TenCate BT250E-6 S2 Unitape 284 gsm 33% RC Qualification Material Property Data Report

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1. Introduction

1.1 Scope

The test methods and results described in this document are intended to provide basic composite properties essential to most methods of analysis and are consistent with CMH-17-1G—Composite Materials Handbook for Polymer Matrix Composites. This report contains material property data of common usefulness to wide range of projects. The lamina material property data have been generated with FAA oversight through FAA Special Project Number TD03019RC-R, and also meet the requirements of NCAMP Standard Operating Procedure NSP 100; the test panels and test specimens have been inspected by an FAA Designated Airworthiness Representative (DAR) and the testing has been witnessed by an FAA Designated Engineering Representative (DER). 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 material property data only. Statistical analysis of the data including the calculations of b-basis values is given in a separate report TenCate Advance Composites S2 Unitape with BT250E-6 Resin Material Allowables Qualification Statistical Analysis Report, NCP-RP-2015-021 N/C. The qualification material was procured to Erickson Air-Crane (EAC) Material Specification ES0096 Revision B dated May 23, 2013. An equivalent NCAMP Material Specification NMS 250/3 Rev Initial Release dated January 2, 2018 has been created, which contains specification limits that are derived from guidelines in DOT/FAA/AR-03/19. The qualification test panels were cured in accordance with Erickson Air-Crane (EAC) Process Specification ES0098 Revision A dated June 15, 2011. An equivalent NCAMP Process Specification NPS 81250 baseline “C” Cure Cycle Rev Initial Release dated October 20, 2017 has been created. The Erickson Air-Crane (EAC) test plan EAC2029 Rev C 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-17-1G. 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-17-1G are adequate for the given program.

Aircraft companies should not use the data published in this report without specifying NCAMP Material Specification NMS 250/3. NMS 250/3 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 250/3.* NMS 250/3 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
$\mu\varepsilon$	micro-strain
E_1^{c}	compressive modulus, longitudinal / warp direction
E_1^{t}	tensile modulus, longitudinal / warp direction
E_2^{c}	compressive modulus, transverse / fill direction
E_2^{t}	tensile modulus, transverse / fill direction
F_1^{cu}	ultimate compressive strength, longitudinal / warp direction
F_1^{tu}	ultimate tensile strength, longitudinal / warp direction
F_2^{cu}	ultimate compressive strength, transverse / fill direction
F_2^{tu}	ultimate tensile strength, transverse / fill direction
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}^{smax}	in-plane shear peak strength before 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
CTD	cold temperature dry
CPT	cured ply thickness
ETD	elevated temperature dry
ETW	elevated temperature wet
Gr/Ep	graphite/epoxy
norm	normalized
RTD	room temperature dry
SACMA	Suppliers of Advanced Composite Materials Association
SRM	SACMA Recommended Method
Tply	thickness divided by the number of plies provides the thickness average per specimen
wet	specimen with an “equilibrium” moisture content
T, RH	temperature, relative humidity

1.3 NIAR–Specimen Naming Format

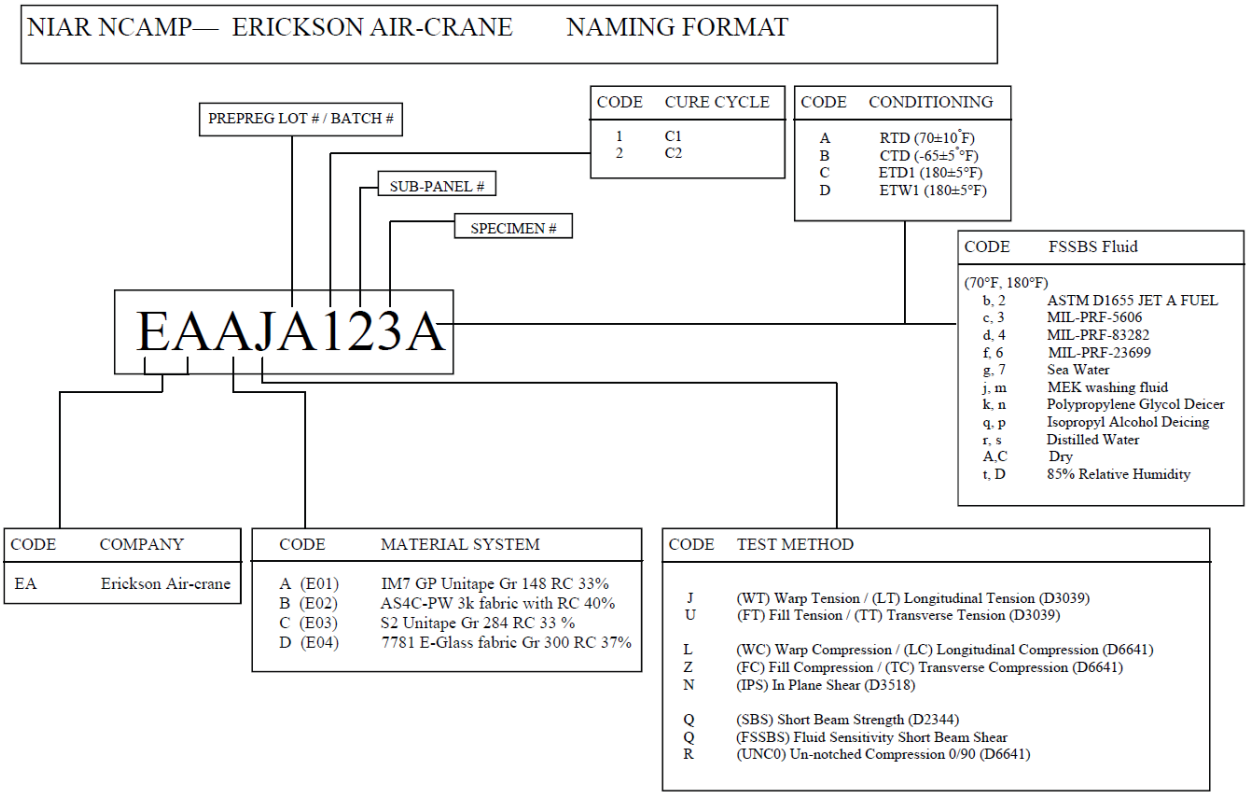


Figure 1-1: Naming Format

1.4 References

ASTM Standards

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

- ASTM D2344/D2344M-00(2006) – Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates
- ASTM D3039/D3039M-08 – Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials
- ASTM D3518/D3518M-94(2007) – Standard Test Method for In-Plane Shear Response of Polymer Matrix Composite Materials by Tensile Test of a ± 45º Laminate In-Plane Shear Strength and Modulus
- ASTM D6641/D6641M-01e1(2009) – Standard Test Method for Determining the Compressive Properties of Polymer Matrix Composite Laminates Using a Combined Loading Compression (CLC) Test Fixture
- ASTM D7028-07e1 – Standard Test Method for Glass Transition Temperature (DMA Tg) of Polymer Matrix Composites by Dynamic Mechanical Analysis (DMA)

1.5 Methodology

1.5.1 Process Definition

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

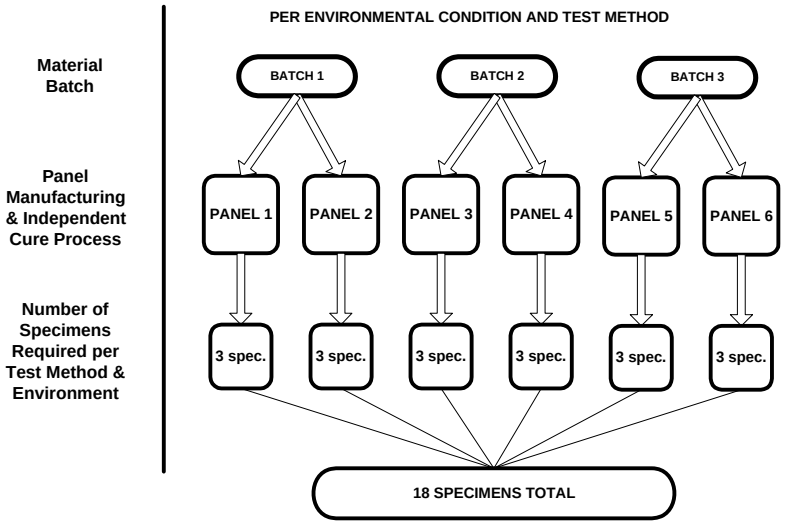


Figure 1-2: Specimen Selection Methodology

All panels were fabricated in accordance with Erickson Air-Crane (EAC) Process Specification ES0098 which is equivalent to NCAMP Process Specification NPS 81250 baseline “C” Cure Cycle, caul plate is used.

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.

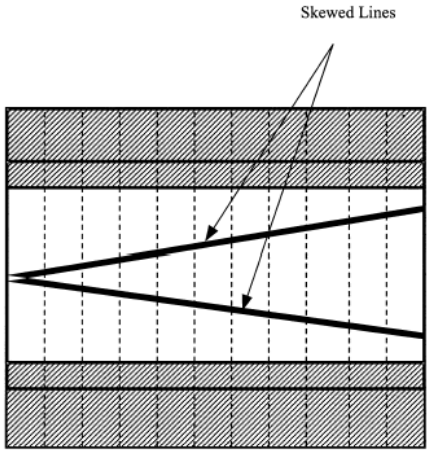


Figure 1-3: Specimen Traceability Line

1.5.2 Specimen & Testing Details

1.5.2.1 Tabbing

Longitudinal Tension coupons were tabbed (beveled) with Henkel Loctite EA 9394 and ±45° Glass tabstock.

1.5.2.2 Specimen Dimensions & Test Configuration

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

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

1.5.2.3 Specimen Strain Device Used

Corresponding Gage ID can be obtained from Appendix 1 of EAC2029 Rev C.

Uniaxial gages were used on:

- All CTD Tension specimens
- Two RTD Tension specimens for obtaining full stress strain curves
- All conditions of combined loading compression specimens

Biaxial gages were used on:

- All conditions of IPS specimens

Uniaxial Extensometers were used on:

- All RTD and ETW Tension specimens

1.5.3 Test Matrix

The table below shows the lay-ups and test matrices used for lamina level testing.

Layup	Test Type and Direction	Property	Number of Batches x No. of Panels x No. of Specimens			
			Test Temperature/Moisture Condition			
			CTD	RTD (4)	ETD	ETW
$[0]_5$	ASTM D3039 0° Tension	Strength, Modulus and Poisson's Ratio	3x2x3	3x2x3		3x2x3
$[0]_{12}$	ASTM D6641 0° Compression	Strength and Modulus	3x2x3	3x2x3 (1)		3x2x3
$[90]_{12}$	ASTM D3039 90° Tension	Strength and Modulus	3x2x3	3x2x3		3x2x3
$[90]_{12}$	ASTM D6641 90° Compression	Strength and Modulus	3x2x3	3x2x3 (1)		3x2x3 (3)
$[90/0/90]_5$	ASTM D6641 0° Compression (5)	Strength and Modulus	3x2x3	3x2x3 (1)	1x2x3	3x2x3 (3)
$[45/-45]_{4S}$	ASTM D3518 In-Plane Shear (2)	Strength and Modulus	3x2x3	3x2x3		3x2x3
$[0]_{27}$	ASTM D2344 Short Beam	Strength	3x2x3	3x2x3	3x2x3	3x2x3

Table 1-1: Lamina Level Test Matrix

Note 1: Back-to-back strain gages are needed on the first two specimens. If no buckling is observed, the remaining modulus specimens will require a strain gage on one side of the specimens only. An appropriate extensometer may be used in place of the strain gage.

Note 2: Once the samples have reached 5% of the full scale testing strain level, the actuator/crosshead displacement rate can be increased by four times the initial rate. Continue testing at the higher strain rate until ultimate failure is observed.

Note 3: Since strain gages are used for modulus measurement, a separate set of 18 un-gaged specimens must be used for strength measurement; because the strain gage and its protective coating may prevent moisture absorption in the gage area.

Note 4: At least two specimens must be gaged to obtain full stress-strain curve to failure. An appropriate extensometer may be used in place of the strain gage for the remaining specimens.

Note 5: Derive the 0° lamina compressive strength $F^{cu}_{0^o\ plies}$ as follows

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

Where:

$F^{cu}_{0^o\ plies}$ = 0° ply Strength

$F^{cu}_{0^o/90^o}$ = 0°/90° or 90°/0° cross-ply laminate strength

E_1 = 0° Modulus

$E_{0^o/90^o}$ = 0°/90° or 90°/0° cross-ply laminate modulus

1.5.4 Cured Laminate Physical Testing

The properties in **Table 1-2 Physical Testing Matrix**

Table 1-2 **Physical Testing Matrix**
2 were determined for each panel used for test coupons with the exception of Tg by DMA which were conducted on one laminate per batch from each oven cure conducted where that batch is present. The tests were performed by the National Institute for Aviation Research (NIAR) Composites Laboratory under the supervision of NCAMP.

Property	**Condition/Method** (Note 1)	**Min Replicates per panel**
Cured Ply Thickness	ASTM D3171-06 (Method II)	All data from mechanical test specimens
Laminate Density	ASTM D792-08	3
Fiber Volume, % by Volume	ASTM D3171-06 (Note 2)	3
Resin Content, % by Weight	ASTM D3171-06 (Note 2)	3
Ultrasonic Through Transmission, C-Scan	CP6121 (Note 3)	1
Glass Transition Temperature, Tg by DMA flexural loading	Dry and Wet – ASTM D7028	1 Dry, 1 Wet

Table 1-2 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 II, except for laminates of materials where actual fiber weight is not accurately known prior to impregnation, as in the case for unidirectional materials. For these materials, in order to verify Method II is accurate, a minimum of 12 samples per batch shall be tested by Method I, Procedure B.

Note 3: CP6121 is equivalent to MIL-HDBK-787A. Five MHz is preferred for solid laminates. Panels with anomaly should be segregated. Microscopy images may be taken from questionable areas. NIAR must be involved in the review of all C-scans.

1.5.5 Environmental Conditioning

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

CTD = -65±5°F, dry
RTD = 70±10°F, dry
ETD = 180±5°F, dry
ETW = 180±5°F, wet

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

For dry testing, specimens were dried at 160°F±5°F for 120 to 130 hours. After drying, specimens were kept in a desiccator until mechanical testing. Alternatively, the specimens may have been left in ambient laboratory condition for a maximum of 14 days until mechanical testing (no drying was required if specimens were tested within 14 days from the date they were cured). Ambient laboratory condition is defined as 70°F±10°F. Since moisture absorption and desorption rate for epoxy is very slow at ambient temperature, there was no requirement to maintain relative humidity levels.

For wet conditioning, specimens were dried at 160°F±5°F for 120 to 130 hours minimum before being conditioned to equilibrium at 160°F±5°F and 85% ± 5%. Effective moisture equilibrium is achieved when the average moisture content of the traveler specimen changes by less than 0.02% for two consecutive determinations which are 7 ±0.5 days apart and may be expressed by:

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

Where:

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

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

1.5.6 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. The heat-up time of the specimen did not exceed 5 minutes, unless otherwise specified in individual test summary sheets. The test was started 5^{+1}_{-0} minutes after the specimen reached the test temperature. During the test, the temperature, as measured on the specimen, was within ±5°F of the required test temperature.

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

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

1.5.7 Fluid Sensitivity Screening

Data is not available

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 90º tensile strength and modulus (unidirectional only), 90º compressive strength and modulus (unidirectional only), in-plane shear strength and modulus, Poisson's ratio, SBS, and ILT. After normalizing, data scatter reduced or remained the same. If data scatter increased significantly after normalizing, the reason was investigated. Wherever properties are normalized, both measured and normalized data were reported.

For unidirectional materials the fiber areal weight cannot be measured in advance of impregnation, hence Method I of ASTM D3171, utilizing acid digestion, will be used to verify the CPT method in accordance with note (2) of Table 1-2.

Method I Fiber Volume (%vol) is 49.158 and Method 2 Fiber Volume (%vol) is 49.059. By comparing Fiber Volume values obtained from Method I and Method II, the values are deemed close enough therefore the FAW is close to the nominal of ~284 gsm. Based on the FAW data from TenCate (Avg ~284 gsm) and our Method I Phys test data (Avg. void content ~ 2.124%) it is appropriate to use the CPT Method for normalization.

The theoretically calculated cured ply thickness was 0.0090 inches. The experimentally measured cured ply thickness of 0.0092 inches has been used as the nominal cured ply thickness (CPT) for normalization purpose. This has been done at the request of the material supplier. The following normalization formula was used:

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

1.5.9 Conformity

The 3-batch qualification panels have been fabricated according to the requirements of the test plan and conformed by an FAA DAR. The test specimens and test setup have also been conformed by an FAA DAR.

Testing was witnessed by an FAA DER. Mechanical testing was carried out at the National Institute for Aviation Research, Wichita State University.

1.5.10 Material Pedigree Information

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

2 Test Results

2.1 Lamina Level Test Summary

Prepreg Material:	TenCate BT250E-6 S2 Unitape Gr 284gsm 33% RC			**TenCate BT250E-6 S2 Unitape Gr 284gsm 33% RC Lamina Properties Summary**	
Material Specification:	NMS 250/3				
Process Specification:	NPS 81250				
Fiber:	S2 Glass Unitape	**Resin:**	TenCate BT250E-6		
Tg(dry):	291.67 °F	**Tg(wet):**	252.92 °F	**Tg METHOD:**	ASTM D7028

	Batch 1	Batch 2	Batch 3		
Date of fiber manufacture	February 4, 2010	December 8, 2010	April 29, 2011	**Date of testing**	Nov 2011 - Apr 2012
Date of resin manufacture *	March 8, 2011	May 10, 2011	May 10, 2011	**Date of data submittal**	April 2, 2012
Date of prepreg manufacture	March 16, 2011	May 27, 2011	May 31, 2011		
Date of composite manufacture		Jun 2011 - Jul 2011			

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.0092 inch)

	CTD Mean		RTD Mean		ETD Mean		ETW Mean	
	Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	236.189	230.241	216.906	216.829			116.001	113.267
E_1^t [Msi]	6.618	6.460	6.489	6.488			6.483	6.335
ν_{12}^t		0.291		0.278				0.327
F_2^{tu} [ksi]		6.716		6.179				3.299
E_2^t [Msi]		1.867		1.648				0.870
**F_1^{cu} [ksi] from UNC0 ** **	164.089	161.713	150.827	151.564			40.120	38.751
E_1^c [Msi]	6.677	6.585	6.568	6.619			6.511	6.422
F_2^{cu} [ksi]		30.364		24.005				12.195
E_2^c [Msi]		1.972		1.791				1.169
UNC0 Strength [ksi]	91.957	91.014	78.244	79.169	60.342	61.480	46.565	46.082
UNC0 Modulus [Msi]	3.564	3.530	3.407	3.457	3.174	3.228	3.077	3.106
$F_{12}^{s0.2\%}$ [ksi]		7.126		5.597				3.142
$F_{12}^{s5\%strain}$ [ksi]		10.422		8.162				4.609
G_{12}^s [Msi]		0.652		0.547				0.326
SBS [ksi]		10.574		8.578		7.104		4.929

*** Three unique resin lots were used, two of the resin lots were produced on the same day.**

**** Derived from cross-ply.**

Table 2-1: Lamina Summary Data

2.2 Individual Test Summaries

2.2.1 Longitudinal Tension Properties (LT)

Material: TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Resin content: 32.78 % wt **Comp. density:** 1.820 g/cc
Fiber volume: 49.54 % vol
Ply count: 5

Test method: ASTM D 3039-08 **Modulus calculation:** 1000 to 3000 microstrain

Normalized by: 0.0092 in. CPT

Tension, 1-axis
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
[0]5

		CTD		RTD		ETW	
Test Temperature [°F]		-65		70		180	
Moisture Conditioning		Dry		Dry		Equilbrium	
Equilbrium at T, RH						160 F,85%	
Source code		EACJX XXXB		EACJX XXXA		EACJX XXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	**Mean**	236.189	230.241	216.906	216.829	116.001	113.267
	Minimum	200.685	195.928	184.445	181.550	99.063	99.315
	Maximum	272.237	260.081	236.882	236.542	128.155	125.696
	C.V.(%)	8.381	7.744	7.004	6.524	7.341	6.350
	No. Specimens	22		22		22	
	No. Prepreg Lots	3		3		3	
E_1^t [Msi]	**Mean**	6.618	6.460	6.489	6.488	6.483	6.335
	Minimum	6.426	6.189	6.178	6.251	6.287	6.080
	Maximum	6.878	6.703	6.726	6.709	6.677	6.515
	C.V.(%)	1.991	2.185	2.148	2.111	1.838	2.172
	No. Specimens	18		22		22	
	No. Prepreg Lots	3		3		3	
ν_{12}^t	**Mean**		0.291		0.278		0.327
	No. Specimens	18		21		22	
	No. Prepreg Lots	3		3		3	

2.2.2 Transverse Tension Properties (TT)

Material:	TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %					**Tension, 2-axis** TenCate BT250E-6 S2 Unitape Gr 284 RC 33 % [90]12			
Resin content:	32.05 % wt	**Comp. density:**	1.829 g/cc						
Fiber volume:	50.33 % vol								
Ply count:	12								
Test method:	ASTM D 3039-08	**Modulus calculation:**	1000 to 3000 microstrain						
Normalized by:	NA								
		CTD		**RTD**		**ETW**			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Dry		Dry		Equilbrium			
Equilbrium at T, RH						160 F,85%			
Source code		EACUX XXXB		EACUX XXXA		EACUX XXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
F_2^{tu} **[ksi]**	**Mean**		6.716		6.179		3.299		
	Minimum		5.624		5.758		2.776		
	Maximum		7.734		6.730		3.792		
	C.V.(%)		7.858		4.502		6.756		
	No. Specimens		21		21		21		
	No. Prepreg Lots		3		3		3		
E_2^t **[Msi]**	**Mean**		1.867		1.648		0.870		
	Minimum		1.742		1.562		0.777		
	Maximum		2.005		1.742		0.950		
	C.V.(%)		3.514		3.039		6.155		
	No. Specimens		18		21		21		
	No. Prepreg Lots		3		3		3		

2.2.3 Longitudinal Compression Properties (LC)

Material:	TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %						**Compression, 1-axis** TenCate BT250E-6 S2 Unitape Gr 284 RC 33 % [0]12		
Resin content:	33.02 % wt		**Comp. density:**	1.791 g/cc					
Fiber volume:	48.57 % vol								
Ply count:	12								
Test method:	ASTM D 6641-09		**Modulus calculation:**	1000 to 3000 microstrain					
Normalized by:	0.0092	in. CPT							
			CTD		**RTD**		**ETW**		
Test Temperature [°F]			-65		70		180		
Moisture Conditioning			Dry		Dry		Equilbrium		
Equilbrium at T, RH							160 F,85%		
Source code			EACLX XXXB		EACLX XXXA		EACLX XXXD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
E_1^c [Msi]	**Mean**		6.677	6.585	6.568	6.619	6.511	6.422	
	Minimum		6.434	6.330	6.326	6.379	6.197	6.195	
	Maximum		7.099	6.990	6.839	6.857	6.744	6.757	
	C.V.(%)		2.974	3.102	2.638	2.018	2.144	2.281	
	No. Specimens		18		18		21		
	No. Prepreg Lots		3		3		3		

2.2.4 Transverse Compression Properties (TC)

Material:	TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %					**Compression, 2-axis** TenCate BT250E-6 S2 Unitape Gr 284 RC 33 % [90]12			
Resin content:	33.58 % wt	**Comp. density:**	1.786 g/cc						
Fiber volume:	48.03 % vol								
Ply count:	12								
Test method:	ASTM D 6641-09	**Modulus calculation:**	1000 to 3000 microstrain						
Normalized by:	NA								
		CTD		**RTD**		**ETW**			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Dry		Dry		Equilbrium			
Equilbrium at T, RH						160 F,85%			
Source code		EACZX XXXB		EACZX XXXA		EACZX XXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
F_2^{cu} **[ksi]**	**Mean**		30.364		24.005		12.195		
	Minimum		26.509		21.685		10.850		
	Maximum		33.656		26.279		14.054		
	C.V.(%)		6.107		5.436		6.209		
	No. Specimens		21		21		22		
	No. Prepreg Lots		3		3		3		
E_2^c **[Msi]**	**Mean**		1.972		1.791		1.169		
	Minimum		1.907		1.692		1.097		
	Maximum		2.157		1.885		1.237		
	C.V.(%)		3.652		3.101		3.665		
	No. Specimens		18		18		21		
	No. Prepreg Lots		3		3		3		

2.2.5 In-Plane Shear Properties (IPS)

Material:	TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %					**In-Plane Shear** TenCate BT250E-6 S2 Unitape Gr 284 RC 33 % [45/-45]4S			
Resin content:	33.04 % wt	**Comp. density:**	1.802 g/cc						
Fiber volume:	48.84 % vol								
Ply count:	16								
Test method:	ASTM D 3518-07	**Modulus calculation:**	2000 to 6000 microstrain						
Normalized by:	NA								
		CTD		**RTD**		**ETW**			
Test Temperature [°F]		-65		70		180			
Moisture Conditioning		Dry		Dry		Equilbrium			
Equilbrium at T, RH						160 F,85%			
Source code		EACNX XXXB		EACNX XXXA		EACNX XXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
$F_{12}^{s0.2\%}$ [ksi]	**Mean**		7.126		5.597		3.142		
	Minimum		6.858		5.394		2.821		
	Maximum		7.527		5.811		3.354		
	C.V.(%)		2.410		2.070		5.054		
	No. Specimens	21		21		21			
	No. Prepreg Lots	3		3		3			
$F_{12}^{s5\%strain}$ [ksi]	**Mean**		10.422		8.162		4.609		
	Minimum		10.162		7.892		4.199		
	Maximum		10.946		8.494		4.940		
	C.V.(%)		2.986		2.477		4.390		
	No. Specimens	7		21		21			
	No. Prepreg Lots	3		3		3			
G_{12}^{s} [Msi]	**Mean**		0.652		0.547		0.326		
	Minimum		0.617		0.532		0.292		
	Maximum		0.690		0.560		0.348		
	C.V.(%)		3.054		1.461		5.383		
	No. Specimens	21		21		21			
	No. Prepreg Lots	3		3		3			

2.2.6 “33/0/67” Unnotched Compression 0 Properties (UNC0)

Material:	TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %						**Unnotched Compression 0/90** TenCate BT250E-6 S2 Unitape Gr 284 RC 33 % [90/0/90]5		
Resin content:	33.98 % wt		**Comp. density:**	1.799 g/cc					
Fiber volume:	48.10 % vol								
Ply count:	15								
Test method:	ASTM D 6641-09		**Modulus calculation:**	1000 to 3000 microstrain					
Normalized by:	0.0092	in. CPT							
			CTD		**RTD**		**ETD**		**ETW**	
Test Temperature [°F]			-65		70		180		180	
Moisture Conditioning			Dry		Dry		Dry		Equilbrium	
Equilbrium at T, RH									160 F,85%	
Source code			EACRX XXXB		EACRX XXXA		EACRX XXXC		EACRX XXXD	
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
UNC0 Strength [ksi]	**Mean**		91.957	91.014	78.244	79.169	60.342	61.480	46.565	46.082
	Minimum		81.720	80.863	70.852	71.628	53.355	54.025	40.912	40.827
	Maximum		101.655	100.409	86.577	89.496	64.396	66.585	51.915	50.294
	C.V.(%)		6.558	6.244	5.201	5.524	6.196	7.183	5.553	5.076
	No. Specimens		20		21		8		21	
	No. Prepreg Lots		3		3		1		3	
UNC0 Modulus [Msi]	**Mean**		3.564	3.530	3.407	3.457	3.174	3.228	3.077	3.106
	Minimum		3.345	3.310	3.259	3.339	3.100	3.080	2.929	2.856
	Maximum		3.750	3.630	3.529	3.607	3.286	3.404	3.200	3.301
	C.V.(%)		2.695	2.440	2.292	2.190	2.338	3.939	2.516	3.633
	No. Specimens		18		18		6		21	
	No. Prepreg Lots		3		3		1		3	

2.2.7 Lamina Short-Beam Strength Properties (SBS)

Material: TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Resin content: 31.69 % wt **Comp. density:** 1.808 g/cc
Fiber volume: 50.00 % vol
Ply count: 27

Test method: ASTM D 2344-06

Normalized by: NA

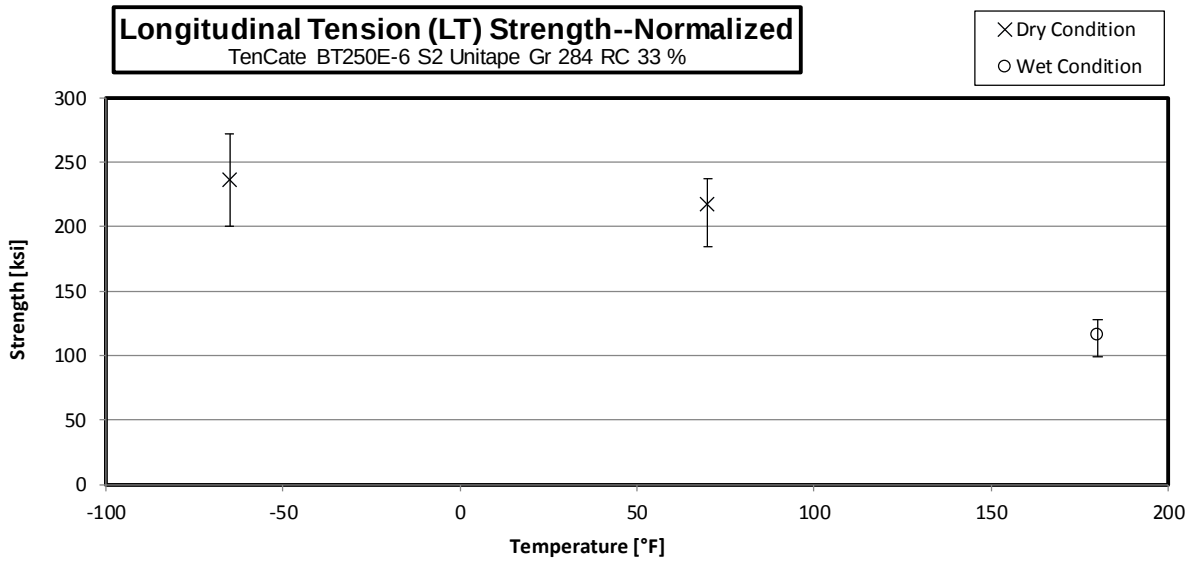
Short-Beam Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
[0]27

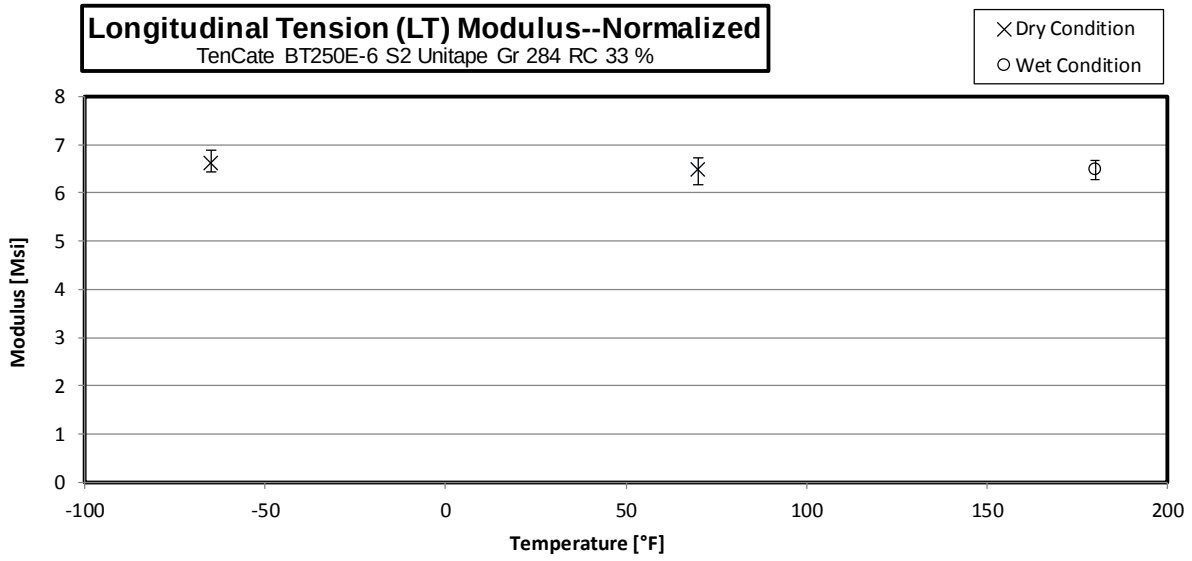
		CTD		RTD		ETD		ETW	
Test Temperature [°F]		-65		70		180		180	
Moisture Conditioning		Dry		Dry		Dry		Equilbrium	
Equilbrium at T, RH								160 F,85%	
Source code		EACQX XXXB		EACQX XXXA		EACQX XXXC		EACQX XXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS [ksi]	**Mean**		10.574		8.578		7.104		4.929
	Minimum		8.744		7.243		6.267		4.259
	Maximum		12.347		9.852		7.844		5.486
	C.V.(%)		9.689		8.767		6.766		8.349
	No. Specimens		21		21		22		21
	No. Prepreg Lots		3		3		3		3

3. Individual Test Charts

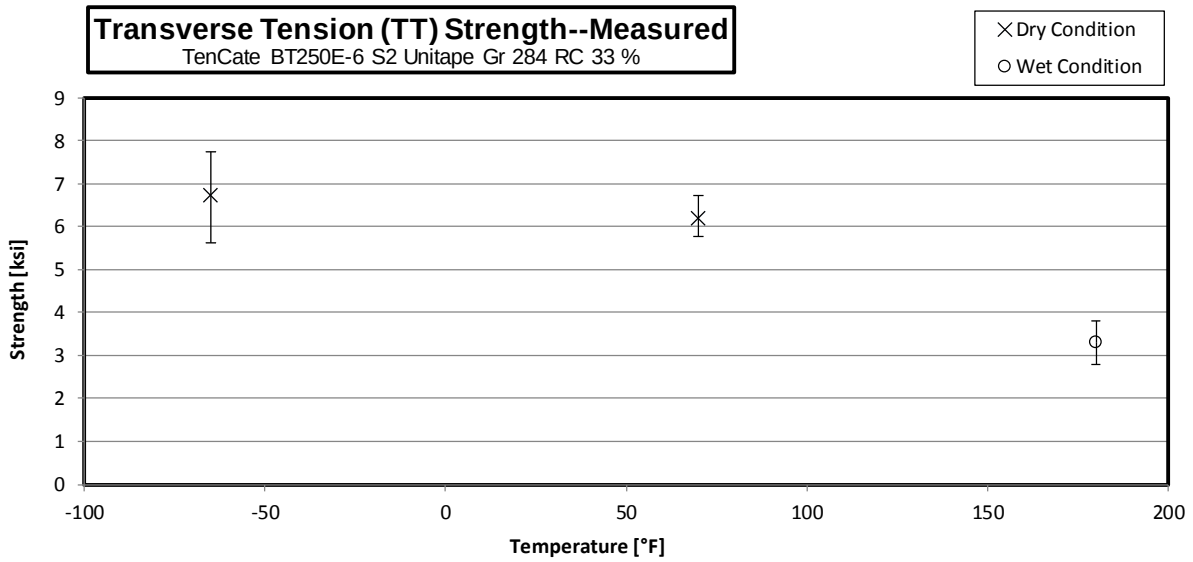
These charts combine all three batches of data and plot the minimum and maximum modulus and strength range based on the test temperature.

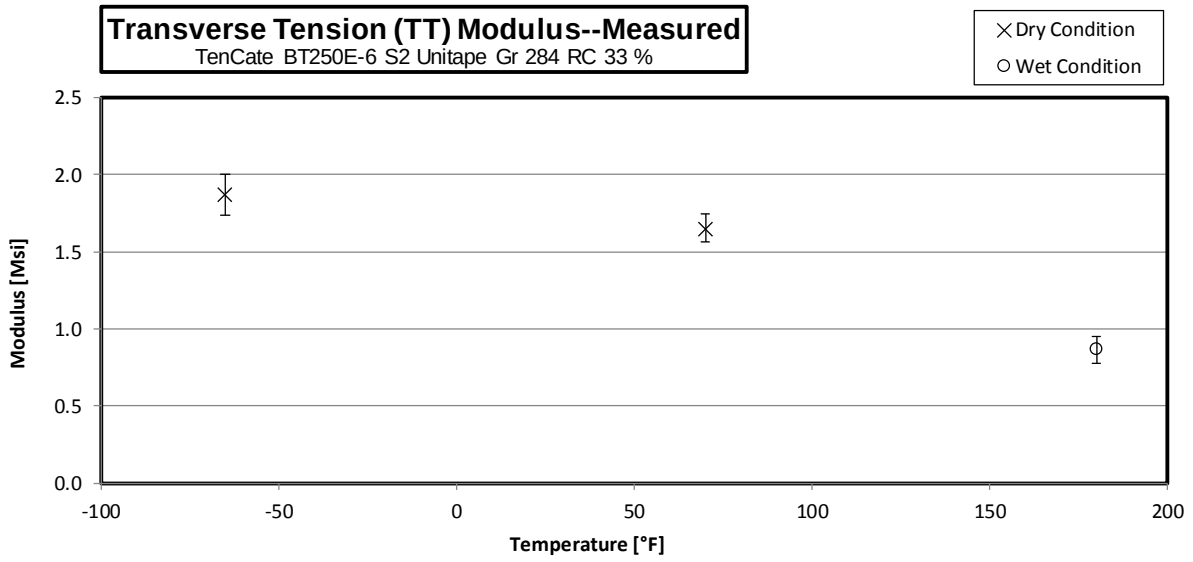
3.1 Longitudinal Tension Properties (LT)



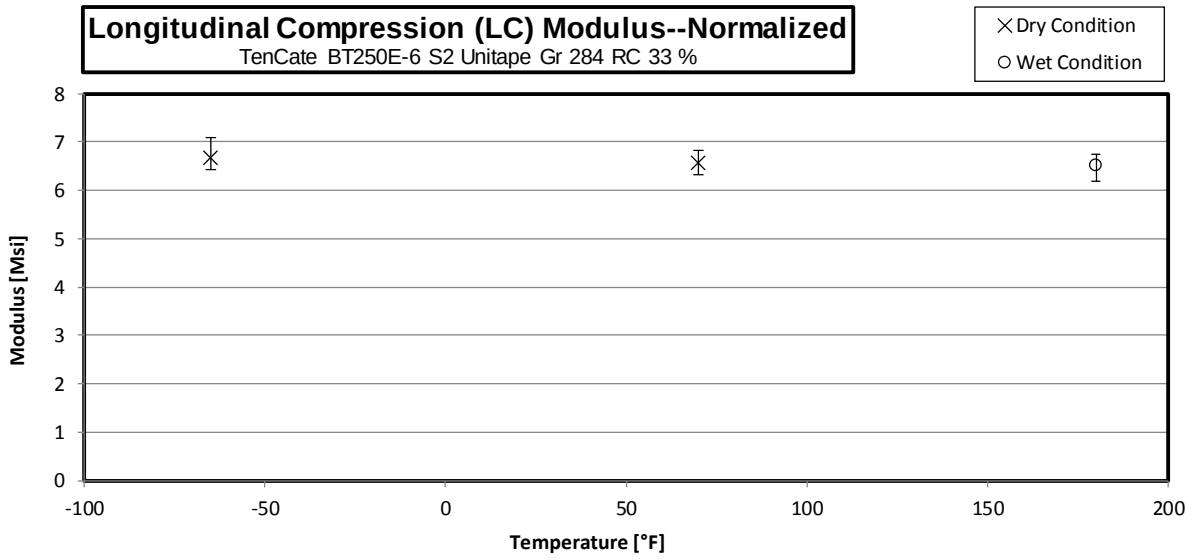


3.2 Transverse Tension Properties (TT)

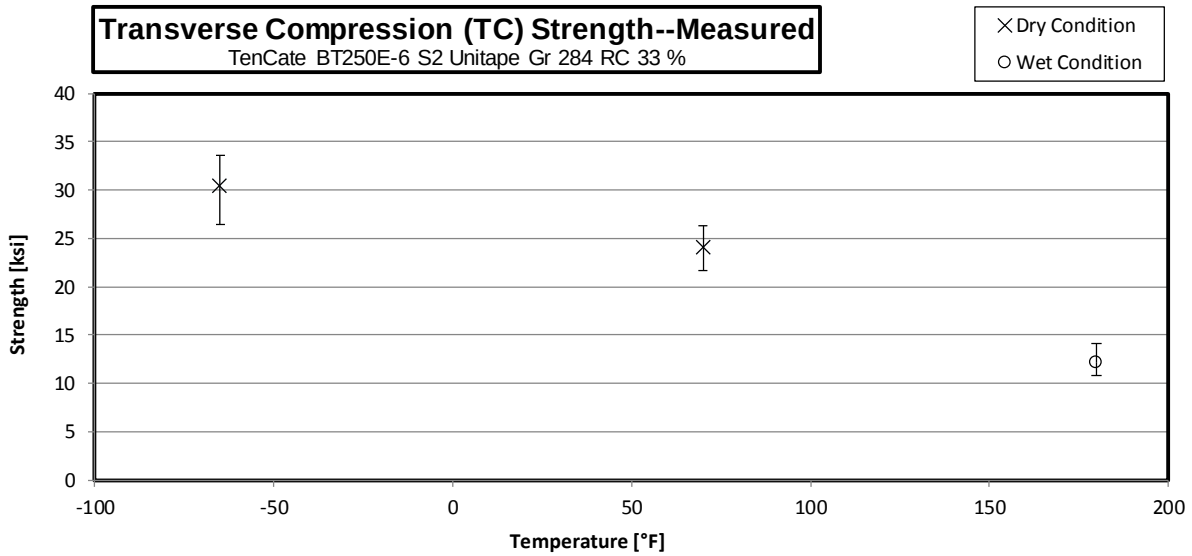


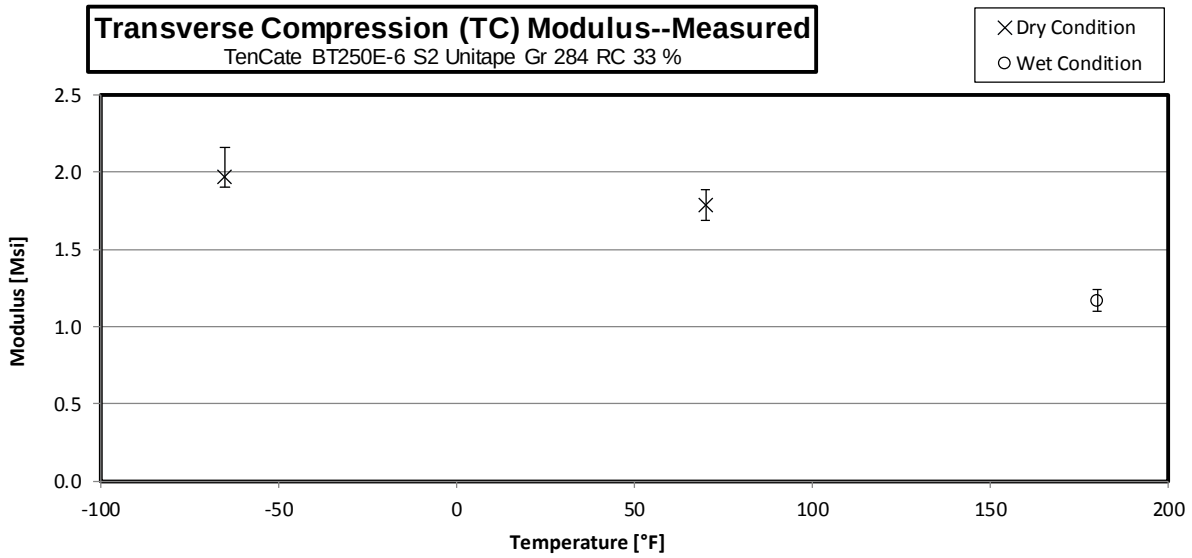


3.3 Longitudinal Compression Properties (LC)

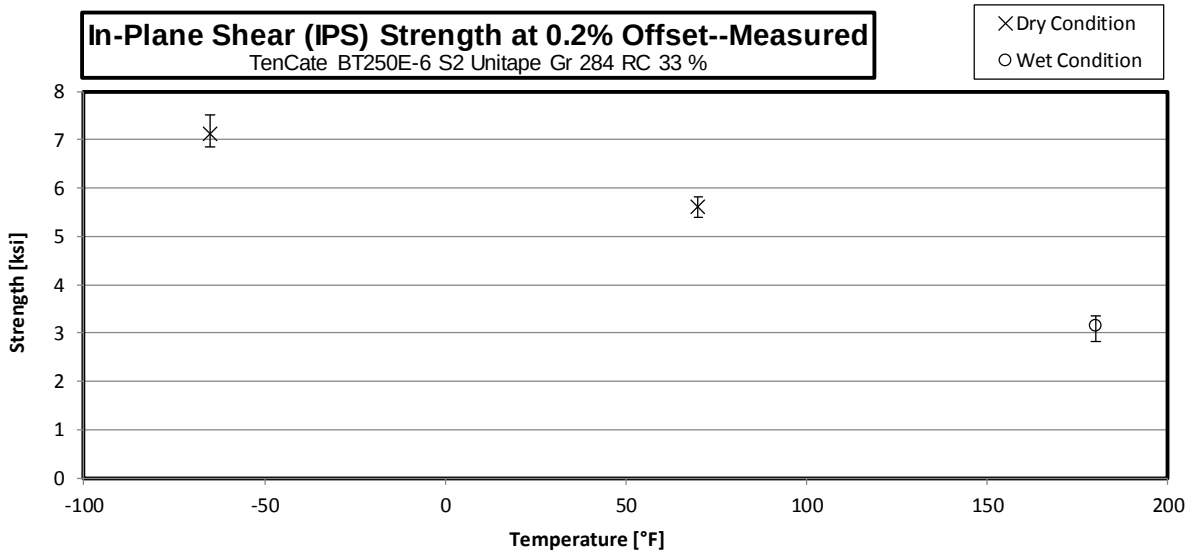


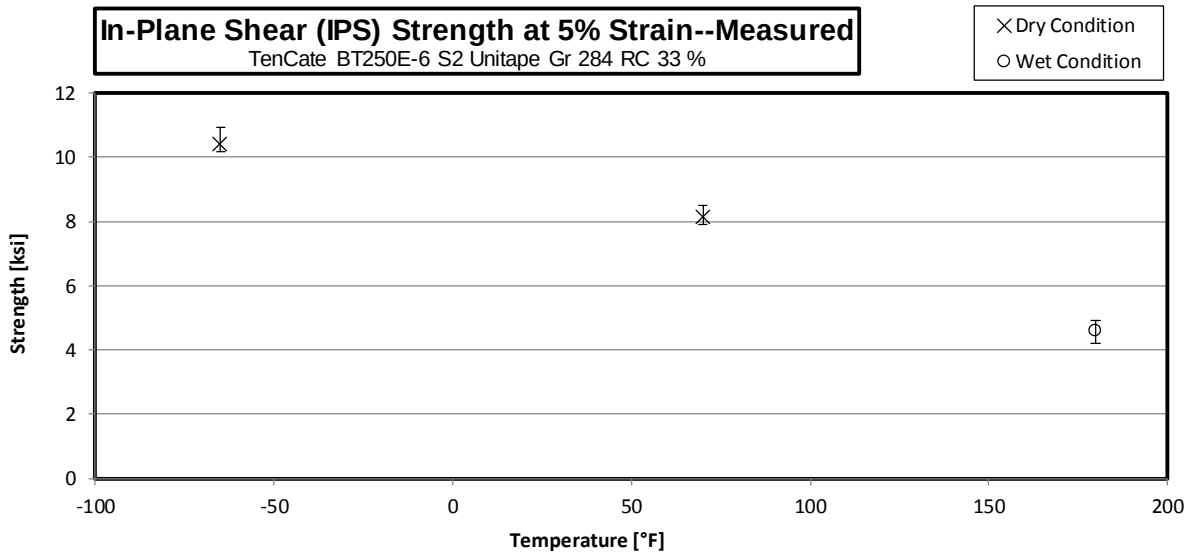
3.4 Transverse Compression Properties (TC)

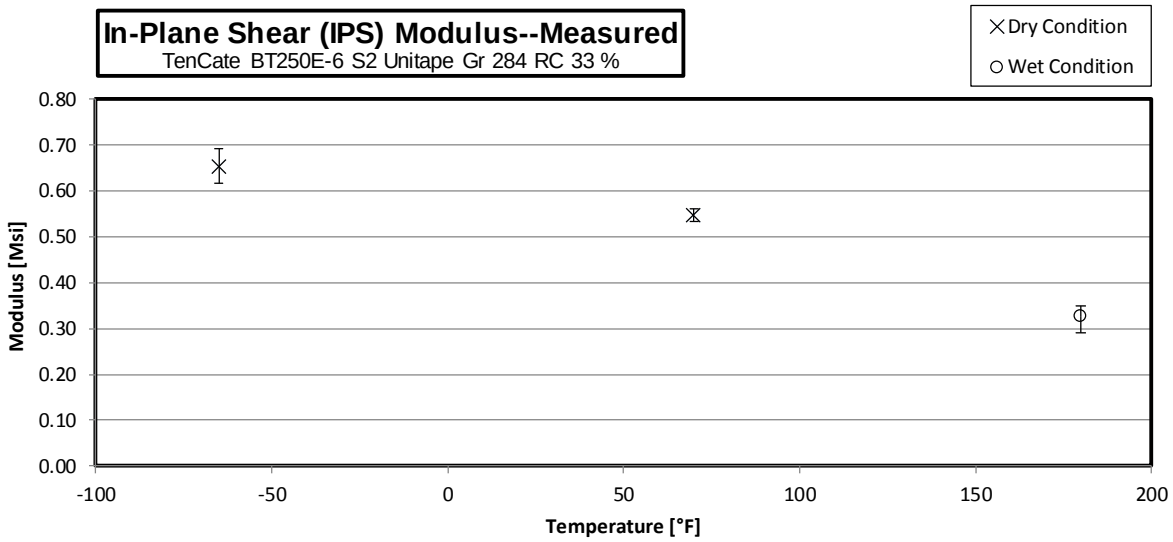




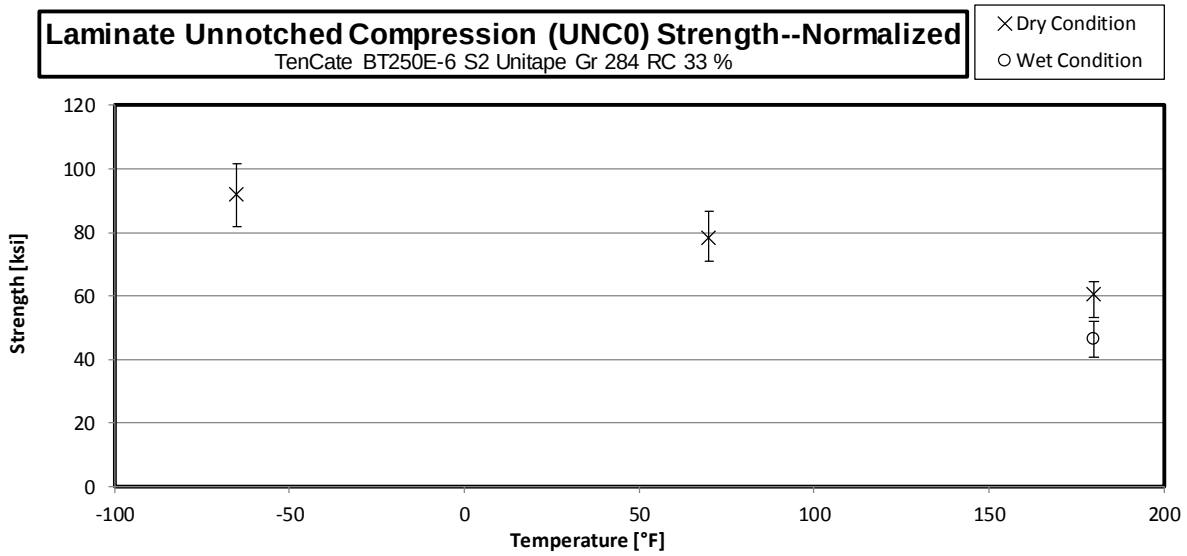
3.5 In-Plane Shear Properties (IPS)

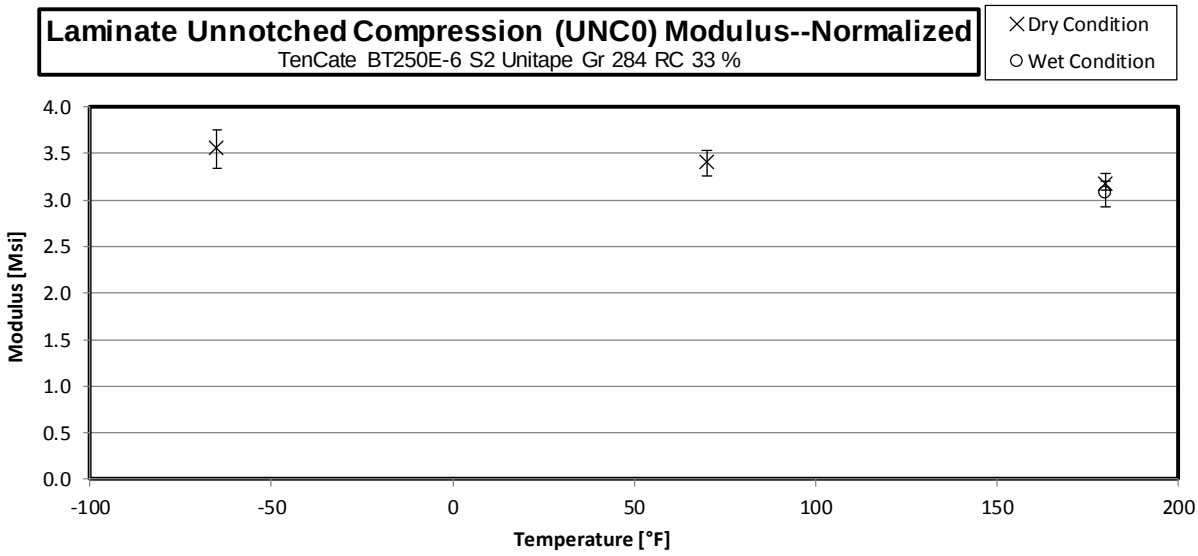




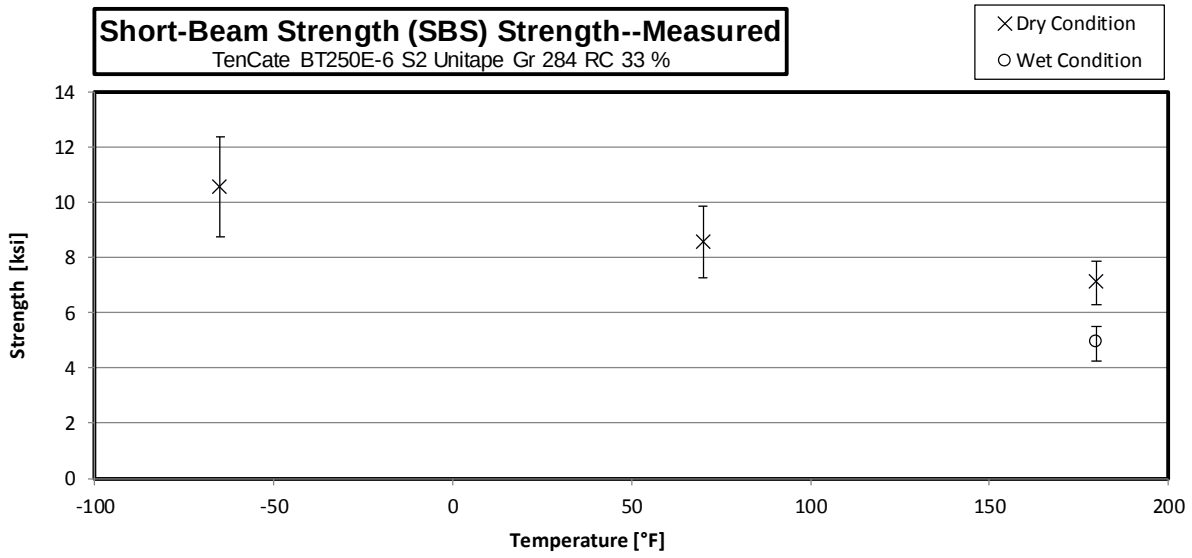

In-Plane Shear (IPS) Modulus--Measured
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Dry Condition
Wet Condition
Modulus [Msi]
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-100
-50
0
50
100
150
200
Temperature [°F]

3.6 "33/0/67" Unnotched Compression 0 Properties (UNC0)





3.7 Lamina Short-Beam Shear Properties (SBS)



4. Individual Test Data

4.1 Longitudinal Tension Properties (LT)

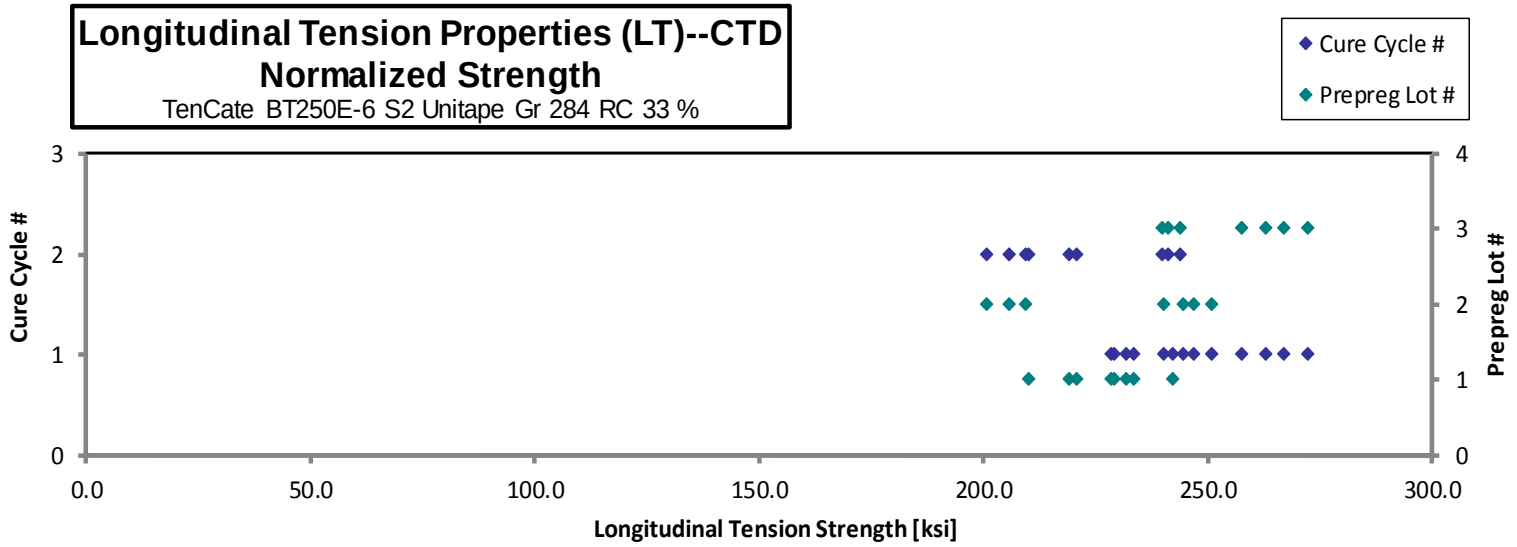
Longitudinal Tension Properties (LT)--CTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

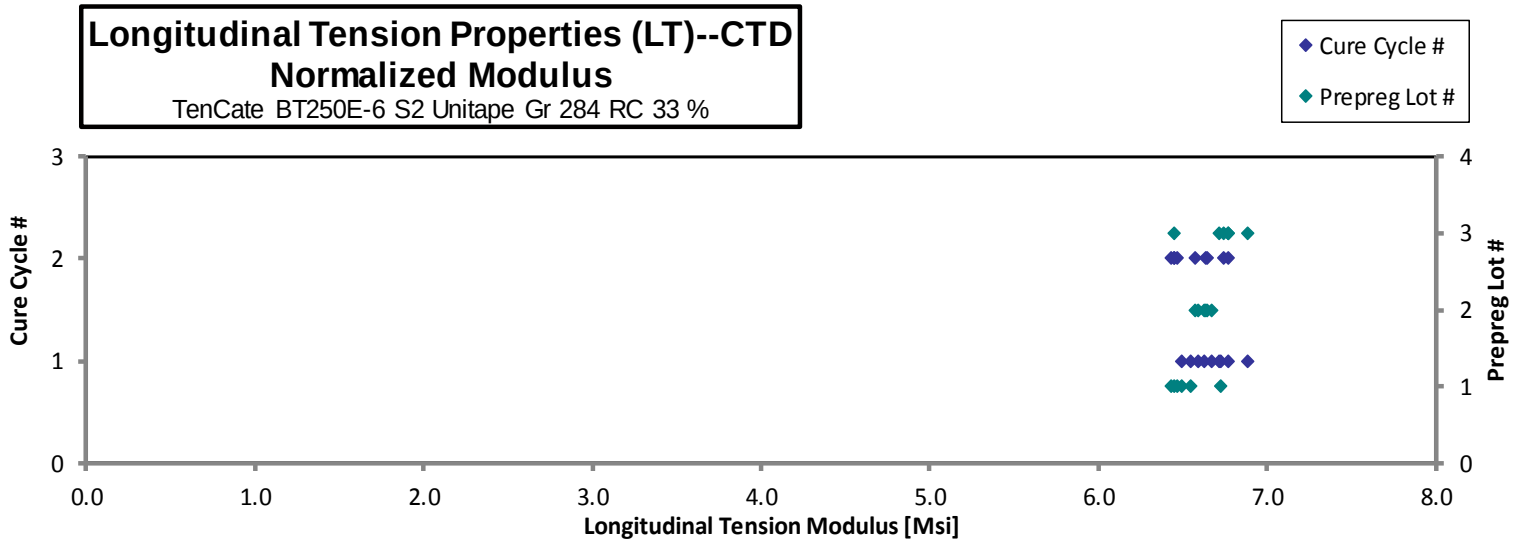
normalizing t_{ply} [in]: 0.0092

Specimen Number	EAC Batch #	EAC 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]
EACJA116B	A	C1	1	1	224.323	6.507	0.302	0.048	5	XGM	0.0095	231.719	6.722
EACJA117B	A	C1	1	1	223.686	6.405	0.279	0.047	5	XGM	0.0094	228.386	6.540
EACJA118B	A	C1	1	1	229.075	6.367	0.296	0.047	5	XGM	0.0094	233.474	6.489
EACJA119B*	A	C1	1	1	219.672			0.048	5	XGM	0.0096	228.904	
EACJA11AB*	A	C1	1	1	240.956			0.046	5	XGM	0.0092	242.179	
EACJA215B	A	C2	1	2	213.725	6.267	0.294	0.047	5	XGM	0.0094	219.146	6.426
EACJA216B	A	C2	1	2	214.712	6.277	0.294	0.047	5	XGM	0.0095	220.547	6.448
EACJA217B	A	C2	1	2	202.865	6.244	0.285	0.048	5	XGM	0.0095	209.995	6.464
EACJB116B	B	C1	2	1	243.141	6.554	0.284	0.046	5	XGM	0.0092	244.374	6.587
EACJB117B	B	C1	2	1	248.069	6.550	0.282	0.047	5	XGM	0.0093	250.855	6.624
EACJB118B	B	C1	2	1	242.968	6.567	0.291	0.047	5	XGM	0.0093	246.841	6.672
EACJB119B*	B	C1	2	1	234.523			0.047	5	XGM	0.0094	240.131	
EACJB215B	B	C2	2	2	195.928	6.479	0.295	0.047	5	XGM	0.0094	200.685	6.636
EACJB216B	B	C2	2	2	210.067	6.597	0.278	0.046	5	XGM	0.0092	209.230	6.571
EACJB217B	B	C2	2	2	207.519	6.703	0.283	0.046	5	XGM	0.0091	205.639	6.642
EACJC116B	C	C1	3	1	260.081	6.465	0.286	0.048	5	XGM	0.0096	272.237	6.767
EACJC117B	C	C1	3	1	252.521	6.452	0.299	0.048	5	XGM	0.0096	262.676	6.712
EACJC118B	C	C1	3	1	255.686	6.589	0.302	0.048	5	XGM	0.0096	266.895	6.878
EACJC119B*	C	C1	3	1	246.631			0.048	5	XGM	0.0096	257.622	
EACJC215B	C	C2	3	2	235.477	6.506	0.309	0.048	5	XGM	0.0095	243.838	6.737
EACJC216B	C	C2	3	2	230.114	6.189	0.296	0.048	5	XGM	0.0096	239.619	6.444
EACJC217B	C	C2	3	2	233.558	6.553	0.278	0.048	5	XGM	0.0095	241.174	6.766

* Specimen was not gaged and tested for strength only.

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**230.241**	**6.460**	**0.291**	**$Average_{norm}$**	**0.0094**	**236.189**	**6.618**
Standard Dev.	**17.829**	**0.141**	**0.009**	**Standard $Dev._{norm}$**		**19.795**	**0.132**
Coeff. of Var. [%]	**7.744**	**2.185**	**3.197**	**Coeff. of Var. $[\%]_{norm}$**		**8.381**	**1.991**
Min.	**195.928**	**6.189**	**0.278**	**Min.**	**0.0091**	**200.685**	**6.426**
Max.	**260.081**	**6.703**	**0.309**	**Max.**	**0.0096**	**272.237**	**6.878**
Number of Spec.	**22**	**18**	**18**	**Number of Spec.**	**22**	**22**	**18**


Longitudinal Tension Properties (LT)--CTD
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
50.0
100.0
150.0
200.0
250.0
300.0
Longitudinal Tension Strength [ksi]


Longitudinal Tension Properties (LT)--CTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Tension Modulus [Msi]

Longitudinal Tension Properties (LT)--RTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

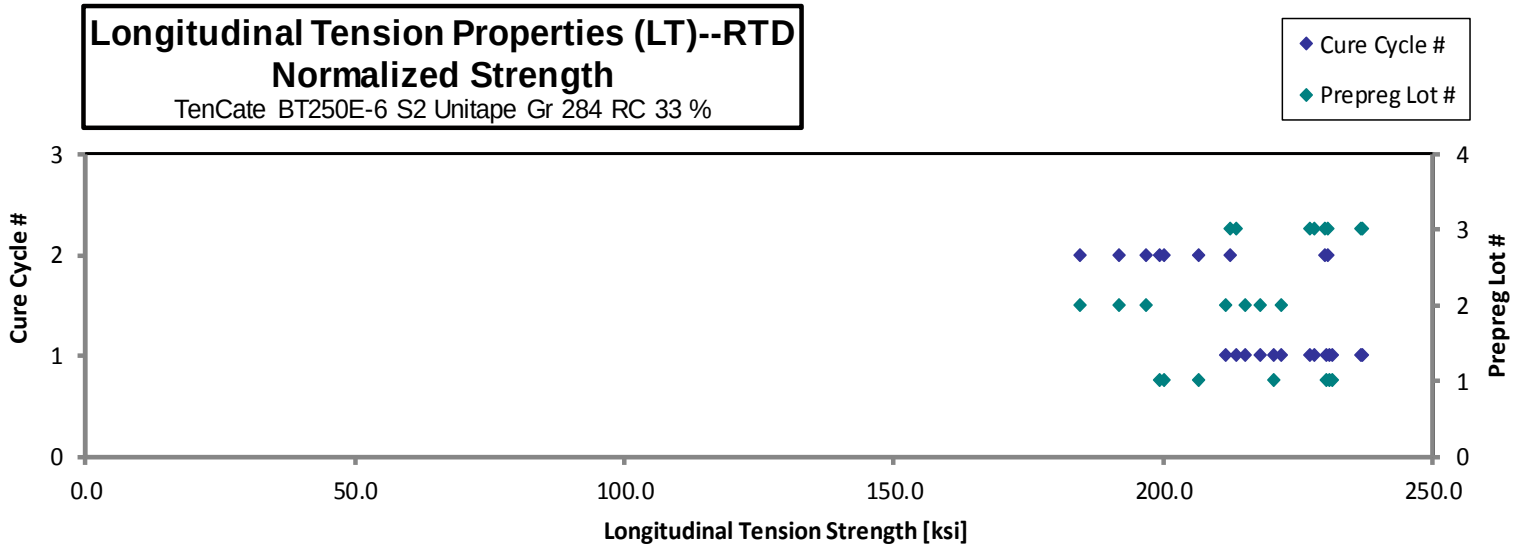
normalizing t_{ply} [in]: 0.0092

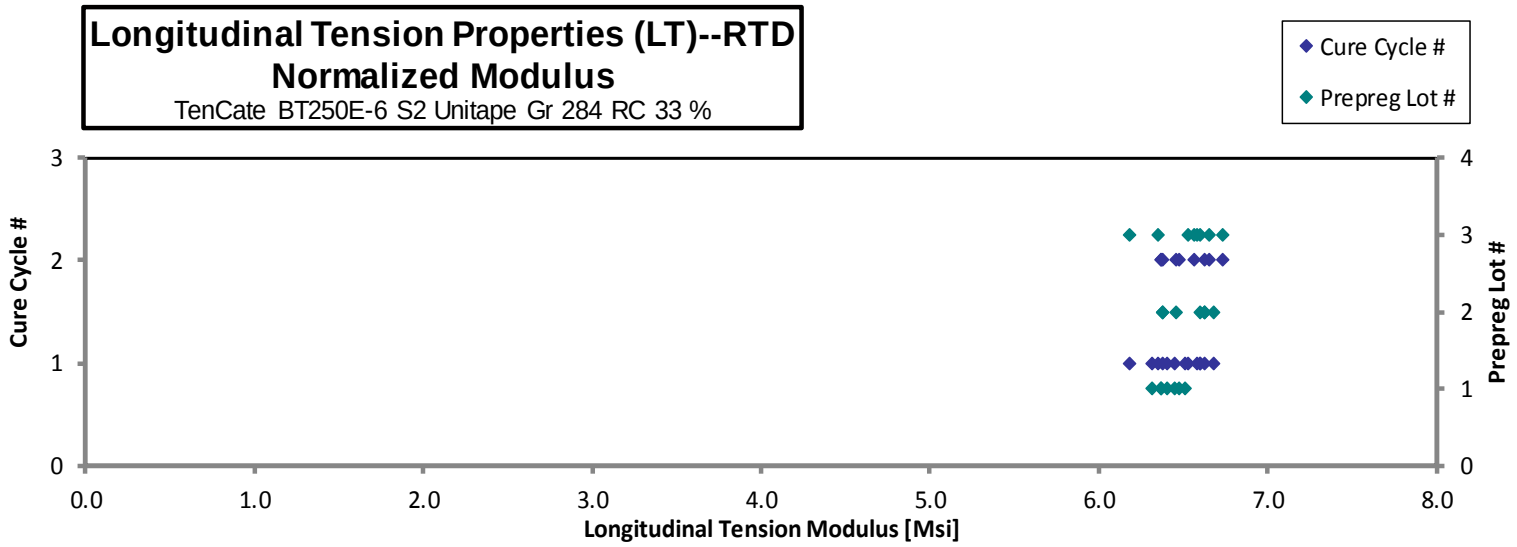
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EACJA111A	A	C1	1	1	228.184	6.535	0.286	0.044	5	XGM	0.0089	220.413	6.312
EACJA112A	A	C1	1	1	236.542	6.613	0.286	0.045	5	XGM	0.0090	230.629	6.448
EACJA113A	A	C1	1	1	227.342	6.317	0.279	0.047	5	XGM	0.0093	230.224	6.397
EACJA114A	A	C1	1	1	225.245	6.341	0.260	0.047	5	XGM	0.0094	231.284	6.511
EACJA211A	A	C2	1	2	209.530	6.698	0.271	0.044	5	XGM	0.0087	199.129	6.365
EACJA212A	A	C2	1	2	209.383	6.566	0.304	0.045	5	XGM	0.0091	206.424	6.473
EACJA213A	A	C2	1	2	196.450	6.251	0.267	0.047	5	XGM	0.0094	199.938	6.362
EACJB111A	B	C1	2	1	219.148	6.611	0.284	0.044	5	XGM	0.0089	211.367	6.377
EACJB112A	B	C1	2	1	221.614	6.709	0.260	0.045	5	XGM	0.0090	217.840	6.595
EACJB113A	B	C1	2	1	213.707	6.577	0.288	0.046	5	XGM	0.0093	215.179	6.622
EACJB114A	B	C1	2	1	220.164	6.634	0.270	0.046	5	XGM	0.0093	221.680	6.679
EACJB211A	B	C2	2	2	196.068	6.517	0.280	0.045	5	XGM	0.0090	191.663	6.371
EACJB212A	B	C2	2	2	181.550	6.355	0.276	0.047	5	XGM	0.0093	184.445	6.456
EACJB213A	B	C2	2	2	196.422	6.607	0.288	0.046	5	XGM	0.0092	196.849	6.622
EACJC111A	C	C1	3	1	225.756	6.531	0.276	0.044	5	XGM	0.0087	213.569	6.178
EACJC112A	C	C1	3	1	229.727	6.395	0.289	0.046	5	XGM	0.0091	227.979	6.346
EACJC113A	C	C1	3	1	230.806	6.434	0.285	0.047	5	XGM	0.0094	236.576	6.595
EACJC114A	C	C1	3	1	218.404	6.277	*	0.048	5	XGM	0.0096	227.188	6.529
EACJC115A	C	C1	3	1	227.170	6.306	0.276	0.048	5	XGM	0.0096	236.882	6.576
EACJC211A	C	C2	3	2	228.813	6.513	0.272	0.046	5	XGM	0.0093	230.471	6.560
EACJC212A	C	C2	3	2	222.115	6.500	0.281	0.048	5	XGM	0.0095	229.840	6.726
EACJC213A	C	C2	3	2	206.089	6.452	0.260	0.047	5	XGM	0.0095	212.361	6.648

* Poisson's ratio not reported due to non-linearity.

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio
Average	**216.829**	**6.488**	**0.278**
Standard Dev.	**14.145**	**0.137**	**0.011**
Coeff. of Var. [%]	**6.524**	**2.111**	**3.972**
Min.	**181.550**	**6.251**	**0.260**
Max.	**236.542**	**6.709**	**0.304**
Number of Spec.	**22**	**22**	**21**

	t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	**0.0092**	**216.906**	**6.489**
Standard $Dev._{norm}$		**15.192**	**0.139**
Coeff. of Var. $[\%]_{norm}$		**7.004**	**2.148**
Min.	**0.0087**	**184.445**	**6.178**
Max.	**0.0096**	**236.882**	**6.726**
Number of Spec.	**22**	**22**	**22**


Longitudinal Tension Properties (LT)--RTD
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
50.0
100.0
150.0
200.0
250.0
Longitudinal Tension Strength [ksi]


Longitudinal Tension Properties (LT)--RTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Tension Modulus [Msi]

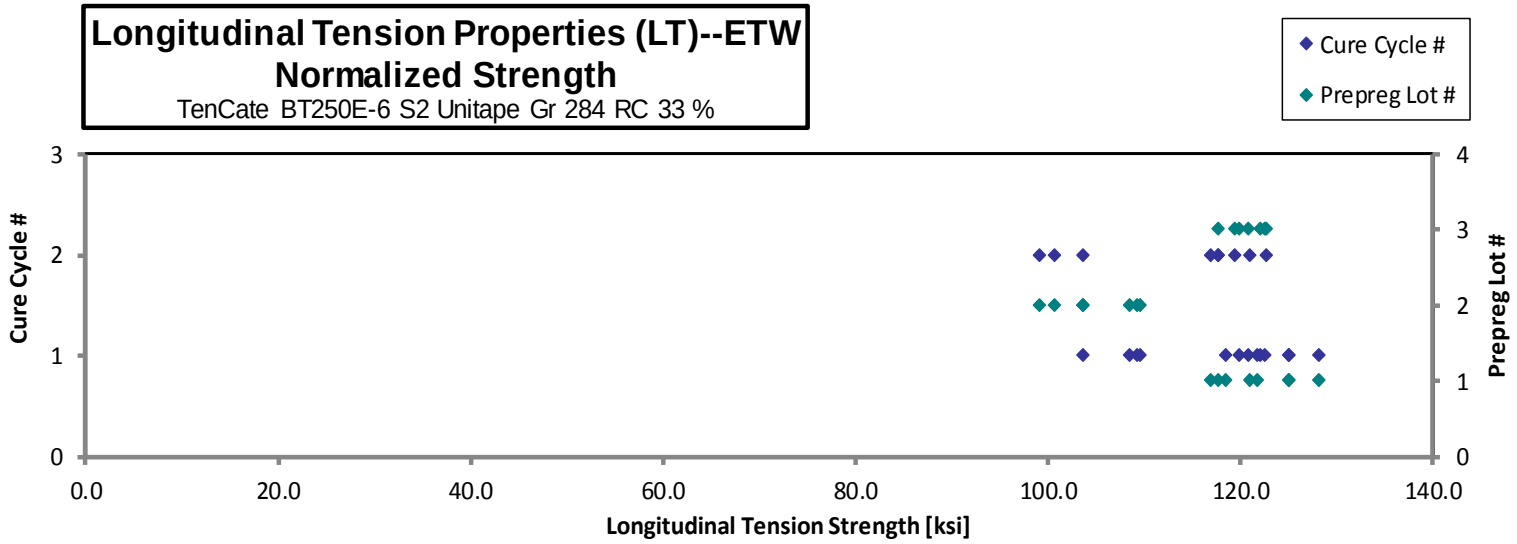
Longitudinal Tension Properties (LT)--ETW
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

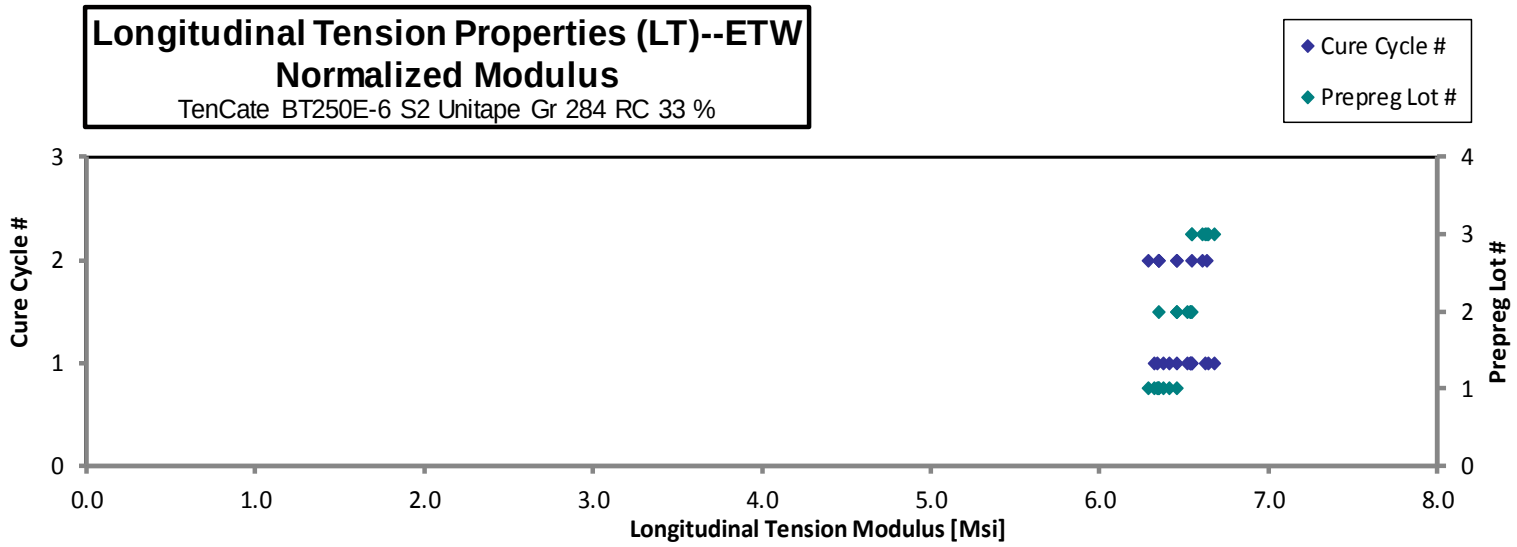
normalizing t_{ply} [in]
0.0092

Specimen Number	EAC Batch #	EAC 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]
EACJA11BD	A	C1	1	1	118.728	6.221	0.325	0.047	5	SGM	0.0094	121.782	6.381
EACJA11CD	A	C1	1	1	116.016	6.191	0.315	0.047	5	SGM	0.0094	118.454	6.322
EACJA11DD	A	C1	1	1	121.185	6.267	0.326	0.047	5	SGM	0.0095	124.961	6.463
EACJA11ED	A	C1	1	1	121.285	6.157	0.325	0.047	5	SGM	0.0095	124.932	6.342
EACJA11FD	A	C1	1	1	125.696	6.290	0.336	0.047	5	SGM	0.0094	128.155	6.413
EACJA219D	A	C2	1	2	113.931	6.151	0.325	0.047	5	SGM	0.0095	117.604	6.349
EACJA21AD	A	C2	1	2	112.978	6.080	0.333	0.048	5	SGM	0.0095	116.826	6.287
EACJA21BD	A	C2	1	2	115.986	6.098	0.335	0.048	5	SGM	0.0096	120.861	6.354
EACJB11BD	B	C1	2	1	108.138	6.457	0.333	0.047	5	SGM	0.0093	109.470	6.537
EACJB11CD	B	C1	2	1	102.661	6.463	0.310	0.046	5	SGM	0.0093	103.554	6.519
EACJB11DD	B	C1	2	1	107.538	6.444	0.339	0.047	5	SGM	0.0093	109.252	6.547
EACJB11ED	B	C1	2	1	106.288	6.412	0.316	0.047	5	SGM	0.0094	108.406	6.539
EACJB219D	B	C2	2	2	103.657	6.469	0.317	0.046	5	SGM	0.0092	103.545	6.462
EACJB21AD	B	C2	2	2	99.315	6.367	0.333	0.046	5	SGM	0.0092	99.063	6.351
EACJB21BD	B	C2	2	2	101.158	6.491	0.328	0.046	5	SGM	0.0092	100.681	6.461
EACJC11BD	C	C1	3	1	115.518	6.262	0.320	0.048	5	SGM	0.0096	120.708	6.544
EACJC11CD	C	C1	3	1	116.519	6.333	0.313	0.048	5	SGM	0.0096	122.007	6.631
EACJC11DD	C	C1	3	1	114.581	6.351	0.348	0.048	5	SGM	0.0096	119.812	6.641
EACJC11ED	C	C1	3	1	117.630	6.415	0.340	0.048	5	SGM	0.0096	122.446	6.677
EACJC219D	C	C2	3	2	116.733	6.471	0.336	0.047	5	SGM	0.0094	119.313	6.614
EACJC21AD	C	C2	3	2	116.017	6.460	0.316	0.047	5	SGM	0.0093	117.614	6.549
EACJC21BD	C	C2	3	2	120.319	6.515	0.316	0.047	5	SGM	0.0094	122.586	6.637

Average	**113.267**	**6.335**	**0.327**
Standard Dev.	**7.193**	**0.138**	**0.010**
Coeff. of Var. [%]	**6.350**	**2.172**	**3.162**
Min.	**99.315**	**6.080**	**0.310**
Max.	**125.696**	**6.515**	**0.348**
Number of Spec.	**22**	**22**	**22**

$Average_{norm}$	**0.0094**	**116.001**	**6.483**
Standard $Dev._{norm}$		**8.516**	**0.119**
Coeff. of Var. $[\%]_{norm}$		**7.341**	**1.838**
Min.	**0.0092**	**99.063**	**6.287**
Max.	**0.0096**	**128.155**	**6.677**
Number of Spec.	**22**	**22**	**22**


Longitudinal Tension Properties (LT)--ETW
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
Longitudinal Tension Strength [ksi]


Longitudinal Tension Properties (LT)--ETW
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Tension Modulus [Msi]

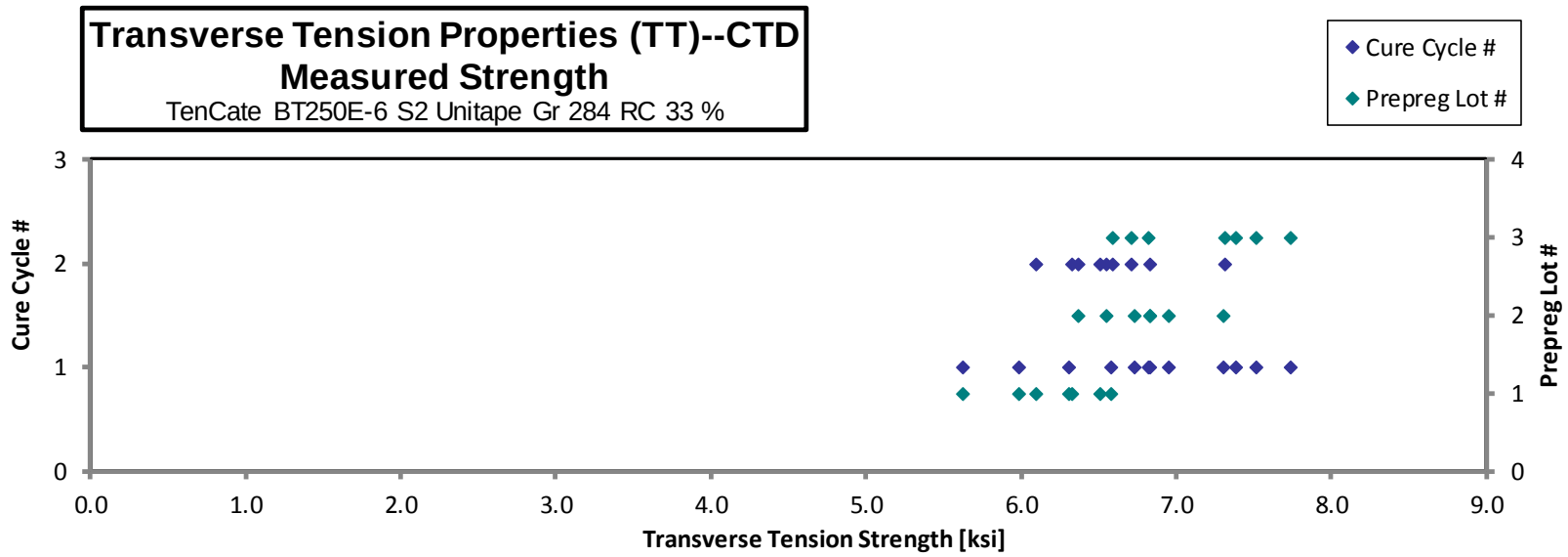
4.2 Transverse Tension Properties (TT)

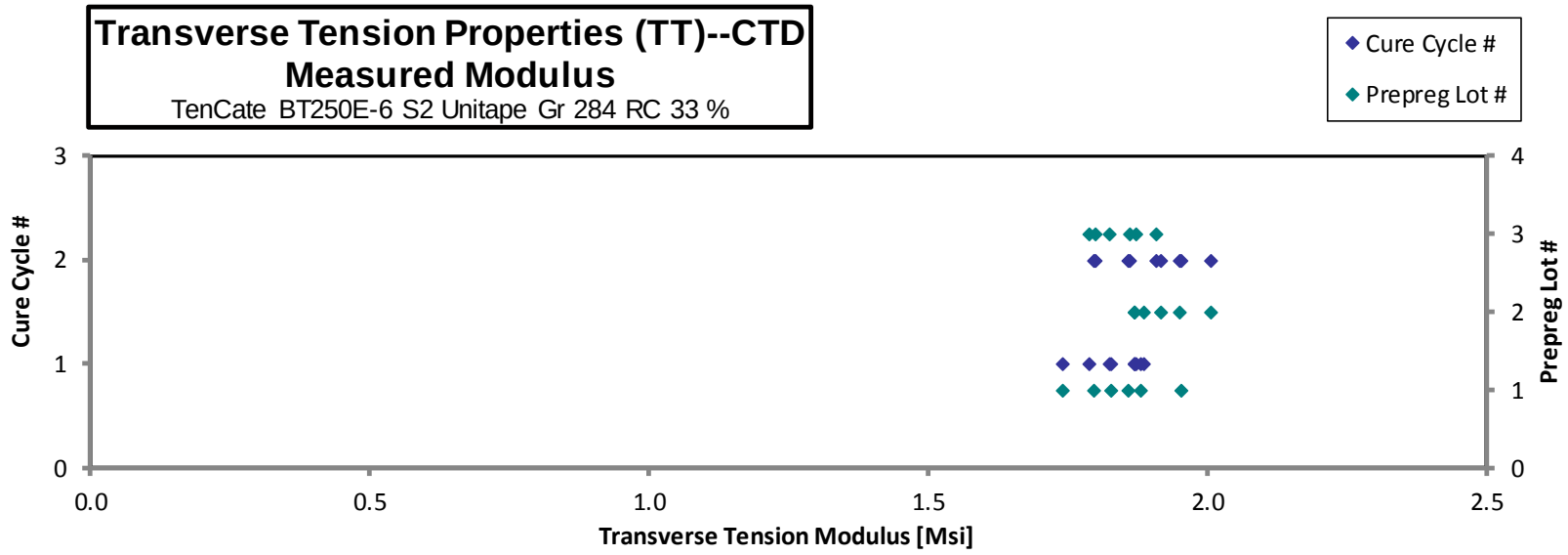
Transverse Tension Properties (TT)--CTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACUA116B	A	C1	1	1	5.985	1.742	0.113	12	0.0094	LAB
EACUA117B	A	C1	1	1	5.624	1.827	0.112	12	0.0093	LAT
EACUA118B	A	C1	1	1	6.582	1.881	0.109	12	0.0091	LAB
EACUA119B*	A	C1	1	1	6.306		0.107	12	0.0089	LAB
EACUA215B	A	C2	1	2	6.093	1.796	0.113	12	0.0094	LAT
EACUA216B	A	C2	1	2	6.511	1.859	0.112	12	0.0093	LGM / LAB
EACUA217B	A	C2	1	2	6.321	1.952	0.105	12	0.0087	LGM / LWT
EACUB116B	B	C1	2	1	7.303	1.868	0.111	12	0.0092	LWB
EACUB117B	B	C1	2	1	6.831	1.870	0.110	12	0.0092	LGM
EACUB118B	B	C1	2	1	6.948	1.885	0.109	12	0.0091	LGM
EACUB119B*	B	C1	2	1	6.729		0.106	12	0.0089	LWB
EACUB215B	B	C2	2	2	6.547	1.951	0.111	12	0.0092	LWT
EACUB216B	B	C2	2	2	6.833	1.917	0.111	12	0.0092	LGM
EACUB217B	B	C2	2	2	6.366	2.005	0.106	12	0.0088	LWT
EACUC116B	C	C1	3	1	7.379	1.825	0.112	12	0.0093	LGM
EACUC117B	C	C1	3	1	7.734	1.787	0.111	12	0.0093	LGM
EACUC118B	C	C1	3	1	6.816	1.872	0.110	12	0.0092	LGM
EACUC119B*	C	C1	3	1	7.513		0.103	12	0.0086	LGM
EACUC215B	C	C2	3	2	7.312	1.861	0.108	12	0.0090	LGM
EACUC216B	C	C2	3	2	6.584	1.908	0.106	12	0.0089	LAB
EACUC217B	C	C2	3	2	6.711	1.799	0.111	12	0.0093	LAB

* Specimen was not gaged and tested for strength only.

Average	**6.716**	**1.867**	**Average**	**0.0091**
Standard Dev.	**0.528**	**0.066**	**Standard Dev.**	
Coeff. of Var. [%]	**7.858**	**3.514**	**Coeff. of Var. [%]**	
Min.	**5.624**	**1.742**	**Min.**	**0.0086**
Max.	**7.734**	**2.005**	**Max.**	**0.0094**
Number of Spec.	**21**	**18**	**Number of Spec.**	**21**

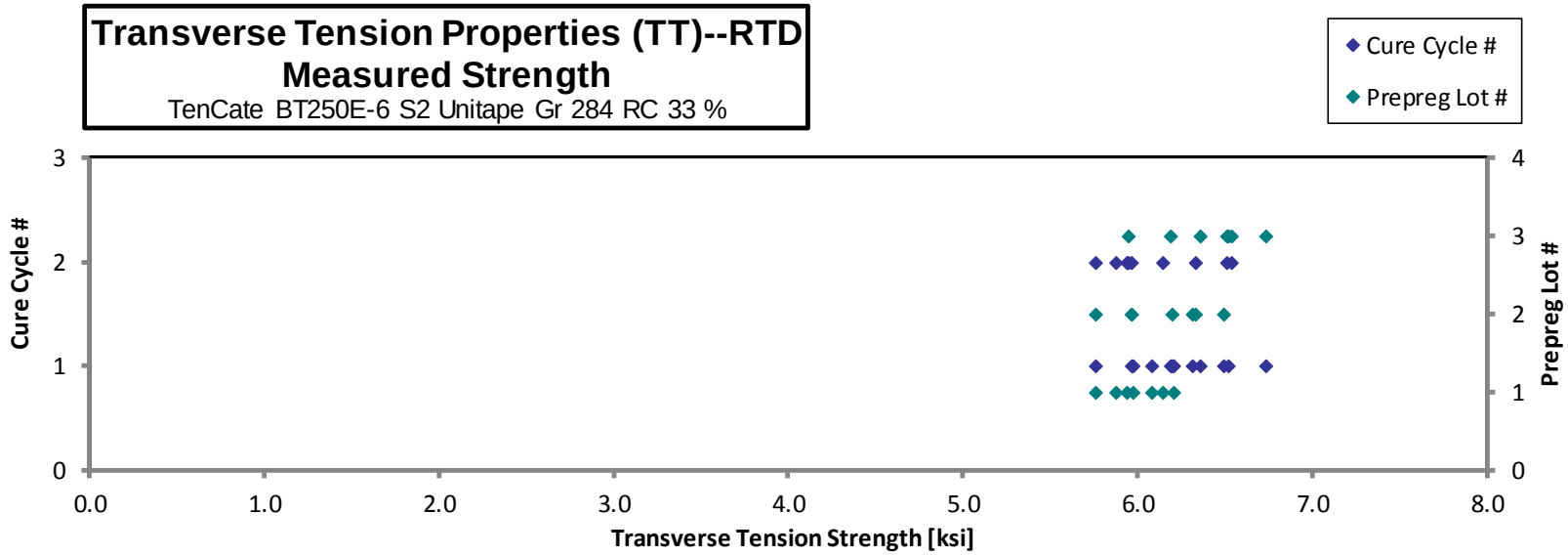

Transverse Tension Properties (TT)--CTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
0
1
2
3
4

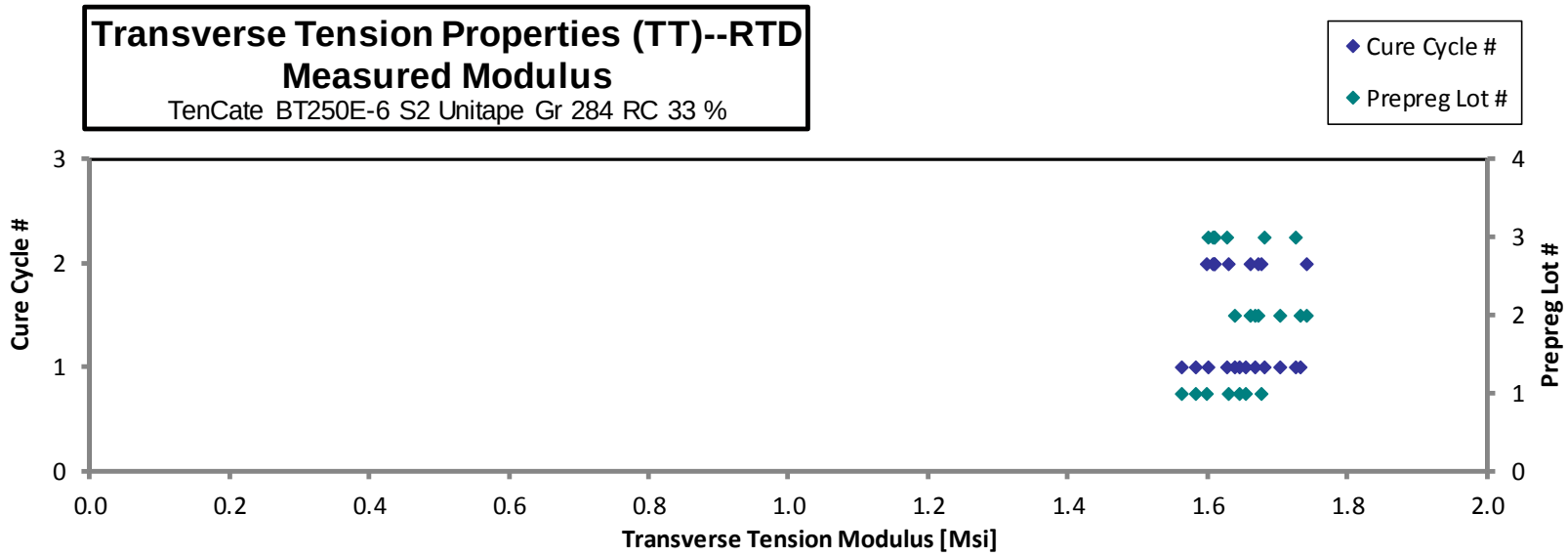

Transverse Tension Properties (TT)--CTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Modulus [Msi]
0.0
0.5
1.0
1.5
2.0
2.5
0
1
2
3
4

Transverse Tension Properties (TT)--RTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACUA111A	A	C1	1	1	6.078	1.654	0.108	12	0.0090	LWB
EACUA112A	A	C1	1	1	5.972	1.644	0.110	12	0.0092	LGM
EACUA113A	A	C1	1	1	6.201	1.582	0.112	12	0.0093	LGM / LAB
EACUA114A	A	C1	1	1	5.758	1.562	0.113	12	0.0094	LAT
EACUA211A	A	C2	1	2	5.870	1.676	0.106	12	0.0088	LWT
EACUA212A	A	C2	1	2	6.139	1.629	0.109	12	0.0091	LGM
EACUA213A	A	C2	1	2	5.932	1.599	0.111	12	0.0092	LAT
EACUB111A	B	C1	2	1	6.196	1.732	0.106	12	0.0089	LWT
EACUB112A	B	C1	2	1	6.492	1.704	0.108	12	0.0090	LWB
EACUB113A	B	C1	2	1	6.313	1.667	0.110	12	0.0092	LGM
EACUB114A	B	C1	2	1	5.960	1.638	0.110	12	0.0092	LAT
EACUB211A	B	C2	2	2	5.760	1.742	0.104	12	0.0087	LGM
EACUB212A	B	C2	2	2	6.330	1.672	0.109	12	0.0091	LGM
EACUB213A	B	C2	2	2	5.960	1.660	0.110	12	0.0092	LGM
EACUC111A	C	C1	3	1	6.361	1.724	0.104	12	0.0087	LGM
EACUC112A	C	C1	3	1	6.522	1.682	0.107	12	0.0089	LGM
EACUC113A	C	C1	3	1	6.188	1.627	0.110	12	0.0092	LWT
EACUC114A	C	C1	3	1	6.730	1.601	0.111	12	0.0093	LWT
EACUC211A	C	C2	3	2	5.943	1.609	0.111	12	0.0093	LAT
EACUC212A	C	C2	3	2	6.513	1.607	0.111	12	0.0093	LAT
EACUC213A	C	C2	3	2	6.535	1.608	0.111	12	0.0092	LGM

Average	**6.179**	**1.648**	**Average**	**0.0091**	
Standard Dev.	**0.278**	**0.050**	**Standard Dev.**		
Coeff. of Var. [%]	**4.502**	**3.039**	**Coeff. of Var. [%]**		
Min.	**5.758**	**1.562**	**Min.**	**0.0087**	
Max.	**6.730**	**1.742**	**Max.**	**0.0094**	
Number of Spec.	**21**	**21**	**Number of Spec.**	**21**	

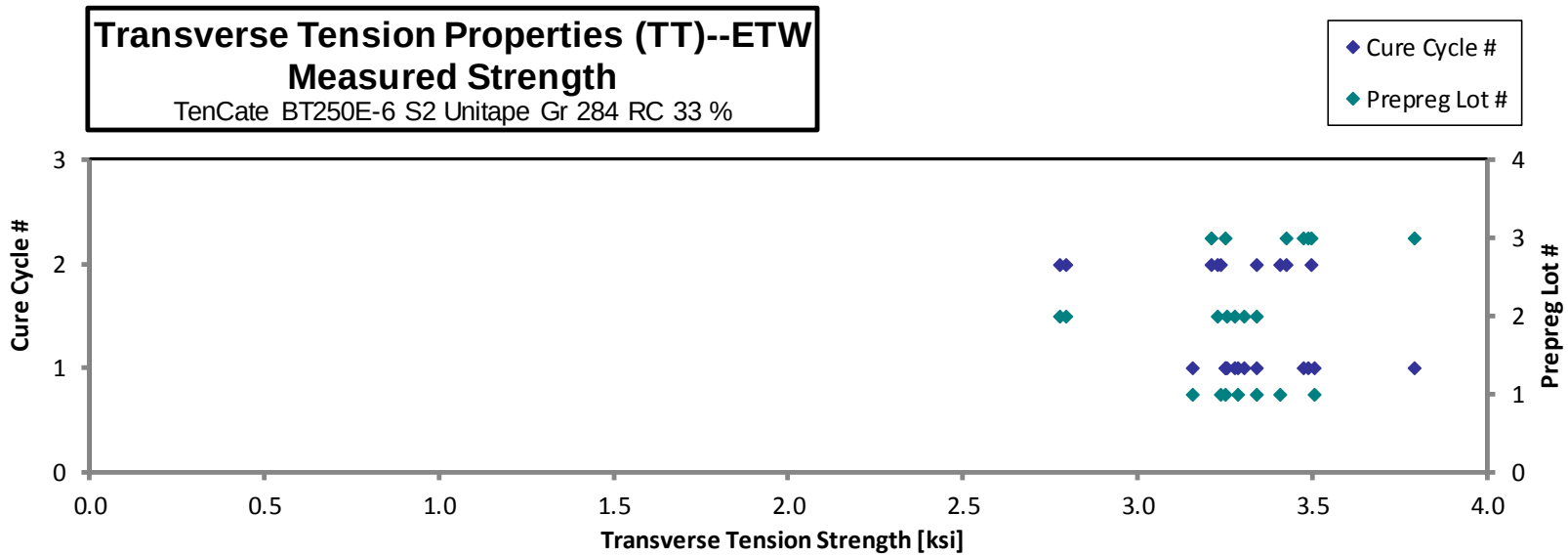

Transverse Tension Properties (TT)--RTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0

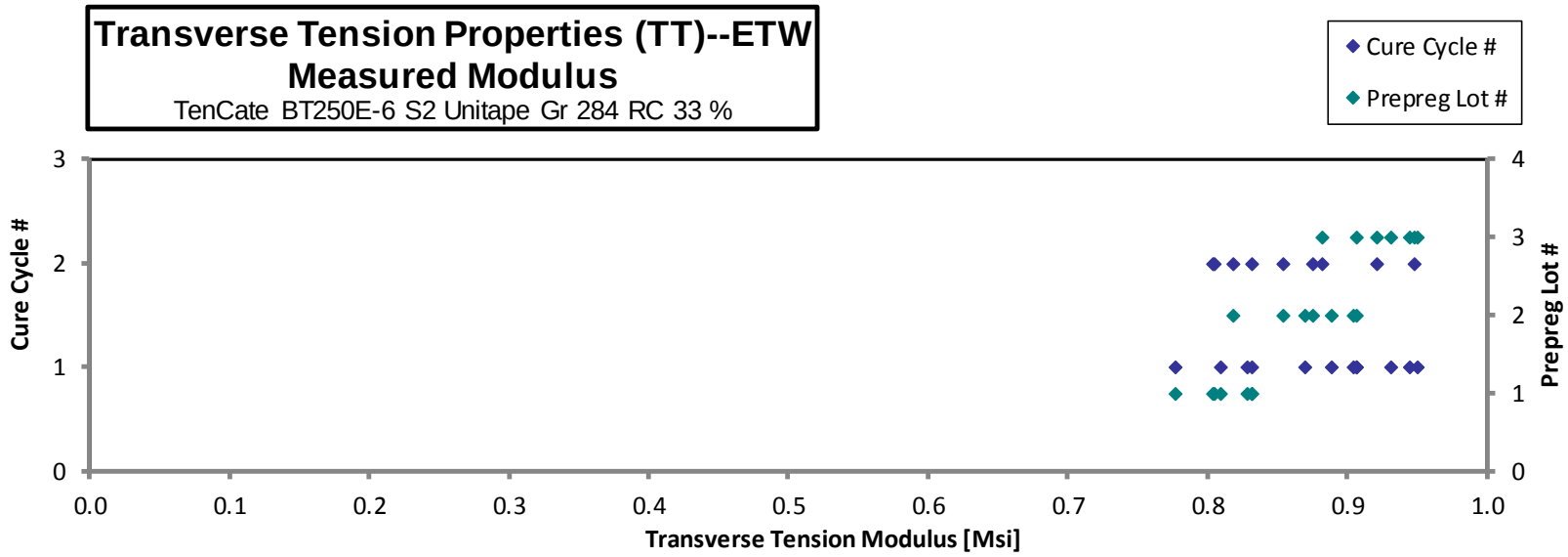

Transverse Tension Properties (TT)--RTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Modulus [Msi]
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0

Transverse Tension Properties (TT)--ETW
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACUA11BD	A	C1	1	1	3.250	0.809	0.111	12	0.0092	LGM
EACUA11CD	A	C1	1	1	3.156	0.777	0.113	12	0.0094	LGM
EACUA11DD	A	C1	1	1	3.505	0.828	0.114	12	0.0095	LGM
EACUA11ED	A	C1	1	1	3.286	0.831	0.113	12	0.0095	LGM
EACUA219D	A	C2	1	2	3.407	0.831	0.110	12	0.0092	LWB
EACUA21AD	A	C2	1	2	3.237	0.805	0.111	12	0.0093	LGM
EACUA21BD	A	C2	1	2	3.338	0.804	0.112	12	0.0094	LGM
EACUB11BD	B	C1	2	1	3.302	0.869	0.109	12	0.0091	LGM
EACUB11CD	B	C1	2	1	3.341	0.907	0.110	12	0.0092	LGM
EACUB11DD	B	C1	2	1	3.255	0.904	0.110	12	0.0092	LGM
EACUB11ED	B	C1	2	1	3.275	0.889	0.111	12	0.0092	LWT
EACUB219D	B	C2	2	2	3.229	0.875	0.110	12	0.0092	LWT
EACUB21AD	B	C2	2	2	2.794	0.818	0.111	12	0.0092	LGM
EACUB21BD	B	C2	2	2	2.776	0.853	0.111	12	0.0093	LWT
EACUC11BD	C	C1	3	1	3.473	0.950	0.110	12	0.0091	LWB
EACUC11CD	C	C1	3	1	3.792	0.931	0.111	12	0.0093	LWB
EACUC11DD	C	C1	3	1	3.487	0.906	0.112	12	0.0093	LGM
EACUC11ED	C	C1	3	1	3.249	0.944	0.111	12	0.0093	LGM
EACUC219D	C	C2	3	2	3.425	0.882	0.111	12	0.0092	LWB
EACUC21AD	C	C2	3	2	3.210	0.920	0.110	12	0.0092	LWT
EACUC21BD	C	C2	3	2	3.495	0.947	0.108	12	0.0090	LWT

Average	**3.299**	**0.870**	**Average**	**0.0092**
Standard Dev.	**0.223**	**0.054**	**Standard Dev.**	
Coeff. of Var. [%]	**6.756**	**6.155**	**Coeff. of Var. [%]**	
Min.	**2.776**	**0.777**	**Min.**	**0.0090**
Max.	**3.792**	**0.950**	**Max.**	**0.0095**
Number of Spec.	**21**	**21**	**Number of Spec.**	**21**


Transverse Tension Properties (TT)--ETW
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
0
1
2
3
4


Transverse Tension Properties (TT)--ETW
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Transverse Tension Modulus [Msi]
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
0
1
2
3
4

4.3 Longitudinal Compression Properties (LC)

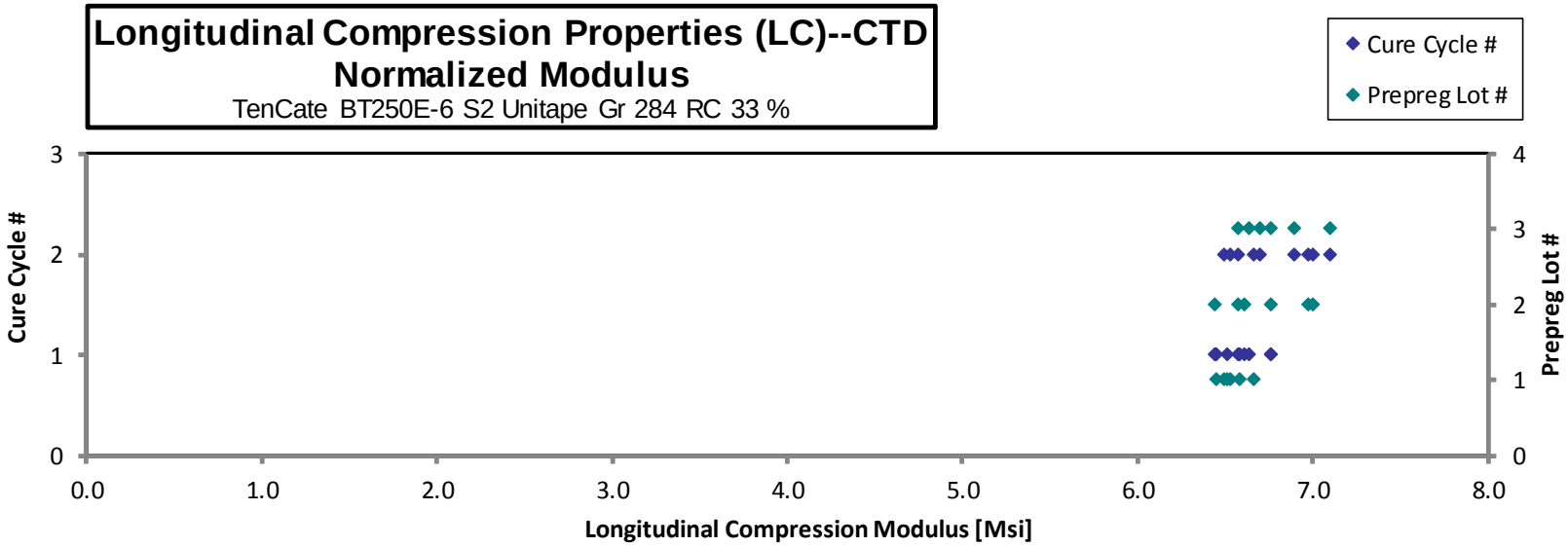
Longitudinal Compression Properties (LC)--CTD
Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

normalizing t_{ply} [in]
0.0092

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
EACLA116B	A	C1	1	1	6.542	0.111	12	N/A	0.0093	6.577
EACLA117B	A	C1	1	1	6.457	0.111	12	N/A	0.0093	6.504
EACLA118B	A	C1	1	1	6.409	0.111	12	N/A	0.0093	6.445
EACLA215B	A	C2	1	2	6.382	0.112	12	N/A	0.0094	6.488
EACLA216B	A	C2	1	2	6.523	0.113	12	N/A	0.0094	6.663
EACLA217B	A	C2	1	2	6.699	0.108	12	N/A	0.0090	6.523
EACLB116B	B	C1	2	1	6.629	0.113	12	N/A	0.0094	6.759
EACLB117B	B	C1	2	1	6.486	0.112	12	N/A	0.0094	6.602
EACLB118B	B	C1	2	1	6.330	0.112	12	N/A	0.0094	6.434
EACLB215B	B	C2	2	2	6.879	0.112	12	N/A	0.0094	6.996
EACLB216B	B	C2	2	2	6.470	0.112	12	N/A	0.0093	6.572
EACLB217B	B	C2	2	2	6.990	0.110	12	N/A	0.0092	6.972
EACLC116B	C	C1	3	1	6.431	0.113	12	N/A	0.0094	6.568
EACLC117B	C	C1	3	1	6.450	0.114	12	N/A	0.0095	6.635
EACLC118B	C	C1	3	1	6.597	0.113	12	N/A	0.0094	6.759
EACLC215B	C	C2	3	2	6.467	0.114	12	N/A	0.0095	6.693
EACLC216B	C	C2	3	2	6.827	0.115	12	N/A	0.0096	7.099
EACLC217B	C	C2	3	2	6.969	0.109	12	N/A	0.0091	6.894

Average	**6.585**	
Standard Dev.	**0.204**	
Coeff. of Var. [%]	**3.102**	
Min.	**6.330**	
Max.	**6.990**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0093**	**6.677**
Standard $Dev._{norm}$		**0.199**
Coeff. of Var. $[\%]_{norm}$		**2.974**
Min.	**0.0090**	**6.434**
Max.	**0.0096**	**7.099**
Number of Spec.	**18**	**18**


Longitudinal Compression Properties (LC)--CTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Compression Modulus [Msi]

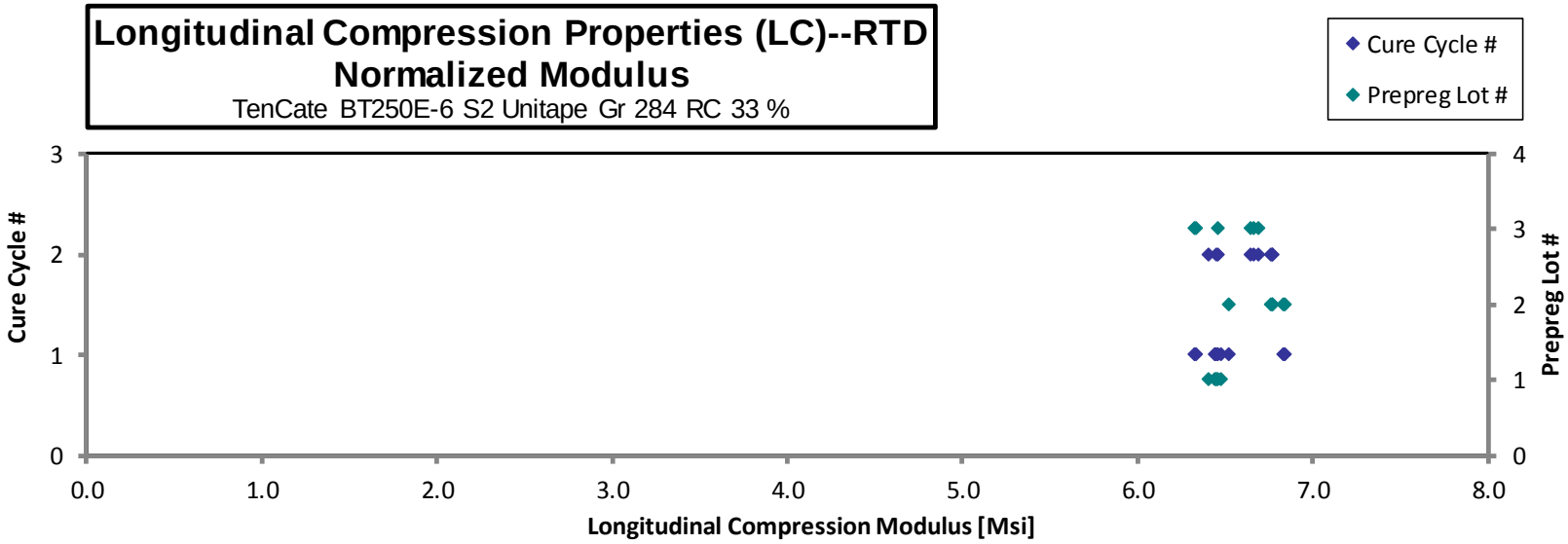
Longitudinal Compression Properties (LC)--RTD
Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

normalizing t_{ply} [in]
0.0092

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
EACLA111A	A	C1	1	1	6.672	0.107	12	N/A	0.0089	6.445
EACLA112A	A	C1	1	1	6.606	0.108	12	N/A	0.0090	6.476
EACLA113A	A	C1	1	1	6.485	0.110	12	N/A	0.0091	6.440
EACLA211A	A	C2	1	2	6.624	0.108	12	N/A	0.0090	6.451
EACLA212A	A	C2	1	2	6.517	0.109	12	N/A	0.0091	6.443
EACLA213A	A	C2	1	2	6.379	0.111	12	N/A	0.0092	6.400
EACLB111A	B	C1	2	1	6.647	0.108	12	N/A	0.0090	6.517
EACLB112A	B	C1	2	1	6.857	0.110	12	N/A	0.0092	6.826
EACLB113A	B	C1	2	1	6.759	0.112	12	N/A	0.0093	6.839
EACLB211A	B	C2	2	2	6.804	0.110	12	N/A	0.0091	6.758
EACLB212A	B	C2	2	2	6.766	0.110	12	N/A	0.0092	6.766
EACLB213A	B	C2	2	2	6.731	0.111	12	N/A	0.0092	6.766
EACLC111A	C	C1	3	1	6.558	0.106	12	N/A	0.0089	6.326
EACLC112A	C	C1	3	1	6.463	0.108	12	N/A	0.0090	6.331
EACLC113A	C	C1	3	1	6.494	0.110	12	N/A	0.0091	6.451
EACLC211A	C	C2	3	2	6.700	0.109	12	N/A	0.0091	6.642
EACLC212A	C	C2	3	2	6.586	0.112	12	N/A	0.0093	6.683
EACLC213A	C	C2	3	2	6.486	0.113	12	N/A	0.0095	6.663

Average	**6.619**	
Standard Dev.	**0.134**	
Coeff. of Var. [%]	**2.018**	
Min.	**6.379**	
Max.	**6.857**	
Number of Spec.	**18**	

$Average_{norm}$	**0.0091**	**6.568**
$Standard\ Dev._{norm}$		**0.173**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.638**
Min.	**0.0089**	**6.326**
Max.	**0.0095**	**6.839**
Number of Spec.	**18**	**18**


Longitudinal Compression Properties (LC)--RTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Compression Modulus [Msi]

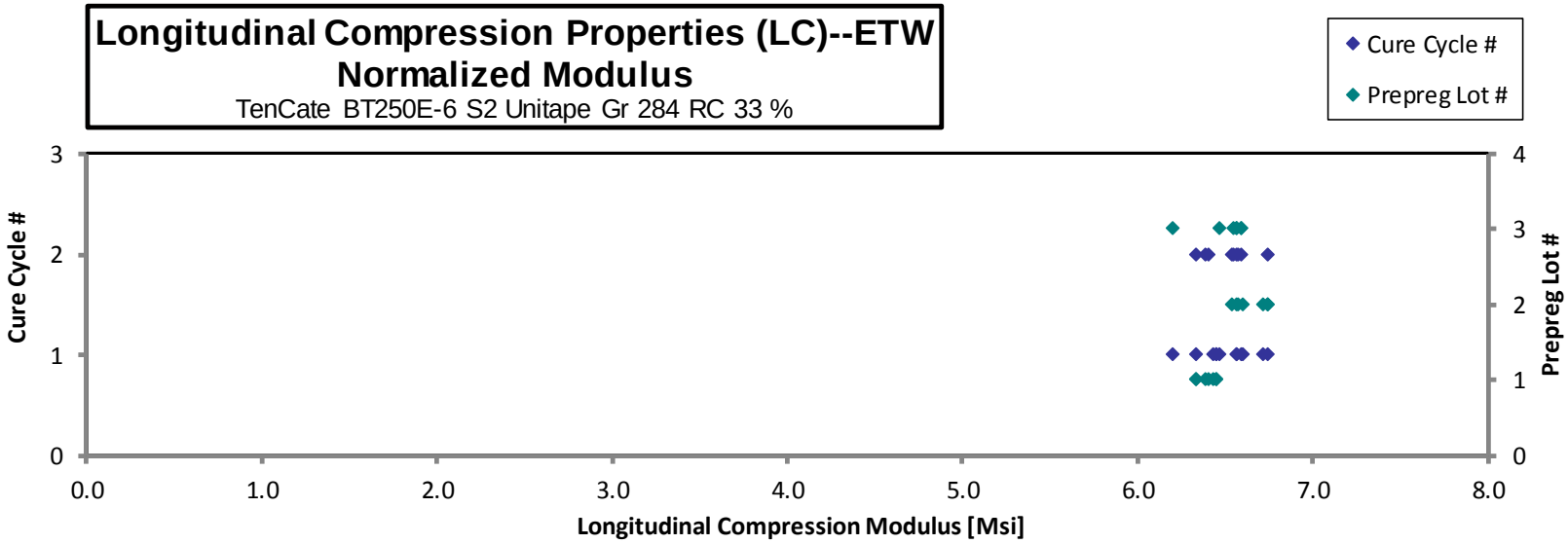
Longitudinal Compression Properties (LC)--ETW
Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

normalizing t_{ply} [in]: 0.0092

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Modulus_{norm}$ [Msi]
EACLA11BD	A	C1	1	1	6.389	0.111	12	N/A	0.0093	6.444
EACLA11CD	A	C1	1	1	6.215	0.112	12	N/A	0.0094	6.331
EACLA11DD	A	C1	1	1	6.304	0.113	12	N/A	0.0094	6.428
EACLA11ED	A	C1	1	1	6.247	0.114	12	N/A	0.0095	6.442
EACLA219D	A	C2	1	2	6.332	0.110	12	N/A	0.0092	6.332
EACLA21AD	A	C2	1	2	6.354	0.111	12	N/A	0.0092	6.386
EACLA21BD	A	C2	1	2	6.305	0.112	12	N/A	0.0093	6.401
EACLB11BD	B	C1	2	1	6.757	0.110	12	N/A	0.0092	6.744
EACLB11CD	B	C1	2	1	6.655	0.111	12	N/A	0.0093	6.712
EACLB11DD	B	C1	2	1	6.571	0.111	12	N/A	0.0092	6.597
EACLB11ED	B	C1	2	1	6.443	0.112	12	N/A	0.0094	6.557
EACLB219D	B	C2	2	2	6.658	0.112	12	N/A	0.0093	6.742
EACLB21AD	B	C2	2	2	6.447	0.113	12	N/A	0.0094	6.573
EACLB21BD	B	C2	2	2	6.394	0.113	12	N/A	0.0094	6.539
EACLC11BD	C	C1	3	1	6.195	0.110	12	N/A	0.0092	6.197
EACLC11CD	C	C1	3	1	6.437	0.111	12	N/A	0.0092	6.462
EACLC11DD	C	C1	3	1	6.465	0.112	12	N/A	0.0093	6.565
EACLC11ED	C	C1	3	1	6.510	0.112	12	N/A	0.0093	6.589
EACLC219D	C	C2	3	2	6.451	0.112	12	N/A	0.0093	6.546
EACLC21AD	C	C2	3	2	6.360	0.114	12	N/A	0.0095	6.559
EACLC21BD	C	C2	3	2	6.384	0.114	12	N/A	0.0095	6.587

Average	**6.422**	
Standard Dev.	**0.146**	
Coeff. of Var. [%]	**2.281**	
Min.	**6.195**	
Max.	**6.757**	
Number of Spec.	**21**	

$Average_{norm}$	**0.0093**	**6.511**
$Standard\ Dev._{norm}$		**0.140**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.144**
Min.	**0.0092**	**6.197**
Max.	**0.0095**	**6.744**
Number of Spec.	**21**	**21**


Longitudinal Compression Properties (LC)--ETW
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Longitudinal Compression Modulus [Msi]

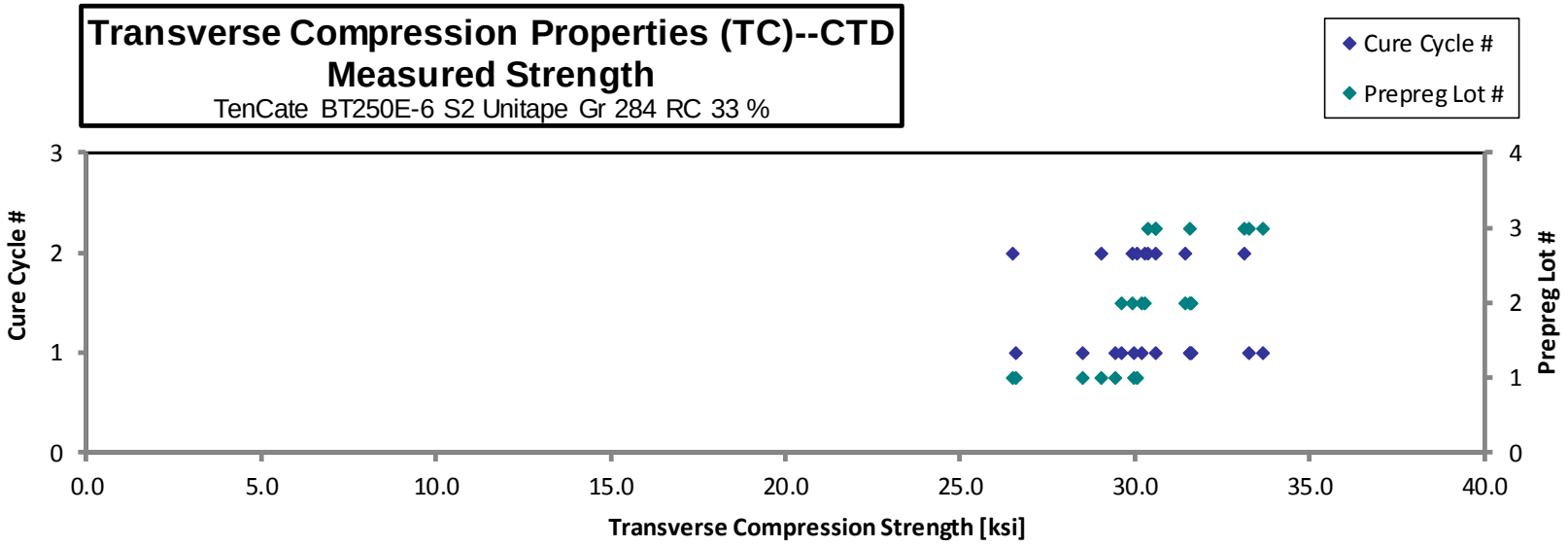
4.4 Transverse Compression Properties (TC)

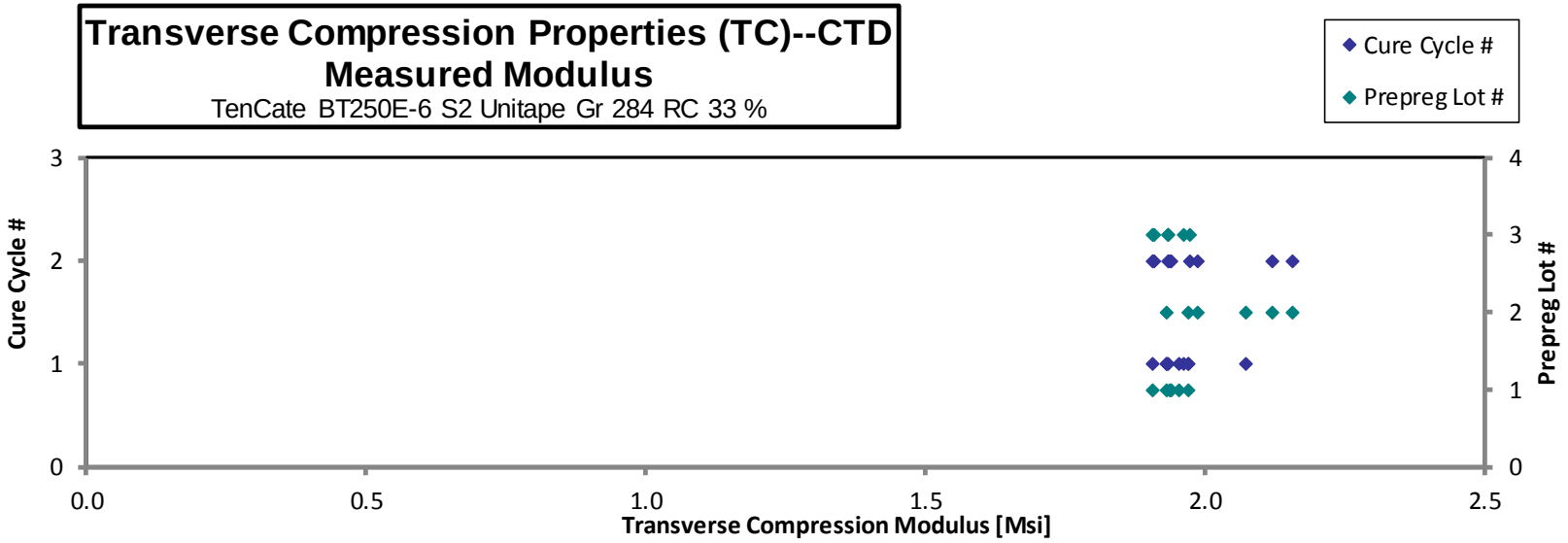
Transverse Compression Properties (TC)--CTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACZA116B	A	C1	1	1	29.963	1.931	0.114	12	0.0095	BGM
EACZA117B	A	C1	1	1	29.415	1.952	0.115	12	0.0096	HGM
EACZA118B	A	C1	1	1	26.600	1.969	0.115	12	0.0096	BAB
EACZA119B*	A	C1	1	1	28.473		0.115	12	0.0096	BAT
EACZA216B	A	C2	1	2	30.051	1.907	0.112	12	0.0093	BAB
EACZA217B	A	C2	1	2	29.006	1.938	0.113	12	0.0094	BGM
EACZA218B	A	C2	1	2	26.509	1.936	0.113	12	0.0095	BGM
EACZB116B	B	C1	2	1	30.169	2.072	0.113	12	0.0094	HGM/HAT
EACZB117B	B	C1	2	1	31.556	1.932	0.113	12	0.0094	BGM
EACZB118B	B	C1	2	1	31.590	1.969	0.113	12	0.0094	BGM
EACZB119B*	B	C1	2	1	29.601		0.113	12	0.0094	BGM
EACZB216B	B	C2	2	2	30.277	1.985	0.109	12	0.0091	BGM
EACZB217B	B	C2	2	2	31.436	2.157	0.110	12	0.0092	HAT
EACZB218B	B	C2	2	2	29.895	2.121	0.111	12	0.0092	HGM
EACZC116B	C	C1	3	1	33.656	1.907	0.115	12	0.0096	BGM
EACZC117B	C	C1	3	1	33.233	1.935	0.115	12	0.0096	BAT
EACZC118B	C	C1	3	1	31.542	1.962	0.116	12	0.0096	BAB
EACZC119B*	C	C1	3	1	30.575		0.116	12	0.0097	BAT
EACZC216B	C	C2	3	2	33.140	1.971	0.113	12	0.0094	BGM
EACZC217B	C	C2	3	2	30.382	1.935	0.114	12	0.0095	HAT
EACZC218B	C	C2	3	2	30.569	1.908	0.114	12	0.0095	HAT

* Specimen was not gaged and tested for strength only.

Average	**30.364**	**1.972**	**Average**	**0.0094**
Standard Dev.	**1.854**	**0.072**	**Standard Dev.**	
Coeff. of Var. [%]	**6.107**	**3.652**	**Coeff. of Var. [%]**	
Min.	**26.509**	**1.907**	**Min.**	**0.0091**
Max.	**33.656**	**2.157**	**Max.**	**0.0097**
Number of Spec.	**21**	**18**	**Number of Spec.**	**21**


Transverse Compression Properties (TC)--CTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
5.0
10.0
15.0
20.0
25.0
30.0
35.0
40.0
Transverse Compression Strength [ksi]

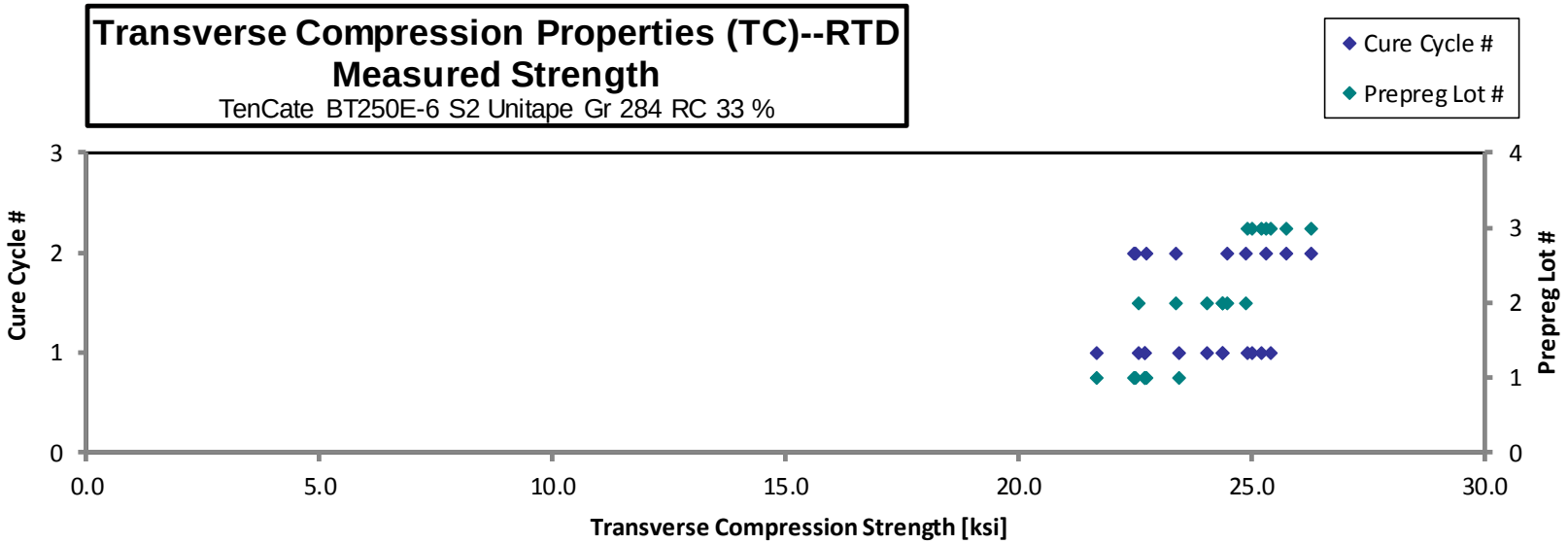

Transverse Compression Properties (TC)--CTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
Transverse Compression Modulus [Msi]

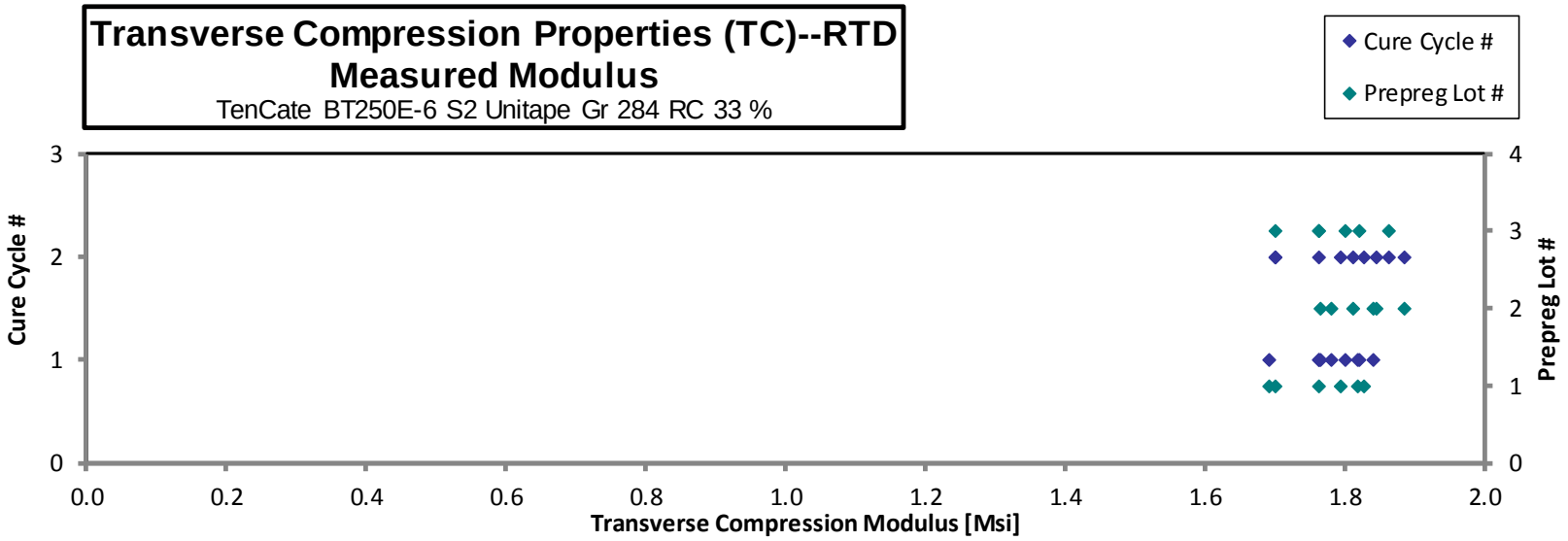
Transverse Compression Properties (TC)--RTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACZA111A	A	C1	1	1	23.443	1.818	0.107	12	0.0089	BGM
EACZA112A	A	C1	1	1	22.696	1.762	0.108	12	0.0090	HAB
EACZA113A	A	C1	1	1	22.695	1.692	0.111	12	0.0093	BGM
EACZA114A*	A	C1	1	1	21.685		0.111	12	0.0093	HGM
EACZA211A	A	C2	1	2	22.754	1.828	0.105	12	0.0088	HGM
EACZA212A	A	C2	1	2	22.453	1.794	0.107	12	0.0089	HGM
EACZA213A	A	C2	1	2	22.515	1.699	0.109	12	0.0091	BGM
EACZB111A	B	C1	2	1	24.355	1.842	0.105	12	0.0087	HGM/HAT
EACZB112A	B	C1	2	1	24.052	1.780	0.108	12	0.0090	BGM
EACZB113A	B	C1	2	1	24.380	1.764	0.110	12	0.0092	HGM
EACZB114A*	B	C1	2	1	22.555		0.112	12	0.0093	HGM
EACZB211A	B	C2	2	2	23.378	1.844	0.107	12	0.0089	BGM
EACZB212A	B	C2	2	2	24.867	1.812	0.107	12	0.0089	BGM
EACZB213A	B	C2	2	2	24.469	1.885	0.108	12	0.0090	BGM
EACZC111A	C	C1	3	1	25.411	1.821	0.107	12	0.0089	BGM
EACZC112A	C	C1	3	1	25.011	1.801	0.109	12	0.0091	BGM
EACZC113A	C	C1	3	1	25.197	1.764	0.111	12	0.0092	HAT/HAB
EACZC114A*	C	C1	3	1	24.895		0.113	12	0.0094	HAT/HAB
EACZC211A	C	C2	3	2	26.279	1.863	0.108	12	0.0090	HAB
EACZC212A	C	C2	3	2	25.734	1.763	0.110	12	0.0091	HAT
EACZC213A	C	C2	3	2	25.289	1.701	0.111	12	0.0092	HGM

* Specimen was not gaged and tested for strength only.

Average	**24.005**	**1.791**	**Average**	**0.0091**	
Standard Dev.	**1.305**	**0.056**	**Standard Dev.**		
Coeff. of Var. [%]	**5.436**	**3.101**	**Coeff. of Var. [%]**		
Min.	**21.685**	**1.692**	**Min.**	**0.0087**	
Max.	**26.279**	**1.885**	**Max.**	**0.0094**	
Number of Spec.	**21**	**18**	**Number of Spec.**	**21**	

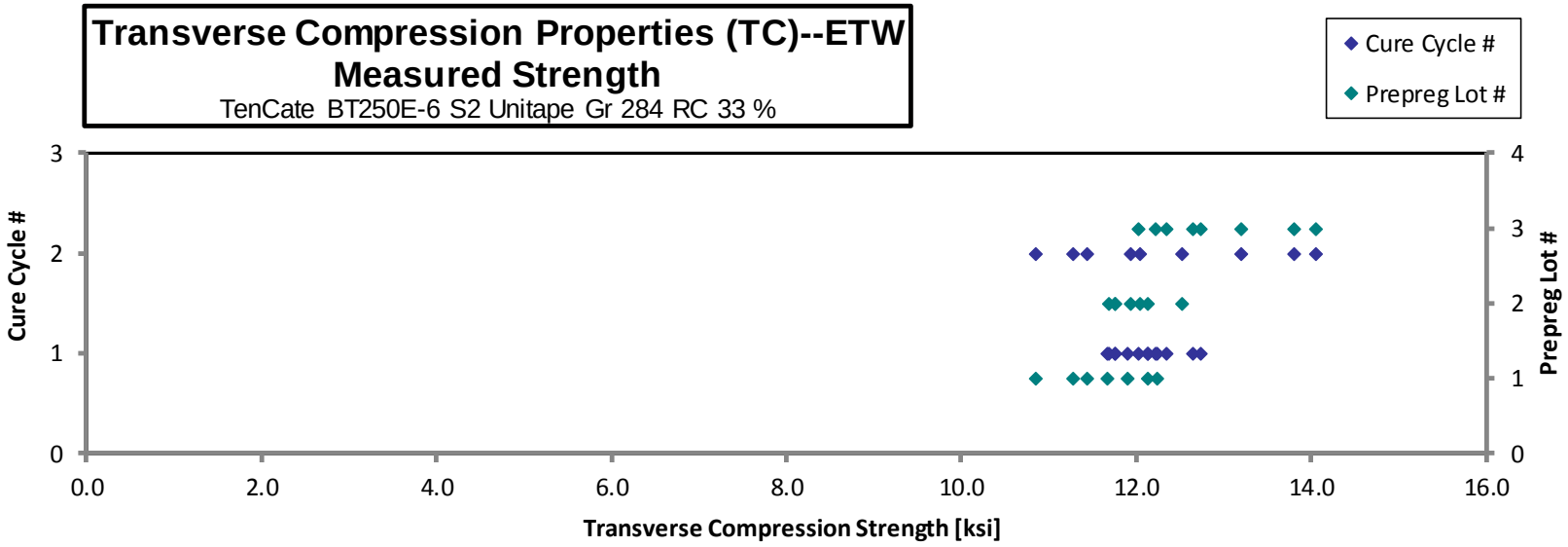

Transverse Compression Properties (TC)--RTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
5.0
10.0
15.0
20.0
25.0
30.0
Transverse Compression Strength [ksi]

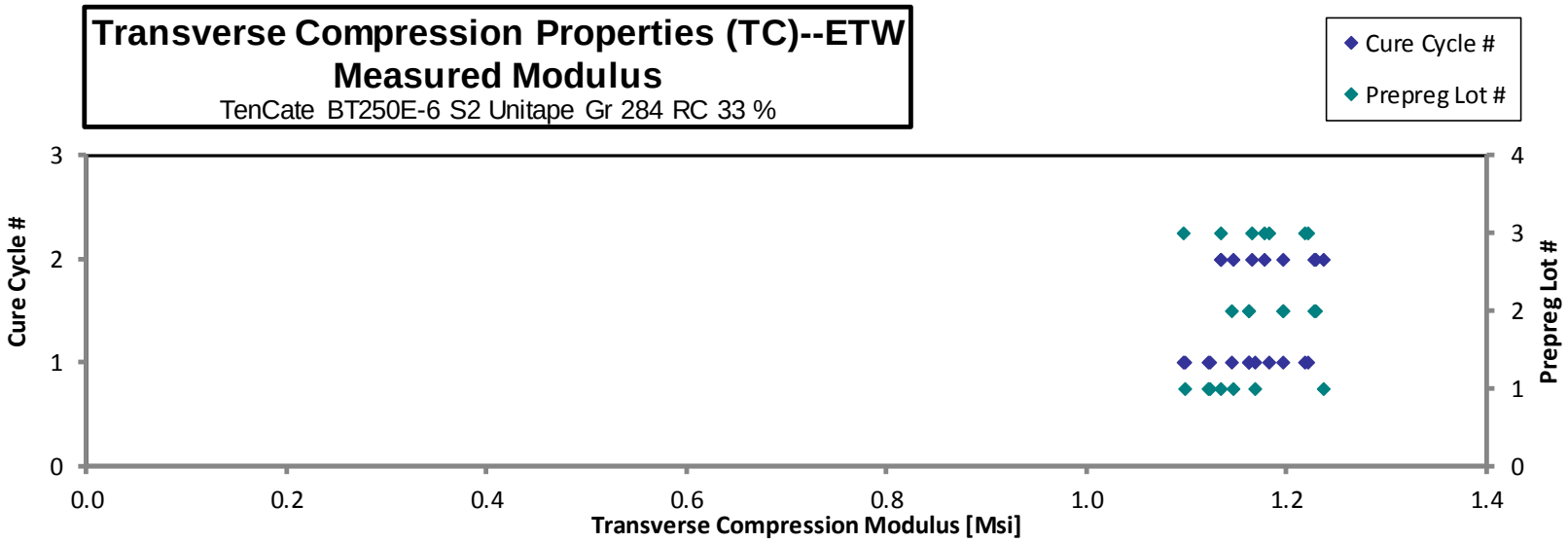

Transverse Compression Properties (TC)--RTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
Transverse Compression Modulus [Msi]

Transverse Compression Properties (TC)--ETW
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACZA11BD	A	C1	1	1		1.098	0.108	12	0.0090	HGM
EACZA11CD	A	C1	1	1		1.124	0.109	12	0.0090	HGM
EACZA11DD	A	C1	1	1		1.168	0.110	12	0.0091	HGM
EACZA11ED	A	C1	1	1		1.122	0.111	12	0.0092	HGM
EACZA11FD	A	C1	1	1	12.231		0.112	12	0.0093	HGM
EACZA11GD	A	C1	1	1	12.123		0.113	12	0.0094	HGM
EACZA11HD	A	C1	1	1	11.901		0.113	12	0.0094	HGM
EACZA11ID	A	C1	1	1	11.672		0.114	12	0.0095	HGM
EACZA21BD	A	C2	1	2		1.237	0.106	12	0.0088	BGM
EACZA21CD	A	C2	1	2		1.147	0.107	12	0.0089	HGM
EACZA21DD	A	C2	1	2		1.134	0.108	12	0.0090	HGM
EACZA21ED	A	C2	1	2	10.850		0.110	12	0.0091	HGM
EACZA21FD	A	C2	1	2	11.432		0.110	12	0.0092	HGM
EACZA21GD	A	C2	1	2	11.278		0.111	12	0.0093	HGM
EACZB11BD	B	C1	2	1		1.162	0.104	12	0.0086	HGM
EACZB11CD	B	C1	2	1		1.162	0.106	12	0.0088	HGM
EACZB11DD	B	C1	2	1		1.197	0.109	12	0.0091	HGM
EACZB11ED	B	C1	2	1		1.145	0.110	12	0.0092	HGM
EACZB11FD	B	C1	2	1	11.680		0.111	12	0.0092	HGM
EACZB11GD	B	C1	2	1	11.761		0.111	12	0.0093	HGM
EACZB11HD	B	C1	2	1	12.124		0.112	12	0.0093	HGM
EACZB11ID	B	C1	2	1	11.753		0.112	12	0.0094	HGM
EACZB21BD	B	C2	2	2		1.229	0.106	12	0.0089	HGM
EACZB21CD	B	C2	2	2		1.227	0.107	12	0.0089	HGM
EACZB21DD	B	C2	2	2		1.196	0.108	12	0.0090	HGM
EACZB21ED	B	C2	2	2	12.512		0.109	12	0.0091	HGM
EACZB21FD	B	C2	2	2	12.038		0.109	12	0.0091	HGM
EACZB21GD	B	C2	2	2	11.935		0.110	12	0.0092	HGM
EACZC11BD	C	C1	3	1		1.218	0.106	12	0.0088	HGM
EACZC11CD	C	C1	3	1		1.221	0.108	12	0.0090	HGM
EACZC11DD	C	C1	3	1		1.182	0.110	12	0.0092	HGM
EACZC11ED	C	C1	3	1		1.097	0.111	12	0.0093	HGM
EACZC11FD	C	C1	3	1	12.648		0.112	12	0.0094	HGM
EACZC11GD	C	C1	3	1	12.207		0.114	12	0.0095	HGM
EACZC11HD	C	C1	3	1	12.027		0.114	12	0.0095	HGM
EACZC11JD	C	C1	3	1	12.335		0.115	12	0.0096	HGM
EACZC11KD	C	C1	3	1	12.733		0.115	12	0.0096	HGM
EACZC21BD	C	C2	3	2		1.178	0.109	12	0.0091	HGM
EACZC21CD	C	C2	3	2		1.134	0.109	12	0.0091	HGM
EACZC21DD	C	C2	3	2		1.166	0.110	12	0.0092	HGM
EACZC21ED	C	C2	3	2	13.805		0.111	12	0.0093	HGM
EACZC21FD	C	C2	3	2	14.054		0.112	12	0.0093	HGM
EACZC21GD	C	C2	3	2	13.196		0.113	12	0.0094	HGM

Average	**12.195**	**1.169**	**Average**	**0.0092**
Standard Dev.	**0.757**	**0.043**	**Standard Dev.**	
Coeff. of Var. [%]	**6.209**	**3.665**	**Coeff. of Var. [%]**	
Min.	**10.850**	**1.097**	**Min.**	**0.0086**
Max.	**14.054**	**1.237**	**Max.**	**0.0096**
Number of Spec.	**22**	**21**	**Number of Spec.**	**43**


Transverse Compression Properties (TC)--ETW
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
Transverse Compression Strength [ksi]


Transverse Compression Properties (TC)--ETW
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Transverse Compression Modulus [Msi]

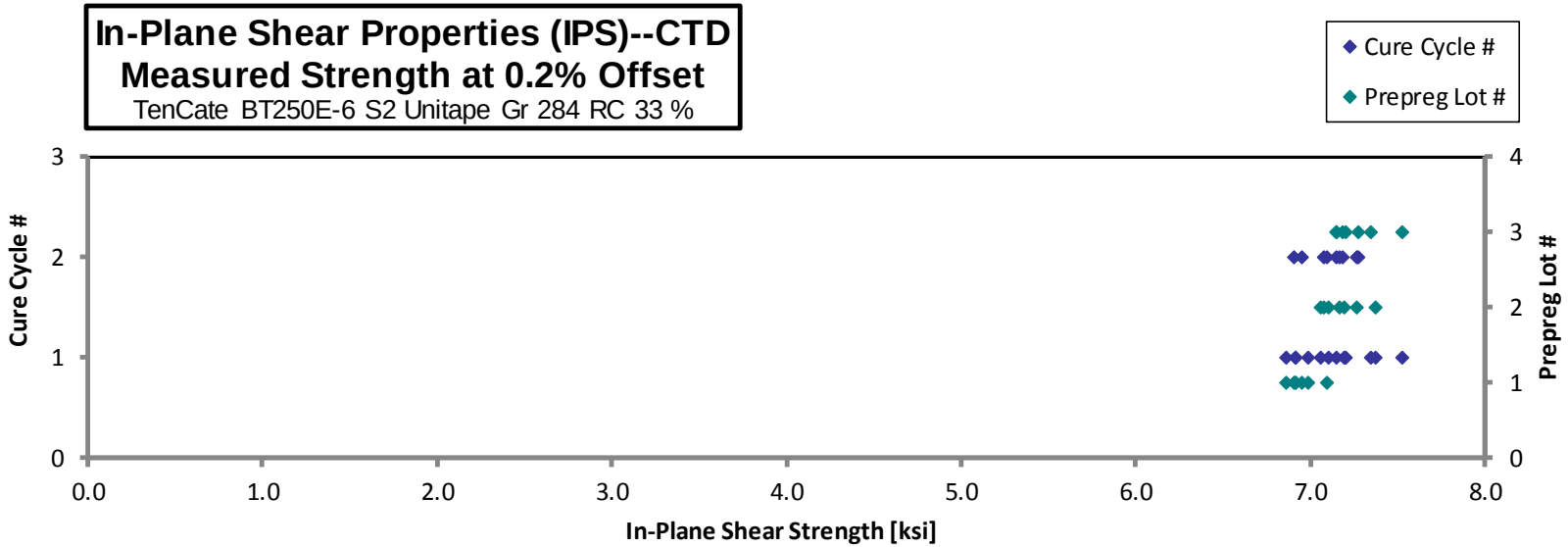
4.5 In-Plane Shear Properties (IPS)

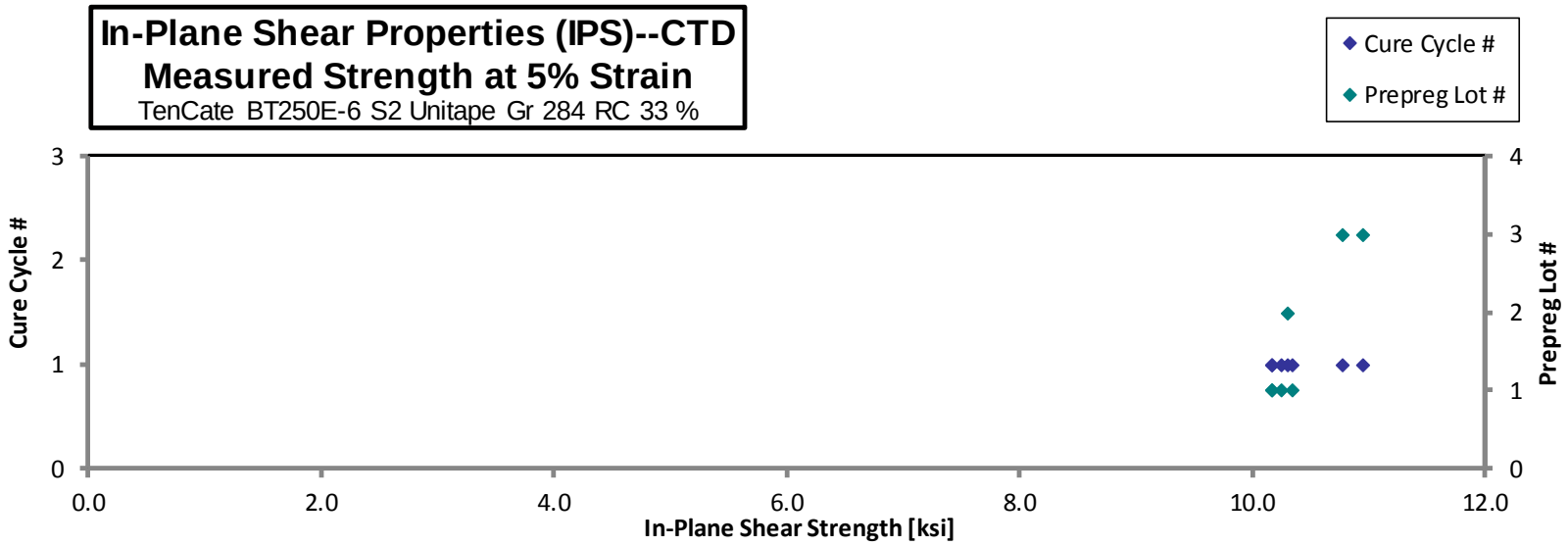
In-Plane Shear Properties (IPS)--CTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

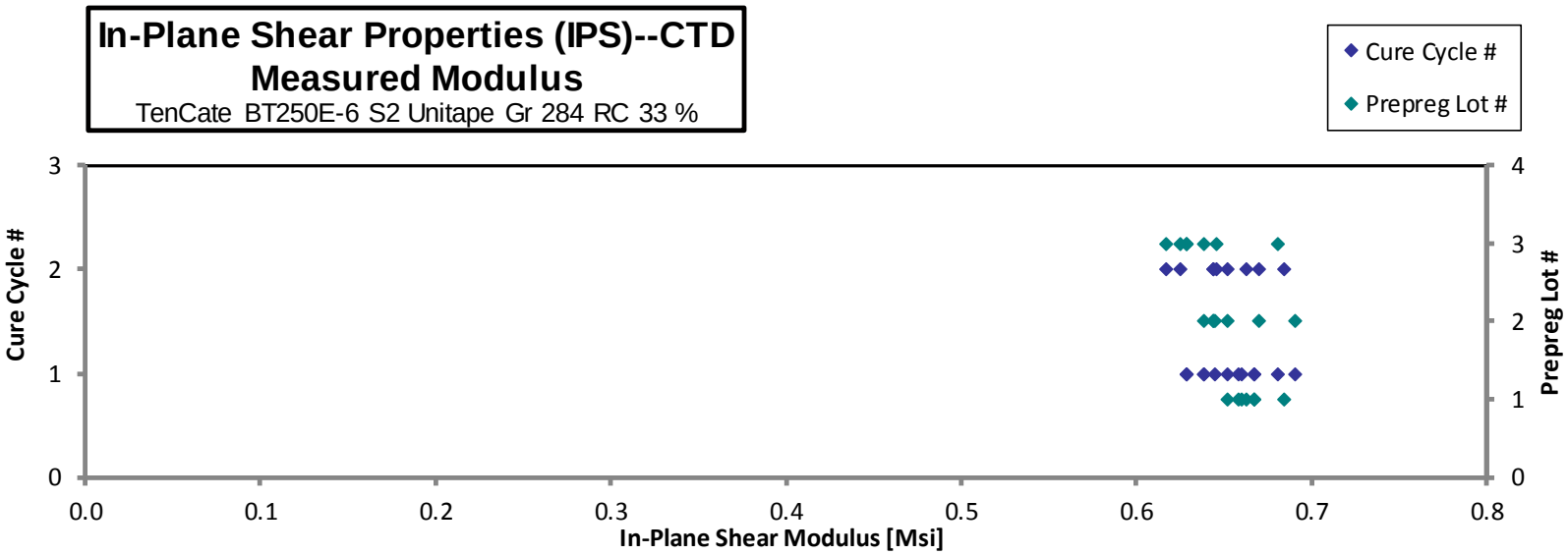
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]
EACNA116B	A	C1	1	1	6.858	10.162	0.658	0.149	16	0.0093
EACNA117B	A	C1	1	1	6.914	10.174	0.660	0.148	16	0.0092
EACNA118B	A	C1	1	1	6.988	10.339	0.667	0.146	16	0.0091
EACNA119B	A	C1	1	1	6.916	10.254	0.667	0.145	16	0.0091
EACNA215B*	A	C2	1	2	6.950		0.662	0.149	16	0.0093
EACNA216B*	A	C2	1	2	6.906		0.652	0.148	16	0.0093
EACNA217B*	A	C2	1	2	7.090		0.684	0.144	16	0.0090
EACNB116B	B	C1	2	1	7.055	10.300	0.639	0.147	16	0.0092
EACNB117B*	B	C1	2	1	7.189		0.652	0.149	16	0.0093
EACNB118B*	B	C1	2	1	7.099		0.645	0.148	16	0.0092
EACNB119B*	B	C1	2	1	7.367		0.690	0.143	16	0.0089
EACNB215B*	B	C2	2	2	7.078		0.644	0.148	16	0.0092
EACNB216B*	B	C2	2	2	7.161		0.644	0.148	16	0.0093
EACNB217B*	B	C2	2	2	7.262		0.670	0.145	16	0.0091
EACNC116B*	C	C1	3	1	7.347		0.638	0.151	16	0.0095
EACNC117B	C	C1	3	1	7.148	10.778	0.628	0.151	16	0.0094
EACNC118B*	C	C1	3	1	7.200		0.628	0.150	16	0.0094
EACNC119B	C	C1	3	1	7.527	10.946	0.680	0.144	16	0.0090
EACNC215B*	C	C2	3	2	7.181		0.617	0.153	16	0.0095
EACNC216B*	C	C2	3	2	7.144		0.625	0.153	16	0.0096
EACNC217B*	C	C2	3	2	7.269		0.645	0.147	16	0.0092

*Strength at 5% strain is not available because strain gage failed prior to reaching 5% strain.

Average	**7.126**	**10.422**	**0.652**	**Average**	**0.0092**
Standard Dev.	**0.172**	**0.311**	**0.020**	**Standard Dev.**	
Coeff. of Var. [%]	**2.410**	**2.986**	**3.054**	**Coeff. of Var. [%]**	
Min.	**6.858**	**10.162**	**0.617**	**Min.**	**0.0089**
Max.	**7.527**	**10.946**	**0.690**	**Max.**	**0.0096**
Number of Spec.	**21**	**7**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS)--CTD
Measured Strength at 0.2% Offset
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
0
1
2
3
4

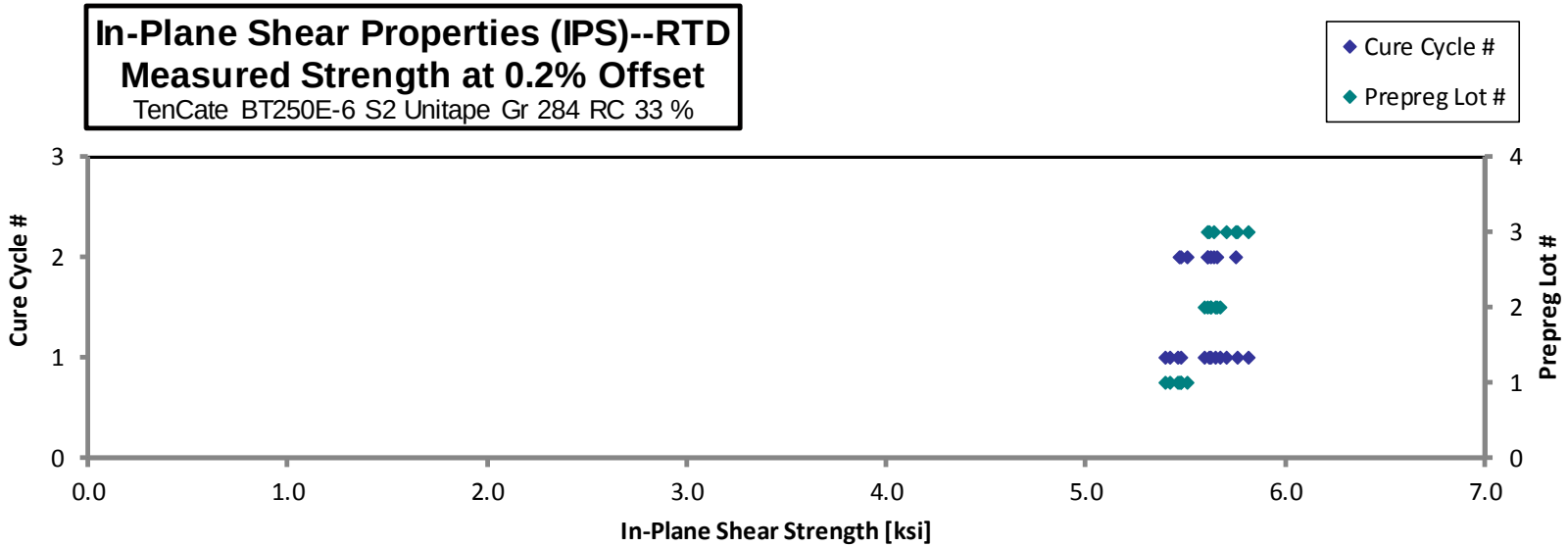

In-Plane Shear Properties (IPS)--CTD
Measured Strength at 5% Strain
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3
4

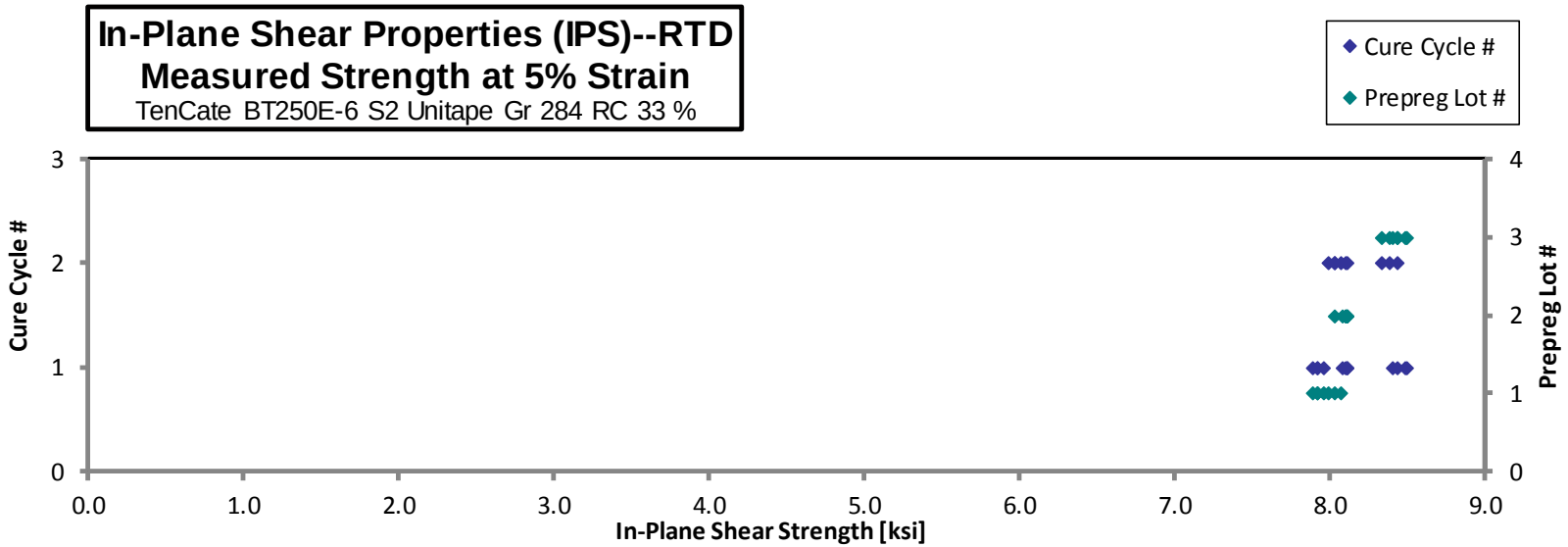

In-Plane Shear Properties (IPS)--CTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

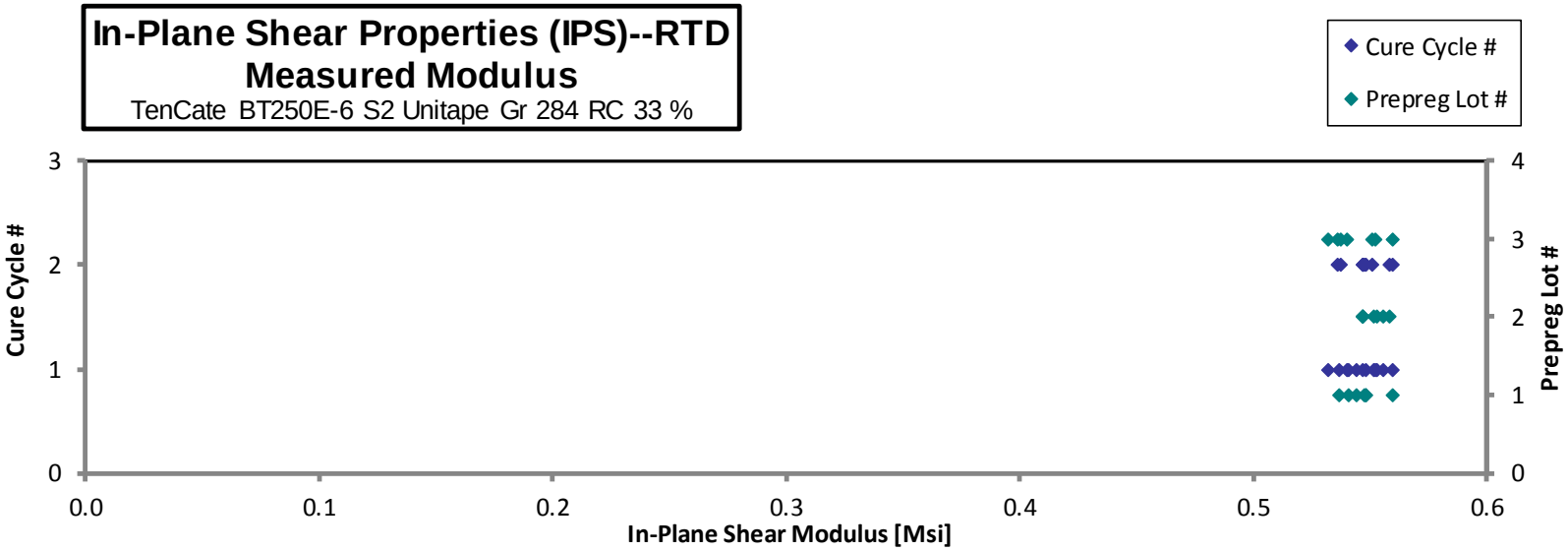
In-Plane Shear Properties (IPS)--RTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC 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]
EACNA111A	A	C1	1	1	5.475	7.921	0.548	0.145	16	0.0090
EACNA112A	A	C1	1	1	5.461	7.923	0.544	0.146	16	0.0091
EACNA113A	A	C1	1	1	5.419	7.892	0.540	0.148	16	0.0092
EACNA114A	A	C1	1	1	5.394	7.960	0.536	0.149	16	0.0093
EACNA211A	A	C2	1	2	5.511	7.987	0.559	0.143	16	0.0089
EACNA212A	A	C2	1	2	5.472	8.033	0.548	0.145	16	0.0091
EACNA213A	A	C2	1	2	5.471	8.073	0.548	0.147	16	0.0092
EACNB111A	B	C1	2	1	5.672	8.103	0.556	0.143	16	0.0090
EACNB112A	B	C1	2	1	5.648	8.108	0.551	0.146	16	0.0091
EACNB113A	B	C1	2	1	5.629	8.111	0.553	0.147	16	0.0092
EACNB114A	B	C1	2	1	5.595	8.084	0.547	0.148	16	0.0092
EACNB211A	B	C2	2	2	5.660	8.034	0.558	0.146	16	0.0091
EACNB212A	B	C2	2	2	5.629	8.098	0.547	0.147	16	0.0092
EACNB213A	B	C2	2	2	5.611	8.114	0.547	0.148	16	0.0093
EACNC111A	C	C1	3	1	5.811	8.434	0.560	0.144	16	0.0090
EACNC112A	C	C1	3	1	5.756	8.494	0.552	0.147	16	0.0092
EACNC113A	C	C1	3	1	5.706	8.485	0.540	0.149	16	0.0093
EACNC114A	C	C1	3	1	5.620	8.401	0.532	0.151	16	0.0095
EACNC211A	C	C2	3	2	5.641	8.382	0.537	0.149	16	0.0093
EACNC212A	C	C2	3	2	5.750	8.432	0.551	0.148	16	0.0093
EACNC213A	C	C2	3	2	5.606	8.332	0.536	0.152	16	0.0095

Average	**5.597**	**8.162**	**0.547**	**Average**	**0.0092**
Standard Dev.	**0.116**	**0.202**	**0.008**	**Standard Dev.**	
Coeff. of Var. [%]	**2.070**	**2.477**	**1.461**	**Coeff. of Var. [%]**	
Min.	**5.394**	**7.892**	**0.532**	**Min.**	**0.0089**
Max.	**5.811**	**8.494**	**0.560**	**Max.**	**0.0095**
Number of Spec.	**21**	**21**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS)--RTD
Measured Strength at 0.2% Offset
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
0
1
2
3
4

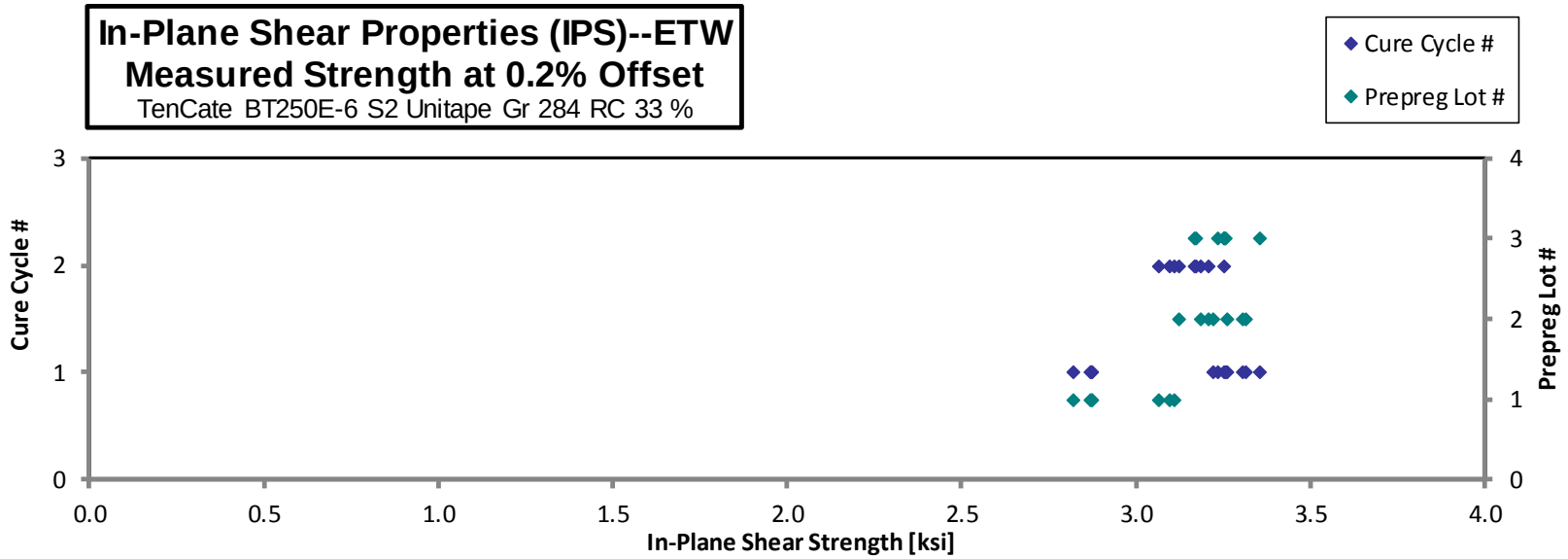

In-Plane Shear Properties (IPS)--RTD
Measured Strength at 5% Strain
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
0
1
2
3
4

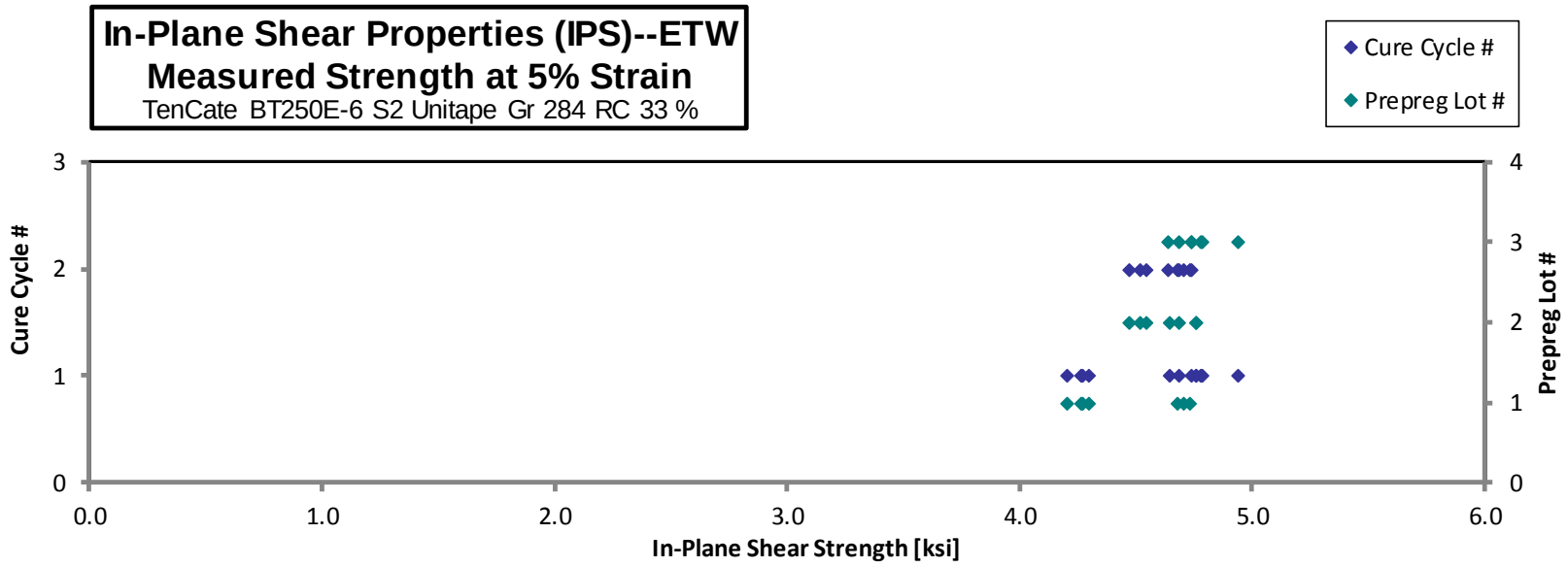

In-Plane Shear Properties (IPS)--RTD
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
In-Plane Shear Modulus [Msi]

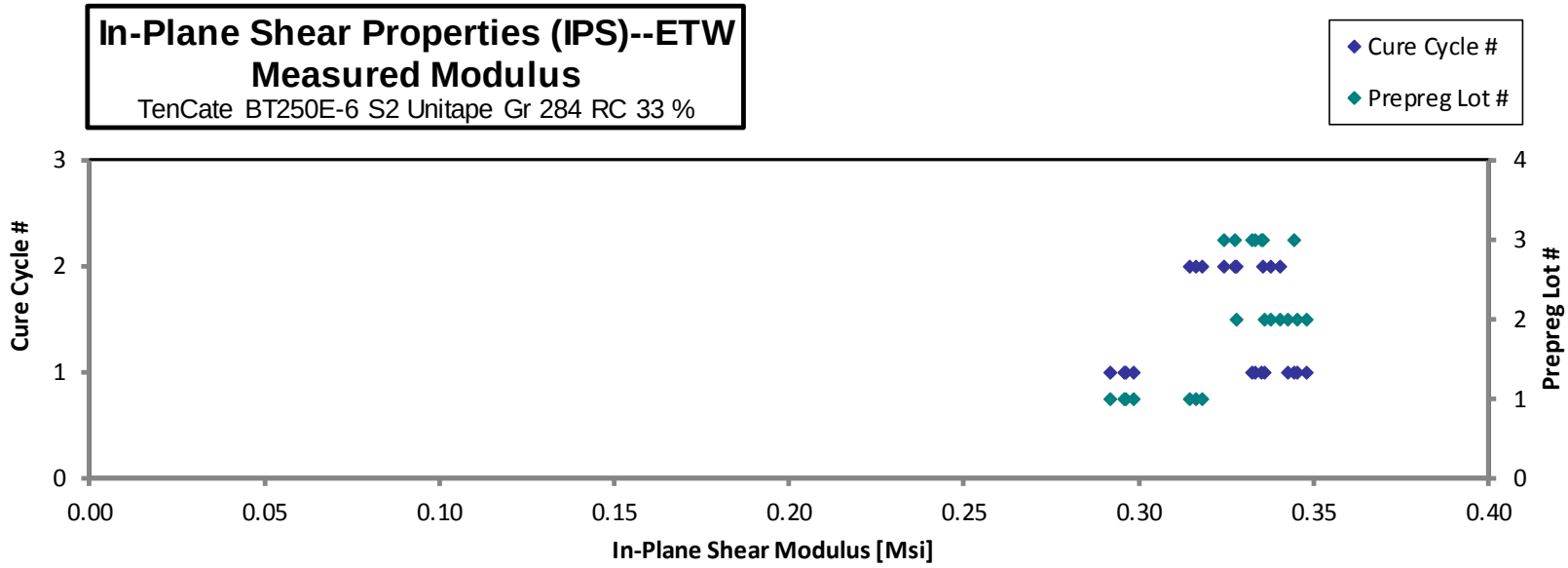
In-Plane Shear Properties (IPS)--ETW
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC 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]
EACNA11BD	A	C1	1	1	2.872	4.297	0.296	0.148	16	0.0092
EACNA11CD	A	C1	1	1	2.874	4.261	0.296	0.149	16	0.0093
EACNA11DD	A	C1	1	1	2.821	4.199	0.292	0.149	16	0.0093
EACNA11ED	A	C1	1	1	2.867	4.267	0.298	0.149	16	0.0093
EACNA219D	A	C2	1	2	3.095	4.703	0.316	0.148	16	0.0092
EACNA21AD	A	C2	1	2	3.108	4.730	0.318	0.148	16	0.0092
EACNA21BD	A	C2	1	2	3.065	4.675	0.315	0.149	16	0.0093
EACNB11BD	B	C1	2	1	3.304	4.756	0.348	0.147	16	0.0092
EACNB11CD	B	C1	2	1	3.218	4.640	0.336	0.148	16	0.0093
EACNB11DD	B	C1	2	1	3.312	4.753	0.345	0.149	16	0.0093
EACNB11ED	B	C1	2	1	3.258	4.685	0.343	0.149	16	0.0093
EACNB219D	B	C2	2	2	3.207	4.545	0.340	0.148	16	0.0092
EACNB21AD	B	C2	2	2	3.124	4.472	0.328	0.149	16	0.0093
EACNB21BD	B	C2	2	2	3.186	4.516	0.337	0.149	16	0.0093
EACNC11BD	C	C1	3	1	3.232	4.736	0.333	0.148	16	0.0093
EACNC11CD	C	C1	3	1	3.354	4.940	0.344	0.149	16	0.0093
EACNC11DD	C	C1	3	1	3.250	4.782	0.332	0.150	16	0.0094
EACNC11ED	C	C1	3	1	3.254	4.777	0.335	0.149	16	0.0093
EACNC219D	C	C2	3	2	3.251	4.738	0.335	0.149	16	0.0093
EACNC21AD	C	C2	3	2	3.171	4.685	0.327	0.151	16	0.0094
EACNC21BD	C	C2	3	2	3.165	4.637	0.324	0.151	16	0.0095

Average	**3.142**	**4.609**	**0.326**	**Average**	**0.0093**
Standard Dev.	**0.159**	**0.202**	**0.018**	**Standard Dev.**	
Coeff. of Var. [%]	**5.054**	**4.390**	**5.383**	**Coeff. of Var. [%]**	
Min.	**2.821**	**4.199**	**0.292**	**Min.**	**0.0092**
Max.	**3.354**	**4.940**	**0.348**	**Max.**	**0.0095**
Number of Spec.	**21**	**21**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS)--ETW
Measured Strength at 0.2% Offset
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
0
1
2
3
4


In-Plane Shear Properties (IPS)--ETW
Measured Strength at 5% Strain
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
0
1
2
3
4


In-Plane Shear Properties (IPS)--ETW
Measured Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40

4.6 "33/0/67" Unnotched Compression 0 Properties (UNC0)

Laminate Unnotched Compression Properties (UNC0)--CTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

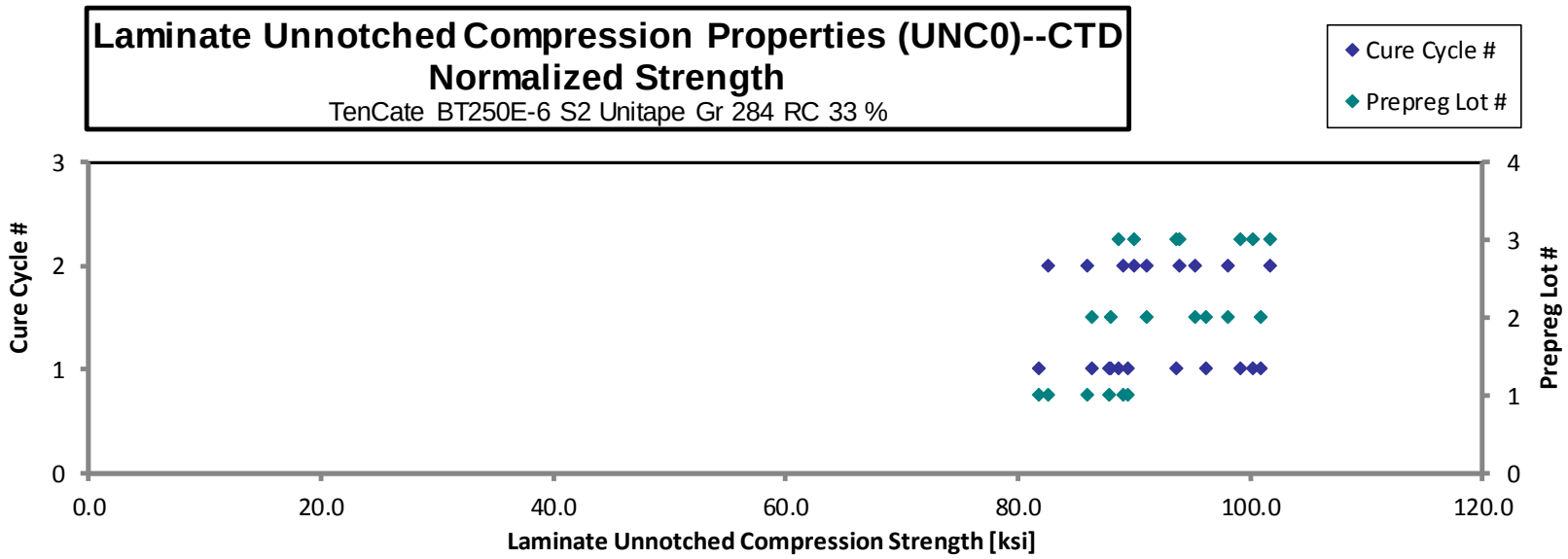
normalizing t_{ply} [in]
0.0092

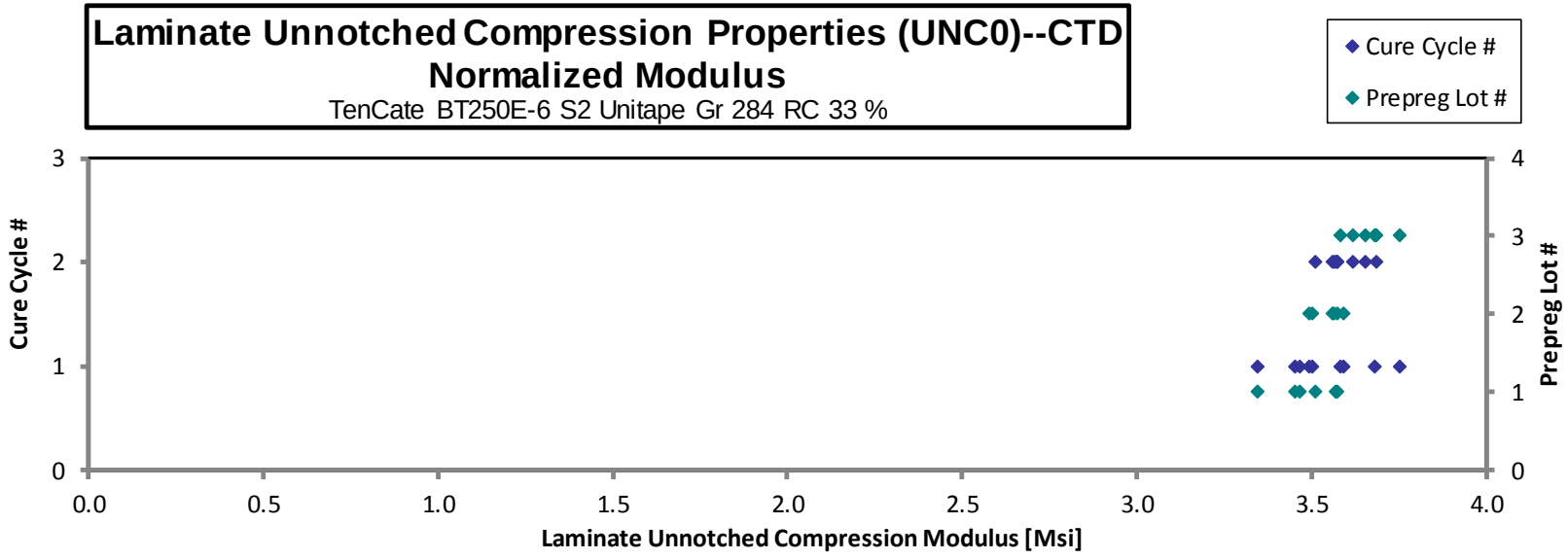
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EACRA117B	A	C1	1	1	*	3.424	0.140	15		0.0093		3.464
EACRA11BB	A	C1	1	1	80.863	3.310	0.139	15	BGM/ END CRUSH	0.0093	81.720	3.345
EACRA11CB	A	C1	1	1	88.813	3.425	0.139	15	BGM	0.0093	89.481	3.451
EACRA11DB	A	C1	1	1	87.494		0.138	15	BGM	0.0092	87.804	
EACRA215B	A	C2	1	2	89.755	3.603	0.137	15	BGM	0.0091	88.974	3.571
EACRA216B	A	C2	1	2	83.173	3.535	0.137	15	BGM	0.0091	82.608	3.511
EACRA217B	A	C2	1	2	85.897	3.563	0.138	15	BGM	0.0092	85.975	3.566
EACRB116B	B	C1	2	1	87.959	3.589	0.138	15	BGM	0.0092	87.959	3.589
EACRB117B	B	C1	2	1	95.724	3.476	0.139	15	BGM	0.0092	96.114	3.490
EACRB118B	B	C1	2	1	100.396	3.483	0.139	15	BGM	0.0092	100.914	3.501
EACRB119B	B	C1	2	1	85.726		0.139	15	BAB	0.0093	86.285	
EACRB215B	B	C2	2	2	96.396	3.603	0.136	15	BAB	0.0091	95.269	3.561
EACRB216B	B	C2	2	2	98.650	3.577	0.137	15	BAT	0.0091	98.096	3.557
EACRB217B	B	C2	2	2	90.897	3.567	0.138	15	BGM	0.0092	91.012	3.571
EACRC116B	C	C1	3	1	90.249	3.545	0.143	15	BGM	0.0095	93.609	3.677
EACRC117B	C	C1	3	1	96.095	3.432	0.144	15	BGM	0.0096	100.238	3.580
EACRC118B	C	C1	3	1	95.217	3.603	0.144	15	BGM	0.0096	99.098	3.750
EACRC119B	C	C1	3	1	85.607		0.143	15	BGM	0.0095	88.569	
EACRC215B	C	C2	3	2	100.409	3.574	0.140	15	BGM	0.0093	101.655	3.618
EACRC216B	C	C2	3	2	88.598	3.630	0.140	15	BGM	0.0093	89.922	3.684
EACRC217B	C	C2	3	2	92.353	3.596	0.140	15	BGM	0.0093	93.834	3.654

*Strength not reported because coupon exceeded max load of machine threshold.

Average	**91.014**	**3.530**	
Standard Dev.	**5.682**	**0.086**	
Coeff. of Var. [%]	**6.244**	**2.440**	
Min.	**80.863**	**3.310**	
Max.	**100.409**	**3.630**	
Number of Spec.	**20**	**18**	

$Average_{norm}$	**0.0093**	**91.957**	**3.564**
Standard $Dev._{norm}$		**6.031**	**0.096**
Coeff. of Var. $[\%]_{norm}$		**6.558**	**2.695**
Min.	**0.0091**	**81.720**	**3.345**
Max.	**0.0096**	**101.655**	**3.750**
Number of Spec.	**21**	**20**	**18**


Laminate Unnotched Compression Properties (UNC0)--CTD
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
20.0
40.0
60.0
80.0
100.0
120.0
Laminate Unnotched Compression Strength [ksi]


Laminate Unnotched Compression Properties (UNC0)--CTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Laminate Unnotched Compression Modulus [Msi]

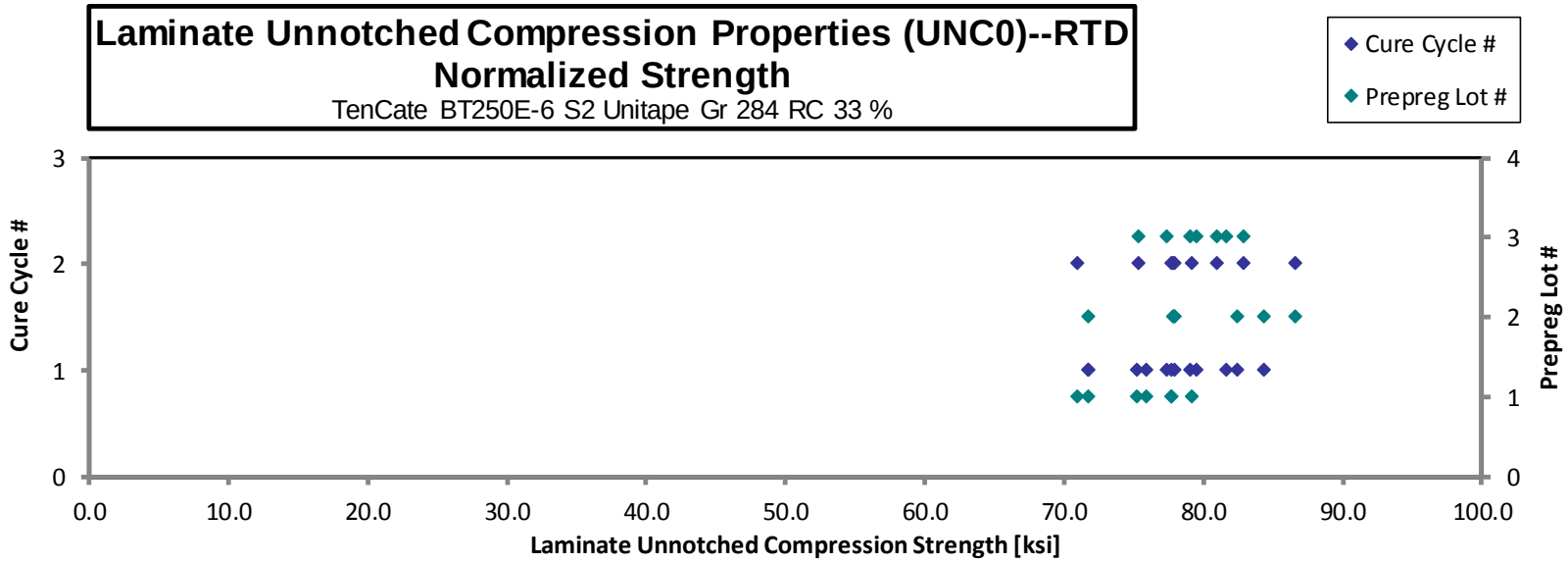
Laminate Unnotched Compression Properties (UNC0)--RTD
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

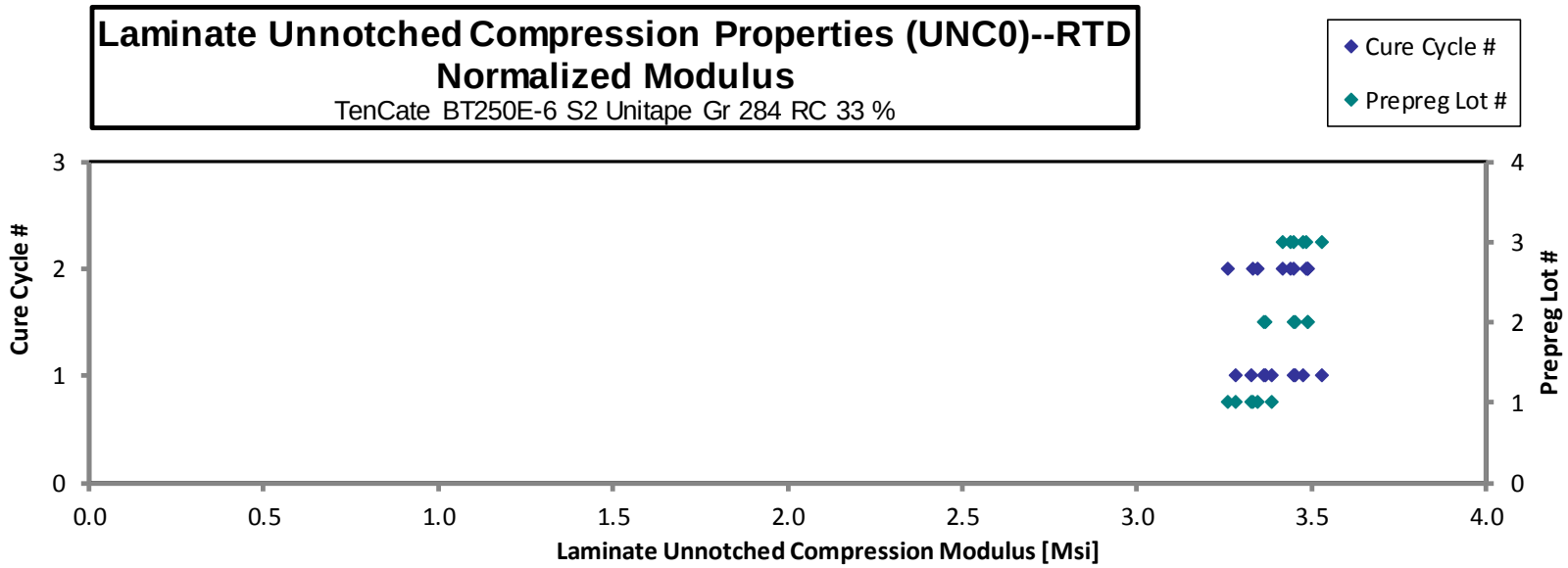
normalizing t_{ply} [in]: 0.0092

Specimen Number	EAC Batch #	EAC 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]
EACRA112A	A	C1	1	1	77.768	3.467	0.135	15	BGM	0.0090	75.901	3.384
EACRA113A	A	C1	1	1	76.533	3.339	0.136	15	BGM	0.0090	75.222	3.281
EACRA114A	A	C1	1	1	78.288	3.354	0.137	15	BGM	0.0091	77.657	3.327
EACRA116A*	A	C1	1	1	71.628		0.138	15	HGM	0.0092	71.731	
EACRA211A	A	C2	1	2	73.835	3.396	0.132	15	BGM	0.0088	70.852	3.259
EACRA212A	A	C2	1	2	81.733	3.457	0.134	15	BGM	0.0089	79.098	3.345
EACRA213A	A	C2	1	2	80.080	3.434	0.134	15	BGM	0.0089	77.679	3.331
EACRB111A	B	C1	2	1	86.955	3.469	0.134	15	BGM	0.0089	84.293	3.363
EACRB112A	B	C1	2	1	73.295	3.444	0.135	15	BGM	0.0090	71.669	3.367
EACRB113A	B	C1	2	1	83.609	3.502	0.136	15	BGM	0.0091	82.420	3.453
EACRB114A*	B	C1	2	1	78.760		0.136	15	BGM	0.0091	77.868	
EACRB211A	B	C2	2	2	81.517	3.606	0.132	15	BGM	0.0088	77.936	3.448
EACRB212A	B	C2	2	2	89.496	3.607	0.134	15	BGM	0.0089	86.577	3.489
EACRB213A	B	C2	2	2	79.362	3.562	0.135	15	BGM	0.0090	77.759	3.490
EACRC111A	C	C1	3	1	80.955	3.446	0.139	15	BGM	0.0093	81.608	3.474
EACRC112A	C	C1	3	1	77.885	3.458	0.141	15	BGM	0.0094	79.486	3.529
EACRC113A	C	C1	3	1	77.044	3.362	0.142	15	BGM	0.0094	79.026	3.448
EACRC114A*	C	C1	3	1	75.085		0.142	15	BGM	0.0095	77.275	
EACRC211A	C	C2	3	2	75.639	3.428	0.137	15	BGM	0.0092	75.331	3.414
EACRC212A	C	C2	3	2	82.782	3.439	0.138	15	BGM	0.0092	82.827	3.441
EACRC213A	C	C2	3	2	80.310	3.459	0.139	15	BGM	0.0093	80.914	3.485

* Specimen was not gaged and tested for strength only.

Average	**79.169**	**3.457**	**$Average_{norm}$**	**0.0091**	**78.244**	**3.407**
Standard Dev.	**4.373**	**0.076**	**Standard $Dev._{norm}$**		**4.070**	**0.078**
Coeff. of Var. [%]	**5.524**	**2.190**	**Coeff. of Var. $[\%]_{norm}$**		**5.201**	**2.292**
Min.	**71.628**	**3.339**	**Min.**	**0.0088**	**70.852**	**3.259**
Max.	**89.496**	**3.607**	**Max.**	**0.0095**	**86.577**	**3.529**
Number of Spec.	**21**	**18**	**Number of Spec.**	**21**	**21**	**18**


Laminate Unnotched Compression Properties (UNC0)--RTD
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
Laminate Unnotched Compression Strength [ksi]


Laminate Unnotched Compression Properties (UNC0)--RTD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Laminate Unnotched Compression Modulus [Msi]

Laminate Unnotched Compression Properties (UNC0)--ETD
Strength & Modulus

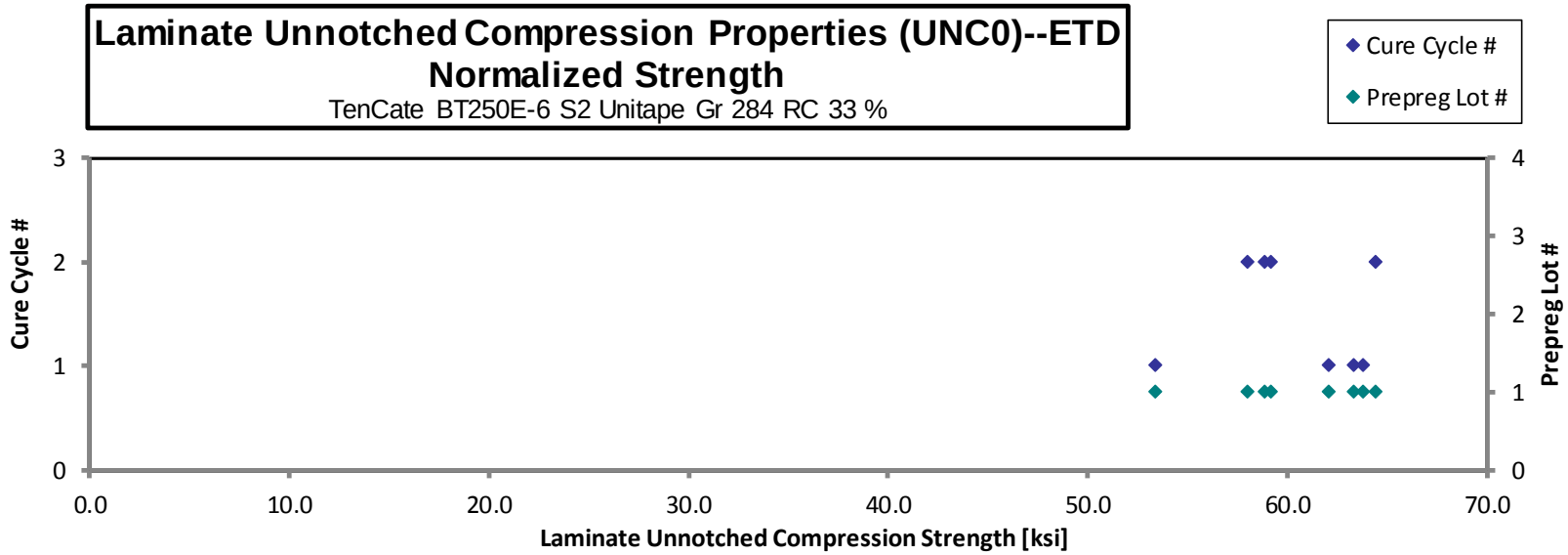
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

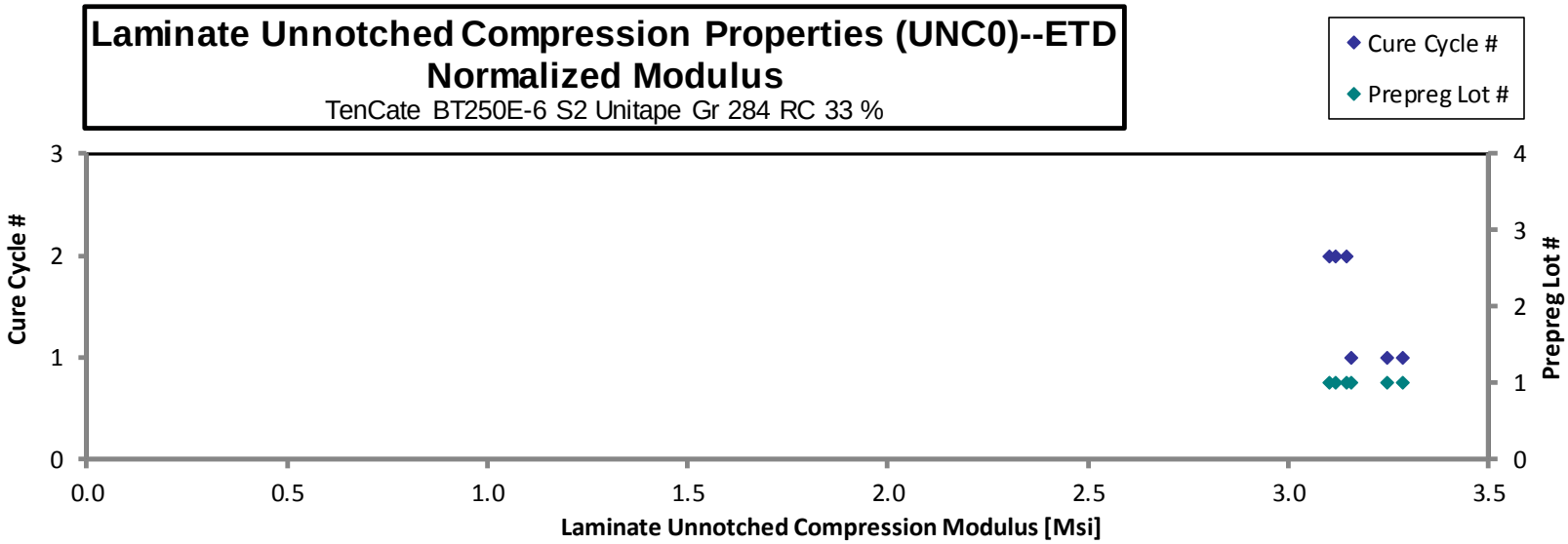
normalizing t_{ply} [in]
0.0092

Specimen Number	EAC Batch #	EAC 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]
EACRA11EC	A	C1	1	1	65.542	3.404	0.133	15	BGM	0.0089	63.268	3.286
EACRA11FC	A	C1	1	1	65.371	3.234	0.135	15	BGM/ CIT	0.0090	63.784	3.156
EACRA11GC	A	C1	1	1	63.267	3.310	0.135	15	BGM	0.0090	62.007	3.244
EACRA11HC*	A	C1	1	1	54.025		0.136	15	HIT/ BGM	0.0091	53.355	
EACRA219C	A	C2	1	2	58.843	3.085	0.139	15	BAT	0.0092	59.131	3.100
EACRA21AC	A	C2	1	2	58.162	3.080	0.140	15	BAT/ HIT	0.0093	58.847	3.116
EACRA21BC	A	C2	1	2	60.040	3.256	0.133	15	BAT/ HIT	0.0089	57.951	3.142
EACRA21CC*	A	C2	1	2	66.585		0.133	15	BAB	0.0089	64.396	

* Specimen was not gaged and tested for strength only.

	Strength [ksi]	Modulus [Msi]		Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**61.480**	**3.228**	**$Average_{norm}$**	**0.0090**	**60.342**	**3.174**
Standard Dev.	**4.416**	**0.127**	**Standard $Dev._{norm}$**		**3.739**	**0.074**
Coeff. of Var. [%]	**7.183**	**3.939**	**Coeff. of $Var.[\%]_{norm}$**		**6.196**	**2.338**
Min.	**54.025**	**3.080**	**Min.**	**0.0089**	**53.355**	**3.100**
Max.	**66.585**	**3.404**	**Max.**	**0.0093**	**64.396**	**3.286**
Number of Spec.	**8**	**6**	**Number of Spec.**	**8**	**8**	**6**


Laminate Unnotched Compression Properties (UNC0)--ETD
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
Laminate Unnotched Compression Strength [ksi]


Laminate Unnotched Compression Properties (UNC0)--ETD
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Laminate Unnotched Compression Modulus [Msi]

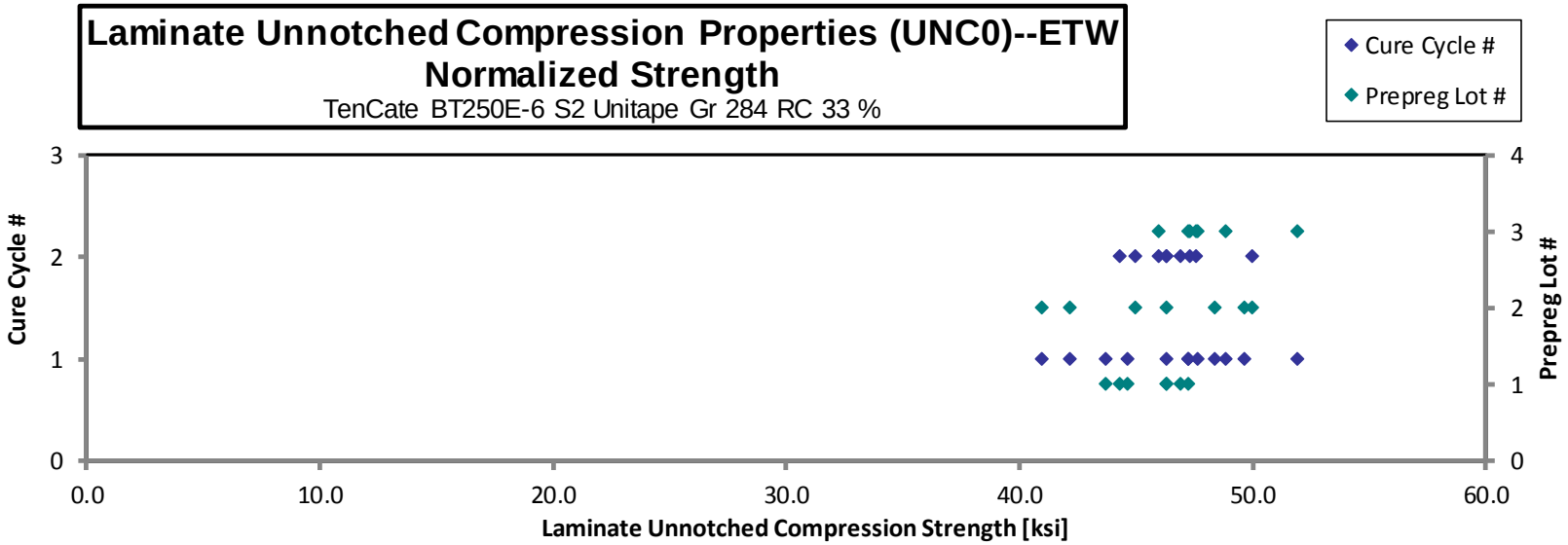
Laminate Unnotched Compression Properties (UNC0)--ETW
Strength & Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

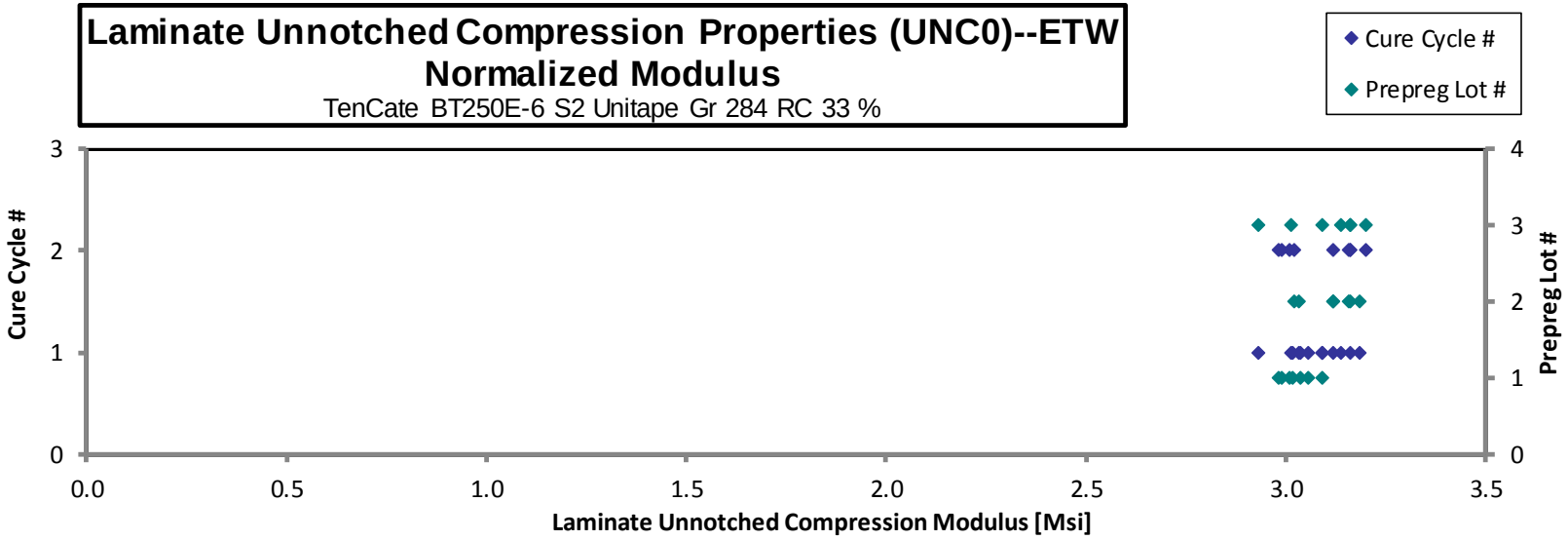
normalizing t_{ply} [in]
0.0092

Specimen Number	EAC Batch #	EAC 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]
EACRA11ID	A	C1	1	1		3.028	0.137	15	BGM	0.0092		3.015
EACRA11JD	A	C1	1	1		3.025	0.139	15	BGM	0.0092		3.037
EACRA11KD	A	C1	1	1		3.016	0.140	15	HGM	0.0093		3.054
EACRA11LD	A	C1	1	1		3.052	0.140	15	HGM	0.0093		3.089
EACRA11MD	A	C1	1	1	43.199		0.140	15	BGM	0.0093	43.704	
EACRA11ND	A	C1	1	1	46.759		0.139	15	BGM	0.0093	47.233	
EACRA11OD	A	C1	1	1	44.167		0.139	15	HAB	0.0093	44.595	
EACRA11PD	A	C1	1	1	45.831		0.139	15	BGM	0.0093	46.266	
EACRA21DD	A	C2	1	2		3.098	0.134	15	BAB	0.0089		3.006
EACRA21ED	A	C2	1	2		3.050	0.135	15	BGM	0.0090		2.988
EACRA21FD	A	C2	1	2		3.006	0.137	15	BGM	0.0091		2.979
EACRA21GD	A	C2	1	2	44.310		0.138	15	BAB	0.0092	44.282	
EACRA21HD	A	C2	1	2	46.021		0.139	15	BGM	0.0093	46.304	
EACRA21ID	A	C2	1	2	46.285		0.140	15	HGM	0.0093	46.851	
EACRB11BD	B	C1	2	1		3.178	0.132	15	BGM / CIT	0.0088		3.030
EACRB11CD	B	C1	2	1		3.301	0.133	15	BGM	0.0089		3.181
EACRB11DD	B	C1	2	1		3.231	0.135	15	BGM	0.0090		3.159
EACRB11ED	B	C1	2	1		3.154	0.136	15	BAB	0.0091		3.117
EACRB11FD	B	C1	2	1	42.230		0.138	15	HAT	0.0092	42.111	
EACRB11GD	B	C1	2	1	40.827		0.138	15	BAB	0.0092	40.912	
EACRB11HD	B	C1	2	1	47.938		0.139	15	BAB	0.0093	48.341	
EACRB11ID	B	C1	2	1	49.228		0.139	15	BGM	0.0093	49.634	
EACRB219D	B	C2	2	2		3.168	0.131	15	HGM	0.0088		3.018
EACRB21AD	B	C2	2	2		3.237	0.133	15	BAT	0.0089		3.118
EACRB21BD	B	C2	2	2		3.234	0.135	15	BGM	0.0090		3.156
EACRB21CD	B	C2	2	2	45.927		0.135	15	BAB	0.0090	44.962	
EACRB21DD	B	C2	2	2	46.756		0.137	15	BGM	0.0091	46.307	
EACRB21ED	B	C2	2	2	50.185		0.137	15	BGM	0.0092	49.948	
EACRC11BD	C	C1	3	1		3.105	0.139	15	BGM	0.0093		3.135
EACRC11CD	C	C1	3	1		3.035	0.140	15	HAT	0.0094		3.088
EACRC11DD	C	C1	3	1		2.856	0.142	15	BGM	0.0094		2.929
EACRC11ED	C	C1	3	1		2.920	0.142	15	BGM	0.0095		3.010
EACRC11FD	C	C1	3	1	45.886		0.143	15	BGM	0.0095	47.624	
EACRC11GD	C	C1	3	1	47.085		0.143	15	BGM	0.0095	48.851	
EACRC11HD	C	C1	3	1	45.342		0.144	15	BAB	0.0096	47.219	
EACRC11ID	C	C1	3	1	50.294		0.142	15	BAT	0.0095	51.915	
EACRC219D	C	C2	3	2		3.182	0.137	15	HGM	0.0091		3.161
EACRC21AD	C	C2	3	2		3.175	0.137	15	BAB	0.0092		3.158
EACRC21BD	C	C2	3	2		3.186	0.139	15	BGM	0.0092		3.200
EACRC21CD	C	C2	3	2	45.840		0.138	15	BAT	0.0092	45.943	
EACRC21DD	C	C2	3	2	47.127		0.139	15	BAB	0.0093	47.549	
EACRC21ED	C	C2	3	2	46.496		0.140	15	BAB	0.0094	47.305	

	Strength [ksi]	Modulus [Msi]
Average	**46.082**	**3.106**
Standard Dev.	**2.339**	**0.113**
Coeff. of Var. [%]	**5.076**	**3.633**
Min.	**40.827**	**2.856**
Max.	**50.294**	**3.301**
Number of Spec.	**21**	**21**

	t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	**0.0092**	**46.565**	**3.077**
Standard $Dev._{norm}$		**2.586**	**0.077**
Coeff. of Var. $[\%]_{norm}$		**5.553**	**2.516**
Min.	**0.0088**	**40.912**	**2.929**
Max.	**0.0096**	**51.915**	**3.200**
Number of Spec.	**42**	**21**	**21**


Laminate Unnotched Compression Properties (UNC0)--ETW
Normalized Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
10.0
20.0
30.0
40.0
50.0
60.0
Laminate Unnotched Compression Strength [ksi]

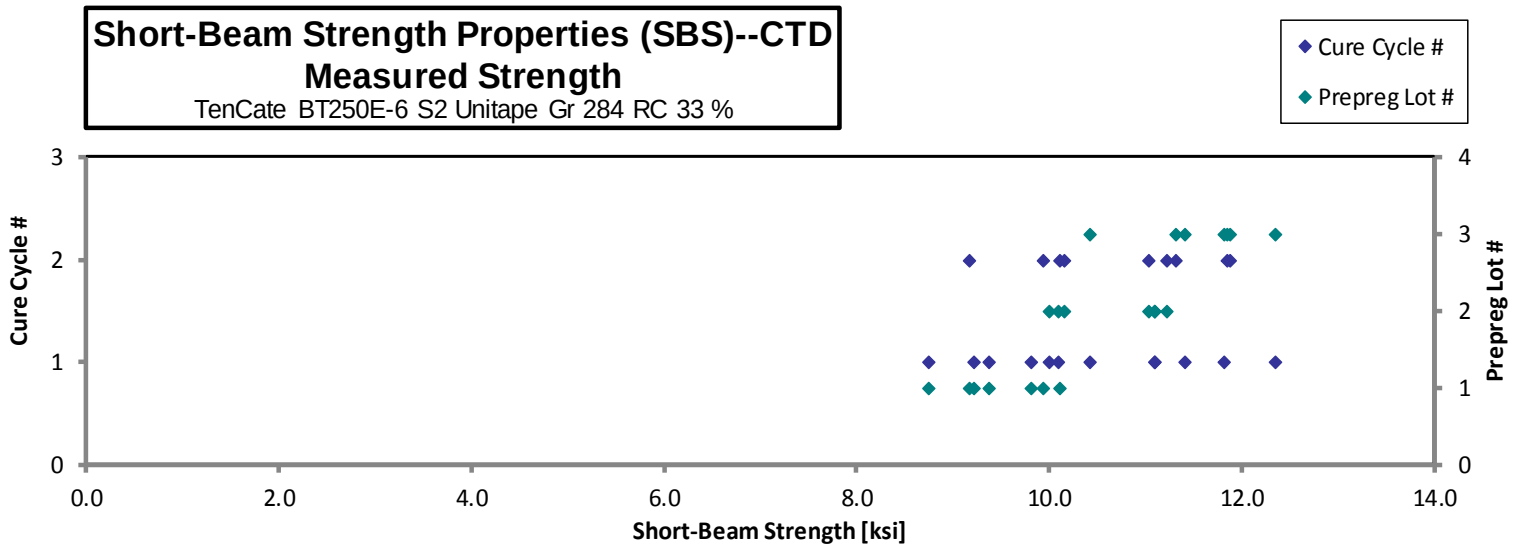

Laminate Unnotched Compression Properties (UNC0)--ETW
Normalized Modulus
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
Laminate Unnotched Compression Modulus [Msi]

4.7 Lamina Short-Beam Strength Properties (SBS)

Short-Beam Strength Properties (SBS)--CTD
Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACQA116B	A	C1	1	1	8.744	0.247	27	0.0092	ILS
EACQA117B	A	C1	1	1	9.207	0.249	27	0.0092	ILS
EACQA118B	A	C1	1	1	9.812	0.251	27	0.0093	ILS
EACQA119B	A	C1	1	1	9.377	0.246	27	0.0091	ILS
EACQA216B	A	C2	1	2	9.173	0.243	27	0.0090	ILS
EACQA217B	A	C2	1	2	9.933	0.250	27	0.0092	ILS
EACQA218B	A	C2	1	2	10.105	0.252	27	0.0093	ILS
EACQB116B	B	C1	2	1	11.085	0.247	27	0.0092	ILS
EACQB117B	B	C1	2	1	11.089	0.247	27	0.0091	ILS
EACQB118B	B	C1	2	1	10.098	0.246	27	0.0091	ILS
EACQB119B	B	C1	2	1	9.995	0.245	27	0.0091	ILS
EACQB216B	B	C2	2	2	11.034	0.241	27	0.0089	ILS
EACQB217B	B	C2	2	2	10.156	0.243	27	0.0090	ILS
EACQB218B	B	C2	2	2	11.217	0.244	27	0.0091	ILS
EACQC116B	C	C1	3	1	12.347	0.251	27	0.0093	ILS
EACQC117B	C	C1	3	1	11.813	0.252	27	0.0093	ILS
EACQC118B	C	C1	3	1	11.410	0.254	27	0.0094	ILS
EACQC119B	C	C1	3	1	10.422	0.254	27	0.0094	ILS
EACQC216B	C	C2	3	2	11.850	0.247	27	0.0091	ILS
EACQC217B	C	C2	3	2	11.316	0.246	27	0.0091	ILS
EACQC218B	C	C2	3	2	11.877	0.246	27	0.0091	ILS

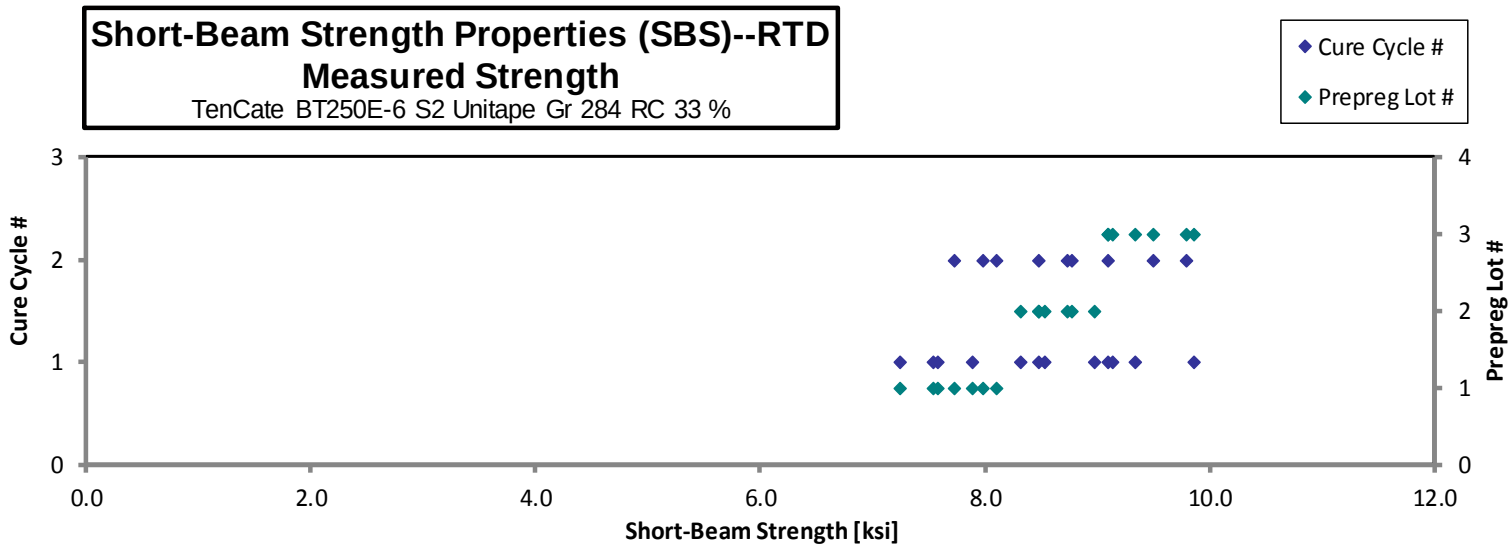
Average	**10.574**	**Average**	**0.0092**
Standard Dev.	**1.025**	**Standard Dev.**	
Coeff. of Var. [%]	**9.689**	**Coeff. of Var. [%]**	
Min.	**8.744**	**Min.**	**0.0089**
Max.	**12.347**	**Max.**	**0.0094**
Number of Spec.	**21**	**Number of Spec.**	**21**


Short-Beam Strength Properties (SBS)--CTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
0
1
2
3
4

Short-Beam Strength Properties (SBS)--RTD
Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACQA111A	A	C1	1	1	7.243	0.239	27	0.0088	ILS
EACQA112A	A	C1	1	1	7.543	0.241	27	0.0089	ILS
EACQA113A	A	C1	1	1	7.884	0.243	27	0.0090	ILS
EACQA114A	A	C1	1	1	7.583	0.244	27	0.0090	ILS
EACQA211A	A	C2	1	2	7.721	0.235	27	0.0087	ILS
EACQA212A	A	C2	1	2	8.105	0.242	27	0.0089	ILS
EACQA213A	A	C2	1	2	7.981	0.244	27	0.0091	ILS
EACQB111A	B	C1	2	1	8.476	0.244	27	0.0090	ILS
EACQB112A	B	C1	2	1	8.976	0.242	27	0.0090	ILS
EACQB113A	B	C1	2	1	8.523	0.241	27	0.0089	ILS
EACQB114A	B	C1	2	1	8.314	0.240	27	0.0089	ILS
EACQB211A	B	C2	2	2	8.764	0.232	27	0.0086	ILS
EACQB212A	B	C2	2	2	8.736	0.235	27	0.0087	ILS
EACQB213A	B	C2	2	2	8.481	0.236	27	0.0087	ILS
EACQC111A	C	C1	3	1	9.337	0.244	27	0.0091	ILS
EACQC112A	C	C1	3	1	9.092	0.246	27	0.0091	ILS
EACQC113A	C	C1	3	1	9.131	0.247	27	0.0092	ILS
EACQC114A	C	C1	3	1	9.852	0.247	27	0.0091	ILS
EACQC211A	C	C2	3	2	9.500	0.239	27	0.0089	ILS
EACQC212A	C	C2	3	2	9.791	0.239	27	0.0089	ILS
EACQC213A	C	C2	3	2	9.096	0.239	27	0.0089	ILS

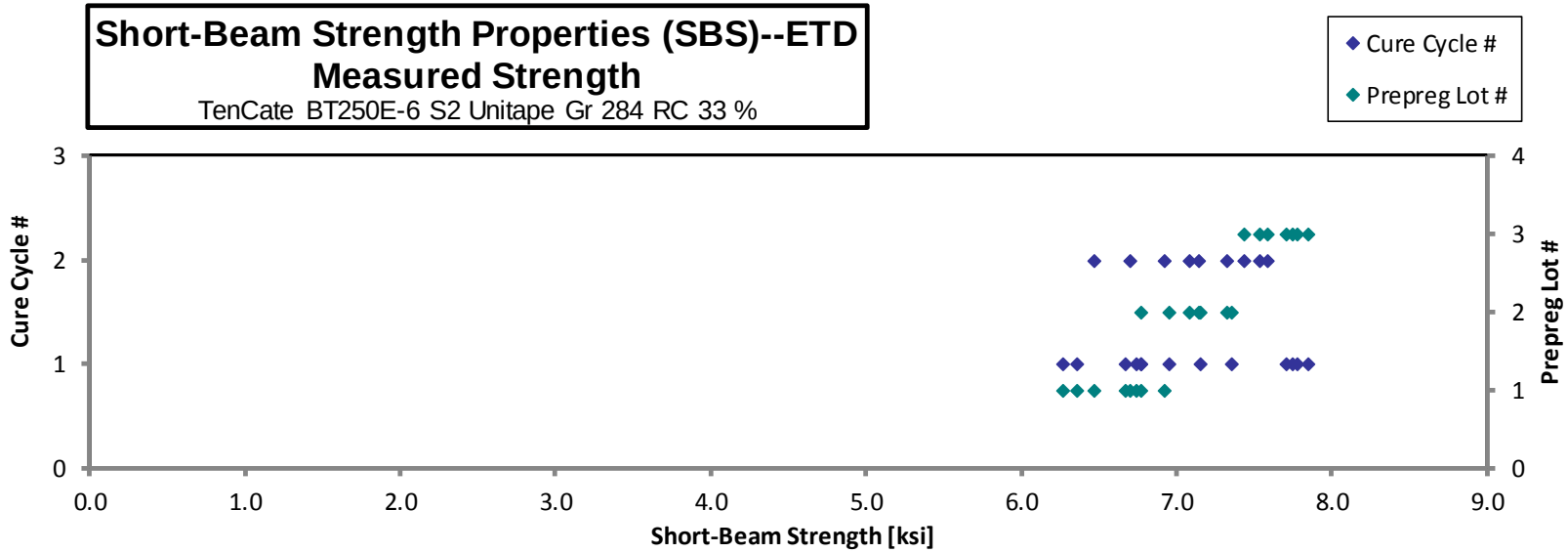
Average	**8.578**	**Average**	**0.0089**
Standard Dev.	**0.752**	**Standard Dev.**	
Coeff. of Var. [%]	**8.767**	**Coeff. of Var. [%]**	
Min.	**7.243**	**Min.**	**0.0086**
Max.	**9.852**	**Max.**	**0.0092**
Number of Spec.	**21**	**Number of Spec.**	**21**


Short-Beam Strength Properties (SBS)--RTD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3
4

Short-Beam Strength Properties (SBS)--ETD
Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACQA11BC	A	C1	1	1	6.671	0.252	27	0.0093	ILS
EACQA11CC	A	C1	1	1	6.267	0.251	27	0.0093	ILS
EACQA11DC	A	C1	1	1	6.768	0.253	27	0.0094	ILS
EACQA11EC	A	C1	1	1	6.743	0.254	27	0.0094	ILS
EACQA11FC	A	C1	1	1	6.351	0.253	27	0.0094	ILS
EACQA21BC	A	C2	1	2	6.464	0.245	27	0.0091	ILS
EACQA21CC	A	C2	1	2	6.924	0.251	27	0.0093	ILS
EACQA21DC	A	C2	1	2	6.697	0.254	27	0.0094	ILS
EACQB11BC	B	C1	2	1	7.149	0.249	27	0.0092	ILS
EACQB11CC	B	C1	2	1	7.355	0.248	27	0.0092	ILS
EACQB11DC	B	C1	2	1	6.955	0.247	27	0.0092	ILS
EACQB11EC	B	C1	2	1	6.769	0.246	27	0.0091	ILS
EACQB21BC	B	C2	2	2	7.081	0.242	27	0.0090	ILS
EACQB21CC	B	C2	2	2	7.141	0.244	27	0.0090	ILS
EACQB21DC	B	C2	2	2	7.320	0.245	27	0.0091	ILS
EACQC11BC	C	C1	3	1	7.745	0.253	27	0.0094	ILS
EACQC11CC	C	C1	3	1	7.844	0.254	27	0.0094	ILS
EACQC11DC	C	C1	3	1	7.770	0.256	27	0.0095	ILS
EACQC11EC	C	C1	3	1	7.707	0.255	27	0.0095	ILS
EACQC21BC	C	C2	3	2	7.586	0.249	27	0.0092	ILS
EACQC21CC	C	C2	3	2	7.435	0.249	27	0.0092	ILS
EACQC21DC	C	C2	3	2	7.536	0.248	27	0.0092	ILS

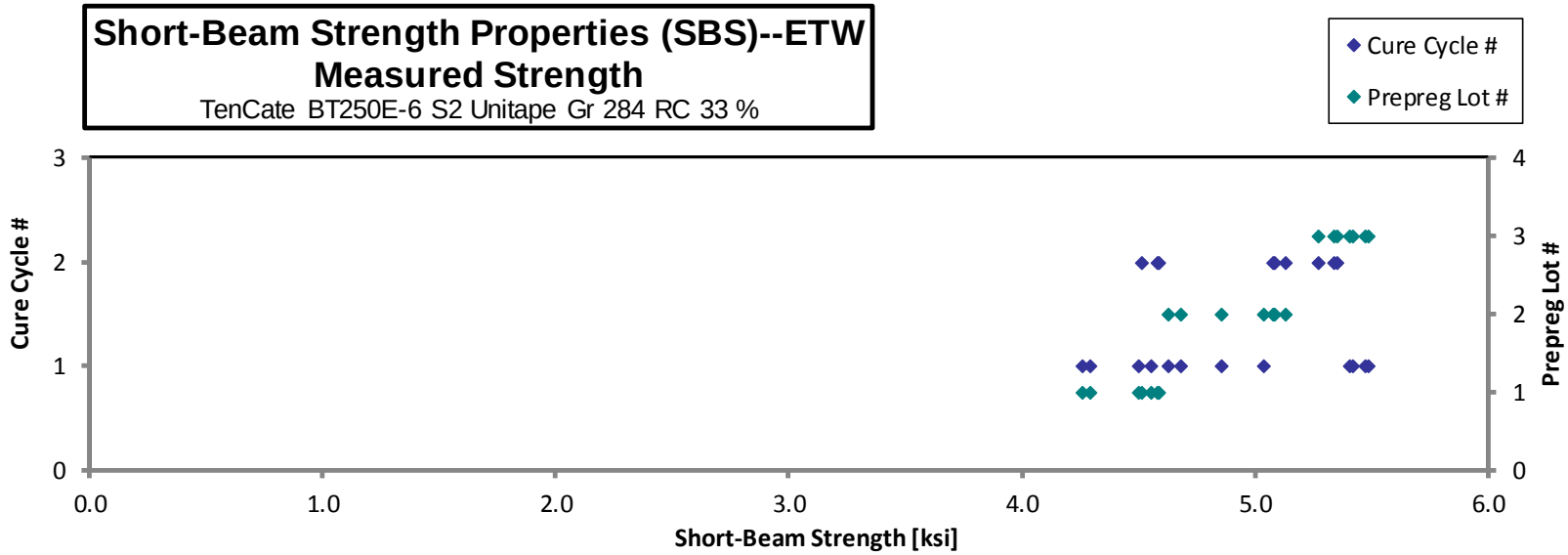
Average	**7.104**	**Average**	**0.0093**
Standard Dev.	**0.481**	**Standard Dev.**	
Coeff. of Var. [%]	**6.766**	**Coeff. of Var. [%]**	
Min.	**6.267**	**Min.**	**0.0090**
Max.	**7.844**	**Max.**	**0.0095**
Number of Spec.	**22**	**Number of Spec.**	**22**


Short-Beam Strength Properties (SBS)--ETD
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
0
1
2
3
4

Short-Beam Strength Properties (SBS)--ETW
Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %

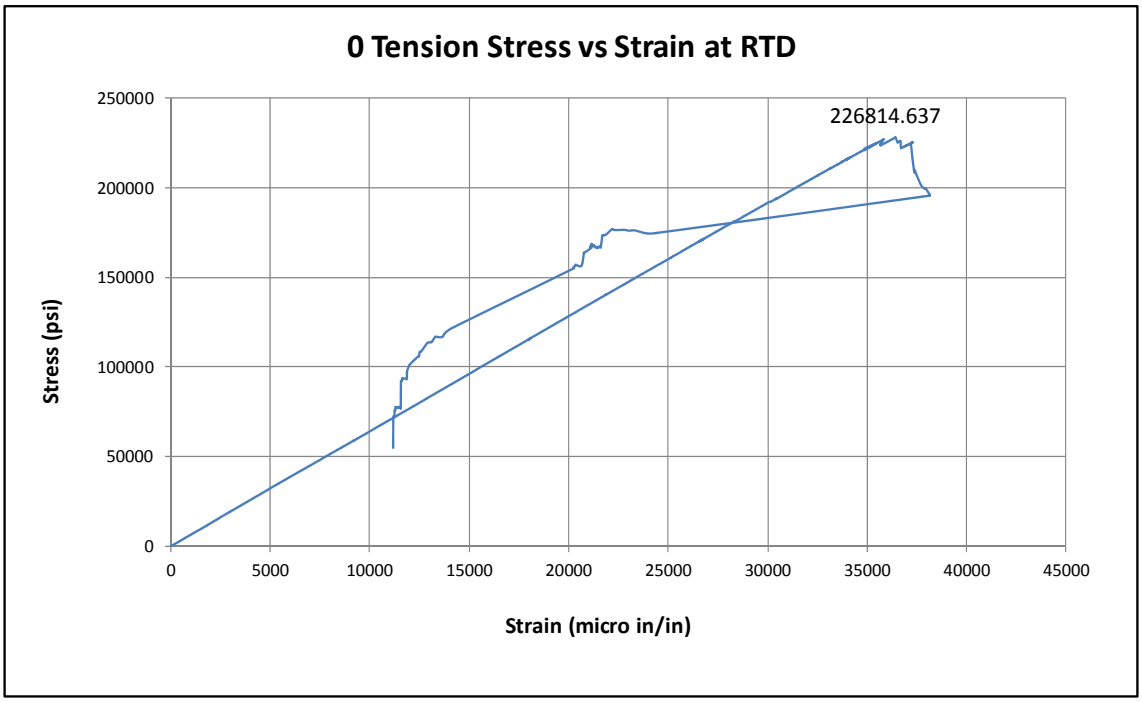
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode
EACQA11GD	A	C1	1	1	4.292	0.242	27	0.0090	INELASTIC DEFORMATION
EACQA11HD	A	C1	1	1	4.259	0.245	27	0.0091	INELASTIC DEFORMATION
EACQA11ID	A	C1	1	1	4.500	0.247	27	0.0092	INELASTIC DEFORMATION
EACQA11JD	A	C1	1	1	4.555	0.248	27	0.0092	INELASTIC DEFORMATION
EACQA21GD	A	C2	1	2	4.514	0.241	27	0.0089	INELASTIC DEFORMATION
EACQA21HD	A	C2	1	2	4.589	0.247	27	0.0091	INELASTIC DEFORMATION
EACQA21ID	A	C2	1	2	4.578	0.250	27	0.0093	INELASTIC DEFORMATION
EACQB11GD	B	C1	2	1	4.854	0.245	27	0.0091	ILS
EACQB11HD	B	C1	2	1	5.038	0.246	27	0.0091	INELASTIC DEFORMATION
EACQB11ID	B	C1	2	1	4.679	0.246	27	0.0091	INELASTIC DEFORMATION
EACQB11JD	B	C1	2	1	4.625	0.245	27	0.0091	INELASTIC DEFORMATION
EACQB21GD	B	C2	2	2	5.077	0.239	27	0.0088	INELASTIC DEFORMATION
EACQB21HD	B	C2	2	2	5.131	0.240	27	0.0089	INELASTIC DEFORMATION
EACQB21ID	B	C2	2	2	5.080	0.242	27	0.0090	INELASTIC DEFORMATION
EACQC11GD	C	C1	3	1	5.418	0.249	27	0.0092	ILS
EACQC11HD	C	C1	3	1	5.406	0.251	27	0.0093	ILS
EACQC11ID	C	C1	3	1	5.486	0.251	27	0.0093	ILS
EACQC11JD	C	C1	3	1	5.475	0.251	27	0.0093	ILS
EACQC21GD	C	C2	3	2	5.353	0.246	27	0.0091	ILS
EACQC21HD	C	C2	3	2	5.338	0.245	27	0.0091	ILS
EACQC21ID	C	C2	3	2	5.271	0.246	27	0.0091	INELASTIC DEFORMATION

Average	**4.929**	**Average**	**0.0091**
Standard Dev.	**0.412**	**Standard Dev.**	
Coeff. of Var. [%]	**8.349**	**Coeff. of Var. [%]**	
Min.	**4.259**	**Min.**	**0.0088**
Max.	**5.486**	**Max.**	**0.0093**
Number of Spec.	**21**	**Number of Spec.**	**21**

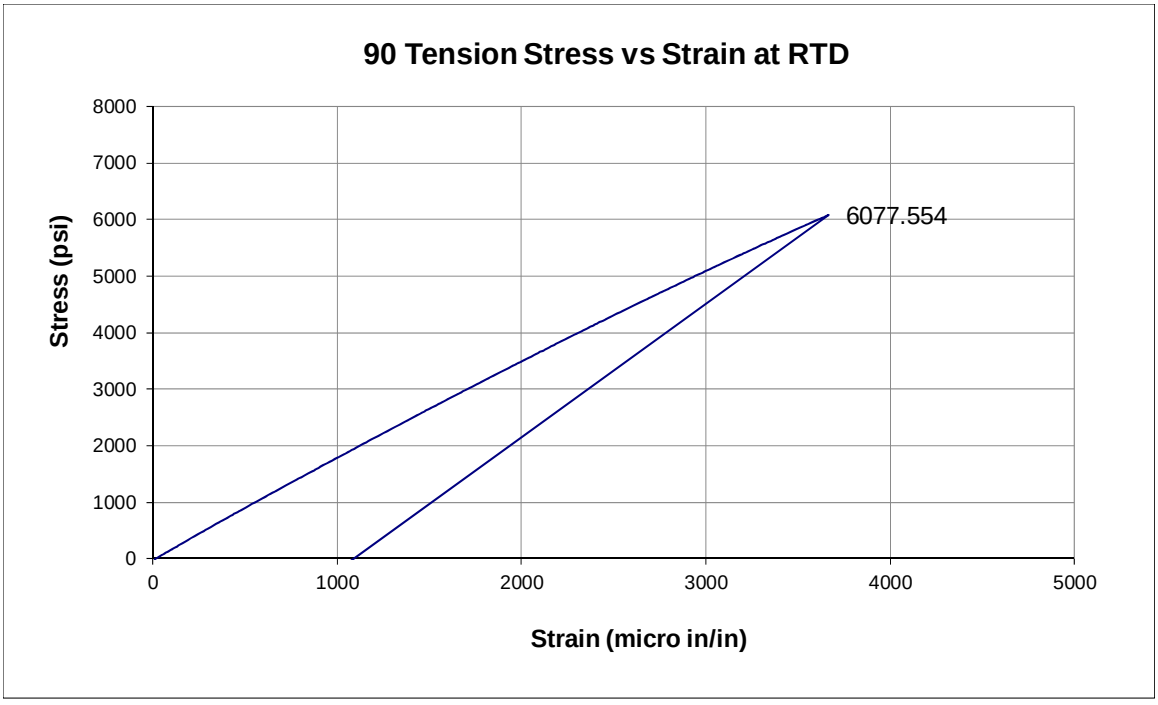

Short-Beam Strength Properties (SBS)--ETW
Measured Strength
TenCate BT250E-6 S2 Unitape Gr 284 RC 33 %
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
0
1
2
3
4

5. Full Stress vs. Strain Curve

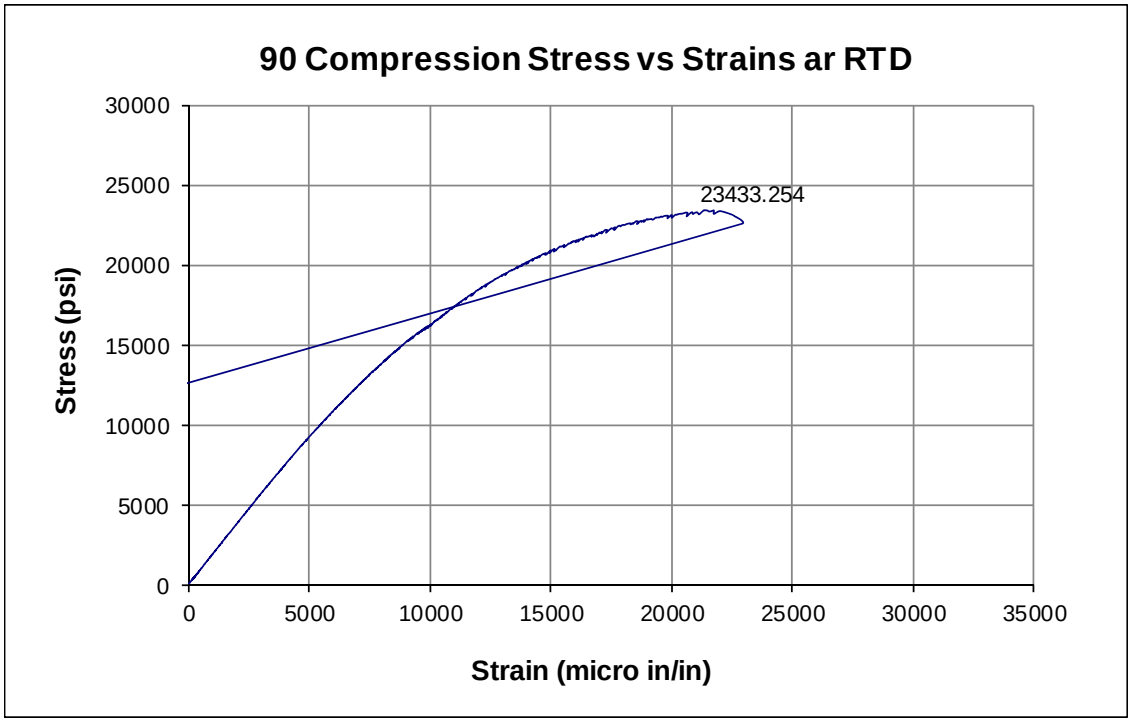
5.1 Longitudinal Tension



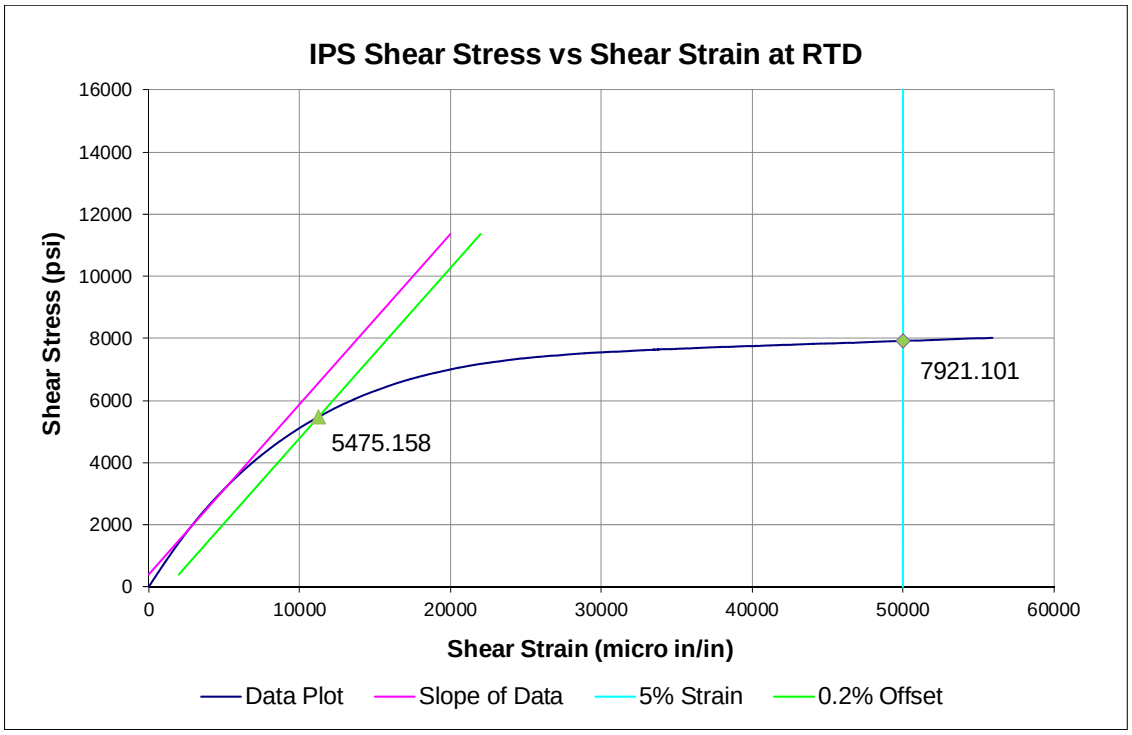
5.2 Transverse Tension



5.3 Transverse Compression

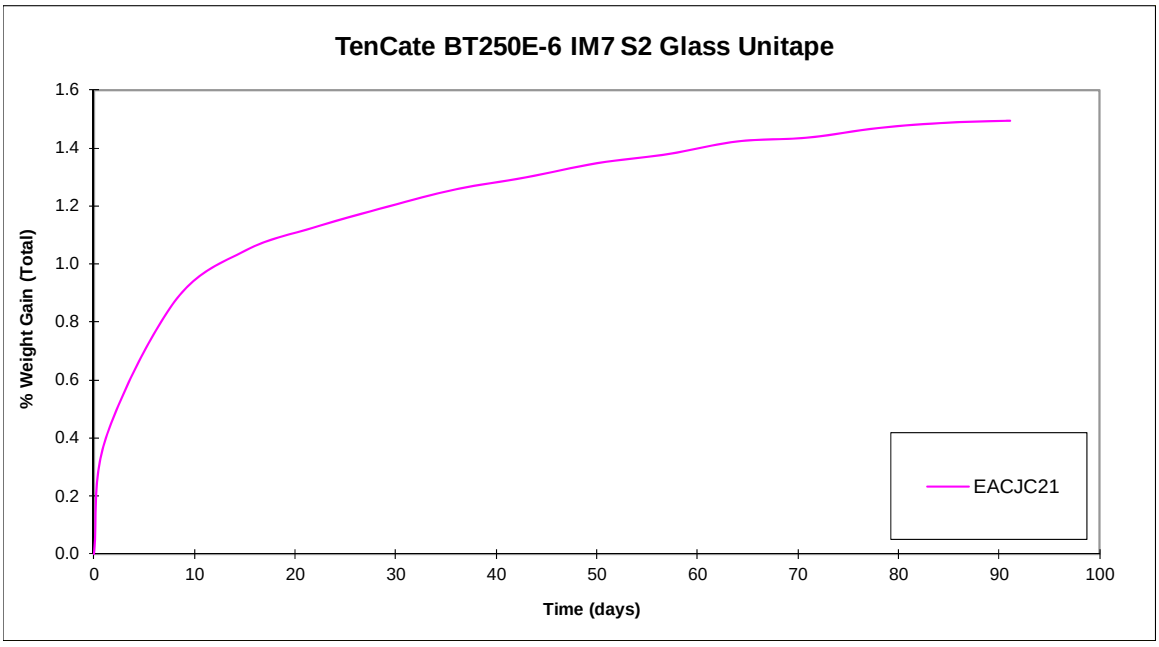


5.4 In-Plane Shear

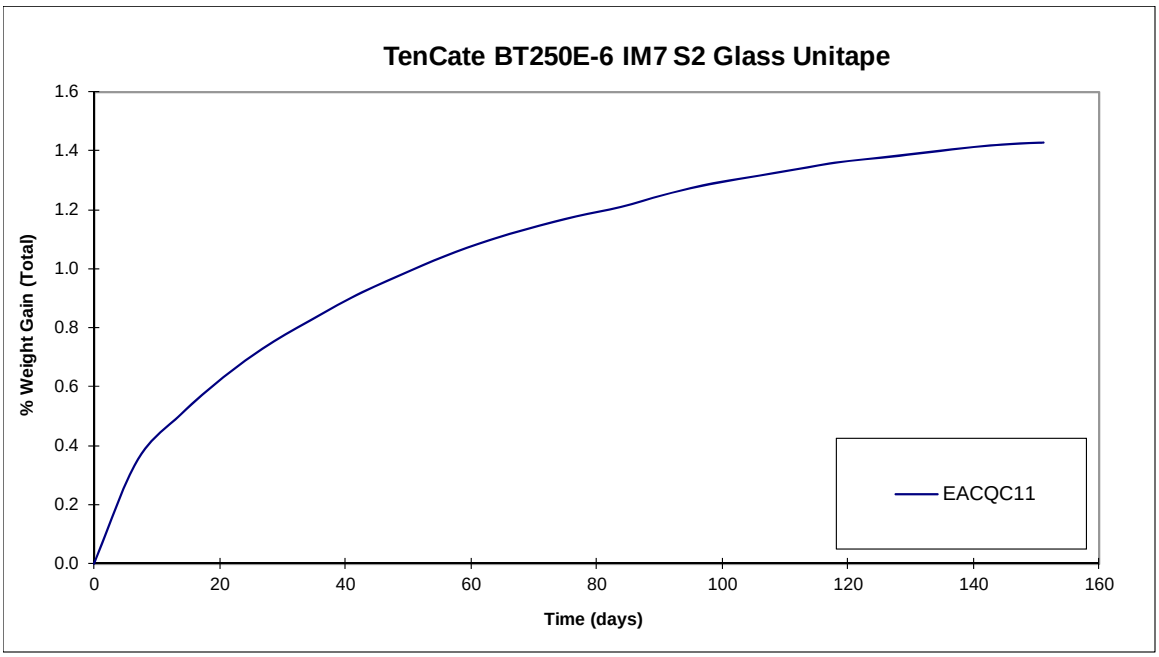


6. Moisture Conditioning Charts

6.1 Longitudinal Tension – Thinnest Panel



6.2 Short Beam Shear – Thickest Panel



For “wet” mechanical test specimens, the drying procedures may not have completely dried the specimens prior to moisture conditioning, so the total amount of moisture absorbed by the specimens may be higher than those recorded in the moisture gain charts.

7. DMA Results

DMA Results Summary

TenCate BT250E-6 S2 Unitape DRY

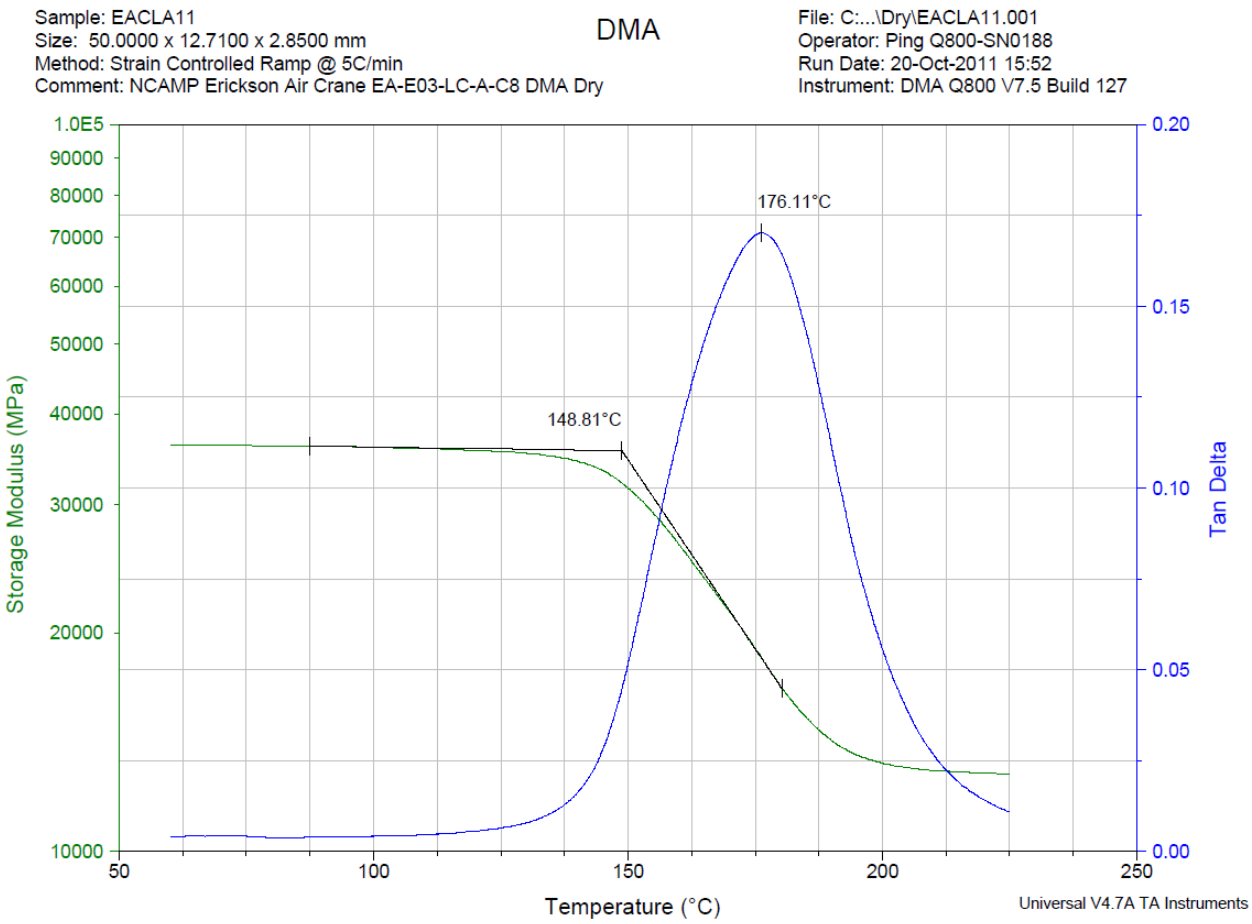
Sample #	Onset Storage Modulus		Peak of Tangent Delta	
	Tg [°C]	Tg [°F]	Tg [°C]	Tg [°F]
EACLA11 (EA-E03-LC-A-C8)	148.81	299.86	176.11	349.00
EACLA21 (EA-E03-LC-A-C9)	146.96	296.53	175.96	348.73
EACLB11 (EA-E03-LC-B-C9)	142.03	287.65	177.95	352.31
EACLB21 (EA-E03-LC-B-C11)	141.40	286.52	177.33	351.19
EACLC11 (EA-E03-LC-C-C9)	147.87	298.17	178.08	352.54
EACLC21 (EA-E03-LC-C-C11)	143.23	289.81	175.51	347.92
EACUA11 (EA-E03-TT-A-C13)	144.44	291.99	173.62	344.52
EACUA21 (EA-E03-TT-A-C14)	145.28	293.50	173.87	344.97
EACUB11 (EA-E03-TT-B-C14)	140.53	284.95	177.73	351.91
EACUB21 (EA-E03-TT-B-C15)	141.54	286.77	176.77	350.19
EACUC11 (EA-E03-TT-C-C14)	142.71	288.88	176.82	350.28
EACUC21 (EA-E03-TT-C-C15)	145.87	294.57	176.61	349.90
EACZA11 (EA-E03-TC-A-C12)	146.51	295.72	175.77	348.39
EACZA21 (EA-E03-TC-A-C13)	145.17	293.31	174.57	346.23
EACZB11 (EA-E03-TC-B-C12)	147.86	298.15	179.39	354.90
EACZB21 (EA-E03-TC-B-C13)	141.46	286.63	176.96	350.53
EACZC11 (EA-E03-TC-C-C12)	146.51	295.72	177.40	351.32
EACZC21 (EA-E03-TC-C-C13)	147.74	297.93	177.69	351.84
EACRC11 (EA-E03-UNC0-C-C12)	139.77	283.59	176.70	350.06
EACRC21 (EA-E03-UNC0-C-C13)	138.36	281.05	177.28	351.10
EACNB21 (EA-E03-IPS-B-C11)	141.58	286.84	167.56	333.61
EACNC11 (EA-E03-IPS-C-C10)	143.30	289.94	166.84	332.31
EACQA11 (EA-E03-SBS-A-C10)	147.24	297.03	174.67	346.41
EACQA21 (EA-E03-SBS-A-C11)	146.12	295.02	174.12	345.42
Average	144.26	291.67	175.64	348.15
Standard Deviation	2.96	5.33	2.98	5.36

DMA Results Summary

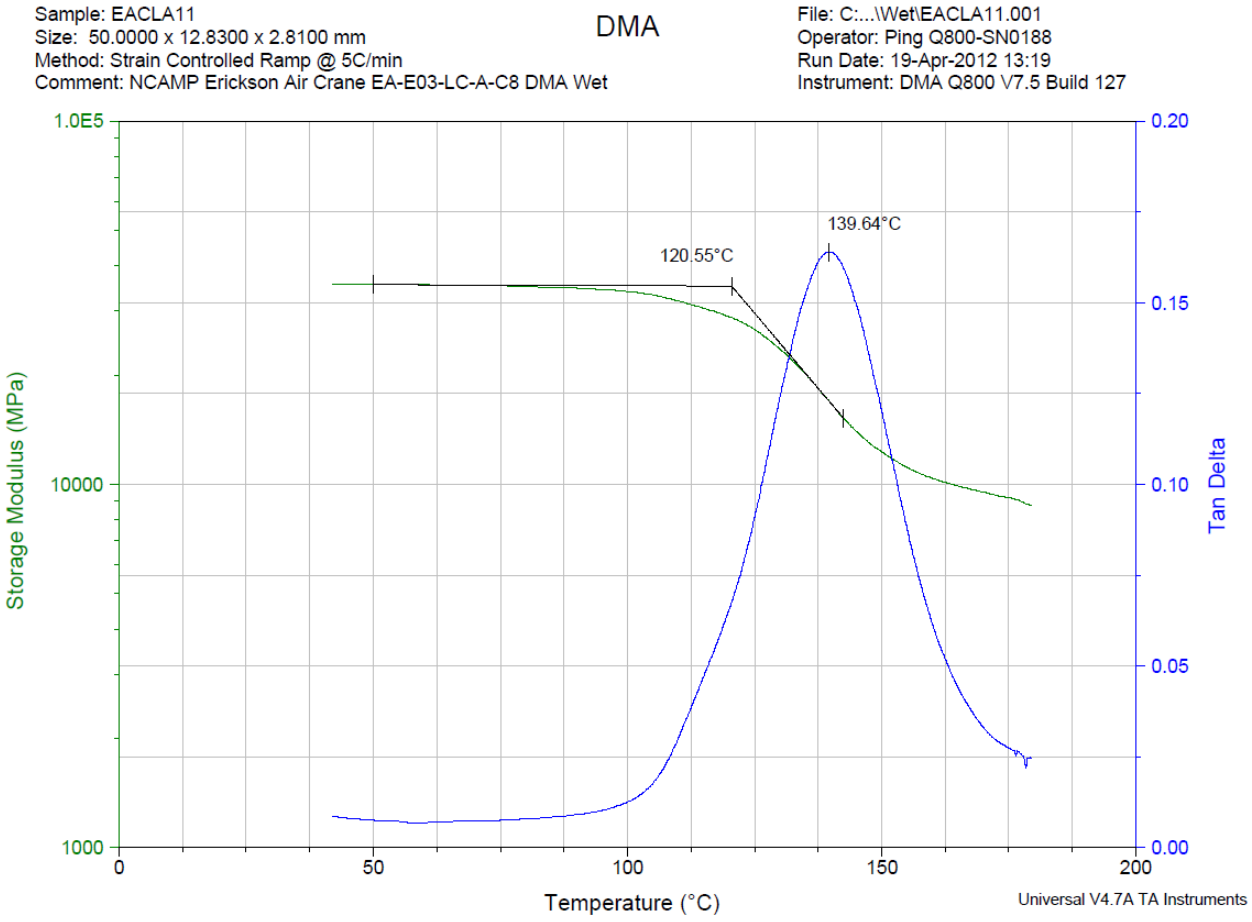
TenCate BT250E-6 S2 Unitape WET

Sample #	Onset Storage Modulus		Peak of Tangent Delta	
	Tg [°C]	Tg [°F]	Tg [°C]	Tg [°F]
EACLA11 (EA-E03-LC-A-C8)	120.55	248.99	139.64	283.35
EACLA21 (EA-E03-LC-A-C9)	122.25	252.05	142.66	288.79
EACLB11 (EA-E03-LC-B-C9)	122.96	253.33	143.20	289.76
EACLB21 (EA-E03-LC-B-C11)	122.51	252.52	142.78	289.00
EACLC11 (EA-E03-LC-C-C9)	124.79	256.62	143.34	290.01
EACLC21 (EA-E03-LC-C-C11)	125.85	258.53	144.35	291.83
EACUA11 (EA-E03-TT-A-C13)	125.56	258.01	144.31	291.76
EACUA21 (EA-E03-TT-A-C14)	126.28	259.30	143.60	290.48
EACUB11 (EA-E03-TT-B-C14)	127.00	260.60	144.97	292.95
EACUB21 (EA-E03-TT-B-C15)	124.17	255.51	143.79	290.82
EACUC11 (EA-E03-TT-C-C14)	123.75	254.75	143.17	289.71
EACUC21 (EA-E03-TT-C-C15)	125.19	257.34	144.11	291.40
EACZA11 (EA-E03-TC-A-C12)	122.37	252.27	142.20	287.96
EACZA21 (EA-E03-TC-A-C13)	120.91	249.64	140.24	284.43
EACZB11 (EA-E03-TC-B-C12)	121.64	250.95	142.21	287.98
EACZB21 (EA-E03-TC-B-C13)	120.63	249.13	140.14	284.25
EACZC11 (EA-E03-TC-C-C12)	125.32	257.58	143.80	290.84
EACZC21 (EA-E03-TC-C-C13)	123.95	255.11	143.30	289.94
EACRC11 (EA-E03-UNC0-C-C12)	121.52	250.74	146.92	296.46
EACRC21 (EA-E03-UNC0-C-C13)	122.65	252.77	148.17	298.71
EACNB21 (EA-E03-IPS-B-C11)	116.55	241.79	154.28	309.70
EACNC11 (EA-E03-IPS-C-C10)	115.09	239.16	150.71	303.28
EACQA11 (EA-E03-SBS-A-C10)	122.61	252.70	143.54	290.37
EACQA21 (EA-E03-SBS-A-C11)	121.55	250.79	142.24	288.03
Average	122.74	252.92	144.07	291.33
Standard Deviation	2.83	5.09	3.24	5.83

7.1 DMA Dry Batch A



7.2 DMA Wet Batch A



8. Deviations

None.