TenCate BT250E-6 AS4C 3k-PW Fabric Gr 195 gsm 40% RC Qualification Material Property Data Report

FAA Special Project Number: TD03019RC-R

NCAMP Test Report Number: CAM-RP-2015-039 N/C

Report Date: October 24, 2017

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Rev	By	Date	Pages Revised or Added
N/C	Vinsensius Tanoto	10/24/2017	Document Initial Release

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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 NSP100; 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 does not guarantee material or structural performance. Material users should be actively involved in evaluating material performance and quality including, but not limited to, performing regular purchaser quality control tests, performing periodic equivalency/additional testing, participating in material change management activities, conducting statistical process control, and conducting regular supplier audits.

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

This report contains material property data only. Statistical analysis of the data including the calculations of b-basis values is given in a separate report, TenCate Advance Composites AS4C 3k-PW Fabric with BT250E-6 Resin Material Allowables Statistical Analysis Report, NCP-RP-2015-020 Rev N/C. The qualification material was procured to Erickson Air-Crane (EAC) Material Specification ES0095 Revision B dated May 22, 2013. An equivalent NCAMP Material Specification NMS 250/2 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 EAC2028 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 250/2. NMS 250/2 may have additional requirements that are listed in its prepreg process control document (PCD), fiber specification, fiber PCD, and other raw material specifications and PCDs which impose essential quality controls on the raw materials and raw material manufacturing equipment and processes. *Aircraft companies and certifying agencies should assume that the material property data published in this report is not applicable when the material is not procured to NMS 250/2.* NMS 250/2 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 Used

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

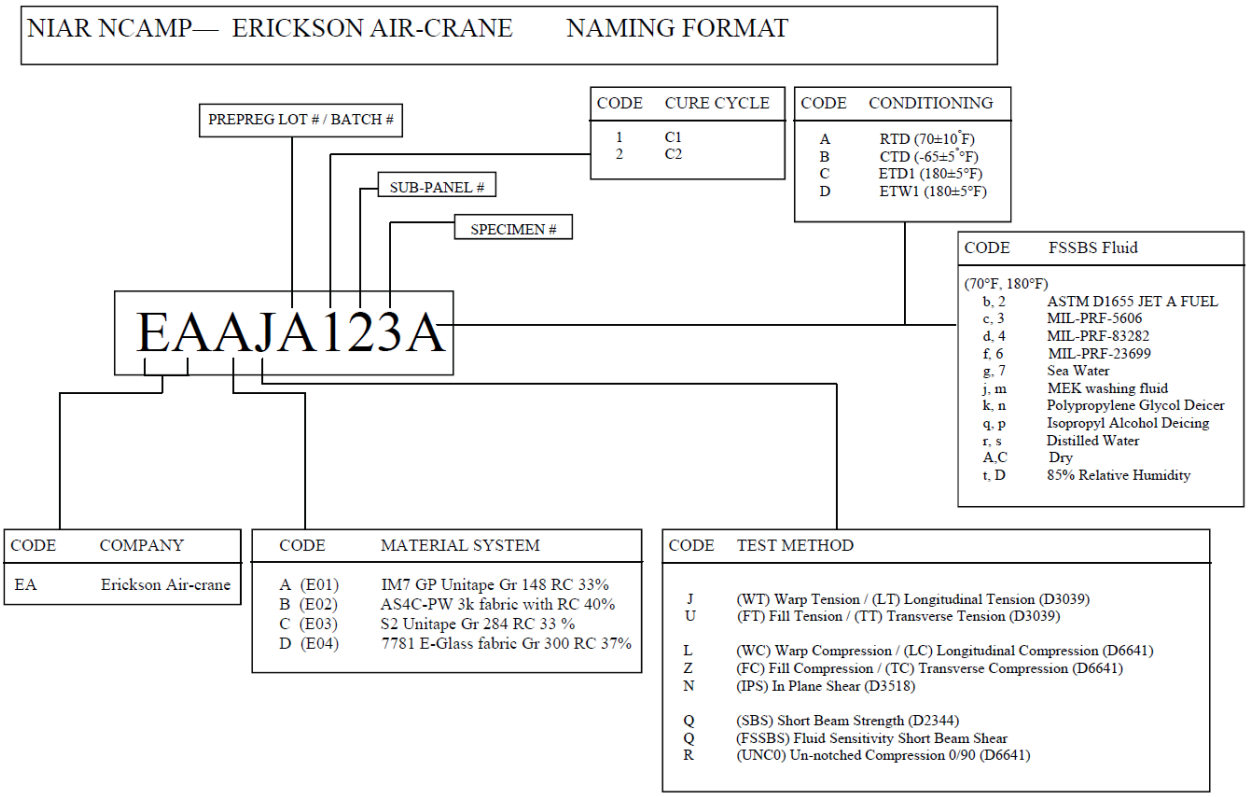


Figure 1-1: Naming Format

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.

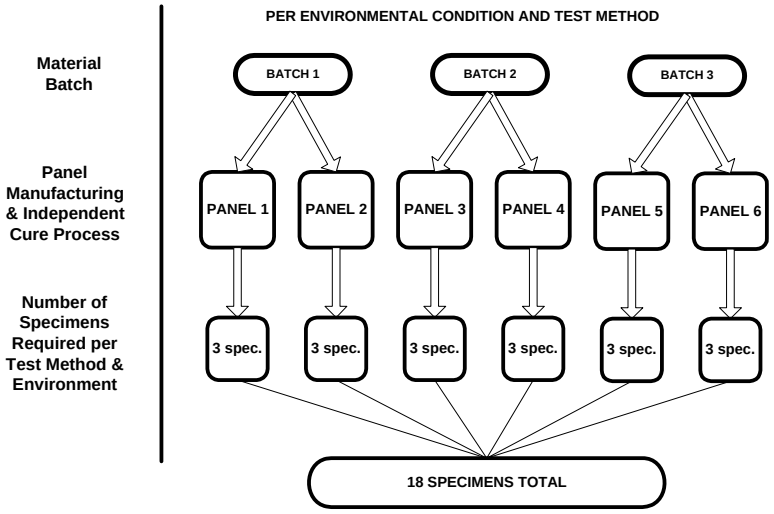


Figure 1-2: Specimen Selection Methodology

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**.

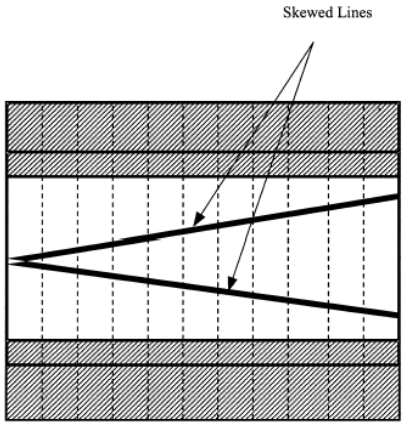


Figure 1-3: Specimen Traceability Line

1.5.2 Specimen & Testing Details

1.5.2.1 Tabbing

No tabs were used for this program.

1.5.2.2 Specimen Dimensions & Test Configuration

For SBS specimens, a span of 4.5T and 4T were used for CTD, RTD and ETD conditions and a span of 4T was used for ETW condition, 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.

1.5.2.3Specimen Strain Device Used

Corresponding Gage ID can be obtained from Appendix A of EAC2028 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
$[0]_{15}$	ASTM D3039 0° Tension	Strength, Modulus and Poisson's Ratio	3x2x3	3x2x3		3x2x3
$[0]_{15}$	ASTM D6641 0° Compression	Strength and Modulus	3x2x3	3x2x3 (1)		3x2x3
$[90]_{15}$	ASTM D3039 90° Tension	Strength and Modulus	3x2x3	3x2x3		3x2x3
$[90]_{15}$	ASTM D6641 90° Compression	Strength and Modulus	3x2x3	3x2x3 (1)	1x2x3	3x2x3 (3)
$[45/-45]_{3S}$	ASTM D3518 In-Plane Shear (2)	Strength and Modulus	3x2x3	3x2x3		3x2x3
$[0]_{32}$	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 of each environment. 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: Gripped (tab) length is 1.5±0.5" on each end of the 10" long specimen. Once the samples have reached the 5% 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: If strain gage is used for modulus measurement, a separate un-gaged specimen 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.

1.5.4 Cured Laminate Physical Testing

The properties in Table 1-2 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. NCAMP 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 before being conditioned to equilibrium at 160°F±5°F and 85% ± 5%. Effective moisture equilibrium was achieved when the average moisture content of the traveler specimen changed by less than 0.02% for two consecutive readings 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 Normalization Procedures

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

The theoretically calculated cured ply thickness was 0.0075 inches. The experimentally Out-of-Autoclave measured cured ply thickness of 0.0085 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.

1.5.8 Inspection Verification

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

1.5.9 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 AS4C 3k-PW Fabric 195gsm 40% RC			**TenCate BT250E-6 AS4C 3k-PW Fabric 195gsm 40% RC Lamina Properties Summary**	
Material Specification:	NMS 250/2				
Process Specification:	NPS 81250				
Fiber:	AS4C 3k-PW	**Resin:**	TenCate BT250E-6		
Tg(dry):	275.46 °F	**Tg(wet):**	249.55 °F	**Tg METHOD:**	ASTM D7028

	Batch 1	Batch 2	Batch 3		
Date of fiber manufacture	May 5, 2011	July 14, 2009	April 5, 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**	May 12, 2012
Date of prepreg manufacture	June 13, 2011	May 31, 2011	May 31, 2011		
Date of composite manufacture		Sept 2011 - Oct 2011			

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT=0.0085 inch)

	CTD Mean		RTD Mean		ETD Mean		ETW Mean	
	Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{tu} [ksi]	125.113	124.754	132.294	131.913			124.698	123.157
E_1^{t} [Msi]	8.631	8.592	8.560	8.536			8.558	8.452
ν_{12}^{t}		0.058		0.055				0.051
F_2^{tu} [ksi]	120.271	120.324	124.751	125.323			110.388	110.164
E_2^{t} [Msi]	8.641	8.615	8.530	8.569			8.604	8.585
F_1^{cu} [ksi]	102.760	101.147	93.092	92.800			56.398	55.442
E_1^{c} [Msi]	8.060	7.937	7.905	7.890			7.987	7.973
F_2^{cu} [ksi]	93.260	93.152	85.122	85.240	73.543	72.056	50.327	49.864
E_2^{c} [Msi]	8.111	8.109	7.862	7.882	7.896	7.724	7.906	7.886
$F_{12}^{s0.2\%}$ [ksi]		8.396		6.403				3.688
$F_{12}^{s5\%strain}$ [ksi]		13.246		10.335				5.733
G_{12}^{s} [Msi]		0.662		0.578				0.379
SBS [ksi]		8.466		8.157		7.109		5.044

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

Table 2-1: Lamina Summary Data

2.2 Individual Test Summaries

2.2.1 Warp Tension Properties (WT)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%							**Tension, 1-axis** TenCate BT250E-6 AS4C-PW 3k fabric with RC 40% [0]15			
Resin content:	39.33 % wt		**Comp. density:**	1.485 g/cc							
Fiber volume:	50.62 % vol										
Ply count:	15										
Test method:	ASTM D 3039-08		**Modulus calculation:**	1000 to 3000 microstrain							
Normalized by:	0.0085	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			EABJX XXXB		EABJX XXXA		EABJX XXXD				
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**			
F_1^{tu} [ksi]	**Mean**		125.113	124.754	132.294	131.913	124.698	123.157			
	Minimum		110.920	110.386	112.881	112.748	117.096	113.780			
	Maximum		137.895	135.538	141.459	141.422	129.636	131.283			
	C.V.(%)		5.388	5.829	4.792	4.959	3.017	4.015			
	No. Specimens		20		22		25				
	No. Prepreg Lots		3		3		3				
E_1^t [Msi]	**Mean**		8.631	8.592	8.560	8.536	8.558	8.452			
	Minimum		8.485	8.257	8.468	8.212	8.411	8.057			
	Maximum		8.829	9.004	8.698	8.911	8.747	8.715			
	C.V.(%)		0.981	2.504	0.663	2.205	0.994	2.118			
	No. Specimens		18		22		28				
	No. Prepreg Lots		3		3		3				
ν_{12}^t	**Mean**			0.058		0.055		0.051			
	No. Specimens		13		21		15				
	No. Prepreg Lots		3		3		3				

2.2.2 Fill Tension Properties (FT)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%							**Tension, 2-axis** TenCate BT250E-6 AS4C-PW 3k fabric with RC 40% [90]15	
Resin content:	38.25 % wt		**Comp. density:**	1.489 g/cc					
Fiber volume:	51.64 % vol								
Ply count:	15								
Test method:	ASTM D 3039-08		**Modulus calculation:**	1000 to 3000 microstrain					
Normalized by:	0.0085	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			EABUX XXXB		EABUX XXXA		EABUX XXXD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
F_2^{tu} [ksi]	**Mean**		120.271	120.324	124.751	125.323	110.388	110.164	
	Minimum		111.238	109.120	114.261	114.351	99.509	98.594	
	Maximum		132.730	133.218	133.012	132.998	121.328	122.561	
	C.V.(%)		4.488	5.194	3.967	4.373	5.533	6.081	
	No. Specimens		21		21		21		
	No. Prepreg Lots		3		3		3		
E_2^t [Msi]	**Mean**		8.641	8.615	8.530	8.569	8.604	8.585	
	Minimum		8.482	8.404	8.215	8.195	8.421	8.363	
	Maximum		8.783	8.746	8.737	9.003	8.790	8.871	
	C.V.(%)		1.021	0.978	1.385	1.983	1.286	1.618	
	No. Specimens		18		21		21		
	No. Prepreg Lots		3		3		3		

2.2.3 Warp Compression Properties (WC)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%						**Compression, 1-axis** TenCate BT250E-6 AS4C-PW 3k fabric with RC 40% [0]15		
Resin content:	39.64 % wt		**Comp. density:**	1.484 g/cc					
Fiber volume:	50.33 % vol								
Ply count:	15								
Test method:	ASTM D 6641-09		**Modulus calculation:**	1000 to 3000 microstrain					
Normalized by:	0.0085	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			EABLX XXXB		EABLX XXXA		EABLX XXXD		
			Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	
F_1^{cu} **[ksi]**	**Mean**		102.760	101.147	93.092	92.800	56.398	55.442	
	Minimum		89.515	87.625	82.364	81.462	49.677	47.952	
	Maximum		113.672	112.219	100.158	101.045	61.373	60.572	
	C.V.(%)		6.254	6.677	5.224	5.359	5.942	6.236	
	No. Specimens		22		21		21		
	No. Prepreg Lots		3		3		3		
E_1^c **[Msi]**	**Mean**		8.060	7.937	7.905	7.890	7.987	7.973	
	Minimum		7.819	7.699	7.783	7.690	7.622	7.550	
	Maximum		8.391	8.214	8.067	8.106	8.172	8.282	
	C.V.(%)		1.572	1.519	1.019	1.593	1.760	2.294	
	No. Specimens		18		18		21		
	No. Prepreg Lots		3		3		3		

2.2.4 Fill Compression Properties (FC)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%							**Compression, 2-axis** TenCate BT250E-6 AS4C-PW 3k fabric with RC 40% [90]15	
Resin content:	39.10 % wt		**Comp. density:**	1.486 g/cc					
Fiber volume:	50.83 % vol								
Ply count:	15								
Test method:	ASTM D 6641-09		**Modulus calculation:**	1000 to 3000 microstrain					
Normalized by:	0.0085	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		EABZX XXXB		EABZX XXXA		EABZX XXXC		EABZX XXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_2^{cu} [ksi]	**Mean**	93.260	93.152	85.122	85.240	73.543	72.056	50.327	49.864
	Minimum	82.771	82.690	78.582	79.502	64.866	64.293	44.995	45.571
	Maximum	103.399	104.268	93.019	92.628	81.002	78.115	57.347	55.730
	C.V.(%)	6.828	7.194	5.207	4.832	9.239	8.143	7.059	6.029
	No. Specimens	21		21		7		22	
	No. Prepreg Lots	3		3		1		3	
E_2^c [Msi]	**Mean**	8.111	8.109	7.862	7.882	7.896	7.724	7.906	7.886
	Minimum	7.688	7.691	7.576	7.661	7.629	7.555	7.737	7.682
	Maximum	8.439	8.526	8.450	8.596	8.157	7.868	8.101	8.065
	C.V.(%)	2.181	2.873	2.269	2.676	3.329	1.751	1.222	1.521
	No. Specimens	18		18		6		21	
	No. Prepreg Lots	3		3		1		3	

2.2.5 In-Plane Shear Properties (IPS)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%						**In-Plane Shear** TenCate BT250E-6 AS4C-PW 3k fabric with RC 40% [45/-45]3S		
Resin content:	38.29 % wt	**Comp. density:**	1.465 g/cc						
Fiber volume:	50.73 % vol								
Ply count:	12								
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		EABNX XXXB		EABNX XXXA		EABNX XXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**		
$F_{12}^{s0.2\%}$ [ksi]	**Mean**		8.396		6.403		3.688		
	Minimum		7.957		6.134		3.497		
	Maximum		8.724		6.583		3.873		
	C.V.(%)		2.348		2.207		3.004		
	No. Specimens		21		21		21		
	No. Prepreg Lots		3		3		3		
$F_{12}^{s5\%strain}$ [ksi]	**Mean**		13.246		10.335		5.733		
	Minimum		12.517		10.050		5.337		
	Maximum		13.973		10.779		6.010		
	C.V.(%)		2.753		1.991		3.319		
	No. Specimens		21		21		20		
	No. Prepreg Lots		3		3		3		
G_{12}^{s} [Msi]	**Mean**		0.662		0.578		0.379		
	Minimum		0.629		0.550		0.364		
	Maximum		0.692		0.597		0.398		
	C.V.(%)		2.460		2.387		2.760		
	No. Specimens		21		21		21		
	No. Prepreg Lots		3		3		3		

2.2.6 Lamina Short-Beam Strength Properties (SBS)

Material:	TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%							
Resin content:	39.04 % wt	**Comp. density:**	1.520 g/cc					
Fiber volume:	51.87 % vol							
Ply count:	32							
Test method:	ASTM D 2344-06							
Normalized by:	NA							

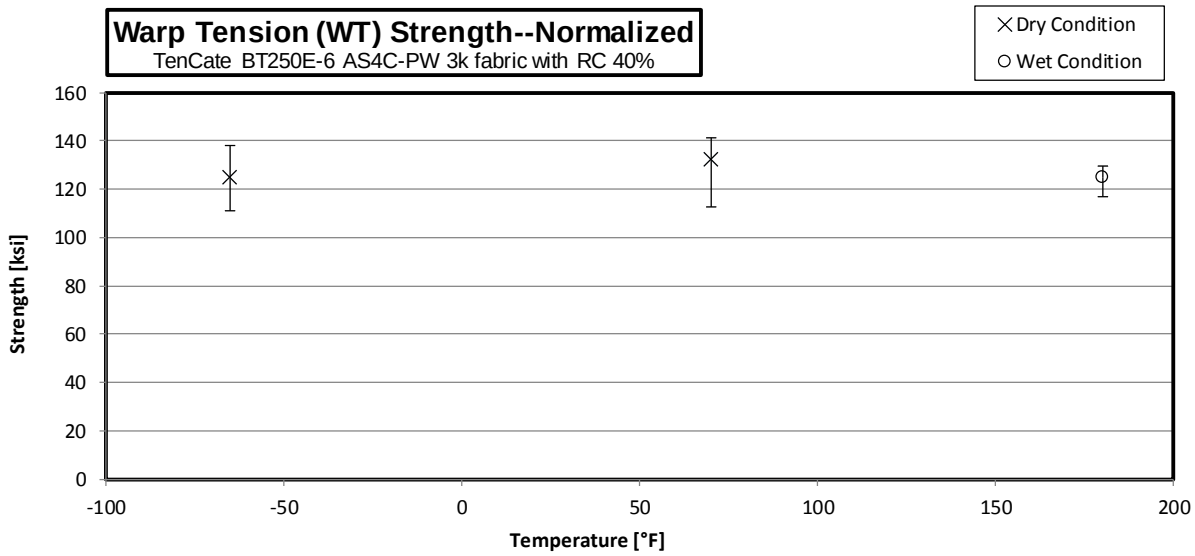
Short-Beam Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
[0]32

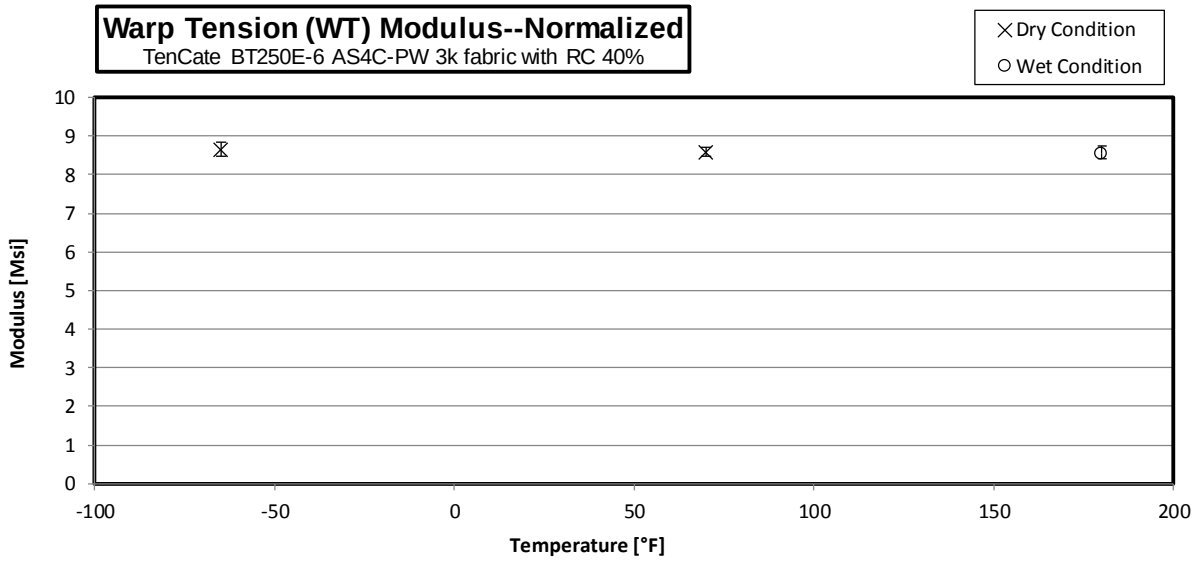
		CTD		RTD		ETD		ETW	
Test Temperature [°F]		-65		70		180		180	
Moisture Conditioning		Dry		Dry		Dry		Equilbrium	
Equilbrium at T, RH								160 F,85%	
Source code		EABQX XXXB		EABQX XXXA		EABQX XXXC		EABQX XXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS [ksi]	**Mean**		8.466		8.157		7.109		5.044
	Minimum		7.885		7.745		6.443		4.597
	Maximum		8.948		8.896		7.554		5.630
	C.V.(%)		3.323		3.458		4.617		4.444
	No. Specimens		22		23		21		22
	No. Prepreg Lots		3		3		3		3

3. Individual Test Charts

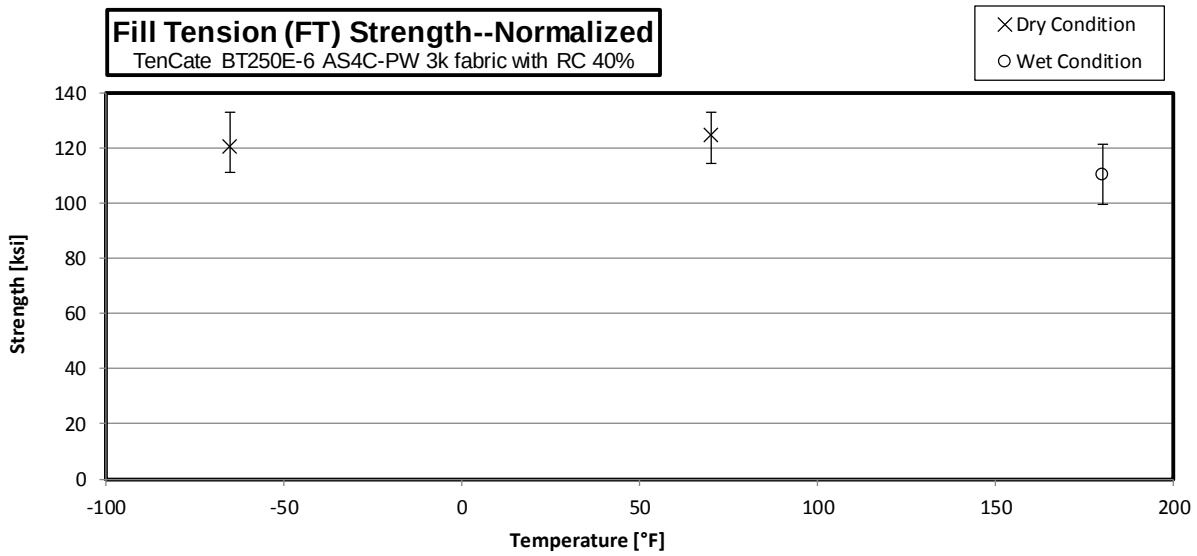
These charts combine all three batches of data and plot the minimum and maximum modulus and strength range based on the test temperature.

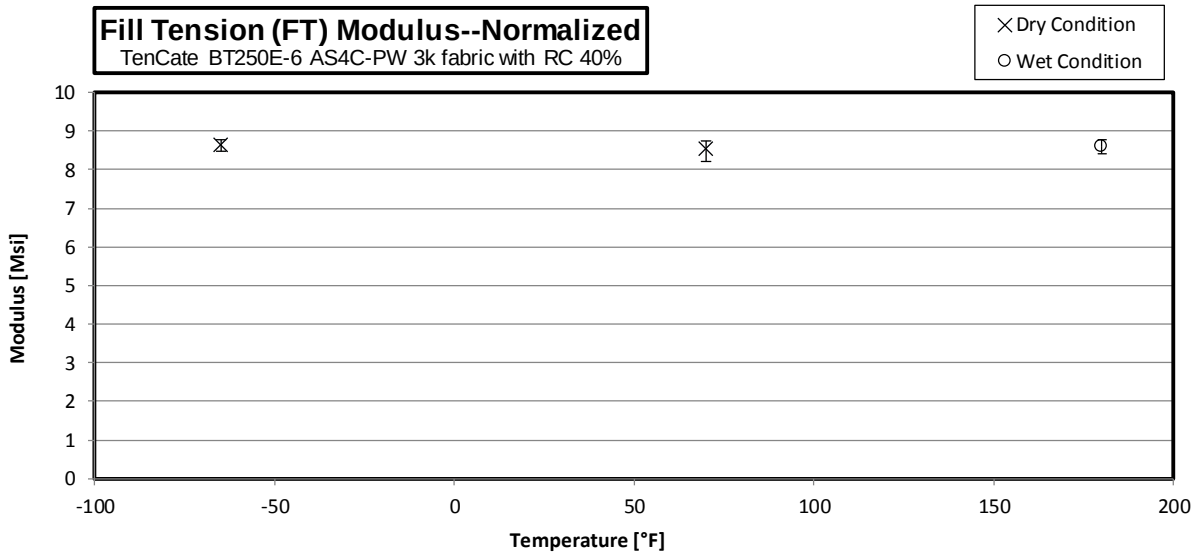
3.1 Warp Tension Properties (WT)



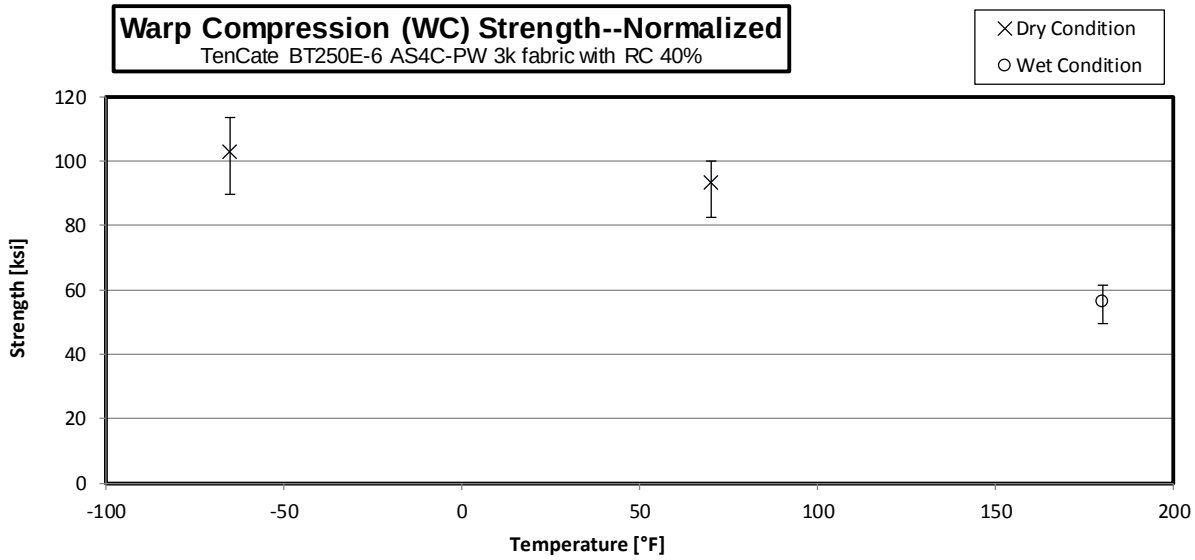


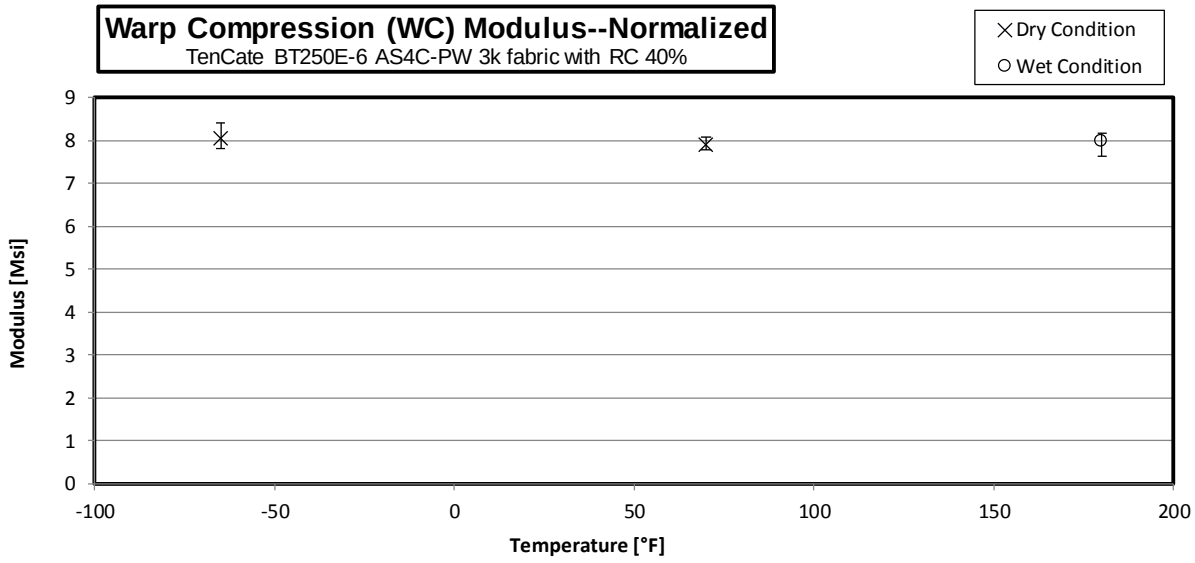
3.2 Fill Tension Properties (FT)



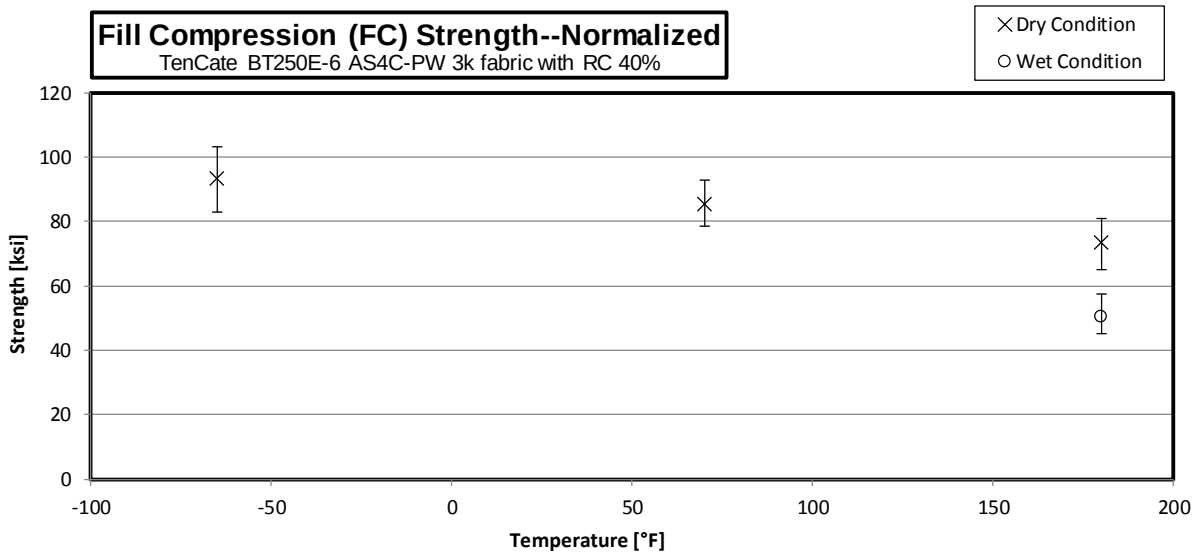


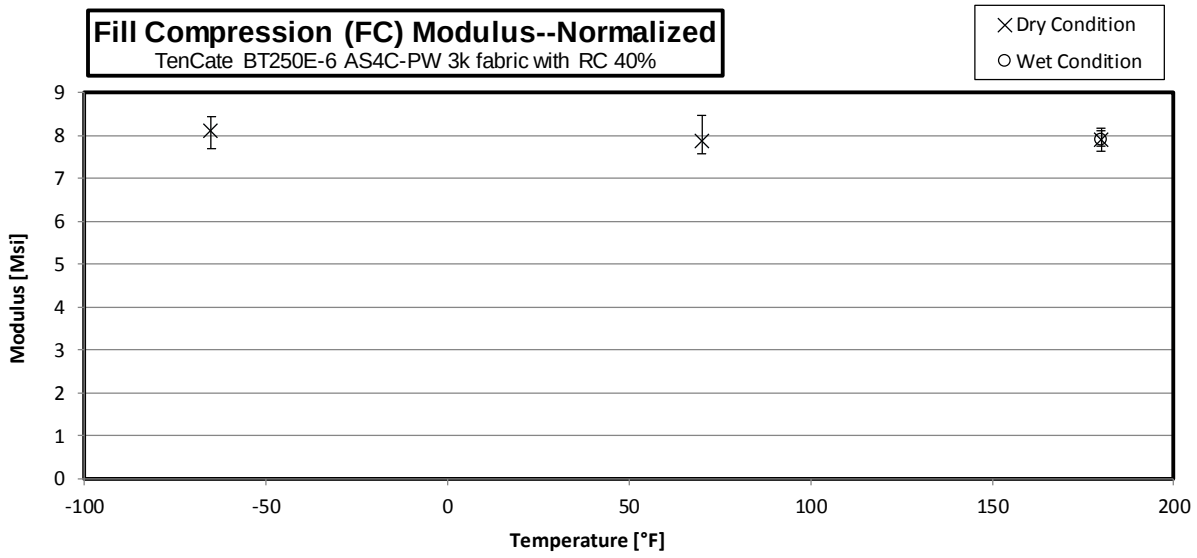
3.3 Warp Compression Properties (WC)



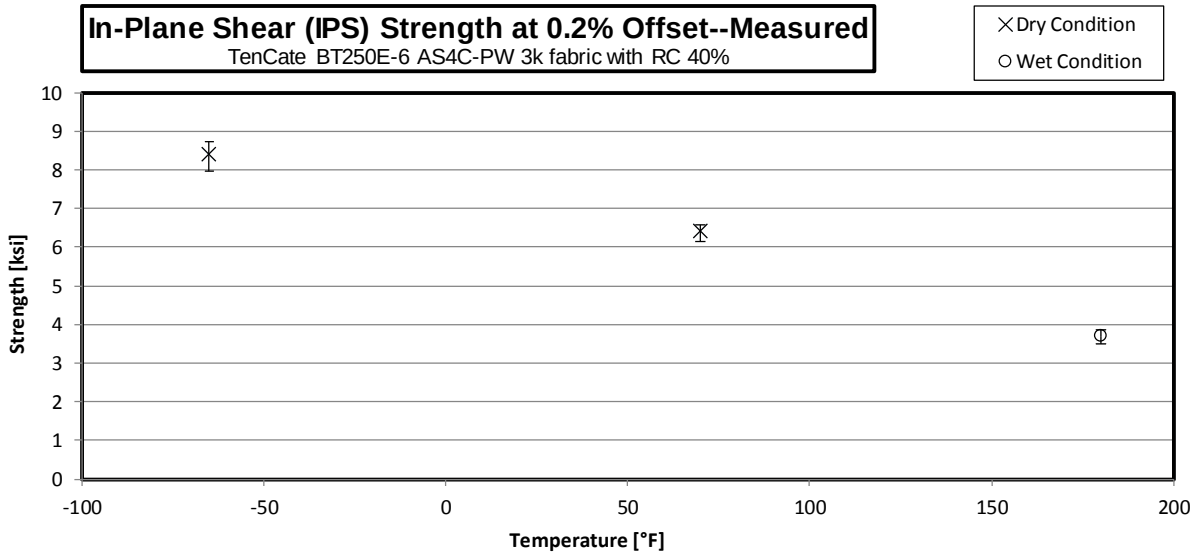


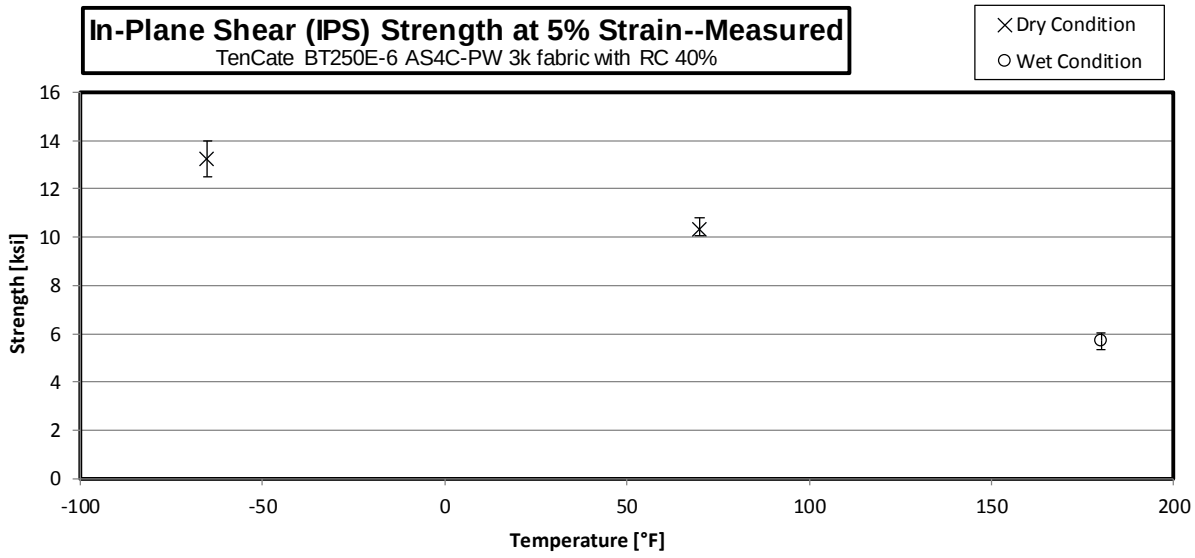
3.4 Fill Compression Properties (FC)

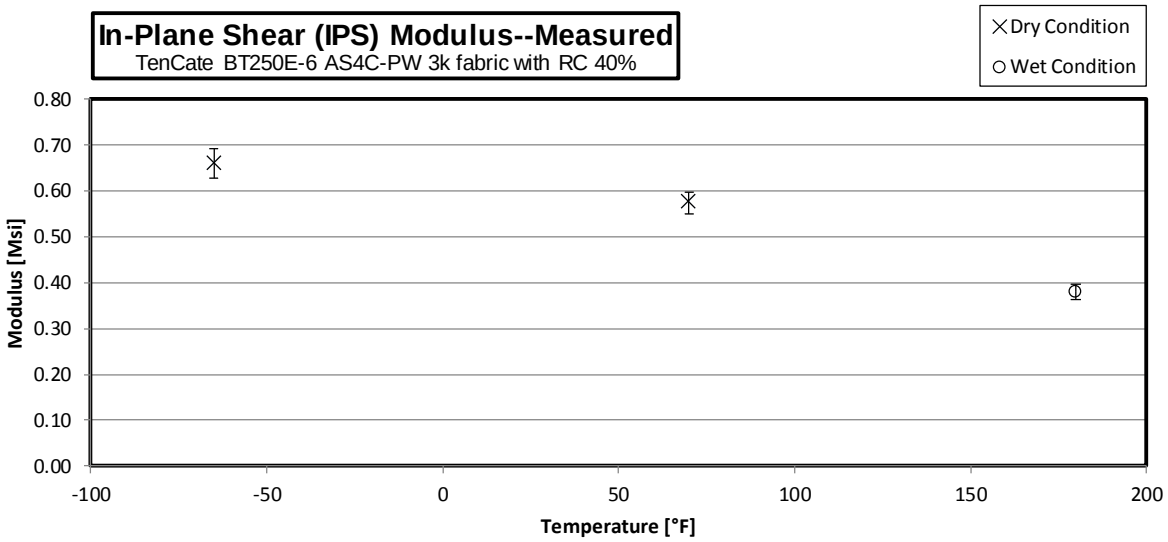




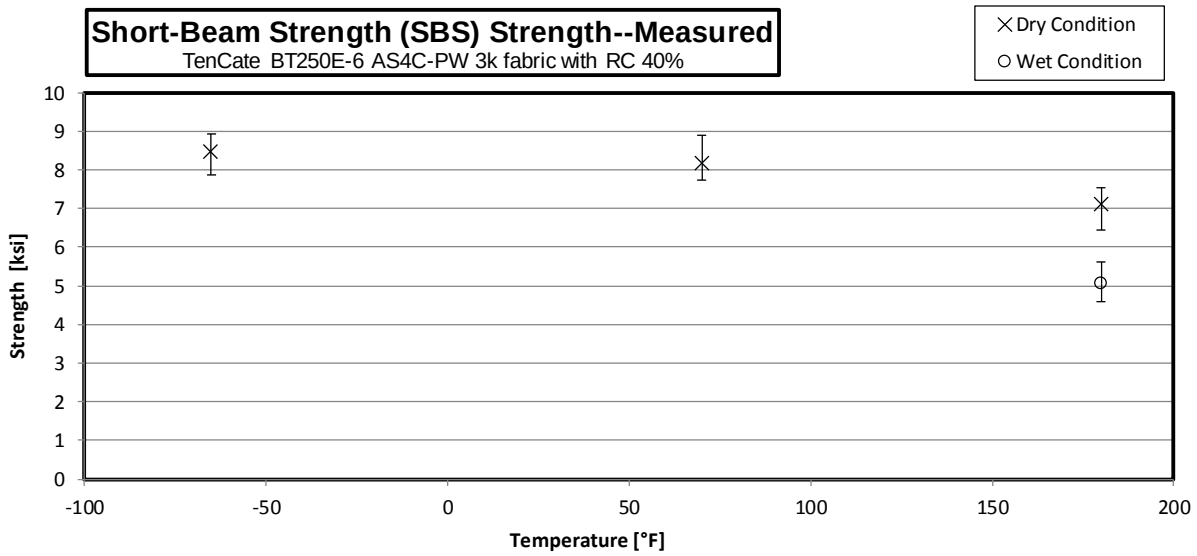
3.5 In-Plane Shear Properties (IPS)






In-Plane Shear (IPS) Modulus--Measured
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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 Lamina Short-Beam Strength Properties (SBS)



4. Individual Test Data

4.1 Warp Tension Properties (WT)

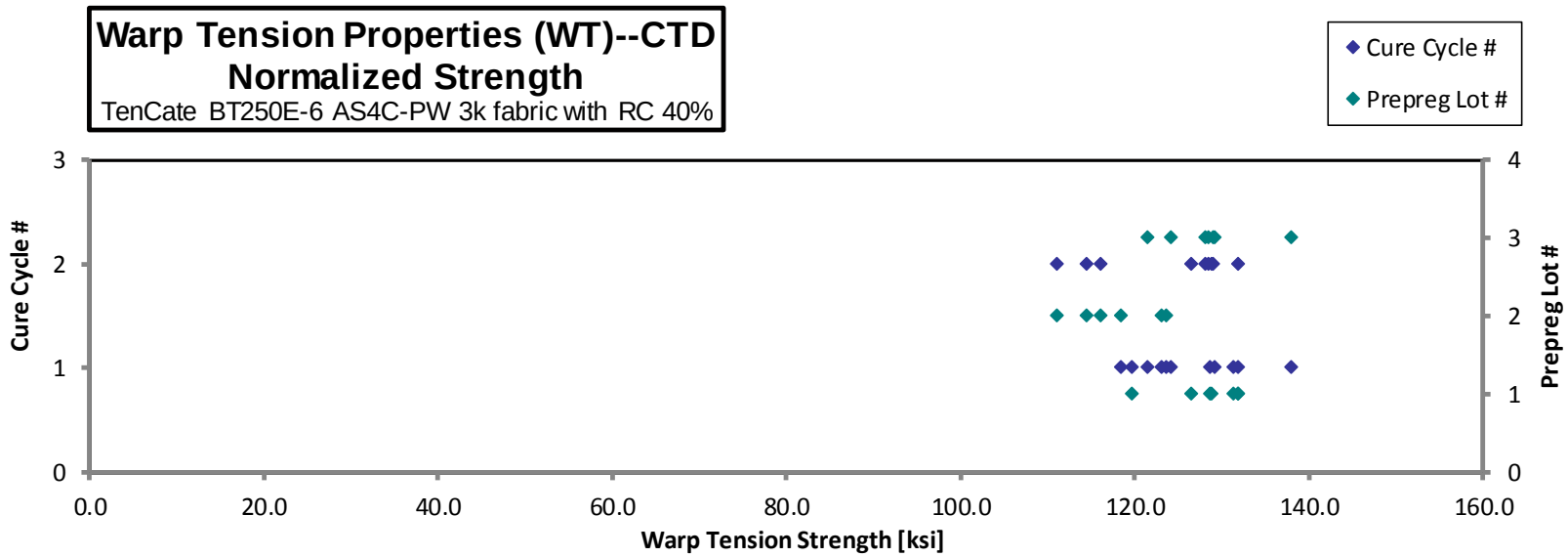
Warp Tension Properties (WT)--CTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

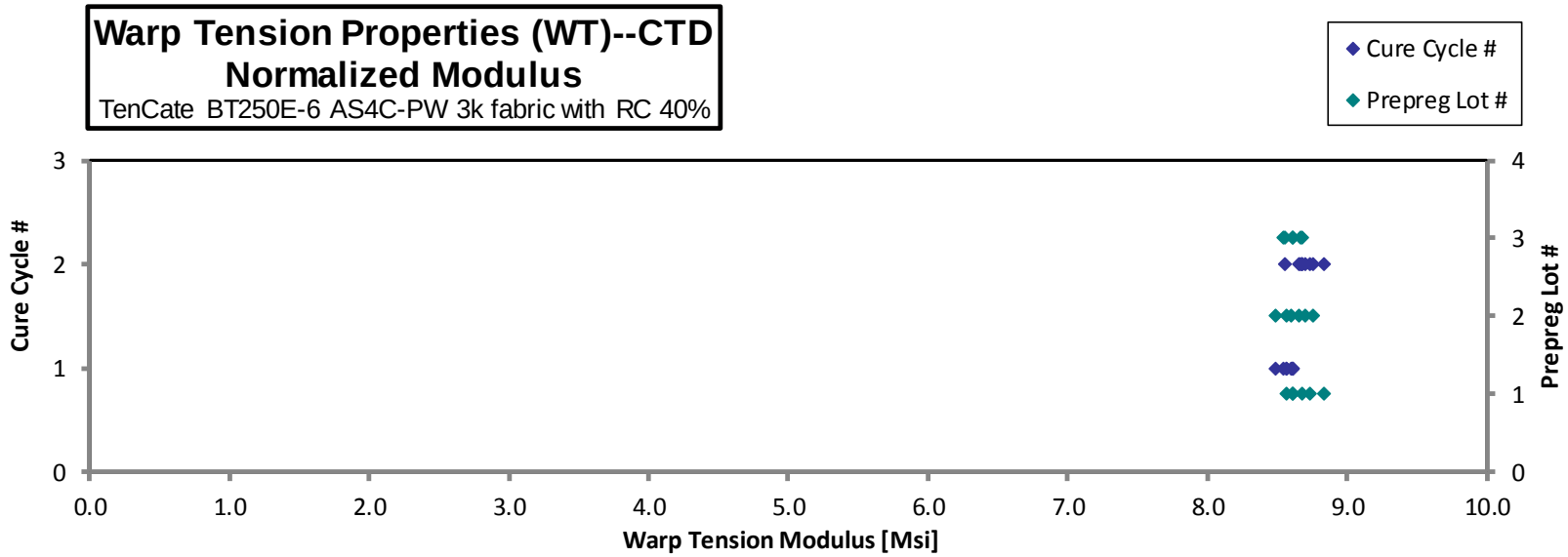
normalizing t_{ply} [in]
0.0085

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]
EABJA116B	A	C1	1	1	129.990	8.695	0.060	0.126	15	LGM/ LWB	0.0084	128.614	8.603
EABJA117B	A	C1	1	1	134.359	8.760	***	0.125	15	LGM	0.0083	131.267	8.558
EABJA118B	A	C1	1	1	122.974	8.843	***	0.124	15	LGM	0.0083	119.630	8.603
EABJA119B*	A	C1	1	1	133.790			0.126	15	LGM/ LWB	0.0084	131.762	
EABJA215B	A	C2	1	2	126.493	8.684	***	0.127	15	LGM / LWT	0.0085	126.394	8.677
EABJA216B	A	C2	1	2	132.440	8.764	0.066	0.127	15	LWT / LGM	0.0085	131.869	8.726
EABJA217B	A	C2	1	2	131.243	9.004	0.066	0.125	15	LAB	0.0083	128.687	8.829
EABJB116B	B	C1	2	1	120.123	8.364	0.059	0.131	15	LAT	0.0087	122.965	8.562
EABJB117B	B	C1	2	1	115.311	8.268	***	0.131	15	LGM	0.0087	118.340	8.485
EABJB118B	B	C1	2	1	**	8.402	0.062	0.130	15	LIT	0.0087		8.595
EABJB119B*	B	C1	2	1	124.227			0.127	15	LGM	0.0085	123.610	
EABJB215B	B	C2	2	2	110.386	8.714	0.055	0.128	15	LAB	0.0085	110.920	8.756
EABJB216B	B	C2	2	2	113.891	8.612	0.051	0.128	15	LAB	0.0085	114.412	8.651
EABJB217B	B	C2	2	2	117.330	8.787	0.056	0.126	15	LAT / LWB	0.0084	116.073	8.693
EABJC116B	C	C1	3	1	124.808	8.257	0.055	0.132	15	LWB / LAT	0.0088	129.132	8.543
EABJC117B	C	C1	3	1	120.132	8.332	0.049	0.132	15	LGM / LWT	0.0088	124.058	8.605
EABJC118B	C	C1	3	1	118.502	8.405	0.060	0.131	15	LWT/LWB	0.0087	121.322	8.605
EABJC119B*	C	C1	3	1	135.538			0.130	15	LWT/LWB	0.0086	137.895	
EABJC215B	C	C2	3	2	127.558	8.604	***	0.128	15	LAB/LWT	0.0086	128.325	8.656
EABJC216B	C	C2	3	2	127.926	8.489	0.050	0.128	15	LAB	0.0086	128.862	8.551
EABJC217B	C	C2	3	2	128.056	8.663	0.060	0.128	15	LAB	0.0085	128.122	8.668

* Specimen was not gaged and tested for strength only.
** Strength not reported due to unacceptable failure mode.
*** Poissons Ratio not reported due to non linear data.

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**124.754**	**8.592**	**0.058**	**Average$_{norm}$**	**0.0085**	**125.113**	**8.631**
Standard Dev.	**7.272**	**0.215**	**0.006**	**Standard Dev.$_{norm}$**		**6.741**	**0.085**
Coeff. of Var. [%]	**5.829**	**2.504**	**9.745**	**Coeff. of Var. [%]$_{norm}$**		**5.388**	**0.981**
Min.	**110.386**	**8.257**	**0.049**	**Min.**	**0.0083**	**110.920**	**8.485**
Max.	**135.538**	**9.004**	**0.066**	**Max.**	**0.0088**	**137.895**	**8.829**
Number of Spec.	**20**	**18**	**13**	**Number of Spec.**	**21**	**20**	**18**


Warp Tension Properties (WT)--CTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
160.0
Warp Tension Strength [ksi]


Warp Tension Properties (WT)--CTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
10.0
Warp Tension Modulus [Msi]

Warp Tension Properties (WT)--RTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

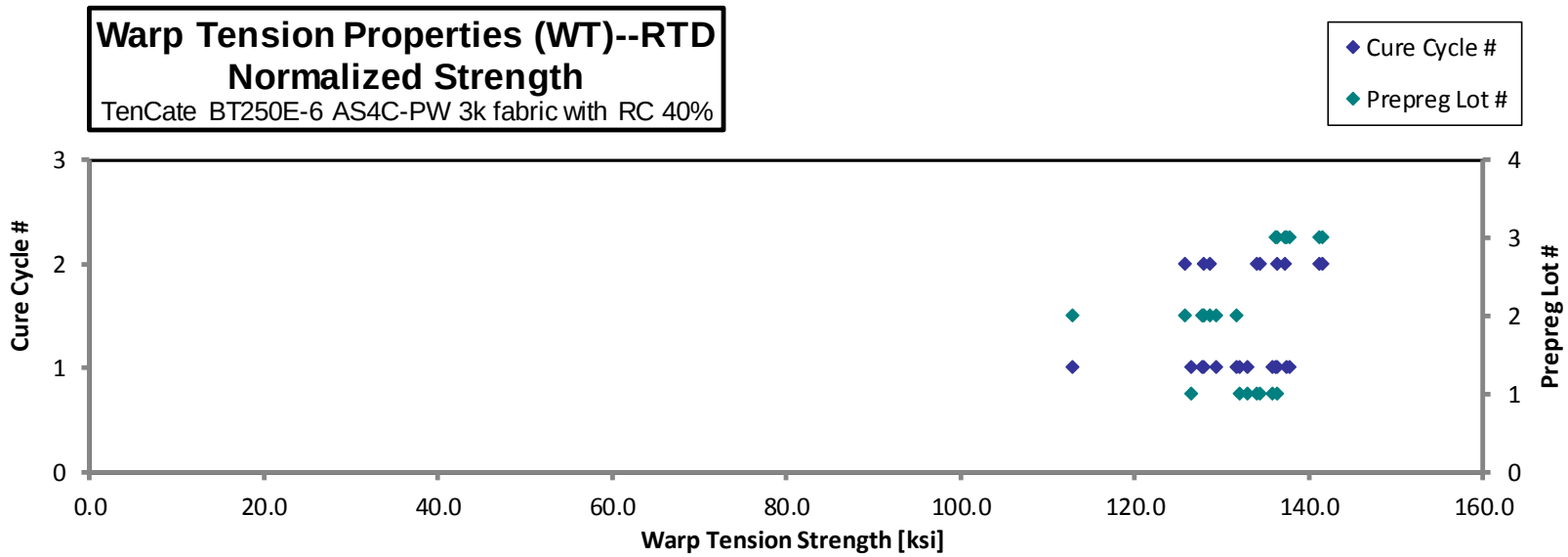
normalizing t_{ply} [in]: 0.0085

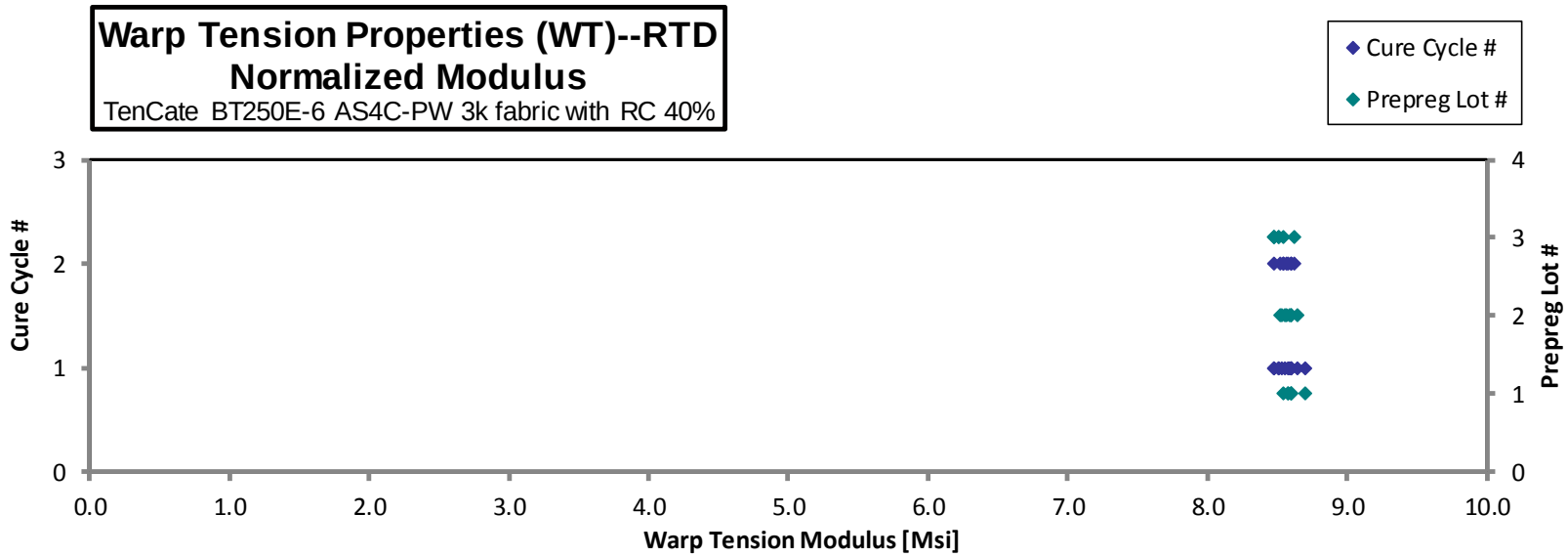
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EABJA111A	A	C1	1	1	136.161	8.911	0.051	0.124	15	LWB/LWT	0.0083	132.904	8.698
EABJA112A	A	C1	1	1	134.214	8.742	**	0.125	15	LWB/LWT	0.0084	131.951	8.594
EABJA113A	A	C1	1	1	128.471	8.710	0.053	0.125	15	LWB/LWT	0.0084	126.439	8.572
EABJA114A	A	C1	1	1	137.605	8.714	0.057	0.126	15	LWB/LWT	0.0084	135.716	8.595
EABJA211A	A	C2	1	2	137.334	8.783	0.052	0.125	15	LAT/LWB	0.0083	134.354	8.592
EABJA212A	A	C2	1	2	138.720	8.689	0.058	0.125	15	LAT/LWB	0.0084	136.345	8.541
EABJA213A	A	C2	1	2	134.838	8.630	0.059	0.127	15	LAT/LWB	0.0084	133.992	8.576
EABJB111A*	B	C1	2	1	112.748	8.576	0.054	0.128	15	LAT	0.0085	112.881	8.586
EABJB112A	B	C1	2	1	127.685	8.534	0.062	0.128	15	LAB / LWT	0.0085	127.936	8.551
EABJB113A	B	C1	2	1	125.372	8.486	0.059	0.130	15	LAB / LWT	0.0087	127.601	8.637
EABJB114A	B	C1	2	1	126.589	8.352	0.051	0.130	15	LAT / LIB	0.0087	129.303	8.531
EABJB115A	B	C1	2	1	127.674	8.340	0.054	0.131	15	LAB / LWT	0.0088	131.596	8.596
EABJB211A	B	C2	2	2	128.999	8.589	0.055	0.126	15	LAB / LWT	0.0084	127.937	8.518
EABJB212A	B	C2	2	2	128.212	8.569	0.055	0.128	15	LWT/LWB	0.0085	128.580	8.594
EABJB213A	B	C2	2	2	125.391	8.532	0.055	0.128	15	LGM	0.0085	125.768	8.558
EABJC111A	C	C1	3	1	134.765	8.353	0.054	0.130	15	LWB/LWT	0.0087	137.284	8.510
EABJC112A	C	C1	3	1	132.440	8.242	0.057	0.131	15	LWB/LWT	0.0087	136.075	8.468
EABJC113A	C	C1	3	1	133.707	8.228	0.061	0.131	15	LWB/LWT	0.0088	137.675	8.472
EABJC114A	C	C1	3	1	131.694	8.212	0.060	0.132	15	LWB/LWT	0.0088	136.325	8.501
EABJC211A	C	C2	3	2	140.517	8.572	0.051	0.128	15	LWT/LWB	0.0085	141.196	8.614
EABJC212A	C	C2	3	2	141.422	8.473	0.054	0.128	15	LGM	0.0085	141.459	8.475
EABJC213A	C	C2	3	2	137.533	8.564	0.053	0.127	15	LWT/LAB/LGM	0.0085	137.155	8.540

* Data point investigated and no reason found to omit data.

** Poissons Ratio not reported due to non linear data.

Average	**131.913**	**8.536**	**0.055**	**$Average_{norm}$**	**0.0085**	**132.294**	**8.560**
Standard Dev.	**6.541**	**0.188**	**0.003**	**$Standard\ Dev._{norm}$**		**6.340**	**0.057**
Coeff. of Var. [%]	**4.959**	**2.205**	**6.029**	**Coeff. of Var. $[\%]_{norm}$**		**4.792**	**0.663**
Min.	**112.748**	**8.212**	**0.051**	**Min.**	**0.0083**	**112.881**	**8.468**
Max.	**141.422**	**8.911**	**0.062**	**Max.**	**0.0088**	**141.459**	**8.698**
Number of Spec.	**22**	**22**	**21**	**Number of Spec.**	**22**	**22**	**22**


Warp Tension Properties (WT)--RTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
160.0
Warp Tension Strength [ksi]


Warp Tension Properties (WT)--RTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
10.0
Warp Tension Modulus [Msi]

Warp Tension Properties (WT)--ETW
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

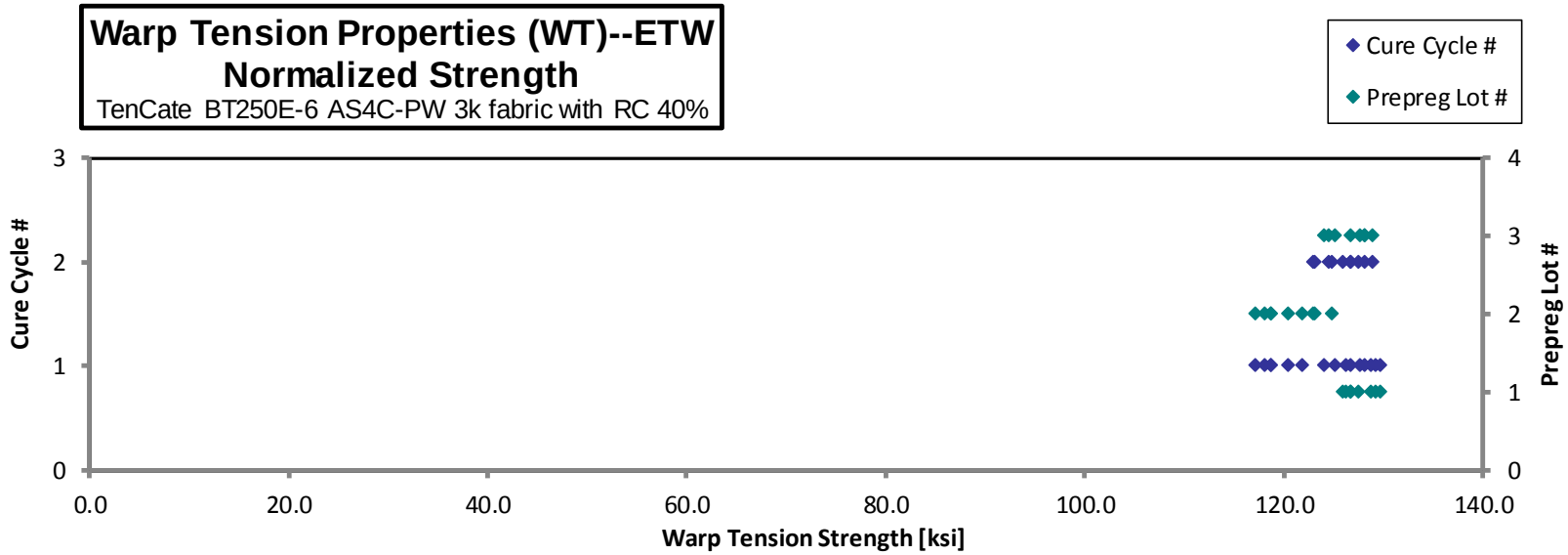
normalizing t_{ply} [in]
0.0085

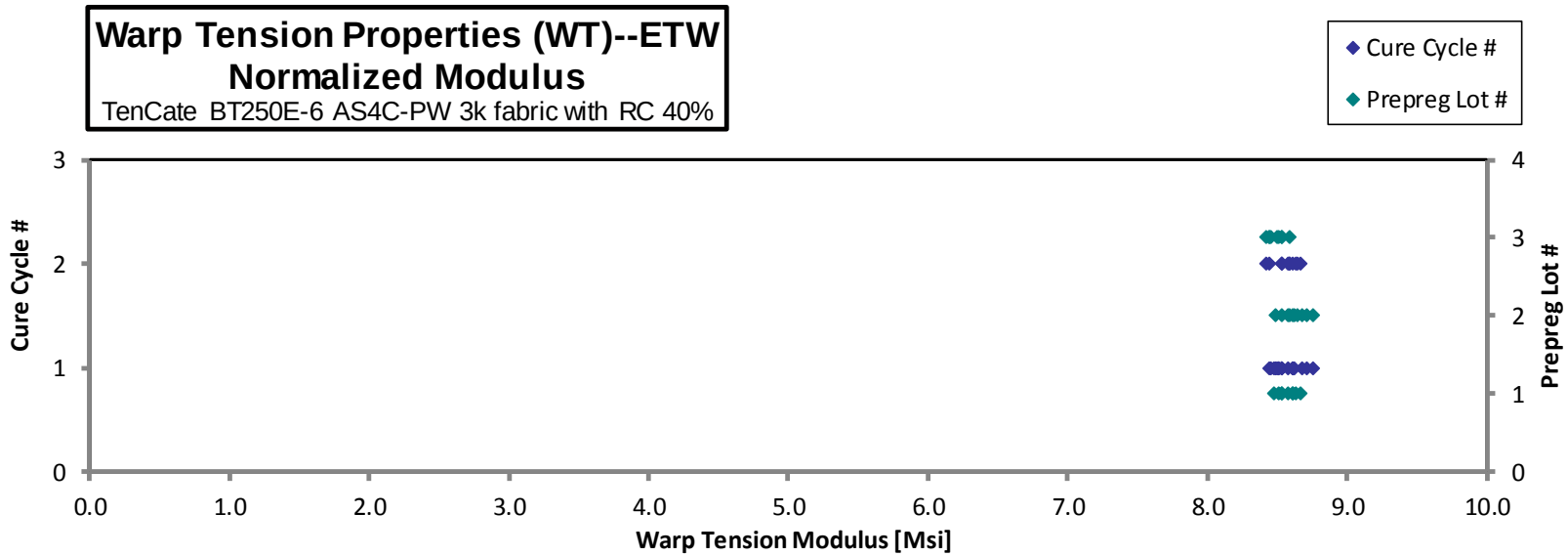
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EABJA11BD	A	C1	1	1	129.634	8.667	0.044	0.127	15	LGM/DGM	0.0084	128.719	8.606
EABJA11CD	A	C1	1	1	126.059	8.571	**	0.128	15	LWT/LWB/DGT	0.0085	126.141	8.577
EABJA11DD	A	C1	1	1	128.692	8.498	**	0.128	15	LGM/LWT/LWB	0.0085	129.163	8.529
EABJA11ED	A	C1	1	1	*	8.544	0.056	0.127	15	LIT	0.0085		8.506
EABJA11FD	A	C1	1	1	131.283	8.580	**	0.126	15	LWT/LWB	0.0084	129.636	8.473
EABJA11GD	A	C1	1	1	129.172	8.701	0.056	0.125	15	LWT/LWB	0.0083	126.572	8.526
EABJA219D	A	C2	1	2	127.503	8.715	0.041	0.127	15	DGM/LGM/LWT/LWB	0.0084	126.653	8.657
EABJA21AD	A	C2	1	2	127.013	8.588	0.049	0.128	15	AWT/AWB	0.0085	127.345	8.610
EABJA21BD	A	C2	1	2	125.686	8.620	0.083	0.128	15	AWT/AWB	0.0085	125.768	8.626
EABJB11BD	B	C1	2	1	119.368	8.444	**	0.130	15	DGM/LGM/AWB	0.0087	121.802	8.616
EABJB11CD	B	C1	2	1	113.780	8.500	**	0.131	15	LAB/AWT	0.0087	117.096	8.747
EABJB11DD	B	C1	2	1	114.819	8.422	**	0.132	15	LWT/LWB	0.0088	118.676	8.704
EABJB11ED	B	C1	2	1	116.409	8.517	0.039	0.130	15	LWT/LWB	0.0087	118.585	8.677
EABJB11FD	B	C1	2	1	115.293	8.417	**	0.130	15	LGM	0.0087	117.946	8.610
EABJB11GD	B	C1	2	1	119.178	8.393	0.044	0.129	15	LWB	0.0086	120.408	8.479
EABJB219D	B	C2	2	2	*	8.602	0.050	0.128	15	LIT	0.0085		8.638
EABJB21AD	B	C2	2	2	122.150	8.479	**	0.128	15	LAT/LWB	0.0085	122.837	8.527
EABJB21BD	B	C2	2	2	122.189	8.523	**	0.128	15	LWT/LWB	0.0086	123.036	8.582
EABJB21CD	B	C2	2	2	124.467	8.546	0.045	0.128	15	LWT/LWB	0.0085	124.776	8.567
EABJC11BD	C	C1	3	1	*	8.209		0.132	15	LIT	0.0088		8.499
EABJC11CD	C	C1	3	1	118.842	8.158	0.045	0.133	15	LGM/LWT	0.0089	123.922	8.507
EABJC11DD	C	C1	3	1	122.198	8.057	0.046	0.134	15	LWT/LWB	0.0089	128.061	8.443
EABJC11ED	C	C1	3	1	122.032	8.073	0.054	0.133	15	LGM/DGM	0.0089	127.504	8.434
EABJC11FD	C	C1	3	1	120.121	8.197	0.050	0.133	15	LGM/DGM	0.0088	125.005	8.530
EABJC219D	C	C2	3	2	123.790	8.539	**	0.128	15	LWT/LWB	0.0085	124.388	8.580
EABJC21AD	C	C2	3	2	126.890	8.453	0.056	0.129	15	LWT/LWB	0.0086	128.018	8.528
EABJC21BD	C	C2	3	2	125.168	8.348	**	0.129	15	LWB/DGM	0.0086	126.559	8.441
EABJC21CD	C	C2	3	2	127.189	8.303	**	0.129	15	LGM/LWB	0.0086	128.834	8.411

* Strength not reported due to unacceptable failure mode.
** Poissons Ratio not reported due to non linear data.

Average	**123.157**	**8.452**	**0.051**
Standard Dev.	**4.944**	**0.179**	**0.011**
Coeff. of Var. [%]	**4.015**	**2.118**	**20.962**
Min.	**113.780**	**8.057**	**0.039**
Max.	**131.283**	**8.715**	**0.083**
Number of Spec.	**25**	**28**	**15**

$Average_{norm}$	**0.0086**	**124.698**	**8.558**
Standard $Dev._{norm}$		**3.762**	**0.085**
Coeff. of Var. $[\%]_{norm}$		**3.017**	**0.994**
Min.	**0.0083**	**117.096**	**8.411**
Max.	**0.0089**	**129.636**	**8.747**
Number of Spec.	**28**	**25**	**28**


Warp Tension Properties (WT)--ETW
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Warp Tension Strength [ksi]


Warp Tension Properties (WT)--ETW
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
10.0
Warp Tension Modulus [Msi]

4.2 Fill Tension Properties (FT)

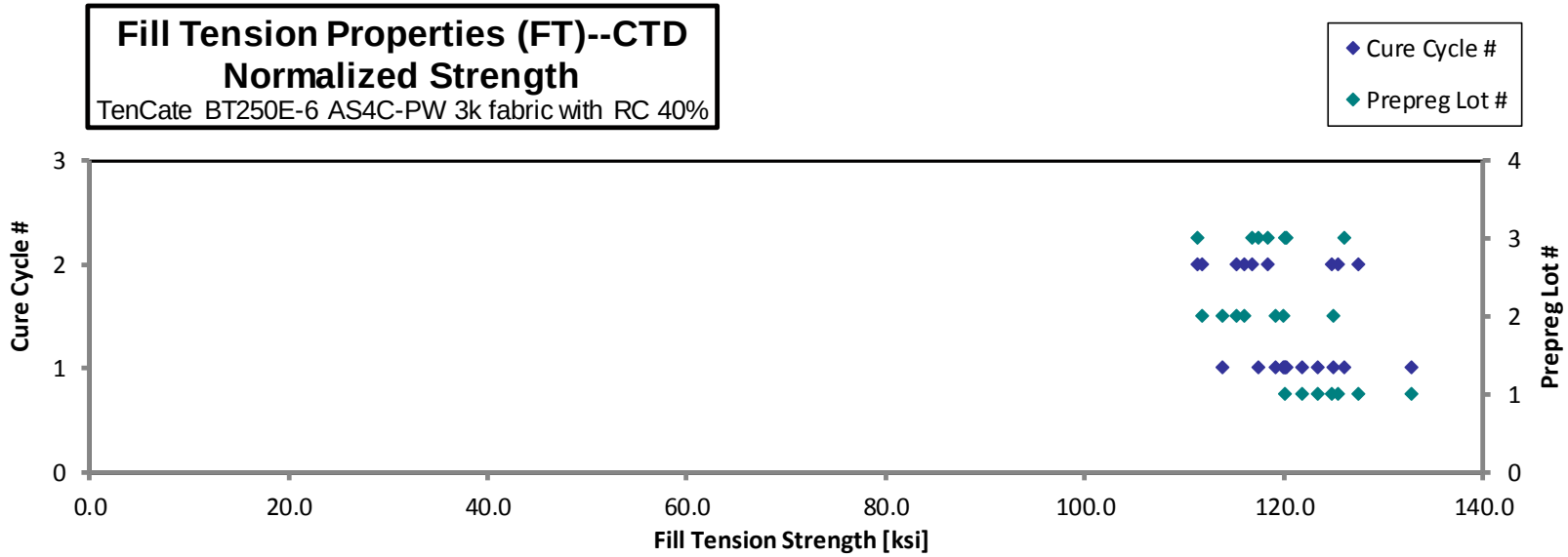
Fill Tension Properties (FT)--CTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

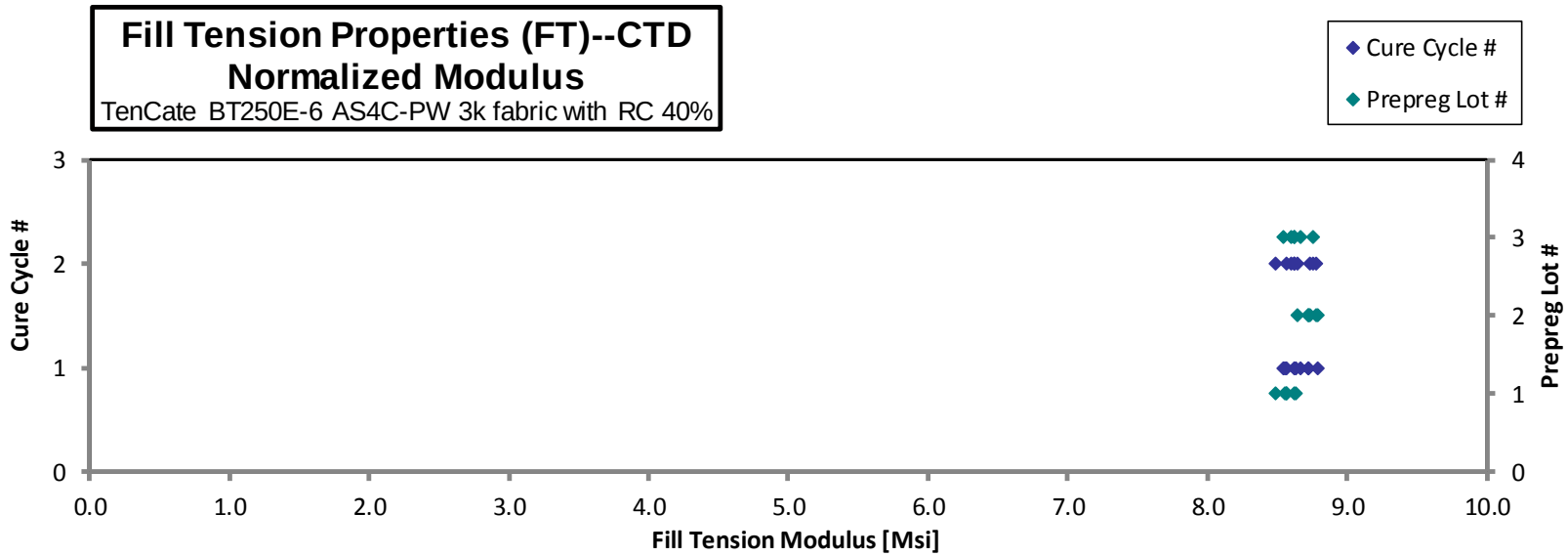
normalizing t_{ply} [in]: 0.0085

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]
EABUA116B	A	C1	1	1	133.218	8.664	0.127	15	LGM	0.0085	132.730	8.632
EABUA117B	A	C1	1	1	122.223	8.596	0.127	15	LWT	0.0085	121.695	8.559
EABUA118B	A	C1	1	1	124.625	8.636	0.126	15	LWT	0.0084	123.403	8.551
EABUA119B*	A	C1	1	1	122.935		0.124	15	LWB	0.0083	119.978	
EABUA215B	A	C2	1	2	123.536	8.404	0.129	15	LWB	0.0086	124.682	8.482
EABUA216B	A	C2	1	2	126.473	8.498	0.128	15	LWB	0.0086	127.366	8.558
EABUA217B	A	C2	1	2	125.745	8.639	0.127	15	LAB	0.0085	125.383	8.614
EABUB116B	B	C1	2	1	117.783	8.571	0.130	15	LAT/ LWB	0.0086	119.815	8.719
EABUB117B	B	C1	2	1	112.145	8.597	0.129	15	LGM	0.0086	113.787	8.722
EABUB118B	B	C1	2	1	117.070	8.637	0.130	15	LGM	0.0086	119.044	8.783
EABUB119B*	B	C1	2	1	124.853		0.127	15	LGM	0.0085	124.837	
EABUB215B	B	C2	2	2	109.120	8.566	0.131	15	LAB	0.0087	111.773	8.774
EABUB216B	B	C2	2	2	113.526	8.536	0.130	15	LAB	0.0087	116.034	8.725
EABUB217B	B	C2	2	2	115.424	8.659	0.127	15	LAB	0.0085	115.213	8.643
EABUC116B	C	C1	3	1	121.165	8.681	0.127	15	LAB	0.0084	120.215	8.613
EABUC117B	C	C1	3	1	121.228	8.746	0.126	15	LGM	0.0084	120.102	8.664
EABUC118B	C	C1	3	1	118.259	8.609	0.127	15	LAT / LWB	0.0084	117.332	8.541
EABUC119B*	C	C1	3	1	130.128		0.123	15	LGM / LWB	0.0082	125.995	
EABUC216B	C	C2	3	2	116.288	8.719	0.128	15	LGM	0.0085	116.728	8.752
EABUC217B	C	C2	3	2	120.237	8.726	0.126	15	LWT/ LWB	0.0084	118.351	8.589
EABUC218B	C	C2	3	2	110.832	8.587	0.128	15	LAB	0.0085	111.238	8.619

* Specimen was not gaged and tested for strength only.

	Strength [ksi]	Modulus [Msi]			$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**120.324**	**8.615**		**$Average_{norm}$**	**0.0085**	**120.271**	**8.641**
Standard Dev.	**6.250**	**0.084**		**Standard $Dev._{norm}$**		**5.398**	**0.088**
Coeff. of Var. [%]	**5.194**	**0.978**		**Coeff. of Var. $[\%]_{norm}$**		**4.488**	**1.021**
Min.	**109.120**	**8.404**		**Min.**	**0.0082**	**111.238**	**8.482**
Max.	**133.218**	**8.746**		**Max.**	**0.0087**	**132.730**	**8.783**
Number of Spec.	**21**	**18**		**Number of Spec.**	**21**	**21**	**18**


Fill Tension Properties (FT)--CTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Tension Strength [ksi]

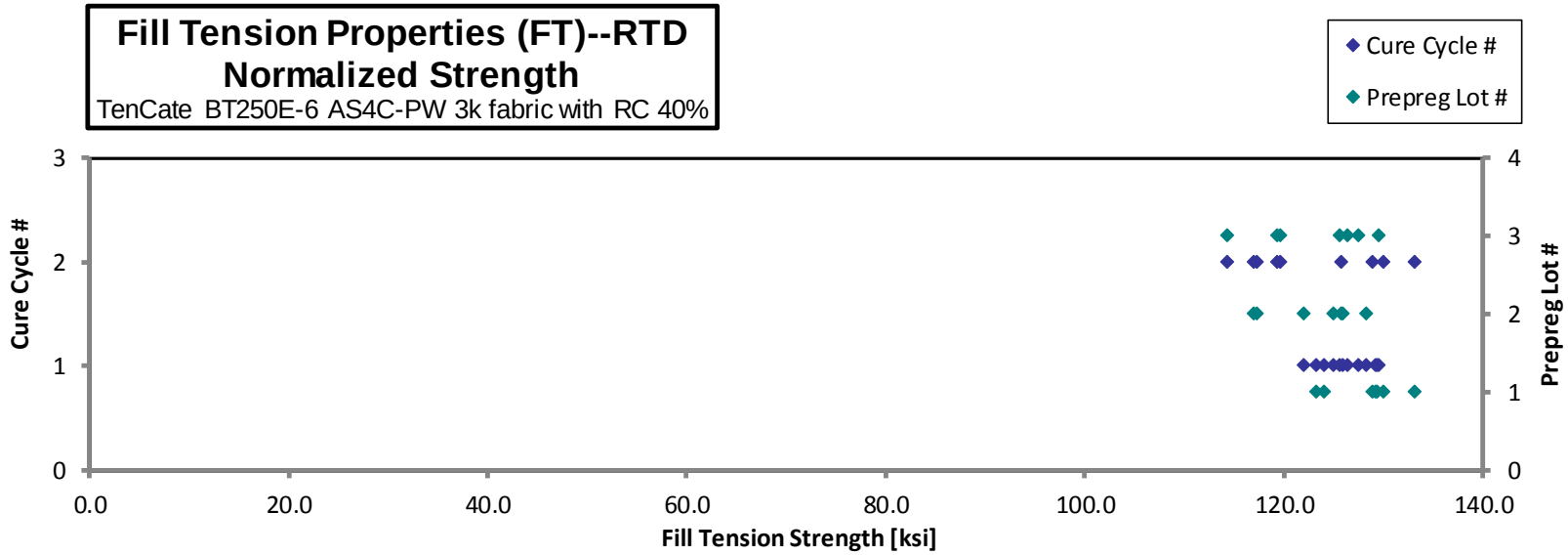

Fill Tension Properties (FT)--CTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Fill Tension Modulus [Msi]

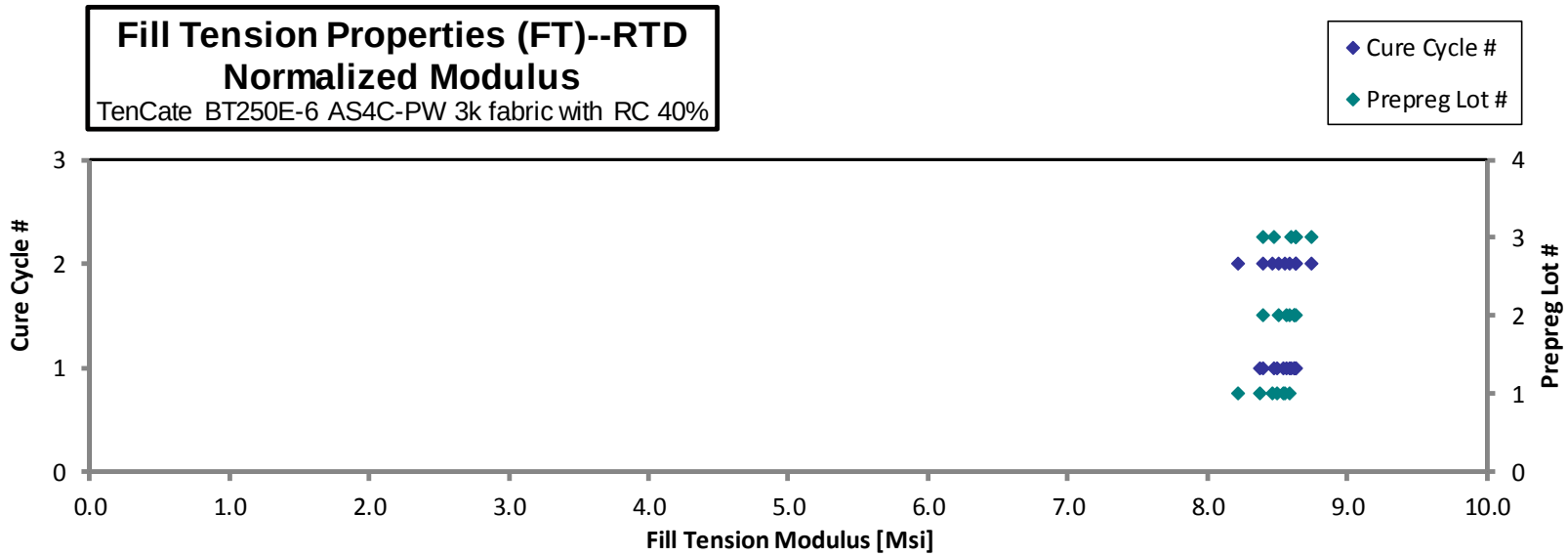
Fill Tension Properties (FT)--RTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

normalizing t_{ply} [in]: 0.0085

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]
EABUA111A	A	C1	1	1	132.998	8.737	0.124	15	LGM	0.0083	129.243	8.490
EABUA112A	A	C1	1	1	131.022	8.709	0.126	15	LWB/LWT	0.0084	129.086	8.580
EABUA113A	A	C1	1	1	124.515	8.622	0.126	15	LWT/LGM	0.0084	123.229	8.533
EABUA114A	A	C1	1	1	124.611	8.414	0.127	15	LGM	0.0085	123.911	8.366
EABUA211A	A	C2	1	2	129.997	8.465	0.127	15	LGM	0.0085	129.912	8.460
EABUA212A	A	C2	1	2	132.682	8.195	0.128	15	LWB	0.0085	133.012	8.215
EABUA213A	A	C2	1	2	128.390	8.518	0.128	15	LGM	0.0085	128.893	8.552
EABUB111A	B	C1	2	1	126.855	8.460	0.126	15	LAT / LWB	0.0084	125.827	8.392
EABUB112A	B	C1	2	1	121.865	8.549	0.128	15	LWB	0.0085	121.992	8.558
EABUB113A	B	C1	2	1	123.808	8.535	0.129	15	LGM	0.0086	124.957	8.614
EABUB114A	B	C1	2	1	126.051	8.474	0.130	15	LAB / LAT	0.0086	128.127	8.613
EABUB211A	B	C2	2	2	117.123	8.510	0.127	15	LGM	0.0085	116.970	8.499
EABUB212A	B	C2	2	2	124.933	8.576	0.128	15	LGM	0.0085	125.635	8.624
EABUB213A	B	C2	2	2	116.206	8.505	0.129	15	LWB	0.0086	117.224	8.579
EABUC111A	C	C1	3	1	131.454	9.003	0.122	15	LWB / LWT	0.0081	125.475	8.593
EABUC112A	C	C1	3	1	128.968	8.727	0.126	15	LGM	0.0084	127.417	8.622
EABUC113A	C	C1	3	1	129.874	8.500	0.127	15	LWB / LWT	0.0085	129.381	8.468
EABUC114A	C	C1	3	1	126.387	8.632	0.127	15	LGM	0.0085	126.304	8.627
EABUC211A	C	C2	3	2	120.837	8.829	0.126	15	LGM	0.0084	119.589	8.737
EABUC212A	C	C2	3	2	114.351	8.396	0.127	15	LWB	0.0085	114.261	8.389
EABUC213A	C	C2	3	2	118.858	8.592	0.128	15	LGM	0.0085	119.324	8.626

	Strength [ksi]	Modulus [Msi]		Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**125.323**	**8.569**	**$Average_{norm}$**	**0.0085**	**124.751**	**8.530**
Standard Dev.	**5.480**	**0.170**	**Standard $Dev._{norm}$**		**4.949**	**0.118**
Coeff. of Var. [%]	**4.373**	**1.983**	**Coeff. of Var. $[\%]_{norm}$**		**3.967**	**1.385**
Min.	**114.351**	**8.195**	**Min.**	**0.0081**	**114.261**	**8.215**
Max.	**132.998**	**9.003**	**Max.**	**0.0086**	**133.012**	**8.737**
Number of Spec.	**21**	**21**	**Number of Spec.**	**21**	**21**	**21**


Fill Tension Properties (FT)--RTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Tension Strength [ksi]

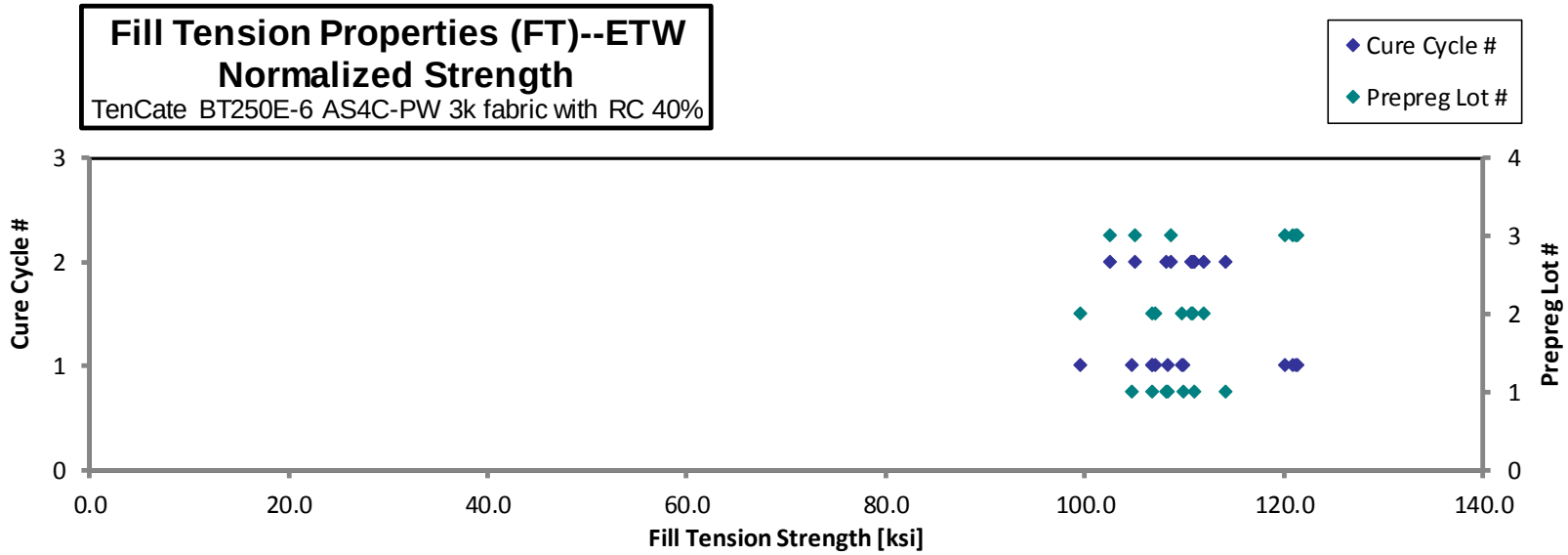

Fill Tension Properties (FT)--RTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
Fill Tension Modulus [Msi]

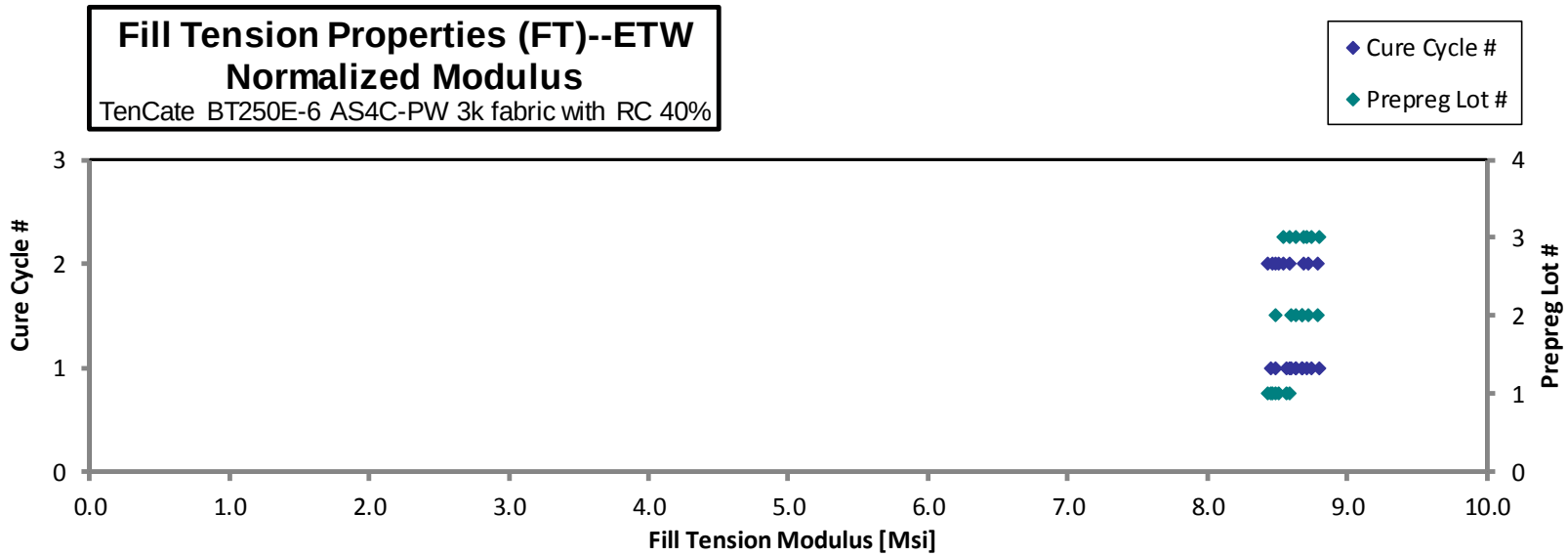
Fill Tension Properties (FT)--ETW
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

normalizing t_{ply} [in]: 0.0085

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]
EABUA11BD	A	C1	1	1	105.781	8.653	0.126	15	LGM	0.0084	104.689	8.564
EABUA11CD	A	C1	1	1	109.023	8.635	0.127	15	LGM	0.0084	108.324	8.580
EABUA11DD	A	C1	1	1	106.818	8.469	0.127	15	LWB	0.0085	106.622	8.453
EABUA11ED	A	C1	1	1	110.082	8.501	0.127	15	LGM/LWB	0.0085	109.909	8.488
EABUA219D	A	C2	1	2	107.596	8.459	0.128	15	LGM	0.0085	108.172	8.505
EABUA21AD	A	C2	1	2	110.091	8.399	0.129	15	LWT/LWB/DGM	0.0086	110.955	8.465
EABUA21BD	A	C2	1	2	113.251	8.363	0.128	15	LGM	0.0086	114.035	8.421
EABUB11BD	B	C1	2	1	109.038	8.552	0.128	15	LGM	0.0085	109.637	8.599
EABUB11CD	B	C1	2	1	106.289	8.614	0.128	15	LGM	0.0086	106.984	8.671
EABUB11DD	B	C1	2	1	105.986	8.564	0.128	15	LWB/DGM	0.0086	106.707	8.622
EABUB11ED	B	C1	2	1	98.594	8.592	0.129	15	LGM	0.0086	99.509	8.671
EABUB219D	B	C2	2	2	110.058	8.428	0.128	15	LGM	0.0086	110.806	8.485
EABUB21AD	B	C2	2	2	109.443	8.694	0.129	15	LWT	0.0086	110.573	8.784
EABUB21BD	B	C2	2	2	109.874	8.551	0.130	15	LGM	0.0087	111.943	8.712
EABUC11BD	C	C1	3	1	121.105	8.871	0.126	15	LGM/DGM	0.0084	119.997	8.790
EABUC11CD	C	C1	3	1	122.067	8.713	0.126	15	LGM/DGM	0.0084	120.823	8.624
EABUC11DD	C	C1	3	1	122.561	8.832	0.126	15	LGM/DGM	0.0084	121.328	8.743
EABUC11ED	C	C1	3	1	122.182	8.790	0.126	15	LGM/DGM	0.0084	121.080	8.711
EABUC219D	C	C2	3	2	101.223	8.569	0.129	15	LGM	0.0086	102.533	8.680
EABUC21AD	C	C2	3	2	103.909	8.456	0.129	15	LWB	0.0086	104.955	8.541
EABUC21BD	C	C2	3	2	108.479	8.571	0.128	15	LGM	0.0085	108.564	8.578

Average	**110.164**	**8.585**	**$Average_{norm}$**	**0.0085**	**110.388**	**8.604**
Standard Dev.	**6.699**	**0.139**	**Standard $Dev._{norm}$**		**6.108**	**0.111**
Coeff. of Var. [%]	**6.081**	**1.618**	**Coeff. of Var. $[\%]_{norm}$**		**5.533**	**1.286**
Min.	**98.594**	**8.363**	**Min.**	**0.0084**	**99.509**	**8.421**
Max.	**122.561**	**8.871**	**Max.**	**0.0087**	**121.328**	**8.790**
Number of Spec.	**21**	**21**	**Number of Spec.**	**21**	**21**	**21**


Fill Tension Properties (FT)--ETW
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Tension Strength [ksi]


Fill Tension Properties (FT)--ETW
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
10.0
Fill Tension Modulus [Msi]

4.3 Warp Compression Properties (WC)

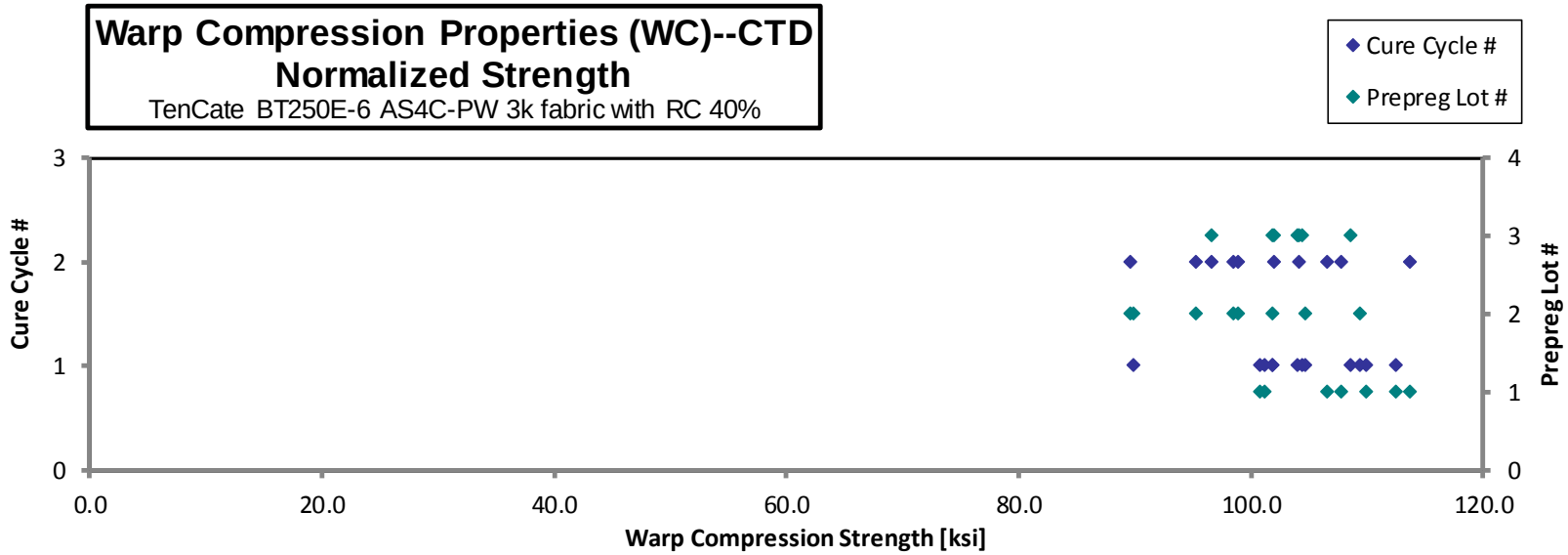
Warp Compression Properties (WC)--CTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

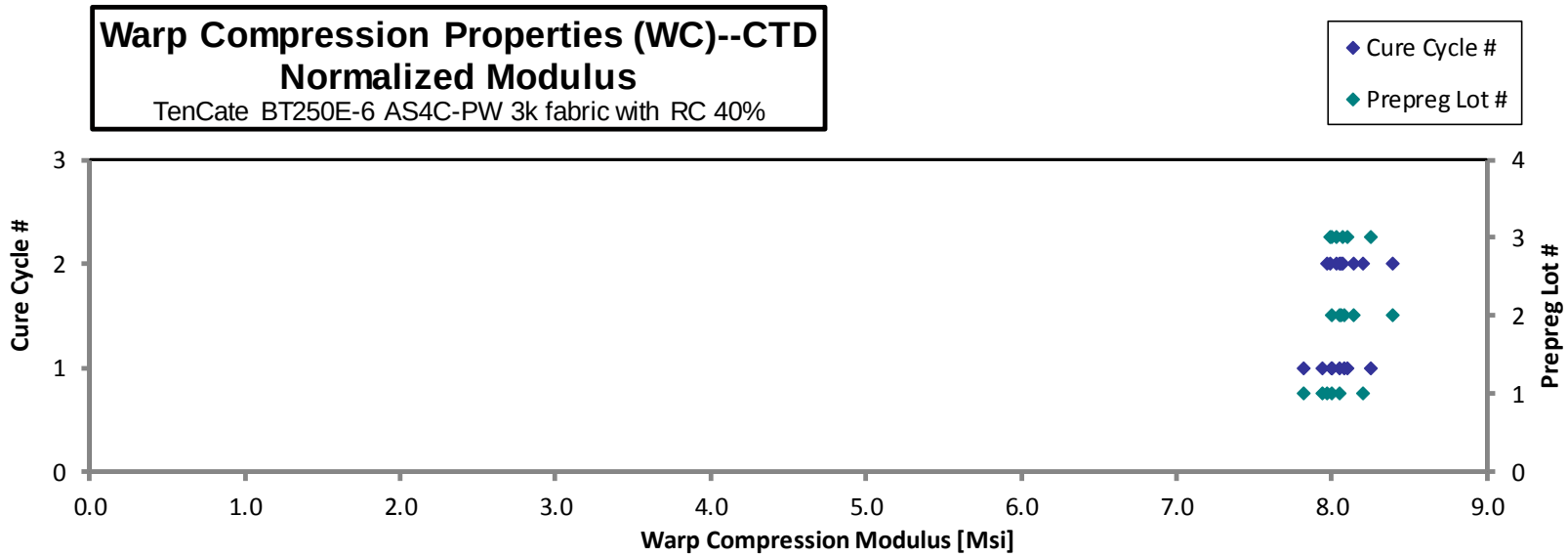
normalizing t_{ply} [in]: 0.0085

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]
EABLA116B	A	C1	1	1	108.167	7.699	0.129	15	BGM	0.0086	109.853	7.819
EABLA117B	A	C1	1	1	111.242	7.917	0.129	15	HAT / BGM	0.0086	112.398	8.000
EABLA118B	A	C1	1	1	100.321	7.874	0.128	15	BGM	0.0086	101.098	7.935
EABLA119B*	A	C1	1	1	99.390		0.129	15	BGM	0.0086	100.725	
EABLA215B	A	C2	1	2	106.110	7.850	0.129	15	BAB	0.0086	107.670	7.966
EABLA216B	A	C2	1	2	112.219	8.093	0.129	15	BGM	0.0086	113.672	8.198
EABLA217B	A	C2	1	2	105.048	7.937	0.129	15	BGM	0.0086	106.459	8.043
EABLB116B	B	C1	2	1	107.266	7.929	0.130	15	BGM	0.0087	109.296	8.079
EABLB117B	B	C1	2	1	102.502	7.875	0.130	15	BGM	0.0087	104.693	8.043
EABLB118B	B	C1	2	1	99.893	7.842	0.130	15	BGM	0.0087	101.813	7.992
EABLB119B*	B	C1	2	1	87.832		0.130	15	BGM	0.0087	89.838	
EABLB215B	B	C2	2	2	87.625	8.214	0.130	15	BGM	0.0087	89.515	8.391
EABLB216B	B	C2	2	2	95.906	7.930	0.131	15	BGM	0.0087	98.398	8.136
EABLB217B	B	C2	2	2	96.140	7.836	0.131	15	BGM/HIT	0.0087	98.836	8.055
EABLB218B	B	C2	2	2	92.343		0.131	15	BGM	0.0088	95.231	
EABLC116B	C	C1	3	1	103.368	8.021	0.129	15	BGM	0.0086	104.311	8.094
EABLC117B	C	C1	3	1	108.172	7.972	0.128	15	BGM	0.0085	108.532	7.998
EABLC118B	C	C1	3	1	100.526	8.141	0.129	15	BGM	0.0086	101.866	8.249
EABLC119B*	C	C1	3	1	103.123		0.129	15	BGM	0.0086	103.932	
EABLC215B	C	C2	3	2	103.131	7.955	0.129	15	BGM	0.0086	104.102	8.030
EABLC216B	C	C2	3	2	100.588	7.878	0.129	15	BGM	0.0086	101.959	7.986
EABLC217B	C	C2	3	2	**	7.904	0.130	15	HIT/BGM	0.0087		8.065
EABLC218B*	C	C2	3	2	94.331		0.130	15	BGM	0.0087	96.514	

* Specimen was not gaged and tested for strength only.
** Strength was omitted because unacceptable failure mode is more prominent.

Average	**101.147**	**7.937**		**$Average_{norm}$**	**0.0086**	**102.760**	**8.060**
Standard Dev.	**6.753**	**0.121**		**Standard $Dev._{norm}$**		**6.426**	**0.127**
Coeff. of Var. [%]	**6.677**	**1.519**		**Coeff. of Var. $[\%]_{norm}$**		**6.254**	**1.572**
Min.	**87.625**	**7.699**		**Min.**	**0.0085**	**89.515**	**7.819**
Max.	**112.219**	**8.214**		**Max.**	**0.0088**	**113.672**	**8.391**
Number of Spec.	**22**	**18**		**Number of Spec.**	**23**	**22**	**18**


Warp Compression Properties (WC)--CTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Warp Compression Strength [ksi]


Warp Compression Properties (WC)--CTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
Warp Compression Modulus [Msi]

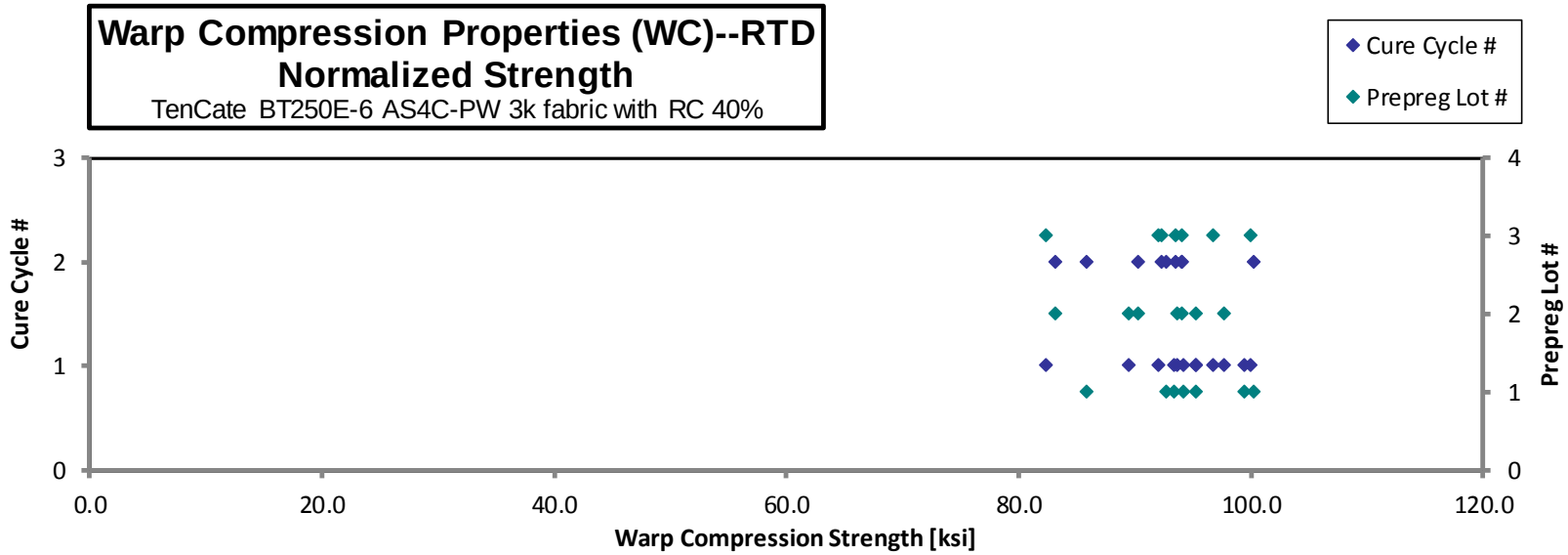
Warp Compression Properties (WC)--RTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

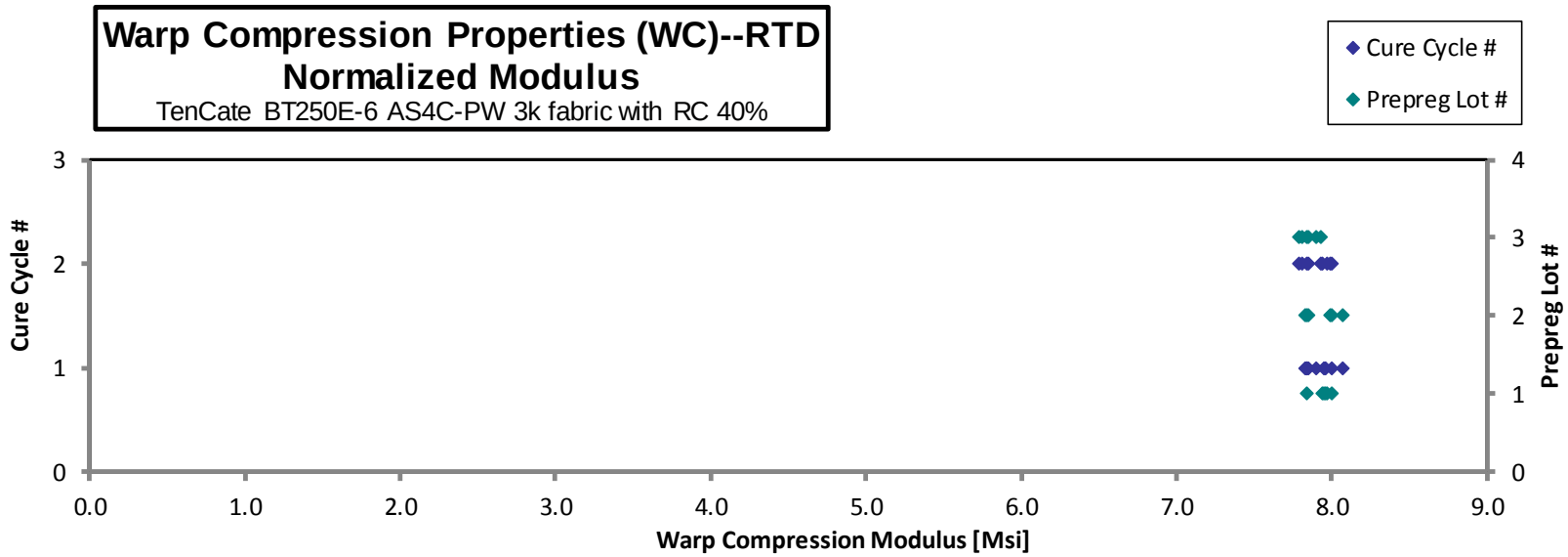
normalizing t_{ply} [in]: 0.0085

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]
EABLA111A	A	C1	1	1	101.045	8.087	0.125	15	BGM/HIB	0.0084	99.431	7.958
EABLA112A	A	C1	1	1	94.066	8.058	0.127	15	BGM/HIT	0.0084	93.374	7.998
EABLA113A	A	C1	1	1	94.613	7.890	0.128	15	BGM	0.0086	95.272	7.945
EABLA114A*	A	C1	1	1	93.390		0.129	15	BGM/HIB	0.0086	94.141	
EABLA211A	A	C2	1	2	92.378	7.936	0.128	15	HGM/BGM	0.0085	92.685	7.963
EABLA212A	A	C2	1	2	84.839	7.847	0.129	15	BGM/HAB	0.0086	85.779	7.934
EABLA213A	A	C2	1	2	99.147	7.757	0.129	15	HGM/BGM	0.0086	100.158	7.837
EABLB111A	B	C1	2	1	98.078	8.106	0.127	15	HIB/BGM	0.0085	97.607	8.067
EABLB112A	B	C1	2	1	89.464	7.821	0.128	15	HAB/BGM	0.0085	89.490	7.824
EABLB113A	B	C1	2	1	92.936	7.781	0.128	15	HGM/HIT	0.0086	93.628	7.839
EABLB114A*	B	C1	2	1	94.147		0.129	15	HIT/BGM	0.0086	95.209	
EABLB211A	B	C2	2	2	94.939	8.080	0.126	15	BGM	0.0084	93.990	8.000
EABLB212A	B	C2	2	2	83.294	7.864	0.127	15	BGM	0.0085	83.138	7.850
EABLB213A	B	C2	2	2	89.515	7.917	0.129	15	BGM/HIB	0.0086	90.252	7.982
EABLC111A	C	C1	3	1	91.313	7.771	0.129	15	BGM/HAB	0.0086	92.038	7.833
EABLC112A	C	C1	3	1	97.948	7.690	0.130	15	HIT/HGM	0.0087	99.935	7.846
EABLC113A	C	C1	3	1	81.462	7.812	0.129	15	HGM	0.0086	82.364	7.899
EABLC114A*	C	C1	3	1	95.506		0.129	15	BGM	0.0086	96.667	
EABLC211A	C	C2	3	2	94.661	7.882	0.126	15	BGM	0.0084	93.482	7.783
EABLC212A	C	C2	3	2	94.247	7.949	0.127	15	BGM	0.0085	93.961	7.925
EABLC213A	C	C2	3	2	91.821	7.765	0.128	15	BGM	0.0085	92.325	7.808

* Specimen was not gaged and tested for strength only.

Average	**92.800**	**7.890**		**$Average_{norm}$**	**0.0085**	**93.092**	**7.905**
Standard Dev.	**4.974**	**0.126**		**$Standard\ Dev._{norm}$**		**4.863**	**0.081**
Coeff. of Var. [%]	**5.359**	**1.593**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.224**	**1.019**
Min.	**81.462**	**7.690**		**Min.**	**0.0084**	**82.364**	**7.783**
Max.	**101.045**	**8.106**		**Max.**	**0.0087**	**100.158**	**8.067**
Number of Spec.	**21**	**18**		**Number of Spec.**	**21**	**21**	**18**


Warp Compression Properties (WC)--RTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Warp Compression Strength [ksi]


Warp Compression Properties (WC)--RTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
Warp Compression Modulus [Msi]

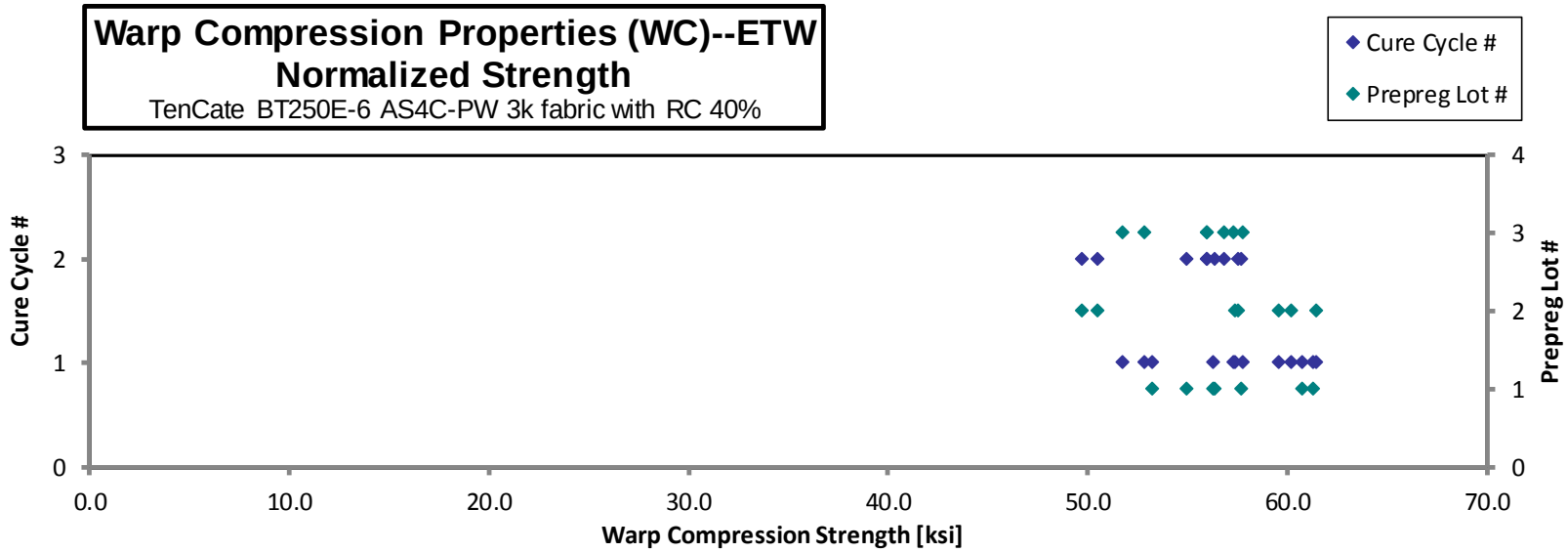
Warp Compression Properties (WC)--ETW
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

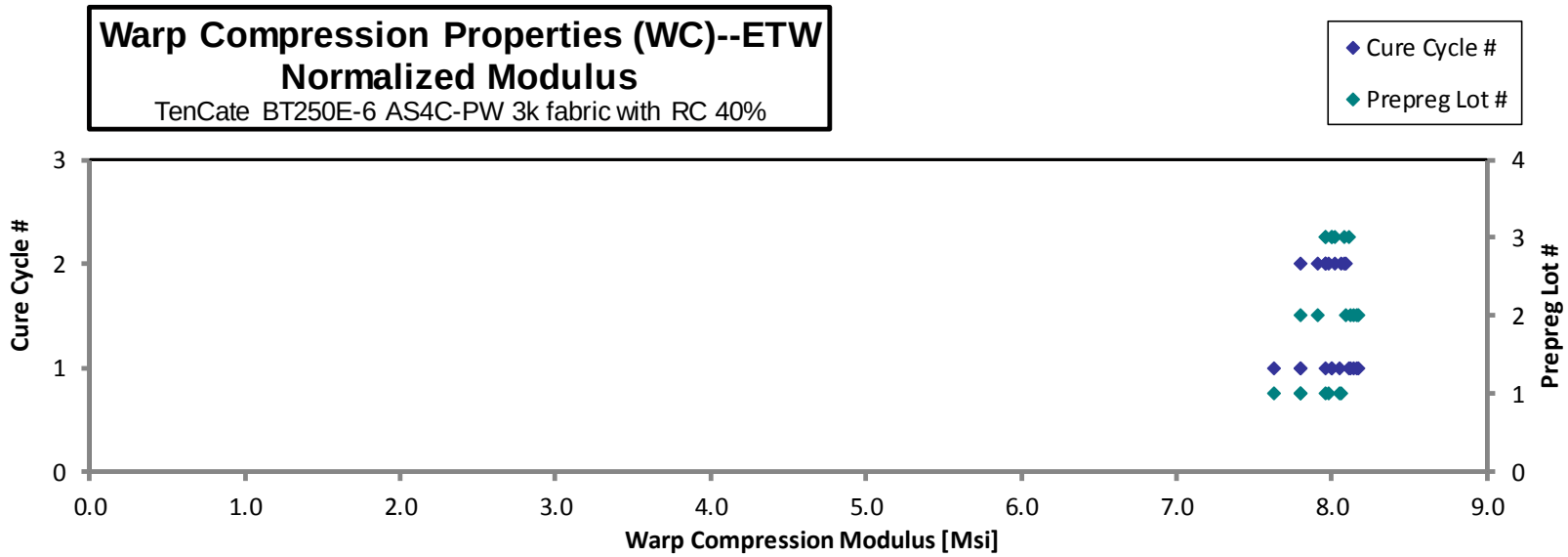
normalizing t_{ply} [in]
0.0085

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]
EABLA11BD	A	C1	1	1		8.179	0.125	15	HGM	0.0084		8.049
EABLA11CD	A	C1	1	1		7.835	0.127	15	BGM	0.0085		7.790
EABLA11DD	A	C1	1	1		7.787	0.128	15	BGM	0.0085		7.800
EABLA11ED	A	C1	1	1		7.550	0.129	15	HGM	0.0086		7.622
EABLA11FD	A	C1	1	1	60.544		0.129	15	BGM	0.0086	61.238	
EABLA11GD	A	C1	1	1	60.161		0.129	15	BGM	0.0086	60.692	
EABLA11HD	A	C1	1	1	55.968		0.128	15	HGM	0.0085	56.226	
EABLA11ID	A	C1	1	1	53.306		0.127	15	HAT	0.0085	53.196	
EABLA219D	A	C2	1	2		7.890	0.129	15	BGM	0.0086		7.955
EABLA21AD	A	C2	1	2		7.978	0.129	15	HGM	0.0086		8.058
EABLA21BD	A	C2	1	2		7.850	0.130	15	HGM	0.0086		7.977
EABLA21CD	A	C2	1	2	53.958		0.130	15	HGM	0.0086	54.904	
EABLA21DD	A	C2	1	2	55.325		0.130	15	HAT	0.0087	56.307	
EABLA21ED	A	C2	1	2	56.636		0.130	15	HGM	0.0086	57.624	
EABLB11BD	B	C1	2	1		8.282	0.126	15	BGM	0.0084		8.158
EABLB11CD	B	C1	2	1		8.212	0.126	15	BGM	0.0084		8.113
EABLB11DD	B	C1	2	1		8.191	0.127	15	HGM	0.0085		8.172
EABLB11ED	B	C1	2	1		8.091	0.128	15	HGM	0.0085		8.137
EABLB11FD	B	C1	2	1	59.720		0.128	15	BGM	0.0086	60.153	
EABLB11GD	B	C1	2	1	60.572		0.129	15	HAB	0.0086	61.373	
EABLB11HD	B	C1	2	1	56.181		0.130	15	BAT	0.0087	57.376	
EABLB11ID	B	C1	2	1	58.058		0.131	15	HGM	0.0087	59.498	
EABLB219D	B	C2	2	2		8.186	0.126	15	HAB	0.0084		8.084
EABLB21AD	B	C2	2	2		7.812	0.127	15	BGM	0.0085		7.800
EABLB21BD	B	C2	2	2		7.750	0.130	15	BGM	0.0087		7.901
EABLB21CD	B	C2	2	2	49.155		0.131	15	HGM	0.0087	50.470	
EABLB21DD	B	C2	2	2	47.952		0.132	15	HGM	0.0088	49.677	
EABLB21FD	B	C2	2	2	55.569		0.132	15	BGM	0.0088	57.498	
EABLC11BD	C	C1	3	1		7.996	0.127	15	HGM	0.0085		7.993
EABLC11CD	C	C1	3	1		7.944	0.128	15	BGM	0.0086		7.993
EABLC11DD	C	C1	3	1		8.063	0.128	15	BAB	0.0085		8.105
EABLC11ED	C	C1	3	1		7.844	0.129	15	HGM	0.0086		7.958
EABLC11FD	C	C1	3	1	51.031		0.129	15	HGM	0.0086	51.691	
EABLC11GD	C	C1	3	1	51.945		0.130	15	HGM	0.0086	52.842	
EABLC11HD	C	C1	3	1	56.451		0.130	15	HGM	0.0087	57.702	
EABLC11JD	C	C1	3	1	56.301		0.130	15	HGM	0.0086	57.251	
EABLC219D	C	C2	3	2		8.061	0.127	15	HGM	0.0085		8.020
EABLC21AD	C	C2	3	2		7.926	0.128	15	BGM	0.0085		7.958
EABLC21BD	C	C2	3	2		7.998	0.129	15	HGM	0.0086		8.077
EABLC21CD	C	C2	3	2	55.923		0.129	15	BGM/HGM	0.0086	56.778	
EABLC21DD	C	C2	3	2	54.879		0.130	15	BGM/HGM	0.0087	55.928	
EABLC21ED	C	C2	3	2	54.641		0.131	15	HGM	0.0087	55.938	

	Strength [ksi]	Modulus [Msi]
Average	**55.442**	**7.973**
Standard Dev.	**3.457**	**0.183**
Coeff. of Var. [%]	**6.236**	**2.294**
Min.	**47.952**	**7.550**
Max.	**60.572**	**8.282**
Number of Spec.	**21**	**21**

	t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	**0.0086**	**56.398**	**7.987**
Standard $Dev._{norm}$		**3.351**	**0.141**
Coeff. of Var. $[\%]_{norm}$		**5.942**	**1.760**
Min.	**0.0084**	**49.677**	**7.622**
Max.	**0.0088**	**61.373**	**8.172**
Number of Spec.	**42**	**21**	**21**


Warp Compression Properties (WC)--ETW
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Warp Compression Strength [ksi]


Warp Compression Properties (WC)--ETW
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
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0.0
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7.0
8.0
9.0
Warp Compression Modulus [Msi]

4.4 Fill Compression Properties (FC)

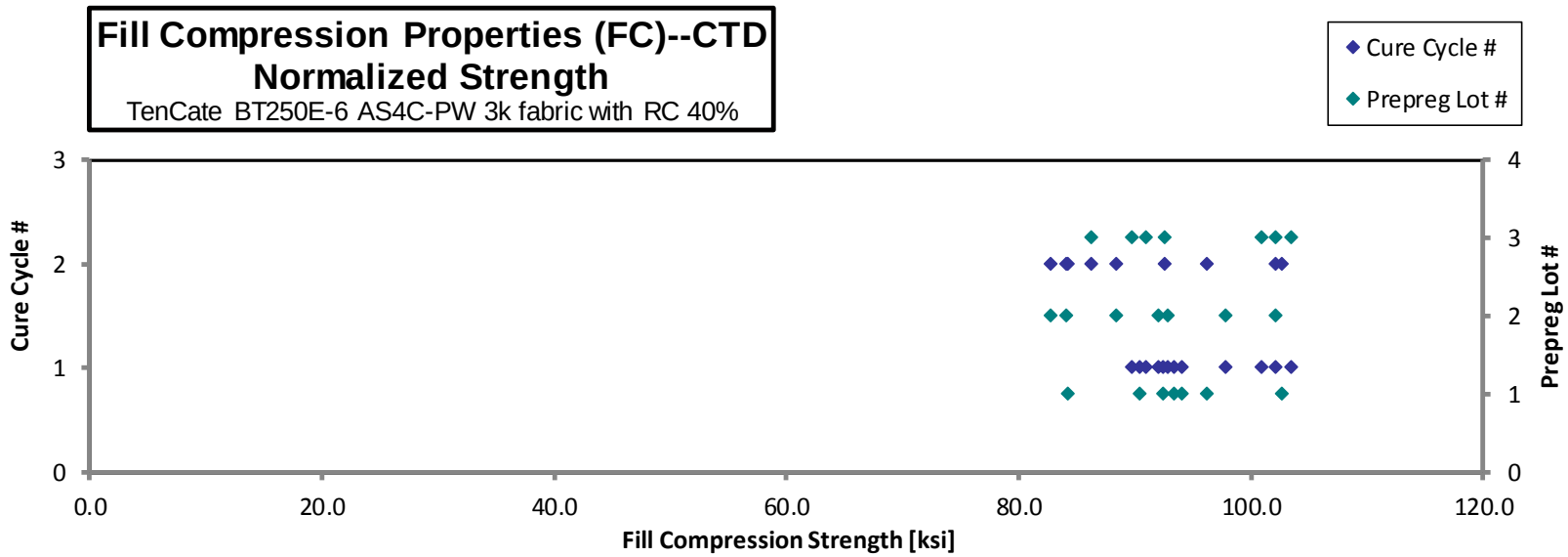
Fill Compression Properties (FC)--CTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

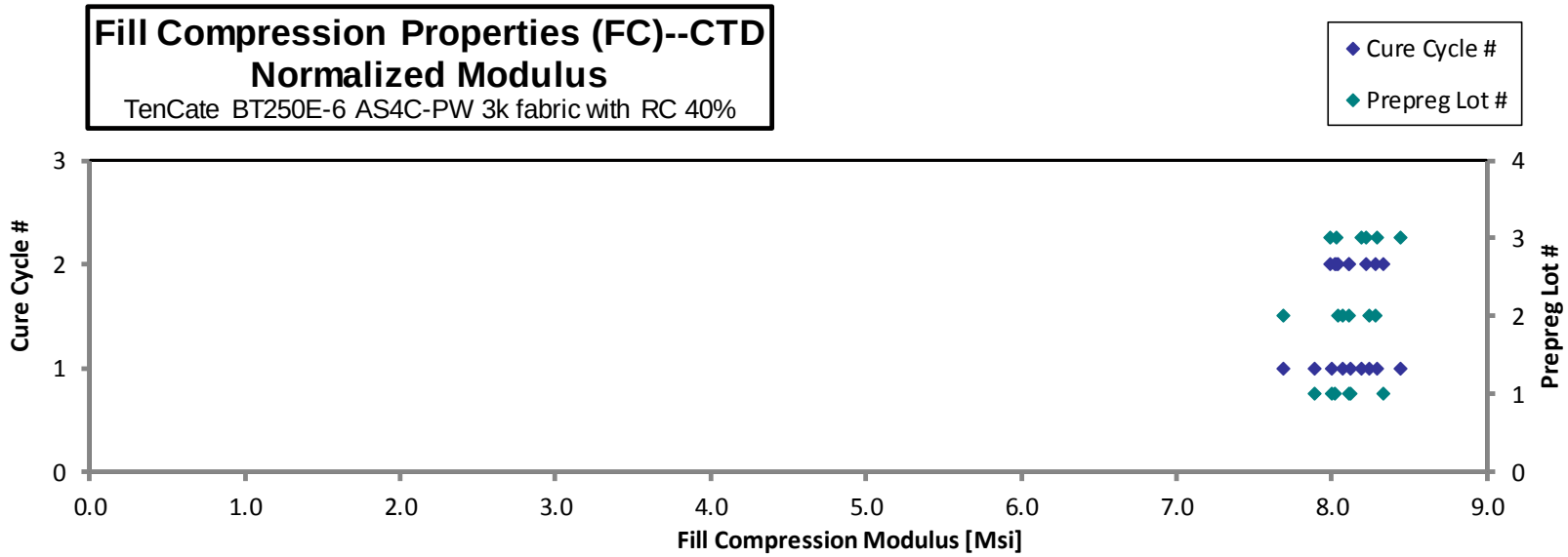
normalizing t_{ply} [in]: 0.0085

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]
EABZA116B	A	C1	1	1	91.100	7.691	0.131	15	BGM	0.0087	93.386	7.884
EABZA117B	A	C1	1	1	87.790	7.771	0.131	15	BGM	0.0087	90.337	7.997
EABZA118B	A	C1	1	1	89.410	7.850	0.132	15	BGM	0.0088	92.417	8.114
EABZA119B*	A	C1	1	1	90.841		0.132	15	BGM	0.0088	93.994	
EABZA215B	A	C2	1	2	96.903	8.394	0.127	15	BGM	0.0084	96.171	8.330
EABZA216B	A	C2	1	2	102.989	8.054	0.127	15	BGM	0.0085	102.565	8.021
EABZA217B	A	C2	1	2	84.579	8.143	0.127	15	BGM	0.0085	84.165	8.104
EABZB116B*	B	C1	2	1	92.839		0.127	15	BGM	0.0085	92.757	
EABZB117B	B	C1	2	1	92.286	8.268	0.127	15	BGM	0.0085	91.960	8.239
EABZB118B	B	C1	2	1	102.512	8.094	0.127	15	BGM	0.0085	102.110	8.062
EABZB119B	B	C1	2	1	98.392	7.736	0.127	15	BGM	0.0084	97.775	7.688
EABZB215B	B	C2	2	2	**	8.303	0.127	15	HIT/BGM	0.0085		8.281
EABZB216B	B	C2	2	2	84.317	8.061	0.127	15	BGM	0.0085	84.078	8.038
EABZB217B	B	C2	2	2	88.592	8.128	0.127	15	BGM	0.0085	88.366	8.108
EABZB218B*	B	C2	2	2	82.690		0.128	15	BGM	0.0085	82.771	
EABZC116B	C	C1	3	1	104.268	8.360	0.126	15	BGM	0.0084	103.399	8.291
EABZC117B	C	C1	3	1	91.625	8.245	0.127	15	BGM	0.0084	90.933	8.183
EABZC118B	C	C1	3	1	101.843	8.526	0.126	15	BGM	0.0084	100.805	8.439
EABZC119B*	C	C1	3	1	91.089		0.126	15	BGM	0.0084	89.696	
EABZC215B	C	C2	3	2	86.781	8.070	0.127	15	BGM	0.0085	86.270	8.022
EABZC216B	C	C2	3	2	102.676	8.036	0.127	15	BGM	0.0084	102.042	7.986
EABZC217B	C	C2	3	2	92.664	8.230	0.127	15	BGM	0.0085	92.473	8.214

* Specimen was not gaged and tested for strength only.
** Strength not reported due to dominant bad failure mode.

Average	**93.152**	**8.109**	**$Average_{norm}$**	**0.0085**	**93.260**	**8.111**
Standard Dev.	**6.701**	**0.233**	**$Standard\ Dev._{norm}$**		**6.368**	**0.177**
Coeff. of Var. [%]	**7.194**	**2.873**	**Coeff. of Var. [%]$_{norm}$**		**6.828**	**2.181**
Min.	**82.690**	**7.691**	**Min.**	**0.0084**	**82.771**	**7.688**
Max.	**104.268**	**8.526**	**Max.**	**0.0088**	**103.399**	**8.439**
Number of Spec.	**21**	**18**	**Number of Spec.**	**22**	**21**	**18**


Fill Compression Properties (FC)--CTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Compression Strength [ksi]


Fill Compression Properties (FC)--CTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
Fill Compression Modulus [Msi]

Fill Compression Properties (FC)--RTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

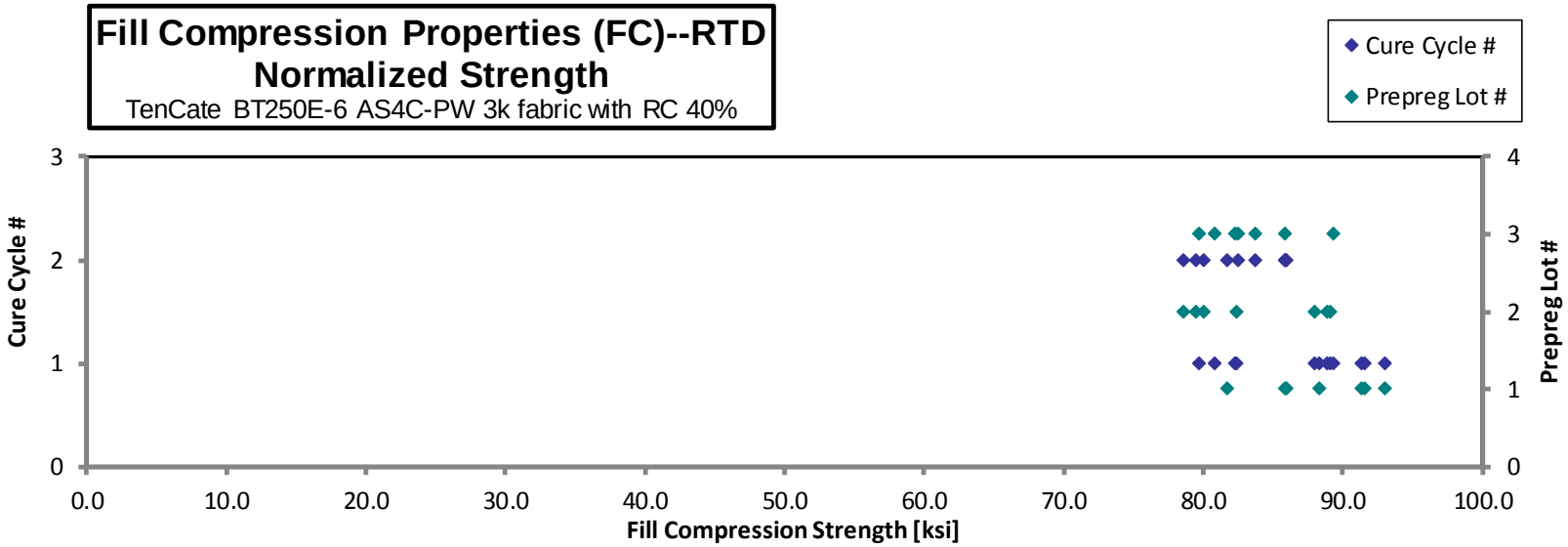
normalizing t_{ply} [in]: 0.0085

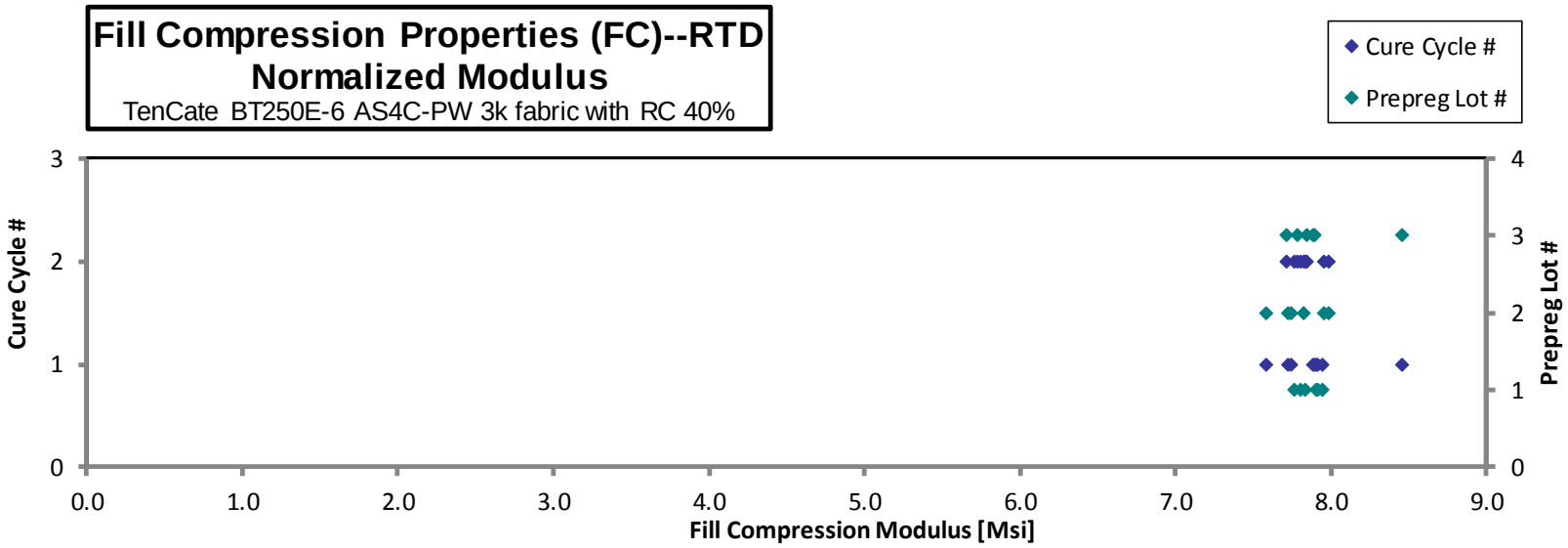
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EABZA111A	A	C1	1	1	92.628	7.875	0.128	15	BGM	0.0085	93.019	7.909
EABZA112A	A	C1	1	1	87.261	7.851	0.129	15	BGM/HIB	0.0086	88.322	7.946
EABZA113A	A	C1	1	1	89.835	7.780	0.130	15	BGM	0.0086	91.253	7.903
EABZA114A*	A	C1	1	1	89.504		0.130	15	BGM	0.0087	91.469	
EABZA211A	A	C2	1	2	81.136	7.711	0.128	15	BAT	0.0086	81.685	7.763
EABZA212A	A	C2	1	2	85.660	7.790	0.128	15	BGM	0.0085	85.811	7.803
EABZA213A	A	C2	1	2	85.888	7.836	0.127	15	BGM	0.0085	85.879	7.835
EABZB111A	B	C1	2	1	89.817	7.661	0.126	15	BGM	0.0084	88.813	7.576
EABZB112A	B	C1	2	1	89.648	7.799	0.127	15	BGM	0.0084	89.033	7.746
EABZB113A	B	C1	2	1	82.748	7.758	0.127	15	BGM	0.0085	82.374	7.723
EABZB114A*	B	C1	2	1	88.162		0.127	15	BGM	0.0085	87.945	
EABZB211A	B	C2	2	2	79.502	7.916	0.126	15	BGM/HGM	0.0084	78.582	7.825
EABZB212A	B	C2	2	2	**	8.009	0.127	15	BGM/HIB	0.0084		7.949
EABZB213A	B	C2	2	2	80.159	8.001	0.127	15	HGM	0.0085	79.970	7.982
EABZB214A*	B	C2	2	2	79.634		0.127	15	BGM	0.0085	79.384	
EABZC111A	C	C1	3	1	82.008	8.014	0.126	15	BGM	0.0084	80.802	7.896
EABZC112A	C	C1	3	1	**	8.596	0.125	15	BGM/HIB	0.0084		8.450
EABZC113A	C	C1	3	1	90.823	8.017	0.125	15	BGM/HGM	0.0084	89.256	7.878
EABZC114A*	C	C1	3	1	83.452		0.126	15	BGM	0.0084	82.242	
EABZC115A*	C	C1	3	1	80.575		0.126	15	HGM	0.0084	79.714	
EABZC211A	C	C2	3	2	81.998	7.797	0.128	15	BGM/HGM	0.0085	82.465	7.841
EABZC212A	C	C2	3	2	85.530	7.677	0.128	15	BGM	0.0085	85.857	7.706
EABZC213A	C	C2	3	2	**	7.794	0.127	15	BGM/HIB	0.0085		7.783
EABZC214A*	C	C2	3	2	84.075		0.127	15	BGM	0.0085	83.687	

* Specimen was not gaged and tested for strength only.

** Strength not reported due to dominant bad failure mode.

Average	**85.240**	**7.882**	**$Average_{norm}$**	**0.0085**	**85.122**	**7.862**
Standard Dev.	**4.118**	**0.211**	**Standard $Dev._{norm}$**		**4.433**	**0.178**
Coeff. of Var. [%]	**4.832**	**2.676**	**Coeff. of Var. $[\%]_{norm}$**		**5.207**	**2.269**
Min.	**79.502**	**7.661**	**Min.**	**0.0084**	**78.582**	**7.576**
Max.	**92.628**	**8.596**	**Max.**	**0.0087**	**93.019**	**8.450**
Number of Spec.	**21**	**18**	**Number of Spec.**	**24**	**21**	**18**


Fill Compression Properties (FC)--RTD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Compression Strength [ksi]


Fill Compression Properties (FC)--RTD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
Fill Compression Modulus [Msi]

Fill Compression Properties (FC)--ETD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

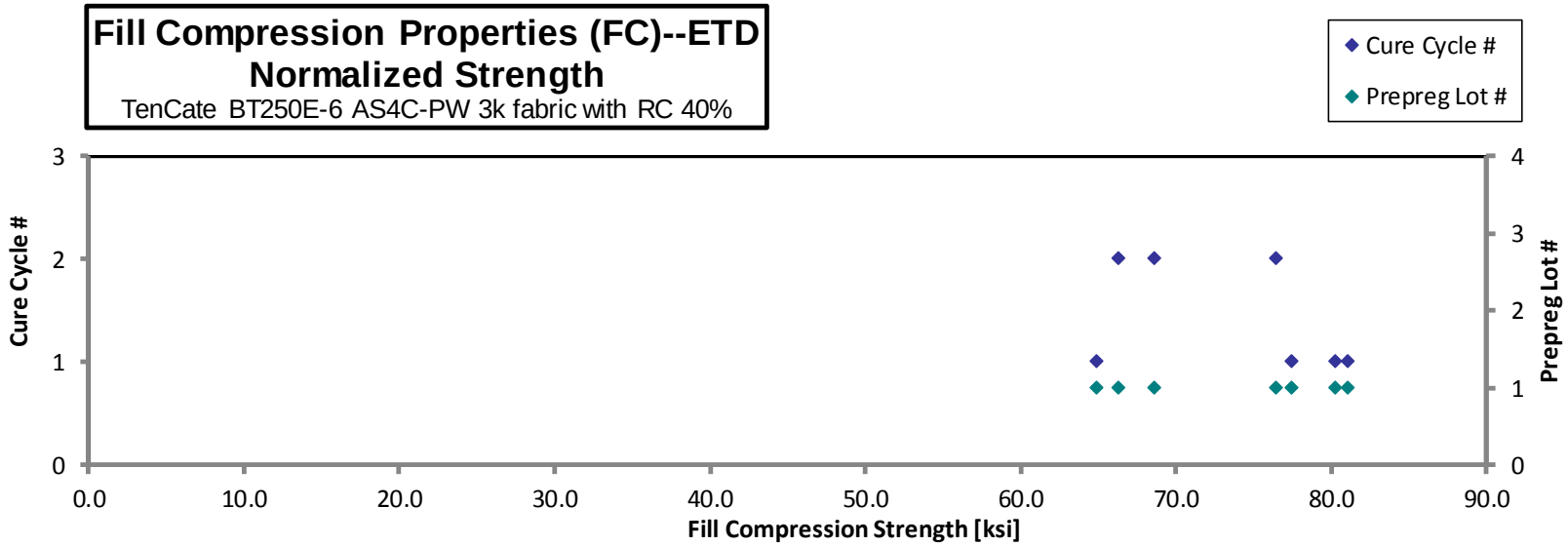
normalizing t_{ply} [in]
0.0085

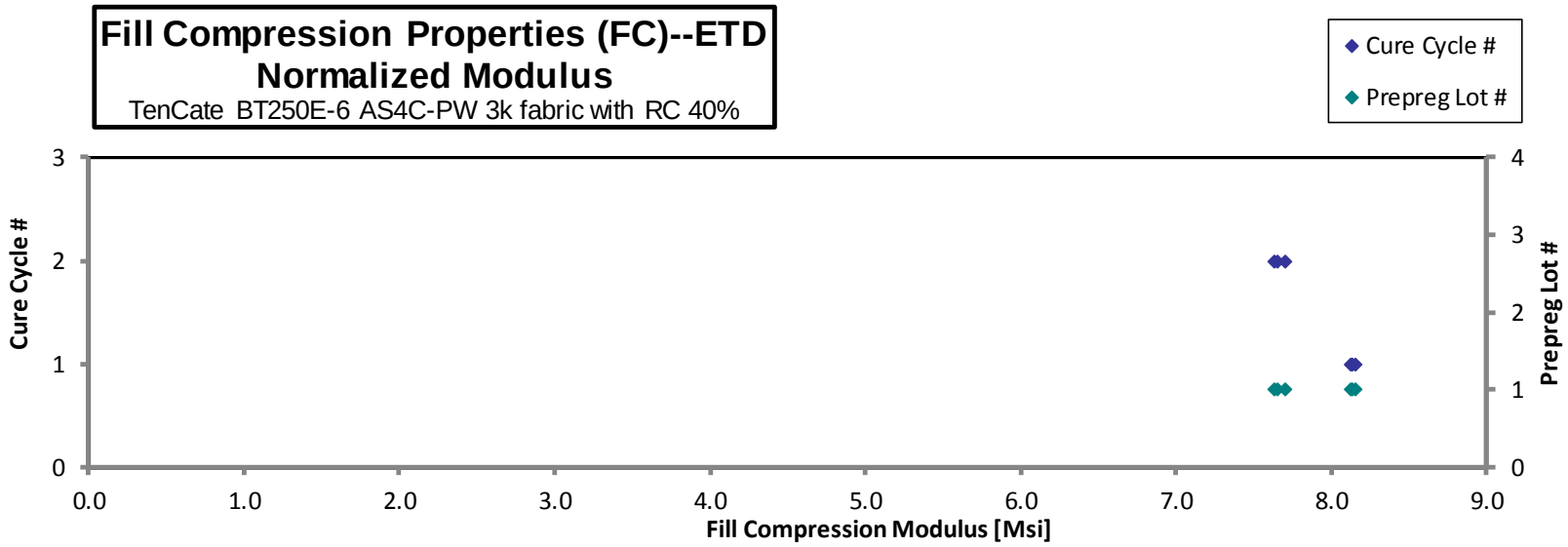
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EABZA11BC	A	C1	1	1	77.377	7.868	0.132	15	BGM	0.0088	80.222	8.157
EABZA11CC	A	C1	1	1	78.115	7.840	0.132	15	BGM/CIT	0.0088	81.002	8.130
EABZA11DC	A	C1	1	1	74.576	7.819	0.132	15	BGM/HIB	0.0088	77.427	8.118
EABZA11EC*	A	C1	1	1	64.293		0.129	15	BGM	0.0086	64.866	
EABZA219C	A	C2	1	2	65.575	7.555	0.129	15	BGM	0.0086	66.218	7.629
EABZA21AC	A	C2	1	2	68.173	7.597	0.128	15	BGM	0.0086	68.614	7.646
EABZA21BC	A	C2	1	2	**	7.663	0.128	15	HIT/BGM	0.0085		7.696
EABZA21CC*	A	C2	1	2	76.281		0.128	15	BAB	0.0085	76.453	

* Specimen was not gaged and tested for strength only.

** Strength not reported due to dominant bad failure mode.

Average	**72.056**	**7.724**		**$Average_{norm}$**	**0.0087**	**73.543**	**7.896**
Standard Dev.	**5.868**	**0.135**		**$Standard\ Dev._{norm}$**		**6.795**	**0.263**
Coeff. of Var. [%]	**8.143**	**1.751**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**9.239**	**3.329**
Min.	**64.293**	**7.555**		**Min.**	**0.0085**	**64.866**	**7.629**
Max.	**78.115**	**7.868**		**Max.**	**0.0088**	**81.002**	**8.157**
Number of Spec.	**7**	**6**		**Number of Spec.**	**8**	**7**	**6**


Fill Compression Properties (FC)--ETD
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
Fill Compression Strength [ksi]


Fill Compression Properties (FC)--ETD
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
9.0
Fill Compression Modulus [Msi]

Fill Compression Properties (FC)--ETW
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

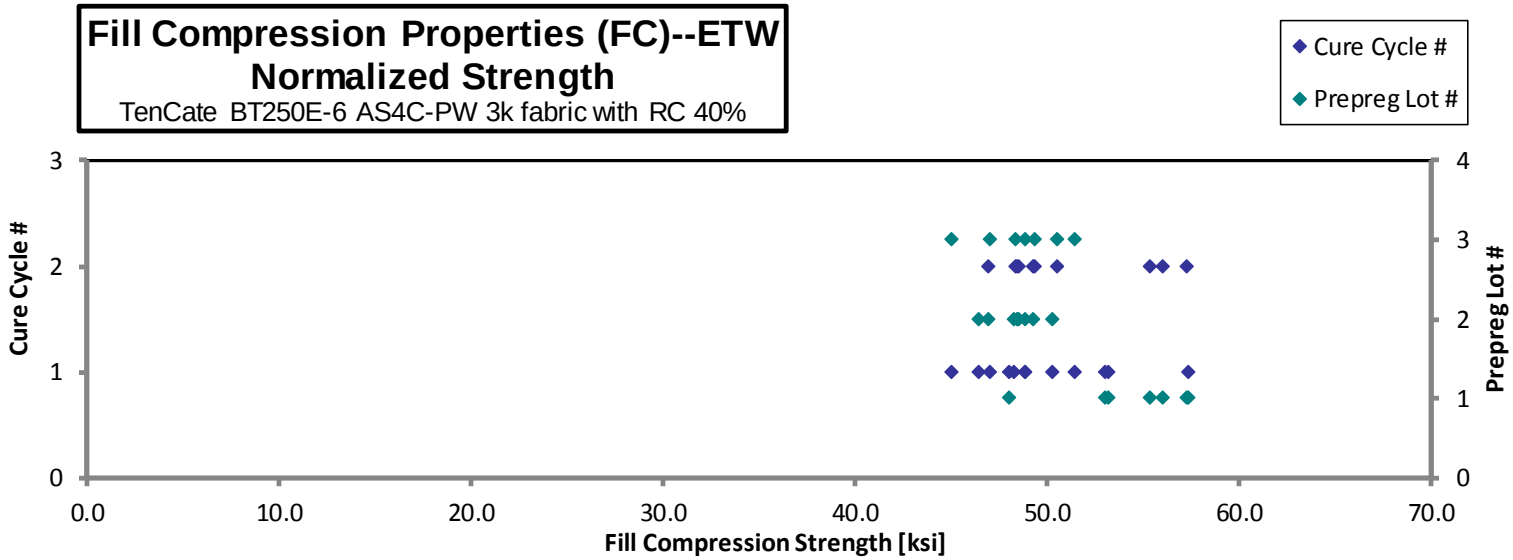
normalizing t_{ply} [in]
0.0085

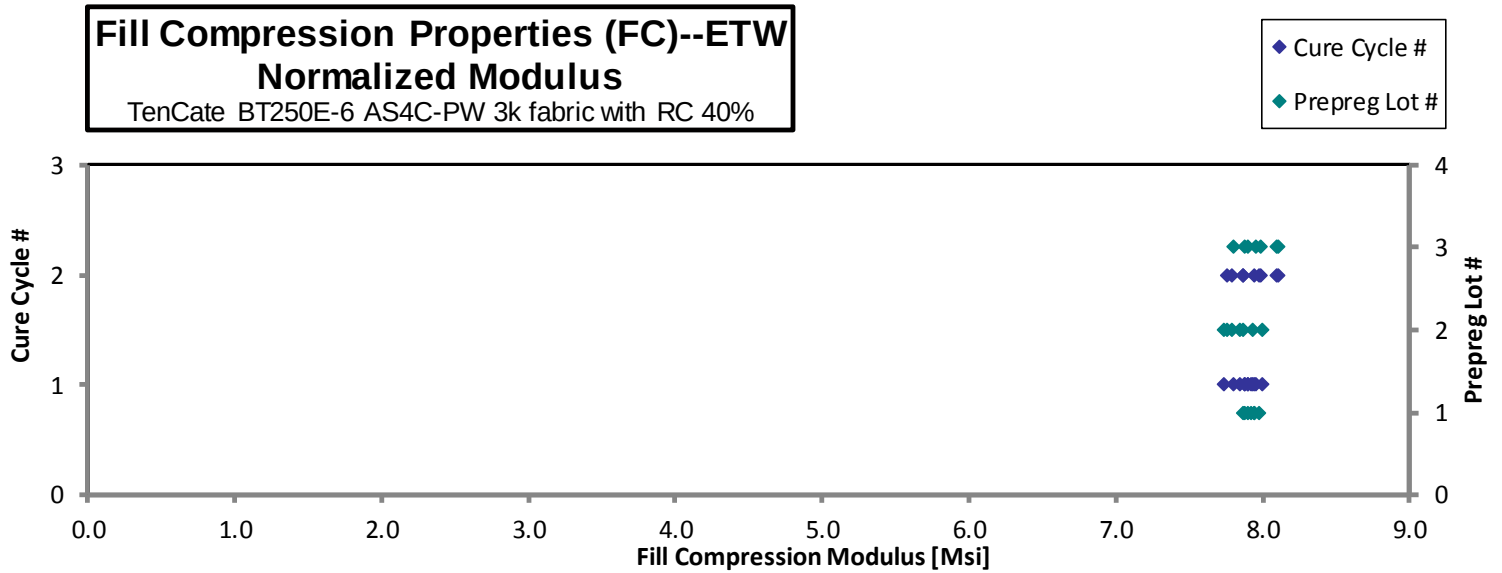
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
EABZA11GD	A	C1	1	1		7.735	0.130	15	HGM	0.0087		7.898
EABZA11HD	A	C1	1	1		7.682	0.131	15	HGM	0.0087		7.872
EABZA11ID	A	C1	1	1		7.731	0.131	15	HGM	0.0087		7.918
EABZA11JD	A	C1	1	1		7.737	0.131	15	HGM	0.0087		7.941
EABZA11KD	A	C1	1	1	51.567		0.131	15	HGM	0.0088	53.164	
EABZA11LD	A	C1	1	1	55.329		0.132	15	HGM	0.0088	57.347	
EABZA11MD	A	C1	1	1	46.341		0.132	15	HAB	0.0088	47.972	
EABZA11ND	A	C1	1	1	51.220		0.132	15	HGM	0.0088	53.008	
EABZA21DD	A	C2	1	2		7.908	0.128	15	BGM	0.0085		7.936
EABZA21ED	A	C2	1	2		7.829	0.128	15	BGM	0.0085		7.862
EABZA21FD	A	C2	1	2		7.930	0.128	15	HGM	0.0086		7.977
EABZA21GD	A	C2	1	2	54.917		0.129	15	HGM	0.0086	55.353	
EABZA21HD	A	C2	1	2	55.730		0.131	15	HGM	0.0087	57.266	
EABZA21ID	A	C2	1	2	54.327		0.131	15	BGM	0.0088	55.962	
EABZB11BD	B	C1	2	1		7.728	0.128	15	HGM	0.0085		7.737
EABZB11CD	B	C1	2	1		7.833	0.128	15	HGM	0.0085		7.838
EABZB11DD	B	C1	2	1		7.971	0.128	15	HGM	0.0085		7.997
EABZB11ED	B	C1	2	1		7.891	0.128	15	HGM	0.0085		7.934
EABZB11FD	B	C1	2	1	46.106		0.128	15	HGM	0.0086	46.423	
EABZB11GD	B	C1	2	1	48.439		0.128	15	HGM	0.0086	48.809	
EABZB11HD	B	C1	2	1	49.902		0.128	15	HGM	0.0086	50.249	
EABZB11ID	B	C1	2	1	47.896		0.128	15	HGM	0.0086	48.262	
EABZB219D	B	C2	2	2		7.923	0.127	15	HGM	0.0084		7.864
EABZB21BD	B	C2	2	2		7.833	0.127	15	HGM	0.0084		7.786
EABZB21CD	B	C2	2	2	48.435		0.127	15	HGM	0.0085	48.383	
EABZB21DD	B	C2	2	2	49.434		0.127	15	HGM	0.0085	49.260	
EABZB21ED	B	C2	2	2	47.216		0.127	15	BGM	0.0084	46.905	
EABZB21FD*	B	C2	2	2	48.852	7.814	0.127	15	HGM	0.0084	48.498	7.757
EABZC11BD	C	C1	3	1		7.964	0.125	15	BGM	0.0083		7.798
EABZC11CD	C	C1	3	1		8.035	0.125	15	HGM	0.0084		7.894
EABZC11DD	C	C1	3	1		7.978	0.126	15	BGM	0.0084		7.871
EABZC11ED	C	C1	3	1		8.060	0.126	15	HGM	0.0084		7.954
EABZC11FD	C	C1	3	1	45.571		0.126	15	HGM	0.0084	44.995	
EABZC11GD	C	C1	3	1	49.172		0.127	15	HGM	0.0084	48.796	
EABZC11HD	C	C1	3	1	47.295		0.127	15	HGM	0.0085	47.021	
EABZC11ID	C	C1	3	1	51.750		0.127	15	HGM	0.0084	51.425	
EABZC219D	C	C2	3	2		7.896	0.129	15	BGM	0.0086		7.988
EABZC21AD	C	C2	3	2		8.052	0.128	15	HGM	0.0086		8.101
EABZC21BD	C	C2	3	2		8.065	0.128	15	HGM	0.0085		8.095
EABZC21CD	C	C2	3	2	48.169		0.128	15	HGM	0.0085	48.296	
EABZC21DD	C	C2	3	2	50.245		0.128	15	BGM	0.0085	50.476	
EABZC21ED	C	C2	3	2	49.104		0.128	15	BGM	0.0085	49.331	

*Strength is reported because SG was gaged after conditioning with a room temp cure adhesive.

	Strength	Modulus
Average	**49.864**	**7.886**
Standard Dev.	**3.007**	**0.120**
Coeff. of Var. [%]	**6.029**	**1.521**
Min.	**45.571**	**7.682**
Max.	**55.730**	**8.065**
Number of Spec.	**22**	**21**

	Avg. t_{ply}	$Strength_{norm}$	$Modulus_{norm}$
$Average_{norm}$	**0.0086**	**50.327**	**7.906**
Standard $Dev._{norm}$		**3.553**	**0.097**
Coeff. of Var. $[\%]_{norm}$		**7.059**	**1.222**
Min.	**0.0083**	**44.995**	**7.737**
Max.	**0.0088**	**57.347**	**8.101**
Number of Spec.	**42**	**22**	**21**


Fill Compression Properties (FC)--ETW
Normalized Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
0
1
2
3
4

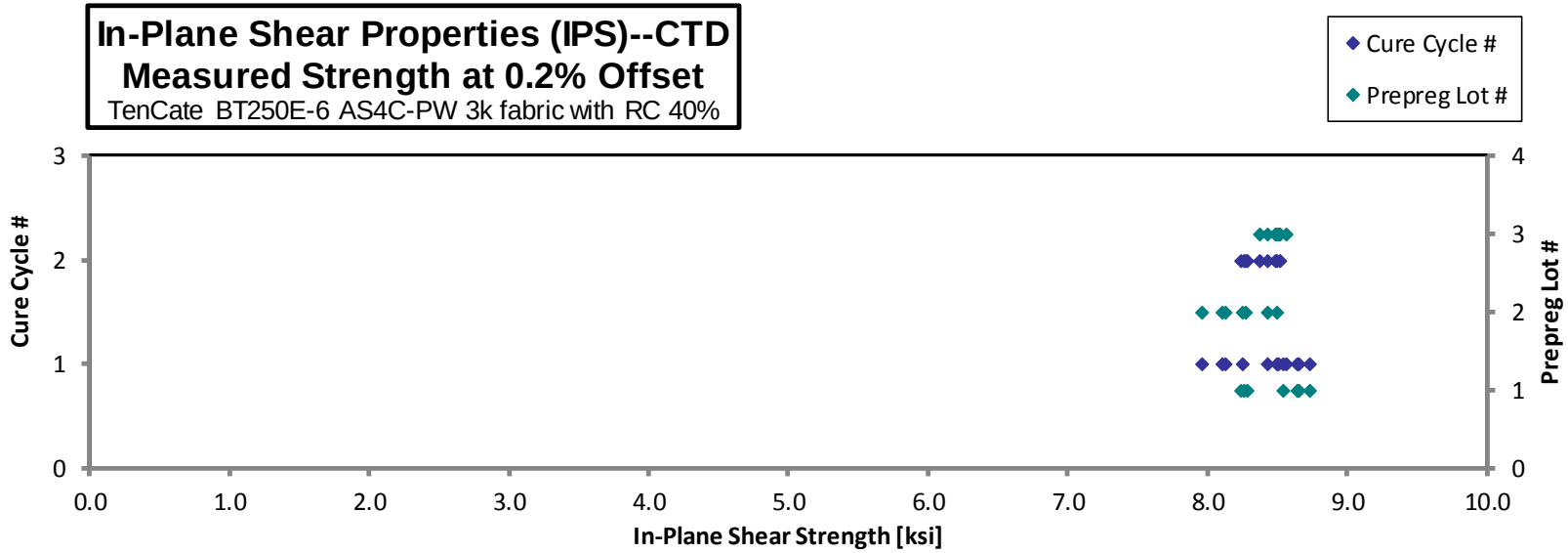

Fill Compression Properties (FC)--ETW
Normalized Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
0
1
2
3
4

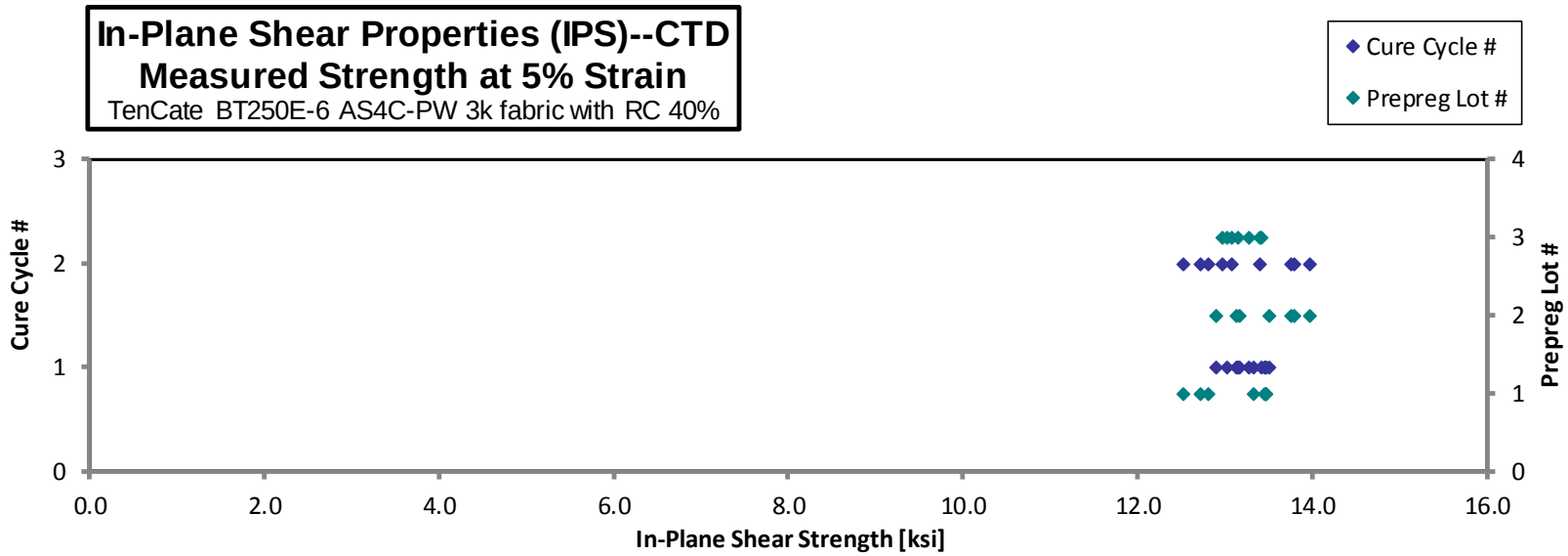
4.5 In-Plane Shear Properties (IPS)

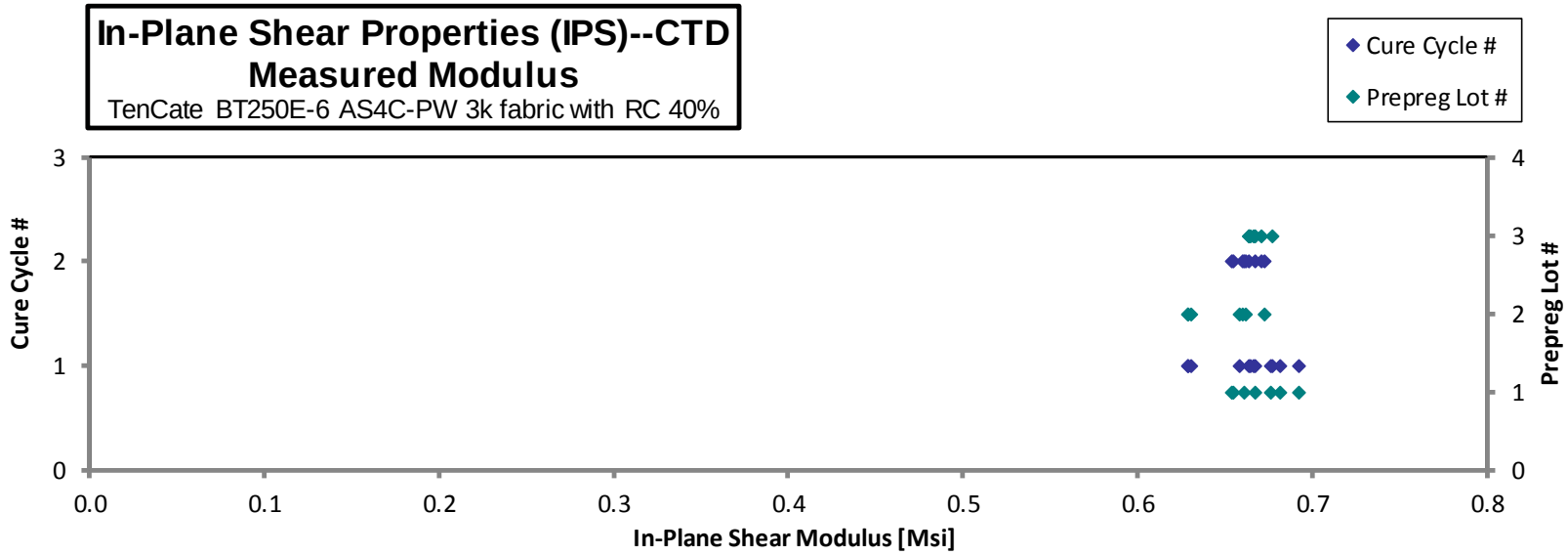
In-Plane Shear Properties (IPS)--CTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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]
EABNA116B	A	C1	1	1	8.538	13.444	0.676	0.102	12	0.0085
EABNA117B	A	C1	1	1	8.636	13.465	0.667	0.102	12	0.0085
EABNA118B	A	C1	1	1	8.646	13.472	0.681	0.102	12	0.0085
EABNA119B	A	C1	1	1	8.724	13.316	0.692	0.099	12	0.0082
EABNA215B	A	C2	1	2	8.285	12.717	0.660	0.105	12	0.0087
EABNA216B	A	C2	1	2	8.254	12.799	0.654	0.105	12	0.0087
EABNA217B	A	C2	1	2	8.237	12.517	0.655	0.103	12	0.0085
EABNB116B	B	C1	2	1	8.101	13.163	0.630	0.108	12	0.0090
EABNB117B	B	C1	2	1	8.129	13.133	0.629	0.107	12	0.0089
EABNB118B	B	C1	2	1	7.957	12.890	0.629	0.106	12	0.0088
EABNB119B	B	C1	2	1	8.245	13.497	0.658	0.105	12	0.0088
EABNB215B	B	C2	2	2	8.424	13.973	0.662	0.103	12	0.0085
EABNB216B	B	C2	2	2	8.274	13.786	0.659	0.103	12	0.0086
EABNB217B	B	C2	2	2	8.490	13.742	0.672	0.102	12	0.0085
EABNC116B	C	C1	3	1	8.506	13.010	0.666	0.102	12	0.0085
EABNC117B	C	C1	3	1	8.564	13.406	0.677	0.102	12	0.0085
EABNC118B	C	C1	3	1	8.494	13.137	0.664	0.102	12	0.0085
EABNC119B	C	C1	3	1	8.426	13.271	0.664	0.103	12	0.0085
EABNC215B	C	C2	3	2	8.373	12.955	0.670	0.103	12	0.0086
EABNC216B	C	C2	3	2	8.487	13.074	0.663	0.103	12	0.0086
EABNC217B	C	C2	3	2	8.515	13.392	0.667	0.103	12	0.0085

Average	**8.396**	**13.246**	**0.662**	**Average**	**0.0086**
Standard Dev.	**0.197**	**0.365**	**0.016**	**Standard Dev.**	
Coeff. of Var. [%]	**2.348**	**2.753**	**2.460**	**Coeff. of Var. [%]**	
Min.	**7.957**	**12.517**	**0.629**	**Min.**	**0.0082**
Max.	**8.724**	**13.973**	**0.692**	**Max.**	**0.0090**
Number of Spec.	**21**	**21**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS)--CTD
Measured Strength at 0.2% Offset
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
10.0

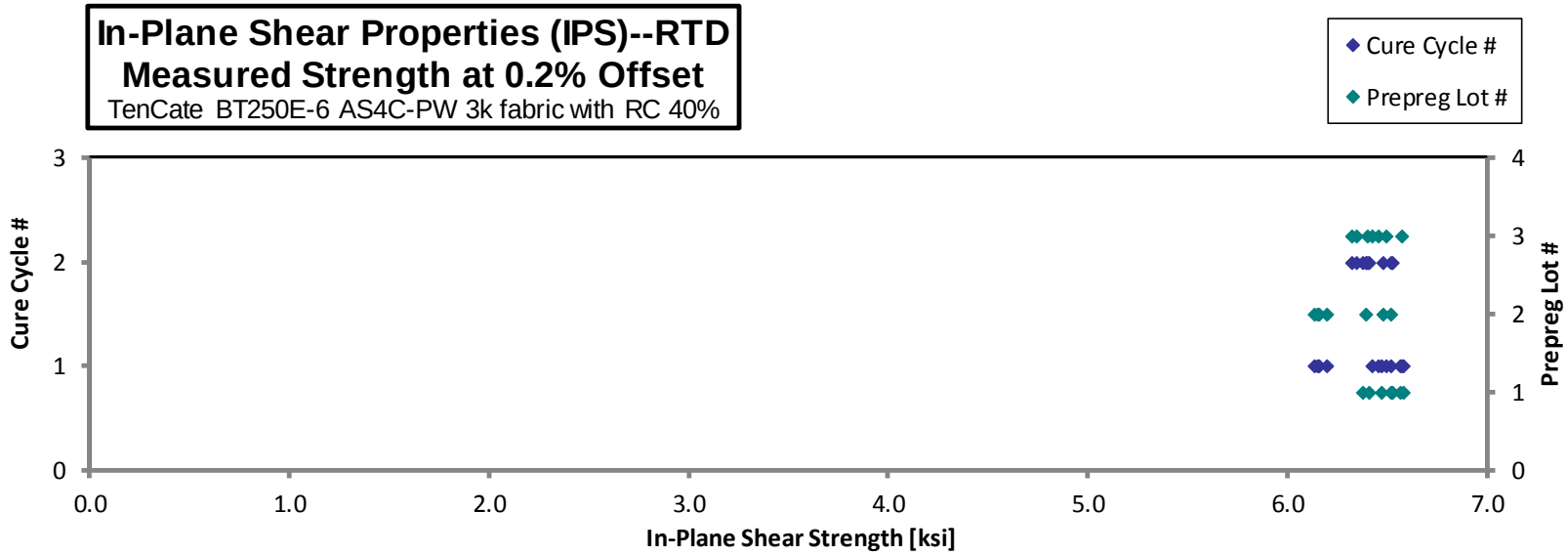

In-Plane Shear Properties (IPS)--CTD
Measured Strength at 5% Strain
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0

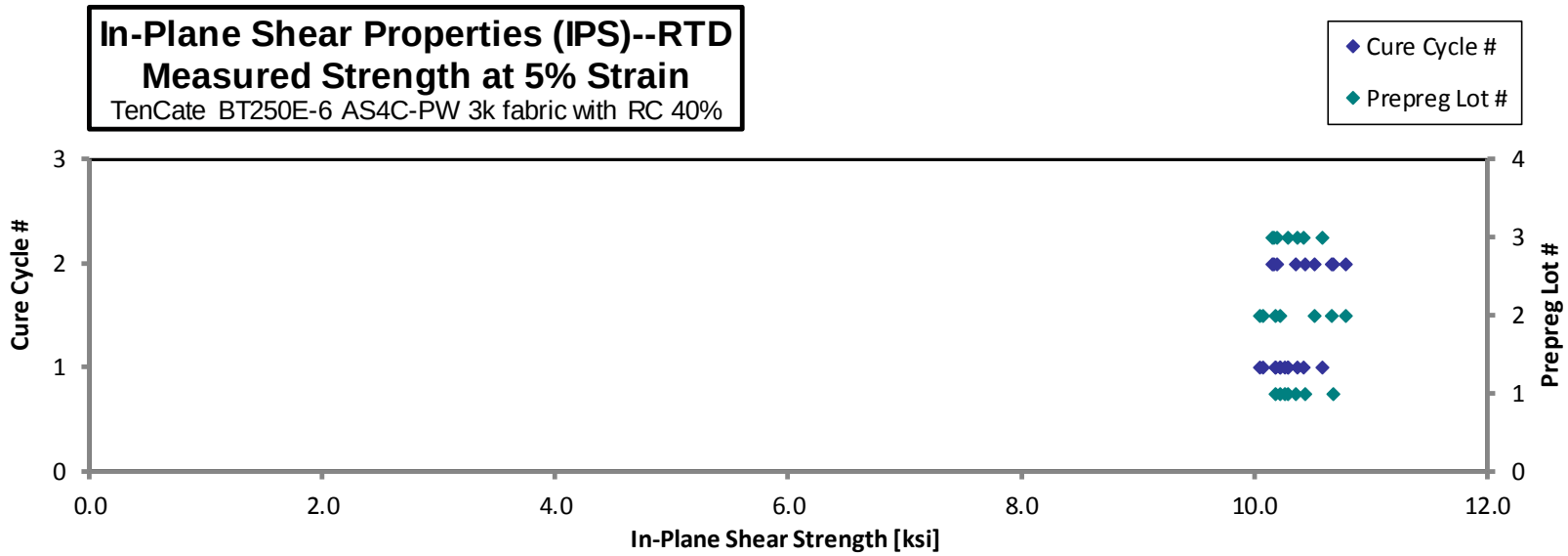

In-Plane Shear Properties (IPS)--CTD
Measured Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8

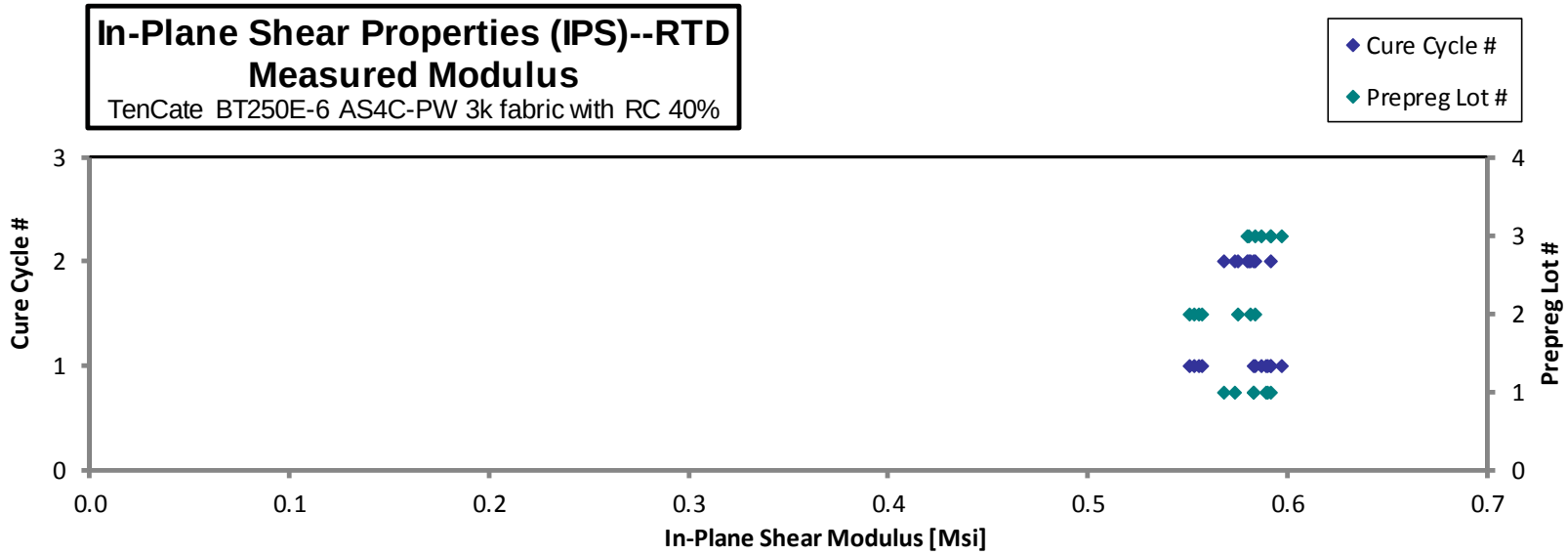
In-Plane Shear Properties (IPS)--RTD
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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]
EABNA111A	A	C1	1	1	6.583	10.217	0.590	0.100	12	0.0083
EABNA112A	A	C1	1	1	6.472	10.185	0.583	0.101	12	0.0084
EABNA113A	A	C1	1	1	6.562	10.291	0.589	0.101	12	0.0084
EABNA114A	A	C1	1	1	6.515	10.260	0.591	0.101	12	0.0085
EABNA211A	A	C2	1	2	6.527	10.668	0.583	0.102	12	0.0085
EABNA212A	A	C2	1	2	6.373	10.430	0.568	0.105	12	0.0087
EABNA213A	A	C2	1	2	6.404	10.353	0.573	0.104	12	0.0087
EABNB111A	B	C1	2	1	6.159	10.050	0.553	0.105	12	0.0088
EABNB112A	B	C1	2	1	6.134	10.072	0.556	0.106	12	0.0088
EABNB113A	B	C1	2	1	6.198	10.218	0.557	0.107	12	0.0089
EABNB114A	B	C1	2	1	6.145	10.176	0.550	0.107	12	0.0089
EABNB211A	B	C2	2	2	6.393	10.520	0.575	0.102	12	0.0085
EABNB212A	B	C2	2	2	6.479	10.660	0.582	0.102	12	0.0085
EABNB213A	B	C2	2	2	6.516	10.779	0.584	0.102	12	0.0085
EABNC111A	C	C1	3	1	6.421	10.288	0.584	0.102	12	0.0085
EABNC112A	C	C1	3	1	6.489	10.418	0.591	0.101	12	0.0084
EABNC113A	C	C1	3	1	6.572	10.587	0.597	0.101	12	0.0084
EABNC114A	C	C1	3	1	6.453	10.360	0.586	0.102	12	0.0085
EABNC211A	C	C2	3	2	6.403	10.149	0.591	0.101	12	0.0084
EABNC212A	C	C2	3	2	6.342	10.170	0.580	0.103	12	0.0086
EABNC213A	C	C2	3	2	6.324	10.189	0.579	0.104	12	0.0086

Average	**6.403**	**10.335**	**0.578**	**Average**	**0.0086**
Standard Dev.	**0.141**	**0.206**	**0.014**	**Standard Dev.**	
Coeff. of Var. [%]	**2.207**	**1.991**	**2.387**	**Coeff. of Var. [%]**	
Min.	**6.134**	**10.050**	**0.550**	**Min.**	**0.0083**
Max.	**6.583**	**10.779**	**0.597**	**Max.**	**0.0089**
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 AS4C-PW 3k fabric with RC 40%
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
In-Plane Shear Strength [ksi]


In-Plane Shear Properties (IPS)--RTD
Measured Strength at 5% Strain
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
In-Plane Shear Strength [ksi]

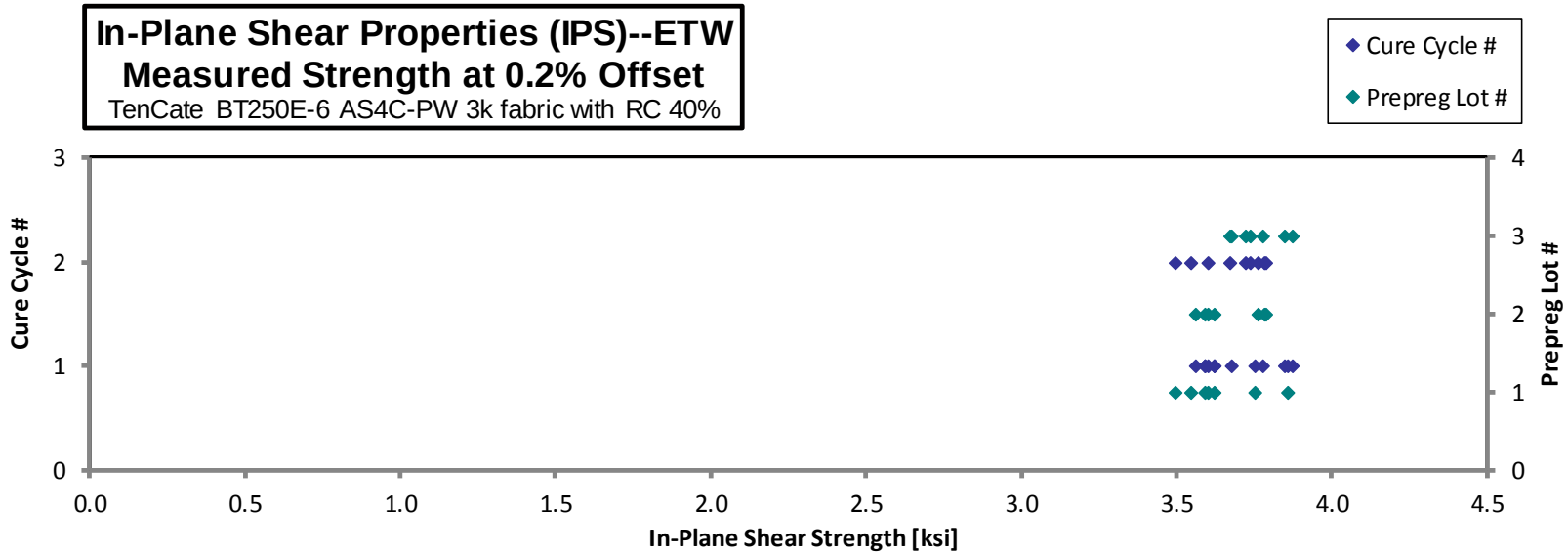

In-Plane Shear Properties (IPS)--RTD
Measured Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0
1
2
3
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
4

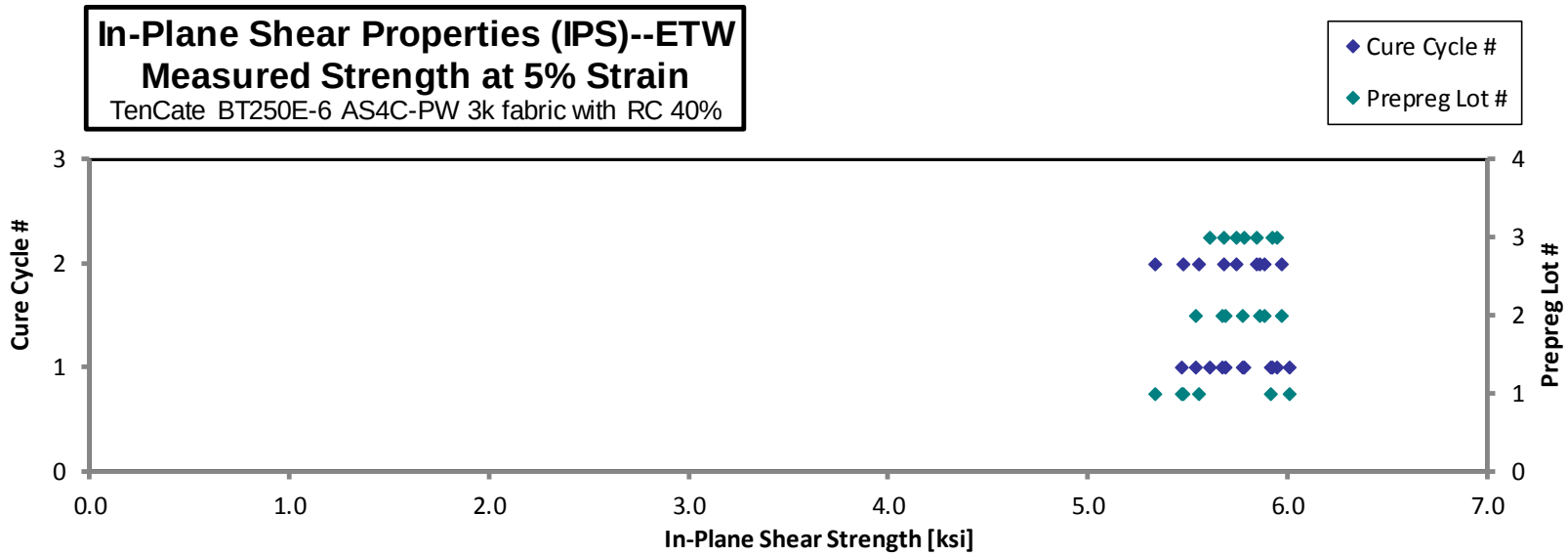
In-Plane Shear Properties (IPS)--ETW
Strength & Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

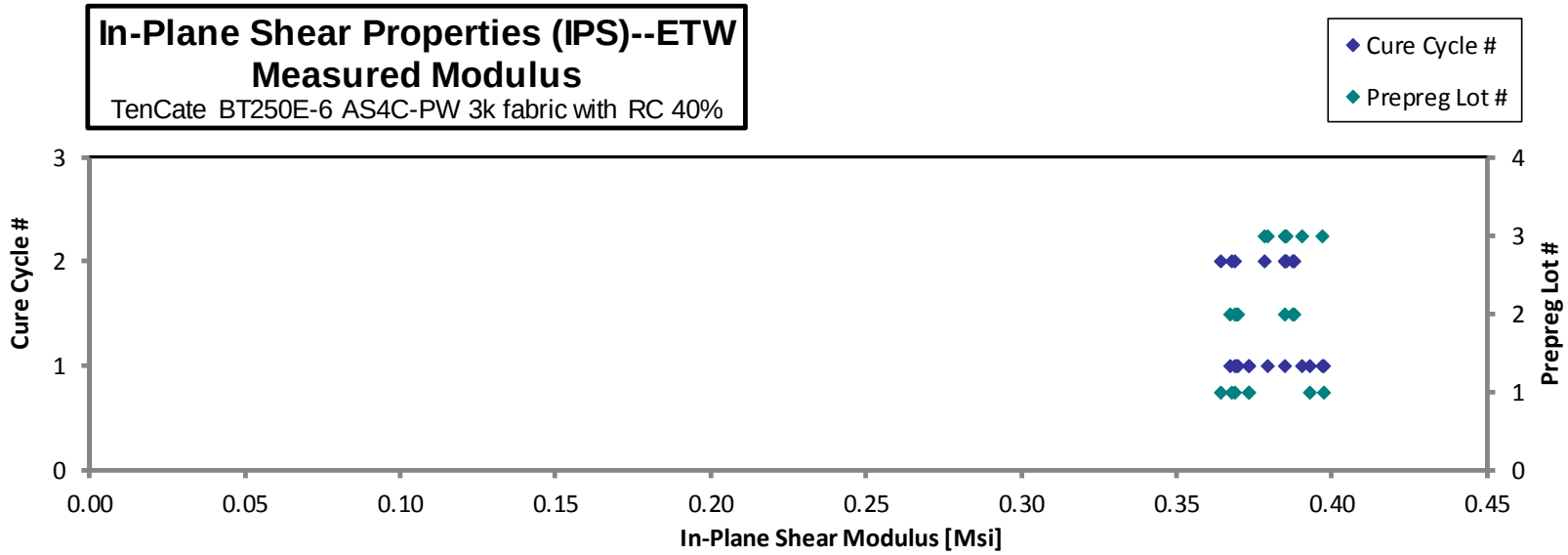
Specimen Number	EAC Batch #	EAC Cure Cycle	Prepreg Lot #	Cure Cycle #	0.2% Offset Strength [ksi]	Strength at 5% Strain [ksi]	Modulus [Msi]	Avg. Specimen Thickness [in]	# Plies in Laminate	Avg. t_{ply} [in]
EABNA11BD	A	C1	1	1	3.859	6.010	0.393	0.101	12	0.0084
EABNA11CD	A	C1	1	1	3.751	5.916	0.398	0.102	12	0.0085
EABNA11DD*	A	C1	1	1	3.590		0.373	0.102	12	0.0085
EABNA11ED	A	C1	1	1	3.619	5.466	0.373	0.102	12	0.0085
EABNA219D	A	C2	1	2	3.497	5.337	0.364	0.103	12	0.0086
EABNA21AD	A	C2	1	2	3.545	5.474	0.368	0.103	12	0.0086
EABNA21BD	A	C2	1	2	3.598	5.555	0.369	0.104	12	0.0087
EABNB11BD	B	C1	2	1	3.559	5.538	0.367	0.107	12	0.0089
EABNB11CD	B	C1	2	1	3.619	5.772	0.369	0.108	12	0.0090
EABNB11DD	B	C1	2	1	3.600	5.689	0.370	0.107	12	0.0089
EABNB11ED	B	C1	2	1	3.588	5.670	0.368	0.107	12	0.0089
EABNB219D	B	C2	2	2	3.780	5.882	0.388	0.102	12	0.0085
EABNB21AD	B	C2	2	2	3.785	5.967	0.387	0.102	12	0.0085
EABNB21BD	B	C2	2	2	3.761	5.862	0.385	0.101	12	0.0084
EABNC11BD	C	C1	3	1	3.846	5.918	0.397	0.101	12	0.0084
EABNC11CD	C	C1	3	1	3.679	5.612	0.379	0.102	12	0.0085
EABNC11DD	C	C1	3	1	3.873	5.944	0.390	0.103	12	0.0085
EABNC11ED	C	C1	3	1	3.776	5.784	0.385	0.103	12	0.0086
EABNC219D	C	C2	3	2	3.735	5.741	0.385	0.103	12	0.0086
EABNC21AD	C	C2	3	2	3.719	5.844	0.385	0.104	12	0.0087
EABNC21BD	C	C2	3	2	3.673	5.681	0.378	0.104	12	0.0087

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

Average	**3.688**	**5.733**	**0.379**	**Average**	**0.0086**
Standard Dev.	**0.111**	**0.190**	**0.010**	**Standard Dev.**	
Coeff. of Var. [%]	**3.004**	**3.319**	**2.760**	**Coeff. of Var. [%]**	
Min.	**3.497**	**5.337**	**0.364**	**Min.**	**0.0084**
Max.	**3.873**	**6.010**	**0.398**	**Max.**	**0.0090**
Number of Spec.	**21**	**20**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS)--ETW
Measured Strength at 0.2% Offset
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
4.5
0
1
2
3
4


In-Plane Shear Properties (IPS)--ETW
Measured Strength at 5% Strain
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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)--ETW
Measured Modulus
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
0.45

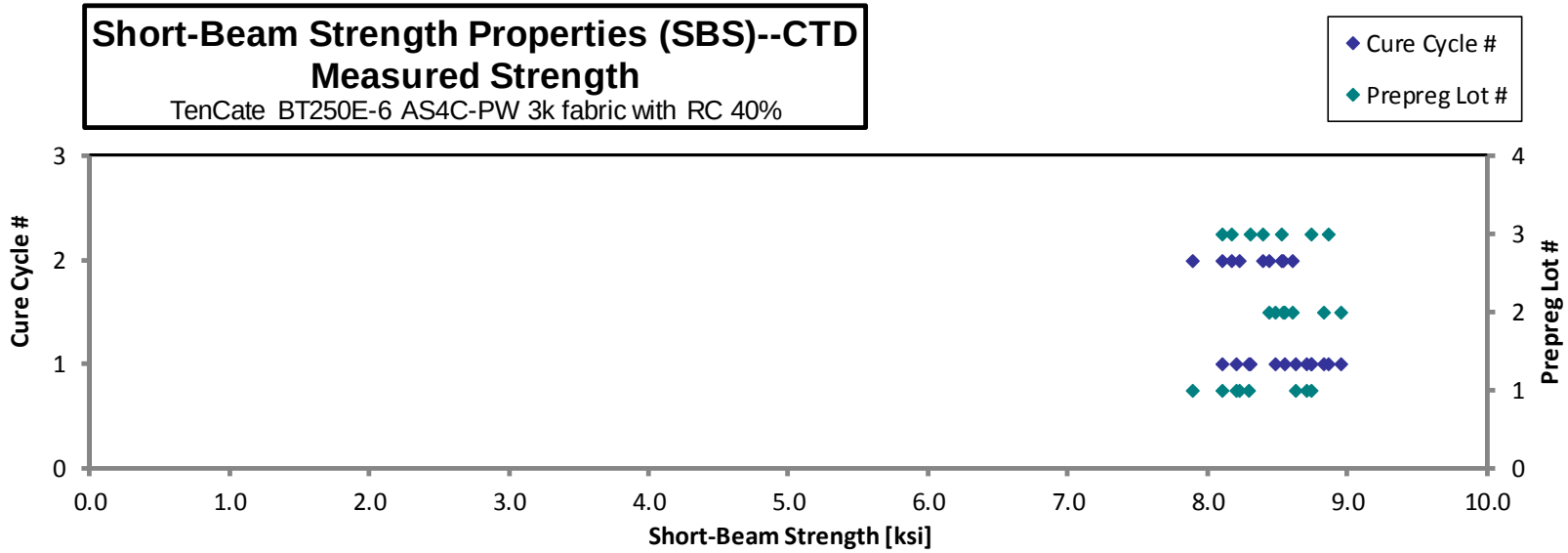
4.6 Lamina Short-Beam Strength Properties (SBS)

Short-Beam Strength Properties (SBS)--CTD
Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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
EABQA116B*	A	C1	1	1	8.631	0.268	32	0.0084	COMPRESSION
EABQA117B	A	C1	1	1	8.207	0.270	32	0.0084	ILS
EABQA118B	A	C1	1	1	8.292	0.272	32	0.0085	ILS
EABQA119B	A	C1	1	1	8.702	0.273	32	0.0085	ILS
EABQA11AB	A	C1	1	1	8.736	0.273	32	0.0085	ILS
EABQA215B	A	C2	1	2	7.885	0.268	32	0.0084	1st: COMPRESSION/ 2nd: ILS
EABQA216B	A	C2	1	2	8.107	0.271	32	0.0085	ILS
EABQA217B	A	C2	1	2	8.230	0.273	32	0.0085	ILS
EABQB116B	B	C1	2	1	8.482	0.264	32	0.0083	1st: ILS/ 2nd: COMPRESSION
EABQB117B	B	C1	2	1	8.550	0.267	32	0.0083	ILS
EABQB119B	B	C1	2	1	8.948	0.269	32	0.0084	ILS
EABQB11AB	B	C1	2	1	8.833	0.269	32	0.0084	ILS
EABQB214B	B	C2	2	2	8.605	0.261	32	0.0081	ILS
EABQB215B	B	C2	2	2	8.534	0.261	32	0.0082	ILS
EABQB216B	B	C2	2	2	8.433	0.262	32	0.0082	1st: ILS/ 2nd: COMPRESSION
EABQC115B	C	C1	3	1	8.738	0.267	32	0.0084	ILS
EABQC116B	C	C1	3	1	8.098	0.264	32	0.0082	ILS
EABQC117B	C	C1	3	1	8.304	0.267	32	0.0083	ILS
EABQC118B	C	C1	3	1	8.857	0.266	32	0.0083	ILS
EABQC215B	C	C2	3	2	8.167	0.258	32	0.0081	ILS
EABQC216B	C	C2	3	2	8.389	0.259	32	0.0081	ILS
EABQC217B	C	C2	3	2	8.524	0.261	32	0.0082	ILS

*4T span was used.
Span of 4.5T was used for all specimens except EABQA116B.

Average	**8.466**	**Average**	**0.0083**
Standard Dev.	**0.281**	**Standard Dev.**	
Coeff. of Var. [%]	**3.323**	**Coeff. of Var. [%]**	
Min.	**7.885**	**Min.**	**0.0081**
Max.	**8.948**	**Max.**	**0.0085**
Number of Spec.	**22**	**Number of Spec.**	**22**


Short-Beam Strength Properties (SBS)--CTD
Measured Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
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
10.0
0
1
2
3
4

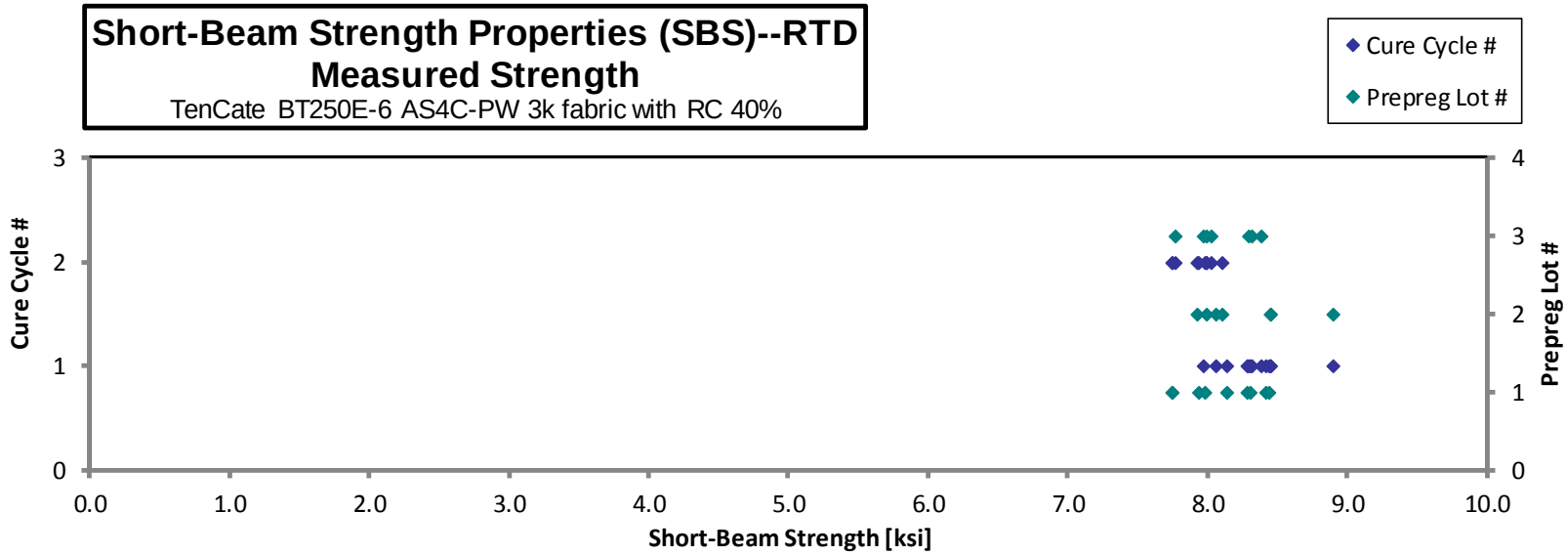
Short-Beam Strength Properties (SBS)--RTD
Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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
EABQA111A*	A	C1	1	1	8.130	0.264	32	0.0082	COMPRESSION
EABQA112A*	A	C1	1	1	8.309	0.266	32	0.0083	COMPRESSION
EABQA113A*	A	C1	1	1	8.417	0.267	32	0.0084	COMPRESSION
EABQA114A	A	C1	1	1	8.437	0.269	32	0.0084	ILS
EABQA115A	A	C1	1	1	8.275	0.269	32	0.0084	1st: COMPRESSION/ 2nd: ILS
EABQA211A	A	C2	1	2	7.746	0.262	32	0.0082	1st: ILS / 2nd: COMPRESSION
EABQA212A	A	C2	1	2	7.933	0.266	32	0.0083	ILS
EABQA213A	A	C2	1	2	7.978	0.268	32	0.0084	1st: ILS / 2nd: COMPRESSION
EABQA214A	A	C2	1	2	7.745	0.270	32	0.0084	1st: COMPRESSION/ 2nd: ILS
EABQB111A	B	C1	2	1	8.063	0.263	32	0.0082	COMPRESSION
EABQB112A	B	C1	2	1	8.454	0.264	32	0.0082	1st: ILS / 2nd: COMPRESSION
EABQB113A	B	C1	2	1	8.447	0.266	32	0.0083	1st: ILS / 2nd: COMPRESSION
EABQB114A	B	C1	2	1	8.896	0.267	32	0.0083	COMPRESSION
EABQB211A	B	C2	2	2	7.922	0.258	32	0.0081	1st:COMPRESSION / 2nd: ILS
EABQB212A	B	C2	2	2	7.990	0.260	32	0.0081	ILS
EABQB213A	B	C2	2	2	8.108	0.261	32	0.0082	1st: ILS / 2nd: COMPRESSION
EABQC111A	C	C1	3	1	7.966	0.262	32	0.0082	ILS
EABQC112A	C	C1	3	1	8.386	0.264	32	0.0082	COMPRESSION
EABQC113A	C	C1	3	1	8.296	0.265	32	0.0083	ILS
EABQC114A	C	C1	3	1	8.320	0.266	32	0.0083	COMPRESSION
EABQC211A	C	C2	3	2	7.766	0.257	32	0.0080	1st: ILS/ 2nd: COMPRESSION
EABQC212A	C	C2	3	2	7.994	0.259	32	0.0081	1st: ILS/ 2nd: COMPRESSION
EABQC213A	C	C2	3	2	8.025	0.260	32	0.0081	ILS

*4T span was used.

Span of 4.5T was used for all specimens except EABQA111A, EABQA112A, EABQA113A.

Average	**8.157**	**Average**	**0.0082**
Standard Dev.	**0.282**	**Standard Dev.**	
Coeff. of Var. [%]	**3.458**	**Coeff. of Var. [%]**	
Min.	**7.745**	**Min.**	**0.0080**
Max.	**8.896**	**Max.**	**0.0084**
Number of Spec.	**23**	**Number of Spec.**	**23**

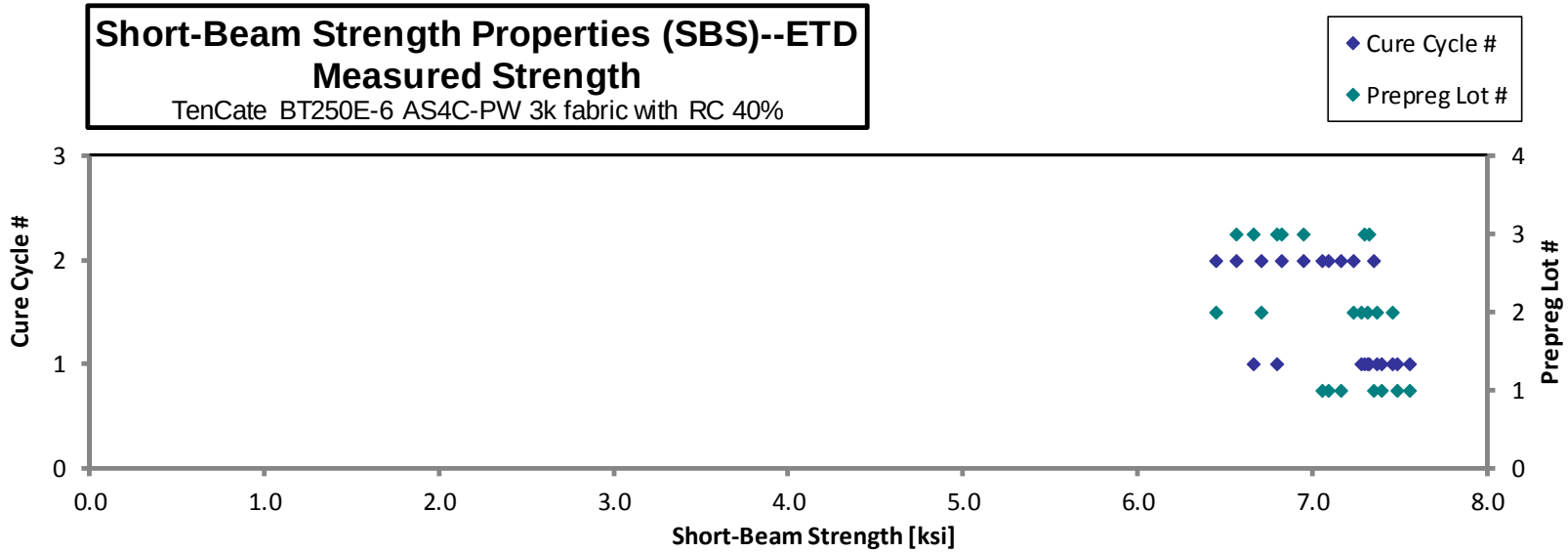

Short-Beam Strength Properties (SBS)--RTD
Measured Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0
1
2
3
4
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0

Short-Beam Strength Properties (SBS)--ETD
Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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
EABQA11BC*	A	C1	1	1	7.554	0.269	32	0.0084	COMPRESSION/ ILS
EABQA11CC	A	C1	1	1	7.398	0.270	32	0.0085	ILS
EABQA11FC	A	C1	1	1	7.483	0.275	32	0.0086	ILS/ COMPRESSION
EABQA219C	A	C2	1	2	7.055	0.270	32	0.0084	COMPRESSION/ ILS
EABQA21AC	A	C2	1	2	7.087	0.273	32	0.0085	COMPRESSION/ ILS
EABQA21BC	A	C2	1	2	7.164	0.275	32	0.0086	ILS
EABQA21CC	A	C2	1	2	7.349	0.277	32	0.0087	ILS
EABQB11BC	B	C1	2	1	7.370	0.267	32	0.0083	COMPRESSION/ ILS
EABQB11CC	B	C1	2	1	7.456	0.269	32	0.0084	ILS
EABQB11DC	B	C1	2	1	7.315	0.268	32	0.0084	COMPRESSION/ ILS
EABQB11EC	B	C1	2	1	7.276	0.269	32	0.0084	ILS/ COMPRESSION
EABQB218C	B	C2	2	2	7.228	0.263	32	0.0082	COMPRESSION/ ILS
EABQB219C	B	C2	2	2	6.443	0.264	32	0.0082	COMPRESSION/ ILS
EABQB21AC	B	C2	2	2	6.709	0.265	32	0.0083	COMPRESSION/ ILS
EABQC11AC	C	C1	3	1	6.799	0.269	32	0.0084	ILS/ COMPRESSION
EABQC11BC	C	C1	3	1	6.659	0.262	32	0.0082	ILS/ COMPRESSION
EABQC11CC	C	C1	3	1	7.322	0.263	32	0.0082	ILS/ COMPRESSION
EABQC11DC	C	C1	3	1	7.291	0.265	32	0.0083	ILS/ COMPRESSION
EABQC21AC	C	C2	3	2	6.558	0.262	32	0.0082	ILS/ COMPRESSION
EABQC21BC	C	C2	3	2	6.818	0.261	32	0.0081	ILS/ COMPRESSION
EABQC21CC	C	C2	3	2	6.945	0.262	32	0.0082	ILS/ COMPRESSION

*4T span was used.
Span of 4.5T was used for all specimens except EABQA11BC.

Average	**7.109**	**Average**	**0.0084**
Standard Dev.	**0.328**	**Standard Dev.**	
Coeff. of Var. [%]	**4.617**	**Coeff. of Var. [%]**	
Min.	**6.443**	**Min.**	**0.0081**
Max.	**7.554**	**Max.**	**0.0087**
Number of Spec.	**21**	**Number of Spec.**	**21**

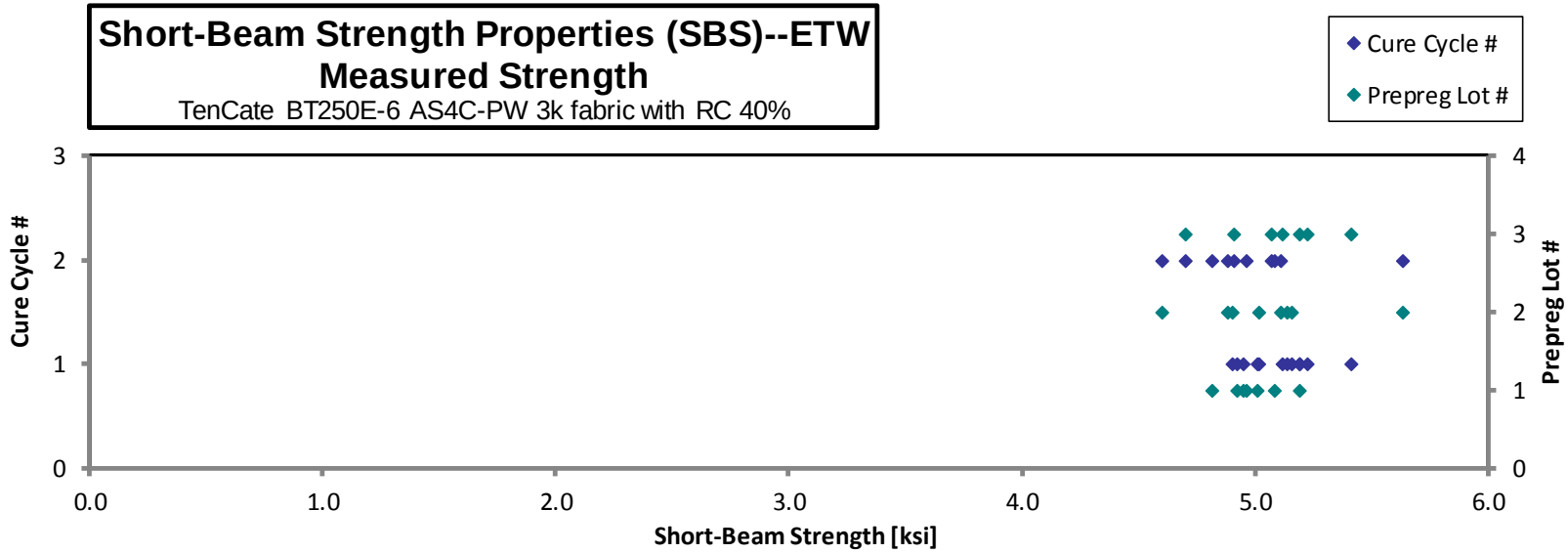

Short-Beam Strength Properties (SBS)--ETD
Measured Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
0
1
2
3
4

Short-Beam Strength Properties (SBS)--ETW
Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%

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
EABQA11GD	A	C1	1	1	5.193	0.268	32	0.0084	ILS
EABQA11HD	A	C1	1	1	4.949	0.270	32	0.0084	ILS
EABQA11ID	A	C1	1	1	4.920	0.272	32	0.0085	ILS
EABQA11JD	A	C1	1	1	5.011	0.273	32	0.0085	ILS
EABQA21DD	A	C2	1	2	4.812	0.270	32	0.0084	ILS
EABQA21ED	A	C2	1	2	4.963	0.273	32	0.0085	ILS
EABQA21FD	A	C2	1	2	5.081	0.275	32	0.0086	ILS
EABQB11GD	B	C1	2	1	4.901	0.264	32	0.0082	ILS
EABQB11HD	B	C1	2	1	5.017	0.266	32	0.0083	ILS
EABQB11ID	B	C1	2	1	5.138	0.267	32	0.0083	ILS
EABQB11JD	B	C1	2	1	5.154	0.268	32	0.0084	ILS
EABQB21DD	B	C2	2	2	5.630	0.263	32	0.0082	ILS
EABQB21ED	B	C2	2	2	4.597	0.266	32	0.0083	ILS
EABQB21FD	B	C2	2	2	4.884	0.263	32	0.0082	ILS
EABQB21GD	B	C2	2	2	5.109	0.263	32	0.0082	ILS
EABQC11FD	C	C1	3	1	5.409	0.267	32	0.0083	ILS
EABQC11GD	C	C1	3	1	5.113	0.262	32	0.0082	ILS
EABQC11HD	C	C1	3	1	5.193	0.263	32	0.0082	ILS
EABQC11ID	C	C1	3	1	5.226	0.264	32	0.0083	ILS
EABQC21ED	C	C2	3	2	4.702	0.261	32	0.0082	ILS
EABQC21FD	C	C2	3	2	4.905	0.260	32	0.0081	ILS
EABQC21GD	C	C2	3	2	5.070	0.261	32	0.0082	ILS

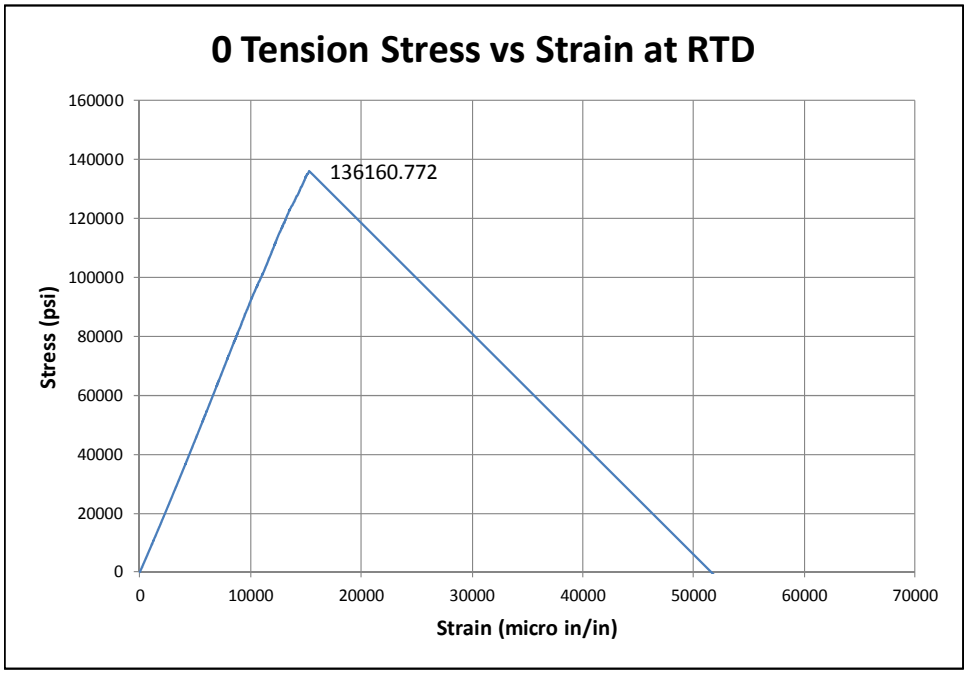
Span of 4T was used for all specimens.

Average	**5.044**	**Average**	**0.0083**
Standard Dev.	**0.224**	**Standard Dev.**	
Coeff. of Var. [%]	**4.444**	**Coeff. of Var. [%]**	
Min.	**4.597**	**Min.**	**0.0081**
Max.	**5.630**	**Max.**	**0.0086**
Number of Spec.	**22**	**Number of Spec.**	**22**

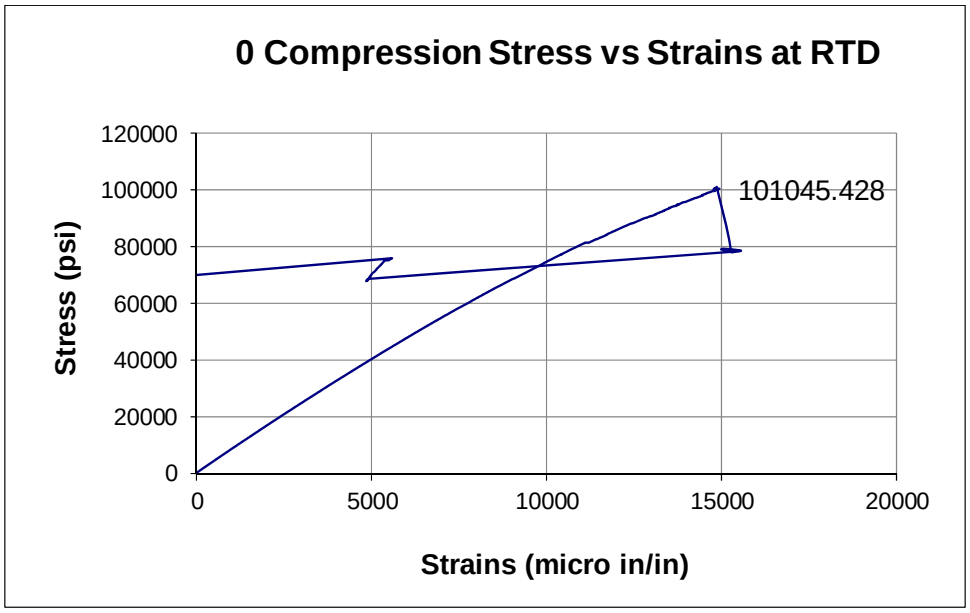

Short-Beam Strength Properties (SBS)--ETW
Measured Strength
TenCate BT250E-6 AS4C-PW 3k fabric with RC 40%
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short-Beam Strength [ksi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
0
1
2
3
4

5. Full Stress vs. Strain Curve

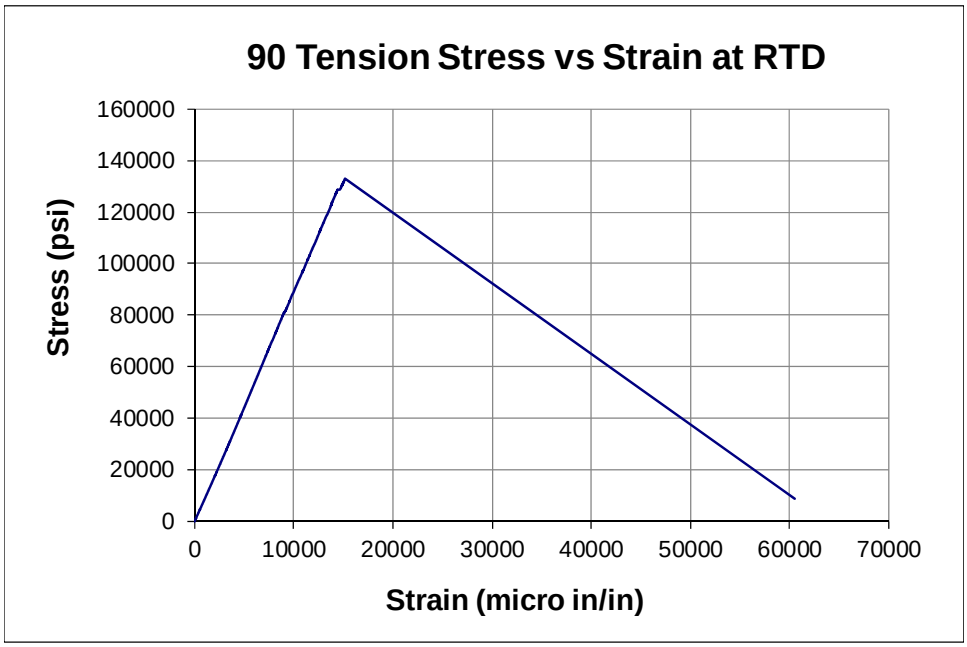
5.1 Warp Tension



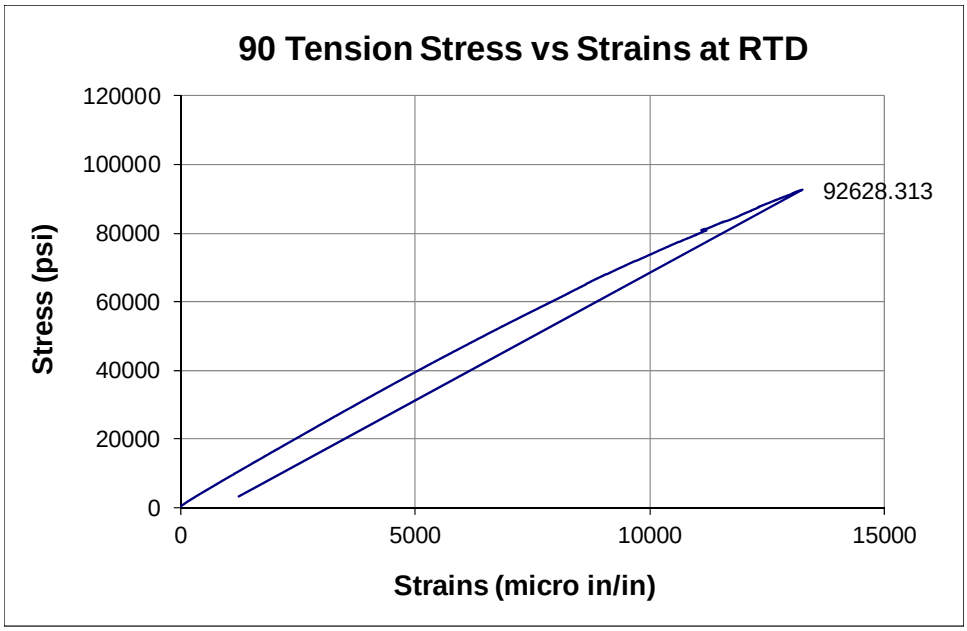
5.2 Warp Compression



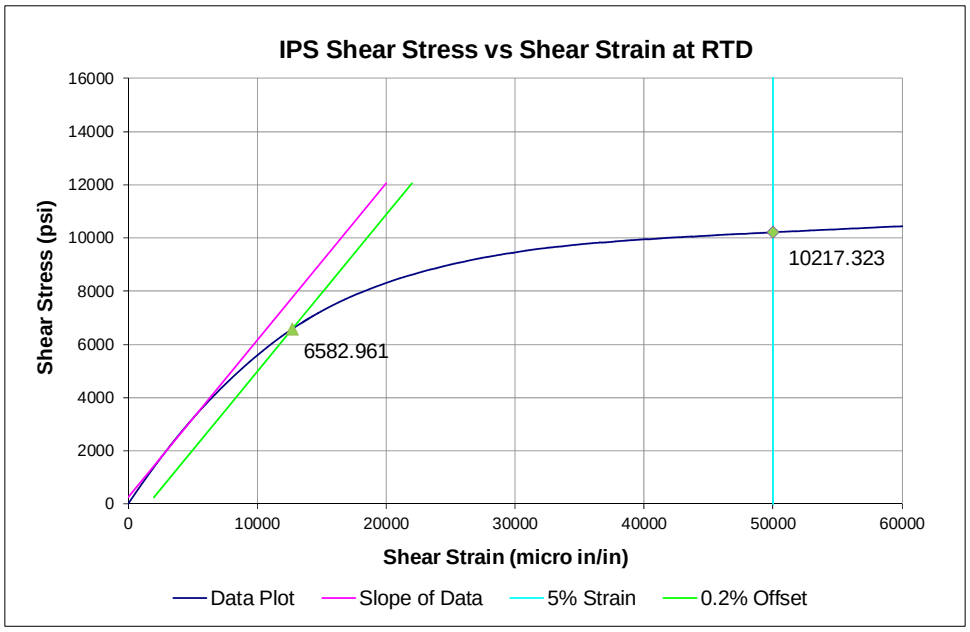
5.3 Fill Tension



5.4 Fill Compression

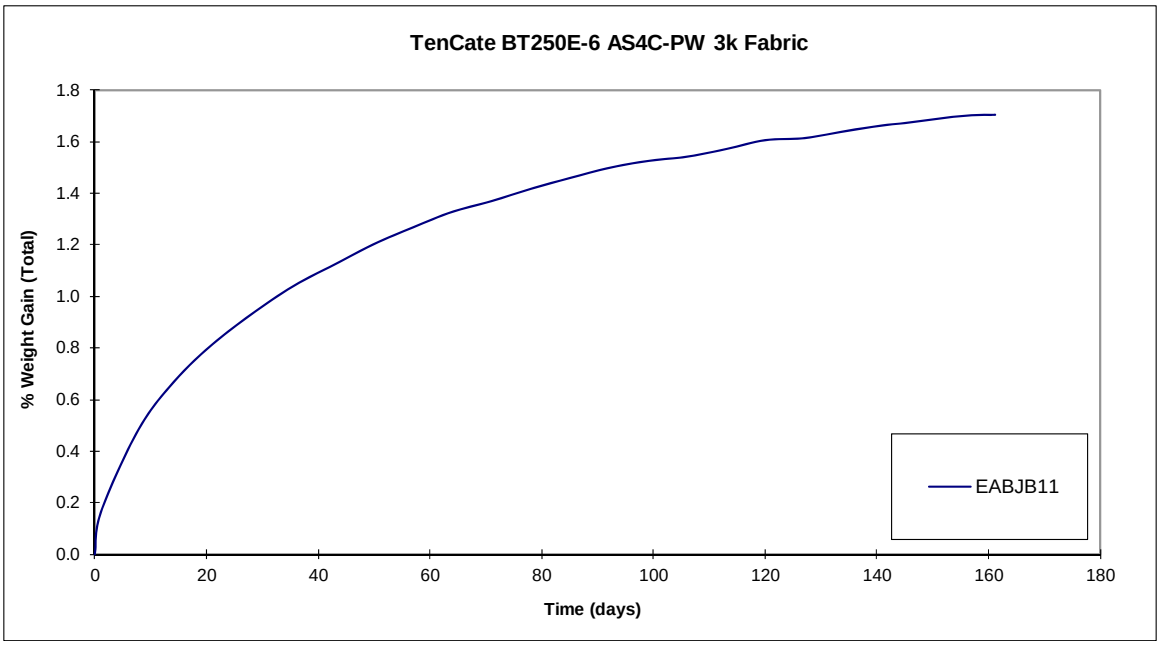


5.5 In-Plane Shear

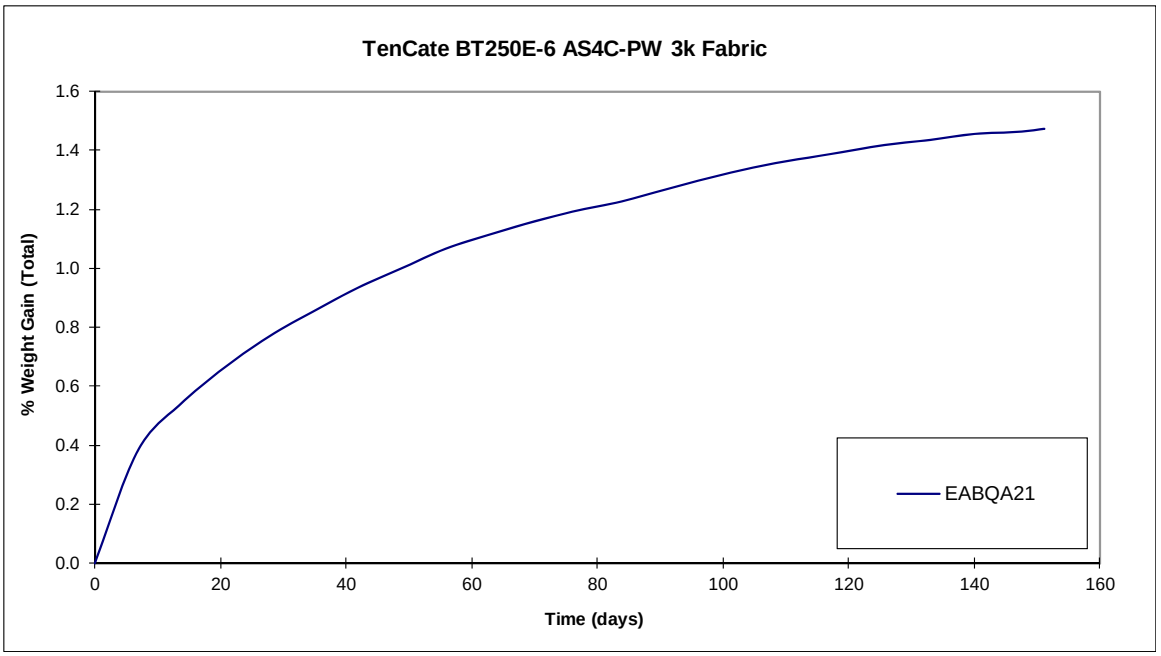


6. Moisture Conditioning Charts

6.1 Warp Tension – Thinnest Panel



6.2 Short-Beam Strength – 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

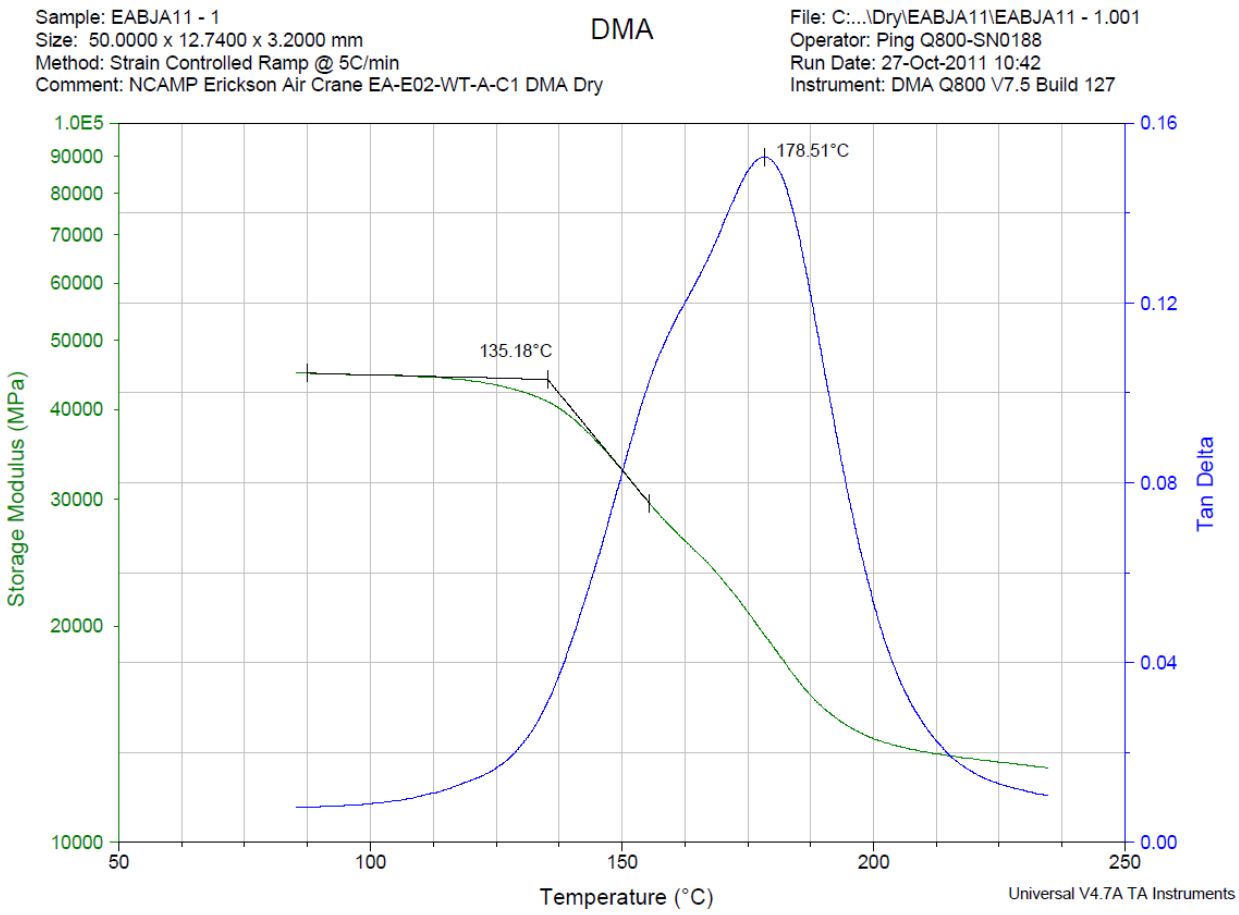
DMA Results Summary				
TenCate BT250E-6 AS4C-PW 3k Fabric DRY				
Sample #	Onset Storage Modulus		Peak of Tangent Delta	
	Average		Average	
	Tg [°C]	Tg [°F]	Tg [°C]	Tg [°F]
EABJA11 - 1 (EA-E02-WT-A-C1)	135.18	275.32	178.51	353.32
EABJA11 - 2 (EA-E02-WT-A-C1)	135.79	276.42	177.73	351.91
EABJA21 - 1 (EA-E02-WT-A-C2)	137.81	280.06	178.25	352.85
EABJA21 - 2 (EA-E02-WT-A-C2)	138.03	280.45	177.79	352.02
EABJB11 - 1 (EA-E02-WT-B-C1)	134.57	274.23	174.81	346.66
EABJB11 - 2 (EA-E02-WT-B-C1)	133.84	272.91	174.30	345.74
EABJB21 - 1 (EA-E02-WT-B-C2)	136.15	277.07	180.06	356.11
EABJB21 - 2 (EA-E02-WT-B-C2)	136.16	277.09	178.93	354.07
EABJC11 - 1 (EA-E02-WT-C-C1)	130.53	266.95	176.41	349.54
EABJC11 - 2 (EA-E02-WT-C-C1)	130.15	266.27	178.42	353.16
EABJC21 - 1 (EA-E02-WT-C-C2)	132.73	270.91	180.43	356.77
EABJC21 - 2 (EA-E02-WT-C-C2)	132.27	270.09	180.17	356.31
EABLB21 - 1 (EA-E02-WC-B-C3)	136.56	277.81	179.49	355.08
EABLB21 - 2 (EA-E02-WC-B-C3)	137.28	279.10	180.20	356.36
EABUA11 - 1 (EA-E02-FT-A-C3)	136.84	278.31	178.49	353.28
EABUA11 - 2 (EA-E02-FT-A-C3)	137.19	278.94	178.57	353.43
EABUA21 - 1 (EA-E02-FT-A-C4)	137.43	279.37	178.63	353.53
EABUA21 - 2 (EA-E02-FT-A-C4)	136.52	277.74	179.17	354.51
EABUB11 - 1 (EA-E02-FT-B-C4)	135.75	276.35	178.78	353.80
EABUB11 - 2 (EA-E02-FT-B-C4)	135.81	276.46	178.96	354.13
EABUB21 - 1 (EA-E02-FT-B-C5)	137.23	279.01	182.06	359.71
EABUB21 - 2 (EA-E02-FT-B-C5)	136.22	277.20	182.05	359.69
EABUC11 - 1 (EA-E02-FT-C-C4)	134.35	273.83	182.32	360.18
EABUC11 - 2 (EA-E02-FT-C-C4)	134.84	274.71	181.97	359.55
EABUC21 - 1 (EA-E02-FT-C-C5)	136.09	276.96	182.35	360.23
EABUC21 - 2 (EA-E02-FT-C-C5)	137.01	278.62	182.50	360.50
EABNB21 - 1 (EA-E02-IPS-B-C11)	132.93	271.27	157.71	315.88
EABNB21 - 2 (EA-E02-IPS-B-C11)	131.97	269.55	158.08	316.54
Average	135.26	275.46	177.76	351.96
Standard Deviation	2.17	3.90	5.98	10.77

DMA Results Summary

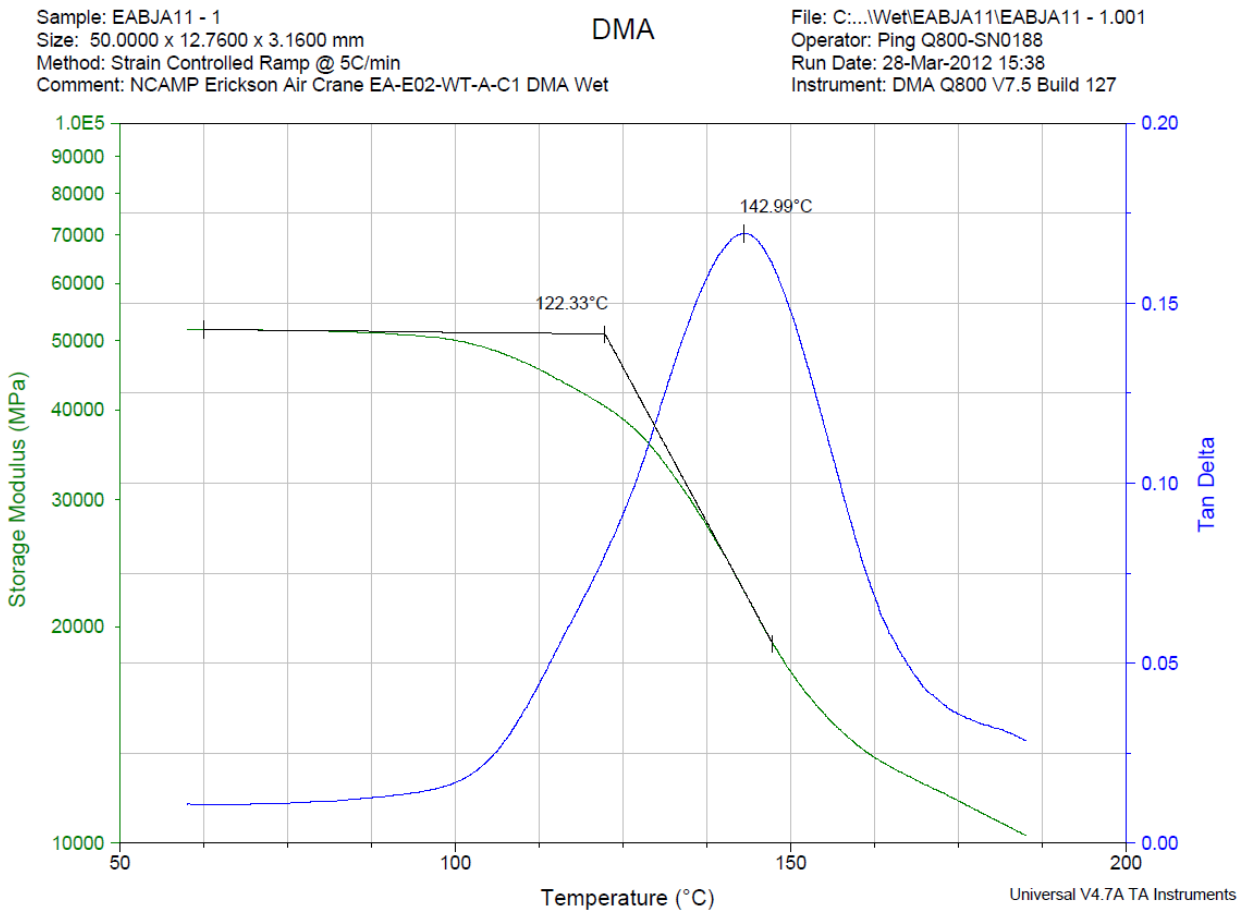
TenCate BT250E-6 AS4C-PW 3k Fabric WET

Sample #	Onset Storage Modulus Average		Peak of Tangent Delta Average	
	Tg [°C]	Tg [°F]	Tg [°C]	Tg [°F]
EABJA11 - 1 (EA-E02-WT-A-C1)	122.33	252.19	142.99	289.38
EABJA11 - 2 (EA-E02-WT-A-C1)	121.36	250.45	143.35	290.03
EABJA21 - 1 (EA-E02-WT-A-C2)	120.03	248.05	140.26	284.47
EABJA21 - 2 (EA-E02-WT-A-C2)	121.23	250.21	142.62	288.72
EABJB11 - 1 (EA-E02-WT-B-C1)	125.51	257.92	147.24	297.03
EABJB11 - 2 (EA-E02-WT-B-C1)	125.52	257.94	147.22	297.00
EABJB21 - 1 (EA-E02-WT-B-C2)	121.48	250.66	142.08	287.74
EABJB21 - 2 (EA-E02-WT-B-C2)	120.21	248.38	143.33	289.99
EABJC11 - 1 (EA-E02-WT-C-C1)	122.48	252.46	146.24	295.23
EABJC11 - 2 (EA-E02-WT-C-C1)	121.23	250.21	145.59	294.06
EABJC21 - 1 (EA-E02-WT-C-C2)	120.46	248.83	143.27	289.89
EABJC21 - 2 (EA-E02-WT-C-C2)	122.41	252.34	143.22	289.80
EABLB21 - 1 (EA-E02-WC-B-C3)	121.42	250.56	141.32	286.38
EABLB21 - 2 (EA-E02-WC-B-C3)	122.05	251.69	142.16	287.89
EABUA11 - 1 (EA-E02-FT-A-C3)	117.46	243.43	139.11	282.40
EABUA11 - 2 (EA-E02-FT-A-C3)	118.03	244.45	138.75	281.75
EABUA21 - 1 (EA-E02-FT-A-C4)	120.66	249.19	141.65	286.97
EABUA21 - 2 (EA-E02-FT-A-C4)	119.41	246.94	140.86	285.55
EABUB11 - 1 (EA-E02-FT-B-C4)	121.74	251.13	144.23	291.61
EABUB11 - 2 (EA-E02-FT-B-C4)	123.53	254.35	143.69	290.64
EABUB21 - 1 (EA-E02-FT-B-C5)	120.52	248.94	141.13	286.03
EABUB21 - 2 (EA-E02-FT-B-C5)	118.51	245.32	140.42	284.76
EABUC11 - 1 (EA-E02-FT-C-C4)	121.17	250.11	143.59	290.46
EABUC11 - 2 (EA-E02-FT-C-C4)	121.70	251.06	142.71	288.88
EABUC21 - 1 (EA-E02-FT-C-C5)	122.09	251.76	142.20	287.96
EABUC21 - 2 (EA-E02-FT-C-C5)	121.16	250.09	142.41	288.34
EABNB21 - 1 (EA-E02-IPS-B-C11)	114.41	237.94	145.63	294.13
EABNB21 - 2 (EA-E02-IPS-B-C11)	116.06	240.91	146.15	295.07
Average	120.86	249.55	142.98	289.36
Standard Deviation	2.41	4.34	2.24	4.03

7.1 DMA Dry Batch A



7.2 DMA Wet Batch A



8. Deviations

- D2344 SBS for CTD, RTD and ETD conditions were tested with a mixture of 4T and 4.5T span length. The SBS for ETW condition was tested with 4T span length.