



**Syensqo (Formerly Solvay) EP2190 IMS65
Unitape Gr 145 RC 35%
Qualification Material Property Data Report
Phase 1, 2 and 3**

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

The use of NCAMP material and process specifications do 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 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 Phase 1, 2 and 3 material property data only. Statistical analysis of the Phase 1, 2 and 3 data including the calculations of b-basis values is given in a separate report, Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Material Allowables Statistical Analysis Report Phase 1, 2 and 3, NCP-RP-2022-002 Rev –. The qualification material was procured to a proprietary material specification which is an equivalent to NCAMP Material Specification NMS 219/1 Rev Initial Release dated November 4, 2021. The qualification test panels were fabricated per a proprietary process specification which is an equivalent to NCAMP Process Specification NPS 82190 Rev A dated April 1, 2022 using baseline cure cycle “C”. The NCAMP Test Plan NTP 2190Q1 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-17-1H. 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-17-1H are adequate for the given program.

Aircraft companies should not use the data published in this report without specifying NCAMP Material Specification NMS 219/1. NMS 219/1 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 219/1.* NMS 219/1 is a free, publicly available, non-proprietary aerospace industry material specification.

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

1.2 Symbols

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_1^{cu}	ultimate compressive strength, longitudinal / warp direction
F_1^{tu}	ultimate tensile strength, longitudinal / warp direction
F_2^{cu}	ultimate compressive strength, transverse / fill direction
F_2^{tu}	ultimate tensile strength, transverse / fill direction
SBS	short beam strength
ν_{12}^c	major Poisson's Ratio, compression
ν_{21}^c	minor Poisson's Ratio, compression
$F_{12}^{s5\% \text{ strain}}$	in-plane shear strength at 5% strain
$F_{12}^{s0.2\%}$	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
ETA	Elevated Temperature Ambient
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 Specimen Naming Format

Phase 1: All specimens were uniquely identified by a coded reference system. The reference system is described as follows:

Solvay Test Request Number – Test Panel ID – Test Type – Batch ID – Cure Cycle ID – Test Condition – Specimen Number

For example:

TR7599562-P1-LT-A-C1-CTA-1						
Solvay Test Request Number	Test Panel ID	Test Type	Prepreg Batch ID	Cure Cycle ID	Test Condition	Specimen Number

Figure 1-1: Naming Format

Phase 2 and Phase 3: All panels and specimens shall be uniquely identified by a 10 code reference system, cross referenced with descriptive identification information as follows:

This Document Number – Prepregger ID – Material Code – Fabricator ID – Test Type – Batch ID – Cure Cycle ID – Test Panel ID – Test Condition – Specimen Number.

For example:

NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-RTA-3									
Document Number	Prepregger ID	Material Code	Fabricator ID	Test Type	Prepreg Batch ID	Cure Cycle ID	Test Panel ID	Test Condition	Specimen Number

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:

- SACMA SRM 1R-94 – SACMA Recommended Test Method for Compressive Properties of Oriented Fiber-Resin Composites
- ASTM D790-17 – Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- 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 D5766/D5766M-11(2018) – 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 D6484/D6484M-14 – Standard Test Method for Open-Hole Compressive Strength of Polymer Matrix Composite Laminates
- ASTM D6742/D6742M-17 – Standard Practice for Filled-Hole Tension and Compression Testing of Polymer Matrix Composite Laminates
- ASTM D7028-07(2015) – Standard Test Method for Glass Transition Temperature (DMA Tg) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)
- ASTM D7136/D7136M-15 – 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

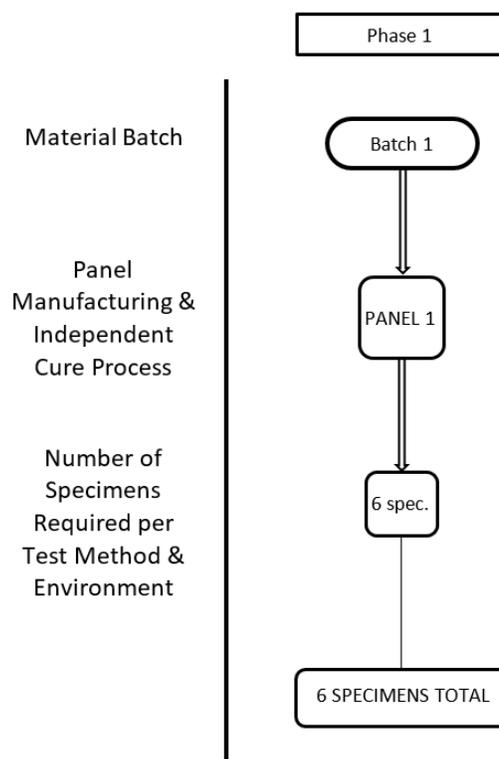
1.5 Methodology

1.5.1 Process Definition

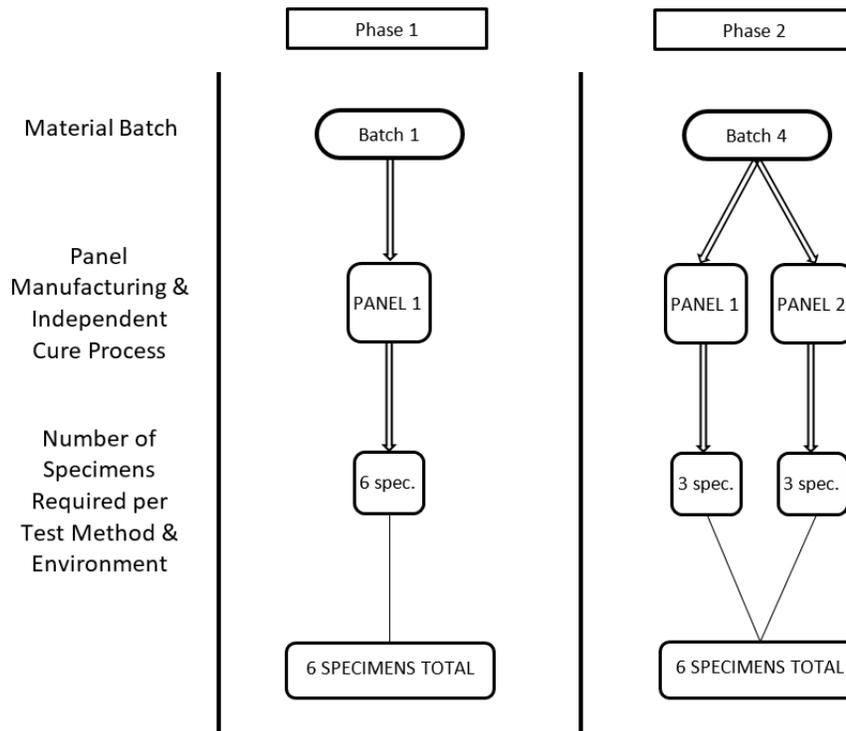
For each combination of test, batch and condition, the specimens were selected from the panels cured separately as shown in Figure 1-2 unless otherwise specified.

For Phase 1, the panels 1, 2, and 3 may be cured in a single cure cycle. For Phase 2 and Phase 3, the specimens will be taken from a minimum of two separate panels cured separately. The term "cure cycle" means a single run through the autoclave or oven, with same processing parameters. The specimen selection methodology in Figure 1-2 will be presented in "Number of Batches x Number of Cure Process x Number of Specimens" format throughout this document. Specifically, Figure 1-2 depicts a 3x1x6 specimen (Phase 1) and a 1x2x3 specimen (Phase 2) selection methodology. If more than 2 panels are required to obtain the minimum specimens, the additional panel(s) shall be labeled accordingly (see section 1.3) and approximately equal number of specimens should be tested from each panel.

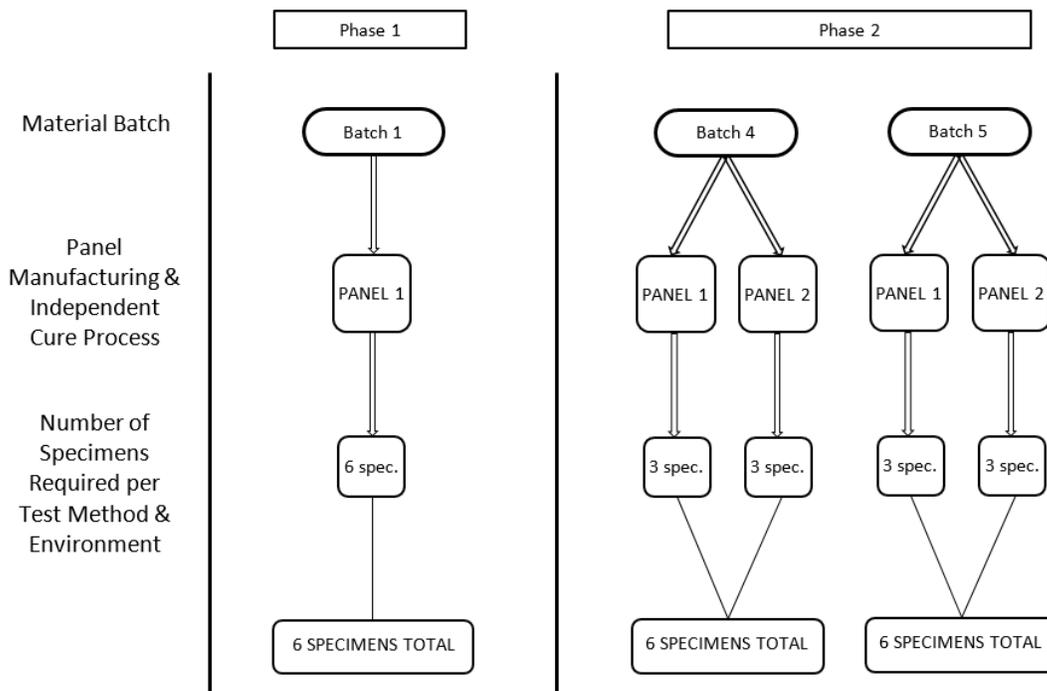
Phase 1: 1x1x6



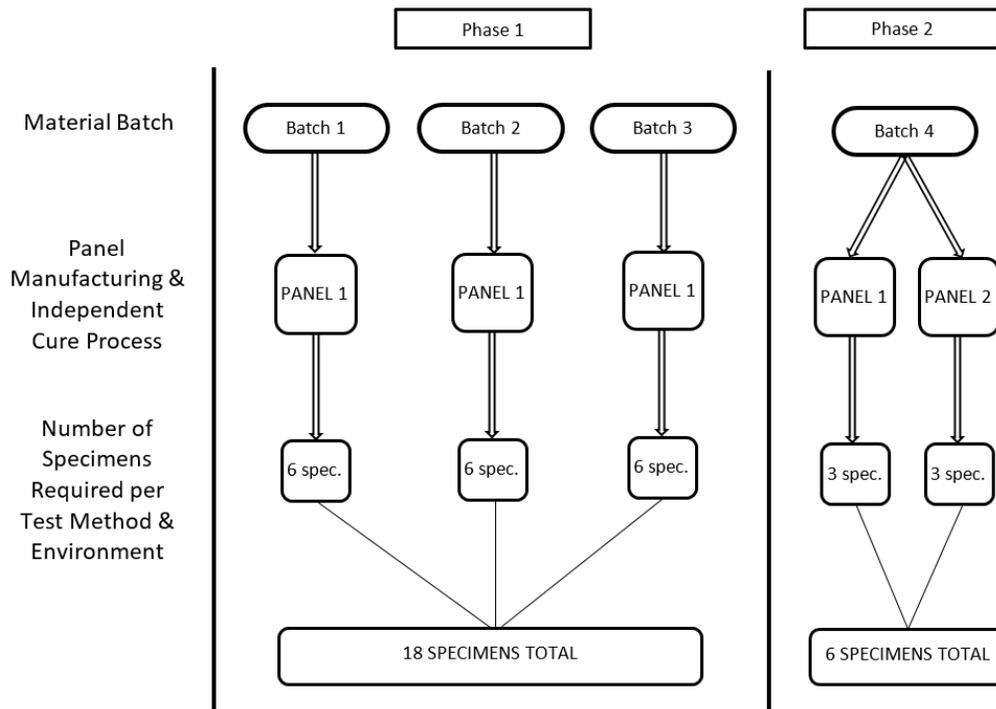
Phase 1: 1x1x6, Phase 2: 1x2x3



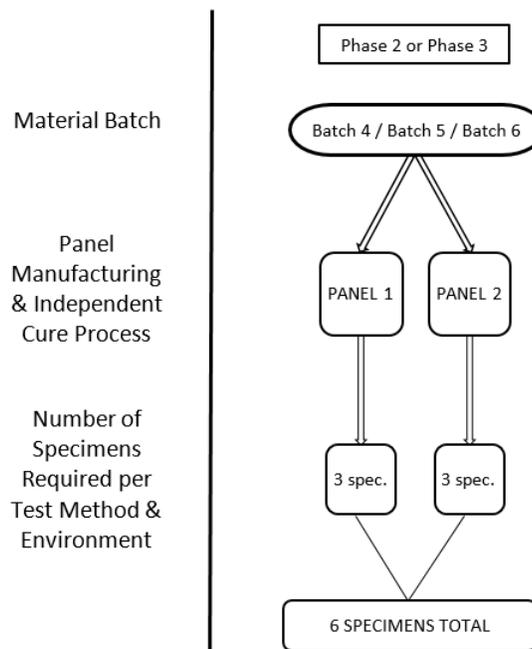
Phase 1: 1x1x6, Phase 2: 2x2x3



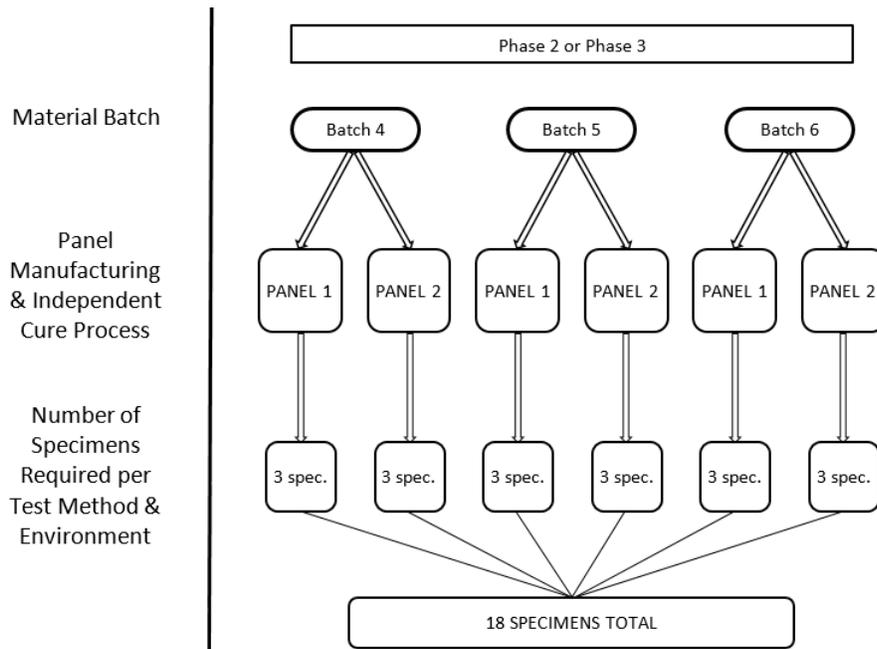
Phase 1: 3x1x6, Phase 2: 1x2x3



Phase 1: -, Phase 2 or Phase 3: 1x2x3



Phase 1: -, Phase 2 or Phase 3: 3x2x3



Notes:

- P1 – Phase 1 to be completed by Solvay, Anaheim CA.
- P2 – Phase 2 to be completed by Solvay, Anaheim CA.
- P3 – Phase 3 to be completed by Solvay, Anaheim CA.

Figure 1-2: Specimen Selection Methodology

All panels were fabricated in accordance with NCAMP Process Specification NPS 82190 using baseline cure cycle "C".

In order to facilitate individual specimen trace ability, individual specimen numbering and/or skewed lines were written or drawn across each sub-panel as shown in Figure 1-3.

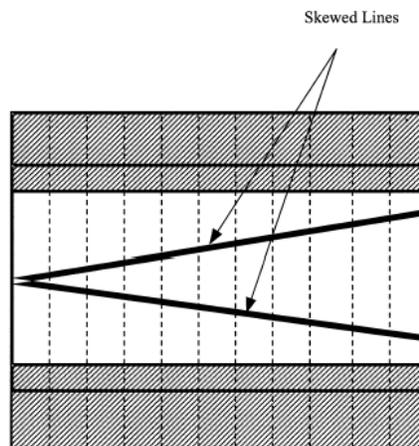


Figure 1-3: Specimen Traceability Line

1.5.2 Specimen & Testing Details

1.5.2.1 Tabbing

Tabs were used for Warp/Fill Tension and Warp/Fill Compression Strength specimens.

1. For Longitudinal/Transverse Tension tests:
 - CTA and RTA: G11 tabs material with MB-1113 adhesive cured at 250°F for 1.5hours.
 - ETW1 (180°F): G11 tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.
 - ETA2/ETW2 (225°F): G11 tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.
 - ETA3/ETW3 (250°F): G11 tabs material with FM400 adhesive cured at 350°F for 1.5hours. Solvay has done preliminary study to show no impact with this tabbing cure temperature and duration.
2. For Longitudinal/Transverse Compression Strength tests:
 - CTA and RTA: 970 T300 PW tabs material with MB-1113 adhesive cured at 250°F for 1.5hours.
 - ETW1 (180°F): 970 T300 PW tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.
 - ETA2/ETW2 (225°F): 970 T300 PW tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.
 - ETA3/ETW3 (250°F): 970 T300 PW tabs material with FM400 adhesive cured at 350°F for 1.5hours. Solvay has done preliminary study to show no impact with this tabbing cure temperature and duration

1.5.2.2 Specimen Dimensions & Test Configuration

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

For filled-hole tension specimens, the fasteners were installed at a torque of 85±5 in-lb beyond the prevailing torque of the fastener. For bearing specimens, the fasteners were installed 30±5 in-lb beyond the prevailing torque of the fastener. For filled-hole compression specimens, the fasteners were installed at a torque of 20±5 in-lb (instead of 30±5 in-lb per test plan) beyond the prevailing torque of the fastener. The lower torque value was used for all FHC test method to induce good failures.

For moisture conditioned specimens, fasteners were installed after moisture conditioning.

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

For filled-hole and bearing specimens, the hole diameter was 0.25 in -0.000 +0.0003 in. The fasteners used for filled-hole and bearing testing are listed in Table 1-1 below.

Test Method	Bolt	Countersink Washer (Head-Side)	Flat Washer (Nut-Side)	Nut	Torque (in-lb)
FHT1	NASM21297	MS21206-C4	MS21206-4	MS21084	85 ± 5
FHT2					85 ± 5
FHT3					85 ± 5
FHC1	NASM21297	MS21206-C4	MS21206-4	MS21084	20 ± 5*
FHC2					20 ± 5*
FHC3					20 ± 5*
SSB1	NASM21297	MS21206-C4	MS21206-4	MS21084	30 ± 5
SSB2					30 ± 5
SSB3					30 ± 5

*Lower torque value of 20±5 in-lb (instead of 30±5 in-lb per test plan) was used for all FHC test method to induce good failures.

Table 1-1: Fastener Identifications

1.5.2.3 Specimen Strain Device Used

Corresponding Gage ID can be obtained from Appendix 1 of NTP 2190Q1.

Test Type	Test Method and Direction	Property	Instrumentation Used	Equivalent Instrumentation ⁽¹⁾
LT	ASTM D3039 0° Tension (with tabs)	Strength, Modulus & Poisson's Ratio	Phase 1 HBM-1-XY31-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-XY31-6/350 (CTA, RTA, ETA3, ETW1, ETW2)	HBM-1-LY61-6/350 or Extensometer
LCM	SACMA SRM 1R-94 0° Compression	Modulus	Phase 1 HBM-1-LY91-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-LY91-6/350 (CTA, RTA, ETA2, ETA3, ETW1, ETW2, ETW3)	HBM-1-LY71-3/350 or Extensometer
TT	ASTM D3039 90° Tension (with tabs)	Strength, Modulus & Poisson's Ratio	Phase 1 HBM-1-XY31-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-XY31-6/350 (CTA, RTA, ETA3, ETW1, ETW2)	HBM-1-LY61-6/350 or Extensometer
TCM	SACMA SRM 1R-94 90° Compression	Modulus	Phase 1 HBM-1-LY91-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-LY91-6/350 (CTA, RTA, ETA2, ETA3, ETW1, ETW2)	HBM-1-LY71-3/350 or Extensometer
IPS	ASTM D3518 In-Plane Shear	0.2% Offset Strength, 5% Strain Strength & Modulus	Phase 1 HBM-1-XY31-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-XY31-6/350 (CTA, RTA, ETW1, ETW2, ETW3)	Extensometer
OFLEX	ASTM D790 Proc. A 0° Flexural (32:1)	Strength & Modulus	Phase 1 Deflectometer (RTA/ETA3) Phase 2 Deflectometer (RTA, ETA2, ETA3, ETW2)	HBM-1-LY91-3/350
UNT1	ASTM D5766 Unnotched Tension	Strength & Modulus	Phase 1 HBM-1-LY61-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-XY31-6/350 (CTA); HBM-1-LY61-6/350 (RTA, ETA2, ETW1, ETW2)	Extensometer

Test Type	Test Method and Direction	Property	Instrumentation Used	Equivalent Instrumentation ⁽¹⁾
UNT2	ASTM D5766 Unnotched Tension	Strength & Modulus	Phase 3 HBM-1-LY61-6/350 (CTA, RTA, ETW1, ETW2)	HBM-1-XY31-6/350 or Extensometer
UNT3	ASTM D5766 Unnotched Tension	Strength & Modulus	Phase 3 HBM-1-LY61-6/350 (CTA, RTA, ETW1, ETW2)	HBM-1-XY31-6/350 or Extensometer
UNC1	ASTM D6484 Unnotched Compression	Strength & Modulus	Phase 1 HBM-1-LY61-6/350 (CTA/RTA/ETA3) Phase 2 HBM-1-LY61-6/350 (CTA, RTA, ETA2, ETW1, ETW2, ETW3)	HBM-1-LY71-3/350 or Extensometer
UNC2	ASTM D6484 Unnotched Compression	Strength & Modulus	Phase 3 HBM-1-LY91-6/350 (RTA, ETA2, ETA3); HBM-1-LY91-6/350 & HBM-1-LY61-6/350 (ETW1, ETW2, ETW3)	HBM-1-LY71-3/350 or Extensometer
UNC3	ASTM D6484 Unnotched Compression	Strength & Modulus	Phase 3 HBM-1-LY91-6/350 (RTA, ETA2, ETA3, ETW1); HBM-1-LY91-6/350 & HBM-1-L61-6/350 (ETW2, ETW3)	HBM-1-LY71-3/350 or Extensometer
SSB1	ASTM D5961 Proc. C Single Shear Bearing	Strength & Deformation	Phase 2 Extensometer (CTA, RTA, ETW1, ETW2 & ETW3)	-
SSB2	ASTM D5961 Proc. C Single Shear Bearing	Strength & Deformation	Phase 3 Extensometer (RTA, ETW1, ETW2 & ETW3)	-
SSB3	ASTM D5961 Proc. C Single Shear Bearing	Strength & Deformation	Phase 3 Extensometer (RTA, ETW1, ETW2 & ETW3)	-

Note:

(1) "Equivalent" corresponds to equivalent active strain gage grid size. Using different active strain gage size may add variability into the test results that may result in Equivalency failure.

Table 1-2: Strain Instrumentation Identifications

1.5.2.4 Additional items

SBS span of 4T was used.

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 and Direction	Property	Process/ Testing Phase (P)	Number of Batches x Number of Panels x Number of Test Specimens						
				Test Temperature/Moisture Condition						
				CTA (-67°F)	RTA (75°F)	ETA2 (225°F)	ETA3 (250°F)	ETW1 (180°F)	ETW2 (225°F)	ETW3 (250°F)
[0] ₈	ASTM D3039 0° Tension (with tabs) ¹	Strength, Modulus and Poisson's Ratio	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3		2x2x3	3x2x3	3x2x3	
[90] ₁₆	ASTM D3039 90° Tension (with tabs) ¹	Strength, Modulus and Poisson's Ratio	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3		2x2x3	3x2x3	3x2x3	
[0] ₈	SACMA SRM 1R-94 0° Compression (with tabs) ²	Strength	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	3x2x3
[0] ₈	SACMA SRM 1R-94 0° Compression	Modulus	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	3x2x3
[90] ₈	SACMA SRM 1R-94 90° Compression (with tabs) ²	Strength	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	
[90] ₈	SACMA SRM 1R-94 90° Compression	Modulus	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	
[45/-45] _{2S}	ASTM D3518 In-Plane Shear	0.2% Offset Strength, 5% Strain Strength & Modulus	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3			3x2x3	3x2x3	3x2x3
[0] ₄₄	ASTM D2344 Short Beam Strength	Strength	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	3x2x3
[0] ₁₂	ASTM D790 Procedure A ³ 0° Flexural (32:1)	Strength and Modulus	P1		3x1x6		1x1x6			
			P2		1x2x3	1x2x3	2x2x3		3x2x3	

Notes:

P1 – Phase 1 test matrix (test panels/ specimens fabrication and testing) completed by Solvay, Anaheim CA.

P2 – Phase 2 test matrix (test panels/ specimens fabrication and testing) completed by Solvay, Anaheim CA.

(1) For Tension tests with tabs required:

CTA and RTA: G11 tabs material with MB-1113 adhesive cured at 250°F for 1.5hours.

ETW1 (180°F): G11 tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.

ETA2/ETW2 (225°F): G11 tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.

ETA3/ETW3 (250°F): G11 tabs material with FM400 adhesive cured at 350°F for 1.5hours. (Solvay has done preliminary study to show no impact with this tabbing cure temperature and duration)

(2) For Compression tests with tabs required:

CTA and RTA: 970 T300 PW tabs material with MB-1113 adhesive cured at 250°F for 1.5hours.

ETW1 (180°F): 970 T300 PW tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.

ETA2/ETW2 (225°F): 970 T300 PW tabs material with FM300-2 adhesive cured at 250°F for 1.5hours.

ETA3/ETW3 (250°F): 970 T300 PW tabs material with FM400 adhesive cured at 350°F for 1.5hours. (Solvay has done preliminary study to show no impact with this tabbing cure temperature and duration)

(3) For Flexural normalization calculation, see section 1.5.8 for details.

Table 1-3: Lamina Level Test Matrix

Table 1-4 below summarizes the laminate level tests carried out. The layup angles 0° , 45° , -45° , and 90° refer to the orientation of the warp/longitudinal fiber direction. The laminate stacking sequences in this program are not specific to any design. Therefore, careful consideration should be given to the validity of properties derived from this program based on the design specific laminates in a structure to be certified.

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

(%0°/%±45°/%90°) Actual Test Type	Test Type and Direction (4)	Property	Process/ Testing Phase (P)	Number of Batches x Number of Panels x Number of Test Specimens						
				Test Temperature/Moisture Condition						
				CTA (-67°F)	RTA (75°F)	ETA2 (225°F)	ETA3 (250°F)	ETW1 (180°F)	ETW2 (225°F)	ETW3 (250°F)
(25/50/25 - QI) UNT1	ASTM D5766 No Hole Tension [45/0/-45/90]S	Strength and Modulus	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3		3x2x3	3x2x3	
(10/80/10) UNT2	ASTM D5766 No Hole Tension [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength and Modulus	P3	3x2x3	3x2x3			3x2x3	3x2x3	
(50/40/10) UNT3	ASTM D5766 No Hole Tension [45/-45/0/0/0/45/90/-45/0/0]S	Strength and Modulus	P3	3x2x3	3x2x3			3x2x3	3x2x3	
(25/50/25 - QI) UNC1	ASTM D6484 No Hole Compression [45/0/-45/90]2S	Strength and Modulus	P1	1x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3		3x2x3	3x2x3	3x2x3
(10/80/10) UNC2	ASTM D6484 No Hole Compression [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength and Modulus	P3		3x2x3	1x2x3	1x2x3	3x2x3	3x2x3	3x2x3
(50/40/10) UNC3	ASTM D6484 No Hole Compression [45/-45/0/0/0/45/90/-45/0/0]S	Strength and Modulus	P3		3x2x3	1x2x3	1x2x3	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) OHT1	ASTM D5766 Open Hole Tension (1) [45/0/-45/90]S	Strength	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	
(10/80/10) OHT2	ASTM D5766 Open Hole Tension (1) [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength	P3	3x2x3	3x2x3			1x2x3	3x2x3	
(50/40/10) OHT3	ASTM D5766 Open Hole Tension (1) [45/-45/0/0/0/45/90/-45/0/0]S	Strength	P3	3x2x3	3x2x3			1x2x3	3x2x3	
(25/50/25 - QI) FHT1	ASTM D6742 Filled Hole Tension (2) [45/0/-45/90]S	Strength	P2	3x2x3	3x2x3			3x2x3	3x2x3	
(10/80/10) FHT2	ASTM D6742 Filled Hole Tension (2) [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength	P3	3x2x3	3x2x3			1x2x3	3x2x3	
(50/40/10) FHT3	ASTM D6742 Filled Hole Tension (2) [45/-45/0/0/0/45/90/-45/0/0]S	Strength	P3	3x2x3	3x2x3			1x2x3	3x2x3	
(25/50/25 - QI) OHC1	ASTM D6484 Open Hole Compression (1) [45/0/-45/90]2S	Strength	P1	3x1x6	3x1x6		1x1x6			
			P2	1x2x3	1x2x3	1x2x3	2x2x3	3x2x3	3x2x3	3x2x3
(10/80/10) OHC2	ASTM D6484 Open Hole Compression (1) [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength	P3		3x2x3	1x2x3	1x2x3	3x2x3	3x2x3	3x2x3
(50/40/10) OHC3	ASTM D6484 Open Hole Compression (1) [45/-45/0/0/0/45/90/-45/0/0]S	Strength	P3		3x2x3	1x2x3	1x2x3	3x2x3	3x2x3	3x2x3
(25/50/25 - QI) FHC1	ASTM D6742 Filled Hole Compression (2) [45/0/-45/90]2S	Strength	P2	3x2x3	3x2x3			3x2x3	3x2x3	
(10/80/10) FHC2	ASTM D6742 Filled Hole Compression (2) [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength	P3		3x2x3			1x2x3	3x2x3	
(50/40/10) FHC3	ASTM D6742 Filled Hole Compression (2) [45/-45/0/0/0/45/90/-45/0/0]S	Strength	P3		3x2x3			1x2x3	3x2x3	
(25/50/25 - QI) SSB1	ASTM D5961 Procedure C (3) Single Shear Bearing, e/D=3 [45/0/-45/90]2S	Strength and Deformation	P2	3x2x3	3x2x3			3x2x3	3x2x3	3x2x3
(10/80/10) SSB2	ASTM D5961 Procedure C (3) Single Shear Bearing, e/D=3 [45/-45/0/45/-45/90/45/-45/45/-45]S	Strength and Deformation	P3		3x2x3			3x2x3	3x2x3	3x2x3
(50/40/10) SSB3	ASTM D5961 Procedure C (3) Single Shear Bearing, e/D=3 [45/-45/0/0/0/45/90/-45/0/0]S	Strength and Deformation	P3		3x2x3			3x2x3	3x2x3	3x2x3
(25/50/25 - QI) CAI1	ASTM D7136 & D7137 Compression After Impact (270 in-lb) [45/0/-45/90]4S	Strength	P1	1x1x6	3x1x6		1x1x6			
			P2			1x2x3		3x1x6	3x1x6	

Table 1-4: Laminate Level Test Matrix

Notes:

P1 – Phase 1 test matrix (test panels/ specimens fabrication and testing) completed by Solvay, Anaheim CA.

P2 – Phase 2 test matrix (test panels/ specimens fabrication and testing) completed by Solvay, Anaheim CA.

P3 – Phase 3 test matrix (test panels/ specimens fabrication and testing) completed by Solvay, Anaheim CA.

(1) Open-hole configuration: 0.25" hole diameter, 1.5" width.

(2) Filled-hole configuration: 0.25" hole diameter, see section 1.5.2 for fastener callout, 1.5" width.

(3) Single shear bearing test configuration: 0.25" hole diameter, 1.5" width, see section 1.5.2 for fastener callout, $e/D=3$, ASTM D5961/D5961M-17 Procedure C.

(4) Loading direction is generally along the 0-degree direction.

1.5.4 Cured Laminate Physical Testing

The properties in Table 1-5 were determined for each panel used for test coupons with the exception of Tg by DMA which were conducted on one laminate per batch from each cure cycle conducted where that batch is present. The tests were performed by the Solvay (Phase 1 – 3 batches of material and Phase 2 /Phase 3 – Additional 3 batches of material) under the supervision of NCAMP.

Property	Condition/Method (Note 1)	Min Replicates per panel
Cured Ply Thickness	ASTM D3171-15	All data from mechanical test specimens
Laminate Density	ASTM D792-13	Per Note 5
Fiber Volume, % by Volume	ASTM D3171-15 (Note 2)	Per Note 5
Resin Content, % by Weight	ASTM D3171-15 (Note 2)	Per Note 5
Void Content, % by Volume	ASTM D3171-15	Per Note 5
Ultrasonic Through Transmission, C-Scan	MIL-HDBK-787A (Note 3)	1
Glass Transition Temperature, Tg by DMA flexural loading	Dry and Wet – ASTM D7028-07(2015)	1 Dry, 1 Wet (Note 4)

Table 1-5: 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 and reported in the final test report.

Note 2: Method I, Procedure B for all the panels.

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

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

DRY: minimum 3 dry DMA per batch (A, B, C) and minimum 5 dry DMA per batch (D, E, F). One DMA specimen is to be machined from a panel.

WET: minimum 8 wet DMA per batch (D, E, F). One DMA specimen is to be machined from a panel.

Note 5: Phase 1: A minimum of 3 samples per batch (A, B, C).

Phase 2: A minimum of 3 samples per panel (D, E, F).

Phase 3: A minimum of 3 samples per panel (D, E, F).

1.5.5 Environmental Conditioning

The following tests were performed by the Solvay Test Facility, Anaheim CA under the supervision of NCAMP.

CTA = -67°F±5°F, ambient
 RTA = 75°F±5°F, ambient
 ETA2 = 225°F±5°F, ambient
 ETA3 = 250°F±5°F, ambient
 ETW1 = 180°F±5°F, wet (equilibrium moisture content per section 1.5.5)
 ETW2 = 225°F±5°F, wet (equilibrium moisture content per section 1.5.5)
 ETW3 = 250°F±5°F, wet (equilibrium moisture content per section 1.5.5)

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 will be exposed at 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 to 130 hours before being conditioned to equilibrium at 160°F±5°F and 85%±5%RH. Effective moisture equilibrium is achieved when the average moisture content of the traveler specimen changes by less than 0.02% for two consecutive determinations which are 7 ±0.5 days apart and may be expressed by:

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

Where:

W_i = weight at current time
 W_{i-1} = weight at previous time
 W_b = baseline weight prior to conditioning

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

1.5.6 Non-ambient Testing

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

For elevated temperature testing, the temperature chamber, test fixture, and grips were preheated to the specified temperature. Each specimen was heated to the required test temperature as verified by a thermocouple in direct contact with and taped to the specimen gage section.

For elevated temperature ambient (ETA2/ETA3) testing, test specimens were in the elevated temperature environment minimum 5 minutes prior to loading. During the test, the temperature, as measured on the specimen, shall be within $\pm 5^{\circ}\text{F}$ of the required test temperature

For elevated temperature wet (ETW1/ETW2/ETW3) testing, the heat-up time of the specimen shall not exceed 5 minutes. The test should start 5_{-0}^{+1} minutes after the specimen has reached the test temperature. During the test, the temperature, as measured on the specimen, shall be 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 10 ± 5 minutes after the specimen reached the test temperature. During the test, the temperature, as measured on the specimen, shall be within $\pm 5^{\circ}\text{F}$ of the required test temperature.

1.5.7 Fluid Sensitivity Screening

Fluid Sensitivity Screening was completed in Phase 2. Solvay fabricated and conformed the panel, machined and conformed the specimens prior shipping it to NIAR. The soak and mechanical testing was performed by NIAR Composites Laboratory, Wichita KS.

Table 1-6 lists the requirements for fluid sensitivity screening, which requires ASTM D2344 Short Beam Strength testing on $[0^\circ]_{44}$ lamina level specimens 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.

Extended Contact:	Exposure	Test Condition	Code
100 Low Lead Aviation Fuel (ASTM D910)	90 days min. @ 70°F±10°F	70°F	FS11RT
	90 days min. @ 70°F±10°F	180°F	FS11ET
ASTM D1655 Jet A Fuel (other jet fuel may be used but its type must be reported)	90 days min. @ 70°F±10°F	70°F	FS12RT
	90 days min. @ 70°F±10°F	180°F	FS12ET
MIL-PRF-5606 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	FS13RT
	90 days min. @ 70°F±10°F	180°F	FS13ET
MIL-PRF-83282 Hydraulic Oil	90 days min. @ 70°F±10°F	70°F	FS14RT
	90 days min. @ 70°F±10°F	180°F	FS14ET
MIL-PRF-7808 Engine Oil	90 days min. @ 70°F±10°F	70°F	FS15RT
	90 days min. @ 70°F±10°F	180°F	FS15ET
MIL-PRF-23699, Class STD Engine Oil	90 days min. @ 70°F±10°F	70°F	FS16RT
	90 days min. @ 70°F±10°F	180°F	FS16ET
Salt 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 5, (SAE AS1241, Type V)	90 days min. @ 70°F±10°F	70°F	FS18RT
	90 days min. @ 70°F±10°F	180°F	FS18ET
50% Water with 50% Skydrol 5, (SAE AS1241, Type V)	90 days min. @ 70°F±10°F	70°F	FS19RT
	90 days min. @ 70°F±10°F	180°F	FS19ET
Short Duration Contact:			
MEK washing fluid. ASTM D740	90 minutes min. @ 70°F±10°F	70°F	FS21RT
	90 minutes min. @ 70°F±10°F	180°F	FS21ET
Polypropylene Glycol Deicer (Type I) SAE AMS 1424	90 minutes min. @ 70°F±10°F	70°F	FS22RT
	90 minutes min. @ 70°F±10°F	180°F	FS22ET
Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F	70°F	FS23RT
	48±4 hours @70°F±10°F	180°F	FS23ET
Control Tests:			
Distilled Water	90 days min. at 70°F±10°F	70°F	FS31RT
	90 days min. at 70°F±10°F	180°F	FS31ET
Dry	Dry per section 6.1 Test Plan NTP 2190Q1	70°F	FS32RT
	Dry per section 6.1 Test Plan NTP 2190Q1	180°F	FS32ET
85% Relative Humidity	Per section 6.1 Test Plan NTP 2190Q1	70°F	FS33RT
	Per section 6.1 Test Plan NTP 2190Q1	180°F	FS33ET

Table 1-6: 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
- 90° compressive strength and modulus
- In-plane shear strength and modulus
- Poisson's ratio
- SBS
- 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 0.005600 inches has been used as the nominal cured ply thickness (CPT) for normalization purpose. The following normalization formula was used (except for Flexural properties):

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

Flexural Test Normalization:

$$\text{Flexural Normalized Value} = \text{Measured Value} \times (\text{Measured CPT}^2) / (\text{Nominal CPT}^2)$$

For Solvay EP2190 IMS65 Unitape Gr 145 RC 35% material the anticipated CPT was 0.005600 inches. The average as measured CPT of the qualification for all test panels (Phase 1, 2 and 3) was 0.005763 inches. The lowest and highest CPT measured were 0.005275 inches and 0.006376 inches respectively.

1.5.9 Inspection Verification

The 3-batch qualification for all 3 phases test 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.

All 3 phases testing was witnessed by NCAMP AER. Test setup and witnessing was delegated to an NCAMP AER. Mechanical testing was carried out at the Solvay Test Facility, Anaheim CA. 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. This template is in Microsoft Excel file format.

2. Test Results

Variability between batches was observed in the data and it was investigated, this variability was due to the moisture absorbed by the panels/specimens at ambient laboratory condition. Some of the batches were tested soon after panel fabrication and a few batches were tested months after panel fabrication because of the magnitude of the Qualification program and laboratory capacity, testing laboratory facility processed the panels/specimens by material batch. The variability and trend was also observed in several material properties and DMA data. CTA(-67°F), RTA(75°F), ETA2(225°F) and ETA3(250°F) ambient test temperatures were the test conditions for this Qualification program. The variability in the properties met the ambient requirements per the test plan and it was more conservative therefore it was included and reported.

Some of the batches also had lower FAW even though it was within the material specification limits, this also contributed to the variability in LT properties. This was investigated and the data was reported as-is, since it would be a good representative of actual production batches. Hence, the LT properties coefficient of variation is deemed to be adequate.

2.1 Lamina Level Test Summary

Prepreg Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Material Specification: NMS 219/1 Process Specification: NPS 82190 Fiber: 24K IMS65 Unitape Resin: EP2190 *Tg(dry): 337.71°F Tg(wet): 286.78°F Tg METHOD: ASTM D7028										Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Lamina Properties Summary				
LAMINA MECHANICAL PROPERTY SUMMARY Data reported as: Normalized & Measured (Normalized by CPT=0.005600 inch)														
Property	CTA(-67°F) Mean		RTA(75°F) Mean		ETA2(225°F) Mean		ETA3(250°F) Mean		ETW1(180°F) Mean		ETW2(225°F) Mean		ETW3(250°F) Mean	
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F ₁ ^{tu} [ksi]	421.0	406.7	430.6	415.8			401.5	388.3	384.0	380.9	361.9	355.7		
E ₁ ^t [Msi]	22.68	21.90	22.81	22.04			23.04	22.28	22.67	22.47	22.74	22.35		
ν ₁₂ ^t		0.3219		0.3299				0.3301		0.3416		0.3363		
F ₂ ^{tu} [ksi]		10.27		11.14				7.926		5.368		4.113		
E ₂ ^t [Msi]		1.413		1.255				1.078		1.114		0.8621		
ν ₂₁ ^t		0.02446		0.01683				0.01500		0.01722		0.01222		
F ₁ ^{cu} [ksi]	242.8	231.7	218.1	207.7	163.7	159.1	143.3	138.1	169.6	166.2	132.1	130.1	108.3	106.0
E ₁ ^c [Msi]	20.16	19.42	20.56	19.72	20.12	19.62	20.68	20.33	21.15	20.73	20.86	20.74	21.06	20.87
F ₂ ^{cu} [ksi]		50.70		41.31		27.14		27.75		29.15		26.37		
E ₂ ^c [Msi]		1.677		1.503		1.199		1.185		1.364		1.194		
F ₁₂ ^{s0.2%} [ksi]		9.316		6.187				4.072		3.904		2.683		2.237
F ₁₂ ^{s5%strain} [ksi]		13.69		10.63				6.958		6.259		4.524		3.923
G ₁₂ ^s [Msi]		0.8078		0.6053				0.4303		0.4169		0.2782		0.2226
SBS [ksi]		16.77		12.64		8.173		7.724		7.006		6.101		5.384
0° Flex Proc. A Strength [ksi]			280.5	258.0	218.9	209.1	203.9	191.8			170.0	165.6		
0° Flex Proc. A Modulus [Msi]			22.83	21.53	20.45	19.54	20.12	19.13			19.75	19.24		

* Specimens might absorb moisture at ambient condition prior to testing which resulted in lower dry Tg, DMA testing took place weeks/months after panel fabrication. Based on Syensqo's batch release historical data, dry Tg is ~ 192°C (377°F) to 208°C (406°F).

Table 2-1: Lamina Summary Data

2.2 Laminate Level Test Summary

Prepreg Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Material Specification: NMS 219/1 Process Specification: NPS 82190 Fiber: 24K IMS65 Unitape				Resin: EP2190				Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Laminate Properties Summary	
*Tg(dry): 337.71°F				Tg(wet): 286.78°F				Tg METHOD: ASTM D7028	
LAMINATE MECHANICAL PROPERTY SUMMARY Data reported as: Normalized & Measured (Normalized by CPT=0.005600 inch)									
Property	Layup	25/50/25		10/80/10		50/40/10			
	Test Condition	Normalized	Measured	Normalized	Measured	Normalized	Measured		
OHT Strength [ksi]	CTA (-67°F)	71.23	69.07	55.39	53.71	127.1	123.6		
	RTA (75°F)	74.75	71.94	50.35	48.90	135.1	131.2		
	ETA2 (225°F)	75.01	73.72						
	ETA3 (250°F)	78.19	76.08						
	ETW1 (180°F)	75.02	73.53	46.95	45.08	160.3	154.5		
	ETW2 (225°F)	78.62	77.90	45.03	43.66	155.5	151.3		
OHC Strength [ksi]	CTA (-67°F)	54.20	52.30						
	RTA (75°F)	48.10	46.28	38.24	37.11	70.00	67.76		
	ETA2 (225°F)	41.14	40.42	30.38	29.17	62.39	59.82		
	ETA3 (250°F)	38.67	37.62	28.73	27.62	57.49	55.04		
	ETW1 (180°F)	39.91	39.59	29.10	28.22	57.86	56.02		
	ETW2 (225°F)	34.88	34.47	23.63	22.92	49.55	47.94		
	ETW3 (250°F)	32.31	32.06	20.96	20.34	43.67	42.25		
UNT Strength [ksi]	CTA (-67°F)	111.6	107.3	89.59	87.06	244.2	237.2		
	RTA (75°F)	135.0	128.8	84.19	81.51	242.7	235.4		
	ETA2 (225°F)	146.3	142.7						
	ETA3 (250°F)	153.6	146.2						
	ETW1 (180°F)	125.3	121.9	74.42	72.25	225.1	218.5		
	ETW2 (225°F)	129.0	126.1	66.20	64.28	227.4	221.0		
UNT Modulus [Msi]	CTA (-67°F)	8.450	8.115	5.485	5.330	13.08	12.70		
	RTA (75°F)	8.384	7.999	5.118	4.955	13.21	12.81		
	ETA2 (225°F)	8.216	8.017						
	ETA3 (250°F)	8.343	7.941						
	ETW1 (180°F)	8.263	8.042	4.806	4.666	13.04	12.66		
	ETW2 (225°F)	8.185	7.996	4.538	4.407	13.18	12.80		

Property	Layup	25/50/25		10/80/10		50/40/10	
	Test Condition	Normalized	Measured	Normalized	Measured	Normalized	Measured
UNC Strength [ksi]	CTA (-67°F)	110.5	107.0				
	RTA (75°F)	87.63	84.28	66.01	63.90	139.0	134.7
	ETA2 (225°F)	62.48	61.06	50.91	48.68	98.30	93.54
	ETA3 (250°F)	74.49	71.18	49.70	47.48	106.3	101.5
	ETW1 (180°F)	67.02	66.23	49.98	48.40	99.99	96.96
	ETW2 (225°F)	60.90	60.26	41.05	39.83	80.75	78.19
	ETW3 (250°F)	52.64	51.83	35.25	34.15	61.15	59.24
UNC Modulus [Msi]	CTA (-67°F)	7.785	7.533				
	RTA (75°F)	7.913	7.613	4.969	4.810	12.03	11.66
	ETA2 (225°F)	7.702	7.529	4.746	4.537	12.24	11.65
	ETA3 (250°F)	7.688	7.346	4.703	4.494	12.28	11.73
	ETW1 (180°F)	7.296	7.201	4.496	4.353	11.36	11.02
	ETW2 (225°F)	7.157	7.084	4.304	4.176	11.15	10.81
	ETW3 (250°F)	7.509	7.396	3.934	3.811	10.98	10.64
FHT Strength [ksi]	CTA (-67°F)	84.16	82.71	63.27	61.25	123.1	119.7
	RTA (75°F)	85.23	84.32	55.96	54.20	124.9	121.4
	ETW1 (180°F)	84.50	83.77	52.79	50.50	136.9	131.6
	ETW2 (225°F)	89.65	89.12	48.95	47.44	135.1	131.6
FHC Strength [ksi]	CTA (-67°F)	74.31	73.37				
	RTA (75°F)	56.00	55.19	52.06	50.43	80.39	77.85
	ETW1 (180°F)	44.14	43.49	37.94	36.34	63.57	60.74
	ETW2 (225°F)	39.25	38.57	30.43	29.46	51.86	50.21
SSB Proc. C 2% Offset Strength [ksi]	CTA (-67°F)	150.2	147.8				
	RTA (75°F)	126.6	125.0	125.5	121.4	124.6	120.5
	ETW1 (180°F)	122.5	121.1	112.3	108.7	110.2	106.5
	ETW2 (225°F)	113.7	112.0	103.4	99.92	99.48	95.89
	ETW3 (250°F)	109.2	107.7	92.53	89.53	86.52	83.58
SSB Proc. C Ultimate Strength [ksi]	CTA (-67°F)	167.9	165.4				
	RTA (75°F)	142.6	140.8	148.6	143.8	144.2	139.4
	ETW1 (180°F)	126.6	125.1	124.4	120.4	122.4	118.3
	ETW2 (225°F)	118.3	116.5	114.0	110.1	110.8	106.9
	ETW3 (250°F)	114.8	113.2	106.3	102.8	100.5	97.13
SSB Proc. C Chord Stiffness [Msi]	CTA (-67°F)	1.765	1.738				
	RTA (75°F)	2.881	2.847	1.524	1.472	2.039	1.967
	ETW1 (180°F)	1.672	1.649	1.239	1.200	1.508	1.459
	ETW2 (225°F)	1.736	1.709	1.197	1.156	1.490	1.437
	ETW3 (250°F)	1.542	1.520	1.267	1.226	1.569	1.516
CAI Strength [ksi]	CTA (-67°F)	56.74	54.19				
	RTA (75°F)	48.40	46.13				
	ETA2 (225°F)	40.13	38.99				
	ETA3 (250°F)	36.33	34.82				
	ETW1 (180°F)	39.83	39.25				
	ETW2 (225°F)	35.31	34.77				

* Specimens might absorb moisture at ambient condition prior to testing which resulted in lower dry Tg, DMA testing took place weeks/months after panel fabrication. Based on Syensqo's batch release historical data, dry Tg is ~ 192°C (377°F) to 208°C (406°F).

Table 2-2: Laminate Summary Data

2.3 Fluid Sensitivity Test Summary

Fluid Sensitivity Screening
Short Beam Strength Properties (FSSBS)--RT(70°F) Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Exposure	Type of Fluid	Fluid Code	Average Strength [ksi]
90 days min @ 70°F ± 10°F	100 Low Lead Fuel	FS11RT	12.48
	Jet A Fuel	FS12RT	11.93
	MIL-PRF-5606 Hydraulic Oil	FS13RT	12.17
	MIL-PRF-83282 Hydraulic Oil	FS14RT	12.09
	MIL-PRF-7808 Engine Oil	FS15RT	12.41
	MIL-PRF-23699 Engine Oil	FS16RT	11.94
	Salt Water	FS17RT	11.81
	Skydrol LD-4	FS18RT	12.32
	50% Water with 50% Skydrol LD-4	FS19RT	11.84
	Distilled Water	FS31RT	11.92
90 mins @ 70°F ± 10°F	MEK washing fluid	FS21RT	12.25
	Polypropylene Glycol Deicer	FS22RT	12.55
48±4 hrs @ 70°F ± 10°F	Isopropyl Alcohol Deicing	FS23RT	12.46
Per section 6.1 Test Plan NTP 2190Q1	Dry	FS32RT	12.56
	85% Relative Humidity	FS33RT	11.37

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

Fluid Sensitivity Screening
Short Beam Strength Properties (FSSBS)--ET(180°F) Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Exposure	Type of Fluid	Fluid Code	Average Strength [ksi]
90 days min @ 70°F ± 10°F	100 Low Lead Fuel	FS11ET	8.977
	Jet A Fuel	FS12ET	9.057
	MIL-PRF-5606 Hydraulic Oil	FS13ET	8.993
	MIL-PRF-83282 Hydraulic Oil	FS14ET	9.164
	MIL-PRF-7808 Engine Oil	FS15ET	9.049
	MIL-PRF-23699 Engine Oil	FS16ET	9.014
	Sea Water	FS17ET	8.107
	Skydrol LD-4	FS18ET	9.517
	50% Water with 50% Skydrol LD-4	FS19ET	8.197
	Distilled Water	FS31ET	8.153
90 mins @ 70°F ± 10°F	MEK washing fluid	FS21ET	9.075
	Polypropylene Glycol Deicer	FS22ET	9.037
48±4 hrs @ 70°F ± 10°F	Isopropyl Alcohol Deicing	FS23ET	9.199
Per section 6.1 Test Plan NTP 2190Q1	Dry	FS32ET	9.388
	85% Relative Humidity	FS33ET	7.662

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

2.4 Cured Laminate Physical Test Summary

2.4.1 DMA

DMA Results Summary				
Solvay EP2190 IMS65 Unitape Gr 145 RC 35% Qualification				

Test Temperature	Mean			
	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
DMA T _g (Dry)*	169.84	337.71	186.97	368.55
DMA T _g (Wet)	141.54	286.78	158.80	317.84

* Specimens might absorb moisture at ambient condition prior to testing which resulted in lower dry T_g, DMA testing took place weeks/months after panel fabrication. Based on Syensqo's batch release historical data, dry T_g is ~192°C (377°F) to 208°C (406°F).

Table 2-5: DMA Summary Data

2.5 Individual Test Summaries

2.5.1 Longitudinal Tension Properties (LT)

Material:		Solvay EP2190 IMS65 Unitape Gr 145 RC 35%									
Resin content:		35.17 %wt		Comp. density:		1.553 g/cc					
Fiber volume:		56.57 %vol									
Ply count:		8									
Test method:		ASTM D3039-17		Modulus calculation: 1000 to 3000 microstrain							
Normalized by:		0.0056		in. CPT							
		CTA		RTA		ETA3		ETW1		ETW2	
Test Temperature [°F]		-67		75		250		180		225	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-LT-X-CX-CTA-X		TR7XXXXXX-PX-LT-X-CX-RTA-X		TR7XXXXXX-PX-LT-X-CX-ETA3-X					
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		LT-X-CX-1-CTA-X		LT-X-CX-1-RTA-X		LT-X-CX-1-ETA3-X		LT-X-CX-1-ETW1-X		LT-X-CX-1-ETW2-X	
		Normalized Measured		Normalized Measured		Normalized Measured		Normalized Measured		Normalized Measured	
F _i ^{tu} [ksj]	Mean	421.0	406.7	430.6	415.8	401.5	388.3	384.0	380.9	361.9	355.7
	Minimum	379.1	366.5	395.9	381.5	375.4	364.8	344.9	343.4	319.3	321.5
	Maximum	450.9	437.7	464.2	438.2	426.9	406.1	415.8	421.1	388.4	381.6
	C.V.(%)	4.300	5.293	4.736	4.239	3.798	3.545	5.164	6.139	4.083	3.706
	No. Specimens	24		24		18		18		18	
No. Prepreg Lots	4		4		3		3		3		
E _i ^t [Msi]	Mean	22.68	21.90	22.81	22.04	23.04	22.28	22.67	22.47	22.74	22.35
	Minimum	21.84	21.26	21.98	21.18	22.45	21.37	21.94	21.52	21.62	21.05
	Maximum	23.36	22.83	23.25	22.65	23.81	23.22	23.23	23.02	23.60	23.19
	C.V.(%)	1.523	2.206	1.282	1.467	1.767	2.124	1.837	1.695	2.032	2.499
	No. Specimens	24		24		18		18		18	
No. Prepreg Lots	4		4		3		3		3		
ν ₁₂ ^t	Mean	0.3219		0.3299		0.3301		0.3416		0.3363	
	No. Specimens	24		24		18		18		18	
	No. Prepreg Lots	4		4		3		3		3	

2.5.2 Transverse Tension Properties (TT)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Tension, 2-axis Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [90]16									
Resin content: 33.95 %wt	Comp. density: 1.545 g/cc										
Fiber volume: 57.34 %vol											
Ply count: 16											
Test method: ASTM D3039-17	Modulus calculation: 1000 to 3000 microstrain										
Normalized by: NA											
		CTA		RTA		ETA3		ETW1		ETW2	
Test Temperature [°F]		-67		75		250		180		225	
Moisture Conditioning Equilibrium at T, RH		Ambient		Ambient		Ambient		Equilibrium 160F, 85%RH		Equilibrium 160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-TT-X-CX-CTA-X		TR7XXXXXX-PX-TT-X-CX-RTA-X		TR7XXXXXX-PX-TT-X-CX-ETA3-X					
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		TT-X-CX-1-CTA-X		TT-X-CX-1-RTA-X		TT-X-CX-1-ETA3-X		TT-X-CX-1-ETW1-X		TT-X-CX-1-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F₂^{tu} [ksj]	Mean		10.27		11.14		7.926		5.368		4.113
	Minimum		6.260		7.760		6.230		3.730		3.670
	Maximum		14.85		12.92		9.320		6.410		4.610
	C.V.(%)		23.14		9.209		9.720		14.187		6.272
	No. Specimens		13		30		18		18		18
No. Prepreg Lots		2		4		3		3		3	
E₂^t [Msij]	Mean		1.413		1.255		1.078		1.114		0.8621
	Minimum		1.350		1.197		1.020		1.052		0.7940
	Maximum		1.481		1.298		1.172		1.171		0.9560
	C.V.(%)		2.522		2.325		5.332		2.579		5.491
	No. Specimens		13		30		18		18		18
No. Prepreg Lots		2		4		3		3		3	
v₂₁^t	Mean		0.02446		0.01683		0.01500		0.01722		0.01222
	No. Specimens		13		24		18		18		18
	No. Prepreg Lots		2		4		3		3		3

2.5.3 Longitudinal Compression Strength Properties (LCS)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%														Compression, 1-axis Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [0]8	
Resin content: 35.56 %wt		Comp. density: 1.556 g/cc													
Fiber volume: 57.38 %vol															
Ply count: 8															
Test method: SACMA SRM 1R-94															
Normalized by: 0.0056 in. CPT															
		CTA		RTA		ETA2		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		-67		75		225		250		180		225		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-LCS-X-CX CTA-X		TR7XXXXXX-PX-LCS-X-CX RTA-X				TR7XXXXXX-PX-LCS-X-CX ETA3-X							
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		LCS-X-CX-X-CTA-X		LCS-X-CX-X-RTA-X		LCS-X-CX-X-ETA2-X		LCS-X-CX-X-ETA3-X		LCS-X-CX-X-ETW1-X		LCS-X-CX-X-ETW2-X		LCS-X-CX-X-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F_c^{cu} [ksi]	Mean	242.8	231.7	218.1	207.7	163.7	159.1	143.3	138.1	169.6	166.2	132.1	130.1	108.3	106.0
	Minimum	206.9	201.6	185.2	175.1	145.2	139.6	124.7	122.7	134.1	128.9	114.1	112.1	83.92	82.09
	Maximum	281.0	270.2	247.2	233.2	188.8	183.9	184.6	175.2	186.4	180.8	152.2	149.5	125.2	123.8
	C.V.(%)	9.678	9.626	7.074	7.428	10.60	11.18	11.36	10.42	7.123	7.547	6.826	6.555	9.461	9.745
	No. Specimens	24		24		6		18		18		18		18	
No. Prepreg Lots	4		4		1		3		3		3		3		

2.5.4 Longitudinal Compression Modulus Properties (LCM)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%													Compression, 1-axis Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [0]8		
Resin content: 34.88 %wt		Comp. density: 1.557 g/cc													
Fiber volume: 56.95 %vol															
Ply count: 8															
Test method: SACMA SRM 1R-94		Modulus calculation: 1000 to 3000 microstrain (CTA/RTA/ETA2) and various range for ETA3, ETW1, ETW2 & ETW3													
Normalized by: 0.0056 in. CPT															
		CTA		RTA		ETA2		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		-67		75		225		250		180		225		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-LCM-X-CX-CTA-X		TR7XXXXXX-PX-LCM-X-CX-RTA-X				TR7XXXXXX-PX-LCM-X-CX-ETA3-X							
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		LCM-X-CX-1-CTA-X		LCM-X-CX-1-RTA-X		LCM-X-CX-1-ETA2-X		LCM-X-CX-1-ETA3-X		LCM-X-CX-1-ETW1-X		LCM-X-CX-1-ETW2-X		LCM-X-CX-1-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
E_c [Msi]		20.16	19.42	20.56	19.72	20.12	19.62	20.68	20.33	21.15	20.73	20.86	20.74	21.06	20.87
Mean		19.13	18.28	19.63	19.04	19.78	19.30	19.77	19.22	20.38	19.60	19.33	19.86	20.59	20.14
Minimum		21.03	20.27	21.59	20.50	20.39	19.95	21.69	21.41	23.08	22.57	21.46	21.52	21.48	22.02
Maximum		2.421	2.608	2.039	1.809	1.257	1.322	2.416	2.792	2.997	3.467	2.209	2.220	1.075	2.420
C.V.(%)															
No. Specimens		26		24		6		20		18		18		18	
No. Prepreg Lots		4		4		1		3		3		3		3	

2.5.5 Transverse Compression Strength Properties (TCS)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Compression, 2-axis Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [90]8													
Resin content:	35.41 %wt													Comp. density: 1.551 g/cc	
Fiber volume:	55.91 %vol														
Ply count:	8														
Test method:	SACMA SRM 1R-94														
Normalized by:	NA														
		CTA		RTA		ETA2		ETA3		ETW1		ETW2			
Test Temperature [°F]	-67		75		225		250		180		225				
Moisture Conditioning Equilibrium at T, RH	Ambient		Ambient		Ambient		Ambient		Equilibrium 160F, 85%RH		Equilibrium 160F, 85%RH				
Source code for Phase 1:	TR7XXXXXX-PX-TCS-X-CX-CTA-X		TR7XXXXXX-PX-TCS-X-CX-RTA-X				TR7XXXXXX-PX-TCS-X-CX-ETA3-X								
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	TCS-X-CX-1-CTA-X		TCS-X-CX-1-RTA-X		TCS-X-CX-1-ETA2-X		TCS-X-CX-1-ETA3-X		TCS-X-CX-1-ETW1-X		TCS-X-CX-1-ETW2-X				
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured		
F₂^{cu} [ksi]	Mean		50.70		41.31		27.14		27.75		29.15		26.37		
	Minimum		45.03		38.09		26.60		24.29		25.91		21.23		
	Maximum		54.08		46.61		28.34		33.29		32.49		30.78		
	C.V.(%)		5.767		6.287		2.339		9.208		6.326		8.610		
	No. Specimens		12		24		6		18		18		18		
No. Prepreg Lots		2		4		1		3		3		3			

2.5.6 Transverse Compression Modulus Properties (TCM)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%											Compression, 2-axis Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [90]B		
Resin content: 35.49 %wt Comp. density: 1.557 g/cc Fiber volume: 56.42 %vol Ply count: 8													
Test method: SACMA SRM 1R-94 Modulus calculation: 1000 to 3000 microstrain Normalized by: NA													
		CTA		RTA		ETA2		ETA3		ETW1		ETW2	
Test Temperature [°F]		-67		75		225		250		180		225	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-TCM-X-CX-CTA-X		TR7XXXXXX-PX-TCM-X-CX-RTA-X				TR7XXXXXX-PX-TCM-X-CX-ETA3-X					
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		TCM-X-CX-1-CTA-X		TCM-X-CX-1-RTA-X		TCM-X-CX-1-ETA2-X		TCM-X-CX-1-ETA3-X		TCM-X-CX-1-ETW1-X		TCM-X-CX-1-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
E₂^c [Msi]			1.677		1.503		1.199		1.185		1.364		1.194
Mean			1.455		1.292		1.157		1.080		1.209		1.125
Minimum			1.883		1.811		1.252		1.272		1.514		1.308
Maximum			7.330		8.216		3.335		3.566		6.396		4.801
C.V.(%)													
No. Specimens			12		24		6		18		18		18
No. Prepreg Lots			2		4		1		3		3		3

2.5.7 In-Plane Shear Properties (IPS)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		In-Plane Shear Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45]2S											
Resin content:	35.17 %wt	Comp. density: 1.556 g/cc											
Fiber volume:	56.67 % vol												
Ply count:	8												
Test method:	ASTM D3518-18	Modulus calculation: 2000 to 6000 microstrain											
Normalized by:	NA												
		CTA		RTA		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		-67		75		250		180		225		250	
Moisture Conditioning		Dry		Dry		Dry		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-IPS-X-CX-CTA-X		TR7XXXXXX-PX-IPS-X-CX-RTA-X		TR7XXXXXX-PX-IPS-X-CX-ETA3-X							
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		IPS-X-CX-1-CTA-X		IPS-X-CX-1-RTA-X		IPS-X-CX-1-ETA3-X		IPS-X-CX-1-ETW1-X		IPS-X-CX-1-ETW2-X		IPS-X-CX-1-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F₁₂^{s0.2%} [ksi]	Mean		9.316		6.187		4.072		3.904		2.683		2.237
	Minimum		8.610		5.520		3.960		3.660		2.390		1.840
	Maximum		9.880		6.590		4.150		4.390		3.020		2.590
	C.V.(%)		3.062		4.027		1.794		4.167		6.597		7.716
	No. Specimens		30		30		6		36		36		36
No. Prepreg Lots		4		4		1		3		3		3	
F₁₂^{s5% strain} [ksi]	Mean		13.69		10.63		6.958		6.259		4.524		3.923
	Minimum		13.09		10.13		6.810		5.780		4.290		3.640
	Maximum		14.61		11.13		7.060		6.610		4.940		4.590
	C.V.(%)		3.076		2.261		1.418		3.367		3.839		5.086
	No. Specimens		24		24		6		18		18		18
No. Prepreg Lots		4		4		1		3		3		3	
G₁₂^s [Msi]	Mean		0.8078		0.6053		0.4303		0.4169		0.2782		0.2226
	Minimum		0.7360		0.5150		0.4180		0.3560		0.2300		0.1730
	Maximum		0.8690		0.6400		0.4370		0.4600		0.3070		0.2730
	C.V.(%)		3.409		4.186		1.780		5.520		6.316		8.961
	No. Specimens		30		30		6		36		36		36
No. Prepreg Lots		4		4		1		3		3		3	

2.5.8 0° Flexural Proc. A Properties (0FLEX)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		0° Flexural, Proc. A Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [0]12							
Resin content: 35.38 %wt	Comp. density: 1.558 g/cc								
Fiber volume: 56.55 %vol									
Ply count: 12									
Test method: ASTM D790-17, Proc. A									
Normalized by: 0.0056	in. CPT								
		RTA		ETA2		ETA3		ETW2	
Test Temperature [°F]		75		225		250		225	
Moisture Conditioning Equilibrium at T, RH		Ambient		Ambient		Ambient		Equilibrium 160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-0FLEX-X-CX-RTA-X				TR7XXXXXX-PX-0FLEX-X-CX-ETA3-X			
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		0FLEX-X-CX-1-RTA-X		0FLEX-X-CX-1-ETA2-X		0FLEX-X-CX-1-ETA3-X		0FLEX-X-CX-1-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
0° Flexural Proc. A Strength [ksi]	Mean	280.5	258.0	218.9	209.1	203.9	191.8	170.0	165.6
	Minimum	259.8	232.7	215.5	203.4	187.2	176.7	160.7	154.1
	Maximum	301.0	286.3	223.8	214.1	219.1	204.9	195.6	188.2
	C.V.(%)	4.959	5.976	1.419	1.996	5.265	4.728	4.690	5.739
	No. Specimens	24		6		18		18	
	No. Prepreg Lots	4		1		3		3	
0° Flexural Proc. A Modulus [Msi]	Mean	22.83	21.53	20.45	19.54	20.12	19.13	19.75	19.24
	Minimum	21.54	19.91	19.94	19.08	18.84	17.87	18.77	18.19
	Maximum	23.74	22.68	20.89	19.91	21.41	19.84	20.42	21.63
	C.V.(%)	3.827	5.361	1.664	1.647	4.222	3.222	2.340	4.408
	No. Specimens	6		6		12		18	
	No. Prepreg Lots	1		1		2		3	

2.5.9 “25/50/25” Unnotched Tension 1 Properties (UNT1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Unnotched Tension 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]S											
Resin content: 37.46 %wt	Comp. density: 1.556 g/cc												
Fiber volume: 54.67 %vol													
Ply count: 8													
Test method: ASTM D 5766-11(2018) Modulus calculation: 1000 to 3000 microstrain													
Normalized by: 0.0056 in. CPT													
		CTA		RTA		ETA2		ETA3		ETW1		ETW2	
Test Temperature [°F]		-67		75		225		250		180		225	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-UNT1-X-CX-CTA-X		TR7XXXXXX-PX-UNT1-X-CX-RTA-X				TR7XXXXXX-PX-UNT1-X-CX-ETA3-X					
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNT1-X-CX-1-CTA-X		UNT1-X-CX-1-RTA-X		UNT1-X-CX-1-ETA2-X				UNT1-X-CX-1-ETW1-X		UNT1-X-CX-1-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
UNT1 Strength [ksij]	Mean	111.6	107.3	135.0	128.8	146.3	142.7	153.6	146.2	125.3	121.9	129.0	126.1
	Minimum	96.67	91.75	114.9	111.2	141.8	139.9	151.0	143.6	117.2	112.1	121.5	114.5
	Maximum	127.7	126.3	154.9	150.9	152.8	148.5	156.8	148.9	130.8	127.3	137.2	140.6
	C.V.(%)	10.13	11.89	9.315	9.884	2.726	2.374	1.375	1.219	2.750	3.858	3.480	5.605
	No. Specimens	12		24		6		6		18		18	
No. Prepreg Lots	2		4		1		1		3		3		
UNT1 Modulus [Msi]	Mean	8.450	8.115	8.384	7.999	8.216	8.017	8.343	7.941	8.263	8.042	8.185	7.996
	Minimum	8.179	7.666	8.163	7.431	8.098	7.853	8.222	7.804	8.070	7.568	7.958	7.524
	Maximum	8.773	8.327	8.591	8.180	8.408	8.171	8.467	8.054	8.433	8.285	8.650	8.415
	C.V.(%)	1.671	2.370	1.561	1.904	1.496	1.464	1.267	1.174	1.475	2.530	2.338	2.773
	No. Specimens	12		24		6		6		18		18	
No. Prepreg Lots	2		4		1		1		3		3		

2.5.10 “10/80/10” Unnotched Tension 2 Properties (UNT2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Unnotched Tension 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S									
Resin content:	35.45 %wt									Comp. density: 1.551 g/cc	
Fiber volume:	56.24 %vol										
Ply count:	20										
Test method:	ASTM D 5766-11(2018) (No-Hole Tension)	Modulus calculation: 1000 to 3000 microstrain									
Normalized by:	0.0056	in. CPT									
		CTA		RTA		ETW1		ETW2			
Test Temperature [°F]		-67		75		180		225			
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium			
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH			
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNT2-X-CX-1-CTA-X		UNT2-X-CX-1-RTA-X		UNT2-X-CX-1-ETW1-X		UNT2-X-CX-1-ETW2-X			
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured		
UNT2 Strength [ksij]	Mean	89.59	87.06	84.19	81.51	74.42	72.25	66.20	64.28		
	Minimum	84.27	82.29	79.14	76.74	71.03	69.36	62.62	60.99		
	Maximum	92.19	89.94	86.79	83.45	78.01	75.65	70.44	68.13		
	C.V.(%)	2.061	2.392	1.836	1.862	2.691	2.326	3.702	3.278		
	No. Specimens	18		18		18		18			
No. Prepreg Lots	3		3		3		3				
UNT2 Modulus [Msi]	Mean	5.485	5.330	5.118	4.955	4.806	4.666	4.538	4.407		
	Minimum	5.347	5.127	4.995	4.859	4.664	4.511	4.442	4.284		
	Maximum	5.782	5.671	5.223	5.046	4.941	4.816	4.713	4.602		
	C.V.(%)	2.278	2.841	1.348	1.142	1.264	1.585	1.707	1.796		
	No. Specimens	18		18		18		18			
No. Prepreg Lots	3		3		3		3				

2.5.11 “50/40/10” Unnotched Tension 3 Properties (UNT3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Unnotched Tension 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S									
Resin content:	35.59 %wt									Comp. density: 1.554 g/cc	
Fiber volume:	56.23 %vol										
Ply count:	20										
Test method:	ASTM D 5766-11(2018) (No-hole Tension)	Modulus calculation: 1000 to 3000 microstrain									
Normalized by:	0.0056	in. CPT									
		CTA		RTA		ETW1		ETW2			
Test Temperature [°F]		-67		75		180		225			
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium			
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH			
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNT3-X-CX-1-CTA-X		UNT3-X-CX-1-RTA-X		UNT3-X-CX-1-ETW1-X		UNT3-X-CX-1-ETW2-X			
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured		
UNT3 Strength [ksi]	Mean	244.2	237.2	242.7	235.4	225.1	218.5	227.4	221.0		
	Minimum	231.3	223.3	224.0	218.2	199.1	194.4	209.0	205.0		
	Maximum	257.6	252.7	261.4	251.8	242.4	233.2	241.6	231.9		
	C.V.(%)	3.638	3.764	4.385	4.209	5.618	5.446	3.799	3.565		
	No. Specimens	18		18		18		18			
No. Prepreg Lots	3		3		3		3				
UNT3 Modulus [Msi]	Mean	13.08	12.70	13.21	12.81	13.04	12.66	13.18	12.80		
	Minimum	12.83	12.49	12.61	12.27	12.65	12.34	12.73	12.44		
	Maximum	13.39	12.99	14.11	13.74	13.41	13.06	13.68	13.13		
	C.V.(%)	1.163	1.071	3.273	3.369	1.401	1.561	2.070	1.501		
	No. Specimens	18		18		18		18			
No. Prepreg Lots	3		3		3		3				

2.5.12 “25/50/25” Unnotched Compression 1 Properties (UNC1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%														Unnotched Compression 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]2S																	
Resin content: 35.53 %wt				Comp. density: 1.552 g/cc																											
Fiber volume: 56.21 %vol																															
Ply count: 16																															
Test method: ASTM D6484-14 (No hole)				Modulus calculation: 1000 to 3000 microstrain																											
Normalized by: 0.0056 in. CPT																															
		CTA		RTA		ETA2		ETA3		ETW1		ETW2		ETW3																	
Test Temperature [°F]		-67		75		225		250		180		225		250																	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium																	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH		160F, 85%RH																	
Source code for Phase 1:		TR7XXXXXX-PX-UNC1-X-CX-CTA-X		TR7XXXXXX-PX-UNC1-X-CX-RTA-X				TR7XXXXXX-PX-UNC1-X-CX-ETA3-X																							
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNC1-X-CX-1-CTA-X		UNC1-X-CX-1-RTA-X		UNC1-X-CX-1-ETA2-X		UNC1-X-CX-1-ETA3-X		UNC1-X-CX-1-ETW1-X		UNC1-X-CX-1-ETW2-X		UNC1-X-CX-1-ETW3-X																	
		Normalized		Measured		Normalized		Measured		Normalized		Measured		Normalized		Measured															
UNC1 Strength [ksi]		Mean		110.5		107.0		87.63		84.28		62.48		61.06		74.49		71.18		67.02		66.23		60.90		60.26		52.64		51.83	
		Minimum		100.3		96.44		68.48		66.19		52.59		51.67		67.66		64.91		55.62		55.01		52.45		51.93		44.03		43.54	
		Maximum		120.0		117.3		101.4		95.92		69.82		68.00		77.97		74.80		74.40		74.69		70.24		68.86		58.17		56.96	
		C.V.(%)		5.954		6.133		9.645		8.870		10.79		10.54		5.027		5.120		7.825		8.439		7.008		6.960		5.919		5.711	
		No. Specimens		12		24		6		6		18		18		18		3		3		3		3		3		3			
No. Prepreg Lots		2		4		1		1		3		3		3		3		3		3		3		3							
UNC1 Modulus [Msi]		Mean		7.785		7.533		7.913		7.613		7.702		7.529		7.688		7.346		7.296		7.201		7.157		7.084		7.509		7.396	
		Minimum		7.661		7.418		7.632		7.393		7.612		7.438		7.535		7.244		6.497		6.494		5.162		5.077		7.357		7.239	
		Maximum		7.989		7.685		8.549		8.003		7.798		7.661		7.857		7.473		7.787		7.610		7.762		7.948		7.675		7.779	
		C.V.(%)		1.357		1.111		3.470		2.414		0.9589		1.154		1.397		1.203		7.401		6.332		10.01		10.30		1.176		1.601	
		No. Specimens		12		24		6		6		18		18		18		3		3		3		3		3		3			
No. Prepreg Lots		2		4		1		1		3		3		3		3		3		3		3		3		3					

2.5.13 “10/80/10” Unnotched Compression 2 Properties (UNC2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%												Unnotched Compression 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S	
Resin content: 35.52 %wt		Comp. density: 1.552 g/cc											
Fiber volume: 56.22 %vol													
Ply count: 20													
Test method: ASTM D6484-14 (No hole)				Modulus calculation: 1000 to 3000 microstrain									
Normalized by: 0.0056		in. CPT											
		RTA		ETA2		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		75		225		250		180		225		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNC2-X-CX-1-RTA-X		UNC2-X-CX-1-ETA2-X		UNC2-X-CX-1-ETA3-X		UNC2-X-CX-1-ETW1-X		UNC2-X-CX-1-ETW2-X		UNC2-X-CX-1-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
UNC2 Strength [ksi]		66.01	63.90	50.91	48.68	49.70	47.48	49.98	48.40	41.05	39.83	35.25	34.15
Minimum		61.93	58.68	46.87	45.10	47.36	44.99	47.15	45.61	34.40	33.74	30.20	29.28
Maximum		70.12	68.89	54.63	52.52	50.87	48.86	55.35	53.35	48.09	47.08	41.24	39.65
C.V.(%)		2.840	3.278	6.148	6.450	2.490	2.891	4.920	4.746	9.551	9.437	7.281	6.834
No. Specimens		18		6		6		18		18		18	
No. Prepreg Lots		3		1		1		3		3		3	
UNC2 Modulus [Msi]		4.969	4.810	4.746	4.537	4.703	4.494	4.496	4.353	4.304	4.176	3.934	3.811
Minimum		4.900	4.677	4.690	4.448	4.668	4.439	4.207	4.108	3.974	3.867	3.531	3.436
Maximum		5.105	4.919	4.789	4.608	4.822	4.581	4.820	4.696	4.612	4.472	4.388	4.226
C.V.(%)		1.192	1.334	0.9069	1.135	1.247	1.113	5.112	4.827	5.265	5.216	7.360	7.244
No. Specimens		18		6		6		18		18		18	
No. Prepreg Lots		3		1		1		3		3		3	

2.5.14 “50/40/10” Unnotched Compression 3 Properties (UNC3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%												Unnotched Compression 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S	
Resin content: 36.27 %wt		Comp. density: 1.550 g/cc											
Fiber volume: 55.58 %vol													
Ply count: 20													
Test method: ASTM D6484-14 (No hole)				Modulus calculation: 1000 to 3000 microstrain									
Normalized by: 0.0056		in. CPT											
		RTA		ETA2		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		75		225		250		180		225		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH								160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		UNC3-X-CX-1-RTA-X		UNC3-X-CX-1-ETA2-X		UNC3-X-CX-1-ETA3-X		UNC3-X-CX-1-ETW1-X		UNC3-X-CX-1-ETW2-X		UNC3-X-CX-1-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
UNC3 Strength [ksii]		139.0	134.7	98.30	93.54	106.3	101.5	99.99	96.96	80.75	78.19	61.15	59.24
Minimum		108.9	105.9	92.17	86.75	93.15	89.63	76.64	75.23	61.59	60.19	48.76	47.57
Maximum		156.5	152.4	110.4	103.9	115.9	109.8	120.8	116.5	104.6	100.7	71.89	68.94
C.V.(%)		9.670	9.453	7.345	7.293	9.232	8.768	10.57	10.27	12.77	12.19	11.17	10.77
No. Specimens		18		6		6		18		18		18	
No. Prepreg Lots		3		1		1		3		3		3	
UNC3 Modulus [Msi]		12.03	11.66	12.24	11.65	12.28	11.73	11.36	11.02	11.15	10.81	10.98	10.64
Minimum		11.83	11.43	12.21	11.49	12.19	11.53	10.84	10.41	10.00	9.741	9.811	9.580
Maximum		12.31	12.04	12.31	11.78	12.49	11.81	12.22	11.94	12.31	11.82	12.10	11.60
C.V.(%)		1.095	1.252	0.3216	1.103	0.9200	0.8967	4.944	5.089	6.770	6.620	6.876	6.874
No. Specimens		18		6		6		18		18		18	
No. Prepreg Lots		3		1		1		3		3		3	

2.5.15 Lamina Short-Beam Strength Properties (SBS)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%												Short-Beam Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [0]44					
Resin content:		35.93 %w t		Comp. density:		1.554 g/cc											
Fiber volume:		55.95 %vol															
Ply count:		44															
Test method:		ASTMD 2344-16															
Normalized by:		NA															
		CTA		RTA		ETA2		ETA3		ETW1		ETW2		ETW3			
Test Temperature [°F]		-67		75		225		250		180		225		250			
Moisture Conditioning Equilibrium at T, RH		Ambient		Ambient		Ambient		Ambient		Equilibrium 160F, 85%RH		Equilibrium 160F, 85%RH		Equilibrium 160F, 85%RH			
Source code for Phase 1:		TR7XXXXXX-PX-SBS-X-CX-CTA-X		TR7XXXXXX-PX-SBS-X-CX-RTA-X				TR7XXXXXX-PX-SBS-X-CX-ETA3-X									
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		SBS-X-CX-1-CTA-X		SBS-X-CX-1-RTA-X		SBS-X-CX-1-ETA2-X		SBS-X-CX-1-ETA3-X		SBS-X-CX-1-ETW1-X		SBS-X-CX-1-ETW2-X		SBS-X-CX-1-ETW3-X			
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured		
SBS [ksi]		Mean		16.77		12.64		8.173		7.724		7.006		6.101		5.384	
		Minimum		16.14		12.14		8.090		7.280		6.580		5.750		4.780	
		Maximum		17.92		12.97		8.320		8.410		7.290		6.520		6.260	
		C.V.(%)		3.057		1.929		1.077		4.464		2.856		3.988		6.696	
		No. Specimens		12		24		6		18		18		18		18	
No. Prepreg Lots		2		4		1		3		3		3		3			

2.5.16 “25/50/25” Open-Hole Tension 1 Properties (OHT1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Open-Hole Tension 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]S											
Resin content: 35.54 %wt	Comp. density: 1.550 g/cc												
Fiber volume: 56.15 %vol													
Ply count: 8													
Test method: ASTM D5766-11(2018)													
Normalized by: 0.0056	in. CPT												
	CTA	RTA	ETA2	ETA3	ETW1	ETW2							
Test Temperature [°F]	-67	75	225	250	180	225							
Moisture Conditioning	Ambient	Ambient	Ambient	Ambient	Equilibrium	Equilibrium							
Equilibrium at T, RH					160F, 85%RH	160F, 85%RH							
Source code for Phase 1:	TR7XXXXXX-PX-OHT1-X-CX-CTA-X	TR7XXXXXX-PX-OHT1-X-CX-RTA-X		TR7XXXXXX-PX-OHT1-X-CX-ETA3-X									
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	OHT1-X-CX-1-CTA-X	OHT1-X-CX-1-RTA-X	OHT1-X-CX-1-ETA2-X	OHT1-X-CX-1-ETA3-X	OHT1-X-CX-1-ETW1-X	OHT1-X-CX-1-ETW2-X							
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	
OHT1 Strength [ksi]	71.23	69.07	74.75	71.94	75.01	73.72	78.19	76.08	75.02	73.53	78.62	77.90	
Minimum	66.31	65.00	69.72	67.55	71.59	70.49	73.27	71.20	71.43	69.40	73.57	74.01	
Maximum	75.06	72.79	78.76	74.87	78.29	76.92	81.59	80.05	78.92	77.37	83.26	81.29	
C.V.(%)	3.323	2.893	3.161	2.913	3.685	3.484	2.978	3.289	3.507	3.442	3.467	2.749	
No. Specimens	24		24		6		18		18		18		
No. Prepreg Lots	4		4		1		3		3		3		

2.5.17 “10/80/10” Open-Hole Tension 2 Properties (OHT2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Open-Hole Tension 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S			
Resin content: 35.65 %wt	Comp. density: 1.551 g/cc				
Fiber volume: 56.08 %vol					
Ply count: 20					
Test method: ASTM D5766-11(2018)					
Normalized by: 0.0056	in. CPT				
	CTA	RTA	ETW1	ETW2	
Test Temperature [°F]	-67	75	180	225	
Moisture Conditioning	Ambient	Ambient	Equilibrium	Equilibrium	
Equilibrium at T, RH			160F, 85%RH	160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	OHT2-X-CX-CTA-X	OHT2-X-CX-RTA-X	OHT2-X-CX-ETW1-X	OHT2-X-CX-ETW2-X	
	Normalized	Measured	Normalized	Measured	Normalized
OHT2 Strength [ksi]	55.39	53.71	50.35	48.90	46.95
Mean	45.08	43.66	45.03	43.66	45.03
Minimum	52.91	51.00	48.92	47.81	45.70
Maximum	57.57	55.70	52.99	50.81	47.78
C.V.(%)	2.928	2.870	1.575	1.294	1.777
No. Specimens	18	18	6	18	18
No. Prepreg Lots	3	3	1	3	3

2.5.18 “50/40/10” Open-Hole Tension 3 Properties (OHT3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Open-Hole Tension 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S						
Resin content: 34.99 %wt	Comp. density: 1.553 g/cc							
Fiber volume: 56.70 %vol								
Ply count: 20								
Test method: ASTM D5766-11(2018)								
Normalized by: 0.0056 in. CPT								
	CTA	RTA	ETW1	ETW2				
Test Temperature [°F]	-67	75	180	225				
Moisture Conditioning	Ambient	Ambient	Equilibrium	Equilibrium				
Equilibrium at T, RH			160F, 85%RH	160F, 85%RH				
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	OHT3-X-CX-CTA-X	OHT3-X-CX-RTA-X	OHT3-X-CX-ETW1-X	OHT3-X-CX-ETW2-X				
	Normalized	Measured	Normalized	Measured	Normalized			
	Measured	Normalized	Measured	Normalized	Measured			
OHT3 Strength [ksi]	127.1	123.6	135.1	131.2	160.3	154.5	155.5	151.3
Mean	116.6	113.6	127.3	124.3	155.8	150.1	149.8	147.1
Minimum	134.6	129.6	140.3	135.0	163.3	157.7	161.5	157.0
Maximum	3.780	3.391	2.955	2.674	1.887	2.024	2.449	1.943
C.V.(%)								
No. Specimens	18		18		6		18	
No. Prepreg Lots	3		3		1		3	

2.5.19 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Tension 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]S							
Resin content: 35.39 %wt	Comp. density: 1.556 g/cc								
Fiber volume: 56.47 %vol									
Ply count: 8									
Test method: ASTM D6742-12									
Normalized by: 0.0056	in. CPT								
		CTA		RTA		ETW1		ETW2	
Test Temperature [°F]		-67		75		180		225	
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		FHT1-X-CX-CTA-X		FHT1-X-CX-RTA-X		FHT1-X-CX-ETW1-X		FHT1-X-CX-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
FHT1	Mean	84.16	82.71	85.23	84.32	84.50	83.77	89.65	89.12
	Minimum	72.56	71.60	73.99	75.63	79.01	77.88	81.08	80.25
	Maximum	96.43	93.91	97.62	96.33	90.55	91.99	95.32	97.86
Strength [ksi]	C.V.(%)	9.065	9.175	7.094	6.385	4.295	4.633	5.055	5.910
	No. Specimens	18		18		18		18	
	No. Prepreg Lots	3		3		3		3	

2.5.20 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Tension 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S							
Resin content: 36.03 %wt	Comp. density: 1.548 g/cc								
Fiber volume: 55.64 %vol									
Ply count: 20									
Test method: ASTM D6742-12									
Normalized by: 0.0056	in. CPT								
		CTA		RTA		ETW1		ETW2	
Test Temperature [°F]		-67		75		180		225	
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		FHT2-X-CX-CTA-X		FHT2-X-CX-RTA-X		FHT2-X-CX-ETW1-X		FHT2-X-CX-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
Mean		63.27	61.25	55.96	54.20	52.79	50.50	48.95	47.44
Minimum		59.80	58.29	53.02	51.39	49.99	47.61	47.38	46.26
Maximum		68.44	66.77	59.72	58.26	54.22	52.22	50.45	48.98
FHT2 C.V.(%)		3.288	3.226	3.439	3.827	3.206	3.512	1.844	1.655
Strength [ksi]									
No. Specimens		18		18		6		18	
No. Prepreg Lots		3		3		1		3	

2.5.21 “50/40/10” Filled-Hole Tension 3 Properties (FHT3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Tension 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S													
Resin content:	35.55 %wt									Comp. density: 1.551 g/cc					
Fiber volume:	56.16 %vol														
Ply count:	20														
Test method:	ASTM D6742-12														
Normalized by:	0.0056	in. CPT													
		CTA		RTA		ETW1		ETW2							
Test Temperature [°F]	-67		75		180		225								
Moisture Conditioning	Ambient		Ambient		Equilibrium		Equilibrium								
Equilibrium at T, RH					160F, 85%RH		160F, 85%RH								
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	FHT3-X-CX-CTA-X		FHT3-X-CX-RTA-X		FHT3-X-CX-ETW1-X		FHT3-X-CX-ETW2-X								
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured						
FHT3 Strength [ksi]	Mean	123.1	119.7	124.9	121.4	136.9	131.6	135.1	131.6						
	Minimum	112.8	109.9	114.8	112.6	131.3	125.8	131.0	128.0						
	Maximum	128.8	126.1	136.5	133.8	141.2	135.7	140.8	137.1						
	C.V.(%)	3.869	3.827	4.815	4.495	2.956	2.989	2.111	1.794						
	No. Specimens	18		18		6		18							
	No. Prepreg Lots	3		3		1		3							

2.5.22 “25/50/25” Open-Hole Compression 1 Properties (OHC1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%													Open-Hole Compression 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]2S		
Resin content: 35.43 %w t		Comp. density: 1.554 g/cc													
Fiber volume: 56.37 %vol															
Ply count: 16															
Test method: ASTM D6484-14															
Normalized by: 0.0056 in. CPT															
		CTA		RTA		ETA2		ETA3		ETW1		ETW2		ETW3	
Test Temperature [°F]		-67		75		225		250		180		225		250	
Moisture Conditioning		Ambient		Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium	
Equilibrium at T, RH										160F, 85%RH		160F, 85%RH		160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-OHC1-X-CX-CTA-X		TR7XXXXXX-PX-OHC1-X-CX-RTA-X				TR7XXXXXX-PX-OHC1-X-CX-ETA3-X							
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		OHC1-X-CX-1-CTA-X		OHC1-X-CX-1-RTA-X		OHC1-X-CX-1-ETA2-X		OHC1-X-CX-1-ETA3-X		OHC1-X-CX-1-ETW1-X		OHC1-X-CX-1-ETW2-X		OHC1-X-CX-1-ETW3-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
Mean		54.20	52.30	48.10	46.28	41.14	40.42	38.67	37.62	39.91	39.59	34.88	34.47	32.31	32.06
Minimum		50.43	48.59	44.88	42.92	39.50	38.94	31.11	30.67	37.03	37.36	32.33	32.57	30.32	29.85
Maximum		59.84	58.60	50.97	48.94	42.24	41.54	44.28	42.21	43.09	42.15	37.53	36.39	35.45	34.90
OHC1 Strength [ksij]															
C.V.(%)		4.546	5.002	2.951	3.112	2.259	2.133	9.993	9.335	4.099	3.718	3.680	3.477	3.705	4.025
No. Specimens		24		24		6		18		18		18		18	
No. Prepreg Lots		4		4		1		3		3		3		3	

2.5.23 “10/80/10” Open-Hole Compression 2 Properties (OHC2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Open-Hole Compression 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S													
Resin content:	35.86 %wt													Comp. density: 1.549 g/cc	
Fiber volume:	55.82 %vol														
Ply count:	20														
Test method:	ASTM D6484-14														
Normalized by:	0.0056	in. CPT													
		RTA		ETA2		ETA3		ETW1		ETW2		ETW3			
Test Temperature [°F]	75		225		250		180		225		250				
Moisture Conditioning	Ambient		Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium				
Equilibrium at T, RH							160F, 85%RH		160F, 85%RH		160F, 85%RH				
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	OHC2-X-CX-1-RTA-X		OHC2-X-CX-1-ETA2-X		OHC2-X-CX-1-ETA3-X		OHC2-X-CX-1-ETW1-X		OHC2-X-CX-1-ETW2-X		OHC2-X-CX-1-ETW3-X				
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured			
OHC2 Strength [ksi]	Mean	38.24	37.11	30.38	29.17	28.73	27.62	29.10	28.22	23.63	22.92	20.96	20.34		
	Minimum	37.25	36.26	29.71	28.56	27.92	26.80	27.81	27.30	22.60	21.82	19.97	19.59		
	Maximum	38.98	38.13	31.52	30.12	29.66	28.49	30.83	29.64	24.85	24.05	22.17	21.61		
	C.V.(%)	1.463	1.568	2.163	1.932	2.403	2.390	3.115	2.511	2.521	2.334	2.790	2.789		
	No. Specimens	18		6		6		18		18		18			
	No. Prepreg Lots	3		1		1		3		3		3			

2.5.24 “50/40/10” Open-Hole Compression 3 Properties (OHC3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Open-Hole Compression 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S												
Resin content: 35.96 %wt	Comp. density: 1.550 g/cc													
Fiber volume: 55.75 %vol														
Ply count: 20														
Test method: ASTM D6484-14														
Normalized by: 0.0056	in. CPT													
		RTA		ETA2		ETA3		ETW1		ETW2		ETW3		
Test Temperature [°F]	75	225		250		180		225		250				
Moisture Conditioning	Ambient	Ambient		Ambient		Equilibrium		Equilibrium		Equilibrium				
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH		160F, 85%RH				
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	OHC3-X-CX-1-RTA-X	OHC3-X-CX-1-ETA2-X		OHC3-X-CX-1-ETA3-X		OHC3-X-CX-1-ETW1-X		OHC3-X-CX-1-ETW2-X		OHC3-X-CX-1-ETW3-X				
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
OHC3 Strength [ksi]	Mean	70.00	67.76	62.39	59.82	57.49	55.04	57.86	56.02	49.55	47.94	43.67	42.25	
	Minimum	60.55	58.92	60.69	58.50	50.37	48.59	52.33	51.59	45.04	44.20	40.50	39.41	
	Maximum	75.48	72.82	66.46	63.40	60.84	58.49	61.48	59.31	56.61	54.47	46.14	44.47	
	C.V.(%)	5.694	5.459	3.377	3.112	7.499	7.056	4.478	4.287	5.971	5.479	3.988	3.860	
	No. Specimens	18		6		6		18		18		18		
	No. Prepreg Lots	3		1		1		3		3		3		

2.5.25 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Compression 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]2S							
Resin content: 35.43 %wt	Comp. density: 1.554 g/cc								
Fiber volume: 56.37 %vol									
Ply count: 16									
Test method: ASTM D6742-12									
Normalized by: 0.0056	in. CPT								
		CTA		RTA		ETW1		ETW2	
Test Temperature [°F]		-67		75		180		225	
Moisture Conditioning		Ambient		Ambient		Equilibrium		Equilibrium	
Equilibrium at T, RH						160F, 85%RH		160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		FHC1-X-CX-CTA-X		FHC1-X-CX-RTA-X		FHC1-X-CX-ETW1-X		FHC1-X-CX-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
Mean		74.31	73.37	56.00	55.19	44.14	43.49	39.25	38.57
Minimum		67.86	66.16	51.63	50.67	38.67	37.91	35.65	34.99
Maximum		80.90	79.66	61.92	61.24	48.30	48.30	41.53	41.76
FHC1 C.V.(%)		5.195	5.444	4.444	4.628	5.928	6.217	4.581	4.887
Strength [ksi]									
No. Specimens		18		18		18		18	
No. Prepreg Lots		3		3		3		3	

2.5.26 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Compression 2 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S					
Resin content: 36.04 %wt	Comp. density: 1.550 g/cc						
Fiber volume: 55.70 %vol							
Ply count: 20							
Test method: ASTM D6742-12							
Normalized by: 0.0056	in. CPT						
	RTA	ETW1	ETW2				
Test Temperature [°F]	75	180	225				
Moisture Conditioning Equilibrium at T, RH	Ambient	Equilibrium 160F, 85%RH	Equilibrium 160F, 85%RH				
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	FHC2-X-CX-RTA-X	FHC2-X-CX-ETW1-X	FHC2-X-CX-ETW2-X				
	Normalized	Measured	Normalized	Measured	Normalized	Measured	
FHC2 Strength [ksi]	52.06	50.43	37.94	36.34	30.43	29.46	
Mean	48.73	46.85	36.27	34.51	28.24	27.55	
Minimum	55.46	53.55	39.79	38.45	34.18	32.89	
Maximum	3.880	3.858	3.810	4.184	5.601	5.460	
C.V.(%)							
No. Specimens	18		6		18		
No. Prepreg Lots	3		1		3		

2.5.27 “50/40/10” Filled-Hole Compression 3 Properties (FHC3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Filled-Hole Compression 3 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S					
Resin content: 36.00 %wt	Comp. density: 1.549 g/cc						
Fiber volume: 55.71 %vol							
Ply count: 20							
Test method: ASTM D6742-12							
Normalized by: 0.0056	in. CPT						
		RTA	ETW1	ETW2			
Test Temperature [°F]		75	180	225			
Moisture Conditioning Equilibrium at T, RH		Ambient	Equilibrium 160F, 85%RH	Equilibrium 160F, 85%RH			
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		FHC3-X-CX-RTA-X	FHC3-X-CX-ETW1-X	FHC3-X-CX-ETW2-X			
		Normalized	Measured	Normalized	Measured	Normalized	Measured
FHC3 Strength [ksi]	Mean	80.39	77.85	63.57	60.74	51.86	50.21
	Minimum	71.13	67.57	59.64	57.34	46.18	44.82
	Maximum	95.97	92.18	65.48	63.00	57.60	55.42
	C.V.(%)	7.815	8.010	3.577	3.660	5.997	5.796
	No. Specimens	18		6		18	
	No. Prepreg Lots	3		1		3	

2.5.28 “25/50/25” Single-Shear Bearing 1, Proc. C Properties (SSB1)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Single-Shear Bearing 1, Proc. C Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]2S													
Resin content: 35.99 %wt	Comp. density: 1.548 g/cc														
Fiber volume: 55.68 %vol															
Ply count: 16															
Test method: ASTM D5961-17, Procedure C															
Normalized by: 0.0056	in. CPT														
		CTA			RTA			ETW1			ETW2			ETW3	
Test Temperature [°F]		-67			75			180			225			250	
Moisture Conditioning		Ambient			Ambient			Equilibrium			Equilibrium			Equilibrium	
Equilibrium at T, RH								160F, 85%RH			160F, 85%RH			160F, 85%RH	
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		SSB1-X-CX-CTA-X			SSB1-X-CX-RTA-X			SSB1-X-CX-ETW1-X			SSB1-X-CX-ETW2-X			SSB1-X-CX-ETW3-X	
		Normalized	Measured		Normalized	Measured		Normalized	Measured		Normalized	Measured		Normalized	Measured
SSB1, Proc. C 2% Offset Strength [ksi]	Mean	150.2	147.8		126.6	125.0		122.5	121.1		113.7	112.0		109.2	107.7
	Minimum	143.6	139.1		117.8	115.1		112.4	110.7		104.1	102.8		100.1	98.58
	Maximum	162.1	160.2		137.6	139.4		134.4	136.7		127.1	125.7		119.3	117.0
	C.V.(%)	3.496	3.320		4.521	5.516		4.249	4.718		6.341	6.566		4.989	5.194
	No. Specimens	18			18			18			18			18	
No. Prepreg Lots	3			3			3			3			3		
SSB1, Proc. C Ultimate Strength [ksi]	Mean	167.9	165.4		142.6	140.8		126.6	125.1		118.3	116.5		114.8	113.2
	Minimum	160.7	157.5		134.5	131.2		119.5	117.6		109.9	107.8		105.5	103.9
	Maximum	181.0	175.5		150.3	153.4		135.7	138.0		127.4	127.0		123.7	121.5
	C.V.(%)	2.934	2.632		2.929	3.836		3.202	3.915		4.124	4.451		4.318	4.444
	No. Specimens	18			18			18			18			18	
No. Prepreg Lots	3			3			3			3			3		
SSB1, Proc. C Chord Stiffness [Msi]	Mean	1.765	1.738		2.881	2.847		1.672	1.649		1.736	1.709		1.542	1.520
	Minimum	1.516	1.470		2.255	2.201		1.117	1.136		1.533	1.509		1.012	1.030
	Maximum	2.303	2.231		3.947	4.033		1.894	1.844		1.917	1.881		1.845	1.797
	C.V.(%)	12.04	11.54		14.08	15.40		11.61	10.77		6.607	6.741		14.87	14.59
	No. Specimens	18			18			18			18			18	
No. Prepreg Lots	3			3			3			3			3		

2.5.29 “10/80/10” Single-Shear Bearing 2, Proc. C Properties (SSB2)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Single-Shear Bearing 2, Proc. C Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/45/-45/90/45/-45/45/-45]S							
Resin content: 36.20 %wt	Comp. density: 1.547 g/cc								
Fiber volume: 55.46 %vol									
Ply count: 20									
Test method: ASTM D5961-17, Procedure C									
Normalized by: 0.0056 in. CPT									
	RTA	ETW1		ETW2		ETW3			
Test Temperature [°F]	75	180		225		250			
Moisture Conditioning	Ambient	Equilibrium		Equilibrium		Equilibrium			
Equilibrium at T, RH		160F, 85%RH		160F, 85%RH		160F, 85%RH			
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-	SSB2-X-CX-RTA-X	SSB2-X-CX-ETW1-X		SSB2-X-CX-ETW2-X		SSB2-X-CX-ETW3-X			
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	
SSB2, Proc. C 2% Offset Strength [ksi]	Mean	125.5	121.4	112.3	108.7	103.4	99.92	92.53	89.53
	Minimum	115.9	113.8	101.7	98.83	94.70	92.15	80.03	78.08
	Maximum	132.3	127.6	120.8	116.2	110.9	107.1	100.3	96.99
	C.V.(%)	3.303	3.391	5.114	4.465	4.740	4.828	6.309	6.111
	No. Specimens	18		18		18		18	
	No. Prepreg Lots	3		3		3		3	
SSB2, Proc. C Ultimate Strength [ksi]	Mean	148.6	143.8	124.4	120.4	114.0	110.1	106.3	102.8
	Minimum	141.9	138.7	115.1	112.1	104.2	101.4	95.75	93.41
	Maximum	155.3	152.3	132.7	127.8	119.8	116.9	118.3	111.6
	C.V.(%)	2.283	2.615	4.159	3.736	3.984	4.126	5.523	4.770
	No. Specimens	18		18		18		18	
	No. Prepreg Lots	3		3		3		3	
SSB2, Proc. C Chord Stiffness [Msi]	Mean	1.524	1.472	1.239	1.200	1.197	1.156	1.267	1.226
	Minimum	1.346	1.314	0.9610	0.9060	0.9861	0.9620	0.9169	0.8860
	Maximum	1.863	1.795	1.634	1.597	2.286	2.224	2.455	2.397
	C.V.(%)	12.86	11.97	15.93	16.56	25.74	25.58	30.46	30.75
	No. Specimens	18		18		18		18	
	No. Prepreg Lots	3		3		3		3	

2.5.30 “50/40/10” Single-Shear Bearing 3, Proc. C Properties (SSB3)

Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%		Single-Shear Bearing 3, Proc. C Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/-45/0/0/0/45/90/-45/0/0]S									
Resin content:	36.29 %w t									Comp. density: 1.548 g/cc	
Fiber volume:	55.40 %vol										
Ply count:	20										
Test method: ASTM D5961-17, Procedure C											
Normalized by: 0.0056 in. CPT											
		RTA	ETW1		ETW2		ETW3				
Test Temperature [°F]		75	180		225		250				
Moisture Conditioning		Ambient	Equilibrium		Equilibrium		Equilibrium				
Equilibrium at T, RH			160F, 85%RH		160F, 85%RH		160F, 85%RH				
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-		SSB3-X-CX-RTA-X	SSB3-X-CX-ETW1-X		SSB3-X-CX-ETW2-X		SSB3-X-CX-ETW3-X				
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured		
SSB3, Proc. C 2% Offset Strength [ksi]	Mean	124.6	120.5	110.2	106.5	99.48	95.89	86.52	83.58		
	Minimum	119.8	111.9	98.78	95.54	91.03	89.43	66.09	64.65		
	Maximum	130.1	127.8	120.0	117.1	111.1	108.0	97.75	94.79		
	C.V.(%)	2.261	3.195	4.712	4.933	5.274	4.684	9.666	9.584		
	No. Specimens	18		18		18		18			
	No. Prepreg Lots	3		3		3		3			
SSB3, Proc. C Ultimate Strength [ksi]	Mean	144.2	139.4	122.4	118.3	110.8	106.9	100.5	97.13		
	Minimum	139.0	129.4	118.5	114.0	104.8	101.3	85.06	82.99		
	Maximum	150.7	145.5	126.8	123.4	119.6	116.3	108.4	105.1		
	C.V.(%)	2.279	2.874	2.149	2.120	3.584	3.126	5.890	5.694		
	No. Specimens	18		18		18		18			
	No. Prepreg Lots	3		3		3		3			
SSB3, Proc. C Chord Stiffness [Msi]	Mean	2.039	1.967	1.508	1.459	1.490	1.437	1.569	1.516		
	Minimum	1.741	1.699	1.067	1.038	0.8977	0.8750	1.230	1.198		
	Maximum	2.610	2.518	2.208	2.162	1.698	1.637	1.924	1.859		
	C.V.(%)	15.02	13.61	18.39	19.06	11.75	11.91	12.99	12.63		
	No. Specimens	18		18		18		18			
	No. Prepreg Lots	3		3		3		3			

2.5.31 “25/50/25” Compression After Impact 1 Properties (CAI1)

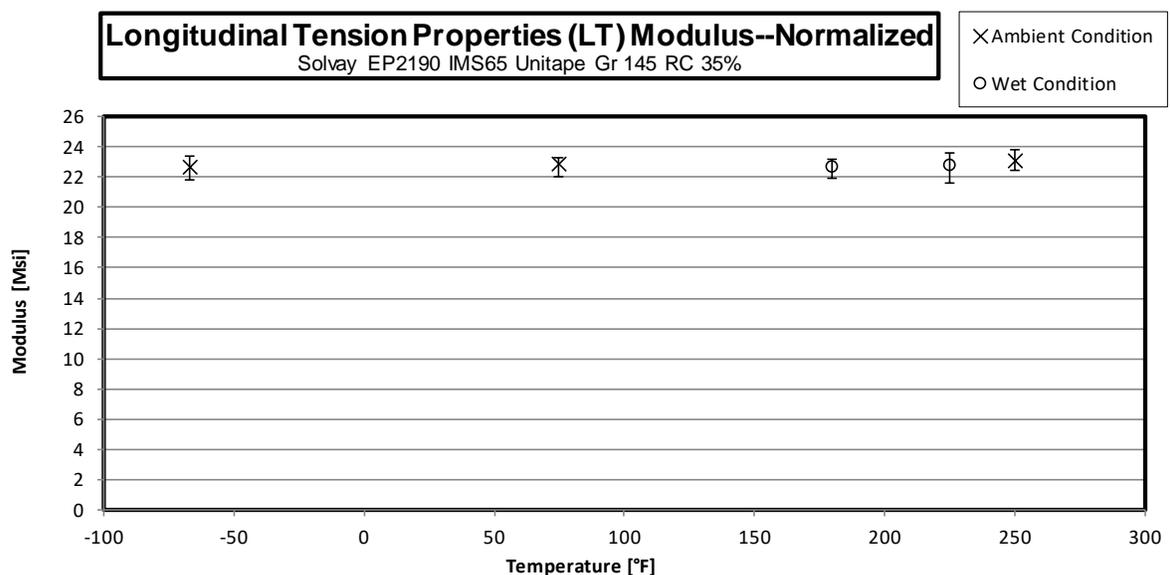
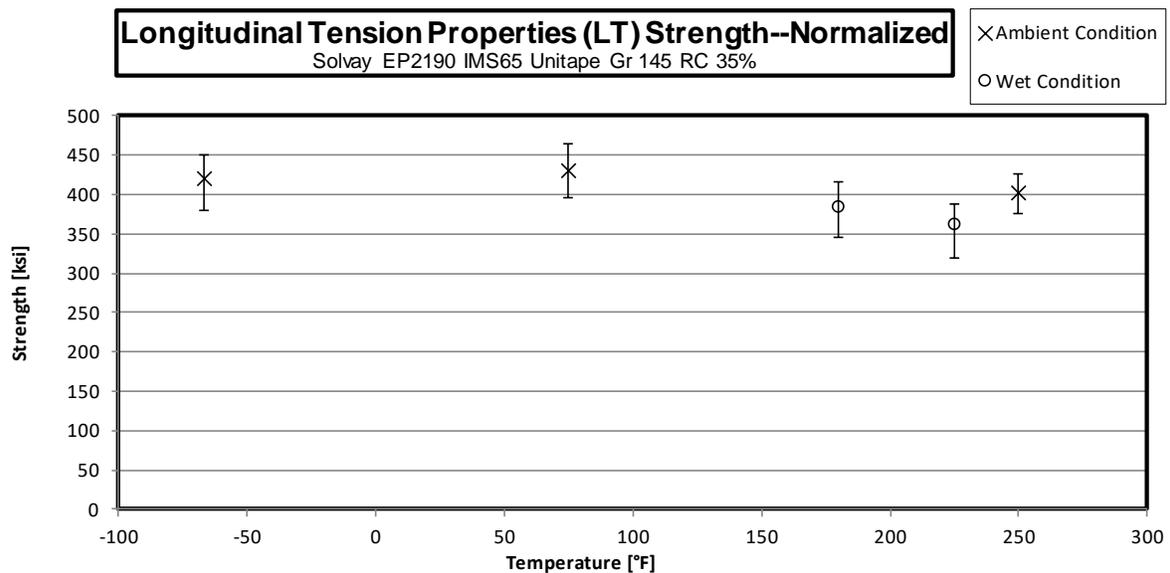
Material: Solvay EP2190 IMS65 Unitape Gr 145 RC 35%												Compression After Impact 1 Solvay EP2190 IMS65 Unitape Gr 145 RC 35% [45/0/-45/90]4S	
Resin content: 36.20 %wt		Comp. density: 1.549 g/cc											
Fiber volume: 55.54 %vol													
Ply count: 32													
Test method: ASTM D7136-15/ D7137-17													
Normalized by: 0.0056 in. CPT													
		CTA		RTA		ETA2		ETA3		ETW1		ETW2	
Test Temperature [°F]		-67		75		225		250		180		225	
Moisture Conditioning Equilibrium at T, RH		Ambient		Ambient		Ambient		Ambient		Equilibrium 160F, 85%RH		Equilibrium 160F, 85%RH	
Source code for Phase 1:		TR7XXXXXX-PX-CAI1-X-CX-CTA-X		TR7XXXXXX-PX-CAI1-X-CX-RTA-X				TR7XXXXXX-PX-CAI1-X-CX-ETA3-X					
Source code for Phase 2 & 3, prefixed by: NTP2190Q1-WRX-IMS-SOL-						CAI1-X-CX-1-ETA2-X				CAI1-X-CX-1-ETW1-X		CAI1-X-CX-1-ETW2-X	
		Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
CAI1 Strength [ksi]	Mean	56.74	54.19	48.40	46.13	40.13	38.99	36.33	34.82	39.83	39.25	35.31	34.77
	Minimum	50.09	47.69	43.96	42.13	37.51	36.57	32.38	31.00	34.07	34.31	32.13	31.46
	Maximum	61.13	58.33	52.54	50.13	41.62	40.56	39.32	37.82	42.83	41.80	39.00	37.98
	C.V.(%)	7.140	7.161	5.943	5.814	4.074	3.974	6.975	7.084	6.511	5.866	5.489	5.398
	No. Specimens	6		18		6		6		18		18	
No. Prepreg Lots	1		3		1		1		3		3		

3. Individual Test Charts

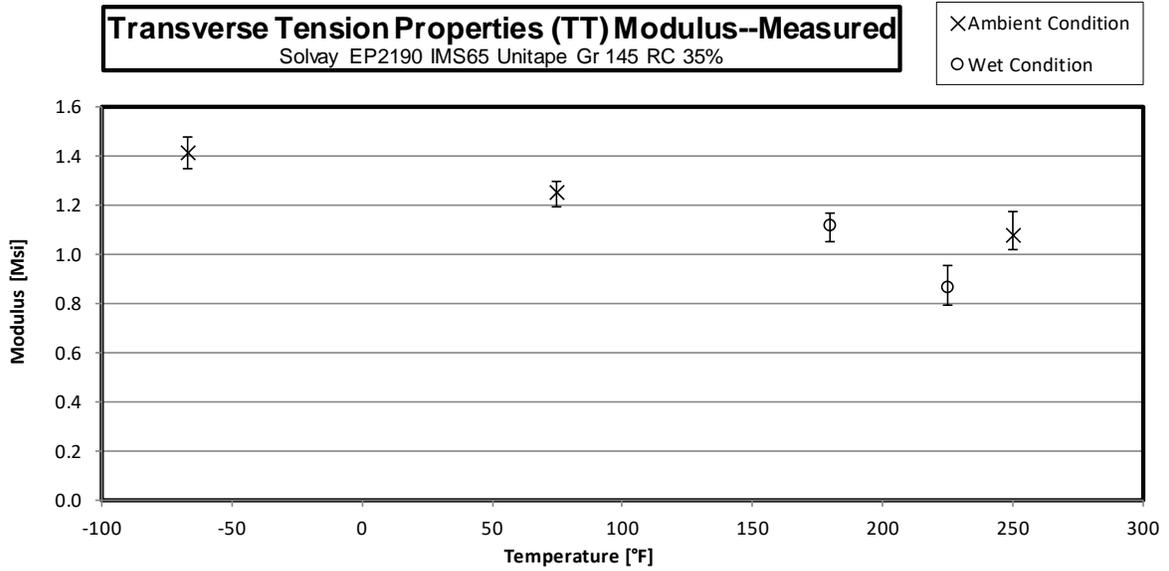
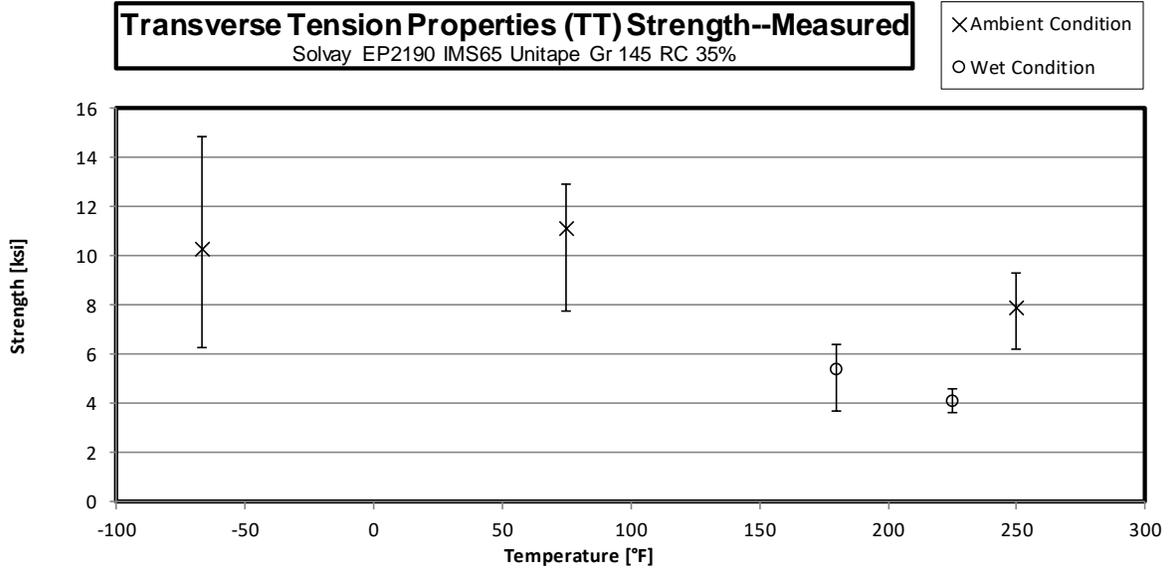
The material property test charts display a combination of all three batches of data for a particular property as a function of test temperature for ambient and wet test conditions. The average is plotted for each material property and the minimum to maximum range is represented by vertical bars.

Plots for ETA2 and ETW3 have been offset to 230°F (from 225°F) and 255°F (from 250°F) respectively, to improve clarity and readability.

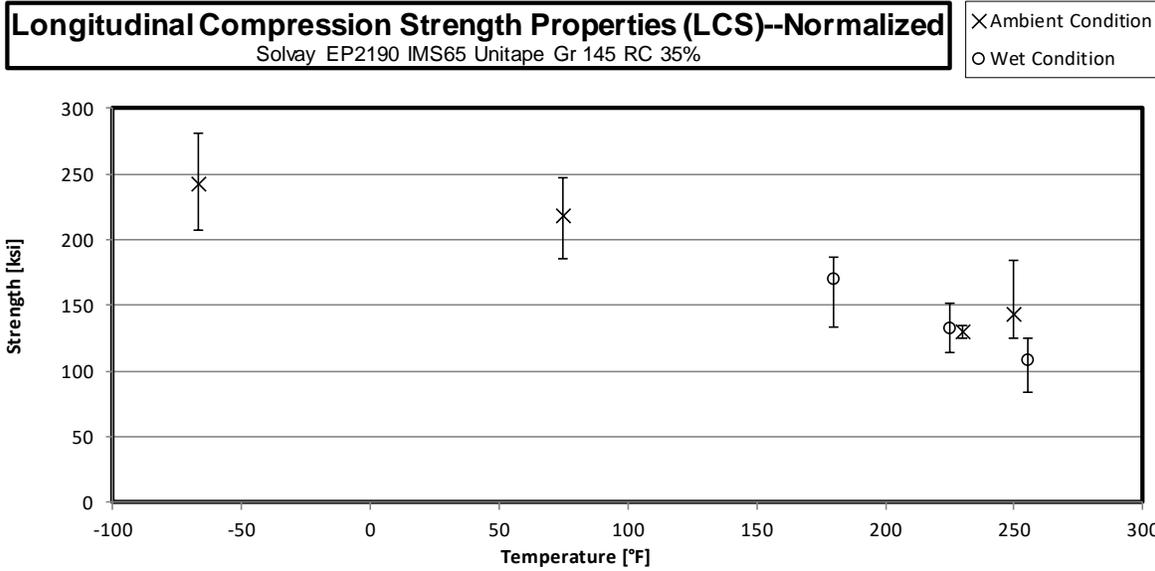
3.1 Longitudinal Tension Properties (LT)



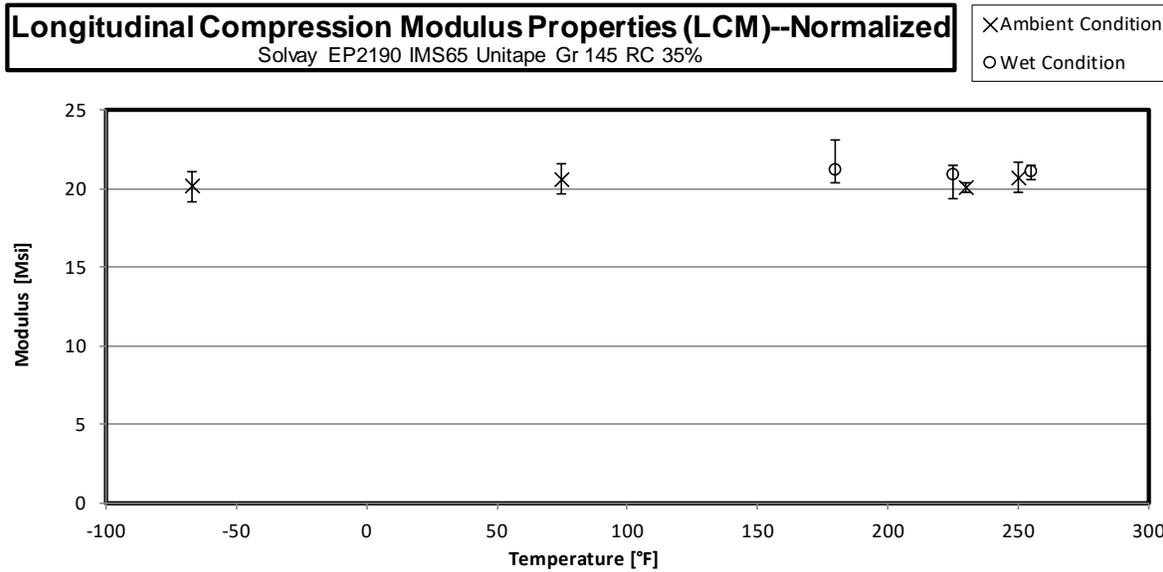
3.2 Transverse Tension Properties (TT)



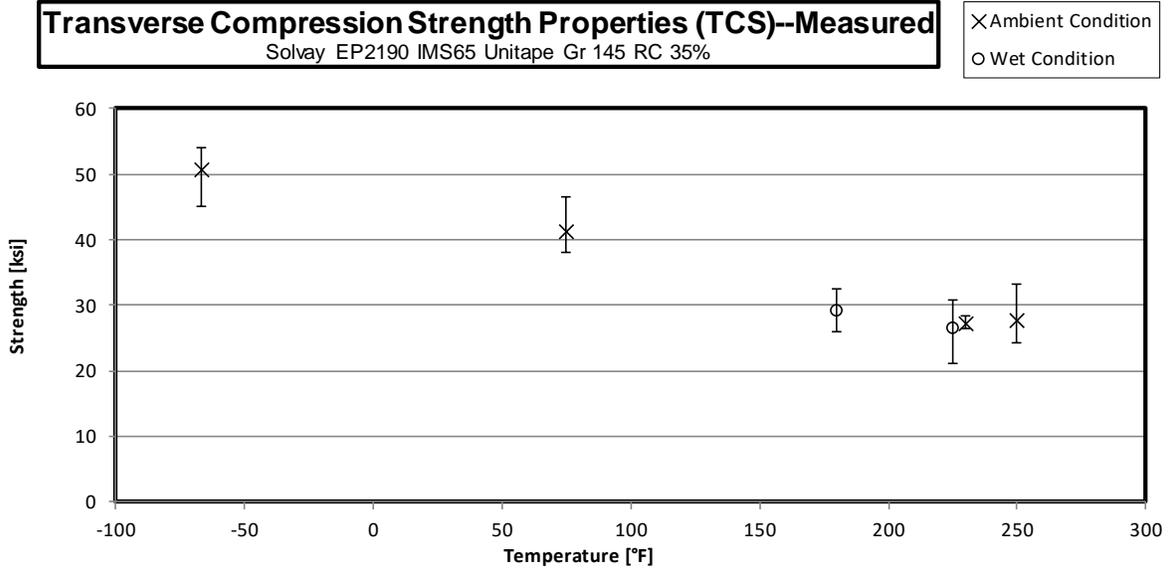
3.3 Longitudinal Compression Strength Properties (LCS)



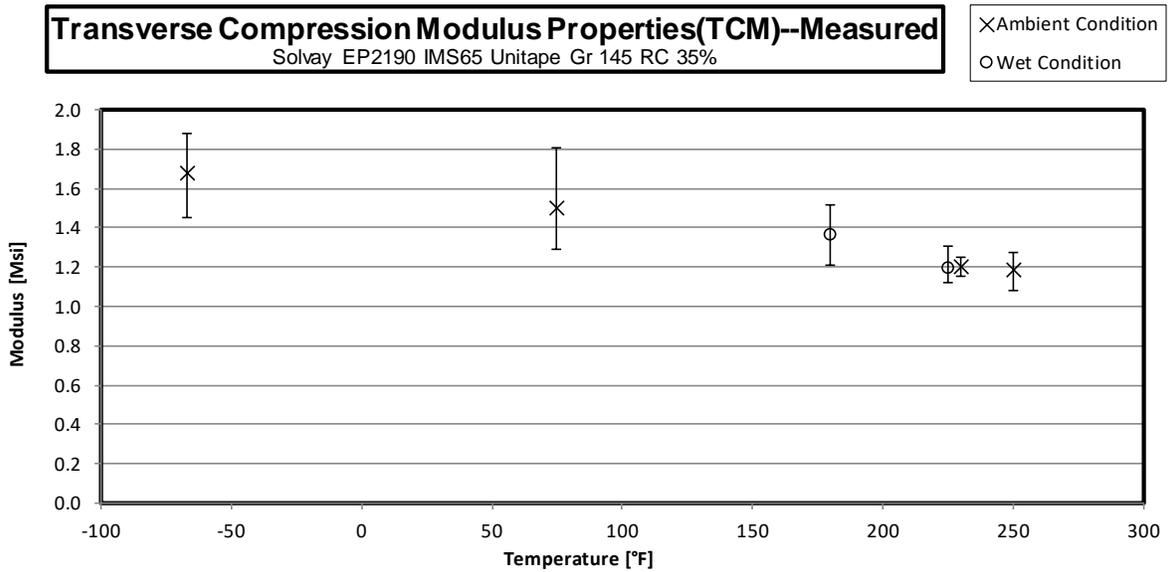
3.4 Longitudinal Compression Modulus Properties (LCM)



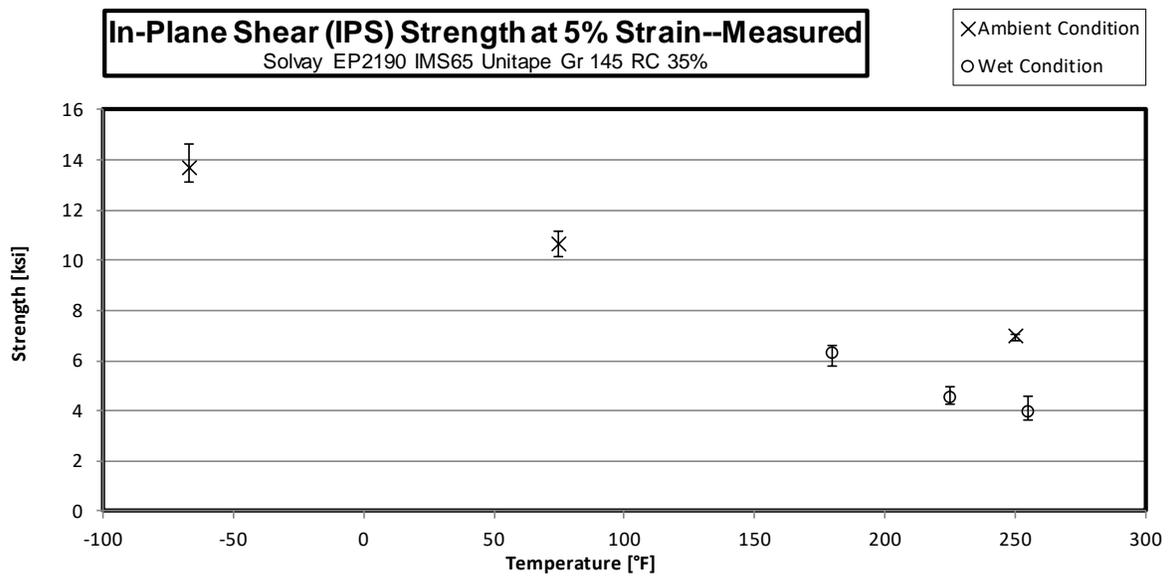
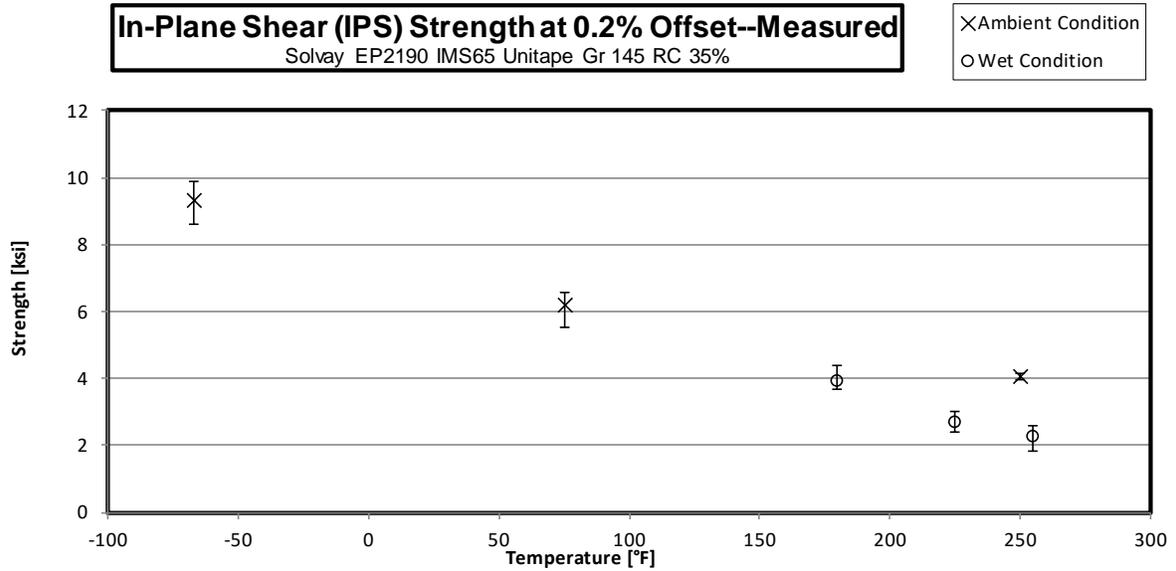
3.5 Transverse Compression Strength Properties (TCS)

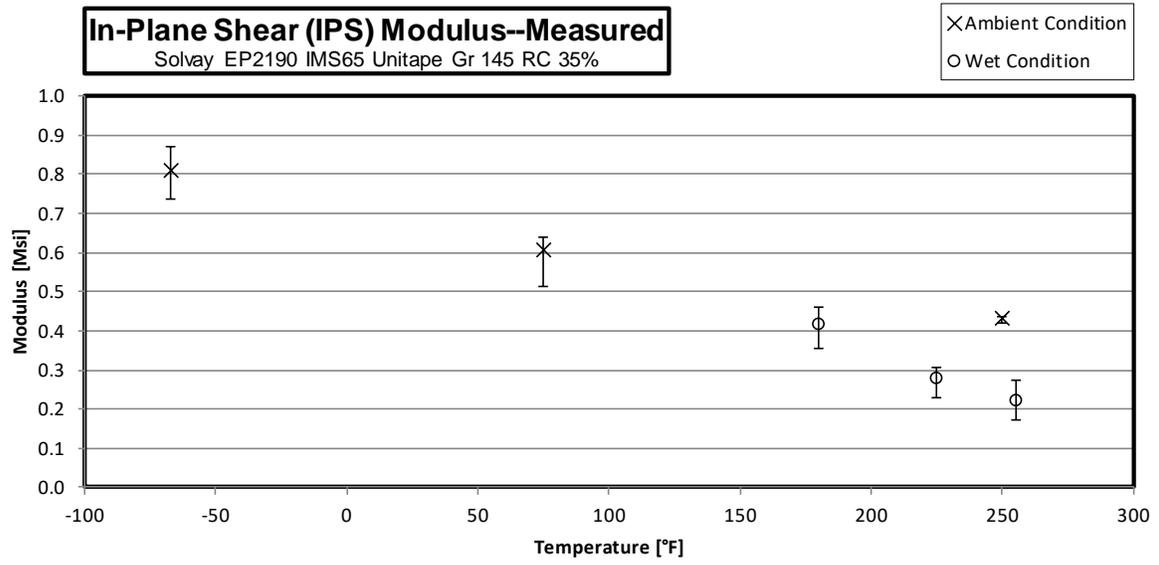


3.6 Transverse Compression Modulus Properties (TCM)

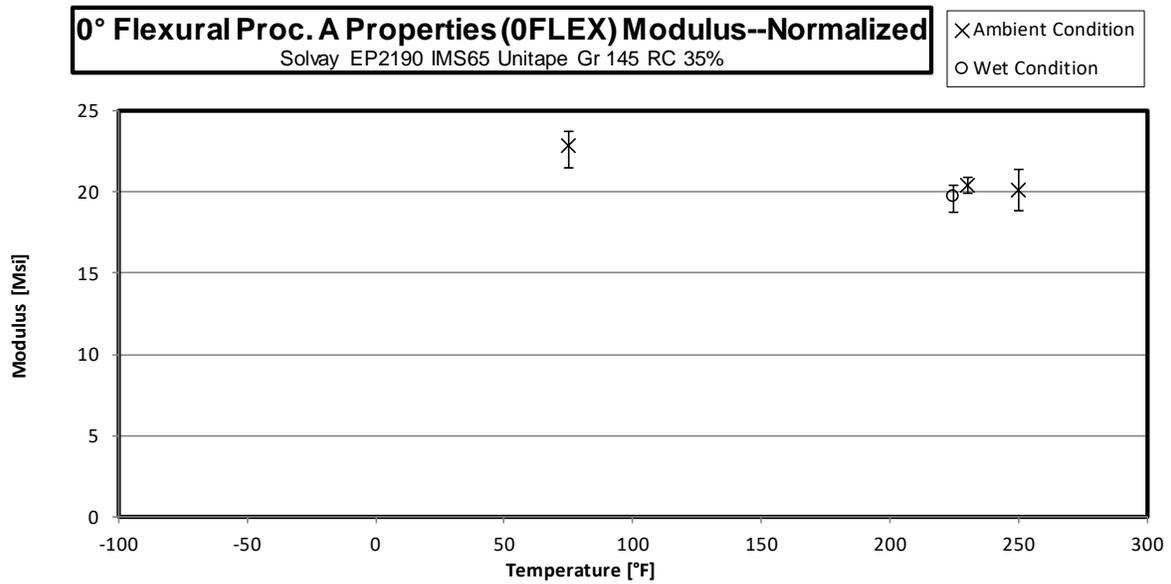
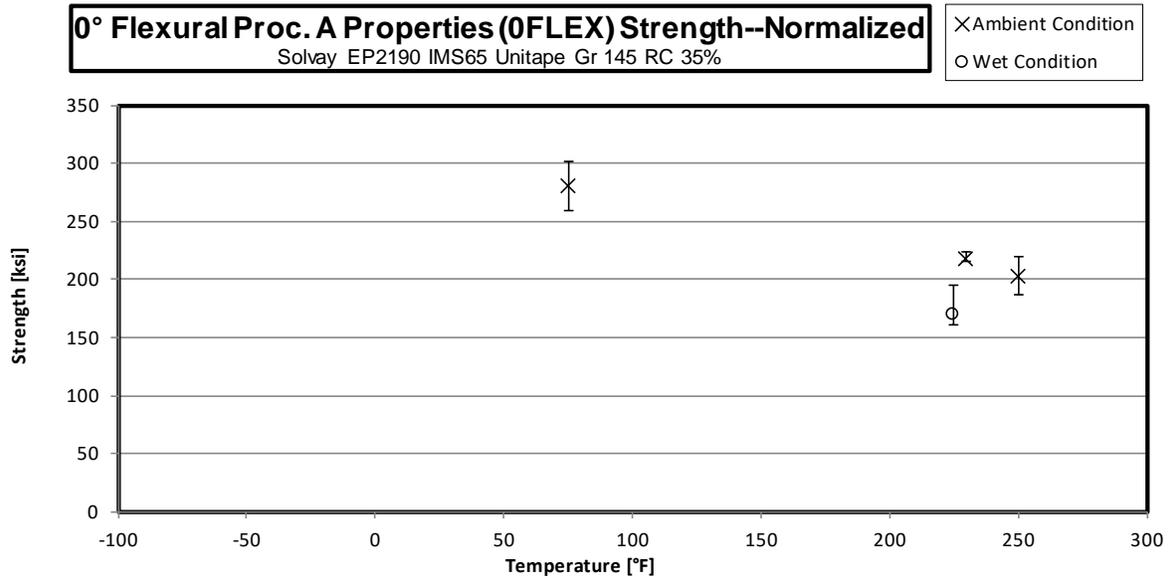


3.7 In-Plane Shear Properties (IPS)

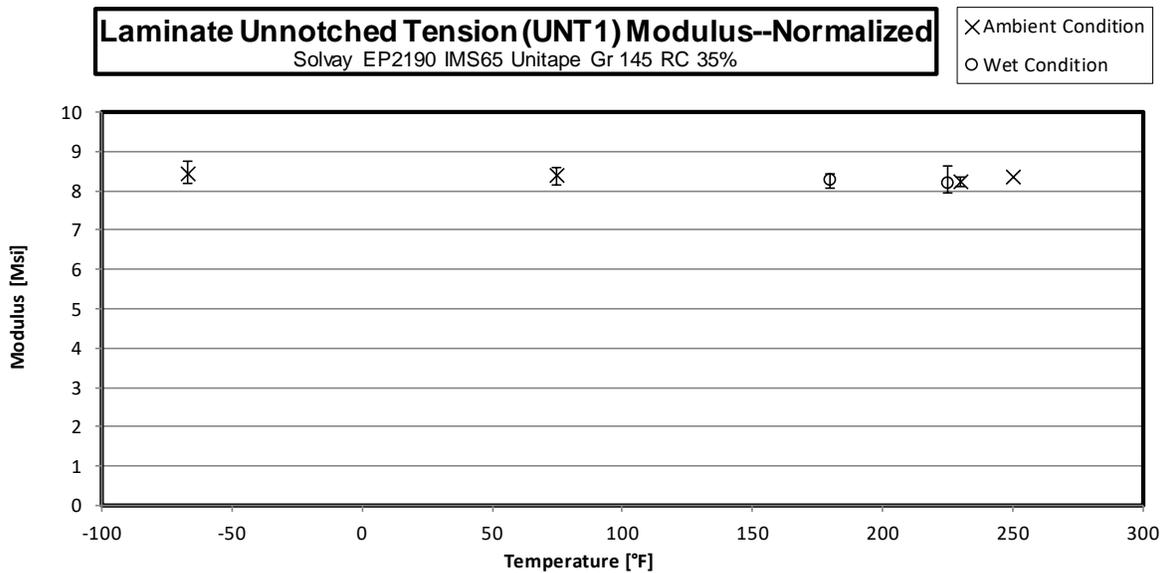
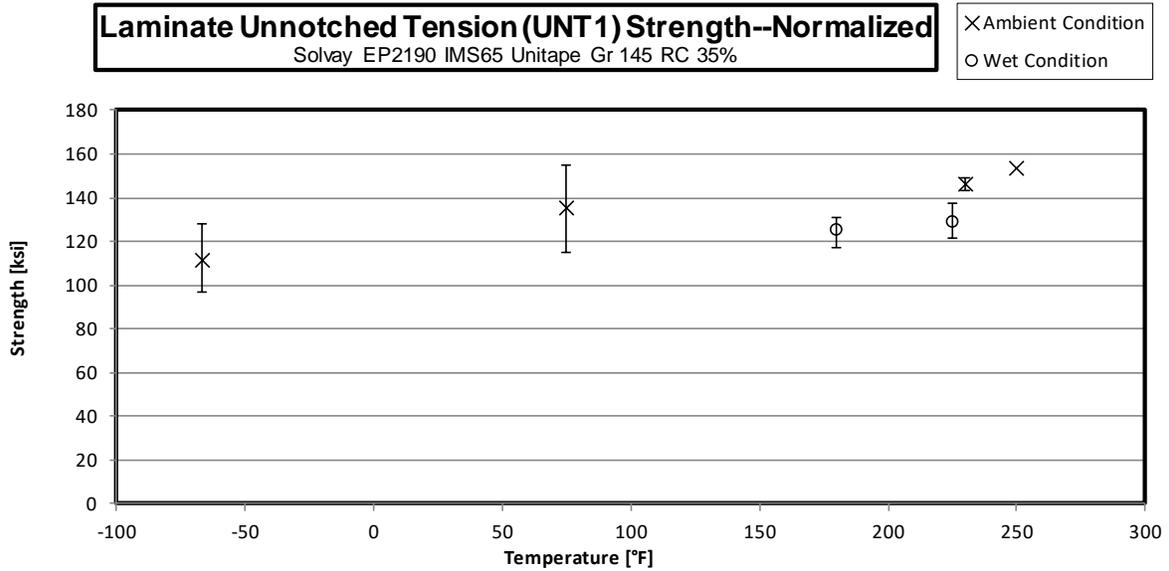




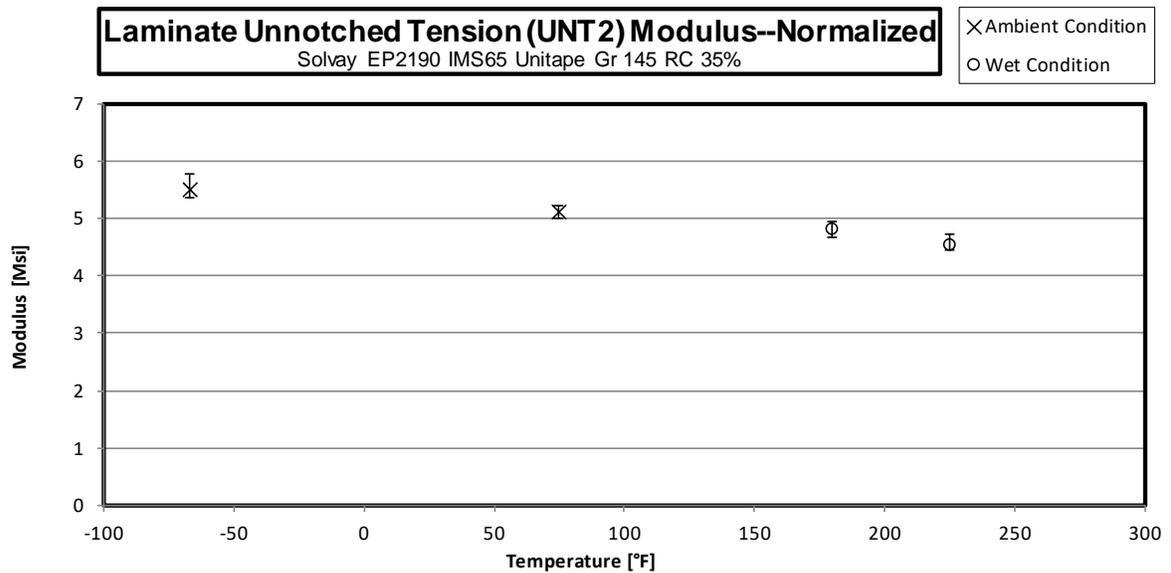
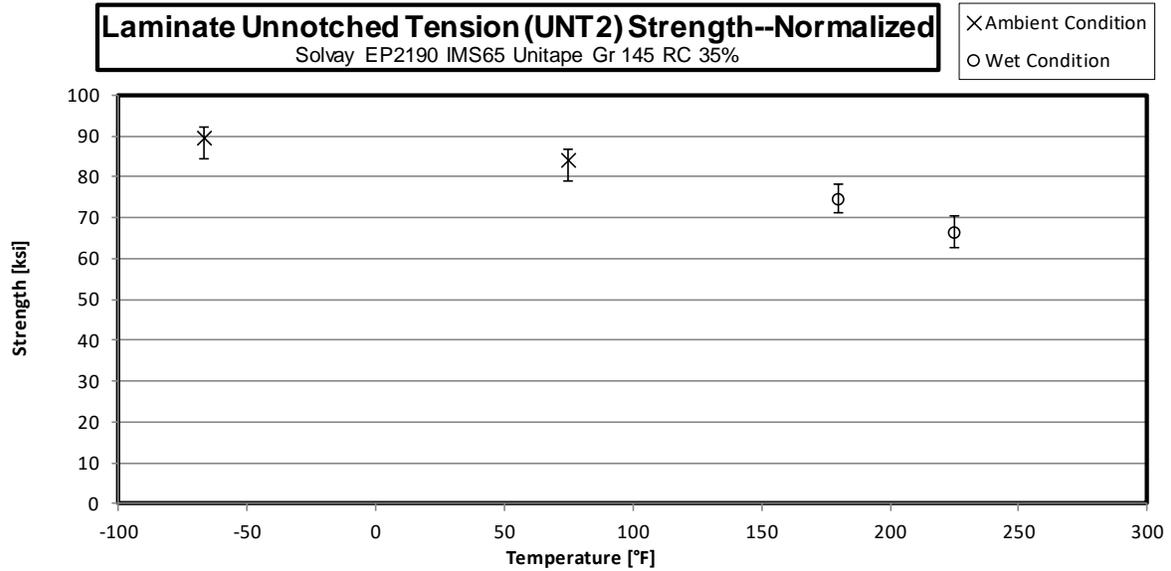
3.8 0° Flexural Proc. A Properties (0FLEX)



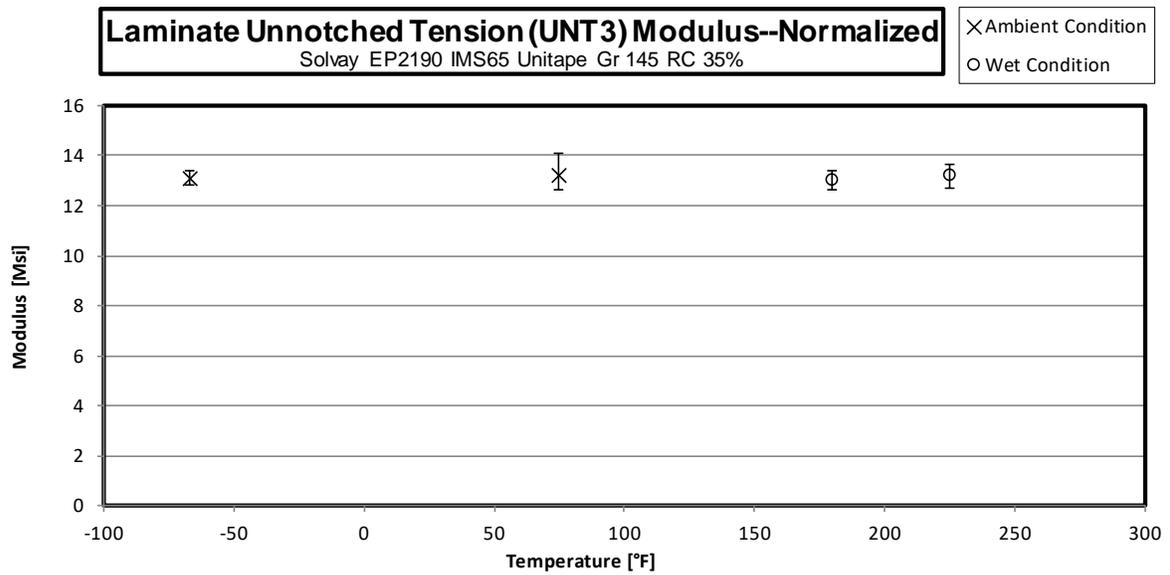
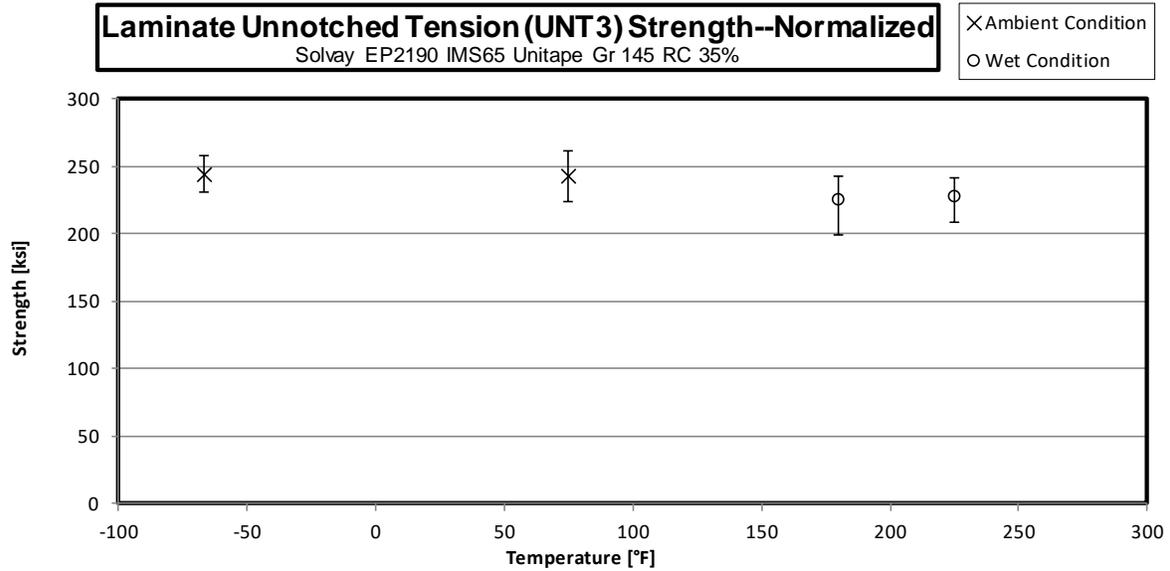
3.9 “25/50/25” Unnotched Tension 1 Properties (UNT1)



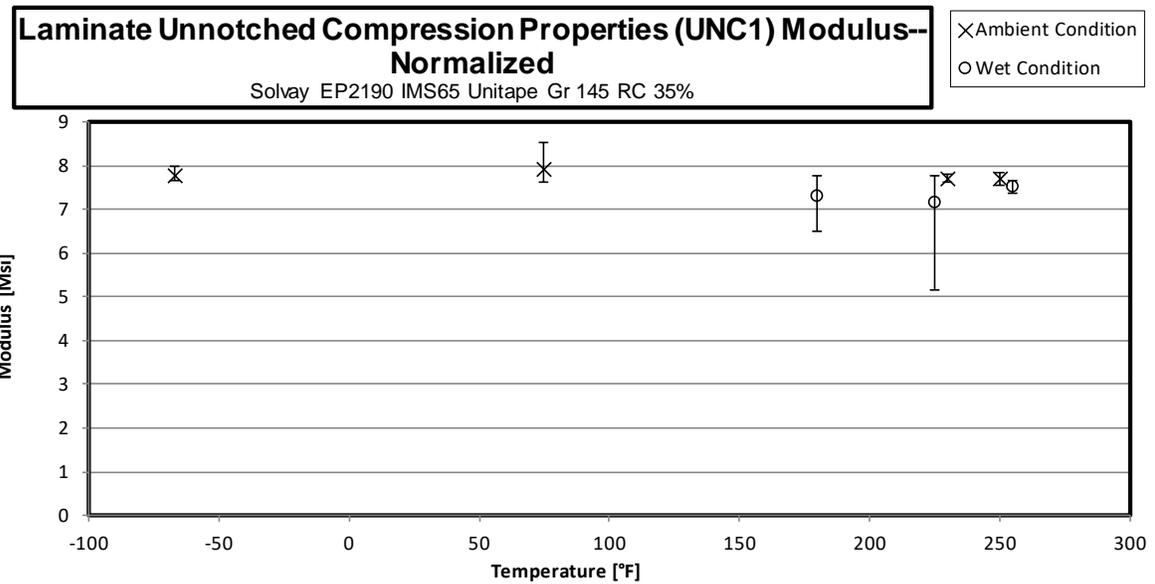
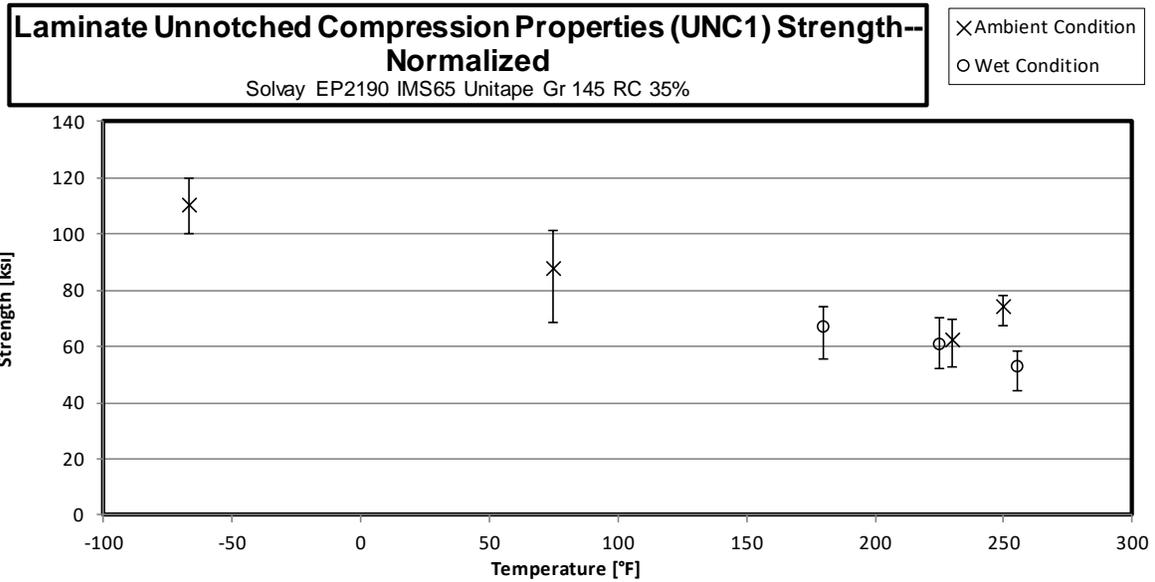
3.10 “10/80/10” Unnotched Tension 2 Properties (UNT2)



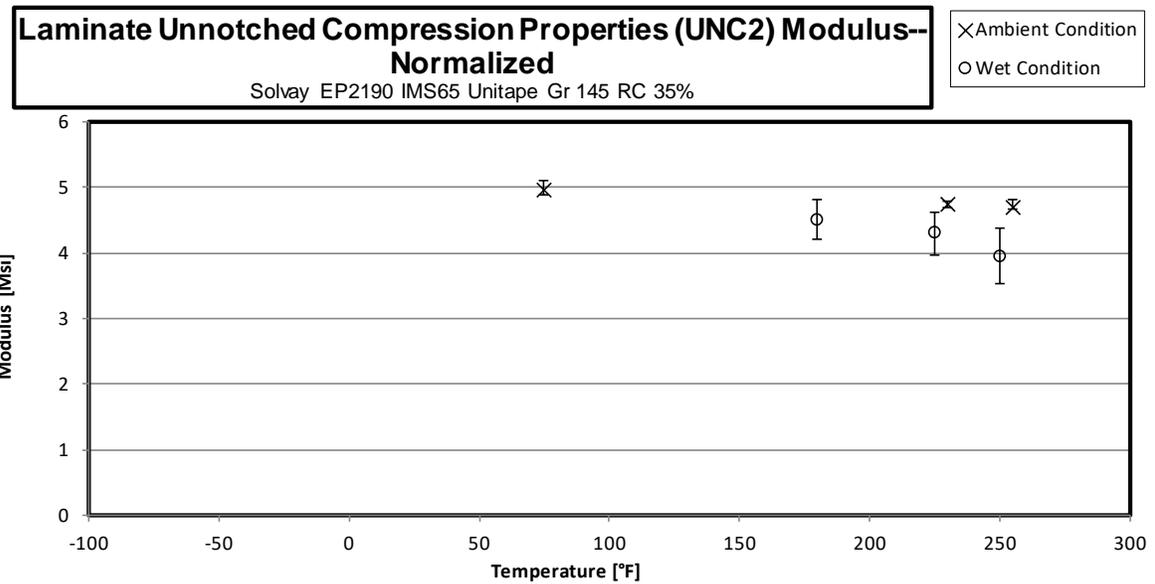
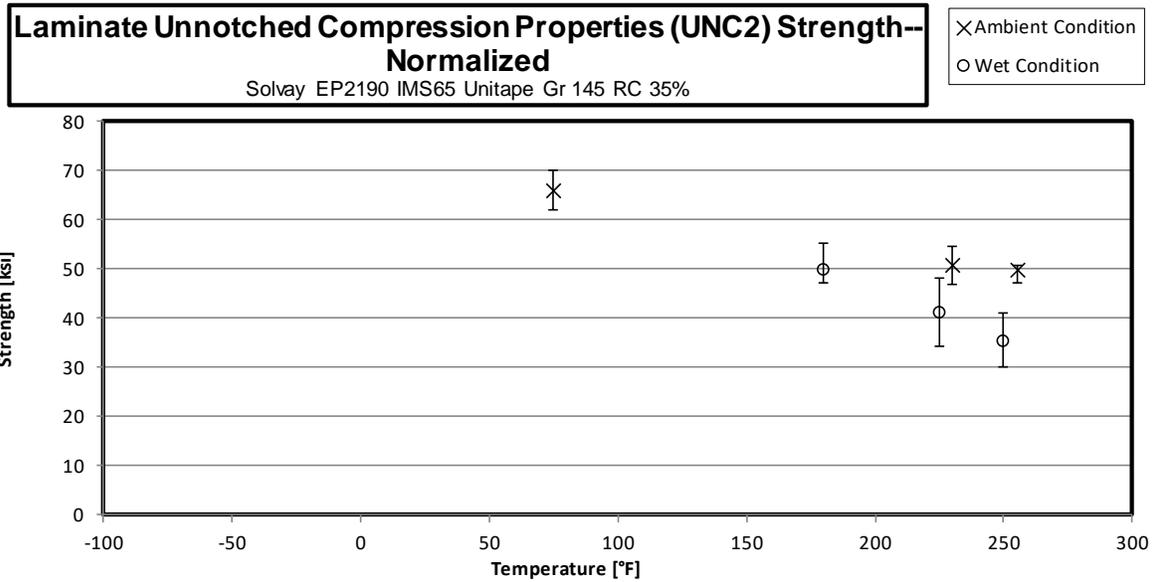
3.11 “50/40/10” Unnotched Tension 3 Properties (UNT3)



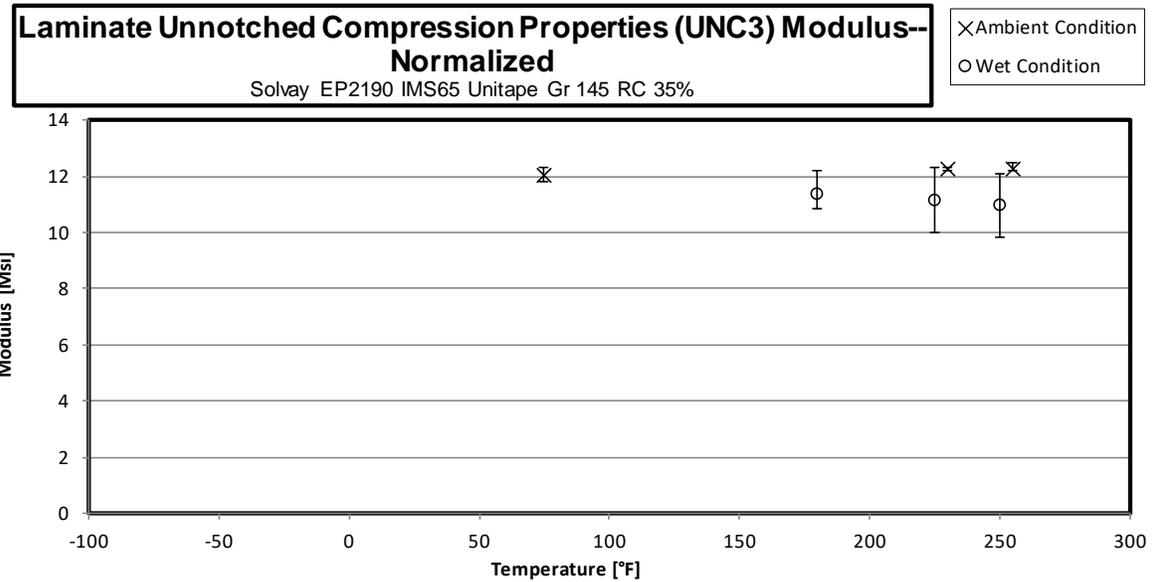
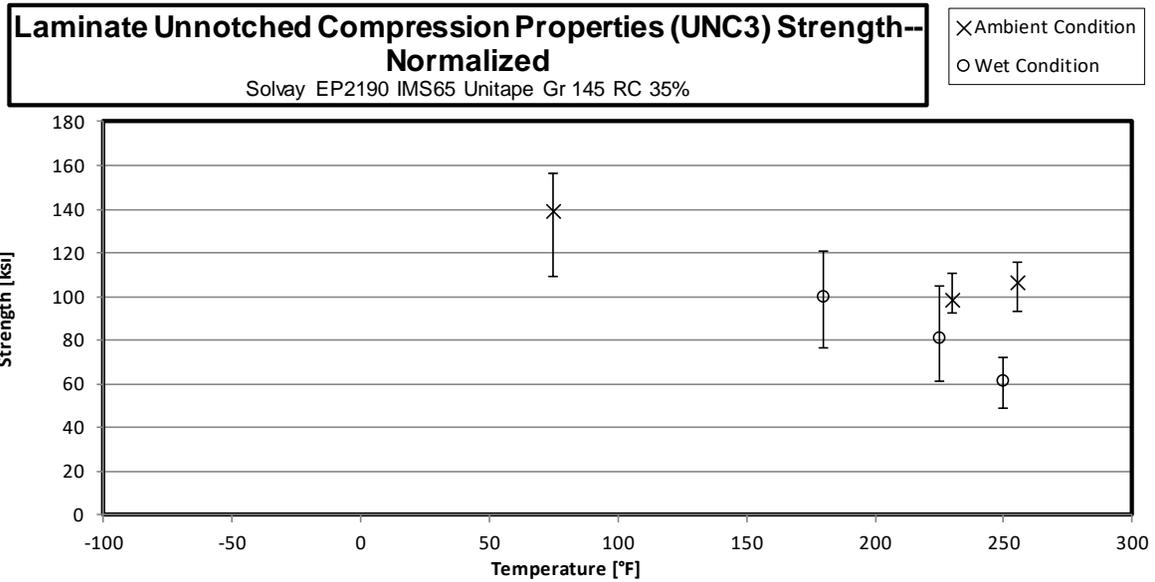
3.12 “25/50/25” Unnotched Compression 1 Properties (UNC1)



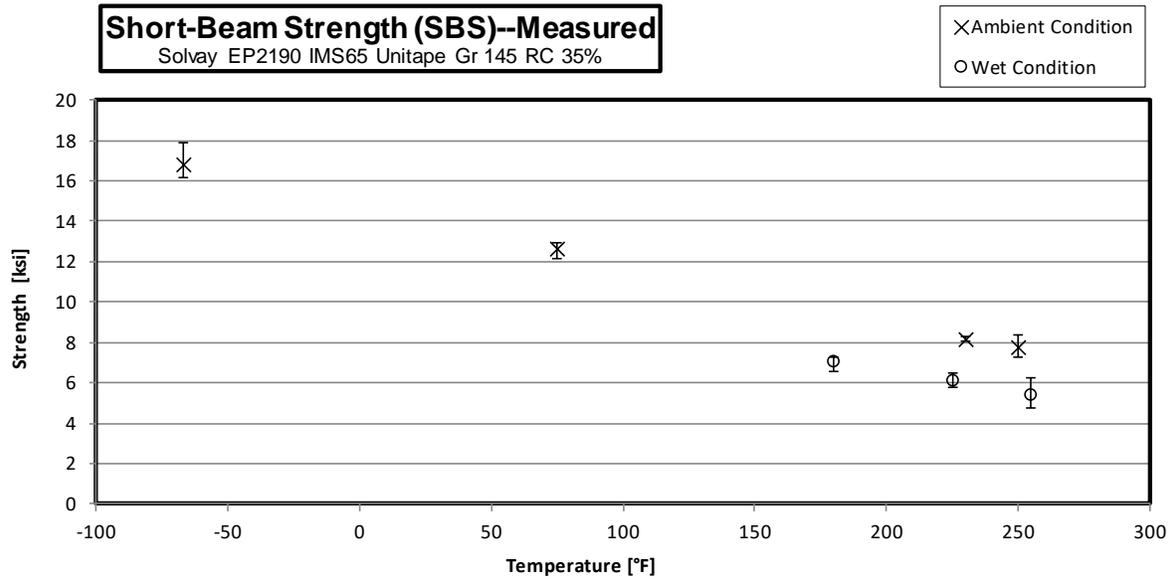
3.13 “10/80/10” Unnotched Compression 2 Properties (UNC2)



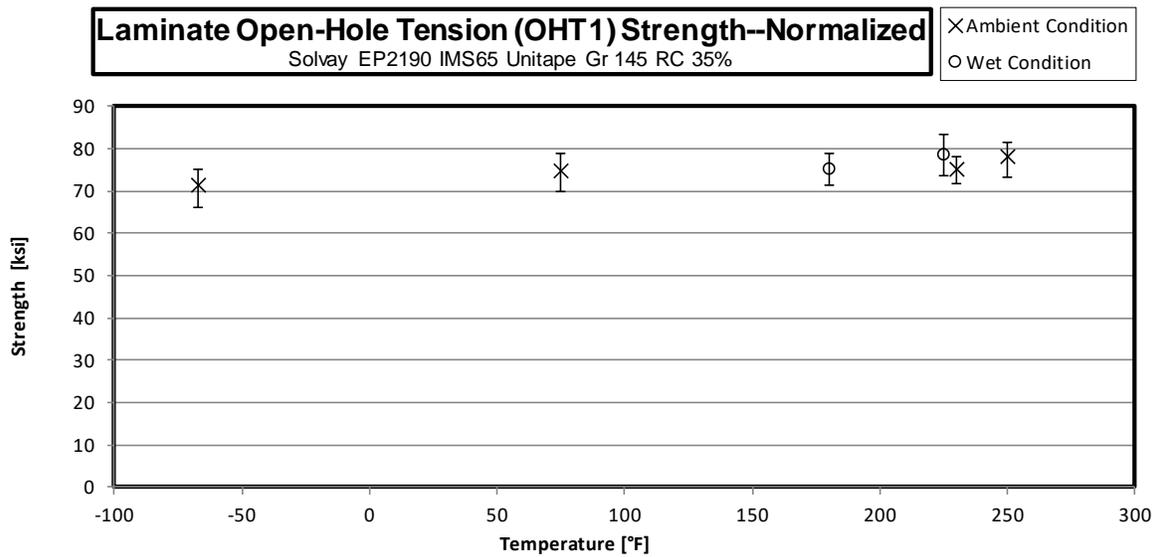
3.14 “50/40/10” Unnotched Compression 3 Properties (UNC3)



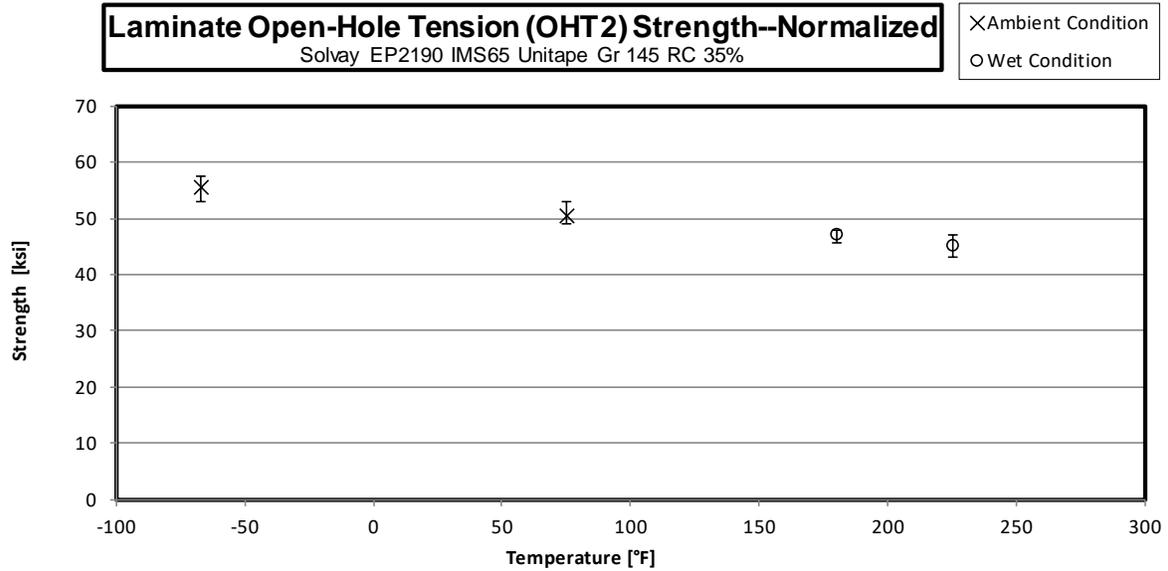
3.15 Lamina Short-Beam Shear Properties (SBS)



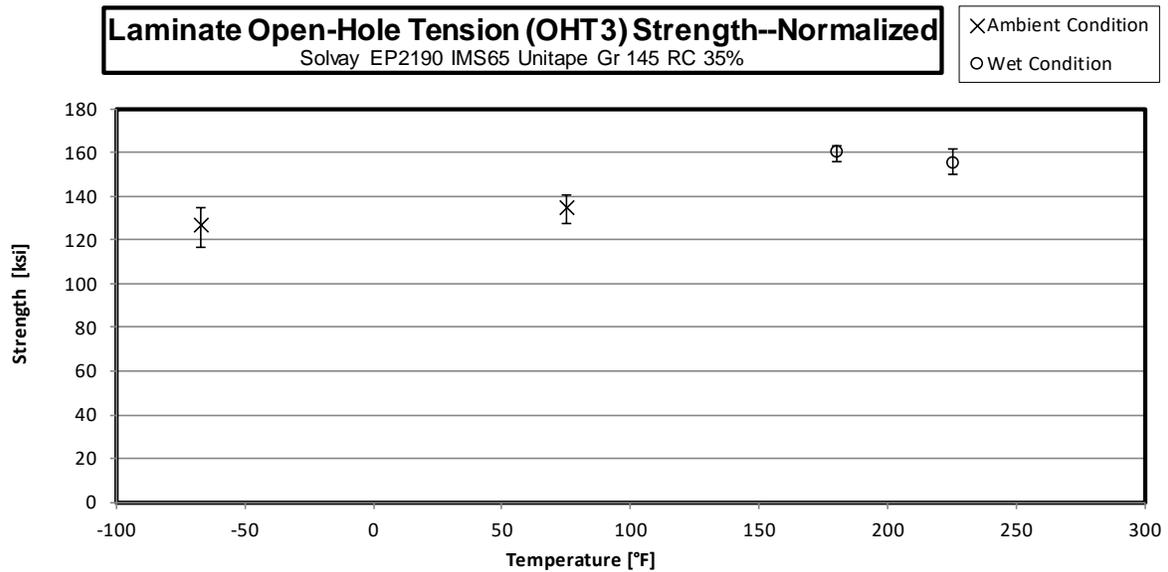
3.16 “25/50/25” Open-Hole Tension 1 Properties (OHT1)



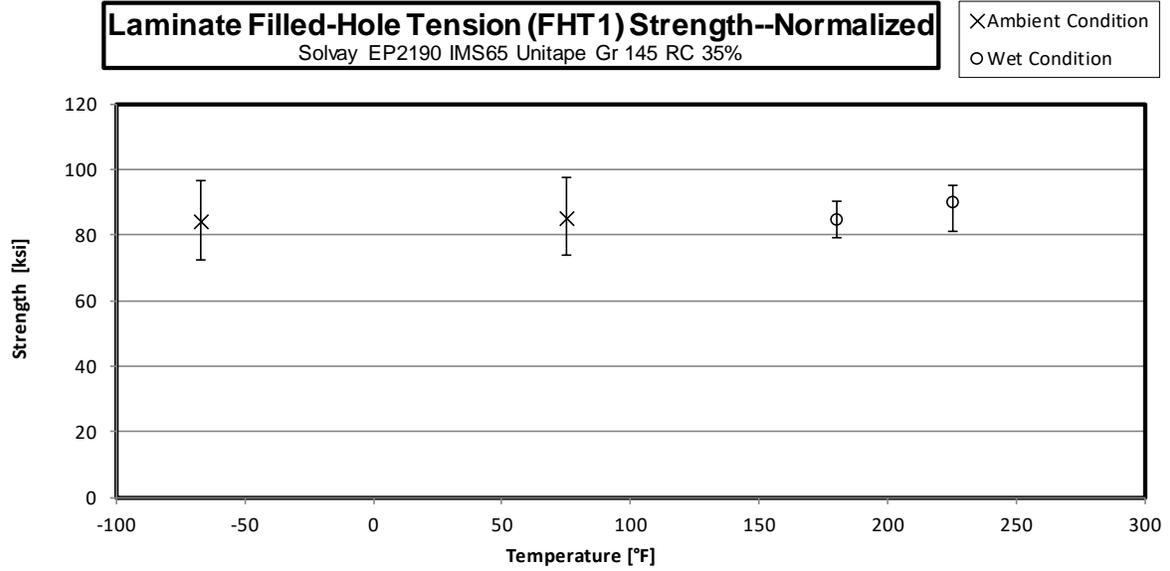
3.17 “10/80/10” Open-Hole Tension 2 Properties (OHT2)



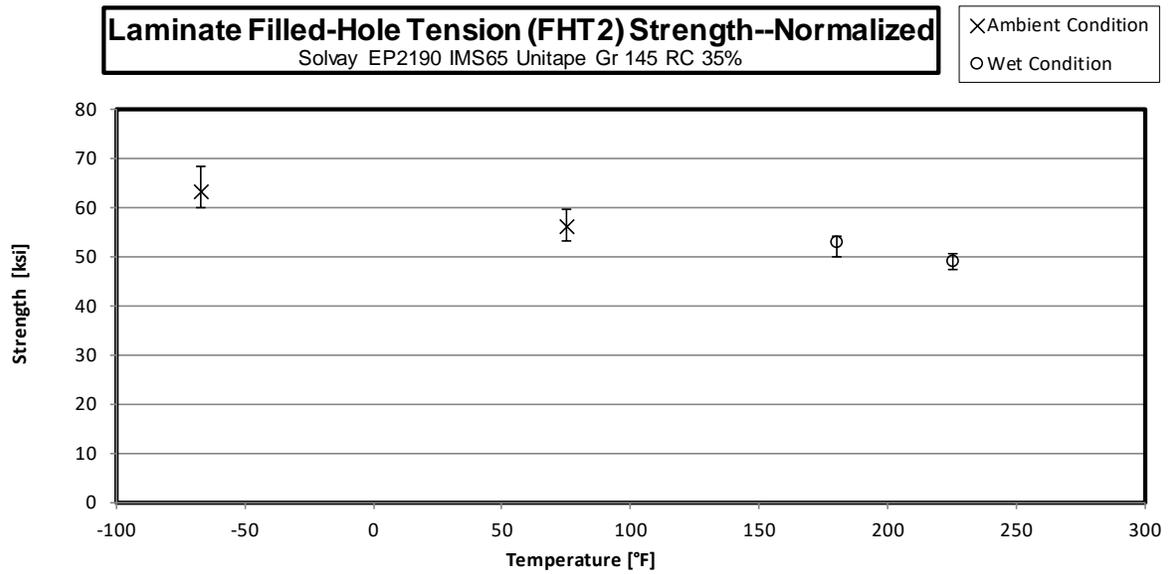
3.18 “50/40/10” Open-Hole Tension 3 Properties (OHT3)



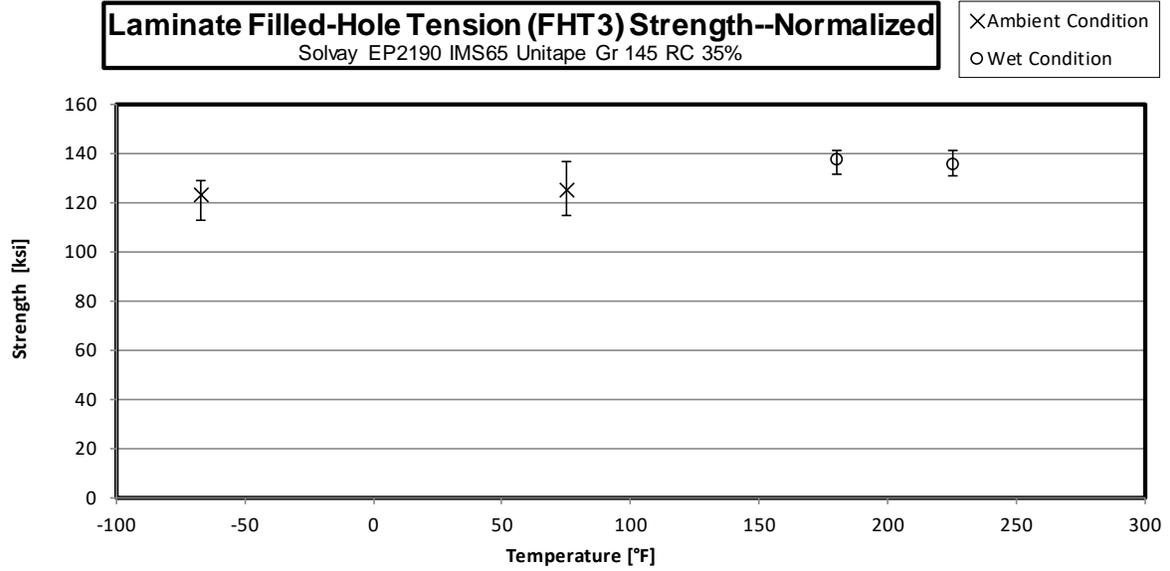
3.19 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)



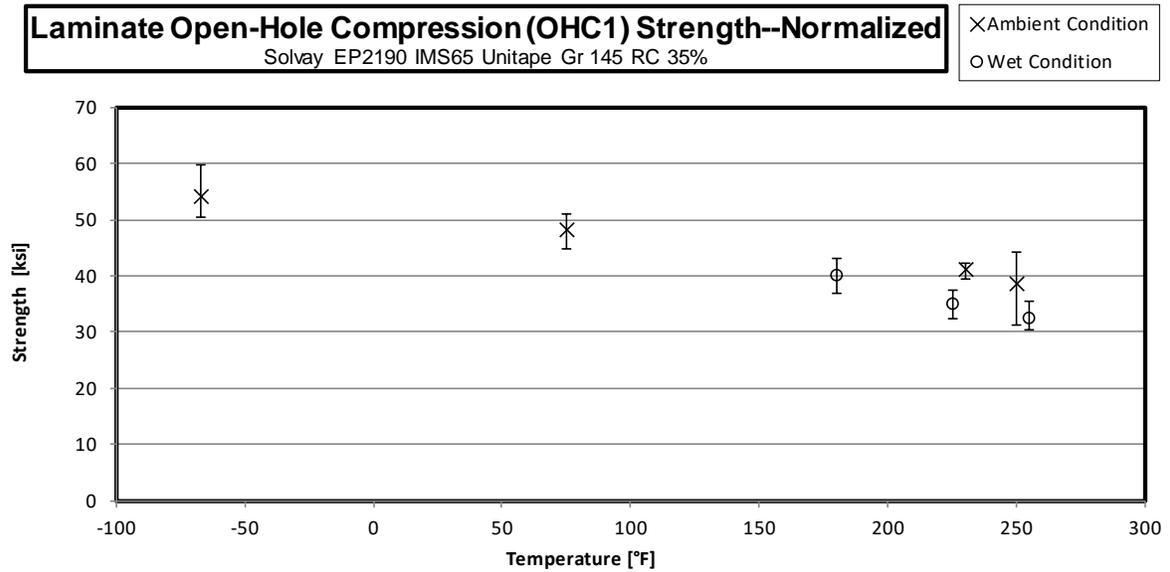
3.20 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)



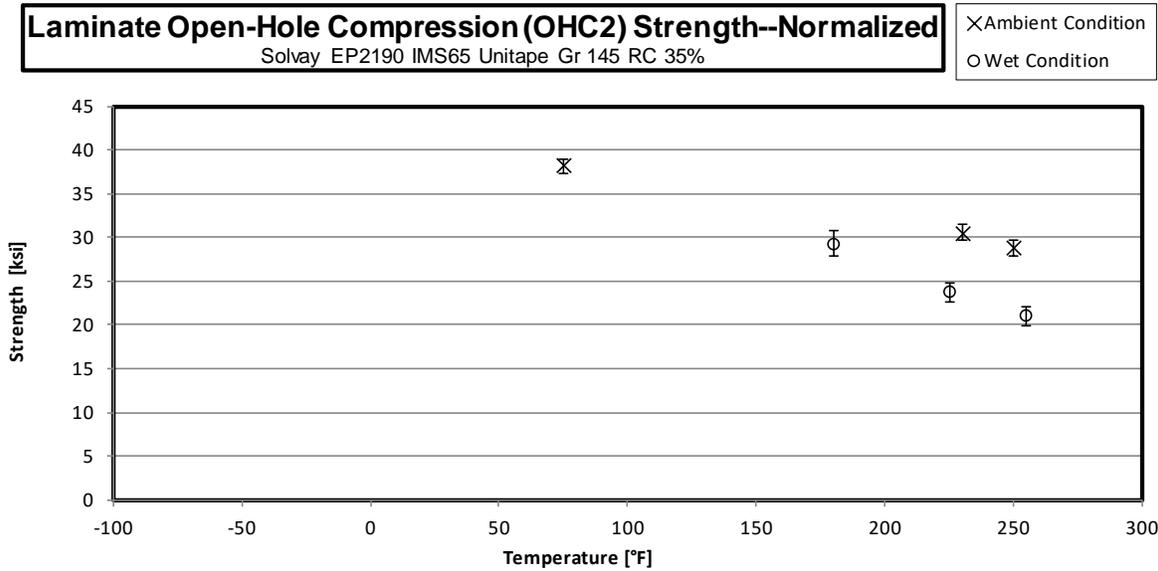
3.21 “50/40/10” Filled-Hole Tension 3 Properties (FHT3)



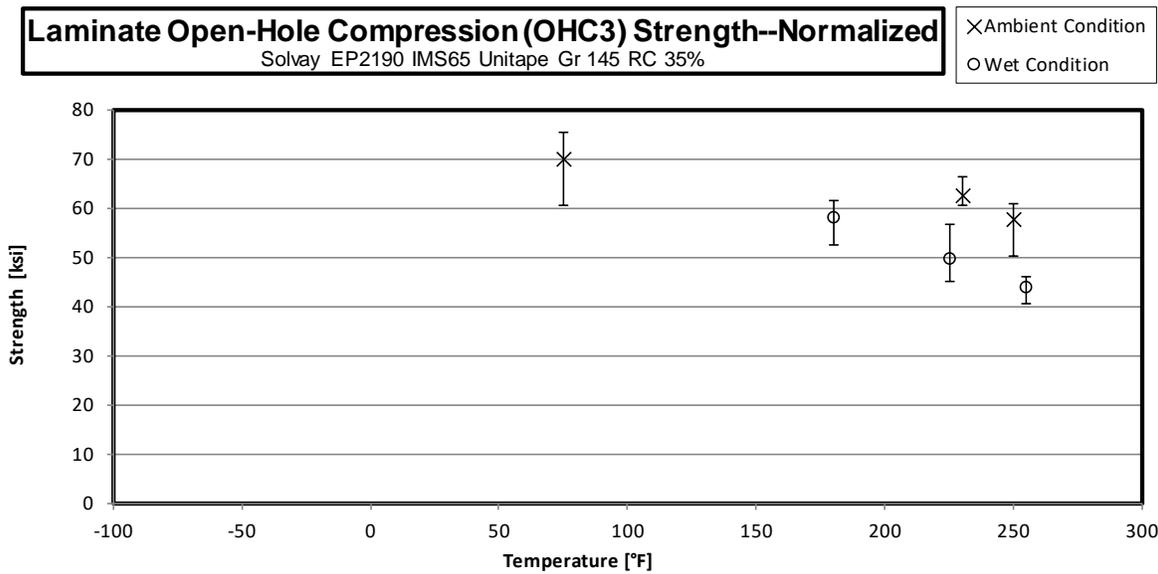
3.22 “25/50/25” Open-Hole Compression 1 Properties (OHC1)



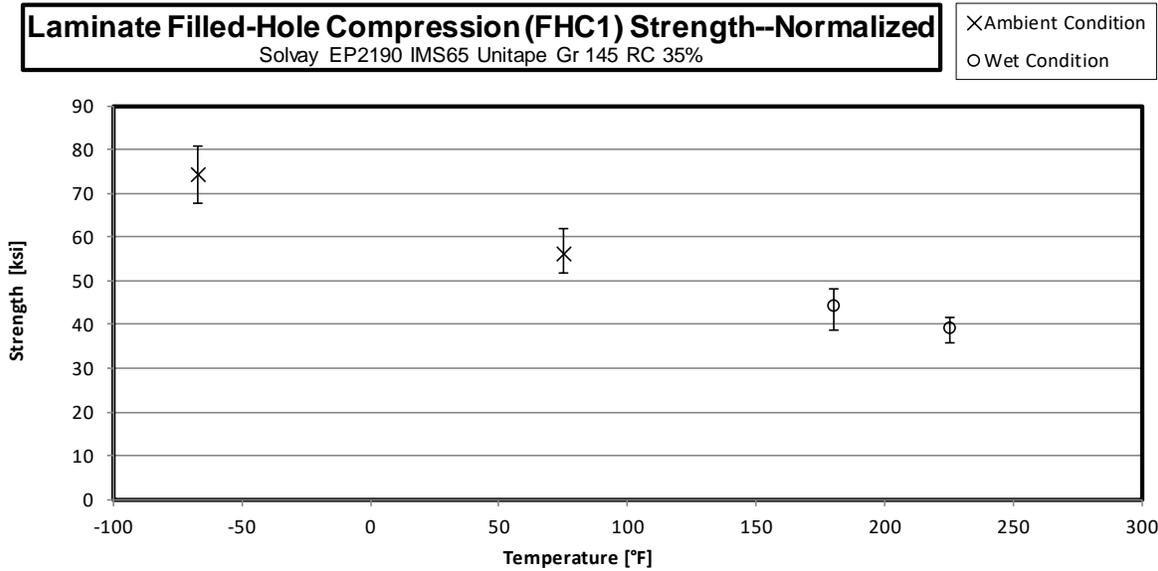
3.23 “10/80/10” Open-Hole Compression 2 Properties (OHC2)



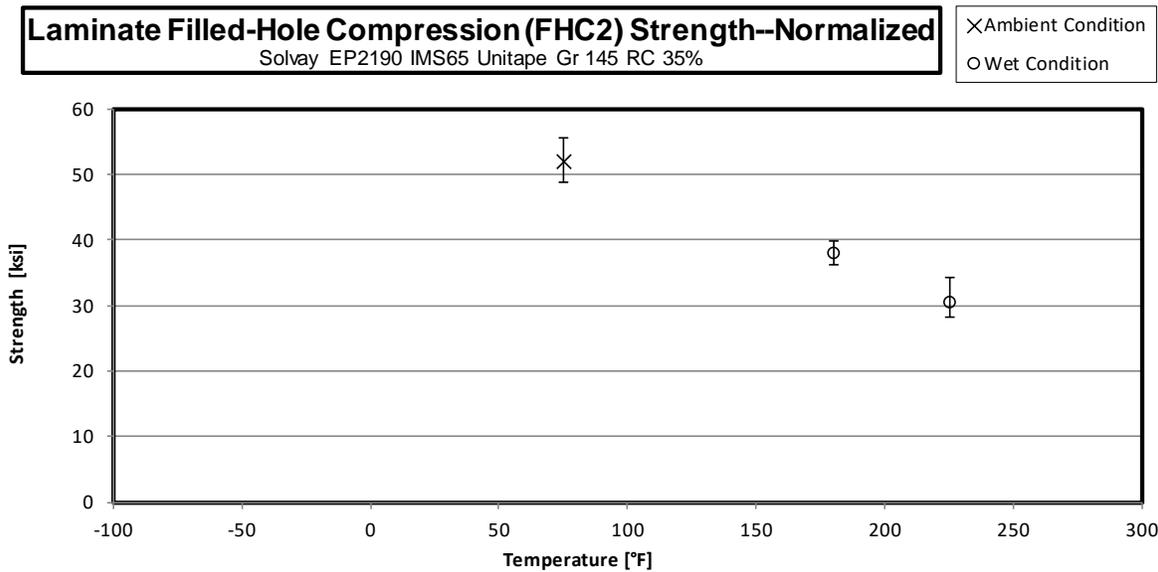
3.24 “50/40/10” Open-Hole Compression 3 Properties (OHC3)



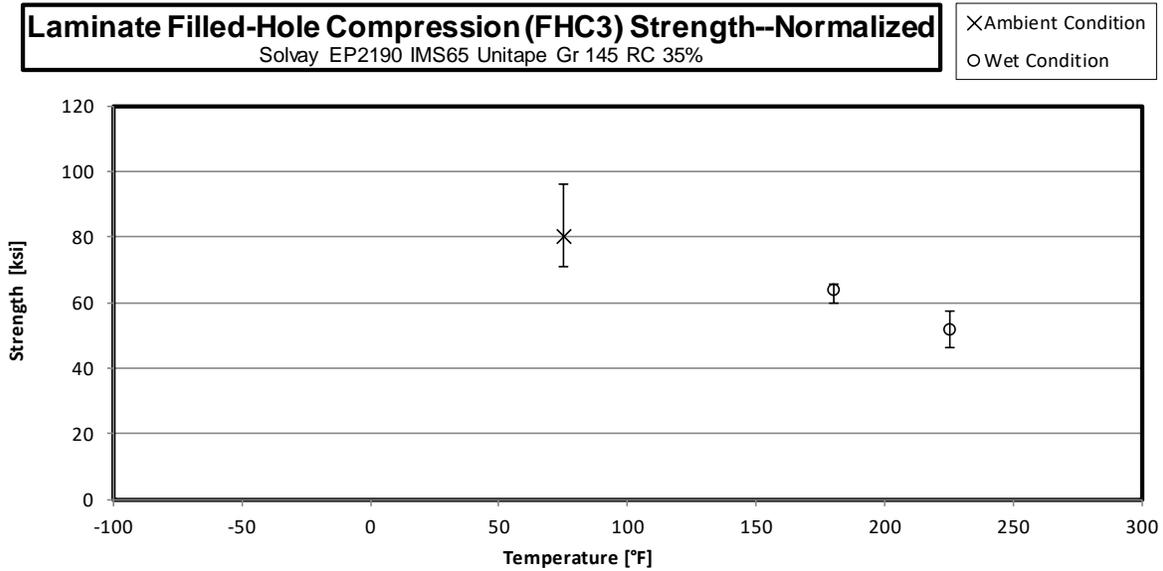
3.25 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)



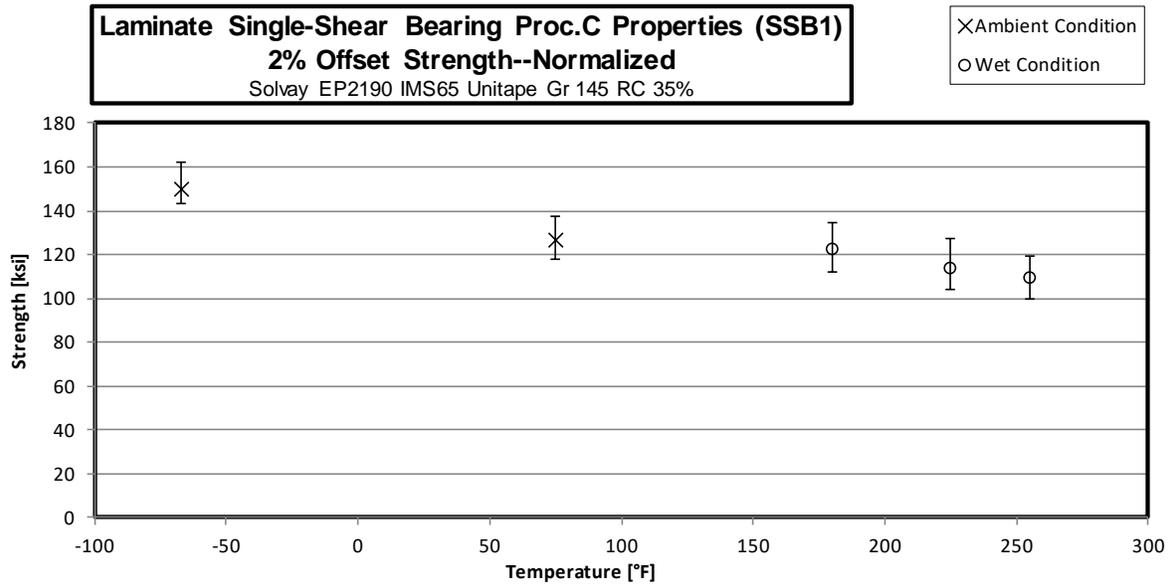
3.26 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

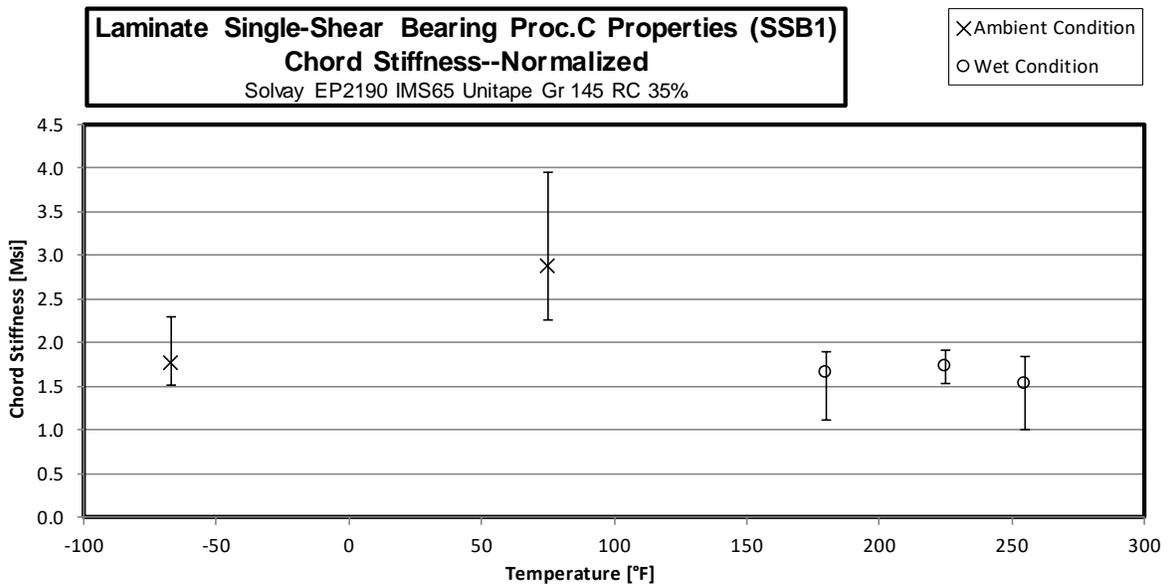


3.27 “50/40/10” Filled-Hole Compression 3 Properties (FHC3)

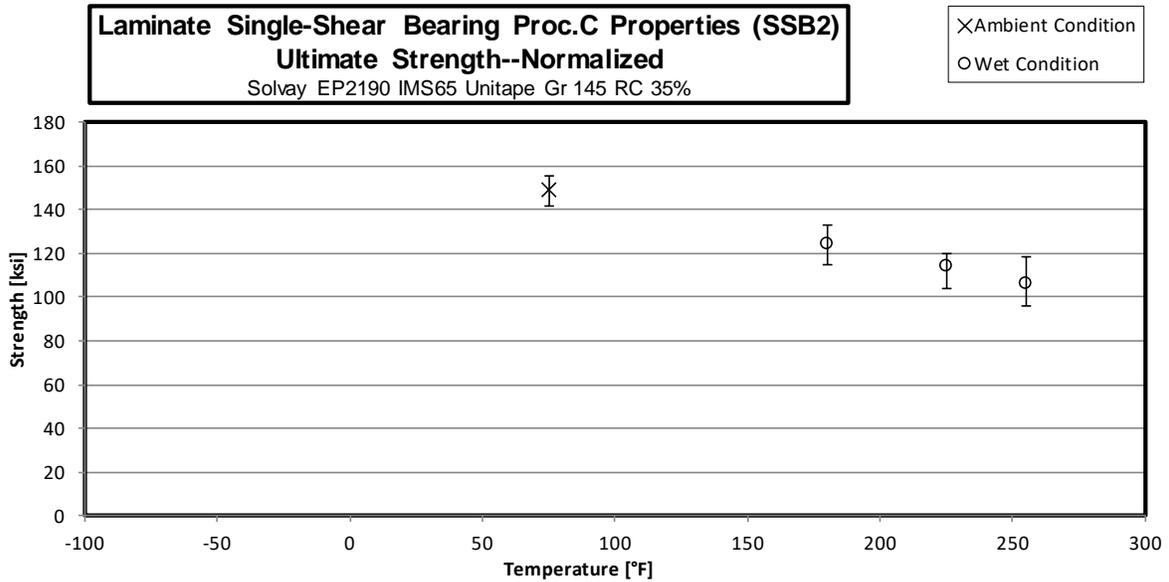
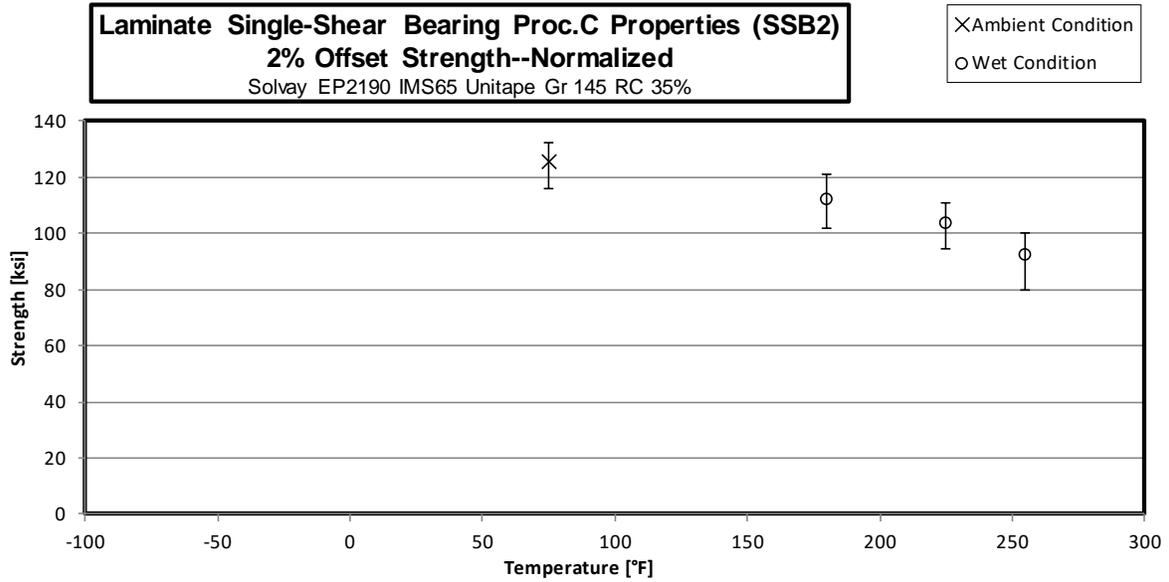


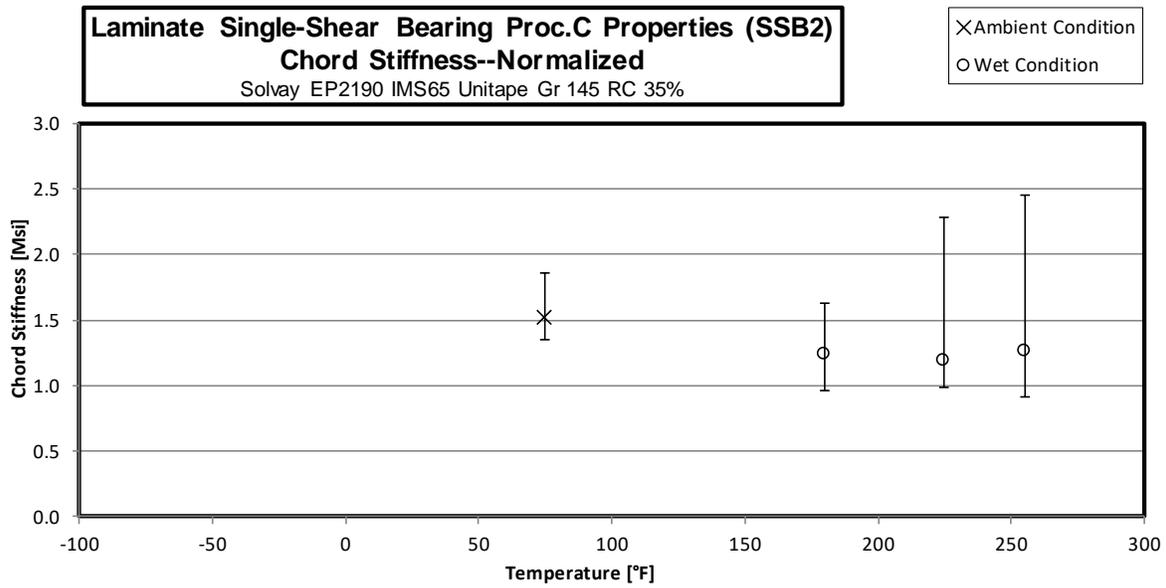
3.28 “25/50/25” Single-Shear Bearing 1 Proc. C Properties (SSB1)



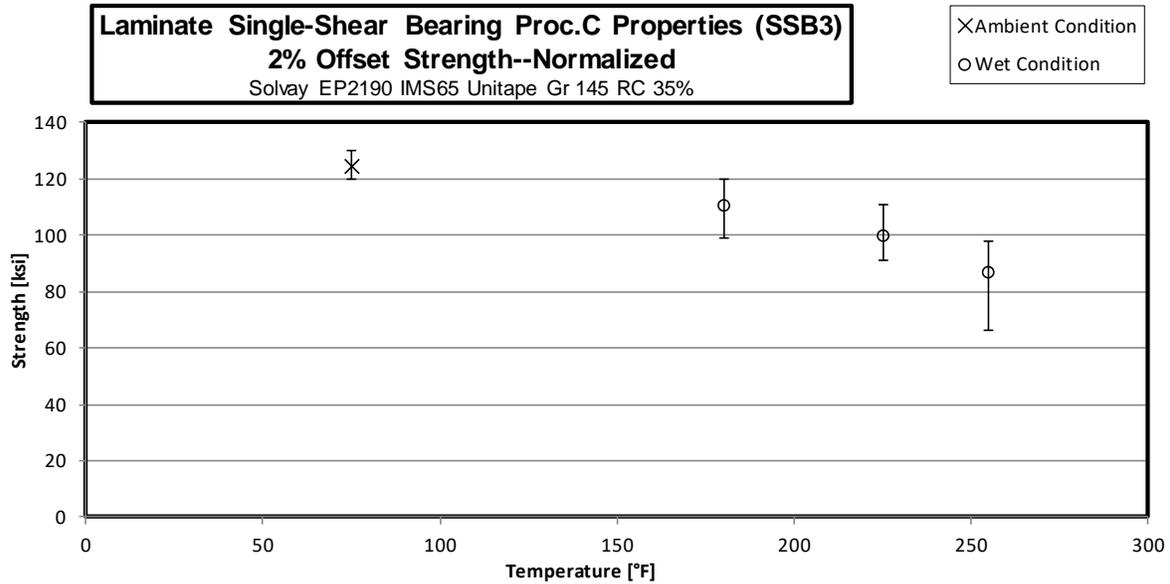


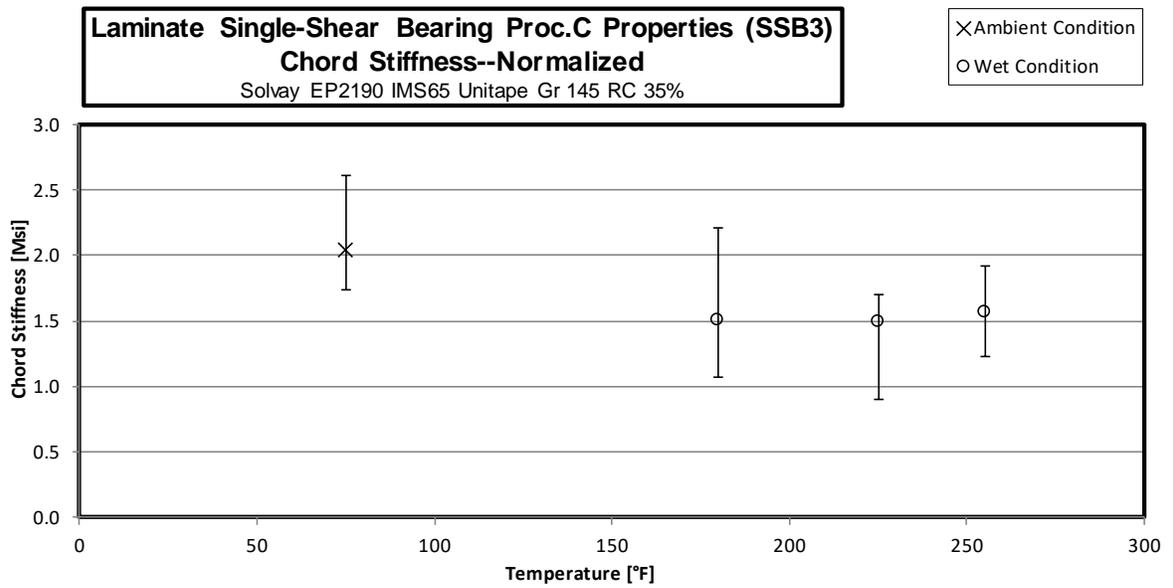
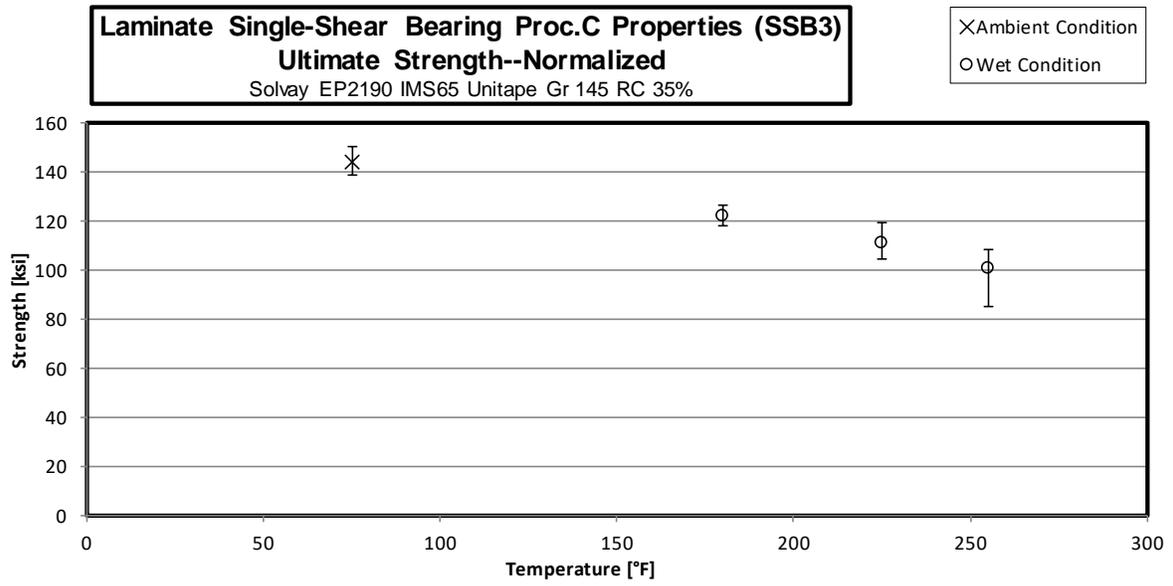
3.29 “10/80/10” Single-Shear Bearing 2 Proc. C Properties (SSB2)



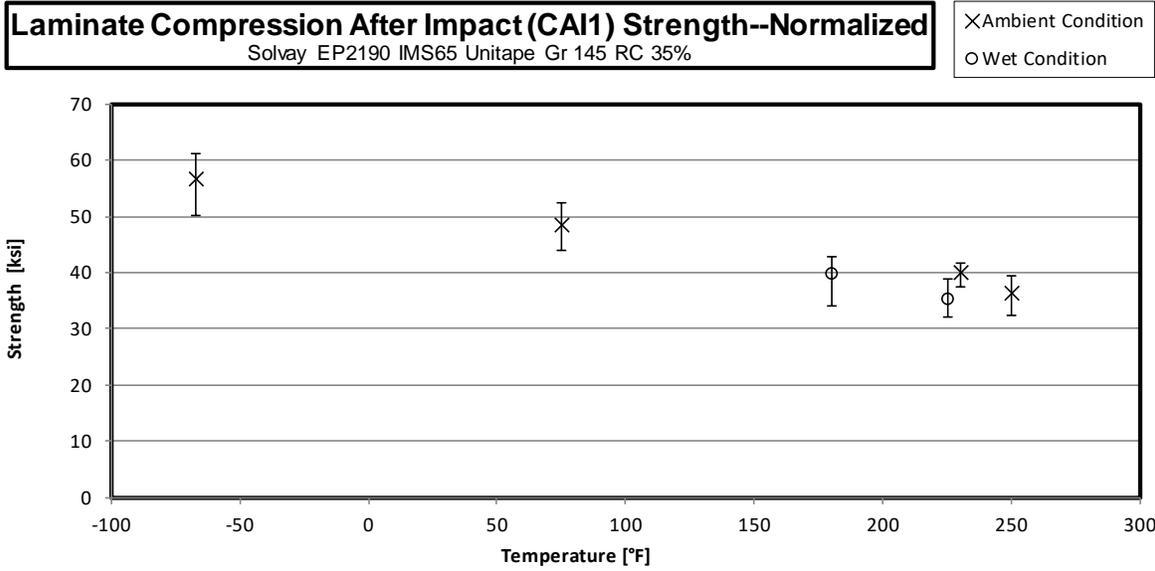


3.30 “50/40/10” Single-Shear Bearing 3 Proc. C Properties (SSB3)





3.31 “25/50/25” Compression After Impact 1 Properties (CAI1)



4. Raw Data

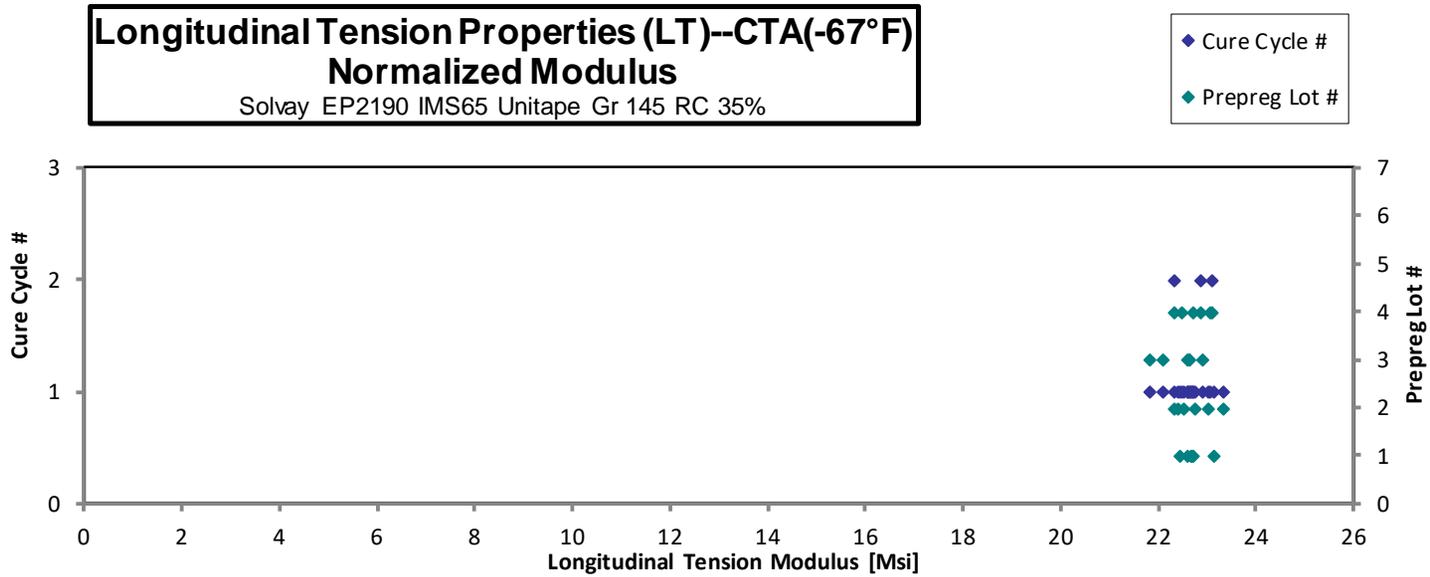
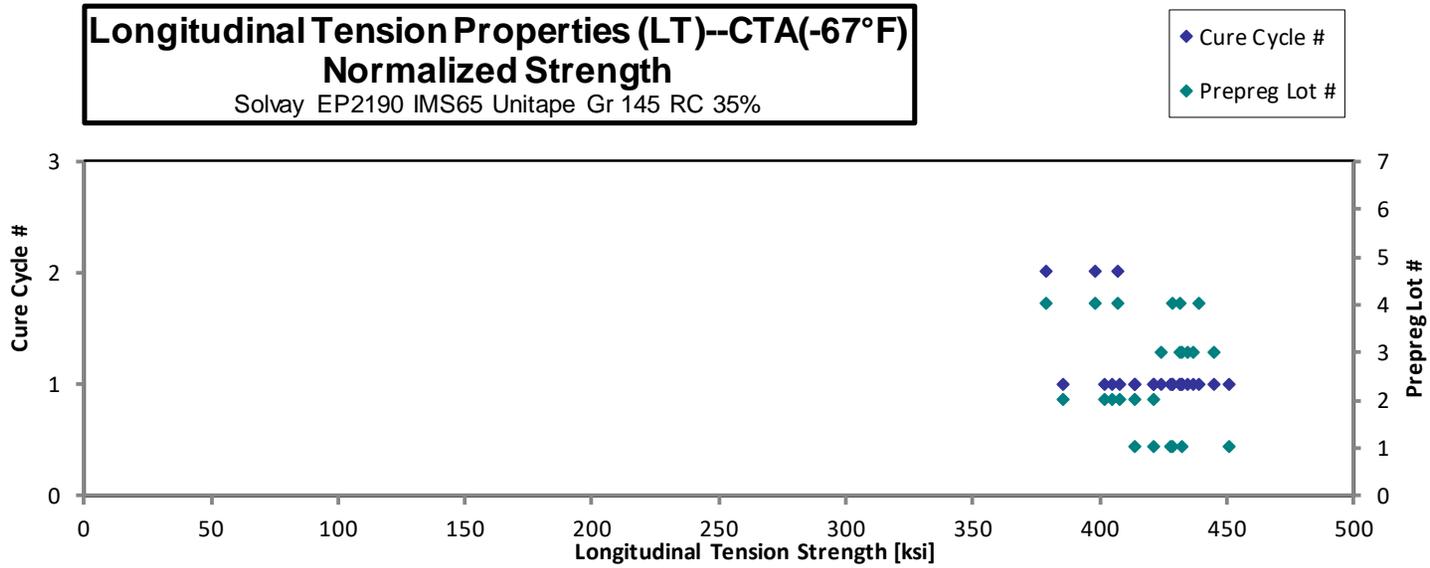
4.1 Longitudinal Tension Properties (LT)

Longitudinal Tension Properties (LT)--CTA(-67°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7599562-P1-LT-A-C1-CTA-1	A	C1	1	1	397.0	21.78	0.2680	0.04670	8	XGV	0.0058	413.9	22.70
TR7599562-P1-LT-A-C1-CTA-2	A	C1	1	1	408.5	21.42	0.3110	0.04700	8	XGV	0.0059	428.6	22.47
TR7599562-P1-LT-A-C1-CTA-3	A	C1	1	1	410.8	21.54	0.3560	0.04720	8	XGV	0.0059	432.8	22.69
TR7599562-P1-LT-A-C1-CTA-4	A	C1	1	1	399.7	21.47	0.2870	0.04720	8	XGV	0.0059	421.1	22.62
TR7599562-P1-LT-A-C1-CTA-5	A	C1	1	1	402.4	21.35	0.3020	0.04770	8	XGV	0.0060	428.4	22.73
TR7599562-P1-LT-A-C1-CTA-6	A	C1	1	1	424.4	21.80	0.3350	0.04760	8	XGV	0.0060	450.9	23.16
TR7702719-P1-LT-B-C1-CTA-1	B	C1	2	1	401.2	21.92	0.3130	0.04710	8	XGV	0.0059	421.8	23.04
TR7702719-P1-LT-B-C1-CTA-2	B	C1	2	1	381.4	22.17	0.3310	0.04720	8	XGV	0.0059	401.8	23.36
TR7702719-P1-LT-B-C1-CTA-3	B	C1	2	1	366.5	21.27	0.3160	0.04720	8	XGV	0.0059	386.1	22.41
TR7702719-P1-LT-B-C1-CTA-4	B	C1	2	1	391.1	21.53	0.2920	0.04740	8	XGV	0.0059	413.8	22.78
TR7702719-P1-LT-B-C1-CTA-5	B	C1	2	1	385.4	21.26	0.3470	0.04710	8	XGV	0.0059	405.2	22.35
TR7702719-P1-LT-B-C1-CTA-6	B	C1	2	1	388.8	21.47	0.3080	0.04700	8	XGV	0.0059	407.8	22.53
TR7725504-P1-LT-C-C1-CTA-1	C	C1	3	1	433.8	22.02	0.3510	0.04600	8	XGV	0.0058	445.5	22.61
TR7725504-P1-LT-C-C1-CTA-2	C	C1	3	1	421.0	21.81	0.3290	0.04650	8	XGV	0.0058	437.0	22.64
TR7725504-P1-LT-C-C1-CTA-3	C	C1	3	1	431.0	22.72	0.3470	0.04520	8	XGV	0.0057	434.8	22.93
TR7725504-P1-LT-C-C1-CTA-4	C	C1	3	1	437.7	22.40	0.3300	0.04420	8	XGV	0.0055	431.9	22.10
TR7725504-P1-LT-C-C1-CTA-5	C	C1	3	1	417.9	21.50	0.3460	0.04550	8	XGV	0.0057	424.4	21.84
TR7725504-P1-LT-C-C1-CTA-6	C	C1	3	1	430.7	22.55	0.3320	0.04500	8	XGV	0.0056	432.6	22.65
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-CTA-1	D	C1	4	1	426.9	22.24	0.3180	0.04530	8	XGV	0.0057	431.7	22.49
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-CTA-2	D	C1	4	1	424.2	22.83	0.3300	0.04530	8	XGV	0.0057	429.0	23.08
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-CTA-3	D	C1	4	1	434.5	22.47	0.2840	0.04530	8	XGV	0.0057	439.4	22.72
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-CTA-1	D	C2	4	2	392.7	22.26	0.4100	0.04650	8	XGV	0.0058	407.6	23.11
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-CTA-2	D	C2	4	2	382.9	21.49	0.3050	0.04660	8	XGV	0.0058	398.3	22.35
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-CTA-3	D	C2	4	2	369.2	22.30	0.2770	0.04600	8	XGV	0.0058	379.1	22.90

Average	406.7	21.90	0.3219	Average _{norm}	0.0058	421.0	22.68
Standard Dev.	21.52	0.4831	0.03075	Standard Dev. _{norm}		18.10	0.3453
Coeff. of Var. [%]	5.293	2.206	9.552	Coeff. of Var. [%] _{norm}		4.300	1.523
Min.	366.5	21.26	0.2680	Min.	0.0055	379.1	21.84
Max.	437.7	22.83	0.4100	Max.	0.0060	450.9	23.36
Number of Spec.	24	24	24	Number of Spec.	24	24	24



**Longitudinal Tension Properties (LT)--RTA(75°F)
Strength & Modulus**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

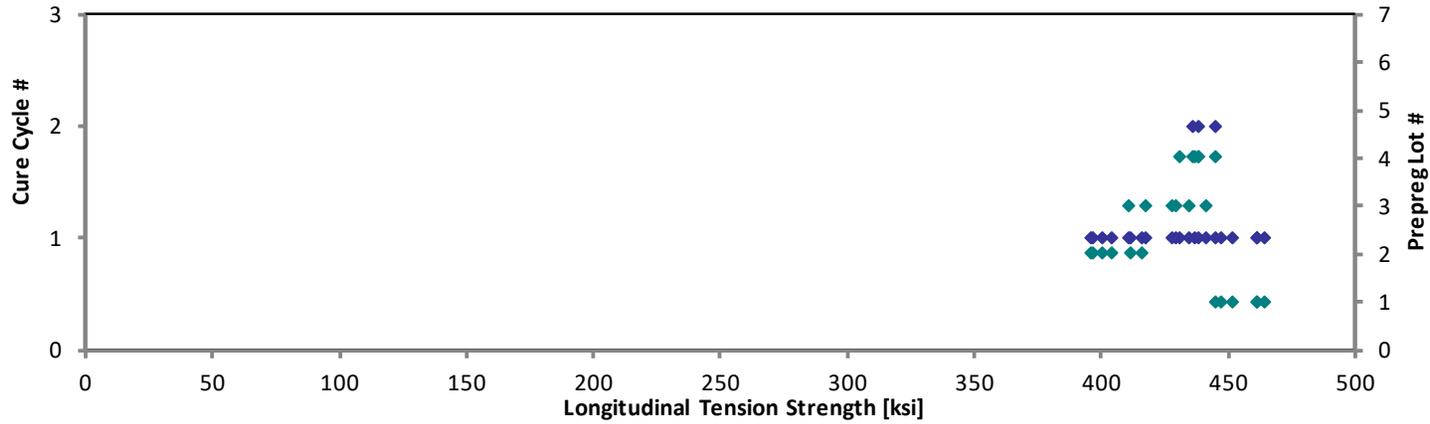
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7599562-P2-LT-A-C1-RTA-1	A	C1	1	1	437.8	21.93	0.3200	0.04750	8	XGV	0.0059	464.2	23.25
TR7599562-P2-LT-A-C1-RTA-2	A	C1	1	1	436.1	21.49	0.3400	0.04740	8	XGV	0.0059	461.4	22.73
TR7599562-P2-LT-A-C1-RTA-3	A	C1	1	1	421.2	21.81	0.3110	0.04750	8	XGV	0.0059	446.6	23.12
TR7599562-P2-LT-A-C1-RTA-4	A	C1	1	1	438.2	21.80	0.3200	0.04710	8	XGV	0.0059	460.7	22.92
TR7599562-P2-LT-A-C1-RTA-5	A	C1	1	1	433.2	21.75	0.3230	0.04670	8	XGV	0.0058	451.5	22.67
TR7599562-P2-LT-A-C1-RTA-6	A	C1	1	1	427.8	22.04	0.3180	0.04660	8	XGV	0.0058	445.0	22.93
TR7702719-P1-LT-B-C1-RTA-1	B	C1	2	1	381.5	21.18	0.2880	0.04650	8	XGV	0.0058	395.9	21.98
TR7702719-P1-LT-B-C1-RTA-2	B	C1	2	1	391.8	22.26	0.3490	0.04620	8	XGV	0.0058	404.0	22.95
TR7702719-P1-LT-B-C1-RTA-3	B	C1	2	1	396.9	22.32	0.3290	0.04640	8	XGV	0.0058	411.1	23.12
TR7702719-P1-LT-B-C1-RTA-4	B	C1	2	1	401.1	22.19	0.3090	0.04640	8	XGV	0.0058	415.4	22.98
TR7702719-P1-LT-B-C1-RTA-5	B	C1	2	1	386.7	21.86	0.3150	0.04640	8	XGV	0.0058	400.5	22.64
TR7702719-P1-LT-B-C1-RTA-6	B	C1	2	1	388.4	22.18	0.3520	0.04570	8	XGV	0.0057	396.2	22.63
TR7725504-P1-LT-C-C1-RTA-1	C	C1	3	1	413.2	21.90	0.3500	0.04650	8	XGV	0.0058	428.9	22.73
TR7725504-P1-LT-C-C1-RTA-2	C	C1	3	1	404.3	21.73	0.3500	0.04620	8	XGV	0.0058	416.9	22.41
TR7725504-P1-LT-C-C1-RTA-3	C	C1	3	1	414.8	22.12	0.3540	0.04620	8	XGV	0.0058	427.7	22.81
TR7725504-P1-LT-C-C1-RTA-4	C	C1	3	1	420.1	22.33	0.3520	0.04630	8	XGV	0.0058	434.1	23.08
TR7725504-P1-LT-C-C1-RTA-5	C	C1	3	1	399.7	21.87	0.3510	0.04600	8	XGV	0.0058	410.4	22.45
TR7725504-P1-LT-C-C1-RTA-6	C	C1	3	1	425.5	22.40	0.3260	0.04640	8	XGV	0.0058	440.7	23.20
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-RTA-1	D	C1	4	1	430.9	22.31	0.3290	0.04550	8	XGV	0.0057	437.6	22.66
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-RTA-2	D	C1	4	1	422.8	22.16	0.2870	0.04560	8	XGV	0.0057	430.3	22.56
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-RTA-3	D	C1	4	1	431.7	22.65	0.3440	0.04530	8	XGV	0.0057	436.5	22.90
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-RTA-1	D	C2	4	2	429.1	22.36	0.3600	0.04640	8	XGV	0.0058	444.4	23.16
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-RTA-2	D	C2	4	2	424.5	22.09	0.3210	0.04620	8	XGV	0.0058	437.7	22.78
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-RTA-3	D	C2	4	2	423.2	22.19	0.3200	0.04610	8	XGV	0.0058	435.4	22.83

Average	415.8	22.04	0.3299	Average _{norm}	0.0058	430.6	22.81
Standard Dev.	17.63	0.3233	0.02040	Standard Dev. _{norm}		20.39	0.2925
Coeff. of Var. [%]	4.239	1.467	6.184	Coeff. of Var. [%] _{norm}		4.736	1.282
Min.	381.5	21.18	0.2870	Min.	0.0057	395.9	21.98
Max.	438.2	22.65	0.3600	Max.	0.0059	464.2	23.25
Number of Spec.	24	24	24	Number of Spec.	24	24	24

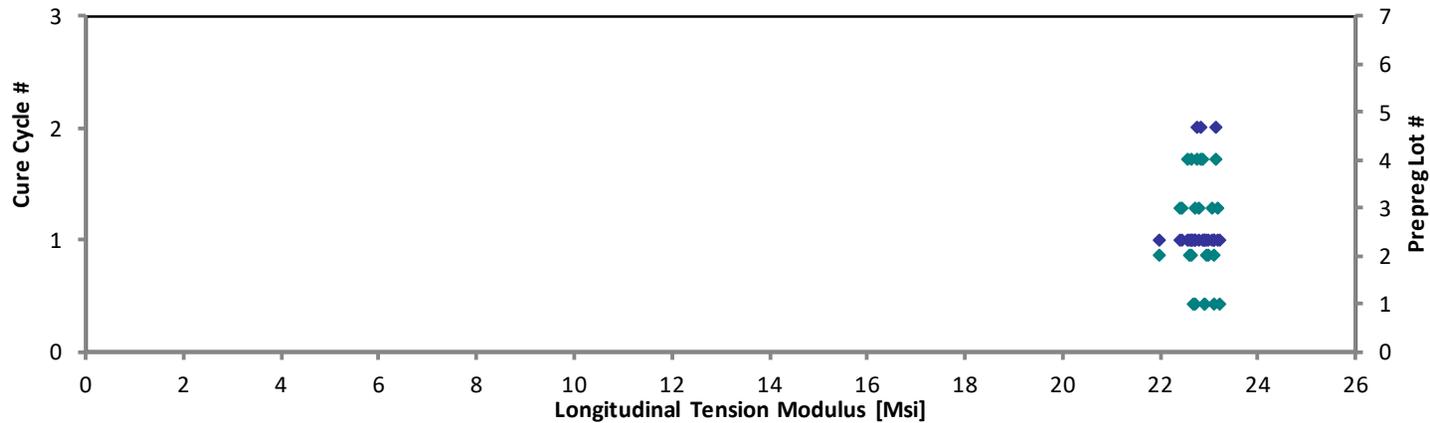
Longitudinal Tension Properties (LT)--RTA(75°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



Longitudinal Tension Properties (LT)--RTA(75°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



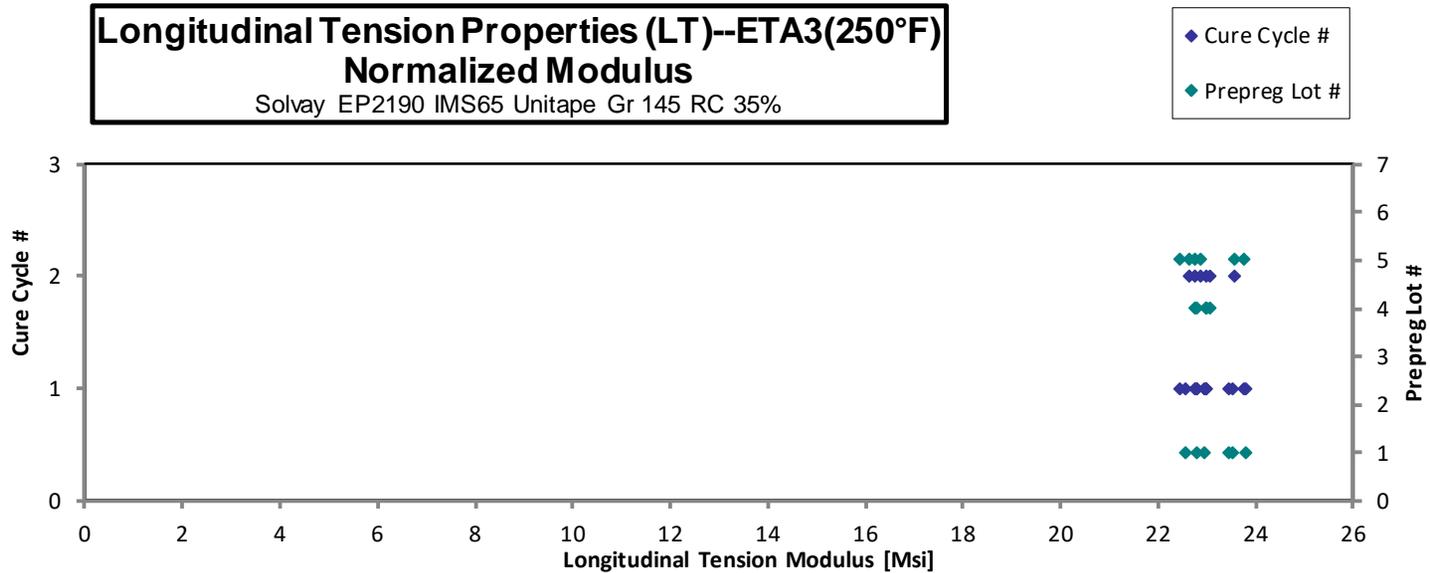
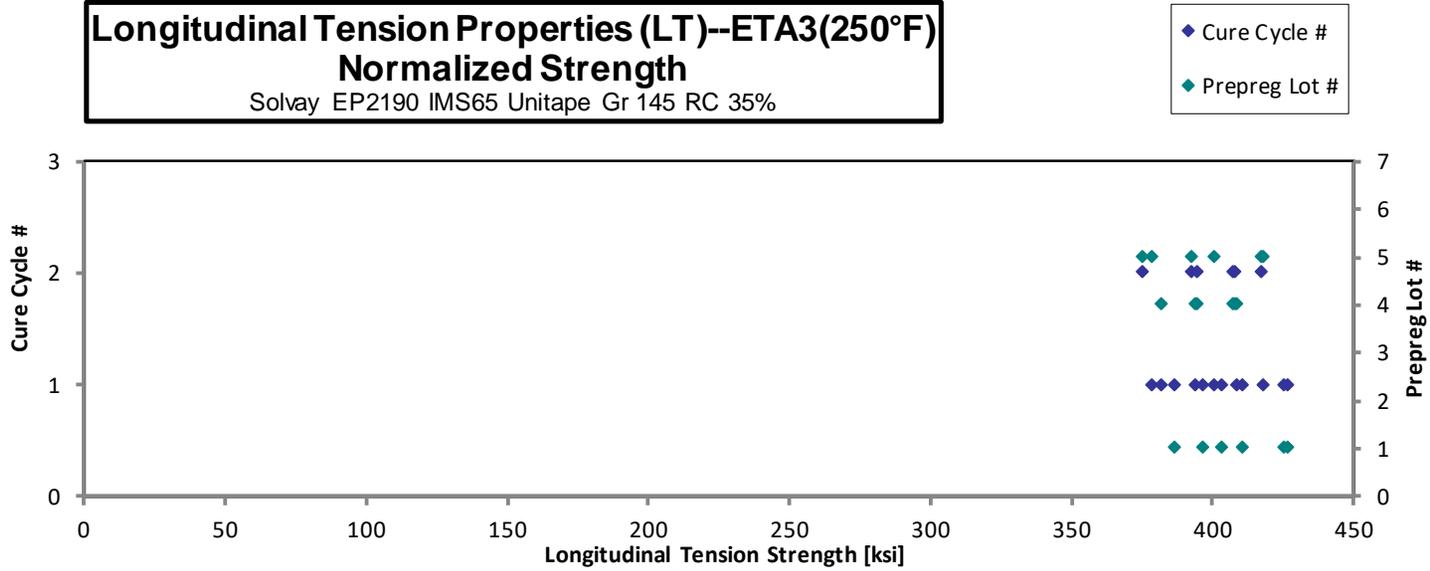
Longitudinal Tension Properties (LT)–ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7599562-P1-LT-A-C1-ETA3-1	A	C1	1	1	390.0	21.64	0.3060	0.04720	8	XGV
TR7599562-P1-LT-A-C1-ETA3-2	A	C1	1	1	381.9	21.37	0.2980	0.04730	8	XGM
TR7599562-P1-LT-A-C1-ETA3-3	A	C1	1	1	365.4	21.70	0.3410	0.04740	8	XGM
TR7599562-P1-LT-A-C1-ETA3-4	A	C1	1	1	401.8	22.41	0.3230	0.04760	8	XGM
TR7599562-P1-LT-A-C1-ETA3-5	A	C1	1	1	403.7	22.26	0.3380	0.04720	8	XGM
TR7599562-P1-LT-A-C1-ETA3-6	A	C1	1	1	376.4	22.34	0.3520	0.04720	8	XGM
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETA3-2	D	C1	4	1	405.7	22.65	0.3260	0.04510	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETA3-3	D	C1	4	1	379.7	22.82	0.3170	0.04510	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETA3-4	D	C1	4	1	390.7	22.77	0.3030	0.04520	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETA3-1	D	C2	4	2	382.7	22.35	0.3460	0.04620	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETA3-2	D	C2	4	2	397.3	22.38	0.3290	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETA3-3	D	C2	4	2	397.0	22.18	0.3070	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETA3-1	E	C1	5	1	406.1	22.12	0.3610	0.04610	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETA3-2	E	C1	5	1	370.4	23.22	0.3320	0.04580	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETA3-3	E	C1	5	1	390.2	21.87	0.3160	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETA3-1	E	C2	5	2	380.5	21.94	0.3420	0.04620	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETA3-2	E	C2	5	2	404.5	22.84	0.3820	0.04620	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETA3-3	E	C2	5	2	364.8	22.24	0.3230	0.04610	8	XGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0059	410.9	22.80
0.0059	403.2	22.56
0.0059	386.6	22.96
0.0060	426.9	23.81
0.0059	425.3	23.45
0.0059	396.6	23.53
0.0056	408.4	22.80
0.0056	382.2	22.97
0.0057	394.2	22.97
0.0058	394.7	23.05
0.0058	407.9	22.98
0.0058	407.7	22.77
0.0058	417.9	22.76
0.0057	378.7	23.74
0.0058	400.7	22.45
0.0058	392.3	22.63
0.0058	417.2	23.55
0.0058	375.4	22.88

Average	388.3	22.28	0.3301	Average_{norm}	0.0058	401.5	23.04
Standard Dev.	13.76	0.4734	0.02180	Standard Dev._{norm}		15.25	0.4070
Coeff. of Var. [%]	3.545	2.124	6.602	Coeff. of Var. [%]_{norm}		3.798	1.767
Min.	364.8	21.37	0.2980	Min.	0.0056	375.4	22.45
Max.	406.1	23.22	0.3820	Max.	0.0060	426.9	23.81
Number of Spec.	18	18	18	Number of Spec.	18	18	18



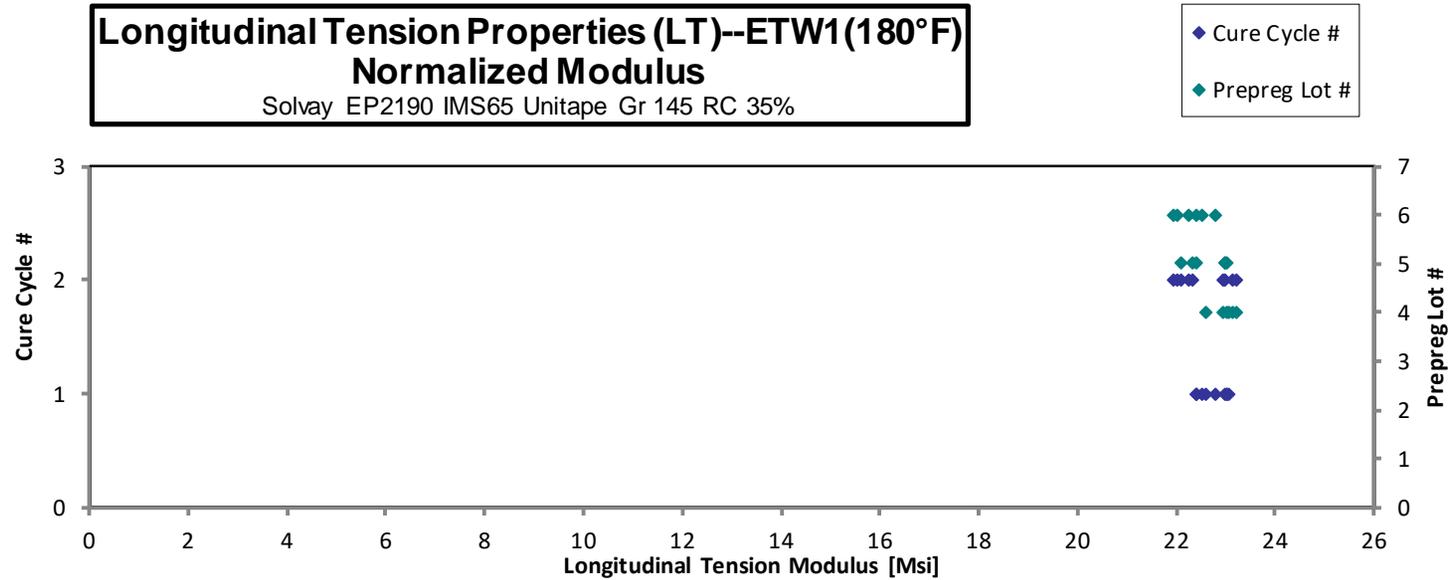
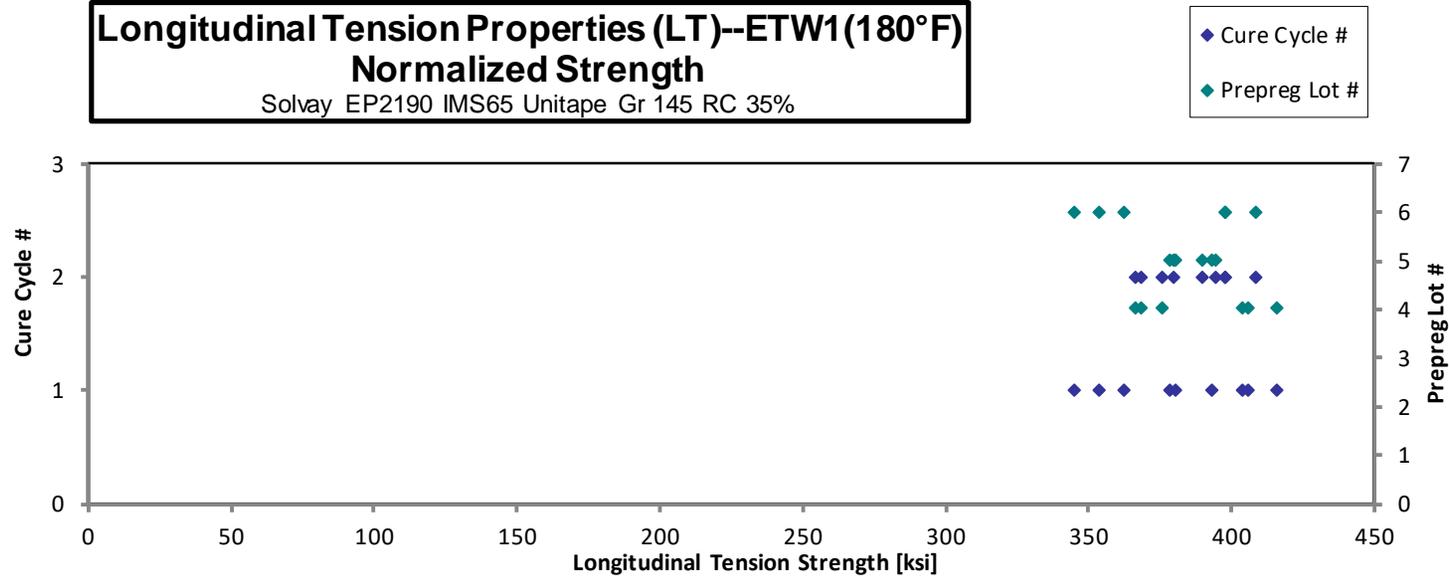
Longitudinal Tension Properties (LT)–ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW1-1	D	C1	4	1	402.3	22.41	0.3340	0.04520	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW1-2	D	C1	4	1	398.9	22.80	0.3430	0.04530	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW1-3	D	C1	4	1	410.3	22.76	0.2980	0.04540	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW1-1	D	C2	4	2	363.1	22.48	0.2990	0.04630	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW1-2	D	C2	4	2	356.3	22.36	0.3100	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW1-3	D	C2	4	2	359.3	22.59	0.3710	0.04590	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW1-1	E	C1	5	1	378.1	22.42	0.3410	0.04480	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW1-2	E	C1	5	1	393.0	23.02	0.3330	0.04480	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW1-3	E	C1	5	1	374.3	22.64	0.3750	0.04550	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW1-1	E	C2	5	2	376.9	22.27	0.3730	0.04630	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW1-2	E	C2	5	2	383.1	21.70	0.3900	0.04610	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW1-3	E	C2	5	2	369.3	21.52	0.3100	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW1-1	F	C1	6	1	343.4	22.34	0.3650	0.04500	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW1-2	F	C1	6	1	351.0	22.65	0.3200	0.04510	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW1-3	F	C1	6	1	359.1	22.34	0.3570	0.04520	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW1-1	F	C2	6	2	408.2	22.55	0.3540	0.04360	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW1-2	F	C2	6	2	421.1	23.00	0.3380	0.04340	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW1-3	F	C2	6	2	408.7	22.65	0.3380	0.04360	8	XGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	405.9	22.61
0.0057	403.4	23.05
0.0057	415.8	23.06
0.0058	375.2	23.23
0.0058	365.8	22.96
0.0057	368.1	23.15
0.0056	378.1	22.42
0.0056	393.0	23.02
0.0057	380.2	23.00
0.0058	389.5	23.02
0.0058	394.2	22.33
0.0058	379.2	22.10
0.0056	344.9	22.44
0.0056	353.3	22.80
0.0057	362.3	22.54
0.0055	397.2	21.94
0.0054	407.9	22.28
0.0055	397.8	22.04

Average	380.9	22.47	0.3416	Average_{norm}	0.0056	384.0	22.67
Standard Dev.	23.38	0.3810	0.02721	Standard Dev._{norm}		19.83	0.4163
Coeff. of Var. [%]	6.139	1.695	7.965	Coeff. of Var. [%]_{norm}		5.164	1.837
Min.	343.4	21.52	0.2980	Min.	0.0054	344.9	21.94
Max.	421.1	23.02	0.3900	Max.	0.0058	415.8	23.23
Number of Spec.	18	18	18	Number of Spec.	18	18	18



Longitudinal Tension Properties (LT)–ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

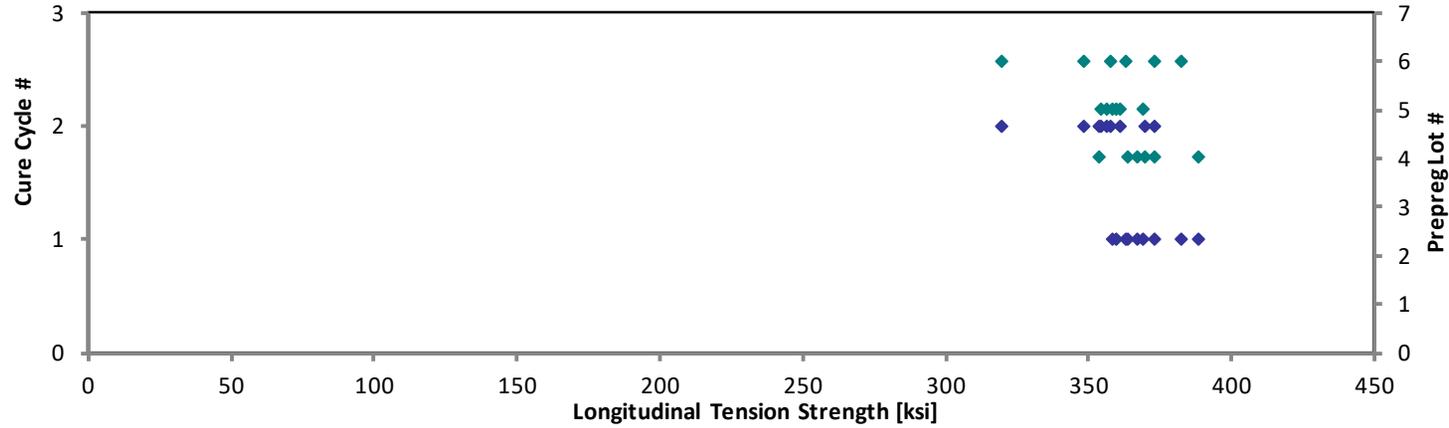
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW2-1	D	C1	4	1	381.6	23.19	0.3400	0.04560	8	MGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW2-2	D	C1	4	1	359.7	22.61	0.3190	0.04570	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-ETW2-3	D	C1	4	1	360.6	22.42	0.3880	0.04520	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW2-1	D	C2	4	2	341.3	22.39	0.3600	0.04640	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW2-2	D	C2	4	2	360.9	22.16	0.4150	0.04590	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-ETW2-3	D	C2	4	2	361.2	22.27	0.2730	0.04620	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW2-2	E	C1	5	1	351.7	21.90	0.3040	0.04580	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW2-3	E	C1	5	1	363.0	22.36	0.3020	0.04550	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-ETW2-4	E	C1	5	1	354.2	22.48	0.3840	0.04530	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW2-1	E	C2	5	2	344.7	21.67	0.2910	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW2-2	E	C2	5	2	351.1	22.28	0.3150	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-ETW2-3	E	C2	5	2	345.0	22.70	0.3240	0.04620	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW2-1	F	C1	6	1	374.1	22.07	0.2380	0.04580	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW2-2	F	C1	6	1	364.4	21.68	0.2990	0.04580	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-ETW2-3	F	C1	6	1	353.1	21.05	0.3870	0.04600	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW2-1	F	C2	6	2	321.5	23.13	0.4570	0.04450	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW2-2	F	C2	6	2	362.4	23.08	0.2700	0.04420	8	XGV
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-ETW2-3	F	C2	6	2	351.7	22.92	0.3880	0.04430	8	XGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	388.4	23.60
0.0057	366.9	23.06
0.0057	363.8	22.62
0.0058	353.5	23.18
0.0057	369.8	22.71
0.0058	372.5	22.97
0.0057	359.5	22.39
0.0057	368.7	22.71
0.0057	358.1	22.73
0.0058	354.0	22.25
0.0058	360.5	22.88
0.0058	355.8	23.41
0.0057	382.4	22.56
0.0057	372.5	22.16
0.0058	362.6	21.62
0.0056	319.3	22.98
0.0055	357.5	22.77
0.0055	347.8	22.67

Average	355.7	22.35	0.3363	Average_{norm}	0.0057	361.9	22.74
Standard Dev.	13.18	0.5586	0.05748	Standard Dev._{norm}		14.77	0.4620
Coeff. of Var. [%]	3.706	2.499	17.09	Coeff. of Var. [%]_{norm}		4.083	2.032
Min.	321.5	21.05	0.2380	Min.	0.0055	319.3	21.62
Max.	381.6	23.19	0.4570	Max.	0.0058	388.4	23.60
Number of Spec.	18	18	18	Number of Spec.	18	18	18

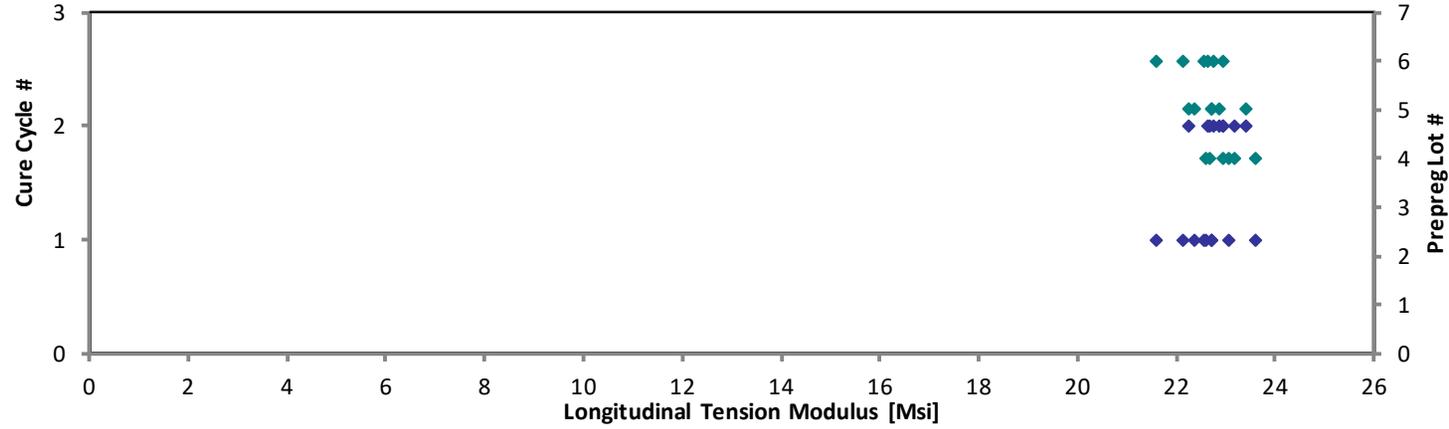
Longitudinal Tension Properties (LT)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



Longitudinal Tension Properties (LT)--ETW2(225°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #

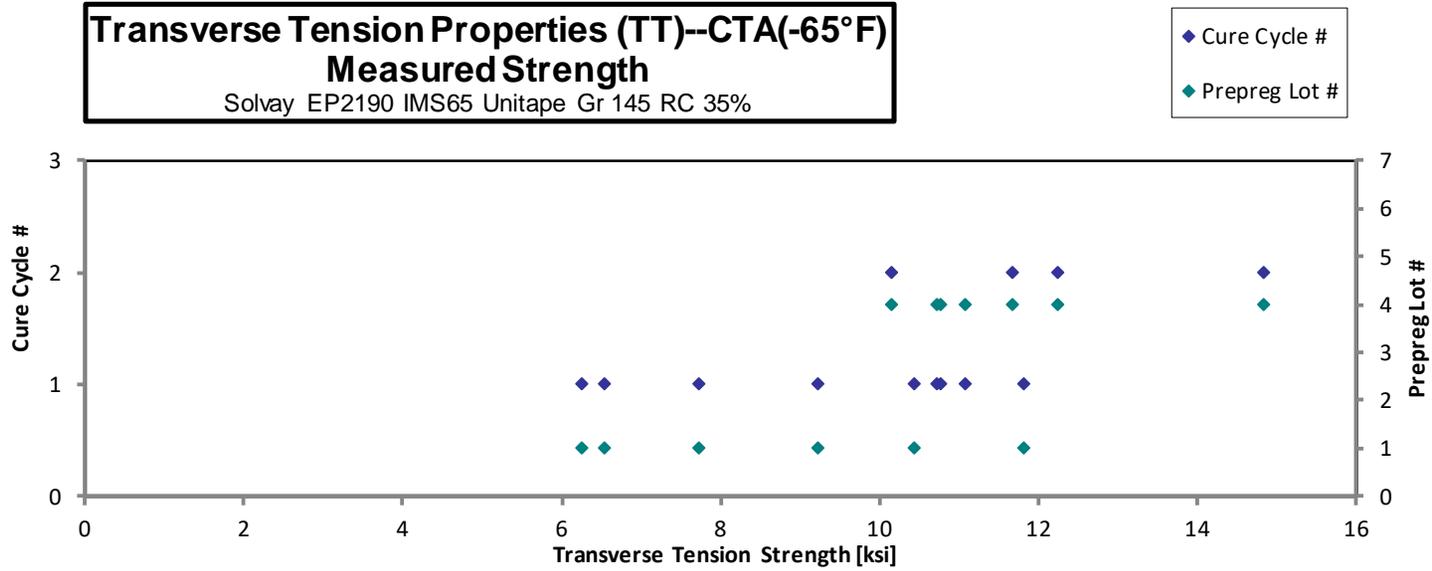


4.2 Transverse Tension Properties (TT)

Transverse Tension Properties (TT)--CTA(-65°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
TR7858635-P1-TT-A-C1-CTA-1	A	C1	1	1	11.81	1.403	0.02200	0.09380	16	0.0059	LGV
TR7858635-P1-TT-A-C1-CTA-2	A	C1	1	1	10.44	1.417	0.03000	0.09360	16	0.0059	LGV
TR7858635-P1-TT-A-C1-CTA-3	A	C1	1	1	6.260	1.398	0.02700	0.09400	16	0.0059	LGV
TR7858635-P1-TT-A-C1-CTA-4	A	C1	1	1	6.550	1.397	0.02700	0.09370	16	0.0059	LGT
TR7858635-P1-TT-A-C1-CTA-6	A	C1	1	1	7.740	1.469	0.009000	0.09390	16	0.0059	LGB
TR7858635-P1-TT-A-C1-CTA-7	A	C1	1	1	9.230	1.481	0.02800	0.09390	16	0.0059	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-CTA-1	D	C1	4	1	11.08	1.400	0.02700	0.09230	16	0.0058	LAV
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-CTA-2	D	C1	4	1	10.77	1.350	0.02400	0.09230	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-CTA-3	D	C1	4	1	10.73	1.374	0.02500	0.09250	16	0.0058	LAB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-CTA-1	D	C2	4	2	10.15	1.422	0.02600	0.09260	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-CTA-2	D	C2	4	2	14.85	1.445	0.02500	0.09270	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-CTA-3	D	C2	4	2	11.68	1.414	0.02000	0.09260	16	0.0058	LAB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-CTA-4	D	C2	4	2	12.25	1.402	0.02800	0.09260	16	0.0058	LGB

Average	10.272	1.413	0.02446	Average	0.0058
Standard Dev.	2.377	0.03564	0.005348		
Coeff. of Var. [%]	23.14	2.522	21.86		
Min.	6.260	1.350	0.009000	Min.	0.0058
Max.	14.85	1.481	0.03000	Max.	0.0059
Number of Spec.	13	13	13	Number of Spec.	13



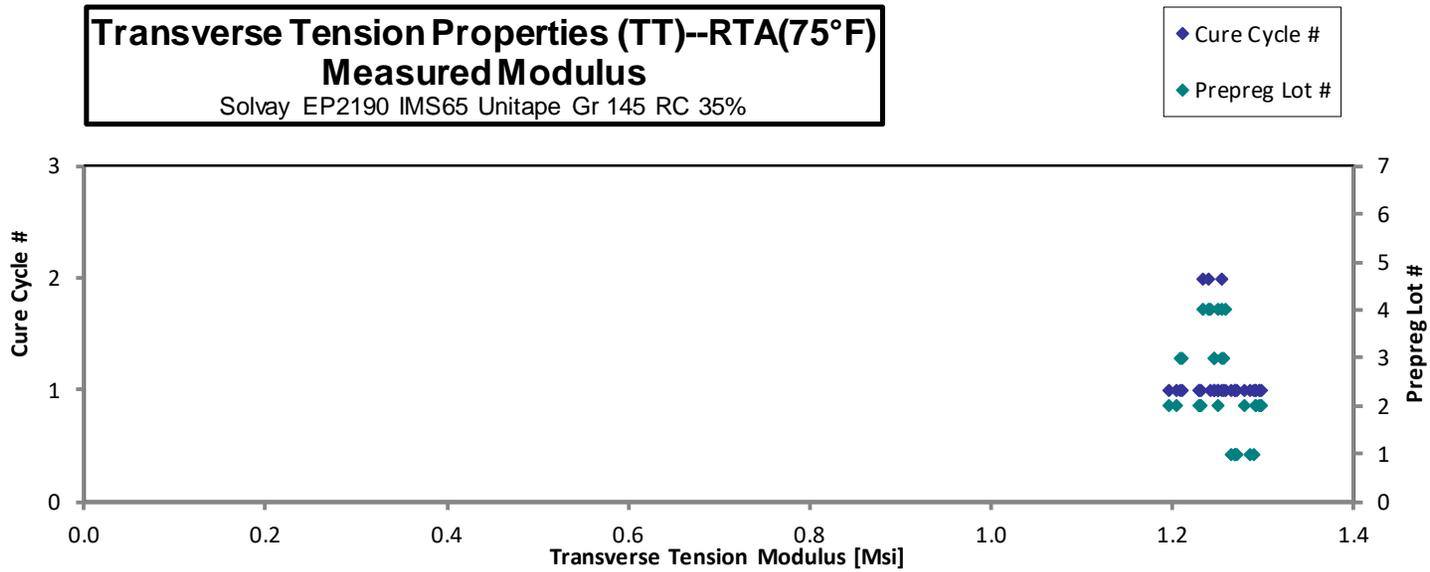
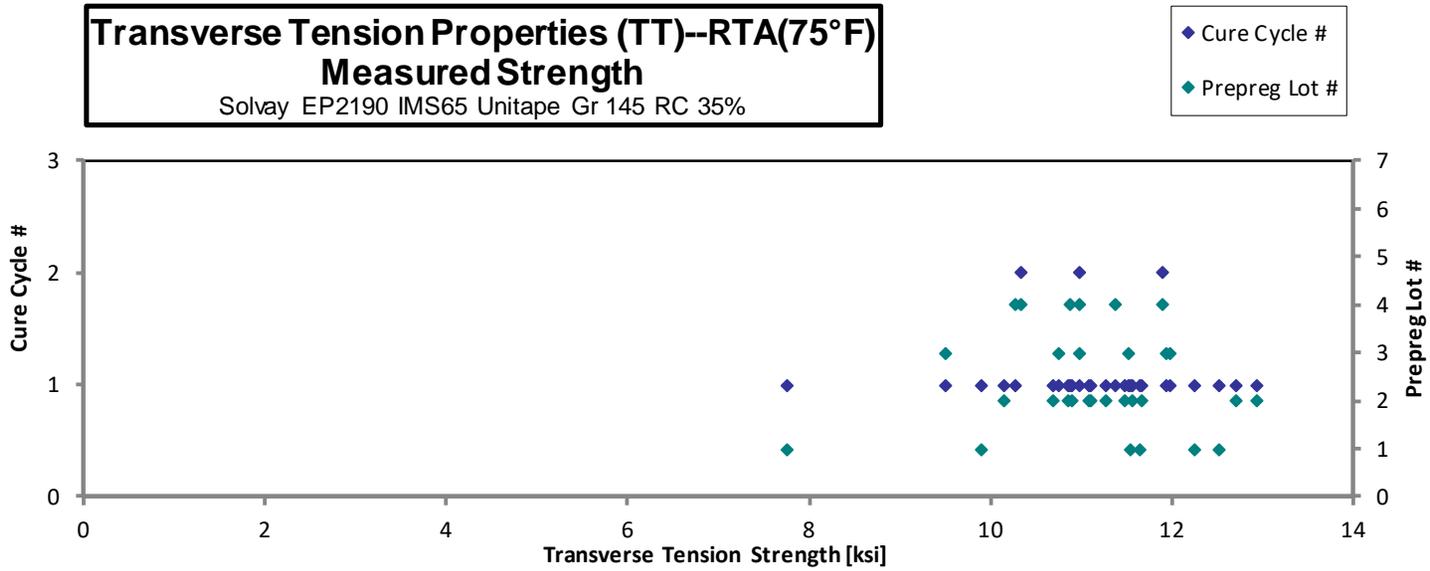
**Transverse Tension Properties (TT)--RTA(75°F)
Strength & Modulus**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
TR7602701-P1-TT-A-C1-RTA-1	A	C1	1	1	12.25	1.265	0.02000	0.09370	16	0.0059	LAT
TR7602701-P1-TT-A-C1-RTA-2	A	C1	1	1	9.890	1.269	0.01600	0.09370	16	0.0059	LGB
TR7602701-P1-TT-A-C1-RTA-3	A	C1	1	1	12.51	1.270	0.01800	0.09360	16	0.0059	LGM
TR7602701-P1-TT-A-C1-RTA-4	A	C1	1	1	11.53	1.272	0.02100	0.09340	16	0.0058	LGM
TR7602701-P1-TT-A-C1-RTA-5	A	C1	1	1	11.65	1.290	0.01600	0.09360	16	0.0059	LAB
TR7602701-P1-TT-A-C1-RTA-6	A	C1	1	1	7.760	1.286	0.02000	0.09430	16	0.0059	LAB
TR7702721-P3-TT-B-C1-RTA-2*	B	C1	2	1	10.68	1.197		0.09360	16	0.0059	LGT
TR7702721-P3-TT-B-C1-RTA-3*	B	C1	2	1	11.48	1.204		0.09350	16	0.0058	LGB
TR7702721-P3-TT-B-C1-RTA-4*	B	C1	2	1	10.85	1.230		0.09300	16	0.0058	LGB
TR7702721-P3-TT-B-C1-RTA-5*	B	C1	2	1	12.70	1.229		0.09320	16	0.0058	LGV
TR7702721-P3-TT-B-C1-RTA-6*	B	C1	2	1	10.15	1.231		0.09340	16	0.0058	LAB
TR7702721-P3-TT-B-C1-RTA-7*	B	C1	2	1	12.92	1.251		0.09340	16	0.0058	LAT
TR8363168-P1-TT-B-C1-RTA-1	B	C1	2	1	11.55	1.298	0.01900	0.09300	16	0.0058	LAB
TR8363168-P1-TT-B-C1-RTA-2	B	C1	2	1	10.90	1.297	0.01800	0.09330	16	0.0058	LAB
TR8363168-P1-TT-B-C1-RTA-3	B	C1	2	1	11.07	1.292	0.01700	0.09360	16	0.0059	LAB
TR8363168-P1-TT-B-C1-RTA-4	B	C1	2	1	11.27	1.293	0.01700	0.09310	16	0.0058	LAB
TR8363168-P1-TT-B-C1-RTA-5	B	C1	2	1	11.10	1.280	0.01700	0.09360	16	0.0059	LAB
TR8363168-P1-TT-B-C1-RTA-6	B	C1	2	1	11.67	1.297	0.01700	0.09330	16	0.0058	LAB
TR7725505-P3-TT-C-C1-RTA-1	C	C1	3	1	11.52	1.212	0.01500	0.09290	16	0.0058	LGM
TR7725505-P3-TT-C-C1-RTA-2	C	C1	3	1	10.97	1.246	0.009000	0.09270	16	0.0058	LGV
TR7725505-P3-TT-C-C1-RTA-3	C	C1	3	1	9.500	1.257	0.01600	0.09270	16	0.0058	LGM
TR7725505-P3-TT-C-C1-RTA-4	C	C1	3	1	11.94	1.246	0.01200	0.09280	16	0.0058	LGV
TR7725505-P3-TT-C-C1-RTA-5	C	C1	3	1	11.98	1.255	0.01500	0.09250	16	0.0058	LGV
TR7725505-P3-TT-C-C1-RTA-6	C	C1	3	1	10.75	1.209	0.01400	0.09370	16	0.0059	LGV
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-RTA-1	D	C1	4	1	11.37	1.259	0.02000	0.09240	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-RTA-2	D	C1	4	1	10.87	1.250	0.01700	0.09280	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-RTA-3	D	C1	4	1	10.27	1.242	0.01600	0.09290	16	0.0058	LGT
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-RTA-1	D	C2	4	2	10.97	1.255	0.01900	0.09260	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-RTA-2	D	C2	4	2	11.89	1.233	0.01700	0.09300	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-RTA-3	D	C2	4	2	10.32	1.241	0.01800	0.09360	16	0.0059	LGB

* Poisson's ratio not available due to strain gage (transverse) error during testing.

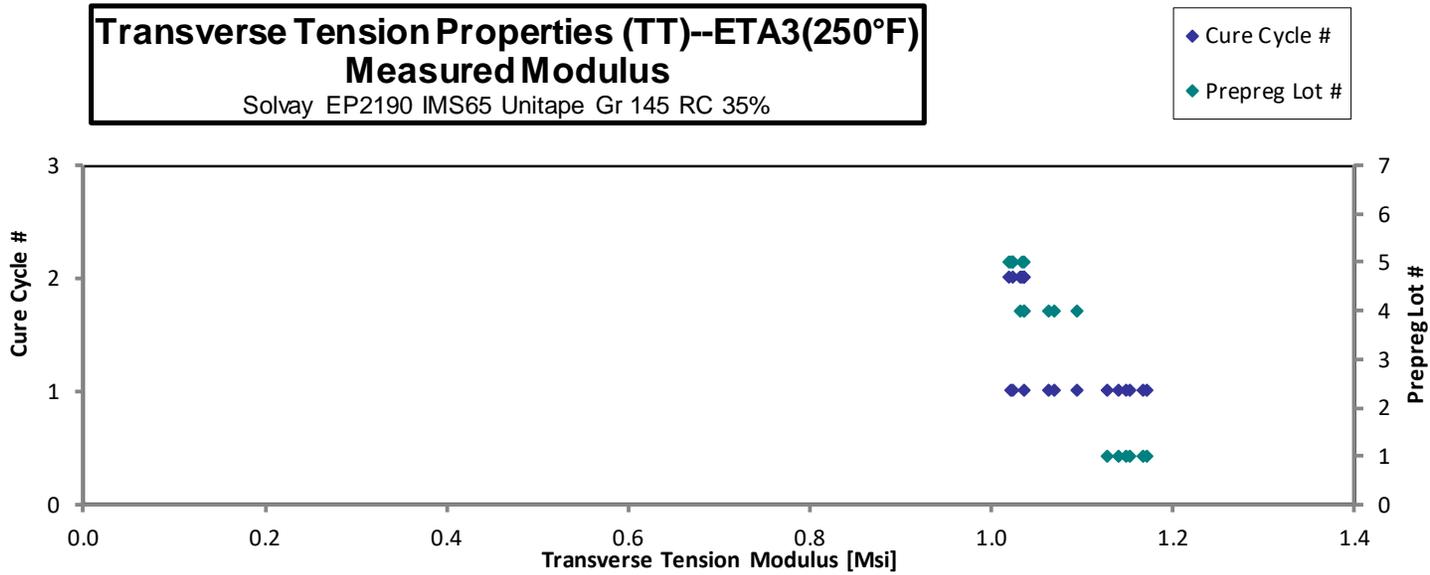
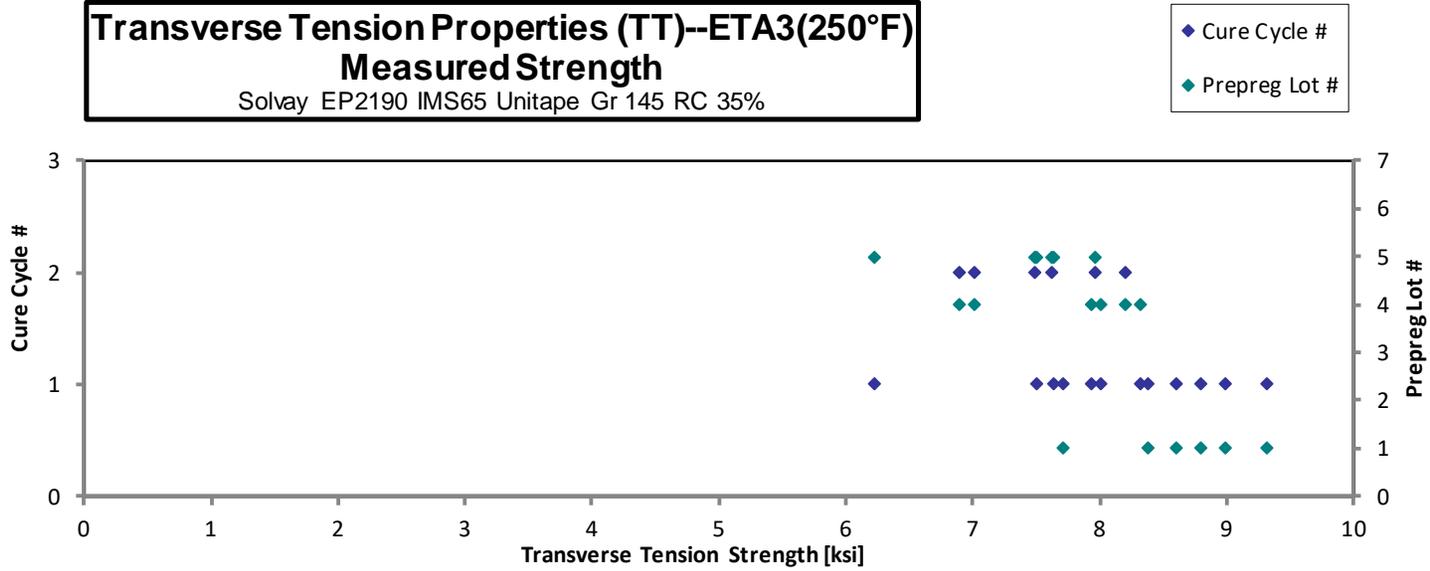
Average	11.14	1.255	0.01683	Average	0.0058
Standard Dev.	1.026	0.02918	0.002665		
Coeff. of Var. [%]	9.209	2.325	15.83		
Min.	7.760	1.197	0.009000	Min.	0.0058
Max.	12.92	1.298	0.02100	Max.	0.0059
Number of Spec.	30	30	24	Number of Spec.	30



Transverse Tension Properties (TT)--ETA3(250°F) Strength & Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
TR7602701-P2-TT-A-C1-ETA3-1	A	C1	1	1	8.990	1.139	0.01400	0.09360	16	0.0059	LGT
TR7602701-P2-TT-A-C1-ETA3-2	A	C1	1	1	9.320	1.149	0.01600	0.09400	16	0.0059	LGB
TR7602701-P2-TT-A-C1-ETA3-3	A	C1	1	1	8.800	1.168	0.01700	0.09390	16	0.0059	LGT
TR7602701-P2-TT-A-C1-ETA3-4	A	C1	1	1	7.710	1.172	0.01900	0.09370	16	0.0059	LGT
TR7602701-P2-TT-A-C1-ETA3-5	A	C1	1	1	8.600	1.128	0.02100	0.09350	16	0.0058	LGT
TR7602701-P2-TT-A-C1-ETA3-6	A	C1	1	1	8.380	1.152	0.01200	0.09350	16	0.0058	LGT
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETA3-2	D	C1	4	1	8.320	1.063	0.01200	0.09290	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETA3-3	D	C1	4	1	7.940	1.070	0.01600	0.09300	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETA3-4	D	C1	4	1	8.020	1.094	0.01000	0.09260	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETA3-1	D	C2	4	2	8.200	1.031	0.01600	0.09270	16	0.0058	LAB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETA3-3	D	C2	4	2	6.900	1.037	0.01800	0.09290	16	0.0058	LAB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETA3-4	D	C2	4	2	7.010	1.035	0.01200	0.09330	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETA3-1	E	C1	5	1	6.230	1.022	0.01000	0.09170	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETA3-4	E	C1	5	1	7.510	1.023	0.01600	0.09230	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETA3-5	E	C1	5	1	7.640	1.037	0.01600	0.09140	16	0.0057	LAB
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETA3-1	E	C2	5	2	7.970	1.020	0.01500	0.09090	16	0.0057	LGB
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETA3-2	E	C2	5	2	7.490	1.034	0.01500	0.09240	16	0.0058	LGT
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETA3-3	E	C2	5	2	7.630	1.023	0.01500	0.09240	16	0.0058	LGT

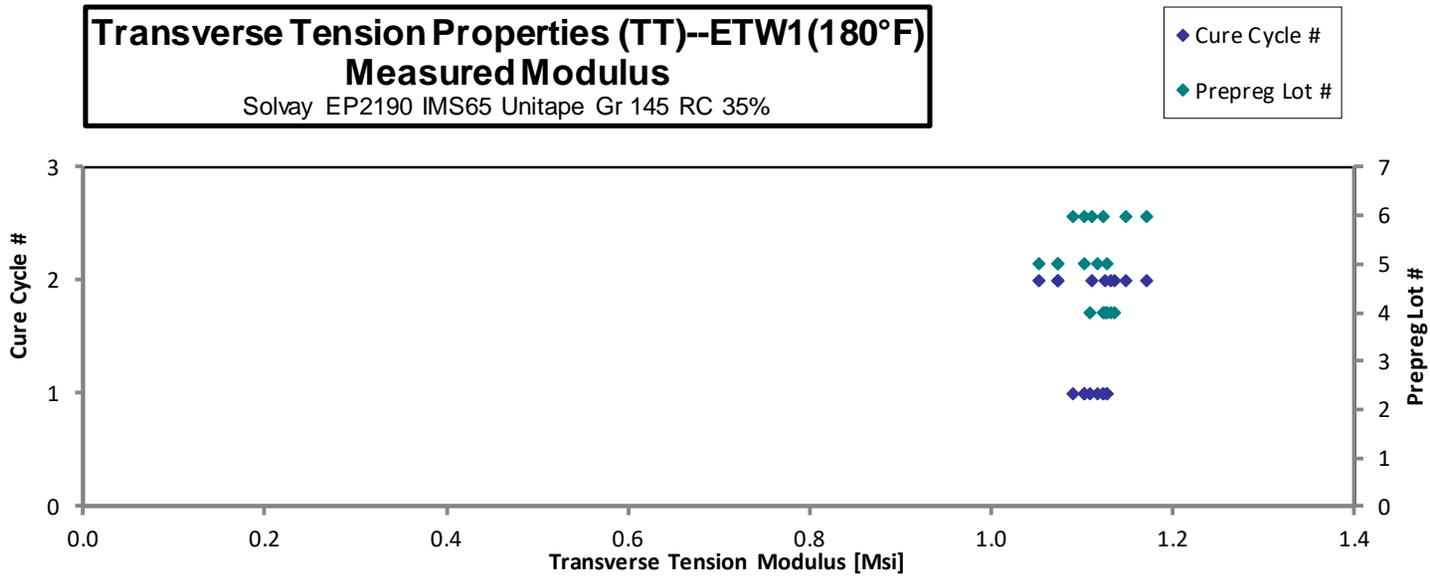
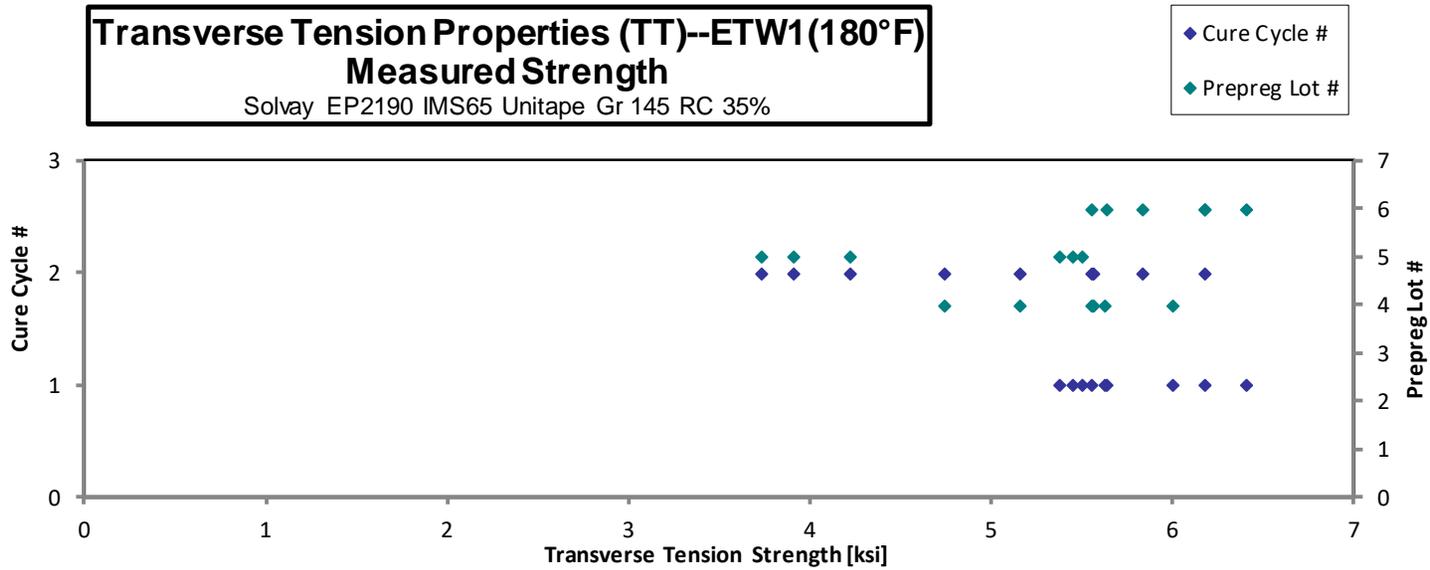
Average	7.926	1.078	0.01500	Average	0.0058
Standard Dev.	0.7703	0.05746	0.002951		
Coeff. of Var. [%]	9.720	5.332	19.67		
Min.	6.230	1.020	0.01000	Min.	0.0057
Max.	9.320	1.172	0.02100	Max.	0.0059
Number of Spec.	18	18	18	Number of Spec.	18



Transverse Tension Properties (TT)--ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW1-1	D	C1	4	1	5.550	1.124	0.02300	0.09280	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW1-2	D	C1	4	1	5.630	1.127	0.01500	0.09240	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW1-3	D	C1	4	1	6.000	1.110	0.02000	0.09260	16	0.0058	LGT
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW1-1	D	C2	4	2	4.740	1.126	0.02000	0.09270	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW1-2	D	C2	4	2	5.560	1.137	0.02000	0.09290	16	0.0058	LGT
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW1-3	D	C2	4	2	5.160	1.132	0.01600	0.09280	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW1-1	E	C1	5	1	5.450	1.118	0.01600	0.09120	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW1-2	E	C1	5	1	5.380	1.128	0.01800	0.09100	16	0.0057	LGT
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW1-3	E	C1	5	1	5.500	1.103	0.02000	0.09110	16	0.0057	LGT
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW1-1	E	C2	5	2	3.910	1.052	0.01400	0.09200	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW1-2	E	C2	5	2	3.730	1.073	0.01700	0.09160	16	0.0057	LAT
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW1-3	E	C2	5	2	4.220	1.073	0.01700	0.09200	16	0.0058	LAT
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW1-1	F	C1	6	1	6.410	1.123	0.01600	0.09030	16	0.0056	LGM
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW1-2	F	C1	6	1	6.180	1.103	0.01800	0.09050	16	0.0057	LGB
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW1-3	F	C1	6	1	5.640	1.091	0.01700	0.09060	16	0.0057	LGT
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW1-1	F	C2	6	2	5.840	1.111	0.01500	0.09010	16	0.0056	LGM
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW1-2	F	C2	6	2	5.550	1.171	0.01400	0.08960	16	0.0056	LGT
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW1-3	F	C2	6	2	6.180	1.149	0.01400	0.09000	16	0.0056	LGM

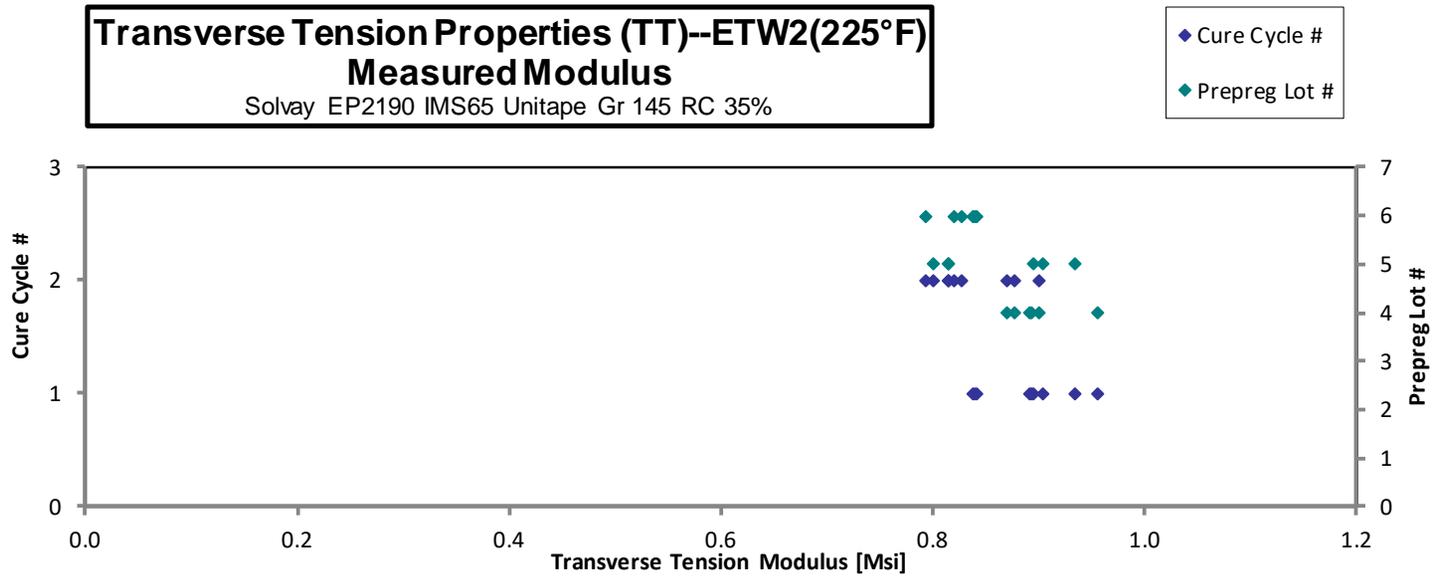
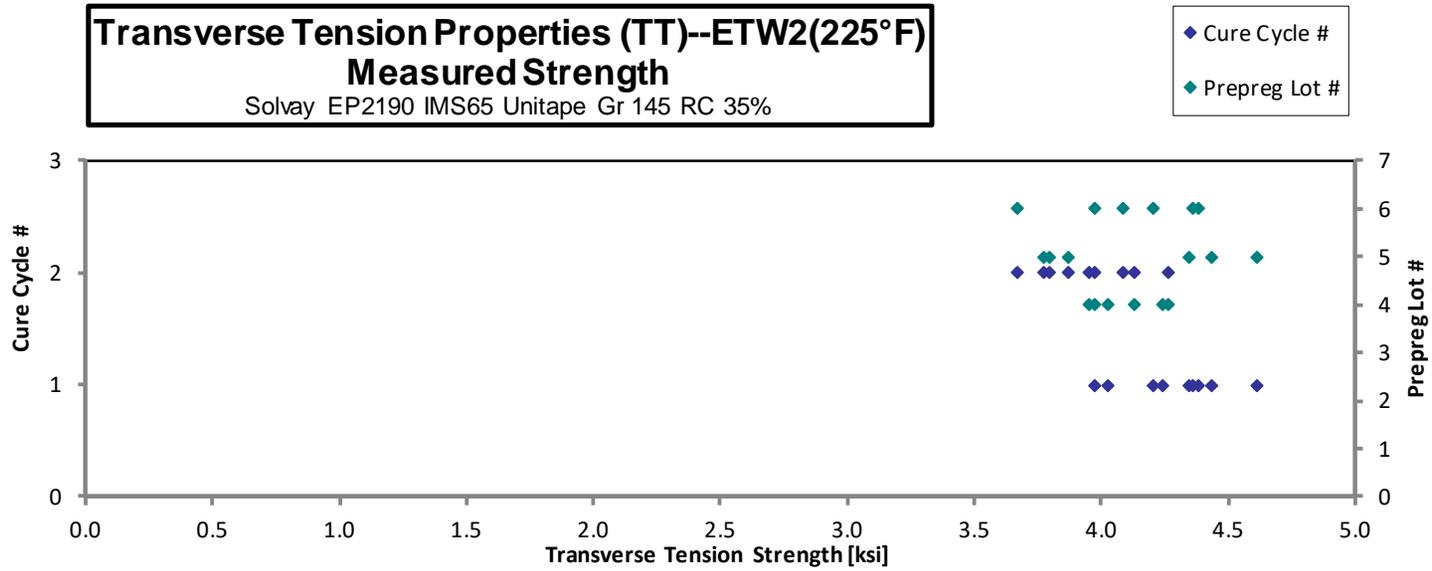
Average	5.368	1.114	0.01722	Average	0.0057
Standard Dev.	0.7616	0.02873	0.002557		
Coeff. of Var. [%]	14.19	2.579	14.84		
Min.	3.730	1.052	0.01400	Min.	0.0056
Max.	6.410	1.171	0.02300	Max.	0.0058
Number of Spec.	18	18	18	Number of Spec.	18



Transverse Tension Properties (TT)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW2-1	D	C1	4	1	4.240	0.9560	0.01000	0.09230	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW2-2	D	C1	4	1	4.020	0.8930	0.01400	0.09230	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-2-ETW2-3	D	C1	4	1	3.970	0.8920	0.01100	0.09270	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW2-1	D	C2	4	2	4.130	0.8710	0.01100	0.09260	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW2-2	D	C2	4	2	4.260	0.8780	0.01200	0.09280	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-ETW2-3	D	C2	4	2	3.950	0.9000	0.01100	0.09260	16	0.0058	LGB
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW2-1	E	C1	5	1	4.430	0.9050	0.01100	0.09130	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW2-2	E	C1	5	1	4.610	0.8960	0.01200	0.09140	16	0.0057	LGT
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-ETW2-3	E	C1	5	1	4.340	0.9350	0.009000	0.09120	16	0.0057	LGB
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW2-1	E	C2	5	2	3.770	0.8000	0.01400	0.09210	16	0.0058	LGM
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW2-2	E	C2	5	2	3.790	0.8150	0.01100	0.09170	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-ETW2-3	E	C2	5	2	3.870	0.8160	0.01200	0.09190	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW2-1	F	C1	6	1	4.380	0.8400	0.01200	0.09100	16	0.0057	LGM
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW2-2	F	C1	6	1	4.360	0.8380	0.01600	0.09080	16	0.0057	LGB
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-ETW2-3	F	C1	6	1	4.200	0.8410	0.01800	0.09100	16	0.0057	LGB
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW2-1	F	C2	6	2	3.670	0.7940	0.01100	0.09020	16	0.0056	LGB
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW2-2	F	C2	6	2	4.080	0.8200	0.01300	0.08950	16	0.0056	LGM
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-ETW2-3	F	C2	6	2	3.970	0.8270	0.01200	0.08950	16	0.0056	LGB

Average	4.113	0.8621	0.01222	Average	0.0057
Standard Dev.	0.2580	0.04734	0.002157		
Coeff. of Var. [%]	6.272	5.491	17.65		
Min.	3.670	0.7940	0.009000	Min.	0.0056
Max.	4.610	0.9560	0.0180	Max.	0.0058
Number of Spec.	18	18	18	Number of Spec.	18



4.3 Longitudinal Compression Strength Properties (LCS)

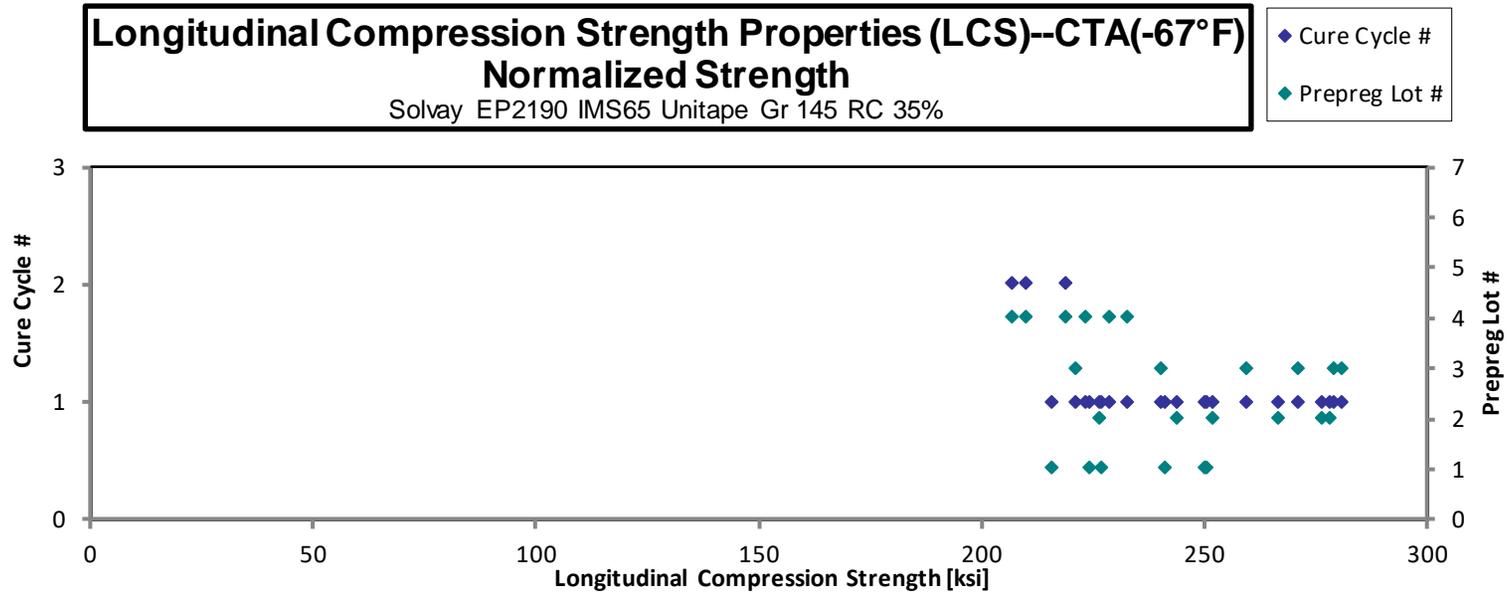
Longitudinal Compression Strength Properties (LCS)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
TR7602786-P1-LCS-A-C1-CTA-1	A	C1	1	1	213.9	0.04760	8	HGB	0.0060	227.3
TR7602786-P1-LCS-A-C1-CTA-2	A	C1	1	1	202.1	0.04790	8	HGB	0.0060	216.0
TR7602786-P1-LCS-A-C1-CTA-3	A	C1	1	1	235.2	0.04780	8	HGB	0.0060	250.9
TR7602786-P1-LCS-A-C1-CTA-4	A	C1	1	1	228.5	0.04730	8	HGB	0.0059	241.3
TR7602786-P1-LCS-A-C1-CTA-5	A	C1	1	1	238.4	0.04700	8	HGB	0.0059	250.1
TR7602786-P1-LCS-A-C1-CTA-6	A	C1	1	1	212.0	0.04740	8	HGB	0.0059	224.3
TR7702726-P1-LCS-B-C1-CTA-1	B	C1	2	1	219.6	0.04620	8	TAB	0.0058	226.5
TR7702726-P1-LCS-B-C1-CTA-2	B	C1	2	1	232.6	0.04700	8	TGM	0.0059	244.0
TR7702726-P1-LCS-B-C1-CTA-3	B	C1	2	1	241.4	0.04680	8	TGM	0.0059	252.2
TR7702726-P1-LCS-B-C1-CTA-4	B	C1	2	1	254.3	0.04700	8	TAB	0.0059	266.8
TR7702726-P1-LCS-B-C1-CTA-5	B	C1	2	1	265.5	0.04700	8	TGM	0.0059	278.5
TR7702726-P1-LCS-B-C1-CTA-6	B	C1	2	1	269.2	0.04600	8	TGM	0.0058	276.4
TR7725508-P1-LCS-C-C1-CTA-1	C	C1	3	1	207.2	0.04780	8	HGM	0.0060	221.1
TR7725508-P1-LCS-C-C1-CTA-2	C	C1	3	1	262.8	0.04760	8	HGM	0.0060	279.2
TR7725508-P1-LCS-C-C1-CTA-3	C	C1	3	1	254.1	0.04780	8	HGM	0.0060	271.1
TR7725508-P1-LCS-C-C1-CTA-4	C	C1	3	1	229.3	0.04700	8	HGM	0.0059	240.6
TR7725508-P1-LCS-C-C1-CTA-5	C	C1	3	1	270.2	0.04660	8	HGM	0.0058	281.0
TR7725508-P1-LCS-C-C1-CTA-6	C	C1	3	1	249.5	0.04660	8	HGM	0.0058	259.5
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-CTA-1	D	C1	4	1	212.4	0.04710	8	HGM	0.0059	223.3
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-CTA-2	D	C1	4	1	219.5	0.04670	8	HGM	0.0058	228.8
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-CTA-3	D	C1	4	1	224.0	0.04660	8	HGM	0.0058	232.9
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-CTA-1	D	C2	4	2	201.6	0.04600	8	MGM	0.0058	206.9
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-CTA-2	D	C2	4	2	203.5	0.04620	8	MGM	0.0058	209.9
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-CTA-3	D	C2	4	2	213.5	0.04600	8	MGM	0.0058	219.2

Average 231.7
Standard Dev. 22.30
Coeff. of Var. [%] 9.626
Min. 201.6
Max. 270.2
Number of Spec. 24

Average_{norm} 0.0059 **242.8**
Standard Dev._{norm} **23.50**
Coeff. of Var. [%]_{norm} **9.678**
Min. 0.0058 **206.9**
Max. 0.0060 **281.0**
Number of Spec. 24 **24**



**Longitudinal Compression Strength Properties (LCS)--RTA(75°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

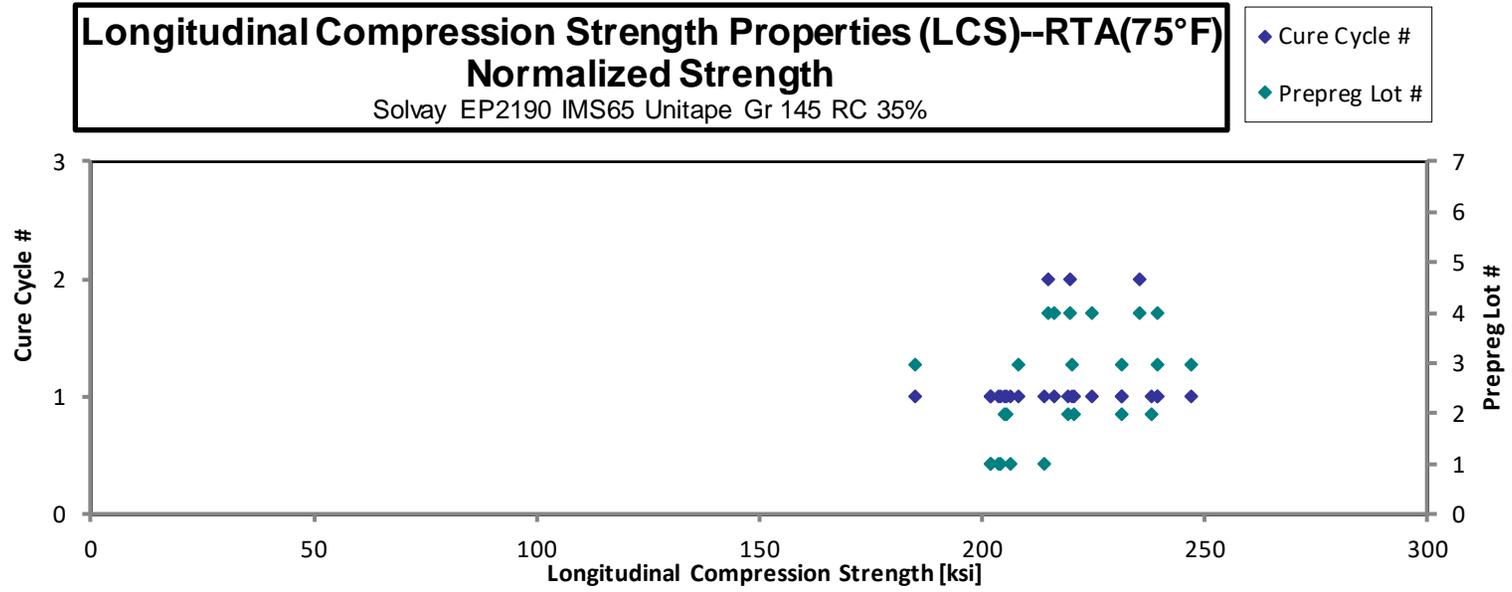
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7602786-P1-LCS-A-C1-RTA-1	A	C1	1	1	204.8	0.04680	8	TAB
TR7602786-P1-LCS-A-C1-RTA-2	A	C1	1	1	193.2	0.04730	8	TGM
TR7602786-P1-LCS-A-C1-RTA-3	A	C1	1	1	190.6	0.04750	8	TGT
TR7602786-P1-LCS-A-C1-RTA-4	A	C1	1	1	191.3	0.04730	8	TGB
TR7602786-P1-LCS-A-C1-RTA-7	A	C1	1	1	192.8	0.04730	8	HAT
TR7602786-P1-LCS-A-C1-RTA-8	A	C1	1	1	193.4	0.04780	8	TGM
TR7702726-P1-LCS-B-C1-RTA-1	B	C1	2	1	196.3	0.04680	8	HGM
TR7702726-P1-LCS-B-C1-RTA-2	B	C1	2	1	224.2	0.04760	8	HGM
TR7702726-P1-LCS-B-C1-RTA-3	B	C1	2	1	196.7	0.04680	8	HGB
TR7702726-P1-LCS-B-C1-RTA-4	B	C1	2	1	213.7	0.04600	8	HGB
TR7702726-P1-LCS-B-C1-RTA-5	B	C1	2	1	213.9	0.04620	8	HGT
TR7702726-P1-LCS-B-C1-RTA-6	B	C1	2	1	223.5	0.04640	8	HGM
TR7725508-P1-LCS-C-C1-RTA-1	C	C1	3	1	204.6	0.04820	8	HGB
TR7725508-P1-LCS-C-C1-RTA-2	C	C1	3	1	191.2	0.04880	8	HGM
TR7725508-P1-LCS-C-C1-RTA-3	C	C1	3	1	224.3	0.04780	8	HGM
TR7725508-P1-LCS-C-C1-RTA-4	C	C1	3	1	175.1	0.04740	8	HGM
TR7725508-P1-LCS-C-C1-RTA-5	C	C1	3	1	233.2	0.04750	8	HGB
TR7725508-P1-LCS-C-C1-RTA-6	C	C1	3	1	219.7	0.04720	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-RTA-1	D	C1	4	1	213.5	0.04720	8	BGT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-RTA-2	D	C1	4	1	228.8	0.04690	8	BGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-RTA-3	D	C1	4	1	209.0	0.04640	8	BGT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-RTA-1	D	C2	4	2	230.1	0.04580	8	BGT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-RTA-2	D	C2	4	2	212.5	0.04630	8	BGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-RTA-3	D	C2	4	2	209.0	0.04610	8	BGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0059	213.9
0.0059	204.0
0.0059	202.1
0.0059	202.0
0.0059	203.5
0.0060	206.3
0.0059	205.0
0.0060	238.2
0.0059	205.4
0.0058	219.4
0.0058	220.6
0.0058	231.4
0.0060	220.1
0.0061	208.2
0.0060	239.3
0.0059	185.2
0.0059	247.2
0.0059	231.4
0.0059	224.9
0.0059	239.5
0.0058	216.4
0.0057	235.2
0.0058	219.6
0.0058	215.1

Average 207.7
Standard Dev. 15.43
Coeff. of Var. [%] 7.428
Min. 175.1
Max. 233.2
Number of Spec. 24

Average_{norm} 0.0059
Standard Dev._{norm} 15.43
Coeff. of Var. [%]_{norm} 7.074
Min. 0.0057
Max. 0.0061
Number of Spec. 24



**Longitudinal Compression Strength Properties (LCS)--ETA2(225°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA2-1	D	C1	4	1	149.6	0.04650	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA2-3	D	C1	4	1	139.6	0.04660	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA2-4	D	C1	4	1	142.6	0.04620	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETA2-1	D	C2	4	2	167.2	0.04560	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETA2-2	D	C2	4	2	171.8	0.04580	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETA2-3	D	C2	4	2	183.9	0.04600	8	HGB

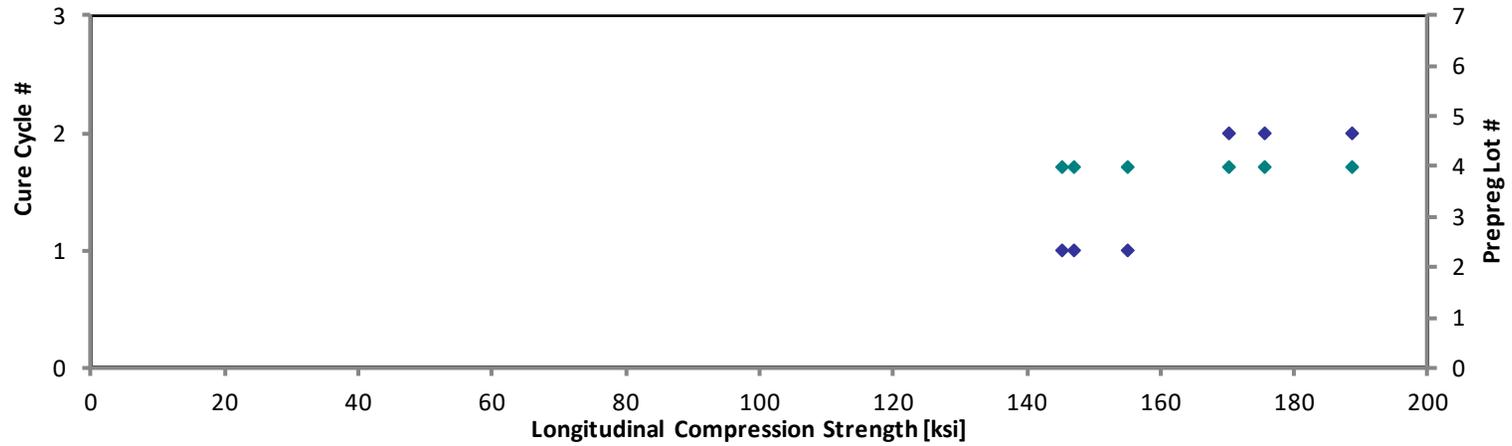
Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	155.3
0.0058	145.2
0.0058	147.1
0.0057	170.2
0.0057	175.7
0.0058	188.8

Average 159.1
Standard Dev. 17.80
Coeff. of Var. [%] 11.18
Min. 139.6
Max. 183.9
Number of Spec. 6

Average_{norm} 0.0058 163.7
Standard Dev._{norm} 17.35
Coeff. of Var. [%]_{norm} 10.60
Min. 0.0057 145.2
Max. 0.0058 188.8
Number of Spec. 6 6

Longitudinal Compression Strength Properties (LCS)--ETA2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Longitudinal Compression Strength Properties (LCS)--ETA3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7602786-P1-LCS-A-C1-ETA3-1	A	C1	1	1	136.4	0.04770	8	HAB
TR7602786-P1-LCS-A-C1-ETA3-2	A	C1	1	1	154.6	0.04710	8	HAT
TR7602786-P1-LCS-A-C1-ETA3-3	A	C1	1	1	148.2	0.04770	8	HAT
TR7602786-P1-LCS-A-C1-ETA3-4	A	C1	1	1	149.8	0.04700	8	HGM
TR7602786-P1-LCS-A-C1-ETA3-5	A	C1	1	1	175.2	0.04720	8	HGM
TR7602786-P1-LCS-A-C1-ETA3-6	A	C1	1	1	155.0	0.04710	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA3-1	D	C1	4	1	125.9	0.04690	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA3-2	D	C1	4	1	122.7	0.04700	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETA3-3	D	C1	4	1	122.7	0.04760	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-2-ETA3-1	D	C2	4	2	128.3	0.04540	8	HAT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-2-ETA3-2	D	C2	4	2	122.8	0.04550	8	HAT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-2-ETA3-3	D	C2	4	2	123.3	0.04530	8	HAB
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETA3-1	E	C1	5	1	133.9	0.04510	8	TGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETA3-2	E	C1	5	1	130.5	0.04520	8	TGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETA3-3	E	C1	5	1	144.0	0.04530	8	TGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETA3-1	E	C2	5	2	143.6	0.04590	8	LGB
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETA3-2	E	C2	5	2	136.0	0.04660	8	LGT
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETA3-3	E	C2	5	2	133.0	0.04650	8	HGM

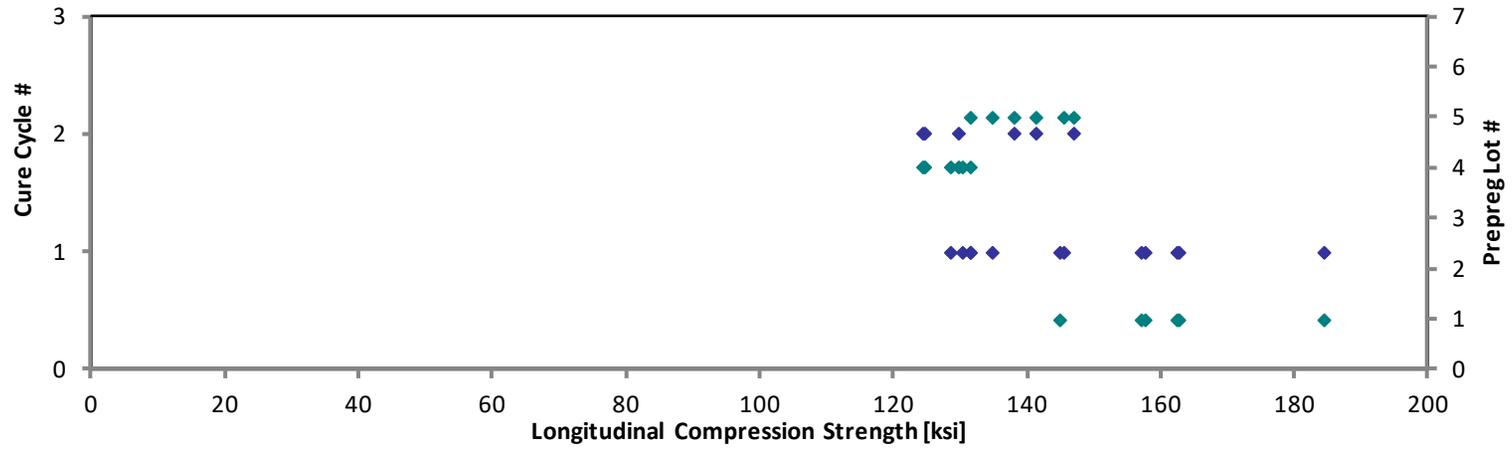
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0060	145.2
0.0059	162.5
0.0060	157.7
0.0059	157.1
0.0059	184.6
0.0059	163.0
0.0059	131.8
0.0059	128.7
0.0060	130.4
0.0057	130.0
0.0057	124.7
0.0057	124.7
0.0056	134.8
0.0057	131.6
0.0057	145.6
0.0057	147.1
0.0058	141.5
0.0058	138.1

Average 138.1
 Standard Dev. 14.39
 Coeff. of Var. [%] 10.42
 Min. 122.7
 Max. 175.2
 Number of Spec. 18

Average_{norm} 0.0058 143.3
 Standard Dev._{norm} 16.28
 Coeff. of Var. [%]_{norm} 11.36
 Min. 0.0056 124.7
 Max. 0.0060 184.6
 Number of Spec. 18 18

Longitudinal Compression Strength Properties (LCS)--ETA3(250°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Longitudinal Compression Strength Properties (LCS)--ETW1(180°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW1-1	D	C1	4	1	171.8	0.04720	8	HAB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW1-2	D	C1	4	1	162.8	0.04670	8	HAB
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW1-4	D	C1	4	1	155.1	0.04710	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW1-1	D	C2	4	2	171.4	0.04570	8	BGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW1-2	D	C2	4	2	168.2	0.04590	8	HAT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW1-3	D	C2	4	2	149.9	0.04580	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW1-1	E	C1	5	1	157.2	0.04550	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW1-2	E	C1	5	1	168.1	0.04510	8	HGT
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW1-3	E	C1	5	1	163.1	0.04520	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW1-1	E	C2	5	2	173.5	0.04620	8	HGB
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW1-2	E	C2	5	2	172.0	0.04580	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW1-3	E	C2	5	2	172.5	0.04510	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW1-1	F	C1	6	1	173.6	0.04510	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW1-2	F	C1	6	1	177.8	0.04470	8	MGB
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW1-3	F	C1	6	1	180.4	0.04450	8	MGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW1-2	F	C2	6	2	180.8	0.04620	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW1-3	F	C2	6	2	128.9	0.04660	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW1-5	F	C2	6	2	165.1	0.04480	8	AGM

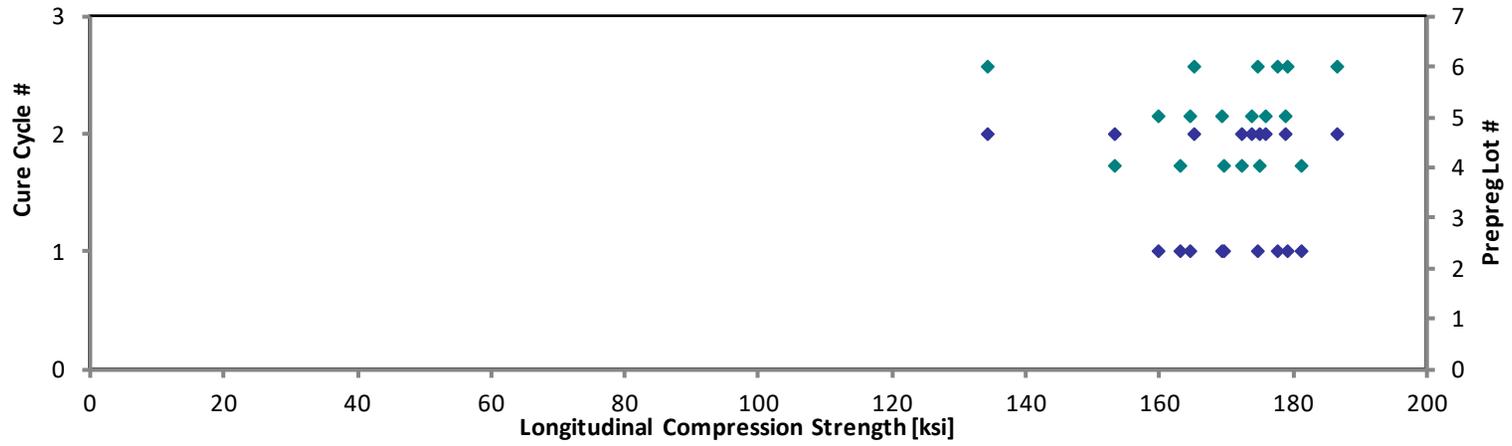
Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0059	181.0
0.0058	169.7
0.0059	163.1
0.0057	174.8
0.0057	172.3
0.0057	153.3
0.0057	159.7
0.0056	169.3
0.0057	164.6
0.0058	178.9
0.0057	175.9
0.0056	173.6
0.0056	174.7
0.0056	177.4
0.0056	179.2
0.0058	186.4
0.0058	134.1
0.0056	165.1

Average 166.2
Standard Dev. 12.55
Coeff. of Var. [%] 7.547
Min. 128.9
Max. 180.8
Number of Spec. 18

Average_{norm} 0.0057 169.6
Standard Dev._{norm} 12.08
Coeff. of Var. [%]_{norm} 7.123
Min. 0.0056 134.1
Max. 0.0059 186.4
Number of Spec. 18 18

Longitudinal Compression Strength Properties (LCS)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Longitudinal Compression Strength Properties (LCS)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

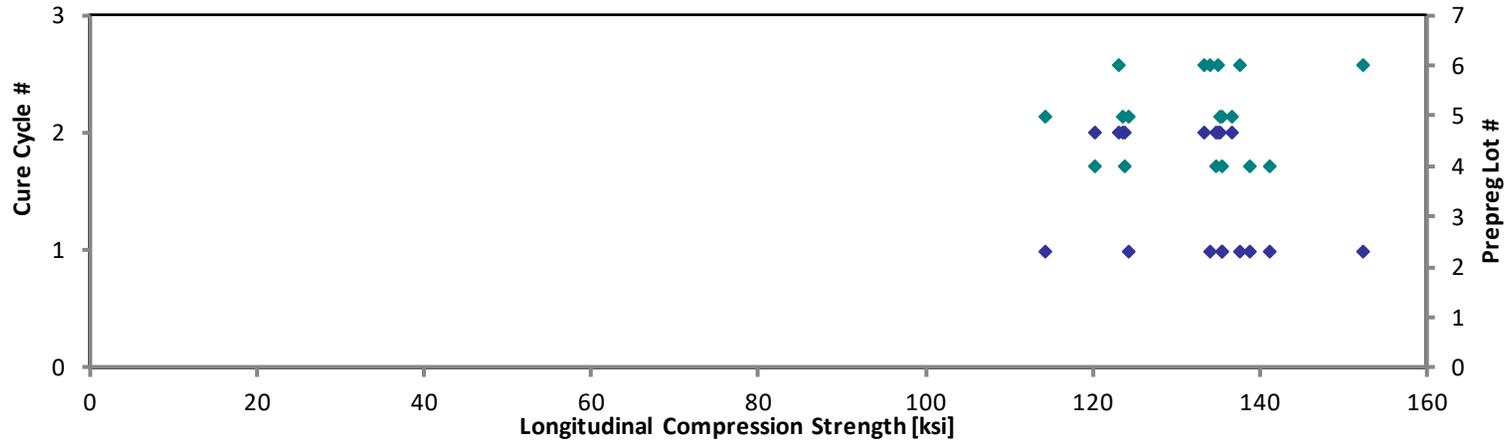
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t _{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW2-1	D	C1	4	1	131.8	0.04600	8	HAT	0.0058	135.3
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW2-2	D	C1	4	1	133.7	0.04650	8	HGB	0.0058	138.7
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW2-3	D	C1	4	1	135.8	0.04660	8	HGB	0.0058	141.2
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW2-1	D	C2	4	2	122.3	0.04530	8	HAB	0.0057	123.7
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW2-2	D	C2	4	2	133.8	0.04510	8	HGM	0.0056	134.7
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW2-3	D	C2	4	2	118.9	0.04530	8	AGM	0.0057	120.2
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW2-1	E	C1	5	1	134.0	0.04530	8	HGM	0.0057	135.5
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW2-2	E	C1	5	1	112.1	0.04560	8	HGM	0.0057	114.1
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW2-3	E	C1	5	1	122.3	0.04550	8	HGM	0.0057	124.2
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW2-1	E	C2	5	2	134.3	0.04510	8	HGB	0.0056	135.2
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW2-2	E	C2	5	2	122.3	0.04530	8	BGM	0.0057	123.6
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW2-3	E	C2	5	2	134.9	0.04540	8	HGM	0.0057	136.7
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW2-1	F	C1	6	1	130.6	0.04600	8	AGM	0.0058	134.1
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW2-2	F	C1	6	1	149.5	0.04560	8	AGT	0.0057	152.2
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW2-3	F	C1	6	1	135.0	0.04560	8	LGT	0.0057	137.4
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW2-1	F	C2	6	2	132.9	0.04490	8	AGT	0.0056	133.2
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW2-2	F	C2	6	2	123.0	0.04480	8	AGB	0.0056	123.0
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW2-3	F	C2	6	2	135.6	0.04460	8	LGB	0.0056	134.9

Average 130.1
Standard Dev. 8.53
Coeff. of Var. [%] 6.555
Min. 112.1
Max. 149.5
Number of Spec. 18

Average_{norm} 0.0057 132.1
Standard Dev._{norm} 9.02
Coeff. of Var. [%]_{norm} 6.826
Min. 0.0056 114.1
Max. 0.0058 152.2
Number of Spec. 18 18

Longitudinal Compression Strength Properties (LCS)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Longitudinal Compression Strength Properties (LCS)--ETW3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

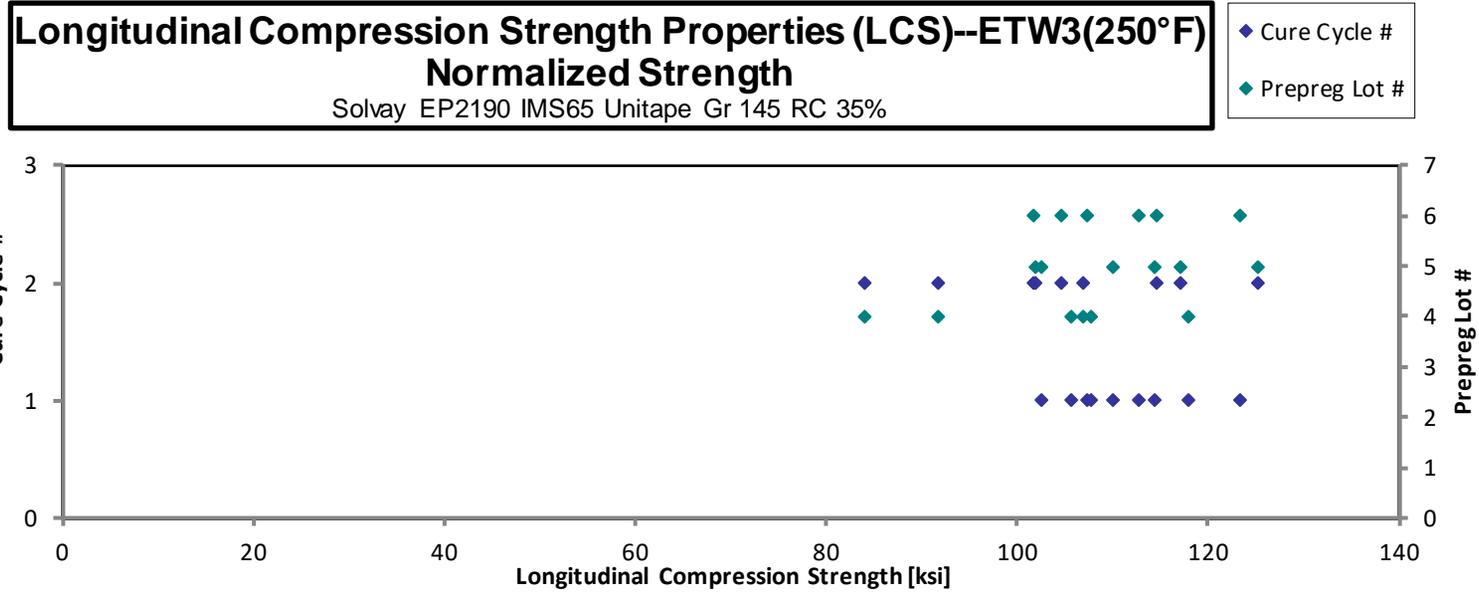
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW3-1	D	C1	4	1	111.0	0.04760	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW3-2	D	C1	4	1	101.7	0.04750	8	HAT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-2-ETW3-3	D	C1	4	1	99.81	0.04740	8	HGT
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW3-1	D	C2	4	2	89.81	0.04580	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW3-2	D	C2	4	2	105.0	0.04560	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-ETW3-3	D	C2	4	2	82.09	0.04580	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW3-1	E	C1	5	1	101.0	0.04550	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW3-2	E	C1	5	1	108.4	0.04550	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-ETW3-3	E	C1	5	1	113.3	0.04520	8	HGT
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW3-1	E	C2	5	2	121.4	0.04620	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW3-2	E	C2	5	2	98.81	0.04620	8	HGM
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-ETW3-3	E	C2	5	2	112.3	0.04670	8	HGT
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW3-1	F	C1	6	1	113.5	0.04450	8	MGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW3-2	F	C1	6	1	123.8	0.04460	8	AGB
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-ETW3-3	F	C1	6	1	106.8	0.04500	8	LGB
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW3-1	F	C2	6	2	114.8	0.04470	8	LGB
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW3-2	F	C2	6	2	102.5	0.04570	8	AGM
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-ETW3-3	F	C2	6	2	101.5	0.04490	8	LGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0060	118.0
0.0059	107.8
0.0059	105.6
0.0057	91.81
0.0057	106.8
0.0057	83.92
0.0057	102.5
0.0057	110.1
0.0057	114.3
0.0058	125.2
0.0058	101.9
0.0058	117.1
0.0056	112.8
0.0056	123.3
0.0056	107.3
0.0056	114.5
0.0057	104.6
0.0056	101.7

Average **106.0**
 Standard Dev. **10.33**
 Coeff. of Var. [%] **9.745**
 Min. **82.09**
 Max. **123.8**
 Number of Spec. **18**

Average_{norm} **0.0057** **108.3**
 Standard Dev._{norm} **10.25**
 Coeff. of Var. [%]_{norm} **9.461**
 Min. **0.0056** **83.92**
 Max. **0.0060** **125.2**
 Number of Spec. **18** **18**



4.4 Longitudinal Compression Modulus Properties (LCM)

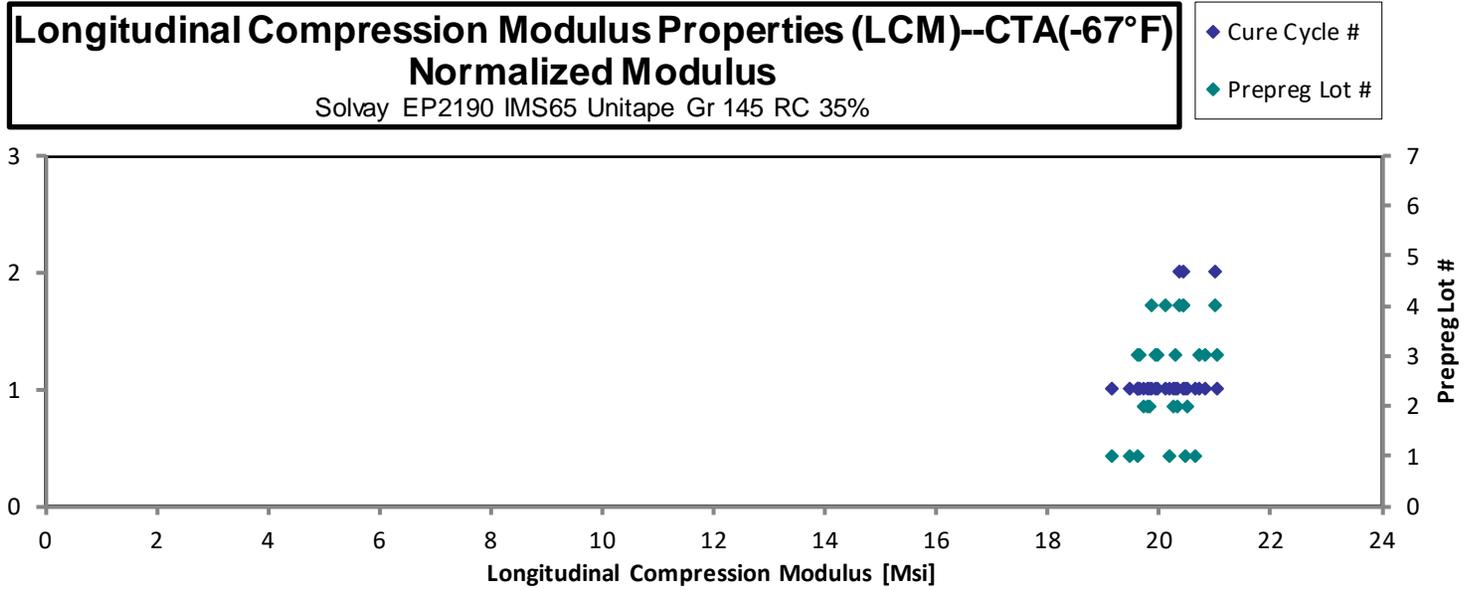
Longitudinal Compression Modulus Properties (LCM)--CTA(-67°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Modulus _{norm} [Msi]
TR7694135-P1-LCM-A-C1-CTA-1	A	C1	1	1	18.28	0.04690	8	0.0059	19.13
TR7694135-P1-LCM-A-C1-CTA-2	A	C1	1	1	19.45	0.04650	8	0.0058	20.19
TR7694135-P1-LCM-A-C1-CTA-3	A	C1	1	1	18.65	0.04710	8	0.0059	19.61
TR7694135-P1-LCM-A-C1-CTA-4	A	C1	1	1	19.71	0.04650	8	0.0058	20.46
TR7694135-P1-LCM-A-C1-CTA-5	A	C1	1	1	18.96	0.04600	8	0.0058	19.47
TR7694135-P1-LCM-A-C1-CTA-6	A	C1	1	1	19.83	0.04660	8	0.0058	20.63
TR7702727-P1-LCM-B-C1-CTA-1	B	C1	2	1	19.00	0.04670	8	0.0058	19.81
TR7702727-P1-LCM-B-C1-CTA-2	B	C1	2	1	19.35	0.04690	8	0.0059	20.26
TR7702727-P1-LCM-B-C1-CTA-3	B	C1	2	1	19.07	0.04650	8	0.0058	19.80
TR7702727-P1-LCM-B-C1-CTA-4	B	C1	2	1	19.70	0.04660	8	0.0058	20.49
TR7702727-P1-LCM-B-C1-CTA-6	B	C1	2	1	19.49	0.04670	8	0.0058	20.32
TR7702727-P1-LCM-B-C1-CTA-8	B	C1	2	1	18.78	0.04700	8	0.0059	19.70
TR7725510-P1-LCM-C-C1-CTA-1	C	C1	3	1	20.27	0.04650	8	0.0058	21.03
TR7725510-P1-LCM-C-C1-CTA-2	C	C1	3	1	19.38	0.04690	8	0.0059	20.29
TR7725510-P1-LCM-C-C1-CTA-3	C	C1	3	1	20.11	0.04640	8	0.0058	20.83
TR7725510-P1-LCM-C-C1-CTA-4	C	C1	3	1	19.10	0.04610	8	0.0058	19.66
TR7725510-P1-LCM-C-C1-CTA-5	C	C1	3	1	19.31	0.04630	8	0.0058	19.96
TR7725510-P1-LCM-C-C1-CTA-6	C	C1	3	1	18.89	0.04650	8	0.0058	19.60
TR7725510-P1-LCM-C-C1-CTA-8	C	C1	3	1	19.12	0.04670	8	0.0058	19.93
TR7725510-P1-LCM-C-C1-CTA-9	C	C1	3	1	19.85	0.04680	8	0.0059	20.73
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-CTA-1	D	C1	4	1	20.26	0.04520	8	0.0057	20.44
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-CTA-2	D	C1	4	1	19.53	0.04560	8	0.0057	19.87
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-CTA-3	D	C1	4	1	19.64	0.04590	8	0.0057	20.12
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-CTA-1	D	C2	4	2	19.56	0.04660	8	0.0058	20.35
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-CTA-2	D	C2	4	2	19.52	0.04690	8	0.0059	20.43
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-CTA-4	D	C2	4	2	20.20	0.04660	8	0.0058	21.01

Modulus calculation is obtained from 1000 - 3000 microstrain.
 D-C1: Modulus calculation is obtained from 1000 - 3000 microstrain.
 D-C2: Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	19.42	Average_{norm}	0.0058
Standard Dev.	0.5065	Standard Dev._{norm}	0.4880
Coeff. of Var. [%]	2.608	Coeff. of Var. [%]_{norm}	2.421
Min.	18.28	Min.	0.0057
Max.	20.27	Max.	0.0059
Number of Spec.	26	Number of Spec.	26



Longitudinal Compression Modulus Properties (LCM)--RTA(75°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

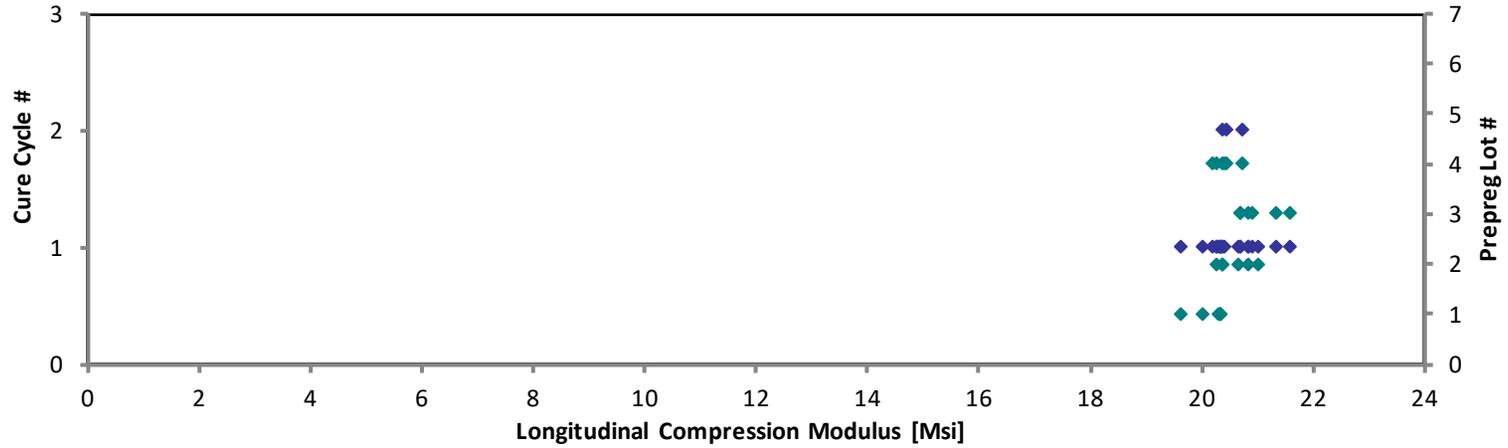
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Modulus _{norm} [Msi]
TR7694135-P1-LCM-A-C1-RTA-1	A	C1	1	1	19.26	0.04660	8	0.0058	20.03
TR7694135-P1-LCM-A-C1-RTA-2	A	C1	1	1	19.32	0.04720	8	0.0059	20.35
TR7694135-P1-LCM-A-C1-RTA-3	A	C1	1	1	19.52	0.04660	8	0.0058	20.30
TR7694135-P1-LCM-A-C1-RTA-4	A	C1	1	1	19.58	0.04660	8	0.0058	20.37
TR7694135-P1-LCM-A-C1-RTA-5	A	C1	1	1	19.04	0.04620	8	0.0058	19.63
TR7694135-P1-LCM-A-C1-RTA-6	A	C1	1	1	19.64	0.04640	8	0.0058	20.34
TR7702727-P1-LCM-B-C1-RTA-1	B	C1	2	1	19.67	0.04750	8	0.0059	20.86
TR7702727-P1-LCM-B-C1-RTA-3	B	C1	2	1	19.31	0.04730	8	0.0059	20.39
TR7702727-P1-LCM-B-C1-RTA-5	B	C1	2	1	20.08	0.04690	8	0.0059	21.02
TR7702727-P1-LCM-B-C1-RTA-6	B	C1	2	1	19.52	0.04680	8	0.0059	20.39
TR7702727-P1-LCM-B-C1-RTA-7	B	C1	2	1	19.29	0.04710	8	0.0059	20.28
TR7702727-P1-LCM-B-C1-RTA-8	B	C1	2	1	19.75	0.04690	8	0.0059	20.67
TR7725510-P1-LCM-C-C1-RTA-1	C	C1	3	1	20.50	0.04720	8	0.0059	21.59
TR7725510-P1-LCM-C-C1-RTA-2	C	C1	3	1	19.87	0.04720	8	0.0059	20.93
TR7725510-P1-LCM-C-C1-RTA-3	C	C1	3	1	20.02	0.04670	8	0.0058	20.87
TR7725510-P1-LCM-C-C1-RTA-4	C	C1	3	1	19.75	0.04700	8	0.0059	20.71
TR7725510-P1-LCM-C-C1-RTA-5	C	C1	3	1	20.40	0.04690	8	0.0059	21.36
TR7725510-P1-LCM-C-C1-RTA-6	C	C1	3	1	19.73	0.04700	8	0.0059	20.69
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-RTA-2	D	C1	4	1	19.85	0.04580	8	0.0057	20.30
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-RTA-3	D	C1	4	1	19.59	0.04620	8	0.0058	20.21
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-RTA-4	D	C1	4	1	20.08	0.04560	8	0.0057	20.44
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-RTA-1	D	C2	4	2	20.11	0.04620	8	0.0058	20.74
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-RTA-2	D	C2	4	2	19.65	0.04650	8	0.0058	20.39
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-RTA-3	D	C2	4	2	19.71	0.04650	8	0.0058	20.45

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	19.72	Average_{norm}	0.0058	20.56
Standard Dev.	0.3567	Standard Dev._{norm}		0.4192
Coeff. of Var. [%]	1.809	Coeff. of Var. [%]_{norm}		2.039
Min.	19.04	Min.	0.0057	19.63
Max.	20.50	Max.	0.0059	21.59
Number of Spec.	24	Number of Spec.	24	24

Longitudinal Compression Modulus Properties (LCM)--RTA(75°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Longitudinal Compression Modulus Properties (LCM)--ETA2(225°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

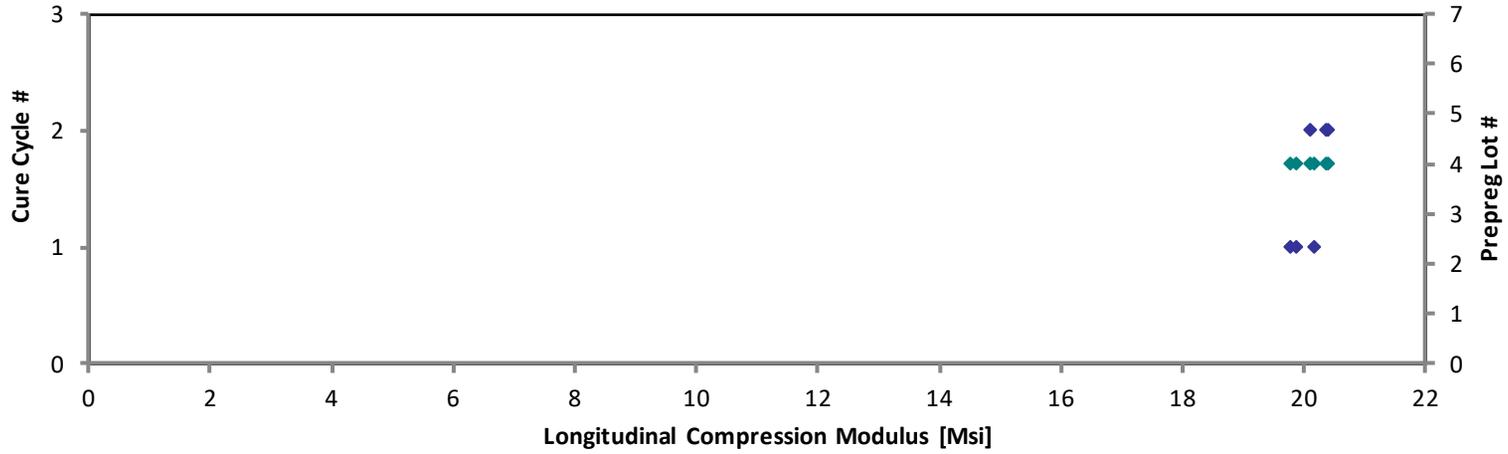
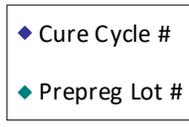
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-ETA2-1	D	C1	4	1	19.95	0.0453	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-ETA2-3	D	C1	4	1	19.30	0.0459	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-ETA2-5	D	C1	4	1	19.40	0.0459	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-ETA2-1	D	C2	4	2	19.73	0.0463	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-ETA2-2	D	C2	4	2	19.84	0.0460	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-ETA2-3	D	C2	4	2	19.50	0.0462	8

Avg. t_{ply} [in]	Modulus _{norm} [Msi]
0.0057	20.17
0.0057	19.78
0.0057	19.88
0.0058	20.39
0.0058	20.37
0.0058	20.11

Modulus calculation is obtained from 1000 - 3000 microstrain.
 D-C1: Modulus calculation is obtained from 1000 - 3000 microstrain.
 D-C2: Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	19.62	Average_{norm}	0.0057	20.12
Standard Dev.	0.2595	Standard Dev._{norm}		0.2530
Coeff. of Var. [%]	1.322	Coeff. of Var. [%]_{norm}		1.257
Min.	19.30	Min.	0.0057	19.78
Max.	19.95	Max.	0.0058	20.39
Number of Spec.	6	Number of Spec.	6	6

Longitudinal Compression Modulus Properties (LCM)--ETA2(225°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Longitudinal Compression Modulus Properties (LCM)--ETA3(250°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate
TR7694135-P1-LCM-A-C1-ETA3-1	A	C1	1	1	19.22	0.04610	8
TR7694135-P1-LCM-A-C1-ETA3-2	A	C1	1	1	20.07	0.04640	8
TR7694135-P1-LCM-A-C1-ETA3-3	A	C1	1	1	19.82	0.04640	8
TR7694135-P1-LCM-A-C1-ETA3-5	A	C1	1	1	19.59	0.04630	8
TR7694135-P1-LCM-A-C1-ETA3-6	A	C1	1	1	19.57	0.04630	8
TR7694135-P1-LCM-A-C1-ETA3-7	A	C1	1	1	19.70	0.04620	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETA3-1	D	C1	4	1	20.58	0.04590	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETA3-2	D	C1	4	1	20.77	0.04610	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETA3-3	D	C1	4	1	20.68	0.04600	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETA3-1	D	C2	4	2	20.30	0.04390	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETA3-2	D	C2	4	2	20.68	0.04470	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETA3-3	D	C2	4	2	20.39	0.04560	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETA3-1	E	C1	5	1	20.09	0.04560	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETA3-2	E	C1	5	1	20.60	0.04570	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETA3-3	E	C1	5	1	20.67	0.04580	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETA3-4	E	C1	5	1	20.09	0.04570	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETA3-1	E	C2	5	2	20.59	0.04460	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETA3-2	E	C2	5	2	21.41	0.04430	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETA3-3	E	C2	5	2	20.51	0.04450	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETA3-4	E	C2	5	2	21.31	0.04560	8

Avg. t_{ply} [in]	Modulus _{norm} [Msi]
0.0058	19.77
0.0058	20.78
0.0058	20.53
0.0058	20.25
0.0058	20.22
0.0058	20.31
0.0057	21.08
0.0058	21.37
0.0058	21.23
0.0055	19.90
0.0056	20.63
0.0057	20.75
0.0057	20.44
0.0057	21.01
0.0057	21.13
0.0057	20.50
0.0056	20.50
0.0055	21.17
0.0056	20.37
0.0057	21.69

Modulus calculation is obtained from 1000 - 3000 microstrain.

D-C1: Modulus calculation is obtained from 1000 - 3000 microstrain

D-C2: Modulus calculation is obtained from 1000 - 3000 microstrain.

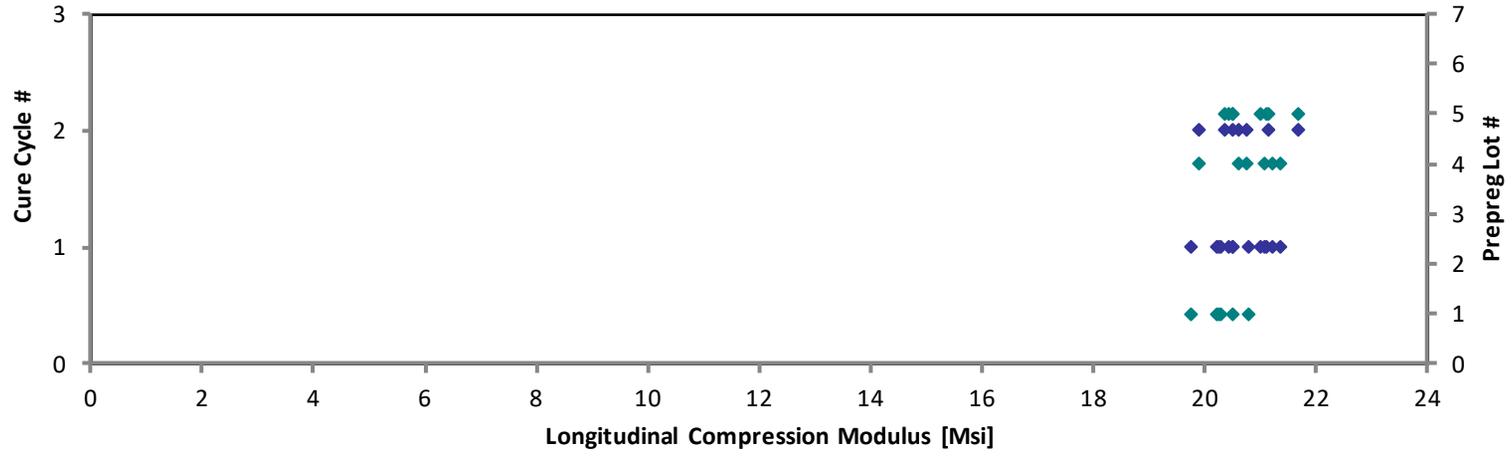
E-C1: Modulus calculation range for specimen #1 (1000-2934 microstrain), #2 (1000-2333 microstrain), #3(1000-3000 microstrain), #4(1000-2149 microstrain).

E-C2: Modulus calculation range for specimen #1 (1000-2668 microstrain), #2 (1000-2823 microstrain), #3(1000-2819 microstrain), #4(1000-3000 microstrain).

Average	20.33	Average_{norm}	0.0057	20.68
Standard Dev.	0.5676	Standard Dev._{norm}		0.4998
Coeff. of Var. [%]	2.792	Coeff. of Var. [%]_{norm}		2.416
Min.	19.22	Min.	0.0055	19.77
Max.	21.41	Max.	0.0058	21.69
Number of Spec.	20	Number of Spec.	20	20

Longitudinal Compression Modulus Properties (LCM)--ETA3(250°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



Longitudinal Compression Modulus Properties (LCM)--ETW1(180°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

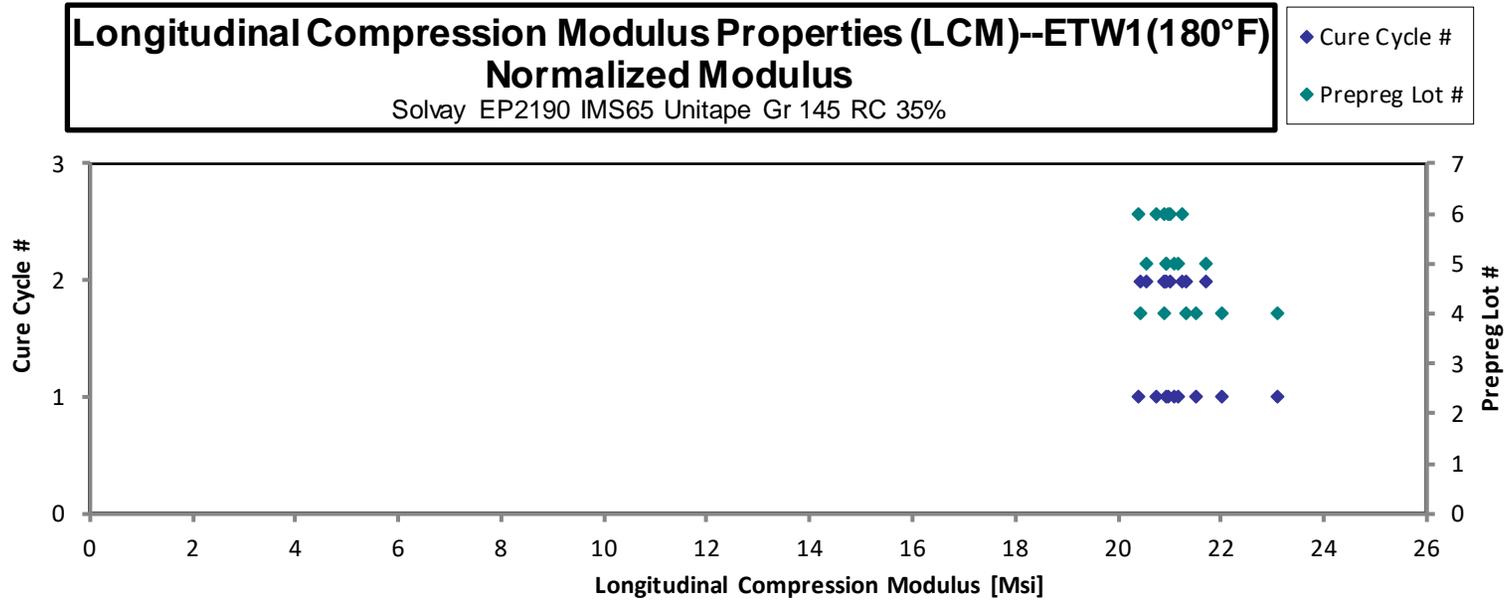
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW1-2	D	C1	4	1	21.47	0.04590	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW1-3	D	C1	4	1	20.97	0.04590	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW1-4	D	C1	4	1	22.57	0.04580	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW1-4	D	C2	4	2	19.81	0.04620	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW1-5	D	C2	4	2	20.43	0.04670	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW1-6	D	C2	4	2	20.15	0.04640	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW1-2	E	C1	5	1	20.72	0.04570	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW1-3	E	C1	5	1	20.62	0.04550	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW1-4	E	C1	5	1	20.69	0.04560	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW1-1	E	C2	5	2	21.19	0.04590	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW1-4	E	C2	5	2	20.37	0.04520	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW1-5	E	C2	5	2	20.65	0.04540	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW1-1	F	C1	6	1	19.60	0.04660	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW1-2	F	C1	6	1	20.15	0.04660	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW1-3	F	C1	6	1	19.97	0.04650	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW1-1	F	C2	6	2	21.30	0.04420	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW1-2	F	C2	6	2	21.17	0.04420	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW1-3	F	C2	6	2	21.39	0.04450	8

Avg. t_{ply} [in]	Modulus _{norm} [Msi]
0.0057	22.00
0.0057	21.49
0.0057	23.08
0.0058	20.42
0.0058	21.30
0.0058	20.87
0.0057	21.14
0.0057	20.94
0.0057	21.06
0.0057	21.71
0.0057	20.56
0.0057	20.93
0.0058	20.38
0.0058	20.96
0.0058	20.72
0.0055	21.01
0.0055	20.88
0.0056	21.25

D-C1: Modulus calculation is obtained from 1000 - 2300 microstrain.
 D-C2: Modulus calculation is obtained from 1000 - 3000 microstrain.
 E-C1: Modulus calculation is obtained from 1000 - 3200 microstrain.
 E-C2: Modulus calculation is obtained from 1000 - 3000 microstrain.
 F-C1: Modulus calculation is obtained from 1000 - 3000 microstrain.
 F-C2: Modulus calculation is obtained from 1000 - 2000 microstrain.
 LCM-D-C2-1-ETW1-6: The specimen was taken from D-C2-1-ETW2-5.

Average	20.73	Average_{norm}	0.0057	21.15
Standard Dev.	0.7188	Standard Dev._{norm}		0.6339
Coeff. of Var. [%]	3.467	Coeff. of Var. [%]_{norm}		2.997
Min.	19.60	Min.	0.0055	20.38
Max.	22.57	Max.	0.0058	23.08
Number of Spec.	18	Number of Spec.	18	18



Longitudinal Compression Modulus Properties (LCM)--ETW2(225°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

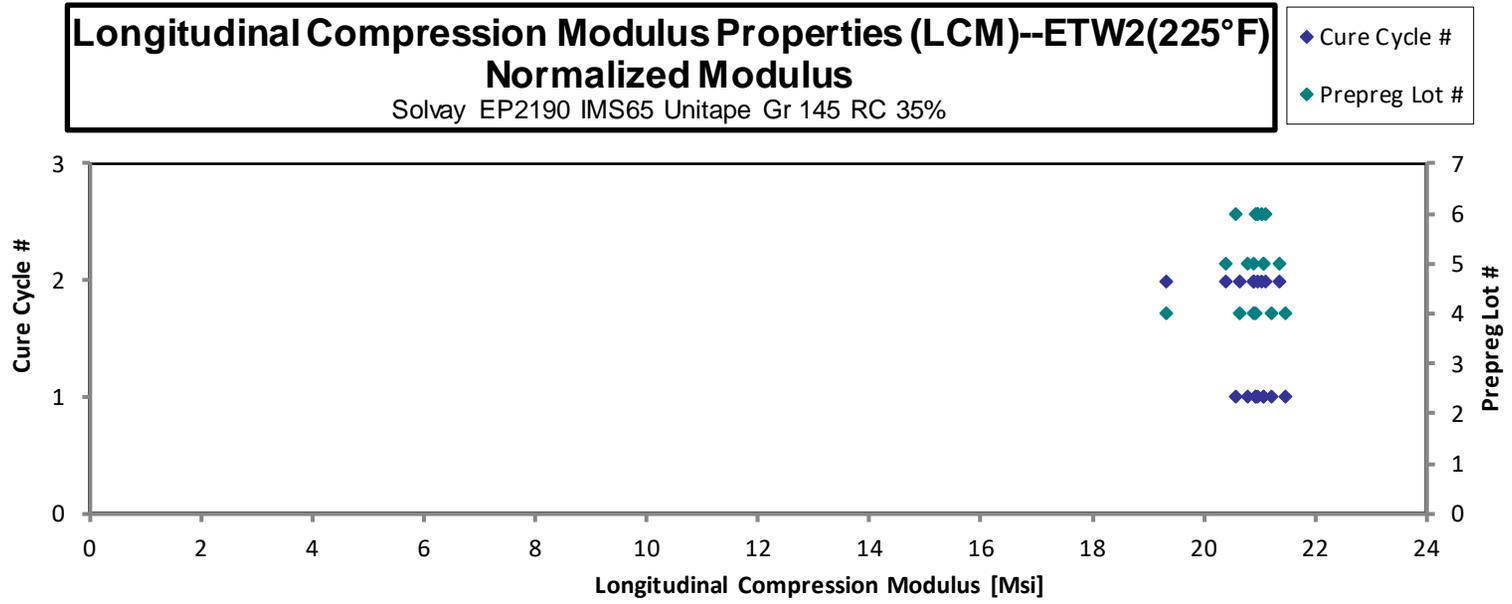
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW2-2	D	C1	4	1	20.34	0.04610	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW2-3	D	C1	4	1	20.81	0.04620	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW2-4	D	C1	4	1	20.52	0.04630	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW2-1	D	C2	4	2	19.86	0.04360	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW2-2	D	C2	4	2	21.02	0.04450	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW2-4	D	C2	4	2	20.05	0.04610	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW2-1	E	C1	5	1	20.95	0.04500	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW2-2	E	C1	5	1	20.65	0.04510	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW2-4	E	C1	5	1	20.73	0.04550	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW2-2	E	C2	5	2	20.53	0.04560	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW2-3	E	C2	5	2	20.88	0.04580	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW2-5	E	C2	5	2	20.34	0.04490	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW2-1	F	C1	6	1	20.62	0.04470	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW2-1	F	C1	6	1	20.99	0.04470	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW2-3	F	C1	6	1	20.65	0.04540	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW2-1	F	C2	6	2	21.51	0.04380	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW2-2	F	C2	6	2	21.44	0.04380	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW2-3	F	C2	6	2	21.52	0.04390	8

Avg. t_{ply} [in]	Modulus _{norm} [Msi]
0.0058	20.93
0.0058	21.46
0.0058	21.20
0.0055	19.33
0.0056	20.88
0.0058	20.63
0.0056	21.05
0.0056	20.79
0.0057	21.05
0.0057	20.89
0.0057	21.35
0.0056	20.39
0.0056	20.57
0.0056	20.95
0.0057	20.92
0.0055	21.03
0.0055	20.96
0.0055	21.09

Modulus calculation is obtained from 1000 - 3000 microstrain.
 D-C1: Modulus calculation is obtained from 1000 - 2600 microstrain.
 D-C2: Modulus calculation is obtained from 1000 - 2950 microstrain.
 E-C1: Modulus calculation is obtained from 1000 - 2800 microstrain.
 E-C2: Modulus calculation range for specimen #2 & #3 (1000-2900 microstrain), #5(1000-3000 microstrain).
 F-C1: Modulus calculation is obtained from 1000 - 3000 microstrain.
 F-C2: Modulus calculation is obtained from 1000 - 1750 microstrain.

Average	20.74	Average_{norm}	0.0056	20.86
Standard Dev.	0.4605	Standard Dev._{norm}		0.4608
Coeff. of Var. [%]	2.220	Coeff. of Var. [%]_{norm}		2.209
Min.	19.86	Min.	0.0055	19.33
Max.	21.52	Max.	0.0058	21.46
Number of Spec.	18	Number of Spec.	18	18



Longitudinal Compression Modulus Properties (LCM)--ETW3(250°F)
Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW3-1	D	C1	4	1	20.73	0.04580	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW3-2	D	C1	4	1	20.83	0.04570	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-ETW3-4	D	C1	4	1	20.34	0.04610	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW3-3	D	C2	4	2	20.36	0.04590	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW3-4	D	C2	4	2	20.43	0.04580	8
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-ETW3-5	D	C2	4	2	20.14	0.04600	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW3-1	E	C1	5	1	20.68	0.04550	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW3-2	E	C1	5	1	20.62	0.04550	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-ETW3-3	E	C1	5	1	20.62	0.04550	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW3-1	E	C2	5	2	20.64	0.04470	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW3-2	E	C2	5	2	21.46	0.04430	8
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-ETW3-5	E	C2	5	2	20.96	0.04490	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW3-1	F	C1	6	1	21.27	0.04460	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW3-4	F	C1	6	1	22.02	0.04370	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-ETW3-5	F	C1	6	1	21.85	0.04350	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW3-1	F	C2	6	2	20.93	0.04530	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW3-2	F	C2	6	2	21.06	0.04540	8
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-ETW3-3	F	C2	6	2	20.78	0.04560	8

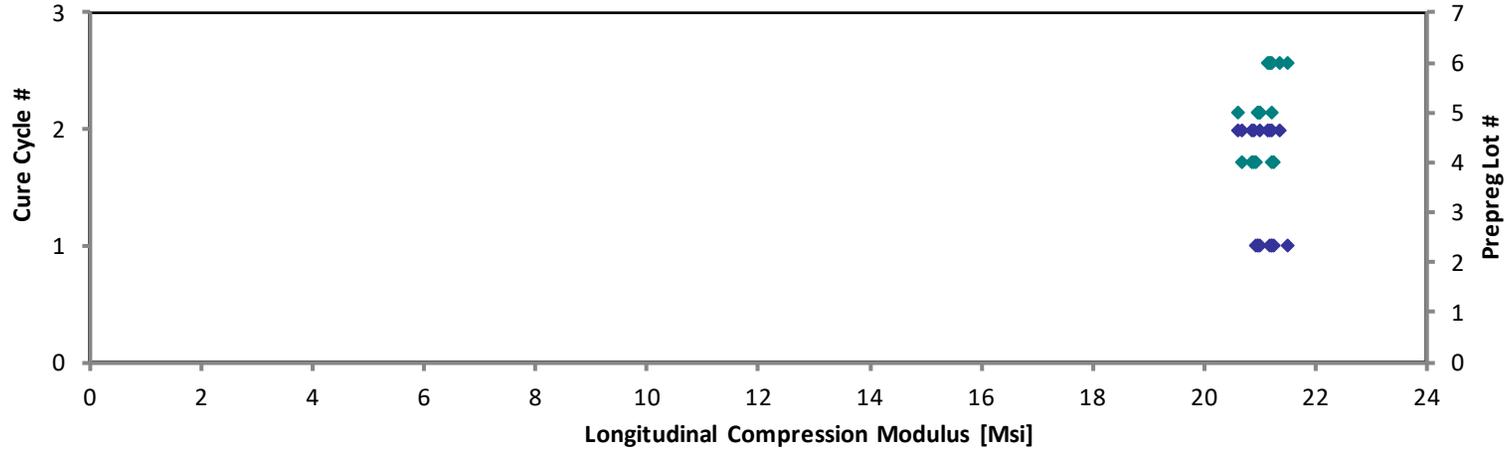
Avg. t_{ply} [in]	Modulus _{norm} [Msi]
0.0057	21.19
0.0057	21.25
0.0058	20.93
0.0057	20.86
0.0057	20.89
0.0058	20.68
0.0057	21.00
0.0057	20.94
0.0057	20.94
0.0056	20.59
0.0055	21.22
0.0056	21.00
0.0056	21.18
0.0055	21.48
0.0054	21.21
0.0057	21.17
0.0057	21.34
0.0057	21.15

D-C1: Modulus calculation is obtained from 1000 - 2200 microstrain.
 D-C2: Modulus calculation is obtained from 1000 - 2550 microstrain.
 E-C1: Modulus calculation is obtained from 1000 - 2000 microstrain.
 E-C2: Modulus calculation is obtained from 1000 - 1900 microstrain.
 F-C1: Modulus calculation is obtained from 500 - 2500 microstrain.
 F-C2: Modulus calculation is obtained from 1000 - 2000 microstrain.

Average	20.87	Average_{norm}	0.0057	21.06
Standard Dev.	0.5051	Standard Dev._{norm}		0.2264
Coeff. of Var. [%]	2.420	Coeff. of Var. [%]_{norm}		1.075
Min.	20.14	Min.	0.0054	20.59
Max.	22.02	Max.	0.0058	21.48
Number of Spec.	18	Number of Spec.	18	18

Longitudinal Compression Modulus Properties (LCM)--ETW3(250°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



4.5 Transverse Compression Strength Properties (TCS)

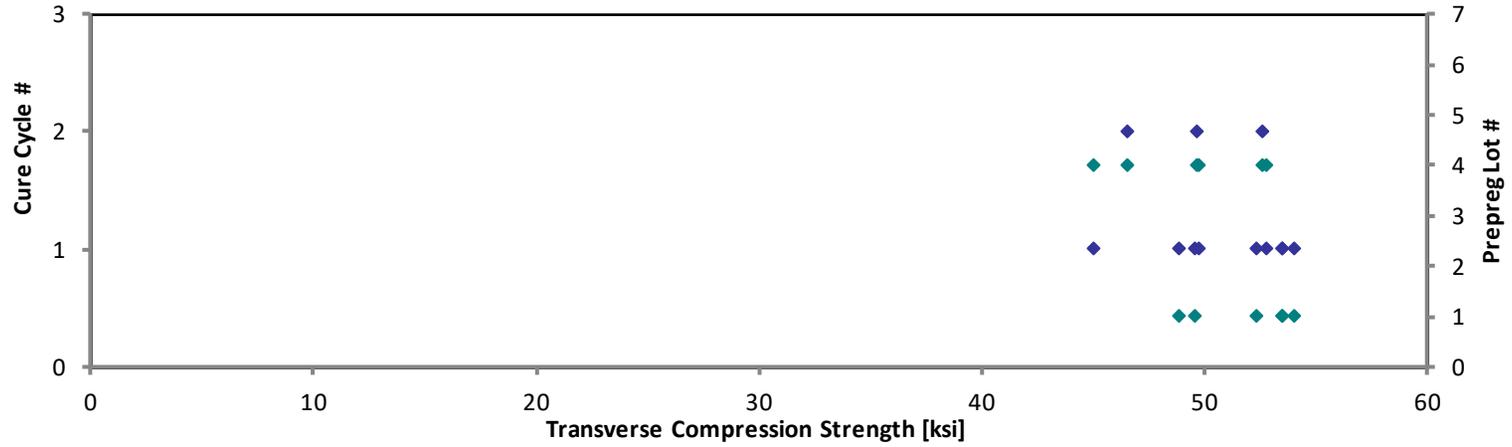
**Transverse Compression Strength Properties (TCS)--CTA(-67°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
TR7694166-P1-TCS-A-C1-CTA-1	A	C1	1	1	49.56	0.04810	8	0.0060	HAT
TR7694166-P1-TCS-A-C1-CTA-2	A	C1	1	1	48.87	0.04790	8	0.0060	HAT
TR7694166-P1-TCS-A-C1-CTA-3	A	C1	1	1	53.48	0.04800	8	0.0060	HGM
TR7694166-P1-TCS-A-C1-CTA-4	A	C1	1	1	54.08	0.04890	8	0.0061	BGM
TR7694166-P1-TCS-A-C1-CTA-5	A	C1	1	1	53.52	0.04830	8	0.0060	BGM
TR7694166-P1-TCS-A-C1-CTA-6	A	C1	1	1	52.35	0.04810	8	0.0060	BGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-CTA-1	D	C1	4	1	52.84	0.04650	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-CTA-2	D	C1	4	1	49.78	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-CTA-3	D	C1	4	1	45.03	0.04600	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-CTA-1	D	C2	4	2	52.61	0.04570	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-CTA-2	D	C2	4	2	49.69	0.04600	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-CTA-3	D	C2	4	2	46.54	0.04580	8	0.0057	HGM

Average	50.70	Average	0.0059
Standard Dev.	2.924		
Coeff. of Var. [%]	5.767		
Min.	45.03	Min.	0.0057
Max.	54.08	Max.	0.0061
Number of Spec.	12	Number of Spec.	12

Transverse Compression Properties (TCS)--CTA(-67°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

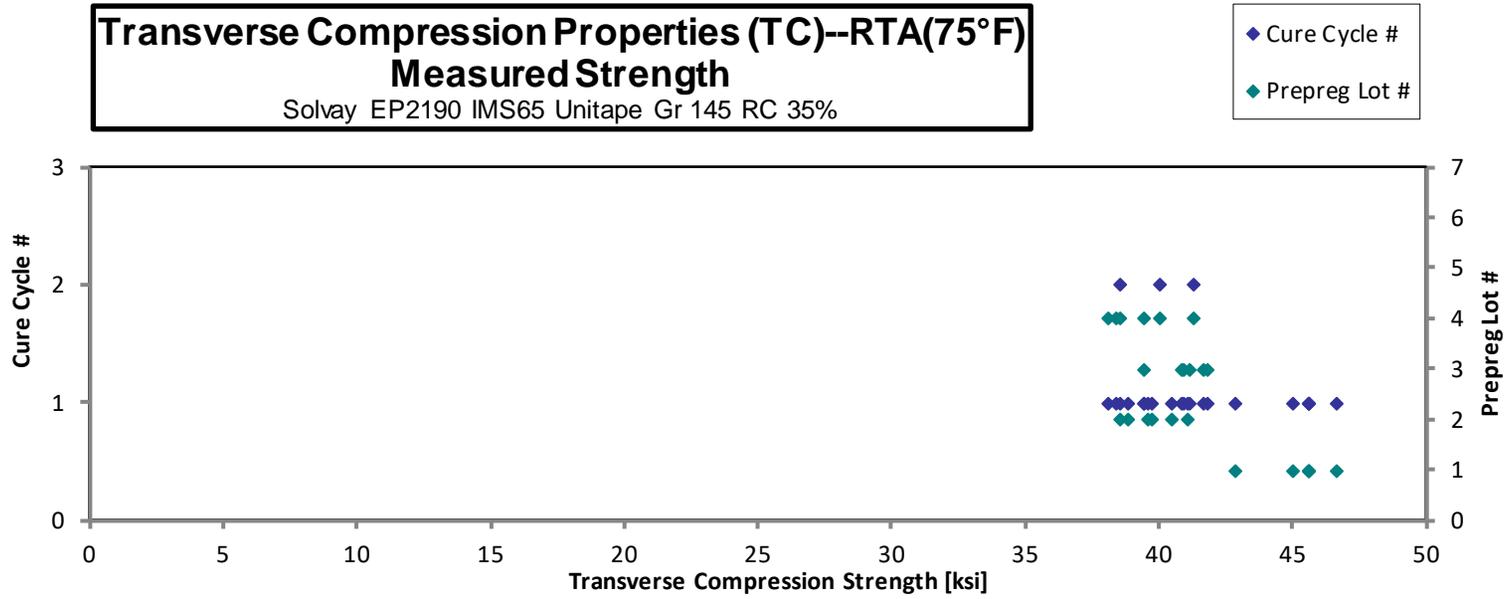
◆ Cure Cycle #
◆ Prepreg Lot #



Transverse Compression Strength Properties (TC)--RTA(75°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
TR7694166-P1-TCS-A-C1-RTA-2	A	C1	1	1	45.63	0.04810	8	0.0060	BGM
TR7694166-P1-TCS-A-C1-RTA-3	A	C1	1	1	46.61	0.04750	8	0.0059	BGM
TR7694166-P1-TCS-A-C1-RTA-4	A	C1	1	1	45.60	0.04780	8	0.0060	BGM
TR7694166-P1-TCS-A-C1-RTA-5	A	C1	1	1	45.00	0.04750	8	0.0059	BGM
TR7694166-P1-TCS-A-C1-RTA-6	A	C1	1	1	42.87	0.04710	8	0.0059	BGM
TR7694166-P1-TCS-A-C1-RTA-7	A	C1	1	1	45.62	0.04730	8	0.0059	BGM
TR7702729-P1-TCS-B-C1-RTA-1	B	C1	2	1	38.88	0.04740	8	0.0059	HGT
TR7702729-P1-TCS-B-C1-RTA-2	B	C1	2	1	39.61	0.04720	8	0.0059	HGB
TR7702729-P1-TCS-B-C1-RTA-3	B	C1	2	1	38.51	0.04680	8	0.0059	HGM
TR7702729-P1-TCS-B-C1-RTA-4	B	C1	2	1	39.74	0.04720	8	0.0059	HGM
TR7702729-P1-TCS-B-C1-RTA-5	B	C1	2	1	40.48	0.04680	8	0.0059	HGM
TR7702729-P1-TCS-B-C1-RTA-6	B	C1	2	1	41.07	0.04630	8	0.0058	HGM
TR7725516-P1-TCS-C-C1-RTA-1	C	C1	3	1	41.11	0.04780	8	0.0060	HGM
TR7725516-P1-TCS-C-C1-RTA-2	C	C1	3	1	40.88	0.04760	8	0.0060	HGT
TR7725516-P1-TCS-C-C1-RTA-3	C	C1	3	1	41.83	0.04780	8	0.0060	HGT
TR7725516-P1-TCS-C-C1-RTA-4	C	C1	3	1	41.64	0.04780	8	0.0060	HGT
TR7725516-P1-TCS-C-C1-RTA-5	C	C1	3	1	39.44	0.04780	8	0.0060	HGM
TR7725516-P1-TCS-C-C1-RTA-6	C	C1	3	1	40.93	0.04750	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-RTA-1	D	C1	4	1	38.09	0.04660	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-RTA-2	D	C1	4	1	38.42	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-RTA-3	D	C1	4	1	39.46	0.04600	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-RTA-1	D	C2	4	2	40.03	0.04640	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-RTA-2	D	C2	4	2	41.32	0.04650	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-RTA-3	D	C2	4	2	38.58	0.04620	8	0.0058	HGM

Average	41.31	Average	0.0059
Standard Dev.	2.597		
Coeff. of Var. [%]	6.287		
Min.	38.09	Min.	0.0058
Max.	46.61	Max.	0.0060
Number of Spec.	24	Number of Spec.	24



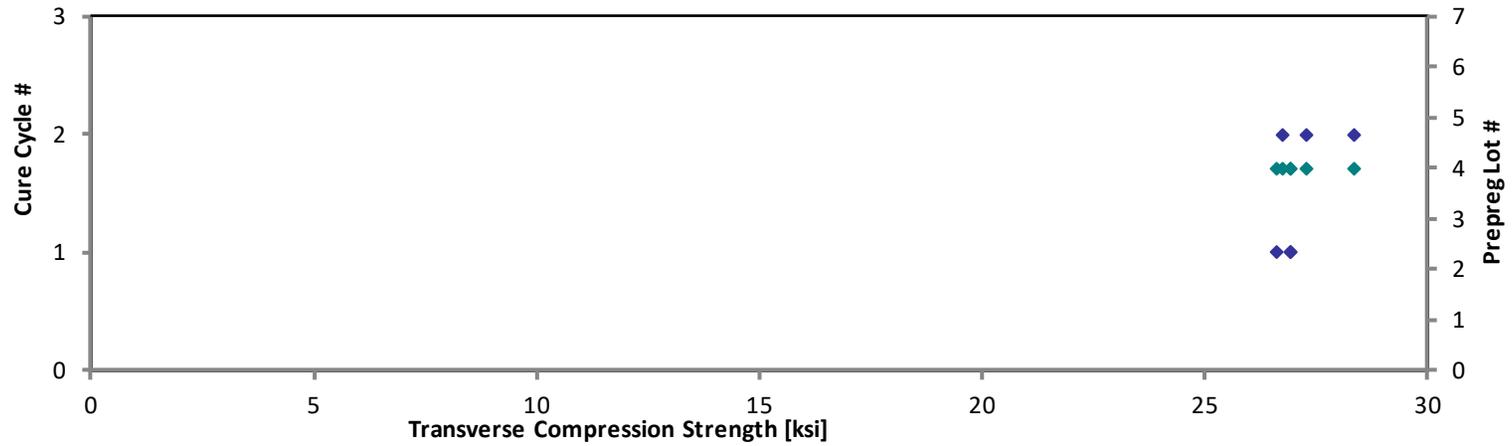
Transverse Compression Strength Properties (TCS)--ETA2(225°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA2-2	D	C1	4	1	26.91	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA2-3	D	C1	4	1	26.60	0.04640	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA2-4	D	C1	4	1	26.93	0.04610	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA2-1	D	C2	4	2	27.30	0.04570	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA2-2	D	C2	4	2	28.34	0.04620	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA2-3	D	C2	4	2	26.74	0.04610	8	0.0058	HGM

Average	27.14	Average	0.0058
Standard Dev.	0.6347		
Coeff. of Var. [%]	2.339		
Min.	26.60	Min.	0.0057
Max.	28.34	Max.	0.0059
Number of Spec.	6	Number of Spec.	6

Transverse Compression Strength Properties (TCS)--ETA2(225°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



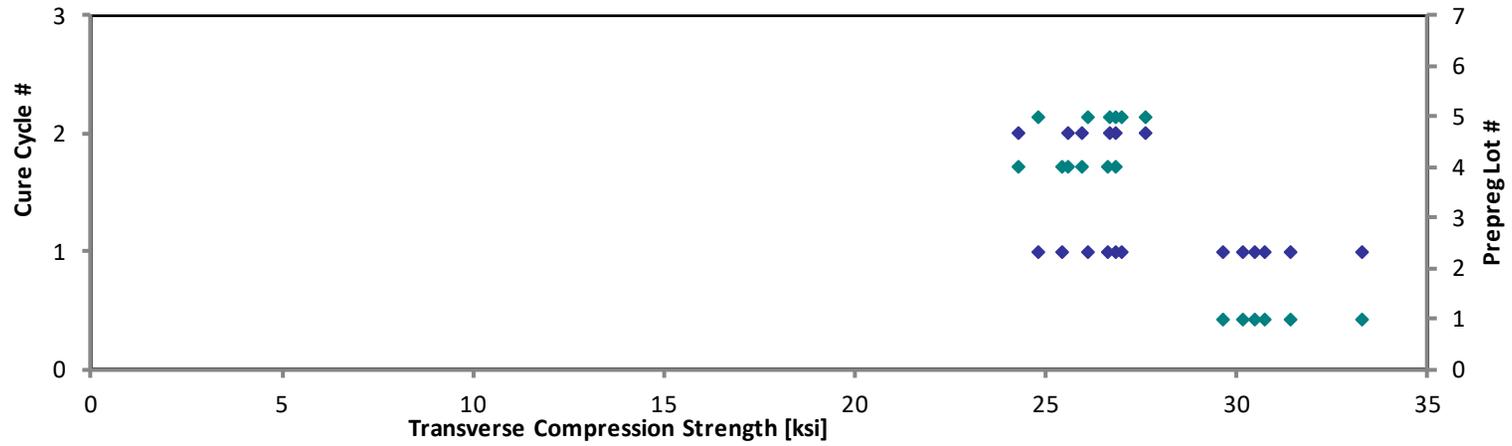
**Transverse Compression Strength Properties (TCS)--ETA3(250°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
TR7694166-P1-TCS-A-C1-ETA3-1	A	C1	1	1	29.64	0.04790	8	0.0060	HAT
TR7694166-P1-TCS-A-C1-ETA3-2	A	C1	1	1	30.47	0.04770	8	0.0060	HGB
TR7694166-P1-TCS-A-C1-ETA3-3	A	C1	1	1	31.44	0.04770	8	0.0060	HGM
TR7694166-P1-TCS-A-C1-ETA3-4	A	C1	1	1	33.29	0.04790	8	0.0060	HGM
TR7694166-P1-TCS-A-C1-ETA3-5	A	C1	1	1	30.74	0.04760	8	0.0060	HGM
TR7694166-P1-TCS-A-C1-ETA3-6	A	C1	1	1	30.16	0.04790	8	0.0060	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA3-1	D	C1	4	1	26.61	0.04690	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA3-2	D	C1	4	1	25.46	0.04710	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETA3-3	D	C1	4	1	26.83	0.04690	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA3-1	D	C2	4	2	24.29	0.04600	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA3-2	D	C2	4	2	25.96	0.04590	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETA3-3	D	C2	4	2	25.59	0.04490	8	0.0056	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETA3-1	E	C1	5	1	26.13	0.04630	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETA3-2	E	C1	5	1	26.97	0.04590	8	0.0057	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETA3-3	E	C1	5	1	24.83	0.04610	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETA3-1	E	C2	5	2	26.82	0.04620	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETA3-2	E	C2	5	2	27.62	0.04620	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETA3-3	E	C2	5	2	26.69	0.04600	8	0.0058	AGM

Average	27.75	Average	0.0058
Standard Dev.	2.556		
Coeff. of Var. [%]	9.208		
Min.	24.29	Min.	0.0056
Max.	33.29	Max.	0.0060
Number of Spec.	18	Number of Spec.	18

Transverse Compression Strength Properties (TCS)--ETA3(250°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



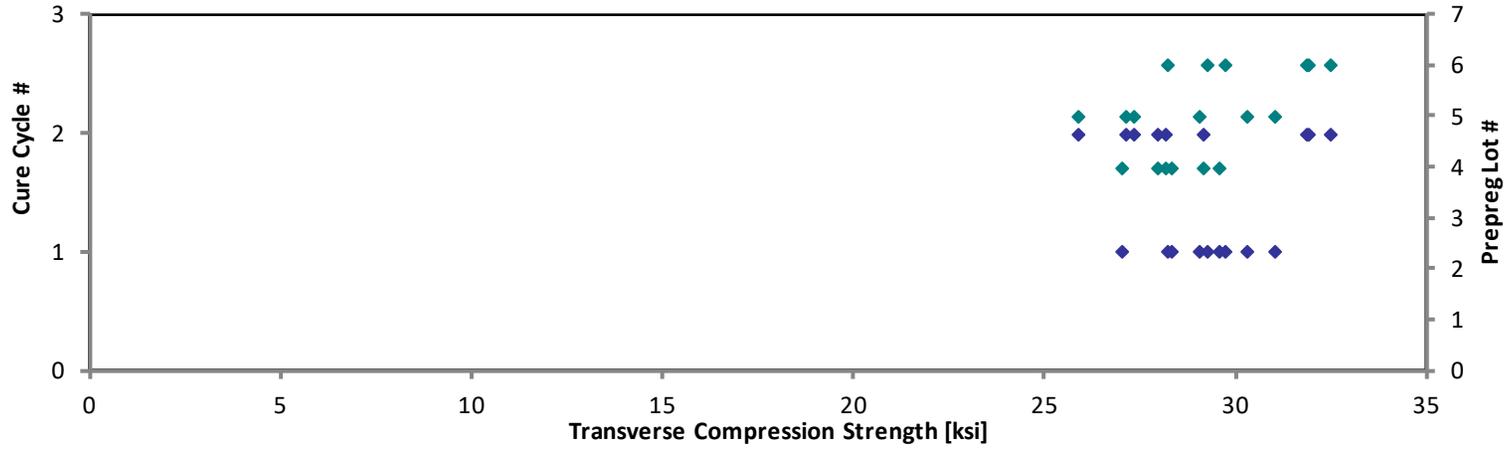
**Transverse Compression Strength Properties (TCS)--ETW1(180°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW1-1	D	C1	4	1	27.04	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW1-2	D	C1	4	1	28.32	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW1-3	D	C1	4	1	29.60	0.04700	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW1-1	D	C2	4	2	29.17	0.04620	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW1-2	D	C2	4	2	27.98	0.04620	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW1-3	D	C2	4	2	28.18	0.04550	8	0.0057	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW1-1	E	C1	5	1	30.31	0.04590	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW1-2	E	C1	5	1	29.08	0.04630	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW1-3	E	C1	5	1	31.06	0.04610	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW1-1	E	C2	5	2	27.37	0.04620	8	0.0058	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW1-2	E	C2	5	2	25.91	0.04640	8	0.0058	AGT
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW1-3	E	C2	5	2	27.15	0.04600	8	0.0058	AGB
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW1-1	F	C1	6	1	29.72	0.04590	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW1-2	F	C1	6	1	28.25	0.04580	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW1-3	F	C1	6	1	29.25	0.04580	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW1-1	F	C2	6	2	31.89	0.04510	8	0.0056	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW1-2	F	C2	6	2	32.49	0.04500	8	0.0056	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW1-3	F	C2	6	2	31.92	0.04510	8	0.0056	HGM

Average	29.15	Average	0.0058
Standard Dev.	1.844		
Coeff. of Var. [%]	6.326		
Min.	25.91	Min.	0.0056
Max.	32.49	Max.	0.0059
Number of Spec.	18	Number of Spec.	18

Transverse Compression Strength Properties (TCS)--ETW1(180°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

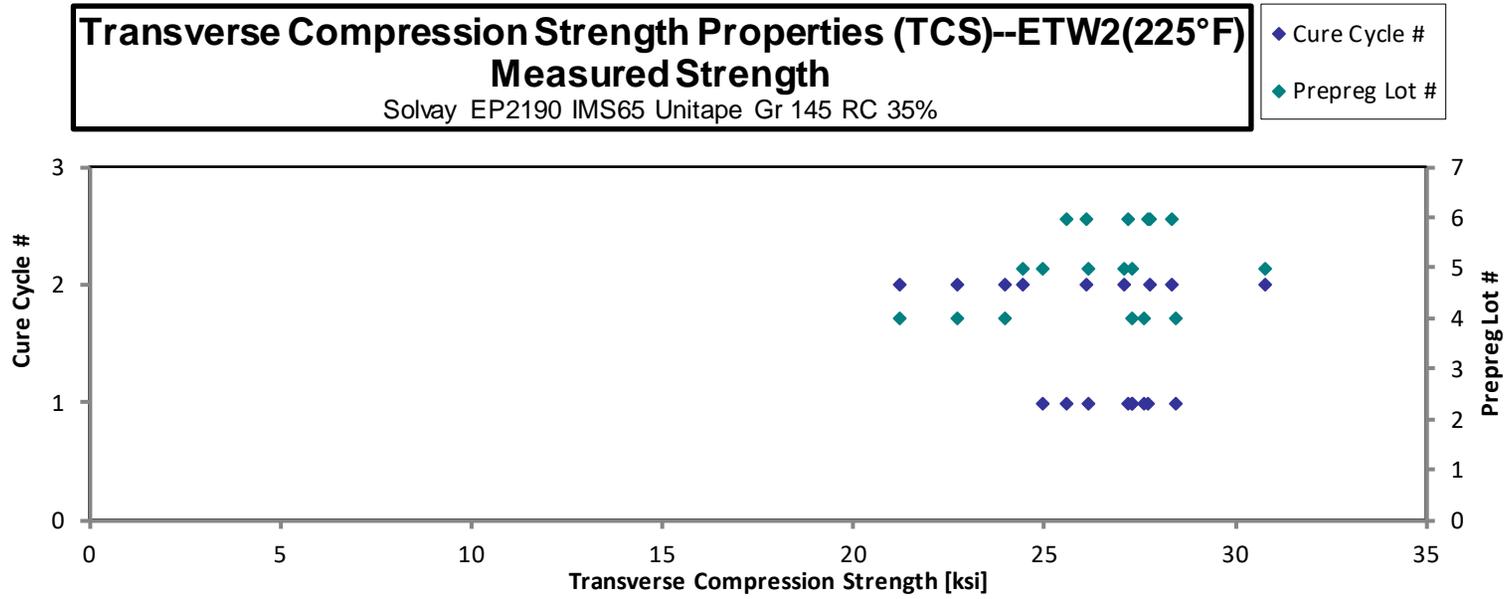
- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Transverse Compression Strength Properties (TCS)--ETW2(225°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW2-1	D	C1	4	1	27.31	0.04680	8	0.0059	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW2-2	D	C1	4	1	28.46	0.04670	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-2-ETW2-3	D	C1	4	1	27.60	0.04630	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW2-1	D	C2	4	2	22.71	0.04580	8	0.0057	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW2-2	D	C2	4	2	21.23	0.04580	8	0.0057	AGB
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-ETW2-3	D	C2	4	2	23.96	0.04550	8	0.0057	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW2-2	E	C1	5	1	27.27	0.04620	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW2-3	E	C1	5	1	24.98	0.04610	8	0.0058	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-ETW2-4	E	C1	5	1	26.14	0.04580	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW2-1	E	C2	5	2	27.09	0.04580	8	0.0057	AGB
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW2-2	E	C2	5	2	24.46	0.04570	8	0.0057	AGM
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-ETW2-3	E	C2	5	2	30.78	0.04590	8	0.0057	AGB
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW2-1	F	C1	6	1	27.17	0.04520	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW2-2	F	C1	6	1	25.58	0.04580	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-ETW2-3	F	C1	6	1	27.70	0.04560	8	0.0057	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW2-1	F	C2	6	2	26.11	0.04510	8	0.0056	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW2-2	F	C2	6	2	27.77	0.04460	8	0.0056	HGM
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-ETW2-3	F	C2	6	2	28.31	0.04420	8	0.0055	HGM

Average	26.37	Average	0.0057
Standard Dev.	2.270		
Coef. of Var. [%]	8.610		
Min.	21.23	Min.	0.0055
Max.	30.78	Max.	0.0059
Number of Spec.	18	Number of Spec.	18



4.6 Transverse Compression Modulus Properties (TCM)

Transverse Compression Modulus Properties (TCM)--CTA(-67°F)
Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

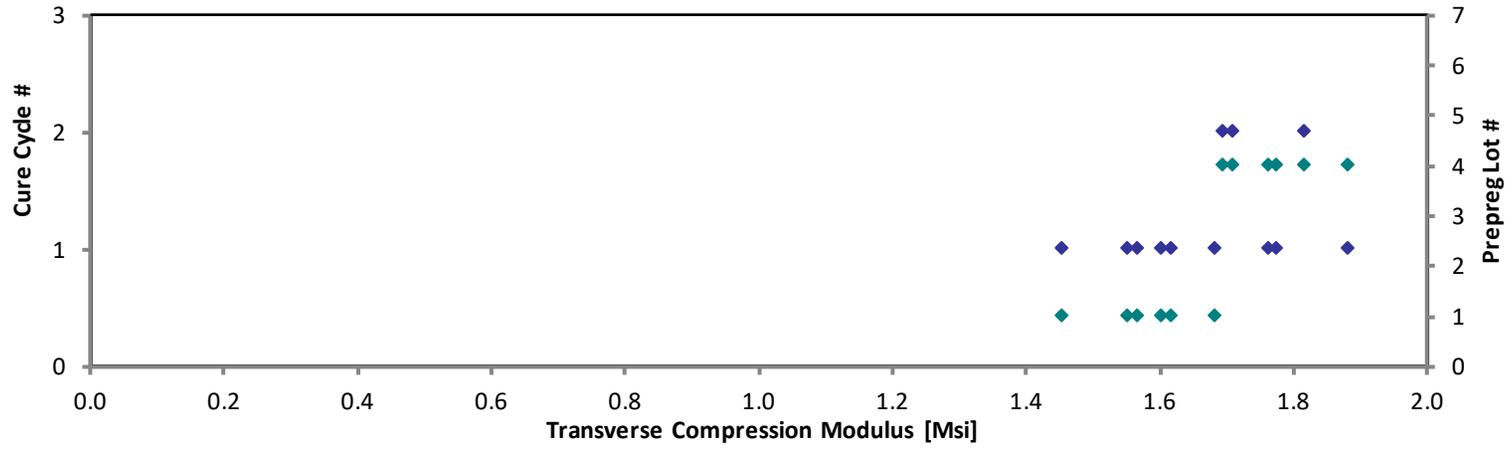
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]
TR7694170-P1-TCM-A-C1-CTA-1	A	C1	1	1	1.455	0.04670	8	0.0058
TR7694170-P1-TCM-A-C1-CTA-2	A	C1	1	1	1.553	0.04620	8	0.0058
TR7694170-P1-TCM-A-C1-CTA-3	A	C1	1	1	1.568	0.04640	8	0.0058
TR7694170-P1-TCM-A-C1-CTA-5	A	C1	1	1	1.603	0.04610	8	0.0058
TR7694170-P1-TCM-A-C1-CTA-6	A	C1	1	1	1.683	0.04630	8	0.0058
TR7694170-P1-TCM-A-C1-CTA-7	A	C1	1	1	1.619	0.04620	8	0.0058
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-CTA-1	D	C1	4	1	1.883	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-CTA-2	D	C1	4	1	1.764	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-CTA-4	D	C1	4	1	1.776	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-CTA-1	D	C2	4	2	1.817	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-CTA-2	D	C2	4	2	1.710	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-CTA-3	D	C2	4	2	1.696	0.04520	8	0.0057

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.677	Average	0.0057
Standard Dev.	0.1229		
Coeff. of Var. [%]	7.330		
Min.	1.455	Min.	0.0056
Max.	1.883	Max.	0.0058
Number of Spec.	12	Number of Spec.	12

Transverse Compression Modulus Properties (TCM)--CTA(-67°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Transverse Compression Modulus Properties (TCM)--RTA(75°F) Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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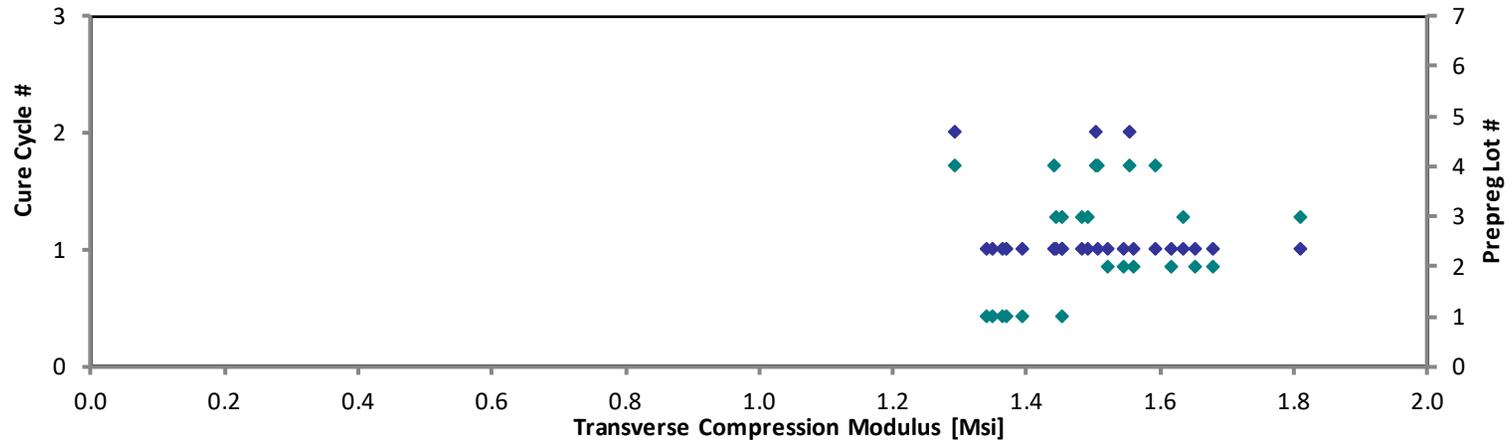
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]
TR7694170-P1-TCM-A-C1-RTA-2	A	C1	1	1	1.341	0.04620	8	0.0058
TR7694170-P1-TCM-A-C1-RTA-3	A	C1	1	1	1.365	0.04610	8	0.0058
TR7694170-P1-TCM-A-C1-RTA-4	A	C1	1	1	1.349	0.04610	8	0.0058
TR7694170-P1-TCM-A-C1-RTA-5	A	C1	1	1	1.454	0.04590	8	0.0057
TR7694170-P1-TCM-A-C1-RTA-6	A	C1	1	1	1.371	0.04620	8	0.0058
TR7694170-P1-TCM-A-C1-RTA-7	A	C1	1	1	1.394	0.04650	8	0.0058
TR7702794-P1-TCM-B-C1-RTA-2	B	C1	2	1	1.562	0.04710	8	0.0059
TR7702794-P1-TCM-B-C1-RTA-3	B	C1	2	1	1.680	0.04720	8	0.0059
TR7702794-P1-TCM-B-C1-RTA-4	B	C1	2	1	1.547	0.04680	8	0.0059
TR7702794-P1-TCM-B-C1-RTA-5	B	C1	2	1	1.521	0.04710	8	0.0059
TR7702794-P1-TCM-B-C1-RTA-6	B	C1	2	1	1.654	0.04710	8	0.0059
TR7702794-P1-TCM-B-C1-RTA-1	B	C1	2	1	1.616	0.04710	8	0.0059
TR7725522-P1-TCM-C-C1-RTA-1	C	C1	3	1	1.811	0.04680	8	0.0059
TR7725522-P1-TCM-C-C1-RTA-2	C	C1	3	1	1.634	0.04640	8	0.0058
TR7725522-P1-TCM-C-C1-RTA-3	C	C1	3	1	1.493	0.04630	8	0.0058
TR7725522-P1-TCM-C-C1-RTA-4	C	C1	3	1	1.483	0.04670	8	0.0058
TR7725522-P1-TCM-C-C1-RTA-5	C	C1	3	1	1.445	0.04680	8	0.0059
TR7725522-P1-TCM-C-C1-RTA-6	C	C1	3	1	1.454	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-RTA-1	D	C1	4	1	1.594	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-RTA-2	D	C1	4	1	1.508	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-RTA-3	D	C1	4	1	1.443	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-RTA-1	D	C2	4	2	1.292	0.04680	8	0.0059
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-RTA-2	D	C2	4	2	1.504	0.04630	8	0.0058
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-RTA-3	D	C2	4	2	1.554	0.04490	8	0.0056

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.503	Average	0.0058
Standard Dev.	0.1235		
Coeff. of Var. [%]	8.216		
Min.	1.292	Min.	0.0056
Max.	1.811	Max.	0.0059
Number of Spec.	24	Number of Spec.	24

Transverse Compression Modulus Properties (TCM)--RTA(75°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Transverse Compression Modulus Properties (TC)--ETA2(225°F) Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

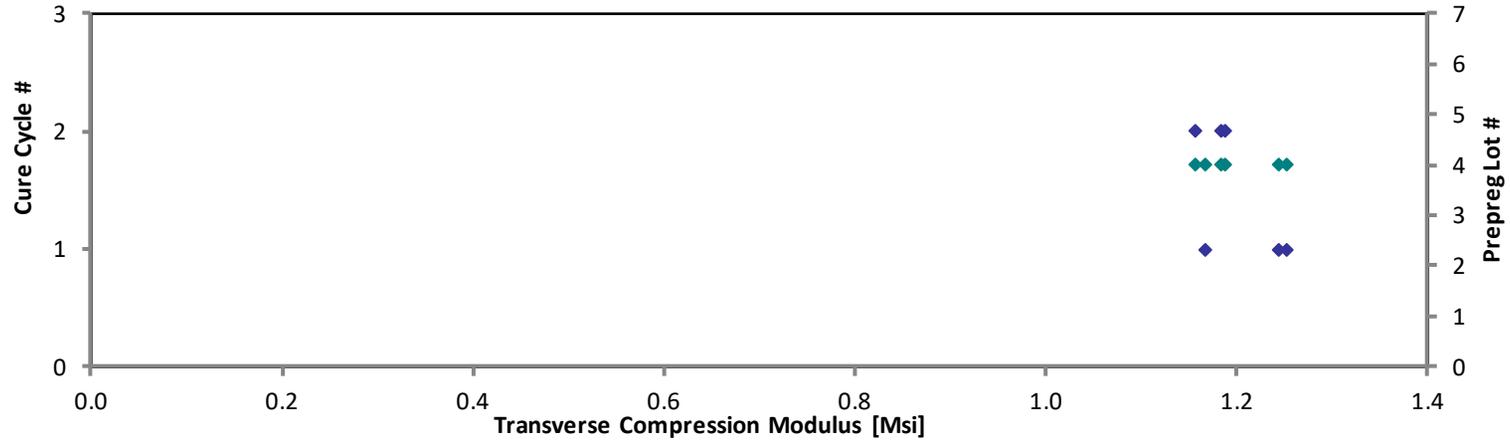
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA2-1	D	C1	4	1	1.168	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA2-2	D	C1	4	1	1.245	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA2-3	D	C1	4	1	1.252	0.04490	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA2-1	D	C2	4	2	1.157	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA2-2	D	C2	4	2	1.184	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA2-3	D	C2	4	2	1.188	0.04480	8	0.0056

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.199	Average	0.0056
Standard Dev.	0.03999		
Coeff. of Var. [%]	3.34		
Min.	1.157	Min.	0.0056
Max.	1.252	Max.	0.0057
Number of Spec.	6	Number of Spec.	6

Transverse Compression Modulus Properties (TCM)--ETA2(225°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Transverse Compression Modulus Properties (TC)--ETA3(250°F) Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

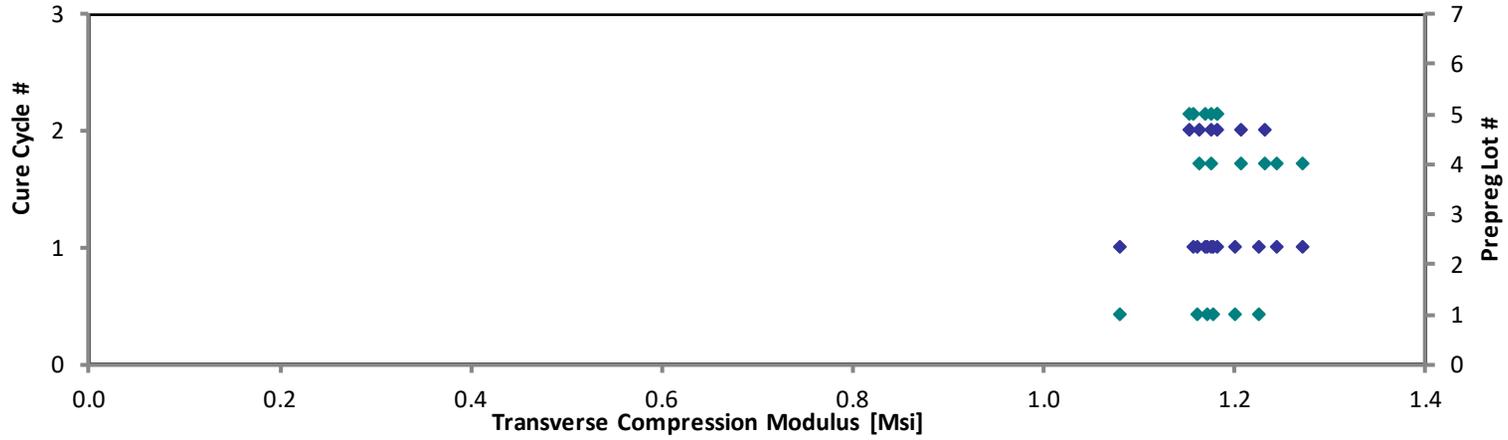
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]
TR7694170-P1-A-C1-ETA3-2	A	C1	1	1	1.080	0.04670	8	0.0058
TR7694170-P1-A-C1-ETA3-3	A	C1	1	1	1.177	0.04620	8	0.0058
TR7694170-P1-A-C1-ETA3-4	A	C1	1	1	1.201	0.04630	8	0.0058
TR7694170-P1-A-C1-ETA3-5	A	C1	1	1	1.160	0.04640	8	0.0058
TR7694170-P1-A-C1-ETA3-6	A	C1	1	1	1.172	0.04640	8	0.0058
TR7694170-P1-A-C1-ETA3-7	A	C1	1	1	1.226	0.04650	8	0.0058
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA3-1	D	C1	4	1	1.272	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA3-2	D	C1	4	1	1.244	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETA3-3	D	C1	4	1	1.175	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA3-1	D	C2	4	2	1.232	0.04590	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA3-2	D	C2	4	2	1.207	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETA3-3	D	C2	4	2	1.163	0.04600	8	0.0058
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETA3-1	E	C1	5	1	1.182	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETA3-2	E	C1	5	1	1.157	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETA3-3	E	C1	5	1	1.170	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETA3-1	E	C2	5	2	1.176	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETA3-2	E	C2	5	2	1.152	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETA3-3	E	C2	5	2	1.182	0.04520	8	0.0057

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.185	Average	0.0057
Standard Dev.	0.04225		
Coeff. of Var. [%]	3.57		
Min.	1.080	Min.	0.0056
Max.	1.272	Max.	0.0058
Number of Spec.	18	Number of Spec.	18

Transverse Compression Modulus Properties (TCM)--ETA3(250°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Transverse Compression Modulus Properties (TCM)--ETW1(180°F) Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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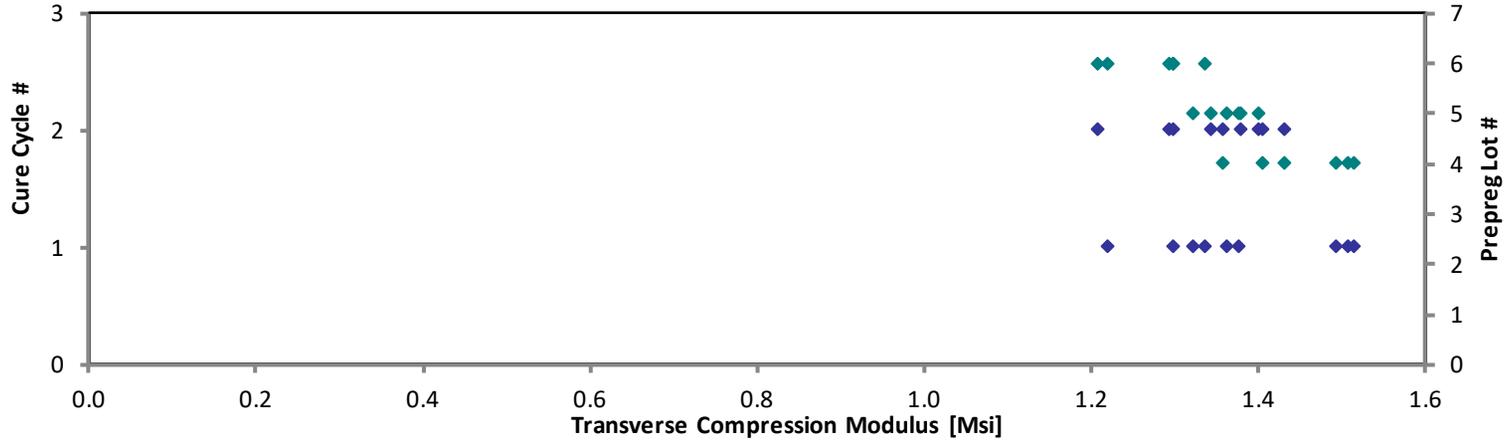
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW1-1	D	C1	4	1	1.493	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW1-2	D	C1	4	1	1.514	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW1-3	D	C1	4	1	1.507	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW1-1	D	C2	4	2	1.431	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW1-2	D	C2	4	2	1.406	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW1-3	D	C2	4	2	1.359	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW1-1	E	C1	5	1	1.378	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW1-2	E	C1	5	1	1.323	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW1-3	E	C1	5	1	1.363	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW1-2	E	C2	5	2	1.379	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW1-3	E	C2	5	2	1.343	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW1-4	E	C2	5	2	1.401	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW1-1	F	C1	6	1	1.219	0.04730	8	0.0059
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW1-2	F	C1	6	1	1.298	0.04370	8	0.0055
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW1-3	F	C1	6	1	1.336	0.04350	8	0.0054
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW1-1	F	C2	6	2	1.293	0.04420	8	0.0055
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW1-2	F	C2	6	2	1.209	0.04430	8	0.0055
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW1-3	F	C2	6	2	1.298	0.04420	8	0.0055

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.364	Average	0.0056
Standard Dev.	0.08723		
Coeff. of Var. [%]	6.396		
Min.	1.209	Min.	0.0054
Max.	1.514	Max.	0.0059
Number of Spec.	18	Number of Spec.	18

Transverse Compression Modulus Properties (TCM)--ETW1 (180°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Transverse Compression Modulus Properties (TCM)--ETW2(225°F) Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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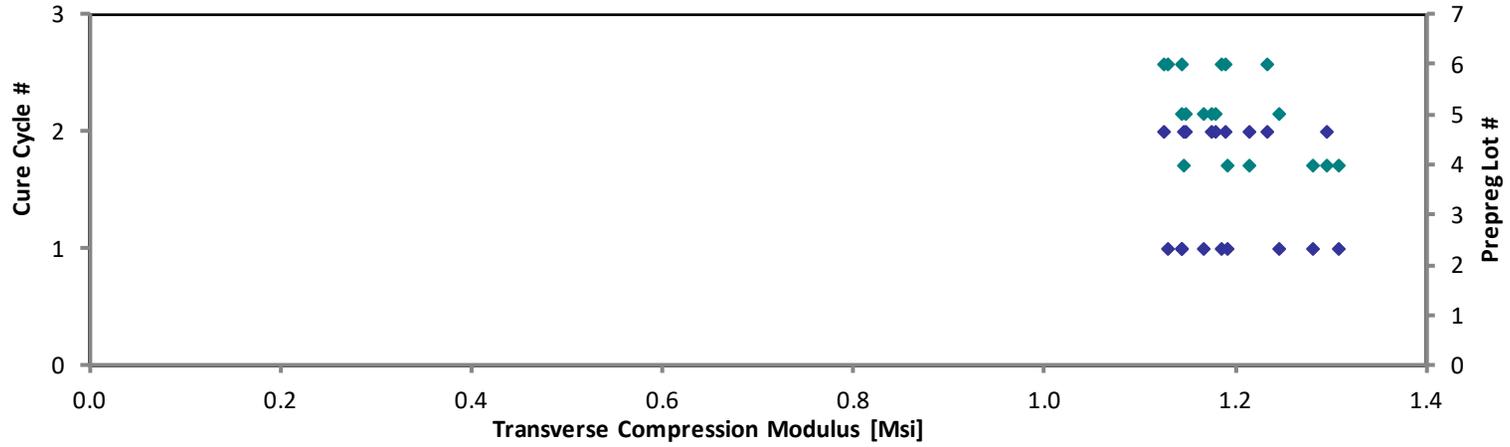
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. tply [in]
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW2-1	D	C1	4	1	1.282	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW2-2	D	C1	4	1	1.308	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-ETW2-3	D	C1	4	1	1.192	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW2-1	D	C2	4	2	1.146	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW2-2	D	C2	4	2	1.214	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-ETW2-3	D	C2	4	2	1.296	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW2-1	E	C1	5	1	1.143	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW2-2	E	C1	5	1	1.166	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-ETW2-3	E	C1	5	1	1.246	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW2-1	E	C2	5	2	1.179	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW2-2	E	C2	5	2	1.147	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-ETW2-3	E	C2	5	2	1.174	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW2-1	F	C1	6	1	1.185	0.04330	8	0.0054
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW2-2	F	C1	6	1	1.129	0.04340	8	0.0054
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-ETW2-3	F	C1	6	1	1.144	0.04350	8	0.0054
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW2-1	F	C2	6	2	1.189	0.04440	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW2-2	F	C2	6	2	1.125	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-ETW2-3	F	C2	6	2	1.233	0.04470	8	0.0056

Modulus calculation is obtained from 1000 - 3000 microstrain.

Average	1.194	Average	0.0056
Standard Dev.	0.05734		
Coeff. of Var. [%]	4.801		
Min.	1.125	Min.	0.0054
Max.	1.308	Max.	0.0057
Number of Spec.	18	Number of Spec.	18

Transverse Compression Modulus Properties (TCM)--ETW2(225°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



4.7 In-Plane Shear Properties (IPS)

In-Plane Shear Properties (IPS)--CTA(-67°F) Strength & Modulus Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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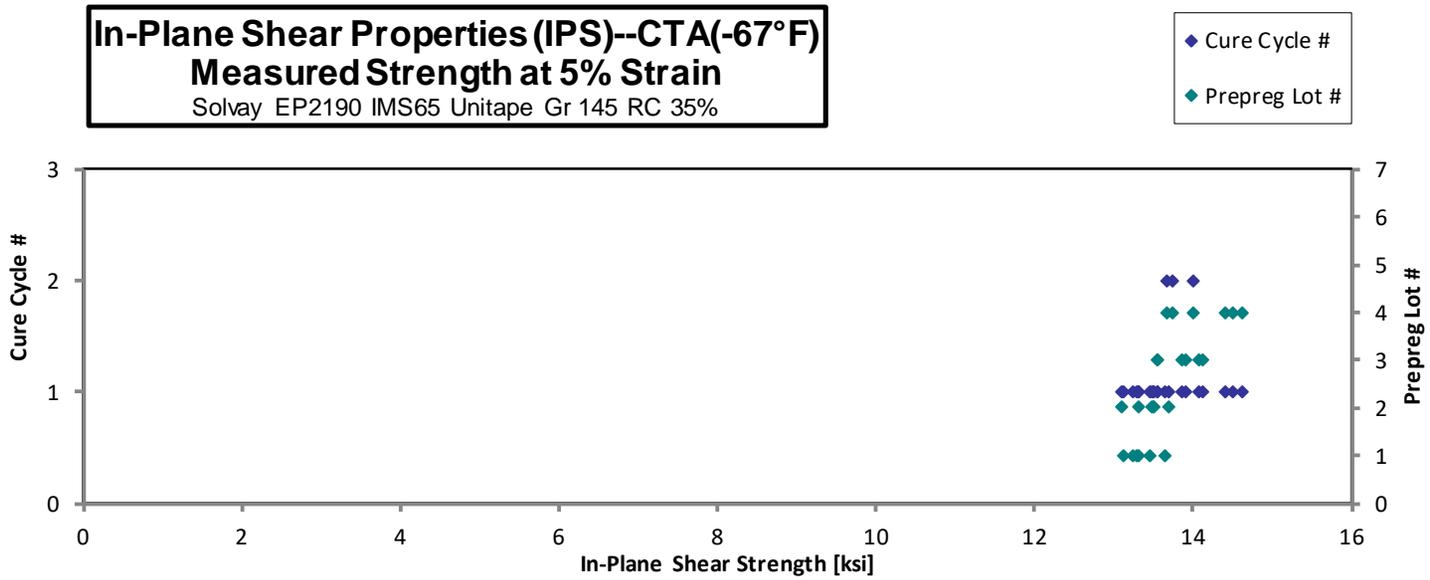
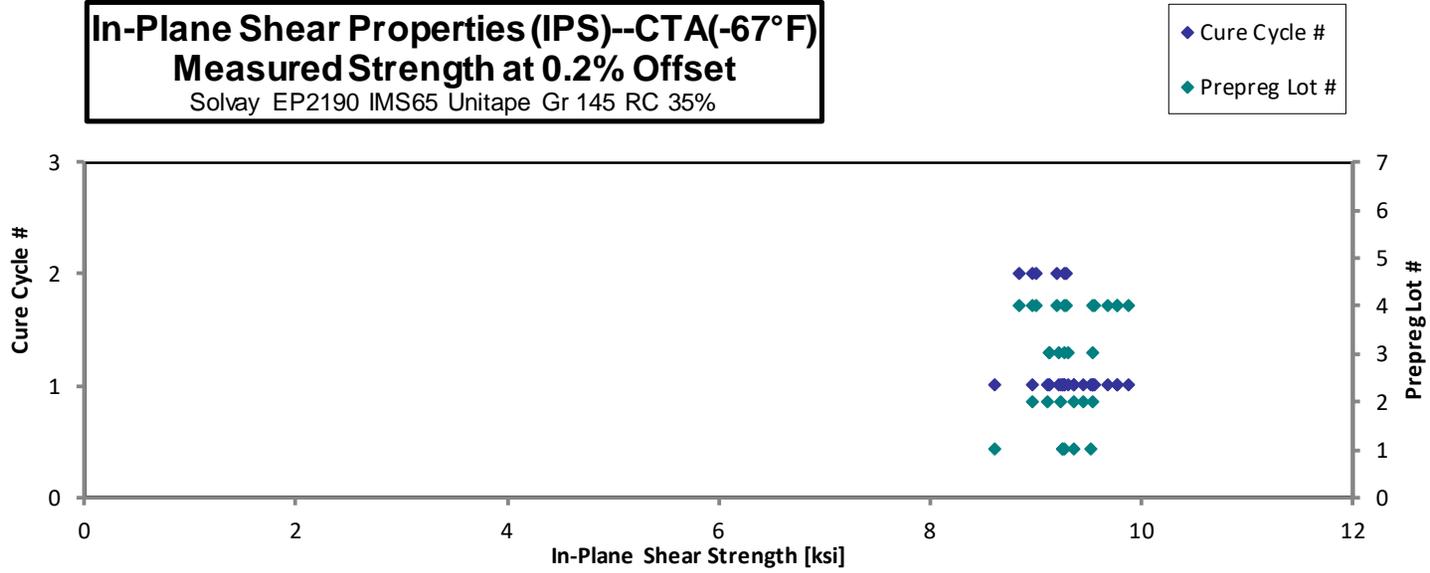
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]
TR7694211-P2-IPS-A-C1-CTA-1	A	C1	1	1	9.280	13.13	0.7830	0.04660	8	0.0058
TR7694211-P2-IPS-A-C1-CTA-2	A	C1	1	1	9.260	13.46	0.8160	0.04640	8	0.0058
TR7694211-P2-IPS-A-C1-CTA-3	A	C1	1	1	9.530	13.24	0.8420	0.04610	8	0.0058
TR7694211-P2-IPS-A-C1-CTA-4	A	C1	1	1	8.610	13.64	0.7360	0.04600	8	0.0058
TR7694211-P2-IPS-A-C1-CTA-5	A	C1	1	1	9.360	13.32	0.8300	0.04640	8	0.0058
TR7694211-P2-IPS-A-C1-CTA-6	A	C1	1	1	9.250	13.29	0.7940	0.04650	8	0.0058
TR7702799-P1-IPS-B-C1-CTA-2	B	C1	2	1	9.120	13.09	0.8020	0.04730	8	0.0059
TR7702799-P1-IPS-B-C1-CTA-3	B	C1	2	1	9.460	13.49	0.7890	0.04740	8	0.0059
TR7702799-P1-IPS-B-C1-CTA-4	B	C1	2	1	9.240	13.68	0.8220	0.04660	8	0.0058
TR7702799-P1-IPS-B-C1-CTA-5	B	C1	2	1	8.980	13.48	0.7980	0.04680	8	0.0059
TR7702799-P1-IPS-B-C1-CTA-6	B	C1	2	1	9.550	13.30	0.8130	0.04640	8	0.0058
TR7702799-P1-IPS-B-C1-CTA-7	B	C1	2	1	9.370	13.51	0.8160	0.04680	8	0.0059
TR7725527-P3-IPS-C-C1-CTA-1	C	C1	3	1	9.220	14.07	0.7760	0.04640	8	0.0058
TR7725527-P3-IPS-C-C1-CTA-2	C	C1	3	1	9.280	13.90	0.8090	0.04630	8	0.0058
TR7725527-P3-IPS-C-C1-CTA-3	C	C1	3	1	9.140	14.13	0.8050	0.04630	8	0.0058
TR7725527-P3-IPS-C-C1-CTA-4	C	C1	3	1	9.310	13.85	0.7900	0.04670	8	0.0058
TR7725527-P3-IPS-C-C1-CTA-5	C	C1	3	1	9.130	13.54	0.7960	0.04690	8	0.0059
TR7725527-P3-IPS-C-C1-CTA-6	C	C1	3	1	9.550	13.54	0.8080	0.04610	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-1*	D	C1	4	1	9.570		0.8410	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-2*	D	C1	4	1	9.680		0.7790	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-4*	D	C1	4	1	9.550		0.8030	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-5	D	C1	4	1	9.770	14.40	0.8600	0.04340	8	0.0054
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-6	D	C1	4	1	9.880	14.51	0.8690	0.04300	8	0.0054
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-CTA-7	D	C1	4	1	9.780	14.61	0.8560	0.04270	8	0.0053
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-1*	D	C2	4	2	9.010		0.7870	0.04650	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-2*	D	C2	4	2	9.270		0.7860	0.04680	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-3*	D	C2	4	2	8.840		0.8170	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-4	D	C2	4	2	9.300	14.01	0.8170	0.04690	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-5	D	C2	4	2	8.980	13.66	0.7950	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-CTA-6	D	C2	4	2	9.210	13.75	0.8000	0.04610	8	0.0058

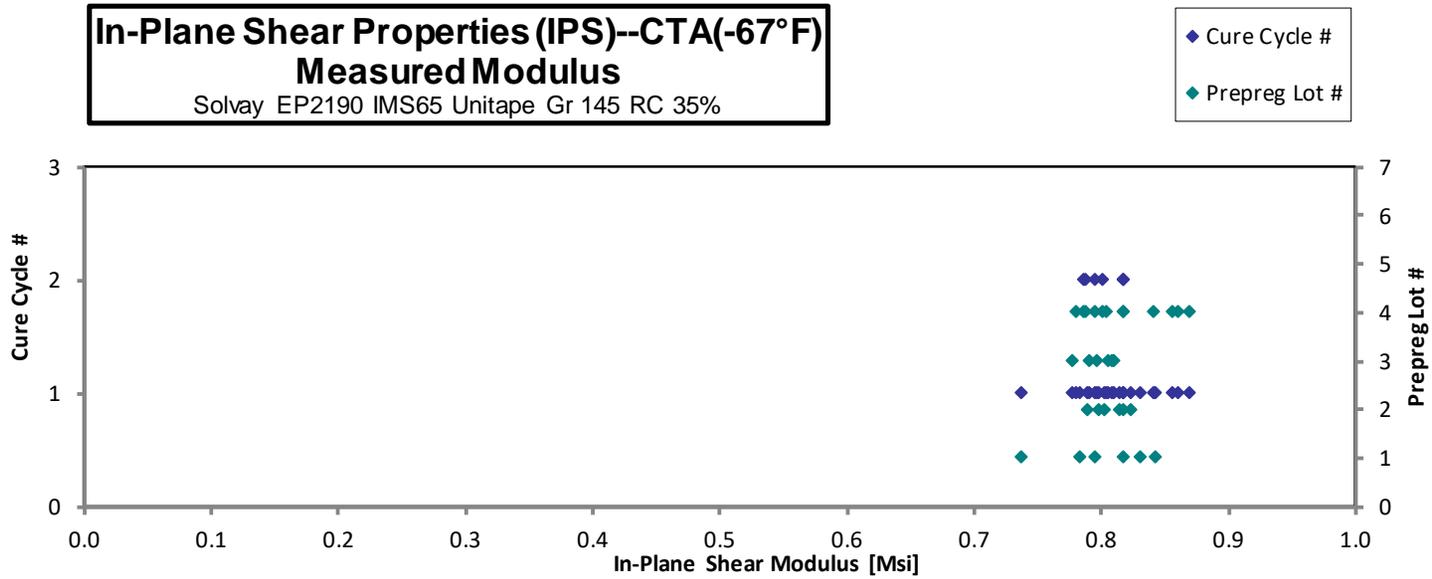
Modulus calculation is obtained from 2000 - 6000 microstrain.

* 5% shear strain data are not reported due to the speed increased prior to 5% strain.

Refer to section 6 for a representative stress strain curves.

Average	9.316	13.69	0.8078	Average	0.0058
Standard Dev.	0.2852	0.4212	0.02754		
Coeff. of Var. [%]	3.062	3.076	3.409		
Min.	8.610	13.09	0.7360	Min.	0.0053
Max.	9.880	14.61	0.8690	Max.	0.0059
Number of Spec.	30	24	30	Number of Spec.	30





In-Plane Shear Properties (IPS)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

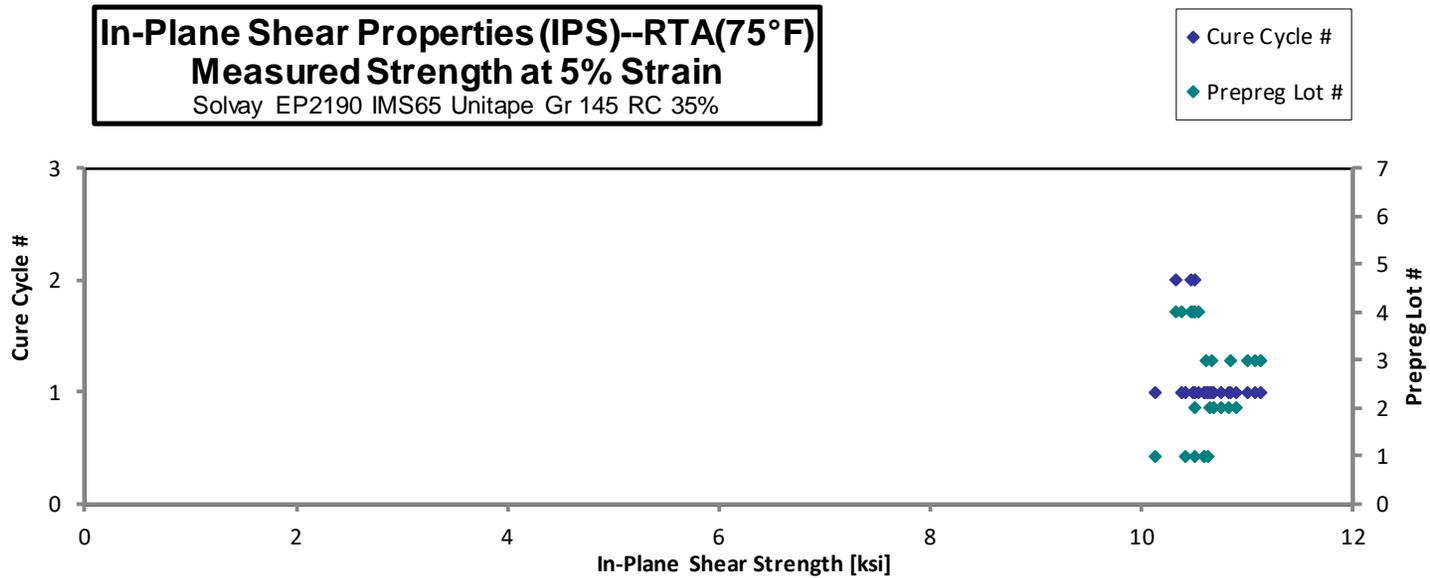
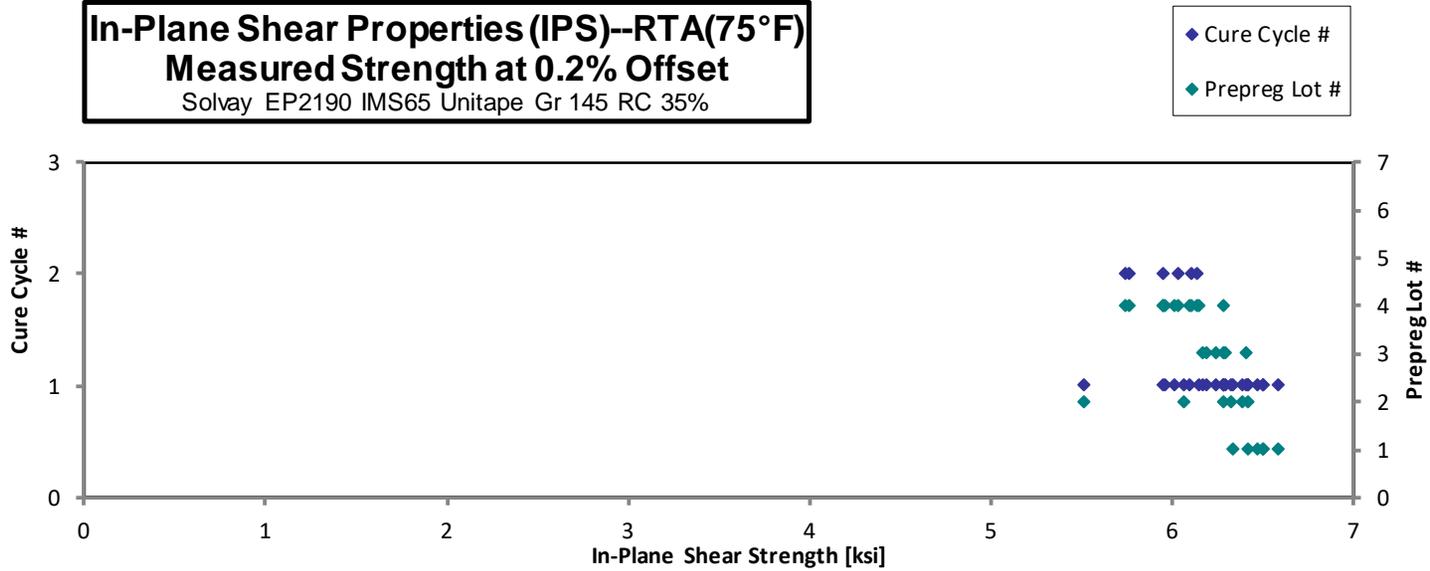
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]
TR7694211-P2-IPS-A-C1-RTA-1	A	C1	1	1	6.340	10.13	0.6150	0.04660	8	0.0058
TR7694211-P2-IPS-A-C1-RTA-2	A	C1	1	1	6.420	10.42	0.6240	0.04650	8	0.0058
TR7694211-P2-IPS-A-C1-RTA-3	A	C1	1	1	6.500	10.59	0.6280	0.04650	8	0.0058
TR7694211-P2-IPS-A-C1-RTA-4	A	C1	1	1	6.590	10.60	0.6400	0.04620	8	0.0058
TR7694211-P2-IPS-A-C1-RTA-5	A	C1	1	1	6.470	10.50	0.6300	0.04680	8	0.0059
TR7694211-P2-IPS-A-C1-RTA-6	A	C1	1	1	6.500	10.63	0.6370	0.04660	8	0.0058
TR7702799-P1-IPS-B-C1-RTA-1	B	C1	2	1	5.520	10.50	0.5150	0.04750	8	0.0059
TR7702799-P1-IPS-B-C1-RTA-2	B	C1	2	1	6.390	10.69	0.6160	0.04720	8	0.0059
TR7702799-P1-IPS-B-C1-RTA-3	B	C1	2	1	6.330	10.76	0.5810	0.04720	8	0.0059
TR7702799-P1-IPS-B-C1-RTA-4	B	C1	2	1	6.290	10.64	0.6160	0.04600	8	0.0058
TR7702799-P2-IPS-B-C1-RTA-5	B	C1	2	1	6.070	10.83	0.6190	0.04680	8	0.0059
TR7702799-P2-IPS-B-C1-RTA-6	B	C1	2	1	6.420	10.90	0.6180	0.04610	8	0.0058
TR7725527-P1-IPS-C-C1-RTA-1	C	C1	3	1	6.300	10.67	0.6050	0.04700	8	0.0059
TR7725527-P1-IPS-C-C1-RTA-2	C	C1	3	1	6.240	10.84	0.5980	0.04690	8	0.0059
TR7725527-P1-IPS-C-C1-RTA-3	C	C1	3	1	6.170	10.61	0.5840	0.04730	8	0.0059
TR7725527-P2-IPS-C-C1-RTA-4	C	C1	3	1	6.410	11.01	0.6060	0.04660	8	0.0058
TR7725527-P2-IPS-C-C1-RTA-5	C	C1	3	1	6.280	11.13	0.6010	0.04640	8	0.0058
TR7725527-P2-IPS-C-C1-RTA-6	C	C1	3	1	6.190	11.07	0.5880	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-1*	D	C1	4	1	6.010		0.6080	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-3*	D	C1	4	1	5.960		0.6050	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-4*	D	C1	4	1	5.950		0.5920	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-5	D	C1	4	1	6.280	10.37	0.6340	0.04610	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-6	D	C1	4	1	6.150	10.48	0.6250	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-RTA-7	D	C1	4	1	6.100	10.54	0.6180	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-1*	D	C2	4	2	5.950		0.5860	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-2*	D	C2	4	2	5.740		0.5690	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-3*	D	C2	4	2	5.760		0.5730	0.04650	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-4	D	C2	4	2	6.140	10.51	0.6200	0.04700	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-5	D	C2	4	2	6.110	10.33	0.6130	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-RTA-6	D	C2	4	2	6.040	10.46	0.5940	0.04660	8	0.0058

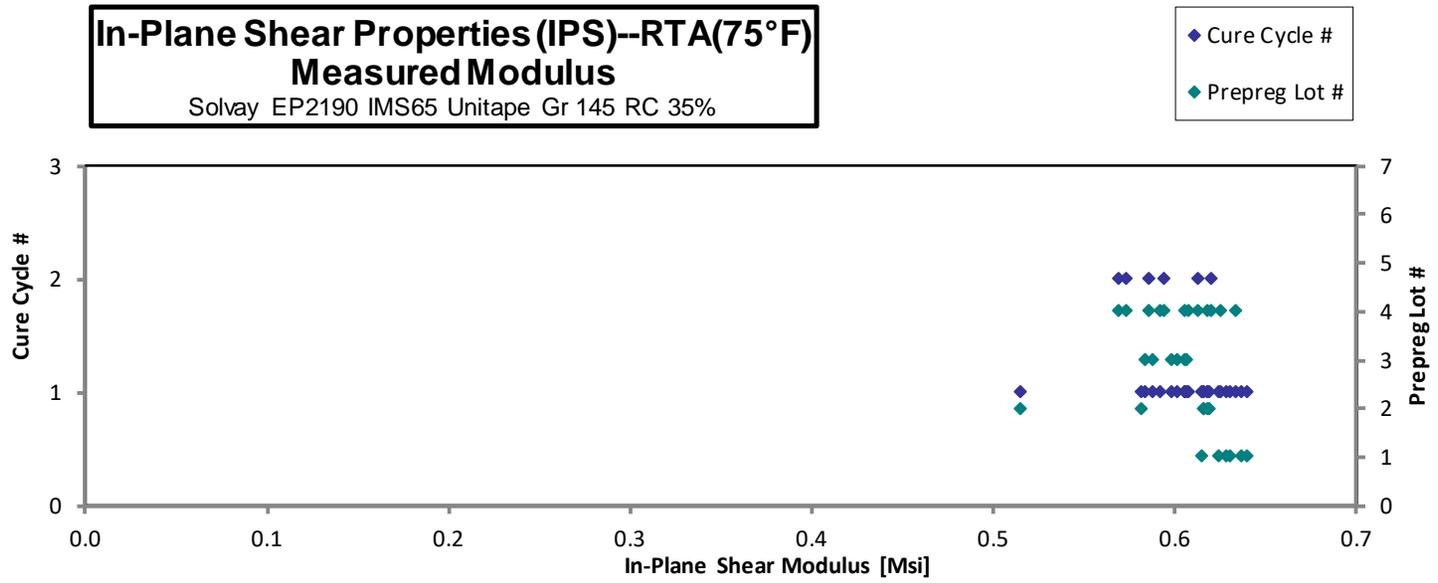
Modulus calculation is obtained from 2000 - 6000 microstrain.

* 5% shear strain data are not reported due to the speed increased prior to 5% strain.

Refer to section 6 for a representative stress strain curves.

Average	6.187	10.63	0.6053	Average	0.0058
Standard Dev.	0.2491	0.2404	0.02534		
Coeff. of Var. [%]	4.027	2.261	4.186		
Min.	5.520	10.13	0.5150	Min.	0.0057
Max.	6.590	11.13	0.6400	Max.	0.0059
Number of Spec.	30	24	30	Number of Spec.	30



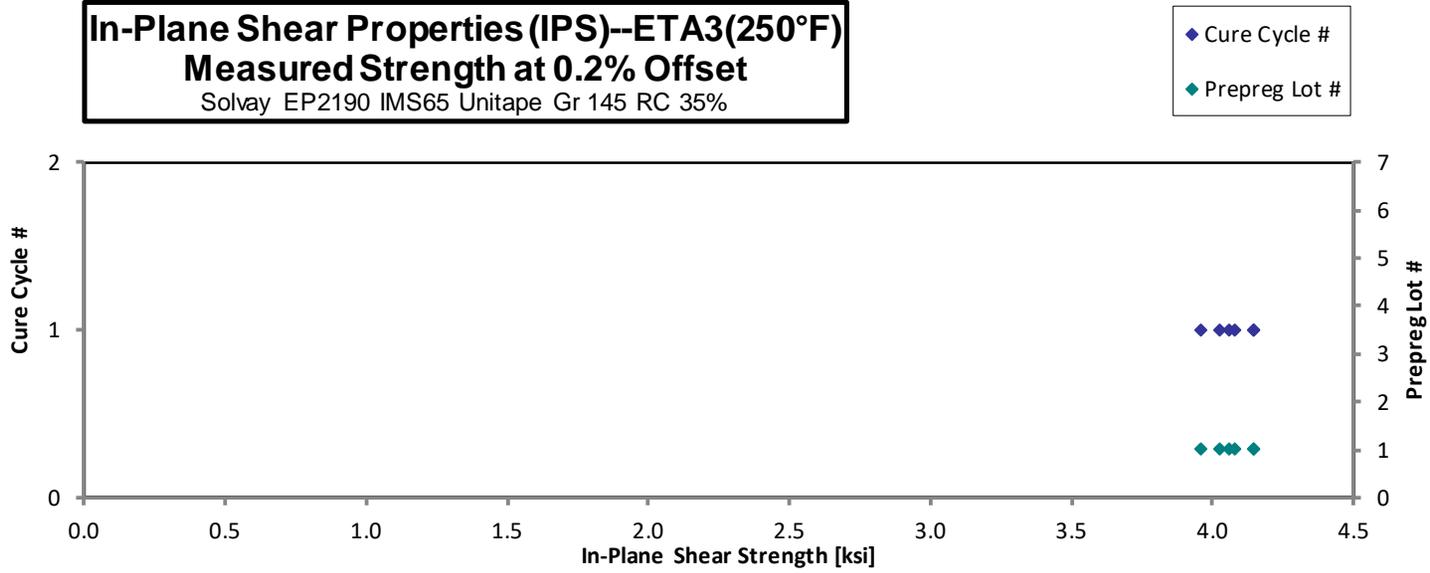


In-Plane Shear Properties (IPS)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay 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]
TR7694211-P3-IPS-A-C1-ETA3-1	A	C1	1	1	3.960	6.810	0.4180	0.04700	8	0.0059
TR7694211-P3-IPS-A-C1-ETA3-2	A	C1	1	1	4.030	6.870	0.4240	0.04650	8	0.0058
TR7694211-P3-IPS-A-C1-ETA3-3	A	C1	1	1	4.150	7.060	0.4320	0.04680	8	0.0059
TR7694211-P3-IPS-A-C1-ETA3-4	A	C1	1	1	4.080	6.970	0.4350	0.04660	8	0.0058
TR7694211-P3-IPS-A-C1-ETA3-5	A	C1	1	1	4.060	7.000	0.4360	0.04630	8	0.0058
TR7694211-P3-IPS-A-C1-ETA3-6	A	C1	1	1	4.150	7.040	0.4370	0.04630	8	0.0058

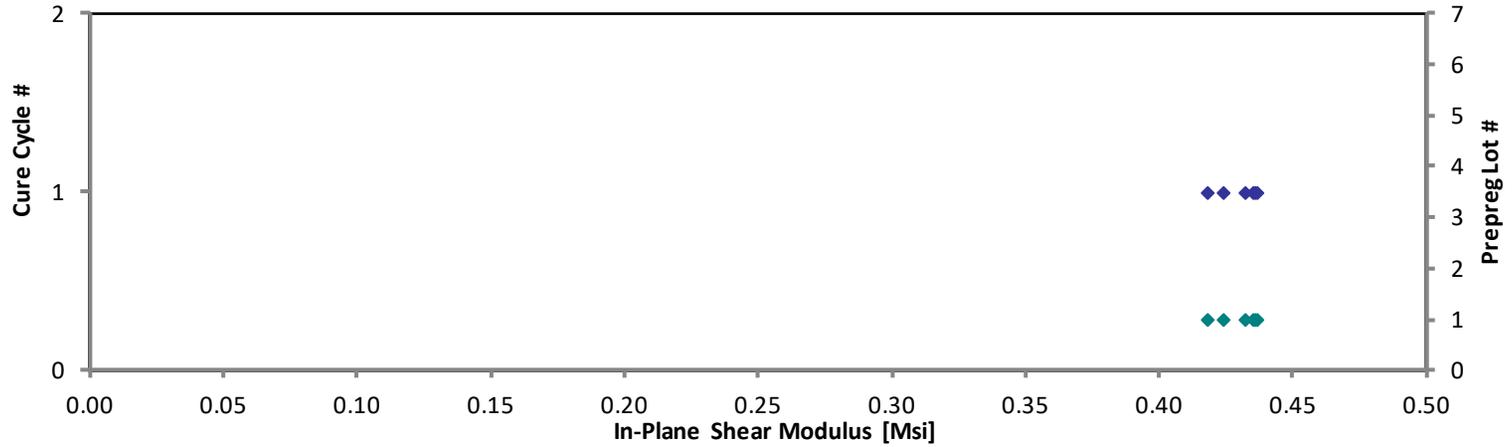
Modulus calculation is obtained from 2000 - 6000 microstrain.

Average	4.072	6.958	0.4303	Average	0.0058
Standard Dev.	0.07305	0.09867	0.00766		
Coeff. of Var. [%]	1.794	1.418	1.780		
Min.	3.960	6.810	0.4180	Min.	0.0058
Max.	4.150	7.060	0.4370	Max.	0.0059
Number of Spec.	6	6	6	Number of Spec.	6



In-Plane Shear Properties (IPS)--ETA3(250°F)
Measured Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



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

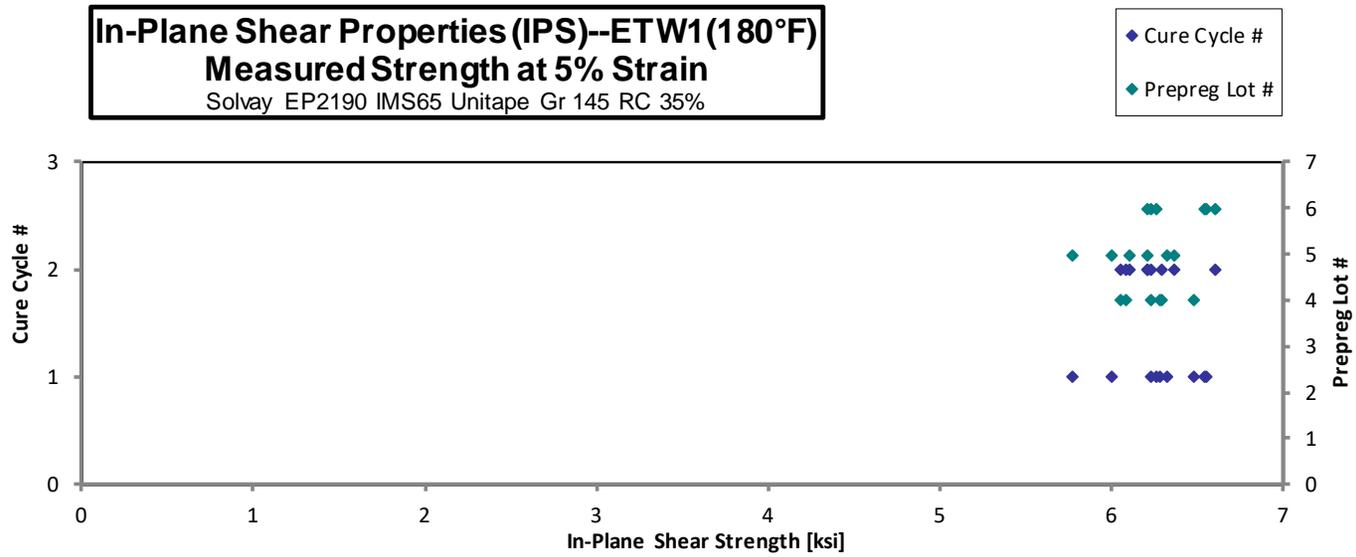
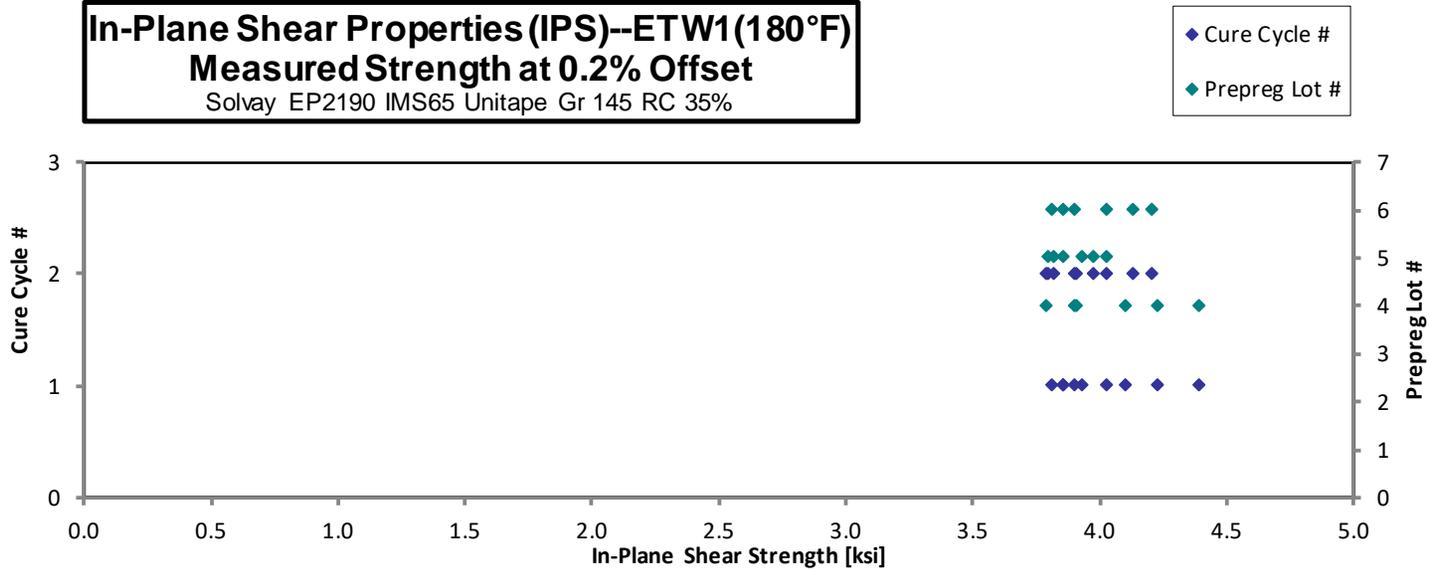
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-1*	D	C1	4	1	4.390		0.4560	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-2*	D	C1	4	1	4.100		0.4320	0.04590	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-3*	D	C1	4	1	4.230		0.4600	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-4	D	C1	4	1	3.930	6.290	0.4120	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-5	D	C1	4	1	3.850	6.230	0.4260	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW1-6	D	C1	4	1	3.970	6.480	0.4160	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-1*	D	C2	4	2	3.900		0.4200	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-2*	D	C2	4	2	3.790		0.4180	0.04720	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-3*	D	C2	4	2	3.910		0.4130	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-4	D	C2	4	2	3.750	6.060	0.4130	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-5	D	C2	4	2	3.750	6.090	0.4070	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW1-6	D	C2	4	2	3.850	6.300	0.3880	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-1*	E	C1	5	1	4.030		0.4280	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-2*	E	C1	5	1	3.860		0.4530	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-3*	E	C1	5	1	3.930		0.4480	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-4	E	C1	5	1	3.660	5.780	0.3560	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-5	E	C1	5	1	3.700	6.000	0.3950	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW1-6	E	C1	5	1	3.830	6.330	0.4200	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-1*	E	C2	5	2	3.980		0.4290	0.04500	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-2*	E	C2	5	2	3.800		0.4160	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-3*	E	C2	5	2	3.820		0.4070	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-4	E	C2	5	2	3.720	6.110	0.3920	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-5	E	C2	5	2	3.850	6.210	0.4030	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW1-6	E	C2	5	2	3.830	6.370	0.4210	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-1*	F	C1	6	1	3.860		0.4030	0.04450	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-2*	F	C1	6	1	3.810		0.3910	0.04430	8	0.0055
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-3*	F	C1	6	1	3.900		0.4020	0.04410	8	0.0055
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-4	F	C1	6	1	3.820	6.540	0.4120	0.04440	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-5	F	C1	6	1	3.780	6.260	0.4020	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW1-6	F	C1	6	1	3.910	6.560	0.4060	0.04490	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-1*	F	C2	6	2	4.130		0.4540	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-2*	F	C2	6	2	4.210		0.4490	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-3*	F	C2	6	2	4.030		0.4230	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-4	F	C2	6	2	3.870	6.230	0.3750	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-5	F	C2	6	2	3.690	6.210	0.4260	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW1-6	F	C2	6	2	4.110	6.610	0.4380	0.04310	8	0.0054

Modulus calculation is obtained from 2000 - 6000 microstrain.

* 5% shear strain data are not reported due to the speed increased prior to 5% strain.

Average	3.904	6.259	0.4169	Average	0.0057
Standard Dev.	0.1627	0.2107	0.02302		
Coeff. of Var. [%]	4.167	3.367	5.520		
Min.	3.660	5.780	0.3560	Min.	0.0054
Max.	4.390	6.610	0.4600	Max.	0.0059
Number of Spec.	36	18	36	Number of Spec.	36



**In-Plane Shear Properties (IPS)–ETW2(225°F)
Strength & Modulus**

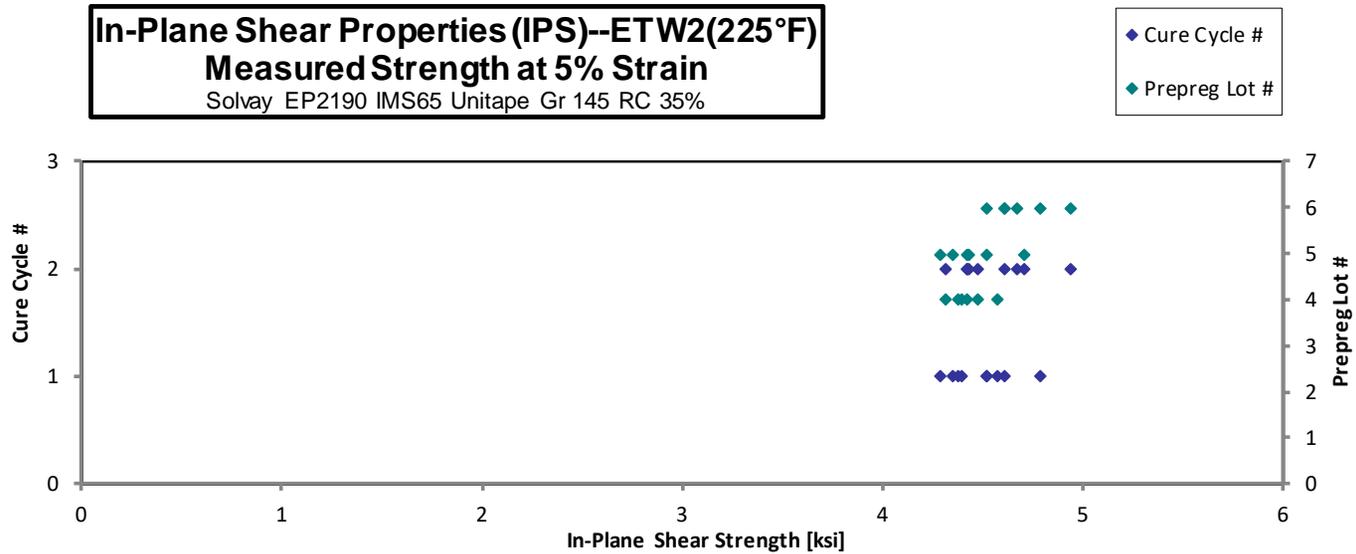
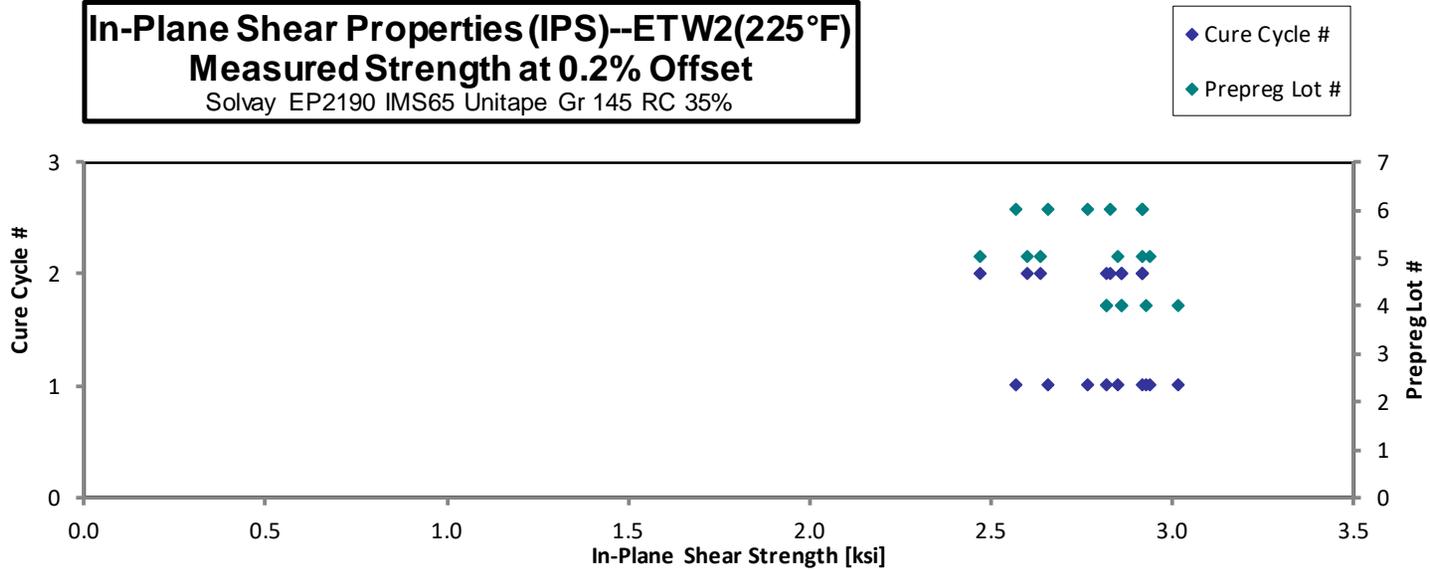
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

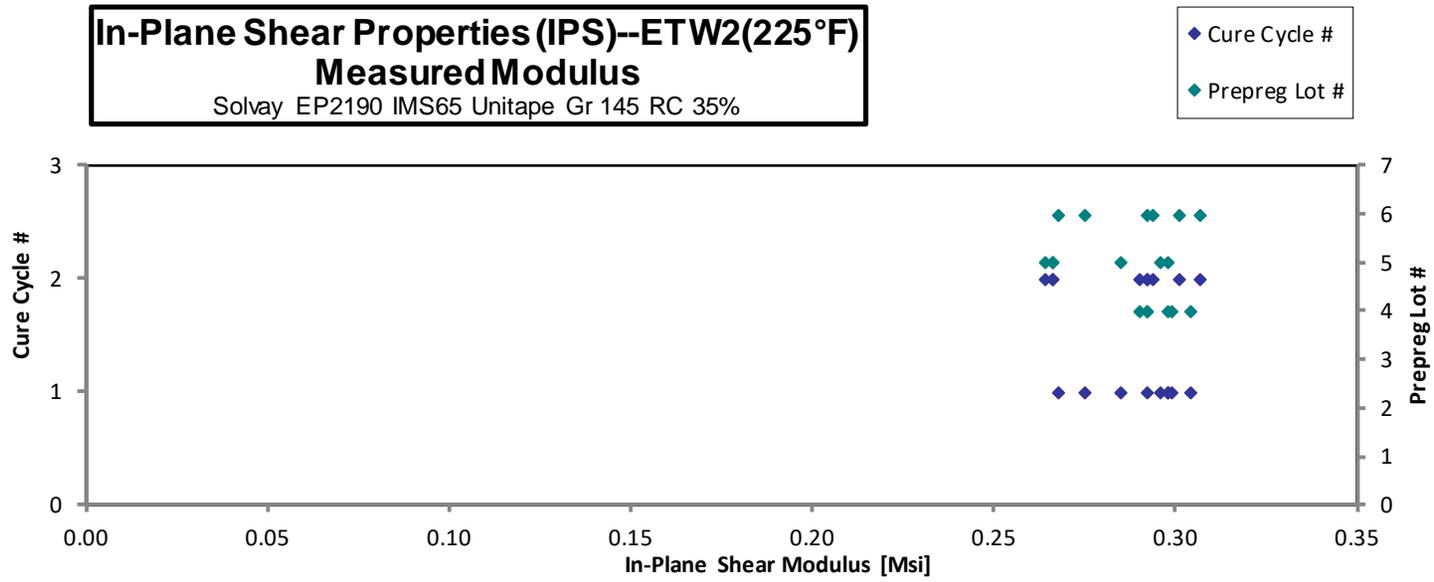
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-1*	D	C1	4	1	2.820		0.2990	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-2*	D	C1	4	1	3.020		0.3040	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-3*	D	C1	4	1	2.930		0.2980	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-4	D	C1	4	1	2.550	4.380	0.2830	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-5	D	C1	4	1	2.470	4.400	0.2810	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW2-6	D	C1	4	1	2.580	4.580	0.2560	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-1*	D	C2	4	2	2.860		0.2920	0.04670	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-2*	D	C2	4	2	2.860		0.2920	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-3*	D	C2	4	2	2.820		0.2900	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-5	D	C2	4	2	2.460	4.320	0.2560	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-6	D	C2	4	2	2.470	4.480	0.2690	0.04650	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW2-4	D	C2	4	2	2.430	4.420	0.2600	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-1*	E	C1	5	1	2.920		0.2960	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-2*	E	C1	5	1	2.940		0.2980	0.04590	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-3*	E	C1	5	1	2.850		0.2850	0.04590	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-4	E	C1	5	1	2.430	4.290	0.2470	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-5	E	C1	5	1	2.510	4.350	0.2550	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW2-6	E	C1	5	1	2.530	4.520	0.2710	0.04490	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-1*	E	C2	5	2	2.640		0.2660	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-2*	E	C2	5	2	2.600		0.2640	0.04540	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-3*	E	C2	5	2	2.470		0.2660	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-4	E	C2	5	2	2.390	4.430	0.2300	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-5	E	C2	5	2	2.600	4.420	0.2710	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW2-6	E	C2	5	2	2.740	4.710	0.2860	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-1*	F	C1	6	1	2.770		0.2750	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-2*	F	C1	6	1	2.570		0.2920	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-3*	F	C1	6	1	2.660		0.2680	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-4	F	C1	6	1	2.610	4.520	0.2710	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-5	F	C1	6	1	2.640	4.610	0.2720	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW2-6	F	C1	6	1	2.720	4.790	0.2820	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-1*	F	C2	6	2	2.830		0.2940	0.04480	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-2*	F	C2	6	2	2.920		0.3070	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-3*	F	C2	6	2	2.920		0.3010	0.04440	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-4	F	C2	6	2	2.650	4.610	0.2790	0.04450	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-5	F	C2	6	2	2.650	4.670	0.2720	0.04450	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW2-6	F	C2	6	2	2.760	4.940	0.2860	0.04420	8	0.0055

Modulus calculation is obtained from 2000 - 6000 microstrain.

* 5% shear strain data are not reported due to the speed increased prior to 5% strain.

Average	2.683	4.524	0.2782	Average	0.0057
Standard Dev.	0.1770	0.1737	0.01757		
Coeff. of Var. [%]	6.597	3.839	6.316		
Min.	2.390	4.290	0.2300	Min.	0.0055
Max.	3.020	4.940	0.3070	Max.	0.0058
Number of Spec.	36	18	36	Number of Spec.	36





**In-Plane Shear Properties (IPS)--ETW3(250°F)
Strength & Modulus**

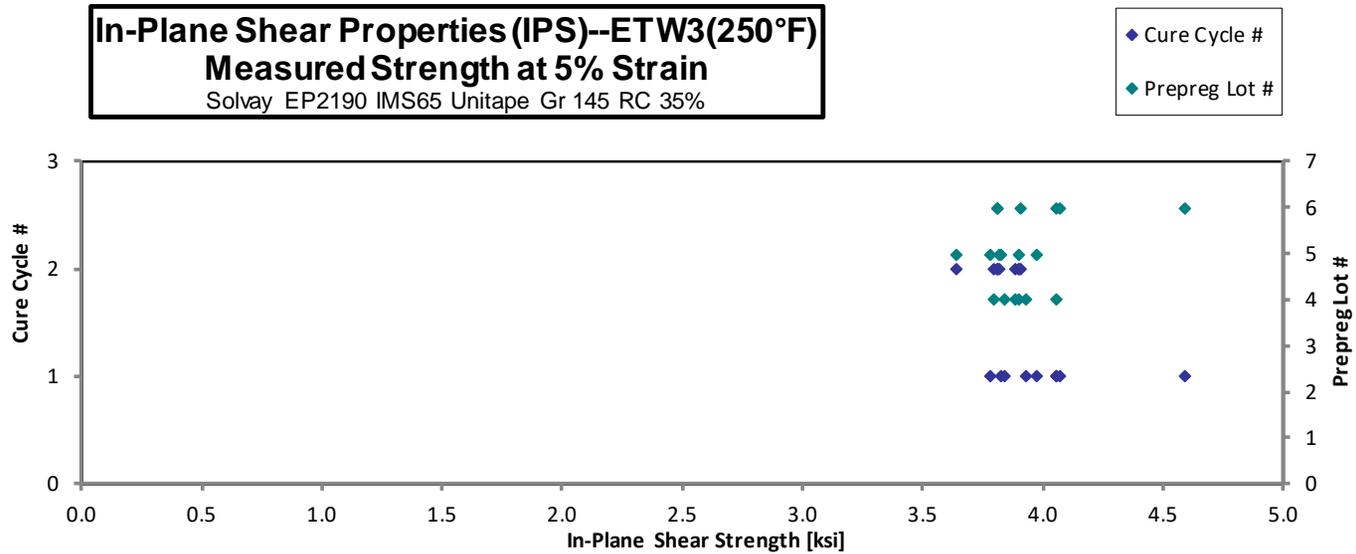
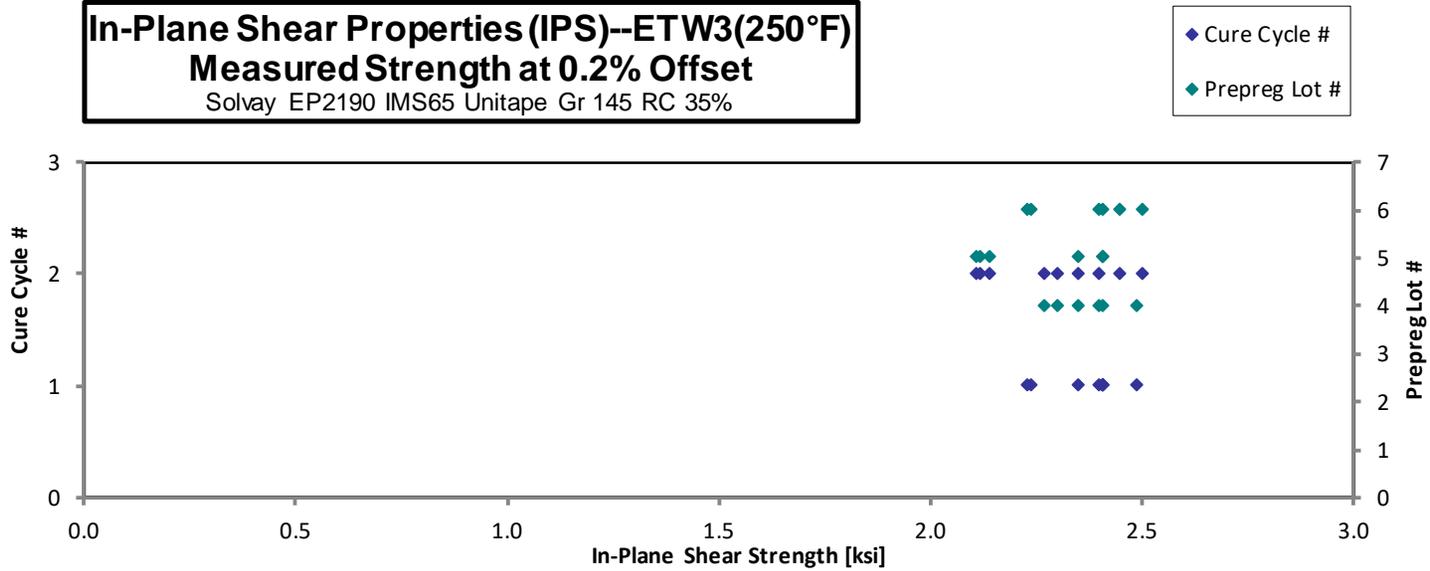
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

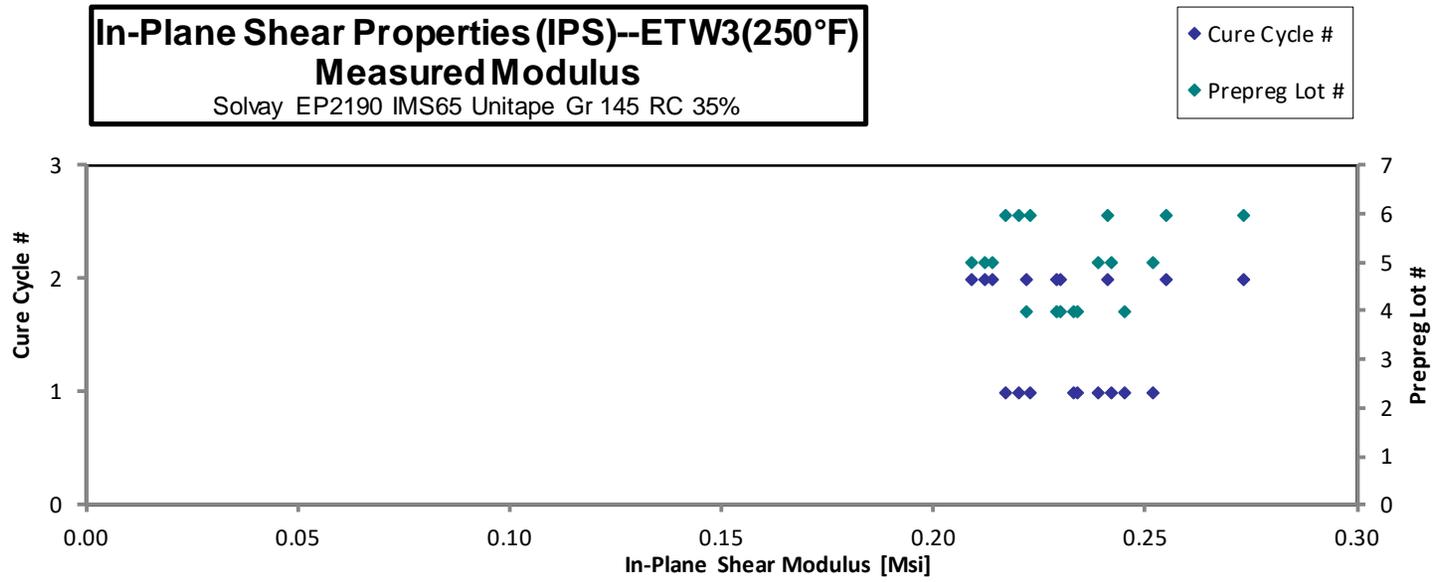
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-1*	D	C1	4	1	2.400		0.2340	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-2*	D	C1	4	1	2.490		0.2450	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-3*	D	C1	4	1	2.410		0.2330	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW3-4	D	C1	4	1	2.240	4.060	0.2200	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW3-5	D	C1	4	1	2.130	3.930	0.2000	0.04570	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-ETW3-6	D	C1	4	1	2.300	3.840	0.1730	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-1*	D	C2	4	2	2.300		0.2290	0.04660	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-2*	D	C2	4	2	2.350		0.2300	0.04630	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-3*	D	C2	4	2	2.270		0.2220	0.04680	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-4	D	C2	4	2	2.070	3.890	0.2170	0.04680	8	0.0059
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-5	D	C2	4	2	1.840	3.800	0.2310	0.04640	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-ETW3-6	D	C2	4	2	2.150	3.900	0.1970	0.04620	8	0.0058
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-1*	E	C1	5	1	2.350		0.2390	0.04580	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-2*	E	C1	5	1	2.410		0.2420	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-3*	E	C1	5	1	2.410		0.2520	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-4	E	C1	5	1	2.000	3.780	0.2180	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-5	E	C1	5	1	2.010	3.830	0.2140	0.04490	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-ETW3-6	E	C1	5	1	2.130	3.980	0.2250	0.04560	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-1*	E	C2	5	2	2.110		0.2090	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-2*	E	C2	5	2	2.140		0.2120	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-3*	E	C2	5	2	2.120		0.2140	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-4	E	C2	5	2	2.010	3.640	0.1920	0.04510	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-5	E	C2	5	2	2.080	3.820	0.2020	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-ETW3-6	E	C2	5	2	2.170	3.900	0.2170	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-1*	F	C1	6	1	2.410		0.2170	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-2*	F	C1	6	1	2.230		0.2200	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-3*	F	C1	6	1	2.240		0.2230	0.04520	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-4	F	C1	6	1	2.190	4.060	0.2090	0.04550	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-5	F	C1	6	1	2.160	4.070	0.2160	0.04530	8	0.0057
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-ETW3-6	F	C1	6	1	2.350	4.590	0.2380	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-1*	F	C2	6	2	2.400		0.2550	0.04430	8	0.0055
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-2*	F	C2	6	2	2.450		0.2730	0.04470	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-3*	F	C2	6	2	2.500		0.2410	0.04460	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-4	F	C2	6	2	2.010	3.810	0.2070	0.04490	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-5	F	C2	6	2	2.110	3.910	0.1980	0.04440	8	0.0056
NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-ETW3-6	F	C2	6	2	2.590	3.810	0.2490	0.04420	8	0.0055

Modulus calculation is obtained from 2000 - 6000 microstrain.

* 5% shear strain data are not reported due to the speed increased prior to 5% strain.

Average	2.237	3.923	0.2226	Average	0.0057
Standard Dev.	0.1726	0.1996	0.01994		
Coeff. of Var. [%]	7.716	5.086	8.961		
Min.	1.840	3.640	0.1730	Min.	0.0055
Max.	2.590	4.590	0.2730	Max.	0.0059
Number of Spec.	36	18	36	Number of Spec.	36





4.8 0° Flexural Proc. A Properties (0FLEX)

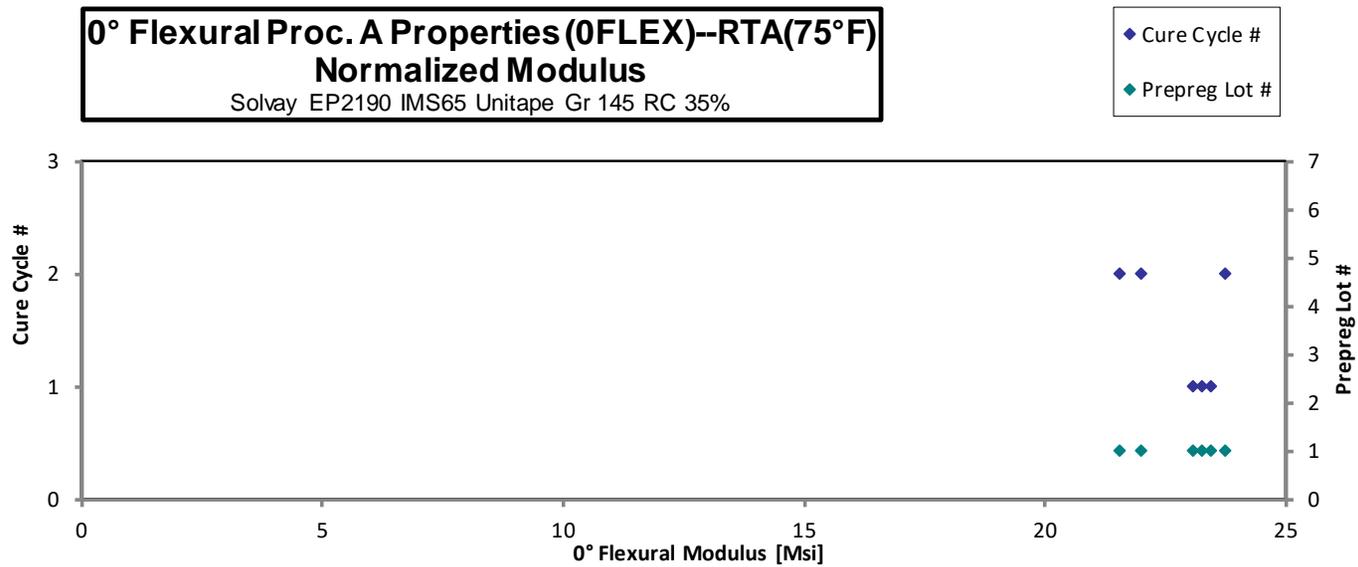
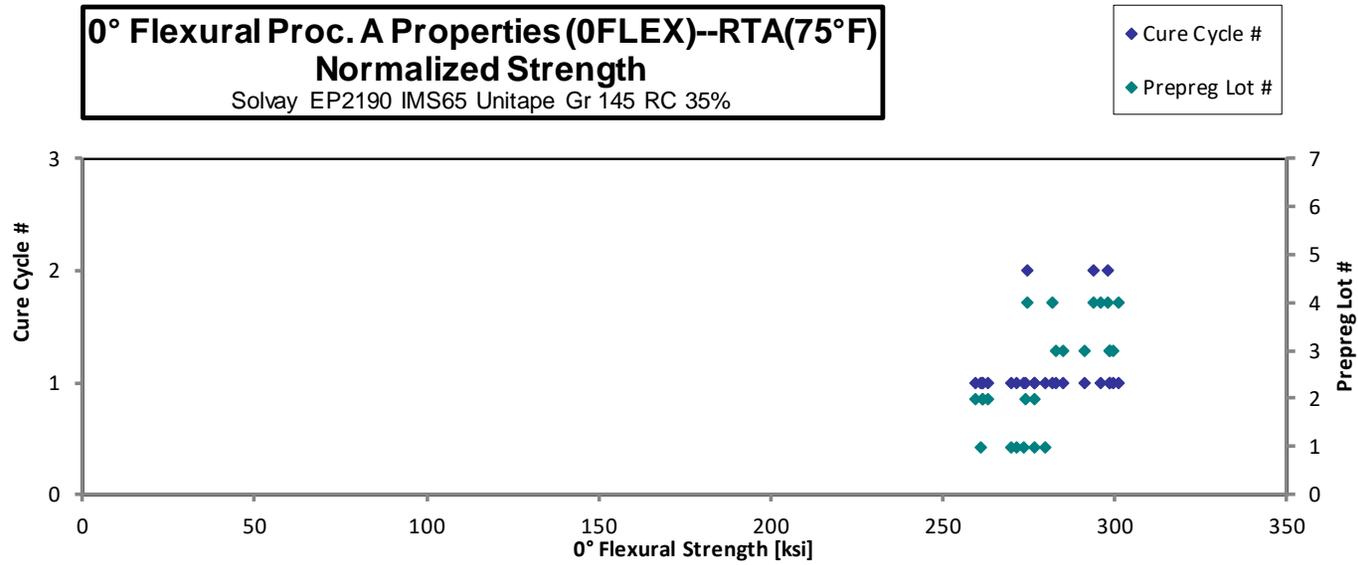
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Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

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 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694248-P1-0FLEX-A-C1-RTA-1	A	C1	1	1	260.9		0.06960	12	M(tc)AM	0.0058	279.8	
TR7694248-P1-0FLEX-A-C1-RTA-2	A	C1	1	1	252.2		0.07000	12	TAM	0.0058	273.7	
TR7694248-P1-0FLEX-A-C1-RTA-3	A	C1	1	1	254.9		0.07000	12	TAM	0.0058	276.6	
TR7694248-P1-0FLEX-A-C1-RTA-4	A	C1	1	1	246.0		0.07040	12	TAM	0.0059	269.9	
TR7694248-P1-0FLEX-A-C1-RTA-5	A	C1	1	1	248.6		0.07020	12	TAM	0.0059	271.3	
TR7694248-P1-0FLEX-A-C1-RTA-6	A	C1	1	1	243.6		0.06960	12	TAM	0.0058	261.3	
TR7702822-P1-0FLEX-B-C1-RTA-1	B	C1	2	1	232.7		0.07100	12	TAM	0.0059	259.8	
TR7702822-P1-0FLEX-B-C1-RTA-2	B	C1	2	1	237.9		0.07070	12	TAM	0.0059	263.3	
TR7702822-P1-0FLEX-B-C1-RTA-3	B	C1	2	1	239.9		0.07020	12	TAM	0.0059	261.8	
TR7702822-P1-0FLEX-B-C1-RTA-4	B	C1	2	1	238.0		0.07050	12	TAM	0.0059	261.9	
TR7702822-P1-0FLEX-B-C1-RTA-5	B	C1	2	1	246.5		0.07120	12	TAM	0.0059	276.8	
TR7702822-P1-0FLEX-B-C1-RTA-6	B	C1	2	1	245.5		0.07100	12	TAM	0.0059	274.1	
TR7725540-P1-0FLEX-C-C1-RTA-1	C	C1	3	1	268.1		0.07090	12	M(tc)AM	0.0059	298.4	
TR7725540-P1-0FLEX-C-C1-RTA-2	C	C1	3	1	259.9		0.07040	12	TAM	0.0059	285.2	
TR7725540-P1-0FLEX-C-C1-RTA-3	C	C1	3	1	267.6		0.07010	12	TAM	0.0058	291.2	
TR7725540-P1-0FLEX-C-C1-RTA-4	C	C1	3	1	257.3		0.07050	12	TAM	0.0059	283.2	
TR7725540-P1-0FLEX-C-C1-RTA-5	C	C1	3	1	271.9		0.07040	12	TAM	0.0059	298.4	
TR7725540-P1-0FLEX-C-C1-RTA-6	C	C1	3	1	274.6		0.07020	12	TAM	0.0059	299.7	
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-RTA-1	D	C1	4	1	286.3	22.09	0.06890	12	M(t,c)	0.0057	301.0	23.22
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-RTA-2	D	C1	4	1	283.2	22.07	0.06870	12	M(t,c)	0.0057	296.0	23.07
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-RTA-3	D	C1	4	1	272.9	22.68	0.06830	12	M(t,c)	0.0057	281.9	23.43
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-RTA-1	D	C2	4	2	274.6	20.24	0.07000	12	M(c,t)BM	0.0058	298.0	21.97
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-RTA-2	D	C2	4	2	253.7	19.91	0.06990	12	M(c,t)BM	0.0058	274.5	21.54
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-RTA-3	D	C2	4	2	275.0	22.20	0.06950	12	M(c,t)BM	0.0058	294.1	23.74

Note: Normalized = Measured * (Avg. t_{ply})² / (Normalizing t_{ply})²

Average	258.0	21.53	Average_{norm}	0.0058	280.5	22.83
Standard Dev.	15.42	1.154	Standard Dev._{norm}		13.91	0.8736
Coeff. of Var. [%]	5.976	5.361	Coeff. of Var. [%]_{norm}		4.959	3.827
Min.	232.7	19.91	Min.	0.0057	259.8	21.54
Max.	286.3	22.68	Max.	0.0059	301.0	23.74
Number of Spec.	24	6	Number of Spec.	24	24	6



0° Flexural Proc. A Properties (0FLEX)--ETA2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

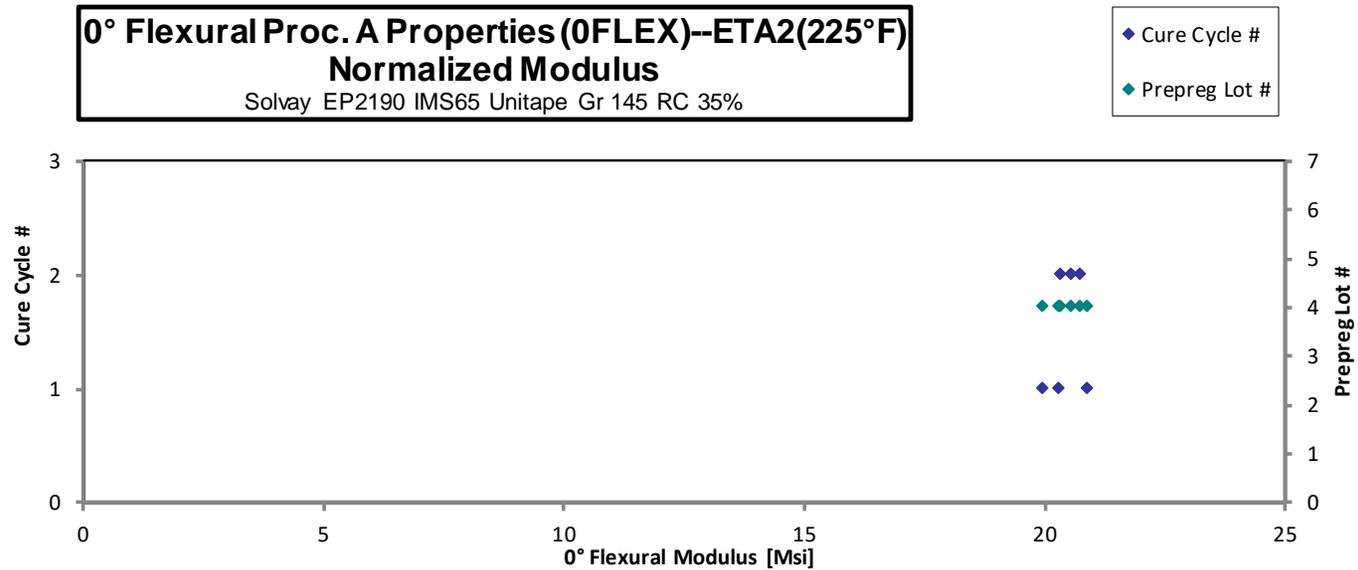
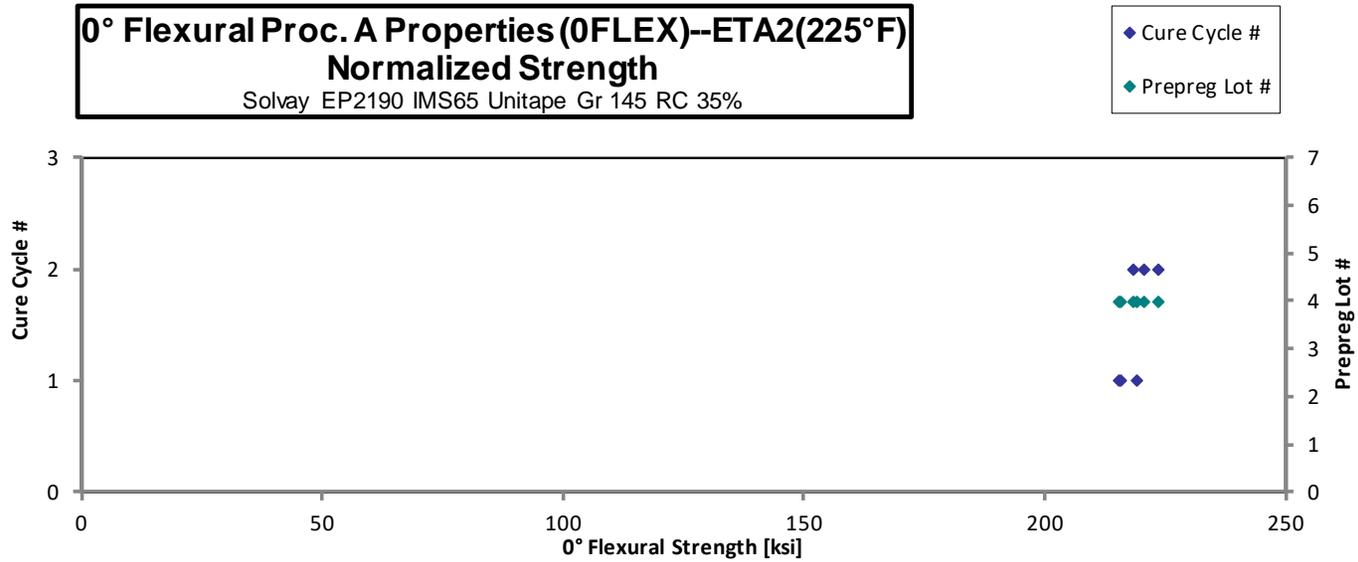
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA2-1	D	C1	4	1	207.9	19.24	0.06900	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA2-2	D	C1	4	1	203.4	19.70	0.06920	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA2-3	D	C1	4	1	206.2	19.08	0.06870	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA2-1	D	C2	4	2	209.7	19.56	0.06890	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA2-2	D	C2	4	2	214.1	19.91	0.06790	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA2-3	D	C2	4	2	213.5	19.77	0.06880	12	CAT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	219.1	20.28
0.0058	215.6	20.89
0.0057	215.5	19.94
0.0057	220.5	20.56
0.0057	218.6	20.33
0.0057	223.8	20.72

Note: Normalized = Measured * (Avg. t_{ply})² / (Normalizing t_{ply})²

Average 209.1 19.54
 Standard Dev. 4.174 0.3219
 Coeff. of Var. [%] 1.996 1.647
 Min. 203.4 19.08
 Max. 214.1 19.91
 Number of Spec. 6 6

Average_{norm} 0.0057 218.9 20.45
 Standard Dev._{norm} 3.107 0.3405
 Coeff. of Var. [%]_{norm} 1.419 1.664
 Min. 0.0057 215.5 19.94
 Max. 0.0058 223.8 20.89
 Number of Spec. 6 6 6



0° Flexural Proc. A Properties (0FLEX)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

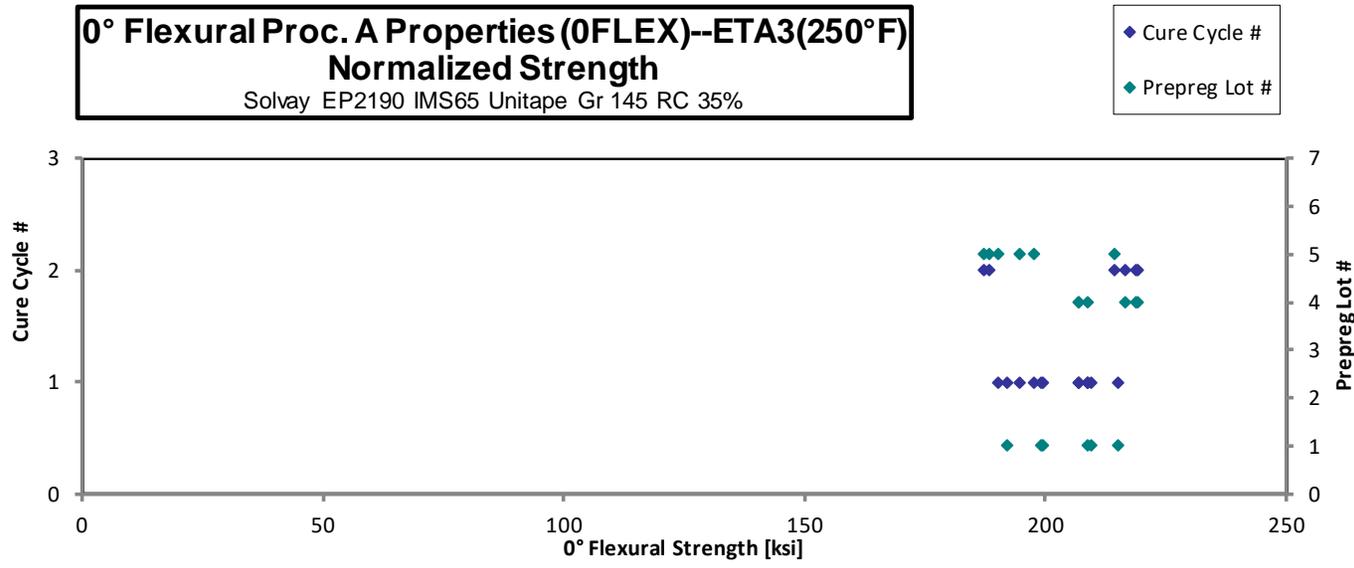
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694248-P1-0FLEX-A-C1-ETA3-1	A	C1	1	1	193.2		0.06980	12	TAM
TR7694248-P1-0FLEX-A-C1-ETA3-2	A	C1	1	1	196.8		0.07020	12	TAM
TR7694248-P1-0FLEX-A-C1-ETA3-3	A	C1	1	1	191.7		0.07020	12	TAM
TR7694248-P1-0FLEX-A-C1-ETA3-4	A	C1	1	1	182.3		0.07020	12	TAM
TR7694248-P1-0FLEX-A-C1-ETA3-5	A	C1	1	1	176.7		0.07000	12	TAM
TR7694248-P1-0FLEX-A-C1-ETA3-6	A	C1	1	1	185.7		0.06960	12	TAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA3-1	D	C1	4	1	196.8	19.60	0.06890	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA3-2	D	C1	4	1	196.8	19.80	0.06890	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETA3-3	D	C1	4	1	196.1	19.34	0.06930	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA3-1	D	C2	4	2	202.8	19.69	0.06940	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA3-2	D	C2	4	2	204.9	19.47	0.06950	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETA3-3	D	C2	4	2	202.5	19.84	0.06980	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETA3-1	E	C1	5	1	186.6	19.10	0.06860	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETA3-2	E	C1	5	1	190.5	18.93	0.06840	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETA3-3	E	C1	5	1	184.3	18.73	0.06820	12	CAT
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETA3-1	E	C2	5	2	204.9	18.32	0.06870	12	M(c,t)LM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETA3-2	E	C2	5	2	182.8	18.84	0.06820	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETA3-3	E	C2	5	2	177.5	17.87	0.06900	12	CAM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	208.4	
0.0059	214.8	
0.0059	209.2	
0.0059	199.0	
0.0058	191.7	
0.0058	199.2	
0.0057	206.8	20.61
0.0057	206.8	20.81
0.0058	208.6	20.56
0.0058	216.3	21.00
0.0058	219.1	20.83
0.0058	218.5	21.41
0.0057	194.4	19.90
0.0057	197.3	19.61
0.0057	189.9	19.29
0.0057	214.1	19.14
0.0057	188.3	19.40
0.0058	187.2	18.84

Note: Normalized = Measured * (Avg. t_{ply})² / (Normalizing t_{ply})²

Average	191.8	19.13	Average_{norm}	0.0058	203.9	20.12
Standard Dev.	9.069	0.6164	Standard Dev._{norm}		10.73	0.8494
Coeff. of Var. [%]	4.728	3.222	Coeff. of Var. [%]_{norm}		5.265	4.222
Min.	176.7	17.87	Min.	0.0057	187.2	18.84
Max.	204.9	19.84	Max.	0.0059	219.1	21.41
Number of Spec.	18	12	Number of Spec.	18	18	12



0° Flexural Proc. A Properties (0FLEX)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

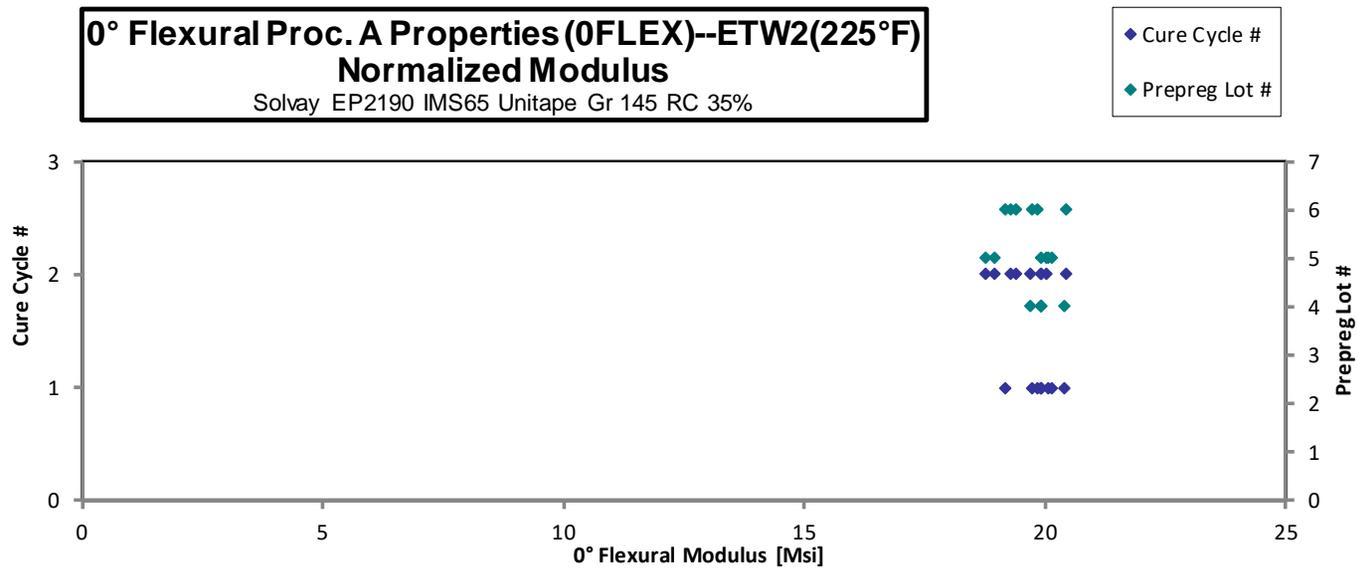
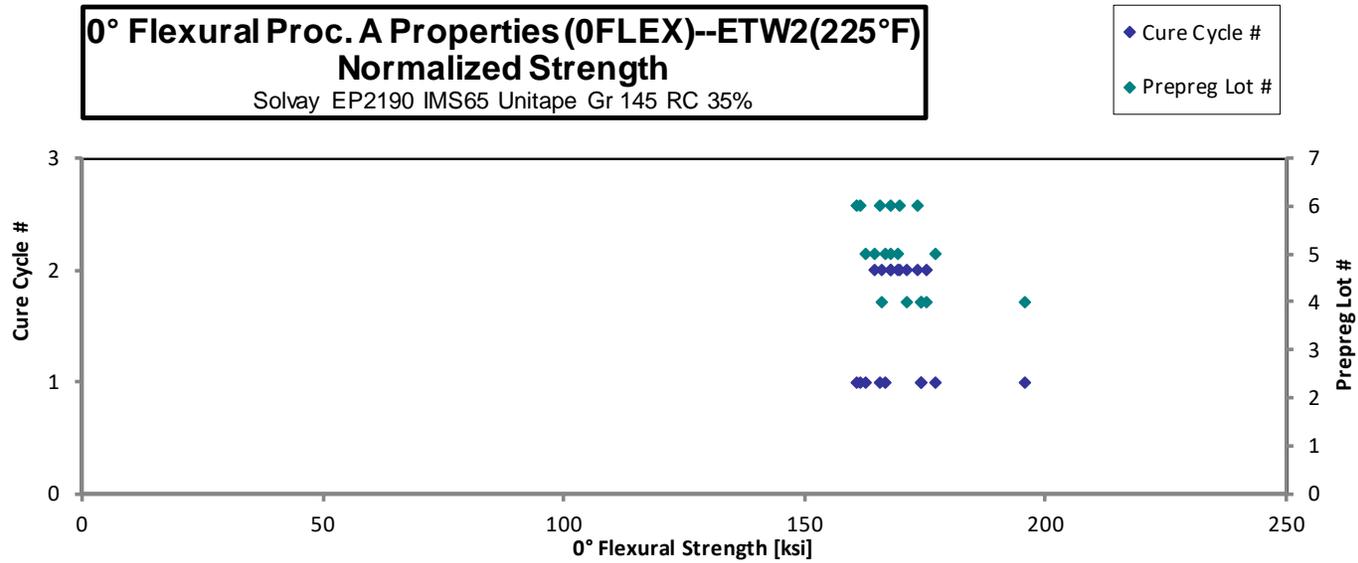
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETW2-1	D	C1	4	1	188.2	19.64	0.06850	12	TAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETW2-2	D	C1	4	1	166.5	19.06	0.06870	12	TAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C1-1-ETW2-3	D	C1	4	1	164.6	18.84	0.06910	12	TAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETW2-1	D	C2	4	2	160.7	18.73	0.06930	12	LGM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETW2-2	D	C2	4	2	155.4	18.46	0.06940	12	LGM
NTP2190Q1-WRX-IMS-SOL-0FLEX-D-C2-1-ETW2-3	D	C2	4	2	163.6	18.60	0.06950	12	LGM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETW2-1	E	C1	5	1	159.3	19.27	0.06870	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETW2-2	E	C1	5	1	158.1	19.55	0.06810	12	CLR
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C1-1-ETW2-3	E	C1	5	1	170.2	19.17	0.06850	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETW2-1	E	C2	5	2	161.7	19.14	0.06870	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETW2-2	E	C2	5	2	160.9	18.19	0.06860	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-E-C2-1-ETW2-3	E	C2	5	2	161.0	18.39	0.06790	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C1-1-ETW2-1	F	C1	6	1	166.1	19.91	0.06710	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C1-1-ETW2-2	F	C1	6	1	156.5	19.19	0.06810	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C1-1-ETW2-3	F	C1	6	1	154.1	18.30	0.06880	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C2-1-ETW2-1	F	C2	6	2	179.6	21.63	0.06530	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C2-1-ETW2-2	F	C2	6	2	174.2	20.17	0.06590	12	CAM
NTP2190Q1-WRX-IMS-SOL-0FLEX-F-C2-1-ETW2-3	F	C2	6	2	180.7	20.09	0.06580	12	CAM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	195.6	20.41
0.0057	174.0	19.92
0.0058	174.1	19.92
0.0058	170.9	19.92
0.0058	165.7	19.69
0.0058	175.0	19.90
0.0057	166.4	20.13
0.0057	162.4	20.07
0.0057	176.8	19.91
0.0057	169.0	20.01
0.0057	167.7	18.95
0.0057	164.4	18.77
0.0056	165.6	19.85
0.0057	160.7	19.71
0.0057	161.5	19.18
0.0054	169.6	20.42
0.0055	167.5	19.40
0.0055	173.2	19.26

Note: Normalized = Measured * (Avg. t_{ply})² / (Normalizing t_{ply})²

Average	165.6	19.24	Average_{norm}	0.0057	170.0	19.75
Standard Dev.	9.506	0.8482	Standard Dev._{norm}		7.973	0.4621
Coeff. of Var. [%]	5.739	4.408	Coeff. of Var. [%]_{norm}		4.690	2.340
Min.	154.1	18.19	Min.	0.0054	160.7	18.77
Max.	188.2	21.63	Max.	0.0058	195.6	20.42
Number of Spec.	18	18	Number of Spec.	18	18	18



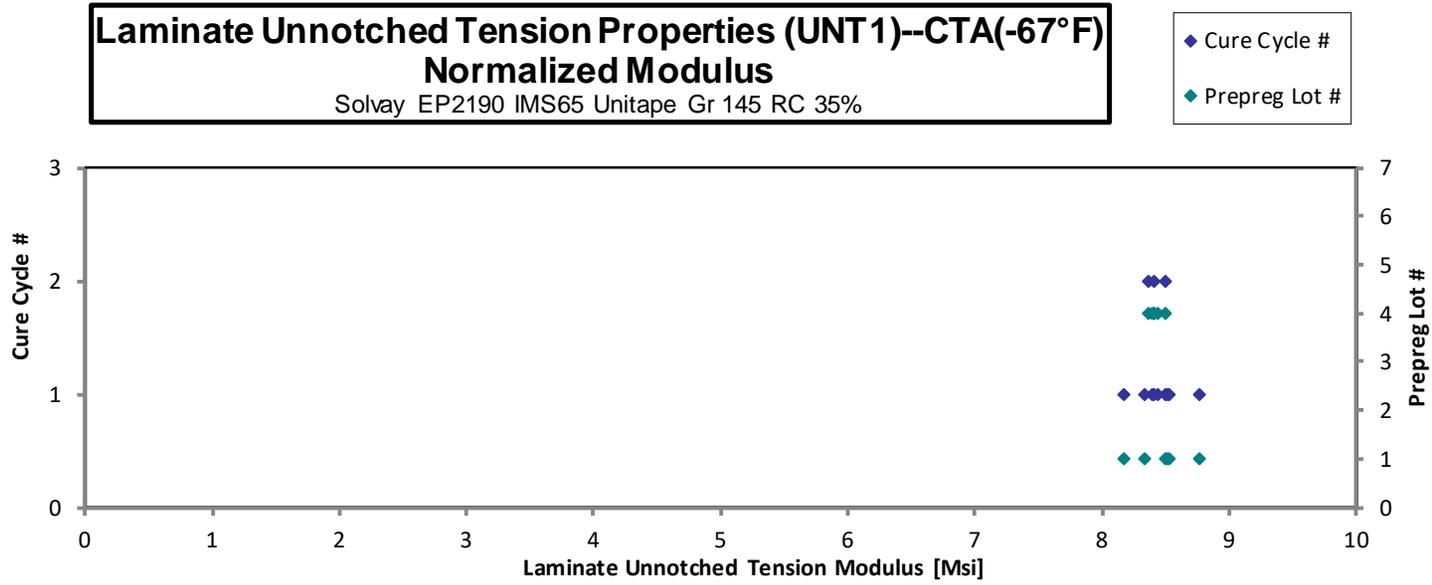
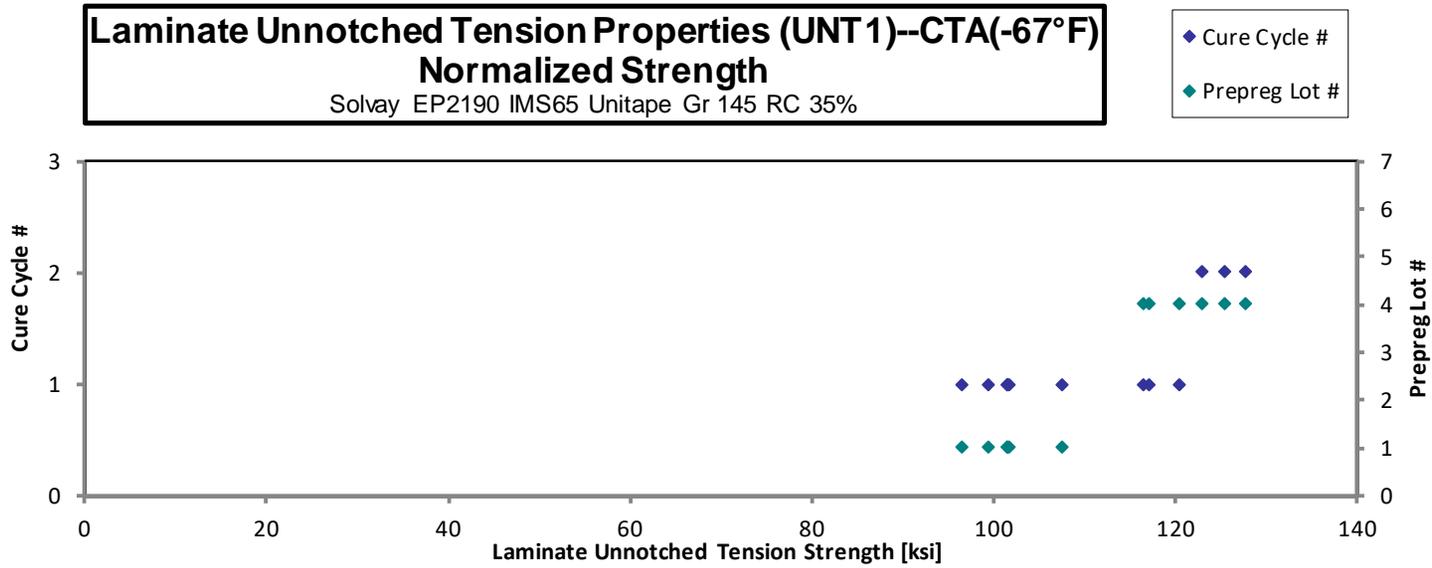
4.9 “25/50/25” Unnotched Tension 1 Properties (UNT1)

Laminate Unnotched Tension Properties (UNT1)–CTA(-67°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694310-P1-UNT1-A-C1-CTA-1	A	C1	1	1	96.14	7.898	0.04730	8	MGM	0.0059	101.5	8.339
TR7694310-P1-UNT1-A-C1-CTA-2	A	C1	1	1	95.81	8.053	0.04750	8	MGV	0.0059	101.6	8.538
TR7694310-P1-UNT1-A-C1-CTA-3	A	C1	1	1	96.62	8.327	0.04720	8	MGM	0.0059	101.8	8.773
TR7694310-P1-UNT1-A-C1-CTA-4	A	C1	1	1	100.9	7.988	0.04780	8	MGM	0.0060	107.7	8.523
TR7694310-P1-UNT1-A-C1-CTA-5	A	C1	1	1	93.21	7.666	0.04780	8	MGM	0.0060	99.45	8.179
TR7694310-P1-UNT1-A-C1-CTA-6	A	C1	1	1	91.75	8.067	0.04720	8	MGM	0.0059	96.67	8.499
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-CTA-1	D	C1	4	1	117.3	8.185	0.04600	8	MGM	0.0058	120.4	8.404
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-CTA-2	D	C1	4	1	114.1	8.221	0.04600	8	MGV	0.0058	117.1	8.441
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-CTA-3	D	C1	4	1	113.3	8.182	0.04610	8	MGV	0.0058	116.6	8.419
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-CTA-1	D	C2	4	2	126.3	8.279	0.04530	8	MGV	0.0057	127.7	8.371
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-CTA-2	D	C2	4	2	120.1	8.209	0.04590	8	MGV	0.0057	123.1	8.411
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-CTA-3	D	C2	4	2	122.5	8.301	0.04590	8	MGV	0.0057	125.5	8.505

Average	107.3	8.115	Average_{norm}	0.0058	111.6	8.450
Standard Dev.	12.77	0.1923	Standard Dev._{norm}		11.30	0.1412
Coeff. of Var. [%]	11.89	2.370	Coeff. of Var. [%]_{norm}		10.13	1.671
Min.	91.75	7.666	Min.	0.0057	96.67	8.179
Max.	126.3	8.327	Max.	0.0060	127.7	8.773
Number of Spec.	12	12	Number of Spec.	12	12	12

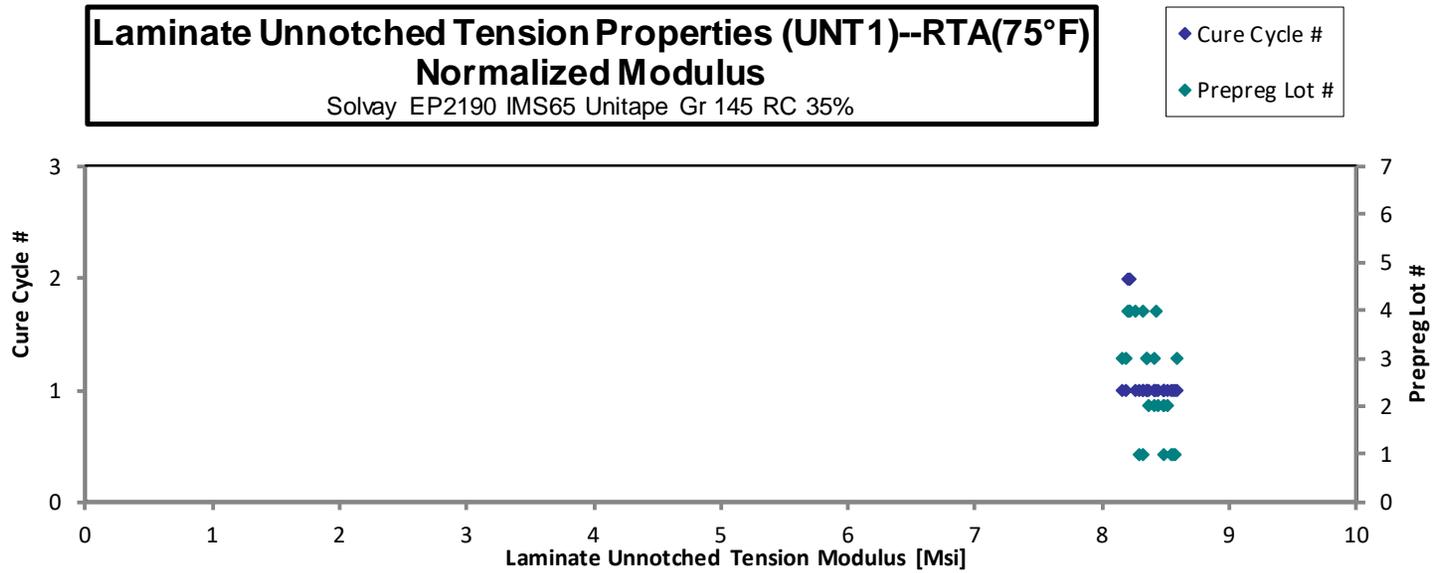
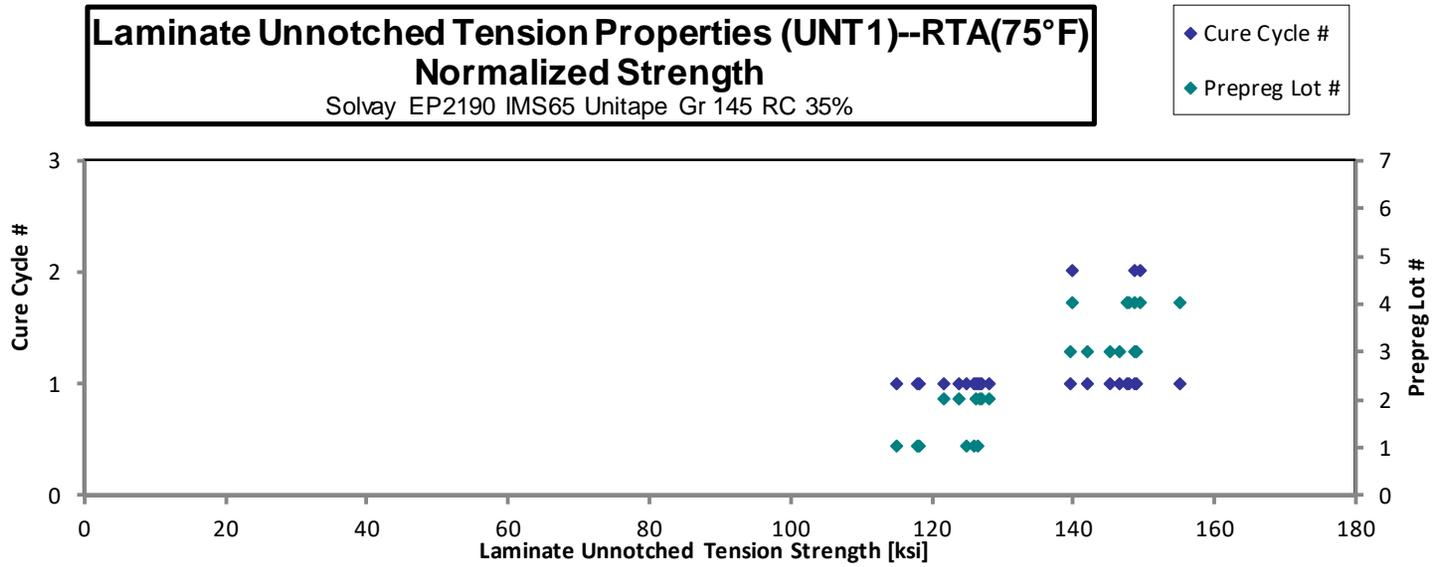


Laminate Unnotched Tension Properties (UNT1)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694310-P2-UNT1-A-C1-RTA-1	A	C1	1	1	118.1	8.103	0.04740	8	MAT/MGB	0.0059	124.9	8.573
TR7694310-P2-UNT1-A-C1-RTA-2	A	C1	1	1	113.1	7.988	0.04670	8	MGT/MGB	0.0058	117.9	8.327
TR7694310-P2-UNT1-A-C1-RTA-3	A	C1	1	1	112.7	8.104	0.04690	8	MGT/MGB	0.0059	118.0	8.484
TR7694310-P2-UNT1-A-C1-RTA-4	A	C1	1	1	119.3	8.068	0.04750	8	MGT/MGB	0.0059	126.4	8.554
TR7694310-P2-UNT1-A-C1-RTA-5	A	C1	1	1	111.2	8.020	0.04630	8	MGT/MGB	0.0058	114.9	8.289
TR7694310-P2-UNT1-A-C1-RTA-6	A	C1	1	1	120.6	8.180	0.04680	8	MGT/MGB	0.0059	125.9	8.545
TR7702824-P3-UNT1-B-C1-RTA-1	B	C1	2	1	120.6	8.057	0.04720	8	MGM	0.0059	127.1	8.489
TR7702824-P3-UNT1-B-C1-RTA-2	B	C1	2	1	119.7	8.055	0.04740	8	MGV	0.0059	126.6	8.522
TR7702824-P3-UNT1-B-C1-RTA-3	B	C1	2	1	115.1	8.032	0.04730	8	MGM	0.0059	121.5	8.480
TR7702824-P3-UNT1-B-C1-RTA-4	B	C1	2	1	116.8	7.909	0.04740	8	MGM	0.0059	123.6	8.368
TR7702824-P3-UNT1-B-C1-RTA-5	B	C1	2	1	120.3	8.043	0.04700	8	MGV	0.0059	126.2	8.438
TR7702824-P3-UNT1-B-C1-RTA-6	B	C1	2	1	121.5	7.989	0.04720	8	MGV	0.0059	128.0	8.417
TR7725549-P3-UNT1-C-C1-RTA-1	C	C1	3	1	142.8	8.086	0.04660	8	MGV	0.0058	148.6	8.411
TR7725549-P3-UNT1-C-C1-RTA-2	C	C1	3	1	135.1	7.899	0.04630	8	MGV	0.0058	139.6	8.163
TR7725549-P3-UNT1-C-C1-RTA-3	C	C1	3	1	129.1	7.431	0.05040	8	MGV	0.0063	145.2	8.360
TR7725549-P3-UNT1-C-C1-RTA-4	C	C1	3	1	134.6	7.921	0.04720	8	MGV	0.0059	141.8	8.345
TR7725549-P3-UNT1-C-C1-RTA-5	C	C1	3	1	141.9	7.802	0.04700	8	MGV	0.0059	148.9	8.185
TR7725549-P3-UNT1-C-C1-RTA-6	C	C1	3	1	133.7	7.839	0.04910	8	AGT	0.0061	146.5	8.591
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-RTA-1	D	C1	4	1	150.9	8.049	0.04600	8	MGV	0.0058	154.9	8.265
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-RTA-2	D	C1	4	1	143.1	8.170	0.04620	8	MGV	0.0058	147.6	8.425
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-RTA-4	D	C1	4	1	143.1	8.060	0.04630	8	MGV	0.0058	147.9	8.330
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-RTA-1	D	C2	4	2	145.8	8.057	0.04570	8	MGV	0.0057	148.7	8.219
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-RTA-2	D	C2	4	2	137.0	8.045	0.04570	8	MGV	0.0057	139.7	8.207
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-RTA-3	D	C2	4	2	146.5	8.063	0.04570	8	MGT	0.0057	149.5	8.225

Average	128.8	7.999	Average_{norm}	0.0059	135.0	8.384
Standard Dev.	12.73	0.1523	Standard Dev._{norm}		12.57	0.1308
Coeff. of Var. [%]	9.884	1.904	Coeff. of Var. [%]_{norm}		9.315	1.561
Min.	111.2	7.431	Min.	0.0057	114.9	8.163
Max.	150.9	8.180	Max.	0.0063	154.9	8.591
Number of Spec.	24	24	Number of Spec.	24	24	24



Laminate Unnotched Tension Properties (UNT1)--ETA2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

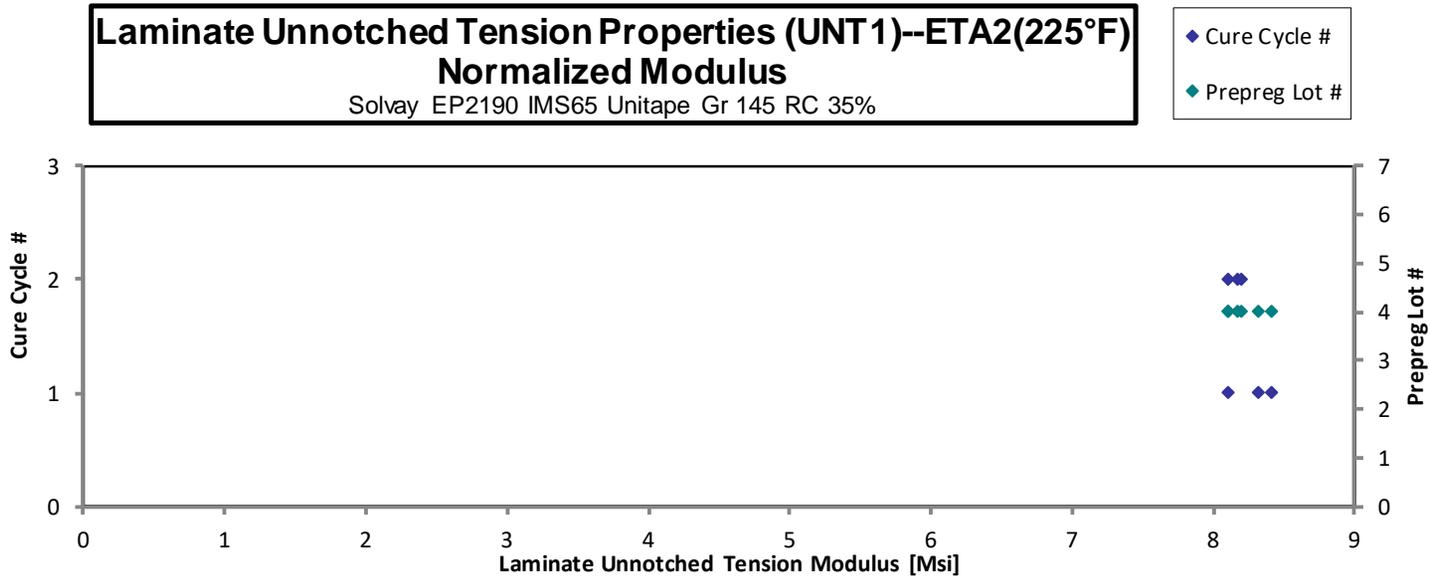
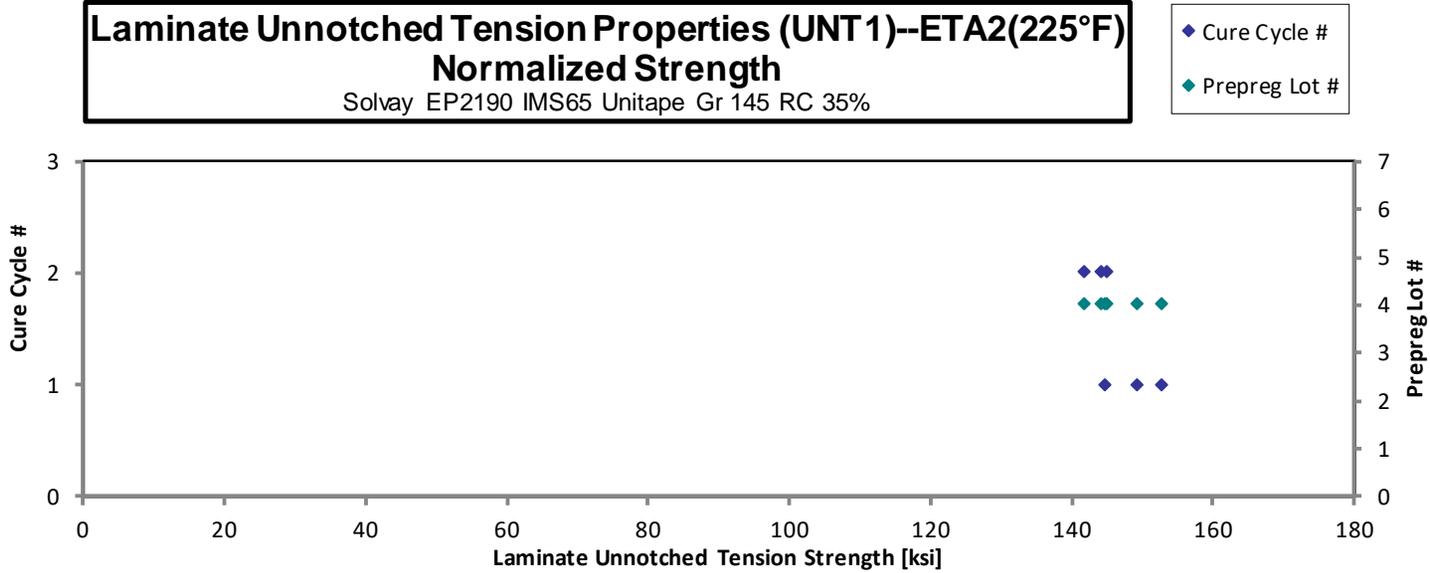
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETA2-1	D	C1	4	1	140.3	7.853	0.04620	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETA2-2	D	C1	4	1	148.5	8.171	0.04610	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETA2-3	D	C1	4	1	145.0	8.085	0.04610	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETA2-1	D	C2	4	2	142.1	7.951	0.04570	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETA2-2	D	C2	4	2	139.9	8.088	0.04540	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETA2-3	D	C2	4	2	140.5	7.952	0.04600	8	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	144.7	8.098
0.0058	152.8	8.408
0.0058	149.2	8.320
0.0057	145.0	8.111
0.0057	141.8	8.196
0.0058	144.3	8.165

Average	142.7	8.017
Standard Dev.	3.389	0.1174
Coeff. of Var. [%]	2.374	1.464
Min.	139.9	7.853
Max.	148.5	8.171
Number of Spec.	6	6

Average_{norm}	0.0057	146.3	8.216
Standard Dev._{norm}		3.988	0.1229
Coeff. of Var. [%]_{norm}		2.726	1.496
Min.	0.0057	141.8	8.098
Max.	0.0058	152.8	8.408
Number of Spec.	6	6	6

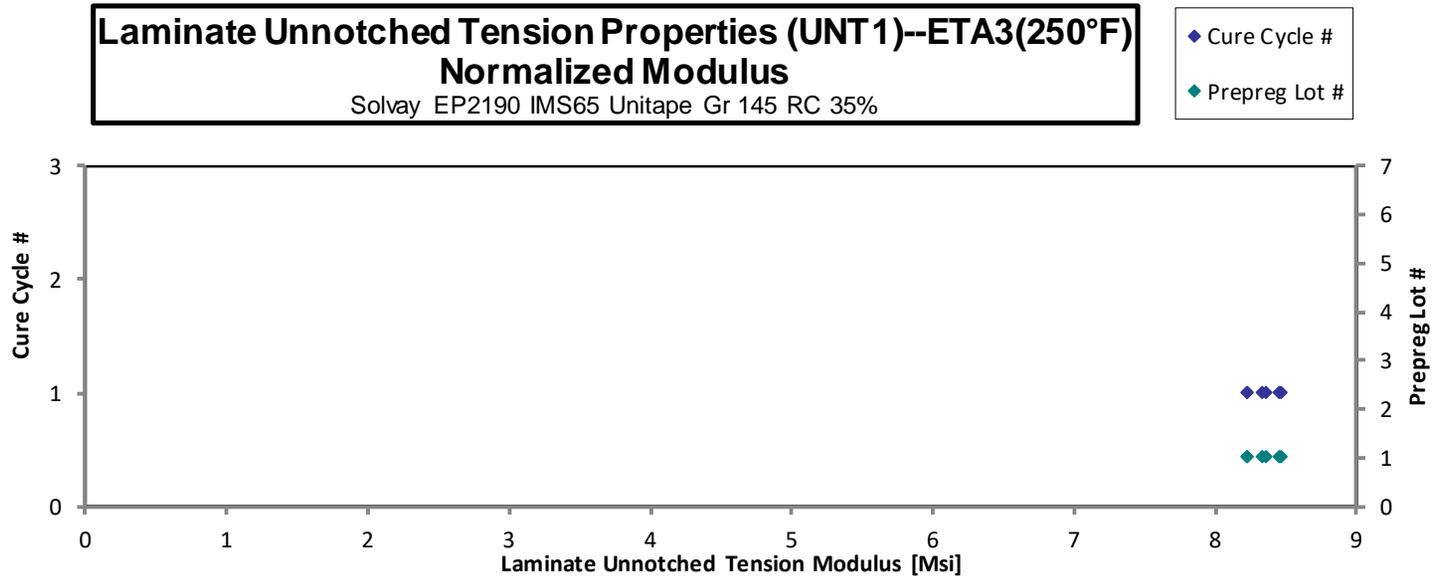
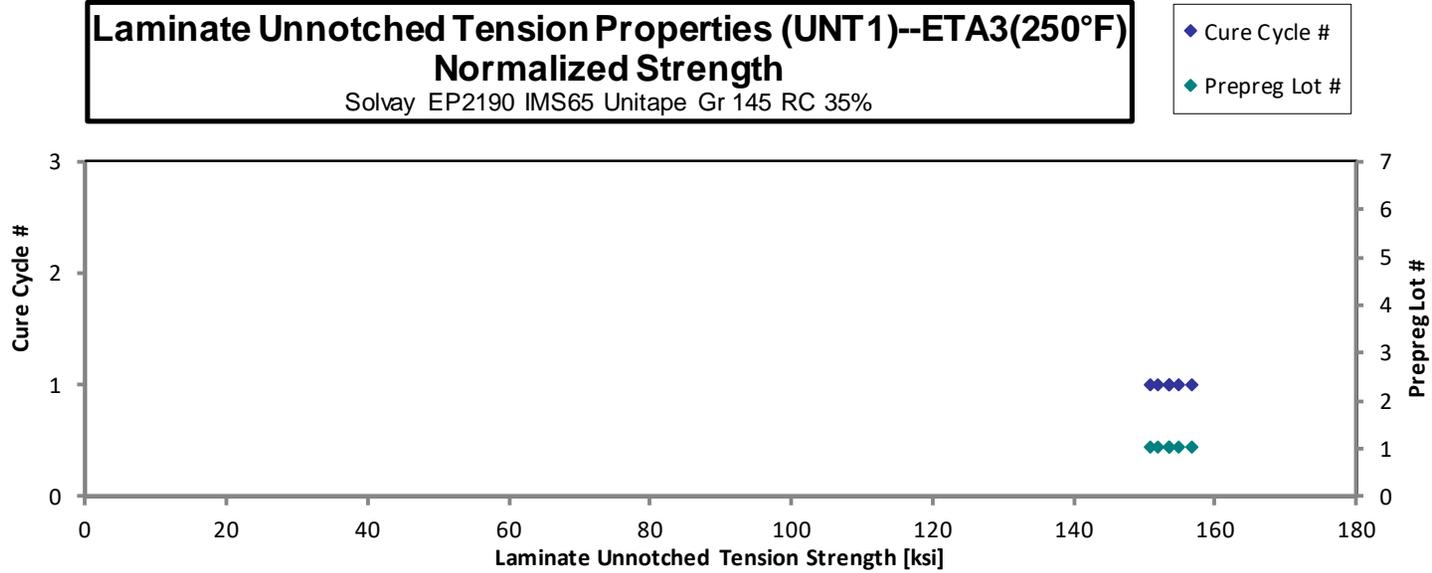


Laminate Unnotched Tension Properties (UNT1)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694310-P3-UNT1-A-C1-ETA3-1	A	C1	1	1	143.6	8.039	0.04710	8	MGV	0.0059	151.0	8.452
TR7694310-P3-UNT1-A-C1-ETA3-2	A	C1	1	1	147.5	8.054	0.04710	8	MGV	0.0059	155.0	8.467
TR7694310-P3-UNT1-A-C1-ETA3-3	A	C1	1	1	148.9	7.934	0.04720	8	MGV	0.0059	156.8	8.359
TR7694310-P3-UNT1-A-C1-ETA3-4	A	C1	1	1	145.7	7.906	0.04720	8	MGV	0.0059	153.5	8.330
TR7694310-P3-UNT1-A-C1-ETA3-5	A	C1	1	1	146.0	7.909	0.04660	8	MGV	0.0058	151.9	8.227
TR7694310-P3-UNT1-A-C1-ETA3-6	A	C1	1	1	145.8	7.804	0.04720	8	MGV	0.0059	153.6	8.222

Average	146.2	7.941	Average_{norm}	0.0059	153.6	8.343
Standard Dev.	1.783	0.0932	Standard Dev._{norm}		2.112	0.1057
Coeff. of Var. [%]	1.219	1.174	Coeff. of Var. [%]_{norm}		1.375	1.267
Min.	143.6	7.804	Min.	0.0058	151.0	8.222
Max.	148.9	8.054	Max.	0.0059	156.8	8.467
Number of Spec.	6	6	Number of Spec.	6	6	6



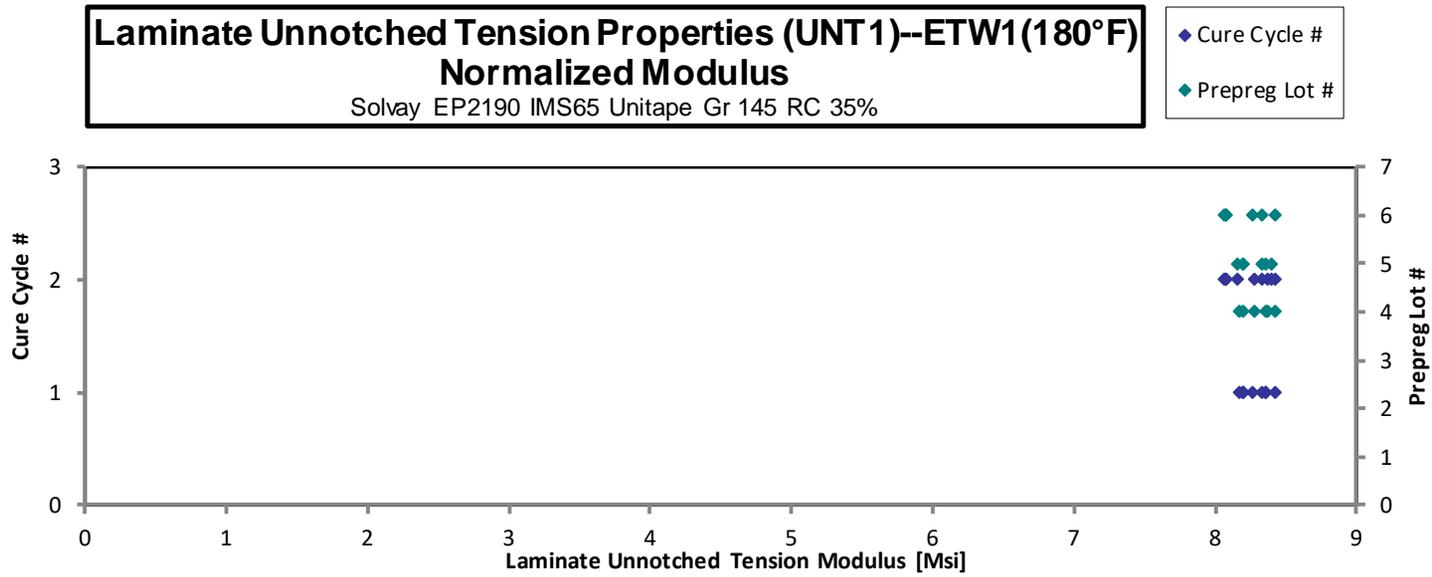
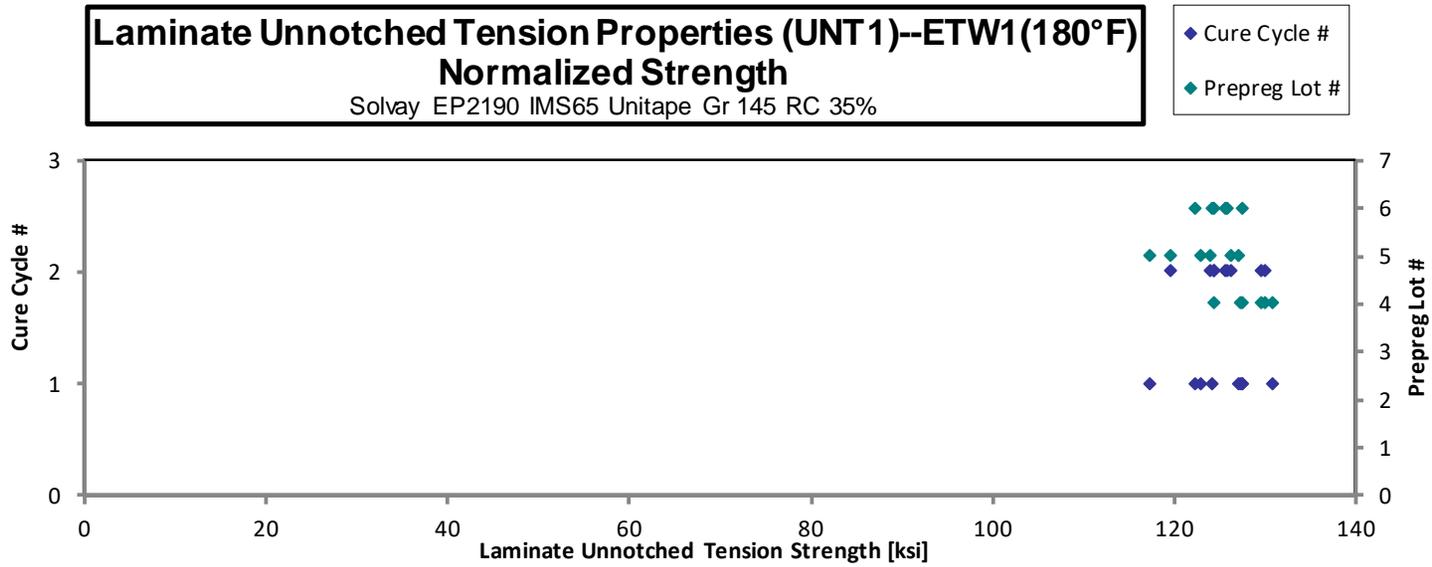
Laminate Unnotched Tension Properties (UNT1)--ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW1-1	D	C1	4	1	123.6	7.972	0.04610	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW1-2	D	C1	4	1	124.1	7.960	0.04600	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW1-3	D	C1	4	1	126.8	8.109	0.04620	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW1-1	D	C2	4	2	127.3	8.121	0.04570	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW1-2	D	C2	4	2	121.3	8.228	0.04590	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW1-3	D	C2	4	2	126.9	8.214	0.04570	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW1-1	E	C1	5	1	121.2	8.244	0.04540	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW1-2	E	C1	5	1	124.2	8.018	0.04580	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW1-3	E	C1	5	1	115.2	8.057	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW1-1	E	C2	5	2	124.4	8.051	0.04540	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW1-2	E	C2	5	2	118.3	8.240	0.04530	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW1-3	E	C2	5	2	122.2	8.285	0.04540	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW1-1	F	C1	6	1	114.1	7.758	0.04870	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW1-2	F	C1	6	1	112.1	7.568	0.04890	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW1-3	F	C1	6	1	116.8	7.640	0.04890	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW1-1	F	C2	6	2	126.0	8.099	0.04470	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW1-2	F	C2	6	2	125.2	8.061	0.04490	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW1-3	F	C2	6	2	125.1	8.124	0.04450	8	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	127.1	8.203
0.0058	127.4	8.173
0.0058	130.8	8.362
0.0057	129.8	8.284
0.0057	124.3	8.430
0.0057	129.4	8.379
0.0057	122.8	8.354
0.0057	127.0	8.197
0.0057	117.2	8.201
0.0057	126.1	8.159
0.0057	119.6	8.332
0.0057	123.9	8.396
0.0061	124.0	8.433
0.0061	122.3	8.261
0.0061	127.5	8.339
0.0056	125.7	8.081
0.0056	125.4	8.079
0.0056	124.2	8.070

Average	121.9	8.042	Average_{norm}	0.0058	125.3	8.263
Standard Dev.	4.704	0.2035	Standard Dev._{norm}		3.445	0.1219
Coeff. of Var. [%]	3.858	2.530	Coeff. of Var. [%]_{norm}		2.750	1.475
Min.	112.1	7.568	Min.	0.0056	117.2	8.070
Max.	127.3	8.285	Max.	0.0061	130.8	8.433
Number of Spec.	18	18	Number of Spec.	18	18	18



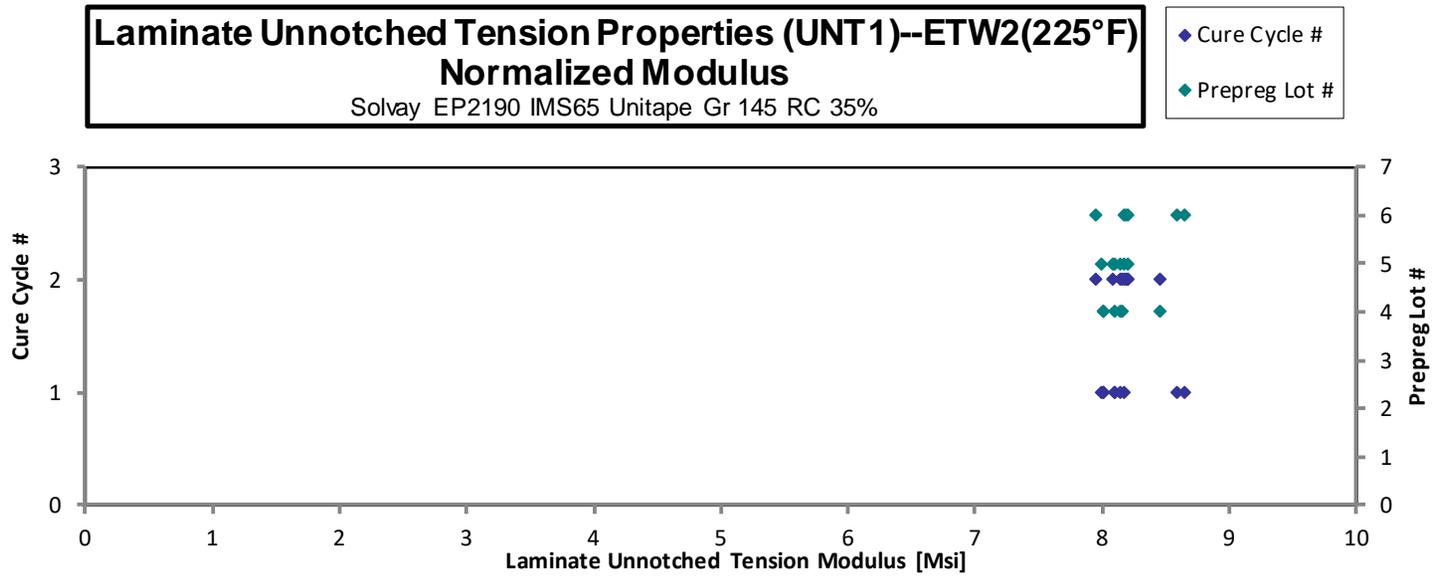
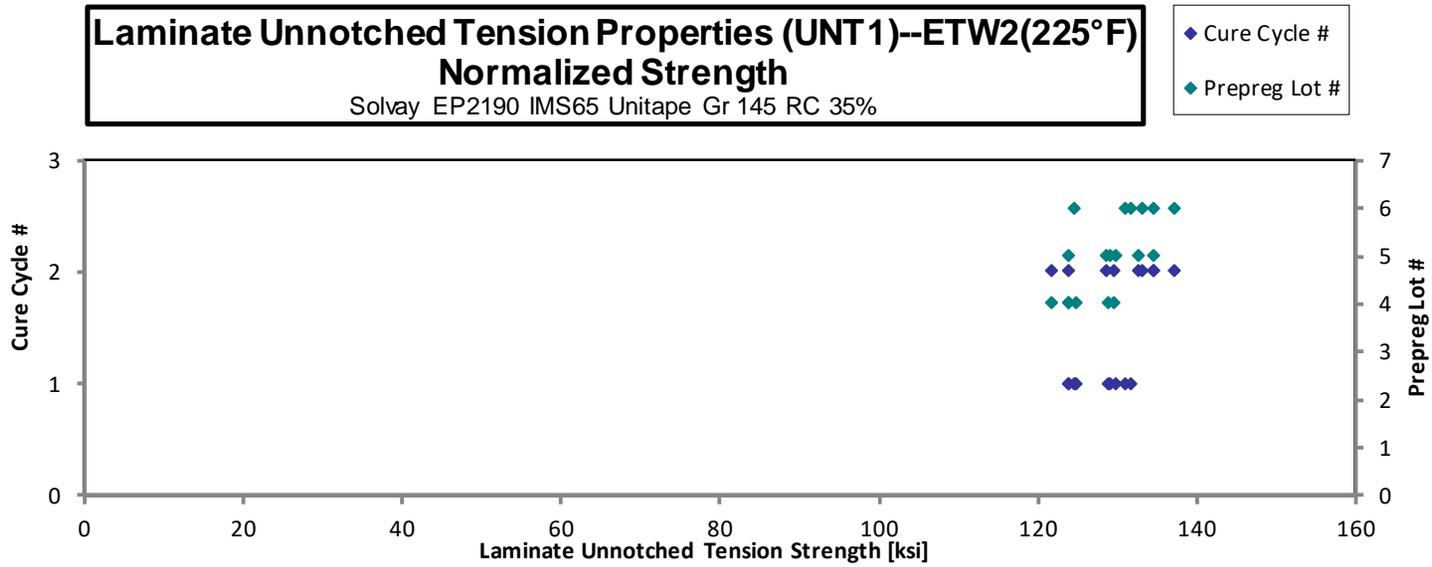
Laminate Unnotched Tension Properties (UNT1)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW2-1	D	C1	4	1	126.2	7.938	0.04570	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW2-2	D	C1	4	1	120.8	7.818	0.04590	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-ETW2-3	D	C1	4	1	121.7	7.824	0.04590	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW2-1	D	C2	4	2	119.9	8.031	0.04540	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW2-2	D	C2	4	2	128.0	8.357	0.04530	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-ETW2-3	D	C2	4	2	122.2	8.047	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW2-1	E	C1	5	1	121.7	7.857	0.04560	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW2-2	E	C1	5	1	127.0	7.916	0.04580	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-ETW2-3	E	C1	5	1	126.8	8.003	0.04560	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW2-1	E	C2	5	2	133.3	8.133	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW2-2	E	C2	5	2	126.9	7.979	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-ETW2-3	E	C2	5	2	131.7	8.120	0.04510	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW2-1	F	C1	6	1	114.5	7.524	0.04870	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW2-2	F	C1	6	1	119.5	7.832	0.04910	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-ETW2-3	F	C1	6	1	117.9	7.750	0.05000	8	MGV
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW2-1	F	C2	6	2	135.9	8.278	0.04430	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW2-2	F	C2	6	2	135.5	8.103	0.04400	8	MGM
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-ETW2-3	F	C2	6	2	140.6	8.415	0.04370	8	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	128.8	8.097
0.0057	123.8	8.010
0.0057	124.6	8.016
0.0057	121.5	8.139
0.0057	129.4	8.450
0.0057	123.8	8.155
0.0057	123.8	7.997
0.0057	129.8	8.093
0.0057	129.0	8.146
0.0057	134.5	8.206
0.0057	128.6	8.086
0.0056	132.6	8.174
0.0061	124.5	8.179
0.0061	130.9	8.584
0.0063	131.6	8.650
0.0055	134.4	8.186
0.0055	133.1	7.958
0.0055	137.2	8.208

Average	126.1	7.996	Average_{norm}	0.0057	129.0	8.185
Standard Dev.	7.068	0.2217	Standard Dev._{norm}		4.489	0.1914
Coeff. of Var. [%]	5.605	2.773	Coeff. of Var. [%]_{norm}		3.480	2.338
Min.	114.5	7.524	Min.	0.0055	121.5	7.958
Max.	140.6	8.415	Max.	0.0063	137.2	8.650
Number of Spec.	18	18	Number of Spec.	18	18	18



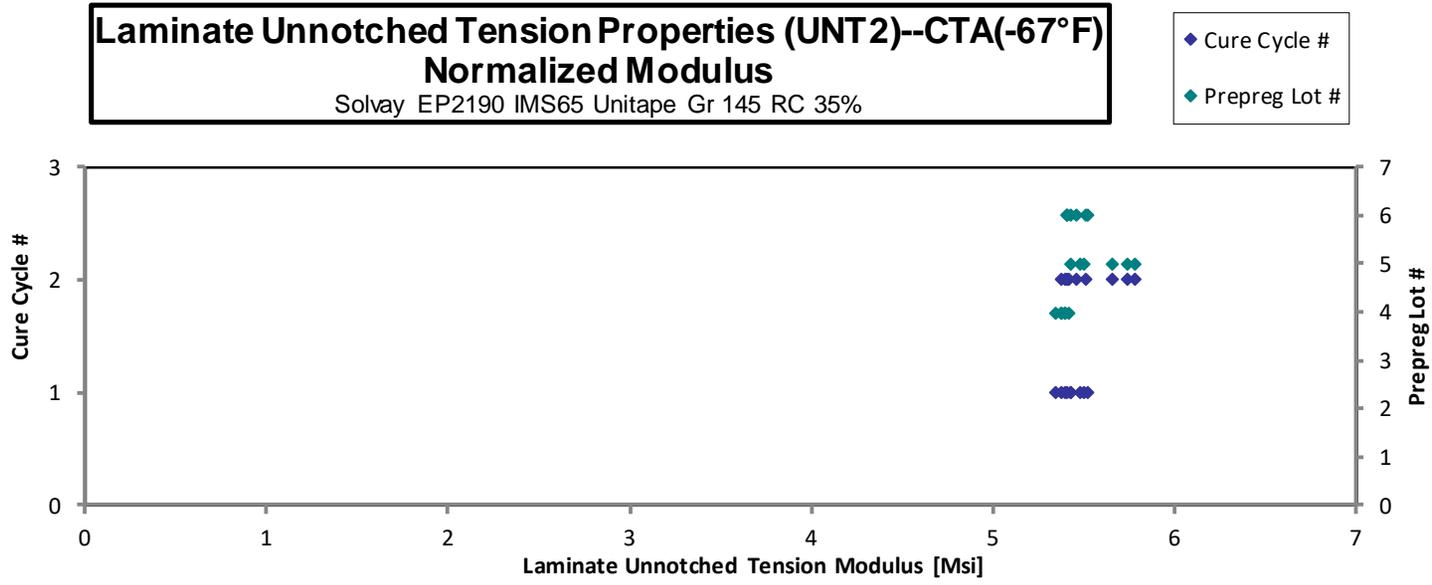
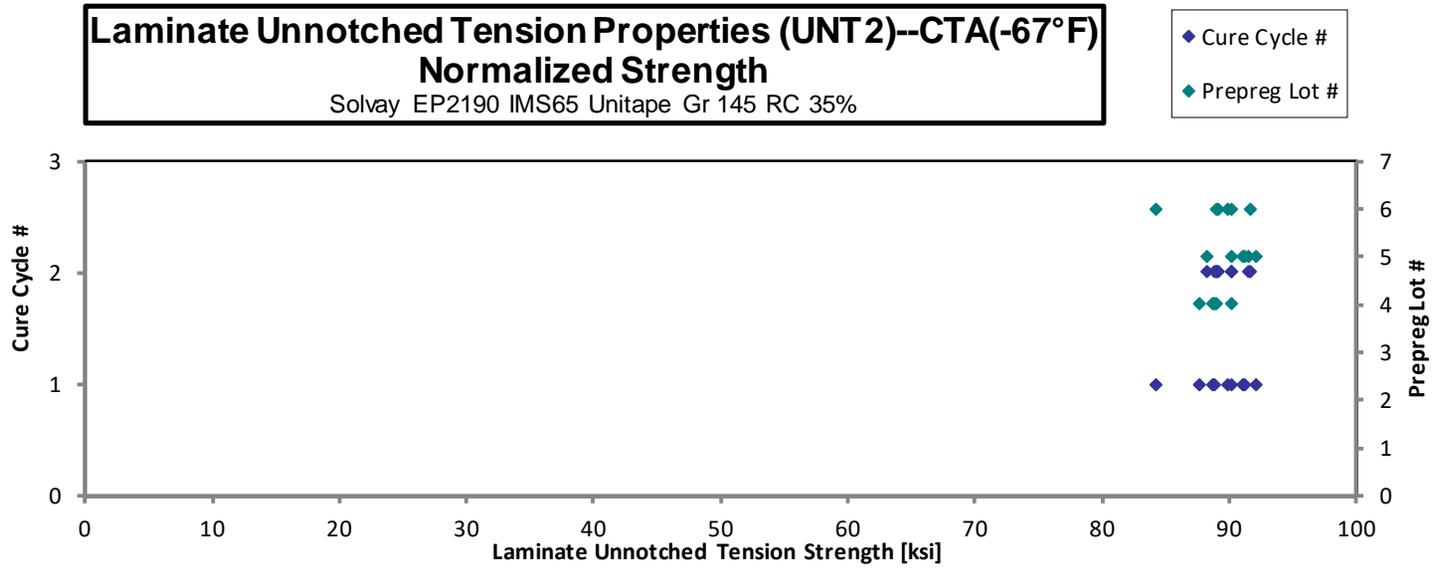
4.10 “10/80/10” Unnotched Tension 2 Properties (UNT2)

Laminate Unnotched Tension Properties (UNT2)--CTA(-67°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-CTA-1	D	C1	4	1	85.52	5.174	0.1164	20	MGM	0.0058	88.88	5.377
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-CTA-2	D	C1	4	1	84.09	5.127	0.1168	20	MGM	0.0058	87.69	5.347
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-CTA-3	D	C1	4	1	85.31	5.191	0.1166	20	MGB	0.0058	88.81	5.404
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-CTA-1	D	C2	4	2	87.22	5.224	0.1159	20	MGM	0.0058	90.26	5.406
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-CTA-2	D	C2	4	2	85.81	5.183	0.1162	20	MGM	0.0058	89.03	5.377
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-CTA-3	D	C2	4	2	85.72	5.228	0.1162	20	MGB	0.0058	88.93	5.424
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-CTA-1	E	C1	5	1	89.94	5.355	0.1148	20	MGT	0.0057	92.19	5.489
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-CTA-2	E	C1	5	1	89.07	5.385	0.1146	20	MGB	0.0057	91.14	5.510
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-CTA-3	E	C1	5	1	88.66	5.282	0.1153	20	MGM	0.0058	91.27	5.438
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-CTA-1	E	C2	5	2	88.47	5.671	0.1142	20	MGM	0.0057	90.21	5.782
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-CTA-2	E	C2	5	2	86.00	5.519	0.1150	20	MGM	0.0058	88.30	5.667
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-CTA-3	E	C2	5	2	89.83	5.631	0.1142	20	MGM	0.0057	91.59	5.742
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-CTA-1	F	C1	6	1	88.05	5.285	0.1148	20	MGT	0.0057	90.25	5.417
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-CTA-2	F	C1	6	1	87.93	5.402	0.1145	20	MGB	0.0057	89.89	5.523
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-CTA-3	F	C1	6	1	82.29	5.304	0.1147	20	MGB	0.0057	84.27	5.432
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-CTA-1	F	C2	6	2	89.46	5.381	0.1149	20	MGT	0.0057	91.78	5.520
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-CTA-2	F	C2	6	2	86.96	5.281	0.1147	20	MGB	0.0057	89.06	5.408
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-CTA-3	F	C2	6	2	86.67	5.315	0.1152	20	MGB	0.0058	89.15	5.467

Average	87.06	5.330	Average_{norm}	0.0058	89.59	5.485
Standard Dev.	2.083	0.1514	Standard Dev._{norm}		1.847	0.1249
Coeff. of Var. [%]	2.392	2.841	Coeff. of Var. [%]_{norm}		2.061	2.278
Min.	82.29	5.127	Min.	0.0057	84.27	5.347
Max.	89.94	5.671	Max.	0.0058	92.19	5.782
Number of Spec.	18	18	Number of Spec.	18	18	18

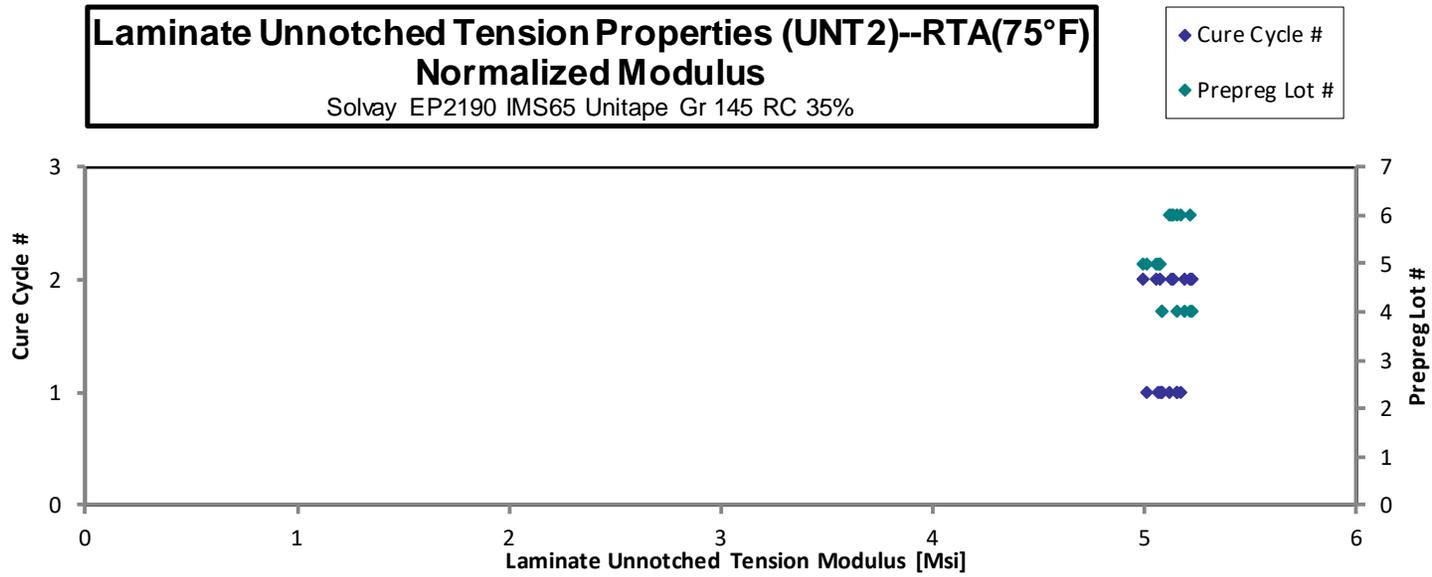
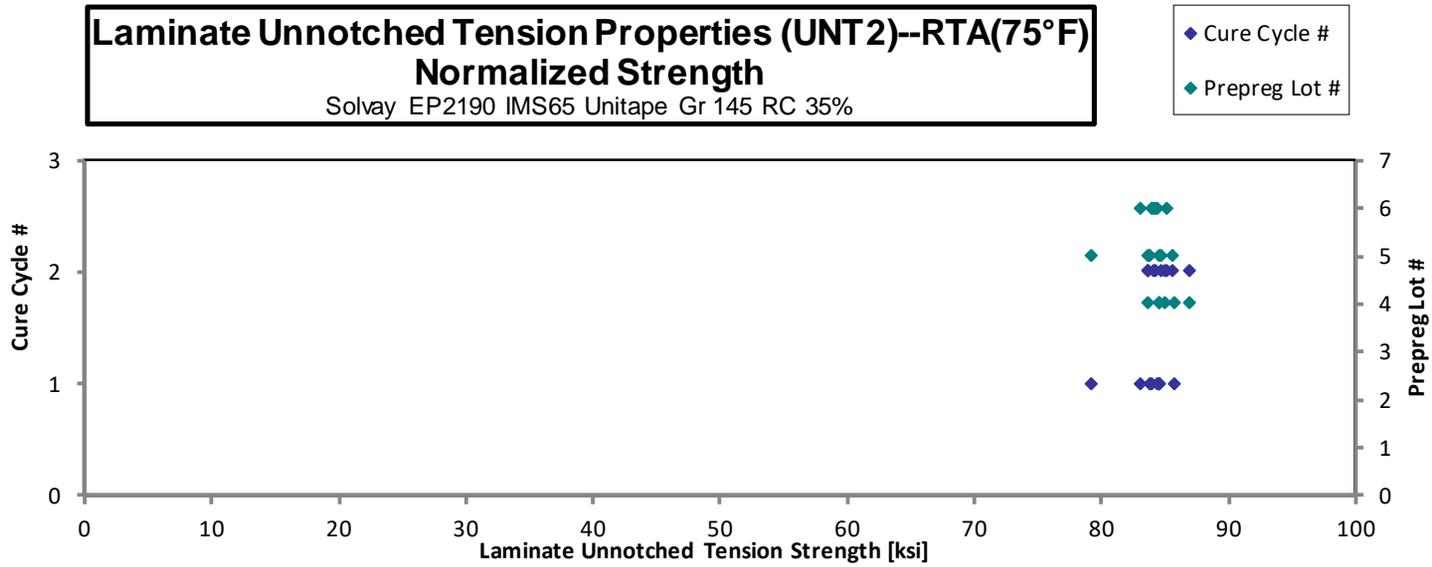


Laminate Unnotched Tension Properties (UNT2)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-RTA-1	D	C1	4	1	81.13	4.948	0.1167	20	MGB	0.0058	84.53	5.156
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-RTA-2	D	C1	4	1	81.22	4.883	0.1165	20	MGT	0.0058	84.48	5.079
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-RTA-3	D	C1	4	1	82.42	4.888	0.1164	20	MGT	0.0058	85.66	5.080
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-RTA-1	D	C2	4	2	83.44	5.021	0.1165	20	MGM	0.0058	86.79	5.223
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-RTA-2	D	C2	4	2	80.38	5.020	0.1164	20	MGT	0.0058	83.54	5.217
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-RTA-3	D	C2	4	2	81.88	5.000	0.1162	20	MGT	0.0058	84.95	5.188
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-RTA-1	E	C1	5	1	81.59	4.942	0.1149	20	MGM	0.0057	83.70	5.070
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-RTA-2	E	C1	5	1	76.74	4.859	0.1155	20	MGT	0.0058	79.14	5.011
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-RTA-3	E	C1	5	1	82.54	4.946	0.1147	20	MGB	0.0057	84.53	5.065
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-RTA-1	E	C2	5	2	82.08	4.964	0.1140	20	MGB	0.0057	83.55	5.053
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-RTA-2	E	C2	5	2	82.60	4.877	0.1147	20	MGT	0.0057	84.59	4.995
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-RTA-3	E	C2	5	2	83.45	4.957	0.1147	20	MGB	0.0057	85.46	5.076
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-RTA-1	F	C1	6	1	81.57	5.007	0.1152	20	MGB	0.0058	83.90	5.150
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-RTA-2	F	C1	6	1	80.43	5.013	0.1155	20	MGB	0.0058	82.94	5.170
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-RTA-3	F	C1	6	1	82.05	4.984	0.1151	20	MGM	0.0058	84.32	5.122
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-RTA-1	F	C2	6	2	82.34	5.046	0.1157	20	MGB	0.0058	85.06	5.213
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-RTA-2	F	C2	6	2	80.90	4.935	0.1164	20	MGT	0.0058	84.08	5.129
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-RTA-3	F	C2	6	2	80.35	4.901	0.1174	20	MGM	0.0059	84.22	5.137

Average	81.51	4.955	Average_{norm}	0.0058	84.19	5.118
Standard Dev.	1.518	0.05660	Standard Dev._{norm}		1.546	0.06902
Coeff. of Var. [%]	1.862	1.142	Coeff. of Var. [%]_{norm}		1.836	1.348
Min.	76.74	4.859	Min.	0.0057	79.14	4.995
Max.	83.45	5.046	Max.	0.0059	86.79	5.223
Number of Spec.	18	18	Number of Spec.	18	18	18



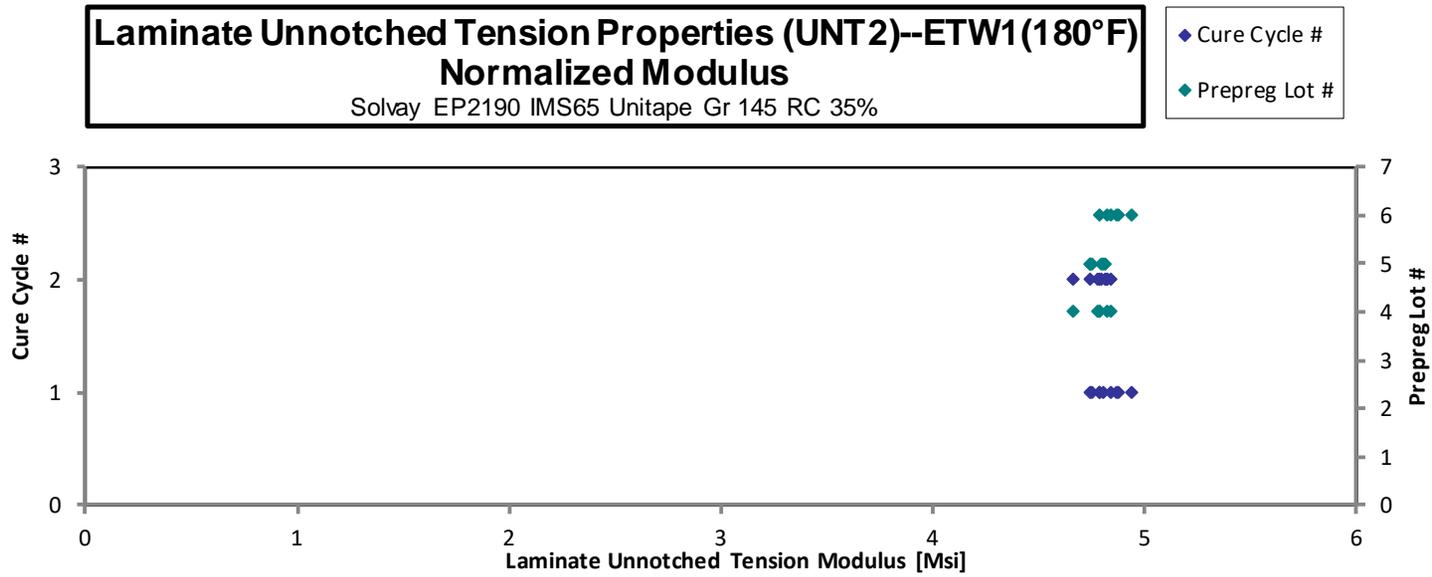
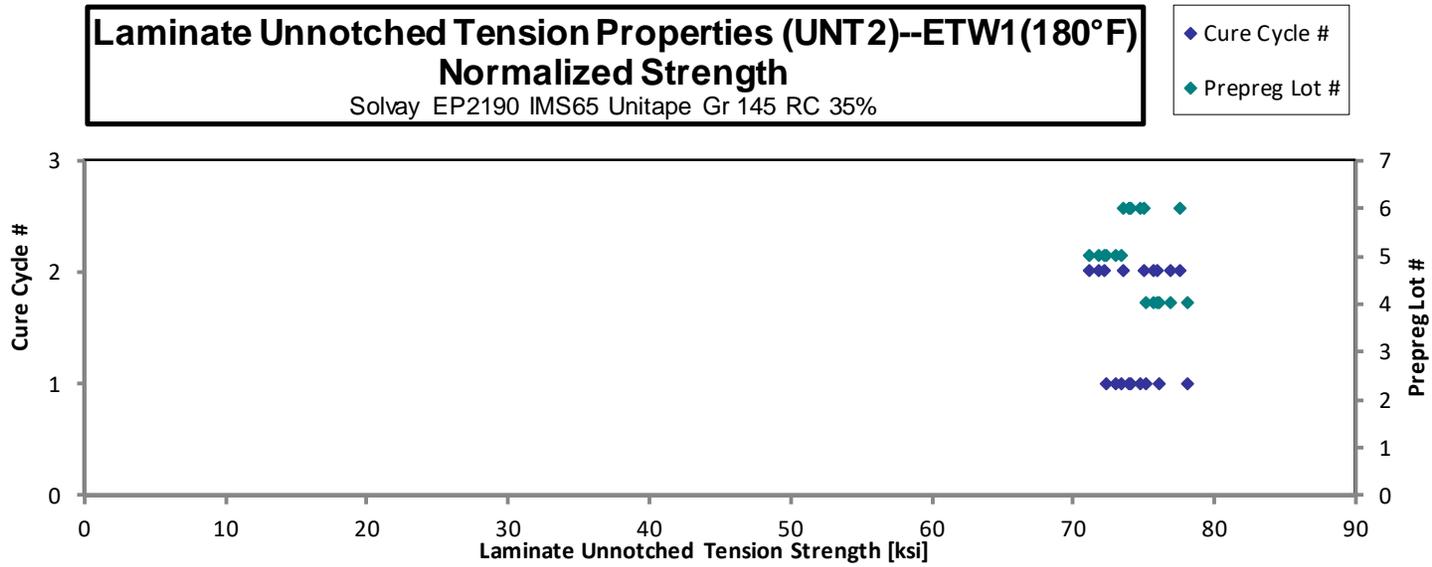
Laminate Unnotched Tension Properties (UNT2)--ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW1-1	D	C1	4	1	72.04	4.600	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW1-2	D	C1	4	1	72.94	4.646	0.1167	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW1-3	D	C1	4	1	74.80	4.593	0.1168	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW1-1	D	C2	4	2	73.28	4.629	0.1156	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW1-2	D	C2	4	2	73.10	4.647	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW1-3	D	C2	4	2	74.37	4.511	0.1158	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW1-1	E	C1	5	1	70.91	4.622	0.1152	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW1-2	E	C1	5	1	70.40	4.616	0.1151	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW1-3	E	C1	5	1	71.55	4.691	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW1-1	E	C2	5	2	69.98	4.682	0.1148	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW1-2	E	C2	5	2	69.36	4.635	0.1147	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW1-3	E	C2	5	2	70.65	4.717	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW1-1	F	C1	6	1	72.17	4.816	0.1149	20	AGT
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW1-2	F	C1	6	1	72.33	4.779	0.1144	20	AGB
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW1-3	F	C1	6	1	73.10	4.760	0.1145	20	AGB
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW1-1	F	C2	6	2	72.38	4.665	0.1159	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW1-2	F	C2	6	2	75.65	4.729	0.1147	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW1-3	F	C2	6	2	71.45	4.652	0.1153	20	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	75.06	4.793
0.0058	76.00	4.841
0.0058	78.01	4.790
0.0058	75.64	4.778
0.0058	75.91	4.825
0.0058	76.89	4.664
0.0058	72.94	4.754
0.0058	72.35	4.744
0.0057	73.34	4.808
0.0057	71.73	4.799
0.0057	71.03	4.747
0.0057	72.10	4.814
0.0057	74.04	4.941
0.0057	73.88	4.881
0.0057	74.73	4.866
0.0058	74.90	4.827
0.0057	77.47	4.843
0.0058	73.56	4.789

Average	72.25	4.666	Average_{norm}	0.0058	74.42	4.806
Standard Dev.	1.681	0.07396	Standard Dev._{norm}		2.002	0.06075
Coeff. of Var. [%]	2.326	1.585	Coeff. of Var. [%]_{norm}		2.691	1.264
Min.	69.36	4.511	Min.	0.0057	71.03	4.664
Max.	75.65	4.816	Max.	0.0058	78.01	4.941
Number of Spec.	18	18	Number of Spec.	18	18	18



Laminate Unnotched Tension Properties (UNT2)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

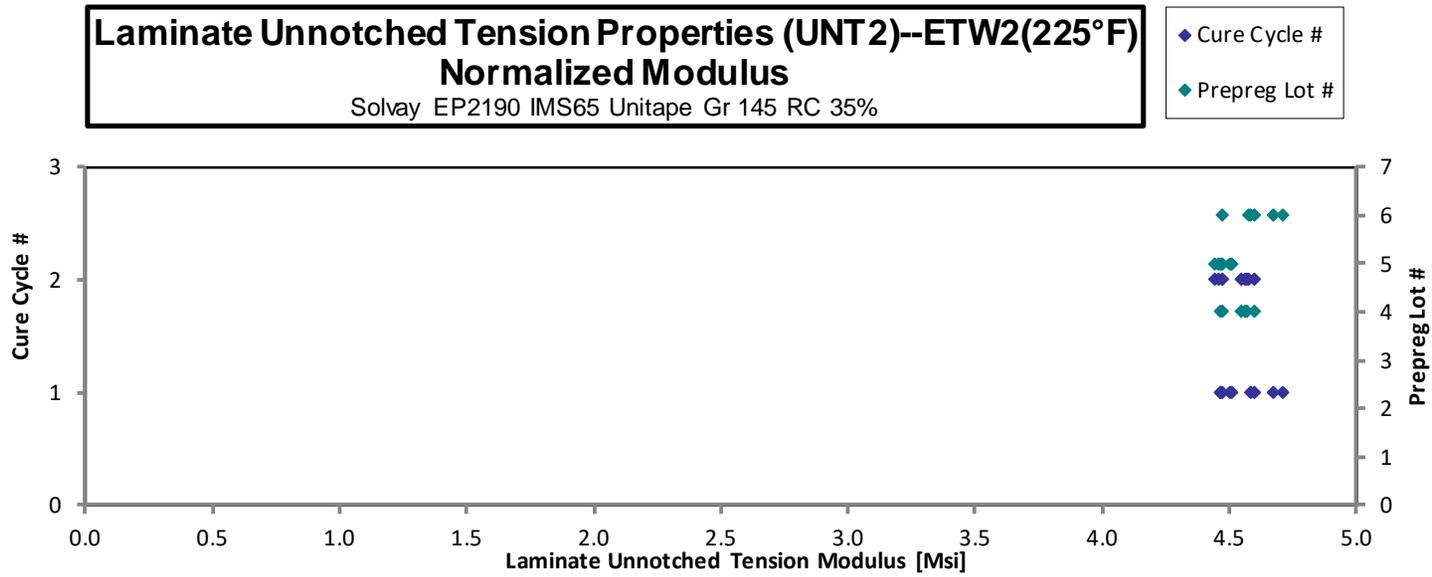
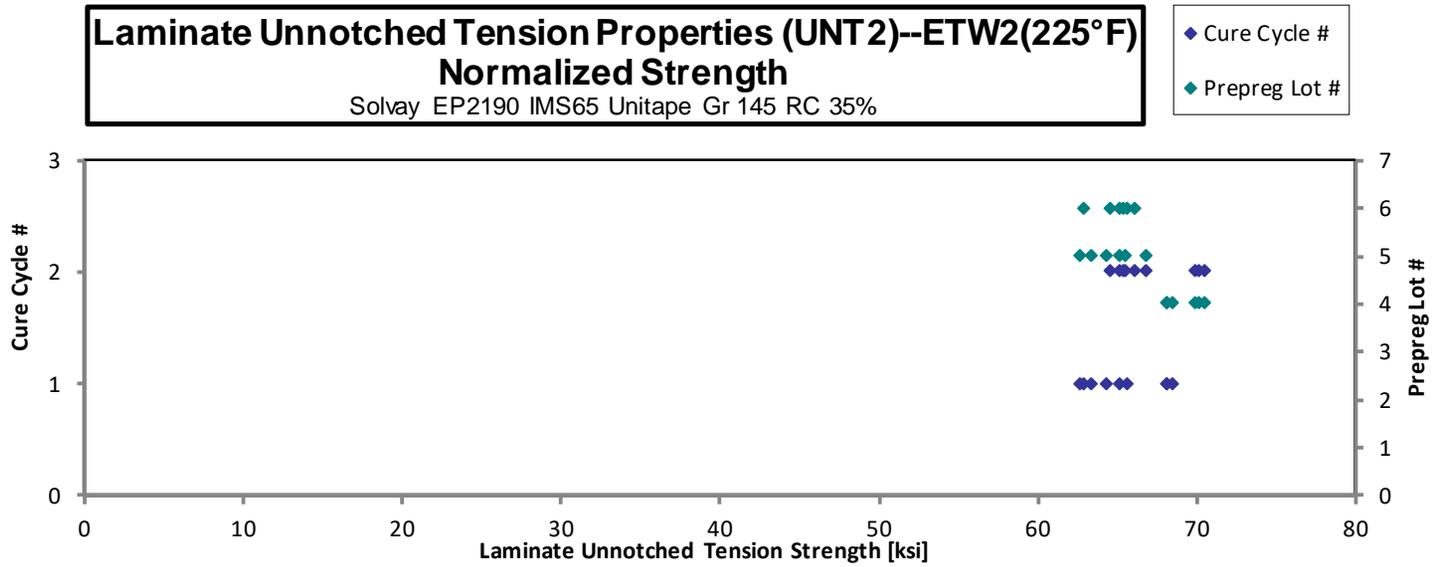
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW2-1	D	C1	4	1	65.77	4.303	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW2-2	D	C1	4	1	65.39	4.421	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-ETW2-3	D	C1	4	1	65.34	4.284	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW2-1	D	C2	4	2	68.13	4.423	0.1158	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW2-2	D	C2	4	2	67.19	4.369	0.1165	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-ETW2-3	D	C2	4	2	67.60	4.399	0.1161	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW2-1	E	C1	5	1	60.99	4.349	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW2-2	E	C1	5	1	61.59	4.375	0.1152	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-ETW2-3	E	C1	5	1	62.62	4.399	0.1149	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW2-1	E	C2	5	2	63.74	4.385	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW2-2	E	C2	5	2	65.32	4.364	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-ETW2-3	E	C2	5	2	64.18	4.353	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW2-1	F	C1	6	1	64.03	4.602	0.1147	20	AGM
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW2-2	F	C1	6	1	61.12	4.545	0.1151	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-ETW2-3	F	C1	6	1	63.29	4.461	0.1151	20	AGB
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW2-1	F	C2	6	2	62.52	4.460	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW2-2	F	C2	6	2	64.45	4.472	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-ETW2-3	F	C2	6	2	63.78	4.363	0.1148	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	68.41	4.476
0.0058	68.02	4.599
0.0058	68.08	4.464
0.0058	70.44	4.573
0.0058	69.89	4.545
0.0058	70.07	4.560
0.0058	62.62	4.465
0.0058	63.35	4.500
0.0057	64.24	4.513
0.0057	65.05	4.475
0.0057	66.72	4.458
0.0057	65.50	4.442
0.0057	65.57	4.713
0.0058	62.81	4.671
0.0058	65.04	4.584
0.0058	64.47	4.599
0.0057	66.00	4.580
0.0057	65.37	4.472

Average 64.28 4.407
 Standard Dev. 2.107 0.07917
 Coeff. of Var. [%] 3.278 1.796
 Min. 60.99 4.284
 Max. 68.13 4.602
 Number of Spec. 18 18

Average_{norm} 0.0058 66.20 4.538
 Standard Dev._{norm} 2.451 0.07745
 Coeff. of Var. [%]_{norm} 3.702 1.707
 Min. 0.0057 62.62 4.442
 Max. 0.0058 70.44 4.713
 Number of Spec. 18 18 18



4.11 “50/40/10” Unnotched Tension 3 Properties (UNT3)

Laminate Unnotched Tension Properties (UNT3)--CTA(-67°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

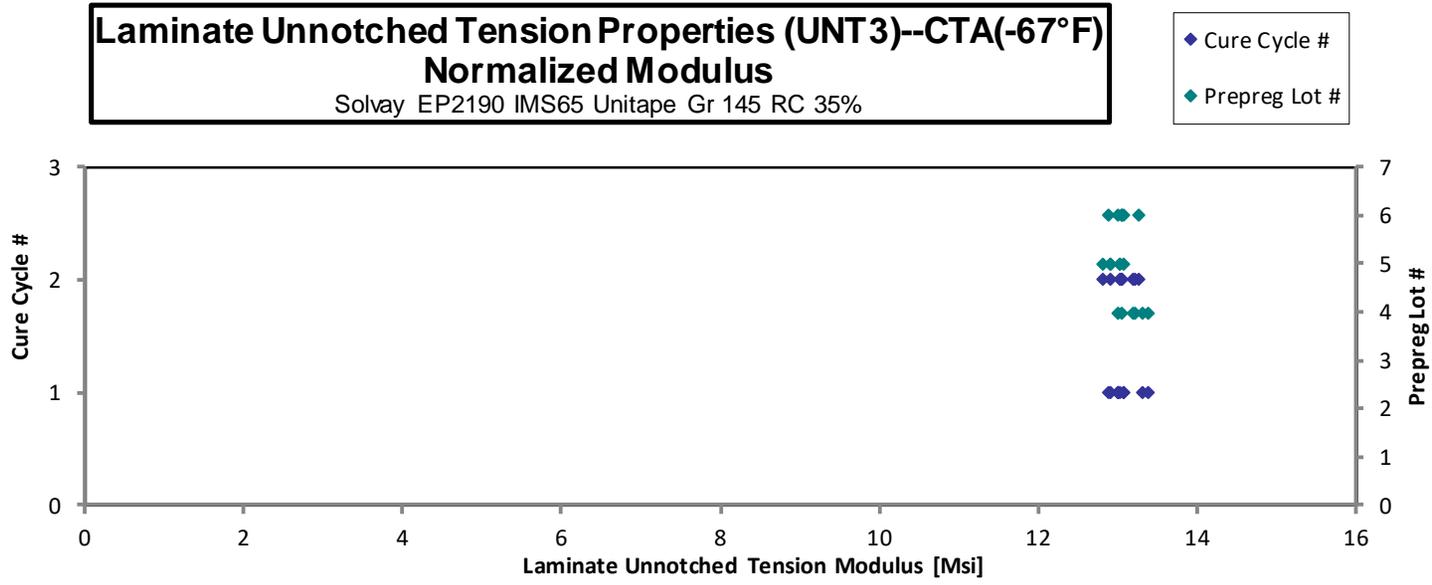
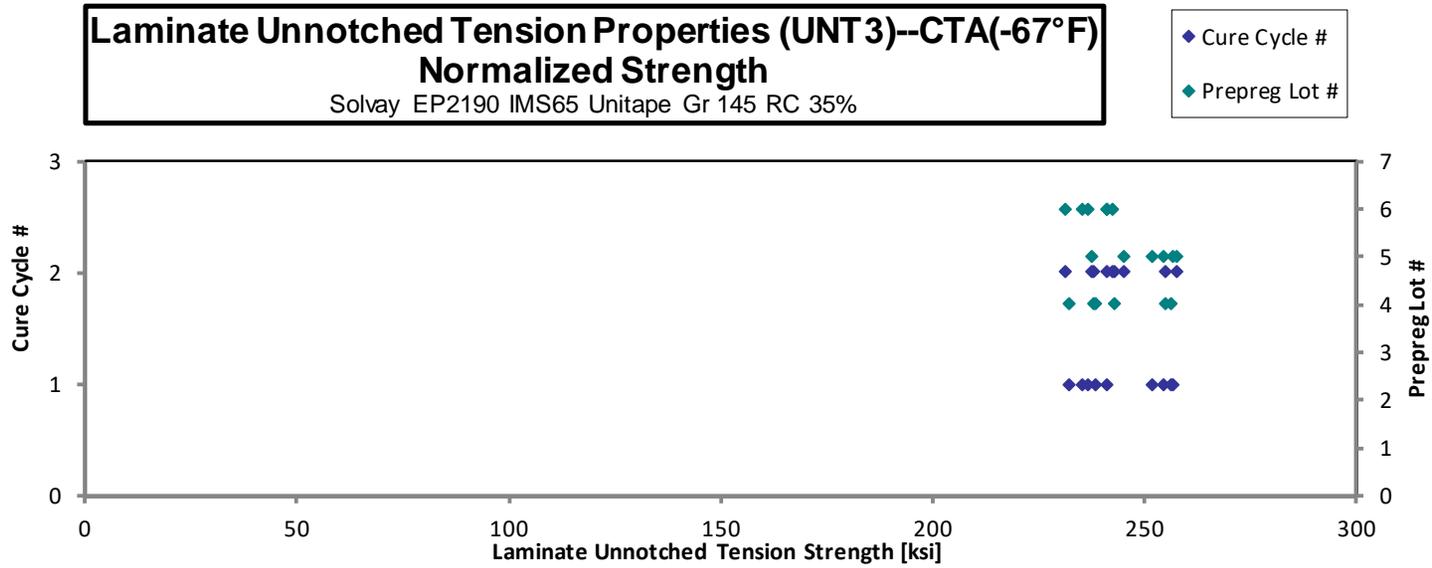
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-CTA-1	D	C1	4	1	229.6	12.89	0.1164	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-CTA-2	D	C1	4	1	223.3	12.49	0.1166	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-CTA-3	D	C1	4	1	245.1	12.73	0.1171	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-CTA-1	D	C2	4	2	232.6	12.64	0.1170	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-CTA-2	D	C2	4	2	228.5	12.53	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-CTA-3	D	C2	4	2	244.7	12.67	0.1168	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-CTA-1	E	C1	5	1	250.6	12.72	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-CTA-2	E	C1	5	1	248.5	12.59	0.1148	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-CTA-3	E	C1	5	1	247.1	12.83	0.1143	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-CTA-1	E	C2	5	2	232.4	12.62	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-CTA-2	E	C2	5	2	239.4	12.53	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-CTA-3	E	C2	5	2	252.7	12.79	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-CTA-1	F	C1	6	1	228.1	12.66	0.1157	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-CTA-2	F	C1	6	1	234.3	12.63	0.1153	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-CTA-3	F	C1	6	1	231.5	12.62	0.1145	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-CTA-1	F	C2	6	2	236.3	12.80	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-CTA-2	F	C2	6	2	237.3	12.99	0.1145	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-CTA-3	F	C2	6	2	227.7	12.86	0.1138	20	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	238.6	13.39
0.0058	232.4	13.00
0.0059	256.2	13.31
0.0059	243.0	13.21
0.0058	238.1	13.06
0.0058	255.1	13.22
0.0057	256.7	13.03
0.0057	254.7	12.91
0.0057	252.1	13.09
0.0057	237.7	12.91
0.0057	245.2	12.83
0.0057	257.6	13.04
0.0058	235.6	13.08
0.0058	241.2	13.00
0.0057	236.6	12.90
0.0057	241.2	13.06
0.0057	242.6	13.28
0.0057	231.3	13.06

Average 237.2 12.70
 Standard Dev. 8.929 0.1360
 Coeff. of Var. [%] 3.764 1.071
 Min. 223.3 12.49
 Max. 252.7 12.99
 Number of Spec. 18 18

Average_{norm} 0.0058 244.2 13.08
 Standard Dev._{norm} 8.885 0.1521
 Coeff. of Var. [%]_{norm} 3.638 1.163
 Min. 0.0057 231.3 12.83
 Max. 0.0059 257.6 13.39
 Number of Spec. 18 18 18



Laminate Unnotched Tension Properties (UNT3)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

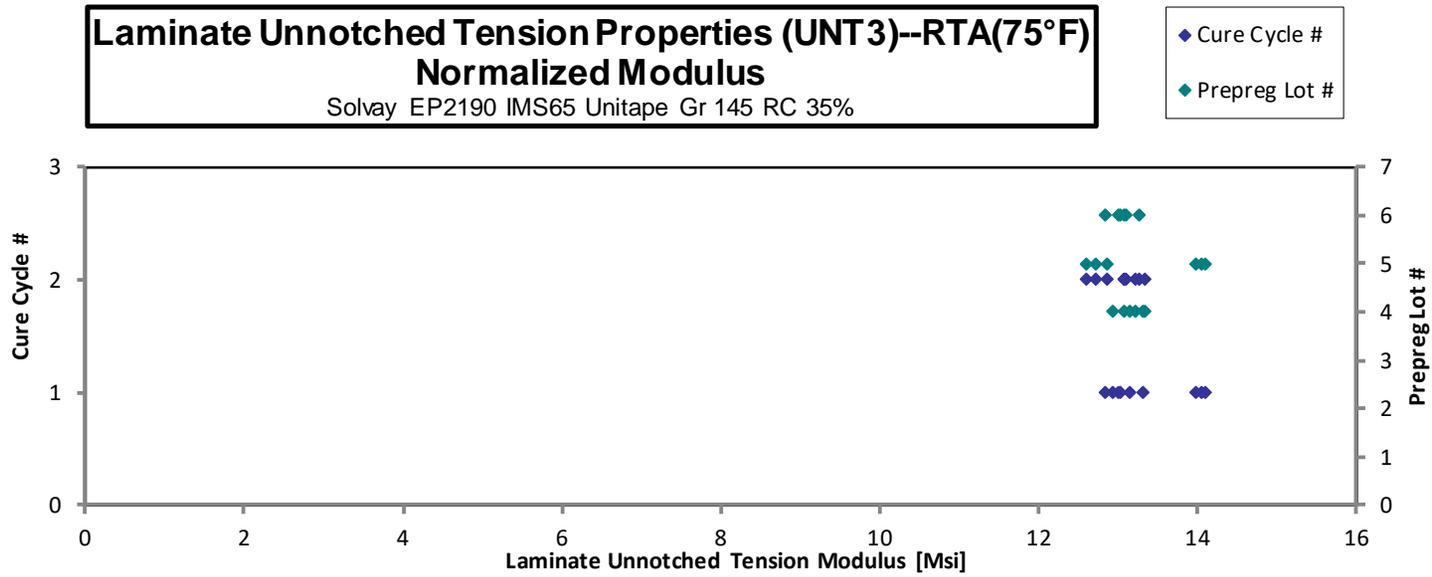
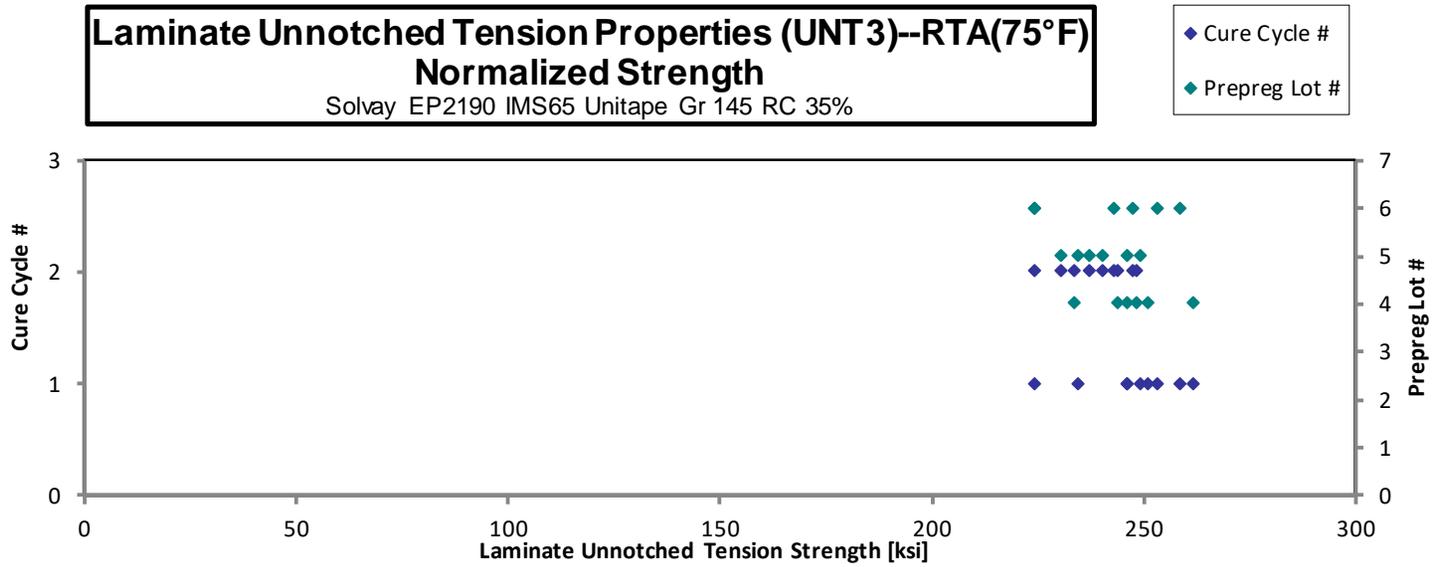
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-RTA-2	D	C1	4	1	235.9	12.42	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-RTA-3	D	C1	4	1	239.9	12.58	0.1170	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-RTA-4	D	C1	4	1	250.9	12.78	0.1167	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-RTA-1	D	C2	4	2	237.8	12.78	0.1169	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-RTA-2	D	C2	4	2	224.3	12.59	0.1165	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-RTA-3	D	C2	4	2	233.6	12.68	0.1168	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-RTA-3	E	C1	5	1	239.7	13.74	0.1150	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-RTA-4	E	C1	5	1	228.3	13.68	0.1150	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-RTA-5	E	C1	5	1	241.5	13.57	0.1154	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-RTA-1	E	C2	5	2	231.0	12.42	0.1148	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-RTA-2	E	C2	5	2	224.1	12.52	0.1150	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-RTA-3	E	C2	5	2	233.8	12.27	0.1151	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-RTA-1	F	C1	6	1	218.2	12.50	0.1151	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-RTA-2	F	C1	6	1	251.8	12.70	0.1149	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-RTA-3	F	C1	6	1	245.8	12.64	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-RTA-1	F	C2	6	2	218.7	12.95	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-RTA-2	F	C2	6	2	242.7	12.85	0.1141	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-RTA-3	F	C2	6	2	238.9	12.88	0.1139	20	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	245.8	12.94
0.0059	250.6	13.14
0.0058	261.4	13.32
0.0058	248.2	13.34
0.0058	233.3	13.09
0.0058	243.6	13.22
0.0058	246.1	14.11
0.0058	234.4	14.05
0.0058	248.8	13.98
0.0057	236.7	12.73
0.0058	230.1	12.85
0.0058	240.2	12.61
0.0058	224.2	12.85
0.0057	258.3	13.03
0.0058	253.0	13.02
0.0057	224.0	13.26
0.0057	247.3	13.09
0.0057	242.9	13.10

Average 235.4 12.81
 Standard Dev. 9.907 0.4316
 Coeff. of Var. [%] 4.209 3.369
 Min. 218.2 12.27
 Max. 251.8 13.74
 Number of Spec. 18 18

Average_{norm} 0.0058 242.7 13.21
 Standard Dev._{norm} 10.64 0.4323
 Coeff. of Var. [%]_{norm} 4.385 3.273
 Min. 0.0057 224.0 12.61
 Max. 0.0059 261.4 14.11
 Number of Spec. 18 18 18



Laminate Unnotched Tension Properties (UNT3)--ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

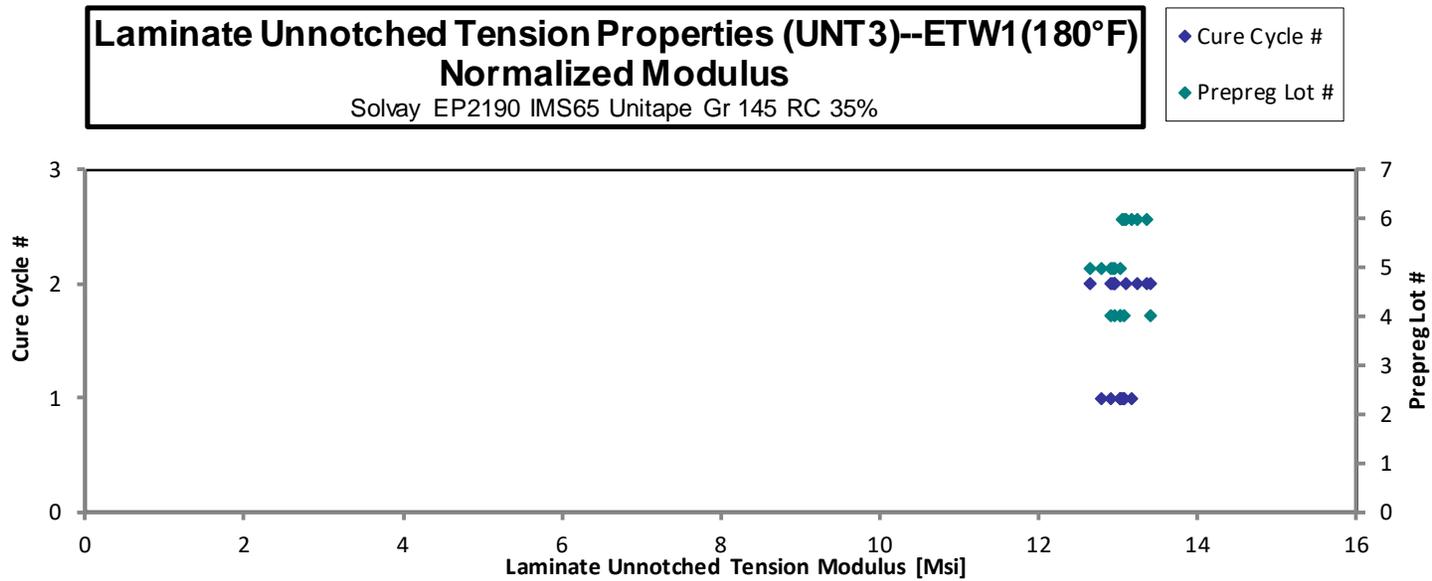
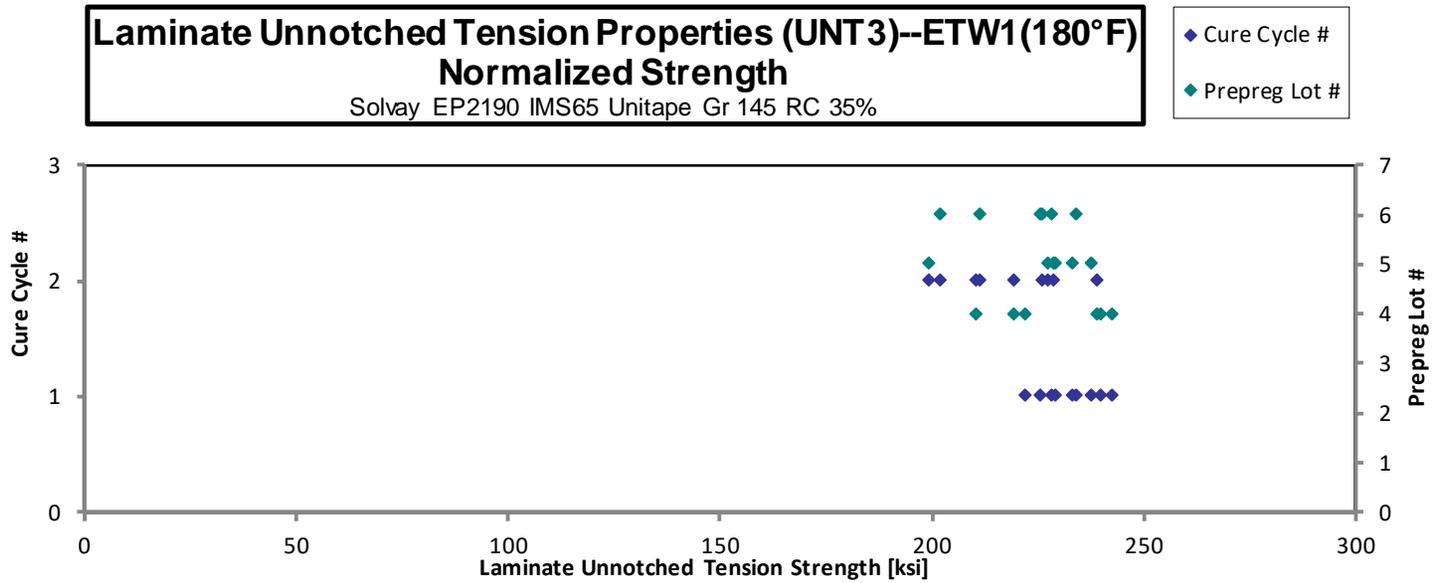
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW1-1	D	C1	4	1	213.0	12.51	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW1-2	D	C1	4	1	229.4	12.53	0.1170	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW1-3	D	C1	4	1	233.2	12.54	0.1164	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW1-1	D	C2	4	2	211.2	12.44	0.1163	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW1-2	D	C2	4	2	229.3	12.87	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW1-3	D	C2	4	2	202.0	12.45	0.1166	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW1-1	E	C1	5	1	222.6	12.67	0.1151	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW1-2	E	C1	5	1	226.5	12.56	0.1152	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW1-3	E	C1	5	1	231.6	12.48	0.1148	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW1-1	E	C2	5	2	222.7	12.34	0.1148	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW1-2	E	C2	5	2	221.3	12.63	0.1149	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW1-3	E	C2	5	2	194.4	12.64	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW1-1	F	C1	6	1	220.5	12.79	0.1144	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW1-2	F	C1	6	1	228.4	12.77	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW1-3	F	C1	6	1	222.6	12.87	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW1-1	F	C2	6	2	221.2	12.83	0.1144	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW1-2	F	C2	6	2	197.2	13.06	0.1145	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW1-3	F	C2	6	2	205.9	12.93	0.1148	20	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	221.9	13.04
0.0059	239.6	13.09
0.0058	242.4	13.03
0.0058	219.3	12.92
0.0058	238.9	13.41
0.0058	210.3	12.96
0.0058	228.8	13.02
0.0058	233.0	12.92
0.0057	237.4	12.79
0.0057	228.3	12.65
0.0057	227.0	12.95
0.0057	199.1	12.95
0.0057	225.3	13.06
0.0057	233.9	13.07
0.0057	228.0	13.18
0.0057	225.9	13.11
0.0057	201.6	13.35
0.0057	211.1	13.25

Average 218.5 12.66
 Standard Dev. 11.90 0.1976
 Coeff. of Var. [%] 5.446 1.561
 Min. 194.4 12.34
 Max. 233.2 13.06
 Number of Spec. 18 18

Average_{norm} 0.0058 225.1 13.04
 Standard Dev._{norm} 0.0057 12.65 0.1827
 Coeff. of Var. [%]_{norm} 5.618 1.401
 Min. 0.0057 199.1 12.65
 Max. 0.0059 242.4 13.41
 Number of Spec. 18 18 18



Laminate Unnotched Tension Properties (UNT3)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

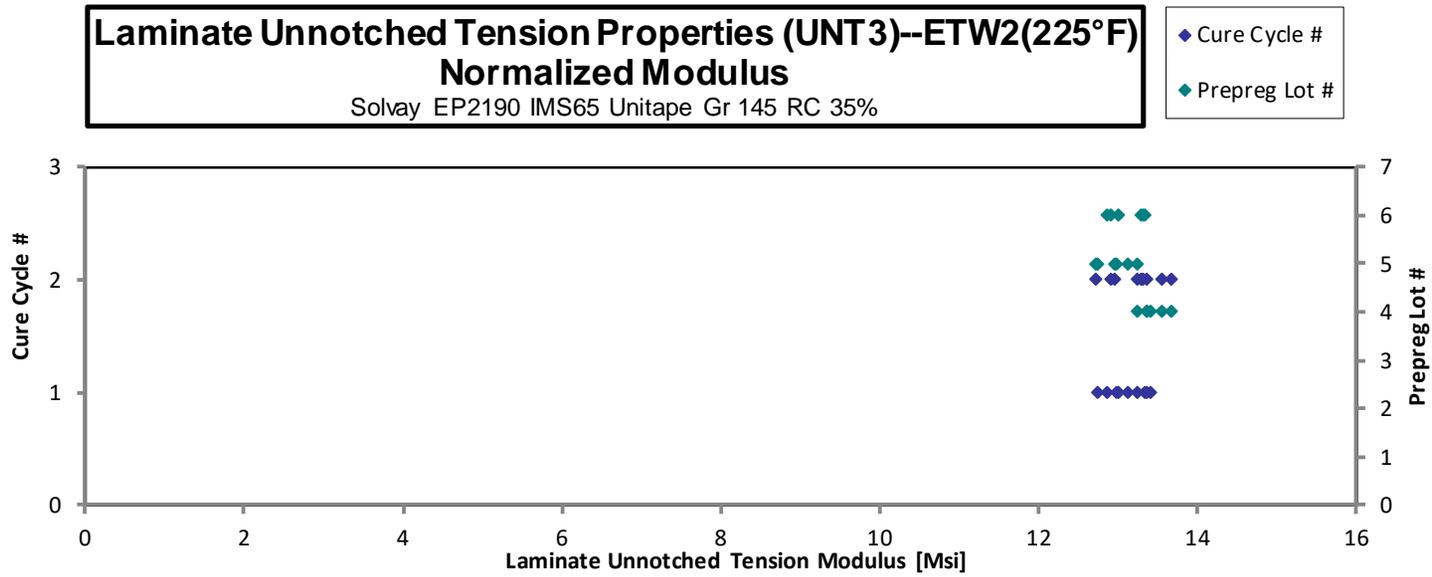
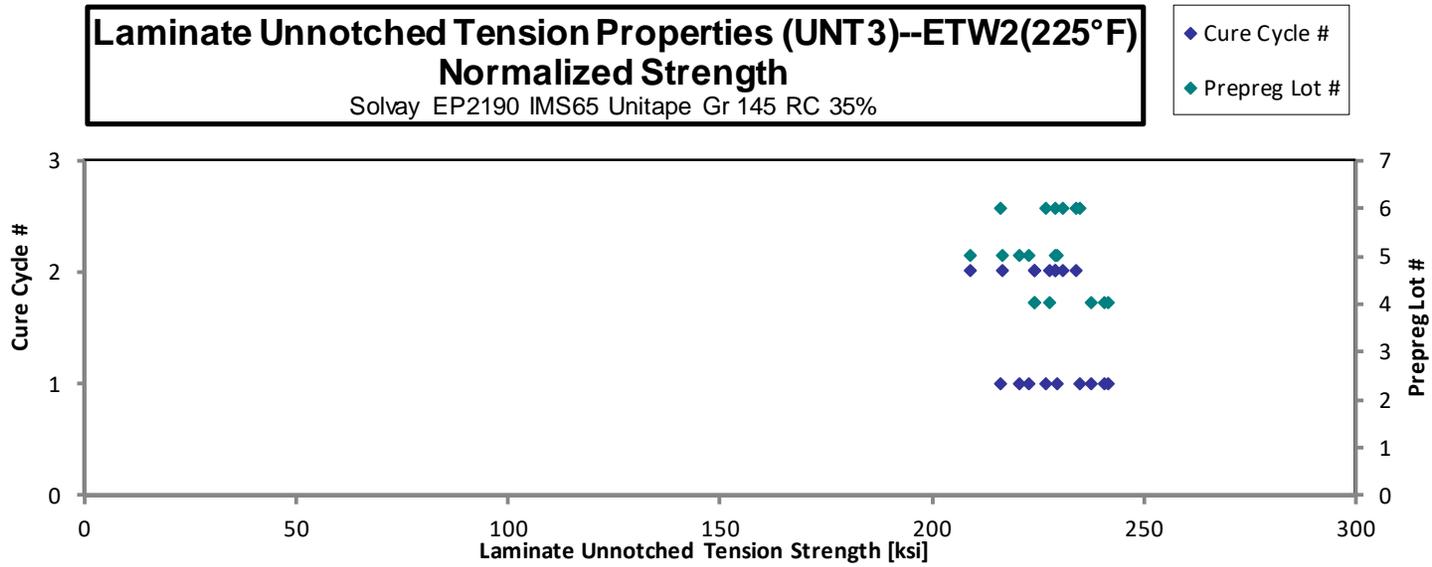
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW2-1	D	C1	4	1	227.9	12.72	0.1166	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW2-2	D	C1	4	1	231.1	12.84	0.1166	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-ETW2-3	D	C1	4	1	231.9	12.88	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW2-1	D	C2	4	2	218.0	13.00	0.1168	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW2-2	D	C2	4	2	215.2	12.85	0.1165	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-ETW2-3	D	C2	4	2	215.1	13.13	0.1167	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW2-3	E	C1	5	1	224.8	12.74	0.1142	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW2-4	E	C1	5	1	215.7	12.82	0.1146	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-ETW2-5	E	C1	5	1	218.3	12.49	0.1143	20	XGV
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW2-2	E	C2	5	2	223.9	12.44	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW2-3	E	C2	5	2	205.0	12.70	0.1142	20	XGM
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-ETW2-4	E	C2	5	2	211.1	12.90	0.1149	20	XGM
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW2-1	F	C1	6	1	209.7	12.96	0.1153	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW2-2	F	C1	6	1	221.3	12.69	0.1148	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-ETW2-3	F	C1	6	1	229.1	12.57	0.1147	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW2-1	F	C2	6	2	229.2	13.03	0.1143	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW2-2	F	C2	6	2	224.4	12.67	0.1142	20	MGV
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-ETW2-3	F	C2	6	2	225.6	13.03	0.1145	20	MGV

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	237.2	13.24
0.0058	240.6	13.37
0.0058	241.6	13.42
0.0058	227.4	13.56
0.0058	223.8	13.37
0.0058	224.1	13.68
0.0057	229.2	12.99
0.0057	220.7	13.12
0.0057	222.8	12.75
0.0057	229.1	12.73
0.0057	209.0	12.95
0.0057	216.5	13.23
0.0058	215.9	13.34
0.0057	226.8	13.01
0.0057	234.7	12.87
0.0057	233.9	13.30
0.0057	228.8	12.92
0.0057	230.7	13.32

Average 221.0 12.80
 Standard Dev. 7.877 0.1922
 Coeff. of Var. [%] 3.565 1.501
 Min. 205.0 12.44
 Max. 231.9 13.13
 Number of Spec. 18 18

Average_{norm} 0.0058 227.4 13.18
 Standard Dev._{norm} 8.638 0.2727
 Coeff. of Var. [%]_{norm} 3.799 2.070
 Min. 0.0057 209.0 12.73
 Max. 0.0058 241.6 13.68
 Number of Spec. 18 18 18



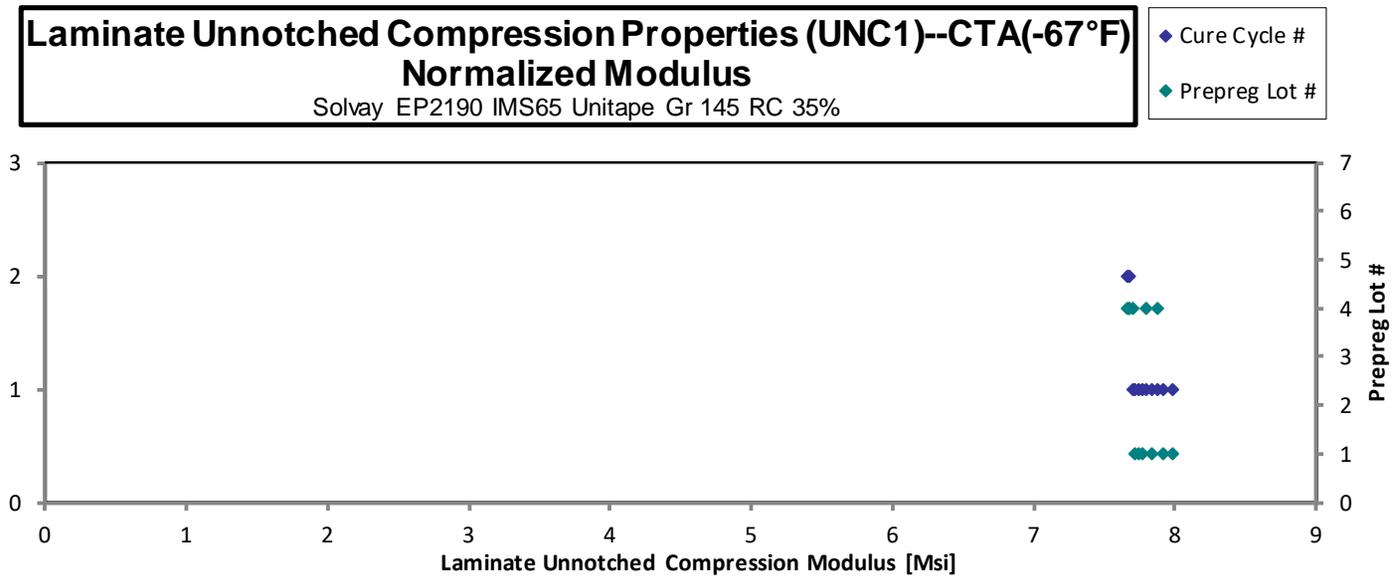
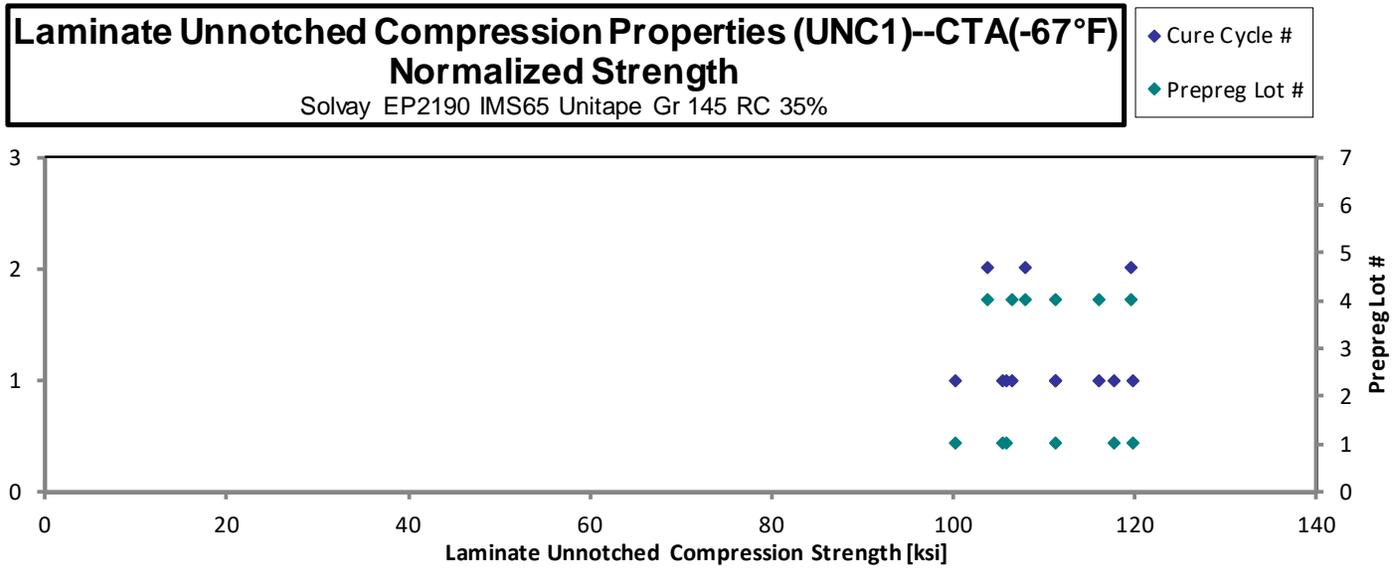
4.12 “25/50/25” Unnotched Compression 1 Properties (UNC1)

Laminate Unnotched Compression Properties (UNC1)–CTA(-67°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694382-P2-UNC1-A-C1-CTA-1	A	C1	1	1	101.0	7.511	0.09360	16	MGT	0.0059	105.5	7.846
TR7694382-P2-UNC1-A-C1-CTA-2	A	C1	1	1	96.44	7.422	0.09320	16	MGT	0.0058	100.3	7.720
TR7694382-P2-UNC1-A-C1-CTA-3	A	C1	1	1	115.1	7.462	0.09340	16	MGM	0.0058	120.0	7.778
TR7694382-P2-UNC1-A-C1-CTA-4	A	C1	1	1	112.8	7.418	0.09360	16	MGM	0.0059	117.8	7.749
TR7694382-P2-UNC1-A-C1-CTA-5	A	C1	1	1	106.5	7.648	0.09360	16	MGT	0.0059	111.3	7.989
TR7694382-P2-UNC1-A-C1-CTA-6	A	C1	1	1	101.5	7.584	0.09360	16	MGT	0.0059	106.0	7.923
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-CTA-1	D	C1	4	1	113.5	7.540	0.09160	16	MGT	0.0057	116.1	7.708
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-CTA-2	D	C1	4	1	103.8	7.601	0.09190	16	MGM	0.0057	106.5	7.796
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-CTA-4	D	C1	4	1	108.6	7.685	0.09190	16	MGM	0.0057	111.4	7.882
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-CTA-1	D	C2	4	2	101.3	7.496	0.09180	16	MGT	0.0057	103.8	7.680
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-CTA-2	D	C2	4	2	117.3	7.529	0.09140	16	MGB	0.0057	119.7	7.680
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-CTA-3	D	C2	4	2	105.9	7.502	0.09150	16	MGB	0.0057	108.1	7.661

Average	107.0	7.533	Average_{norm}	0.0058	110.5	7.785
Standard Dev.	6.561	0.08368	Standard Dev._{norm}		6.581	0.1057
Coeff. of Var. [%]	6.133	1.111	Coeff. of Var. [%]_{norm}		5.954	1.357
Min.	96.44	7.418	Min.	0.0057	100.3	7.661
Max.	117.3	7.685	Max.	0.0059	120.0	7.989
Number of Spec.	12	12	Number of Spec.	12	12	12

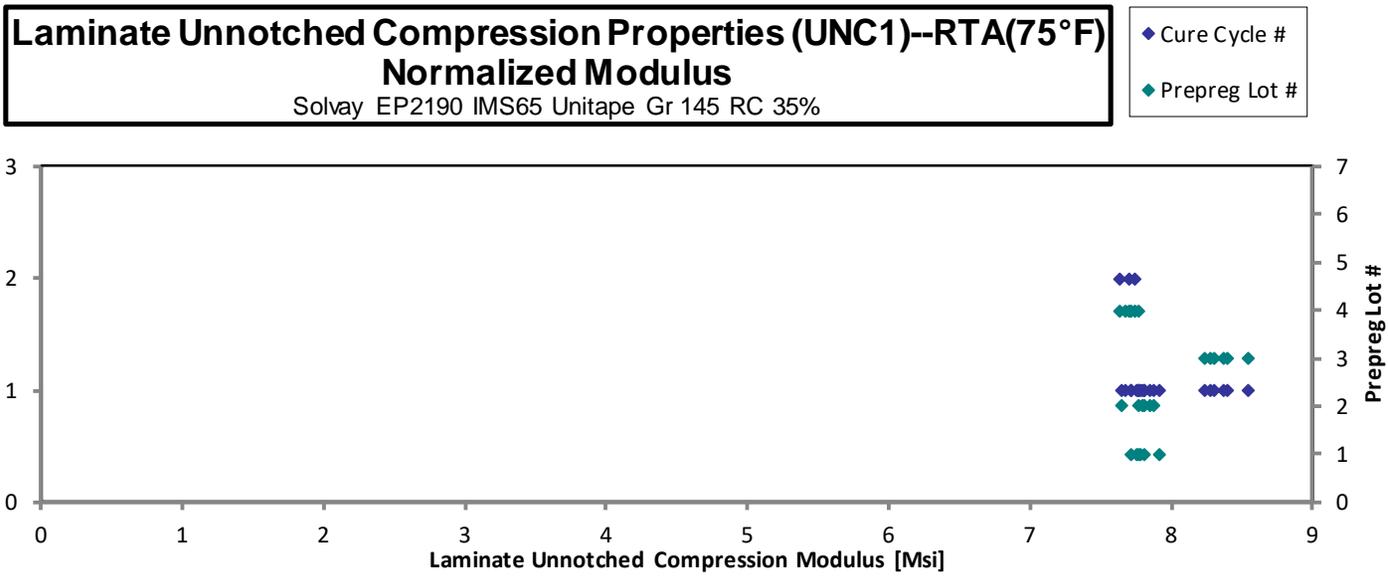
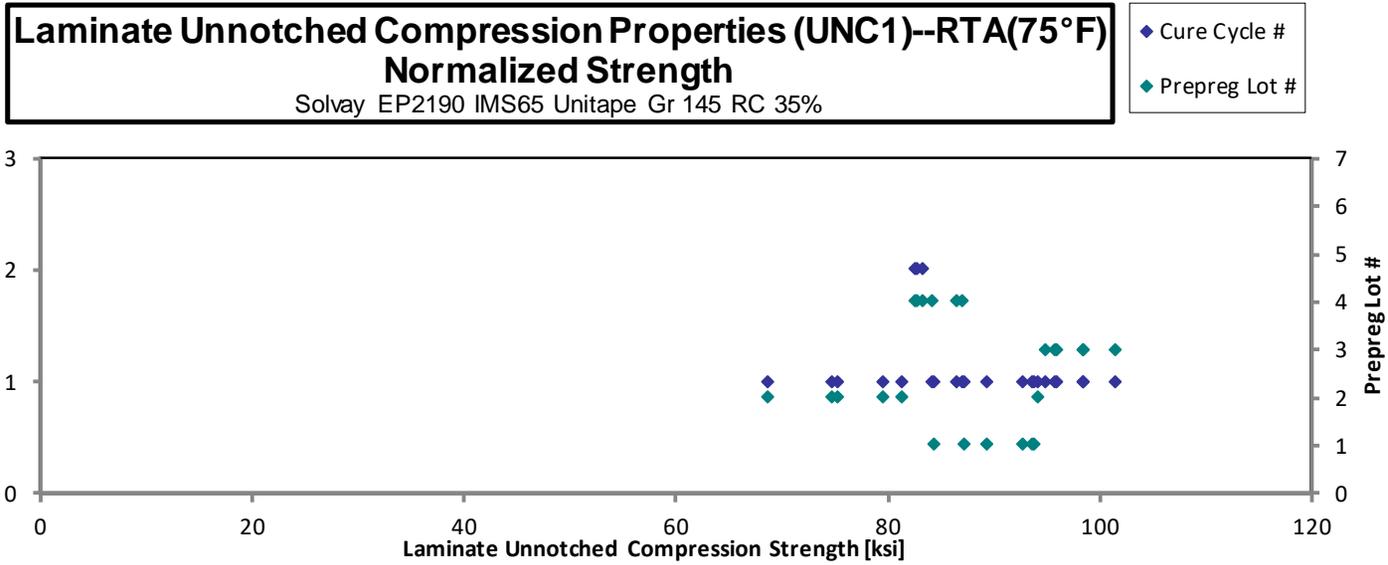


Laminate Unnotched Compression Properties (UNC1)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
TR7694382-P5-UNC1-A-C1-RTA-1	A	C1	1	1	83.87	7.527	0.09300	16	LGM	0.0058	87.05	7.813
TR7694382-P5-UNC1-A-C1-RTA-2	A	C1	1	1	80.81	7.590	0.09340	16	LGM	0.0058	84.24	7.912
TR7694382-P5-UNC1-A-C1-RTA-3	A	C1	1	1	89.54	7.393	0.09360	16	LGM	0.0059	93.54	7.723
TR7694382-P5-UNC1-A-C1-RTA-4	A	C1	1	1	85.82	7.471	0.09320	16	LGM	0.0058	89.27	7.771
TR7694382-P5-UNC1-A-C1-RTA-5	A	C1	1	1	90.06	7.483	0.09320	16	LGM	0.0058	93.68	7.784
TR7694382-P5-UNC1-A-C1-RTA-6	A	C1	1	1	89.21	7.476	0.09300	16	LGM	0.0058	92.60	7.760
TR7702868-P3-UNC1-B-C1-RTA-2	B	C1	2	1	72.02	7.530	0.09280	16	LAT	0.0058	74.59	7.799
TR7702868-P3-UNC1-B-C1-RTA-3	B	C1	2	1	66.19	7.399	0.09270	16	LAT	0.0058	68.48	7.655
TR7702868-P3-UNC1-B-C1-RTA-4	B	C1	2	1	72.62	7.587	0.09270	16	LAT	0.0058	75.13	7.849
TR7702868-P3-UNC1-B-C1-RTA-5	B	C1	2	1	91.09	7.525	0.09250	16	LAT	0.0058	94.04	7.769
TR7702868-P3-UNC1-B-C1-RTA-6	B	C1	2	1	76.91	7.559	0.09260	16	LAT	0.0058	79.49	7.812
TR7702868-P3-UNC1-B-C1-RTA-8	B	C1	2	1	78.60	7.619	0.09260	16	LAT	0.0058	81.23	7.874
TR7725554-P1-UNC1-C-C1-RTA-1	C	C1	3	1	93.74	8.003	0.09400	16	LGT	0.0059	98.34	8.396
TR7725554-P1-UNC1-C-C1-RTA-2	C	C1	3	1	90.98	7.961	0.09420	16	LGT	0.0059	95.65	8.370
TR7725554-P1-UNC1-C-C1-RTA-3	C	C1	3	1	91.74	7.971	0.09610	16	LAT	0.0060	98.40	8.549
TR7725554-P1-UNC1-C-C1-RTA-4	C	C1	3	1	90.67	7.830	0.09480	16	LAT	0.0059	95.93	8.284
TR7725554-P1-UNC1-C-C1-RTA-5	C	C1	3	1	95.92	7.800	0.09470	16	LAT	0.0059	101.4	8.244
TR7725554-P1-UNC1-C-C1-RTA-6	C	C1	3	1	89.44	7.839	0.09490	16	LAT	0.0059	94.73	8.303
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-RTA-1	D	C1	4	1	82.38	7.570	0.09140	16	MGM	0.0057	84.03	7.722
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-RTA-2	D	C1	4	1	84.26	7.494	0.09180	16	MGM	0.0057	86.33	7.678
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-RTA-3	D	C1	4	1	85.22	7.612	0.09140	16	MGM	0.0057	86.93	7.765
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-RTA-1	D	C2	4	2	80.40	7.425	0.09210	16	MGT	0.0058	82.64	7.632
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-RTA-2	D	C2	4	2	80.51	7.524	0.09170	16	MGT	0.0057	82.40	7.700
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-RTA-3	D	C2	4	2	80.77	7.529	0.09220	16	MGV	0.0058	83.11	7.747

Average	84.28	7.613	Average_{norm}	0.0058	87.63	7.913
Standard Dev.	7.476	0.1838	Standard Dev._{norm}		8.452	0.2746
Coeff. of Var. [%]	8.870	2.414	Coeff. of Var. [%]_{norm}		9.645	3.470
Min.	66.19	7.393	Min.	0.0057	68.48	7.632
Max.	95.92	8.003	Max.	0.0060	101.4	8.549
Number of Spec.	24	24	Number of Spec.	24	24	24



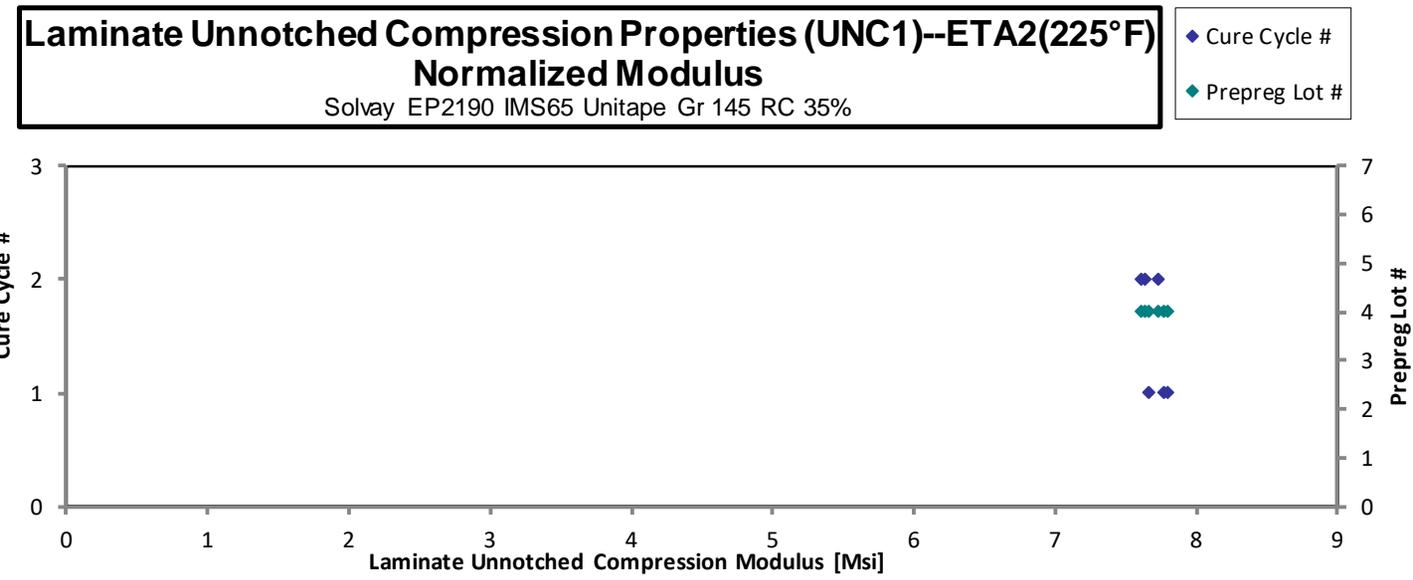
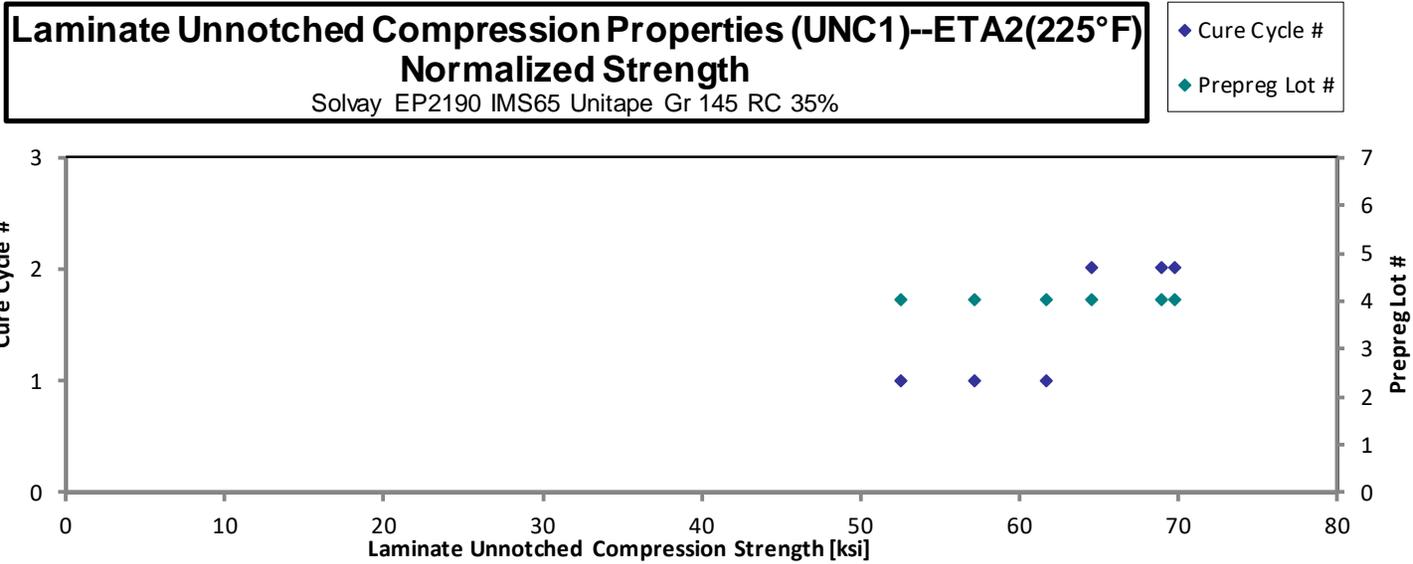
Laminate Unnotched Compression Properties (UNC1)--ETA2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETA2-1	D	C1	4	1	51.67	7.661	0.09120	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETA2-2	D	C1	4	1	55.94	7.499	0.09160	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETA2-3	D	C1	4	1	60.37	7.599	0.09160	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETA2-1	D	C2	4	2	67.44	7.438	0.09170	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETA2-2	D	C2	4	2	62.92	7.450	0.09190	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETA2-3	D	C2	4	2	68.00	7.526	0.09200	16	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	52.59	7.798
0.0057	57.19	7.666
0.0057	61.72	7.769
0.0057	69.02	7.612
0.0057	64.54	7.641
0.0058	69.82	7.728

Average	61.06	7.529	Average_{norm}	0.0057	62.48	7.702
Standard Dev.	6.437	0.08690	Standard Dev._{norm}		6.741	0.07385
Coeff. of Var. [%]	10.54	1.154	Coeff. of Var. [%]_{norm}		10.79	0.9589
Min.	51.67	7.438	Min.	0.0057	52.59	7.612
Max.	68.00	7.661	Max.	0.0058	69.82	7.798
Number of Spec.	6	6	Number of Spec.	6	6	6



Laminate Unnotched Compression Properties (UNC1)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694382-P4-UNC1-A-C1-ETA3-2	A	C1	1	1	69.95	7.288	0.09440	16	LGT
TR7694382-P4-UNC1-A-C1-ETA3-4	A	C1	1	1	74.80	7.336	0.09340	16	MGT
TR7694382-P4-UNC1-A-C1-ETA3-5	A	C1	1	1	74.70	7.244	0.09320	16	LGT
TR7694382-P4-UNC1-A-C1-ETA3-6	A	C1	1	1	71.46	7.305	0.09400	16	LGT
TR7694382-P4-UNC1-A-C1-ETA3-7	A	C1	1	1	71.27	7.473	0.09420	16	LGT
TR7694382-P4-UNC1-A-C1-ETA3-8	A	C1	1	1	64.91	7.432	0.09340	16	LGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0059	73.70	7.678
0.0058	77.97	7.647
0.0058	77.70	7.535
0.0059	74.97	7.664
0.0059	74.93	7.857
0.0058	67.66	7.747

Average	71.18	7.346
Standard Dev.	3.644	0.08840
Coeff. of Var. [%]	5.120	1.203
Min.	64.91	7.244
Max.	74.80	7.473
Number of Spec.	6	6

Average_{norm}	0.0059	74.49	7.688
Standard Dev._{norm}		3.744	0.1074
Coeff. of Var. [%]_{norm}		5.027	1.397
Min.	0.0058	67.66	7.535
Max.	0.0059	77.97	7.857
Number of Spec.	6	6	6

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

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

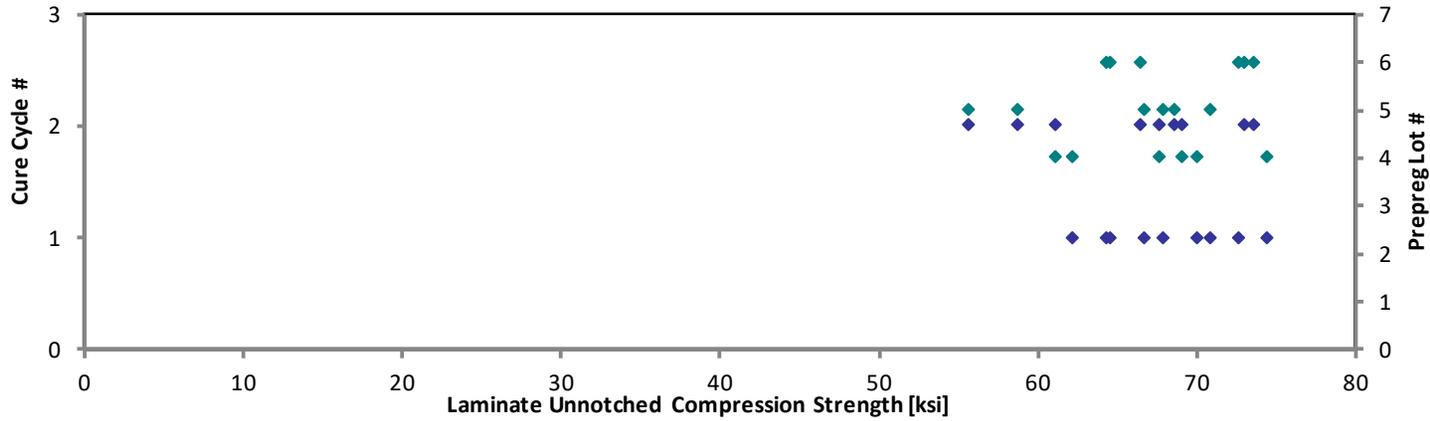
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW1-1	D	C1	4	1	72.78	7.534	0.09160	16	MGM	0.0057	74.40	7.702
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW1-2	D	C1	4	1	60.80	7.591	0.09160	16	MGT	0.0057	62.16	7.760
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW1-3	D	C1	4	1	68.39	7.609	0.09170	16	MGB	0.0057	69.99	7.787
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW1-1	D	C2	4	2	59.34	7.547	0.09210	16	MGM	0.0058	61.00	7.758
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW1-2	D	C2	4	2	67.01	7.450	0.09220	16	MGT	0.0058	68.95	7.666
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW1-3	D	C2	4	2	65.66	7.493	0.09220	16	MGT	0.0058	67.57	7.710
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW1-1	E	C1	5	1	69.57	6.979	0.09110	16	MGT	0.0057	70.7	7.096
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW1-2	E	C1	5	1	65.56	7.516	0.09110	16	MGM	0.0057	66.66	7.642
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW1-4	E	C1	5	1	66.92	7.610	0.09080	16	MGB	0.0057	67.82	7.712
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW1-1	E	C2	5	2	55.01	7.579	0.09060	16	MGM	0.0057	55.62	7.664
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW1-2	E	C2	5	2	57.86	7.526	0.09080	16	MGM	0.0057	58.63	7.627
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW1-3	E	C2	5	2	67.16	7.549	0.09140	16	MGM	0.0057	68.51	7.701
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW1-1	F	C1	6	1	63.71	6.494	0.09040	16	MGT	0.0057	64.28	6.552
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW1-2	F	C1	6	1	64.05	6.638	0.09020	16	MGT	0.0056	64.48	6.682
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW1-3	F	C1	6	1	73.59	6.637	0.08840	16	MGB	0.0055	72.60	6.548
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW1-1	F	C2	6	2	74.69	6.739	0.08820	16	MGB	0.0055	73.52	6.634
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW1-2	F	C2	6	2	73.96	6.585	0.08840	16	MGT	0.0055	72.97	6.497
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW1-3	F	C2	6	2	66.03	6.549	0.09010	16	MGT	0.0056	66.40	6.586

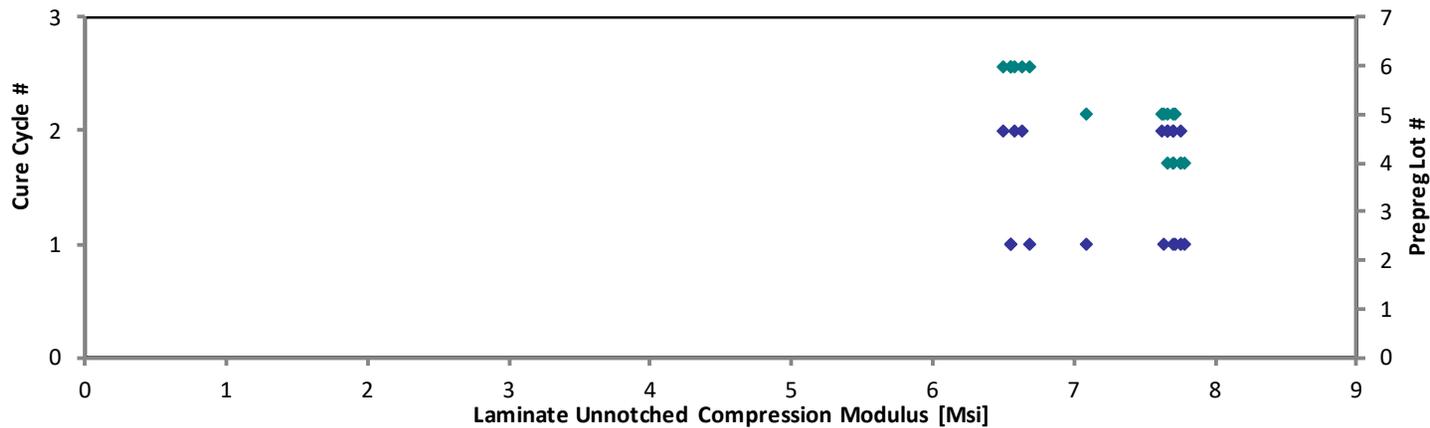
Average 66.23 7.201
 Standard Dev. 5.589 0.4560
 Coeff. of Var. [%] 8.439 6.332
 Min. 55.01 6.494
 Max. 74.69 6.610
 Number of Spec. 18 18

Average_{norm} 0.0057 67.02 7.296
 Standard Dev._{norm} 5.244 0.5400
 Coeff. of Var. [%]_{norm} 7.825 7.401
 Min. 0.0055 55.62 6.497
 Max. 0.0058 74.40 7.787
 Number of Spec. 18 18 18

Laminate Unnotched Compression Properties (UNC1)--ETW1(180°F)
Normalized Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC1)--ETW1(180°F)
Normalized Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



**Laminate Unnotched Compression Properties (UNC1)--ETW2(225°F)
Strength & Modulus**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

t_{ply} [in]
0.0056

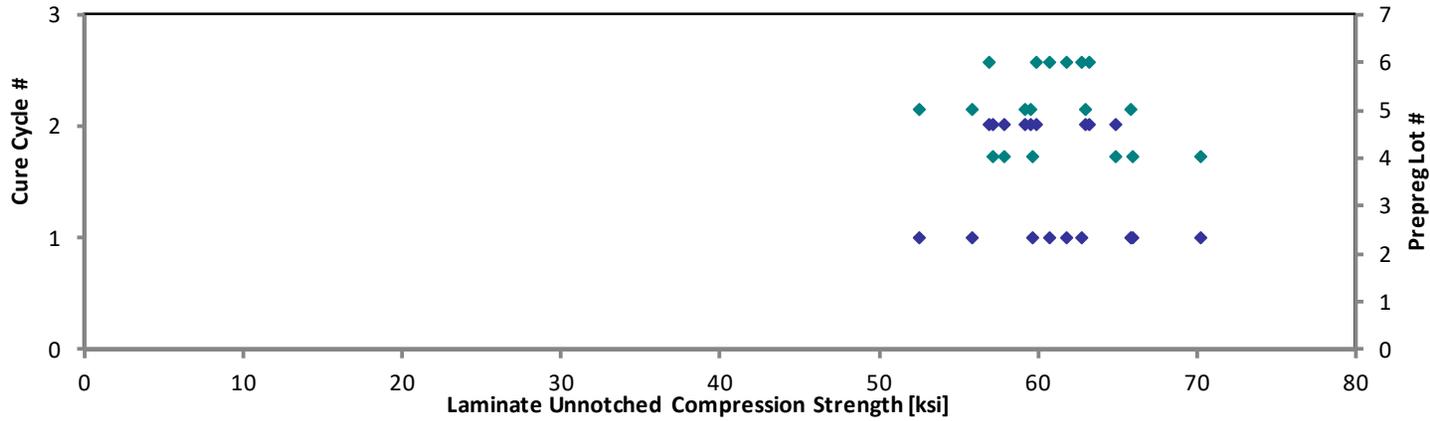
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW2-1	D	C1	4	1	58.40	7.341	0.09140	16	MGB
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW2-2	D	C1	4	1	68.86	7.590	0.09140	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW2-3	D	C1	4	1	64.55	7.544	0.09150	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW2-1	D	C2	4	2	55.43	7.388	0.09240	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW2-2	D	C2	4	2	62.99	7.369	0.09220	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW2-3	D	C2	4	2	56.57	7.323	0.09160	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW2-1	E	C1	5	1	51.93	6.390	0.09050	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW2-2	E	C1	5	1	64.94	6.445	0.09080	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW2-3	E	C1	5	1	54.92	5.077	0.09110	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW2-1	E	C2	5	2	58.74	7.521	0.09070	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW2-2	E	C2	5	2	58.48	7.474	0.09070	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW2-3	E	C2	5	2	62.33	7.525	0.09050	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW2-1	F	C1	6	1	62.04	6.368	0.09050	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW2-2	F	C1	6	1	59.87	6.350	0.09080	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW2-3	F	C1	6	1	60.99	6.516	0.09070	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW2-1	F	C2	6	2	61.01	7.538	0.08790	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW2-2	F	C2	6	2	64.68	7.948	0.08750	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW2-3	F	C2	6	2	57.96	7.799	0.08790	16	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	59.57	7.488
0.0057	70.24	7.742
0.0057	65.92	7.704
0.0058	57.16	7.619
0.0058	64.82	7.583
0.0057	57.83	7.486
0.0057	52.5	6.454
0.0057	65.81	6.531
0.0057	55.84	5.162
0.0057	59.46	7.613
0.0057	59.20	7.566
0.0057	62.96	7.601
0.0057	62.66	6.432
0.0057	60.67	6.435
0.0057	61.74	6.596
0.0055	59.85	7.395
0.0055	63.16	7.762
0.0055	56.86	7.651

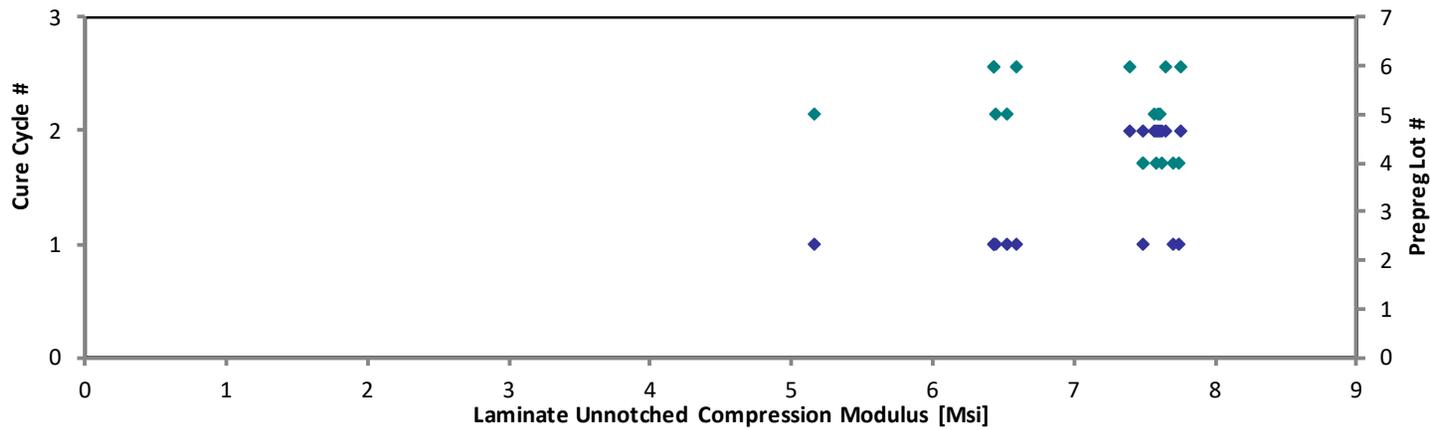
Average 60.26 7.084
 Standard Dev. 4.194 0.7299
 Coeff. of Var. [%] 6.960 10.30
 Min. 51.93 5.077
 Max. 68.86 7.948
 Number of Spec. 18 18

Average_{norm} 0.0057 60.90 7.157
 Standard Dev._{norm} 4.268 0.7162
 Coeff. of Var. [%]_{norm} 7.008 10.01
 Min. 0.0055 52.45 5.162
 Max. 0.0058 70.24 7.762
 Number of Spec. 18 18 18

Laminate Unnotched Compression Properties (UNC1)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC1)--ETW2(225°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



**Laminate Unnotched Compression Properties (UNC1)--ETW3(250°F)
Strength & Modulus**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

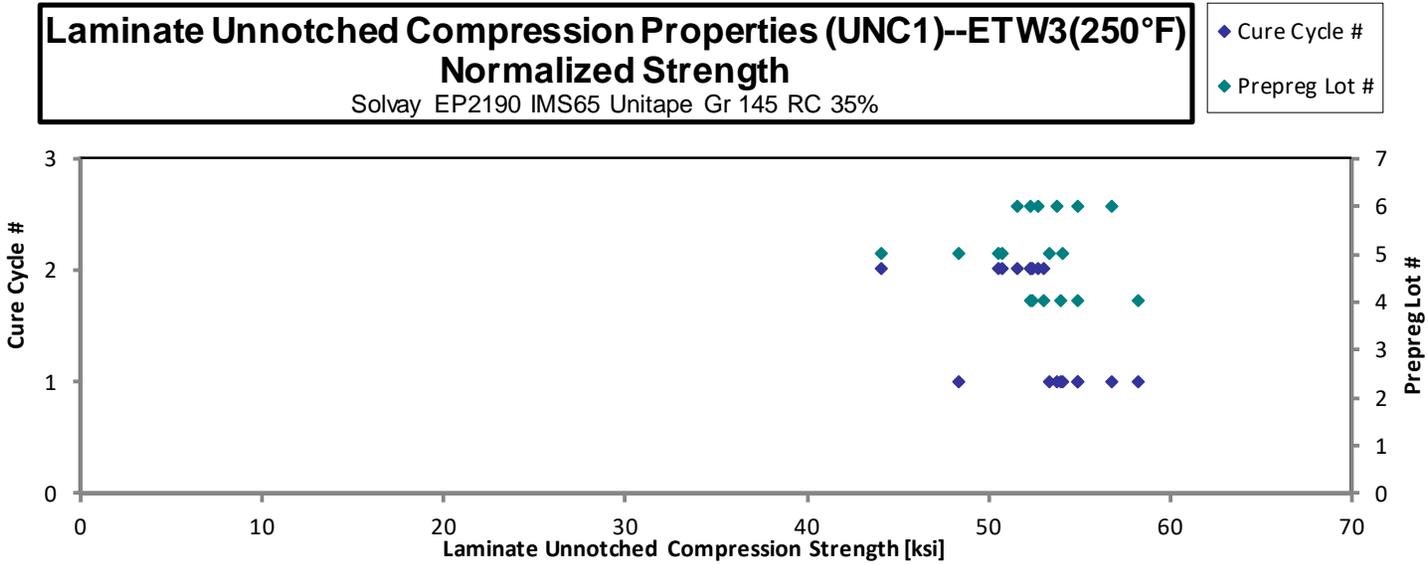
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW3-1	D	C1	4	1	53.87	7.435	0.09120	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW3-2	D	C1	4	1	52.89	7.461	0.09130	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-ETW3-3	D	C1	4	1	56.96	7.426	0.09150	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW3-1	D	C2	4	2	50.98	7.301	0.09210	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW3-2	D	C2	4	2	50.85	7.375	0.09210	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-ETW3-3	D	C2	4	2	51.59	7.361	0.09200	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW3-1	E	C1	5	1	47.61	7.410	0.09100	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW3-2	E	C1	5	1	53.13	7.259	0.09120	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-ETW3-3	E	C1	5	1	52.28	7.239	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW3-1	E	C2	5	2	50.27	7.536	0.09010	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW3-2	E	C2	5	2	43.54	7.341	0.09060	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-ETW3-3	E	C2	5	2	50.10	7.363	0.09070	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW3-1	F	C1	6	1	55.57	7.404	0.09150	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW3-2	F	C1	6	1	53.83	7.342	0.09140	16	MGM
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-ETW3-3	F	C1	6	1	52.65	7.357	0.09150	16	MGB
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW3-1	F	C2	6	2	53.44	7.779	0.08840	16	MGB
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW3-2	F	C2	6	2	52.17	7.349	0.08970	16	MGT
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-ETW3-3	F	C2	6	2	51.22	7.382	0.09020	16	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0057	54.83	7.568
0.0057	53.89	7.603
0.0057	58.17	7.583
0.0058	52.40	7.505
0.0058	52.27	7.581
0.0058	52.97	7.558
0.0057	48.35	7.526
0.0057	54.08	7.389
0.0057	53.27	7.376
0.0056	50.55	7.578
0.0057	44.03	7.423
0.0057	50.72	7.453
0.0057	56.75	7.561
0.0057	54.91	7.489
0.0057	53.77	7.513
0.0055	52.72	7.675
0.0056	52.23	7.357
0.0056	51.56	7.431

Average 51.83 7.396
 Standard Dev. 2.960 0.1184
 Coeff. of Var. [%] 5.711 1.601
 Min. 43.54 7.239
 Max. 56.96 7.779
 Number of Spec. 18 18

Average_{norm} 0.0057 52.64 7.509
 Standard Dev._{norm} 3.115 0.08833
 Coeff. of Var. [%]_{norm} 5.919 1.176
 Min. 0.0055 44.03 7.357
 Max. 0.0058 58.17 7.675
 Number of Spec. 18 18 18



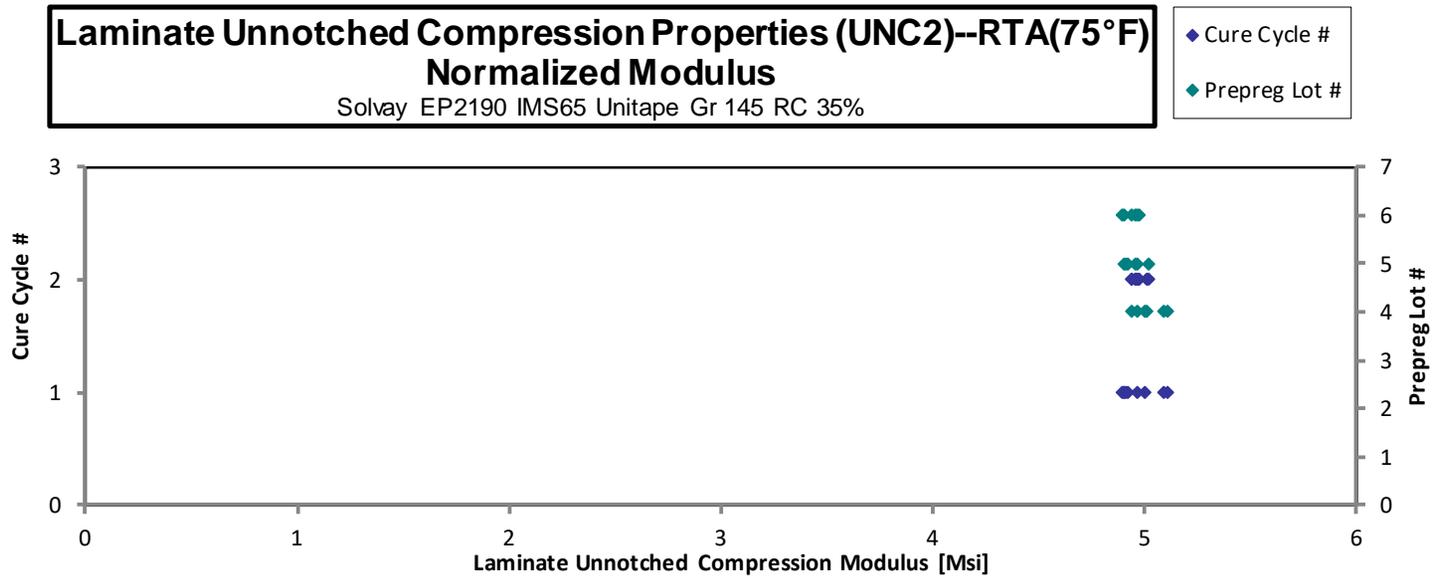
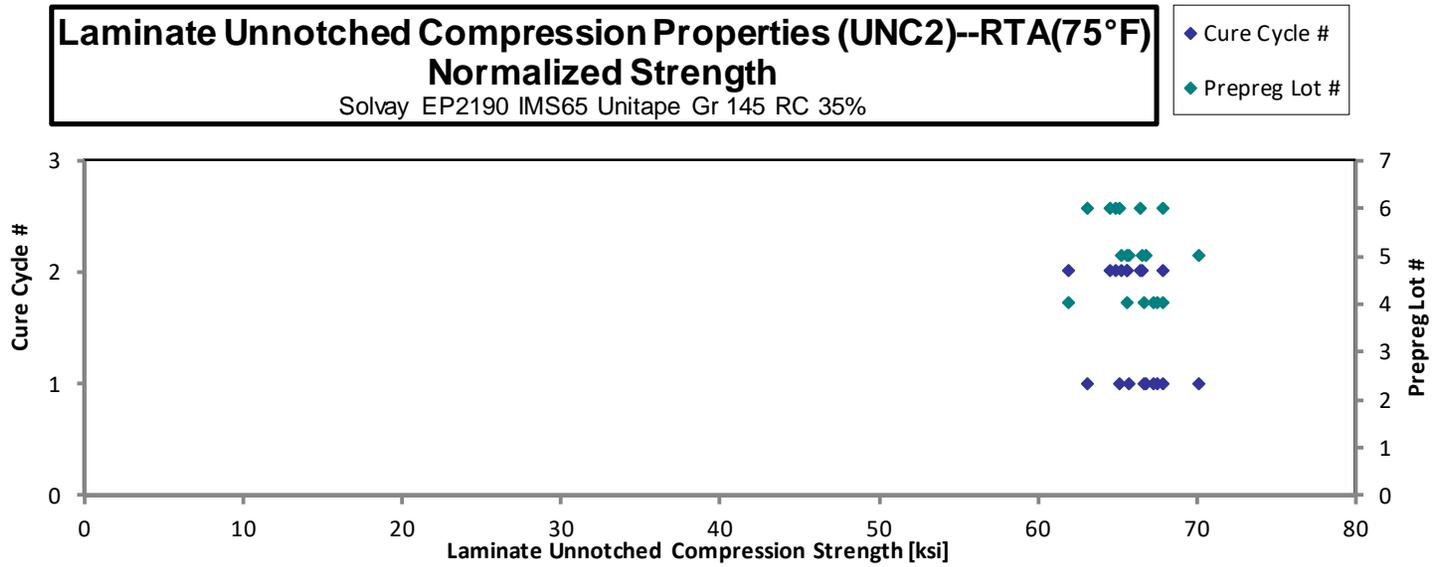
4.13 “10/80/10” Unnotched Compression 2 Properties (UNC2)

Laminate Unnotched Compression Properties (UNC2)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-RTA-1	D	C1	4	1	64.31	4.909	0.1161	20	MGM	0.0058	66.66	5.089
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-RTA-2	D	C1	4	1	64.52	4.883	0.1171	20	MGM	0.0059	67.46	5.105
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-RTA-3	D	C1	4	1	64.50	4.796	0.1168	20	MGM	0.0058	67.26	5.002
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-RTA-1	D	C2	4	2	62.20	4.716	0.1180	20	MGM	0.0059	65.53	4.969
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-RTA-2	D	C2	4	2	58.68	4.677	0.1182	20	MGT	0.0059	61.93	4.936
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-RTA-3	D	C2	4	2	64.24	4.748	0.1182	20	MGT	0.0059	67.80	5.011
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-RTA-1	E	C1	5	1	68.89	4.825	0.1140	20	MGM	0.0057	70.12	4.911
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-RTA-2	E	C1	5	1	65.42	4.825	0.1143	20	MGM	0.0057	66.76	4.924
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-RTA-3	E	C1	5	1	64.13	4.784	0.1148	20	MGM	0.0057	65.73	4.904
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-RTA-1	E	C2	5	2	64.20	4.867	0.1144	20	MGM	0.0057	65.58	4.971
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-RTA-2	E	C2	5	2	65.16	4.919	0.1143	20	MGM	0.0057	66.50	5.020
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-RTA-3	E	C2	5	2	64.04	4.869	0.1141	20	MGM	0.0057	65.24	4.960
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-RTA-1	F	C1	6	1	61.59	4.790	0.1146	20	MGM	0.0057	63.02	4.901
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-RTA-2	F	C1	6	1	63.32	4.768	0.1151	20	MGM	0.0058	65.07	4.900
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-RTA-3	F	C1	6	1	66.03	4.830	0.1151	20	MGM	0.0058	67.86	4.964
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-RTA_1	F	C2	6	2	62.29	4.784	0.1160	20	MGM	0.0058	64.51	4.955
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-RTA-2	F	C2	6	2	62.63	4.807	0.1159	20	MGM	0.0058	64.81	4.974
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-RTA-3	F	C2	6	2	64.12	4.774	0.1159	20	MGM	0.0058	66.35	4.940

Average	63.90	4.810	Average_{norm}	0.0058	66.01	4.969
Standard Dev.	2.095	0.06416	Standard Dev._{norm}		1.875	0.05921
Coeff. of Var. [%]	3.278	1.334	Coeff. of Var. [%]_{norm}		2.840	1.192
Min.	58.68	4.677	Min.	0.0057	61.93	4.900
Max.	68.89	4.919	Max.	0.0059	70.12	5.105
Number of Spec.	18	18	Number of Spec.	18	18	18



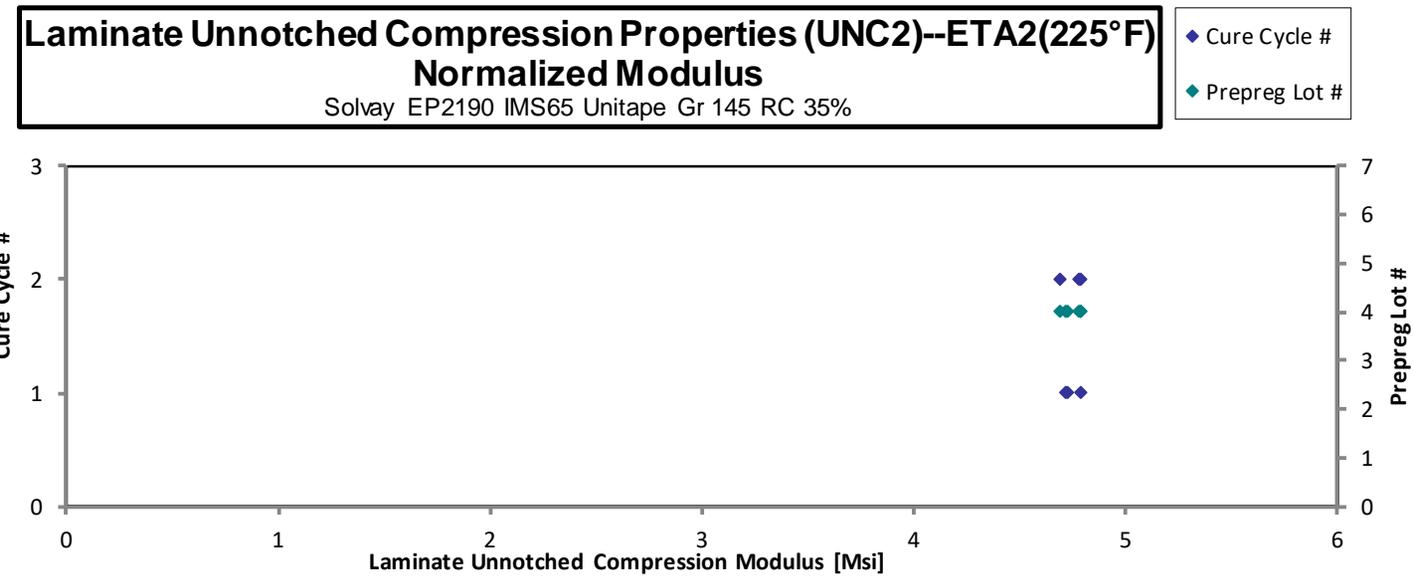
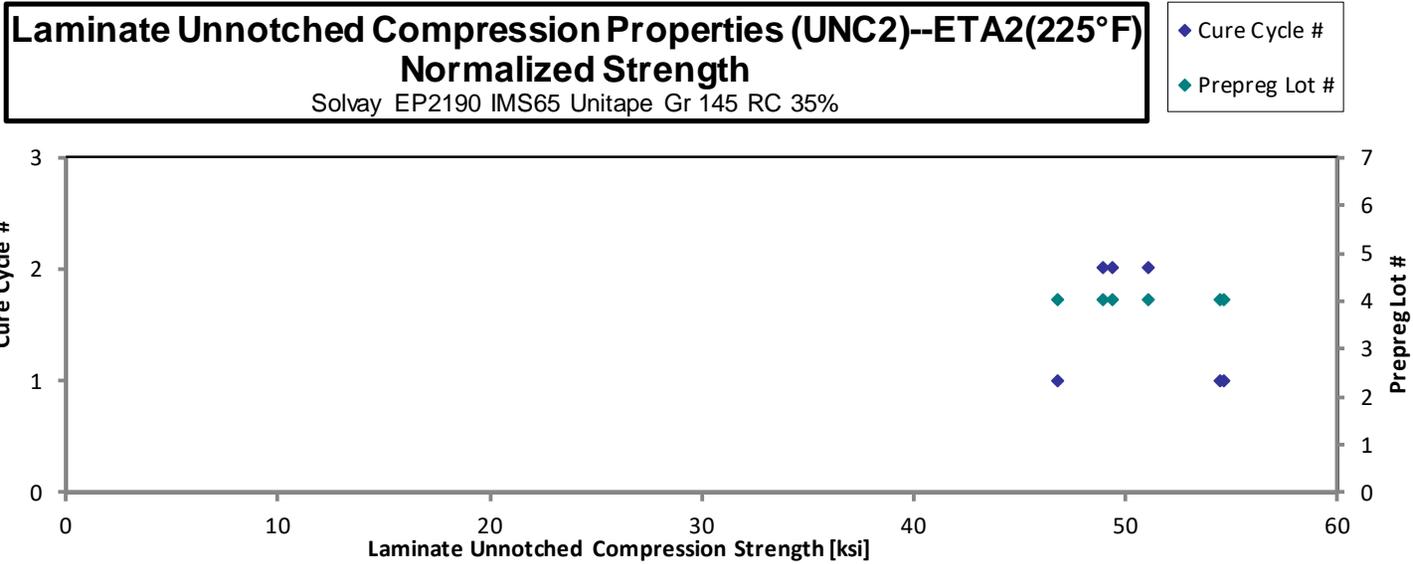
Laminate Unnotched Compression Properties (UNC2)--ETA2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA2-1	D	C1	4	1	52.52	4.530	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA2-2	D	C1	4	1	52.44	4.608	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA2-3	D	C1	4	1	45.10	4.545	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA2-1	D	C2	4	2	46.62	4.545	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA2-2	D	C2	4	2	48.52	4.548	0.1179	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA2-3	D	C2	4	2	46.86	4.448	0.1181	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	54.63	4.712
0.0058	54.50	4.789
0.0058	46.87	4.724
0.0059	48.99	4.776
0.0059	51.08	4.788
0.0059	49.41	4.690

Average	48.68	4.537	Average_{norm}	0.0059	50.91	4.746
Standard Dev.	3.139	0.05150	Standard Dev._{norm}		3.130	0.04305
Coeff. of Var. [%]	6.450	1.135	Coeff. of Var. [%]_{norm}		6.148	0.9069
Min.	45.10	4.448	Min.	0.0058	46.87	4.690
Max.	52.52	4.608	Max.	0.0059	54.63	4.789
Number of Spec.	6	6	Number of Spec.	6	6	6



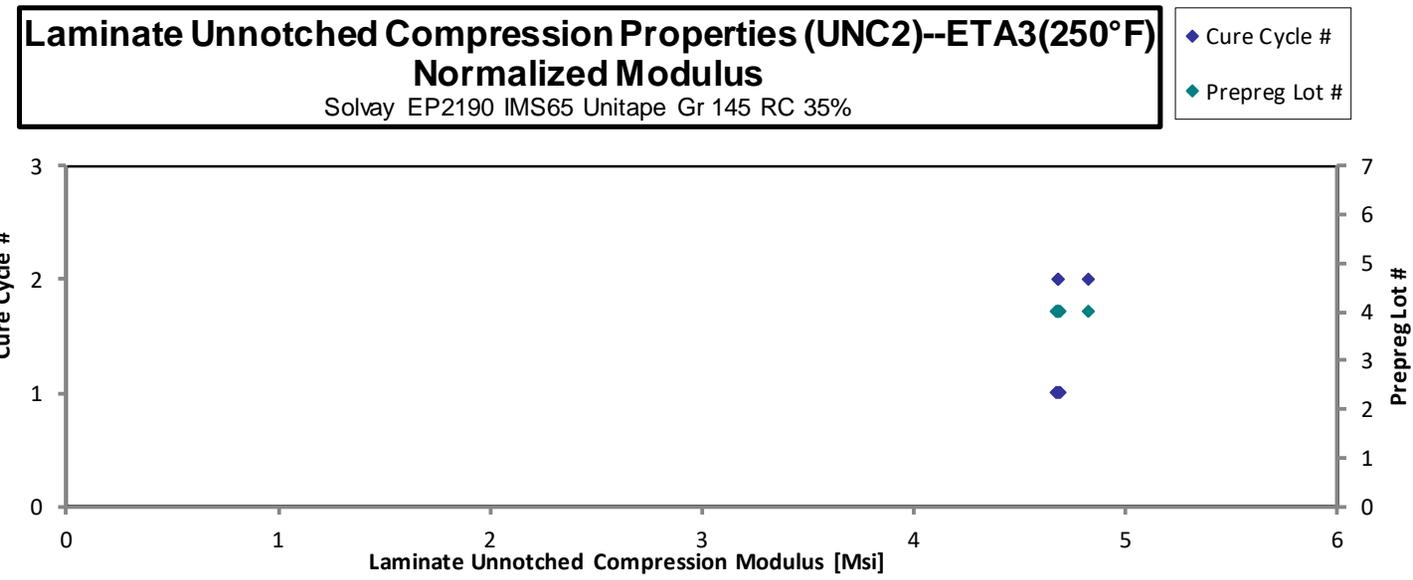
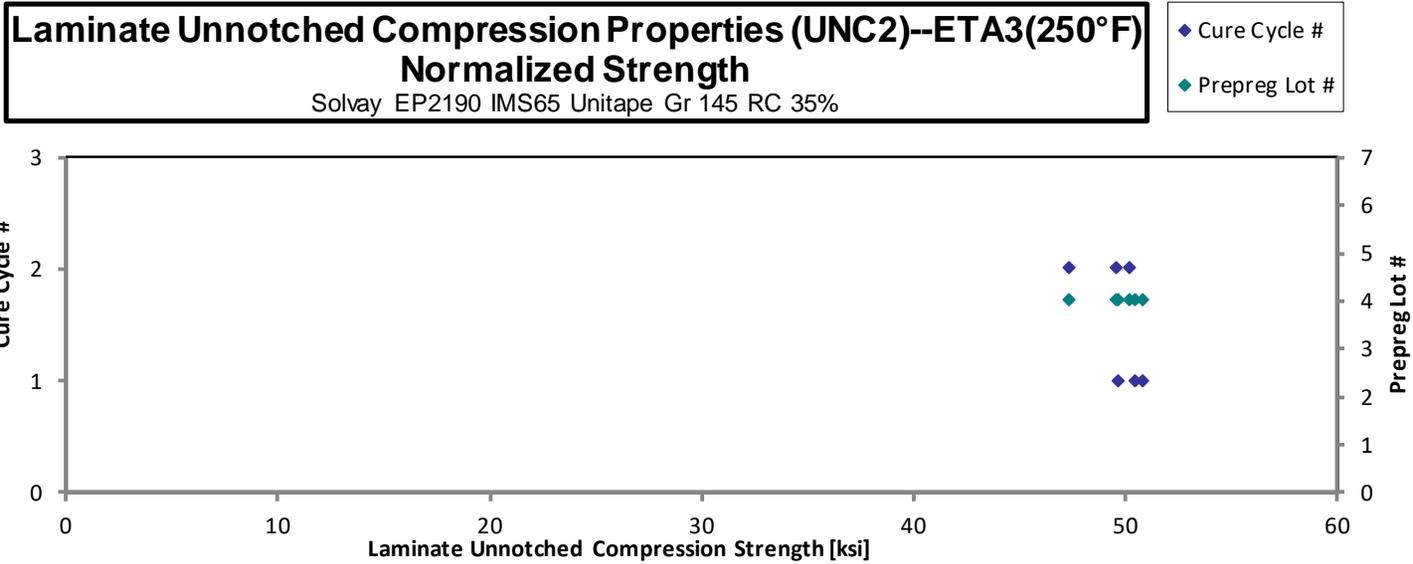
Laminate Unnotched Compression Properties (UNC2)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA1-1	D	C1	4	1	48.86	4.484	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA1-2	D	C1	4	1	48.43	4.491	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETA3-3	D	C1	4	1	47.81	4.511	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA3-1	D	C2	4	2	47.02	4.439	0.1182	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA3-2	D	C2	4	2	47.79	4.455	0.1176	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETA3-3	D	C2	4	2	44.99	4.581	0.1179	20	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	50.87	4.668
0.0058	50.46	4.679
0.0058	49.69	4.688
0.0059	49.62	4.685
0.0059	50.18	4.678
0.0059	47.36	4.822

Average	47.48	4.494	Average_{norm}	0.0059	49.70	4.703
Standard Dev.	1.373	0.05002	Standard Dev._{norm}		1.237	0.05864
Coeff. of Var. [%]	2.891	1.113	Coeff. of Var. [%]_{norm}		2.490	1.247
Min.	44.99	4.439	Min.	0.0058	47.36	4.668
Max.	48.86	4.581	Max.	0.0059	50.87	4.822
Number of Spec.	6	6	Number of Spec.	6	6	6



Laminate Unnotched Compression Properties (UNC2)--ETW1(180°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

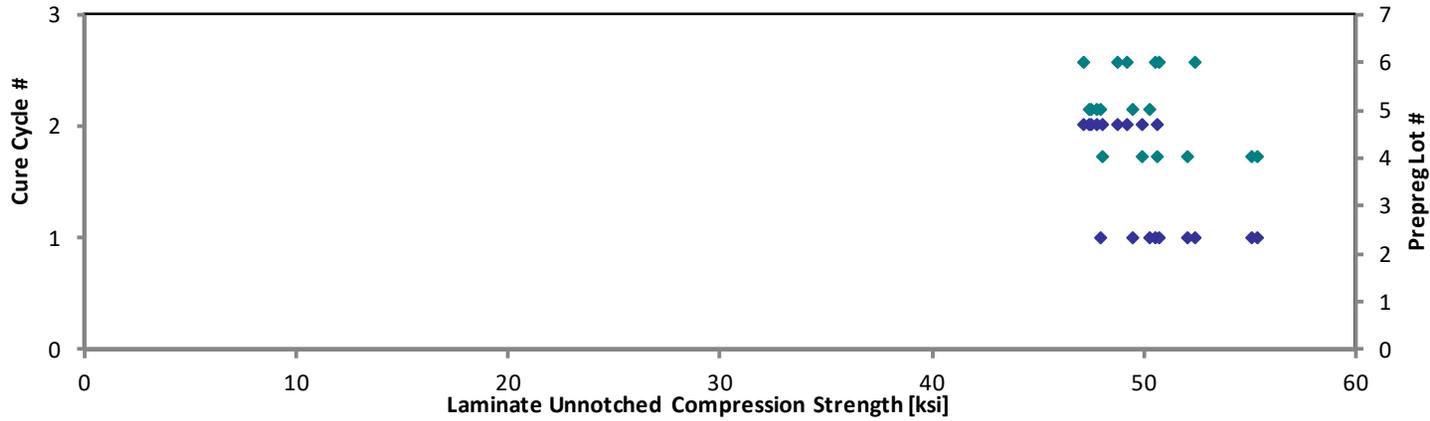
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW1-1	D	C1	4	1	50.13	4.623	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW1-2	D	C1	4	1	52.98	4.502	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW1-3	D	C1	4	1	53.35	4.570	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW1-2	D	C2	4	2	48.36	4.348	0.1172	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW1-3	D	C2	4	2	47.55	4.420	0.1175	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW1-4	D	C2	4	2	45.61	4.336	0.1179	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW1-1	E	C1	5	1	48.24	4.108	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW1-2	E	C1	5	1	46.64	4.111	0.1151	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW1-3	E	C1	5	1	49.11	4.135	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW1-1	E	C2	5	2	46.39	4.208	0.1144	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW1-2	E	C2	5	2	46.40	4.246	0.1145	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW1-3	E	C2	5	2	46.85	4.224	0.1141	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW1-1	F	C1	6	1	51.07	4.696	0.1149	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW1-2	F	C1	6	1	49.08	4.686	0.1152	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW1-3	F	C1	6	1	49.33	4.605	0.1150	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW1-1	F	C2	6	2	47.03	4.146	0.1161	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW1-2	F	C2	6	2	47.44	4.237	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW1-3	F	C2	6	2	45.68	4.153	0.1156	20	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	52.05	4.800
0.0058	55.06	4.679
0.0058	55.35	4.741
0.0059	50.61	4.550
0.0059	49.89	4.637
0.0059	48.01	4.564
0.0057	49.40	4.207
0.0058	47.93	4.225
0.0057	50.25	4.231
0.0057	47.38	4.298
0.0057	47.44	4.341
0.0057	47.73	4.303
0.0057	52.39	4.818
0.0058	50.48	4.820
0.0058	50.65	4.728
0.0058	48.75	4.298
0.0058	49.18	4.392
0.0058	47.15	4.286

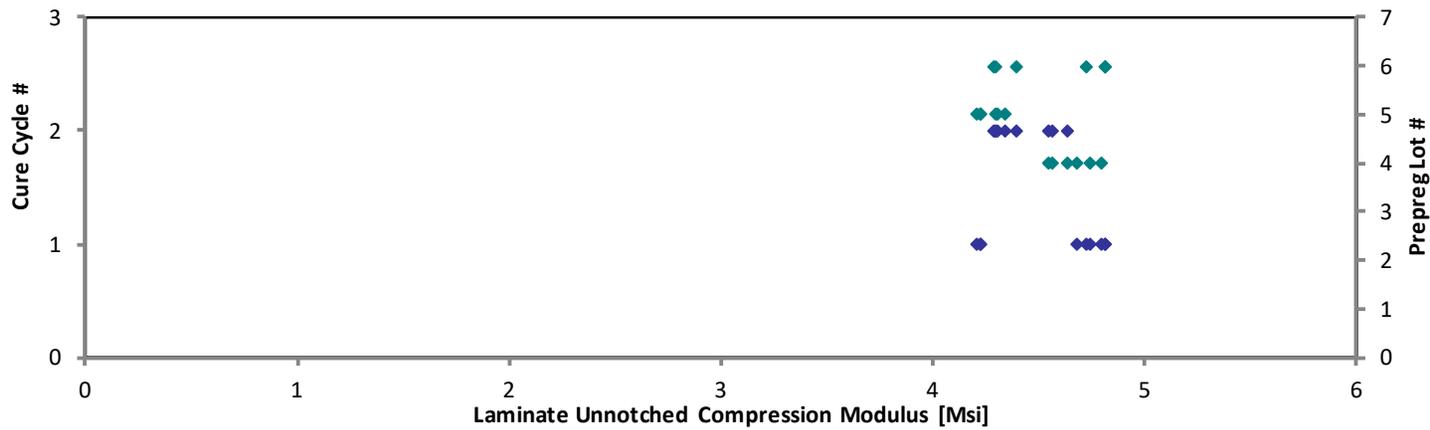
Average 48.40 4.353
 Standard Dev. 2.297 0.2101
 Coeff. of Var. [%] 4.746 4.827
 Min. 45.61 4.108
 Max. 53.35 4.696
 Number of Spec. 18 18

Average_{norm} 0.0058 49.98 4.496
 Standard Dev._{norm} 2.459 0.2298
 Coeff. of Var. [%]_{norm} 4.920 5.112
 Min. 0.0057 47.15 4.207
 Max. 0.0059 55.35 4.820
 Number of Spec. 18 18 18

Laminate Unnotched Compression Properties (UNC2)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC2)--ETW1(180°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC2)--ETW2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

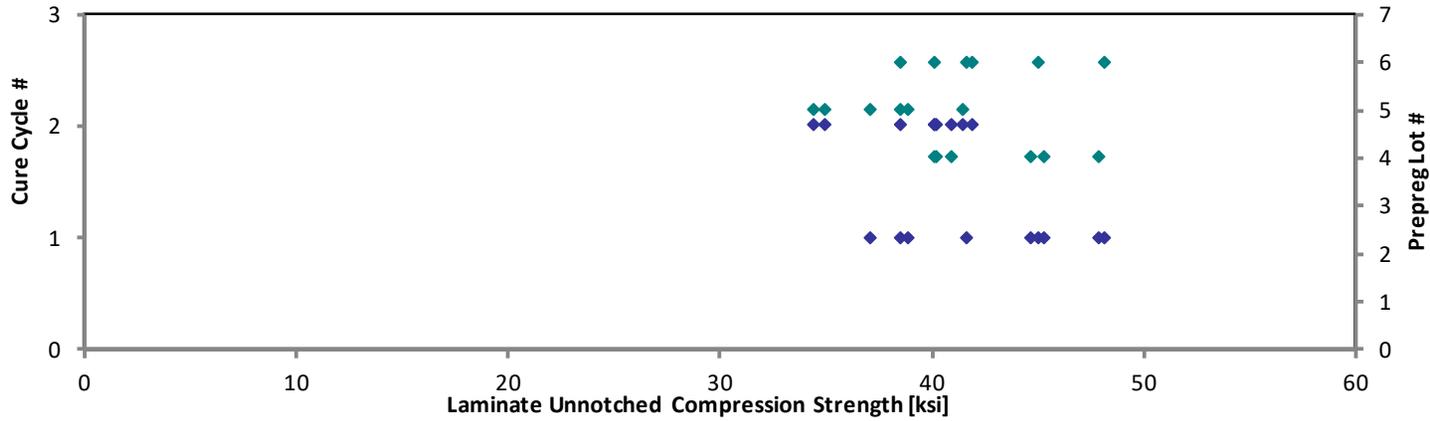
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW2-1	D	C1	4	1	43.61	4.426	0.11610	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW2-2	D	C1	4	1	43.08	4.369	0.11610	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW2-3	D	C1	4	1	46.07	4.445	0.11620	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW2-1	D	C2	4	2	38.07	4.069	0.11800	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW2-2	D	C2	4	2	38.25	4.040	0.11770	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW2-3	D	C2	4	2	38.80	4.118	0.11790	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW2-1	E	C1	5	1	37.57	4.294	0.11460	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW2-2	E	C1	5	1	36.11	4.284	0.11490	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW2-3	E	C1	5	1	37.91	4.319	0.11460	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW2-1	E	C2	5	2	40.51	4.001	0.11450	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW2-2	E	C2	5	2	34.28	3.923	0.11400	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW2-3	E	C2	5	2	33.74	3.964	0.11420	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW2-1	F	C1	6	1	40.64	4.346	0.11460	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW2-2	F	C1	6	1	47.08	4.421	0.11440	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW2-3	F	C1	6	1	44.11	4.472	0.11420	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW2-1	F	C2	6	2	38.98	3.867	0.11510	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW2-2	F	C2	6	2	40.70	3.925	0.11530	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW2-3	F	C2	6	2	37.43	3.892	0.11510	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	45.21	4.588
0.0058	44.66	4.529
0.0058	47.80	4.612
0.0059	40.11	4.287
0.0059	40.20	4.246
0.0059	40.84	4.335
0.0057	38.44	4.394
0.0057	37.04	4.395
0.0057	38.79	4.419
0.0057	41.41	4.090
0.0057	34.89	3.993
0.0057	34.40	4.042
0.0057	41.58	4.447
0.0057	48.09	4.516
0.0057	44.98	4.560
0.0058	40.06	3.974
0.0058	41.90	4.041
0.0058	38.47	4.000

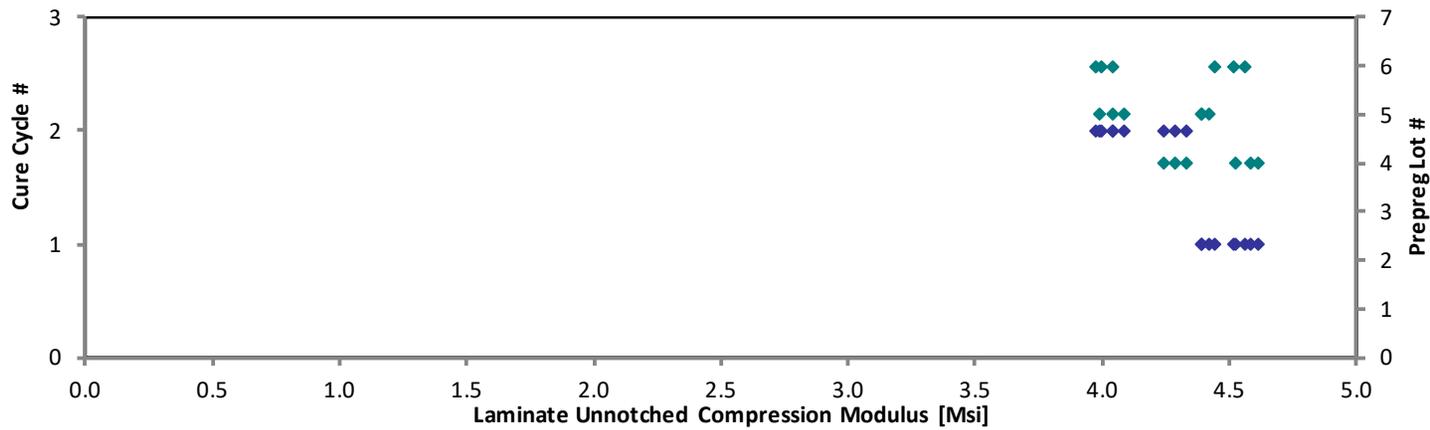
Average 39.83 4.176
 Standard Dev. 3.759 0.2178
 Coeff. of Var. [%] 9.437 5.216
 Min. 33.74 3.867
 Max. 47.08 4.472
 Number of Spec. 18 18

Average_{norm} 0.0058 41.05 4.304
 Standard Dev._{norm} 3.920 0.2266
 Coeff. of Var. [%]_{norm} 9.551 5.265
 Min. 0.0057 34.40 3.974
 Max. 0.0059 48.09 4.612
 Number of Spec. 18 18

Laminate Unnotched Compression Properties (UNC2)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC2)--ETW2(225°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC2)--ETW3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

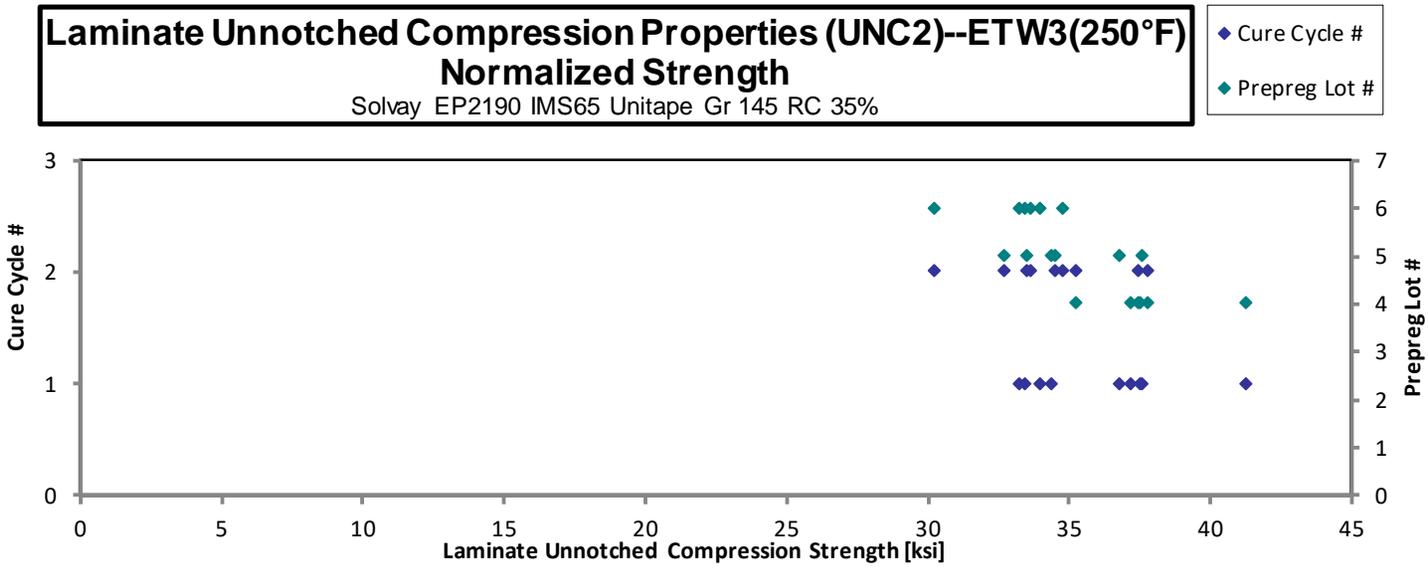
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW3-1	D	C1	4	1	35.75	4.226	0.11630	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW3-2	D	C1	4	1	35.99	4.184	0.11660	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-ETW3-3	D	C1	4	1	39.65	4.186	0.11650	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW3-1	D	C2	4	2	35.86	3.658	0.11790	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW3-2	D	C2	4	2	35.72	3.697	0.11730	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-ETW3-3	D	C2	4	2	33.42	3.730	0.11790	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW3-1	E	C1	5	1	33.60	4.152	0.11450	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW3-2	E	C1	5	1	35.98	4.136	0.11440	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-ETW3-3	E	C1	5	1	36.68	4.109	0.11470	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW3-1	E	C2	5	2	31.96	3.724	0.11450	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW3-2	E	C2	5	2	33.63	3.707	0.11470	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-ETW3-3	E	C2	5	2	32.78	3.691	0.11440	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW3-1	F	C1	6	1	32.97	3.436	0.11520	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW3-2	F	C1	6	1	32.48	3.436	0.11510	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-ETW3-3	F	C1	6	1	32.35	3.444	0.11500	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW3-1	F	C2	6	2	29.28	3.702	0.11550	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW3-2	F	C2	6	2	32.65	3.715	0.11530	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-ETW3-3	F	C2	6	2	33.89	3.668	0.11490	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	37.12	4.388
0.0058	37.47	4.356
0.0058	41.24	4.354
0.0059	37.75	3.851
0.0059	37.41	3.872
0.0059	35.18	3.926
0.0057	34.35	4.245
0.0057	36.75	4.225
0.0057	37.56	4.208
0.0057	32.67	3.807
0.0057	34.44	3.796
0.0057	33.48	3.770
0.0058	33.91	3.534
0.0058	33.38	3.531
0.0058	33.22	3.536
0.0058	30.20	3.818
0.0058	33.61	3.824
0.0057	34.77	3.763

Average 34.15 3.811
 Standard Dev. 2.334 0.2761
 Coeff. of Var. [%] 6.834 7.244
 Min. 29.28 3.436
 Max. 39.65 4.226
 Number of Spec. 18 18

Average_{norm} 0.0058 35.25 3.934
 Standard Dev._{norm} 2.567 0.2895
 Coeff. of Var. [%]_{norm} 7.281 7.360
 Min. 0.0057 30.20 3.531
 Max. 0.0059 41.24 4.388
 Number of Spec. 18 18 18



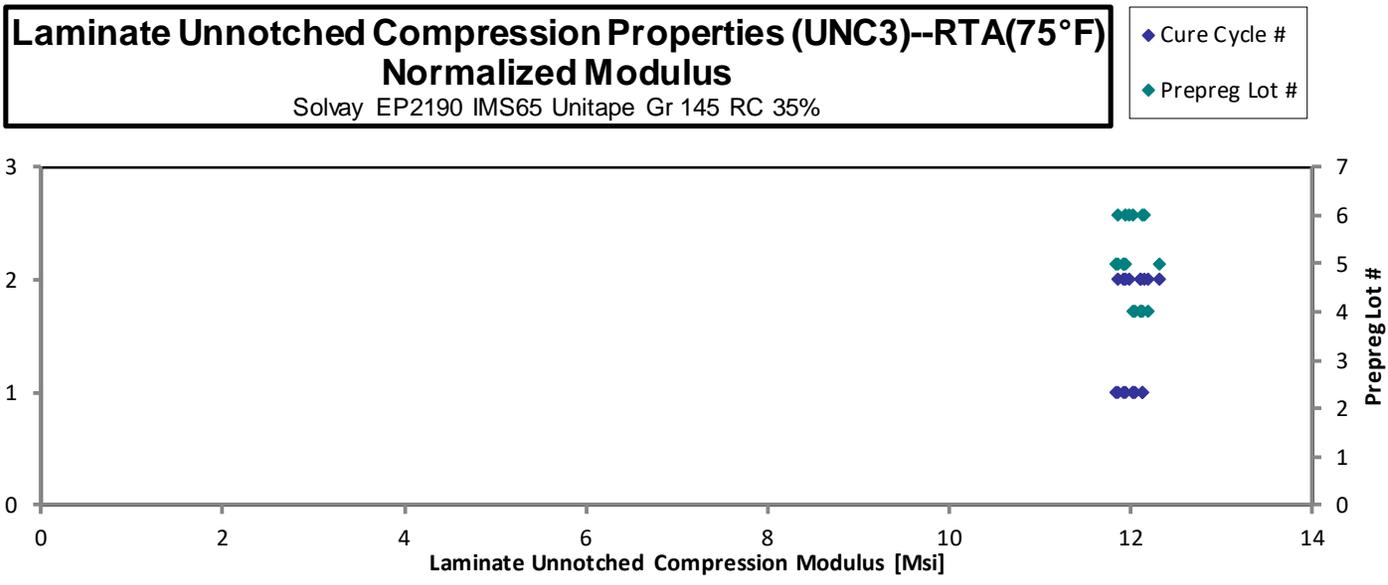
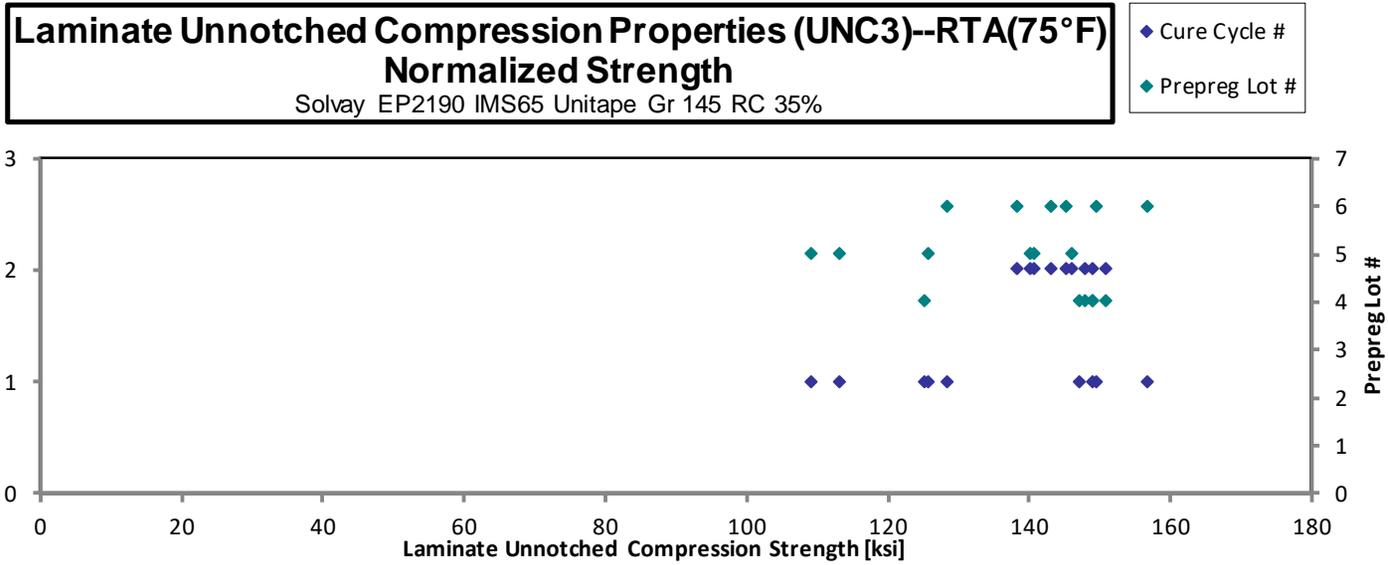
4.14 “50/40/10” Unnotched Compression 3 Properties (UNC3)

Laminate Unnotched Compression Properties (UNC3)--RTA(75°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay 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]
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-RTA-1	D	C1	4	1	141.3	11.65	0.1165	20	MGM	0.0058	147.0	12.12
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-RTA-2	D	C1	4	1	120.0	11.57	0.1166	20	MGM	0.0058	124.9	12.04
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-RTA-3	D	C1	4	1	143.4	11.58	0.1163	20	MGM	0.0058	148.9	12.02
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-RTA-2	D	C2	4	2	142.7	11.54	0.1183	20	MGM	0.0059	150.7	12.19
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-RTA-3	D	C2	4	2	139.6	11.43	0.1187	20	MGM	0.0059	147.9	12.11
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-RTA-4	D	C2	4	2	143.1	11.64	0.1165	20	MGM	0.0058	148.9	12.11
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-RTA-1	E	C1	5	1	110.1	11.55	0.1149	20	MGM	0.0057	112.9	11.85
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-RTA-2	E	C1	5	1	105.9	11.50	0.1152	20	MGM	0.0058	108.9	11.83
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-RTA-3	E	C1	5	1	122.3	11.62	0.1150	20	MGM	0.0058	125.6	11.93
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-RTA-2	E	C2	5	2	137.5	11.66	0.1145	20	MGM	0.0057	140.6	11.92
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-RTA-3	E	C2	5	2	136.8	11.67	0.1146	20	MGM	0.0057	140.0	11.94
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-RTA-5	E	C2	5	2	142.8	12.04	0.1145	20	MGM	0.0057	145.9	12.31
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-RTA-1	F	C1	6	1	124.9	11.63	0.1150	20	MAT	0.0058	128.2	11.94
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-RTA-2	F	C1	6	1	144.8	11.77	0.1155	20	MAT	0.0058	149.3	12.13
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-RTA-3	F	C1	6	1	152.4	11.71	0.1150	20	MGM	0.0058	156.5	12.02
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-RTA-1	F	C2	6	2	140.2	11.92	0.1142	20	MGM	0.0057	143.0	12.16
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-RTA-2	F	C2	6	2	142.0	11.61	0.1144	20	MGM	0.0057	145.1	11.85
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-RTA-3	F	C2	6	2	135.4	11.75	0.1143	20	MGM	0.0057	138.2	11.99

Average	134.7	11.66	Average_{norm}	0.0058	139.0	12.03
Standard Dev.	12.74	0.1460	Standard Dev._{norm}		13.44	0.1317
Coeff. of Var. [%]	9.453	1.252	Coeff. of Var. [%]_{norm}		9.670	1.095
Min.	105.9	11.43	Min.	0.0057	108.9	11.83
Max.	152.4	12.04	Max.	0.0059	156.5	12.31
Number of Spec.	18	18	Number of Spec.	18	18	18



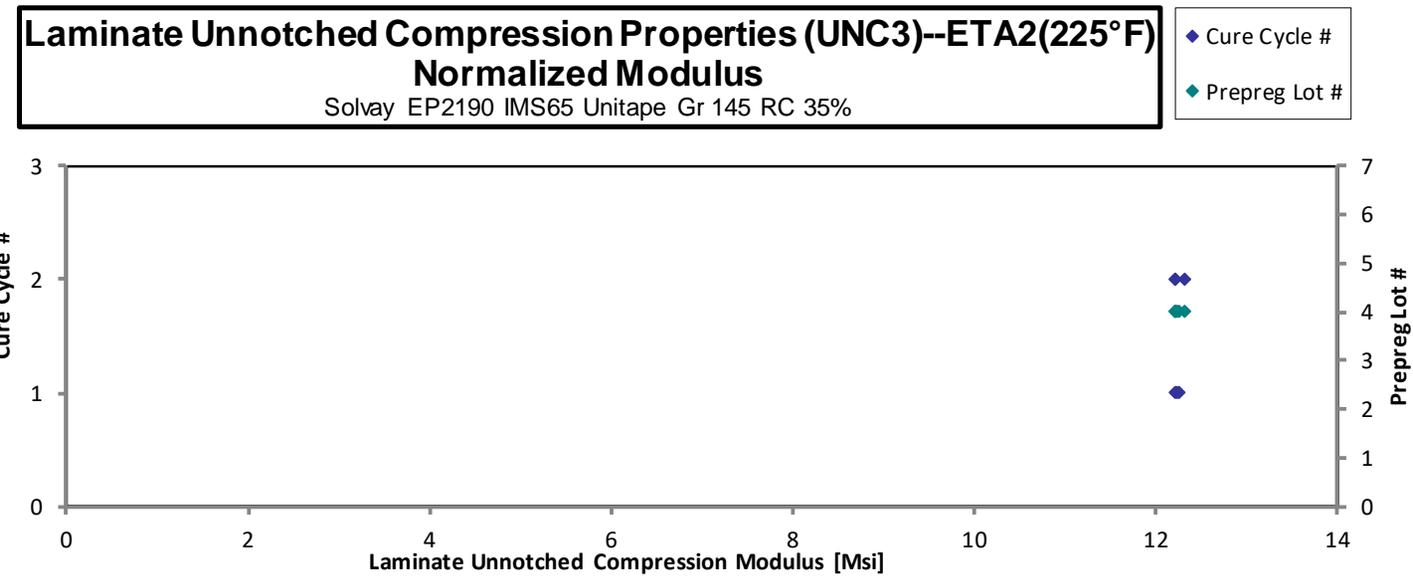
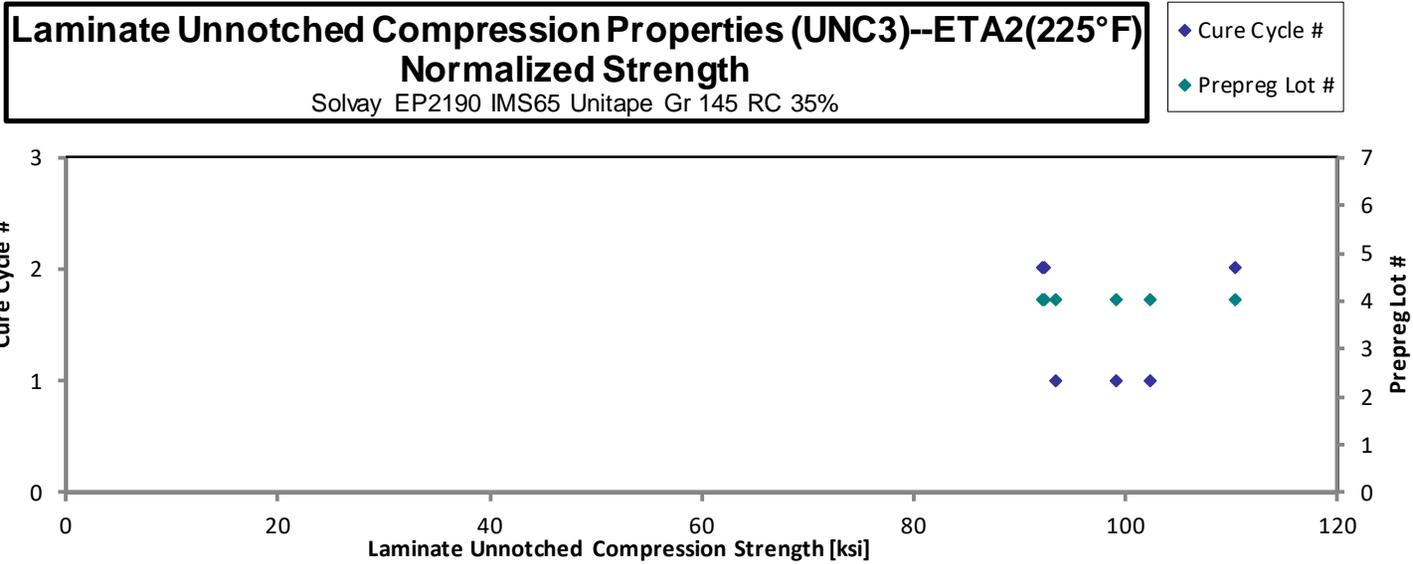
Laminate Unnotched Compression Properties (UNC3)--ETA2(225°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA2-1	D	C1	4	1	95.21	11.74	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA2-2	D	C1	4	1	89.87	11.78	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA2-3	D	C1	4	1	98.28	11.78	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETA2-1	D	C2	4	2	86.75	11.59	0.1190	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETA2-2	D	C2	4	2	87.22	11.53	0.1186	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETA2-3	D	C2	4	2	103.9	11.49	0.1190	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	99.12	12.22
0.0058	93.40	12.24
0.0058	102.3	12.26
0.0060	92.17	12.31
0.0059	92.36	12.21
0.0060	110.4	12.21

Average	93.54	11.65	Average_{norm}	0.0059	98.30	12.24
Standard Dev.	6.822	0.1285	Standard Dev._{norm}		7.221	0.03937
Coeff. of Var. [%]	7.293	1.103	Coeff. of Var. [%]_{norm}		7.345	0.3216
Min.	86.75	11.49	Min.	0.0058	92.17	12.21
Max.	103.9	11.78	Max.	0.0060	110.4	12.31
Number of Spec.	6	6	Number of Spec.	6	6	6



Laminate Unnotched Compression Properties (UNC3)--ETA3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

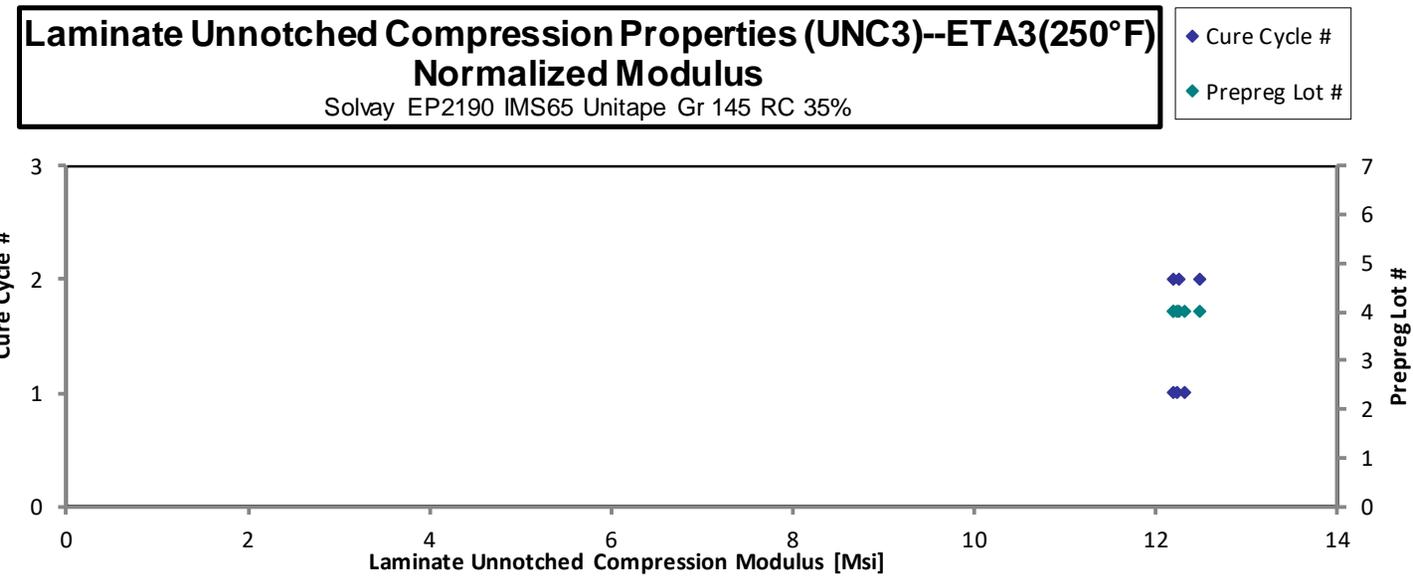
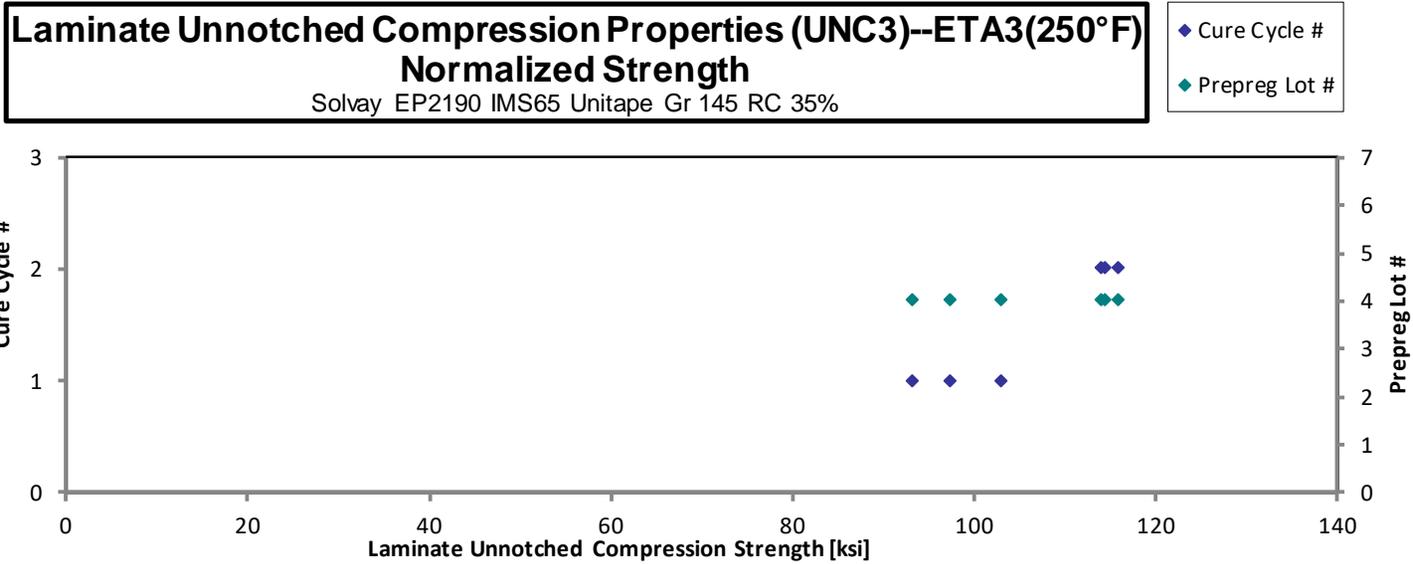
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA3-1	D	C1	4	1	98.57	11.71	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA3-2	D	C1	4	1	89.63	11.73	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETA3-3	D	C1	4	1	93.36	11.79	0.1169	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETA3-2	D	C2	4	2	108.3	11.81	0.1184	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETA3-3	D	C2	4	2	109.6	11.53	0.1184	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-2-ETA3-4	D	C2	4	2	109.8	11.79	0.1164	20	MGB

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0059	103.0	12.23
0.0058	93.15	12.19
0.0058	97.44	12.31
0.0059	114.5	12.49
0.0059	115.9	12.19
0.0058	114.1	12.25

Average	101.5	11.73
Standard Dev.	8.903	0.1052
Coeff. of Var. [%]	8.768	0.8967
Min.	89.63	11.53
Max.	109.8	11.81
Number of Spec.	6	6

Average_{norm}	0.0059	106.3	12.28
Standard Dev._{norm}		9.817	0.1129
Coeff. of Var. [%]_{norm}		9.232	0.9200
Min.	0.0058	93.15	12.19
Max.	0.0059	115.9	12.49
Number of Spec.	6	6	6



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

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW1-1	D	C1	4	1	116.5	11.78	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW1-2	D	C1	4	1	87.78	11.73	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW1-3	D	C1	4	1	104.6	11.56	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW1-1	D	C2	4	2	89.53	10.41	0.1184	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW1-2	D	C2	4	2	102.0	10.62	0.1181	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW1-3	D	C2	4	2	103.9	10.49	0.1181	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW1-1	E	C1	5	1	89.25	10.57	0.1149	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW1-2	E	C1	5	1	103.0	10.59	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW1-3	E	C1	5	1	90.06	10.56	0.1150	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW1-1	E	C2	5	2	86.26	10.63	0.1148	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW1-2	E	C2	5	2	98.01	10.63	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW1-3	E	C2	5	2	92.80	10.67	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW1-1	F	C1	6	1	101.8	11.94	0.1146	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW1-2	F	C1	6	1	111.4	11.71	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW1-3	F	C1	6	1	75.23	11.87	0.1141	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW1-1	F	C2	6	2	91.85	10.85	0.1141	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW1-2	F	C2	6	2	100.1	10.78	0.1144	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW1-3	F	C2	6	2	101.2	10.89	0.1140	20	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	120.8	12.22
0.0058	91.15	12.18
0.0058	108.6	12.00
0.0059	94.65	11.01
0.0059	107.6	11.20
0.0059	109.5	11.06
0.0057	91.56	10.85
0.0058	106.0	10.90
0.0058	92.47	10.84
0.0057	88.42	10.90
0.0058	100.6	10.91
0.0057	94.87	10.91
0.0057	104.2	12.22
0.0057	113.9	11.97
0.0057	76.64	12.09
0.0057	93.57	11.06
0.0057	102.3	11.01
0.0057	103.0	11.08

Average 96.96 11.02
 Standard Dev. 9.957 0.5606
 Coeff. of Var. [%] 10.27 5.089
 Min. 75.23 10.41
 Max. 116.5 11.94
 Number of Spec. 18 18

Average_{norm} 0.0058 99.99 11.36
 Standard Dev._{norm} 10.57 0.5614
 Coeff. of Var. [%]_{norm} 10.57 4.944
 Min. 0.0057 76.64 10.84
 Max. 0.0059 120.8 12.22
 Number of Spec. 18 18 18

**Laminate Unnotched Compression Properties (UNC3)--ETW2(225°F)
Strength & Modulus**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

t_{ply} [in]
0.0056

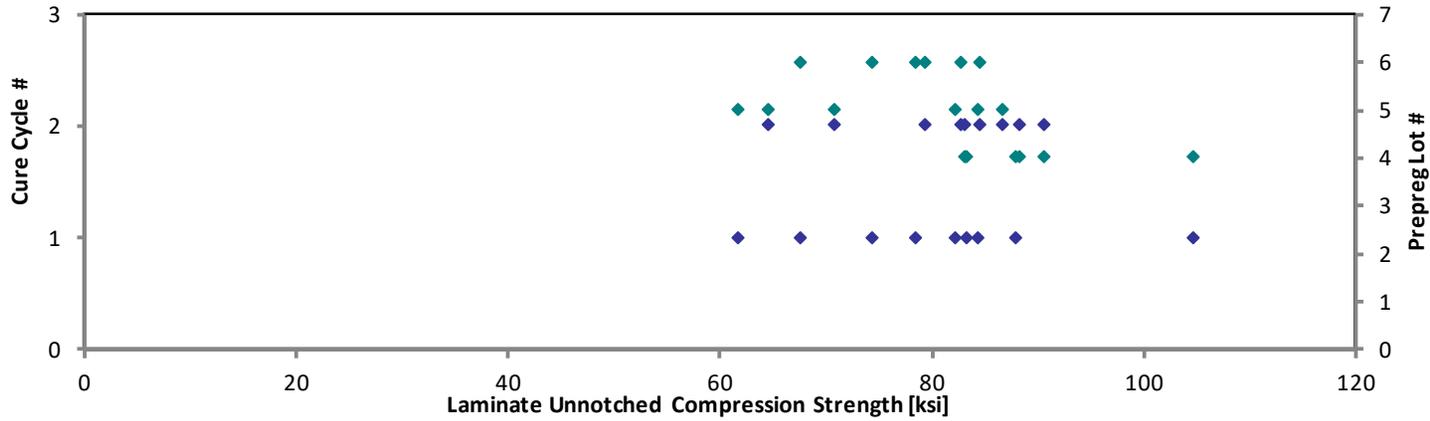
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW2-1	D	C1	4	1	100.7	11.76	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW2-2	D	C1	4	1	84.35	11.81	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW2-3	D	C1	4	1	79.87	11.82	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW2-1	D	C2	4	2	78.53	10.46	0.1183	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW2-2	D	C2	4	2	83.30	10.45	0.1186	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW2-3	D	C2	4	2	85.27	10.36	0.1189	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW2-1	E	C1	5	1	80.06	11.57	0.1148	20	MGB
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW2-2	E	C1	5	1	82.34	11.67	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW2-3	E	C1	5	1	60.19	11.57	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW2-1	E	C2	5	2	84.76	10.62	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW2-2	E	C2	5	2	63.09	10.58	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW2-3	E	C2	5	2	69.35	10.59	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW2-1	F	C1	6	1	76.33	9.849	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW2-2	F	C1	6	1	65.54	9.742	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW2-3	F	C1	6	1	72.34	9.741	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW2-1	F	C2	6	2	77.73	10.62	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW2-2	F	C2	6	2	82.60	10.68	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW2-3	F	C2	6	2	81.08	10.64	0.1142	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	104.6	12.21
0.0058	87.81	12.30
0.0058	83.22	12.31
0.0059	82.95	11.05
0.0059	88.21	11.06
0.0059	90.52	11.00
0.0057	82.06	11.86
0.0057	84.32	11.95
0.0057	61.59	11.84
0.0057	86.58	10.85
0.0057	64.39	10.79
0.0057	70.65	10.79
0.0058	78.37	10.11
0.0058	67.47	10.03
0.0058	74.28	10.00
0.0057	79.33	10.84
0.0057	84.44	10.92
0.0057	82.67	10.85

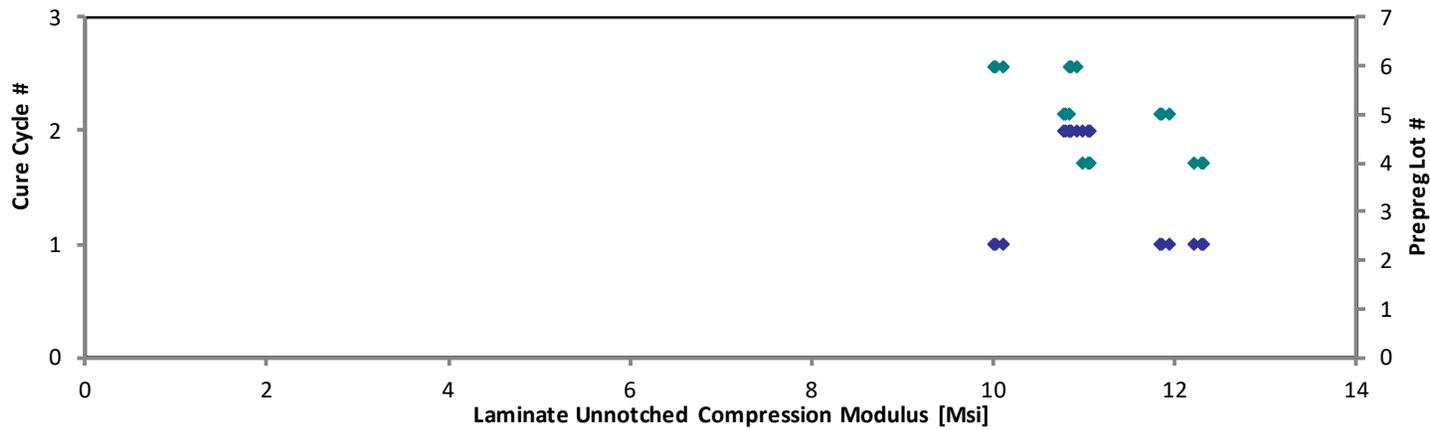
Average 78.19 10.81
 Standard Dev. 9.532 0.7154
 Coeff. of Var. [%] 12.19 6.620
 Min. 60.19 9.741
 Max. 100.7 11.82
 Number of Spec. 18 18

Average_{norm} 0.0058 80.75 11.15
 Standard Dev._{norm} 10.32 0.7550
 Coeff. of Var. [%]_{norm} 12.77 6.770
 Min. 0.0057 61.59 10.00
 Max. 0.0059 104.6 12.31
 Number of Spec. 18 18 18

Laminate Unnotched Compression Properties (UNC3)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC3)--ETW2(225°F)
Normalized Modulus
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Unnotched Compression Properties (UNC3)--ETW3(250°F)
Strength & Modulus
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

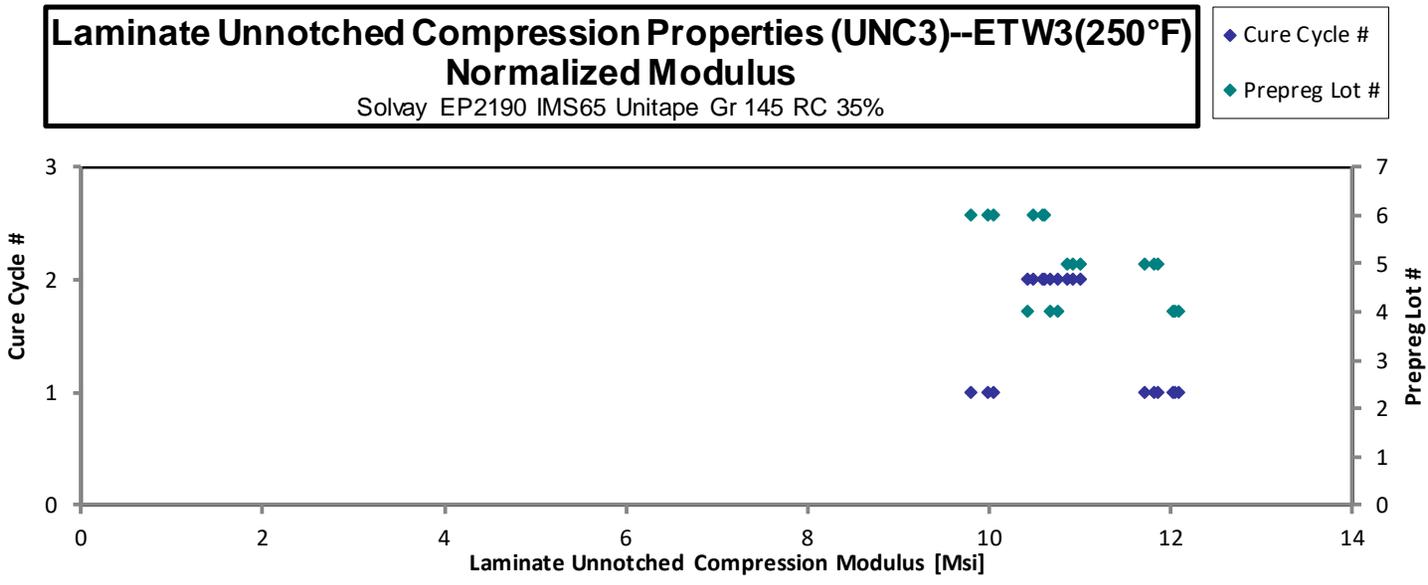
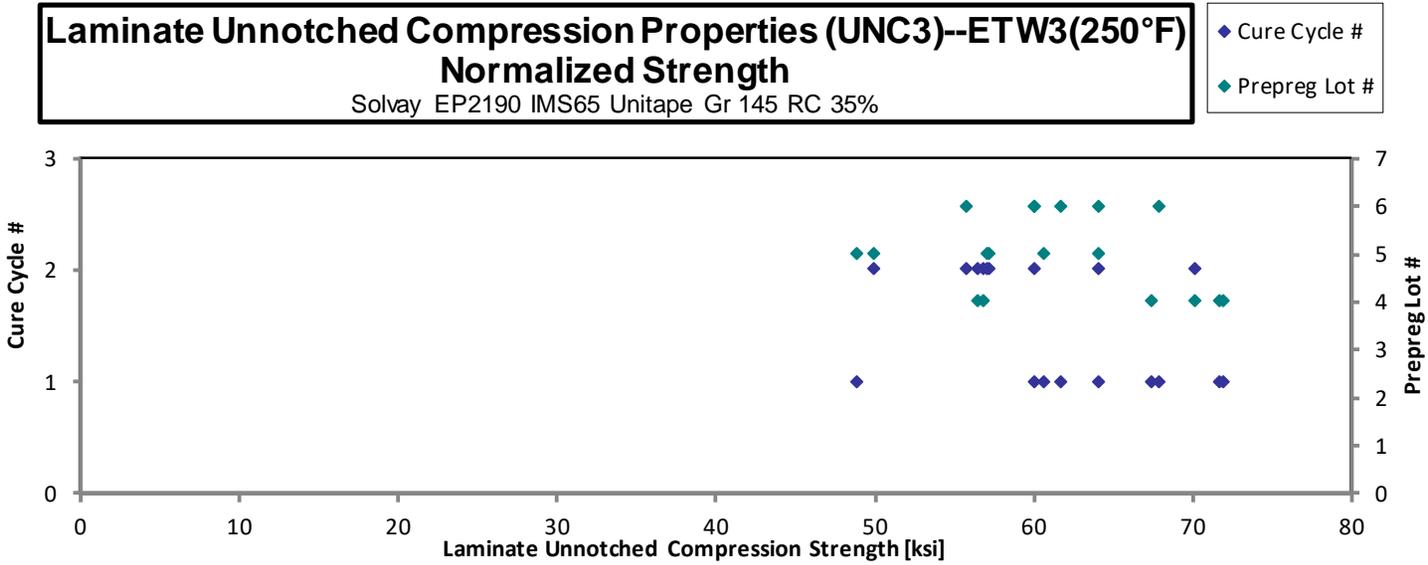
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW3-1	D	C1	4	1	64.80	11.60	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW3-2	D	C1	4	1	68.94	11.60	0.1168	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-ETW3-3	D	C1	4	1	68.60	11.51	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW3-1	D	C2	4	2	53.50	10.13	0.1180	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW3-2	D	C2	4	2	66.43	10.20	0.1181	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-ETW3-3	D	C2	4	2	53.90	9.911	0.1179	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW3-1	E	C1	5	1	59.20	11.59	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW3-2	E	C1	5	1	47.57	11.42	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-ETW3-3	E	C1	5	1	62.76	11.58	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW3-1	E	C2	5	2	48.82	10.69	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW3-2	E	C2	5	2	55.72	10.61	0.1146	20	MGT
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-ETW3-3	E	C2	5	2	55.97	10.80	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW3-2	F	C1	6	1	58.62	9.580	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW3-3	F	C1	6	1	66.25	9.808	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-ETW3-4	F	C1	6	1	59.71	9.666	0.1157	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW3-1	F	C2	6	2	58.72	10.35	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW3-2	F	C2	6	2	54.25	10.21	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-ETW3-3	F	C2	6	2	62.53	10.37	0.1146	20	MGT

Avg. t_{ply} [in]	Strength _{norm} [ksi]	Modulus _{norm} [Msi]
0.0058	67.29	12.04
0.0058	71.89	12.10
0.0059	71.66	12.02
0.0059	56.37	10.67
0.0059	70.05	10.76
0.0059	56.74	10.43
0.0057	60.57	11.86
0.0057	48.76	11.71
0.0057	64.05	11.81
0.0057	49.87	10.92
0.0057	57.01	10.85
0.0057	57.12	11.02
0.0057	60.03	9.811
0.0057	67.85	10.04
0.0058	61.68	9.985
0.0057	60.03	10.58
0.0058	55.70	10.48
0.0057	63.98	10.61

Average 59.24 10.64
 Standard Dev. 6.379 0.7317
 Coeff. of Var. [%] 10.77 6.874
 Min. 47.57 9.580
 Max. 68.94 11.60
 Number of Spec. 18 18

Average_{norm} 0.0058 61.15 10.98
 Standard Dev._{norm} 6.832 0.7552
 Coeff. of Var. [%]_{norm} 11.17 6.876
 Min. 0.0057 48.76 9.811
 Max. 0.0059 71.89 12.10
 Number of Spec. 18 18 18

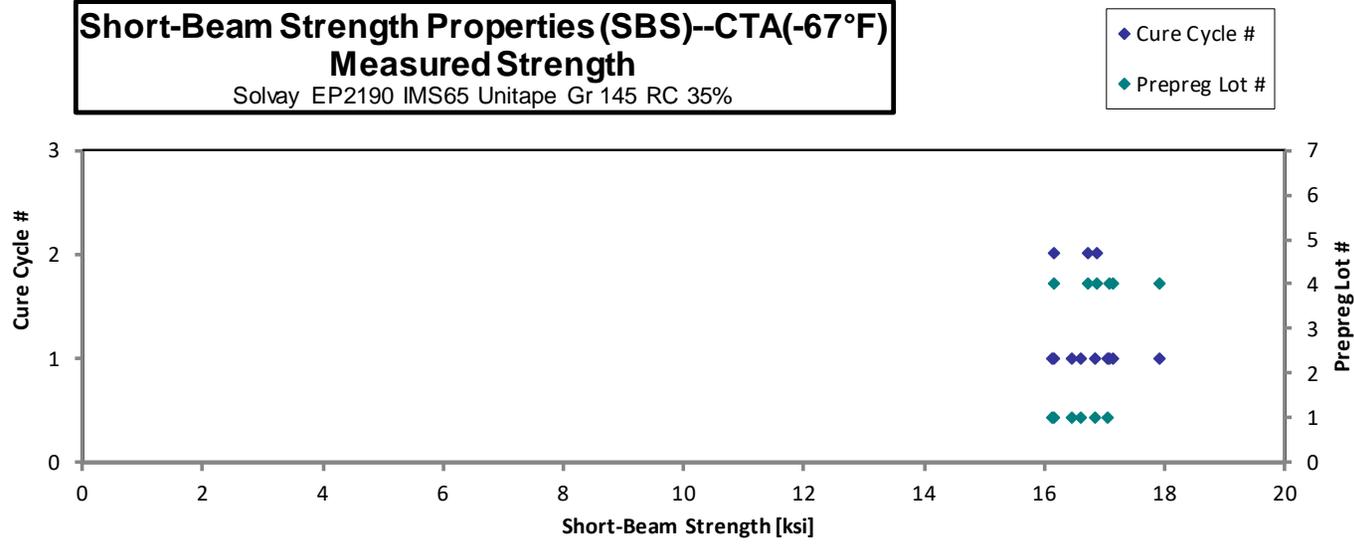


4.15 Lamina Short-Beam Strength Properties (SBS)

Short-Beam Strength Properties (SBS)--CTA(-67°F)
Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
TR7695895-P1-SBS-A-C1-CTA-1	A	C1	1	1	16.85	0.2594	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-CTA-2	A	C1	1	1	16.46	0.2592	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-CTA-3	A	C1	1	1	17.07	0.2590	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-CTA-4	A	C1	1	1	16.18	0.2598	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-CTA-5	A	C1	1	1	16.62	0.2588	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-CTA-6	A	C1	1	1	16.14	0.2585	44	0.0059	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-CTA-1	D	C1	4	1	17.15	0.2506	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-CTA-2	D	C1	4	1	17.92	0.2492	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-CTA-3	D	C1	4	1	17.09	0.2480	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-CTA-1	D	C2	4	2	16.88	0.2552	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-CTA-2	D	C2	4	2	16.18	0.2547	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-CTA-3	D	C2	4	2	16.72	0.2536	44	0.0058	ILS

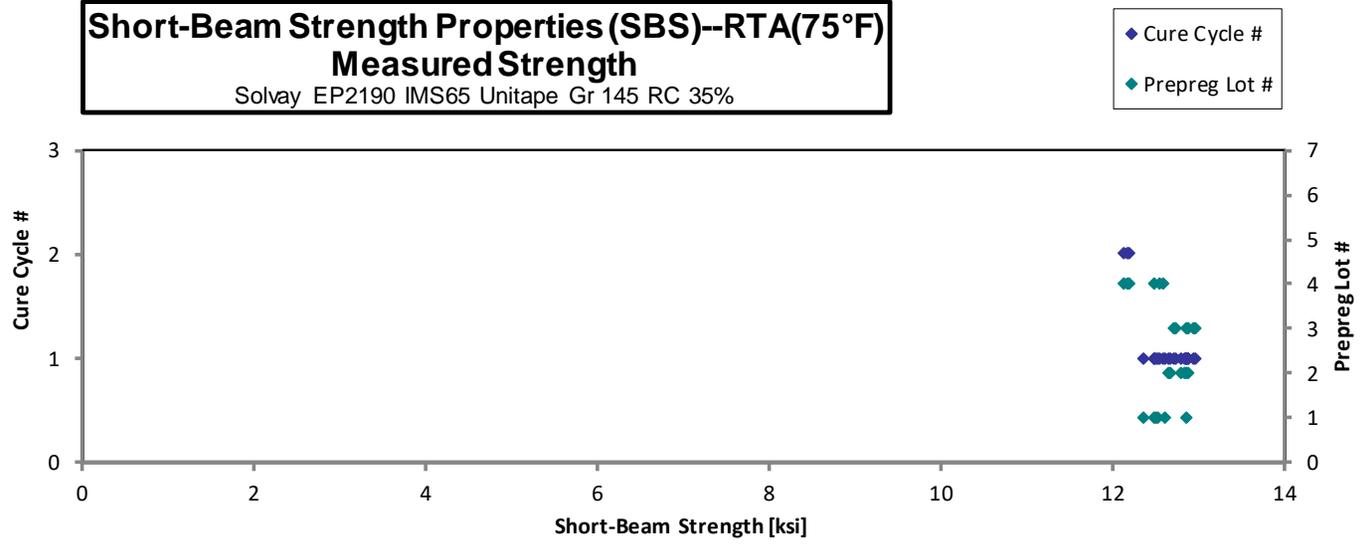
Average	16.77	Average	0.0058
Standard Dev.	0.5127		
Coeff. of Var. [%]	3.057		
Min.	16.14	Min.	0.0056
Max.	17.92	Max.	0.0059
Number of Spec.	12	Number of Spec.	12



Short-Beam Strength Properties (SBS)--RTA(75°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
TR7695895-P1-SBS-A-C1-RTA-1	A	C1	1	1	12.49	0.2596	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-RTA-2	A	C1	1	1	12.51	0.2598	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-RTA-3	A	C1	1	1	12.86	0.2596	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-RTA-4	A	C1	1	1	12.60	0.2599	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-RTA-5	A	C1	1	1	12.53	0.2591	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-RTA-6	A	C1	1	1	12.37	0.2589	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-1	B	C1	2	1	12.80	0.2599	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-2	B	C1	2	1	12.83	0.2601	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-3	B	C1	2	1	12.65	0.2597	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-4	B	C1	2	1	12.87	0.2596	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-5	B	C1	2	1	12.68	0.2590	44	0.0059	ILS
TR7702886-P1-SBS-B-C1-RTA-6	B	C1	2	1	12.88	0.2589	44	0.0059	ILS
TR7725568-P1-SBS-C-C1-RTA-1	C	C1	3	1	12.71	0.2590	44	0.0059	ILS
TR7725568-P1-SBS-C-C1-RTA-2	C	C1	3	1	12.88	0.2588	44	0.0059	ILS
TR7725568-P1-SBS-C-C1-RTA-3	C	C1	3	1	12.94	0.2607	44	0.0059	ILS
TR7725568-P1-SBS-C-C1-RTA-4	C	C1	3	1	12.97	0.2572	44	0.0058	ILS
TR7725568-P1-SBS-C-C1-RTA-5	C	C1	3	1	12.73	0.2602	44	0.0059	ILS
TR7725568-P1-SBS-C-C1-RTA-6	C	C1	3	1	12.86	0.2551	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-RTA-1	D	C1	4	1	12.55	0.2499	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-RTA-2	D	C1	4	1	12.48	0.2482	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-RTA-3	D	C1	4	1	12.59	0.2470	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-RTA-1	D	C2	4	2	12.19	0.2574	44	0.0059	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-RTA-2	D	C2	4	2	12.18	0.2572	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-RTA-3	D	C2	4	2	12.14	0.2567	44	0.0058	ILS

Average	12.64	Average	0.0059
Standard Dev.	0.2437		
Coeff. of Var. [%]	1.929		
Min.	12.14	Min.	0.0056
Max.	12.97	Max.	0.0059
Number of Spec.	24	Number of Spec.	24

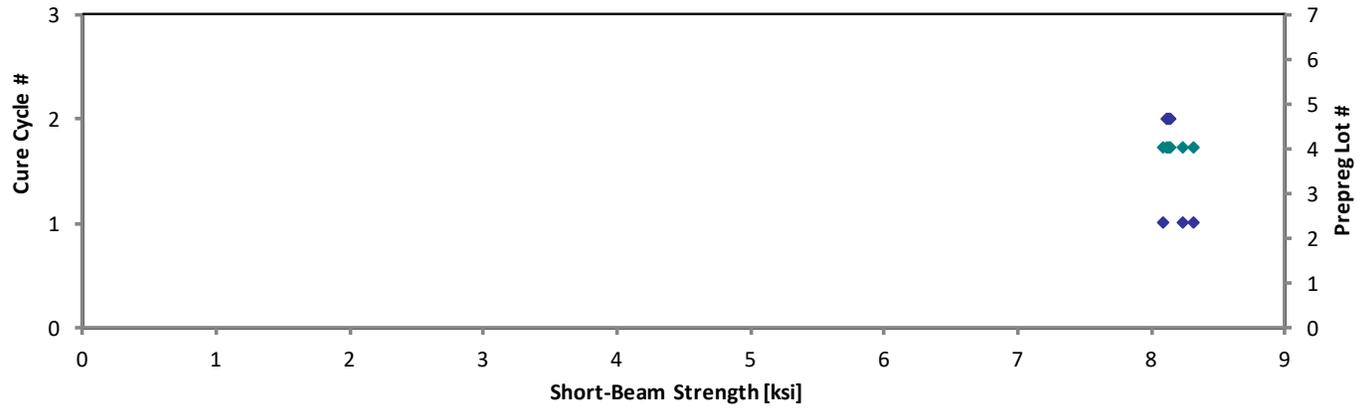
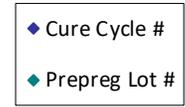


Short-Beam Strength Properties (SBS)--ETA2(225°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA2-4	D	C1	4	1	8.240	0.2453	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA2-5	D	C1	4	1	8.090	0.2439	44	0.0055	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA2-6	D	C1	4	1	8.320	0.2451	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA2-1	D	C2	4	2	8.130	0.2529	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA2-2	D	C2	4	2	8.140	0.2520	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA2-3	D	C2	4	2	8.120	0.2508	44	0.0057	ILS

Average	8.173	Average	0.0056
Standard Dev.	0.08802		
Coeff. of Var. [%]	1.077		
Min.	8.090	Min.	0.0055
Max.	8.320	Max.	0.0057
Number of Spec.	6	Number of Spec.	6

Short-Beam Strength Properties (SBS)--ETA2(225°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Short-Beam Strength Properties (SBS)--ETA3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

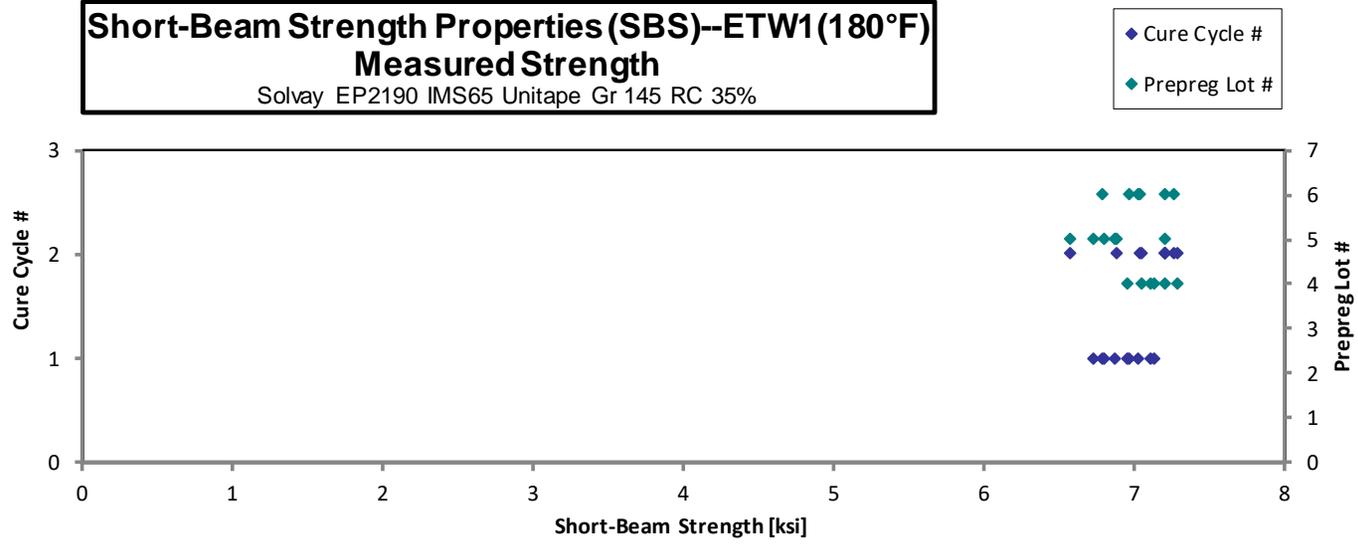
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
TR7695895-P1-SBS-A-C1-ETA3-1	A	C1	1	1	8.410	0.2602	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-ETA3-2	A	C1	1	1	8.210	0.2603	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-ETA3-3	A	C1	1	1	7.980	0.2598	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-ETA3-4	A	C1	1	1	8.090	0.2594	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-ETA3-5	A	C1	1	1	7.850	0.2591	44	0.0059	ILS
TR7695895-P1-SBS-A-C1-ETA3-6	A	C1	1	1	8.010	0.2593	44	0.0059	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA3-1	D	C1	4	1	7.820	0.2508	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA3-2	D	C1	4	1	7.860	0.2472	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETA3-3	D	C1	4	1	7.960	0.2443	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA3-1	D	C2	4	2	7.290	0.2547	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA3-2	D	C2	4	2	7.660	0.2543	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETA3-3	D	C2	4	2	7.630	0.2535	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETA3-1	E	C1	5	1	7.370	0.2481	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETA3-2	E	C1	5	1	7.380	0.2466	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETA3-3	E	C1	5	1	7.380	0.2443	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETA3-1	E	C2	5	2	7.450	0.2536	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETA3-2	E	C2	5	2	7.280	0.2541	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETA3-3	E	C2	5	2	7.410	0.2530	44	0.0058	ILS

Average	7.724	Average	0.0058
Standard Dev.	0.3448		
Coeff. of Var. [%]	4.464		
Min.	7.280	Min.	0.0056
Max.	8.410	Max.	0.0059
Number of Spec.	18	Number of Spec.	18

Short-Beam Strength Properties (SBS)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW1-1	D	C1	4	1	7.130	0.2504	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW1-2	D	C1	4	1	6.960	0.2485	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW1-3	D	C1	4	1	7.110	0.2465	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW1-1	D	C2	4	2	7.210	0.2516	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW1-2	D	C2	4	2	7.290	0.2504	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW1-3	D	C2	4	2	7.050	0.2494	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW1-1	E	C1	5	1	6.730	0.2468	44	0.0056	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW1-2	E	C1	5	1	6.870	0.2451	44	0.0056	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW1-3	E	C1	5	1	6.800	0.2430	44	0.0055	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW1-1	E	C2	5	2	7.210	0.2534	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW1-2	E	C2	5	2	6.580	0.2531	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW1-3	E	C2	5	2	6.880	0.2530	44	0.0058	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW1-1	F	C1	6	1	6.790	0.2500	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW1-2	F	C1	6	1	6.970	0.2488	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW1-3	F	C1	6	1	7.030	0.2503	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW1-2	F	C2	6	2	7.260	0.2451	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW1-3	F	C2	6	2	7.040	0.2428	44	0.0055	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW1-4	F	C2	6	2	7.200	0.2440	44	0.0055	ILS

Average	7.006	Average	0.0056
Standard Dev.	0.2001		
Coeff. of Var. [%]	2.856		
Min.	6.580	Min.	0.0055
Max.	7.290	Max.	0.0058
Number of Spec.	18	Number of Spec.	18



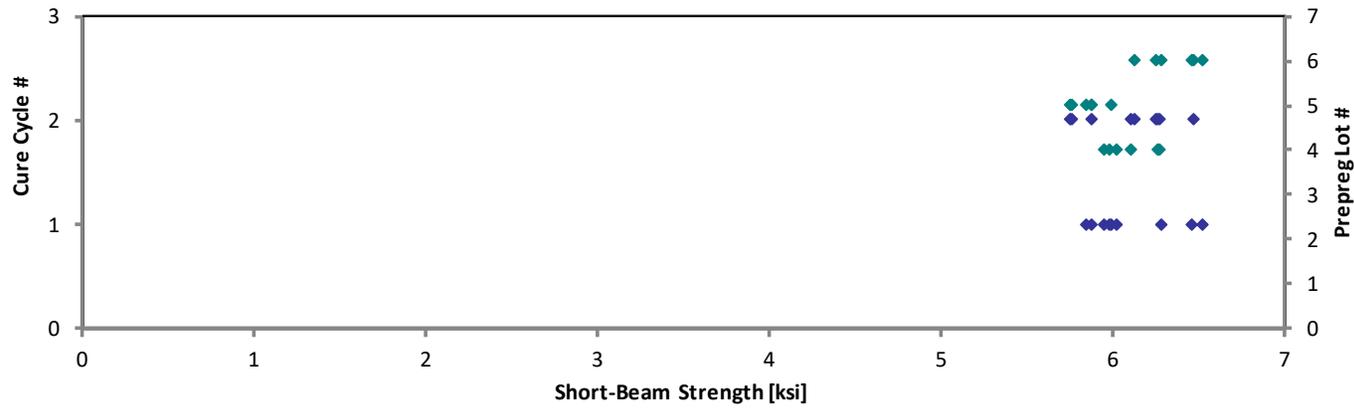
Short-Beam Strength Properties (SBS)--ETW2(225°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW2-1	D	C1	4	1	5.950	0.2507	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW2-2	D	C1	4	1	5.980	0.2489	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW2-3	D	C1	4	1	6.020	0.2474	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW2-1	D	C2	4	2	6.110	0.2481	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW2-2	D	C2	4	2	6.260	0.2481	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW2-3	D	C2	4	2	6.270	0.2482	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW2-1	E	C1	5	1	5.990	0.2483	44	0.0056	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW2-2	E	C1	5	1	5.850	0.2462	44	0.0056	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW2-3	E	C1	5	1	5.880	0.2439	44	0.0055	ILS, Compression
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW2-1	E	C2	5	2	5.880	0.2527	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW2-2	E	C2	5	2	5.750	0.2526	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW2-3	E	C2	5	2	5.760	0.2527	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW2-1	F	C1	6	1	6.280	0.2503	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW2-2	F	C1	6	1	6.460	0.2491	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW2-3	F	C1	6	1	6.520	0.2494	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW2-1	F	C2	6	2	6.470	0.2439	44	0.0055	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW2-2	F	C2	6	2	6.250	0.2446	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW2-3	F	C2	6	2	6.130	0.2439	44	0.0055	ILS

Average	6.101	Average	0.0056
Standard Dev.	0.2433		
Coeff. of Var. [%]	3.988		
Min.	5.750	Min.	0.0055
Max.	6.520	Max.	0.0057
Number of Spec.	18	Number of Spec.	18

Short-Beam Strength Properties (SBS)--ETW2(225°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



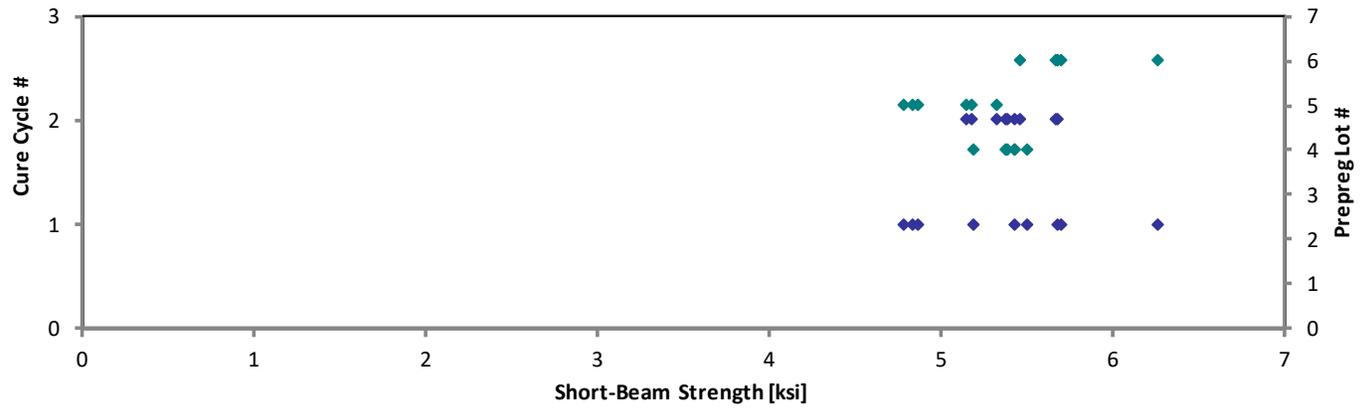
Short-Beam Strength Properties (SBS)--ETW3(250°F) Strength Solvay EP2190 IMS65 Unitape Gr 145 RC 35%
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t _{ply} [in]	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW3-1	D	C1	4	1	5.500	0.2500	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW3-2	D	C1	4	1	5.430	0.2482	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-ETW3-3	D	C1	4	1	5.190	0.2466	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW3-1	D	C2	4	2	5.380	0.2459	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW3-2	D	C2	4	2	5.430	0.2455	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-ETW3-3	D	C2	4	2	5.390	0.2444	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW3-1	E	C1	5	1	4.870	0.2453	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW3-2	E	C1	5	1	4.840	0.2430	44	0.0055	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-ETW3-3	E	C1	5	1	4.780	0.2410	44	0.0055	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW3-1	E	C2	5	2	5.330	0.2507	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW3-2	E	C2	5	2	5.180	0.2505	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-ETW3-3	E	C2	5	2	5.150	0.2503	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW3-1	F	C1	6	1	6.260	0.2501	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW3-2	F	C1	6	1	5.700	0.2486	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-ETW3-3	F	C1	6	1	5.680	0.2494	44	0.0057	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW3-1	F	C2	6	2	5.680	0.2450	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW3-2	F	C2	6	2	5.670	0.2459	44	0.0056	ILS
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-ETW3-3	F	C2	6	2	5.460	0.2460	44	0.0056	ILS

Average	5.384	Average	0.0056
Standard Dev.	0.3605		
Coeff. of Var. [%]	6.696		
Min.	4.780	Min.	0.0055
Max.	6.260	Max.	0.0057
Number of Spec.	18	Number of Spec.	18

Short-Beam Strength Properties (SBS)--ETW3(250°F)
Measured Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



4.16 “25/50/25” Open-Hole Tension 1 Properties (OHT1)

Laminate Open-Hole Tension Properties (OHT1)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

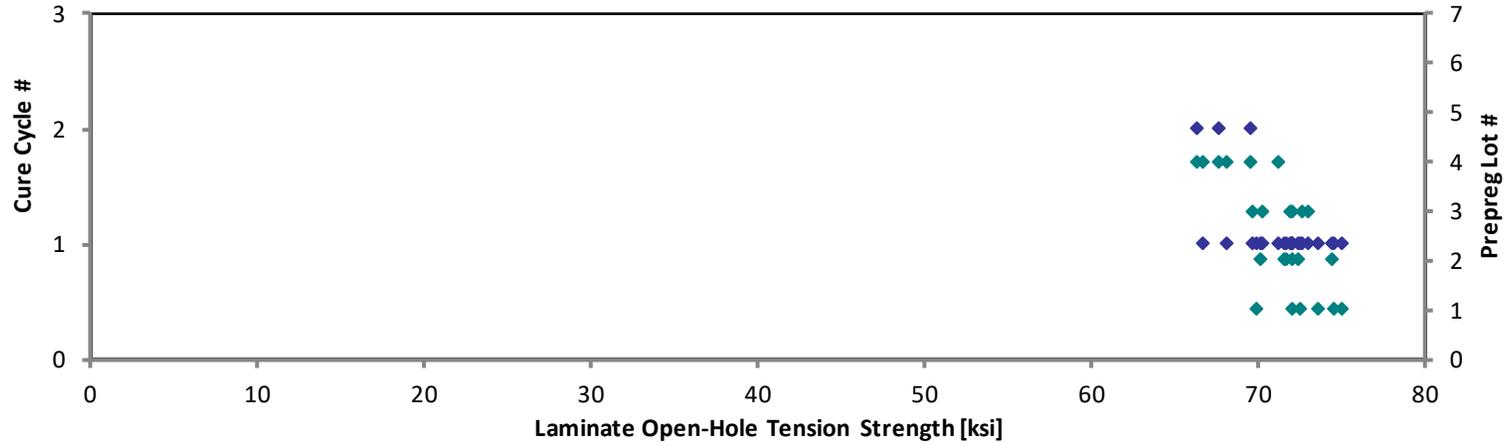
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
TR7694340-P4-OHT1-A-C1-CTA-1	A	C1	1	1	71.35	0.04680	8	MGM	0.0059	74.54
TR7694340-P4-OHT1-A-C1-CTA-2	A	C1	1	1	69.46	0.04680	8	MGM	0.0059	72.56
TR7694340-P4-OHT1-A-C1-CTA-3	A	C1	1	1	69.62	0.04640	8	MGM	0.0058	72.11
TR7694340-P4-OHT1-A-C1-CTA-4	A	C1	1	1	71.02	0.04640	8	MGM	0.0058	73.56
TR7694340-P4-OHT1-A-C1-CTA-5	A	C1	1	1	72.79	0.04620	8	MGM	0.0058	75.06
TR7694340-P4-OHT1-A-C1-CTA-6	A	C1	1	1	67.18	0.04660	8	MGM	0.0058	69.88
TR7829254-P1-OHT1-B-C1-CTA-1	B	C1	2	1	70.56	0.04600	8	MGM	0.0058	72.45
TR7829254-P1-OHT1-B-C1-CTA-2	B	C1	2	1	72.21	0.04620	8	MGM	0.0058	74.47
TR7829254-P1-OHT1-B-C1-CTA-3	B	C1	2	1	69.88	0.04600	8	MGM	0.0058	71.75
TR7829254-P1-OHT1-B-C1-CTA-4	B	C1	2	1	68.29	0.04600	8	MGM	0.0058	70.12
TR7829254-P1-OHT1-B-C1-CTA-5	B	C1	2	1	70.21	0.04570	8	MGM	0.0057	71.62
TR7829254-P1-OHT1-B-C1-CTA-6	B	C1	2	1	70.17	0.04600	8	MGM	0.0058	72.05
TR7829257-P1-OHT1-C-C1-CTA-1	C	C1	3	1	69.50	0.04640	8	MGM	0.0058	71.98
TR7829257-P1-OHT1-C-C1-CTA-2	C	C1	3	1	67.41	0.04630	8	MGM	0.0058	69.67
TR7829257-P1-OHT1-C-C1-CTA-3	C	C1	3	1	68.95	0.04680	8	MGM	0.0059	72.03
TR7829257-P1-OHT1-C-C1-CTA-4	C	C1	3	1	67.40	0.04670	8	MGM	0.0058	70.26
TR7829257-P1-OHT1-C-C1-CTA-5	C	C1	3	1	70.04	0.04650	8	MGM	0.0058	72.70
TR7829257-P1-OHT1-C-C1-CTA-6	C	C1	3	1	69.75	0.04690	8	MGM	0.0059	73.02
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-CTA-1	D	C1	4	1	65.95	0.04530	8	MGM	0.0057	66.69
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-CTA-2	D	C1	4	1	66.84	0.04570	8	MGM	0.0057	68.18
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-CTA-3	D	C1	4	1	70.07	0.04550	8	MGM	0.0057	71.16
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-CTA-1	D	C2	4	2	65.00	0.04570	8	MGM	0.0057	66.31
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-CTA-2	D	C2	4	2	67.80	0.04600	8	MGM	0.0058	69.62
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-CTA-3	D	C2	4	2	66.23	0.04580	8	MGM	0.0057	67.71

Average	69.07	Average_{norm}	0.0058	71.23
Standard Dev.	1.998	Standard Dev._{norm}		2.367
Coeff. of Var. [%]	2.893	Coeff. of Var. [%]_{norm}		3.323
Min.	65.00	Min.	0.0057	66.31
Max.	72.79	Max.	0.0059	75.06
Number of Spec.	24	Number of Spec.	24	24

Laminate Open-Hole Tension Properties (OHT1)--CTA(-67°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



**Laminate Open-Hole Tension Properties (OHT1)--RTA(75°F)
Strength**

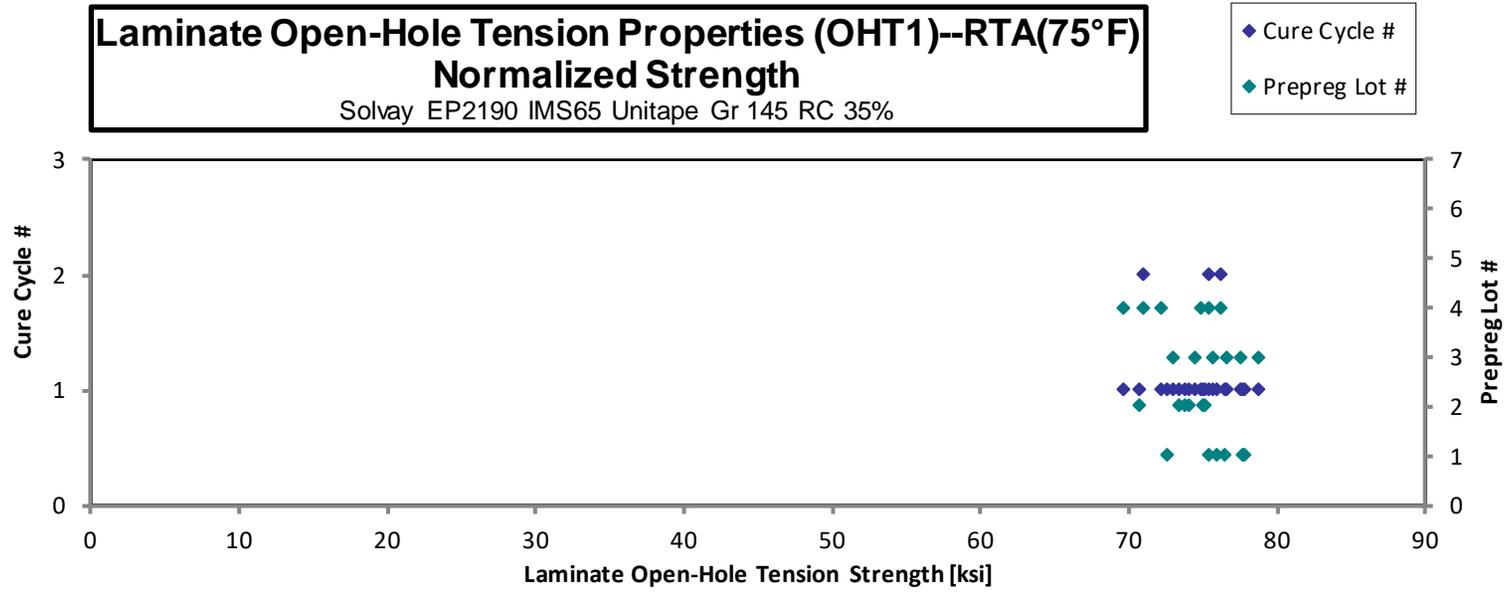
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t _{ply} [in]	Strength _{norm} [ksi]
TR7694340-P2-OHT1-A-C1-RTA-1	A	C1	1	1	70.76	0.04600	8	MGM	0.0058	72.66
TR7694340-P2-OHT1-A-C1-RTA-2	A	C1	1	1	74.44	0.04680	8	MGM	0.0059	77.76
TR7694340-P2-OHT1-A-C1-RTA-3	A	C1	1	1	73.20	0.04680	8	MGM	0.0059	76.47
TR7694340-P2-OHT1-A-C1-RTA-4	A	C1	1	1	73.03	0.04660	8	MGM	0.0058	75.96
TR7694340-P2-OHT1-A-C1-RTA-5	A	C1	1	1	74.87	0.04660	8	MGM	0.0058	77.88
TR7694340-P2-OHT1-A-C1-RTA-6	A	C1	1	1	72.78	0.04640	8	MGM	0.0058	75.38
TR7702826-P2-OHT1-B-C1-RTA-1	B	C1	2	1	72.39	0.04640	8	MGM	0.0058	74.98
TR7702826-P2-OHT1-B-C1-RTA-2	B	C1	2	1	71.30	0.04660	8	MGM	0.0058	74.16
TR7702826-P2-OHT1-B-C1-RTA-3	B	C1	2	1	72.21	0.04660	8	MGM	0.0058	75.11
TR7702826-P2-OHT1-B-C1-RTA-4	B	C1	2	1	71.41	0.04630	8	MGM	0.0058	73.80
TR7702826-P2-OHT1-B-C1-RTA-5	B	C1	2	1	70.57	0.04660	8	MGM	0.0058	73.41
TR7702826-P2-OHT1-B-C1-RTA-6	B	C1	2	1	67.55	0.04690	8	MGM	0.0059	70.72
TR7725552-P1-OHT1-C-C1-RTA-1	C	C1	3	1	72.89	0.04710	8	MGM	0.0059	76.63
TR7725552-P1-OHT1-C-C1-RTA-2	C	C1	3	1	74.44	0.04740	8	MGM	0.0059	78.76
TR7725552-P1-OHT1-C-C1-RTA-3	C	C1	3	1	72.76	0.04780	8	MGM	0.0060	77.63
TR7725552-P1-OHT1-C-C1-RTA-4	C	C1	3	1	67.90	0.04820	8	MGM	0.0060	73.05
TR7725552-P1-OHT1-C-C1-RTA-5	C	C1	3	1	70.69	0.04720	8	MGM	0.0059	74.48
TR7725552-P1-OHT1-C-C1-RTA-6	C	C1	3	1	71.01	0.04780	8	MGM	0.0060	75.77
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-RTA-1	D	C1	4	1	74.11	0.04530	8	MGM	0.0057	74.94
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-RTA-2	D	C1	4	1	68.65	0.04550	8	MGM	0.0057	69.72
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-RTA-3	D	C1	4	1	71.23	0.04540	8	MGM	0.0057	72.18
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-RTA-1	D	C2	4	2	74.73	0.04570	8	MGM	0.0057	76.23
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-RTA-2	D	C2	4	2	73.90	0.04570	8	MGM	0.0057	75.38
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-RTA-3	D	C2	4	2	69.71	0.04560	8	MGM	0.0057	70.95

Average 71.94
Standard Dev. 2.096
Coeff. of Var. [%] 2.913
Min. 67.55
Max. 74.87
Number of Spec. 24

Average_{norm} 0.0058 74.75
Standard Dev._{norm} 2.363
Coeff. of Var. [%]_{norm} 3.161
Min. 0.0057 69.72
Max. 0.0060 78.76
Number of Spec. 24 24



**Laminate Open-Hole Tension Properties (OHT1)--ETA2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

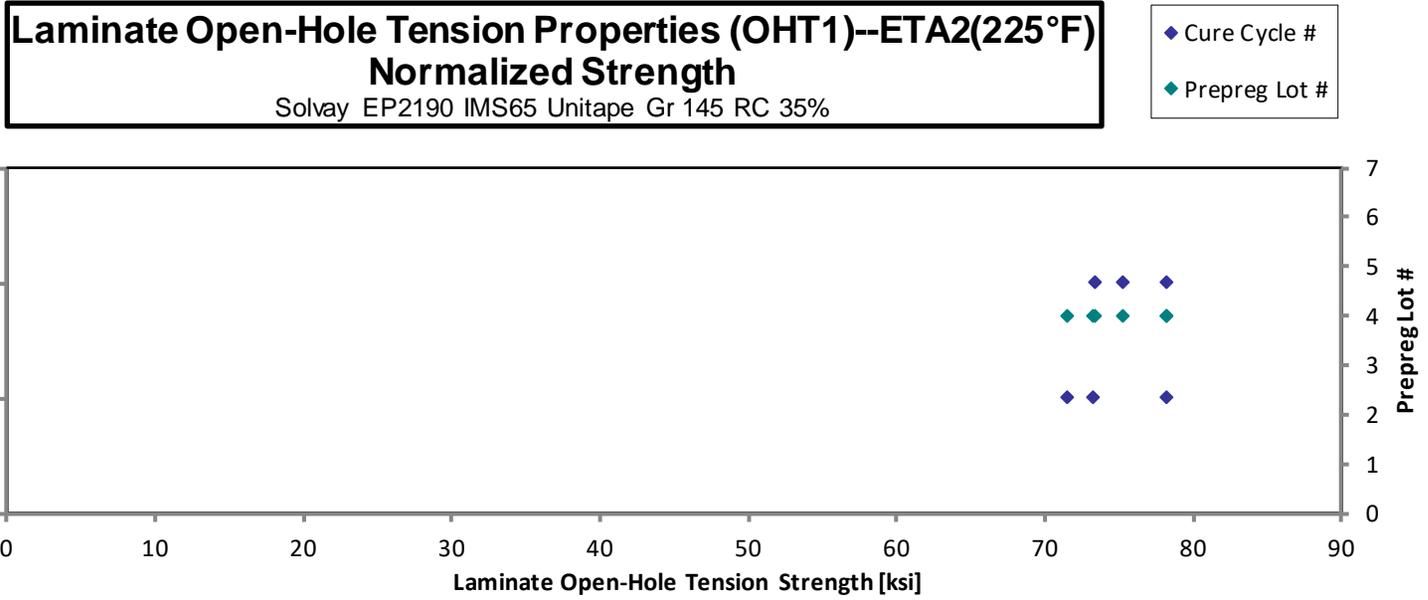
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA2-1	D	C1	4	1	76.92	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA2-2	D	C1	4	1	70.49	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA2-3	D	C1	4	1	72.47	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA2-1	D	C2	4	2	71.98	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA2-2	D	C2	4	2	76.49	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA2-3	D	C2	4	2	73.95	0.04560	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	78.29
0.0057	71.59
0.0057	73.28
0.0057	73.43
0.0057	78.20
0.0057	75.27

Average 73.72
Standard Dev. 2.569
Coeff. of Var. [%] 3.484
Min. 70.49
Max. 76.92
Number of Spec. 6

Average_{norm} 0.0057 75.01
Standard Dev._{norm} 2.764
Coeff. of Var. [%]_{norm} 3.685
Min. 0.0057 71.59
Max. 0.0057 78.29
Number of Spec. 6 6



**Laminate Open-Hole Tension Properties (OHT1)--ETA3(250°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

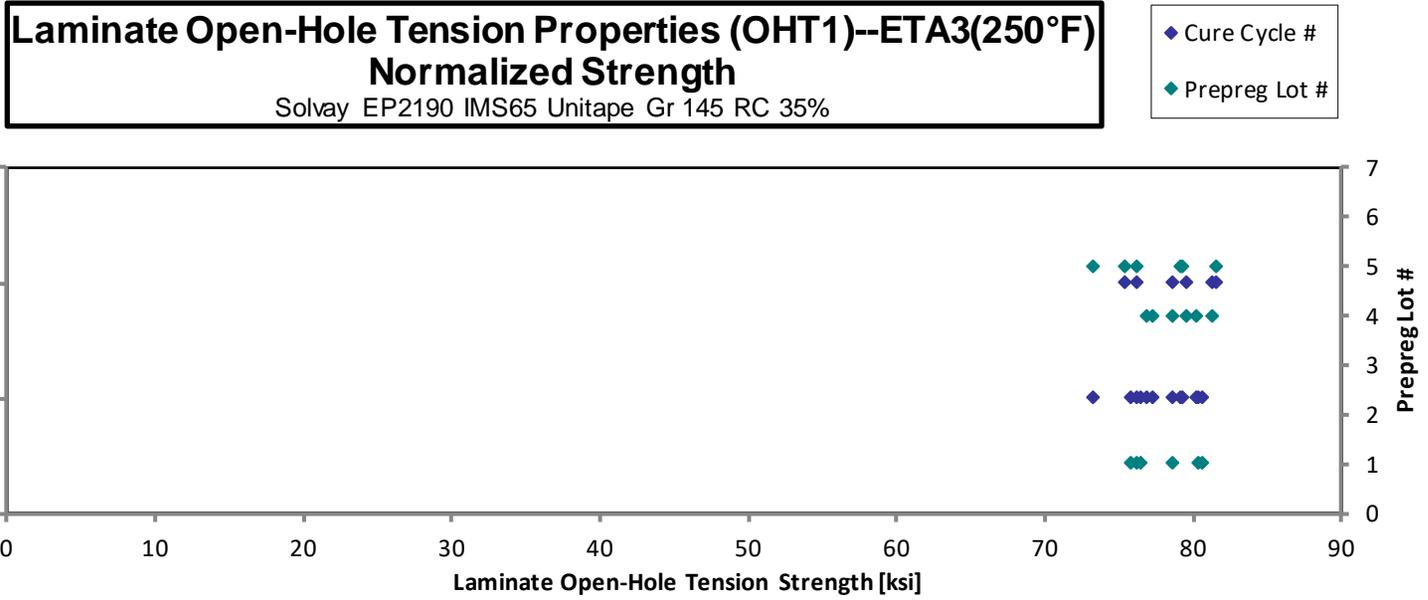
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694340-P1-OHT1-A-C1-ETA3-2	A	C1	1	1	73.29	0.04680	8	MGM
TR7694340-P1-OHT1-A-C1-ETA3-3	A	C1	1	1	77.27	0.04680	8	MGM/MGB
TR7694340-P1-OHT1-A-C1-ETA3-4	A	C1	1	1	72.33	0.04700	8	MGM/MGB
TR7694340-P1-OHT1-A-C1-ETA3-5	A	C1	1	1	74.99	0.04700	8	MGM/MGB
TR7694340-P1-OHT1-A-C1-ETA3-6	A	C1	1	1	77.00	0.04680	8	MGM/MGB
TR7694340-P1-OHT1-A-C1-ETA3-7	A	C1	1	1	73.25	0.04660	8	MGM/MGB
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA3-1	D	C1	4	1	75.84	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA3-2	D	C1	4	1	75.93	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETA3-3	D	C1	4	1	78.72	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA3-1	D	C2	4	2	77.24	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA3-2	D	C2	4	2	77.85	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETA3-3	D	C2	4	2	80.05	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETA3-1	E	C1	5	1	77.84	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETA3-2	E	C1	5	1	77.06	0.04610	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETA3-3	E	C1	5	1	71.20	0.04610	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETA3-1	E	C2	5	2	75.73	0.04510	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETA3-2	E	C2	5	2	79.81	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETA3-3	E	C2	5	2	74.09	0.04560	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0059	76.56
0.0059	80.72
0.0059	75.88
0.0059	78.67
0.0059	80.44
0.0058	76.19
0.0057	76.86
0.0057	77.29
0.0057	80.30
0.0057	78.62
0.0057	79.59
0.0057	81.30
0.0057	79.23
0.0058	79.30
0.0058	73.27
0.0056	76.24
0.0057	81.59
0.0057	75.41

Average 76.08
Standard Dev. 2.503
Coeff. of Var. [%] 3.289
Min. 71.20
Max. 80.05
Number of Spec. 18

Average_{norm} 0.0058
Standard Dev._{norm} 2.328
Coeff. of Var. [%]_{norm} 2.978
Min. 0.0056
Max. 0.0059
Number of Spec. 18



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

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

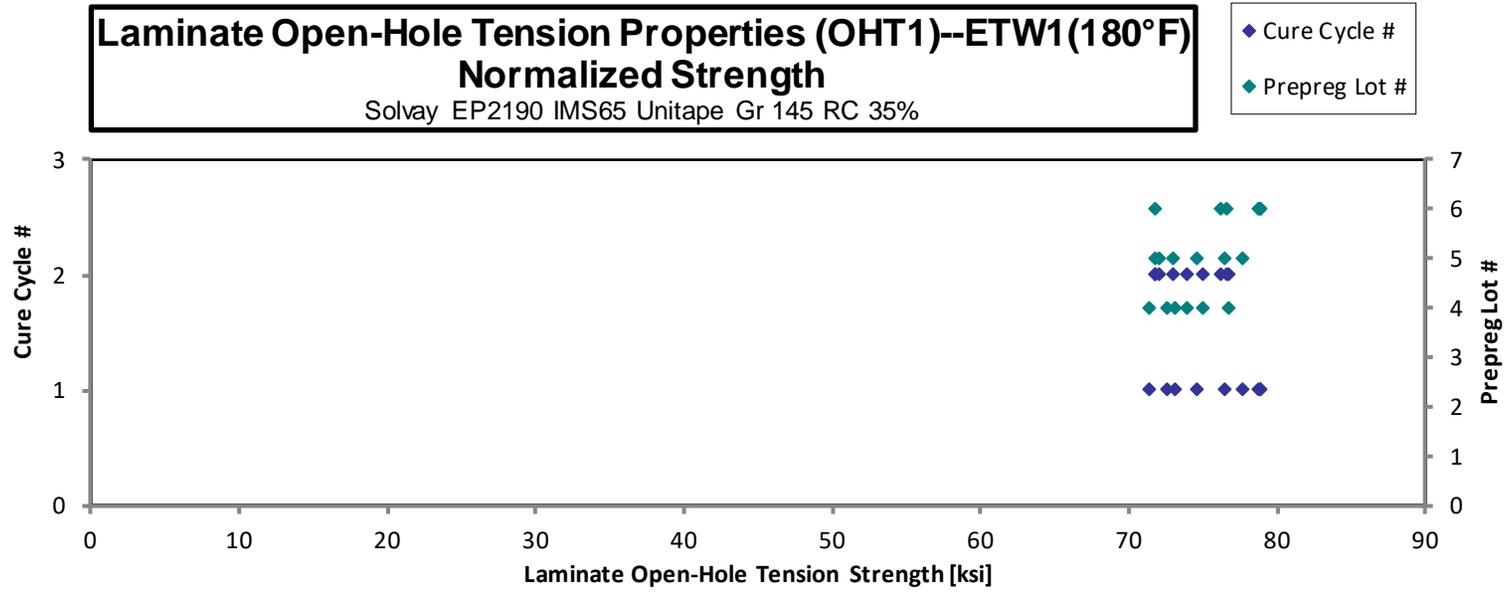
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW1-1	D	C1	4	1	71.98	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW1-2	D	C1	4	1	70.49	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW1-3	D	C1	4	1	71.40	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW1-1	D	C2	4	2	73.46	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW1-2	D	C2	4	2	72.24	0.04590	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW1-3	D	C2	4	2	75.26	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW1-2	E	C1	5	1	75.36	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW1-3	E	C1	5	1	73.55	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW1-4	E	C1	5	1	76.71	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW1-2	E	C2	5	2	70.70	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW1-3	E	C2	5	2	71.40	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW1-4	E	C2	5	2	72.27	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW1-1	F	C1	6	1	77.33	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW1-2	F	C1	6	1	77.28	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW1-3	F	C1	6	1	77.37	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW1-1	F	C1	6	2	73.91	0.04620	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW1-2	F	C1	6	2	69.40	0.04640	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW1-3	F	C1	6	2	73.41	0.04680	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	73.10
0.0057	71.43
0.0057	72.68
0.0057	75.10
0.0057	74.01
0.0057	76.77
0.0057	76.54
0.0057	74.70
0.0057	77.74
0.0057	71.80
0.0057	72.04
0.0057	73.08
0.0057	78.88
0.0057	78.83
0.0057	78.92
0.0058	76.22
0.0058	71.88
0.0059	76.69

Average 73.53
Standard Dev. 2.531
Coeff. of Var. [%] 3.442
Min. 69.40
Max. 77.37
Number of Spec. 18

Average_{norm} 75.02
Standard Dev._{norm} 2.631
Coeff. of Var. [%]_{norm} 3.507
Min. 71.43
Max. 78.92
Number of Spec. 18



**Laminate Open-Hole Tension Properties (OHT1)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

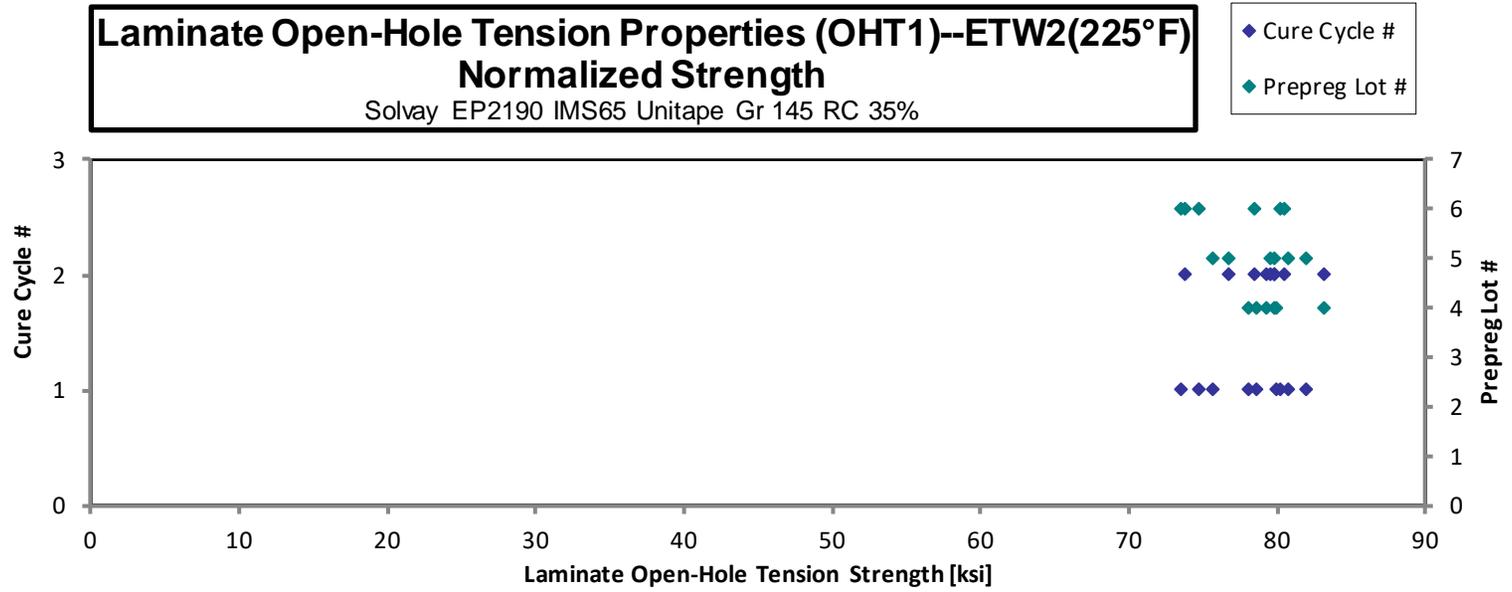
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW2-1	D	C1	4	1	77.45	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW2-2	D	C1	4	1	76.78	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-ETW2-3	D	C1	4	1	78.42	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW2-1	D	C2	4	2	80.91	0.04610	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW2-2	D	C2	4	2	77.19	0.04600	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-ETW2-3	D	C2	4	2	77.55	0.04610	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW2-1	E	C1	5	1	78.83	0.04590	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW2-2	E	C1	5	1	79.87	0.04600	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-ETW2-3	E	C1	5	1	74.01	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW2-1	E	C2	5	2	76.72	0.04480	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW2-2	E	C2	5	2	78.35	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-ETW2-3	E	C2	5	2	78.74	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW2-1	F	C1	6	1	81.29	0.04420	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW2-2	F	C1	6	1	76.12	0.04400	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-ETW2-3	F	C1	6	1	74.91	0.04400	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW2-1	F	C1	6	2	80.75	0.04470	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW2-2	F	C1	6	2	74.78	0.04420	8	MGM
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-ETW2-3	F	C1	6	2	79.61	0.04420	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	78.66
0.0057	78.15
0.0057	80.00
0.0058	83.26
0.0058	79.26
0.0058	79.80
0.0057	80.77
0.0058	82.01
0.0057	75.66
0.0056	76.72
0.0057	79.57
0.0057	79.79
0.0055	80.20
0.0055	74.76
0.0055	73.57
0.0056	80.57
0.0055	73.78
0.0055	78.54

Average 77.90
Standard Dev. 2.142
Coeff. of Var. [%] 2.749
Min. 74.01
Max. 81.29
Number of Spec. 18

Average_{norm} 0.0057 78.62
Standard Dev._{norm} 2.726
Coeff. of Var. [%]_{norm} 3.467
Min. 0.0055 73.57
Max. 0.0058 83.26
Number of Spec. 18 18



4.17 “10/80/10” Open-Hole Tension 2 Properties (OHT2)

Laminate Open-Hole Tension Properties (OHT2)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

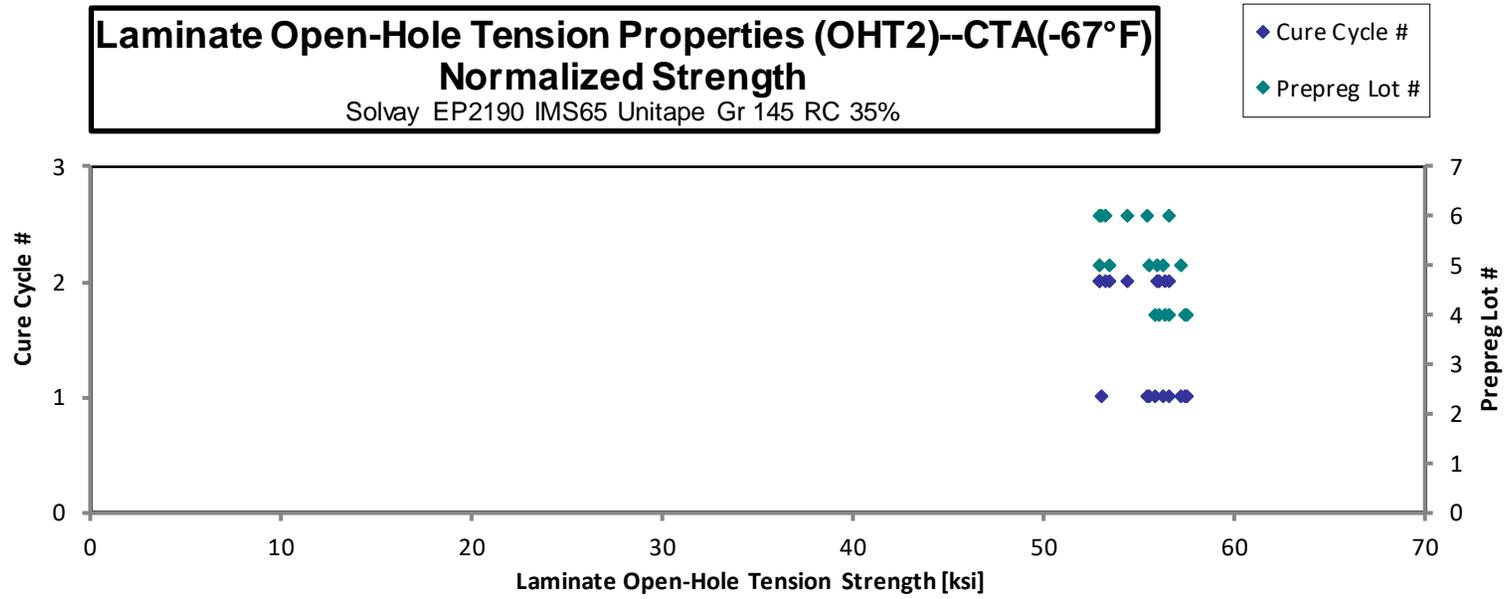
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-CTA-1	D	C1	4	1	55.01	0.1169	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-CTA-2	D	C1	4	1	55.44	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-CTA-3	D	C1	4	1	53.81	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-CTA-1	D	C2	4	2	54.66	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-CTA-2	D	C2	4	2	54.28	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-CTA-3	D	C2	4	2	54.12	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-CTA-1	E	C1	5	1	55.70	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-CTA-2	E	C1	5	1	54.13	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-CTA-3	E	C1	5	1	55.03	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-CTA-1	E	C2	5	2	51.65	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-CTA-2	E	C2	5	2	54.49	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-CTA-3	E	C2	5	2	52.24	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-CTA-1	F	C1	6	1	55.42	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-CTA-2	F	C1	6	1	54.25	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-CTA-3	F	C1	6	1	51.90	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-CTA-1	F	C1	6	2	51.00	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-CTA-2	F	C1	6	2	52.42	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-CTA-3	F	C1	6	2	51.28	0.1164	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	57.42
0.0058	57.57
0.0058	55.88
0.0058	56.61
0.0058	56.36
0.0058	56.05
0.0058	57.24
0.0058	55.58
0.0057	56.26
0.0057	52.94
0.0058	56.00
0.0057	53.50
0.0057	56.61
0.0057	55.41
0.0057	53.01
0.0058	52.91
0.0058	54.43
0.0058	53.29

Average 53.71
 Standard Dev. 1.541
 Coeff. of Var. [%] 2.870
 Min. 51.00
 Max. 55.70
 Number of Spec. 18

Average_{norm} 0.0058 55.39
 Standard Dev._{norm} 1.622
 Coeff. of Var. [%]_{norm} 2.928
 Min. 0.0057 52.91
 Max. 0.0058 57.57
 Number of Spec. 18 18



**Laminate Open-Hole Tension Properties (OHT2)--RTA(75°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

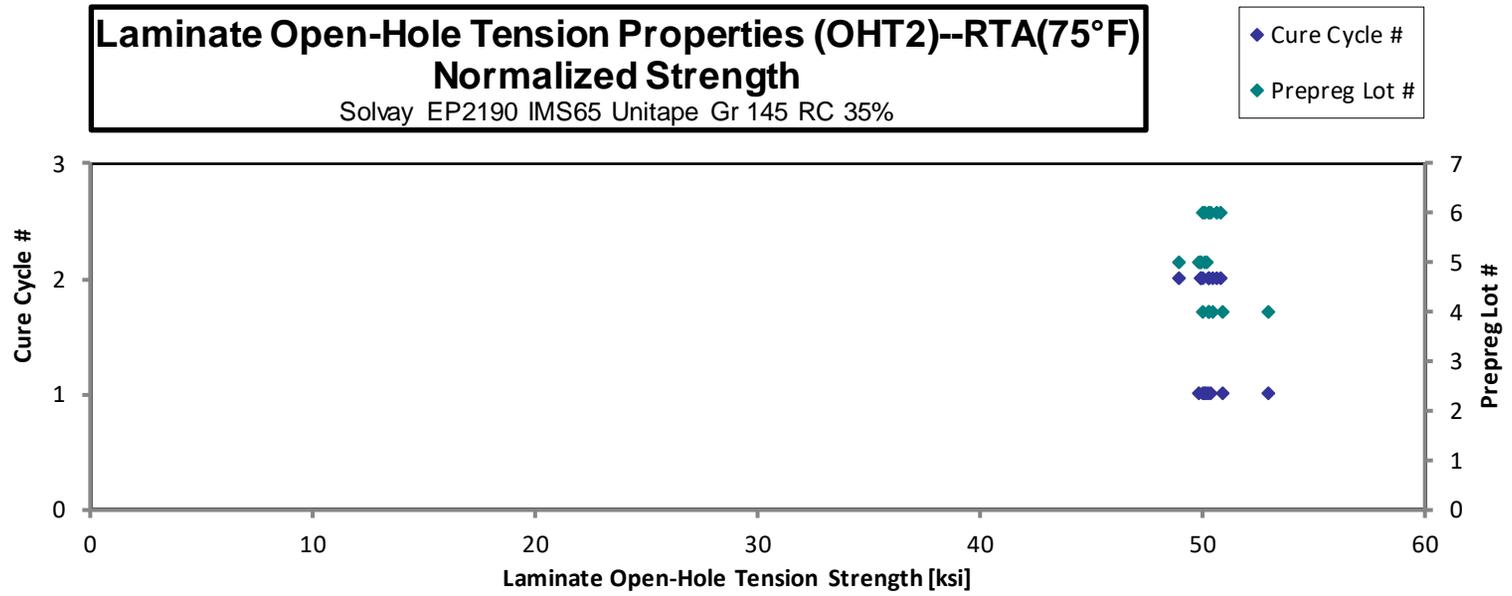
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-RTA-1	D	C1	4	1	50.81	0.1168	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-RTA-2	D	C1	4	1	49.02	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-RTA-3	D	C1	4	1	48.21	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-RTA-1	D	C2	4	2	48.43	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-RTA-2	D	C2	4	2	48.68	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-RTA-3	D	C2	4	2	48.42	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-RTA-1	E	C1	5	1	48.71	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-RTA-2	E	C1	5	1	48.60	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-RTA-3	E	C1	5	1	49.10	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-RTA-1	E	C2	5	2	48.82	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-RTA-2	E	C2	5	2	48.70	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-RTA-3	E	C2	5	2	47.81	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-RTA-1	F	C1	6	1	49.09	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-RTA-2	F	C1	6	1	49.14	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-RTA-3	F	C1	6	1	48.94	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-1	F	C1	6	2	49.37	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-2	F	C1	6	2	48.86	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-3	F	C1	6	2	49.57	0.1148	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	52.99
0.0058	50.95
0.0058	50.06
0.0058	50.29
0.0058	50.51
0.0058	50.32
0.0058	50.10
0.0057	49.82
0.0057	50.24
0.0057	49.91
0.0057	49.96
0.0057	48.92
0.0057	50.27
0.0057	50.41
0.0057	50.08
0.0057	50.65
0.0057	49.99
0.0057	50.81

Average 48.90
Standard Dev. 0.6327
Coeff. of Var. [%] 1.294
Min. 47.81
Max. 50.81
Number of Spec. 18

Average_{norm} 0.0058 50.35
Standard Dev._{norm} 0.7928
Coeff. of Var. [%]_{norm} 1.575
Min. 0.0057 48.92
Max. 0.0058 52.99
Number of Spec. 18 18



Laminate Open-Hole Tension Properties (OHT2)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

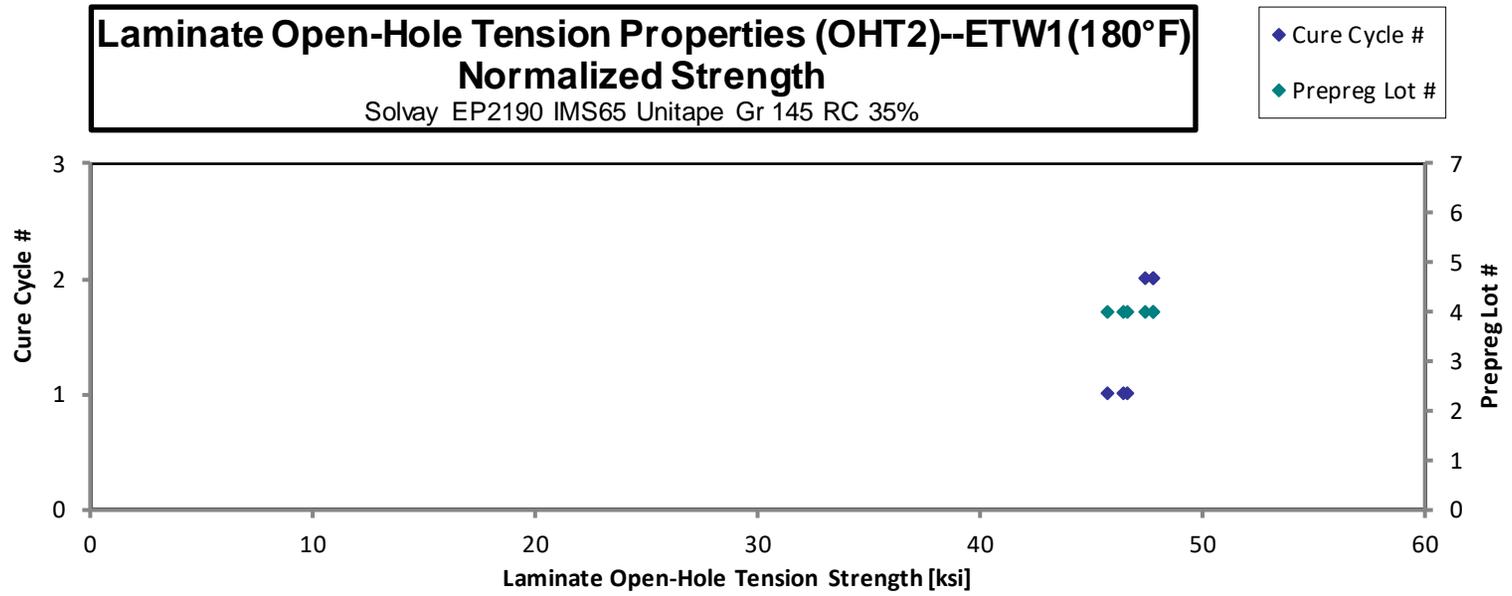
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW1-1	D	C1	4	1	44.80	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW1-2	D	C1	4	1	44.59	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW1-3	D	C1	4	1	43.90	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW1-1	D	C2	4	2	45.95	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW1-2	D	C2	4	2	45.74	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW1-3	D	C2	4	2	45.50	0.1167	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	46.64
0.0058	46.42
0.0058	45.70
0.0058	47.76
0.0059	47.78
0.0058	47.41

Average 45.08
 Standard Dev. 0.7848
 Coeff. of Var. [%] 1.741
 Min. 43.90
 Max. 45.95
 Number of Spec. 6

Average_{norm} 0.0058 46.95
 Standard Dev._{norm} 0.8345
 Coeff. of Var. [%]_{norm} 1.777
 Min. 0.0058 45.70
 Max. 0.0059 47.78
 Number of Spec. 6 6



**Laminate Open-Hole Tension Properties (OHT2)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

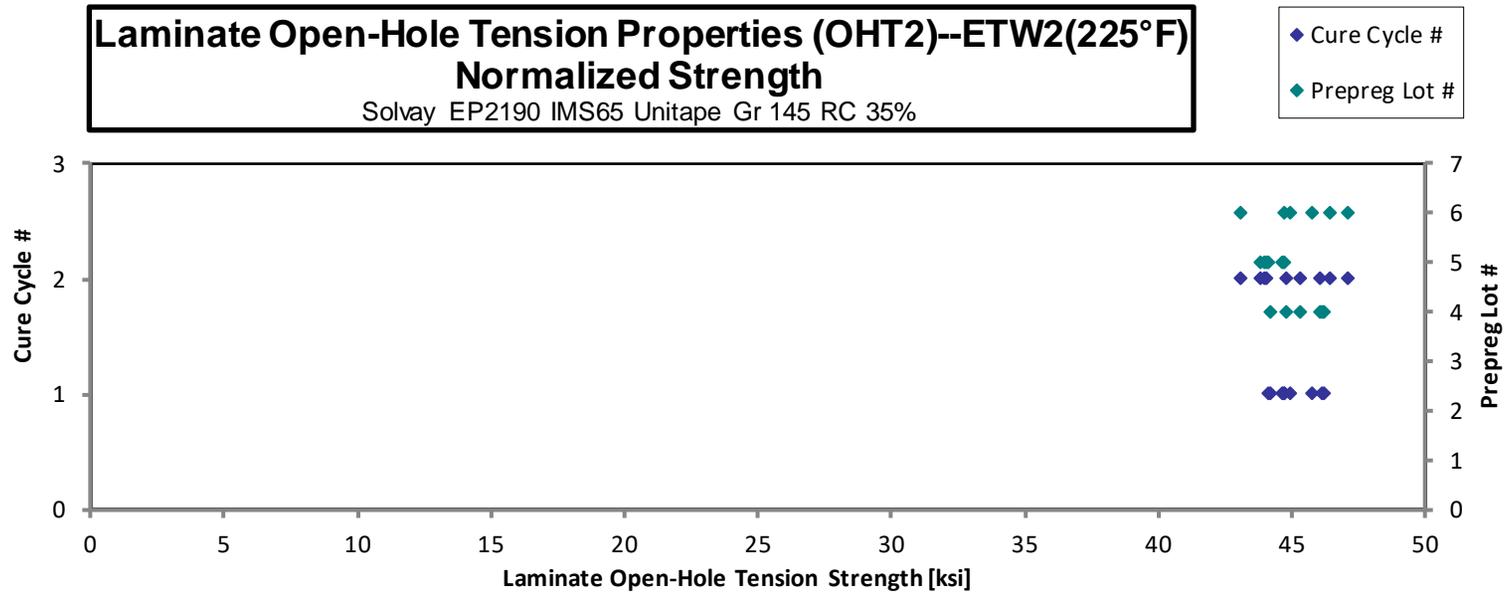
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW2-1	D	C1	4	1	44.34	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW2-2	D	C1	4	1	44.53	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-ETW2-3	D	C1	4	1	42.59	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW2-1	D	C2	4	2	44.34	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW2-2	D	C2	4	2	43.60	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-ETW2-3	D	C2	4	2	42.92	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-ETW2-1	E	C1	5	1	43.48	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-ETW2-2	E	C1	5	1	43.06	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-ETW2-3	E	C1	5	1	43.60	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-ETW2-1	E	C2	5	2	42.99	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-ETW2-2	E	C2	5	2	42.92	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-ETW2-3	E	C2	5	2	42.54	0.1154	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-ETW2-1	F	C1	6	1	44.93	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-ETW2-2	F	C1	6	1	43.68	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-ETW2-3	F	C1	6	1	44.13	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-ETW2-1	F	C1	6	2	45.56	0.1159	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-ETW2-2	F	C1	6	2	41.74	0.1157	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-ETW2-3	F	C1	6	2	44.89	0.1159	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	46.12
0.0058	46.24
0.0058	44.23
0.0058	46.04
0.0058	45.35
0.0059	44.84
0.0058	44.64
0.0057	44.14
0.0057	44.73
0.0057	44.10
0.0057	43.99
0.0058	43.83
0.0057	45.81
0.0057	44.73
0.0057	45.00
0.0058	47.15
0.0058	43.12
0.0058	46.45

Average 43.66
Standard Dev. 0.9902
Coeff. of Var. [%] 2.268
Min. 41.74
Max. 45.56
Number of Spec. 18

Average_{norm} 0.0058 45.03
Standard Dev_{norm} 1.077
Coeff. of Var. [%]_{norm} 2.393
Min. 0.0057 43.12
Max. 0.0059 47.15
Number of Spec. 18 18



4.18 “50/40/10” Open-Hole Tension 3 Properties (OHT3)

Laminate Open-Hole Tension Properties (OHT3)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

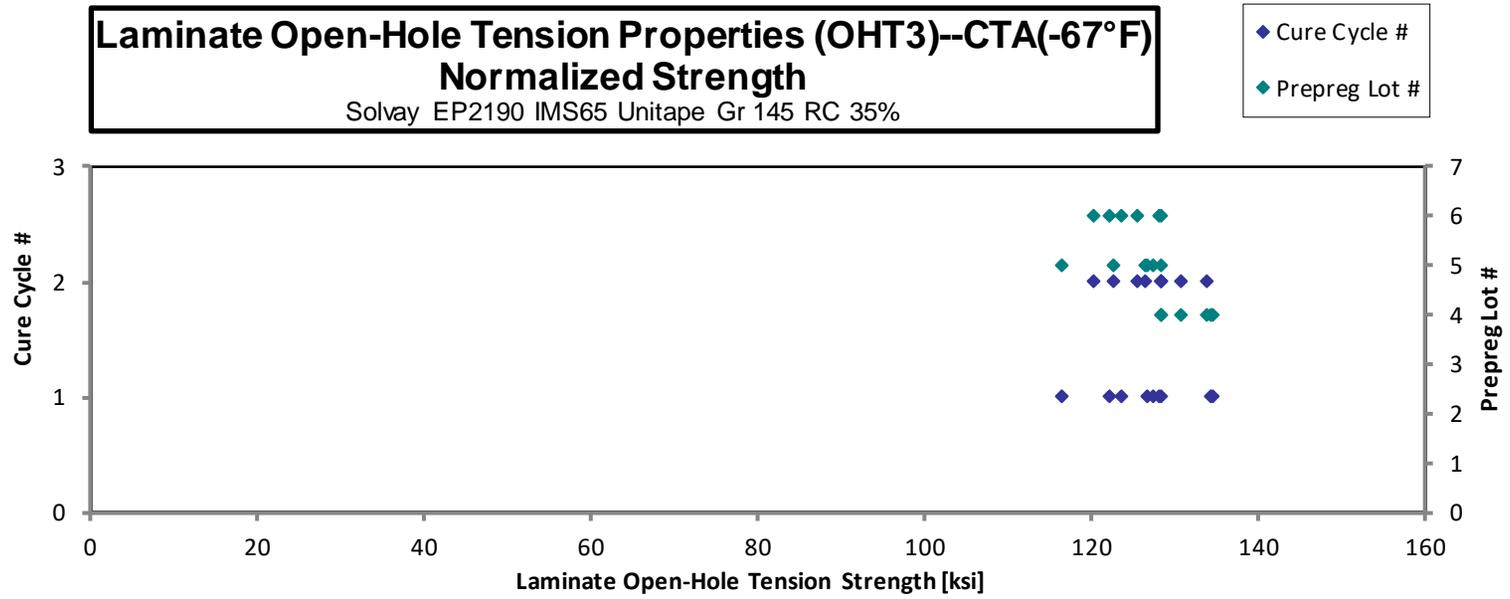
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-CTA-1	D	C1	4	1	124.1	0.1158	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-CTA-2	D	C1	4	1	129.5	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-CTA-3	D	C1	4	1	129.4	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-CTA-1	D	C2	4	2	129.6	0.1158	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-CTA-2	D	C2	4	2	123.5	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-CTA-3	D	C2	4	2	126.3	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-CTA-1	E	C1	5	1	113.6	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-CTA-2	E	C1	5	1	123.8	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-CTA-3	E	C1	5	1	123.7	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-CTA-1	E	C2	5	2	124.0	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-CTA-2	E	C2	5	2	120.0	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-CTA-3	E	C2	5	2	125.4	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-CTA-1	F	C1	6	1	119.4	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-CTA-2	F	C1	6	1	120.5	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-CTA-3	F	C1	6	1	125.4	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-CTA-1	F	C1	6	2	122.8	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-CTA-2	F	C1	6	2	117.7	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-CTA-3	F	C1	6	2	125.5	0.1145	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	128.3
0.0058	134.6
0.0058	134.4
0.0058	134.0
0.0058	128.5
0.0058	130.8
0.0058	116.6
0.0058	127.4
0.0057	126.6
0.0057	126.5
0.0057	122.7
0.0057	128.5
0.0057	122.3
0.0057	123.6
0.0057	128.2
0.0057	125.5
0.0057	120.3
0.0057	128.3

Average 123.6
 Standard Dev. 4.190
 Coeff. of Var. [%] 3.391
 Min. 113.6
 Max. 129.6
 Number of Spec. 18

Average_{norm} 0.0058 127.1
 Standard Dev._{norm} 4.803
 Coeff. of Var. [%]_{norm} 3.780
 Min. 0.0057 116.6
 Max. 0.0058 134.6
 Number of Spec. 18 18



**Laminate Open-Hole Tension Properties (OHT3)--RTA(75°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-RTA-1	D	C1	4	1	134.7	0.1158	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-RTA-2	D	C1	4	1	135.0	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-RTA-3	D	C1	4	1	132.8	0.1168	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-RTA-1	D	C2	4	2	134.4	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-RTA-2	D	C2	4	2	132.1	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-RTA-3	D	C2	4	2	133.4	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-RTA-1	E	C1	5	1	133.5	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-RTA-2	E	C1	5	1	128.7	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-RTA-3	E	C1	5	1	132.1	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-RTA-1	E	C2	5	2	130.7	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-RTA-2	E	C2	5	2	131.8	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-RTA-3	E	C2	5	2	133.0	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-RTA-1	F	C1	6	1	124.4	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-RTA-2	F	C1	6	1	132.1	0.1157	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-RTA-3	F	C1	6	1	129.3	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-1	F	C1	6	2	124.3	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-2	F	C1	6	2	124.9	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-RTA-3	F	C1	6	2	134.2	0.1148	20	MGM

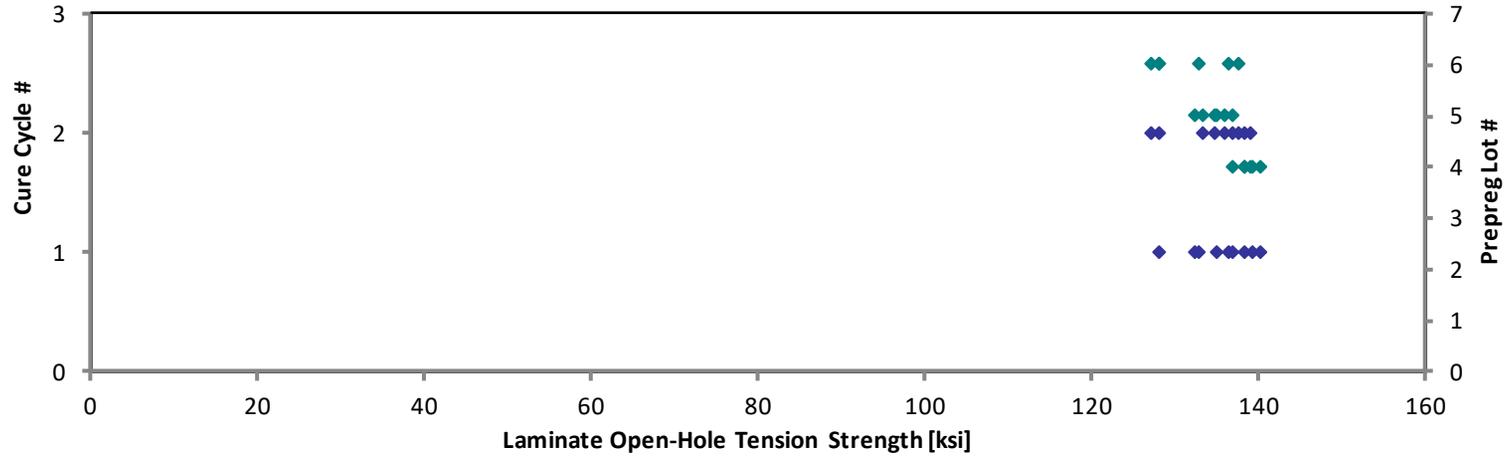
Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	139.3
0.0058	140.3
0.0058	138.5
0.0058	139.2
0.0058	137.0
0.0058	138.4
0.0057	136.9
0.0058	132.5
0.0057	135.1
0.0057	133.4
0.0057	134.9
0.0057	136.1
0.0058	128.3
0.0058	136.5
0.0058	132.8
0.0057	127.3
0.0057	128.1
0.0057	137.6

Average 131.2
Standard Dev. 3.508
Coeff. of Var. [%] 2.674
Min. 124.3
Max. 135.0
Number of Spec. 18

Average_{norm} 0.0058 135.1
Standard Dev._{norm} 3.993
Coeff. of Var. [%]_{norm} 2.955
Min. 0.0057 127.3
Max. 0.0058 140.3
Number of Spec. 18 18

Laminate Open-Hole Tension Properties (OHT3)--RTA(75°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Tension Properties (OHT3)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

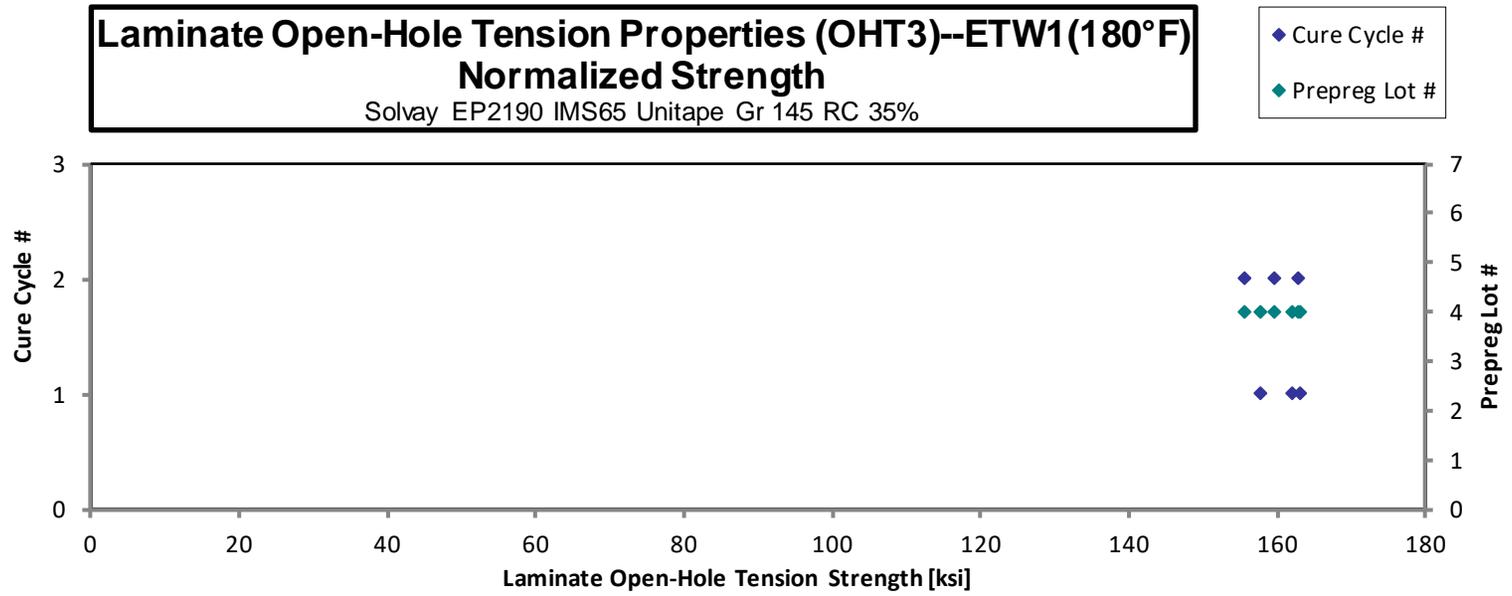
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW1-1	D	C1	4	1	155.9	0.1164	20	MGV
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW1-2	D	C1	4	1	157.7	0.1160	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW1-3	D	C1	4	1	151.9	0.1165	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW1-1	D	C2	4	2	157.6	0.1159	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW1-2	D	C2	4	2	150.1	0.1163	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW1-3	D	C2	4	2	153.7	0.1163	20	XGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	162.0
0.0058	163.3
0.0058	158.0
0.0058	163.1
0.0058	155.8
0.0058	159.6

Average 154.5
Standard Dev. 3.127
Coeff. of Var. [%] 2.024
Min. 150.1
Max. 157.7
Number of Spec. 6

Average_{norm} 0.0058
Standard Dev._{norm} 3.024
Coeff. of Var. [%]_{norm} 1.887
Min. 0.0058
Max. 0.0058
Number of Spec. 6



**Laminate Open-Hole Tension Properties (OHT3)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

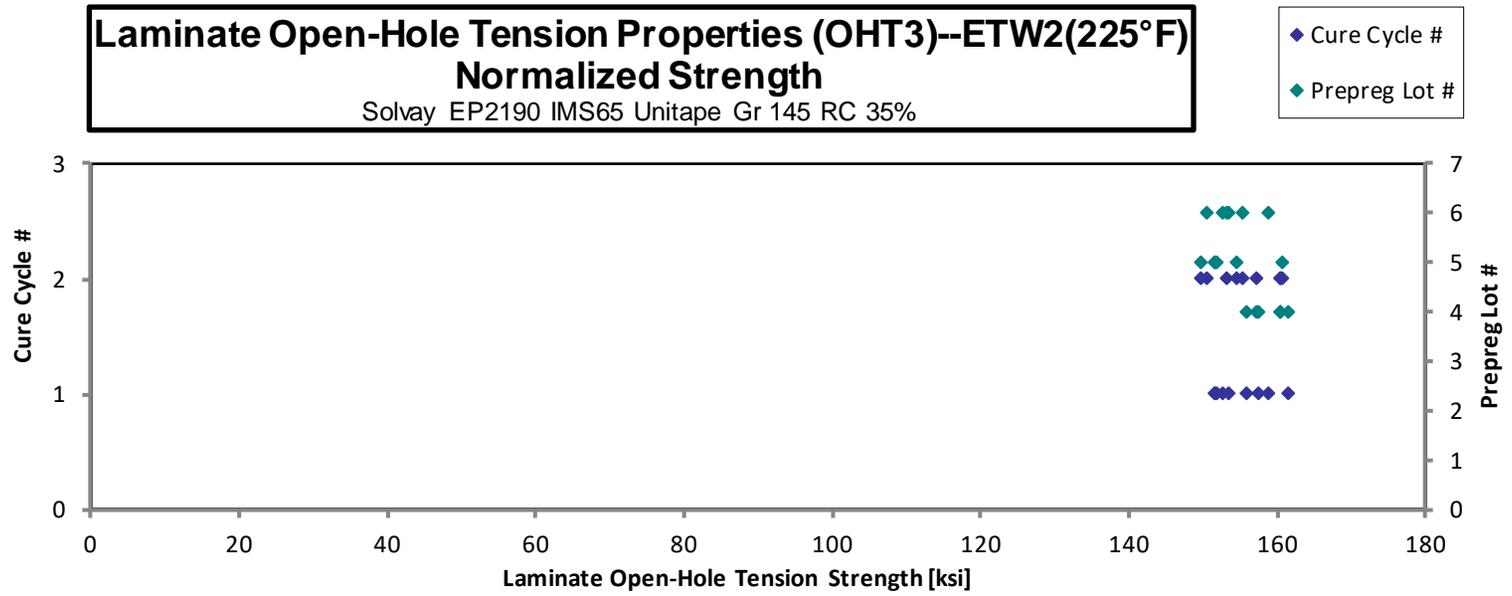
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW2-1	D	C1	4	1	151.2	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW2-2	D	C1	4	1	154.8	0.1168	20	MGV
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-ETW2-3	D	C1	4	1	149.8	0.1167	20	MGV
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW2-1	D	C2	4	2	154.9	0.1160	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW2-2	D	C2	4	2	151.4	0.1163	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-ETW2-3	D	C2	4	2	155.1	0.1160	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-ETW2-1	E	C1	5	1	148.6	0.1143	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-ETW2-2	E	C1	5	1	148.2	0.1147	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-ETW2-3	E	C1	5	1	147.9	0.1152	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-ETW2-1	E	C2	5	2	147.1	0.1141	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-ETW2-2	E	C2	5	2	151.0	0.1147	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-ETW2-4	E	C2	5	2	157.0	0.1147	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-ETW2-1	F	C1	6	1	150.1	0.1146	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-ETW2-2	F	C1	6	1	154.8	0.1150	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-ETW2-3	F	C1	6	1	149.4	0.1145	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-ETW2-1	F	C1	6	2	152.4	0.1142	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-ETW2-2	F	C1	6	2	148.8	0.1134	20	XGM
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-ETW2-3	F	C1	6	2	150.3	0.1142	20	XGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	157.5
0.0058	161.5
0.0058	156.0
0.0058	160.4
0.0058	157.2
0.0058	160.6
0.0057	151.6
0.0057	151.8
0.0058	152.1
0.0057	149.8
0.0057	154.6
0.0057	160.8
0.0057	153.6
0.0058	158.9
0.0057	152.7
0.0057	155.4
0.0057	150.6
0.0057	153.2

Average 151.3
Standard Dev. 2.939
Coeff. of Var. [%] 1.943
Min. 147.1
Max. 157.0
Number of Spec. 18

Average_{norm} 0.0058 155.5
Standard Dev._{norm} 3.807
Coeff. of Var. [%]_{norm} 2.449
Min. 0.0057 149.8
Max. 0.0058 161.5
Number of Spec. 18 18



4.19 “25/50/25” Filled-Hole Tension 1 Properties (FHT1)

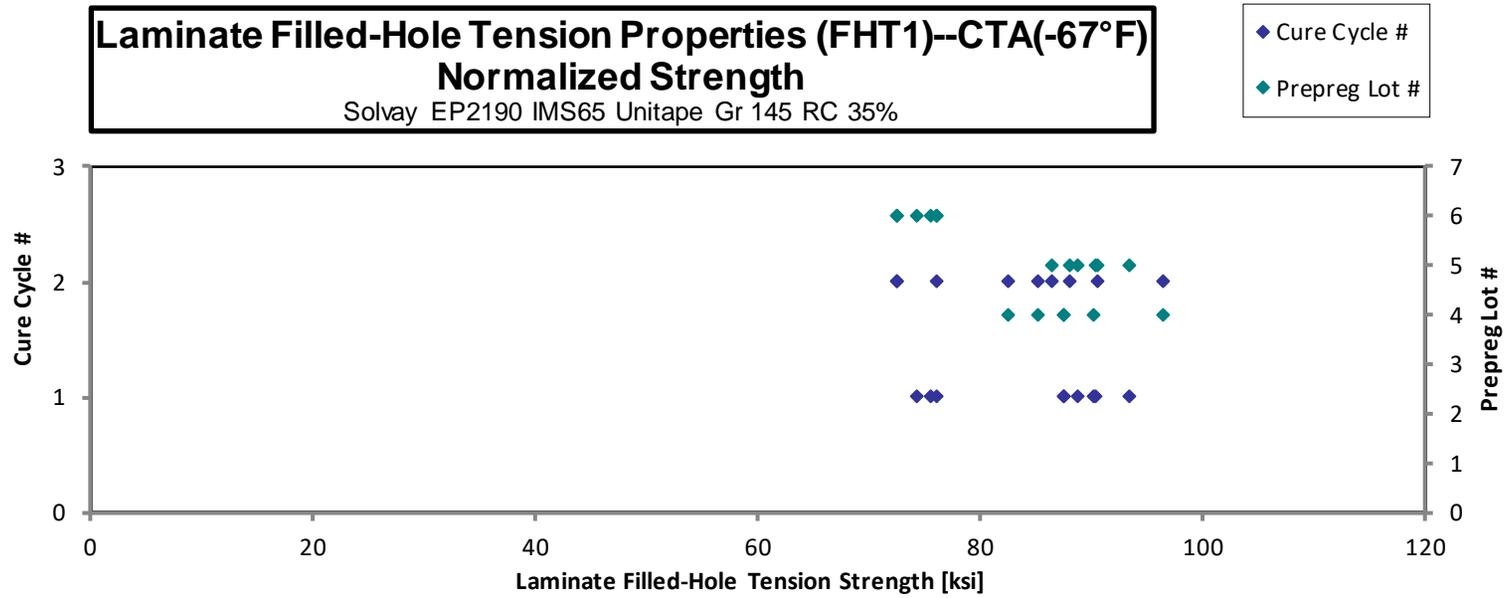
Laminate Filled-Hole Tension Properties (FHT1)–CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-CTA-1	D	C1	4	1	85.56	0.04580	8	MGM	0.0057	87.47
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-CTA-2	D	C1	4	1	85.85	0.04570	8	MGM	0.0057	87.57
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-CTA-3	D	C1	4	1	88.24	0.04580	8	MGM	0.0057	90.21
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-CTA-1	D	C2	4	2	93.91	0.04600	8	MGM	0.0058	96.43
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-CTA-2	D	C2	4	2	83.38	0.04580	8	MGM	0.0057	85.24
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-CTA-3	D	C2	4	2	81.02	0.04560	8	MGM	0.0057	82.47
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-CTA-1	E	C1	5	1	89.83	0.04510	8	MGM	0.0056	90.43
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-CTA-2	E	C1	5	1	92.25	0.04540	8	MGM	0.0057	93.49
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-CTA-3	E	C1	5	1	88.29	0.04510	8	MGM	0.0056	88.88
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-CTA-1	E	C2	5	2	86.91	0.04540	8	MGM	0.0057	88.07
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-CTA-2	E	C2	5	2	85.00	0.04560	8	MGM	0.0057	86.52
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-CTA-3	E	C2	5	2	89.62	0.04530	8	MGM	0.0057	90.62
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-CTA-1	F	C1	6	1	73.46	0.04610	8	MGM	0.0058	75.59
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-CTA-2	F	C1	6	1	71.60	0.04650	8	MGM	0.0058	74.32
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-CTA-3	F	C1	6	1	73.25	0.04660	8	MGM	0.0058	76.19
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-CTA-1	F	C1	6	2	72.14	0.04510	8	MGM	0.0056	72.62
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-CTA-2	F	C1	6	2	75.53	0.04520	8	MGM	0.0057	76.20
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-CTA-3	F	C1	6	2	72.89	0.04460	8	MGM	0.0056	72.56

Average 82.71
Standard Dev. 7.589
Coeff. of Var. [%] 9.175
Min. 71.60
Max. 93.91
Number of Spec. 18

Average_{norm} 0.0057
Standard Dev._{norm} 0.0056
Coeff. of Var. [%]_{norm} 9.065
Min. 0.0056
Max. 0.0058
Number of Spec. 18



**Laminate Filled-Hole Tension Properties (FHT1)--RTA(75°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

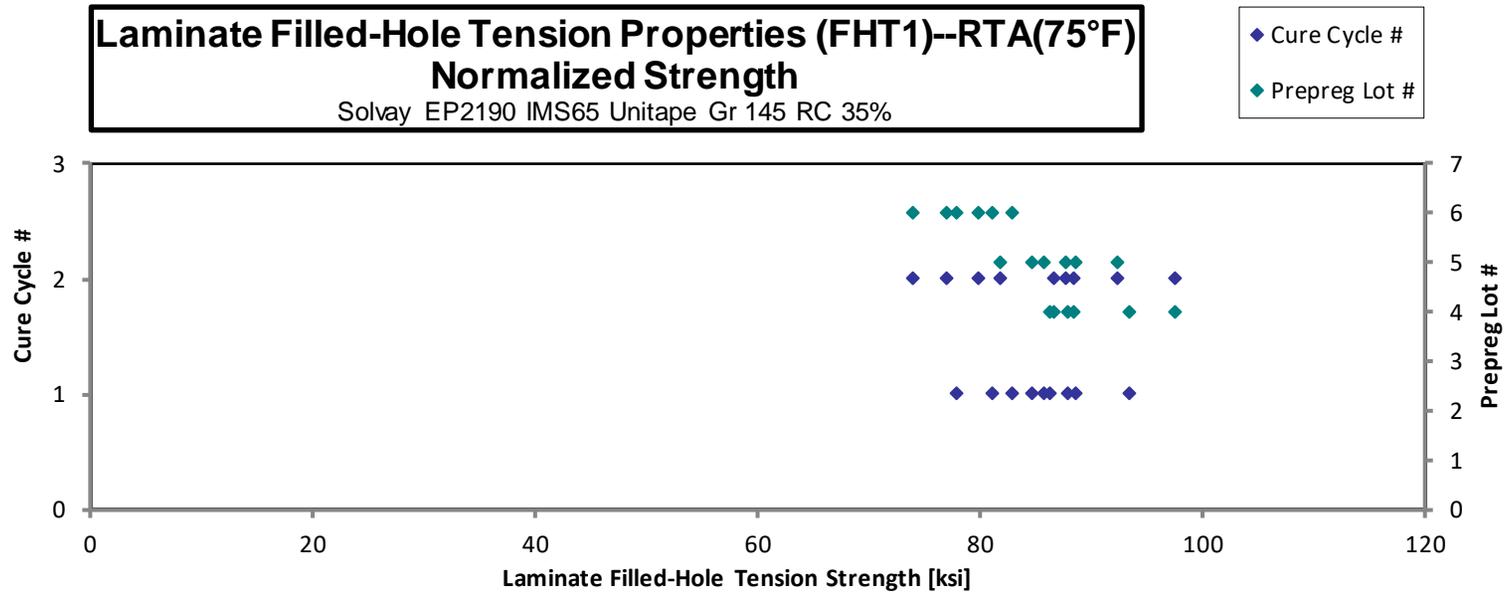
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-RTA-1	D	C1	4	1	84.43	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-RTA-2	D	C1	4	1	91.84	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-RTA-3	D	C1	4	1	85.73	0.04590	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-RTA-1	D	C2	4	2	96.33	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-RTA-2	D	C2	4	2	86.51	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-RTA-3	D	C2	4	2	84.83	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-RTA-1	E	C1	5	1	84.90	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-RTA-2	E	C1	5	1	87.82	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-RTA-3	E	C1	5	1	83.70	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-RTA-1	E	C2	5	2	86.51	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-RTA-2	E	C2	5	2	81.06	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-RTA-3	E	C2	5	2	90.74	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-RTA-1	F	C1	6	1	75.63	0.04610	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-RTA-2	F	C1	6	1	79.94	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-RTA-3	F	C1	6	1	82.31	0.04510	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-RTA-1	F	C1	6	2	76.03	0.04360	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-RTA-2	F	C1	6	2	81.35	0.04400	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-RTA-3	F	C1	6	2	78.08	0.04420	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	86.31
0.0057	93.48
0.0057	87.83
0.0057	97.62
0.0057	88.44
0.0057	86.72
0.0057	85.85
0.0057	88.60
0.0057	84.63
0.0057	87.67
0.0057	81.78
0.0057	92.36
0.0058	77.82
0.0057	81.19
0.0056	82.86
0.0055	73.99
0.0055	79.90
0.0055	77.03

Average 84.32
Standard Dev. 5.383
Coeff. of Var. [%] 6.385
Min. 75.63
Max. 96.33
Number of Spec. 18

Average_{norm} 0.0057
Standard Dev._{norm} 0.0055
Coeff. of Var. [%]_{norm} 7.094
Min. 0.0055
Max. 0.0058
Number of Spec. 18



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

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

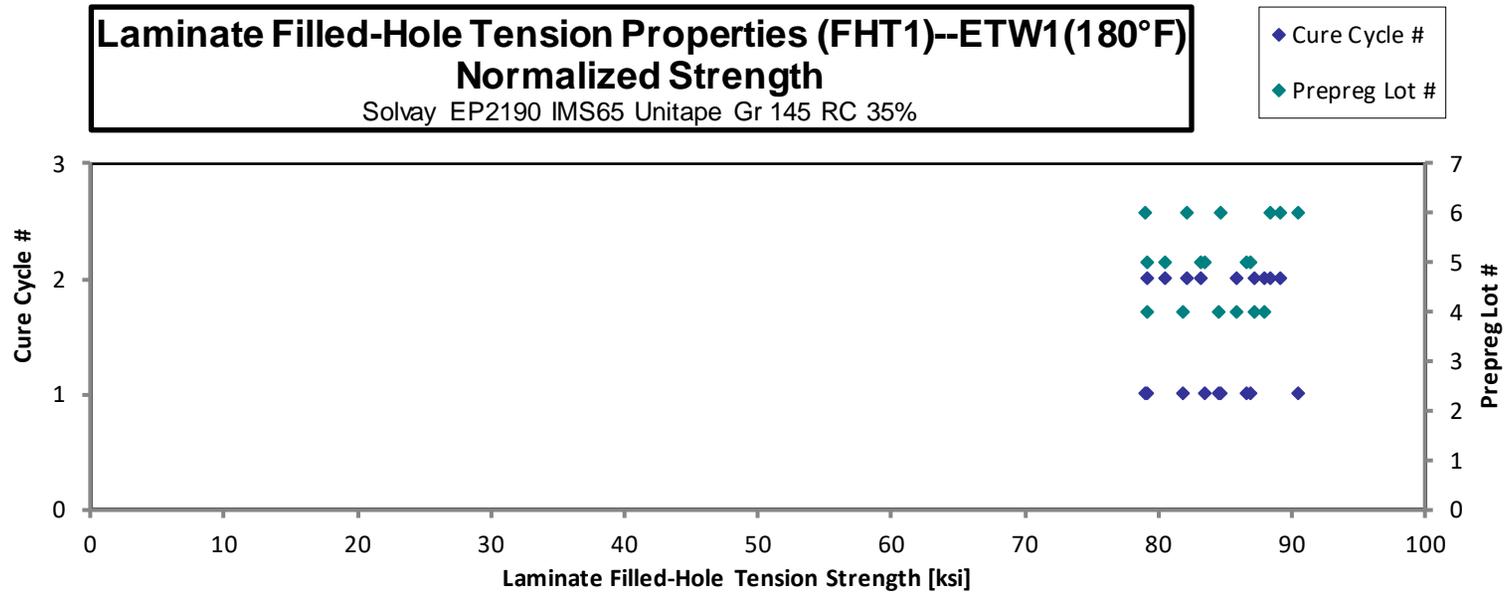
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW1-1	D	C1	4	1	77.88	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW1-2	D	C1	4	1	82.49	0.04590	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW1-3	D	C1	4	1	80.38	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW1-1	D	C2	4	2	85.00	0.04600	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW1-2	D	C2	4	2	84.24	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW1-3	D	C2	4	2	86.12	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW1-1	E	C1	5	1	85.64	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW1-2	E	C1	5	1	85.08	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW1-3	E	C1	5	1	82.47	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW1-1	E	C2	5	2	83.11	0.04490	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW1-2	E	C2	5	2	78.28	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW1-3	E	C2	5	2	79.98	0.04510	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW1-1	F	C1	6	1	86.61	0.04380	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW1-2	F	C1	6	1	91.99	0.04410	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW1-3	F	C1	6	1	79.90	0.04430	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW1-1	F	C1	6	2	81.11	0.04540	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW1-2	F	C1	6	2	88.38	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW1-3	F	C1	6	2	89.27	0.04440	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	79.27
0.0057	84.52
0.0057	81.82
0.0058	87.28
0.0057	85.93
0.0057	88.04
0.0057	86.98
0.0057	86.60
0.0057	83.57
0.0056	83.30
0.0057	79.15
0.0056	80.52
0.0055	84.68
0.0055	90.55
0.0055	79.01
0.0057	82.20
0.0057	89.17
0.0056	88.47

Average 83.77
Standard Dev. 3.881
Coeff. of Var. [%] 4.633
Min. 77.88
Max. 91.99
Number of Spec. 18

Average_{norm} 0.0057 84.50
Standard Dev._{norm} 3.629
Coeff. of Var. [%]_{norm} 4.295
Min. 0.0055 79.01
Max. 0.0058 90.55
Number of Spec. 18 18



**Laminate Filled-Hole Tension Properties (FHT1)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

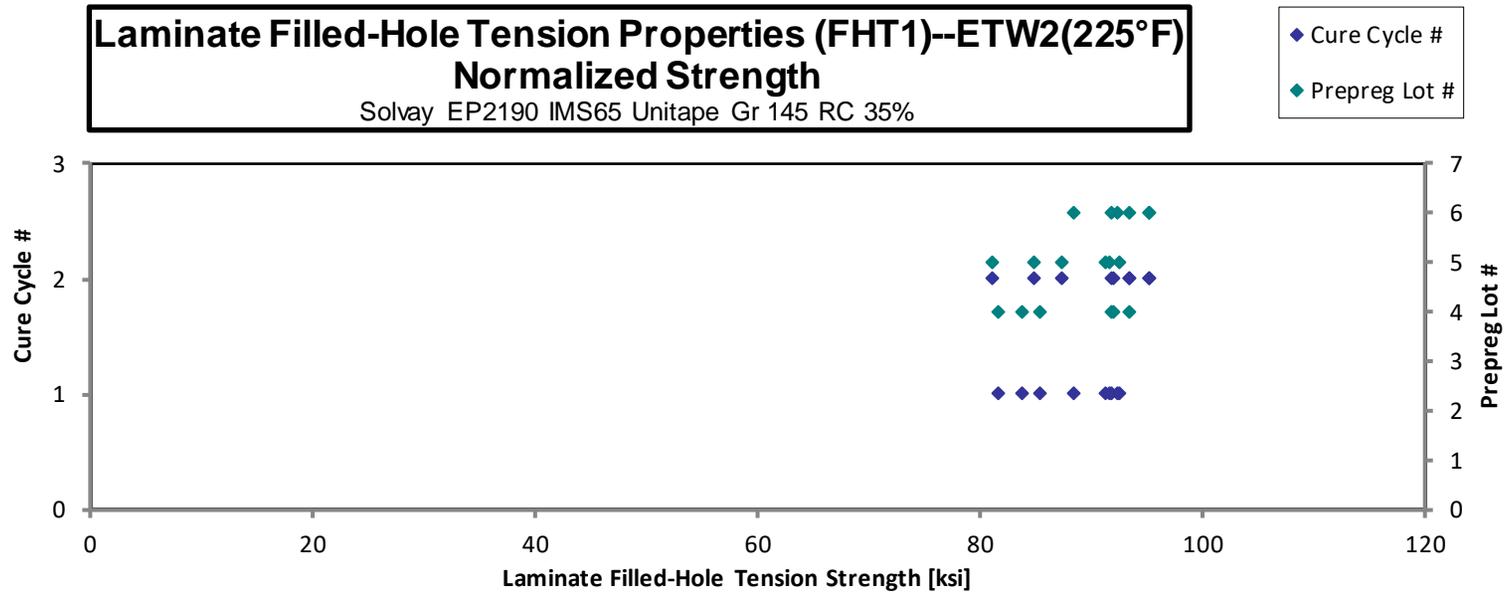
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW2-1	D	C1	4	1	80.25	0.04560	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW2-2	D	C1	4	1	82.09	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C1-1-ETW2-3	D	C1	4	1	83.65	0.04570	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW2-1	D	C2	4	2	90.42	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW2-2	D	C2	4	2	91.40	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-D-C2-1-ETW2-3	D	C2	4	2	89.97	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW2-1	E	C1	5	1	89.33	0.04580	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW2-2	E	C1	5	1	91.52	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C1-1-ETW2-3	E	C1	5	1	90.17	0.04550	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW2-1	E	C2	5	2	80.36	0.04520	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW2-2	E	C2	5	2	86.34	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-E-C2-1-ETW2-3	E	C2	5	2	84.02	0.04530	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW2-1	F	C1	6	1	94.33	0.04390	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW2-2	F	C1	6	1	90.14	0.04400	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C1-1-ETW2-3	F	C1	6	1	92.93	0.04430	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW2-1	F	C1	6	2	97.86	0.04360	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW2-2	F	C1	6	2	96.61	0.04420	8	MGM
NTP2190Q1-WRX-IMS-SOL-FHT1-F-C2-1-ETW2-3	F	C1	6	2	92.79	0.04510	8	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	81.68
0.0057	83.74
0.0057	85.33
0.0057	91.83
0.0057	93.44
0.0057	91.98
0.0057	91.32
0.0057	92.54
0.0057	91.58
0.0057	81.08
0.0057	87.30
0.0057	84.96
0.0055	92.43
0.0055	88.53
0.0055	91.89
0.0055	95.24
0.0055	95.32
0.0056	93.41

Average 89.12
Standard Dev. 5.267
Coeff. of Var. [%] 5.910
Min. 80.25
Max. 97.86
Number of Spec. 18

Average_{norm} 0.0056 89.65
Standard Dev._{norm} 4.531
Coeff. of Var. [%]_{norm} 5.055
Min. 0.0055 81.08
Max. 0.0057 95.32
Number of Spec. 18 18



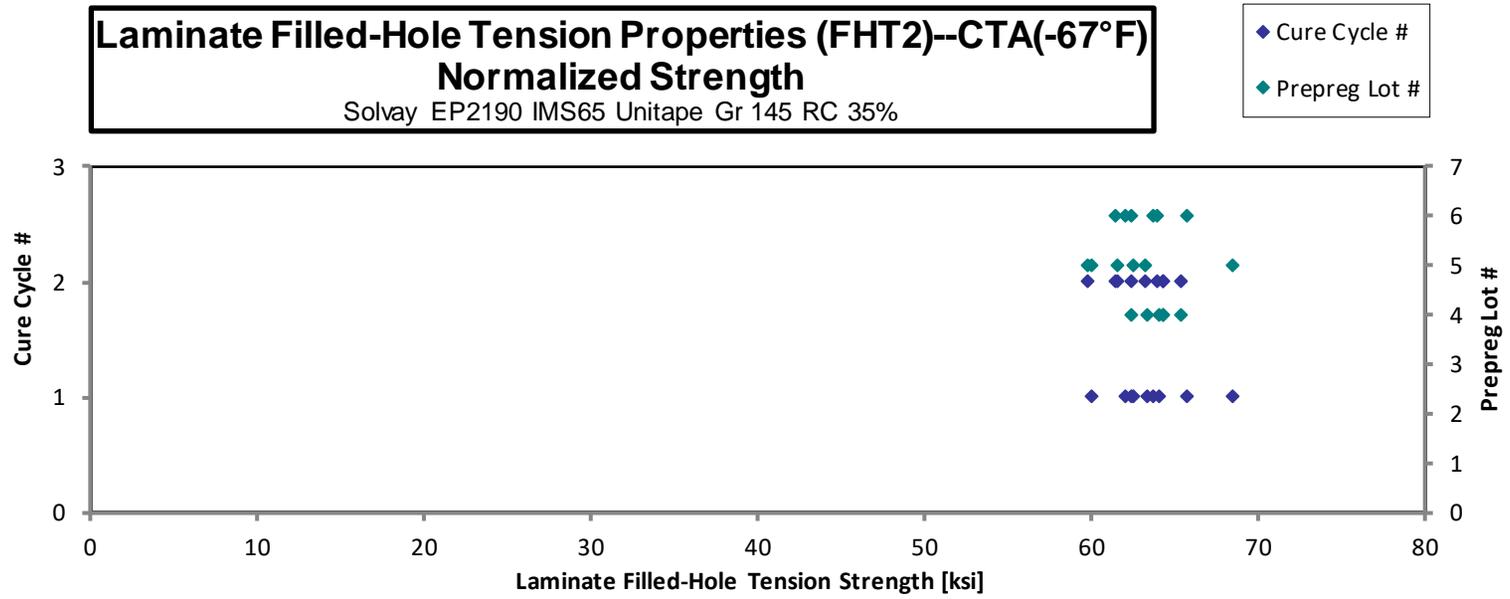
4.20 “10/80/10” Filled-Hole Tension 2 Properties (FHT2)

Laminate Filled-Hole Tension Properties (FHT2)–CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-CTA-1	D	C1	4	1	60.22	0.1160	20	MGM	0.0058	62.37
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-CTA-2	D	C1	4	1	61.16	0.1161	20	MGM	0.0058	63.40
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-CTA-3	D	C1	4	1	62.02	0.1158	20	MGM	0.0058	64.12
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-CTA-1	D	C2	4	2	61.08	0.1179	20	MGM	0.0059	64.30
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-CTA-2	D	C2	4	2	61.01	0.1180	20	MGM	0.0059	64.28
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-CTA-3	D	C2	4	2	62.42	0.1173	20	MGM	0.0059	65.37
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-CTA-1	E	C1	5	1	58.54	0.1149	20	MGM	0.0057	60.06
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-CTA-2	E	C1	5	1	60.83	0.1151	20	MGM	0.0058	62.51
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-CTA-3	E	C1	5	1	66.77	0.1148	20	MGM	0.0057	68.44
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-CTA-1	E	C2	5	2	59.98	0.1149	20	MGM	0.0057	61.53
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-CTA-2	E	C2	5	2	58.29	0.1149	20	MGM	0.0057	59.80
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-CTA-3	E	C2	5	2	61.74	0.1147	20	MGM	0.0057	63.23
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-1	F	C1	6	1	64.19	0.1148	20	MGM	0.0057	65.79
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-2	F	C1	6	1	60.33	0.1151	20	MGM	0.0058	62.00
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-3	F	C1	6	1	62.16	0.1149	20	MGM	0.0057	63.77
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-CTA-1	F	C1	6	2	60.62	0.1154	20	MGM	0.0058	62.46
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-CTA-2	F	C1	6	2	59.34	0.1159	20	MGM	0.0058	61.41
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-CTA-3	F	C1	6	2	61.78	0.1159	20	MGM	0.0058	63.93

Average	61.25	Average_{norm}	0.0058	63.27
Standard Dev.	1.976	Standard Dev._{norm}		2.080
Coeff. of Var. [%]	3.226	Coeff. of Var. [%]_{norm}		3.288
Min.	58.29	Min.	0.0057	59.80
Max.	66.77	Max.	0.0059	68.44
Number of Spec.	18	Number of Spec.	18	18



**Laminate Filled-Hole Tension Properties (FHT2)--RTA(75°F)
Strength**

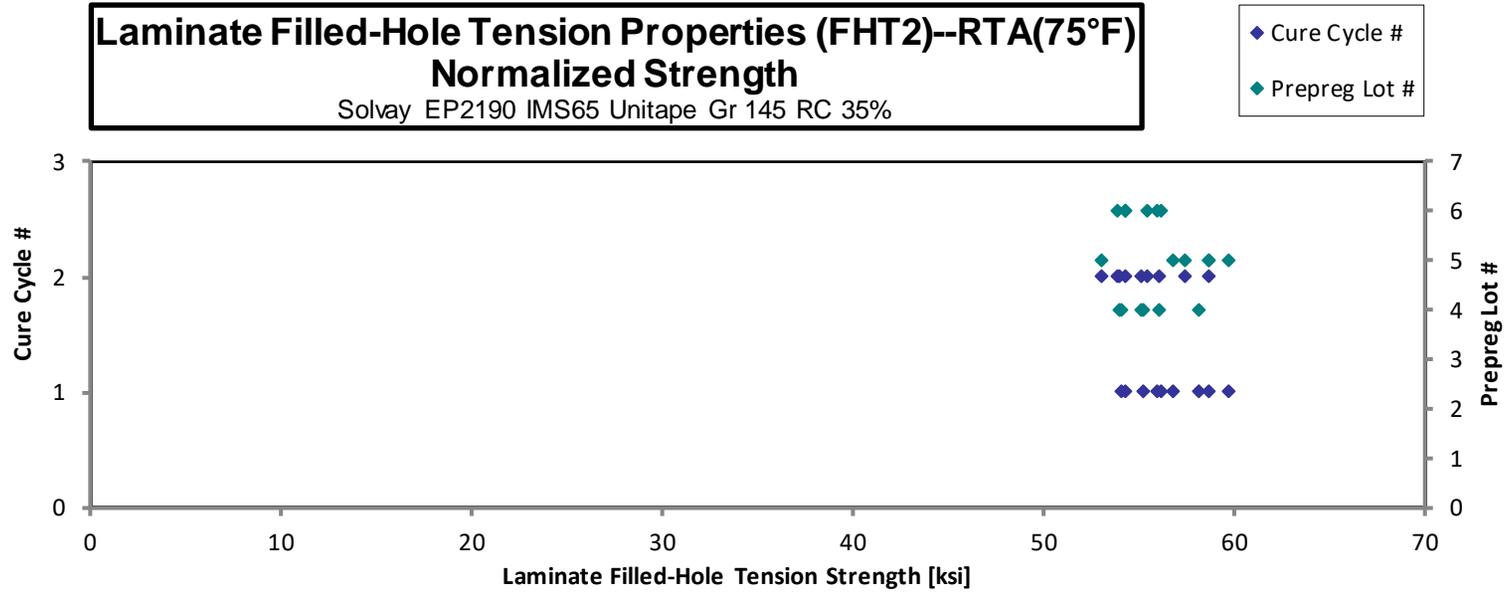
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t _{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-RTA-1	D	C1	4	1	53.18	0.1163	20	MGM	0.0058	55.22
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-RTA-2	D	C1	4	1	55.79	0.1167	20	MGM	0.0058	58.13
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-RTA-3	D	C1	4	1	52.09	0.1164	20	MGM	0.0058	54.14
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-RTA-1	D	C2	4	2	52.56	0.1175	20	MGM	0.0059	55.14
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-RTA-2	D	C2	4	2	53.40	0.1176	20	MGM	0.0059	56.07
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-RTA-3	D	C2	4	2	51.39	0.1177	20	MGM	0.0059	54.01
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-RTA-1	E	C1	5	1	55.40	0.1149	20	MGM	0.0057	56.83
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-RTA-2	E	C1	5	1	58.26	0.1148	20	MGM	0.0057	59.72
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-RTA-3	E	C1	5	1	57.27	0.1147	20	MGM	0.0057	58.65
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-RTA-1	E	C2	5	2	57.17	0.1149	20	MGM	0.0057	58.65
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-RTA-2	E	C2	5	2	55.83	0.1152	20	MGM	0.0058	57.43
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-RTA-3	E	C2	5	2	51.59	0.1151	20	MGM	0.0058	53.02
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-RTA-1	F	C1	6	1	52.92	0.1150	20	MGM	0.0058	54.34
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-RTA-2	F	C1	6	1	54.83	0.1143	20	MGM	0.0057	55.96
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-RTA-3	F	C1	6	1	54.92	0.1146	20	MGM	0.0057	56.19
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-RTA-1	F	C1	6	2	52.38	0.1153	20	MGM	0.0058	53.92
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-RTA-2	F	C1	6	2	52.70	0.1155	20	MGM	0.0058	54.35
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-RTA-3	F	C1	6	2	53.85	0.1153	20	MGM	0.0058	55.44

Average 54.20
Standard Dev. 2.074
Coeff. of Var. [%] 3.827
Min. 51.39
Max. 58.26
Number of Spec. 18

Average_{norm} 0.0058
Standard Dev._{norm} 1.924
Coeff. of Var. [%]_{norm} 3.439
Min. 0.0057
Max. 0.0059
Number of Spec. 18



Laminate Filled-Hole Tension Properties (FHT2)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

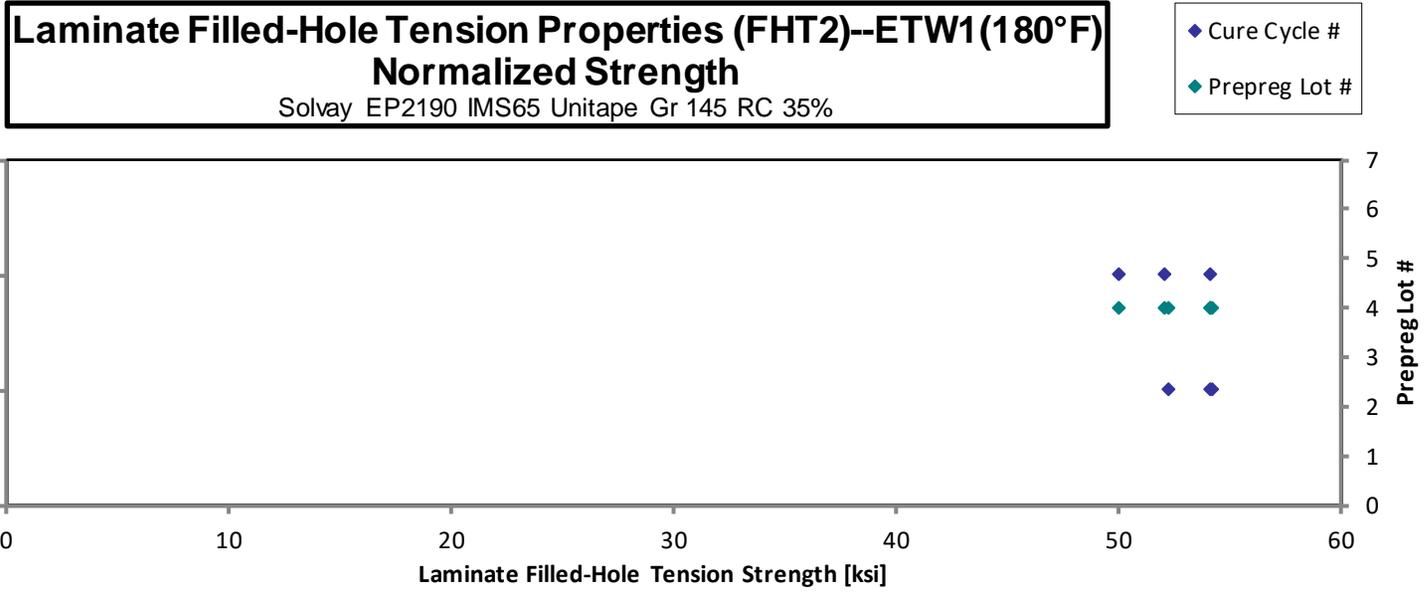
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW1-1	D	C1	4	1	52.22	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW1-2	D	C1	4	1	52.07	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW1-3	D	C1	4	1	50.37	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW1-1	D	C2	4	2	49.39	0.1180	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW1-2	D	C2	4	2	51.34	0.1180	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW1-3	D	C2	4	2	47.61	0.1176	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	54.22
0.0058	54.16
0.0058	52.26
0.0059	52.04
0.0059	54.09
0.0059	49.99

Average 50.50
Standard Dev. 1.774
Coeff. of Var. [%] 3.512
Min. 47.61
Max. 52.22
Number of Spec. 6

Average_{norm} 0.0059
Standard Dev._{norm} 1.692
Coeff. of Var. [%]_{norm} 3.206
Min. 0.0058
Max. 0.0059
Number of Spec. 6



**Laminate Filled-Hole Tension Properties (FHT2)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

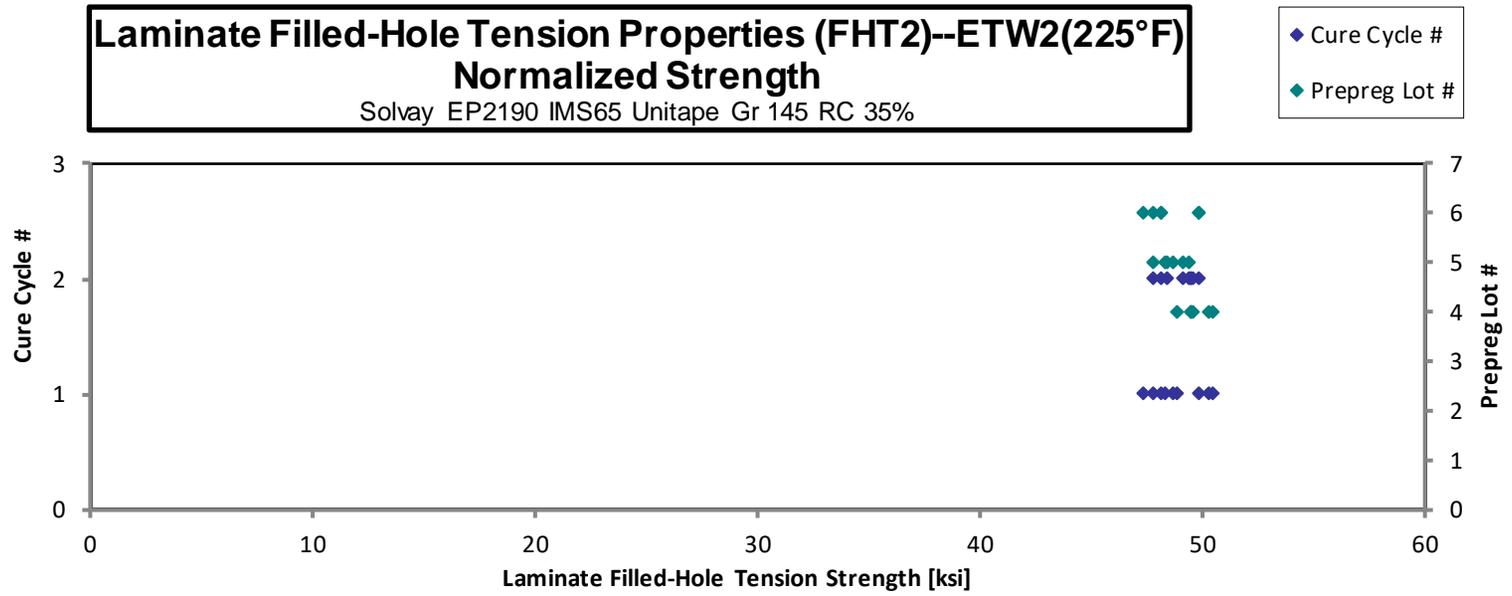
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW2-1	D	C1	4	1	47.00	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW2-2	D	C1	4	1	48.50	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-ETW2-3	D	C1	4	1	48.40	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW2-1	D	C2	4	2	47.27	0.1173	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW2-2	D	C2	4	2	47.30	0.1174	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-ETW2-3	D	C2	4	2	47.02	0.1179	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-ETW2-1	E	C1	5	1	46.68	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-ETW2-2	E	C1	5	1	47.11	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-ETW2-3	E	C1	5	1	47.57	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-ETW2-1	E	C2	5	2	47.20	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-ETW2-2	E	C2	5	2	48.05	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-ETW2-3	E	C2	5	2	47.79	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-ETW2-1	F	C1	6	1	46.26	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-ETW2-2	F	C1	6	1	47.26	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-ETW2-3	F	C1	6	1	48.98	0.1140	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-ETW2-1	F	C1	6	2	46.61	0.1157	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-ETW2-2	F	C1	6	2	46.35	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-ETW2-3	F	C1	6	2	48.48	0.1151	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	48.89
0.0058	50.45
0.0058	50.26
0.0059	49.51
0.0059	49.58
0.0059	49.50
0.0057	47.81
0.0058	48.37
0.0057	48.67
0.0057	48.38
0.0058	49.38
0.0058	49.16
0.0057	47.38
0.0057	48.19
0.0057	49.85
0.0058	48.15
0.0058	47.80
0.0058	49.82

Average 47.44
Standard Dev. 0.7849
Coeff. of Var. [%] 1.655
Min. 46.26
Max. 48.98
Number of Spec. 18

Average_{norm} 0.0058 48.95
Standard Dev._{norm} 0.9025
Coeff. of Var. [%]_{norm} 1.844
Min. 0.0057 47.38
Max. 0.0059 50.45
Number of Spec. 18 18



4.21 “50/40/10” Filled-Hole Tension 3 Properties (FHT3)

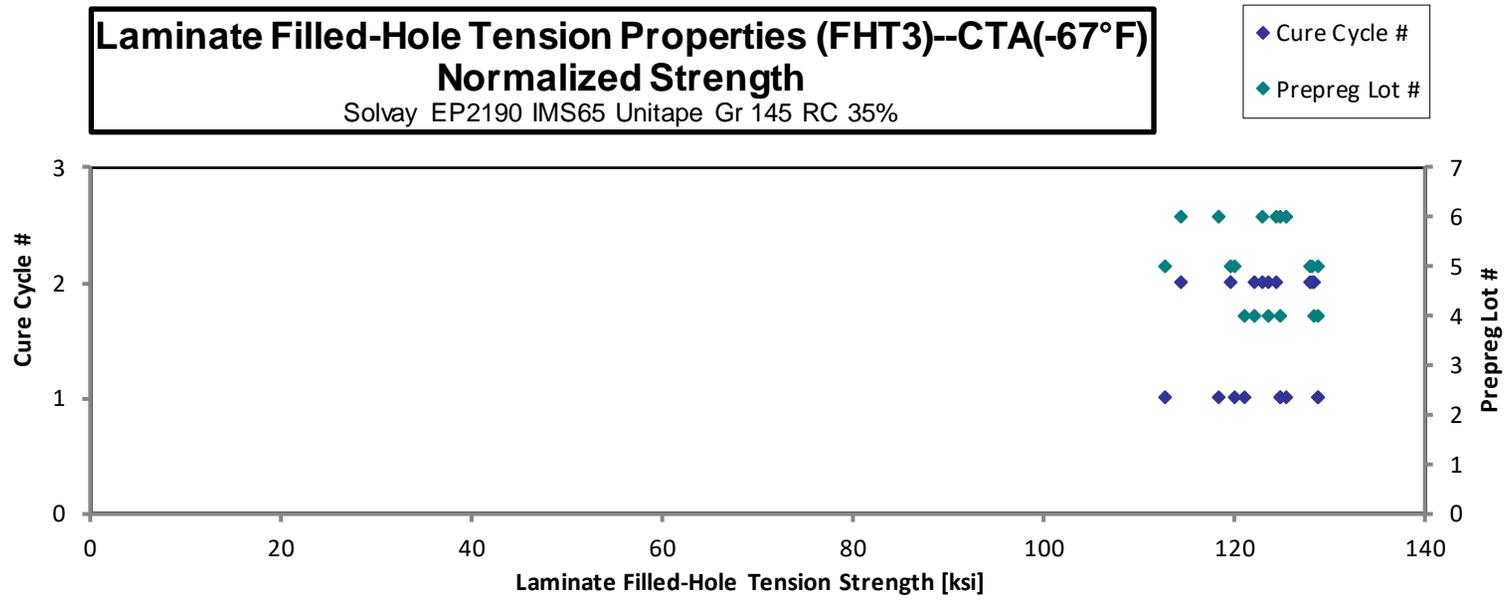
Laminate Filled-Hole Tension Properties (FHT3)–CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-CTA-1	D	C1	4	1	116.0	0.1169	20	MGM	0.0058	121.1
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-CTA-2	D	C1	4	1	123.5	0.1168	20	MGM	0.0058	128.8
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-CTA-3	D	C1	4	1	119.7	0.1169	20	MGM	0.0058	124.9
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-CTA-1	D	C2	4	2	120.2	0.1151	20	MGM	0.0058	123.6
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-CTA-2	D	C2	4	2	123.4	0.1165	20	MGM	0.0058	128.4
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-CTA-3	D	C2	4	2	117.8	0.1162	20	MGM	0.0058	122.2
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-CTA-1	E	C1	5	1	125.0	0.1154	20	MGM	0.0058	128.8
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-CTA-2	E	C1	5	1	116.4	0.1154	20	MGM	0.0058	120.0
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-CTA-3	E	C1	5	1	109.9	0.1150	20	MGM	0.0058	112.8
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-CTA-1	E	C2	5	2	126.1	0.1138	20	MGM	0.0057	128.2
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-CTA-2	E	C2	5	2	116.6	0.1149	20	MGM	0.0057	119.6
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-CTA-3	E	C2	5	2	125.1	0.1145	20	MGM	0.0057	127.9
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-1	F	C1	6	1	121.8	0.1148	20	MGM	0.0057	124.8
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-2	F	C1	6	1	122.6	0.1146	20	MGM	0.0057	125.4
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-CTA-3	F	C1	6	1	115.0	0.1152	20	MGM	0.0058	118.3
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-CTA-1	F	C1	6	2	121.1	0.1138	20	MGM	0.0057	123.0
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-CTA-2	F	C1	6	2	122.4	0.1138	20	MGM	0.0057	124.4
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-CTA-3	F	C1	6	2	112.5	0.1139	20	MGM	0.0057	114.4

Average 119.7
Standard Dev. 4.582
Coeff. of Var. [%] 3.827
Min. 109.9
Max. 126.1
Number of Spec. 18

Average_{norm} 0.0058 **123.1**
Standard Dev._{norm} **4.764**
Coeff. of Var. [%]_{norm} **3.869**
Min. 0.0057 **112.8**
Max. 0.0058 **128.8**
Number of Spec. 18 **18**



**Laminate Filled-Hole Tension Properties (FHT3)--RTA(75°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

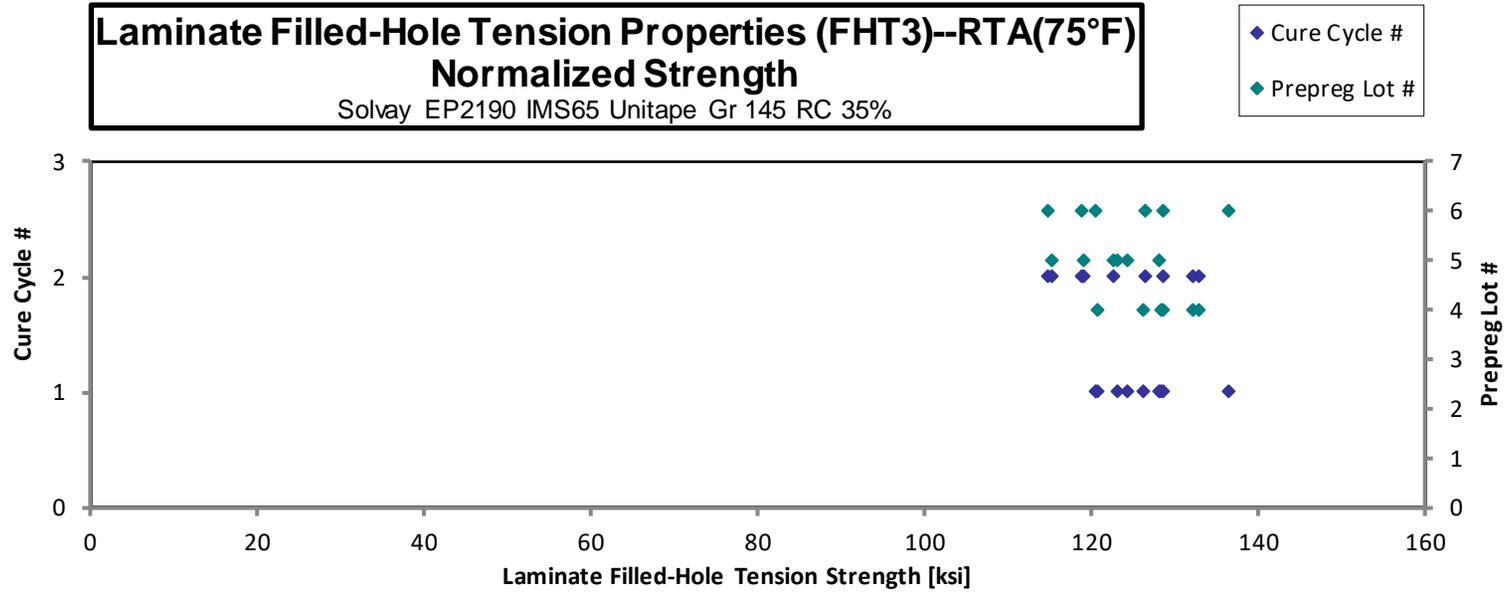
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-RTA-1	D	C1	4	1	116.3	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-RTA-2	D	C1	4	1	123.5	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-RTA-3	D	C1	4	1	121.4	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-RTA-1	D	C2	4	2	123.3	0.1168	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-RTA-2	D	C2	4	2	127.0	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-RTA-3	D	C2	4	2	127.3	0.1169	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-RTA-1	E	C1	5	1	125.2	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-RTA-2	E	C1	5	1	121.3	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-RTA-3	E	C1	5	1	120.6	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-RTA-1	E	C2	5	2	120.8	0.1137	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-RTA-2	E	C2	5	2	112.6	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-RTA-3	E	C2	5	2	116.8	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-RTA-1	F	C1	6	1	117.9	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-RTA-2	F	C1	6	1	133.8	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-RTA-3	F	C1	6	1	125.2	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-RTA-1	F	C1	6	2	116.0	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-RTA-2	F	C1	6	2	112.7	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-RTA-3	F	C1	6	2	124.2	0.1142	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	120.9
0.0058	128.4
0.0058	126.2
0.0058	128.5
0.0058	132.3
0.0058	132.9
0.0057	128.1
0.0057	124.2
0.0057	123.0
0.0057	122.6
0.0057	115.4
0.0057	119.1
0.0057	120.6
0.0057	136.5
0.0058	128.6
0.0057	118.8
0.0057	114.8
0.0057	126.6

Average 121.4
Standard Dev. 5.458
Coeff. of Var. [%] 4.495
Min. 112.6
Max. 133.8
Number of Spec. 18

Average_{norm} 0.0058
Standard Dev._{norm} 0.0057
Coeff. of Var. [%]_{norm} 4.815
Min. 0.0057
Max. 0.0058
Number of Spec. 18



Laminate Filled-Hole Tension Properties (FHT3)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

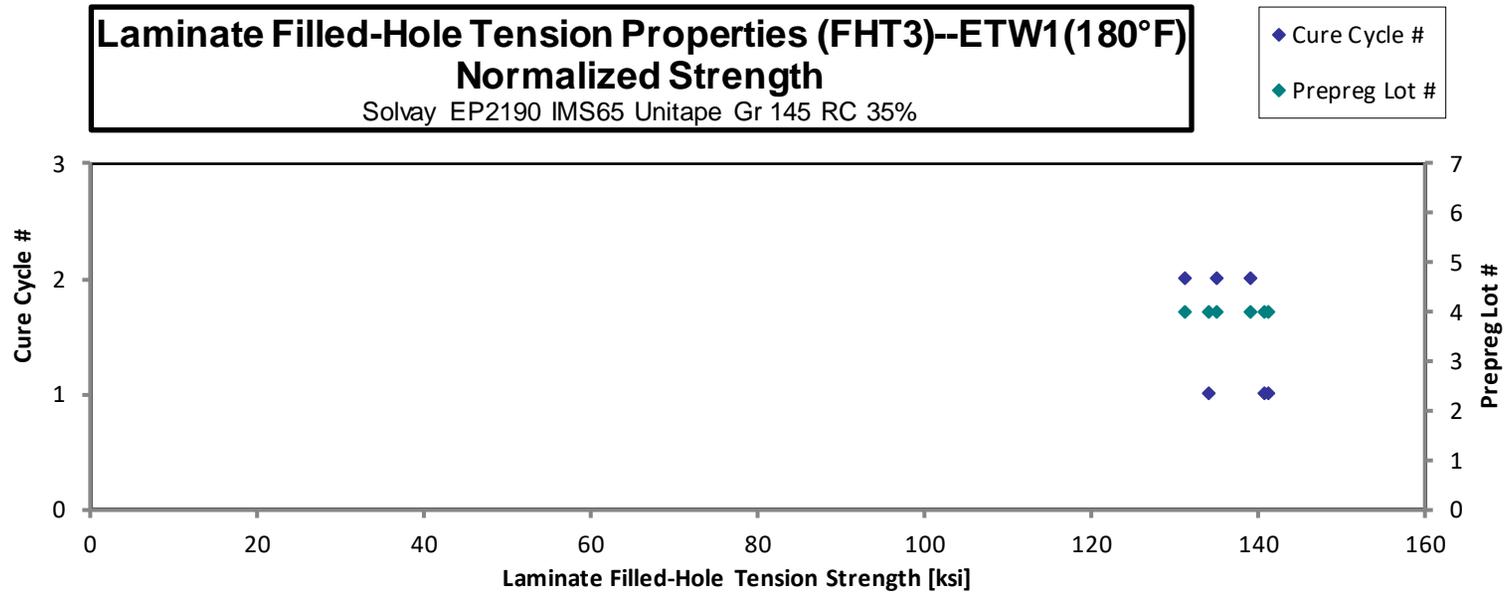
normalizing
 t_{ply} [in]
 0.0058

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW1-1	D	C1	4	1	129.0	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW1-2	D	C1	4	1	135.7	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW1-3	D	C1	4	1	135.3	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW1-1	D	C2	4	2	133.5	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW1-2	D	C2	4	2	125.8	0.1169	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW1-3	D	C2	4	2	130.2	0.1161	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	134.1
0.0058	141.2
0.0058	140.9
0.0058	139.1
0.0058	131.3
0.0058	135.0

Average 131.6
 Standard Dev. 3.932
 Coeff. of Var. [%] 2.989
 Min. 125.8
 Max. 135.7
 Number of Spec. 6

Average_{norm} 0.0058 136.9
 Standard Dev_{norm} 4.047
 Coeff. of Var. [%]_{norm} 2.956
 Min. 0.0058 131.3
 Max. 0.0058 141.2
 Number of Spec. 6 6



**Laminate Filled-Hole Tension Properties (FHT3)--ETW2(225°F)
Strength**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

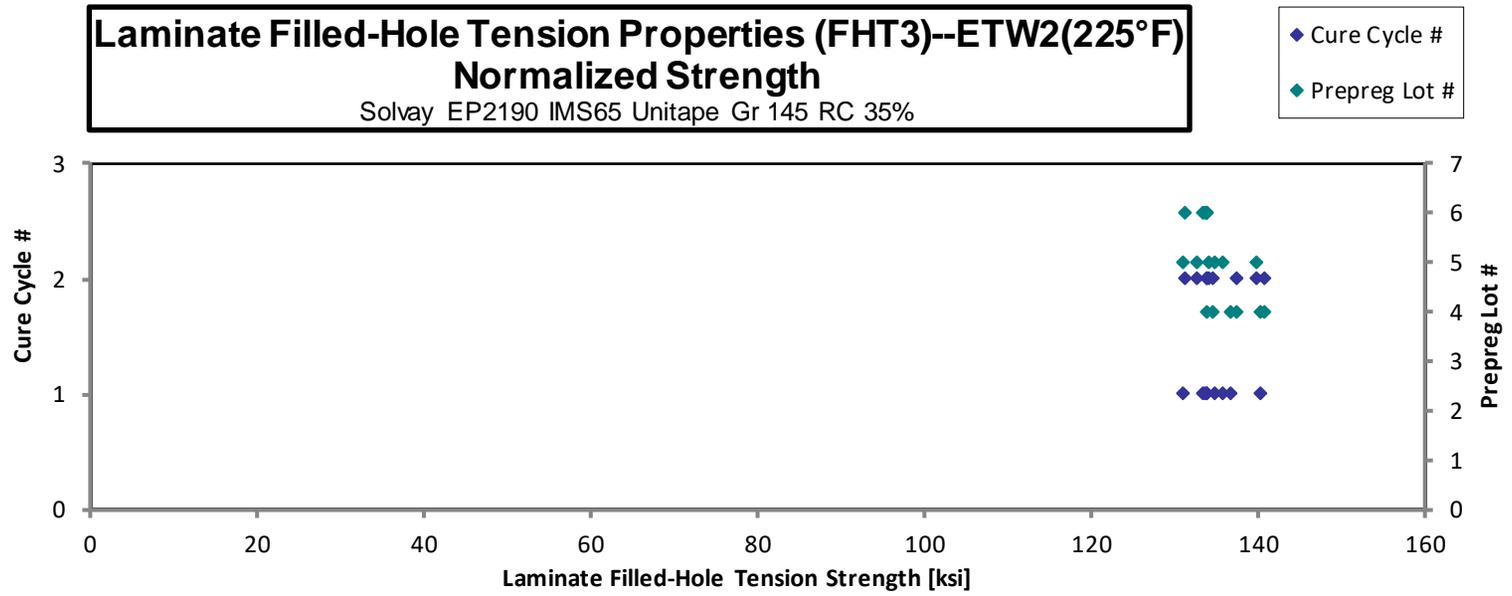
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW2-1	D	C1	4	1	135.2	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW2-2	D	C1	4	1	129.2	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-ETW2-3	D	C1	4	1	131.4	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW2-1	D	C2	4	2	135.4	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW2-2	D	C2	4	2	129.6	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-ETW2-3	D	C2	4	2	132.5	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-ETW2-1	E	C1	5	1	131.5	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-ETW2-2	E	C1	5	1	132.3	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-ETW2-3	E	C1	5	1	128.0	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-ETW2-1	E	C2	5	2	130.2	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-ETW2-2	E	C2	5	2	137.1	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-ETW2-3	E	C2	5	2	131.5	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-ETW2-1	F	C1	6	1	131.0	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-ETW2-2	F	C1	6	1	131.0	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-ETW2-3	F	C1	6	1	130.0	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-ETW2-1	F	C1	6	2	131.7	0.1139	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-ETW2-2	F	C1	6	2	131.7	0.1138	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-ETW2-3	F	C1	6	2	128.8	0.1141	20	MGM

Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0058	140.3
0.0058	134.0
0.0058	136.7
0.0058	140.8
0.0058	134.7
0.0058	137.5
0.0057	134.8
0.0058	135.8
0.0057	131.0
0.0057	132.8
0.0057	139.7
0.0057	134.2
0.0057	133.5
0.0057	134.0
0.0057	133.8
0.0057	131.2

Average 131.6
Standard Dev. 2.360
Coeff. of Var. [%] 1.794
Min. 128.0
Max. 137.1
Number of Spec. 18

Average_{norm} 0.0058 135.1
Standard Dev._{norm} 2.852
Coeff. of Var. [%]_{norm} 2.111
Min. 0.0057 131.0
Max. 0.0058 140.8
Number of Spec. 18 18



4.22 “25/50/25” Open-Hole Compression 1 Properties (OHC1)

Laminate Open-Hole Compression Properties (OHC1)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

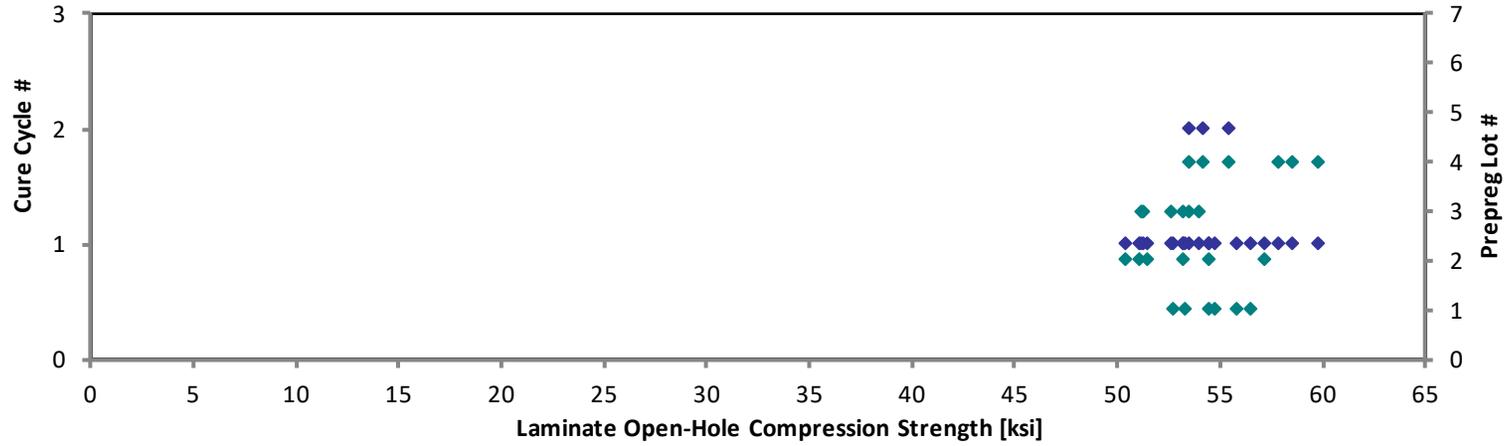
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694389-P3-OHC1-A-C1-CTA-2	A	C1	1	1	53.78	0.09410	16	LGM
TR7694389-P3-OHC1-A-C1-CTA-3	A	C1	1	1	52.02	0.09380	16	LGM
TR7694389-P3-OHC1-A-C1-CTA-4	A	C1	1	1	50.47	0.09370	16	LGM
TR7694389-P3-OHC1-A-C1-CTA-5	A	C1	1	1	52.22	0.09390	16	LGM
TR7694389-P3-OHC1-A-C1-CTA-6	A	C1	1	1	50.53	0.09460	16	LGM
TR7694389-P3-OHC1-A-C1-CTA-7	A	C1	1	1	53.14	0.09420	16	LGM
TR7829277-P1-OHC1-B-C1-CTA-1	B	C1	2	1	48.59	0.09300	16	MGM
TR7829277-P1-OHC1-B-C1-CTA-2	B	C1	2	1	52.48	0.09300	16	MGM
TR7829277-P1-OHC1-B-C1-CTA-3	B	C1	2	1	49.65	0.09290	16	MGM
TR7829277-P1-OHC1-B-C1-CTA-4	B	C1	2	1	51.64	0.09240	16	MGM
TR7829277-P1-OHC1-B-C1-CTA-5	B	C1	2	1	49.62	0.09230	16	MGM
TR7829277-P1-OHC1-B-C1-CTA-6	B	C1	2	1	55.66	0.09210	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-1	C	C1	3	1	51.51	0.09390	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-2	C	C1	3	1	50.49	0.09340	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-3	C	C1	3	1	51.33	0.09340	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-4	C	C1	3	1	51.14	0.09330	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-5	C	C1	3	1	49.40	0.09310	16	MGM
TR7829270-P1-OHC1-C-C1-CTA-6	C	C1	3	1	49.32	0.09300	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-CTA-1	D	C1	4	1	55.81	0.09290	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-CTA-2	D	C1	4	1	58.60	0.09150	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-CTA-3	D	C1	4	1	57.46	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-CTA-1	D	C2	4	2	54.52	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-CTA-2	D	C2	4	2	53.38	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-CTA-3	D	C2	4	2	52.48	0.09130	16	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0059	56.48
0.0059	54.46
0.0059	52.78
0.0059	54.73
0.0059	53.35
0.0059	55.87
0.0058	50.43
0.0058	54.47
0.0058	51.48
0.0058	53.25
0.0058	51.12
0.0058	57.21
0.0059	53.98
0.0058	52.63
0.0058	53.51
0.0058	53.25
0.0058	51.33
0.0058	51.19
0.0058	57.87
0.0057	59.84
0.0057	58.55
0.0057	55.43
0.0057	54.21
0.0057	53.48

Average	52.30	Average_{norm}	0.0058	54.20
Standard Dev.	2.616	Standard Dev._{norm}		2.464
Coeff. of Var. [%]	5.002	Coeff. of Var. [%]_{norm}		4.546
Min.	48.59	Min.	0.0057	50.43
Max.	58.60	Max.	0.0059	59.84
Number of Spec.	24	Number of Spec.	24	24

Laminate Open-Hole Compression Properties (OHC1)--CTA(-67°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC1)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

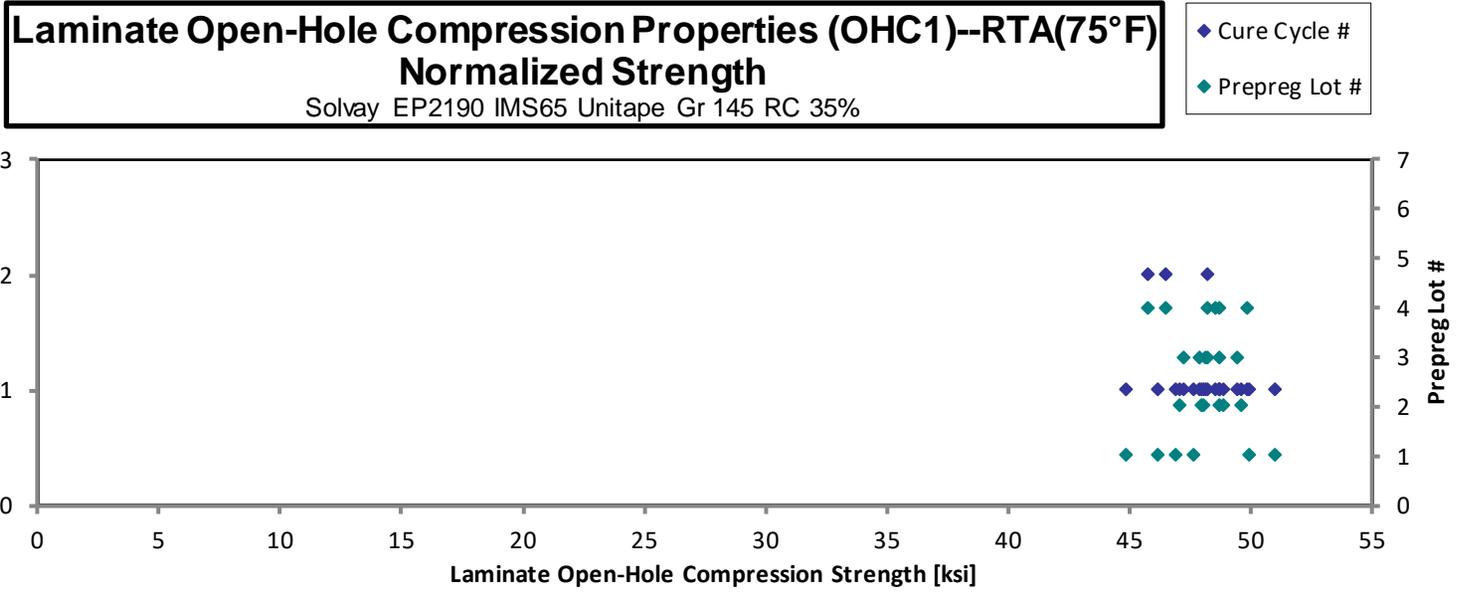
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694389-P1-OHC1-A-C1-RTA-1	A	C1	1	1	47.59	0.09410	16	LGM
TR7694389-P1-OHC1-A-C1-RTA-2	A	C1	1	1	48.64	0.09390	16	LGM
TR7694389-P1-OHC1-A-C1-RTA-3	A	C1	1	1	44.09	0.09380	16	LGM
TR7694389-P1-OHC1-A-C1-RTA-4	A	C1	1	1	45.48	0.09390	16	LGM
TR7694389-P1-OHC1-A-C1-RTA-5	A	C1	1	1	42.92	0.09370	16	LGM
TR7694389-P1-OHC1-A-C1-RTA-6	A	C1	1	1	44.85	0.09380	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-1	B	C1	2	1	47.48	0.09360	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-3	B	C1	2	1	45.61	0.09430	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-5	B	C1	2	1	45.59	0.09450	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-6	B	C1	2	1	44.83	0.09410	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-7	B	C1	2	1	46.48	0.09430	16	LGM
TR7702869-P3-OHC1-B-C1-RTA-8	B	C1	2	1	46.51	0.09390	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-1	C	C1	3	1	46.08	0.09360	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-2	C	C1	3	1	47.47	0.09340	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-3	C	C1	3	1	45.84	0.09360	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-4	C	C1	3	1	45.50	0.09310	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-5	C	C1	3	1	46.84	0.09320	16	LGM
TR7725556-P1-OHC1-C-C1-RTA-6	C	C1	3	1	46.38	0.09320	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-RTA-1	D	C1	4	1	47.47	0.09160	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-RTA-2	D	C1	4	1	47.89	0.09120	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-RTA-3	D	C1	4	1	48.94	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-RTA-1	D	C2	4	2	45.00	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-RTA-2	D	C2	4	2	47.54	0.09090	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-RTA-3	D	C2	4	2	45.81	0.09100	16	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0059	49.98
0.0059	50.97
0.0059	46.16
0.0059	47.66
0.0059	44.88
0.0059	46.95
0.0059	49.60
0.0059	48.00
0.0059	48.08
0.0059	47.08
0.0059	48.92
0.0059	48.74
0.0059	48.14
0.0058	49.48
0.0059	47.89
0.0058	47.28
0.0058	48.72
0.0058	48.24
0.0057	48.53
0.0057	48.75
0.0057	49.87
0.0057	45.80
0.0057	48.23
0.0057	46.53

Average 46.28
 Standard Dev. 1.441
 Coeff. of Var. [%] 3.112
 Min. 42.92
 Max. 48.94
 Number of Spec. 24

Average_{norm} 0.0058 48.10
 Standard Dev._{norm} 1.419
 Coeff. of Var. [%]_{norm} 2.951
 Min. 0.0057 44.88
 Max. 0.0059 50.97
 Number of Spec. 24 24



Laminate Open-Hole Compression Properties (OHC1)--ETA2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-1	D	C1	4	1	40.55	0.09150	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-2	D	C1	4	1	40.45	0.09180	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-3	D	C1	4	1	41.54	0.09110	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-1	D	C2	4	2	40.16	0.09090	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-2	D	C2	4	2	40.85	0.09100	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA2-3	D	C2	4	2	38.94	0.09090	16	MGM

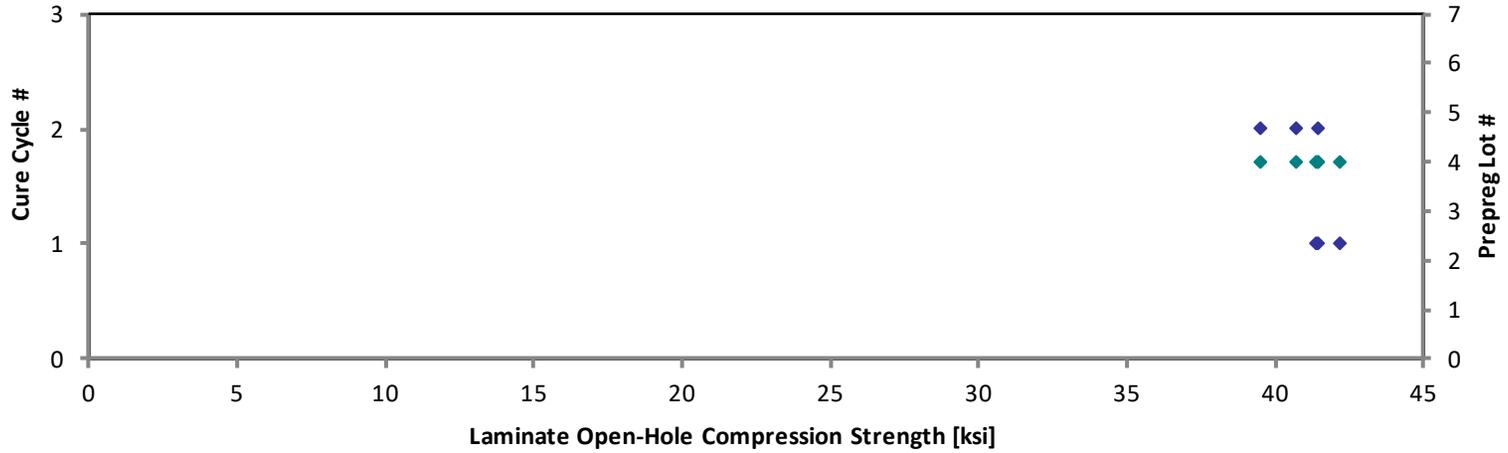
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	41.41
0.0057	41.44
0.0057	42.24
0.0057	40.74
0.0057	41.49
0.0057	39.50

Average 40.42
Standard Dev. 0.8620
Coeff. of Var. [%] 2.133
Min. 38.94
Max. 41.54
Number of Spec. 6

Average_{norm} 0.0057 **41.14**
Standard Dev._{norm} **0.9292**
Coeff. of Var. [%]_{norm} **2.259**
Min. 0.0057 **39.50**
Max. 0.0057 **42.24**
Number of Spec. 6 **6**

Laminate Open-Hole Compression Properties (OHC1)--ETA2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC1)--ETA3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

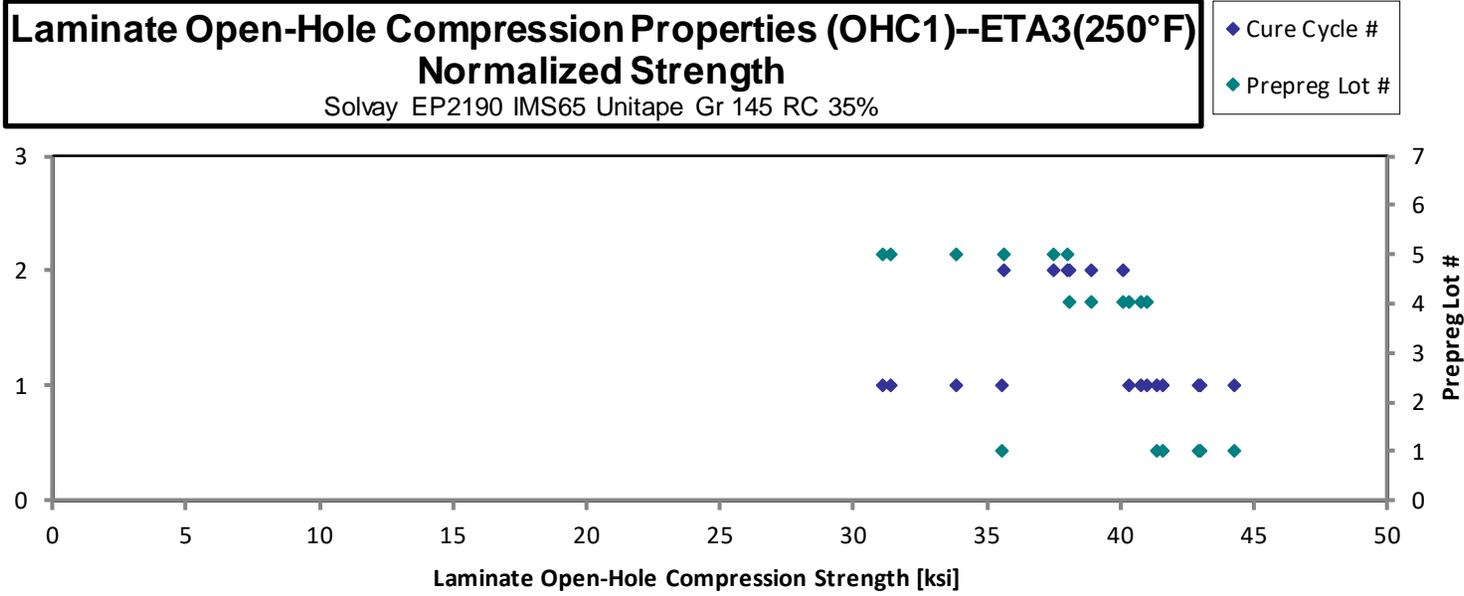
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694389-P4-OHC1-A-C1-ETA3-1	A	C1	1	1	42.21	0.09400	16	LGM
TR7694389-P4-OHC1-A-C1-ETA3-2	A	C1	1	1	39.53	0.09380	16	LGM
TR7694389-P4-OHC1-A-C1-ETA3-3	A	C1	1	1	41.36	0.09310	16	LGM
TR7694389-P4-OHC1-A-C1-ETA3-4	A	C1	1	1	39.94	0.09340	16	LGM
TR7694389-P4-OHC1-A-C1-ETA3-5	A	C1	1	1	41.24	0.09350	16	LGM
TR7694389-P4-OHC1-A-C1-ETA3-6	A	C1	1	1	34.01	0.09370	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA3-1	D	C1	4	1	39.81	0.09190	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA3-2	D	C1	4	1	40.15	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETA3-3	D	C1	4	1	39.46	0.09170	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETA3-1	D	C2	4	2	37.39	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETA3-2	D	C2	4	2	38.33	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETA3-3	D	C2	4	2	39.34	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETA3-1	E	C1	5	1	30.73	0.09070	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETA3-2	E	C1	5	1	30.67	0.09190	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETA3-3	E	C1	5	1	33.24	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETA3-1	E	C2	5	2	37.60	0.09060	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETA3-2	E	C2	5	2	36.96	0.09090	16	MGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETA3-3	E	C2	5	2	35.18	0.09080	16	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0059	44.28
0.0059	41.38
0.0058	42.98
0.0058	41.63
0.0058	43.04
0.0059	35.57
0.0057	40.83
0.0057	41.05
0.0057	40.38
0.0057	38.14
0.0057	38.97
0.0057	40.13
0.0057	31.11
0.0057	31.46
0.0057	33.87
0.0057	38.02
0.0057	37.50
0.0057	35.65

Average 37.62
 Standard Dev. 3.512
 Coeff. of Var. [%] 9.335
 Min. 30.67
 Max. 42.21
 Number of Spec. 18

Average_{norm} 0.0058 38.67
 Standard Dev._{norm} 3.864
 Coeff. of Var. [%]_{norm} 9.993
 Min. 0.0057 31.11
 Max. 0.0059 44.28
 Number of Spec. 18 18



Laminate Open-Hole Compression Properties (OHC1)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW1-2	D	C1	4	1	40.20	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW1-3	D	C1	4	1	41.61	0.09170	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW1-4	D	C1	4	1	42.06	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW1-1	D	C2	4	2	42.15	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW1-2	D	C2	4	2	37.74	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW1-3	D	C2	4	2	39.45	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW1-1	E	C1	5	1	39.09	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW1-2	E	C1	5	1	38.99	0.09240	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW1-3	E	C1	5	1	38.04	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW1-1	E	C2	5	2	38.74	0.09070	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW1-2	E	C2	5	2	37.86	0.09080	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW1-3	E	C2	5	2	39.08	0.09070	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW1-1	F	C1	6	1	39.28	0.08890	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW1-2	F	C1	6	1	37.36	0.08880	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW1-3	F	C1	6	1	39.21	0.08890	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW1-1	F	C2	6	2	40.42	0.08650	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW1-2	F	C2	6	2	41.41	0.08740	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW1-3	F	C2	6	2	39.86	0.08930	16	LGM

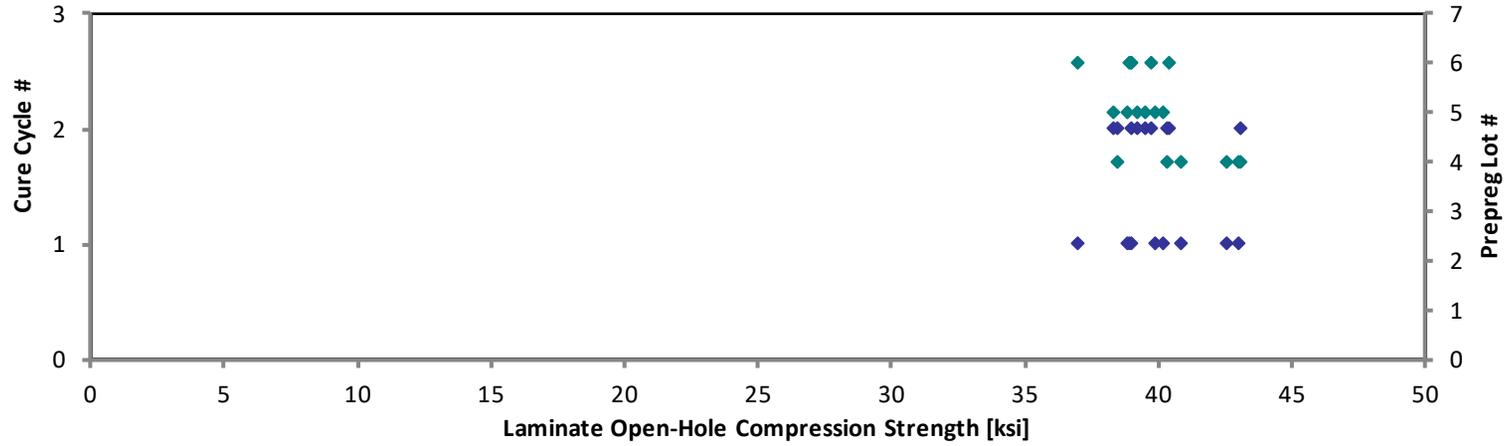
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	40.87
0.0057	42.59
0.0057	43.00
0.0057	43.09
0.0057	38.46
0.0057	40.33
0.0057	39.88
0.0058	40.21
0.0057	38.85
0.0057	39.22
0.0057	38.37
0.0057	39.56
0.0056	38.97
0.0056	37.03
0.0056	38.90
0.0054	39.02
0.0055	40.39
0.0056	39.73

Average **39.59**
 Standard Dev. **1.472**
 Coeff. of Var. [%] **3.718**
 Min. **37.36**
 Max. **42.15**
 Number of Spec. **18**

Average_{norm} **0.0056** **39.91**
 Standard Dev._{norm} **1.636**
 Coeff. of Var. [%]_{norm} **4.099**
 Min. **0.0054** **37.03**
 Max. **0.0058** **43.09**
 Number of Spec. **18** **18**

Laminate Open-Hole Compression Properties (OHC1)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC1)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW2-1	D	C1	4	1	35.68	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW2-2	D	C1	4	1	33.99	0.09180	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW2-3	D	C1	4	1	33.88	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW2-1	D	C2	4	2	34.91	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW2-2	D	C2	4	2	35.86	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW2-3	D	C2	4	2	35.20	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW2-1	E	C1	5	1	36.39	0.09240	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW2-2	E	C1	5	1	33.89	0.09180	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW2-3	E	C1	5	1	32.57	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW2-1	E	C2	5	2	33.79	0.09080	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW2-2	E	C2	5	2	33.46	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW2-3	E	C2	5	2	33.93	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW2-1	F	C1	6	1	33.49	0.09080	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW2-2	F	C1	6	1	33.51	0.09050	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW2-3	F	C1	6	1	34.15	0.08990	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW2-1	F	C2	6	2	36.32	0.08870	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW2-2	F	C2	6	2	36.30	0.08730	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW2-3	F	C2	6	2	33.22	0.08720	16	LGM

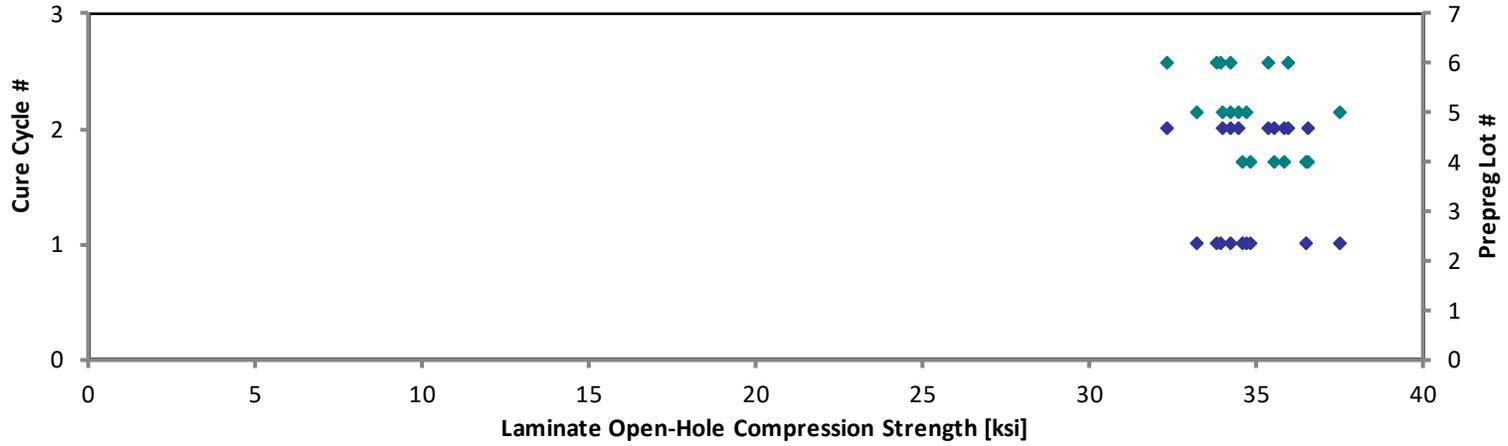
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	36.48
0.0057	34.82
0.0057	34.60
0.0057	35.57
0.0057	36.54
0.0057	35.83
0.0058	37.53
0.0057	34.72
0.0057	33.26
0.0057	34.24
0.0057	33.98
0.0057	34.50
0.0057	33.94
0.0057	33.85
0.0056	34.26
0.0055	35.96
0.0055	35.37
0.0055	32.33

Average 34.47
 Standard Dev. 1.199
 Coeff. of Var. [%] 3.477
 Min. 32.57
 Max. 36.39
 Number of Spec. 18

Average_{norm} 0.0057 34.88
 Standard Dev._{norm} 1.284
 Coeff. of Var. [%]_{norm} 3.680
 Min. 0.0055 32.33
 Max. 0.0058 37.53
 Number of Spec. 18 18

Laminate Open-Hole Compression Properties (OHC1)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC1)--ETW3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW3-1	D	C1	4	1	33.18	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW3-2	D	C1	4	1	32.22	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-ETW3-3	D	C1	4	1	31.65	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW3-1	D	C2	4	2	29.93	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW3-2	D	C2	4	2	31.82	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-ETW3-3	D	C2	4	2	31.14	0.09170	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW3-1	E	C1	5	1	30.87	0.09170	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW3-2	E	C1	5	1	34.90	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-ETW3-3	E	C1	5	1	31.17	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW3-1	E	C2	5	2	29.85	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW3-2	E	C2	5	2	32.59	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-ETW3-3	E	C2	5	2	31.16	0.09090	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW3-1	F	C1	6	1	32.36	0.08820	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW3-2	F	C1	6	1	32.42	0.08790	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-ETW3-3	F	C1	6	1	32.50	0.08710	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW3-1	F	C2	6	2	32.26	0.08950	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW3-2	F	C2	6	2	32.95	0.08920	16	LGM
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-ETW3-3	F	C2	6	2	34.04	0.08830	16	LGM

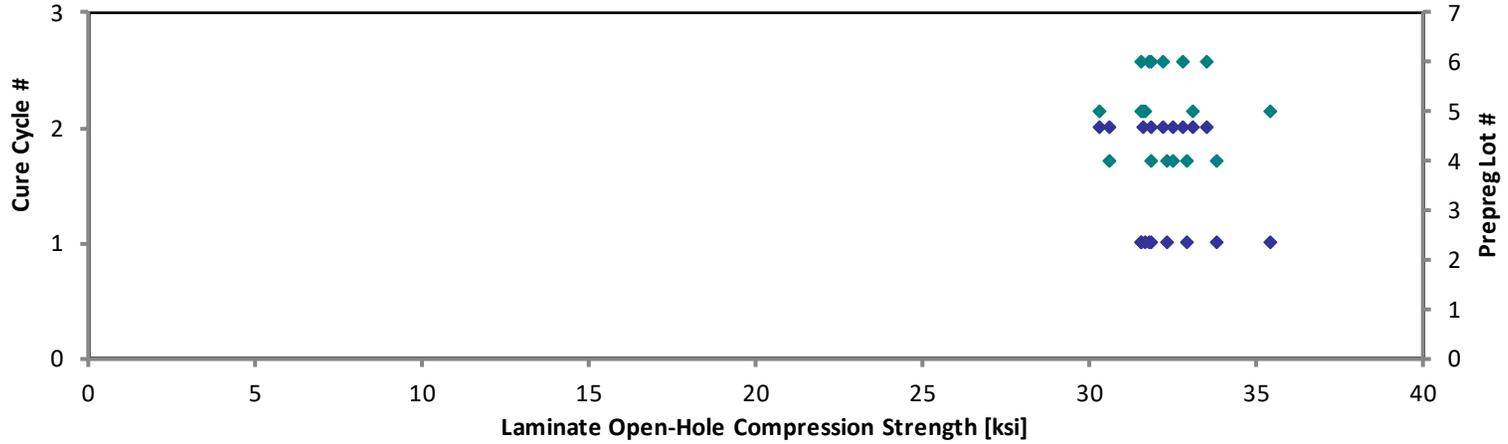
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	33.81
0.0057	32.94
0.0057	32.36
0.0057	30.60
0.0057	32.49
0.0057	31.87
0.0057	31.59
0.0057	35.45
0.0057	31.69
0.0057	30.32
0.0057	33.10
0.0057	31.61
0.0055	31.85
0.0055	31.80
0.0054	31.59
0.0056	32.22
0.0056	32.80
0.0055	33.55

Average **32.06**
 Standard Dev. **1.290**
 Coeff. of Var. [%] **4.025**
 Min. **29.85**
 Max. **34.90**
 Number of Spec. **18**

Average_{norm} **0.0056** **32.31**
 Standard Dev._{norm} **1.197**
 Coeff. of Var. [%]_{norm} **3.705**
 Min. **0.0054** **30.32**
 Max. **0.0057** **35.45**
 Number of Spec. **18** **18**

Laminate Open-Hole Compression Properties (OHC1)--ETW3(250°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



4.23 “10/80/10” Open-Hole Compression 2 Properties (OHC2)

Laminate Open-Hole Compression Properties (OHC2)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

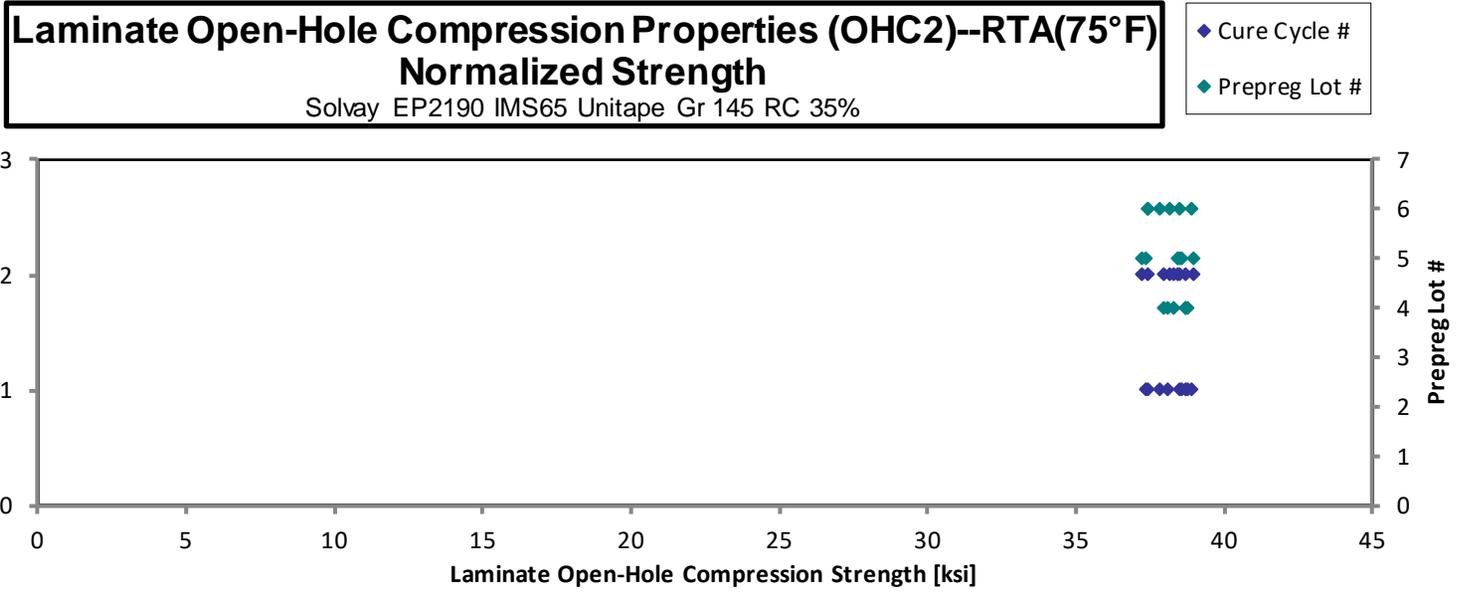
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-RTA-1	D	C1	4	1	37.42	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-RTA-2	D	C1	4	1	36.61	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-RTA-3	D	C1	4	1	37.37	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-RTA-1	D	C2	4	2	37.18	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-RTA-2	D	C2	4	2	36.50	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-RTA-3	D	C2	4	2	36.84	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-RTA-1	E	C1	5	1	37.81	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-RTA-2	E	C1	5	1	37.78	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-RTA-3	E	C1	5	1	36.63	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-RTA-1	E	C2	5	2	37.56	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-RTA-2	E	C2	5	2	36.56	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-RTA-3	E	C2	5	2	38.13	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-RTA-1	F	C1	6	1	36.82	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-RTA-2	F	C1	6	1	37.88	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-RTA-3	F	C1	6	1	36.30	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-RTA-1	F	C2	6	2	36.26	0.1156	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-RTA-2	F	C2	6	2	36.94	0.1157	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-RTA-3	F	C2	6	2	37.42	0.1154	20	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	38.76
0.0058	38.15
0.0058	38.77
0.0058	38.71
0.0058	38.00
0.0058	38.32
0.0057	38.55
0.0057	38.62
0.0057	37.41
0.0057	38.43
0.0057	37.25
0.0057	38.98
0.0058	37.87
0.0058	38.89
0.0058	37.43
0.0058	37.43
0.0058	38.16
0.0058	38.56

Average 37.11
Standard Dev. 0.5820
Coeff. of Var. [%] 1.568
Min. 36.26
Max. 38.13
Number of Spec. 18

Average_{norm} 0.0058 **38.24**
Standard Dev._{norm} **0.5596**
Coeff. of Var. [%]_{norm} **1.463**
Min. 0.0057 **37.25**
Max. 0.0058 **38.98**
Number of Spec. 18 **18**



Laminate Open-Hole Compression Properties (OHC2)--ETA2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA2-1	D	C1	4	1	29.45	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA2-2	D	C1	4	1	30.12	0.1172	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA2-3	D	C1	4	1	29.16	0.1166	20	MGM
NTP2191Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA2-1	D	C2	4	2	28.70	0.1164	20	MGM
NTP2191Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA2-2	D	C2	4	2	28.56	0.1165	20	MGM
NTP2191Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA2-3	D	C2	4	2	29.05	0.1165	20	MGM

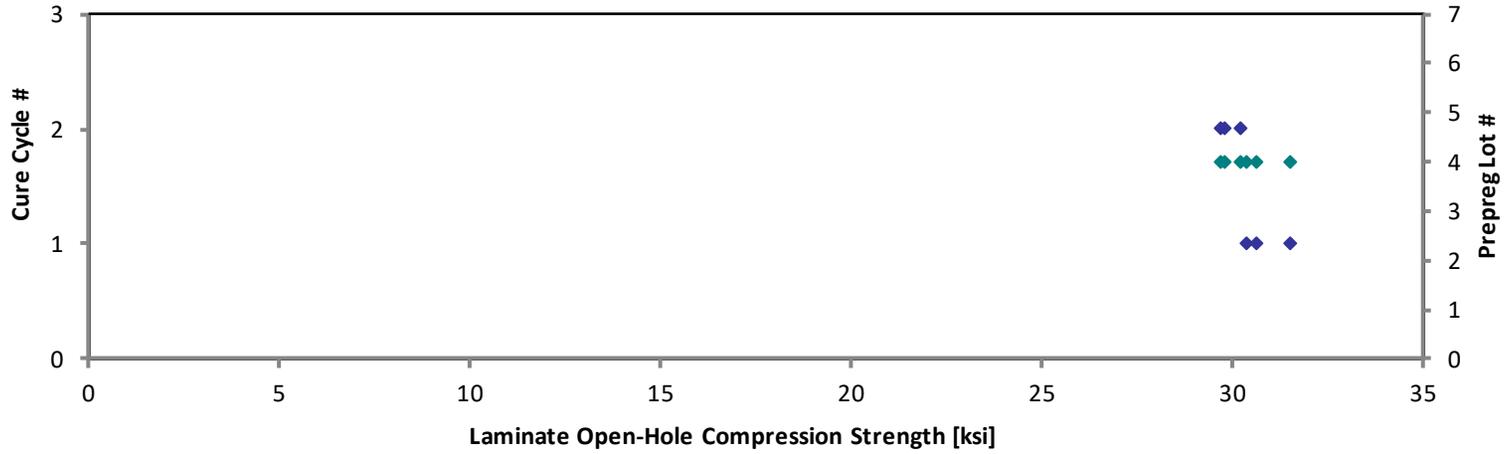
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	30.66
0.0059	31.52
0.0058	30.36
0.0058	29.83
0.0058	29.71
0.0058	30.22

Average 29.17
 Standard Dev. 0.5636
 Coeff. of Var. [%] 1.932
 Min. 28.56
 Max. 30.12
 Number of Spec. 6

Average_{norm} 0.0058 30.38
 Standard Dev._{norm} 0.6571
 Coeff. of Var. [%]_{norm} 2.163
 Min. 0.0058 29.71
 Max. 0.0059 31.52
 Number of Spec. 6 6

Laminate Open-Hole Compression Properties (OHC2)--ETA2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC2)--ETA3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA3-1	D	C1	4	1	27.42	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA3-2	D	C1	4	1	28.49	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETA3-3	D	C1	4	1	28.29	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA3-1	D	C2	4	2	27.11	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA3-2	D	C2	4	2	27.60	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETA3-3	D	C2	4	2	26.80	0.1167	20	MGM

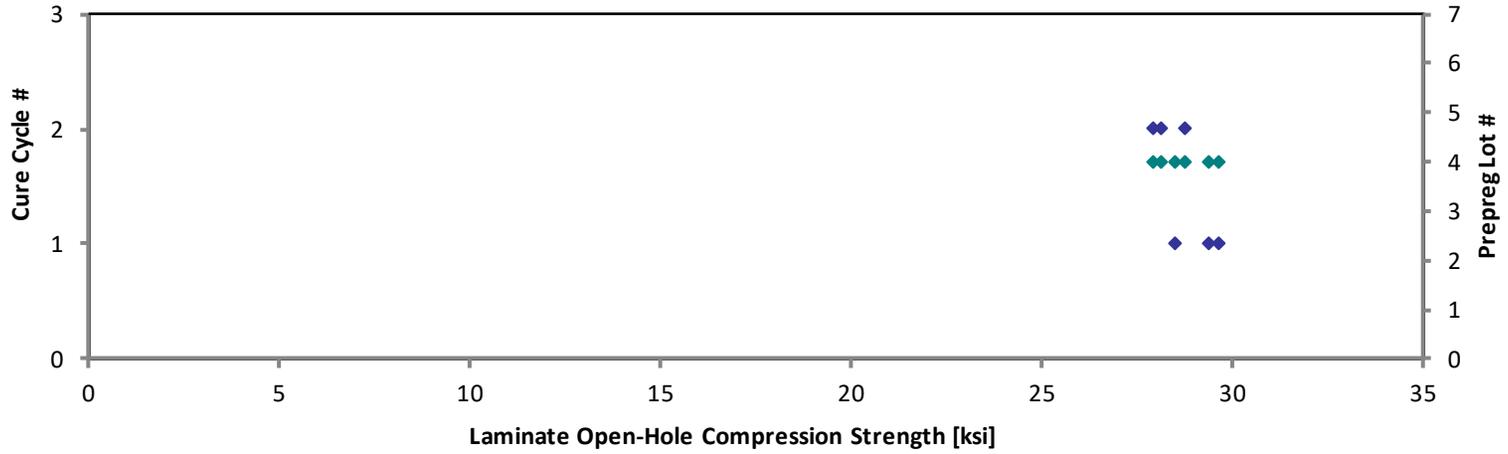
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	28.50
0.0058	29.66
0.0058	29.40
0.0058	28.13
0.0058	28.76
0.0058	27.92

Average 27.62
Standard Dev. 0.6601
Coeff. of Var. [%] 2.390
Min. 26.80
Max. 28.49
Number of Spec. 6

Average_{norm} 0.0058
Standard Dev._{norm} 0.6904
Coeff. of Var. [%]_{norm} 2.403
Min. 0.0058
Max. 0.0058
Number of Spec. 6

Laminate Open-Hole Compression Properties (OHC2)--ETA3(250°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC2)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW1-1	D	C1	4	1	28.84	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW1-2	D	C1	4	1	29.27	0.1174	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW1-3	D	C1	4	1	29.64	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW1-1	D	C2	4	2	29.17	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW1-2	D	C2	4	2	27.71	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW1-3	D	C2	4	2	28.80	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW1-1	E	C1	5	1	27.67	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW1-2	E	C1	5	1	28.35	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW1-3	E	C1	5	1	27.30	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW1-1	E	C2	5	2	27.75	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW1-2	E	C2	5	2	28.16	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW1-3	E	C2	5	2	27.36	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW1-1	F	C1	6	1	28.54	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW1-2	F	C1	6	1	28.49	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW1-3	F	C1	6	1	27.44	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW1-1	F	C2	6	2	27.84	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW1-2	F	C2	6	2	28.02	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW1-3	F	C2	6	2	27.56	0.1158	20	MGM

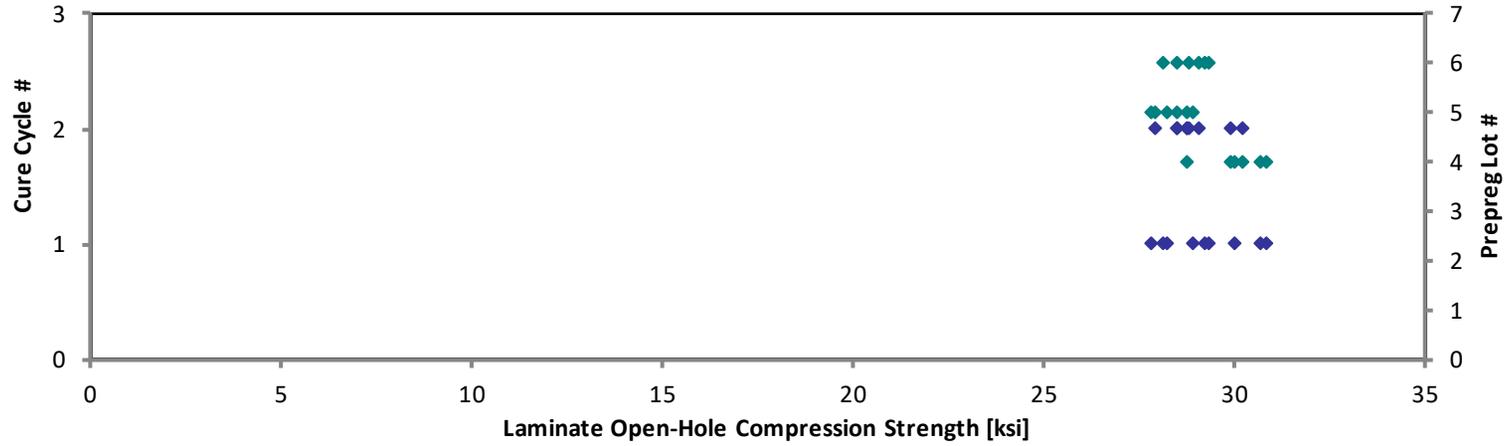
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	30.00
0.0059	30.68
0.0058	30.83
0.0058	30.24
0.0058	28.77
0.0058	29.91
0.0057	28.26
0.0057	28.93
0.0057	27.81
0.0058	28.49
0.0057	28.79
0.0057	27.95
0.0058	29.36
0.0058	29.25
0.0057	28.15
0.0058	28.83
0.0058	29.07
0.0058	28.50

Average 28.22
 Standard Dev. 0.7086
 Coeff. of Var. [%] 2.511
 Min. 27.30
 Max. 29.64
 Number of Spec. 18

Average_{norm} 0.0058 29.10
 Standard Dev._{norm} 0.9064
 Coeff. of Var. [%]_{norm} 3.115
 Min. 0.0057 27.81
 Max. 0.0059 30.83
 Number of Spec. 18 18

Laminate Open-Hole Compression Properties (OHC2)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC2)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW2-1	D	C1	4	1	23.89	0.1165	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW2-2	D	C1	4	1	22.51	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW2-3	D	C1	4	1	23.15	0.1165	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW2-1	D	C2	4	2	23.47	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW2-2	D	C2	4	2	22.81	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW2-3	D	C2	4	2	23.24	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW2-1	E	C1	5	1	22.46	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW2-2	E	C1	5	1	22.59	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW2-3	E	C1	5	1	22.66	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW2-1	E	C2	5	2	22.51	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW2-2	E	C2	5	2	23.02	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW2-3	E	C2	5	2	23.14	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW2-1	F	C1	6	1	22.64	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW2-2	F	C1	6	1	23.02	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW2-3	F	C1	6	1	24.05	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW2-1	F	C2	6	2	21.82	0.1160	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW2-2	F	C2	6	2	22.61	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW2-3	F	C2	6	2	22.95	0.1161	20	MGM

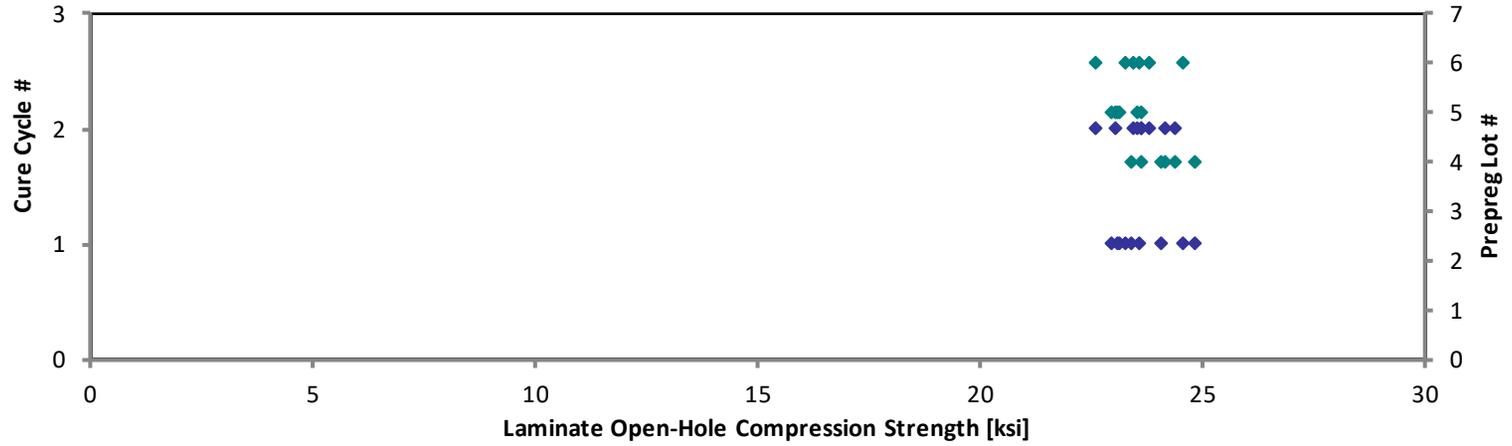
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	24.85
0.0058	23.39
0.0058	24.08
0.0058	24.37
0.0058	23.65
0.0058	24.17
0.0057	22.98
0.0057	23.15
0.0057	23.11
0.0057	23.03
0.0057	23.55
0.0057	23.64
0.0058	23.29
0.0057	23.57
0.0057	24.59
0.0058	22.60
0.0058	23.46
0.0058	23.79

Average **22.92**
 Standard Dev. **0.5350**
 Coeff. of Var. [%] **2.334**
 Min. **21.82**
 Max. **24.05**
 Number of Spec. **18**

Average_{norm} **0.0058** **23.63**
 Standard Dev._{norm} **0.5956**
 Coeff. of Var. [%]_{norm} **2.521**
 Min. **0.0057** **22.60**
 Max. **0.0058** **24.85**
 Number of Spec. **18** **18**

Laminate Open-Hole Compression Properties (OHC2)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC2)--ETW3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

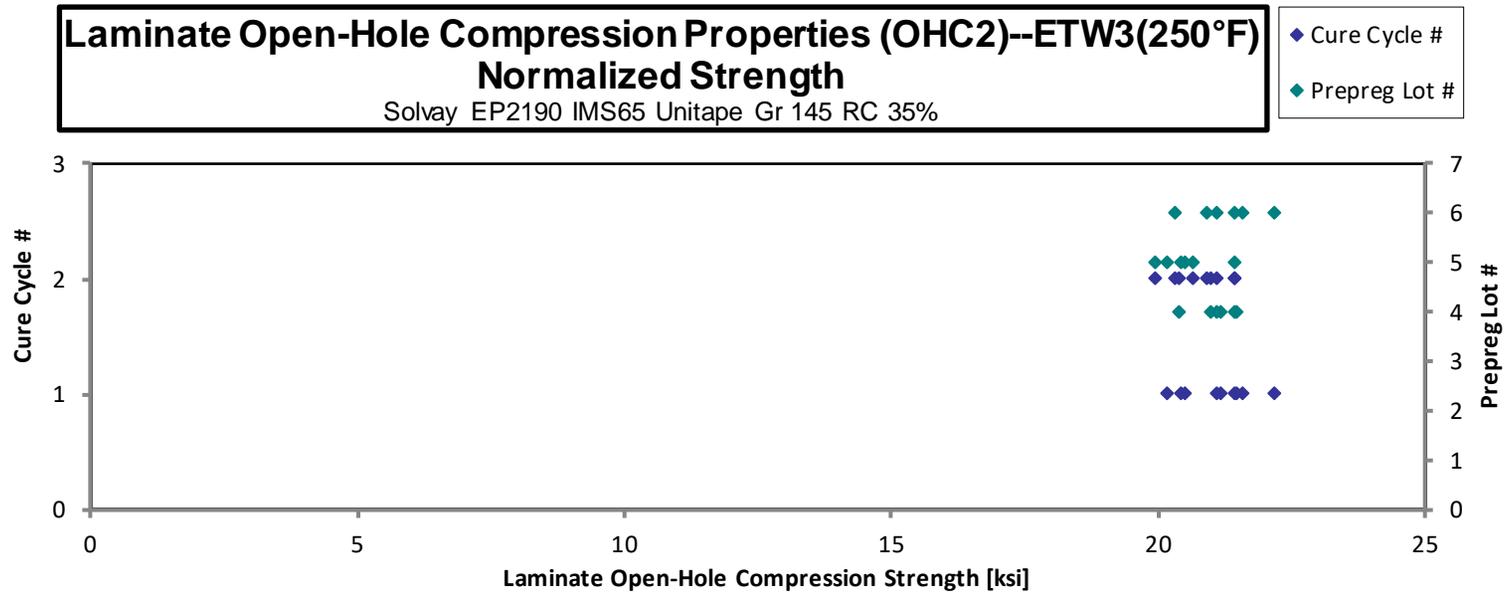
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW3-1	D	C1	4	1	20.60	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW3-2	D	C1	4	1	20.29	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-ETW3-3	D	C1	4	1	20.19	0.1170	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW3-1	D	C2	4	2	20.60	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW3-2	D	C2	4	2	19.68	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-ETW3-3	D	C2	4	2	20.23	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW3-1	E	C1	5	1	20.05	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW3-2	E	C1	5	1	19.80	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-ETW3-3	E	C1	5	1	20.11	0.1143	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW3-1	E	C2	5	2	20.21	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW3-2	E	C2	5	2	19.60	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-ETW3-3	E	C2	5	2	21.09	0.1138	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW3-1	F	C1	6	1	21.19	0.1142	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW3-2	F	C1	6	1	20.91	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-ETW3-3	F	C1	6	1	21.61	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW3-1	F	C2	6	2	20.06	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW3-2	F	C2	6	2	20.27	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-ETW3-3	F	C2	6	2	19.59	0.1162	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	21.46
0.0059	21.20
0.0059	21.09
0.0058	21.43
0.0058	20.38
0.0058	20.99
0.0057	20.44
0.0057	20.17
0.0057	20.52
0.0057	20.64
0.0057	19.97
0.0057	21.43
0.0057	21.61
0.0057	21.45
0.0057	22.17
0.0058	20.90
0.0058	21.10
0.0058	20.32

Average 20.34
 Standard Dev. 0.5672
 Coeff. of Var. [%] 2.789
 Min. 19.59
 Max. 21.61
 Number of Spec. 18

Average_{norm} 0.0058 20.96
 Standard Dev._{norm} 0.5848
 Coeff. of Var. [%]_{norm} 2.790
 Min. 0.0057 19.97
 Max. 0.0059 22.17
 Number of Spec. 18 18



4.24 “50/40/10” Open-Hole Compression 3 Properties (OHC3)

Laminate Open-Hole Compression Properties (OHC3)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

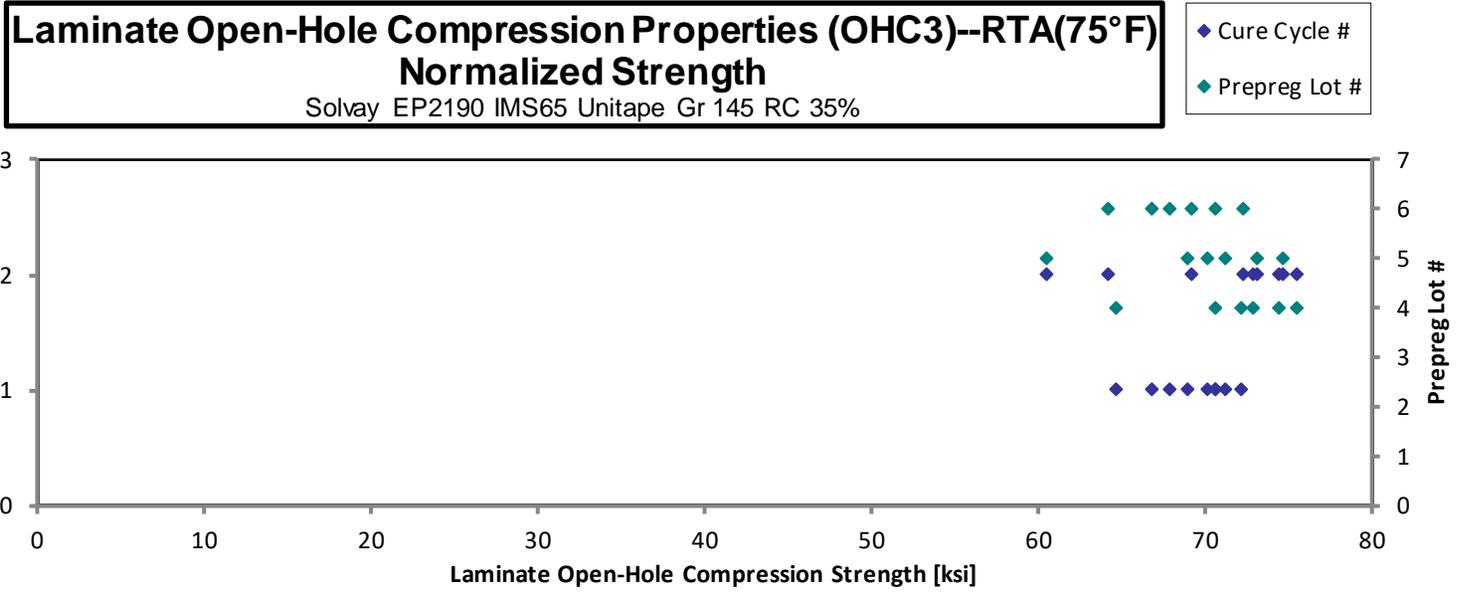
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-RTA-1	D	C1	4	1	62.39	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-RTA-2	D	C1	4	1	68.26	0.1159	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-RTA-3	D	C1	4	1	69.78	0.1159	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-RTA-1	D	C2	4	2	69.39	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-RTA-2	D	C2	4	2	71.82	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-RTA-3	D	C2	4	2	70.96	0.1174	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-RTA-1	E	C1	5	1	69.91	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-RTA-2	E	C1	5	1	68.20	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-RTA-3	E	C1	5	1	67.18	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-RTA-1	E	C2	5	2	71.03	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-RTA-2	E	C2	5	2	58.92	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-RTA-3	E	C2	5	2	72.82	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-RTA-1	F	C1	6	1	68.93	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-RTA-2	F	C1	6	1	66.17	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-RTA-3	F	C1	6	1	64.83	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-RTA-1	F	C2	6	2	67.06	0.1155	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-RTA-3	F	C2	6	2	69.97	0.1158	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-RTA-4	F	C2	6	2	62.05	0.1158	20	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	64.67
0.0058	70.64
0.0058	72.21
0.0059	72.92
0.0059	75.48
0.0059	74.38
0.0057	71.22
0.0058	70.15
0.0057	68.92
0.0058	73.12
0.0058	60.55
0.0057	74.71
0.0057	70.59
0.0058	67.94
0.0058	66.86
0.0058	69.16
0.0058	72.34
0.0058	64.16

Average 67.76
Standard Dev. 3.699
Coeff. of Var. [%] 5.459
Min. 58.92
Max. 72.82
Number of Spec. 18

Average_{norm} 0.0058 **70.00**
Standard Dev._{norm} **3.986**
Coeff. of Var. [%]_{norm} **5.694**
Min. 0.0057 **60.55**
Max. 0.0059 **75.48**
Number of Spec. 18 **18**



Laminate Open-Hole Compression Properties (OHC3)--ETA2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA2-1	D	C1	4	1	60.23	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA2-2	D	C1	4	1	58.84	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA2-3	D	C1	4	1	58.50	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETA2-1	D	C2	4	2	58.66	0.1172	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETA2-2	D	C2	4	2	63.40	0.1174	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETA2-3	D	C2	4	2	59.28	0.1171	20	MGM

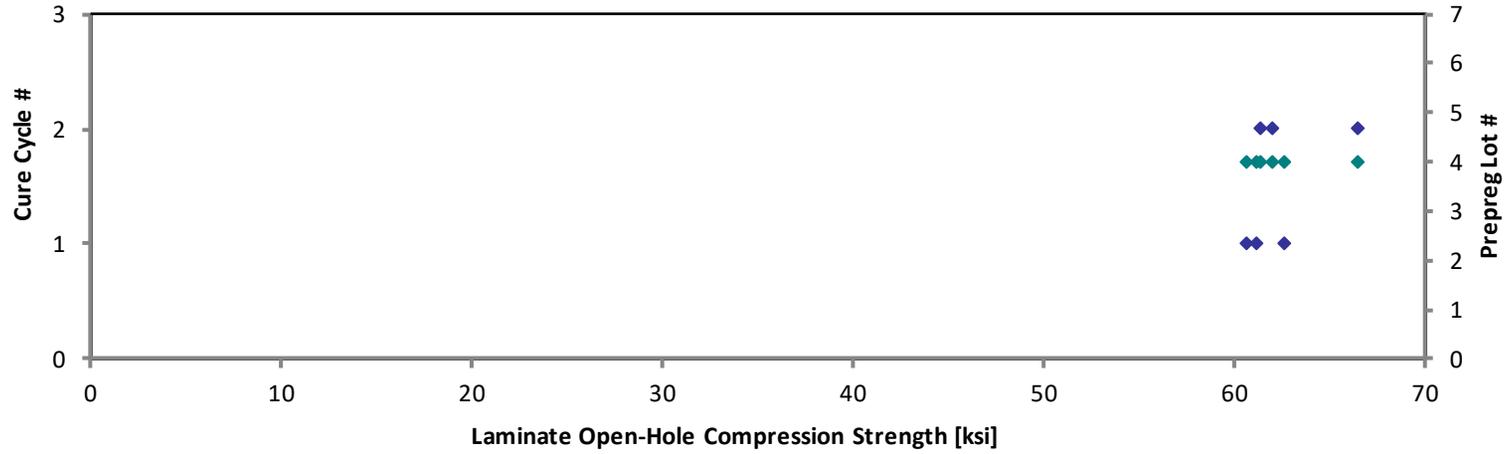
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	62.65
0.0058	61.15
0.0058	60.69
0.0059	61.38
0.0059	66.46
0.0059	61.98

Average 59.82
Standard Dev. 1.861
Coeff. of Var. [%] 3.112
Min. 58.50
Max. 63.40
Number of Spec. 6

Average_{norm} 0.0058
Standard Dev._{norm} 2.107
Coeff. of Var. [%]_{norm} 3.377
Min. 0.0058
Max. 0.0059
Number of Spec. 6

Laminate Open-Hole Compression Properties (OHC3)--ETA2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC3)--ETA3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA3-1	D	C1	4	1	58.49	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA3-2	D	C1	4	1	48.59	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETA3-3	D	C1	4	1	52.02	0.1162	20	MGM
NTP2191Q1-WRX-IPS-SOL-OHC3-D-C2-1-ETA3-1	D	C2	4	2	57.43	0.1175	20	MGM
NTP2191Q1-WRX-IPS-SOL-OHC3-D-C2-1-ETA3-2	D	C2	4	2	57.34	0.1179	20	MGM
NTP2191Q1-WRX-IPS-SOL-OHC3-D-C2-1-ETA3-3	D	C2	4	2	56.38	0.1175	20	MGM

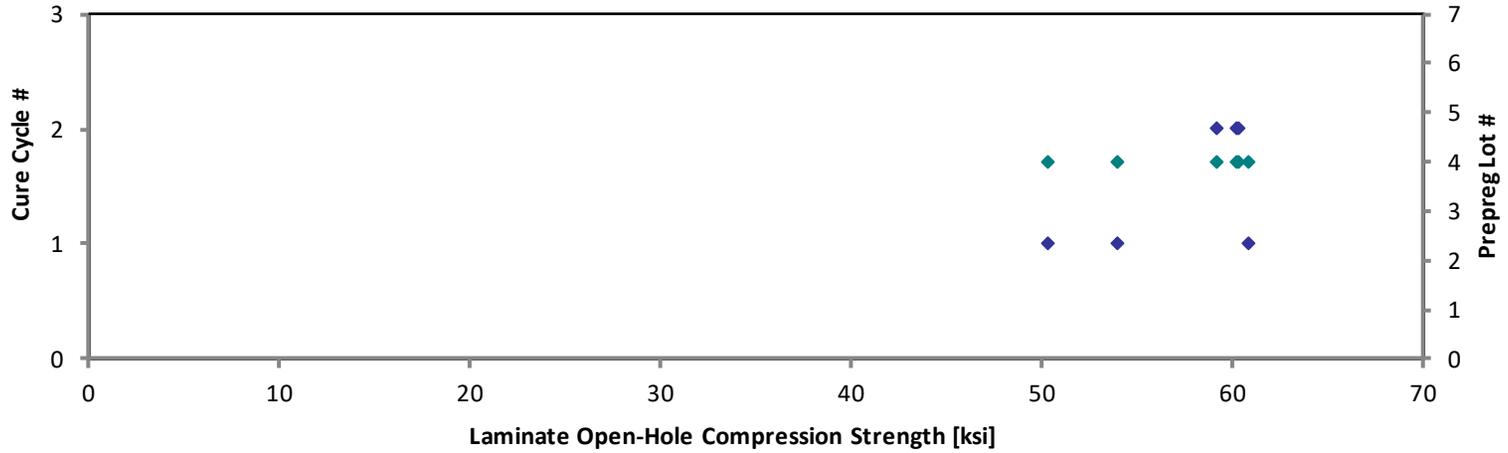
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	60.84
0.0058	50.37
0.0058	53.97
0.0059	60.25
0.0059	60.36
0.0059	59.15

Average 55.04
Standard Dev. 3.884
Coeff. of Var. [%] 7.056
Min. 48.59
Max. 58.49
Number of Spec. 6

Average_{norm} 0.0058
Standard Dev._{norm} 4.311
Coeff. of Var. [%]_{norm} 7.499
Min. 0.0058
Max. 0.0059
Number of Spec. 6

Laminate Open-Hole Compression Properties (OHC3)--ETA3(250°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC3)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW1-1	D	C1	4	1	58.21	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW1-2	D	C1	4	1	54.64	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW1-3	D	C1	4	1	58.09	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW1-1	D	C2	4	2	54.53	0.1175	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW1-2	D	C2	4	2	55.55	0.1180	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW1-3	D	C2	4	2	57.34	0.1175	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW1-1	E	C1	5	1	56.78	0.1146	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW1-2	E	C1	5	1	52.79	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW1-3	E	C1	5	1	57.24	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW1-1	E	C2	5	2	58.48	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW1-2	E	C2	5	2	59.08	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW1-3	E	C2	5	2	57.19	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW1-1	F	C1	6	1	51.59	0.1136	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW1-2	F	C1	6	1	54.05	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW1-3	F	C1	6	1	56.38	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW1-1	F	C2	6	2	51.70	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW1-2	F	C2	6	2	55.34	0.1159	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW1-3	F	C2	6	2	59.31	0.1161	20	MGM

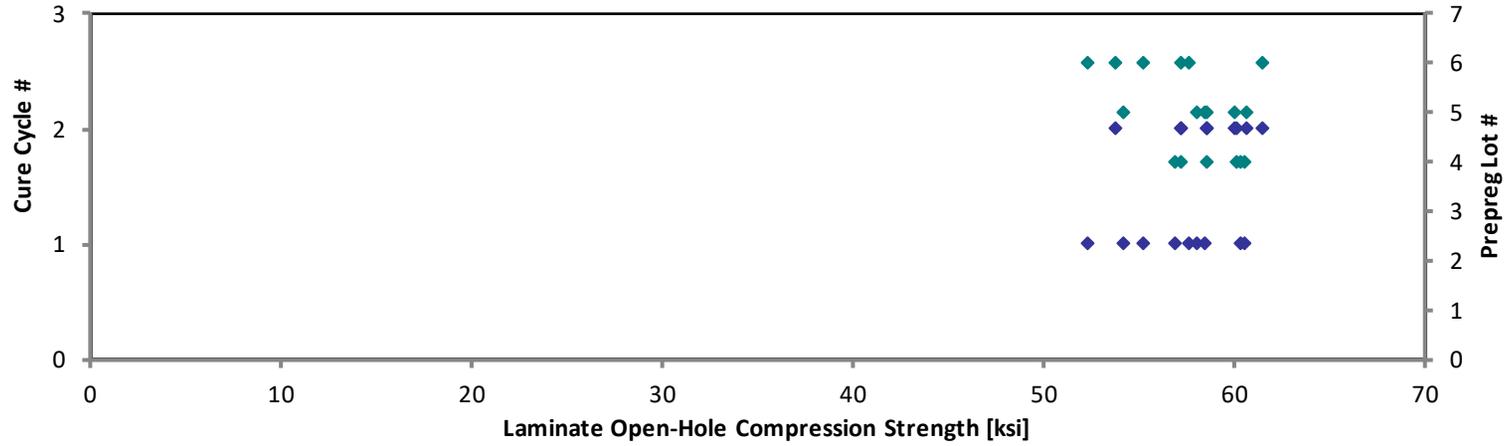
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	60.55
0.0058	56.88
0.0058	60.32
0.0059	57.21
0.0059	58.53
0.0059	60.16
0.0057	58.10
0.0058	54.20
0.0057	58.52
0.0057	59.99
0.0057	60.61
0.0057	58.62
0.0057	52.33
0.0057	55.26
0.0057	57.64
0.0058	53.82
0.0058	57.27
0.0058	61.48

Average **56.02**
 Standard Dev. **2.401**
 Coeff. of Var. [%] **4.287**
 Min. **51.59**
 Max. **59.31**
 Number of Spec. **18**

Average_{norm} **0.0058** **57.86**
 Standard Dev._{norm} **2.591**
 Coeff. of Var. [%]_{norm} **4.478**
 Min. **0.0057** **52.33**
 Max. **0.0059** **61.48**
 Number of Spec. **18** **18**

Laminate Open-Hole Compression Properties (OHC3)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC3)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW2-1	D	C1	4	1	54.47	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW2-2	D	C1	4	1	49.67	0.1163	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW2-3	D	C1	4	1	47.85	0.1163	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW2-1	D	C2	4	2	50.90	0.1175	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW2-2	D	C2	4	2	48.98	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW2-3	D	C2	4	2	47.13	0.1174	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW2-1	E	C1	5	1	46.27	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW2-2	E	C1	5	1	44.20	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW2-3	E	C1	5	1	49.82	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW2-1	E	C2	5	2	45.74	0.1139	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW2-2	E	C2	5	2	49.69	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW2-3	E	C2	5	2	44.29	0.1139	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW2-1	F	C1	6	1	45.37	0.1155	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW2-2	F	C1	6	1	46.25	0.1156	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW2-3	F	C1	6	1	47.90	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW2-1	F	C2	6	2	50.72	0.1161	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW2-2	F	C2	6	2	46.83	0.1161	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW2-3	F	C2	6	2	46.85	0.1161	20	LGM

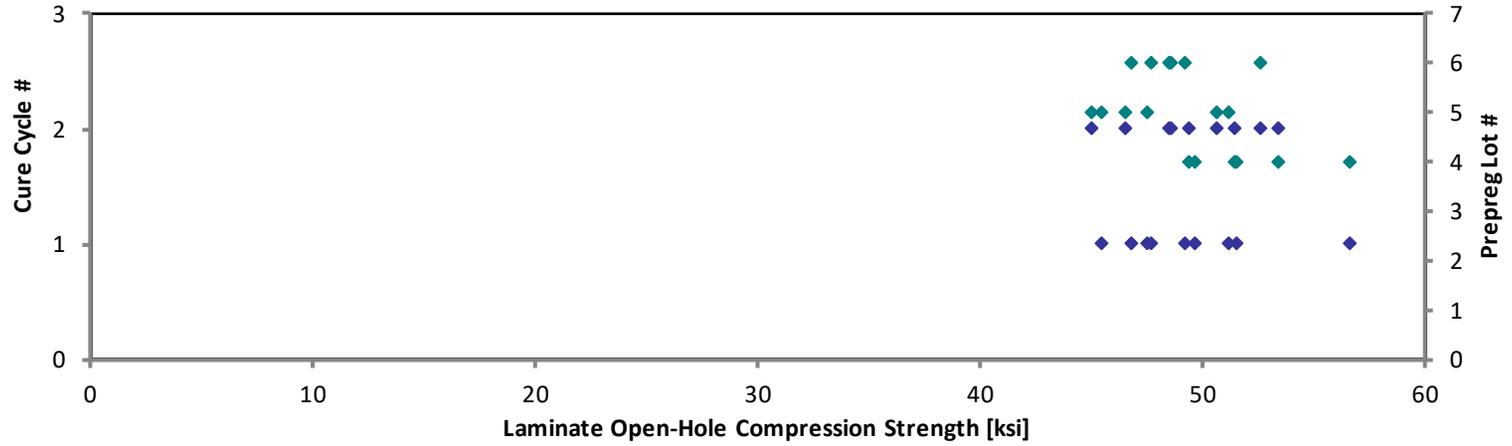
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	56.61
0.0058	51.58
0.0058	49.69
0.0059	53.40
0.0059	51.47
0.0059	49.40
0.0058	47.51
0.0058	45.46
0.0058	51.15
0.0057	46.52
0.0057	50.62
0.0057	45.04
0.0058	46.79
0.0058	47.74
0.0058	49.23
0.0058	52.58
0.0058	48.54
0.0058	48.57

Average 47.94
 Standard Dev. 2.627
 Coeff. of Var. [%] 5.479
 Min. 44.20
 Max. 54.47
 Number of Spec. 18

Average_{norm} 0.0058 49.55
 Standard Dev._{norm} 2.959
 Coeff. of Var. [%]_{norm} 5.971
 Min. 0.0057 45.04
 Max. 0.0059 56.61
 Number of Spec. 18 18

Laminate Open-Hole Compression Properties (OHC3)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Open-Hole Compression Properties (OHC3)--ETW3(250°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

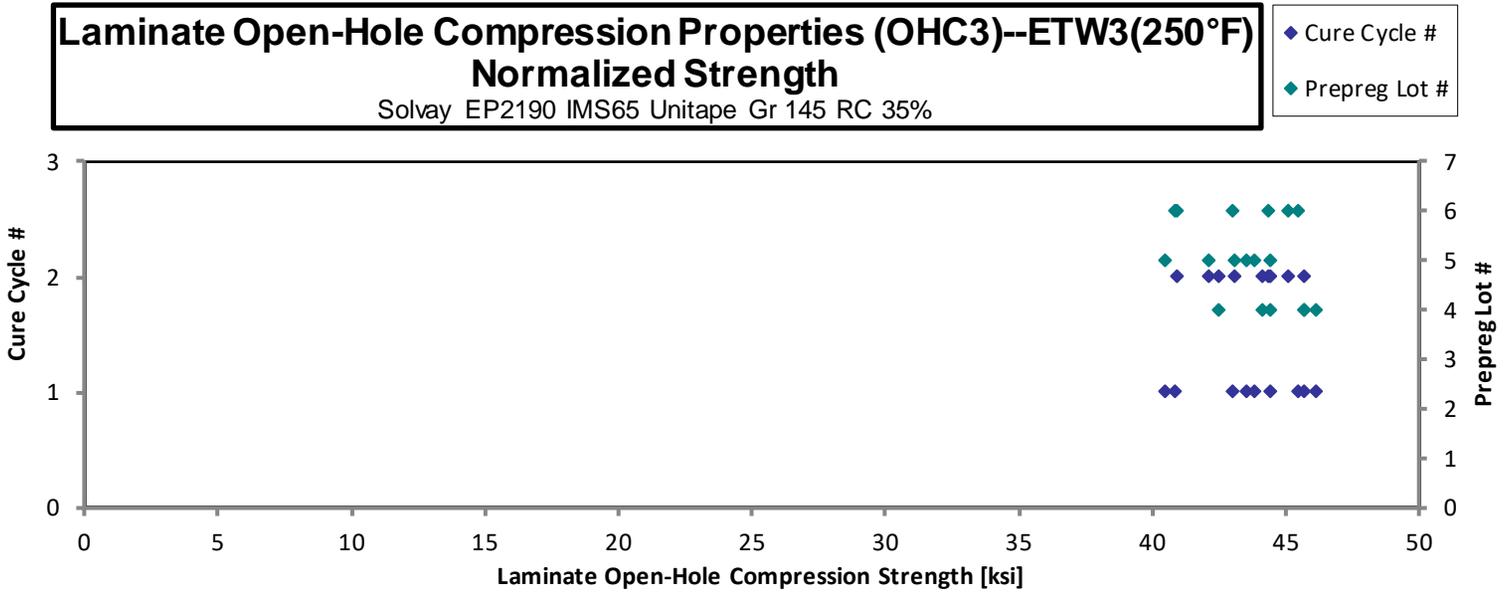
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW3-1	D	C1	4	1	44.47	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW3-2	D	C1	4	1	42.69	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-ETW3-3	D	C1	4	1	44.14	0.1159	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW3-1	D	C2	4	2	43.50	0.1177	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW3-2	D	C2	4	2	40.26	0.1183	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-ETW3-3	D	C2	4	2	42.09	0.1175	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW3-1	E	C1	5	1	42.70	0.1150	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW3-2	E	C1	5	1	42.36	0.1151	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-ETW3-3	E	C1	5	1	39.55	0.1147	20	LGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW3-1	E	C2	5	2	42.03	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW3-2	E	C2	5	2	43.31	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-ETW3-3	E	C2	5	2	41.28	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW3-1	F	C1	6	1	42.27	0.1140	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW3-2	F	C1	6	1	39.63	0.1154	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-ETW3-3	F	C1	6	1	44.21	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW3-1	F	C2	6	2	43.70	0.1157	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW3-2	F	C2	6	2	39.41	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-ETW3-3	F	C2	6	2	42.94	0.1158	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	46.14
0.0058	44.44
0.0058	45.68
0.0059	45.71
0.0059	42.52
0.0059	44.16
0.0058	43.84
0.0058	43.53
0.0057	40.50
0.0057	43.12
0.0057	44.43
0.0057	42.16
0.0057	43.02
0.0058	40.83
0.0058	45.51
0.0058	45.14
0.0058	40.96
0.0058	44.40

Average 42.25
 Standard Dev. 1.631
 Coeff. of Var. [%] 3.860
 Min. 39.41
 Max. 44.47
 Number of Spec. 18

Average_{norm} 0.0058 43.67
 Standard Dev._{norm} 1.742
 Coeff. of Var. [%]_{norm} 3.988
 Min. 0.0057 40.50
 Max. 0.0059 46.14
 Number of Spec. 18 18



4.25 “25/50/25” Filled-Hole Compression 1 Properties (FHC1)

Laminate Filled-Hole Compression Properties (FHC1)--CTA(-67°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-CTA-1	D	C1	4	1	66.16	0.09190	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-CTA-2	D	C1	4	1	66.41	0.09190	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-CTA-3	D	C1	4	1	68.83	0.09110	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-CTA-1	D	C2	4	2	74.15	0.09140	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-CTA-2	D	C2	4	2	70.91	0.09150	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-CTA-3	D	C2	4	2	70.84	0.09160	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-CTA-1	E	C1	5	1	70.06	0.09100	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-CTA-2	E	C1	5	1	78.03	0.09080	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-CTA-3	E	C1	5	1	76.70	0.09090	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-CTA-1	E	C2	5	2	71.54	0.09200	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-CTA-2	E	C2	5	2	75.62	0.09160	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-CTA-3	E	C2	5	2	76.85	0.09170	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-CTA-1	F	C1	6	1	72.35	0.08970	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-CTA-2	F	C1	6	1	78.51	0.09040	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-CTA-3	F	C1	6	1	79.66	0.09100	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-CTA-1	F	C1	6	2	75.35	0.08790	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-CTA-2	F	C1	6	2	74.42	0.08840	16	LGF
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-CTA-3	F	C1	6	2	74.29	0.08910	16	LGF

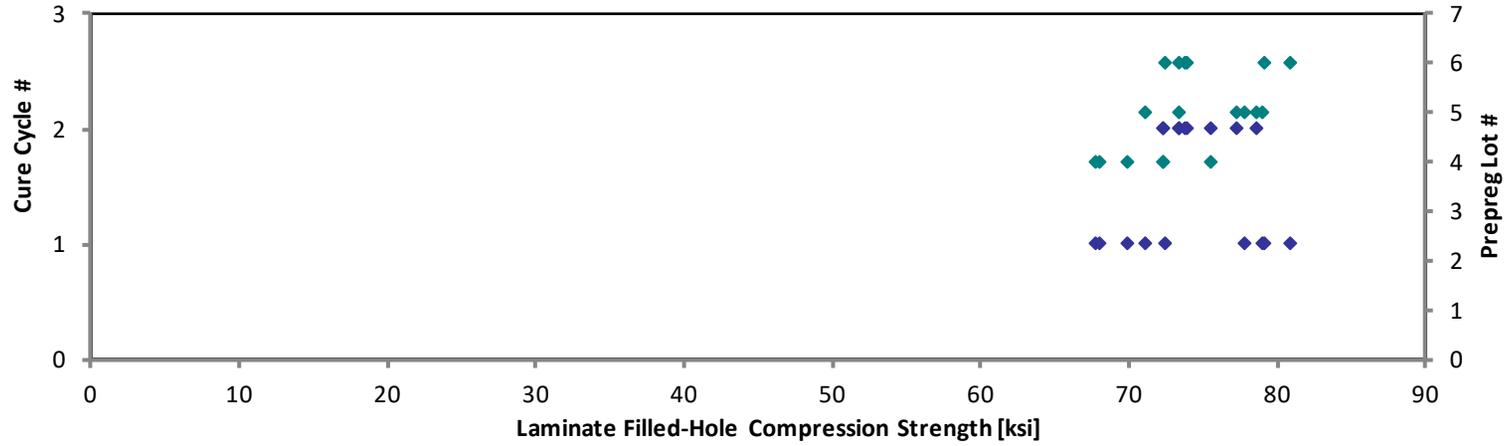
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	67.86
0.0057	68.11
0.0057	69.98
0.0057	75.64
0.0057	72.41
0.0057	72.42
0.0057	71.15
0.0057	79.08
0.0057	77.81
0.0058	73.46
0.0057	77.31
0.0057	78.65
0.0056	72.43
0.0057	79.21
0.0057	80.90
0.0055	73.92
0.0055	73.42
0.0056	73.88

Average 73.37
 Standard Dev. 3.995
 Coeff. of Var. [%] 5.444
 Min. 66.16
 Max. 79.66
 Number of Spec. 18

Average_{norm} 0.0057 74.31
 Standard Dev._{norm} 3.860
 Coeff. of Var. [%]_{norm} 5.195
 Min. 0.0055 67.86
 Max. 0.0058 80.90
 Number of Spec. 18 18

Laminate Filled-Hole Compression Properties (FHC1)--CTA(-67°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Laminate Filled-Hole Compression Properties (FHC1)--RTA(75°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-RTA-1	D	C1	4	1	55.60	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-RTA-2	D	C1	4	1	50.67	0.09130	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-RTA-3	D	C1	4	1	61.24	0.09060	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-RTA-1	D	C2	4	2	52.13	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-RTA-2	D	C2	4	2	55.16	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-RTA-3	D	C2	4	2	51.78	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-RTA-1	E	C1	5	1	54.50	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-RTA-2	E	C1	5	1	56.45	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-RTA-3	E	C1	5	1	56.48	0.09110	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-RTA-1	E	C2	5	2	52.23	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-RTA-2	E	C2	5	2	57.85	0.09180	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-RTA-3	E	C2	5	2	54.54	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-RTA-1	F	C1	6	1	53.63	0.09070	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-RTA-2	F	C1	6	1	57.02	0.09020	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-RTA-3	F	C1	6	1	54.77	0.08980	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-RTA-1	F	C1	6	2	57.18	0.08990	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-RTA-2	F	C1	6	2	55.33	0.09060	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-RTA-3	F	C1	6	2	56.86	0.09030	16	LGM

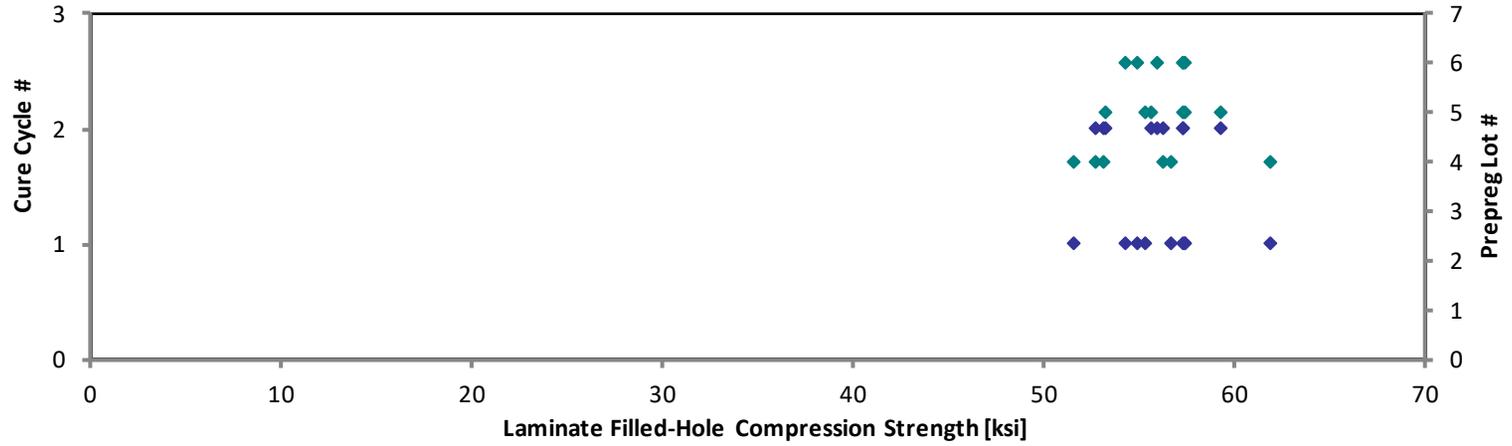
Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0057	56.65
0.0057	51.63
0.0057	61.92
0.0057	53.18
0.0057	56.27
0.0057	52.76
0.0057	55.35
0.0057	57.33
0.0057	57.43
0.0057	53.28
0.0057	59.27
0.0057	55.64
0.0057	54.29
0.0056	57.40
0.0056	54.89
0.0056	57.37
0.0057	55.95
0.0056	57.30

Average 55.19
Standard Dev. 2.554
Coeff. of Var. [%] 4.628
Min. 50.67
Max. 61.24
Number of Spec. 18

Average_{norm} 0.0057 56.00
Standard Dev._{norm} 2.489
Coeff. of Var. [%]_{norm} 4.444
Min. 0.0056 51.63
Max. 0.0057 61.92
Number of Spec. 18 18

Laminate Filled-Hole Compression Properties (FHC1)--RTA(75°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Filled-Hole Compression Properties (FHC1)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW1-1	D	C1	4	1	45.41	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW1-2	D	C1	4	1	43.45	0.09100	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW1-3	D	C1	4	1	45.41	0.09130	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW1-1	D	C2	4	2	43.28	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW1-2	D	C2	4	2	45.73	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW1-3	D	C2	4	2	39.95	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW1-1	E	C1	5	1	43.57	0.09080	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW1-2	E	C1	5	1	44.70	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW1-3	E	C1	5	1	43.99	0.09150	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW1-1	E	C2	5	2	37.91	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW1-2	E	C2	5	2	38.63	0.09170	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW1-3	E	C2	5	2	44.51	0.09120	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW1-2	F	C1	6	1	48.30	0.08960	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW1-3	F	C1	6	1	44.51	0.09080	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW1-4	F	C1	6	1	42.23	0.09080	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW1-1	F	C1	6	2	43.94	0.08960	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW1-2	F	C1	6	2	46.48	0.09020	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW1-3	F	C1	6	2	40.86	0.09040	16	LGM

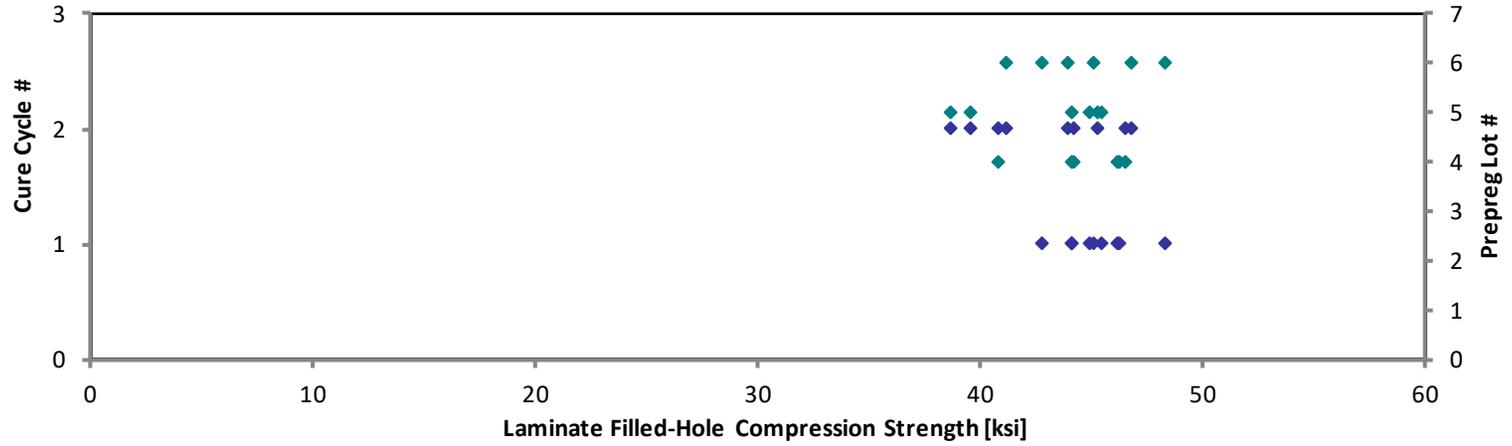
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	46.22
0.0057	44.13
0.0057	46.27
0.0057	44.25
0.0057	46.55
0.0057	40.80
0.0057	44.15
0.0057	45.50
0.0057	44.92
0.0057	38.67
0.0057	39.54
0.0057	45.30
0.0056	48.30
0.0057	45.11
0.0057	42.80
0.0056	43.94
0.0056	46.79
0.0057	41.22

Average 43.49
 Standard Dev. 2.704
 Coeff. of Var. [%] 6.217
 Min. 37.91
 Max. 48.30
 Number of Spec. 18

Average_{norm} 0.0057 44.14
 Standard Dev._{norm} 2.617
 Coeff. of Var. [%]_{norm} 5.928
 Min. 0.0056 38.67
 Max. 0.0057 48.30
 Number of Spec. 18 18

Laminate Filled-Hole Compression Properties (FHC1)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Filled-Hole Compression Properties (FHC1)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW2-1	D	C1	4	1	36.42	0.09140	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW2-2	D	C1	4	1	38.33	0.09160	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-ETW2-3	D	C1	4	1	40.21	0.09170	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW2-1	D	C2	4	2	39.20	0.09170	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW2-2	D	C2	4	2	38.99	0.09170	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-ETW2-3	D	C2	4	2	40.29	0.09180	16	LGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW2-1	E	C1	5	1	39.92	0.09120	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW2-2	E	C1	5	1	39.22	0.09140	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-ETW2-3	E	C1	5	1	37.58	0.09140	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW2-1	E	C2	5	2	36.35	0.09140	16	MGO
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW2-2	E	C2	5	2	36.95	0.09130	16	MGO
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-ETW2-3	E	C2	5	2	38.89	0.09160	16	MGO
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW2-1	F	C1	6	1	40.76	0.09060	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW2-3	F	C1	6	1	40.52	0.08950	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-ETW2-4	F	C1	6	1	41.76	0.08910	16	MGM
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW2-1	F	C1	6	2	35.99	0.09110	16	MGO
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW2-2	F	C1	6	2	37.96	0.09150	16	MGO
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-ETW2-3	F	C1	6	2	34.99	0.09130	16	MGO

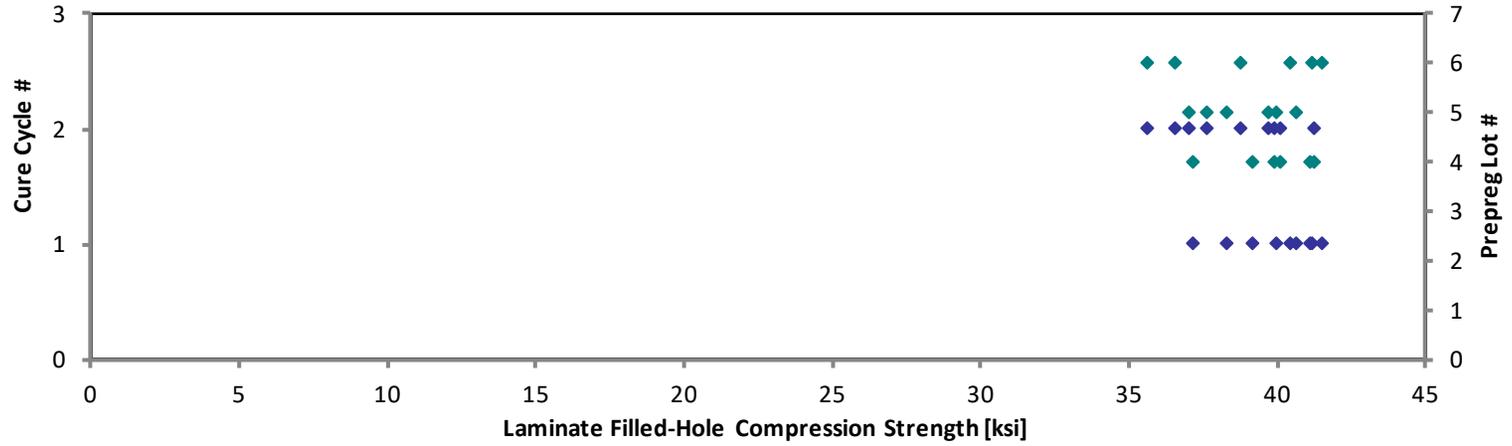
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	37.15
0.0057	39.19
0.0057	41.15
0.0057	40.12
0.0057	39.90
0.0057	41.28
0.0057	40.63
0.0057	40.01
0.0057	38.33
0.0057	37.08
0.0057	37.65
0.0057	39.76
0.0057	41.21
0.0056	40.47
0.0056	41.53
0.0057	36.59
0.0057	38.76
0.0057	35.65

Average **38.57**
 Standard Dev. **1.885**
 Coeff. of Var. [%] **4.887**
 Min. **34.99**
 Max. **41.76**
 Number of Spec. **18**

Average_{norm} **0.0057** **39.25**
 Standard Dev._{norm} **1.798**
 Coeff. of Var. [%]_{norm} **4.581**
 Min. **0.0056** **35.65**
 Max. **0.0057** **41.53**
 Number of Spec. **18** **18**

Laminate Filled-Hole Compression Properties (FHC1)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



4.26 “10/80/10” Filled-Hole Compression 2 Properties (FHC2)

Laminate Filled-Hole Compression Properties (FHC2)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

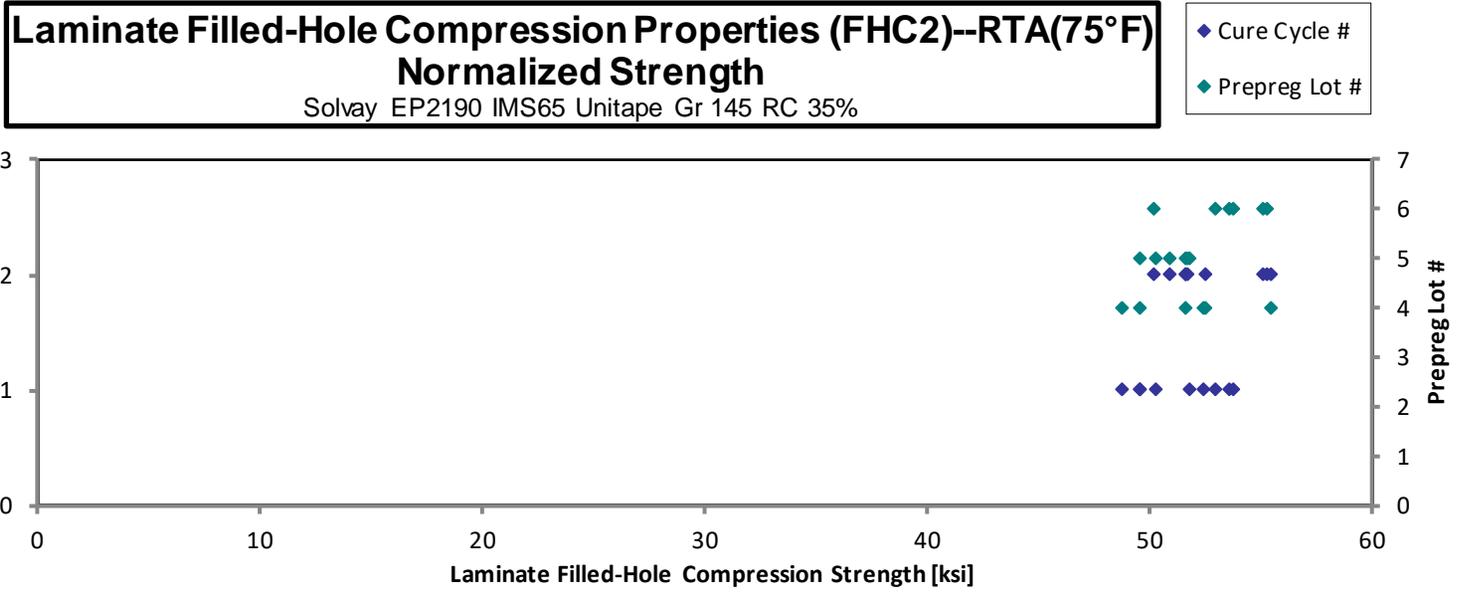
normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-RTA-1	D	C1	4	1	46.85	0.1165	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-RTA-2	D	C1	4	1	47.84	0.1160	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-RTA-3	D	C1	4	1	50.55	0.1162	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-RTA-1	D	C2	4	2	49.18	0.1175	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-RTA-2	D	C2	4	2	49.95	0.1178	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-RTA-3	D	C2	4	2	52.82	0.1176	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-RTA-1	E	C1	5	1	48.50	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-RTA-2	E	C1	5	1	48.93	0.1151	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-RTA-3	E	C1	5	1	50.52	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-RTA-1	E	C2	5	2	49.83	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-RTA-2	E	C2	5	2	50.73	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-RTA-3	E	C2	5	2	50.50	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-RTA-1	F	C1	6	1	52.26	0.1148	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-RTA-2	F	C1	6	1	51.75	0.1146	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-RTA-3	F	C1	6	1	52.61	0.1144	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-RTA-1	F	C1	6	2	53.55	0.1156	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-RTA-2	F	C1	6	2	48.35	0.1163	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-RTA-3	F	C1	6	2	53.07	0.1163	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	48.73
0.0058	49.55
0.0058	52.45
0.0059	51.60
0.0059	52.54
0.0059	55.46
0.0057	49.58
0.0058	50.28
0.0057	51.83
0.0057	50.94
0.0057	51.68
0.0057	51.63
0.0057	53.57
0.0057	52.95
0.0057	53.74
0.0058	55.27
0.0058	50.21
0.0058	55.11

Average 50.43
 Standard Dev. 1.946
 Coeff. of Var. [%] 3.858
 Min. 46.85
 Max. 53.55
 Number of Spec. 18

Average_{norm} 0.0058 52.06
 Standard Dev._{norm} 2.020
 Coeff. of Var. [%]_{norm} 3.880
 Min. 0.0057 48.73
 Max. 0.0059 55.46
 Number of Spec. 18 18



Laminate Filled-Hole Compression Properties (FHC2)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW1-1	D	C1	4	1	38.45	0.1159	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW1-2	D	C1	4	1	36.02	0.1167	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW1-3	D	C1	4	1	35.36	0.1168	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW1-1	D	C2	4	2	35.80	0.1176	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW1-2	D	C2	4	2	34.51	0.1177	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW1-3	D	C2	4	2	37.89	0.1171	20	LGM

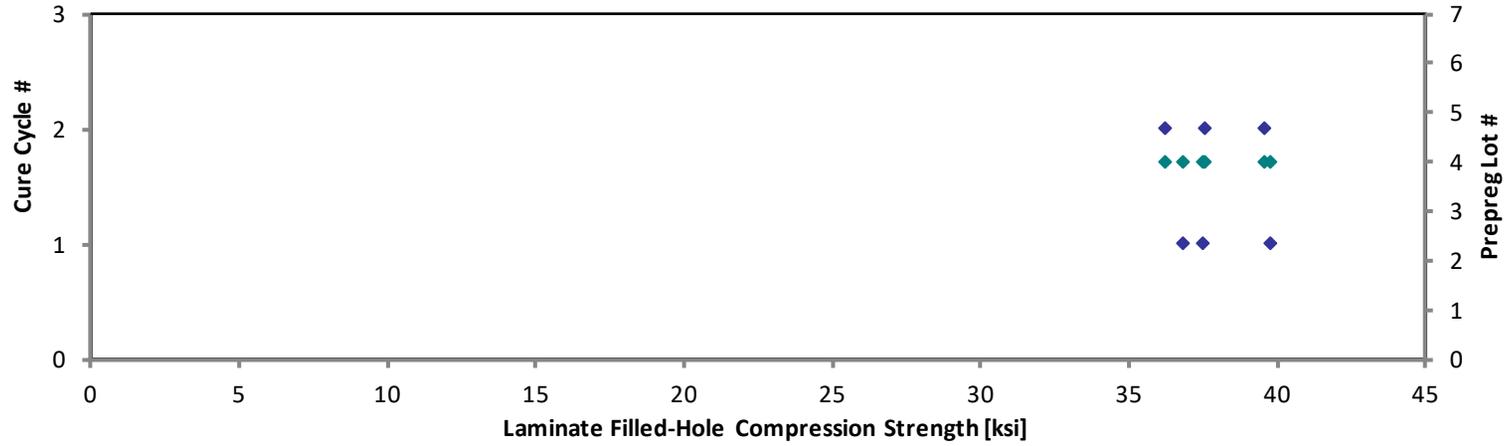
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	39.79
0.0058	37.53
0.0058	36.88
0.0059	37.59
0.0059	36.27
0.0059	39.62

Average 36.34
Standard Dev. 1.520
Coeff. of Var. [%] 4.184
Min. 34.51
Max. 38.45
Number of Spec. 6

Average_{norm} 0.0058
Standard Dev._{norm} 1.446
Coeff. of Var. [%]_{norm} 3.810
Min. 0.0058
Max. 0.0059
Number of Spec. 6

Laminate Filled-Hole Compression Properties (FHC2)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Filled-Hole Compression Properties (FHC2)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW2-1	D	C1	4	1	30.73	0.1159	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW2-2	D	C1	4	1	32.89	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-ETW2-3	D	C1	4	1	29.81	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW2-1	D	C2	4	2	28.24	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW2-2	D	C2	4	2	31.66	0.1177	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-ETW2-3	D	C2	4	2	28.74	0.1175	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-ETW2-1	E	C1	5	1	29.64	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-ETW2-2	E	C1	5	1	27.55	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-ETW2-3	E	C1	5	1	27.80	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-ETW2-1	E	C2	5	2	29.23	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-ETW2-2	E	C2	5	2	29.72	0.1147	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-ETW2-3	E	C2	5	2	28.89	0.1149	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-ETW2-1	F	C1	6	1	32.31	0.1146	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-ETW2-2	F	C1	6	1	29.37	0.1145	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-ETW2-3	F	C1	6	1	30.22	0.1143	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-ETW2-1	F	C1	6	2	28.11	0.1159	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-ETW2-2	F	C1	6	2	27.74	0.1161	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-ETW2-3	F	C1	6	2	27.65	0.1162	20	MGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	31.80
0.0058	34.18
0.0058	30.98
0.0059	29.68
0.0059	33.27
0.0059	30.15
0.0058	30.49
0.0057	28.24
0.0057	28.47
0.0057	29.93
0.0057	30.44
0.0057	29.64
0.0057	33.06
0.0057	30.03
0.0057	30.84
0.0058	29.09
0.0058	28.76
0.0058	28.69

Average 29.46
 Standard Dev. 1.609
 Coeff. of Var. [%] 5.460
 Min. 27.55
 Max. 32.89
 Number of Spec. 18

Average_{norm} 0.0058 30.43
 Standard Dev._{norm} 1.704
 Coeff. of Var. [%]_{norm} 5.601
 Min. 0.0057 28.24
 Max. 0.0059 34.18
 Number of Spec. 18 18

4.27 “50/40/10” Filled-Hole Compression 3 Properties (FHC3)

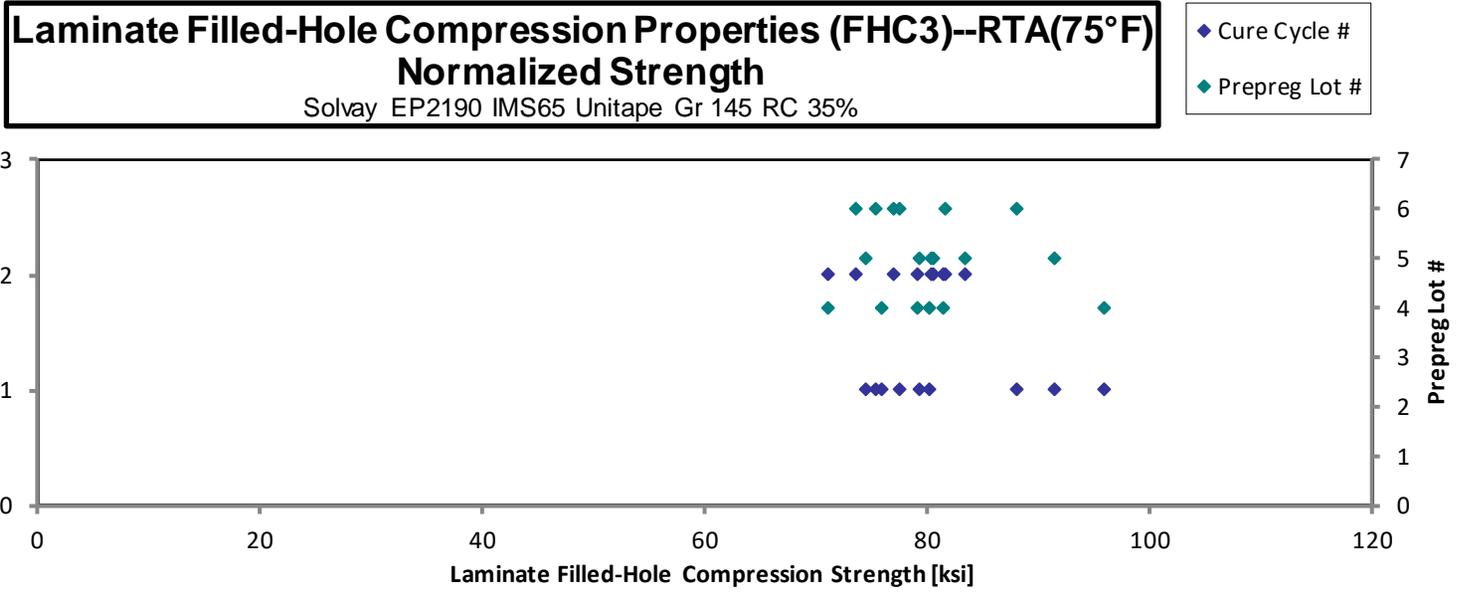
Laminate Filled-Hole Compression Properties (FHC3)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-RTA-1	D	C1	4	1	77.01	0.1167	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-RTA-2	D	C1	4	1	73.06	0.1164	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-RTA-3	D	C1	4	1	92.18	0.1166	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-RTA-1	D	C2	4	2	74.75	0.1186	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-RTA-2	D	C2	4	2	77.09	0.1184	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-RTA-3	D	C2	4	2	67.57	0.1179	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-RTA-1	E	C1	5	1	72.76	0.1148	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-RTA-2	E	C1	5	1	77.19	0.1150	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-RTA-3	E	C1	5	1	89.19	0.1149	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-RTA-1	E	C2	5	2	81.64	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-RTA-2	E	C2	5	2	78.84	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-RTA-3	E	C2	5	2	78.69	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-RTA-1	F	C1	6	1	73.54	0.1148	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-RTA-2	F	C1	6	1	86.18	0.1145	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-RTA-3	F	C1	6	1	75.80	0.1145	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-RTA-1	F	C1	6	2	71.33	0.1155	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-RTA-2	F	C1	6	2	79.48	0.1151	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-RTA-3	F	C1	6	2	75.05	0.1150	20	LGM

Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	80.24
0.0058	75.93
0.0058	95.97
0.0059	79.15
0.0059	81.50
0.0059	71.13
0.0057	74.58
0.0058	79.26
0.0057	91.50
0.0057	83.39
0.0057	80.60
0.0057	80.45
0.0057	75.38
0.0057	88.10
0.0057	77.49
0.0058	73.56
0.0058	81.68
0.0058	77.06

Average	77.85	Average_{norm}	0.0058	80.39
Standard Dev.	6.236	Standard Dev._{norm}		6.282
Coeff. of Var. [%]	8.010	Coeff. of Var. [%]_{norm}		7.815
Min.	67.57	Min.	0.0057	71.13
Max.	92.18	Max.	0.0059	95.97
Number of Spec.	18	Number of Spec.	18	18



Laminate Filled-Hole Compression Properties (FHC3)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW1-1	D	C1	4	1	62.53	0.1165	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW1-2	D	C1	4	1	57.34	0.1165	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW1-3	D	C1	4	1	63.00	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW1-1	D	C2	4	2	61.54	0.1182	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW1-2	D	C2	4	2	58.76	0.1183	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW1-3	D	C2	4	2	61.26	0.1175	20	LGM

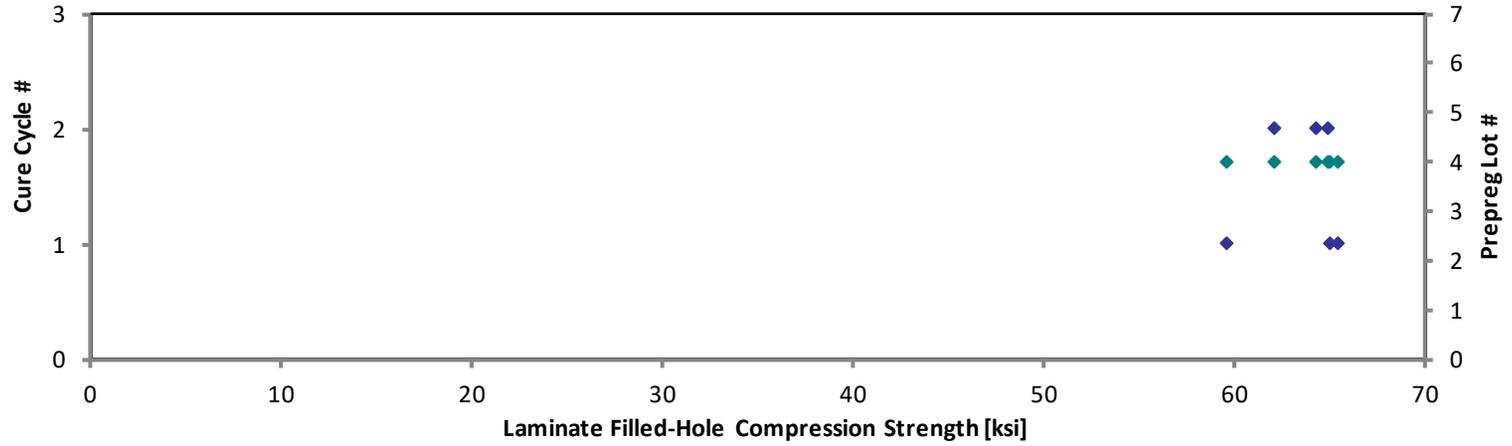
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	65.04
0.0058	59.64
0.0058	65.48
0.0059	64.95
0.0059	62.07
0.0059	64.27

Average 60.74
 Standard Dev. 2.223
 Coeff. of Var. [%] 3.660
 Min. 57.34
 Max. 63.00
 Number of Spec. 6

Average_{norm} 0.0059 63.57
 Standard Dev._{norm} 2.274
 Coeff. of Var. [%]_{norm} 3.577
 Min. 0.0058 59.64
 Max. 0.0059 65.48
 Number of Spec. 6 6

Laminate Filled-Hole Compression Properties (FHC3)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Filled-Hole Compression Properties (FHC3)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW2-1	D	C1	4	1	55.42	0.1164	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW2-2	D	C1	4	1	52.26	0.1165	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-ETW2-3	D	C1	4	1	45.83	0.1163	20	LGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW2-1	D	C2	4	2	48.51	0.1185	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW2-2	D	C2	4	2	51.58	0.1183	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-ETW2-3	D	C2	4	2	49.29	0.1180	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-ETW2-1	E	C1	5	1	53.05	0.1148	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-ETW2-2	E	C1	5	1	50.51	0.1154	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-ETW2-3	E	C1	5	1	51.67	0.1152	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-ETW2-1	E	C2	5	2	48.08	0.1138	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-ETW2-2	E	C2	5	2	47.92	0.1144	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-ETW2-3	E	C2	5	2	49.45	0.1141	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-ETW2-1	F	C1	6	1	54.18	0.1151	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-ETW2-2	F	C1	6	1	44.82	0.1154	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-ETW2-3	F	C1	6	1	47.08	0.1146	20	MGO
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-ETW2-1	F	C1	6	2	53.27	0.1153	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-ETW2-2	F	C1	6	2	49.14	0.1154	20	MGM
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-ETW2-3	F	C1	6	2	51.63	0.1150	20	MGM

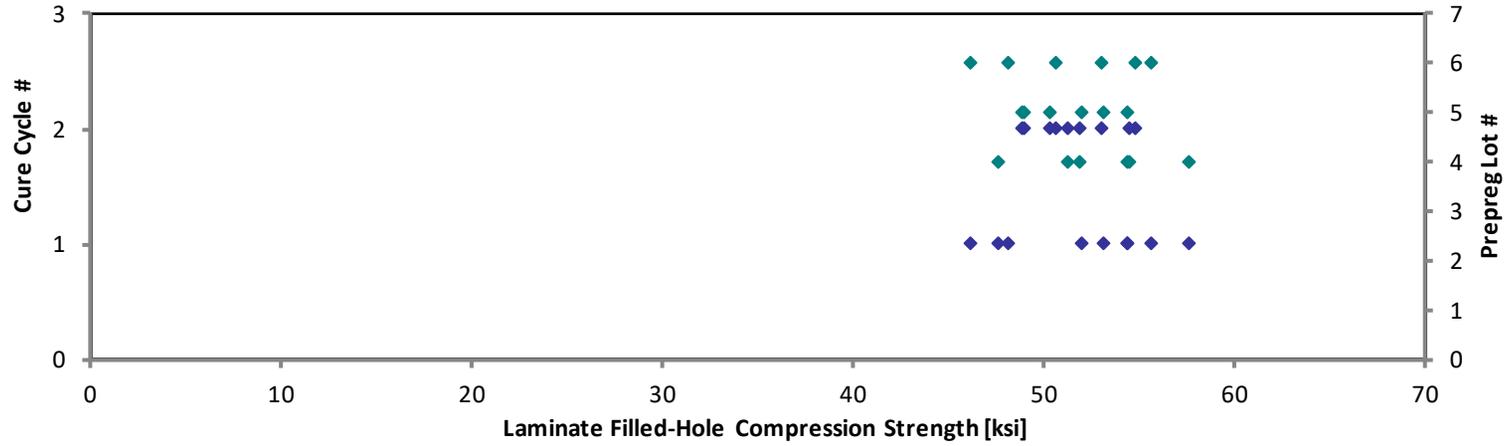
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0058	57.60
0.0058	54.36
0.0058	47.59
0.0059	51.33
0.0059	54.48
0.0059	51.93
0.0057	54.38
0.0058	52.04
0.0058	53.15
0.0057	48.85
0.0057	48.95
0.0057	50.38
0.0058	55.68
0.0058	46.18
0.0057	48.17
0.0058	54.84
0.0058	50.63
0.0058	53.01

Average **50.21**
 Standard Dev. **2.910**
 Coeff. of Var. [%] **5.796**
 Min. **44.82**
 Max. **55.42**
 Number of Spec. **18**

Average_{norm} **0.0058** **51.86**
 Standard Dev._{norm} **3.110**
 Coeff. of Var. [%]_{norm} **5.997**
 Min. **0.0057** **46.18**
 Max. **0.0059** **57.60**
 Number of Spec. **18** **18**

Laminate Filled-Hole Compression Properties (FHC3)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



4.28 “25/50/25” Single-Shear Bearing 1, Proc. C Properties (SSB1)

Laminate Single-Shear Bearing Proc.C Properties (SSB1)--CTA(-67°F)
Strength & Deformation
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

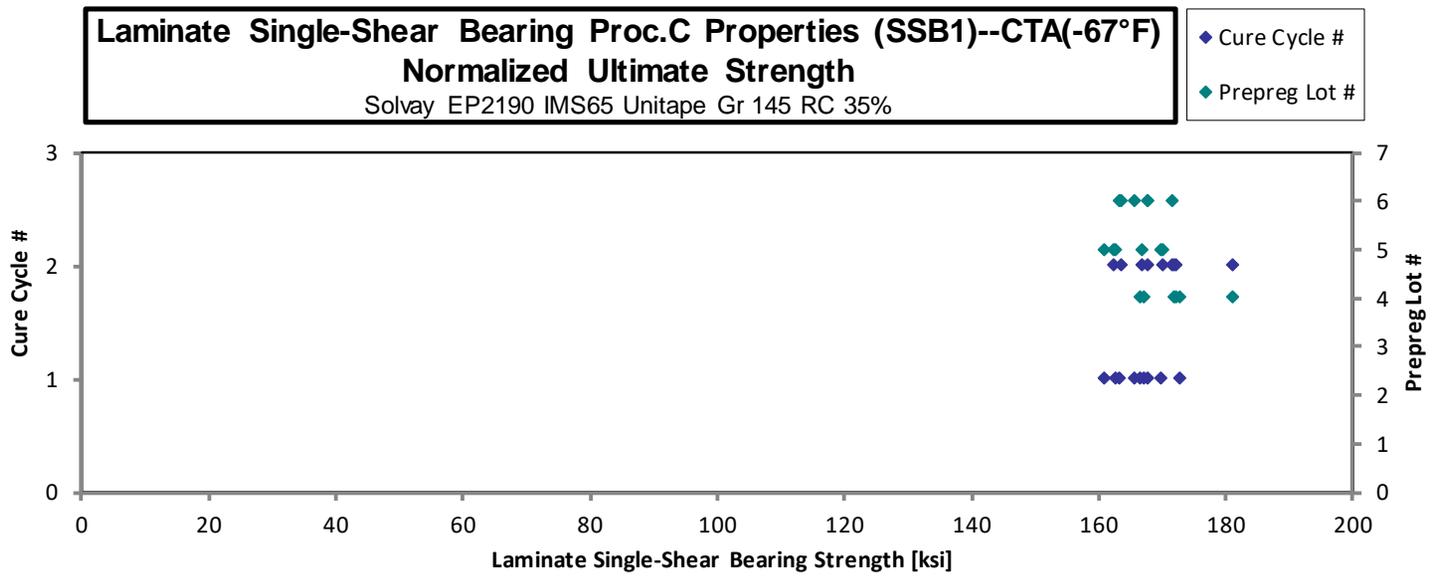
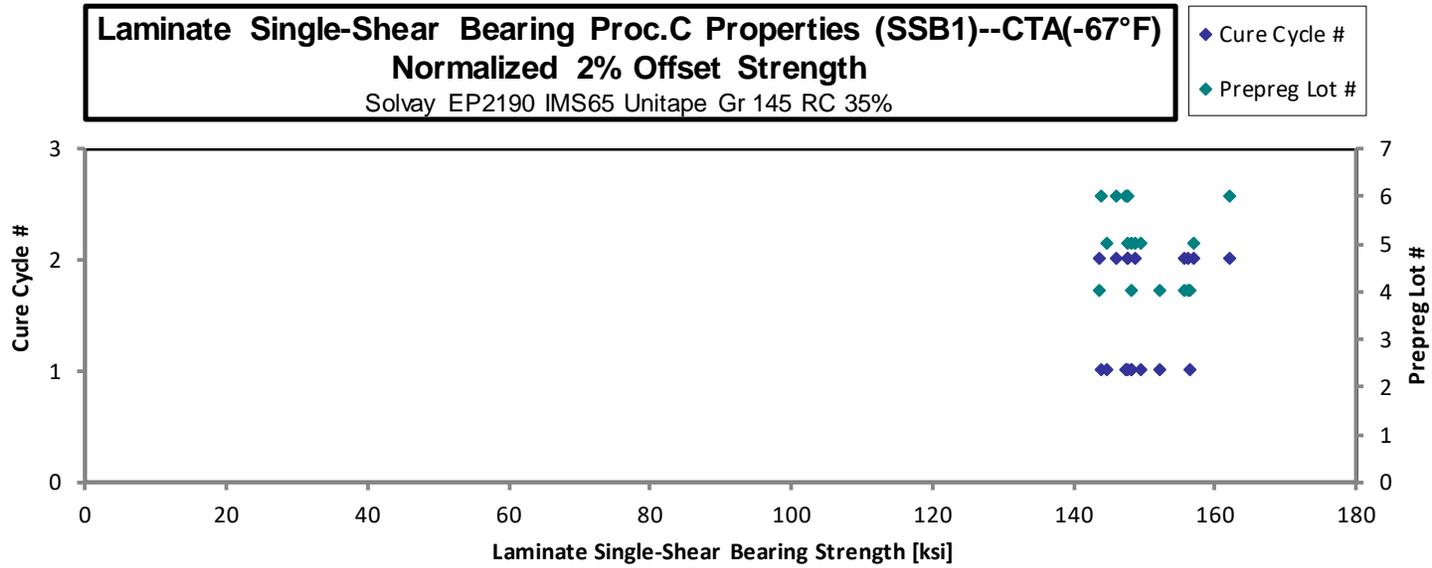
normalizing
 t_{ply} [in]
 0.0056

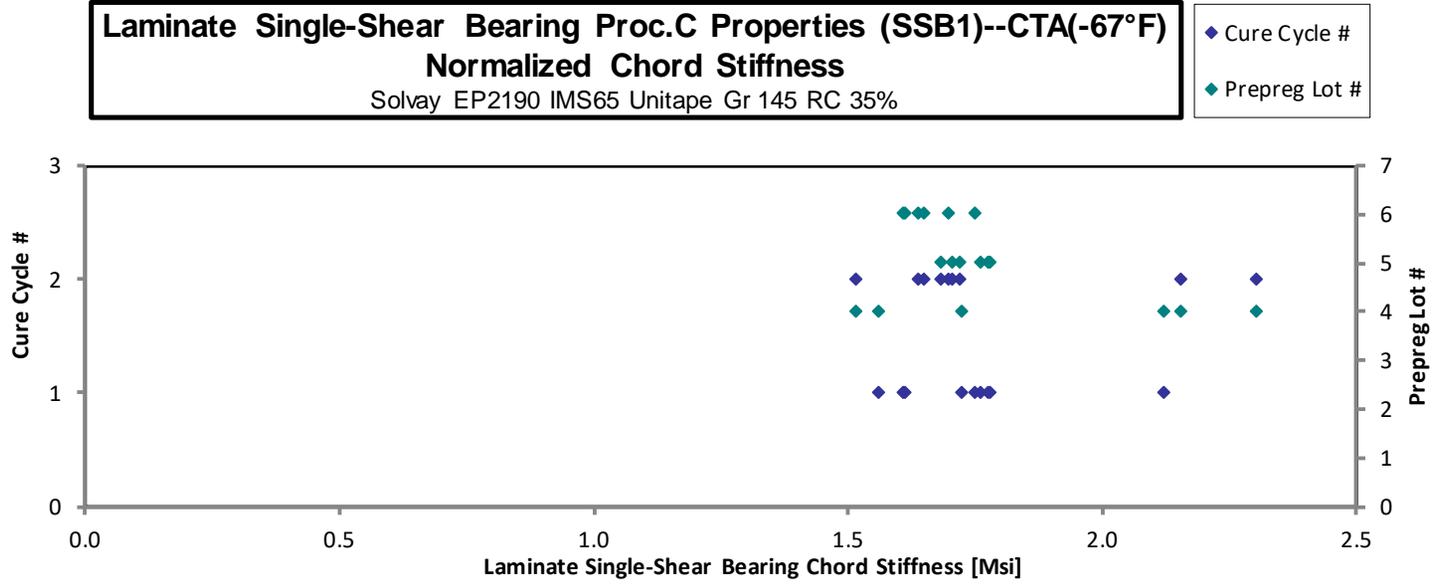
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-CTA-2	D	C1	4	1	145.8	169.8	1.697	0.09110	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-CTA-3	D	C1	4	1	147.9	163.9	2.092	0.09090	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-CTA-4	D	C1	4	1	153.6	164.1	1.532	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-CTA-1	D	C2	4	2	152.0	167.3	2.093	0.09220	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-CTA-2	D	C2	4	2	139.1	166.5	2.231	0.09250	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-CTA-3	D	C2	4	2	151.0	175.5	1.470	0.09240	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-CTA-1	E	C1	5	1	146.8	161.1	1.760	0.09050	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-CTA-2	E	C1	5	1	141.8	157.5	1.726	0.09140	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-CTA-3	E	C1	5	1	147.0	166.7	1.749	0.09120	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-CTA-1	E	C2	5	2	145.9	163.8	1.675	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-CTA-2	E	C2	5	2	153.9	166.5	1.688	0.09140	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-CTA-3	E	C2	5	2	144.4	158.8	1.646	0.09160	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-CTA-1	F	C1	6	1	148.4	164.2	1.619	0.08900	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-CTA-2	F	C1	6	1	144.1	165.8	1.752	0.08950	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-CTA-3	F	C1	6	1	147.6	167.4	1.611	0.08970	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-CTA-1	F	C1	6	2	144.3	165.5	1.629	0.09070	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-CTA-2	F	C1	6	2	160.2	161.3	1.618	0.09070	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-CTA-3	F	C1	6	2	147.8	171.7	1.701	0.08950	16	B11

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0057	148.2	172.7	1.725
0.0057	152.2	166.3	2.122
0.0057	156.5	167.2	1.561
0.0058	156.4	172.2	2.154
0.0058	143.6	171.9	2.303
0.0058	155.7	181.0	1.516
0.0057	148.2	162.7	1.778
0.0057	144.6	160.7	1.761
0.0057	149.6	169.7	1.780
0.0057	148.7	166.9	1.707
0.0057	157.0	169.9	1.722
0.0057	147.6	162.3	1.683
0.0056	147.4	163.1	1.608
0.0056	143.9	165.6	1.750
0.0056	147.7	167.5	1.613
0.0057	146.1	167.5	1.649
0.0057	162.1	163.3	1.638
0.0056	147.7	171.5	1.699

Average	147.8	165.4	1.738
Standard Dev.	4.909	4.353	0.2006
Coeff. of Var. [%]	3.320	2.632	11.54
Min.	139.1	157.5	1.470
Max.	160.2	175.5	2.231
Number of Spec.	18	18	18

Average_{norm}	0.0057	150.2	167.9	1.765
Standard Dev._{norm}		5.250	4.926	0.2126
Coeff. of Var. [%]_{norm}		3.496	2.934	12.04
Min.	0.0056	143.6	160.7	1.516
Max.	0.0058	162.1	181.0	2.303
Number of Spec.	18	18	18	18





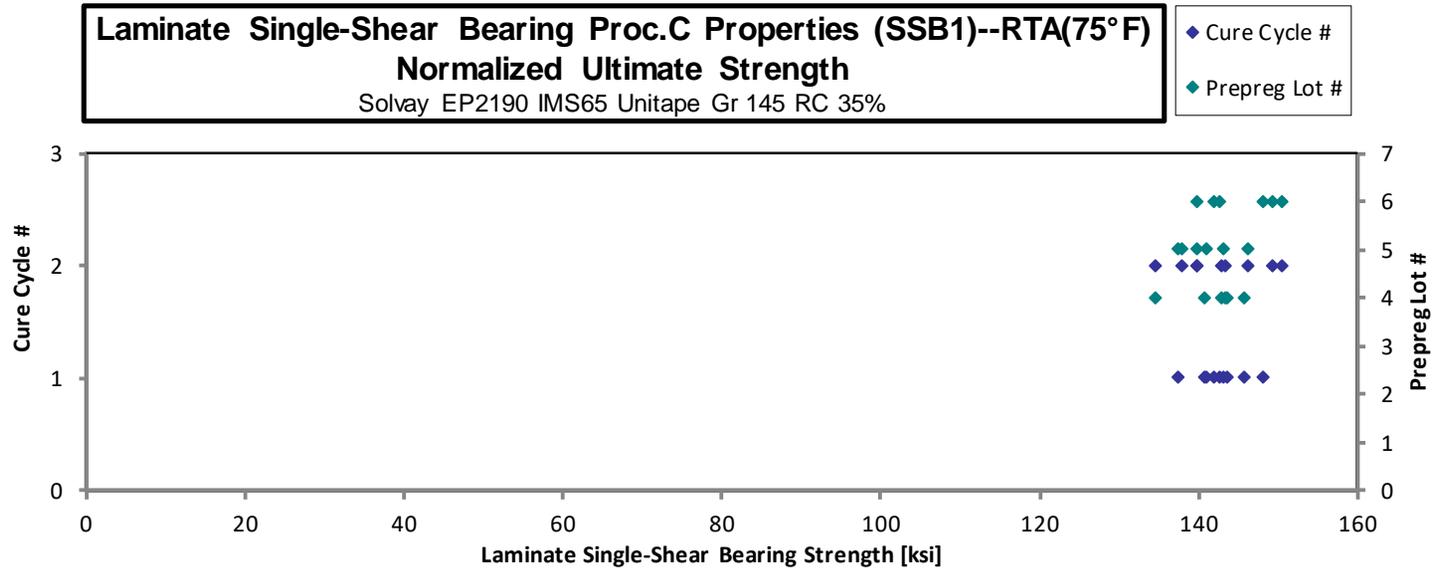
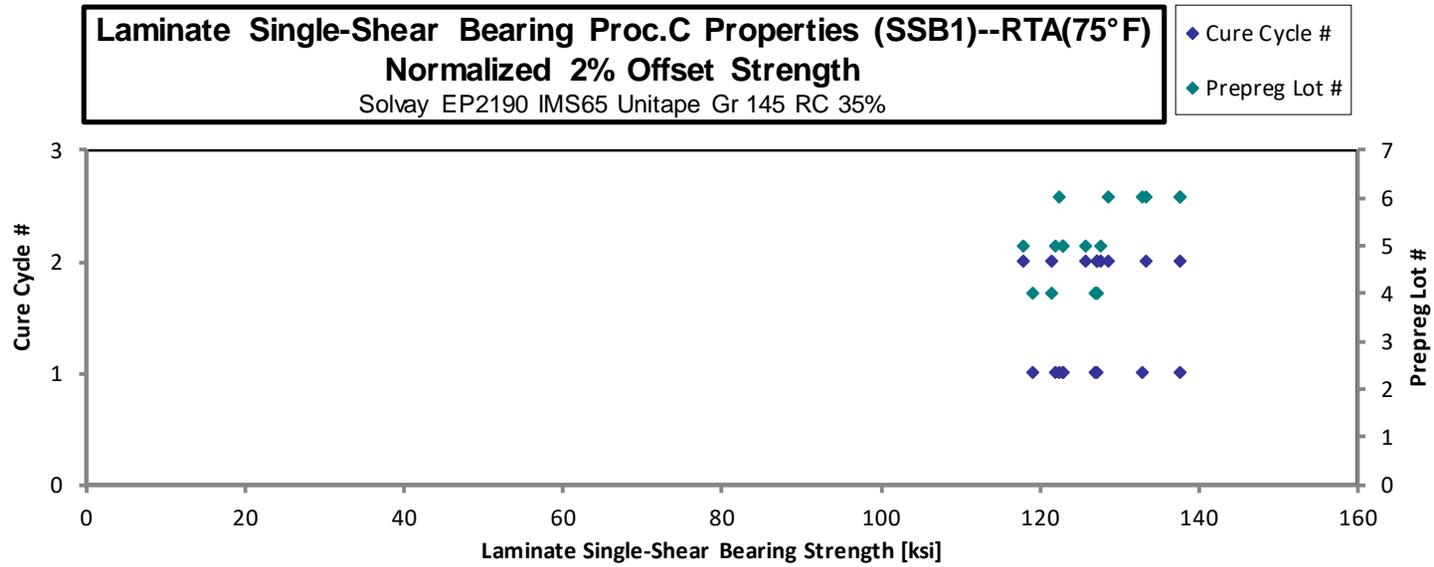
Laminate Single-Shear Bearing Proc.C Properties (SSB1)--RTA(75°F)
Strength & Deformation
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

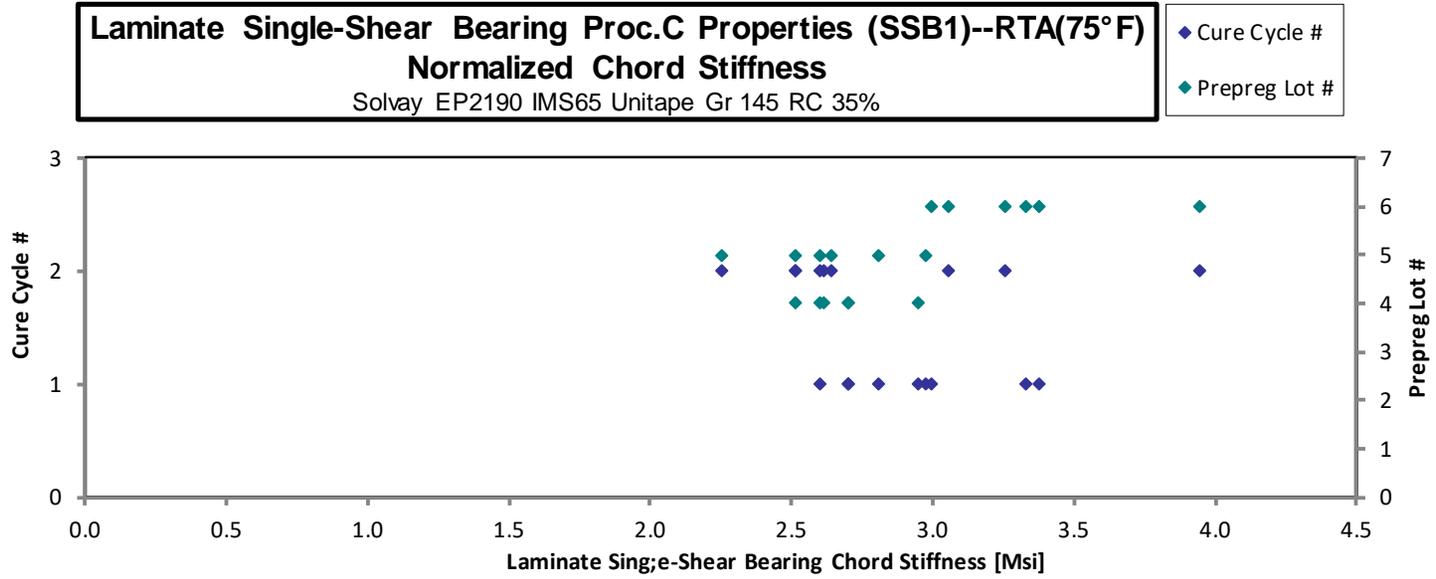
normalizing
 t_{ply} [in]
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-RTA-1	D	C1	4	1	125.0	141.2	2.903	0.09100	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-RTA-2	D	C1	4	1	116.2	142.1	2.637	0.09180	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-RTA-3	D	C1	4	1	124.5	138.2	2.655	0.09120	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-RTA-1	D	C2	4	2	123.8	139.1	2.545	0.09200	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-RTA-2	D	C2	4	2	124.0	140.0	2.538	0.09180	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-RTA-3	D	C2	4	2	118.5	131.2	2.458	0.09180	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-RTA-1	E	C1	5	1	120.8	138.6	2.930	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-RTA-2	E	C1	5	1	119.9	140.6	2.560	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-RTA-3	E	C1	5	1	120.2	134.6	2.754	0.09150	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-RTA-1	E	C2	5	2	123.8	137.6	2.601	0.09100	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-RTA-2	E	C2	5	2	124.5	142.7	2.201	0.09180	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-RTA-3	E	C2	5	2	115.1	134.6	2.458	0.09170	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-RTA-1	F	C1	6	1	120.9	140.7	2.958	0.09070	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-RTA-2	F	C1	6	1	130.6	139.6	3.324	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-RTA-3	F	C1	6	1	135.4	145.5	3.274	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-RTA-1	F	C1	6	2	131.2	142.7	4.033	0.08770	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-RTA-2	F	C1	6	2	136.0	153.4	3.327	0.08780	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-RTA-3	F	C1	6	2	139.4	151.3	3.097	0.08840	16	B1I

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0057	127.0	143.4	2.948
0.0057	119.1	145.6	2.702
0.0057	126.8	140.7	2.702
0.0058	127.1	142.8	2.613
0.0057	127.0	143.4	2.600
0.0057	121.5	134.5	2.518
0.0057	122.8	140.9	2.979
0.0057	121.9	143.0	2.603
0.0057	122.7	137.4	2.812
0.0057	125.7	139.7	2.642
0.0057	127.5	146.2	2.255
0.0057	117.8	137.8	2.516
0.0057	122.4	142.4	2.994
0.0057	132.7	141.9	3.380
0.0057	137.6	148.0	3.329
0.0055	128.4	139.7	3.947
0.0055	133.2	150.3	3.260
0.0055	137.5	149.3	3.056

Average	125.0	140.8	2.847	Average_{norm}	0.0057	126.6	142.6	2.881
Standard Dev.	6.893	5.400	0.4386	Standard Dev_{v, norm}		5.723	4.177	0.4057
Coeff. of Var. [%]	5.516	3.836	15.40	Coeff. of Var. [%]_{norm}		4.521	2.929	14.08
Min.	115.1	131.2	2.201	Min.	0.0055	117.8	134.5	2.255
Max.	139.4	153.4	4.033	Max.	0.0058	137.6	150.3	3.947
Number of Spec.	18	18	18	Number of Spec.	18	18	18	18





**Laminate Single-Shear Bearing Proc.C Properties (SSB1)--ETW1(180°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

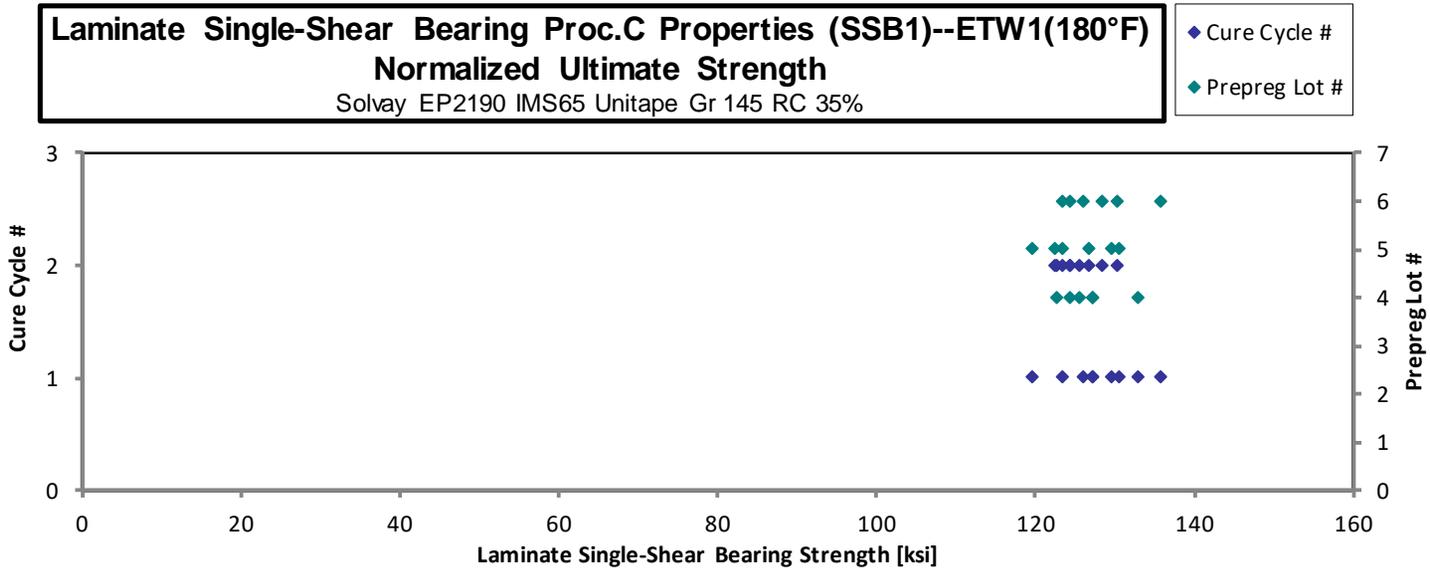
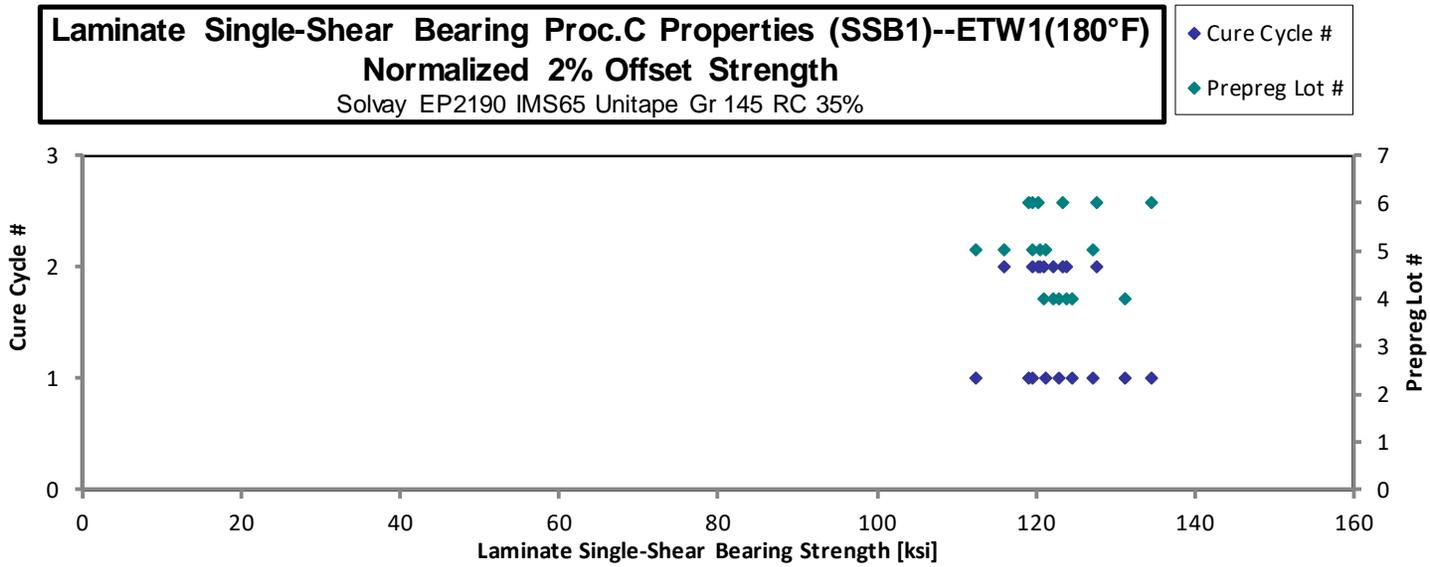
normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW1-1	D	C1	4	1	122.8	125.3	1.750	0.09090	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW1-2	D	C1	4	1	128.5	130.1	1.566	0.09140	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW1-3	D	C1	4	1	121.1	125.2	1.790	0.09090	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW1-1	D	C2	4	2	118.7	122.0	1.778	0.09220	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW1-2	D	C2	4	2	120.1	120.5	1.681	0.09240	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW1-3	D	C2	4	2	117.5	119.3	1.843	0.09210	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW1-1	E	C1	5	1	119.4	127.6	1.844	0.09090	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW1-2	E	C1	5	1	124.7	128.0	1.611	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW1-3	E	C1	5	1	110.7	117.6	1.822	0.09100	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW1-1	E	C2	5	2	117.3	121.1	1.571	0.09120	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW1-2	E	C2	5	2	117.9	124.1	1.581	0.09150	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW1-3	E	C2	5	2	113.6	119.9	1.773	0.09140	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW1-1	F	C1	6	1	122.1	126.5	1.438	0.08730	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW1-2	F	C1	6	1	136.7	138.0	1.136	0.08810	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW1-3	F	C1	6	1	121.4	127.9	1.704	0.08830	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW1-1	F	C1	6	2	118.7	122.7	1.683	0.09070	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW1-2	F	C1	6	2	125.3	126.0	1.661	0.09120	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW1-3	F	C1	6	2	122.9	129.6	1.458	0.09000	16	B11

Avg. t _{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0057	124.5	127.1	1.775
0.0057	131.1	132.7	1.597
0.0057	122.9	127.0	1.816
0.0058	122.1	125.5	1.830
0.0058	123.8	124.2	1.734
0.0058	120.8	122.7	1.894
0.0057	121.1	129.4	1.871
0.0057	127.1	130.4	1.642
0.0057	112.4	119.5	1.850
0.0057	119.4	123.3	1.599
0.0057	120.4	126.8	1.615
0.0057	115.9	122.3	1.809
0.0055	119.0	123.3	1.401
0.0055	134.4	135.7	1.117
0.0055	119.6	126.0	1.679
0.0057	120.1	124.2	1.704
0.0057	127.6	128.3	1.691
0.0056	123.4	130.1	1.465

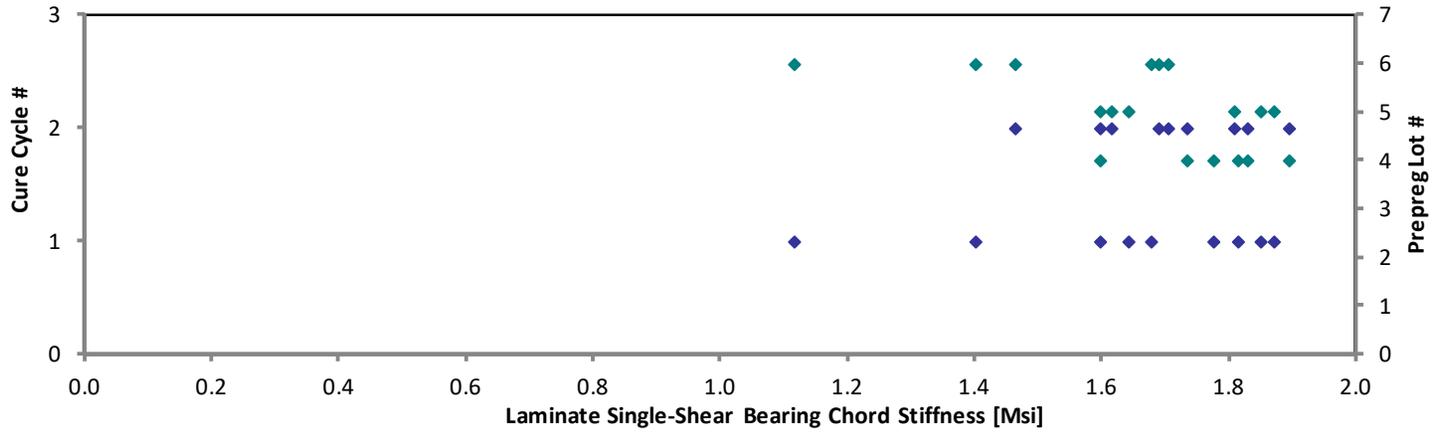
Average	121.1	125.1	1.649
Standard Dev.	5.712	4.896	0.1776
Coeff. of Var. [%]	4.718	3.915	10.77
Min.	110.7	117.6	1.136
Max.	136.7	138.0	1.844
Number of Spec.	18	18	18

Average _{norm}	0.0057	122.5	126.6	1.672
Standard Dev. _{norm}		5.206	4.053	0.1941
Coeff. of Var. [%] _{norm}		4.249	3.202	11.61
Min.	0.0055	112.4	119.5	1.117
Max.	0.0058	134.4	135.7	1.894
Number of Spec.	18	18	18	18



Laminate Single-Shear Bearing Proc.C Properties (SSB1)--ETW1(180°F)
Normalized Chord Stiffness
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Laminate Single-Shear Bearing Proc.C Properties (SSB1)--ETW2(225°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

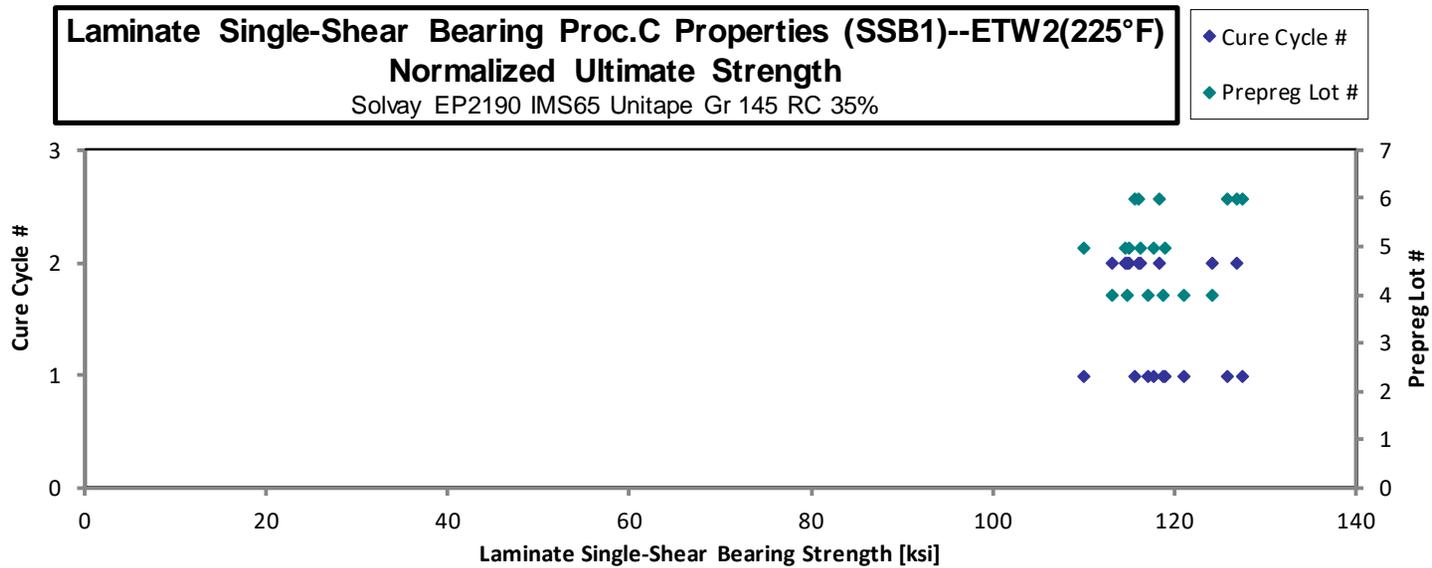
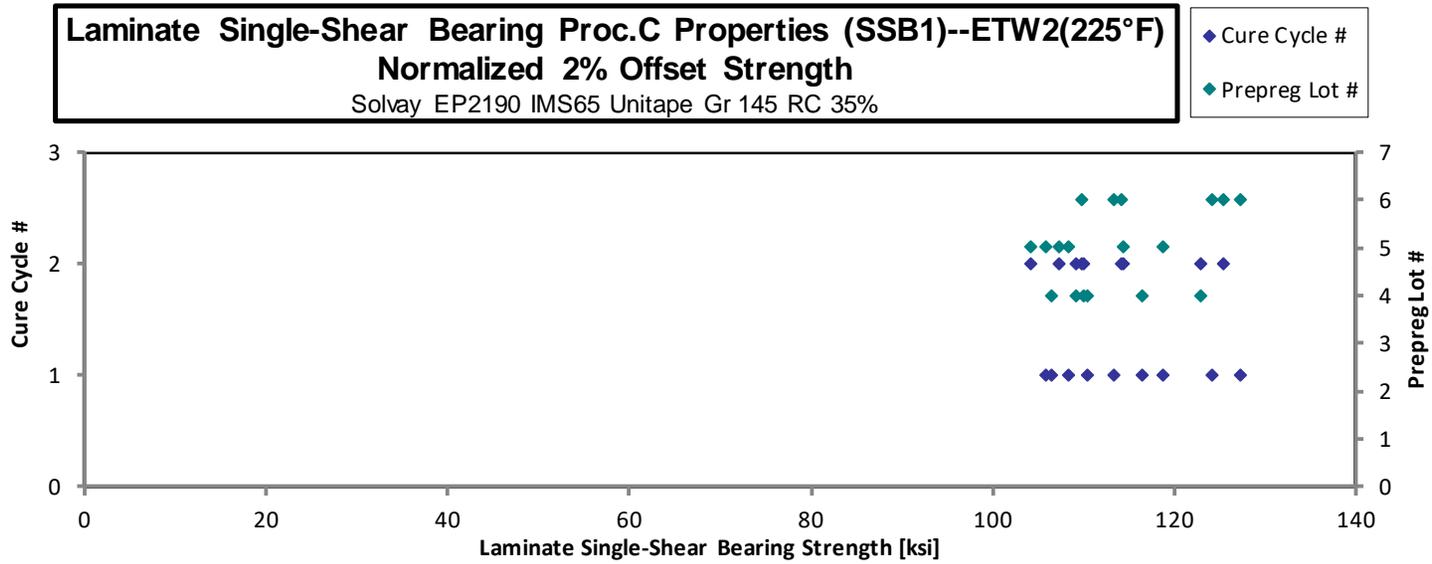
normalizing
t_{ply} [in]
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW2-1	D	C1	4	1	108.7	117.0	1.748	0.09090	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW2-2	D	C1	4	1	114.1	118.5	1.677	0.09140	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW2-3	D	C1	4	1	104.5	114.9	1.877	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW2-1	D	C2	4	2	119.8	120.9	1.539	0.09190	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW2-2	D	C2	4	2	106.6	109.7	1.713	0.09240	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW2-3	D	C2	4	2	106.5	112.0	1.670	0.09180	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW2-1	E	C1	5	1	103.7	107.8	1.881	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW2-2	E	C1	5	1	106.4	115.5	1.815	0.09120	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW2-3	E	C1	5	1	116.6	116.7	1.679	0.09120	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW2-1	E	C2	5	2	102.8	113.2	1.747	0.09070	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW2-2	E	C2	5	2	112.5	114.2	1.530	0.09110	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW2-3	E	C2	5	2	105.5	113.0	1.763	0.09110	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW2-1	F	C1	6	1	125.5	125.7	1.596	0.09080	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW2-2	F	C1	6	1	111.1	113.5	1.689	0.09130	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW2-3	F	C1	6	1	122.2	123.9	1.509	0.09100	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW2-1	F	C1	6	2	109.8	116.0	1.878	0.08960	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW2-2	F	C1	6	2	113.3	117.2	1.771	0.09030	16	B11
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW2-3	F	C1	6	2	125.7	127.0	1.682	0.08940	16	B11

Avg. t _{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0057	110.3	118.7	1.773
0.0057	116.4	120.9	1.711
0.0057	106.4	117.0	1.913
0.0057	122.9	124.0	1.579
0.0058	109.9	113.1	1.767
0.0057	109.1	114.7	1.711
0.0057	105.7	109.9	1.917
0.0057	108.3	117.6	1.847
0.0057	118.7	118.8	1.709
0.0057	104.1	114.6	1.768
0.0057	114.4	116.1	1.556
0.0057	107.3	114.9	1.793
0.0057	127.1	127.4	1.617
0.0057	113.2	115.6	1.721
0.0057	124.1	125.8	1.533
0.0056	109.8	116.0	1.878
0.0056	114.2	118.2	1.785
0.0056	125.4	126.7	1.678

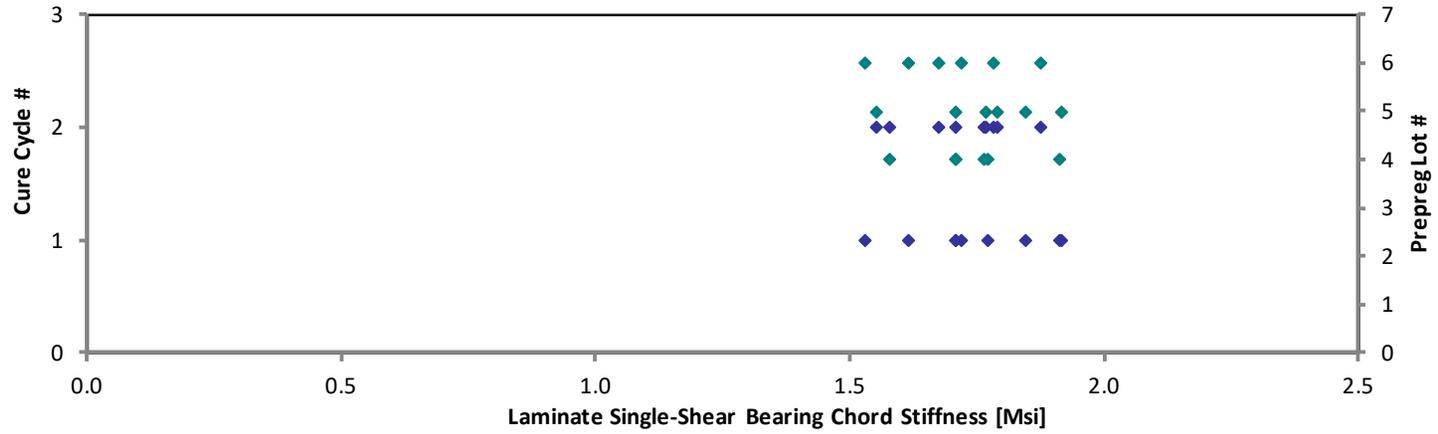
Average	112.0	116.5	1.709
Standard Dev.	7.352	5.185	0.1152
Coeff. of Var. [%]	6.566	4.451	6.741
Min.	102.8	107.8	1.509
Max.	125.7	127.0	1.881
Number of Spec.	18	18	18

Average_{norm}	0.0057	113.7	118.3	1.736
Standard Dev._{norm}		7.212	4.879	0.1147
Coeff. of Var. [%]_{norm}		6.341	4.124	6.607
Min.	0.0056	104.1	109.9	1.533
Max.	0.0058	127.1	127.4	1.917
Number of Spec.	18	18	18	18



Laminate Single-Shear Bearing Proc.C Properties (SSB1)--ETW2(225°F)
Normalized Chord Stiffness
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



**Laminate Single-Shear Bearing Proc.C Properties (SSB1)--ETW3(250°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

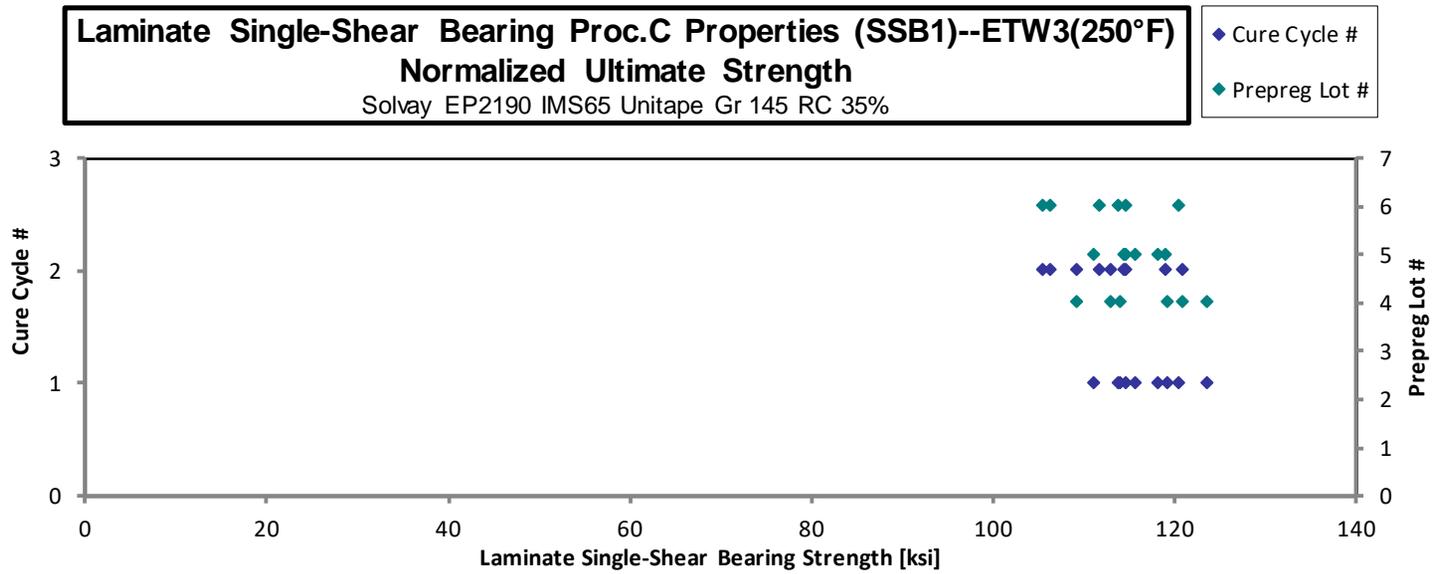
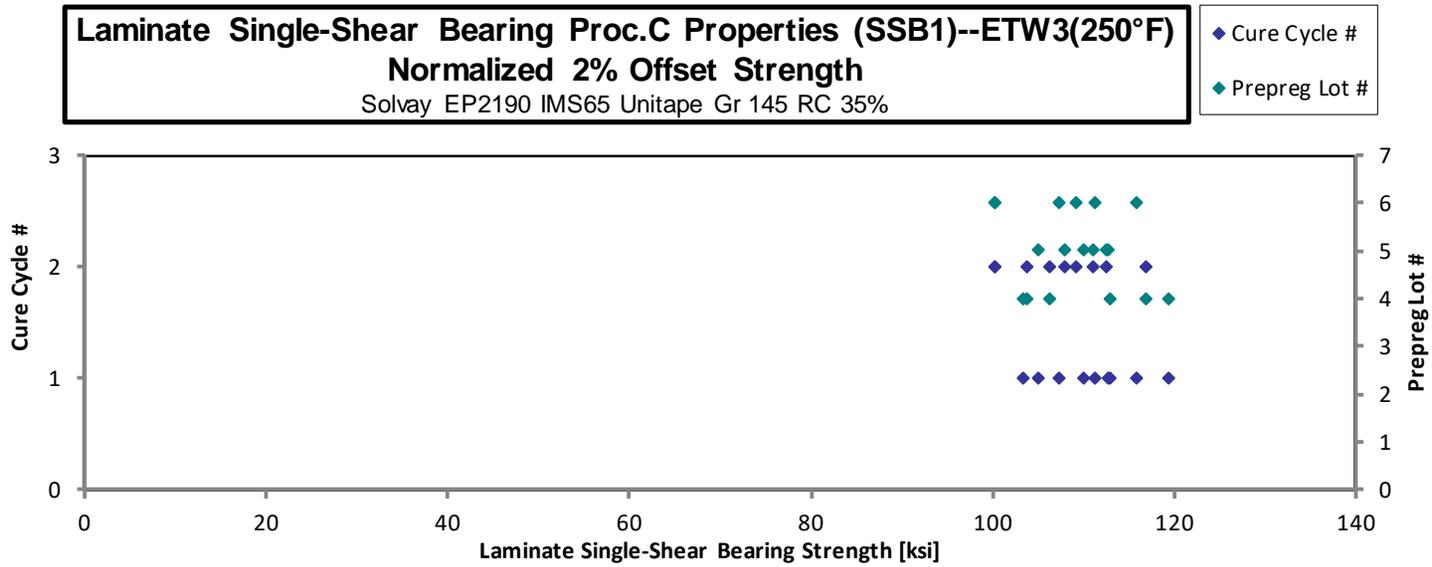
normalizing
t_{ply} [in]
0.0056

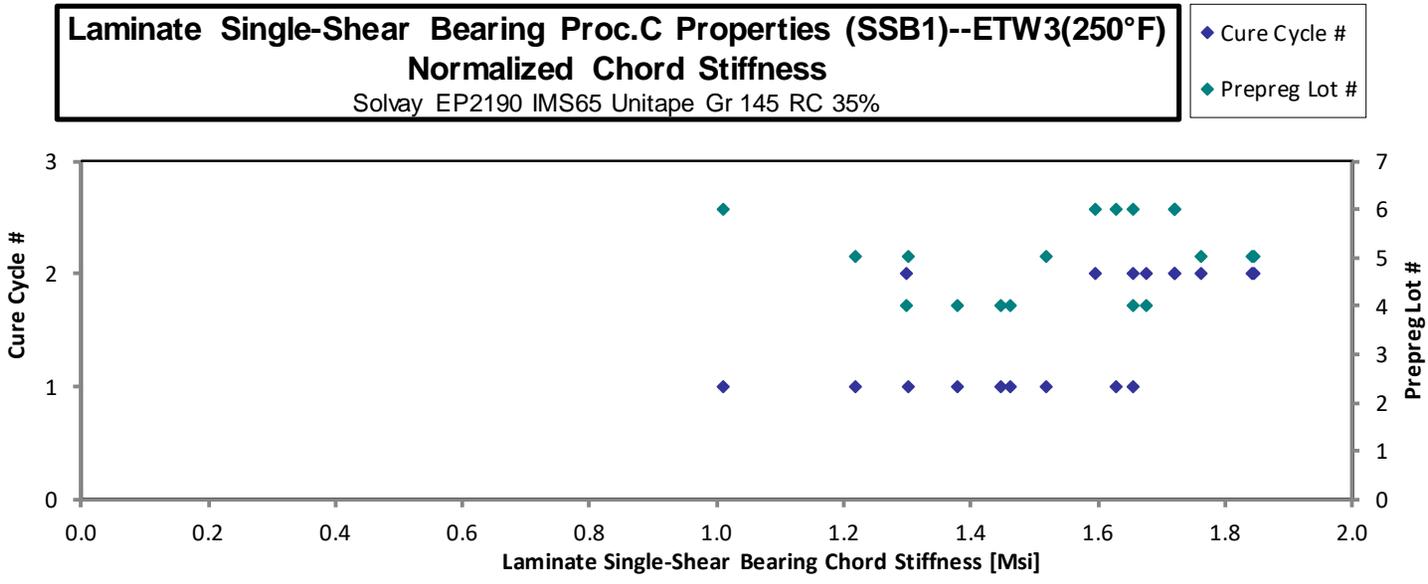
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW3-1	D	C1	4	1	110.9	117.4	1.357	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW3-3	D	C1	4	1	101.8	112.2	1.425	0.09100	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-ETW3-2	D	C1	4	1	117.0	121.3	1.433	0.09140	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW3-1	D	C2	4	2	103.4	110.0	1.614	0.09200	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW3-2	D	C2	4	2	113.5	117.6	1.629	0.09220	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-ETW3-3	D	C2	4	2	101.2	106.6	1.267	0.09190	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW3-1	E	C1	5	1	110.8	113.8	1.200	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW3-2	E	C1	5	1	103.2	109.4	1.495	0.09110	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-ETW3-3	E	C1	5	1	107.5	115.6	1.274	0.09170	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW3-1	E	C2	5	2	108.5	111.9	1.722	0.09170	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW3-2	E	C2	5	2	109.6	116.0	1.797	0.09200	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-ETW3-3	E	C2	5	2	105.0	111.6	1.793	0.09210	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW3-1	F	C1	6	1	113.9	117.5	1.668	0.08750	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW3-3	F	C1	6	1	109.3	115.8	1.030	0.08800	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-ETW3-4	F	C1	6	1	116.8	121.5	1.671	0.08880	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW3-1	F	C1	6	2	98.58	103.9	1.695	0.09100	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW3-2	F	C1	6	2	107.7	110.3	1.700	0.09080	16	B1I
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-ETW3-3	F	C1	6	2	100.0	106.1	1.594	0.08980	16	B1I

Avg. t _{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0057	112.8	119.3	1.380
0.0057	103.4	114.0	1.447
0.0057	119.3	123.7	1.462
0.0058	106.2	113.0	1.657
0.0058	116.7	121.0	1.676
0.0057	103.8	109.3	1.300
0.0057	112.6	115.7	1.220
0.0057	104.9	111.2	1.520
0.0057	110.0	118.3	1.304
0.0057	111.0	114.5	1.762
0.0058	112.5	119.1	1.845
0.0058	107.9	114.7	1.843
0.0055	111.2	114.8	1.629
0.0055	107.3	113.8	1.012
0.0056	115.8	120.4	1.656
0.0057	100.1	105.5	1.721
0.0057	109.1	111.8	1.723
0.0056	100.2	106.3	1.598

Average	107.7	113.2	1.520
Standard Dev.	5.593	5.033	0.2219
Coeff. of Var. [%]	5.194	4.444	14.59
Min.	98.58	103.9	1.030
Max.	117.0	121.5	1.797
Number of Spec.	18	18	18

Average_{norm}	0.0057	109.2	114.8	1.542
Standard Dev._{norm}		5.447	4.957	0.2293
Coeff. of Var. [%]_{norm}		4.989	4.318	14.87
Min.	0.0055	100.1	105.5	1.012
Max.	0.0058	119.3	123.7	1.845
Number of Spec.	18	18	18	18





4.29 “10/80/10” Single-Shear Bearing 2, Proc. C Properties (SSB2)

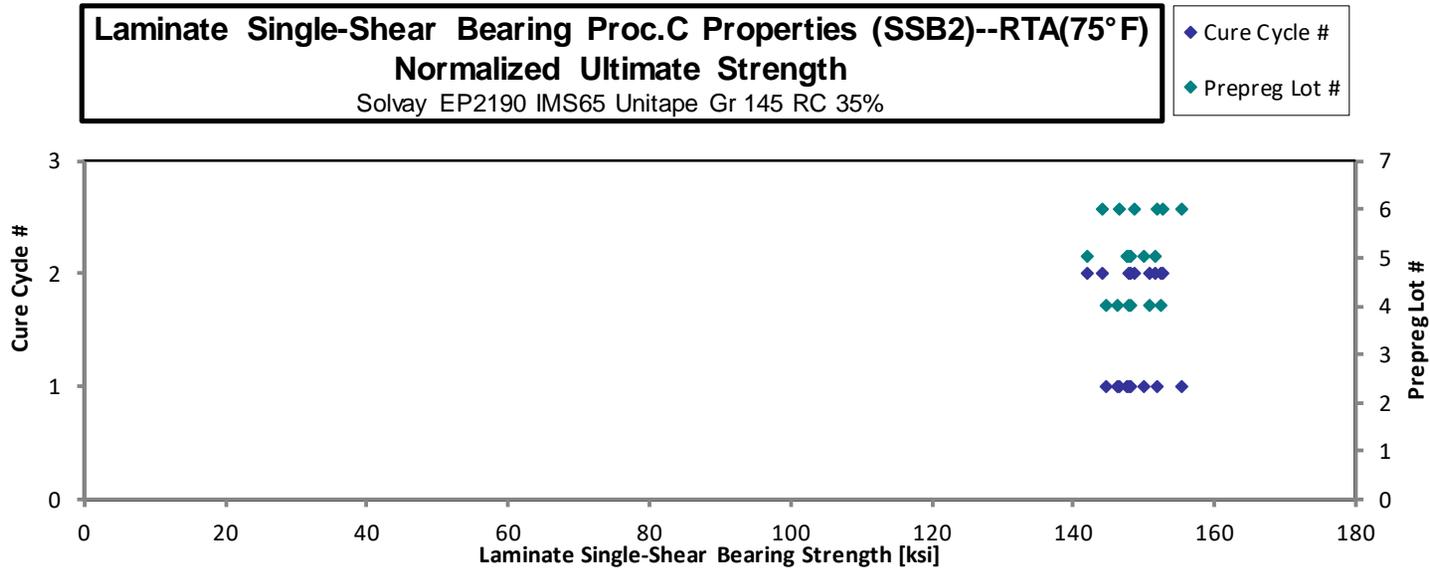
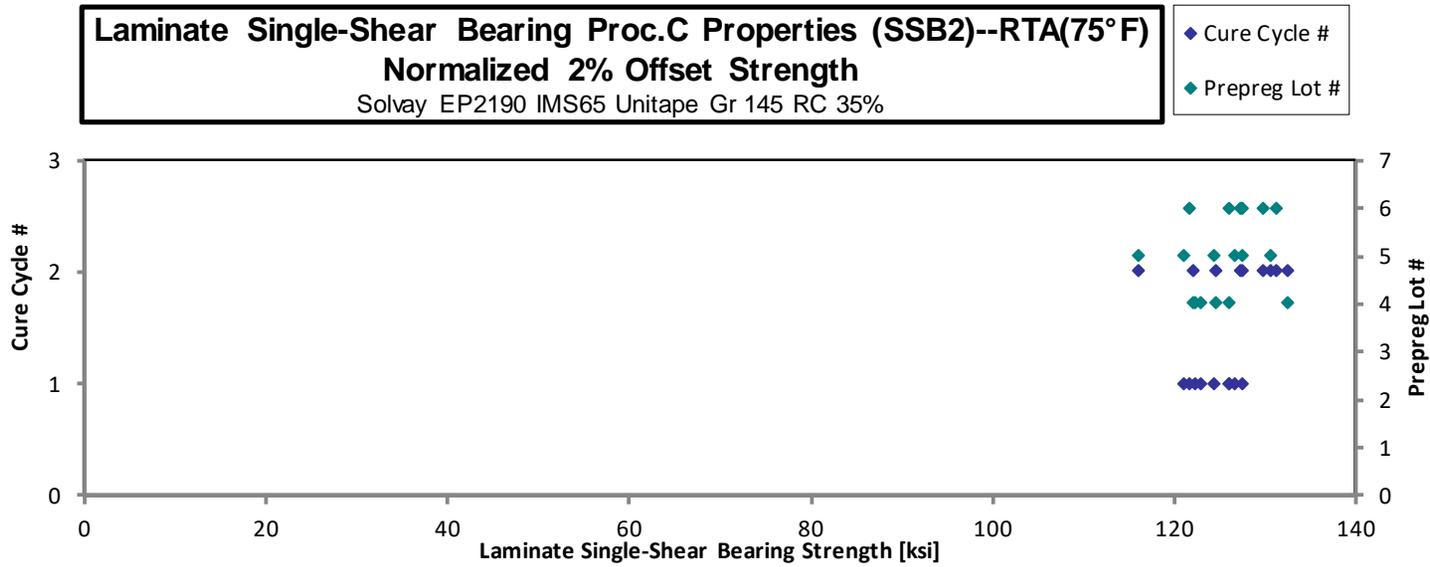
Laminate Single-Shear Bearing Proc.C Properties (SSB2)--RTA(75°F)
Strength & Deformation
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-RTA-1	D	C1	4	1	121.3	139.4	1.794	0.1163	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-RTA-2	D	C1	4	1	117.3	141.9	1.729	0.1166	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-RTA-3	D	C1	4	1	118.8	141.2	1.795	0.1159	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-RTA-1	D	C2	4	2	116.6	138.7	1.555	0.1196	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-RTA-2	D	C2	4	2	124.8	143.7	1.740	0.1188	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-RTA-3	D	C2	4	2	115.3	142.6	1.495	0.1185	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-RTA-1	E	C1	5	1	124.2	145.5	1.462	0.1141	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-RTA-2	E	C1	5	1	117.8	143.5	1.373	0.1151	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-RTA-3	E	C1	5	1	121.6	146.8	1.331	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-RTA-1	E	C2	5	2	127.6	148.3	1.331	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-RTA-2	E	C2	5	2	124.9	144.9	1.320	0.1142	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-RTA-3	E	C2	5	2	113.8	139.3	1.351	0.1141	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-RTA-1	F	C1	6	1	118.4	147.9	1.345	0.1150	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-RTA-2	F	C1	6	1	124.5	142.9	1.314	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-RTA-3	F	C1	6	1	123.5	152.3	1.438	0.1142	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-RTA-1	F	C1	6	2	122.5	138.8	1.321	0.1162	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-RTA-2	F	C1	6	2	125.5	147.6	1.324	0.1157	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-RTA-3	F	C1	6	2	126.1	142.9	1.481	0.1165	20	B11

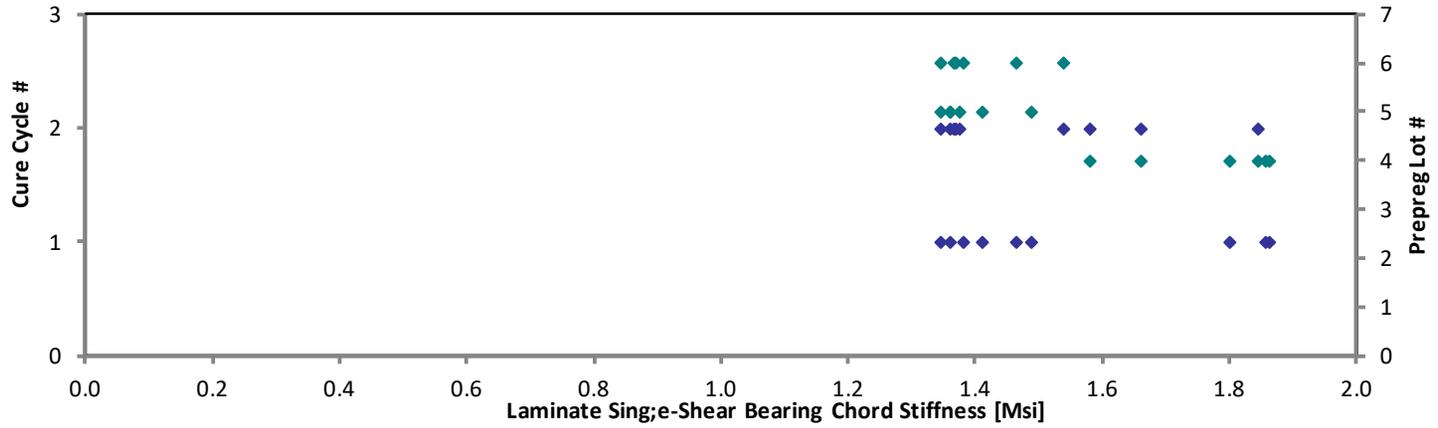
Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	125.9	144.7	1.863
0.0058	122.1	147.7	1.800
0.0058	122.9	146.2	1.858
0.0060	124.5	148.1	1.661
0.0059	132.3	152.4	1.846
0.0059	122.0	150.9	1.582
0.0057	126.5	148.2	1.489
0.0058	121.0	147.5	1.411
0.0057	124.3	150.0	1.361
0.0057	130.5	151.6	1.361
0.0057	127.4	147.8	1.346
0.0057	115.9	141.9	1.376
0.0058	121.6	151.8	1.381
0.0057	127.5	146.4	1.346
0.0057	125.9	155.3	1.466
0.0058	127.1	144.0	1.371
0.0058	129.6	152.5	1.368
0.0058	131.2	148.7	1.541

Average	121.4	143.8	1.472	Average_{norm}	0.0058	125.5	148.6	1.524
Standard Dev.	4.115	3.760	0.1762	Standard Dev. _{norm}		4.144	3.394	0.1959
Coeff. of Var. [%]	3.391	2.615	11.97	Coeff. of Var. [%] _{norm}		3.303	2.283	12.86
Min.	113.8	138.7	1.314	Min.	0.0057	115.9	141.9	1.346
Max.	127.6	152.3	1.795	Max.	0.0060	132.3	155.3	1.863
Number of Spec.	18	18	18	Number of Spec.	18	18	18	18



Laminate Single-Shear Bearing Proc.C Properties (SSB2)--RTA(75°F)
Normalized Chord Stiffness
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

◆ Cure Cycle #
◆ Prepreg Lot #



Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW1(180°F)
Strength & Deformation

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

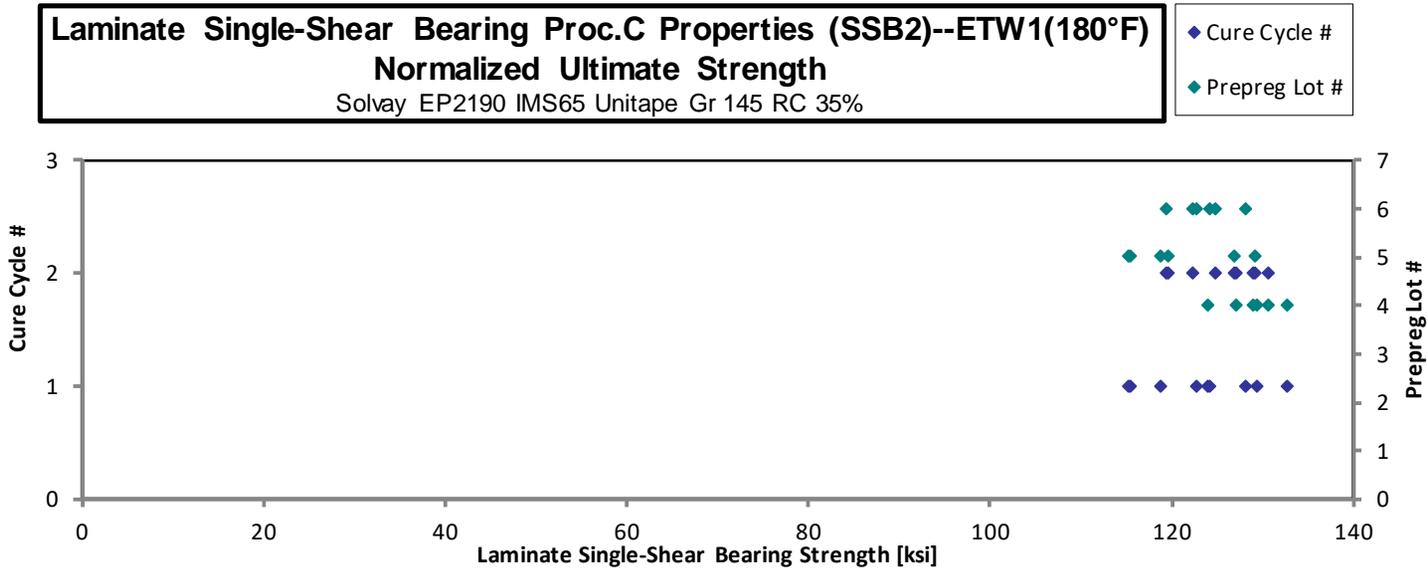
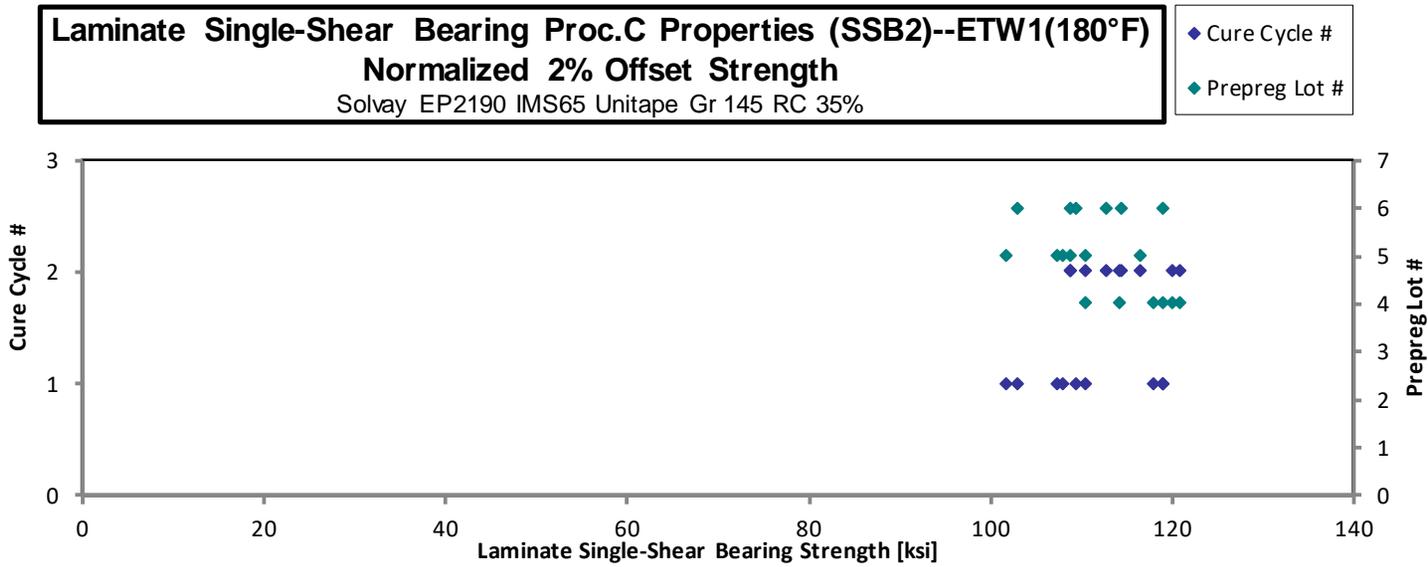
normalizing
 t_{ply} [in]
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW1-1	D	C1	4	1	114.6	127.8	1.062	0.1163	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW1-2	D	C1	4	1	113.2	119.1	1.053	0.1166	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW1-3	D	C1	4	1	106.7	125.1	1.113	0.1158	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW1-1	D	C2	4	2	107.1	119.1	1.073	0.1194	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW1-2	D	C2	4	2	113.0	121.4	1.222	0.1189	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW1-3	D	C2	4	2	113.9	123.2	0.9060	0.1188	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW1-1	E	C1	5	1	104.9	116.1	1.597	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW1-2	E	C1	5	1	98.83	112.1	1.365	0.1152	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW1-3	E	C1	5	1	105.4	112.5	1.503	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW1-1	E	C2	5	2	107.9	116.9	1.288	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW1-2	E	C2	5	2	114.1	124.4	0.9900	0.1143	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW1-3	E	C2	5	2	106.2	126.1	0.9810	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW1-1	F	C1	6	1	107.0	121.5	1.319	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW1-2	F	C1	6	1	100.8	120.2	1.421	0.1144	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW1-3	F	C1	6	1	116.2	125.3	1.405	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-1	F	C1	6	2	105.9	116.2	1.038	0.1151	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-2	F	C1	6	2	109.5	118.8	1.174	0.1153	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-3	F	C1	6	2	110.7	120.9	1.092	0.1157	20	B11

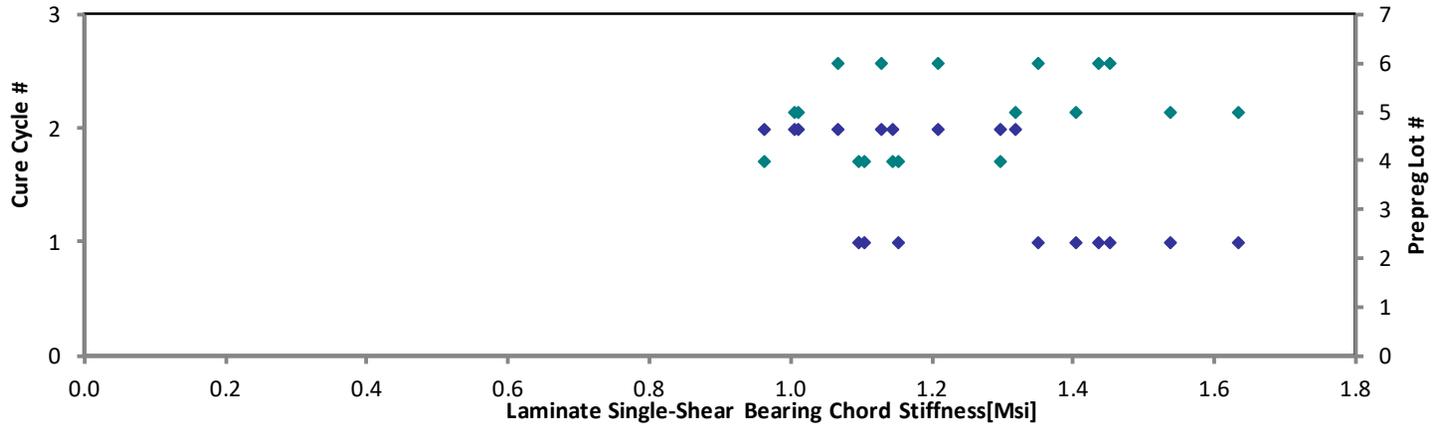
Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	118.9	132.7	1.103
0.0058	117.9	124.0	1.096
0.0058	110.4	129.3	1.151
0.0060	114.2	127.0	1.144
0.0059	120.0	128.8	1.297
0.0059	120.8	130.6	0.9610
0.0057	107.3	118.8	1.634
0.0058	101.7	115.3	1.404
0.0057	107.8	115.1	1.538
0.0057	110.4	119.6	1.318
0.0057	116.5	126.9	1.010
0.0057	108.7	129.0	1.004
0.0057	109.4	124.2	1.348
0.0057	102.9	122.7	1.451
0.0057	118.8	128.1	1.436
0.0058	108.8	119.4	1.067
0.0058	112.7	122.2	1.209
0.0058	114.3	124.9	1.128

Average	108.7	120.4	1.200
Standard Dev.	4.852	4.496	0.1987
Coeff. of Var. [%]	4.465	3.736	16.56
Min.	98.83	112.1	0.9060
Max.	116.2	127.8	1.597
Number of Spec.	18	18	18

Average _{norm}	0.0058	112.3	124.4	1.239
Standard Dev. _{norm}		5.743	5.172	0.1973
Coeff. of Var. [%] _{norm}		5.114	4.159	15.93
Min.	0.0057	101.7	115.1	0.9610
Max.	0.0060	120.8	132.7	1.634
Number of Spec.	18	18	18	18



Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW1(180°F)
Normalized Chord Stiffness
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



**Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW2(225°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

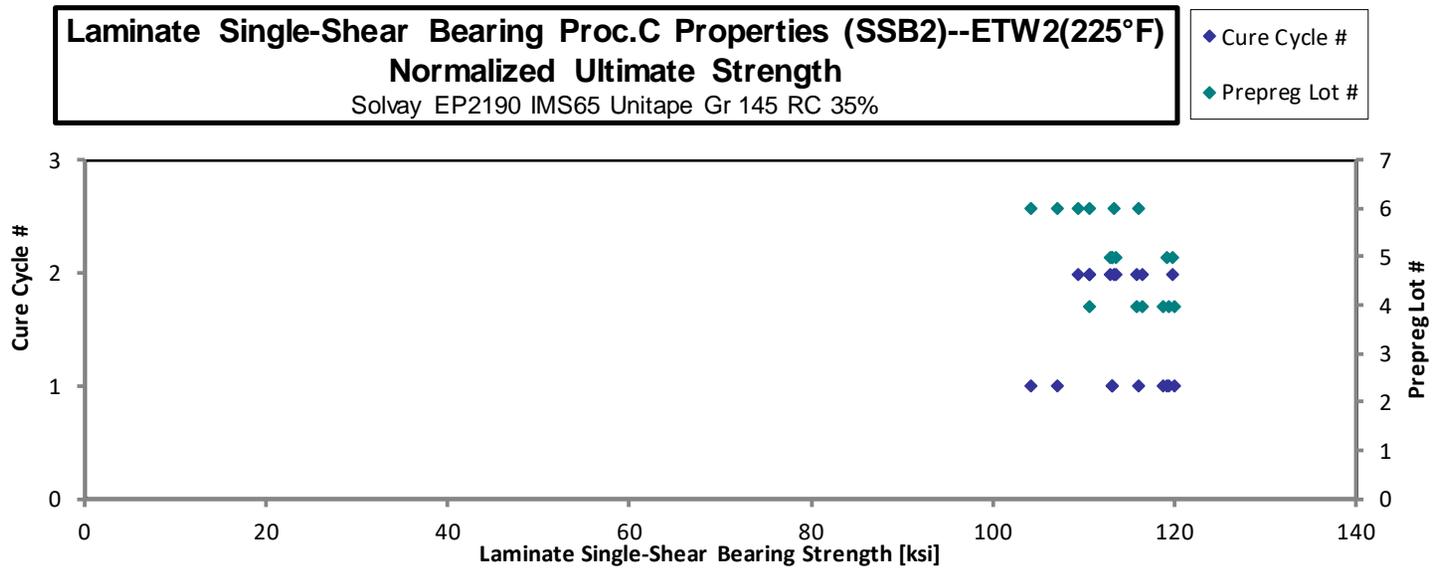
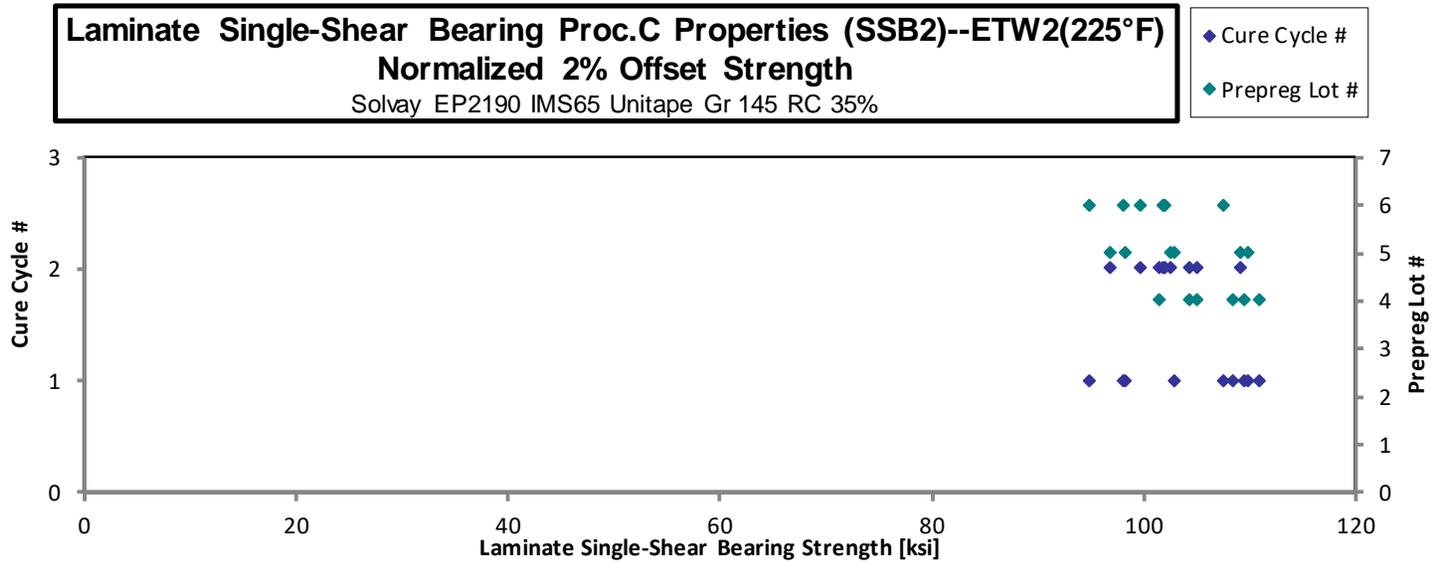
t_{ply} [in]
0.0056

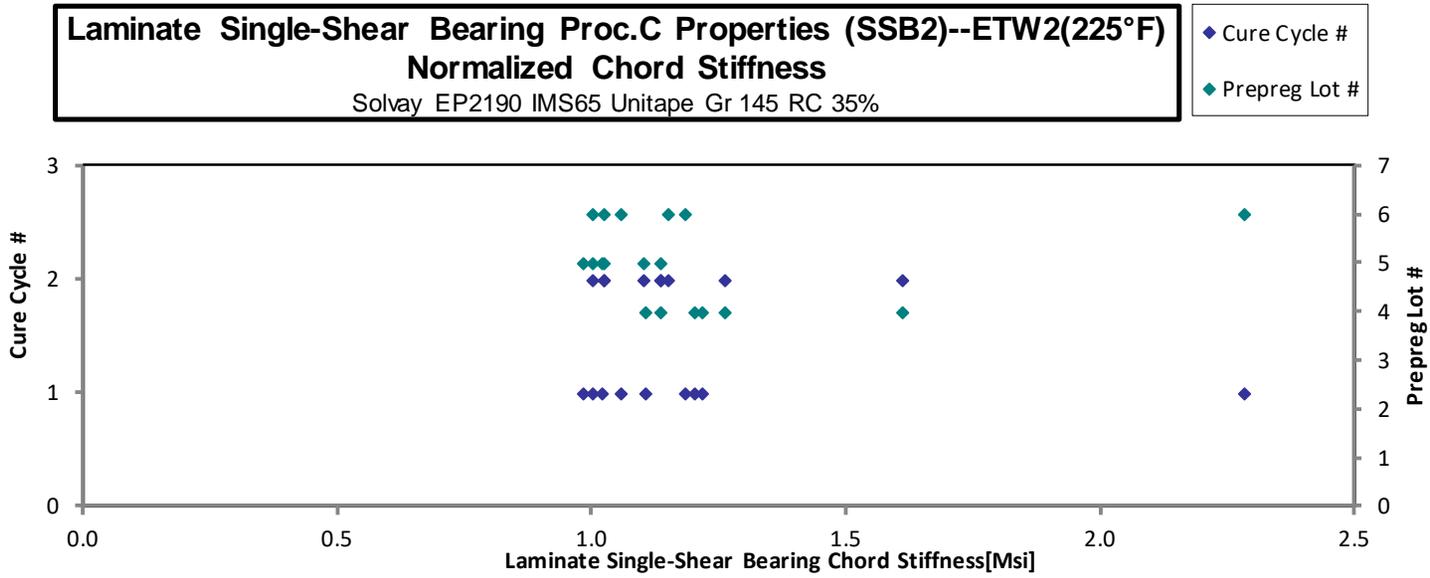
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW2-1	D	C1	4	1	104.7	115.8	1.164	0.1159	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW2-2	D	C1	4	1	106.5	114.1	1.066	0.1166	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW2-3	D	C1	4	1	105.6	115.2	1.179	0.1160	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW2-1	D	C2	4	2	94.85	103.5	1.508	0.1197	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW2-2	D	C2	4	2	98.44	109.3	1.188	0.1193	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW2-3	D	C2	4	2	98.34	109.1	1.074	0.1188	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW2-1	E	C1	5	1	100.3	110.1	0.9780	0.1149	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW2-2	E	C1	5	1	95.40	109.9	0.9940	0.1152	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW2-3	E	C1	5	1	107.1	116.2	0.9620	0.1148	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW2-1	E	C2	5	2	94.44	110.3	1.077	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW2-2	E	C2	5	2	100.4	111.1	1.113	0.1144	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW2-3	E	C2	5	2	106.5	116.9	1.002	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW2-1	F	C1	6	1	105.1	113.2	1.036	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW2-2	F	C1	6	1	92.15	101.4	2.224	0.1151	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW2-3	F	C1	6	1	95.48	104.2	1.155	0.1150	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW2-1	F	C1	6	2	98.88	107.4	1.120	0.1153	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW2-2	F	C1	6	2	96.39	105.8	0.9930	0.1157	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW2-3	F	C1	6	2	98.17	109.1	0.9690	0.1162	20	B11

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	108.3	119.8	1.205
0.0058	110.9	118.8	1.110
0.0058	109.4	119.4	1.221
0.0060	101.4	110.6	1.612
0.0060	104.9	116.4	1.265
0.0059	104.3	115.8	1.139
0.0057	102.9	113.0	1.003
0.0058	98.13	113.0	1.022
0.0057	109.7	119.1	0.9861
0.0057	96.72	112.9	1.103
0.0057	102.5	113.5	1.137
0.0057	109.0	119.7	1.026
0.0057	107.5	115.9	1.060
0.0058	94.70	104.2	2.286
0.0058	98.04	107.0	1.186
0.0058	101.8	110.5	1.153
0.0058	99.57	109.3	1.026
0.0058	101.9	113.2	1.005

Average	99.9	110.1	1.156
Standard Dev.	4.824	4.544	0.2956
Coeff. of Var. [%]	4.828	4.126	25.58
Min.	92.15	101.4	0.9620
Max.	107.1	116.9	2.224
Number of Spec.	18	18	18

Average _{norm}	0.0058	103.4	114.0	1.197
Standard Dev _{norm}		4.902	4.542	0.3081
Coeff. of Var. [%] _{norm}		4.740	3.984	25.74
Min.	0.0057	94.70	104.2	0.9861
Max.	0.0060	110.9	119.8	2.286
Number of Spec.	18	18	18	18





**Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW3(250°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

t_{ply} [in]

0.0056

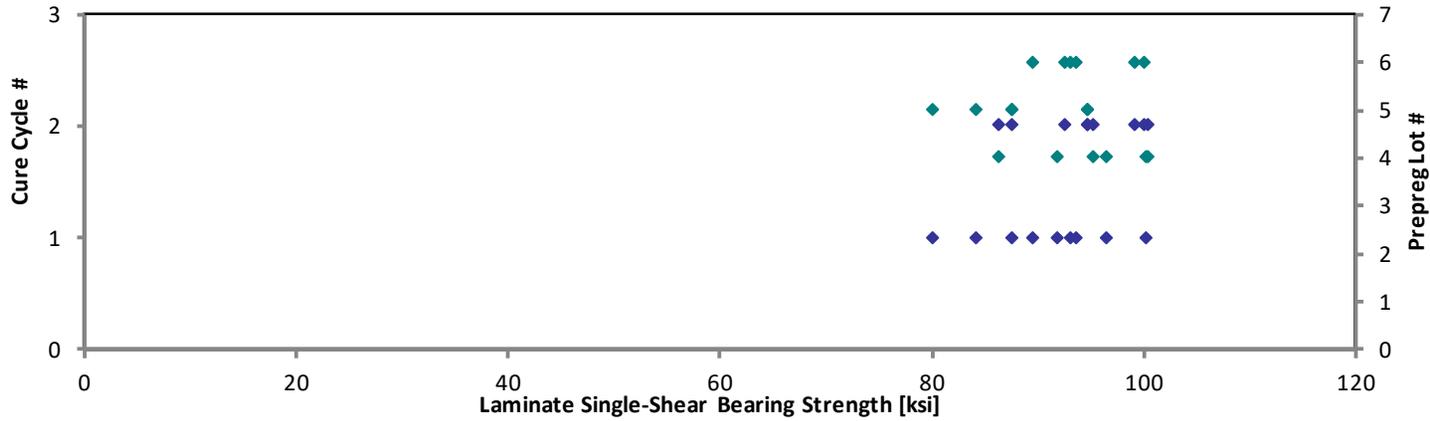
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW3-2	D	C1	4	1	96.14	108.1	1.260	0.1167	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW3-3	D	C1	4	1	88.33	100.7	1.157	0.1164	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-ETW3-4	D	C1	4	1	93.17	109.8	0.8860	0.1159	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW3-1	D	C2	4	2	80.85	96.88	1.081	0.1194	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW3-2	D	C2	4	2	89.46	106.6	1.121	0.1192	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-ETW3-3	D	C2	4	2	94.59	111.6	1.194	0.1188	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW3-1	E	C1	5	1	78.08	93.41	1.027	0.1148	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW3-2	E	C1	5	1	84.84	103.1	2.032	0.1154	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-ETW3-3	E	C1	5	1	82.11	102.6	2.397	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW3-1	E	C2	5	2	85.45	97.24	0.9780	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW3-2	E	C2	5	2	92.70	103.2	1.075	0.1143	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-ETW3-3	E	C2	5	2	92.45	106.7	1.174	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW3-1	F	C1	6	1	91.89	103.0	1.169	0.1139	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW3-2	F	C1	6	1	91.46	97.66	0.9850	0.1138	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-ETW3-3	F	C1	6	1	87.86	97.27	1.113	0.1139	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW3-1	F	C1	6	2	89.49	103.1	1.253	0.1157	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW3-2	F	C1	6	2	95.73	105.5	1.078	0.1158	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW3-3	F	C1	6	2	96.99	104.4	1.093	0.1155	20	B11

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	100.2	112.7	1.313
0.0058	91.80	104.6	1.202
0.0058	96.41	113.6	0.9169
0.0060	86.19	103.3	1.152
0.0060	95.21	113.4	1.193
0.0059	100.3	118.3	1.266
0.0057	80.03	95.75	1.053
0.0058	87.42	106.3	2.094
0.0057	84.09	105.1	2.455
0.0057	87.43	99.50	1.001
0.0057	94.60	105.3	1.097
0.0057	94.60	109.2	1.201
0.0057	93.45	104.7	1.189
0.0057	92.93	99.23	1.001
0.0057	89.35	98.92	1.132
0.0058	92.45	106.5	1.294
0.0058	98.98	109.1	1.115
0.0058	100.0	107.6	1.127

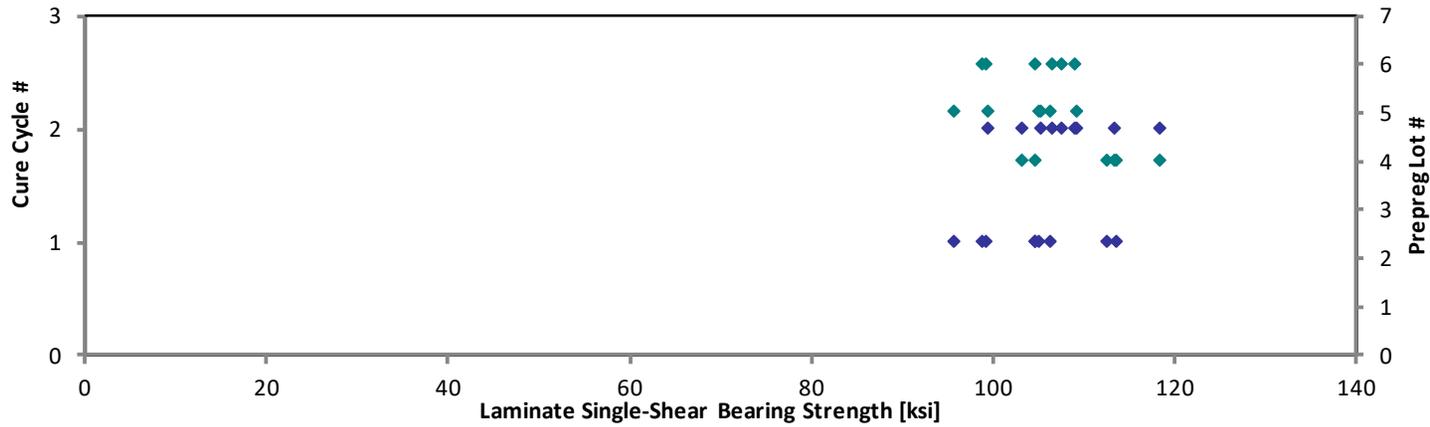
Average	89.53	102.8	1.226
Standard Dev.	5.471	4.905	0.3770
Coeff. of Var. [%]	6.111	4.770	30.75
Min.	78.08	93.41	0.8860
Max.	96.99	111.6	2.397
Number of Spec.	18	18	18

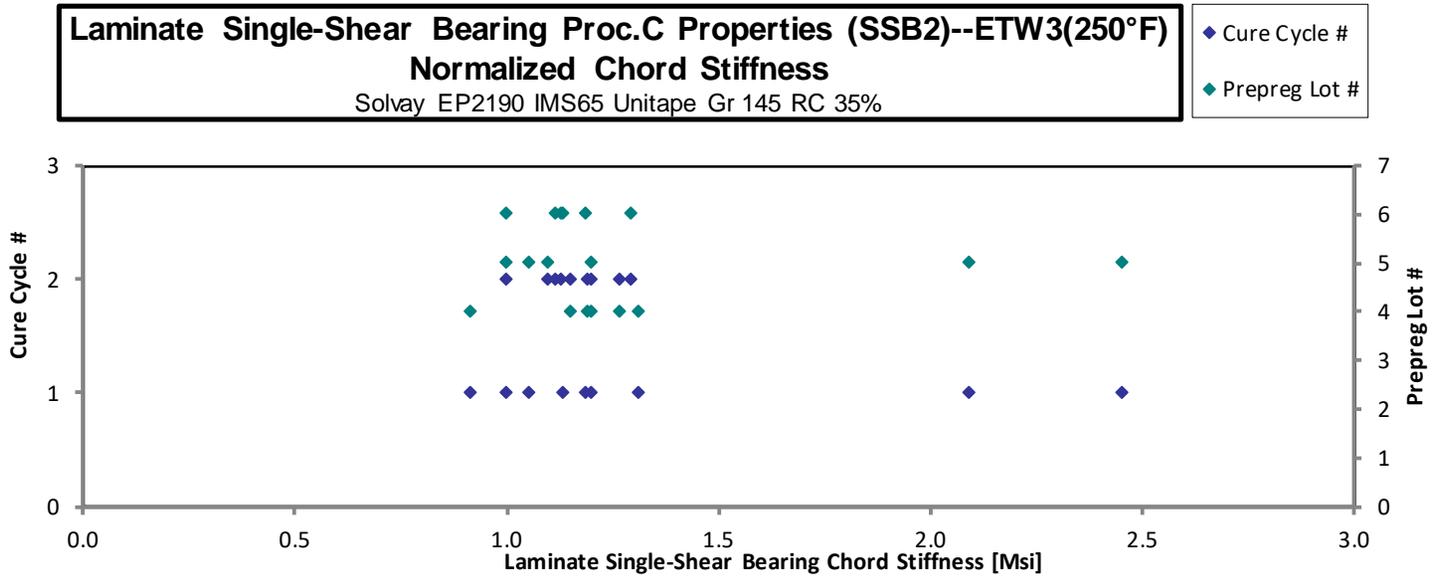
Average _{norm}	0.0058	92.53	106.3	1.267
Standard Dev _{norm}		5.837	5.870	0.3858
Coeff. of Var. [%] _{norm}		6.309	5.523	30.46
Min.	0.0057	80.03	95.75	0.9169
Max.	0.0060	100.3	118.3	2.455
Number of Spec.	18	18	18	18

Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW3(250°F)
Normalized 2% Offset Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%



Laminate Single-Shear Bearing Proc.C Properties (SSB2)--ETW3(250°F)
Normalized Ultimate Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%





4.30 “50/40/10” Single-Shear Bearing 3, Proc. C Properties (SSB3)

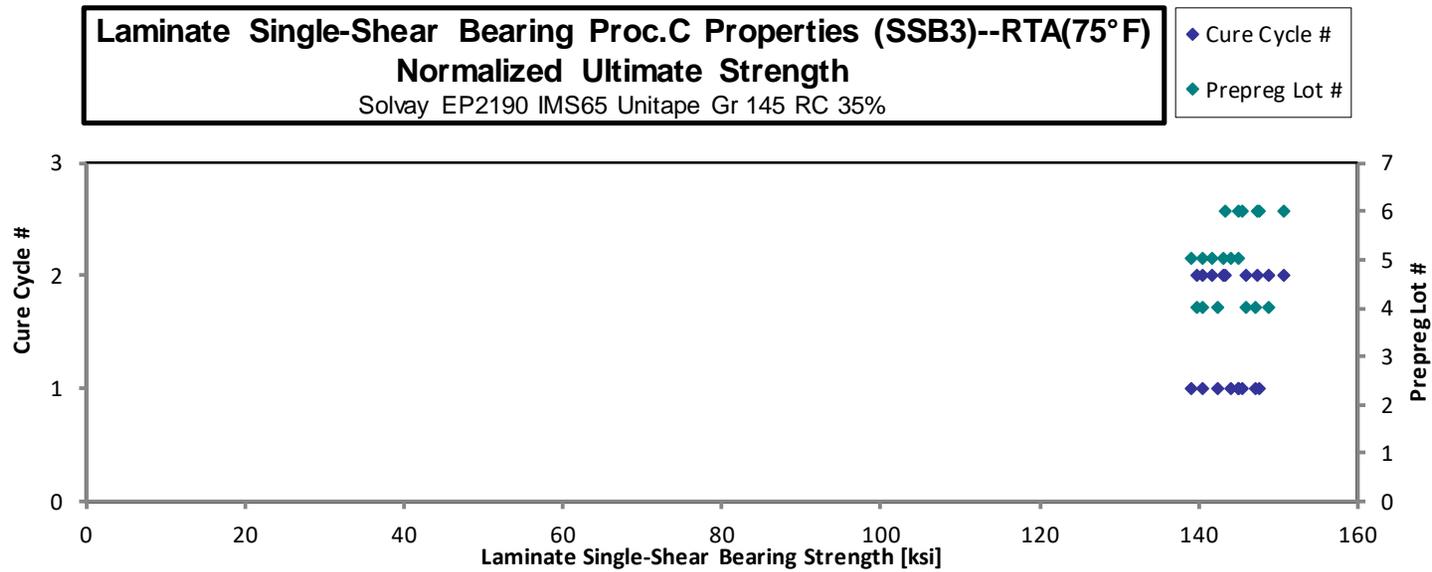
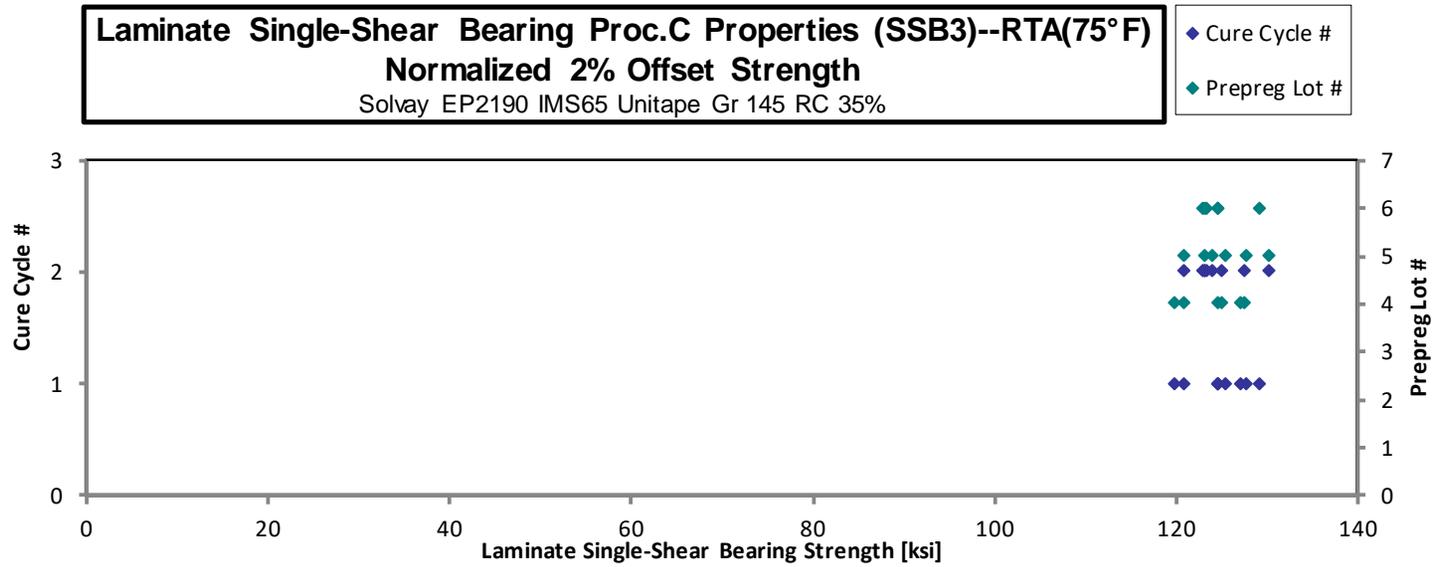
Laminate Single-Shear Bearing Proc.C Properties (SSB3)--RTA(75°F)
Strength & Deformation
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

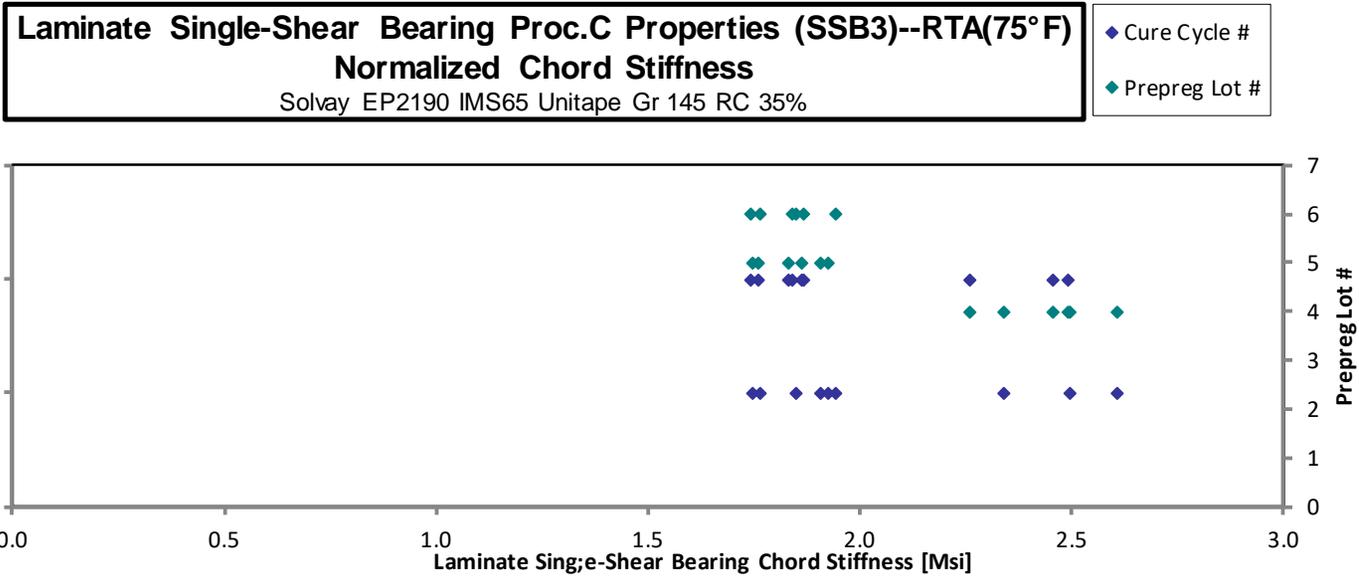
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 t_{ply} [in]
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-RTA-1	D	C1	4	1	115.7	135.5	2.409	0.1160	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-RTA-2	D	C1	4	1	119.5	136.6	2.246	0.1167	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-RTA-3	D	C1	4	1	122.6	141.9	2.518	0.1161	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-RTA-1	D	C2	4	2	111.9	129.4	2.307	0.1210	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-RTA-2	D	C2	4	2	118.6	138.4	2.101	0.1204	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-RTA-3	D	C2	4	2	116.2	135.7	2.282	0.1205	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-RTA-1	E	C1	5	1	124.5	135.8	1.864	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-RTA-2	E	C1	5	1	122.5	140.6	1.705	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-RTA-3	E	C1	5	1	118.2	141.8	1.884	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-RTA-1	E	C2	5	2	127.8	139.1	1.833	0.1140	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-RTA-2	E	C2	5	2	120.4	137.4	1.724	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-RTA-3	E	C2	5	2	120.5	139.1	1.781	0.1152	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-RTA-1	F	C1	6	1	122.3	142.9	1.734	0.1140	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-RTA-2	F	C1	6	1	126.5	144.6	1.906	0.1143	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-RTA-3	F	C1	6	1	122.7	142.7	1.821	0.1137	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-RTA-1	F	C1	6	2	119.0	145.5	1.803	0.1160	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-RTA-2	F	C1	6	2	119.5	139.1	1.786	0.1154	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-RTA-3	F	C1	6	2	119.9	143.6	1.699	0.1148	20	B11

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	119.8	140.3	2.495
0.0058	124.5	142.3	2.340
0.0058	127.1	147.1	2.610
0.0061	120.9	139.8	2.492
0.0060	127.4	148.7	2.259
0.0060	125.0	146.0	2.455
0.0057	127.5	139.0	1.909
0.0057	125.4	144.0	1.746
0.0057	120.8	144.9	1.926
0.0057	130.1	141.6	1.866
0.0057	123.1	140.4	1.762
0.0058	124.0	143.1	1.832
0.0057	124.5	145.4	1.765
0.0057	129.1	147.5	1.945
0.0057	124.6	144.9	1.849
0.0058	123.3	150.7	1.867
0.0058	123.1	143.3	1.840
0.0057	122.8	147.2	1.741

Average	120.5	139.4	1.967	Average_{norm}	0.0058	124.6	144.2	2.039
Standard Dev.	3.849	4.007	0.2677	Standard Dev _{norm}		2.817	3.288	0.3063
Coeff. of Var. [%]	3.195	2.874	13.61	Coeff. of Var. [%] _{norm}		2.261	2.279	15.02
Min.	111.9	129.4	1.699	Min.	0.0057	119.8	139.0	1.741
Max.	127.8	145.5	2.518	Max.	0.0061	130.1	150.7	2.610
Number of Spec.	18	18	18	Number of Spec.	18	18	18	18





Laminate Single-Shear Bearing Proc.C Properties (SSB3)--ETW1(180°F)
Strength & Deformation

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

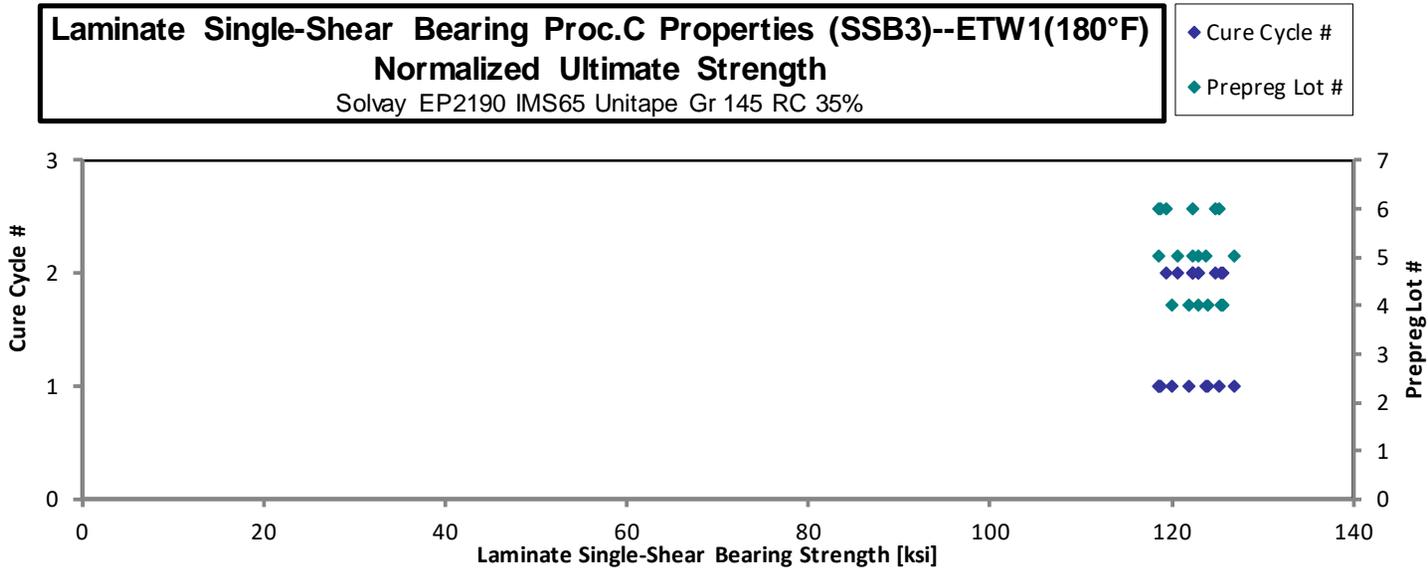
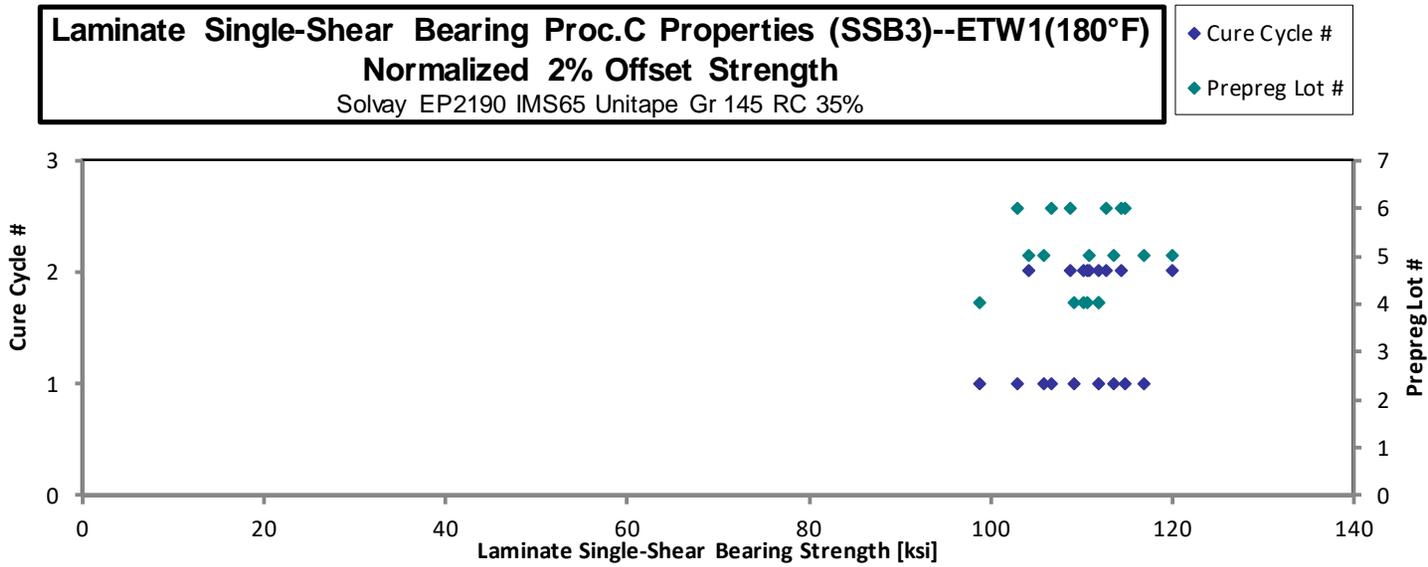
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 t_{ply} [in]
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW1-1	D	C1	4	1	107.5	119.1	1.477	0.1165	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW1-2	D	C1	4	1	105.2	117.3	1.641	0.1163	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW1-3	D	C1	4	1	95.54	116.1	1.413	0.1158	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW1-1	D	C2	4	2	102.3	114.0	1.196	0.1206	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW1-2	D	C2	4	2	103.7	116.4	1.399	0.1208	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW1-3	D	C2	4	2	103.2	116.9	1.383	0.1200	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW1-1	E	C1	5	1	110.5	123.4	1.356	0.1151	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW1-2	E	C1	5	1	114.1	120.7	1.301	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW1-3	E	C1	5	1	103.3	115.7	1.329	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW1-1	E	C2	5	2	102.1	118.3	1.717	0.1142	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW1-2	E	C2	5	2	117.1	119.2	1.774	0.1148	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW1-3	E	C2	5	2	107.9	119.8	1.485	0.1149	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW1-1	F	C1	6	1	105.2	117.1	1.743	0.1136	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW1-2	F	C1	6	1	112.3	122.6	2.162	0.1144	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW1-3	F	C1	6	1	101.1	116.5	1.573	0.1139	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-1	F	C1	6	2	105.9	116.2	1.038	0.1151	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-2	F	C1	6	2	109.5	118.8	1.174	0.1153	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-ETW1-3	F	C1	6	2	110.7	120.9	1.092	0.1157	20	B11

Avg. t _{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	111.8	123.8	1.536
0.0058	109.2	121.8	1.704
0.0058	98.78	120.0	1.461
0.0060	110.1	122.8	1.288
0.0060	111.8	125.5	1.509
0.0060	110.6	125.3	1.482
0.0058	113.5	126.8	1.394
0.0057	116.9	123.7	1.332
0.0057	105.8	118.5	1.361
0.0057	104.1	120.6	1.751
0.0057	120.0	122.2	1.818
0.0057	110.7	122.9	1.523
0.0057	106.7	118.8	1.768
0.0057	114.7	125.3	2.208
0.0057	102.8	118.5	1.600
0.0058	108.8	119.4	1.067
0.0058	112.7	122.2	1.209
0.0058	114.3	124.9	1.128

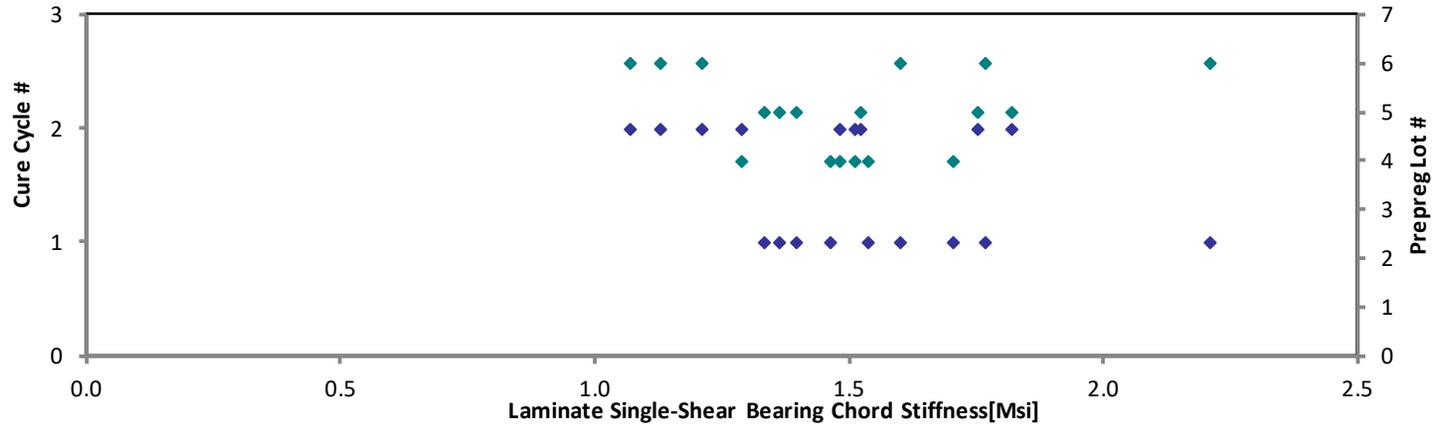
Average	106.5	118.3	1.459
Standard Dev.	5.253	2.508	0.2780
Coeff. of Var. [%]	4.933	2.120	19.06
Min.	95.54	114.0	1.038
Max.	117.1	123.4	2.162
Number of Spec.	18	18	18

Average_{norm}	0.0058	110.2	1.508
Standard Dev._{norm}		5.192	2.630
Coeff. of Var. [%]_{norm}		4.712	2.149
Min.	0.0057	98.78	118.5
Max.	0.0060	120.0	126.8
Number of Spec.	18	18	18



Laminate Single-Shear Bearing Proc.C Properties (SSB3)--ETW1(180°F)
Normalized Chord Stiffness
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Laminate Single-Shear Bearing Proc.C Properties (SSB3)--ETW2(225°F)
Strength & Deformation**

Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing

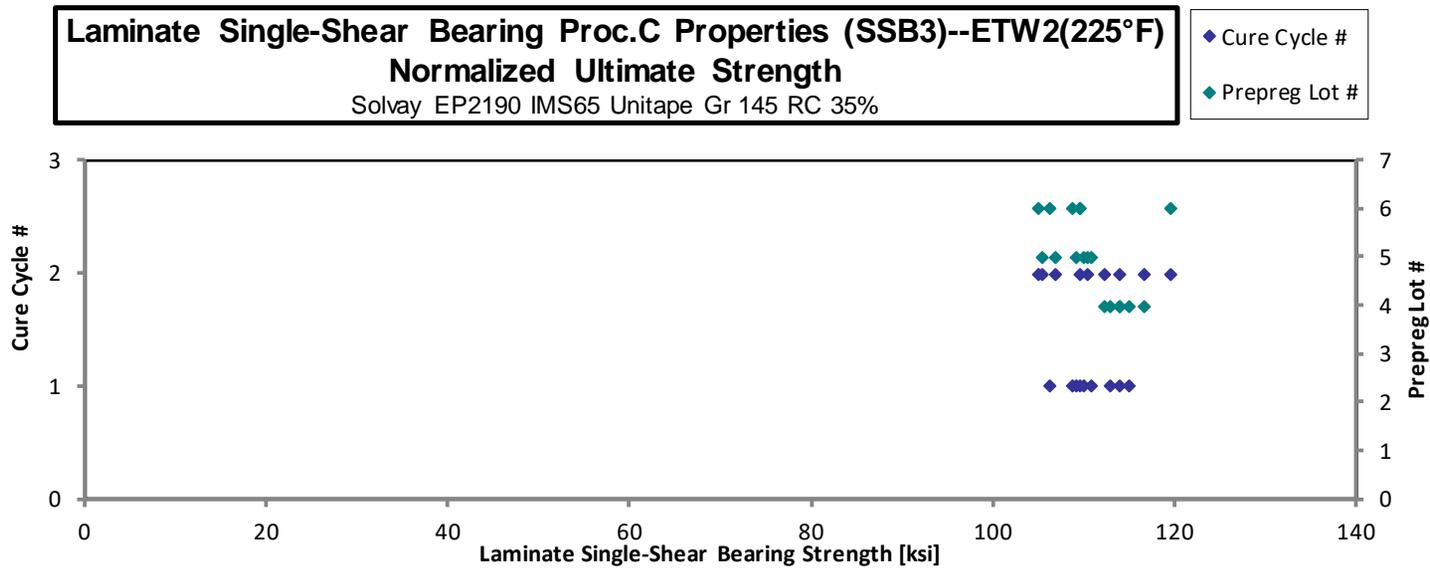
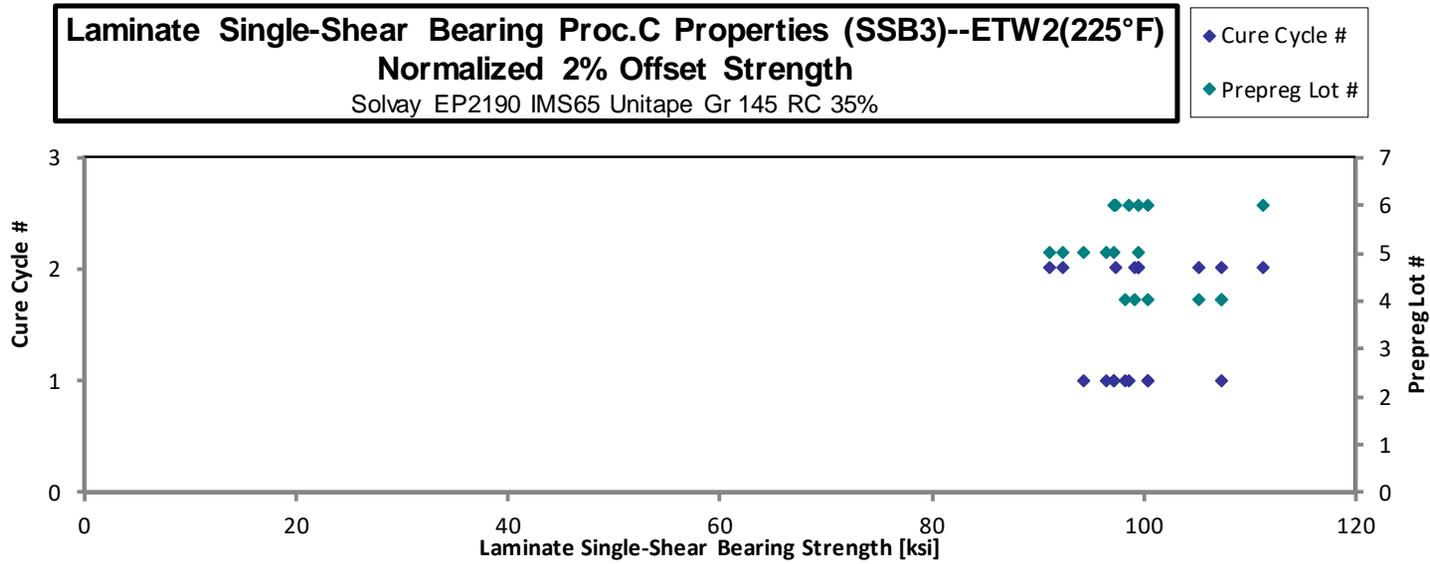
t_{ply} [in]

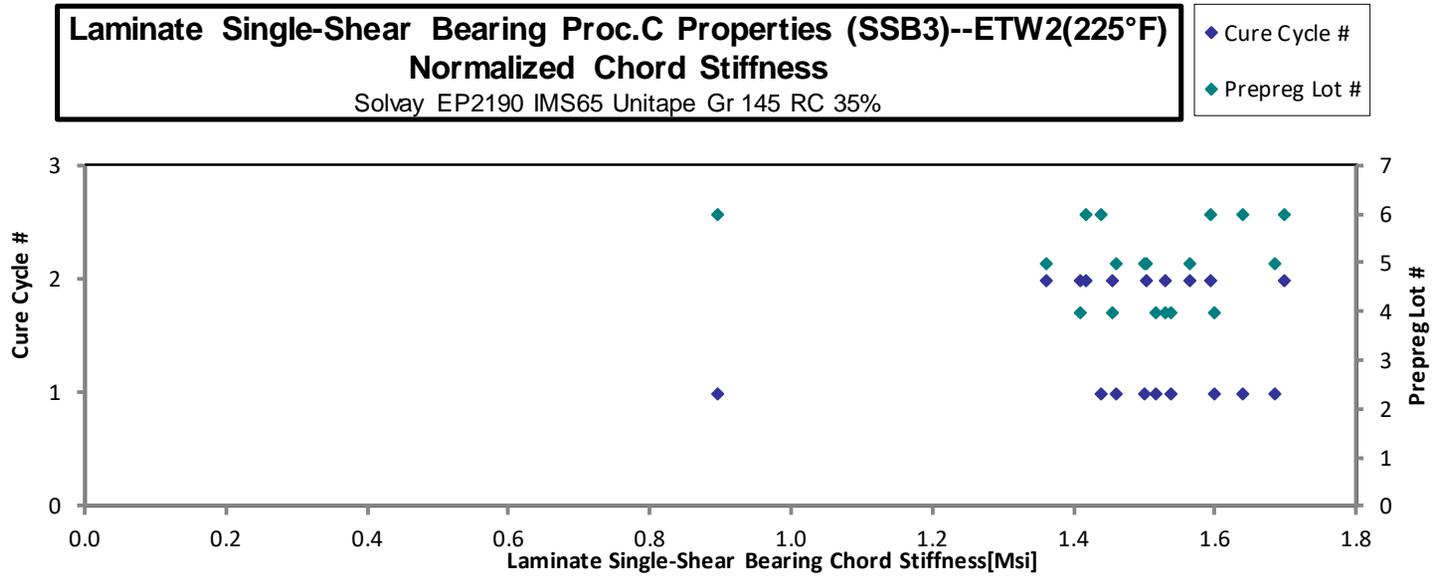
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Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW2-1	D	C1	4	1	96.20	110.3	1.536	0.1167	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW2-2	D	C1	4	1	94.27	109.4	1.477	0.1167	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW2-3	D	C1	4	1	103.4	108.8	1.463	0.1162	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW2-1	D	C2	4	2	98.88	105.1	1.343	0.1214	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW2-2	D	C2	4	2	92.22	104.5	1.424	0.1203	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW2-3	D	C2	4	2	97.31	108.1	1.307	0.1209	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW2-1	E	C1	5	1	94.12	105.9	1.635	0.1155	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW2-2	E	C1	5	1	93.47	106.7	1.457	0.1154	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW2-3	E	C1	5	1	91.96	108.2	1.427	0.1147	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW2-1	E	C2	5	2	89.43	108.4	1.539	0.1140	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW2-2	E	C2	5	2	97.37	104.7	1.335	0.1143	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW2-3	E	C2	5	2	90.23	102.9	1.469	0.1146	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW2-1	F	C1	6	1	95.98	103.5	0.875	0.1149	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW2-2	F	C1	6	1	94.90	107.2	1.604	0.1145	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW2-3	F	C1	6	1	98.58	106.8	1.417	0.1139	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW2-1	F	C1	6	2	95.78	105.5	1.637	0.1162	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW2-2	F	C1	6	2	93.94	101.3	1.540	0.1159	20	B1I
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW2-3	F	C1	6	2	108.0	116.3	1.378	0.1152	20	B1I

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	100.2	114.9	1.600
0.0058	98.23	114.0	1.539
0.0058	107.3	112.9	1.518
0.0061	107.2	113.9	1.456
0.0060	99.05	112.2	1.530
0.0060	105.0	116.6	1.411
0.0058	97.06	109.2	1.686
0.0058	96.31	110.0	1.501
0.0057	94.18	110.8	1.461
0.0057	91.03	110.3	1.566
0.0057	99.37	106.8	1.362
0.0057	92.32	105.3	1.503
0.0057	98.47	106.2	0.898
0.0057	97.02	109.6	1.640
0.0057	100.3	108.6	1.441
0.0058	99.37	109.4	1.698
0.0058	97.21	104.8	1.594
0.0058	111.1	119.6	1.417

Average	95.89	106.9	1.437	Average_{norm}	0.0058	99.48	110.8	1.490
Standard Dev.	4.492	3.340	0.1711	Standard Dev._{norm}		5.247	3.973	0.1751
Coeff. of Var. [%]	4.684	3.126	11.91	Coeff. of Var. [%]_{norm}		5.274	3.584	11.75
Min.	89.43	101.3	0.8750	Min.	0.0057	91.03	104.8	0.8977
Max.	108.0	116.3	1.637	Max.	0.0061	111.1	119.6	1.698
Number of Spec.	18	18	18	Number of Spec.	18	18	18	18





Laminate Single-Shear Bearing Proc.C Properties (SSB3)--ETW3(250°F)
Strength & Deformation
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

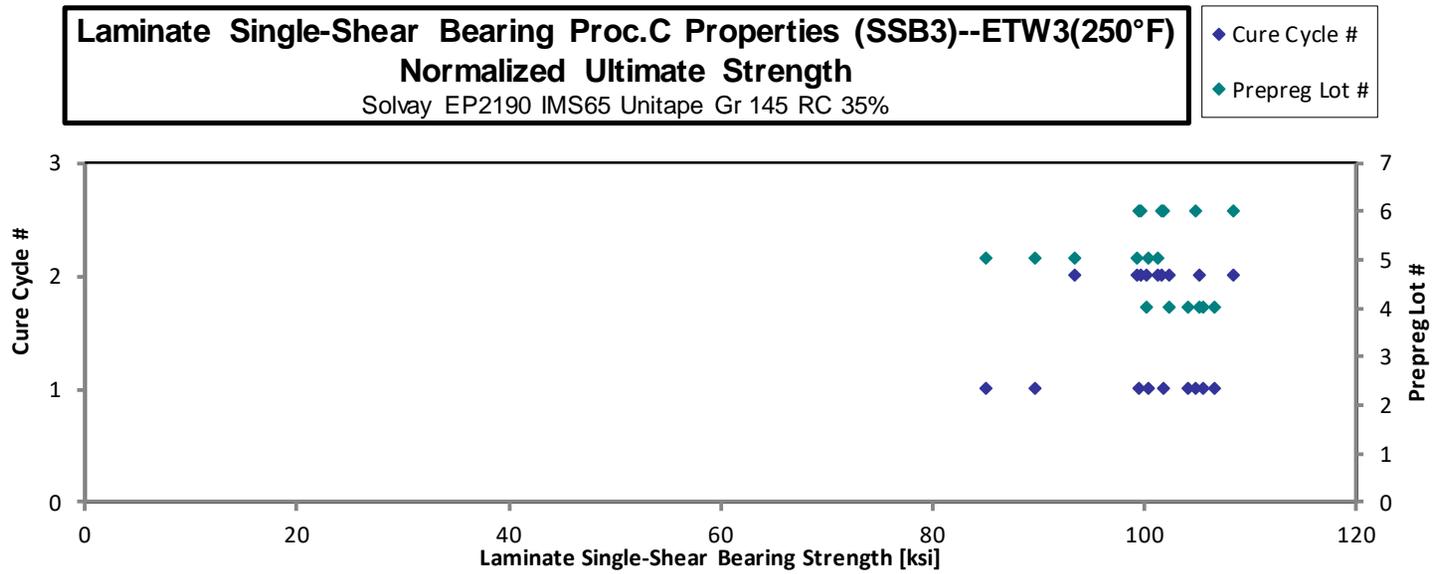
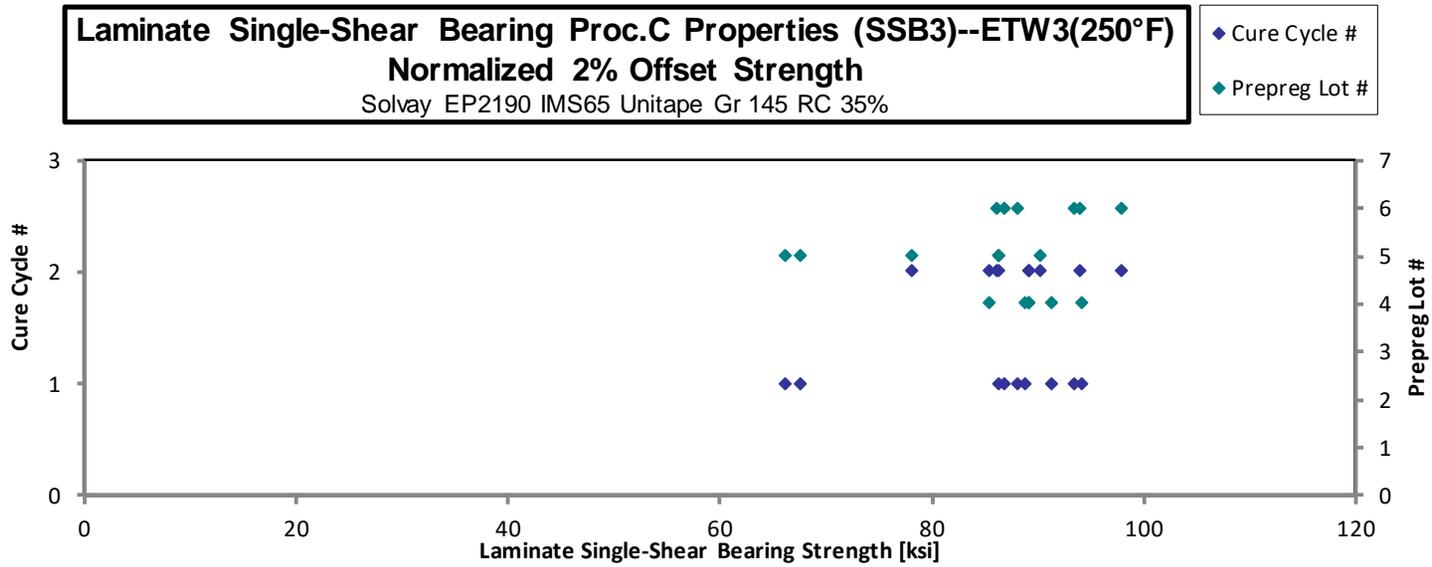
normalizing
 t_{ply} [in]
 0.0056

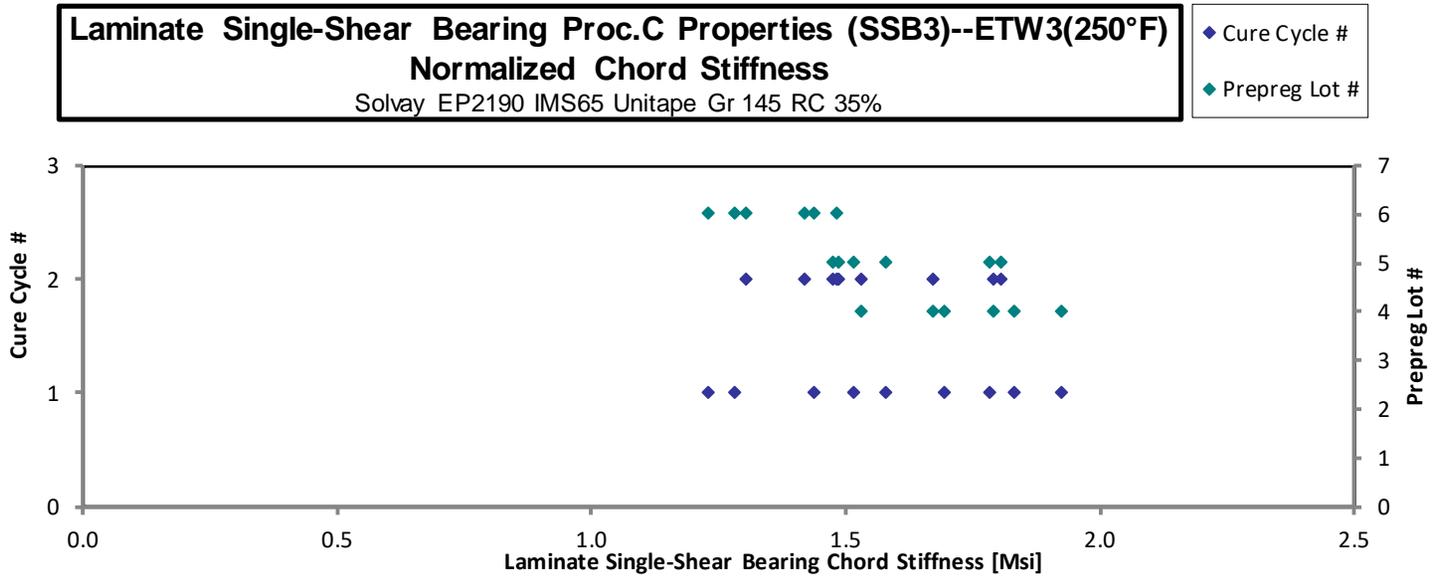
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Ultimate Strength [ksi]	Chord Stiffness [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW3-1	D	C1	4	1	88.18	102.0	1.859	0.1159	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW3-2	D	C1	4	1	85.73	102.9	1.636	0.1160	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-ETW3-3	D	C1	4	1	90.85	100.6	1.768	0.1160	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW3-1	D	C2	4	2	82.45	94.85	1.549	0.1209	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW3-2	D	C2	4	2	79.23	93.17	1.423	0.1206	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-ETW3-3	D	C2	4	2	83.00	98.11	1.669	0.1202	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW3-1	E	C1	5	1	65.93	82.99	1.742	0.1148	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW3-2	E	C1	5	1	84.24	98.17	1.544	0.1146	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-ETW3-3	E	C1	5	1	64.65	87.75	1.482	0.1145	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW3-1	E	C2	5	2	76.47	91.65	1.458	0.1142	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW3-2	E	C2	5	2	84.56	99.33	1.770	0.1142	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-ETW3-3	E	C2	5	2	87.89	96.91	1.438	0.1148	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW3-1	F	C1	6	1	85.66	99.13	1.198	0.1150	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW3-2	F	C1	6	1	84.77	97.14	1.404	0.1147	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-ETW3-3	F	C1	6	1	91.59	103.0	1.260	0.1141	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW3-1	F	C1	6	2	94.79	105.1	1.439	0.1155	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW3-2	F	C1	6	2	91.05	98.71	1.265	0.1154	20	B11
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-ETW3-3	F	C1	6	2	83.48	96.86	1.379	0.1154	20	B11

Avg. t_{ply} [in]	2% Offset Strength _{norm} [ksi]	Ultimate Strength _{norm} [ksi]	Chord Stiffness _{norm} [Msi]
0.0058	91.25	105.6	1.924
0.0058	88.79	106.6	1.694
0.0058	94.09	104.2	1.831
0.0060	89.00	102.4	1.672
0.0060	85.31	100.3	1.532
0.0060	89.08	105.3	1.791
0.0057	67.58	85.06	1.786
0.0057	86.20	100.4	1.580
0.0057	66.09	89.71	1.515
0.0057	77.97	93.45	1.487
0.0057	86.22	101.3	1.805
0.0057	90.09	99.33	1.474
0.0058	87.95	101.8	1.230
0.0057	86.81	99.48	1.438
0.0057	93.31	104.9	1.284
0.0058	97.75	108.4	1.484
0.0058	93.81	101.7	1.303
0.0058	86.01	99.80	1.421

Average	83.58	97.13	1.516
Standard Dev.	8.011	5.530	0.1914
Coeff. of Var. [%]	9.584	5.694	12.63
Min.	64.65	82.99	1.198
Max.	94.79	105.1	1.859
Number of Spec.	18	18	18

Average _{norm}	0.0058	86.52	100.5	1.569
Standard Dev. _{norm}		8.363	5.922	0.2038
Coeff. of Var. [%] _{norm}		9.666	5.890	12.99
Min.	0.0057	66.09	85.06	1.230
Max.	0.0060	97.75	108.4	1.924
Number of Spec.	18	18	18	18





4.31 “25/50/25” Compression After Impact 1 Properties (CAI1)

**Laminate Compression After Impact Properties (CAI1)--CTA(-67°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

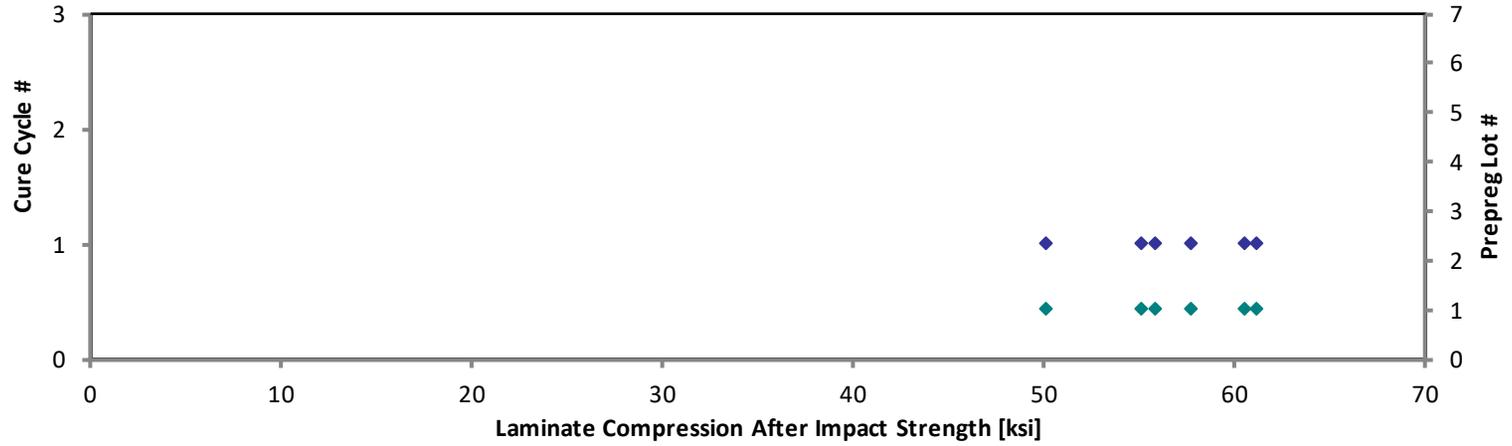
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t _{ply} [in]	Strength _{norm} [ksi]
TR7694402-P1-CAI1-A-C1-CTA-1	A	C1	1	1	52.69	270.3	0.1875	32	BDM	0.0059	55.13
TR7694402-P1-CAI1-A-C1-CTA-2	A	C1	1	1	57.74	270.3	0.1878	32	BDM	0.0059	60.51
TR7694402-P1-CAI1-A-C1-CTA-3	A	C1	1	1	55.05	270.3	0.1879	32	BDM	0.0059	57.72
TR7694402-P1-CAI1-A-C1-CTA-4	A	C1	1	1	58.33	270.3	0.1878	32	BDM	0.0059	61.13
TR7694402-P1-CAI1-A-C1-CTA-5	A	C1	1	1	47.69	270.3	0.1882	32	BDM	0.0059	50.09
TR7694402-P1-CAI1-A-C1-CTA-6	A	C1	1	1	53.63	270.3	0.1867	32	BDM	0.0058	55.87

Average 54.19
Standard Dev. 3.881
Coeff. of Var. [%] 7.161
Min. 47.69
Max. 58.33
Number of Spec. 6

Average_{norm} 0.0059 56.74
Standard Dev._{norm} 4.052
Coeff. of Var. [%]_{norm} 7.140
Min. 0.0058 50.09
Max. 0.0059 61.13
Number of Spec. 6 6

Laminate Compression After Impact Properties (CAI1)--CTA(-67°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



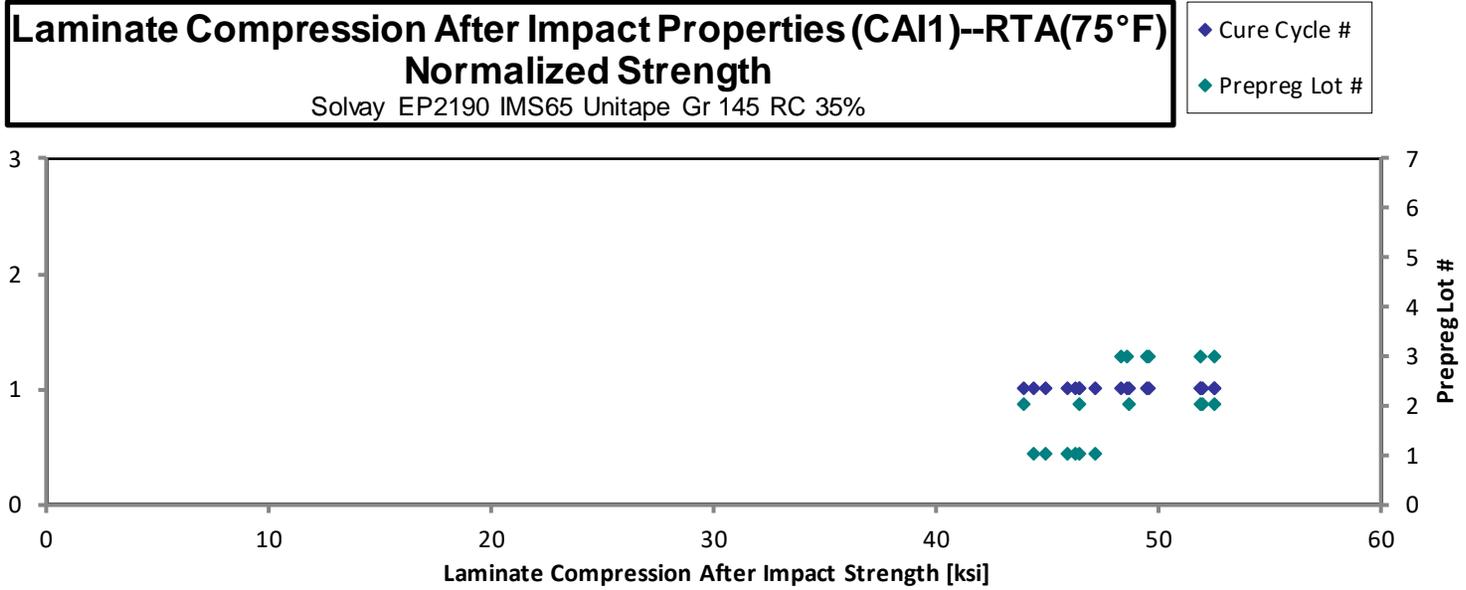
Laminate Compression After Impact Properties (CAI1)--RTA(75°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
TR7694402-P2-CAI1-A-C1-RTA-1	A	C1	1	1	44.94	270.3	0.1882	32	LDM	0.0059	47.20
TR7694402-P2-CAI1-A-C1-RTA-2	A	C1	1	1	44.36	270.3	0.1877	32	LDM	0.0059	46.46
TR7694402-P2-CAI1-A-C1-RTA-3	A	C1	1	1	42.47	270.3	0.1874	32	LDM	0.0059	44.41
TR7694402-P2-CAI1-A-C1-RTA-4	A	C1	1	1	42.81	270.3	0.1881	32	LDM	0.0059	44.94
TR7694402-P2-CAI1-A-C1-RTA-5	A	C1	1	1	44.31	270.3	0.1873	32	LDM	0.0059	46.31
TR7694402-P2-CAI1-A-C1-RTA-6	A	C1	1	1	43.96	270.3	0.1871	32	LDM	0.0058	45.90
TR7702884-P1-CAI1-B-C1-RTA-1	B	C1	2	1	49.56	270.3	0.1879	32	BDM	0.0059	51.97
TR7702884-P1-CAI1-B-C1-RTA-2	B	C1	2	1	44.43	270.3	0.1875	32	BDM	0.0059	46.49
TR7702884-P1-CAI1-B-C1-RTA-3	B	C1	2	1	46.23	270.3	0.1887	32	BDM	0.0059	48.68
TR7702884-P1-CAI1-B-C1-RTA-4	B	C1	2	1	50.04	270.3	0.1880	32	BDM	0.0059	52.50
TR7702884-P1-CAI1-B-C1-RTA-5	B	C1	2	1	42.13	270.3	0.1870	32	BDM	0.0058	43.96
TR7702884-P1-CAI1-B-C1-RTA-6	B	C1	2	1	49.31	270.3	0.1885	32	BDM	0.0059	51.87
TR7725560-P1-CAI1-C-C1-RTA-1	C	C1	3	1	49.54	270.3	0.1877	32	LDM	0.0059	51.89
TR7725560-P1-CAI1-C-C1-RTA-2	C	C1	3	1	47.15	270.3	0.1885	32	LDM	0.0059	49.60
TR7725560-P1-CAI1-C-C1-RTA-3	C	C1	3	1	46.18	270.3	0.1886	32	LDM	0.0059	48.60
TR7725560-P1-CAI1-C-C1-RTA-4	C	C1	3	1	50.13	270.3	0.1878	32	LDM	0.0059	52.54
TR7725560-P1-CAI1-C-C1-RTA-5	C	C1	3	1	46.85	270.3	0.1894	32	LDM	0.0059	49.52
TR7725560-P1-CAI1-C-C1-RTA-6	C	C1	3	1	45.96	270.3	0.1885	32	LDM	0.0059	48.35

Average 46.13
 Standard Dev. 2.682
 Coeff. of Var. [%] 5.814
 Min. 42.13
 Max. 50.13
 Number of Spec. 18

Average_{norm} 0.0059 48.40
 Standard Dev._{norm} 2.877
 Coeff. of Var. [%]_{norm} 5.943
 Min. 0.0058 43.96
 Max. 0.0059 52.54
 Number of Spec. 18 18



Laminate Compression After Impact Properties (CAI1)--ETA2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-1	D	C1	4	1	39.40	269.7	0.1839	32	LDM
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-1	D	C1	4	1	40.56	269.7	0.1839	32	LDM
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-3	D	C1	4	1	36.57	269.7	0.1838	32	LDM
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-1	D	C2	4	2	37.65	269.7	0.1847	32	LDM
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-2	D	C2	4	2	40.16	269.7	0.1849	32	LDM
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-3	D	C2	4	2	39.58	269.7	0.1855	32	LDM

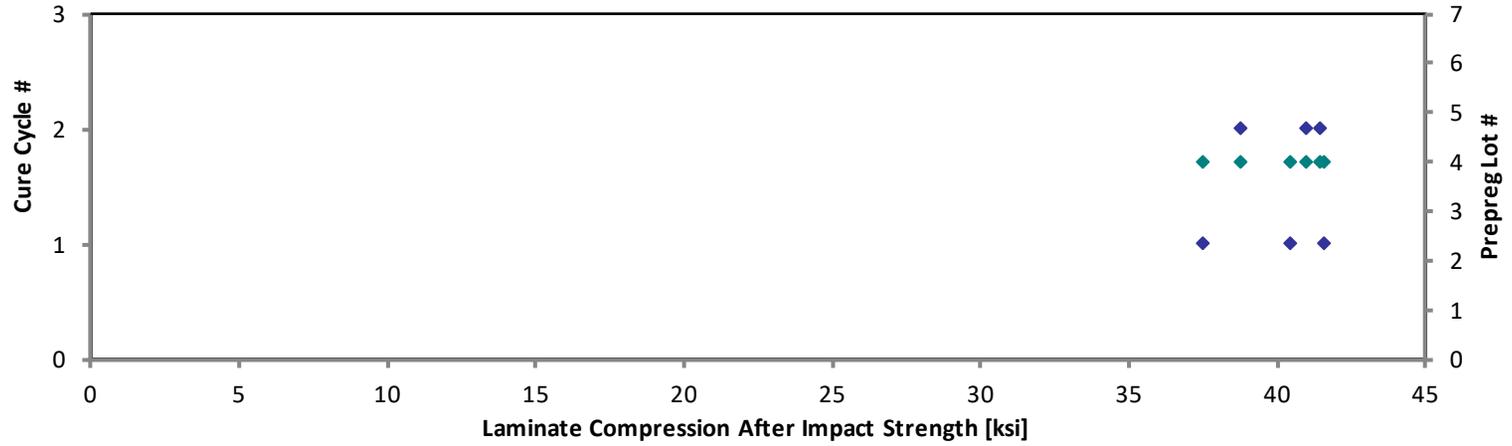
Avg. t_{ply} [in]	Strength _{norm} [ksi]
0.0057	40.43
0.0057	41.62
0.0057	37.51
0.0058	38.81
0.0058	41.44
0.0058	40.97

Average 38.99
 Standard Dev. 1.549
 Coeff. of Var. [%] 3.974
 Min. 36.57
 Max. 40.56
 Number of Spec. 6

Average_{norm} 0.0058 40.13
 Standard Dev._{norm} 1.635
 Coeff. of Var. [%]_{norm} 4.074
 Min. 0.0057 37.51
 Max. 0.0058 41.62
 Number of Spec. 6 6

Laminate Compression After Impact Properties (CAI1)--ETA2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



**Laminate Compression After Impact Properties (CAI1)--ETA3(250°F)
Strength**
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
t_{ply} [in]
0.0056

Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode
TR7694402-P4-CAI1-A-C1-ETA3-1	A	C1	1	1	31.00	270.3	0.1872	32	LDM
TR7694402-P4-CAI1-A-C1-ETA3-2	A	C1	1	1	37.82	270.3	0.1863	32	LDM
TR7694402-P4-CAI1-A-C1-ETA3-3	A	C1	1	1	34.27	270.3	0.1868	32	LDM
TR7694402-P4-CAI1-A-C1-ETA3-4	A	C1	1	1	37.12	270.3	0.1870	32	LDM
TR7694402-P4-CAI1-A-C1-ETA3-5	A	C1	1	1	35.01	270.3	0.1875	32	LDM
TR7694402-P4-CAI1-A-C1-ETA3-6	A	C1	1	1	33.72	270.3	0.1869	32	LDM

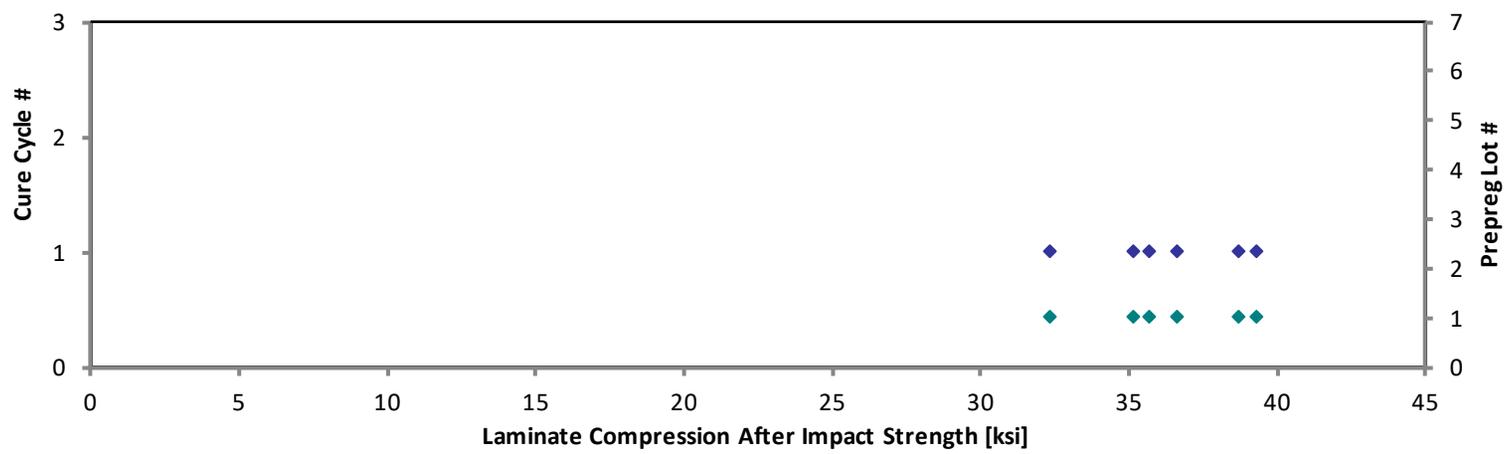
Avg. t _{ply} [in]	Strength _{norm} [ksi]
0.0059	32.38
0.0058	39.32
0.0058	35.72
0.0058	38.74
0.0059	36.63
0.0058	35.17

Average 34.82
Standard Dev. 2.467
Coeff. of Var. [%] 7.084
Min. 31.00
Max. 37.82
Number of Spec. 6

Average_{norm} 0.0058 36.33
Standard Dev._{norm} 2.534
Coeff. of Var. [%]_{norm} 6.975
Min. 0.0058 32.38
Max. 0.0059 39.32
Number of Spec. 6 6

Laminate Compression After Impact Properties (CAI1)--ETA3(250°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Compression After Impact Properties (CAI1)--ETW1(180°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

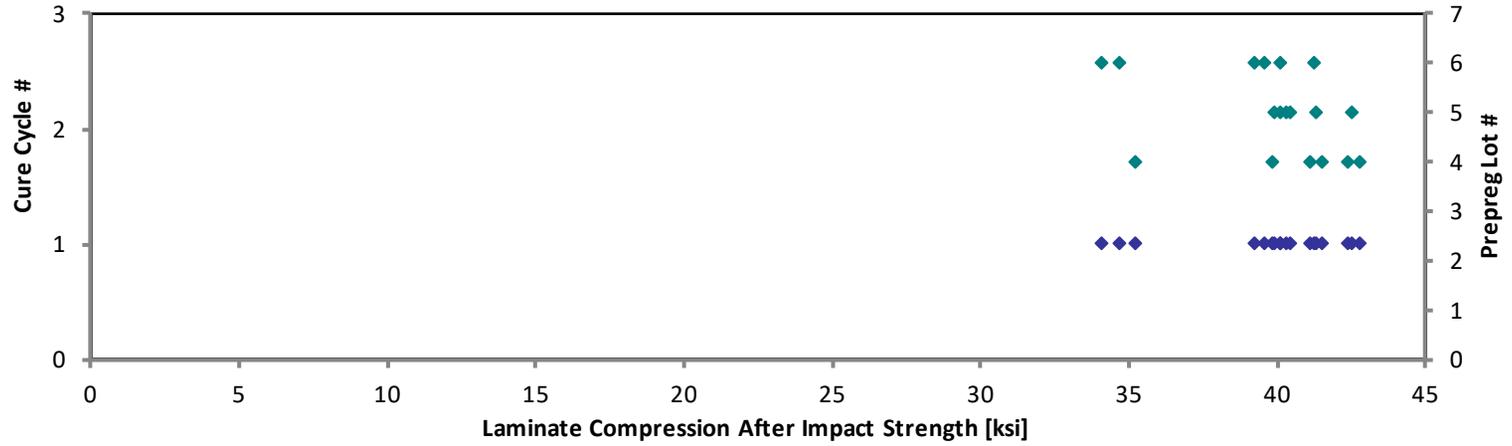
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-1	D	C1	4	1	34.31	269.7	0.1839	32	LDM	0.0057	35.21
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-2	D	C1	4	1	41.24	269.7	0.1843	32	LDM	0.0058	42.41
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-3	D	C1	4	1	40.46	269.7	0.1841	32	LDM	0.0058	41.57
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-4	D	C1	4	1	38.96	269.7	0.1835	32	LDM	0.0057	39.89
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-5	D	C1	4	1	41.80	269.7	0.1836	32	LDM	0.0057	42.83
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-6	D	C1	4	1	39.99	269.7	0.1843	32	LDM	0.0058	41.13
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-1	E	C1	5	1	39.63	269.7	0.1825	32	LDM	0.0057	40.36
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-2	E	C1	5	1	41.64	269.7	0.1831	32	LDM	0.0057	42.55
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-3	E	C1	5	1	39.02	269.7	0.1834	32	LDM	0.0057	39.93
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-4	E	C1	5	1	39.46	269.7	0.1822	32	LDM	0.0057	40.12
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-5	E	C1	5	1	40.77	269.7	0.1818	32	LDM	0.0057	41.36
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-6	E	C1	5	1	39.62	269.7	0.1831	32	LDM	0.0057	40.48
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-1	F	C1	6	1	41.15	269.7	0.1797	32	LDM	0.0056	41.26
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-2	F	C1	6	1	34.73	269.7	0.1758	32	LDM	0.0055	34.07
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-3	F	C1	6	1	39.92	269.7	0.1777	32	LDM	0.0056	39.59
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-4	F	C1	6	1	40.14	269.7	0.1793	32	LDM	0.0056	40.16
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-5	F	C1	6	1	38.89	269.7	0.1809	32	LDM	0.0057	39.26
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-6	F	C1	6	1	34.85	269.7	0.1784	32	LDM	0.0056	34.69

Average 39.25
 Standard Dev. 2.303
 Coeff. of Var. [%] 5.866
 Min. 34.31
 Max. 41.80
 Number of Spec. 18

Average_{norm} 0.0057 39.83
 Standard Dev._{norm} 2.593
 Coeff. of Var. [%]_{norm} 6.511
 Min. 0.0055 34.07
 Max. 0.0058 42.83
 Number of Spec. 18 18

Laminate Compression After Impact Properties (CAI1)--ETW1(180°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



Laminate Compression After Impact Properties (CAI1)--ETW2(225°F)
Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

normalizing
 t_{ply} [in]
 0.0056

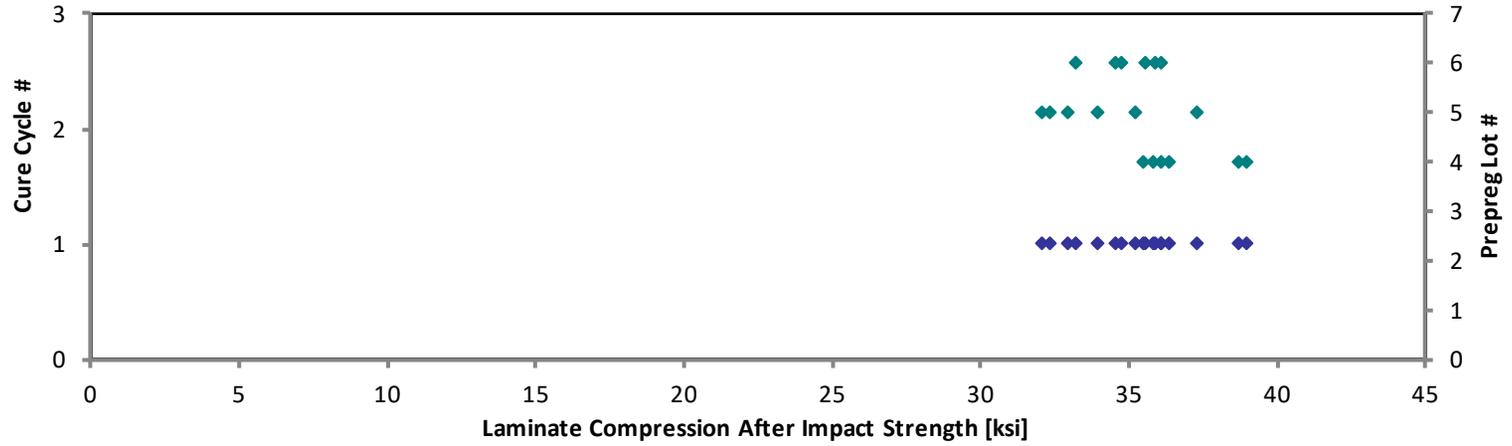
Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Target Impact Energy [in-lbf]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	Strength _{norm} [ksi]
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-2	D	C1	4	1	34.68	269.7	0.1836	32	LDM	0.0057	35.53
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-3	D	C1	4	1	35.48	269.7	0.1836	32	LDM	0.0057	36.35
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-4	D	C1	4	1	35.24	269.7	0.1835	32	LDM	0.0057	36.09
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-5	D	C1	4	1	37.98	269.7	0.1840	32	LDM	0.0058	39.00
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-6	D	C1	4	1	35.01	269.7	0.1836	32	LDM	0.0057	35.87
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-7	D	C1	4	1	37.76	269.7	0.1837	32	LDM	0.0057	38.71
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-1	E	C1	5	1	34.66	269.7	0.1822	32	LDM	0.0057	35.24
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-2	E	C1	5	1	32.20	269.7	0.1835	32	LDM	0.0057	32.97
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-3	E	C1	5	1	31.46	269.7	0.1830	32	LDM	0.0057	32.13
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-4	E	C1	5	1	36.71	269.7	0.1823	32	LDM	0.0057	37.35
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-5	E	C1	5	1	33.39	269.7	0.1822	32	LDM	0.0057	33.95
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-6	E	C1	5	1	31.71	269.7	0.1828	32	LDM	0.0057	32.35
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-1	F	C1	6	1	36.22	269.7	0.1788	32	LDM	0.0056	36.14
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-2	F	C1	6	1	32.93	269.7	0.1808	32	LDM	0.0057	33.22
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-3	F	C1	6	1	35.55	269.7	0.1793	32	LDM	0.0056	35.57
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-4	F	C1	6	1	34.62	269.7	0.1799	32	LDM	0.0056	34.76
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-5	F	C1	6	1	35.81	269.7	0.1796	32	LDM	0.0056	35.89
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-6	F	C1	6	1	34.52	269.7	0.1794	32	LDM	0.0056	34.56

Average 34.77
 Standard Dev. 1.877
 Coeff. of Var. [%] 5.398
 Min. 31.46
 Max. 37.98
 Number of Spec. 18

Average_{norm} 0.0057
 Standard Dev._{norm} 1.938
 Coeff. of Var. [%]_{norm} 5.489
 Min. 0.0056
 Max. 0.0058
 Number of Spec. 18

Laminate Compression After Impact Properties (CAI1)--ETW2(225°F)
Normalized Strength
Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

- ◆ Cure Cycle #
- ◆ Prepreg Lot #



5. Additional Compression After Impact Data

Target Impact Energy Level: 1500 in-lb/in

Impactor Diameter: 0.625"

Damage Area and Dent Depth Summary:

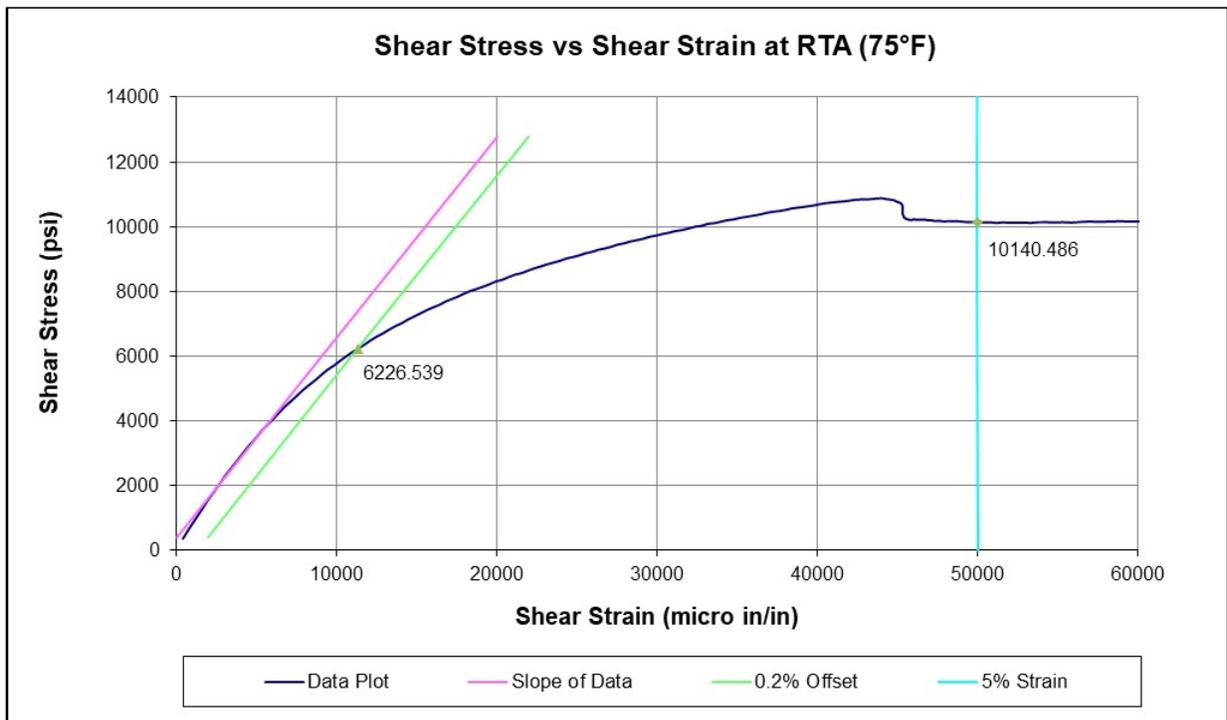
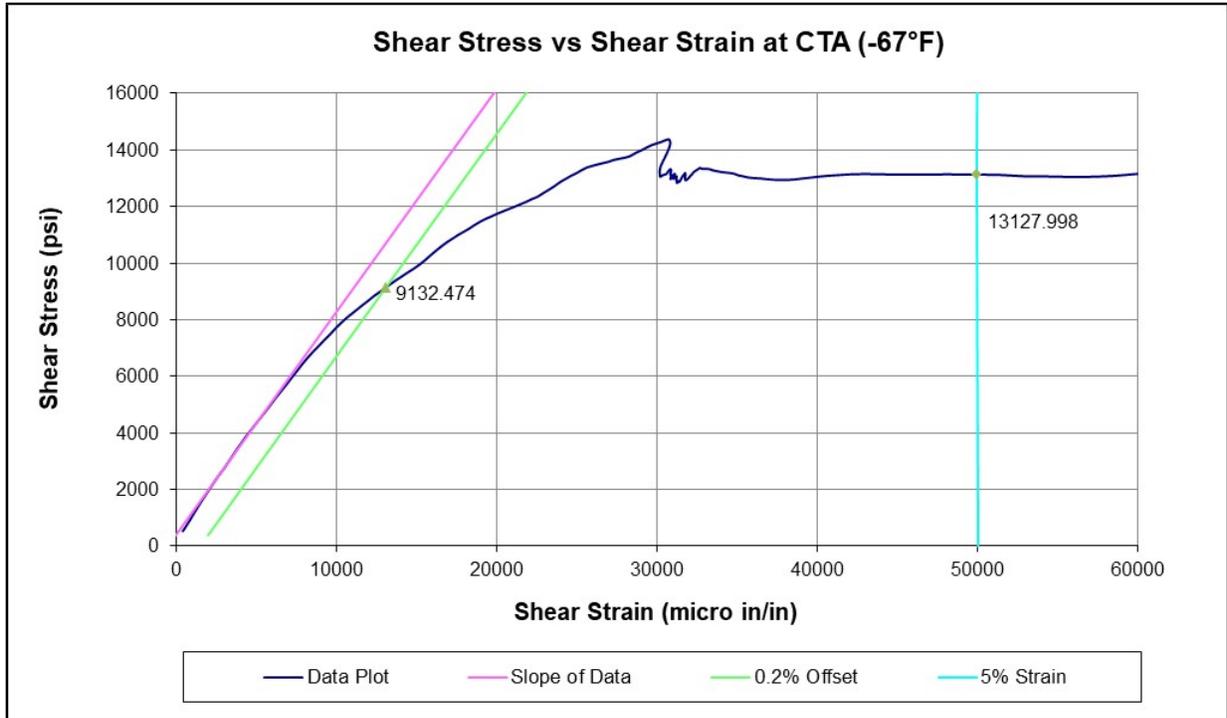
Specimen ID	Dent Depth (inch)
TR7694402-P1-A-C1-CTA-1	0.0091
TR7694402-P1-A-C1-CTA-2	0.0083
TR7694402-P1-A-C1-CTA-3	0.0082
TR7694402-P1-A-C1-CTA-4	0.0083
TR7694402-P1-A-C1-CTA-5	0.0091
TR7694402-P1-A-C1-CTA-6	0.0089
TR7694402-P2-A-C1-RTA-1	0.0085
TR7694402-P2-A-C1-RTA-2	0.0084
TR7694402-P2-A-C1-RTA-3	0.0081
TR7694402-P2-A-C1-RTA-4	0.0084
TR7694402-P2-A-C1-RTA-5	0.0082
TR7694402-P2-A-C1-RTA-6	0.0085
TR7702884-P1-B-C1-RTA-1	0.0085
TR7702884-P1-B-C1-RTA-2	0.0095
TR7702884-P1-B-C1-RTA-3	0.0092
TR7702884-P1-B-C1-RTA-4	0.0084
TR7702884-P1-B-C1-RTA-5	0.0091
TR7702884-P1-B-C1-RTA-6	0.0081
TR7725560-P1-C-C1-RTA-1	0.0083
TR7725560-P1-C-C1-RTA-2	0.0089
TR7725560-P1-C-C1-RTA-3	0.0083
TR7725560-P1-C-C1-RTA-4	0.0081
TR7725560-P1-C-C1-RTA-5	0.0081
TR7725560-P1-C-C1-RTA-6	0.0081
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-1	0.0094
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-1	0.0093
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETA2-3	0.0098
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-1	0.0095
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-2	0.0088
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-ETA2-3	0.0096

TR7694402-P4-A-C1-ETA3-1	0.0083
TR7694402-P4-A-C1-ETA3-2	0.0082
TR7694402-P4-A-C1-ETA3-3	0.0082
TR7694402-P4-A-C1-ETA3-4	0.0092
TR7694402-P4-A-C1-ETA3-5	0.0083
TR7694402-P4-A-C1-ETA3-6	0.0104
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-1	0.0120
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-2	0.0087
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-3	0.0094
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-4	0.0093
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-5	0.0096
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW1-6	0.0097
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-1	0.0086
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-2	0.0084
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-3	0.0086
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-4	0.0083
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-5	0.0085
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW1-6	0.0083
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-1	0.0080
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-2	0.0086
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-3	0.0080
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-4	0.0084
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-5	0.0081
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW1-6	0.0086
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NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-3	0.0094
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-4	0.0089
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-5	0.0086
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-6	0.0090
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-ETW2-7	0.0091
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-1	0.0082
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-2	0.0086
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-3	0.0082
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-4	0.0087
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-5	0.0087
NTP2190Q1-WRX-IMS-SOL-CAI1-E-C1-1-ETW2-6	0.0082
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-1	0.0076

NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-2	0.0081
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-3	0.0082
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-4	0.0084
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-5	0.0087
NTP2190Q1-WRX-IMS-SOL-CAI1-F-C1-1-ETW2-6	0.0088

6. In-Plane Shear Stress vs Strain Curve

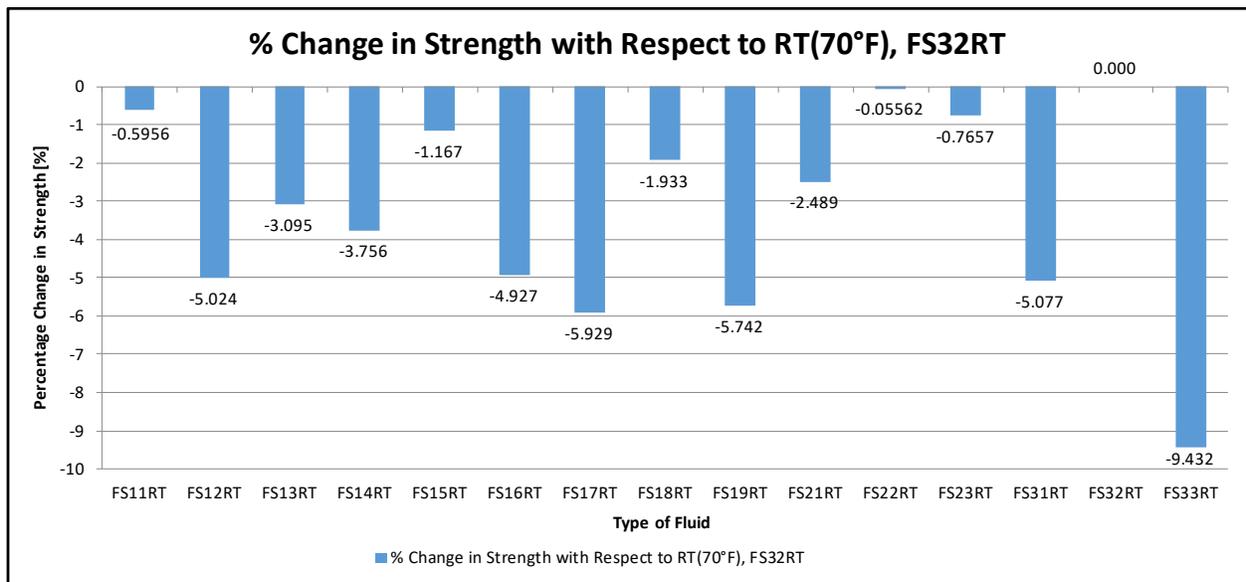
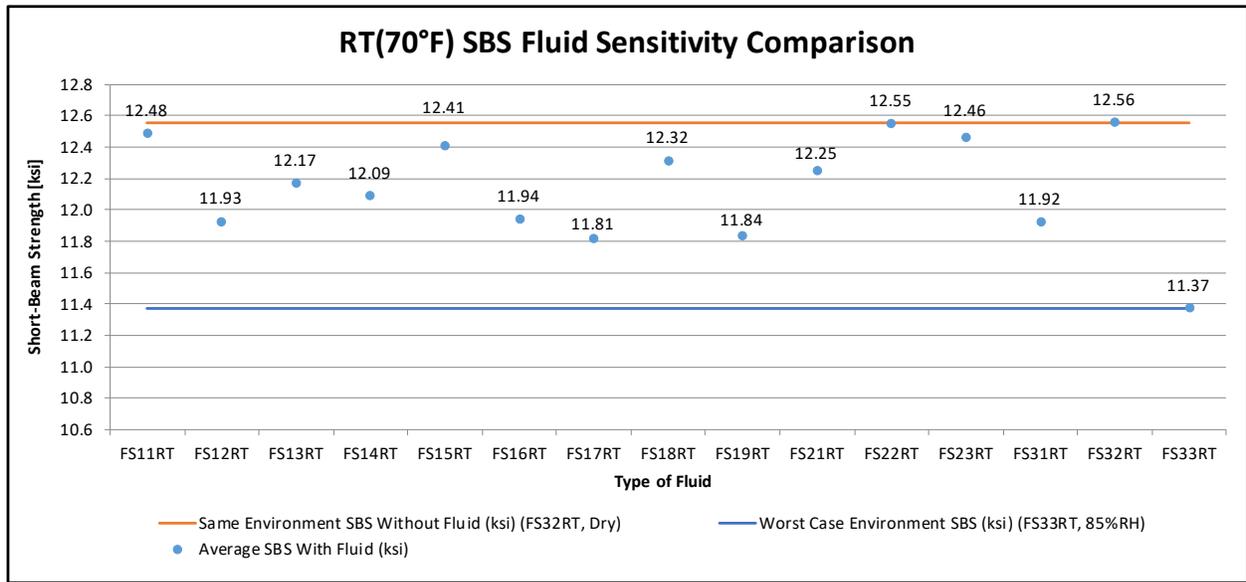
A representative curve for IPS CTA and RTA conditions are provided in this section below.



7. Fluid Sensitivity Comparison

7.1 Room Temperature Test Data

Code	Type of Fluid	Exposure
FS11RT	100 Low Lead Fuel	90 days min @ 70°F±10°F
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 Engine Oil	
FS17RT	Salt Water	
FS18RT	Skydrol LD-4	
FS19RT	50% Water w/ 50% Skydrol	
FS31RT	Distilled Water	
FS21RT	MEK washing fluid	90 mins @ 70°F±10°F
FS22RT	Polypropylene Glycol Deicer	
FS23RT	Isopropyl Alcohol Deicing	48±4 hrs @ 70°F±10°F
FS32RT	Dry	Per section 6.1 Test Plan NTP 2190Q1
FS33RT	85% Relative Humidity	

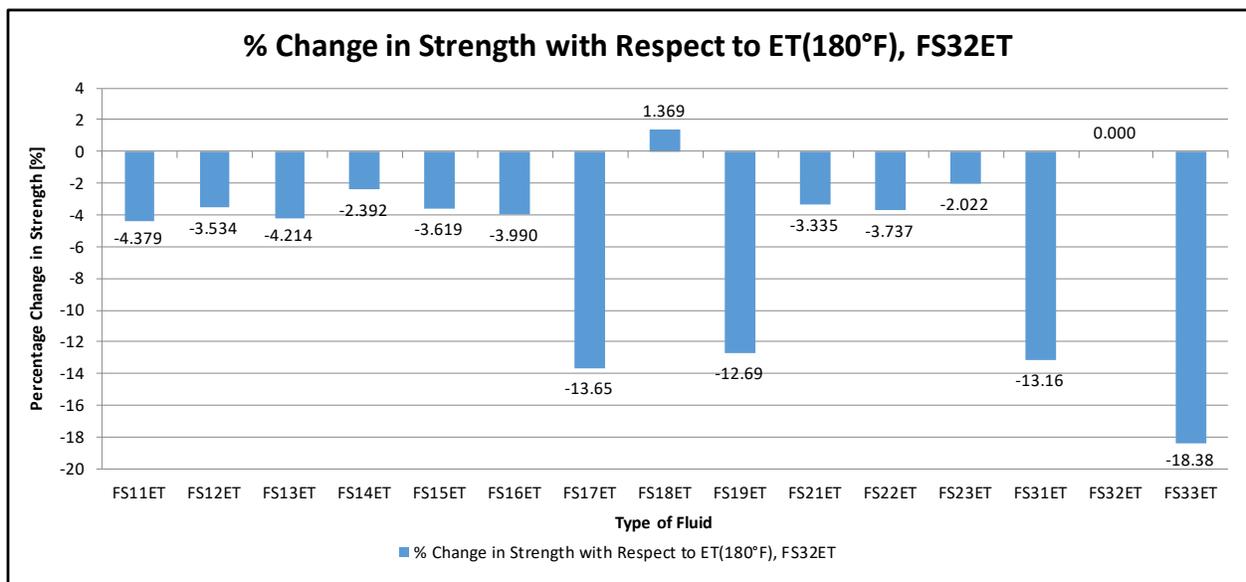
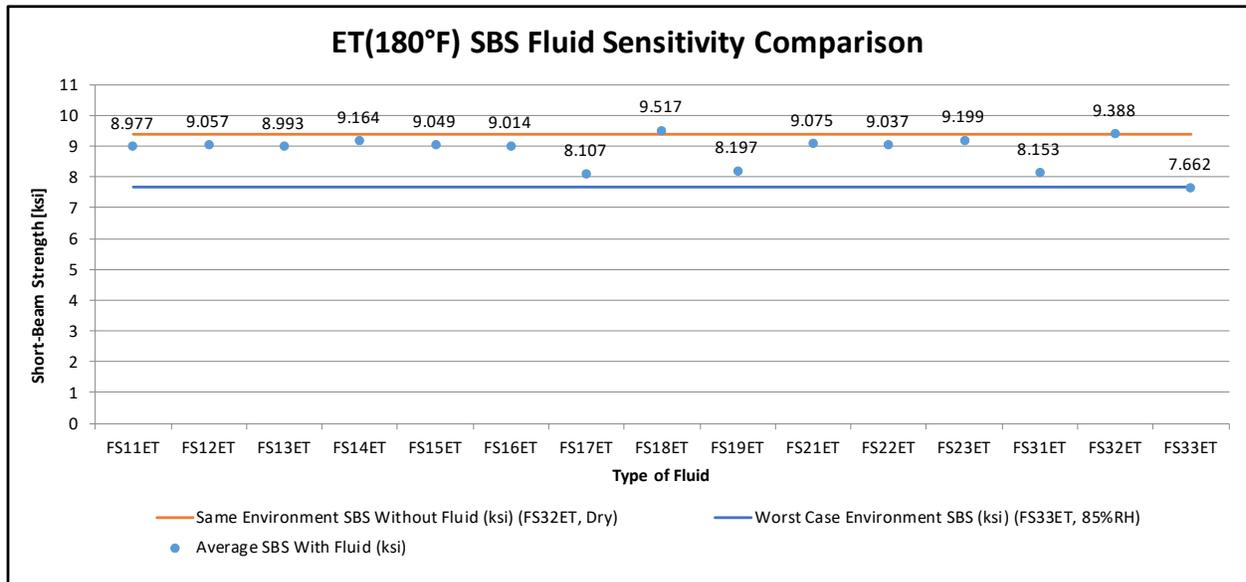


Fluid Sensitivity Screening
Short-Beam Strength Properties (FSSBS)--RT(70°F) Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

Fluid Code	Specimen Number	Solvay Batch #	Solvay 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	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11RT-1	D	C1	4	1	12.39	0.2412	44	0.005482	ILS	12.48
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11RT-2	D	C1	4	1	12.62	0.2433	44	0.005530	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11RT-3	D	C1	4	1	12.34	0.2449	44	0.005566	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11RT-4	D	C1	4	1	12.58	0.2461	44	0.005593	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11RT-5	D	C1	4	1	12.50	0.2476	44	0.005627	ILS	
FS12RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12RT-1	D	C1	4	1	11.99	0.2544	44	0.005782	ILS	11.93
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12RT-2	D	C1	4	1	11.79	0.2541	44	0.005775	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12RT-3	D	C1	4	1	11.79	0.2534	44	0.005759	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12RT-4	D	C1	4	1	11.94	0.2528	44	0.005745	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12RT-5	D	C1	4	1	12.13	0.2521	44	0.005730	ILS	
FS13RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13RT-1	D	C1	4	1	12.02	0.2505	44	0.005693	ILS	12.17
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13RT-2	D	C1	4	1	12.28	0.2507	44	0.005698	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13RT-3	D	C1	4	1	12.24	0.2504	44	0.005691	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13RT-4	D	C1	4	1	12.20	0.2510	44	0.005705	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13RT-5	D	C1	4	1	12.10	0.2511	44	0.005707	ILS	
FS14RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14RT-1	D	C1	4	1	12.29	0.2524	44	0.005736	ILS	12.09
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14RT-2	D	C1	4	1	12.12	0.2531	44	0.005752	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14RT-3	D	C1	4	1	11.92	0.2535	44	0.005761	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14RT-4	D	C1	4	1	12.02	0.2538	44	0.005768	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14RT-5	D	C1	4	1	12.08	0.2543	44	0.005780	ILS	
FS15RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15RT-1	D	C1	4	1	12.65	0.2416	44	0.005491	ILS	12.41
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15RT-2	D	C1	4	1	12.41	0.2431	44	0.005525	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15RT-3	D	C1	4	1	12.27	0.2451	44	0.005570	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15RT-4	D	C1	4	1	12.38	0.2467	44	0.005607	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15RT-5	D	C1	4	1	12.35	0.2485	44	0.005648	ILS	
FS16RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16RT-1	D	C1	4	1	11.90	0.2545	44	0.005784	ILS	11.94
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16RT-2	D	C1	4	1	12.21	0.2543	44	0.005780	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16RT-3	D	C1	4	1	11.91	0.2536	44	0.005764	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16RT-4	D	C1	4	1	11.86	0.2531	44	0.005752	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16RT-5	D	C1	4	1	11.82	0.2523	44	0.005734	ILS	
FS17RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17RT-1	D	C1	4	1	11.92	0.2414	44	0.005486	ILS	11.81
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17RT-2	D	C1	4	1	12.19	0.2435	44	0.005534	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17RT-3	D	C1	4	1	11.71	0.2449	44	0.005566	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17RT-4	D	C1	4	1	11.48	0.2463	44	0.005598	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17RT-5	D	C1	4	1	11.77	0.2480	44	0.005636	ILS	
FS18RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18RT-1	D	C1	4	1	12.47	0.2542	44	0.005777	ILS	12.32
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18RT-2	D	C1	4	1	12.56	0.2541	44	0.005775	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18RT-3	D	C1	4	1	12.17	0.2535	44	0.005761	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18RT-4	D	C1	4	1	12.15	0.2528	44	0.005745	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18RT-5	D	C1	4	1	12.23	0.2519	44	0.005725	ILS	
FS19RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19RT-1	D	C1	4	1	12.13	0.2420	44	0.005500	ILS	11.84
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19RT-2	D	C1	4	1	11.90	0.2437	44	0.005539	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19RT-3	D	C1	4	1	11.74	0.2454	44	0.005577	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19RT-4	D	C1	4	1	11.94	0.2469	44	0.005611	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19RT-5	D	C1	4	1	11.47	0.2487	44	0.005652	ILS	
FS21RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21RT-1	D	C1	4	1	12.29	0.2546	44	0.005786	ILS	12.25
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21RT-2	D	C1	4	1	12.39	0.2544	44	0.005782	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21RT-3	D	C1	4	1	12.21	0.2534	44	0.005759	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21RT-4	D	C1	4	1	12.18	0.2532	44	0.005755	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21RT-5	D	C1	4	1	12.16	0.2526	44	0.005741	ILS	
FS22RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22RT-1	D	C1	4	1	12.82	0.2415	44	0.005489	ILS	12.55
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22RT-2	D	C1	4	1	12.40	0.2435	44	0.005534	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22RT-3	D	C1	4	1	12.55	0.2449	44	0.005566	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22RT-4	D	C1	4	1	12.41	0.2470	44	0.005614	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22RT-5	D	C1	4	1	12.58	0.2489	44	0.005657	ILS	
FS23RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23RT-1	D	C1	4	1	12.47	0.2540	44	0.005773	ILS	12.46
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23RT-2	D	C1	4	1	12.53	0.2531	44	0.005752	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23RT-3	D	C1	4	1	12.34	0.2528	44	0.005745	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23RT-4	D	C1	4	1	12.46	0.2527	44	0.005743	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23RT-5	D	C1	4	1	12.51	0.2521	44	0.005730	ILS	
FS31RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31RT-1	D	C1	4	1	12.33	0.2426	44	0.005514	ILS	11.92
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31RT-2	D	C1	4	1	11.86	0.2441	44	0.005548	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31RT-3	D	C1	4	1	11.85	0.2457	44	0.005584	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31RT-4	D	C1	4	1	11.83	0.2475	44	0.005625	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31RT-5	D	C1	4	1	11.73	0.2491	44	0.005661	ILS	
FS32RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32RT-1	D	C1	4	1	12.65	0.2550	44	0.005795	ILS	12.56
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32RT-2	D	C1	4	1	12.55	0.2543	44	0.005780	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32RT-3	D	C1	4	1	12.49	0.2538	44	0.005768	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32RT-4	D	C1	4	1	12.57	0.2533	44	0.005757	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32RT-5	D	C1	4	1	12.52	0.2525	44	0.005739	ILS	
FS33RT	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33RT-1	D	C1	4	1	11.41	0.2528	44	0.005745	ILS	11.37
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33RT-2	D	C1	4	1	11.25	0.2532	44	0.005755	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33RT-3	D	C1	4	1	11.20	0.2539	44	0.005770	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33RT-4	D	C1	4	1	11.53	0.2543	44	0.005780	ILS	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33RT-5	D	C1	4	1	11.49	0.2547	44	0.005789	ILS	

7.2 Elevated Temperature Test Data

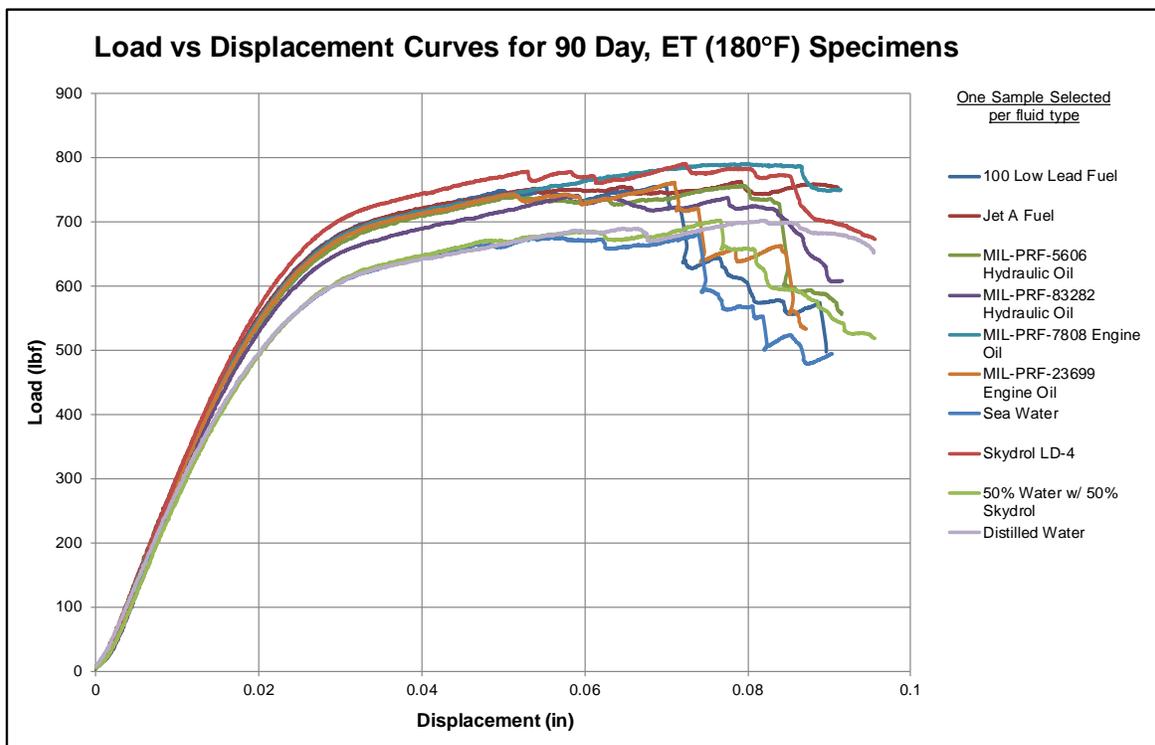
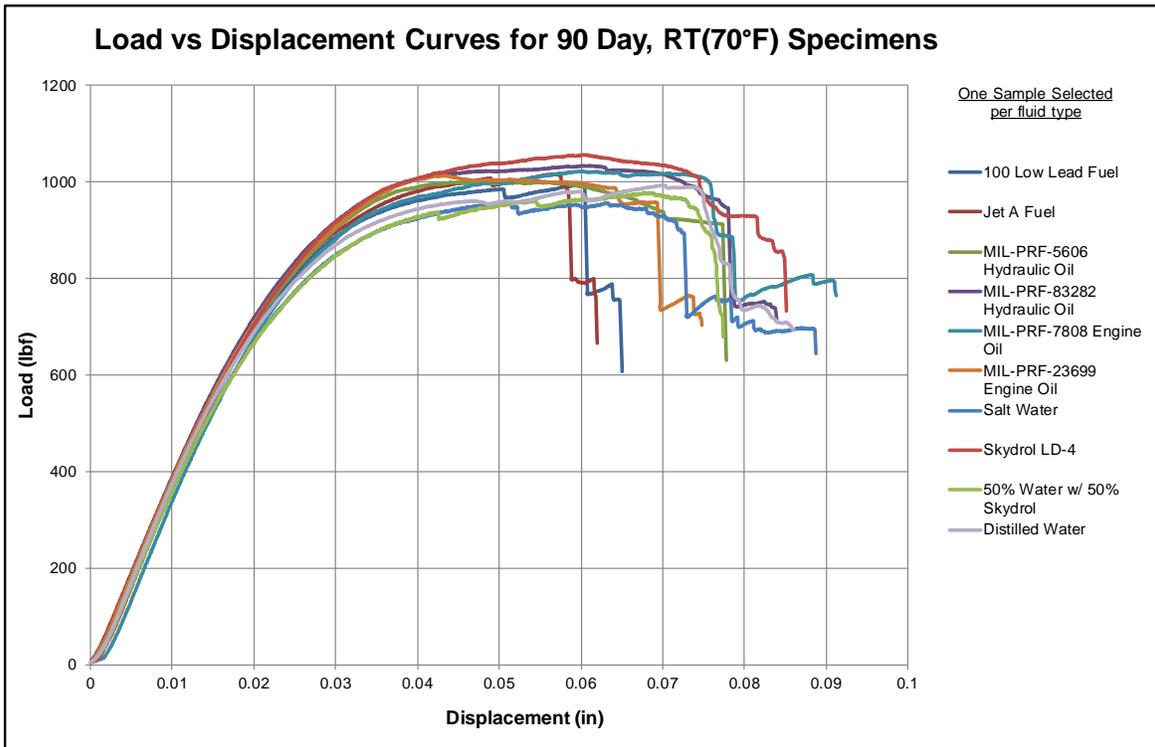
Code	Type of Fluid	Exposure
FS11ET	100 Low lead Fuel	90 days min @ 70°F±10°F
FS12ET	Jet A Fuel	
FS13ET	MIL-PRF-5606 Hydraulic Oil	
FS14ET	MIL-PRF-83282 Hydraulic Oil	
FS15ET	MIL-PRF-7808 Engine Oil	
FS16ET	MIL-PRF-23699 Engine Oil	
FS17ET	Sea Water	
FS18ET	Skydrol LD-4	
FS19ET	50% Water w/ 50% Skydrol	
FS31ET	Distilled Water	
FS21ET	MEK washing fluid	90 mins @ 70°F±10°F
FS22ET	Polypropylene Glycol Deicer	
FS23ET	Isopropyl Alcohol Deicing	48±4 hrs @ 70°F±10°F
FS32ET	Dry	Per section 6.1 Test Plan NTP 2190Q1
FS33ET	85% Relative Humidity	

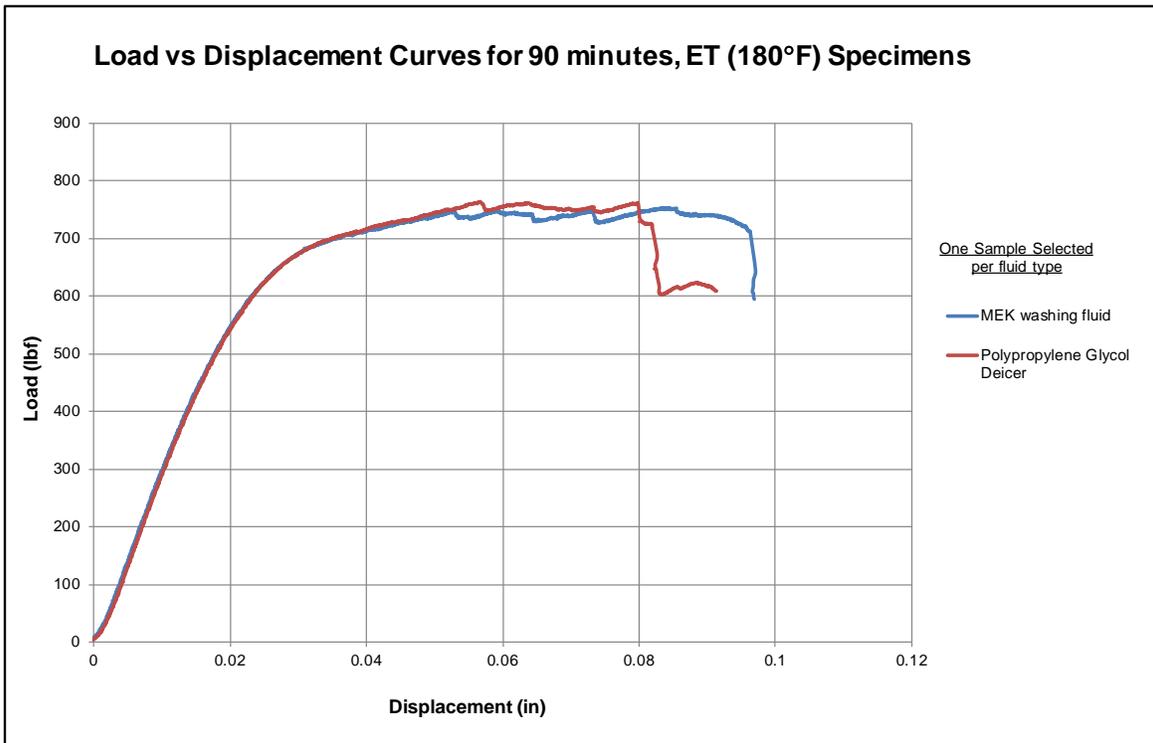
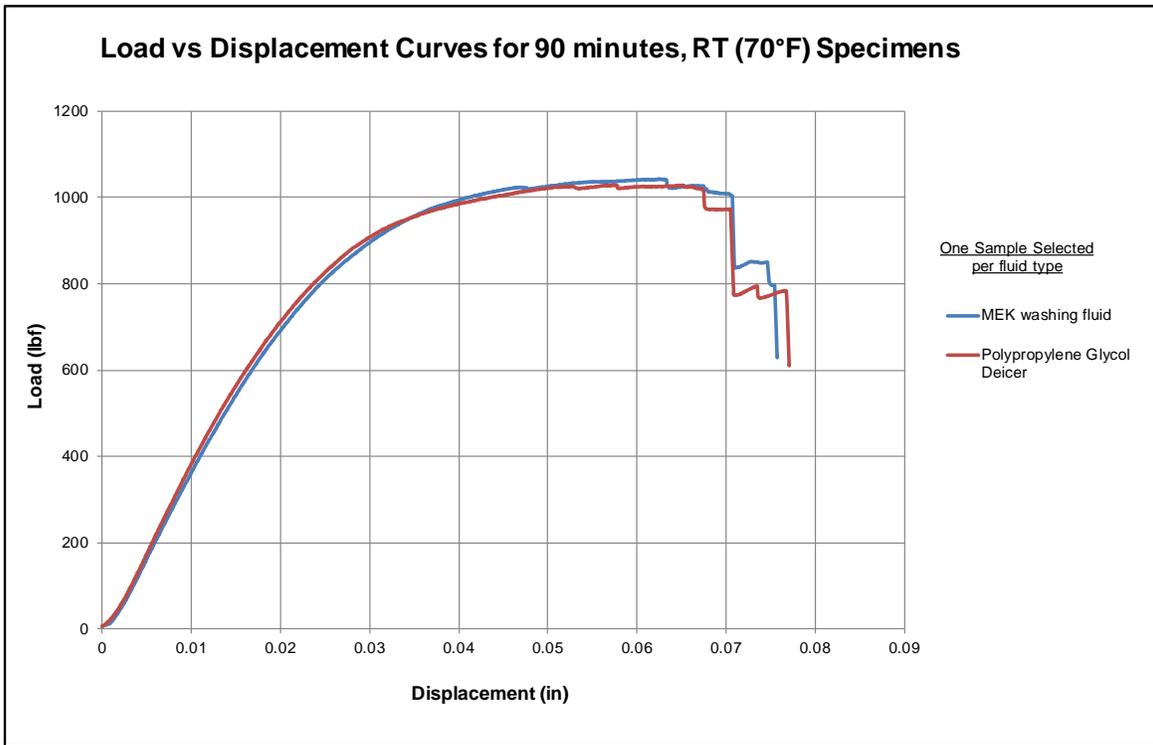


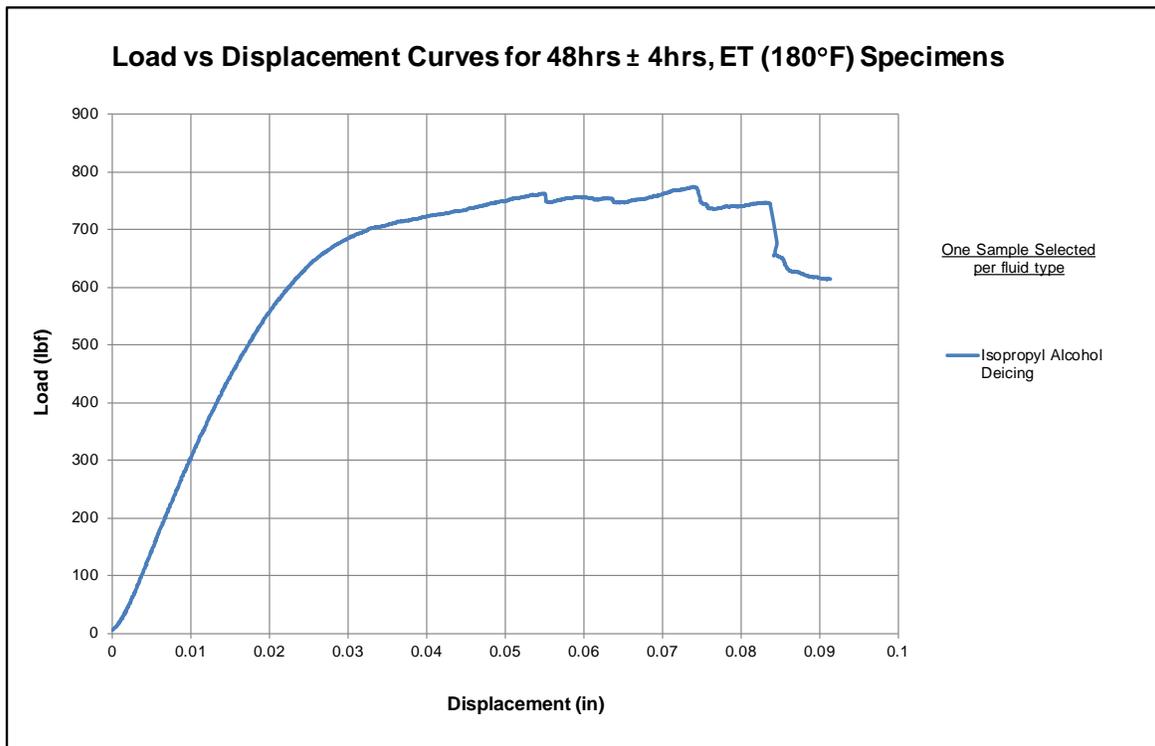
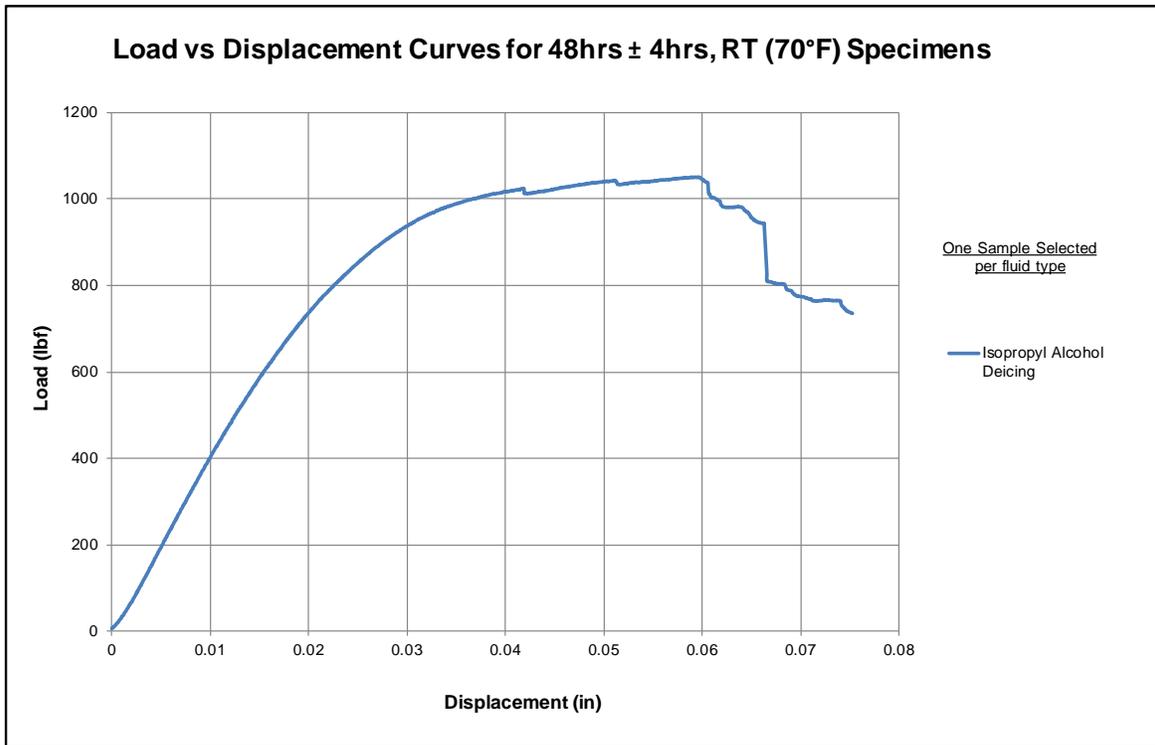
Fluid Sensitivity Screening
Short-Beam Strength Properties (FSSBS)–ET (180°F) Strength
 Solvay EP2190 IMS65 Unitape Gr 145 RC 35%

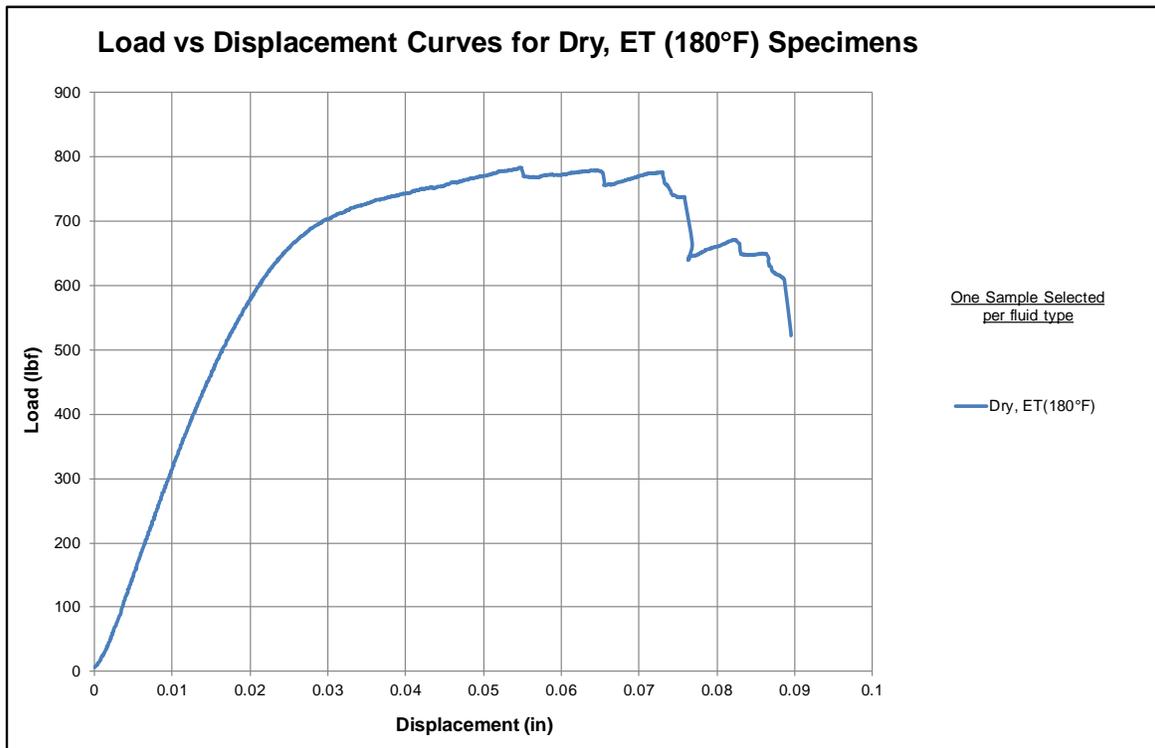
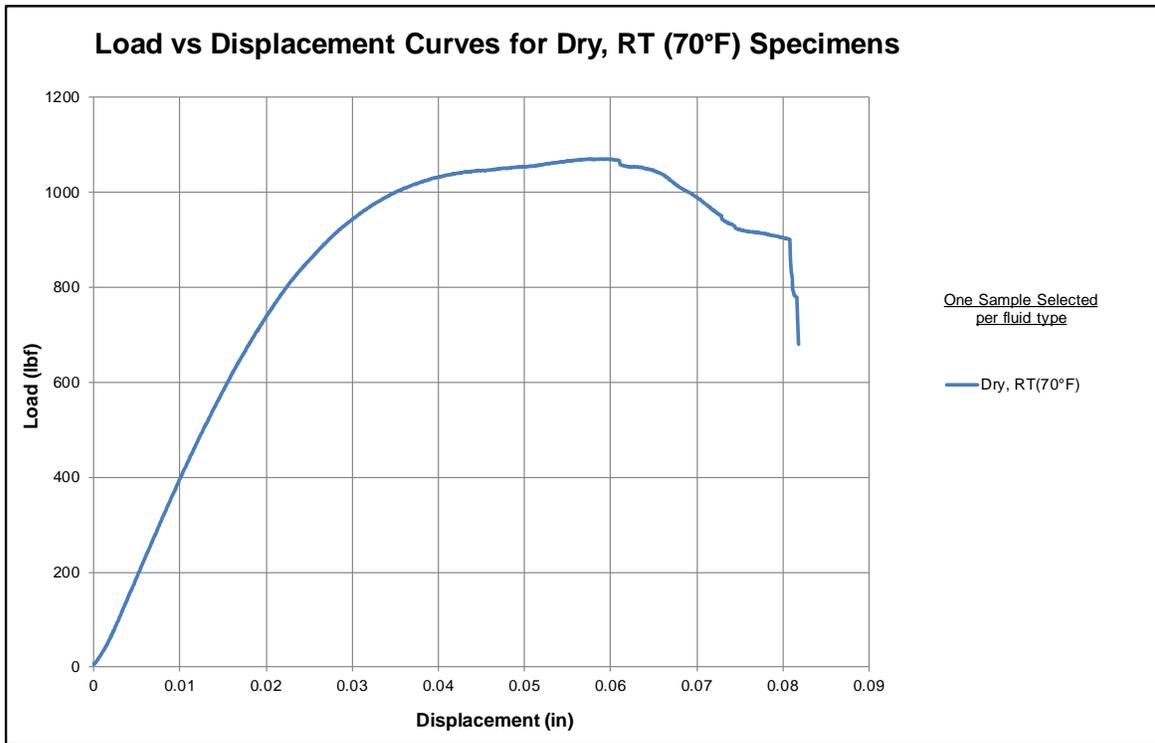
Fluid Code	Specimen Number	Solvay Batch #	Solvay Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Average Strength [ksi]
FS11ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11ET-1	D	C1	4	1	8.977	0.2520	44	0.005727	ILS, INELASTIC DEFORMATION	8.977
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11ET-2	D	C1	4	1	9.121	0.2529	44	0.005748	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11ET-3	D	C1	4	1	8.894	0.2534	44	0.005759	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS11ET-4	D	C1	4	1	8.844	0.2539	44	0.005770	ILS, INELASTIC DEFORMATION	
FS12ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12ET-1	D	C1	4	1	9.049	0.2544	44	0.005782	ILS, INELASTIC DEFORMATION	9.057
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12ET-2	D	C1	4	1	9.116	0.2510	44	0.005705	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12ET-3	D	C1	4	1	9.141	0.2506	44	0.005695	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12ET-4	D	C1	4	1	9.157	0.2504	44	0.005691	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS12ET-5	D	C1	4	1	8.972	0.2507	44	0.005698	ILS, INELASTIC DEFORMATION	
FS13ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13ET-1	D	C1	4	1	8.895	0.2506	44	0.005695	ILS, INELASTIC DEFORMATION	8.993
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13ET-2	D	C1	4	1	8.919	0.2542	44	0.005777	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13ET-3	D	C1	4	1	9.129	0.2539	44	0.005770	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS13ET-4	D	C1	4	1	8.980	0.2533	44	0.005757	ILS, INELASTIC DEFORMATION	
FS14ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14ET-1	D	C1	4	1	8.894	0.2526	44	0.005741	ILS, INELASTIC DEFORMATION	9.164
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14ET-2	D	C1	4	1	9.042	0.2519	44	0.005725	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14ET-3	D	C1	4	1	9.164	0.2415	44	0.005489	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14ET-4	D	C1	4	1	9.340	0.2435	44	0.005534	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS14ET-5	D	C1	4	1	9.032	0.2451	44	0.005570	ILS, INELASTIC DEFORMATION	
FS15ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15ET-1	D	C1	4	1	9.237	0.2468	44	0.005609	ILS, INELASTIC DEFORMATION	9.049
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15ET-2	D	C1	4	1	9.046	0.2482	44	0.005641	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15ET-3	D	C1	4	1	9.387	0.2526	44	0.005741	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS15ET-4	D	C1	4	1	9.175	0.2531	44	0.005752	ILS, INELASTIC DEFORMATION	
FS16ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16ET-1	D	C1	4	1	8.762	0.2537	44	0.005766	ILS, INELASTIC DEFORMATION	9.014
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16ET-2	D	C1	4	1	8.767	0.2541	44	0.005775	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16ET-3	D	C1	4	1	9.153	0.2546	44	0.005786	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16ET-4	D	C1	4	1	9.089	0.2512	44	0.005709	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS16ET-5	D	C1	4	1	8.939	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION	
FS17ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17ET-1	D	C1	4	1	9.012	0.2507	44	0.005698	ILS, INELASTIC DEFORMATION	8.107
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17ET-2	D	C1	4	1	9.012	0.2515	44	0.005716	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17ET-3	D	C1	4	1	9.017	0.2517	44	0.005720	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS17ET-4	D	C1	4	1	8.089	0.2523	44	0.005734	ILS, INELASTIC DEFORMATION	
FS18ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18ET-1	D	C1	4	1	8.056	0.2530	44	0.005750	ILS, INELASTIC DEFORMATION	9.517
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18ET-2	D	C1	4	1	7.964	0.2534	44	0.005759	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18ET-3	D	C1	4	1	7.899	0.2539	44	0.005770	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18ET-4	D	C1	4	1	8.525	0.2545	44	0.005784	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS18ET-5	D	C1	4	1	9.452	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION	
FS19ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19ET-1	D	C1	4	1	9.747	0.2504	44	0.005691	ILS, INELASTIC DEFORMATION	8.197
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19ET-2	D	C1	4	1	9.469	0.2503	44	0.005689	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19ET-3	D	C1	4	1	9.534	0.2506	44	0.005695	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS19ET-4	D	C1	4	1	9.383	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION	
FS21ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21ET-1	D	C1	4	1	8.344	0.2524	44	0.005736	ILS, INELASTIC DEFORMATION	9.075
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21ET-2	D	C1	4	1	8.146	0.2534	44	0.005759	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21ET-3	D	C1	4	1	8.161	0.2539	44	0.005770	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21ET-4	D	C1	4	1	7.970	0.2543	44	0.005780	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS21ET-5	D	C1	4	1	8.360	0.2547	44	0.005789	ILS, INELASTIC DEFORMATION, COMPRESSION	
FS22ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22ET-1	D	C1	4	1	8.995	0.2512	44	0.005709	ILS, INELASTIC DEFORMATION, COMPRESSION	9.037
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22ET-2	D	C1	4	1	9.032	0.2511	44	0.005707	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22ET-3	D	C1	4	1	9.225	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22ET-4	D	C1	4	1	9.058	0.2512	44	0.005709	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS22ET-5	D	C1	4	1	9.066	0.2514	44	0.005714	ILS, INELASTIC DEFORMATION, COMPRESSION	
FS23ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23ET-1	D	C1	4	1	9.084	0.2528	44	0.005745	ILS, INELASTIC DEFORMATION	9.199
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23ET-2	D	C1	4	1	9.057	0.2534	44	0.005759	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23ET-3	D	C1	4	1	8.902	0.2538	44	0.005768	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23ET-4	D	C1	4	1	9.213	0.2544	44	0.005782	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS23ET-5	D	C1	4	1	8.931	0.2544	44	0.005782	ILS, INELASTIC DEFORMATION	
FS31ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31ET-1	D	C1	4	1	9.319	0.2510	44	0.005705	ILS, INELASTIC DEFORMATION	8.153
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31ET-2	D	C1	4	1	9.106	0.2506	44	0.005695	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31ET-3	D	C1	4	1	9.113	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31ET-4	D	C1	4	1	9.245	0.2509	44	0.005702	ILS, INELASTIC DEFORMATION, COMPRESSION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS31ET-5	D	C1	4	1	9.209	0.2511	44	0.005707	ILS, INELASTIC DEFORMATION, COMPRESSION	
FS32ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-1	D	C1	4	1	8.355	0.2530	44	0.005750	ILS, INELASTIC DEFORMATION	9.388
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-2	D	C1	4	1	7.949	0.2535	44	0.005761	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-3	D	C1	4	1	8.055	0.2539	44	0.005770	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-4	D	C1	4	1	8.384	0.2547	44	0.005789	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-5	D	C1	4	1	8.022	0.2549	44	0.005793	ILS, INELASTIC DEFORMATION	
FS33ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-1	D	C1	4	1	9.402	0.2512	44	0.005709	ILS, INELASTIC DEFORMATION	7.662
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-2	D	C1	4	1	9.340	0.2508	44	0.005700	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-3	D	C1	4	1	9.305	0.2507	44	0.005698	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-4	D	C1	4	1	9.421	0.2511	44	0.005707	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS32ET-5	D	C1	4	1	9.474	0.2513	44	0.005711	ILS, INELASTIC DEFORMATION	
FS33ET	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33ET-1	D	C1	4	1	7.690	0.2422	44	0.005505	ILS, INELASTIC DEFORMATION	7.662
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33ET-2	D	C1	4	1	7.747	0.2440	44	0.005545	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33ET-3	D	C1	4	1	7.536	0.2457	44	0.005584	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33ET-4	D	C1	4	1	7.682	0.2474	44	0.005623	ILS, INELASTIC DEFORMATION	
	NTP2190Q1-WRX-IMS-SOL-SBSFS-D-C1-1-FS33ET-5	D	C1	4	1	7.657	0.2489	44	0.005657	ILS, INELASTIC DEFORMATION	

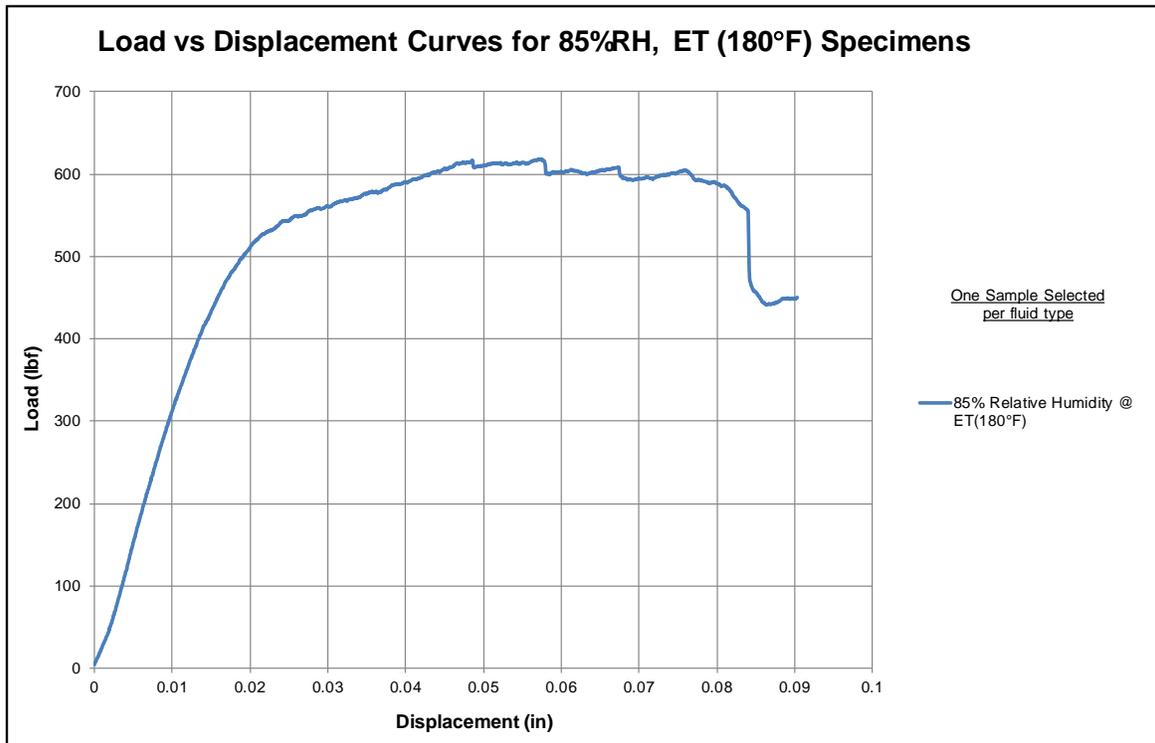
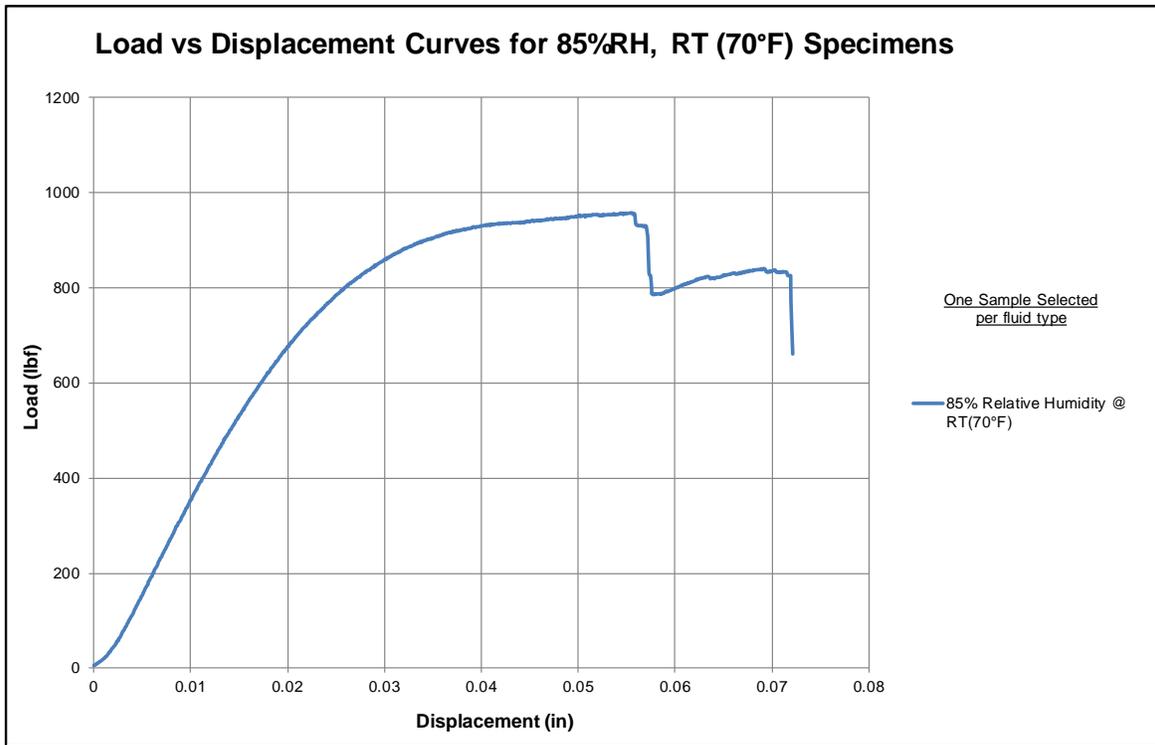
7.3 Load Displacement Curves





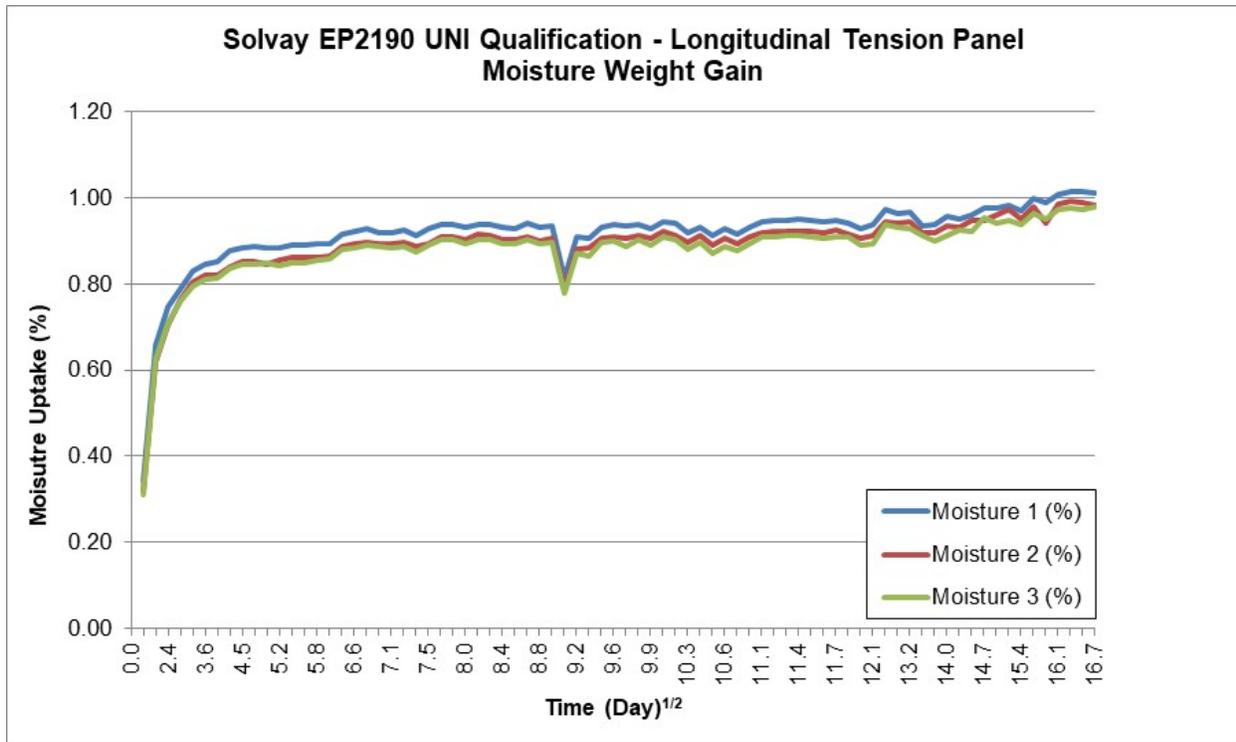




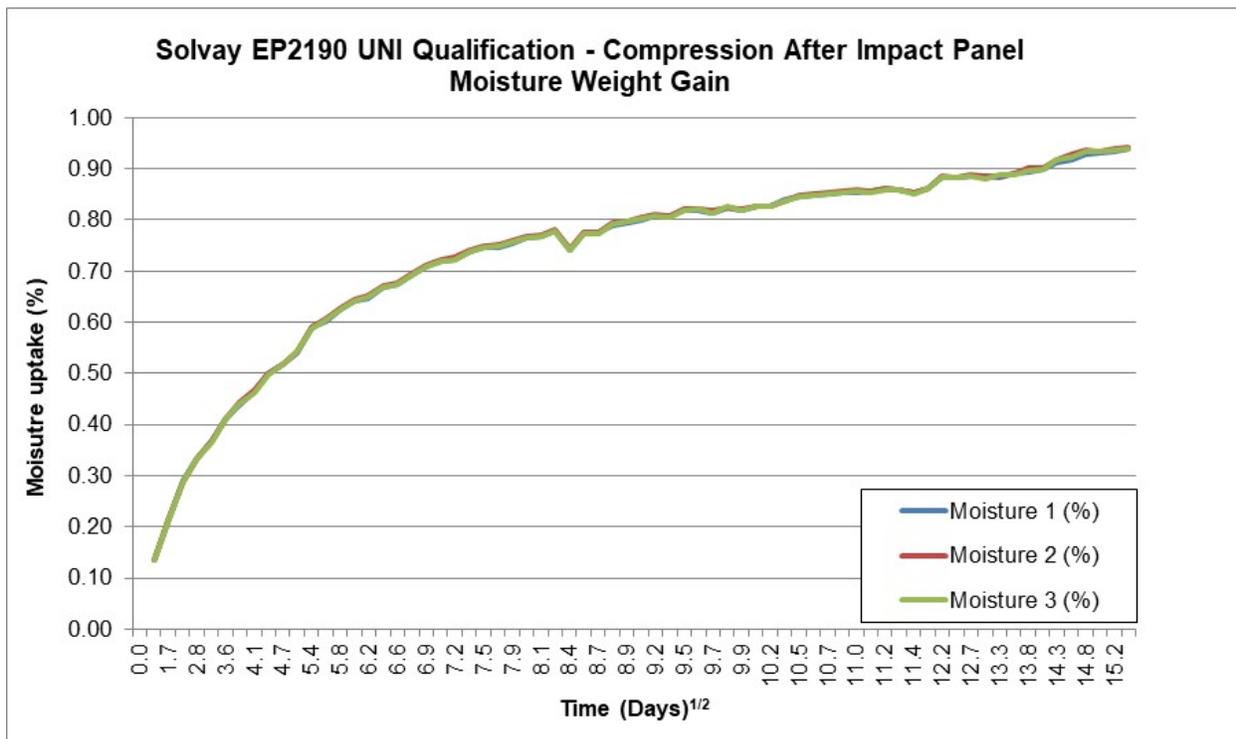


8. Moisture Conditioning Charts

8.1 Longitudinal Tension – Thinnest Panel



8.2 Compression After Impact – Thickest Panel



9. DMA Results

9.1 DMA Dry Test Data

DMA Results Summary				
Solvay EP2190 UNI Qualification DMA Dry				
Sample #	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
QB1-870406999-D-1	188.70	371.66	201.57	394.83
QB1-870406999-D-2	188.27	370.89	201.29	394.32
QB1-870406999-D-3	188.71	371.68	201.42	394.56
QB2-870407000-D-1	187.99	370.38	200.74	393.33
QB2-870407000-D-2	187.63	369.73	200.50	392.90
QB2-870407000-D-3	188.29	370.92	201.05	393.89
QB3-870407110-D-1	188.13	370.63	201.35	394.43
QB3-870407110-D-2	187.33	369.19	200.59	393.06
QB3-870407110-D-3	186.28	367.30	199.62	391.32
NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-DRY	164.18	327.52	179.21	354.58
NTP2190Q1-WRX-IMS-SOL-LCS-D-C1-1-DRY	177.59	351.66	193.00	379.40
NTP2190Q1-WRX-IMS-SOL-LCM-D-C1-1-DRY	173.24	343.83	188.63	371.53
NTP2190Q1-WRX-IMS-SOL-TT-D-C1-1-DRY	175.18	347.32	195.69	384.24
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-1-DRY	177.73	351.91	193.00	379.40
NTP2190Q1-WRX-IMS-SOL-TCM-D-C1-1-DRY	172.88	343.18	187.78	370.00
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-DRY	162.93	325.27	183.75	362.75
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-DRY	185.46	365.83	203.59	398.46
NTP2190Q1-WRX-IMS-SOL-FLEX-D-C1-1-DRY	178.31	352.96	195.35	383.63
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C1-1-DRY	167.77	333.99	182.74	360.93
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-DRY	178.47	353.25	195.69	384.24
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C1-1-DRY	161.09	321.96	175.51	347.92
NTP2191Q1-WRX-IMS-SOL-FHT1-D-C1-1-DRY	167.21	332.98	182.07	359.73
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-DRY	161.09	321.96	175.51	347.92
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-DRY	177.30	351.14	195.69	384.24
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-DRY	176.99	350.58	195.18	383.32
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C1-1-DRY	182.16	359.89	201.57	394.83
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-DRY	170.68	339.22	184.76	364.57
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-DRY	170.12	338.22	184.25	363.65
NTP2190Q1-WRX-IMS-SOL-LCM-D-C2-1-DRY	171.17	340.11	186.44	367.59
NTP2190Q1-WRX-IMS-SOL-TT-D-C2-1-DRY	171.49	340.68	189.97	373.95
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-DRY	170.63	339.13	184.93	364.87
NTP2190Q1-WRX-IMS-SOL-TCM-D-C2-1-DRY	172.43	342.37	186.78	368.20
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-DRY	166.08	330.94	185.26	365.47
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-DRY	188.41	371.14	204.59	400.26
NTP2190Q1-WRX-IMS-SOL-FLEX-D-C2-1-DRY	176.54	349.77	192.83	379.09
NTP2190Q1-WRX-IMS-SOL-UNT1-D-C2-1-DRY	166.35	331.43	180.05	356.09
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-DRY	172.87	343.17	191.15	376.07
NTP2190Q1-WRX-IMS-SOL-OHT1-D-C2-1-DRY	166.52	331.74	180.89	357.60
NTP2191Q1-WRX-IMS-SOL-FHT1-D-C2-1-DRY	166.19	331.14	180.89	357.60
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C2-1-DRY	175.73	348.31	194.34	381.81
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-DRY	176.33	349.39	194.34	381.81
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C2-1-DRY	175.79	348.42	193.84	380.91
NTP2190Q1-WRX-IMS-SOL-CAI1-D-C2-1-DRY	184.28	363.70	202.24	396.03
NTP2190Q1-WRX-IMS-SOL-LT-E-C1-1-DRY	162.96	325.33	176.86	350.35

NTP2190Q1-WRX-IMS-SOL-LCS-E-C1-1-DRY	163.07	325.53	177.03	350.65
NTP2190Q1-WRX-IMS-SOL-LCM-E-C1-1-DRY	164.35	327.83	178.20	352.76
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-DRY	173.71	344.68	192.66	378.79
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-DRY	163.11	325.60	177.19	350.94
NTP2190Q1-WRX-IMS-SOL-TCM-E-C1-1-DRY	162.90	325.22	176.86	350.35
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-DRY	159.69	319.44	178.37	353.07
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-DRY	181.62	358.92	202.24	396.03
NTP2190Q1-WRX-IMS-SOL-FLEX-E-C1-1-DRY	168.99	336.18	184.59	364.26
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C1-1-DRY	160.22	320.40	174.34	345.81
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-DRY	169.69	337.44	187.62	369.72
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C1-1-DRY	158.55	317.39	172.82	343.08
NTP2191Q1-WRX-IMS-SOL-FHT1-E-C1-1-DRY	158.12	316.62	173.16	343.69
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-DRY	166.30	331.34	184.42	363.96
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-DRY	169.12	336.42	186.27	367.29
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C1-1-DRY	167.49	333.48	184.42	363.96
NTP2190Q1-WRX-IMS-SOL-CA11-E-C1-1-DRY	177.67	351.81	199.05	390.29
NTP2190Q1-WRX-IMS-SOL-LT-E-C2-1-DRY	162.64	324.75	177.70	351.86
NTP2190Q1-WRX-IMS-SOL-LCS-E-C2-1-DRY	162.05	323.69	175.85	348.53
NTP2190Q1-WRX-IMS-SOL-LCM-E-C2-1-DRY	155.90	312.62	176.19	349.14
NTP2190Q1-WRX-IMS-SOL-TT-E-C2-1-DRY	171.57	340.83	190.47	374.85
NTP2190Q1-WRX-IMS-SOL-TCS-E-C2-1-DRY	156.41	313.54	176.52	349.74
NTP2190Q1-WRX-IMS-SOL-TCM-E-C2-1-DRY	156.27	313.29	175.68	348.22
NTP2190Q1-WRX-IMS-SOL-IPS-E-C2-1-DRY	152.65	306.77	177.53	351.55
NTP2190Q1-WRX-IMS-SOL-SBS-E-C2-1-DRY	180.67	357.21	201.06	393.91
NTP2190Q1-WRX-IMS-SOL-FLEX-E-C2-1-DRY	167.02	332.64	183.41	362.14
NTP2190Q1-WRX-IMS-SOL-UNT1-E-C2-1-DRY	158.59	317.46	173.66	344.59
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C2-1-DRY	168.33	334.99	185.43	365.77
NTP2190Q1-WRX-IMS-SOL-OHT1-E-C2-1-DRY	159.43	318.97	174.00	345.20
NTP2191Q1-WRX-IMS-SOL-FHT1-E-C2-2-DRY	157.84	316.11	172.32	342.18
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-DRY	167.14	332.85	184.25	363.65
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-DRY	165.84	330.51	183.08	361.54
NTP2190Q1-WRX-IMS-SOL-SSB1-E-C2-1-DRY	165.56	330.01	182.57	360.63
NTP2190Q1-WRX-IMS-SOL-LT-F-C1-1-DRY	161.53	322.75	176.52	349.74
NTP2190Q1-WRX-IMS-SOL-LCS-F-C1-1-DRY	162.36	324.25	177.03	350.65
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-DRY	161.84	323.31	176.02	348.84
NTP2190Q1-WRX-IMS-SOL-TT-F-C1-1-DRY	170.40	338.72	188.29	370.92
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-DRY	162.10	323.78	176.86	350.35
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-DRY	162.38	324.28	176.86	350.35
NTP2190Q1-WRX-IMS-SOL-IPS-F-C1-1-DRY	158.23	316.81	178.20	352.76
NTP2190Q1-WRX-IMS-SOL-SBS-F-C1-1-DRY	180.67	357.21	202.41	396.34
NTP2190Q1-WRX-IMS-SOL-FLEX-F-C1-1-DRY	166.92	332.46	181.90	359.42
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-DRY	159.57	319.23	174.17	345.51
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C1-1-DRY	167.24	333.03	185.10	365.18
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C1-1-DRY	158.58	317.44	173.66	344.59
NTP2191Q1-WRX-IMS-SOL-FHT1-F-C1-1-DRY	159.33	318.79	174.17	345.51
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C1-1-DRY	167.16	332.89	184.59	364.26
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C1-1-DRY	166.83	332.29	183.41	362.14
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C1-1-DRY	167.37	333.27	183.92	363.06
NTP2190Q1-WRX-IMS-SOL-CA11-F-C1-1-DRY	176.08	348.94	199.22	390.60
NTP2190Q1-WRX-IMS-SOL-LT-F-C2-1-DRY	161.18	322.12	175.85	348.53
NTP2190Q1-WRX-IMS-SOL-LCS-F-C2-1-DRY	159.57	319.23	174.84	346.71
NTP2190Q1-WRX-IMS-SOL-LCM-F-C2-1-DRY	159.21	318.58	175.01	347.02
NTP2190Q1-WRX-IMS-SOL-TT-F-C2-1-DRY	169.50	337.10	187.45	369.41
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-DRY	160.34	320.61	175.68	348.22
NTP2190Q1-WRX-IMS-SOL-TCM-F-C2-1-DRY	160.63	321.13	175.35	347.63

NTP2190Q1-WRX-IMS-SOL-IPS-F-C2-1-DRY	157.51	315.52	175.85	348.53
NTP2190Q1-WRX-IMS-SOL-SBS-F-C2-1-DRY	177.68	351.82	198.88	389.98
NTP2190Q1-WRX-IMS-SOL-FLEX-F-C2-1-DRY	165.37	329.67	181.73	359.11
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-DRY	158.45	317.21	173.33	343.99
NTP2190Q1-WRX-IMS-SOL-UNC1-F-C2-1-DRY	167.01	332.62	185.60	366.08
NTP2190Q1-WRX-IMS-SOL-OHT1-F-C2-1-DRY	158.13	316.63	173.83	344.89
NTP2191Q1-WRX-IMS-SOL-FHT1-F-C2-1-DRY	159.50	319.10	173.66	344.59
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-DRY	168.14	334.65	185.77	366.39
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-DRY	165.93	330.67	182.74	360.93
NTP2190Q1-WRX-IMS-SOL-SSB1-F-C2-1-DRY	165.71	330.28	182.24	360.03
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-DRY	166.62	331.92	184.76	364.57
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-DRY	167.85	334.13	185.77	366.39
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-DRY	166.58	331.84	184.76	364.57
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-DRY	167.21	332.98	184.78	364.60
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-DRY	166.33	331.39	184.29	363.72
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-DRY	167.37	333.27	185.22	365.40
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C1-1-DRY	167.64	333.75	185.22	365.40
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-DRY	167.66	333.79	185.07	365.13
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-DRY	167.66	333.79	185.22	365.40
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-DRY	167.01	332.62	184.44	363.99
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-DRY	167.68	333.82	185.80	366.44
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-DRY	167.98	334.36	185.50	365.90
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-DRY	158.01	316.42	173.09	343.56
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-DRY	167.21	332.98	184.74	364.53
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-DRY	167.80	334.04	185.35	365.63
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-DRY	168.00	334.40	185.35	365.63
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-DRY	167.40	333.32	185.04	365.07
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-DRY	167.33	333.19	184.44	363.99
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-DRY	167.29	333.12	185.10	365.18
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-DRY	167.40	333.32	185.10	365.18
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-DRY	166.80	332.24	184.25	363.65
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-DRY	168.67	335.61	186.44	367.59
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-DRY	168.09	334.56	185.77	366.39
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-DRY	168.36	335.05	185.94	366.69
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-DRY	167.45	333.41	184.59	364.26
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-DRY	168.97	336.15	187.01	368.62
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-DRY	167.09	332.76	184.09	363.36
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-DRY	167.11	332.80	184.44	363.99
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-DRY	171.24	340.23	190.64	375.15
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-DRY	173.54	344.37	192.16	377.89
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-DRY	172.35	342.23	192.16	377.89
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-DRY	173.52	344.34	192.32	378.18
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-DRY	172.54	342.57	192.83	379.09
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-DRY	174.11	345.40	193.50	380.30
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-DRY	172.07	341.73	191.99	377.58
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-DRY	174.16	345.49	193.67	380.61
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-DRY	172.61	342.70	192.16	377.89
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-DRY	173.07	343.53	191.99	377.58
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-DRY	172.29	342.12	191.99	377.58
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-DRY	174.52	346.14	193.67	380.61
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-DRY	168.96	336.13	188.46	371.23
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-DRY	171.05	339.89	189.63	373.33
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-DRY	168.76	335.77	186.59	367.86
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-DRY	170.34	338.61	188.26	370.87

NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-DRY	155.08	311.14	173.28	343.90
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-DRY	171.79	341.22	189.37	372.87
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-DRY	170.83	339.49	188.44	371.19
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-DRY	172.32	342.18	190.11	374.20
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-DRY	170.13	338.23	188.26	370.87
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-DRY	170.71	339.28	188.81	371.86
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-DRY	170.68	339.22	188.63	371.53
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-DRY	170.24	338.43	187.52	369.54
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-DRY	172.83	343.09	190.29	374.52
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-DRY	172.25	342.05	189.74	373.53
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-DRY	169.55	337.19	187.52	369.54
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-DRY	167.90	334.22	186.04	366.87
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C1-1-DRY	169.97	337.95	187.15	368.87
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-DRY	172.16	341.89	188.63	371.53
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-DRY	171.20	340.16	188.07	370.53
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-DRY	171.47	340.65	188.29	370.92
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-DRY	172.51	342.52	189.13	372.43
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-DRY	173.58	344.44	190.64	375.15
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-DRY	172.67	342.81	189.47	373.05
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-DRY	173.60	344.48	190.81	375.46
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-DRY	172.55	342.59	189.80	373.64
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-DRY	171.81	341.26	188.63	371.53
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-DRY	171.42	340.56	189.18	372.52
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-DRY	172.84	343.11	190.29	374.52
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-DRY	170.24	338.43	187.89	370.20
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-DRY	172.18	341.92	189.92	373.86
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-DRY	173.40	344.12	193.33	379.99
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C2-1-DRY	176.65	349.97	196.02	384.84
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-DRY	174.15	345.47	194.00	381.20
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-DRY	175.07	347.13	194.88	382.78
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-DRY	175.24	347.43	194.84	382.71
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-DRY	176.60	349.88	195.01	383.02
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-DRY	176.36	349.45	196.02	384.84
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-DRY	177.82	352.08	196.69	386.04
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-DRY	177.64	351.75	197.70	387.86
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-DRY	179.11	354.40	197.53	387.55
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-DRY	176.00	348.80	195.52	383.94
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-DRY	177.69	351.84	196.69	386.04
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-DRY	176.07	348.93	195.69	384.24
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-DRY	178.39	353.10	197.03	386.65
Average	169.84	337.71	186.97	368.55
Standard Deviation	7.47	13.45	7.96	14.33

Specimens might absorb moisture at ambient condition prior to testing which resulted in lower dry Tg, DMA testing took place weeks/months after panel fabrication. Based on Syensqo's batch release historical data, dry Tg is ~192°C (377°F) to 208°C (406°F).

9.2 DMA Wet Test Data

DMA Results Summary				
Solvay EP2190 UNI Qualification DMA Wet				
Sample #	Onset Storage Modulus		Peak of Tangent Delta	
	T _g [°C]	T _g [°F]	T _g [°C]	T _g [°F]
NTP2190Q1-WRX-IMS-SOL-TCS-D-C1-1-WET	145.94	294.69	161.11	322.00
NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-WET	141.91	287.44	161.73	323.11
NTP2190Q1-WRX-IMS-SOL-SBS-D-C1-1-WET	144.90	292.82	162.20	323.96
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C1-1-WET	145.22	293.40	161.56	322.81
NTP2190Q1-WRX-IMS-SOL-OHC1-D-C1-1-WET	145.09	293.16	161.39	322.50
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C1-1-WET	144.59	292.26	161.12	322.02
NTP2190Q1-WRX-IMS-SOL-SSB1-D-C1-1-WET	144.41	291.94	160.58	321.04
NTP2190Q1-WRX-IMS-SOL-LT-D-C2-1-WET	143.68	290.62	159.48	319.06
NTP2190Q1-WRX-IMS-SOL-LCS-D-C2-1-WET	143.93	291.07	160.05	320.09
NTP2190Q1-WRX-IMS-SOL-TCS-D-C2-1-WET	144.06	291.31	160.89	321.60
NTP2190Q1-WRX-IMS-SOL-IPS-D-C2-1-WET	142.89	289.20	162.35	324.23
NTP2190Q1-WRX-IMS-SOL-SBS-D-C2-1-WET	142.49	288.48	162.74	324.93
NTP2190Q1-WRX-IMS-SOL-UNC1-D-C2-1-WET	143.53	290.35	160.55	320.99
NTP2190Q1-WRX-IMS-SOL-FHC1-D-C2-1-WET	143.74	290.73	160.31	320.56
NTP2190Q1-WRX-IMS-SOL-TT-E-C1-1-WET	143.00	289.40	160.38	320.68
NTP2190Q1-WRX-IMS-SOL-TCS-E-C1-1-WET	140.54	284.97	158.87	317.97
NTP2190Q1-WRX-IMS-SOL-IPS-E-C1-1-WET	141.06	285.91	160.58	321.04
NTP2190Q1-WRX-IMS-SOL-SBS-E-C1-1-WET	143.93	291.07	161.39	322.50
NTP2190Q1-WRX-IMS-SOL-UNC1-E-C1-1-WET	142.26	288.07	158.54	317.37
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C1-1-WET	144.01	291.22	160.22	320.40
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C1-1-WET	144.23	291.61	160.58	321.04
NTP2191Q1-WRX-IMS-SOL-FHT1-E-C2-1-WET	145.34	293.61	159.38	318.88
NTP2190Q1-WRX-IMS-SOL-OHC1-E-C2-1-WET	143.89	291.00	160.05	320.09
NTP2190Q1-WRX-IMS-SOL-FHC1-E-C2-1-WET	143.20	289.76	159.51	319.12
NTP2190Q1-WRX-IMS-SOL-LCM-F-C1-1-WET	140.34	284.61	156.49	313.68
NTP2190Q1-WRX-IMS-SOL-TCS-F-C1-1-WET	142.10	287.78	158.70	317.66
NTP2190Q1-WRX-IMS-SOL-TCM-F-C1-1-WET	138.12	280.62	153.99	309.18
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C1-1-WET	141.70	287.06	157.86	316.15
NTP2190Q1-WRX-IMS-SOL-TCS-F-C2-1-WET	139.08	282.34	155.51	311.92
NTP2190Q1-WRX-IMS-SOL-UNT1-F-C2-1-WET	141.66	286.99	157.19	314.94
NTP2190Q1-WRX-IMS-SOL-OHC1-F-C2-1-WET	138.92	282.06	156.00	312.80
NTP2190Q1-WRX-IMS-SOL-FHC1-F-C2-1-WET	139.53	283.15	156.14	313.05
NTP2190Q1-WRX-IMS-SOL-UNT2-D-C1-1-WET	139.40	282.92	157.86	316.15
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C1-1-WET	139.49	283.08	158.20	316.76
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C1-1-WET	140.24	284.43	158.97	318.15
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C1-1-WET	140.59	285.06	159.37	318.87
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C1-1-WET	141.38	286.48	159.37	318.87
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C1-1-WET	139.18	282.52	158.03	316.45
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C1-1-WET	139.66	283.39	158.70	317.66
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C1-1-WET	142.07	287.73	159.88	319.78
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C1-1-WET	140.61	285.10	159.71	319.48
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C1-1-WET	141.60	286.88	159.88	319.78
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C1-1-WET	142.85	289.13	161.12	322.02
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C1-1-WET	140.26	284.47	158.83	317.89
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C1-1-WET	141.20	286.16	159.78	319.60

NTP2190Q1-WRX-IMS-SOL-UNT2-D-C2-1-WET	139.87	283.77	158.16	316.69
NTP2190Q1-WRX-IMS-SOL-UNT3-D-C2-1-WET	141.39	286.50	159.71	319.48
NTP2190Q1-WRX-IMS-SOL-UNC2-D-C2-1-WET	142.00	287.60	160.18	320.32
NTP2190Q1-WRX-IMS-SOL-UNC3-D-C2-1-WET	140.18	284.32	158.97	318.15
NTP2190Q1-WRX-IMS-SOL-OHT2-D-C2-1-WET	142.20	287.96	160.18	320.32
NTP2190Q1-WRX-IMS-SOL-OHT3-D-C2-1-WET	143.49	290.28	162.06	323.71
NTP2190Q1-WRX-IMS-SOL-FHT2-D-C2-1-WET	139.01	282.22	157.36	315.25
NTP2190Q1-WRX-IMS-SOL-FHT3-D-C2-1-WET	140.74	285.33	159.21	318.58
NTP2190Q1-WRX-IMS-SOL-OHC2-D-C2-1-WET	141.91	287.44	159.51	319.12
NTP2190Q1-WRX-IMS-SOL-OHC3-D-C2-1-WET	141.52	286.74	160.22	320.40
NTP2190Q1-WRX-IMS-SOL-FHC2-D-C2-1-WET	141.55	286.79	159.54	319.17
NTP2190Q1-WRX-IMS-SOL-FHC3-D-C2-1-WET	141.70	287.06	160.38	320.68
NTP2190Q1-WRX-IMS-SOL-SSB2-D-C2-1-WET	142.28	288.10	160.18	320.32
NTP2190Q1-WRX-IMS-SOL-SSB3-D-C2-1-WET	141.90	287.42	160.18	320.32
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C1-1-WET	139.60	283.28	156.35	313.43
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C1-1-WET	139.14	282.45	156.88	314.38
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C1-1-WET	140.30	284.54	157.19	314.94
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C1-1-WET	139.68	283.42	157.02	314.64
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C1-1-WET	139.42	282.96	156.01	312.82
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C1-1-WET	139.47	283.05	156.41	313.54
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C1-1-WET	139.88	283.78	156.69	314.04
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C1-1-WET	140.04	284.07	157.76	315.97
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C1-1-WET	139.99	283.98	157.09	314.76
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C1-1-WET	140.82	285.48	157.62	315.72
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C1-1-WET	140.73	285.31	157.36	315.25
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C1-1-WET	140.75	285.35	157.76	315.97
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C1-1-WET	139.97	283.95	156.68	314.02
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C1-1-WET	139.62	283.32	156.41	313.54
NTP2190Q1-WRX-IMS-SOL-UNT2-E-C2-1-WET	138.56	281.41	155.68	312.22
NTP2190Q1-WRX-IMS-SOL-UNT3-E-C2-1-WET	139.40	282.92	156.55	313.79
NTP2190Q1-WRX-IMS-SOL-UNC2-E-C2-1-WET	138.62	281.52	155.68	312.22
NTP2190Q1-WRX-IMS-SOL-UNC3-E-C2-1-WET	140.30	284.54	157.19	314.94
NTP2190Q1-WRX-IMS-SOL-OHT2-E-C2-1-WET	138.96	282.13	155.74	312.33
NTP2190Q1-WRX-IMS-SOL-OHT3-E-C2-1-WET	139.07	282.33	156.28	313.30
NTP2190Q1-WRX-IMS-SOL-FHT2-E-C2-1-WET	139.98	283.96	156.85	314.33
NTP2190Q1-WRX-IMS-SOL-FHT3-E-C2-1-WET	140.29	284.52	157.09	314.76
NTP2190Q1-WRX-IMS-SOL-OHC2-E-C2-1-WET	140.07	284.13	157.02	314.64
NTP2190Q1-WRX-IMS-SOL-OHC3-E-C2-1-WET	140.69	285.24	158.03	316.45
NTP2190Q1-WRX-IMS-SOL-FHC2-E-C2-1-WET	140.35	284.63	157.09	314.76
NTP2190Q1-WRX-IMS-SOL-FHC3-E-C2-1-WET	140.38	284.68	157.76	315.97
NTP2190Q1-WRX-IMS-SOL-SSB2-E-C2-1-WET	140.27	284.49	157.36	315.25
NTP2190Q1-WRX-IMS-SOL-SSB3-E-C2-1-WET	139.92	283.86	156.95	314.51
NTP2190Q1-WRX-IMS-SOL-UNT3-F-C1-1-WET	142.29	288.12	159.78	319.60
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C1-1-WET	142.27	288.09	159.38	318.88
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C1-1-WET	142.92	289.26	159.71	319.48
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C1-1-WET	142.38	288.28	159.37	318.87
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C1-1-WET	141.14	286.05	158.03	316.45
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C1-1-WET	141.62	286.92	158.87	317.97
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C1-1-WET	142.81	289.06	159.64	319.35
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C1-1-WET	142.02	287.64	159.04	318.27
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C1-1-WET	141.05	285.89	158.03	316.45
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C1-1-WET	142.76	288.97	159.21	318.58
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C1-1-WET	141.94	287.49	158.87	317.97
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C1-1-WET	143.31	289.96	160.55	320.99

NTP2190Q1-WRX-IMS-SOL-SSB3-F-C1-1-WET	142.55	288.59	160.05	320.09
NTP2190Q1-WRX-IMS-SOL-UNT2-F-C2-1-WET	141.68	287.02	158.20	316.76
NTP2190Q1-WRX-IMS-SOL-UNC2-F-C2-1-WET	142.46	288.43	159.21	318.58
NTP2190Q1-WRX-IMS-SOL-UNC3-F-C2-1-WET	142.75	288.95	159.51	319.12
NTP2190Q1-WRX-IMS-SOL-OHT2-F-C2-1-WET	142.20	287.96	158.83	317.89
NTP2190Q1-WRX-IMS-SOL-OHT3-F-C2-1-WET	140.62	285.12	157.49	315.48
NTP2190Q1-WRX-IMS-SOL-FHT2-F-C2-1-WET	143.41	290.14	159.91	319.84
NTP2190Q1-WRX-IMS-SOL-FHT3-F-C2-1-WET	142.33	288.19	159.10	318.38
NTP2190Q1-WRX-IMS-SOL-OHC2-F-C2-1-WET	142.80	289.04	159.38	318.88
NTP2190Q1-WRX-IMS-SOL-OHC3-F-C2-1-WET	143.19	289.74	159.71	319.48
NTP2190Q1-WRX-IMS-SOL-FHC2-F-C2-1-WET	142.61	288.70	159.21	318.58
NTP2190Q1-WRX-IMS-SOL-FHC3-F-C2-1-WET	143.18	289.72	159.71	319.48
NTP2190Q1-WRX-IMS-SOL-SSB2-F-C2-1-WET	141.80	287.24	158.83	317.89
NTP2190Q1-WRX-IMS-SOL-SSB3-F-C2-1-WET	142.57	288.63	159.37	318.87
Average	141.54	286.78	158.80	317.84
Standard Deviation	1.74	3.13	1.73	3.12

9.3 DMA Dry Batch D

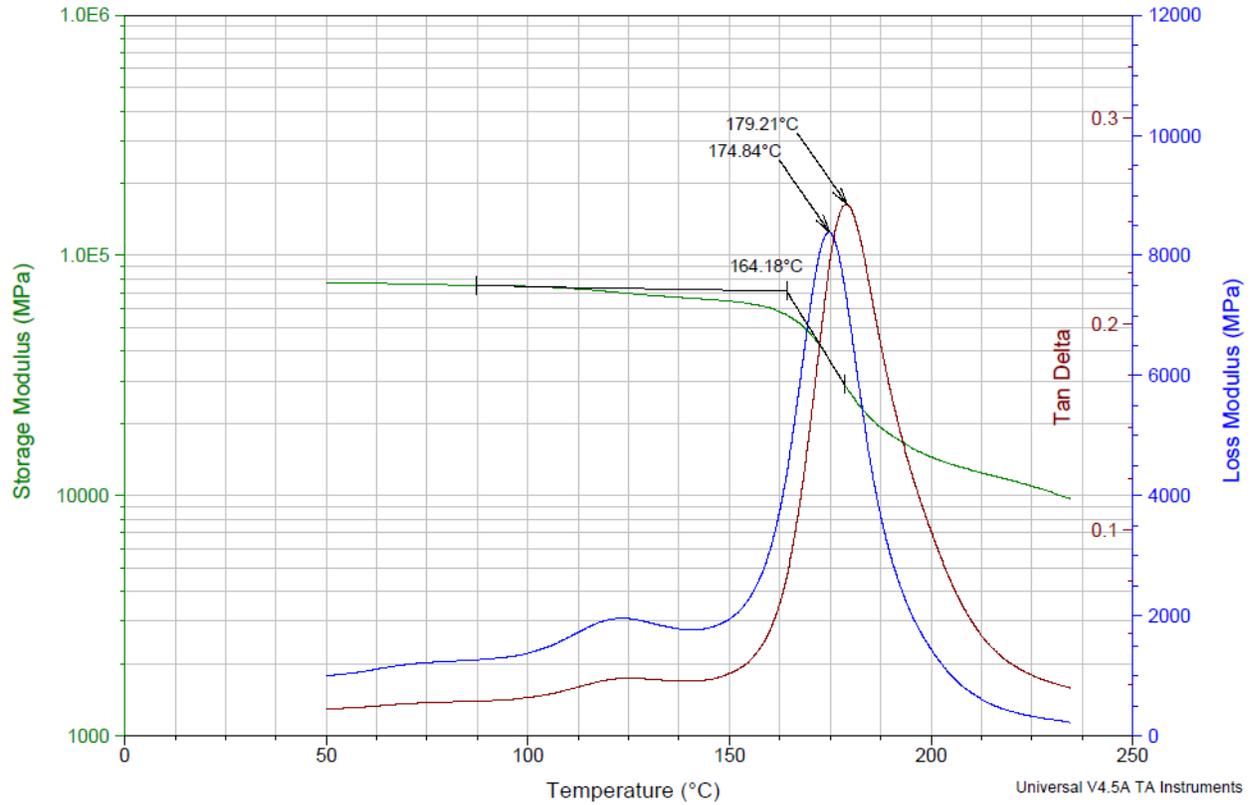
A representative of DMA Dry profile from Batch D is provided below.

DMA Sample ID: NTP2190Q1-WRX-IMS-SOL-LT-D-C1-1-DRY

Sample: 90Q1-WRX-IMS-SOL-DMA-D-C1-1-D-1
Size: 35.0000 x 12.7100 x 1.1500 mm
Method: ASTM D7028-07
Comment: 5°C/min, N2 5L/min, Amp 24.3um, AMB, D-LT-CURE 1, TR 9316697

DMA

File: \\...DMAQ800RIData\2022\T214398.001
Operator: NN(Dual Cant.)35mm
Run Date: 19-Aug-2022 13:10
Instrument: DMA Q800 V20.24 Build 43



9.4 DMA Wet Batch D

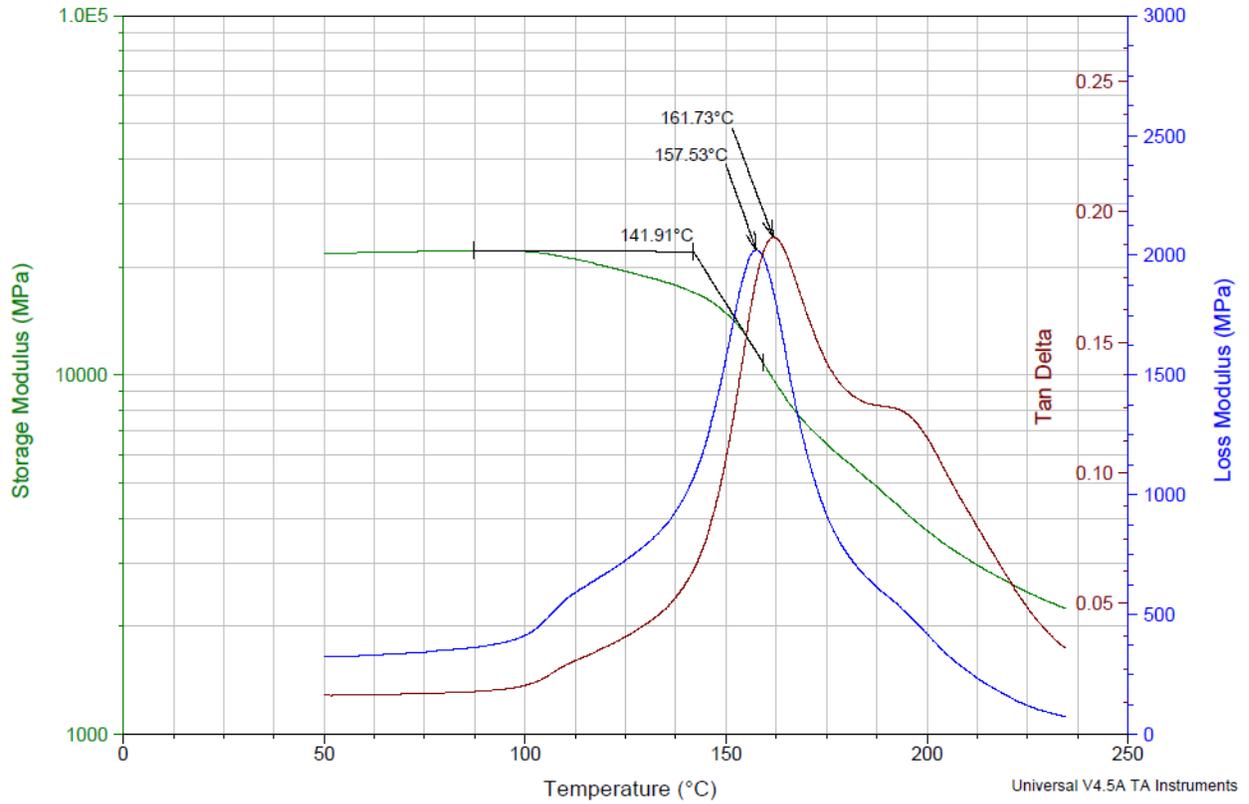
A representative of DMA Wet profile from Batch D is provided below.

DMA Sample ID: NTP2190Q1-WRX-IMS-SOL-IPS-D-C1-1-WET

Sample: 90Q1-WRX-IMS-DOL-DMA-D-C1-1-W-1
Size: 35.0000 x 12.6400 x 1.1800 mm
Method: ASTM D7028-07
Comment: 5°C/min, N2 5L/min, Amp 80.9um, D-IPS-C1,Wet, TR 9318459

DMA

File: \\...DMAQ800RIData\2023\T216004.001
Operator: JL (Dual Cant.) 35.00mm
Run Date: 08-Feb-2023 17:46
Instrument: DMA Q800 V21.3 Build 96



10. Composite Material Data Collection

10.1 Fiber, Resin, Prepreg Manufacturing Dates

10.1.1 Phase 1

	Lot 1 (Batch A)	Lot 2 (Batch B)	Lot 3 (Batch C)
Fiber Lot ID	98085768	98085768	98085766
Date of Fiber Manufacture	April 2018	April 2018	July 2018
Resin Lot ID	870127551	870127552	87081772
Date of Resin Manufacture	4/19/2018	5/21/2018	7/12/2018
Prepreg Lot ID	870406999	870407000	870407110
Date of Prepreg Manufacture	5/22/2018	5/24/2018	7/26/2018

10.1.2 Phase 2

	Lot 1 (Batch D)	Lot 2 (Batch E)	Lot 3 (Batch F)
Fiber Lot ID	XM0002F	XM0002H	171120320
Date of Fiber Manufacture	August 2021	September 2021	November 2017
Resin Lot ID	XXM0B1	XXM09U	WX02YT
Date of Resin Manufacture	9/30/2021	9/29/2021	3/31/2021
Prepreg Lot ID	XXM08E	XXM09H	XXM04J
Date of Prepreg Manufacture	10/5/2021	11/17/2021	4/22/2021

10.1.3 Phase 3

	Lot 1 (Batch D)	Lot 2 (Batch E)	Lot 3 (Batch F)
Fiber Lot ID	190620310	XM0002F	XM0002H
Date of Fiber Manufacture	June 2019	August 2021	September 2021
Resin Lot ID	XXM078	XXM09U	XXM09X
Date of Resin Manufacture	8/19/2021	9/29/2021	11/18/2021
Prepreg Lot ID	XXM0B3	XXM09J	XXM09K
Date of Prepreg Manufacture	9/1/2021	10/13/2021	12/2/2021

10.2 Prepreg, Testing and Data Submission Dates

	Start Date	End Date
Date of Composite Manufacture	P1: 8/8/2018 P2: 3/23/2022 P3: 6/13/2022	P1: 9/18/2019 P2: 5/11/2022 P3: 8/5/2022
Date of Testing	P1: 7/22/2018 P2: 7/19/2022 P3: 9/22/2022	P1: 1/14/2021 P2: 9/18/2023 P3: 8/7/2023

	Phase 1	Phase 2	Phase 3
Date of Data Submission to NCAMP	December 2021	June 2024	June 2024

11. Deviations

None