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Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC Qualification Material Property Data Report

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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 Volume 1—Composite Materials Handbook for Polymer Matrix Composites Volume 1. 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, Hexcel M91/IM8-GP 6K ZB Fabric PW 145gsm with 40% RC Material Allowables Statistical Analysis Report NCP-RP-2024-011. The qualification material was procured to NCAMP Material Specification NMS 191/2 Rev A dated January 12th, 2026 The qualification test panels were cured in accordance with NCAMP Process Specification NPS 81910 Rev B dated October 13th, 2025 using baseline cure cycle "C" with a cure pressure of 35psi. The NCAMP Test Plan NTP M911Q1 Rev B 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 Volume 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 Volume 1 are adequate for the given program.

Aircraft companies should not use the data published in this report without specifying NCAMP Material Specification NMS 191/2. NMS 191/2 may have additional requirements that are listed in its prepreg 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 191/2.* NMS 191/2 is a free, publicly available, non-proprietary aerospace industry material specification.

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1.2 Symbols Used

ν_{12}^t	major Poisson's ratio, tension
$\mu\epsilon$	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_{1cu}	ultimate compressive strength, longitudinal / warp direction
F_{1tu}	ultimate tensile strength, longitudinal / warp direction
F_{2cu}	ultimate compressive strength, transverse / fill direction
F_{2tu}	ultimate tensile strength, transverse / fill direction
$F_{12}^{s5\% \text{ strain}}$	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
ETW	elevated temperature wet
Gr/Ep	graphite/epoxy
norm	normalized
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 NIAR–Specimen Naming Format

All panels and specimens shall be uniquely identified by an 11 code reference system, cross referenced with descriptive identification information as follows: This Document Number-Prepregger ID-Material Code-Fabricator ID-Intended Test Type-Batch ID-Cure Cycle ID-Test Panel ID-Actual Test Type-Test Condition-Specimen Number. For example, NTPM911Q1-HXL-H40-NIAR-WT-A-C1-2-FT-RTA-3 denotes Prepregger: Hexcel, Prepreg Name: Hexcel M91/IM8-GP 6K ZB fabric PW 145gsm 40%, Fabricator: NIAR, Intended Test Type: Warp Tension, Prepreg Batch: A, Cure Cycle: C1, Test Panel ID: 2, Actual Test Method: Fill Tension, Test Condition: Room Temperature Ambient, and Specimen Number: 3. The testing lab may assign a separate identification code but must reference the 11 code reference system and uniquely identify the panels and specimens.

Panels to be manufactured are listed in Appendix 2 of NTP M911Q1 Rev B and will follow the same I.D. above, inherently omitting the actual test type, test condition and specimen number.

The above parameters can have the following values:

Prepregger ID
Hexcel: HXL

Material Code	Prepreg Name
H40	Hexcel M91/IM8-GP-6K ZB PW 145gsm 40%

Fabricator ID (Company that layup, bag, and cure the test panels)
NIAR: National Institute for Aviation Research (Batch A, B and C)
FACC: FACC Operations GmbH (Batch D)
SKS: Sekisui Aerospace (Batch E)

Intended and Actual Test Types	
WT: Warp tension	UNT1, UNT2....: Un-notched Tension Layup 1, Layup 2, etc.
FT: Fill Tension	OHT1, OHT2....: Open Hole Tension Layup 1, Layup 2, etc.
WC: Warp Compression	OHC1, OHC2....: Open Hole Compression Layup 1 etc.
FC: Fill Compression	FHT1, FHT2....: Filled Hole Tension Layup 1, Layup 2 etc.
IPST: In Plane Shear Tension	FHC1, FHC2....: Filled Hole Compression Layup 1, Layup 2 etc.
IPSV: In- Plane Shear V-Notch	SBS: Short Beam Strength
SBS: Short Beam Strength	SSB1, SSB2....: Single Shear Pin Bearing Layup 1, Layup 2.....etc.
LT: Longitudinal Tension	CAI1: Compression After Impact Layup 1, Layup 2, ... etc.
TT: Transverse Tension	FSL: Freezer and Out Life Verification
LC: Longitudinal Compression	DMA: Dynamic Mechanical Analysis
TC: Transverse Compression	DSC: Differential Scanning Calorimetry
UNC0: Unnotched Compression	TGA: Thermogravimetric Analysis
ILT: Interlaminar Tension	SBSFS: Short Beam Strength for Fluid Sensitivity
QI: Quasi Isotropic	SSB1D1, SSB1E1, SSB1T1....: Single Shear Pin Bearing Layup 1 protruding edge distance altered.....etc.
SSB1C1, SSB2C1....: Single Shear Pin Bearing Layup 1 countersink, Layup 2 countersink.....etc.	UNC1, UNC2....: Un-notched Compression Layup 1, Layup 2, etc.

(Note that the layup numbers 1, 2, 3 and 4 correspond to those designated as “quasi isotropic,” “soft”, “hard”, and “-45/+45” respectively. In addition, the 0°/90° cross-plyed laminates used for the unidirectional materials only are designated “Layup 0”).

Batch ID: A, B, C, D, E, F etc. (to be cross referenced with prepreg batch numbers as shown in appendix 3)

Cure Cycle ID: C1, C2, C3, etc.: Cure Cycle 1, 2, 3, etc.

Note: Cure Cycle ID numbers 1, 2, 3, etc. in Appendix 2 of the test plan are for reference only. Actual numbers may vary depending on the actual cure cycle runs.

Test Panel ID: 1,2,3,4,5,6,7,8,9,A,B,C..... etc. (restart from 1 for every Cure Cycle ID)

Test Condition: CTA, RTA, ETW, etc. (test conditions as defined in section 1.5.5)

FS11RT, FS12RT, FS13RT, etc. (fluid sensitivity test - see Table 1-4)

D, W (dry, wet conditions for DMA)

Specimen Number: 1,2,3,4,5,6,7,8,9,A,B,C..... etc.

1.4 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-16 – 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 D3518/D3518M-18 – Standard Test Method for In-Plane Shear Response of Polymer Matrix Composite Materials by Tensile Test of a $\pm 45^\circ$ Laminate In-Plane Shear Strength and Modulus
- ASTM D5379/D5379M-19 – Standard Test Method for Shear Properties of Composite Materials by the V-Notched Beam Method
- ASTM D5766/D5766M-11 – Standard Test Method for Open Hole Tensile Strength of Polymer Matrix Composite Laminates
- ASTM D5961/D5961M-17 – Standard Test Method for Bearing Response of Polymer Matrix Composite Laminates
- ASTM D6415/D6415M-06a – Standard Test Method for Measuring the Curved Beam Strength of a Fiber-Reinforced Polymer-Matrix Composite
- ASTM D6484/D6484M-20 – Standard Test Method for Open-Hole Compressive Strength of Polymer Matrix Composite Laminates
- ASTM D6641/D6641M-16e2 – Standard Test Method for Determining the Compressive Properties of Polymer Matrix Composite Laminates Using a Combined Loading Compression (CLC) Test Fixture
- ASTM D6742/D6742M-17 – Standard Practice for Filled-Hole Tension and Compression Testing of Polymer Matrix Composite Laminates
- ASTM D7028-07(2024) – Standard Test Method for Glass Transition Temperature (DMA Tg) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)
- ASTM D7136/D7136M-17 – Standard Test Method for Measuring the Damage Resistance of a Fiber-Reinforced Polymer Matrix Composite to a Drop-Weight Impact Event
- ASTM D7137/D7137M-17 – Standard Test Method for Compressive Residual Strength Properties of Damaged Polymer Matrix Composite Plates

1.5 Methodology

1.5.1 Process Definition

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 and Figure 1-2 unless otherwise specified.

For each combination of test, batch and condition, the specimens were selected from a minimum of two separate panels cured separately as shown in Figure 1-1 and Figure 1-2. Panels 1, 3, 5, 7 and 9 were cured in a single cure cycle. Panels 2, 4, 6, 8 and 10 were cured in a single cure cycle separate from panels 1, 3, 5, 7 and 9. The term "cure cycle" means a single run through the autoclave or oven, with same processing parameters. The specimen selection methodology in Figure 1 is presented in "Number of Batches x Number of Cure Process x Number of Specimens" format throughout this document. Specifically, Figure 1-1 represents 5x2x5/6 and Figure 1-2 depicts a 3x2x3 specimen selection methodology. The 5x2x5/6 selection method was used for the lamina level testing and the 3x2x3 selection method for the laminate level testing and the IPST.

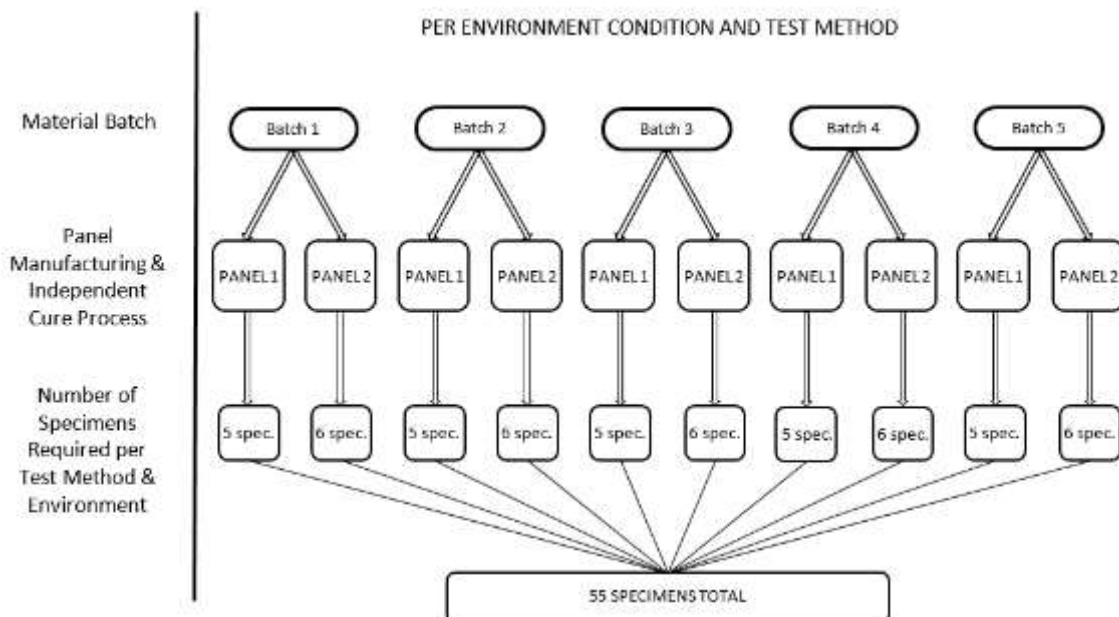


Figure 1-1: Specimen Selection Methodology for Lamina Level Testing

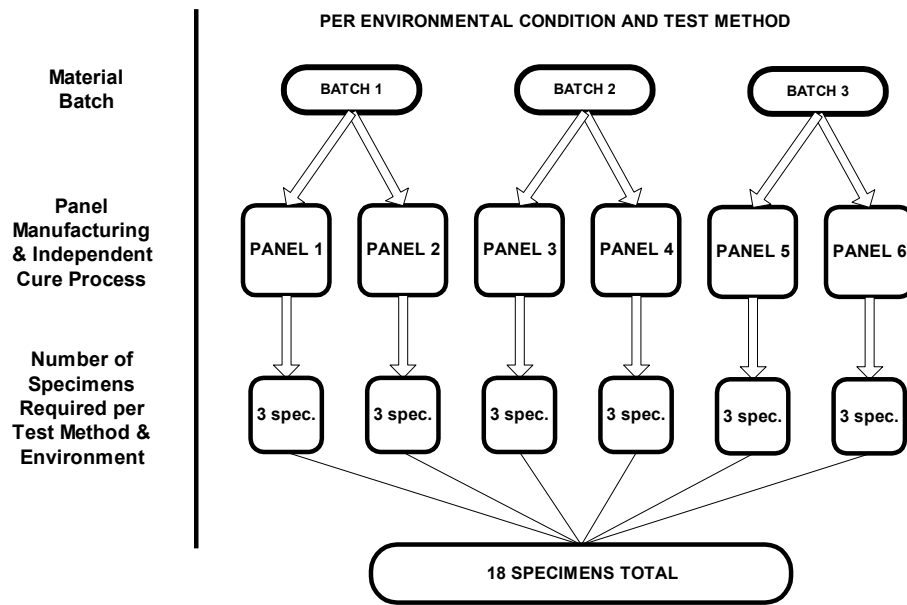


Figure 1-2: Specimen Selection Methodology for Laminate Level Testing and IPST

All panels were fabricated in accordance with NCAMP Process Specification NPS 81910 Rev B using baseline cure cycle “C” with a cure pressure of 35psi.

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 1-3.

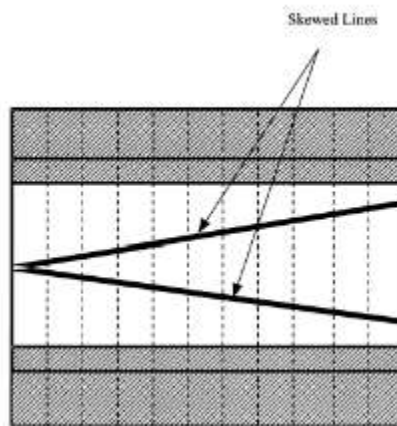


Figure 1-3: Specimen Traceability Line

1.5.2 Specimen & Testing Details

1.5.2.1 Tabbing

No tabs were used for this program

1.5.2.2 Specimen Dimensions & Test Configuration

For SBS specimens, a span of 4T was used where T was the average thickness of six qualification panels. The same T was used to compute the width and length of the specimen.

For filled-hole tension tests, the fasteners were installed to 85±5 in-lb. For filled-hole compression and bearing tests, the fasteners were installed to 30±5 in-lb. Fasteners were installed after moisture conditioning. These torque values are above the prevailing torque. The prevailing torque was measured and recorded for each specimen.

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

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

Test Method	Bolt	Countersink Washer (Head-Side)	Flat Washer (Nut-Side)	Nut
FHT1	NASM21297-04004	MS21206-C4	MS21206-4	MS21084L04
FHT2				
FHT3				
FHC1	NASM21297-04004	MS21206-C4	MS21206-4	MS21084L04
FHC2				
FHC3				
SSB1, D=0.19", e=0.38	NAS6703	NAS1149E0332R	NAS1149E0363R	NAS1291C3M
SSB3, D=0.19", e=0.38				
SSB4, D=0.19", e=0.38				
SSB1E1, D=0.19", e=0.57				
SSB1T1, D=0.19", e=0.38				
SSB1C1, CSK 100°, D=0.19", e=0.38	NAS8703			
SSB3C1, CSK 100°, D=0.19", e=0.38				
SSB1D1, , D=0.25", e=0.5	NAS6704	NAS1149E0463R	NAS1149E0466R	NAS1291C4M

1.5.2.3 Specimen Strain Device Used

Corresponding Gage ID can be obtained from Appendix 1 of NTP M911Q1 Rev B.

Uniaxial gages were used on:

- CTA, RTA and ETW conditions of WC. First 2 RTA coupons had back-to-back gages to observe for bending
- CTA, RTA and ETW conditions of FC. First 2 RTA coupons had back-to-back gages to observe for bending
- CTA and RTA condition of FT
- CTA, RTA and ETW conditions of UNT1, UNT2 and UNT3
- RTA and ETW conditions of UNC1, UNC2 and UNC3. First 2 RTA coupons had back-to-back gages to observe for bending
- RTA condition of OHC1, OHC2 and OHC3. First 2 coupons had back-to-back gages to observe for bending
- One unimpacted CAI for balancing

Biaxial gages were used on:

- CTA, RTA and ETW conditions of IPST and IPSV
- CTA, RTA and ETW conditions of Warp Tension

Uniaxial Extensometers were used on:

- ETW Fill Tension specimens
- ETW condition of OHC1, OHC2 and OHC3

1.5.3 Test Matrix

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

Layup	Test Type Code	Test Type and Direction	Property	Number of Batches x No. of Panels x No. of Specimens Test Temperature/Moisture Condition		
				CTA -65°F	RTA 70°F	ETW 180°F
[0] ₁₅	WT	ASTM D3039 0° Tension	Strength, Modulus and Poisson's Ratio	5x2x5/6 (3)	5x2x5/6 (3)	5x2x5/6 (3)
[0] ₁₅	WC	ASTM D6641 0° Compression	Strength and Modulus	5x2x5/6 (3)	5x2x5/6 (1)(3)	5x2x5/6 (3)
[90] ₁₅	FT	ASTM D3039 90° Tension	Strength and Modulus	5x2x5/6 (3)	5x2x5/6 (3)	5x2x5/6 (3)
[90] ₁₅	FC	ASTM D6641 90° Compression	Strength and Modulus	5x2x5/6 (3)	5x2x5/6 (3) (1)	5x2x5/6 (3)
[45/-45] _{3s}	IPST	ASTM D3518 In-Plane Shear Tension (2)	Strength and Modulus	3x2x3	3x2x3	3x2x3
[0] ₂₄	IPSV	ASTM D5379 In-Plane Shear V-notch	Strength and Modulus	5x2x5/6 (3)	5x2x5/6 (3)	5x2x5/6 (3)
[0] ₂₄	SBS	ASTM D2344 Short Beam	Strength	5x2x5/6 (3)	5x2x5/6 (3)	5x2x5/6 (3)

Table 1-1: Lamina Level Test Matrix

- Note 1: Back-to-back strain gages were used on the first two specimens. If no buckling was observed, the remaining modulus specimens require a strain gage on one side of the specimen only
- Note 2: Gripped (tab) length is 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: The total number of specimens for the 5x2x5/6 matrix is 55 specimens, with 5 specimens from cure cycle 1 and 6 specimens from cure cycle 2.

Table 1-2 below summarizes the laminate level tests. The layup angles 0°, 45°, -45°, and 90° refer to the orientation of the warp/longitudinal fiber direction. The laminate stacking sequences tested are not specific to any design but are intended to capture a typical range of laminate stiffness.. 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.

Table 1-2 also emphasizes those properties and test condition combinations believed to constitute the worst case, which in general is cold 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	ETW
(25/50/25 - QI) UNT1	ASTM D3039 Un-notched Tension [45/0/-45/90]2S	Strength & modulus	3x2x3	3x2x3	3x2x3
(10/80/10) UNT2	ASTM D3039 Un-notched Tension [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength & modulus	3x2x3	3x2x3	3x2x3
(40/20/40) UNT3	ASTM D3039 Un-notched Tension [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	Strength & modulus	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) UNC1	ASTM D6641 Un-notched Compression [45/0/-45/90]2S	Strength & modulus		3x2x3 (4)	3x2x3
(10/80/10) UNC2	ASTM D6641 Un-notched Compression [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength & modulus		3x2x3 (4)	3x2x3
(40/20/40) UNC3	ASTM D6641 Un-notched Compression [0/90/45/0/90/0/90/-45/0/90]S	Strength & modulus		3x2x3 (4)	3x2x3
(25/50/25 - QI) OHT1	ASTM D5766 Open Hole Tension (1) [45/0/-45/90]2S	Strength	3x2x3	3x2x3	3x2x3
(10/80/10) OHT2	ASTM D5766 Open Hole Tension (1) [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength	3x2x3	3x2x3	3x2x3
(40/20/40) OHT3	ASTM D5766 Open Hole Tension (1) [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	Strength	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) FHT1	ASTM D6742 Filled Hole Tension (2) [45/0/-45/90]2S	Strength	3x2x3	3x2x3	3x2x3
(10/80/10) FHT2	ASTM D6742 Filled Hole Tension (2) [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength	3x2x3	3x2x3	3x2x3
(40/20/40) FHT3	ASTM D6742 Filled Hole Tension (2) [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	Strength	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) OHC1	ASTM D6484 Open Hole Compression (1) [45/0/-45/90/45/0/-45/90/-45/90]S	Strength		3x2x3 (4)	3x2x3
(10/80/10) OHC2	ASTM D6484 Open Hole Compression (1) [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength		3x2x3 (4)	3x2x3
(40/20/40) OHC3	ASTM D6484 Open Hole Compression (1) [0/90/45/90/0/0/90/-45/90/0]S	Strength		3x2x3 (4)	3x2x3
(25/50/25 - QI) FHC1	ASTM D6742 Filled Hole Compression (2) [45/0/-45/90/45/0/-45/90/-45/90]S	Strength		3x2x3	3x2x3
(10/80/10) FHC2	ASTM D6742 Filled Hole Compression (2) [45/-45/0/45/-45/45/-45/90/45/-45]S	Strength		3x2x3	3x2x3
(40/20/40) FHC3	ASTM D6742 Filled Hole Compression (2) [0/90/45/90/0/0/90/-45/90/0]S	Strength		3x2x3	3x2x3
(25/50/25 - QI) SSB1	ASTM D5961 Single Shear Bearing (3) [45/0/-45/90/45/0]S	Strength & Deformation		3x2x3	3x2x3

(40/20/40) SSB3	ASTM D5961 Single Shear Bearing (3) [0/90/45/0/90/0]S	Strength & Deformation		3x2x3	3x2x3
(0/100/0) SSB4	ASTM D5961 Single Shear Bearing (3) [45/-45/45/-45/45/-45]S	Strength & Deformation		3x2x3	3x2x3
(25/50/25 - QI) SSB1 C1	ASTM D5961 Single Shear Bearing (5) [45/0/-45/90/45/0]S	Strength & Deformation		3x2x3	3x2x3
(40/20/40) SSB3 C1	ASTM D5961 Single Shear Bearing (5) [0/90/45/0/90/0]S	Strength & Deformation		3x2x3	3x2x3
(25/50/25 - QI) SSB1 E1	ASTM D5961 Single Shear Bearing (6) [45/0/-45/90/45/0]S	Strength & Deformation		3x2x3	3x2x3
(25/50/25 - QI) SSB1 D1	ASTM D5961 Single Shear Bearing (8) [45/0/-45/90/45/0]S	Strength & Deformation		3x2x3	3x2x3
(25/50/25 - QI) SSB1 T1	ASTM D5961 Single Shear Bearing (9) [45/0/-45/90]S	Strength & Deformation		3x2x3	3x2x3
(100/0/0) ILT	ASTM D6415 Interlaminar Tension [0]21	Strength	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) CA11	ASTM D7136 & D7137 Compression After Impact (1500 in.lb/in) (7) [45/0/-45/90]3S	Strength		1x1x6	

Table 1-2: Laminate Level Test Matrix

- Note 1: Open-hole configuration: 0.25" hole diameter, 1.5 inch width.
- Note 2: Filled-hole test configuration: 0.25" diameter, see section 1.5.2.2 for fastener callout, 1.5" width.
- Note 3: Single shear bearing test configuration: 0.19": hole diameter, 0.76" width, e=0.38, see section 1.5.2.2 for fastener callout, e/D=2, ASTM D5961/D5961M-23 Procedure C
- Note 4: Back-to-back strain gages needed on the first two specimens. If no buckling is observed, the remaining modulus specimens will require strain gage on one side of the specimens only. Appropriate extensometer may be used in place of the strain gage.
- Note 5: Single shear bearing test configuration: 0.19": hole diameter, 0.76" width, e=0.38, see section 1.5.2.2 for fastener callout, e/D=2, ASTM D5961/D5961M-23 Procedure C . Countersink angle 100 degrees. Use NAS8803 (or equivalent size, reduced shear head fastener)
- Note 6: Single shear bearing test configuration: 0.19": hole diameter, 1.14" width, e=0.57, see section 1.5.2.2 for fastener callout, e/D=3, ASTM D5961/D5961M-23 Procedure C
- Note 7: Back-to-back strain gages on two locations (a total of four strain gages) are needed on the first specimen. The specimen should be equivalent to the test specimens in terms of material, layup, and geometry, shall be un-damaged. Alternatively, an instrumented metallic plate, equivalent in thickness to the test specimens to within ± 0.25 mm [± 0.010 in.], may be used.
- Note 8: Single shear bearing test configuration: 0.25": hole diameter, 1" width, e=0.5, see section 1.5.2.2 for fastener callout, e/D=2, ASTM D5961/D5961M-23 Procedure C
- Note 9: Single shear bearing test configuration: 0.19": hole diameter, 0.76" width, e=0.38, see section 1.5.2.2 for fastener callout, e/D=2, ASTM D5961/D5961M-23 Procedure C

1.5.4 Cured Laminate Physical Testing

The properties in Table 1-3 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)	Replicates per Panel
Cured Ply Thickness	ASTM D3171-22	All data from mechanical test specimens
Laminate Density	ASTM D792-20	3
Fiber Volume, % by Volume	ASTM D3171-22 (Note 2)	3
Resin Content, % by Weight	ASTM D3171-22 (Note 2)	3
Void Content, % by Volume	ASTM D3171-22	3
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 1-3: Physical Testing Matrix

- Note 1: Where the applicable 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: Use Method I with solvents.
- Note 3: 5 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.

1.5.5 Environmental Conditioning

The following tests were performed by the NIAR Composites Laboratory under the supervision of NCAMP.

CTA = -65±5°F, ambient

RTA = 70±10°F, room temperature ambient

ETW = 180±5°F, wet

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, specimens were kept at ambient laboratory condition, 60°F to 80°F and 65%RH (maximum) for 48 hours minimum prior to test.

For wet conditioning, specimens were dried at 160°F±5°F for 120-130 hours minimum before being conditioned to equilibrium at 160°F±5°F and 85% ± 5%. Effective moisture equilibrium was achieved when the average moisture content of the traveler specimen changed 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.

1.5.6 Non-ambient Testing

The environmental chamber was of adequate size so that all test fixtures and load frame grips were contained within the chamber.

For elevated temperature testing, the environmental 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 $\pm 5^{\circ}\text{F}$ 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 $\pm 5^{\circ}\text{F}$ 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. A minimum of one specimen or representative coupon was used to measure the moisture loss for every combination of test temperature and stacking sequence. For tabbed specimens, representative coupons without tabs and having the same number of plies was 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.

1.5.7 Fluid Sensitivity Screening

Table 1-4 lists the requirements for fluid sensitivity screening, which requires ASTM D2344 Short Beam Strength testing on $[0^\circ]_{24}$ lamina level specimens dried at $160^\circ\text{F} \pm 5^\circ\text{F}$ for 120-130 hours minimum before being 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. Since load versus displacement curves are influenced by test machine and fixture compliance, all the tests were performed with the identical machine and fixture, through a single setup. 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.

<u>Extended Contact:</u>	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	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
Aeroshell 750 turbine oil (Def Stan 91-98)	90 days min. @ 70°F±10°F	70°F	FS19RT
	90 days min. @ 70°F±10°F	180°F	FS19ET
<u>Short Duration Contact:</u>			
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
Aeroshell 750 turbine oil (Def Stan 91-98)	90 minutes min. @ 70°F±10°F	70°F	FS24RT
	90 minutes min. @ 70°F±10°F	180°F	FS24ET
<u>Control Tests:</u>			
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	Dry per section 1.5.75	70°F	FS32RT
	Dry per section 1.5.75	180°F	FS32ET
85% Relative Humidity	Per section 1.5.5	70°F	FS33RT
	Per section 1.5.5	180°F	FS33ET

Table 1-4: Fluid Sensitivity Matrix

1.5.8 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 90° tensile strength and modulus (unidirectional only), 90° 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 0.0061 inches has been used as the nominal cured ply thickness (CPT) for normalization purpose. This has been done at the request of the material supplier. The following normalization formula was used:

$$\text{Normalized Value} = \text{Measured Value} \times \text{Measured CPT} / \text{Nominal CPT}.$$

For Hexcel M91/IM8-GP 6K ZB Fabric the anticipated CPT was 0.006100 inches. The average as measured CPT of the qualification panels was 0.006214 inches. The lowest and highest CPT measured were 0.005748 inches and 0.006876 inches respectively.

1.5.9 Inspection Verification

The 3-batch laminate (and IPST) and 5-batch lamina 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. The inspection documentation with required approval signatures are stored in hard copy as well as electronically.

1.5.10 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.

2. Test Results

2.1 Lamina Level Test Summary

Prepreg Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC Material Specification: NMS 191/2 Process Specification: NPS 81910 Fabric: IM8-GP 6K ZB Resin: M91 Hexply				Lamina Properties Summary Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		
DMA Tg (dry): 383.3 °F		DMA Tg (wet): 296.3 °F		Tg METHOD: DMA (ASTM D7028)		
Prepreg Batch	Batch #1 92M0081680	Batch #2 92M0081681	Batch #3 92M0084557	Batch #4 92M0088097	Batch #5 92M0088098	
Date of fiber manufacture	1/22/2021	5/5/2022	10/23/2022	10/23/2022	2/24/2023	
Date of resin manufacture	6/10/2022	9/14/2022	4/19/2023	5/1/2023	5/25/2023	
Date of prepreg manufacture	7/18/2022	9/20/2022	4/27/2023	5/4/2023	6/6/2023	
Date of composite manufacture	12/15/2022-10/10/2023					
Date of testing	May 2024 - August 2024					
Date of data submittal	9/9/2024					
LAMINA MECHANICAL PROPERTY SUMMARY Data reported as: Normalized & Measured (Normalized by CPT=0.006100 inch)						
Properties	CTA (-65°F) Mean		RTA (70°F) Mean		ETW (180°F) Mean	
	Normalized	Measured	Normalized	Measured	Normalized	Measured
F ₁ ^{tu} [ksi]	162.6	161.6	178.3	176.8	179.5	178.3
E ₁ ^t [Msi]	11.85	11.77	11.72	11.63	11.88	11.78
ν ₁₂ ^t		0.04836		0.04125		0.03875
*F ₂ ^{tu} [ksi]	156.8	155.8	171.7	170.5	176.1	174.8
*E ₂ ^t [Msi]	11.86	11.79	11.93	11.86	11.62	11.54
F ₁ ^{cu} [ksi]	127.1	125.9	114.5	113.3	83.68	83.05
E ₁ ^c [Msi]	10.71	10.62	10.76	10.65	11.03	10.94
*F ₂ ^{cu} [ksi]	128.4	127.1	112.0	110.6	84.03	83.11
*E ₂ ^c [Msi]	10.71	10.61	10.78	10.64	11.14	11.02
(D3518) F ₁₂ ^{s0.2%} [ksi]		10.12		7.388		4.770
(D3518) F ₁₂ ^{5%strain} [ksi]		18.25		13.03		7.779
(D3518) G ₁₂ ^s [Msi]		0.8065		0.6602		0.4687
(D5379) F ₁₂ ^{s0.2%} [ksi]		11.63		8.361		5.328
(D5379) F ₁₂ ^{5%strain} [ksi]		20.36		14.88		9.073
(D5379) F ₁₂ ^{su} [ksi]		29.48		24.02		15.45
(D5379) G ₁₂ ^s [Msi]		0.8103		0.6993		0.5470
SBS [ksi]		17.05		13.46		7.772

*Batch 4 data removed with an assignable cause. A replacement batch is being made.

Table 2-1: Lamina Summary Data

2.2 Laminate Level Test Summary

Prepreg Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC Material Specification: NMS 191/2 Process Specification: NPS 81910 Fabric: IM8-GP 6K ZB Resin: M91 Hexply				Laminate Properties Summary Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC			
DMA Tg (dry): 383.3 °F		DMA Tg (wet): 296.3 °F		Tg METHOD: DMA (ASTM D7028)			
Prepreg Batch		Batch #1	Batch #2	Batch #3	Batch #4	Batch #5	
Date of fiber manufacture		92M0081680	92M0081681	92M0084557	92M0088097	92M0088098	
Resin Lot		1/22/2021	5/5/2022	10/23/2022	10/23/2022	2/24/2023	
Date of prepreg manufacture		6/10/2022	9/14/2022	4/19/2023	5/1/2023	5/25/2023	
Date of composite manufacture		7/18/2022	9/20/2022	4/27/2023	5/4/2023	6/6/2023	
Date of testing		12/15/2022-10/10/2023					
Date of data submittal		May 2024 - August 2024					
Date of data submittal		9/9/2024					
Laminate Mechanical Properties Summary Data Reported as Normalized & Measured (Normalized by CPT=0.006100 inch)							
Layup		25/50/25 (Quasi)		10/80/10 (Soft)		40/20/40 (Hard)	
Properties	Test Condition	Normalized	Measured	Normalized	Measured	Normalized	Measured
UNT Strength [ksi]	CTA (-65°F)	125.3	123.3	78.80	77.17	145.4	142.5
	RTA (70°F)	132.2	129.9	75.28	73.83	156.6	153.6
	ETW (180°F)	128.0	125.7	65.77	64.47	157.8	154.6
UNT Modulus [Msi]	CTA (-65°F)	8.363	8.228	5.434	5.322	10.56	10.35
	RTA (70°F)	8.208	8.067	5.224	5.124	10.51	10.31
	ETW (180°F)	8.076	7.931	4.811	4.715	10.41	10.20
UNC Strength [ksi]	RTA (70°F)	90.75	88.67	63.48	61.89	102.9	100.3
	ETW (180°F)	67.10	65.75	46.83	45.65	79.19	77.22
UNC Modulus [Msi]	RTA (70°F)	7.597	7.423	4.956	4.833	9.542	9.291
	ETW (180°F)	7.643	7.488	4.673	4.561	9.791	9.548
OHT Strength [ksi]	CTA (-65°F)	56.35	55.20	61.16	59.88	65.03	63.72
	RTA (70°F)	61.15	59.85	55.62	54.33	72.06	70.56
	ETW (180°F)	64.02	62.74	43.41	42.51	78.47	76.86
OHC Strength [ksi]	RTA (70°F)	45.53	44.55	43.35	42.27	45.69	44.58
	ETW (180°F)	35.50	34.54	31.84	31.00	37.72	36.72
FHT Strength [ksi]	CTA (-65°F)	69.91	68.57	67.84	66.43	79.51	77.95
	RTA (70°F)	72.78	71.43	62.56	61.26	81.85	80.00
	ETW (180°F)	74.04	72.51	51.03	50.05	82.57	80.69
FHC Strength [ksi]	RTA (70°F)	89.11	86.76	65.97***	64.47***	93.33	91.40
	ETW (180°F)	67.24***	66.17***	49.37***	48.68***	70.78	69.04
SSB Proc. C, D=0.19", e=0.38, Initial Peak Strength [ksi] SSB	RTA (70°F)					106.3	104.0
	ETW (180°F)	119.5	117.0			97.96	96.93
SSB Proc. C, D=0.19", e=0.38, 2% Offset Strength [ksi] SSB	RTA (70°F)	122.4	121.2			105.6	104.5
	ETW (180°F)	107.4	106.3			95.44	94.44
SSB Proc. C, D=0.19", e=0.38, Ultimate Strength [ksi] SSB	RTA (70°F)	150.2	148.8			113.5	112.3
	ETW (180°F)	128.8	127.5			103.7	102.7

SSB Proc. C, D=0.19", e=0.38, 2% Offset Strength [ksi] SSB4*	RTA (70°F)	65.61	64.96		
	ETW (180°F)	45.77	45.40		
SSB Proc. C, D=0.19", e=0.38, Ultimate strength [ksi] SSB4*	RTA (70°F)	107.6	106.5		
	ETW (180°F)	73.03	72.45		
SSB Proc. C, Countersink 100° D=0.19", e=0.38, Initial Peak Strength [ksi] SSB C1	RTA (70°F)			85.99	84.09
	ETW (180°F)				
SSB Proc. C, Countersink 100° D=0.19", e=0.38, 2% Offset Strength [ksi] SSB C1	RTA (70°F)	90.45	89.32	84.64	83.12
	ETW (180°F)	80.39	80.10	70.52	69.93
SSB Proc. C, Countersink 100° D=0.19", e=0.38, Ultimate Strength [ksi] SSB C1	RTA (70°F)	100.5	99.22	91.19	89.60
	ETW (180°F)	83.15	82.36	73.67	72.71
SSB Proc. C, D=0.19", e=0.57, Initial Peak Strength [ksi] SSB1E1	RTA (70°F)				
	ETW (180°F)	119.0	116.7		
SSB Proc. C, D=0.19", e=0.57, 2% Offset Strength [ksi], SSB1E1	RTA (70°F)	124.1	122.7		
	ETW (180°F)	109.2	107.9		
SSB Proc. C, D=0.19", e=0.57, Ultimate Strength [ksi], SSB1E1	RTA (70°F)	156.5	154.7		
	ETW (180°F)	132.5	131.0		
SSB Proc. C, D=0.25", e=0.5, Initial Peak Strength [ksi] SSB1D1	RTA (70°F)				
	ETW (180°F)	101.7	100.4		
SSB Proc. C, D=0.25", e=0.5, 2% Offset Strength [ksi], SSB1D1	RTA (70°F)	121.5	120.2		
	ETW (180°F)	102.2	101.2		
SSB Proc. C, D=0.25", e=0.5, Ultimate Strength [ksi], SSB1D1	RTA (70°F)	147.1	145.4		
	ETW (180°F)	118.9	117.7		
SSB Proc. C, D=0.19", e=0.38, Initial Peak Strength [ksi] SSB1T1	RTA (70°F)	82.93	81.35		
	ETW (180°F)				
SSB Proc. C, D=0.19", e=0.38, 2% Offset Strength [ksi], SSB1T1	RTA (70°F)	104.4	103.0		
	ETW (180°F)	114.3	112.7		
SSB Proc. C, D=0.19", e=0.38, Ultimate Strength [ksi], SSB1T1	RTA (70°F)	143.1	141.3		
	ETW (180°F)	131.5	129.7		
CBS [lbs] **	CTA (-65°F)		417.0		
	RTA (70°F)		347.9		
	ETW (180°F)		195.0		
ILT [ksi] **	CTA (-65°F)		15.14		
	RTA (70°F)		12.71		
	ETW (180°F)		7.088		
CAI Strength[ksi], (1500 in.lb/in)	RTA (70°F)	42.27	41.54		

* ASTM D5961 SSB4 layup [45/-45/45/-45/45/-45]S, (0/100/0)

** The actual layup for ILT is [0]21, (100/0/0).

***In some cases of FHC>UNC, UNC data is recommended for design. The FHC data is for informational purposes only and is not appropriate to be used for design.

Table 2-2: Laminate Summary Data

2.3 Fluid Sensitivity Test Summary

2.3.1 Short Beam Strength Fluid Sensitivity Test (SBSFS)

Fluid Sensitivity Screening Short-Beam Strength Properties (SBSFS)--RT (70°F) Strength Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC			
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Exposure	Type of Fluid	Fluid Code	Average Strength (ksi)
90 days min @ 70°F ± 10F	100 Low Lead Aviation Fuel (ASTM D910)	FS11RT	12.99
	Jet A Fuel	FS12RT	13.15
	MIL-PRF-5606 Hydraulic Oil	FS13RT	13.18
	MIL-PRF-83282 Hydraulic Oil	FS14RT	13.25
	MIL-PRF-7808 Engine Oil	FS15RT	13.17
	MIL-PRF-23699, Class STD Engine Oil	FS16RT	13.00
	Sea Water (ASTM D1141)	FS17RT	12.60
	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	FS18RT	13.27
	Aeroshell 750 turbine oil (Def Stan 91-98)	FS19RT	13.13
	Distilled water	FS31RT	12.40
90 mins @ 70°F ± 10F	MEK washing fluid	FS21RT	13.34
	Polypropylene Glycol Deicer	FS22RT	13.40
	Aeroshell 750 turbine oil (Def Stan 91-98)	FS24RT	12.90
48±4 hours @70°F±10°F	Isopropyl Alcohol Deicing Agent (TT-I-735)	FS23RT	13.25
Per section 7 Test Plan	Dry	FS32RT	13.02
	85% Relative Humidity	FS33RT	11.70

Table 2-3 SBS Fluid Sensitivity Summary Data – RT (70°F)

Fluid Sensitivity Screening
Short-Beam Strength Properties (SBSFS)--ET (180°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Exposure	Type of Fluid	Fluid Code	Average Strength (ksi)
90 days min @ 70°F ± 10F	100 Low Lead Aviation Fuel (ASTM D910)	FS11ET	10.42
	Jet A Fuel	FS12ET	10.25
	MIL-PRF-5606 Hydraulic Oil	FS13ET	10.18
	MIL-PRF-83282 Hydraulic Oil	FS14ET	9.810
	MIL-PRF-7808 Engine Oil	FS15ET	10.34
	MIL-PRF-23699, Class STD Engine Oil	FS16ET	10.04
	Sea Water (ASTM D1141)	FS17ET	9.147
	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	FS18ET	10.32
	Aeroshell 750 turbine oil (Def Stan 91-98)	FS19ET	9.767
	Distilled water	FS31ET	8.837
90 mins @ 70°F ± 10F	MEK washing fluid	FS21ET	10.27
	Polypropylene Glycol Deicer	FS22ET	10.25
	Aeroshell 750 turbine oil (Def Stan 91-98)	FS24ET	9.951
48±4 hours @70°F±10°F	Isopropyl Alcohol Deicing Agent (TT-I-735)	FS23ET	10.25
Per section 7 Test Plan	Dry	FS32ET	10.24
	85% Relative Humidity	FS33ET	7.957

Table 2-4 SBS Fluid Sensitivity Summary Data - ET(180°F)

2.4 Cured Laminate Physical Test Summary

2.4.1 DMA

DMA Results Summary Hexcel M91/IM8-GP 6K ZB Fabric Qualification				
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Test Temperature	Mean			
	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
DMA Tg (Dry)	195.1	383.3	207.6	405.6
DMA Tg (Wet)	146.8	296.3	159.8	319.6

Table 2-5 DMA Summary Data

2.5 Individual Test Summaries

2.5.1 Warp Tension Properties (WT)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC				Tension, 1-axis Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0] ₁₅			
Resin content: 47.30% wt		Comp. density: 1.525 g/cc					
Fiber volume: 51.68% vol							
Ply count: 15							
Test method: ASTM D3039-17		Modulus calculation: 1000-3000 microstrain					
Normalized by: 0.006100		in. CPT					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-WT-CX-X-CTA-X		XX-WT-CX-X-RTA-X		XX-WT-CX-X-ETW-X	
		Normalized Measured		Normalized Measured		Normalized Measured	
F ₁ ^{tu} [ksi]	Mean	162.6	161.6	178.3	176.8	179.5	178.3
	Minimum	106.5	106.1	161.3	157.2	165.1	157.9
	Maximum	173.8	178.4	190.4	187.2	194.3	193.0
	C.V.(%)	5.974	6.704	3.655	3.658	3.773	4.070
	No. Specimens	55		55		58	
No. Prepreg Lots		5		5		5	
E ₁ ^t [Msi]	Mean	11.85	11.77	11.72	11.63	11.88	11.78
	Minimum	11.37	11.27	9.981	10.09	11.48	11.10
	Maximum	12.31	12.20	12.03	12.03	12.64	12.85
	C.V.(%)	1.585	1.868	2.447	2.524	1.909	3.401
	No. Specimens	55		55		55	
No. Prepreg Lots		5		5		5	
ν ₁₂ ^r	Mean	0.04836		0.04125		0.03875	
	Minimum	0.02187		0.03569		0.03245	
	Maximum	0.08106		0.05073		0.05980	
	C.V.(%)	18.48		8.926		11.62	
	No. Specimens	55		55		55	
No. Prepreg Lots		5		5		5	

2.5.2 Fill Tension Properties (FT)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Tension, 2-axis Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0]15 [90]15					
Resin content:	47.62% wt	Comp. density: 1.527 g/cc					
Fiber volume:	51.51% vol						
Ply count:	15						
Test method: ASTM D3039-17		Modulus calculation: 1000-3000 microstrain					
Normalized by:	0.006100	in. CPT					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-FT-CX-X-CTA-X		XX-FT-CX-X-RTA-X		XX-FT-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
F₂^{tu} [ksi]	Mean	156.8	155.8	171.7	170.5	176.1	174.8
	Minimum	126.9	126.2	153.6	152.7	161.7	163.6
	Maximum	164.4	167.1	185.7	184.4	189.6	187.5
	C.V.(%)	4.037	4.645	4.647	4.351	3.238	2.914
	No. Specimens	44		44		45	
	No. Prepreg Lots	4		4		4	
E₂^t [Msi]	Mean	11.86	11.79	11.93	11.86	11.62	11.54
	Minimum	11.31	11.22	11.53	11.27	11.05	10.99
	Maximum	12.18	12.38	15.37	15.56	12.69	12.84
	C.V.(%)	1.885	2.551	4.595	5.147	1.885	2.830
	No. Specimens	44		44		45	
	No. Prepreg Lots	4		4		4	

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.

2.5.3 Warp Compression Properties (WC)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Compression, 1-axis Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0] ₁₅	
Resin content: 47.56% wt	Comp. density: 1.524 g/cc		
Fiber volume: 51.42% vol			
Ply count: 15			
Test method: ASTM D6641-16e2	Modulus calculation: 1000-3000 microstrain		
Normalized by: 0.006100	in. CPT		
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-WC-X-CX-X-CTA-X	XX-WC-X-CX-X-RTA-X	XX-WC-X-CX-X-ETW-X
	Normalized	Measured	Normalized
Mean	127.1	125.9	114.5
Minimum	112.6	111.9	102.0
Maximum	142.4	138.0	122.0
C.V.(%)	5.489	5.192	3.753
No. Specimens	55	54	56
No. Prepreg Lots	5	5	5
Mean	10.71	10.62	10.76
Minimum	10.15	9.817	10.43
Maximum	11.32	11.24	11.06
C.V.(%)	2.318	3.195	1.407
No. Specimens	55	55	55
No. Prepreg Lots	5	5	5

2.5.4 Fill Compression Properties (FC)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Compression, 2-axis Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [90] ₁₅	
Resin content: 47.57% wt	Comp. density: 1.527 g/cc		
Fiber volume: 51.6% vol			
Ply count: 15			
Test method: ASTM D6641-16e2	Modulus calculation: 1000-3000 microstrain		
Normalized by: 0.006100	in. CPT		
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source code Prefixed by: NTPM911Q1-HXL-H40-	XX-FC-X-CX-X-CTA-X	XX-FC-X-CX-X-RTA-X	XX-FC-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
F₂^{CU} [ksi]			
Mean	128.4	127.1	84.03
Minimum	103.5	101.6	69.16
Maximum	136.8	134.0	91.22
C.V.(%)	4.850	4.683	6.019
No. Specimens	44	42	44
No. Prepreg Lots	4	4	4
E₂^C [Msi]			
Mean	10.71	10.61	11.14
Minimum	10.11	9.979	10.31
Maximum	11.09	11.20	11.73
C.V.(%)	2.278	2.835	2.764
No. Specimens	44	44	44
No. Prepreg Lots	4	4	4

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.

2.5.5 In-Plane Shear Tension Properties (IPST)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		In-Plane Shear Tension Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45]_{3S}			
Resin content:	48.24% wt	Comp. density: 1.527 g/cc					
Fiber volume:	51.11% vol						
Ply count:	12						
Test method:	ASTM D3518-18	Modulus calculation: 2000-6000 microstrain					
Normalized by:	N/A						
		CTA		RTA		ETW	
Test Temperature [°F]	-65	70		180			
Moisture Conditioning	Ambient	Ambient		Equilibrium			
Equilibrium at T, RH				160°F,85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-IPST-X-CX-X-CTA-X	XX-IPST-X-CX-X-RTA-X		XX-IPST-X-CX-X-ETW-X			
	Normalized	Measured	Normalized	Measured	Normalized	Measured	
(D3518) F ₁₂ ^{s0.2%} [ksi]	Mean	10.12	7.388	4.770			
	Minimum	9.718	7.128	4.624			
	Maximum	10.56	7.693	5.199			
	C.V.(%)	2.161	2.599	3.155			
	No. Specimens	18	18	18			
	No. Prepreg Lots	3	3	3			
(D3518) F ₁₂ ^{s5%strain} [ksi]	Mean	18.25	13.03	7.779			
	Minimum	17.46	12.58	7.436			
	Maximum	19.07	13.57	8.659			
	C.V.(%)	2.211	2.324	3.835			
	No. Specimens	18	18	18			
	No. Prepreg Lots	3	3	3			
(D3518) G ₁₂ ^s [Msi]	Mean	0.8065	0.6602	0.4687			
	Minimum	0.7890	0.6461	0.4514			
	Maximum	0.8258	0.6790	0.5092			
	C.V.(%)	1.224	1.559	3.261			
	No. Specimens	18	18	18			
	No. Prepreg Lots	3	3	3			

2.5.6 In-Plane Shear V Notch Properties (IPSV)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		In-Plane Shear V-Notch Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0] ₂₄	
Resin content: 47.39% wt	Comp. density: 1.527 g/cc		
Fiber volume: 51.72% vol			
Ply count: 24			
Test method: ASTM D5379-19	Modulus calculation: 2000-6000 microstrain for CTA, RTA and ETW (Batch C, D and E) 1000-3000 microstrain for ETW (Batch A and B)		
Normalized by: NA			
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-IPSV-X-CX-X-CTA-X	XX-IPSV-X-CX-X-RTA-X	XX-IPSV-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
(D5379) $F_{12}^{s0.2\%}$ [ksi]	Mean	11.63	8.361
	Minimum	10.39	7.820
	Maximum	14.19	9.095
	C.V.(%)	7.042	3.787
	No. Specimens	56	55
	No. Prepreg Lots	5	5
(D5379) $F_{12}^{s5\% \text{ strain}}$ [ksi]	Mean	20.36	14.88
	Minimum	19.08	13.92
	Maximum	21.87	16.20
	C.V.(%)	2.989	3.943
	No. Specimens	56	55
	No. Prepreg Lots	5	5
(D5379) F_{12}^{su} [ksi]	Mean	29.48	24.02
	Minimum	25.68	23.06
	Maximum	32.21	25.13
	C.V.(%)	5.854	1.927
	No. Specimens	56	55
	No. Prepreg Lots	5	5
(D5379) G_{12}^s [Msi]	Mean	0.8103	0.6993
	Minimum	0.6662	0.6406
	Maximum	0.9391	0.8169
	C.V.(%)	7.715	5.385
	No. Specimens	56	55
	No. Prepreg Lots	5	5

2.5.7 Short Beam Strength Properties (SBS)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Short-Beam Strength Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0] ₂₄					
Resin content:	47.08% wt						
Fiber volume:	51.88% vol						
Ply count:	24						
Test method: ASTM D2344-16							
Normalized by: NA							
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SBS-X-CX-X-CTA-X		XX-SBS-X-CX-X-RTA-X		XX-SBS-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
SBS [ksi]	Mean		17.05		13.46		7.772
	Minimum		15.71		12.78		7.055
	Maximum		18.87		14.38		8.113
	C.V.(%)		3.691		3.327		2.985
	No. Specimens		55		55		53
	No. Prepreg Lots		5		5		5

2.5.8 “25/50/25” Unnotched Tension 1 Properties (UNT1)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Tension 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]2S					
Resin content:	48.06% wt	Comp. density: 1.522 g/cc							
Fiber volume:	50.92% vol								
Ply count:	16								
Test method:	ASTM D3039-17	Modulus calculation: 1000-3000 microstrain							
Normalized by:	0.006100	in. CPT							
		CTA		RTA		ETW			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Ambient		Ambient		Equilibrium			
Equilibrium at T, RH						160°F, 85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-UNT1-X-CX-X-CTA-X		XX-UNT1-X-CX-X-RTA-X		XX-UNT1-X-CX-X-ETW-X			
		Normalized		Measured		Normalized		Measured	
UNT1 Strength [ksi]	Mean	125.3	123.3	132.2	129.9	128.0	125.7		
	Minimum	113.1	113.8	126.0	123.1	116.5	111.6		
	Maximum	132.8	132.0	137.0	135.6	134.0	132.3		
	C.V.(%)	4.450	3.904	2.606	2.604	3.367	3.703		
	No. Specimens	18		18		18			
	No. Prepreg Lots	3		3		3			
UNT1 Modulus [Msi]	Mean	8.363	8.228	8.208	8.067	8.076	7.931		
	Minimum	8.094	7.978	8.056	7.829	7.963	7.624		
	Maximum	8.582	8.675	8.359	8.247	8.197	8.189		
	C.V.(%)	1.937	2.317	0.9407	1.777	0.9601	2.280		
	No. Specimens	18		18		18			
	No. Prepreg Lots	3		3		3			

2.5.9 “10/80/10” Unnotched Tension 2 Properties (UNT2)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Tension 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/90/45/-45/45/-45]S					
Resin content:	47.56% wt	Comp. density: 1.517 g/cc					
Fiber volume:	51.04% vol						
Ply count:	20						
Test method: ASTM D3039-17		Modulus calculation: 1000-3000 microstrain					
Normalized by: 0.006100		in. CPT					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-UNT2-X-CX-X-CTA-X		XX-UNT2-X-CX-X-RTA-X		XX-UNT2-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
UNT2 Strength [ksi]	Mean	78.80	77.17	75.28	73.83	65.77	64.47
	Minimum	77.12	73.89	73.48	71.34	63.49	61.09
	Maximum	80.03	78.82	77.01	76.75	67.67	67.27
	C.V.(%)	1.090	1.650	1.428	2.224	2.135	3.035
	No. Specimens	18		18		18	
	No. Prepreg Lots	3		3		3	
UNT2 Modulus [Msi]	Mean	5.434	5.322	5.224	5.124	4.811	4.715
	Minimum	5.325	5.177	5.113	4.960	4.703	4.567
	Maximum	5.556	5.439	5.553	5.584	4.913	4.863
	C.V.(%)	1.119	1.432	1.926	2.658	1.480	1.956
	No. Specimens	18		18		18	
	No. Prepreg Lots	3		3		3	

2.5.10 “40/20/40” Unnotched Tension 3 Properties (UNT3)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Tension 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	
Resin content: 48.27% wt	Comp. density: 1.523 g/cc		
Fiber volume: 50.86% vol			
Ply count: 15			
Test method: ASTM D3039-17	Modulus calculation: 1000-3000 microstrain		
Normalized by: 0.006100	in. CPT		
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-UNT3-X-CX-X-CTA-X	XX-UNT3-X-CX-X-RTA-X	XX-UNT3-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
			Normalized
			Measured
UNT3 Strength [ksi]			
Mean	145.4	142.5	157.8
Minimum	133.4	131.7	147.4
Maximum	153.3	151.9	169.4
C.V.(%)	4.140	3.560	4.404
No. Specimens	18	18	18
No. Prepreg Lots	3	3	3
UNT3 Modulus [Msi]			
Mean	10.56	10.35	10.41
Minimum	10.14	10.01	10.28
Maximum	10.87	10.79	10.57
C.V.(%)	1.857	2.214	0.8821
No. Specimens	18	18	18
No. Prepreg Lots	3	3	3

2.5.11 “25/50/25” Unnotched Compression 1 Properties (UNC1)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Compression 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]2S	
Resin content: 48.54% wt	Comp. density: 1.527 g/cc		
Fiber volume: 50.86% vol			
Ply count: 16			
Test method: ASTM D6641-16e2		Modulus calculation: 1000-3000 microstrain	
Normalized by: 0.006100		in. CPT	
		RTA	ETW
Test Temperature [°F] 70		180	
Moisture Conditioning Ambient		Equilibrium	
Equilibrium at T, RH 160°F, 85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-UNC1-X-CX-X-RTA-X	XX-UNC1-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
UNC1 Strength [ksi]	Mean	90.75	88.67
	Minimum	87.29	82.97
	Maximum	94.72	92.73
	C.V.(%)	2.818	3.113
	No. Specimens	18	18
	No. Prepreg Lots	3	3
UNC1 Modulus [Msi]	Mean	7.597	7.423
	Minimum	7.291	7.217
	Maximum	7.745	7.596
	C.V.(%)	1.541	1.545
	No. Specimens	18	18
	No. Prepreg Lots	3	3

2.5.12 “10/80/10” Unnotched Compression 2 Properties (UNC2)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Compression 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/45/-45/90/45/-45]S			
Resin content:	48.46% wt	Comp. density: 1.527 g/cc					
Fiber volume:	50.96% vol						
Ply count:	20						
Test method:	ASTM D6641-16e2	Modulus calculation: 1000-3000 microstrain					
Normalized by:	0.006100	in. CPT					
		RTA		ETW			
Test Temperature [°F]	70		180				
Moisture Conditioning	Ambient		Equilibrium				
Equilibrium at T, RH			160°F, 85%				
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-UNC2-X-CX-X-RTA-X		XX-UNC2-X-CX-X-ETW-X				
	Normalized	Measured	Normalized	Measured			
UNC2 Strength [ksi]	Mean	63.48 61.89	46.83	45.65			
	Minimum	61.29 58.84	43.24	41.66			
	Maximum	65.77 65.26	48.60	48.07			
	C.V.(%)	1.760 2.333	3.196	3.477			
	No. Specimens	18	19				
	No. Prepreg Lots	3	3				
UNC2 Modulus [Msi]	Mean	4.956 4.833	4.673	4.561			
	Minimum	4.859 4.682	4.549	4.413			
	Maximum	5.040 5.050	4.863	4.813			
	C.V.(%)	1.036 2.253	1.586	2.647			
	No. Specimens	18	18				
	No. Prepreg Lots	3	3				

2.5.13 “40/20/40” Unnotched Compression 3 Properties (UNC3)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Unnotched Compression 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/45/0/90/0/90/-45/0/90]S			
Resin content:	48.41% wt	Comp. density: 1.526 g/cc					
Fiber volume:	50.90% vol						
Ply count:	20						
Test method:	ASTM D6641-16e2	Modulus calculation: 1000-3000 microstrain					
Normalized by:	0.006100	in. CPT					
		RTA		ETW			
Test Temperature [°F]		70		180			
Moisture Conditioning		Ambient		Equilibrium			
Equilibrium at T, RH				160°F, 85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-UNC3-X-CX-X-RTA-X		XX-UNC3-X-CX-X-ETW-X			
		Normalized	Measured	Normalized	Measured		
UNC3 Strength [ksi]	Mean	102.9	100.3	79.19	77.22		
	Minimum	92.46	91.58	66.72	65.58		
	Maximum	109.0	107.2	84.57	83.74		
	C.V.(%)	4.202	4.591	5.042	5.184		
	No. Specimens	17		18			
	No. Prepreg Lots	3		3			
UNC3 Modulus [Msi]	Mean	9.542	9.291	9.791	9.548		
	Minimum	9.262	9.059	9.549	9.257		
	Maximum	9.772	9.543	10.09	9.787		
	C.V.(%)	1.447	1.437	1.415	1.382		
	No. Specimens	18		18			
	No. Prepreg Lots	3		3			

2.5.14 “25/50/25” Open-Hole Tension 1 Properties (OHT1)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Open-Hole Tension 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]2S	
Resin content: 48.34% wt	Comp. density: 1.527 g/cc		
Fiber volume: 51.00% vol			
Ply count: 16			
Test method: ASTM D5766-11			
Normalized by: 0.006100 in. CPT			
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-OHT1-X-CX-X-CTA-X	XX-OHT1-X-CX-X-RTA-X	XX-OHT1-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
OHT1 Strength [ksi]			
Mean	56.35	55.20	61.15
Minimum	54.04	53.04	57.95
Maximum	59.44	57.31	64.00
C.V.(%)	2.743	2.332	2.581
No. Specimens	18	18	19
No. Prepreg Lots	3	3	3

2.5.15 “10/80/10” Open-Hole Tension 2 Properties (OHT2)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Open-Hole Tension 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/45/-45/90/45/-45]S					
Resin content:	48.02% wt	Comp. density: 1.522 g/cc					
Fiber volume:	50.95% vol						
Ply count:	20						
Test method: ASTM D5766-11							
Normalized by: 0.006100		in. CPT					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-OHT2-X-CX-X-CTA-X		XX-OHT2-X-CX-X-RTA-X		XX-OHT2-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
Mean		61.16	59.88	55.62	54.33	43.41	42.51
Minimum		59.13	58.23	52.93	51.92	42.74	41.11
Maximum		62.96	62.61	57.37	56.12	44.75	44.00
OHT2 Strength [ksi]	C.V.(%)	1.839	1.837	2.357	1.891	1.208	1.888
No. Specimens		18		18		18	
No. Prepreg Lots		3		3		3	

2.5.16 “40/20/40” Open-Hole Tension 3 Properties (OHT3)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Open-Hole Tension 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]					
Resin content:	48.45% wt	Comp. density: 1.526 g/cc					
Fiber volume:	50.86% vol						
Ply count:	15						
Test method: ASTM D5766-11							
Normalized by: 0.006100		in. CPT					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-OHT3-X-CX-X-CTA-X		XX-OHT3-X-CX-X-RTA-X		XX-OHT3-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
OHT3 Strength [ksi]	Mean	65.03	63.72	72.06	70.56	78.47	76.86
	Minimum	59.71	58.66	65.44	64.75	74.51	72.24
	Maximum	73.85	72.34	76.82	75.23	82.84	80.08
	C.V.(%)	6.058	5.586	4.845	5.111	3.001	2.691
	No. Specimens	18		18		18	
No. Prepreg Lots		3		3		3	

2.5.17 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Tension 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]2S					
Resin content:	48.20% wt	Comp. density: 1.524 g/cc					
Fiber volume:	50.97% vol						
Ply count:	16						
Test method: ASTM D6742-17							
Normalized by: 0.006100 in. CPT							
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-FHT1-X-CX-X-CTA-X		XX-FHT1-X-CX-X-RTA-X		XX-FHT1-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
FHT1 Strength [ksi]	Mean	69.91	68.57	72.78	71.43	74.04	72.51
	Minimum	66.98	66.93	68.75	68.32	71.65	68.93
	Maximum	74.67	73.93	78.69	78.17	77.88	77.19
	C.V.(%)	3.077	2.646	3.448	3.643	2.771	3.063
	No. Specimens	18		18		18	
No. Prepreg Lots		3		3		3	

2.5.18 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Tension 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/45/-45/90/45/-45]S	
Resin content: 48.32% wt	Comp. density: 1.523 g/cc		
Fiber volume: 50.82% vol			
Ply count: 20			
Test method: ASTM D6742-17			
Normalized by: 0.006100 in. CPT			
	CTA	RTA	ETW
Test Temperature [°F]	-65	70	180
Moisture Conditioning	Ambient	Ambient	Equilibrium
Equilibrium at T, RH			160°F, 85%
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-FHT2-X-CX-X-CTA-X	XX-FHT2-X-CX-X-RTA-X	XX-FHT2-X-CX-X-ETW-X
	Normalized	Measured	Normalized
			Measured
Mean	67.84	66.43	62.56
Minimum	65.49	63.28	60.81
Maximum	70.01	69.17	64.10
FHT2 Strength [ksi] C.V.(%)	1.546	2.206	1.515
			2.497
No. Specimens	18	18	18
No. Prepreg Lots	3	3	3

2.5.19 “40/20/40” Filled-Hole Tension 3 Properties (FHT3)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Tension 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]			
Resin content:	48.42% wt	Comp. density: 1.525 g/cc					
Fiber volume:	50.87% vol						
Ply count:	15						
Test method:		ASTM D6742-17					
Normalized by:		0.006100		in. CPT			
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source code Prefixed by: NTPM911Q1-HXL-H40		XX-FHT3-X-CX-X-CTA-X		XX-FHT3-X-CX-X-RTA-X		XX-FHT3-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
FHT3 Strength [ksi]	Mean	79.51	77.95	81.85	80.00	82.57	80.69
	Minimum	72.21	72.35	76.91	74.64	77.24	74.39
	Maximum	85.89	83.05	89.19	85.77	91.38	89.22
	C.V.(%)	4.486	3.872	4.058	3.784	3.934	4.499
	No. Specimens	18		18		18	
No. Prepreg Lots		3		3		3	

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Open-Hole Compression 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0/-45/90/-45/90]S			
Resin content:	48.49% wt	Comp. density: 1.524 g/cc					
Fiber volume:	50.72% vol						
Ply count:	20						
Test method:		ASTM D6484-20					
Normalized by:		0.006100		in. CPT			
		RTA		ETW			
Test Temperature [°F]		70		180			
Moisture Conditioning		Ambient		Equilibrium			
Equilibrium at T, RH				160°F, 85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-OHC1-X-CX-X-RTA-X		XX-OHC1-X-CX-X-ETW-X			
		Normalized	Measured	Normalized	Measured		
Mean		45.53	44.55	35.50	34.54		
Minimum		43.96	43.55	32.91	32.09		
Maximum		47.72	46.52	37.66	35.82		
OHC1 Strength [ksi] C.V.(%)		2.335	1.808	3.374	2.816		
No. Specimens		18		18			
No. Prepreg Lots		3		3			

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC				Open-Hole Compression 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/45/-45/90/45/-45]S			
Resin content: 48.49% wt		Comp. density: 1.524 g/cc					
Fiber volume: 50.76% vol							
Ply count: 20							
Test method: ASTM D6484-20							
Normalized by: 0.006100		in. CPT					
		RTA		ETW			
Test Temperature [°F]		70		180			
Moisture Conditioning		Ambient		Equilibrium			
Equilibrium at T, RH				160°F, 85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-OHC2-X-CX-X-RTA-X		XX-OHC2-X-CX-X-ETW-X			
		Normalized	Measured	Normalized	Measured		
Mean		43.35	42.27	31.84	31.00		
Minimum		41.84	41.33	30.75	29.93		
Maximum		45.53	44.32	32.80	31.67		
OHC2 Strength [ksi]							
C.V.(%)		2.179	1.704	1.788	1.695		
No. Specimens		18		18			
No. Prepreg Lots		3		3			

2.5.22 “40/20/40” Open-Hole Compression 3 Properties (OHC3)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Open-Hole Compression 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/45/90/0/0/90/-45/90/0]S			
Resin content:	48.36% wt	Comp. density: 1.523 g/cc			
Fiber volume:	50.78% vol				
Ply count:	20				
Test method:	ASTM D6484-20				
Normalized by:	0.006100	in. CPT			
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F, 85%	
Source Code Prefixed by:	NTPM911Q1-HXL-H40-	XX-OHC3-X-CX-X-RTA-X		XX-OHC3-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
OHC3 Strength [ksi]	Mean	45.69	44.58	37.72	36.72
	Minimum	43.11	42.50	35.45	34.03
	Maximum	48.20	46.28	39.16	38.23
	C.V.(%)	2.120	2.179	2.649	2.734
	No. Specimens	18		18	
No. Prepreg Lots		3		3	

2.5.23 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Compression 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0/-45/90/-45/90]S	
Resin content:	48.17% wt		
Fiber volume:	50.78% vol		
Ply count:	20		
Test method: ASTM D6742-17			
Normalized by: 0.006100 in. CPT			
		RTA	ETW
Test Temperature [°F]	70	180	
Moisture Conditioning	Ambient	Equilibrium	
Equilibrium at T, RH		160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-FHC1-X-CX-X-RTA-X	XX-FHC1-X-CX-X-ETW-X	
	Normalized	Measured	Normalized
			Measured
Mean	89.11	86.76	67.24
Minimum	83.71	81.83	64.65
Maximum	91.90	90.30	69.49
FHC1 Strength [ksi]			68.08
C.V.(%)	2.724	2.786	2.134
			1.916
No. Specimens	13	11	
No. Prepreg Lots	3	3	

In some cases of FHC>UNC, UNC data is recommended for design. The FHC data is for informational purposes only and is not appropriate to be used for design. Shaded values indicated FHC1>UNC1.

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

2.5.24 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Compression 2 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/0/45/-45/45/-45/90/45/-45]S			
Resin content:	48.23% wt	Comp. density: 1.521 g/cc			
Fiber volume:	50.76% vol				
Ply count:	20				
Test method: ASTM D6742-17					
Normalized by: 0.006100 in. CPT					
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-FHC2-X-CX-X-RTA-X		XX-FHC2-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
FHC2 Strength [ksi]	Mean	65.97	64.47	49.37	48.68
	Minimum	62.30	60.48	47.23	46.67
	Maximum	69.41	68.17	51.29	50.62
	C.V.(%)	2.863	2.887	3.068	2.964
	No. Specimens	15		5	
No. Prepreg Lots		3		2	

In some cases of FHC>UNC, UNC data is recommended for design. The FHC data is for informational purposes only and is not appropriate to be used for design. Shaded values indicated FHC2>UNC2.

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

2.5.25 “40/20/40” Filled-Hole Compression 3 Properties (FHC3)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Filled-Hole Compression 3 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/45/90/0/0/90/-45/90/0]S			
Resin content: 48.39% wt	Comp. density: 1.522 g/cc				
Fiber volume: 50.73% vol					
Ply count: 20					
Test method: ASTM D6742-17					
Normalized by: 0.006100	in. CPT				
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-FHC3-X-CX-X-RTA-X		XX-FHC3-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
Mean		93.33	91.40	70.78	69.04
Minimum		87.29	84.45	64.67	63.65
Maximum		100.3	98.00	77.16	75.59
FHC3 Strength [ksi]					
C.V.(%)		4.336	4.316	3.957	4.114
No. Specimens		18		18	
No. Prepreg Lots		3		3	

2.5.26 “25/50/25” Single-Shear Bearing 1 Proc. C Properties (SSB1, D=0.19”, e=0.38)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 1 Proc. C, D=0.19”, e=0.38			
Resin content: 48.56% wt	Comp. density: 1.527 g/cc	Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0]S			
Fiber volume: 50.88% vol					
Ply count: 12					
Test method: ASTM D5961-17 Proc. C					
Normalized by: 0.006100	in. CPT				
	RTA	ETW			
Test Temperature [°F]	70	180			
Moisture Conditioning	Ambient	Equilibrium			
Equilibrium at T, RH		160°F, 85%			
Source code Prefixed by: NTPM911Q1-HXL-H40-	SSB1-X-X-RTA-X	SSB1-X-X-ETW-X			
	Normalized	Measured	Normalized	Measured	
Mean			119.5	117.0	
Minimum			115.0	111.7	
Maximum			125.1	124.5	
C.V.(%)			3.742	4.292	
No. Specimens			5		
No. Prepreg Lots			2		
Mean	122.4	121.2	107.4	106.3	
Minimum	106.4	105.9	84.53	84.28	
Maximum	129.3	127.1	123.7	123.2	
C.V.(%)	4.272	3.945	11.72	11.11	
No. Specimens	18		18		
No. Prepreg Lots	3		3		
Mean	150.2	148.8	128.8	127.5	
Minimum	145.2	144.4	123.3	123.5	
Maximum	157.0	154.9	134.3	133.7	
C.V.(%)	2.413	2.213	2.643	2.302	
No. Specimens	18		18		
No. Prepreg Lots	3		3		

2.5.27 “40/20/40” Single-Shear Bearing 3 Proc. C Properties (SSB3, D=0.19”, e=0.38)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 3 Proc. C, D=0.19", e=0.38 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/45/0/90/0]S			
Resin content:	48.27% wt	Comp. density: 1.527 g/cc					
Fiber volume:	51.08% vol						
Ply count:	12						
Test method:	ASTM D5961-17 Proc. C						
Normalized by:	0.006100	in. CPT					
		RTA		ETW			
Test Temperature [°F]	70		180				
Moisture Conditioning	Ambient		Equilibrium				
Equilibrium at T, RH			160°F,85%				
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-SSB3-X-CX-X-RTA-X		XX-SSB3-X-CX-X-ETW-X				
		Normalized	Measured	Normalized	Measured		
SSB3 Proc. C, D=0.19", e=0.38 Initial Peak Strength [ksi]	Mean	106.3	104.0	97.96	96.93		
	Minimum	101.7	101.8	83.96	84.26		
	Maximum	110.6	106.7	106.0	106.0		
	C.V.(%)	4.129	2.325	7.309	7.076		
	No. Specimens	4	9				
	No. Prepreg Lots	2	3				
SSB3 Proc. C, D=0.19", e=0.38 2% Offset Strength [ksi]	Mean	105.6	104.5	95.44	94.44		
	Minimum	98.51	97.03	81.59	81.89		
	Maximum	112.1	112.1	103.3	103.3		
	C.V.(%)	2.952	2.945	7.024	6.945		
	No. Specimens	18	16				
	No. Prepreg Lots	3	3				
SSB3 Proc. C, D=0.19", e=0.38 Ultimate Strength [ksi]	Mean	113.5	112.3	103.7	102.7		
	Minimum	106.0	106.6	96.75	94.69		
	Maximum	124.1	121.2	108.9	109.1		
	C.V.(%)	4.004	3.407	3.287	3.798		
	No. Specimens	18	18				
	No. Prepreg Lots	3	3				

2.5.28 “0/100/0” Single-Shear Bearing 4 Proc. C Properties (SSB4, D=0.19”, e=0.38)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 4 Proc. C, D=0.19”, e=0.38 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/-45/45/-45/45/-45]S			
Resin content:	48.18% wt	Comp. density: 1.525 g/cc			
Fiber volume:	51.05% vol				
Ply count:	12				
Test method: ASTM D5961-17 Proc. C					
Normalized by: 0.006100 in. CPT					
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SSB4-X-CX-X-RTA-X		XX-SSB4-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
SSB4 Proc. C, D=0.19”, e=0.38 2% Offset Strength [ksi]	Mean	65.61	64.96	45.77	45.40
	Minimum	60.05	57.79	41.27	40.82
	Maximum	70.51	70.62	48.24	48.96
	C.V.(%)	4.743	6.088	4.133	4.441
	No. Specimens	18		18	
	No. Prepreg Lots	3		3	
SSB4 Proc. C, D=0.19”, e=0.38 Ultimate Strength [ksi]	Mean	107.6	106.5	73.03	72.45
	Minimum	101.0	101.1	68.54	67.92
	Maximum	116.6	116.8	83.51	83.74
	C.V.(%)	4.091	4.482	6.601	7.289
	No. Specimens	18		18	
	No. Prepreg Lots	3		3	

2.5.29 “25/50/25” Single-Shear Bearing 1 Countersink 1 Proc. C, Properties (SSB1C1, D=0.19”, e=0.38)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 1 C1 Proc. C, D=0.19", e=0.38 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0]S	
Resin content:	48.53% wt	Comp. density: 1.527 g/cc			
Fiber volume:	50.91% vol				
Ply count:	12				
Test method:		ASTM D5961-17 Proc. C			
Normalized by:	0.006100	in. CPT			
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F,85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SSB1C1-X-CX-X-RTA-X		XX-SSB1C1-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
Mean		90.45	89.32	80.39	80.10
Minimum		85.14	82.88	75.93	75.88
SSB1C1 Proc. C, 100° Maximum		96.81	96.20	83.08	82.35
Countersink, D=0.19", e=0.38 C.V.(%)		3.926	4.695	3.048	2.907
2% Offset Strength [ksi]					
No. Specimens		18		6	
No. Prepreg Lots		3		1	
Mean		100.5	99.22	83.15	82.36
Minimum		93.55	92.27	78.07	76.57
SSB1C1 Proc. C, 100° Maximum		106.5	105.8	88.22	87.33
Countersink, D=0.19", e=0.38 C.V.(%)		3.142	3.892	3.289	3.538
Ultimate Strength [ksi]					
No. Specimens		18		19	
No. Prepreg Lots		3		3	

2.5.30 “40/20/40” Single-Shear Bearing 3 Countersink 1 Proc. C Properties (SSB3C1, D=0.19”, e=0.38)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 3 C1 Proc. C, D=0.19”, e=0.38 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0/90/45/0/90/0]S			
Resin content:	48.57% wt	Comp. density: 1.524 g/cc			
Fiber volume:	50.69% vol				
Ply count:	12				
Test method: ASTM D5961-17 Proc. C					
Normalized by: 0.006100 in. CPT					
		RTA		ETW	
Test Temperature [°F]		70		180	
Moisture Conditioning		Ambient		Equilibrium	
Equilibrium at T, RH				160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SSB3C1-X-CX-X-RTA-X		XX-SSB3C1-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured
SSB3C1 Proc. C, 100° Countersink, D=0.19”, e=0.38 Initial Peak Strength [ksi]	Mean	85.99	84.09		
	Minimum	82.28	79.49		
	Maximum	89.70	90.06		
	C.V.(%)	3.156	4.081		
	No. Specimens	6			
No. Prepreg Lots		3			
SSB3C1 Proc. C, 100° Countersink, D=0.19”, e=0.38 2% Offset Strength [ksi]	Mean	84.64	83.12	70.52	69.93
	Minimum	78.61	75.94	66.29	64.81
	Maximum	90.94	89.54	72.64	72.31
	C.V.(%)	4.484	5.253	4.069	4.929
	No. Specimens	17		4	
No. Prepreg Lots		3		2	
SSB3C1 Proc. C, 100° Countersink, D=0.19”, e=0.38 Ultimate Strength [ksi]	Mean	91.19	89.60	73.67	72.71
	Minimum	85.08	83.74	66.88	65.39
	Maximum	97.46	94.65	80.00	77.15
	C.V.(%)	3.126	3.333	4.439	4.298
	No. Specimens	18		20	
No. Prepreg Lots		3		3	

2.5.31 “25/50/25” Single-Shear Bearing 1 E1 Proc. C Properties (SSB1E1, D=0.19”, e=0.57)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 1 E1 Proc. C, D=0.19”, e=0.57 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0]S			
Resin content: 48.39% wt	Comp. density: 1.527 g/cc				
Fiber volume: 51% vol					
Ply count: 12					
Test method: ASTM D5961-17 Proc. C					
Normalized by: 0.006100 in. CPT					
		RTA		ETW	
Test Temperature [°F] 70		Ambient		180	
Moisture Conditioning Equilibrium at T, RH				Equilibrium 160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SSB1E1-X-CX-XRTA-X		XX-SSB1E1-X-CX-XETW-X	
		Normalized	Measured	Normalized	Measured
SSB1E1 Proc. C, D=0.19”, e=0.57 Initial Peak Strength [ksi]	Mean			119.0	116.7
	Minimum			115.6	114.4
	Maximum			120.9	118.7
	C.V.(%)			2.481	1.868
	No. Specimens			3	
No. Prepreg Lots				2	
SSB1E1 Proc. C, D=0.19”, e=0.57 2% Offset Strength [ksi]	Mean	124.1	122.7	109.2	107.9
	Minimum	116.5	115.8	95.23	94.32
	Maximum	140.0	139.0	124.0	121.5
	C.V.(%)	4.959	5.273	8.189	7.762
	No. Specimens	18		18	
No. Prepreg Lots		3		3	
SSB1E1 Proc. C, D=0.19”, e=0.57 Ultimate Strength [ksi]	Mean	156.5	154.7	132.5	131.0
	Minimum	148.9	148.2	128.5	127.2
	Maximum	161.5	160.5	134.9	134.4
	C.V.(%)	2.321	2.338	1.375	1.529
	No. Specimens	18		18	
No. Prepreg Lots		3		3	

2.5.32 “25/50/25” Single-Shear Bearing 1 D1 Proc. C Properties (SSB1D1, D=0.25”, e=0.5)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Single-Shear Bearing 1 D1 Proc. C, D=0.25”, e=0.5 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90/45/0]S	
Resin content:	48.56% wt	Comp. density:	1.525 g/cc
Fiber volume:	50.76% vol		
Ply count:	12		
Test method: ASTM D5961-17 Proc. C			
Normalized by: 0.006100 in. CPT			
	RTA	ETW	
Test Temperature [°F]	70	180	
Moisture Conditioning	Ambient	Equilibrium	
Equilibrium at T, RH		160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-	XX-SSB1D1-X-CX-X-RTA-X	XX-SSB1D1-X-CX-X-ETW-X	
	Normalized	Measured	Normalized
			Measured
Mean		101.7	100.4
Minimum		93.63	92.72
Maximum		109.3	107.5
SSB1D1 Proc. C, D=0.25”, e=0.5 Initial Peak Strength [ksi]		7.708	7.365
C.V.(%)			
No. Specimens		3	
No. Prepreg Lots		2	
Mean	121.5	120.2	102.2
Minimum	114.6	113.6	87.70
Maximum	129.3	127.7	110.9
SSB1D1 Proc. C, D=0.25”, e=0.5 2% Offset Strength [ksi]	3.589	3.737	5.921
C.V.(%)			5.977
No. Specimens	18	18	
No. Prepreg Lots	3	3	
Mean	147.1	145.4	118.9
Minimum	138.7	139.3	110.5
Maximum	153.9	151.3	127.5
SSB1D1 Proc. C, D=0.25”, e=0.5 Ultimate Strength [ksi]	2.844	2.246	4.035
C.V.(%)			4.040
No. Specimens	18	18	
No. Prepreg Lots	3	3	

2.5.33 “25/50/25” Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19”, e=0.38)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC				Single-Shear Bearing 1 T1 Proc. C, D=0.19", e=0.38 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]S			
Resin content:		48.33% wt	Comp. density: 1.531 g/cc				
Fiber volume:		51.25% vol					
Ply count:		8					
Test method:		ASTM D5961-17 Proc. C					
Normalized by:		0.006100	in. CPT				
		RTA		ETW			
Test Temperature [°F]		70		180			
Moisture Conditioning		Ambient		Equilibrium			
Equilibrium at T, RH				160°F,85%			
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-SSB1T1-X-CX-X-RTA-X		XX-SSB1T1-X-CX-X-ETW-X			
		Normalized	Measured	Normalized	Measured		
SSB1T1 Proc. C, D=0.19", e=0.38 Initial Peak Strength [ksi]	Mean	82.93	81.35				
	Minimum	70.49	69.47				
	Maximum	96.67	94.10				
	C.V.(%)	13.29	12.58				
	No. Specimens	4					
	No. Prepreg Lots	2					
SSB1T1 Proc. C, D=0.19", e=0.38 2% Offset Strength [ksi]	Mean	104.4	103.0	114.3	112.7		
	Minimum	69.03	68.03	82.38	81.79		
	Maximum	126.9	125.4	137.7	136.4		
	C.V.(%)	16.98	17.12	13.31	13.07		
	No. Specimens	19		18			
	No. Prepreg Lots	3		3			
SSB1T1 Proc. C, D=0.19", e=0.38 Ultimate Strength [ksi]	Mean	143.1	141.3	131.5	129.7		
	Minimum	130.0	128.3	123.6	123.1		
	Maximum	160.1	158.2	140.8	140.7		
	C.V.(%)	6.911	7.329	3.876	3.793		
	No. Specimens	19		18			
	No. Prepreg Lots	3		3			

2.5.34 “25/50/25” Compression After Impact 1 Properties (CAI1)

Material: Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Compression After Impact 1 Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [45/0/-45/90]3S			
Resin content:	48.29% wt	Comp. density: 1.523 g/cc			
Fiber volume:	50.84% vol				
Ply count:	24				
Test method: ASTM D7136/D7137-17					
Normalized by: 0.006100 in. CPT					
RTA					
Test Temperature [°F]		70			
Moisture Conditioning		Ambient			
Equilibrium at T, RH					
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX-CAI1-X-CX-X-RTA-X			
		Normalized	Measured		
CAI1 Strength [ksi]	Mean	42.27	41.54		
	Minimum	41.35	40.81		
	Maximum	42.75	41.88		
	C.V.(%)	1.232	1.119		
	No. Specimens	6			
No. Prepreg Lots		1			

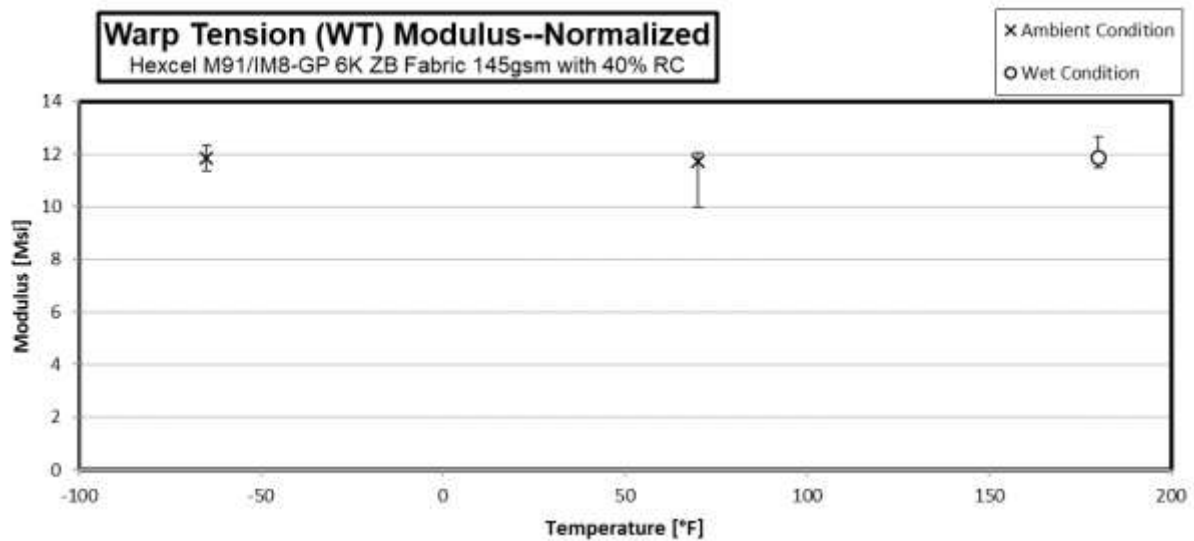
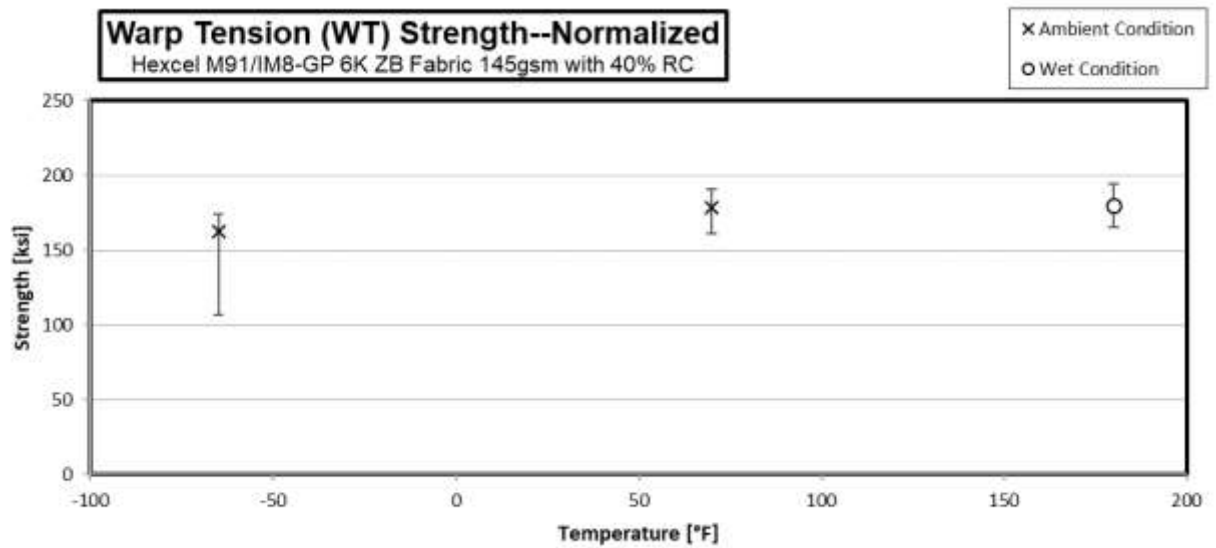
2.5.35 Interlaminar Tension Properties (ILT)

Material:		Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC		Interlaminar Tension Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC [0]21			
Resin content:	47.19% wt	Comp. density: 1.527 g/cc					
Fiber volume:	51.83% vol						
Ply count:	21						
Test method:		ASTM D6415-06a					
Normalized by:		NA					
		CTA		RTA		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Ambient		Ambient		Equilibrium	
Equilibrium at T, RH						160°F, 85%	
Source Code Prefixed by: NTPM911Q1-HXL-H40-		XX<ILT-X-CX-X-CTA-X		XX<ILT-X-CX-X-RTA-X		XX<ILT-X-CX-X-ETW-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured
CBS [lb]	Mean	417.0		347.9		195.0	
	Minimum	302.6		272.4		126.4	
	Maximum	477.7		414.7		242.7	
	C.V.(%)	8.102		10.02		13.03	
	No. Specimens	59		55		60	
	No. Prepreg Lots	5		5		5	
ILT [ksi]	Mean	15.14		12.71		7.088	
	Minimum	11.54		10.23		4.315	
	Maximum	17.85		14.62		8.529	
	C.V.(%)	9.082		7.756		10.98	
	No. Specimens	59		55		60	
	No. Prepreg Lots	5		5		5	

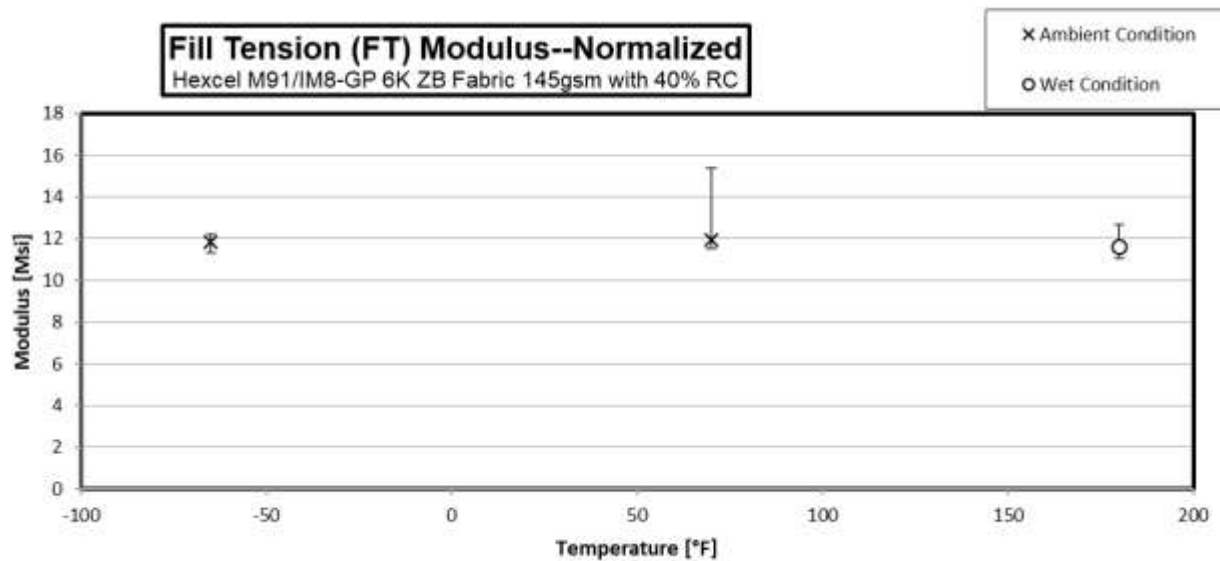
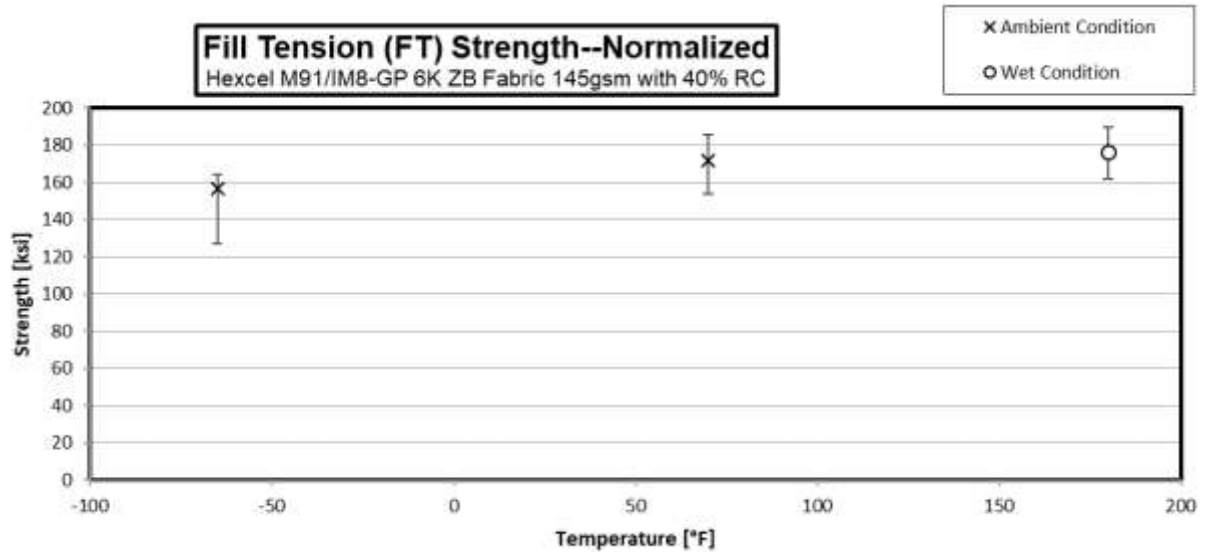
3. Individual Test Charts

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

3.1 Warp Tension Properties (WT)

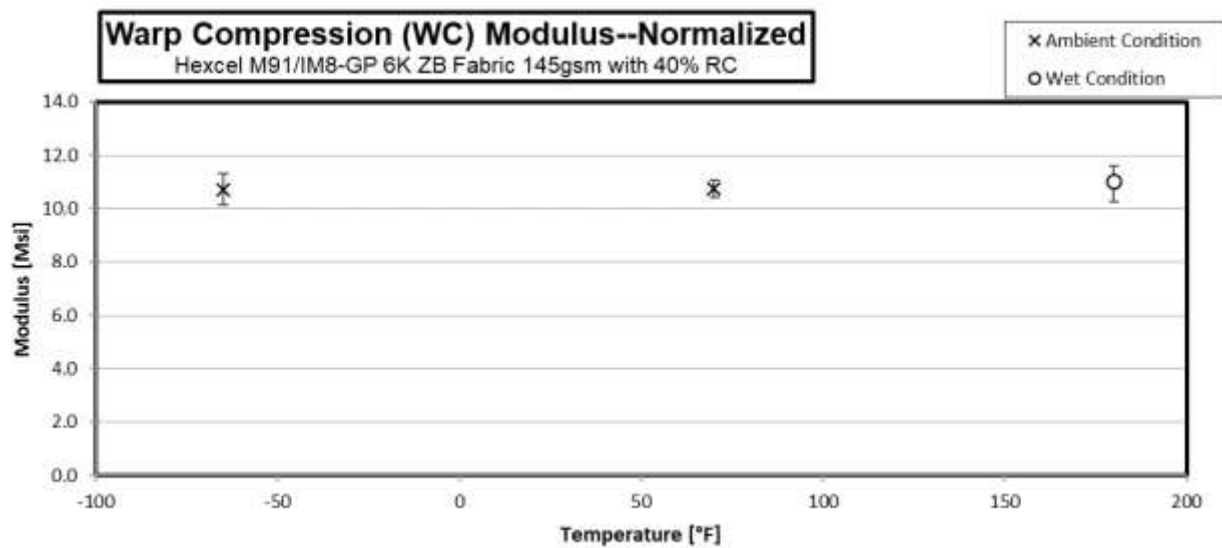
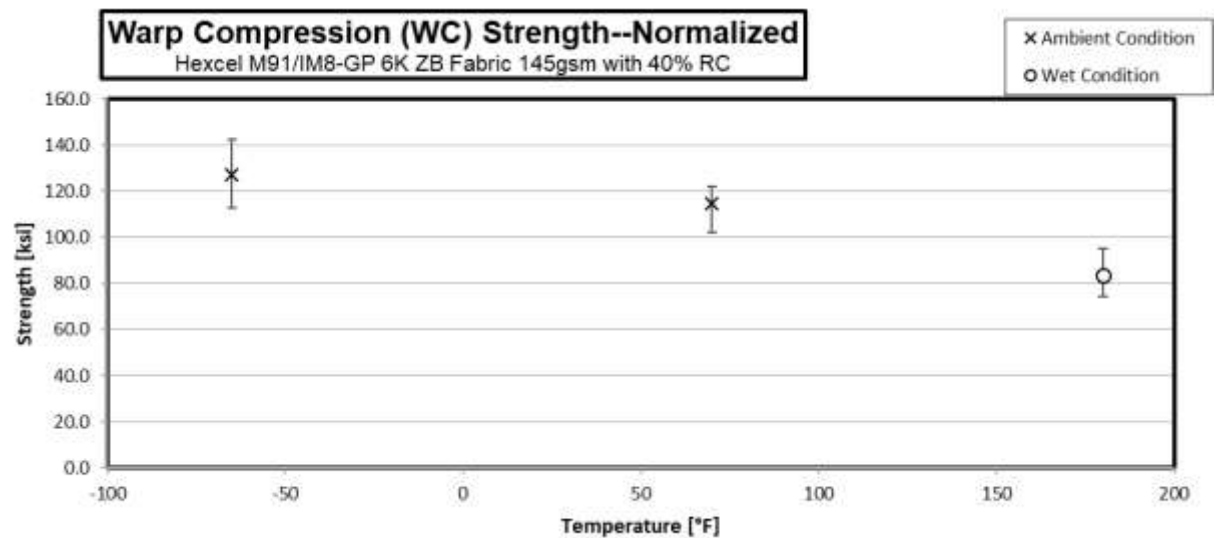


3.2 Fill Tension Properties (FT)

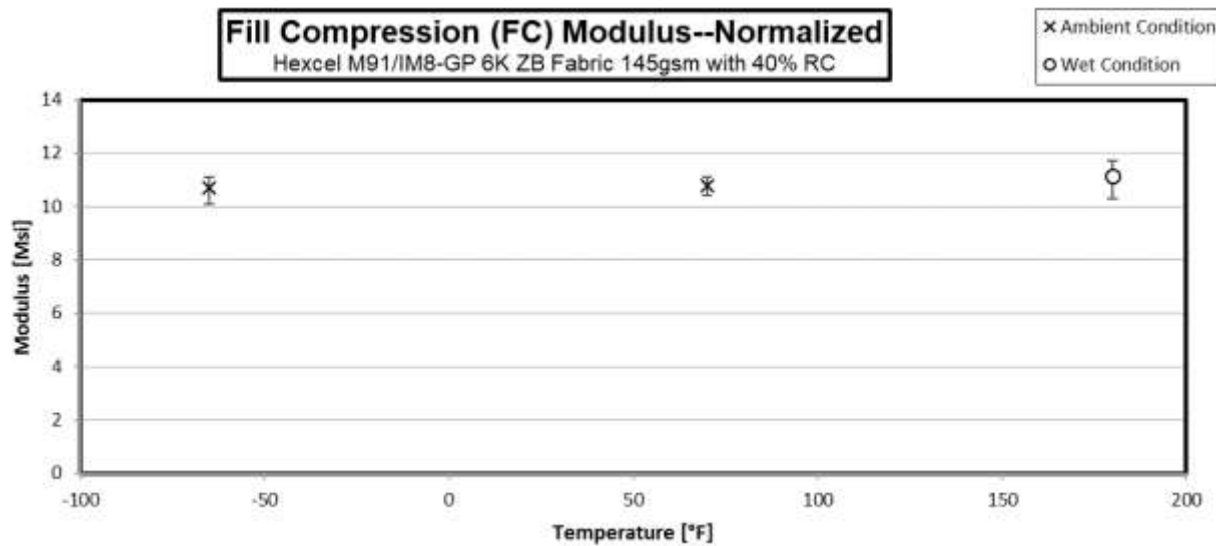
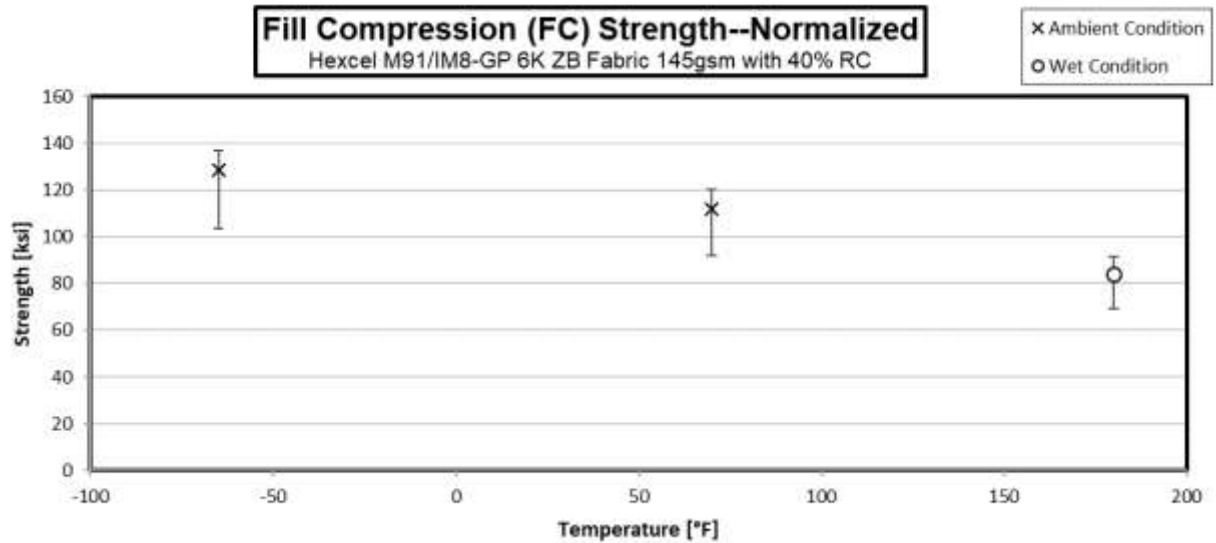


* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.

3.3 Warp Compression Properties (WC)

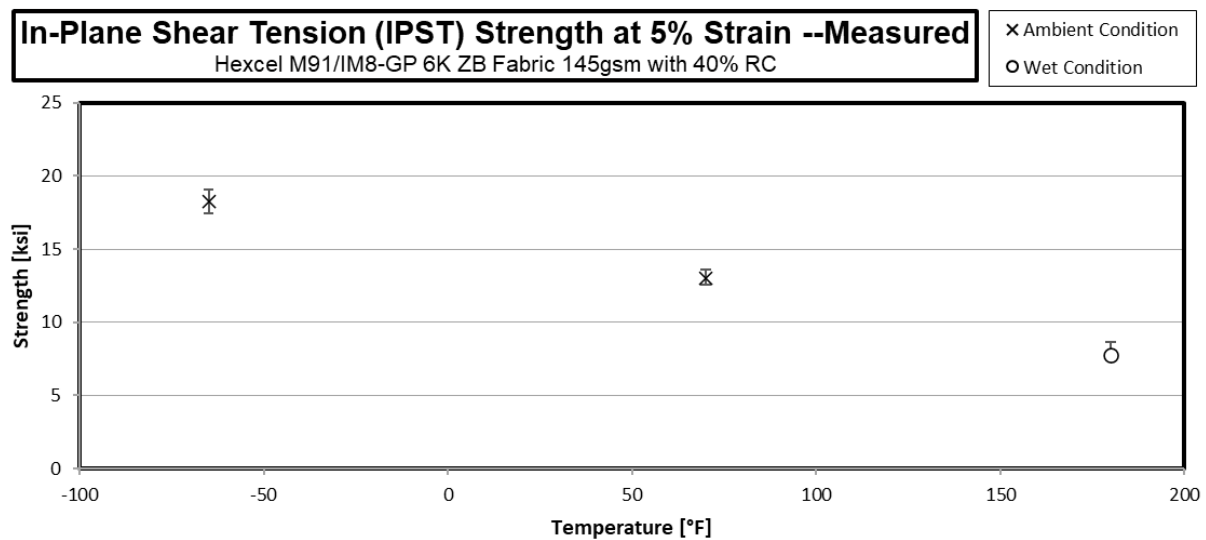
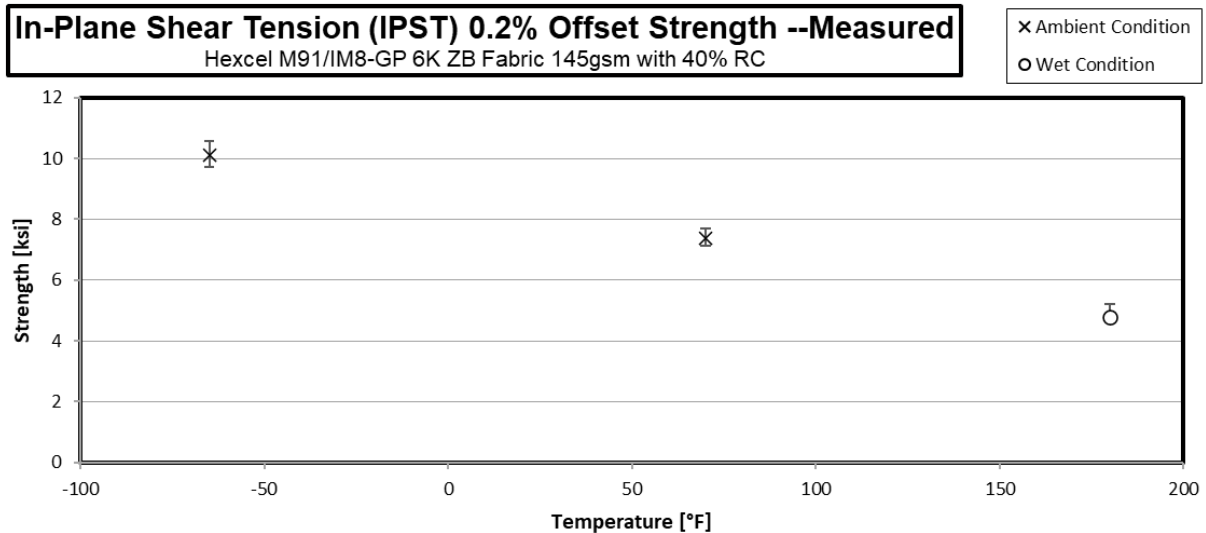


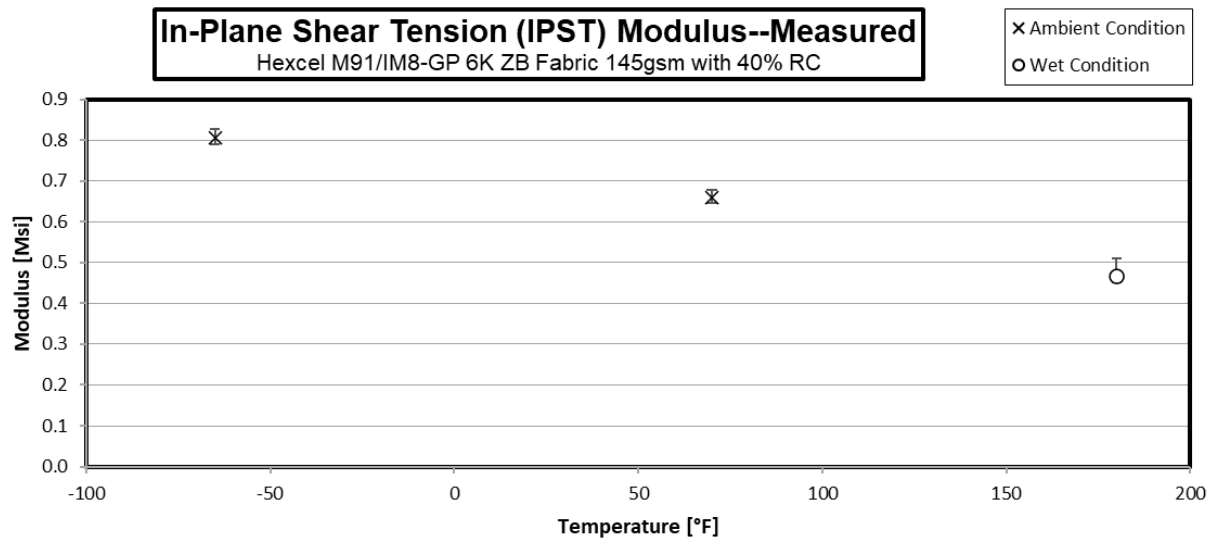
3.4 Fill Compression Properties (FC)



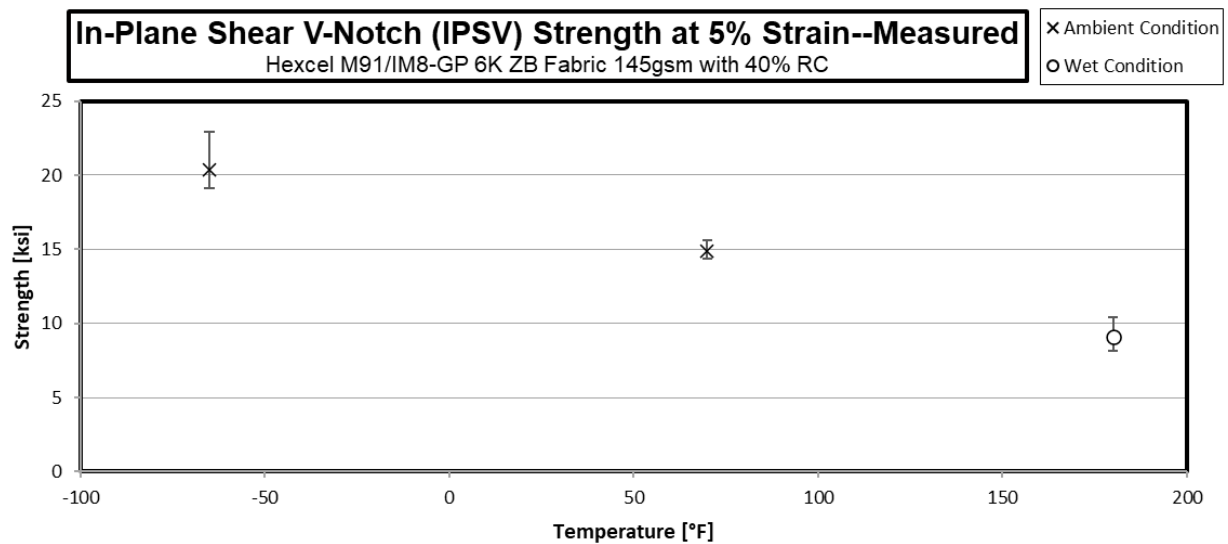
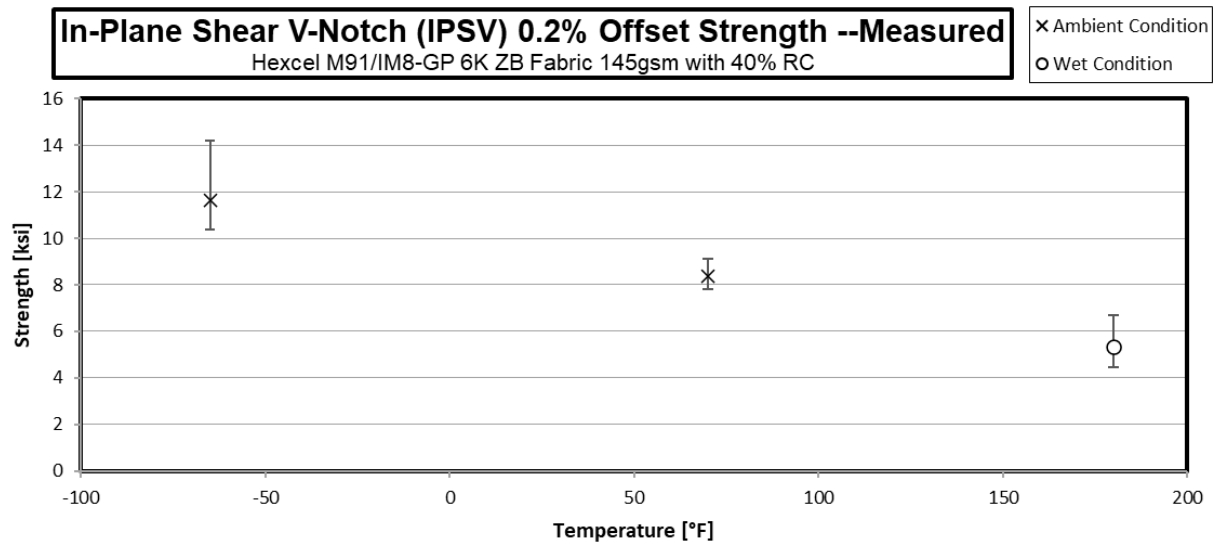
*Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.

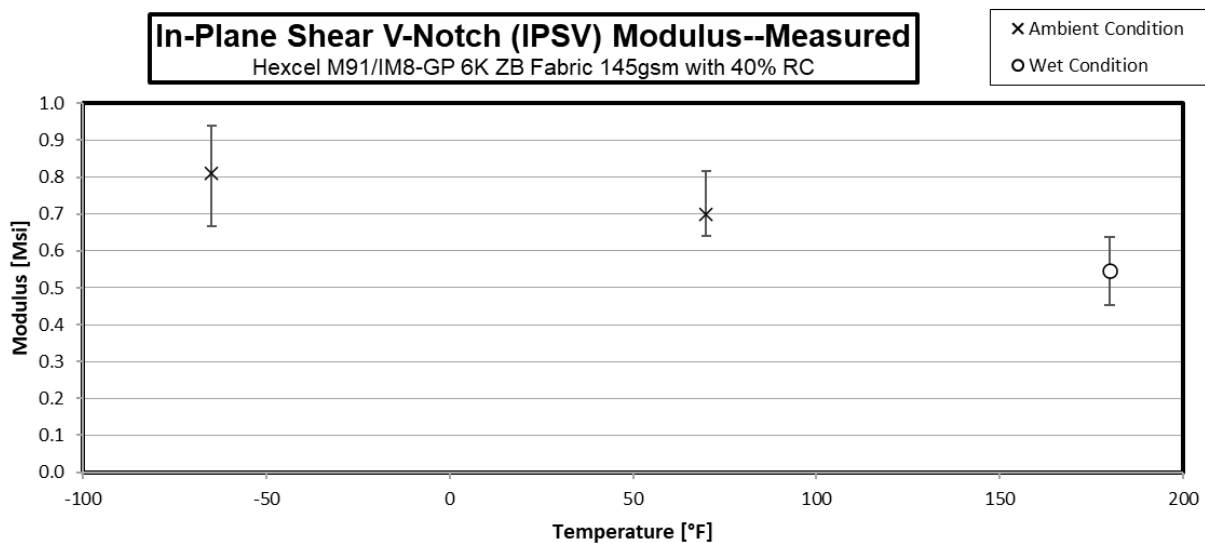
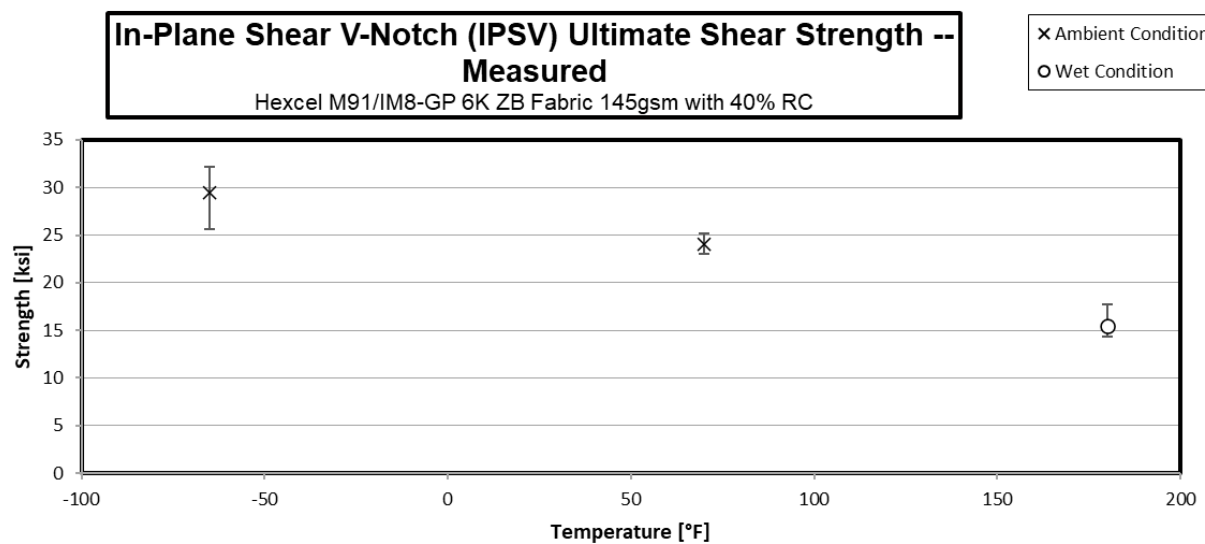
3.5 In-Plane Shear Tension Properties (IPST)



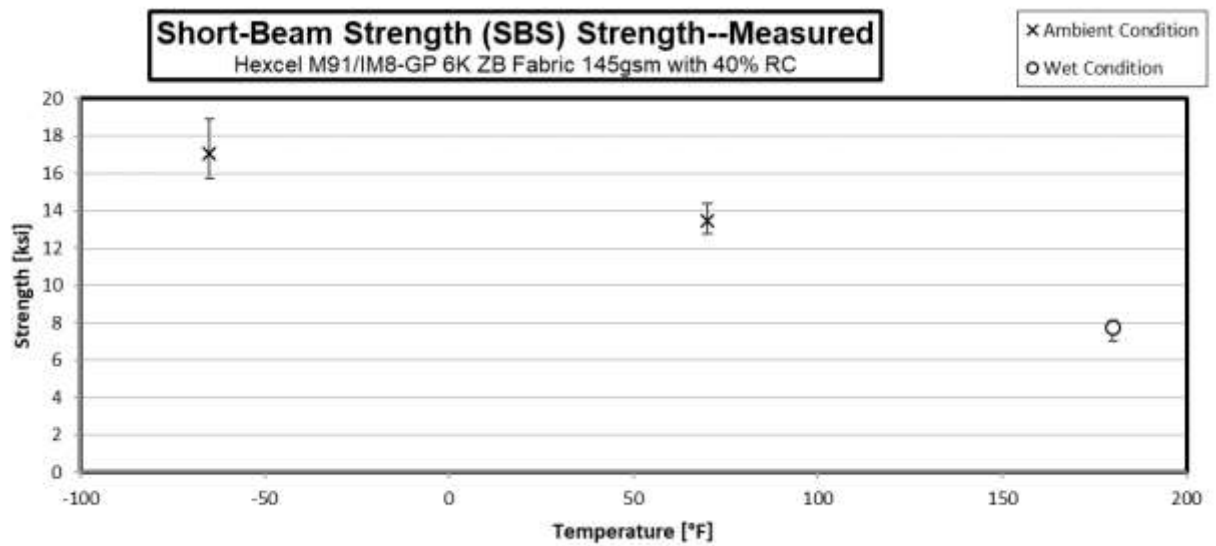


3.6 In-Plane Shear V-Notch Properties (IPSV)

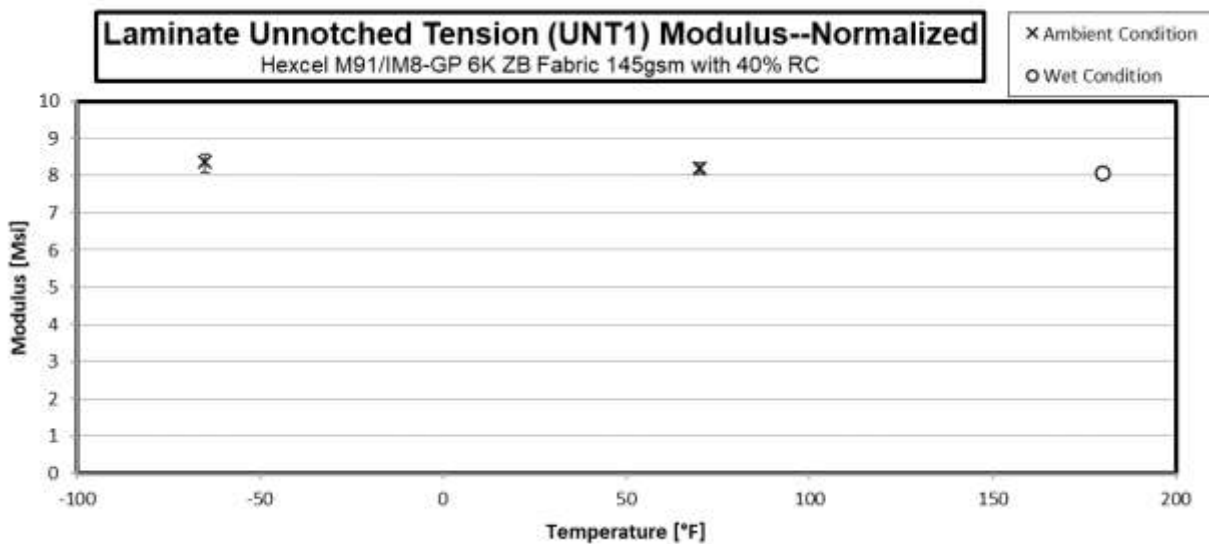
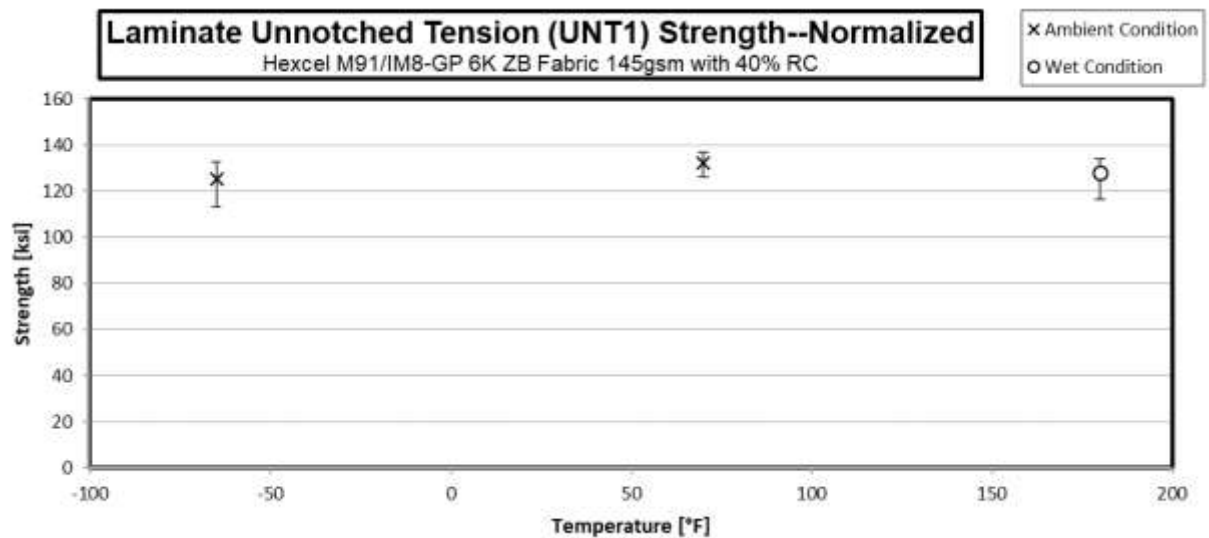




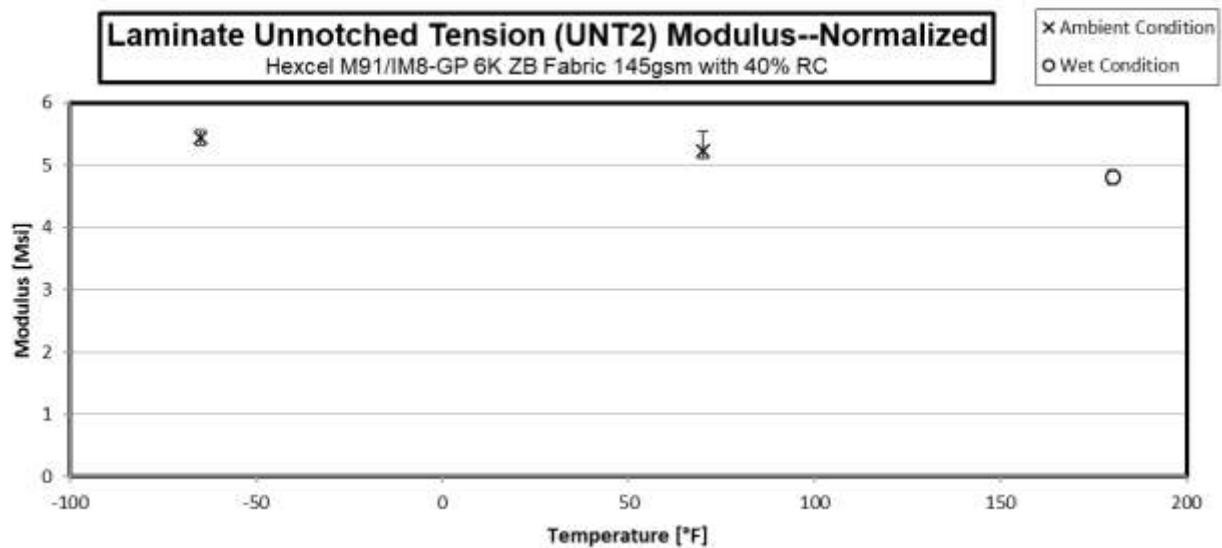
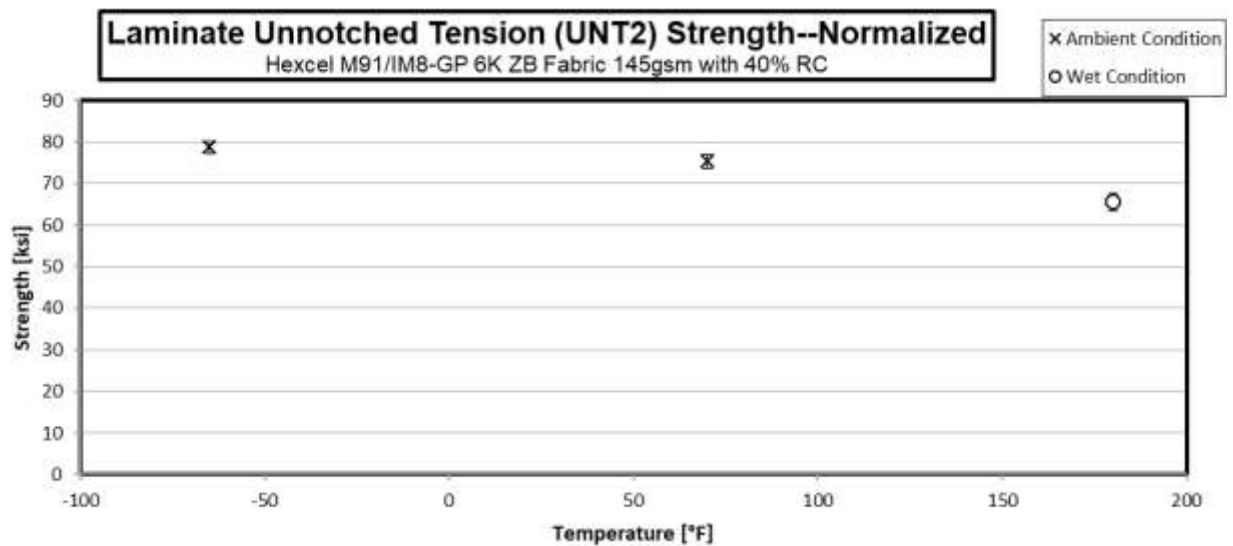
3.7 Short Beam Strength Properties (SBS)



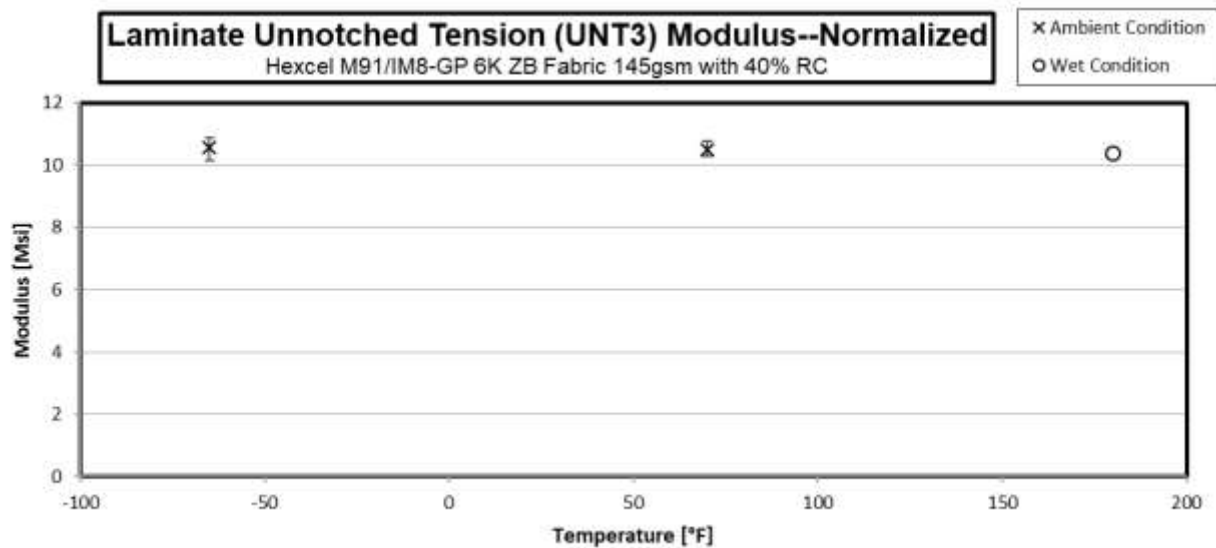
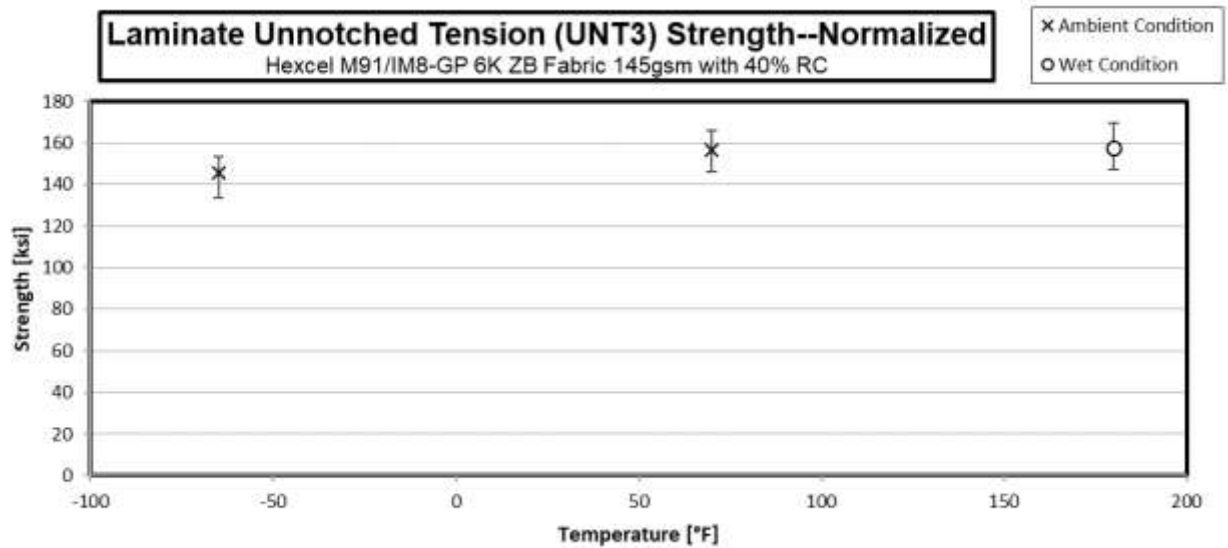
3.8 “25/50/25” Unnotched Tension 1 Properties (UNT1)



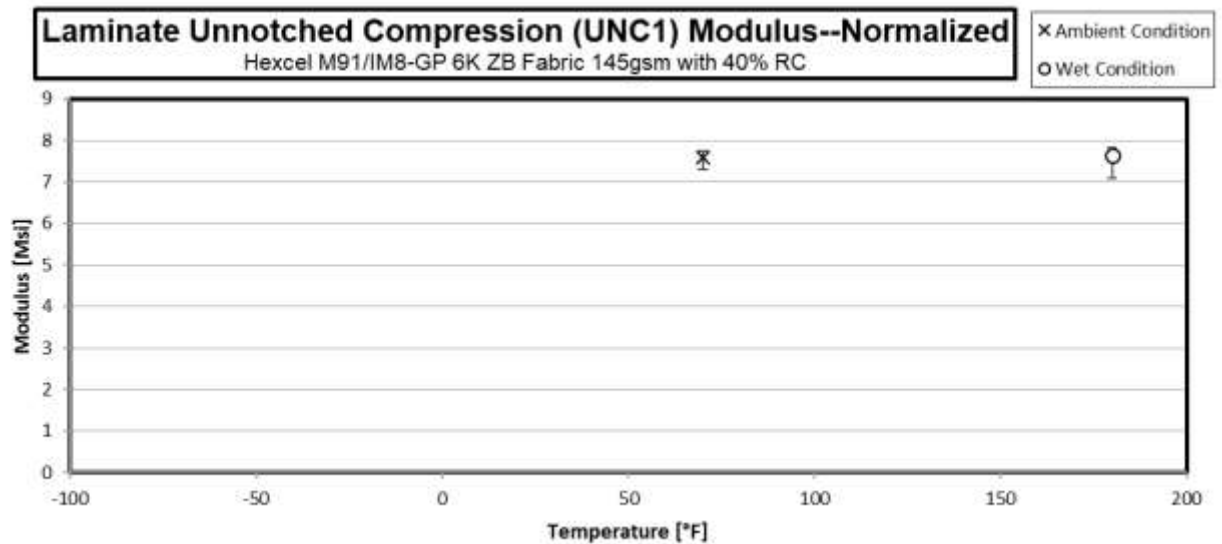
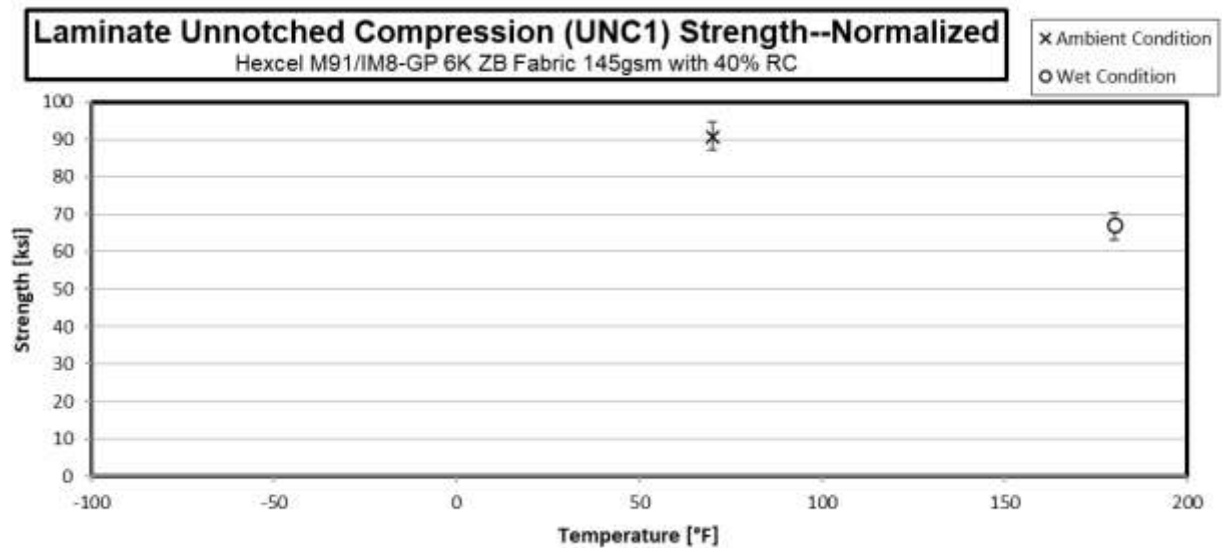
3.9 “10/80/10” Unnotched Tension 2 Properties (UNT2)



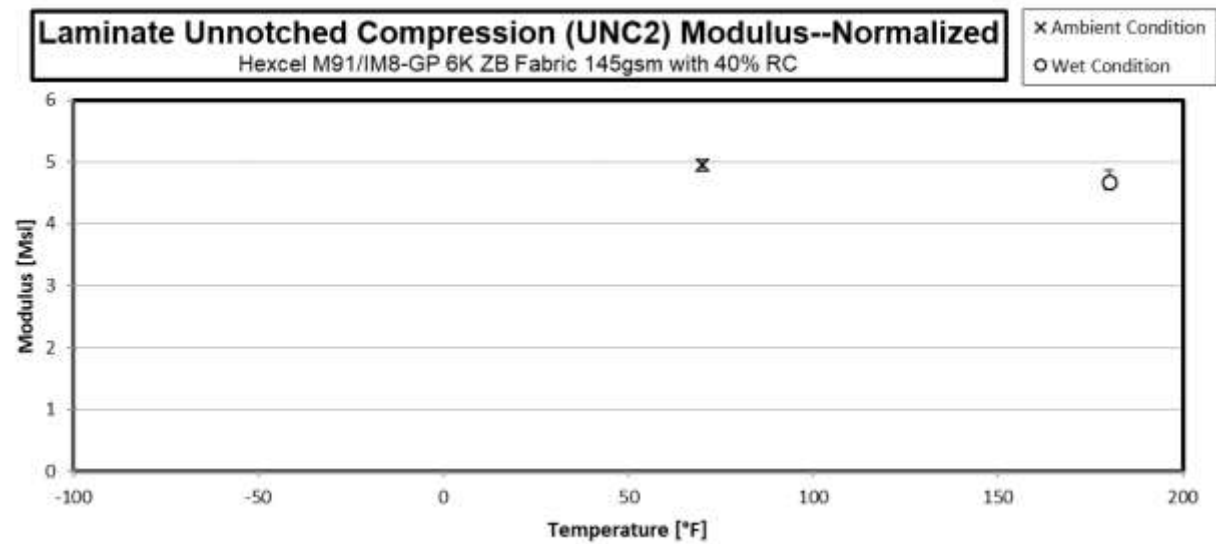
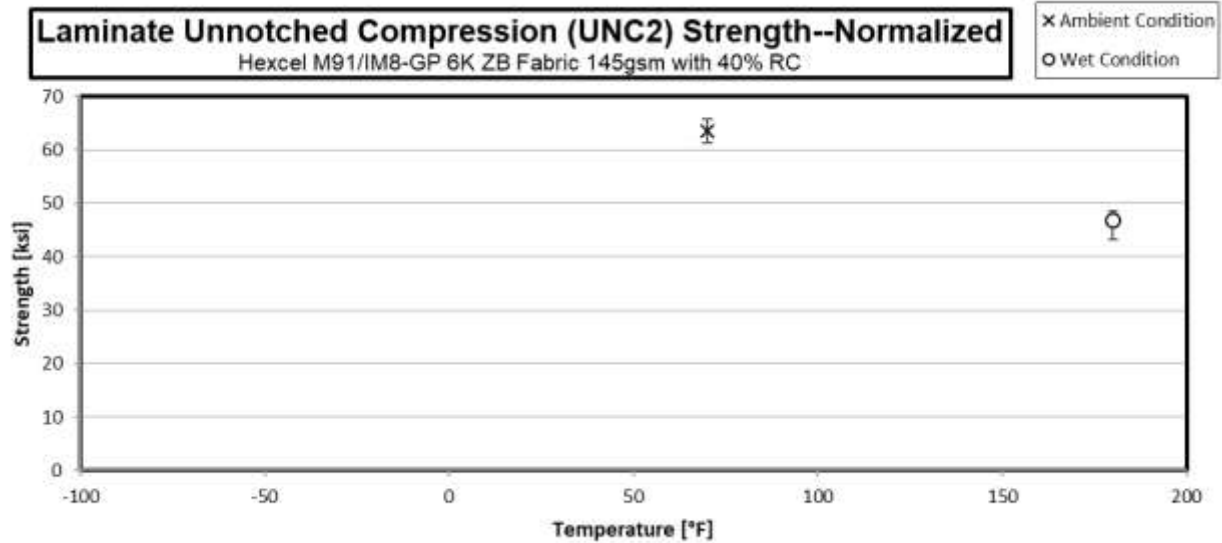
3.10 “40/20/40” Unnotched Tension 3 Properties (UNT3)



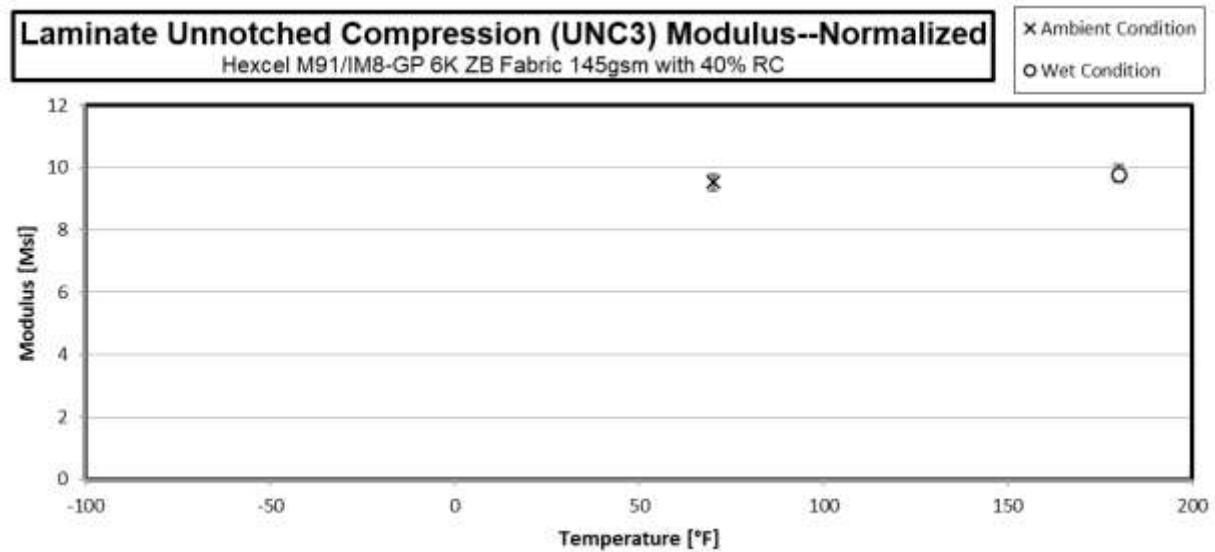
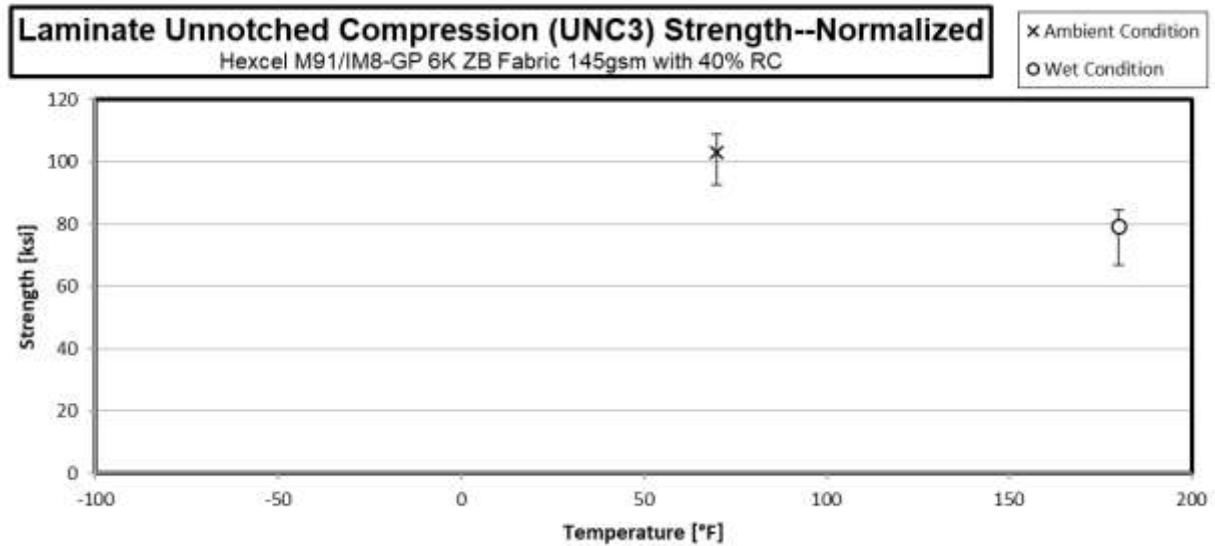
3.11 “25/50/25” Unnotched Compression 1 Properties (UNC1)



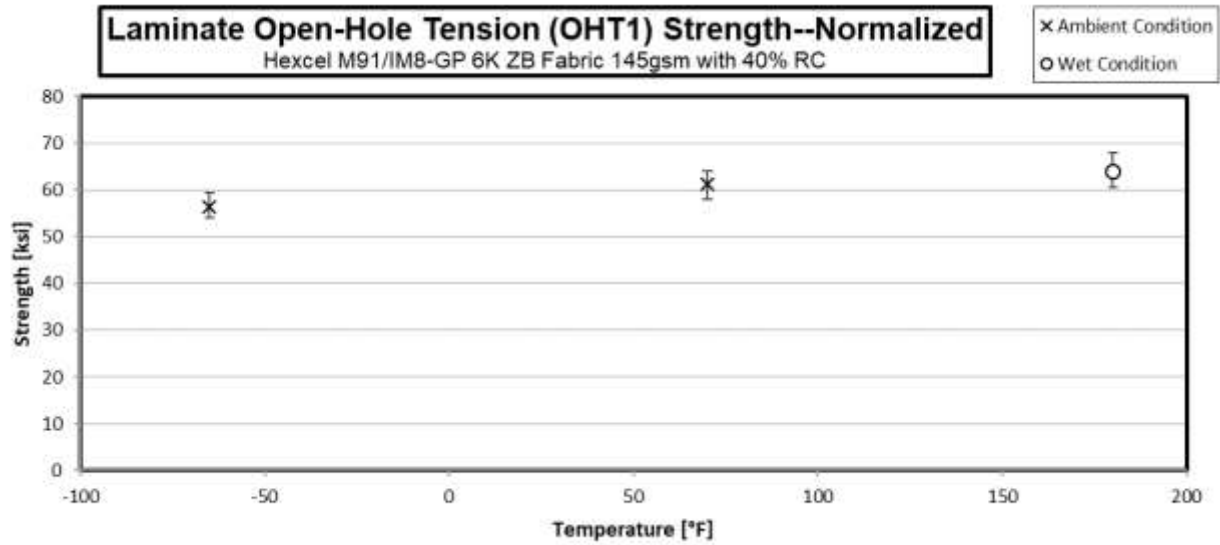
3.12 “10/80/10” Unnotched Compression 2 Properties (UNC2)



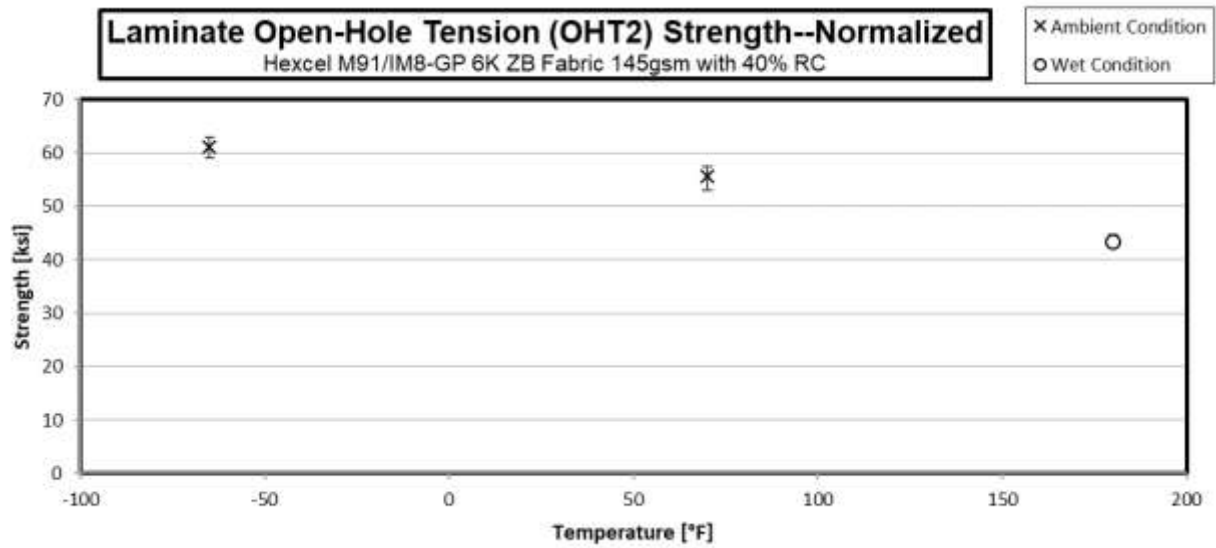
3.13 “40/20/40” Unnotched Compression 3 Properties (UNC3)



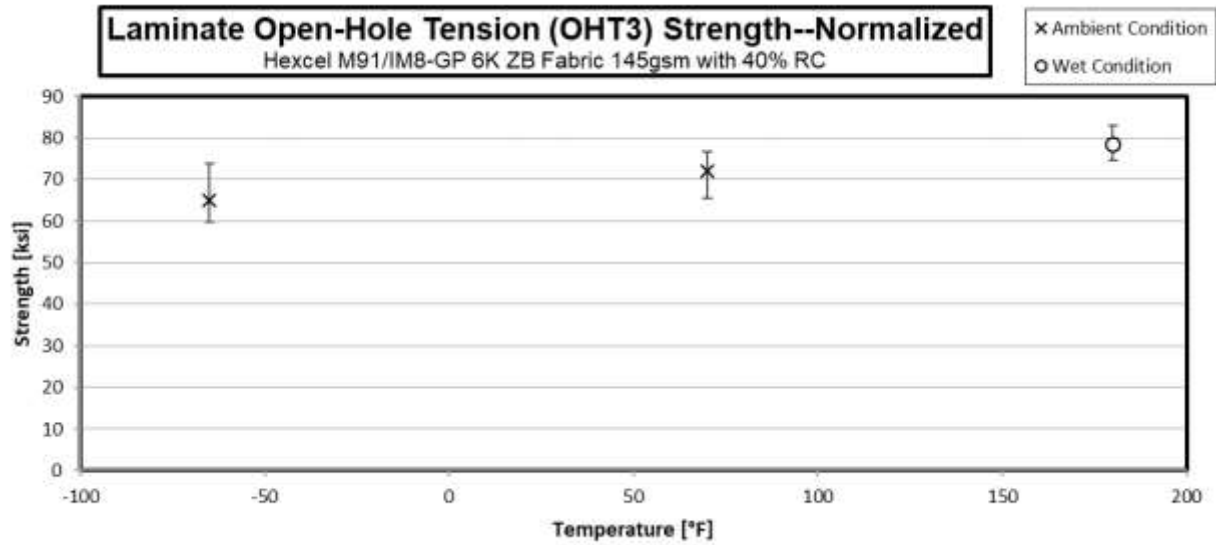
3.14 “25/50/25” Open-Hole Tension 1 Properties (OHT1)



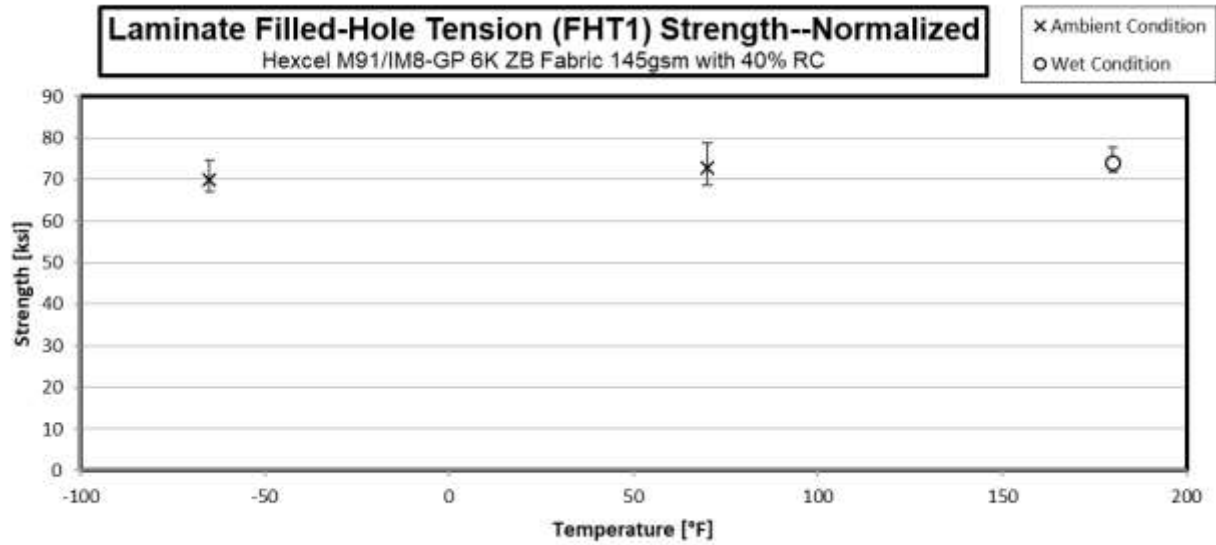
3.15 “10/80/10” Open-Hole Tension 2 Properties (OHT2)



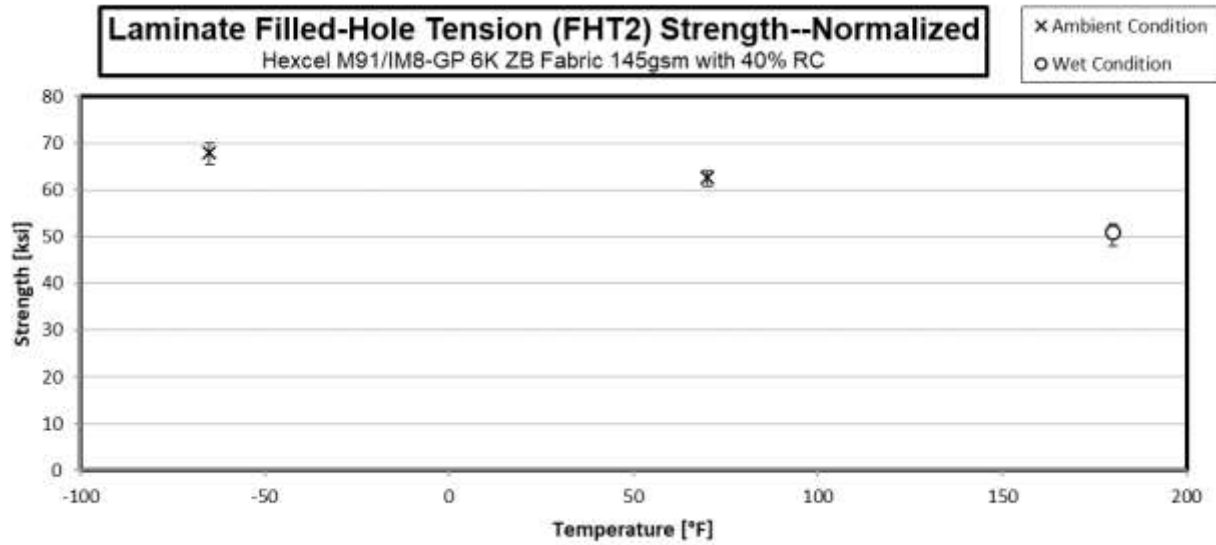
3.16 “40/20/40” Open-Hole Tension 3 Properties (OHT3)



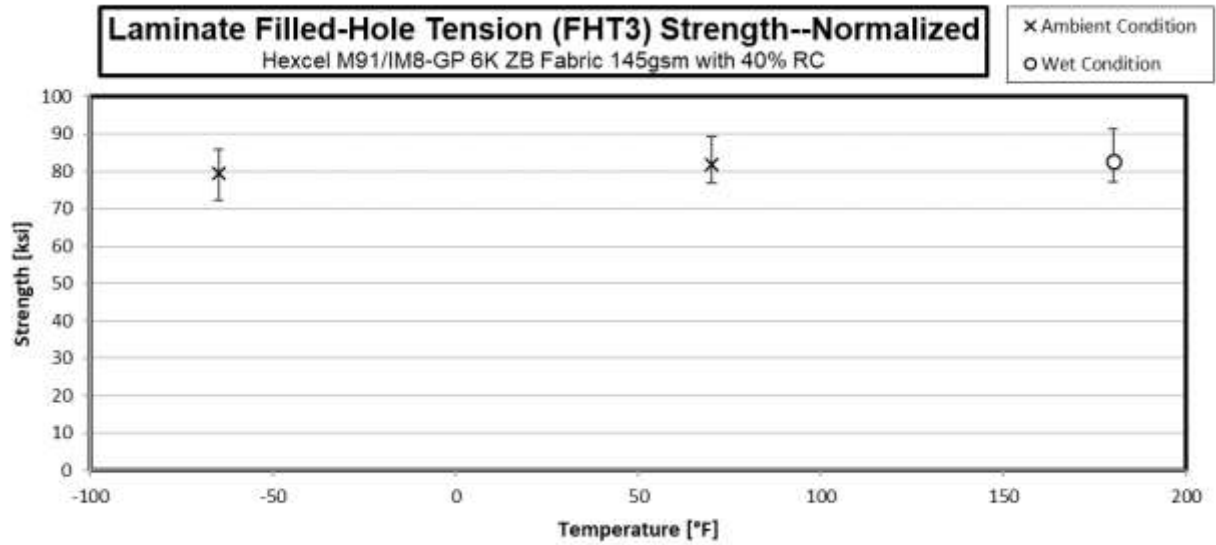
3.17 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)



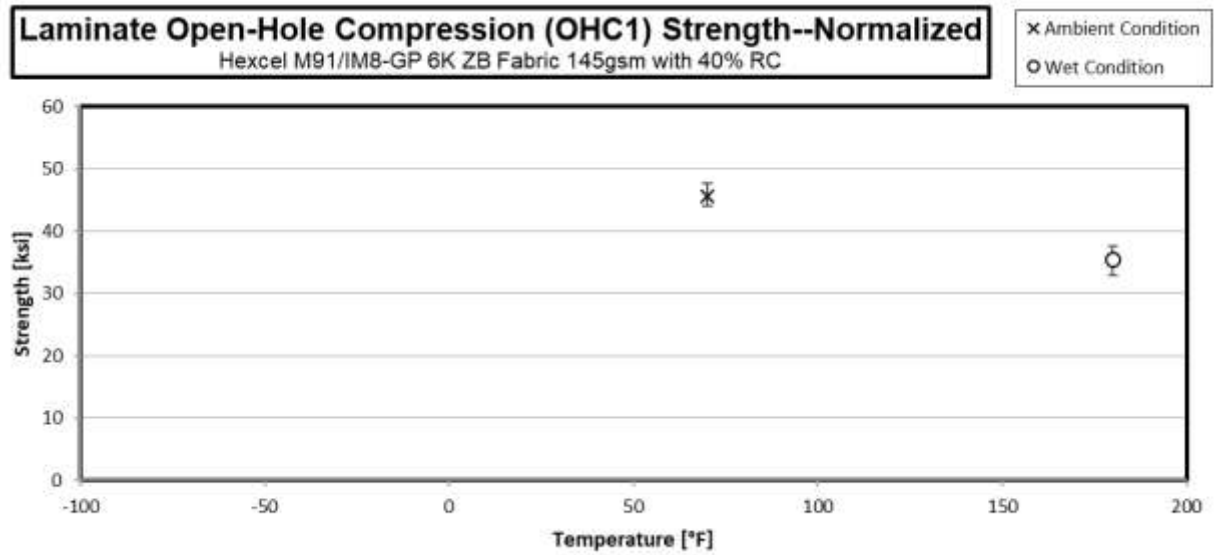
3.18 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)



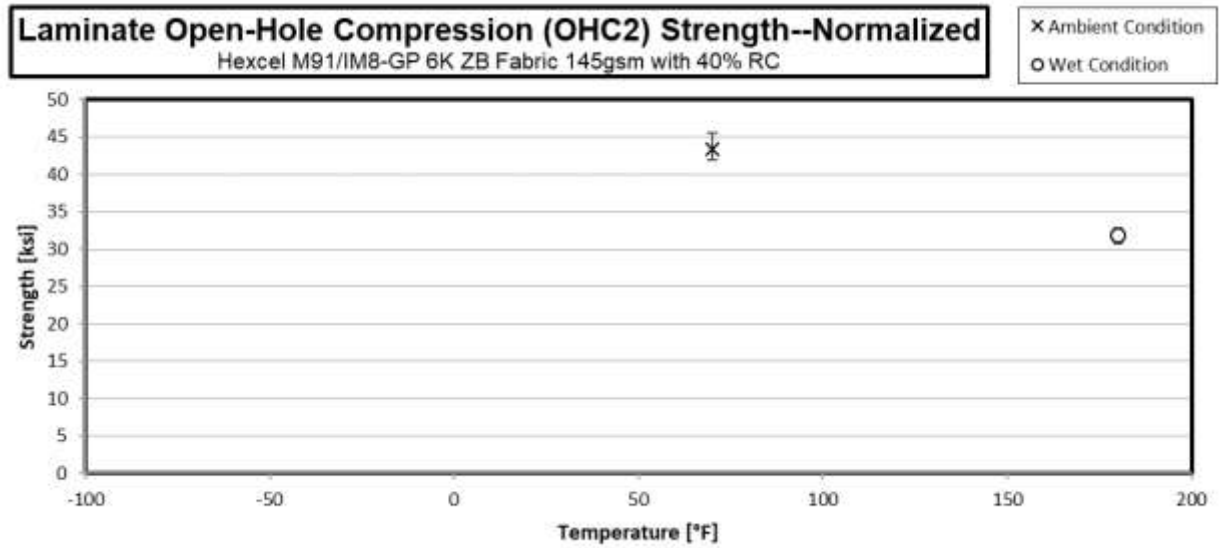
3.19 “40/20/40” Filled-Hole Tension 3 Properties (FHT3)



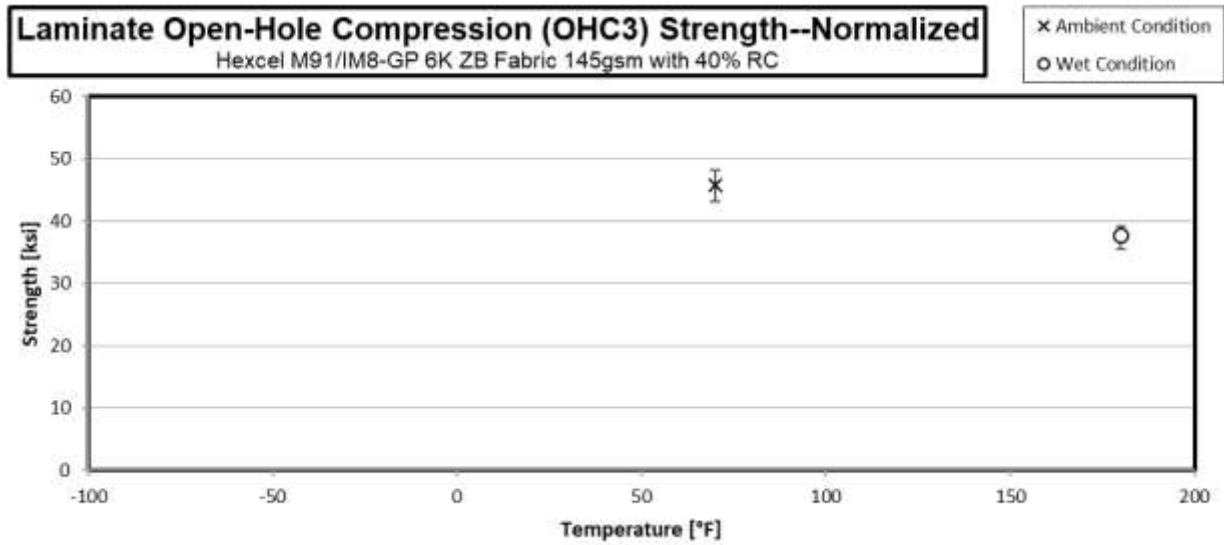
3.20 “25/50/25” Open-Hole Compression 1 Properties (OHC1)



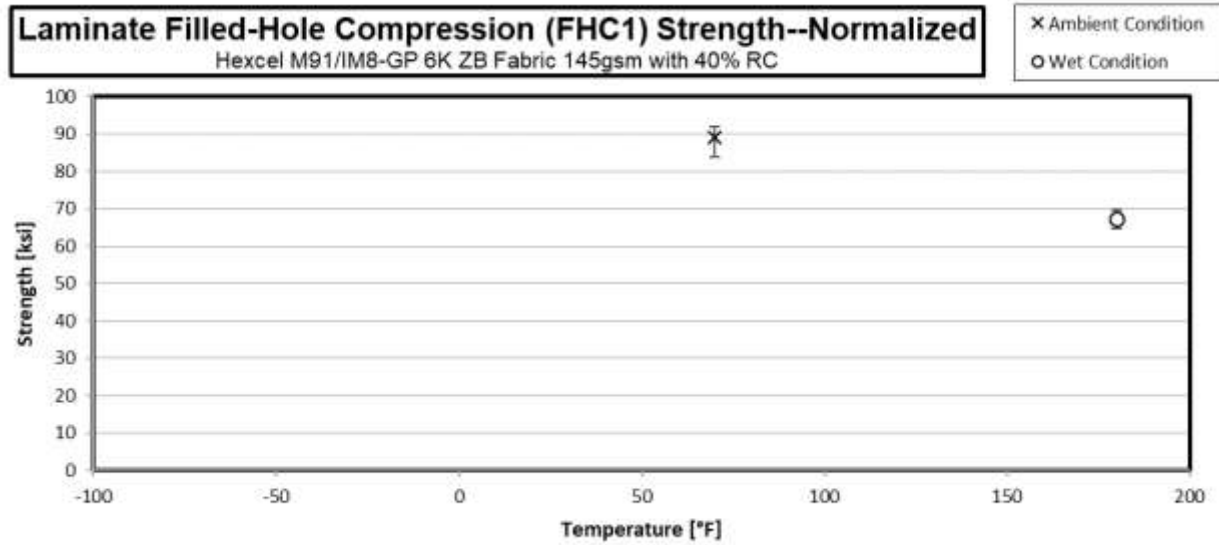
3.21 “10/80/10” Open-Hole Compression 2 Properties (OHC2)



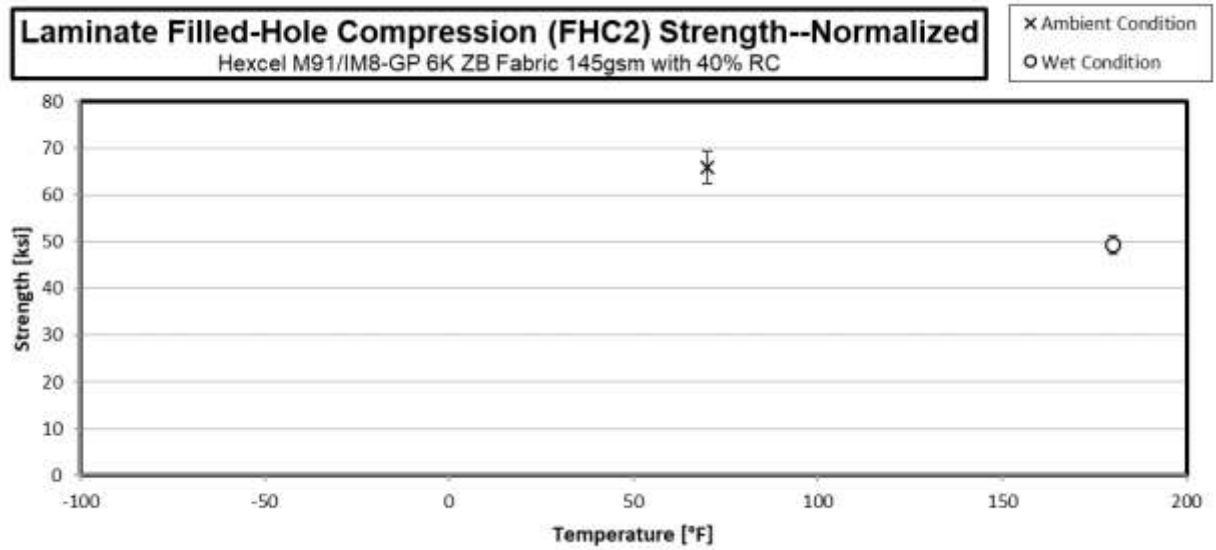
3.22 “40/20/40” Open-Hole Compression 3 Properties (OHC3)



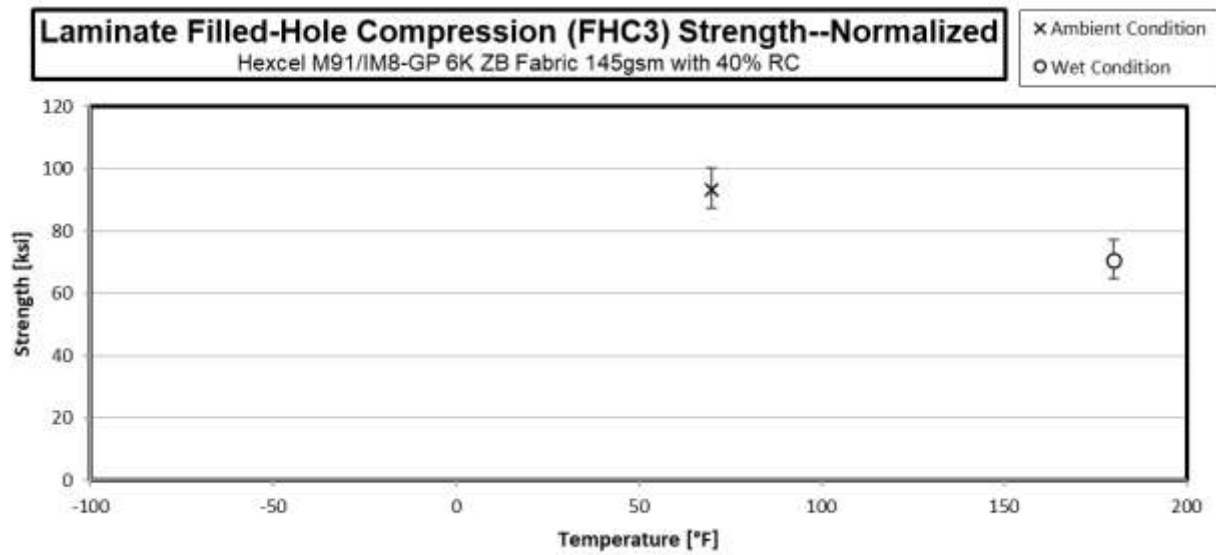
3.23 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)



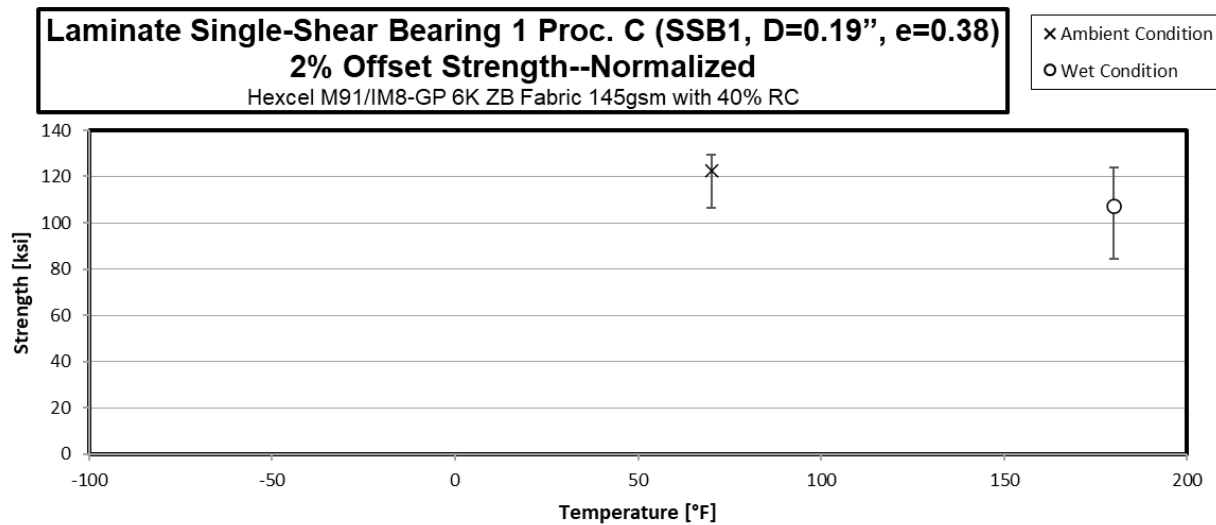
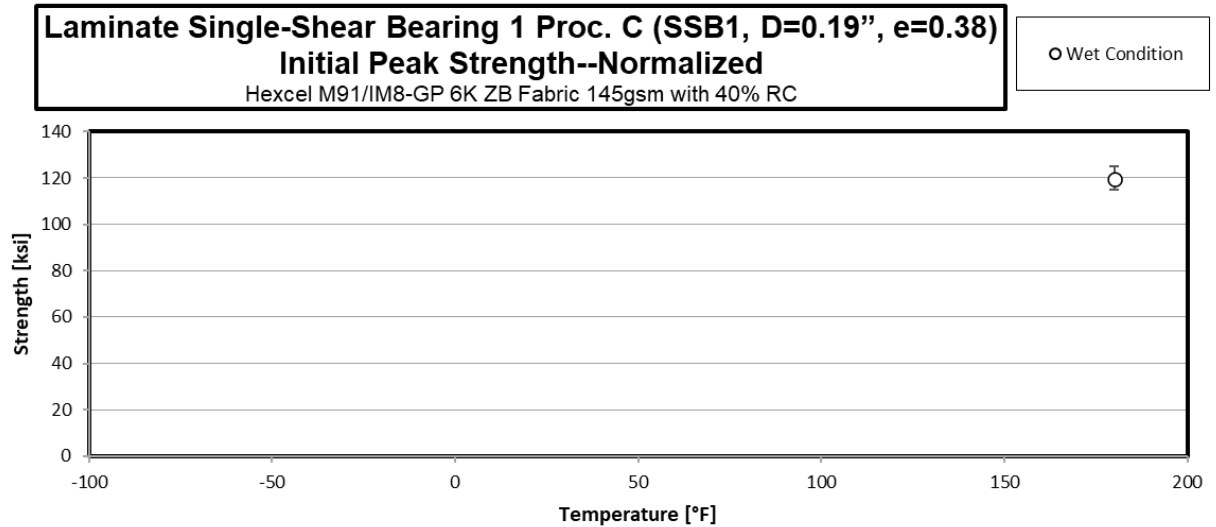
3.24 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

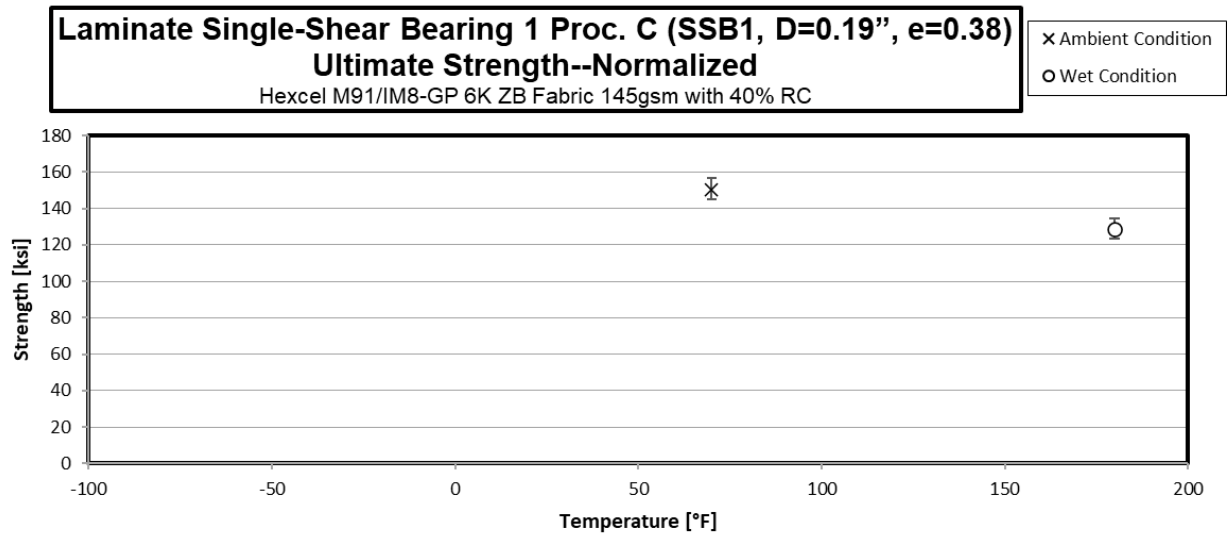


3.25 “40/20/40” Filled-Hole Compression 3 Properties (FHC3)

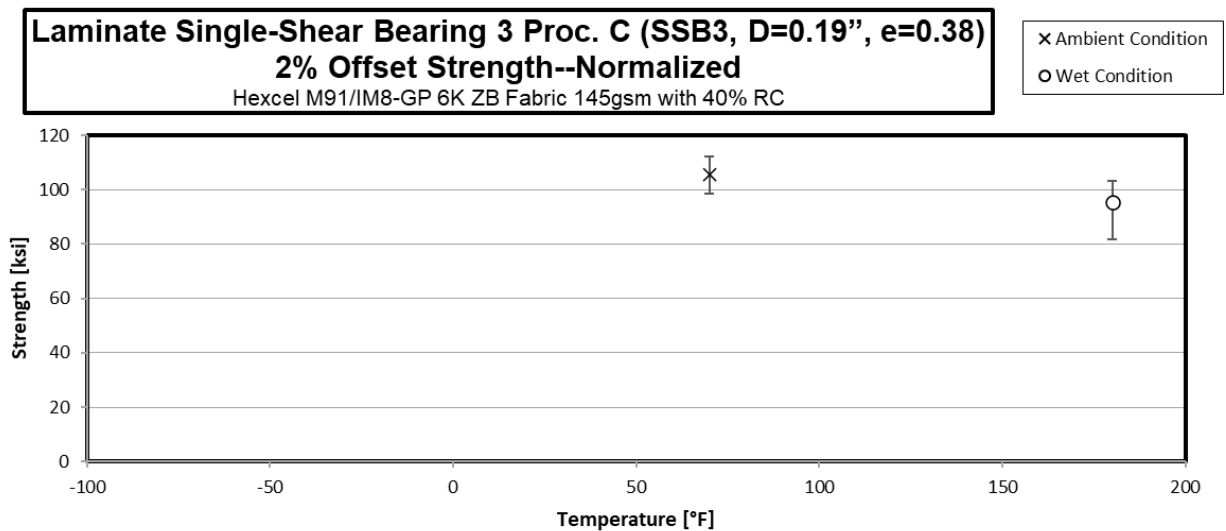
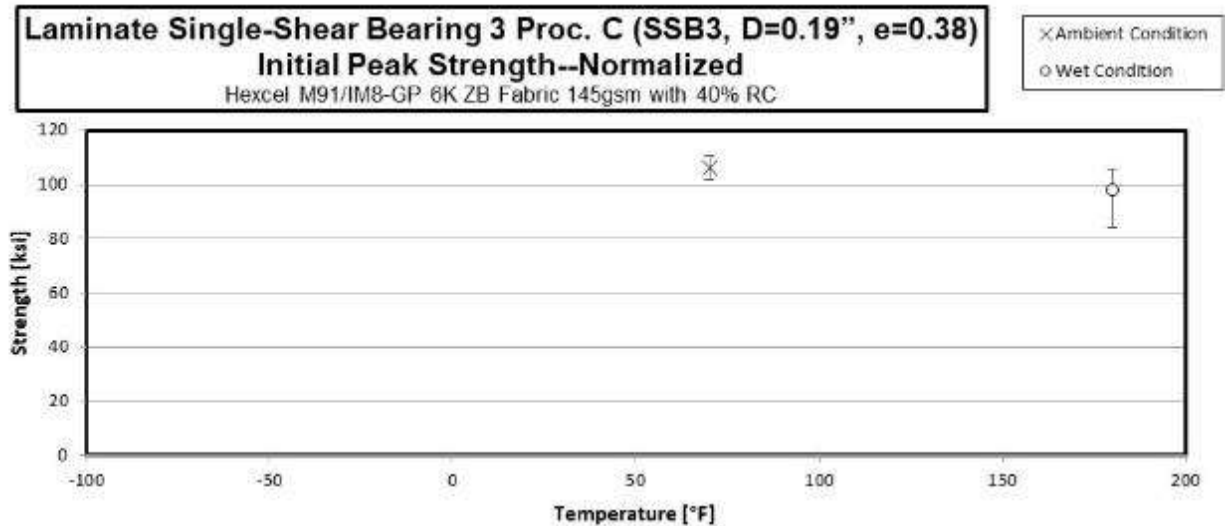


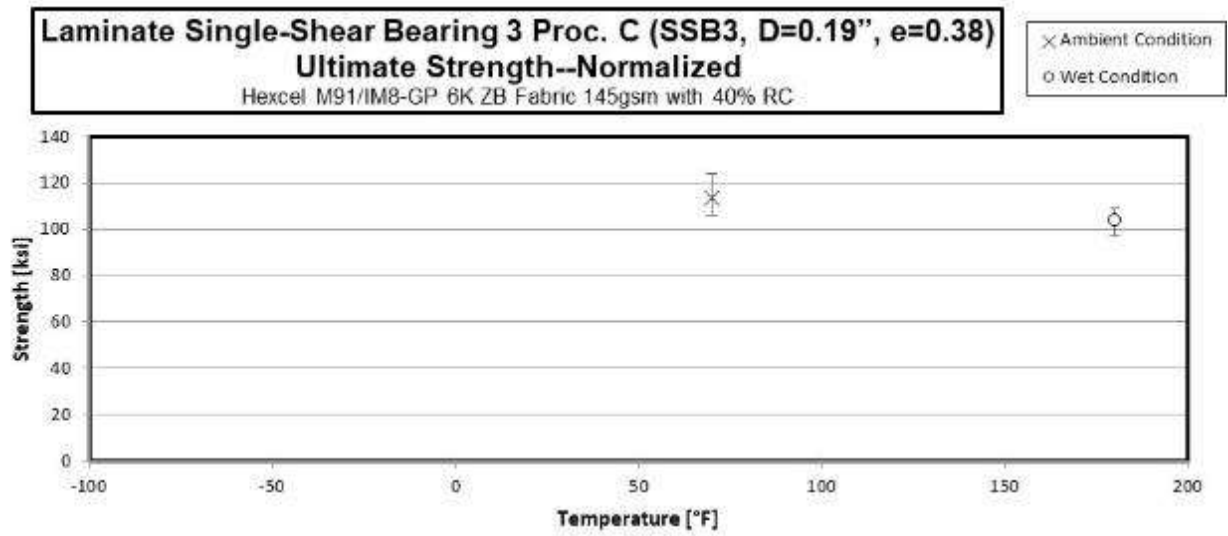
3.26 “25/50/25” Single-Shear Bearing 1 Proc. C Properties (SSB1, D=0.19”, e=0.38)



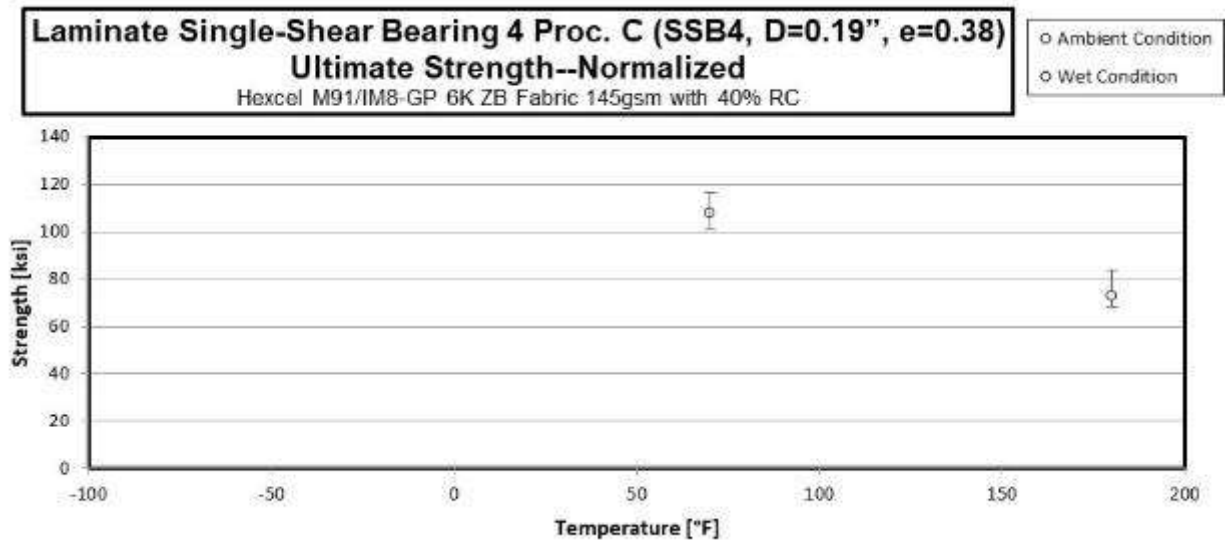
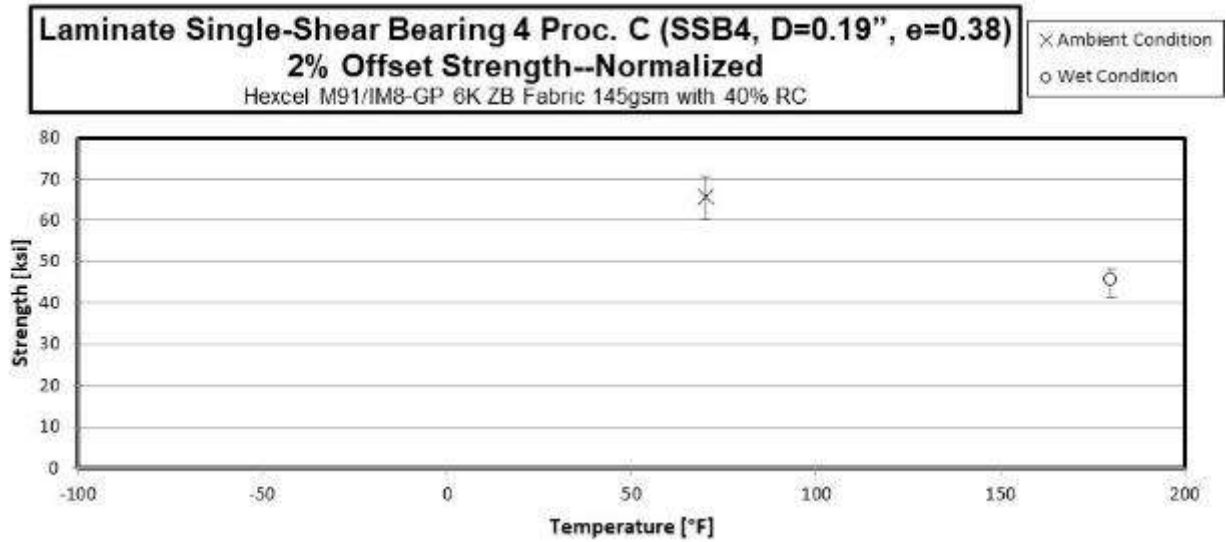


3.27 “40/20/40” Single-Shear Bearing 3 Proc. C Properties (SSB3, D=0.19”, e=0.38)

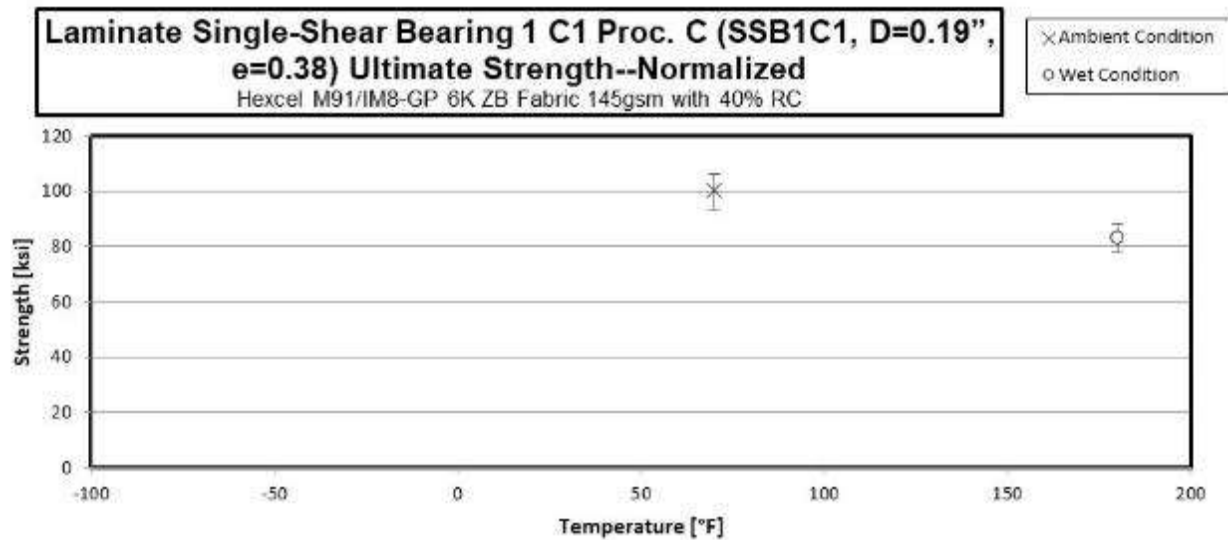
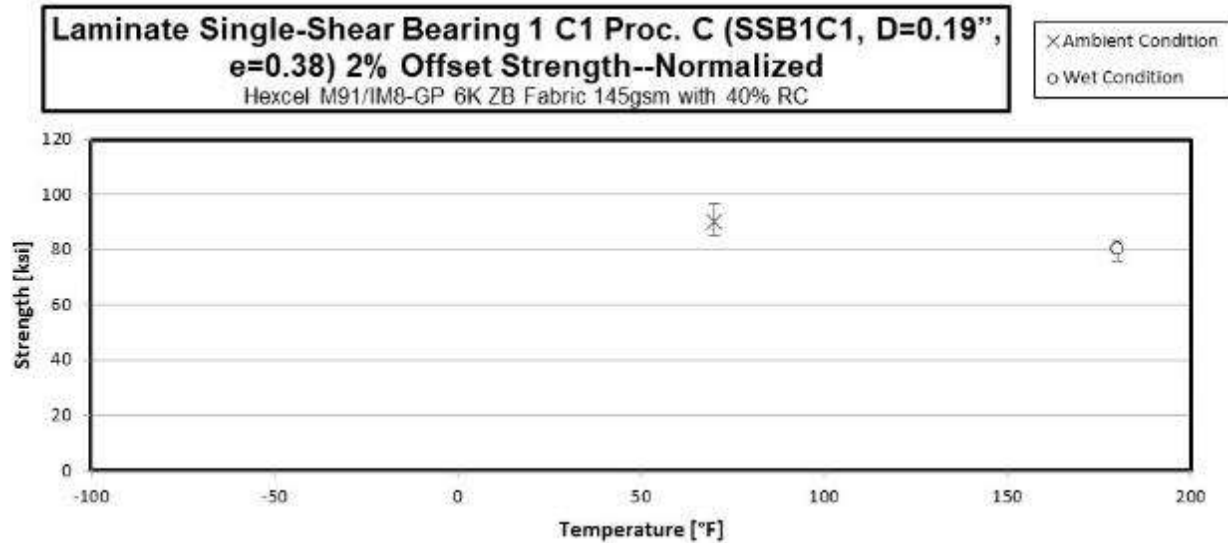




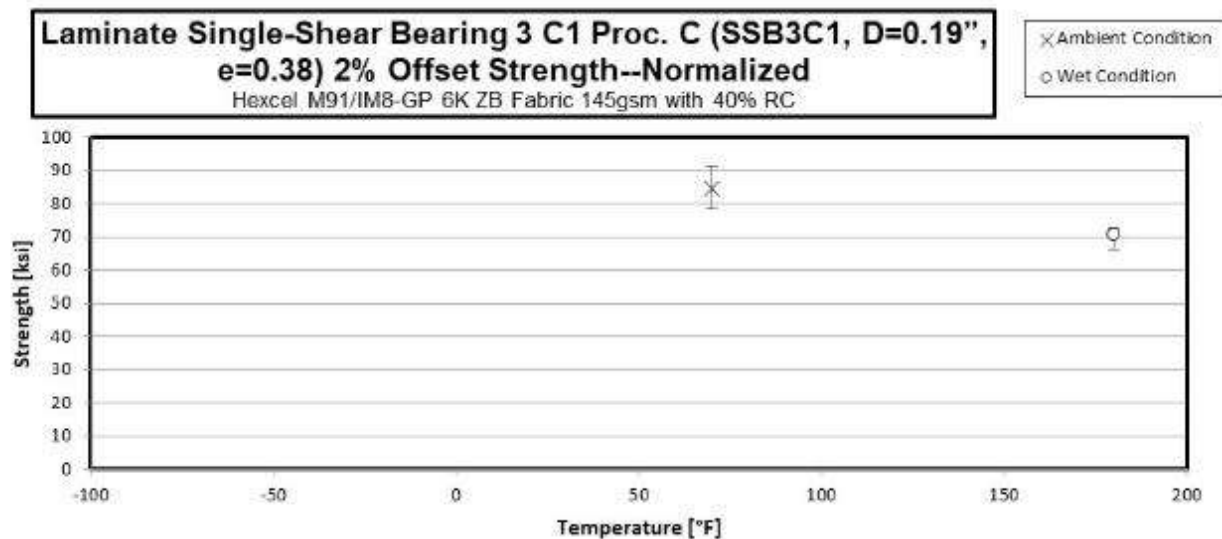
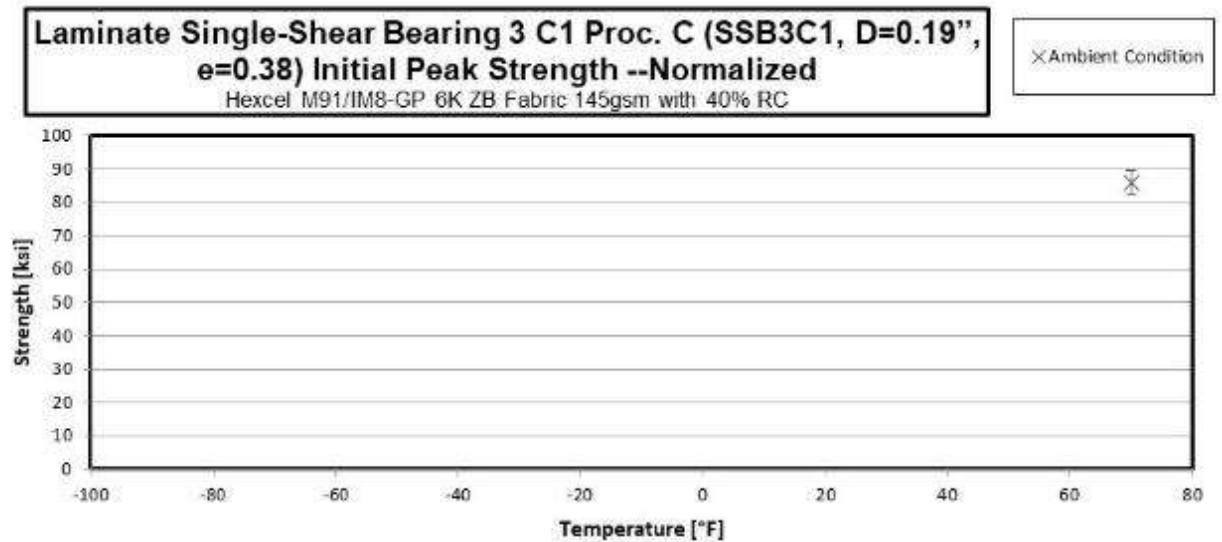
3.28 “0/100/0” Single-Shear Bearing 4 Proc. C Properties (SSB4, D=0.19”, e=0.38)

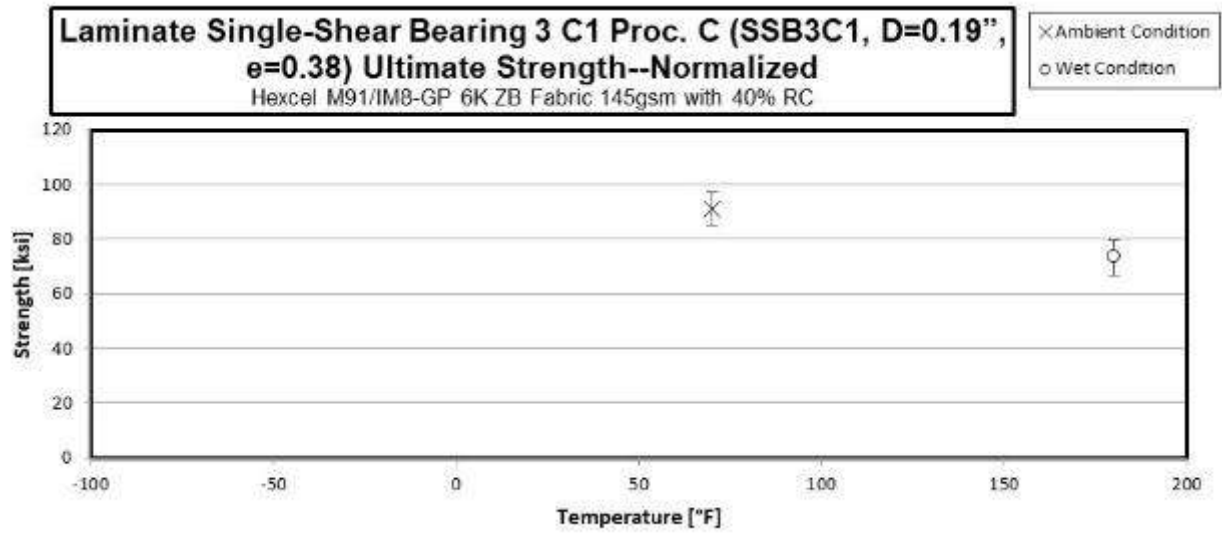


3.29 “25/50/25” Single-Shear Bearing 1 Countersink 1 Proc. C, Properties (SSB1C1, D=0.19”, e=0.38)

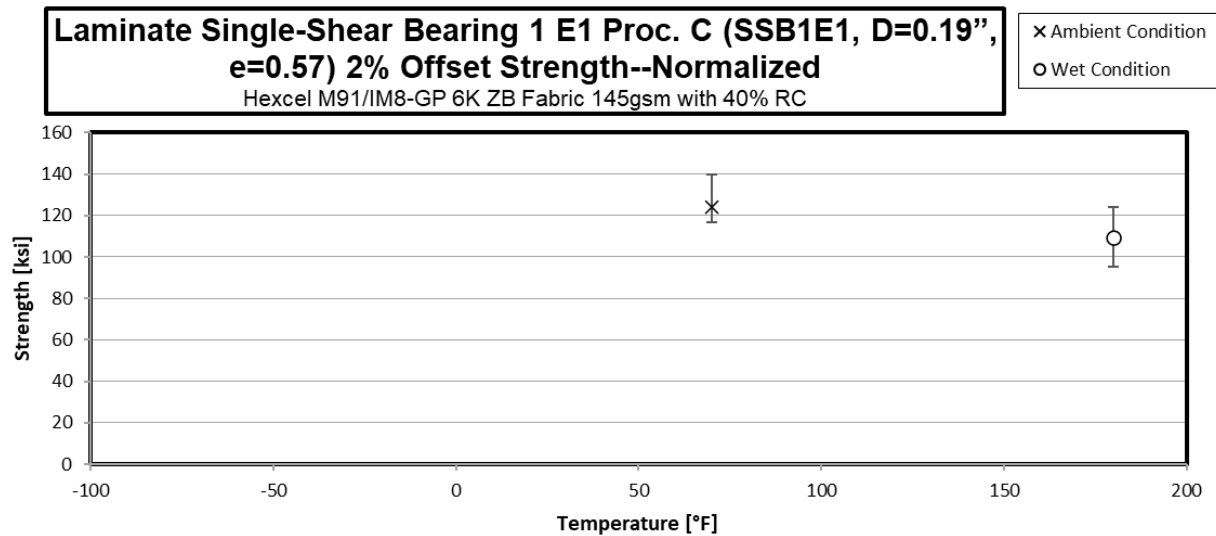
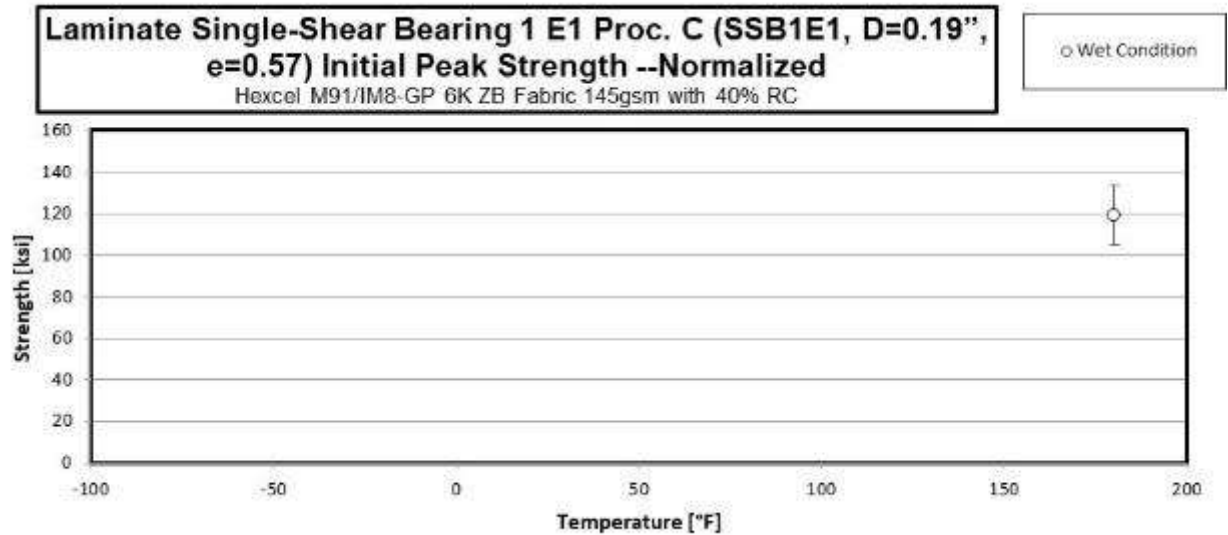


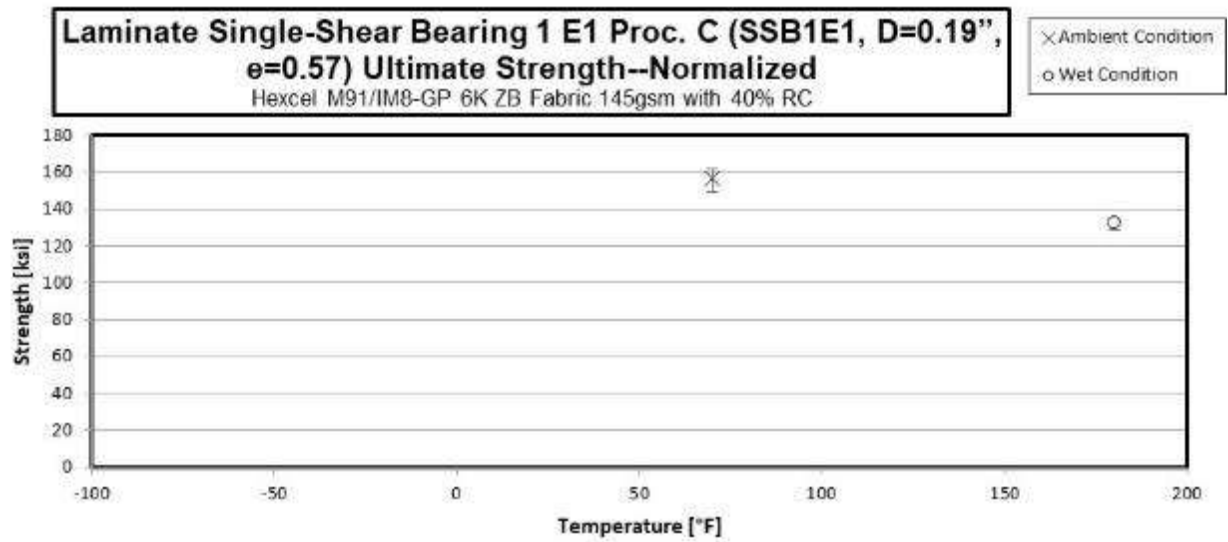
3.30 “40/20/40” Single-Shear Bearing 3 Countersink 1 Proc. C Properties (SSB3C1, D=0.19”, e=0.38)



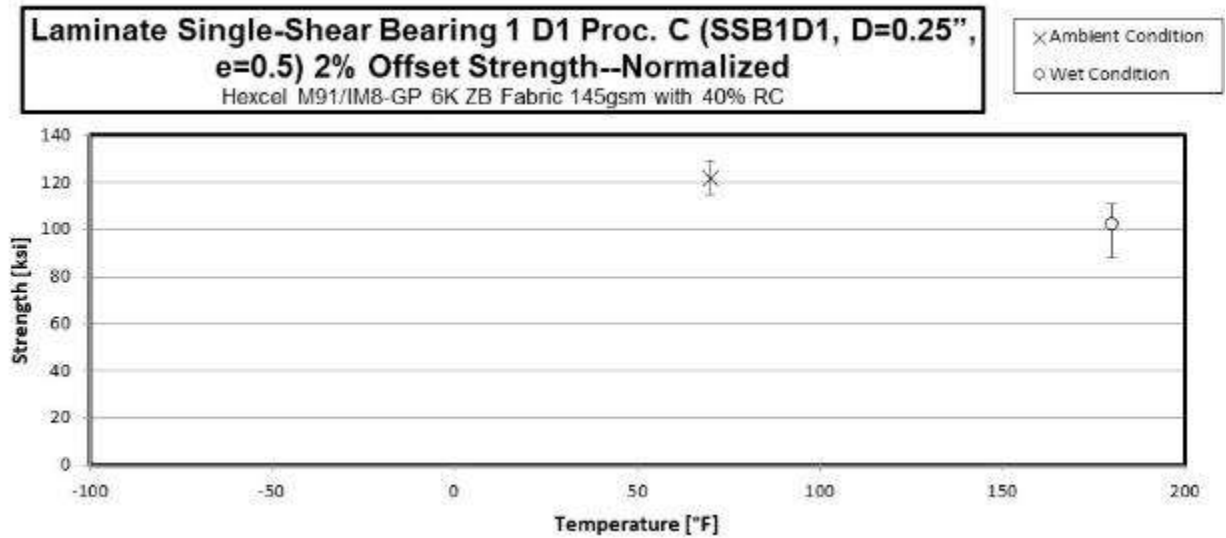
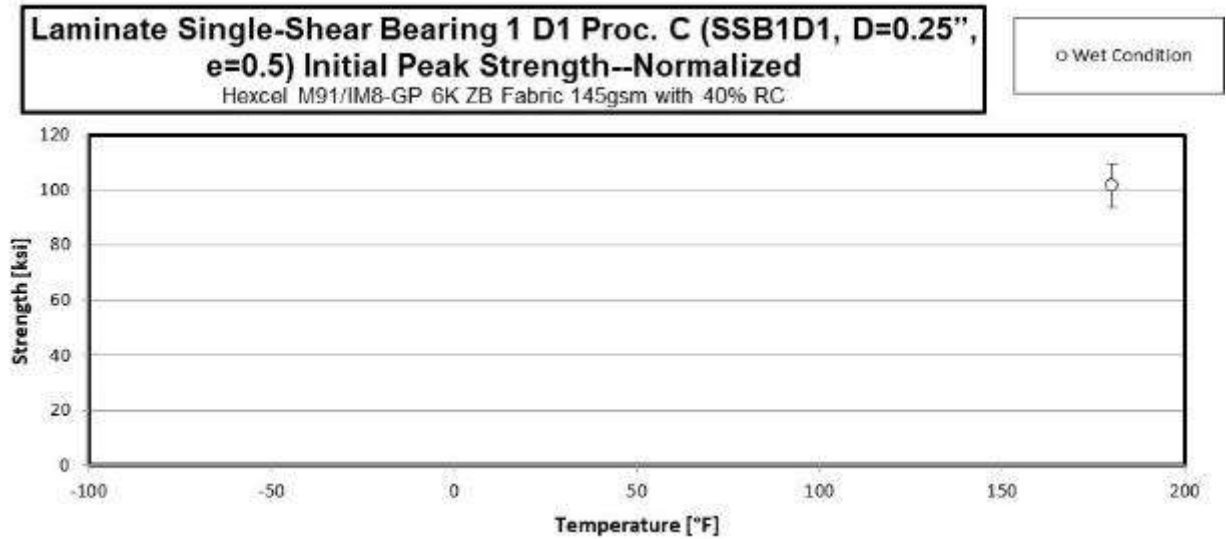


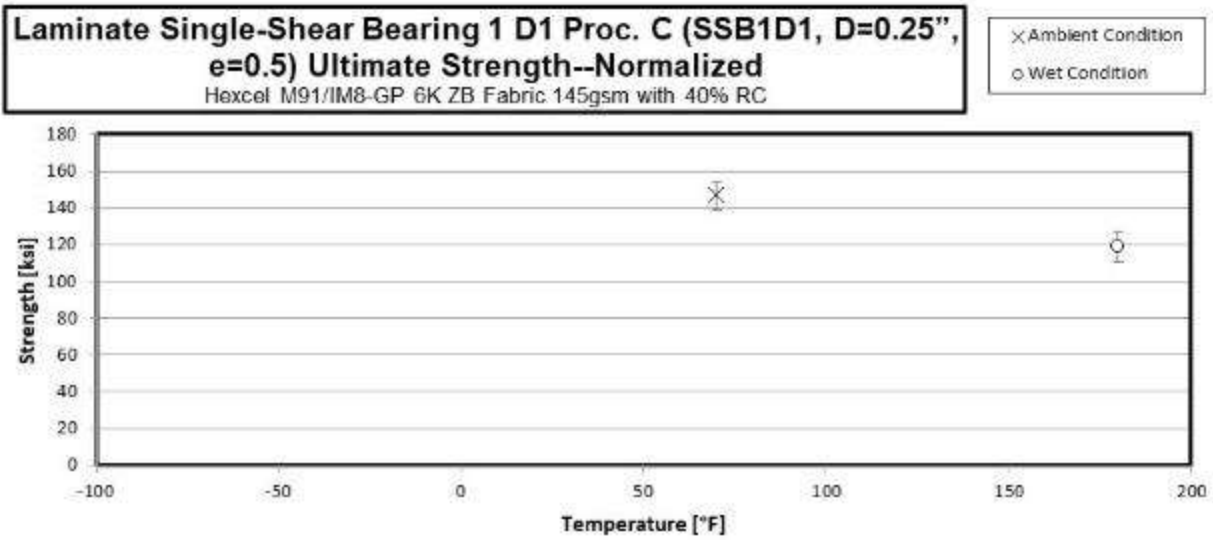
3.31 “25/50/25” Single-Shear Bearing 1 E1 Proc. C Properties (SSB1E1, D=0.19”, e=0.57)



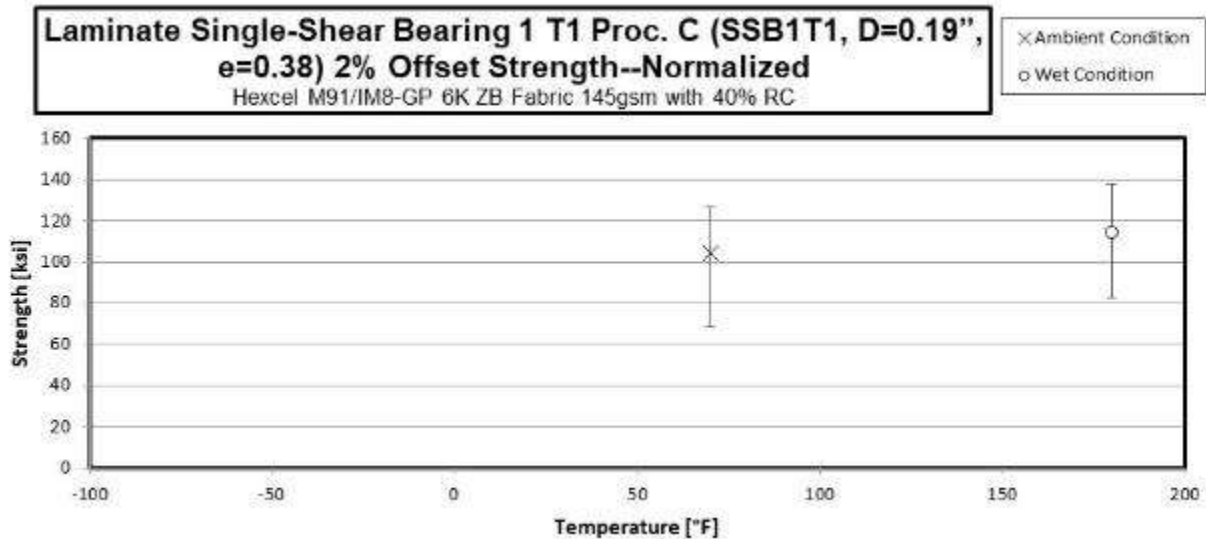
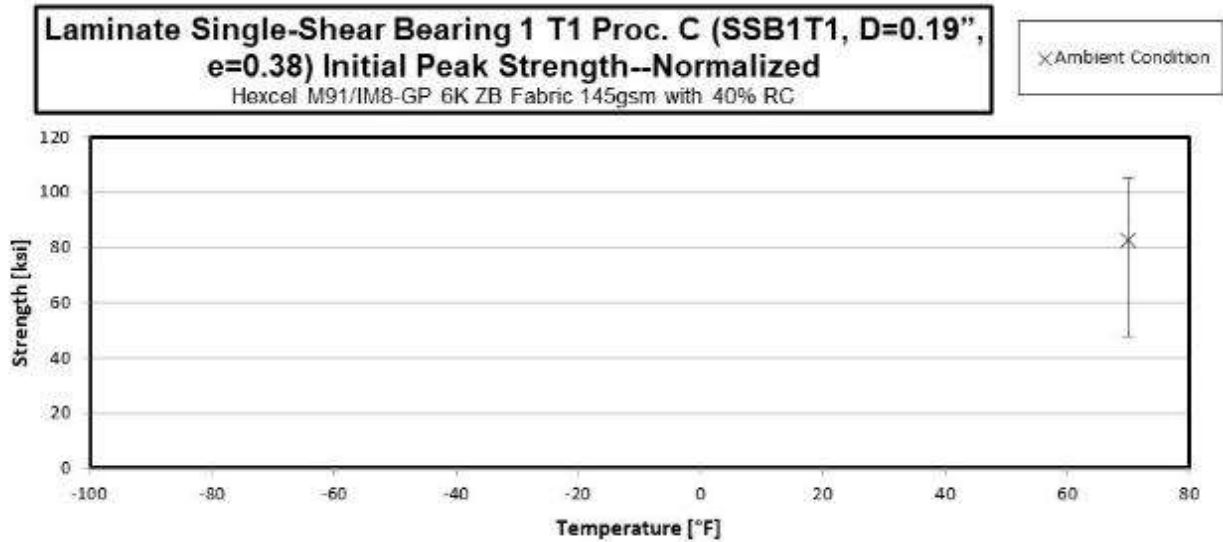


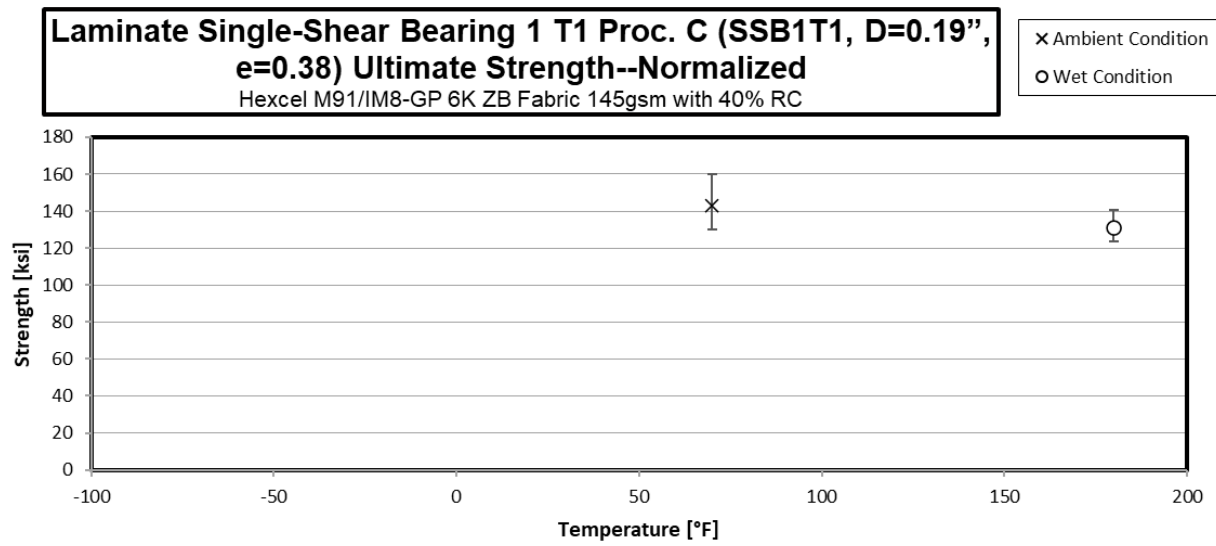
3.32 “25/50/25” Single-Shear Bearing 1 D1 Proc. C Properties (SSB1D1, D=0.25”, e=0.5)



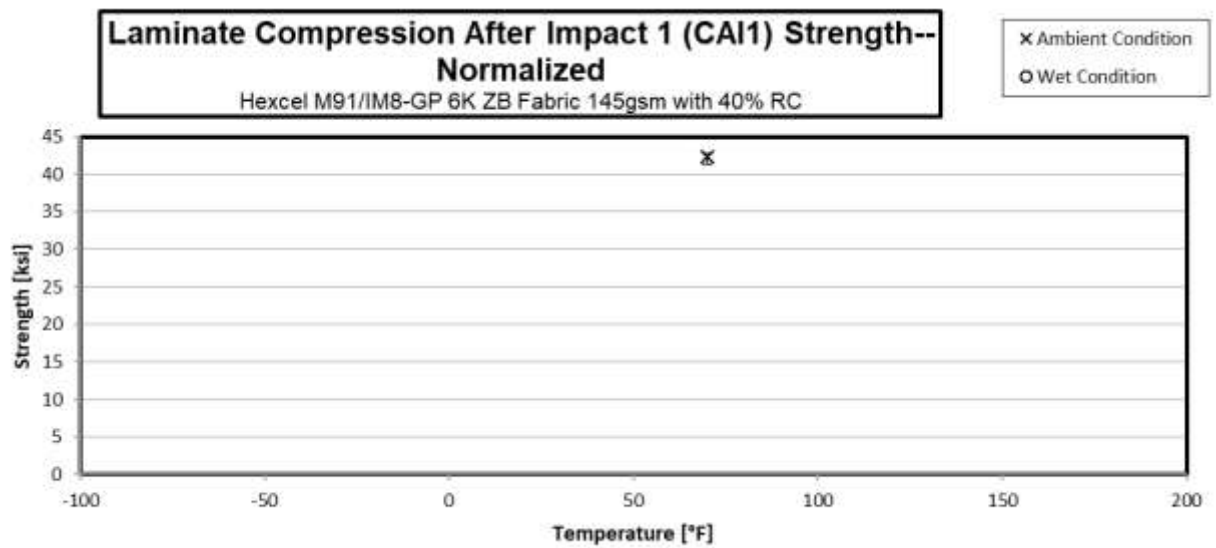


3.33 “25/50/25” Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19”, e=0.38)

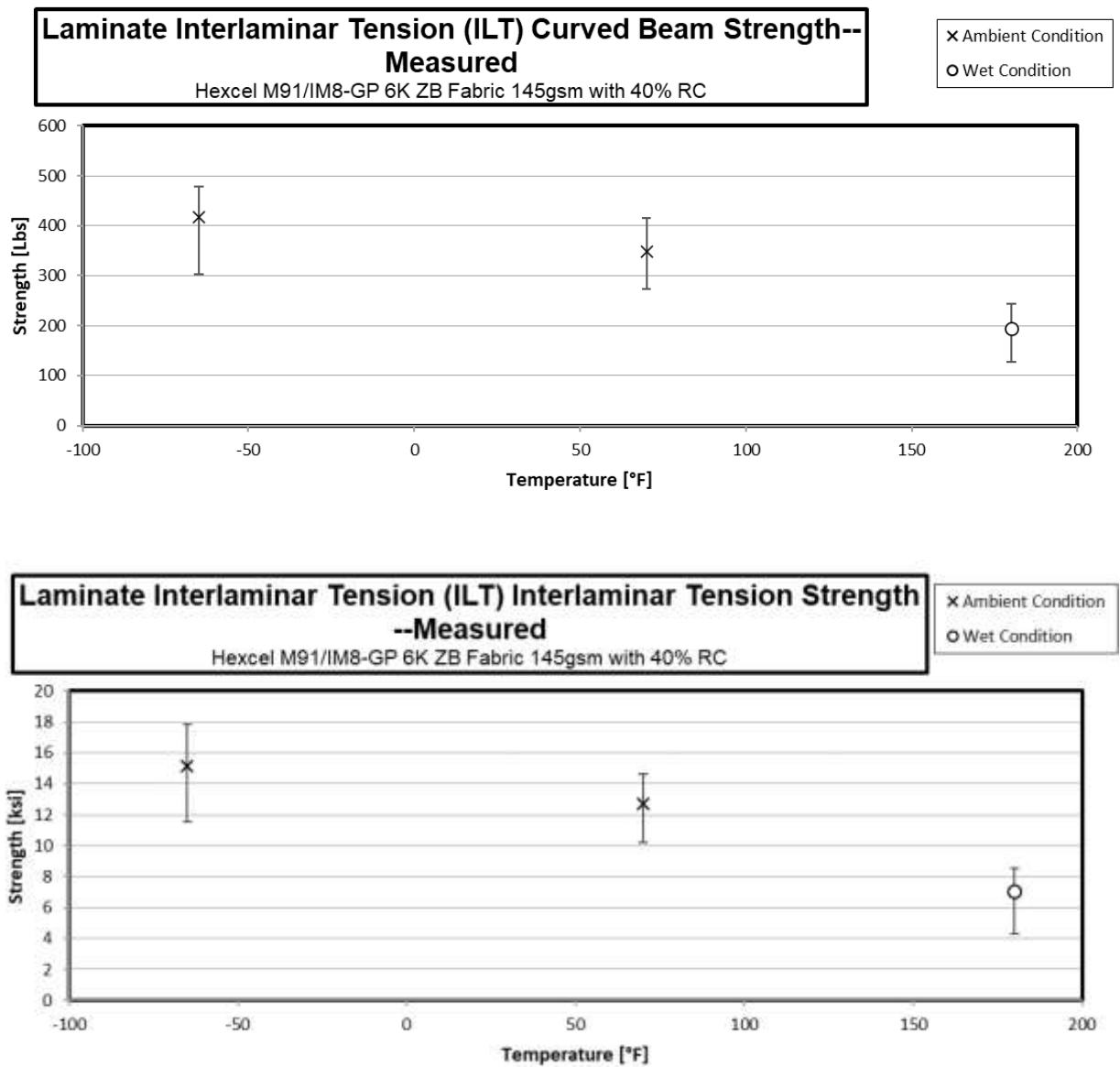




3.34 “25/50/25” Compression After Impact 1 Properties (CAI1)



3.35 Interlaminar Tension Properties (ILT)



4. Raw Data

4.1 Warp Tension Properties (WT)

**Warp Tension Properties (WT)--CTA (-65°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

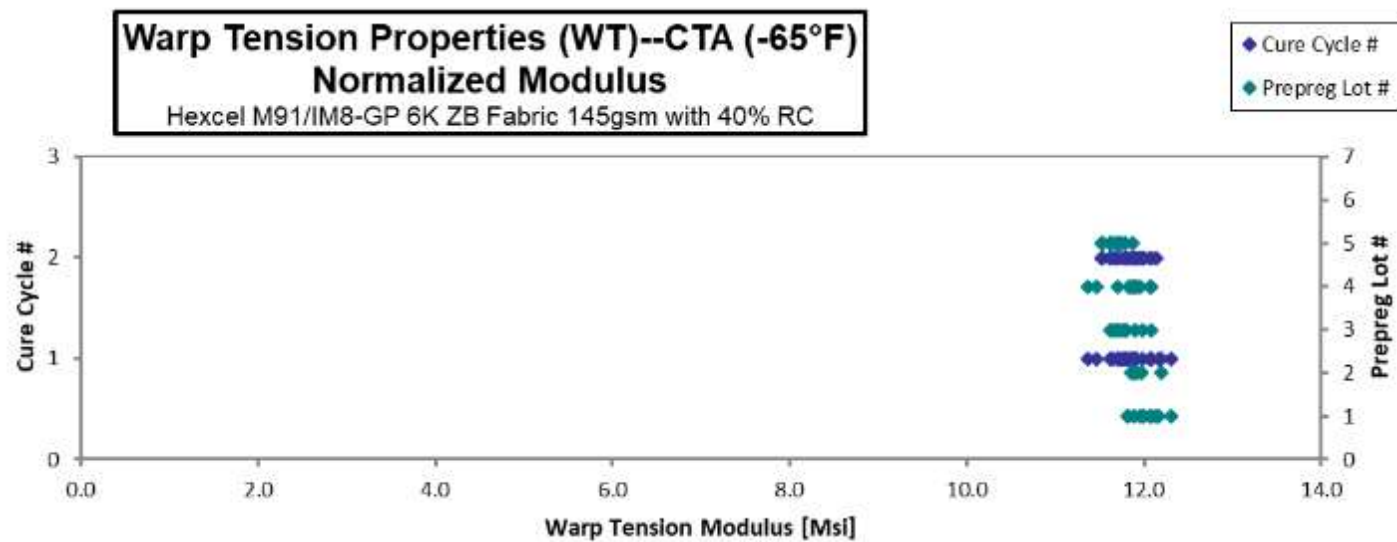
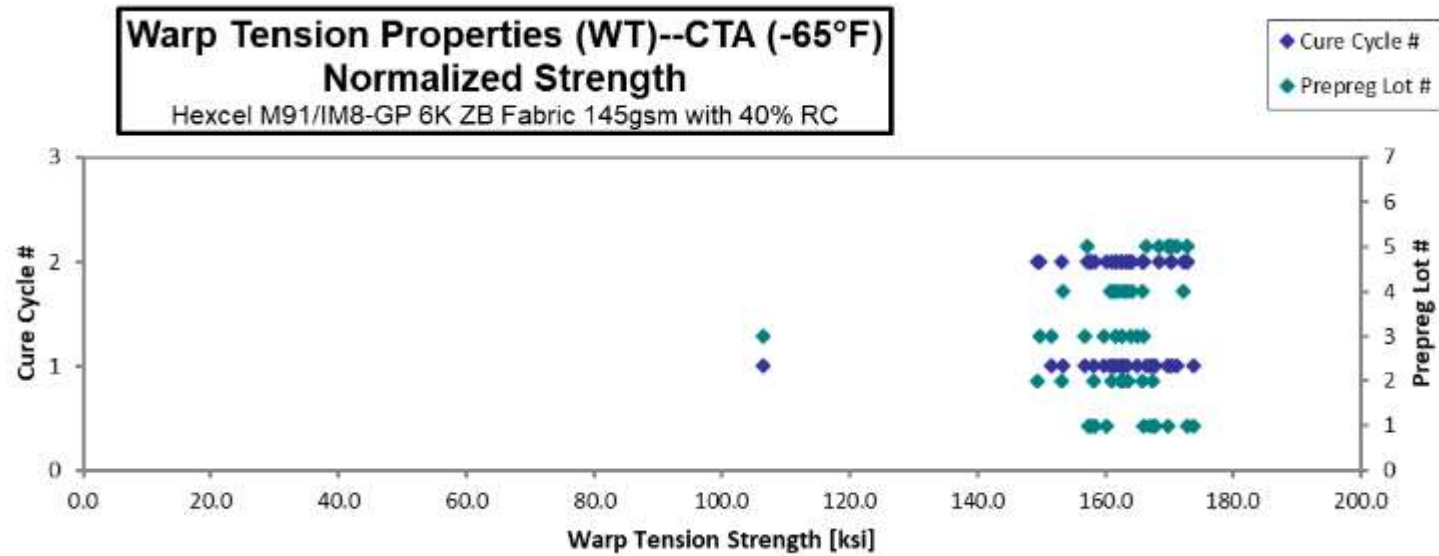
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-CTA-1	A	C1	1	1	166.2	11.95	0.04763	0.09243	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-CTA-2	A	C1	1	1	167.0	11.94	0.05224	0.09187	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-CTA-3	A	C1	1	1	168.5	12.08	0.05989	0.09215	15	LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-CTA-4	A	C1	1	1	172.3	12.20	0.05855	0.09232	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-CTA-5	A	C1	1	1	165.5	11.96	0.05028	0.09237	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-1	A	C2	1	2	158.2	11.85	0.04676	0.09125	15	LWT
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-2	A	C2	1	2	156.6	11.82	0.05085	0.09255	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-3	A	C2	1	2	159.9	11.98	0.04786	0.09167	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-4	A	C2	1	2	157.4	12.14	0.06285	0.09147	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-5	A	C2	1	2	172.6	11.88	0.04280	0.09157	15	LWB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-CTA-6	A	C2	1	2	166.0	11.81	0.04685	0.09153	15	LGB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-CTA-1	B	C1	2	1	157.2	11.79	0.04789	0.09463	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-CTA-2	B	C1	2	1	156.3	11.47	0.04704	0.09508	15	LGT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-CTA-3	B	C1	2	1	152.0	11.45	0.04566	0.09517	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-CTA-4	B	C1	2	1	161.2	11.47	0.04642	0.09503	15	LWB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-CTA-5	B	C1	2	1	156.8	11.42	0.04509	0.09497	15	LWT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-1	B	C2	2	2	145.2	11.55	0.05575	0.09415	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-2	B	C2	2	2	148.1	11.52	0.04554	0.09458	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-3	B	C2	2	2	158.6	11.50	0.05631	0.09440	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-4	B	C2	2	2	161.2	11.64	0.04751	0.09412	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-5	B	C2	2	2	156.5	11.63	0.05090	0.09415	15	LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-CTA-6	B	C2	2	2	157.7	11.53	0.04782	0.09438	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-CTA-1	C	C1	3	1	106.1	11.60	0.08106	0.09183	15	LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-CTA-2	C	C1	3	1	158.8	11.73	0.05307	0.09210	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-CTA-3	C	C1	3	1	149.9	11.50	0.04130	0.09250	15	LGT
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-CTA-4	C	C1	3	1	157.3	11.82	0.04721	0.09120	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-CTA-5	C	C1	3	1	165.5	12.11	0.06878	0.09127	15	LGT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-1	C	C2	3	2	161.9	11.63	0.04735	0.09197	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-2	C	C2	3	2	163.8	11.70	0.04281	0.09167	15	LGB
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-3	C	C2	3	2	163.6	11.74	0.05444	0.09283	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-4	C	C2	3	2	159.6	11.63	0.04691	0.09262	15	LWT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-5	C	C2	3	2	160.5	11.64	0.04671	0.09268	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-CTA-6	C	C2	3	2	148.0	11.84	0.04583	0.09262	15	LAB

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006162	167.9	12.08
0.006124	167.6	11.98
0.006143	169.7	12.16
0.006154	173.8	12.31
0.006158	167.1	12.07
0.006083	157.7	11.82
0.006170	158.4	11.96
0.006111	160.2	12.00
0.006098	157.4	12.14
0.006104	172.7	11.89
0.006102	166.0	11.81
0.006309	162.5	12.19
0.006339	162.4	11.92
0.006344	158.1	11.91
0.006336	167.5	11.91
0.006331	162.7	11.86
0.006277	149.4	11.89
0.006306	153.1	11.91
0.006293	163.6	11.86
0.006274	165.8	11.97
0.006277	161.0	11.97
0.006292	162.6	11.90
0.006122	106.5	11.64
0.006140	159.8	11.80
0.006167	151.6	11.63
0.006080	156.7	11.78
0.006084	165.0	12.08
0.006131	162.7	11.69
0.006111	164.1	11.72
0.006189	166.0	11.91
0.006174	161.5	11.77
0.006179	162.6	11.79
0.006174	149.8	11.98

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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-CTA-1	D	C1	4	1	151.9	11.27	0.02187	0.09232	15	LAB	0.006154	153.3	11.37
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-CTA-2	D	C1	4	1	159.9	11.78	0.05252	0.09240	15	LAB, LAT	0.006160	161.5	11.89
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-CTA-3	D	C1	4	1	159.8	11.60	0.03221	0.09237	15	LWT, LIB	0.006158	161.3	11.71
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-CTA-4	D	C1	4	1	161.5	11.70	0.03944	0.09255	15	LGT	0.006170	163.3	11.83
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-CTA-5	D	C1	4	1	160.0	11.40	0.03081	0.09198	15	LAT	0.006132	160.8	11.46
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-1	D	C2	4	2	171.5	11.86	0.05337	0.09185	15	LWT	0.006123	172.1	11.91
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-2	D	C2	4	2	161.2	11.81	0.04975	0.09223	15	LAB, LAT	0.006149	162.5	11.91
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-3	D	C2	4	2	162.3	12.01	0.04811	0.09203	15	LGM	0.006136	163.2	12.08
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-4	D	C2	4	2	162.4	11.83	0.05713	0.09250	15	LAB, LAT	0.006167	164.2	11.95
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-5	D	C2	4	2	165.4	12.06	0.06361	0.09173	15	LAT	0.006116	165.8	12.09
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-CTA-6	D	C2	4	2	159.7	11.70	0.04215	0.09272	15	LAB, LAT	0.006181	161.8	11.85
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-CTA-1	E	C1	5	1	174.9	12.10	0.04303	0.08883	15	LAT, LAB	0.005922	169.8	11.74
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-CTA-2	E	C1	5	1	176.1	12.20	0.04755	0.08900	15	LGM	0.005933	171.3	11.87
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-CTA-3	E	C1	5	1	172.1	11.92	0.04315	0.09053	15	LWT, LAB	0.006036	170.3	11.79
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-CTA-4	E	C1	5	1	173.2	11.95	0.04763	0.08968	15	LGM	0.005979	169.7	11.71
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-CTA-5	E	C1	5	1	167.4	11.81	0.04749	0.09097	15	LWT, LAB	0.006064	166.4	11.74
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-1	E	C2	5	2	178.4	12.01	0.04120	0.08868	15	LWT, LAB	0.005912	172.9	11.64
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-2	E	C2	5	2	176.2	12.03	0.04012	0.08835	15	LWT, LGM, LAB	0.005890	170.1	11.62
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-3	E	C2	5	2	173.8	11.84	0.04138	0.08975	15	LAB, LAT	0.005983	170.4	11.62
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-4	E	C2	5	2	160.0	11.73	0.04535	0.08992	15	LWT, LAB	0.005994	157.2	11.53
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-5	E	C2	5	2	175.5	11.72	0.04327	0.09008	15	LGM	0.006006	172.7	11.54
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-CTA-6	E	C2	5	2	170.2	11.79	0.05095	0.09057	15	LAT, LAB	0.006038	168.4	11.67
Average					161.6	11.77	0.04836	Average _{norm}			0.006141	162.6	11.85
Standard Dev.					10.83	0.2200	0.008938	Standard Dev. _{norm}			0.0001111	9.714	0.1879
Coeff. of Var. [%]					6.704	1.868	18.48	Coeff. of Var. [%] _{norm}			1.809	5.974	1.585
Min.					106.1	11.27	0.02187	Min.			0.005890	106.5	11.37
Max.					178.4	12.20	0.08106	Max.			0.006344	173.8	12.31
Number of Spec.					55	55	55	Number of Spec.			55	55	55



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**Warp Tension Properties (WT)--RTA (70°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]
0.006100

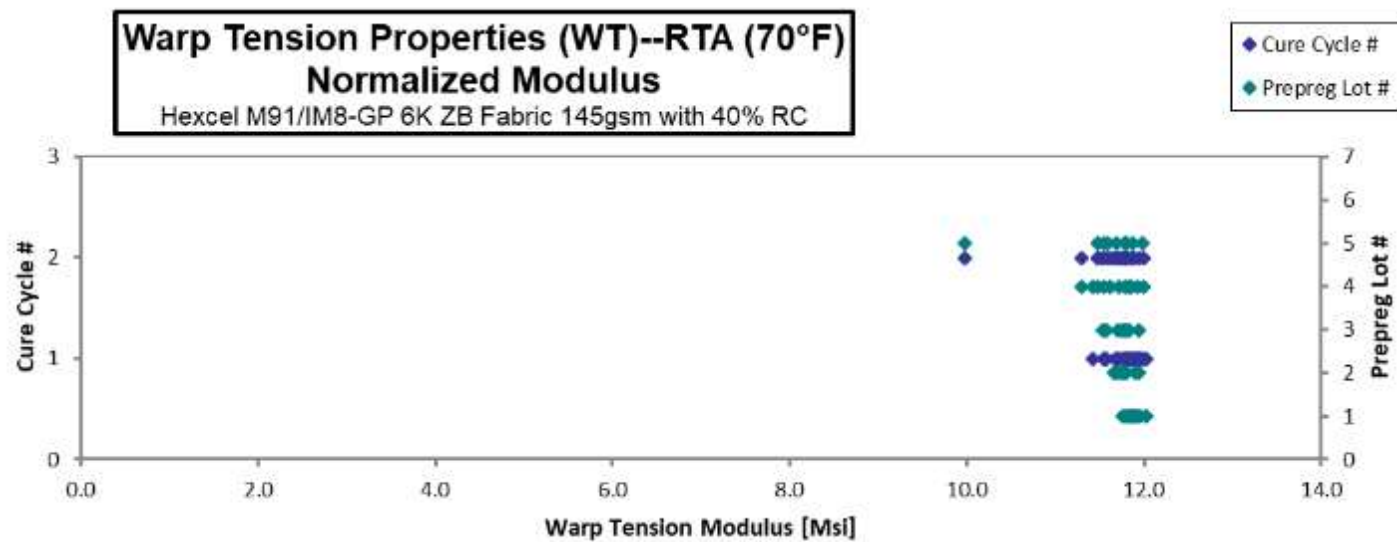
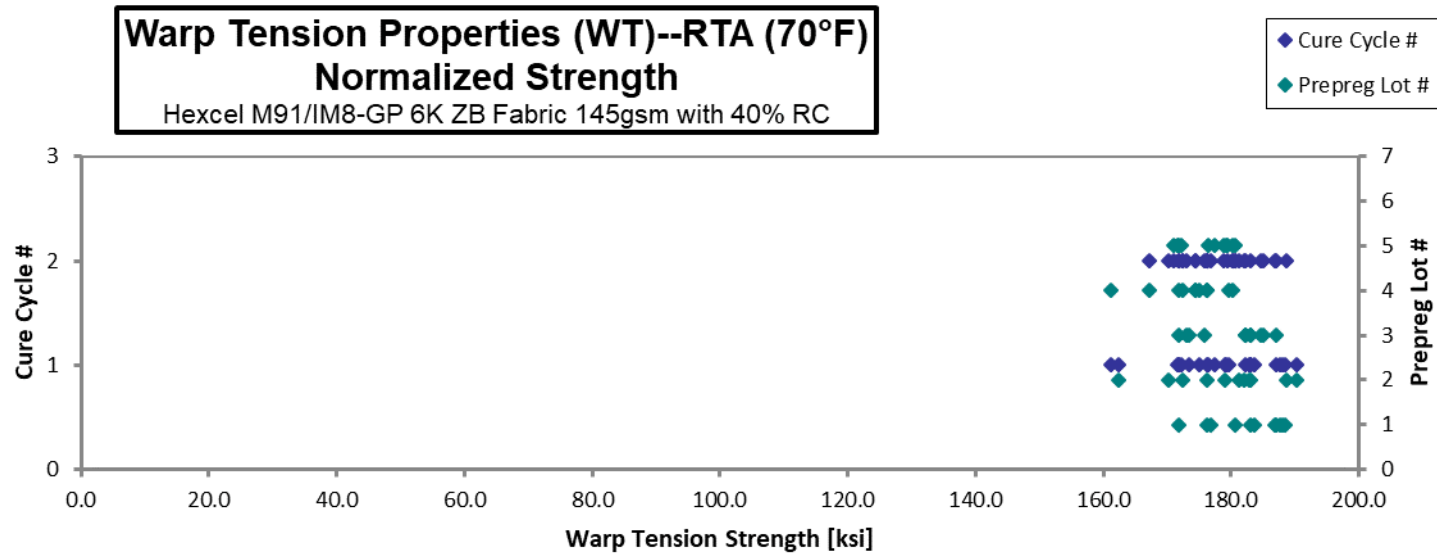
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-RTA-1	A	C1	1	1	185.3	11.76	0.05034	0.09265	15	LWB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-RTA-2	A	C1	1	1	180.8	11.82	0.04156	0.09258	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-RTA-3	A	C1	1	1	184.9	11.80	0.04294	0.09332	15	LGM, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-RTA-4	A	C1	1	1	185.3	11.73	0.04320	0.09287	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-RTA-5	A	C1	1	1	181.8	11.73	0.04851	0.09240	15	LGM, LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-1	A	C2	1	2	171.9	11.89	0.04250	0.09143	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-2	A	C2	1	2	186.8	11.79	0.04296	0.09162	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-3	A	C2	1	2	177.4	11.97	0.04197	0.09090	15	LWB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-4	A	C2	1	2	181.6	11.88	0.04108	0.09102	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-5	A	C2	1	2	175.6	11.69	0.04145	0.09208	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-RTA-6	A	C2	1	2	187.2	11.90	0.03913	0.09137	15	LWB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-RTA-1	B	C1	2	1	176.6	11.53	0.04201	0.09482	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-RTA-2	B	C1	2	1	157.2	11.52	0.03892	0.09452	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-RTA-3	B	C1	2	1	184.5	11.42	0.04007	0.09440	15	LWT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-RTA-4	B	C1	2	1	176.5	11.27	0.03922	0.09475	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-RTA-5	B	C1	2	1	173.0	11.36	0.03841	0.09473	15	LGT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-1	B	C2	2	2	170.9	11.37	0.03950	0.09428	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-2	B	C2	2	2	183.2	11.42	0.03755	0.09427	15	LGB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-3	B	C2	2	2	166.6	11.36	0.04236	0.09467	15	LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-4	B	C2	2	2	175.8	11.44	0.04355	0.09437	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-5	B	C2	2	2	164.0	11.24	0.04104	0.09495	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-RTA-6	B	C2	2	2	174.9	11.33	0.05073	0.09527	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-RTA-1	C	C1	3	1	185.9	11.51	0.04423	0.09203	15	LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-RTA-2	C	C1	3	1	179.5	11.64	0.04349	0.09297	15	LWT, LAT
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-RTA-3	C	C1	3	1	181.8	11.74	0.05053	0.09210	15	LWT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-RTA-4	C	C1	3	1	175.6	11.86	0.03911	0.09037	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-RTA-5	C	C1	3	1	171.8	11.55	0.04225	0.09153	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-1	C	C2	3	2	171.6	11.44	0.03986	0.09228	15	LAB, LWT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-2	C	C2	3	2	180.9	11.61	0.03754	0.09265	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-3	C	C2	3	2	180.2	11.81	0.03768	0.09257	15	LAT, LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-4	C	C2	3	2	183.4	11.67	0.03965	0.09235	15	LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-5	C	C2	3	2	173.8	11.60	0.03705	0.09263	15	LAT, LGM
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-RTA-6	C	C2	3	2	183.0	11.72	0.04188	0.09230	15	LWT, LWB

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0062	187.7	11.91
0.006172	183.0	11.96
0.006221	188.6	12.03
0.006191	188.0	11.91
0.006160	183.6	11.84
0.006096	171.8	11.88
0.006108	187.1	11.81
0.006060	176.2	11.89
0.006068	180.7	11.82
0.006139	176.7	11.76
0.006091	186.9	11.88
0.006321	183.0	11.95
0.006301	162.4	11.90
0.006293	190.4	11.79
0.006317	182.8	11.67
0.006316	179.1	11.76
0.006286	176.1	11.72
0.006284	188.7	11.77
0.006311	172.4	11.76
0.006291	181.3	11.80
0.006330	170.2	11.67
0.006351	182.1	11.79
0.006136	187.0	11.58
0.006198	182.3	11.83
0.006140	183.0	11.82
0.006024	173.4	11.71
0.006102	171.8	11.55
0.006152	173.1	11.54
0.006177	183.1	11.76
0.006171	182.3	11.95
0.006157	185.1	11.78
0.006176	175.9	11.74
0.006153	184.6	11.82

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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-RTA-1	D	C1	4	1	174.2	11.50	0.03790	0.09192	15	LWB, LAT	0.006128	175.0	11.55
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-RTA-2	D	C1	4	1	175.6	11.67	0.03805	0.09182	15	LAB, LAT	0.006121	176.3	11.71
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-RTA-3	D	C1	4	1	179.2	11.79	0.04106	0.09178	15	LAB, LAT	0.006119	179.7	11.83
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-RTA-4	D	C1	4	1	160.9	11.91	0.03569	0.09170	15	LWB	0.006113	161.3	11.93
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-RTA-5	D	C1	4	1	171.9	11.44	0.03738	0.09142	15	LAT	0.006094	171.8	11.43
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-1	D	C2	4	2	173.7	11.82	0.04746	0.09287	15	LWT, LAB	0.006191	176.2	12.00
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-2	D	C2	4	2	165.9	11.51	0.03607	0.09228	15	LGT, LWB	0.006152	167.3	11.61
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-3	D	C2	4	2	171.1	11.40	0.04595	0.09218	15	LAB	0.006146	172.4	11.49
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-4	D	C2	4	2	173.5	11.73	0.04767	0.09198	15	LWB, LAT	0.006132	174.4	11.79
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-5	D	C2	4	2	179.0	11.21	0.03978	0.09218	15	LAB, LAT	0.006146	180.3	11.29
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-RTA-6	D	C2	4	2	174.3	11.85	0.03925	0.09155	15	LAT, LIB	0.006103	174.4	11.86
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-RTA-1	E	C1	5	1	179.5	11.81	0.04064	0.09133	15	LWB, LAT	0.006089	179.2	11.78
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-RTA-2	E	C1	5	1	172.1	11.82	0.04434	0.09125	15	LGM, M(A,L)WB, LAT	0.006083	171.7	11.78
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-RTA-3	E	C1	5	1	178.2	12.03	0.04480	0.09115	15	LWB, LAT	0.006077	177.5	11.99
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-RTA-4	E	C1	5	1	176.5	11.87	0.04241	0.09145	15	LGM, LWB, LWT	0.006097	176.4	11.87
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-RTA-5	E	C1	5	1	172.8	11.84	0.03824	0.09123	15	LGM, LAB, LAT	0.006082	172.3	11.81
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-1	E	C2	5	2	182.5	11.71	0.03946	0.09055	15	LWB, LAT	0.006037	180.6	11.59
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-2	E	C2	5	2	183.1	11.89	0.03894	0.09005	15	M(A,L)WB, LAT	0.006003	180.2	11.70
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-3	E	C2	5	2	180.7	10.09	0.03675	0.09053	15	LWB, LAT	0.006036	178.8	9.98
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-4	E	C2	5	2	174.7	11.67	0.03939	0.09003	15	LWB, LAT	0.006002	171.9	11.48
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-5	E	C2	5	2	182.9	11.78	0.03718	0.08970	15	LGT, LWB, LAT	0.005980	179.3	11.55
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-RTA-6	E	C2	5	2	174.2	11.69	0.03825	0.08983	15	LWB, LAT	0.005989	171.0	11.48
Average					176.8	11.63	0.04125	Average _{norm}			0.006153	178.3	11.72
Standard Dev.					6.468	0.2934	0.003682	Standard Dev. _{norm}			0.00009550	6.518	0.2868
Coeff. of Var. [%]					3.658	2.524	8.926	Coeff. of Var. [%] _{norm}			1.552	3.655	2.447
Min.					157.2	10.09	0.03569	Min.			0.005980	161.3	9.981
Max.					187.2	12.03	0.05073	Max.			0.006351	190.4	12.03
Number of Spec.					55	55	55	Number of Spec.			55	55	55



June 15th, 2026

CAM-RP-2025-001 Rev -

**Warp Tension Properties (WT)--ETW (180°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-ETW-1	A	C1	1	1	193.0	11.85	0.04390	0.09212	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-ETW-2	A	C1	1	1	178.4	11.74	0.04004	0.09232	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-ETW-3	A	C1	1	1	180.1	11.80	0.04313	0.09250	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-ETW-4	A	C1	1	1	182.2	11.63	0.04567	0.09245	15	LAB, LWT, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-ETW-5	A	C1	1	1	182.0	11.72	0.04637	0.09277	15	LAB, LAT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-1	A	C2	1	2	187.8	11.60	0.03965	0.09205	15	LGT, LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-2	A	C2	1	2	185.7	11.64	0.03755	0.09178	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-3	A	C2	1	2	181.0	11.59	0.04161	0.09262	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-4	A	C2	1	2	189.4	11.71	0.04084	0.09162	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-5	A	C2	1	2	182.2	11.70	0.04051	0.09150	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-A-C2-1-ETW-6	A	C2	1	2	187.2	11.73	0.03816	0.09115	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-ETW-1	B	C1	2	1	175.7	11.14	0.03245	0.09568	15	LAB, LWT
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-ETW-2	B	C1	2	1	164.2	11.16	0.03631	0.09533	15	LAB, LGM
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-ETW-3	B	C1	2	1	164.5	11.16	0.03845	0.09538	15	LGB, LWT
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-ETW-4	B	C1	2	1	157.9	11.22	0.03511	0.09563	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-ETW-5	B	C1	2	1	168.5	11.21	0.03437	0.09547	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-1	B	C2	2	2	185.7	11.21	0.03353	0.09470	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-2	B	C2	2	2	163.0	11.17	0.03385	0.09482	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-3	B	C2	2	2	174.8	11.10	0.03630	0.09460	15	LGT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-4	B	C2	2	2	173.7	11.18	0.03622	0.09478	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-5	B	C2	2	2	177.4	11.13	0.03678	0.09495	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-B-C2-1-ETW-6	B	C2	2	2	182.0	11.11	0.03480	0.09468	15	LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-ETW-1	C	C1	3	1	181.7	11.94	0.03949	0.09242	15	LGT, LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-ETW-2	C	C1	3	1	179.4	11.71	0.04131	0.09197	15	LAT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-ETW-3	C	C1	3	1	173.7	11.79	0.05980	0.09227	15	LAB, LWT
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-ETW-4	C	C1	3	1	180.6	11.63	0.04194	0.09173	15	LWT, LGT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-ETW-5	C	C1	3	1	183.9	11.69	0.03908	0.09147	15	LWT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-1	C	C2	3	2	175.2	11.93	0.03825	0.09232	15	LGT, LAB, LWT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-2	C	C2	3	2	177.1	11.90	0.03719	0.09245	15	LAT, LAB
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-3	C	C2	3	2	183.5	11.82	0.03461	0.09265	15	LGM, LAB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-4	C	C2	3	2	187.4	11.86	0.03288	0.09270	15	LWB, LAT
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-5	C	C2	3	2	179.7	11.83	0.03854	0.09280	15	LWT, LWB
NTPM911Q1-HXL-H40-NIAR-WT-C-C2-1-ETW-6	C	C2	3	2	189.1	11.95	0.03892	0.09262	15	LAB, LAT, LGB

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006141	194.3	11.93
0.006154	180.0	11.85
0.006167	182.1	11.92
0.006163	184.1	11.75
0.006184	184.5	11.88
0.006137	189.0	11.67
0.006119	186.3	11.68
0.006174	183.2	11.73
0.006108	189.6	11.72
0.006100	182.2	11.70
0.006077	186.5	11.69
0.006379	183.8	11.65
0.006356	171.0	11.63
0.006359	171.5	11.63
0.006376	165.1	11.73
0.006364	175.8	11.70
0.006313	192.2	11.60
0.006321	169.0	11.57
0.006307	180.7	11.48
0.006319	179.9	11.58
0.006330	184.1	11.55
0.006312	188.3	11.50
0.006161	183.5	12.06
0.006131	180.3	11.77
0.006151	175.2	11.89
0.006116	181.1	11.66
0.006098	183.9	11.68
0.006154	176.8	12.04
0.006163	178.9	12.02
0.006177	185.8	11.97
0.006180	189.8	12.02
0.006187	182.3	12.00
0.006174	191.4	12.09

June 15th, 2026

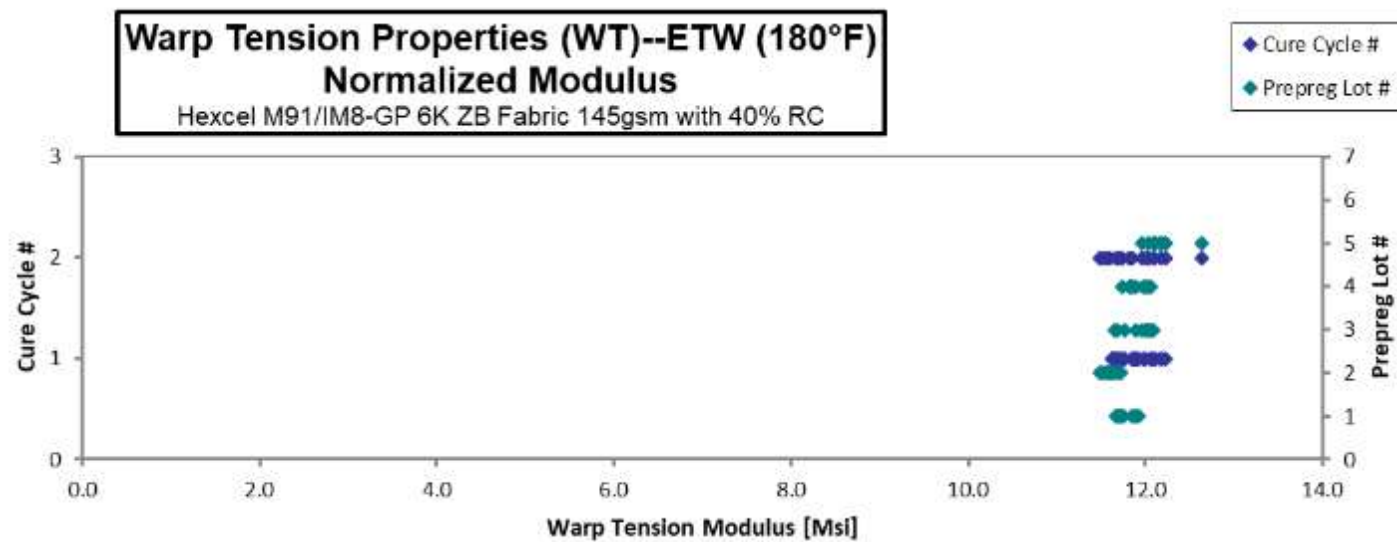
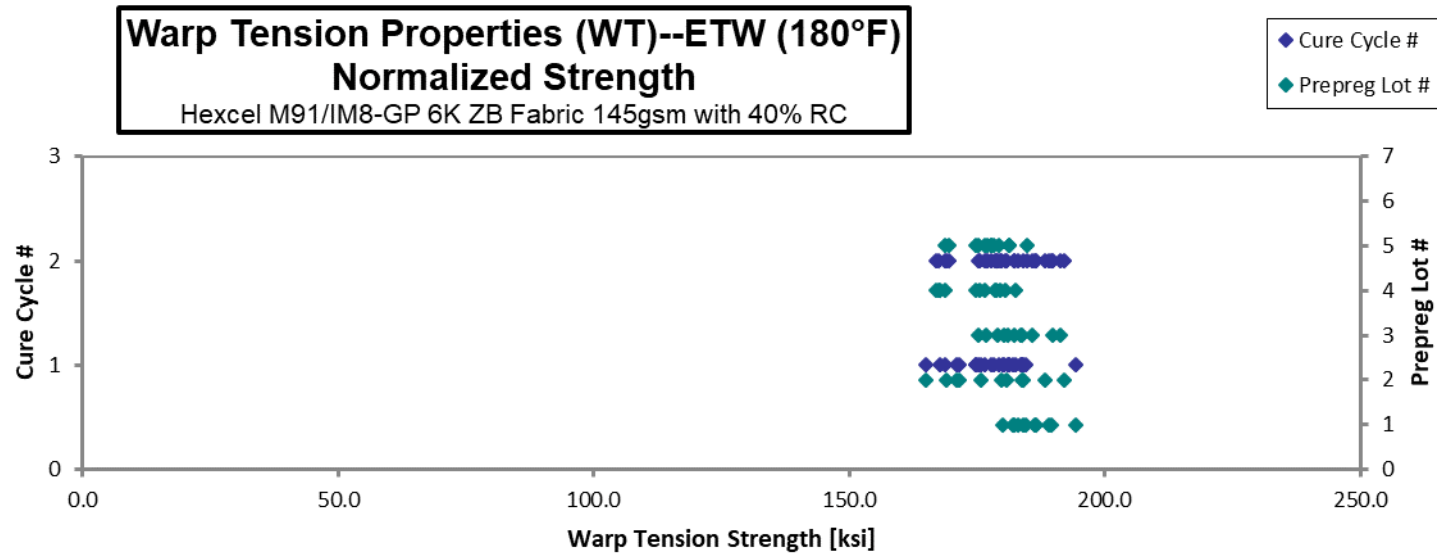
CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Ms]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Ms]
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-ETW-1	D	C1	4	1	175.8	12.02	0.03713	0.09185	15	LAB, LAT	0.006123	176.4	12.07
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-ETW-2	D	C1	4	1	168.0	11.87	0.03677	0.09138	15	LWB, LWT	0.006092	167.8	11.86
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-ETW-3	D	C1	4	1	174.2	11.85	0.03306	0.09178	15	LWB, LWT	0.006119	174.8	11.89
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-ETW-4	D	C1	4	1	182.8	11.99	0.03830	0.09140	15	LAB, LWT	0.006093	182.6	11.98
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-ETW-5	D	C1	4	1	169.3	12.04	0.03879	0.09130	15	LWB	0.006087	168.9	12.01
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-1	D	C2	4	2	173.4	11.88	0.04296	0.09267	15	LGM	0.006178	175.6	12.03
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-2	D	C2	4	2	181.0	11.89	0.04314	0.09128	15	LAB, LAT	0.006086	180.6	11.86
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-3	D	C2	4	2	179.6	11.90	0.03877	0.09115	15	LAT, LIB	0.006077	178.9	11.85
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-4	D	C2	4	2	166.9	11.81	0.04380	0.09155	15	LWB	0.006103	167.0	11.82
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-5	D	C2	4	2	177.3	11.65	0.04509	0.09217	15	LWT, LAB	0.006144	178.6	11.74
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-6	D	C2	4	2	166.2	11.73	0.03863	0.09218	15	LAB	0.006146	167.4	11.82
NTPM911Q1-HXL-H40-FACC-WT-D-C2-1-ETW-7*	D	C2	4	2	177.9		0.09227		15	LAT, LAB	0.006151	179.4	
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-1	E	C1	5	1	180.8	12.32	0.03634	0.09080	15	LAB, LWT	0.006053	179.4	12.23
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-2	E	C1	5	1	183.1	12.29	0.03446	0.09065	15	LAB, LIT	0.006043	181.4	12.17
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-3	E	C1	5	1	179.5	12.24	0.03471	0.09062	15	LWT, LAB	0.006041	177.8	12.12
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-4	E	C1	5	1	176.5	12.30	0.03609	0.09063	15	LIT	0.006042	174.8	12.18
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-5	E	C1	5	1	183.1	12.20	0.04044	0.09067	15	LAT, LAB	0.006044	181.4	12.08
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-ETW-6*	E	C1	5	1	180.0		0.09058		15	LAT, LAB	0.006039	178.2	
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-1	E	C2	5	2	173.4	12.39	0.03864	0.08942	15	LWT, LAB	0.005961	169.4	12.10
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-2	E	C2	5	2	180.2	12.42	0.03503	0.08968	15	LWB, LIT	0.005979	176.6	12.18
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-3	E	C2	5	2	180.7	12.48	0.04032	0.08965	15	LAB, LAT, LGB	0.005977	177.0	12.23
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-4	E	C2	5	2	170.7	12.17	0.03951	0.09045	15	LIT, LWB	0.006030	168.8	12.03
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-5	E	C2	5	2	188.0	12.85	0.03910	0.09002	15	LAB, LWT	0.006001	184.9	12.64
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-6	E	C2	5	2	178.9	12.22	0.03262	0.08962	15	LWB, LWT, LAT	0.005974	175.2	11.96
NTPM911Q1-HXL-H40-SKS-WT-E-C2-1-ETW-7*	E	C2	5	2	184.9		0.08798		15	LIT, LAB	0.005866	177.8	

*Specimen was not gaged, only strength is tested

Average 178.3 11.78 0.03875
Standard Dev. 7.256 0.4007 0.004502
Coeff. of Var. [%] 4.070 3.401 11.62
Min. 157.9 11.10 0.03245
Max. 193.0 12.85 0.05980
Number of Spec. 58 55 55

Average_{norm} 0.006145 179.5 11.88
Standard Dev._{norm} 0.0001153 6.774 0.2267
Coeff. of Var. [%]_{norm} 1.877 3.773 1.909
Min. 0.005866 165.1 11.48
Max. 0.006379 194.3 12.64
Number of Spec. 58 58 55



4.2 Fill Tension Properties (FT)

Fill Tension Properties (FT)--CTA (-65°F)				
Strength & Modulus				
Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC				

normalizing

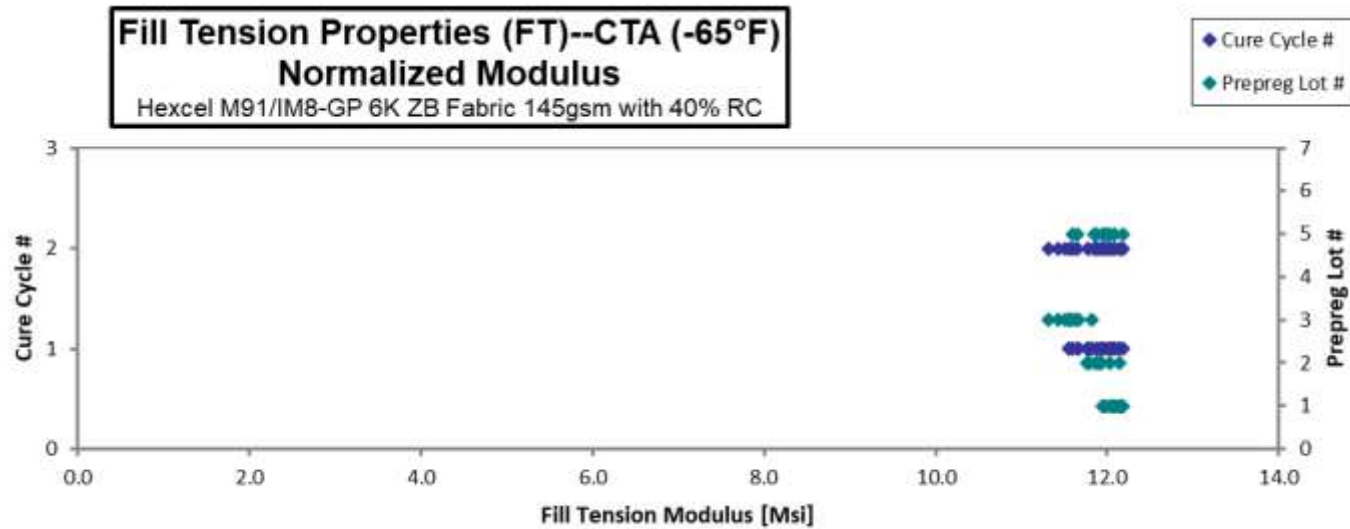
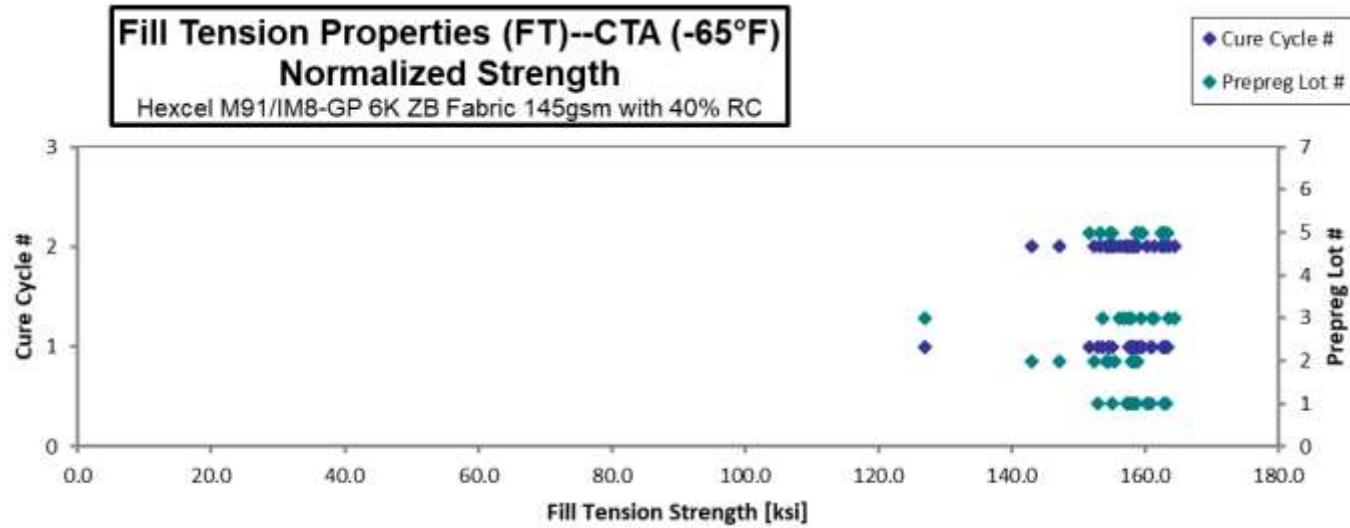
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-CTA-1	A	C1	1	1	158.8	11.90	0.09267	15	LAB, LAT	0.006178	160.8	12.05
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-CTA-2	A	C1	1	1	155.2	11.90	0.09298	15	LGT	0.006199	157.7	12.09
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-CTA-3	A	C1	1	1	159.8	11.76	0.09333	15	LGT	0.006222	163.0	12.00
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-CTA-4	A	C1	1	1	152.6	11.88	0.09302	15	LGB	0.006201	155.1	12.08
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-CTA-5	A	C1	1	1	150.8	11.97	0.09270	15	LWB	0.006180	152.8	12.12
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-1	A	C2	1	2	159.9	12.28	0.09077	15	LWB, LAT	0.006051	158.6	12.18
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-2	A	C2	1	2	160.8	12.01	0.09260	15	LGB	0.006173	162.7	12.15
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-3	A	C2	1	2	158.6	11.82	0.09243	15	LGB	0.006162	160.3	11.94
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-4	A	C2	1	2	154.5	11.73	0.09327	15	LGM	0.006218	157.5	11.96
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-5	A	C2	1	2	157.7	12.09	0.09183	15	LAB	0.006122	158.3	12.14
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-CTA-6	A	C2	1	2	156.7	12.02	0.09178	15	LGB	0.006119	157.2	12.06
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-CTA-1	B	C1	2	1	153.7	11.59	0.09408	15	LAB, LAT	0.006272	158.0	11.91
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-CTA-2	B	C1	2	1	149.3	11.41	0.09462	15	LWB	0.006308	154.4	11.79
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-CTA-3	B	C1	2	1	152.9	11.55	0.09452	15	LAB, LAT	0.006301	158.0	11.93
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-CTA-4	B	C1	2	1	154.5	11.81	0.09405	15	LGB	0.006270	158.8	12.14
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-CTA-5	B	C1	2	1	153.5	11.40	0.09440	15	LWB, LAT	0.006293	158.4	11.76
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-1	B	C2	2	2	141.3	11.73	0.09258	15	LGB	0.006172	142.9	11.87
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-2	B	C2	2	2	149.2	11.47	0.09465	15	LGB	0.006310	154.3	11.86
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-3	B	C2	2	2	142.2	11.39	0.09465	15	LAB	0.006310	147.1	11.78
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-4	B	C2	2	2	151.6	11.61	0.09382	15	LGT	0.006254	155.4	11.91
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-5	B	C2	2	2	150.7	11.52	0.09353	15	LGT	0.006236	154.1	11.78
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-CTA-6	B	C2	2	2	148.7	11.75	0.09367	15	LGB	0.006244	152.2	12.03
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-CTA-1	C	C1	3	1	162.3	11.74	0.09080	15	LWT	0.006053	161.0	11.65
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-CTA-2	C	C1	3	1	158.3	11.60	0.09203	15	LGT	0.006136	159.3	11.67
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-CTA-3	C	C1	3	1	153.6	11.83	0.09145	15	LGM	0.006097	153.5	11.82
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-CTA-4	C	C1	3	1	126.2	11.49	0.09198	15	LWB	0.006132	126.9	11.55
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-CTA-5	C	C1	3	1	157.5	11.56	0.09145	15	LGM	0.006097	157.5	11.55
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-1	C	C2	3	2	161.0	11.50	0.09165	15	LGB	0.006110	161.3	11.51
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-2	C	C2	3	2	156.6	11.22	0.09222	15	LGM	0.006148	157.9	11.31
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-3	C	C2	3	2	155.2	11.50	0.09200	15	LAB	0.006133	156.0	11.56
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-4	C	C2	3	2	163.0	11.53	0.09182	15	LGM	0.006121	163.5	11.57
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-5	C	C2	3	2	156.0	11.36	0.09203	15	LGM	0.006136	156.9	11.43
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-CTA-6	C	C2	3	2	163.0	11.51	0.09228	15	LWT, LGB	0.006152	164.4	11.61
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-CTA-1	E	C1	5	1	167.1	12.29	0.08905	15	LGM	0.005937	162.6	11.96
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-CTA-2	E	C1	5	1	165.9	12.22	0.09008	15	LWT, LAB	0.006006	163.3	12.03
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-CTA-3	E	C1	5	1	152.3	11.64	0.09115	15	LWT, LAB	0.006077	151.7	11.60
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-CTA-4	E	C1	5	1	163.6	11.95	0.09100	15	LWT, LAB	0.006067	162.7	11.88
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-CTA-5	E	C1	5	1	159.9	12.20	0.09133	15	LAT, LAB	0.006089	159.6	12.18
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-1	E	C2	5	2	158.5	12.38	0.08843	15	LAB	0.005896	153.2	11.96
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-2	E	C2	5	2	162.0	12.33	0.08973	15	LWT, LGM, LAB	0.005982	158.8	12.09
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-3	E	C2	5	2	157.3	12.05	0.08995	15	LAT, LAB	0.005997	154.6	11.85
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-4	E	C2	5	2	161.7	12.23	0.08980	15	LWT, LAB	0.005987	158.7	12.00
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-5	E	C2	5	2	164.6	11.81	0.09025	15	LWT, LAB	0.006017	162.4	11.64
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-CTA-6	E	C2	5	2	156.5	12.05	0.09067	15	LAT, LAB	0.006044	155.1	11.94

Average	155.8	11.79
Standard Dev.	7.236	0.3006
Coeff. of Var. [%]	4.645	2.551
Min.	126.2	11.22
Max.	167.1	12.38
Number of Spec.	44	44

Average _{norm}	0.006141	156.8	11.86
Standard Dev. _{norm}	0.0001051	6.329	0.2235
Coeff. of Var. [%] _{norm}	1.711	4.037	1.885
Min.	0.005896	126.9	11.31
Max.	0.006310	164.4	12.18
Number of Spec.	44	44	44

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



**Fill Tension Properties (FT)--RTA (70°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

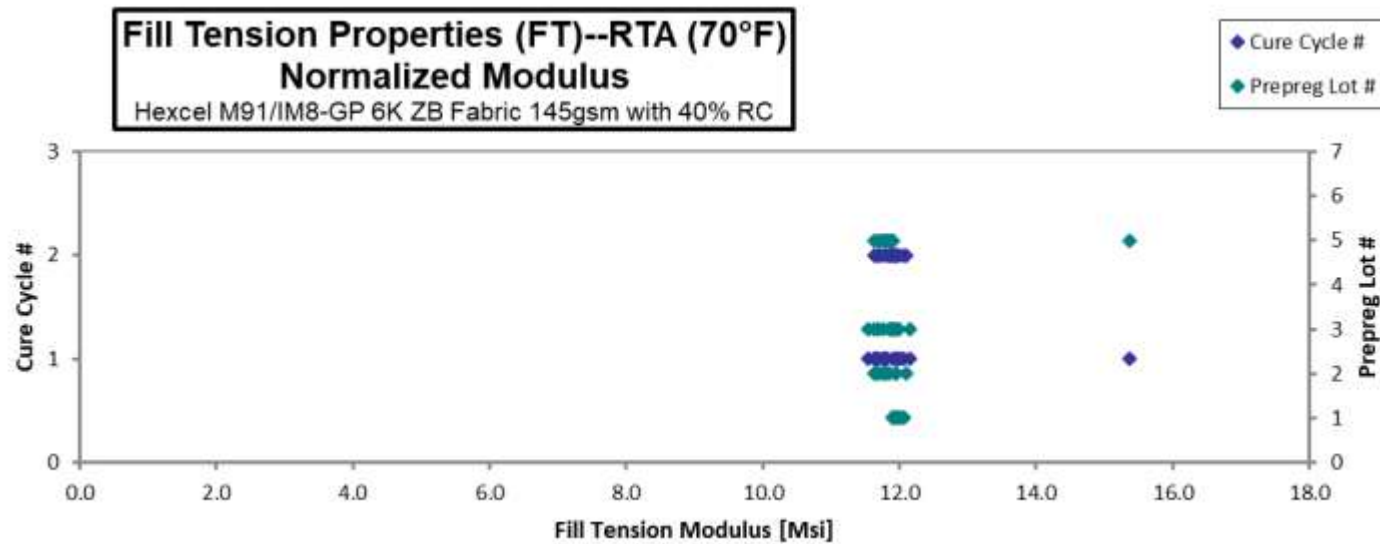
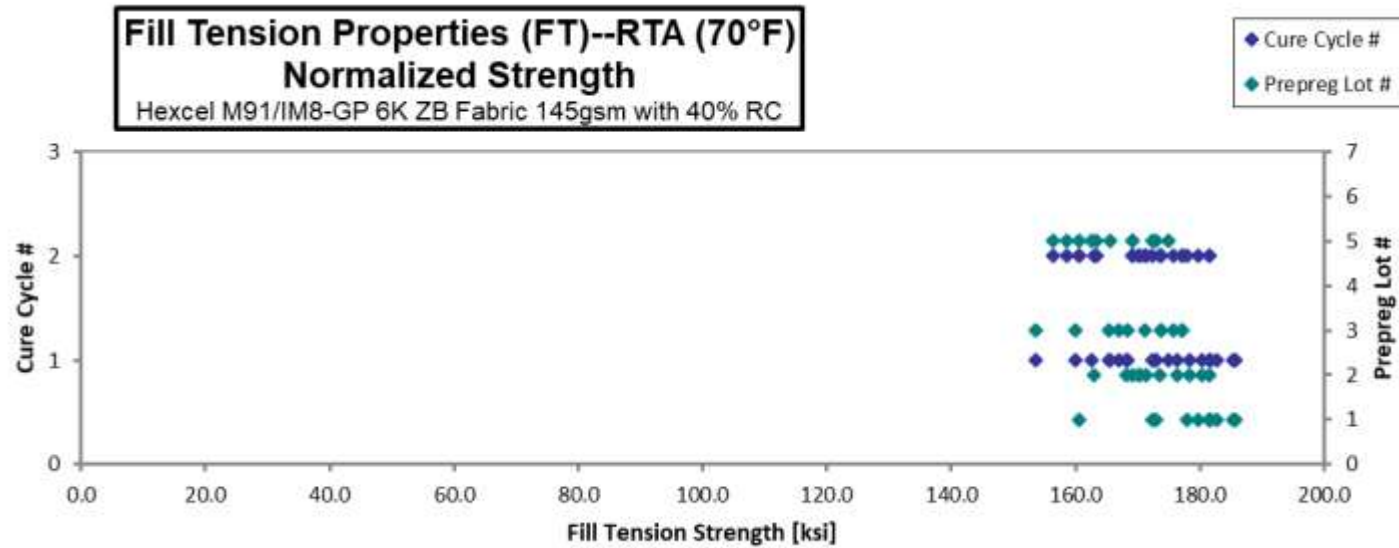
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-RTA-1	A	C1	1	1	180.7	11.82	0.09253	15	LAT, LAB	0.006169	182.7	11.95
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-RTA-2	A	C1	1	1	179.8	11.89	0.09245	15	LAT, LAB	0.006163	181.7	12.01
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-RTA-3	A	C1	1	1	184.4	11.91	0.09217	15	LWT, LAB	0.006144	185.7	12.00
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-RTA-4	A	C1	1	1	171.6	11.86	0.09228	15	LAT, LAB	0.006152	173.0	11.96
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-RTA-5	A	C1	1	1	182.2	11.86	0.09308	15	LAT, LAB	0.006206	185.3	12.07
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-1	A	C2	1	2	177.7	11.95	0.09168	15	LAT, LAB	0.006112	178.0	11.97
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-2	A	C2	1	2	171.6	11.86	0.09188	15	LAT, LAB	0.006126	172.3	11.91
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-3	A	C2	1	2	181.0	11.87	0.09178	15	LAT, LAB	0.006119	181.5	11.90
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-4	A	C2	1	2	176.5	11.85	0.09315	15	LWB, LAT	0.006210	179.7	12.06
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-5	A	C2	1	2	181.6	11.89	0.09153	15	LAT, LAB	0.006102	181.6	11.90
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-RTA-6	A	C2	1	2	160.6	11.91	0.09150	15	LAT	0.006100	160.6	11.91
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-RTA-1	B	C1	2	1	173.2	11.45	0.09418	15	LWB, LAT	0.006279	178.3	11.79
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-RTA-2	B	C1	2	1	171.9	11.46	0.09383	15	LWT, LAB	0.006256	176.3	11.75
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-RTA-3	B	C1	2	1	176.8	11.37	0.09400	15	LGM	0.006267	181.6	11.68
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-RTA-4	B	C1	2	1	175.3	11.32	0.09408	15	LGT	0.006272	180.3	11.64
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-RTA-5	B	C1	2	1	162.5	11.27	0.09468	15	LWB, LAT	0.006312	168.2	11.66
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-1	B	C2	2	2	167.4	11.74	0.09315	15	LWB, LAT	0.006210	170.4	11.95
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-2	B	C2	2	2	166.7	11.84	0.09343	15	LGB	0.006229	170.3	12.09
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-3	B	C2	2	2	164.7	11.63	0.09398	15	LGB	0.006266	169.2	11.95
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-4	B	C2	2	2	169.1	11.38	0.09387	15	LGB	0.006258	173.5	11.67
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-5	B	C2	2	2	158.2	11.44	0.09428	15	LGT	0.006286	163.0	11.79
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-RTA-6	B	C2	2	2	166.8	11.52	0.09407	15	LWT	0.006271	171.4	11.85
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-RTA-1	C	C1	3	1	158.9	11.45	0.09217	15	LWT, LWB	0.006144	160.0	11.53
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-RTA-2	C	C1	3	1	167.5	11.63	0.09193	15	LGT, LWB	0.006129	168.3	11.68
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-RTA-3	C	C1	3	1	152.7	12.09	0.09200	15	LWB	0.006133	153.6	12.15
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-RTA-4	C	C1	3	1	165.8	11.55	0.09210	15	LWB, LWT	0.006140	166.9	11.63
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-RTA-5	C	C1	3	1	165.2	11.74	0.09160	15	LAT	0.006107	165.4	11.76
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-1	C	C2	3	2	176.6	11.88	0.09182	15	LWT, LWB	0.006121	177.2	11.92
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-2	C	C2	3	2	172.9	11.79	0.09202	15	LAT, LAB	0.006134	173.8	11.85
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-3	C	C2	3	2	176.1	11.80	0.09207	15	LWB, LAT	0.006138	177.2	11.88
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-4	C	C2	3	2	170.2	11.92	0.09202	15	LGT	0.006134	171.1	11.99
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-5	C	C2	3	2	174.5	11.87	0.09217	15	LAB, LWT	0.006144	175.8	11.95
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-RTA-6	C	C2	3	2	174.2	11.95	0.09130	15	LWB, LAT	0.006087	173.8	11.92
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-RTA-1	E	C1	5	1	167.7	11.96	0.09033	15	LGM, LWT, LAB	0.006022	165.6	11.81
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-RTA-2	E	C1	5	1	175.2	15.56	0.09038	15	LGM, LWT, LWB	0.006026	173.0	15.37
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-RTA-3	E	C1	5	1	176.7	12.02	0.09062	15	LGM, LWT, LAB	0.006041	175.0	11.90
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-RTA-4	E	C1	5	1	164.0	11.88	0.09073	15	LWT, LAB	0.006049	162.6	11.78
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-RTA-5	E	C1	5	1	173.9	11.91	0.09065	15	LGM, LWT, LAB	0.006043	172.3	11.80
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-1	E	C2	5	2	163.2	11.82	0.09000	15	LGB, LAT	0.006000	160.5	11.62
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-2	E	C2	5	2	160.2	12.04	0.09052	15	LAT, LAB	0.006034	158.5	11.91
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-3	E	C2	5	2	166.5	12.09	0.08982	15	LAT, LAB	0.005988	163.5	11.87
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-4	E	C2	5	2	171.8	11.97	0.09010	15	LGM, LWB, LAT	0.006007	169.2	11.79
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-5	E	C2	5	2	158.0	11.82	0.09057	15	LWB, LAT	0.006038	156.4	11.70
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-RTA-6	E	C2	5	2	171.5	11.87	0.09028	15	LGM, LAT	0.006019	169.2	11.71

Average 170.5 11.86
Standard Dev. 7.420 0.6103
Coeff. of Var. [%] 4.351 5.147
Min. 152.7 11.27
Max. 184.4 15.56
Number of Spec. 44 44

Average_{norm} 0.006141 171.7 11.93
Standard Dev_{norm} 0.00008991 7.978 0.5483
Coeff. of Var. [%]_{norm} 1.464 4.647 4.595
Min. 0.005988 153.6 11.53
Max. 0.006312 185.7 15.37
Number of Spec. 44 44

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



June 15th, 2026

CAM-RP-2025-001 Rev -

**Fill Tension Properties (FT)--ETW (180°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

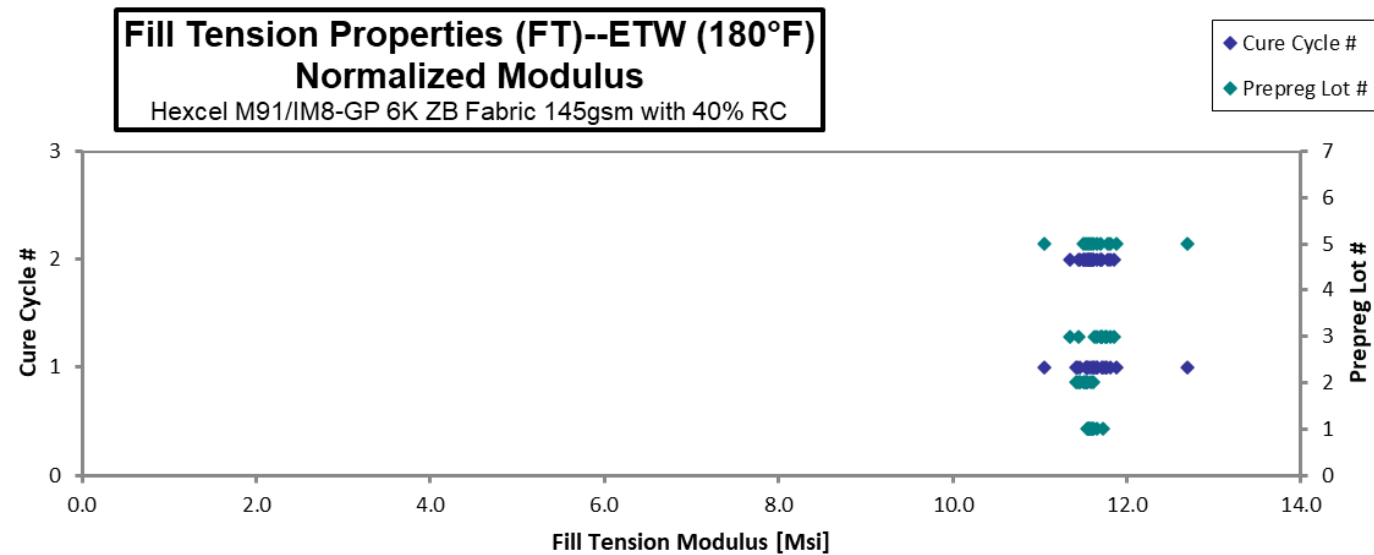
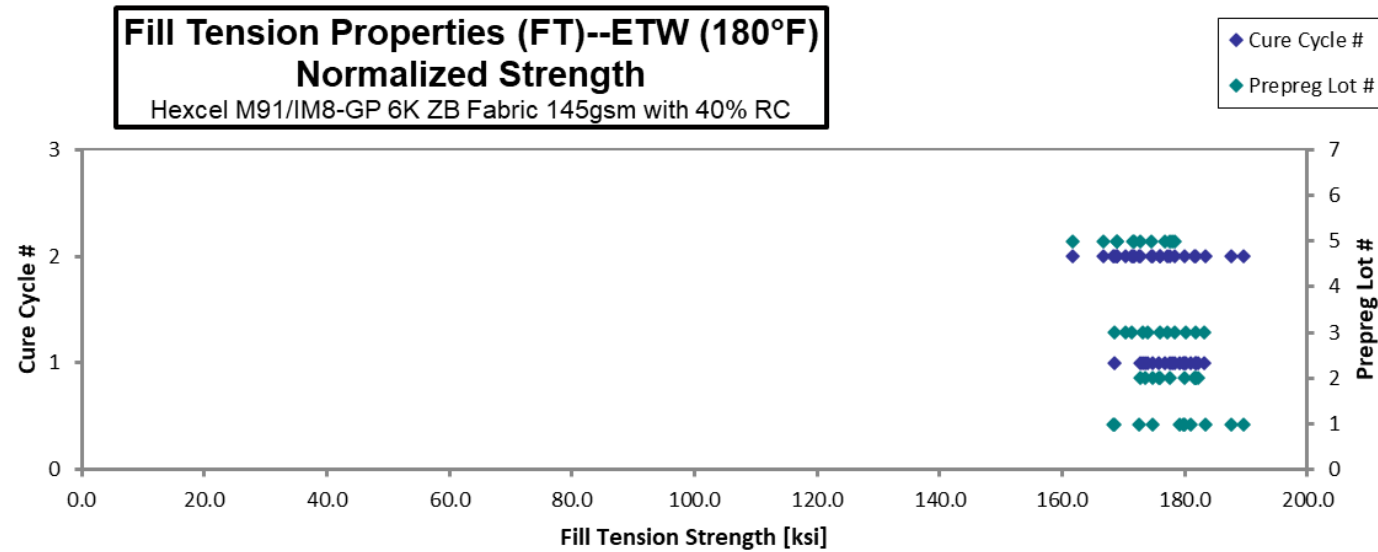
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-ETW-1	A	C1	1	1	176.5	11.37	0.09285	15	LAB, LWT	0.006190	179.1	11.54
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-ETW-2	A	C1	1	1	171.8	11.41	0.09305	15	LAB, LAT	0.006203	174.7	11.60
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-ETW-3	A	C1	1	1	167.1	11.56	0.09228	15	LWB, LAT	0.006152	168.6	11.66
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-ETW-4	A	C1	1	1	177.2	11.41	0.09285	15	LAB, LAT	0.006190	179.8	11.58
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-ETW-5	A	C1	1	1	178.6	11.57	0.09275	15	LAB, LWT	0.006183	181.1	11.73
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-1	A	C2	1	2	168.6	11.60	0.09133	15	LWT, LAB	0.006089	168.3	11.57
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-2	A	C2	1	2	180.8	11.66	0.09112	15	LAB, LAT	0.006074	180.0	11.61
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-3	A	C2	1	2	187.5	11.43	0.09252	15	LGB, LAT	0.006168	189.6	11.56
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-4	A	C2	1	2	186.3	11.48	0.09217	15	LAB, LAT	0.006144	187.7	11.56
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-5	A	C2	1	2	178.6	11.27	0.09400	15	LWB, LAT	0.006267	183.5	11.58
NTPM911Q1-HXL-H40-NIAR-FT-A-C2-1-ETW-6	A	C2	1	2	172.3	11.60	0.09162	15	LAB, LAT	0.006108	172.5	11.61
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-ETW-1	B	C1	2	1	175.0	11.03	0.09505	15	LWB, LWT	0.006337	181.8	11.46
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-ETW-2	B	C1	2	1	175.3	11.17	0.09512	15	LWT, LAB	0.006341	182.3	11.61
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-ETW-3	B	C1	2	1	167.0	10.99	0.09507	15	LAB, LAT	0.006338	173.5	11.42
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-ETW-4	B	C1	2	1	174.3	11.07	0.09447	15	LWT, LAB	0.006298	179.9	11.43
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-ETW-5	B	C1	2	1	170.5	11.20	0.09428	15	LAB, LAT	0.006286	175.7	11.55
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-1	B	C2	2	2	173.0	11.21	0.09397	15	LGB, LAT, LAB	0.006264	177.6	11.51
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-2	B	C2	2	2	170.5	11.27	0.09372	15	LWB, LAT	0.006248	174.7	11.54
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-3	B	C2	2	2	177.7	11.21	0.09357	15	LWT, LAB	0.006238	181.7	11.46
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-4	B	C2	2	2	172.6	11.30	0.09332	15	LWT, LAB	0.006221	176.0	11.53
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-5	B	C2	2	2	178.0	11.36	0.09333	15	LWT, LAB	0.006222	181.6	11.59
NTPM911Q1-HXL-H40-NIAR-FT-B-C2-1-ETW-6	B	C2	2	2	167.7	11.16	0.09425	15	LWB, LAT	0.006283	172.7	11.50
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-ETW-1	C	C1	3	1	182.1	11.69	0.09202	15	LWT, LWB	0.006134	183.2	11.76
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-ETW-2	C	C1	3	1	173.7	11.70	0.09162	15	LWB, LAT	0.006108	173.9	11.71
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-ETW-3	C	C1	3	1	178.8	11.68	0.09220	15	LWB, LWT	0.006147	180.1	11.77
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-ETW-4	C	C1	3	1	173.2	11.63	0.09148	15	LWB, LGT	0.006099	173.2	11.62
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-ETW-5	C	C1	3	1	180.9	11.75	0.09197	15	LWB, LGT	0.006131	181.8	11.81
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-1	C	C2	3	2	168.5	11.70	0.09155	15	LAT, LWB	0.006103	168.6	11.71
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-2	C	C2	3	2	171.2	11.33	0.09162	15	LAT, LWB	0.006108	171.4	11.35
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-3	C	C2	3	2	176.7	11.82	0.09178	15	LAB	0.006119	177.2	11.85
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-4	C	C2	3	2	175.3	11.66	0.09187	15	LAB, LWT	0.006124	176.0	11.70
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-5	C	C2	3	2	178.6	11.67	0.09142	15	LAB, LWT	0.006094	178.4	11.66
NTPM911Q1-HXL-H40-NIAR-FT-C-C2-1-ETW-6	C	C2	3	2	170.2	11.44	0.09157	15	LWT, LAB	0.006104	170.3	11.45
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-ETW-1	E	C1	5	1	177.6	11.10	0.09103	15	LAT, LAB, LWB	0.006069	176.7	11.05
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-ETW-2	E	C1	5	1	173.8	11.74	0.09088	15	LAT, LWB	0.006059	172.6	11.66
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-ETW-3	E	C1	5	1	180.1	12.84	0.09045	15	LAT, LWB	0.006030	178.0	12.69
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-ETW-4	E	C1	5	1	179.2	11.99	0.09068	15	LAT, LWB, LGB	0.006046	177.6	11.88
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-ETW-5	E	C1	5	1	179.9	11.62	0.09075	15	LAT, LWB	0.006050	178.4	11.53
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-1	E	C2	5	2	170.3	11.61	0.09072	15	LAB, LWT	0.006048	168.8	11.51
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-2	E	C2	5	2	173.9	11.94	0.09032	15	LAT, LWB	0.006021	171.7	11.78
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-3	E	C2	5	2	173.6	11.72	0.09047	15	LGT, LWB	0.006031	171.6	11.59
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-4	E	C2	5	2	168.7	11.94	0.09047	15	LWB, LIT	0.006031	166.8	11.81
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-5	E	C2	5	2	176.9	11.86	0.09023	15	LAB, LAT	0.006016	174.5	11.70
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-6	E	C2	5	2	163.6	11.75	0.09042	15	LWT, LAB	0.006028	161.7	11.61
NTPM911Q1-HXL-H40-SKS-FT-E-C2-1-ETW-7	E	C2	5	2	171.3	11.72	0.09018	15	LGT, LAB	0.006012	168.9	11.55

Average 174.8 11.54
Standard Dev. 5.093 0.3266
Coeff. of Var. [%] 2.914 2.830
Min. 163.6 10.99
Max. 187.5 12.84
Number of Spec. 45 45

Average_{norm} 0.006146 176.1 11.62
Standard Dev._{norm} 0.00009653 5.702 0.2191
Coeff. of Var. [%]_{norm} 1.571 3.238 1.885
Min. 0.006012 161.7 11.05
Max. 0.006341 189.6 12.69
Number of Spec. 45 45 45

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



4.3 Warp Compression Properties (WC)

Warp Compression Properties (WC)--CTA (-65°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Ms]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Ms]
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-CTA-1	A	C1	1	1	118.7	10.44	0.09340	15	M(B,H)AB, HIB	0.006227	121.2	10.65
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-CTA-2	A	C1	1	1	129.2	10.03	0.09283	15	BGM	0.006189	131.1	10.17
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-CTA-3	A	C1	1	1	125.1	10.25	0.09378	15	BGM, HAB	0.006252	128.2	10.51
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-CTA-4	A	C1	1	1	124.0	10.31	0.09333	15	M(B,H)AB	0.006222	126.5	10.52
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-CTA-5	A	C1	1	1	129.3	10.52	0.09325	15	BGM, HAB	0.006217	131.8	10.72
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-1	A	C2	1	2	123.5	10.73	0.09302	15	BGM, CIT	0.006201	125.6	10.91
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-2	A	C2	1	2	120.6	10.77	0.09285	15	HAT	0.006190	122.4	10.93
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-3	A	C2	1	2	125.0	10.73	0.09300	15	BAT	0.006200	127.0	10.90
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-4	A	C2	1	2	128.8	10.76	0.09340	15	BAT	0.006227	131.4	10.98
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-5	A	C2	1	2	122.2	11.06	0.09317	15	BAB	0.006211	124.5	11.26
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-6	A	C2	1	2	132.4	11.16	0.09282	15	BAT	0.006188	134.3	11.32
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-CTA-7**	A	C2	1	2	127.1		0.09273	15	M(B,H)AB	0.006182	128.9	
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-CTA-1	B	C1	2	1	116.9	10.33	0.09493	15	BGM	0.006329	121.3	10.72
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-CTA-2	B	C1	2	1	125.9	9.817	0.09478	15	BGM	0.006319	130.4	10.17
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-CTA-3	B	C1	2	1	111.9	10.16	0.09452	15	BGM	0.006301	115.6	10.50
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-CTA-4	B	C1	2	1	122.5	10.25	0.09477	15	BGM	0.006318	126.8	10.61
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-CTA-5	B	C1	2	1	135.0	10.35	0.09440	15	HAB, HIB	0.006293	139.2	10.68
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-1	B	C2	2	2	130.3	10.34	0.09538	15	BGM	0.006359	135.9	10.78
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-2	B	C2	2	2	130.0	9.918	0.09548	15	HAT	0.006366	135.6	10.35
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-3	B	C2	2	2	124.7	10.16	0.09545	15	BGM	0.006363	130.1	10.59
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-4	B	C2	2	2	133.3	10.32	0.09545	15	BGM	0.006363	139.1	10.76
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-5	B	C2	2	2	136.5	10.13	0.09545	15	BGM	0.006363	142.4	10.56
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-CTA-6	B	C2	2	2	128.2	10.26	0.09528	15	BGM	0.006352	133.5	10.68
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-1*	C	C1	3	1		10.95	0.09140	15	CIT	0.006093		10.94
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-2	C	C1	3	1	125.7	10.90	0.09172	15	HAB	0.006114	126.0	10.92
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-3*	C	C1	3	1		10.73	0.09215	15	HIB	0.006143		10.80
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-4	C	C1	3	1	122.7	10.63	0.09212	15	BGM,HAT	0.006141	123.5	10.71
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-5	C	C1	3	1	135.7	10.85	0.09188	15	HAT,HIT	0.006126	136.3	10.90
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-CTA-6**	C	C1	3	1	133.9		0.09165	15	BGM	0.006110	134.2	
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-1	C	C2	3	2	128.9	10.76	0.09123	15	M(B,H)AT	0.006082	128.6	10.73
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-2	C	C2	3	2	126.5	10.55	0.09198	15	BAB	0.006132	127.1	10.60
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-3	C	C2	3	2	133.5	10.54	0.09235	15	BAT,HAB	0.006157	134.8	10.63
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-4	C	C2	3	2	118.2	10.70	0.09205	15	BAB	0.006137	118.9	10.77
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-5	C	C2	3	2	133.1	10.56	0.09215	15	M(B,H)AT	0.006143	134.0	10.63
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-CTA-6	C	C2	3	2	123.4	10.40	0.09183	15	BAT	0.006122	123.8	10.44

June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-CTA-1	D	C1	4	1	123.6	11.07	0.08475	14	BGM	0.006054	122.6	10.98
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-CTA-2	D	C1	4	1	113.8	10.70	0.08452	14	BGM	0.006037	112.6	10.59
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-CTA-3	D	C1	4	1	119.0	11.24	0.08447	14	BGM	0.006033	117.7	11.11
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-CTA-4	D	C1	4	1	121.3	10.52	0.08512	14	BGM	0.006080	120.9	10.49
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-CTA-5	D	C1	4	1	115.6	10.24	0.08522	14	BGM	0.006087	115.3	10.22
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-1	D	C2	4	2	120.0	10.60	0.09760	16	BGM	0.006100	120.0	10.60
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-2	D	C2	4	2	126.4	10.13	0.09782	16	BGM, HAT, HIT	0.006114	126.7	10.15
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-3	D	C2	4	2	114.2	10.94	0.09843	16	BGM	0.006152	115.2	11.03
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-4	D	C2	4	2	113.0	10.80	0.09800	16	BGM	0.006125	113.5	10.85
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-5	D	C2	4	2	115.5	10.99	0.09827	16	BGM	0.006142	116.3	11.06
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-CTA-6	D	C2	4	2	119.2	10.78	0.09792	16	BGM, HAT	0.006120	119.6	10.81
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-CTA-1	E	C1	5	1	128.7	10.84	0.08875	15	BAB	0.005917	124.9	10.52
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-CTA-2	E	C1	5	1	138.0	10.73	0.09015	15	BAT	0.006010	135.9	10.57
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-CTA-3	E	C1	5	1	132.7	10.92	0.09052	15	BGM	0.006034	131.2	10.80
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-CTA-4	E	C1	5	1	129.0	10.91	0.09062	15	BGM	0.006041	127.8	10.80
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-CTA-5	E	C1	5	1	129.0	10.57	0.09073	15	BGM	0.006049	127.9	10.48
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-1*	E	C2	5	2	11.23	10.8805	0.08805	15	CIT	0.005870	120.8	10.81
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-2	E	C2	5	2	128.0	11.04	0.08960	15	BAB	0.005973	125.4	10.81
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-3	E	C2	5	2	128.9	10.74	0.09015	15	BAT	0.006010	127.0	10.58
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-4	E	C2	5	2	129.9	10.89	0.09075	15	BAB	0.006050	128.8	10.80
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-5	E	C2	5	2	134.4	10.93	0.09092	15	BAT	0.006061	133.6	10.86
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-6	E	C2	5	2	132.5	10.83	0.09077	15	BGM	0.006051	131.4	10.74
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-CTA-7**	E	C2	5	2	129.0	10.9088	0.09088	15	BAT	0.006059	128.1	10.74

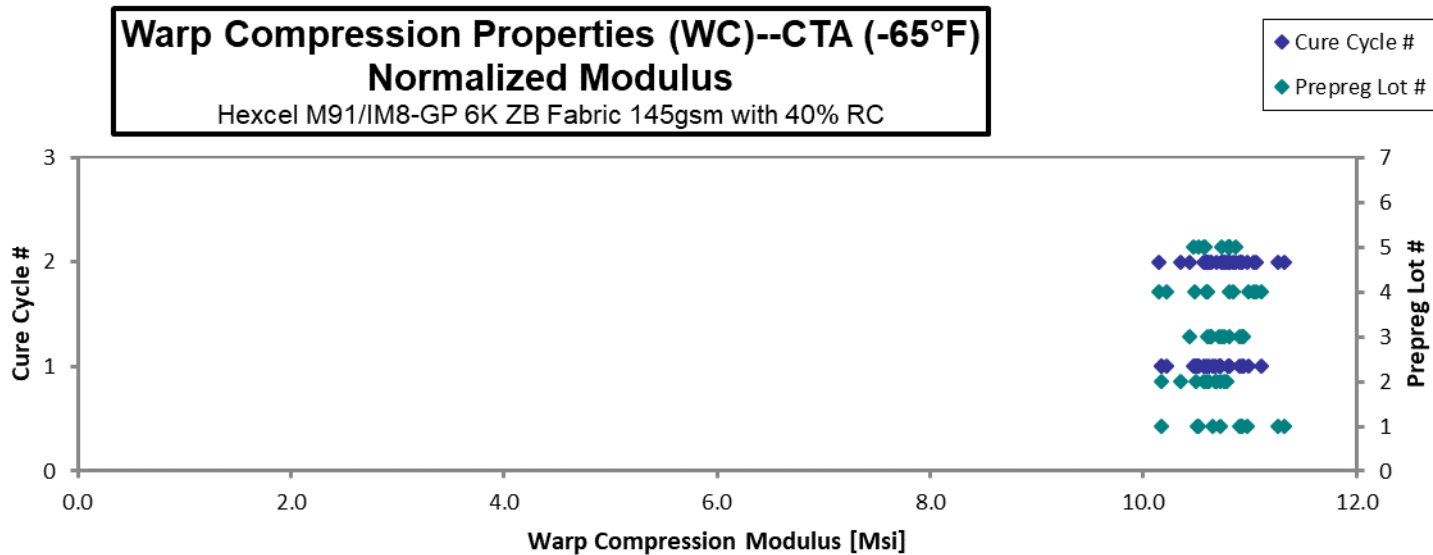
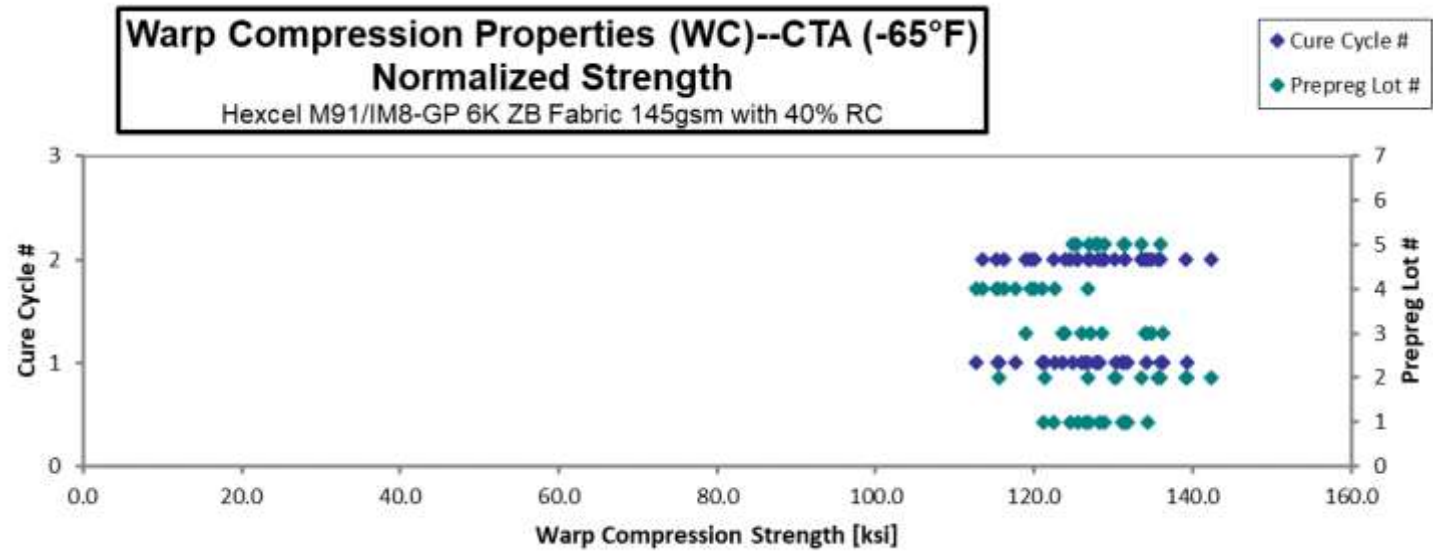
*Strength not reported due to unacceptable failure mode

**Specimen was not gaged, only strength is tested

Average 125.9 10.62
Standard Dev. 6.537 0.3392
Coeff. of Var. [%] 5.192 3.195
Min. 111.9 9.817
Max. 138.0 11.24
Number of Spec. 55 55

Average_{norm} 0.006153 127.1 10.71
Standard Dev_{norm} 0.0001172 6.978 0.2483
Coeff. of Var. [%]_{norm} 1.904 5.489 2.318
Min. 0.005870 112.6 10.151
Max. 0.006366 142.4 11.32
Number of Spec. 58 55 55

Note: For batch 4, C1 and C2 panels have ply counts that deviate from the configuration called out per the NCAMP Test Plan. The tested data was normalized based of the # of plies that were layed up.



Warp Compression Properties (WC)--RTA (70°F)
Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]
 0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Ms]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-1***	A	C1	1	1	115.7	10.64	0.09357	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-2***	A	C1	1	1	99.34	10.66	0.09392	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-3	A	C1	1	1	106.1	10.33	0.09335	15	M(B,H)AT
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-4	A	C1	1	1	111.2	10.64	0.09292	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-5	A	C1	1	1	110.5	10.78	0.09308	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-RTA-6**	A	C1	1	1	116.4		0.09367	15	BGM, HAB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-1***	A	C2	1	2	113.7	10.69	0.09303	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-2*/****	A	C2	1	2		10.57	0.09310	15	HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-3	A	C2	1	2	113.6	10.65	0.09283	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-4	A	C2	1	2	116.1	10.75	0.09215	15	M(B,H)AT
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-5	A	C2	1	2	115.4	10.54	0.09323	15	BAT
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-6	A	C2	1	2	100.8	10.53	0.09302	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-RTA-7**	A	C2	1	2	120.1		0.09298	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-1*/****	B	C1	2	1		10.34	0.09512	15	CIT
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-2***	B	C1	2	1	115.6	10.33	0.09452	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-3	B	C1	2	1	111.1	10.15	0.09448	15	BGM, HAT
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-4	B	C1	2	1	114.8	10.22	0.09338	15	BGM, HAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-5	B	C1	2	1	113.8	10.41	0.09438	15	BAT
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-RTA-6**	B	C1	2	1	112.2		0.09485	15	BAB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-1***	B	C2	2	2	111.5	10.27	0.09570	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-2***	B	C2	2	2	111.6	10.18	0.09540	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-3	B	C2	2	2	113.4	10.13	0.09552	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-4	B	C2	2	2	110.1	10.58	0.09397	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-5	B	C2	2	2	110.0	10.43	0.09537	15	M(B,H)AB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-RTA-6	B	C2	2	2	109.5	10.45	0.09552	15	HAB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-1*/****	C	C1	3	1		10.86	0.09183	15	CIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-2***	C	C1	3	1	106.7	10.71	0.09183	15	BAB,HIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-3**	C	C1	3	1		11.00	0.09205	15	CIT,CIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-4	C	C1	3	1	114.9	10.91	0.09190	15	BGM,HAT
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-5	C	C1	3	1	113.4	10.82	0.09185	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-RTA-6**	C	C1	3	1	113.1		0.09160	15	HAT,HIT
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-1*/****	C	C2	3	2		10.84	0.09152	15	HIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-2***	C	C2	3	2	118.7	10.66	0.09220	15	BAT,HIT
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-3	C	C2	3	2	111.9	10.80	0.09237	15	BAB
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-4	C	C2	3	2	118.0	10.68	0.09230	15	HAB,HIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-5	C	C2	3	2	118.6	10.50	0.09235	15	HAB,HIB
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-RTA-6	C	C2	3	2	109.6	10.57	0.09220	15	BGM,HIB

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Ms]
0.006238	118.3	10.89
0.006261	102.0	10.94
0.006223	108.2	10.54
0.006194	113.0	10.81
0.006206	112.4	10.97
0.006244	119.2	
0.006202	115.6	10.87
0.006207		10.75
0.006189	115.3	10.80
0.006143	116.9	10.83
0.006216	117.6	10.74
0.006201	102.5	10.70
0.006199	122.0	
0.006341		10.74
0.006301	119.5	10.68
0.006299	114.7	10.48
0.006226	117.1	10.43
0.006292	117.4	10.73
0.006323	116.3	
0.006380	116.6	10.74
0.006360	116.3	10.61
0.006368	118.4	10.57
0.006264	113.1	10.86
0.006358	114.6	10.87
0.006368	114.4	10.91
0.006122		10.90
0.006122	107.1	10.75
0.006137		11.06
0.006127	115.4	10.96
0.006123	113.8	10.86
0.006107	113.3	
0.006101		10.85
0.006147	119.6	10.74
0.006158	112.9	10.90
0.006153	119.0	10.78
0.006157	119.7	10.59
0.006147	110.4	10.65

June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-RTA-1***	D	C1	4	1	107.7	10.69	0.08487	14	BGM	0.006062	107.0	10.63
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-RTA-2***	D	C1	4	1	115.0	10.67	0.08483	14	BGM	0.006060	114.3	10.60
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-RTA-3	D	C1	4	1	110.9	10.54	0.08535	14	BGM	0.006096	110.8	10.54
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-RTA-4	D	C1	4	1	113.5	10.73	0.08567	14	BGM	0.006119	113.8	10.76
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-RTA-5	D	C1	4	1	107.8	10.92	0.08542	14	BGM	0.006101	107.8	10.92
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-1***	D	C2	4	2	118.2	10.47	0.09803	16	BGM	0.006127	118.8	10.52
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-2***	D	C2	4	2	109.8	10.59	0.09773	16	BGM	0.006108	110.0	10.61
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-3	D	C2	4	2	117.0	10.61	0.09757	16	BAT,HIT	0.006098	116.9	10.61
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-4	D	C2	4	2	108.8	10.75	0.09745	16	BGM	0.006091	108.6	10.73
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-5	D	C2	4	2	113.1	10.70	0.09710	16	BGM	0.006069	112.5	10.65
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-RTA-6	D	C2	4	2	120.5	10.92	0.09707	16	BGM	0.006067	119.8	10.86
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-RTA-1***	E	C1	5	1	116.7	10.96	0.09117	15	M(B,H)AB	0.006078	116.3	10.92
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-RTA-2***	E	C1	5	1	113.8	10.88	0.09108	15	BAB	0.006072	113.3	10.83
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-RTA-3	E	C1	5	1	115.1	10.57	0.09110	15	BAT	0.006073	114.5	10.53
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-RTA-4	E	C1	5	1	110.8	10.44	0.09145	15	M(B,H)AB	0.006097	110.7	10.44
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-RTA-5	E	C1	5	1	118.5	10.75	0.09145	15	HAB	0.006097	118.4	10.74
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-1*/***	E	C2	5	2	109.8	10.98	0.09053	15	CIT	0.006036	116.3	10.87
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-2***	E	C2	5	2	117.3	11.05	0.08998	15	BAT	0.005999	115.4	10.87
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-3	E	C2	5	2	116.2	11.17	0.09002	15	BAT	0.006001	114.3	10.99
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-4	E	C2	5	2	115.4	10.85	0.09010	15	BGM	0.006007	113.7	10.69
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-5	E	C2	5	2	120.3	11.09	0.08982	15	M(B,H)AT	0.005988	118.0	10.88
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-6	E	C2	5	2	121.2	11.03	0.09025	15	HAT	0.006017	119.6	10.88
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-RTA-7**	E	C2	5	2	115.8	10.90	0.09005	15	M(B,H)AB	0.006003	113.9	

*Strength not reported due to unacceptable failure mode

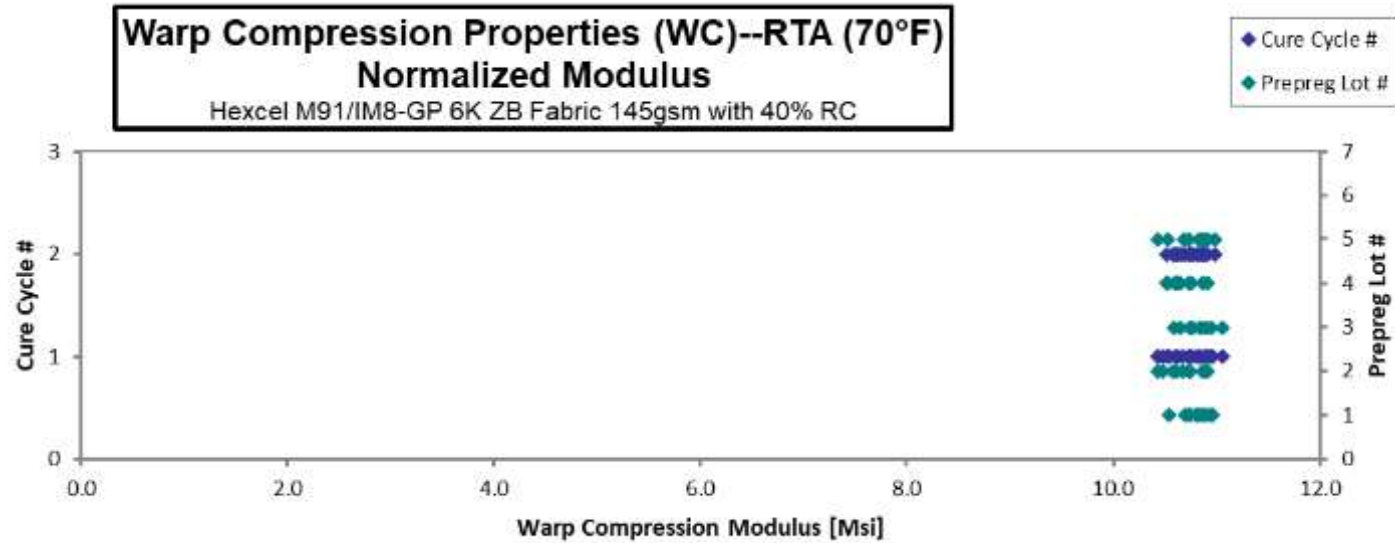
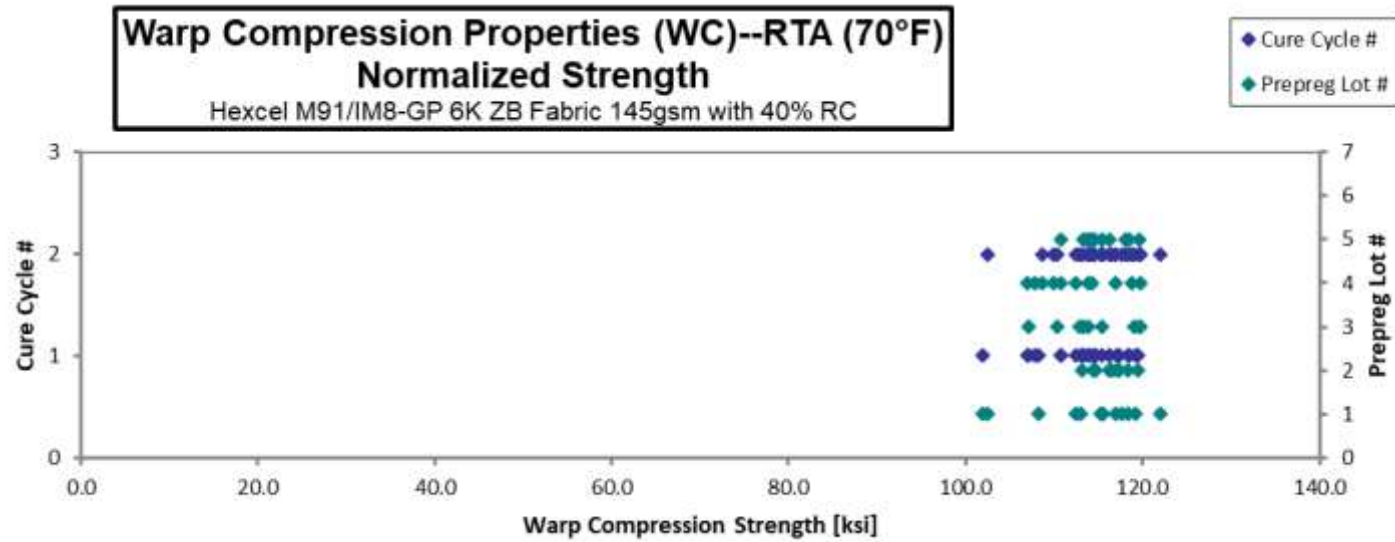
**Specimen was not gaged, only strength is tested

***Modulus are averaged values of 2 strain gages

Average 113.3 10.65
Standard Dev. 4.501 0.2465
Coeff. of Var. [%] 3.971 2.314
Min. 99.34 10.13
Max. 121.2 11.17
Number of Spec. 54 55

Average_{norm} 0.006161 114.5 10.76
Standard Dev_{norm} 0.0001052 4.296 0.1513
Coeff. of Var. [%]_{norm} 1.708 3.753 1.407
Min. 0.005988 101.96 10.434
Max. 0.006380 122.0 11.06
Number of Spec. 60 54 55

Note: For batch 4, C1 and C2 panels have ply counts that deviate from the configuration called out per the NCAMP Test Plan. The tested data was normalized based of the # of plies that were layed up.



**Warp Compression Properties (WC)--ETW (180°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-1	A	C1	1	1	84.71	10.83	0.09380	15	M(B,H)AB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-2	A	C1	1	1	82.41	10.77	0.09362	15	BAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-3	A	C1	1	1	73.18	11.12	0.09312	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-4	A	C1	1	1	75.32	10.88	0.09385	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-5*	A	C1	1	1		10.86	0.09410	15	HIT
NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-ETW-7**	A	C1	1	1	79.71		0.09338	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-1	A	C2	1	2	82.64	11.00	0.09333	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-2	A	C2	1	2	75.85	11.23	0.09282	15	BAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-3	A	C2	1	2	80.42	11.01	0.09282	15	BAB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-4	A	C2	1	2	81.72	11.16	0.09302	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-5	A	C2	1	2	80.85	11.01	0.09345	15	BAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-A-C2-1-ETW-6	A	C2	1	2	86.84	10.73	0.09313	15	M(B,H)AB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-ETW-1	B	C1	2	1	80.96	10.72	0.09458	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-ETW-2	B	C1	2	1	81.26	10.88	0.09477	15	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-ETW-3	B	C1	2	1	80.98	10.69	0.09542	15	M(B,H)AB
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-ETW-4	B	C1	2	1	77.46	10.85	0.09502	15	HAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-B-C1-1-ETW-5	B	C1	2	1	74.19	10.75	0.09443	15	BAB, HIB, HAB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-1	B	C2	2	2	80.01	10.47	0.09525	15	M(B,H)AB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-2	B	C2	2	2	78.63	10.68	0.09567	15	BAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-3	B	C2	2	2	75.45	10.59	0.09533	15	M(B,H)AB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-4	B	C2	2	2	82.24	10.45	0.09497	15	BAB, HIB
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-5	B	C2	2	2	84.28	10.62	0.09532	15	HAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-B-C2-1-ETW-6	B	C2	2	2	81.31	10.38	0.09577	15	BAT, HIT
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-ETW-1	C	C1	3	1	80.32	10.72	0.09172	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-ETW-2	C	C1	3	1	82.50	10.23	0.09165	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-ETW-3	C	C1	3	1	81.16	10.46	0.09152	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-ETW-4	C	C1	3	1	83.74	11.21	0.09153	15	BAB
NTPM911Q1-HXL-H40-NIAR-WC-C-C1-1-ETW-5	C	C1	3	1	82.99	10.64	0.09173	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-1	C	C2	3	2	81.71	10.80	0.09190	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-2	C	C2	3	2	76.57	10.58	0.09210	15	BAT
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-3	C	C2	3	2	80.88	10.81	0.09193	15	BGM
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-4	C	C2	3	2	92.32	10.86	0.09207	15	HAB
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-5	C	C2	3	2	92.05	11.08	0.09190	15	HAT
NTPM911Q1-HXL-H40-NIAR-WC-C-C2-1-ETW-6	C	C2	3	2	91.57	11.12	0.09207	15	BAB

Avg. t _{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006253	86.84	11.11
0.006241	84.32	11.02
0.006208	74.47	11.32
0.006257	77.26	11.16
0.006273		11.16
0.006226	81.35	
0.006222	84.29	11.22
0.006188	76.95	11.39
0.006188	81.57	11.17
0.006201	83.08	11.35
0.006230	82.58	11.24
0.006209	88.39	10.93
0.006306	83.69	11.08
0.006318	84.16	11.27
0.006361	84.44	11.15
0.006334	80.44	11.26
0.006296	76.57	11.09
0.006350	83.29	10.90
0.006378	82.21	11.17
0.006356	78.61	11.03
0.006331	85.36	10.85
0.006354	87.80	11.06
0.006384	85.11	10.86
0.006114	80.51	10.74
0.006110	82.64	10.25
0.006101	81.18	10.46
0.006102	83.77	11.22
0.006116	83.20	10.67
0.006127	82.06	10.85
0.006140	77.08	10.65
0.006129	81.26	10.86
0.006138	92.89	10.92
0.006127	92.45	11.12
0.006138	92.14	11.19

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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-1	D	C1	4	1	77.00	10.97	0.08547	14	BGM, HAB	0.006105	77.06	10.98
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-2	D	C1	4	1	79.85	10.66	0.08473	14	M(B,H)AT	0.006052	79.23	10.57
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-3	D	C1	4	1	74.77	10.70	0.08478	14	BAT, HAT/HIT	0.006056	74.23	10.62
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-4	D	C1	4	1	79.53	10.81	0.08488	14	HAT/HIT	0.006063	79.05	10.75
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-5**	D	C1	4	1	78.04		0.08507	14	M(B,H)AB	0.006076	77.73	
NTPM911Q1-HXL-H40-FACC-WC-D-C1-1-ETW-6	D	C1	4	1	74.54	11.17	0.08510	14	BGM, HAT/HIT	0.006079	74.28	11.13
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-1	D	C2	4	2	77.61	10.93	0.09743	16	HAB/HIB	0.006090	77.48	10.91
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-2	D	C2	4	2	88.26	10.95	0.09778	16	HAT/HIT	0.006111	88.43	10.97
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-3	D	C2	4	2	86.03	10.66	0.09817	16	BGM, HAB/HIB	0.006135	86.53	10.72
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-4	D	C2	4	2	77.22	10.80	0.09812	16	HAT/HIT	0.006132	77.63	10.86
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-5	D	C2	4	2	89.24	10.89	0.09812	16	HAB/HIB	0.006132	89.71	10.95
NTPM911Q1-HXL-H40-FACC-WC-D-C2-1-ETW-6	D	C2	4	2	77.29	11.09	0.09755	16	BGM, HAT/HIT	0.006097	77.26	11.08
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-ETW-1	E	C1	5	1	90.09	11.52	0.09037	15	BGM, HAT	0.006024	88.98	11.37
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-ETW-2	E	C1	5	1	91.77	11.04	0.09053	15	HAB/HIB	0.006036	90.80	10.93
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-ETW-3	E	C1	5	1	91.33	11.13	0.08992	15	M(B,H)AB	0.005994	89.75	10.94
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-ETW-4	E	C1	5	1	88.86	11.10	0.09028	15	BGM, HIT	0.006019	87.67	10.95
NTPM911Q1-HXL-H40-SKS-WC-E-C1-1-ETW-5	E	C1	5	1	92.25	11.00	0.09012	15	BGM	0.006008	90.86	10.84
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-1	E	C2	5	2	84.45	11.77	0.09033	15	BAT	0.006022	83.37	11.62
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-2	E	C2	5	2	96.67	11.66	0.09007	15	HAT/HIT	0.006004	95.15	11.48
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-3	E	C2	5	2	91.97	11.71	0.09005	15	BGM	0.006003	90.51	11.53
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-4	E	C2	5	2	94.66	11.54	0.08925	15	BAT	0.005950	92.34	11.25
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-5	E	C2	5	2	91.44	11.72	0.08822	15	HAT/HIT	0.005881	88.16	11.30
NTPM911Q1-HXL-H40-SKS-WC-E-C2-1-ETW-6	E	C2	5	2	91.45	11.63	0.08795	15	BAB, HIB	0.005863	87.90	11.18

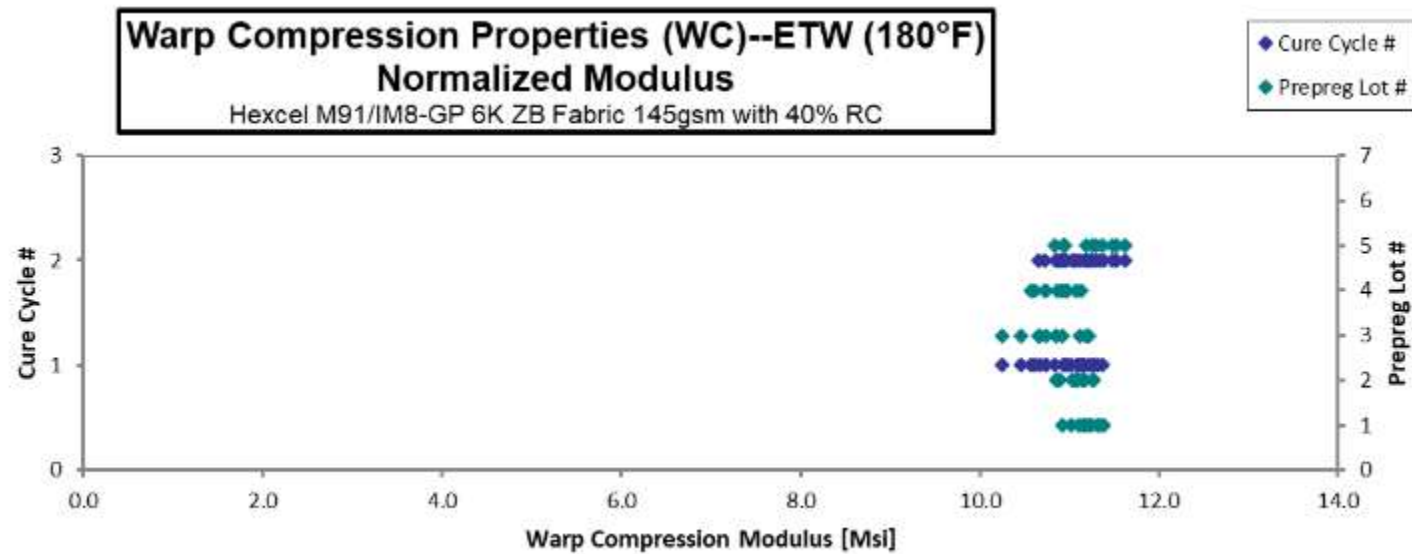
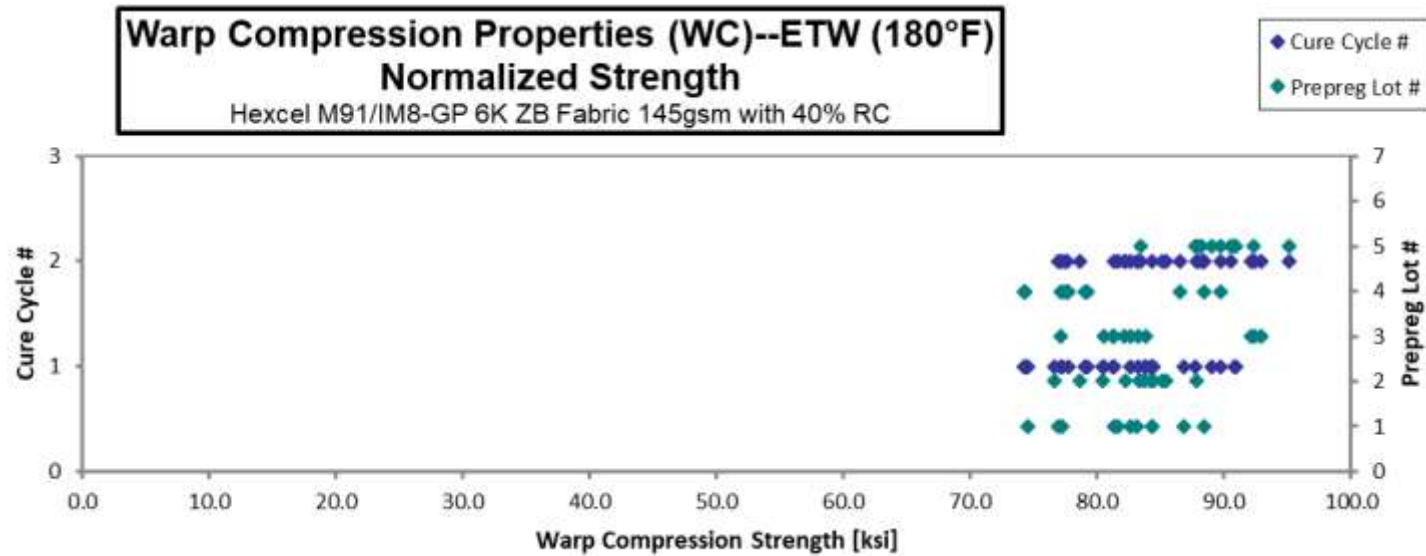
*Strength not reported due to unacceptable failure mode

**Specimen was not gaged, only strength is tested

Average 83.05 10.94
Standard Dev. 6.054 0.3513
Coeff. of Var. [%] 7.290 3.212
Min. 73.18 10.23
Max. 96.67 11.77
Number of Spec. 56 55

Average_{norm} 0.006153 83.68 11.03
Standard Dev._{norm} 0.0001262 5.370 0.268
Coeff. of Var. [%]_{norm} 2.051 6.418 2.429
Min. 0.005863 74.23 10.251
Max. 0.006384 95.15 11.62
Number of Spec. 57 56 55

Note: For batch 4, C1 and C2 panels have ply counts that deviate from the configuration called out per the NCAMP Test Plan. The tested data was normalized based of the # of plies that were layed up.



4.4 Fill Compression Properties (FC)

Fill Compression Properties (FC)--CTA (-65°F)					
Strength & Modulus					
Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC					

normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-1	A	C1	1	1	127.7	10.60	0.09343	15	BAB	0.006229	130.4	10.83
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-2	A	C1	1	1	101.6	10.50	0.09322	15	BAT	0.006214	103.5	10.69
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-3*	A	C1	1	1		10.22	0.09323	15	HIB	0.006216		10.42
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-4	A	C1	1	1	132.1	10.35	0.09293	15	BGM	0.006196	134.2	10.51
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-5	A	C1	1	1	121.7	10.13	0.09345	15	BGM	0.006230	124.3	10.35
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-CTA-6**	A	C1	1	1	128.9		0.09325	15	BAT	0.006217	131.4	
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-1	A	C2	1	2	130.3	9.979	0.09267	15	HAB, HIB	0.006178	131.9	10.11
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-2	A	C2	1	2	128.6	10.16	0.09277	15	HAB	0.006184	130.4	10.30
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-3	A	C2	1	2	128.8	10.26	0.09292	15	BGM	0.006194	130.8	10.42
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-4	A	C2	1	2	131.3	10.64	0.09267	15	HAT	0.006178	133.0	10.78
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-5	A	C2	1	2	133.9	10.82	0.09250	15	BAB	0.006167	135.4	10.93
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-CTA-6	A	C2	1	2	126.5	10.88	0.09163	15	BAT	0.006109	126.7	10.90
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-CTA-1	B	C1	2	1	126.1	10.63	0.09225	15	BAB	0.006150	127.1	10.72
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-CTA-2	B	C1	2	1	127.6	10.60	0.09420	15	HAB	0.006280	131.4	10.91
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-CTA-3	B	C1	2	1	126.7	10.60	0.09445	15	BGM, HAB, HIB	0.006297	130.7	10.94
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-CTA-4	B	C1	2	1	126.6	10.70	0.09448	15	M(B,H)AB	0.006299	130.7	11.05
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-CTA-5	B	C1	2	1	133.3	10.77	0.09387	15	BAB	0.006258	136.8	11.04
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-1	B	C2	2	2	128.5	10.60	0.09367	15	BAB	0.006244	131.6	10.85
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-2	B	C2	2	2	127.5	10.15	0.09532	15	BAT	0.006354	132.9	10.57
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-3	B	C2	2	2	127.1	10.45	0.09557	15	BGM	0.006371	132.7	10.91
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-4	B	C2	2	2	110.9	10.34	0.09542	15	BGM	0.006361	115.6	10.78
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-5	B	C2	2	2	131.4	10.66	0.09515	15	BGM	0.006343	136.6	11.09
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-CTA-6	B	C2	2	2	131.5	10.25	0.09467	15	BGM, HAB	0.006311	136.0	10.60
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-CTA-1	C	C1	3	1	129.7	10.69	0.09137	15	BGM	0.006091	129.5	10.67
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-CTA-2	C	C1	3	1	127.2	10.77	0.09238	15	BGM	0.006159	128.4	10.87
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-CTA-3	C	C1	3	1	128.3	10.76	0.09237	15	BAB	0.006158	129.5	10.86
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-CTA-4	C	C1	3	1	131.5	10.90	0.09212	15	BAT	0.006141	132.3	10.98
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-CTA-5	C	C1	3	1	134.0	10.82	0.09252	15	BAT	0.006168	135.5	10.94
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-1	C	C2	3	2	130.4	10.23	0.09155	15	HAB	0.006103	130.5	10.24
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-2	C	C2	3	2	132.3	10.11	0.09178	15	HAB, HIB	0.006119	132.7	10.14
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-3	C	C2	3	2	119.5	10.59	0.09218	15	BAT	0.006146	120.4	10.67
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-4	C	C2	3	2	132.9	10.51	0.09242	15	BGM, HAT, HIT	0.006161	134.3	10.61
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-5	C	C2	3	2	124.3	10.53	0.09245	15	BAB	0.006163	125.6	10.64
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-CTA-6	C	C2	3	2	119.9	10.49	0.09243	15	BAT	0.006162	121.1	10.60
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-CTA-1	E	C1	5	1	127.7	11.20	0.08887	15	BAT	0.005924	124.0	10.88
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-CTA-2	E	C1	5	1	129.2	11.20	0.08970	15	BAT	0.005980	126.7	10.98
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-CTA-3	E	C1	5	1	130.1	11.07	0.09053	15	BGM	0.006036	128.7	10.95
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-CTA-4	E	C1	5	1	123.3	10.83	0.09112	15	BGM	0.006074	122.8	10.79
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-CTA-5	E	C1	5	1	130.9	10.74	0.09122	15	BGM	0.006081	130.5	10.71
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-1	E	C2	5	2	132.8	11.16	0.08895	15	BAT	0.005930	129.1	10.85
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-2	E	C2	5	2	125.6	10.78	0.08973	15	BAB	0.005982	123.2	10.58
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-3	E	C2	5	2	121.7	10.83	0.09037	15	BAB	0.006024	120.2	10.70
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-4	E	C2	5	2	127.0	10.92	0.09068	15	HAB	0.006046	125.8	10.82
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-5	E	C2	5	2	123.2	10.79	0.09113	15	BAB	0.006076	122.8	10.75
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-CTA-6	E	C2	5	2	124.1	10.51	0.09125	15	BAT	0.006083	123.8	10.48

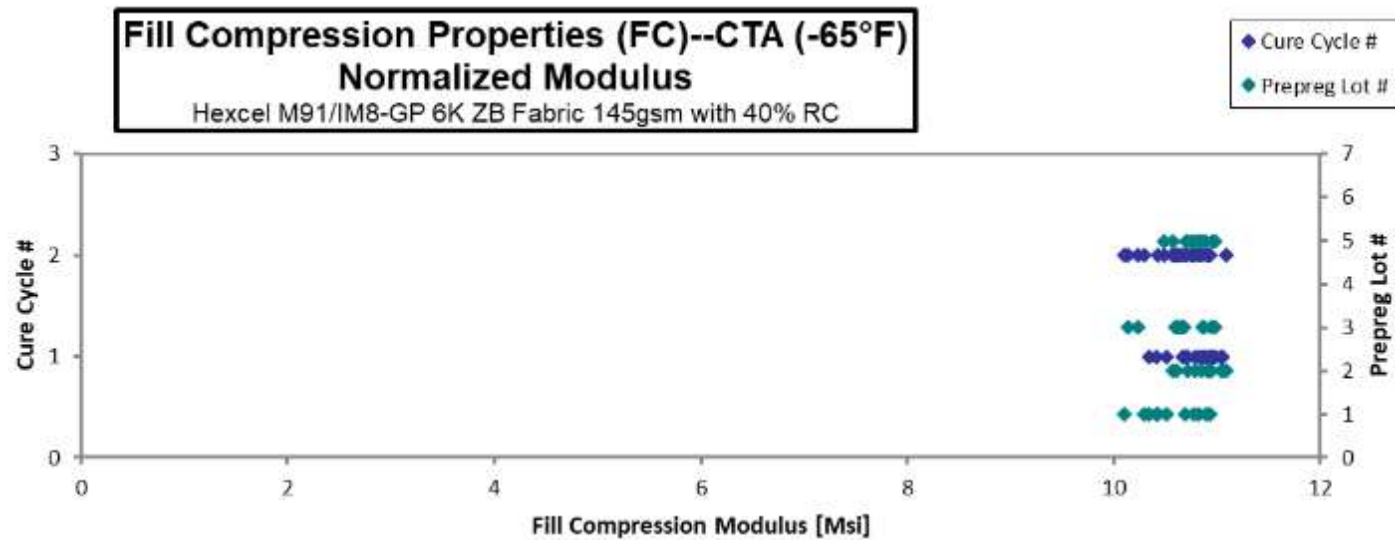
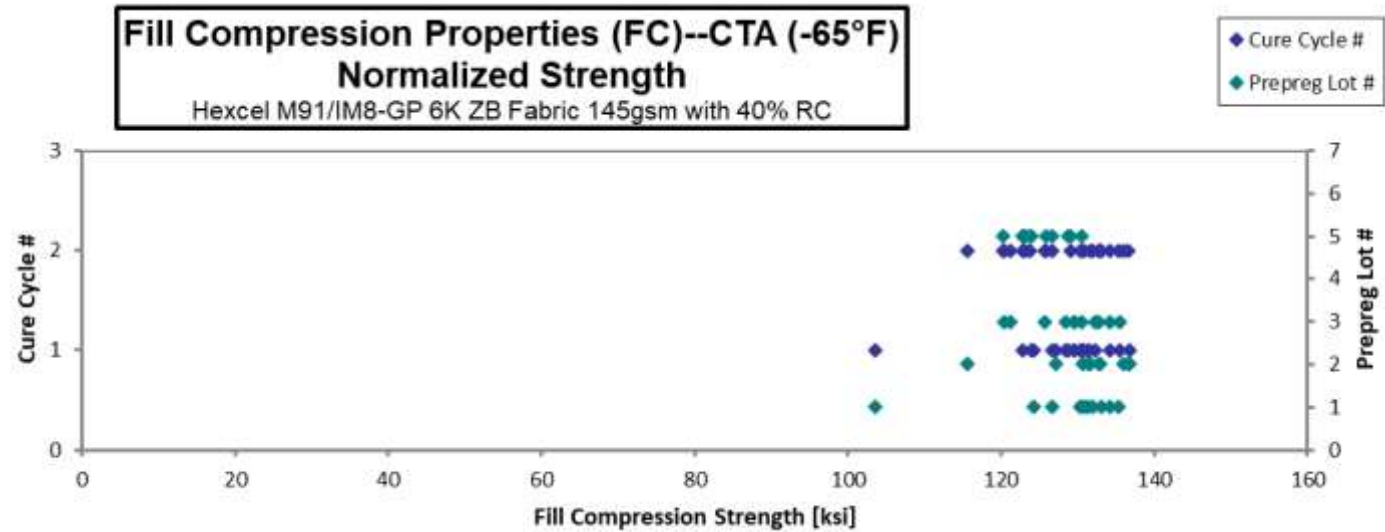
*FC-A-C1-1-CTA-3 Strength not reported due to unacceptable failure mode

**FC-A-C1-1-CTA-6 was not gaged, only strength is tested

Average	127.1	10.61
Standard Dev.	5.954	0.3007
Coeff. of Var. [%]	4.683	2.835
Min.	101.6	9.979
Max.	134.0	11.20
Number of Spec.	44	44

Average _{norm}	0.006164	128.4	10.71
Standard Dev. _{norm}	0.0001097	6.229	0.2441
Coeff. of Var. [%] _{norm}	1.779	4.850	2.278
Min.	0.005924	103.53	10.11
Max.	0.006371	136.8	11.09
Number of Spec.	45	44	44

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



**Fill Compression Properties (FC)--RTA (70°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-1***	A	C1	1	1	94.31	10.62	0.09327	15	BAB	0.006218	96.13	10.82
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-2***	A	C1	1	1	110.1	10.77	0.09313	15	HAT	0.006209	112.1	10.97
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-3	A	C1	1	1	113.4	10.67	0.09355	15	BGM	0.006237	115.9	10.90
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-4	A	C1	1	1	114.4	10.46	0.09330	15	BGM	0.006220	116.7	10.67
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-5	A	C1	1	1	90.69	10.67	0.09252	15	BGM	0.006168	91.70	10.79
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-RTA-6**	A	C1	1	1	107.4		0.09323	15	BAT	0.006216	109.5	
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-1***	A	C2	1	2	110.6	10.62	0.09310	15	BAT	0.006207	112.5	10.80
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-2***	A	C2	1	2	105.6	10.75	0.09253	15	M(B,H)AB, HIB	0.006169	106.8	10.87
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-3	A	C2	1	2	119.1	10.48	0.09232	15	HAB	0.006154	120.2	10.58
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-4	A	C2	1	2	104.7	10.58	0.09250	15	M(B,H)AB	0.006167	105.8	10.70
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-5	A	C2	1	2	98.70	10.71	0.09250	15	BGM	0.006167	99.77	10.83
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-RTA-6	A	C2	1	2	113.7	10.66	0.09273	15	BAT	0.006182	115.3	10.80
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-RTA-1***	B	C1	2	1	112.9	10.43	0.09380	15	BGM	0.006253	115.7	10.70
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-RTA-2***	B	C1	2	1	110.9	10.40	0.09420	15	BGM	0.006280	114.2	10.71
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-RTA-3	B	C1	2	1	111.0	10.63	0.09350	15	BAB	0.006233	113.4	10.86
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-RTA-4	B	C1	2	1	115.9	10.26	0.09292	15	BGM	0.006194	117.7	10.41
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-RTA-5	B	C1	2	1	114.8	10.41	0.09438	15	HAT	0.006292	118.4	10.74
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-1****	B	C2	2	2		10.23	0.09538	15	HIT	0.006359		10.67
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-2***	B	C2	2	2	109.7	10.42	0.09468	15	BGM, HAB, HIB	0.006312	113.6	10.78
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-3	B	C2	2	2	109.1	10.56	0.09487	15	BGM	0.006324	113.1	10.95
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-4	B	C2	2	2	114.5	10.39	0.09488	15	BAB	0.006326	118.8	10.78
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-5	B	C2	2	2	115.2	10.49	0.09400	15	BAB	0.006267	118.3	10.78
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-RTA-6	B	C2	2	2	103.2	10.30	0.09552	15	HAB	0.006368	107.7	10.75
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-RTA-1****	C	C1	3	1		10.59	0.09182	15	HIB	0.006121		10.63
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-RTA-2***	C	C1	3	1	112.7	10.71	0.09223	15	BAT	0.006149	113.6	10.80
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-RTA-3	C	C1	3	1	110.0	10.40	0.09217	15	BAT	0.006144	110.8	10.47
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-RTA-4	C	C1	3	1	110.7	10.36	0.09222	15	HAB	0.006148	111.5	10.44
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-RTA-5	C	C1	3	1	114.1	10.54	0.09222	15	BAB	0.006148	115.0	10.62
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-1***	C	C2	3	2	114.8	10.76	0.09222	15	HAB,HIB	0.006148	115.7	10.84
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-2***	C	C2	3	2	113.5	10.87	0.09230	15	BAB,HIB	0.006153	114.5	10.97
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-3	C	C2	3	2	105.8	11.05	0.09210	15	BAB,HIB	0.006140	106.5	11.12
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-4*	C	C2	3	2		10.73	0.09228	15	M(C,H)IB	0.006152		10.83
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-5*	C	C2	3	2		10.84	0.09168	15	HIT	0.006112		10.86
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-6	C	C2	3	2	113.3	10.70	0.09218	15	M(B,H)AB	0.006146	114.1	10.78
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-RTA-7**	C	C2	3	2	114.4		0.09205	15	M(B,H)AB	0.006137	115.1	
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-RTA-1***	E	C1	5	1	119.1	11.04	0.09127	15	BAT	0.006084	118.8	11.01
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-RTA-2***	E	C1	5	1	117.0	11.13	0.09103	15	BAT	0.006069	116.4	11.08
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-RTA-3	E	C1	5	1	121.4	11.16	0.09073	15	HAT	0.006049	120.3	11.06
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-RTA-4	E	C1	5	1	121.3	10.97	0.09068	15	BGM, HAB	0.006046	120.2	10.87
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-RTA-5	E	C1	5	1	117.0	10.93	0.09058	15	HAT	0.006039	115.8	10.82
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-1***	E	C2	5	2	104.9	10.81	0.09157	15	BAB	0.006104	105.0	10.82
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-2***	E	C2	5	2	102.7	10.77	0.09193	15	M(B,H)AB	0.006129	103.2	10.82
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-3	E	C2	5	2	113.0	10.40	0.09183	15	BAB	0.006122	113.4	10.44
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-4	E	C2	5	2	106.9	10.71	0.09152	15	BAT	0.006101	107.0	10.72
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-5	E	C2	5	2	107.7	10.68	0.09173	15	M(B,H)AB, HIB	0.006116	108.0	10.70
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-RTA-6	E	C2	5	2	105.9	10.58	0.09223	15	BAB	0.006149	106.7	10.66

*Strength not reported due to unacceptable failure mode

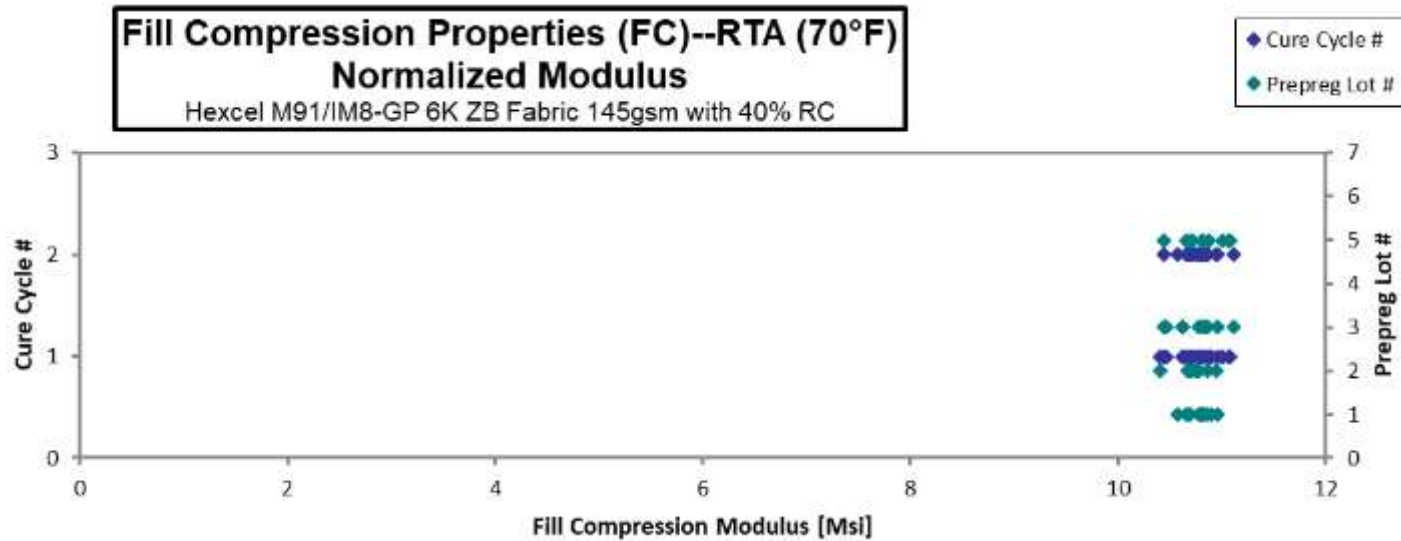
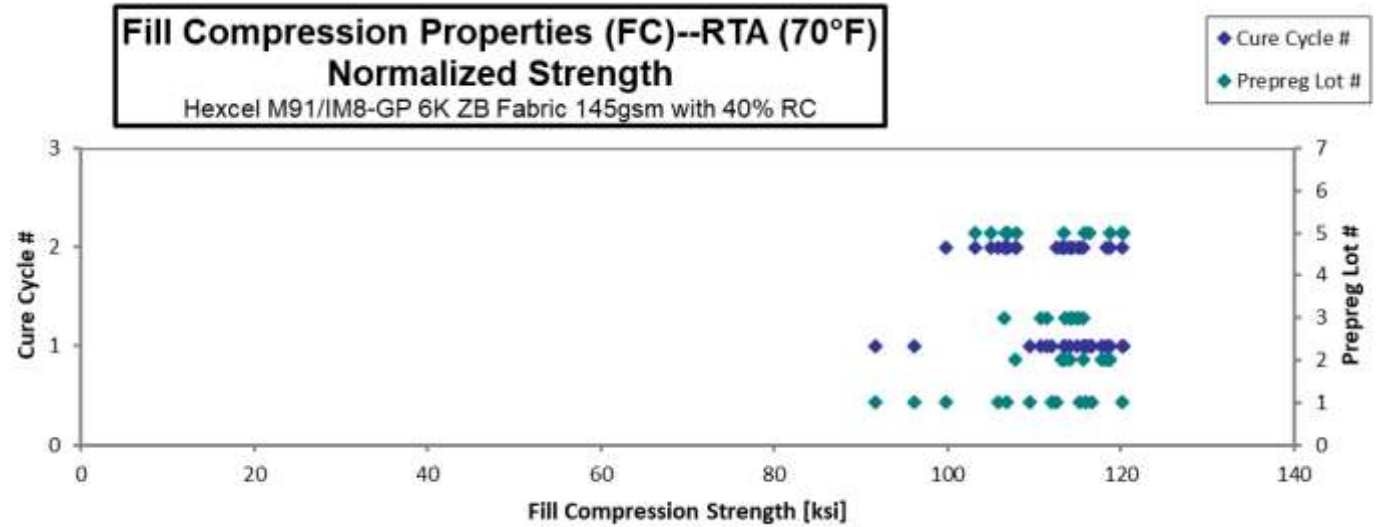
**Specimen was not gaged, only strength is tested

***Modulus are averaged values of 2 strain gages

Average 110.6 10.64
Standard Dev. 6.513 0.2279
Coeff. of Var. [%] 5.888 2.141
Min. 90.69 10.23
Max. 121.4 11.16
Number of Spec. 42 44

Average_{norm} 0.006179 112.0 10.78
Standard Dev._{norm} 0.0008094 6.428 0.1612
Coeff. of Var. [%]_{norm} 1.310 5.738 1.495
Min. 0.006039 91.70 10.41
Max. 0.006368 120.3 11.12
Number of Spec. 46 42 44

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



June 15th, 2026

CAM-RP-2025-001 Rev -

**Fill Compression Properties (FC)--ETW (180°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-1	A	C1	1	1	71.45	10.91	0.09292	15	BAB, HIB	0.006194	72.55	11.08
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-2	A	C1	1	1	79.61	11.01	0.09342	15	M(B,H)AB	0.006228	81.27	11.24
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-3	A	C1	1	1	81.34	11.12	0.09343	15	HAT, HIT	0.006229	83.06	11.36
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-4	A	C1	1	1	82.41	11.22	0.09327	15	HIB, HAB	0.006218	84.01	11.43
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-5	A	C1	1	1	80.88	10.88	0.09330	15	HIB, HAB	0.006220	82.47	11.10
NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-ETW-6**	A	C1	1	1	85.80		0.09312	15	M(B,H)AT, HIT	0.006208	87.32	
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-1	A	C2	1	2	78.32	10.92	0.09292	15	HAT, HAT	0.006194	79.54	11.09
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-2	A	C2	1	2	81.75	11.25	0.09247	15	M(B,H)AB, HIB	0.006164	82.62	11.37
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-3	A	C2	1	2	78.33	11.13	0.09258	15	BAB, HIB	0.006172	79.26	11.26
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-4	A	C2	1	2	81.93	11.11	0.09243	15	M(B,H)AB, HIB	0.006162	82.76	11.23
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-5	A	C2	1	2	86.62	10.97	0.09263	15	M(B,H)AB	0.006176	87.69	11.10
NTPM911Q1-HXL-H40-NIAR-FC-A-C2-1-ETW-6	A	C2	1	2	86.50	11.01	0.09325	15	HIB, HAB	0.006217	88.15	11.22
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-ETW-1	B	C1	2	1	72.21	10.65	0.09460	15	M(B,H)AT	0.006307	74.66	11.01
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-ETW-2	B	C1	2	1	78.21	10.71	0.09402	15	BGM, HIT	0.006268	80.36	11.00
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-ETW-3	B	C1	2	1	81.50	10.33	0.09412	15	M(B,H)AB, HIB	0.006274	83.83	10.62
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-ETW-4	B	C1	2	1	84.64	10.72	0.09413	15	BAT	0.006276	87.07	11.03
NTPM911Q1-HXL-H40-NIAR-FC-B-C1-1-ETW-5	B	C1	2	1	87.50	10.54	0.09397	15	BAT, HIT	0.006264	89.85	10.83
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-1	B	C2	2	2	76.40	10.59	0.09537	15	M(B,H)AB, HIB	0.006358	79.63	11.04
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-2	B	C2	2	2	86.84	10.64	0.09462	15	M(B,H)AT	0.006308	89.79	11.00
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-3*	B	C2	2	2		10.68	0.09445	15	HIB	0.006297		11.02
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-4	B	C2	2	2	81.18	10.59	0.09477	15	M(B,H)AT, HIT	0.006318	84.08	10.96
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-5	B	C2	2	2	84.56	10.57	0.09470	15	M(B,H)AB	0.006313	87.52	10.94
NTPM911Q1-HXL-H40-NIAR-FC-B-C2-1-ETW-6	B	C2	2	2	87.55	10.70	0.09483	15	M(B,H)AB, HIB	0.006322	90.74	11.09
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-ETW-1	C	C1	3	1	68.70	10.67	0.09212	15	BAB	0.006141	69.16	10.74
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-ETW-2	C	C1	3	1	81.78	10.70	0.09237	15	BGM	0.006158	82.56	10.80
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-ETW-3	C	C1	3	1	85.05	10.29	0.09168	15	BAB	0.006112	85.23	10.31
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-ETW-4	C	C1	3	1	89.59	10.33	0.09162	15	BAB	0.006108	89.70	10.34
NTPM911Q1-HXL-H40-NIAR-FC-C-C1-1-ETW-5	C	C1	3	1	84.21	10.71	0.09178	15	M(B,H)AB	0.006119	84.47	10.74
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-1	C	C2	3	2	86.32	11.02	0.09228	15	BAB	0.006152	87.06	11.12
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-2	C	C2	3	2	88.07	11.44	0.09235	15	HAT	0.006157	88.89	11.55
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-3	C	C2	3	2	84.24	11.13	0.09260	15	BGM	0.006173	85.26	11.26
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-4	C	C2	3	2	87.41	11.44	0.09280	15	BGM	0.006187	88.65	11.61
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-5	C	C2	3	2	89.08	11.15	0.09252	15	BAB	0.006168	90.07	11.27
NTPM911Q1-HXL-H40-NIAR-FC-C-C2-1-ETW-6	C	C2	3	2	87.66	10.98	0.09233	15	BGM	0.006156	88.46	11.08
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-ETW-1	E	C1	5	1	86.53	11.44	0.09032	15	BAB	0.006021	85.41	11.29
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-ETW-2	E	C1	5	1	83.77	11.78	0.08985	15	BAB	0.005990	82.26	11.56
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-ETW-3	E	C1	5	1	92.54	11.90	0.09020	15	M(B,H)AT	0.006013	91.22	11.73
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-ETW-4	E	C1	5	1	92.61	11.76	0.09005	15	HAB/HIB	0.006003	91.15	11.58
NTPM911Q1-HXL-H40-SKS-FC-E-C1-1-ETW-5	E	C1	5	1	82.23	11.66	0.09033	15	BAT	0.006022	81.18	11.51
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-1	E	C2	5	2	86.93	11.24	0.09178	15	BGM, HAB/HIB	0.006119	87.20	11.28
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-2	E	C2	5	2	86.36	11.34	0.09133	15	HAB/HIB, HIT	0.006089	86.20	11.32
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-3	E	C2	5	2	80.58	11.42	0.09095	15	BGM, HAB/HIB	0.006063	80.09	11.35
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-4	E	C2	5	2	79.62	11.17	0.09087	15	BGM, TAB	0.006058	79.06	11.09
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-5	E	C2	5	2	79.23	11.56	0.09052	15	HAB/HIB, HAT/HIT	0.006034	78.37	11.44
NTPM911Q1-HXL-H40-SKS-FC-E-C2-1-ETW-6	E	C2	5	2	79.01	11.64	0.08965	15	BGM, HIT	0.005977	77.41	11.40

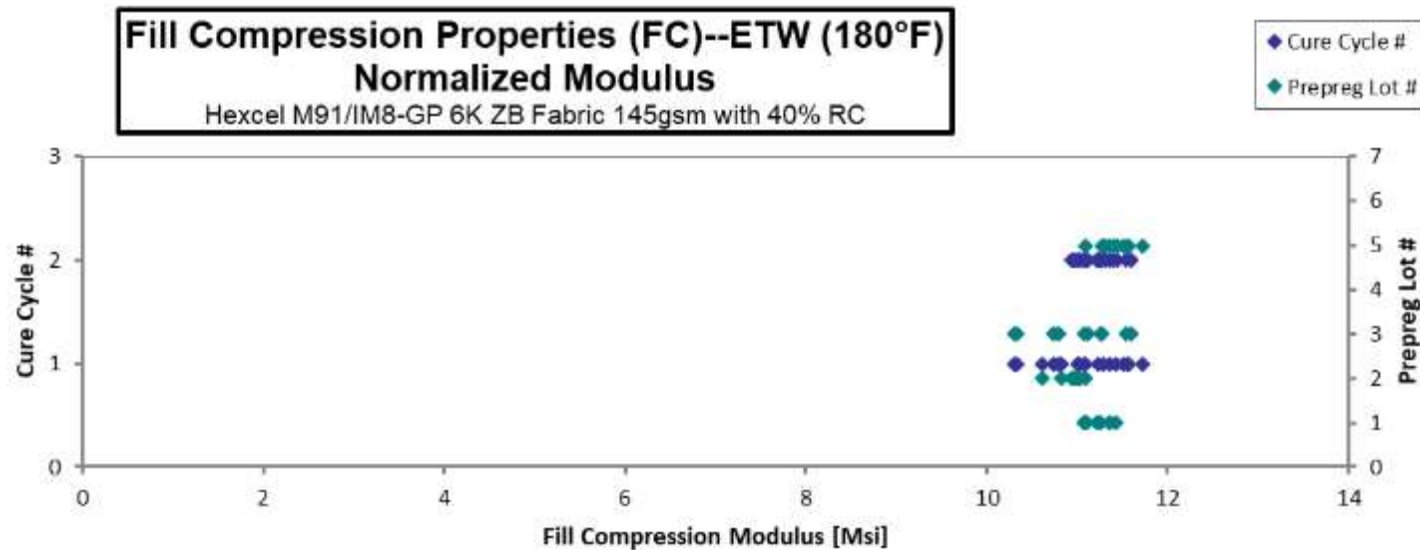
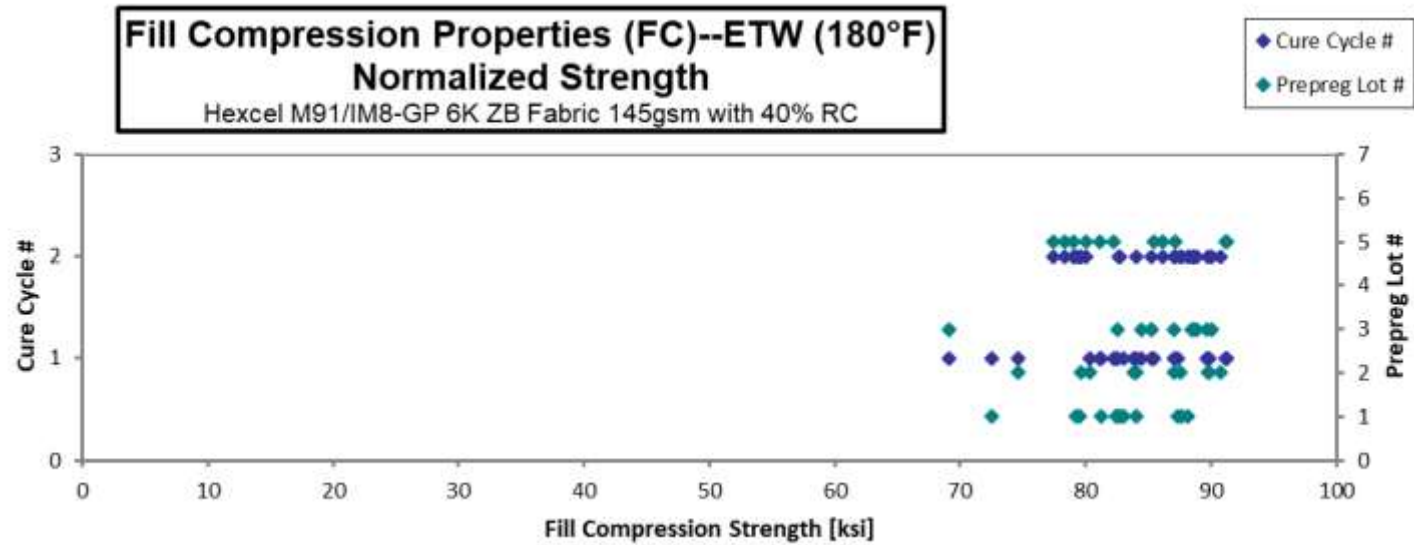
*FC-B-C2-1-ETW-3 Strength not reported due to unacceptable failure mode

**FC-A-C1-1-ETW-6 was not gaged, only strength is tested

Average 83.11 11.02
Standard Dev. 5.112 0.4138
Coeff. of Var. [%] 6.151 3.754
Min. 68.70 10.29
Max. 92.61 11.90
Number of Spec. 44 44

Average_{norm} 0.006171 84.03 11.14
Standard Dev._{norm} 0.0001001 5.058 0.3081
Coeff. of Var. [%]_{norm} 1.622 6.019 2.764
Min. 0.005977 69.16 10.31
Max. 0.006358 91.22 11.73
Number of Spec. 45 44 44

* Batch 4 fill data were generated from panels with an erroneous reference line, resulting in 8-10 degree off-axis loading that greatly misrepresented material strength and modulus. These data were discarded and new coupons are being fabricated. Once these are tested, the new dataset will be included in Rev A of this report.



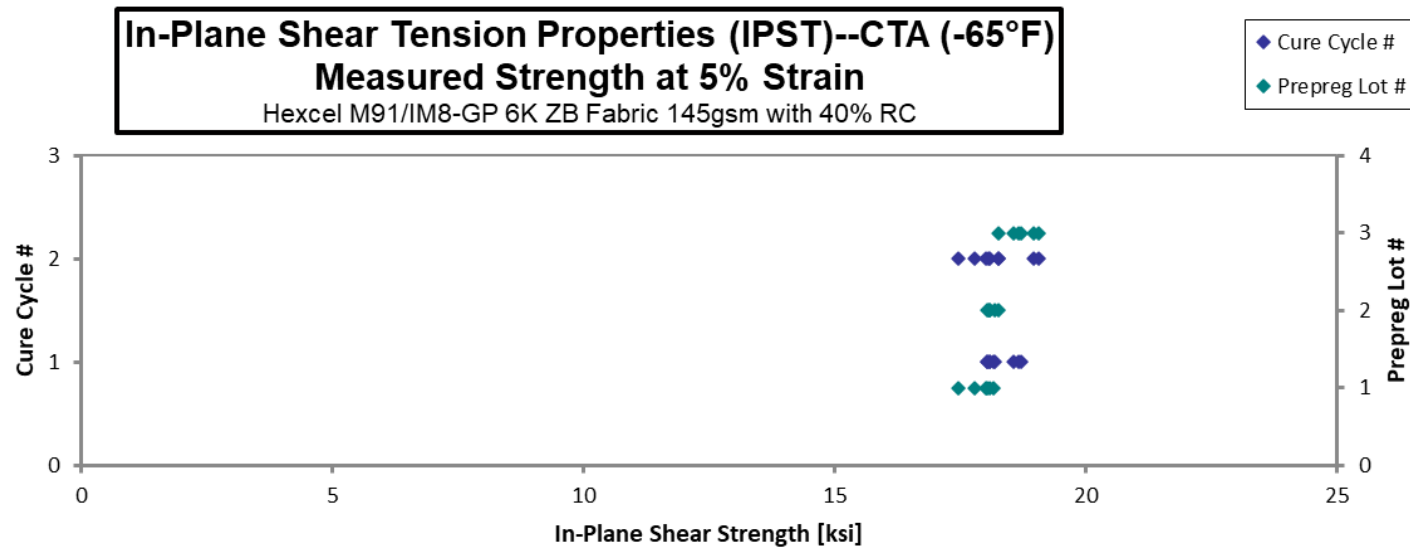
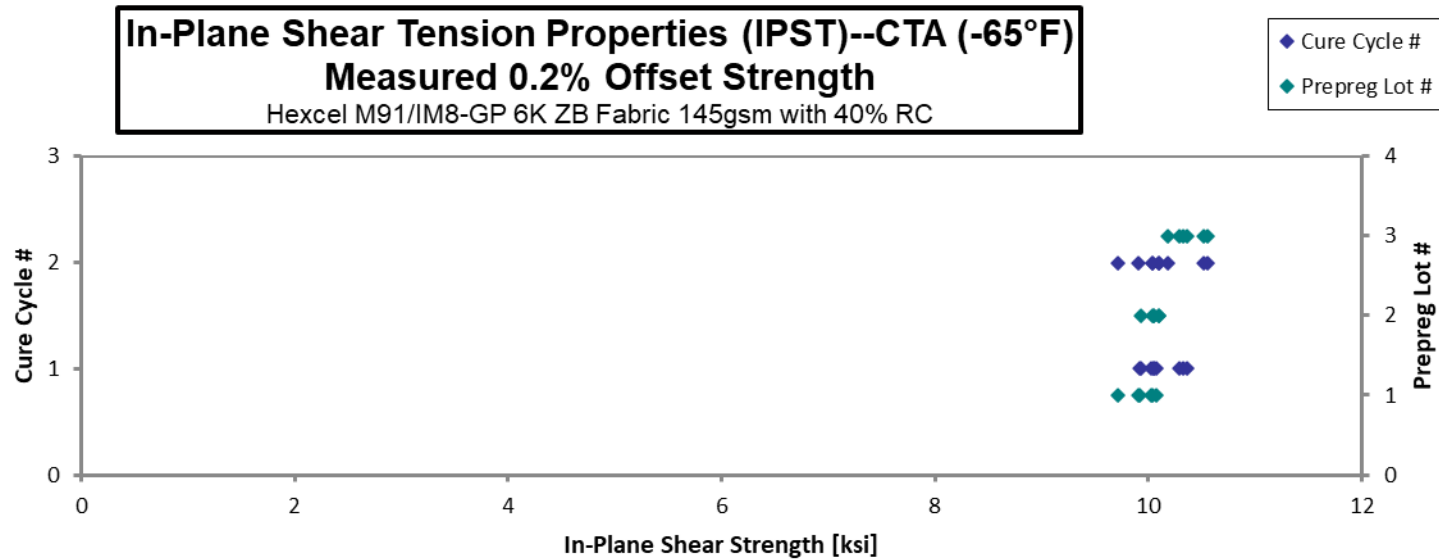
4.5 In-Plane Shear Tension Properties (IPST)

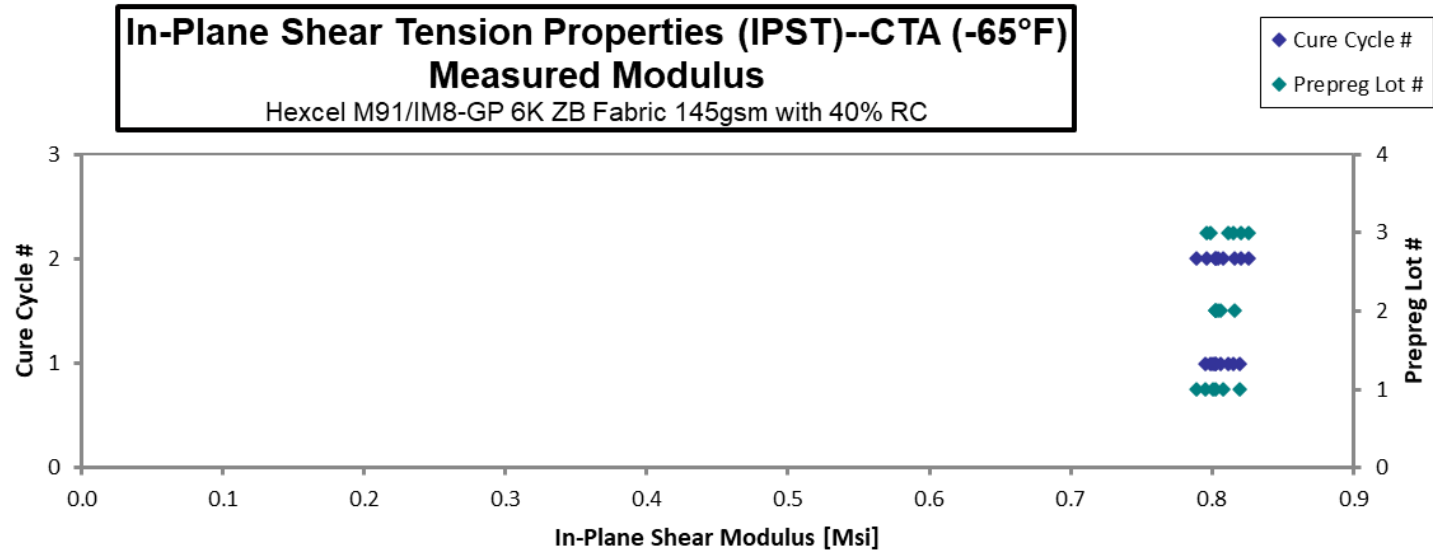
In-Plane Shear Tension Properties (IPST)--CTA (-65°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-CTA-1	A	C1	1	1	10.07	18.04	0.8197	0.07290	12	0.006075
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-CTA-2	A	C1	1	1	10.03	18.09	0.8002	0.07313	12	0.006094
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-CTA-3	A	C1	1	1	9.920	18.16	0.7954	0.07403	12	0.006169
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-CTA-1	A	C2	1	2	9.718	17.46	0.7890	0.07373	12	0.006144
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-CTA-2	A	C2	1	2	9.902	17.78	0.8024	0.07378	12	0.006149
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-CTA-3	A	C2	1	2	10.04	18.01	0.8075	0.07372	12	0.006143
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-CTA-1	B	C1	2	1	10.05	18.20	0.8029	0.07548	12	0.006290
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-CTA-2	B	C1	2	1	9.931	18.09	0.8024	0.07642	12	0.006368
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-CTA-3	B	C1	2	1	10.05	18.04	0.8062	0.07593	12	0.006328
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-CTA-1	B	C2	2	2	10.10	18.08	0.8161	0.07478	12	0.006232
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-CTA-2	B	C2	2	2	10.10	18.25	0.8041	0.07523	12	0.006269
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-CTA-3	B	C2	2	2	10.03	18.09	0.8029	0.07567	12	0.006306
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-CTA-1	C	C1	3	1	10.33	18.70	0.8115	0.07352	12	0.006126
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-CTA-2	C	C1	3	1	10.29	18.57	0.7986	0.07405	12	0.006171
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-CTA-3	C	C1	3	1	10.37	18.66	0.8150	0.07388	12	0.006157
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-CTA-1	C	C2	3	2	10.52	18.96	0.8258	0.07278	12	0.006065
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-CTA-2	C	C2	3	2	10.19	18.26	0.7958	0.07393	12	0.006161
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-CTA-3	C	C2	3	2	10.56	19.07	0.8208	0.07373	12	0.006144

Average	10.12	18.25	0.8065	0.07426	0.006189
Standard Dev.	0.2187	0.4035	0.009868	0.001069	0.00008907
Coeff. of Var. [%]	2.161	2.211	1.224	1.439	1.439
Min.	9.718	17.46	0.7890	0.07278	0.006065
Max.	10.56	19.07	0.8258	0.07642	0.006368
Number of Spec.	18	18	18	18	18





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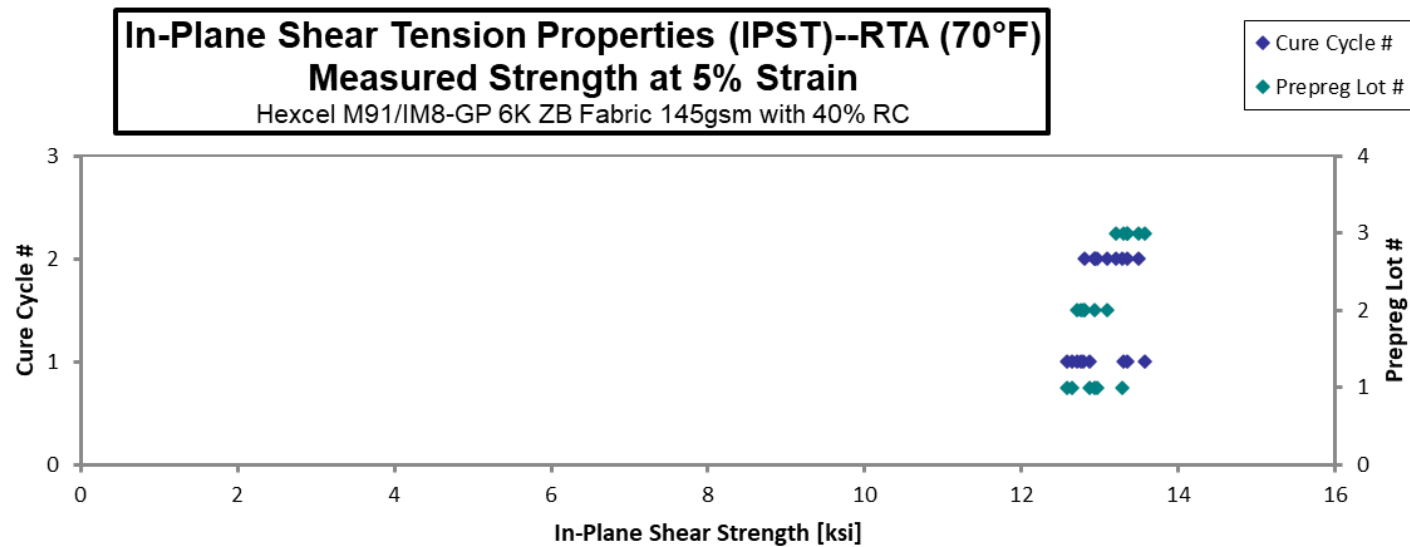
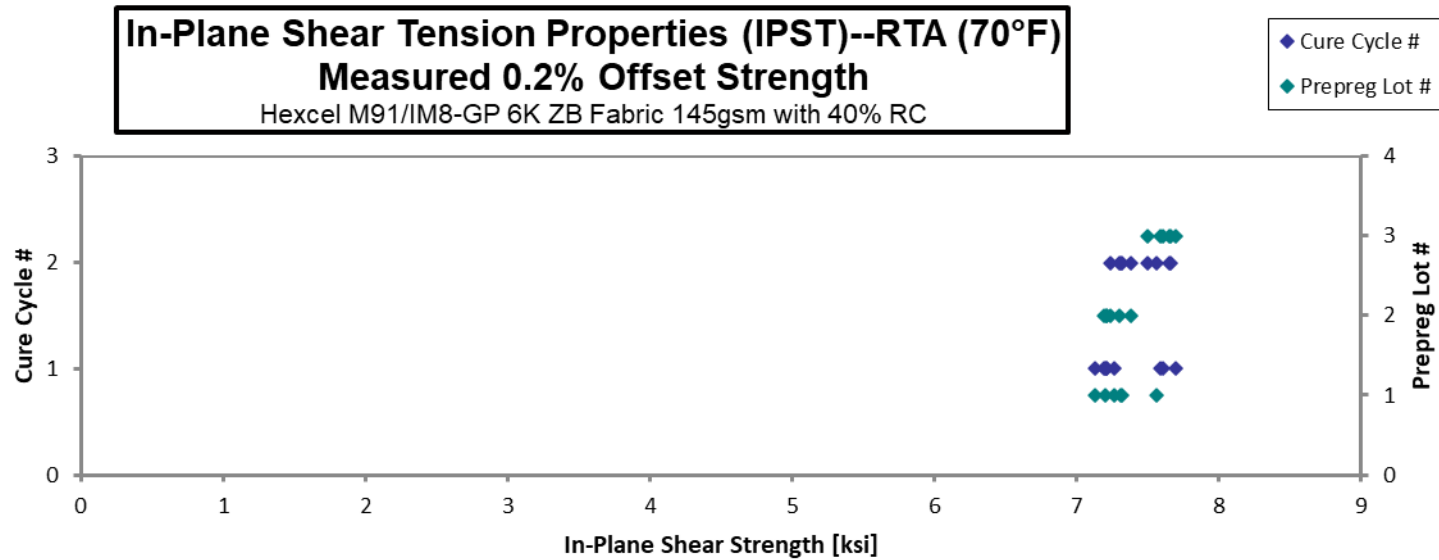
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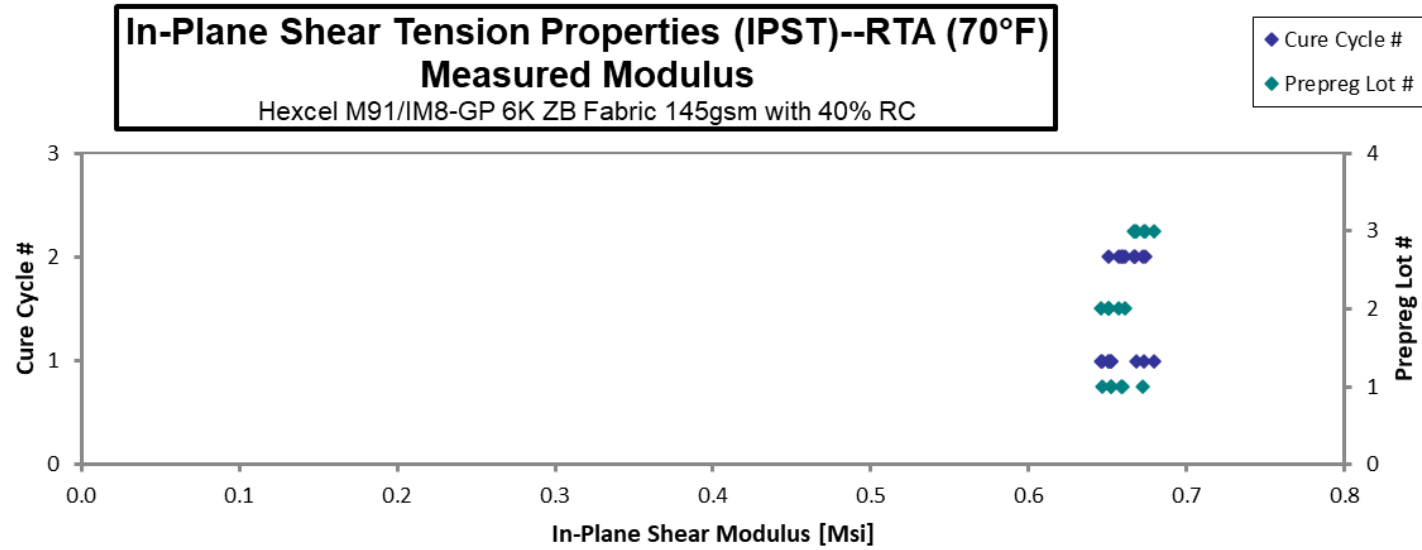
**In-Plane Shear Tension Properties (IPST)--RTA (70°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-RTA-1	A	C1	1	1	7.128	12.58	0.6466	0.07368	12	0.006140
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-RTA-2	A	C1	1	1	7.263	12.87	0.6523	0.07408	12	0.006174
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-RTA-3	A	C1	1	1	7.198	12.64	0.6523	0.07342	12	0.006118
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-RTA-1	A	C2	1	2	7.558	13.29	0.6724	0.07402	12	0.006168
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-RTA-2	A	C2	1	2	7.322	12.93	0.6589	0.07357	12	0.006131
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-RTA-3	A	C2	1	2	7.308	12.96	0.6585	0.07323	12	0.006103
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-RTA-1	B	C1	2	1	7.212	12.71	0.6505	0.07592	12	0.006326
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-RTA-2	B	C1	2	1	7.190	12.75	0.6461	0.07578	12	0.006315
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-RTA-3	B	C1	2	1	7.208	12.79	0.6505	0.07565	12	0.006304
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-RTA-1	B	C2	2	2	7.234	12.81	0.6504	0.07567	12	0.006306
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-RTA-2	B	C2	2	2	7.296	12.94	0.6571	0.07555	12	0.006296
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-RTA-3	B	C2	2	2	7.380	13.10	0.6609	0.07568	12	0.006307
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-RTA-1	C	C1	3	1	7.693	13.57	0.6790	0.07425	12	0.006188
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-RTA-2	C	C1	3	1	7.606	13.35	0.6727	0.07403	12	0.006169
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-RTA-3	C	C1	3	1	7.585	13.29	0.6677	0.07380	12	0.006150
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-RTA-1	C	C2	3	2	7.658	13.34	0.6738	0.07340	12	0.006117
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-RTA-2	C	C2	3	2	7.649	13.49	0.6672	0.07382	12	0.006151
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-RTA-3	C	C2	3	2	7.500	13.20	0.6665	0.07358	12	0.006132

Average	7.388	13.03	0.6602	0.07440	0.006200
Standard Dev.	0.1921	0.3029	0.01029	0.0009899	0.00008249
Coeff. of Var. [%]	2.599	2.324	1.559	1.331	1.331
Min.	7.128	12.58	0.6461	0.07323	0.006103
Max.	7.693	13.57	0.6790	0.07592	0.006326
Number of Spec.	18	18	18	18	18





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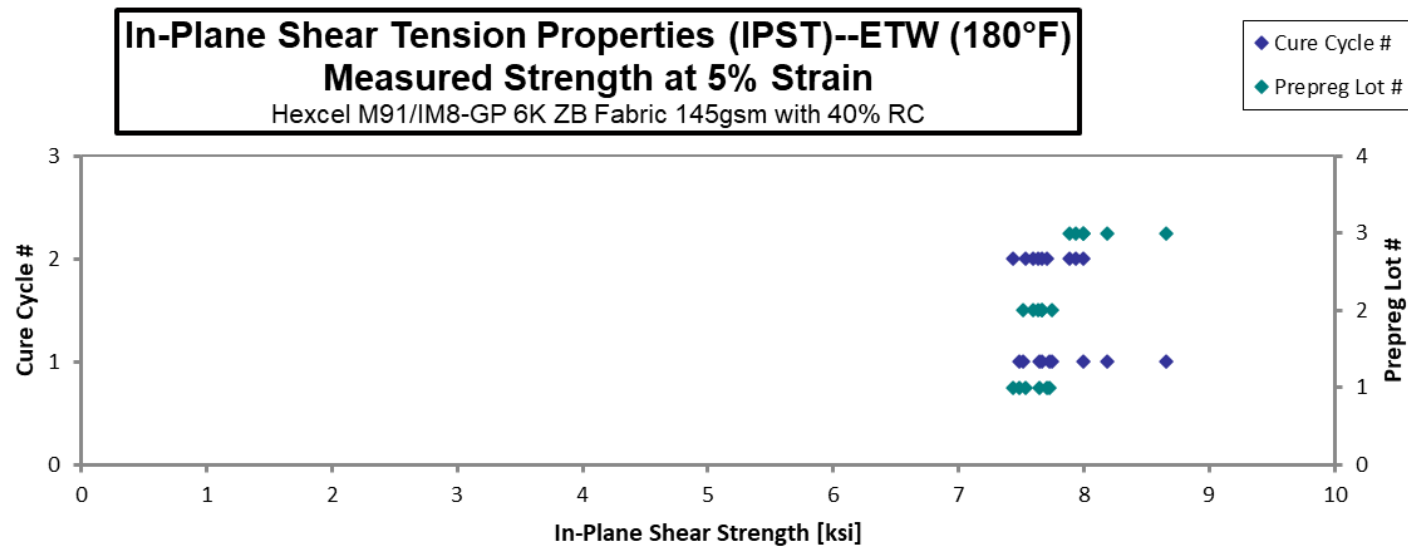
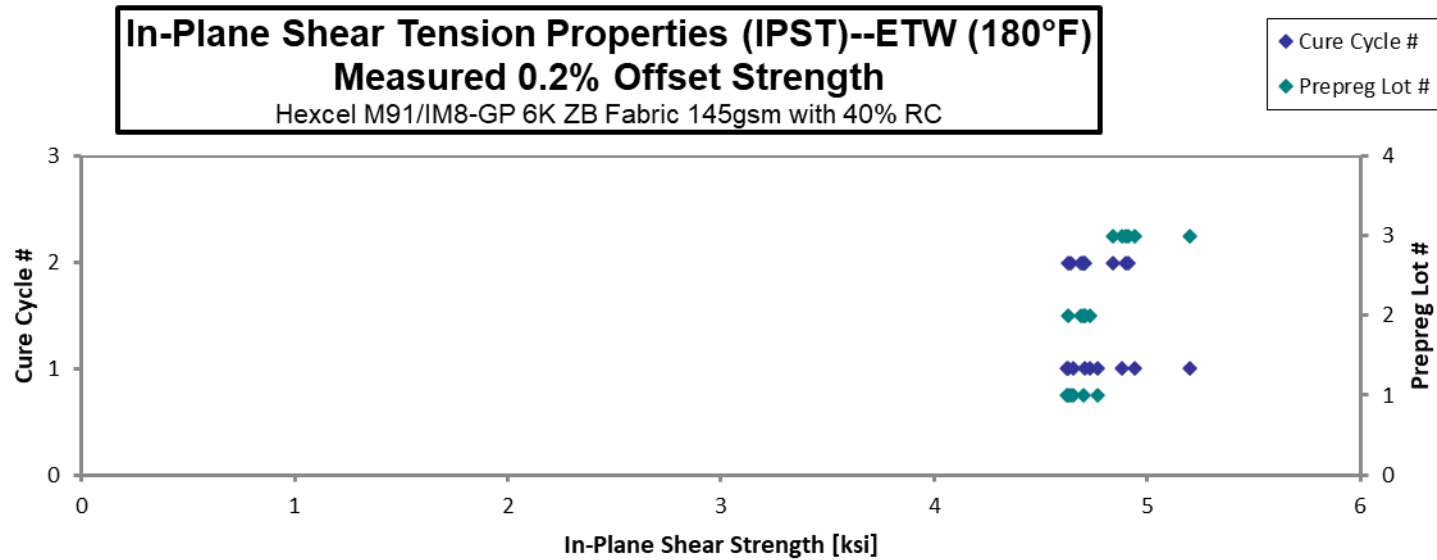
In-Plane Shear Tension Properties (IPST)--ETW (180°F)

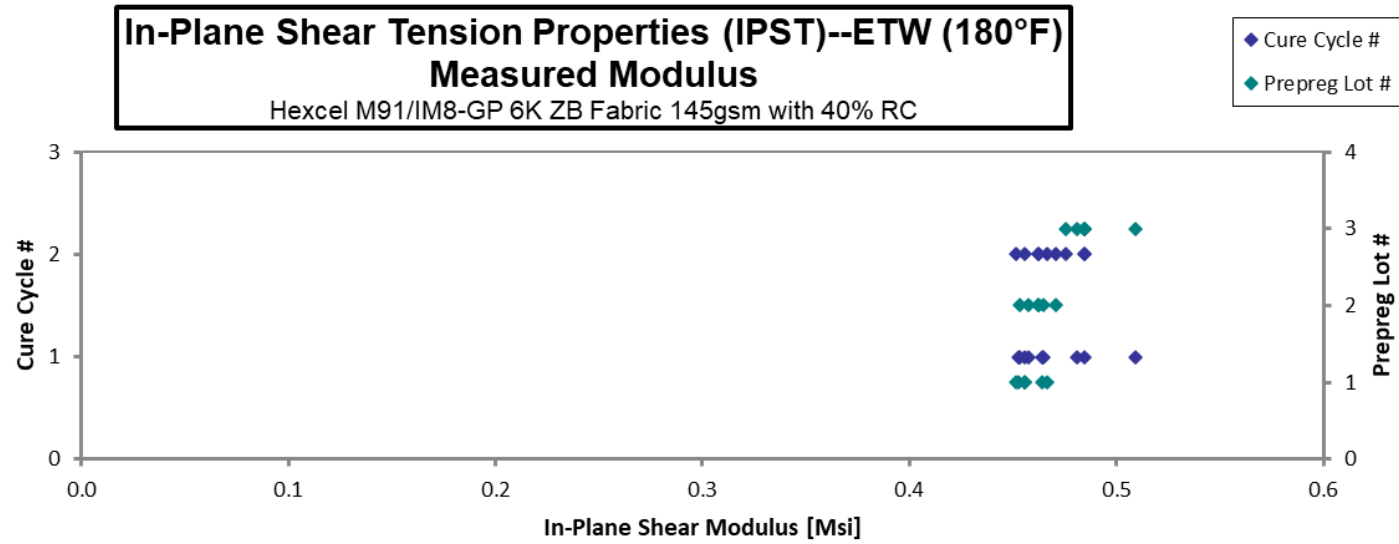
Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-ETW-1	A	C1	1	1	4.766	7.730	0.4639	0.07335	12	0.006113
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-ETW-2	A	C1	1	1	4.651	7.645	0.4559	0.07343	12	0.006119
NTPM911Q1-HXL-H40-NIAR-IPST-A-C1-1-ETW-3	A	C1	1	1	4.624	7.485	0.4527	0.07402	12	0.006168
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-ETW-1	A	C2	1	2	4.700	7.703	0.4663	0.07362	12	0.006135
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-ETW-2	A	C2	1	2	4.628	7.436	0.4514	0.07443	12	0.006203
NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-ETW-3	A	C2	1	2	4.641	7.535	0.4560	0.07418	12	0.006182
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-ETW-1	B	C1	2	1	4.729	7.749	0.4647	0.07535	12	0.006279
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-ETW-2	B	C1	2	1	4.632	7.512	0.4531	0.07737	12	0.006447
NTPM911Q1-HXL-H40-NIAR-IPST-B-C1-1-ETW-3	B	C1	2	1	4.707	7.670	0.4578	0.07558	12	0.006299
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-ETW-1	B	C2	2	2	4.691	7.599	0.4622	0.07477	12	0.006231
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-ETW-2	B	C2	2	2	4.703	7.634	0.4707	0.07583	12	0.006319
NTPM911Q1-HXL-H40-NIAR-IPST-B-C2-1-ETW-3	B	C2	2	2	4.709	7.661	0.4622	0.07522	12	0.006268
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-ETW-1	C	C1	3	1	4.945	8.189	0.4845	0.07313	12	0.006094
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-ETW-2	C	C1	3	1	4.880	7.996	0.4808	0.07402	12	0.006168
NTPM911Q1-HXL-H40-NIAR-IPST-C-C1-1-ETW-3	C	C1	3	1	5.199	8.659	0.5092	0.07393	12	0.006161
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-ETW-1	C	C2	3	2	4.899	7.932	0.4846	0.07363	12	0.006136
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-ETW-2	C	C2	3	2	4.912	7.993	0.4848	0.07323	12	0.006103
NTPM911Q1-HXL-H40-NIAR-IPST-C-C2-1-ETW-3	C	C2	3	2	4.841	7.891	0.4755	0.07412	12	0.006176

Average	4.770	7.779	0.4687	0.07440	0.006200
Standard Dev.	0.1505	0.2983	0.01528	0.001106	0.00009219
Coeff. of Var. [%]	3.155	3.835	3.261	1.487	1.487
Min.	4.624	7.436	0.4514	0.07313	0.006094
Max.	5.199	8.659	0.5092	0.07737	0.006447
Number of Spec.	18	18	18	18	18





4.6 In-Plane Shear V Notch Properties (IPSV)

In-Plane Shear V-Notch Properties (IPSV)--CTA (-65°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

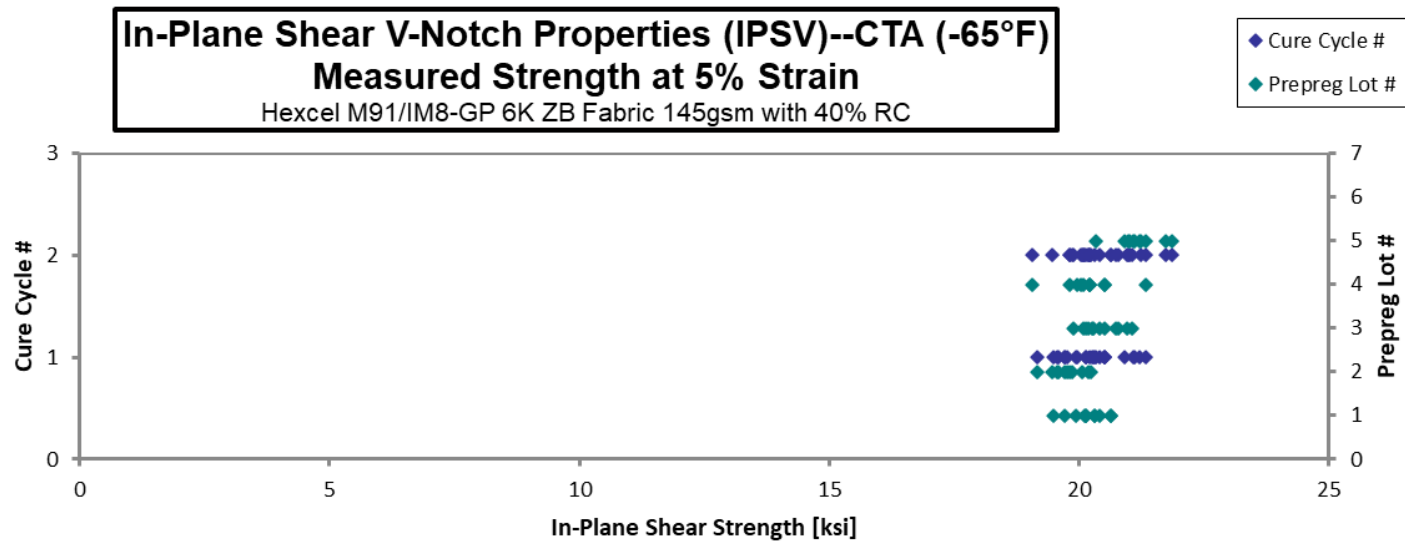
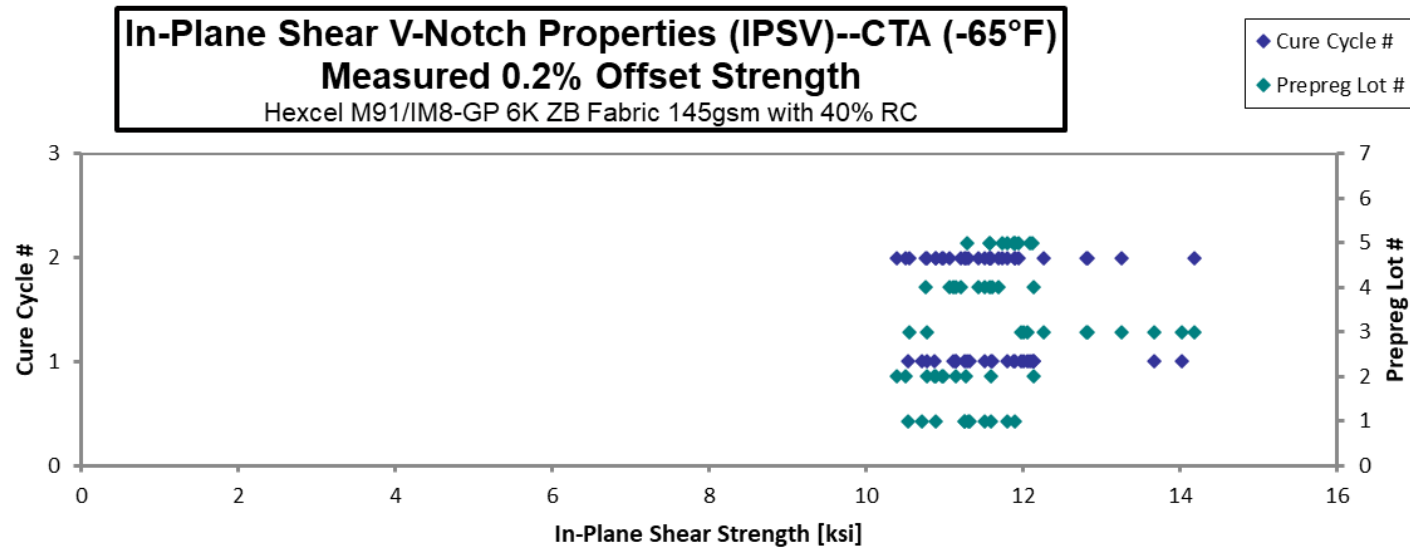
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-CTA-1	A	C1	1	1	11.33	19.96	31.40	0.8408	0.1475	24	0.006144	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-CTA-2	A	C1	1	1	11.80	19.73	31.11	0.7662	0.1484	24	0.006183	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-CTA-3	A	C1	1	1	10.72	20.32	30.66	0.8364	0.1487	24	0.006197	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-CTA-4	A	C1	1	1	10.54	19.49	30.53	0.7746	0.1485	24	0.006189	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-CTA-5	A	C1	1	1	11.26	20.15	30.76	0.8506	0.1475	24	0.006144	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-1	A	C2	1	2	11.26	20.42	31.46	0.8605	0.1462	24	0.006093	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-2	A	C2	1	2	11.90	20.65	31.59	0.8135	0.1459	24	0.006078	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-3	A	C2	1	2	11.60	20.64	30.90	0.8395	0.1473	24	0.006139	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-4	A	C2	1	2	11.52	20.31	31.44	0.8011	0.1469	24	0.006121	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-5	A	C2	1	2	10.89	20.13	31.03	0.8222	0.1480	24	0.006167	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-CTA-6	A	C2	1	2	11.30	20.14	31.24	0.8194	0.1473	24	0.006138	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-CTA-1	B	C1	2	1	11.59	19.77	28.62	0.7535	0.1517	24	0.006321	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-CTA-2	B	C1	2	1	12.14	19.73	28.95	0.7565	0.1528	24	0.006366	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-CTA-3	B	C1	2	1	10.79	19.59	29.05	0.7829	0.1526	24	0.006358	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-CTA-4	B	C1	2	1	10.88	19.58	28.96	0.8037	0.1519	24	0.006328	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-CTA-5	B	C1	2	1	11.15	19.17	29.25	0.7382	0.1518	24	0.006323	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-1	B	C2	2	2	10.99	20.08	30.33	0.7618	0.1534	24	0.006392	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-2	B	C2	2	2	10.39	20.25	29.33	0.8200	0.1544	24	0.006433	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-3	B	C2	2	2	10.89	20.20	29.83	0.8988	0.1536	24	0.006400	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-4	B	C2	2	2	10.98	19.47	29.59	0.7438	0.1530	24	0.006374	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-5	B	C2	2	2	11.28	19.88	28.99	0.7486	0.1527	24	0.006364	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-CTA-6	B	C2	2	2	10.51	19.83	29.05	0.8407	0.1530	24	0.006376	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-CTA-1	C	C1	3	1	11.97	20.52	25.89	0.8065	0.1451	24	0.006047	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-CTA-2	C	C1	3	1	12.01	20.27	26.72	0.8222	0.1465	24	0.006105	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-CTA-3	C	C1	3	1	14.03	20.41	26.23	0.6662	0.1475	24	0.006146	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-CTA-4	C	C1	3	1	13.68	20.13	25.68	0.6706	0.1477	24	0.006154	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-CTA-5	C	C1	3	1	12.06	20.30	26.26	0.7725	0.1476	24	0.006149	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-1	C	C2	3	2	12.83	20.97	26.94	0.8435	0.1459	24	0.006079	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-2	C	C2	3	2	12.26	20.10	28.73	0.7791	0.1474	24	0.006142	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-3	C	C2	3	2	14.19	20.79	27.20	0.6694	0.1479	24	0.006163	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-4	C	C2	3	2	10.78	21.07	27.26	0.9065	0.1479	24	0.006160	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-5	C	C2	3	2	12.81	20.74	27.90	0.7648	0.1479	24	0.006163	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-6	C	C2	3	2	13.25	20.21	27.55	0.7558	0.1474	24	0.006141	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-CTA-7	C	C2	3	2	10.56	19.90	26.96	0.8335	0.1472	24	0.006131	M(V,H)GN

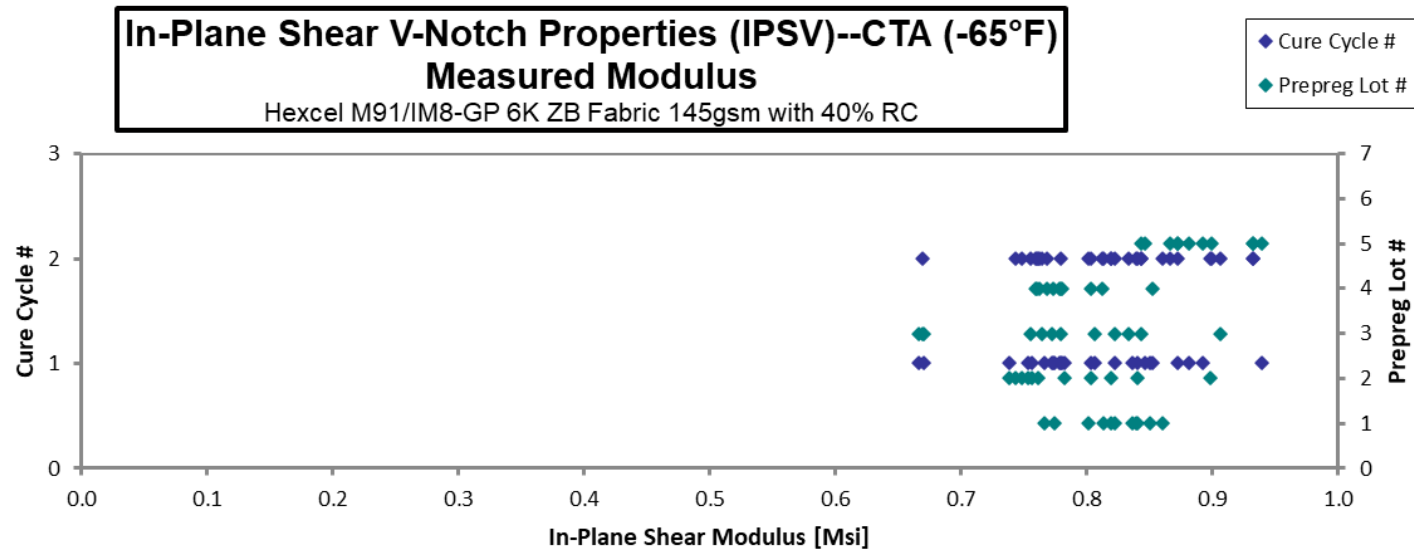
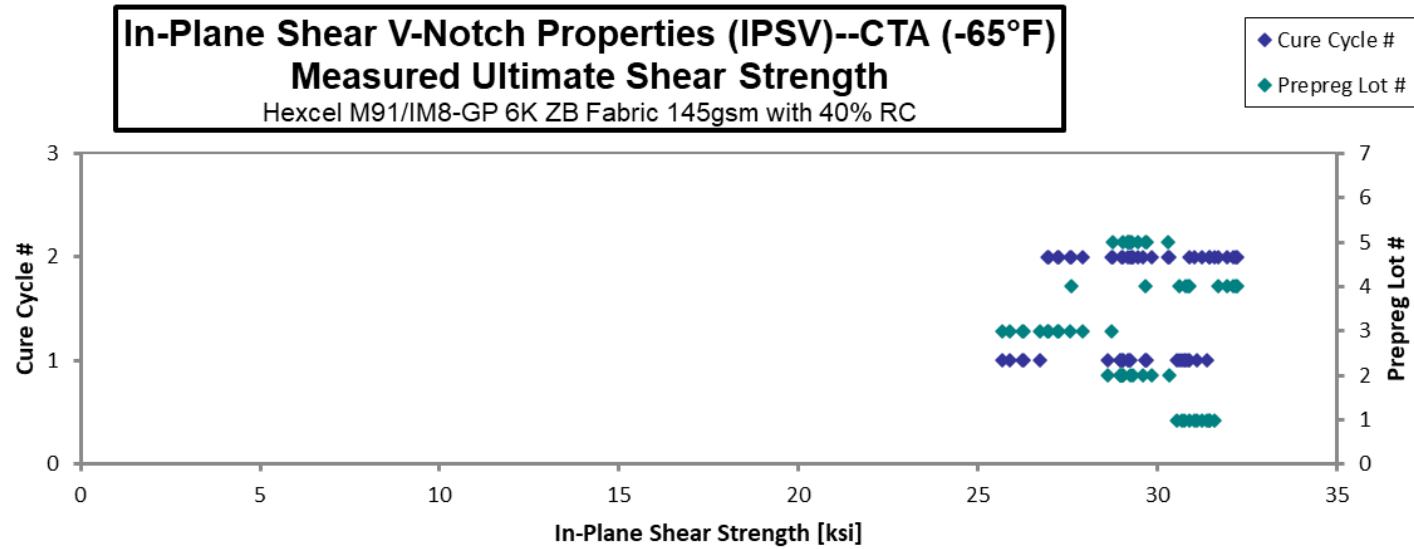
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-CTA-1	D	C1	4	1	11.62	20.53	30.89	0.7809	0.1465	24	0.006103	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-CTA-2	D	C1	4	1	12.14	21.34	29.68	0.7781	0.1467	24	0.006110	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-CTA-3	D	C1	4	1	11.16	19.96	30.62	0.7799	0.1469	24	0.006122	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-CTA-4	D	C1	4	1	11.12	20.52	30.80	0.8523	0.1466	24	0.006110	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-CTA-5	D	C1	4	1	11.51	20.23	30.85	0.7733	0.1465	24	0.006102	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-1	D	C2	4	2	11.70	20.21	31.95	0.7626	0.1474	24	0.006141	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-3	D	C2	4	2	11.21	19.81	32.18	0.7600	0.1478	24	0.006157	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-4	D	C2	4	2	11.08	20.05	32.21	0.8121	0.1476	24	0.006150	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-5	D	C2	4	2	11.57	20.10	32.12	0.7604	0.1474	24	0.006142	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-6	D	C2	4	2	11.43	20.21	31.71	0.7687	0.1476	24	0.006149	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-CTA-7	D	C2	4	2	10.77	19.08	27.59	0.8033	0.1476	24	0.006149	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-CTA-1	E	C1	5	1	11.91	21.21	29.02	0.9391	0.1393	24	0.005803	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-CTA-2	E	C1	5	1	11.88	21.10	29.21	0.8930	0.1406	24	0.005859	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-CTA-3	E	C1	5	1	12.09	20.92	29.67	0.8465	0.1412	24	0.005883	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-CTA-4	E	C1	5	1	12.12	21.13	29.69	0.8812	0.1419	24	0.005914	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-CTA-5	E	C1	5	1	11.30	20.35	29.17	0.8726	0.1426	24	0.005940	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-1	E	C2	5	2	11.75	21.02	28.77	0.8666	0.1414	24	0.005892	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-2	E	C2	5	2	11.58	21.35	29.29	0.8995	0.1427	24	0.005944	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-3	E	C2	5	2	11.89	21.76	29.19	0.9328	0.1439	24	0.005994	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-4	E	C2	5	2	11.81	21.87	30.28	0.9321	0.1443	24	0.006013	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-5	E	C2	5	2	11.59	21.24	29.46	0.8726	0.1445	24	0.006019	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-CTA-6	E	C2	5	2	11.94	21.00	29.25	0.8432	0.1448	24	0.006032	M(H,V)GN

Average	11.63	20.36	29.48	0.8103	0.1474	0.006142
Standard Dev.	0.8190	0.6084	1.726	0.06251	0.003434	0.0001431
Coeff. of Var. [%]	7.042	2.989	5.854	7.715	2.330	2.330
Min.	10.39	19.08	25.68	0.6662	0.1393	0.005803
Max.	14.19	21.87	32.21	0.9391	0.1544	0.006433
Number of Spec.	56	56	56	56	56	56





**In-Plane Shear V-Notch Properties (IPSV)--RTA (70°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

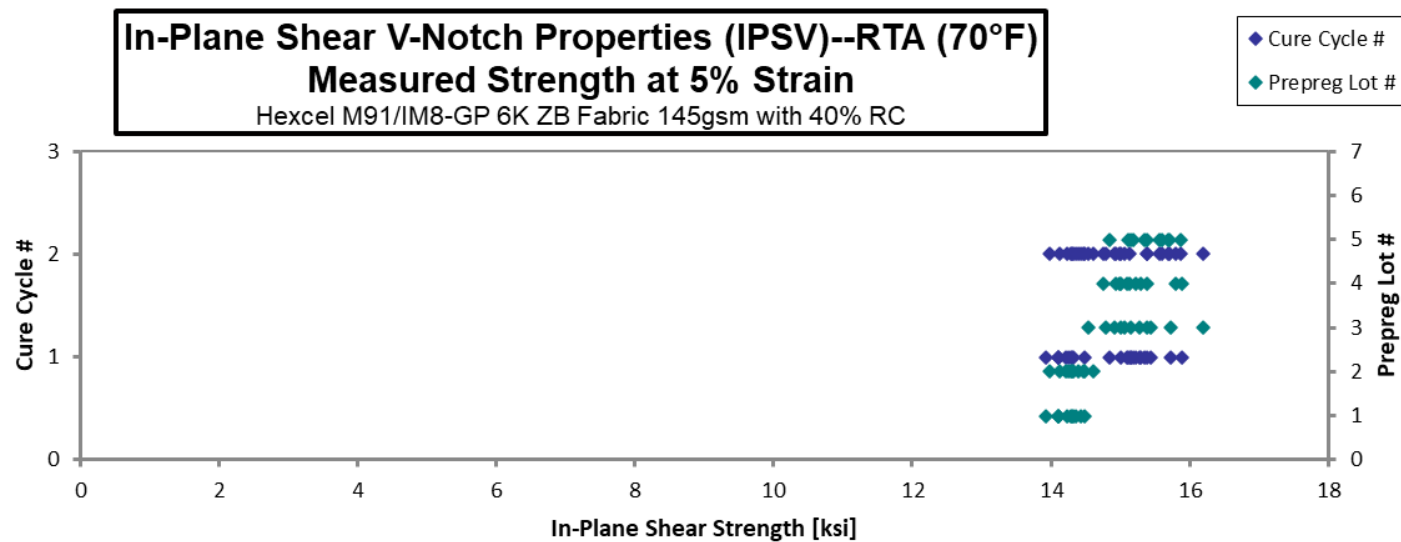
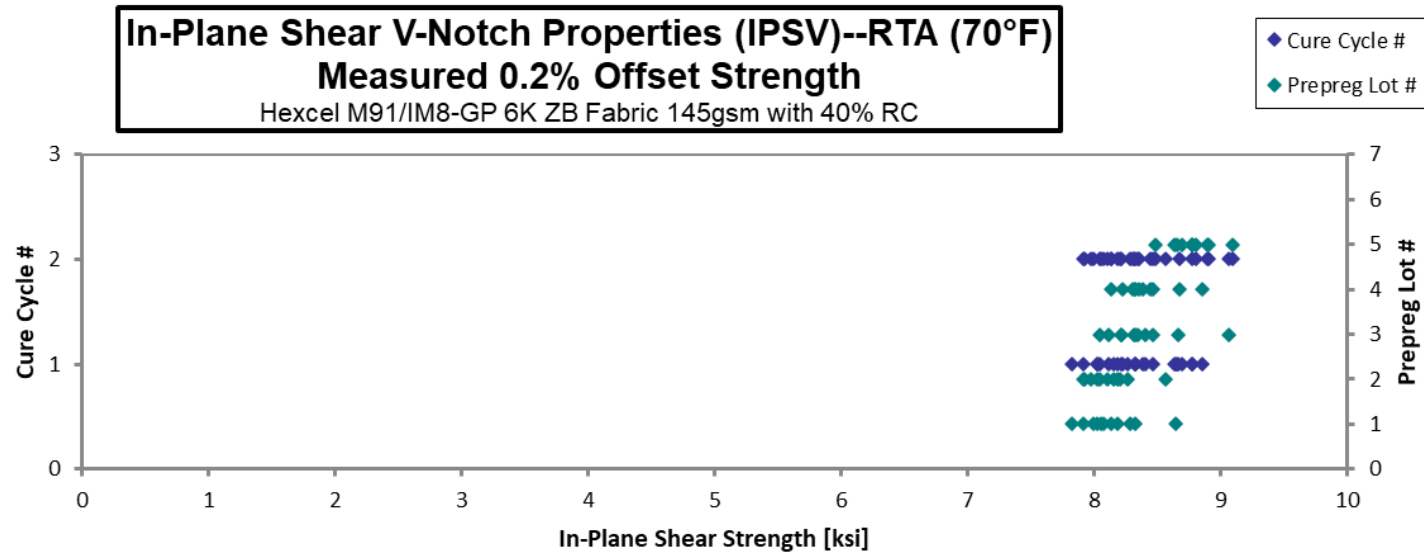
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-RTA-1	A	C1	1	1	8.027	14.12	24.34	0.6783	0.1497	24	0.006235	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-RTA-2	A	C1	1	1	7.910	13.92	24.69	0.6406	0.1503	24	0.006261	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-RTA-3	A	C1	1	1	7.820	14.11	23.95	0.6771	0.1506	24	0.006276	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-RTA-4	A	C1	1	1	8.321	14.12	24.27	0.6978	0.1492	24	0.006215	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-RTA-5	A	C1	1	1	8.646	14.49	24.48	0.7387	0.1473	24	0.006135	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-1	A	C2	1	2	8.133	14.33	24.83	0.6969	0.1481	24	0.006172	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-2	A	C2	1	2	8.054	14.36	24.51	0.6838	0.1484	24	0.006182	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-3	A	C2	1	2	8.181	14.31	24.88	0.6929	0.1490	24	0.006207	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-4	A	C2	1	2	7.992	14.29	24.50	0.6586	0.1491	24	0.006213	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-5	A	C2	1	2	8.287	14.42	24.43	0.6959	0.1484	24	0.006183	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-RTA-6	A	C2	1	2	8.070	14.24	24.81	0.6883	0.1484	24	0.006183	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-RTA-1	B	C1	2	1	8.187	14.32	23.48	0.6855	0.1510	24	0.006290	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-RTA-2	B	C1	2	1	8.047	14.21	23.52	0.6857	0.1520	24	0.006332	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-RTA-3	B	C1	2	1	8.149	14.29	23.09	0.6816	0.1518	24	0.006326	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-RTA-4	B	C1	2	1	8.027	14.25	23.68	0.6873	0.1521	24	0.006339	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-RTA-5	B	C1	2	1	8.265	14.31	23.55	0.6862	0.1507	24	0.006280	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-1	B	C2	2	2	8.198	14.40	23.65	0.6805	0.1529	24	0.006372	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-2	B	C2	2	2	7.927	14.13	23.84	0.6461	0.1535	24	0.006395	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-3	B	C2	2	2	7.908	13.98	24.06	0.6428	0.1535	24	0.006397	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-4	B	C2	2	2	8.562	14.61	23.53	0.7226	0.1520	24	0.006335	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-5	B	C2	2	2	7.970	14.46	23.71	0.6489	0.1530	24	0.006374	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-RTA-6	B	C2	2	2	8.101	14.48	23.55	0.6576	0.1536	24	0.006401	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-RTA-1	C	C1	3	1	8.321	15.45	24.07	0.6896	0.1482	24	0.006173	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-RTA-2	C	C1	3	1	8.211	15.27	23.68	0.6577	0.1484	24	0.006182	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-RTA-3	C	C1	3	1	8.666	15.73	23.72	0.7074	0.1481	24	0.006169	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-RTA-4	C	C1	3	1	8.403	15.39	24.06	0.7071	0.1478	24	0.006160	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-RTA-5	C	C1	3	1	8.111	15.15	23.97	0.6772	0.1482	24	0.006176	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-1	C	C2	3	2	8.339	14.92	23.68	0.6881	0.1452	24	0.006051	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-2	C	C2	3	2	8.214	14.79	24.22	0.6786	0.1471	24	0.006129	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-3	C	C2	3	2	8.040	14.55	24.07	0.6654	0.1478	24	0.006157	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-4	C	C2	3	2	9.058	16.20	23.06	0.7842	0.1477	24	0.006156	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-5	C	C2	3	2	8.464	15.07	23.91	0.6836	0.1470	24	0.006124	M(V,H)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-RTA-6	C	C2	3	2	8.309	15.00	23.90	0.6877	0.1475	24	0.006146	M(V,H)GN

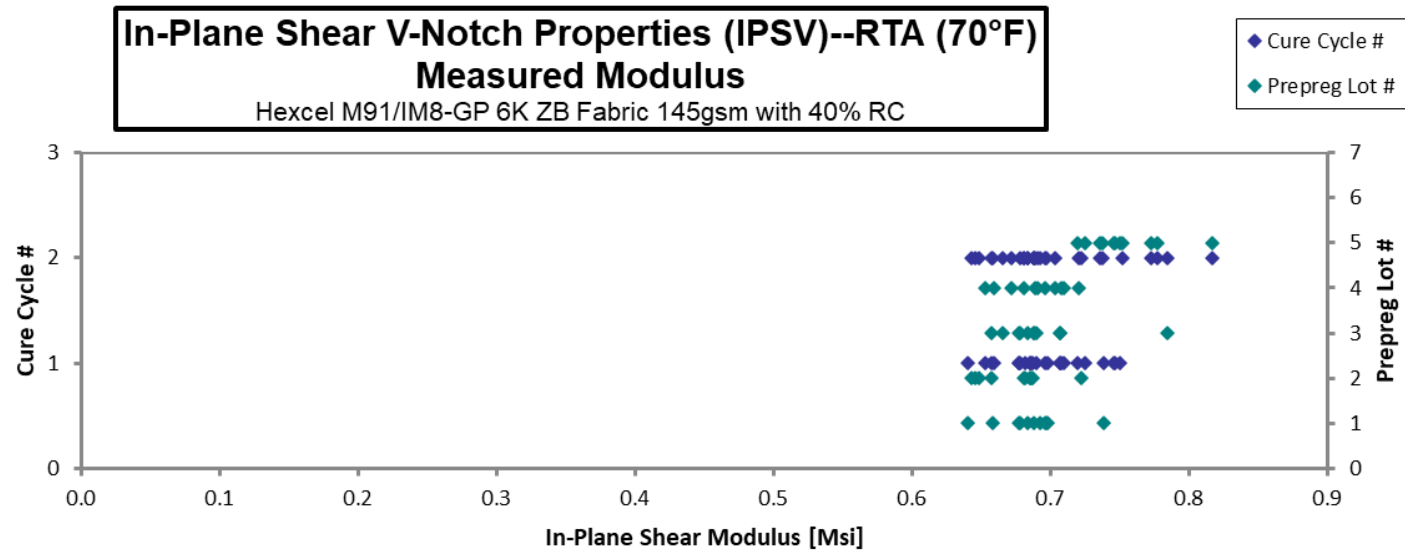
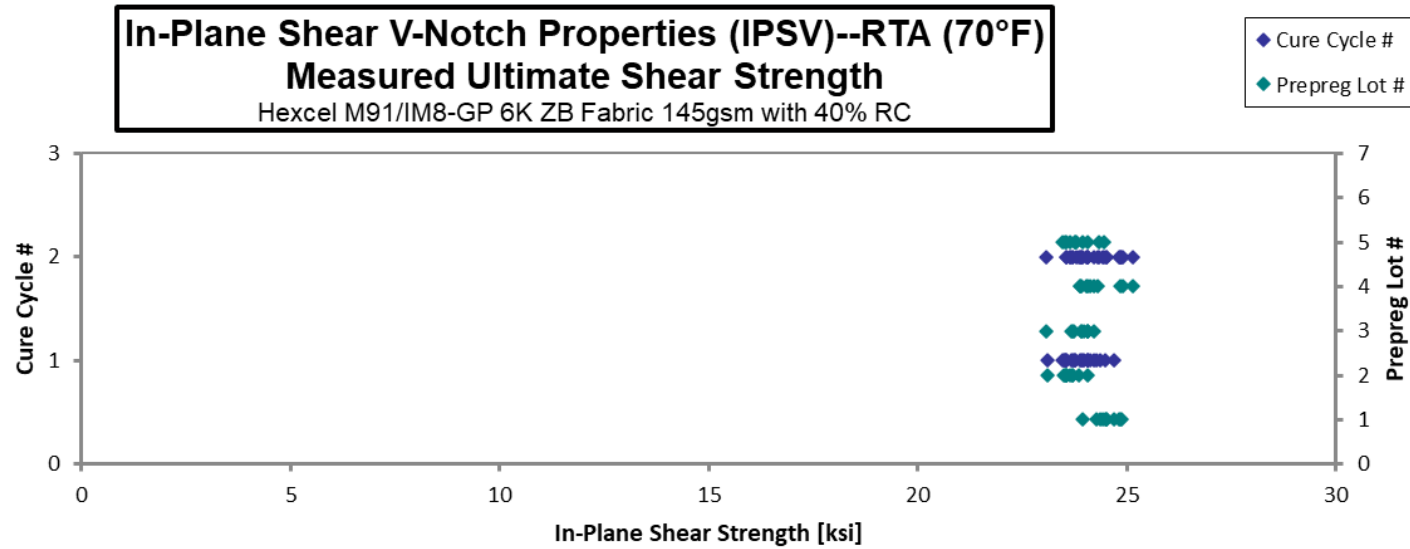
June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-RTA-1	D	C1	4	1	8.222	15.22	24.12	0.6530	0.1474	24	0.006141	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-RTA-2	D	C1	4	1	8.461	15.10	24.21	0.7095	0.1471	24	0.006131	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-RTA-3	D	C1	4	1	8.382	15.30	24.04	0.7076	0.1466	24	0.006108	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-RTA-4	D	C1	4	1	8.320	15.02	23.92	0.6595	0.1469	24	0.006122	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-RTA-5	D	C1	4	1	8.855	15.88	23.88	0.6961	0.1470	24	0.006123	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-1	D	C2	4	2	8.304	14.94	25.13	0.6892	0.1478	24	0.006157	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-2	D	C2	4	2	8.325	14.98	24.90	0.6722	0.1475	24	0.006146	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-3	D	C2	4	2	8.668	15.80	24.02	0.7034	0.1476	24	0.006149	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-4	D	C2	4	2	8.350	15.39	24.31	0.6811	0.1475	24	0.006147	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-5	D	C2	4	2	8.131	14.76	24.84	0.6906	0.1475	24	0.006144	M(H,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-RTA-6	D	C2	4	2	8.444	15.14	23.89	0.7202	0.1475	24	0.006144	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-RTA-1	E	C1	5	1	8.632	14.84	23.74	0.7197	0.1426	24	0.005940	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-RTA-2	E	C1	5	1	8.696	15.15	23.54	0.7467	0.1421	24	0.005921	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-RTA-3	E	C1	5	1	8.769	15.12	23.47	0.7499	0.1419	24	0.005913	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-RTA-4	E	C1	5	1	8.775	15.34	23.52	0.7461	0.1418	24	0.005908	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-RTA-5	E	C1	5	1	8.652	15.19	23.75	0.7247	0.1413	24	0.005886	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-1	E	C2	5	2	8.892	15.59	23.92	0.7772	0.1448	24	0.006032	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-2	E	C2	5	2	8.776	15.69	23.79	0.7730	0.1437	24	0.005988	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-4	E	C2	5	2	9.095	15.88	24.33	0.8169	0.1426	24	0.005943	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-5	E	C2	5	2	8.901	15.70	24.05	0.7380	0.1430	24	0.005958	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-6	E	C2	5	2	8.482	15.39	24.44	0.7357	0.1432	24	0.005965	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-RTA-7	E	C2	5	2	8.803	15.57	23.63	0.7522	0.1423	24	0.005931	M(H,V)GN

Average	8.361	14.88	24.02	0.6993	0.1478	0.006157
Standard Dev.	0.3167	0.5868	0.4629	0.03766	0.003271	0.0001363
Coeff. of Var. [%]	3.787	3.943	1.927	5.385	2.213	2.213
Min.	7.820	13.92	23.06	0.6406	0.1413	0.005886
Max.	9.095	16.20	25.13	0.8169	0.1536	0.006401
Number of Spec.	55	55	55	55	55	55





**In-Plane Shear V-Notch Properties (IPSV)--ETW (180°F)
Strength & Modulus**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

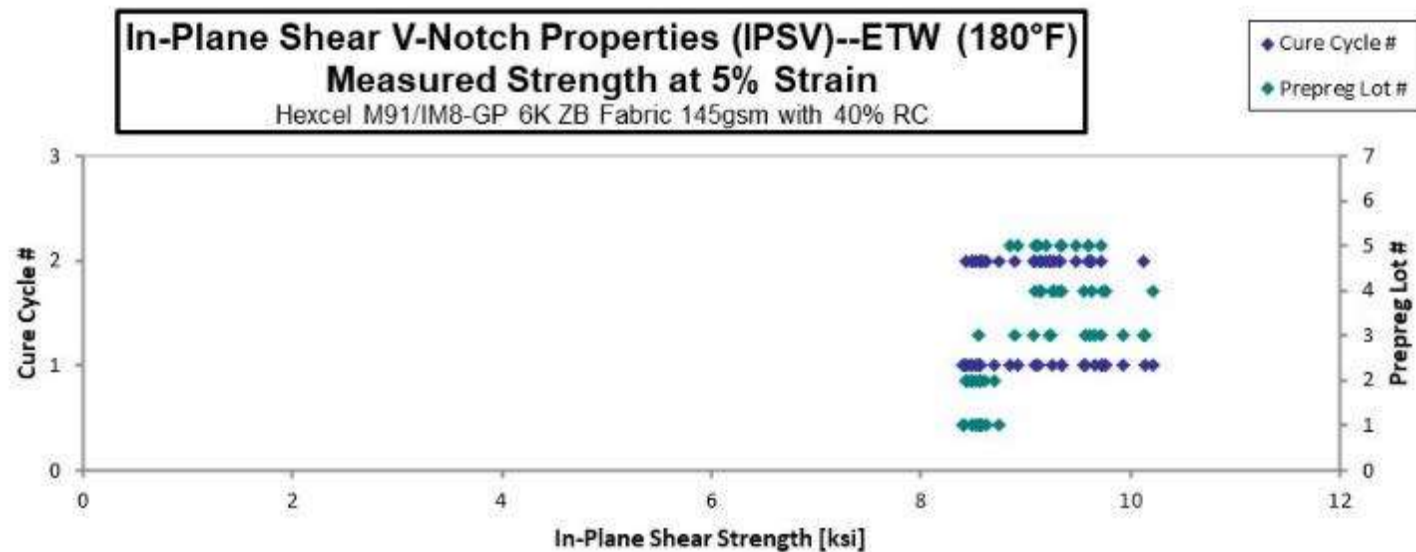
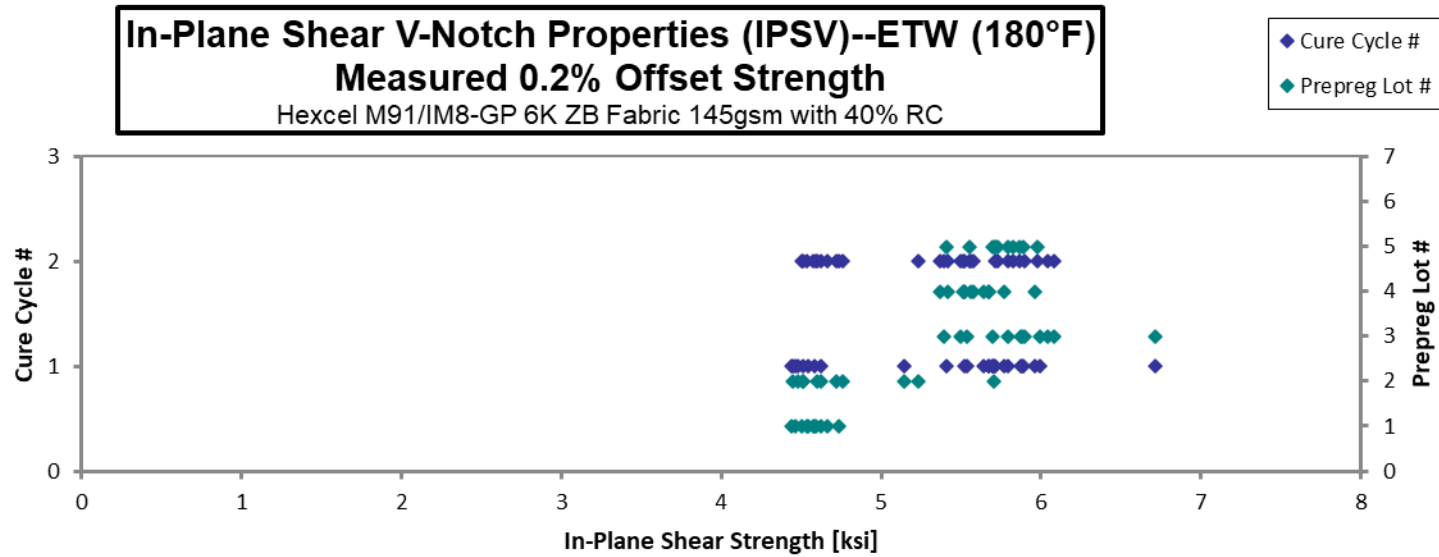
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-ETW-1*	A	C1	1	1	4.620	8.415	15.09	0.5828	0.1502	24	0.00626	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-ETW-2*	A	C1	1	1	4.542	8.403	14.96	0.6064	0.1504	24	0.00627	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-ETW-3*	A	C1	1	1	4.459	8.484	15.21	0.6364	0.1488	24	0.00620	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-ETW-4*	A	C1	1	1	4.579	8.544	15.44	0.5899	0.1477	24	0.00615	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-ETW-5*	A	C1	1	1	4.439	8.524	15.30	0.5949	0.1478	24	0.00616	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-1*	A	C2	1	2	4.731	8.583	15.40	0.5598	0.1485	24	0.00619	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-2*	A	C2	1	2	4.577	8.496	15.59	0.6294	0.1492	24	0.00622	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-3*	A	C2	1	2	4.662	8.568	15.55	0.6221	0.1494	24	0.00622	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-4*	A	C2	1	2	4.591	8.749	15.18	0.6010	0.1482	24	0.00617	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-5*	A	C2	1	2	4.532	8.565	15.45	0.6077	0.1474	24	0.00614	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-A-C2-1-ETW-6*	A	C2	1	2	4.502	8.621	15.37	0.6068	0.1473	24	0.00614	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-ETW-1*	B	C1	2	1	4.447	8.705	15.06	0.5828	0.1529	24	0.00637	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-ETW-2*	B	C1	2	1	5.148	8.562	15.24	0.5033	0.1522	24	0.00634	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-ETW-3*	B	C1	2	1	4.482	8.452	15.38	0.5478	0.1520	24	0.00633	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-ETW-4*	B	C1	2	1	4.514	8.428	15.00	0.5754	0.1525	24	0.00635	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C1-1-ETW-5*	B	C1	2	1	5.703	8.557	14.99	0.4520	0.1525	24	0.00635	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-1*	B	C2	2	2	5.233	8.494	15.12	0.5004	0.1531	24	0.00638	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-2*	B	C2	2	2	4.722	8.489	15.30	0.5011	0.1527	24	0.00636	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-3*	B	C2	2	2	4.512	8.426	15.01	0.5684	0.1526	24	0.00636	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-4*	B	C2	2	2	4.599	8.567	15.22	0.5407	0.1522	24	0.00634	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-5*	B	C2	2	2	4.763	8.609	15.17	0.5531	0.1522	24	0.00634	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-B-C2-1-ETW-6*	B	C2	2	2	4.622	8.519	15.10	0.5494	0.1529	24	0.00637	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-1**	C	C1	3	1	6.710	10.14	15.26	0.5306	0.1453	24	0.00605	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-2**	C	C1	3	1	5.873	9.936	15.69	0.5329	0.1481	24	0.00617	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-3**	C	C1	3	1	5.536	9.564	15.48	0.5191	0.1484	24	0.00618	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-4**	C	C1	3	1	5.992	9.716	15.26	0.5146	0.1486	24	0.00619	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-5**	C	C1	3	1	5.877	9.665	15.37	0.5022	0.1480	24	0.00617	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C1-1-ETW-6**	C	C1	3	1	5.700	8.544	14.33	0.4751	0.1484	24	0.00618	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-1**	C	C2	3	2	5.897	9.236	16.47	0.5060	0.1441	24	0.00601	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-2**	C	C2	3	2	5.495	9.225	16.94	0.5220	0.1461	24	0.00609	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-3**	C	C2	3	2	5.790	8.900	17.76	0.5391	0.1464	24	0.00610	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-4**	C	C2	3	2	6.084	10.122	17.18	0.5253	0.1461	24	0.00609	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-5**	C	C2	3	2	6.043	9.616	17.60	0.5002	0.1468	24	0.00612	M(H,V)GN
NTPM911Q1-HXL-H40-NIAR-IPSV-C-C2-1-ETW-6**	C	C2	3	2	5.389	9.078	16.96	0.5252	0.1466	24	0.00611	M(H,V)GN

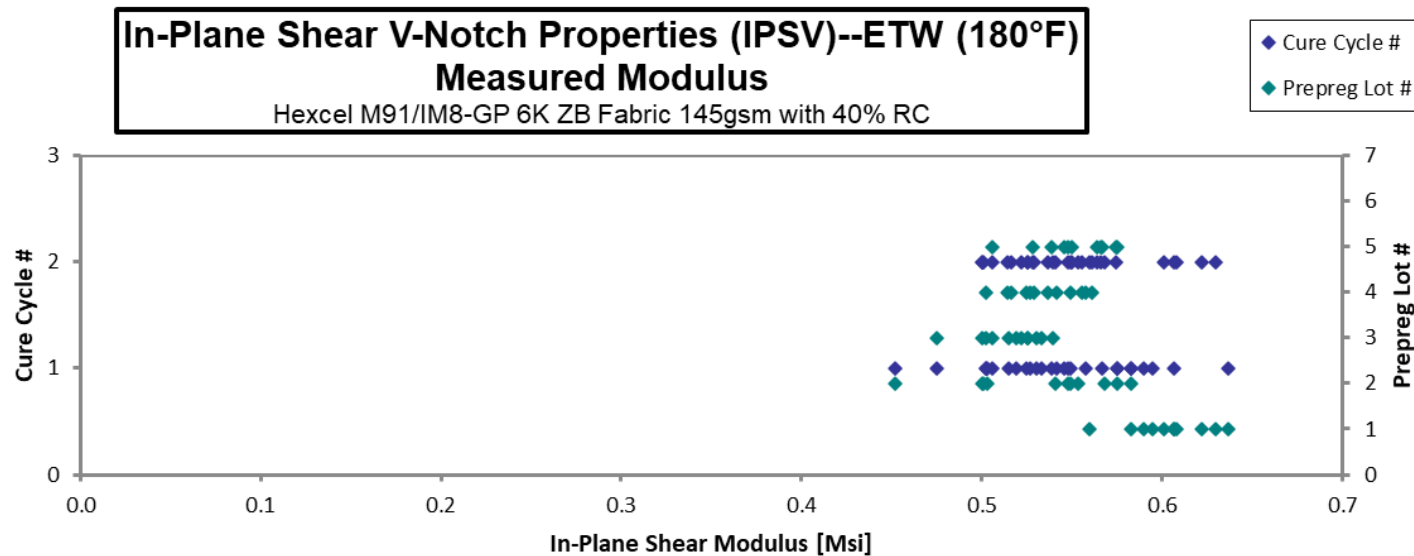
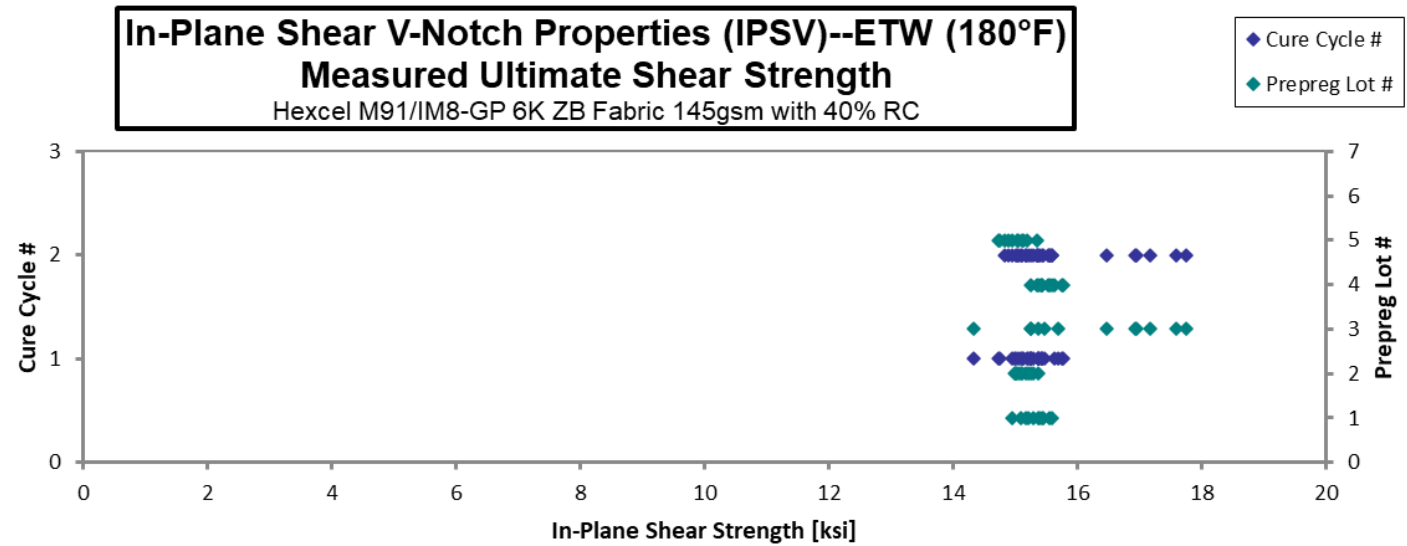
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Ultimate Shear Strength [ksi]	Modulus [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-1**	D	C1	4	1	5.964	10.21	15.75	0.5574	0.1472	24	0.00613	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-2**	D	C1	4	1	5.644	9.340	15.44	0.5414	0.1472	24	0.00613	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-3**	D	C1	4	1	5.672	9.547	15.78	0.5244	0.1467	24	0.00611	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-4**	D	C1	4	1	5.765	9.728	15.41	0.5491	0.1472	24	0.00613	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-5**	D	C1	4	1	5.675	9.760	15.63	0.5269	0.1472	24	0.00613	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C1-1-ETW-6**	D	C1	4	1	5.518	9.246	15.37	0.5021	0.1466	24	0.00611	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-1**	D	C2	4	2	5.521	9.632	15.56	0.5613	0.1475	24	0.00614	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-2**	D	C2	4	2	5.561	9.084	15.53	0.5366	0.1479	24	0.00616	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-3**	D	C2	4	2	5.412	9.143	15.59	0.5288	0.1478	24	0.00616	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-4**	D	C2	4	2	5.366	9.317	15.35	0.5553	0.1480	24	0.00617	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-5**	D	C2	4	2	5.516	9.131	15.43	0.5162	0.1478	24	0.00616	M(A,V)GN
NTPM911Q1-HXL-H40-FACC-IPSV-D-C2-1-ETW-6**	D	C2	4	2	5.575	9.265	15.25	0.5143	0.1480	24	0.00617	M(A,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-ETW-1**	E	C1	5	1	5.891	9.341	14.76	0.5752	0.1404	24	0.00585	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-ETW-2**	E	C1	5	1	5.793	9.088	14.73	0.5456	0.1407	24	0.00586	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-ETW-3**	E	C1	5	1	5.709	9.120	15.19	0.5391	0.1418	24	0.00591	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-ETW-4**	E	C1	5	1	5.411	8.922	15.11	0.5669	0.1440	24	0.00600	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C1-1-ETW-5**	E	C1	5	1	5.700	8.843	15.13	0.5060	0.1445	24	0.00602	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-1**	E	C2	5	2	5.974	9.721	14.89	0.5747	0.1432	24	0.00597	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-2**	E	C2	5	2	5.861	9.592	15.06	0.5661	0.1442	24	0.00601	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-3**	E	C2	5	2	5.714	9.472	15.36	0.5283	0.1452	24	0.00605	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-4**	E	C2	5	2	5.826	9.605	15.04	0.5498	0.1457	24	0.00607	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-5**	E	C2	5	2	5.725	9.332	14.83	0.5477	0.1460	24	0.00608	M(H,V)GN
NTPM911Q1-HXL-H40-SKS-IPSV-E-C2-1-ETW-6**	E	C2	5	2	5.550	9.198	14.95	0.5637	0.1458	24	0.00607	M(H,V)GN

*Modulus calculation was obtained from 1000 to 3000 microstrain

**Modulus calculation was obtained from 2000 to 6000 microstrain

Average	5.328	9.073	15.45	0.5470	0.1478	0.006159
Standard Dev.	0.5862	0.5261	0.6618	0.03850	0.003047	0.0001270
Coeff. of Var. [%]	11.00	5.80	4.284	7.038	2.061	2.061
Min.	4.439	8.403	14.33	0.4520	0.1404	0.005851
Max.	6.710	10.212	17.76	0.6364	0.1531	0.006377
Number of Spec.	57	57	57	57	57	57





4.7 Short Beam Strength (SBS)

Short-Beam Strength Properties (SBS)--CTA (-65°F)

Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

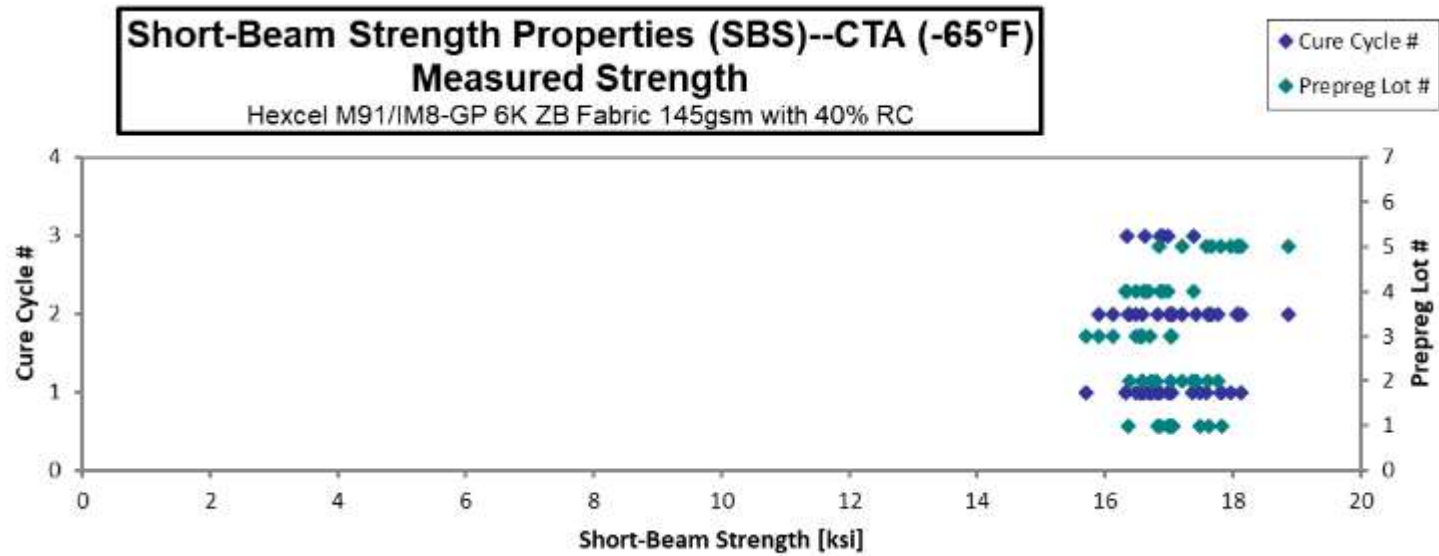
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-CTA-1	A	C1	1	1	17.00	0.1473	24	0.006136	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-CTA-2	A	C1	1	1	17.82	0.1479	24	0.006164	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-CTA-3	A	C1	1	1	17.49	0.1471	24	0.006129	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-CTA-4	A	C1	1	1	17.05	0.1482	24	0.006175	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-CTA-5	A	C1	1	1	16.88	0.1475	24	0.006147	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-2	A	C2	1	2	17.00	0.1491	24	0.006213	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-3	A	C2	1	2	17.63	0.1484	24	0.006183	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-4	A	C2	1	2	17.01	0.1500	24	0.006249	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-5	A	C2	1	2	17.08	0.1493	24	0.006220	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-6	A	C2	1	2	16.82	0.1511	24	0.006297	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-CTA-7	A	C2	1	2	16.38	0.1493	24	0.006222	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-CTA-1	B	C1	2	1	16.82	0.1487	24	0.006197	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-CTA-2	B	C1	2	1	16.60	0.1492	24	0.006218	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-CTA-3	B	C1	2	1	17.38	0.1500	24	0.006251	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-CTA-4	B	C1	2	1	17.03	0.1503	24	0.006263	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-CTA-5	B	C1	2	1	16.72	0.1497	24	0.006238	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-1	B	C2	2	2	16.59	0.1475	24	0.006144	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-2	B	C2	2	2	17.22	0.1489	24	0.006203	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-3	B	C2	2	2	17.61	0.1488	24	0.006199	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-4	B	C2	2	2	17.44	0.1490	24	0.006206	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-5	B	C2	2	2	16.39	0.1488	24	0.006200	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-CTA-6	B	C2	2	2	17.78	0.1487	24	0.006194	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-CTA-1	C	C1	3	1	15.71	0.1426	24	0.005942	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-CTA-2	C	C1	3	1	16.54	0.1438	24	0.005990	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-CTA-3	C	C1	3	1	16.56	0.1448	24	0.006031	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-CTA-4	C	C1	3	1	16.59	0.1452	24	0.006048	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-CTA-5	C	C1	3	1	16.72	0.1450	24	0.006040	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-1	C	C2	3	2	17.03	0.1428	24	0.005950	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-2	C	C2	3	2	16.12	0.1441	24	0.006004	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-3	C	C2	3	2	17.03	0.1448	24	0.006032	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-4	C	C2	3	2	15.92	0.1452	24	0.006050	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-5	C	C2	3	2	16.49	0.1450	24	0.006041	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-CTA-6	C	C2	3	2	17.06	0.1453	24	0.006055	INTERLAMINAR SHEAR

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CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-CTA-1	D	C1	4	1	16.62	0.1464	24	0.006100	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-CTA-2	D	C1	4	1	16.69	0.1460	24	0.006084	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-CTA-3	D	C1	4	1	16.32	0.1459	24	0.006079	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-CTA-4	D	C1	4	1	16.33	0.1452	24	0.006050	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-CTA-5	D	C1	4	1	16.50	0.1479	24	0.006162	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-1	D	C3	4	3	16.35	0.1453	24	0.006052	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-2	D	C3	4	3	16.87	0.1469	24	0.006119	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-3	D	C3	4	3	16.63	0.1464	24	0.006100	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-4	D	C3	4	3	17.00	0.1464	24	0.006101	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-5	D	C3	4	3	16.91	0.1469	24	0.006122	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-CTA-6	D	C3	4	3	17.39	0.1471	24	0.006128	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-CTA-1	E	C1	5	1	16.84	0.1380	24	0.005748	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-CTA-2	E	C1	5	1	18.12	0.1400	24	0.005834	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-CTA-3	E	C1	5	1	17.98	0.1387	24	0.005778	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-CTA-4	E	C1	5	1	17.81	0.1410	24	0.005874	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-CTA-5	E	C1	5	1	17.59	0.1396	24	0.005816	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-1	E	C2	5	2	18.13	0.1390	24	0.005792	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-2	E	C2	5	2	17.21	0.1408	24	0.005867	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-3	E	C2	5	2	18.08	0.1400	24	0.005831	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-4	E	C2	5	2	18.08	0.1417	24	0.005906	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-5	E	C2	5	2	18.87	0.1406	24	0.005856	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-CTA-6	E	C2	5	2	17.68	0.1407	24	0.005861	INTERLAMINAR SHEAR, COMPRESSION

Average	17.05	0.006071
Standard Dev.	0.6291	0.0001447
Coeff. of Var. [%]	3.691	2.383
Min.	15.71	0.005748
Max.	18.87	0.006297
Number of Spec.	55	55



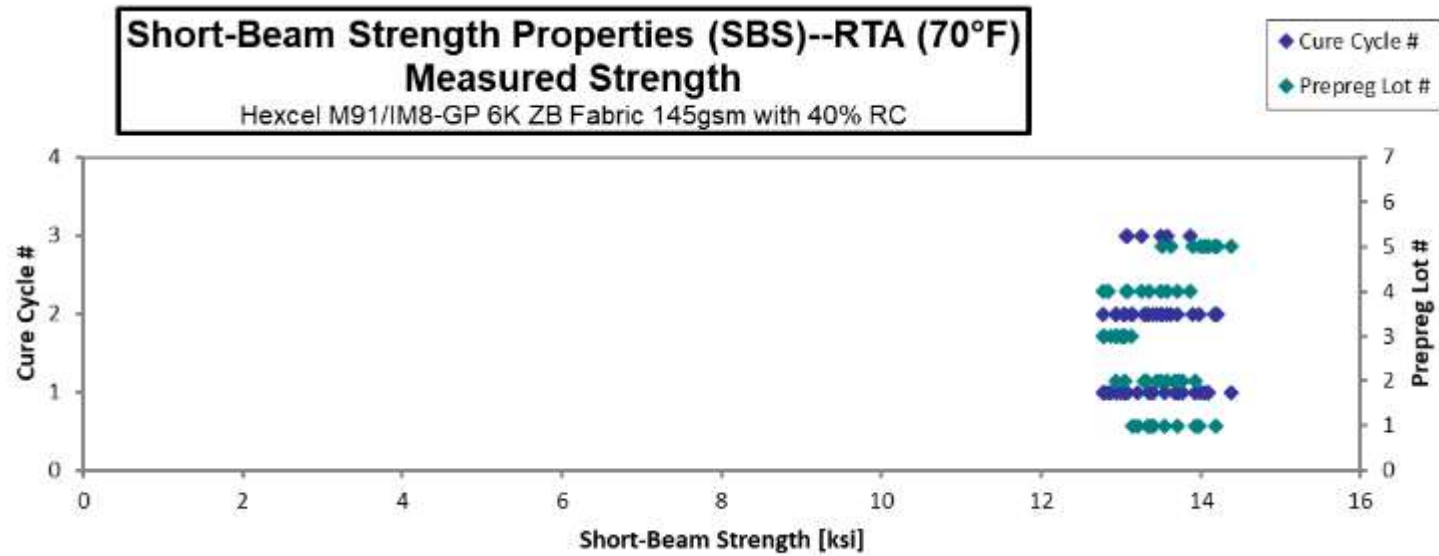
Short-Beam Strength Properties (SBS)--RTA (70°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-RTA-1	A	C1	1	1	13.36	0.1477	24	0.006155	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-RTA-2	A	C1	1	1	13.22	0.1482	24	0.006176	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-RTA-3	A	C1	1	1	13.55	0.1474	24	0.006140	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-RTA-4	A	C1	1	1	13.41	0.1479	24	0.006162	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-RTA-5	A	C1	1	1	13.93	0.1475	24	0.006147	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-1	A	C2	1	2	13.71	0.1509	24	0.006288	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-2	A	C2	1	2	14.19	0.1499	24	0.006244	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-3	A	C2	1	2	13.14	0.1512	24	0.006299	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-4	A	C2	1	2	13.98	0.1498	24	0.006242	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-5	A	C2	1	2	13.40	0.1519	24	0.006329	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-RTA-6	A	C2	1	2	13.34	0.1501	24	0.006255	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-RTA-1	B	C1	2	1	13.05	0.1494	24	0.006224	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-RTA-2	B	C1	2	1	13.68	0.1501	24	0.006253	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-RTA-3	B	C1	2	1	13.77	0.1494	24	0.006225	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-RTA-4	B	C1	2	1	13.72	0.1494	24	0.006224	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-RTA-5	B	C1	2	1	13.94	0.1500	24	0.006251	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-1	B	C2	2	2	13.59	0.1484	24	0.006182	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-2	B	C2	2	2	13.33	0.1483	24	0.006179	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-3	B	C2	2	2	12.94	0.1485	24	0.006188	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-4	B	C2	2	2	13.51	0.1480	24	0.006165	INTERLAMINAR SHEAR, COMPRESSION, TENSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-5	B	C2	2	2	13.46	0.1492	24	0.006215	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-RTA-6	B	C2	2	2	13.29	0.1503	24	0.006260	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-RTA-1	C	C1	3	1	12.87	0.1448	24	0.006031	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-RTA-2	C	C1	3	1	13.01	0.1446	24	0.006026	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-RTA-3	C	C1	3	1	13.06	0.1450	24	0.006043	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-RTA-4	C	C1	3	1	12.93	0.1449	24	0.006036	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-RTA-5	C	C1	3	1	12.79	0.1449	24	0.006036	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-1	C	C2	3	2	12.94	0.1449	24	0.006037	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-2	C	C2	3	2	13.05	0.1450	24	0.006042	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-3	C	C2	3	2	13.13	0.1454	24	0.006057	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-4	C	C2	3	2	13.04	0.1451	24	0.006047	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-5	C	C2	3	2	12.94	0.1452	24	0.006049	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-RTA-6	C	C2	3	2	12.78	0.1448	24	0.006034	INTERLAMINAR SHEAR

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-RTA-1	D	C1	4	1	13.09	0.1447	24	0.006028	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-RTA-2	D	C1	4	1	12.84	0.1454	24	0.006060	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-RTA-3	D	C1	4	1	13.35	0.1472	24	0.006132	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-RTA-4	D	C1	4	1	13.71	0.1469	24	0.006119	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-RTA-5	D	C1	4	1	12.78	0.1468	24	0.006118	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-1	D	C3	4	3	13.51	0.1472	24	0.006131	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-2	D	C3	4	3	13.27	0.1471	24	0.006130	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-3	D	C3	4	3	13.58	0.1471	24	0.006128	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-4	D	C3	4	3	13.07	0.1469	24	0.006122	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-5	D	C3	4	3	13.87	0.1449	24	0.006037	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-RTA-6	D	C3	4	3	13.08	0.1456	24	0.006067	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-RTA-1	E	C1	5	1	14.09	0.1399	24	0.005828	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-RTA-2	E	C1	5	1	14.00	0.1406	24	0.005857	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-RTA-3	E	C1	5	1	14.38	0.1405	24	0.005853	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-RTA-4	E	C1	5	1	14.10	0.1403	24	0.005844	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-RTA-5	E	C1	5	1	14.05	0.1409	24	0.005871	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-1	E	C2	5	2	14.21	0.1400	24	0.005833	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-2	E	C2	5	2	14.17	0.1401	24	0.005836	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-3	E	C2	5	2	14.20	0.1394	24	0.005808	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-4	E	C2	5	2	13.63	0.1398	24	0.005826	INTERLAMINAR SHEAR
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-5	E	C2	5	2	13.90	0.1398	24	0.005824	INTERLAMINAR SHEAR, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-RTA-6	E	C2	5	2	13.51	0.1404	24	0.005851	INTERLAMINAR SHEAR, COMPRESSION

Average	13.46	0.006083
Standard Dev.	0.4479	0.0001464
Coeff. of Var. [%]	3.327	2.406
Min.	12.78	0.005808
Max.	14.38	0.006329
Number of Spec.	55	55



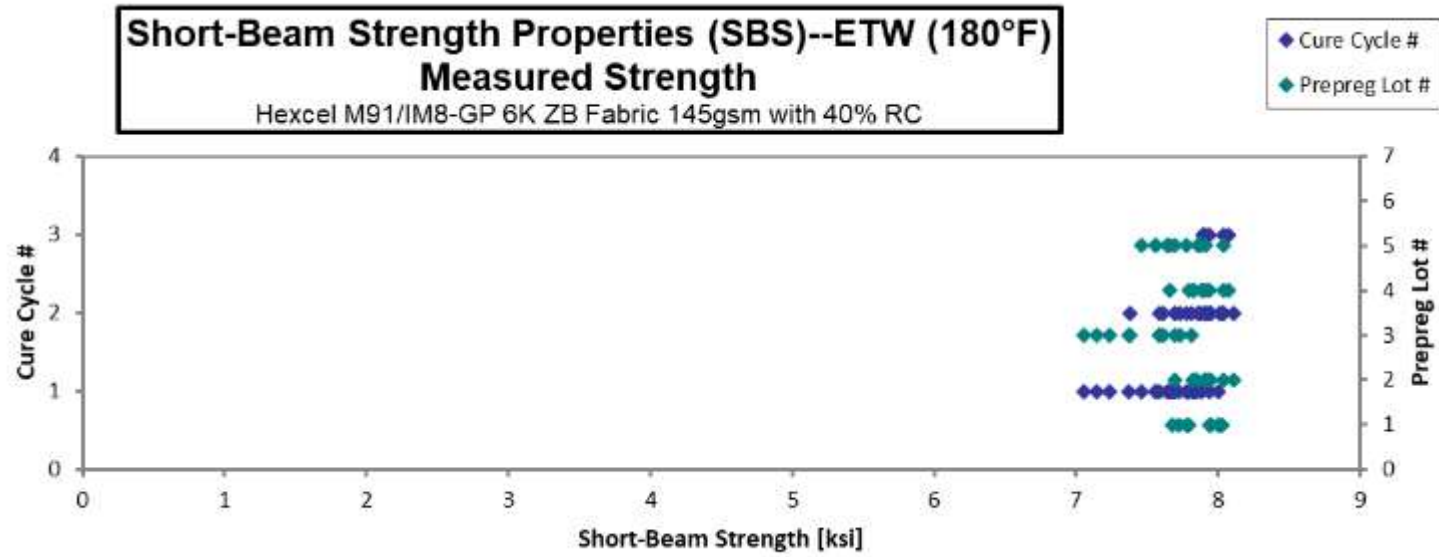
**Short-Beam Strength Properties (SBS)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-ETW-1	A	C1	1	1	7.722	0.1472	24	0.006132	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-ETW-2	A	C1	1	1	7.678	0.1480	24	0.006168	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-ETW-3	A	C1	1	1	7.775	0.1474	24	0.006143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-ETW-4	A	C1	1	1	8.001	0.1480	24	0.006167	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-ETW-5	A	C1	1	1	7.791	0.1471	24	0.006128	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-ETW-1	A	C2	1	2	7.939	0.1496	24	0.006234	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-ETW-2	A	C2	1	2	8.029	0.1520	24	0.006332	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-ETW-3	A	C2	1	2	7.949	0.1497	24	0.006237	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-ETW-4	A	C2	1	2	8.012	0.1518	24	0.006323	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-A-C2-1-ETW-5	A	C2	1	2	7.951	0.1495	24	0.006229	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-ETW-1	B	C1	2	1	7.841	0.1520	24	0.006333	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-ETW-2	B	C1	2	1	7.846	0.1517	24	0.006322	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-ETW-3	B	C1	2	1	7.826	0.1518	24	0.006326	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-ETW-4	B	C1	2	1	7.937	0.1516	24	0.006315	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C1-1-ETW-5	B	C1	2	1	7.697	0.1513	24	0.006302	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-ETW-1	B	C2	2	2	7.901	0.1507	24	0.006280	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-ETW-2	B	C2	2	2	7.923	0.1507	24	0.006277	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-ETW-3	B	C2	2	2	8.040	0.1503	24	0.006263	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-ETW-4	B	C2	2	2	7.946	0.1502	24	0.006258	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-B-C2-1-ETW-5	B	C2	2	2	8.113	0.1503	24	0.006261	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-ETW-1	C	C1	3	1	7.055	0.1442	24	0.006008	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-ETW-2	C	C1	3	1	7.147	0.1440	24	0.005999	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-ETW-3	C	C1	3	1	7.236	0.1425	24	0.005938	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-ETW-4	C	C1	3	1	7.372	0.1447	24	0.006028	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C1-1-ETW-5	C	C1	3	1	7.590	0.1459	24	0.006078	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-1	C	C2	3	2	7.376	0.1424	24	0.005932	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-2	C	C2	3	2	7.588	0.1444	24	0.006017	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-3	C	C2	3	2	7.611	0.1462	24	0.006090	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-4	C	C2	3	2	7.809	0.1468	24	0.006117	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-5	C	C2	3	2	7.694	0.1478	24	0.006158	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-NIAR-SBS-C-C2-1-ETW-6	C	C2	3	2	7.736	0.1478	24	0.006159	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-ETW-1	D	C1	4	1	7.821	0.1463	24	0.006095	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-ETW-2	D	C1	4	1	7.827	0.1479	24	0.006160	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-ETW-3	D	C1	4	1	7.658	0.1484	24	0.006182	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-ETW-4	D	C1	4	1	7.886	0.1474	24	0.006142	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C1-1-ETW-5	D	C1	4	1	7.791	0.1474	24	0.006143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-1	D	C3	4	3	7.892	0.1463	24	0.006096	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-2	D	C3	4	3	7.913	0.1464	24	0.006101	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-3	D	C3	4	3	7.942	0.1466	24	0.006107	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-4	D	C3	4	3	8.074	0.1469	24	0.006120	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-5	D	C3	4	3	8.040	0.1468	24	0.006118	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-FACC-SBS-D-C3-1-ETW-6	D	C3	4	3	7.894	0.1471	24	0.006129	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-ETW-1	E	C1	5	1	7.645	0.1409	24	0.005872	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-ETW-2	E	C1	5	1	7.663	0.1404	24	0.005851	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-ETW-3	E	C1	5	1	7.565	0.1402	24	0.005840	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-ETW-4	E	C1	5	1	7.560	0.1398	24	0.005824	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C1-1-ETW-5	E	C1	5	1	7.457	0.1391	24	0.005795	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-1	E	C2	5	2	8.040	0.1409	24	0.005869	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-2	E	C2	5	2	7.874	0.1409	24	0.005872	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-3	E	C2	5	2	7.776	0.1406	24	0.005860	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-4	E	C2	5	2	7.692	0.1401	24	0.005836	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-5	E	C2	5	2	7.910	0.1386	24	0.005776	INTERLAMINAR SHEAR, INELASTIC DEFORMATION
NTPM911Q1-HXL-H40-SKS-SBS-E-C2-1-ETW-6	E	C2	5	2	7.859	0.1421	24	0.005920	INTERLAMINAR SHEAR, INELASTIC DEFORMATION

Average	7.772	0.006099
Standard Dev.	0.2320	0.0001630
Coeff. of Var. [%]	2.985	2.672
Min.	7.055	0.005776
Max.	8.113	0.006333
Number of Spec.	53	53



4.8 “25/50/25” Unnotched Tension 1 Properties (UNT1)

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

Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

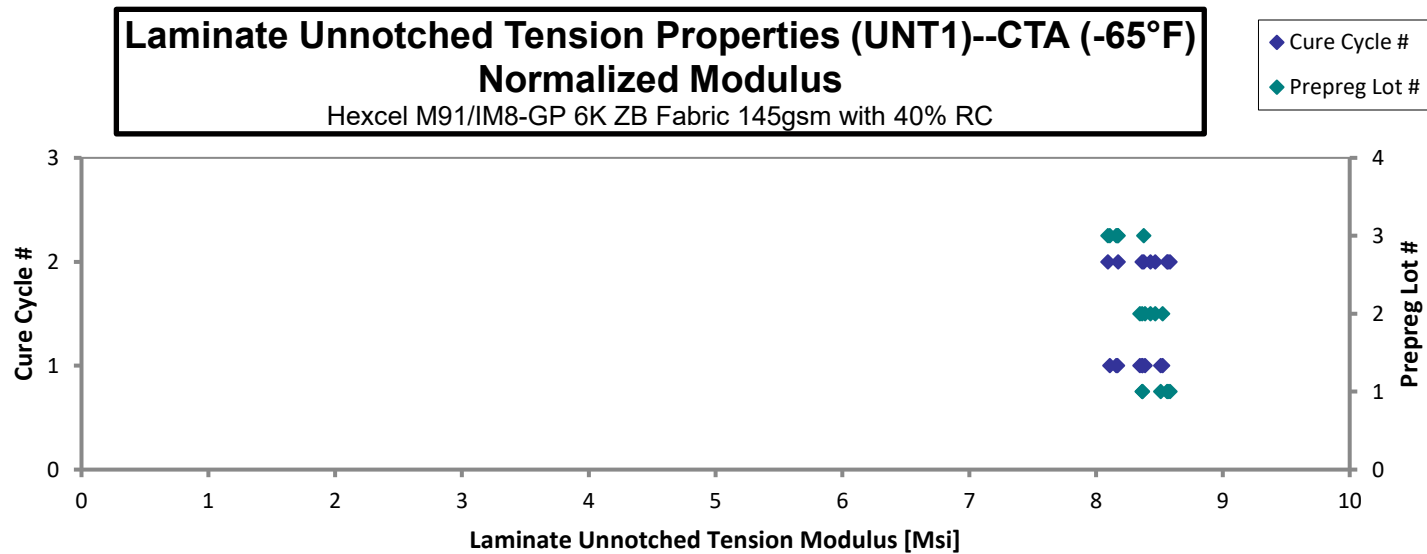
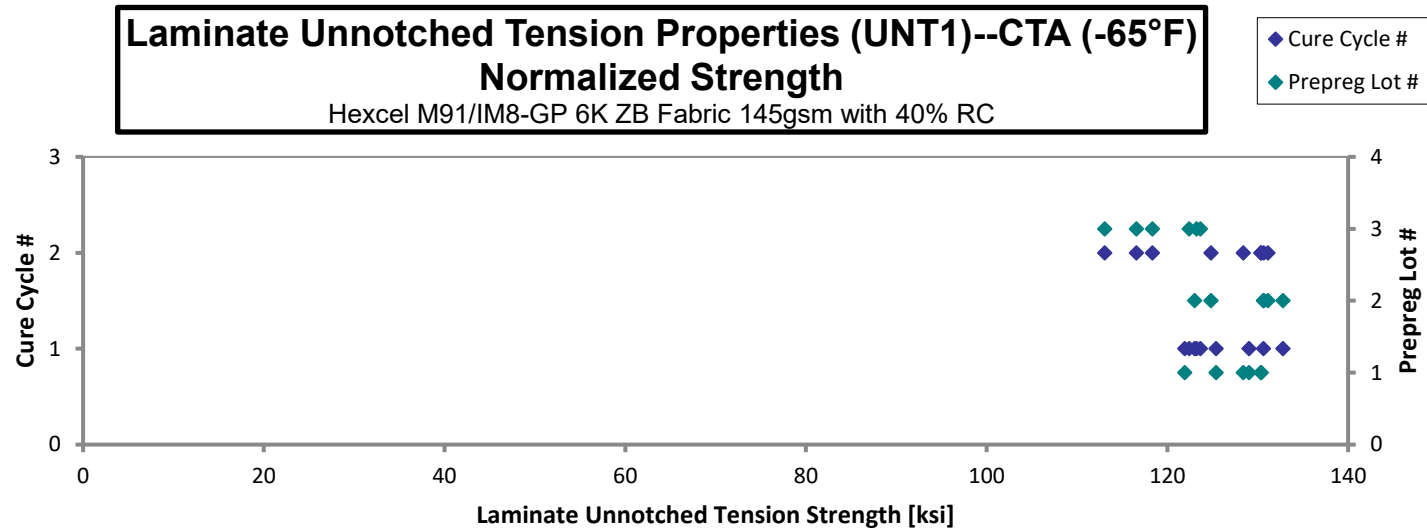
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-CTA-1	A	C1	1	1	121.4	8.101	0.1008	16	LWT, LWB	0.006299	125.4	8.365
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-CTA-2	A	C1	1	1	120.5	8.270	0.09870	16	LWT, LWB	0.006169	121.9	8.363
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-CTA-3	A	C1	1	1	128.3	8.463	0.09813	16	LWB	0.006133	129.0	8.509
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-CTA-1	A	C2	1	2	132.0	8.675	0.09640	16	LGT, LWB	0.006025	130.3	8.569
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-CTA-2	A	C2	1	2	129.4	8.494	0.09837	16	LWT	0.006148	130.4	8.561
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-CTA-3	A	C2	1	2	126.4	8.451	0.09912	16	LWT, LWB	0.006195	128.4	8.582
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-CTA-1	B	C1	2	1	117.6	7.978	0.1021	16	LGB	0.006380	123.0	8.345
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-CTA-2	B	C1	2	1	125.7	8.066	0.1015	16	LGB	0.006342	130.6	8.385
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-CTA-3	B	C1	2	1	127.8	8.208	0.1014	16	LGM	0.006335	132.8	8.525
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-CTA-1	B	C2	2	2	126.2	8.111	0.1014	16	LGT	0.006339	131.1	8.428
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-CTA-2	B	C2	2	2	120.5	8.174	0.1011	16	LGM	0.006319	124.8	8.467
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-CTA-3	B	C2	2	2	125.8	8.055	0.1014	16	LGB	0.006334	130.7	8.364
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-CTA-1	C	C1	3	1	122.8	8.187	0.09727	16	LGT, LWB	0.006079	122.4	8.159
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-CTA-2	C	C1	3	1	122.1	8.065	0.09885	16	LGM	0.006178	123.7	8.168
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-CTA-3	C	C1	3	1	122.0	8.027	0.09858	16	LWT, LWB	0.006161	123.2	8.107
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-CTA-1	C	C2	3	2	116.4	8.360	0.09778	16	LWT	0.006111	116.6	8.376
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-CTA-2	C	C2	3	2	113.8	8.231	0.09693	16	LGM	0.006058	113.1	8.174
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-CTA-3	C	C2	3	2	119.7	8.185	0.09652	16	LGM	0.006032	118.3	8.094

Average 123.3 8.228 0.09923
 Standard Dev. 4.811 0.1906 0.001914
 Coeff. of Var. [%] 3.904 2.317 1.929
 Min. 113.8 7.978 0.09640
 Max. 132.0 8.675 0.1021
 Number of Spec. 18 18 18

Average_{norm} 0.006202 125.3 8.363
 Standard Dev._{norm} 0.0001196 5.577 0.1620
 Coeff. of Var. [%]_{norm} 1.929 4.450 1.937
 Min. 0.006025 113.1 8.094
 Max. 0.006380 132.8 8.582
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

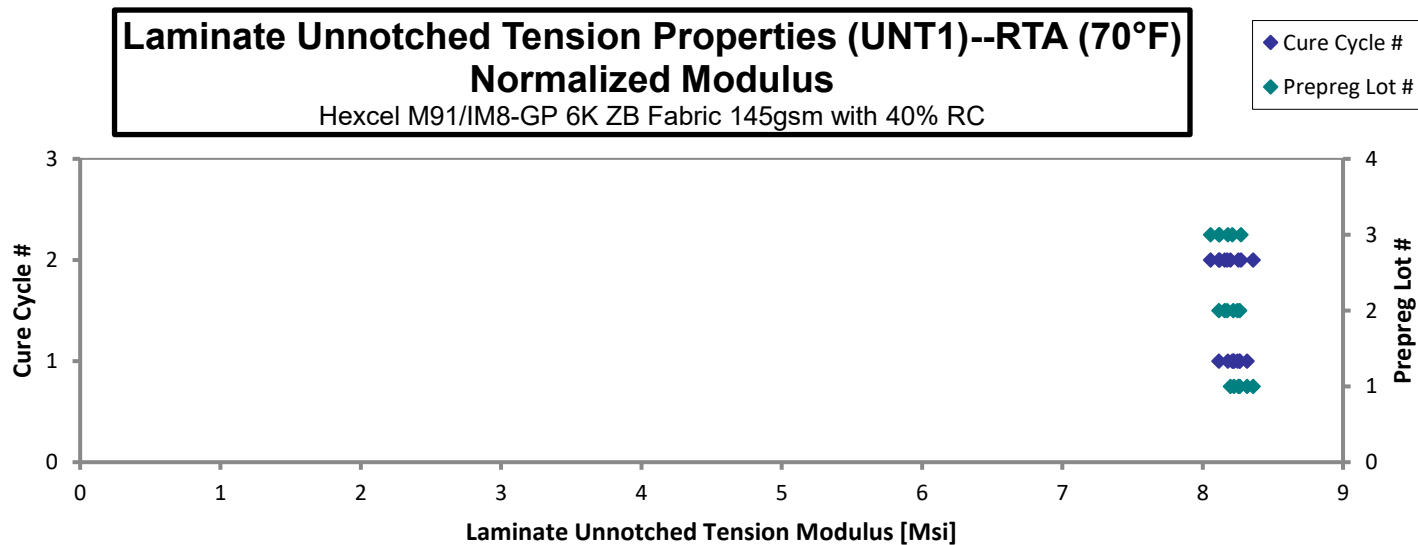
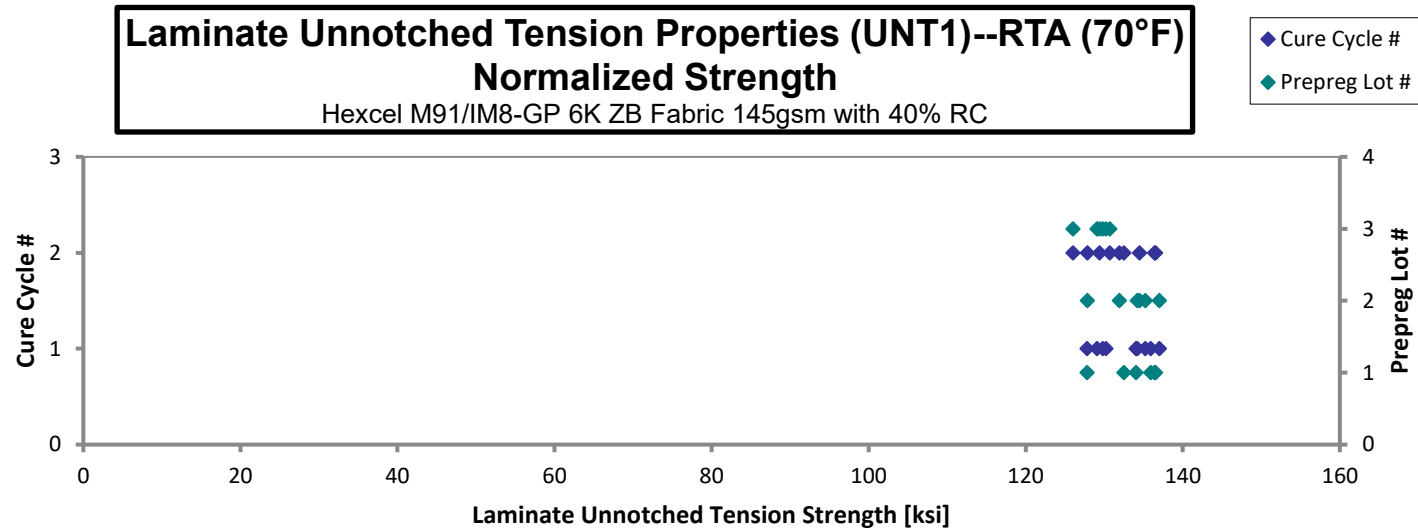
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-RTA-1	A	C1	1	1	133.9	8.098	0.09908	16	LWT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-RTA-2	A	C1	1	1	126.4	8.226	0.09867	16	LWT,LGB
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-RTA-3	A	C1	1	1	133.8	8.247	0.09780	16	LGT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-RTA-1	A	C2	1	2	134.1	8.219	0.09927	16	LWT,M(A,L)WB
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-RTA-2	A	C2	1	2	132.2	8.177	0.09783	16	LGT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-RTA-3	A	C2	1	2	135.6	8.199	0.09825	16	LGM
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-RTA-1	B	C1	2	1	128.9	7.920	0.1016	16	LGM
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-RTA-2	B	C1	2	1	132.0	7.916	0.1013	16	LGT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-RTA-3	B	C1	2	1	131.7	8.046	0.1002	16	LWT,LGB
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-RTA-1	B	C2	2	2	129.1	7.829	0.1017	16	LGT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-RTA-2	B	C2	2	2	123.1	7.871	0.1014	16	LGM
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-RTA-3	B	C2	2	2	127.7	7.857	0.1008	16	LGB
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-RTA-1	C	C1	3	1	127.8	8.131	0.09855	16	LGM, LWT, LWB
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-RTA-2	C	C1	3	1	128.6	8.012	0.09883	16	LGB, LWT
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-RTA-3	C	C1	3	1	128.1	8.072	0.09890	16	LWB, LWT
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-RTA-1	C	C2	3	2	128.1	7.979	0.09855	16	LWT, LGB
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-RTA-2	C	C2	3	2	125.4	8.232	0.09807	16	LWB, LWT
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-RTA-3	C	C2	3	2	131.6	8.176	0.09693	16	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006193	135.9	8.221
0.006167	127.8	8.316
0.006113	134.0	8.264
0.006204	136.4	8.359
0.006115	132.5	8.197
0.006141	136.5	8.253
0.006352	134.2	8.247
0.006332	137.0	8.218
0.006264	135.2	8.262
0.006355	134.5	8.157
0.006335	127.9	8.175
0.006301	131.9	8.116
0.006159	129.0	8.210
0.006177	130.2	8.114
0.006181	129.8	8.179
0.006159	129.4	8.056
0.006129	126.0	8.272
0.006058	130.7	8.120

Average 129.9 8.067 0.09932
Standard Dev. 3.382 0.1434 0.001479
Coeff. of Var. [%] 2.604 1.777 1.489
Min. 123.1 7.829 0.09693
Max. 135.6 8.247 0.1017
Number of Spec. 18 18 18

Average_{norm} 0.006208 132.2 8.208
Standard Dev_{norm} 0.00009242 3.445 0.07721
Coeff. of Var. [%]_{norm} 1.489 2.606 0.9407
Min. 0.006058 126.0 8.056
Max. 0.006355 137.0 8.359
Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

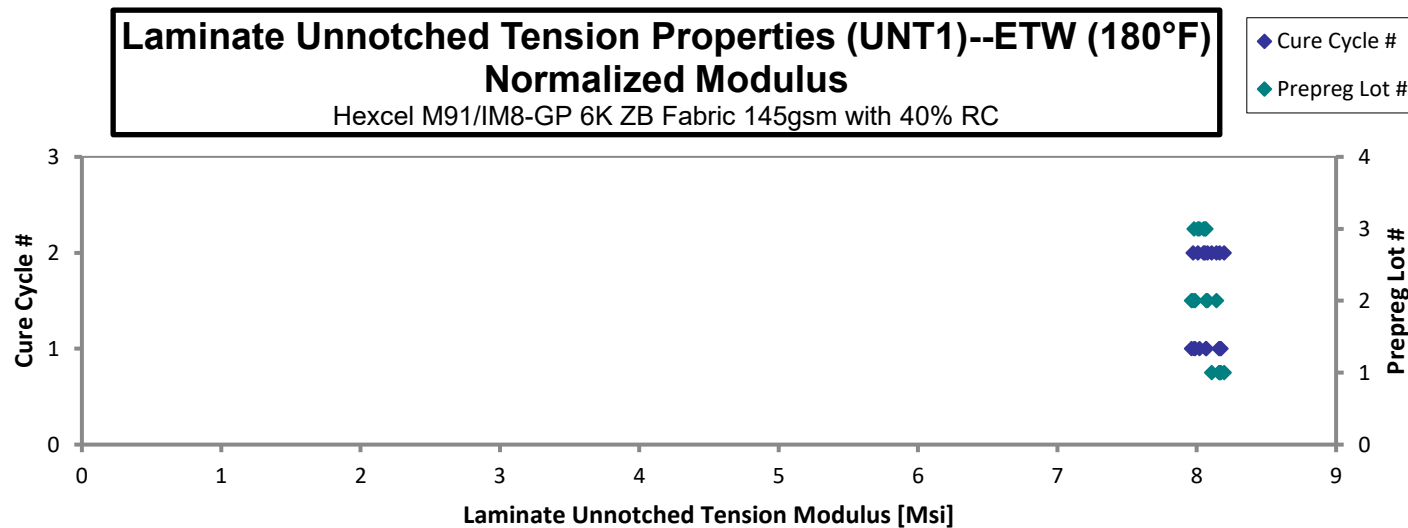
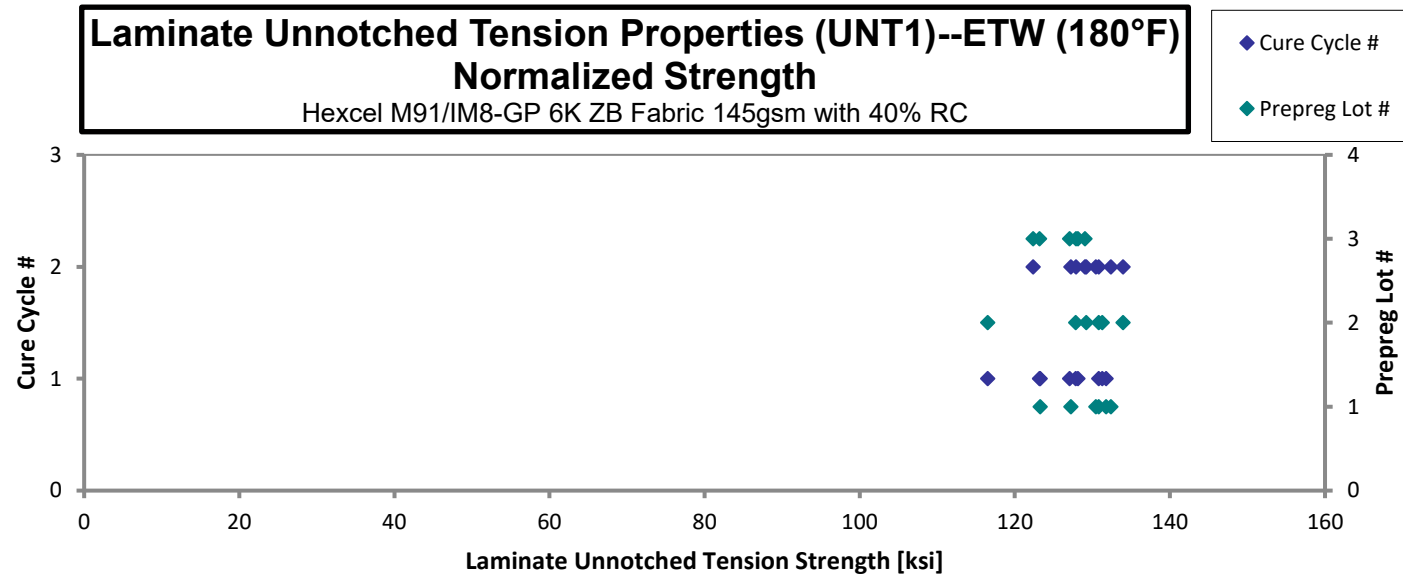
normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-ETW-1	A	C1	1	1	121.8	8.071	0.09877	16	LBT, LWT	0.006173	123.3	8.168
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-ETW-2	A	C1	1	1	130.4	8.089	0.09863	16	LWB, LGB, LWT	0.006165	131.8	8.175
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-ETW-3	A	C1	1	1	128.5	8.014	0.09937	16	LWB, LGM	0.006210	130.9	8.159
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-ETW-1	A	C2	1	2	132.3	8.189	0.09770	16	LWB, LAT	0.006106	132.4	8.197
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-ETW-2	A	C2	1	2	126.5	8.113	0.09822	16	LWB, LWT	0.006139	127.3	8.164
NTPM911Q1-HXL-H40-NIAR-UNT1-A-C2-1-ETW-3	A	C2	1	2	130.1	8.087	0.09783	16	LWB, LGT	0.006115	130.4	8.106
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-ETW-1	B	C1	2	1	126.0	7.667	0.1017	16	LGM, LAT	0.006355	131.3	7.988
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-ETW-2	B	C1	2	1	111.6	7.624	0.1019	16	LWB, LGT	0.006371	116.5	7.963
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C1-1-ETW-3	B	C1	2	1	122.7	7.744	0.1017	16	LWB, LWT	0.006355	127.9	8.068
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-ETW-1	B	C2	2	2	128.5	7.745	0.1018	16	LWB, LWT	0.006363	134.0	8.078
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-ETW-2	B	C2	2	2	124.2	7.823	0.1016	16	LWB, LGT	0.006349	129.2	8.142
NTPM911Q1-HXL-H40-NIAR-UNT1-B-C2-1-ETW-3	B	C2	2	2	125.2	7.628	0.1020	16	LGB, LWT	0.006376	130.8	7.974
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-ETW-1	C	C1	3	1	126.1	7.915	0.09840	16	LWT, LWB	0.006150	127.1	7.980
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-ETW-2	C	C1	3	1	121.8	7.931	0.09870	16	LWT, LGB	0.006169	123.2	8.020
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C1-1-ETW-3	C	C1	3	1	127.4	8.022	0.09813	16	LWT, LGB	0.006133	128.1	8.066
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-ETW-1	C	C2	3	2	126.9	7.996	0.09837	16	LWT, LGM	0.006148	127.9	8.059
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-ETW-2	C	C2	3	2	129.3	8.021	0.09745	16	LWT, LWB	0.006091	129.1	8.008
NTPM911Q1-HXL-H40-NIAR-UNT1-C-C2-1-ETW-3	C	C2	3	2	122.8	8.082	0.09722	16	LWT, LGB	0.006076	122.4	8.050

Average 125.7 7.931 0.09942
Standard Dev. 4.654 0.1808 0.001793
Coeff. of Var. [%] 3.703 2.280 1.804
Min. 111.6 7.624 0.09722
Max. 132.3 8.189 0.1020
Number of Spec. 18 18 18

Average_{norm} 0.006213 128.0 8.076
Standard Dev_{norm} 0.0001121 4.309 0.07754
Coeff. of Var. [%]_{norm} 1.804 3.367 0.9601
Min. 0.006076 116.5 7.963
Max. 0.006376 134.0 8.197
Number of Spec. 18 18 18



4.9 “10/80/10” Unnotched Tension 2 Properties (UNT2)

Laminate Unnotched Tension Properties (UNT2)--CTA (-65°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

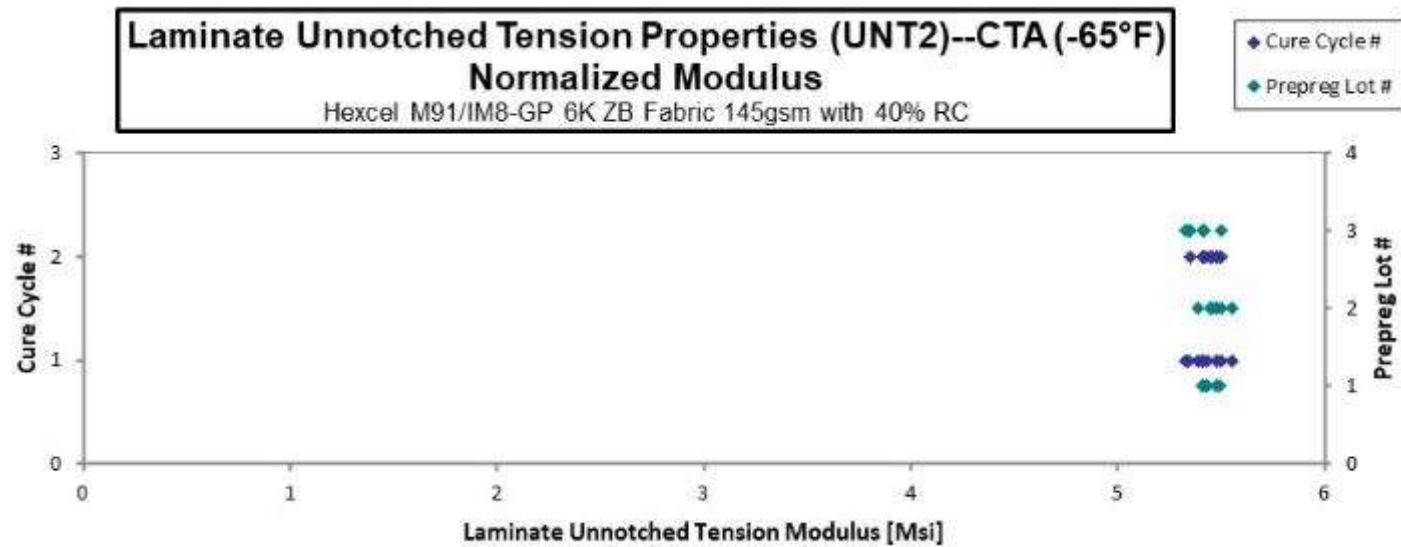
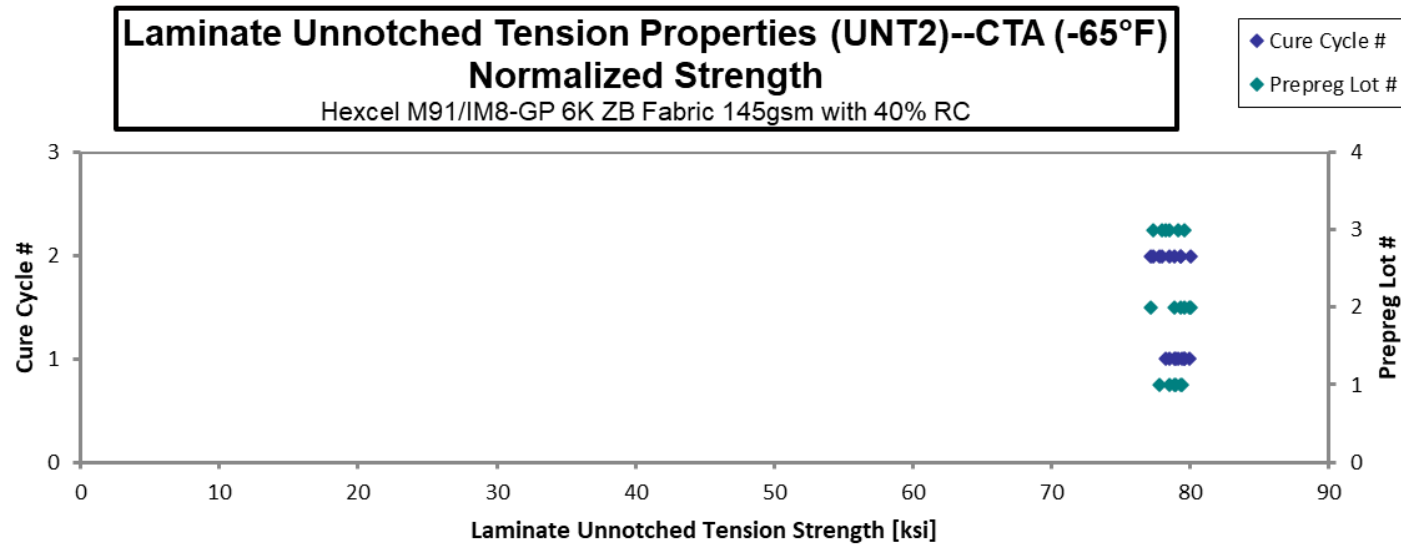
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-CTA-1	A	C1	1	1	78.50	5.384	0.1227	20	AWB	0.006133	78.92	5.413
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-CTA-2	A	C1	1	1	77.71	5.377	0.1232	20	AGB	0.006159	78.46	5.429
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-CTA-3	A	C1	1	1	78.82	5.370	0.1229	20	AGB	0.006145	79.40	5.409
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-CTA-1	A	C2	1	2	78.77	5.389	0.1228	20	AGM	0.006142	79.31	5.425
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-CTA-2	A	C2	1	2	76.75	5.405	0.1236	20	AWB	0.006180	77.75	5.476
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-CTA-3	A	C2	1	2	77.93	5.427	0.1235	20	AGB	0.006173	78.86	5.491
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-CTA-1	B	C1	2	1	76.08	5.237	0.1276	20	AWB	0.006379	79.57	5.477
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-CTA-2	B	C1	2	1	76.61	5.325	0.1273	20	AWB	0.006364	79.92	5.556
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-CTA-3	B	C1	2	1	75.78	5.177	0.1270	20	AWT	0.006348	78.85	5.387
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-CTA-1	B	C2	2	2	73.89	5.228	0.1273	20	AGB	0.006367	77.12	5.457
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-CTA-2	B	C2	2	2	76.21	5.233	0.1271	20	AGB	0.006353	79.36	5.450
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-CTA-3	B	C2	2	2	77.10	5.298	0.1266	20	AGB	0.006332	80.03	5.500
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-CTA-1	C	C1	3	1	78.71	5.439	0.1234	20	AGT	0.006171	79.62	5.502
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-CTA-2	C	C1	3	1	77.26	5.277	0.1235	20	AWT	0.006177	78.23	5.343
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-CTA-3	C	C1	3	1	78.10	5.254	0.1236	20	AWT	0.006182	79.15	5.325
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-CTA-1	C	C2	3	2	76.20	5.331	0.1238	20	AWT	0.006188	77.30	5.408
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-CTA-2	C	C2	3	2	77.55	5.348	0.1235	20	AGT	0.006177	78.52	5.416
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-CTA-3	C	C2	3	2	77.15	5.296	0.1233	20	AWB	0.006163	77.95	5.351

Average 77.17 5.322 0.1246
 Standard Dev. 1.273 0.07619 0.001886
 Coeff. of Var. [%] 1.650 1.432 1.514
 Min. 73.89 5.177 0.1227
 Max. 78.82 5.439 0.1276
 Number of Spec. 18 18 18

Average_{norm} 0.006229 78.80 5.434
 Standard Dev._{norm} 0.00009429 0.8585 0.06083
 Coeff. of Var. [%]_{norm} 1.514 1.090 1.119
 Min. 0.006133 77.12 5.325
 Max. 0.006379 80.03 5.556
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

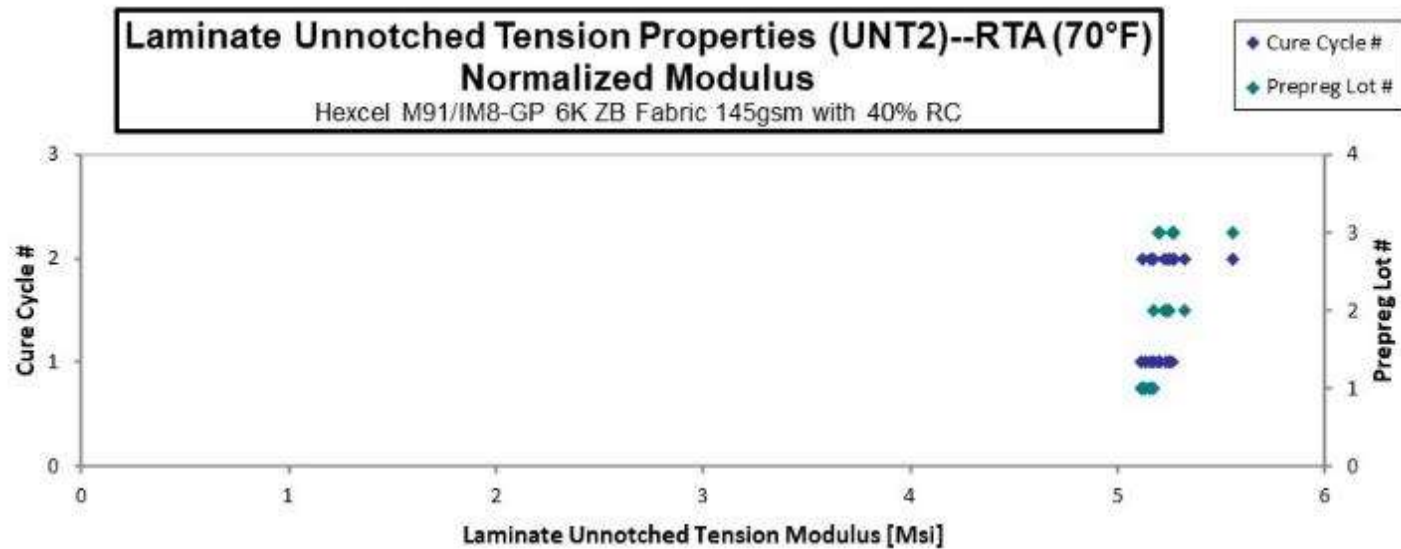
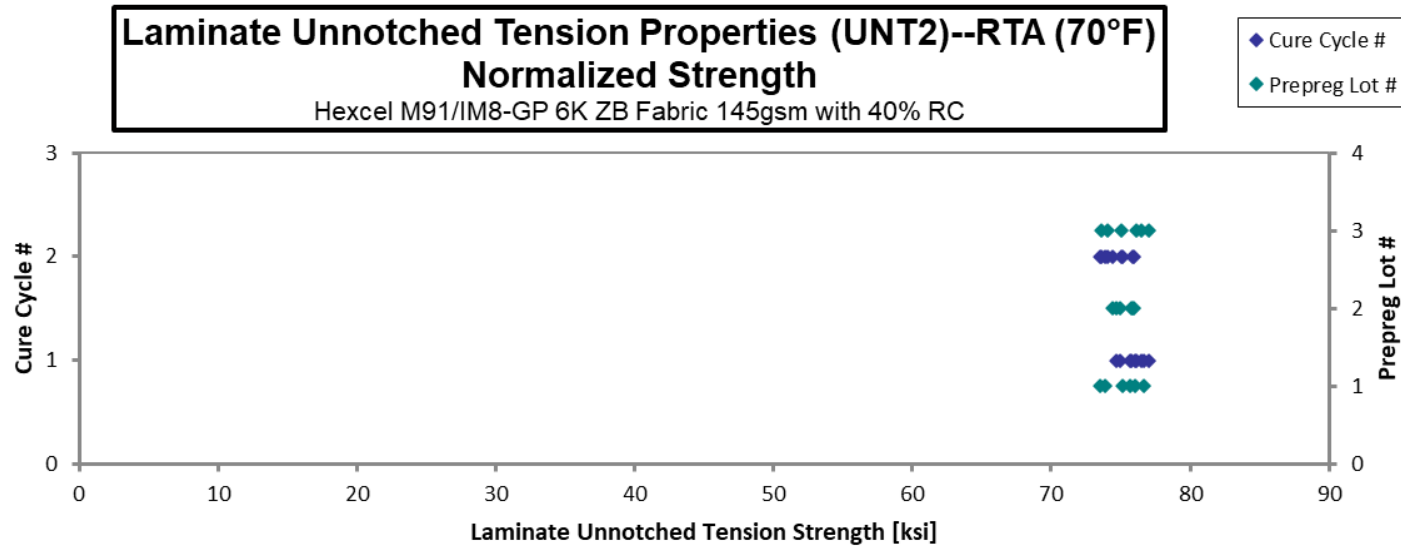
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-RTA-1	A	C1	1	1	75.11	5.072	0.1230	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-RTA-2	A	C1	1	1	75.91	5.083	0.1232	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-RTA-3	A	C1	1	1	75.42	5.111	0.1231	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-RTA-1	A	C2	1	2	72.47	5.060	0.1244	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-RTA-2	A	C2	1	2	72.51	5.049	0.1236	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-RTA-3	A	C2	1	2	73.86	5.087	0.1241	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-RTA-1	B	C1	2	1	71.64	4.960	0.1272	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-RTA-2	B	C1	2	1	71.87	5.017	0.1273	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-RTA-3	B	C1	2	1	73.52	5.091	0.1257	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-RTA-1	B	C2	2	2	71.34	5.027	0.1273	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-RTA-2	B	C2	2	2	72.87	5.013	0.1271	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-RTA-3	B	C2	2	2	73.21	5.130	0.1265	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-RTA-1	C	C1	3	1	76.03	5.135	0.1236	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-RTA-2	C	C1	3	1	75.23	5.203	0.1235	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-RTA-3	C	C1	3	1	76.75	5.212	0.1216	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-RTA-1	C	C2	3	2	72.52	5.189	0.1238	20	AGT
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-RTA-2	C	C2	3	2	74.29	5.215	0.1233	20	AGT
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-RTA-3	C	C2	3	2	74.43	5.584	0.1213	20	AGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006149	75.71	5.113
0.006161	76.66	5.133
0.006153	76.07	5.155
0.006220	73.90	5.160
0.006182	73.48	5.116
0.006203	75.11	5.173
0.006360	74.69	5.171
0.006365	74.99	5.235
0.006286	75.76	5.246
0.006367	74.46	5.246
0.006353	75.90	5.221
0.006326	75.92	5.320
0.006179	77.01	5.201
0.006173	76.13	5.265
0.006078	76.47	5.193
0.006191	73.60	5.266
0.006163	75.06	5.269
0.006066	74.02	5.553

Average 73.83 5.124 0.1244
 Standard Dev. 1.642 0.1362 0.001952
 Coeff. of Var. [%] 2.224 2.658 1.569
 Min. 71.34 4.960 0.1213
 Max. 76.75 5.584 0.1273
 Number of Spec. 18 18 18

Average_{norm} 0.006221 75.28 5.224
 Standard Dev._{norm} 0.00009762 1.075 0.1006
 Coeff. of Var. [%]_{norm} 1.569 1.428 1.926
 Min. 0.006066 73.48 5.113
 Max. 0.006367 77.01 5.553
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

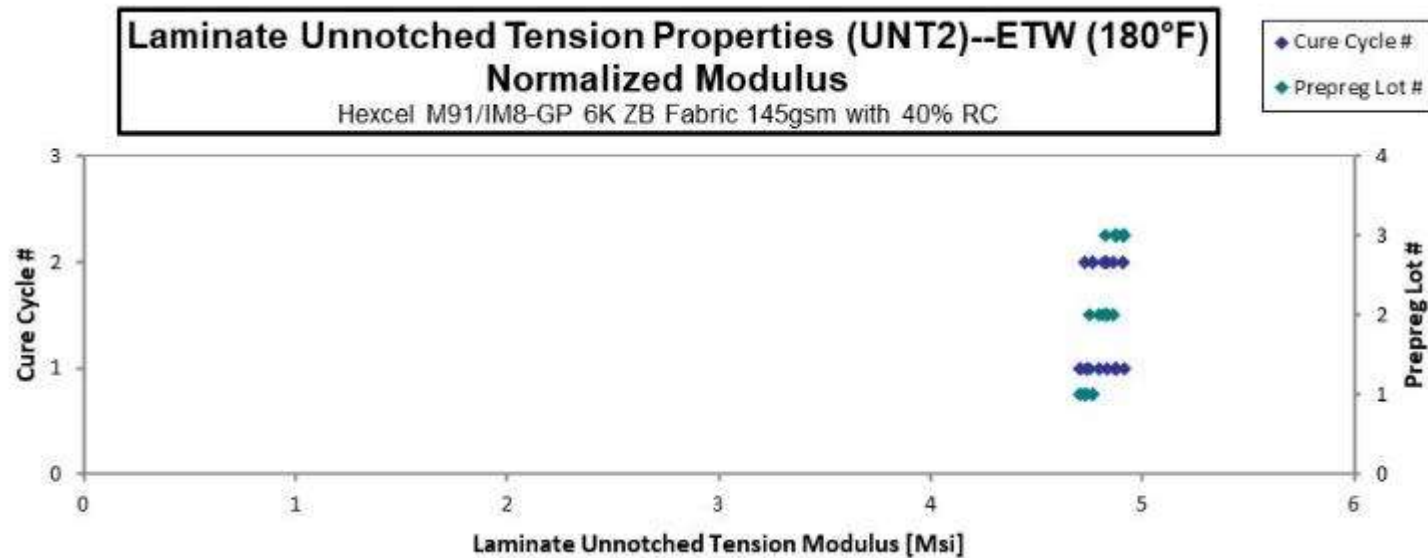
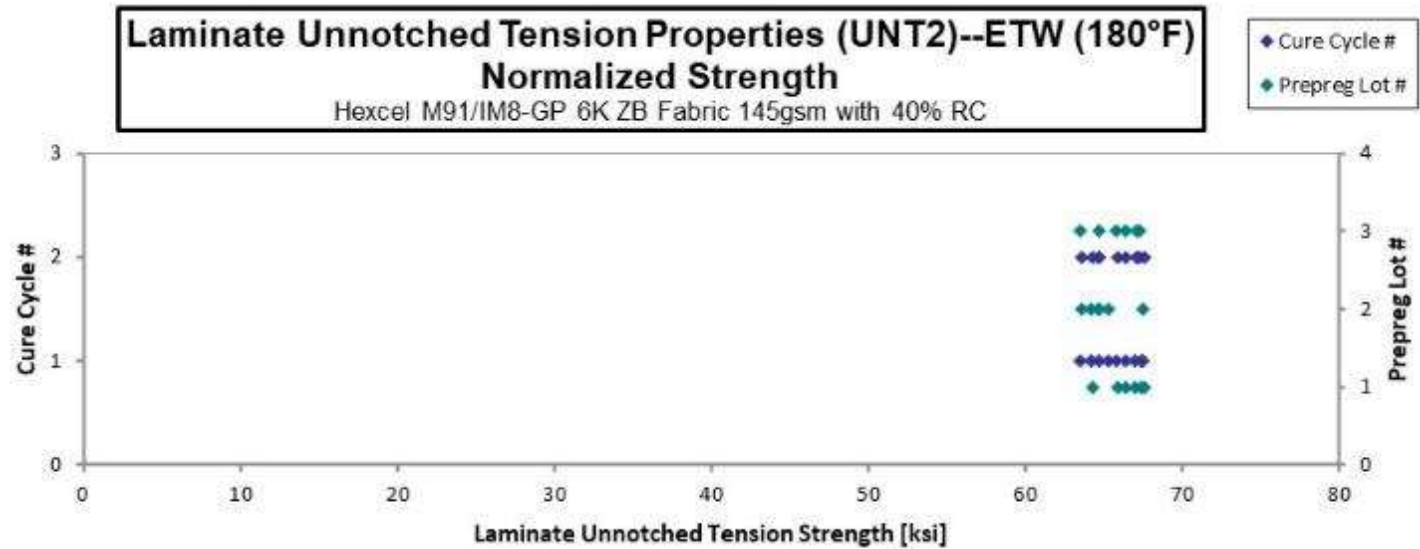
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-ETW-1	A	C1	1	1	65.85	4.693	0.1230	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-ETW-2	A	C1	1	1	66.25	4.647	0.1235	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-ETW-3	A	C1	1	1	66.67	4.654	0.1233	20	AWT
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-ETW-1	A	C2	1	2	65.56	4.738	0.1226	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-ETW-2	A	C2	1	2	63.92	4.698	0.1228	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-A-C2-1-ETW-3	A	C2	1	2	67.27	4.735	0.1227	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-ETW-1	B	C1	2	1	64.93	4.612	0.1268	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-ETW-2	B	C1	2	1	62.81	4.645	0.1269	20	AGT
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C1-1-ETW-3	B	C1	2	1	61.68	4.567	0.1270	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-ETW-1	B	C2	2	2	61.09	4.667	0.1272	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-ETW-2	B	C2	2	2	61.99	4.614	0.1275	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-B-C2-1-ETW-3	B	C2	2	2	62.15	4.645	0.1270	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-ETW-1	C	C1	3	1	65.01	4.807	0.1236	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-ETW-2	C	C1	3	1	62.84	4.863	0.1233	20	AGB
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C1-1-ETW-3	C	C1	3	1	63.99	4.821	0.1235	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-ETW-1	C	C2	3	2	66.43	4.857	0.1233	20	AWB
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-ETW-2	C	C2	3	2	66.46	4.766	0.1235	20	AGM
NTPM911Q1-HXL-H40-NIAR-UNT2-C-C2-1-ETW-3	C	C2	3	2	65.57	4.837	0.1237	20	AGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006151	66.40	4.732
0.006173	67.03	4.703
0.006167	67.40	4.705
0.006131	65.90	4.762
0.006138	64.32	4.727
0.006136	67.67	4.763
0.006342	67.50	4.794
0.006345	65.33	4.831
0.006348	64.19	4.752
0.006359	63.68	4.865
0.006373	64.77	4.821
0.006349	64.69	4.835
0.006178	65.84	4.868
0.006163	63.49	4.913
0.006175	64.77	4.880
0.006167	67.15	4.910
0.006177	67.30	4.826
0.006185	66.48	4.905

Average 64.47 4.715 0.1245
Standard Dev. 1.957 0.09221 0.001881
Coeff. of Var. [%] 3.035 1.956 1.511
Min. 61.09 4.567 0.1226
Max. 67.27 4.863 0.1275
Number of Spec. 18 18 18

Average_{norm} 0.006225 65.77 4.811
Standard Dev._{norm} 0.00009407 1.404 0.07121
Coeff. of Var. [%]_{norm} 1.511 2.135 1.480
Min. 0.006131 63.49 4.703
Max. 0.006373 67.67 4.913
Number of Spec. 18 18 18



4.10 “40/20/40” Unnotched Tension 3 Properties (UNT3)

Laminate Unnotched Tension Properties (UNT3)--CTA (-65°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

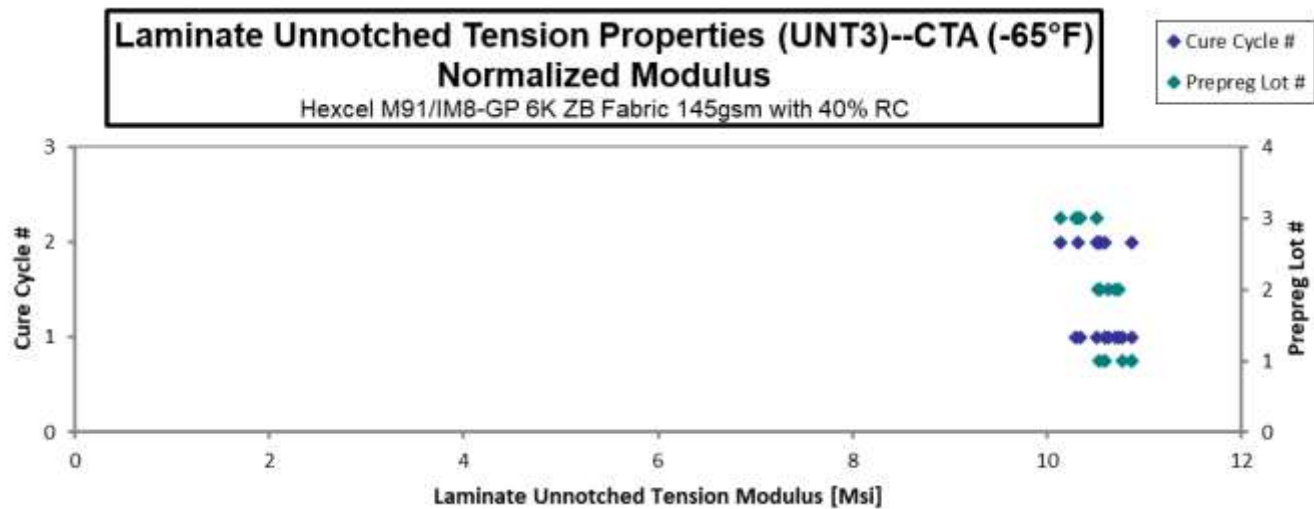
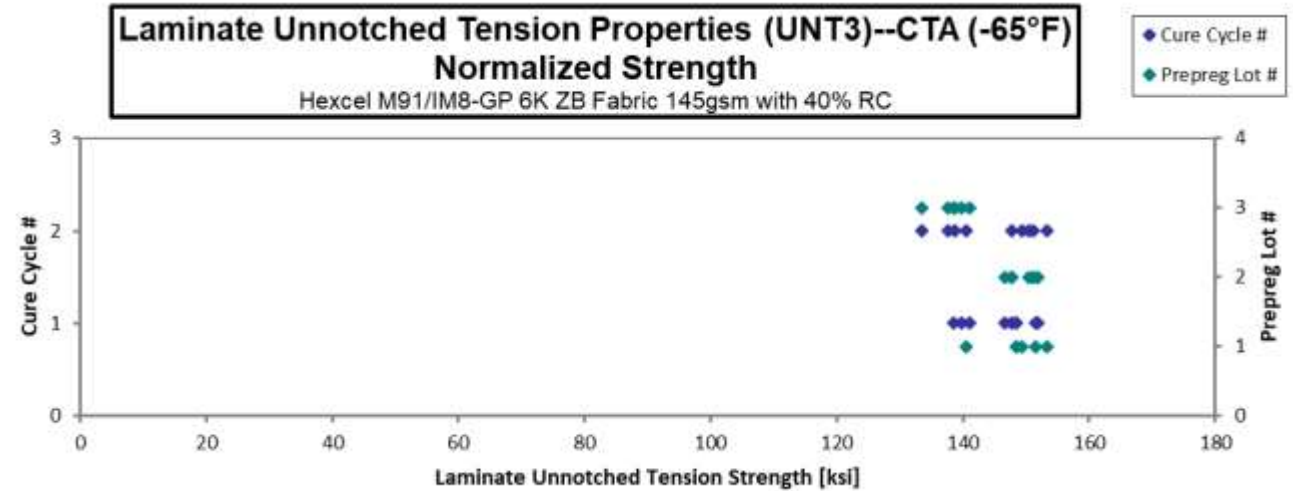
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-CTA-1	A	C1	1	1	149.0	10.42	0.09300	15	LGT, LWB	0.006200	151.5	10.59
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-CTA-2	A	C1	1	1	146.3	10.71	0.09287	15	LGT	0.006191	148.5	10.87
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-CTA-3	A	C1	1	1	146.9	10.66	0.09248	15	LAT, LAB	0.006166	148.4	10.77
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-CTA-1	A	C2	1	2	139.5	10.79	0.09215	15	LWT, LWB	0.006143	140.5	10.87
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-CTA-2	A	C2	1	2	151.9	10.44	0.09232	15	LGM	0.006154	153.3	10.54
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-CTA-3	A	C2	1	2	148.2	10.51	0.09218	15	LWT, LAB	0.006146	149.3	10.59
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-CTA-1	B	C1	2	1	145.4	10.17	0.09563	15	LWT, LAB	0.006376	151.9	10.63
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-CTA-2	B	C1	2	1	141.8	10.26	0.09538	15	LGM, LWB	0.006359	147.8	10.70
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-CTA-3	B	C1	2	1	140.4	10.28	0.09557	15	LGB, LWT	0.006371	146.7	10.74
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-CTA-1	B	C2	2	2	141.9	10.12	0.09535	15	LWT, LWB	0.006357	147.8	10.55
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-CTA-2	B	C2	2	2	144.6	10.11	0.09518	15	LGB, LWT	0.006346	150.5	10.52
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-CTA-3	B	C2	2	2	145.4	10.14	0.09510	15	LGT	0.006340	151.1	10.54
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-CTA-1	C	C1	3	1	140.3	10.56	0.09112	15	LGT	0.006074	139.8	10.51
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-CTA-2	C	C1	3	1	139.5	10.18	0.09253	15	LGT	0.006169	141.1	10.30
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-CTA-3	C	C1	3	1	136.1	10.16	0.09312	15	LGM	0.006208	138.5	10.34
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-CTA-1	C	C2	3	2	138.4	10.37	0.09105	15	LAT, LAB	0.006070	137.7	10.32
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-CTA-2	C	C2	3	2	138.3	10.48	0.09178	15	LWT, LGB	0.006119	138.8	10.51
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-CTA-3	C	C2	3	2	131.7	10.01	0.09268	15	LWB, LWT	0.006179	133.4	10.14

Average 142.5 10.35 0.09331
 Standard Dev. 5.075 0.2292 0.001600
 Coeff. of Var. [%] 3.560 2.214 1.715
 Min. 131.7 10.01 0.09105
 Max. 151.9 10.79 0.09563
 Number of Spec. 18 18 18

Average_{norm} 0.006220 145.4 10.56
 Standard Dev._{norm} 0.0001067 6.018 0.1960
 Coeff. of Var. [%]_{norm} 1.715 4.140 1.857
 Min. 0.006070 133.4 10.14
 Max. 0.006376 153.3 10.87
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

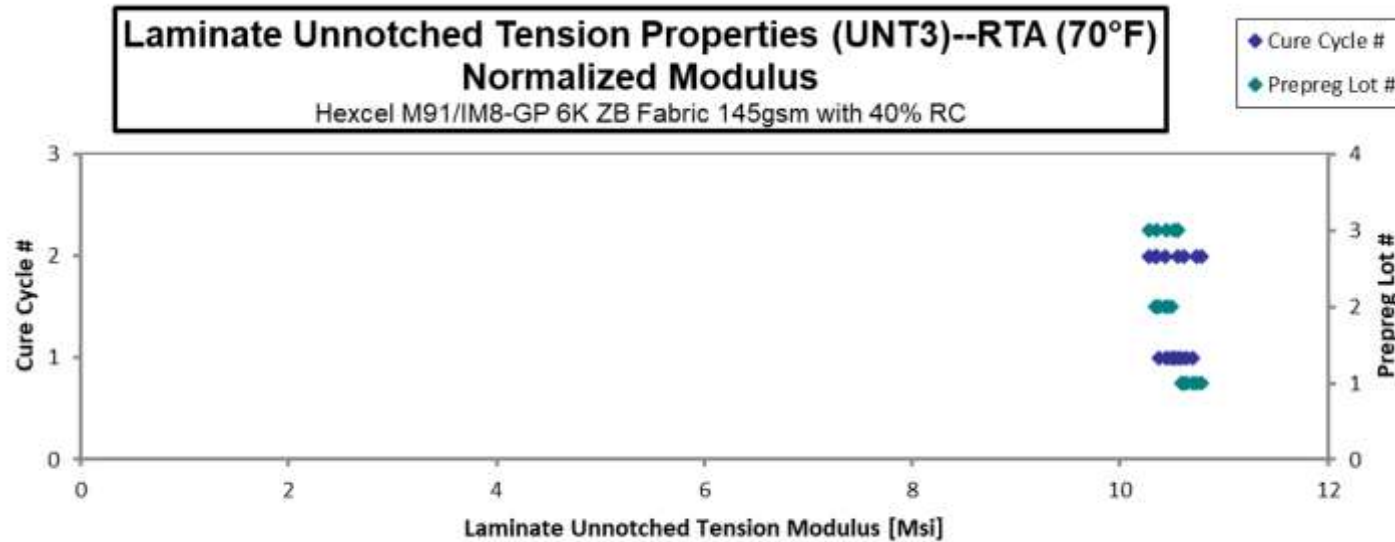
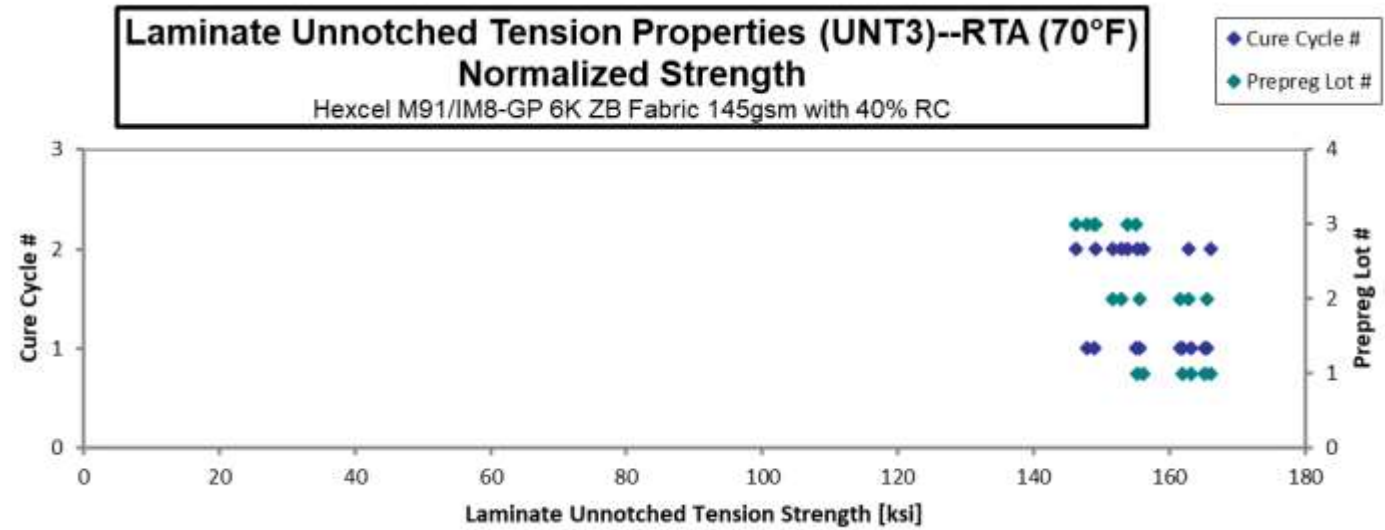
t_{ply} [in]
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-RTA-1	A	C1	1	1	161.8	10.50	0.09228	15	LIT,LGB
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-RTA-2	A	C1	1	1	159.9	10.56	0.09267	15	LGT,M(A,L)WB
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-RTA-3	A	C1	1	1	162.7	10.48	0.09283	15	LGB
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-RTA-1	A	C2	1	2	165.5	10.69	0.09185	15	LIT,LGB
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-RTA-2	A	C2	1	2	154.0	10.70	0.09223	15	LAT,LGB
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-RTA-3	A	C2	1	2	155.7	10.59	0.09175	15	LWT,LAB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-RTA-1	B	C1	2	1	154.6	10.00	0.09558	15	M(A,L)GT,LAB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-RTA-2	B	C1	2	1	149.9	9.993	0.09503	15	LGT,LAB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-RTA-3	B	C1	2	1	158.8	10.07	0.09535	15	LWT,LWB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-RTA-1	B	C2	2	2	147.1	9.955	0.09515	15	LWT,LAB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-RTA-2	B	C2	2	2	145.3	9.995	0.09550	15	LWT,LAB
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-RTA-3	B	C2	2	2	158.3	10.04	0.09418	15	LWT,M(A,L)GM
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-RTA-1	C	C1	3	1	146.7	10.35	0.09297	15	LWT, LWB
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-RTA-2	C	C1	3	1	153.3	10.32	0.09257	15	LGM
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-RTA-3	C	C1	3	1	145.2	10.36	0.09318	15	LGM
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-RTA-1	C	C2	3	2	147.8	10.26	0.09233	15	LWB, LWT
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-RTA-2	C	C2	3	2	144.8	10.45	0.09235	15	LWT, LGM
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-RTA-3	C	C2	3	2	153.0	10.23	0.09202	15	LWB, LWT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006152	163.2	10.59
0.006178	161.9	10.70
0.006189	165.1	10.64
0.006123	166.1	10.73
0.006149	155.2	10.79
0.006117	156.1	10.62
0.006372	161.5	10.45
0.006336	155.7	10.38
0.006357	165.5	10.50
0.006343	153.0	10.35
0.006367	151.7	10.43
0.006279	162.9	10.34
0.006198	149.0	10.52
0.006171	155.1	10.44
0.006212	147.9	10.55
0.006156	149.2	10.35
0.006157	146.2	10.55
0.006134	153.9	10.28

Average 153.6 10.31 0.09332
Standard Dev. 6.599 0.2528 0.001391
Coeff. of Var. [%] 4.297 2.453 1.491
Min. 144.8 9.955 0.09175
Max. 165.5 10.70 0.09558
Number of Spec. 18 18 18

Average_{norm} 0.006222 156.6 10.51
Standard Dev._{norm} 0.00009274 6.534 0.1451
Coeff. of Var. [%]_{norm} 1.491 4.172 1.381
Min. 0.006117 146.2 10.28
Max. 0.006372 166.1 10.79
Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

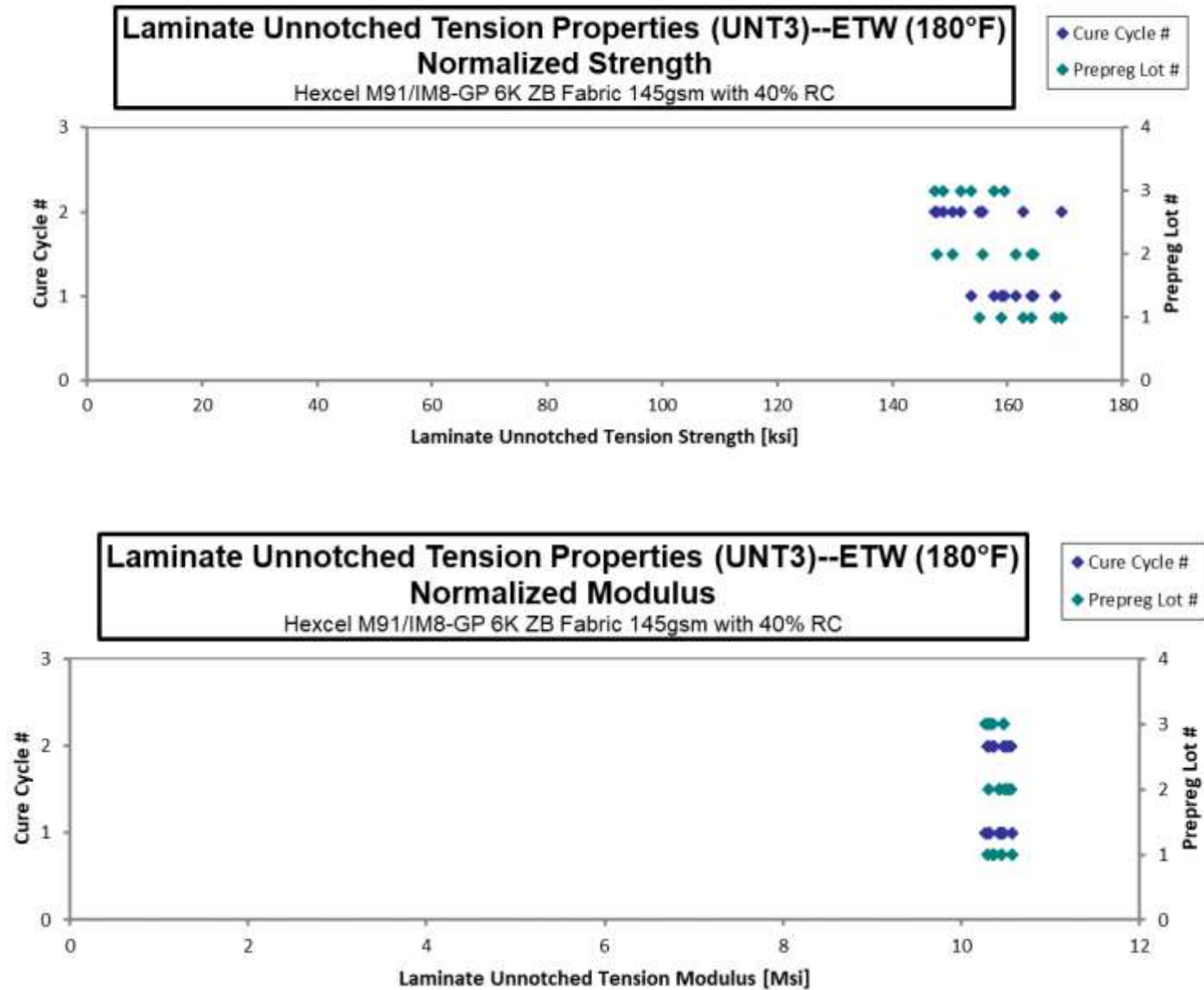
normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-ETW-1	A	C1	1	1	164.1	10.57	0.09153	15	LAB, LWT	0.006102	164.2	10.57
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-ETW-2	A	C1	1	1	156.7	10.30	0.09277	15	LGB, LWT	0.006184	158.8	10.45
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-ETW-3	A	C1	1	1	165.5	10.27	0.09308	15	LAB, LWT	0.006206	168.4	10.45
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-ETW-1	A	C2	1	2	153.6	10.27	0.09240	15	LAB, LGT, LWT	0.006160	155.1	10.37
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-ETW-2	A	C2	1	2	162.2	10.27	0.09173	15	LWB, LGM, LAT	0.006116	162.6	10.30
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C2-1-ETW-3	A	C2	1	2	167.0	10.21	0.09283	15	LAB, LWT	0.006189	169.4	10.36
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-ETW-1	B	C1	2	1	154.3	9.847	0.09575	15	LAB, LGB, LAT	0.006383	161.4	10.30
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-ETW-2	B	C1	2	1	157.5	10.00	0.09533	15	LWB, LAT	0.006356	164.1	10.42
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-ETW-3	B	C1	2	1	157.9	10.01	0.09533	15	LAB, LGB, LAT	0.006356	164.5	10.43
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-ETW-1	B	C2	2	2	149.4	10.09	0.09538	15	M(L,A)WB, LWT	0.006359	155.7	10.52
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-ETW-2	B	C2	2	2	141.7	10.13	0.09533	15	LWB, LGB, LWT	0.006356	147.7	10.55
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C2-1-ETW-3	B	C2	2	2	143.9	10.04	0.09558	15	LGB	0.006372	150.4	10.48
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-ETW-1	C	C1	3	1	152.3	10.38	0.09235	15	LAT, LGB	0.006157	153.7	10.48
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-ETW-2	C	C1	3	1	155.0	10.15	0.09308	15	LWT, LGB	0.006206	157.6	10.32
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-ETW-3	C	C1	3	1	156.6	10.10	0.09313	15	LGT, LIB	0.006209	159.4	10.28
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-ETW-1	C	C2	3	2	146.3	10.28	0.09222	15	LGB	0.006148	147.4	10.36
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-ETW-2	C	C2	3	2	150.4	10.37	0.09240	15	LAT, LGB	0.006160	151.8	10.47
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C2-1-ETW-3	C	C2	3	2	148.0	10.24	0.09205	15	LAT, LGB	0.006137	148.8	10.30

Average 154.6 10.20 0.09346
Standard Dev. 7.247 0.1685 0.001514
Coeff. of Var. [%] 4.689 1.653 1.620
Min. 141.7 9.847 0.09153
Max. 167.0 10.57 0.09575
Number of Spec. 18 18 18

Average_{norm} 0.006231 157.8 10.41
Standard Dev_{norm} 0.0001009 6.952 0.09184
Coeff. of Var. [%]_{norm} 1.620 4.404 0.8821
Min. 0.006102 147.4 10.28
Max. 0.006383 169.4 10.57
Number of Spec. 18 18 18



4.11 “25/50/25” Unnotched Compression 1 Properties (UNC1)

Laminate Unnotched Compression Properties (UNC1)--RTA (70°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

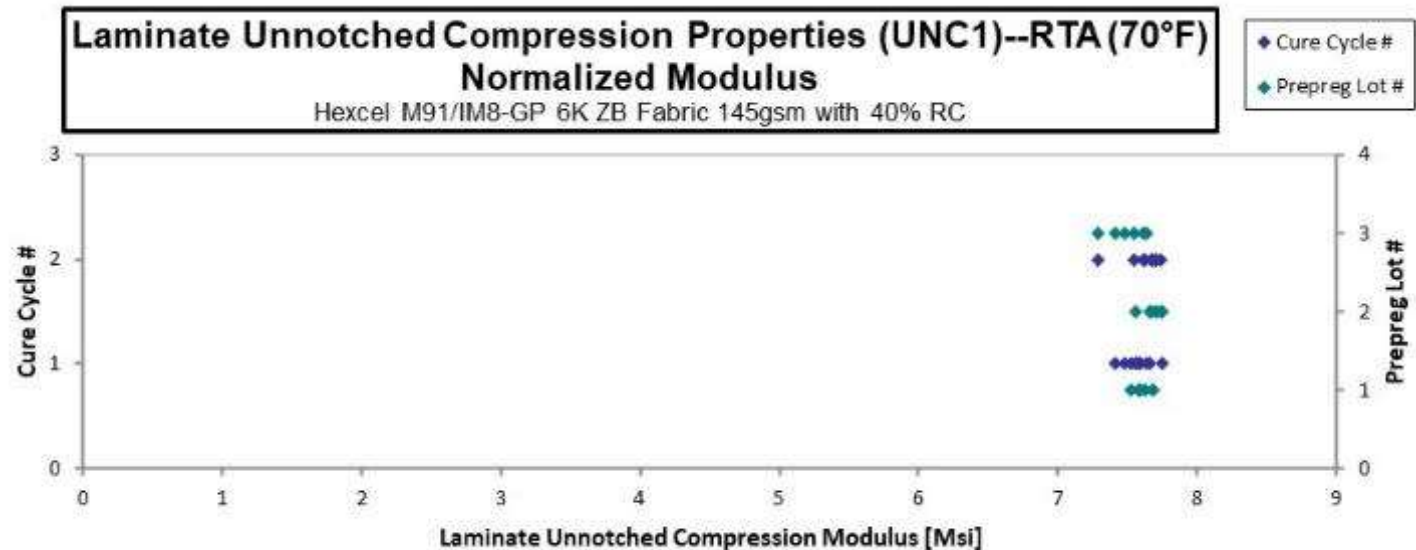
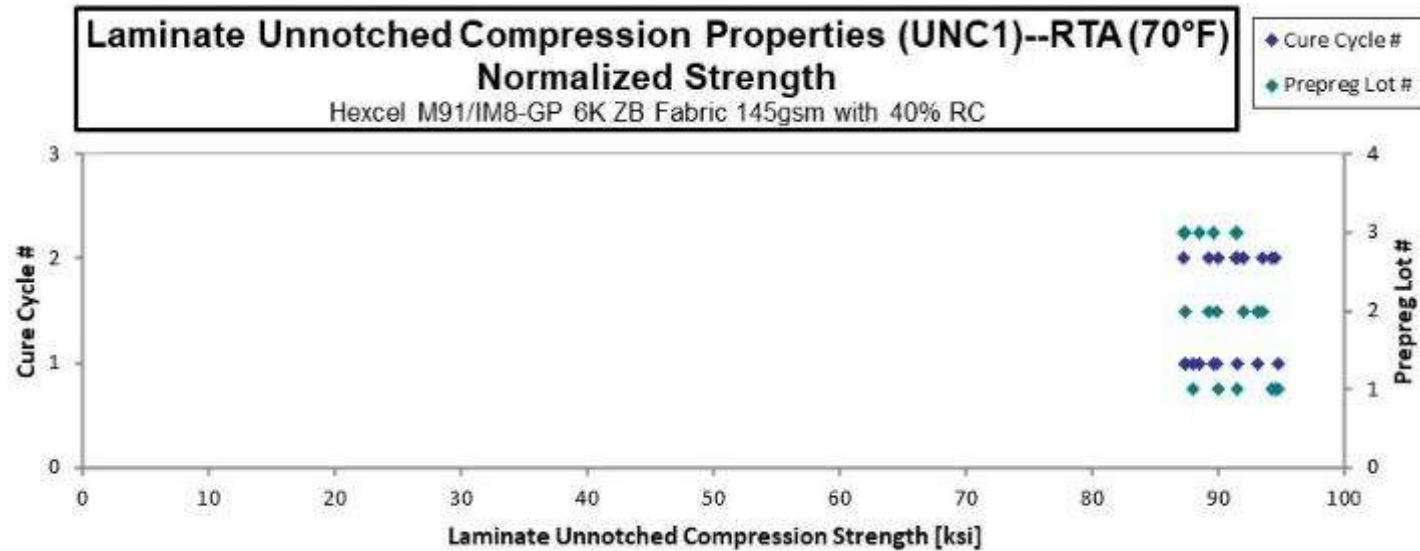
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-RTA-1*	A	C1	1	1	92.73	7.437	0.09970	16	BGM	0.006231	94.72	7.597
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-RTA-2*	A	C1	1	1	86.07	7.411	0.09980	16	BGM	0.006238	88.01	7.578
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-RTA-3	A	C1	1	1	89.66	7.372	0.09963	16	BGM	0.006227	91.52	7.525
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-RTA-1*	A	C2	1	2	92.48	7.523	0.09973	16	BGM	0.006233	94.50	7.688
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-RTA-2*	A	C2	1	2	88.45	7.551	0.09933	16	BGM	0.006208	90.02	7.686
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-RTA-3	A	C2	1	2	92.45	7.483	0.09943	16	BGM	0.006215	94.19	7.624
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-RTA-1*	B	C1	2	1	88.90	7.393	0.1023	16	BGM	0.006391	93.14	7.745
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-RTA-2*	B	C1	2	1	82.97	7.276	0.1028	16	BGM	0.006422	87.34	7.660
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-RTA-3	B	C1	2	1	85.71	7.217	0.1023	16	BAB	0.006392	89.80	7.562
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-RTA-1*	B	C2	2	2	85.21	7.325	0.1022	16	BGM	0.006386	89.21	7.669
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-RTA-2*	B	C2	2	2	87.70	7.351	0.1024	16	BGM	0.006397	91.97	7.708
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-RTA-3	B	C2	2	2	89.16	7.380	0.1023	16	BAT	0.006395	93.47	7.737
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-RTA-1*	C	C1	3	1	88.61	7.488	0.09742	16	BGM	0.006089	88.45	7.474
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-RTA-2*	C	C1	3	1	86.85	7.596	0.09813	16	BAB	0.006133	87.32	7.638
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-RTA-3	C	C1	3	1	89.10	7.378	0.09810	16	BAT	0.006131	89.56	7.415
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-RTA-1*	C	C2	3	2	91.70	7.569	0.09725	16	BAB	0.006078	91.37	7.542
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-RTA-2*	C	C2	3	2	91.23	7.589	0.09793	16	BGM	0.006121	91.54	7.614
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-RTA-3	C	C2	3	2	87.03	7.269	0.09790	16	BGM	0.006119	87.29	7.291

*Modulus are averaged values of 2 strain gages

Average	88.67	7.423	0.09992
Standard Dev.	2.760	0.1147	0.001946
Coeff. of Var. [%]	3.113	1.545	1.948
Min.	82.97	7.217	0.09725
Max.	92.73	7.596	0.1028
Number of Spec.	18	18	18

Average _{norm}	0.006245	90.75	7.597
Standard Dev. _{norm}	0.0001217	2.557	0.1171
Coeff. of Var. [%] _{norm}	1.948	2.818	1.541
Min.	0.006078	87.29	7.291
Max.	0.006422	94.72	7.745
Number of Spec.	18	18	18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

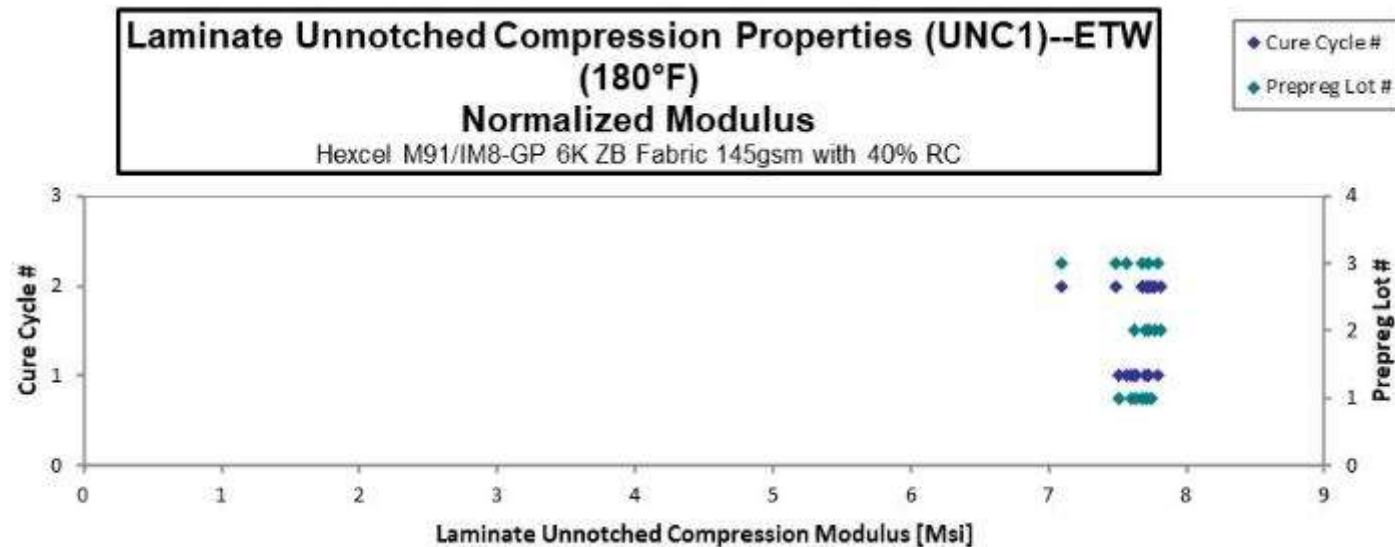
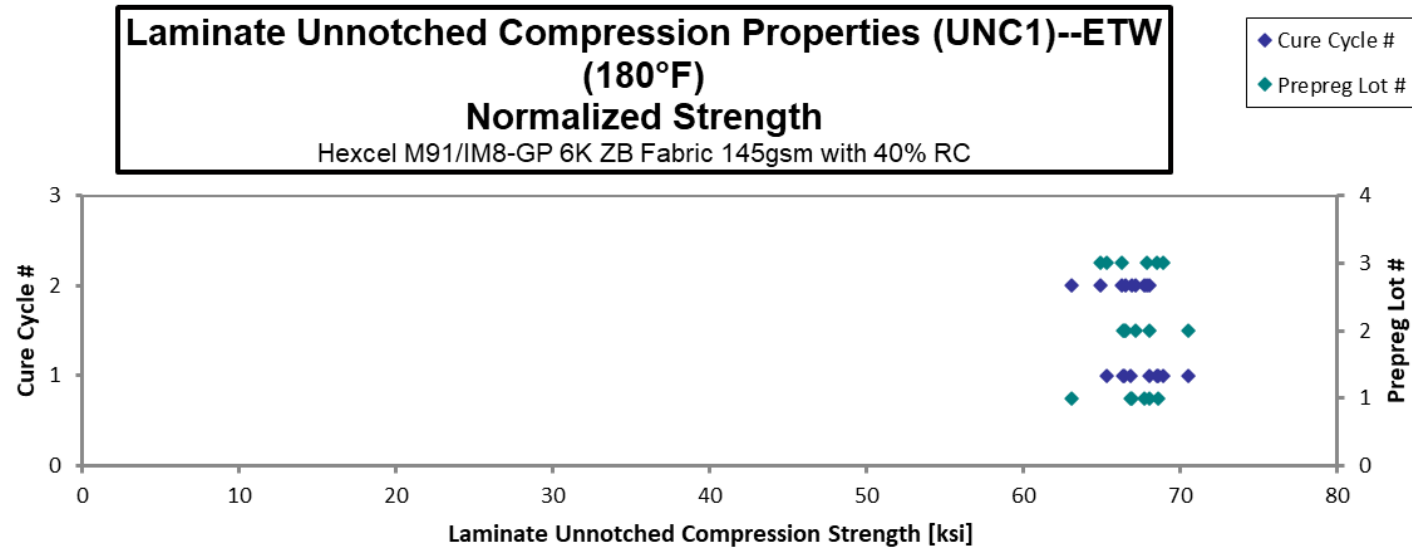
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-ETW-1	A	C1	1	1	67.91	7.525	0.09858	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-ETW-2	A	C1	1	1	65.45	7.478	0.09968	16	BGB
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-ETW-3	A	C1	1	1	66.75	7.373	0.09947	16	BGB
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-ETW-1	A	C2	1	2	62.77	7.705	0.09807	16	BGB
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-ETW-2	A	C2	1	2	65.43	7.539	0.09983	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-A-C2-1-ETW-3	A	C2	1	2	66.25	7.513	0.09972	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-ETW-1	B	C1	2	1	68.21	7.372	0.1009	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-ETW-2	B	C1	2	1	63.45	7.363	0.1020	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C1-1-ETW-3	B	C1	2	1	63.61	7.402	0.1019	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-ETW-1	B	C2	2	2	64.49	7.579	0.1006	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-ETW-2	B	C2	2	2	64.92	7.373	0.1022	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-B-C2-1-ETW-3	B	C2	2	2	64.22	7.425	0.1021	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-ETW-1	C	C1	3	1	65.11	7.537	0.09795	16	BAT
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-ETW-2	C	C1	3	1	68.33	7.764	0.09790	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C1-1-ETW-3	C	C1	3	1	68.60	7.684	0.09807	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-ETW-1	C	C2	3	2	64.67	7.071	0.09792	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-ETW-2	C	C2	3	2	67.57	7.652	0.09800	16	BGM
NTPM911Q1-HXL-H40-NIAR-UNC1-C-C2-1-ETW-3	C	C2	3	2	65.76	7.428	0.09837	16	BGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006161	68.59	7.601
0.006230	66.85	7.638
0.006217	68.02	7.514
0.006129	63.07	7.741
0.006240	66.93	7.711
0.006232	67.68	7.676
0.006303	70.48	7.618
0.006377	66.33	7.697
0.006370	66.43	7.729
0.006290	66.50	7.815
0.006389	67.99	7.721
0.006380	67.17	7.766
0.006122	65.34	7.564
0.006119	68.54	7.788
0.006129	68.93	7.721
0.006120	64.88	7.094
0.006125	67.84	7.684
0.006148	66.28	7.487

Average 65.75 7.488 0.09963
Standard Dev. 1.802 0.1624 0.001632
Coeff. of Var. [%] 2.740 2.169 1.638
Min. 62.77 7.071 0.09790
Max. 68.60 7.764 0.1022
Number of Spec. 18 18 18

Average_{norm} 0.006227 67.10 7.643
Standard Dev._{norm} 0.0001020 1.682 0.1639
Coeff. of Var. [%]_{norm} 1.638 2.507 2.144
Min. 0.006119 63.07 7.094
Max. 0.006389 70.48 7.815
Number of Spec. 18 18 18



4.12 “10/80/10” Unnotched Compression 2 Properties (UNC2)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

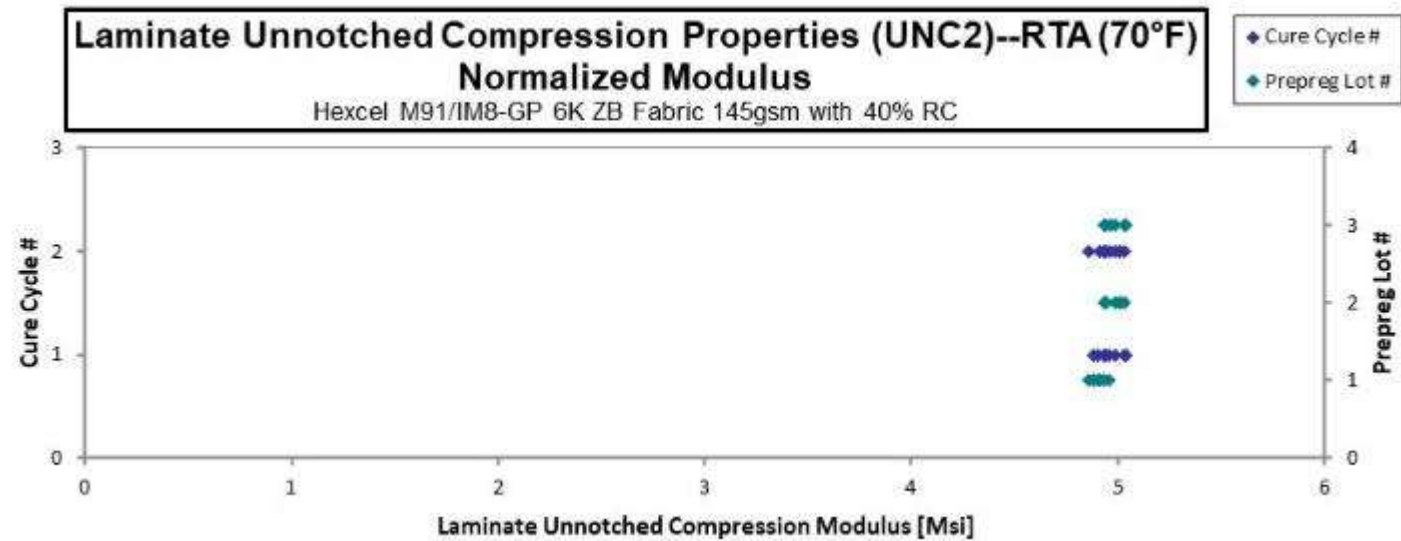
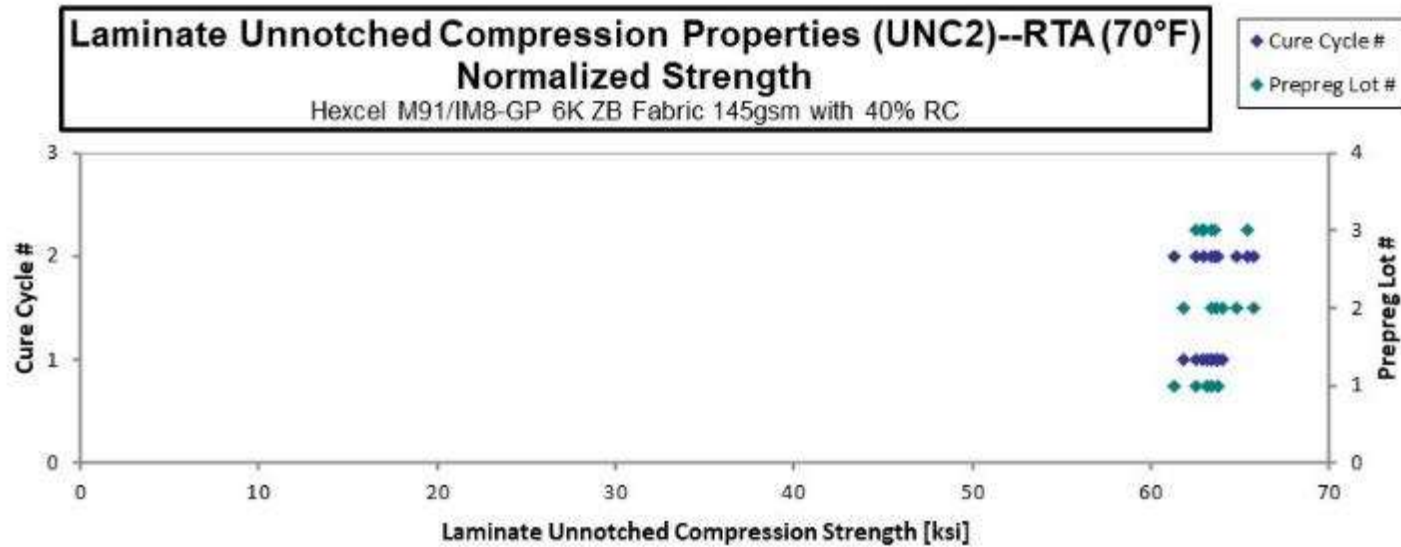
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-RTA-1*	A	C1	1	1	62.11	4.875	0.1241	20	BGM	0.006206	63.18	4.959
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-RTA-2*	A	C1	1	1	62.02	4.799	0.1248	20	BGM	0.006238	63.42	4.908
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-RTA-3	A	C1	1	1	62.30	4.770	0.1249	20	BGM	0.006244	63.77	4.883
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-RTA-1*	A	C2	1	2	61.40	4.843	0.1242	20	BGM	0.006211	62.52	4.931
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-RTA-2*	A	C2	1	2	62.81	4.838	0.1239	20	BGM	0.006193	63.77	4.912
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-RTA-3	A	C2	1	2	60.46	4.793	0.1237	20	BGM	0.006183	61.29	4.859
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-RTA-1*	B	C1	2	1	60.92	4.702	0.1283	20	BGM	0.006413	64.04	4.943
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-RTA-2*	B	C1	2	1	58.84	4.743	0.1283	20	BGM	0.006414	61.87	4.988
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-RTA-3	B	C1	2	1	60.57	4.693	0.1283	20	BGM	0.006414	63.69	4.935
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-RTA-1*	B	C2	2	2	61.39	4.763	0.1289	20	BGM	0.006445	64.86	5.032
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-RTA-2*	B	C2	2	2	62.35	4.750	0.1287	20	BGM	0.006434	65.77	5.010
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-RTA-3	B	C2	2	2	60.07	4.682	0.1289	20	BGM	0.006443	63.44	4.945
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-RTA-1*	C	C1	3	1	63.66	5.050	0.1216	20	BGM	0.006079	63.44	5.033
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-RTA-2*	C	C1	3	1	62.19	5.008	0.1228	20	BGM	0.006138	62.58	5.040
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-RTA-3	C	C1	3	1	62.22	4.881	0.1233	20	BAT	0.006165	62.88	4.933
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-RTA-1*	C	C2	3	2	65.26	4.975	0.1223	20	BGM	0.006114	65.41	4.987
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-RTA-2*	C	C2	3	2	62.57	4.930	0.1229	20	BGM	0.006144	63.02	4.966
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-RTA-3	C	C2	3	2	62.97	4.894	0.1232	20	BGM	0.006162	63.61	4.944

*Modulus are averaged values of 2 strain gages

Average 61.89 4.833 0.1252
Standard Dev. 1.444 0.1089 0.002594
Coeff. of Var. [%] 2.333 2.253 2.072
Min. 58.84 4.682 0.1216
Max. 65.26 5.050 0.1289
Number of Spec. 18 18 18

Average_{norm} 0.006258 63.48 4.956
Standard Dev._{norm} 0.0001297 1.117 0.05135
Coeff. of Var. [%]_{norm} 2.072 1.760 1.036
Min. 0.006079 61.29 4.859
Max. 0.006445 65.77 5.040
Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

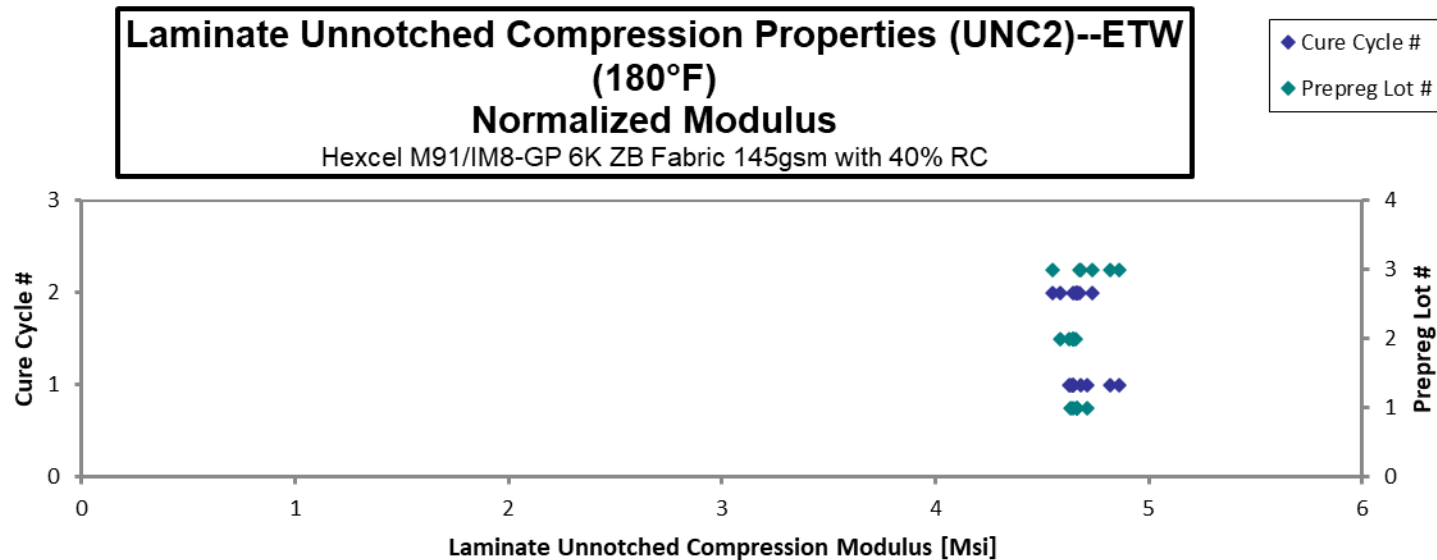
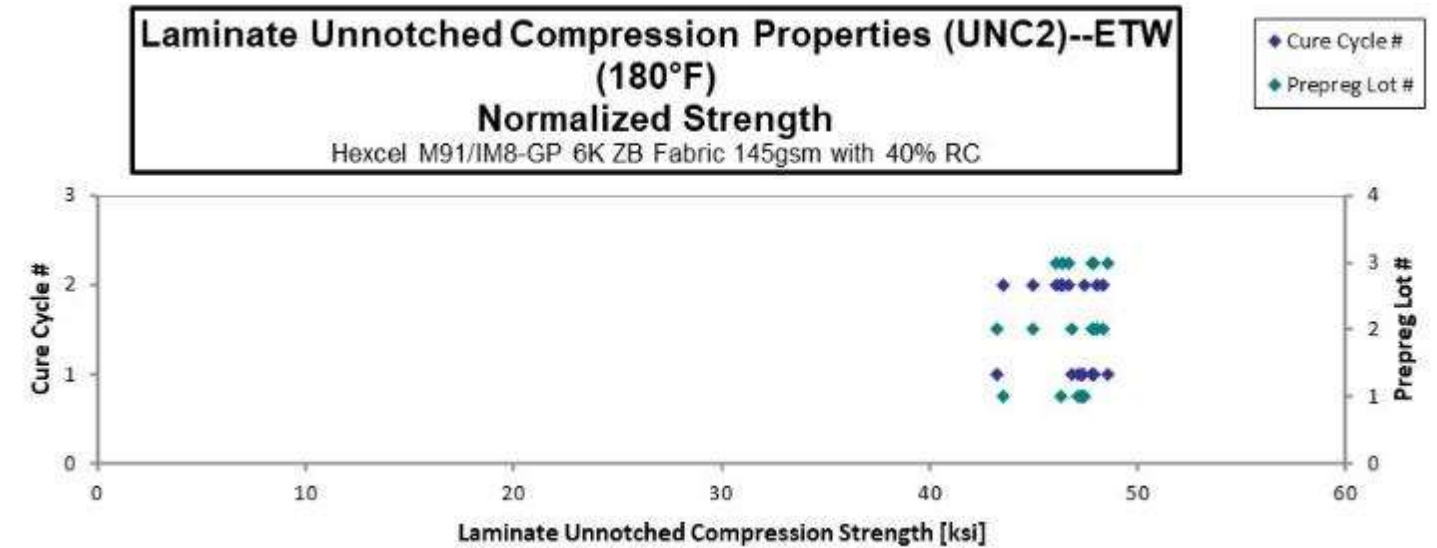
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-ETW-1	A	C1	1	1	46.87	4.603	0.1232	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-ETW-2	A	C1	1	1	46.07	4.527	0.1249	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-ETW-3	A	C1	1	1	46.24	4.600	0.1250	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-ETW-1	A	C2	1	2	42.78	4.584	0.1241	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-ETW-2	A	C2	1	2	46.61	4.580	0.1242	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-A-C2-1-ETW-3	A	C2	1	2	45.49	4.583	0.1242	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-ETW-1	B	C1	2	1	41.66	4.458	0.1266	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-ETW-2	B	C1	2	1	45.54	4.423	0.1281	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-ETW-3	B	C1	2	1	44.60	4.428	0.1281	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C1-1-ETW-4*	B	C1	2	1	45.78		0.1277	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-ETW-1	B	C2	2	2	43.43	4.429	0.1263	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-ETW-2	B	C2	2	2	45.89	4.422	0.1285	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-B-C2-1-ETW-3	B	C2	2	2	45.64	4.413	0.1284	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-ETW-1	C	C1	3	1	47.36	4.632	0.1233	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-ETW-2	C	C1	3	1	48.07	4.766	0.1233	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C1-1-ETW-3	C	C1	3	1	47.32	4.813	0.1233	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-ETW-1	C	C2	3	2	45.95	4.689	0.1232	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-ETW-2	C	C2	3	2	46.29	4.636	0.1230	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC2-C-C2-1-ETW-3	C	C2	3	2	45.67	4.506	0.1232	20	BGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006159	47.33	4.648
0.006247	47.17	4.636
0.006251	47.39	4.714
0.006207	43.53	4.664
0.006208	47.44	4.661
0.006209	46.31	4.665
0.006332	43.24	4.628
0.006403	47.80	4.643
0.006403	46.82	4.648
0.006383	47.91	
0.006313	44.94	4.584
0.006423	48.31	4.655
0.006419	48.03	4.643
0.006167	47.88	4.682
0.006167	48.60	4.819
0.006163	47.81	4.863
0.006159	46.40	4.734
0.006152	46.68	4.675
0.006158	46.10	4.549

*Specimen was not gaged, only strength is tested

Average	45.65	4.561	0.1252
Standard Dev.	1.587	0.1207	0.002075
Coeff. of Var. [%]	3.477	2.647	1.657
Min.	41.66	4.413	0.1230
Max.	48.07	4.813	0.1285
Number of Spec.	19	18	19

Average _{norm}	0.006259	46.83	4.673
Standard Dev. _{norm}	0.0001037	1.497	0.07410
Coeff. of Var. [%] _{norm}	1.657	3.196	1.586
Min.	0.006152	43.24	4.549
Max.	0.006423	48.60	4.863
Number of Spec.	19	19	18



4.13 “40/20/40” Unnotched Compression 3 Properties (UNC3)

Laminate Unnotched Compression Properties (UNC3)--RTA (70°F) Strength & Modulus

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-RTA-1***	A	C1	1	1	104.6	9.438	0.1243	20	BGM	0.006213	106.5	9.612
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-RTA-2***	A	C1	1	1	104.0	9.282	0.1245	20	BGM, HAB	0.006226	106.2	9.473
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-RTA-3	A	C1	1	1	100.5	9.339	0.1241	20	BGM	0.006206	102.3	9.502
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-RTA-1***	A	C2	1	2	106.5	9.399	0.1243	20	BAT	0.006215	108.6	9.576
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-RTA-2**	A	C2	1	2		9.324	0.1245	20	CIT, CIB	0.006224		9.514
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-RTA-3	A	C2	1	2	102.7	9.321	0.1245	20	BAB, HIB	0.006225	104.8	9.512
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-RTA-4**	A	C2	1	2	107.2		0.1241	20	HAB	0.006205	109.0	
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-RTA-1**	B	C1	2	1		9.224	0.1283	20	HIT	0.006417		9.702
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-RTA-2***	B	C1	2	1	100.4	9.221	0.1285	20	M(B,H)AB, HIB	0.006424	105.7	9.711
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-RTA-3	B	C1	2	1	101.5	9.152	0.1286	20	BGM, HAB, HIB	0.006430	107.0	9.647
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-RTA-1***	B	C2	2	2	96.27	9.166	0.1280	20	BGM	0.006400	101.0	9.617
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-RTA-2***	B	C2	2	2	94.76	9.059	0.1316	20	BGM	0.006580	102.2	9.772
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-RTA-3	B	C2	2	2	92.19	9.158	0.1287	20	BGM	0.006433	97.22	9.657
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-RTA-1***	C	C1	3	1	99.96	9.464	0.1222	20	BGM	0.006111	100.1	9.481
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-RTA-2***	C	C1	3	1	104.1	9.365	0.1228	20	BGM	0.006138	104.7	9.424
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-RTA-3	C	C1	3	1	91.58	9.181	0.1232	20	BGM	0.006158	92.46	9.269
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-RTA-1**	C	C2	3	2		9.543	0.1218	20	M(C,H)IT	0.006091		9.529
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-RTA-2***	C	C2	3	2	101.7	9.438	0.1228	20	BGM	0.006138	102.3	9.497
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-RTA-3	C	C2	3	2	100.4	9.161	0.1234	20	BGM	0.006168	101.6	9.262
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-RTA-4**	C	C2	3	2	97.33		0.1234	20	BGM	0.006172	98.48	

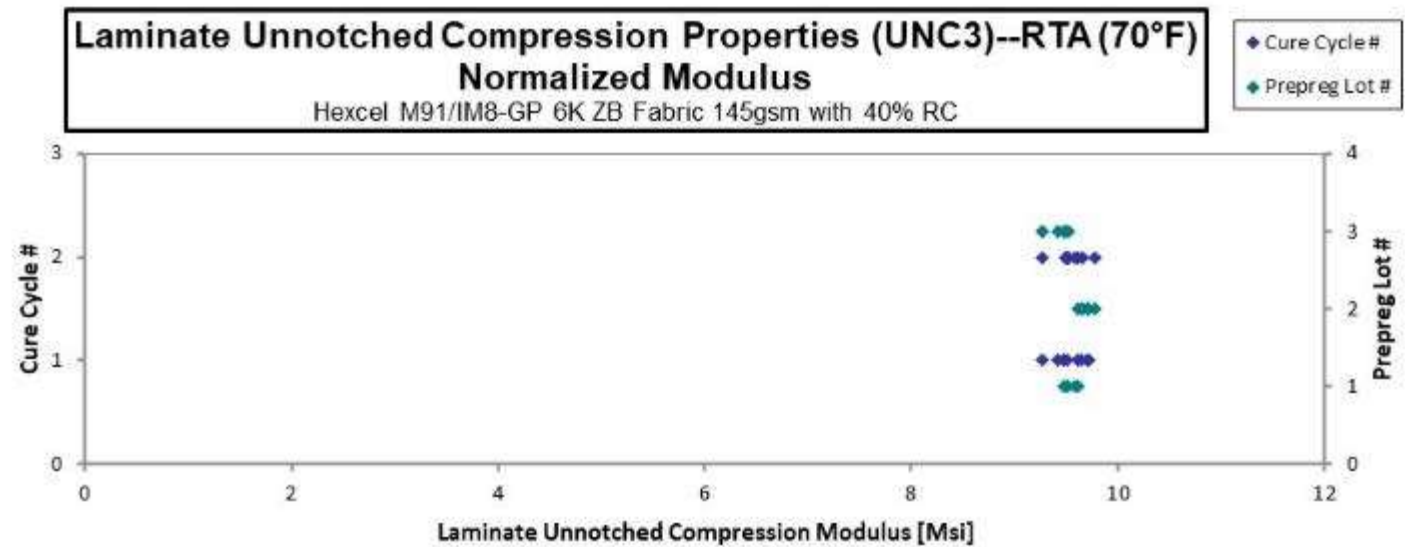
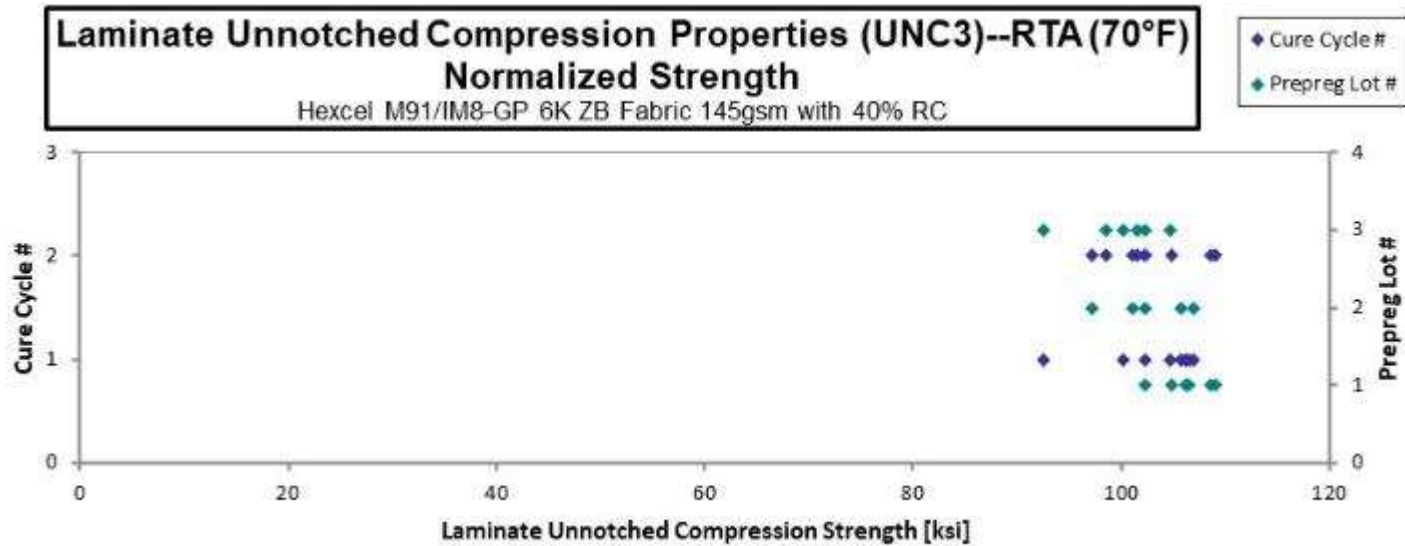
*Strength not reported due to unacceptable failure mode

**Specimen was not gaged, only strength is tested

***Modulus are averaged values of 2 strain gages

Average 100.3 9.291 0.1252
Standard Dev. 4.607 0.1335 0.002727
Coeff. of Var. [%] 4.591 1.437 2.178
Min. 91.58 9.059 0.1218
Max. 107.2 9.543 0.1316
Number of Spec. 17 18 20

Average_{norm} 0.006259 102.9 9.542
Standard Dev_{norm} 0.0001363 4.326 0.1381
Coeff. of Var. [%]_{norm} 2.178 4.202 1.447
Min. 0.006091 92.46 9.262
Max. 0.006580 109.0 9.772
Number of Spec. 20 17 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

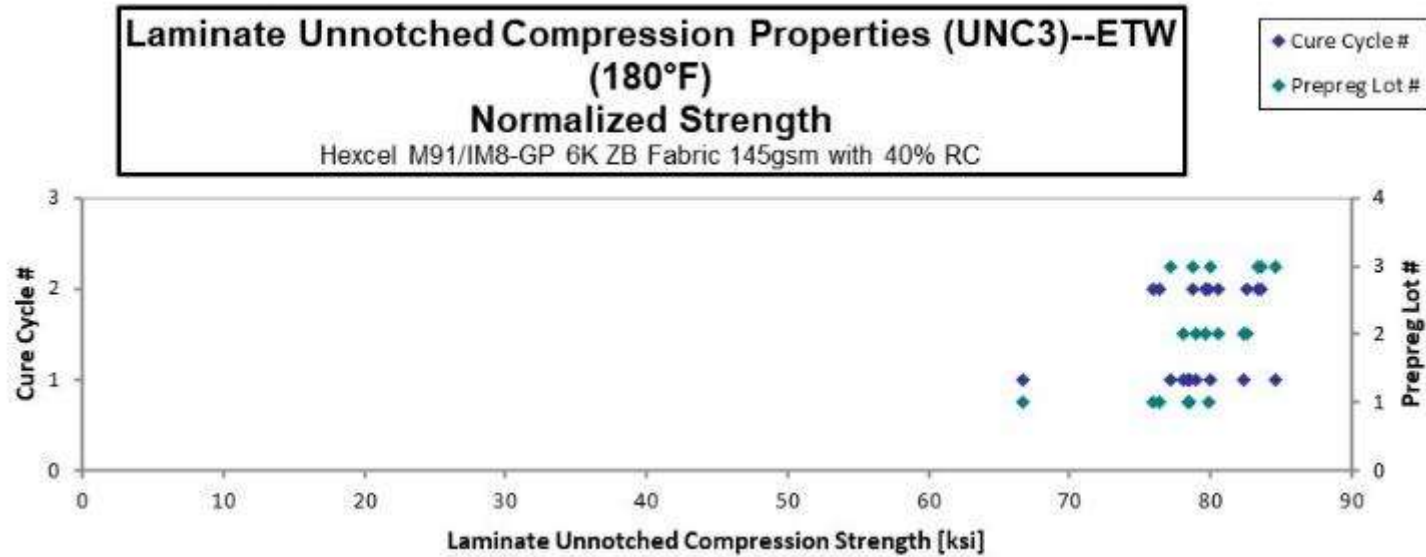
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-ETW-1	A	C1	1	1	77.34	9.630	0.1236	20	BGB, HAB
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-ETW-2	A	C1	1	1	65.58	9.501	0.1241	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-ETW-3	A	C1	1	1	77.05	9.676	0.1243	20	BGT, HIB, HAT
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-ETW-1	A	C2	1	2	78.84	9.615	0.1236	20	HAT, HIT
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-ETW-2	A	C2	1	2	74.26	9.513	0.1248	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC3-A-C2-1-ETW-3	A	C2	1	2	74.70	9.542	0.1248	20	BGT, HIT
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-ETW-1	B	C1	2	1	75.96	9.422	0.1268	20	BGT, HAT
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-ETW-2	B	C1	2	1	74.09	9.384	0.1286	20	BGB, HAB
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C1-1-ETW-3	B	C1	2	1	78.00	9.563	0.1288	20	HAB
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-ETW-1	B	C2	2	2	77.05	9.471	0.1261	20	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-ETW-2	B	C2	2	2	78.31	9.533	0.1286	20	HAB, HIB
NTPM911Q1-HXL-H40-NIAR-UNC3-B-C2-1-ETW-3	B	C2	2	2	76.59	9.257	0.1283	20	BGT, HIT
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-ETW-1	C	C1	3	1	76.38	9.463	0.1233	20	BAT
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-ETW-2	C	C1	3	1	78.98	9.627	0.1235	20	BAB
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C1-1-ETW-3	C	C1	3	1	83.74	9.456	0.1232	20	BGM
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-ETW-1	C	C2	3	2	77.84	9.726	0.1233	20	M(H,B)AB
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-ETW-2	C	C2	3	2	82.44	9.787	0.1234	20	BAT
NTPM911Q1-HXL-H40-NIAR-UNC3-C-C2-1-ETW-3	C	C2	3	2	82.84	9.691	0.1231	20	BGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.006181	78.36	9.757
0.006206	66.72	9.666
0.006214	78.49	9.857
0.006180	79.87	9.741
0.006238	75.94	9.728
0.006238	76.39	9.758
0.006342	78.97	9.795
0.006430	78.10	9.892
0.006438	82.33	10.09
0.006305	79.64	9.789
0.006431	82.56	10.05
0.006416	80.56	9.737
0.006166	77.21	9.565
0.006175	79.95	9.745
0.006160	84.57	9.549
0.006167	78.69	9.832
0.006172	83.41	9.902
0.006156	83.60	9.780

Average 77.22 9.548 0.1251
Standard Dev. 4.003 0.1319 0.002140
Coeff. of Var. [%] 5.184 1.382 1.711
Min. 65.58 9.257 0.1231
Max. 83.74 9.787 0.1288
Number of Spec. 18 18 18

Average_{norm} 0.006256 79.19 9.791
Standard Dev._{norm} 0.0001070 3.992 0.1386
Coeff. of Var. [%]_{norm} 1.711 5.042 1.415
Min. 0.006156 66.72 9.549
Max. 0.006438 84.57 10.09
Number of Spec. 18 18 18



4.14 “25/50/25” Open-Hole Tension 1 Properties (OHT1)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

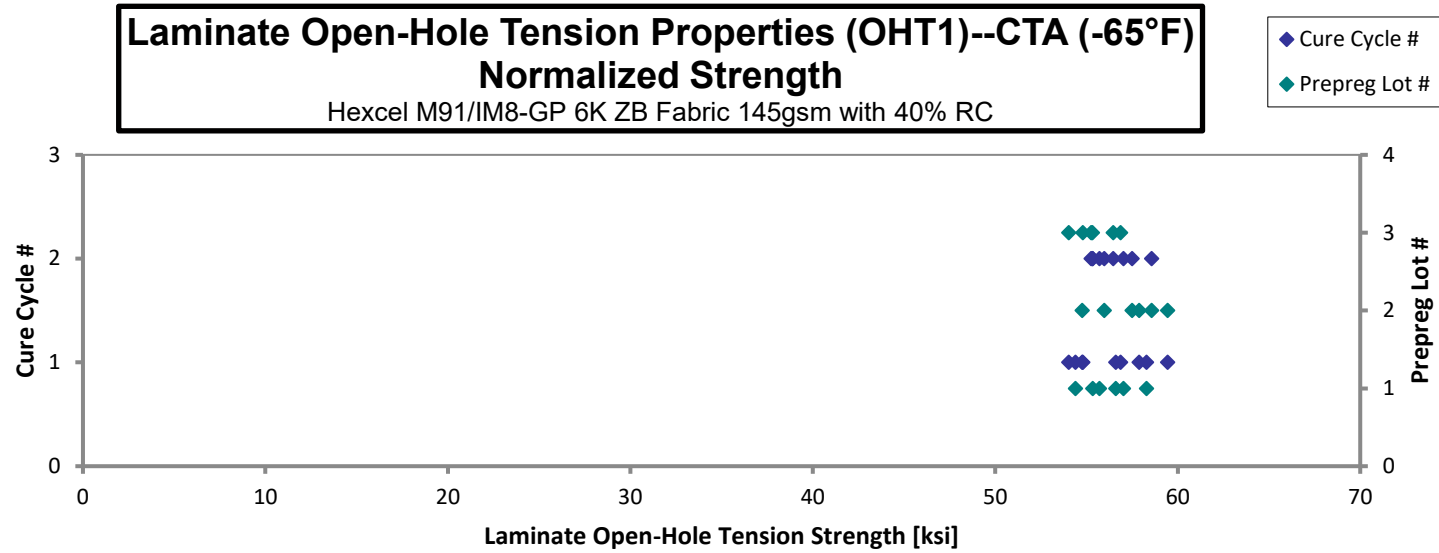
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-CTA-1	A	C1	1	1	53.66	0.09895	16	LGM	0.006184	54.40
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-CTA-2	A	C1	1	1	55.77	0.09907	16	LGM	0.006192	56.61
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-CTA-3	A	C1	1	1	57.26	0.09935	16	LGM	0.006209	58.28
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-CTA-1	A	C2	1	2	54.29	0.09950	16	LGM	0.006219	55.35
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-CTA-2	A	C2	1	2	54.11	0.1005	16	LGM	0.006281	55.72
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-CTA-3	A	C2	1	2	55.88	0.09960	16	LGM	0.006225	57.03
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-CTA-1	B	C1	2	1	57.31	0.1012	16	LGM	0.006327	59.44
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-CTA-2	B	C1	2	1	53.04	0.1008	16	LGM	0.006299	54.77
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-CTA-3	B	C1	2	1	56.01	0.1009	16	LGM	0.006305	57.89
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-CTA-1	B	C2	2	2	55.19	0.1017	16	LGM	0.006356	57.51
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-CTA-2	B	C2	2	2	53.64	0.1019	16	LGM	0.006367	55.98
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-CTA-3	B	C2	2	2	56.52	0.1012	16	LGM	0.006322	58.57
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-CTA-1	C	C1	3	1	54.31	0.09710	16	LGM	0.006069	54.04
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-CTA-2	C	C1	3	1	56.44	0.09835	16	LGM	0.006147	56.88
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-CTA-3	C	C1	3	1	54.27	0.09855	16	LGM	0.006159	54.80
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-CTA-1	C	C2	3	2	56.31	0.09787	16	LGM	0.006117	56.46
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-CTA-2	C	C2	3	2	54.80	0.09843	16	LGM	0.006152	55.26
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-CTA-3	C	C2	3	2	54.73	0.09865	16	LGM	0.006166	55.32

Average 55.20 0.09964
 Standard Dev. 1.287 0.001402
 Coeff. of Var. [%] 2.332 1.407
 Min. 53.04 0.09710
 Max. 57.31 0.1019
 Number of Spec. 18 18

Average_{norm} 0.006228 56.35
 Standard Dev._{norm} 0.00008762 1.546
 Coeff. of Var. [%]_{norm} 1.407 2.743
 Min. 0.006069 54.04
 Max. 0.006367 59.44
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

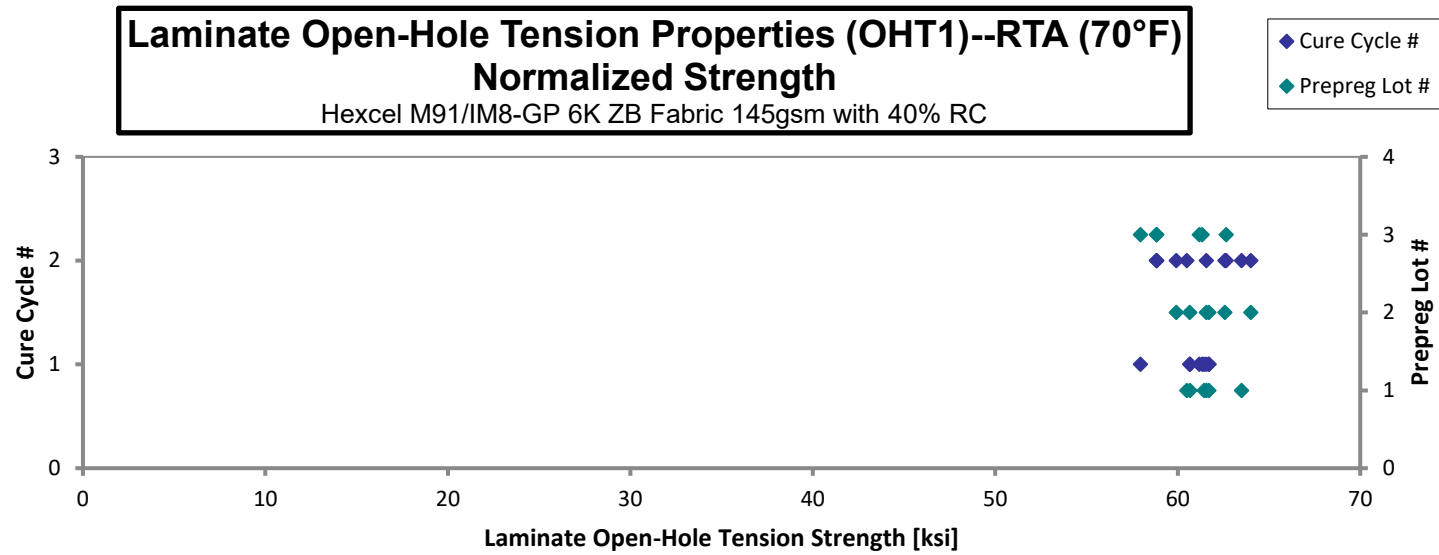
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-RTA-1	A	C1	1	1	60.87	0.09895	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-RTA-2	A	C1	1	1	60.35	0.09938	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-RTA-3	A	C1	1	1	59.68	0.09923	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-RTA-1	A	C2	1	2	62.14	0.09973	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-RTA-2	A	C2	1	2	59.10	0.09990	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-RTA-3	A	C2	1	2	60.27	0.09970	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-RTA-1	B	C1	2	1	59.65	0.1008	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-RTA-2	B	C1	2	1	58.26	0.1016	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-RTA-3	B	C1	2	1	59.95	0.1005	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-RTA-1	B	C2	2	2	60.39	0.1012	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-RTA-2	B	C2	2	2	57.81	0.1012	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-RTA-3	B	C2	2	2	62.00	0.1008	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-RTA-1	C	C1	3	1	60.60	0.09853	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-RTA-2	C	C1	3	1	60.66	0.09870	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-RTA-3	C	C1	3	1	57.17	0.09893	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-RTA-1	C	C2	3	2	58.15	0.09875	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-RTA-2	C	C2	3	2	58.09	0.09888	16	LGM
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-RTA-3	C	C2	3	2	62.13	0.09843	16	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.006184	61.71
0.006211	61.45
0.006202	60.68
0.006233	63.50
0.006244	60.50
0.006231	61.56
0.006297	61.58
0.006351	60.66
0.006279	61.71
0.006322	62.58
0.006323	59.92
0.006297	64.00
0.006158	61.18
0.006169	61.35
0.006183	57.95
0.006172	58.84
0.006180	58.86
0.006152	62.66

Average 59.85 0.09972
Standard Dev. 1.506 0.001022
Coeff. of Var. [%] 2.516 1.025
Min. 57.17 0.09843
Max. 62.14 0.1016
Number of Spec. 18 18

Average_{norm} 0.006233 61.15
Standard Dev._{norm} 0.00006387 1.578
Coeff. of Var. [%]_{norm} 1.025 2.581
Min. 0.006152 57.95
Max. 0.006351 64.00
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

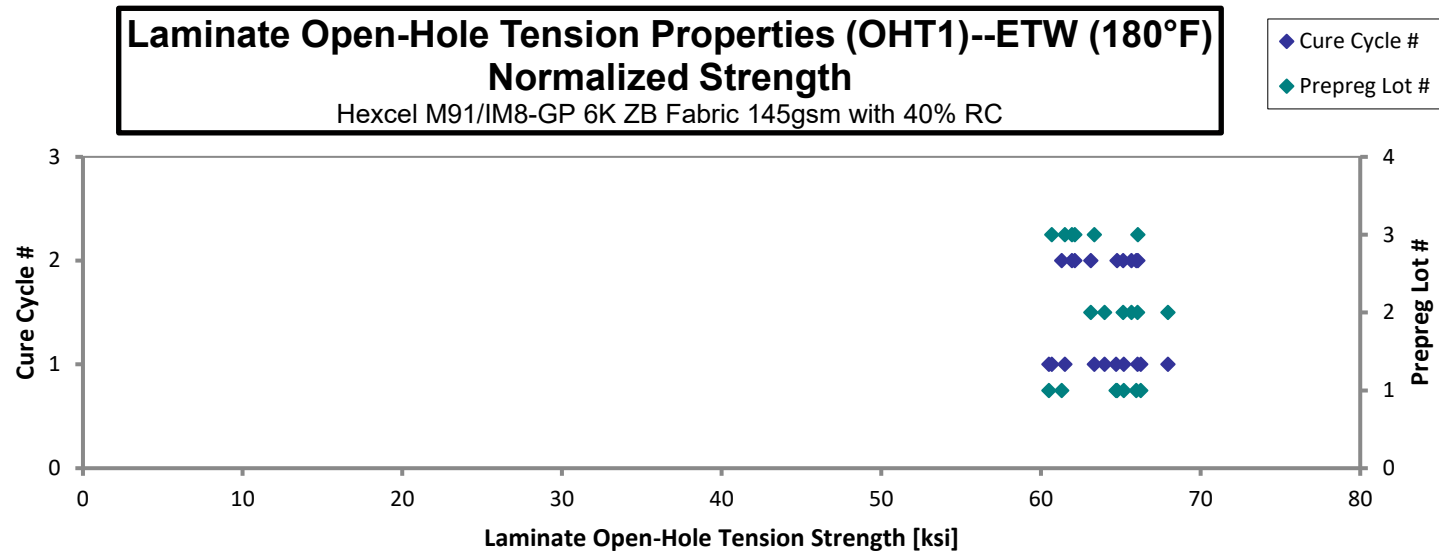
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-ETW-1	A	C1	1	1	64.11	0.09927	16	LGM	0.006204	65.20
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-ETW-2	A	C1	1	1	63.78	0.09903	16	LGM	0.006190	64.71
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-ETW-3	A	C1	1	1	65.30	0.09902	16	LGM	0.006189	66.25
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-ETW-4	A	C1	1	1	59.83	0.09870	16	LGM	0.006169	60.50
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-ETW-1	A	C2	1	2	63.66	0.09932	16	LGM	0.006207	64.78
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-ETW-2	A	C2	1	2	65.17	0.09880	16	LGM	0.006175	65.98
NTPM911Q1-HXL-H40-NIAR-OHT1-A-C2-1-ETW-3	A	C2	1	2	60.35	0.09915	16	LGM	0.006197	61.30
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-ETW-1	B	C1	2	1	61.05	0.1023	16	LGM	0.006394	63.99
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-ETW-2	B	C1	2	1	63.30	0.1019	16	LGM	0.006366	66.06
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C1-1-ETW-3	B	C1	2	1	65.35	0.1015	16	LGM	0.006343	67.96
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-ETW-1	B	C2	2	2	60.97	0.1011	16	LGM	0.006316	63.12
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-ETW-2	B	C2	2	2	62.91	0.1011	16	LGM	0.006317	65.15
NTPM911Q1-HXL-H40-NIAR-OHT1-B-C2-1-ETW-3	B	C2	2	2	63.56	0.1009	16	LGM	0.006303	65.68
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-ETW-1	C	C1	3	1	60.58	0.09777	16	LGM	0.006110	60.68
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-ETW-2	C	C1	3	1	62.95	0.09822	16	LGM	0.006139	63.35
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C1-1-ETW-3	C	C1	3	1	61.07	0.09832	16	LGM	0.006145	61.52
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-ETW-1	C	C2	3	2	65.85	0.09793	16	LGM	0.006121	66.08
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-ETW-2	C	C2	3	2	61.10	0.09925	16	LGM	0.006203	62.14
NTPM911Q1-HXL-H40-NIAR-OHT1-C-C2-1-ETW-3	C	C2	3	2	61.17	0.09885	16	LGM	0.006178	61.96

Average 62.74 0.09959
 Standard Dev. 1.925 0.001387
 Coeff. of Var. [%] 3.068 1.392
 Min. 59.83 0.09777
 Max. 65.85 0.1023
 Number of Spec. 19 19

Average_{norm} 0.006224 64.02
 Standard Dev._{norm} 0.00008666 2.178
 Coeff. of Var. [%]_{norm} 1.392 3.402
 Min. 0.006110 60.50
 Max. 0.006394 67.96
 Number of Spec. 19 19



4.15 “10/80/10” Open-Hole Tension 2 Properties (OHT2)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

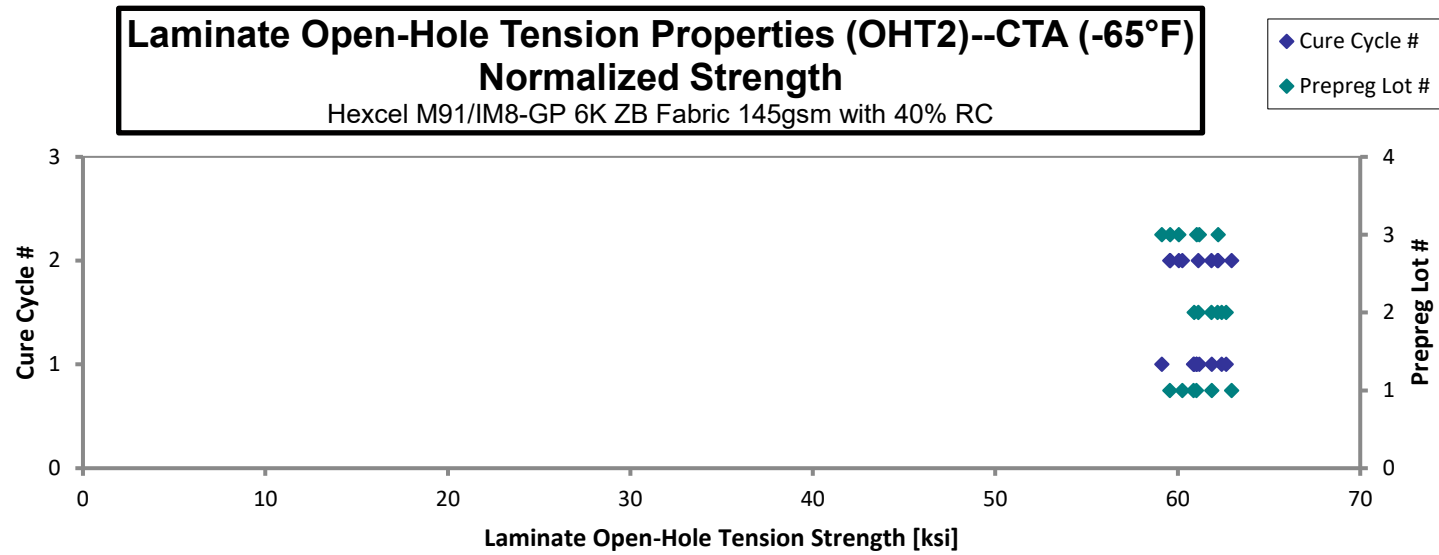
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-CTA-1	A	C1	1	1	61.00	0.1237	20	M(A,L)GM	0.006187	61.86
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-CTA-2	A	C1	1	1	59.96	0.1242	20	M(A,L)GM	0.006208	61.02
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-CTA-3	A	C1	1	1	59.75	0.1243	20	M(A,L)GM	0.006214	60.87
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-CTA-1	A	C2	1	2	59.50	0.1222	20	M(A,L)GM	0.006108	59.58
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-CTA-2	A	C2	1	2	62.61	0.1227	20	M(A,L)GM	0.006134	62.96
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-CTA-3	A	C2	1	2	59.80	0.1229	20	AGM	0.006147	60.26
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-CTA-1	B	C1	2	1	59.72	0.1280	20	M(A,L)GM	0.006401	62.66
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-CTA-2	B	C1	2	1	58.31	0.1274	20	M(A,L)GM	0.006371	60.90
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-CTA-3	B	C1	2	1	59.67	0.1276	20	M(A,L)GM	0.006381	62.42
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-CTA-1	B	C2	2	2	59.32	0.1272	20	M(A,L)GM	0.006360	61.85
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-CTA-2	B	C2	2	2	58.75	0.1269	20	M(A,L)GM	0.006347	61.13
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-CTA-3	B	C2	2	2	59.79	0.1269	20	M(A,L)GM	0.006344	62.18
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-CTA-1	C	C1	3	1	61.02	0.1221	20	AGM	0.006103	61.05
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-CTA-2	C	C1	3	1	58.23	0.1239	20	AGM	0.006194	59.13
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-CTA-3	C	C1	3	1	60.56	0.1233	20	AGM	0.006163	61.18
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-CTA-1	C	C2	3	2	59.18	0.1228	20	AGM	0.006142	59.59
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-CTA-2	C	C2	3	2	61.36	0.1237	20	M(A,L)GM	0.006185	62.21
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-CTA-3	C	C2	3	2	59.22	0.1237	20	M(A,L)GM	0.006186	60.06

Average 59.88 0.1246
 Standard Dev. 1.100 0.002073
 Coeff. of Var. [%] 1.837 1.663
 Min. 58.23 0.1221
 Max. 62.61 0.1280
 Number of Spec. 18 18

Average_{norm} 0.006232 61.16
 Standard Dev._{norm} 0.0001037 1.125
 Coeff. of Var. [%]_{norm} 1.663 1.839
 Min. 0.006103 59.13
 Max. 0.006401 62.96
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

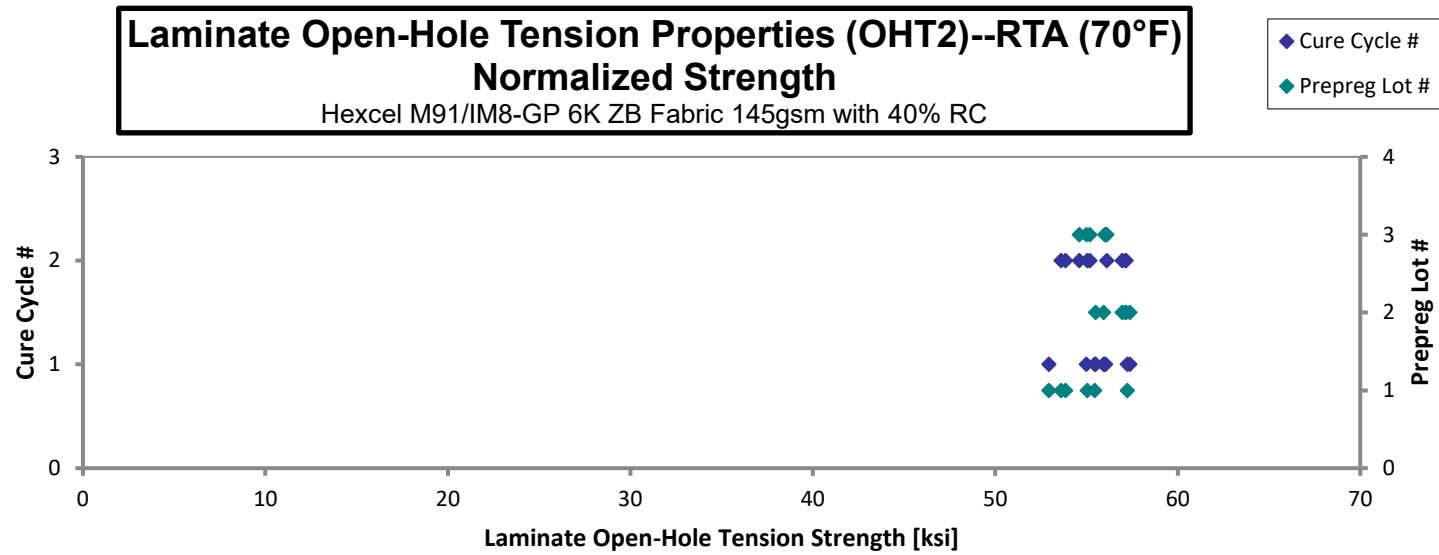
normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-RTA-1	A	C1	1	1	54.54	0.1240	20	AGM	0.006202	55.45
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-RTA-2	A	C1	1	1	51.92	0.1244	20	AGM	0.006219	52.93
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-RTA-3	A	C1	1	1	56.12	0.1245	20	AGM	0.006223	57.25
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-RTA-1	A	C2	1	2	53.39	0.1231	20	AGM	0.006153	53.86
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-RTA-2	A	C2	1	2	54.53	0.1231	20	AGM	0.006157	55.04
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-RTA-3	A	C2	1	2	53.25	0.1228	20	AGM	0.006140	53.60
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-RTA-1	B	C1	2	1	54.93	0.1274	20	AGM	0.006372	57.37
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-RTA-2	B	C1	2	1	52.90	0.1280	20	AGM	0.006401	55.51
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-RTA-3	B	C1	2	1	53.69	0.1271	20	AGM	0.006355	55.93
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-RTA-1	B	C2	2	2	54.93	0.1270	20	AGM	0.006348	57.16
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-RTA-2	B	C2	2	2	54.67	0.1271	20	AGM	0.006356	56.96
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-RTA-3	B	C2	2	2	55.01	0.1267	20	AGM	0.006335	57.13
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-RTA-1	C	C1	3	1	54.22	0.1238	20	AGM	0.006188	55.00
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-RTA-2	C	C1	3	1	54.91	0.1244	20	AGM	0.006222	56.00
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-RTA-3	C	C1	3	1	55.45	0.1233	20	AGM	0.006165	56.04
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-RTA-1	C	C2	3	2	54.19	0.1243	20	AGM	0.006213	55.19
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-RTA-2	C	C2	3	2	55.45	0.1235	20	AGM	0.006173	56.11
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-RTA-3	C	C2	3	2	53.92	0.1236	20	AGM	0.006178	54.61

Average 54.33 0.1249
Standard Dev. 1.027 0.001780
Coeff. of Var. [%] 1.891 1.425
Min. 51.92 0.1228
Max. 56.12 0.1280
Number of Spec. 18 18

Average_{norm} 0.006244 55.62
Standard Dev._{norm} 0.00008899 1.311
Coeff. of Var. [%]_{norm} 1.425 2.357
Min. 0.006140 52.93
Max. 0.006401 57.37
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

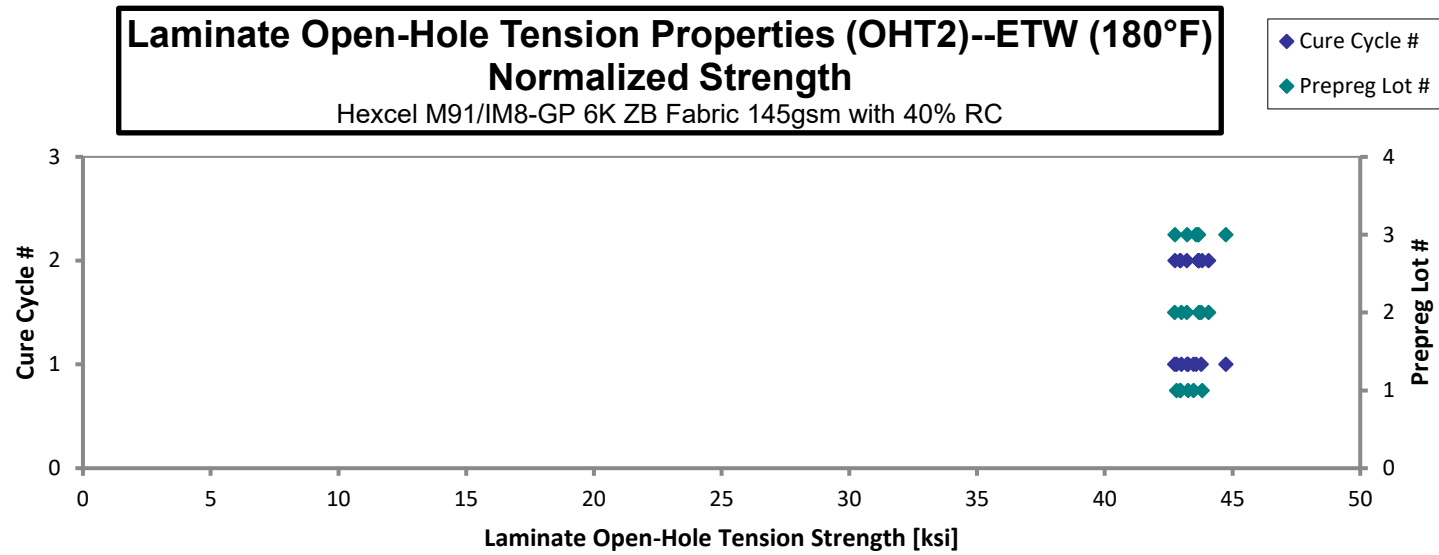
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-ETW-1	A	C1	1	1	42.45	0.1244	20	AGM	0.006218	43.26
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-ETW-2	A	C1	1	1	42.20	0.1238	20	AGM	0.006189	42.82
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-ETW-3	A	C1	1	1	42.84	0.1238	20	AGM	0.006191	43.48
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-ETW-1	A	C2	1	2	42.49	0.1233	20	AGM	0.006166	42.95
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-ETW-2	A	C2	1	2	42.60	0.1231	20	AGM	0.006153	42.96
NTPM911Q1-HXL-H40-NIAR-OHT2-A-C2-1-ETW-3	A	C2	1	2	43.37	0.1233	20	AGM	0.006163	43.82
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-ETW-1	B	C1	2	1	41.99	0.1272	20	AGM	0.006361	43.78
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-ETW-2	B	C1	2	1	41.44	0.1266	20	AGM	0.006329	43.00
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C1-1-ETW-3	B	C1	2	1	41.11	0.1268	20	AGM	0.006341	42.74
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-ETW-1	B	C2	2	2	42.20	0.1274	20	AGM	0.006371	44.07
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-ETW-2	B	C2	2	2	41.81	0.1275	20	AGM	0.006374	43.69
NTPM911Q1-HXL-H40-NIAR-OHT2-B-C2-1-ETW-3	B	C2	2	2	41.48	0.1271	20	AGM	0.006356	43.22
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-ETW-1	C	C1	3	1	43.48	0.1223	20	LGM	0.006113	43.58
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-ETW-2	C	C1	3	1	44.00	0.1241	20	LGM	0.006203	44.75
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C1-1-ETW-3	C	C1	3	1	42.64	0.1237	20	LGM	0.006184	43.22
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-ETW-1	C	C2	3	2	43.59	0.1222	20	AGM	0.006110	43.66
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-ETW-2	C	C2	3	2	42.21	0.1236	20	AGM	0.006178	42.75
NTPM911Q1-HXL-H40-NIAR-OHT2-C-C2-1-ETW-3	C	C2	3	2	43.24	0.1232	20	AGM	0.006160	43.66

Average 42.51 0.1246
Standard Dev. 0.8024 0.001892
Coeff. of Var. [%] 1.888 1.518
Min. 41.11 0.1222
Max. 44.00 0.1275
Number of Spec. 18 18

Average_{norm} 0.006231 43.41
Standard Dev._{norm} 0.00009459 0.5246
Coeff. of Var. [%]_{norm} 1.518 1.208
Min. 0.006110 42.74
Max. 0.006374 44.75
Number of Spec. 18 18



4.16 “40/20/40” Open-Hole Tension 3 Properties (OHT3)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

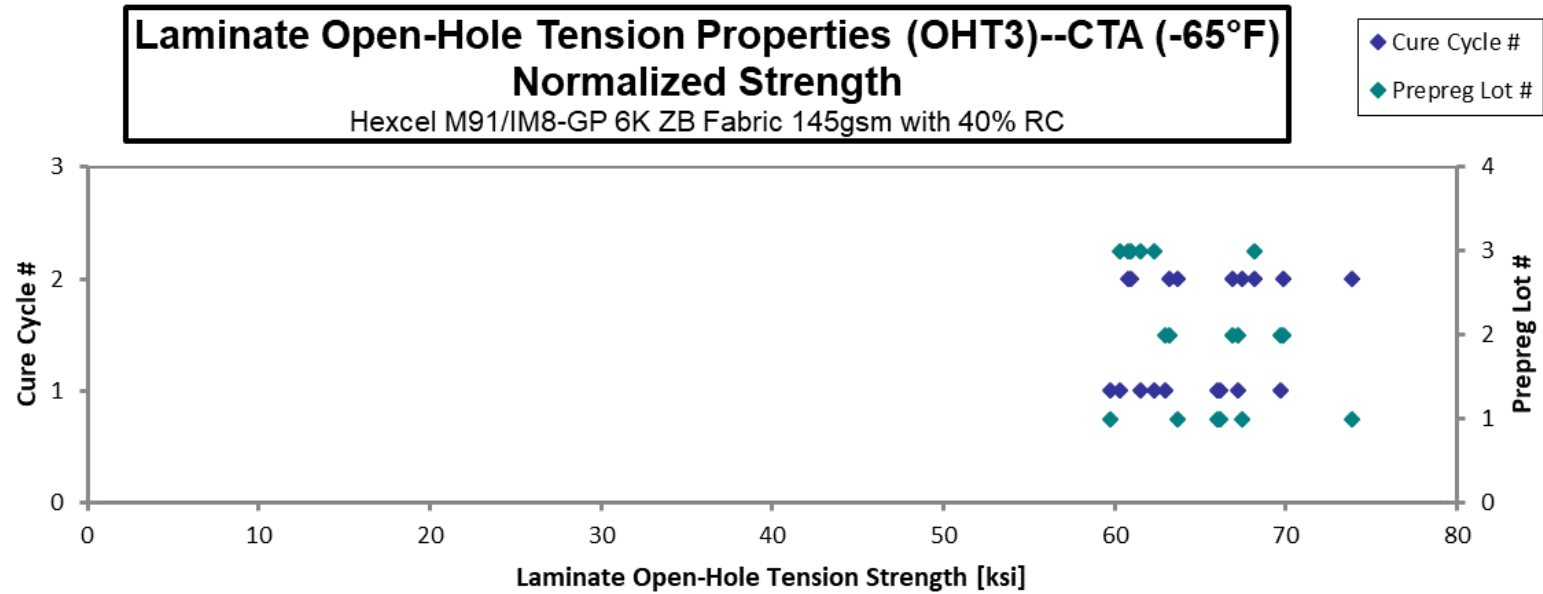
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-CTA-1	A	C1	1	1	58.66	0.09313	15	LGM	0.006209	59.71
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-CTA-2	A	C1	1	1	64.74	0.09347	15	LGM	0.006231	66.13
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-CTA-3	A	C1	1	1	64.71	0.09330	15	LGM	0.006220	65.98
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-CTA-1	A	C2	1	2	66.70	0.09255	15	LGM	0.006170	67.46
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-CTA-2	A	C2	1	2	72.34	0.09342	15	LGM	0.006228	73.85
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-CTA-3	A	C2	1	2	62.55	0.09320	15	LGM	0.006213	63.71
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-CTA-1	B	C1	2	1	67.31	0.09468	15	LGM	0.006312	69.65
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-CTA-2	B	C1	2	1	64.91	0.09468	15	LGM	0.006312	67.17
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-CTA-3	B	C1	2	1	61.03	0.09433	15	LGM	0.006289	62.92
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-CTA-1	B	C2	2	2	60.99	0.09478	15	LGM	0.006319	63.18
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-CTA-2	B	C2	2	2	64.70	0.09460	15	LGM	0.006307	66.89
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-CTA-3	B	C2	2	2	67.45	0.09480	15	LGM	0.006320	69.88
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-CTA-1	C	C1	3	1	61.61	0.09132	15	LGM	0.006088	61.49
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-CTA-2	C	C1	3	1	61.48	0.09275	15	LGM	0.006183	62.32
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-CTA-3	C	C1	3	1	59.72	0.09238	15	LGM	0.006159	60.29
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-CTA-1	C	C2	3	2	60.62	0.09197	15	LGM	0.006131	60.93
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-CTA-2	C	C2	3	2	67.18	0.09283	15	LGM	0.006189	68.16
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-CTA-3	C	C2	3	2	60.22	0.09235	15	LGM	0.006157	60.78

Average 63.72 0.09336
 Standard Dev. 3.559 0.001073
 Coeff. of Var. [%] 5.586 1.149
 Min. 58.66 0.09132
 Max. 72.34 0.09480
 Number of Spec. 18 18

Average_{norm} 0.006224 65.03
 Standard Dev._{norm} 0.00007154 3.939
 Coeff. of Var. [%]_{norm} 1.149 6.058
 Min. 0.006088 59.71
 Max. 0.006320 73.85
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

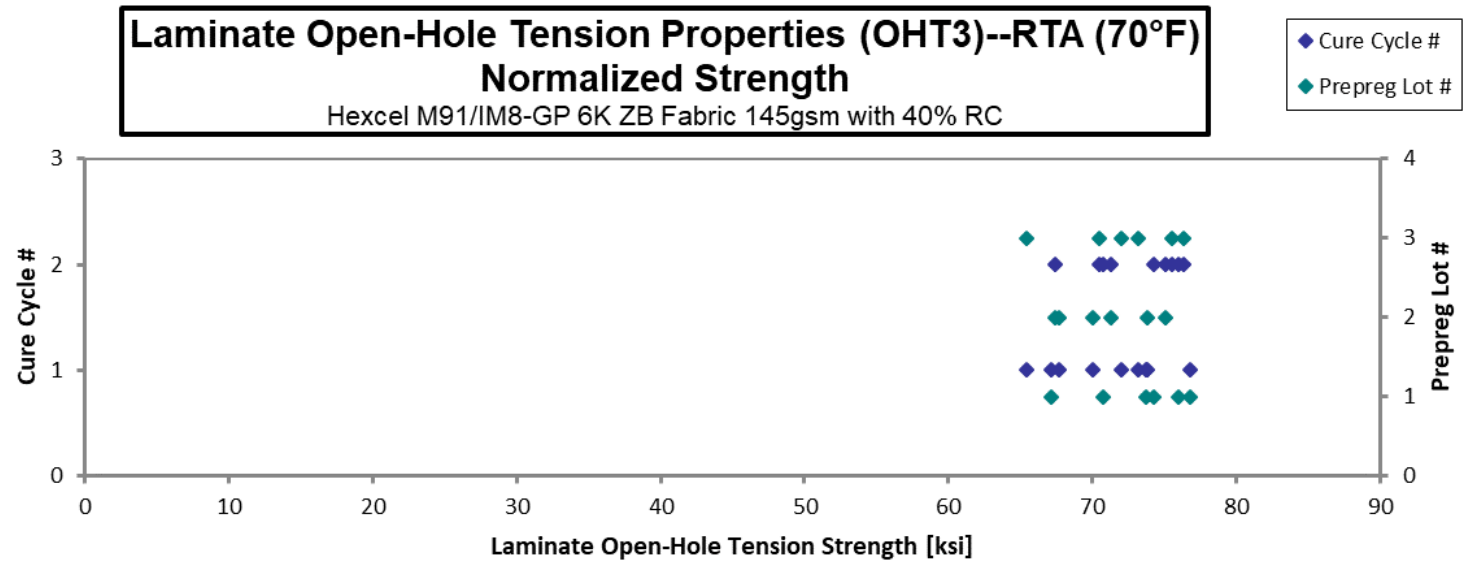
normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-RTA-1	A	C1	1	1	72.37	0.09320	15	LGM	0.006213	73.72
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-RTA-2	A	C1	1	1	66.04	0.09303	15	LGM	0.006202	67.14
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-RTA-3	A	C1	1	1	75.23	0.09343	15	LGM	0.006229	76.82
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-RTA-1	A	C2	1	2	69.54	0.09308	15	LGM	0.006206	70.74
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-RTA-2	A	C2	1	2	72.75	0.09337	15	LGM	0.006224	74.23
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-RTA-3	A	C2	1	2	74.76	0.09303	15	LGM	0.006202	76.02
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-RTA-1	B	C1	2	1	71.58	0.09440	15	LGM	0.006293	73.85
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-RTA-2	B	C1	2	1	67.79	0.09457	15	LGM	0.006304	70.06
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-RTA-3	B	C1	2	1	65.50	0.09458	15	LGM	0.006306	67.70
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-RTA-1	B	C2	2	2	64.95	0.09495	15	LGM	0.006330	67.40
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-RTA-2	B	C2	2	2	72.49	0.09480	15	LGM	0.006320	75.11
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-RTA-3	B	C2	2	2	68.74	0.09493	15	LGM	0.006329	71.32
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-RTA-1	C	C1	3	1	64.75	0.09247	15	LGM	0.006164	65.44
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-RTA-2	C	C1	3	1	71.63	0.09195	15	LGM	0.006130	71.98
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-RTA-3	C	C1	3	1	72.19	0.09275	15	LGM	0.006183	73.17
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-RTA-1	C	C2	3	2	74.92	0.09225	15	LGM	0.006150	75.54
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-RTA-2	C	C2	3	2	69.58	0.09272	15	LGM	0.006181	70.50
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-RTA-3	C	C2	3	2	75.21	0.09285	15	LGM	0.006190	76.32

Average 70.56 0.09346
Standard Dev. 3.607 0.0009792
Coeff. of Var. [%] 5.111 1.048
Min. 64.75 0.09195
Max. 75.23 0.09495
Number of Spec. 18 18

Average_{norm} 0.006231 72.06
Standard Dev._{norm} 0.00006528 3.491
Coeff. of Var. [%]_{norm} 1.048 4.845
Min. 0.006130 65.44
Max. 0.006330 76.82
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

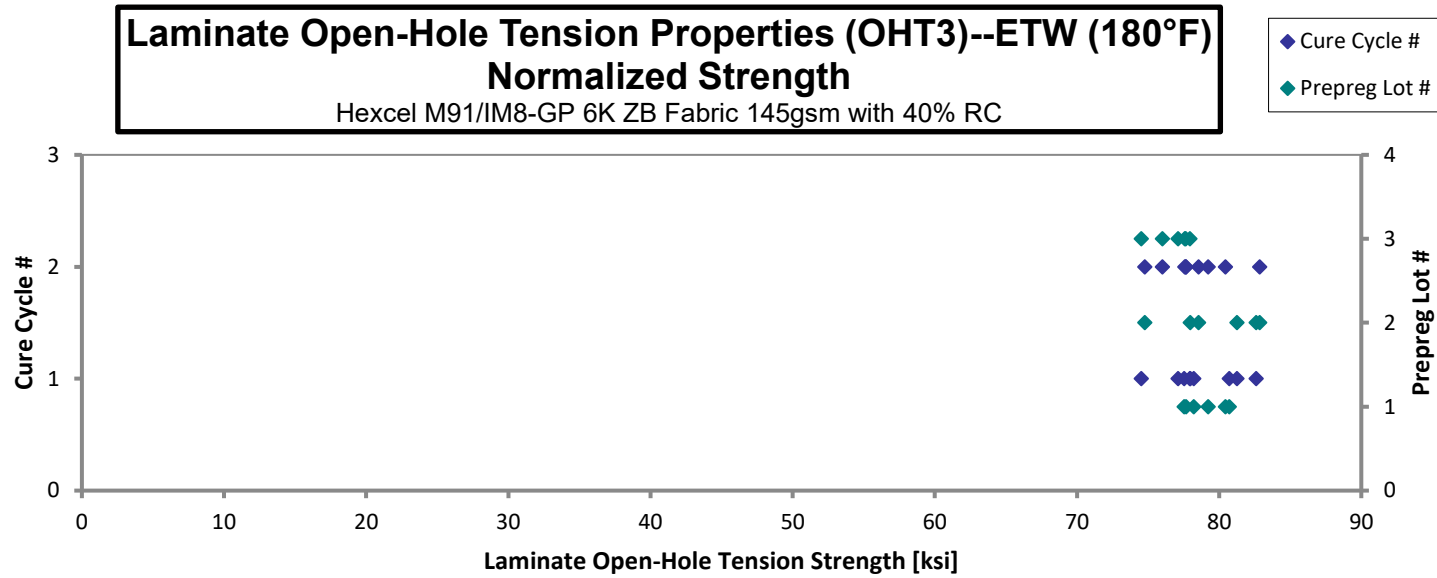
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-ETW-1	A	C1	1	1	79.88	0.09245	15	LGM	0.006163	80.71
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-ETW-2	A	C1	1	1	76.49	0.09275	15	LGM	0.006183	77.54
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-ETW-3	A	C1	1	1	77.30	0.09258	15	LGM	0.006172	78.21
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-ETW-1	A	C2	1	2	76.41	0.09302	15	LGM	0.006201	77.67
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-ETW-2	A	C2	1	2	78.48	0.09378	15	LGM	0.006252	80.43
NTPM911Q1-HXL-H40-NIAR-OHT3-A-C2-1-ETW-3	A	C2	1	2	77.58	0.09342	15	LGM	0.006228	79.21
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-ETW-1	B	C1	2	1	78.60	0.09457	15	LGM	0.006304	81.23
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-ETW-2	B	C1	2	1	75.18	0.09488	15	LGM	0.006326	77.96
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C1-1-ETW-3	B	C1	2	1	79.77	0.09473	15	LGM	0.006316	82.59
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-ETW-1	B	C2	2	2	75.46	0.09523	15	LGM	0.006349	78.54
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-ETW-2	B	C2	2	2	80.08	0.09465	15	LGM	0.006310	82.84
NTPM911Q1-HXL-H40-NIAR-OHT3-B-C2-1-ETW-3	B	C2	2	2	72.24	0.09468	15	LGM	0.006312	74.76
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-ETW-1	C	C1	3	1	77.17	0.09140	15	LGM	0.006093	77.09
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-ETW-2	C	C1	3	1	76.63	0.09305	15	LGM	0.006203	77.93
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C1-1-ETW-3	C	C1	3	1	73.71	0.09250	15	LGM	0.006167	74.51
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-ETW-1	C	C2	3	2	75.66	0.09190	15	LGM	0.006127	75.99
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-ETW-2	C	C2	3	2	76.60	0.09273	15	LGM	0.006182	77.63
NTPM911Q1-HXL-H40-NIAR-OHT3-C-C2-1-ETW-3	C	C2	3	2	76.28	0.09305	15	LGM	0.006203	77.57

Average 76.86 0.09341
Standard Dev. 2.068 0.001136
Coeff. of Var. [%] 2.691 1.216
Min. 72.24 0.09140
Max. 80.08 0.09523
Number of Spec. 18 18

Average_{norm} 0.006227 78.47
Standard Dev._{norm} 0.00007574 2.355
Coeff. of Var. [%]_{norm} 1.216 3.001
Min. 0.006093 74.51
Max. 0.006349 82.84
Number of Spec. 18 18



4.17 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

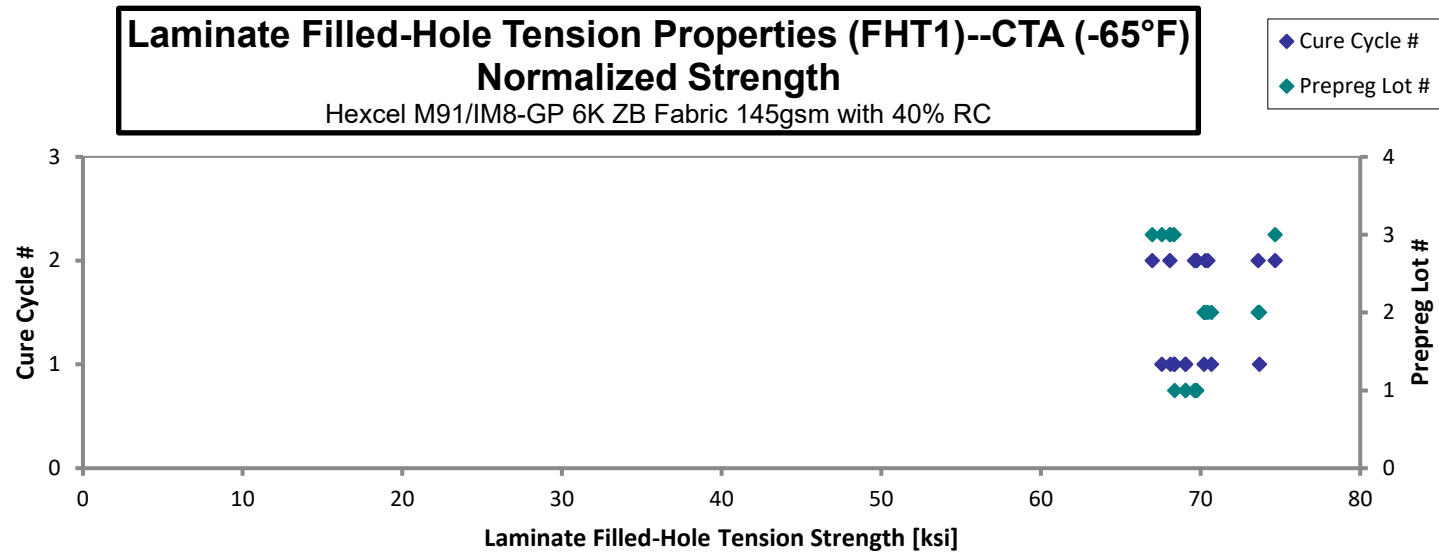
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-CTA-1	A	C1	1	1	67.08	0.09950	16	LGM	0.006219	68.39
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-CTA-2	A	C1	1	1	67.50	0.09987	16	LGM	0.006242	69.07
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-CTA-3	A	C1	1	1	69.43	0.09708	16	LGM	0.006068	69.06
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-CTA-1	A	C2	1	2	68.57	0.09928	16	LGM	0.006205	69.75
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-CTA-2	A	C2	1	2	67.97	0.09997	16	LGM	0.006248	69.61
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-CTA-3	A	C2	1	2	68.58	0.09930	16	LGM	0.006206	69.77
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-CTA-1	B	C1	2	1	67.81	0.1011	16	LGM	0.006318	70.23
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-CTA-2	B	C1	2	1	70.93	0.1014	16	LGM	0.006338	73.69
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-CTA-3	B	C1	2	1	68.69	0.1004	16	LGM	0.006277	70.68
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-CTA-1	B	C2	2	2	67.39	0.1018	16	LGM	0.006365	70.31
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-CTA-2	B	C2	2	2	68.09	0.1010	16	LGM	0.006313	70.46
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-CTA-3	B	C2	2	2	71.32	0.1007	16	LGM	0.006296	73.61
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-CTA-1	C	C1	3	1	67.19	0.09815	16	LGM	0.006134	67.57
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-CTA-2	C	C1	3	1	67.93	0.09787	16	LGM	0.006117	68.11
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-CTA-3	C	C1	3	1	67.29	0.09913	16	LGM	0.006196	68.35
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-CTA-1	C	C2	3	2	66.93	0.09768	16	LGM	0.006105	66.98
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-CTA-2	C	C2	3	2	73.93	0.09857	16	LGM	0.006160	74.67
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-CTA-3	C	C2	3	2	67.70	0.09817	16	LGM	0.006135	68.09

Average 68.57 0.09950
 Standard Dev. 1.815 0.001394
 Coeff. of Var. [%] 2.646 1.401
 Min. 66.93 0.09708
 Max. 73.93 0.1018
 Number of Spec. 18 18

Average_{norm} 0.006219 69.91
 Standard Dev._{norm} 0.00008716 2.151
 Coeff. of Var. [%]_{norm} 1.401 3.077
 Min. 0.006068 66.98
 Max. 0.006365 74.67
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

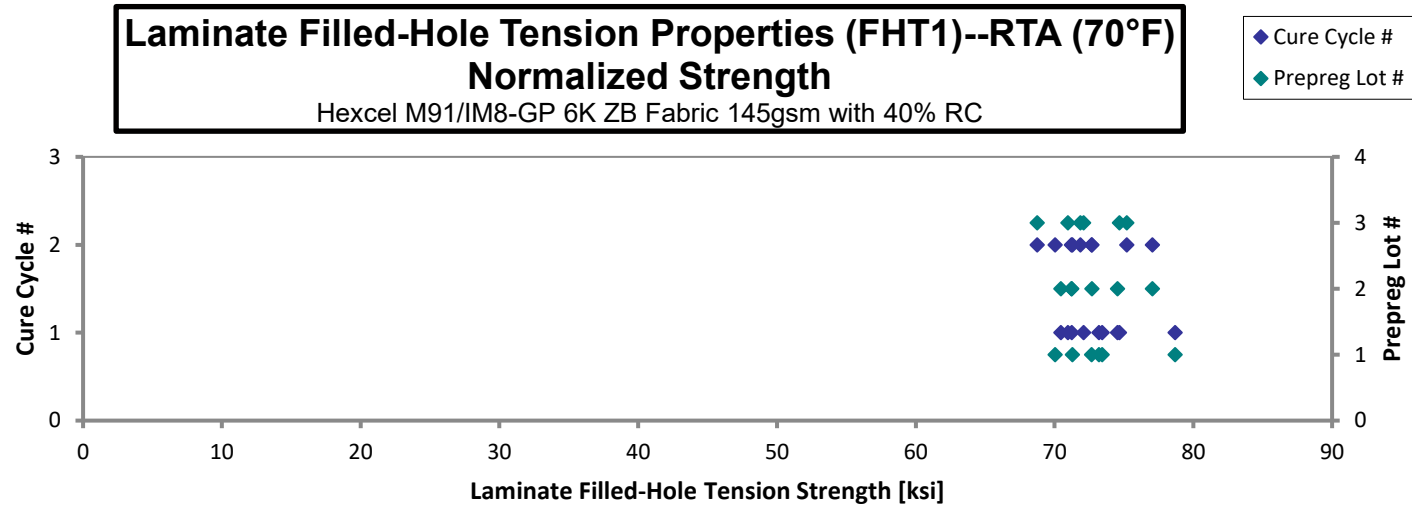
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-RTA-1	A	C1	1	1	78.17	0.09825	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-RTA-2	A	C1	1	1	72.49	0.09885	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-RTA-3	A	C1	1	1	72.53	0.09850	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-RTA-1	A	C2	1	2	71.48	0.09922	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-RTA-2	A	C2	1	2	70.07	0.09928	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-RTA-3	A	C2	1	2	68.80	0.09935	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-RTA-1	B	C1	2	1	68.33	0.1006	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-RTA-2	B	C1	2	1	71.96	0.1011	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-RTA-3	B	C1	2	1	69.12	0.1006	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-RTA-1	B	C2	2	2	74.35	0.1011	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-RTA-2	B	C2	2	2	68.66	0.1012	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-RTA-3	B	C2	2	2	70.40	0.1008	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-RTA-1	C	C1	3	1	71.41	0.09853	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-RTA-2	C	C1	3	1	74.09	0.09838	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-RTA-3	C	C1	3	1	70.46	0.09832	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-RTA-1	C	C2	3	2	68.32	0.09822	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-RTA-2	C	C2	3	2	70.86	0.09900	16	LGM
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-RTA-3	C	C2	3	2	74.29	0.09880	16	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.006141	78.69
0.006178	73.42
0.006156	73.20
0.006201	72.66
0.006205	71.28
0.006209	70.04
0.006289	70.45
0.006318	74.53
0.006288	71.25
0.006321	77.04
0.006327	71.22
0.006299	72.70
0.006158	72.09
0.006149	74.68
0.006145	70.97
0.006139	68.75
0.006188	71.87
0.006175	75.20

Average 71.43 0.09945
Standard Dev. 2.603 0.001121
Coeff. of Var. [%] 3.643 1.127
Min. 68.32 0.09822
Max. 78.17 0.1012
Number of Spec. 18 18

Average_{norm} 0.006216 72.78
Standard Dev._{norm} 0.0001 2.509
Coeff. of Var. [%]_{norm} 1.127 3.448
Min. 0.006139 68.75
Max. 0.006327 78.69
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

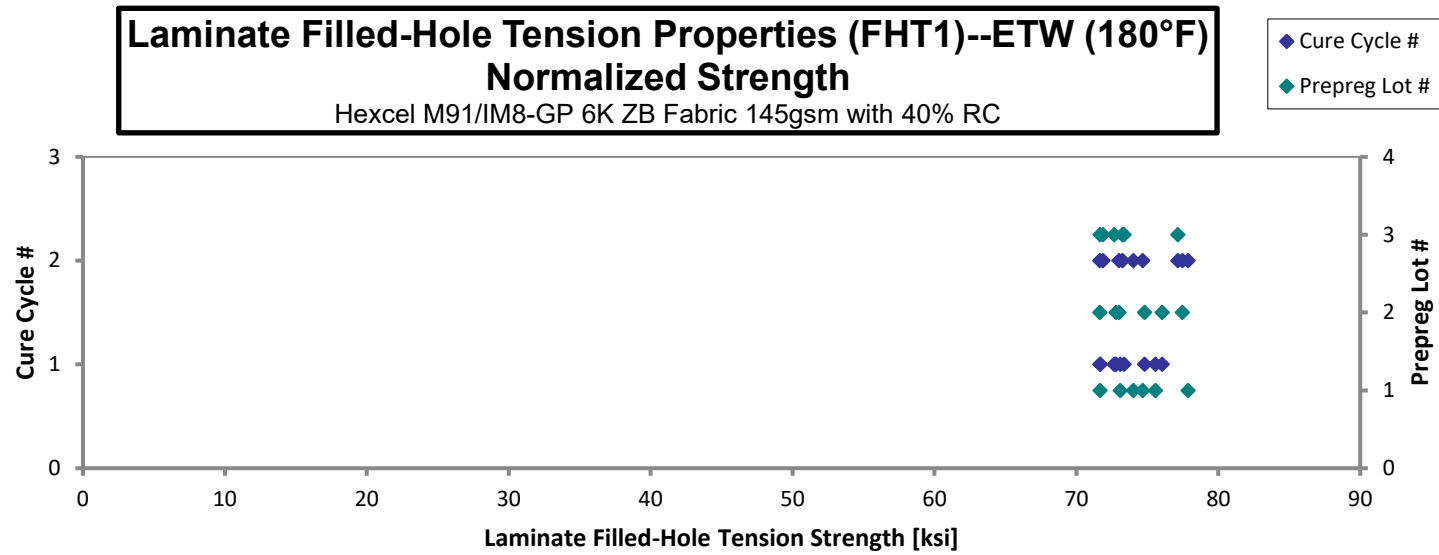
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-ETW-1	A	C1	1	1	74.52	0.09898	16	LGM	0.006186	75.57
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-ETW-2	A	C1	1	1	70.90	0.09867	16	LGM	0.006167	71.67
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-ETW-3	A	C1	1	1	72.14	0.09888	16	LGM	0.006180	73.09
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-ETW-1	A	C2	1	2	73.38	0.09933	16	LGM	0.006208	74.68
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-ETW-2	A	C2	1	2	76.71	0.09908	16	LGM	0.006193	77.88
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C2-1-ETW-3	A	C2	1	2	72.76	0.09928	16	LGM	0.006205	74.01
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-ETW-1	B	C1	2	1	70.00	0.1015	16	LGM	0.006345	72.81
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-ETW-2	B	C1	2	1	72.10	0.1013	16	LGM	0.006329	74.81
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-ETW-3	B	C1	2	1	72.87	0.1019	16	LGM	0.006367	76.05
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-ETW-1	B	C2	2	2	74.72	0.1012	16	LGM	0.006324	77.46
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-ETW-2	B	C2	2	2	70.09	0.1017	16	LGM	0.006353	73.00
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C2-1-ETW-3	B	C2	2	2	68.93	0.1015	16	LGM	0.006341	71.65
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-ETW-1	C	C1	3	1	73.21	0.09782	16	LGM	0.006114	73.38
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-ETW-2	C	C1	3	1	70.76	0.09887	16	LGM	0.006179	71.68
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-ETW-3	C	C1	3	1	71.49	0.09922	16	LGM	0.006201	72.68
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-ETW-1	C	C2	3	2	77.19	0.09757	16	LGM	0.006098	77.16
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-ETW-2	C	C2	3	2	72.42	0.09873	16	LGM	0.006171	73.26
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C2-1-ETW-3	C	C2	3	2	71.08	0.09870	16	LGM	0.006169	71.88

Average 72.51 0.09967
Standard Dev. 2.221 0.001402
Coeff. of Var. [%] 3.063 1.406
Min. 68.93 0.09757
Max. 77.19 0.1019
Number of Spec. 18 18

Average_{norm} 0.006229 74.04
Standard Dev._{norm} 0.00008760 2.051
Coeff. of Var. [%]_{norm} 1.406 2.771
Min. 0.006098 71.65
Max. 0.006367 77.88
Number of Spec. 18 18



4.18 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

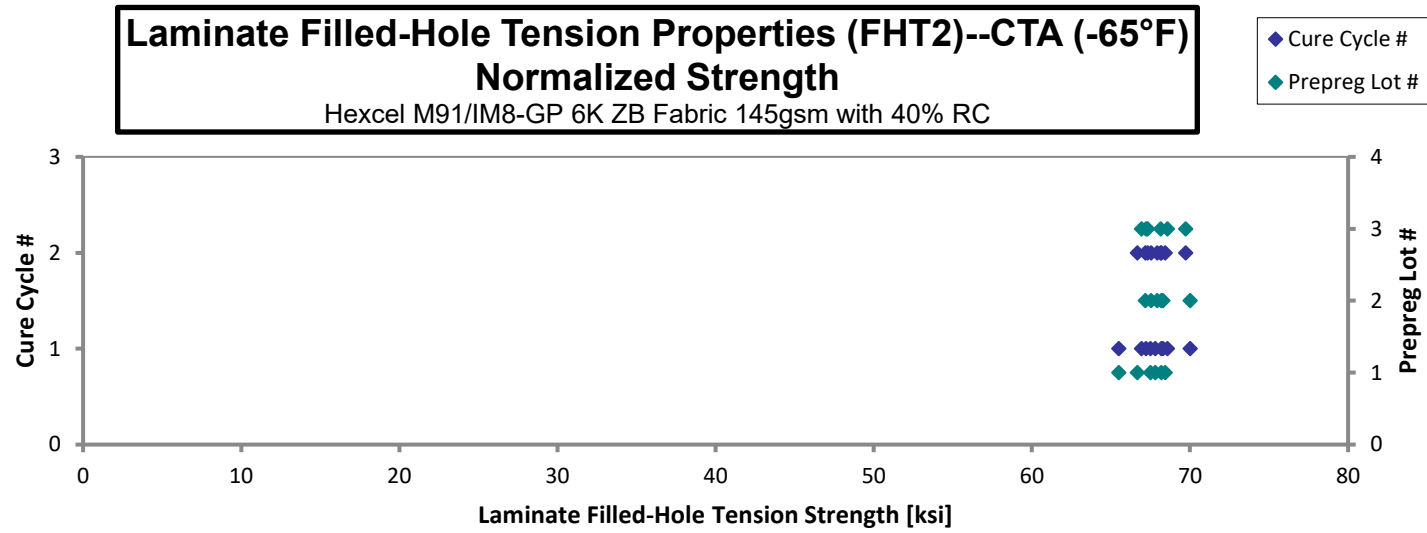
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-CTA-1	A	C1	1	1	66.12	0.1246	20	AGM	0.006228	67.51
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-CTA-2	A	C1	1	1	66.37	0.1246	20	M(A,L)GM	0.006232	67.80
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-CTA-3	A	C1	1	1	63.28	0.1263	20	M(A,L)GM	0.006313	65.49
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-CTA-1	A	C2	1	2	66.20	0.1229	20	M(A,L)GM	0.006144	66.67
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-CTA-2	A	C2	1	2	67.73	0.1229	20	M(A,L)GM	0.006143	68.20
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-CTA-3	A	C2	1	2	68.06	0.1227	20	M(A,L)GM	0.006133	68.43
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-CTA-1	B	C1	2	1	65.69	0.1269	20	M(A,L)GM	0.006343	68.30
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-CTA-2	B	C1	2	1	65.66	0.1267	20	M(A,L)GM	0.006336	68.20
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-CTA-3	B	C1	2	1	67.05	0.1274	20	M(A,L)GM	0.006369	70.01
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-CTA-1	B	C2	2	2	64.36	0.1274	20	AGM	0.006368	67.18
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-CTA-2	B	C2	2	2	64.64	0.1275	20	M(A,L)GM	0.006374	67.55
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-CTA-3	B	C2	2	2	65.41	0.1267	20	M(A,L)GM	0.006335	67.93
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-CTA-1	C	C1	3	1	66.79	0.1228	20	AGM	0.006140	67.22
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-CTA-2	C	C1	3	1	66.34	0.1231	20	AGM	0.006154	66.93
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-CTA-3	C	C1	3	1	67.93	0.1232	20	AGM	0.006158	68.57
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-CTA-1	C	C2	3	2	67.30	0.1220	20	AGM	0.006101	67.31
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-CTA-2	C	C2	3	2	67.60	0.1230	20	AGM	0.006150	68.15
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-CTA-3	C	C2	3	2	69.17	0.1230	20	AGM	0.006148	69.72

Average 66.43 0.1246
 Standard Dev. 1.465 0.002024
 Coeff. of Var. [%] 2.206 1.624
 Min. 63.28 0.1220
 Max. 69.17 0.1275
 Number of Spec. 18 18

Average_{norm} 0.006232 67.84
 Standard Dev._{norm} 0.0001012 1.049
 Coeff. of Var. [%]_{norm} 1.624 1.546
 Min. 0.006101 65.49
 Max. 0.006374 70.01
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

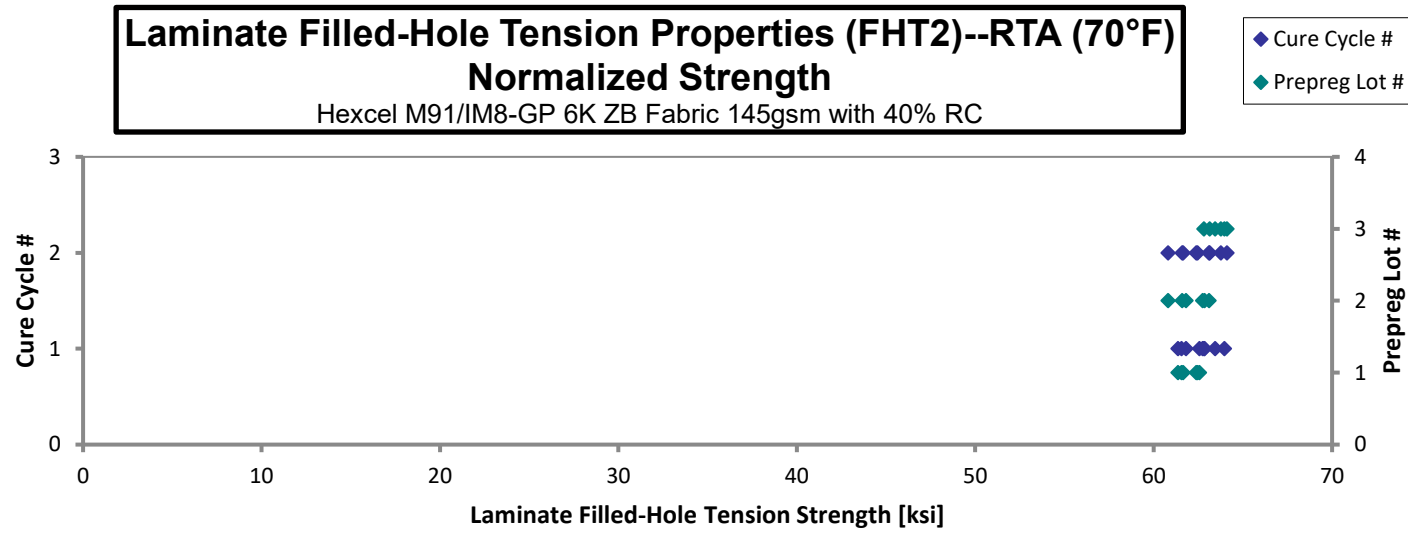
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-RTA-1	A	C1	1	1	60.16	0.1248	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-RTA-2	A	C1	1	1	60.30	0.1242	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-RTA-3	A	C1	1	1	61.34	0.1244	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-RTA-1	A	C2	1	2	61.97	0.1230	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-RTA-2	A	C2	1	2	61.90	0.1230	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-RTA-3	A	C2	1	2	61.32	0.1227	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-RTA-1	B	C1	2	1	60.08	0.1276	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-RTA-2	B	C1	2	1	59.75	0.1262	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-RTA-3	B	C1	2	1	60.08	0.1274	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-RTA-1	B	C2	2	2	58.35	0.1272	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-RTA-2	B	C2	2	2	58.93	0.1275	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-RTA-3	B	C2	2	2	60.82	0.1266	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-RTA-1	C	C1	3	1	63.29	0.1233	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-RTA-2	C	C1	3	1	62.53	0.1226	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-RTA-3	C	C1	3	1	62.89	0.1231	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-RTA-1	C	C2	3	2	62.43	0.1234	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-RTA-2	C	C2	3	2	63.22	0.1231	20	AGM
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-RTA-3	C	C2	3	2	63.25	0.1236	20	AGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.006242	61.55
0.006208	61.36
0.006222	62.56
0.006148	62.46
0.006148	62.39
0.006133	61.64
0.006382	62.85
0.006310	61.81
0.006370	62.74
0.006358	60.81
0.006376	61.60
0.006329	63.11
0.006164	63.96
0.006128	62.82
0.006154	63.44
0.006170	63.15
0.006153	63.77
0.006182	64.10

Average 61.26 0.1246
Standard Dev. 1.530 0.001892
Coeff. of Var. [%] 2.497 1.518
Min. 58.35 0.1226
Max. 63.29 0.1276
Number of Spec. 18 18

Average_{norm} 0.006232 62.56
Standard Dev._{norm} 0.00009462 0.9479
Coeff. of Var. [%]_{norm} 1.518 1.515
Min. 0.006128 60.81
Max. 0.006382 64.10
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

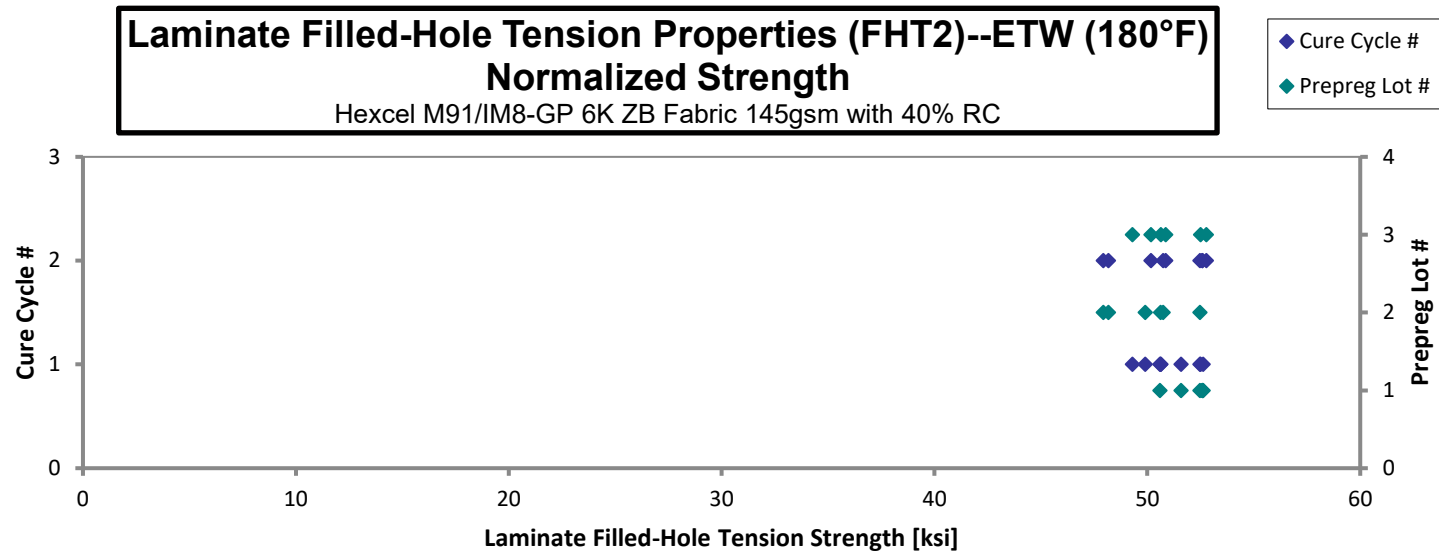
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-ETW-1	A	C1	1	1	49.61	0.1244	20	AGM	0.006221	50.60
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-ETW-2	A	C1	1	1	51.58	0.1245	20	AGM	0.006223	52.62
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-ETW-3	A	C1	1	1	50.77	0.1240	20	AGM	0.006199	51.59
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-ETW-1	A	C2	1	2	52.09	0.1229	20	AGM	0.006145	52.47
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-ETW-2	A	C2	1	2	52.42	0.1224	20	AGM	0.006121	52.60
NTPM911Q1-HXL-H40-NIAR-FHT2-A-C2-1-ETW-3	A	C2	1	2	52.20	0.1229	20	AGM	0.006144	52.58
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-ETW-1	B	C1	2	1	48.04	0.1267	20	AGM	0.006337	49.91
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-ETW-2	B	C1	2	1	50.20	0.1275	20	AGM	0.006376	52.47
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C1-1-ETW-3	B	C1	2	1	48.68	0.1269	20	AGM	0.006343	50.62
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-ETW-1	B	C2	2	2	45.91	0.1274	20	AGM	0.006369	47.93
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-ETW-2	B	C2	2	2	48.58	0.1274	20	AGM	0.006372	50.74
NTPM911Q1-HXL-H40-NIAR-FHT2-B-C2-1-ETW-3	B	C2	2	2	46.18	0.1273	20	AGM	0.006363	48.18
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-ETW-1	C	C1	3	1	49.37	0.1218	20	AGM	0.006091	49.30
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-ETW-2	C	C1	3	1	50.10	0.1233	20	AGM	0.006166	50.64
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C1-1-ETW-3	C	C1	3	1	52.16	0.1228	20	AGM	0.006141	52.51
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-ETW-1	C	C2	3	2	50.44	0.1214	20	AGM	0.006068	50.17
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-ETW-2	C	C2	3	2	50.33	0.1233	20	AGM	0.006165	50.86
NTPM911Q1-HXL-H40-NIAR-FHT2-C-C2-1-ETW-3	C	C2	3	2	52.28	0.1232	20	AGM	0.006158	52.77

Average 50.05 0.1244
Standard Dev. 1.996 0.002150
Coeff. of Var. [%] 3.988 1.728
Min. 45.91 0.1214
Max. 52.42 0.1275
Number of Spec. 18 18

Average_{norm} 0.006222 51.03
Standard Dev._{norm} 0.0001075 1.542
Coeff. of Var. [%]_{norm} 1.728 3.021
Min. 0.006068 47.93
Max. 0.006376 52.77
Number of Spec. 18 18



4.19 “40/20/40” Filled-Hole Tension 3 Properties (FHT3)

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

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

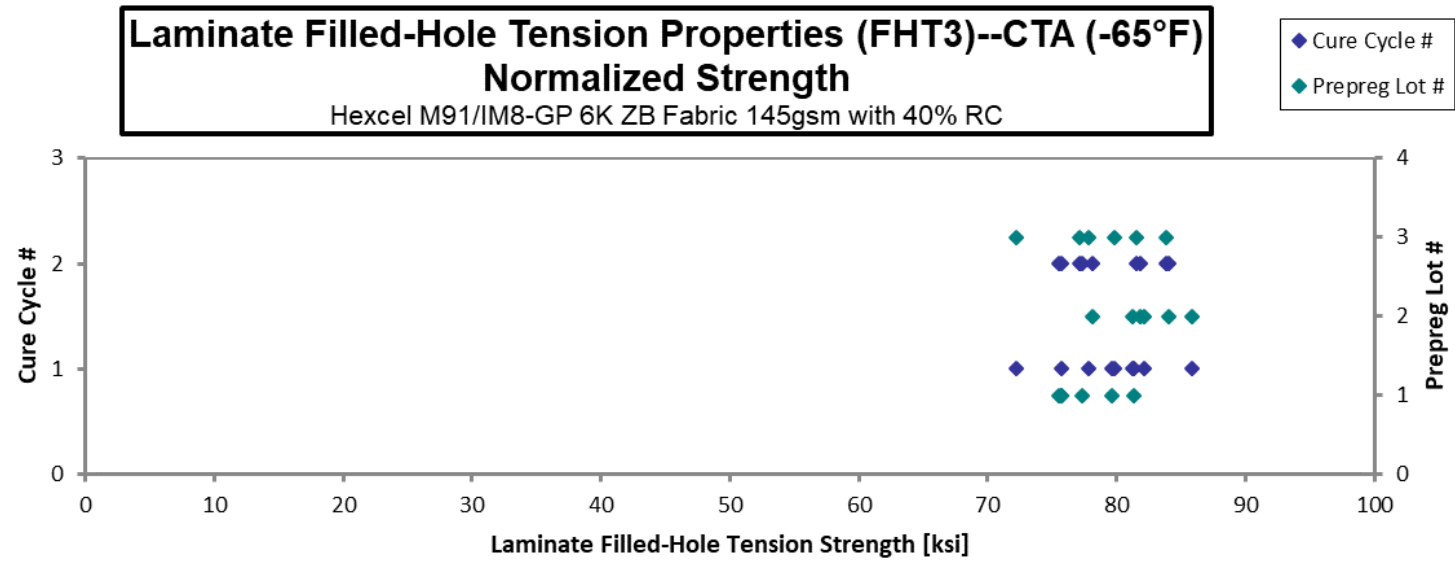
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-CTA-1	A	C1	1	1	80.25	0.09277	15	LGM	0.006184	81.36
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-CTA-2	A	C1	1	1	78.59	0.09270	15	LGM	0.006180	79.62
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-CTA-3	A	C1	1	1	74.59	0.09293	15	LGM	0.006196	75.76
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-CTA-1	A	C2	1	2	74.71	0.09272	15	LGM	0.006181	75.71
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-CTA-2	A	C2	1	2	75.69	0.09350	15	LGM	0.006233	77.35
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-CTA-3	A	C2	1	2	74.23	0.09315	15	LGM	0.006210	75.57
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-CTA-1	B	C1	2	1	79.43	0.09468	15	LGM	0.006312	82.20
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-CTA-2	B	C1	2	1	78.18	0.09512	15	LGM	0.006341	81.27
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-CTA-3	B	C1	2	1	82.76	0.09497	15	LGM	0.006331	85.89
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-CTA-1	B	C2	2	2	80.91	0.09508	15	LGM	0.006339	84.08
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-CTA-2	B	C2	2	2	78.89	0.09490	15	LGM	0.006327	81.82
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-CTA-3	B	C2	2	2	75.51	0.09465	15	LGM	0.006310	78.11
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-CTA-1	C	C1	3	1	72.35	0.09133	15	LGM	0.006089	72.21
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-CTA-2	C	C1	3	1	76.97	0.09252	15	LGM	0.006168	77.82
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-CTA-3	C	C1	3	1	79.14	0.09228	15	LGM	0.006152	79.82
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-CTA-1	C	C2	3	2	77.22	0.09140	15	LGM	0.006093	77.13
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-CTA-2	C	C2	3	2	80.64	0.09252	15	LGM	0.006168	81.54
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-CTA-3	C	C2	3	2	83.05	0.09240	15	LGM	0.006160	83.87

Average 77.95 0.09331
 Standard Dev. 3.019 0.001267
 Coeff. of Var. [%] 3.872 1.358
 Min. 72.35 0.09133
 Max. 83.05 0.09512
 Number of Spec. 18 18

Average_{norm} 0.006221 79.51
 Standard Dev._{norm} 0.00008445 3.567
 Coeff. of Var. [%]_{norm} 1.358 4.486
 Min. 0.006089 72.21
 Max. 0.006341 85.89
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Filled-Hole Tension Properties (FHT3)--RTA (70°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

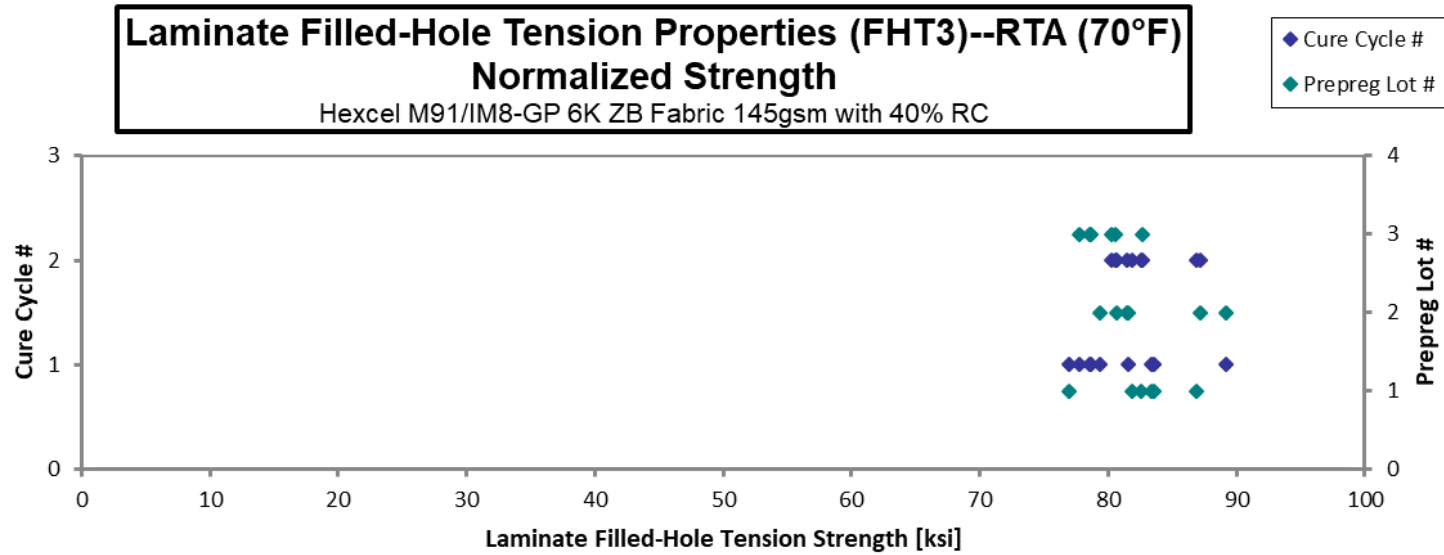
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-RTA-1	A	C1	1	1	74.64	0.09428	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-RTA-2	A	C1	1	1	80.87	0.09460	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-RTA-3	A	C1	1	1	81.31	0.09387	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-RTA-1	A	C2	1	2	80.80	0.09275	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-RTA-2	A	C2	1	2	81.39	0.09283	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-RTA-3	A	C2	1	2	85.77	0.09265	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-RTA-1	B	C1	2	1	79.06	0.09440	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-RTA-2	B	C1	2	1	77.10	0.09417	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-RTA-3	B	C1	2	1	85.74	0.09518	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-RTA-1	B	C2	2	2	78.80	0.09458	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-RTA-2	B	C2	2	2	84.05	0.09492	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-RTA-3	B	C2	2	2	78.09	0.09448	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-RTA-1	C	C1	3	1	77.76	0.09248	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-RTA-2	C	C1	3	1	76.83	0.09263	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-RTA-3	C	C1	3	1	77.71	0.09268	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-RTA-1	C	C2	3	2	81.79	0.09248	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-RTA-2	C	C2	3	2	79.15	0.09315	15	LGM
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-RTA-3	C	C2	3	2	79.16	0.09283	15	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.006286	76.91
0.006307	83.61
0.006258	83.42
0.006183	81.91
0.006189	82.58
0.006177	86.85
0.006293	81.56
0.006278	79.35
0.006346	89.19
0.006306	81.46
0.006328	87.18
0.006299	80.63
0.006166	78.60
0.006176	77.78
0.006179	78.71
0.006166	82.67
0.006210	80.58
0.006189	80.31

Average 80.00 0.09361
Standard Dev. 3.027 0.0009627
Coeff. of Var. [%] 3.784 1.028
Min. 74.64 0.09248
Max. 85.77 0.09518
Number of Spec. 18 18

Average_{norm} 0.006241 81.85
Standard Dev._{norm} 0.00006418 3.321
Coeff. of Var. [%]_{norm} 1.028 4.058
Min. 0.006166 76.91
Max. 0.006346 89.19
Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Filled-Hole Tension Properties (FHT3)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

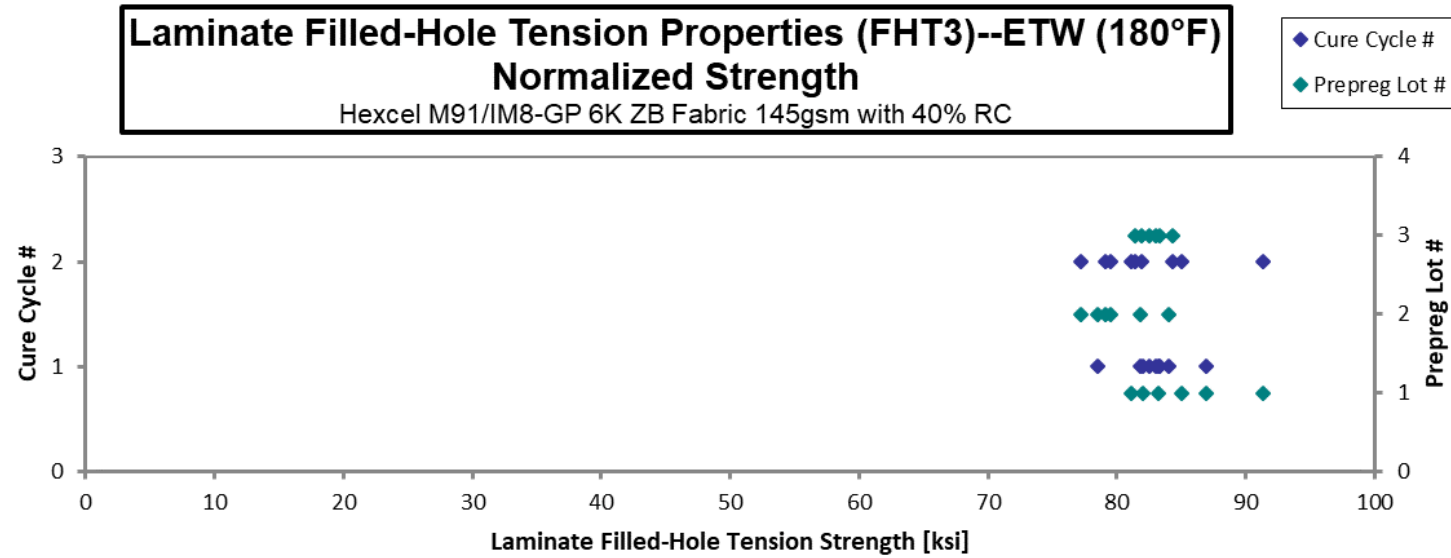
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-ETW-1	A	C1	1	1	80.96	0.09408	15	LGM	0.006272	83.25
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-ETW-2	A	C1	1	1	79.77	0.09407	15	LGM	0.006271	82.01
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-ETW-3	A	C1	1	1	84.86	0.09370	15	LGM	0.006247	86.90
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-ETW-1	A	C2	1	2	79.08	0.09385	15	LGM	0.006257	81.12
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-ETW-2	A	C2	1	2	83.03	0.09367	15	LGM	0.006244	85.00
NTPM911Q1-HXL-H40-NIAR-FHT3-A-C2-1-ETW-3	A	C2	1	2	89.22	0.09372	15	LGM	0.006248	91.38
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-ETW-1	B	C1	2	1	75.67	0.09492	15	LGM	0.006328	78.50
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-ETW-2	B	C1	2	1	80.87	0.09502	15	LGM	0.006334	83.98
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C1-1-ETW-3	B	C1	2	1	78.84	0.09493	15	LGM	0.006329	81.79
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-ETW-1	B	C2	2	2	74.39	0.09500	15	LGM	0.006333	77.24
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-ETW-2	B	C2	2	2	76.21	0.09500	15	LGM	0.006333	79.12
NTPM911Q1-HXL-H40-NIAR-FHT3-B-C2-1-ETW-3	B	C2	2	2	76.75	0.09482	15	LGM	0.006321	79.53
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-ETW-1	C	C1	3	1	83.18	0.09130	15	LGM	0.006087	83.00
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-ETW-2	C	C1	3	1	82.24	0.09273	15	LGM	0.006182	83.35
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C1-1-ETW-3	C	C1	3	1	81.36	0.09278	15	LGM	0.006186	82.50
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-ETW-1	C	C2	3	2	84.10	0.09172	15	LGM	0.006114	84.30
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-ETW-2	C	C2	3	2	81.11	0.09238	15	LGM	0.006159	81.89
NTPM911Q1-HXL-H40-NIAR-FHT3-C-C2-1-ETW-3	C	C2	3	2	80.81	0.09223	15	LGM	0.006149	81.46

Average 80.69 0.09366
Standard Dev. 3.630 0.001213
Coeff. of Var. [%] 4.499 1.295
Min. 74.39 0.09130
Max. 89.22 0.09502
Number of Spec. 18 18

Average_{norm} 0.006244 82.57
Standard Dev._{norm} 0.00008084 3.249
Coeff. of Var. [%]_{norm} 1.295 3.934
Min. 0.006087 77.24
Max. 0.006334 91.38
Number of Spec. 18 18



4.20 “25/50/25” Open-Hole Compression 1 Properties (OHC1)

Laminate Open-Hole Compression Properties (OHC1)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

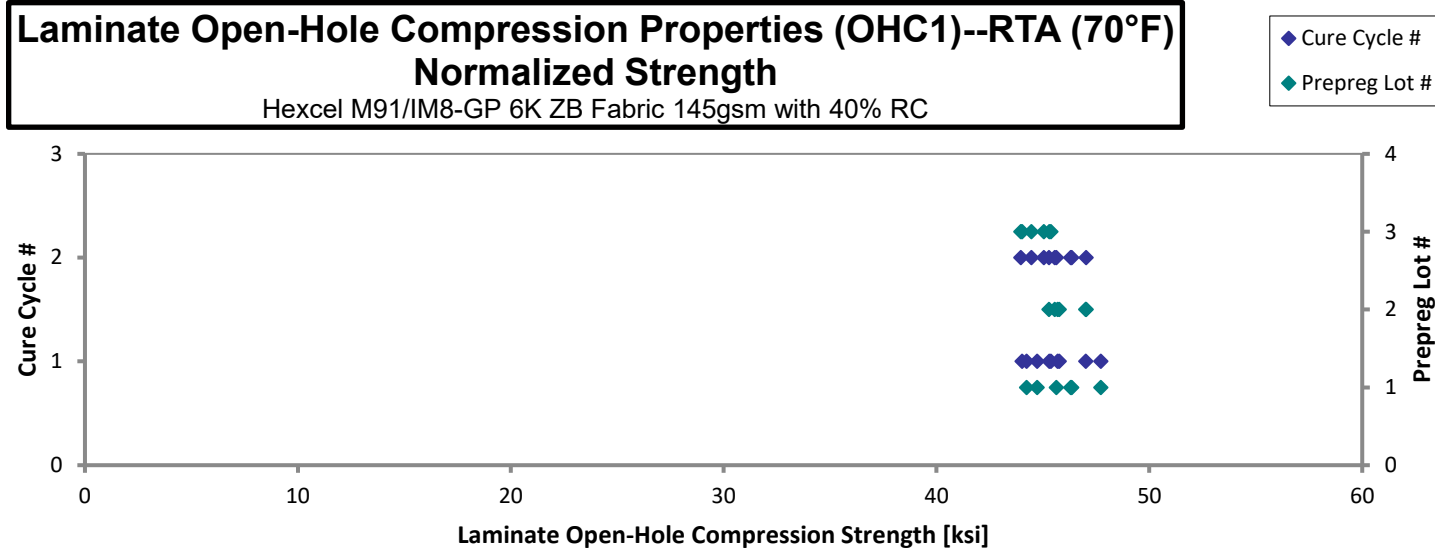
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-RTA-1	A	C1	1	1	43.78	0.1233	20	LGM	0.006165	44.24
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-RTA-2	A	C1	1	1	46.52	0.1252	20	LGM	0.006258	47.72
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-RTA-3	A	C1	1	1	43.55	0.1253	20	LGM	0.006266	44.73
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-RTA-1	A	C2	1	2	45.12	0.1234	20	LGM	0.006169	45.63
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-RTA-2	A	C2	1	2	45.20	0.1251	20	LGM	0.006257	46.36
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-RTA-3	A	C2	1	2	45.14	0.1252	20	LGM	0.006258	46.31
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-RTA-1	B	C1	2	1	45.45	0.1262	20	LGM	0.006311	47.02
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-RTA-2	B	C1	2	1	44.18	0.1264	20	LGM	0.006320	45.78
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-RTA-3	B	C1	2	1	44.15	0.1263	20	LGM	0.006314	45.69
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-RTA-1	B	C2	2	2	45.25	0.1268	20	LGM	0.006340	47.03
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-RTA-2	B	C2	2	2	43.82	0.1268	20	LGM	0.006342	45.56
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-RTA-3	B	C2	2	2	43.58	0.1268	20	LGM	0.006338	45.28
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-RTA-1	C	C1	3	1	43.79	0.1226	20	LGM	0.006132	44.02
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-RTA-2	C	C1	3	1	44.97	0.1231	20	LGM	0.006156	45.38
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-RTA-3	C	C1	3	1	44.74	0.1235	20	LGM	0.006176	45.30
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-RTA-1	C	C2	3	2	43.82	0.1224	20	LGM	0.006119	43.96
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-RTA-2	C	C2	3	2	44.30	0.1225	20	LGM	0.006123	44.46
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-RTA-3	C	C2	3	2	44.52	0.1234	20	LGM	0.006172	45.05

Average 44.55 0.1247
 Standard Dev. 0.8052 0.001642
 Coeff. of Var. [%] 1.808 1.317
 Min. 43.55 0.1224
 Max. 46.52 0.1268
 Number of Spec. 18 18

Average_{norm} 0.006234 45.53
 Standard Dev._{norm} 0.00008208 1.063
 Coeff. of Var. [%]_{norm} 1.317 2.335
 Min. 0.006119 43.96
 Max. 0.006342 47.72
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Open-Hole Compression Properties (OHC1)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

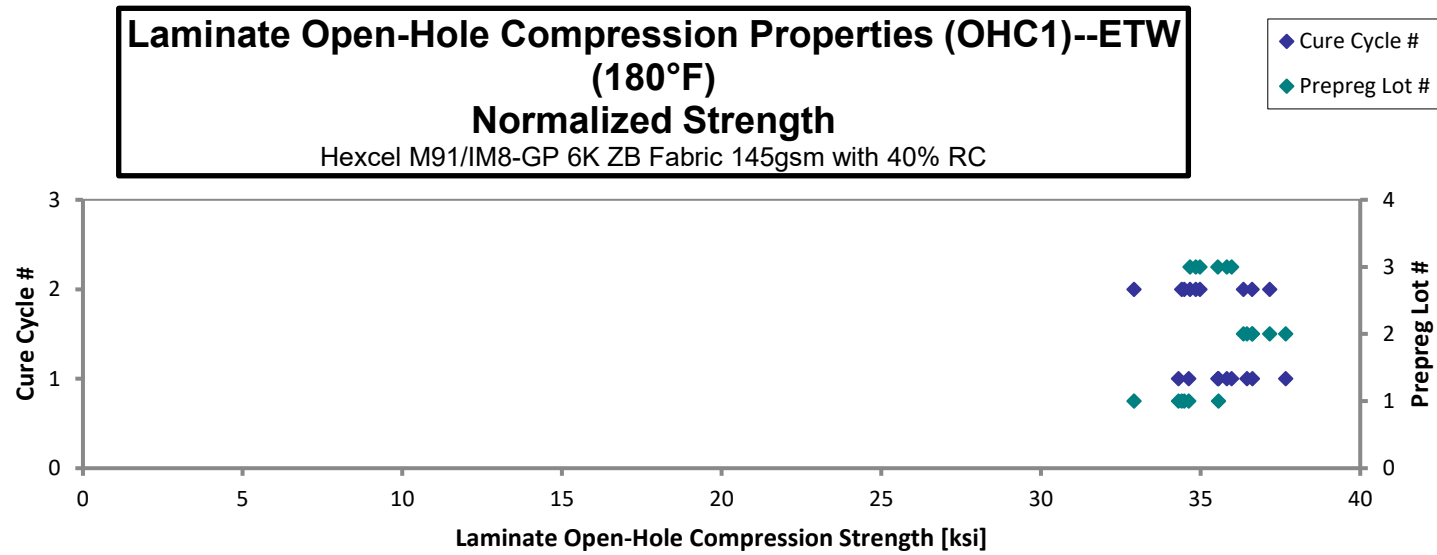
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-ETW-1	A	C1	1	1	33.44	0.1252	20	LGM	0.006258	34.31
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-ETW-2	A	C1	1	1	34.65	0.1252	20	LGM	0.006261	35.56
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-ETW-3	A	C1	1	1	33.77	0.1251	20	M(A,L)GM	0.006256	34.63
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-ETW-1	A	C2	1	2	33.46	0.1255	20	LGM	0.006273	34.41
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-ETW-2	A	C2	1	2	32.09	0.1251	20	LGM	0.006256	32.91
NTPM911Q1-HXL-H40-NIAR-OHC1-A-C2-1-ETW-3	A	C2	1	2	33.54	0.1255	20	LGM	0.006273	34.49
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-ETW-1	B	C1	2	1	35.11	0.1267	20	LGM	0.006335	36.46
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-ETW-2	B	C1	2	1	35.14	0.1272	20	M(A,L)GM	0.006358	36.63
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C1-1-ETW-3	B	C1	2	1	35.82	0.1283	20	LGM	0.006413	37.66
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-ETW-1	B	C2	2	2	35.28	0.1266	20	M(A,L)GM	0.006330	36.61
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-ETW-2	B	C2	2	2	34.78	0.1275	20	M(A,L)GM	0.006375	36.35
NTPM911Q1-HXL-H40-NIAR-OHC1-B-C2-1-ETW-3	B	C2	2	2	35.56	0.1275	20	LGM	0.006375	37.17
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-ETW-1	C	C1	3	1	35.35	0.1237	20	LGM	0.006183	35.82
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-ETW-2	C	C1	3	1	35.50	0.1237	20	LGM	0.006183	35.98
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C1-1-ETW-3	C	C1	3	1	35.16	0.1233	20	LGM	0.006167	35.54
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-ETW-1	C	C2	3	2	34.53	0.1236	20	LGM	0.006180	34.99
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-ETW-2	C	C2	3	2	34.17	0.1238	20	LGM	0.006189	34.67
NTPM911Q1-HXL-H40-NIAR-OHC1-C-C2-1-ETW-3	C	C2	3	2	34.36	0.1237	20	LGM	0.006187	34.85

Average 34.54 0.1254
Standard Dev. 0.9726 0.001581
Coeff. of Var. [%] 2.816 1.261
Min. 32.09 0.1233
Max. 35.82 0.1283
Number of Spec. 18 18

Average_{norm} 0.006269 35.50
Standard Dev_{norm} 0.00007907 1.198
Coeff. of Var. [%]_{norm} 1.261 3.374
Min. 0.006167 32.91
Max. 0.006413 37.66
Number of Spec. 18 18



4.21 “10/80/10” Open-Hole Compression 2 Properties (OHC2)

Laminate Open-Hole Compression Properties (OHC2)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

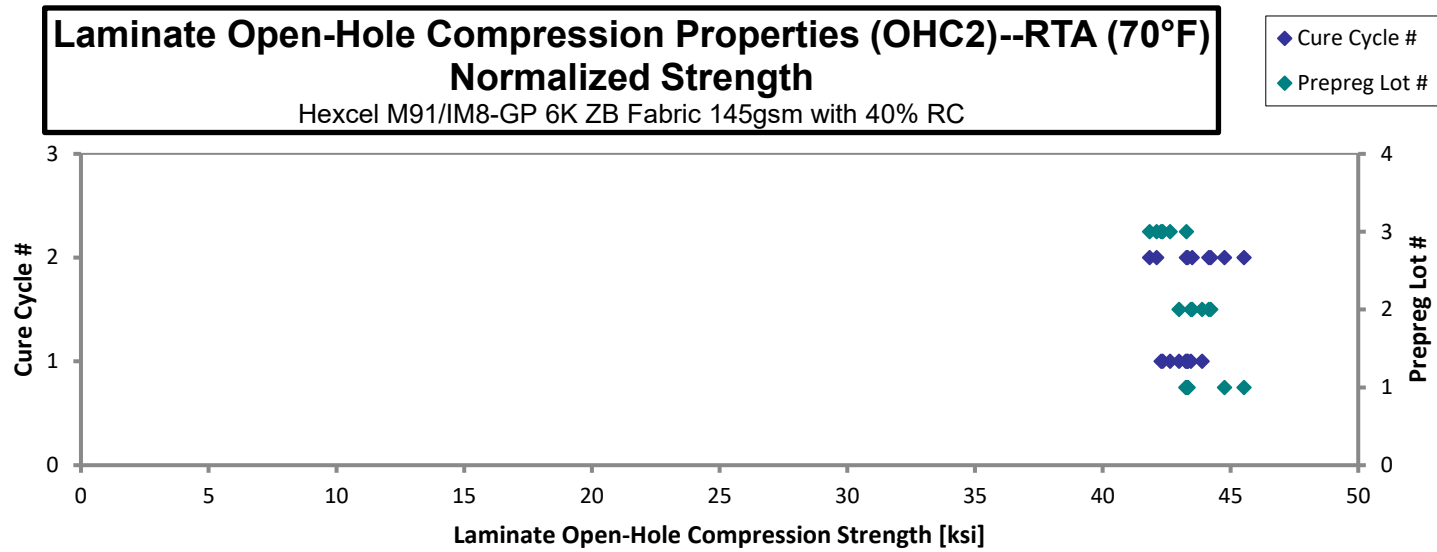
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-RTA-1	A	C1	1	1	42.18	0.1253	20	LGM	0.006263	43.31
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-RTA-2	A	C1	1	1	42.15	0.1255	20	LGM	0.006273	43.34
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-RTA-3	A	C1	1	1	42.01	0.1256	20	M(A,L)GM	0.006279	43.25
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-RTA-1	A	C2	1	2	44.32	0.1253	20	AGM	0.006267	45.53
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-RTA-2	A	C2	1	2	42.06	0.1257	20	LGM	0.006285	43.33
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-RTA-3	A	C2	1	2	43.57	0.1254	20	LGM	0.006268	44.77
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-RTA-1	B	C1	2	1	41.33	0.1269	20	M(A,L)GM	0.006346	42.99
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-RTA-2	B	C1	2	1	42.00	0.1275	20	M(A,L)GM	0.006375	43.89
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-RTA-3	B	C1	2	1	41.51	0.1277	20	LGM	0.006384	43.45
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-RTA-1	B	C2	2	2	42.51	0.1269	20	M(A,L)GM	0.006347	44.23
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-RTA-2	B	C2	2	2	42.32	0.1273	20	M(A,L)GM	0.006364	44.15
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-RTA-3	B	C2	2	2	41.72	0.1272	20	M(A,L)GM	0.006360	43.50
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-RTA-1	C	C1	3	1	42.48	0.1216	20	M(A,L)GM	0.006080	42.34
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-RTA-2	C	C1	3	1	42.46	0.1225	20	M(A,L)GM	0.006125	42.64
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-RTA-3	C	C1	3	1	41.85	0.1233	20	M(A,L)GM	0.006163	42.28
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-RTA-1	C	C2	3	2	41.94	0.1225	20	M(A,L)GM	0.006125	42.11
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-RTA-2	C	C2	3	2	41.73	0.1223	20	M(A,L)GM	0.006116	41.84
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-RTA-3	C	C2	3	2	42.74	0.1235	20	M(A,L)GM	0.006176	43.27

Average 42.27 0.1251
 Standard Dev. 0.7203 0.002008
 Coeff. of Var. [%] 1.704 1.605
 Min. 41.33 0.1216
 Max. 44.32 0.1277
 Number of Spec. 18 18

Average_{norm} 0.006255 43.35
 Standard Dev._{norm} 0.0001004 0.9446
 Coeff. of Var. [%]_{norm} 1.605 2.179
 Min. 0.006080 41.84
 Max. 0.006384 45.53
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Open-Hole Compression Properties (OHC2)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

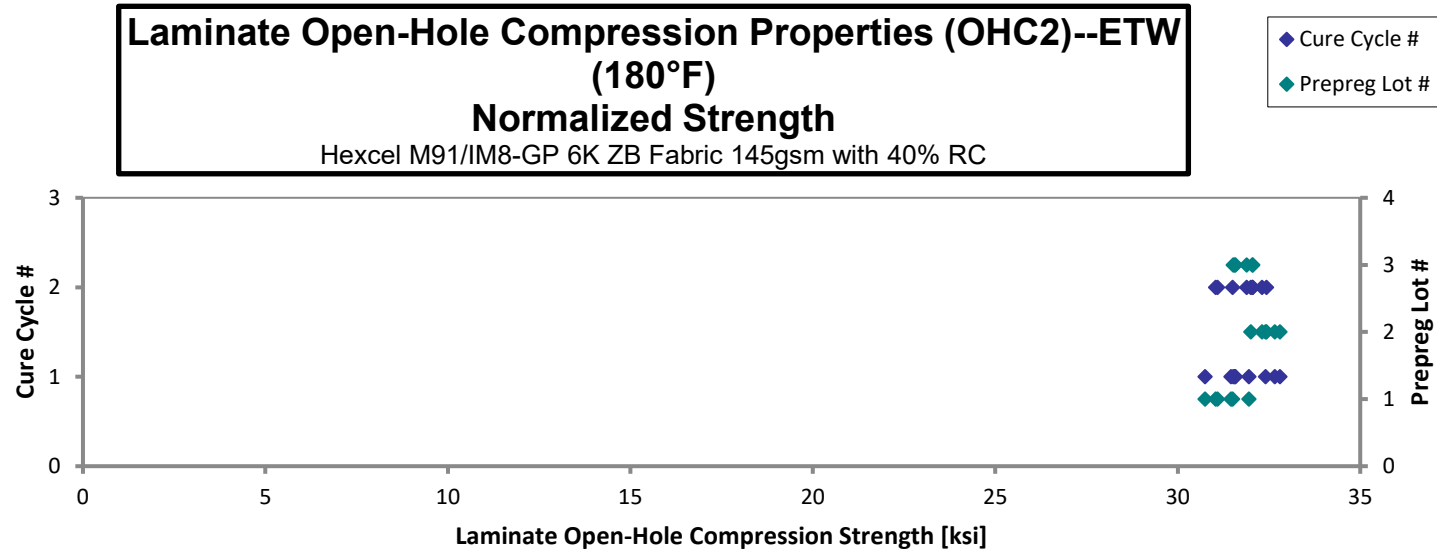
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-ETW-1	A	C1	1	1	31.12	0.1253	20	LGM	0.006263	31.95
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-ETW-2	A	C1	1	1	30.59	0.1255	20	M(A,L)GM	0.006273	31.46
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-ETW-3	A	C1	1	1	29.93	0.1253	20	LGM	0.006267	30.75
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-ETW-1	A	C2	1	2	30.73	0.1251	20	M(A,L)GM	0.006254	31.51
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-ETW-2	A	C2	1	2	30.15	0.1256	20	LGM	0.006281	31.04
NTPM911Q1-HXL-H40-NIAR-OHC2-A-C2-1-ETW-3	A	C2	1	2	30.21	0.1255	20	M(A,L)GM	0.006277	31.09
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-ETW-1	B	C1	2	1	31.41	0.1269	20	LGM	0.006343	32.66
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-ETW-2	B	C1	2	1	31.60	0.1266	20	LGM	0.006332	32.80
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C1-1-ETW-3	B	C1	2	1	30.89	0.1280	20	LGM	0.006399	32.41
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-ETW-1	B	C2	2	2	30.96	0.1273	20	M(A,L)GM	0.006366	32.31
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-ETW-2	B	C2	2	2	31.15	0.1270	20	M(A,L)GM	0.006351	32.43
NTPM911Q1-HXL-H40-NIAR-OHC2-B-C2-1-ETW-3	B	C2	2	2	30.72	0.1271	20	M(A,L)GM	0.006356	32.01
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-ETW-1	C	C1	3	1	31.23	0.1233	20	M(A,L)GM	0.006163	31.55
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-ETW-2	C	C1	3	1	31.33	0.1230	20	LGM	0.006149	31.58
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C1-1-ETW-3	C	C1	3	1	31.28	0.1229	20	LGM	0.006147	31.52
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-ETW-1	C	C2	3	2	31.67	0.1235	20	M(A,L)GM	0.006175	32.06
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-ETW-2	C	C2	3	2	31.50	0.1235	20	LGM	0.006175	31.89
NTPM911Q1-HXL-H40-NIAR-OHC2-C-C2-1-ETW-3	C	C2	3	2	31.61	0.1237	20	M(A,L)GM	0.006186	32.05

Average 31.00 0.1253
 Standard Dev. 0.5254 0.001646
 Coeff. of Var. [%] 1.695 1.314
 Min. 29.93 0.1229
 Max. 31.67 0.1280
 Number of Spec. 18 18

Average_{norm} 0.006264 31.84
 Standard Dev_{norm} 0.00008232 0.5693
 Coeff. of Var. [%]_{norm} 1.314 1.788
 Min. 0.006147 30.75
 Max. 0.006399 32.80
 Number of Spec. 18 18



4.22 “40/20/40” Open-Hole Compression 3 Properties (OHC3)

Laminate Open-Hole Compression Properties (OHC3)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

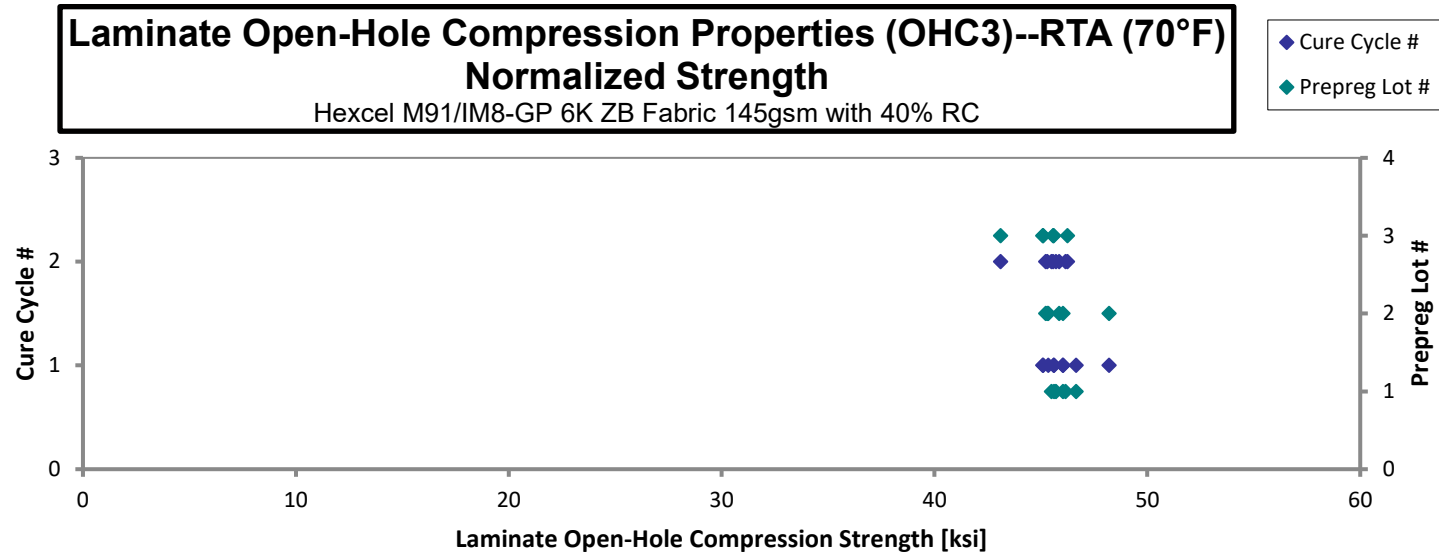
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-RTA-1	A	C1	1	1	45.42	0.1253	20	LGM	0.006267	46.66
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-RTA-2	A	C1	1	1	44.47	0.1252	20	LGM	0.006258	45.62
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-RTA-3	A	C1	1	1	44.84	0.1253	20	LGM	0.006264	46.04
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-RTA-1	A	C2	1	2	44.55	0.1252	20	LGM	0.006258	45.70
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-RTA-2	A	C2	1	2	44.31	0.1253	20	LGM	0.006264	45.50
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-RTA-3	A	C2	1	2	44.95	0.1253	20	LGM	0.006263	46.16
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-RTA-1	B	C1	2	1	43.64	0.1268	20	LGM	0.006339	45.35
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-RTA-2	B	C1	2	1	44.10	0.1274	20	LGM	0.006369	46.04
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-RTA-3	B	C1	2	1	46.28	0.1271	20	M(A,L)GM	0.006353	48.20
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-RTA-1	B	C2	2	2	43.68	0.1265	20	LGM	0.006327	45.31
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-RTA-2	B	C2	2	2	43.31	0.1274	20	LGM	0.006370	45.22
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-RTA-3	B	C2	2	2	44.03	0.1271	20	LGM	0.006353	45.85
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-RTA-1	C	C1	3	1	45.21	0.1231	20	LGM	0.006153	45.60
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-RTA-2	C	C1	3	1	45.01	0.1222	20	LGM	0.006110	45.09
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-RTA-3	C	C1	3	1	44.46	0.1238	20	M(A,L)GM	0.006188	45.11
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-RTA-1	C	C2	3	2	46.12	0.1224	20	LGM	0.006118	46.25
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-RTA-2	C	C2	3	2	45.58	0.1220	20	LGM	0.006098	45.57
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-RTA-3	C	C2	3	2	42.50	0.1238	20	LGM	0.006188	43.11

Average 44.58 0.1250
 Standard Dev. 0.9716 0.001826
 Coeff. of Var. [%] 2.179 1.460
 Min. 42.50 0.1220
 Max. 46.28 0.1274
 Number of Spec. 18 18

Average_{norm} 0.006252 45.69
 Standard Dev._{norm} 0.00009130 0.9685
 Coeff. of Var. [%]_{norm} 1.460 2.120
 Min. 0.006098 43.11
 Max. 0.006370 48.20
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Open-Hole Compression Properties (OHC3)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

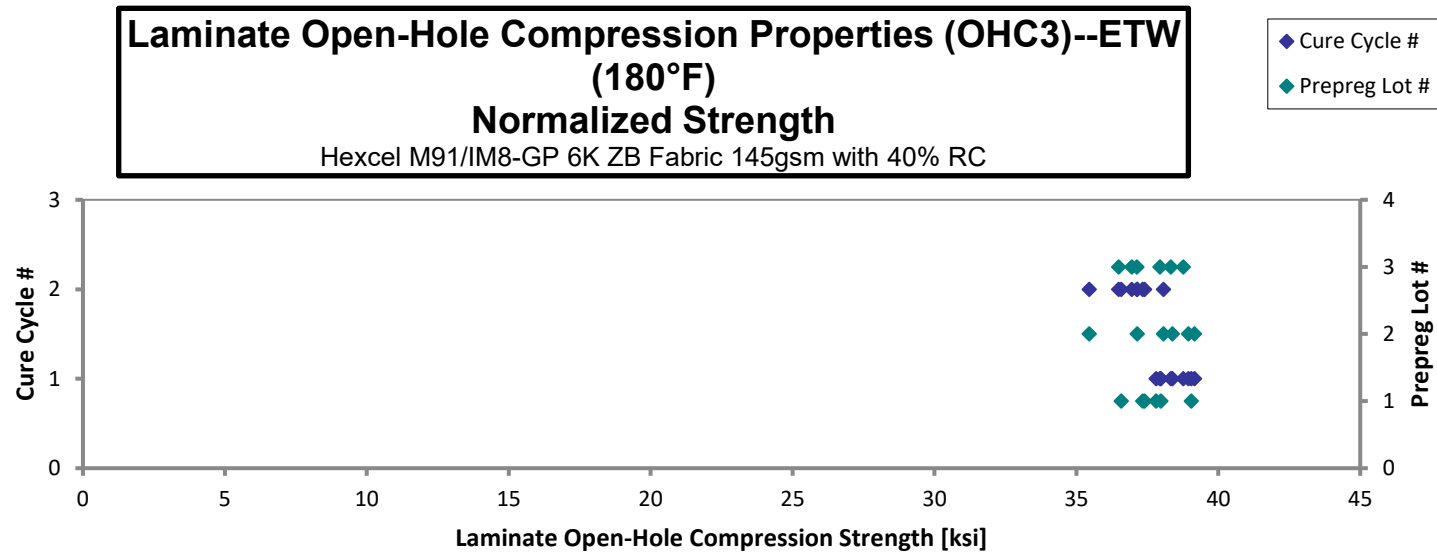
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-ETW-1	A	C1	1	1	36.98	0.1253	20	LGM	0.006266	37.98
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-ETW-2	A	C1	1	1	36.81	0.1253	20	LGM	0.006267	37.81
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-ETW-3	A	C1	1	1	38.06	0.1252	20	LGM	0.006258	39.05
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-ETW-1	A	C2	1	2	36.41	0.1253	20	LGM	0.006267	37.41
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-ETW-2	A	C2	1	2	35.68	0.1251	20	LGM	0.006254	36.58
NTPM911Q1-HXL-H40-NIAR-OHC3-A-C2-1-ETW-3	A	C2	1	2	36.40	0.1251	20	LGM	0.006256	37.33
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-ETW-1	B	C1	2	1	37.39	0.1271	20	LGM	0.006355	38.95
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-ETW-2	B	C1	2	1	36.90	0.1269	20	LGM	0.006345	38.39
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C1-1-ETW-3	B	C1	2	1	37.54	0.1273	20	LGM	0.006364	39.16
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-ETW-1	B	C2	2	2	35.64	0.1272	20	LGM	0.006358	37.15
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-ETW-2	B	C2	2	2	36.33	0.1278	20	LGM	0.006391	38.07
NTPM911Q1-HXL-H40-NIAR-OHC3-B-C2-1-ETW-3	B	C2	2	2	34.03	0.1271	20	LGM	0.006355	35.45
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-ETW-1	C	C1	3	1	37.34	0.1240	20	LGM	0.006198	37.94
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-ETW-2	C	C1	3	1	38.23	0.1237	20	LGM	0.006186	38.76
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C1-1-ETW-3	C	C1	3	1	37.81	0.1237	20	LGM	0.006184	38.33
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-ETW-1	C	C2	3	2	36.41	0.1238	20	LGM	0.006191	36.96
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-ETW-2	C	C2	3	2	36.15	0.1232	20	LGM	0.006158	36.49
NTPM911Q1-HXL-H40-NIAR-OHC3-C-C2-1-ETW-3	C	C2	3	2	36.81	0.1231	20	LGM	0.006154	37.13

Average 36.72 0.1253
Standard Dev. 1.004 0.001561
Coeff. of Var. [%] 2.734 1.245
Min. 34.03 0.1231
Max. 38.23 0.1278
Number of Spec. 18 18

Average_{norm} 0.006267 37.72
Standard Dev_{norm} 0.00007805 0.9993
Coeff. of Var. [%]_{norm} 1.245 2.649
Min. 0.006154 35.45
Max. 0.006391 39.16
Number of Spec. 18 18



4.23 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)

In some cases of FHC1>UNC1, UNC1 data is recommended for design. The FHC1 data is for informational purposes only and is not appropriate to be used for design. Shaded values indicated FHC1>UNC1

Laminate Filled-Hole Compression Properties (FHC1)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

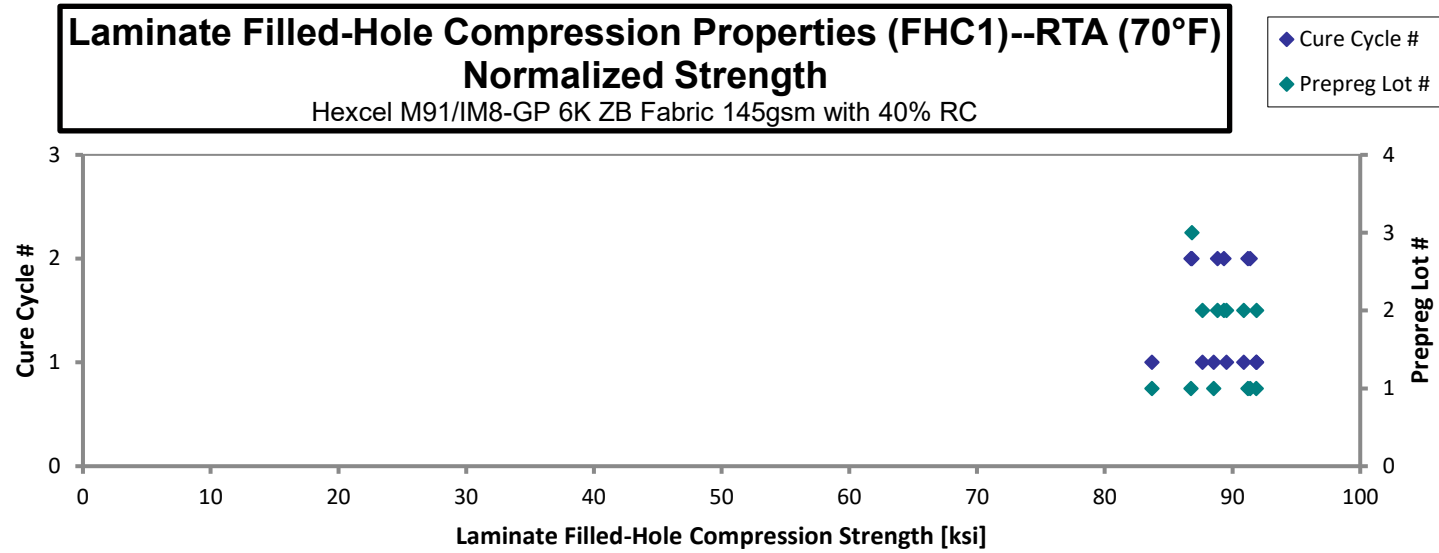
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-RTA-1	A	C1	1	1	89.80	0.1248	20	LGF	0.006240	91.86
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-RTA-3	A	C1	1	1	86.78	0.1245	20	LGF	0.006223	88.52
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-RTA-4	A	C1	1	1	81.83	0.1248	20	LGF	0.006240	83.71
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C2-1-RTA-1	A	C2	1	2	85.73	0.1235	20	LGF	0.006173	86.76
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C2-1-RTA-2	A	C2	1	2	90.00	0.1236	20	LGF	0.006182	91.20
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C2-1-RTA-3	A	C2	1	2	90.30	0.1235	20	LGF	0.006173	91.38
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C1-1-RTA-1	B	C1	2	1	85.99	0.1270	20	LGF	0.006351	89.53
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C1-1-RTA-2	B	C1	2	1	83.94	0.1274	20	LGF	0.006370	87.65
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C1-1-RTA-3	B	C1	2	1	87.48	0.1267	20	LGF	0.006337	90.88
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C1-1-RTA-4	B	C1	2	1	87.98	0.1274	20	LGF	0.006372	91.90
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C2-1-RTA-3	B	C2	2	2	85.79	0.1263	20	LGF	0.006317	88.84
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C2-1-RTA-4	B	C2	2	2	86.37	0.1262	20	LGF	0.006309	89.33
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C2-1-RTA-3	C	C2	3	2	85.83	0.1234	20	LGF	0.006171	86.82

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

Average 86.76 0.1253
Standard Dev. 2.417 0.001583
Coeff. of Var. [%] 2.786 1.263
Min. 81.83 0.1234
Max. 90.30 0.1274
Number of Spec. 13 13

Average_{norm} 0.006266 89.11
Standard Dev._{norm} 0.00007916 2.428
Coeff. of Var. [%]_{norm} 1.263 2.724
Min. 0.006171 83.71
Max. 0.006372 91.90
Number of Spec. 13 13



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Filled-Hole Compression Properties (FHC1)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing
t_{ply} [in]
0.006100

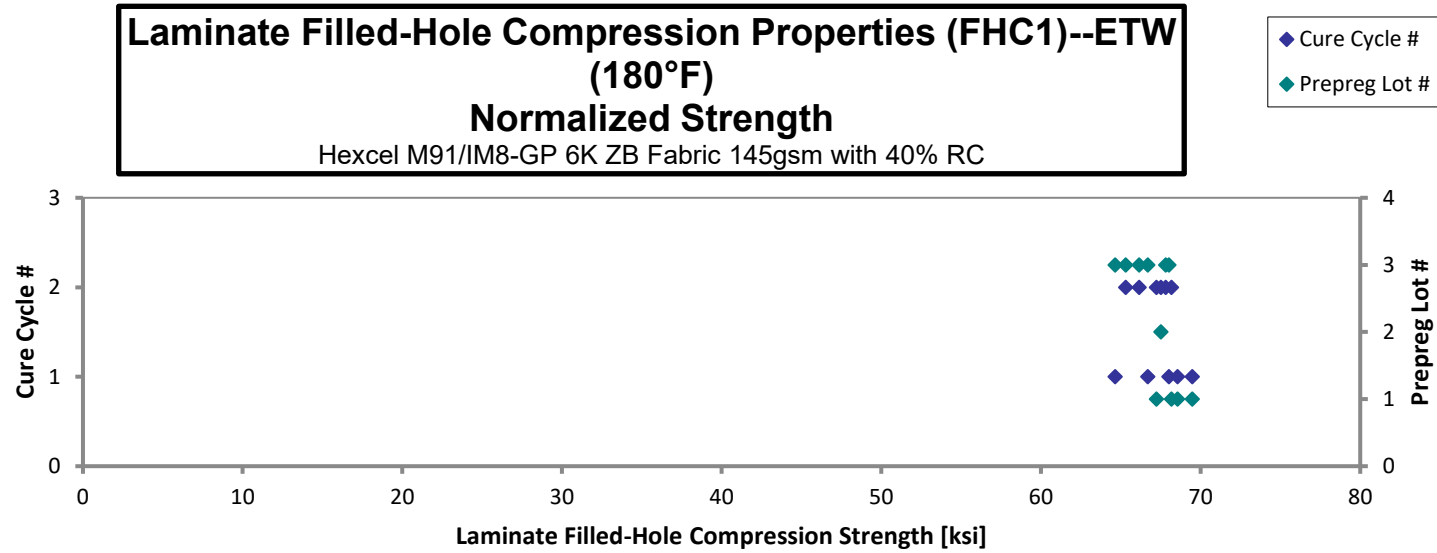
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-ETW-2	A	C1	1	1	68.08	0.1245	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-ETW-3	A	C1	1	1	66.95	0.1250	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C2-1-ETW-1	A	C2	1	2	66.99	0.1242	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-A-C2-1-ETW-2	A	C2	1	2	66.16	0.1240	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-B-C2-1-ETW-2	B	C2	2	2	65.44	0.1259	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C1-1-ETW-1	C	C1	3	1	65.99	0.1233	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C1-1-ETW-2	C	C1	3	1	67.39	0.1231	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C1-1-ETW-3	C	C1	3	1	63.92	0.1234	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C2-1-ETW-1	C	C2	3	2	65.41	0.1234	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C2-1-ETW-2	C	C2	3	2	67.05	0.1234	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC1-C-C2-1-ETW-3	C	C2	3	2	64.52	0.1235	20	LGF

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.006227	69.49
0.006248	68.57
0.006208	68.18
0.006198	67.23
0.006294	67.52
0.006166	66.70
0.006157	68.01
0.006169	64.65
0.006169	66.15
0.006169	67.81
0.006175	65.32

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

Average 66.17 0.1240
Standard Dev. 1.268 0.0008577
Coeff. of Var. [%] 1.916 0.6919
Min. 63.92 0.1231
Max. 68.08 0.1259
Number of Spec. 11 11

Average_{norm} 0.006198 67.24
Standard Dev._{norm} 0.00004289 1.435
Coeff. of Var. [%]_{norm} 0.6919 2.134
Min. 0.006157 64.65
Max. 0.006294 69.49
Number of Spec. 11 11



4.24 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

In some cases of FHC2>UNC2, UNC2 data is recommended for design. The FHC1 data is for informational purposes only and is not appropriate to be used for design. Shaded values indicated FHC2>UNC2

Laminate Filled-Hole Compression Properties (FHC2)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

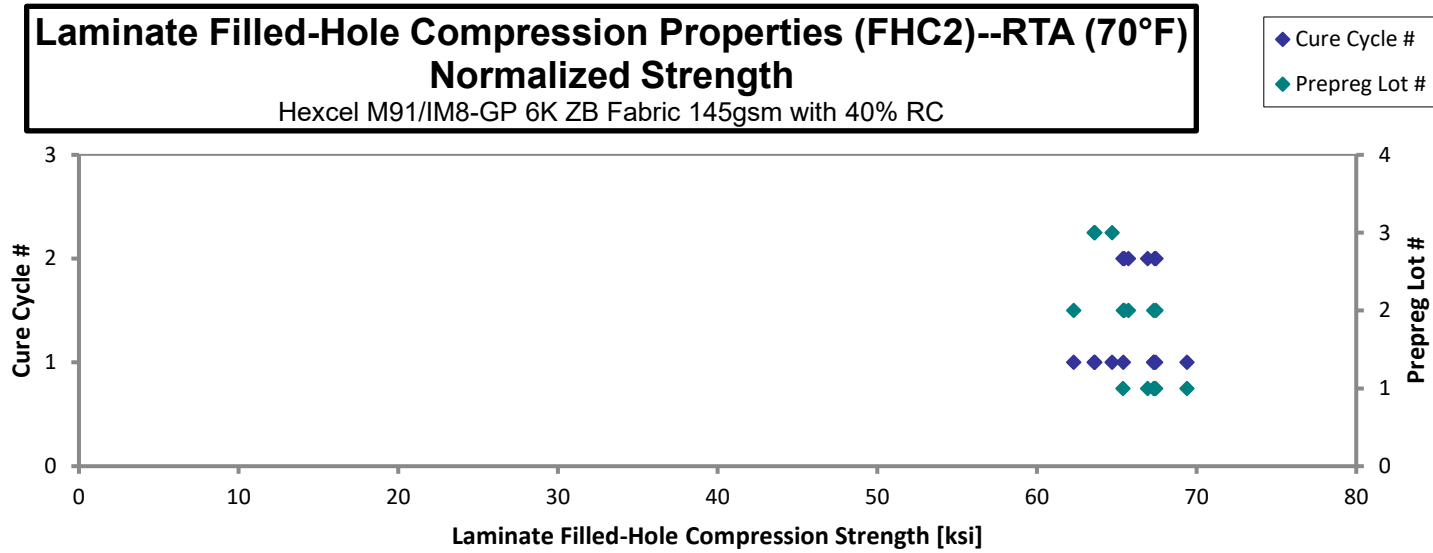
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C1-1-RTA-2	A	C1	1	1	66.24	0.1240	20	M(A,L)GF	0.006200	67.32
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C1-1-RTA-3	A	C1	1	1	66.07	0.1245	20	M(A,L)GF	0.006226	67.43
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C1-1-RTA-4	A	C1	1	1	68.17	0.1242	20	M(A,L)GF	0.006211	69.41
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C2-1-RTA-2	A	C2	1	2	64.13	0.1244	20	M(A,L)GF	0.006220	65.39
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C2-1-RTA-3	A	C2	1	2	66.08	0.1244	20	M(A,L)GF	0.006220	67.38
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C2-1-RTA-4	A	C2	1	2	65.99	0.1237	20	M(A,L)GF	0.006187	66.93
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C1-1-RTA-1	B	C1	2	1	60.48	0.1257	20	M(A,L)GF	0.006283	62.30
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C1-1-RTA-2	B	C1	2	1	64.77	0.1268	20	M(A,L)GF	0.006340	67.32
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C1-1-RTA-3	B	C1	2	1	63.17	0.1263	20	LGF	0.006317	65.41
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C2-1-RTA-1	B	C2	2	2	63.37	0.1261	20	LGF	0.006303	65.48
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C2-1-RTA-3	B	C2	2	2	64.93	0.1268	20	M(A,L)GF	0.006338	67.46
NTPM911Q1-HXL-H40-NIAR-FHC2-B-C2-1-RTA-4	B	C2	2	2	63.07	0.1272	20	M(A,L)GF	0.006359	65.74
NTPM911Q1-HXL-H40-NIAR-FHC2-C-C1-1-RTA-1	C	C1	3	1	63.45	0.1223	20	LGF	0.006117	63.62
NTPM911Q1-HXL-H40-NIAR-FHC2-C-C1-1-RTA-2	C	C1	3	1	63.18	0.1228	20	M(A,L)GF	0.006139	63.59
NTPM911Q1-HXL-H40-NIAR-FHC2-C-C1-1-RTA-3	C	C1	3	1	63.91	0.1235	20	M(A,L)GF	0.006177	64.72

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

Average	64.47	0.1248
Standard Dev.	1.861	0.001523
Coeff. of Var. [%]	2.887	1.220
Min.	60.48	0.1223
Max.	68.17	0.1272
Number of Spec.	15	15

Average _{norm}	0.006242	65.97
Standard Dev. _{norm}	0.00007617	1.888
Coeff. of Var. [%] _{norm}	1.220	2.863
Min.	0.006117	62.30
Max.	0.006359	69.41
Number of Spec.	15	15



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Filled-Hole Compression Properties (FHC2)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

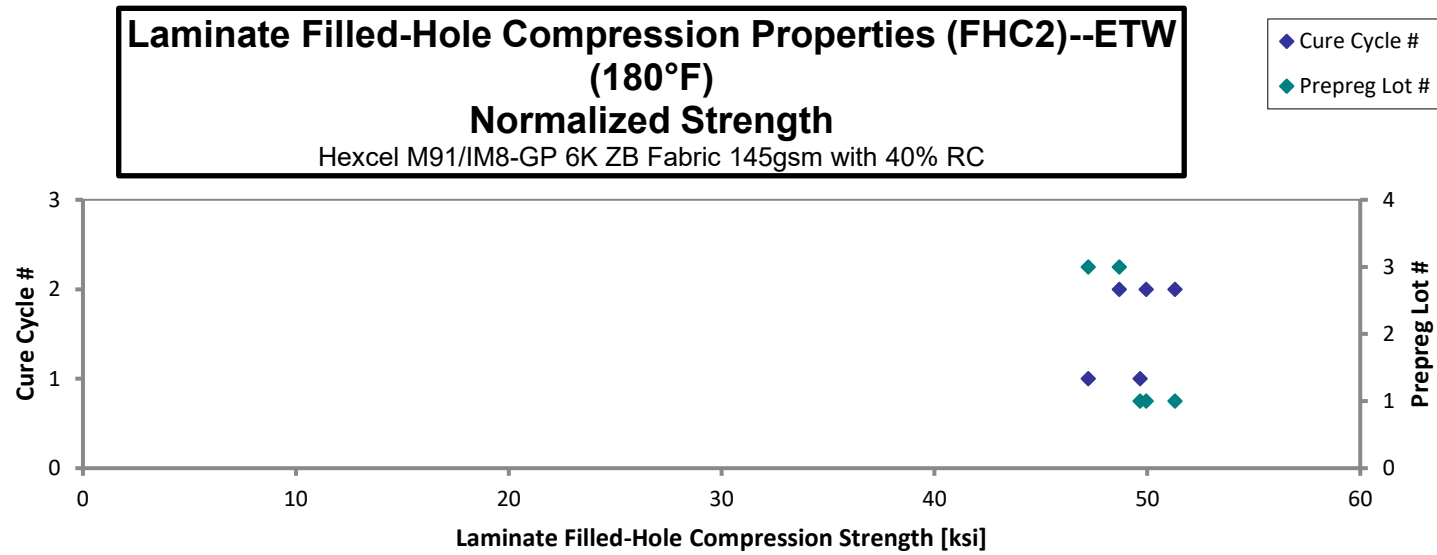
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C1-1-ETW-3	A	C1	1	1	48.89	0.1239	20	M(A,L)GF
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C2-1-ETW-1	A	C2	1	2	50.62	0.1236	20	M(A,L)GF
NTPM911Q1-HXL-H40-NIAR-FHC2-A-C2-1-ETW-3	A	C2	1	2	49.10	0.1241	20	M(A,L)GF
NTPM911Q1-HXL-H40-NIAR-FHC2-C-C1-1-ETW-1	C	C1	3	1	46.67	0.1235	20	LGF
NTPM911Q1-HXL-H40-NIAR-FHC2-C-C2-1-ETW-1	C	C2	3	2	48.13	0.1234	20	M(A,L)GF

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.006197	49.66
0.006182	51.29
0.006206	49.95
0.006174	47.23
0.006169	48.68

Number of specimens reported is less than the required number of 18 specimens due to invalid failure mode

Average 48.68 0.1237
Standard Dev. 1.443 0.0003079
Coeff. of Var. [%] 2.964 0.2489
Min. 46.67 0.1234
Max. 50.62 0.1241
Number of Spec. 5 5

Average_{norm} 0.006186 49.37
Standard Dev._{norm} 0.00001540 1.515
Coeff. of Var. [%]_{norm} 0.2489 3.068
Min. 0.006169 47.23
Max. 0.006206 51.29
Number of Spec. 5 5



4.25 “40/20/40” Filled-Hole Compression 3 Properties (FHC3)

Laminate Filled-Hole Compression Properties (FHC3)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

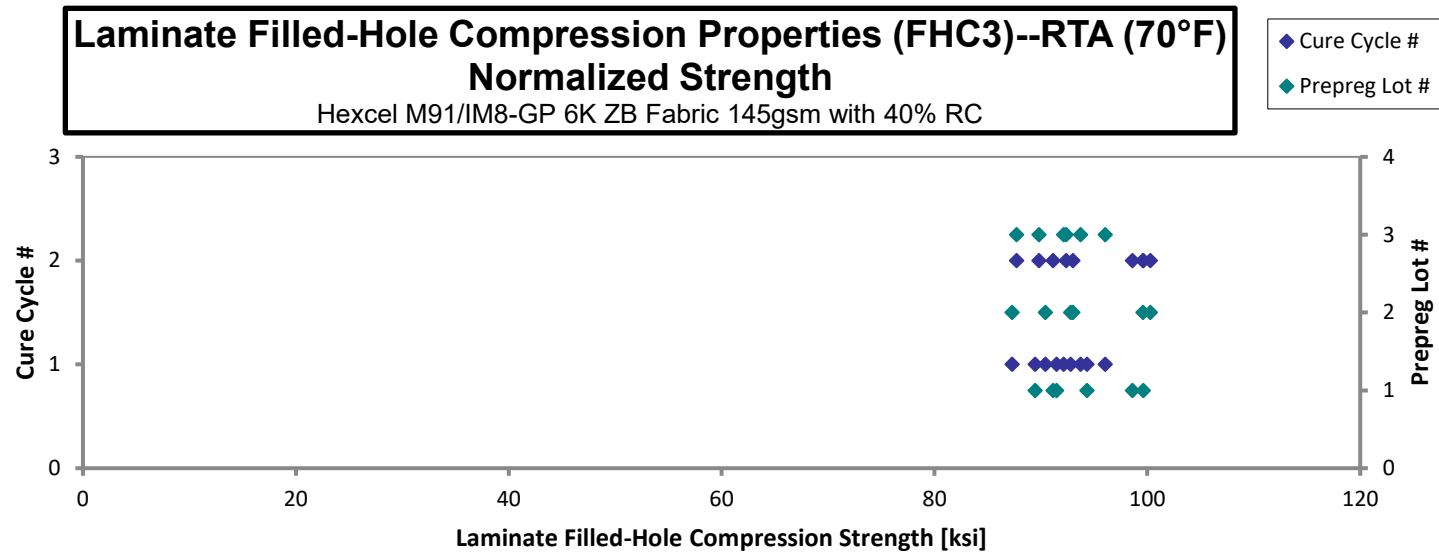
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-RTA-1	A	C1	1	1	87.93	0.1241	20	LGF	0.006207	89.47
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-RTA-2	A	C1	1	1	89.82	0.1243	20	LGF	0.006213	91.47
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-RTA-3	A	C1	1	1	92.84	0.1240	20	LGF	0.006198	94.33
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-RTA-1	A	C2	1	2	97.13	0.1239	20	LGF	0.006193	98.61
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-RTA-2	A	C2	1	2	89.39	0.1244	20	LGF	0.006220	91.15
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-RTA-3	A	C2	1	2	98.00	0.1240	20	LGF	0.006201	99.62
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-RTA-1	B	C1	2	1	84.45	0.1261	20	LGF	0.006305	87.29
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-RTA-2	B	C1	2	1	89.35	0.1267	20	LGF	0.006335	92.80
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-RTA-3	B	C1	2	1	87.55	0.1260	20	LGF	0.006299	90.41
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-RTA-1	B	C2	2	2	97.03	0.1261	20	LGF	0.006305	100.3
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-RTA-2	B	C2	2	2	89.70	0.1265	20	LGF	0.006325	93.01
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-RTA-3	B	C2	2	2	95.72	0.1269	20	LGF	0.006347	99.59
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-RTA-1	C	C1	3	1	91.80	0.1225	20	LGF	0.006123	92.15
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-RTA-2	C	C1	3	1	95.38	0.1229	20	LGF	0.006143	96.05
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-RTA-3	C	C1	3	1	92.47	0.1237	20	LGF	0.006184	93.74
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-RTA-2	C	C2	3	2	89.19	0.1229	20	LGF	0.006143	89.81
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-RTA-3	C	C2	3	2	91.03	0.1238	20	LGF	0.006191	92.38
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-RTA-4	C	C2	3	2	86.42	0.1238	20	LGF	0.006191	87.71

Average 91.40 0.1246
 Standard Dev. 3.945 0.001419
 Coeff. of Var. [%] 4.316 1.139
 Min. 84.45 0.1225
 Max. 98.00 0.1269
 Number of Spec. 18 18

Average_{norm} 0.006229 93.33
 Standard Dev._{norm} 0.00007096 4.047
 Coeff. of Var. [%]_{norm} 1.139 4.336
 Min. 0.006123 87.29
 Max. 0.006347 100.3
 Number of Spec. 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Filled-Hole Compression Properties (FHC3)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

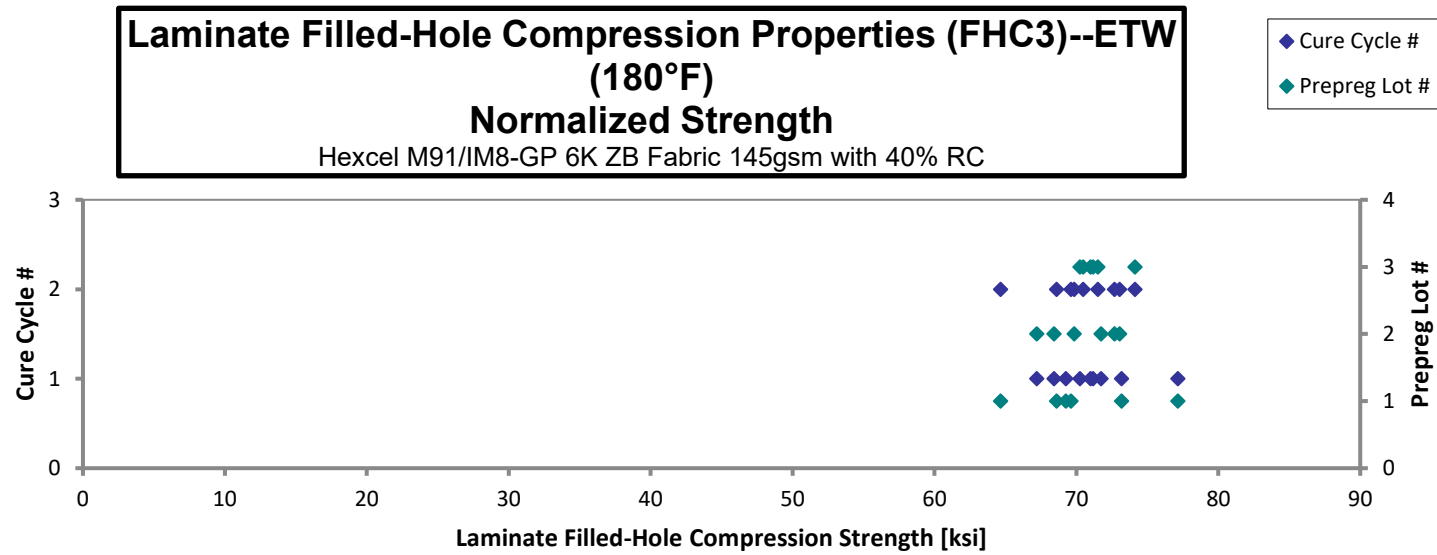
t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-ETW-1	A	C1	1	1	75.59	0.1245	20	LGF	0.006227	77.16
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-ETW-2	A	C1	1	1	71.44	0.1250	20	LGF	0.006248	73.18
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-ETW-3	A	C1	1	1	67.53	0.1251	20	LGF	0.006257	69.27
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-ETW-1	A	C2	1	2	68.52	0.1240	20	LGF	0.006198	69.63
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-ETW-2	A	C2	1	2	67.19	0.1246	20	LGF	0.006228	68.60
NTPM911Q1-HXL-H40-NIAR-FHC3-A-C2-1-ETW-3	A	C2	1	2	63.65	0.1240	20	LGF	0.006198	64.67
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-ETW-1	B	C1	2	1	69.16	0.1266	20	LGF	0.006328	71.74
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-ETW-2	B	C1	2	1	64.69	0.1268	20	LGF	0.006338	67.20
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C1-1-ETW-3	B	C1	2	1	66.00	0.1265	20	LGF	0.006324	68.42
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-ETW-1	B	C2	2	2	69.80	0.1277	20	LGF	0.006383	73.04
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-ETW-2	B	C2	2	2	69.63	0.1274	20	LGF	0.006368	72.68
NTPM911Q1-HXL-H40-NIAR-FHC3-B-C2-1-ETW-3	B	C2	2	2	66.96	0.1273	20	LGF	0.006363	69.84
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-ETW-1	C	C1	3	1	69.33	0.1237	20	LGF	0.006183	70.26
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-ETW-2	C	C1	3	1	70.15	0.1235	20	LGF	0.006173	71.00
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C1-1-ETW-3	C	C1	3	1	70.32	0.1235	20	LGF	0.006174	71.18
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-ETW-1	C	C2	3	2	72.96	0.1240	20	LGF	0.006198	74.12
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-ETW-2	C	C2	3	2	69.48	0.1238	20	LGF	0.006188	70.48
NTPM911Q1-HXL-H40-NIAR-FHC3-C-C2-1-ETW-3	C	C2	3	2	70.24	0.1242	20	LGF	0.006211	71.52

Average 69.04 0.1251
 Standard Dev. 2.840 0.001486
 Coeff. of Var. [%] 4.114 1.188
 Min. 63.65 0.1235
 Max. 75.59 0.1277
 Number of Spec. 18 18

Average_{norm} 0.006255 70.78
 Standard Dev._{norm} 0.00007431 2.801
 Coeff. of Var. [%]_{norm} 1.188 3.957
 Min. 0.006173 64.67
 Max. 0.006383 77.16
 Number of Spec. 18 18



4.26 “25/50/25” Single-Shear Bearing 1 Proc. C Properties (SSB1, D=0.19”, e=0.38)

Laminate Single-Shear Bearing 1 Proc. C Properties (SSB1, D=0.19”, e=0.38)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

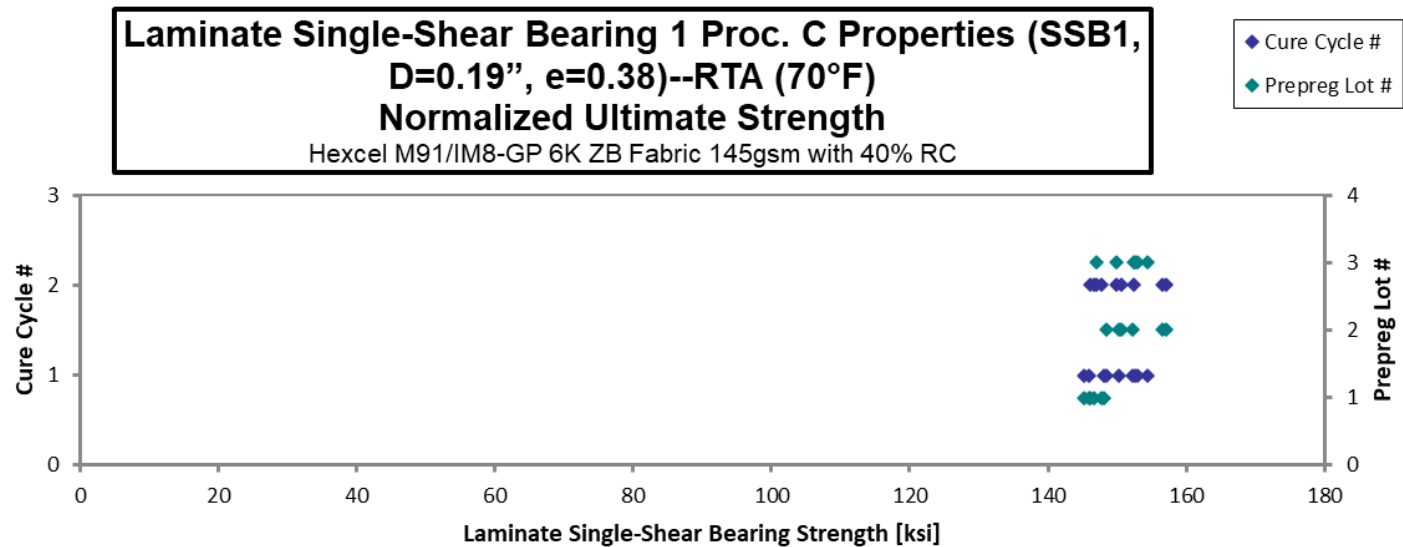
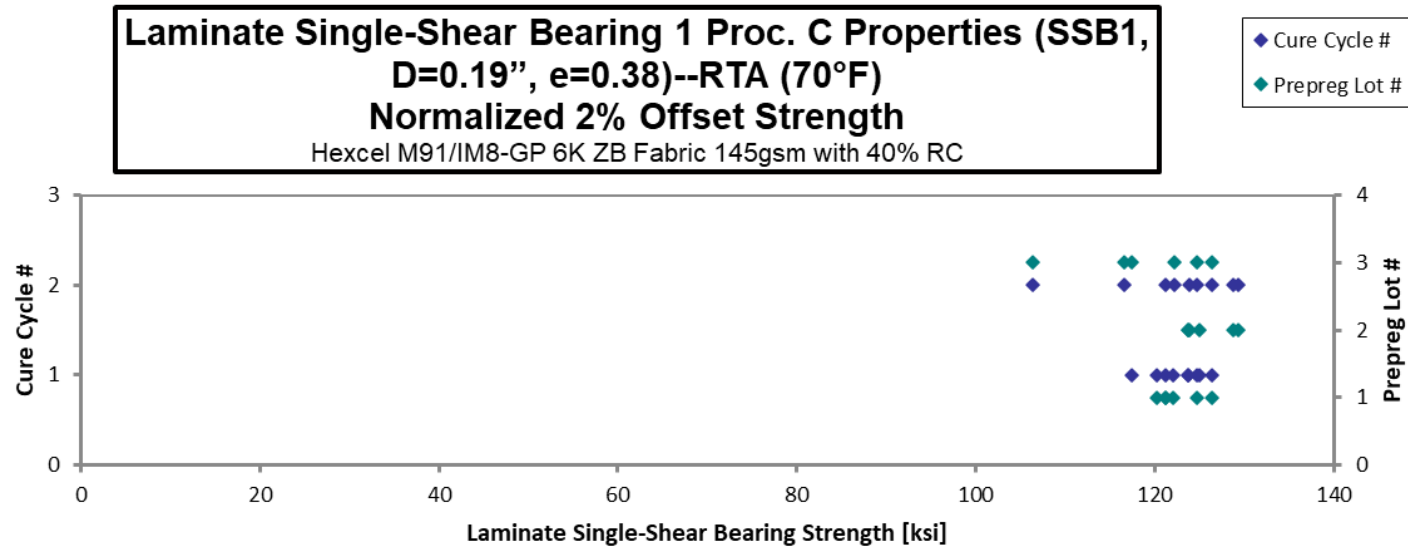
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-RTA-1	A	C1	1	1	121.4	145.4	0.07307	12	M(B,C)1I	0.006089	121.2	145.2
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-RTA-2	A	C1	1	1	118.9	144.4	0.07398	12	M(B,C)1I	0.006165	120.2	146.0
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-RTA-3	A	C1	1	1	122.0	148.0	0.07322	12	M(B,C)1I	0.006101	122.1	148.0
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-RTA-1	A	C2	1	2	124.4	146.3	0.07333	12	M(B,C)1I	0.006111	124.6	146.6
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-RTA-2	A	C2	1	2	120.8	147.2	0.07345	12	M(B,C)1I	0.006121	121.2	147.7
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-RTA-3	A	C2	1	2	126.2	145.8	0.07335	12	M(B,C)1I	0.006113	126.4	146.1
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-RTA-1	B	C1	2	1	121.4	145.8	0.07457	12	M(B,C,L)1I	0.006214	123.7	148.5
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-RTA-2	B	C1	2	1	121.3	147.4	0.07467	12	M(B,C,L)1I	0.006222	123.8	150.3
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-RTA-3	B	C1	2	1	123.0	149.7	0.07442	12	M(B,C,L)1I	0.006201	125.0	152.1
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-RTA-1	B	C2	2	2	120.2	151.9	0.07540	12	M(B,C,L)1I	0.006283	123.9	156.5
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-RTA-2	B	C2	2	2	124.9	145.4	0.07580	12	M(B,C,L)1I	0.006317	129.3	150.6
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-RTA-3	B	C2	2	2	124.4	151.7	0.07578	12	M(B,C,L)1I	0.006315	128.8	157.0
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-RTA-1	C	C1	3	1	127.1	154.0	0.07275	12	M(C,L)1I	0.006063	126.3	153.0
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-RTA-2	C	C1	3	1	124.8	152.8	0.07312	12	M(C,L)1I	0.006093	124.7	152.6
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-RTA-3	C	C1	3	1	117.8	154.9	0.07298	12	M(C,L)1I	0.006082	117.4	154.4
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-RTA-1	C	C2	3	2	116.0	146.4	0.07353	12	M(C,L)1I	0.006128	116.6	147.0
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-RTA-2	C	C2	3	2	105.9	151.7	0.07353	12	M(C,L)1I	0.006128	106.4	152.3
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-RTA-3	C	C2	3	2	121.8	149.5	0.07338	12	M(C,L)1I	0.006115	122.1	149.9

Average 121.2 148.8 0.07391
 Standard Dev. 4.783 3.292 0.0009705
 Coeff. of Var. [%] 3.945 2.213 1.313
 Min. 105.9 144.4 0.07275
 Max. 127.1 154.9 0.07580
 Number of Spec. 18 18 18

Average_{norm} 0.006159 122.4 150.2
 Standard Dev._{norm} 0.00008087 5.230 3.625
 Coeff. of Var. [%]_{norm} 1.313 4.272 2.413
 Min. 0.006063 106.4 145.2
 Max. 0.006317 129.3 157.0
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 1 Proc. C Properties (SSB1, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-ETW-1	A	C1	1	1		120.1	130.2	0.07287	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-ETW-2	A	C1	1	1		113.1	130.7	0.07397	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-ETW-3	A	C1	1	1		109.3	128.1	0.07437	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-ETW-1*	A	C2	1	2	116.4	116.0	131.1	0.07338	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-ETW-2*	A	C2	1	2	124.5	123.2	133.7	0.07355	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C2-1-ETW-3	A	C2	1	2		110.4	123.6	0.07300	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-ETW-1	B	C1	2	1		104.7	124.5	0.07312	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-ETW-2*	B	C1	2	1	113.5	112.5	125.4	0.07557	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-ETW-3*	B	C1	2	1	119.0	116.6	128.9	0.07587	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-ETW-1	B	C2	2	2		112.0	127.9	0.07513	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-ETW-2	B	C2	2	2		115.0	126.7	0.07550	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C2-1-ETW-3*	B	C2	2	2	111.7	111.4	125.4	0.07533	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-ETW-1**	C	C1	3	1		92.24	124.1	0.07315	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-ETW-2**	C	C1	3	1		91.25	123.5	0.07332	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-ETW-3**	C	C1	3	1		87.38	130.4	0.07315	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-ETW-1**	C	C2	3	2		84.28	125.5	0.07342	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-ETW-2**	C	C2	3	2		96.61	126.6	0.07328	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C2-1-ETW-3**	C	C2	3	2		96.88	128.6	0.07333	12	B1I, S1I

Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006072		119.5	129.6
0.006164		114.3	132.1
0.006197		111.0	130.2
0.006115	116.7	116.2	131.4
0.006129	125.1	123.7	134.3
0.006083		110.1	123.3
0.006093		104.5	124.4
0.006297	117.2	116.1	129.4
0.006322	123.3	120.8	133.6
0.006261		114.9	131.3
0.006292		118.6	130.7
0.006278	115.0	114.6	129.1
0.006096		92.18	124.0
0.006110		91.40	123.7
0.006096		87.32	130.3
0.006118		84.53	125.9
0.006107		96.72	126.8
0.006111		97.05	128.8

*Initial peak strength reported only when observed
 **2% Offset was lower for batch C as a compounded failure mode if bearing and shear was observed, compared to batches A and B, in which only bearing failure was observed

Average 117.0
 Standard Dev. 5.023
 Coeff. of Var. [%] 4.292
 Min. 111.7
 Max. 124.5
 Number of Spec. 5

106.3
 11.80
 11.11
 84.28
 123.2
 18

127.5
 2.935
 2.302
 123.5
 133.7
 18

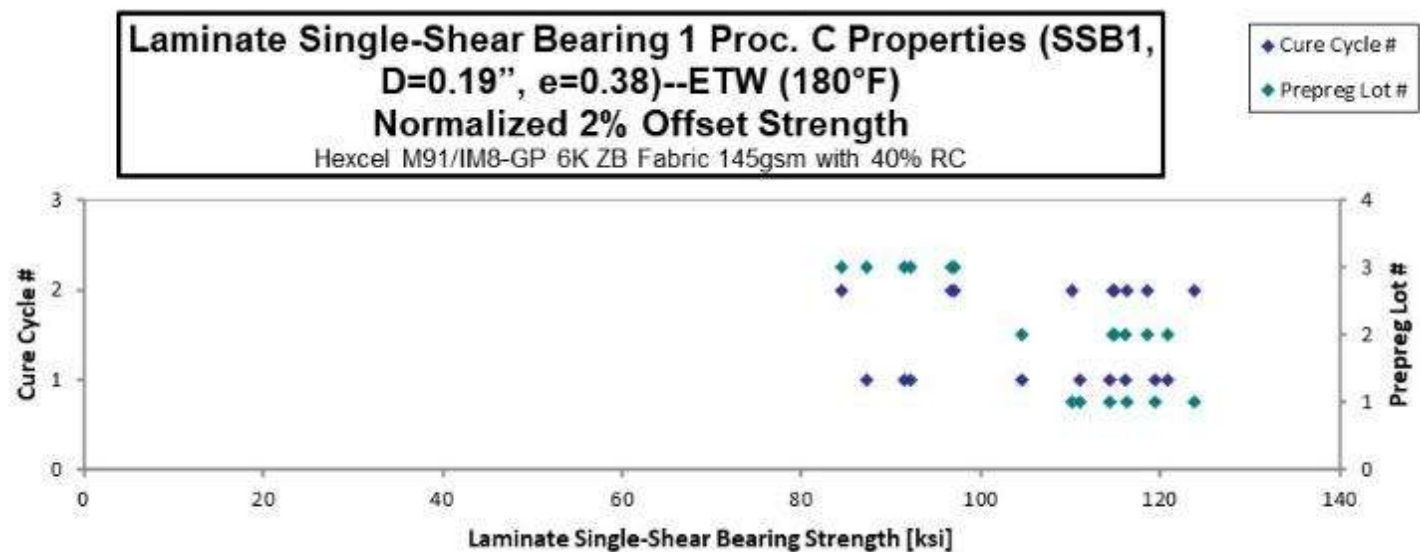
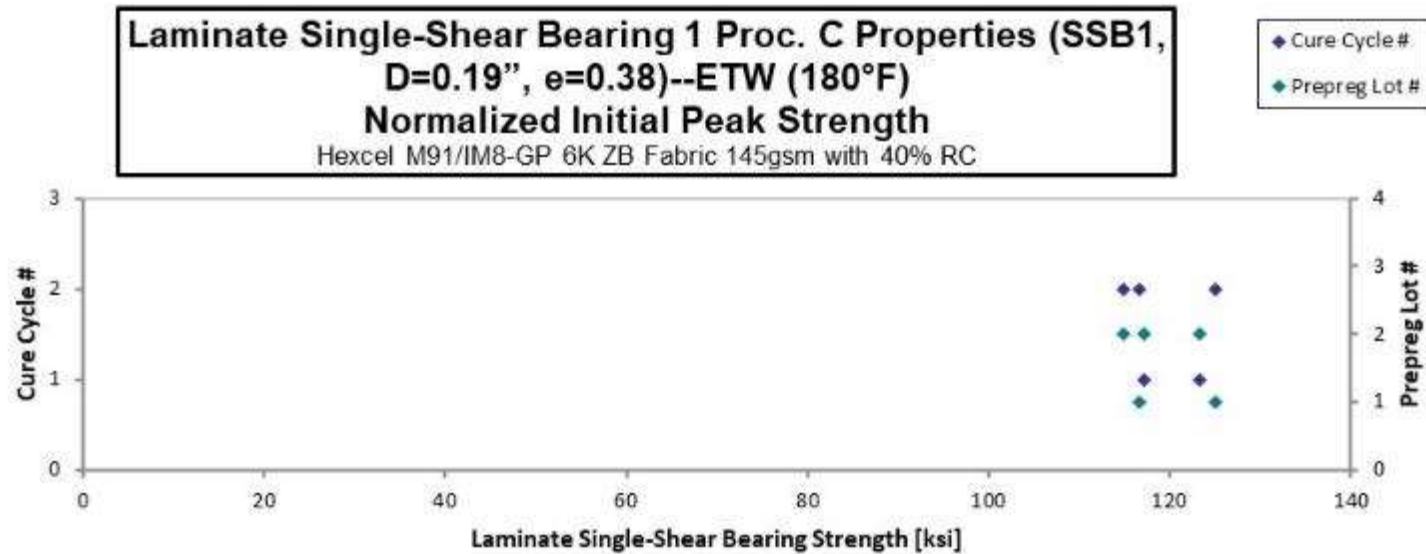
0.07396
 0.001035
 1.400
 0.07287
 0.07587
 18

Average_{norm} 0.006163
 Standard Dev._{norm} 0.00008627
 Coeff. of Var. [%]_{norm} 1.400
 Min. 0.006072
 Max. 0.006322
 Number of Spec. 18

119.5
 4.470
 3.742
 115.0
 125.1
 5

107.4
 12.59
 11.72
 84.53
 123.7
 18

128.8
 3.405
 2.643
 123.3
 134.3
 18





4.27 “40/20/40” Single-Shear Bearing 3 Proc. C Properties (SSB3, D=0.19”, e=0.38)

Laminate Single-Shear Bearing 3 Proc. C Properties (SSB3, D=0.19”, e=0.38)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

0.006100

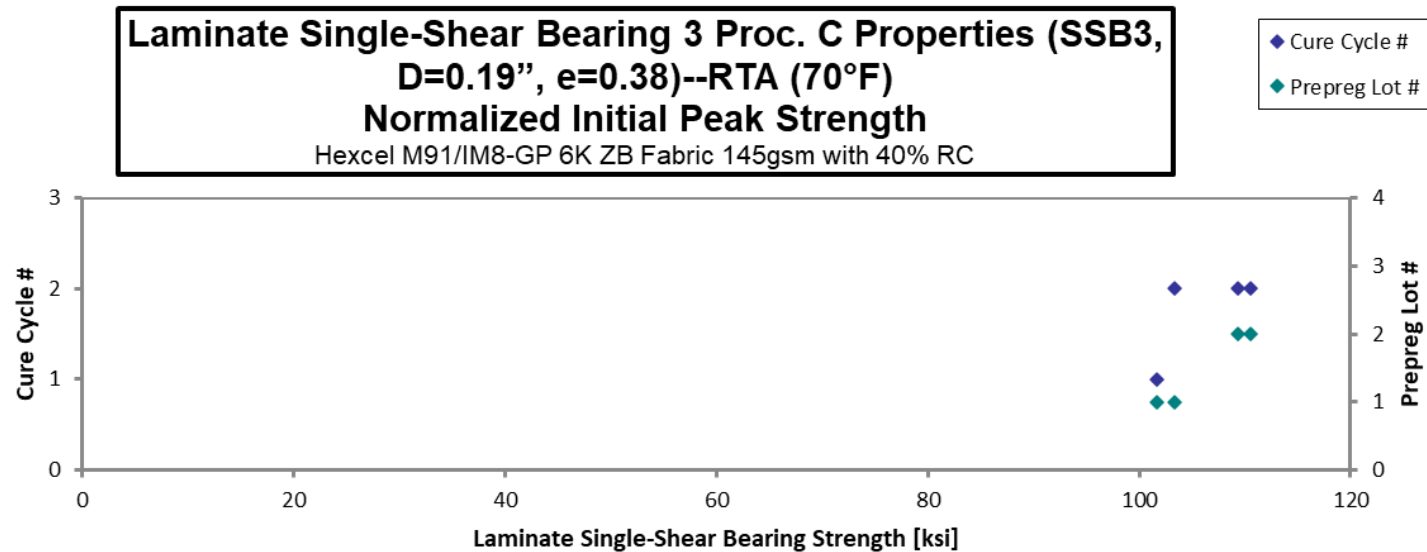
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-RTA-1*	A	C1	1	1	102.1	100.9	106.6	0.07292	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-RTA-2	A	C1	1	1		105.5	107.2	0.07258	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-RTA-3	A	C1	1	1		105.5	107.2	0.07238	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-RTA-1	A	C2	1	2		102.3	111.3	0.07423	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-RTA-2	A	C2	1	2		103.6	116.9	0.07507	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-RTA-3*	A	C2	1	2	101.8	97.03	107.7	0.07432	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-RTA-1	B	C1	2	1		102.5	110.6	0.07453	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-RTA-2	B	C1	2	1		106.4	110.8	0.07497	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-RTA-3	B	C1	2	1		106.0	121.2	0.07495	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-RTA-1	B	C2	2	2		102.7	112.2	0.07522	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-RTA-2*	B	C2	2	2	106.7	105.4	111.9	0.07588	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-RTA-3*	B	C2	2	2	105.4	103.1	110.2	0.07597	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-RTA-1	C	C1	3	1		103.9	115.3	0.07337	12	S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-RTA-2	C	C1	3	1		105.0	113.5	0.07348	12	S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-RTA-3	C	C1	3	1		105.9	114.7	0.07312	12	S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-RTA-1	C	C2	3	2		107.4	115.1	0.07247	12	S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-RTA-2	C	C2	3	2		105.4	114.9	0.07315	12	S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-RTA-3	C	C2	3	2		112.1	113.3	0.07325	12	S1I

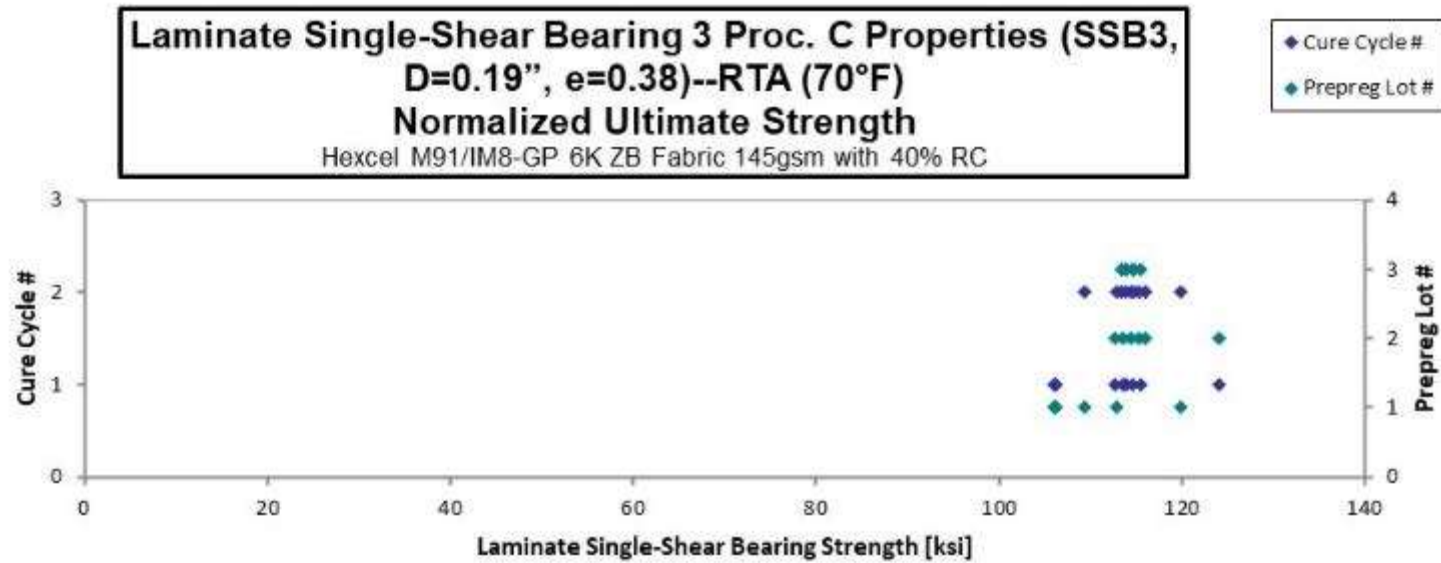
Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006076	101.7	100.5	106.2
0.006049		104.6	106.3
0.006032		104.4	106.0
0.006186		103.7	112.9
0.006256		106.3	119.9
0.006193	103.4	98.51	109.4
0.006211		104.4	112.6
0.006247		109.0	113.5
0.006246		108.5	124.1
0.006268		105.5	115.2
0.006324	110.6	109.3	116.0
0.006331	109.4	107.0	114.4
0.006114		104.1	115.6
0.006124		105.5	113.9
0.006093		105.8	114.6
0.006039		106.3	114.0
0.006096		105.3	114.8
0.006104		112.1	113.3

*Initial peak strength reported only when observed

Average	104.0	104.5	112.3	0.07399
Standard Dev.	2.418	3.077	3.824	0.001168
Coeff. of Var. [%]	2.325	2.945	3.407	1.578
Min.	101.8	97.03	106.6	0.07238
Max.	106.7	112.1	121.2	0.07597
Number of Spec.	4	18	18	18

Average _{norm}	0.006166	106.3	105.6	113.5
Standard Dev. _{norm}	0.0009732	4.387	3.117	4.544
Coeff. of Var. [%] _{norm}	1.578	4.129	2.952	4.004
Min.	0.006032	101.7	98.51	106.0
Max.	0.006331	110.6	112.1	124.1
Number of Spec.	18	4	18	18





June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 3 Proc. C Properties (SSB3, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-ETW-1*	A	C1	1	1	97.83	96.35	109.1	0.07307	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-ETW-2*	A	C1	1	1	104.4	102.6	106.2	0.07273	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-ETW-3*	A	C1	1	1	106.0	103.3	107.3	0.07320	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-ETW-1**	A	C2	1	2			100.6	0.07395	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-ETW-2**	A	C2	1	2			107.0	0.07362	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-A-C2-1-ETW-3	A	C2	1	2		96.46	101.5	0.07435	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-ETW-1*	B	C1	2	1	100.2	99.75	102.3	0.07478	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-ETW-2*	B	C1	2	1	95.14	89.86	99.02	0.07470	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C1-1-ETW-3	B	C1	2	1		99.96	100.5	0.07475	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-ETW-1*	B	C2	2	2	95.72	92.72	100.3	0.07530	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-ETW-2	B	C2	2	2		91.08	94.69	0.07558	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-B-C2-1-ETW-3*	B	C2	2	2	99.42	96.16	104.2	0.07578	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-ETW-1*	C	C1	3	1	89.43	88.30	103.8	0.07325	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-ETW-2	C	C1	3	1		98.54	106.9	0.07328	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C1-1-ETW-3*	C	C1	3	1	84.26	81.89	100.6	0.07293	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-ETW-1	C	C2	3	2		99.97	103.4	0.07305	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-ETW-2	C	C2	3	2		91.72	104.6	0.07320	12	B1I, S1I
NTPM911Q1-HXL-H40-NIAR-SSB3-C-C2-1-ETW-3	C	C2	3	2		82.40	96.24	0.07358	12	B1I, S1I

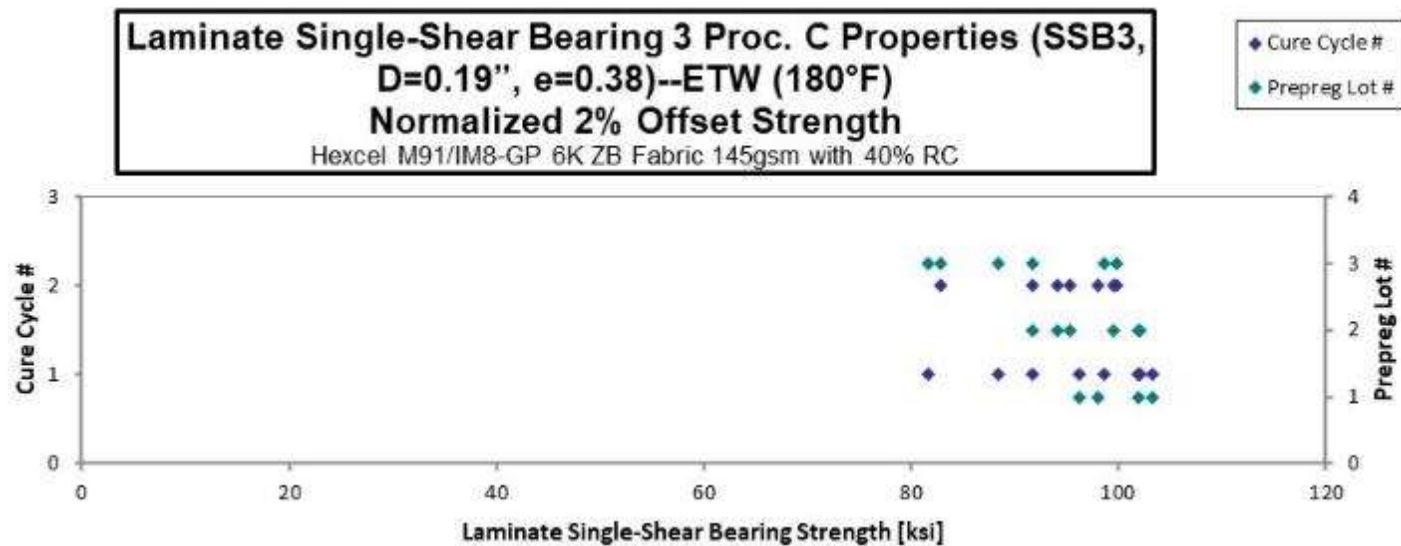
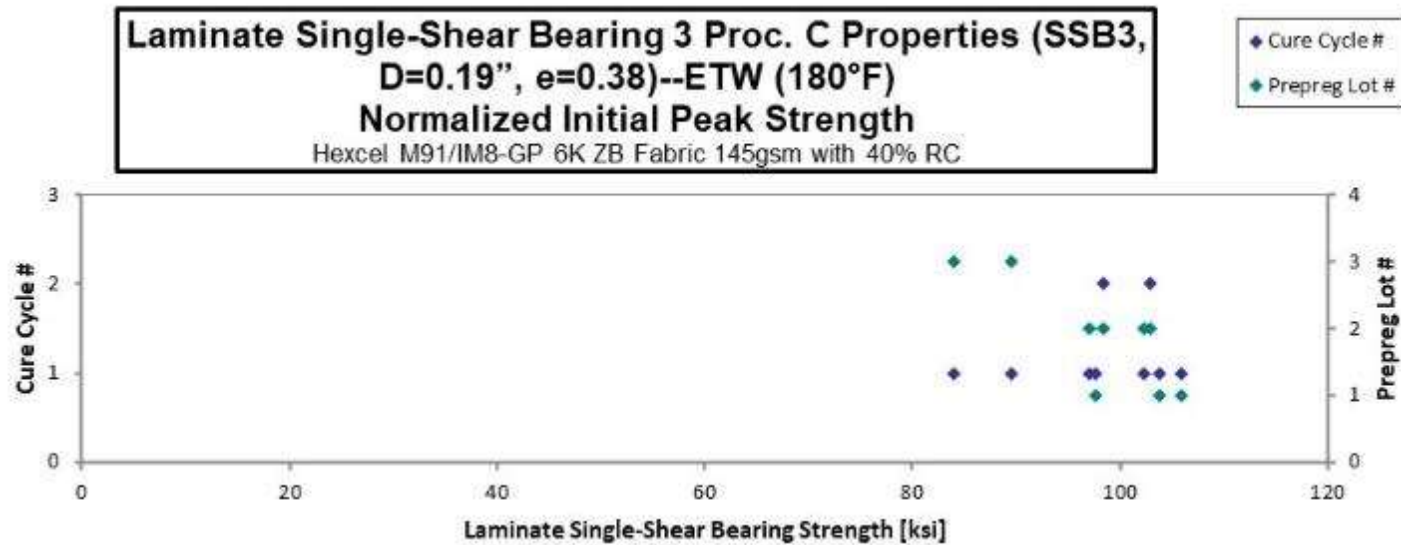
Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006089	97.65	96.18	108.9
0.006061	103.8	102.0	105.5
0.006100	106.0	103.3	107.3
0.006163			101.6
0.006135			107.6
0.006196		97.98	103.1
0.006232	102.3	101.9	104.5
0.006225	97.09	91.71	101.1
0.006229		102.1	102.7
0.006275	98.47	95.38	103.2
0.006299		94.04	97.77
0.006315	102.9	99.55	107.8
0.006104	89.49	88.36	103.9
0.006107		98.65	107.0
0.006078	83.96	81.59	100.2
0.006088		99.76	103.1
0.006100		91.72	104.6
0.006132		82.84	96.75

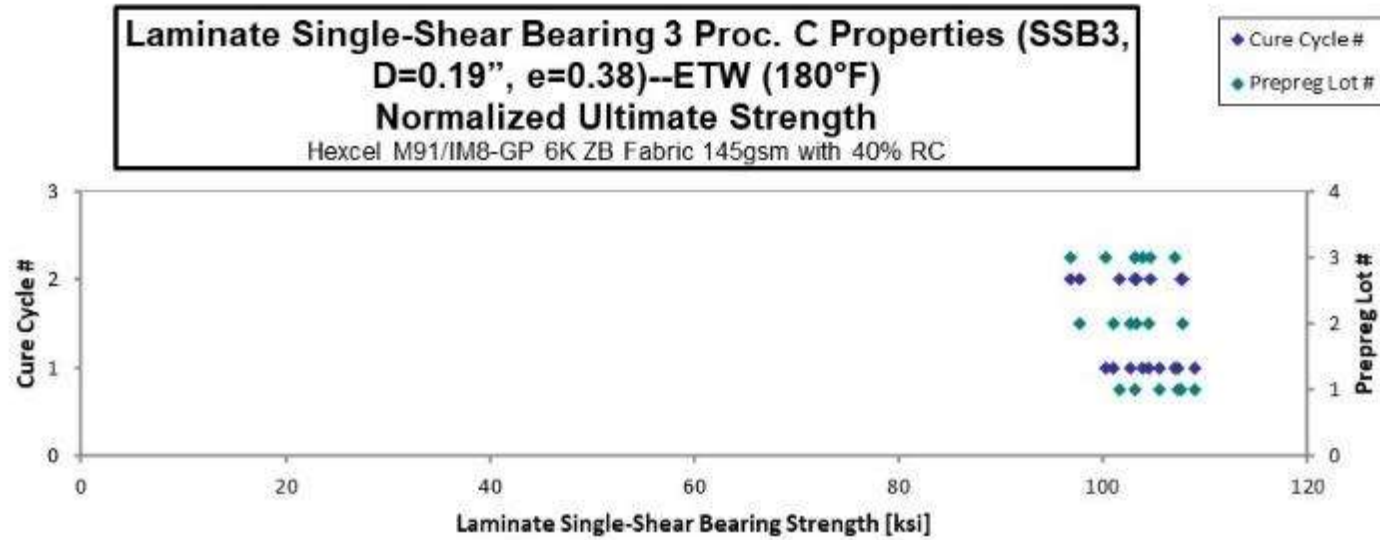
*Initial peak strength reported only when observed

**2% Offset Strength is reported only when ultimate strength is achieved after 2% is observed

Average	96.93	94.44	102.7	0.07395
Standard Dev.	6.858	6.559	3.900	0.0009797
Coeff. of Var. [%]	7.076	6.945	3.798	1.325
Min.	84.26	81.89	94.69	0.07273
Max.	106.0	103.3	109.1	0.07578
Number of Spec.	9	16	18	18

Average _{norm}	0.006163	97.96	95.44	103.7
Standard Dev. _{norm}	0.00008164	7.160	6.704	3.409
Coeff. of Var. [%] _{norm}	1.325	7.309	7.024	3.287
Min.	0.006061	83.96	81.59	96.75
Max.	0.006315	106.0	103.3	108.9
Number of Spec.	18	9	16	18





4.28 “0/100/0” Single-Shear Bearing 4 Proc. C Properties (SSB4, D=0.19”, e=0.38)

Laminate Single-Shear Bearing 4 Proc. C Properties (SSB4, D=0.19”, e=0.38)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

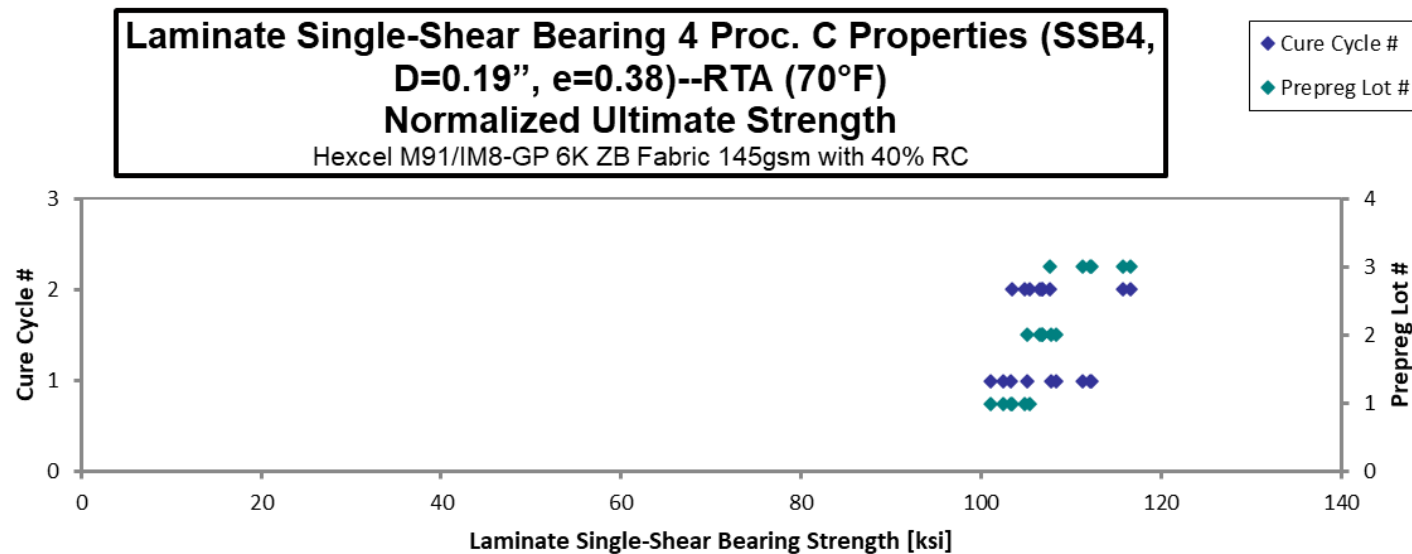
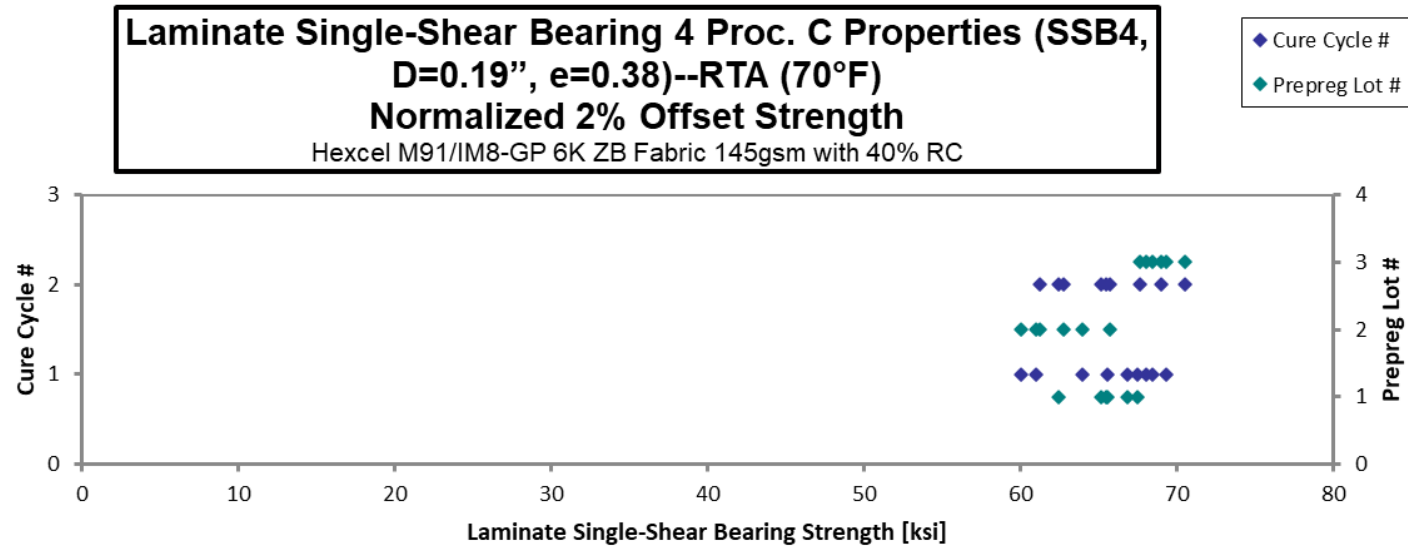
 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-RTA-1	A	C1	1	1	68.25	103.6	0.07240	12	B1I	0.006033	67.51	102.5
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-RTA-2	A	C1	1	1	67.79	102.4	0.07220	12	B1I	0.006017	66.86	101.0
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-RTA-3	A	C1	1	1	66.60	104.9	0.07205	12	B1I	0.006004	65.56	103.3
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-RTA-1	A	C2	1	2	61.87	103.8	0.07393	12	B1I	0.006161	62.49	104.8
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-RTA-2	A	C2	1	2	64.12	101.2	0.07480	12	B1I	0.006233	65.52	103.4
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-RTA-3	A	C2	1	2	64.56	104.3	0.07393	12	B1I	0.006161	65.20	105.3
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-RTA-1	B	C1	2	1	62.83	106.4	0.07453	12	B1I	0.006211	63.98	108.4
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-RTA-2	B	C1	2	1	57.79	101.1	0.07607	12	B1I	0.006339	60.05	105.1
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-RTA-3	B	C1	2	1	58.75	103.9	0.07598	12	B1I	0.006332	60.98	107.8
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-RTA-1	B	C2	2	2	64.21	104.3	0.07493	12	B1I	0.006244	65.73	106.8
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-RTA-2	B	C2	2	2	59.30	103.0	0.07567	12	B1I	0.006306	61.30	106.5
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-RTA-3	B	C2	2	2	60.95	103.7	0.07542	12	B1I	0.006285	62.79	106.8
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-RTA-1	C	C1	3	1	67.47	111.1	0.07383	12	L1I	0.006153	68.05	112.1
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-RTA-2	C	C1	3	1	69.16	111.9	0.07343	12	C1I	0.006119	69.38	112.2
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-RTA-3	C	C1	3	1	68.33	111.1	0.07332	12	C1I	0.006110	68.44	111.3
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-RTA-1	C	C2	3	2	67.81	107.9	0.07305	12	C1I	0.006088	67.67	107.7
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-RTA-2	C	C2	3	2	68.86	115.4	0.07337	12	C1I	0.006114	69.02	115.7
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-RTA-3	C	C2	3	2	70.62	116.8	0.07308	12	B1I	0.006090	70.51	116.6

Average 64.96 106.5 0.07400
 Standard Dev. 3.955 4.774 0.001269
 Coeff. of Var. [%] 6.088 4.482 1.714
 Min. 57.79 101.1 0.07205
 Max. 70.62 116.8 0.07607
 Number of Spec. 18 18 18

Average_{norm} 0.006167 65.61 107.6
 Standard Dev._{norm} 0.0001057 3.112 4.403
 Coeff. of Var. [%]_{norm} 1.714 4.743 4.091
 Min. 0.006004 60.05 101.0
 Max. 0.006339 70.51 116.6
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 4 Proc. C Properties (SSB4, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

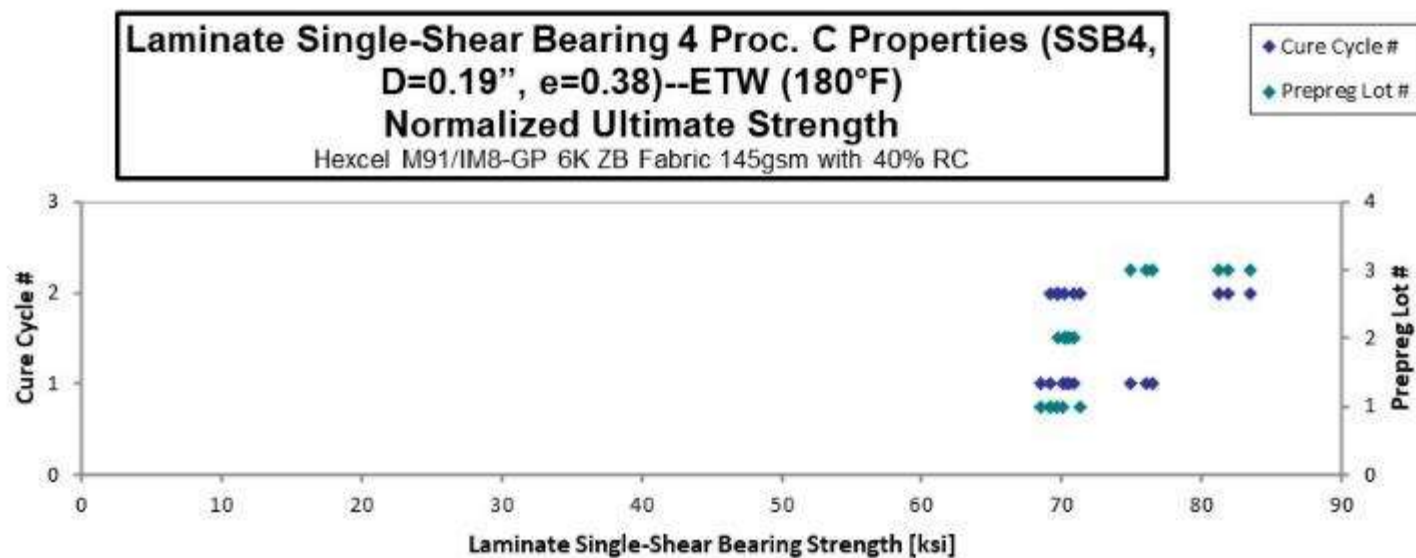
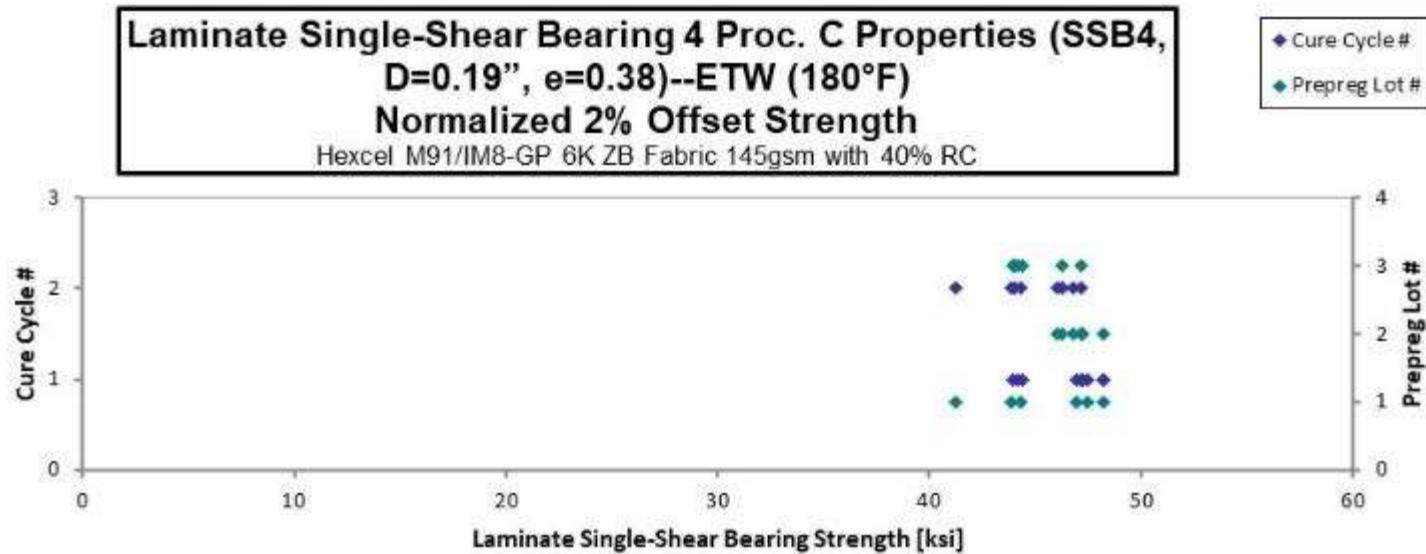
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-ETW-1	A	C1	1	1	48.10	69.44	0.07225	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-ETW-2	A	C1	1	1	48.96	70.19	0.07212	12	C1I
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-ETW-3	A	C1	1	1	47.89	71.51	0.07173	12	C1I
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-ETW-1	A	C2	1	2	40.82	70.51	0.07402	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-ETW-2	A	C2	1	2	43.36	68.86	0.07405	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-A-C2-1-ETW-3	A	C2	1	2	43.69	68.25	0.07420	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-ETW-1	B	C1	2	1	46.74	68.72	0.07550	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-ETW-2	B	C1	2	1	46.02	68.82	0.07502	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C1-1-ETW-3	B	C1	2	1	46.08	68.52	0.07510	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-ETW-1	B	C2	2	2	44.82	67.92	0.07518	12	C1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-ETW-2	B	C2	2	2	45.63	68.39	0.07512	12	L1I
NTPM911Q1-HXL-H40-NIAR-SSB4-B-C2-1-ETW-3	B	C2	2	2	44.97	68.87	0.07533	12	C1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-ETW-1	C	C1	3	1	44.29	76.25	0.07342	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-ETW-2	C	C1	3	1	44.07	74.76	0.07338	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C1-1-ETW-3	C	C1	3	1	43.93	75.98	0.07322	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-ETW-1	C	C2	3	2	47.29	83.74	0.07300	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-ETW-2	C	C2	3	2	46.43	82.25	0.07292	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB4-C-C2-1-ETW-3	C	C2	3	2	44.06	81.21	0.07318	12	B1I

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006021	47.48	68.54
0.006010	48.24	69.15
0.005978	46.93	70.08
0.006168	41.27	71.30
0.006171	43.86	69.65
0.006183	44.29	69.18
0.006292	48.20	70.88
0.006251	47.16	70.52
0.006258	47.28	70.30
0.006265	46.03	69.76
0.006260	46.82	70.18
0.006278	46.28	70.88
0.006118	44.42	76.47
0.006115	44.18	74.95
0.006101	43.94	75.99
0.006083	47.16	83.51
0.006076	46.25	81.93
0.006099	44.05	81.20

Average 45.40 72.45 0.07382
Standard Dev. 2.016 5.282 0.001195
Coeff. of Var. [%] 4.441 7.289 1.619
Min. 40.82 67.92 0.07173
Max. 48.96 83.74 0.07550
Number of Spec. 18 18 18

Average_{norm} 0.006152 45.77 73.03
Standard Dev._{norm} 0.00009961 1.892 4.820
Coeff. of Var. [%]_{norm} 1.619 4.133 6.601
Min. 0.005978 41.27 68.54
Max. 0.006292 48.24 83.51
Number of Spec. 18 18 18



4.29 “25/50/25” Single-Shear Bearing 1 Countersink 1 Proc. C, Properties (SSB1C1, D=0.19”, e=0.38)

Laminate Single-Shear Bearing 1 C1 Proc. C Properties (SSB1C1, D=0.19”, e=0.38)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

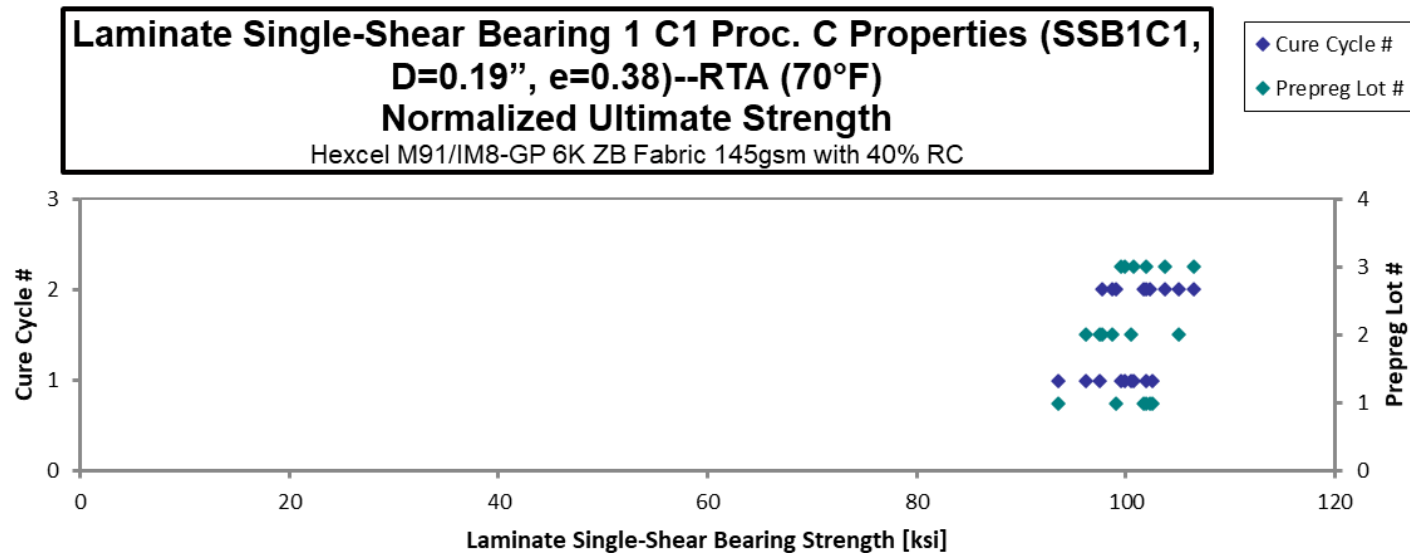
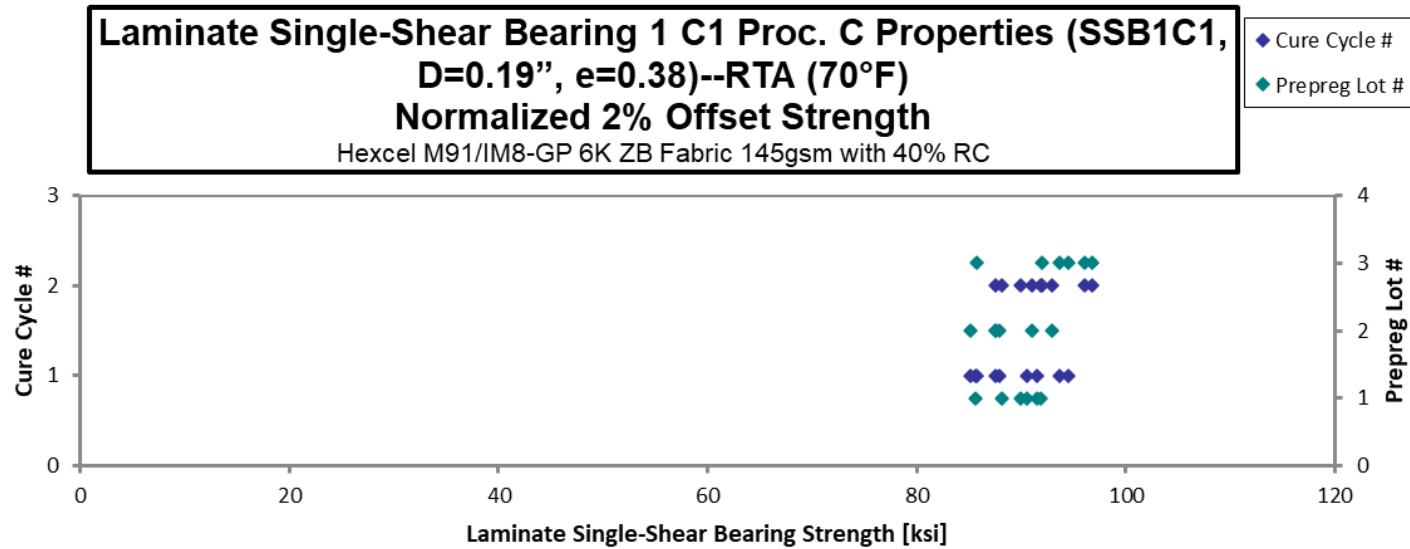
normalizing

 t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-RTA-1	A	C1	1	1	84.39	92.27	0.07422	12	B1I, Y3H, P1B	0.006185	85.56	93.55
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-RTA-2	A	C1	1	1	91.31	101.8	0.07330	12	B1I, Y3H, P1B	0.006108	91.44	101.9
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-RTA-3	A	C1	1	1	88.89	100.7	0.07455	12	B1I, Y3H, P1B	0.006213	90.53	102.5
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-RTA-1	A	C2	1	2	87.11	97.84	0.07408	12	B1I, Y3H, P1B	0.006174	88.17	99.02
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-RTA-2	A	C2	1	2	90.83	100.6	0.07403	12	B1I, Y3H, P1B	0.006169	91.87	101.7
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-RTA-3	A	C2	1	2	89.55	101.9	0.07347	12	B1I, Y3H, P1B	0.006122	89.88	102.3
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-RTA-1	B	C1	2	1	85.61	94.08	0.07483	12	B1I, Y3H, P1B	0.006236	87.52	96.18
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-RTA-2	B	C1	2	1	86.16	98.49	0.07468	12	B1I, Y3H, P1B	0.006224	87.91	100.5
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-RTA-3	B	C1	2	1	82.88	94.89	0.07520	12	B1I, G3H, P1B	0.006267	85.14	97.48
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-RTA-1	B	C2	2	2	92.02	104.0	0.07393	12	B1I, Y3H, P1B	0.006161	92.94	105.0
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-RTA-2	B	C2	2	2	83.53	93.33	0.07665	12	B1I, Y3H, P1B	0.006388	87.46	97.73
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-RTA-3	B	C2	2	2	88.42	95.91	0.07535	12	B1I, Y3H, P1B	0.006279	91.02	98.73
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-RTA-1	C	C1	3	1	94.65	100.0	0.07310	12	B1I, Y3H	0.006092	94.53	99.88
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-RTA-2	C	C1	3	1	85.37	99.05	0.07353	12	B1I, Y3H	0.006128	85.75	99.51
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-RTA-3	C	C1	3	1	92.82	99.84	0.07385	12	B1I, Y3H	0.006154	93.65	100.7
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-RTA-1	C	C2	3	2	91.91	101.9	0.07322	12	B1I, Y3H	0.006101	91.93	101.9
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-RTA-2	C	C2	3	2	96.10	103.7	0.07318	12	B1I, Y3H	0.006099	96.08	103.7
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-RTA-3	C	C2	3	2	96.20	105.8	0.07367	12	B1I, Y3H	0.006139	96.81	106.5

Average 89.32 99.22 0.07416
 Standard Dev. 4.193 3.862 0.0009259
 Coeff. of Var. [%] 4.695 3.892 1.249
 Min. 82.88 92.27 0.07310
 Max. 96.20 105.8 0.07665
 Number of Spec. 18 18 18

Average_{norm} 0.006180 90.45 100.5
 Standard Dev._{norm} 0.00007716 3.551 3.157
 Coeff. of Var. [%]_{norm} 1.249 3.926 3.142
 Min. 0.006092 85.14 93.55
 Max. 0.006388 96.81 106.5
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 1 C1 Proc. C Properties (SSB1C1, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

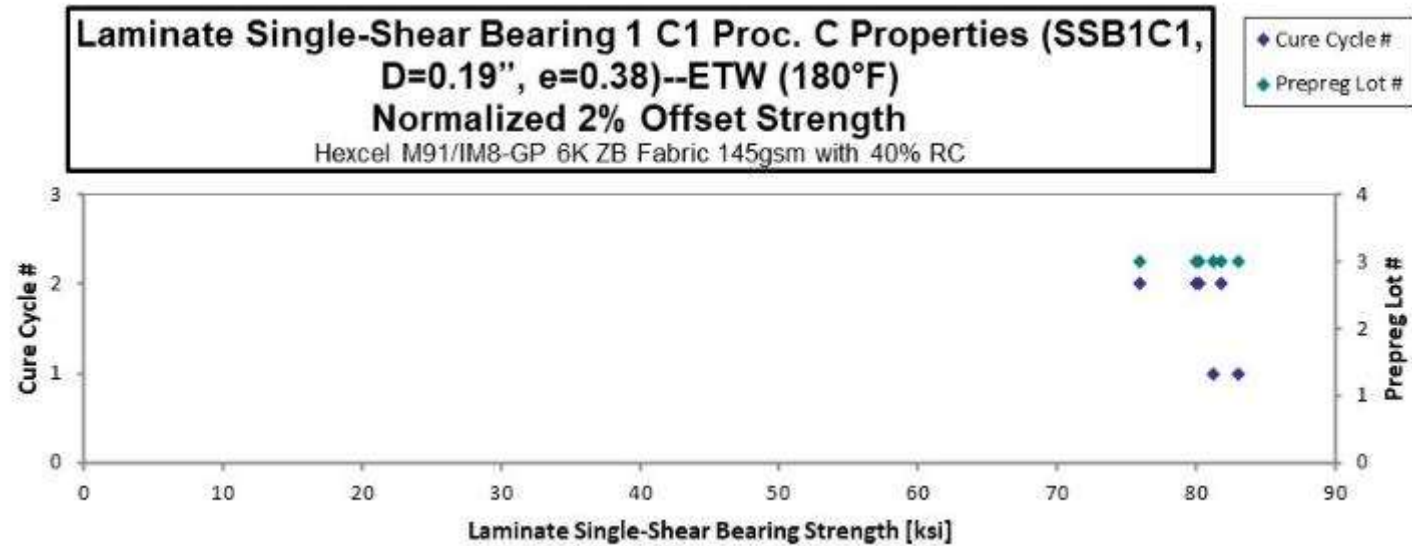
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-ETW-1*	A	C1	1	1		87.33	0.07395	12	B1I	0.006163		88.22
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-ETW-2*	A	C1	1	1		83.07	0.07303	12	B1I	0.006086		82.88
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-ETW-3*	A	C1	1	1		82.95	0.07375	12	B1I	0.006146		83.57
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-ETW-1*	A	C2	1	2		87.04	0.07352	12	B1I	0.006126		87.41
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-ETW-2*	A	C2	1	2		84.35	0.07403	12	B1I	0.006169		85.31
NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C2-1-ETW-3*	A	C2	1	2		83.89	0.07378	12	B1I	0.006149		84.56
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-ETW-1*	B	C1	2	1		83.65	0.07395	12	B1I	0.006163		84.51
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-ETW-2*	B	C1	2	1		83.05	0.07428	12	B1I	0.006190		84.28
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C1-1-ETW-3*	B	C1	2	1		81.22	0.07425	12	B1I	0.006188		82.38
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-ETW-1*	B	C2	2	2		80.82	0.07480	12	B1I	0.006233		82.58
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-ETW-2*	B	C2	2	2		76.57	0.07517	12	B1I	0.006264		78.63
NTPM911Q1-HXL-H40-NIAR-SSB1C1-B-C2-1-ETW-3*	B	C2	2	2		81.03	0.07460	12	B1I	0.006217		82.58
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-ETW-1	C	C1	3	1	82.35	83.55	0.07385	12	B1I	0.006154	83.08	84.29
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-ETW-2*	C	C1	3	1		77.65	0.07425	12	B1I	0.006188		78.76
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C1-1-ETW-3	C	C1	3	1	81.29	85.79	0.07317	12	B1I	0.006097	81.25	85.75
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-ETW-1	C	C2	3	2	75.88	78.02	0.07325	12	B1I	0.006104	75.93	78.07
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-ETW-2	C	C2	3	2	79.72	81.64	0.07370	12	B1I	0.006142	80.26	82.20
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-ETW-3	C	C2	3	2	81.68	82.73	0.07332	12	B1I	0.006110	81.81	82.86
NTPM911Q1-HXL-H40-NIAR-SSB1C1-C-C2-1-ETW-4	C	C2	3	2	79.66	80.58	0.07352	12	B1I	0.006126	80.00	80.93

*2% Offset Strength is reported only when ultimate strength is achieved after 2% is observed

Average 80.10 82.36 0.07390
Standard Dev. 2.328 2.914 0.0005649
Coeff. of Var. [%] 2.907 3.538 0.7643
Min. 75.88 76.57 0.07303
Max. 82.35 87.33 0.07517
Number of Spec. 6 19 19

Average_{norm} 0.006159 80.39 83.15
Standard Dev._{norm} 0.00004707 2.451 2.735
Coeff. of Var. [%]_{norm} 0.7643 3.048 3.289
Min. 0.006086 75.93 78.07
Max. 0.006264 83.08 88.22
Number of Spec. 19 6 19



4.30 “40/20/40” Single-Shear Bearing 3 Countersink 1 Proc. C Properties (SSB3C1, D=0.19”, e=0.38)

Laminate Single-Shear Bearing 3 C1 Proc. C Properties (SSB3C1, D=0.19”, e=0.38)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

 t_{ply} [in]

0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-RTA-1	A	C1	1	1		80.86	87.04	0.07445	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-RTA-2	A	C1	1	1		89.54	92.29	0.07435	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-RTA-3	A	C1	1	1		87.91	90.92	0.07405	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-RTA-1	A	C2	1	2		87.43	88.99	0.07377	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-RTA-2*	A	C2	1	2	83.74	80.13	83.74	0.07437	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-RTA-3*	A	C2	1	2	82.94	78.60	86.70	0.07412	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-RTA-1*	B	C1	2	1	79.49	75.94	86.58	0.07577	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-RTA-2	B	C1	2	1		77.85	87.50	0.07565	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-RTA-3*	B	C1	2	1	84.68	81.84	89.52	0.07577	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-RTA-1	B	C2	2	2		76.75	88.47	0.07543	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-RTA-2	B	C2	2	2		82.35	86.43	0.07588	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-RTA-3*	B	C2	2	2	83.60	81.50	93.34	0.07643	12	B1I, Y3H, P1B
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-RTA-1*	C	C1	3	1	90.06	85.53	93.22	0.07290	12	B1I, Y3H
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-RTA-2	C	C1	3	1		86.49	88.69	0.07383	12	B1I, Y3H
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-RTA-3**	C	C1	3	1			90.61	0.07342	12	B1I, Y3H
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-RTA-1	C	C2	3	2		88.64	92.91	0.07327	12	B1I, Y3H
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-RTA-2	C	C2	3	2		85.20	94.65	0.07352	12	B1I, Y3H
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-RTA-3	C	C2	3	2		86.45	91.27	0.07413	12	B1I, Y3H

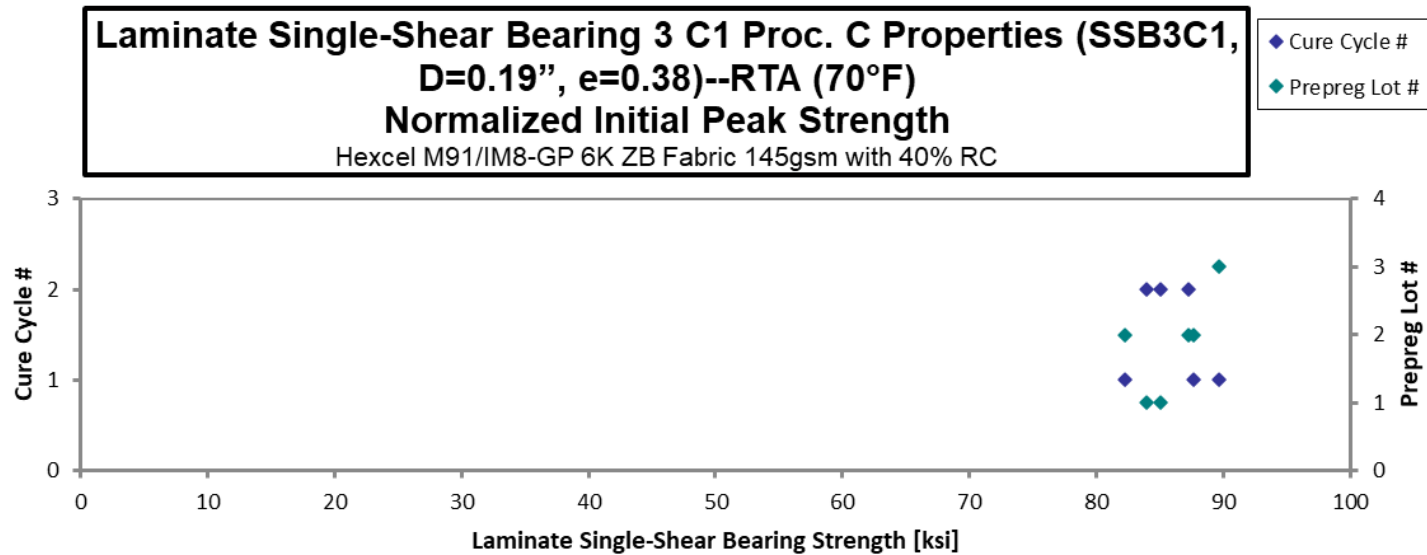
*Initial peak strength reported only when observed

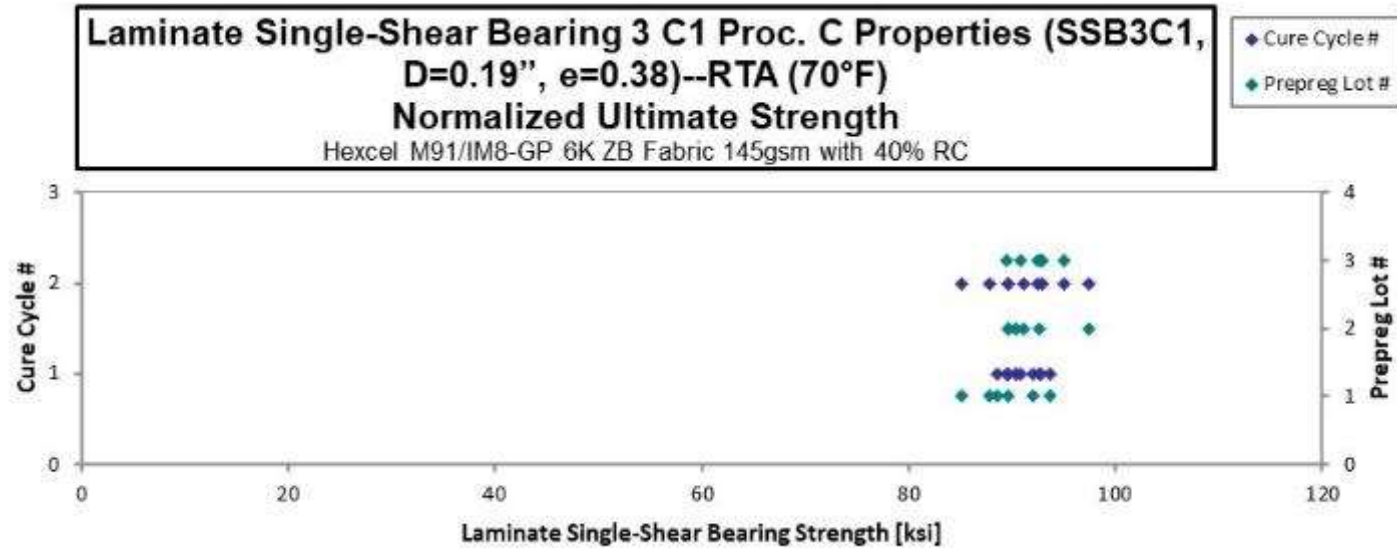
**2% Offset Strength is reported only when ultimate strength is achieved after 2% is observed

Average	84.09	83.12	89.60	0.07451
Standard Dev.	3.432	4.366	2.987	0.001051
Coeff. of Var. [%]	4.081	5.253	3.333	1.411
Min.	79.49	75.94	83.74	0.07290
Max.	90.06	89.54	94.65	0.07643
Number of Spec.	6	17	18	18

Average _{norm}	0.006209	85.99	84.64	91.19
Standard Dev. _{norm}	0.00008760	2.714	3.795	2.850
Coeff. of Var. [%] _{norm}	1.411	3.156	4.484	3.126
Min.	0.006075	82.28	78.61	85.08
Max.	0.006369	89.70	90.94	97.46
Number of Spec.	18	6	17	18

Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006204		82.24	88.53
0.006196		90.94	93.74
0.006171		88.94	91.98
0.006147		88.10	89.67
0.006197	85.08	81.41	85.08
0.006176	83.98	79.59	87.79
0.006314	82.28	78.61	89.61
0.006304		80.46	90.43
0.006314	87.65	84.71	92.66
0.006286		79.09	91.17
0.006324		85.36	89.60
0.006369	87.29	85.10	97.46
0.006075	89.70	85.18	92.84
0.006153		87.24	89.46
0.006118			90.87
0.006106		88.72	92.99
0.006126		85.57	95.06
0.006178		87.56	92.43





Laminate Single-Shear Bearing 3 C1 Proc. C Properties (SSB3C1, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

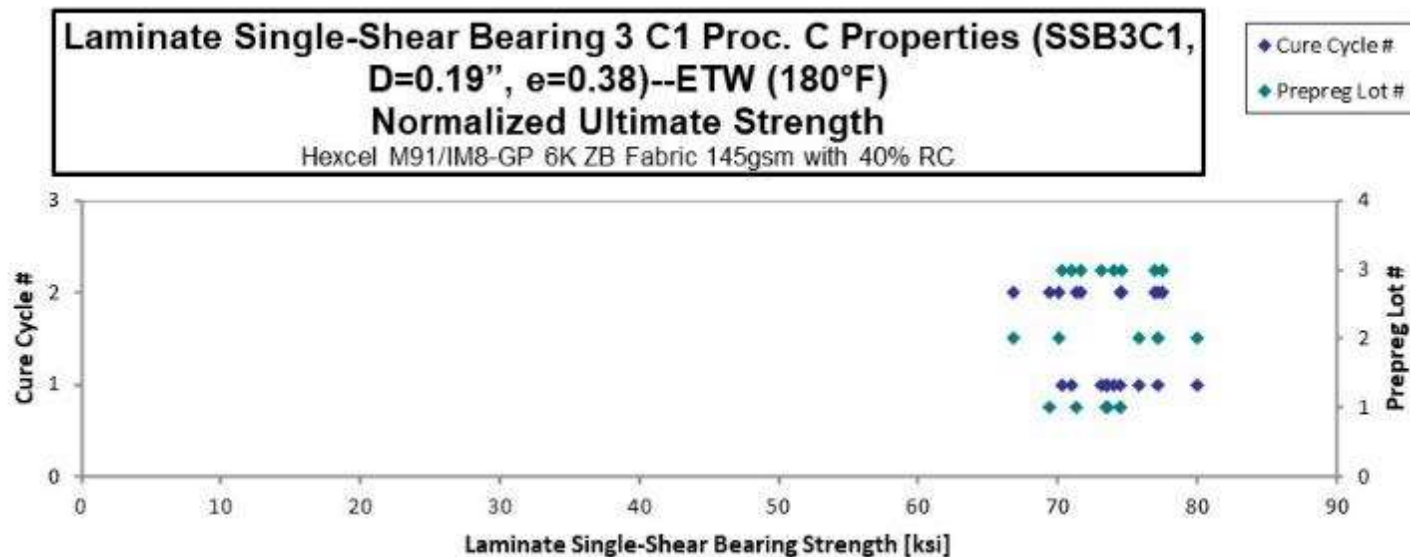
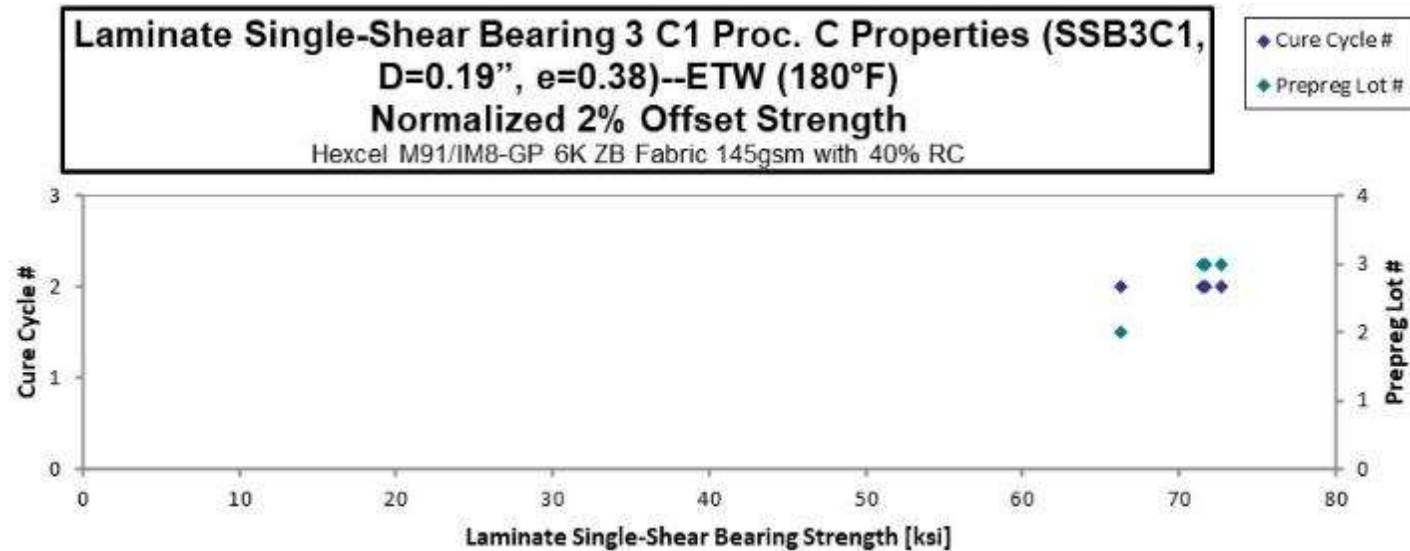
t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-ETW-1*	A	C1	1	1		73.34	0.07350	12	B1I	0.006125		73.64
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-ETW-2*	A	C1	1	1		74.52	0.07320	12	B1I	0.006100		74.52
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-ETW-3*	A	C1	1	1		73.43	0.07328	12	B1I	0.006107		73.52
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-ETW-1*	A	C2	1	2		68.37	0.07430	12	B1I	0.006192		69.40
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-ETW-2*	A	C2	1	2		70.43	0.07413	12	B1I	0.006178		71.33
NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C2-1-ETW-3*	A	C2	1	2		73.79	0.07393	12	B1I	0.006161		74.53
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-ETW-1*	B	C1	2	1		76.56	0.07648	12	B1I	0.006374		80.00
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-ETW-2*	B	C1	2	1		74.81	0.07422	12	B1I	0.006185		75.84
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C1-1-ETW-3*	B	C1	2	1		75.47	0.07492	12	B1I	0.006243		77.24
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-ETW-1*	B	C2	2	2		74.58	0.07575	12	B1I	0.006313		77.17
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-ETW-2	B	C2	2	2	64.81	65.39	0.07487	12	B1I	0.006239	66.29	66.88
NTPM911Q1-HXL-H40-NIAR-SSB3C1-B-C2-1-ETW-3*	B	C2	2	2		68.49	0.07488	12	B1I	0.006240		70.07
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-ETW-1*	C	C1	3	1		69.69	0.07392	12	B1I	0.006160		70.37
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-ETW-2*	C	C1	3	1		73.55	0.07367	12	B1I	0.006139		74.02
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-ETW-3*	C	C1	3	1		70.23	0.07403	12	B1I, S1I	0.006169		71.02
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C1-1-ETW-4*	C	C1	3	1		72.09	0.07427	12	B1I	0.006189		73.14
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-ETW-1*	C	C2	3	2		76.55	0.07362	12	B1I	0.006135		76.99
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-ETW-2	C	C2	3	2	71.37	71.51	0.07332	12	B1I	0.006110	71.48	71.63
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-ETW-3	C	C2	3	2	71.23	74.17	0.07367	12	B1I	0.006139	71.69	74.65
NTPM911Q1-HXL-H40-NIAR-SSB3C1-C-C2-1-ETW-4	C	C2	3	2	72.31	77.15	0.07353	12	B1I	0.006128	72.64	77.50

*2% Offset Strength is reported only when ultimate strength is achieved after 2% is observed

Average 69.93 72.71 0.07417
Standard Dev. 3.447 3.125 0.0008488
Coeff. of Var. [%] 4.929 4.298 1.144
Min. 64.81 65.39 0.07320
Max. 72.31 77.15 0.07648
Number of Spec. 4 20 20

Average_{norm} 0.006181 70.52 73.67
Standard Dev._{norm} 0.00007074 2.870 3.270
Coeff. of Var. [%]_{norm} 1.144 4.069 4.439
Min. 0.006100 66.29 66.88
Max. 0.006374 72.64 80.00
Number of Spec. 20 4 20



June 15th, 2026

CAM-RP-2025-001 Rev -

4.31 “25/50/25” Single-Shear Bearing 1 E1 Proc. C Properties (SSB1E1, D=0.19”, e=0.57)

Laminate Single-Shear Bearing 1 E1 Proc. C Properties (SSB1E1, D=0.19”, e=0.57)--RTA (70°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

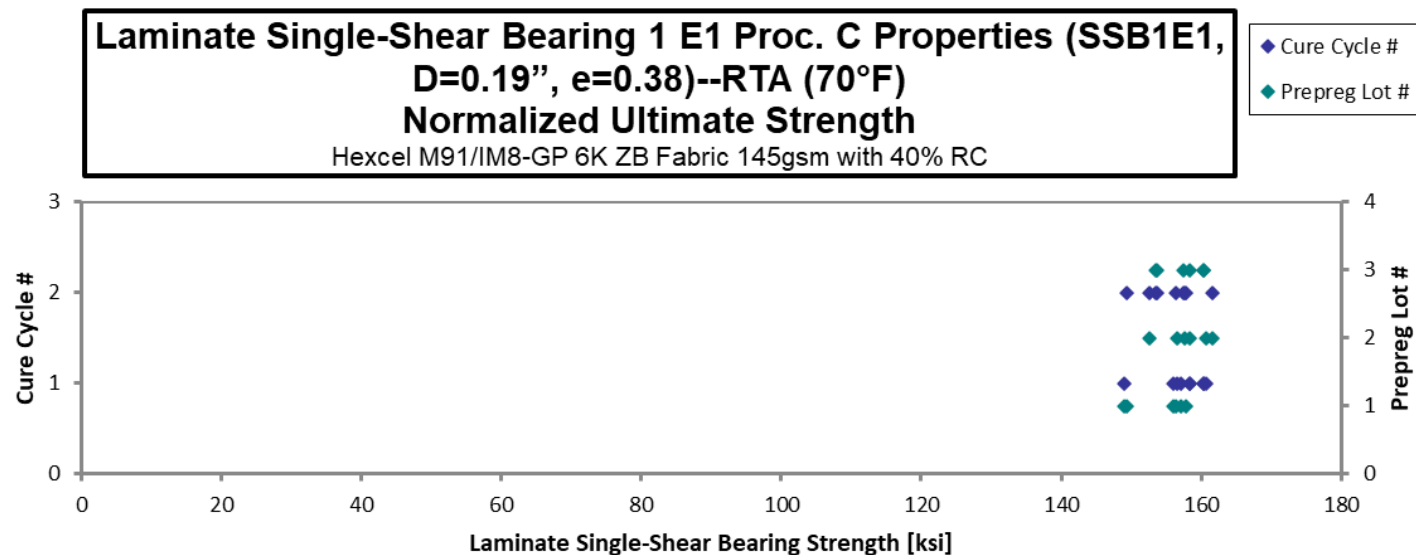
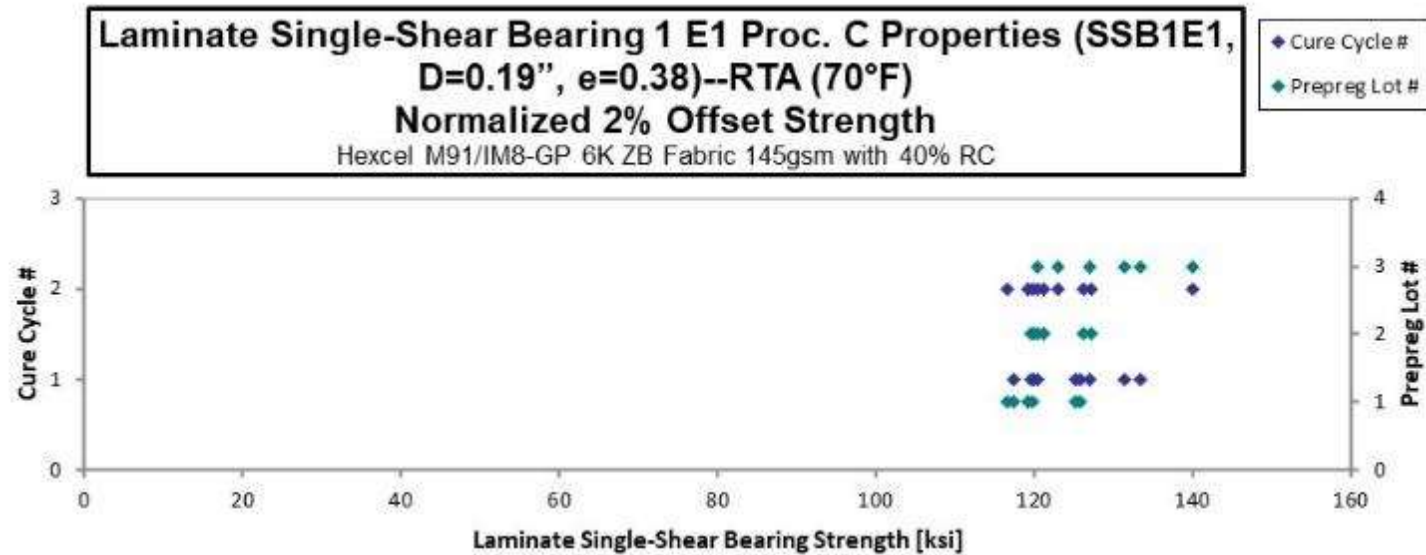
normalizing

t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-RTA-1	A	C1	1	1	116.8	148.2	0.07358	12	B1I, Y3H	0.006132	117.4	148.9
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-RTA-2	A	C1	1	1	124.2	154.0	0.07415	12	B1I, Y3H	0.006179	125.8	156.0
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-RTA-3	A	C1	1	1	123.7	155.4	0.07400	12	B1I, Y3H	0.006167	125.1	157.1
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-RTA-1	A	C2	1	2	118.7	155.8	0.07347	12	B1I, Y3H	0.006122	119.1	156.4
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-RTA-2	A	C2	1	2	115.8	148.4	0.07365	12	B1I, Y3H	0.006138	116.5	149.3
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-RTA-3	A	C2	1	2	118.5	156.2	0.07397	12	B1I, Y3H	0.006164	119.7	157.9
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-RTA-1	B	C1	2	1	116.9	153.1	0.07482	12	B1I, Y3H	0.006235	119.5	156.5
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-RTA-2	B	C1	2	1	117.5	156.9	0.07493	12	B1I, Y3H	0.006244	120.3	160.6
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-RTA-3	B	C1	2	1	117.1	154.6	0.07500	12	B1I, Y3H	0.006250	120.0	158.4
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-RTA-1	B	C2	2	2	124.9	158.5	0.07458	12	B1I, Y3H	0.006215	127.3	161.5
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-RTA-2	B	C2	2	2	124.1	155.0	0.07447	12	B1I, Y3H	0.006206	126.2	157.6
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-RTA-3	B	C2	2	2	119.0	149.9	0.07452	12	B1I, Y3H	0.006210	121.1	152.6
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-RTA-1	C	C1	3	1	133.6	160.5	0.07310	12	B1I, E3S	0.006092	133.4	160.3
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-RTA-2	C	C1	3	1	127.1	160.4	0.07315	12	B1I, E3S	0.006096	127.0	160.3
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-RTA-3	C	C1	3	1	130.7	157.6	0.07357	12	B1I, E3S	0.006131	131.4	158.4
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-RTA-1	C	C2	3	2	139.0	152.5	0.07375	12	B1I, E3S	0.006146	140.0	153.6
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-RTA-2	C	C2	3	2	121.6	151.7	0.07403	12	B1I, E3S	0.006169	123.0	153.4
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-RTA-3	C	C2	3	2	119.4	156.2	0.07378	12	B1I, E3S	0.006149	120.4	157.4

Average 122.7 154.7 0.07403
Standard Dev. 6.470 3.618 0.0005833
Coeff. of Var. [%] 5.273 2.338 0.7879
Min. 115.8 148.2 0.07310
Max. 139.0 160.5 0.07500
Number of Spec. 18 18 18

Average_{norm} 0.006169 124.1 156.5
Standard Dev_{norm} 0.00004860 6.152 3.631
Coeff. of Var. [%]_{norm} 0.7879 4.959 2.321
Min. 0.006092 116.5 148.9
Max. 0.006250 140.0 161.5
Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 1 E1 Proc. C Properties (SSB1E1, D=0.19", e=0.57)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

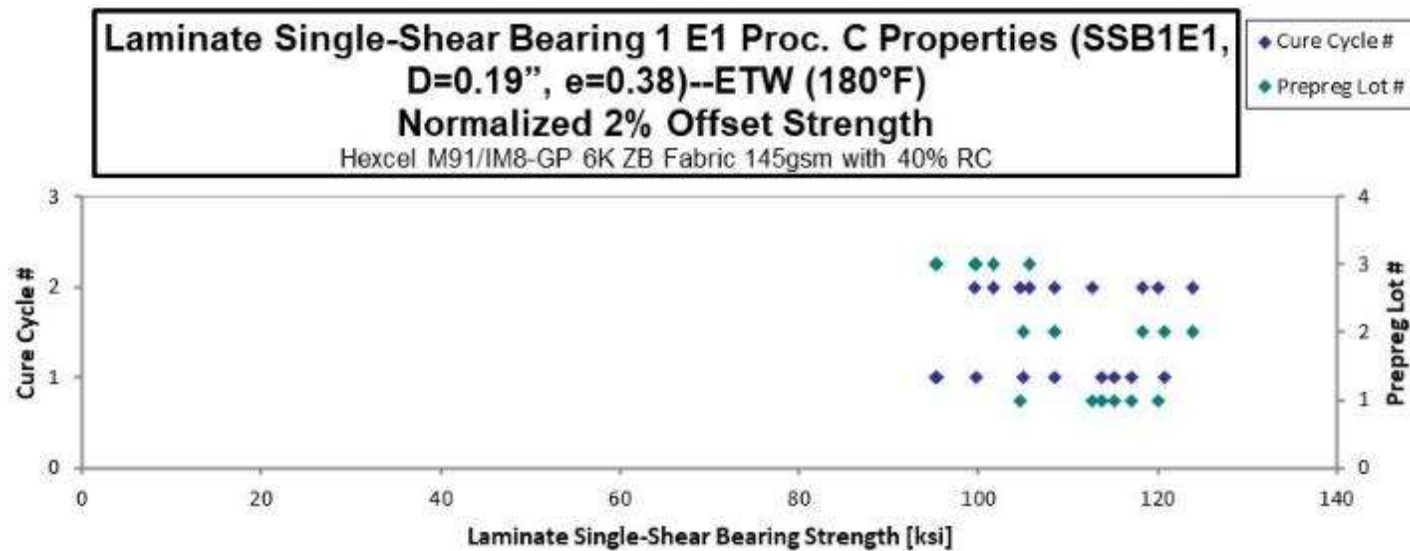
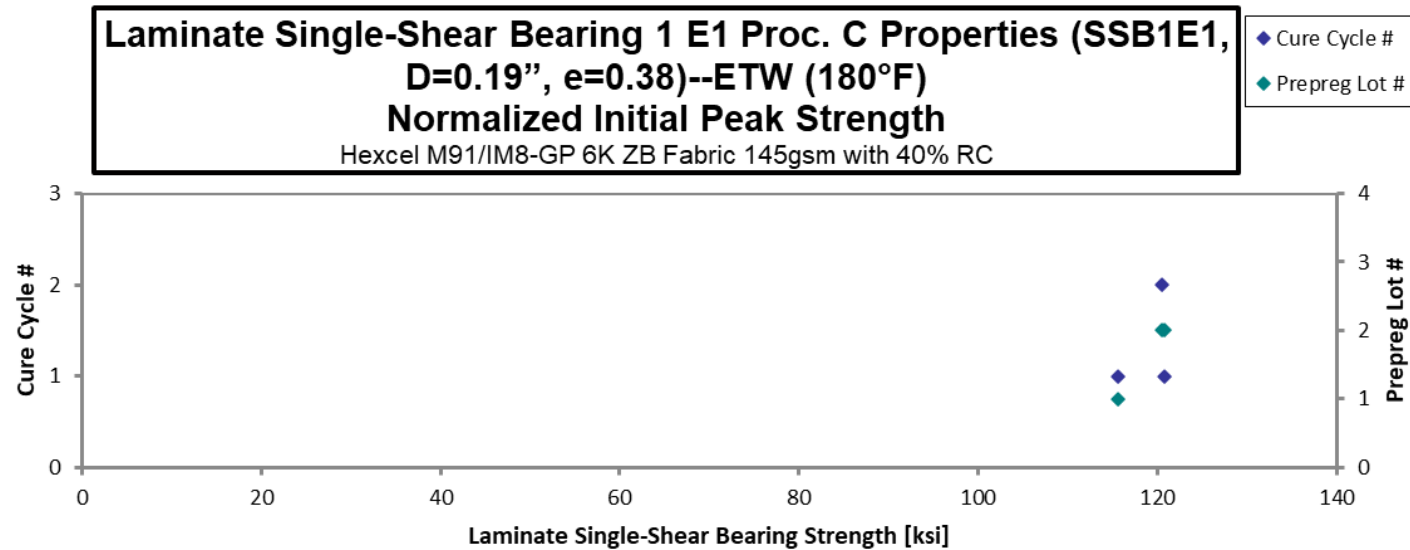
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-ETW-1	A	C1	1	1	114.4	114.1	132.3	0.07395	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-ETW-2*	A	C1	1	1		112.6	133.1	0.07395	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-ETW-3	A	C1	1	1		115.5	130.3	0.07418	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-ETW-1	A	C2	1	2	111.4	119.1	132.6	0.07377	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-ETW-2	A	C2	1	2		111.4	129.4	0.07402	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C2-1-ETW-3	A	C2	1	2		103.3	127.8	0.07408	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-ETW-1	B	C1	2	1	117.1	102.9	129.2	0.07473	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-ETW-2	B	C1	2	1		104.8	129.4	0.07577	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C1-1-ETW-3*	B	C1	2	1		116.9	129.6	0.07557	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-ETW-1	B	C2	2	2	118.7	108.2	130.6	0.07333	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-ETW-2	B	C2	2	2		121.5	131.2	0.07468	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-B-C2-1-ETW-3*	B	C2	2	2		116.6	131.9	0.07430	12	B1I, Y3S
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-ETW-1	C	C1	3	1	99.86	99.86	134.2	0.07312	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-ETW-2	C	C1	3	1		95.10	131.4	0.07343	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C1-1-ETW-3	C	C1	3	1		94.32	127.2	0.07390	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-ETW-1	C	C2	3	2	99.28	105.2	131.6	0.07352	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-ETW-2	C	C2	3	2		99.28	131.2	0.07345	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1E1-C-C2-1-ETW-3	C	C2	3	2		101.3	134.4	0.07343	12	B1I

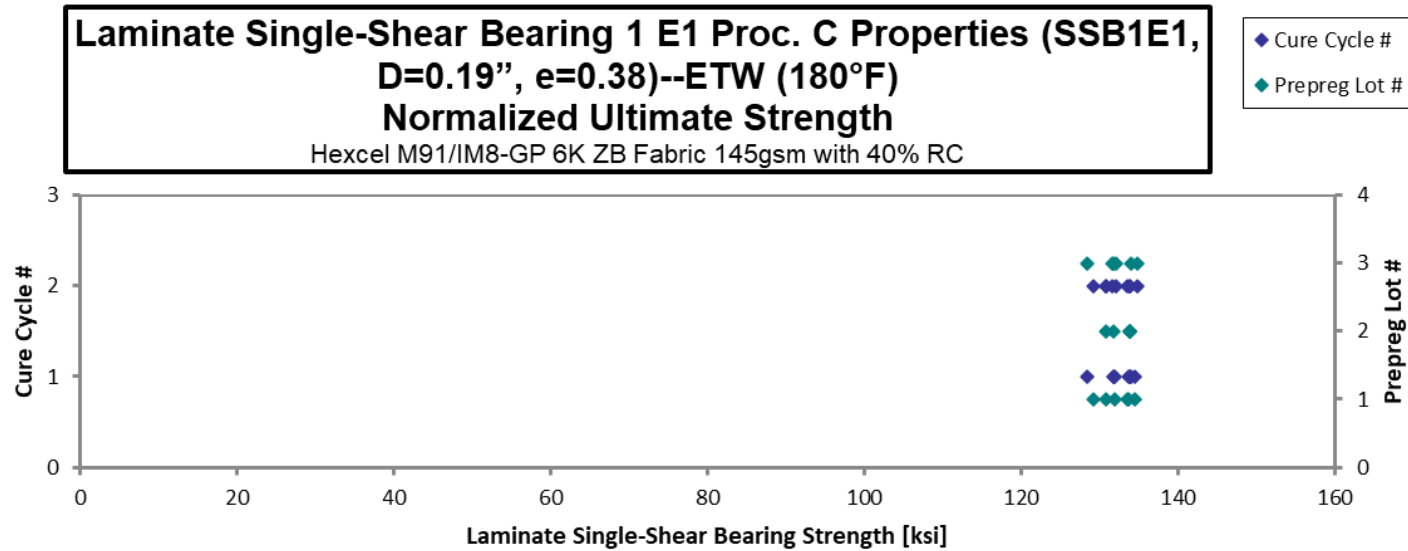
Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006163	115.6	115.2	133.7
0.006163		113.8	134.5
0.006182		117.1	132.0
0.006147	120.9	120.1	133.6
0.006168		112.7	130.9
0.006174		104.6	129.3
0.006228	120.5	105.1	131.9
0.006314		108.5	133.9
0.006297		120.7	133.8
0.006111	120.5	108.4	130.8
0.006224		124.0	133.9
0.006192		118.4	133.9
0.006093	120.9	99.74	134.1
0.006119		95.40	131.9
0.006158		95.23	128.5
0.006126	120.9	105.7	132.1
0.006121		99.62	131.6
0.006119		101.7	134.9

*Initial peak strength reported only when observed

Average	116.7	107.9	131.0	0.07407
Standard Dev.	2.181	8.376	2.003	0.0007319
Coeff. of Var. [%]	1.868	7.762	1.529	0.9881
Min.	114.4	94.32	127.2	0.07312
Max.	118.7	121.5	134.4	0.07577
Number of Spec.	3	18	18	18

Average _{norm}	0.006172	119.0	109.2	132.5
Standard Dev. _{norm}	0.00006099	2.952	8.943	1.822
Coeff. of Var. [%] _{norm}	0.9881	2.481	8.189	1.375
Min.	0.006093	115.6	95.23	128.5
Max.	0.006314	120.9	124.0	134.9
Number of Spec.	18	3	18	18





4.32 “25/50/25” Single-Shear Bearing 1 D1 Proc. C Properties (SSB1D1, D=0.25”, e=0.5)

Laminate Single-Shear Bearing 1 D1 Proc. C Properties (SSB1D1, D=0.25”, e=0.5)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

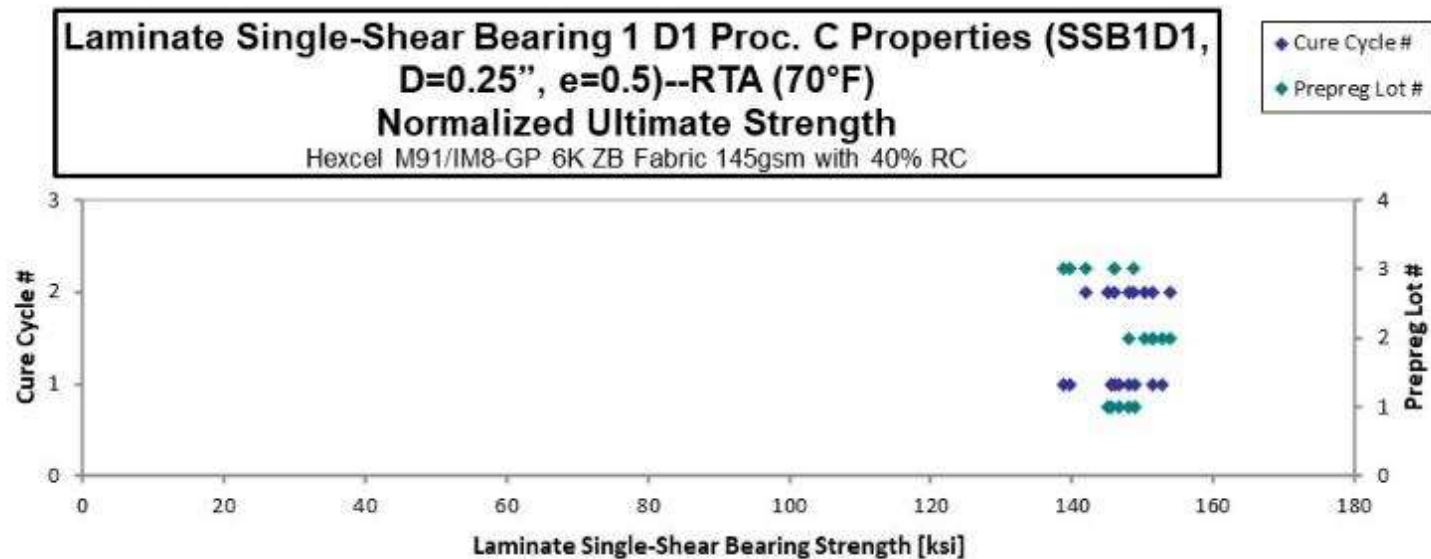
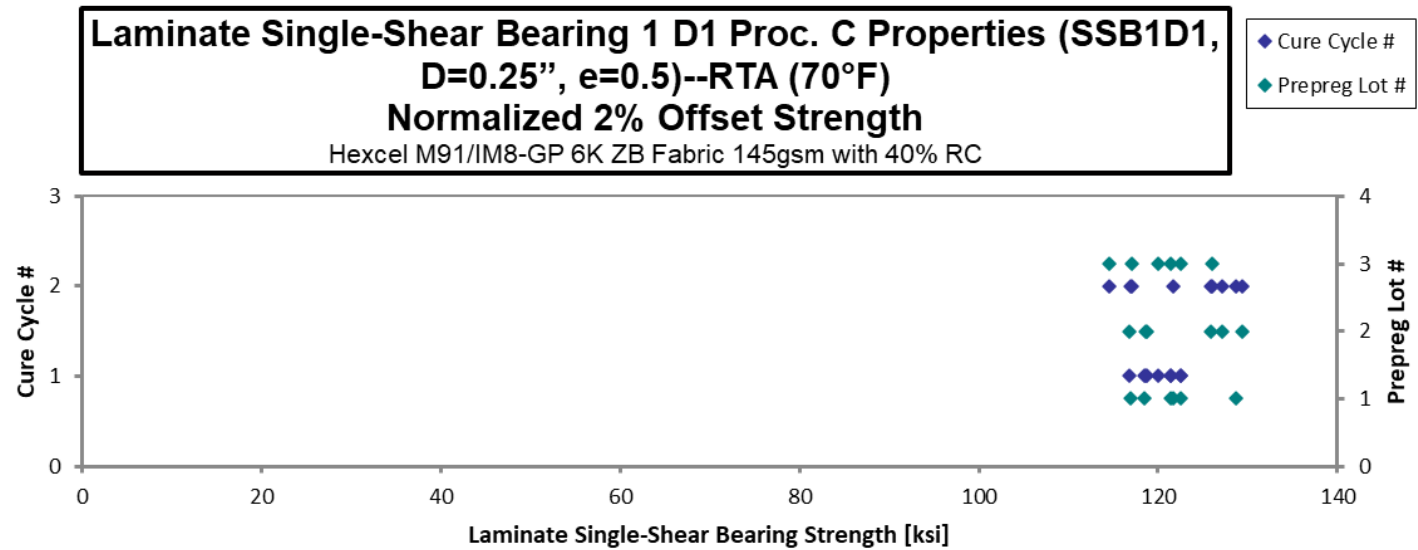
normalizing

 t_{ply} [in]
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-RTA-1	A	C1	1	1	122.2	146.4	0.07333	12	B1I	0.006111	122.5	146.7
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-RTA-2	A	C1	1	1	120.3	144.1	0.07390	12	M(B,C)1I	0.006158	121.4	145.4
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-RTA-3	A	C1	1	1	117.3	147.4	0.07395	12	M(B,C)1I	0.006163	118.5	148.9
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-RTA-1	A	C2	1	2	127.7	147.0	0.07377	12	M(B,C)1I	0.006147	128.7	148.1
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-RTA-2	A	C2	1	2	120.1	143.2	0.07410	12	B1I	0.006175	121.6	145.0
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-RTA-3	A	C2	1	2	115.1	142.9	0.07435	12	M(B,C,L)1I	0.006196	116.9	145.1
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-RTA-1	B	C1	2	1	113.6	147.3	0.07523	12	M(B,C)1I	0.006269	116.7	151.4
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-RTA-2	B	C1	2	1	115.4	148.4	0.07532	12	M(B,C,L)1I	0.006276	118.8	152.7
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-RTA-3	B	C1	2	1	115.3	143.8	0.07528	12	M(B,C)1I	0.006274	118.6	147.9
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-RTA-1	B	C2	2	2	124.7	147.5	0.07458	12	B1I	0.006215	127.1	150.2
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-RTA-2	B	C2	2	2	123.8	151.3	0.07443	12	B1I	0.006203	125.9	153.9
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-RTA-3	B	C2	2	2	127.0	148.6	0.07457	12	B1I	0.006214	129.3	151.4
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-RTA-1	C	C1	3	1	121.9	139.3	0.07288	12	M(B,C)1I	0.006074	121.4	138.7
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-RTA-2	C	C1	3	1	119.8	145.7	0.07333	12	M(B,C)1I	0.006111	120.0	146.0
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-RTA-3	C	C1	3	1	122.3	139.3	0.07338	12	M(B,C)1I	0.006115	122.6	139.7
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-RTA-1	C	C2	3	2	116.8	148.4	0.07340	12	M(B,C)1I	0.006117	117.1	148.8
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-RTA-2	C	C2	3	2	125.2	145.0	0.07363	12	B1I	0.006136	126.0	145.9
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-RTA-3	C	C2	3	2	114.4	141.7	0.07332	12	B1I	0.006110	114.6	142.0

Average 120.2 145.4 0.07404
 Standard Dev. 4.490 3.267 0.0007434
 Coeff. of Var. [%] 3.737 2.246 1.004
 Min. 113.6 139.3 0.07288
 Max. 127.7 151.3 0.07532
 Number of Spec. 18 18 18

Average_{norm} 0.006170 121.5 147.1
 Standard Dev_{norm} 0.00006195 4.362 4.184
 Coeff. of Var. [%]_{norm} 1.004 3.589 2.844
 Min. 0.006074 114.6 138.7
 Max. 0.006276 129.3 153.9
 Number of Spec. 18 18 18



June 15th, 2026

CAM-RP-2025-001 Rev -

**Laminate Single-Shear Bearing 1 D1 Proc. C Properties (SSB1D1, D=0.25", e=0.5)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]
0.006100

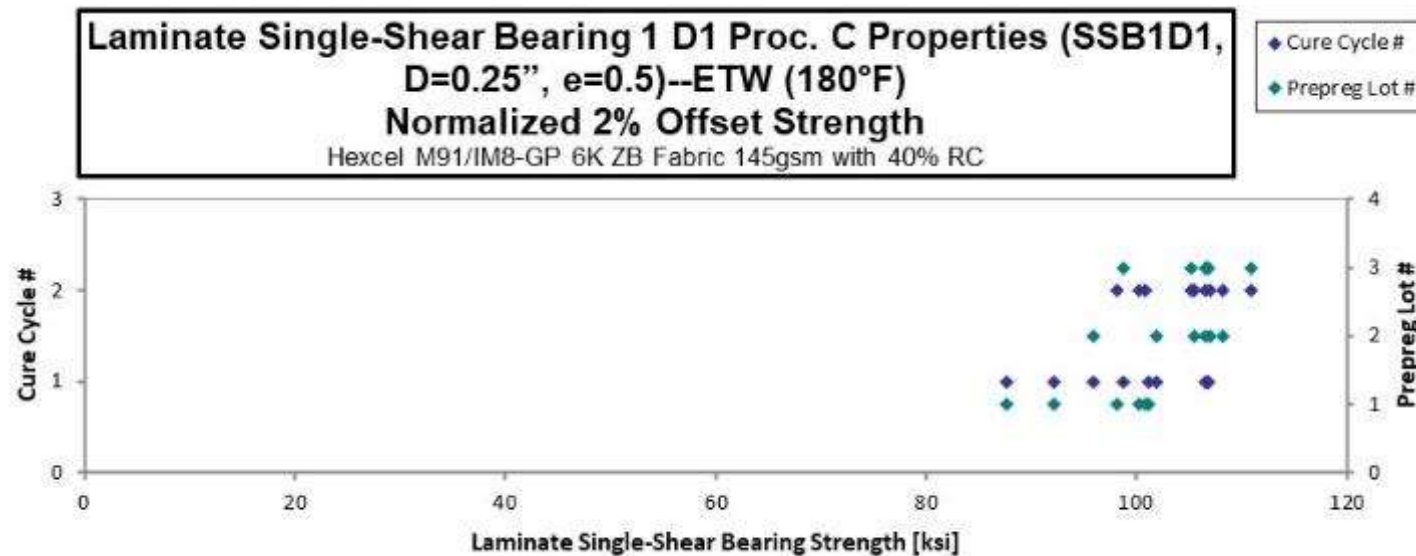
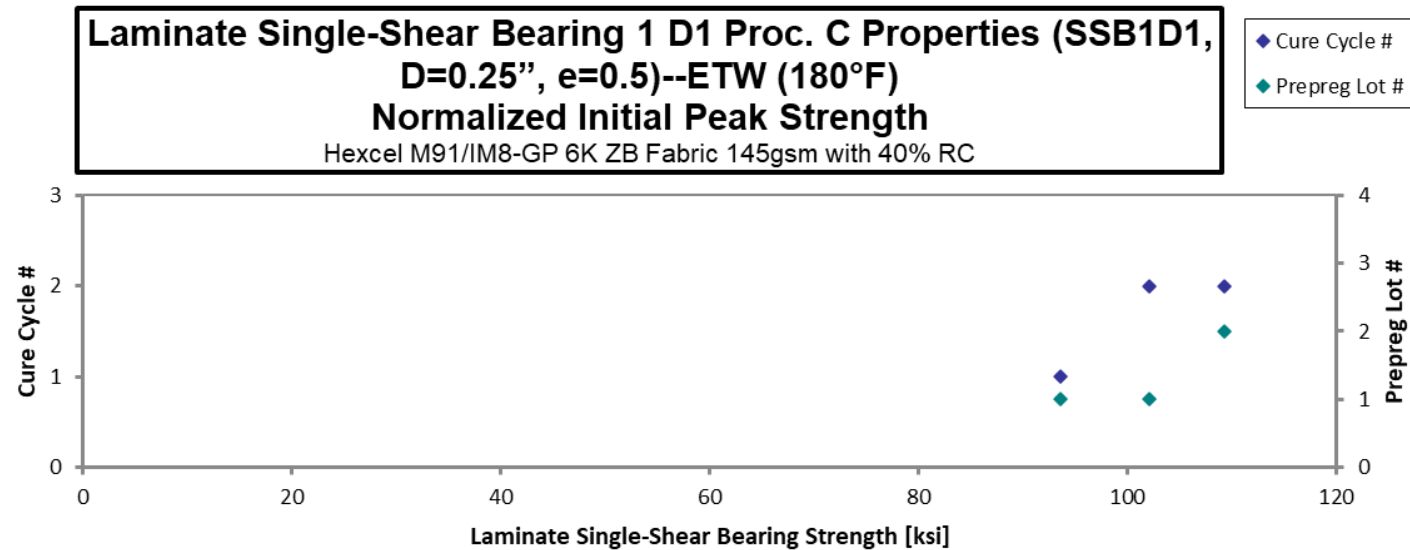
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-ETW-1	A	C1	1	1		91.36	114.4	0.07380	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-ETW-2	A	C1	1	1		100.4	121.2	0.07370	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-ETW-3*	A	C1	1	1	92.72	86.85	113.0	0.07392	12	B1B, B1N, S1B
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-ETW-1*	A	C2	1	2	101.0	99.18	112.7	0.07403	12	B1B, B1N, S1B, S1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-ETW-2	A	C2	1	2		97.08	111.2	0.07402	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C2-1-ETW-3	A	C2	1	2		99.33	118.3	0.07432	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-ETW-1	B	C1	2	1		100.5	113.3	0.07420	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-ETW-2	B	C1	2	1		93.96	114.5	0.07470	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C1-1-ETW-3	B	C1	2	1		104.4	124.8	0.07473	12	B1B, B1N, S1B
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-ETW-1*	B	C2	2	2	107.5	105.2	116.8	0.07443	12	B1B, B1N, S1B
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-ETW-2	B	C2	2	2		103.2	115.1	0.07480	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-B-C2-1-ETW-3	B	C2	2	2		106.2	120.4	0.07462	12	B1B, B1N
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-ETW-1	C	C1	3	1		106.5	121.9	0.07340	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-ETW-2	C	C1	3	1		106.6	119.4	0.07343	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C1-1-ETW-3	C	C1	3	1		99.26	111.1	0.07280	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-ETW-1	C	C2	3	2		106.6	121.7	0.07318	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-ETW-2	C	C2	3	2		110.2	125.5	0.07370	12	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1D1-C-C2-1-ETW-3	C	C2	3	2		105.3	123.6	0.07317	12	B1I

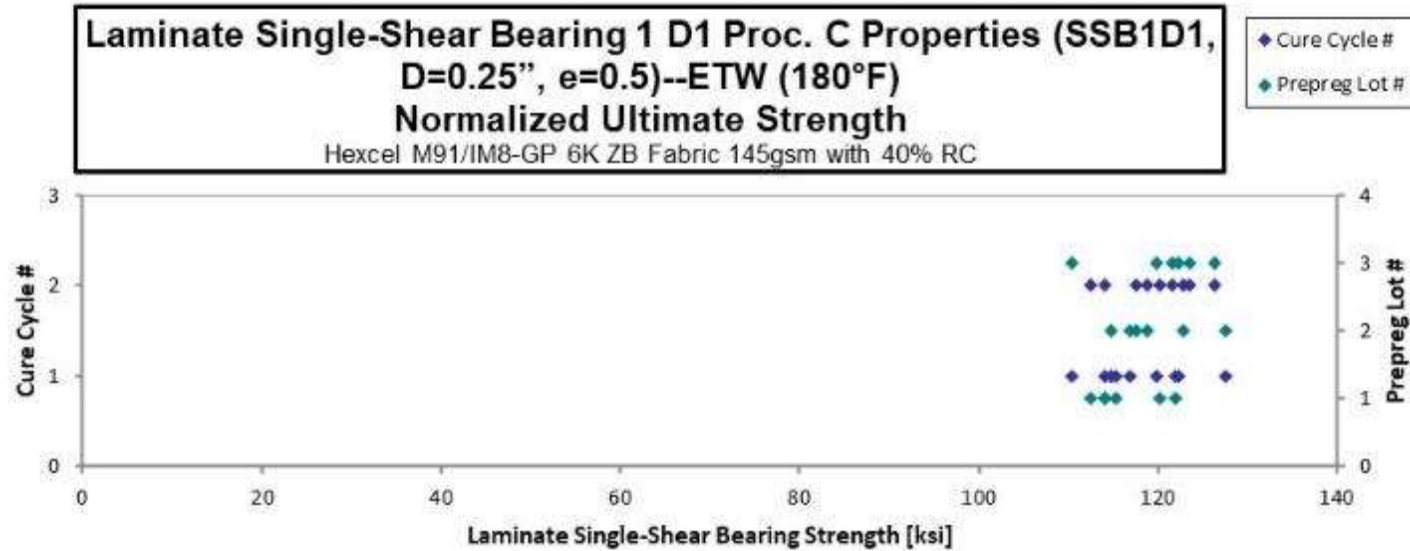
Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006150		92.11	115.3
0.006142		101.1	122.0
0.006160	93.63	87.70	114.1
0.006169	102.1	100.3	114.0
0.006168		98.16	112.4
0.006193		100.8	120.1
0.006183		101.9	114.9
0.006225		95.88	116.9
0.006228		106.5	127.5
0.006203	109.3	107.0	118.8
0.006233		105.4	117.6
0.006218		108.2	122.7
0.006117		106.7	122.2
0.006119		106.9	119.8
0.006067		98.72	110.5
0.006099		106.6	121.6
0.006142		110.9	126.4
0.006097		105.3	123.5

*Initial peak strength reported only when observed

Average	100.4	101.2	117.7	0.07394
Standard Dev.	7.393	6.050	4.756	0.0005954
Coeff. of Var. [%]	7.365	5.977	4.040	0.8052
Min.	92.72	86.85	111.1	0.07280
Max.	107.5	110.2	125.5	0.07480
Number of Spec.	3	18	18	18

Average _{norm}	0.006162	101.7	102.2	118.9
Standard Dev _{norm}	0.00004961	7.837	6.054	4.798
Coeff. of Var. [%] _{norm}	0.8052	7.708	5.921	4.035
Min.	0.006067	93.63	87.70	110.5
Max.	0.006233	109.3	110.9	127.5
Number of Spec.	18	3	18	18





June 15th, 2026

CAM-RP-2025-001 Rev -

4.33 “25/50/25” Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19”, e=0.38)

**Laminate Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19”, e=0.38)--RTA (70°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

0.006100

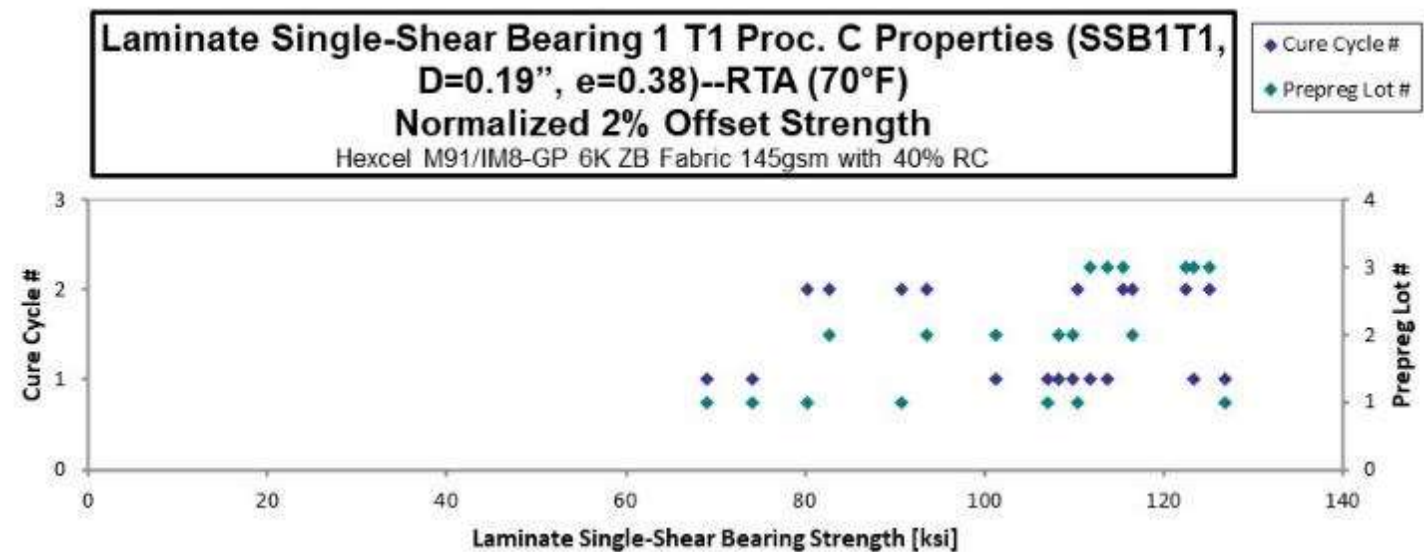
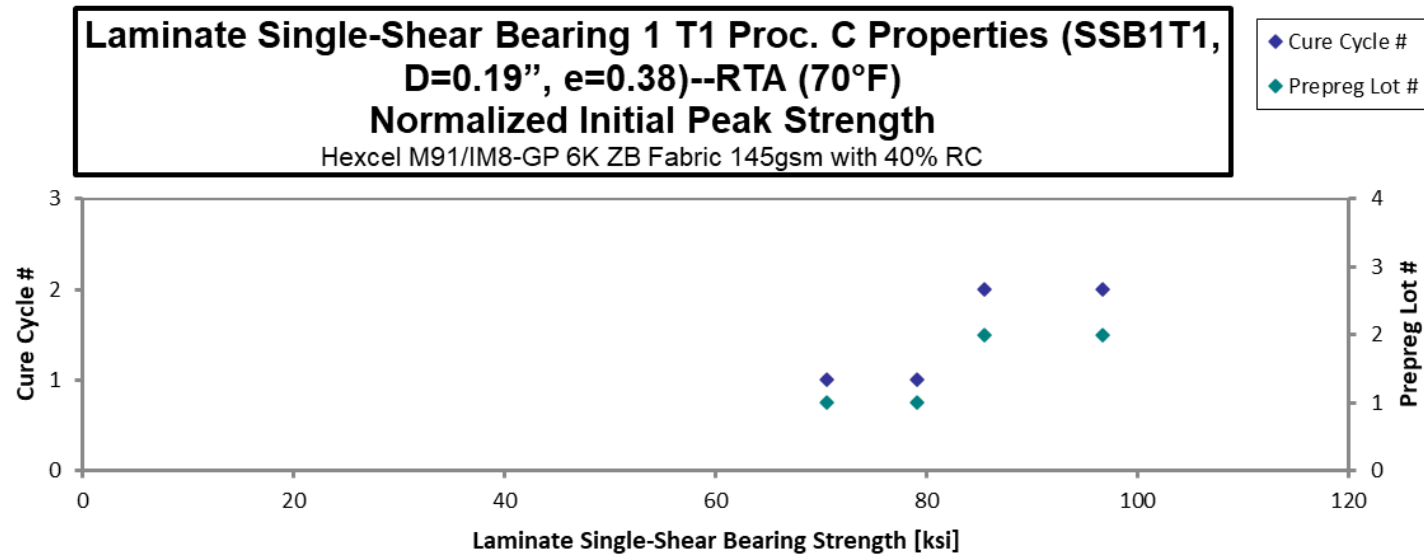
Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Initial Peak Strength [ksi]	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-RTA-1	A	C1	1	1		106.3	148.7	0.04913	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-RTA-2	A	C1	1	1		125.4	158.2	0.04937	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-RTA-3*	A	C1	1	1	69.47	68.03	128.3	0.04952	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-RTA-4*	A	C1	1	1	78.64	73.77	131.7	0.04908	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-RTA-1	A	C2	1	2		80.46	130.4	0.04863	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-RTA-2	A	C2	1	2		109.8	138.5	0.04912	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-RTA-3	A	C2	1	2		90.00	137.7	0.04923	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-RTA-1	B	C1	2	1		98.45	133.1	0.05023	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-RTA-2	B	C1	2	1		106.8	133.9	0.05020	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-RTA-3	B	C1	2	1		105.5	130.7	0.05010	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-RTA-1*	B	C2	2	2	83.18	80.50	133.5	0.05013	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-RTA-2*	B	C2	2	2	94.10	91.05	129.2	0.05013	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-RTA-3	B	C2	2	2		113.0	140.4	0.05030	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-RTA-1	C	C1	3	1		112.9	146.8	0.04917	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-RTA-2	C	C1	3	1		122.0	156.0	0.04935	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-RTA-3	C	C1	3	1		111.7	149.2	0.04888	8	M(B,C,L)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-RTA-1	C	C2	3	2		115.6	146.7	0.04873	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-RTA-2	C	C2	3	2		124.2	153.6	0.04917	8	M(B,C)1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-RTA-3	C	C2	3	2		121.8	157.3	0.04908	8	M(B,C)1I

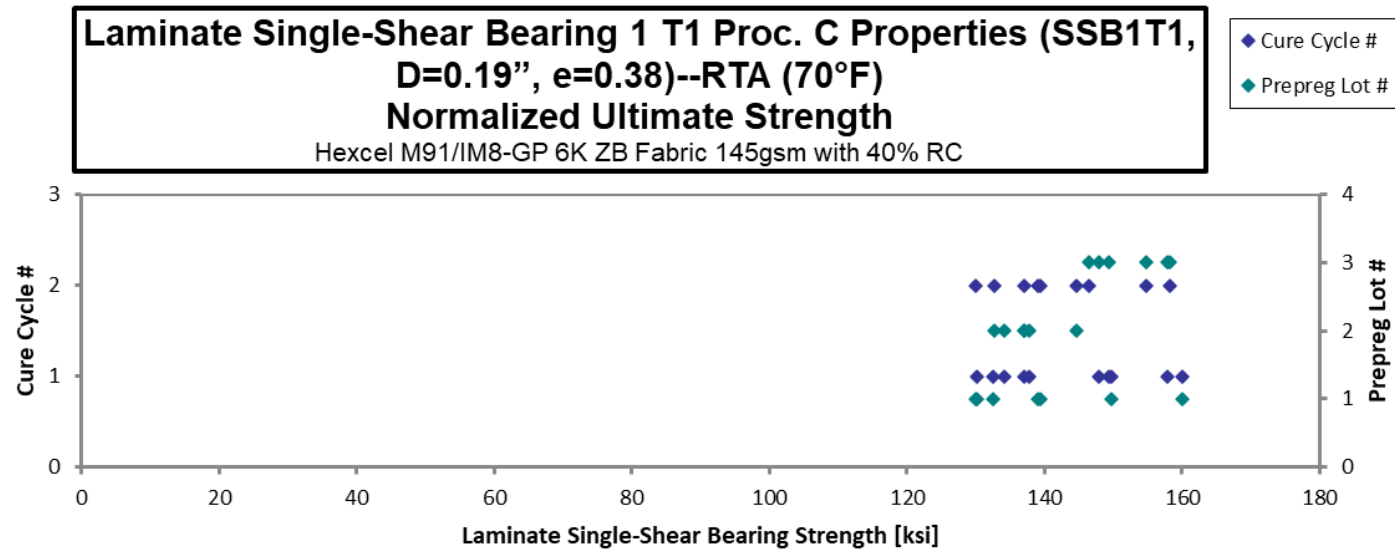
Avg. t_{ply} [in]	Initial Peak Strength _{norm} [ksi]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006142		107.0	149.7
0.006171		126.9	160.1
0.006190	70.49	69.03	130.1
0.006135	79.10	74.20	132.5
0.006079		80.18	130.0
0.006140		110.5	139.4
0.006154		90.80	138.9
0.006279		101.3	137.0
0.006275		109.9	137.8
0.006263		108.4	134.2
0.006267	85.46	82.70	137.1
0.006267	96.67	93.54	132.8
0.006288		116.5	144.7
0.006146		113.7	147.9
0.006169		123.4	157.8
0.006110		111.9	149.4
0.006092		115.4	146.5
0.006146		125.1	154.8
0.006135		122.5	158.2

*Initial peak strength reported only when observed

Average	81.35	103.0	141.3	0.04945
Standard Dev.	10.24	17.64	10.35	0.0005511
Coeff. of Var. [%]	12.58	17.12	7.329	1.114
Min.	69.47	68.03	128.3	0.04863
Max.	94.10	125.4	158.2	0.05030
Number of Spec.	4	19	19	19

Average _{norm}	0.006181	82.93	104.4	143.1
Standard Dev. _{norm}	0.00006888	11.02	17.73	9.889
Coeff. of Var. [%] _{norm}	1.114	13.29	16.98	6.911
Min.	0.006079	70.49	69.03	130.0
Max.	0.006288	96.67	126.9	160.1
Number of Spec.	19	4	19	19





June 15th, 2026

CAM-RP-2025-001 Rev -

Laminate Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19", e=0.38)--ETW (180°F)
Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

normalizing

t_{ply} [in]

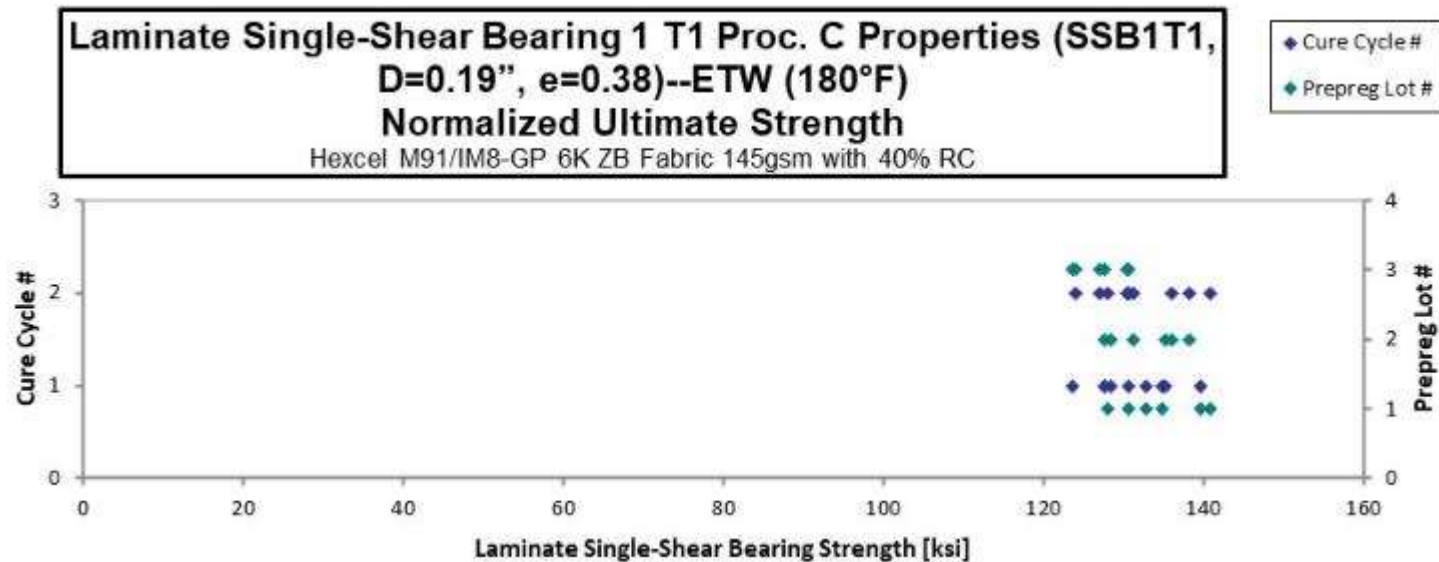
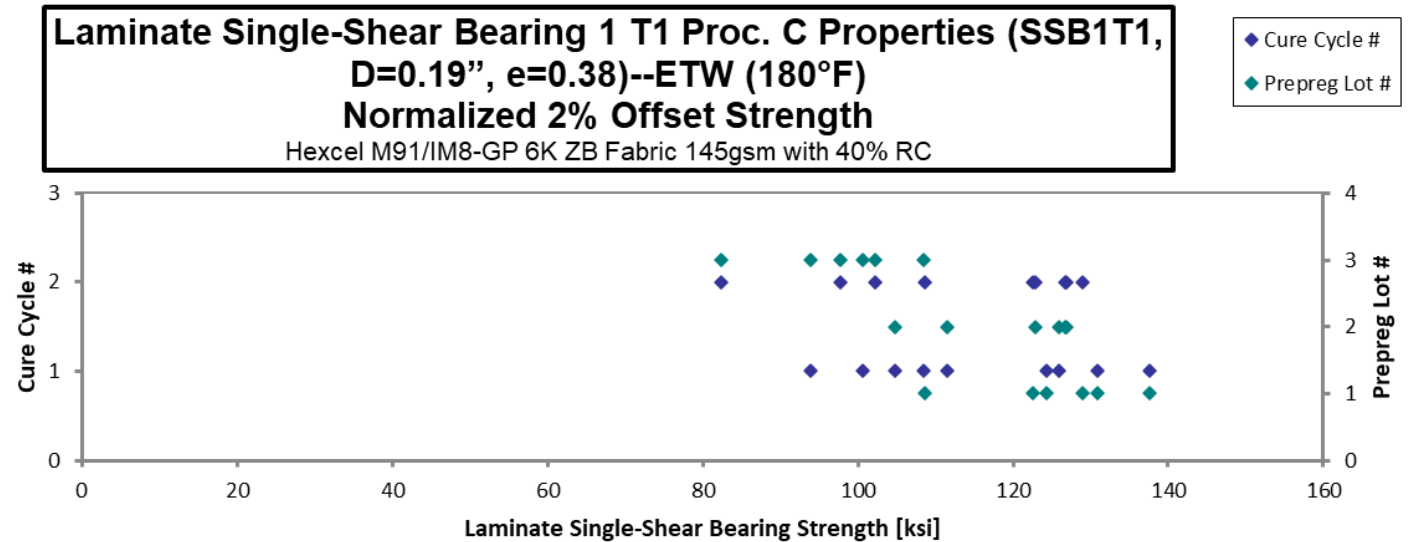
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Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-ETW-1	A	C1	1	1	136.4	138.3	0.04927	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-ETW-2	A	C1	1	1	123.4	131.9	0.04917	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-ETW-3	A	C1	1	1	129.8	133.7	0.04922	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-ETW-1	A	C2	1	2	122.4	140.7	0.04885	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-ETW-2	A	C2	1	2	128.7	130.4	0.04888	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C2-1-ETW-3	A	C2	1	2	107.9	127.3	0.04910	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-ETW-1	B	C1	2	1	123.2	132.4	0.04985	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-ETW-2	B	C1	2	1	107.6	124.0	0.05053	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C1-1-ETW-3	B	C1	2	1	101.7	123.7	0.05033	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-ETW-1	B	C2	2	2	119.8	127.9	0.05003	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-ETW-2	B	C2	2	2	122.6	131.7	0.05043	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-B-C2-1-ETW-3	B	C2	2	2	122.5	133.4	0.05057	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-ETW-1	C	C1	3	1	101.5	124.7	0.04837	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-ETW-2	C	C1	3	1	93.43	129.9	0.04905	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C1-1-ETW-3	C	C1	3	1	107.4	126.3	0.04930	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-ETW-1	C	C2	3	2	97.17	126.3	0.04908	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-ETW-2	C	C2	3	2	101.5	129.7	0.04912	8	B1I
NTPM911Q1-HXL-H40-NIAR-SSB1T1-C-C2-1-ETW-3	C	C2	3	2	81.79	123.1	0.04915	8	B1I

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]
0.006158	137.7	139.6
0.006146	124.4	132.9
0.006152	130.9	134.9
0.006106	122.6	140.8
0.006110	128.9	130.6
0.006138	108.6	128.1
0.006231	125.9	135.3
0.006317	111.5	128.4
0.006292	104.8	127.6
0.006254	122.9	131.1
0.006304	126.7	136.1
0.006321	126.9	138.3
0.006046	100.6	123.6
0.006131	93.91	130.6
0.006163	108.5	127.6
0.006135	97.73	127.0
0.006140	102.2	130.5
0.006144	82.38	123.9

Average 112.7 129.7 0.04946
Standard Dev. 14.73 4.922 0.0006566
Coeff. of Var. [%] 13.07 3.793 1.328
Min. 81.79 123.1 0.04837
Max. 136.4 140.7 0.05057
Number of Spec. 18 18 18

Average_{norm} 0.006183 114.3 131.5
Standard Dev_{norm} 0.00008208 15.21 5.097
Coeff. of Var. [%]_{norm} 1.328 13.31 3.876
Min. 0.006046 82.38 123.6
Max. 0.006321 137.7 140.8
Number of Spec. 18 18 18



4.34 “25/50/25” Compression After Impact 1 Properties (CAI1)

Laminate Compression After Impact 1 Properties (CAI1)--RTA (70°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

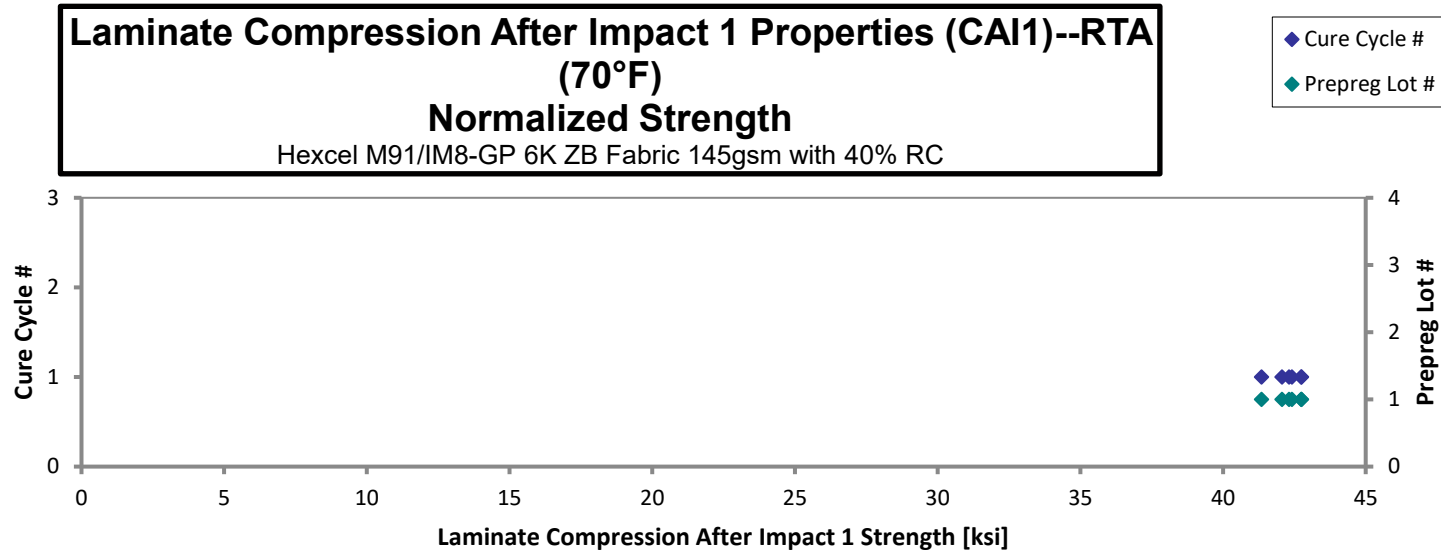
normalizing

 $t_{ply} [in]$
0.006100

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	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]
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-1	A	C1	1	1	41.88	221.4	0.1483	24	LDM	0.006177	42.41
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-2	A	C1	1	1	40.81	223.4	0.1483	24	LDM	0.006181	41.35
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-3	A	C1	1	1	41.80	223.4	0.1482	24	LDM	0.006175	42.31
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-4	A	C1	1	1	41.79	225.8	0.1498	24	LDM	0.006241	42.75
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-5	A	C1	1	1	41.11	226.9	0.1498	24	LDM	0.006243	42.07
NTPM911Q1-HXL-H40-NIAR-CAI1-A-C1-1-RTA-6	A	C1	1	1	41.88	223.2	0.1494	24	LDM	0.006225	42.74

Average 41.54 224.0 0.1490
 Standard Dev. 0.4649 2.009 0.0007870
 Coeff. of Var. [%] 1.119 0.8969 0.5283
 Min. 40.81 221.4 0.1482
 Max. 41.88 226.9 0.1498
 Number of Spec. 6 6 6

Average_{norm} 0.006207 42.27
 Standard Dev._{norm} 0.00003279 0.5207
 Coeff. of Var. [%]_{norm} 0.5283 1.232
 Min. 0.006175 41.35
 Max. 0.006243 42.75
 Number of Spec. 6 6



4.35 Interlaminar Tension Properties (ILT)

Laminate Interlaminar Tension Properties (ILT)--CTA (-65°F) Strength

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number*	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-CTA-1	A	C1	1	1	433.8	15.52	0.1351	21	0.006433	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-CTA-2	A	C1	1	1	416.2	14.90	0.1350	21	0.006430	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-CTA-4	A	C1	1	1	422.5	15.25	0.1341	21	0.006385	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-CTA-5	A	C1	1	1	420.6	15.20	0.1340	21	0.006381	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-CTA-6	A	C1	1	1	412.4	14.99	0.1333	21	0.006349	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-1	A	C2	1	2	436.6	15.08	0.1392	21	0.006629	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-2	A	C2	1	2	444.6	15.41	0.1388	21	0.006610	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-4	A	C2	1	2	406.5	14.30	0.1370	21	0.006525	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-5	A	C2	1	2	403.6	14.31	0.1361	21	0.006482	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-6	A	C2	1	2	405.8	14.44	0.1358	21	0.006464	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-CTA-7	A	C2	1	2	417.4	14.91	0.1353	21	0.006442	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-CTA-1	B	C1	2	1	442.6	14.68	0.1441	21	0.006860	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-CTA-2	B	C1	2	1	441.9	14.76	0.1433	21	0.006821	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-CTA-3	B	C1	2	1	458.6	15.46	0.1421	21	0.006765	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-CTA-5	B	C1	2	1	440.1	15.10	0.1400	21	0.006668	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-CTA-6	B	C1	2	1	458.2	15.80	0.1395	21	0.006640	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-CTA-1	B	C2	2	2	364.6	12.46	0.1405	21	0.006688	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-CTA-2	B	C2	2	2	431.6	14.91	0.1392	21	0.006630	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-CTA-3	B	C2	2	2	430.8	14.92	0.1389	21	0.006615	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-CTA-6	B	C2	2	2	427.0	14.93	0.1378	21	0.006562	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-CTA-7	B	C2	2	2	419.9	14.76	0.1372	21	0.006531	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT THE LEGS
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-1	C	C1	3	1	440.0	14.74	0.1429	21	0.006805	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-2	C	C1	3	1	399.1	13.45	0.1422	21	0.006770	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-3	C	C1	3	1	382.8	13.14	0.1400	21	0.006667	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-4	C	C1	3	1	408.5	14.19	0.1386	21	0.006598	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-5	C	C1	3	1	421.2	14.72	0.1379	21	0.006565	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-CTA-6	C	C1	3	1	408.0	14.31	0.1374	21	0.006543	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-1	C	C2	3	2	356.6	12.49	0.1376	21	0.006552	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-2	C	C2	3	2	390.2	13.97	0.1351	21	0.006432	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-3	C	C2	3	2	408.1	14.66	0.1347	21	0.006412	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-4	C	C2	3	2	403.7	14.56	0.1342	21	0.006389	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-5	C	C2	3	2	402.2	14.68	0.1328	21	0.006324	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-6	C	C2	3	2	400.9	14.63	0.1328	21	0.006325	INTERLAMINAR TENSILE FAILURE, TENISON
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-CTA-7	C	C2	3	2	407.7	14.95	0.1324	21	0.006302	INTERLAMINAR TENSILE FAILURE, TENISON

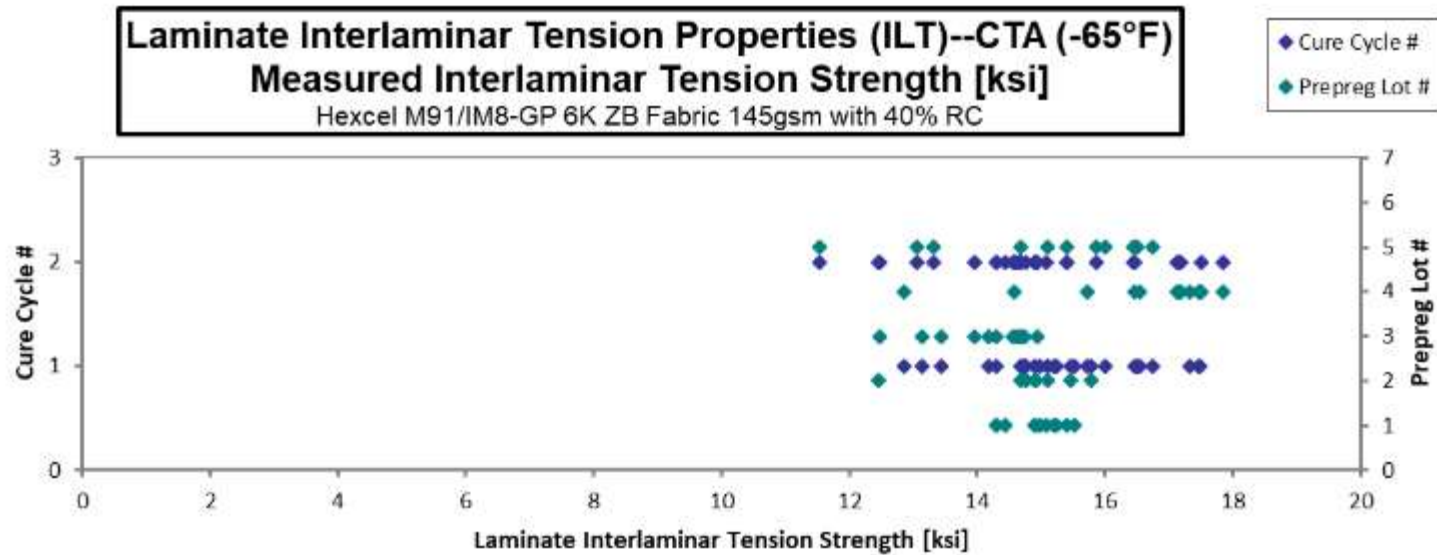
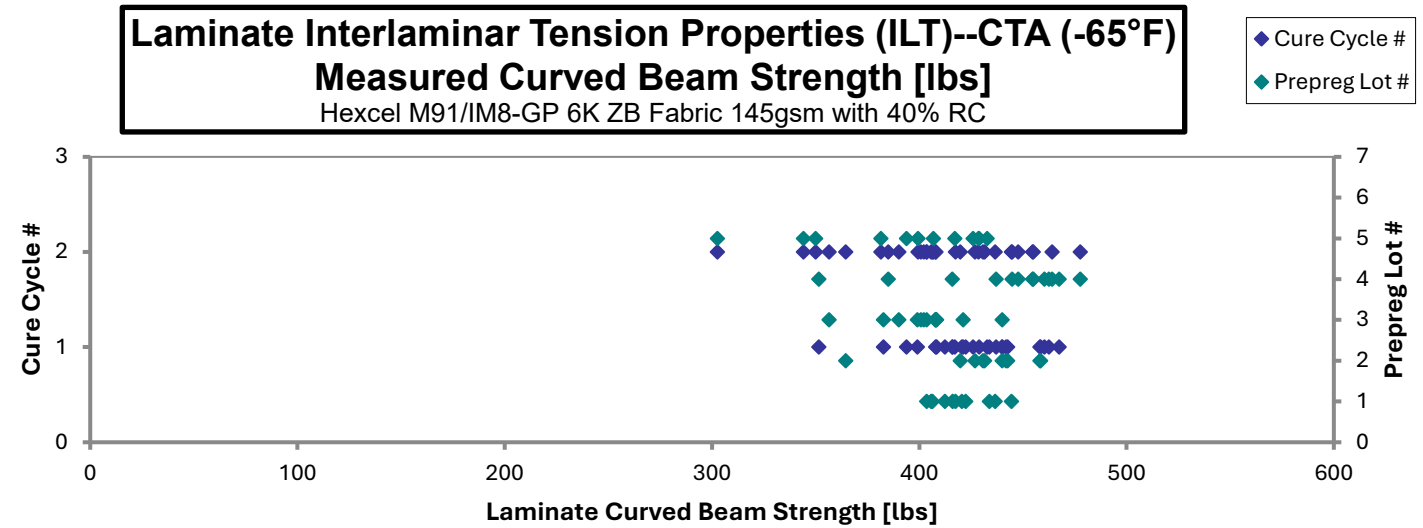
June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number*	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-CTA-1	D	C1	4	1	351.5	12.86	0.1326	21	0.006314	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-CTA-2	D	C1	4	1	437.2	16.55	0.1288	21	0.006131	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-CTA-3	D	C1	4	1	467.6	17.48	0.1302	21	0.006198	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-CTA-4	D	C1	4	1	415.9	15.73	0.1289	21	0.006136	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-CTA-5	D	C1	4	1	462.7	17.48	0.1290	21	0.006140	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-CTA-6	D	C1	4	1	460.4	17.33	0.1294	21	0.006162	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-CTA-1	D	C2	4	2	464.1	17.51	0.1292	21	0.006150	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-CTA-2	D	C2	4	2	455.1	17.13	0.1294	21	0.006162	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-CTA-3	D	C2	4	2	454.8	17.19	0.1289	21	0.006139	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-CTA-4	D	C2	4	2	385.1	14.59	0.1287	21	0.006127	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-CTA-5	D	C2	4	2	447.8	17.17	0.1274	21	0.006064	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-CTA-6	D	C2	4	2	477.7	17.85	0.1302	21	0.006199	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-CTA-7	D	C2	4	2	444.8	16.47	0.1312	21	0.006248	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE AND LEG
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-CTA-1	E	C1	5	1	432.8	16.74	0.1264	21	0.006020	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-CTA-2	E	C1	5	1	417.2	16.01	0.1273	21	0.006060	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-CTA-3	E	C1	5	1	393.9	15.11	0.1273	21	0.006062	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-CTA-4	E	C1	5	1	429.0	16.51	0.1270	21	0.006045	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-CTA-5	E	C1	5	1	426.0	16.48	0.1264	21	0.006020	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-1	E	C2	5	2	399.5	15.42	0.1267	21	0.006032	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-2	E	C2	5	2	381.5	14.68	0.1270	21	0.006045	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-3	E	C2	5	2	428.6	16.44	0.1273	21	0.006063	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-4	E	C2	5	2	350.1	13.33	0.1282	21	0.006104	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-5	E	C2	5	2	406.8	15.87	0.1255	21	0.005975	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-6	E	C2	5	2	344.2	13.06	0.1286	21	0.006121	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-CTA-7	E	C2	5	2	302.6	11.54	0.1273	21	0.006061	INTERLAMINAR TENSILE FAILURE, TENSION

*Cross head displacement exceeds 0.2in for all

Average	417.0	15.14	0.1336	0.006362
Standard Dev.	33.78	1.375	0.005275	0.0002512
Coeff. of Var. [%]	8.102	9.08	3.948	3.948
Min.	302.6	11.540	0.1255	0.005975
Max.	477.7	17.85	0.1441	0.006860
Number of Spec.	59	59	59	59



**Laminate Interlaminar Tension Properties (ILT)--RTA (70°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number*	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{py} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-RTA-1	A	C1	1	1	352.9	12.76	0.1339	21	0.006377	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-RTA-2	A	C1	1	1	361.7	13.06	0.1340	21	0.006382	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-RTA-3	A	C1	1	1	379.1	13.64	0.1345	21	0.006404	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-RTA-4	A	C1	1	1	391.2	13.94	0.1356	21	0.006457	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-RTA-5	A	C1	1	1	371.9	13.23	0.1358	21	0.006465	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-1	A	C2	1	2	345.4	12.33	0.1354	21	0.006445	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-2	A	C2	1	2	379.5	13.76	0.1336	21	0.006361	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-3	A	C2	1	2	357.4	12.88	0.1343	21	0.006393	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-4	A	C2	1	2	341.8	12.36	0.1339	21	0.006377	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-5	A	C2	1	2	345.3	12.45	0.1342	21	0.006389	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-RTA-6	A	C2	1	2	342.3	12.33	0.1343	21	0.006395	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-RTA-1	B	C1	2	1	414.2	14.28	0.1394	21	0.006639	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-RTA-2	B	C1	2	1	407.0	14.15	0.1384	21	0.006592	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-RTA-3	B	C1	2	1	401.1	14.02	0.1378	21	0.006562	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-RTA-4	B	C1	2	1	403.5	14.18	0.1372	21	0.006533	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-RTA-5	B	C1	2	1	409.6	14.46	0.1367	21	0.006507	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-1	B	C2	2	2	381.9	13.44	0.1370	21	0.006525	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-2	B	C2	2	2	390.4	13.82	0.1363	21	0.006492	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-3	B	C2	2	2	388.0	13.68	0.1369	21	0.006517	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-4	B	C2	2	2	403.5	14.23	0.1368	21	0.006515	INTERLAMINAR TENSILE FAILURE, TENSILE FAILURE AT INNER CURVE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-5	B	C2	2	2	414.7	14.62	0.1368	21	0.006514	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-RTA-6	B	C2	2	2	406.8	14.19	0.1381	21	0.006576	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-RTA-1	C	C1	3	1	314.8	11.12	0.1366	21	0.006504	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-RTA-2	C	C1	3	1	304.5	10.82	0.1359	21	0.006470	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-RTA-3	C	C1	3	1	338.9	12.08	0.1356	21	0.006456	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-RTA-4	C	C1	3	1	337.2	12.22	0.1337	21	0.006367	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-RTA-5	C	C1	3	1	336.1	12.21	0.1334	21	0.006352	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-1	C	C2	3	2	359.0	13.13	0.1326	21	0.006314	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-2	C	C2	3	2	319.2	11.66	0.1327	21	0.006320	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-3	C	C2	3	2	298.2	10.96	0.1321	21	0.006288	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-4	C	C2	3	2	331.4	12.18	0.1320	21	0.006287	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-5	C	C2	3	2	333.7	12.31	0.1316	21	0.006267	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-RTA-6	C	C2	3	2	339.8	12.58	0.1312	21	0.006249	INTERLAMINAR TENSILE FAILURE, TENSION

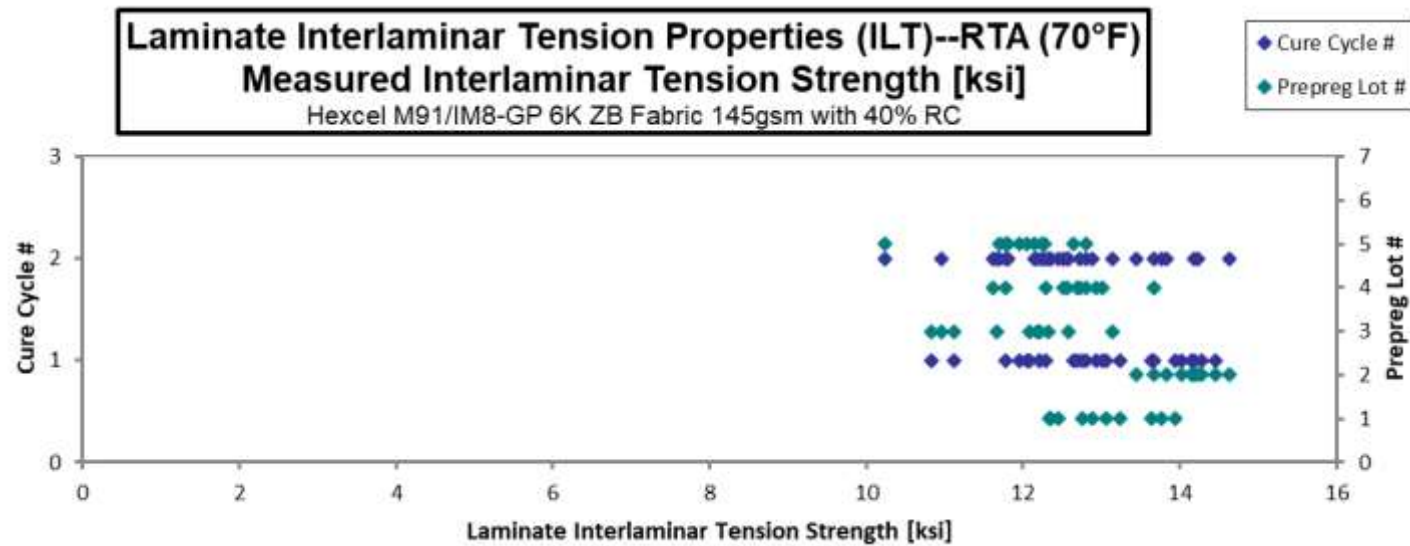
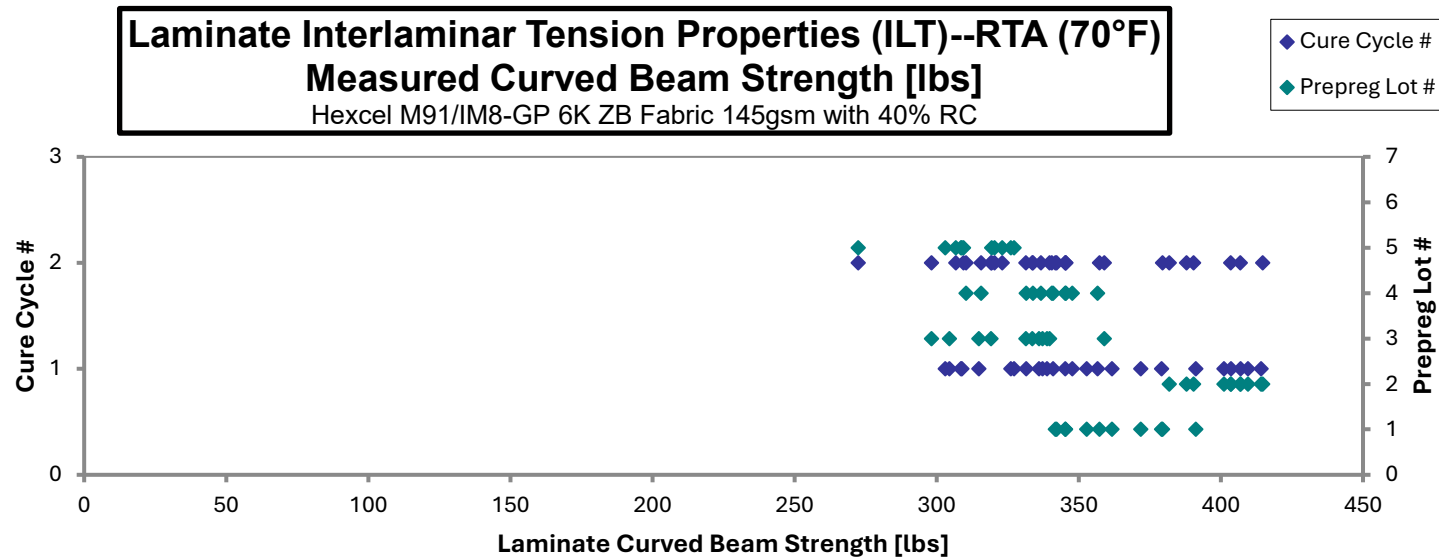
June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number*	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-RTA-1	D	C1	4	1	347.8	12.93	0.1308	21	0.006229	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-RTA-2	D	C1	4	1	331.5	12.30	0.1310	21	0.006239	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-RTA-3	D	C1	4	1	341.0	12.69	0.1307	21	0.006223	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-RTA-4	D	C1	4	1	345.3	13.01	0.1293	21	0.006155	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-RTA-5	D	C1	4	1	356.6	13.67	0.1274	21	0.006065	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-RTA-1	D	C2	4	2	336.7	12.56	0.1304	21	0.006211	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-RTA-2	D	C2	4	2	345.5	12.72	0.1319	21	0.006281	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-RTA-3	D	C2	4	2	315.6	11.77	0.1304	21	0.006210	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-RTA-4	D	C2	4	2	340.5	12.80	0.1296	21	0.006169	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-RTA-5	D	C2	4	2	333.9	12.52	0.1299	21	0.006183	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-RTA-6	D	C2	4	2	310.3	11.61	0.1300	21	0.006192	INTERLAMINAR TENSILE FAILURE, OUTER PLYS FAILURE AT CURVE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-RTA-1	E	C1	5	1	308.9	11.95	0.1264	21	0.006019	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-RTA-2	E	C1	5	1	326.2	12.64	0.1263	21	0.006012	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-RTA-3	E	C1	5	1	303.0	11.77	0.1260	21	0.005999	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-RTA-4	E	C1	5	1	308.5	12.05	0.1254	21	0.005971	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-RTA-5	E	C1	5	1	327.3	12.80	0.1252	21	0.005963	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-1	E	C2	5	2	309.5	11.80	0.1280	21	0.006093	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-2	E	C2	5	2	306.7	11.70	0.1279	21	0.006090	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-3	E	C2	5	2	272.4	10.23	0.1296	21	0.006173	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-4	E	C2	5	2	323.0	12.28	0.1283	21	0.006111	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-5	E	C2	5	2	320.4	12.24	0.1278	21	0.006086	INTERLAMINAR TENSILE FAILURE, TENSION
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-RTA-6	E	C2	5	2	319.3	12.14	0.1283	21	0.006110	INTERLAMINAR TENSILE FAILURE

*Cross head displacement exceeds 0.2in for all

Average	347.9	12.71	0.1325	0.006310
Standard Dev.	34.85	0.9861	0.003777	0.0001798
Coeff. of Var. [%]	10.02	7.756	2.850	2.850
Min.	272.4	10.23	0.1252	0.005963
Max.	414.7	14.62	0.1394	0.006639
Number of Spec.	55	55	55	55



**Laminate Interlaminar Tension Properties (ILT)--ETW (180°F)
Strength**

Hexcel M91/IM8-GP 6K ZB Fabric 145gsm with 40% RC

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-2	A	C1	1	1	192.0	6.666	0.1386	21	0.006601	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-3	A	C1	1	1	223.1	7.758	0.1385	21	0.006593	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-4	A	C1	1	1	205.2	7.055	0.1398	21	0.006655	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-5	A	C1	1	1	126.4	4.315	0.1407	21	0.006698	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-6	A	C1	1	1	223.6	7.473	0.1432	21	0.006818	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-ETW-7	A	C1	1	1	207.2	6.854	0.1444	21	0.006876	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-1	A	C2	1	2	215.7	7.757	0.1345	21	0.006405	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-2	A	C2	1	2	210.0	7.538	0.1347	21	0.006415	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-3	A	C2	1	2	194.3	6.987	0.1345	21	0.006406	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-4	A	C2	1	2	215.2	7.716	0.1349	21	0.006421	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-5	A	C2	1	2	223.9	7.984	0.1355	21	0.006454	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-A-C2-1-ETW-6	A	C2	1	2	206.9	7.309	0.1366	21	0.006504	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-ETW-1	B	C1	2	1	231.0	8.216	0.1358	21	0.006465	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-ETW-2	B	C1	2	1	227.7	8.034	0.1367	21	0.006510	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-ETW-3	B	C1	2	1	236.7	8.415	0.1359	21	0.006469	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-ETW-4	B	C1	2	1	240.2	8.529	0.1360	21	0.006475	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-ETW-5	B	C1	2	1	222.4	7.877	0.1363	21	0.006489	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-1	B	C2	2	2	242.7	8.446	0.1384	21	0.006588	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-2	B	C2	2	2	233.1	8.078	0.1388	21	0.006610	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-3	B	C2	2	2	225.3	7.742	0.1398	21	0.006657	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-4	B	C2	2	2	230.2	7.826	0.1411	21	0.006720	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-5	B	C2	2	2	237.9	8.038	0.1419	21	0.006755	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-B-C2-1-ETW-6	B	C2	2	2	238.5	8.008	0.1426	21	0.006789	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-1	C	C1	3	1	158.9	5.847	0.1319	21	0.006282	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-2	C	C1	3	1	194.8	7.113	0.1328	21	0.006324	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-3	C	C1	3	1	195.1	7.092	0.1333	21	0.006348	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-4	C	C1	3	1	180.3	6.533	0.1337	21	0.006367	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-5	C	C1	3	1	189.0	6.789	0.1347	21	0.006412	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-ETW-6	C	C1	3	1	178.5	6.482	0.1334	21	0.006354	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-1	C	C2	3	2	165.1	6.079	0.1319	21	0.006280	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-2	C	C2	3	2	178.5	6.562	0.1320	21	0.006287	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-3	C	C2	3	2	173.9	6.393	0.1321	21	0.006288	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-4	C	C2	3	2	172.6	6.306	0.1327	21	0.006319	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-5	C	C2	3	2	184.5	6.662	0.1341	21	0.006385	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-NIAR-ILT-C-C2-1-ETW-6	C	C2	3	2	176.5	6.387	0.1338	21	0.006373	INTERLAMINAR TENSILE FAILURE

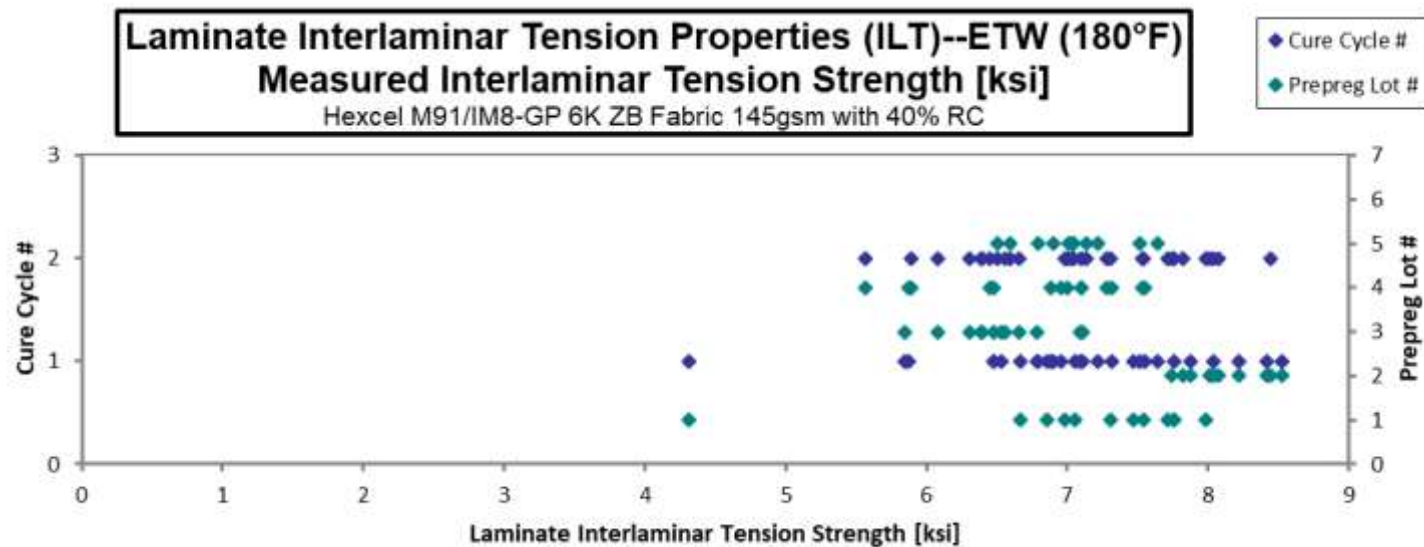
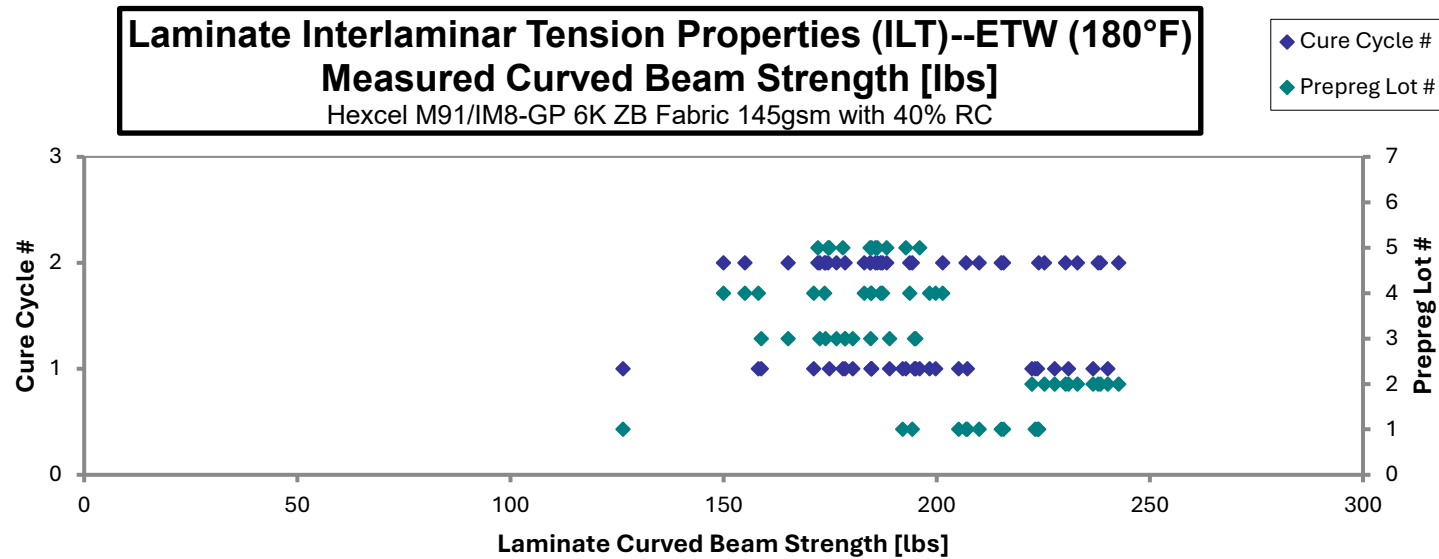
June 15th, 2026

CAM-RP-2025-001 Rev -

Specimen Number	Hexcel Batch	Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-ETW-1	D	C1	4	1	198.4	7.316	0.1317	21	0.006270	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-ETW-2	D	C1	4	1	171.2	6.481	0.1288	21	0.006131	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-ETW-3	D	C1	4	1	158.2	5.877	0.1308	21	0.006230	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-ETW-4	D	C1	4	1	184.7	6.954	0.1294	21	0.006161	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-ETW-5	D	C1	4	1	199.8	7.551	0.1290	21	0.006140	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-2-ETW-6	D	C1	4	1	184.6	6.886	0.1304	21	0.006210	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-ETW-1	D	C2	4	2	183.0	7.099	0.1261	21	0.006005	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-ETW-2	D	C2	4	2	173.7	6.447	0.1310	21	0.006237	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-ETW-3	D	C2	4	2	155.0	5.892	0.1283	21	0.006111	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-ETW-4*	D	C2	4	2	150.0	5.565	0.1310	21	0.006239	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-ETW-5	D	C2	4	2	201.4	7.530	0.1302	21	0.006198	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-ETW-6	D	C2	4	2	187.3	7.002	0.1302	21	0.006198	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-ETW-7	D	C2	4	2	193.7	7.280	0.1296	21	0.006169	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-2-ETW-8	D	C2	4	2	186.8	7.105	0.1283	21	0.006108	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-ETW-1	E	C1	5	1	196.0	7.645	0.1255	21	0.005976	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-ETW-2	E	C1	5	1	174.8	6.795	0.1259	21	0.005995	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-ETW-3	E	C1	5	1	192.8	7.518	0.1256	21	0.005979	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-ETW-4	E	C1	5	1	184.8	7.218	0.1254	21	0.005969	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-ETW-5	E	C1	5	1	178.0	6.898	0.1262	21	0.006010	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-1	E	C2	5	2	172.1	6.504	0.1290	21	0.006142	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-2	E	C2	5	2	188.3	7.139	0.1286	21	0.006123	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-3	E	C2	5	2	174.6	6.593	0.1290	21	0.006144	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-4	E	C2	5	2	185.7	7.033	0.1287	21	0.006126	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-5	E	C2	5	2	184.4	7.014	0.1281	21	0.006100	INTERLAMINAR TENSILE FAILURE
NTPM911Q1-HXL-H40-SKS-ILT-E-C2-1-ETW-6	E	C2	5	2	186.1	7.044	0.1288	21	0.006131	INTERLAMINAR TENSILE FAILURE

*Cross head displacement exceeds 0.2in for all except FACC-ILT-D-C2-2-ETW-4

Average	195.0	7.088	0.1332	0.006341
Standard Dev.	25.42	0.7786	0.004869	0.0002319
Coeff. of Var. [%]	13.03	10.98	3.656	3.656
Min.	126.4	4.315	0.1254	0.005969
Max.	242.7	8.529	0.1444	0.006876
Number of Spec.	60	60	60	60



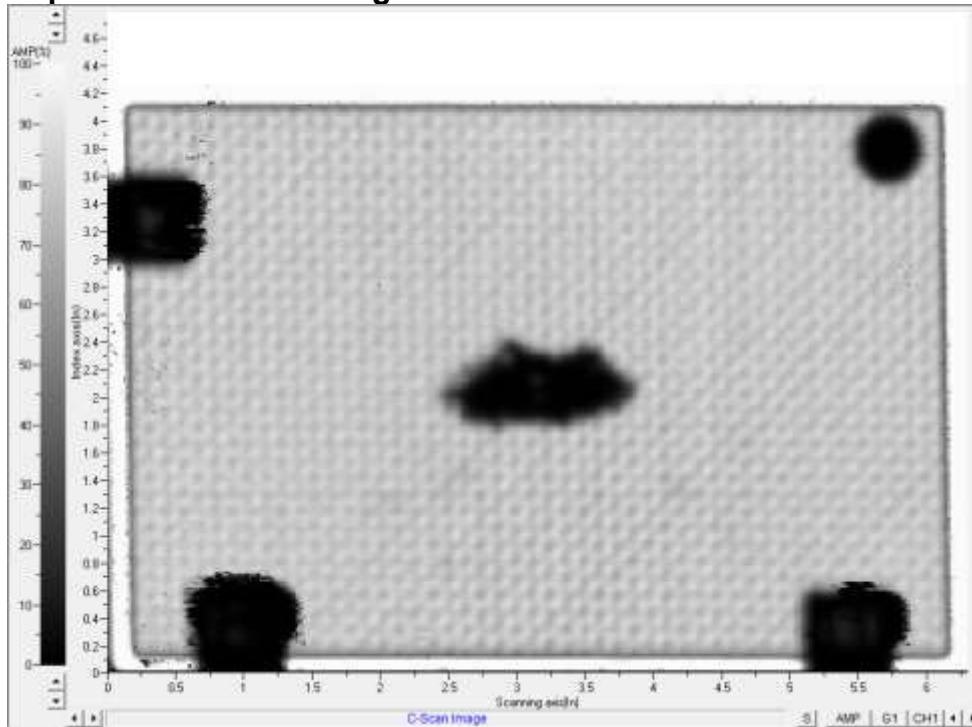
5. Additional Compression After Impact Data

5.1 “25/50/25” Compression After Impact 1 (CAI1)

Target Impact Energy Level: 1500 in-lb/in

Impactor Diameter: 0.625”

Representative of Damage Area:



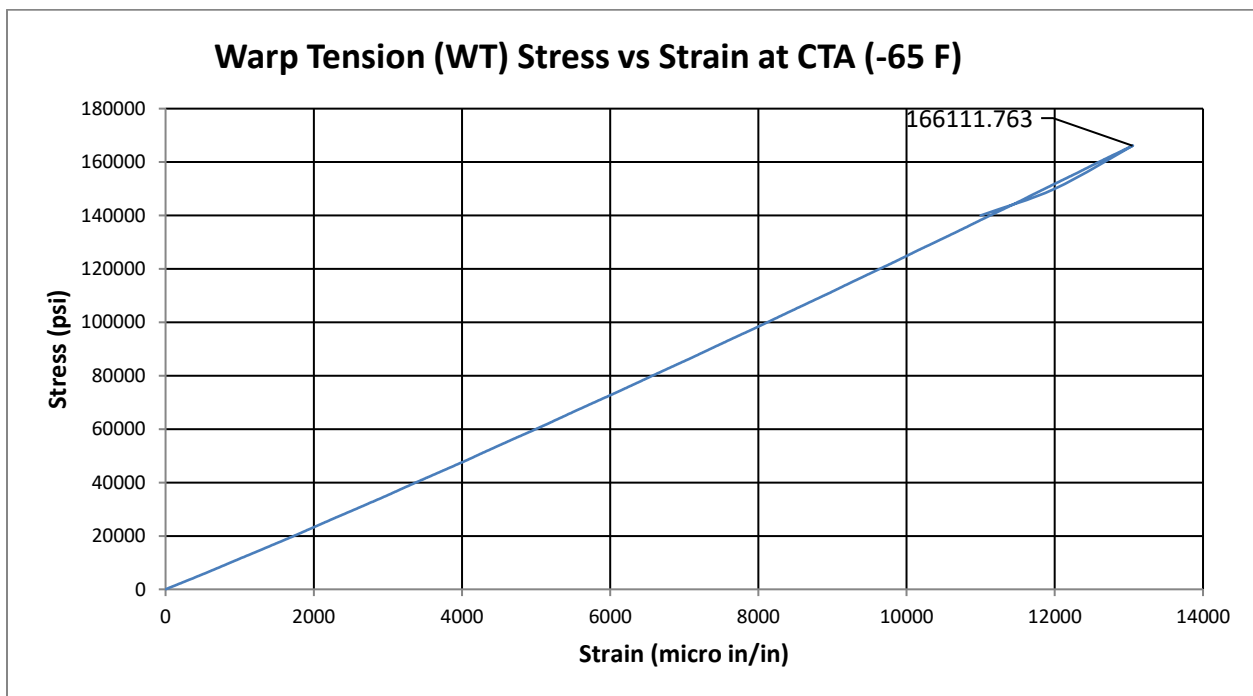
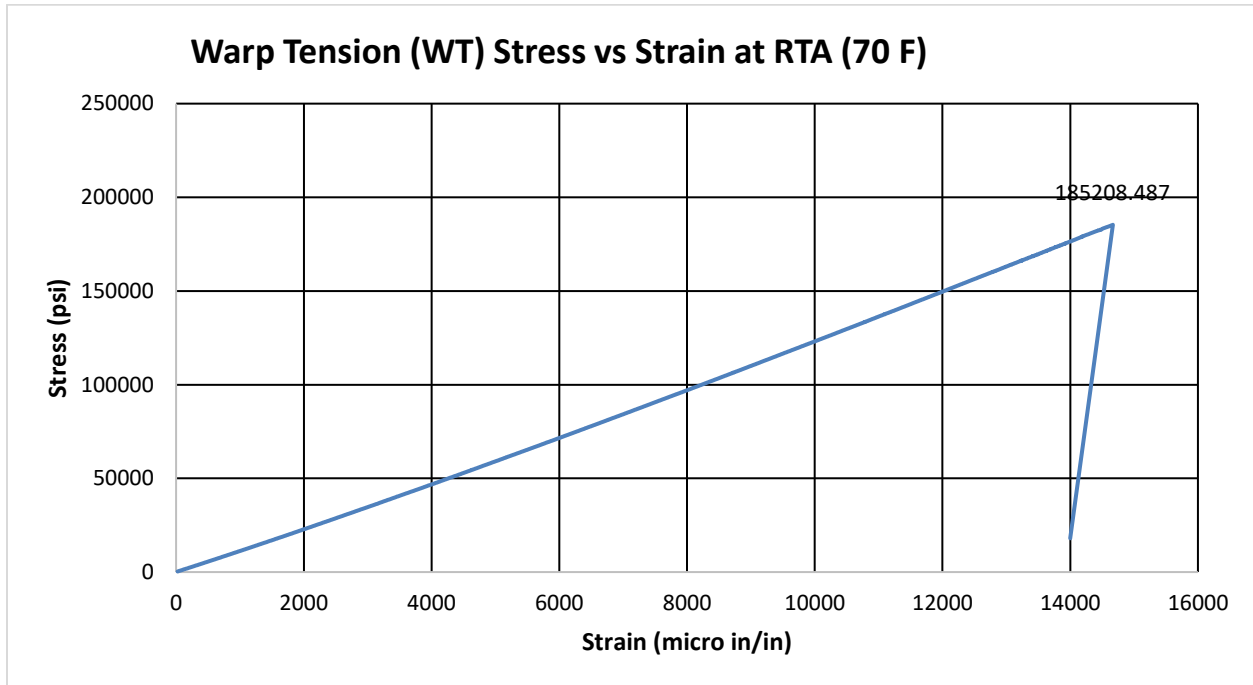
Note: Black areas around the edges are clamp areas.

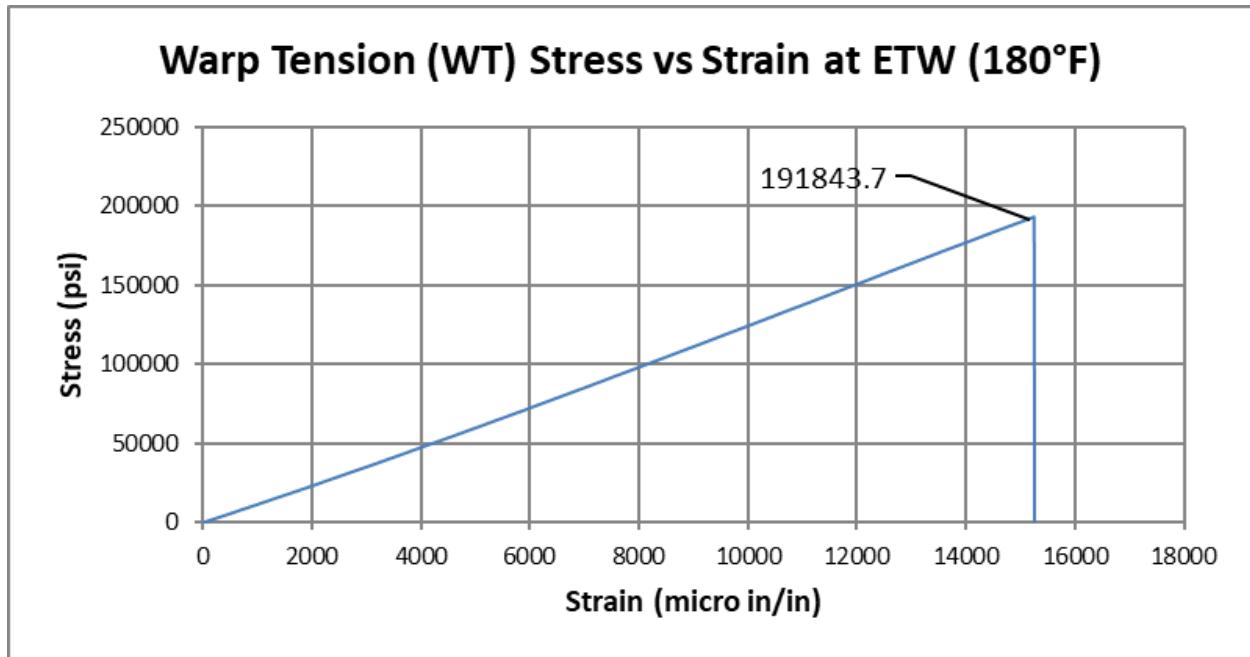
Damage Area and Dent Depth Summary:

Specimen ID	Damage Area (inch ²)	Dent Depth (inch)
NIAR-CAI1-A-C1-1-RTA-1	0.5736	0.01450
NIAR-CAI1-A-C1-1-RTA-2	0.6472	0.01450
NIAR-CAI1-A-C1-1-RTA-3	0.6120	0.01650
NIAR-CAI1-A-C1-1-RTA-4	0.6596	0.01500
NIAR-CAI1-A-C1-1-RTA-5	0.6820	0.01450
NIAR-CAI1-A-C1-1-RTA-6	0.6840	0.01700

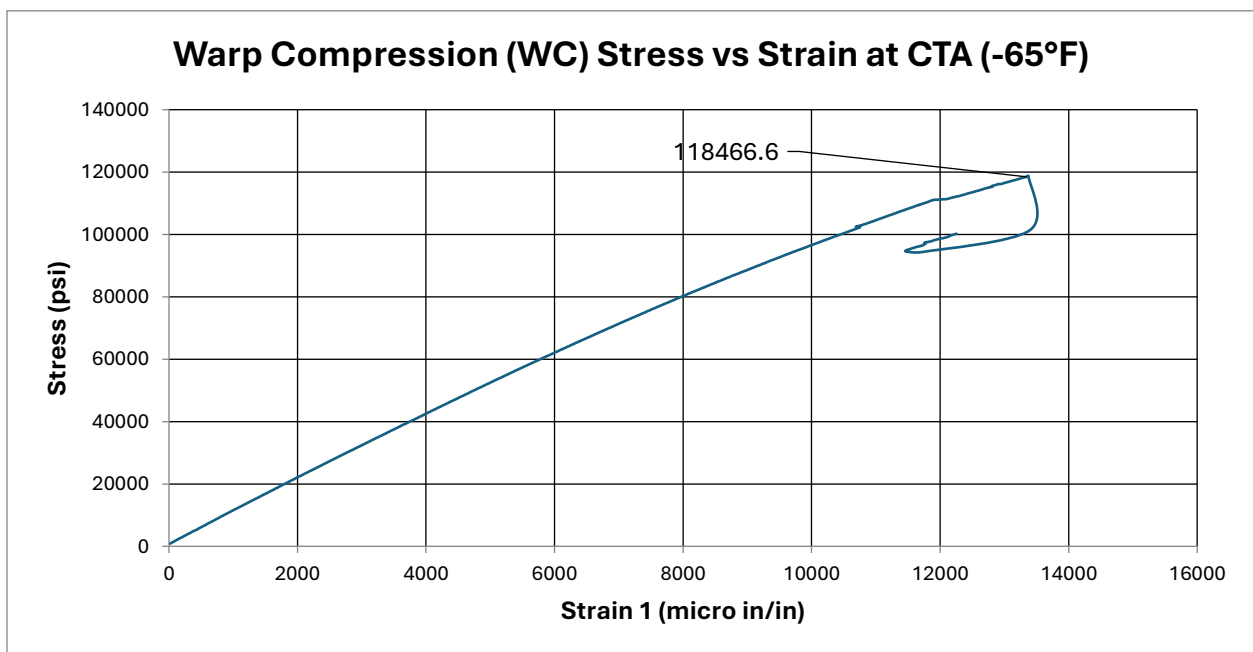
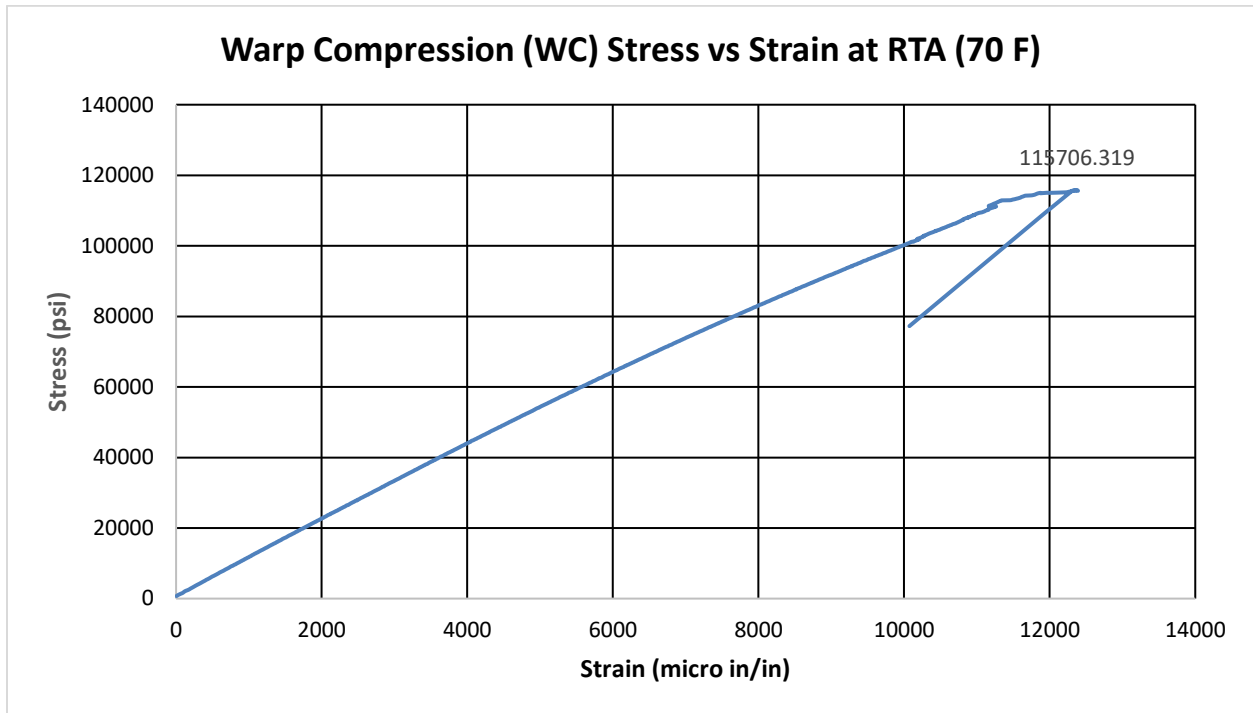
6. Full Stress vs. Strain Curve

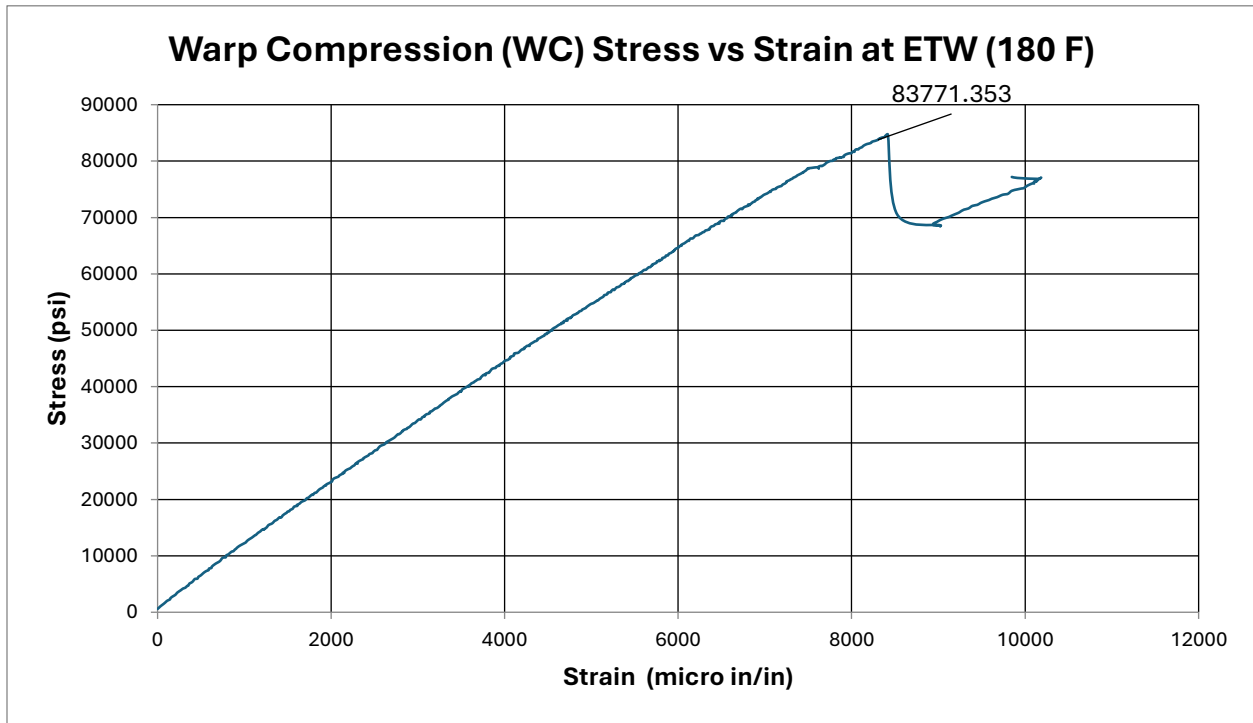
6.1 Warp Tension (WT) – RTA, CTA, ETW



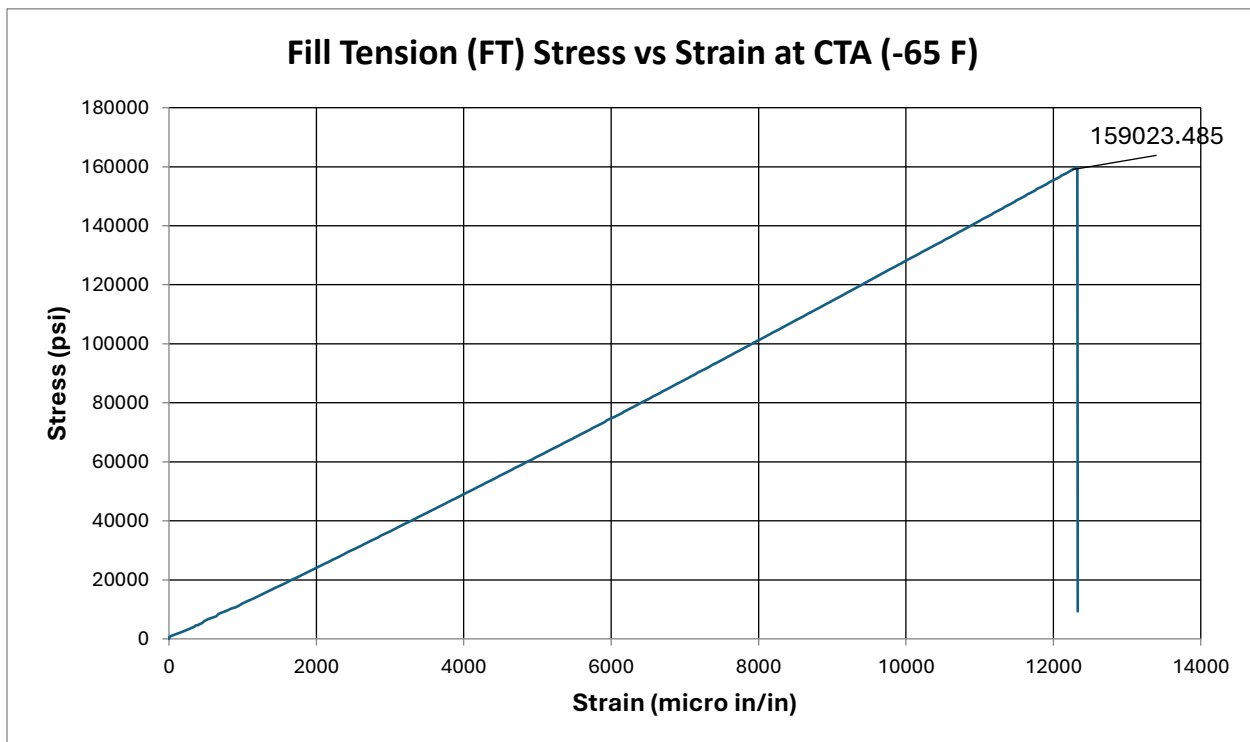
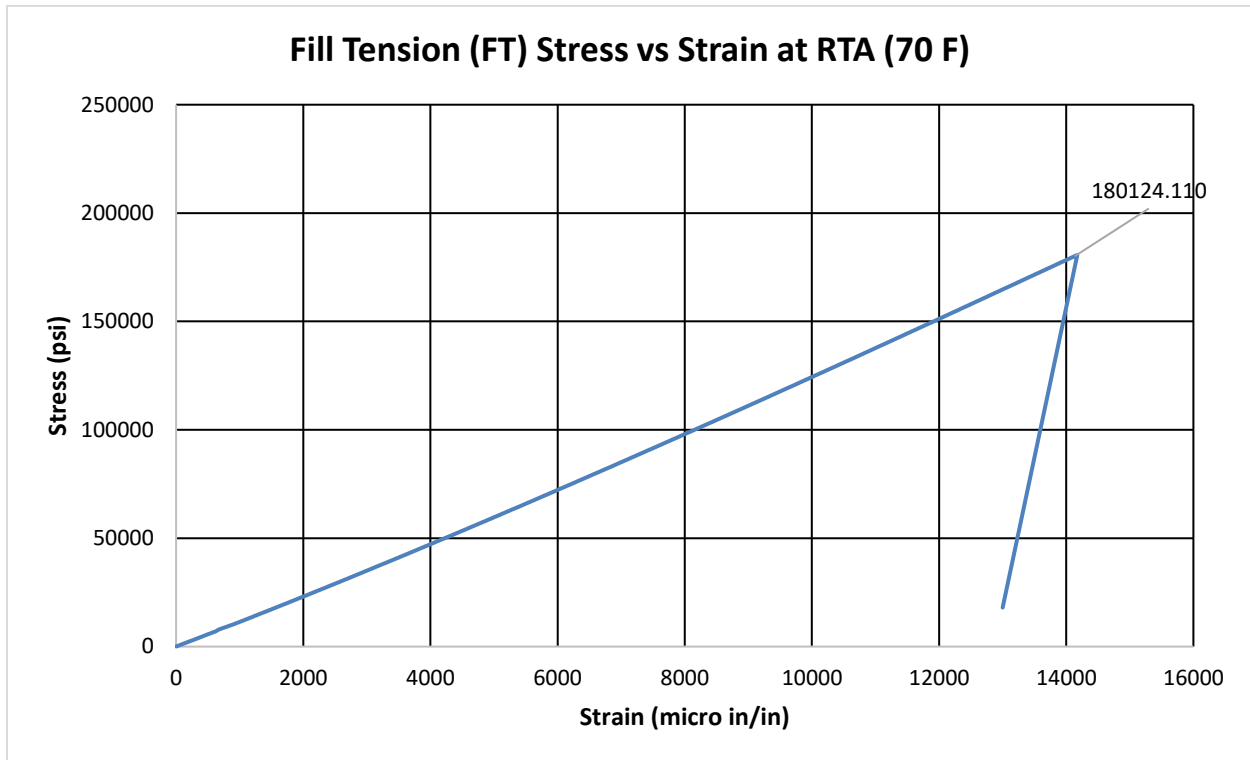


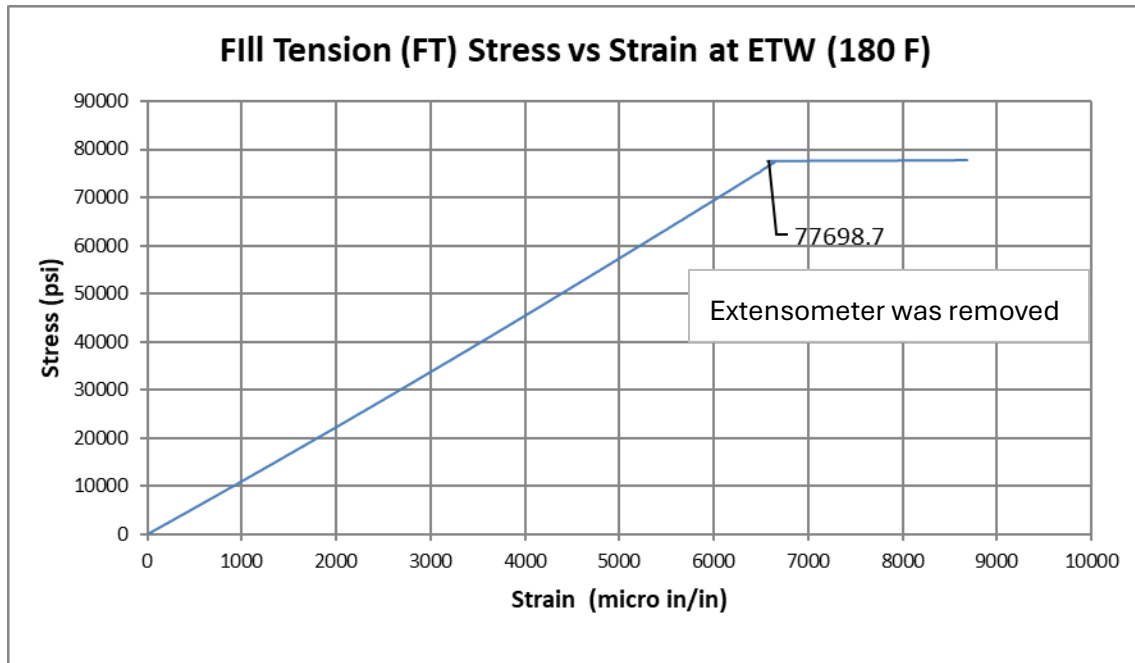
6.2 Warp Compression (WC) – RTA, CTA, ETW



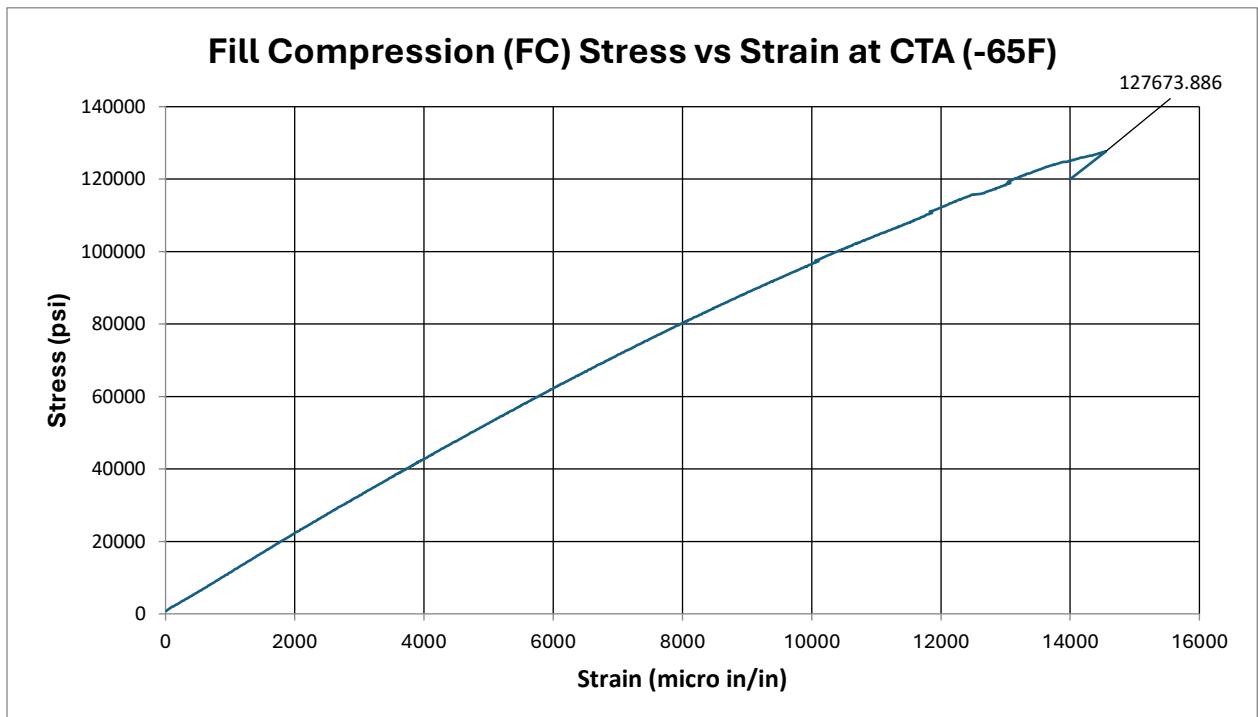
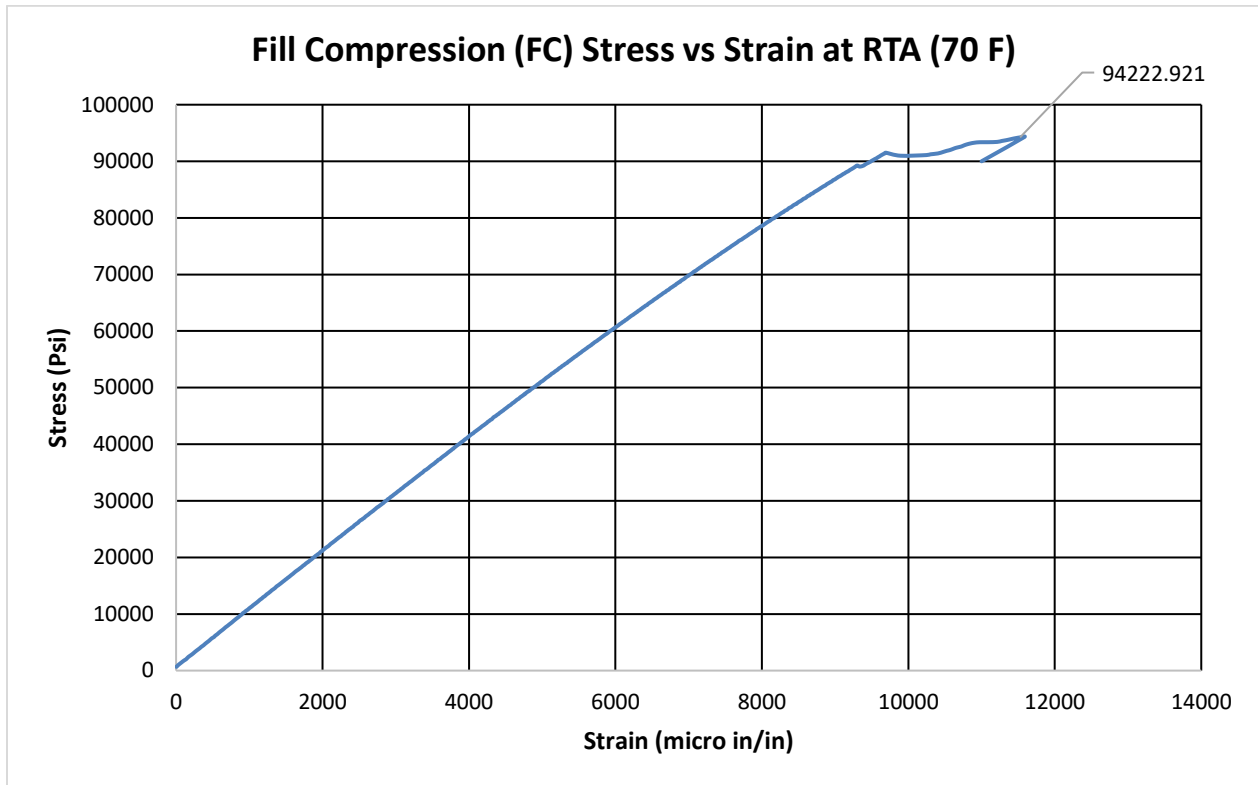


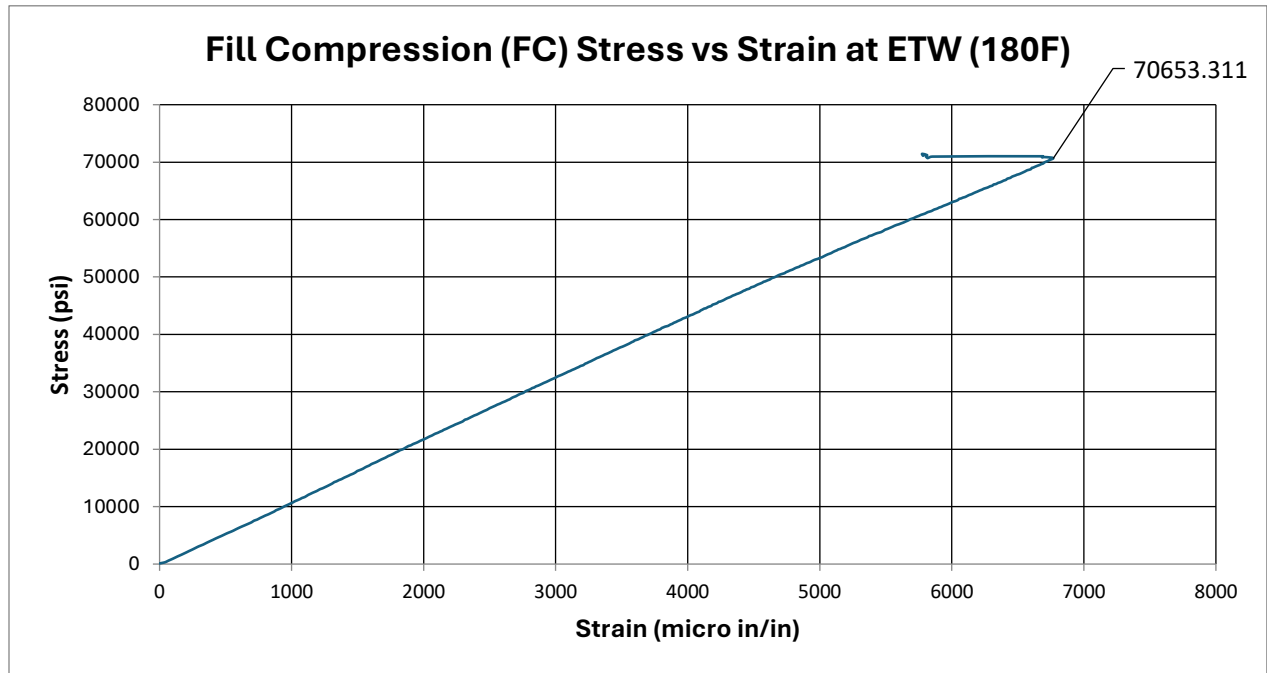
6.3 Fill Tension (FT) – RTA, CTA and ETW



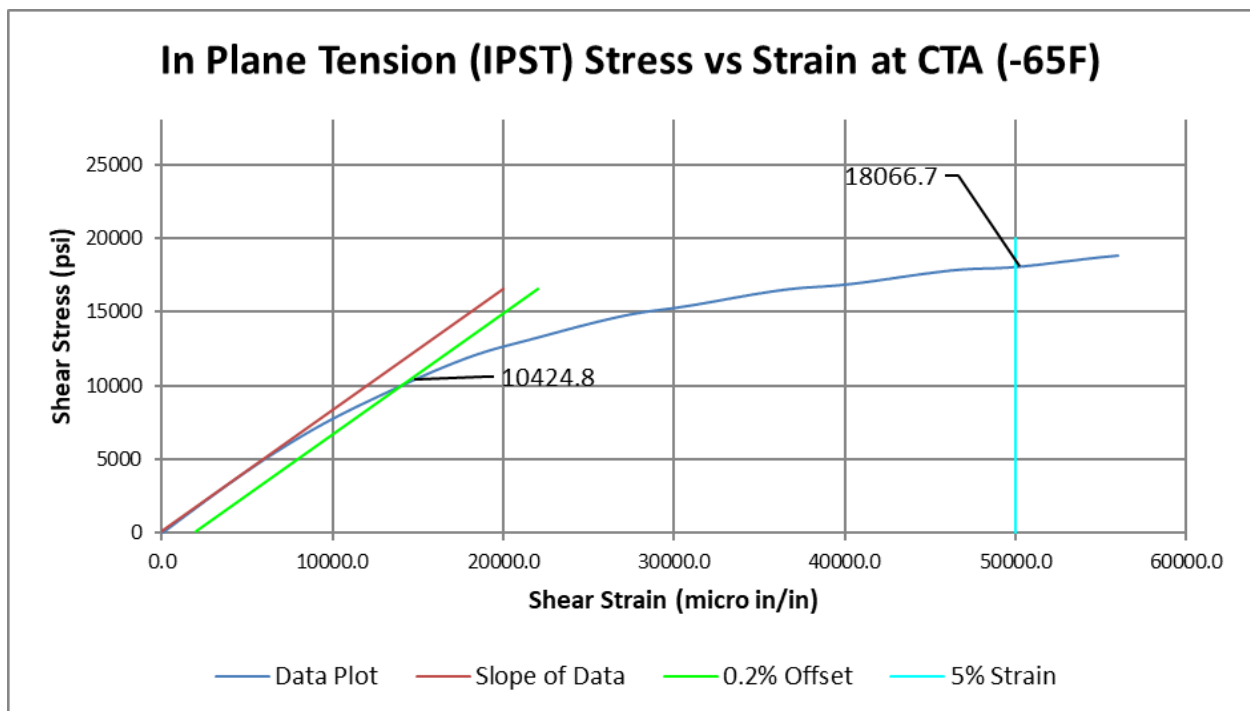
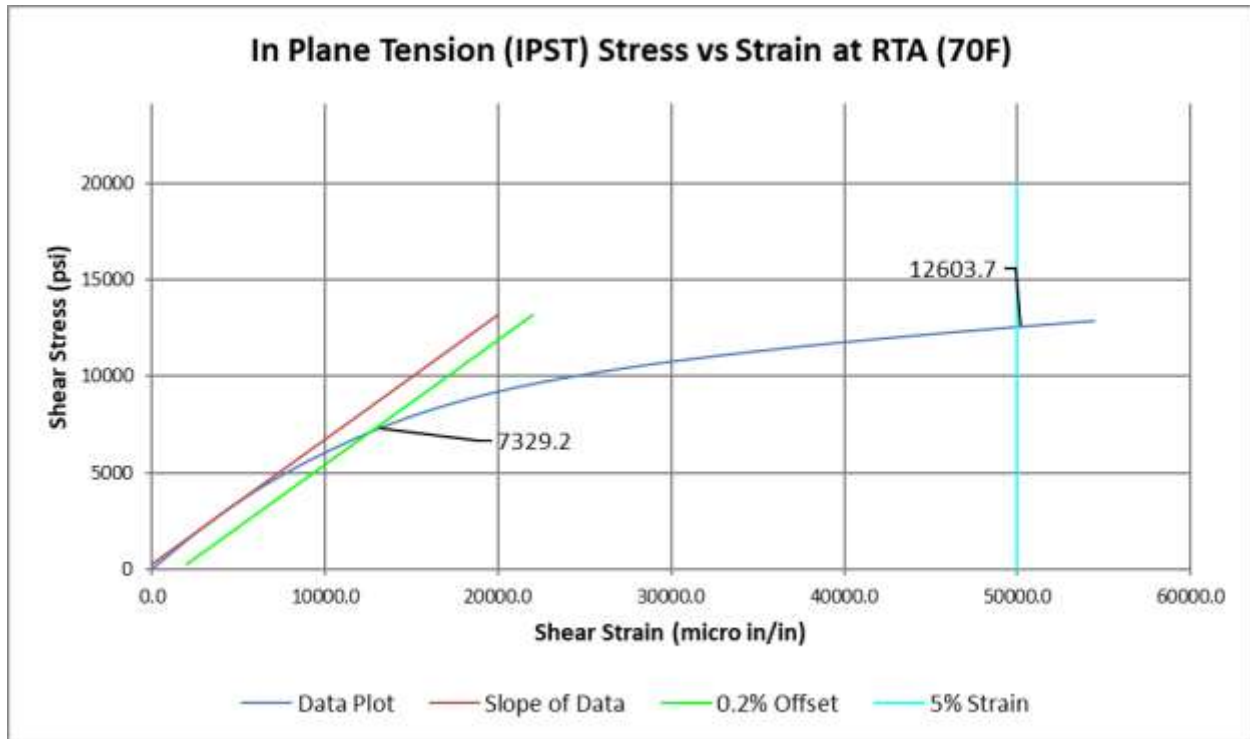


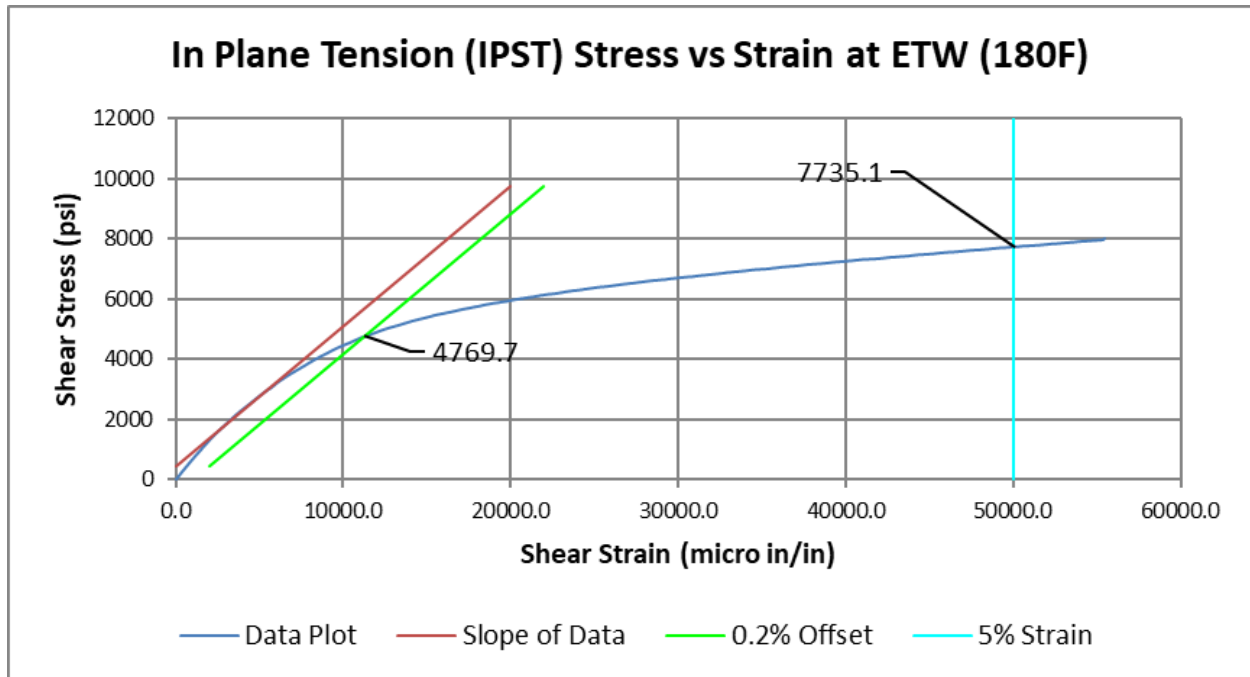
6.4 Fill Compression (FC) – RTA, CTA, ETW



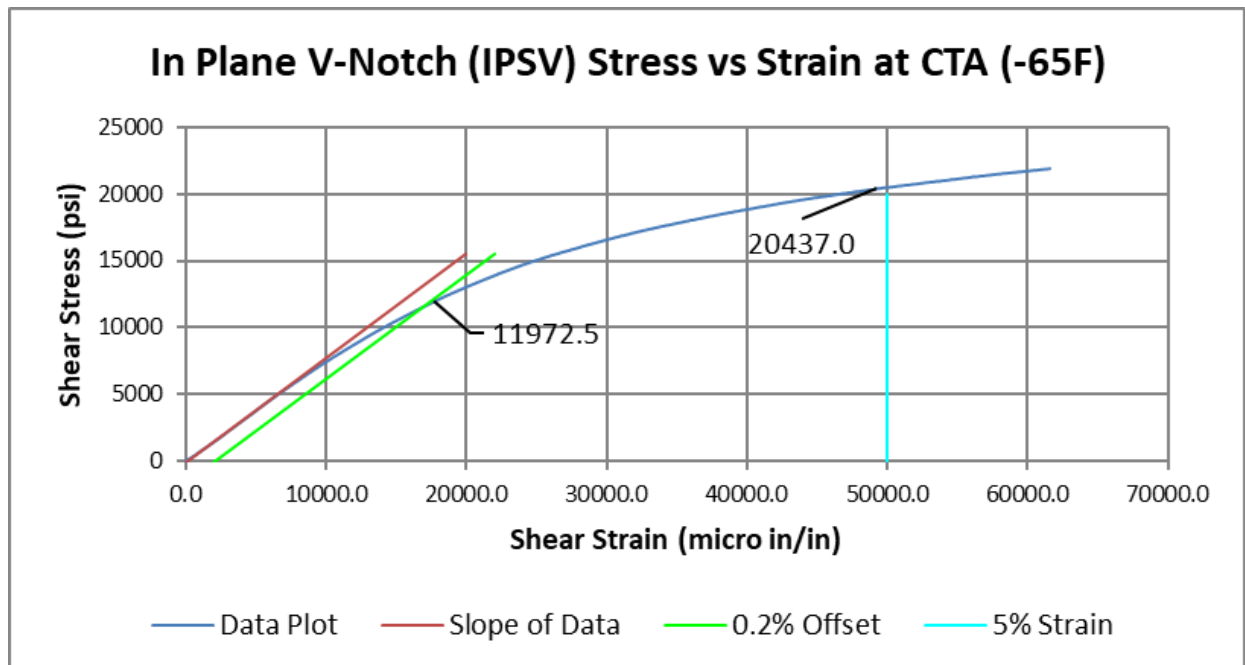
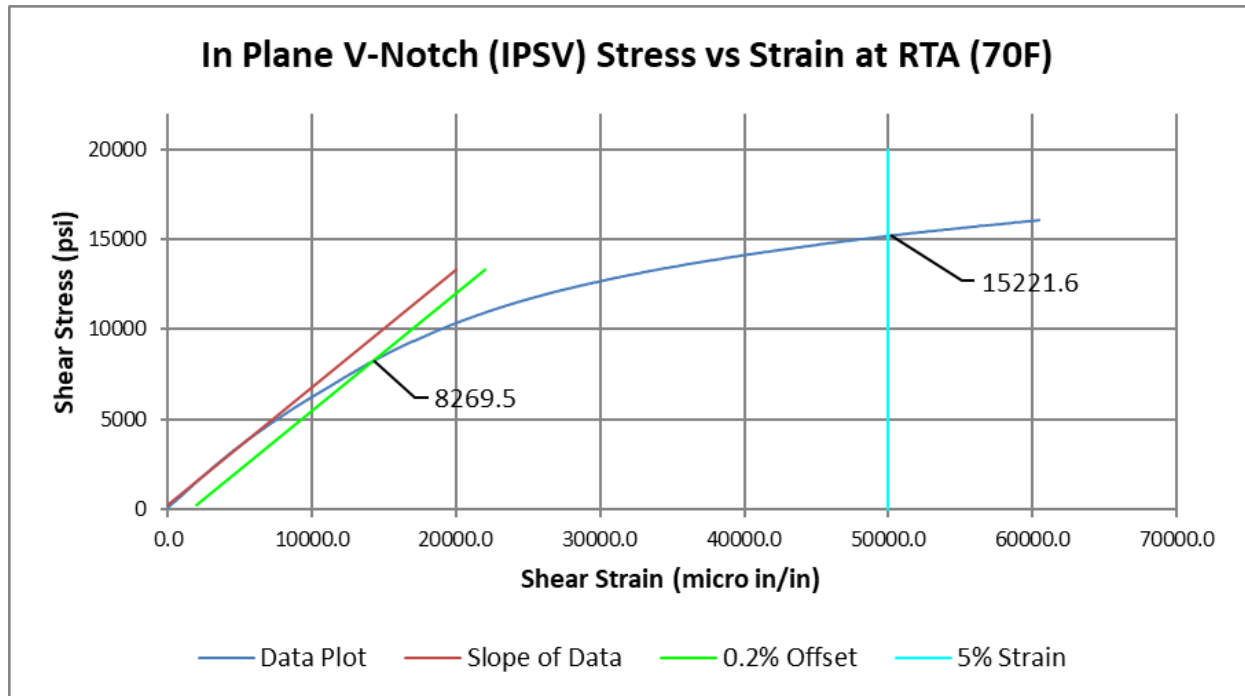


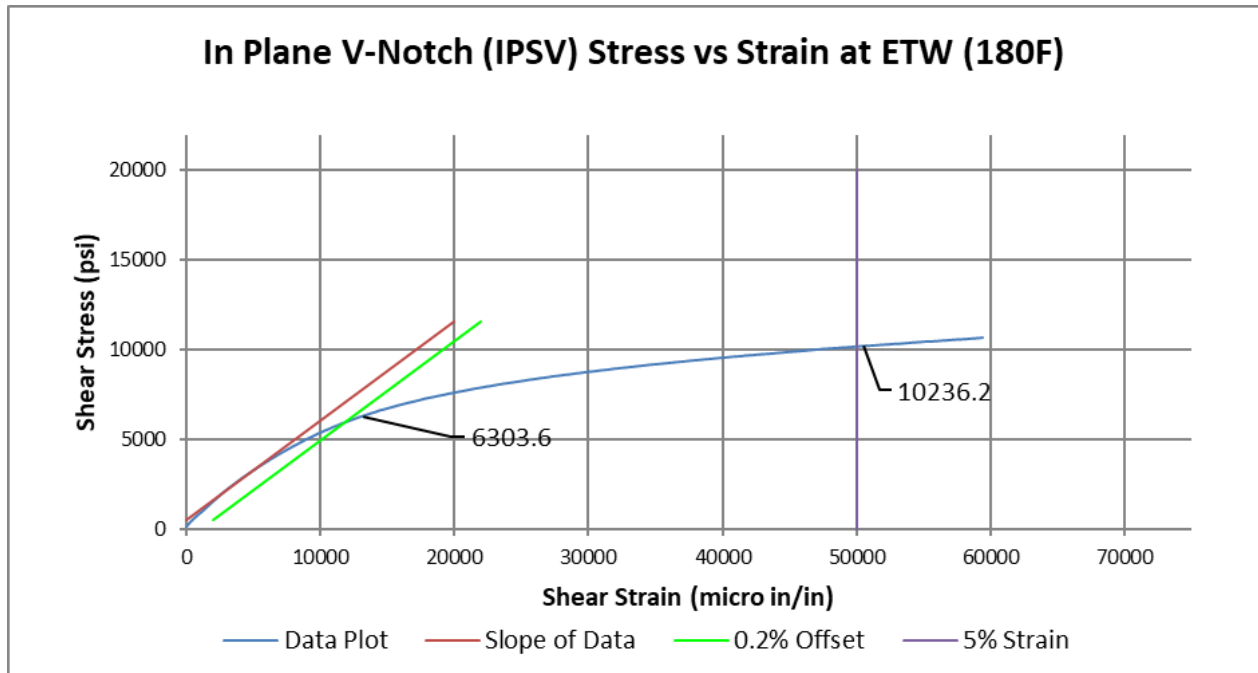
6.5 In-Plane Shear Tension (IPST) – RTA, CTA and ETW

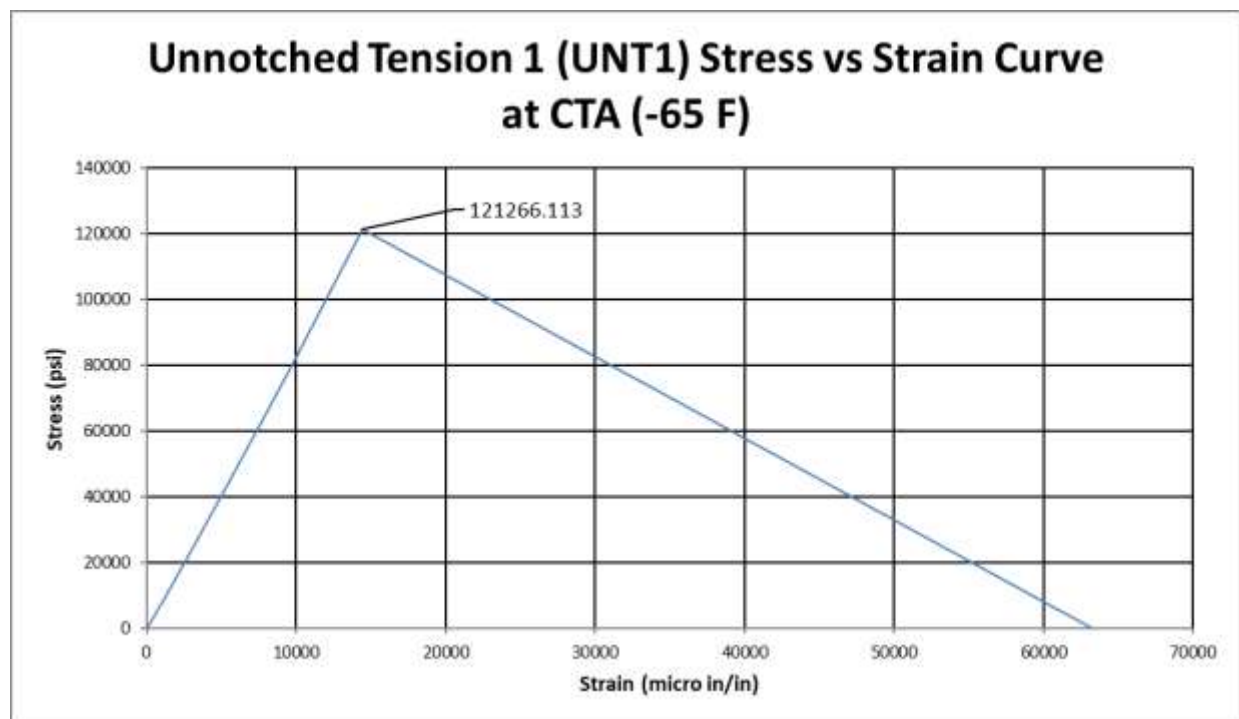
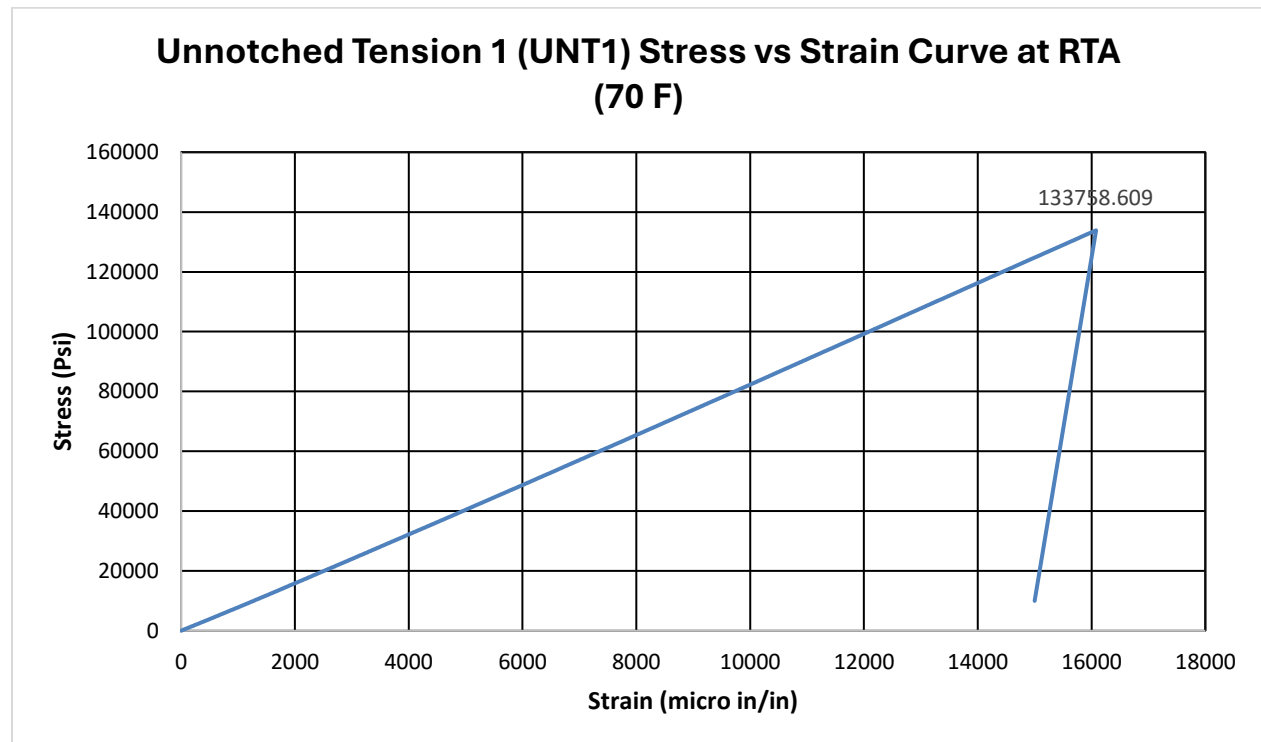


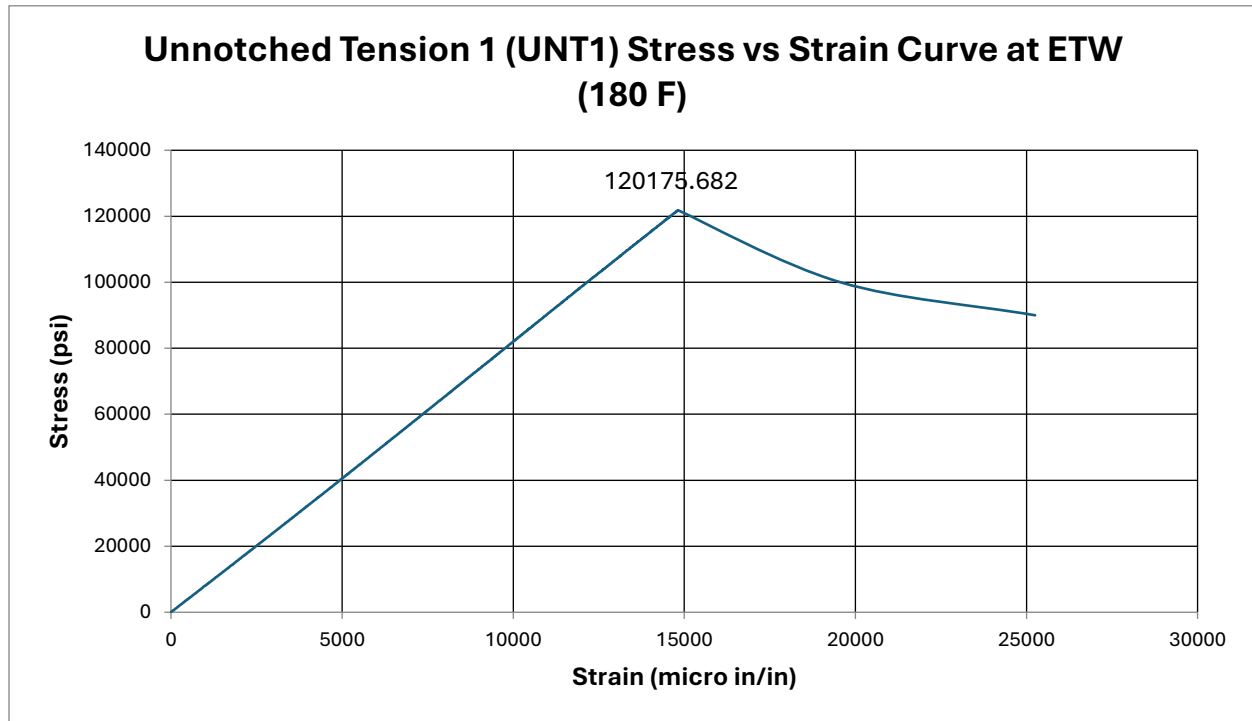


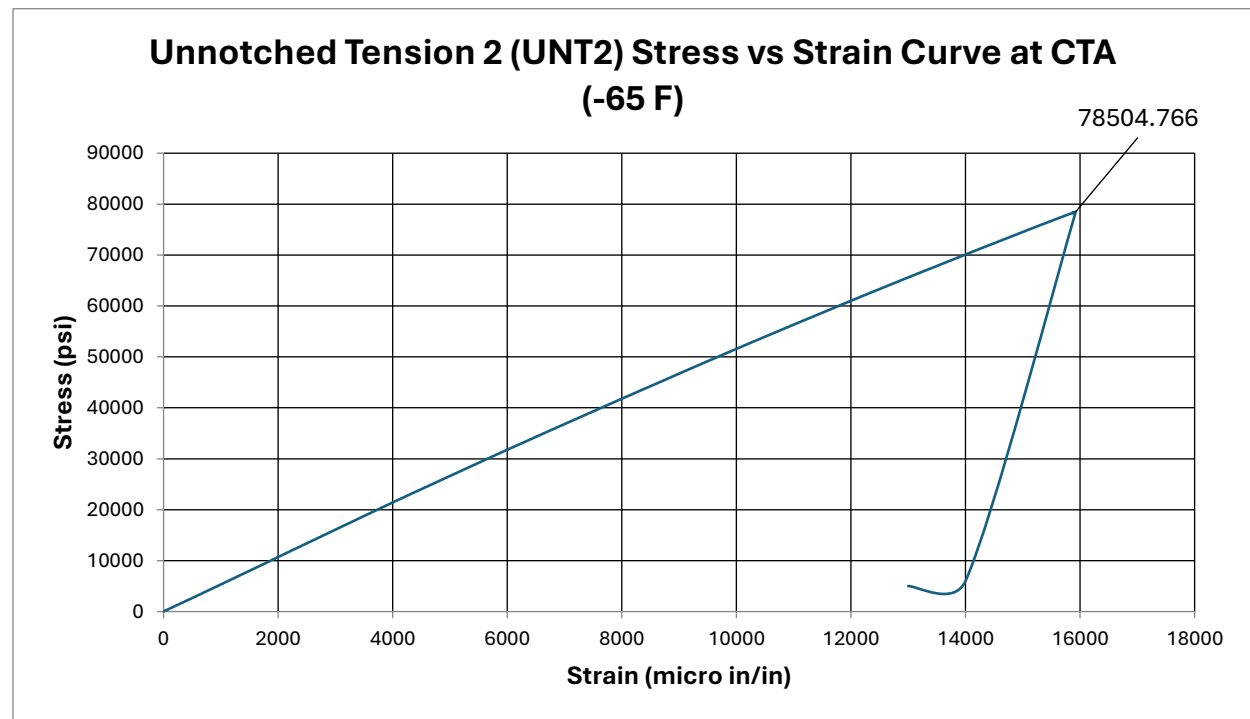
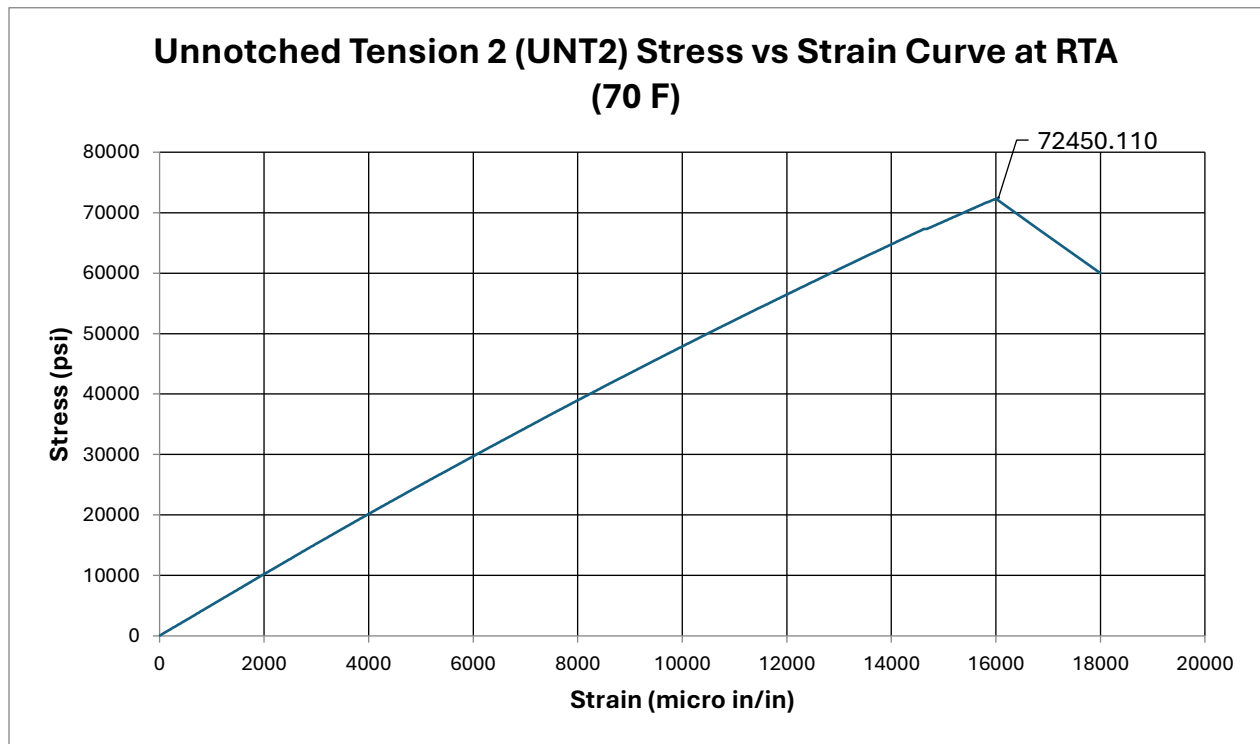
6.6 In Plane Shear V-Notch (IPSV) – RTA, CTA and ETW

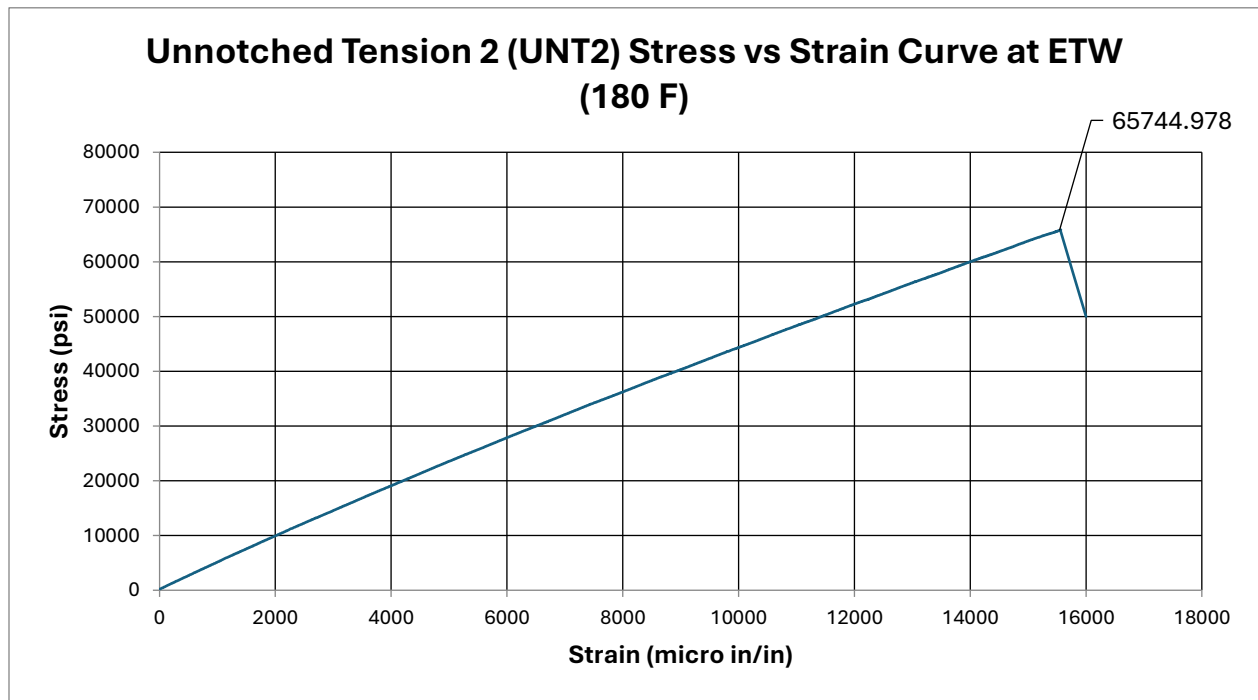


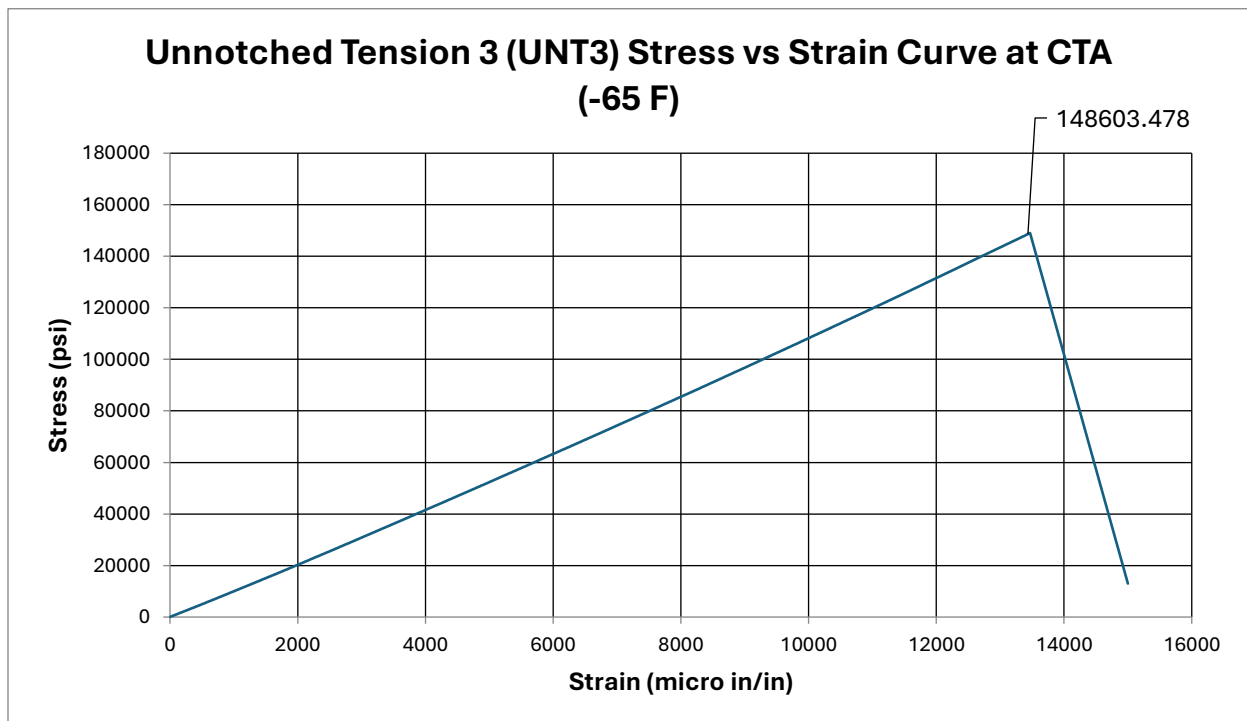
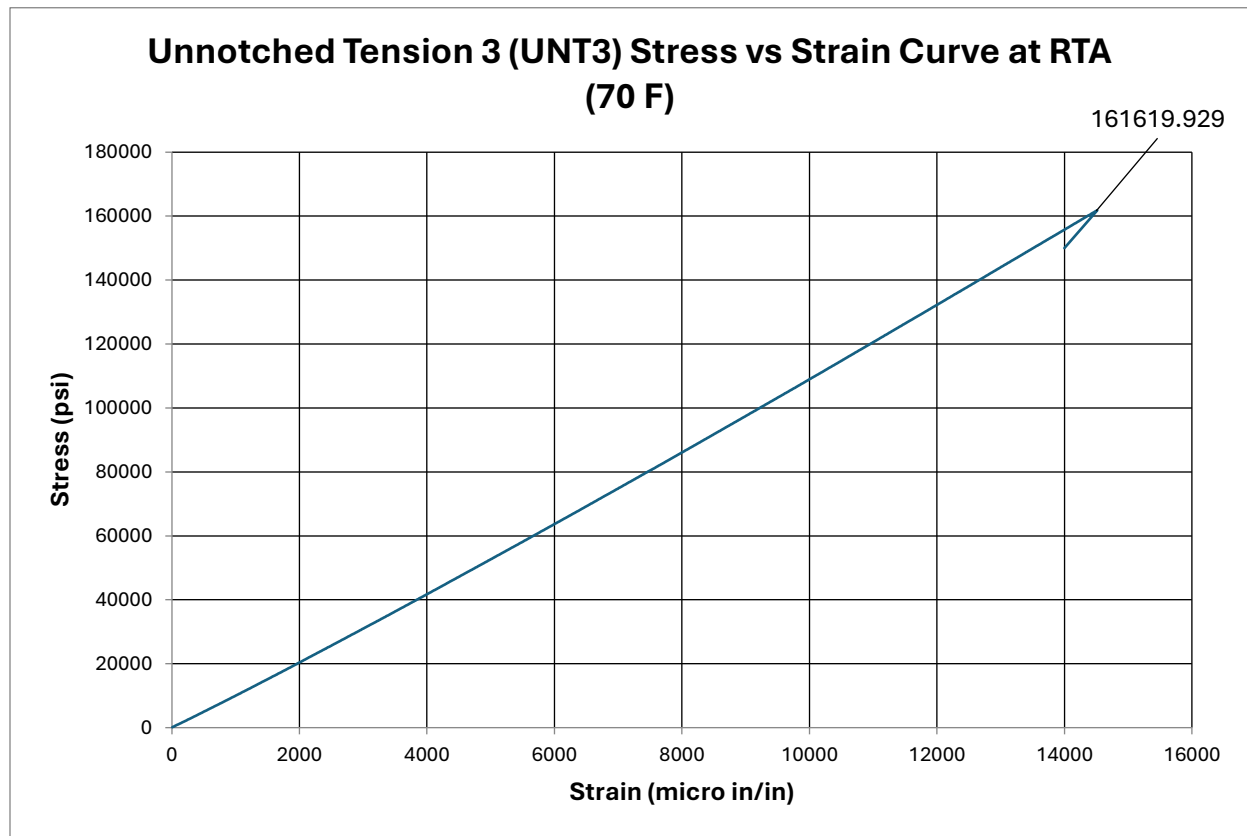


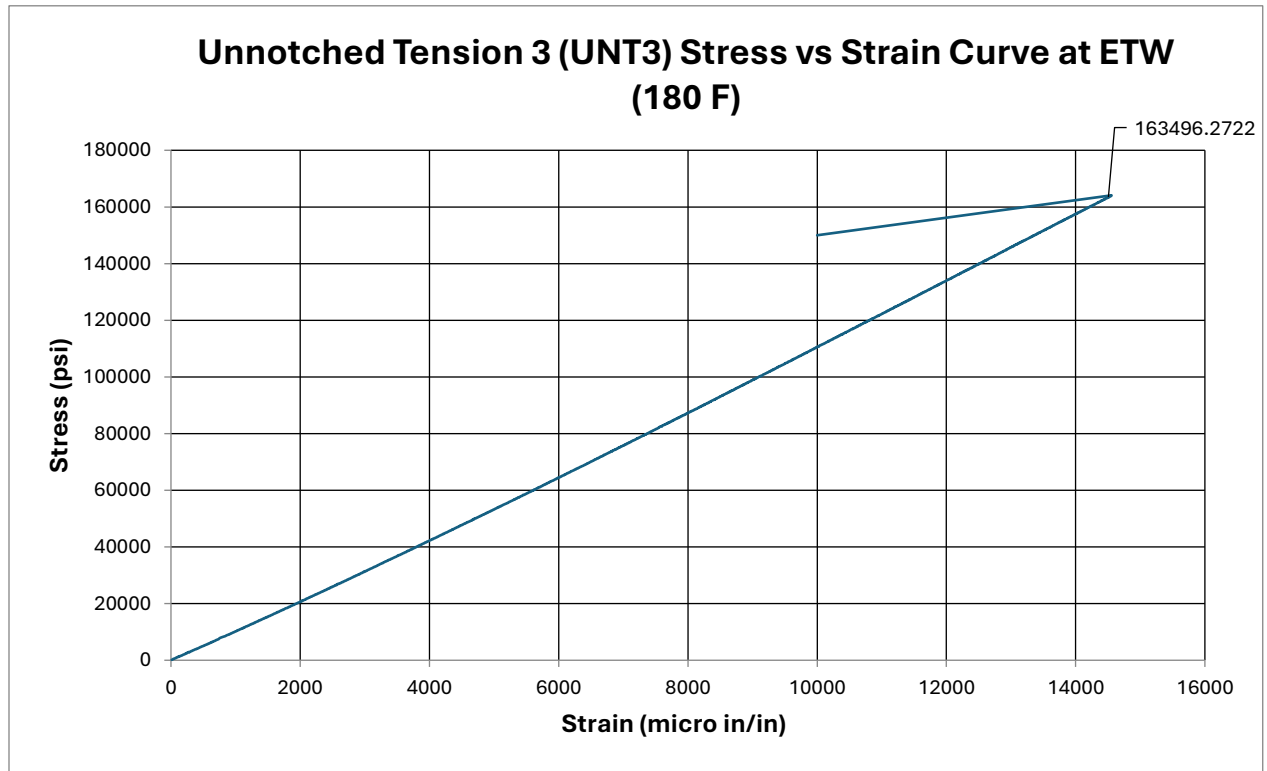
6.7 “25/50/25” Unnotched Tension 1 (UNT1) – RTA, CTA and ETW

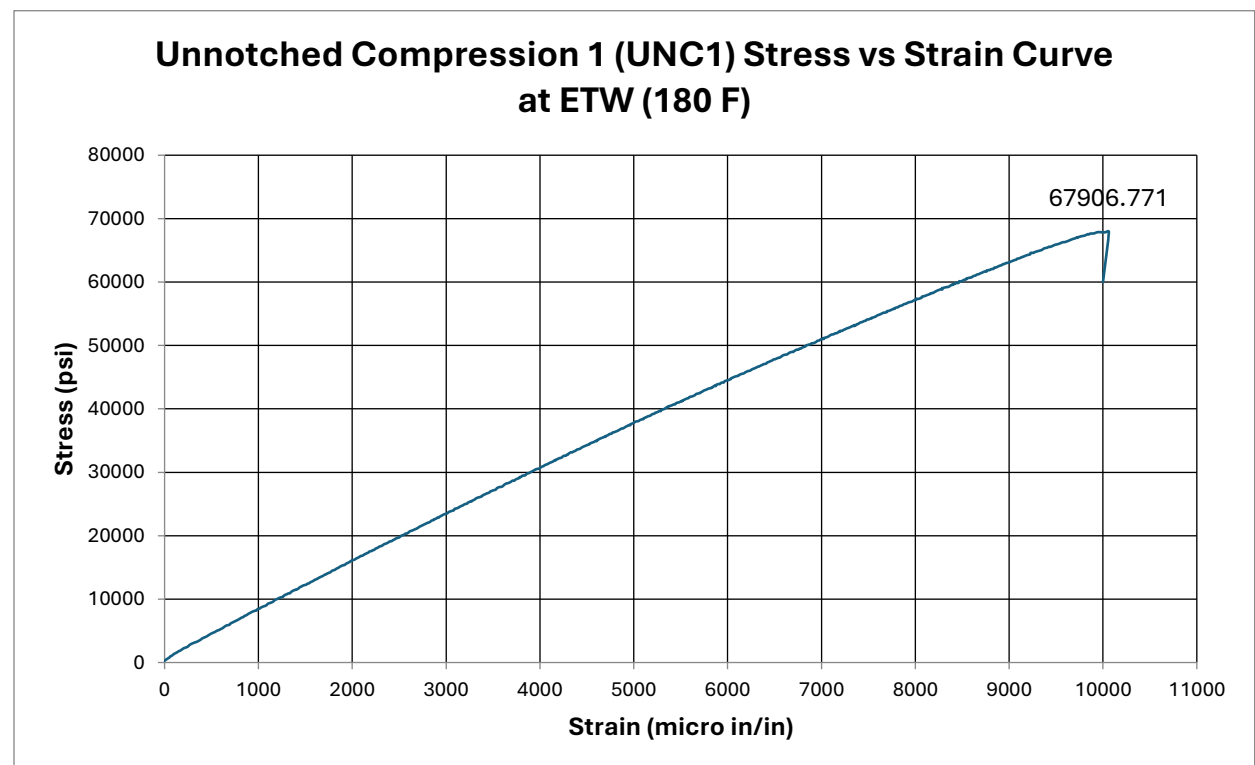
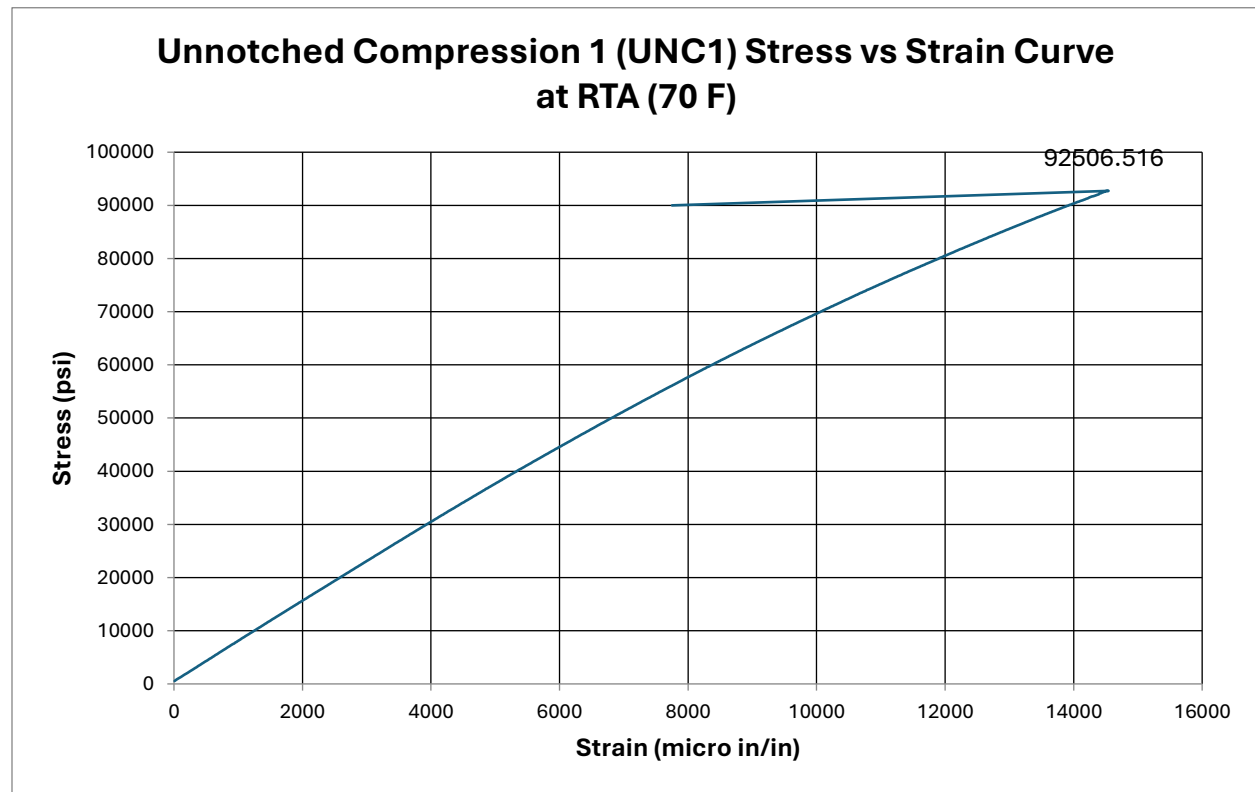


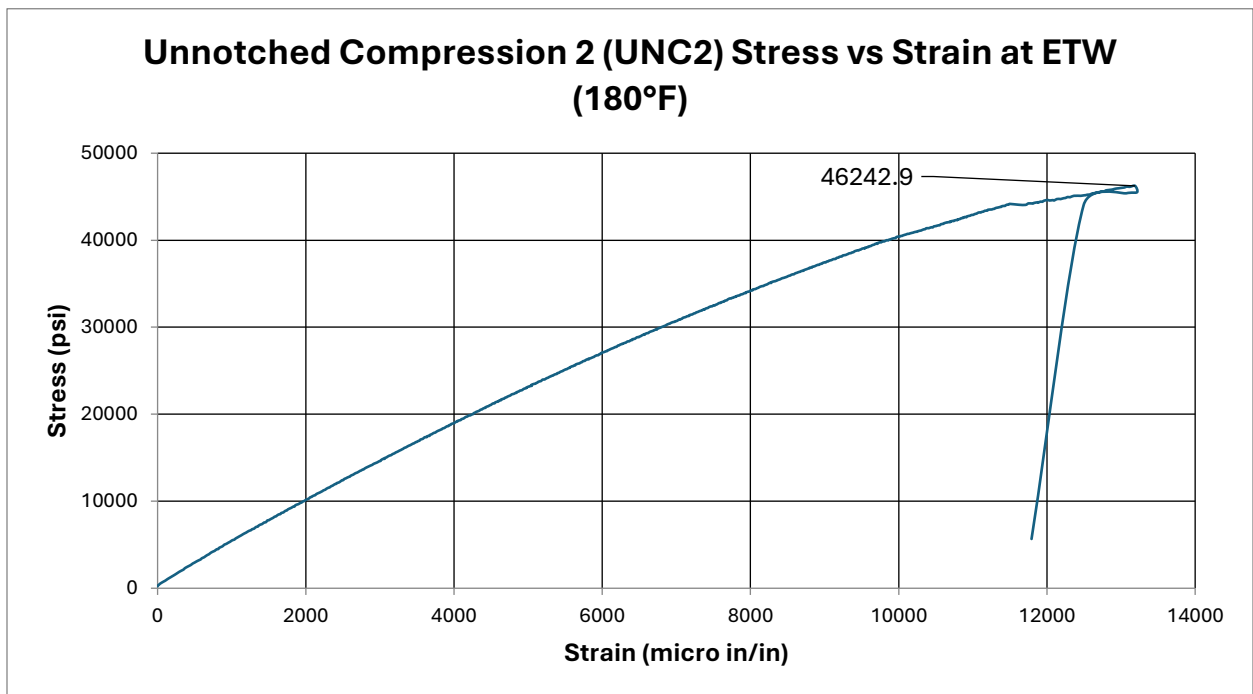
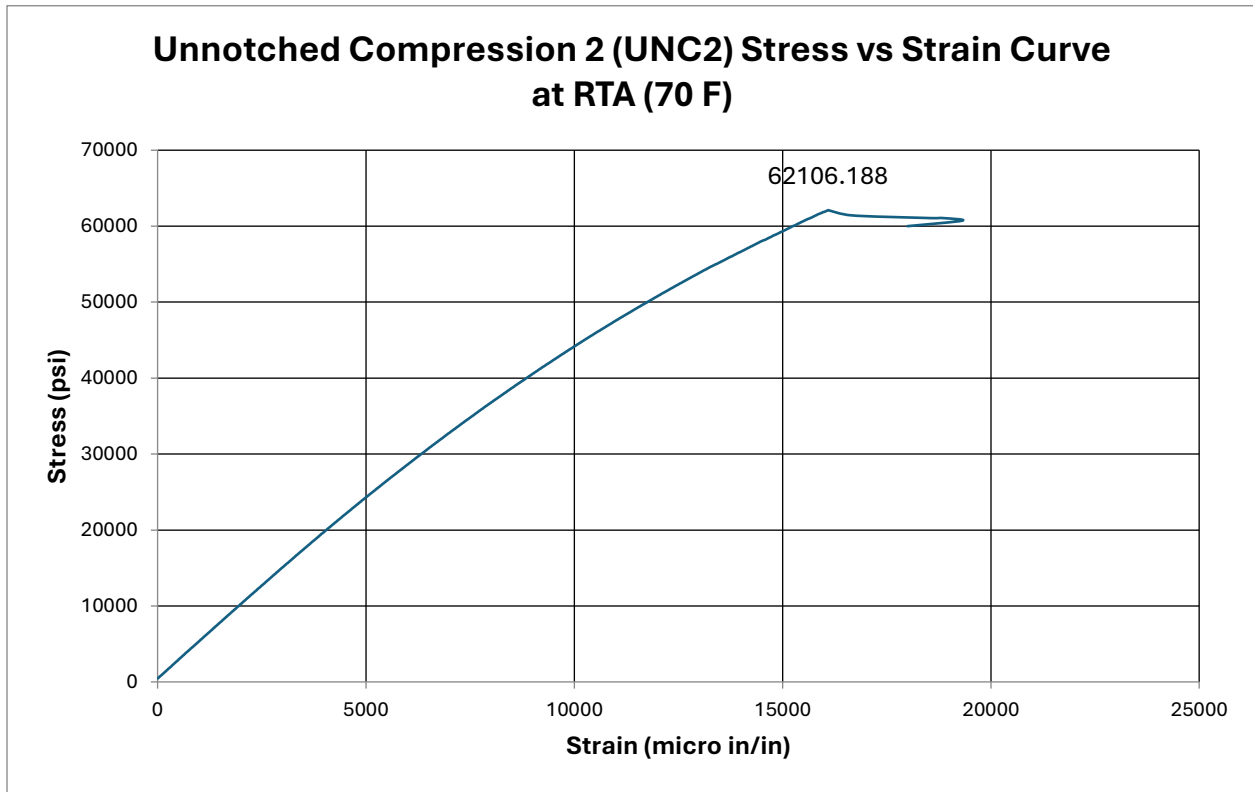
6.8 “10/80/10” Unnotched Tension 2 (UNT2) – RTA, CTA and ETW

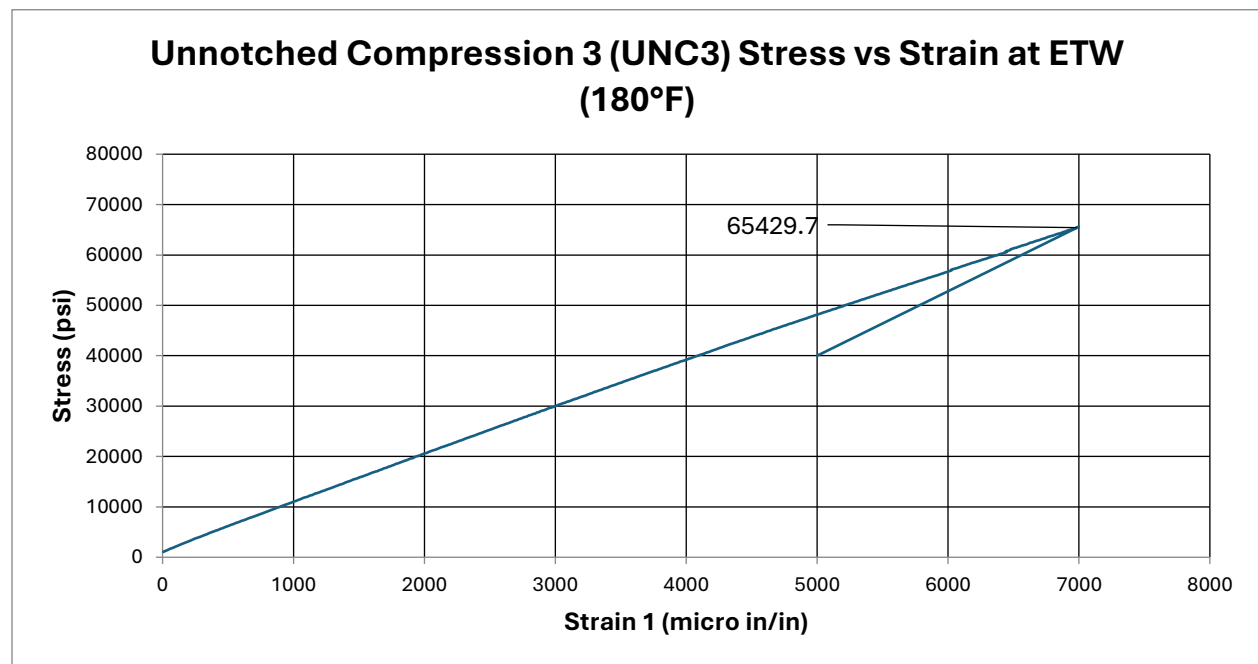
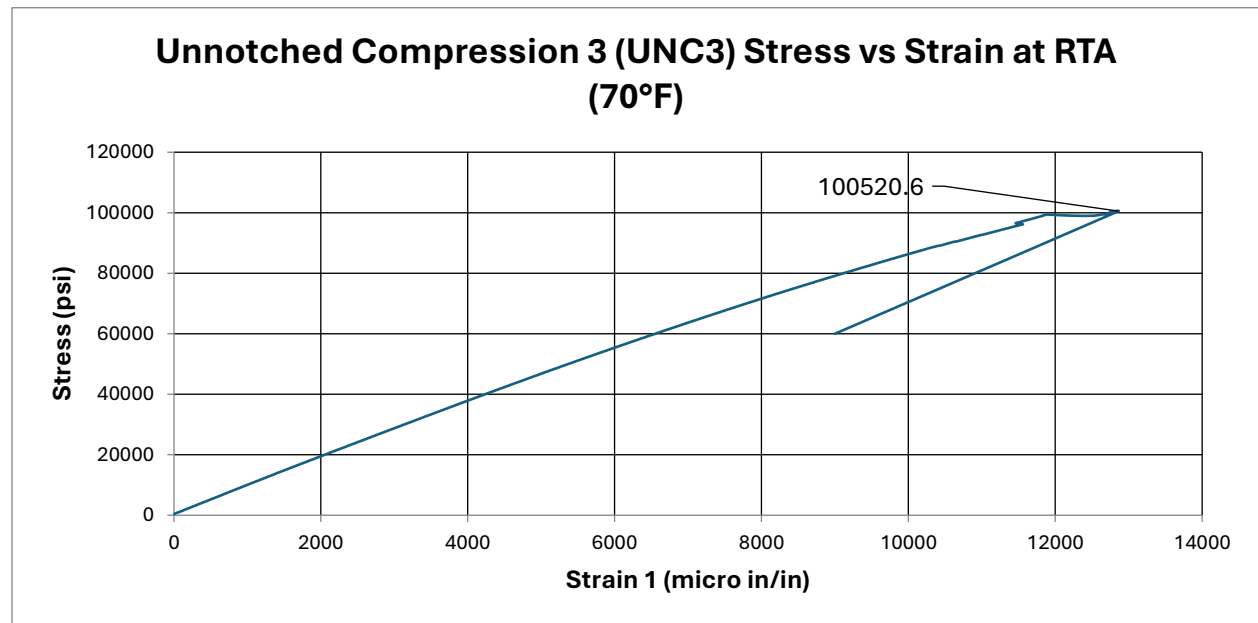


6.9 “40/20/40” Unnotched Tension 3 (UNT3) – RTA, CTA and ETW



6.10 “25/50/25” Unnotched Compression 1 (UNC1) – RTA and ETW

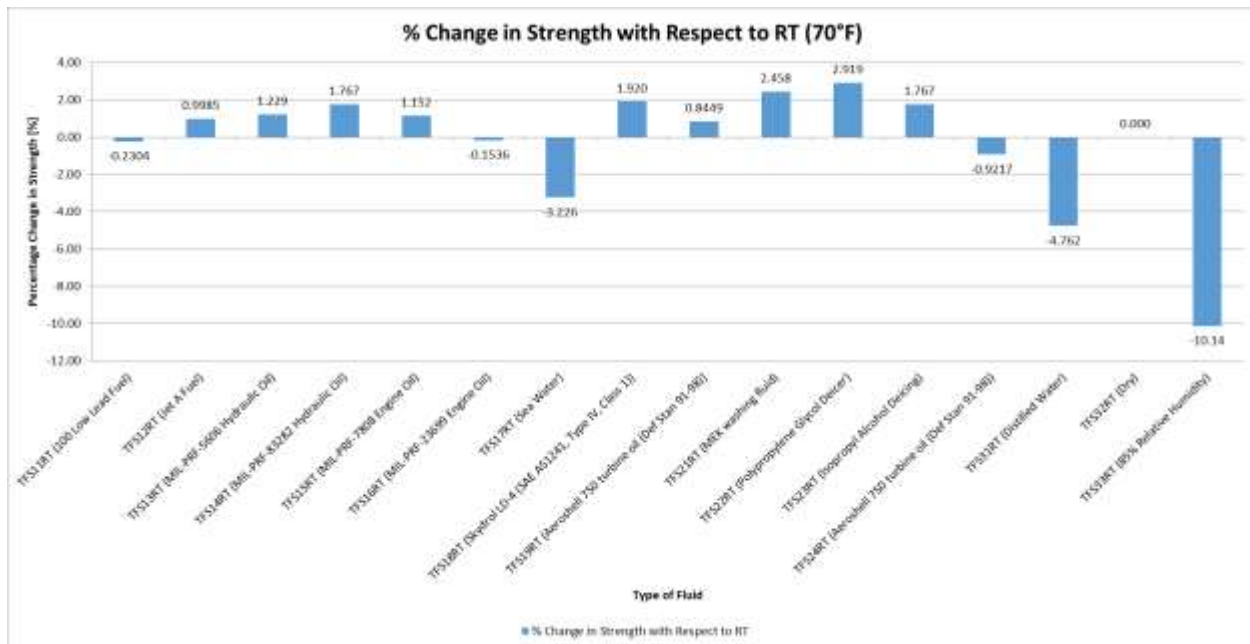
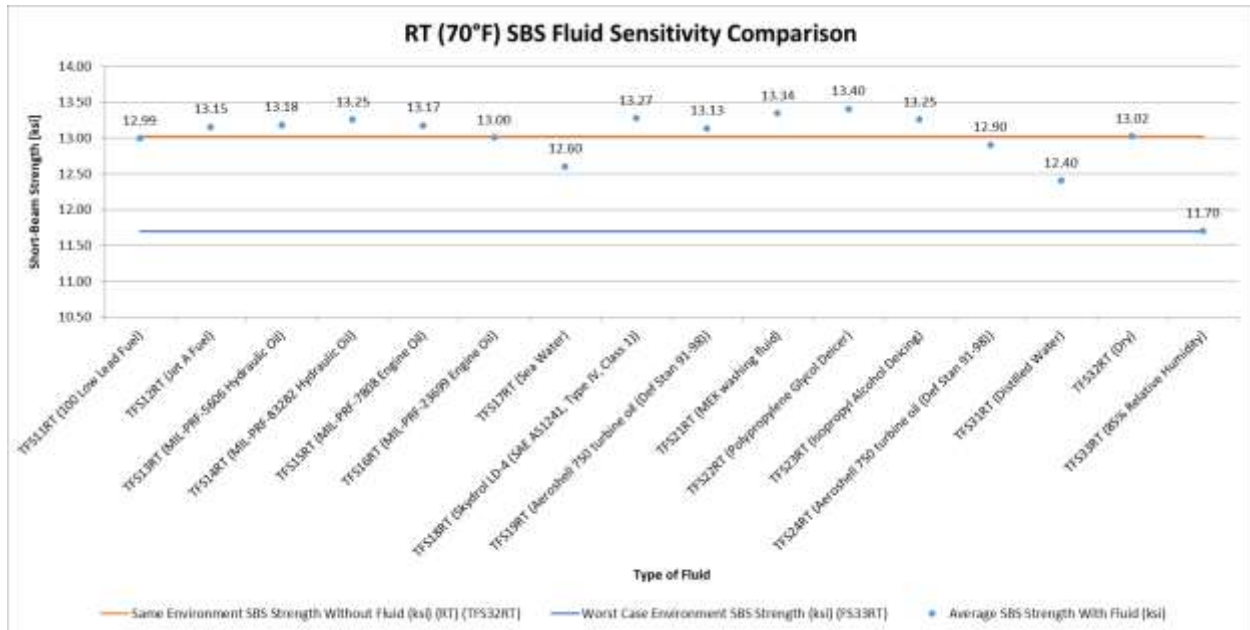
6.11 “10/80/10” Unnotched Compression 2 (UNC2) – RTA and ETW

6.12 “40/20/40” Unnotched Compression 3 (UNC3) – RTA and ETW

7. Fluid Sensitivity Comparison

7.1 Room Temperature Test Data (70°F)

Code	Type of Fluid	Exposure
FS11RT	100 Low Lead Aviation Fuel (ASTM D910)	90 days min @ 70°F ± 10F
FS12RT	Jet A Fuel	
FS13RT	MIL-PRF-5606 Hydraulic Oil	
FS14RT	MIL-PRF-83282 Hydraulic Oil	
FS15RT	MIL-PRF-7808 Engine Oil	
FS16RT	MIL-PRF-23699, Class STD Engine Oil	
FS17RT	Sea Water (ASTM D1141)	
FS18RT	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS19RT	Aeroshell 750 turbine oil (Def Stan 91-98)	
FS31RT	Distilled water	
FS21RT	MEK washing fluid	90 mins @ 70°F ± 10F
FS22RT	Polypropylene Glycol Deicer	
FS24RT	Aeroshell 750 turbine oil (Def Stan 91-98)	
FS23RT	Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F
FS32RT	Dry	Per section 7 Test Plan
FS33RT	85% Relative Humidity	



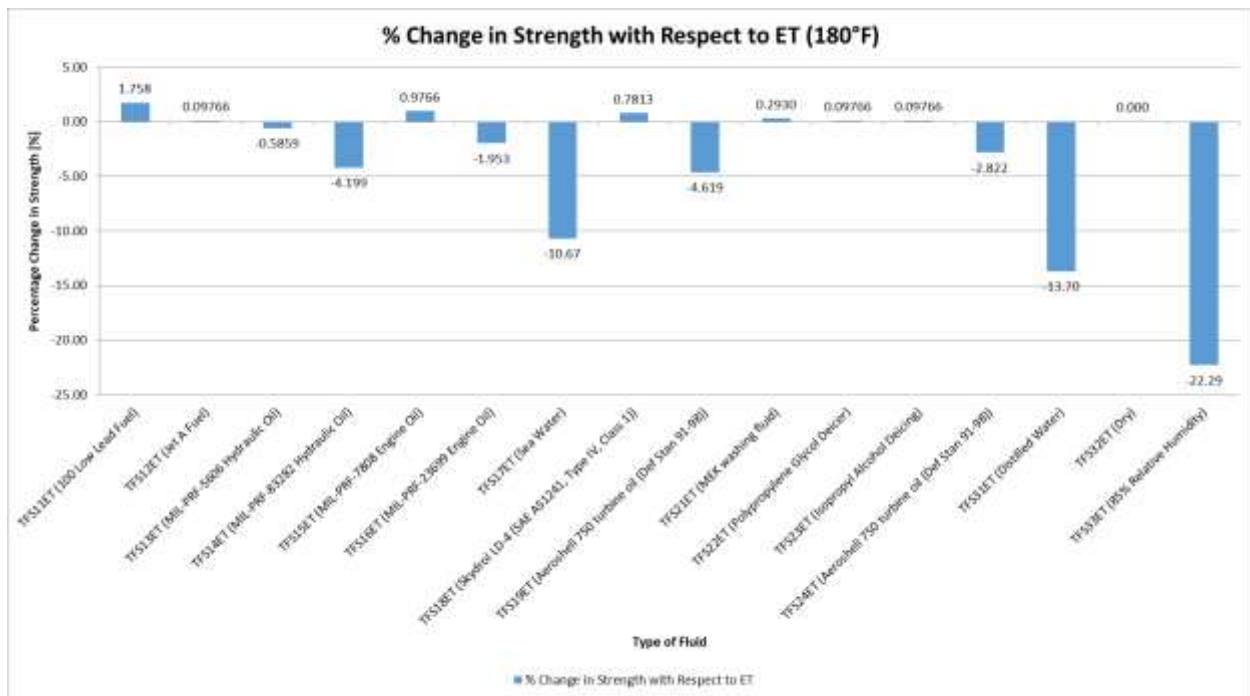
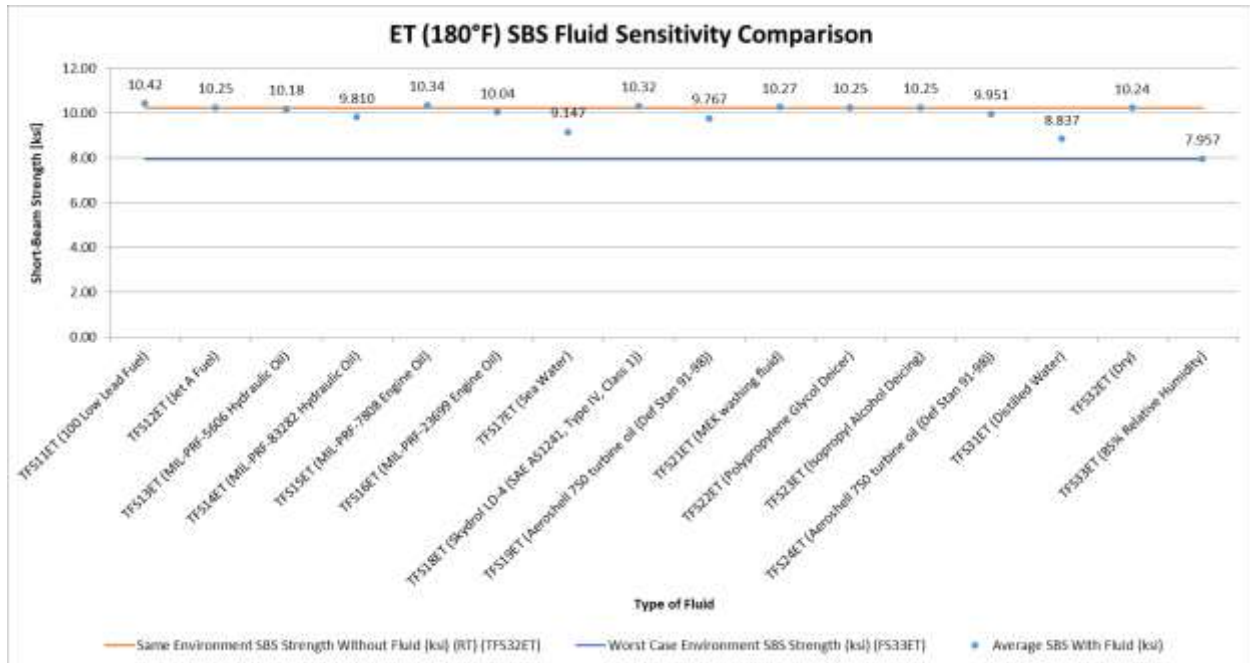
Fluid Sensitivity Screening
Short-Beam Strength Properties (SBSFS)--RT (70°F) Strength
 Hexcel M91/IM6-GP 6K ZB Fabric 145gsm with 40% RC

Fluid Code	Specimen Number	Hexcel Batch #	Hexcel Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Average Strength [ksi]
FS11RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11RT-1	B	C1	2	1	13.24	0.1497	24	0.006236	INTERLAMINAR SHEAR, COMPRESSION	12.99
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11RT-2	B	C1	2	1	12.76	0.1477	24	0.006153	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11RT-3	B	C1	2	1	13.01	0.1510	24	0.006292	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11RT-4	B	C1	2	1	13.11	0.1480	24	0.006167	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11RT-5	B	C1	2	1	12.82	0.1472	24	0.006135	INTERLAMINAR SHEAR, COMPRESSION	
FS12RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12RT-1	B	C1	2	1	13.05	0.1505	24	0.006270	INTERLAMINAR SHEAR, COMPRESSION	13.15
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12RT-2	B	C1	2	1	13.03	0.1483	24	0.006178	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12RT-3	B	C1	2	1	13.10	0.1511	24	0.006295	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12RT-4	B	C1	2	1	13.47	0.1476	24	0.006148	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12RT-5	B	C1	2	1	13.12	0.1511	24	0.006294	INTERLAMINAR SHEAR, COMPRESSION	
FS13RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13RT-1	B	C1	2	1	13.26	0.1501	24	0.006253	INTERLAMINAR SHEAR, COMPRESSION	13.18
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13RT-2	B	C1	2	1	12.91	0.1472	24	0.006132	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13RT-3	B	C1	2	1	13.20	0.1496	24	0.006232	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13RT-4	B	C1	2	1	12.84	0.1506	24	0.006276	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13RT-5	B	C1	2	1	13.68	0.1473	24	0.006138	INTERLAMINAR SHEAR, COMPRESSION	
FS14RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14RT-1	B	C1	2	1	12.98	0.1490	24	0.006206	INTERLAMINAR SHEAR, COMPRESSION	13.25
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14RT-2	B	C1	2	1	12.90	0.1498	24	0.006242	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14RT-3	B	C1	2	1	13.31	0.1512	24	0.006300	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14RT-4	B	C1	2	1	13.31	0.1495	24	0.006228	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14RT-5	B	C1	2	1	13.73	0.1492	24	0.006217	INTERLAMINAR SHEAR, COMPRESSION	
FS15RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15RT-1	B	C1	2	1	13.23	0.1479	24	0.006163	INTERLAMINAR SHEAR, COMPRESSION, TENSION	13.17
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15RT-2	B	C1	2	1	12.70	0.1504	24	0.006268	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15RT-3	B	C1	2	1	13.49	0.1479	24	0.006163	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15RT-4	B	C1	2	1	13.67	0.1511	24	0.006297	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15RT-5	B	C1	2	1	13.34	0.1502	24	0.006258	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
FS16RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16RT-1	B	C1	2	1	13.41	0.1488	24	0.006201	INTERLAMINAR SHEAR, COMPRESSION	13.00
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16RT-2	B	C1	2	1	12.81	0.1506	24	0.006273	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16RT-3	B	C1	2	1	12.78	0.1479	24	0.006161	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16RT-4	B	C1	2	1	12.76	0.1502	24	0.006258	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16RT-5	B	C1	2	1	13.23	0.1490	24	0.006209	INTERLAMINAR SHEAR, COMPRESSION	
FS17RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17RT-1	B	C1	2	1	12.38	0.1520	24	0.006333	INTERLAMINAR SHEAR, COMPRESSION	12.60
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17RT-2	B	C1	2	1	12.53	0.1510	24	0.006291	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17RT-3	B	C1	2	1	13.05	0.1517	24	0.006322	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17RT-4	B	C1	2	1	12.26	0.1519	24	0.006328	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17RT-5	B	C1	2	1	12.75	0.1513	24	0.006304	INTERLAMINAR SHEAR, COMPRESSION	
FS18RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18RT-1	B	C1	2	1	12.99	0.1486	24	0.006192	INTERLAMINAR SHEAR, COMPRESSION	13.27
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18RT-2	B	C1	2	1	13.14	0.1501	24	0.006253	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18RT-3	B	C1	2	1	13.67	0.1511	24	0.006297	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18RT-4	B	C1	2	1	13.37	0.1511	24	0.006297	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18RT-5	B	C1	2	1	13.16	0.1509	24	0.006286	INTERLAMINAR SHEAR, COMPRESSION	
FS19RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19RT-1	B	C1	2	1	13.14	0.1512	24	0.006299	INTERLAMINAR SHEAR, COMPRESSION, TENSION	13.13
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19RT-2	B	C1	2	1	13.36	0.1512	24	0.006300	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19RT-3	B	C1	2	1	13.49	0.1501	24	0.006254	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19RT-4	B	C1	2	1	12.98	0.1505	24	0.006272	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19RT-5	B	C1	2	1	12.67	0.1509	24	0.006289	INTERLAMINAR SHEAR, COMPRESSION	
FS21RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21RT-1	B	C1	2	1	13.47	0.1512	24	0.006300	INTERLAMINAR SHEAR	13.34
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21RT-2	B	C1	2	1	13.25	0.1510	24	0.006293	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21RT-3	B	C1	2	1	13.30	0.1509	24	0.006286	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21RT-4	B	C1	2	1	13.19	0.1504	24	0.006268	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21RT-5	B	C1	2	1	13.52	0.1515	24	0.006310	INTERLAMINAR SHEAR	
FS22RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22RT-1	B	C1	2	1	13.23	0.1519	24	0.006331	INTERLAMINAR SHEAR, COMPRESSION	13.40
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22RT-2	B	C1	2	1	13.54	0.1503	24	0.006263	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22RT-3	B	C1	2	1	13.53	0.1507	24	0.006277	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22RT-4	B	C1	2	1	13.49	0.1510	24	0.006292	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22RT-5	B	C1	2	1	13.21	0.1511	24	0.006295	INTERLAMINAR SHEAR	
FS23RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23RT-1	B	C1	2	1	13.58	0.1514	24	0.006309	INTERLAMINAR SHEAR	13.25
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23RT-2	B	C1	2	1	13.15	0.1514	24	0.006310	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23RT-3	B	C1	2	1	13.33	0.1515	24	0.006314	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23RT-4	B	C1	2	1	12.96	0.1518	24	0.006325	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23RT-5	B	C1	2	1	13.23	0.1513	24	0.006305	INTERLAMINAR SHEAR	
FS24RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24RT-1	B	C1	2	1	12.82	0.1500	24	0.006250	INTERLAMINAR SHEAR, TENSION, COMPRESSION	12.90
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24RT-2	B	C1	2	1	12.84	0.1512	24	0.006299	INTERLAMINAR SHEAR, TENSION, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24RT-3	B	C1	2	1	12.69	0.1503	24	0.006261	INTERLAMINAR SHEAR, TENSION, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24RT-4	B	C1	2	1	13.17	0.1513	24	0.006305	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24RT-5	B	C1	2	1	12.97	0.1513	24	0.006305	INTERLAMINAR SHEAR, TENSION, COMPRESSION	
FS31RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31RT-1	B	C1	2	1	12.19	0.1515	24	0.006313	INTERLAMINAR SHEAR, COMPRESSION	12.40
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31RT-2	B	C1	2	1	11.82	0.1492	24	0.006217	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31RT-3	B	C1	2	1	12.65	0.1500	24	0.006251	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31RT-4	B	C1	2	1	12.84	0.1522	24	0.006342	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31RT-5	B	C1	2	1	12.52	0.1521	24	0.006336	INTERLAMINAR SHEAR, COMPRESSION	
FS32RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32RT-1	B	C1	2	1	12.84	0.1521	24	0.006337	INTERLAMINAR SHEAR, COMPRESSION, TENSION	13.02
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32RT-2	B	C1	2	1	12.76	0.1514	24	0.006308	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32RT-3	B	C1	2	1	12.75	0.1481	24	0.006172	INTERLAMINAR SHEAR, COMPRESSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32RT-4	B	C1	2	1	13.53	0.1508	24	0.006283	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32RT-5	B	C1	2	1	13.21	0.1512	24	0.006299	INTERLAMINAR SHEAR, COMPRESSION, TENSION	
FS33RT	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33RT-2	B	C1	2	1	11.91	0.1515	24	0.006312	INTERLAMINAR SHEAR	11.70
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33RT-3	B	C1	2	1	11.89	0.1517	24	0.006320	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33RT-4	B	C1	2	1	11.74	0.1519	24	0.006331	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33RT-5	B	C1	2	1	11.55	0.1514	24	0.006307	INTERLAMINAR SHEAR	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33RT-6	B	C1	2	1	11.40	0.1519	24	0.006330	INTERLAMINAR SHEAR	

Number of Spec. 80

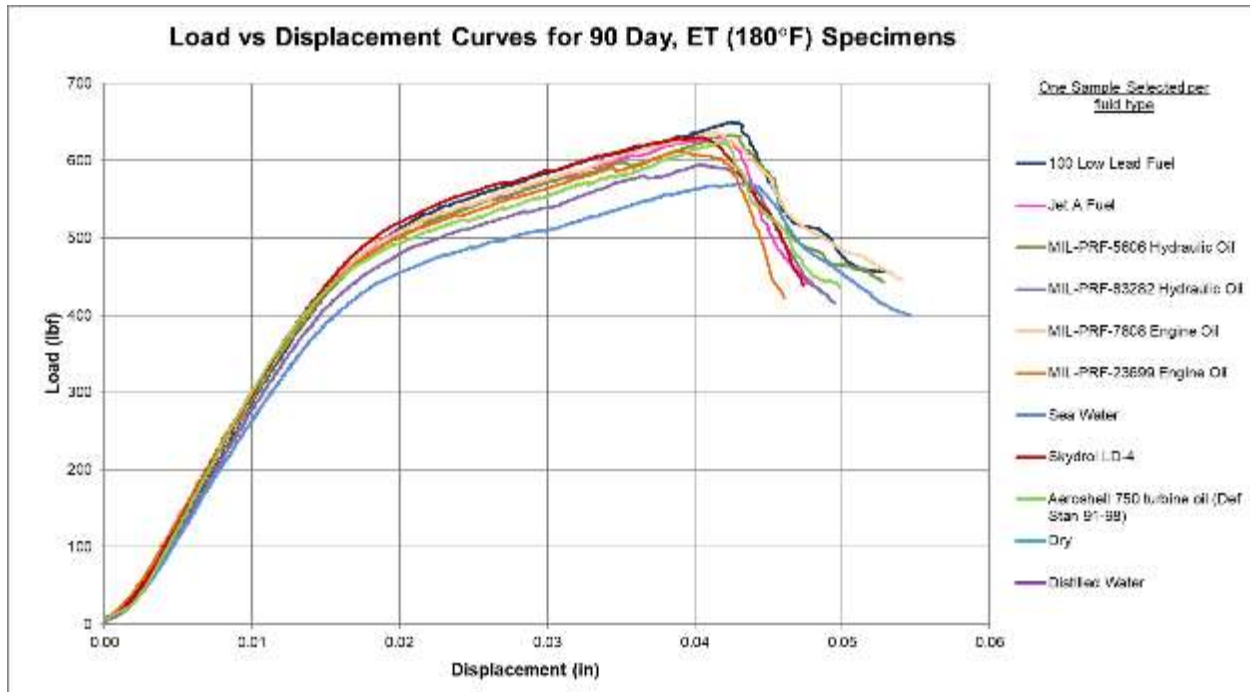
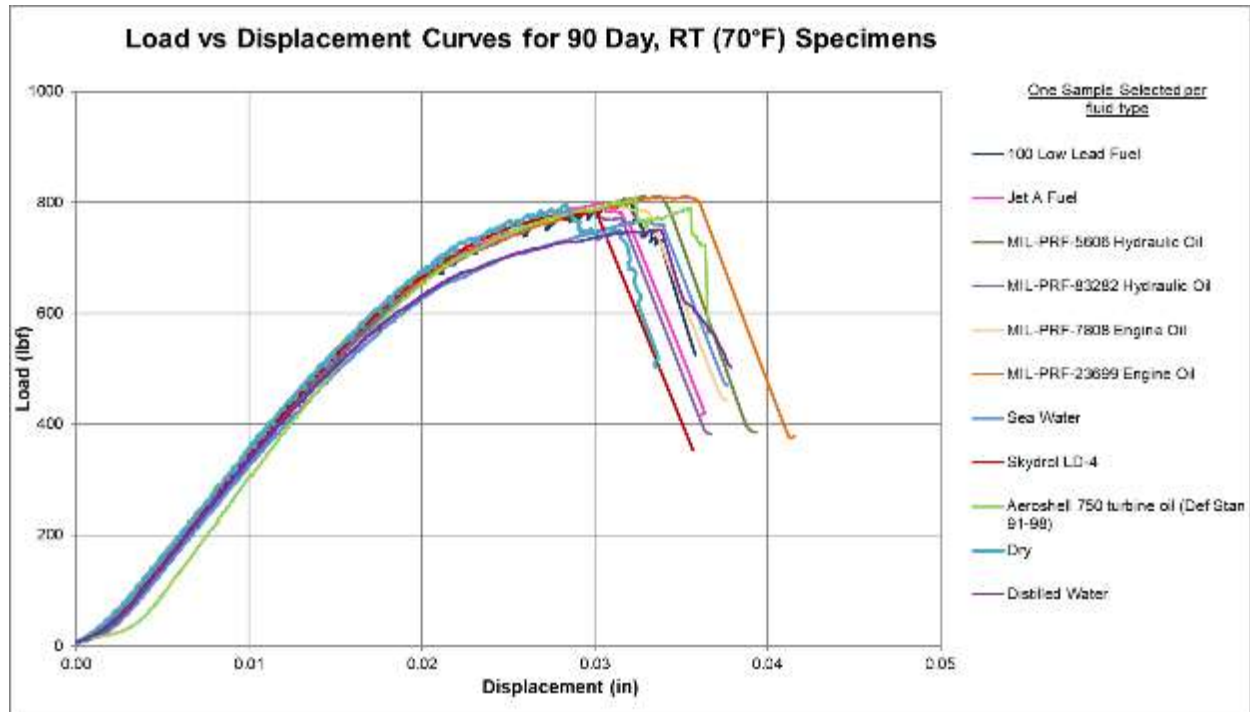
7.2 Elevated Temperature Test Data (180°F)

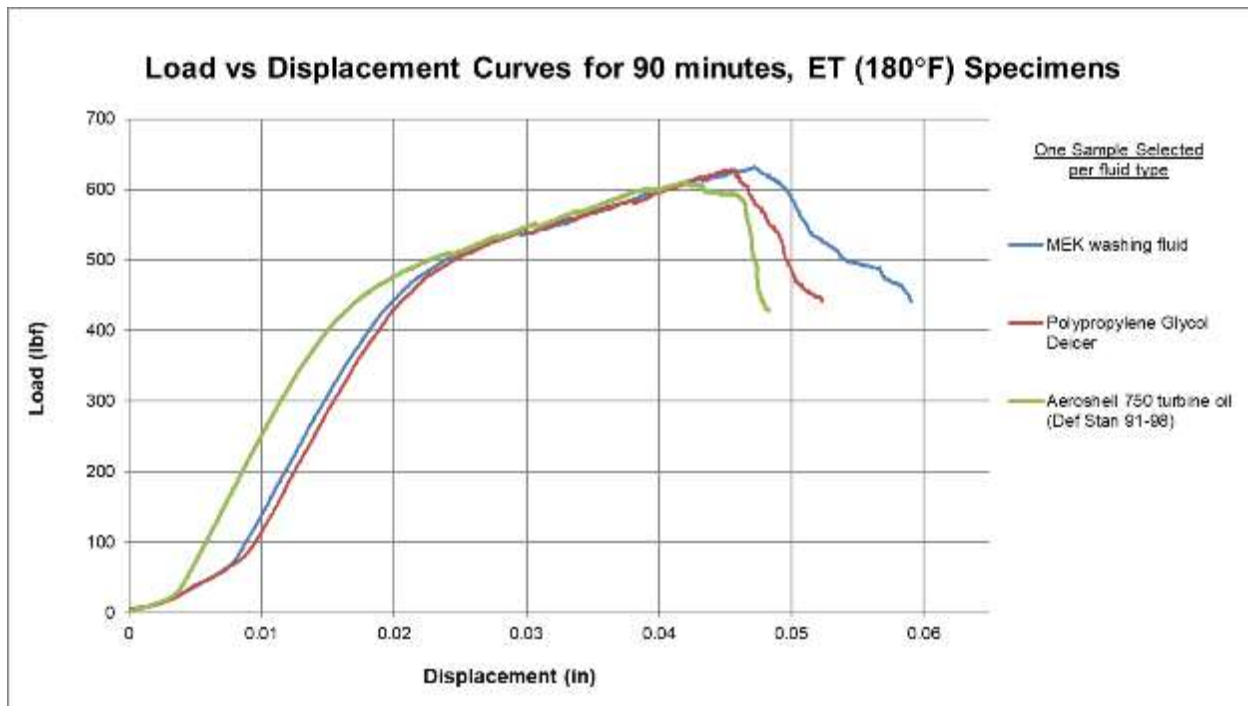
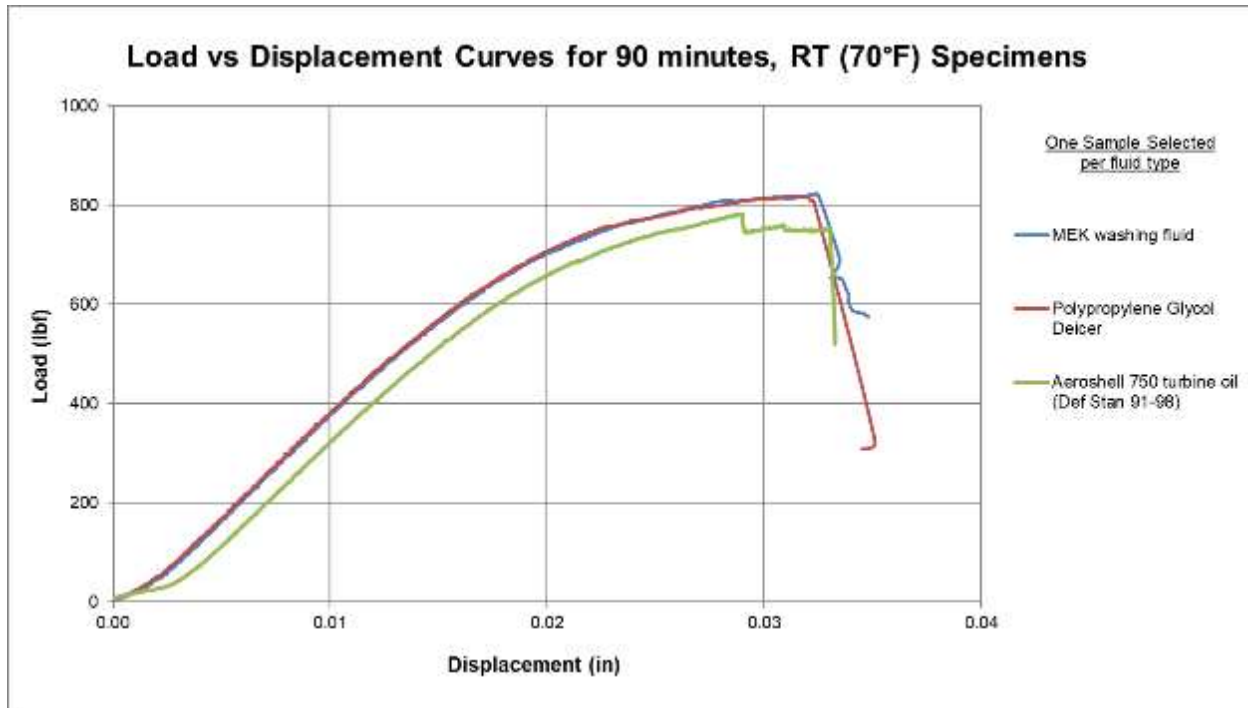
Code	Type of Fluid	Exposure
FS11ET	100 Low Lead Aviation Fuel (ASTM D910)	90 days min @ 70°F ± 10F
FS12ET	Jet A Fuel	
FS13ET	MIL-PRF-5606 Hydraulic Oil	
FS14ET	MIL-PRF-83282 Hydraulic Oil	
FS15ET	MIL-PRF-7808 Engine Oil	
FS16ET	MIL-PRF-23699, Class STD Engine Oil	
FS17ET	Sea Water (ASTM D1141)	
FS18ET	Skydrol LD-4 (SAE AS1241, Type IV, Class 1)	
FS19ET	Aeroshell 750 turbine oil (Def Stan 91-98)	
FS31ET	Distilled water	
FS21ET	MEK washing fluid	90 mins @ 70°F ± 10F
FS22ET	Polypropylene Glycol Deicer	
FS24ET	Aeroshell 750 turbine oil (Def Stan 91-98)	
FS23ET	Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F
FS32ET	Dry	Per section 7 Test Plan
FS33ET	85% Relative Humidity	

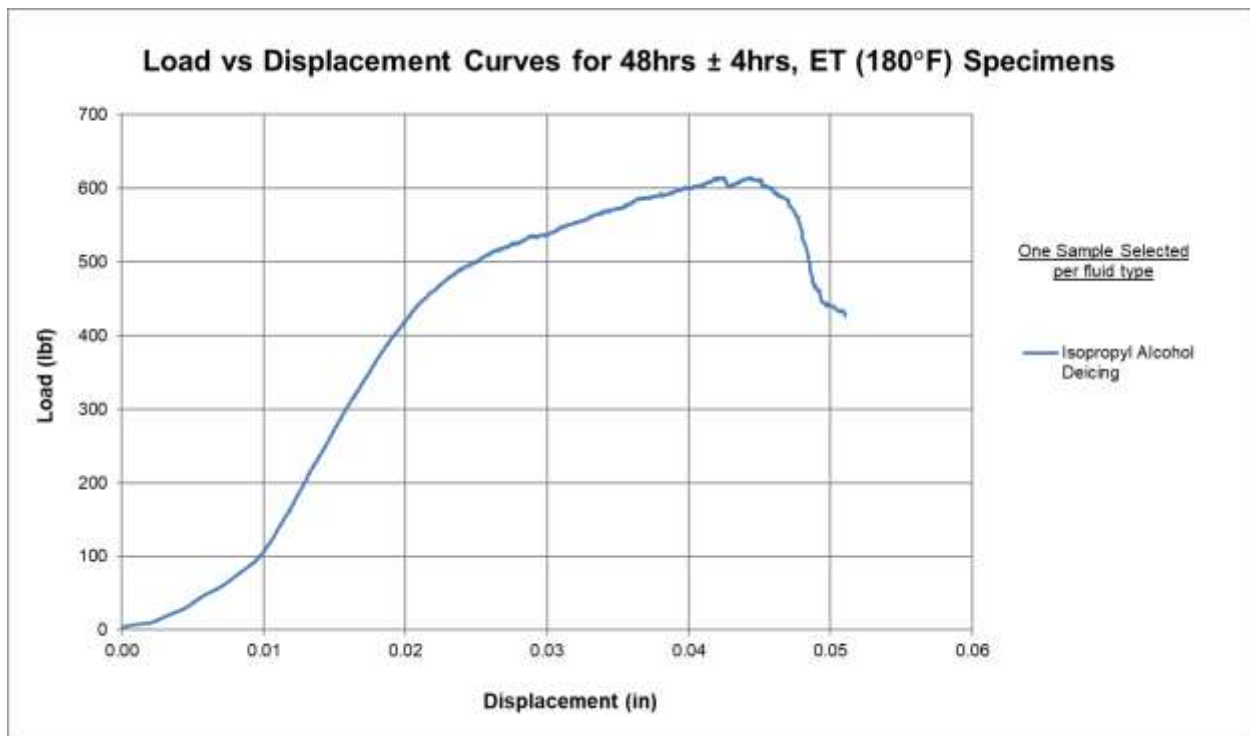
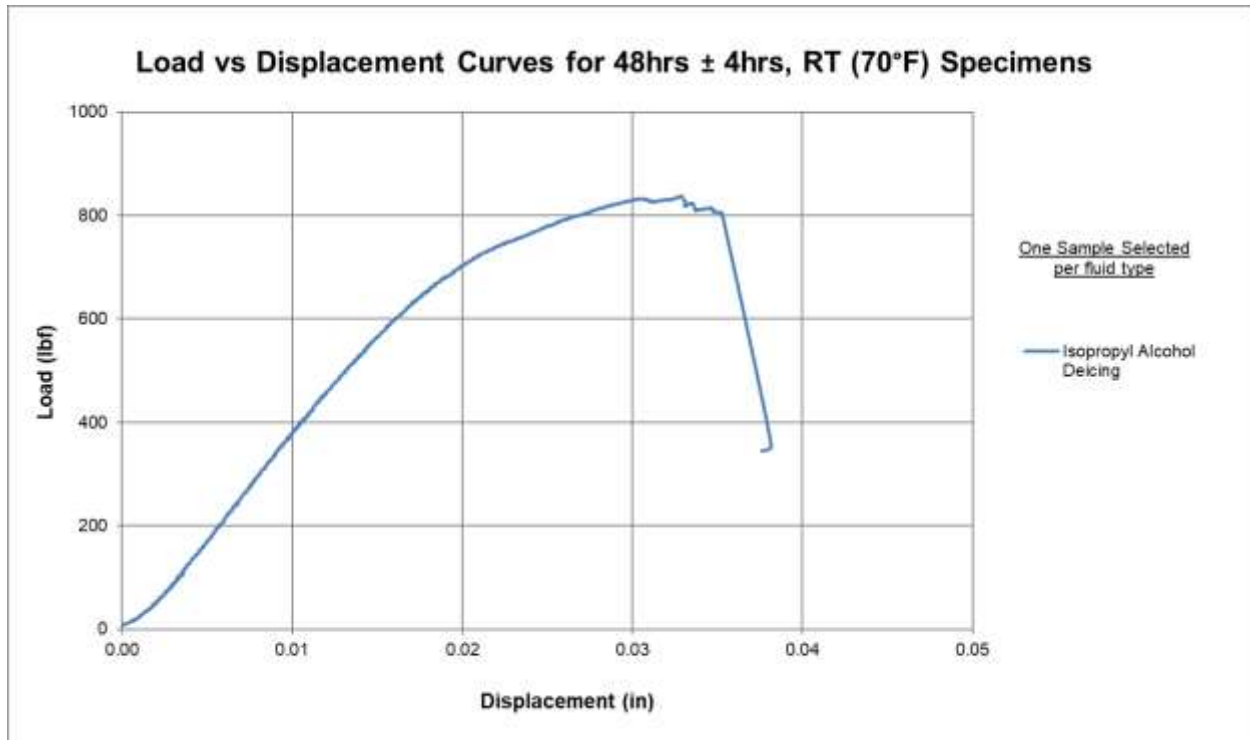


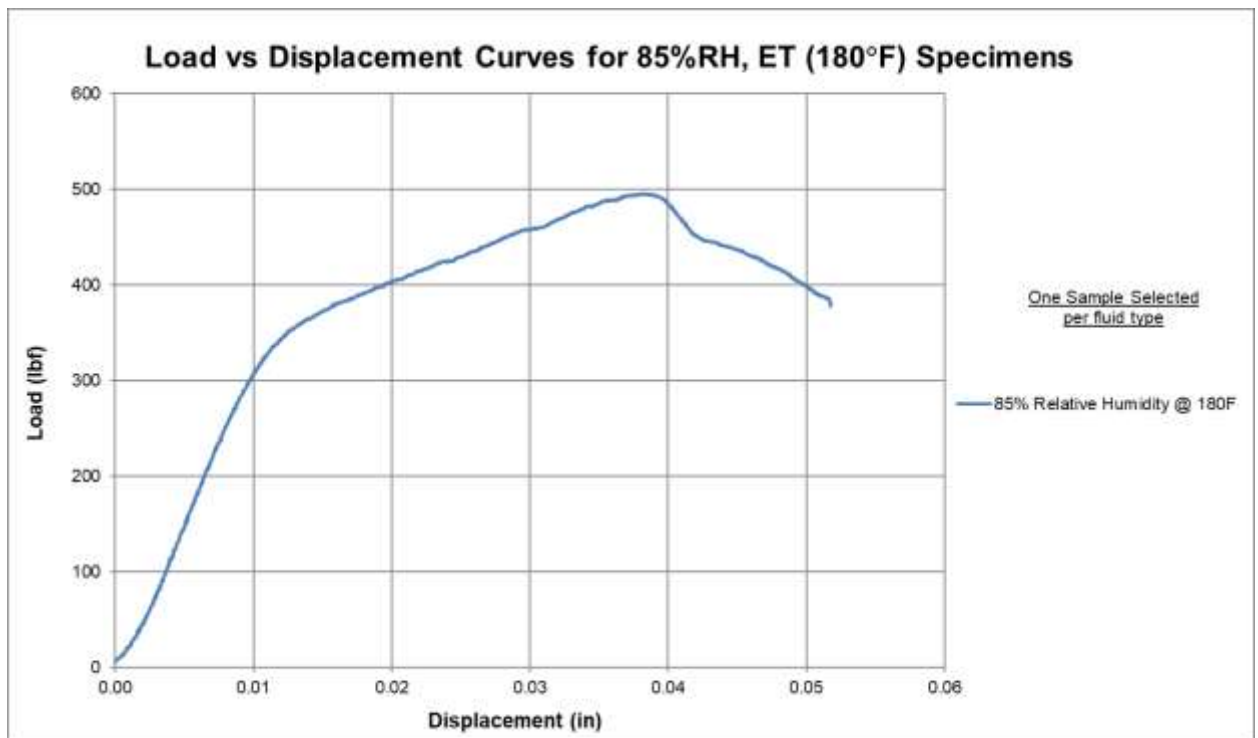
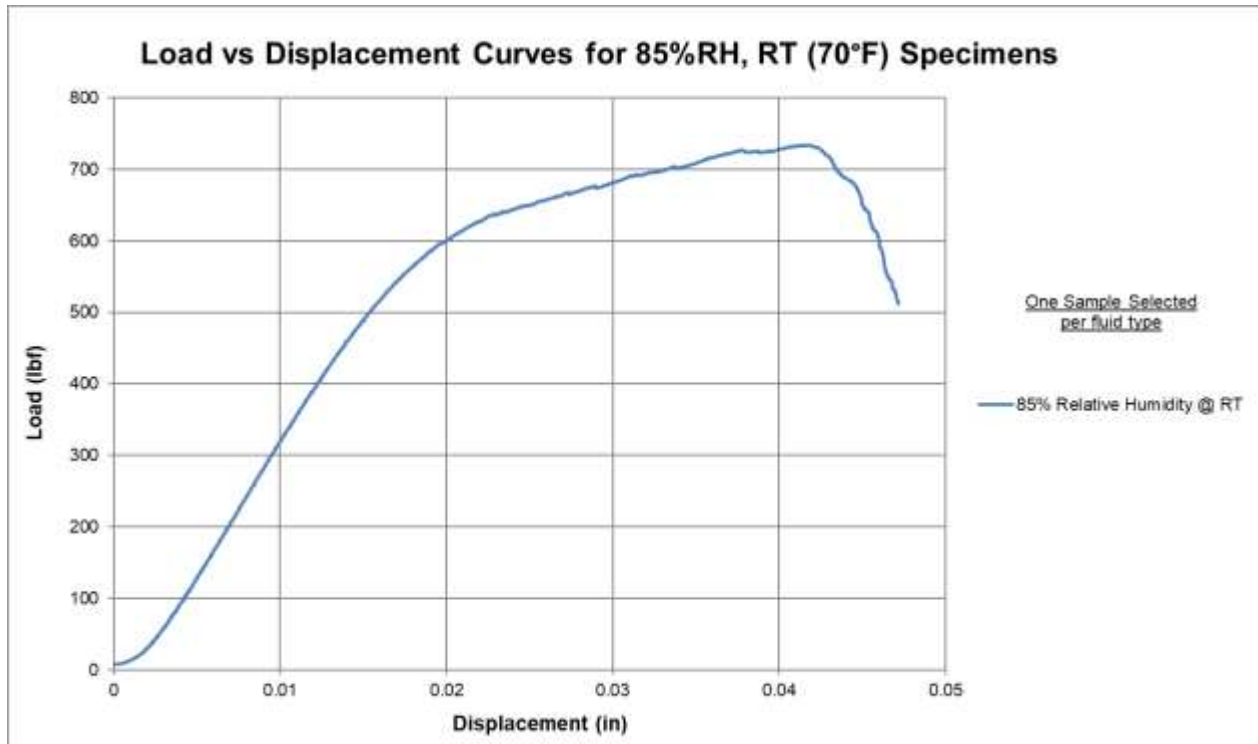
Fluid Sensitivity Screening												
Short-Beam Strength Properties (SBSFS)--ET (180°F) Strength												
Hexcel M91/IM6-GP 6K 2B Fabric 145gsm with 40% RC												
Fluid Code	Specimen Number	Hexcel Batch #	Hexcel Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Piles in Laminate	Avg. t_{ply}	Failure Mode	Average Strength [ksi]	
FS11ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11ET-1	B	C1	2	1	10.66	0.1502	24	0.006256	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION	10.42	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11ET-2	B	C1	2	1	10.46	0.1503	24	0.006262	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11ET-3	B	C1	2	1	10.39	0.1496	24	0.006233	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11ET-4	B	C1	2	1	10.32	0.1504	24	0.006267	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS11ET-5	B	C1	2	1	10.24	0.1506	24	0.006276	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS12ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12ET-1	B	C1	2	1	10.26	0.1511	24	0.006297	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.25	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12ET-2	B	C1	2	1	10.36	0.1496	24	0.006234	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12ET-3	B	C1	2	1	10.27	0.1512	24	0.006298	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12ET-4	B	C1	2	1	10.16	0.1504	24	0.006265	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS12ET-5	B	C1	2	1	10.20	0.1490	24	0.006208	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS13ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13ET-1	B	C1	2	1	10.38	0.1503	24	0.006262	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.18	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13ET-2	B	C1	2	1	10.13	0.1481	24	0.006169	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13ET-3	B	C1	2	1	10.22	0.1510	24	0.006291	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13ET-4	B	C1	2	1	10.14	0.1507	24	0.006280	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS13ET-5	B	C1	2	1	10.05	0.1484	24	0.006184	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS14ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14ET-1	B	C1	2	1	9.884	0.1483	24	0.006178	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	9.810	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14ET-2	B	C1	2	1	9.822	0.1508	24	0.006284	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14ET-3	B	C1	2	1	9.764	0.1494	24	0.006224	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14ET-4	B	C1	2	1	9.813	0.1475	24	0.006144	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS14ET-5	B	C1	2	1	9.766	0.1482	24	0.006173	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
FS15ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15ET-1	B	C1	2	1	10.43	0.1499	24	0.006246	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.34	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15ET-2	B	C1	2	1	10.26	0.1501	24	0.006253	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15ET-3	B	C1	2	1	10.49	0.1493	24	0.006222	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15ET-4	B	C1	2	1	10.27	0.1474	24	0.006143	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS15ET-5	B	C1	2	1	10.25	0.1513	24	0.006305	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS16ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16ET-1	B	C1	2	1	10.01	0.1507	24	0.006278	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION	10.04	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16ET-2	B	C1	2	1	10.25	0.1502	24	0.006257	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16ET-3	B	C1	2	1	10.05	0.1486	24	0.006233	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16ET-4	B	C1	2	1	9.838	0.1480	24	0.006167	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS16ET-5	B	C1	2	1	10.07	0.1500	24	0.006251	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
FS17ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17ET-1	B	C1	2	1	9.229	0.1519	24	0.006329	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	9.147	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17ET-2	B	C1	2	1	9.373	0.1514	24	0.006310	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17ET-3	B	C1	2	1	9.113	0.1514	24	0.006307	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17ET-4	B	C1	2	1	8.980	0.1518	24	0.006324	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS17ET-5	B	C1	2	1	9.043	0.1513	24	0.006303	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS18ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18ET-1	B	C1	2	1	10.20	0.1519	24	0.006327	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION	10.32	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18ET-2	B	C1	2	1	10.39	0.1489	24	0.006202	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18ET-3	B	C1	2	1	10.22	0.1512	24	0.006299	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18ET-4	B	C1	2	1	10.30	0.1511	24	0.006294	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS18ET-5	B	C1	2	1	10.48	0.1516	24	0.006317	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS19ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19ET-1	B	C1	2	1	10.14	0.1513	24	0.006304	INTERLAMINAR SHEAR, COMPRESSION	9.767	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19ET-2	B	C1	2	1	9.694	0.1499	24	0.006244	INTERLAMINAR SHEAR, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19ET-3	B	C1	2	1	9.663	0.1518	24	0.006324	INTERLAMINAR SHEAR, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19ET-4	B	C1	2	1	9.637	0.1514	24	0.006308	INTERLAMINAR SHEAR, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS19ET-5	B	C1	2	1	9.701	0.1504	24	0.006268	INTERLAMINAR SHEAR, COMPRESSION		
FS21ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21ET-1	B	C1	2	1	10.31	0.1511	24	0.006296	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.27	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21ET-2	B	C1	2	1	10.14	0.1513	24	0.006304	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21ET-3	B	C1	2	1	10.29	0.1511	24	0.006294	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21ET-4	B	C1	2	1	10.39	0.1512	24	0.006298	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS21ET-5	B	C1	2	1	10.24	0.1507	24	0.006278	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS22ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22ET-1	B	C1	2	1	10.24	0.1510	24	0.006291	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.25	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22ET-2	B	C1	2	1	10.20	0.1480	24	0.006165	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22ET-3	B	C1	2	1	10.20	0.1507	24	0.006280	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22ET-4	B	C1	2	1	10.43	0.1504	24	0.006268	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS22ET-5	B	C1	2	1	10.19	0.1508	24	0.006281	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS23ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23ET-1	B	C1	2	1	10.58	0.1516	24	0.006315	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.25	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23ET-2	B	C1	2	1	10.19	0.1510	24	0.006292	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23ET-3	B	C1	2	1	10.24	0.1514	24	0.006306	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23ET-4	B	C1	2	1	10.20	0.1521	24	0.006337	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS23ET-5	B	C1	2	1	10.03	0.1508	24	0.006284	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS24ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24ET-1	B	C1	2	1	10.08	0.1489	24	0.006205	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	9.951	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24ET-2	B	C1	2	1	9.884	0.1515	24	0.006311	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24ET-3	B	C1	2	1	9.893	0.1508	24	0.006283	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24ET-4	B	C1	2	1	9.913	0.1520	24	0.006334	INTERLAMINAR SHEAR, INELASTIC DEFORMATION, COMPRESSION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS24ET-5	B	C1	2	1	9.981	0.1500	24	0.006249	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS31ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31ET-1	B	C1	2	1	8.910	0.1513	24	0.006304	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	8.837	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31ET-2	B	C1	2	1	8.590	0.1519	24	0.006331	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31ET-3	B	C1	2	1	8.925	0.1512	24	0.006298	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31ET-4	B	C1	2	1	8.896	0.1514	24	0.006308	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS31ET-5	B	C1	2	1	8.866	0.1519	24	0.006327	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS32ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32ET-1	B	C1	2	1	10.16	0.1510	24	0.006293	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	10.24	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32ET-2	B	C1	2	1	10.30	0.1510	24	0.006291	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32ET-3	B	C1	2	1	10.23	0.1514	24	0.006306	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32ET-4	B	C1	2	1	10.33	0.1515	24	0.006310	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
FS33ET	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS32ET-5	B	C1	2	1	10.17	0.1519	24	0.006327	INTERLAMINAR SHEAR, INELASTIC DEFORMATION	7.957	
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33ET-1	B	C1	2	1	8.053	0.1513	24	0.006303	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33ET-2	B	C1	2	1	7.967	0.1506	24	0.006276	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33ET-3	B	C1	2	1	7.870	0.1514	24	0.006310	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33ET-4	B	C1	2	1	7.924	0.1510	24	0.006291	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
	NTPM911Q1-HXL-H40-NIAR-SBSFS-B-C1-1-FS33ET-5	B	C1	2	1	7.971	0.1514	24	0.006308	INTERLAMINAR SHEAR, INELASTIC DEFORMATION		
Number of Spec. 80												

7.3 Load Displacement Curves



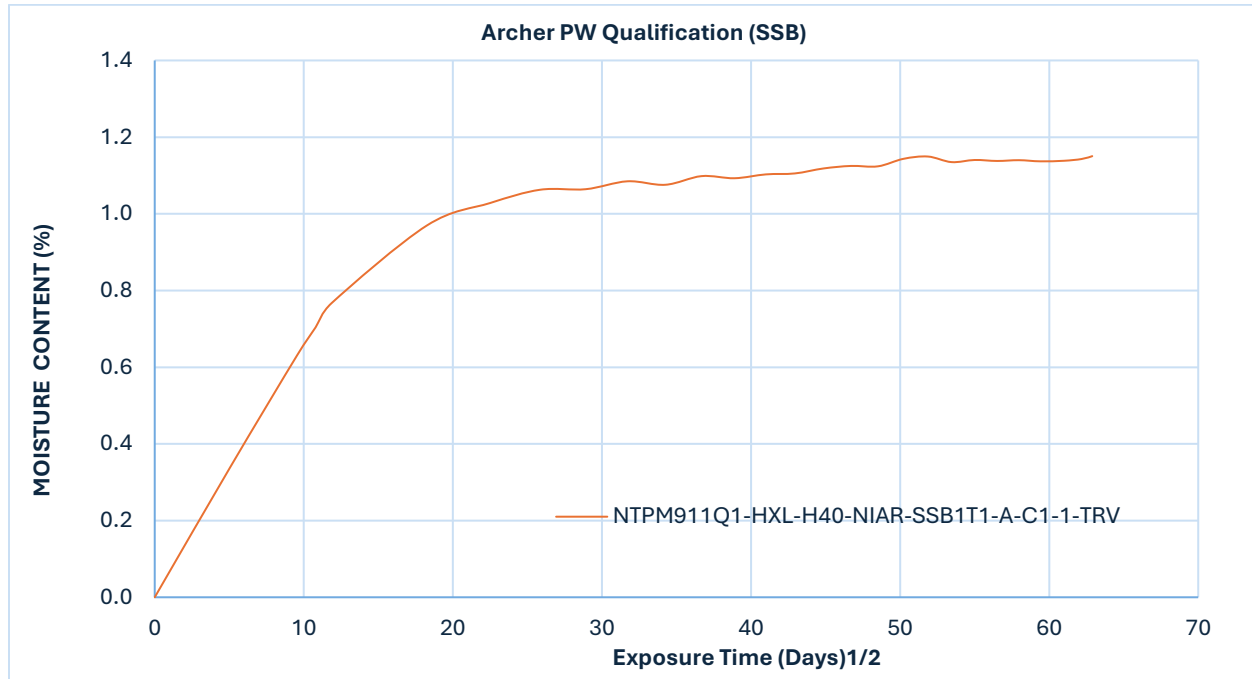




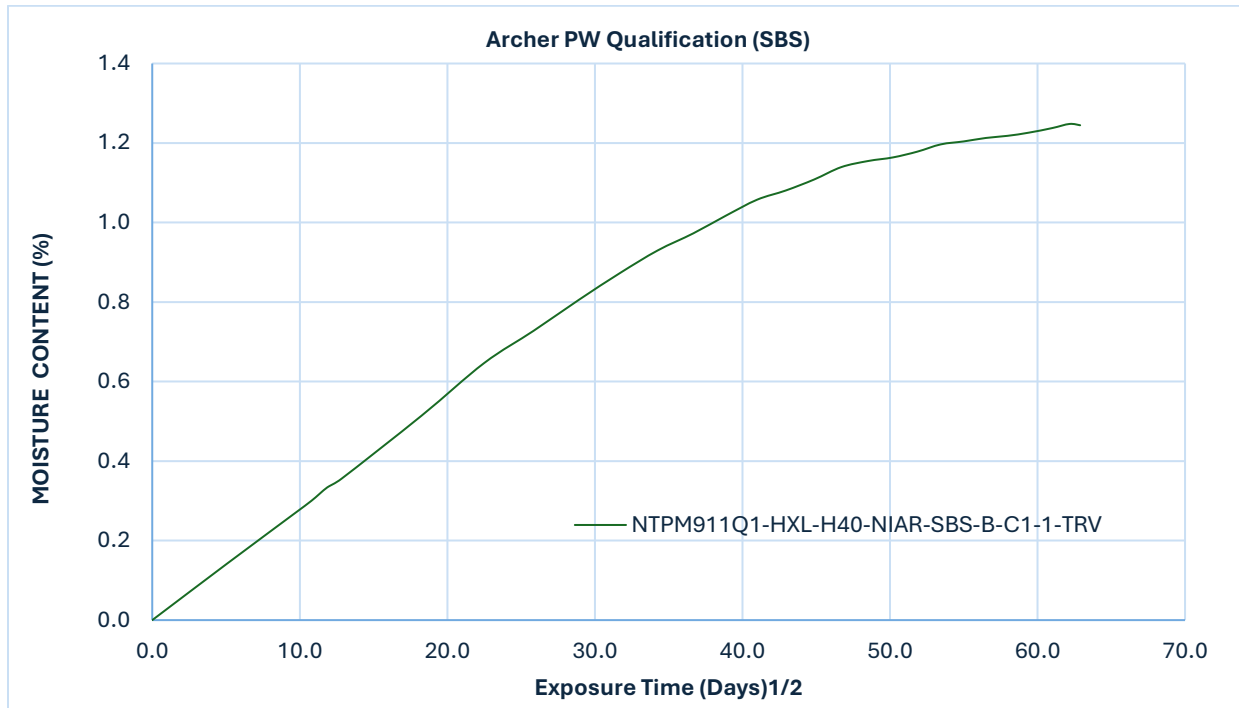


8. Moisture Conditioning Charts

8.1 Single-Shear Bearing 1 T1 Proc. C Properties (SSB1T1, D=0.19", e=0.38) - Thinnest Panel



8.2 Short-Beam Strength (SBS) - Thickest Panel



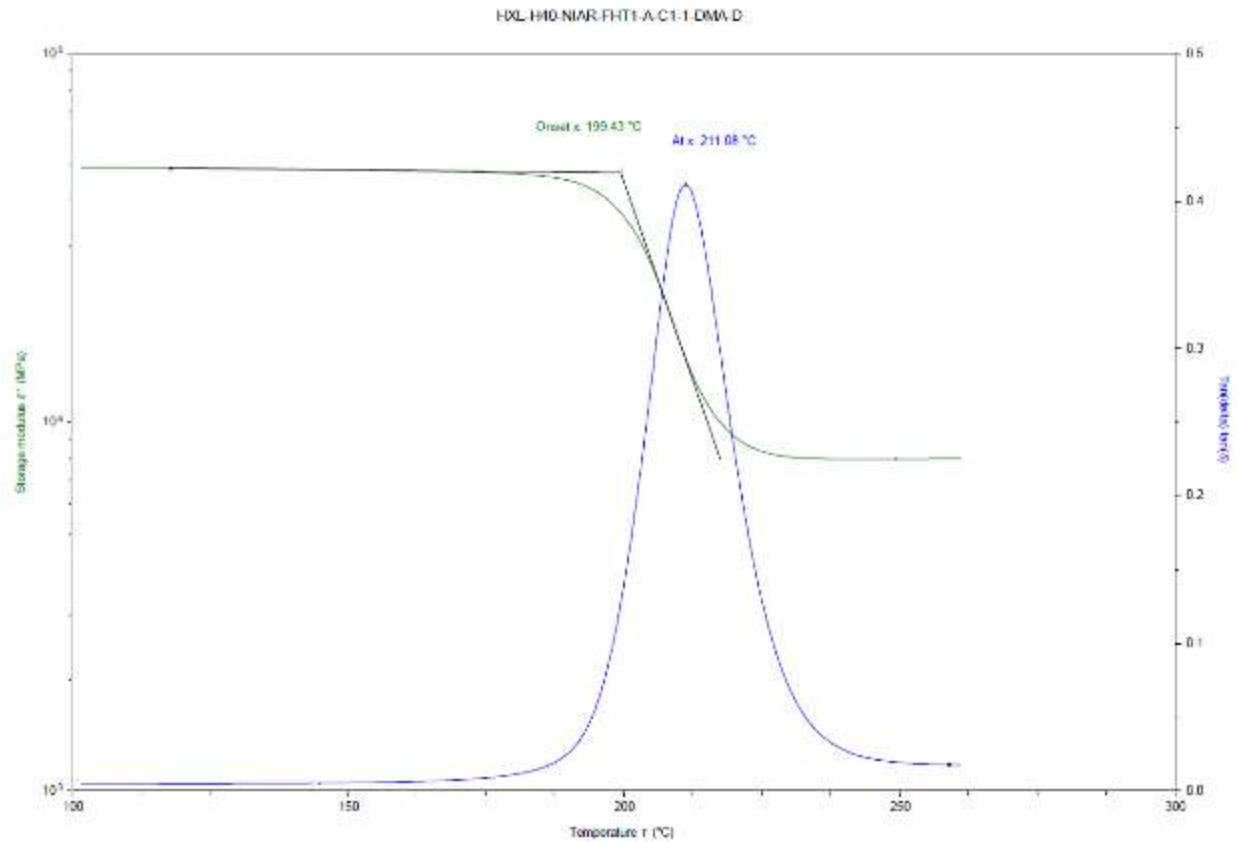
9. DMA Results

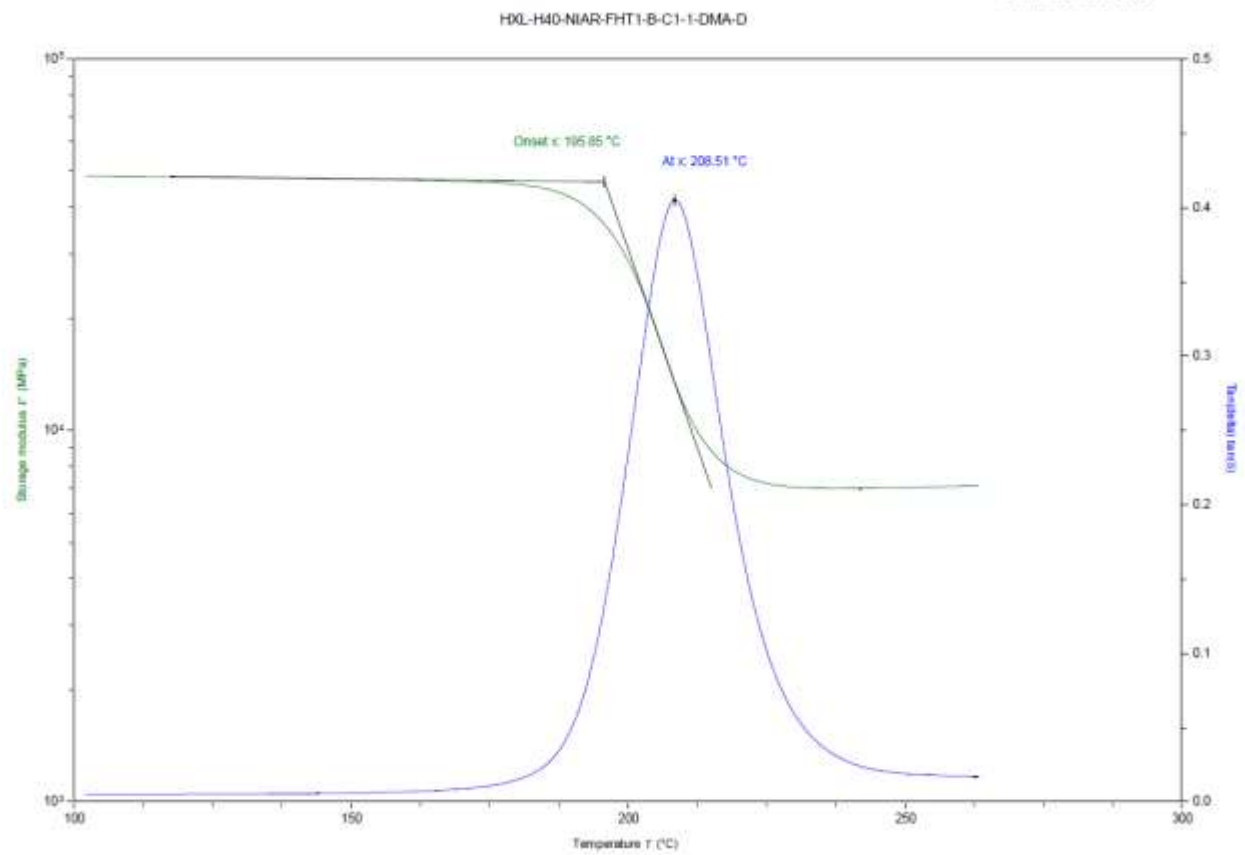
9.1 DMA Dry

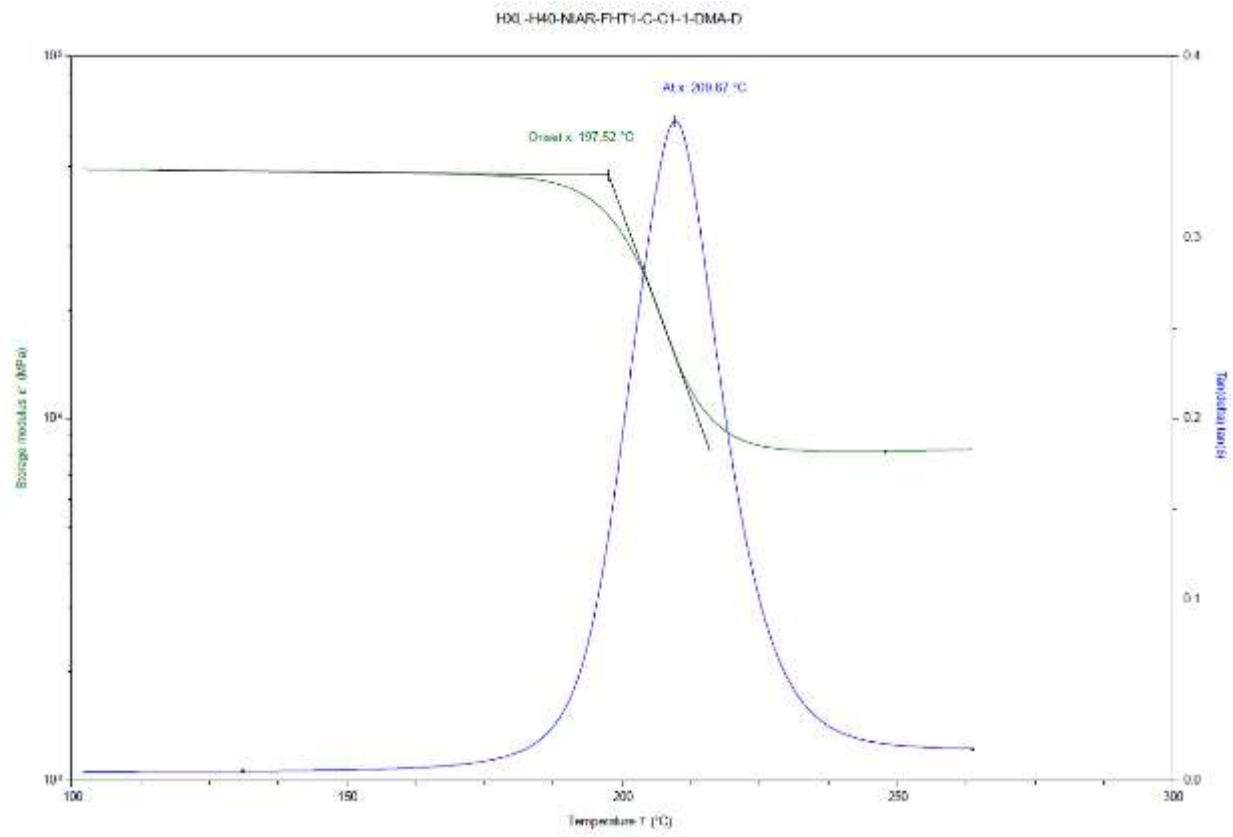
DMA Results Summary Hexcel M91/IM8-GP 6K ZB Fabric Qualification DMA Dry				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
HXL-H40-NIAR-FHT1-A-C1-1-DMA-D	199.4	391.0	211.1	411.9
HXL-H40-NIAR-FHT1-B-C1-1-DMA-D	195.9	384.5	208.5	407.3
HXL-H40-NIAR-FHT1-C-C1-1-DMA-D	197.5	387.5	209.7	409.4
HXL-H40-NIAR-FT-A-C1-1-DMA-D	198.6	389.4	210.3	410.6
HXL-H40-NIAR-FT-B-C1-1-DMA-D	194.1	381.3	206.7	404.1
HXL-H40-NIAR-FT-C-C1-1-DMA-D	195.3	383.6	207.9	406.1
HXL-H40-NIAR-ILT-A-C1-1-DMA-D	199.1	390.5	210.4	410.6
HXL-H40-NIAR-ILT-B-C1-1-DMA-D	197.5	387.5	209.9	409.8
HXL-H40-NIAR-ILT-C-C1-1-DMA-D	195.4	383.7	208.1	406.5
HXL-H40-NIAR-SSB1-A-C1-1-DMA-D	197.4	387.3	209.8	409.6
HXL-H40-NIAR-SSB1-B-C1-1-DMA-D	194.9	382.8	207.8	406.1
HXL-H40-NIAR-SSB1-C-C1-1-DMA-D	197.3	387.1	209.2	408.6
HXL-H40-NIAR-UNT3-A-C1-1-DMA-D	198.6	389.4	210.2	410.3
HXL-H40-NIAR-UNT3-B-C1-1-DMA-D	194.4	381.9	207.0	404.6
HXL-H40-NIAR-UNT3-C-C1-1-DMA-D	196.1	384.9	208.0	406.5
HXL-H40-NIAR-WT-A-C1-1-DMA-D	198.6	389.4	209.9	409.9
HXL-H40-NIAR-WT-B-C1-1-DMA-D	194.6	382.4	206.9	404.5
HXL-H40-NIAR-WT-C-C1-1-DMA-D	195.4	383.8	207.5	405.4
NTPM911Q1-HXL-H40-FACC-FT-D-C1-1-DMA-D	190.6	375.1	203.9	399.1
NTPM911Q1-HXL-H40-FACC-ILT-D-C1-1-DMA-D	190.5	374.8	203.6	398.5
NTPM911Q1-HXL-H40-FACC-ILT-D-C2-1-DMA-D	192.3	378.1	205.2	401.3
NTPM911Q1-HXL-H40-FACC-WT-D-C1-1-DMA-D	190.7	375.3	204.1	399.3
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-DMA-D	191.8	377.2	204.7	400.4
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-DMA-D	189.8	373.6	203.1	397.6
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-DMA-D	193.2	379.7	206.0	402.8
Average	195.1	383.3	207.6	405.6
Standard deviation	2.946	5.302	2.397	4.316

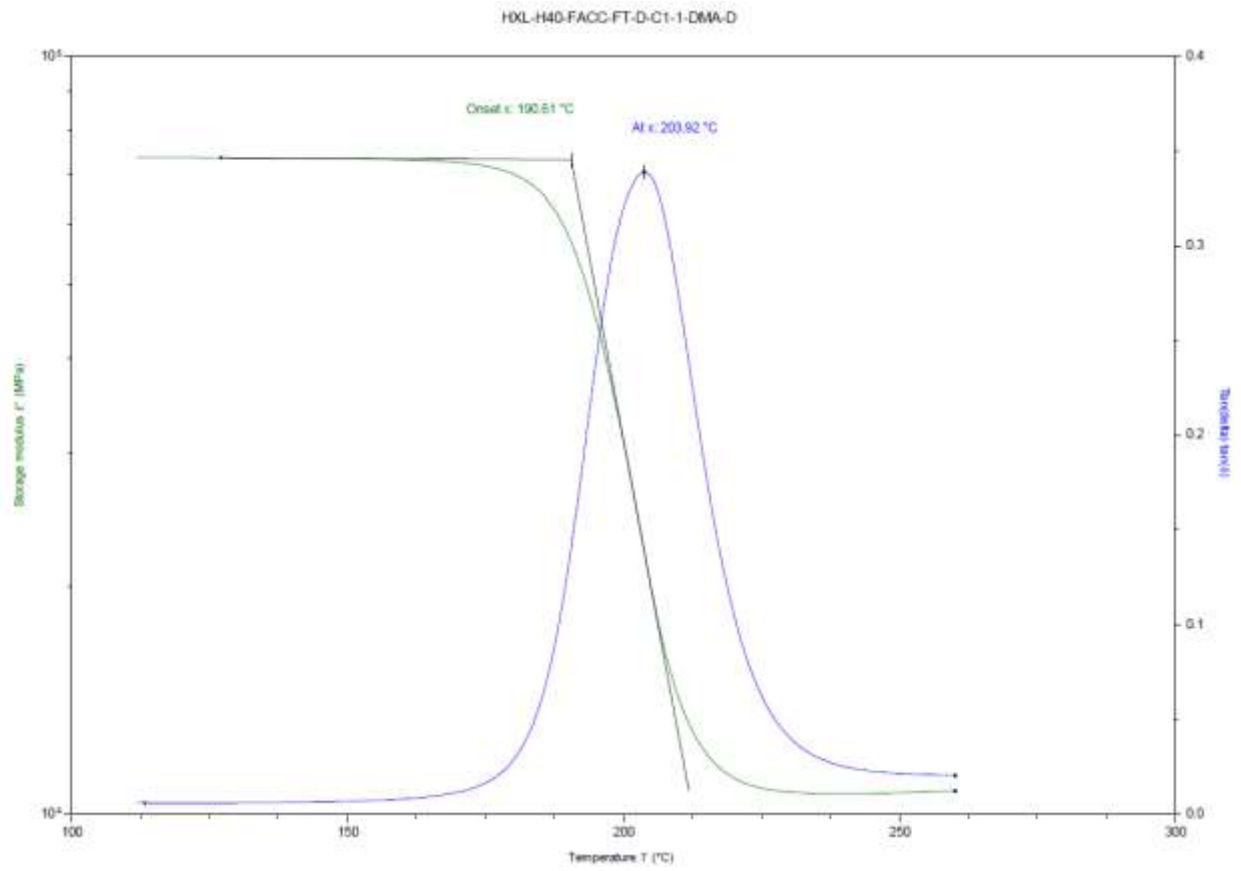
9.2 DMA Dry Batch A, B, C, D and E

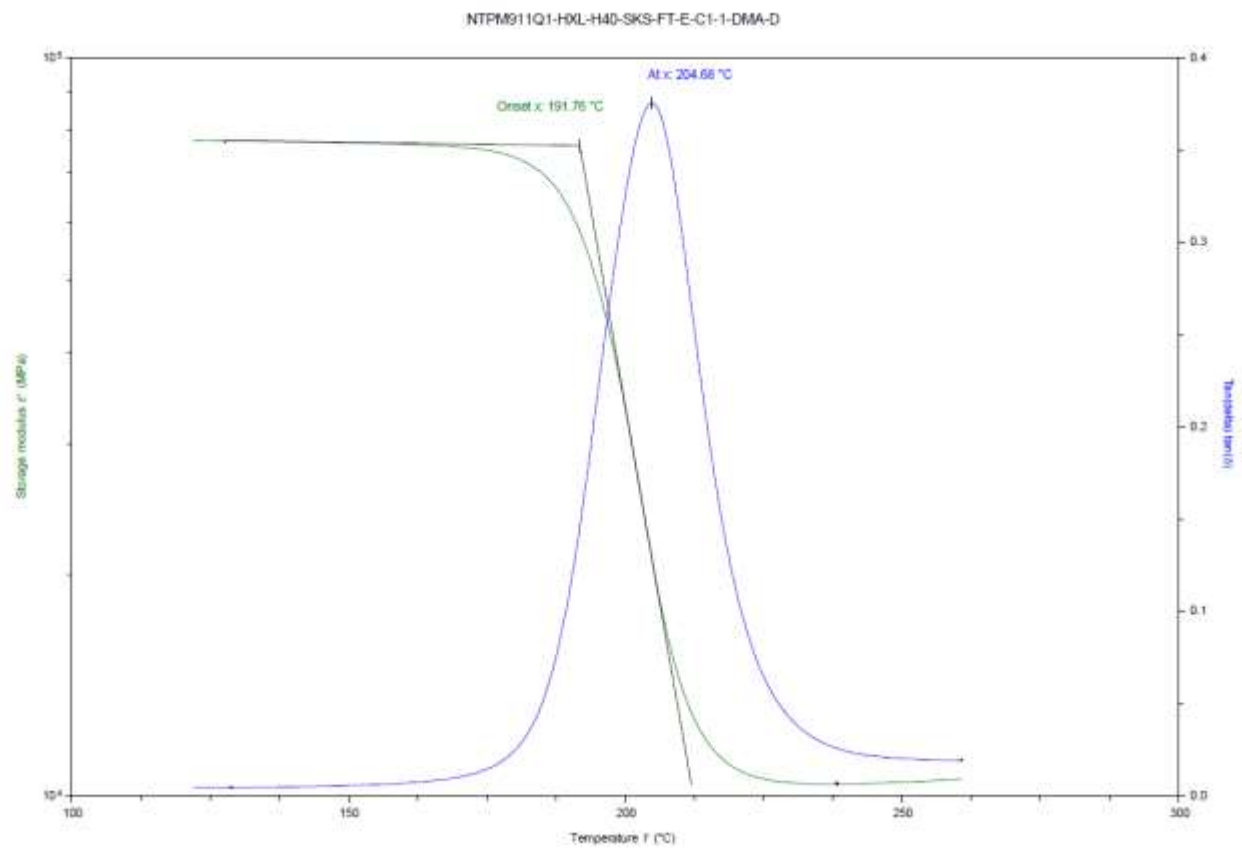
Representative graphs of DMA Dry profile from Batch A, B, C, D, and E are provided below.









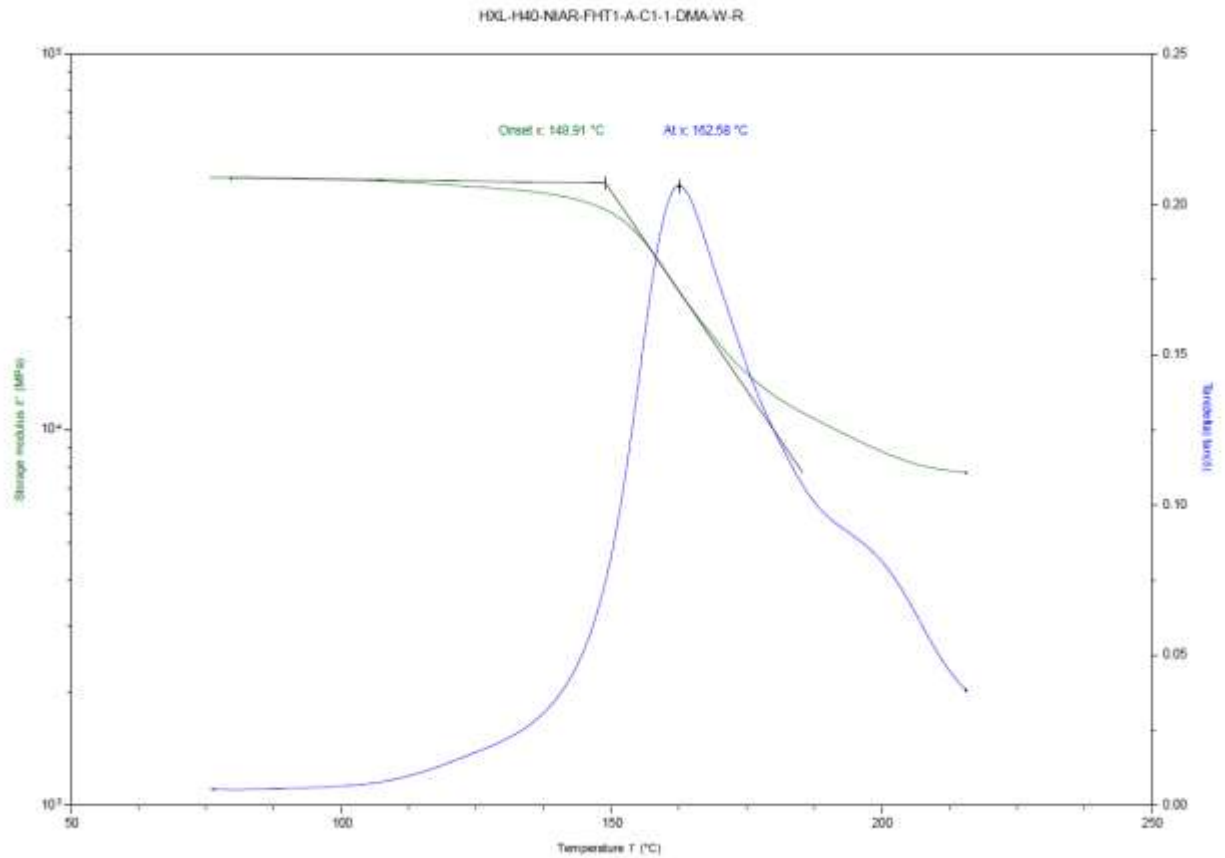


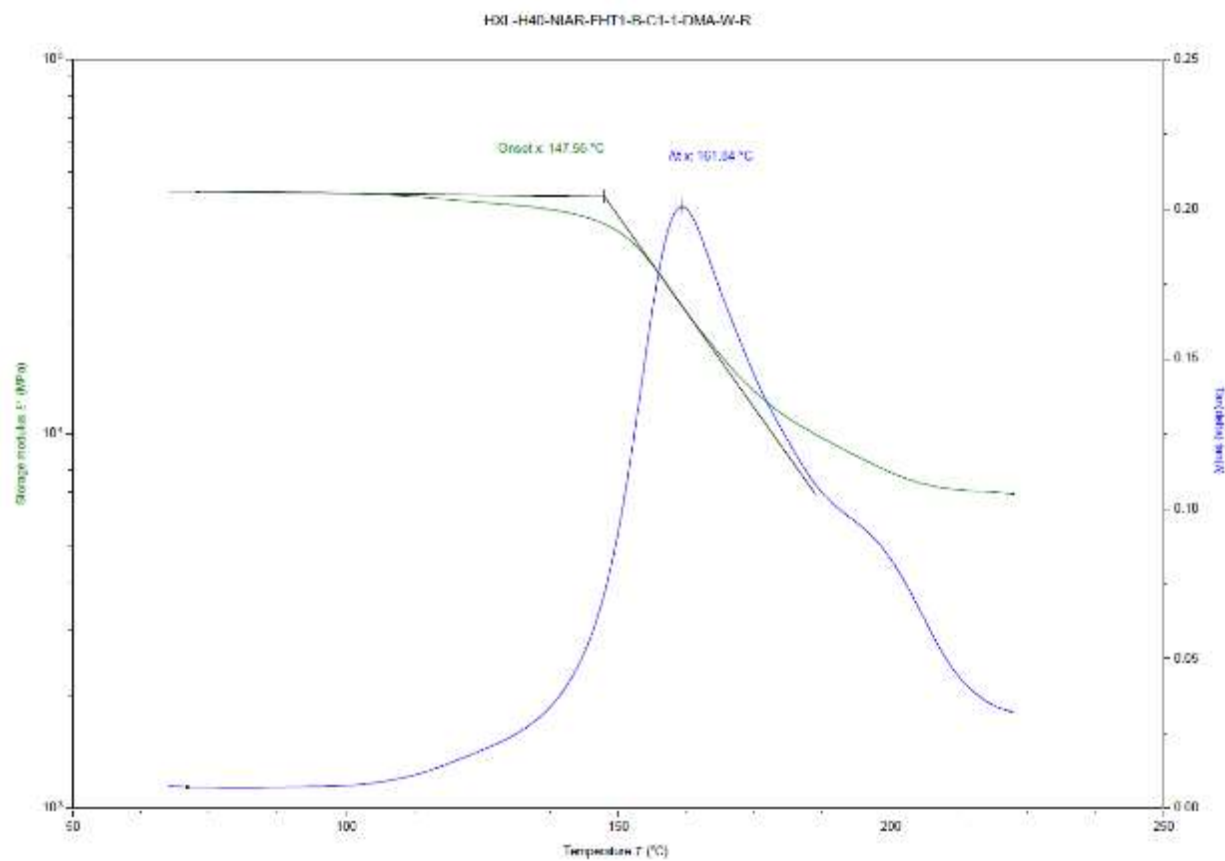
9.3 DMA Wet

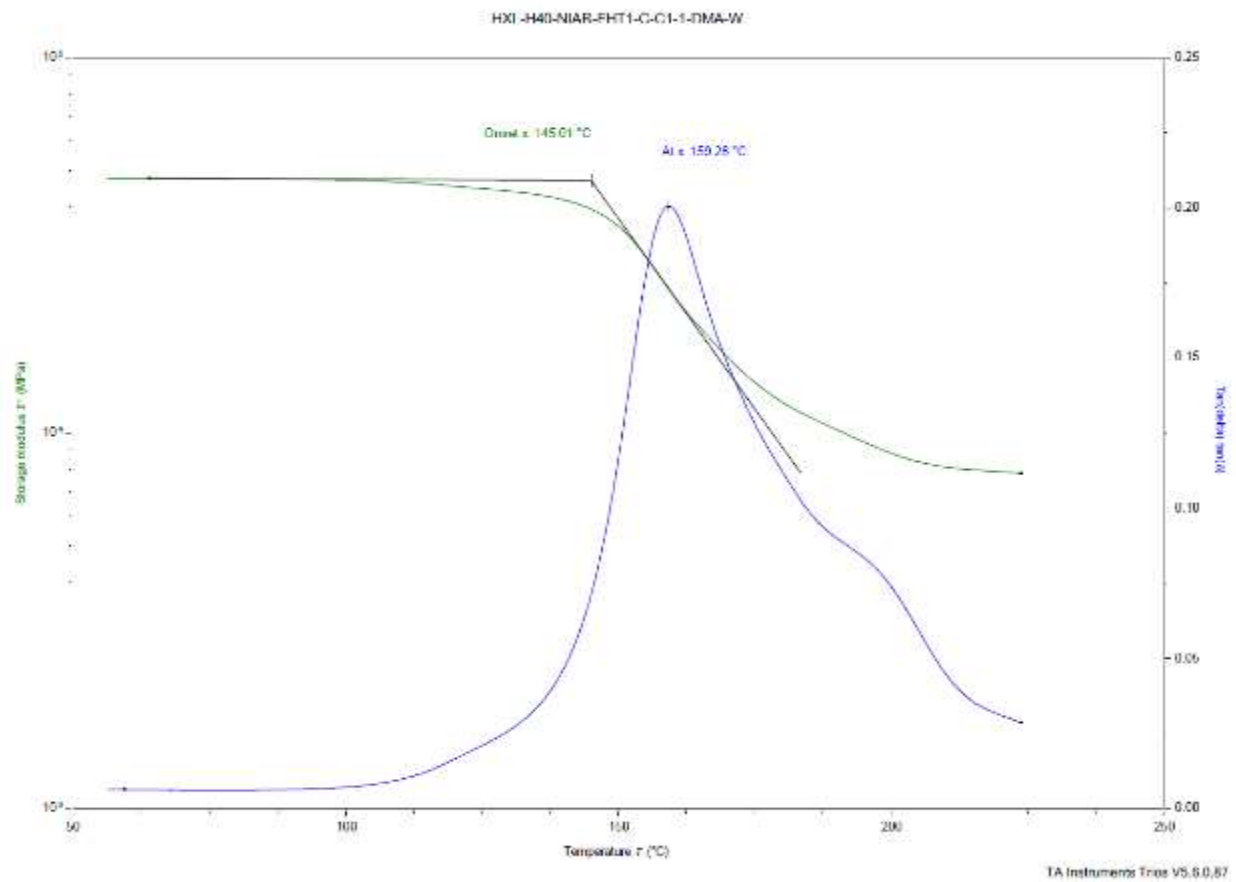
DMA Results Summary				
Hexcel M91/IM8-GP 6K ZB Fabric Qualification DMA Wet				
Sample ID	Onset Storage Modulus		Peak of Tangent Delta	
	T, [°C]	T, [°F]	T, [°C]	T, [°F]
NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-DMA-W-R	148.9	300.0	162.6	324.6
NTPM911Q1-HXL-H40-NIAR-FHT1-B-C1-1-DMA-W-R	147.6	297.6	161.8	323.3
NTPM911Q1-HXL-H40-NIAR-FHT1-C-C1-1-DMA-W	145.0	293.0	159.3	318.7
NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-DMA-W-R	148.5	299.3	160.8	321.4
NTPM911Q1-HXL-H40-NIAR-FT-B-C1-1-DMA-W-R	148.4	299.1	161.4	322.6
NTPM911Q1-HXL-H40-NIAR-FT-C-C1-1-DMA-W	145.5	293.9	157.9	316.2
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-DMA-W	149.8	301.6	162.0	323.6
NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-DMA-W-R	147.6	297.6	160.0	320.0
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-DMA-W	148.2	298.8	161.5	322.7
NTPM911Q1-HXL-H40-NIAR-ILT-B-C1-1-DMA-W-R	147.0	296.6	159.9	319.9
NTPM911Q1-HXL-H40-NIAR-ILT-C-C1-1-DMA-W	145.8	294.5	158.0	316.4
NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-DMA-W-R	147.1	296.8	161.8	323.2
NTPM911Q1-HXL-H40-NIAR-SSB1-B-C1-1-DMA-W-R	148.5	299.4	162.7	324.8
NTPM911Q1-HXL-H40-NIAR-SSB1-C-C1-1-DMA-W	145.8	294.5	160.3	320.5
NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-DMA-W-R	148.7	299.6	161.6	322.8
NTPM911Q1-HXL-H40-NIAR-UNT3-B-C1-1-DMA-W-R	148.6	299.4	162.1	323.8
NTPM911Q1-HXL-H40-NIAR-UNT3-C-C1-1-DMA-W	145.7	294.2	158.3	317.0
NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-DMA-W-R	148.9	300.0	161.3	322.3
NTPM911Q1-HXL-H40-NIAR-WT-B-C1-1-DMA-W-R	148.8	299.9	161.3	322.3
NTPM911Q1-HXL-H40-NIAR-WT-C-C1-1-DMA-W	145.6	294.0	157.8	316.0
HXL-H40-FACC-FT-D-C1-1-DMA-W	143.8	290.8	156.4	313.5
HXL-H40-FACC-ILT-D-C1-1-DMA-W	143.2	289.7	155.6	312.0
HXL-H40-FACC-ILT-D-C2-1-DMA-W	145.5	294.0	157.5	315.4
HXL-H40-FACC-WT-D-C1-1-DMA-W	142.7	288.9	155.4	311.7
NTPM911Q1-HXL-H40-SKS-FT-E-C1-1-DMA-W	146.6	295.9	159.4	318.9
NTPM911Q1-HXL-H40-SKS-ILT-E-C1-1-DMA-W	146.1	294.9	158.4	317.1
NTPM911Q1-HXL-H40-SKS-WT-E-C1-1-DMA-W	146.7	296.1	159.3	318.8
Average	146.8	296.3	159.8	319.6
Standard deviation	1.872	3.369	2.133	3.838

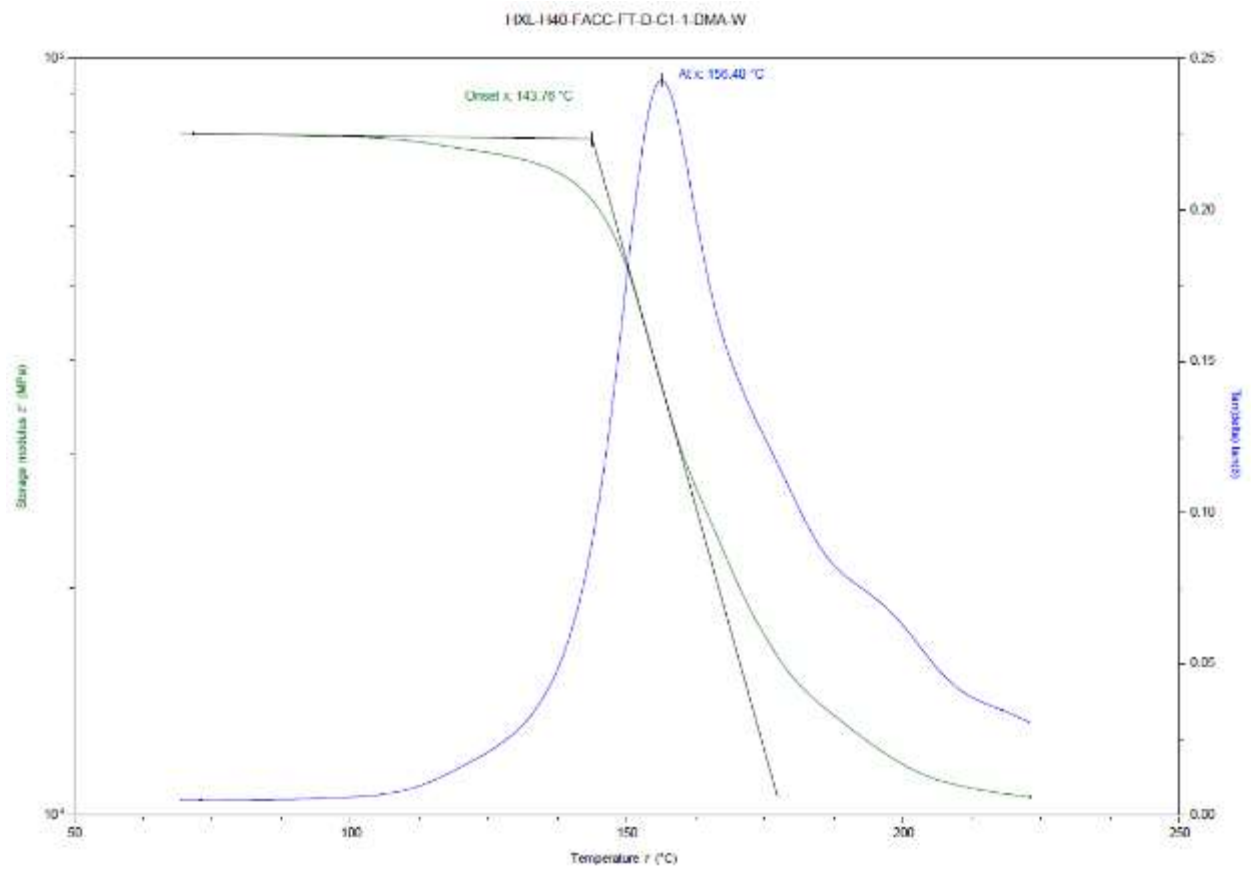
9.4 DMA Wet Batch A, B, C, D and E

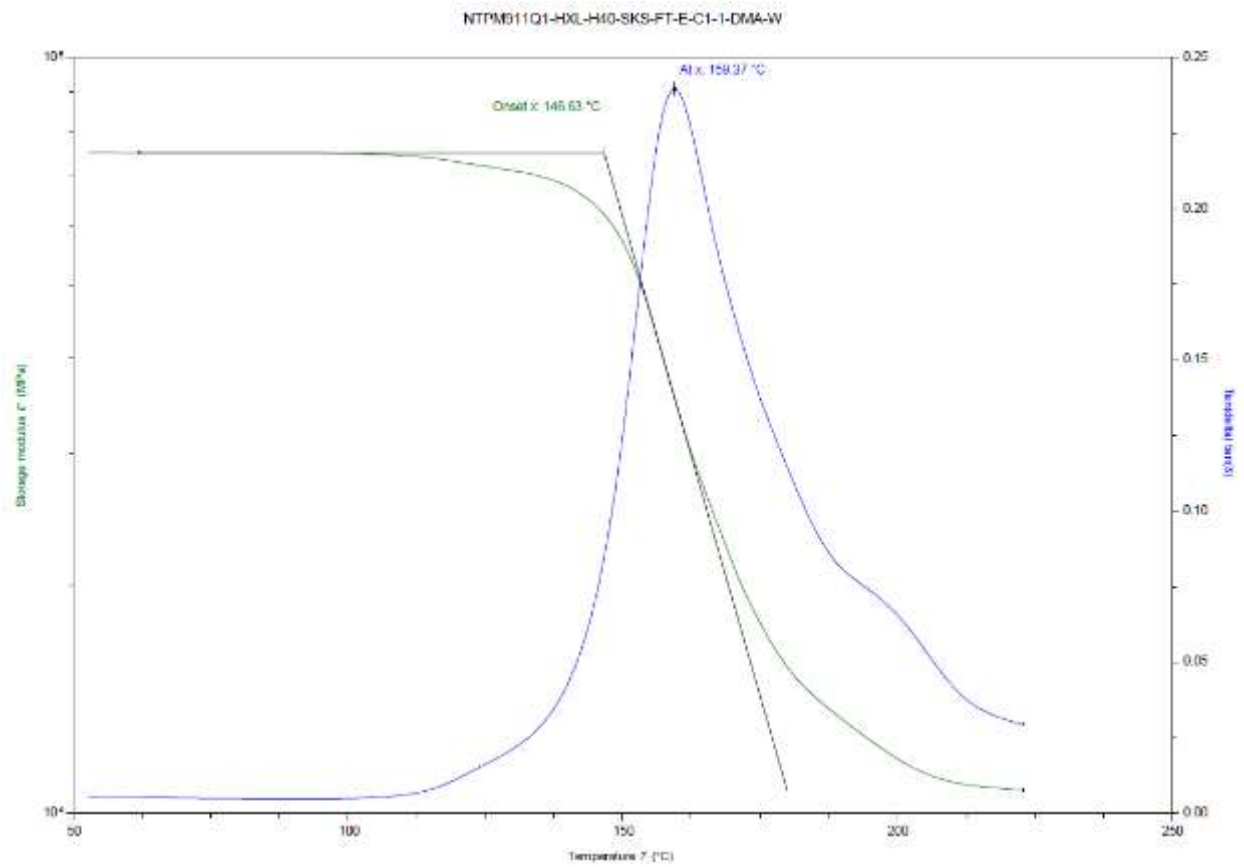
Representative graphs of DMA Wet profile from Batch A, B, C, D, and E are provided below.











10. Moisture Loss

Layup	Test Type	Test Temperature	Specimen ID	Weight Pre-Test (g)	Weight Post-Test (g)	Moisture Loss (g)
[0]15	WT	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-WT-A-C1-1-TRV	18.0364	18.0198	0.01660
[90]15	FT	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FT-A-C1-1-TRV	18.2882	18.2736	0.01460
[0]15	WC	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-WC-A-C1-1-TRV	18.025	18.0035	0.02150
[90]15	FC	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FC-A-C1-1-TRV	18.1272	18.1048	0.02240
[45/-45]4s	IPST	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-IPST-A-C2-1-TRV	19.8671	19.8375	0.02960
[0]24	IPSV	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-IPSV-A-C1-1-TRV	23.6649	23.6437	0.02120
[0]24	SBS	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SBS-A-C1-1-TRV	23.9322	23.9159	0.01630
[45/0/-45/90]2S	UNT1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNT1-A-C1-1-TRV	22.9201	22.9021	0.01800
[45/-45/0/45/-45/45/-45/90/45/-45]S	UNT2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNT2-A-C1-1-TRV	24.0939	24.0762	0.01770
[0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	UNT3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNT3-A-C1-1-TRV	21.5969	21.5753	0.02160
[45/0/-45/90]2S	UNC1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNC1-A-C1-1-TRV	18.5804	18.5676	0.01280
[45/-45/0/45/-45/45/-45/90/45/-45]S	UNC2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNC2-A-C1-1-TRV	23.2034	23.1811	0.02230
[0/90/45/0/90/0/90/-45/0/90]S	UNC3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-UNC3-A-C1-1-TRV	23.1053	23.0831	0.02220
[45/0/-45/90]2S	OHT1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHT1-A-C1-1-TRV	19.107	19.0955	0.01150
[45/-45/0/45/-45/45/-45/90/45/-45]S	OHT2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHT2-A-C1-1-TRV	24.0215	24.0113	0.01020
[0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	OHT3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHT3-A-C1-1-TRV	17.9337	17.9231	0.01060
[45/0/-45/90]2S	FHT1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHT1-A-C1-1-TRV	19.1567	19.1449	0.01180
[45/-45/0/45/-45/45/-45/90/45/-45]S	FHT2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHT2-A-C1-1-TRV	24.0583	24.0442	0.01410
[0/90/0/45/90/0/90/-45/90/0/90/45/0/90/0]	FHT3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHT3-A-C1-1-TRV	18.0109	17.9958	0.01510
[45/0/-45/90/45/0/-45/90/-45/90]S	OHC1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHC1-A-C1-1-TRV	24.2509	24.2325	0.01840
[45/-45/0/45/-45/45/-45/90/45/-45]S	OHC2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHC2-A-C1-1-TRV	24.3004	24.2777	0.02270
[0/90/45/90/0/0/90/-45/90/0]S	OHC3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-OHC3-A-C1-1-TRV	24.3399	24.3166	0.02330
[45/0/-45/90/45/0/-45/90/-45/90]S	FHC1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHC1-A-C1-1-TRV	24.2488	24.2257	0.02310
[45/-45/0/45/-45/45/-45/90/45/-45]S	FHC2	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHC2-A-C1-1-TRV	24.1401	24.1176	0.02250
[0/90/45/90/0/0/90/-45/90/0]S	FHC3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-FHC3-A-C1-1-TRV	24.3952	24.3701	0.02510
[45/0/-45/90/45/0]S	SSB1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB1-A-C1-1-TRV	19.437	19.4121	0.02490
[0/90/45/0/90/0]S	SSB3	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB3-A-C1-1-TRV	19.5057	19.4827	0.02300
[45/-45/45/-45/45/-45]S	SSB4	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB4-A-C1-1-TRV	19.5556	19.5282	0.02740
[45/0/-45/90/45/0]S	SSB1C1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB1C1-A-C1-1-TRV	19.4012	19.3767	0.02450
[0/90/45/0/90/0]S	SSB3C1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB3C1-A-C1-1-TRV	19.5339	19.5072	0.02670
[45/0/-45/90/45/0]S	SSB1E1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB1E1-A-C1-1-TRV	19.449	19.4278	0.02120
[45/0/-45/90/45/0]S	SSB1D1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB1D1-A-C1-1-TRV	19.5284	19.5021	0.02630
[45/0/-45/90]S	SSB1T1	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-SSB1T1-A-C1-1-TRV	20.2352	20.1966	0.03860
[0]21	ILT	ETW(180F)	NTPM911Q1-HXL-H40-NIAR-ILT-A-C1-1-TRV	20.5845	20.5696	0.01490

11. Deviations

Deviation from NTP M911Q1 Rev B test plan:

1. FHC1 and FHC2 have less than 18 specimens (3x2x3) reported in both RTA (70°F) and ETW (180°F) conditions due to invalid failure mode.
2. Batch 4 fill data (both Fill tension and Fill Compression) was generated from panels with an erroneous reference line, resulting in off-axis test specimens at about 8-10 degrees, thereby greatly misrepresenting the strength and modulus the material possess. Data was discarded. Moving forward, new panels are being cured to replaced these faulty datapoints. These will be re-tested, and the new dataset will be included in the Rev A of this report in the future.
3. For batch 4 of Warp Compression, C1 (14 plies) and C2 (16 plies) panels have ply counts that deviate from the configuration called out per the NCAMP Test Plan (NTP). The tested data was normalized based off the ply count that the NTP calls out (15 plies).