	0.0072	104.66	12.06
M-UNC3-A-C2-1-2A	1	C2	2	112.1	11.84	0.1445	20	BGM	0.0072	115.71	12.21
M-UNC3-A-C2-1-3A	1	C2	2	96.42	12.45	0.1446	20	BGM	0.0072	99.61	12.86
M-UNC3-B-C1-1-1A	2	C1	1		11.85	0.1460	20	BGM, CIT, CIB	0.0073		12.36
M-UNC3-B-C1-1-2A	2	C1	1		11.67	0.1446	20	CIT	0.0072		12.05
M-UNC3-B-C1-1-3A	2	C1	1	126.3	12.70	0.1445	20	BGM	0.0072	130.34	13.11
M-UNC3-B-C1-1-4A	2	C1	1	101.4		0.1446	20	BGM	0.0072	104.69	
M-UNC3-B-C2-1-1A	2	C2	2	115.8	12.52	0.1376	20	BGM	0.0069	113.79	12.30
M-UNC3-B-C2-1-2A	2	C2	2	113.9	12.41	0.1371	20	BGM	0.0069	111.59	12.16
M-UNC3-B-C2-1-3A	2	C2	2	115.6	13.75	0.1381	20	BGM	0.0069	114.06	13.56
M-UNC3-C-C1-1-1A	3	C1	1	86.58	11.92	0.1425	20	BGM	0.0071	88.11	12.13
M-UNC3-C-C1-1-2A	3	C1	1	86.36	11.83	0.1432	20	BAB	0.0072	88.32	12.10
M-UNC3-C-C1-1-3A	3	C1	1	85.54	13.29	0.1431	20	BGM	0.0072	87.42	13.58
M-UNC3-C-C2-1-1A	3	C2	2	110.7	12.04	0.1421	20	BGM	0.0071	112.31	12.22
M-UNC3-C-C2-1-2A	3	C2	2	124.1	12.03	0.1415	20	BGM	0.0071	125.42	12.16
M-UNC3-C-C2-1-3A	3	C2	2	113.0	12.05	0.1406	20	BGM	0.0070	113.43	12.11

Cause of lower strength values for C-C1 is unclear. There are no noticable porosity and layup appears correct. ETW coupons do not exhibit the same behavior.

Average	**107.8**	**12.20**		**$Average_{norm}$**	**0.0071**	**109.61**	**12.42**
Standard Dev.	**12.66**	**0.5696**		**$Standard\ Dev._{norm}$**		**12.661**	**0.50**
Coeff. of Var. [%]	**11.75**	**4.669**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**11.55**	**4.02**
Min.	**85.54**	**11.67**		**Min.**	**0.0069**	**87.42**	**12.05**
Max.	**126.3**	**13.75**		**Max.**	**0.0073**	**130.34**	**13.58**
Number of Spec.	**17**	**18**		**Number of Spec.**	**19**	**17**	**18**


Laminate Unnotched Compression Properties (UNC3)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4


Laminate Unnotched Compression Properties (UNC3)--RTA (70°F)
Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

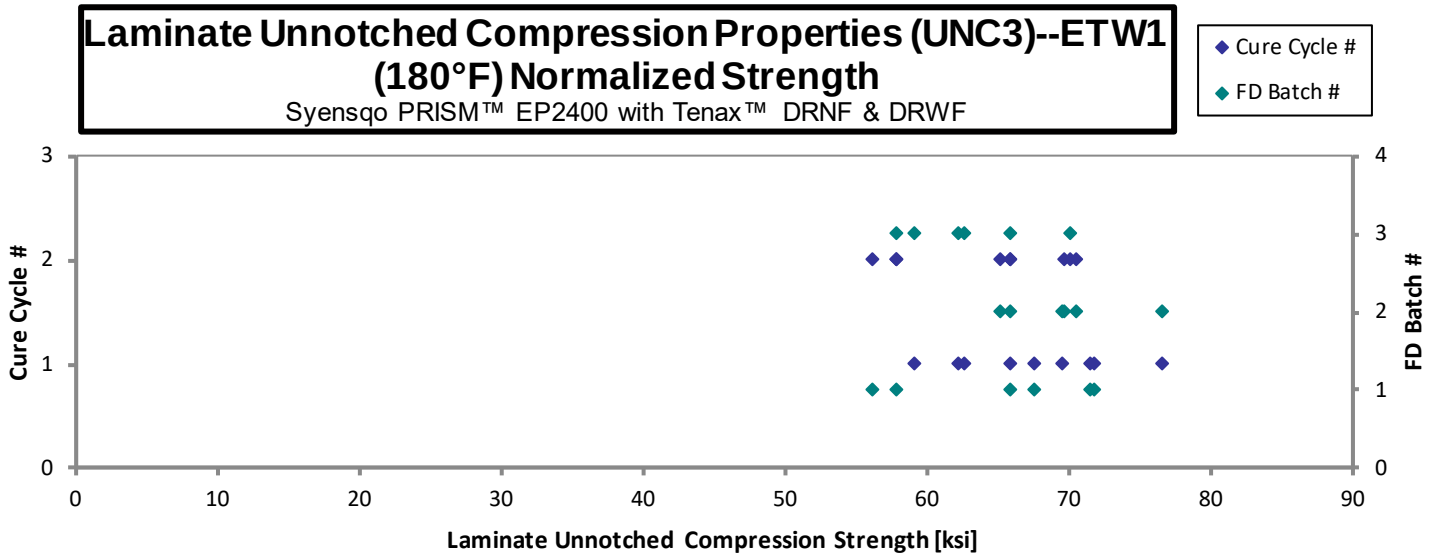
Laminate Unnotched Compression Properties (UNC3)-- ETW1 (180°F) Strength & Modulus

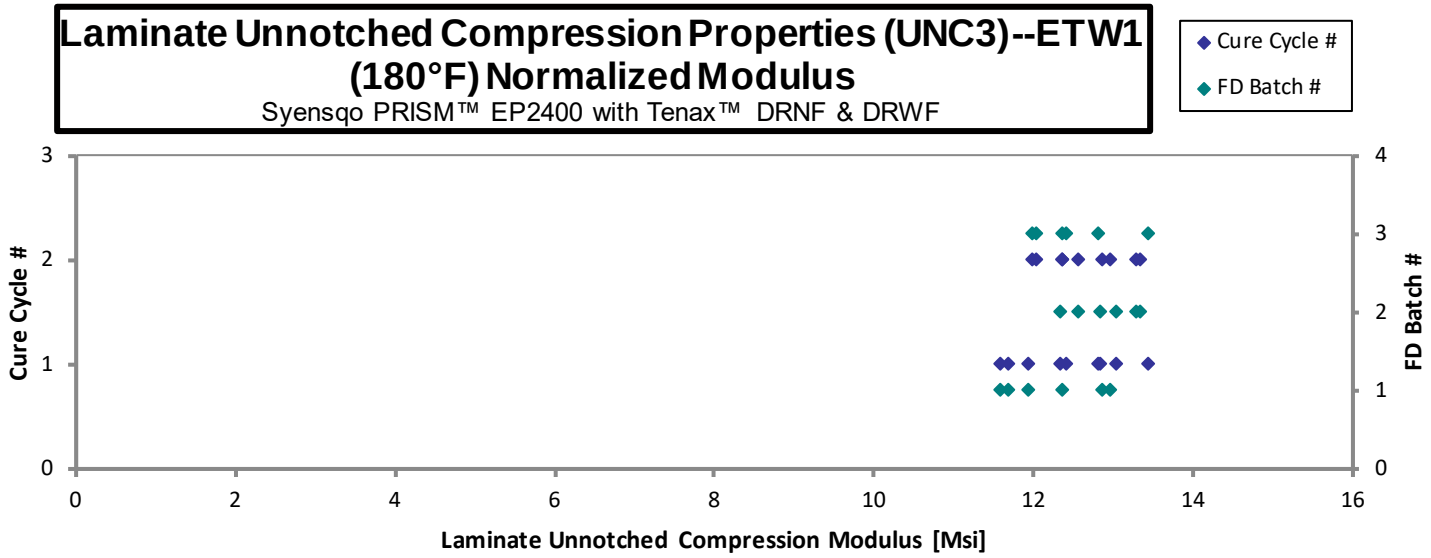
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
M-UNC3-A-C1-1-1D	1	C1	1	70.48	11.47	0.1425	20	BAT	0.0071	71.75	11.68
M-UNC3-A-C1-1-2D	1	C1	1	69.60	11.62	0.1438	20	BAT	0.0072	71.47	11.93
M-UNC3-A-C1-1-3D	1	C1	1	66.16	11.34	0.1430	20	BAT	0.0071	67.57	11.58
M-UNC3-A-C2-1-1D	1	C2	2	56.93	12.65	0.1424	20	BGM	0.0071	57.89	12.86
M-UNC3-A-C2-1-2D	1	C2	2	54.91	12.70	0.1431	20	BGM	0.0072	56.11	12.97
M-UNC3-A-C2-1-3D	1	C2	2	64.57	12.13	0.1427	20	BGM	0.0071	65.82	12.36
M-UNC3-B-C1-1-1D	2	C1	1	67.41	12.65	0.1443	20	BGM	0.0072	69.49	13.04
M-UNC3-B-C1-1-2D	2	C1	1	74.23	11.95	0.1446	20	BGM	0.0072	76.64	12.34
M-UNC3-B-C1-1-3D	2	C1	1	63.79	12.43	0.1447	20	BGM	0.0072	65.93	12.85
M-UNC3-B-C2-1-1D	2	C2	2	70.74	13.48	0.1380	20	BGM	0.0069	69.71	13.28
M-UNC3-B-C2-1-2D	2	C2	2	71.99	12.82	0.1371	20	BGM	0.0069	70.48	12.55
M-UNC3-B-C2-1-3D	2	C2	2	64.96	13.31	0.1404	20	BGM	0.0070	65.12	13.34
M-UNC3-C-C1-1-1D	3	C1	1	61.49	12.65	0.1418	20	BGM	0.0071	62.27	12.81
M-UNC3-C-C1-1-2D	3	C1	1	58.60	12.30	0.1412	20	BGM	0.0071	59.09	12.41
M-UNC3-C-C1-1-3D	3	C1	1	61.92	13.27	0.1418	20	BGM	0.0071	62.71	13.44
M-UNC3-C-C2-1-1D	3	C2	2	57.17	11.91	0.1415	20	BGM	0.0071	57.79	12.04
M-UNC3-C-C2-1-2D	3	C2	2	64.59	12.13	0.1428	20	BGM	0.0071	65.90	12.37
M-UNC3-C-C2-1-3D	3	C2	2	68.85	11.76	0.1426	20	BGM	0.0071	70.10	11.98

Average	**64.91**	**12.36**	**$Average_{norm}$**	**0.0071**	**65.88**	**12.55**
Standard Dev.	**5.598**	**0.6312**	**$Standard\ Dev._{norm}$**		**5.665**	**0.56**
Coeff. of Var. [%]	**8.624**	**5.105**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**8.599**	**4.50**
Min.	**54.91**	**11.34**	**Min.**	**0.0069**	**56.11**	**11.58**
Max.	**74.23**	**13.48**	**Max.**	**0.0072**	**76.64**	**13.44**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Unnotched Compression Properties (UNC3)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Strength [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3
4

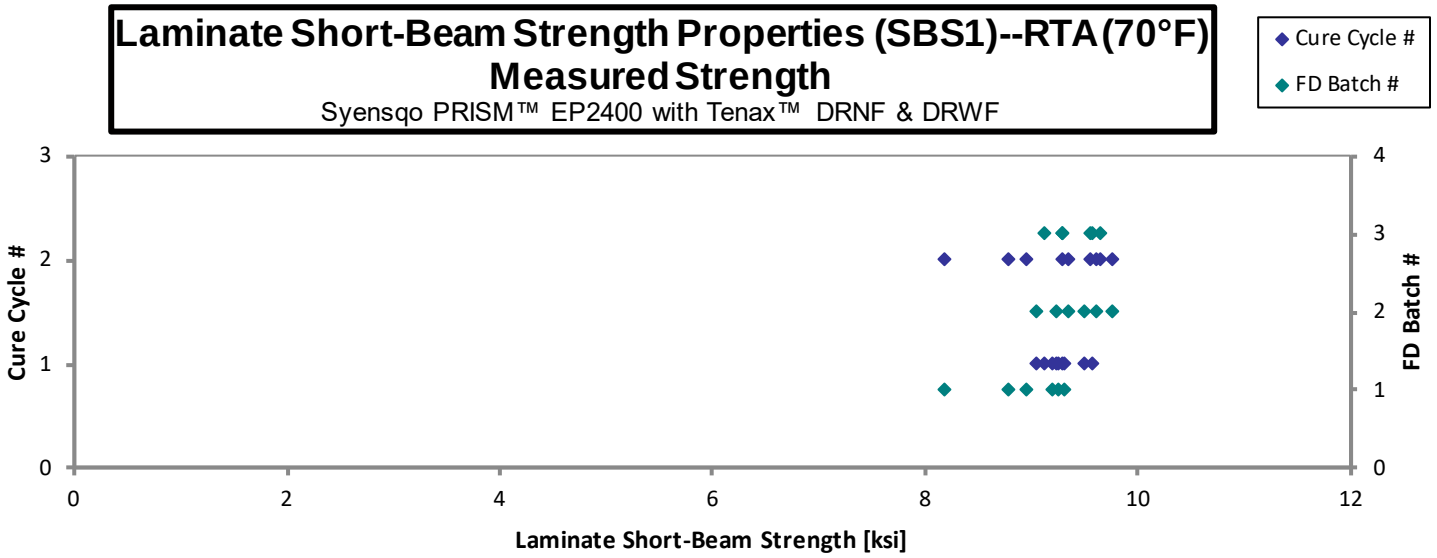

Laminate Unnotched Compression Properties (UNC3)--ETW1
(180°F) Normalized Modulus
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Unnotched Compression Modulus [Msi]
0
2
4
6
8
10
12
14
16
0
1
2
3
4

4.2.7 Laminate Short-Beam Strength (SBS1)

Laminate Short-Beam Strength Properties (SBS1)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
M-SBS1-A-C1-M-1A	1	C1	1	9.194	0.1214	8	0.0152	INTERLAMINAR SHEAR
M-SBS1-A-C1-M-2A	1	C1	1	9.249	0.1199	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-A-C1-M-3A	1	C1	1	9.319	0.1201	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-1A	1	C2	2	8.958	0.1216	8	0.0152	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-2A	1	C2	2	8.781	0.1225	8	0.0153	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-3A	1	C2	2	8.179	0.1215	8	0.0152	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-1A	2	C1	1	9.492	0.1144	8	0.0143	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-2A	2	C1	1	9.242	0.1148	8	0.0144	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-4A	2	C1	1	9.055	0.1151	8	0.0144	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-1A	2	C2	2	9.604	0.1171	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-2A	2	C2	2	9.347	0.1168	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-3A	2	C2	2	9.767	0.1171	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-1A	3	C1	1	9.286	0.1169	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-2A	3	C1	1	9.567	0.1165	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-3A	3	C1	1	9.123	0.1161	8	0.0145	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-1A	3	C2	2	9.549	0.1274	8	0.0159	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-2A	3	C2	2	9.645	0.1267	8	0.0158	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-3A	3	C2	2	9.297	0.1267	8	0.0158	INTERLAMINAR SHEAR

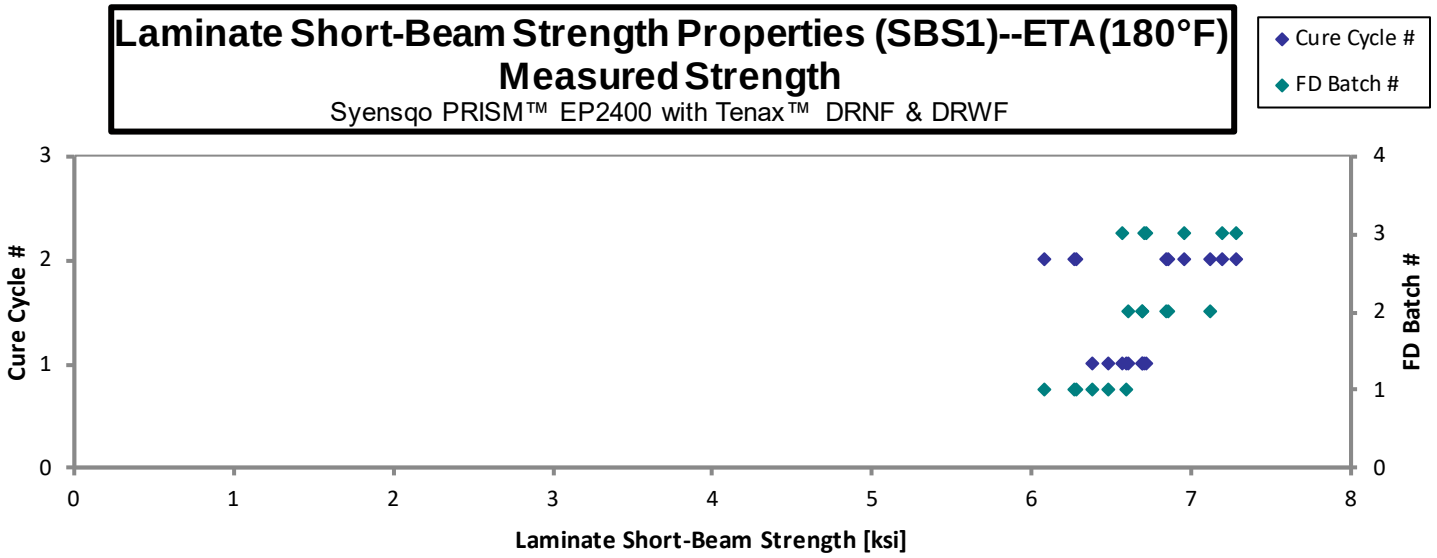
Average	**9.259**	**0.0149**
Standard Dev.	**0.3696**	
Coeff. of Var. [%]	**3.992**	
Min.	**8.179**	**0.0143**
Max.	**9.767**	**0.0159**
Number of Spec.	**18**	**18**


Laminate Short-Beam Strength Properties (SBS1)--RTA(70°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Short-Beam Strength [ksi]
0
1
2
3
4
0
2
4
6
8
10
12

Laminate Short-Beam Strength Properties (SBS1)--ETA (180°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
M-SBS1-A-C1-M-1C	1	C1	1	6.595	0.1196	8	0.0149	INTERLAMINAR SHEAR
M-SBS1-A-C1-M-2C	1	C1	1	6.382	0.1194	8	0.0149	INTERLAMINAR SHEAR
M-SBS1-A-C1-M-3C	1	C1	1	6.484	0.1199	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-1C	1	C2	2	6.285	0.1199	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-2C	1	C2	2	6.084	0.1204	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-A-C2-M-3C	1	C2	2	6.275	0.1202	8	0.0150	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-1C	2	C1	1	6.604	0.1144	8	0.0143	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-2C	2	C1	1	6.697	0.1142	8	0.0143	INTERLAMINAR SHEAR
M-SBS1-B-C1-M-3C	2	C1	1	6.701	0.1145	8	0.0143	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-1C	2	C2	2	6.849	0.1170	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-2C	2	C2	2	6.861	0.1170	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-B-C2-M-3C	2	C2	2	7.117	0.1173	8	0.0147	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-1C	3	C1	1	6.723	0.1162	8	0.0145	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-2C	3	C1	1	6.574	0.1168	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-C-C1-M-3C	3	C1	1	6.709	0.1168	8	0.0146	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-1C	3	C2	2	7.283	0.1269	8	0.0159	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-2C	3	C2	2	7.199	0.1271	8	0.0159	INTERLAMINAR SHEAR
M-SBS1-C-C2-M-4C	3	C2	2	6.965	0.1272	8	0.0159	INTERLAMINAR SHEAR

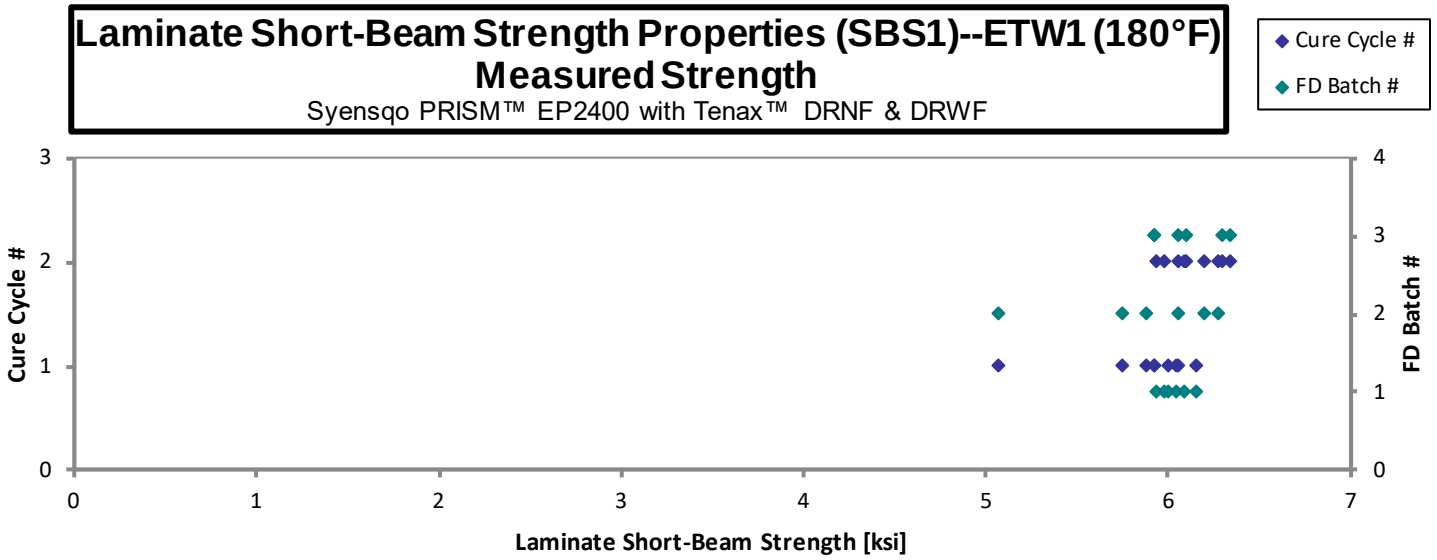
Average	**6.688**	**0.0149**
Standard Dev.	**0.3251**	
Coeff. of Var. [%]	**4.861**	
Min.	**6.084**	**0.0143**
Max.	**7.283**	**0.0159**
Number of Spec.	**18**	**18**


Laminate Short-Beam Strength Properties (SBS1)--ETA (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7
8

Laminate Short-Beam Strength Properties (SBS1)--ETW1 (180°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
M-SBS1-A-C1-M-1D	1	C1	1	6.004	0.1199	8	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
M-SBS1-A-C1-M-2D	1	C1	1	6.049	0.1199	8	0.0150	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
M-SBS1-A-C1-M-3D	1	C1	1	6.158	0.1191	8	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
M-SBS1-A-C2-M-1D	1	C2	2	5.932	0.1192	8	0.0149	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-A-C2-M-2D	1	C2	2	5.983	0.1183	8	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-A-C2-M-3D	1	C2	2	6.090	0.1187	8	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C1-M-3D	2	C1	1	5.877	0.1149	8	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C1-M-4D	2	C1	1	5.747	0.1146	8	0.0143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C1-M-5D	2	C1	1	5.073	0.1154	8	0.0144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C2-M-1D	2	C2	2	6.203	0.1164	8	0.0145	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C2-M-2D	2	C2	2	6.055	0.1181	8	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-B-C2-M-3D	2	C2	2	6.271	0.1188	8	0.0148	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-C-C1-M-1D	3	C1	1	6.055	0.1168	8	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-C-C1-M-2D	3	C1	1	5.924	0.1169	8	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
M-SBS1-C-C1-M-3D	3	C1	1	5.920	0.1164	8	0.0146	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-C-C2-M-1D	3	C2	2	6.294	0.1269	8	0.0159	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-C-C2-M-2D	3	C2	2	6.338	0.1264	8	0.0158	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
M-SBS1-C-C2-M-3D	3	C2	2	6.097	0.1263	8	0.0158	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	**6.004**	**0.0149**
Standard Dev.	**0.2787**	
Coeff. of Var. [%]	**4.642**	
Min.	**5.073**	**0.0143**
Max.	**6.338**	**0.0159**
Number of Spec.	**18**	**18**


Laminate Short-Beam Strength Properties (SBS1)--ETW1 (180°F)
Measured Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Short-Beam Strength [ksi]
0
1
2
3
4
5
6
7

4.2.8 Open-Hole Tension 1 (OHT1)

Laminate Open-Hole Tension Properties (OHT1)--CTA (-65°F) Strength

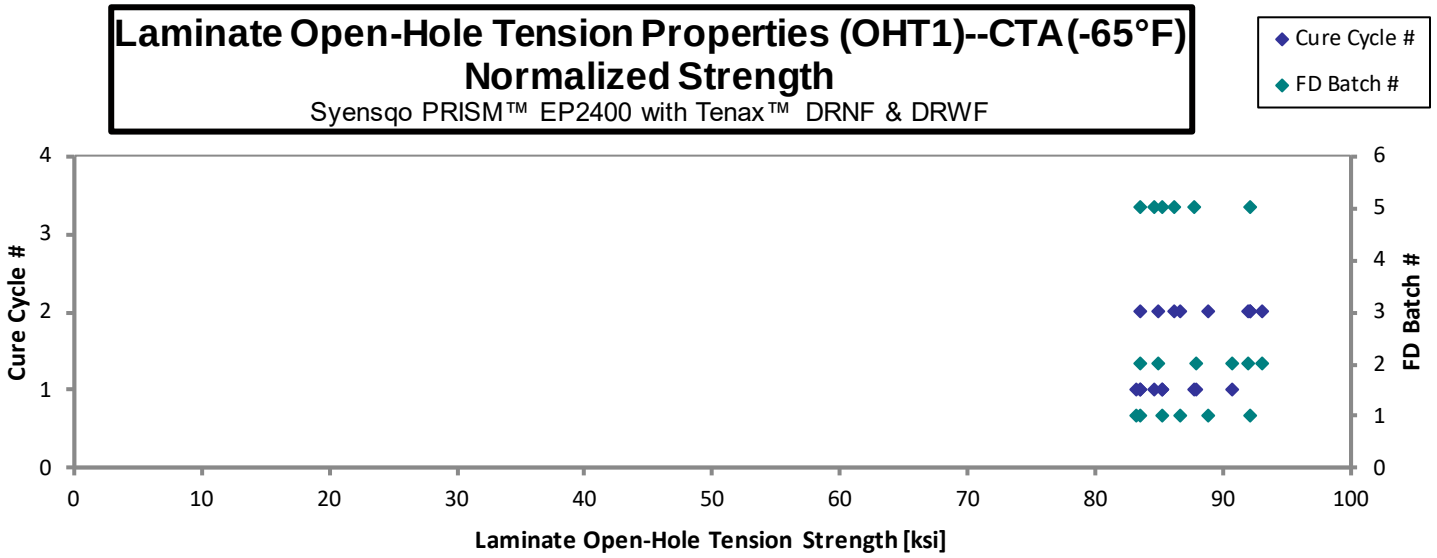
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT1-A-C1-1-1B	1	C1	1	80.90	0.1181	8	AGM	0.0148	85.28
M-OHT1-A-C1-1-2B	1	C1	1	79.43	0.1175	8	AGM	0.0147	83.29
M-OHT1-A-C1-1-3B	1	C1	1	79.74	0.1174	8	AGM	0.0147	83.59
M-OHT1-A-C2-1-1B	1	C2	2	83.38	0.1164	8	AGM	0.0145	86.64
M-OHT1-A-C2-1-2B	1	C2	2	88.84	0.1162	8	AGM	0.0145	92.13
M-OHT1-A-C2-1-3B	1	C2	2	86.42	0.1153	8	AGM	0.0144	88.94
M-OHT1-B-C1-1-1B	2	C1	1	78.28	0.1196	8	AGM	0.0150	83.61
M-OHT1-B-C1-1-2B	2	C1	1	83.19	0.1183	8	AGM	0.0148	87.86
M-OHT1-B-C1-1-3B	2	C1	1	86.25	0.1179	8	AGM	0.0147	90.77
M-OHT1-B-C2-1-1B	2	C2	2	88.26	0.1168	8	AGM	0.0146	92.04
M-OHT1-B-C2-1-2B	2	C2	2	80.97	0.1175	8	AGM	0.0147	84.96
M-OHT1-B-C2-1-3B	2	C2	2	88.54	0.1177	8	AGM	0.0147	93.04
M-OHT1-E-C1-1-1B	5	C1	1	79.94	0.1186	8	AGM	0.0148	84.61
M-OHT1-E-C1-1-2B	5	C1	1	83.38	0.1180	8	AGM	0.0147	87.81
M-OHT1-E-C1-1-3B	5	C1	1	80.41	0.1188	8	AGM	0.0148	85.27
M-OHT1-E-C2-1-1B	5	C2	2	85.85	0.1203	8	M(A,L)GM	0.0150	92.24
M-OHT1-E-C2-1-2B	5	C2	2	80.35	0.1202	8	M(A,L)GM	0.0150	86.25
M-OHT1-E-C2-1-3B	5	C2	2	77.61	0.1206	8	M(A,L)GM	0.0151	83.53

Average	**82.87**	
Standard Dev.	**3.672**	
Coeff. of Var. [%]	**4.431**	
Min.	**77.61**	
Max.	**88.84**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0148**	**87.33**
Standard $Dev._{norm}$		**3.418**
Coeff. of Var. $[\%]_{norm}$		**3.914**
Min.	**0.0144**	**83.29**
Max.	**0.0151**	**93.04**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT1)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
0
1
2
3
4
5
6

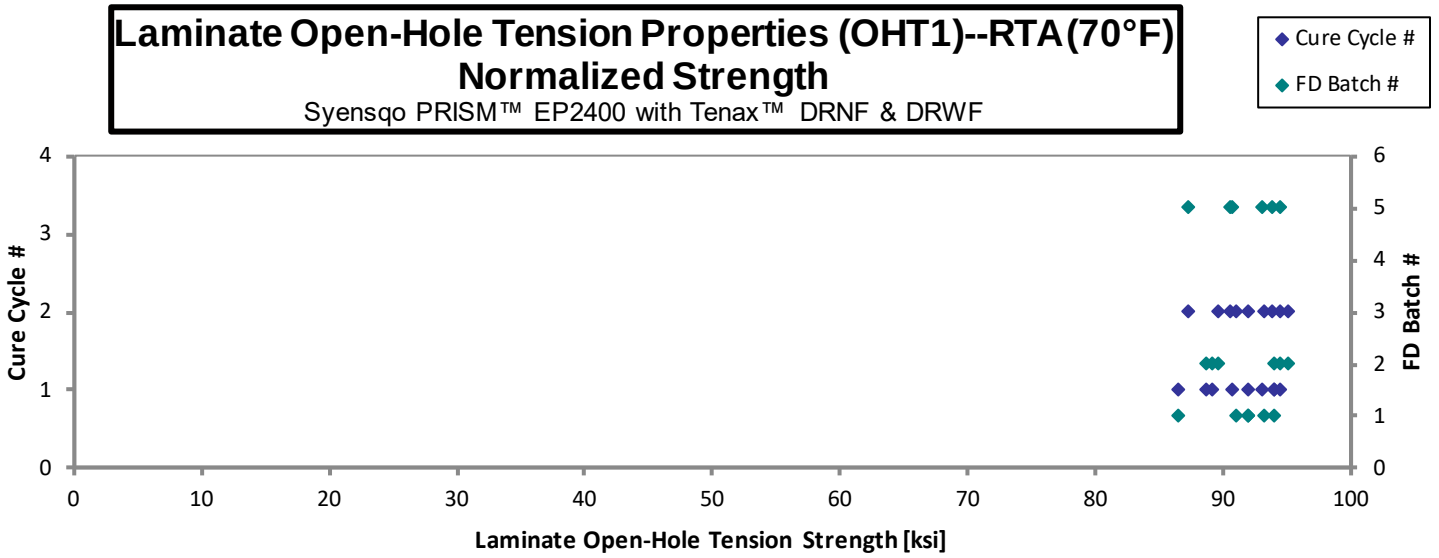
Laminate Open-Hole Tension Properties (OHT1)--RTA (70°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT1-A-C1-1-1A	1	C1	1	82.66	0.1173	8	M(A,L)GM	0.0147	86.54
M-OHT1-A-C1-1-2A	1	C1	1	89.76	0.1174	8	M(A,L)GM	0.0147	94.09
M-OHT1-A-C1-1-3A	1	C1	1	88.81	0.1161	8	M(A,L)GM	0.0145	92.09
M-OHT1-A-C2-1-1A	1	C2	2	90.51	0.1140	8	M(A,L)GM	0.0142	92.08
M-OHT1-A-C2-1-2A	1	C2	2	91.11	0.1147	8	M(A,L)GM	0.0143	93.29
M-OHT1-A-C2-1-3A	1	C2	2	88.32	0.1155	8	M(A,L)GM	0.0144	91.10
M-OHT1-B-C1-1-1A	2	C1	1	83.83	0.1186	8	M(A,L)GM	0.0148	88.73
M-OHT1-B-C1-1-2A	2	C1	1	88.91	0.1185	8	M(A,L)GM	0.0148	94.06
M-OHT1-B-C1-1-3A	2	C1	1	84.92	0.1177	8	M(A,L)GM	0.0147	89.26
M-OHT1-B-C2-1-1A	2	C2	2	89.45	0.1191	8	M(A,L)GM	0.0149	95.12
M-OHT1-B-C2-1-2A	2	C2	2	85.59	0.1174	8	M(A,L)GM	0.0147	89.73
M-OHT1-B-C2-1-3A	2	C2	2	89.99	0.1176	8	M(A,L)GM	0.0147	94.48
M-OHT1-E-C1-1-1A	5	C1	1	89.17	0.1188	8	M(A,L)GM	0.0148	94.54
M-OHT1-E-C1-1-2A	5	C1	1	86.26	0.1178	8	M(A,L)GM	0.0147	90.70
M-OHT1-E-C1-1-3A	5	C1	1	88.82	0.1175	8	M(A,L)GM	0.0147	93.18
M-OHT1-E-C2-1-1A	5	C2	2	84.13	0.1207	8	M(A,L)GM	0.0151	90.63
M-OHT1-E-C2-1-2A	5	C2	2	81.06	0.1206	8	M(A,L)GM	0.0151	87.27
M-OHT1-E-C2-1-3A	5	C2	2	87.00	0.1209	8	M(A,L)GM	0.0151	93.91

Average	**87.24**		**Average$_{norm}$**	**0.0147**	**91.71**
Standard Dev.	**2.938**		**Standard Dev.$_{norm}$**		**2.613**
Coeff. of Var. [%]	**3.367**		**Coeff. of Var. [%]$_{norm}$**		**2.849**
Min.	**81.06**		**Min.**	**0.0142**	**86.54**
Max.	**91.11**		**Max.**	**0.0151**	**95.12**
Number of Spec.	**18**		**Number of Spec.**	**18**	**18**


Laminate Open-Hole Tension Properties (OHT1)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
5
6

Laminate Open-Hole Tension Properties (OHT1)--ETA (180°F) Strength

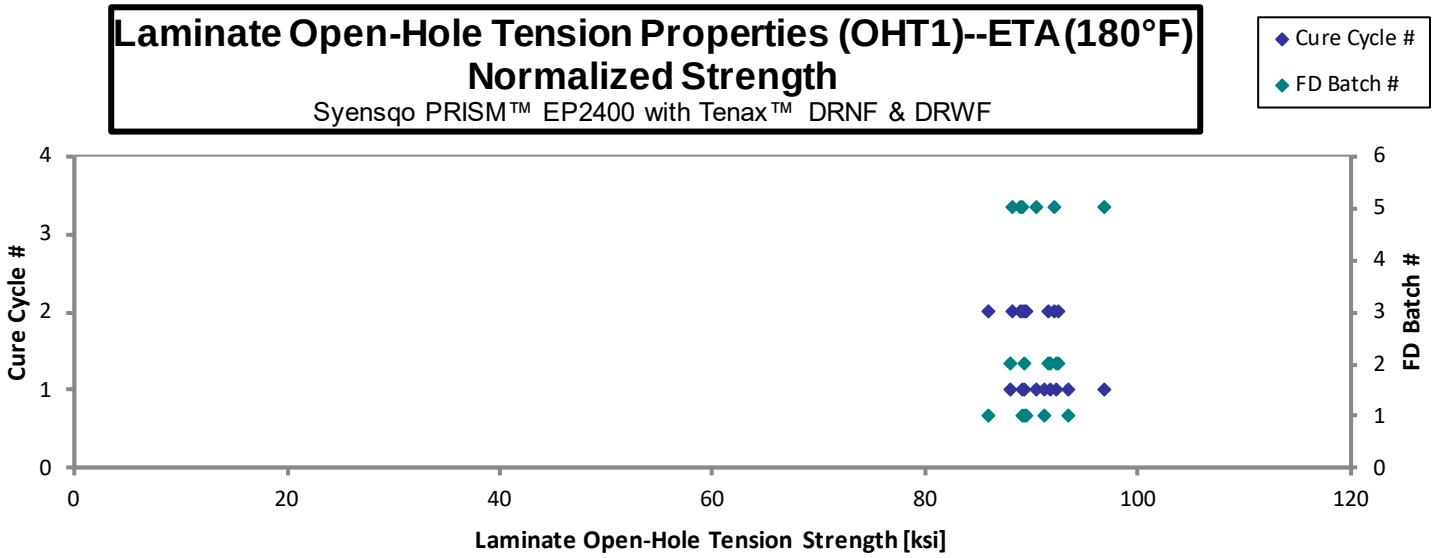
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT1-A-C1-1-1C	1	C1	1	88.52	0.1182	8	M(A,L)GM	0.0148	93.45
M-OHT1-A-C1-1-2C	1	C1	1	86.42	0.1183	8	M(A,L)GM	0.0148	91.31
M-OHT1-A-C1-1-3C	1	C1	1	84.80	0.1180	8	M(A,L)GM	0.0147	89.32
M-OHT1-A-C2-1-1C	1	C2	2	86.16	0.1160	8	M(A,L)GM	0.0145	89.25
M-OHT1-A-C2-1-2C	1	C2	2	83.77	0.1150	8	AGM	0.0144	85.98
M-OHT1-A-C2-1-3C	1	C2	2	86.63	0.1157	8	M(A,L)GM	0.0145	89.49
M-OHT1-B-C1-1-1C	2	C1	1	88.25	0.1166	8	AGM	0.0146	91.86
M-OHT1-B-C1-1-2C	2	C1	1	83.18	0.1184	8	M(A,L)GM	0.0148	87.95
M-OHT1-B-C1-1-3C	2	C1	1	88.03	0.1174	8	M(A,L)GM	0.0147	92.27
M-OHT1-B-C2-1-1C	2	C2	2	85.14	0.1205	8	M(A,L)GM	0.0151	91.57
M-OHT1-B-C2-1-2C	2	C2	2	84.41	0.1185	8	M(A,L)GM	0.0148	89.32
M-OHT1-B-C2-1-3C	2	C2	2	87.89	0.1180	8	M(A,L)GM	0.0148	92.61
M-OHT1-E-C1-1-1C	5	C1	1	91.44	0.1186	8	M(A,L)GM	0.0148	96.86
M-OHT1-E-C1-1-2C	5	C1	1	83.12	0.1202	8	M(A,L)GM	0.0150	89.20
M-OHT1-E-C1-1-3C	5	C1	1	84.00	0.1206	8	M(A,L)GM	0.0151	90.42
M-OHT1-E-C2-1-1C	5	C2	2	82.14	0.1214	8	M(A,L)GM	0.0152	89.05
M-OHT1-E-C2-1-2C	5	C2	2	81.79	0.1208	8	M(A,L)GM	0.0151	88.18
M-OHT1-E-C2-1-3C	5	C2	2	84.76	0.1219	8	M(A,L)GM	0.0152	92.22

Average	**85.58**	
Standard Dev.	**2.547**	
Coeff. of Var. [%]	**2.976**	
Min.	**81.79**	
Max.	**91.44**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0148**	**90.57**
$Standard\ Dev._{norm}$		**2.481**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.740**
Min.	**0.0144**	**85.98**
Max.	**0.0152**	**96.86**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT1)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120
Laminate Open-Hole Tension Strength [ksi]

Laminate Open-Hole Tension Properties (OHT1)--ETW1 (180°F) Strength

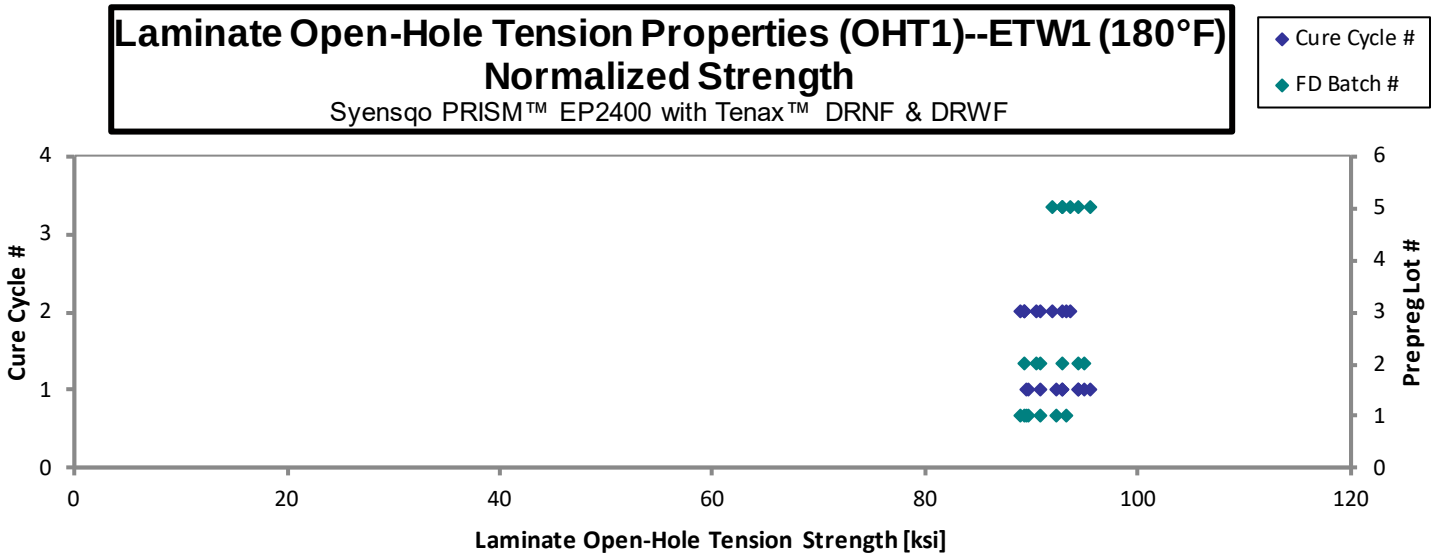
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT1-A-C1-1-1D	1	C1	1	88.11	0.1175	8	AGM	0.0147	92.45
M-OHT1-A-C1-1-2D	1	C1	1	86.66	0.1175	8	AGM	0.0147	90.92
M-OHT1-A-C1-1-3D	1	C1	1	86.08	0.1165	8	AGM	0.0146	89.51
M-OHT1-A-C1-1-4D	1	C1	1	86.29	0.1164	8	AGM	0.0146	89.69
M-OHT1-A-C2-1-1D	1	C2	2	86.63	0.1151	8	AGM	0.0144	89.00
M-OHT1-A-C2-1-2D	1	C2	2	86.72	0.1155	8	AGM	0.0144	89.39
M-OHT1-A-C2-1-3D	1	C2	2	91.38	0.1145	8	AGM	0.0143	93.39
M-OHT1-B-C1-1-1D	2	C1	1	87.79	0.1186	8	AGM	0.0148	92.94
M-OHT1-B-C1-1-2D	2	C1	1	90.08	0.1173	8	AGM	0.0147	94.37
M-OHT1-B-C1-1-3D	2	C1	1	90.56	0.1175	8	AGM	0.0147	94.96
M-OHT1-B-C2-1-1D	2	C2	2	86.66	0.1174	8	AGM	0.0147	90.82
M-OHT1-B-C2-1-2D	2	C2	2	85.33	0.1173	8	AGM	0.0147	89.39
M-OHT1-B-C2-1-3D	2	C2	2	84.46	0.1201	8	AGM	0.0150	90.57
M-OHT1-E-C1-1-1D	5	C1	1	89.09	0.1187	8	AGM	0.0148	94.40
M-OHT1-E-C1-1-2D	5	C1	1	87.81	0.1185	8	AGM	0.0148	92.94
M-OHT1-E-C1-1-3D	5	C1	1	90.44	0.1184	8	AGM	0.0148	95.61
M-OHT1-E-C2-1-1D	5	C2	2	84.08	0.1225	8	AGM	0.0153	91.95
M-OHT1-E-C2-1-2D	5	C2	2	85.62	0.1216	8	AGM	0.0152	92.93
M-OHT1-E-C2-1-3D	5	C2	2	86.44	0.1214	8	AGM	0.0152	93.66

Average	**87.38**	
Standard Dev.	**2.095**	
Coeff. of Var. [%]	**2.398**	
Min.	**84.08**	
Max.	**91.38**	
Number of Spec.	**19**	

$Average_{norm}$	**0.0148**	**92.05**
Standard $Dev._{norm}$		**2.100**
Coeff. of Var. $[\%]_{norm}$		**2.281**
Min.	**0.0143**	**89.00**
Max.	**0.0153**	**95.61**
Number of Spec.	**19**	**19**


Laminate Open-Hole Tension Properties (OHT1)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
Prepreg Lot #
Laminate Open-Hole Tension Strength [ksi]
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120

4.2.9 Open-Hole Tension 2 (OHT2)

Laminate Open-Hole Tension Properties (OHT2)--CTA (-65°F) Strength

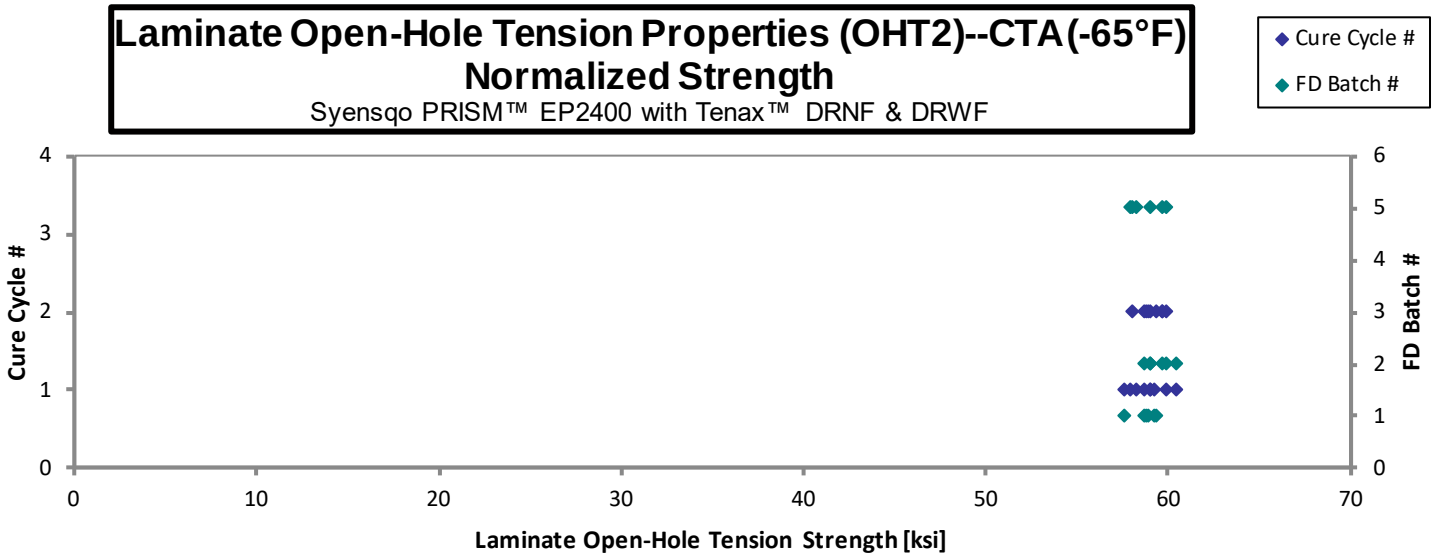
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT2-A-C1-1-1B	1	C1	1	55.67	0.1192	8	AGM	0.0149	59.24
M-OHT2-A-C1-1-2B	1	C1	1	54.75	0.1200	8	AGM	0.0150	58.65
M-OHT2-A-C1-1-3B	1	C1	1	54.72	0.1179	8	AGM	0.0147	57.61
M-OHT2-A-C2-1-1B	1	C2	2	55.75	0.1192	8	AGM	0.0149	59.31
M-OHT2-A-C2-1-2B	1	C2	2	55.27	0.1193	8	AGM	0.0149	58.89
M-OHT2-A-C2-1-3B	1	C2	2	55.55	0.1185	8	AGM	0.0148	58.80
M-OHT2-B-C1-1-1B	2	C1	1	57.31	0.1171	8	AGM	0.0146	59.92
M-OHT2-B-C1-1-2B	2	C1	1	57.08	0.1158	8	AGM	0.0145	59.02
M-OHT2-B-C1-1-3B	2	C1	1	58.86	0.1150	8	AGM	0.0144	60.42
M-OHT2-B-C2-1-1B	2	C2	2	56.17	0.1171	8	AGM	0.0146	58.71
M-OHT2-B-C2-1-2B	2	C2	2	56.71	0.1178	8	AGM	0.0147	59.65
M-OHT2-B-C2-1-3B	2	C2	2	55.41	0.1194	8	AGM	0.0149	59.07
M-OHT2-E-C1-1-1B	5	C1	1	56.63	0.1152	8	AGM	0.0144	58.26
M-OHT2-E-C1-1-2B	5	C1	1	56.80	0.1163	8	AGM	0.0145	59.00
M-OHT2-E-C1-1-3B	5	C1	1	56.28	0.1154	8	AGM	0.0144	57.97
M-OHT2-E-C2-1-1B	5	C2	2	56.34	0.1154	8	AGM	0.0144	58.07
M-OHT2-E-C2-1-2B	5	C2	2	57.70	0.1159	8	AGM	0.0145	59.72
M-OHT2-E-C2-1-3B	5	C2	2	58.08	0.1155	8	AGM	0.0144	59.91

Average	**56.39**	
Standard Dev.	**1.130**	
Coeff. of Var. [%]	**2.003**	
Min.	**54.72**	
Max.	**58.86**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0147**	**59.01**
$Standard\ Dev._{norm}$		**0.7466**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.265**
Min.	**0.0144**	**57.61**
Max.	**0.0150**	**60.42**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT2)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
0
1
2
3
4
0
1
2
3
4
5
6

Laminate Open-Hole Tension Properties (OHT2)--RTA (70°F) Strength

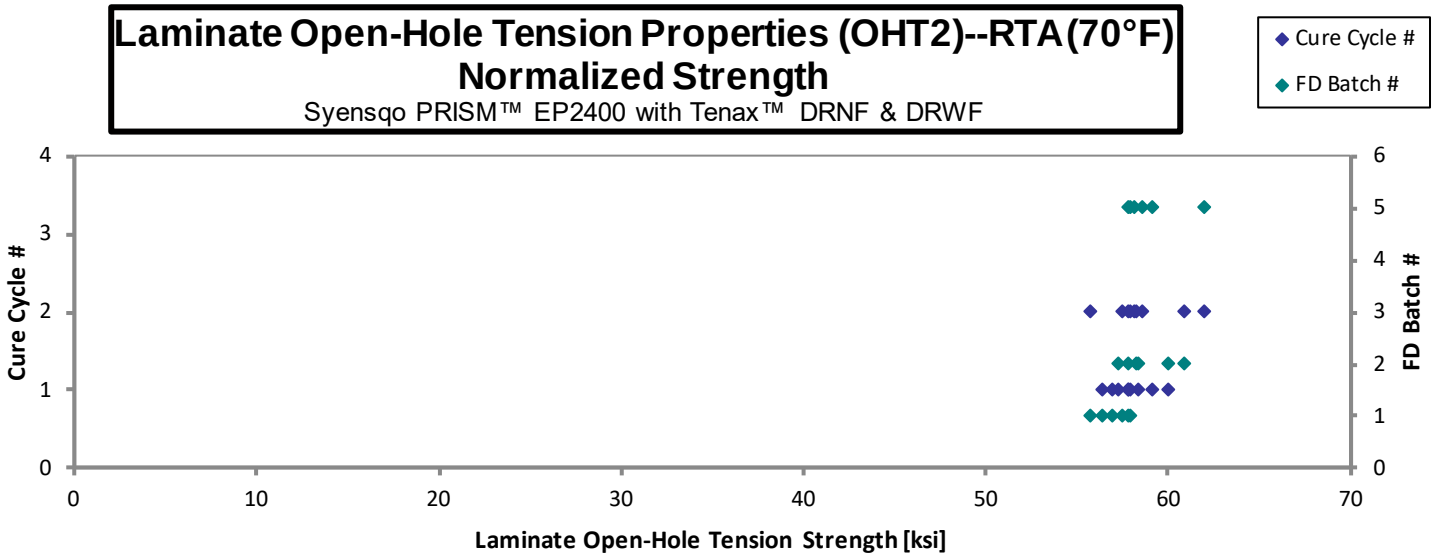
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT2-A-C1-1-1A	1	C1	1	53.10	0.1190	8	AGM	0.0149	56.40
M-OHT2-A-C1-1-2A	1	C1	1	54.51	0.1188	8	AGM	0.0148	57.81
M-OHT2-A-C1-1-3A	1	C1	1	53.75	0.1186	8	AGM	0.0148	56.90
M-OHT2-A-C2-1-1A	1	C2	2	54.14	0.1189	8	AGM	0.0149	57.45
M-OHT2-A-C2-1-2A	1	C2	2	54.90	0.1182	8	AGM	0.0148	57.92
M-OHT2-A-C2-1-3A	1	C2	2	53.19	0.1174	8	AGM	0.0147	55.75
M-OHT2-B-C1-1-1A	2	C1	1	56.74	0.1152	8	AGM	0.0144	58.38
M-OHT2-B-C1-1-2A	2	C1	1	56.14	0.1142	8	AGM	0.0143	57.26
M-OHT2-B-C1-1-3A	2	C1	1	58.30	0.1152	8	AGM	0.0144	59.98
M-OHT2-B-C2-1-1A	2	C2	2	55.86	0.1159	8	AGM	0.0145	57.78
M-OHT2-B-C2-1-2A	2	C2	2	55.92	0.1168	8	AGM	0.0146	58.30
M-OHT2-B-C2-1-3A	2	C2	2	58.03	0.1176	8	AGM	0.0147	60.95
M-OHT2-E-C1-1-1A	5	C1	1	56.83	0.1165	8	AGM	0.0146	59.13
M-OHT2-E-C1-1-2A	5	C1	1	55.67	0.1164	8	AGM	0.0146	57.87
M-OHT2-E-C1-1-3A	5	C1	1	56.46	0.1149	8	AGM	0.0144	57.91
M-OHT2-E-C2-1-1A	5	C2	2	60.01	0.1157	8	AGM	0.0145	61.99
M-OHT2-E-C2-1-2A	5	C2	2	56.41	0.1155	8	AGM	0.0144	58.16
M-OHT2-E-C2-1-3A	5	C2	2	56.83	0.1154	8	AGM	0.0144	58.56

Average	**55.93**	
Standard Dev.	**1.818**	
Coeff. of Var. [%]	**3.250**	
Min.	**53.10**	
Max.	**60.01**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0146**	**58.25**
Standard $Dev._{norm}$		**1.516**
Coeff. of $Var.[\%]_{norm}$		**2.602**
Min.	**0.0143**	**55.75**
Max.	**0.0149**	**61.99**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT2)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
Laminate Open-Hole Tension Strength [ksi]

Laminate Open-Hole Tension Properties (OHT2)--ETW1
(180°F) Strength

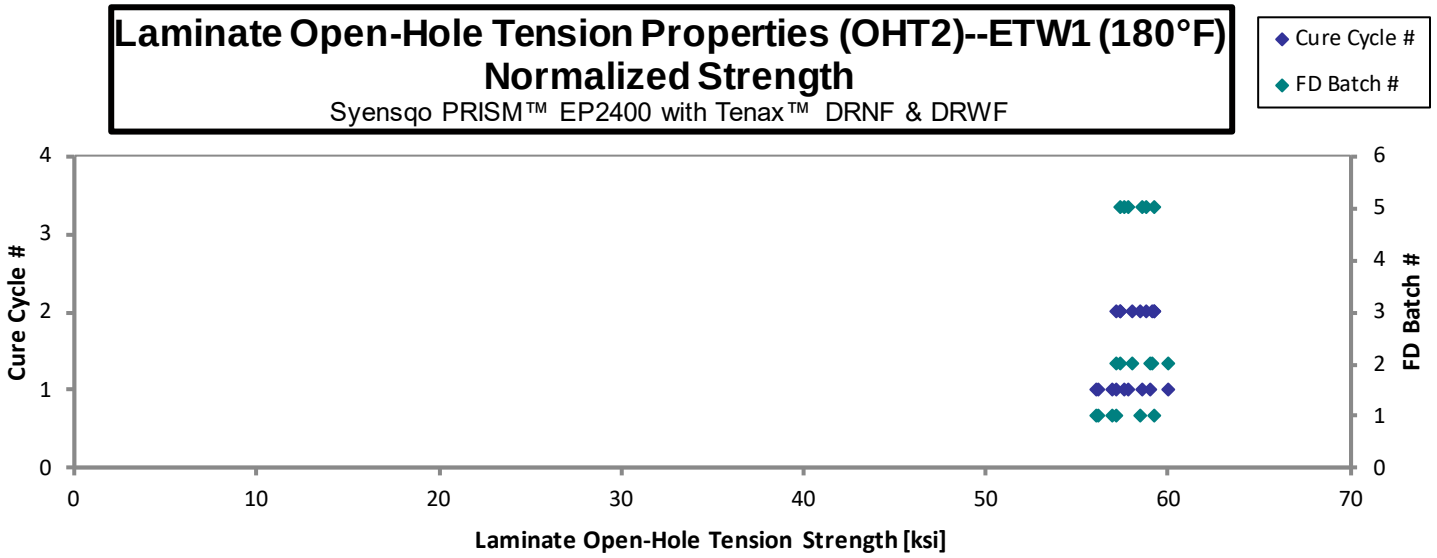
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT2-A-C1-1-1D	1	C1	1	52.98	0.1188	8	AGM	0.0148	56.19
M-OHT2-A-C1-1-2D	1	C1	1	52.46	0.1197	8	AGM	0.0150	56.05
M-OHT2-A-C1-1-3D	1	C1	1	53.62	0.1191	8	AGM	0.0149	56.99
M-OHT2-A-C2-1-1D	1	C2	2	55.64	0.1192	8	AGM	0.0149	59.23
M-OHT2-A-C2-1-2D	1	C2	2	55.73	0.1175	8	AGM	0.0147	58.47
M-OHT2-A-C2-1-3D	1	C2	2	54.20	0.1182	8	AGM	0.0148	57.22
M-OHT2-B-C1-1-1D	2	C1	1	58.14	0.1155	8	AGM	0.0144	59.98
M-OHT2-B-C1-1-2D	2	C1	1	57.54	0.1150	8	AGM	0.0144	59.06
M-OHT2-B-C1-1-3D	2	C1	1	55.35	0.1157	8	AGM	0.0145	57.20
M-OHT2-B-C2-1-1D	2	C2	2	56.23	0.1179	8	AGM	0.0147	59.19
M-OHT2-B-C2-1-2D	2	C2	2	55.08	0.1167	8	AGM	0.0146	57.38
M-OHT2-B-C2-1-3D	2	C2	2	55.71	0.1166	8	AGM	0.0146	57.99
M-OHT2-E-C1-1-1D	5	C1	1	56.29	0.1166	8	AGM	0.0146	58.62
M-OHT2-E-C1-1-2D	5	C1	1	55.51	0.1163	8	AGM	0.0145	57.61
M-OHT2-E-C1-1-3D	5	C1	1	57.01	0.1137	8	AGM	0.0142	57.86
M-OHT2-E-C2-1-1D	5	C2	2	57.09	0.1153	8	AGM	0.0144	58.79
M-OHT2-E-C2-1-2D	5	C2	2	56.89	0.1167	8	AGM	0.0146	59.29
M-OHT2-E-C2-1-3D	5	C2	2	55.37	0.1161	8	AGM	0.0145	57.41

Average	**55.60**	
Standard Dev.	**1.534**	
Coeff. of Var. [%]	**2.758**	
Min.	**52.46**	
Max.	**58.14**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0146**	**58.03**
$Standard\ Dev._{norm}$		**1.113**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.919**
Min.	**0.0142**	**56.05**
Max.	**0.0150**	**59.98**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT2)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
Laminate Open-Hole Tension Strength [ksi]

4.2.10 Open-Hole Tension 3 (OHT3)

Laminate Open-Hole Tension Properties (OHT3)--CTA (-65°F) Strength

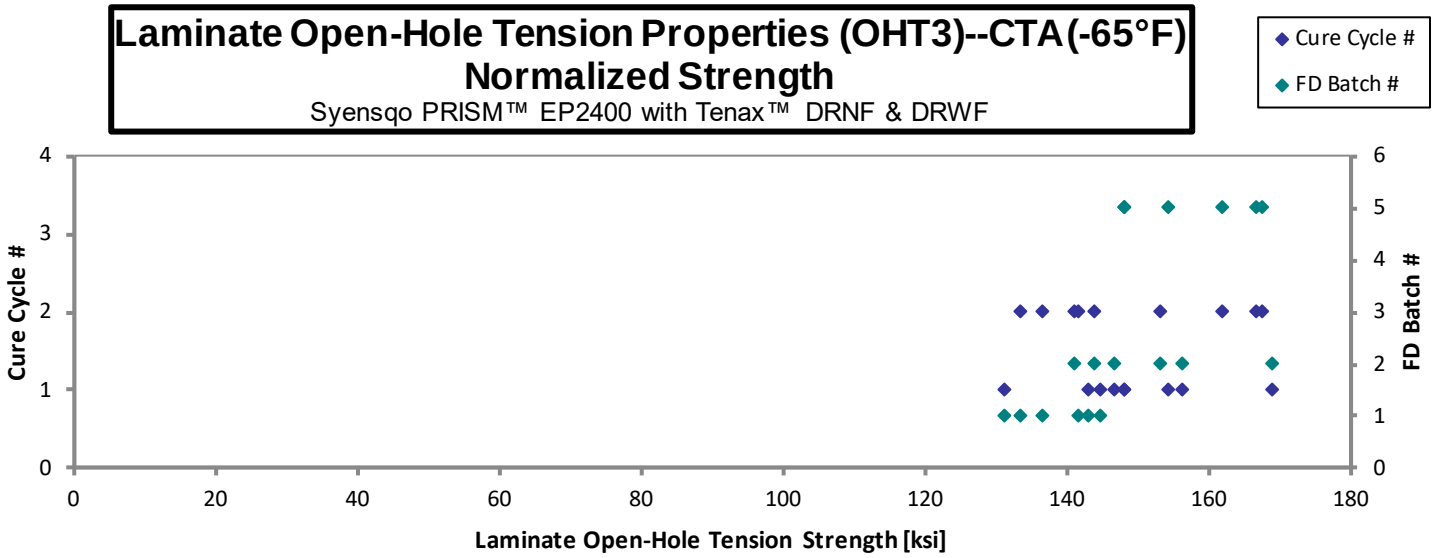
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT3-A-C1-1-1B	1	C1	1	141.0	0.1438	20	M(A,L)GM	0.0072	144.79
M-OHT3-A-C1-1-2B	1	C1	1	127.8	0.1437	20	M(A,L)GM	0.0072	131.22
M-OHT3-A-C1-1-3B	1	C1	1	139.1	0.1439	20	M(A,L)GM	0.0072	143.01
M-OHT3-A-C2-1-1B	1	C2	2	136.6	0.1451	20	M(A,L)GM	0.0073	141.53
M-OHT3-A-C2-1-2B	1	C2	2	132.3	0.1444	20	M(A,L)GM	0.0072	136.46
M-OHT3-A-C2-1-3B	1	C2	2	131.9	0.1417	20	M(A,L)GM	0.0071	133.55
M-OHT3-B-C1-1-1B	2	C1	1	153.0	0.1429	20	M(A,D,)GM	0.0071	156.18
M-OHT3-B-C1-1-2B	2	C1	1	143.6	0.1430	20	M(A,D,)GM	0.0072	146.68
M-OHT3-B-C1-1-3B	2	C1	1	165.4	0.1429	20	M(A,D,)GM	0.0071	168.86
M-OHT3-B-C2-1-1B	2	C2	2	139.6	0.1443	20	M(A,L)GM	0.0072	143.86
M-OHT3-B-C2-1-2B	2	C2	2	148.9	0.1442	20	M(A,L)GM	0.0072	153.29
M-OHT3-B-C2-1-3B	2	C2	2	136.1	0.1452	20	M(A,L)GM	0.0073	141.15
M-OHT3-E-C1-1-1B	5	C1	1	149.2	0.1389	20	M(A,L)GM	0.0069	148.00
M-OHT3-E-C1-1-2B	5	C1	1	146.5	0.1416	20	M(A,L)GM	0.0071	148.15
M-OHT3-E-C1-1-3B	5	C1	1	154.3	0.1402	20	M(A,L)GM	0.0070	154.42
M-OHT3-E-C2-1-1B	5	C2	2	162.4	0.1395	20	M(A,D)GM	0.0070	161.81
M-OHT3-E-C2-1-2B	5	C2	2	167.3	0.1401	20	M(A,D)GM	0.0070	167.49
M-OHT3-E-C2-1-3B	5	C2	2	166.0	0.1407	20	M(A,D)GM	0.0070	166.86

Average	**146.7**	
Standard Dev.	**12.49**	
Coeff. of Var. [%]	**8.510**	
Min.	**127.8**	
Max.	**167.3**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**149.3**
$Standard\ Dev._{norm}$		**11.46**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**7.678**
Min.	**0.0069**	**131.2**
Max.	**0.0073**	**168.9**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT3)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Tension Strength [ksi]
0
20
40
60
80
100
120
140
160
180
0
1
2
3
4
5
6

Laminate Open-Hole Tension Properties (OHT3)--RTA (70°F) Strength

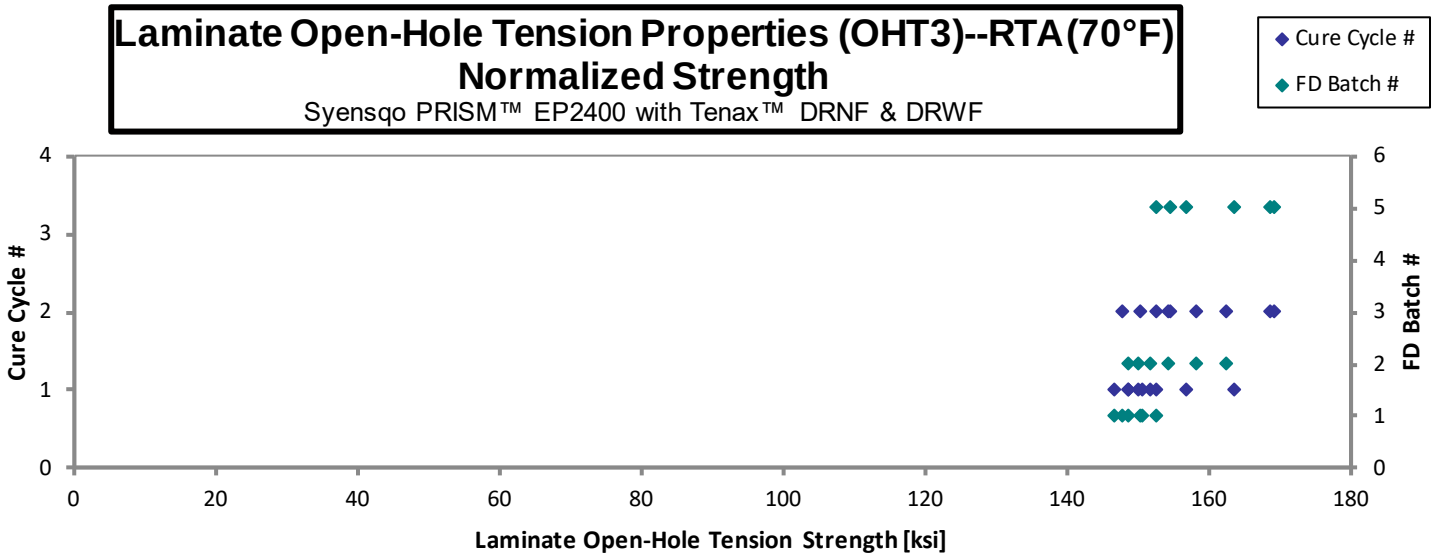
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT3-A-C1-1-1A	1	C1	1	141.9	0.1449	20	M(A,L)GM	0.0072	146.83
M-OHT3-A-C1-1-2A	1	C1	1	145.7	0.1430	20	M(A,L)GM	0.0072	148.84
M-OHT3-A-C1-1-3A	1	C1	1	143.5	0.1471	20	M(A,L)GM	0.0074	150.70
M-OHT3-A-C2-1-1A	1	C2	2	147.5	0.1449	20	M(A,L)GM	0.0072	152.63
M-OHT3-A-C2-1-2A	1	C2	2	143.9	0.1439	20	M(A,L)GM	0.0072	147.90
M-OHT3-A-C2-1-3A	1	C2	2	145.1	0.1450	20	M(A,L)GM	0.0073	150.30
M-OHT3-B-C1-1-1A	2	C1	1	148.7	0.1430	20	M(A,L)GM	0.0072	151.87
M-OHT3-B-C1-1-2A	2	C1	1	147.1	0.1429	20	M(A,L)GM	0.0071	150.13
M-OHT3-B-C1-1-3A	2	C1	1	146.1	0.1426	20	M(A,L)GM	0.0071	148.76
M-OHT3-B-C2-1-1A	2	C2	2	149.5	0.1445	20	M(A,L)GM	0.0072	154.34
M-OHT3-B-C2-1-2A	2	C2	2	157.6	0.1444	20	M(A,L)GM	0.0072	162.55
M-OHT3-B-C2-1-3A	2	C2	2	152.5	0.1454	20	M(A,L)GM	0.0073	158.33
M-OHT3-E-C1-1-1A	5	C1	1	150.7	0.1418	20	M(A,L)GM	0.0071	152.67
M-OHT3-E-C1-1-2A	5	C1	1	163.0	0.1405	20	M(A,L)GM	0.0070	163.60
M-OHT3-E-C1-1-3A	5	C1	1	155.5	0.1411	20	M(A,L)GM	0.0071	156.78
M-OHT3-E-C2-1-1A	5	C2	2	167.5	0.1411	20	M(A,L)GM	0.0071	168.76
M-OHT3-E-C2-1-2A	5	C2	2	168.7	0.1404	20	M(A,L)GM	0.0070	169.19
M-OHT3-E-C2-1-3A	5	C2	2	154.9	0.1399	20	M(A,L)GM	0.0070	154.75

Average	**151.6**	
Standard Dev.	**8.110**	
Coeff. of Var. [%]	**5.349**	
Min.	**141.9**	
Max.	**168.7**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0072**	**154.9**
$Standard\ Dev._{norm}$		**6.926**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.470**
Min.	**0.0070**	**146.8**
Max.	**0.0074**	**169.2**
Number of Spec.	**18**	**18**


Laminate Open-Hole Tension Properties (OHT3)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
180
Laminate Open-Hole Tension Strength [ksi]

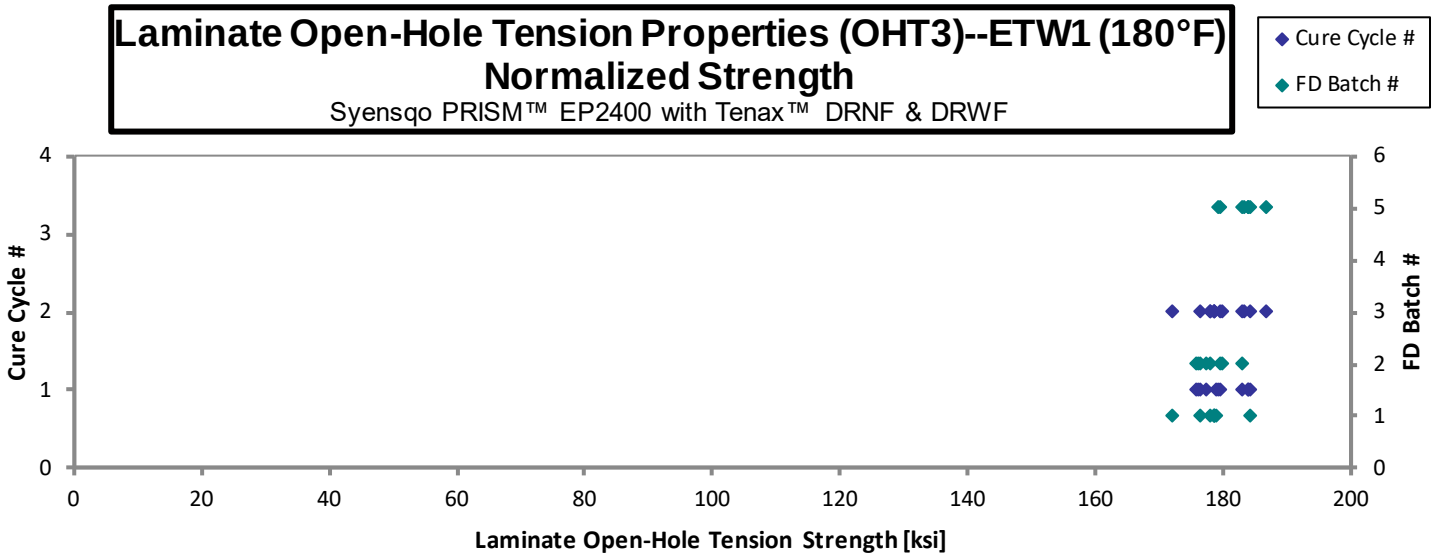
Laminate Open-Hole Tension Properties (OHT3)--ETW1 (180°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT3-A-C1-1-2D	1	C1	1	177.1	0.1415	20	M(A,D)GM	0.0071	178.92
M-OHT3-A-C1-1-3D	1	C1	1	179.9	0.1433	20	M(A,D)GM	0.0072	184.19
M-OHT3-A-C1-1-4D	1	C1	1	172.4	0.1434	20	M(A,D)GM	0.0072	176.60
M-OHT3-A-C2-1-1D	1	C2	2	173.7	0.1441	20	M(A,D)GM	0.0072	178.81
M-OHT3-A-C2-1-2D	1	C2	2	174.7	0.1427	20	DGM, M(A,D)WB	0.0071	178.12
M-OHT3-A-C2-1-3D	1	C2	2	176.0	0.1422	20	M(A,D)GM	0.0071	178.75
M-OHT3-A-C2-1-4D	1	C2	2	168.1	0.1433	20	M(A,D)GM	0.0072	172.08
M-OHT3-A-C2-1-5D	1	C2	2	174.0	0.1437	20	M(A,D)GM	0.0072	178.61
M-OHT3-B-C1-1-1D	2	C1	1	172.4	0.1430	20	M(A,D)GM	0.0072	176.14
M-OHT3-B-C1-1-3D	2	C1	1	179.8	0.1425	20	M(A,D)GM	0.0071	183.06
M-OHT3-B-C1-1-4D	2	C1	1	173.1	0.1436	20	M(A,D)GM, M(A,L)WB	0.0072	177.59
M-OHT3-B-C1-1-5D	2	C1	1	172.1	0.1431	20	M(A,D)GM, M(A,L)GB, AWT	0.0072	175.91
M-OHT3-B-C2-1-1D	2	C2	2	174.8	0.1426	20	M(A,D)GM	0.0071	178.09
M-OHT3-B-C2-1-3D	2	C2	2	173.1	0.1428	20	M(A,D)GM	0.0071	176.49
M-OHT3-B-C2-1-4D	2	C2	2	177.0	0.1423	20	DGM, AWT, M(A,D)GB	0.0071	179.98
M-OHT3-B-C2-1-5D	2	C2	2	173.3	0.1451	20	DGM, M(A,D)GB, M(A,D)WT	0.0073	179.62
M-OHT3-E-C1-1-1D	5	C1	1	182.4	0.1414	20	M(A,D)GM	0.0071	184.15
M-OHT3-E-C1-1-3D	5	C1	1	183.4	0.1405	20	M(A,D)GM	0.0070	184.05
M-OHT3-E-C1-1-4D	5	C1	1	180.3	0.1396	20	M(A,D)GM, M(A,D)GT, M(A,L)WB	0.0070	179.74
M-OHT3-E-C1-1-5D	5	C1	1	180.4	0.1393	20	M(A,D)GM, M(A,L)WT, M(A,D)GB	0.0070	179.43
M-OHT3-E-C2-1-1D	5	C2	2	185.2	0.1412	20	M(A,D)GM	0.0071	186.84
M-OHT3-E-C2-1-3D	5	C2	2	183.2	0.1408	20	M(A,D)GM	0.0070	184.31
M-OHT3-E-C2-1-4D	5	C2	2	182.8	0.1405	20	LGT, M(A,D,S)GM	0.0070	183.51
M-OHT3-E-C2-1-5D	5	C2	2	182.6	0.1403	20	M(D,A,L)WT, M(A,D)GM, M(A,D)GB	0.0070	182.99

Average	**177.2**	**Average$_{norm}$**	**0.0071**	**179.9**
Standard Dev.	**4.673**	**Standard Dev.$_{norm}$**		**3.519**
Coeff. of Var. [%]	**2.638**	**Coeff. of Var. [%]$_{norm}$**		**1.956**
Min.	**168.1**	**Min.**	**0.0070**	**172.1**
Max.	**185.2**	**Max.**	**0.0073**	**186.8**
Number of Spec.	**24**	**Number of Spec.**	**24**	**24**


Laminate Open-Hole Tension Properties (OHT3)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Tension Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3
4
5
6

4.2.11 Open-Hole Tension 4 (OHT4)

Laminate Open-Hole Tension Properties (OHT4)--RTA (70°F) Strength

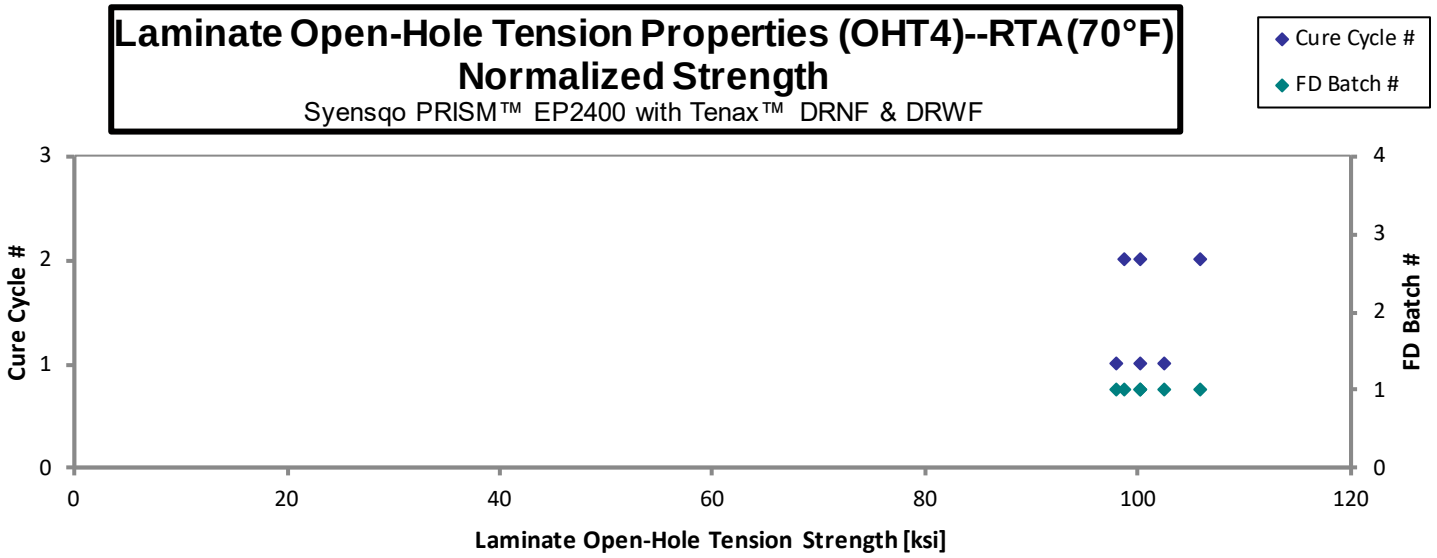
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT4-A-C1-1-1A	1	C1	1	94.40	0.1189	8	M(A,L)GM	0.0149	100.2
M-OHT4-A-C1-1-2A	1	C1	1	94.79	0.1211	8	M(A,L)GM	0.0151	102.5
M-OHT4-A-C1-1-3A	1	C1	1	91.66	0.1198	8	M(A,L)GM	0.0150	98.00
M-OHT4-A-C2-1-1A	1	C2	2	89.19	0.1259	8	M(A,L)GM	0.0157	100.2
M-OHT4-A-C2-1-2A	1	C2	2	97.28	0.1219	8	M(A,L)GM	0.0152	105.9
M-OHT4-A-C2-1-3A	1	C2	2	88.96	0.1243	8	M(A,L)GM	0.0155	98.73

Average	**92.71**	
Standard Dev.	**3.337**	
Coeff. of Var. [%]	**3.599**	
Min.	**88.96**	
Max.	**97.28**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0152**	**100.9**
$Standard\ Dev._{norm}$		**2.871**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.845**
Min.	**0.0149**	**98.00**
Max.	**0.0157**	**105.9**
Number of Spec.	**6**	**6**


Laminate Open-Hole Tension Properties (OHT4)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
20
40
60
80
100
120
Laminate Open-Hole Tension Strength [ksi]

Laminate Open-Hole Tension Properties (OHT4)--ETW1 (180°F) Strength

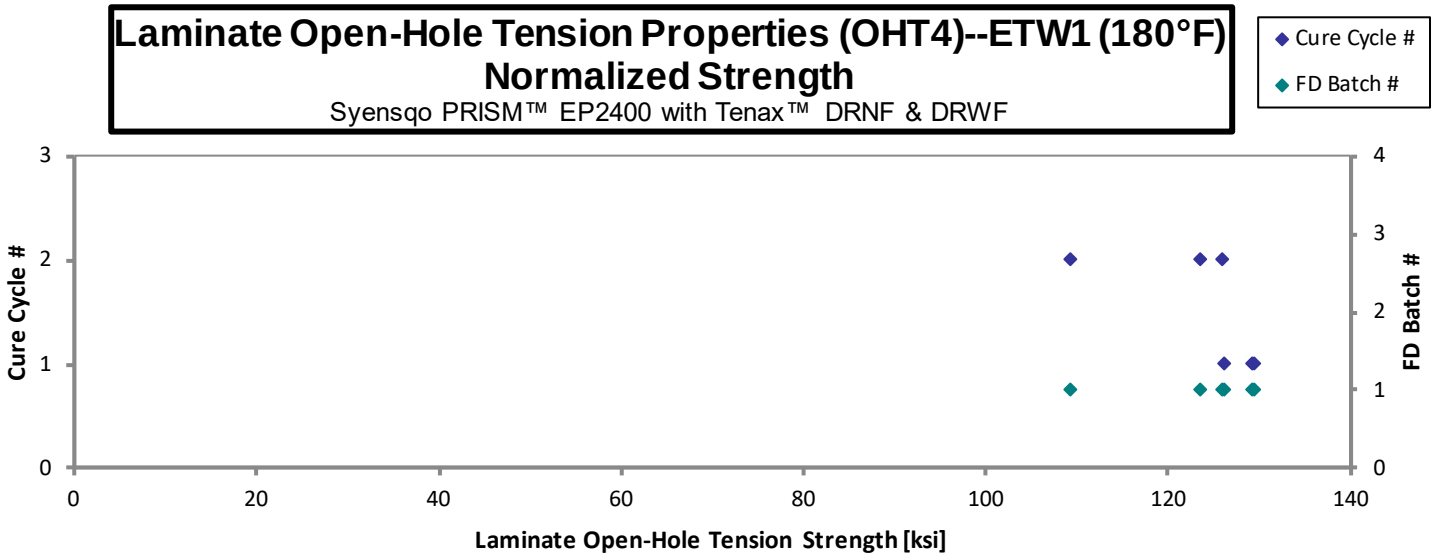
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHT4-A-C1-1-1D	1	C1	1	121.2	0.1196	8	M(L,D)GM	0.0150	129.4
M-OHT4-A-C1-1-2D	1	C1	1	121.6	0.1190	8	LGM	0.0149	129.2
M-OHT4-A-C1-1-3D	1	C1	1	118.3	0.1194	8	LGM	0.0149	126.2
M-OHT4-A-C2-1-1D	1	C2	2	98.89	0.1237	8	LGM	0.0155	109.2
M-OHT4-A-C2-1-2D	1	C2	2	112.5	0.1230	8	LGM	0.0154	123.5
M-OHT4-A-C2-1-3D	1	C2	2	116.8	0.1207	8	M(A,L)GM	0.0151	125.9

	Strength [ksi]
Average	**114.9**
Standard Dev.	**8.497**
Coeff. of Var. [%]	**7.398**
Min.	**98.89**
Max.	**121.6**
Number of Spec.	**6**

	t_{ply} [in]	$Strength_{norm}$ [ksi]
$Average_{norm}$	**0.0151**	**123.9**
$Standard\ Dev._{norm}$		**7.518**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**6.068**
Min.	**0.0149**	**109.2**
Max.	**0.0155**	**129.4**
Number of Spec.	**6**	**6**


Laminate Open-Hole Tension Properties (OHT4)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
20
40
60
80
100
120
140
Laminate Open-Hole Tension Strength [ksi]

4.2.12 Filled-Hole Tension 1 (FHT1)

Laminate Filled-Hole Tension Properties (FHT1)--CTA (-65°F) Strength

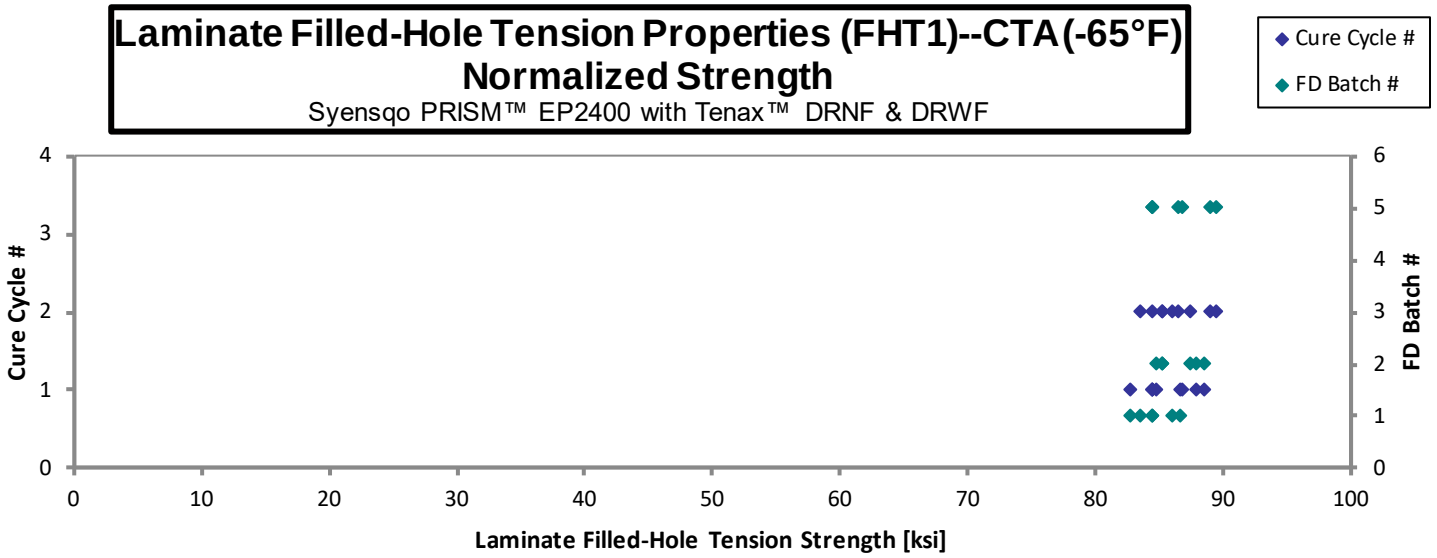
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT1-A-C1-1-1B	1	C1	1	79.01	0.1198	8	M(A,L)GM	0.0150	84.54
M-FHT1-A-C1-1-2B	1	C1	1	81.74	0.1189	8	M(A,L)GM	0.0149	86.73
M-FHT1-A-C1-1-3B	1	C1	1	77.92	0.1191	8	M(A,L)GM	0.0149	82.82
M-FHT1-A-C2-1-1B	1	C2	2	78.39	0.1193	8	M(A,L)GM	0.0149	83.49
M-FHT1-A-C2-1-2B	1	C2	2	80.33	0.1200	8	M(A,L)GM	0.0150	86.09
M-FHT1-A-C2-1-3B	1	C2	2	78.50	0.1205	8	M(A,L)GM	0.0151	84.43
M-FHT1-B-C1-1-1B	2	C1	1	82.26	0.1206	8	M(A,L)GM	0.0151	88.57
M-FHT1-B-C1-1-2B	2	C1	1	81.03	0.1217	8	M(A,L)GM	0.0152	88.01
M-FHT1-B-C1-1-3B	2	C1	1	78.48	0.1211	8	M(A,L)GM	0.0151	84.86
M-FHT1-B-C2-1-1B	2	C2	2	80.26	0.1190	8	M(A,L)GM	0.0149	85.30
M-FHT1-B-C2-1-2B	2	C2	2	82.86	0.1182	8	AGM	0.0148	87.42
M-FHT1-B-C2-1-3B	2	C2	2	80.38	0.1189	8	AGM	0.0149	85.34
M-FHT1-E-C1-1-1B	5	C1	1	83.16	0.1170	8	AGM	0.0146	86.83
M-FHT1-E-C1-1-2B	5	C1	1	81.84	0.1157	8	AGM	0.0145	84.54
M-FHT1-E-C1-1-3B	5	C1	1	81.27	0.1165	8	AGM	0.0146	84.50
M-FHT1-E-C2-1-1B	5	C2	2	81.90	0.1184	8	AGM	0.0148	86.57
M-FHT1-E-C2-1-2B	5	C2	2	83.89	0.1190	8	AGM	0.0149	89.10
M-FHT1-E-C2-1-3B	5	C2	2	83.97	0.1194	8	AGM	0.0149	89.53

Average	**80.95**	
Standard Dev.	**1.929**	
Coeff. of Var. [%]	**2.383**	
Min.	**77.92**	
Max.	**83.97**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0149**	**86.04**
$Standard\ Dev._{norm}$		**1.938**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.253**
Min.	**0.0145**	**82.82**
Max.	**0.0152**	**89.53**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT1)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
80
90
100
Laminate Filled-Hole Tension Strength [ksi]

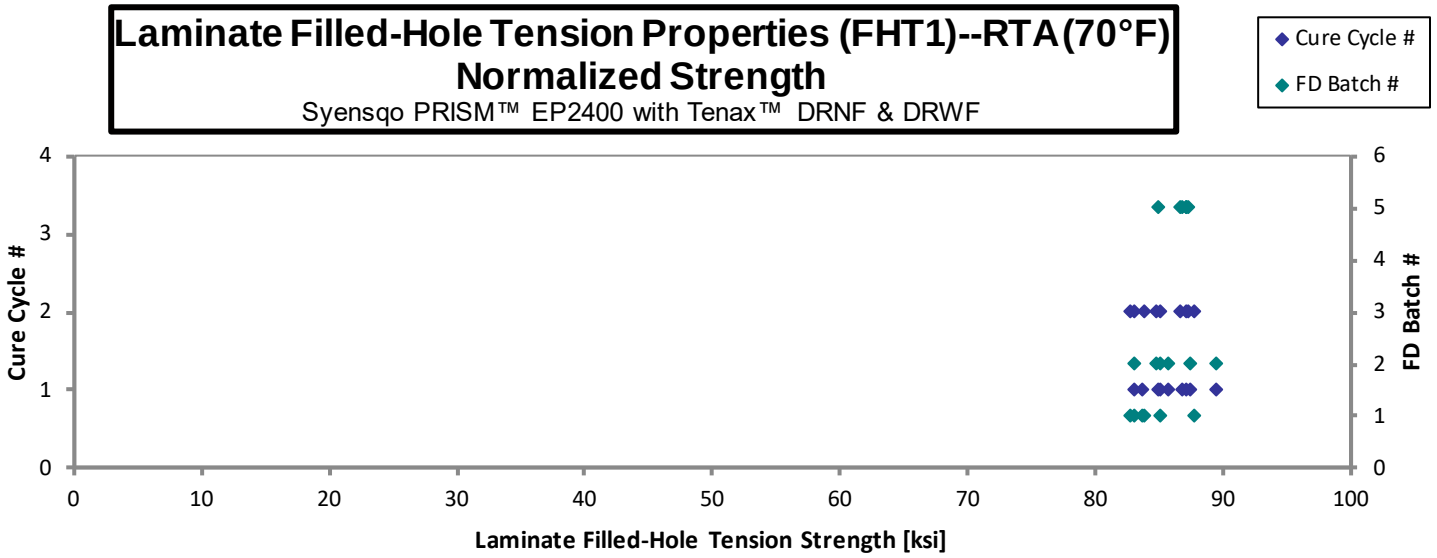
Laminate Filled-Hole Tension Properties (FHT1)--RTA (70°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT1-A-C1-1-1A	1	C1	1	79.00	0.1188	8	M(A,L)GM	0.0148	83.77
M-FHT1-A-C1-1-2A	1	C1	1	80.04	0.1190	8	M(A,L)GM	0.0149	85.04
M-FHT1-A-C1-1-3A	1	C1	1	78.84	0.1181	8	M(A,L)GM	0.0148	83.11
M-FHT1-A-C2-1-1A	1	C2	2	77.02	0.1204	8	M(A,L)GM	0.0150	82.79
M-FHT1-A-C2-1-2A	1	C2	2	81.65	0.1204	8	M(A,L)GM	0.0150	87.76
M-FHT1-A-C2-1-3A	1	C2	2	78.40	0.1199	8	M(A,L)GM	0.0150	83.90
M-FHT1-B-C1-1-1A	2	C1	1	82.62	0.1214	8	M(A,L)GM	0.0152	89.57
M-FHT1-B-C1-1-2A	2	C1	1	78.55	0.1222	8	M(A,L)GM	0.0153	85.68
M-FHT1-B-C1-1-3A	2	C1	1	82.49	0.1188	8	M(A,L)GM	0.0149	87.53
M-FHT1-B-C2-1-1A	2	C2	2	78.39	0.1213	8	M(A,L)GM	0.0152	84.87
M-FHT1-B-C2-1-2A	2	C2	2	79.95	0.1192	8	M(A,L)GM	0.0149	85.11
M-FHT1-B-C2-1-3A	2	C2	2	78.06	0.1191	8	M(A,L)GM	0.0149	83.02
M-FHT1-E-C1-1-1A	5	C1	1	81.96	0.1162	8	M(A,L)GM	0.0145	85.01
M-FHT1-E-C1-1-2A	5	C1	1	85.21	0.1141	8	M(A,L)GM	0.0143	86.83
M-FHT1-E-C1-1-3A	5	C1	1	84.52	0.1156	8	M(A,L)GM	0.0144	87.21
M-FHT1-E-C2-1-1A	5	C2	2	80.55	0.1205	8	M(A,L)GM	0.0151	86.62
M-FHT1-E-C2-1-2A	5	C2	2	80.60	0.1214	8	AGM	0.0152	87.36
M-FHT1-E-C2-1-3A	5	C2	2	82.01	0.1189	8	M(A,L)GM	0.0149	87.08

	Strength [ksi]		$Strength_{norm}$ [ksi]
Average	**80.55**	**Average$_{norm}$**	**0.0149**	**85.68**
Standard Dev.	**2.285**	**Standard Dev.$_{norm}$**		**1.925**
Coeff. of Var. [%]	**2.836**	**Coeff. of Var. [%]$_{norm}$**		**2.246**
Min.	**77.02**	**Min.**	**0.0143**	**82.79**
Max.	**85.21**	**Max.**	**0.0153**	**89.57**
Number of Spec.	**18**	**Number of Spec.**	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT1)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
80
90
100
Laminate Filled-Hole Tension Strength [ksi]

Laminate Filled-Hole Tension Properties (FHT1)--ETA (180°F) Strength

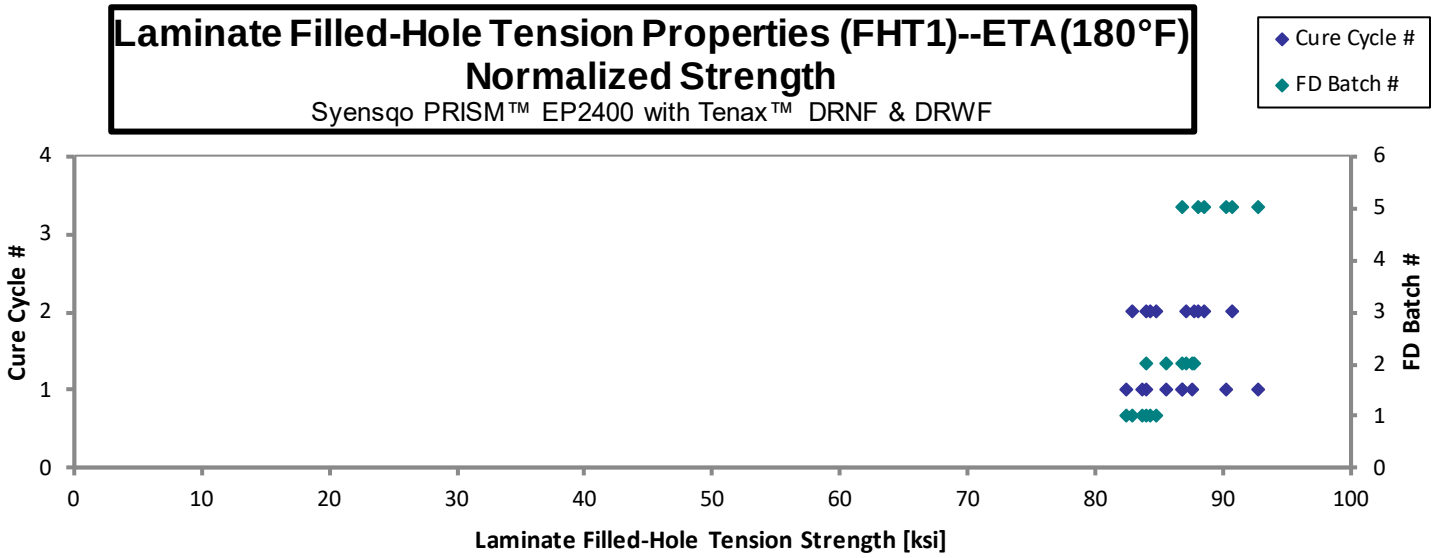
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT1-A-C1-1-1C	1	C1	1	77.02	0.1200	8	M(A,L)GM	0.0150	82.51
M-FHT1-A-C1-1-2C	1	C1	1	79.08	0.1186	8	M(A,L)GM	0.0148	83.70
M-FHT1-A-C1-1-3C	1	C1	1	79.93	0.1177	8	M(A,L)GM	0.0147	84.00
M-FHT1-A-C2-1-1C	1	C2	2	77.07	0.1204	8	M(A,L)GM	0.0151	82.87
M-FHT1-A-C2-1-2C	1	C2	2	79.38	0.1197	8	M(A,L)GM	0.0150	84.83
M-FHT1-A-C2-1-3C	1	C2	2	78.58	0.1201	8	M(A,L)GM	0.0150	84.29
M-FHT1-B-C1-1-1C	2	C1	1	79.81	0.1201	8	AGM	0.0150	85.56
M-FHT1-B-C1-1-2C	2	C1	1	80.89	0.1201	8	AGM	0.0150	86.77
M-FHT1-B-C1-1-3C	2	C1	1	82.82	0.1185	8	AGM	0.0148	87.66
M-FHT1-B-C2-1-1C	2	C2	2	82.03	0.1199	8	M(A,L)GM	0.0150	87.83
M-FHT1-B-C2-1-2C	2	C2	2	81.47	0.1198	8	AGM	0.0150	87.13
M-FHT1-B-C2-1-3C	2	C2	2	78.78	0.1194	8	AGM	0.0149	84.00
M-FHT1-E-C1-1-1C	5	C1	1	82.96	0.1173	8	M(A,L)GM	0.0147	86.88
M-FHT1-E-C1-1-2C	5	C1	1	89.57	0.1159	8	M(A,L)GM	0.0145	92.72
M-FHT1-E-C1-1-3C	5	C1	1	87.39	0.1157	8	M(A,L)GM	0.0145	90.26
M-FHT1-E-C2-1-1C	5	C2	2	85.82	0.1185	8	M(A,L)GM	0.0148	90.81
M-FHT1-E-C2-1-2C	5	C2	2	83.17	0.1187	8	M(A,L)GM	0.0148	88.14
M-FHT1-E-C2-1-3C	5	C2	2	83.21	0.1193	8	M(A,L)GM	0.0149	88.61

Average	**81.61**	
Standard Dev.	**3.429**	
Coeff. of Var. [%]	**4.201**	
Min.	**77.02**	
Max.	**89.57**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0149**	**86.59**
$Standard\ Dev._{norm}$		**2.872**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.316**
Min.	**0.0145**	**82.51**
Max.	**0.0151**	**92.72**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT1)--ETA(180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Filled-Hole Tension Strength [ksi]
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
80
90
100

Laminate Filled-Hole Tension Properties (FHT1)--ETW1
(180°F) Strength

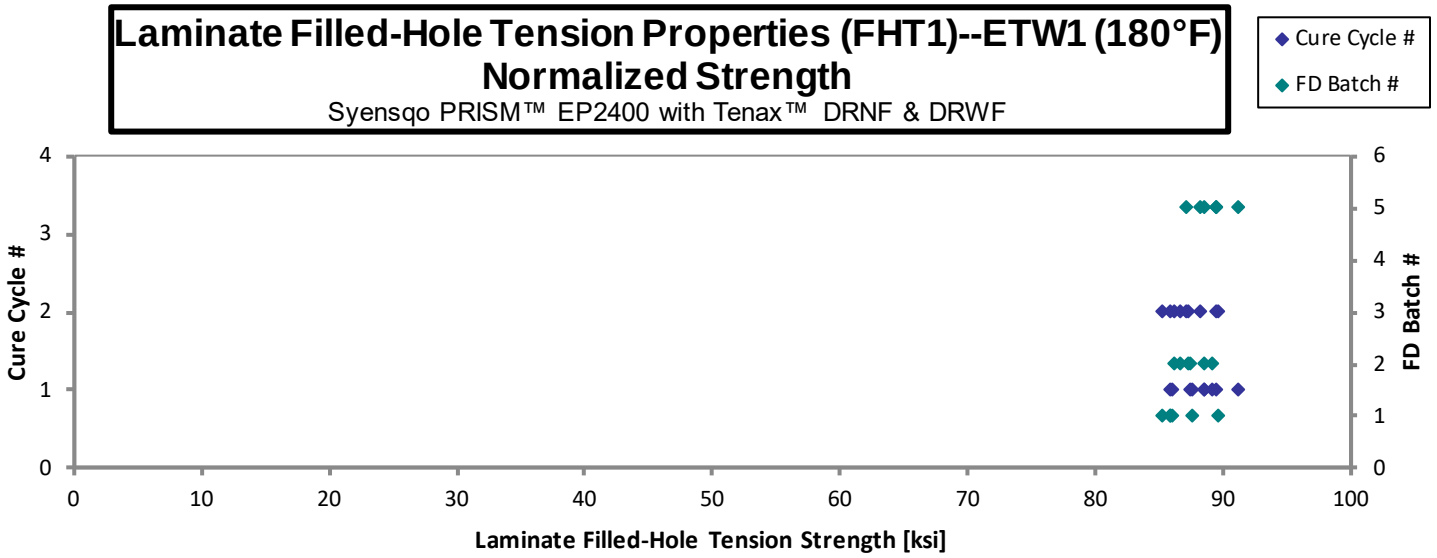
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT1-A-C1-1-1D	1	C1	1	81.99	0.1175	8	AGM	0.0147	86.02
M-FHT1-A-C1-1-2D	1	C1	1	83.84	0.1171	8	AGM	0.0146	87.66
M-FHT1-A-C1-1-3D	1	C1	1	81.94	0.1174	8	AGM	0.0147	85.89
M-FHT1-A-C2-1-1D	1	C2	2	79.72	0.1198	8	AGM	0.0150	85.26
M-FHT1-A-C2-1-2D	1	C2	2	84.07	0.1195	8	AGM	0.0149	89.68
M-FHT1-A-C2-1-3D	1	C2	2	80.56	0.1194	8	AGM	0.0149	85.89
M-FHT1-B-C1-1-1D	2	C1	1	83.21	0.1192	8	AGM	0.0149	88.59
M-FHT1-B-C1-1-2D	2	C1	1	81.58	0.1201	8	AGM	0.0150	87.46
M-FHT1-B-C1-1-3D	2	C1	1	83.01	0.1203	8	AGM	0.0150	89.14
M-FHT1-B-C2-1-1D	2	C2	2	80.63	0.1197	8	AGM	0.0150	86.15
M-FHT1-B-C2-1-2D	2	C2	2	81.95	0.1194	8	AGM	0.0149	87.38
M-FHT1-B-C2-1-3D	2	C2	2	81.45	0.1193	8	AGM	0.0149	86.76
M-FHT1-E-C1-1-1D	5	C1	1	85.75	0.1157	8	AGM	0.0145	88.60
M-FHT1-E-C1-1-2D	5	C1	1	88.28	0.1157	8	AGM	0.0145	91.16
M-FHT1-E-C1-1-3D	5	C1	1	86.64	0.1157	8	AGM	0.0145	89.47
M-FHT1-E-C2-1-1D	5	C2	2	84.12	0.1191	8	AGM	0.0149	89.42
M-FHT1-E-C2-1-2D	5	C2	2	83.00	0.1191	8	AGM	0.0149	88.23
M-FHT1-E-C2-1-3D	5	C2	2	81.96	0.1190	8	AGM	0.0149	87.08

Average	**82.98**	
Standard Dev.	**2.208**	
Coeff. of Var. [%]	**2.661**	
Min.	**79.72**	
Max.	**88.28**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0148**	**87.77**
$Standard\ Dev._{norm}$		**1.626**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.853**
Min.	**0.0145**	**85.26**
Max.	**0.0150**	**91.16**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT1)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Filled-Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3
4
0
1
2
3
4
5
6

4.2.13 Filled-Hole Tension 2 (FHT2)

Laminate Filled-Hole Tension Properties (FHT2)--CTA (-65°F) Strength

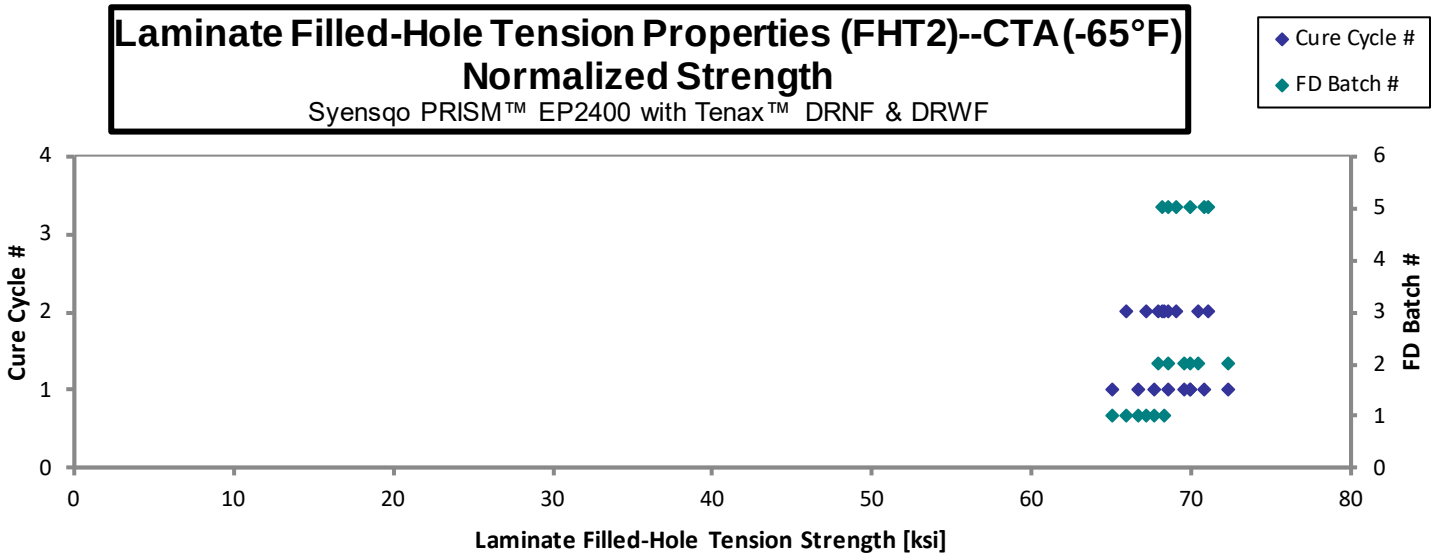
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT2-A-C1-1-1B	1	C1	1	64.06	0.1166	8	AGM	0.0146	66.69
M-FHT2-A-C1-1-2B	1	C1	1	63.12	0.1155	8	AGM	0.0144	65.07
M-FHT2-A-C1-1-3B	1	C1	1	65.50	0.1158	8	AGM	0.0145	67.70
M-FHT2-A-C2-1-1B	1	C2	2	64.98	0.1138	8	AGM	0.0142	66.00
M-FHT2-A-C2-1-2B	1	C2	2	65.56	0.1149	8	AGM	0.0144	67.24
M-FHT2-A-C2-1-3B	1	C2	2	66.83	0.1146	8	AGM	0.0143	68.36
M-FHT2-B-C1-1-1B	2	C1	1	66.14	0.1185	8	AGM	0.0148	69.99
M-FHT2-B-C1-1-2B	2	C1	1	68.91	0.1177	8	AGM	0.0147	72.38
M-FHT2-B-C1-1-3B	2	C1	1	65.61	0.1189	8	AGM	0.0149	69.63
M-FHT2-B-C2-1-1B	2	C2	2	67.09	0.1176	8	AGM	0.0147	70.43
M-FHT2-B-C2-1-2B	2	C2	2	65.74	0.1170	8	AGM	0.0146	68.66
M-FHT2-B-C2-1-3B	2	C2	2	65.44	0.1163	8	AGM	0.0145	67.96
M-FHT2-E-C1-1-1B	5	C1	1	64.64	0.1188	8	AGM	0.0149	68.58
M-FHT2-E-C1-1-2B	5	C1	1	66.54	0.1192	8	AGM	0.0149	70.79
M-FHT2-E-C1-1-3B	5	C1	1	65.58	0.1195	8	AGM	0.0149	69.96
M-FHT2-E-C2-1-1B	5	C2	2	63.85	0.1196	8	AGM	0.0149	68.17
M-FHT2-E-C2-1-2B	5	C2	2	64.49	0.1200	8	AGM	0.0150	69.09
M-FHT2-E-C2-1-3B	5	C2	2	65.46	0.1216	8	AGM	0.0152	71.06

Average	**65.53**	
Standard Dev.	**1.326**	
Coeff. of Var. [%]	**2.024**	
Min.	**63.12**	
Max.	**68.91**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0147**	**68.77**
$Standard\ Dev._{norm}$		**1.867**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.716**
Min.	**0.0142**	**65.07**
Max.	**0.0152**	**72.38**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT2)--CTA (-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Filled-Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
0
1
2
3
4
5
6

Laminate Filled-Hole Tension Properties (FHT2)--RTA (70°F) Strength

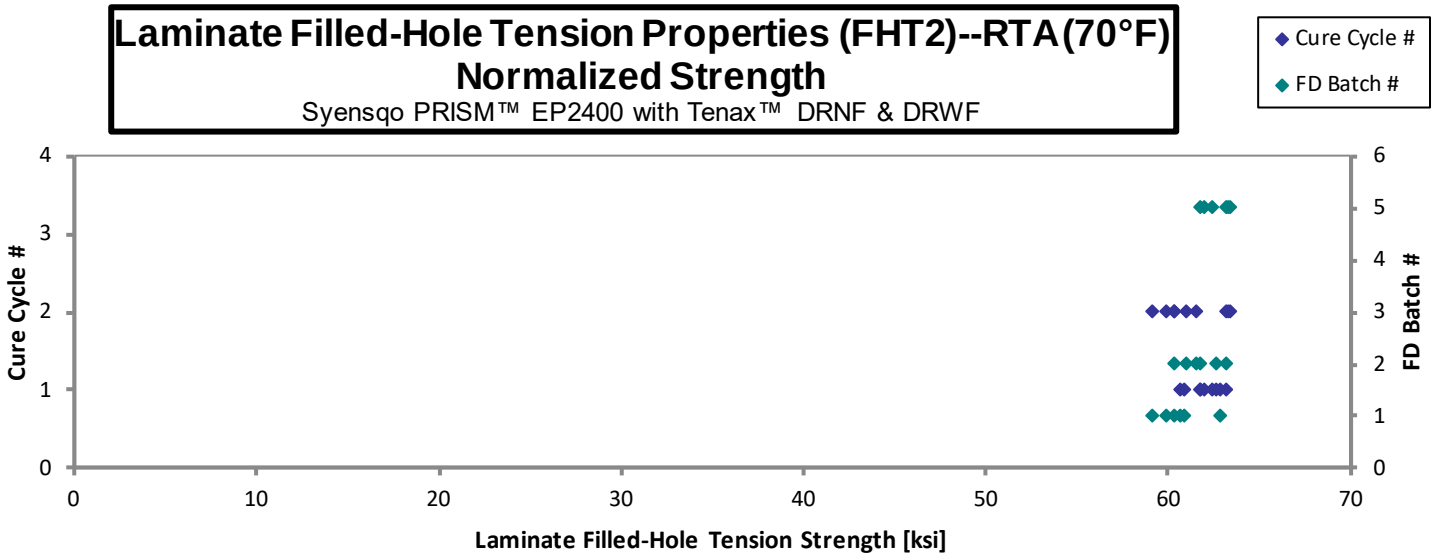
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT2-A-C1-1-1A	1	C1	1	59.51	0.1146	8	AGM	0.0143	60.89
M-FHT2-A-C1-1-2A	1	C1	1	60.79	0.1159	8	AGM	0.0145	62.90
M-FHT2-A-C1-1-3A	1	C1	1	59.22	0.1148	8	AGM	0.0144	60.72
M-FHT2-A-C2-1-1A	1	C2	2	58.58	0.1145	8	AGM	0.0143	59.90
M-FHT2-A-C2-1-2A	1	C2	2	58.62	0.1131	8	AGM	0.0141	59.18
M-FHT2-A-C2-1-3A	1	C2	2	60.06	0.1126	8	AGM	0.0141	60.40
M-FHT2-B-C1-1-1A	2	C1	1	58.24	0.1189	8	AGM	0.0149	61.82
M-FHT2-B-C1-1-2A	2	C1	1	60.20	0.1177	8	AGM	0.0147	63.24
M-FHT2-B-C1-1-3A	2	C1	1	59.49	0.1179	8	AGM	0.0147	62.63
M-FHT2-B-C2-1-1A	2	C2	2	59.41	0.1160	8	AGM	0.0145	61.53
M-FHT2-B-C2-1-2A	2	C2	2	59.07	0.1144	8	AGM	0.0143	60.33
M-FHT2-B-C2-1-3A	2	C2	2	58.43	0.1169	8	AGM	0.0146	60.98
M-FHT2-E-C1-1-1A	5	C1	1	58.18	0.1194	8	AGM	0.0149	62.01
M-FHT2-E-C1-1-2A	5	C1	1	58.21	0.1189	8	AGM	0.0149	61.81
M-FHT2-E-C1-1-3A	5	C1	1	57.64	0.1214	8	AGM	0.0152	62.46
M-FHT2-E-C2-1-1A	5	C2	2	59.30	0.1197	8	AGM	0.0150	63.38
M-FHT2-E-C2-1-2A	5	C2	2	59.12	0.1197	8	AGM	0.0150	63.17
M-FHT2-E-C2-1-3A	5	C2	2	59.56	0.1191	8	AGM	0.0149	63.31

Average	**59.09**	
Standard Dev.	**0.8098**	
Coeff. of Var. [%]	**1.371**	
Min.	**57.64**	
Max.	**60.79**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0146**	**61.70**
$Standard\ Dev._{norm}$		**1.289**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.090**
Min.	**0.0141**	**59.18**
Max.	**0.0152**	**63.38**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT2)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
Laminate Filled-Hole Tension Strength [ksi]

Laminate Filled-Hole Tension Properties (FHT2)--ETW1
(180°F) Strength

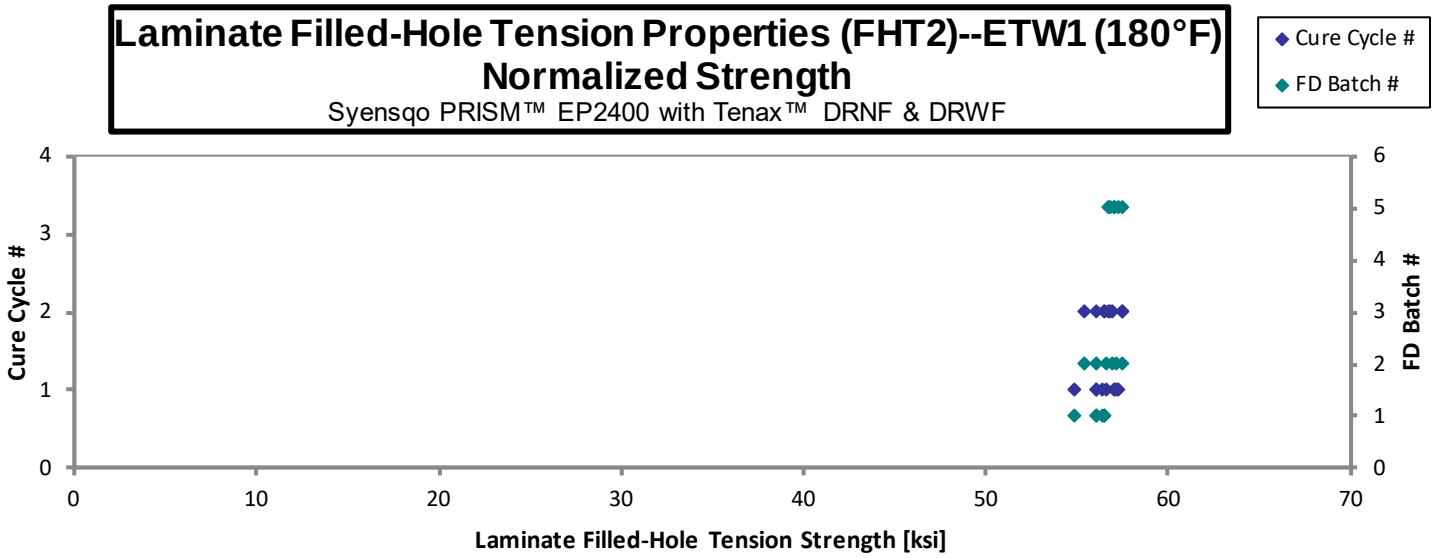
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT2-A-C1-1-1D	1	C1	1	53.11	0.1156	8	AGM	0.0145	54.83
M-FHT2-A-C1-1-2D	1	C1	1	55.15	0.1145	8	AGM	0.0143	56.38
M-FHT2-A-C1-1-3D	1	C1	1	55.15	0.1140	8	AGM	0.0142	56.11
M-FHT2-A-C2-1-1D	1	C2	2	54.47	0.1163	8	AGM	0.0145	56.56
M-FHT2-A-C2-1-2D	1	C2	2	55.11	0.1139	8	AGM	0.0142	56.05
M-FHT2-A-C2-1-3D	1	C2	2	55.29	0.1145	8	AGM	0.0143	56.52
M-FHT2-B-C1-1-1D	2	C1	1	52.93	0.1187	8	AGM	0.0148	56.11
M-FHT2-B-C1-1-2D	2	C1	1	54.57	0.1174	8	AGM	0.0147	57.18
M-FHT2-B-C1-1-3D	2	C1	1	53.92	0.1176	8	AGM	0.0147	56.63
M-FHT2-B-C2-1-1D	2	C2	2	53.75	0.1155	8	AGM	0.0144	55.41
M-FHT2-B-C2-1-2D	2	C2	2	55.35	0.1163	8	AGM	0.0145	57.46
M-FHT2-B-C2-1-3D	2	C2	2	55.06	0.1159	8	AGM	0.0145	56.97
M-FHT2-E-C1-1-1D	5	C1	1	53.03	0.1206	8	AGM	0.0151	57.11
M-FHT2-E-C1-1-2D	5	C1	1	53.98	0.1188	8	AGM	0.0148	57.23
M-FHT2-E-C1-1-3D	5	C1	1	53.86	0.1188	8	AGM	0.0148	57.11
M-FHT2-E-C2-1-1D	5	C2	2	53.03	0.1199	8	AGM	0.0150	56.77
M-FHT2-E-C2-1-2D	5	C2	2	53.44	0.1205	8	AGM	0.0151	57.51
M-FHT2-E-C2-1-3D	5	C2	2	53.12	0.1198	8	AGM	0.0150	56.79

Average	**54.13**	
Standard Dev.	**0.8979**	
Coeff. of Var. [%]	**1.659**	
Min.	**52.93**	
Max.	**55.35**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0146**	**56.60**
$Standard\ Dev._{norm}$		**0.7041**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.244**
Min.	**0.0142**	**54.83**
Max.	**0.0151**	**57.51**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT2)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
10
20
30
40
50
60
70
Laminate Filled-Hole Tension Strength [ksi]

4.2.14 Filled-Hole Tension 3 (FHT3)

Laminate Filled-Hole Tension Properties (FHT3)--CTA (-65°F) Strength

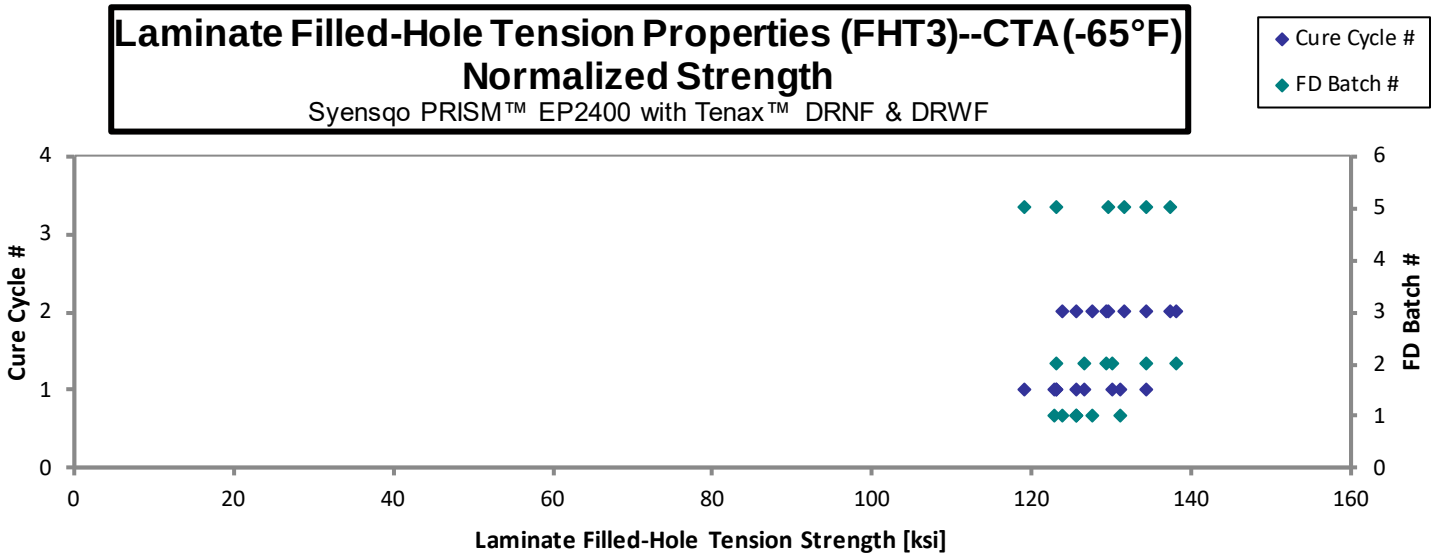
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT3-A-C1-1-1B	1	C1	1	125.1	0.1407	20	AGM	0.0070	125.8
M-FHT3-A-C1-1-2B	1	C1	1	121.2	0.1418	20	M(A,L)GM	0.0071	122.8
M-FHT3-A-C1-1-3B	1	C1	1	127.6	0.1438	20	M(A,L)GM	0.0072	131.1
M-FHT3-A-C2-1-1B	1	C2	2	122.6	0.1417	20	AGM	0.0071	124.0
M-FHT3-A-C2-1-2B	1	C2	2	125.9	0.1419	20	AGM	0.0071	127.6
M-FHT3-A-C2-1-3B	1	C2	2	122.3	0.1440	20	AGM	0.0072	125.8
M-FHT3-B-C1-1-1B	2	C1	1	128.2	0.1423	20	AGM	0.0071	130.2
M-FHT3-B-C1-1-2B	2	C1	1	123.5	0.1396	20	AGM	0.0070	123.1
M-FHT3-B-C1-1-3B	2	C1	1	127.0	0.1396	20	AGM	0.0070	126.6
M-FHT3-B-C2-1-1B	2	C2	2	135.7	0.1426	20	AGM	0.0071	138.3
M-FHT3-B-C2-1-2B	2	C2	2	126.0	0.1438	20	AGM	0.0072	129.5
M-FHT3-B-C2-1-3B	2	C2	2	130.6	0.1441	20	AGM	0.0072	134.4
M-FHT3-E-C1-1-1B	5	C1	1	124.0	0.1346	20	M(A,L)GM	0.0067	119.2
M-FHT3-E-C1-1-2B	5	C1	1	139.3	0.1352	20	M(A,L)GM	0.0068	134.5
M-FHT3-E-C1-1-3B	5	C1	1	126.3	0.1365	20	M(A,L)GM	0.0068	123.2
M-FHT3-E-C2-1-1B	5	C2	2	127.1	0.1429	20	M(A,L)GM	0.0071	129.7
M-FHT3-E-C2-1-2B	5	C2	2	130.1	0.1417	20	M(A,L)GM	0.0071	131.6
M-FHT3-E-C2-1-3B	5	C2	2	134.8	0.1428	20	M(A,L)GM	0.0071	137.5

Average	**127.6**	
Standard Dev.	**4.900**	
Coeff. of Var. [%]	**3.839**	
Min.	**121.2**	
Max.	**139.3**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**128.6**
$Standard\ Dev._{norm}$		**5.336**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.150**
Min.	**0.0067**	**119.2**
Max.	**0.0072**	**138.3**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT3)--CTA(-65°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
Laminate Filled-Hole Tension Strength [ksi]

Laminate Filled-Hole Tension Properties (FHT3)--RTA (70°F) Strength

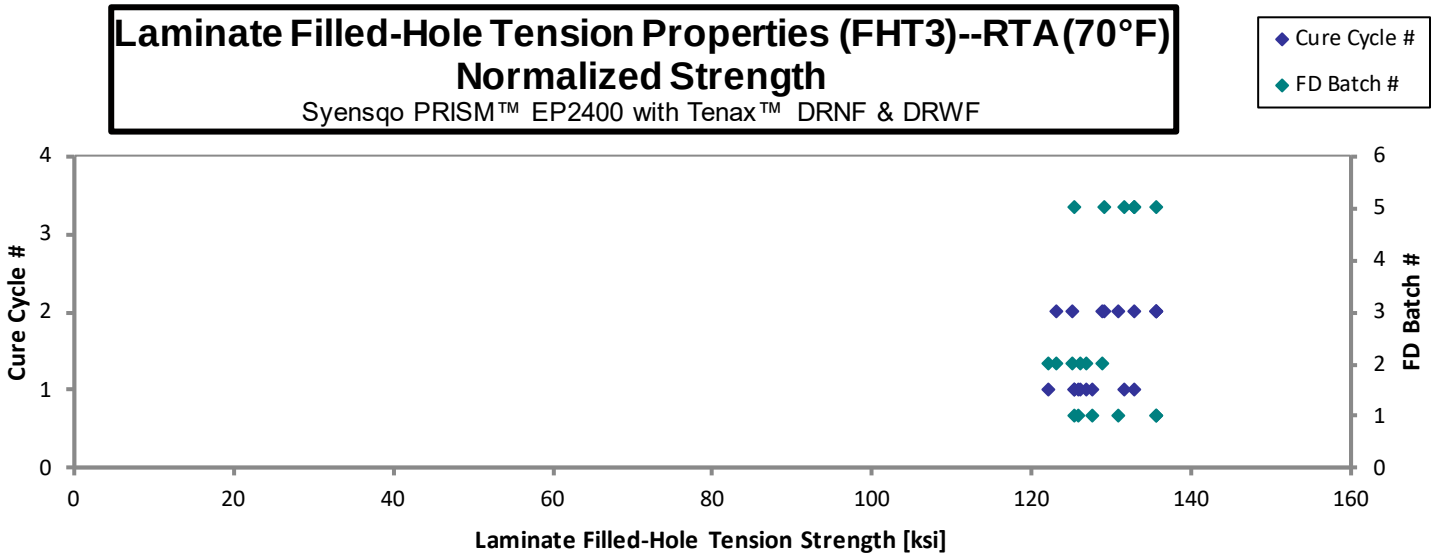
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT3-A-C1-1-1A	1	C1	1	124.2	0.1413	20	AGM	0.0071	125.3
M-FHT3-A-C1-1-2A	1	C1	1	127.0	0.1409	20	AGM	0.0070	127.8
M-FHT3-A-C1-1-3A	1	C1	1	124.5	0.1415	20	AGM	0.0071	125.9
M-FHT3-A-C2-1-1A	1	C2	2	131.6	0.1444	20	M(A,L)GM	0.0072	135.7
M-FHT3-A-C2-1-2A	1	C2	2	127.9	0.1433	20	M(A,L)GM	0.0072	130.9
M-FHT3-A-C2-1-3A	1	C2	2	133.0	0.1429	20	M(A,L)GM	0.0071	135.7
M-FHT3-B-C1-1-1A	2	C1	1	121.4	0.1408	20	M(A,L)GM	0.0070	122.1
M-FHT3-B-C1-1-2A	2	C1	1	125.7	0.1404	20	M(A,L)GM	0.0070	126.1
M-FHT3-B-C1-1-3A	2	C1	1	126.2	0.1407	20	M(A,L)GM	0.0070	126.9
M-FHT3-B-C2-1-1A	2	C2	2	122.5	0.1431	20	M(A,L)GM	0.0072	125.2
M-FHT3-B-C2-1-2A	2	C2	2	121.4	0.1421	20	M(A,L)GM	0.0071	123.2
M-FHT3-B-C2-1-3A	2	C2	2	126.7	0.1423	20	M(A,L)GM	0.0071	128.8
M-FHT3-E-C1-1-1A	5	C1	1	135.2	0.1375	20	M(A,L)GM	0.0069	132.8
M-FHT3-E-C1-1-2A	5	C1	1	127.3	0.1380	20	M(A,L)GM	0.0069	125.5
M-FHT3-E-C1-1-3A	5	C1	1	134.6	0.1370	20	M(A,L)GM	0.0068	131.7
M-FHT3-E-C2-1-1A	5	C2	2	130.1	0.1432	20	M(A,L)GM	0.0072	133.0
M-FHT3-E-C2-1-2A	5	C2	2	132.4	0.1436	20	M(A,L)GM	0.0072	135.8
M-FHT3-E-C2-1-3A	5	C2	2	126.7	0.1428	20	M(A,L)GM	0.0071	129.2

Average	**127.7**	
Standard Dev.	**4.293**	
Coeff. of Var. [%]	**3.362**	
Min.	**121.4**	
Max.	**135.2**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**129.0**
$Standard\ Dev._{norm}$		**4.367**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.386**
Min.	**0.0068**	**122.1**
Max.	**0.0072**	**135.8**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT3)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
Laminate Filled-Hole Tension Strength [ksi]

Laminate Filled-Hole Tension Properties (FHT3)--ETW1
(180°F) Strength

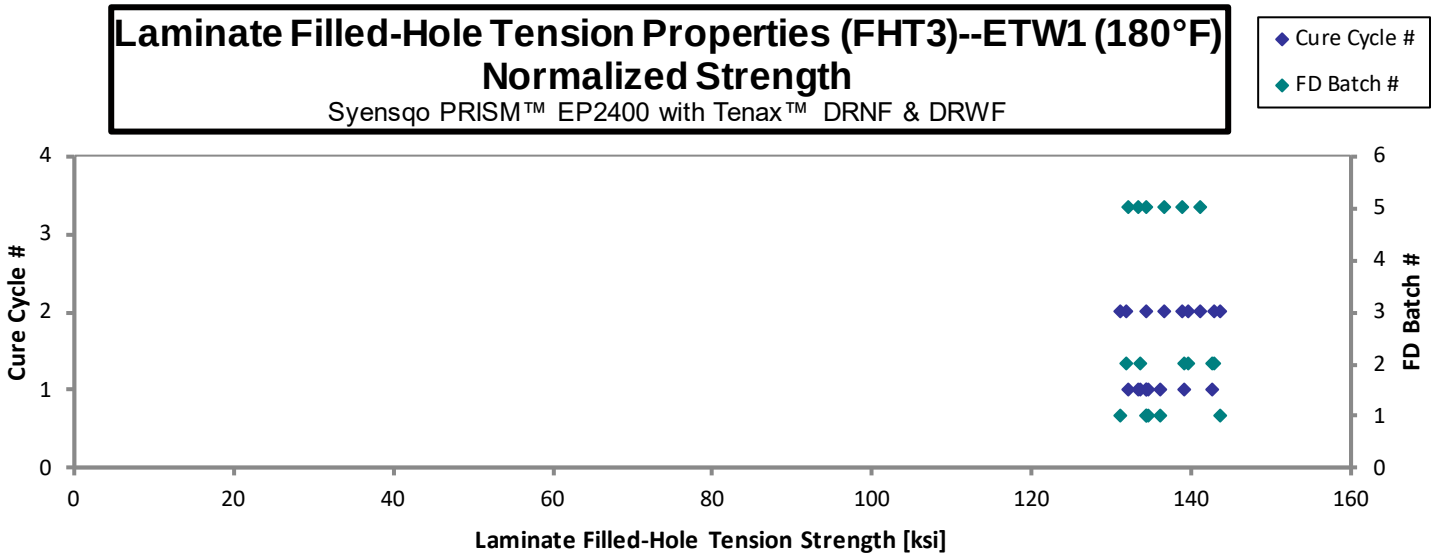
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHT3-A-C1-1-1D	1	C1	1	134.4	0.1419	20	AGM	0.0071	136.3
M-FHT3-A-C1-1-2D	1	C1	1	133.2	0.1415	20	AGM	0.0071	134.6
M-FHT3-A-C1-1-3D	1	C1	1	131.4	0.1432	20	AGM	0.0072	134.4
M-FHT3-A-C2-1-1D	1	C2	2	132.0	0.1425	20	AGM	0.0071	134.4
M-FHT3-A-C2-1-2D	1	C2	2	141.3	0.1425	20	AGM	0.0071	143.8
M-FHT3-A-C2-1-3D	1	C2	2	129.6	0.1417	20	AGM	0.0071	131.1
M-FHT3-B-C1-1-1D	2	C1	1	140.1	0.1392	20	AGM	0.0070	139.2
M-FHT3-B-C1-1-2D	2	C1	1	143.5	0.1393	20	AGM	0.0070	142.8
M-FHT3-B-C1-1-3D	2	C1	1	133.6	0.1400	20	AGM	0.0070	133.6
M-FHT3-B-C2-1-1D	2	C2	2	128.2	0.1440	20	AGM	0.0072	131.8
M-FHT3-B-C2-1-2D	2	C2	2	136.6	0.1433	20	AGM	0.0072	139.8
M-FHT3-B-C2-1-3D	2	C2	2	140.0	0.1431	20	AGM	0.0072	143.1
M-FHT3-E-C1-1-1D	5	C1	1	135.0	0.1372	20	AGM	0.0069	132.3
M-FHT3-E-C1-1-2D	5	C1	1	136.9	0.1365	20	AGM	0.0068	133.4
M-FHT3-E-C1-1-3D	5	C1	1	138.4	0.1359	20	AGM	0.0068	134.3
M-FHT3-E-C2-1-1D	5	C2	2	136.4	0.1425	20	AGM	0.0071	138.8
M-FHT3-E-C2-1-2D	5	C2	2	138.2	0.1430	20	AGM	0.0072	141.1
M-FHT3-E-C2-1-3D	5	C2	2	134.2	0.1426	20	AGM	0.0071	136.7

Average	**135.7**	
Standard Dev.	**4.099**	
Coeff. of Var. [%]	**3.020**	
Min.	**128.2**	
Max.	**143.5**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**136.7**
$Standard\ Dev._{norm}$		**4.084**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.987**
Min.	**0.0068**	**131.1**
Max.	**0.0072**	**143.8**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Tension Properties (FHT3)--ETW1 (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
0
20
40
60
80
100
120
140
160
Laminate Filled-Hole Tension Strength [ksi]

4.2.15 Open-Hole Compression 1 (OHC1)

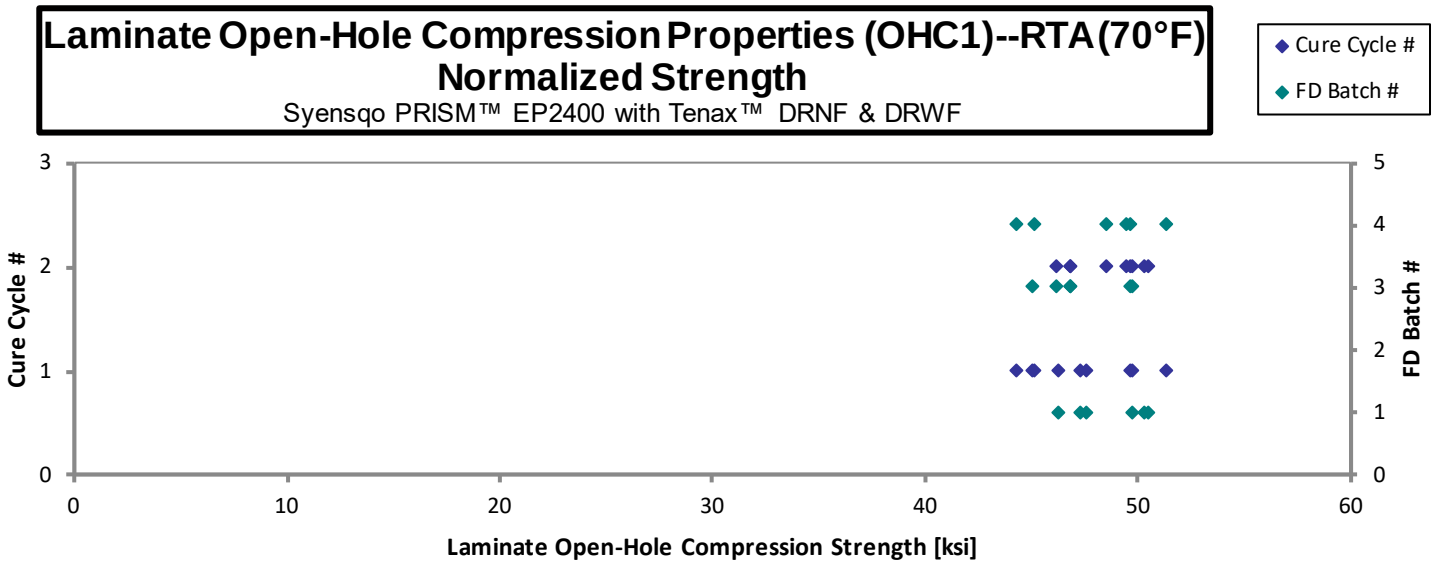
Laminate Open-Hole Compression Properties (OHC1)--RTA (70°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC1-A-C1-1-1A	1	C1	1	1	43.52	0.1192	8	LGM	0.0149	46.31
M-OHC1-A-C1-1-2A	1	C1	1	1	44.90	0.1188	8	LGM	0.0149	47.62
M-OHC1-A-C1-1-3A	1	C1	1	1	44.82	0.1183	8	LGM	0.0148	47.34
M-OHC1-A-C2-1-1A	1	C2	1	2	45.73	0.1233	8	M(A,L)GM	0.0154	50.33
M-OHC1-A-C2-1-2A	1	C2	1	2	46.07	0.1228	8	M(A,L)GM	0.0153	50.50
M-OHC1-A-C2-1-3A	1	C2	1	2	45.82	0.1217	8	M(A,L)GM	0.0152	49.79
M-OHC1-C-C1-1-1A	3	C1	3	1	46.13	0.1208	8	LGM	0.0151	49.73
M-OHC1-C-C1-1-2A	3	C1	3	1	45.37	0.1225	8	LGM	0.0153	49.61
M-OHC1-C-C1-1-3A	3	C1	3	1	41.94	0.1202	8	M(A,L)GM	0.0150	45.02
M-OHC1-C-C2-1-1A	3	C2	3	2	43.08	0.1218	8	M(A,L)GM	0.0152	46.83
M-OHC1-C-C2-1-2A	3	C2	3	2	42.91	0.1206	8	M(A,L)GM	0.0151	46.20
M-OHC1-C-C2-1-3A	3	C2	3	2	43.75	0.1200	8	M(A,L)GM	0.0150	46.86
M-OHC1-D-C1-1-1A	4	C1	4	1	42.15	0.1200	8	M(A,L)GM	0.0150	45.16
M-OHC1-D-C1-1-2A	4	C1	4	1	48.37	0.1189	8	M(A,L)GM	0.0149	51.33
M-OHC1-D-C1-1-3A	4	C1	4	1	42.73	0.1162	8	M(A,L)GM	0.0145	44.33
M-OHC1-D-C2-1-1A	4	C2	4	2	46.52	0.1196	8	M(A,L)GM	0.0150	49.69
M-OHC1-D-C2-1-2A	4	C2	4	2	45.88	0.1208	8	M(A,L)GM	0.0151	49.49
M-OHC1-D-C2-1-3A	4	C2	4	2	45.09	0.1206	8	M(A,L)GM	0.0151	48.54

Average	**44.71**	
Standard Dev.	**1.735**	
Coeff. of Var. [%]	**3.881**	
Min.	**41.94**	
Max.	**48.37**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0150**	**48.04**
Standard $Dev._{norm}$		**2.125**
Coeff. of Var. $[\%]_{norm}$		**4.424**
Min.	**0.0145**	**44.33**
Max.	**0.0154**	**51.33**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC1)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
0
1
2
3
4
5
0
10
20
30
40
50
60
Laminate Open-Hole Compression Strength [ksi]

Laminate Open-Hole Compression Properties (OHC1)--ETA (180°F)
Strength

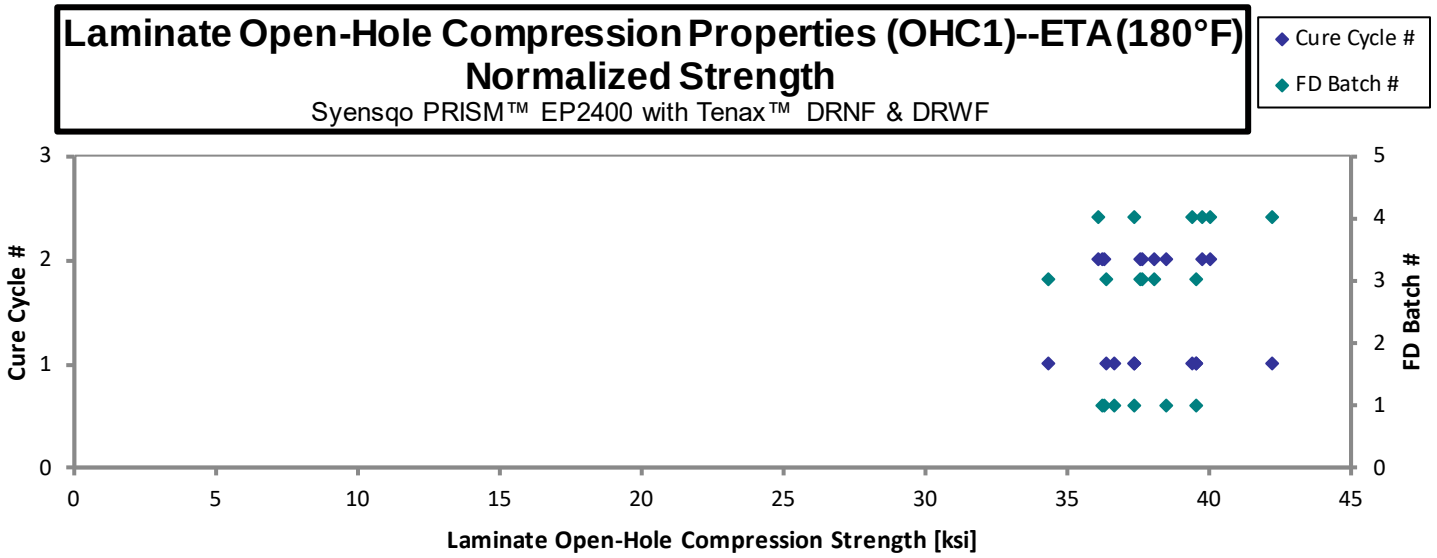
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC1-A-C1-1-1C	1	C1	1	1	37.05	0.1196	8	LGM	0.0149	39.55
M-OHC1-A-C1-1-2C	1	C1	1	1	34.70	0.1184	8	LGM	0.0148	36.67
M-OHC1-A-C1-1-3C	1	C1	1	1	35.27	0.1188	8	M(A,L)GM	0.0148	37.40
M-OHC1-A-C2-1-1C	1	C2	1	2	36.07	0.1196	8	LGM	0.0149	38.51
M-OHC1-A-C2-1-2C	1	C2	1	2	33.42	0.1215	8	LGM	0.0152	36.24
M-OHC1-A-C2-1-3C	1	C2	1	2	33.59	0.1211	8	LGM	0.0151	36.33
M-OHC1-C-C1-1-1C	3	C1	3	1	31.85	0.1208	8	LGM	0.0151	34.33
M-OHC1-C-C1-1-2C	3	C1	3	1	35.65	0.1243	8	LGM	0.0155	39.56
M-OHC1-C-C1-1-3C	3	C1	3	1	33.41	0.1221	8	M(A,L)GM	0.0153	36.43
M-OHC1-C-C2-1-1C	3	C2	3	2	35.30	0.1209	8	M(A,L)GM	0.0151	38.11
M-OHC1-C-C2-1-2C	3	C2	3	2	35.13	0.1199	8	LGM	0.0150	37.61
M-OHC1-C-C2-1-3C	3	C2	3	2	34.83	0.1211	8	M(A,L)GM	0.0151	37.66
M-OHC1-D-C1-1-1C	4	C1	4	1	39.72	0.1192	8	LGM	0.0149	42.26
M-OHC1-D-C1-1-2C	4	C1	4	1	35.23	0.1189	8	LGM	0.0149	37.38
M-OHC1-D-C1-1-3C	4	C1	4	1	37.27	0.1184	8	LGM	0.0148	39.41
M-OHC1-D-C2-1-1C	4	C2	4	2	36.53	0.1219	8	M(A,L)GM	0.0152	39.76
M-OHC1-D-C2-1-2C	4	C2	4	2	36.87	0.1217	8	M(A,L)GM	0.0152	40.07
M-OHC1-D-C2-1-3C	4	C2	4	2	33.00	0.1226	8	M(A,L)GM	0.0153	36.11

Average	**35.27**	
Standard Dev.	**1.864**	
Coeff. of Var. [%]	**5.285**	
Min.	**31.85**	
Max.	**39.72**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0151**	**37.97**
$Standard\ Dev._{norm}$		**1.891**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.982**
Min.	**0.0148**	**34.33**
Max.	**0.0155**	**42.26**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC1)--ETA (180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
1
2
3
0
1
2
3
4
5
0
5
10
15
20
25
30
35
40
45

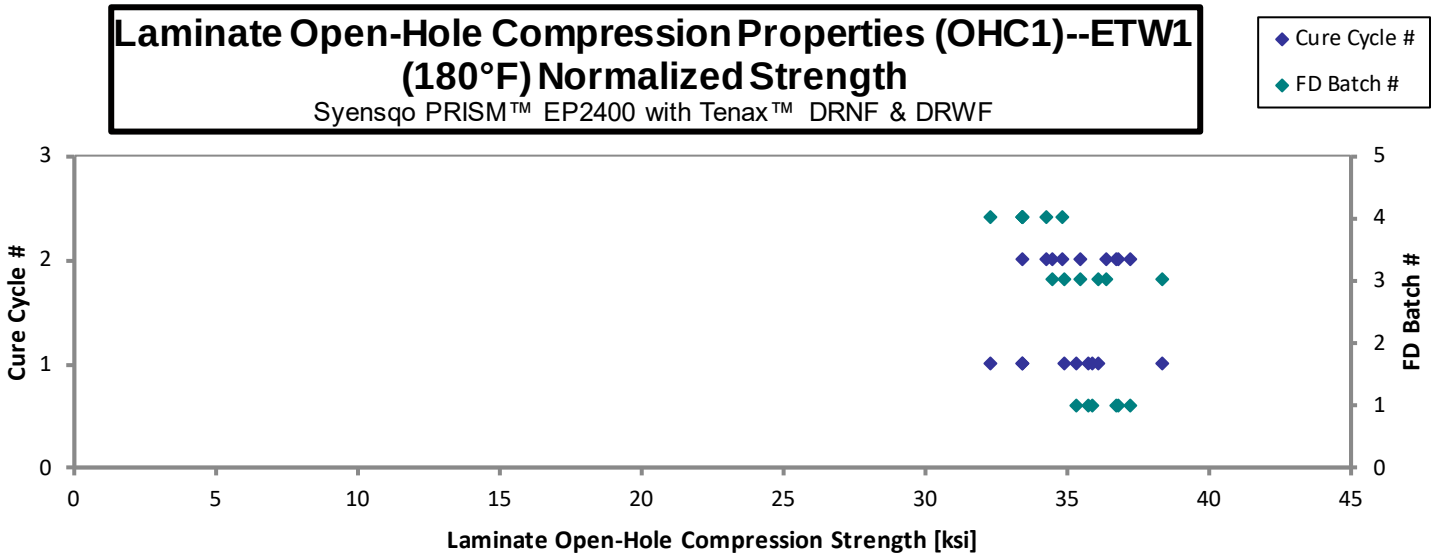
Laminate Open-Hole Compression Properties (OHC1)--ETW1 (180°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC1-A-C1-1-1D	1	C1	1	1	33.52	0.1196	8	M(A,L)GM	0.0150	35.80
M-OHC1-A-C1-1-2D	1	C1	1	1	33.14	0.1214	8	M(A,L)GM	0.0152	35.92
M-OHC1-A-C1-1-3D	1	C1	1	1	33.08	0.1197	8	M(A,L)GM	0.0150	35.34
M-OHC1-A-C2-1-1D	1	C2	1	2	33.93	0.1216	8	LGM	0.0152	36.83
M-OHC1-A-C2-1-2D	1	C2	1	2	34.53	0.1209	8	LGM	0.0151	37.27
M-OHC1-A-C2-1-3D	1	C2	1	2	33.82	0.1218	8	LGM	0.0152	36.77
M-OHC1-C-C1-1-1D	3	C1	3	1	35.69	0.1203	8	M(A,L)GM	0.0150	38.34
M-OHC1-C-C1-1-2D	3	C1	3	1	33.54	0.1206	8	M(A,L)GM	0.0151	36.11
M-OHC1-C-C1-1-3D	3	C1	3	1	32.42	0.1207	8	M(A,L)GM	0.0151	34.94
M-OHC1-C-C2-1-1D	3	C2	3	2	32.94	0.1207	8	M(A,L)GM	0.0151	35.49
M-OHC1-C-C2-1-2D	3	C2	3	2	32.06	0.1206	8	M(A,L)GM	0.0151	34.52
M-OHC1-C-C2-1-3D	3	C2	3	2	33.74	0.1208	8	M(A,L)GM	0.0151	36.39
M-OHC1-D-C1-1-1D	4	C1	4	1	31.27	0.1196	8	M(A,L)GM	0.0150	33.41
M-OHC1-D-C1-1-2D	4	C1	4	1	31.57	0.1187	8	M(A,L)GM	0.0148	33.46
M-OHC1-D-C1-1-3D	4	C1	4	1	30.42	0.1189	8	M(A,L)GM	0.0149	32.29
M-OHC1-D-C2-1-1D	4	C2	4	2	31.50	0.1188	8	M(A,L)GM	0.0149	33.42
M-OHC1-D-C2-1-2D	4	C2	4	2	32.30	0.1189	8	M(A,L)GM	0.0149	34.28
M-OHC1-D-C2-1-3D	4	C2	4	2	32.72	0.1193	8	M(A,L)GM	0.0149	34.85

Average	**32.90**	
Standard Dev.	**1.279**	
Coeff. of Var. [%]	**3.886**	
Min.	**30.42**	
Max.	**35.69**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0150**	**35.30**
$Standard\ Dev._{norm}$		**1.566**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.436**
Min.	**0.0148**	**32.29**
Max.	**0.0152**	**38.34**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC1)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
1
2
3
0
5
10
15
20
25
30
35
40
45
0
1
2
3
4
5

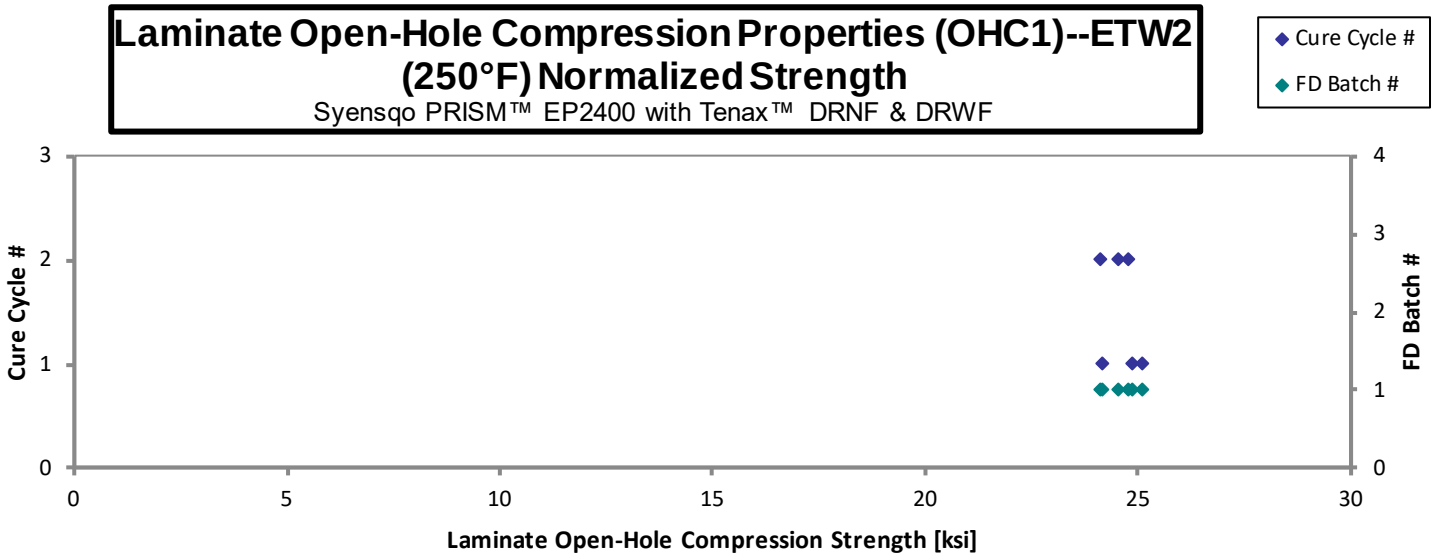
Laminate Open-Hole Compression Properties (OHC1)--ETW2 (250°F)
Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC1-A-C1-1-1F	1	C1	1	1	23.36	0.1193	8	LGM	0.0149	24.87
M-OHC1-A-C1-1-2F	1	C1	1	1	23.63	0.1190	8	LGM	0.0149	25.12
M-OHC1-A-C1-1-3F	1	C1	1	1	22.39	0.1208	8	LGM	0.0151	24.16
M-OHC1-A-C2-1-1F	1	C2	1	2	22.56	0.1230	8	LGM	0.0154	24.78
M-OHC1-A-C2-1-2F	1	C2	1	2	22.58	0.1217	8	LGM	0.0152	24.54
M-OHC1-A-C2-1-3F	1	C2	1	2	22.12	0.1222	8	LGM	0.0153	24.14

Average	**22.77**	
Standard Dev.	**0.5887**	
Coeff. of Var. [%]	**2.585**	
Min.	**22.12**	
Max.	**23.63**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0151**	**24.60**
$Standard\ Dev._{norm}$		**0.3955**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.608**
Min.	**0.0149**	**24.14**
Max.	**0.0154**	**25.12**
Number of Spec.	**6**	**6**


Laminate Open-Hole Compression Properties (OHC1)--ETW2 (250°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
5
10
15
20
25
30
Laminate Open-Hole Compression Strength [ksi]

4.2.16 Open-Hole Compression 2 (OHC2)

Laminate Open-Hole Compression Properties (OHC2)--RTA (70°F) Strength

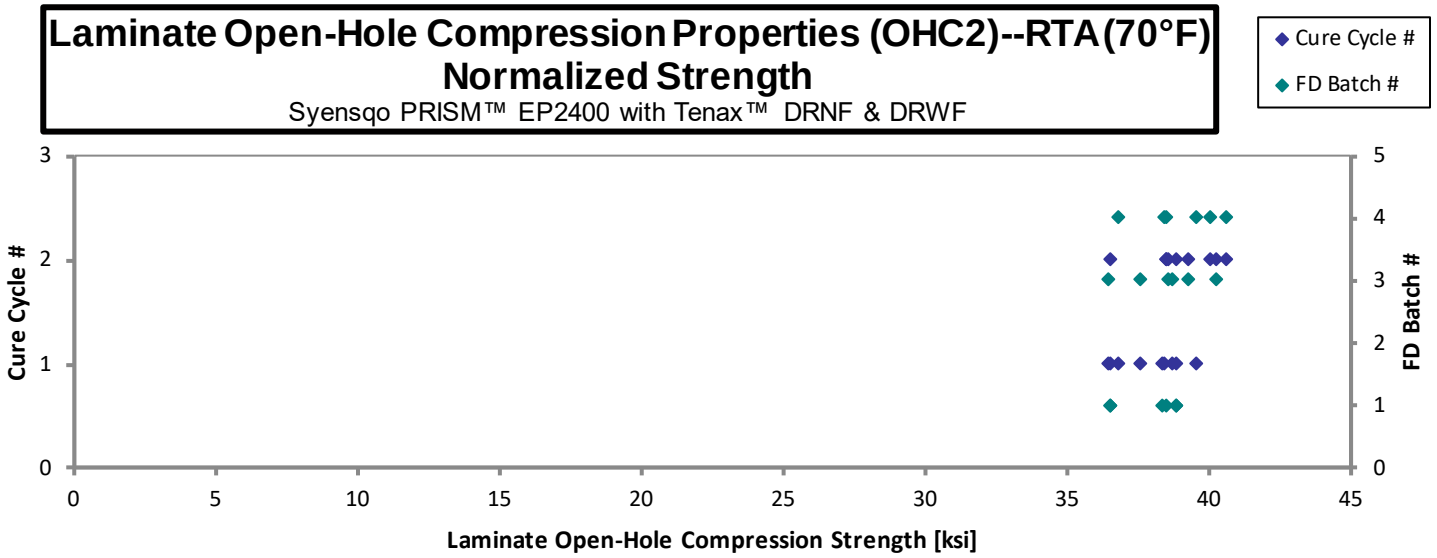
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC2-A-C1-1-1A	1	C1	1	38.59	0.1129	8	LGM	0.0141	38.89
M-OHC2-A-C1-1-2A	1	C1	1	38.19	0.1125	8	M(A,L)GM	0.0141	38.35
M-OHC2-A-C1-1-3A	1	C1	1	36.23	0.1129	8	LGM	0.0141	36.51
M-OHC2-A-C2-1-1A	1	C2	2	34.17	0.1197	8	M(A,L)GM	0.0150	36.51
M-OHC2-A-C2-1-2A	1	C2	2	36.10	0.1195	8	M(A,L)GM	0.0149	38.52
M-OHC2-A-C2-1-3A	1	C2	2	36.79	0.1184	8	LGM	0.0148	38.90
M-OHC2-C-C1-1-1A	3	C1	1	36.05	0.1169	8	LGM	0.0146	37.62
M-OHC2-C-C1-1-2A	3	C1	1	36.39	0.1191	8	LGM	0.0149	38.69
M-OHC2-C-C1-1-3A	3	C1	1	34.81	0.1174	8	M(A,L)GM	0.0147	36.50
M-OHC2-C-C2-1-1A	3	C2	2	38.66	0.1166	8	M(A,L)GM	0.0146	40.25
M-OHC2-C-C2-1-2A	3	C2	2	37.76	0.1165	8	M(A,L)GM	0.0146	39.27
M-OHC2-C-C2-1-3A	3	C2	2	36.89	0.1171	8	M(A,L)GM	0.0146	38.58
M-OHC2-D-C1-1-1A	4	C1	1	34.33	0.1202	8	LGM	0.0150	36.83
M-OHC2-D-C1-1-2A	4	C1	1	35.88	0.1200	8	M(A,L)GM	0.0150	38.43
M-OHC2-D-C1-1-3A	4	C1	1	37.05	0.1196	8	LGM	0.0150	39.57
M-OHC2-D-C2-1-1A	4	C2	2	38.38	0.1185	8	LGM	0.0148	40.62
M-OHC2-D-C2-1-2A	4	C2	2	36.74	0.1174	8	M(A,L)GM	0.0147	38.52
M-OHC2-D-C2-1-3A	4	C2	2	37.97	0.1182	8	LGM	0.0148	40.08

Average	**36.72**	
Standard Dev.	**1.388**	
Coeff. of Var. [%]	**3.779**	
Min.	**34.17**	
Max.	**38.66**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0147**	**38.48**
Standard $Dev._{norm}$		**1.275**
Coeff. of Var. $[\%]_{norm}$		**3.314**
Min.	**0.0141**	**36.50**
Max.	**0.0150**	**40.62**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC2)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
1
2
3
0
5
10
15
20
25
30
35
40
45
0
1
2
3
4
5

Laminate Open-Hole Compression Properties (OHC2)-- ETW1 (180°F) Strength

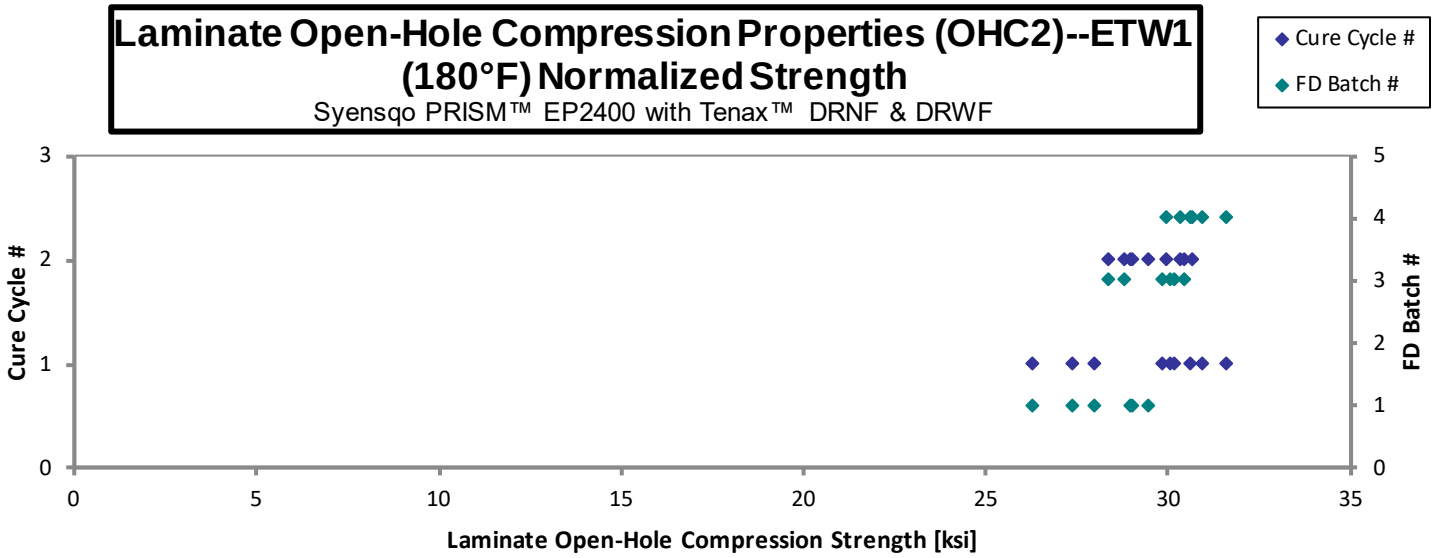
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC2-A-C1-1-1D	1	C1	1	27.43	0.1142	8	M(A,L)GM	0.0143	27.96
M-OHC2-A-C1-1-2D	1	C1	1	25.86	0.1138	8	M(A,L)GM	0.0142	26.27
M-OHC2-A-C1-1-3D	1	C1	1	27.03	0.1134	8	M(A,L)GM	0.0142	27.37
M-OHC2-A-C2-1-1D	1	C2	2	27.62	0.1175	8	M(A,L)GM	0.0147	28.98
M-OHC2-A-C2-1-2D	1	C2	2	27.74	0.1191	8	M(A,L)GM	0.0149	29.48
M-OHC2-A-C2-1-3D	1	C2	2	27.37	0.1188	8	M(A,L)GM	0.0149	29.04
M-OHC2-C-C1-1-1D	3	C1	1	28.37	0.1179	8	M(A,L)GM	0.0147	29.86
M-OHC2-C-C1-1-2D	3	C1	1	28.55	0.1184	8	M(A,L)GM	0.0148	30.18
M-OHC2-C-C1-1-3D	3	C1	1	28.32	0.1189	8	M(A,L)GM	0.0149	30.07
M-OHC2-C-C2-1-1D	3	C2	2	26.89	0.1182	8	M(A,L)GM	0.0148	28.37
M-OHC2-C-C2-1-2D	3	C2	2	29.01	0.1175	8	M(A,L)GM	0.0147	30.44
M-OHC2-C-C2-1-3D	3	C2	2	27.50	0.1172	8	M(A,L)GM	0.0147	28.78
M-OHC2-D-C1-1-1D	4	C1	1	29.47	0.1201	8	M(A,L)GM	0.0150	31.59
M-OHC2-D-C1-1-2D	4	C1	1	28.79	0.1204	8	M(A,L)GM	0.0150	30.93
M-OHC2-D-C1-1-3D	4	C1	1	28.65	0.1197	8	M(A,L)GM	0.0150	30.62
M-OHC2-D-C2-1-1D	4	C2	2	28.20	0.1190	8	M(A,L)GM	0.0149	29.95
M-OHC2-D-C2-1-2D	4	C2	2	28.46	0.1207	8	M(A,L)GM	0.0151	30.67
M-OHC2-D-C2-1-3D	4	C2	2	28.01	0.1213	8	M(A,L)GM	0.0152	30.33

Average	**27.96**	
Standard Dev.	**0.8734**	
Coeff. of Var. [%]	**3.124**	
Min.	**25.86**	
Max.	**29.47**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0148**	**29.49**
Standard $Dev._{norm}$		**1.358**
Coeff. of Var. $[\%]_{norm}$		**4.605**
Min.	**0.0142**	**26.27**
Max.	**0.0152**	**31.59**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC2)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
1
2
3
0
5
10
15
20
25
30
35
4
5

4.2.17 Open-Hole Compression 3 (OHC3)

Laminate Open-Hole Compression Properties (OHC3)--RTA (70°F) Strength

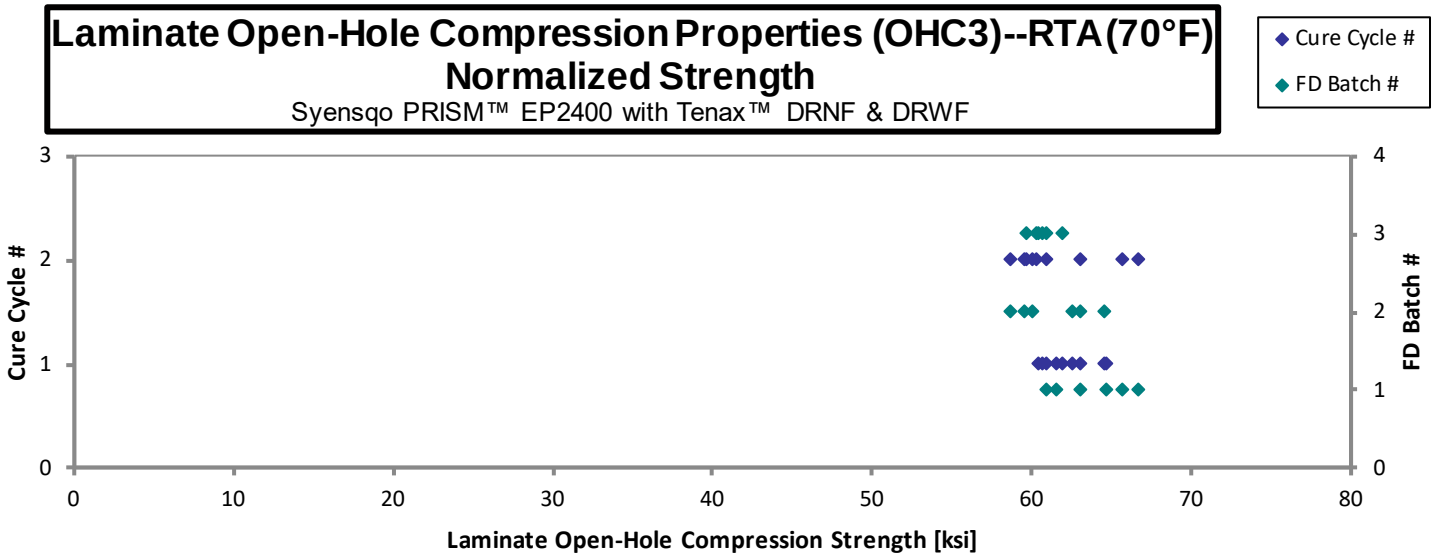
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC3-A-C1-1-1A	1	C1	1	61.89	0.1378	20	M(A,L)GM	0.0069	60.90
M-OHC3-A-C1-1-2A	1	C1	1	66.47	0.1362	20	M(A,L)GM	0.0068	64.67
M-OHC3-A-C1-1-3A	1	C1	1	62.96	0.1370	20	M(A,L)GM	0.0068	61.59
M-OHC3-A-C2-1-1A	1	C2	2	64.02	0.1459	20	M(A,L)GM	0.0073	66.72
M-OHC3-A-C2-1-2A	1	C2	2	63.42	0.1450	20	M(A,L)GM	0.0072	65.68
M-OHC3-A-C2-1-3A	1	C2	2	60.28	0.1466	20	M(A,L)GM	0.0073	63.12
M-OHC3-B-C1-1-1A	2	C1	1	61.38	0.1426	20	M(A,L)GM	0.0071	62.54
M-OHC3-B-C1-1-2A	2	C1	1	62.70	0.1441	20	M(A,L)GM	0.0072	64.55
M-OHC3-B-C1-1-3A	2	C1	1	61.35	0.1441	20	M(A,L)GM	0.0072	63.13
M-OHC3-B-C2-1-1A	2	C2	2	57.05	0.1440	20	M(A,L)GM	0.0072	58.66
M-OHC3-B-C2-1-2A	2	C2	2	57.87	0.1440	20	M(A,L)GM	0.0072	59.52
M-OHC3-B-C2-1-3A	2	C2	2	59.30	0.1417	20	M(A,L)GM	0.0071	60.03
M-OHC3-C-C1-1-1A	3	C1	1	59.99	0.1411	20	M(A,L)GM	0.0071	60.47
M-OHC3-C-C1-1-2A	3	C1	1	59.83	0.1420	20	M(A,L)GM	0.0071	60.67
M-OHC3-C-C1-1-3A	3	C1	1	61.45	0.1411	20	LGM	0.0071	61.94
M-OHC3-C-C2-1-1A	3	C2	2	57.22	0.1461	20	M(A,L)GM	0.0073	59.71
M-OHC3-C-C2-1-2A	3	C2	2	57.41	0.1472	20	M(A,L)GM	0.0074	60.34
M-OHC3-C-C2-1-3A	3	C2	2	58.11	0.1468	20	M(A,L)GM	0.0073	60.94

Average	**60.71**	
Standard Dev.	**2.635**	
Coeff. of Var. [%]	**4.340**	
Min.	**57.05**	
Max.	**66.47**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**61.95**
Standard $Dev._{norm}$		**2.275**
Coeff. of Var. $[\%]_{norm}$		**3.672**
Min.	**0.0068**	**58.66**
Max.	**0.0074**	**66.72**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC3)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
1
2
3
4
0
10
20
30
40
50
60
70
80

Laminate Open-Hole Compression Properties (OHC3)-- ETW1 (180°F) Strength

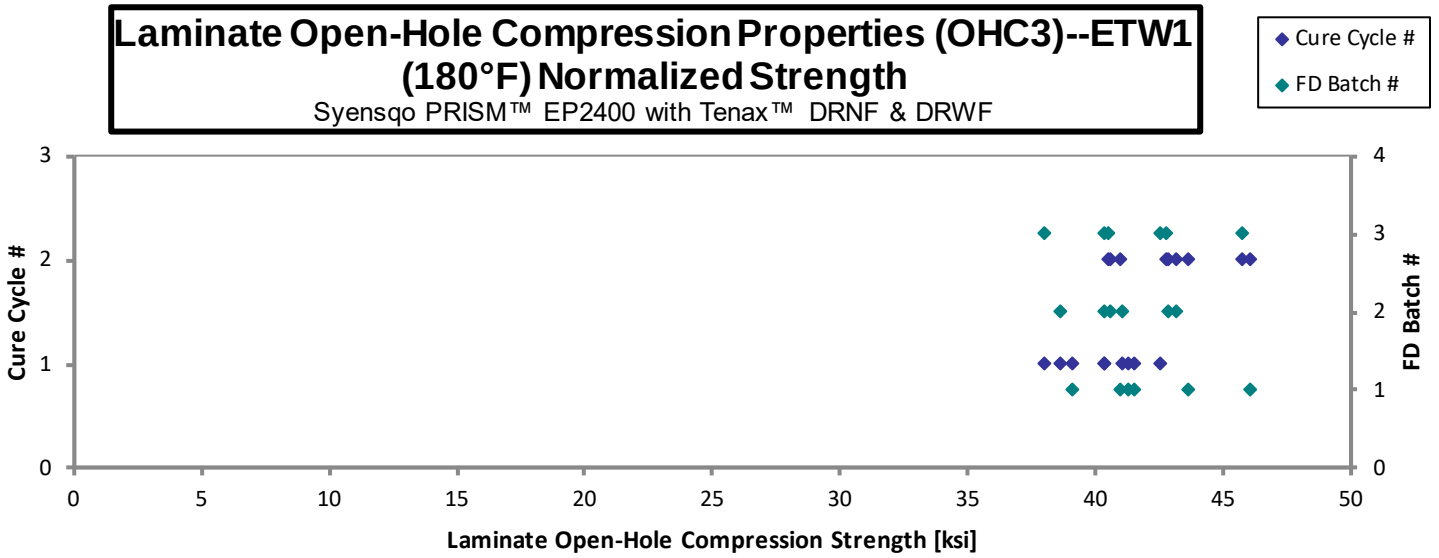
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]: 0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC3-A-C1-1-1D	1	C1	1	42.51	0.1369	20	LGM	0.0068	41.56
M-OHC3-A-C1-1-2D	1	C1	1	40.23	0.1360	20	M(A,L)GM	0.0068	39.09
M-OHC3-A-C1-1-3D	1	C1	1	42.49	0.1361	20	M(A,L)GM	0.0068	41.29
M-OHC3-A-C2-1-1D	1	C2	2	44.34	0.1454	20	M(A,L)GM	0.0073	46.04
M-OHC3-A-C2-1-2D	1	C2	2	39.57	0.1449	20	LGM	0.0072	40.96
M-OHC3-A-C2-1-3D	1	C2	2	42.17	0.1448	20	M(A,L)GM	0.0072	43.63
M-OHC3-B-C1-1-1D	2	C1	1	37.38	0.1448	20	M(A,L)GM	0.0072	38.65
M-OHC3-B-C1-1-2D	2	C1	1	40.74	0.1412	20	M(A,L)GM	0.0071	41.08
M-OHC3-B-C1-1-3D	2	C1	1	39.71	0.1423	20	M(A,L)GM	0.0071	40.37
M-OHC3-B-C2-1-1D	2	C2	2	39.66	0.1433	20	LGM	0.0072	40.60
M-OHC3-B-C2-1-2D	2	C2	2	41.82	0.1435	20	LGM	0.0072	42.87
M-OHC3-B-C2-1-3D	2	C2	2	42.39	0.1426	20	M(A,L)GM	0.0071	43.19
M-OHC3-C-C1-1-1D	3	C1	1	37.50	0.1420	20	LGM	0.0071	38.03
M-OHC3-C-C1-1-2D	3	C1	1	39.56	0.1428	20	M(A,L)GM	0.0071	40.34
M-OHC3-C-C1-1-3D	3	C1	1	41.96	0.1419	20	M(A,L)GM	0.0071	42.52
M-OHC3-C-C2-1-1D	3	C2	2	43.73	0.1465	20	LGM	0.0073	45.77
M-OHC3-C-C2-1-2D	3	C2	2	38.59	0.1469	20	LGM	0.0073	40.50
M-OHC3-C-C2-1-3D	3	C2	2	40.95	0.1464	20	LGM	0.0073	42.81

Average	**40.85**	
Standard Dev.	**1.986**	
Coeff. of Var. [%]	**4.862**	
Min.	**37.38**	
Max.	**44.34**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**41.63**
Standard $Dev._{norm}$		**2.190**
Coeff. of Var. $[\%]_{norm}$		**5.262**
Min.	**0.0068**	**38.03**
Max.	**0.0073**	**46.04**
Number of Spec.	**18**	**18**


Laminate Open-Hole Compression Properties (OHC3)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Open-Hole Compression Strength [ksi]
0
5
10
15
20
25
30
35
40
45
50
0
1
2
3
4

4.2.18 Open-Hole Compression 4 (OHC4)

Laminate Open-Hole Compression Properties (OHC4)--RTA (70°F) Strength

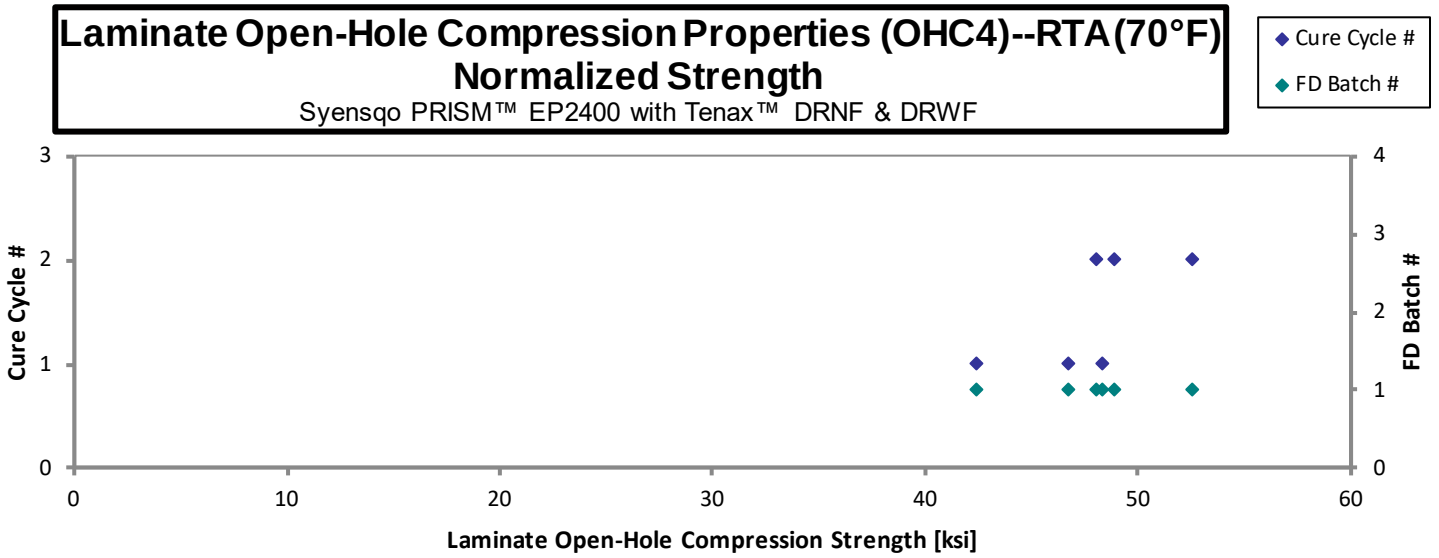
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC4-A-C1-1-1A	1	C1	1	38.93	0.1221	8	LGM	0.0153	42.43
M-OHC4-A-C1-1-2A	1	C1	1	43.52	0.1204	8	LGM	0.0150	46.77
M-OHC4-A-C1-1-3A	1	C1	1	44.61	0.1213	8	LGM	0.0152	48.32
M-OHC4-A-C2-1-1A	1	C2	2	44.17	0.1240	8	LGM	0.0155	48.89
M-OHC4-A-C2-1-2A	1	C2	2	43.57	0.1235	8	LGM	0.0154	48.03
M-OHC4-A-C2-1-3A	1	C2	2	47.46	0.1242	8	LGM	0.0155	52.61

Average	**43.71**	
Standard Dev.	**2.758**	
Coeff. of Var. [%]	**6.310**	
Min.	**38.93**	
Max.	**47.46**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0153**	**47.84**
$Standard\ Dev._{norm}$		**3.304**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**6.906**
Min.	**0.0150**	**42.43**
Max.	**0.0155**	**52.61**
Number of Spec.	**6**	**6**


Laminate Open-Hole Compression Properties (OHC4)--RTA (70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
Laminate Open-Hole Compression Strength [ksi]

Laminate Open-Hole Compression Properties (OHC4)-- ETW1 (180°F) Strength

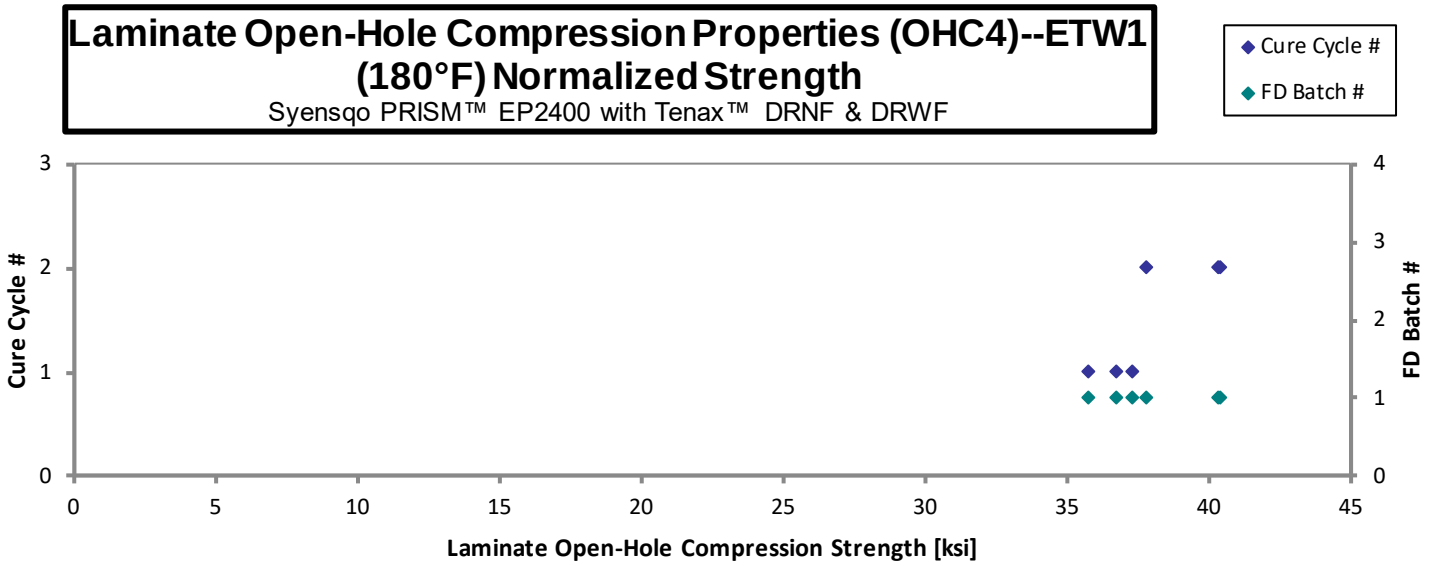
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-OHC4-A-C1-1-1D	1	C1	1	34.54	0.1193	8	LGM	0.0149	36.78
M-OHC4-A-C1-1-2D	1	C1	1	33.44	0.1198	8	LGM	0.0150	35.78
M-OHC4-A-C1-1-3D	1	C1	1	34.92	0.1196	8	LGM	0.0150	37.30
M-OHC4-A-C2-1-1D	1	C2	2	36.88	0.1228	8	LGM	0.0154	40.44
M-OHC4-A-C2-1-2D	1	C2	2	34.17	0.1240	8	LGM	0.0155	37.83
M-OHC4-A-C2-1-3D	1	C2	2	35.66	0.1267	8	LGM	0.0158	40.35

Average	**34.94**	
Standard Dev.	**1.208**	
Coeff. of Var. [%]	**3.458**	
Min.	**33.44**	
Max.	**36.88**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0153**	**38.08**
$Standard\ Dev._{norm}$		**1.918**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**5.037**
Min.	**0.0149**	**35.78**
Max.	**0.0158**	**40.44**
Number of Spec.	**6**	**6**


Laminate Open-Hole Compression Properties (OHC4)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
5
10
15
20
25
30
35
40
45
Laminate Open-Hole Compression Strength [ksi]

4.2.19 Filled-Hole Compression 1 (FHC1)

Laminate Filled-Hole Compression Properties (FHC1)--RTA (70°F) Strength

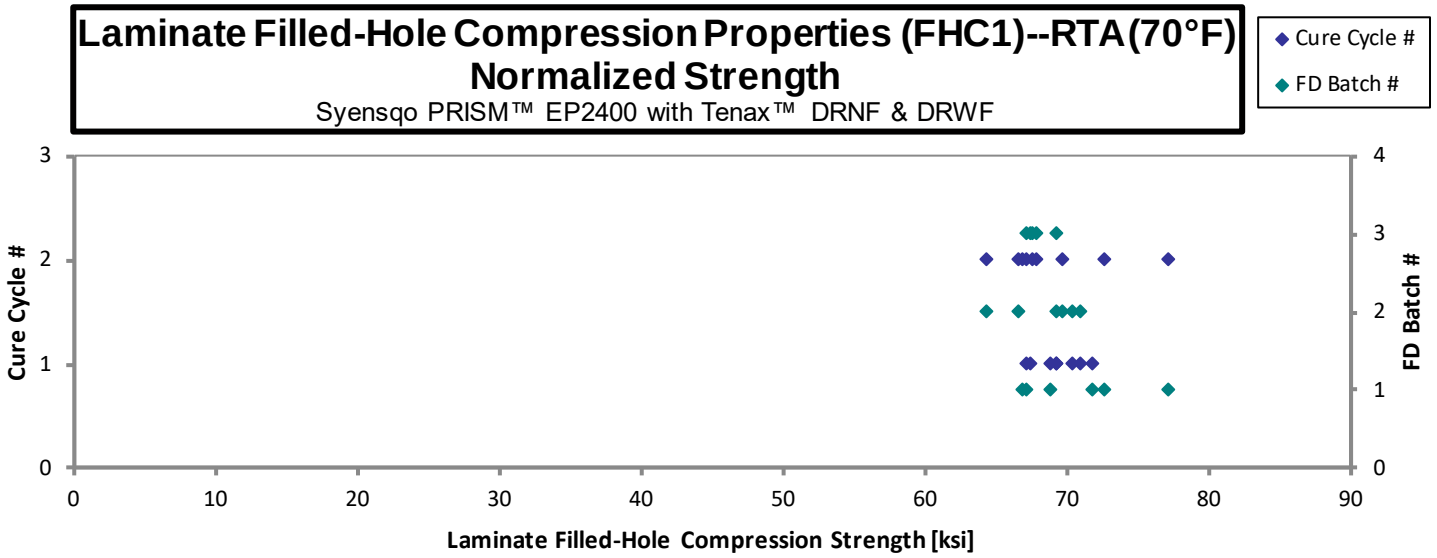
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC1-A-C1-1-1A	1	C1	1	66.87	0.1153	8	M(A,L)GF	0.0144	68.84
M-FHC1-A-C1-1-2A	1	C1	1	69.37	0.1159	8	M(A,L)GF	0.0145	71.78
M-FHC1-A-C1-1-3A	1	C1	1	64.95	0.1159	8	M(A,L)GF	0.0145	67.19
M-FHC1-A-C2-1-1A	1	C2	2	68.27	0.1192	8	M(A,L)GF	0.0149	72.62
M-FHC1-A-C2-1-2A	1	C2	2	62.61	0.1197	8	M(A,L)GF	0.0150	66.90
M-FHC1-A-C2-1-3A	1	C2	2	73.24	0.1180	8	M(A,L)GF	0.0148	77.17
M-FHC1-B-C1-1-1A	2	C1	1	65.94	0.1195	8	M(A,L)GF	0.0149	70.33
M-FHC1-B-C1-1-2A	2	C1	1	66.35	0.1198	8	M(A,L)GF	0.0150	70.94
M-FHC1-B-C1-1-3A	2	C1	1	65.80	0.1178	8	M(A,L)GF	0.0147	69.22
M-FHC1-B-C2-1-1A	2	C2	2	62.16	0.1201	8	M(A,L)GF	0.0150	66.64
M-FHC1-B-C2-1-2A	2	C2	2	59.76	0.1205	8	M(A,L)GF	0.0151	64.28
M-FHC1-B-C2-1-3A	2	C2	2	65.37	0.1195	8	M(A,L)GF	0.0149	69.76
M-FHC1-C-C1-1-2A	3	C1	1	64.75	0.1198	8	M(A,L)GF	0.0150	69.27
M-FHC1-C-C1-1-3A	3	C1	1	63.26	0.1193	8	M(A,L)GF	0.0149	67.38
M-FHC1-C-C2-1-1A	3	C2	2	63.74	0.1180	8	M(A,L)GF	0.0148	67.17
M-FHC1-C-C2-1-2A	3	C2	2	63.65	0.1193	8	M(A,L)GF	0.0149	67.80
M-FHC1-C-C2-1-3A	3	C2	2	63.56	0.1191	8	LGF	0.0149	67.59

Average	**65.27**	
Standard Dev.	**3.094**	
Coeff. of Var. [%]	**4.740**	
Min.	**59.76**	
Max.	**73.24**	
Number of Spec.	**17**	

$Average_{norm}$	**0.0148**	**69.11**
$Standard\ Dev._{norm}$		**2.943**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.258**
Min.	**0.0144**	**64.28**
Max.	**0.0151**	**77.17**
Number of Spec.	**17**	**17**


Laminate Filled-Hole Compression Properties (FHC1)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
70
80
90
Laminate Filled-Hole Compression Strength [ksi]

Laminate Filled-Hole Compression Properties (FHC1)--ETA (180°F) Strength

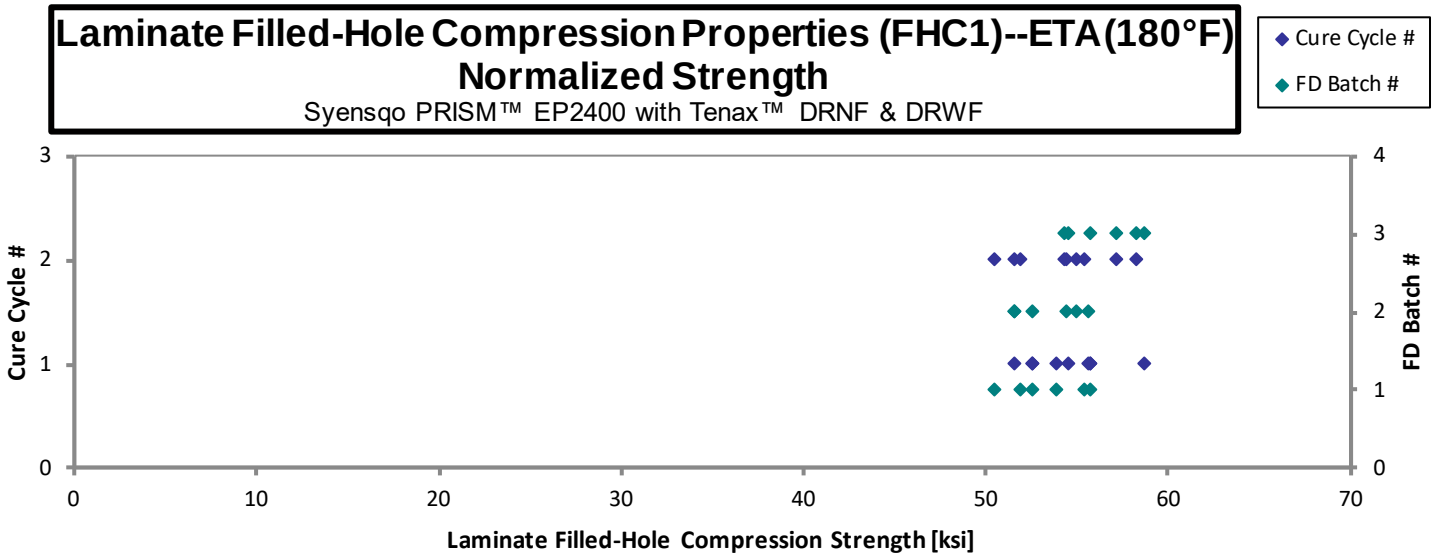
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC1-A-C1-1-1C	1	C1	1	50.16	0.1173	8	M(A,L)GF	0.0147	52.54
M-FHC1-A-C1-1-2C	1	C1	1	53.70	0.1164	8	M(A,L)GF	0.0145	55.78
M-FHC1-A-C1-1-3C	1	C1	1	52.29	0.1155	8	M(A,L)GF	0.0144	53.92
M-FHC1-A-C2-1-1C	1	C2	2	52.85	0.1175	8	M(A,L)GF	0.0147	55.46
M-FHC1-A-C2-1-2C	1	C2	2	47.55	0.1190	8	M(A,L)GF	0.0149	50.51
M-FHC1-A-C2-1-3C	1	C2	2	48.92	0.1187	8	M(A,L)GF	0.0148	51.86
M-FHC1-B-C1-1-1C	2	C1	1	49.09	0.1178	8	M(A,L)GF	0.0147	51.61
M-FHC1-B-C1-1-2C	2	C1	1	49.36	0.1192	8	M(A,L)GF	0.0149	52.53
M-FHC1-B-C1-1-3C	2	C1	1	52.51	0.1187	8	M(A,L)GF	0.0148	55.66
M-FHC1-B-C2-1-1C	2	C2	2	48.37	0.1195	8	M(A,L)GF	0.0149	51.62
M-FHC1-B-C2-1-2C	2	C2	2	51.07	0.1195	8	M(A,L)GF	0.0149	54.46
M-FHC1-B-C2-1-3C	2	C2	2	51.08	0.1205	8	M(A,L)GF	0.0151	54.95
M-FHC1-C-C1-1-1C	3	C1	1	52.64	0.1187	8	M(A,L)GF	0.0148	55.79
M-FHC1-C-C1-1-2C	3	C1	1	50.33	0.1213	8	M(A,L)GF	0.0152	54.51
M-FHC1-C-C1-1-3C	3	C1	1	54.10	0.1216	8	M(A,L)GF	0.0152	58.72
M-FHC1-C-C2-1-1C	3	C2	2	51.00	0.1194	8	M(A,L)GF	0.0149	54.35
M-FHC1-C-C2-1-2C	3	C2	2	54.07	0.1208	8	M(A,L)GF	0.0151	58.30
M-FHC1-C-C2-1-3C	3	C2	2	53.51	0.1196	8	M(A,L)GF	0.0149	57.13

Average	**51.25**	
Standard Dev.	**2.060**	
Coeff. of Var. [%]	**4.018**	
Min.	**47.55**	
Max.	**54.10**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0149**	**54.43**
$Standard\ Dev._{norm}$		**2.331**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.283**
Min.	**0.0144**	**50.51**
Max.	**0.0152**	**58.72**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Compression Properties (FHC1)--ETA(180°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
70
Laminate Filled-Hole Compression Strength [ksi]

Laminate Filled-Hole Compression Properties (FHC1)-- ETW1 (180°F) Strength

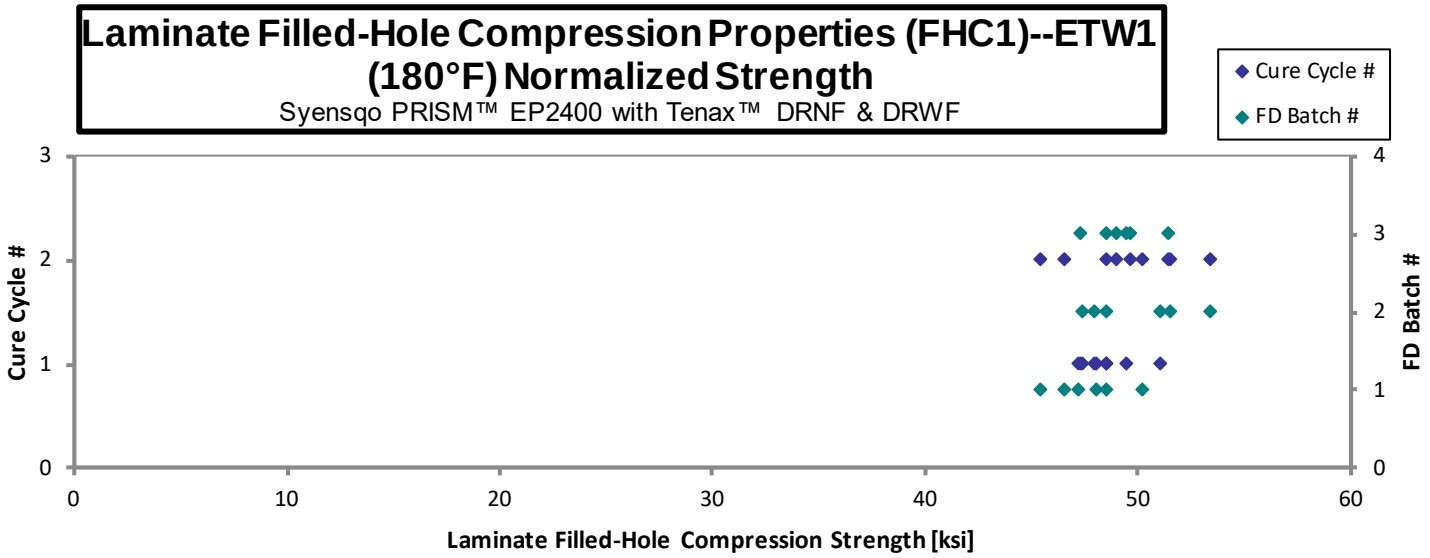
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC1-A-C1-1-1D	1	C1	1	46.48	0.1157	8	M(A,L)GF	0.0145	48.03
M-FHC1-A-C1-1-2D	1	C1	1	45.45	0.1163	8	M(A,L)GF	0.0145	47.19
M-FHC1-A-C1-1-3D	1	C1	1	46.54	0.1168	8	M(A,L)GF	0.0146	48.52
M-FHC1-A-C2-1-1D	1	C2	2	42.07	0.1211	8	M(A,L)GF	0.0151	45.47
M-FHC1-A-C2-1-2D	1	C2	2	46.93	0.1198	8	M(A,L)GF	0.0150	50.22
M-FHC1-A-C2-1-3D	1	C2	2	43.40	0.1202	8	M(A,L)GF	0.0150	46.58
M-FHC1-B-C1-1-1D	2	C1	1	45.81	0.1173	8	M(A,L)GF	0.0147	47.99
M-FHC1-B-C1-1-2D	2	C1	1	48.50	0.1180	8	LGF	0.0147	51.09
M-FHC1-B-C1-1-3D	2	C1	1	44.95	0.1180	8	LGF	0.0148	47.36
M-FHC1-B-C2-1-1D	2	C2	2	49.45	0.1210	8	M(A,L)GF	0.0151	53.43
M-FHC1-B-C2-1-2D	2	C2	2	44.75	0.1216	8	M(A,L)GF	0.0152	48.57
M-FHC1-B-C2-1-3D	2	C2	2	47.33	0.1219	8	M(A,L)GF	0.0152	51.52
M-FHC1-C-C1-1-1D	3	C1	1	45.89	0.1207	8	LGF	0.0151	49.43
M-FHC1-C-C1-1-2D	3	C1	1	44.09	0.1202	8	M(A,L)GF	0.0150	47.30
M-FHC1-C-C1-1-3D	3	C1	1	45.49	0.1196	8	M(A,L)GF	0.0149	48.56
M-FHC1-C-C2-1-1D	3	C2	2	46.00	0.1193	8	M(A,L)GF	0.0149	49.01
M-FHC1-C-C2-1-2D	3	C2	2	46.39	0.1199	8	M(A,L)GF	0.0150	49.66
M-FHC1-C-C2-1-3D	3	C2	2	48.11	0.1197	8	M(A,L)GF	0.0150	51.42

Average	**45.98**	
Standard Dev.	**1.800**	
Coeff. of Var. [%]	**3.915**	
Min.	**42.07**	
Max.	**49.45**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0149**	**48.96**
$Standard\ Dev._{norm}$		**2.000**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.085**
Min.	**0.0145**	**45.47**
Max.	**0.0152**	**53.43**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Compression Properties (FHC1)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
Laminate Filled-Hole Compression Strength [ksi]

4.2.20 Filled-Hole Compression 2 (FHC2)

Laminate Filled-Hole Compression Properties (FHC2)--RTA (70°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

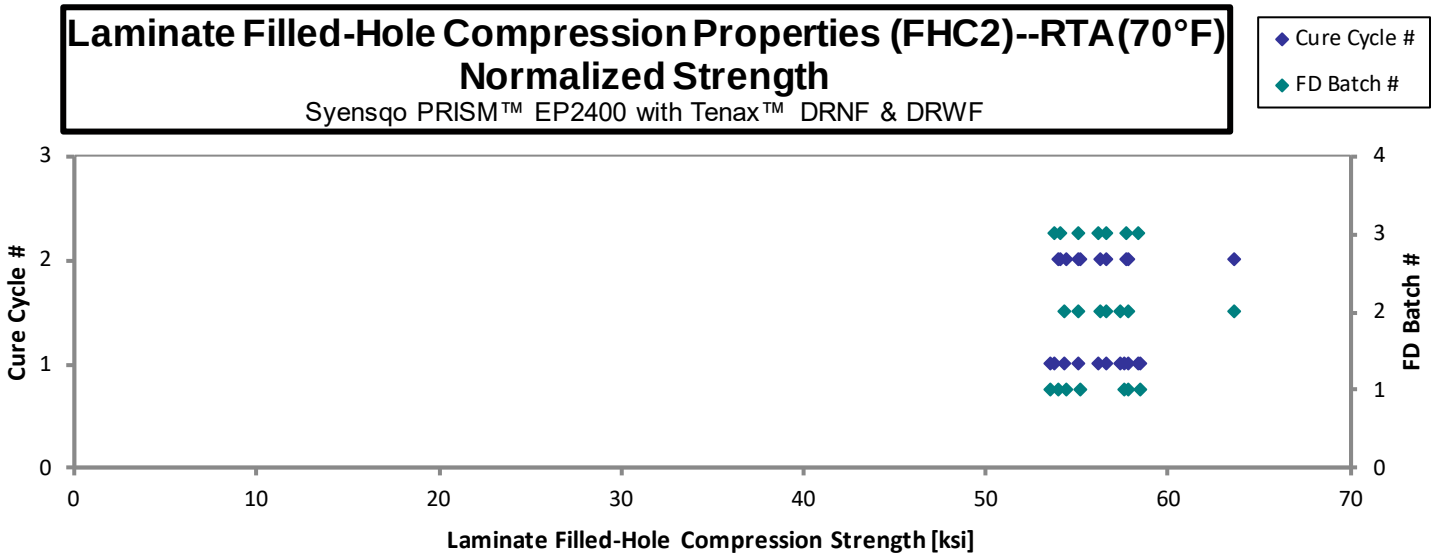
normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC2-A-C1-1-1A	1	C1	1	55.65	0.1176	8	M(A,L)GF	0.0147	58.45
M-FHC2-A-C1-1-2A	1	C1	1	55.25	0.1168	8	M(A,L)GF	0.0146	57.60
M-FHC2-A-C1-1-3A*	1	C1	1	51.81	0.1158	8	M(A,L)WB	0.0145	53.57
M-FHC2-A-C1-1-4A*	1	C1	1	55.81	0.1161	8	M(A,L)WB	0.0145	57.84
M-FHC2-A-C2-1-1A	1	C2	2	52.31	0.1181	8	M(A,L)GF	0.0148	55.16
M-FHC2-A-C2-1-2A	1	C2	2	51.59	0.1181	8	M(A,L)GF	0.0148	54.41
M-FHC2-A-C2-1-3A	1	C2	2	50.66	0.1194	8	M(A,L)GF	0.0149	54.01
M-FHC2-B-C1-1-1A	2	C1	1	51.01	0.1192	8	M(A,L)GF	0.0149	54.31
M-FHC2-B-C1-1-2A	2	C1	1	52.27	0.1180	8	M(A,L)GF	0.0148	55.08
M-FHC2-B-C1-1-3A	2	C1	1	54.29	0.1185	8	M(A,L)GF	0.0148	57.44
M-FHC2-B-C2-1-1A*	2	C2	2	53.61	0.1182	8	LWT	0.0148	56.58
M-FHC2-B-C2-1-2A*	2	C2	2	53.24	0.1185	8	M(A,L)GB	0.0148	56.34
M-FHC2-B-C2-1-3A*	2	C2	2	55.30	0.1171	8	M(A,L)WB	0.0146	57.79
M-FHC2-B-C2-1-4A*	2	C2	2	61.13	0.1166	8	LGB	0.0146	63.65
M-FHC2-C-C1-1-1A*	3	C1	1	54.17	0.1162	8	M(A,L)WB	0.0145	56.21
M-FHC2-C-C1-1-2A	3	C1	1	56.40	0.1159	8	M(A,L)GF	0.0145	58.35
M-FHC2-C-C1-1-3A*	3	C1	1	54.66	0.1161	8	M(A,L)GB	0.0145	56.64
M-FHC2-C-C1-1-4A*	3	C1	1	51.82	0.1163	8	M(A,L)GT	0.0145	53.79
M-FHC2-C-C2-1-2A	3	C2	2	51.73	0.1192	8	M(A,L)GF	0.0149	55.04
M-FHC2-C-C2-1-3A	3	C2	2	51.04	0.1188	8	M(A,L)GF	0.0149	54.14
M-FHC2-C-C2-1-4A	3	C2	2	53.97	0.1197	8	M(A,L)GF	0.0150	57.67

*Failure occured away from hole and fastener. Data was retained for analysis.

Average	**53.70**	
Standard Dev.	**2.454**	
Coeff. of Var. [%]	**4.570**	
Min.	**50.66**	
Max.	**61.13**	
Number of Spec.	**21**	

$Average_{norm}$	**0.0147**	**56.38**
$Standard\ Dev._{norm}$		**2.324**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**4.121**
Min.	**0.0145**	**53.57**
Max.	**0.0150**	**63.65**
Number of Spec.	**21**	**21**


Laminate Filled-Hole Compression Properties (FHC2)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
70
Laminate Filled-Hole Compression Strength [ksi]

Laminate Filled-Hole Compression Properties (FHC2)-- ETW1 (180°F) Strength

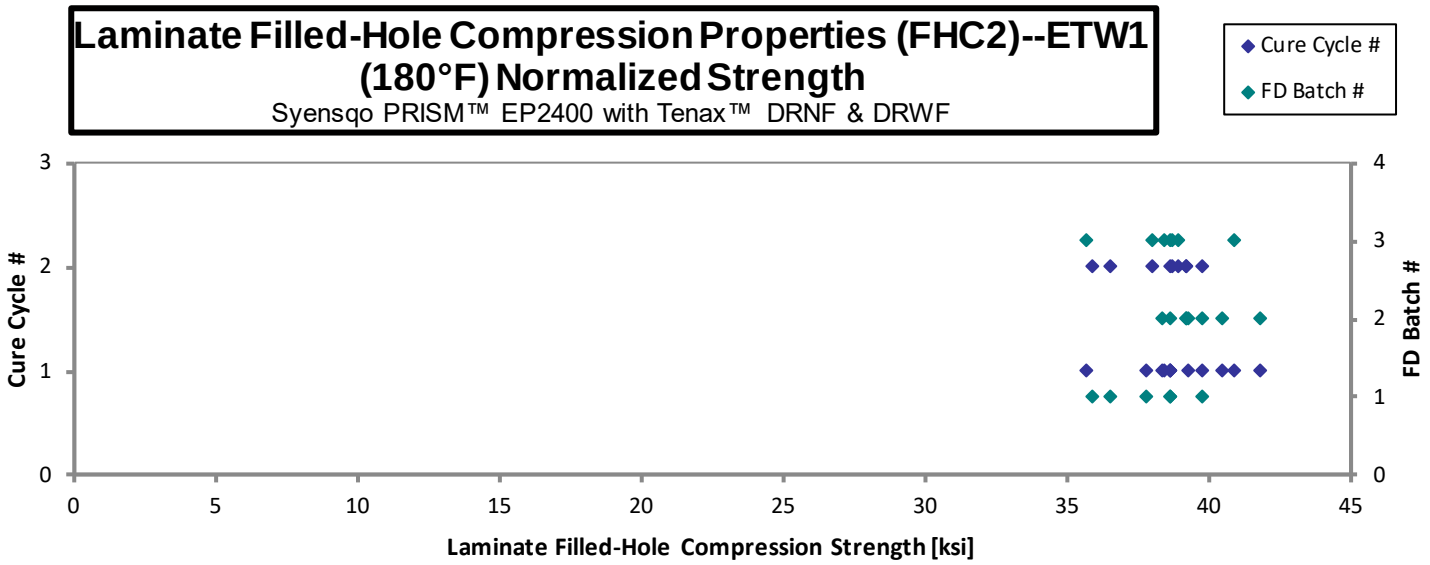
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC2-A-C1-1-1D*	1	C1	1	37.47	0.1155	8	LGB	0.0144	38.62
M-FHC2-A-C1-1-2D	1	C1	1	36.39	0.1163	8	M(A,L)GF	0.0145	37.79
M-FHC2-A-C1-1-3D	1	C1	1	37.14	0.1166	8	M(A,L)GF	0.0146	38.68
M-FHC2-A-C2-1-1D*	1	C2	2	38.25	0.1164	8	M(A,L)GT	0.0146	39.75
M-FHC2-A-C2-1-2D	1	C2	2	34.47	0.1167	8	LGF	0.0146	35.92
M-FHC2-A-C2-1-3D	1	C2	2	34.66	0.1182	8	M(A,L)GF	0.0148	36.57
M-FHC2-B-C1-1-1D*	2	C1	1	38.03	0.1171	8	M(A,L)WB	0.0146	39.76
M-FHC2-B-C1-1-2D*	2	C1	1	36.23	0.1187	8	LWB	0.0148	38.38
M-FHC2-B-C1-1-3D*	2	C1	1	38.31	0.1184	8	LWB	0.0148	40.49
M-FHC2-B-C1-1-4D*	2	C1	1	39.48	0.1186	8	M(A,L)GB	0.0148	41.81
M-FHC2-B-C1-1-5D	2	C1	1	36.82	0.1195	8	M(A,L)GF	0.0149	39.29
M-FHC2-B-C2-1-1D	2	C2	2	37.42	0.1174	8	M(A,L)GF	0.0147	39.23
M-FHC2-B-C2-1-2D*	2	C2	2	36.93	0.1173	8	M(A,L)GT	0.0147	38.67
M-FHC2-B-C2-1-3D*	2	C2	2	37.43	0.1174	8	M(A,L)GT	0.0147	39.24
M-FHC2-C-C1-1-1D	3	C1	1	36.81	0.1169	8	M(A,L)GF	0.0146	38.42
M-FHC2-C-C1-1-2D	3	C1	1	34.61	0.1156	8	LGF	0.0144	35.70
M-FHC2-C-C1-1-3D*	3	C1	1	39.11	0.1171	8	LWB	0.0146	40.89
M-FHC2-C-C1-1-4D	3	C1	1	36.52	0.1185	8	M(A,L)GF	0.0148	38.65
M-FHC2-C-C2-1-1D	3	C2	2	35.94	0.1185	8	M(A,L)GF	0.0148	38.02
M-FHC2-C-C2-1-2D	3	C2	2	36.86	0.1178	8	LGF	0.0147	38.76
M-FHC2-C-C2-1-3D	3	C2	2	36.65	0.1189	8	M(A,L)GF	0.0149	38.91

*Failure occured away from hole and fastener. Data was retained for analysis.

Average	**36.93**		**$Average_{norm}$**	**0.0147**	**38.74**
Standard Dev.	**1.333**		**$Standard\ Dev._{norm}$**		**1.475**
Coeff. of Var. [%]	**3.610**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.807**
Min.	**34.47**		**Min.**	**0.0144**	**35.70**
Max.	**39.48**		**Max.**	**0.0149**	**41.81**
Number of Spec.	**21**		**Number of Spec.**	**21**	**21**


Laminate Filled-Hole Compression Properties (FHC2)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Filled-Hole Compression Strength [ksi]
0
1
2
3
4
0
5
10
15
20
25
30
35
40
45

4.2.21 Filled-Hole Compression 3 (FHC3)

Laminate Filled-Hole Compression Properties (FHC3)--RTA (70°F) Strength

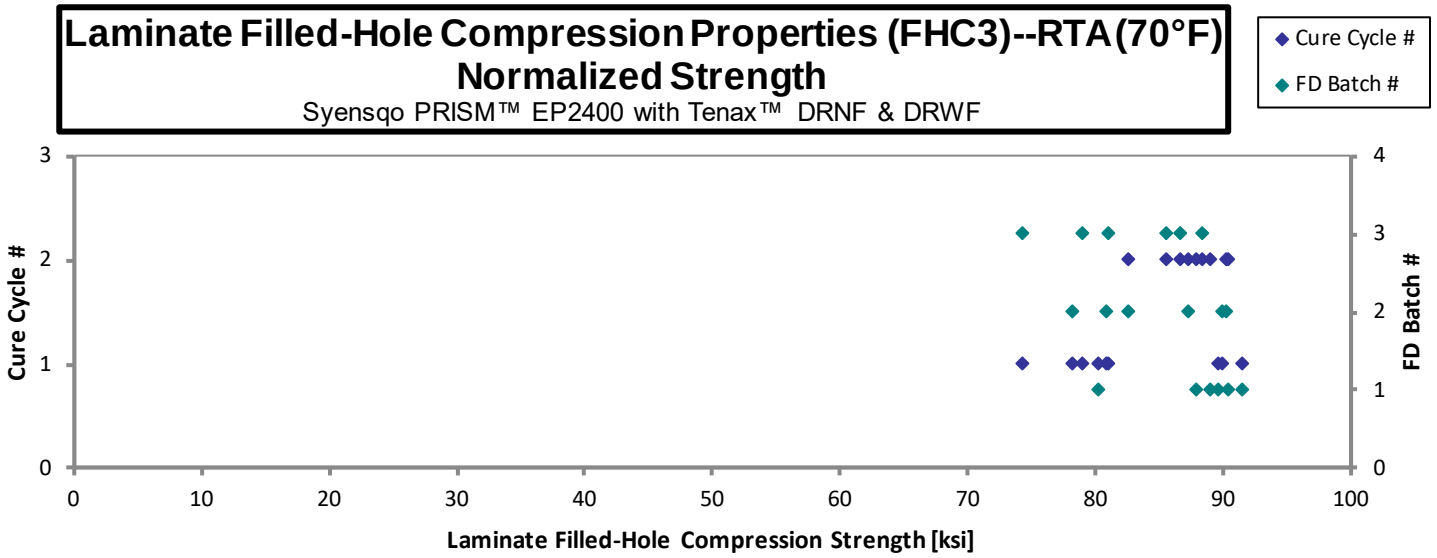
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC3-A-C1-1-1A	1	C1	1	87.99	0.1425	20	M(A,L)GF	0.0071	89.59
M-FHC3-A-C1-1-2A	1	C1	1	79.46	0.1415	20	M(A,L)GF	0.0071	80.30
M-FHC3-A-C1-1-3A	1	C1	1	91.07	0.1408	20	M(A,L)GF	0.0070	91.60
M-FHC3-A-C2-1-1A	1	C2	2	90.01	0.1408	20	M(A,L)GF	0.0070	90.51
M-FHC3-A-C2-1-2A	1	C2	2	88.79	0.1405	20	M(A,L)GF	0.0070	89.11
M-FHC3-A-C2-1-3A	1	C2	2	87.69	0.1404	20	M(A,L)GF	0.0070	87.92
M-FHC3-B-C1-1-1A	2	C1	1	79.53	0.1423	20	M(A,L)GF	0.0071	80.81
M-FHC3-B-C1-1-2A	2	C1	1	77.03	0.1421	20	M(A,L)GF	0.0071	78.18
M-FHC3-B-C1-1-3A	2	C1	1	89.86	0.1401	20	M(A,L)GF	0.0070	89.90
M-FHC3-B-C2-1-1A	2	C2	2	80.38	0.1438	20	M(A,L)GF	0.0072	82.54
M-FHC3-B-C2-1-2A	2	C2	2	85.46	0.1430	20	M(A,L)GF	0.0071	87.27
M-FHC3-B-C2-1-3A	2	C2	2	88.34	0.1432	20	M(A,L)GF	0.0072	90.35
M-FHC3-C-C1-1-1A	3	C1	1	78.11	0.1415	20	M(A,L)GF	0.0071	78.96
M-FHC3-C-C1-1-2A	3	C1	1	80.05	0.1417	20	M(A,L)GF	0.0071	81.02
M-FHC3-C-C1-1-3A	3	C1	1	74.18	0.1401	20	M(A,L)GF, LWT	0.0070	74.23
M-FHC3-C-C2-1-1A	3	C2	2	84.44	0.1419	20	M(A,L)GF	0.0071	85.60
M-FHC3-C-C2-1-2A	3	C2	2	85.21	0.1423	20	M(A,L)GF	0.0071	86.63
M-FHC3-C-C2-1-3A	3	C2	2	87.49	0.1415	20	M(A,L)GF	0.0071	88.44

Average	**84.17**	
Standard Dev.	**5.180**	
Coeff. of Var. [%]	**6.154**	
Min.	**74.18**	
Max.	**91.07**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**85.16**
Standard $Dev._{norm}$		**5.163**
Coeff. of Var. $[\%]_{norm}$		**6.062**
Min.	**0.0070**	**74.23**
Max.	**0.0072**	**91.60**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Compression Properties (FHC3)--RTA(70°F)
Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
70
80
90
100
Laminate Filled-Hole Compression Strength [ksi]

Laminate Filled-Hole Compression Properties (FHC3)-- ETW1 (180°F) Strength

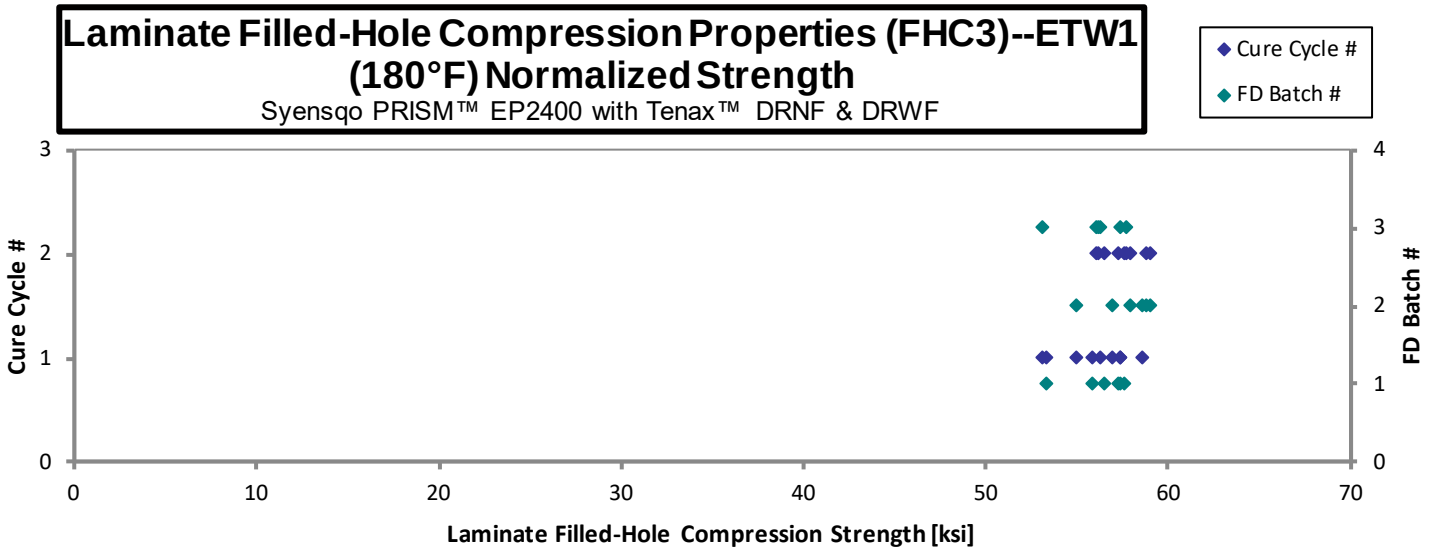
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-FHC3-A-C1-1-1D	1	C1	1	56.69	0.1417	20	LGF	0.0071	57.39
M-FHC3-A-C1-1-2D	1	C1	1	52.90	0.1410	20	LGF	0.0071	53.29
M-FHC3-A-C1-1-3D	1	C1	1	55.68	0.1403	20	LGF	0.0070	55.80
M-FHC3-A-C2-1-1D	1	C2	2	56.35	0.1404	20	M(A,L)GF	0.0070	56.50
M-FHC3-A-C2-1-2D	1	C2	2	56.42	0.1422	20	M(A,L)GF	0.0071	57.30
M-FHC3-A-C2-1-3D	1	C2	2	57.18	0.1410	20	M(A,L)GF	0.0071	57.61
M-FHC3-B-C1-1-1D	2	C1	1	54.60	0.1409	20	M(A,L)GF	0.0070	54.94
M-FHC3-B-C1-1-2D	2	C1	1	56.39	0.1413	20	LGF	0.0071	56.90
M-FHC3-B-C1-1-3D	2	C1	1	57.62	0.1425	20	M(A,L)GF	0.0071	58.64
M-FHC3-B-C2-1-1D	2	C2	2	57.35	0.1434	20	M(A,L)GF	0.0072	58.76
M-FHC3-B-C2-1-2D	2	C2	2	57.62	0.1434	20	M(A,L)GF	0.0072	59.01
M-FHC3-B-C2-1-3D	2	C2	2	56.93	0.1424	20	M(A,L)GF	0.0071	57.89
M-FHC3-C-C1-1-2D	3	C1	1	56.28	0.1427	20	M(A,L)GF	0.0071	57.36
M-FHC3-C-C1-1-3D	3	C1	1	55.66	0.1417	20	M(A,L)GF	0.0071	56.34
M-FHC3-C-C1-1-4D	3	C1	1	52.33	0.1420	20	M(A,L)GF	0.0071	53.06
M-FHC3-C-C2-1-1D	3	C2	2	55.86	0.1410	20	M(A,L)GF	0.0070	56.24
M-FHC3-C-C2-1-2D	3	C2	2	55.29	0.1420	20	M(A,L)GF	0.0071	56.09
M-FHC3-C-C2-1-3D	3	C2	2	56.80	0.1423	20	M(A,L)GF	0.0071	57.72

Average	**56.00**	
Standard Dev.	**1.471**	
Coeff. of Var. [%]	**2.627**	
Min.	**52.33**	
Max.	**57.62**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0071**	**56.71**
$Standard\ Dev._{norm}$		**1.6712**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.947**
Min.	**0.0070**	**53.06**
Max.	**0.0072**	**59.01**
Number of Spec.	**18**	**18**


Laminate Filled-Hole Compression Properties (FHC3)--ETW1
(180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
10
20
30
40
50
60
70
Laminate Filled-Hole Compression Strength [ksi]

4.2.22 Single-Shear Bearing 1 (SSB1)

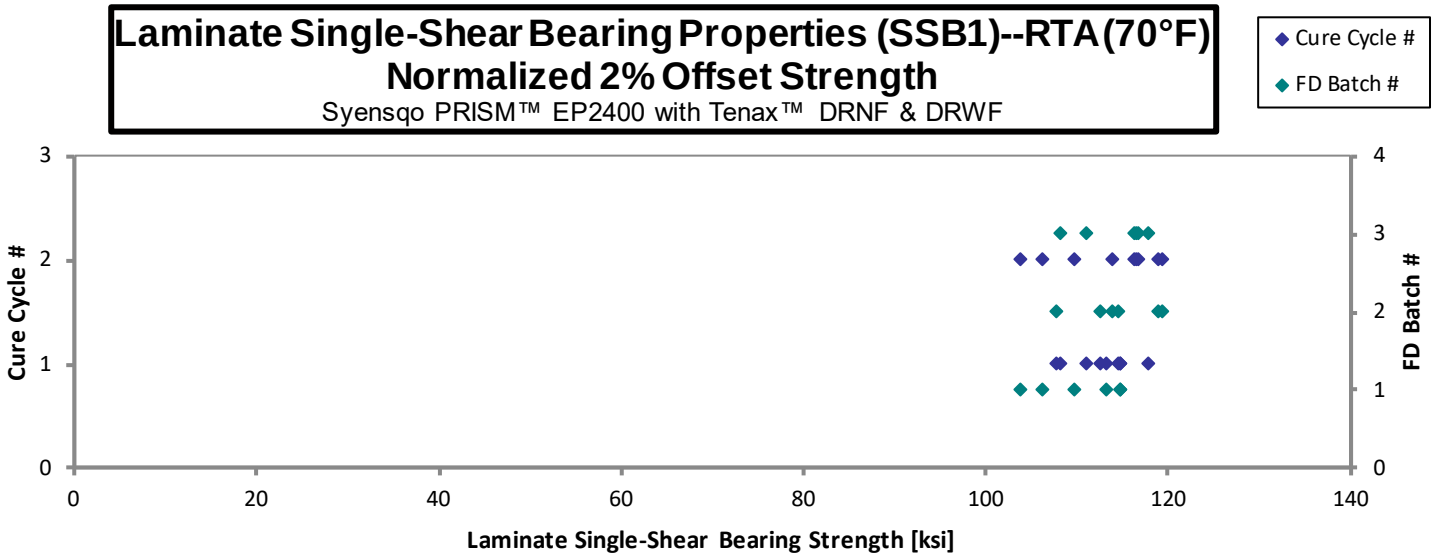
Laminate Single-Shear Bearing Properties (SSB1)--RTA (70°F) Strength

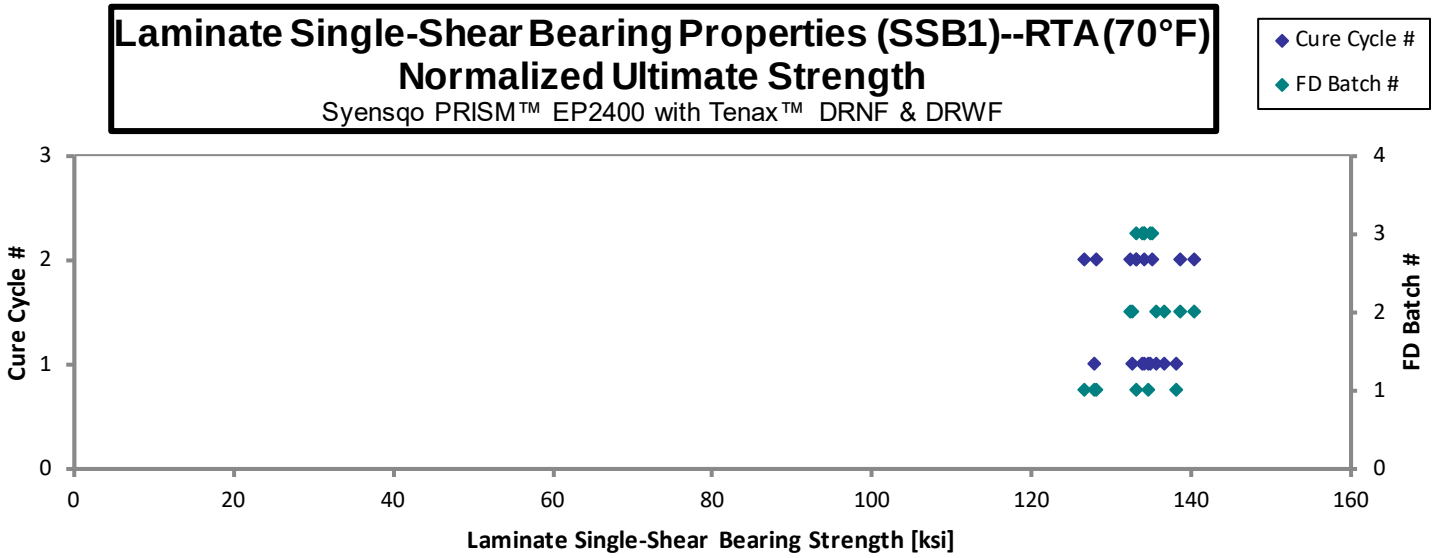
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB1-A-C1-1-1A	1	C1	1	107.7	121.8	0.1177	8	B1I	0.0147	113.2	128.0
M-SSB1-A-C1-1-2A	1	C1	1	108.4	130.4	0.1187	8	B1I	0.0148	114.8	138.2
M-SSB1-A-C1-1-3A	1	C1	1	109.5	128.4	0.1174	8	B1I	0.0147	114.8	134.6
M-SSB1-A-C2-1-1A	1	C2	2	100.7	124.4	0.1155	8	B1I	0.0144	103.8	128.3
M-SSB1-A-C2-1-2A	1	C2	2	101.5	127.2	0.1173	8	B1I	0.0147	106.3	133.3
M-SSB1-A-C2-1-3A	1	C2	2	104.2	120.5	0.1178	8	B1I	0.0147	109.6	126.8
M-SSB1-B-C1-1-1A	2	C1	1	108.8	128.8	0.1180	8	B1I	0.0148	114.7	135.7
M-SSB1-B-C1-1-2A	2	C1	1	101.9	125.6	0.1184	8	B1I	0.0148	107.7	132.7
M-SSB1-B-C1-1-3A	2	C1	1	107.3	130.1	0.1177	8	B1I	0.0147	112.7	136.7
M-SSB1-B-C2-1-1A	2	C2	2	114.9	133.7	0.1163	8	B1I	0.0145	119.3	138.8
M-SSB1-B-C2-1-2A	2	C2	2	113.4	133.8	0.1175	8	B1I	0.0147	118.9	140.4
M-SSB1-B-C2-1-3A	2	C2	2	107.7	125.4	0.1183	8	B1I	0.0148	113.8	132.4
M-SSB1-C-C1-1-1A	3	C1	1	103.2	128.6	0.1175	8	B1I	0.0147	108.3	135.0
M-SSB1-C-C1-1-2A	3	C1	1	104.6	126.1	0.1188	8	B1I	0.0149	110.9	133.8
M-SSB1-C-C1-1-3A	3	C1	1	113.9	129.7	0.1160	8	B1I	0.0145	117.9	134.3
M-SSB1-C-C2-1-1A	3	C2	2	111.7	129.3	0.1171	8	B1I	0.0146	116.8	135.2
M-SSB1-C-C2-1-2A	3	C2	2	109.4	125.1	0.1193	8	B1I	0.0149	116.5	133.3
M-SSB1-C-C2-1-3A	3	C2	2	111.4	128.5	0.1170	8	B1I	0.0146	116.4	134.3

Average	**107.8**	**127.6**	**$Average_{norm}$**	**0.0147**	**113.1**	**134.0**
Standard Dev.	**4.360**	**3.538**	**$Standard\ Dev._{norm}$**		**4.489**	**3.606**
Coeff. of Var. [%]	**4.045**	**2.772**	**Coeff. of Var. $[\%]_{norm}$**		**3.968**	**2.692**
Min.	**100.7**	**120.5**	**Min.**	**0.0144**	**103.8**	**126.8**
Max.	**114.9**	**133.8**	**Max.**	**0.0149**	**119.3**	**140.4**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB1)--RTA (70°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB1)--RTA (70°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3
4

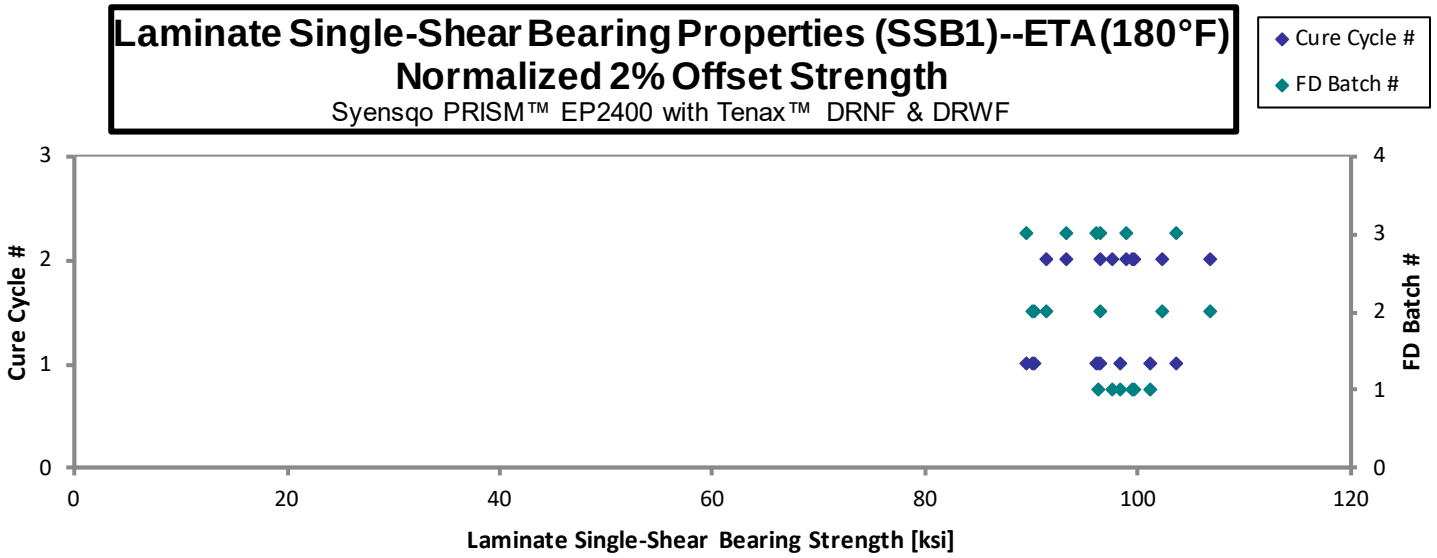
Laminate Single-Shear Bearing Properties (SSB1)--ETA (180°F) Strength

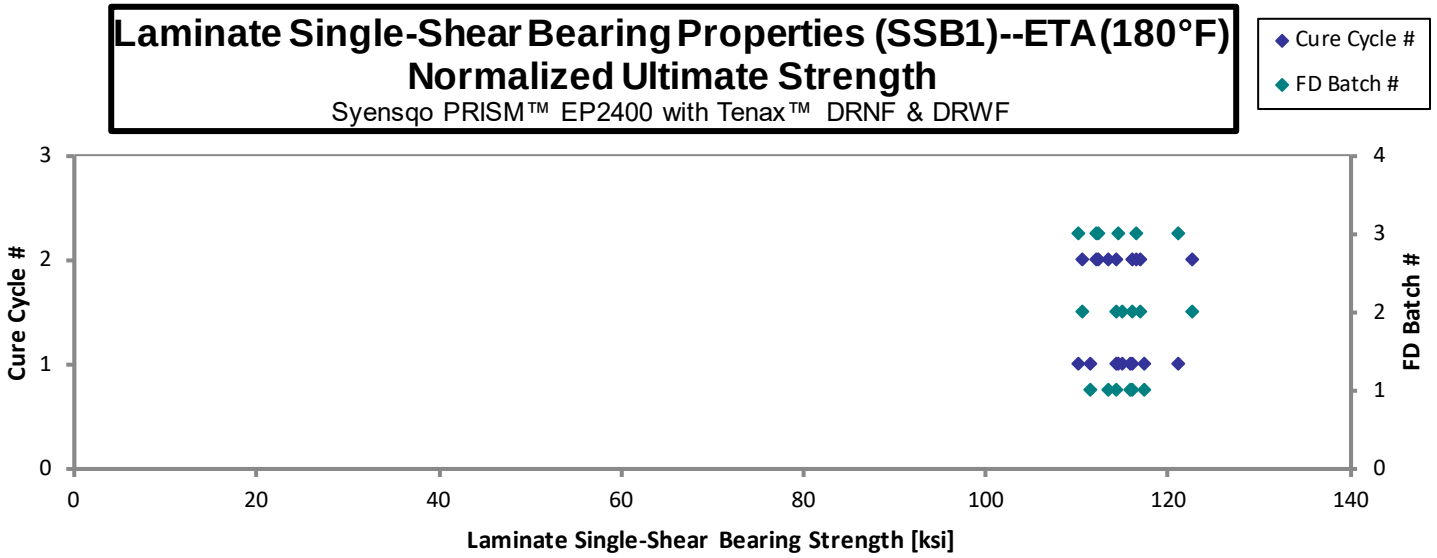
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB1-A-C1-1-1C	1	C1	1	93.57	111.7	0.1179	8	B1I	0.0147	98.47	117.5
M-SSB1-A-C1-1-2C	1	C1	1	98.11	112.2	0.1156	8	B1I	0.0145	101.3	115.8
M-SSB1-A-C1-1-3C	1	C1	1	91.43	105.8	0.1181	8	B1I	0.0148	96.39	111.6
M-SSB1-A-C2-1-1C	1	C2	2	95.44	111.4	0.1167	8	B1I	0.0146	99.42	116.1
M-SSB1-A-C2-1-2C	1	C2	2	94.60	107.7	0.1180	8	B1I	0.0147	99.63	113.5
M-SSB1-A-C2-1-3C	1	C2	2	93.68	109.8	0.1166	8	B1I	0.0146	97.56	114.3
M-SSB1-B-C1-1-1C	2	C1	1	85.92	110.8	0.1174	8	B1I	0.0147	90.06	116.1
M-SSB1-B-C1-1-2C	2	C1	1	92.47	110.3	0.1168	8	B1I	0.0146	96.46	115.0
M-SSB1-B-C1-1-3C	2	C1	1	86.69	109.9	0.1166	8	B1I	0.0146	90.24	114.4
M-SSB1-B-C2-1-1C	2	C2	2	98.63	112.6	0.1163	8	B1I	0.0145	102.4	116.9
M-SSB1-B-C2-1-2C	2	C2	2	87.62	106.0	0.1169	8	B1I	0.0146	91.42	110.5
M-SSB1-B-C2-1-3C	2	C2	2	101.9	117.0	0.1175	8	B1I	0.0147	106.9	122.7
M-SSB1-C-C1-1-1C	3	C1	1	93.04	111.0	0.1156	8	B1I	0.0145	96.04	114.6
M-SSB1-C-C1-1-2C	3	C1	1	98.40	115.1	0.1179	8	B1I	0.0147	103.6	121.1
M-SSB1-C-C1-1-3C	3	C1	1	86.79	107.0	0.1155	8	B1I	0.0144	89.47	110.3
M-SSB1-C-C2-1-1C	3	C2	2	92.74	107.8	0.1167	8	B1I	0.0146	96.59	112.3
M-SSB1-C-C2-1-2C	3	C2	2	93.04	109.6	0.1190	8	B1I	0.0149	98.87	116.5
M-SSB1-C-C2-1-3C	3	C2	2	88.31	106.1	0.1183	8	B1I	0.0148	93.30	112.1

Average	**92.91**	**110.1**	**$Average_{norm}$**	**0.0146**	**97.11**	**115.1**
Standard Dev.	**4.585**	**3.076**	**$Standard\ Dev._{norm}$**		**4.870**	**3.295**
Coeff. of Var. [%]	**4.934**	**2.794**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.015**	**2.863**
Min.	**85.92**	**105.8**	**Min.**	**0.0144**	**89.47**	**110.3**
Max.	**101.9**	**117.0**	**Max.**	**0.0149**	**106.9**	**122.7**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB1)--ETA(180°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4

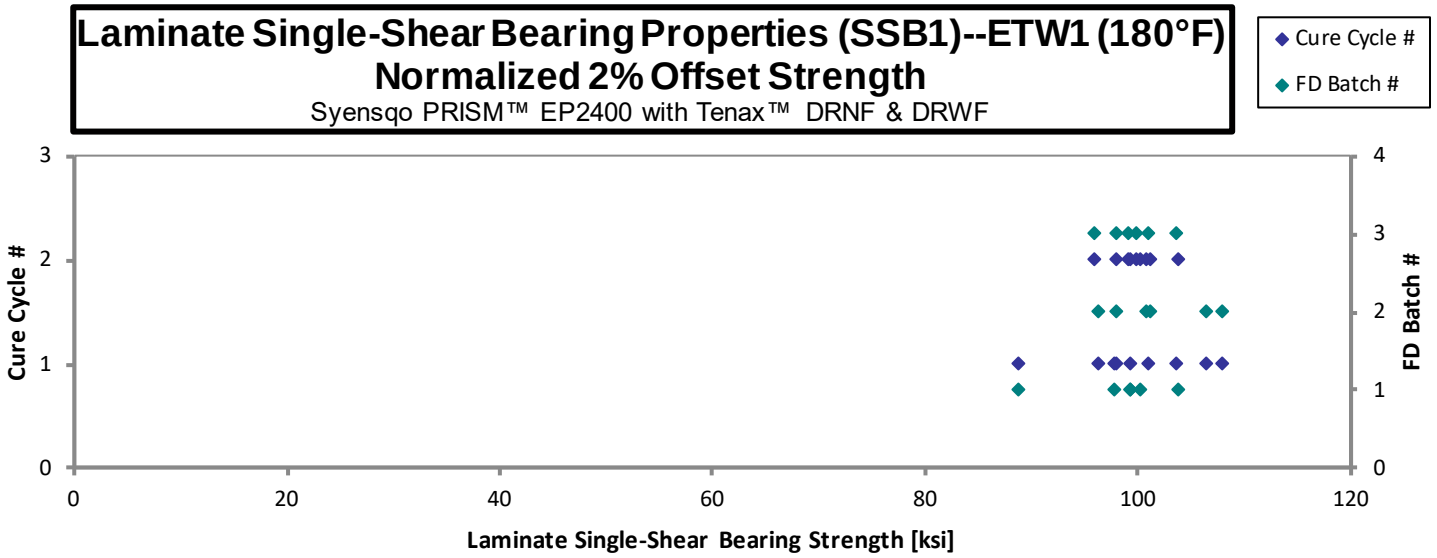

Laminate Single-Shear Bearing Properties (SSB1)--ETA(180°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4

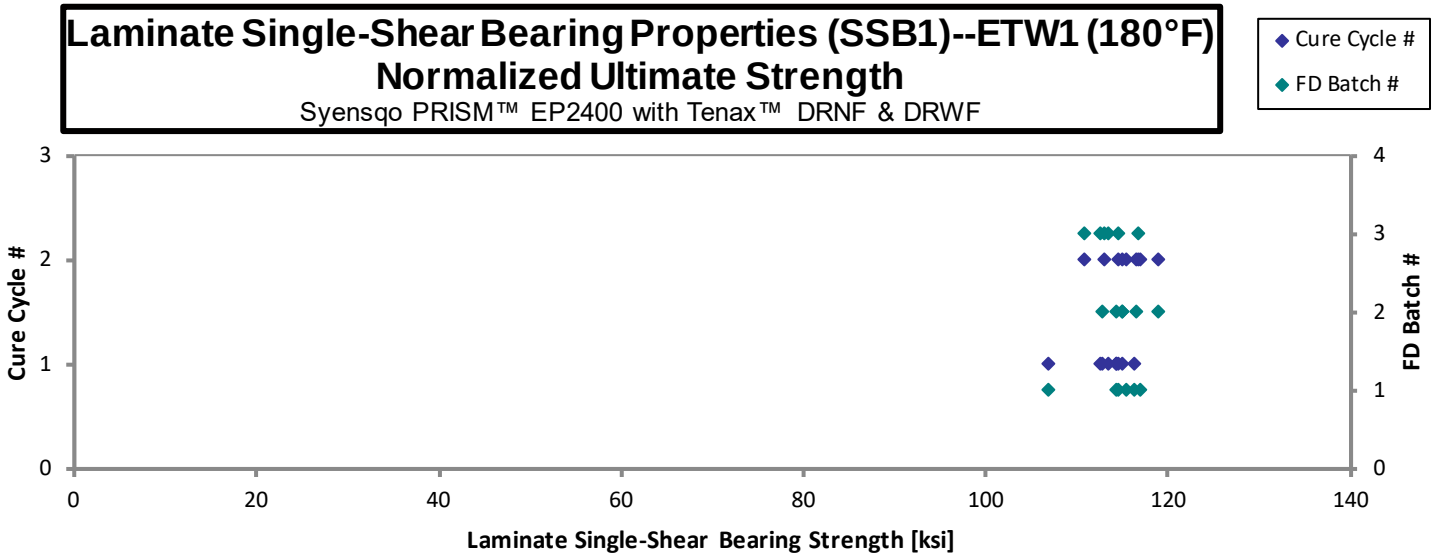
Laminate Single-Shear Bearing Properties (SSB1)--ETW1 (180°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB1-A-C1-1-1D	1	C1	1	91.17	106.7	0.1219	8	B1I	0.0152	99.25	116.2
M-SSB1-A-C1-1-2D	1	C1	1	91.67	107.3	0.1195	8	B1I	0.0149	97.77	114.4
M-SSB1-A-C1-1-3D	1	C1	1	84.71	102.0	0.1174	8	B1I	0.0147	88.76	106.8
M-SSB1-A-C2-1-1D	1	C2	2	99.96	112.7	0.1164	8	B1I	0.0145	103.8	117.0
M-SSB1-A-C2-1-2D	1	C2	2	95.70	110.5	0.1163	8	B1I	0.0145	99.33	114.7
M-SSB1-A-C2-1-3D	1	C2	2	96.45	111.1	0.1164	8	B1I	0.0146	100.2	115.5
M-SSB1-B-C1-1-1D	2	C1	1	99.66	106.3	0.1213	8	B1I	0.0152	107.9	115.1
M-SSB1-B-C1-1-2D	2	C1	1	99.80	107.2	0.1194	8	B1I	0.0149	106.4	114.3
M-SSB1-B-C1-1-3D	2	C1	1	89.83	105.2	0.1200	8	B1I	0.0150	96.24	112.7
M-SSB1-B-C2-1-1D	2	C2	2	94.63	111.6	0.1193	8	B1I	0.0149	100.8	118.9
M-SSB1-B-C2-1-2D	2	C2	2	94.58	107.5	0.1198	8	B1I	0.0150	101.1	115.0
M-SSB1-B-C2-1-3D	2	C2	2	91.31	108.4	0.1203	8	B1I	0.0150	98.09	116.5
M-SSB1-C-C1-1-1D	3	C1	1	98.70	109.2	0.1175	8	B1I	0.0147	103.6	114.6
M-SSB1-C-C1-1-2D	3	C1	1	95.88	107.7	0.1180	8	B1I	0.0147	101.0	113.4
M-SSB1-C-C1-1-3D	3	C1	1	94.64	108.7	0.1161	8	B1I	0.0145	98.09	112.6
M-SSB1-C-C2-1-1D	3	C2	2	91.27	107.4	0.1178	8	B1I	0.0147	96.03	113.0
M-SSB1-C-C2-1-2D	3	C2	2	92.02	108.4	0.1206	8	B1I	0.0151	99.06	116.7
M-SSB1-C-C2-1-3D	3	C2	2	95.34	105.8	0.1173	8	B1I	0.0147	99.85	110.9
Average				**94.30**	**108.0**				**Average$_{norm}$**	**0.0148**	**99.85**	**114.3**
Standard Dev.				**4.006**	**2.523**				**Standard Dev.$_{norm}$**		**4.230**	**2.664**
Coeff. of Var. [%]				**4.248**	**2.336**				**Coeff. of Var. [%]$_{norm}$**		**4.236**	**2.330**
Min.				**84.71**	**102.0**				**Min.**	**0.0145**	**88.76**	**106.8**
Max.				**99.96**	**112.7**				**Max.**	**0.0152**	**107.9**	**118.9**
Number of Spec.				**18**	**18**				**Number of Spec.**	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB1)--ETW1 (180°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB1)--ETW1 (180°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4

4.2.23 Single-Shear Bearing 2 (SSB2)

Laminate Single-Shear Bearing Properties (SSB2)--RTA (70°F) Strength

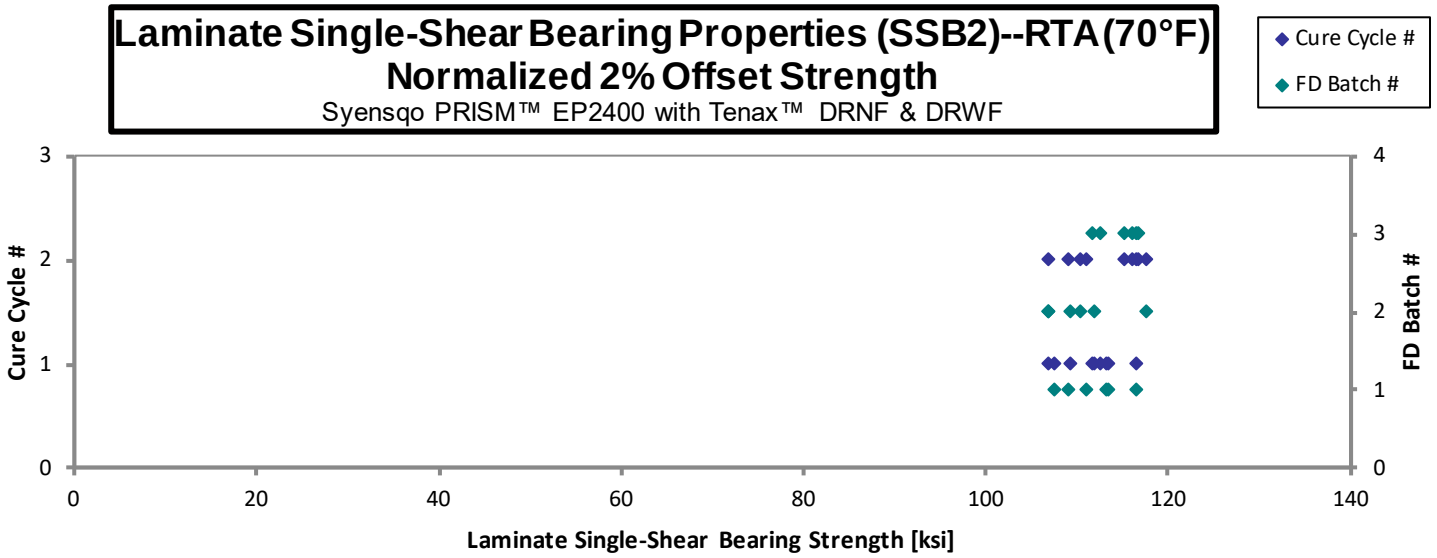
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

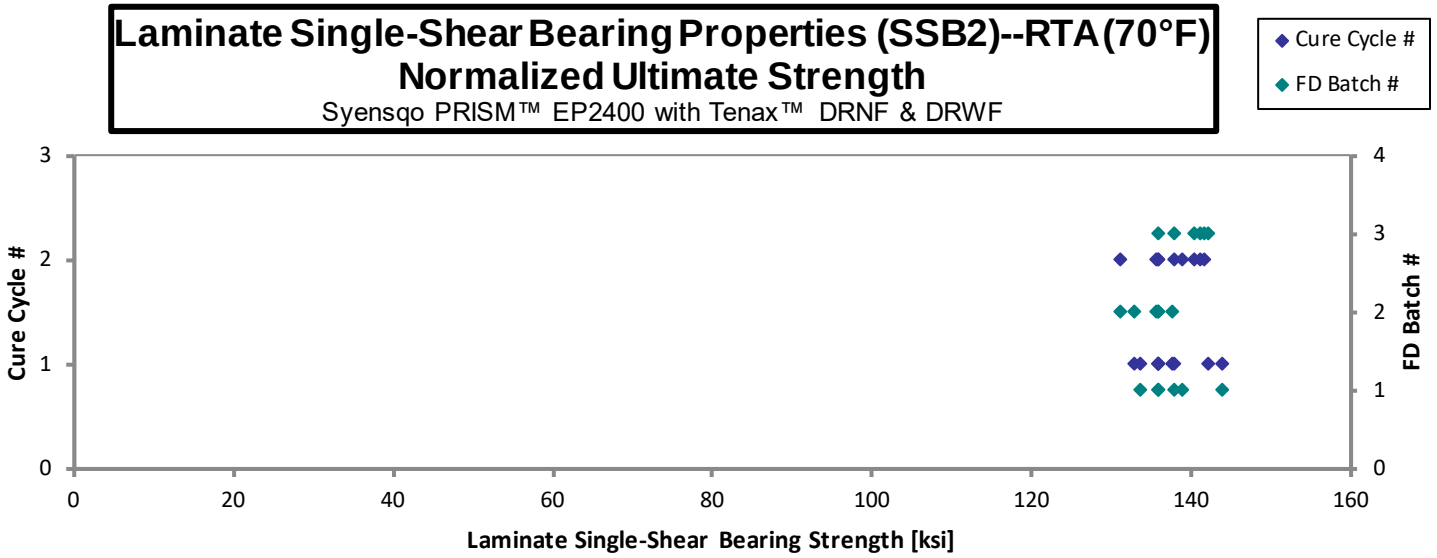
normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB2-A-C1-1-1A	1	C1	1	108.6	137.7	0.1171	8	B1I	0.0146	113.5	144.0
M-SSB2-A-C1-1-2A	1	C1	1	110.0	131.9	0.1154	8	B1I	0.0144	113.3	135.9
M-SSB2-A-C1-1-3A	1	C1	1	105.4	131.1	0.1143	8	B1I	0.0143	107.6	133.8
M-SSB2-A-C2-1-1A	1	C2	2	111.0	131.5	0.1175	8	B1I	0.0147	116.4	138.0
M-SSB2-A-C2-1-2A	1	C2	2	104.0	132.6	0.1174	8	B1I	0.0147	109.1	139.0
M-SSB2-A-C2-1-3A	1	C2	2	106.8	130.6	0.1165	8	B1I	0.0146	111.1	135.8
M-SSB2-B-C1-1-1A	2	C1	1	104.1	129.6	0.1176	8	B1I	0.0147	109.3	136.0
M-SSB2-B-C1-1-2A	2	C1	1	101.7	126.4	0.1178	8	B1I	0.0147	106.9	132.9
M-SSB2-B-C1-1-3A	2	C1	1	106.4	130.9	0.1179	8	B1I	0.0147	112.0	137.7
M-SSB2-B-C2-1-1A	2	C2	2	114.1	131.5	0.1155	8	B1I	0.0144	117.7	135.6
M-SSB2-B-C2-1-2A	2	C2	2	108.6	133.6	0.1139	8	B1I	0.0142	110.5	135.9
M-SSB2-B-C2-1-3A	2	C2	2	103.3	127.0	0.1158	8	B1I	0.0145	106.8	131.3
M-SSB2-C-C1-1-1A	3	C1	1	107.5	130.8	0.1165	8	B1I	0.0146	111.8	136.0
M-SSB2-C-C1-1-2A	3	C1	1	112.6	137.4	0.1159	8	B1I	0.0145	116.5	142.2
M-SSB2-C-C1-1-3A	3	C1	1	109.9	134.9	0.1146	8	B1I	0.0143	112.5	138.1
M-SSB2-C-C2-1-1A	3	C2	2	110.9	135.4	0.1163	8	B1I	0.0145	115.1	140.6
M-SSB2-C-C2-1-2A	3	C2	2	110.0	132.9	0.1189	8	B1I	0.0149	116.8	141.2
M-SSB2-C-C2-1-3A	3	C2	2	112.5	137.5	0.1154	8	B1I	0.0144	116.0	141.7

Average	**108.2**	**132.4**	
Standard Dev.	**3.522**	**3.255**	
Coeff. of Var. [%]	**3.255**	**2.458**	
Min.	**101.7**	**126.4**	
Max.	**114.1**	**137.7**	
Number of Spec.	**18**	**18**	

$Average_{norm}$	**0.0145**	**112.4**	**137.5**
$Standard\ Dev._{norm}$		**3.550**	**3.398**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.159**	**2.471**
Min.	**0.0142**	**106.8**	**131.3**
Max.	**0.0149**	**117.7**	**144.0**
Number of Spec.	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB2)--RTA (70°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB2)--RTA (70°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3
4

Laminate Single-Shear Bearing Properties (SSB2)--ETW1 (180°F) Strength

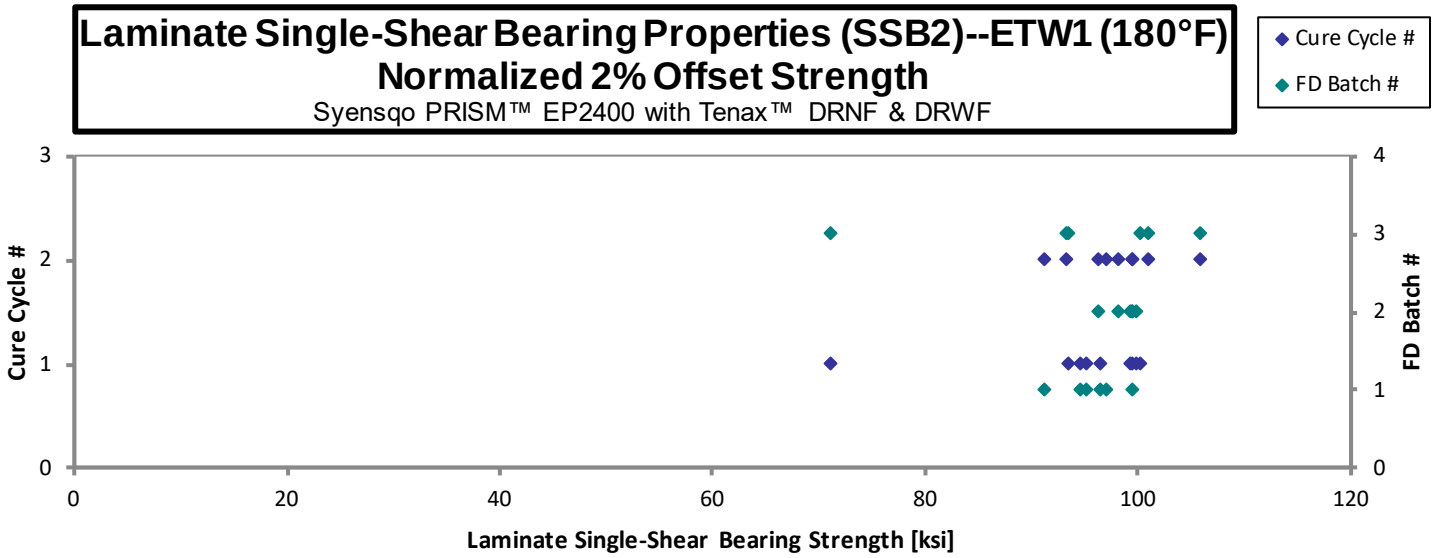
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

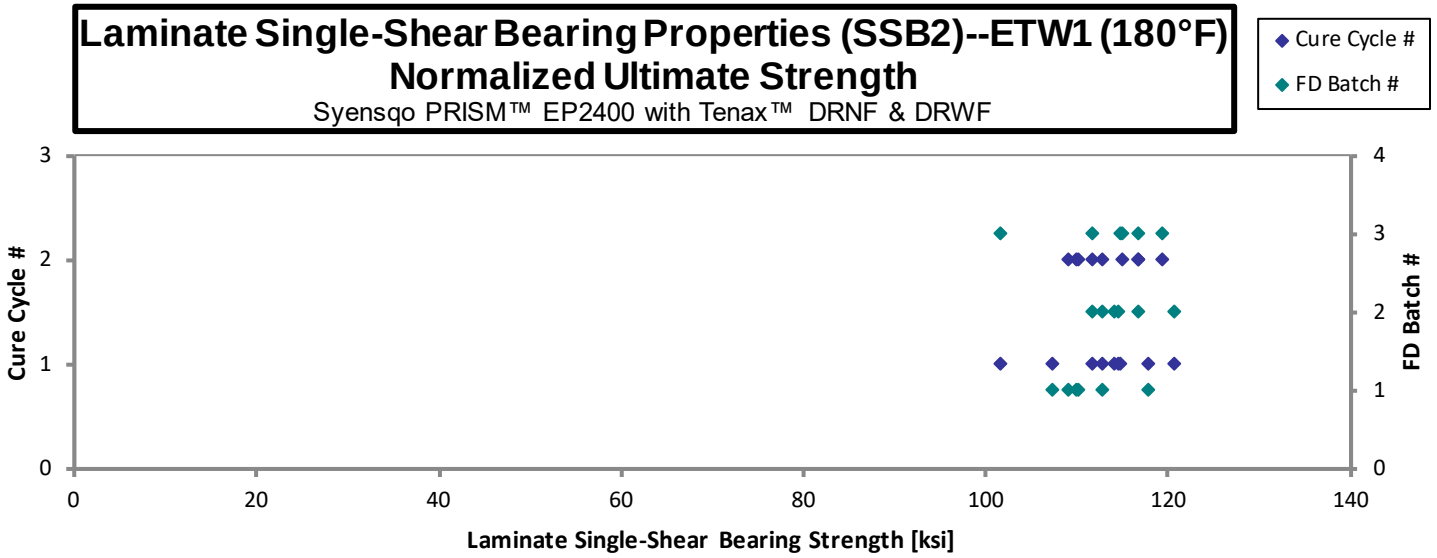
normalizing t_{ply} [in]: 0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB2-A-C1-1-1D	1	C1	1	93.04	105.5	0.1139	8	B1I	0.0142	94.60	107.3
M-SSB2-A-C1-1-2D	1	C1	1	94.78	110.7	0.1141	8	B1I	0.0143	96.51	112.7
M-SSB2-A-C1-1-3D	1	C1	1	90.81	112.5	0.1173	8	B1I	0.0147	95.11	117.9
M-SSB2-A-C2-1-1D	1	C2	2	95.61	105.6	0.1165	8	B1I	0.0146	99.46	109.9
M-SSB2-A-C2-1-2D	1	C2	2	94.15	106.0	0.1154	8	B1I	0.0144	96.99	109.2
M-SSB2-A-C2-1-3D	1	C2	2	87.98	106.2	0.1162	8	B1I	0.0145	91.26	110.2
M-SSB2-B-C1-1-1D	2	C1	1	93.81	107.7	0.1187	8	B1I	0.0148	99.43	114.1
M-SSB2-B-C1-1-2D	2	C1	1	93.87	108.2	0.1186	8	B1I	0.0148	99.39	114.5
M-SSB2-B-C1-1-3D	2	C1	1	95.37	115.3	0.1173	8	B1I	0.0147	99.89	120.8
M-SSB2-B-C2-1-1D	2	C2	2	96.73	109.7	0.1151	8	B1I	0.0144	99.42	112.7
M-SSB2-B-C2-1-2D	2	C2	2	92.70	112.2	0.1165	8	B1I	0.0146	96.40	116.7
M-SSB2-B-C2-1-3D	2	C2	2	94.56	107.6	0.1162	8	B1I	0.0145	98.13	111.6
M-SSB2-C-C1-1-1D	3	C1	1	89.96	107.5	0.1164	8	B1I	0.0145	93.46	111.6
M-SSB2-C-C1-1-2D	3	C1	1	95.73	109.4	0.1174	8	B1I	0.0147	100.3	114.7
M-SSB2-C-C1-1-3D*	3	C1	1	69.20	98.83	0.1151	8	B1I	0.0144	71.10	101.5
M-SSB2-C-C2-1-1D	3	C2	2	88.18	110.2	0.1186	8	B1I	0.0148	93.36	116.7
M-SSB2-C-C2-1-2D	3	C2	2	93.92	107.0	0.1204	8	B1I	0.0151	101.0	115.0
M-SSB2-C-C2-1-3D	3	C2	2	98.26	110.9	0.1206	8	B1I	0.0151	105.8	119.4

*no discernable cause for low data point

Average	**92.15**	**108.4**	**$Average_{norm}$**	**0.0146**	**96.20**	**113.1**
Standard Dev.	**6.356**	**3.592**	**$Standard\ Dev._{norm}$**		**7.137**	**4.619**
Coeff. of Var. [%]	**6.897**	**3.314**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.419**	**4.083**
Min.	**69.20**	**98.83**	**Min.**	**0.0142**	**71.10**	**101.5**
Max.	**98.26**	**115.3**	**Max.**	**0.0151**	**105.8**	**120.8**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB2)--ETW1 (180°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB2)--ETW1 (180°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4

4.2.24 Single-Shear Bearing 3 (SSB3)

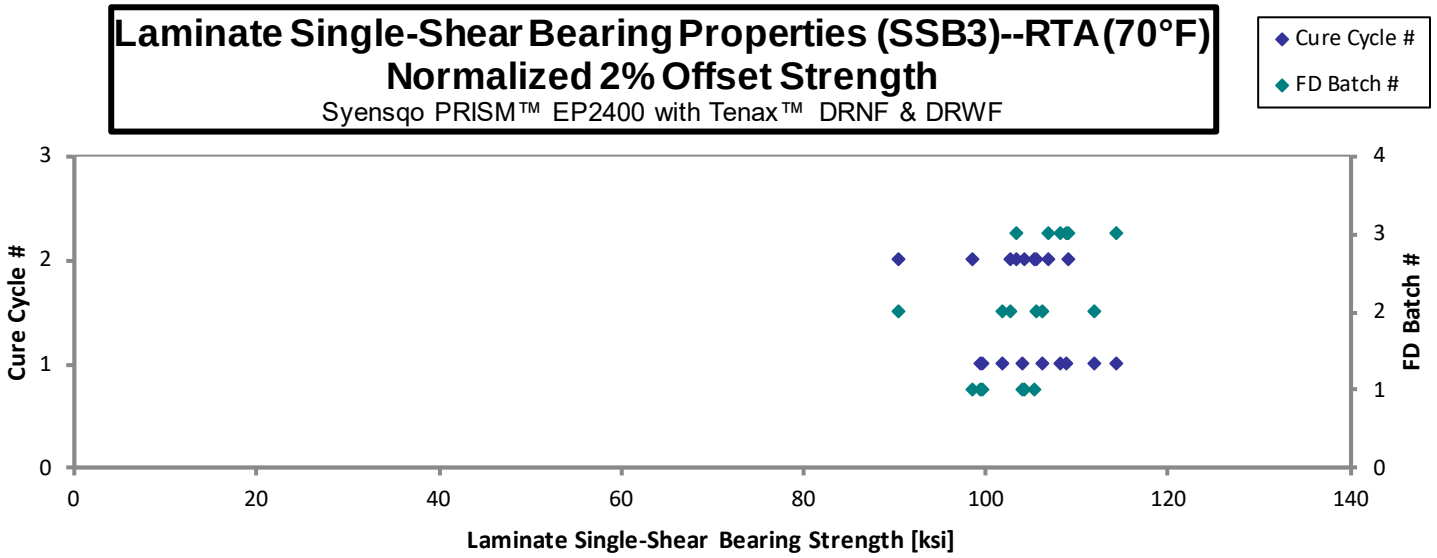
Laminate Single-Shear Bearing Properties (SSB3)--RTA (70°F) Strength

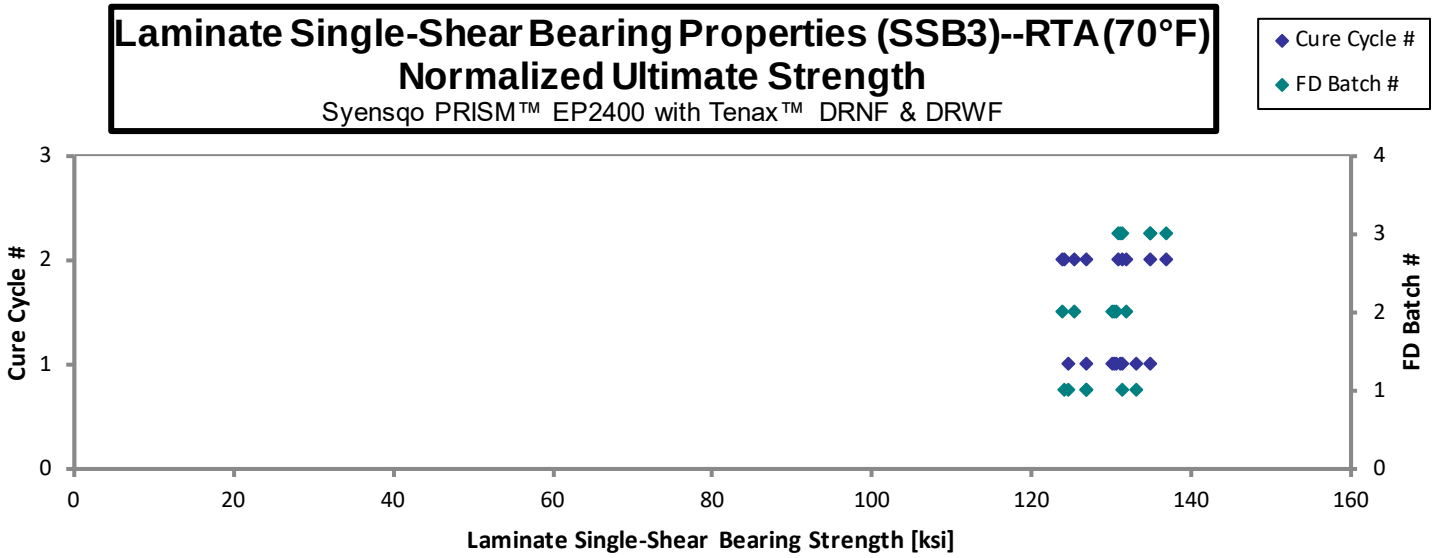
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB3-A-C1-1-1A	1	C1	1	102.2	130.9	0.1424	20	B1I	0.0071	104.0	133.2
M-SSB3-A-C1-1-2A	1	C1	1	97.79	122.7	0.1424	20	B1I	0.0071	99.47	124.8
M-SSB3-A-C1-1-3A	1	C1	1	98.25	125.0	0.1421	20	B1I	0.0071	99.75	126.9
M-SSB3-A-C2-1-1A	1	C2	2	99.51	132.8	0.1386	20	B1I	0.0069	98.53	131.5
M-SSB3-A-C2-1-2A	1	C2	2	105.2	125.2	0.1389	20	B1I	0.0069	104.3	124.2
M-SSB3-A-C2-1-3A	1	C2	2	106.8	128.9	0.1380	20	B1I	0.0069	105.3	127.0
M-SSB3-B-C1-1-1A	2	C1	1	110.2	128.6	0.1422	20	B1I	0.0071	112.0	130.6
M-SSB3-B-C1-1-2A	2	C1	1	104.9	128.4	0.1418	20	B1I	0.0071	106.2	130.1
M-SSB3-B-C1-1-3A	2	C1	1	101.2	129.5	0.1410	20	B1I	0.0070	101.9	130.4
M-SSB3-B-C2-1-1A	2	C2	2	101.9	127.2	0.1452	20	B1I	0.0073	105.6	132.0
M-SSB3-B-C2-1-2A	2	C2	2	87.28	119.5	0.1452	20	B1I	0.0073	90.52	123.9
M-SSB3-B-C2-1-3A	2	C2	2	99.56	121.5	0.1444	20	B1I	0.0072	102.7	125.4
M-SSB3-C-C1-1-1A	3	C1	1	108.7	124.6	0.1473	20	B1I	0.0074	114.4	131.1
M-SSB3-C-C1-1-2A	3	C1	1	99.55	124.1	0.1522	20	B1I	0.0076	108.2	134.9
M-SSB3-C-C1-1-3A	3	C1	1	103.1	124.4	0.1478	20	B1I	0.0074	108.9	131.3
M-SSB3-C-C2-1-1A	3	C2	2	105.6	130.7	0.1445	20	B1I	0.0072	109.0	134.9
M-SSB3-C-C2-1-2A	3	C2	2	101.4	128.3	0.1427	20	B1I	0.0071	103.4	130.8
M-SSB3-C-C2-1-3A	3	C2	2	103.8	133.2	0.1440	20	B1I	0.0072	106.8	137.0

Average	**102.1**	**127.0**	**Average$_{norm}$**	**0.0072**	**104.5**	**130.0**
Standard Dev.	**5.086**	**3.844**	**Standard Dev.$_{norm}$**		**5.464**	**3.873**
Coeff. of Var. [%]	**4.983**	**3.027**	**Coeff. of Var. [%]$_{norm}$**		**5.229**	**2.979**
Min.	**87.28**	**119.5**	**Min.**	**0.0069**	**90.52**	**123.9**
Max.	**110.2**	**133.2**	**Max.**	**0.0076**	**114.4**	**137.0**
Number of Spec.	**18**	**18**	**Number of Spec.**	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB3)--RTA (70°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB3)--RTA (70°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3
4

Laminate Single-Shear Bearing Properties (SSB3)--ETW1 (180°F) Strength

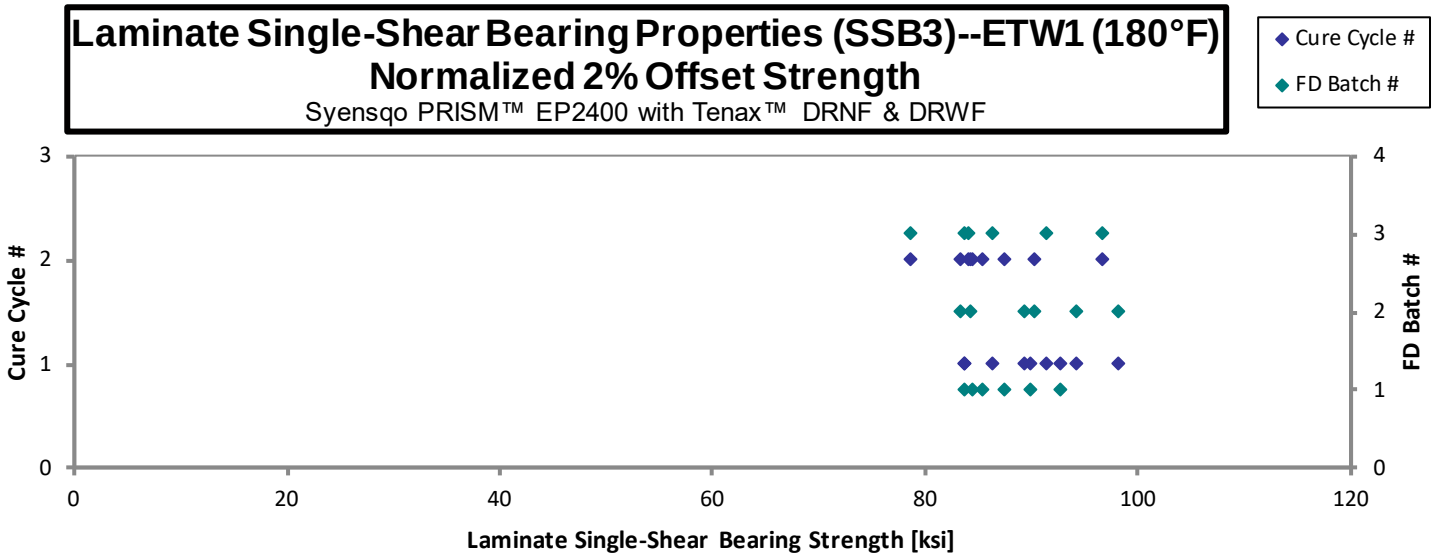
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

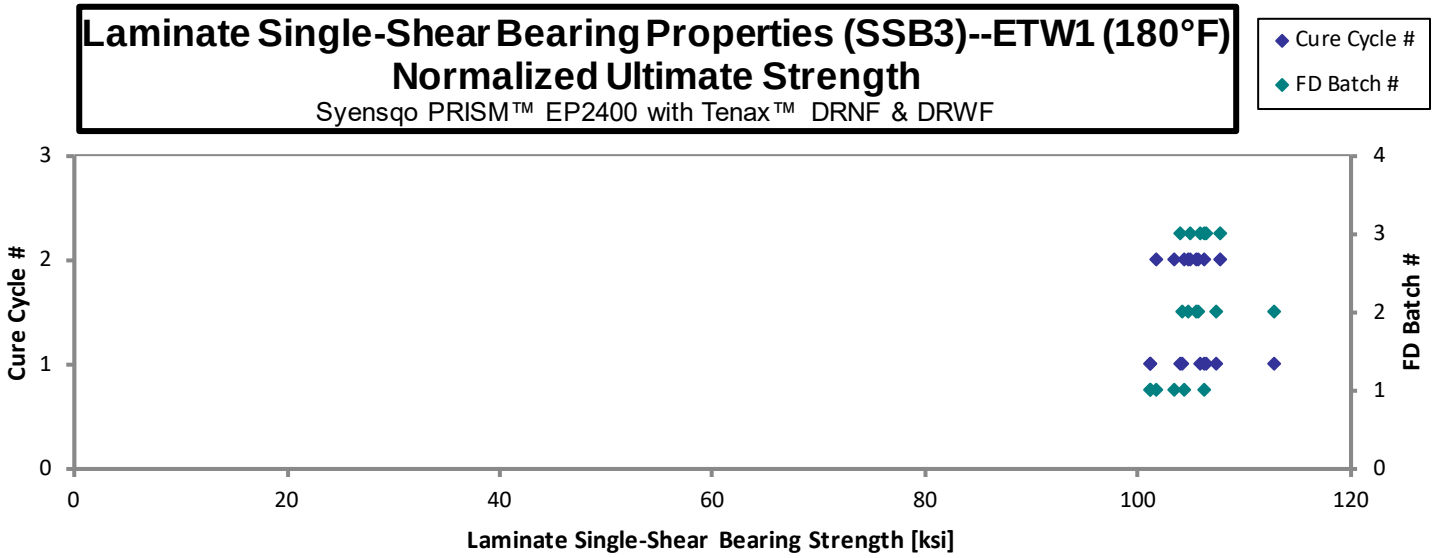
normalizing t_{ply} [in]
0.0070

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	2% Offset $Strength_{norm}$ [ksi]	Ultimate $Strength_{norm}$ [ksi]
M-SSB3-A-C1-1-1D	1	C1	1	82.28	99.41	0.1426	20	B1I	0.0071	83.79	101.24
M-SSB3-A-C1-1-2D	1	C1	1	88.53	104.6	0.1422	20	B1I	0.0071	89.90	106.26
M-SSB3-A-C1-1-3D	1	C1	1	91.03	99.32	0.1426	20	B1I	0.0071	92.70	101.14
M-SSB3-A-C2-1-1D	1	C2	2	86.76	103.3	0.1379	20	B1I	0.0069	85.43	101.72
M-SSB3-A-C2-1-2D	1	C2	2	84.58	104.5	0.1398	20	B1I	0.0070	84.48	104.38
M-SSB3-A-C2-1-3D	1	C2	2	88.32	104.5	0.1386	20	B1I	0.0069	87.41	103.46
M-SSB3-B-C1-1-1D	2	C1	1	92.43	102.2	0.1428	20	B1I	0.0071	94.26	104.20
M-SSB3-B-C1-1-2D	2	C1	1	86.95	104.6	0.1438	20	B1I	0.0072	89.29	107.44
M-SSB3-B-C1-1-3D	2	C1	1	94.98	109.2	0.1448	20	B1I	0.0072	98.21	112.94
M-SSB3-B-C2-1-1D	2	C2	2	80.30	101.0	0.1453	20	B1I	0.0073	83.32	104.77
M-SSB3-B-C2-1-2D	2	C2	2	87.33	102.2	0.1448	20	B1I	0.0072	90.31	105.72
M-SSB3-B-C2-1-3D	2	C2	2	80.90	101.4	0.1457	20	B1I	0.0073	84.19	105.50
M-SSB3-C-C1-1-1D	3	C1	1	81.11	97.73	0.1491	20	B1I	0.0075	86.37	104.08
M-SSB3-C-C1-1-2D	3	C1	1	86.28	100.0	0.1483	20	B1I	0.0074	91.41	105.99
M-SSB3-C-C1-1-3D	3	C1	1	79.59	101.3	0.1473	20	B1I	0.0074	83.74	106.55
M-SSB3-C-C2-1-1D	3	C2	2	77.61	104.7	0.1420	20	B1I	0.0071	78.70	106.22
M-SSB3-C-C2-1-2D	3	C2	2	94.86	105.8	0.1426	20	B1I	0.0071	96.61	107.78
M-SSB3-C-C2-1-3D	3	C2	2	81.90	102.2	0.1439	20	B1I	0.0072	84.18	105.02

Average	**85.87**	**102.7**	
Standard Dev.	**5.243**	**2.791**	
Coeff. of Var. [%]	**6.106**	**2.718**	
Min.	**77.61**	**97.73**	
Max.	**94.98**	**109.2**	
Number of Spec.	**18**	**18**	

$Average_{norm}$	**0.0072**	**88.02**	**105.24**
Standard $Dev._{norm}$		**5.186**	**2.733**
Coeff. of Var. $[\%]_{norm}$		**5.892**	**2.597**
Min.	**0.0069**	**78.70**	**101.14**
Max.	**0.0075**	**98.21**	**112.94**
Number of Spec.	**18**	**18**	**18**


Laminate Single-Shear Bearing Properties (SSB3)--ETW1 (180°F)
Normalized 2% Offset Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4


Laminate Single-Shear Bearing Properties (SSB3)--ETW1 (180°F)
Normalized Ultimate Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
Laminate Single-Shear Bearing Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3
4

4.2.25 Compression After Impact 1 (CAI1)

Laminate Compression After Impact 1 Properties (CAI1)--RTA (70°F) Strength

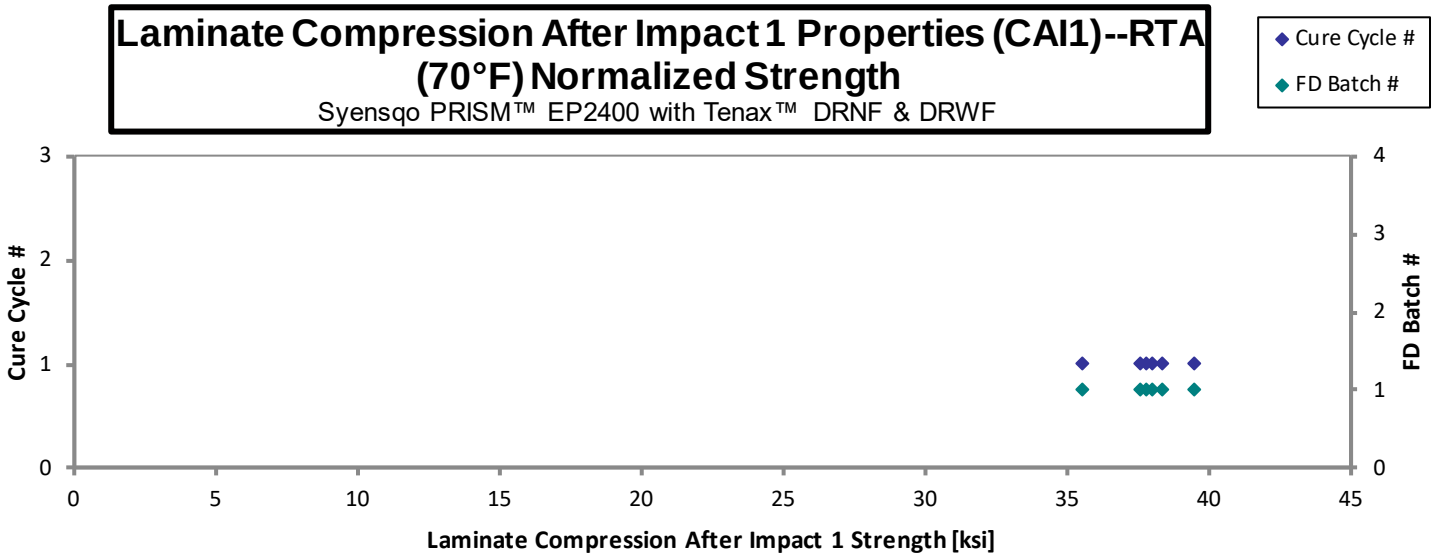
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Measured Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-CAI1-A-C1-1-1A	1	C1	1	37.31	270.7	0.1780	12	M(A,L)DM	0.0148	39.53
M-CAI1-A-C1-1-2A	1	C1	1	35.68	269.9	0.1782	12	M(A,L)DM	0.0148	37.84
M-CAI1-A-C1-1-3A	1	C1	1	36.27	269.6	0.1776	12	M(A,L)DM	0.0148	38.34
M-CAI1-A-C1-1-4A	1	C1	1	35.30	269.7	0.1788	12	M(A,L)DM	0.0149	37.58
M-CAI1-A-C1-1-5A	1	C1	1	33.39	270.1	0.1788	12	M(A,L)DM	0.0149	35.53
M-CAI1-A-C1-1-6A	1	C1	1	35.80	268.2	0.1785	12	M(A,L)DM	0.0149	38.03

Average	**35.63**	
Standard Dev.	**1.294**	
Coeff. of Var. [%]	**3.632**	
Min.	**33.39**	
Max.	**37.31**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0149**	**37.81**
$Standard\ Dev._{norm}$		**1.309**
Coeff. of Var. [%]$_{norm}$		**3.462**
Min.	**0.0148**	**35.53**
Max.	**0.0149**	**39.53**
Number of Spec.	**6**	**6**


Laminate Compression After Impact 1 Properties (CAI1)--RTA (70°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
5
10
15
20
25
30
35
40
45
Laminate Compression After Impact 1 Strength [ksi]

Laminate Compression After Impact 1 Properties (CAI1)-- ETW1 (180°F) Strength

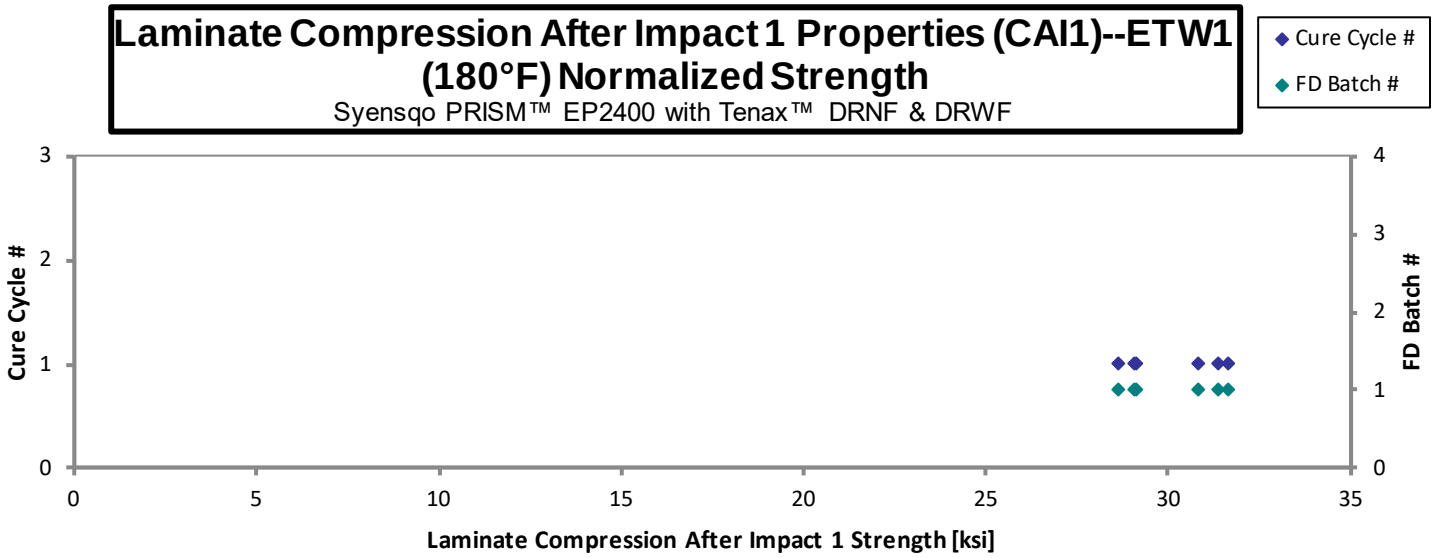
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF

normalizing t_{ply} [in]
0.0140

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Strength [ksi]	Measured Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
M-CAI1-A-C1-1-1D	1	C1	1	26.97	268.8	0.1785	12	LDM	0.0149	28.65
M-CAI1-A-C1-1-2D	1	C1	1	29.14	269.5	0.1777	12	LDM	0.0148	30.82
M-CAI1-A-C1-1-3D	1	C1	1	27.53	269.1	0.1778	12	M(A,L)DM	0.0148	29.13
M-CAI1-A-C1-1-4D	1	C1	1	29.40	268.7	0.1793	12	M(A,L)DM	0.0149	31.37
M-CAI1-A-C1-1-5D	1	C1	1	27.35	270.7	0.1785	12	M(A,L)DM	0.0149	29.06
M-CAI1-A-C1-1-6D	1	C1	1	29.79	270.8	0.1786	12	M(A,L)DM	0.0149	31.67

Average	**28.36**	
Standard Dev.	**1.216**	
Coeff. of Var. [%]	**4.286**	
Min.	**26.97**	
Max.	**29.79**	
Number of Spec.	**6**	

$Average_{norm}$	**0.0149**	**30.12**
Standard $Dev._{norm}$		**1.318**
Coeff. of Var. $[\%]_{norm}$		**4.377**
Min.	**0.0148**	**28.65**
Max.	**0.0149**	**31.67**
Number of Spec.	**6**	**6**

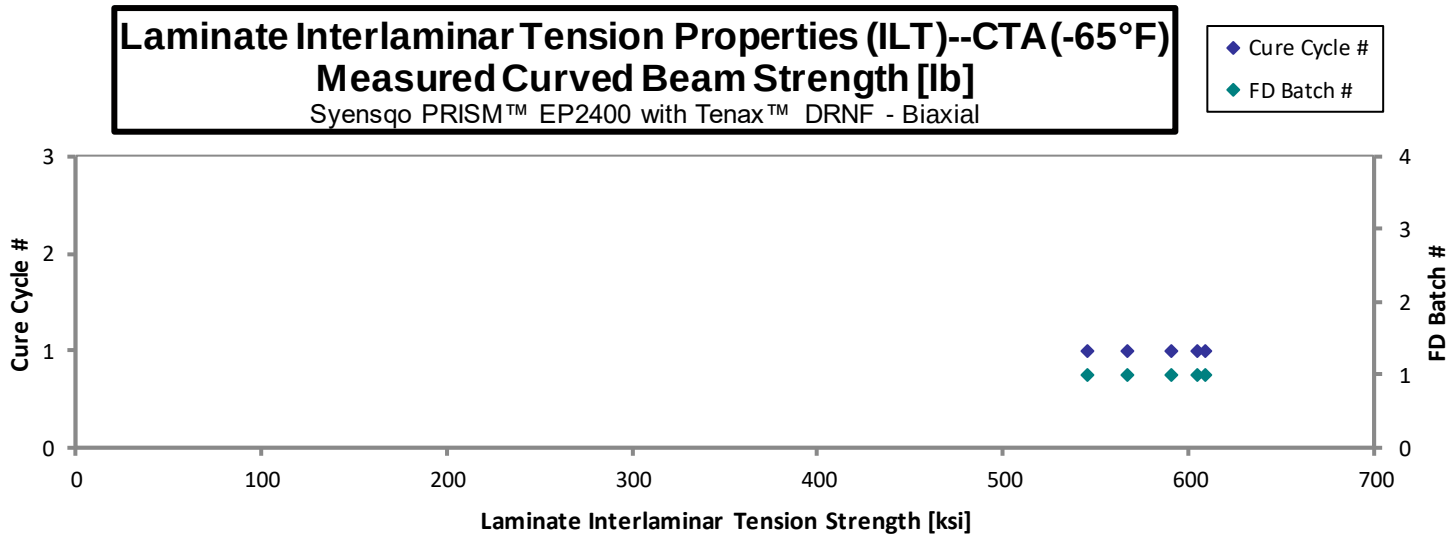

Laminate Compression After Impact 1 Properties (CAI1)--ETW1 (180°F) Normalized Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF & DRWF
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
5
10
15
20
25
30
35
Laminate Compression After Impact 1 Strength [ksi]

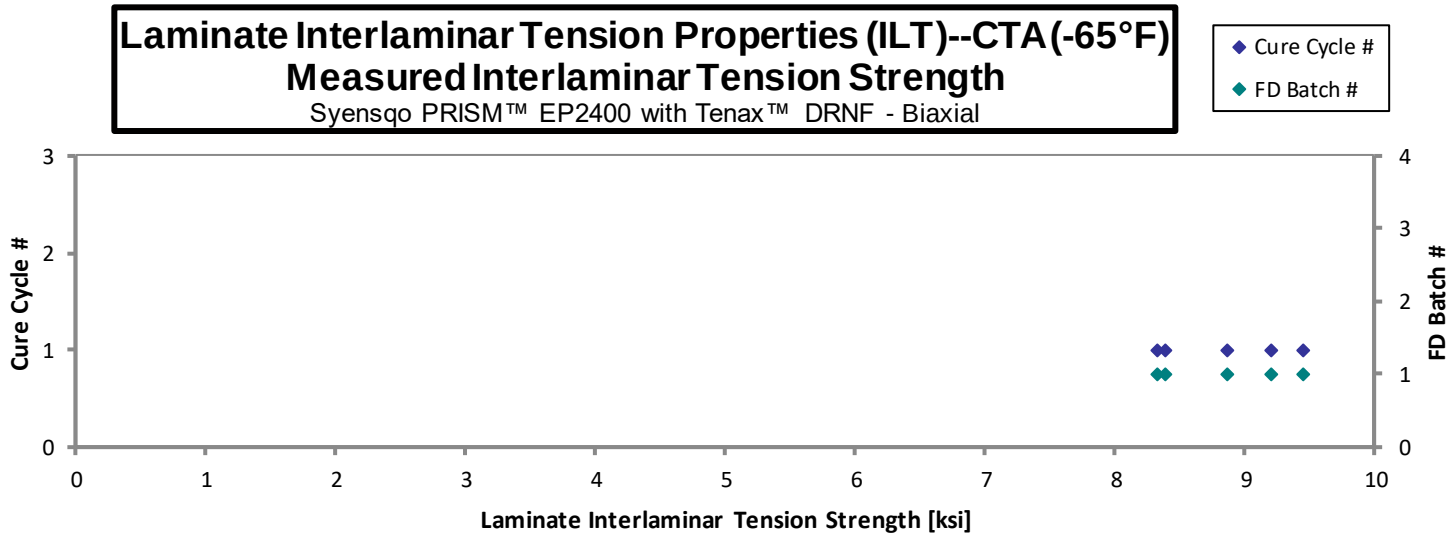
4.2.26 Biaxial Interlaminar Tension (BA-ILT)

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-ILT-A-C1-1-1B	1	C1	1	605.0	9.450	0.2671	20	0.0134	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-2B	1	C1	1	609.5	9.207	0.2743	20	0.0137	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-3B	1	C1	1	545.9	8.336	0.2720	20	0.0136	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-4B	1	C1	1	590.3	8.875	0.2753	20	0.0138	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-5B	1	C1	1	567.3	8.391	0.2789	20	0.0139	INTERLAMINAR TENSILE FAILURE
			Average	**583.6**	**8.852**			**0.0137**	
			Standard Dev.	**26.74**	**0.4907**				
			Coeff. of Var. [%]	**4.581**	**5.543**				
			Min.	**545.9**	**8.336**			**0.0134**	
			Max.	**609.5**	**9.450**			**0.0139**	
			Number of Spec.	**5**	**5**			**5**	

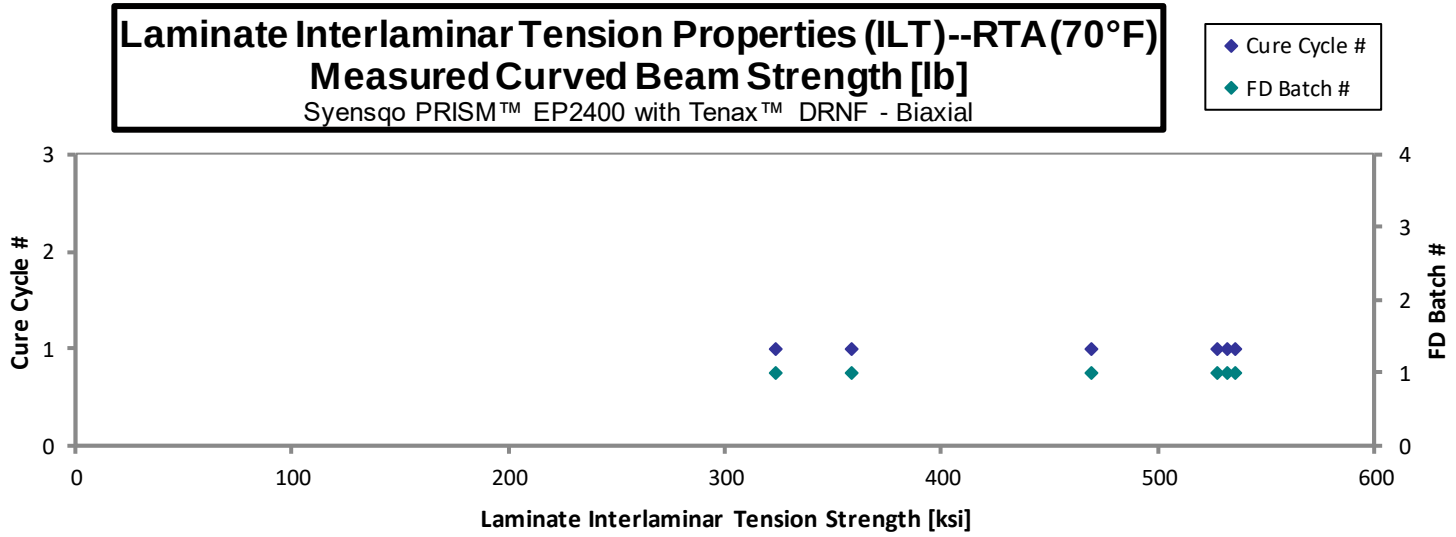

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
0
100
200
300
400
500
600
700
Laminate Interlaminar Tension Strength [ksi]

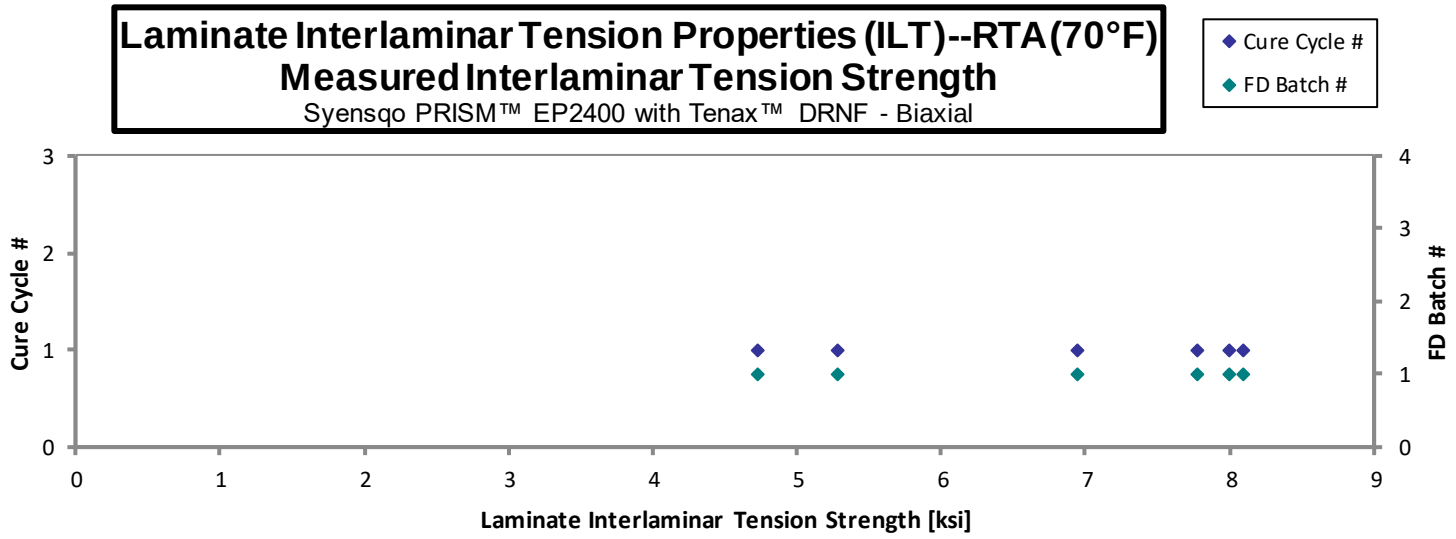

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
0
1
2
3
4
5
6
7
8
9
10
Laminate Interlaminar Tension Strength [ksi]

Laminate Interlaminar Tension Properties (ILT)--RTA (70°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-ILT-A-C1-1-1A	1	C1	1	358.4	5.278	0.2799	20	0.0140	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-2A	1	C1	1	323.7	4.726	0.2818	20	0.0141	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-3A	1	C1	1	469.6	6.944	0.2790	20	0.0139	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-4A	1	C1	1	528.0	7.779	0.2798	20	0.0140	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-5A	1	C1	1	532.2	7.997	0.2754	20	0.0138	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-6A	1	C1	1	536.3	8.100	0.2743	20	0.0137	INTERLAMINAR TENSILE FAILURE
			Average	**458.0**	**6.804**			**0.0139**	
			Standard Dev.	**94.47**	**1.464**				
			Coeff. of Var. [%]	**20.62**	**21.52**				
			Min.	**323.7**	**4.726**			**0.0137**	
			Max.	**536.3**	**8.100**			**0.0141**	
			Number of Spec.	**6**	**6**			**6**	

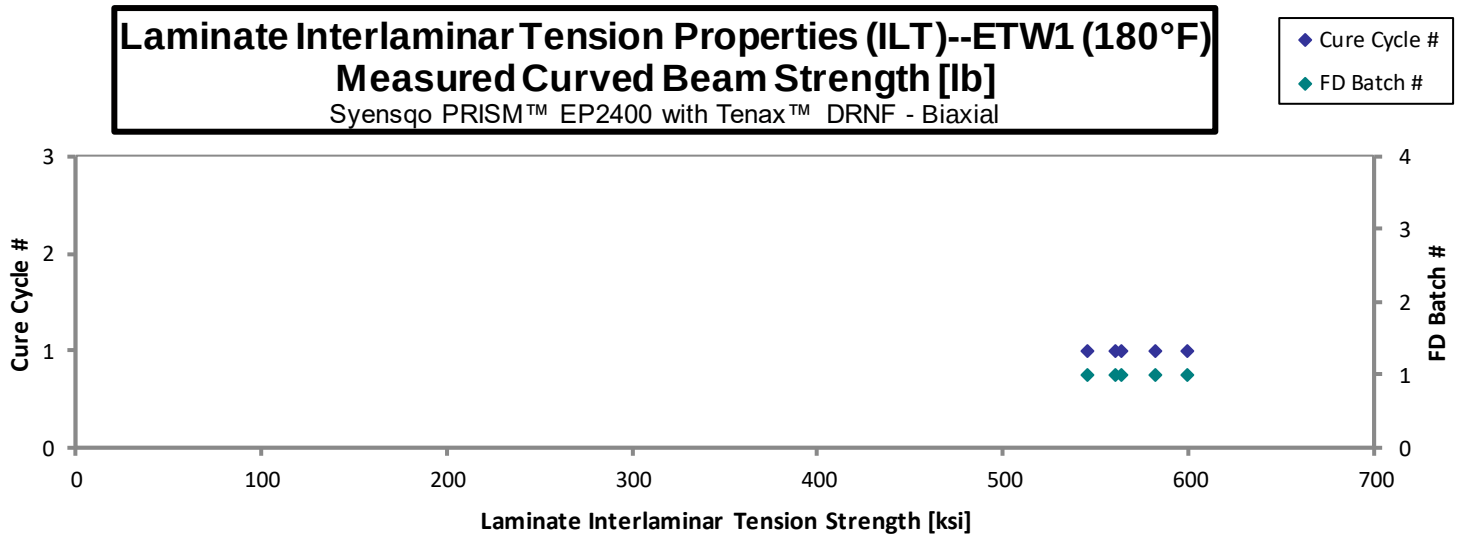

Laminate Interlaminar Tension Properties (ILT)--RTA(70°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
100
200
300
400
500
600
Laminate Interlaminar Tension Strength [ksi]

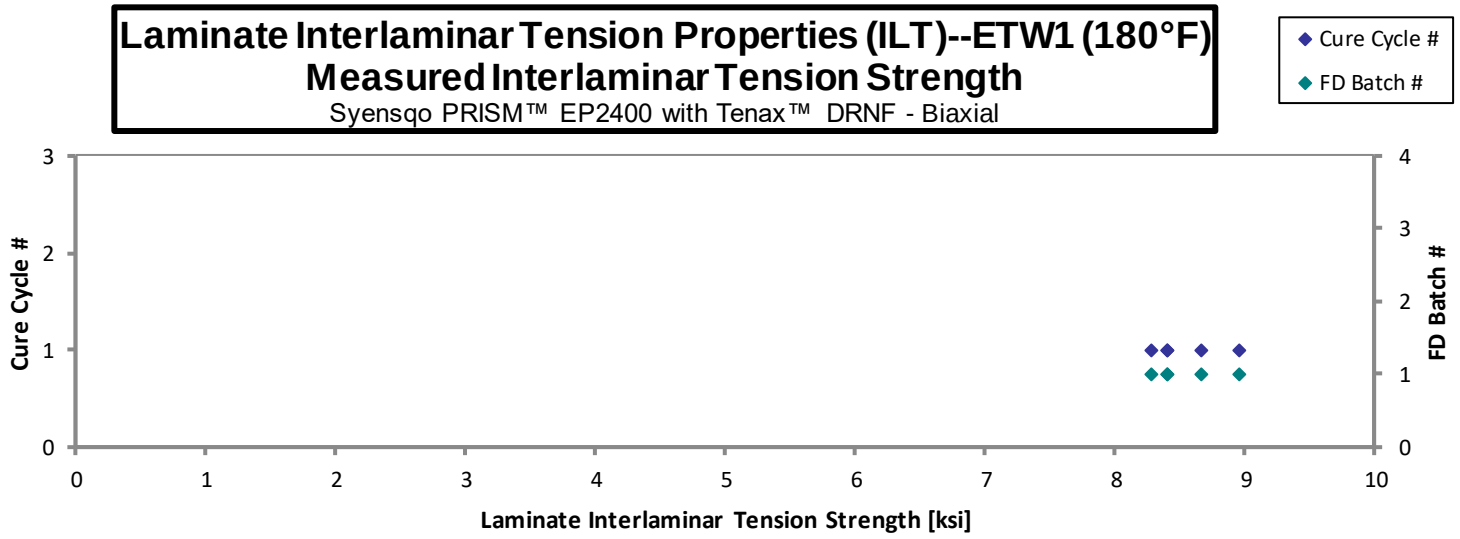

Laminate Interlaminar Tension Properties (ILT)--RTA(70°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
7
8
9
Laminate Interlaminar Tension Strength [ksi]

Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BA-ILT-A-C1-1-1D	1	C1	1	564.0	8.413	0.2770	20	0.0139	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-2D	1	C1	1	599.9	8.969	0.2765	20	0.0138	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-3D	1	C1	1	582.0	8.675	0.2772	20	0.0139	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-4D	1	C1	1	560.8	8.409	0.2759	20	0.0138	INTERLAMINAR TENSILE FAILURE
BA-ILT-A-C1-1-7D	1	C1	1	545.4	8.289	0.2730	20	0.0136	INTERLAMINAR TENSILE FAILURE
Average				**570.4**	**8.551**			**0.0138**	
Standard Dev.				**20.99**	**0.2730**				
Coeff. of Var. [%]				**3.681**	**3.193**				
Min.				**545.4**	**8.289**			**0.0136**	
Max.				**599.9**	**8.969**			**0.0139**	
Number of Spec.				**5**	**5**			**5**	


Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
100
200
300
400
500
600
700
Laminate Interlaminar Tension Strength [ksi]

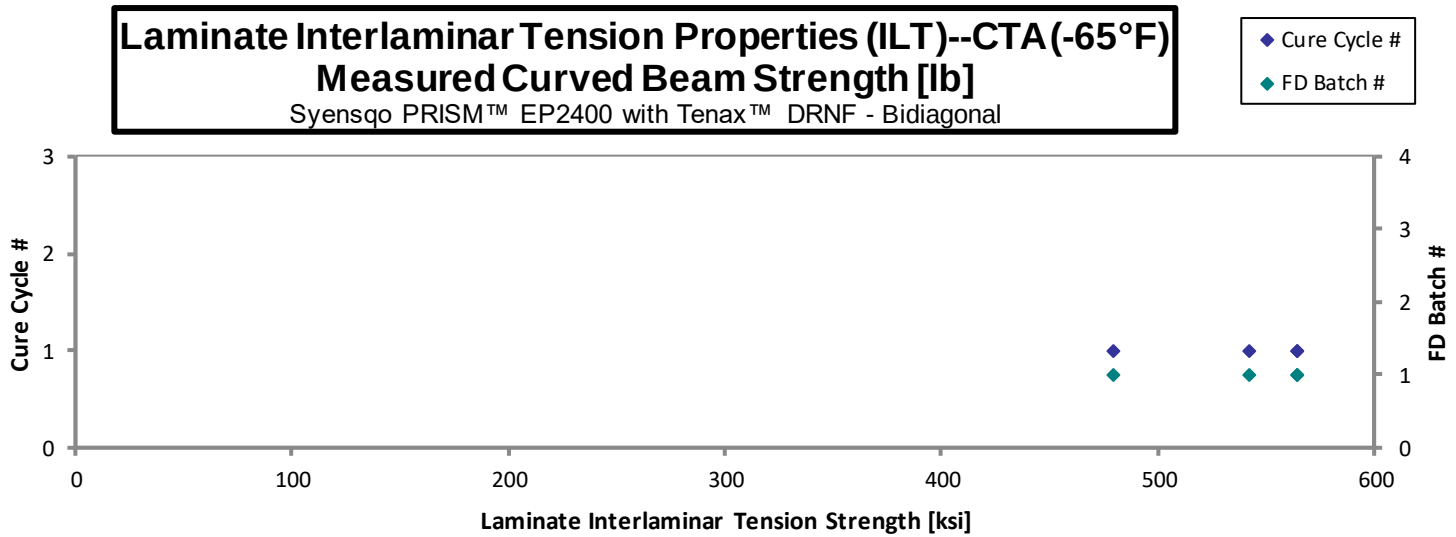

Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Biaxial
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
7
8
9
10
Laminate Interlaminar Tension Strength [ksi]

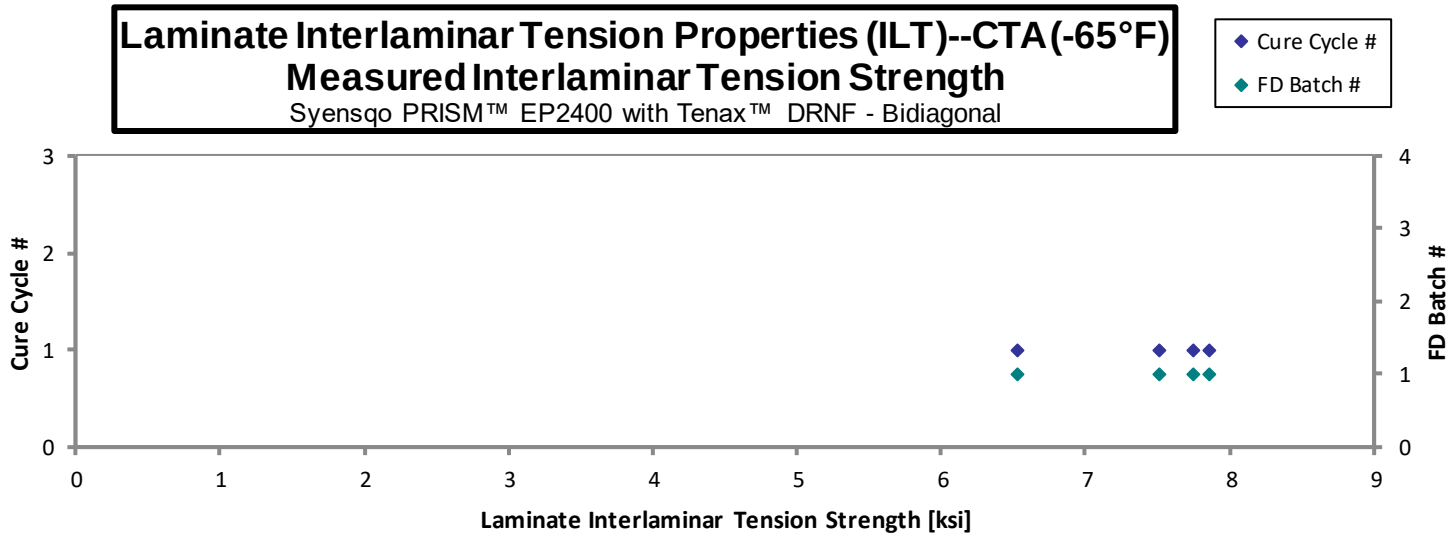
4.2.27 Bidiagonal Interlaminar Tension (BD-ILT)

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-ILT-A-C1-1-1B	1	C1	1	479.9	6.533	0.2978	20	0.0149	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-2B	1	C1	1	564.7	7.861	0.2926	20	0.0146	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-3B	1	C1	1	564.7	7.754	0.2957	20	0.0148	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-4B	1	C1	1	542.8	7.510	0.2940	20	0.0147	INTERLAMINAR TENSILE FAILURE
			Average	**538.0**	**7.414**			**0.0148**	
			Standard Dev.	**40.12**	**0.6060**				
			Coeff. of Var. [%]	**7.457**	**8.173**				
			Min.	**479.9**	**6.533**			**0.0146**	
			Max.	**564.7**	**7.861**			**0.0149**	
			Number of Spec.	**4**	**4**			**4**	

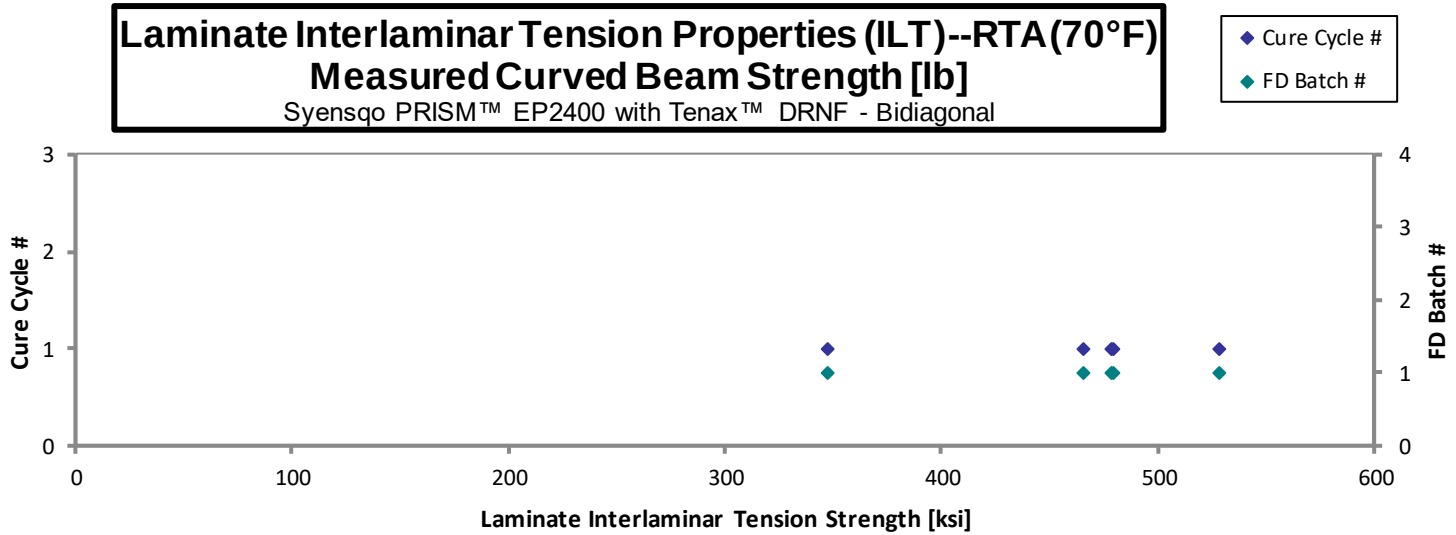

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
100
200
300
400
500
600
Laminate Interlaminar Tension Strength [ksi]

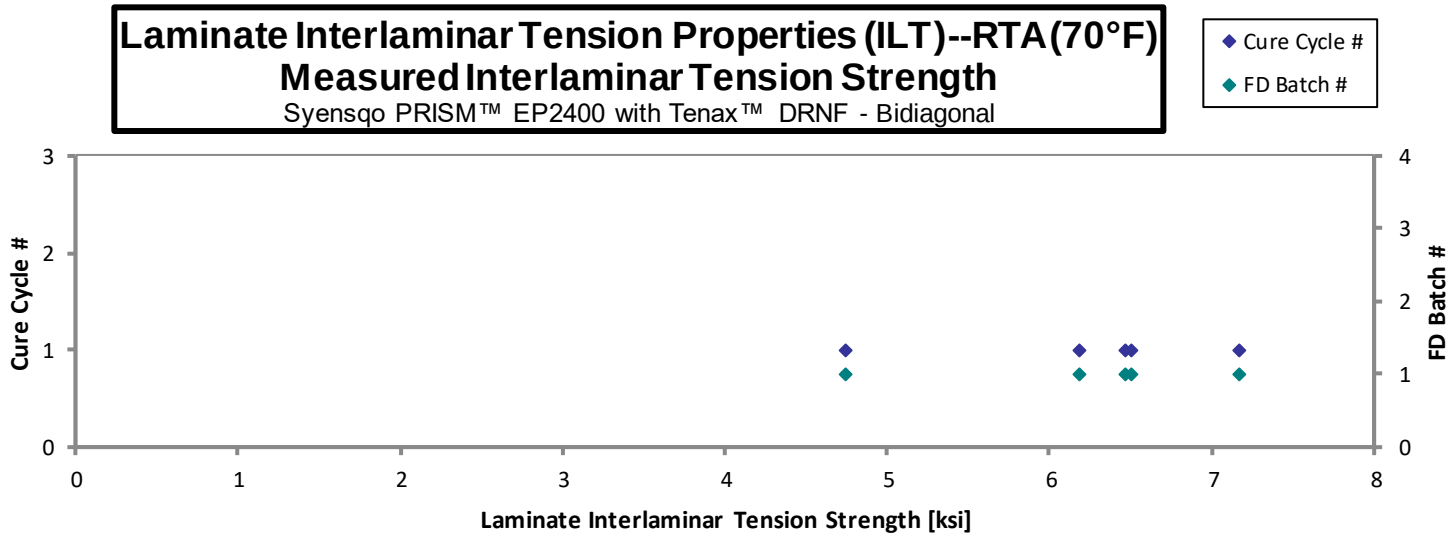

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
7
8
9
Laminate Interlaminar Tension Strength [ksi]

Laminate Interlaminar Tension Properties (ILT)--RTA (70°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-ILT-A-C1-1-1A	1	C1	1	347.6	4.740	0.2974	20	0.0149	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-2A	1	C1	1	478.9	6.503	0.2983	20	0.0149	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-3A	1	C1	1	528.5	7.174	0.2984	20	0.0149	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-4A	1	C1	1	480.0	6.467	0.3002	20	0.0150	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-5A	1	C1	1	465.7	6.186	0.3036	20	0.0152	INTERLAMINAR TENSILE FAILURE
			Average	**460.1**	**6.214**			**0.0150**	
			Standard Dev.	**67.30**	**0.9006**				
			Coeff. of Var. [%]	**14.63**	**14.49**				
			Min.	**347.6**	**4.740**			**0.0149**	
			Max.	**528.5**	**7.174**			**0.0152**	
			Number of Spec.	**5**	**5**			**5**	

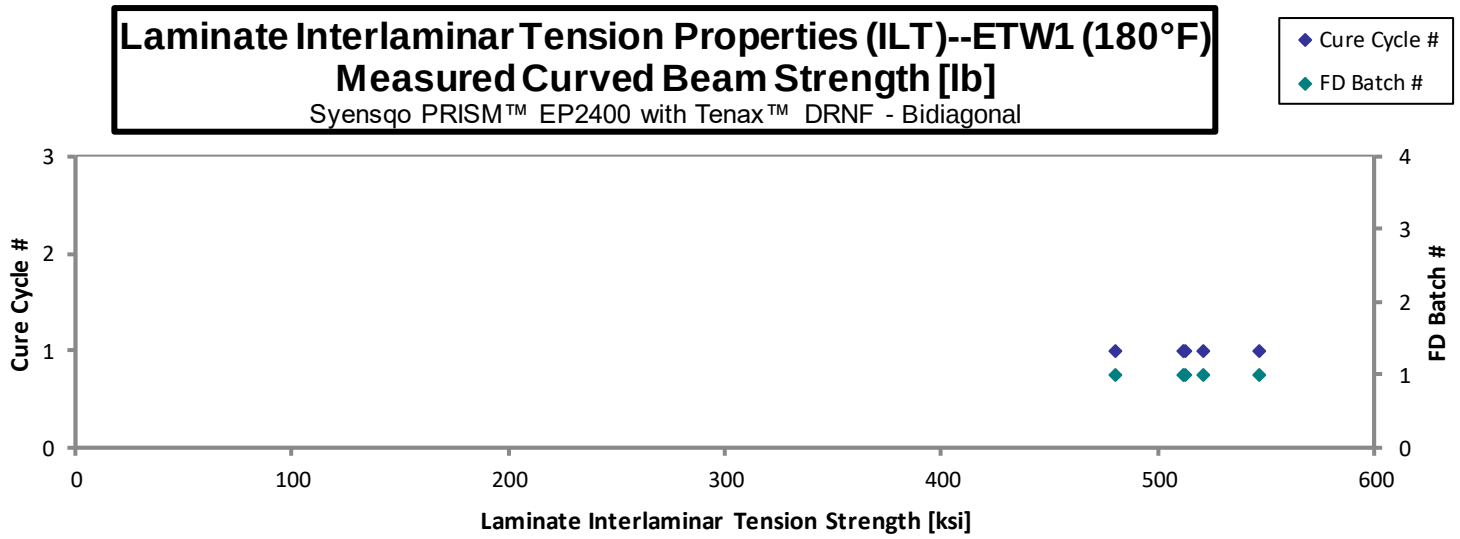

Laminate Interlaminar Tension Properties (ILT)--RTA(70°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
100
200
300
400
500
600
Laminate Interlaminar Tension Strength [ksi]

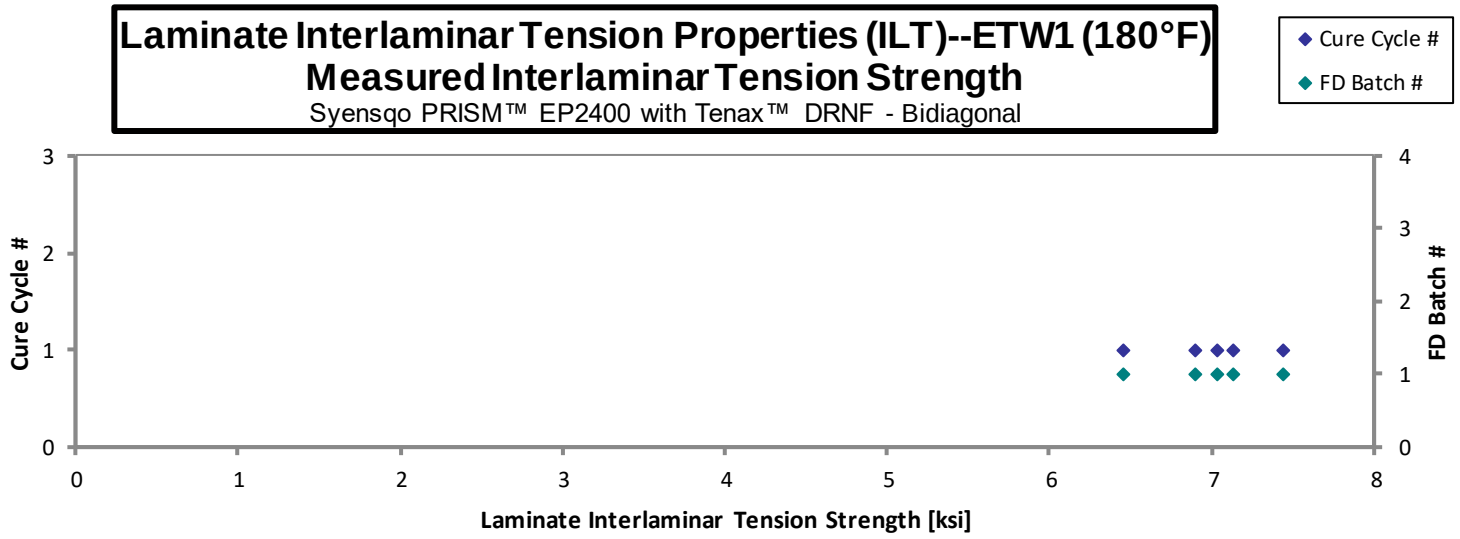

Laminate Interlaminar Tension Properties (ILT)--RTA(70°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
7
8
Laminate Interlaminar Tension Strength [ksi]

Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F) Strength

Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
BD-ILT-A-C1-1-1D	1	C1	1	511.6	6.901	0.2999	20	0.0150	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-2D	1	C1	1	521.2	7.031	0.2999	20	0.0150	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-3D	1	C1	1	480.3	6.461	0.3005	20	0.0150	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-4D	1	C1	1	512.8	7.135	0.2927	20	0.0146	INTERLAMINAR TENSILE FAILURE
BD-ILT-A-C1-1-7D	1	C1	1	546.7	7.447	0.2976	20	0.0149	INTERLAMINAR TENSILE FAILURE
			Average	**514.5**	**6.995**			**0.0149**	
			Standard Dev.	**23.78**	**0.3600**				
			Coeff. of Var. [%]	**4.623**	**5.147**				
			Min.	**480.3**	**6.461**			**0.0146**	
			Max.	**546.7**	**7.447**			**0.0150**	
			Number of Spec.	**5**	**5**			**5**	

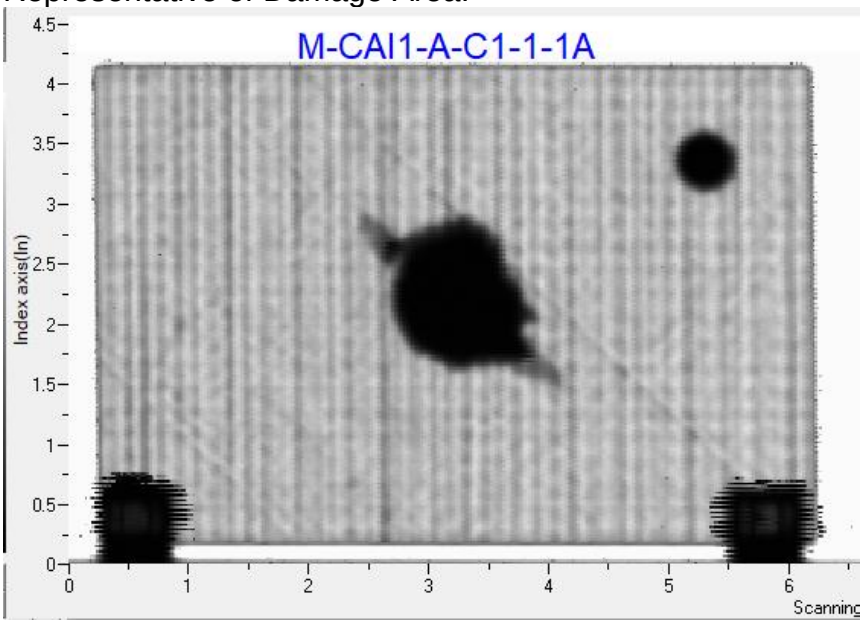

Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F)
Measured Curved Beam Strength [lb]
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
100
200
300
400
500
600
Laminate Interlaminar Tension Strength [ksi]

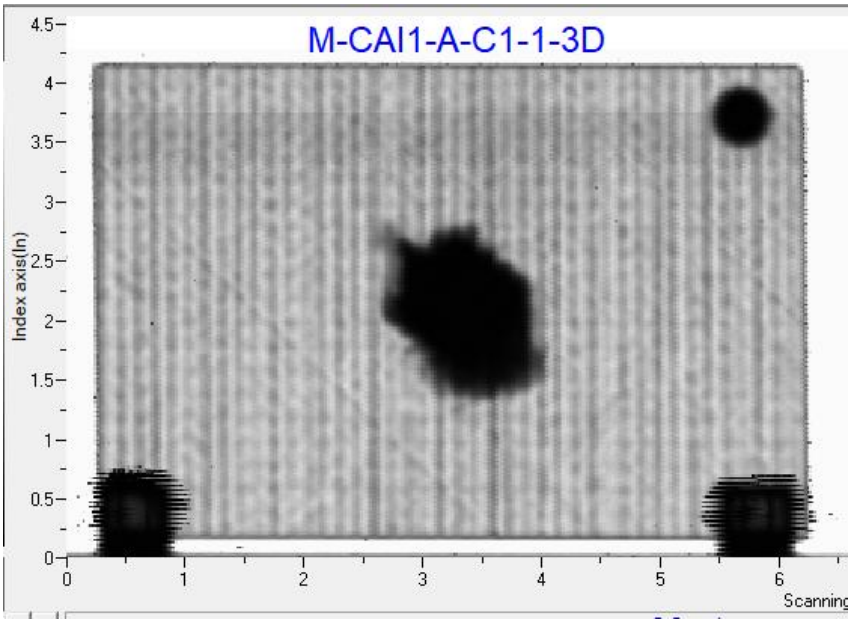

Laminate Interlaminar Tension Properties (ILT)--ETW1 (180°F)
Measured Interlaminar Tension Strength
Syensqo PRISM™ EP2400 with Tenax™ DRNF - Bidiagonal
Cure Cycle #
FD Batch #
Cure Cycle #
FD Batch #
0
1
2
3
4
0
1
2
3
4
5
6
7
8
Laminate Interlaminar Tension Strength [ksi]

5. Additional Compression After Impact Data

Impactor Diameter: 0.625”

Representative of Damage Area:



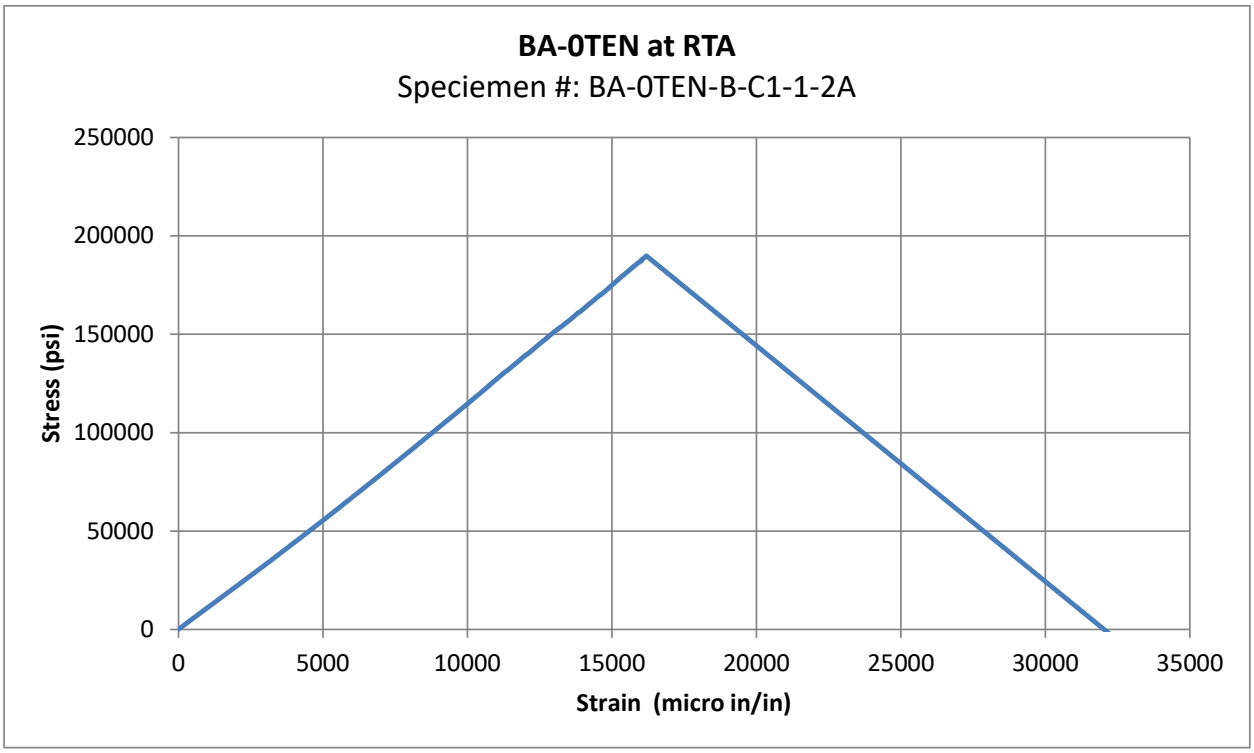


Damage Area and Dent Depth Summary:

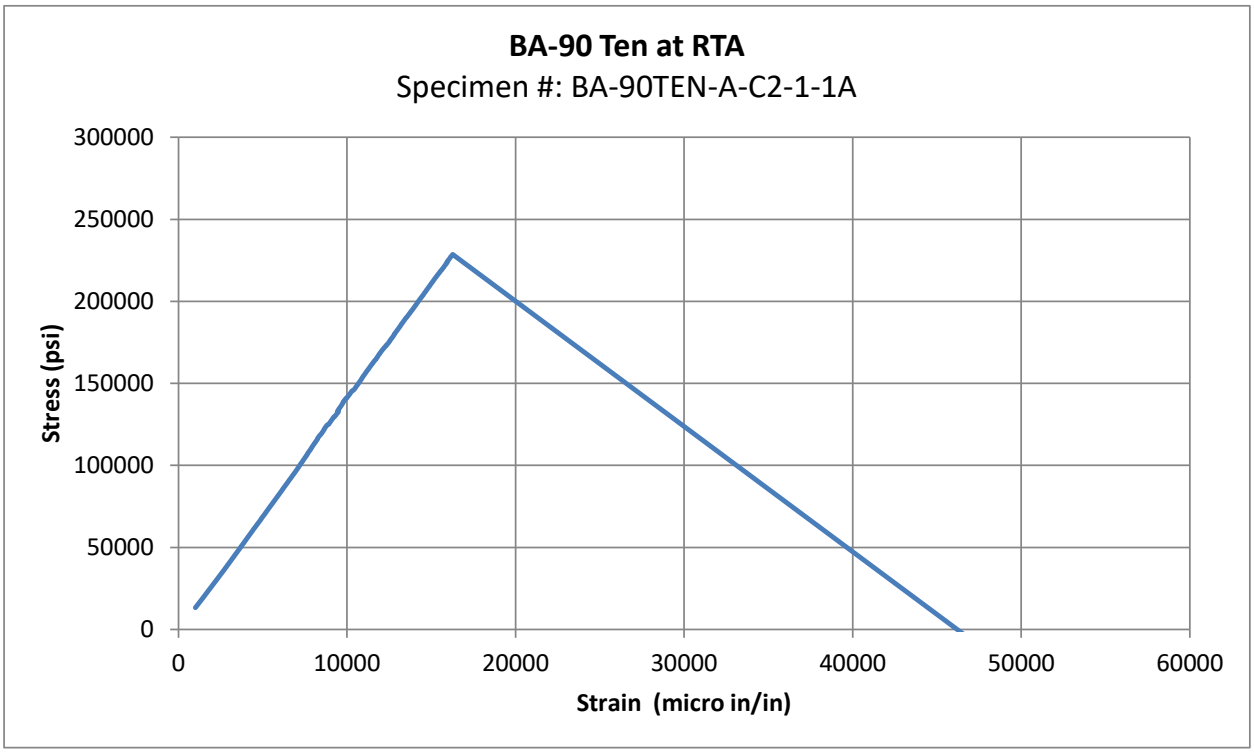
Specimen ID	Damage Area (inch^2)	Dent Depth (inch)
M-CAI1-A-C1-1-1A	1.158	0.0120
M-CAI1-A-C1-1-2A	1.027	0.0115
M-CAI1-A-C1-1-3A	1.143	0.0120
M-CAI1-A-C1-1-4A	1.244	0.0100
M-CAI1-A-C1-1-5A	1.370	0.0130
M-CAI1-A-C1-1-6A	1.245	0.0110
M-CAI1-A-C1-1-1D	1.132	0.0125
M-CAI1-A-C1-1-2D	1.268	0.0120
M-CAI1-A-C1-1-3D	1.348	0.0125
M-CAI1-A-C1-1-4D	1.374	0.0130
M-CAI1-A-C1-1-5D	1.753	0.0110
M-CAI1-A-C1-1-6D	1.456	0.0105

6. Full Stress vs. Strain Curve

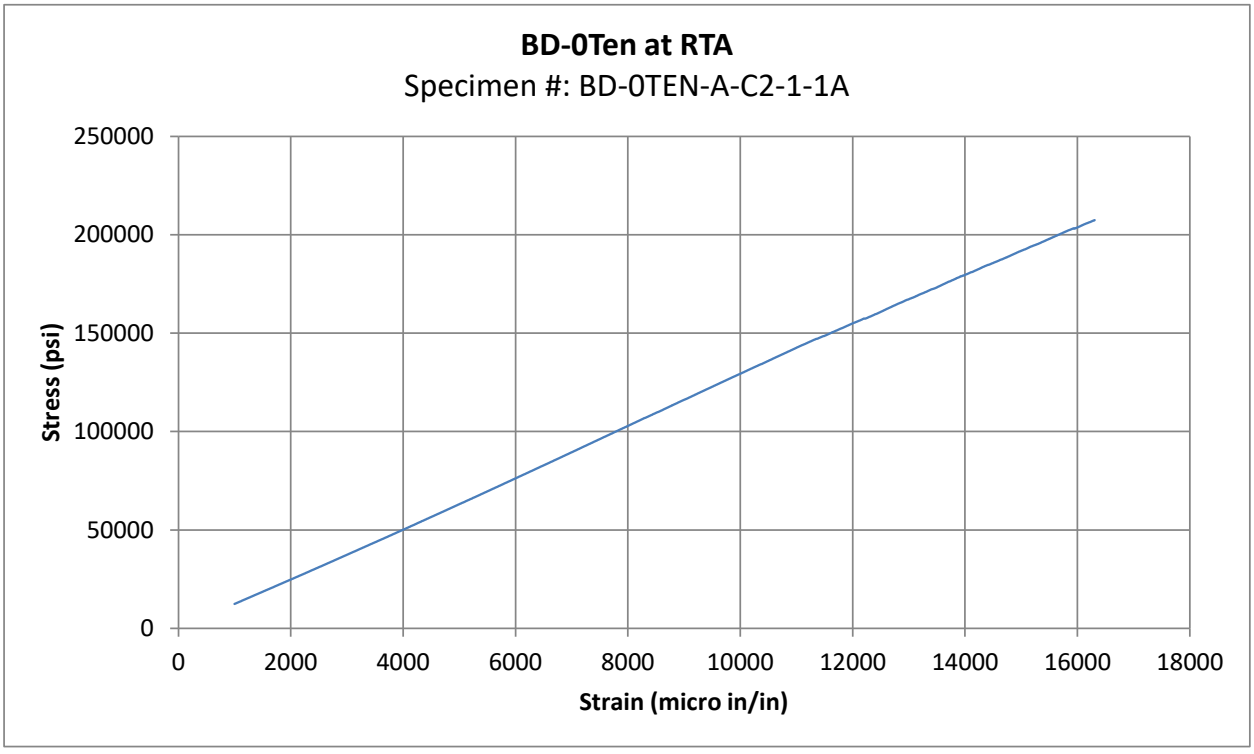
6.1 BA-0Ten – RTA



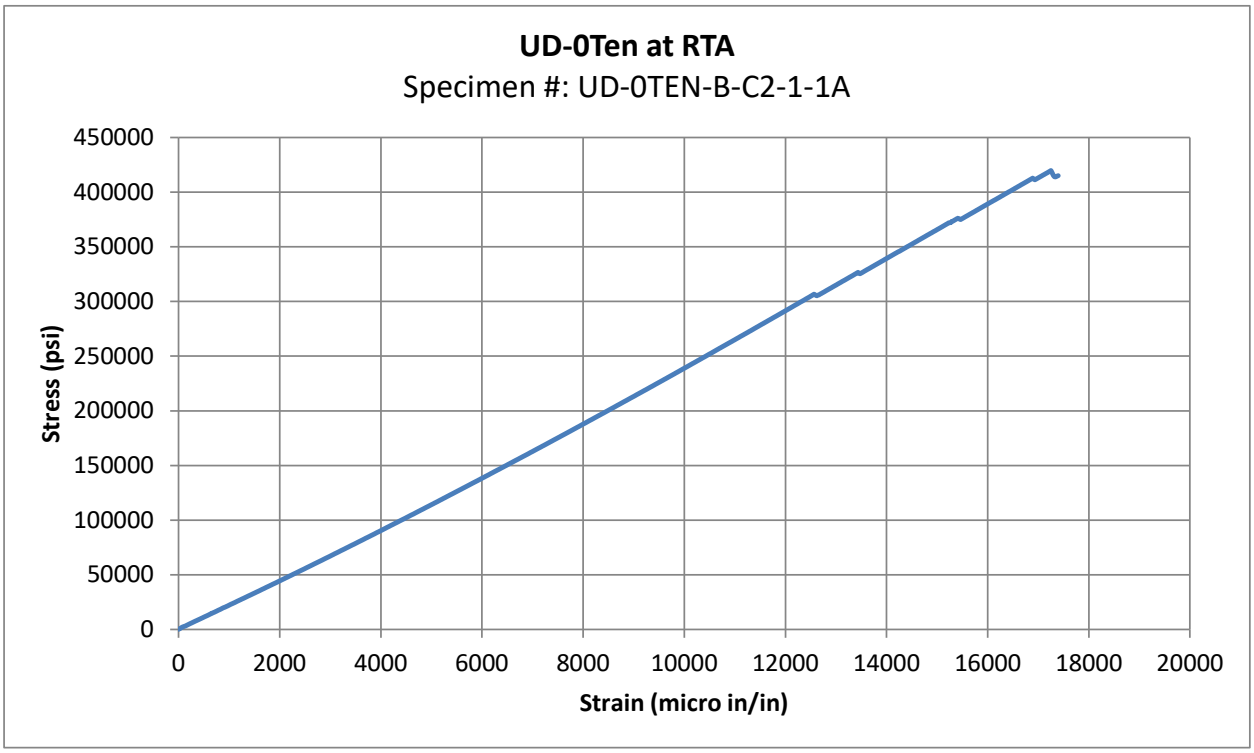
6.2 BA-90Ten – RTA



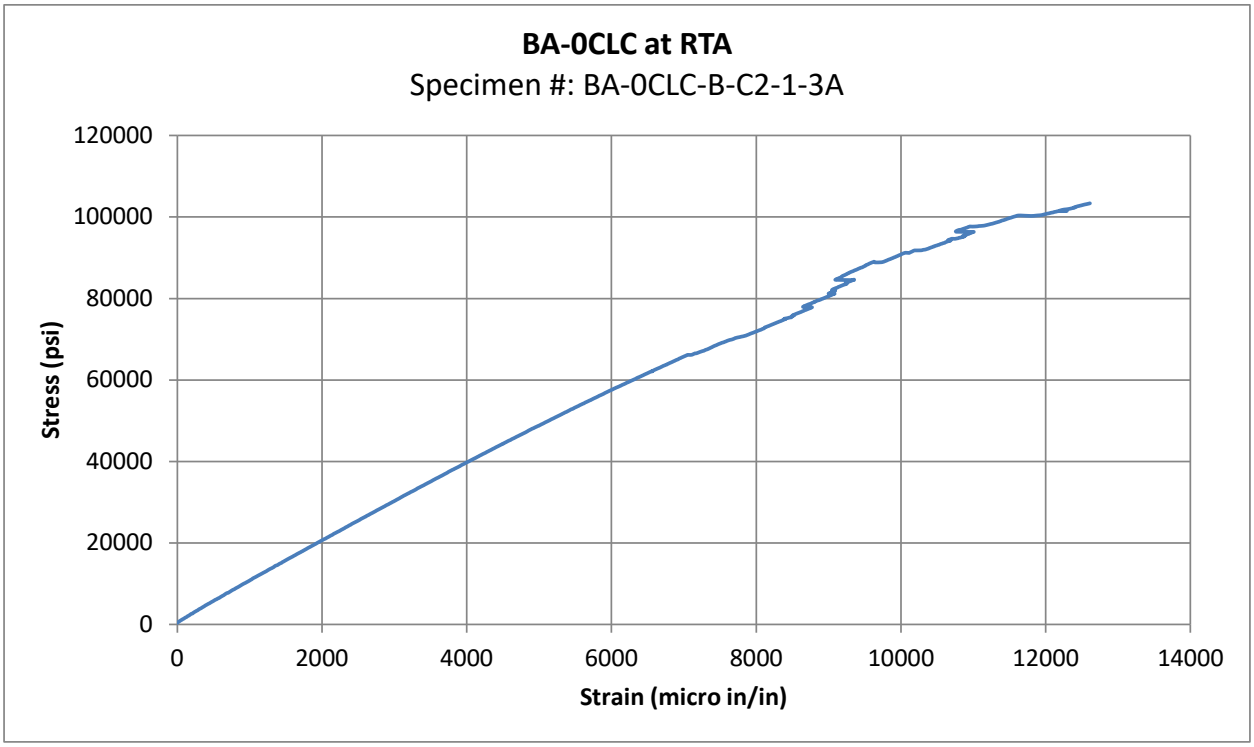
6.3 BD-0Ten – RTA



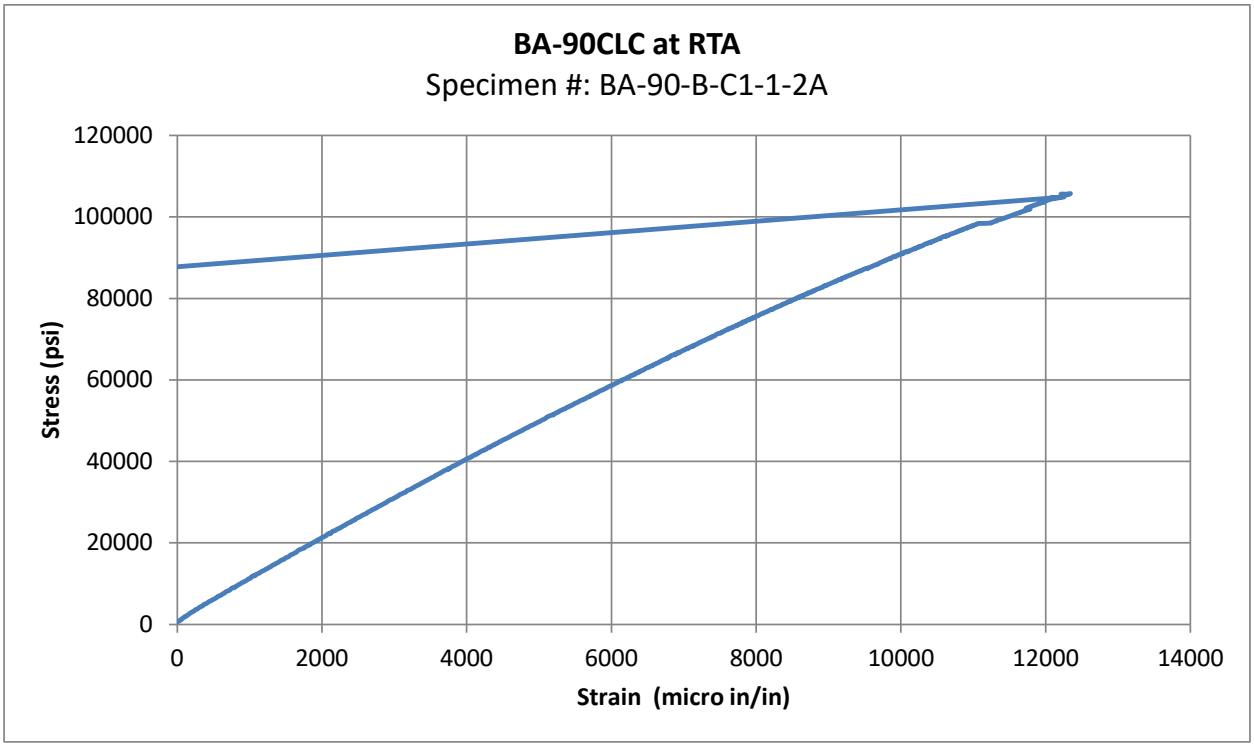
6.4 UD-0Ten – RTA



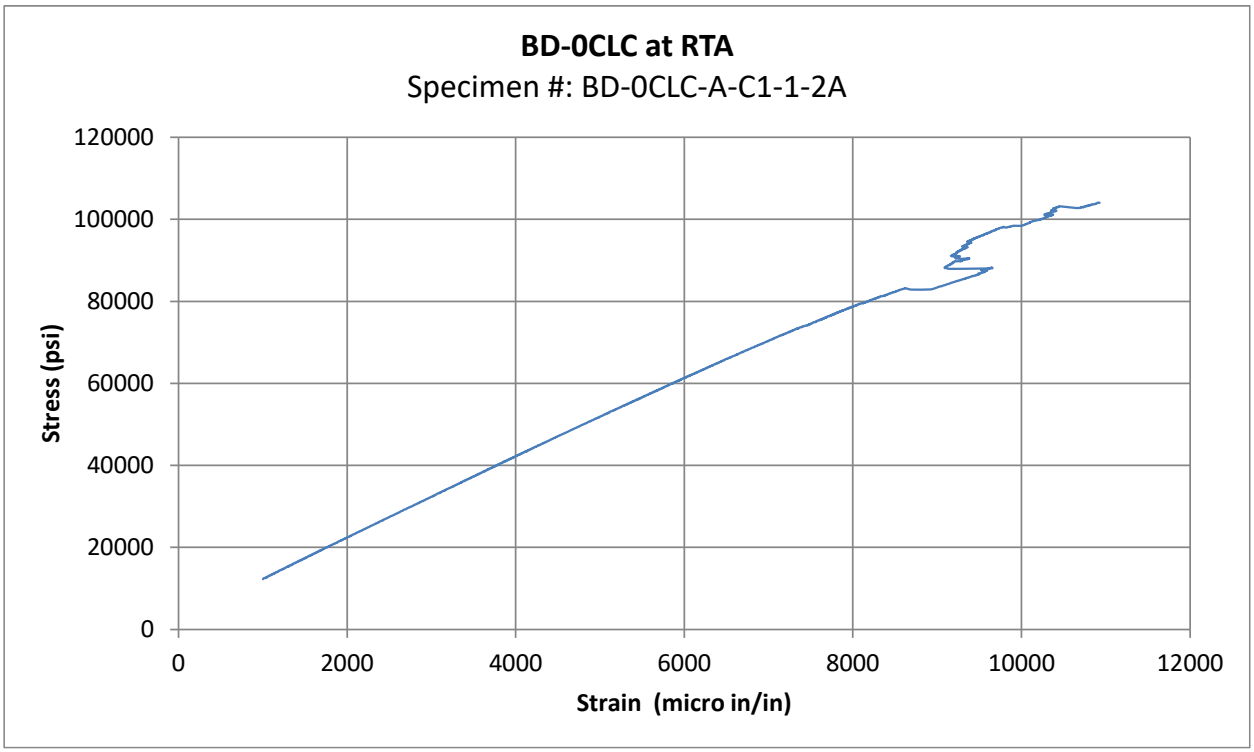
6.6 BA-0CLC – RTA



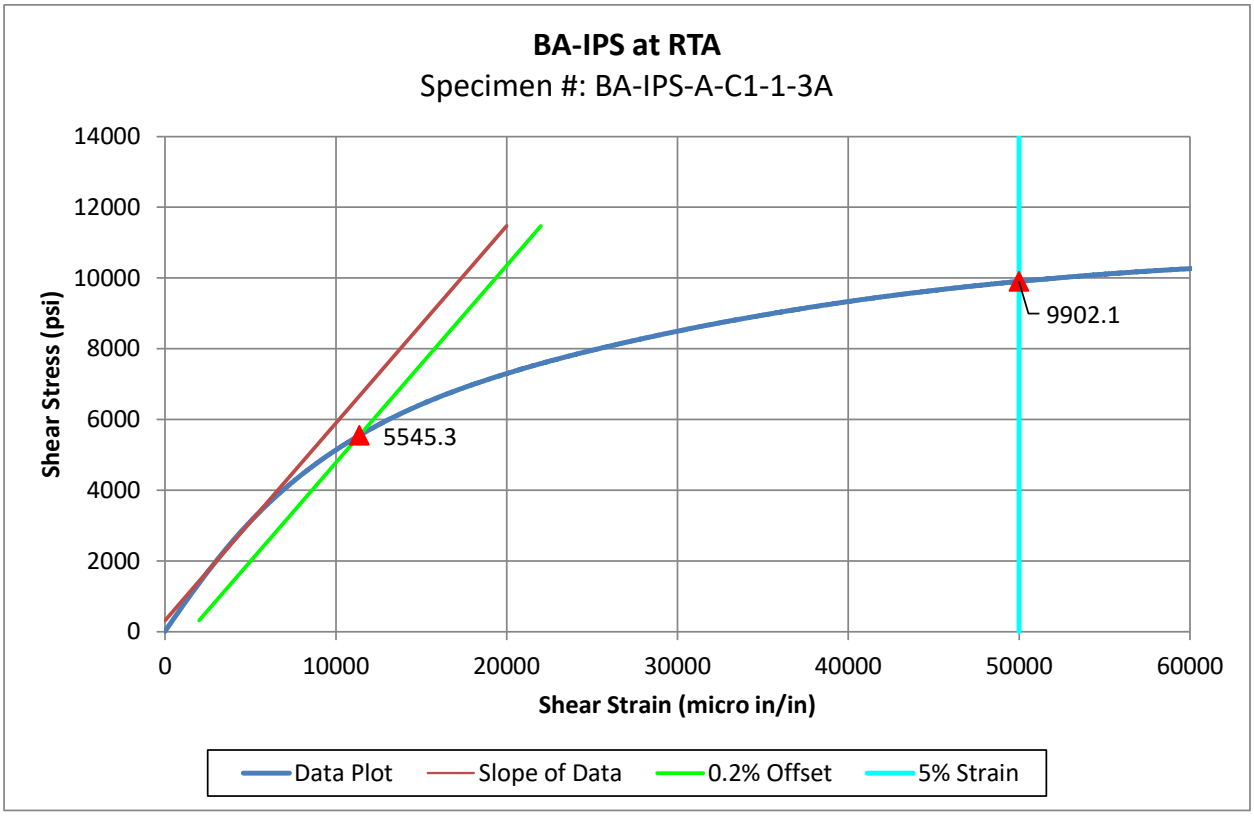
6.7 BA-90CLC – RTA



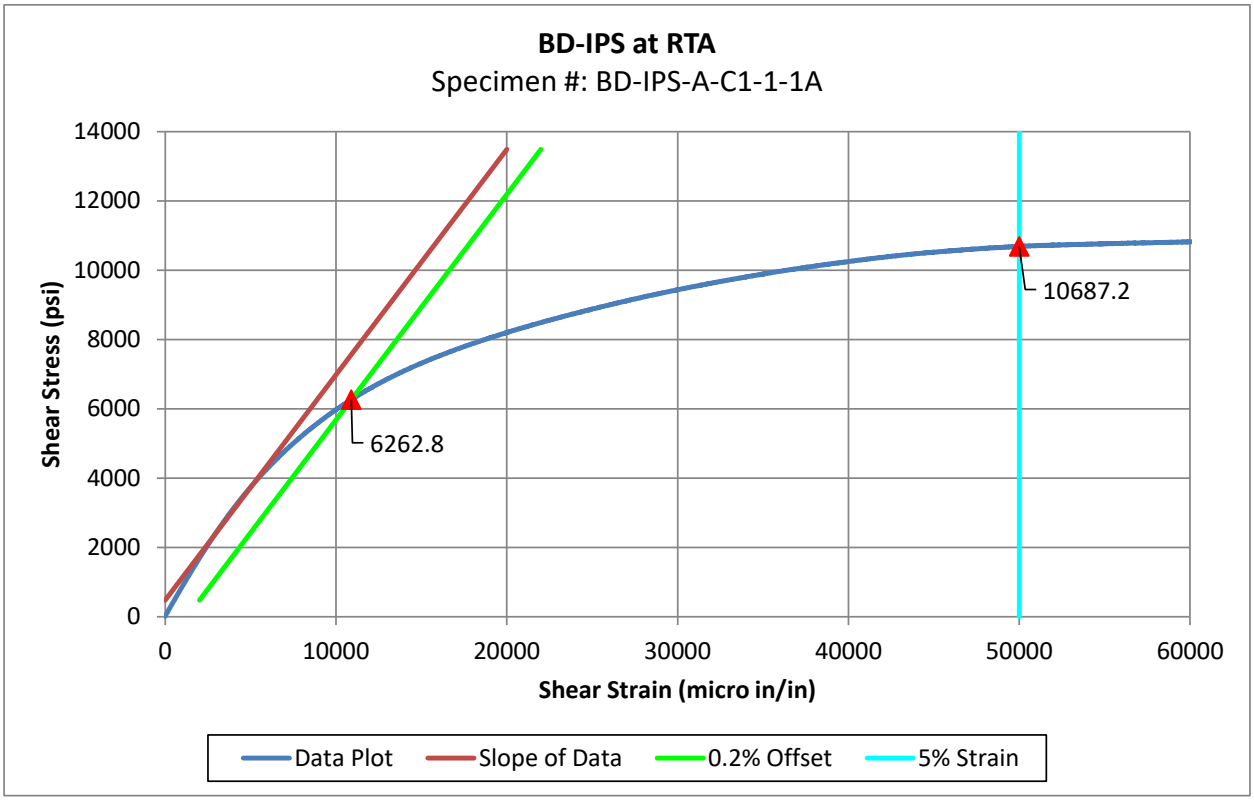
6.8 BD-0CLC – RTA



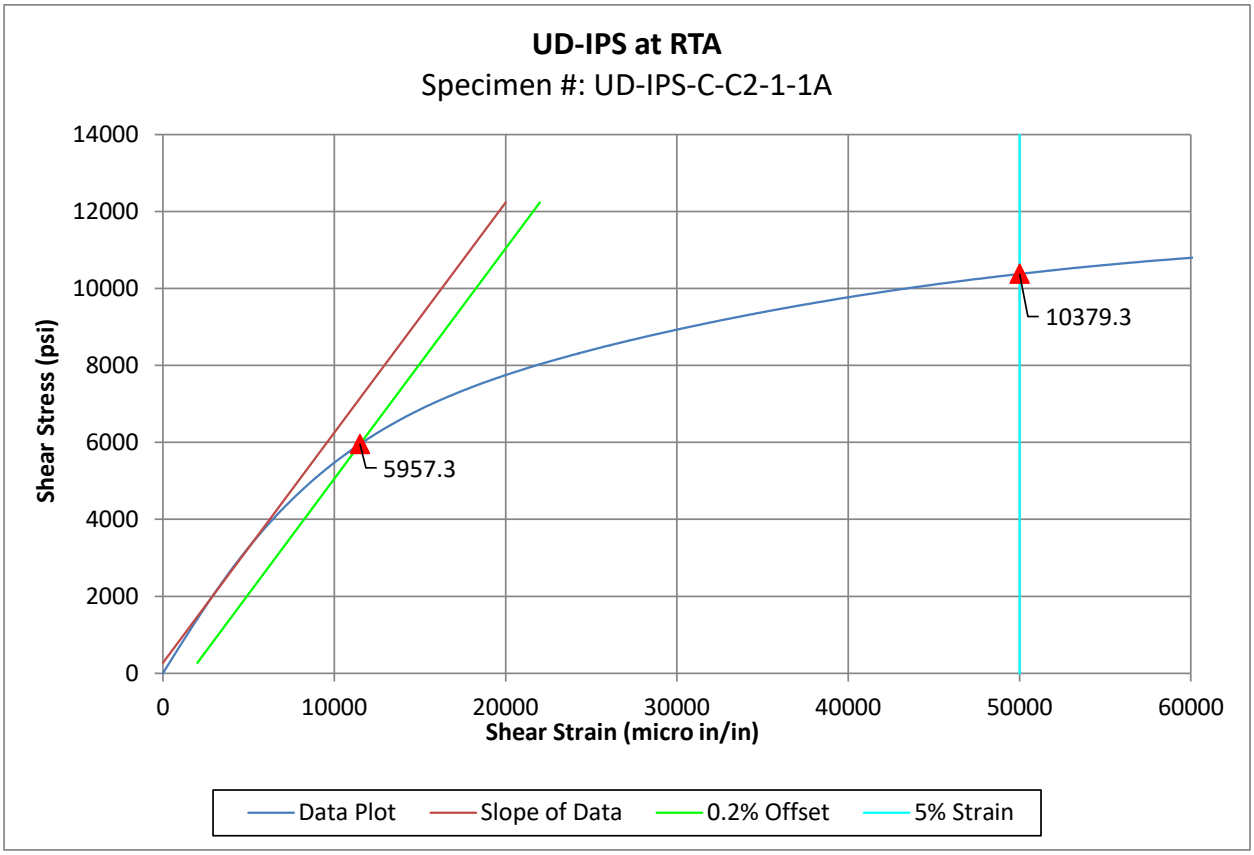
6.9 BA-IPS – RTA


BA-IPS at RTA
Specimen #: BA-IPS-A-C1-1-3A
Shear Stress (psi)
14000
12000
10000
8000
6000
4000
2000
0
0
10000
20000
30000
40000
50000
60000
Shear Strain (micro in/in)
5545.3
9902.1
Data Plot
Slope of Data
0.2% Offset
5% Strain

6.10 BD-IPS – RTA

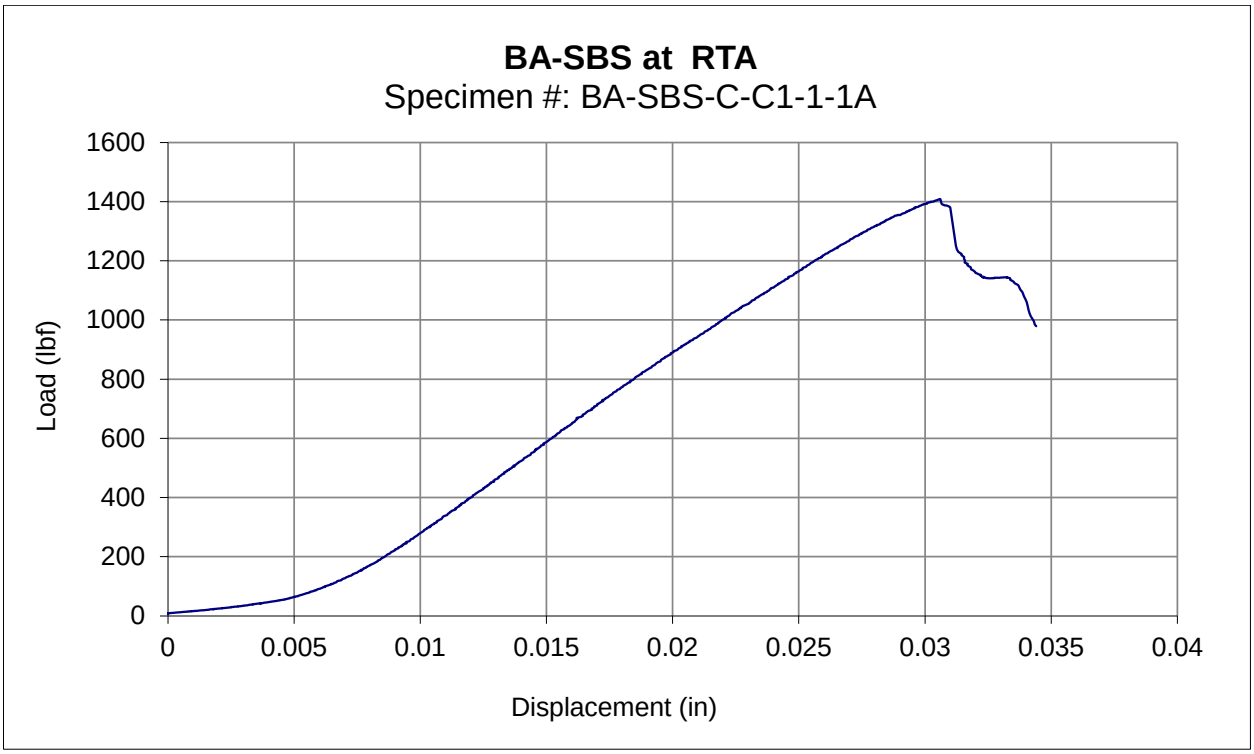


6.11 UD-IPS – RTA



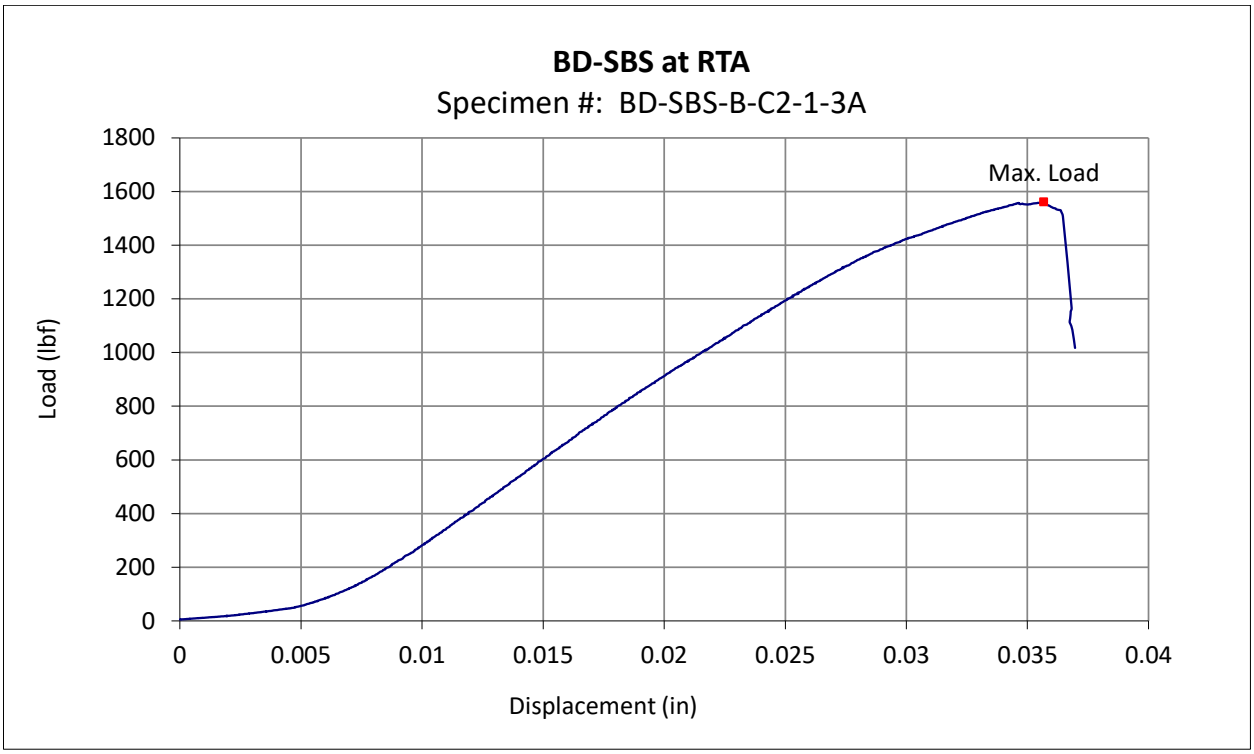
6.12 BA-SBS – RTA

Load displacement curves are shown since coupons did not have a strain device.



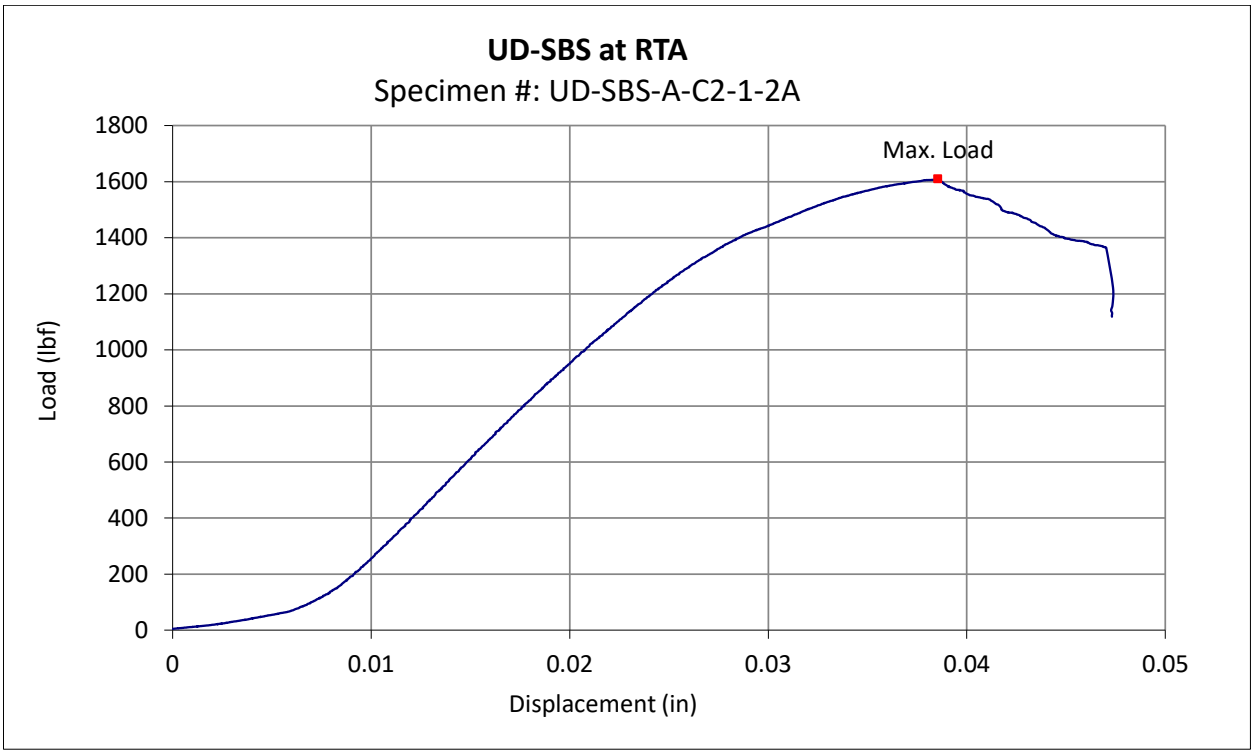
6.13 BD-SBS – RTA

Load displacement curves are shown since coupons did not have a strain device.

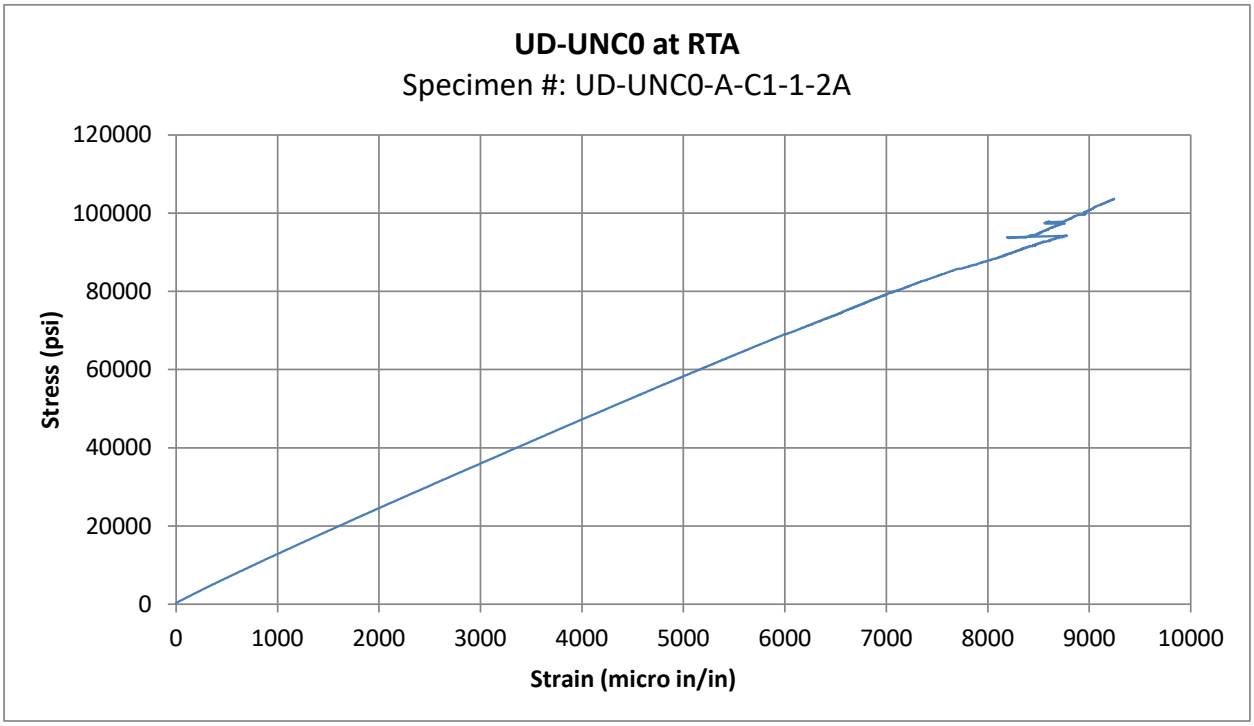


6.14 UD-SBS – RTA

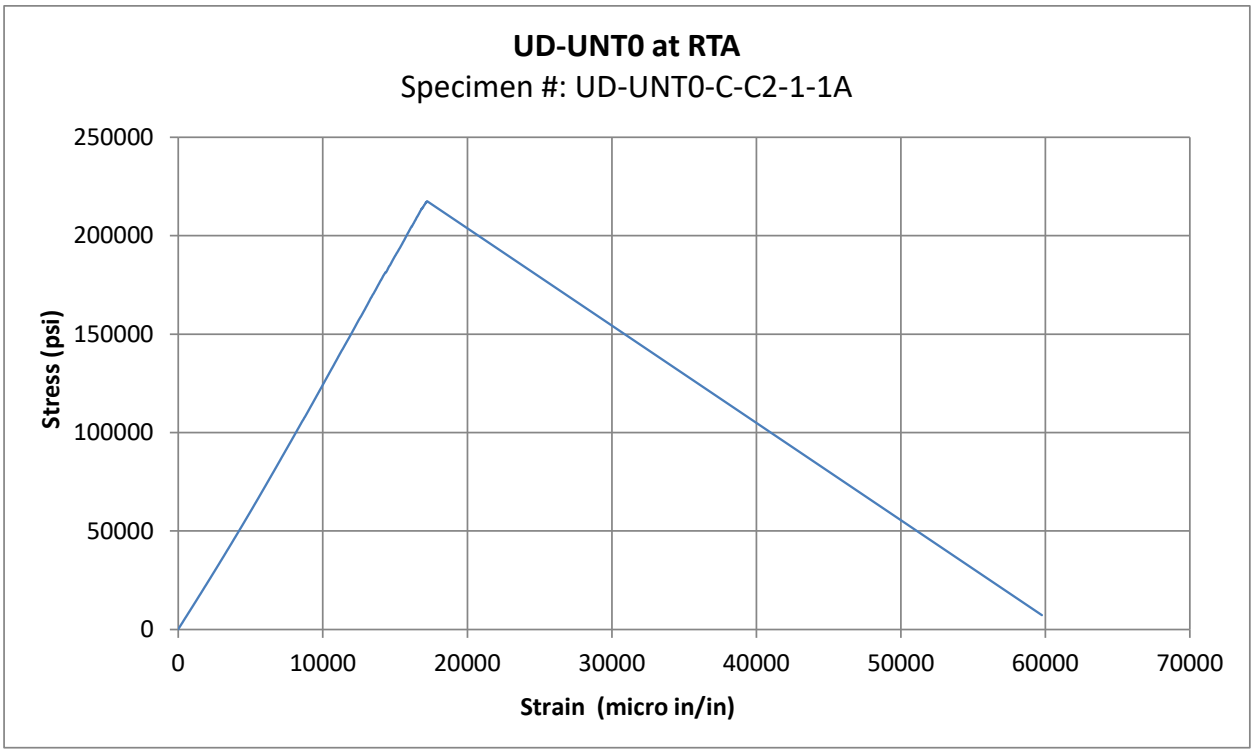
Load displacement curves are shown since coupons did not have a strain device.



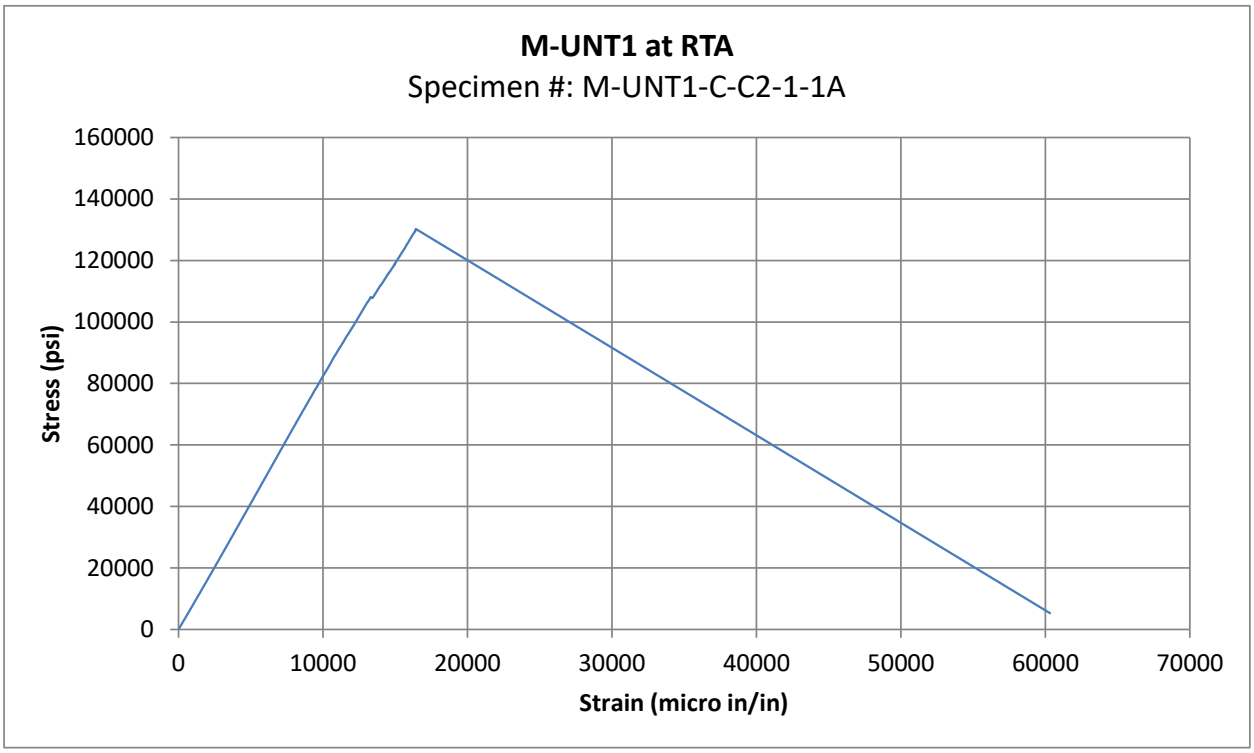
6.15 UD-UNC0 – RTA



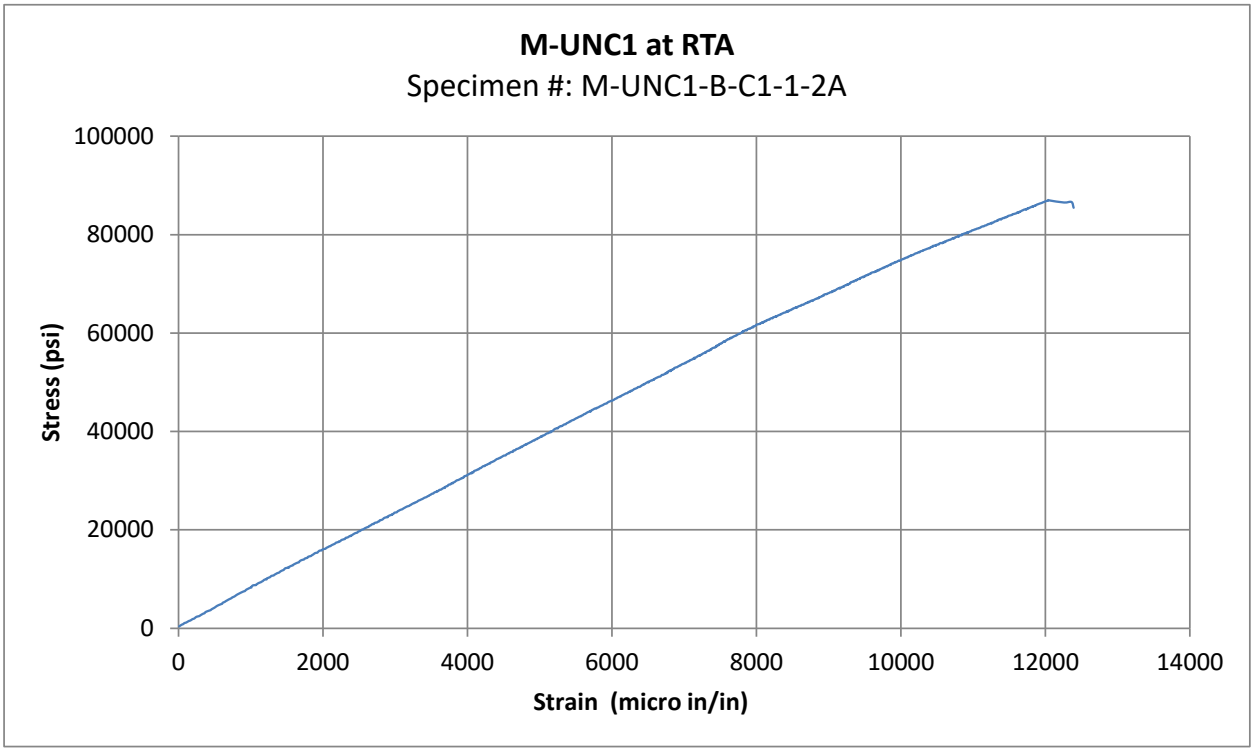
6.16 UD-UNT0 – RTA



6.17 M-UNT1 – RTA



6.18 M-UNC1 – RTA



7. Fluid Sensitivity Comparison

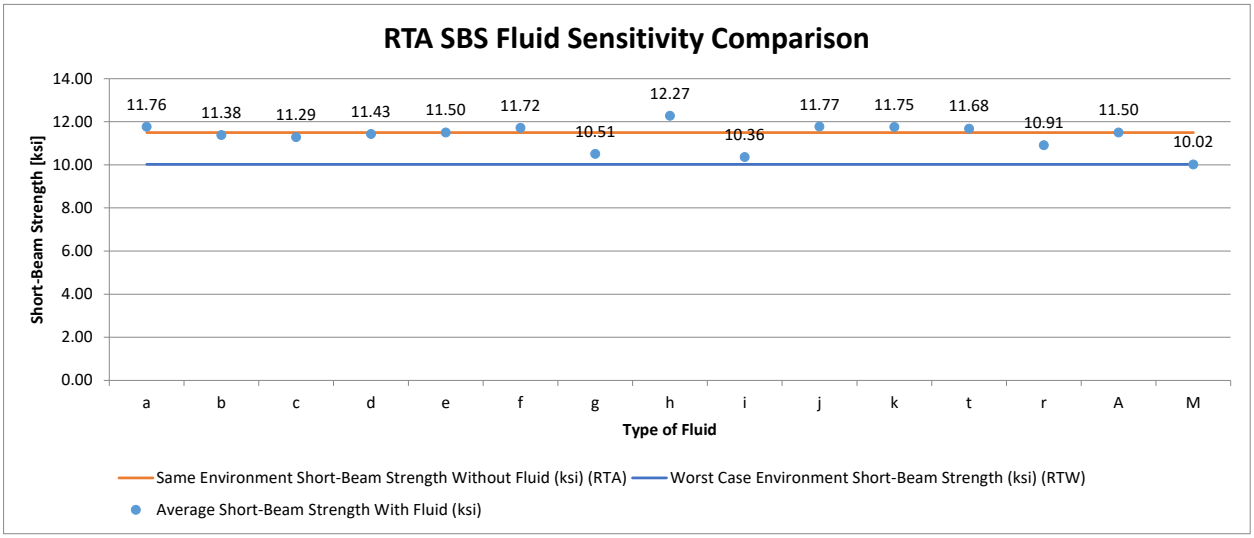
7.1 Room Temperature Test Data

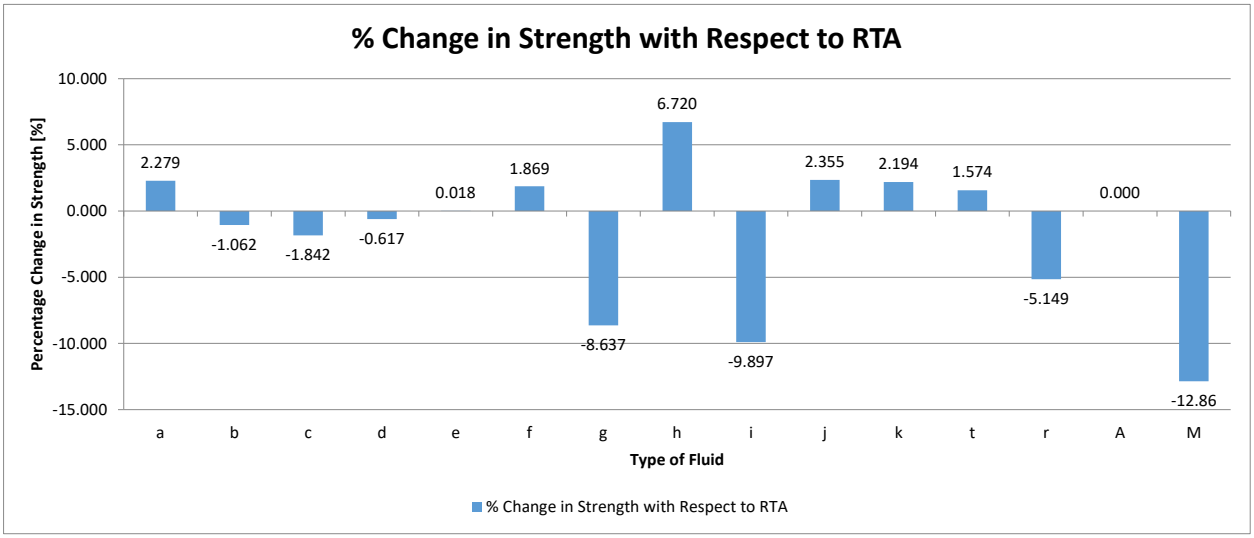
Fluid	Average Short-Beam Strength With Fluid (ksi)	Same Environment Short-Beam Strength Without Fluid (ksi) (RTA)	Worst Case Environment Short-Beam Strength (ksi) (RTW)	% Change in Strength with Respect to RTA
a	11.76	11.50	10.02	2.279
b	11.38	11.50	10.02	-1.062
c	11.29	11.50	10.02	-1.842
d	11.43	11.50	10.02	-0.617
e	11.50	11.50	10.02	0.018
f	11.72	11.50	10.02	1.869
g	10.51	11.50	10.02	-8.637
h	12.27	11.50	10.02	6.720
i	10.36	11.50	10.02	-9.897
j	11.77	11.50	10.02	2.355
k	11.75	11.50	10.02	2.194
t	11.68	11.50	10.02	1.574
r	10.91	11.50	10.02	-5.149
A	11.50	11.50	10.02	0.000
M	10.02	11.50	10.02	-12.86

Fluid Sensitivity Screening
Short-Beam Strength Properties (FSSBS)--RT Strength
Solvay PRISM™ EP2400 with Tenax™ DRWF - IM UD

Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Batch #	Fluid ID	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Average
UD-FSS-A-C1-1-2a	A	C1	1	a	11.94	0.099	15	0.0066	Interlaminar Shear	11.76
UD-FSS-A-C1-1-3a	A	C1	1	a	11.61	0.101	15	0.0067		
UD-FSS-A-C1-1-4a	A	C1	1	a	11.67	0.101	15	0.0067		
UD-FSS-A-C1-1-5a	A	C1	1	a	11.67	0.099	15	0.0066		
UD-FSS-A-C1-1-6a	A	C1	1	a	11.92	0.100	15	0.0066		
UD-FSS-A-C1-1-1b	A	C1	1	b	11.07	0.100	15	0.0072	Interlaminar Shear	11.38
UD-FSS-A-C1-1-3b	A	C1	1	b	11.42	0.099	15	0.0072		
UD-FSS-A-C1-1-5b	A	C1	1	b	11.65	0.098	15	0.0072		
UD-FSS-A-C1-1-6b	A	C1	1	b	11.59	0.098	15	0.0070		
UD-FSS-A-C1-1-7b	A	C1	1	b	11.17	0.100	15	0.0073		
UD-FSS-A-C1-1-1c	A	C1	1	c	11.46	0.099	15	0.0066	Interlaminar Shear	11.29
UD-FSS-A-C1-1-2c	A	C1	1	c	10.89	0.101	15	0.0067		
UD-FSS-A-C1-1-4c	A	C1	1	c	11.41	0.102	15	0.0068		
UD-FSS-A-C1-1-5c	A	C1	1	c	11.19	0.099	15	0.0066		
UD-FSS-A-C1-1-6c	A	C1	1	c	11.49	0.098	15	0.0065		
UD-FSS-A-C1-1-1d	A	C1	1	d	11.66	0.100	15	0.0066	Interlaminar Shear, Inelastic Deformation	11.43
UD-FSS-A-C1-1-2d	A	C1	1	d	11.21	0.100	15	0.0066		
UD-FSS-A-C1-1-3d	A	C1	1	d	11.40	0.098	15	0.0065		
UD-FSS-A-C1-1-4d	A	C1	1	d	11.46	0.099	15	0.0066		
UD-FSS-A-C1-1-6d	A	C1	1	d	11.42	0.099	15	0.0066		
UD-FSS-A-C1-1-1e	A	C1	1	e	11.49	0.103	15	0.0069	Interlaminar Shear, Compression	11.50
UD-FSS-A-C1-1-2e	A	C1	1	e	11.34	0.100	15	0.0066		
UD-FSS-A-C1-1-3e	A	C1	1	e	11.53	0.102	15	0.0068		
UD-FSS-A-C1-1-4e	A	C1	1	e	11.60	0.103	15	0.0069		
UD-FSS-A-C1-1-5e	A	C1	1	e	11.55	0.102	15	0.0068		
UD-FSS-A-C1-1-1f	A	C1	1	f	11.85	0.101	15	0.0068	Interlaminar Shear, Compression	11.72
UD-FSS-A-C1-1-2f	A	C1	1	f	11.93	0.100	15	0.0066		
UD-FSS-A-C1-1-3f	A	C1	1	f	11.59	0.102	15	0.0068		
UD-FSS-A-C1-1-4f	A	C1	1	f	11.66	0.101	15	0.0067		
UD-FSS-A-C1-1-5f	A	C1	1	f	11.55	0.100	15	0.0066		
UD-FSS-A-C1-1-1g	A	C1	1	g	11.03	0.104	15	0.0070	Interlaminar Shear, Compression	10.51
UD-FSS-A-C1-1-3g	A	C1	1	g	10.18	0.104	15	0.0069		
UD-FSS-A-C1-1-4g	A	C1	1	g	10.33	0.103	15	0.0068		
UD-FSS-A-C1-1-6g	A	C1	1	g	10.35	0.105	15	0.0070		
UD-FSS-A-C1-1-7g	A	C1	1	g	10.65	0.102	15	0.0068		

UD-FSS-A-C1-1-1h	A	C1	1	h	12.76	0.099	15	0.0066		
UD-FSS-A-C1-1-2h	A	C1	1	h	12.49	0.104	15	0.0069		
UD-FSS-A-C1-1-3h	A	C1	1	h	12.30	0.103	15	0.0069	Interlaminar	
UD-FSS-A-C1-1-4h	A	C1	1	h	12.10	0.100	15	0.0067	Shear,	
UD-FSS-A-C1-1-5h	A	C1	1	h	11.77	0.101	15	0.0067	Compression	12.27
UD-FSS-A-C1-1-6h	A	C1	1	h	11.97	0.100	15	0.0067		
UD-FSS-A-C1-1-7h	A	C1	1	h	12.53	0.099	15	0.0066		
UD-FSS-A-C1-1-1i	A	C1	1	i	10.15	0.102	15	0.0068		
UD-FSS-A-C1-1-2i	A	C1	1	i	10.28	0.102	15	0.0068	Interlaminar	
UD-FSS-A-C1-1-3i	A	C1	1	i	10.28	0.103	15	0.0068	Shear,	10.36
UD-FSS-A-C1-1-4i	A	C1	1	i	10.70	0.102	15	0.0068	Compression	
UD-FSS-A-C1-1-5i	A	C1	1	i	10.41	0.105	15	0.0070		
UD-FSS-A-C1-1-1j	A	C1	1	j	11.96	0.101	15	0.0067		
UD-FSS-A-C1-1-2j	A	C1	1	j	11.87	0.104	15	0.0070	Interlaminar	
UD-FSS-A-C1-1-3j	A	C1	1	j	11.80	0.104	15	0.0069	Shear	11.77
UD-FSS-A-C1-1-4j	A	C1	1	j	11.83	0.100	15	0.0067		
UD-FSS-A-C1-1-5j	A	C1	1	j	11.39	0.101	15	0.0068		
UD-FSS-A-C1-1-1k	A	C1	1	k	11.83	0.102	15	0.0068		
UD-FSS-A-C1-1-2k	A	C1	1	k	11.64	0.101	15	0.0068	Interlaminar	
UD-FSS-A-C1-1-3k	A	C1	1	k	11.71	0.101	15	0.0067	Shear	11.75
UD-FSS-A-C1-1-4k	A	C1	1	k	11.73	0.101	15	0.0067		
UD-FSS-A-C1-1-5k	A	C1	1	k	11.86	0.100	15	0.0067		
UD-FSS-A-C1-1-1r	A	C1	1	r	11.38	0.099	15	0.0066		
UD-FSS-A-C1-1-2r	A	C1	1	r	10.72	0.099	15	0.0066	Interlaminar	
UD-FSS-A-C1-1-3r	A	C1	1	r	11.28	0.099	15	0.0066	Shear,	
UD-FSS-A-C1-1-4r	A	C1	1	r	10.95	0.099	15	0.0066	Inelastic	10.91
UD-FSS-A-C1-1-5r	A	C1	1	r	10.21	0.100	15	0.0067	Deformation	
UD-FSS-A-C1-1-1t	A	C1	1	t	11.78	0.099	15	0.0066		
UD-FSS-A-C1-1-2t	A	C1	1	t	12.12	0.101	15	0.0067		
UD-FSS-A-C1-1-3t	A	C1	1	t	11.85	0.101	15	0.0067	Interlaminar	
UD-FSS-A-C1-1-4t	A	C1	1	t	11.29	0.103	15	0.0069	Shear	11.68
UD-FSS-A-C1-1-5t	A	C1	1	t	11.37	0.102	15	0.0068		
UD-FSS-A-C1-1-1A	A	C1	1	A	11.30	0.101	15	0.0072		
UD-FSS-A-C1-1-2A	A	C1	1	A	11.62	0.101	15	0.0072		
UD-FSS-A-C1-1-3A	A	C1	1	A	11.61	0.101	15	0.0072	Interlaminar	
UD-FSS-A-C1-1-4A	A	C1	1	A	11.58	0.098	15	0.0070	Shear	11.50
UD-FSS-A-C1-1-5A	A	C1	1	A	11.39	0.102	15	0.0073		
UD-FSS-A-C1-1-1M	A	C1	1	M	10.10	0.102	15	0.0068		
UD-FSS-A-C1-1-2M	A	C1	1	M	9.76	0.099	15	0.0066	Interlaminar	
UD-FSS-A-C1-1-3M	A	C1	1	M	10.11	0.100	15	0.0067	Shear,	10.02
UD-FSS-A-C1-1-4M	A	C1	1	M	10.00	0.099	15	0.0066	Inelastic	
UD-FSS-A-C1-1-5M	A	C1	1	M	10.09	0.099	15	0.0066	Deformation	
UD-FSS-A-C1-1-7M	A	C1	1	M	10.07	0.098	15	0.0065		


RTA SBS Fluid Sensitivity Comparison
Short-Beam Strength [ksi]
14.00
12.00
10.00
8.00
6.00
4.00
2.00
0.00
11.76
11.38
11.29
11.43
11.50
11.72
10.51
12.27
10.36
11.77
11.75
11.68
10.91
11.50
10.02
a
b
c
d
e
f
g
h
i
j
k
t
r
A
M
Type of Fluid
Same Environment Short-Beam Strength Without Fluid (ksi) (RTA)
Worst Case Environment Short-Beam Strength (ksi) (RTW)
Average Short-Beam Strength With Fluid (ksi)


% Change in Strength with Respect to RTA
Percentage Change in Strength [%]
10.000
5.000
0.000
-5.000
-10.000
-15.000
2.279
-1.062
-1.842
-0.617
0.018
1.869
-8.637
6.720
-9.897
2.355
2.194
1.574
-5.149
0.000
-12.86
a
b
c
d
e
f
g
h
i
j
k
t
r
A
M
Type of Fluid
% Change in Strength with Respect to RTA

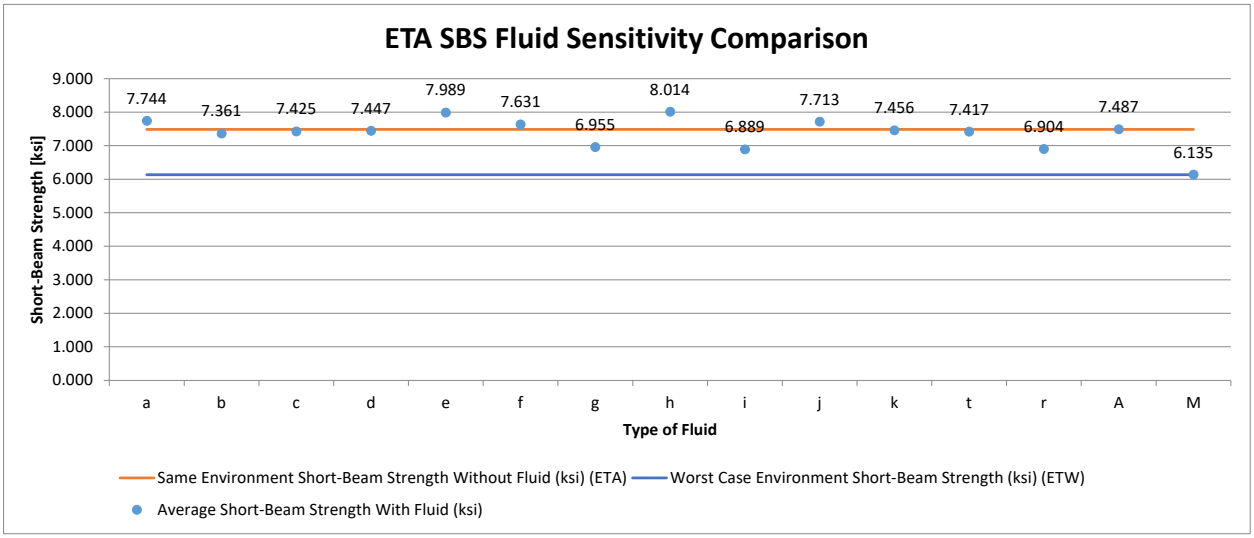
7.2 Elevated Temperature Test Data

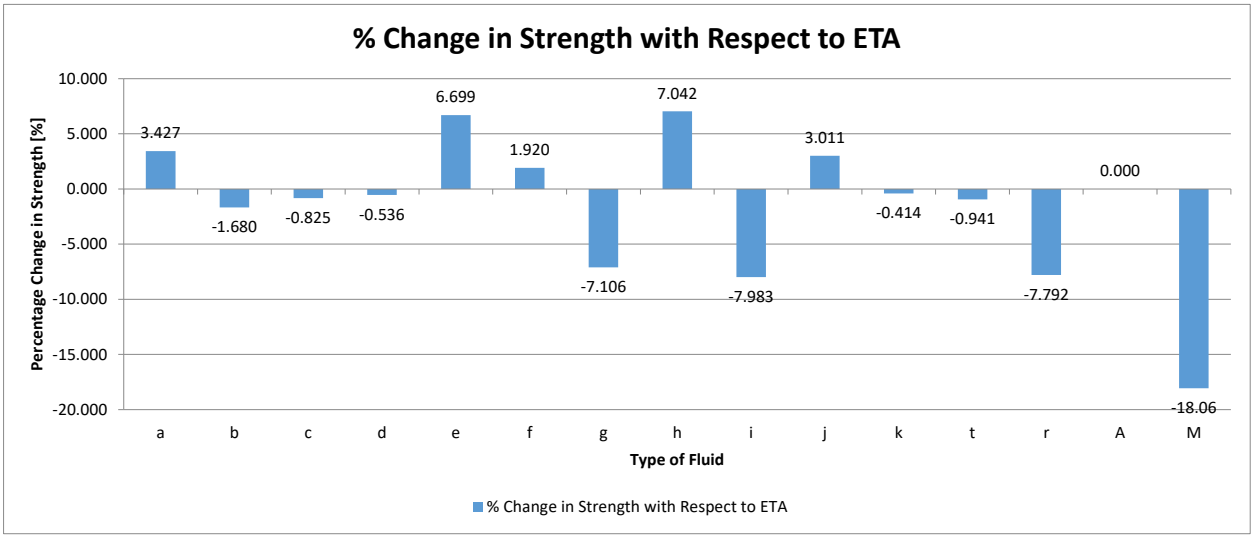
Fluid	Average Short-Beam Strength With Fluid (ksi)	Same Environment Short-Beam Strength Without Fluid (ksi) (ETA)	Worst Case Environment Short-Beam Strength (ksi) (ETW)	% Change in Strength with Respect to ETA
a	7.744	7.487	6.135	3.427
b	7.361	7.487	6.135	-1.680
c	7.425	7.487	6.135	-0.825
d	7.447	7.487	6.135	-0.536
e	7.989	7.487	6.135	6.699
f	7.631	7.487	6.135	1.920
g	6.955	7.487	6.135	-7.106
h	8.014	7.487	6.135	7.042
i	6.889	7.487	6.135	-7.983
j	7.713	7.487	6.135	3.011
k	7.456	7.487	6.135	-0.414
t	7.417	7.487	6.135	-0.941
r	6.904	7.487	6.135	-7.792
A	7.487	7.487	6.135	0.000
M	6.135	7.487	6.135	-18.06

Fluid Sensitivity Screening
Short-Beam Strength Properties (FSSBS)--ET Strength
Solvay PRISM™ EP2400 with Tenax™ DRWF - IM UD

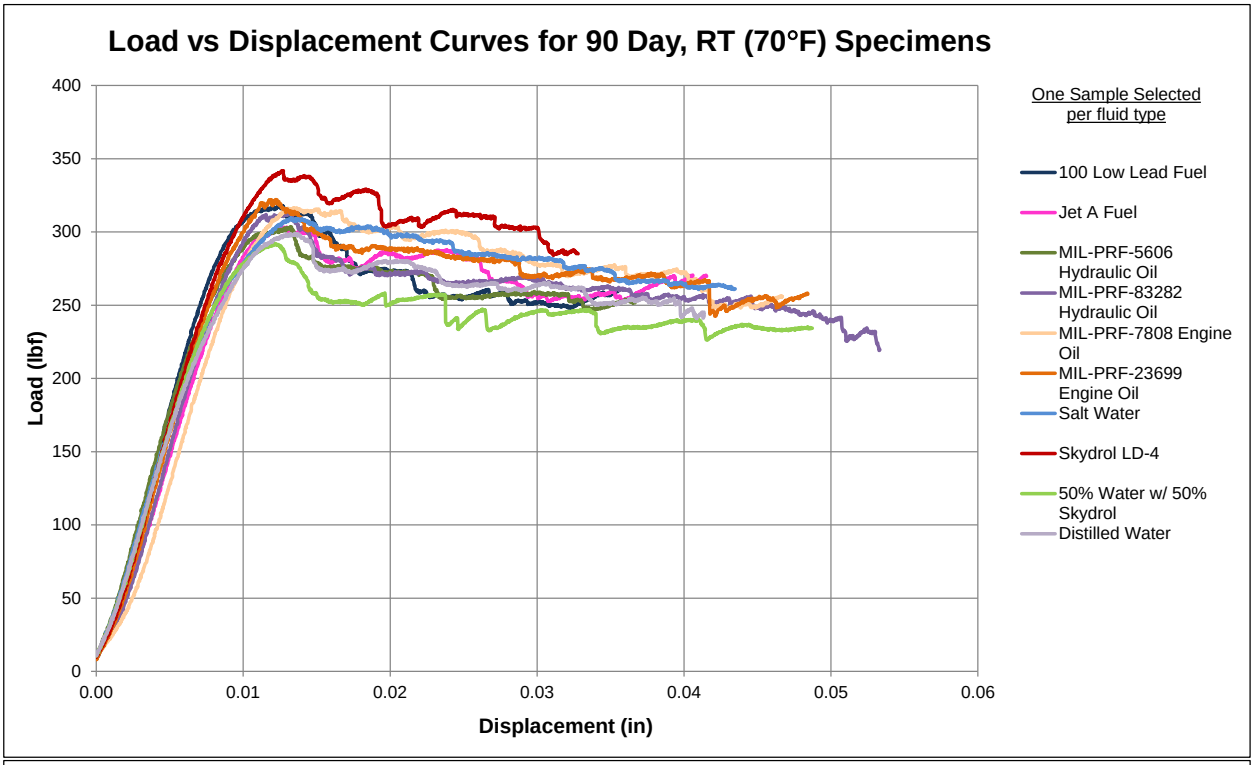
Specimen Number	Fiber Dynamics Batch #	Fiber Dynamics Cure Cycle	Batch #	Fluid ID	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Average
UD-FSS-A-C1-1-11	A	C1	1	1	8.909	0.105	15	0.0070	Interlaminar Shear, Inelastic Deformation	7.744
UD-FSS-A-C1-1-21	A	C1	1	1	7.352	0.099	15	0.0066		
UD-FSS-A-C1-1-31	A	C1	1	1	7.394	0.099	15	0.0066		
UD-FSS-A-C1-1-41	A	C1	1	1	7.497	0.101	15	0.0068		
UD-FSS-A-C1-1-51	A	C1	1	1	7.681	0.099	15	0.0075		
UD-FSS-A-C1-1-71	A	C1	1	1	7.629	0.099	15	0.0066		
UD-FSS-A-C1-1-12	A	C1	1	2	6.982	0.102	15	0.0068	Interlaminar Shear, Inelastic Deformation	7.361
UD-FSS-A-C1-1-22	A	C1	1	2	7.145	0.100	15	0.0067		
UD-FSS-A-C1-1-32	A	C1	1	2	8.309	0.104	15	0.0069		
UD-FSS-A-C1-1-42	A	C1	1	2	7.200	0.102	15	0.0068		
UD-FSS-A-C1-1-52	A	C1	1	2	7.171	0.100	15	0.0066		
UD-FSS-A-C1-1-13	A	C1	1	3	7.323	0.101	15	0.0068	Interlaminar Shear, Inelastic Deformation	7.425
UD-FSS-A-C1-1-23	A	C1	1	3	7.252	0.099	15	0.0066		
UD-FSS-A-C1-1-33	A	C1	1	3	7.371	0.100	15	0.0067		
UD-FSS-A-C1-1-43	A	C1	1	3	7.463	0.099	15	0.0066		
UD-FSS-A-C1-1-53	A	C1	1	3	7.718	0.103	15	0.0069		
UD-FSS-A-C1-1-14	A	C1	1	4	7.313	0.099	15	0.0066	Interlaminar Shear, Inelastic Deformation	7.447
UD-FSS-A-C1-1-34	A	C1	1	4	7.408	0.202	15	0.0135		
UD-FSS-A-C1-1-44	A	C1	1	4	7.538	0.202	15	0.0135		
UD-FSS-A-C1-1-54	A	C1	1	4	7.471	0.201	15	0.0134		
UD-FSS-A-C1-1-64	A	C1	1	4	7.505	0.201	15	0.0134		
UD-FSS-A-C1-1-15	A	C1	1	5	8.992	0.109	15	0.0073	Interlaminar Shear, Inelastic Deformation	7.989
UD-FSS-A-C1-1-25	A	C1	1	5	7.846	0.100	15	0.0066		
UD-FSS-A-C1-1-35	A	C1	1	5	8.572	0.105	15	0.0070		
UD-FSS-A-C1-1-45	A	C1	1	5	7.728	0.102	15	0.0068		
UD-FSS-A-C1-1-55	A	C1	1	5	8.017	0.101	15	0.0067		
UD-FSS-A-C1-1-65	A	C1	1	5	7.306	0.102	15	0.0068		
UD-FSS-A-C1-1-75	A	C1	1	5	7.460	0.103	15	0.0068		
UD-FSS-A-C1-1-16	A	C1	1	6	7.730	0.102	15	0.0068	Interlaminar Shear, Inelastic Deformation	7.631
UD-FSS-A-C1-1-26	A	C1	1	6	7.306	0.103	15	0.0069		
UD-FSS-A-C1-1-36	A	C1	1	6	7.538	0.104	15	0.0069		
UD-FSS-A-C1-1-46	A	C1	1	6	7.641	0.101	15	0.0067		
UD-FSS-A-C1-1-56	A	C1	1	6	7.940	0.103	15	0.0069		
UD-FSS-A-C1-1-17	A	C1	1	7	6.921	0.099	15	0.0066	Interlaminar Shear, Inelastic Deformation	6.955
UD-FSS-A-C1-1-27	A	C1	1	7	6.766	0.101	15	0.0067		
UD-FSS-A-C1-1-37	A	C1	1	7	7.127	0.099	15	0.0066		
UD-FSS-A-C1-1-47	A	C1	1	7	6.990	0.100	15	0.0067		
UD-FSS-A-C1-1-57	A	C1	1	7	6.971	0.101	15	0.0067		

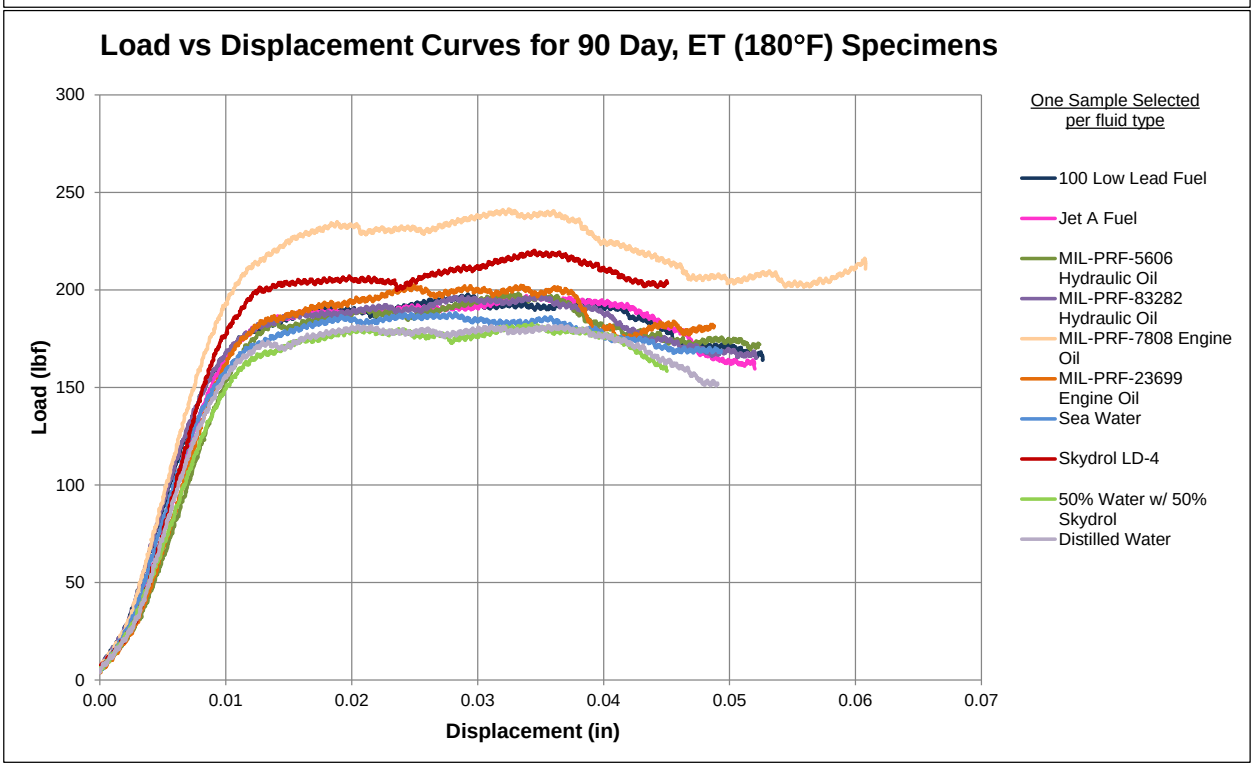
UD-FSS-A-C1-1-18	A	C1	1	8	8.122	0.101	15	0.0067	Interlaminar Shear, Inelastic Deformation	8.014
UD-FSS-A-C1-1-28	A	C1	1	8	7.954	0.101	15	0.0068		
UD-FSS-A-C1-1-38	A	C1	1	8	8.250	0.099	15	0.0066		
UD-FSS-A-C1-1-48	A	C1	1	8	7.630	0.100	15	0.0066		
UD-FSS-A-C1-1-58	A	C1	1	8	8.116	0.100	15	0.0067		
UD-FSS-A-C1-1-19	A	C1	1	9	6.751	0.101	15	0.0067	Interlaminar Shear, Inelastic Deformation	6.889
UD-FSS-A-C1-1-29	A	C1	1	9	6.802	0.101	15	0.0067		
UD-FSS-A-C1-1-39	A	C1	1	9	6.971	0.101	15	0.0068		
UD-FSS-A-C1-1-49	A	C1	1	9	6.992	0.102	15	0.0068		
UD-FSS-A-C1-1-59	A	C1	1	9	6.930	0.103	15	0.0069		
UD-FSS-A-C1-1-3m	A	C1	1	m	7.485	0.100	15	0.0067	Interlaminar Shear, Inelastic Deformation	7.713
UD-FSS-A-C1-1-4m	A	C1	1	m	7.800	0.099	15	0.0066		
UD-FSS-A-C1-1-5m	A	C1	1	m	7.740	0.099	15	0.0066		
UD-FSS-A-C1-1-6m	A	C1	1	m	7.706	0.097	15	0.0065		
UD-FSS-A-C1-1-7m	A	C1	1	m	7.831	0.098	15	0.0065		
UD-FSS-A-C1-1-1n	A	C1	1	n	7.368	0.100	15	0.0067	Interlaminar Shear, Inelastic Deformation	7.456
UD-FSS-A-C1-1-2n	A	C1	1	n	7.643	0.100	15	0.0067		
UD-FSS-A-C1-1-3n	A	C1	1	n	7.370	0.101	15	0.0068		
UD-FSS-A-C1-1-4n	A	C1	1	n	7.376	0.101	15	0.0068		
UD-FSS-A-C1-1-5n	A	C1	1	n	7.524	0.100	15	0.0066		
UD-FSS-A-C1-1-1p	A	C1	1	p	7.672	0.106	15	0.0070	Interlaminar Shear, Inelastic Deformation	7.417
UD-FSS-A-C1-1-2p	A	C1	1	p	7.364	0.100	15	0.0067		
UD-FSS-A-C1-1-3p	A	C1	1	p	7.206	0.102	15	0.0068		
UD-FSS-A-C1-1-4p	A	C1	1	p	7.305	0.102	15	0.0068		
UD-FSS-A-C1-1-5p	A	C1	1	p	7.537	0.102	15	0.0068		
UD-FSS-A-C1-1-1s	A	C1	1	s	6.709	0.101	15	0.0067	Interlaminar Shear, Inelastic Deformation	6.904
UD-FSS-A-C1-1-2s	A	C1	1	s	7.105	0.099	15	0.0066		
UD-FSS-A-C1-1-3s	A	C1	1	s	6.798	0.099	15	0.0066		
UD-FSS-A-C1-1-4s	A	C1	1	s	6.840	0.099	15	0.0066		
UD-FSS-A-C1-1-5s	A	C1	1	s	7.067	0.099	15	0.0066		
UD-FSS-A-C1-1-1L	A	C1	1	L	7.549	0.103	15	0.0069	Interlaminar Shear, Inelastic Deformation	7.487
UD-FSS-A-C1-1-2L	A	C1	1	L	7.506	0.100	15	0.0066		
UD-FSS-A-C1-1-3L	A	C1	1	L	7.518	0.100	15	0.0067		
UD-FSS-A-C1-1-4L	A	C1	1	L	7.527	0.102	15	0.0068		
UD-FSS-A-C1-1-5L	A	C1	1	L	7.336	0.103	15	0.0069		
UD-FSS-A-C1-1-1N	A	C1	1	N	6.080	0.100	15	0.0067	Interlaminar Shear, Inelastic Deformation	6.135
UD-FSS-A-C1-1-2N	A	C1	1	N	5.977	0.100	15	0.0067		
UD-FSS-A-C1-1-3N	A	C1	1	N	6.023	0.101	15	0.0068		
UD-FSS-A-C1-1-4N	A	C1	1	N	6.176	0.101	15	0.0068		
UD-FSS-A-C1-1-5N	A	C1	1	N	6.314	0.100	15	0.0066		
UD-FSS-A-C1-1-6N	A	C1	1	N	6.241	0.099	15	0.0066		

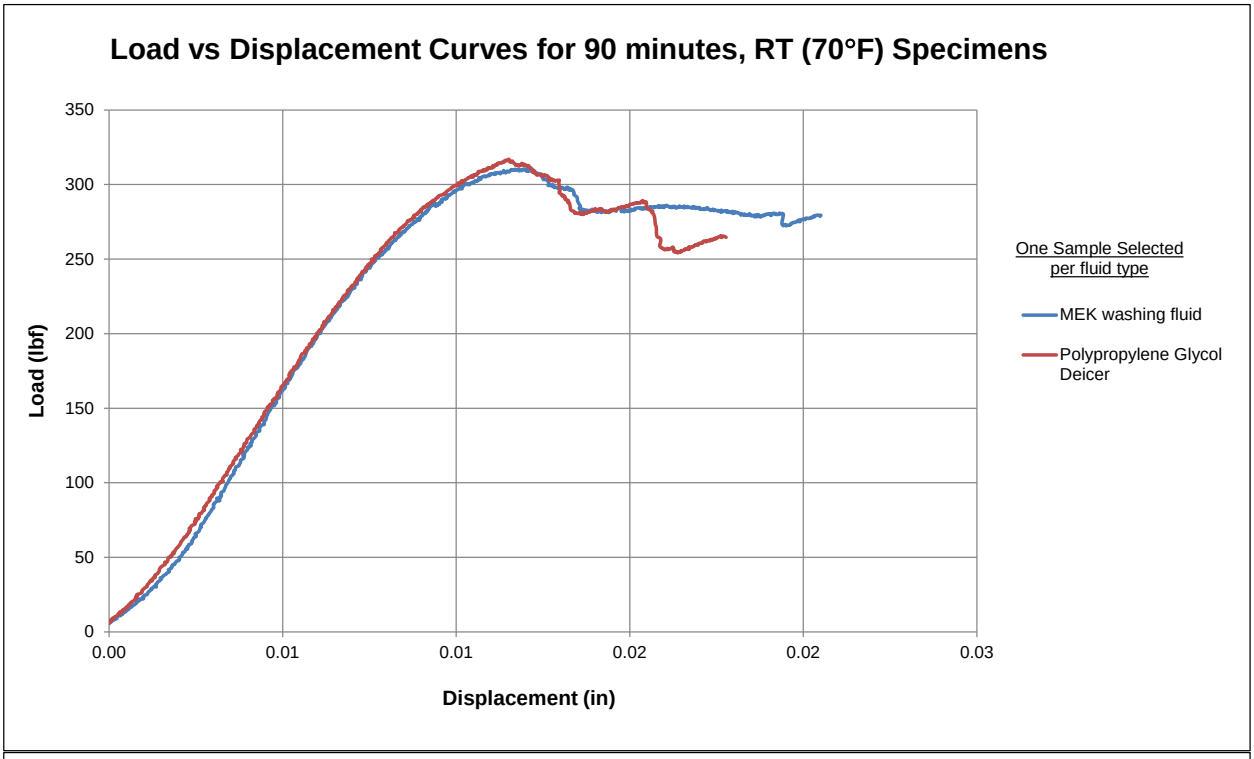

ETA SBS Fluid Sensitivity Comparison
Short-Beam Strength [ksi]
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000
0.000
7.744
7.361
7.425
7.447
7.989
7.631
6.955
8.014
6.889
7.713
7.456
7.417
6.904
7.487
6.135
a b c d e f g h i j k t r A M
Type of Fluid
Same Environment Short-Beam Strength Without Fluid (ksi) (ETA)
Worst Case Environment Short-Beam Strength (ksi) (ETW)
Average Short-Beam Strength With Fluid (ksi)

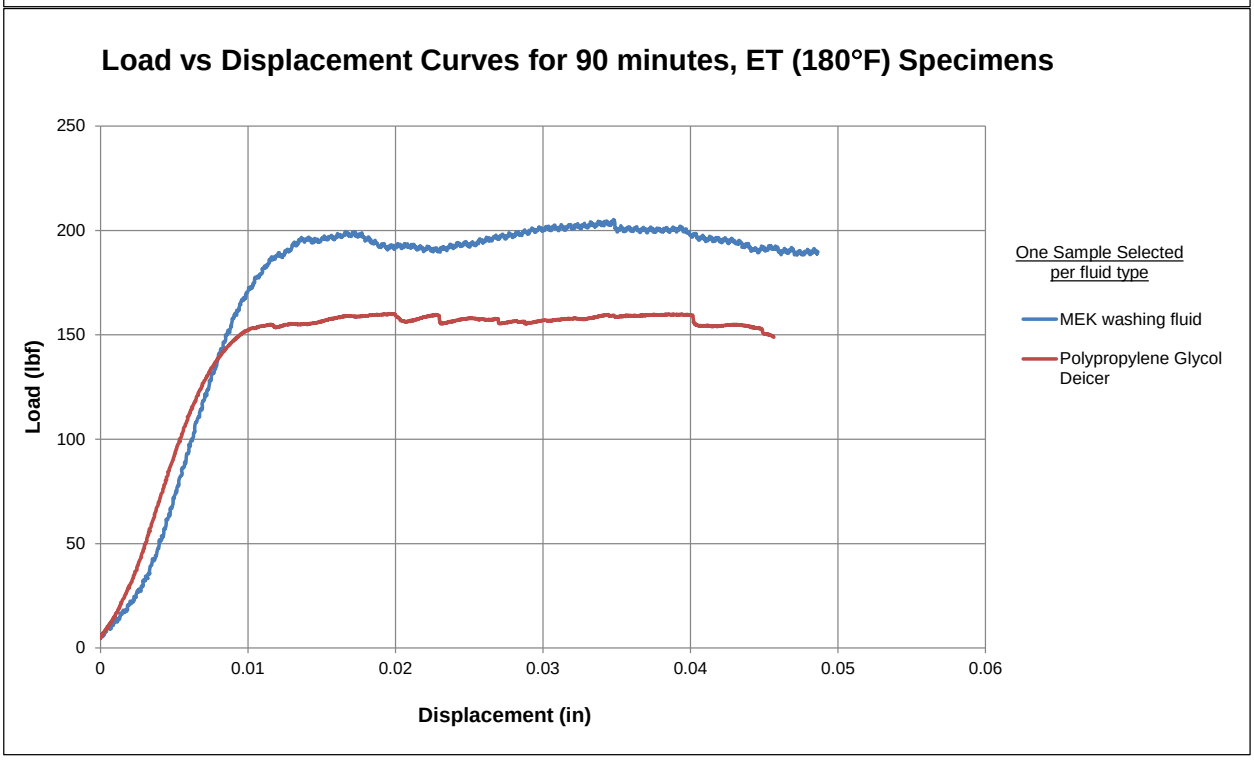

% Change in Strength with Respect to ETA
Percentage Change in Strength [%]
10.000
5.000
0.000
-5.000
-10.000
-15.000
-20.000
3.427
-1.680
-0.825
-0.536
6.699
1.920
-7.106
7.042
-7.983
3.011
-0.414
-0.941
-7.792
0.000
-18.06
a b c d e f g h i j k t r A M
Type of Fluid
% Change in Strength with Respect to ETA

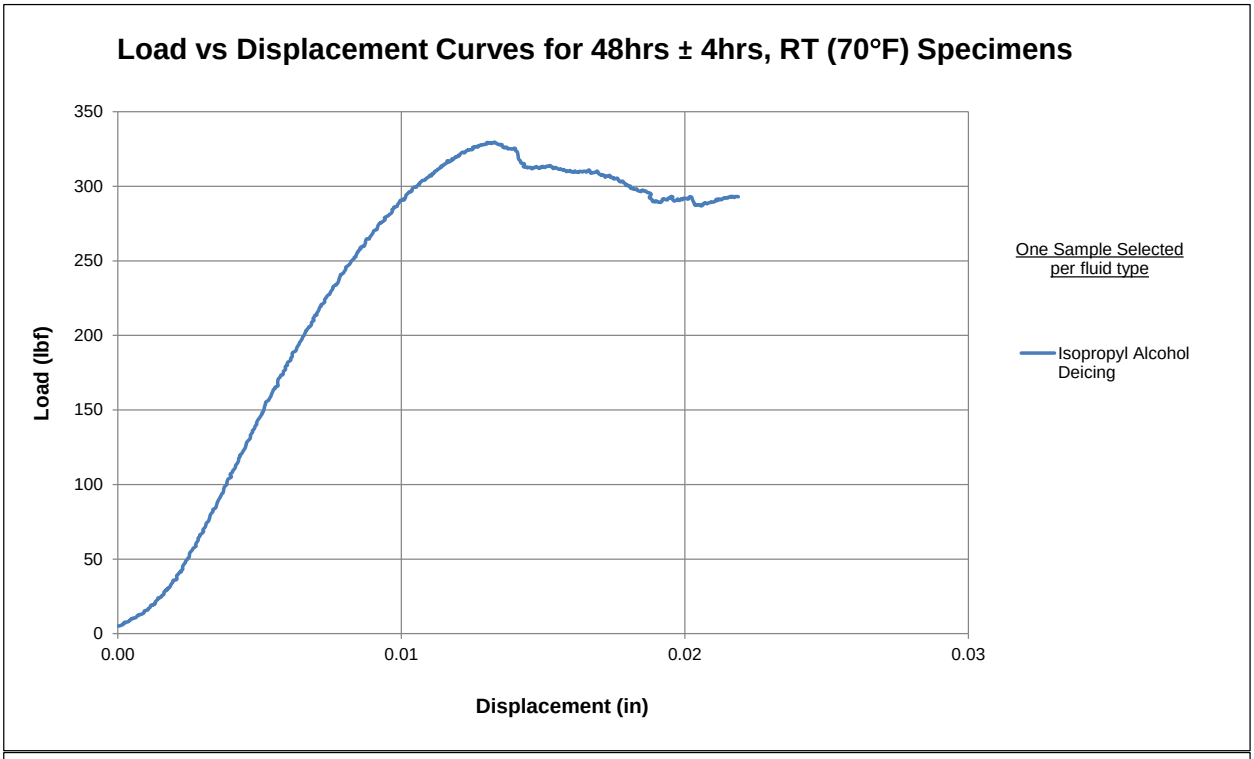
7.3 Load Displacement Curves

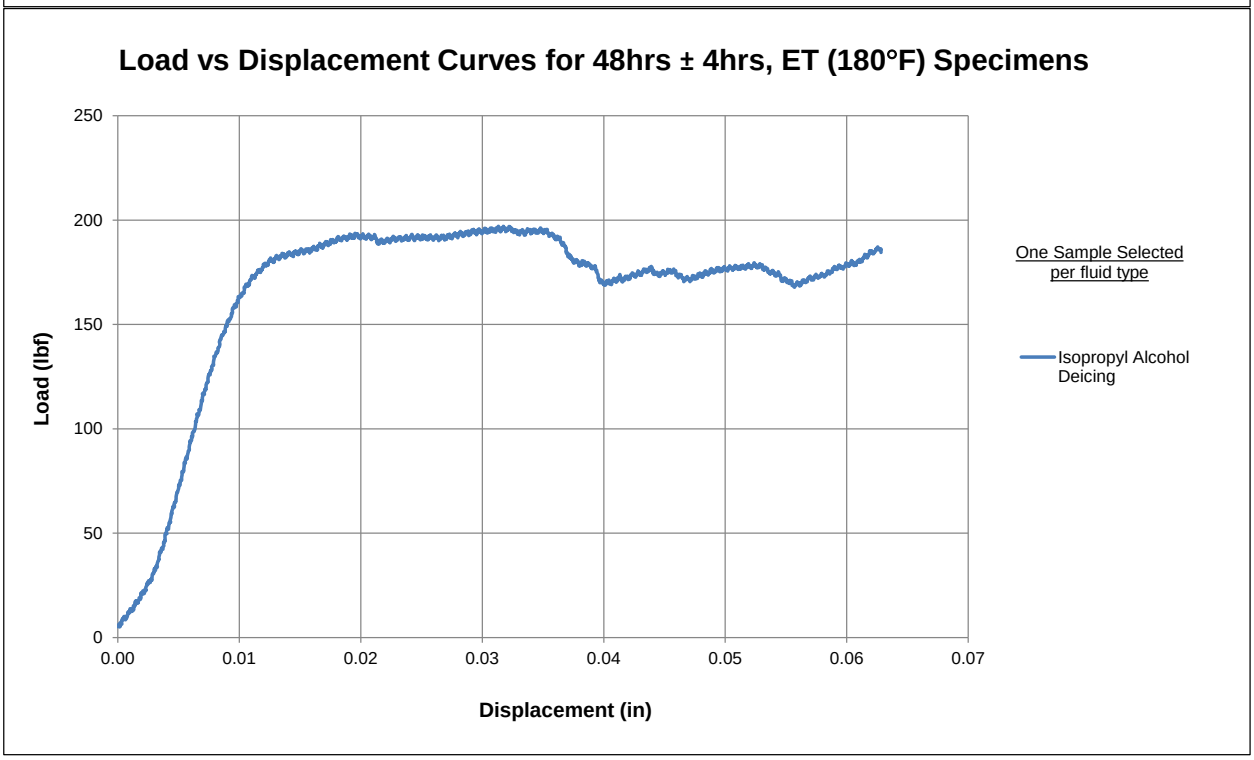


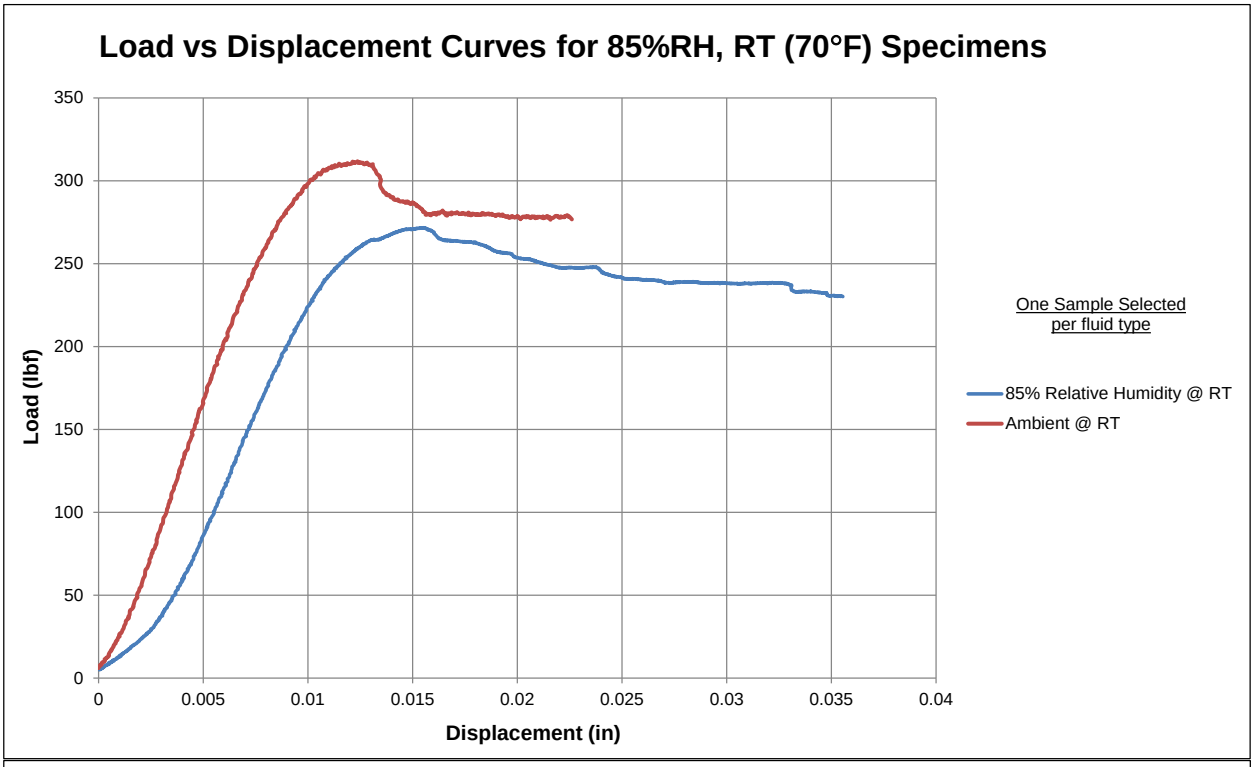


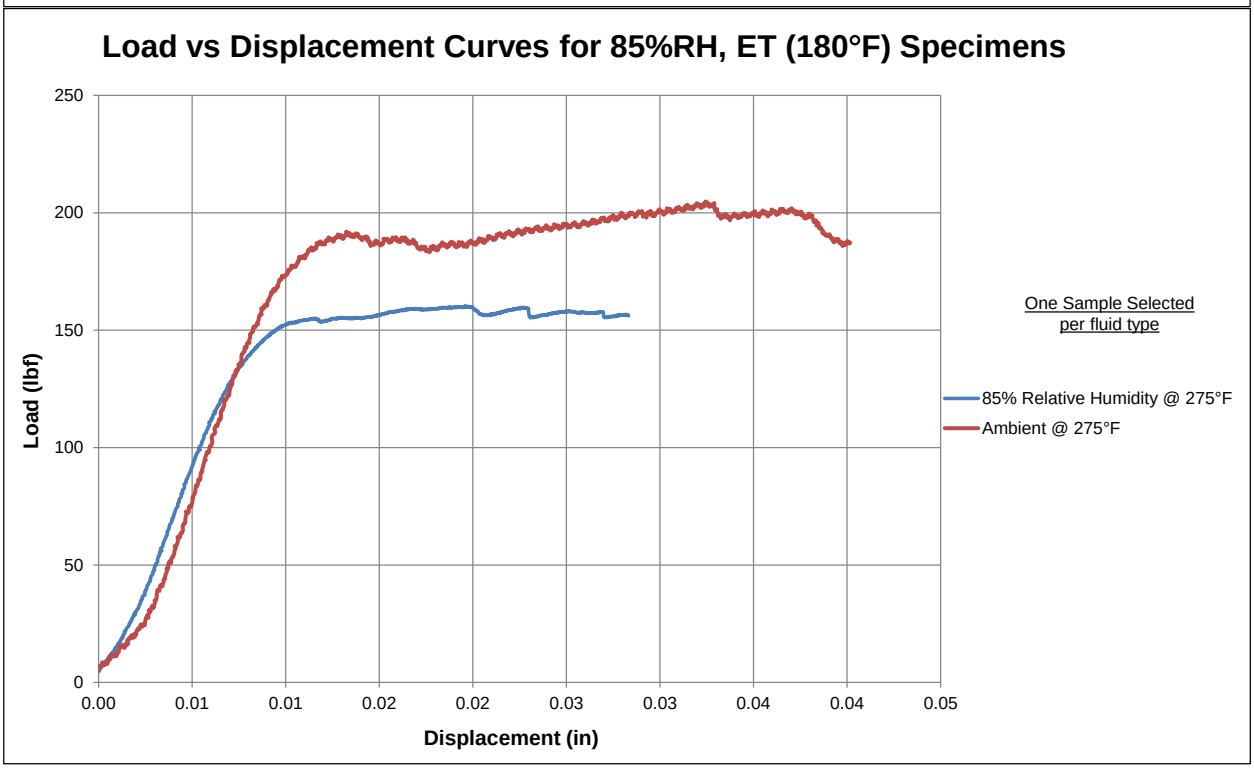

Load vs Displacement Curves for 90 minutes, RT (70°F) Specimens
Load (lbf)
350
300
250
200
150
100
50
0
0.00
0.01
0.01
0.02
0.02
0.03
Displacement (in)
One Sample Selected per fluid type
MEK washing fluid
Polypropylene Glycol Deicer


Load vs Displacement Curves for 90 minutes, ET (180°F) Specimens
Load (lbf)
250
200
150
100
50
0
0
0.01
0.02
0.03
0.04
0.05
0.06
Displacement (in)
One Sample Selected per fluid type
MEK washing fluid
Polypropylene Glycol Deicer


Load vs Displacement Curves for 48hrs ± 4hrs, RT (70°F) Specimens
Load (lbf)
350
300
250
200
150
100
50
0
0.00
0.01
0.02
0.03
Displacement (in)
One Sample Selected per fluid type
Isopropyl Alcohol Deicing

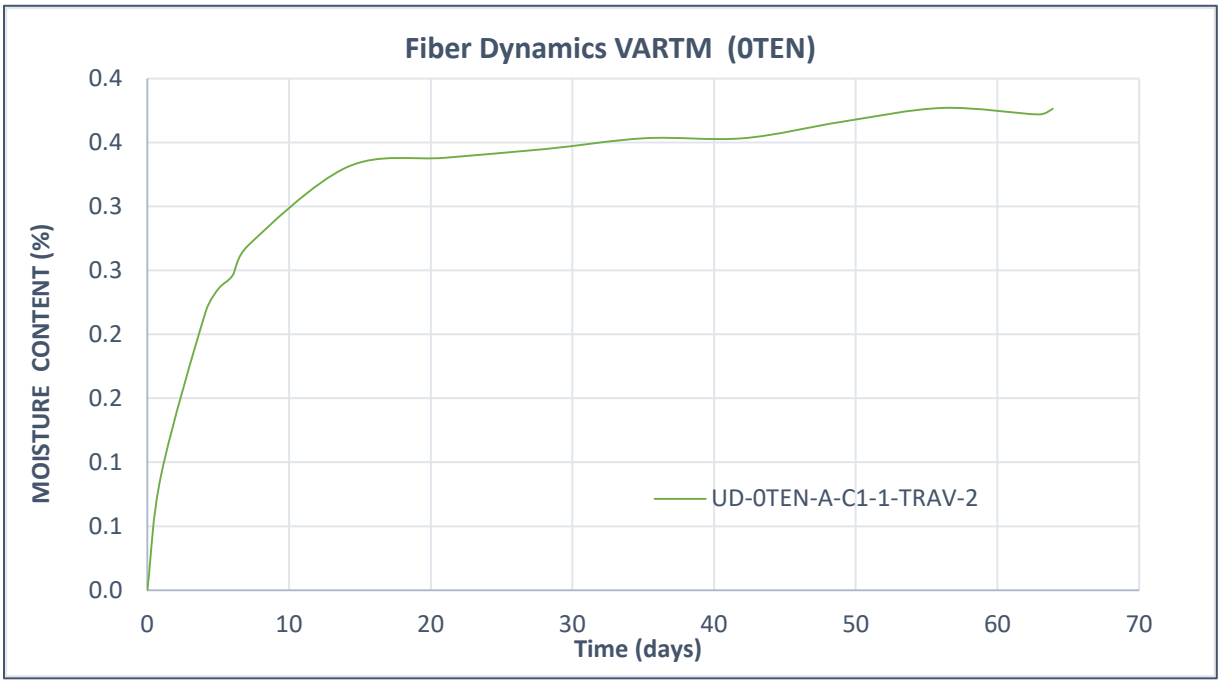

Load vs Displacement Curves for 48hrs ± 4hrs, ET (180°F) Specimens
Load (lbf)
250
200
150
100
50
0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
Displacement (in)
One Sample Selected per fluid type
Isopropyl Alcohol Deicing


Load vs Displacement Curves for 85%RH, RT (70°F) Specimens
Load (lbf)
350
300
250
200
150
100
50
0
0
0.005
0.01
0.015
0.02
0.025
0.03
0.035
0.04
Displacement (in)
One Sample Selected per fluid type
85% Relative Humidity @ RT
Ambient @ RT

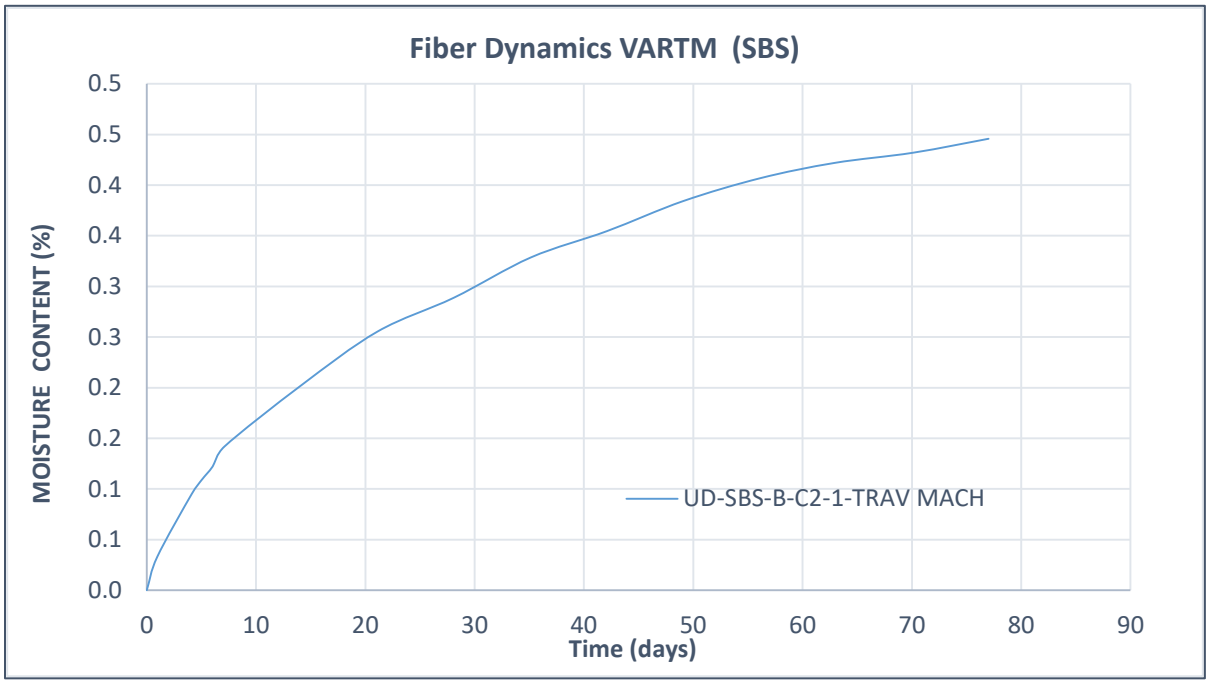

Load vs Displacement Curves for 85%RH, ET (180°F) Specimens
Load (lbf)
250
200
150
100
50
0
0.00
0.01
0.01
0.02
0.02
0.03
0.03
0.04
0.04
0.05
Displacement (in)
One Sample Selected per fluid type
85% Relative Humidity @ 275°F
Ambient @ 275°F

8. Moisture Conditioning Charts

8.1 UD-0Ten - Thinnest Panel



8.2 UD-SBS- Thickest Panel



9. DMA Results

9.1 Ambient DMA Data

DMA Results Summary Fiber Dynamics VARTM DMA Ambient - Biaxial				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
BA-0CLC-B-C2-1-DMA-D-1	158.0	316.3	170.0	337.9
BA-0CLC-B-C2-1-DMA-D-2	157.9	316.2	170.2	338.4
BA-90CLC-A-C2-1-DMA-D-1	162.7	324.9	174.5	346.1
BA-IPS-A-C1-1-DMA-D-1	155.5	311.8	172.7	342.9
BA-IPS-A-C1-1-DMA-D-1	152.9	307.1	169.9	337.9
BA-IPS-A-C1-1-DMA-D-2	153.4	308.1	170.4	338.6
Average	156.7	314.1	171.3	340.3
Standard Deviation	3.650	6.570	1.894	3.410

DMA Results Summary Fiber Dynamics VARTM DMA Ambient- Bidiagonal				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
BD-0CLC-C-C1-1-DMA-D-1	157.6	315.6	170.7	339.2
BD-0CLC-C-C1-1-DMA-D-2	158.2	316.8	170.8	339.4
BD-0TEN-A-C1-1-DMA-D-1	162.7	324.8	176.2	349.2
BD-0TEN-A-C1-1-DMA-D-2	162.5	324.5	175.8	348.4
BD-IPS-A-C1-1-DMA-D-1	155.7	312.3	174.8	346.6
BD-IPS-A-C1-1-DMA-D-2	156.1	313.0	174.6	346.2
BD-IPS-C-C2-1-DMA-D-1	150.7	303.3	167.9	334.2
BD-IPS-C-C2-1-DMA-D-2	150.6	303.0	168.7	335.7
Average	156.8	314.2	172.4	342.4
Standard Deviation	4.580	8.243	3.296	5.933

DMA Results Summary

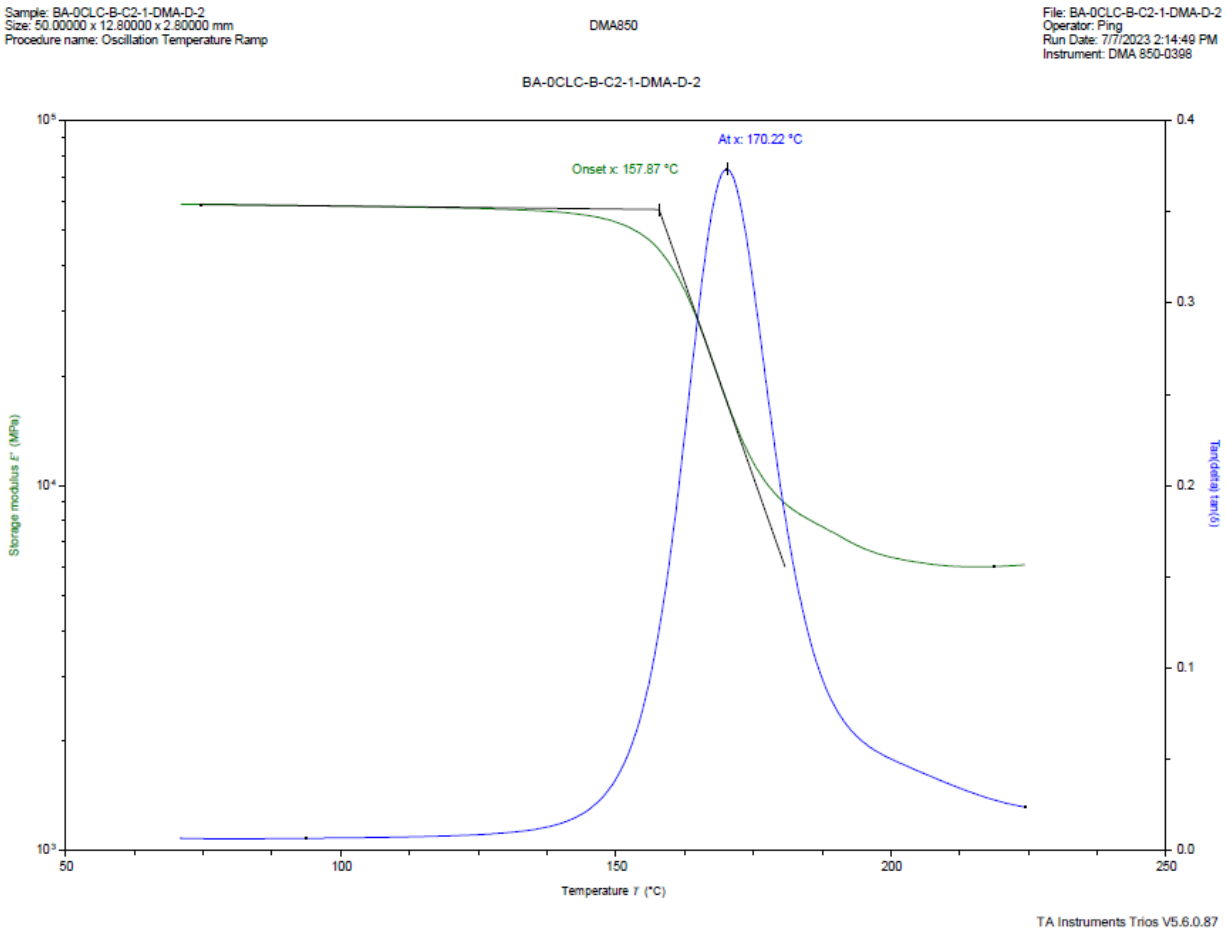
Fiber Dynamics VARTM DMA Ambient - UD Woven

Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
UD-0CLC-C-C1-1-DMA-D-1	164.5	328.0	175.8	348.5
UD-0CLC-C-C1-1-DMA-D-2	165.2	329.3	175.9	348.6
UD-SBS-A-C1-1-DMA-D-1	166.1	331.1	178.6	353.4
UD-SBS-A-C1-1-DMA-D-2	164.6	328.3	178.1	352.6
UD-SBS-A-C1-1-DMA-D-3	165.1	329.1	178.3	352.9
UD-UNC0-B-C1-1-DMA-D-1	162.8	325.1	174.7	346.5
UD-UNC0-B-C1-1-DMA-D-2	162.8	325.1	174.5	346.1
UD-UNT0-A-C2-1-DMA-D-1	166.2	331.2	179.0	354.1
UD-UNT0-A-C2-1-DMA-D-2	166.1	331.0	179.2	354.5
UD-UNT0-B-C1-1-DMA-D-1	164.4	328.0	176.8	350.3
UD-UNT0-B-C1-1-DMA-D-2	165.3	329.5	176.5	349.7
UD-UNT0-C-C1-1-DMA-D-1	164.0	327.1	176.6	349.8
UD-UNT0-C-C1-1-DMA-D-2	163.0	325.5	176.0	348.8
Average	164.6	328.3	176.9	350.4
Standard Deviation	1.206	2.171	1.563	2.814

DMA Results Summary

Fiber Dynamics VARTM DMA Ambient - DRNF & DRWF

Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
M-FHC3-A-C2-1-DMA-D-1	158.5	317.3	172.2	341.9
M-FHC3-A-C2-1-DMA-D-2	160.3	320.5	173.0	343.5
M-FHT2-E-C2-1-DMA-D-1	157.4	315.3	171.3	340.4
M-FHT2-E-C2-1-DMA-D-2	159.1	318.3	171.6	340.9
M-OHC1-A-C1-1-DMA-D-1	157.3	315.2	170.9	339.6
M-OHC1-A-C1-1-DMA-D-2	156.6	313.9	171.4	340.4
M-OHC1-D-C2-1-DMA-D-1	158.3	317.0	171.0	339.9
M-OHC1-D-C2-1-DMA-D-2	157.9	316.2	170.8	339.4
M-OHC2-D-C1-1-DMA-D-1	158.8	317.8	171.7	341.1
M-OHC2-D-C1-1-DMA-D-2	158.6	317.4	171.8	341.2
M-OHT2-E-C1-1-DMA-D-1	157.6	315.6	171.4	340.4
M-OHT2-E-C1-1-DMA-D-2	157.4	315.2	171.5	340.7
M-SSB1-A-C1-1-DMA-D-1	162.6	324.6	175.6	348.1
M-SSB1-A-C1-1-DMA-D-2	162.5	324.5	175.7	348.2
M-UNC1-B-C2-1-DMA-D-1	158.1	316.5	171.8	341.2
M-UNC1-B-C2-1-DMA-D-2	159.0	318.2	172.3	342.2
M-UNC1-C-C2-1-DMA-D-1	166.6	331.9	179.0	354.1
M-UNC1-C-C2-1-DMA-D-2	166.3	331.3	178.7	353.7
M-UNC2-B-C2-1-DMA-D-1	159.2	318.5	173.3	344.0
M-UNC2-B-C2-1-DMA-D-2	159.2	318.5	172.9	343.3
M-UNT1-B-C1-1-DMA-D-1	157.8	316.1	171.6	340.9
M-UNT1-B-C1-1-DMA-D-2	157.4	315.2	171.6	340.9
M-UNT1-C-C1-1-DMA-D-1	159.1	318.4	172.3	342.1
M-UNT1-C-C1-1-DMA-D-2	159.9	319.8	172.9	343.2
Average	159.4	318.9	172.8	343.0
Standard Deviation	2.622	4.720	2.251	4.052


Sample: BA-0CLC-B-C2-1-DMA-D-2
Size: 50.00000 x 12.80000 x 2.80000 mm
Procedure name: Oscillation Temperature Ramp
DMA850
File: BA-0CLC-B-C2-1-DMA-D-2
Operator: Ping
Run Date: 7/7/2023 2:14:49 PM
Instrument: DMA 850-0398
BA-0CLC-B-C2-1-DMA-D-2
At x: 170.22 °C
Onset x: 157.87 °C
Storage modulus E' (MPa)
Tan(delta) tan(δ)
Temperature T (°C)
TA Instruments Trios V5.6.0.87

9.2 Wet DMA Data

DMA Results Summary Fiber Dynamics VARTM DMA Wet- Biaxial				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
BA-0CLC-B-C2-1-DMA-W-1	139.2	282.5	151.1	304.0
BA-0CLC-B-C2-1-DMA-W-2	139.4	282.9	151.4	304.6
BA-90CLC-A-C2-1-DMA-W-1	141.0	285.8	152.8	307.0
BA-IPS-A-C1-1-DMA-W-1	130.2	266.4	150.4	302.8
BA-IPS-A-C1-1-DMA-W-1	130.3	266.5	151.5	304.7
BA-IPS-A-C1-1-DMA-W-2	129.6	265.2	150.3	302.5
Average	134.9	274.9	151.3	304.3
Standard Deviation	5.420	9.757	0.891	1.603

DMA Results Summary Fiber Dynamics VARTM DMA Wet- Bidiagonal				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
BD-0CLC-C-C1-1-DMA-W-1	139.0	282.2	152.3	306.1
BD-0CLC-C-C1-1-DMA-W-2	139.2	282.6	152.1	305.8
BD-0TEN-A-C1-1-DMA-W-1	141.4	286.6	154.4	309.8
BD-0TEN-A-C1-1-DMA-W-2	139.6	283.2	153.2	307.7
BD-IPS-A-C1-1-DMA-W-1	129.8	265.6	151.7	305.1
BD-IPS-A-C1-1-DMA-W-2	129.2	264.5	149.8	301.6
BD-IPS-C-C2-1-DMA-W-1	128.7	263.6	150.0	301.9
BD-IPS-C-C2-1-DMA-W-2	129.6	265.3	150.1	302.3
Average	134.6	274.2	151.7	305.1
Standard Deviation	5.673	10.211	1.644	2.959

DMA Results Summary

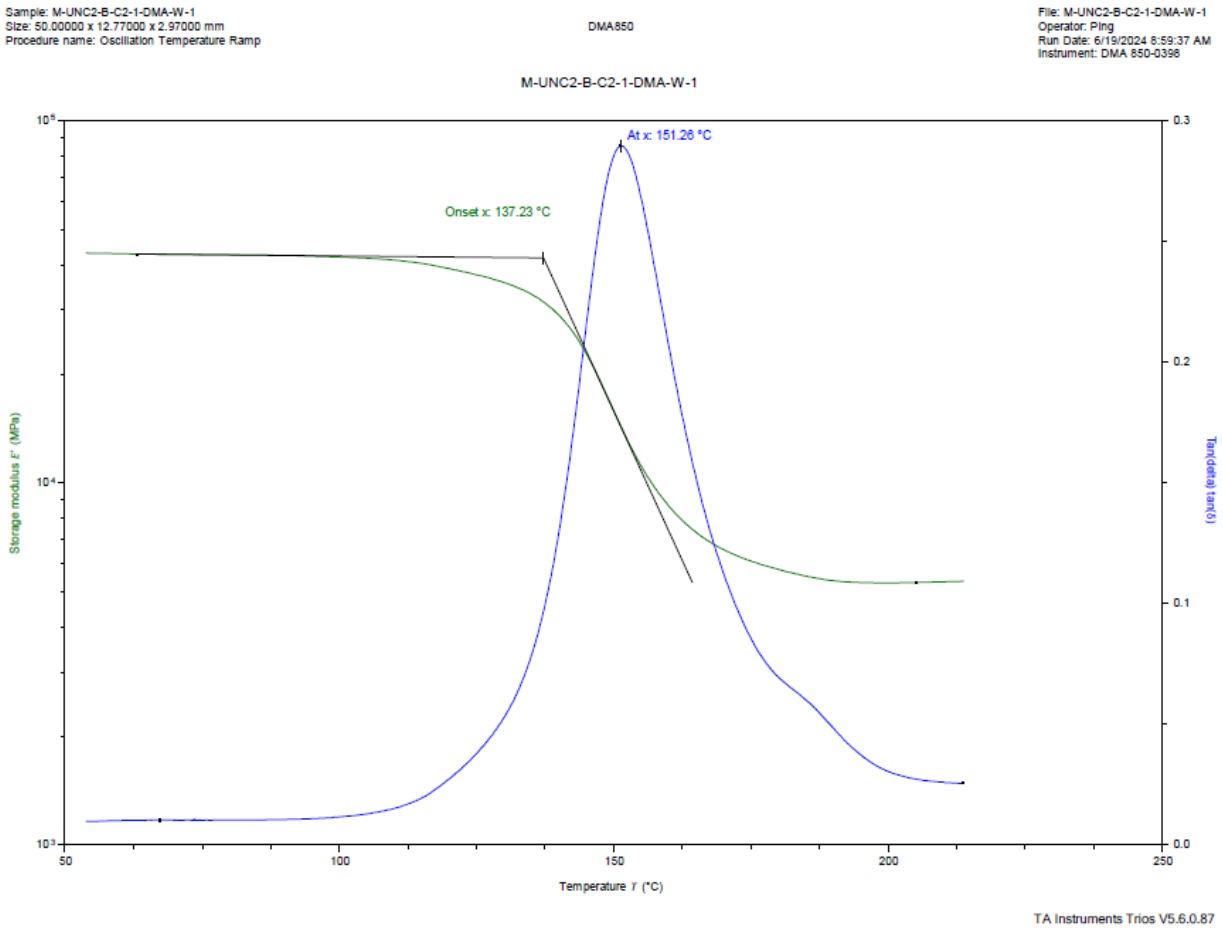
Fiber Dynamics VARTM DMA Wet- UD Woven

Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
UD-0CLC-C-C1-1-DMA-W-1	143.4	290.1	156.1	313.0
UD-0CLC-C-C1-1-DMA-W-2	143.3	289.9	155.8	312.4
UD-SBS-A-C1-1-DMA-W-1	142.7	288.8	155.8	312.5
UD-SBS-A-C1-1-DMA-W-2	141.8	287.2	156.1	313.0
UD-UNC0-B-C1-1-DMA-W-1	141.2	286.1	153.7	308.7
UD-UNC0-B-C1-1-DMA-W-2	142.1	287.7	154.6	310.3
UD-UNT0-A-C2-1-DMA-W-1	141.5	286.7	155.3	311.5
UD-UNT0-A-C2-1-DMA-W-2	142.3	288.1	154.8	310.6
UD-UNT0-B-C1-1-DMA-W-1	141.9	287.4	154.5	310.2
UD-UNT0-B-C1-1-DMA-W-2	142.2	288.0	154.6	310.2
UD-UNT0-C-C1-1-DMA-W-1	141.5	286.6	154.5	310.0
UD-UNT0-C-C1-1-DMA-W-2	142.8	289.0	154.7	310.4
Average	142.2	288.0	155.0	311.1
Standard Deviation	0.710	1.277	0.759	1.367

DMA Results Summary

Fiber Dynamics VARTM DMA Wet- DRNF & DRWF

Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T_g [°C]	T_g [°F]	T_g [°C]	T_g [°F]
M-FHC3-A-C2-1-DMA-W-1	139.1	282.4	152.3	306.1
M-FHC3-A-C2-1-DMA-W-2	137.1	278.7	151.0	303.8
M-FHT2-E-C2-1-DMA-W-1	137.6	279.8	151.3	304.4
M-FHT2-E-C2-1-DMA-W-2	136.8	278.3	151.1	303.9
M-OHC1-A-C1-1-DMA-W-1	137.9	280.2	151.7	305.1
M-OHC1-A-C1-1-DMA-W-2	139.1	282.4	152.7	306.8
M-OHC1-D-C2-1-DMA-W-1	136.6	277.9	150.2	302.4
M-OHC1-D-C2-1-DMA-W-2	135.9	276.5	150.3	302.5
M-OHC2-D-C1-1-DMA-W-1	137.3	279.2	151.0	303.7
M-OHC2-D-C1-1-DMA-W-2	137.5	279.4	151.1	303.9
M-OHT2-E-C1-1-DMA-W-1	136.0	276.8	150.8	303.4
M-OHT2-E-C1-1-DMA-W-2	136.4	277.6	150.8	303.4
M-SSB1-A-C1-1-DMA-W-1	140.6	285.1	153.5	308.3
M-SSB1-A-C1-1-DMA-W-2	139.0	282.1	153.2	307.8
M-UNC1-B-C2-1-DMA-W-1	138.0	280.3	152.1	305.7
M-UNC1-B-C2-1-DMA-W-2	138.4	281.0	152.5	306.6
M-UNC1-C-C2-1-DMA-W-1	143.1	289.6	157.1	314.7
M-UNC1-C-C2-1-DMA-W-2	143.0	289.5	157.0	314.5
M-UNC2-B-C2-1-DMA-W-1	137.2	279.0	151.3	304.3
M-UNC2-B-C2-1-DMA-W-2	137.1	278.8	151.4	304.6
M-UNT1-B-C1-1-DMA-W-1	138.2	280.7	152.8	307.1
M-UNT1-B-C1-1-DMA-W-2	137.2	279.0	152.2	305.9
M-UNT1-C-C1-1-DMA-W-1	139.2	282.6	153.2	307.7
M-UNT1-C-C1-1-DMA-W-2	138.6	281.6	152.7	306.8
Average	138.2	280.8	152.2	306.0
Standard Deviation	1.873	3.372	1.751	3.152


Sample: M-UNC2-B-C2-1-DMA-W-1
Size: 50.00000 x 12.77000 x 2.97000 mm
Procedure name: Oscillation Temperature Ramp
DMA850
File: M-UNC2-B-C2-1-DMA-W-1
Operator: Ping
Run Date: 6/19/2024 8:59:37 AM
Instrument: DMA 850-0398
M-UNC2-B-C2-1-DMA-W-1
At x: 151.26 °C
Onset x: 137.23 °C
Storage modulus E' (MPa)
Tan(delta) tan(δ)
Temperature T (°C)
TA Instruments Trios V5.6.0.87

10. Deviations

1. Jet fuel was used instead of Low Lead Aviation Fuel.
2. Due to resin shortage, some test method/panels were fabricated with different batches. Batch D is a combination of Batch B fibers with Batch A resin and batch E is a combination of Batch C fibers with Batch A resin.
3. ILT had fewer coupons tested than that specified in the test plan because the panel was not sufficiently sized.