Advanced Composites Group
MTM45-1 CF0526A-36%RW
3K Plain Weave G30-500 Fabric, 193 gsm
Qualification Material Property Data Report

FAA Special Project Number: SP3505WI-Q

NCAMP Test Report Number: NCP-RP-2008-003 Rev D

Report Date: May 2, 2013

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Revisions:

Rev	By	Date	Pages Revised or Added
N/C	Kristin Marlett; Yeow Ng, Michelle Man	9/10/2008	Document Initial Release
A	Kristin Marlett	4/2/2009	**UNT1** (RTD) normalized strength: 96.35 to 96.42 ksi; modulus 6.45 to 6.46 / **FHC1** (ETW2) strength: 44.56 - normalized, 44.60 measured to 44.30 (norm) and 44.38 (meas). / **ILT** (RTD) Strength : 7.65 to 7.68 and ETW2 from 3.31 to 3.32 / **PB2** (ETW2) 2% Strength: 66.29 (norm) 66.04 (meas) to 66.36 (norm) 66.11 (meas) / **PB3** (ETW2) 2% Strength: 70.11 (norm) 70.59 (meas) to 70.18 (norm) 70.57 (meas).
A	Kristin Marlett	4/23/2009	Pin Bearing Ultimate Strength was removed from the Laminate Summary Chart and all subsequent charts. Data is not valid since it did not reach ultimate failure.
A	Kristin Marlett	5/11/2009	ETW2 Modulus values removed pending investivation into high CV obtained
A	Kristin Marlett	5/11/2009	WC (ETW) thickness values altered for batch C. Values higher now.
A	Kristin Marlett	6/16/2009	WT (ETW2) normalized value changed in lamina sheet from 130.25 to 130.24; FHC3 (ETW2) norm/measured values changed from 47.83 and 47.12 to 48.01 and 47.27.
A	Kristin Marlett	6/22/2009	Tg results in Lamina and Laminate sheets were copied/pasted incorrectly. In addition, two specimens were excluded from the MH calculation (labeled as MH) and two specimens in Batch A were not included in the average formula, changing the Tg values overall from 360.79 DRY to 360.36 DRY and 320.13 WET to 320.42 WET. LH and M cure cycles removed from report since they are equivalency cure cycles.
A	Kristin Marlett	7/8/2009	HPLC example chart added
A	Kristin Marlett	9/22/2009	Report Template Revised

A	Kristin Marlett	11/30/2009	Physical testing values updated
A	Kristin Marlett	2/16/2010	Report Template Revised and Moisture Conditioning charts changed
A	Kristin Marlett	2/18/2010	FSBS worst case strength changed to reflect actual test condition (200 degrees).
B	Kristin Marlett	1/31/2011	Introduction/Scope, Section 1.1 wording edited.
B	Kristin Marlett	3/15/2011	Introduction/Scope Section 1.1 wording edited. Bearing Modulus removed and ILT values edited to reflect correct delta and thickness at tcurve and dy formula update to ETW template.
C	Kristin Marlett	7/14/2011	CAI raw data summary sheet added.
D	Michelle Man	5/2/2013	- Typographical and Editorial changes - Added notes and updated/clarified references in Section 1.5.2.4, 1.5.3 and 1.5.7 - Modulus Data Updated in Section 2.3.3(WC), 2.3.4 (FC), 2.3.9(UNC1), 2.3.10 (UNC2) and 2.3.11(UNC3); affected sections also updated (Section 2.1, 2.2, 3, and 4) - 0.2% Offset Strain Chart added to Section 3.5 and 4.5 - Graphs updated in Section 5, and 7. - Section 8 – LH DMA data removed. - Updated deviations, Section 10.

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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-17G—Composite Materials Handbook for Polymer Matrix Composites.

This report contains material property data of common usefulness to wide range of projects. The lamina and laminate material property data have been generated with FAA oversight through FAA Special Project Number SP3505WI-Q; the test panels, test specimens, and test setups have been conformed by the FAA and the testing has been witnessed by the FAA. However, the data may not fulfill all the needs of any specific company's programs. Specific properties, environments, laminate architecture, and loading situations that individual companies may require additional testing.

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

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

Statistical analysis of the data including the calculations of b-basis values are given in a separate report, Advanced Composites Group MTM45-1 CF0526A-36%RW 3K Plain Weave G30-500 Fabric, 193 gsm Qualification Statistical Analysis Report, NCAMP Report Number NCP-RP-2008-005 Rev A or later revisions .

The material was procured to ACG Material Specification ACGM Material Specification ACGM 1001–13 Revision A dated November 14, 2007. An equivalent NCAMP Material Specification NMS 451/13 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 ACG process specification ACGP 1001-02 Revision E “MH” cure cycle. An equivalent NCAMP Process Specification, NPS 81451 baseline “MH” Cure Cycle, has been created. The panels

were fabricated at Advanced Composites Group, 5350 S 129th E. Ave, Tulsa, OK 74134. The ACG Test Plan AI/TR/1392 Revision E 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-17G. 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-17G are adequate for the given program.

Aircraft companies should not use the data published in this report without specifying NCAMP Material Specification NMS 451/13. NMS 451/13 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 451/13.* NMS 451/13 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}^{tu}	major Poisson's ratio, tension
$\mu\varepsilon$	micro-strain
E_1^c	compressive modulus, longitudinal / warp direction
E_1^t	tensile modulus, longitudinal / warp direction
E_2^c	compressive modulus, transverse / fill direction
E_2^t	tensile modulus, transverse / fill direction
F_1^{cu}	ultimate compressive strength, longitudinal / warp direction
F_1^{tu}	ultimate tensile strength, longitudinal / warp direction
F_2^{cu}	ultimate compressive strength, transverse / fill direction
F_2^{tu}	ultimate tensile strength, transverse / fill direction
SBS	short beam strength
ν_{12}^c	major Poisson's Ratio, compression
ν_{21}^c	minor Poisson's Ratio, compression
$F_{12}^{s5\% \text{ strain}}$	in-plane shear, strength at 5% strain
$F_{12}^{s0.2\%}$	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
ν	Poisson's Ratio

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 shear

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, lower wet temperature
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 NCAMP – ACG Specimen Naming Format

The NIAR specimen names can be correlated to ACG specimen names using the scheme in Figure 1-1.

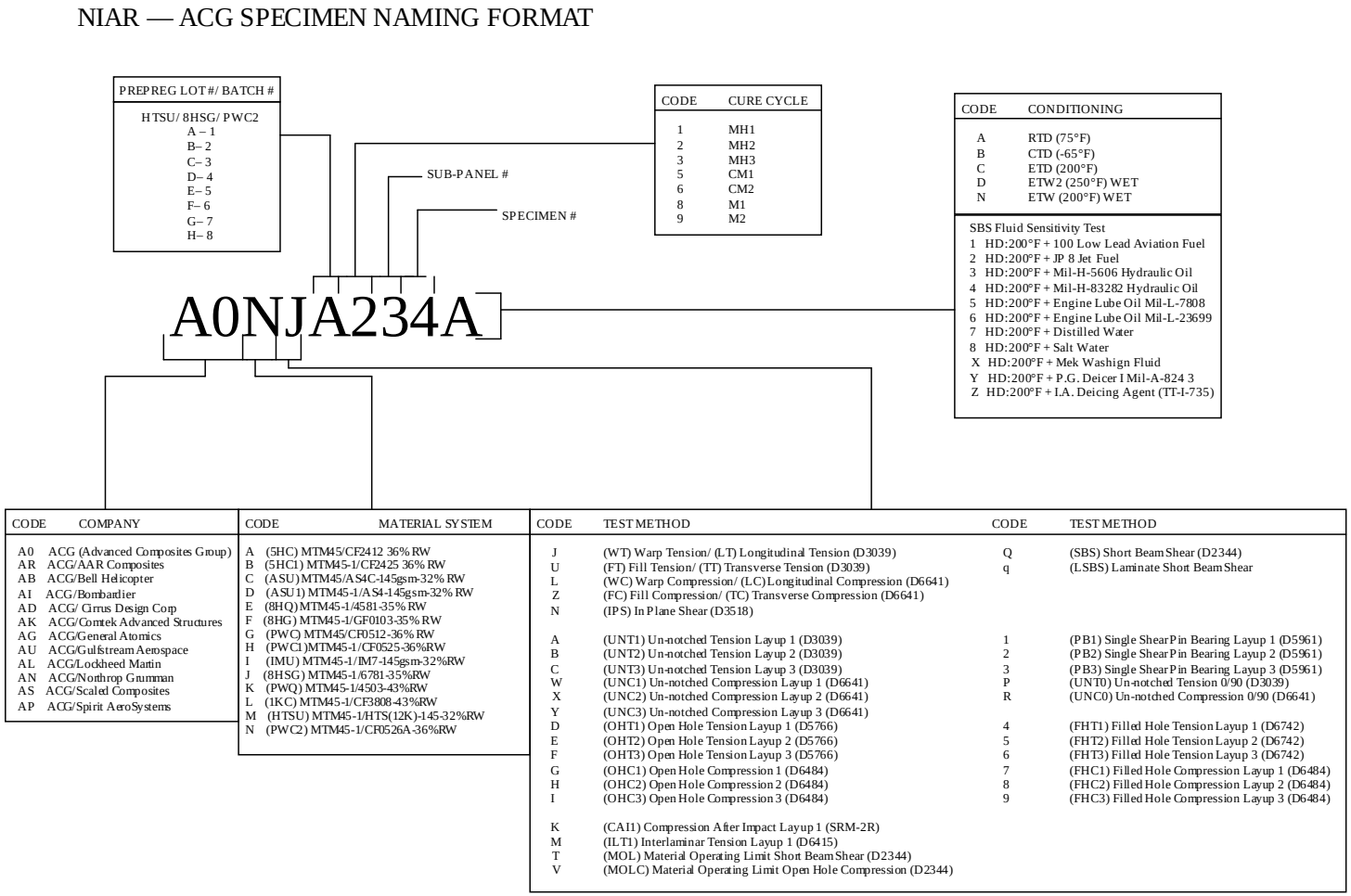

Figure 1-1: NIAR – ACG Specimen Naming Format Correlation

1.4 ASTM Standards

ASTM D 3039/D 3039M – 00^{e2} *Standard Test Method for Tensile Properties of Polymer Matrix Composite Materials*

ASTM D 6641/D 6641M – 01^{e1} *Standard Test Method for Determining the Compressive Properties of Polymer Matrix Composite Laminates Using a Combined Loading Compression (CLC) Test Fixture*

ASTM D 3518/D 3518M – 94 (2001) *Standard Test Method for In-Plane Shear Response of Polymer Matrix Composite Materials by Tensile Test of a 645° Laminate*

ASTM D 2344/D 2344M – 00^{e1} *Standard Test Method for Short-Beam Strength of Polymer Matrix Composite Materials and Their Laminates*

ASTM D 5766/D 5766M – 02a *Standard Test Method for Open Hole Tensile Strength of Polymer Matrix Composite Laminates*

ASTM D 6484/D 6484M – 04 *Standard Test Method for Open-Hole Compressive Strength of Polymer Matrix Composite Laminates*

SACMA Standards

- SACMA SRM 2R-94 *SACMA Recommended Test Method for Compression After Impact Properties of Oriented Fiber-Resin Composites*

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.

If more than 2 panels were required to obtain the minimum specimens, the additional panel(s) shall be labeled accordingly and an equal number of specimens shall be tested from each panel.

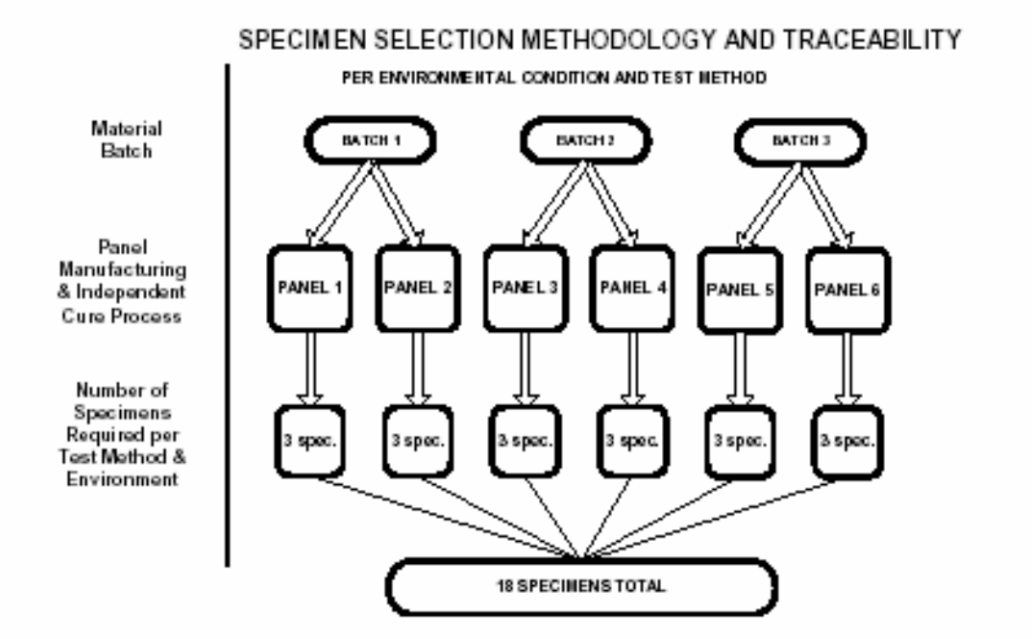

Figure 1-2: Cure Cycle Definition for Mechanical Test Panels

All panels were cured in accordance with ACG process specification ACGP 1001-02 Revision E.

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

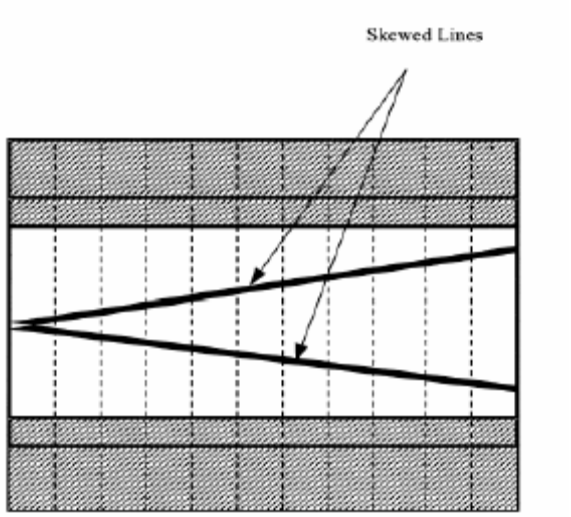

Figure 1-3: Specimen Traceability Line

1.5.2 Specimen & Testing Details

1.5.2.1 Tabbing

No tabs were used for this material system.

1.5.2.2 Specimen dimension

Specimen dimension were inspected before and after conditioning except report notched hole related dimensions pre-conditioning only.

1.5.2.3 Strain gages

Strain gages were employed for modulus on selected test methods.

ASTM D3039 tensile: CEA-XX-250UW-120 or 350 (refer to Appendix 1 for specific requirements)
ASTM D3518 in-plane shear: CEA-XX-250UW-120 or 350 (one each 0° and 90° to specimen axis) optionally CEA-XX-125UT-120 or 350 biaxial gage
All ASTM D6641 compression: CEA-XX-125UT-120 or 350
Optional ASTM D6641 compression of unidirectional materials and fabric materials of tow/yarn 3K or smaller: CEA-XX-062UT-120 or 350
Where XX = 03 or 06 the self temperature compensation factor for the purposes and procedures of this test plan considered equivalent.

Where modulus is required for other tests, an extensometer will be used.

1.5.2.4 Specimen Hole Dimensions & Test Configuration

For the open-hole tests, the hole diameter were 0.25 in ±0.003 in. For filled-hole and bearing tests, the hole diameter were 0.25 in -0.000 +0.003 in. The fastener type was NAS674X, where 'X' is the grip length for each different specimen thickness. The grip lengths chosen are listed in Table 1-1 below.

Fastener Type	Grip Length	Test Method
NAS674 –V2	.125 grip	Filled Hole Tension
NAS674 –V3	.188 grip	Filled Hole Compression
NAS674 –V13	.812 grip	Pin Bearing

Table 1-1: Fastener and Corresponding Grip Length

The washer type was NAS1149C0432R (nominal ID 0.265, nominal OD 0.500and nominal thickness 0.032 inches) and the nut type will be NAS1291C4M. Washers were used under both the head and nut as directed by ACG.

For filled hole tensile and pin bearing tests the fastener torque were 10 to 15 in-lbs above the run on torque required to bring the fastener/specimen/fixture flush. For example, if it requires 15 in-lbs to flush the specimen/fastener/fixture with no gap, additional 10-15 in-lbs was applied for a total of 25-30 in-lbs. For filled hole compression tests the fasteners were installed as above then torque released approximately one-quarter (1/4) turn to maintain fastener "flushness" and approximate zero (0) torque allowing the fastener to turn/twist with no lateral movement or "slack." In all cases, for each laminate thickness and given test, the torque applied was equal. Fasteners were installed before conditioning.

For the pin bearing tests, the single shear method was used with one of the pairs of specimens replaced by a steel fixture. The configuration is shown in Figure 1-4 below. Thickness of specimen fixture used was 0.685"

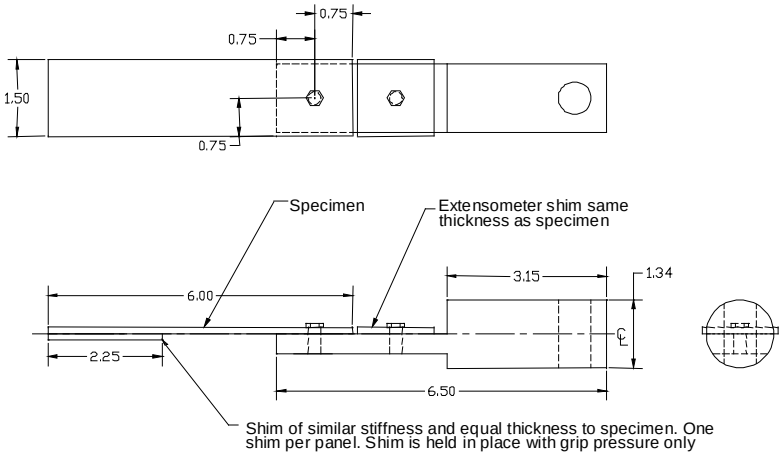

Figure 1-4: ASTM D5961 (Pin Bearing) Specimen and Loading Arrangement

The configuration of the ASTM D6415-99 specimen is as shown in Figure 1-5. 0 degree of the stacking sequence is along L (shown in the figure below).

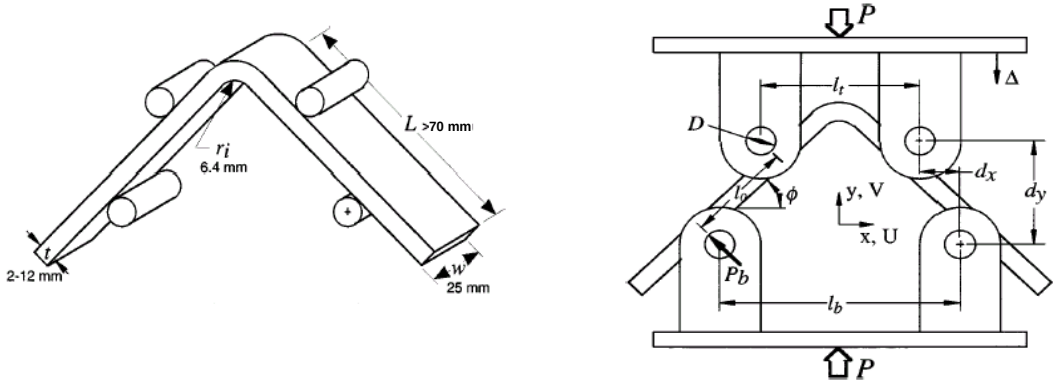

Figure 1-5: ASTM D6415 (Interlaminar Tension) Specimen and Loading Arrangement

For compression after impact, specimens following impact received nondestructive inspection by c-scan or equivalent method to determine extent and area of damage.

1.5.3 Test Matrix

Table 1-2 summarizes the lamina level tests carried out on fabric materials. The lay-ups chosen have been designed to produce the appropriate thickness required for the various types of tests to be performed. Table 1-3 summarizes the laminate level tests carried out on fabric materials. Lamina and Laminate stacking sequence can be obtained from page 17 of Appendix 1 of AI/TR/1392 E Appendix (or later revisions).

Layup (warp direction)	Test Type and Direction	Property	Number of Batches x Number of Panels x Number of Test Specimens				
			Test Temperature/Moisture Condition				
			CTD	RTD	ETD	ETW	ETW2
[0°]n	Warp Tension	Strength, Modulus	3x2x3	3x2x3		3x2x3	3x2x3
[0°]n	Warp Compression	Strength, Modulus, Poisson's	3x2x3	3x2x3		3x2x3	3x2x3
[90]n	Fill Tension	Strength, Modulus	3x2x3	3x2x3		3x2x3	3x2x3
[90]n	Fill Compression	Strength, Modulus, Poisson's	3x2x3	3x2x3	3x2x3	3x2x3	3x2x3
[45°/-45°]ns	In-Plane Shear	Strength and Modulus	3x2x3	3x2x3		3x2x3	3x2x3
[90°]n	Short Beam Strength	Strength	3x2x3	3x2x3	3x2x3	3x2x3	3x2x3

Table 1-2: Lamina Level Tests - Fabric

Table 1-3 below indicates the laminate level tests performed on the G30-500 3K Plain Weave. This table emphasizes those properties and test condition combinations believed to constitute the worst case. Additional testing at some test conditions may be necessary depending on the results contained in this document"

Layup	Test Type and Direction	Property	Number of Batches x Number of Panels x Number of Test Specimens			
			Test Temperature/Moisture Condition			
			CTD	RTD	ETW	ETW2
(25%/50%/25% - QI)	Open Hole Tension (1)	Strength	3x2x3	3x2x3	1x2x3	3x2x3
(10%/80%/10%)	Open Hole Tension (1)(6)	Strength	3x2x3	1x2x3		1x2x3
(40%/20%/40%)	Open Hole Tension (1)(6)	Strength	3x2x3	1x2x3		1x2x3
(25%/50%/25% - QI)	Open Hole Compression (1)	Strength		3x2x3	1x2x3	3x2x3
(10%/80%/10%)	Open Hole Compression (1)(6)	Strength		1x2x3		3x2x3
(40%/20%/40%)	Open Hole Compression (1)(6)	Strength		1x2x3		3x2x3
(25%/50%/25% - QI)	Un-notched Tension	Strength and modulus	3x2x3	3x2x3		1x2x3
(10%/80%/10%)	Un-notched Tension (5)(6)	Strength and modulus	1x2x3	1x2x3		1x2x3
(40%/20%/40%)	Un-notched Tension (5)(6)	Strength and modulus	1x2x3	1x2x3		1x2x3
(25%/50%/25% - QI)	Un-notched Compression (and short beam strength)	Strength and modulus		3x2x3 (3x2x3)	1x2x3 (1x2x3)	3x2x3 (3x2x3)

(10%/80%/10%)	Un-notched Compression (5)(6)	Strength and modulus		1x2x3		1x2x3
(40%/20%/40%)	Un-notched Compression (5)(6)	Strength and modulus		1x2x3		1x2x3
(25%/50%/25% - QI)	Filled Hole Tension (2)	Strength	3x2x3	1x2x3		
(10%/80%/10%)	Filled Hole Tension (2) (5)	Strength	1x2x3	1x2x3		1x2x3
(40%/20%/40%)	Filled Hole Tension (2) (5)	Strength	1x2x3	1x2x3		
(25%/50%/25% - QI)	Filled Hole Compression (2) (6)	Strength		1x2x3		3x2x3
(10%/80%/10%)	Filled Hole Compression (2) (5)	Strength		1x2x3		3x2x3
(40%/20%/40%)	Filled Hole Compression (2) (5)	Strength		1x2x3		3x2x3
(25%/50%/25% - QI)	Single Shear Bearing (3)	Strength		3x2x3		3x2x3
(10%/80%/10%)	Single Shear Bearing (3)(5)	Strength		1x2x3		3x2x3
(40%/20%/40%)	Single Shear Bearing (3)(5)	Strength		1x2x3		3x2x3
(25%/50%/25% - QI)	Interlaminar Tension (4)(6)	Strength		1x1x6		1x1x6
(25%/50%/25% - QI)	SACMA Compression After Impact – 1500 in-lb/in impact (6)	Strength		1x1x6		

(1). Open-hole configuration: 0.25” hole diameter, 1.5 inch width.
(2). Filled-hole test configuration: 0.25” diameter, protruding head fastener, 1.5” width.
(3). Single shear bearing test configuration: 0.25: hole diameter, 1.5” width, one protruding head fastener e/D=3
(4). Interlaminar tension test as described above.
(5) Omitted for 4581quartz, 4503 quartz, 6781S2 Glass and, 7781 E glass
(6) Omitted for 4503 quartz – other 4503 properties RT dry only except for interlaminar tension. 4581 one batch on

Table 1-3: Laminate Level Tests – Fabric

1.5.4 Physical Testing

The following tests were conducted for each test laminate with the exception of DMA Tg which was conducted on one separate traveler laminate per batch from each oven cure conducted where that batch is present. This data is included at the top of each individual test summary sheet, located in section 1.7.1.

Property	Condition/Method(1)	# Replicates
Cured Ply Thickness	SACMA SRM10 - Data from mechanical test laminates	Report
Laminate Density	ASTM D792	3
Fiber Volume, % by Volume	ASTM D3171-99(2)	3
Resin Content, % by Volume	ASTM D3171-99(2)	3
Void Content, % by Volume	ASTM D3171-99(2)	3
Glass Transition Temperature, Tg, By DMA	Dry and Wet – SACMA SRM 18R-94	1 dry(3) 1 wet(3)

(1) Where the applicable standard allows variations in specimen form or test method, the specific parameters used are specified in the test work instructions and reported in the applicable test report.
(2) Method II, except for laminates of materials where actual fiber weight is not known accurately prior to impregnation. As is the case for unidirectional materials. For these materials to verify Method II is accurate, a minimum of 12 samples per batch (two from each roll must be included) were tested by Method I, Procedure B for carbon reinforcements and Procedure G for glass or quartz reinforcements.
(3) Minimum 24 dry and 24 wet for each material system, 3 dry & 3 wet per traveler coupon for equivalency testing.

Table 1-4: Cured Laminate Physical Testing

1.5.5 Environmental Conditioning

The following tables define the range of tests and conditions were used to produce design allowable property and other screening data. Test environments are defined as:
CTD = -65±5°F, ambient moisture content dry
RTD = room temperature ambient dry
RTA = room temperature ambient – no drying required
ETD = 200±5°F dry
ETW= 200±5°F, wet (equilibrium moisture content)
ETW2=250±5°F, wet (equilibrium moisture content)

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

For dry testing, specimens were dried at 160°F±5°F for 120 to 130 hours. When drying was completed, specimens were either stored until testing in a sealed oven maintained at 85°F ± 5°F or alternately stored with desiccant in a sealed container. For wet testing, specimens were conditioned to equilibrium in a 160°F±5°F and 85% ± 5% RH environment in accordance with ASTM D 5229/D5229M Procedure C. Equilibrium was determined in accordance with DOT/FAA/AR-03/19 section 3.2. When conditioning was completed the specimens and traveler were stored in the conditioning chamber for up to 60 days or were wrapped in moist cloth or paper towel in a sealed container up no more than 14 days. If storage time exceeded 14 days, the traveler was reweighed to assure moisture equilibrium. In the event that moisture equilibrium was not maintained, the specimens were placed back into the chamber until equilibrium was reached. For non-ambient testing, DOT/FAA/AR-03/19 section 3.3 was followed.
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1.5.6 Fluid Sensitivity Screening

Table 7 lists the requirements for fluid sensitivity screening, which requires ASTM D2344 Short Beam Strength testing on [90°]n lamina level specimens subjected to the conditions indicated, 5 replicates per fluid – one material batch and one cure cycle. The test results can be found in section 1.9.

Extended Contact:	Exposure	Test Condition	Code
100 Low Lead Aviation Fuel	90 days minimum at 70°F±10°F	200°F	FS1
JP-8 Jet Fuel or SAE AMS 2629B	90 days minimum at 70°F±10°F	200°F	FS2
Mil-H-5606 Hydraulic Oil	90 days minimum at 70°F±10°F	200°F	FS3
Mil-H-83282 Hydraulic Oil	90 days minimum at 70°F±10°F	200°F	FS4
Engine Lubricating Oil Mil-L-7808	90 days minimum at 70°F±10°F	200°F	FS5
Engine Lubricating Oil Mil-L-23699	90 days minimum at 70°F±10°F	200°F	FS6
Distilled Water	90 days minimum at 70°F±10°F	200°F	FS7
Salt Water	90 days minimum at 70°F±10°F	200°F	FS8
Short Duration Contact:			
MEK washing fluid. ASTM D740	90 minutes minimum @70°F±10°F	200°F	FS9
Polypropylene Glycol Deicer (Type I) Mil-A-824 3	90 minutes Minimum @70°F±10°F	200°F	FS10
Isopropyl Alcohol Deicing Agent (TT-I-735)	48±4 hours @70°F±10°F	200°F	FS11

Table 1-5: Fluid Sensitivity Screening

1.5.7 Normalization Procedures

The nominal cure ply thicknesses for each material type are given in appendix 3 of the AI/TR/1392 E Appendix. Lamina level tension and compression strength and modulus properties were normalized to the cured ply thickness indicated. Per ACG's request, the laminate level properties were also normalized. Wherever properties are normalized, both measured and normalized data were reported

The nominal fiber areal weight was at 193 g/m^2 and the average of the four batches of material was 187.53 g/m^2 therefore normalization by cured ply thickness (CPT) was used, i.e.

Normalized strength=Measured Strength x Measured CPT/Nominal CPT

The nominal CPT is 0.0079 inch and the average CPT is 0.0080 inch. Individual ply thicknesses can be found in each individual summary sheet, but as an example, the range for each specimen was between 0.0073 and 0.0085 inch CPT.

1.5.8 Conformity

All laminates and specimens for design allowable property and fluid sensitivity screening were inspected for conformance with the requirements of this document and appendices 1 and 2. For all materials requiring FAA approval, the conformance was verified by an FAA approved designated airworthiness representative (DAR). Test setup and methods were approved and witnessed by the FAA or authorized designated engineering representative (DER) as required. Conformity documentation can be obtained in PDF file entitled Conformity_Final and is included on the CD provided with this report.

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 environmental conditioning and test results. This template is included on the CD provided with this report.

ACG 3K Plain Weave Test results

The files below are available on the CD available with this report.

2. Test Results

2.1 Lamina Level Test Summary

Prepreg Material:	Advanced Composites Group - MTM45-1 PWC2 3K PW G30-500 Fabric NMS 451/13 Material Specification				**ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric Lamina Properties Summary**
Fiber:	Tenax-J HTS40 E13 3K 200TEX	**Resin:**	MTM45-1		
Tg(dry):	360.36°F	**Tg(wet)**	320.42°F	**Tg METHOD:**	DMA (SRM 18-94)
PROCESSING:	NCAMP 81451 Process Specification "MH" Cure Cycle				

Date of fiber manufacture	10/2003; 7/2004; 6/2005	**Date of testing**	02/2006 - 07/2006
Date of resin manufacture	11/2005 -12/2005	**Date of data submittal**	03/2008 - 08/2008
Date of prepreg manufacture	11/2005-12/2005; 4/2006		
Date of composite manufacture	12/2005 -3/2006; 4/2006		

LAMINA MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT= .0079 inch)

	CTD Mean		RTD Mean		ETD Mean		ETW Mean		ETW2 Mean	
	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured	Normalized	Measured
F_1^{tu} (ksi)	137.39	135.47	141.31	139.63	---	---	134.53	134.10	130.24	130.15
E_1^t (Msi)	9.37	9.23	9.24	9.13	---	---	8.98	8.95	---	---
F_2^{tu} (ksi)	125.64	127.06	128.26	129.21	---	---	117.18	117.28	110.44	109.71
E_2^t (Msi)	9.07	9.17	8.88	8.95	---	---	8.64	8.64	---	---
F_1^{cu} (ksi)	104.85	105.08	99.43	99.86	---	---	65.30	66.46	58.45	59.70
E_1^c (Msi)	8.80	8.82	8.32	8.36	---	---	8.33	8.48	8.23	8.40
ν_{12}^c	---	0.048	---	0.057	---	---	---	0.048	---	0.054
F_2^{cu} (ksi)	96.41	98.60	88.68	89.44	75.42	75.93	58.31	57.90	51.85	51.59
E_2^c (Msi)	8.40	8.59	8.20	8.28	8.21	8.27	7.89	7.84	7.98	7.94
ν_{21}^c	---	0.051	---	0.056	---	0.050	---	0.047	---	0.053
$F_{12}^{s5\%strain}$ (ksi)	---	14.08	---	10.77	---	---	---	6.80	---	5.67
$F_{12}^{s0.2\%}$ (ksi)	---	8.27	---	6.12	---	---	---	3.88	---	3.25
G_{12}^s (Msi)	---	0.661	---	0.557	---	---	---	0.401	---	0.340
SBS (ksi)	---	12.86	---	10.29	---	7.97	---	6.53	---	5.24

Table 2-1: Lamina Level Test Summary

2.2 Laminate Level Test Summary

Prepreg Material:	Advanced Composites Group - MTM45-1 PWC2 3K PW G30-500 Fabric NMS 451/13 Material Specification				**ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric Laminate Properties Summary**
Fiber	Tenax-J HTS40 E13 3K 200TEX		**Resin**	MTM45-1	
Tg(dry)	360.36°F	**Tg(wet)**	320.42°F	**Tg METHOD**	DMA (SRM 18-94)
PROCESSING:	NCAMP 81451 Process Specification "MH" Cure Cycle				

Date of fiber manufacture	10/2003; 7/2004; 6/2005	**Date of testing**	02/2006 - 07/2006
Date of resin manufacture	11/2005 -12/2005	**Date of data submittal**	03/2006 - 08/2006
Date of prepreg manufacture	11/2005-12/2005; 4/2006		
Date of composite manufacture	12/2005 -3/2006; 4/2006		

LAMINATE MECHANICAL PROPERTY SUMMARY
Data reported as: Normalized & Measured
(Normalized by CPT= .0079 inch)

	Layup:	**25/50/25**		**10/80/10**		**40/20/40**	
	Test Condition	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
OHT	**CTD**	51.27	50.81	45.23	44.22	65.31	64.40
Strength (ksi)	**RTD**	52.16	51.95	40.06	39.26	62.56	62.51
	ETW	49.52	48.73	---	---	---	---
	ETW2	51.21	50.74	31.17	30.48	64.13	63.53
OHC	**RTD**	41.71	40.71	36.94	36.47	48.78	47.06
Strength (ksi)	**ETW**	31.46	30.58	---	---	---	---
	ETW2	28.92	28.00	26.40	25.69	30.74	29.76
UNT	**CTD**	94.45	92.96	59.19	58.28	122.05	121.11
Strength (ksi)	**RTD**	96.42	94.79	58.23	56.84	124.20	122.67
	ETW2	78.13	77.49	45.64	44.47	113.66	112.32
Modulus (msi)	**CTD**	6.61	6.51	4.33	4.26	8.32	8.26
	RTD	6.46	6.35	4.12	4.02	8.16	8.06
UNC	**RTD**	74.05	74.70	50.88	51.02	84.84	85.57
Strength (ksi)	**ETW**	52.91	53.05	---	---	---	---
	ETW2	48.79	48.76	32.16	31.88	52.64	52.83
						---	---
Modulus (msi)	**RTD**	5.94	5.98	3.88	3.89	7.52	7.58
	ETW	5.61	5.62	---	---	---	---
	ETW2	5.58	5.58	3.46	3.43	7.67	7.70
νUNC	**RTD**	---	0.322	---	0.554	---	0.144
	ETW	---	0.304	---	---	---	---
	ETW2		0.313		0.564		0.149
FHT	**CTD**	54.12	53.09	46.52	46.11	64.40	62.82
Strength (ksi)	**RTD**	52.47	51.66	41.25	40.65	60.95	59.43
	ETW2	---	---	33.43	32.61	---	---
FHC	**RTD**	59.80	59.04	50.05	49.46	66.30	65.32
Strength (ksi)	**ETW2**	44.30	43.38	31.65	30.98	48.01	47.27
LSBS	**RTD**	---	9.99	---	---	---	---
Strength (ksi)	**ETW**	---	6.33	---	---	---	---
	ETW2	---	5.26	---	---	---	---
PB							
2% offset	**RTD**	88.26	87.98	86.80	86.38	82.13	80.38
Strength (ksi)	**ETW2**	73.86	73.95	66.36	66.11	70.18	70.57
ILT	**RTD**	---	6.60	---	---	---	---
Strength (ksi)	**ETW2**	---	2.70	---	---	---	---
CAI	**RTD**	33.84	33.69	---	---	---	---
Strength (ksi)							

Table 2-2: Laminate Level Test Summary

2.3 Individual Test Summaries

The individual test summaries are below.

2.3.1 Warp Tension Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 44.69 vol%
Fiber volume: 55.31 vol%
Ply thickness: 0.0077-0.0081
Ply count: 14

Comp. density: 1.492 g/cc (.054 lb/cu in)

Tension, 1-axis
Gr/ Ep
MTM45-1/ 3K Plain Weave G30-500 Fabric
$[0]_{14}$

Test method: ASTM D3039-00

Modulus calculation: linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

		CTD (B)		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		250	
Moisture Conditioning		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH						160 F,85%		160 F,85%	
Source code		A0NJXXXXB		A0NJXXXXA		A0NJXXXXN		A0NJXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	137.39	135.47	141.31	139.63	134.53	134.10	130.24	130.15
	Minimum	127.62	125.14	129.72	127.29	125.70	124.95	122.83	122.68
	Maximum	148.00	146.91	150.84	150.24	140.68	141.76	137.02	136.46
F_1^{tu} (ksi)	**C.V.(%)**	4.83	5.45	4.54	4.81	3.56	4.22	2.52	2.71
	No. Specimens	19		28		18		21	
	No. Prepreg Lots	3		3		3		3	
	Mean	9.37	9.23	9.24	9.13	8.98	8.95		
	Minimum	9.16	9.00	8.89	8.73	8.21	8.06		
	Maximum	9.58	9.43	9.53	9.46	9.35	9.34		
E_1^t (Msi)	**C.V.(%)**	1.20	1.31	1.75	2.28	3.48	3.65		
	No. Specimens	19		28		18			
	No. Prepreg Lots	3		3		3			

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

2.3.2 Fill Tension Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 44.64 vol%
Fiber volume: 55.36 vol%
Ply thickness: 0.0073-0.0082
Ply count: 14

Comp. density: 1.494 g/cc (.054 lb/cu in)

Tension, 2-axis
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
$[90]_{14}$

Test method: ASTM D3039-00

Modulus calculation: linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

		CTD (B)		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		250	
Moisture Conditioning		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH						160 F,85%		160 F,85%	
Source code		A0NUXXXXB		A0NUXXXXA		A0NUXXXXN		A0NUXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	125.64	127.06	128.26	129.21	117.18	117.28	110.44	109.71
	Minimum	118.18	117.19	111.99	110.36	108.88	106.73	101.61	99.74
	Maximum	133.11	140.90	137.32	138.98	129.02	130.13	122.77	120.63
F_2^{tu} (ksi)	**C.V.(%)**	4.16	5.20	5.85	6.10	5.41	6.15	5.69	5.83
	No. Specimens	18		18		19		18	
	No. Prepreg Lots	3		3		3		3	
	Mean	9.07	9.17	8.88	8.95	8.64	8.64		
	Minimum	8.60	8.53	8.03	8.10	8.26	8.12		
	Maximum	9.39	10.02	9.18	9.63	8.87	9.31		
E_2^t (Msi)	**C.V.(%)**	3.00	4.44	3.19	3.42	2.23	3.47		
	No. Specimens	18		18		19			
	No. Prepreg Lots	3		3		3			

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

2.3.3 Warp Compression Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.64 %vol **Comp. density:** 1.491 g/cc (.054 lb/cu in)
Fiber volume: 54.00 %vol
Ply thickness: 0.0075-0.0080
Ply count: 18

Test method: ASTM D6641-01 **Modulus calculation:** linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

Compression, 1-axis
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
$[0]_{18}$

		CTD (B)		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		250	
Moisture Conditioning		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH						160 F,85%		160 F,85%	
Source code		A0NLXXXXB		A0NLXXXXA		A0NLXXXXN		A0NLXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_1^{cu} (ksi)	**Mean**	104.85	105.08	99.43	99.86	65.30	66.46	58.45	59.70
	Minimum	79.05	81.25	85.32	84.68	57.65	58.24	46.47	46.78
	Maximum	117.22	116.22	108.07	107.00	75.38	75.80	64.56	64.56
	C.V.(%)	9.33	9.22	5.64	5.73	7.13	7.08	8.39	8.39
	No. Specimens	20		21		26		18	
	No. Prepreg Lots	3		3		3		3	
E_1^c (Msi)	**Mean**	8.80	8.82	8.32	8.36	8.33	8.48	8.23	8.40
	Minimum	7.91	7.85	8.02	7.98	7.50	7.50	7.49	7.54
	Maximum	9.99	9.90	8.67	8.83	9.22	9.16	8.82	9.15
	C.V.(%)	5.90	5.99	2.20	2.70	4.28	4.45	4.55	5.13
	No. Specimens	20		21		26		18	
	No. Prepreg Lots	3		3		3		3	
ν_{12}	**Mean**	0.048		0.057		0.048		0.054	
	No. Specimens	20		21		26		18	
	No. Prepreg Lots	3		3		3		3	

2.3.4 Fill Compression Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.81 %vol **Comp. density:** 1.490 g/cc (.054 lb/cu in)
Fiber volume: 53.84 %vol
Ply thickness: 0.0073-0.0082
Ply count: 18

Test method: ASTM D6641-01e1 **Modulus calculation:** linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in CPT

Compression, 2-axis
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
$[90]_{18}$

		CTD (B)		RTD (A)		ETD (C)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		200		250	
Moisture Conditioning		dry		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH								160 F,85%		160 F,85%	
Source code		A0NZXXXXB		A0NZXXXXA		A0NZXXXXC		A0NZXXXXN		A0NZXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	96.41	98.60	88.68	89.44	75.42	75.93	58.31	57.90	51.85	51.59
	Minimum	85.52	83.75	80.35	79.17	65.30	65.75	53.13	52.84	44.47	44.26
	Maximum	114.41	113.96	101.81	101.93	82.64	85.67	63.70	63.01	59.98	58.88
F_2^{cu} (ksi)	**C.V.(%)**	7.92	7.72	7.00	7.11	6.60	6.93	3.98	4.42	7.59	7.52
	No. Specimens	18		18		18		18		19	
	No. Prepreg Lots	3		3		3		3		3	
	Mean	8.40	8.59	8.20	8.28	8.21	8.27	7.89	7.84	7.98	7.94
	Minimum	8.00	7.97	7.93	7.81	7.66	7.65	7.45	7.18	7.50	7.53
	Maximum	8.94	9.36	8.58	8.89	8.79	9.12	8.47	8.43	8.74	8.83
E_2^c (Msi)	**C.V.(%)**	2.92	4.59	1.94	3.54	4.14	5.67	3.51	4.08	3.92	4.64
	No. Specimens	18		18		18		18		19	
	No. Prepreg Lots	3		3		3		3		3	
	Mean	0.051		0.056		0.050		0.047		0.053	
ν_{21}^c	**No. Specimens**	18		18		18		18		19	
	No. Prepreg Lots	3		3		3		3		3	

2.3.5 In-Plane Shear Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.18 vol%
Fiber volume: 54.82 vol%
Ply thickness: 0.0076-0.0085
Ply count: 8
Test method: ASTM D3518-94

Comp. density: 1.488 g/cc (.054 lb/ cu in)

Modulus calculation: linear fit from 2000 to 6000 micro in/in

Normalized by: NA

In-Plane Shear
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[+45/-45]2s

		CTD (B)		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		250	
Moisture Conditioning		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH						160 F,85%		160 F,85%	
Source code		A0NNXXXXB		A0NNXXXXA		A0NNXXXXN		A0NNXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
$F_{12}^{s5\%strain}$ (ksi)	**Mean**		14.08		10.77		6.80		5.67
	Minimum		13.01		9.99		6.13		5.14
	Maximum		14.57		11.59		7.45		6.37
	C.V.(%)		3.23		4.21		6.12		6.59
	No. Specimens	13		26		17		19	
	No. Prepreg Lots	3		3		3		3	
$F_{12}^{s0.2\%}$ (ksi)	**Mean**		8.27		6.12		3.88		3.25
	Minimum		7.58		5.65		3.63		2.98
	Maximum		8.91		6.70		4.08		3.52
	C.V.(%)		4.80		5.34		3.28		4.78
	No. Specimens	18		26		20		21	
	No. Prepreg Lots	3		3		3		3	
G_{12}^{s} (Msi)	**Mean**		0.66		0.56		0.40		0.34
	Minimum		0.62		0.53		0.38		0.32
	Maximum		0.71		0.60		0.42		0.38
	C.V.(%)		4.02		3.67		3.15		5.16
	No. Specimens	18		26		20		21	
	No. Prepreg Lots	3		3		3		3	

Physical testing values do not inlcude IPS-C-MH1 or IPS-C-MH2

2.3.6 Unnotched Tension 1 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Unnotched Tension 1
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]2s

Resin content: 46.30 vol%
Comp. density: 1.483 g/cc (.054 lb/cu in)
Fiber volume: 53.70 vol%
Ply thickness: 0.0078-0.0083
Ply count: 16

Test method: ASTM D3039-00
Modulus calculation: linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in CPT

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0NAXXXXB		A0NAXXXXA		A0NAXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	94.45	92.96	96.42	94.79	78.13	77.49
	Minimum	89.19	89.08	89.09	87.73	76.37	76.17
	Maximum	100.39	97.41	102.41	99.68	80.95	80.30
UNT1	**C.V.(%)**	3.40	2.77	3.63	3.21	2.15	1.96
Strength (ksi)							
	No. Specimens	19		18		6	
	No. Prepreg Lots	3		3		1	
	Mean	6.61	6.51	6.46	6.35		
	Minimum	6.46	6.26	6.28	6.12		
	Maximum	6.80	6.67	6.67	6.57		
UNT1	**C.V.(%)**	1.62	2.03	1.51	2.07		
Modulus (Msi)							
	No. Specimens	19		18			
	No. Prepreg Lots	3		3			

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

2.3.7 Unnotched Tension 2 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 44.78 vol% **Comp. density:** 1.489 g/cc (.054 lb/cu in)
Fiber volume: 55.22 vol%
Ply thickness: 0.0080-0.0082
Ply count: 20

Unnotched Tension 2
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,-45,0,45,-45]2S

Test method: ASTM D3039-00 **Modulus calculation:** linear fit from 1000 to 3000 micro in/in
Normalized by: 0.0079 in. CPT

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0NBXXXXB		A0NBXXXXA		A0NBXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	59.19	58.28	58.23	56.84	45.64	44.47
	Minimum	56.62	55.20	57.08	55.65	44.09	43.24
	Maximum	60.76	60.35	59.36	57.97	46.69	45.39
UNT2	**C.V.(%)**	2.40	2.88	1.60	1.54	2.10	1.93
Strength (ksi)							
	No. Specimens	6		6		7	
	No. Prepreg Lots	1		1		1	
	Mean	4.33	4.26	4.12	4.02		
	Minimum	4.24	4.19	4.02	3.92		
	Maximum	4.42	4.35	4.22	4.11		
UNT2	**C.V.(%)**	1.68	1.52	1.65	1.61		
Modulus (Msi)							
	No. Specimens	6		6			
	No. Prepreg Lots	1		1			

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

2.3.8 Unnotched Tension 3 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 46.02 vol%
Fiber volume: 53.98 vol%
Ply thickness: 0.0078-0.0081
Ply count: 15

Comp. density: 1.487 g/cc (.054 lb/cu in)

Unnotched Tension 3
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[0_3,45,0_3,-45,0_3,45,0_3]

Test method: ASTM D3039-00

Modulus calculation: linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0NCXXXXB		A0NCXXXXA		A0NCXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	122.05	121.11	124.20	122.67	113.66	112.32
	Minimum	119.87	118.42	121.54	121.35	106.25	105.27
	Maximum	125.13	123.14	125.64	124.29	119.34	118.42
UNT3 Strength (ksi)	**C.V.(%)**	1.80	1.48	1.11	0.88	4.67	4.38
	No. Specimens	6		7		6	
	No. Prepreg Lots	1		1		1	
	Mean	8.32	8.26	8.16	8.06		
	Minimum	8.16	8.08	7.95	7.94		
	Maximum	8.47	8.54	8.39	8.28		
UNT3 Modulus (Msi)	**C.V.(%)**	1.52	2.08	1.71	1.50		
	No. Specimens	6		7			
	No. Prepreg Lots	1		1			

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

2.3.9 Unnotched Compression 1 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 36.13 %vol **Comp. density:** 1.490 g/cc (.054 lb/cu in)
Fiber volume: 36.87 %vol
Ply thickness: 0.0077-0.0080
Ply count: 24

Test method: ASTM D6641-01^{E1} **Modulus calculation:** linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

Unnotched Compression 1
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]3s

		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		75 F		200 F		250 F	
Moisture Conditioning				equilibrium		equilibrium	
Equilibrium at T, RH				160 F,85%		160 F,85%	
Source code		A0NWXXXXA		A0NWXXXXN		A0NWXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	74.05	74.70	52.91	53.05	48.79	48.76
	Minimum	66.08	66.59	51.75	51.82	45.57	45.49
	Maximum	78.55	79.94	56.87	56.69	51.22	51.66
UNC1	**C.V.(%)**	4.07	4.22	3.70	3.45	2.83	2.89
Strength (ksi)							
	No. Specimens	19		6		18	
	No. Prepreg Lots	3		1		3	
	Mean	5.94	5.98	5.61	5.62	5.58	5.58
	Minimum	5.59	5.69	5.08	5.05	5.03	5.07
	Maximum	6.34	6.40	5.96	6.06	5.85	5.84
UNC1	**C.V.(%)**	3.03	2.80	5.89	6.45	3.54	3.33
Modulus (Msi)							
	No. Specimens	18		6		18	
	No. Prepreg Lots	3		1		3	
	Mean	0.322		0.304		0.313	
νUNC1	**No. Specimens**	18		6		18	
	No. Prepreg Lots	3		1		3	

2.3.10 Unnotched Compression 2 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 36.49 %vol **Comp. density:** 1.490g/cc (.054 lb/cu in)
Fiber volume: 63.51 %vol
Ply thickness: 0.0077-0.0082
Ply count: 20

Unnotched Compression 2
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,-45,0,45,-45]2S

Test method: ASTM D6641-01^{E1} **Modulus calculation:** linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		DRY		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0NXXXXXA		A0NXXXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	50.88	51.02	32.16	31.88		
	Minimum	45.09	46.22	30.16	30.27		
	Maximum	52.91	52.65	33.44	33.78		
UNC2	**C.V.(%)**	5.71	4.74	3.61	3.79		
Strength (ksi)							
	No. Specimens	6		6			
	No. Prepreg Lots	1		1			
	Mean	3.88	3.89	3.46	3.43		
	Minimum	3.66	3.75	3.22	3.14		
	Maximum	4.23	4.29	3.65	3.66		
UNC2	**C.V.(%)**	5.51	5.92	4.75	5.69		
Modulus (Msi)							
	No. Specimens	6		6			
	No. Prepreg Lots	1		1			
	Mean	0.554		0.564			
νUNC2	**No. Specimens**	6		6			
	No. Prepreg Lots	1		1			

2.3.11 Unnotched Compression 3 Properties

Material: Advanced Composites Group -MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 36.21%vol **Comp. density:** 1.492 g/cc (.054 lb/cu in)
Fiber volume: 63.79 %vol
Ply thickness: 0.0077-0.0080
Ply count 20

Test method: ASTM D6641-01^{E1} **Modulus calculation:** linear fit from 1000 to 3000 micro in/in

Normalized by: 0.0079 in. CPT

Unnotched Compression 3
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
$[0_2,45,0_4,-45,0_2]S$

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0NYXXXXA		A0NYXXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	84.84	85.57	52.64	52.83		
	Minimum	80.85	81.10	45.37	45.74		
	Maximum	89.10	89.40	55.64	55.91		
UNC3 Strength (ksi)	**C.V.(%)**	4.31	4.67	6.49	6.34		
	No. Specimens	6		7			
	No. Prepreg Lots	1		1			
	Mean	7.52	7.58	7.67	7.70		
	Minimum	7.39	7.40	7.48	7.51		
	Maximum	7.65	7.74	7.88	7.83		
UNC3 Modulus (Msi)	**C.V.(%)**	1.24	1.53	2.05	1.76		
	No. Specimens	7		7			
	No. Prepreg Lots	1		1			
	Mean	0.144		0.149			
νUNC3	**No. Specimens**	7		7			
	No. Prepreg Lots	1		1			

2.3.12 Laminate Short Beam Strength Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: see UNC1 **Comp. density:** see UNC1
Fiber volume: see UNC1
Ply thickness: 0.0077-0.0080
Ply count: 24

Test method: ASTM D2344-00^{E1}

Normalized by: NA

Laminate Short Beam Strength
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]3s

		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		75		200		250	
Moisture Conditioning		dry		equilibrium		equilibrium	
Equilibrium at T, RH							
Source code		A0NqXXXXA		A0NqXXXXN		A0NqXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
LSBS (ksi)	**Mean**		9.99		6.33		5.26
	Minimum		9.53		6.26		5.14
	Maximum		10.30		6.42		5.36
	C.V.(%)		1.91		0.93		1.22
	No. Specimens	18		7		18	
	No. Prepreg Lots	3		1		3	

* See Section 10 for deviations related to this test method

2.3.13 Lamina Short Beam Strength Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: see FT **Comp. density:** see FT
Fiber volume: see FT
Ply thickness: 0.0075-0.0081
Ply count: 14

Test method: ASTM D2344-00^{E1}

Normalized by: NA

Short Beam Strength
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave
G30-500 Fabric
$[90]_{14}$

		CTD (B)		RTD (A)		ETD (C)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		200		250	
Moisture Conditioning		dry		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH								160 F,85%		160 F,85%	
Source code		A0NQXXXXB		A0NQXXXXA		A0NQXXXXC		A0NQXXXXN		A0NQXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
SBS Strength (ksi)	**Mean**		12.86		10.29		7.97		6.53		5.24
	Minimum		10.73		9.96		7.63		6.22		5.00
	Maximum		13.74		10.58		8.28		6.97		5.51
	C.V.(%)		5.45		1.89		2.20		2.73		2.52
	No. Specimens	20		20		20		18		18	
	No. Prepreg Lots	3		3		3		3		3	

* See Section 10 for deviations related to this test method

2.3.14 Open Hole Tension 1 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.58 vol% **Comp. density:** 1.487 g/cc (.054 lb/cu in)
Fiber volume: 54.42 vol%
Ply thickness: 0.0075-0.0082
Ply count: 16

Test method: ASTM D5766-02a

Normalized by: 0.0079 in. CPT

Open Hole Tension 1
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]2S

		CTD (B)		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		-65		75		200		250	
Moisture Conditioning		dry		dry		equilibrium		equilibrium	
Equilibrium at T, RH						160 F,85%		160 F,85%	
Source code		A0NDXXXXB		A0NDXXXXA		A0NDXXXXN		A0NDXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	51.27	50.81	52.16	51.95	49.52	48.73	51.21	50.74
	Minimum	47.69	48.43	48.55	48.80	47.59	47.92	46.92	47.94
	Maximum	55.04	53.65	54.72	54.97	50.67	49.62	54.95	53.97
OHT1	**C.V.(%)**	3.70	2.97	3.26	3.48	2.24	1.34	5.41	4.39
Strength (ksi)									
	No. Specimens	18		18		6		18	
	No. Prepreg Lots	3		3		1		3	

Physical testing values only includes OHT1-A-MH2 and OHT1-B-MH1

2.3.15 Open Hole Tension 2 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.06 vol% **Comp. density:** 1.491 g/cc (.054 lb/cu in)
Fiber volume: 54.94 vol%
Ply thickness: 0.0079-0.0082
Ply count 20

Test method: ASTM D5766-02a

Normalized by: 0.0079 in. CPT

Open Hole Tension 2
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,-45,0,45,-45]2s

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0NEXXXXB		A0NEXXXXA		A0NEXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	45.23	44.22	40.06	39.26	31.17	30.48
	Minimum	44.02	43.31	39.48	38.57	30.82	29.90
	Maximum	46.99	45.98	41.23	40.56	31.62	31.35
OHT2	**C.V.(%)**	1.63	1.55	1.49	1.72	1.10	1.88
Strength (ksi)							
	No. Specimens	18		7		6	
	No. Prepreg Lots	3		1		1	

2.3.16 Open Hole Tension 3 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 44.53 vol% **Comp. density:** 1.492 g/cc (.054 lb/cu in)

Fiber volume: 55.47 vol%

Ply thickness: 0.0078-0.0081

Ply count: 15

Test method: ASTM D5766-02a

Normalized by: 0.0079 in. CPT

Open Hole Tension 3
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[0_3,45,0_3,-45,0_3,45,0_3]

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0NFXXXXB		A0NFXXXXA		A0NFXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	65.31	64.40	62.56	62.51	64.13	63.53
	Minimum	56.36	56.55	60.14	60.16	60.66	59.95
	Maximum	72.43	72.59	65.11	64.68	66.15	66.15
OHT3	**C.V.(%)**	7.03	6.99	2.73	2.57	2.38	2.69
Strength (ksi)							
	No. Specimens	18		6		11	
	No. Prepreg Lots	3		1		1	

2.3.17 Filled Hole Tension 1 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 45.67 vol%
Comp. density: 1.493 g/cc (.054lb/cu in)
Fiber volume: 54.33 vol%
Ply thickness: 0.0079-0.0082
Ply count: 16

Test method: ASTM D6742-02

Normalized by: 0.0079 in. CPT

Filled Hole Tension 1
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]2S

		CTD (B)		RTD (A)			
Test Temperature [°F]		-65		75			
Moisture Conditioning		dry		dry			
Equilibrium at T, RH							
Source code		A0N4XXXXB		A0N4XXXXA			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	54.12	53.09	52.47	51.66		
	Minimum	51.26	50.88	50.45	49.60		
	Maximum	57.42	55.66	54.24	53.59		
FHT1	**C.V.(%)**	3.29	2.78	2.31	2.46		
Strength (ksi)							
	No. Specimens	18		7			
	No. Prepreg Lots	3		1			

2.3.18 Filled Hole Tension 2 Properties

Material: Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 36.12 vol%
Comp. density: 1.491 g/cc (.054 lb/cu in)
Fiber volume: 63.88 vol%
Ply thickness: 0.0078-0.0082
Ply count: 20

Test method: ASTM D6742-02

Normalized by: 0.0079 in. CPT

Filled Hole Tension 2
Gr/ Ep
ACG -MTM45-1/ 3K Plain Weave G30-500 Fabric
$[45,-45,0,45,-45]_{2S}$

		CTD (B)		RTD (A)		ETW2 (D)	
Test Temperature [°F]		-65		75		250	
Moisture Conditioning		dry		dry		equilibrium	
Equilibrium at T, RH						160 F,85%	
Source code		A0N5XXXXB		A0N5XXXXA		A0N5XXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	46.52	46.11	41.25	40.65	33.43	32.61
	Minimum	46.12	45.26	40.52	39.72	32.59	31.95
	Maximum	47.01	47.04	42.27	41.39	34.14	33.70
FHT2	**C.V.(%)**	0.70	1.27	1.62	1.73	1.69	1.96
Strength (ksi)							
	No. Specimens	6		6		6	
	No. Prepreg Lots	1		1		1	

2.3.19 Filled Hole Tension 3 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Filled Hole Tension 3** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[0_3,45,0_3\text{-}45,0_3,45,0_3]$**
Resin content:	35.72 vol%	**Comp. density:** 1.493 g/cc (.054 lb/cu in)	
Fiber volume:	64.28 vol%		
Ply thickness:	0.0080-0.0082		
Ply count:	15		
Test method:	ASTM D6742-02		
Normalized by:	0.0079 in. CPT		

		CTD (B)		RTD (A)			
Test Temperature [°F]		-65		75			
Moisture Conditioning		dry		dry			
Equilibrium at T, RH							
Source code		A0N6XXXXB		A0N6XXXXA			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
FHT3 Strength (ksi)	**Mean**	64.40	62.82	60.95	59.43		
	Minimum	61.52	59.82	57.47	56.25		
	Maximum	66.71	65.45	64.26	61.87		
	C.V.(%)	3.16	3.44	3.95	3.57		
	No. Specimens	6		6			
	No. Prepreg Lots	1		1			

2.3.20 Open Hole Compression 1 Properties

Material: Advanced Composites Group -MTM45-1/ 3K Plain Weave G30-500 Fabric

Resin content: 44.87 vol% **Comp. density:** 1.489 g/cc (.054 lb/cu in)
Fiber volume: 55.13 vol%
Ply thickness: 0.0079-0.0083
Ply count: 16

Test method: ASTM D6484-04

Normalized by: 0.0079 in. CPT

Open Hole Compression 1
Gr/ Ep
ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric
[45,0,-45,90]2s

		RTD (A)		ETW (N)		ETW2 (D)	
Test Temperature [°F]		75		200		250	
Moisture Conditioning		dry		equilibrium		equilibrium	
Equilibrium at T, RH				160 F,85%		160 F,85%	
Source code		A0NGXXXXA		A0NGXXXXN		A0NGXXXXD	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	41.71	40.71	31.46	30.58	28.92	28.00
	Minimum	40.20	39.18	30.26	29.00	27.03	26.53
	Maximum	45.06	43.33	32.36	31.98	31.34	29.77
OHC1	**C.V.(%)**	2.76	2.69	2.91	3.70	4.36	3.92
Strength (ksi)							
	No. Specimens	18		6		18	
	No. Prepreg Lots	3		1		3	

2.3.21 Open Hole Compression 2 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Open Hole Compression 2** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[45,-45,0,45,-45]_{2S}$**
Resin content:	36.51 vol %	**Comp. density:** 1.490 g/cc (.054 lb/cu in)	
Fiber volume:	63.49 vol %		
Ply thickness:	0.0079-0.0083		
Ply count:	20		
Test method:	ASTM D6484-04		
Normalized by:	0.0079 in. CPT		

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0NHXXXXA		A0NHXXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	36.94	36.47	26.40	25.69		
	Minimum	35.97	35.76	23.18	22.66		
	Maximum	37.63	36.86	28.16	27.34		
OHC2	**C.V.(%)**	1.69	1.15	5.20	5.08		
Strength (ksi)							
	No. Specimens	6		19			
	No. Prepreg Lots	1		3			

2.3.22 Open Hole Compression 3 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Open Hole Compression 3** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[0_3,45,0_3,-45,0_3,45,0_3]$**
Resin content:	36.00 vol %	**Comp. density:** 1.490 g/cc (.054 lb/cu in)	
Fiber volume:	64.00 vol %		
Ply thickness:	0.0079-0.0084		
Ply count:	15		
Test method:	ASTM D6484-04		
Normalized by:	0.0079 in. CPT		

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0NIXXXXA		A0NIXXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	48.78	47.06	30.74	29.76		
	Minimum	46.05	44.07	26.68	25.62		
	Maximum	52.76	50.96	34.80	34.11		
OHC3	**C.V.(%)**	4.877	5.09	6.16	6.59		
Strength (ksi)							
	No. Specimens	6		20			
	No. Prepreg Lots	1		3			

2.3.23 Filled Hole Compression 1 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Filled Hole Compression 1** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[45,0,-45,90]_{2S}$**
Resin content:	44.98 vol%	**Comp. density:** 1.490 g/cc (.054 lb/cu in)	
Fiber volume:	55.02 vol%		
Ply thickness:	0.0079-0.0082		
Ply count:	16		
Test method:	ASTM D6742-02		
Normalized by:	0.0079 in. CPT		

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0N7XXXXA		A0N7XXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
FHC1 Strength (ksi)	**Mean**	59.80	59.04	44.30	43.38		
	Minimum	57.90	56.40	39.50	38.00		
	Maximum	62.81	62.11	50.40	49.37		
	C.V.(%)	2.99	3.53	6.92	7.23		
	No. Specimens	6		17			
	No. Prepreg Lots	1		3			

* See Section 10 for deviations related to this test method

2.3.24 Filled Hole Compression 2 Properties

Material:	Advanced Composites Group -MTM45-1/ 3K Plain Weave G30-500 Fabric				**Filled Hole Compression 2** **Gr/ Ep** **ACG -MTM45-1/ 3K Plain Weave G30-500 Fabric** **[45,-45,0,45,-45]2S**	
Resin content:	35.85 vol%	**Comp. density:** 1.494 g/cc				
Fiber volume:	54.45 vol%					
Ply thickness:	0.0079-0.0082					
Ply count:	20					
Test method:	ASTM D6742-02					
Normalized by:	0.0079 in. CPT					
		RTD (A)		**ETW2 (D)**		
Test Temperature [°F]		75		250		
Moisture Conditioning		dry		equilibrium		
Equilibrium at T, RH				160 F,85%		
Source code		A0N8XXXXA		A0N8XXXXD		
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	50.05	49.46	31.65	30.98		
	Minimum	49.07	48.63	26.52	26.55		
	Maximum	51.13	50.49	35.43	34.26		
FHC2	**C.V.(%)**	1.62	1.62	8.22	7.63		
Strength (ksi)							
	No. Specimens	6		18			
	No. Prepreg Lots	1		3			

* See Section 10 for deviations related to this test method

2.3.25 Filled Hole Compression 3 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Filled Hole Compression 3** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[0_3,45,0_3,-45,0_3,45,0_3]$**
Resin content:	44.82 vol%	**Comp. density:** 1.490 g/cc (.054 lb/cu in)	
Fiber volume:	55.18 vol%		
Ply thickness:	0.0079-0.0082		
Ply count	15		
Test method:	ASTM D6742-02		
Normalized by:	0.0079 in. CPT		

		RTD (A)		ETW2 (D)			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0N9XXXXA		A0N9XXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	66.30	65.32	48.01	47.27		
	Minimum	64.44	63.46	42.49	41.96		
	Maximum	68.78	67.98	52.93	51.55		
FHC3	**C.V.(%)**	2.73	3.03	7.72	7.29		
Strength (ksi)							
	No. Specimens	5		18			
	No. Prepreg Lots	1		3			

Physical testing values do not include FHC3-A-MH2 and FHC3 -C-MH1

* See Section 10 for deviations related to this test method

2.3.26 Pin Bearing 1 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Pin Bearing 1** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **[45,0,-45,90]2S**
Resin content:	45.42 vol%	**Comp. density:** 1.49 g/cc (0.054 lb/cu in)	
Fiber volume:	54.58 vol%		
Ply thickness:	0.0075-0.0081		
Ply count:	16		
Test method:	ASTM D5961-05		
Normalized by:	0.0079 in CPT		

		RTD (A)		ETW2 (D)		
Test Temperature [°F]		75		250		
Moisture Conditioning		dry		equilibrium		
Equilibrium at T, RH				160 F,85%		
Source code		A0N1XXXXA		A0N1XXXXD		
		Normalized	**Measured**	**Normalized**	**Measured**	
	Mean	88.26	87.98	73.86	73.95	
	Minimum	79.34	78.66	65.29	64.91	
	Maximum	93.76	93.72	83.40	82.73	
PB1	**C.V.(%)**	4.03	4.53	7.07	7.19	
2% offset Strength						
(ksi)	**No. Specimens**	17		20		
	No. Prepreg Lots	3		3		

Physical testing values do not inlcude PB1 Batch B cure 1 and 2 and Batch C Cure 2

2.3.27 Pin Bearing 2 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Pin Bearing 2** **Gr/ Ep** **MTM45-1/ 3K Plain Weave** **G30-500 Fabric** **[45,-45,0,45,-45]2S**
Resin content:	45.34 vol%	**Comp. density:** 1.49 g/cc (.054 lb/cc in)	
Fiber volume:	54.66 vol%		
Ply thickness:	0.0077-0.0081		
Ply count:	20		
Test method:	ASTM D5961-05		
Normalized by:	0.0079 in CPT		

		RTD (A)		ETW2 (D)		
Test Temperature [°F]		75		250		
Moisture Conditioning		dry		equilibrium		
Equilibrium at T, RH				160 F,85%		
Source code		A0N2XXXXA		A0N2XXXXD		
		Normalized	**Measured**	**Normalized**	**Measured**	
	Mean	86.80	86.38	66.36	66.11	
	Minimum	78.38	78.26	54.60	55.29	
	Maximum	91.22	90.50	71.56	71.19	
PB2	**C.V.(%)**	5.58	5.79	7.49	6.82	
2% offset Strength						
(ksi)	**No. Specimens**	6		18		
	No. Prepreg Lots	1		3		

2.3.28 Pin Bearing 3 Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric		**Pin Bearing 3** **Gr/ Ep** **ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric** **$[0_3,45,0_3,-45,0_3,45,0_3]$**
Resin content:	45.58 vol%	**Comp. density:** 1.49 g/cc (.054 lb/cu in)	
Fiber volume:	54.42 vol%		
Ply thickness:	0.0075-0.0082		
Ply count:	15		
Test method:	ASTM D5961-05		
Normalized by:	0.0079 in CPT		

		RTD (A)		ETW2 (D)		
Test Temperature [°F]		75		250		
Moisture Conditioning		dry		equilibrium		
Equilibrium at T, RH				160 F,85%		
Source code		A0N3XXXXA		A0N3XXXXD		
		Normalized	**Measured**	**Normalized**	**Measured**	
	Mean	82.13	80.38	70.18	70.57	
	Minimum	74.99	74.31	50.75	53.47	
	Maximum	88.89	86.99	89.87	89.12	
PB3	**C.V.(%)**	6.38	6.24	11.46	11.52	
2% offset Strength						
(ksi)	**No. Specimens**	6		18		
	No. Prepreg Lots	1		3		

Physical testing values do not include PB3-A-MH1 and PB3-C-MH2

2.3.29 Compression After Impact Properties

Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric				**Compression After Impact** Gr/ Ep ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric [0,45,-45,0]5	
Resin content:	NA	**Comp. density:** NA				
Fiber volume:	NA					
Ply thickness:	0.0079-0.0080					
Ply count:	20					
Test method:	SACMA SRM 2R-94					
Normalized by:	0.0079 in. CPT					
		RTD (A)				
Test Temperature [°F]		75				
Moisture Conditioning		dry				
Equilibrium at T, RH						
Source code		A0NKXXXXA				
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	33.84	33.691				
	Minimum	31.92	31.78				
	Maximum	35.23	34.85				
CAI	**C.V.(%)**	3.33	3.33				
Strength (ksi)							
	No. Specimens	8					
	No. Prepreg Lots	1					

No physical testing results available

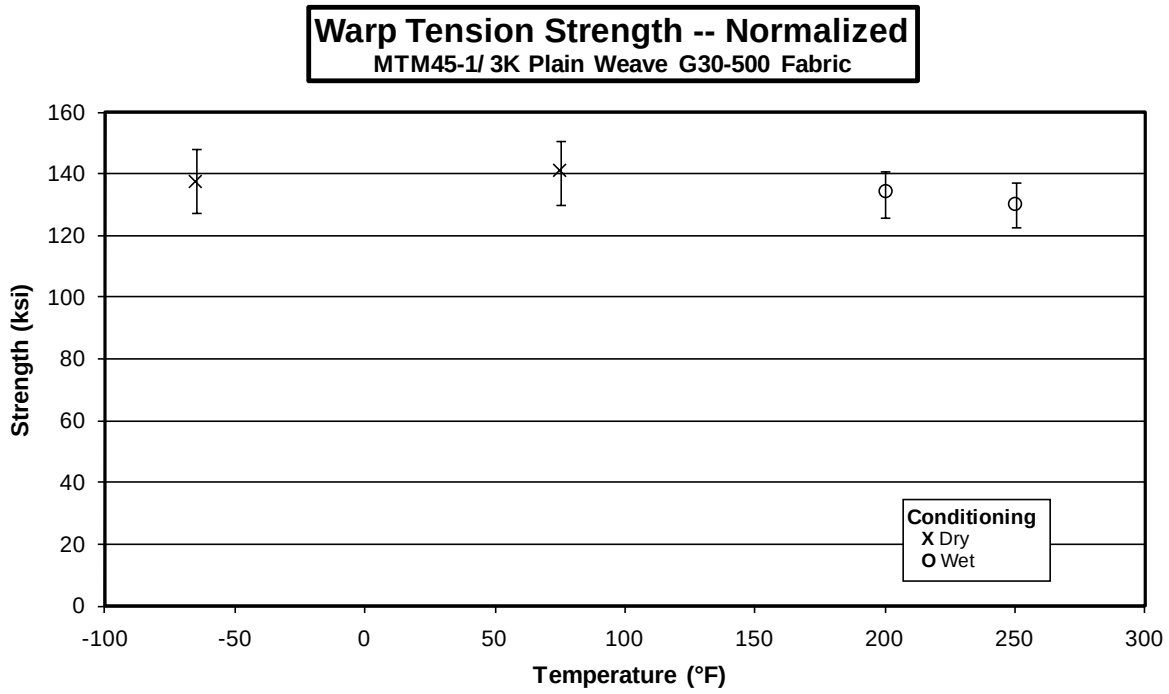
2.3.30 Interlaminar Tension Properties

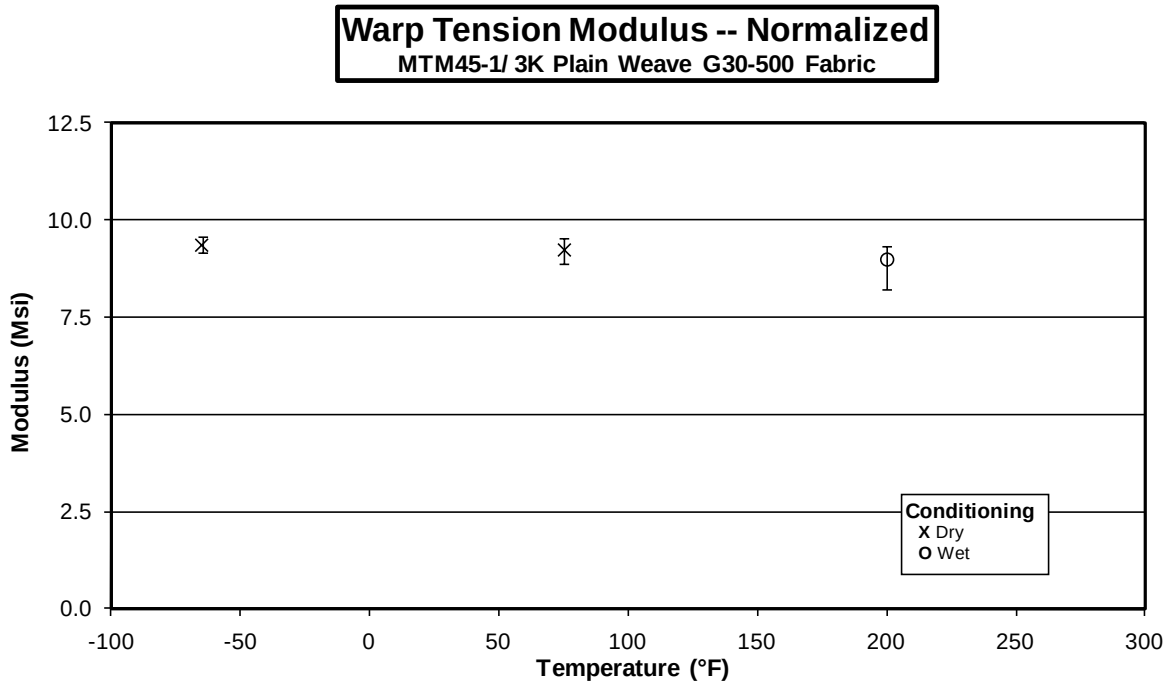
Material:	Advanced Composites Group - MTM45-1/ 3K Plain Weave G30-500 Fabric					**Interlaminar Tension** Gr/ Ep ACG - MTM45-1/ 3K Plain Weave G30-500 Fabric [0,45,-45,0]5	
Resin content:	36.18 vol %		**Comp. density:** 1.492 g/cc (.054 lb/cu in)				
Fiber volume:	63.82 vol %						
Ply thickness:	0.0078-0.0081						
Ply count:	20						
Test method:	ASTM D6415-99^{E1}						
Normalized by:	NA						
		RTD (A)		**ETW2 (D)**			
Test Temperature [°F]		75		250			
Moisture Conditioning		dry		equilibrium			
Equilibrium at T, RH				160 F,85%			
Source code		A0NMXXXXA		A0NMXXXXD			
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean		6.60		2.70		
	Minimum		5.91		2.48		
	Maximum		8.13		2.98		
ILT	**C.V.(%)**		12.89		8.29		
Strength (ksi)							
	No. Specimens	6		6			
	No. Prepreg Lots	1		1			

3. Individual Test Charts

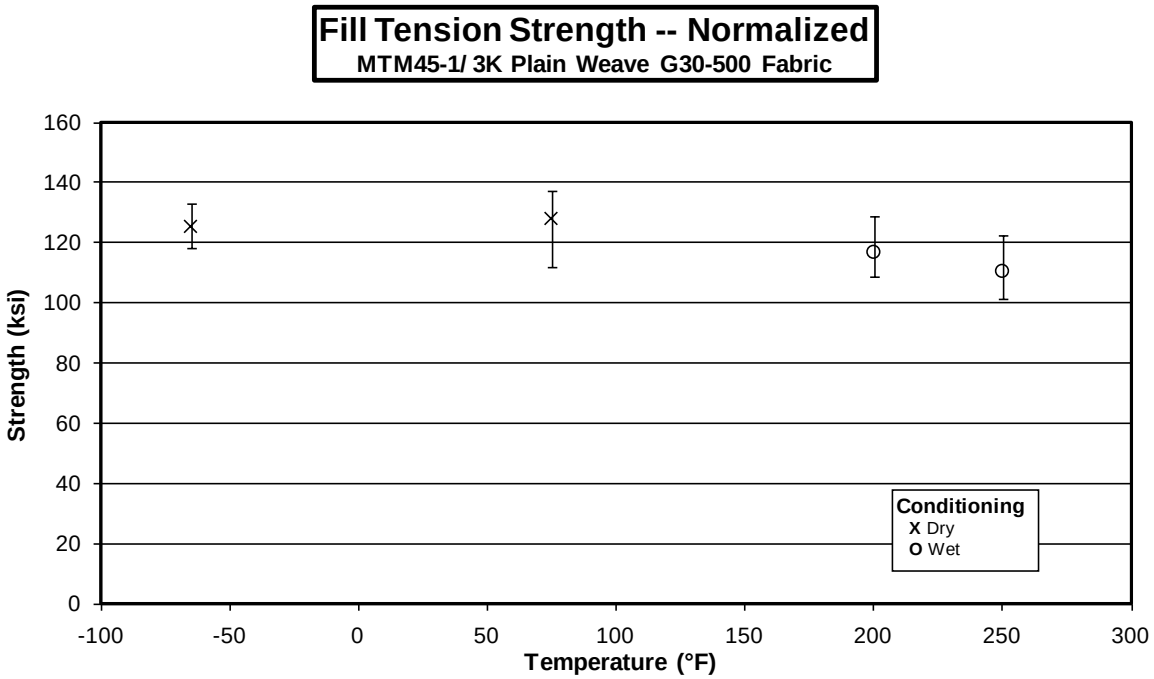
These charts combine all three batches of data and plot the minimum and maximum modulus and strength range based on the test temperature.

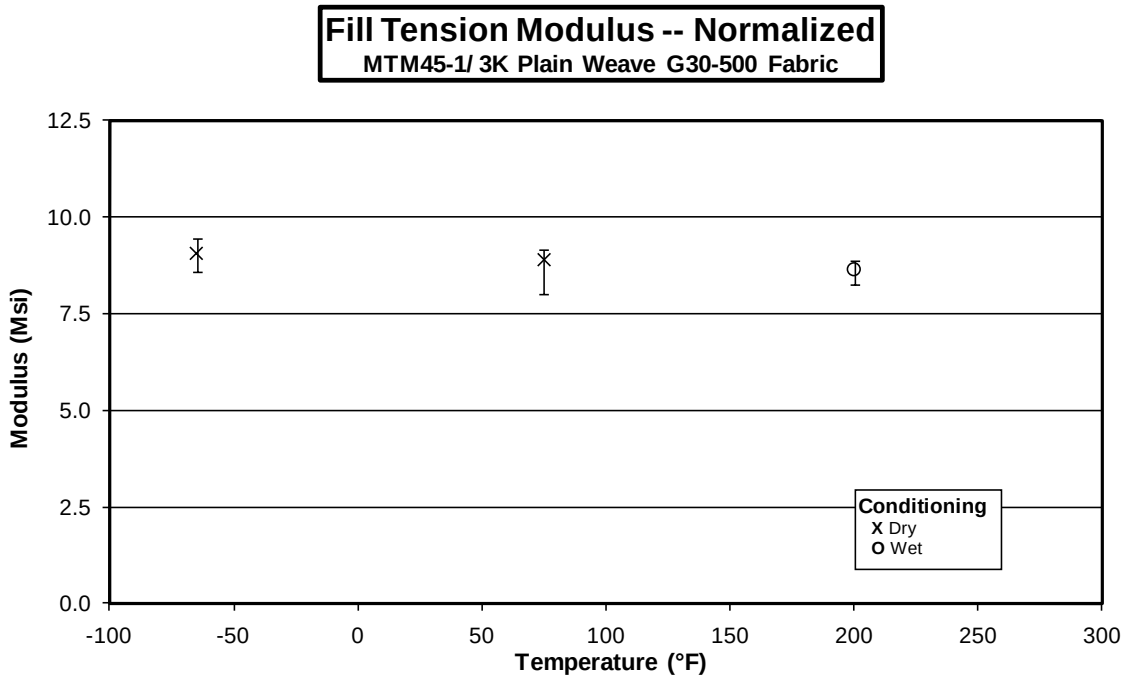
3.1 Warp Tension Properties



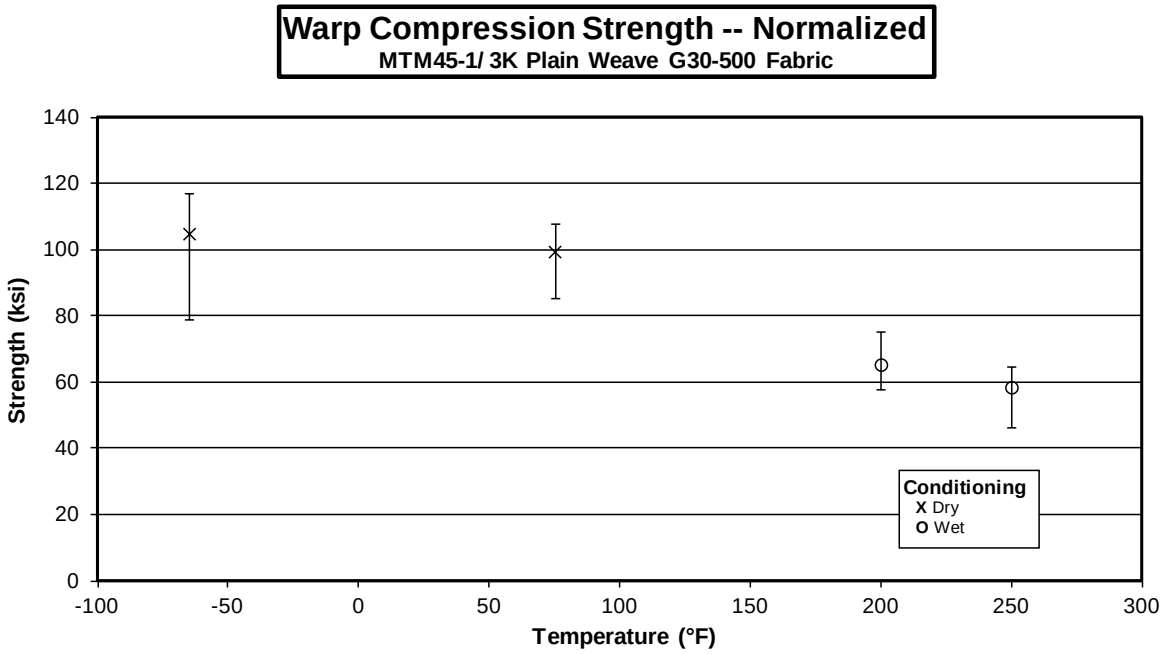


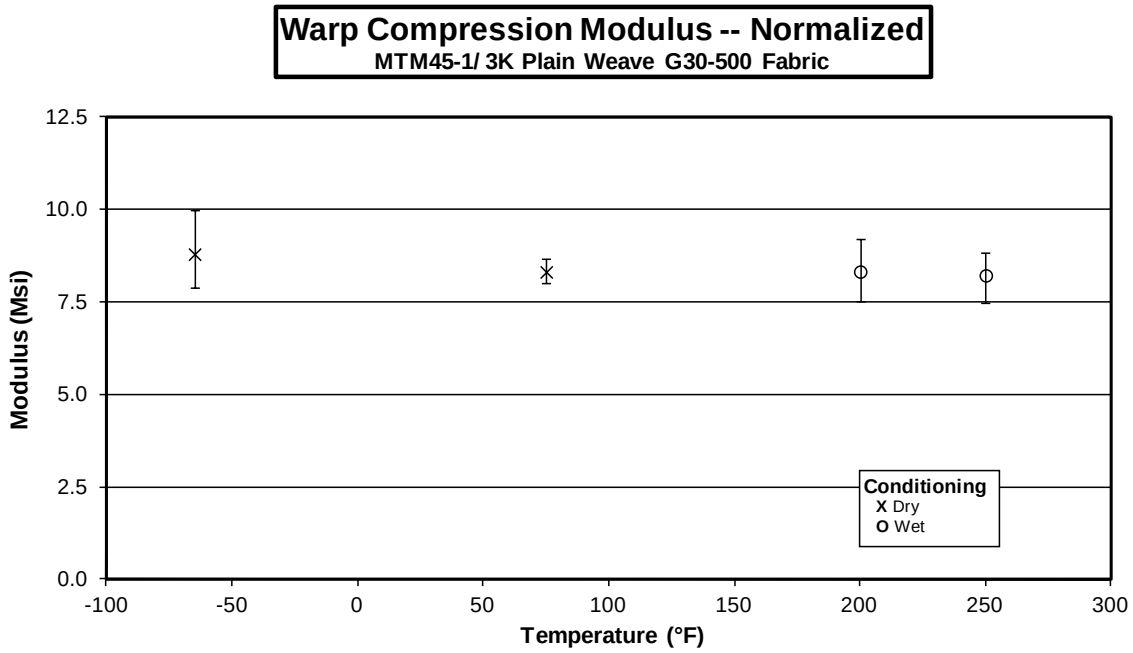
3.2 Fill Tension Properties



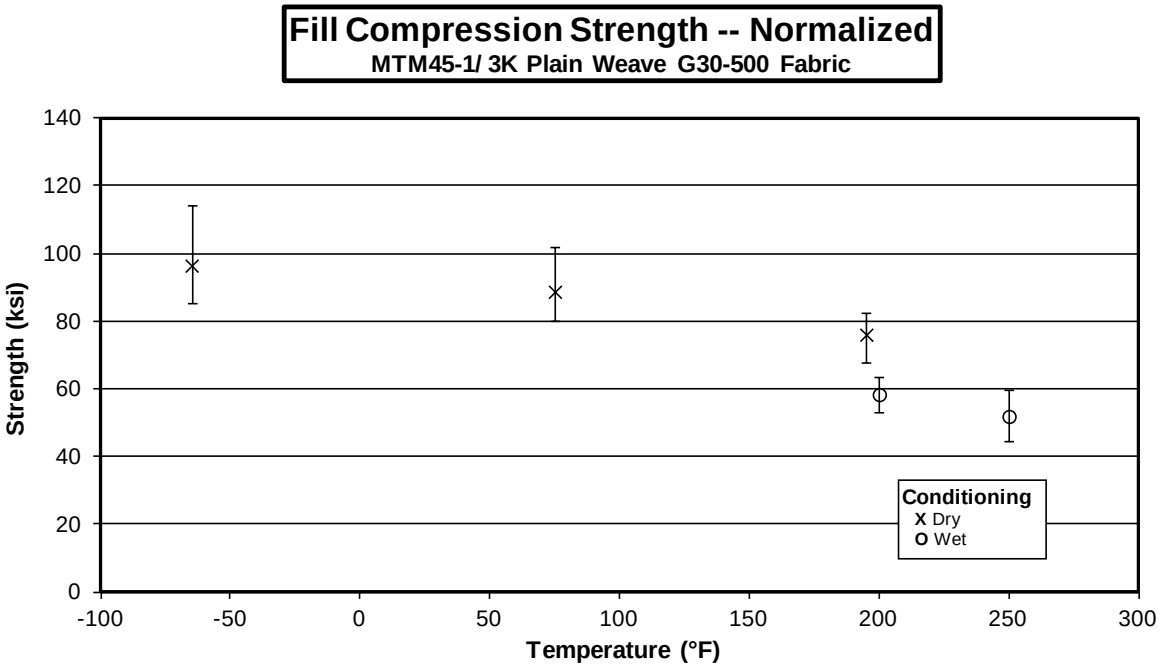


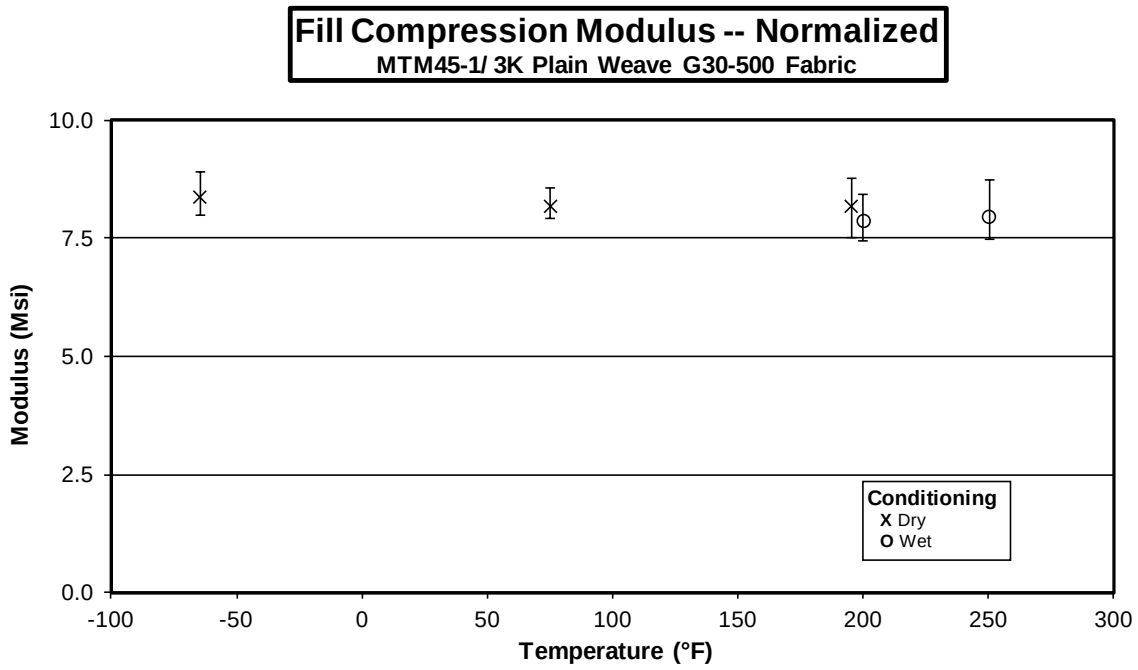
3.3 Warp Compression Properties



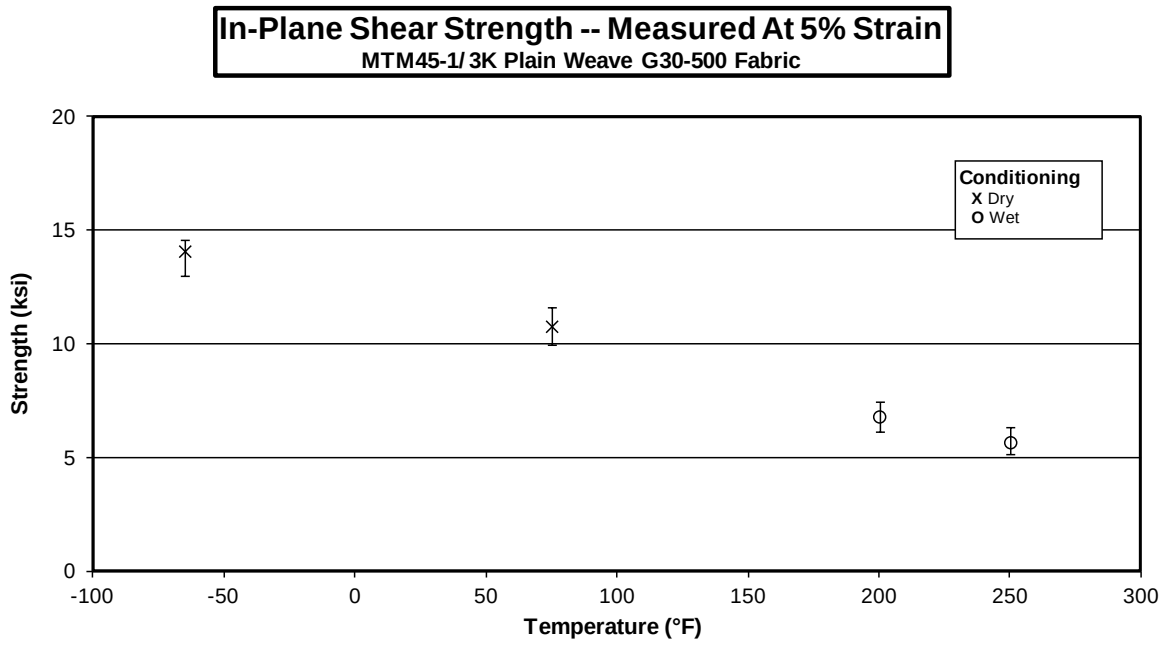


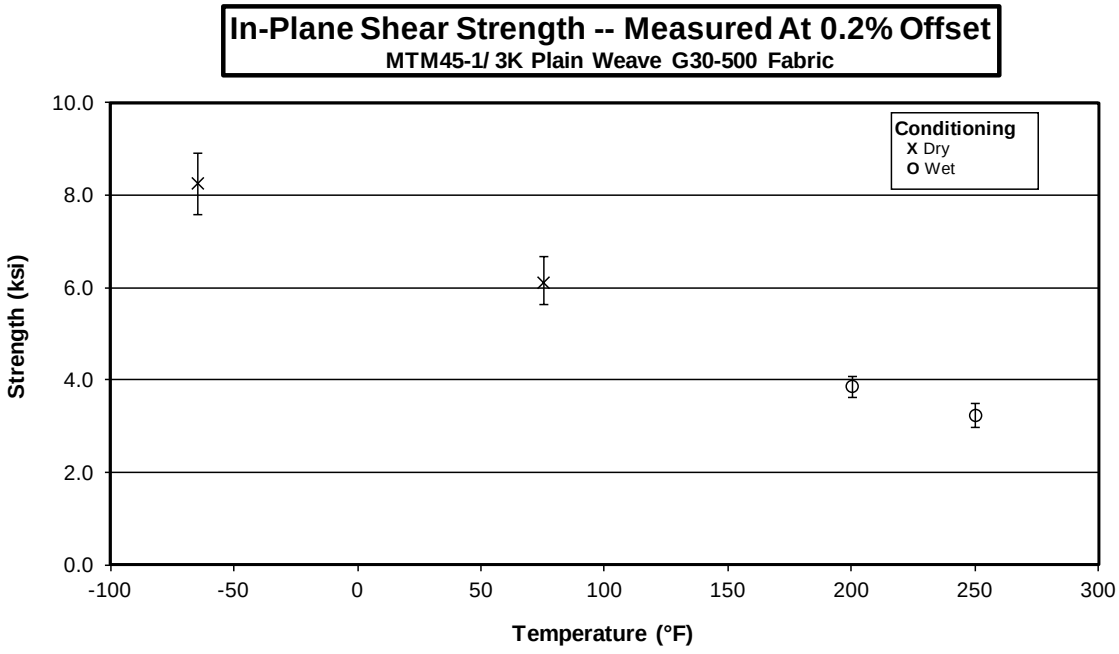
3.4 Fill Compression Properties

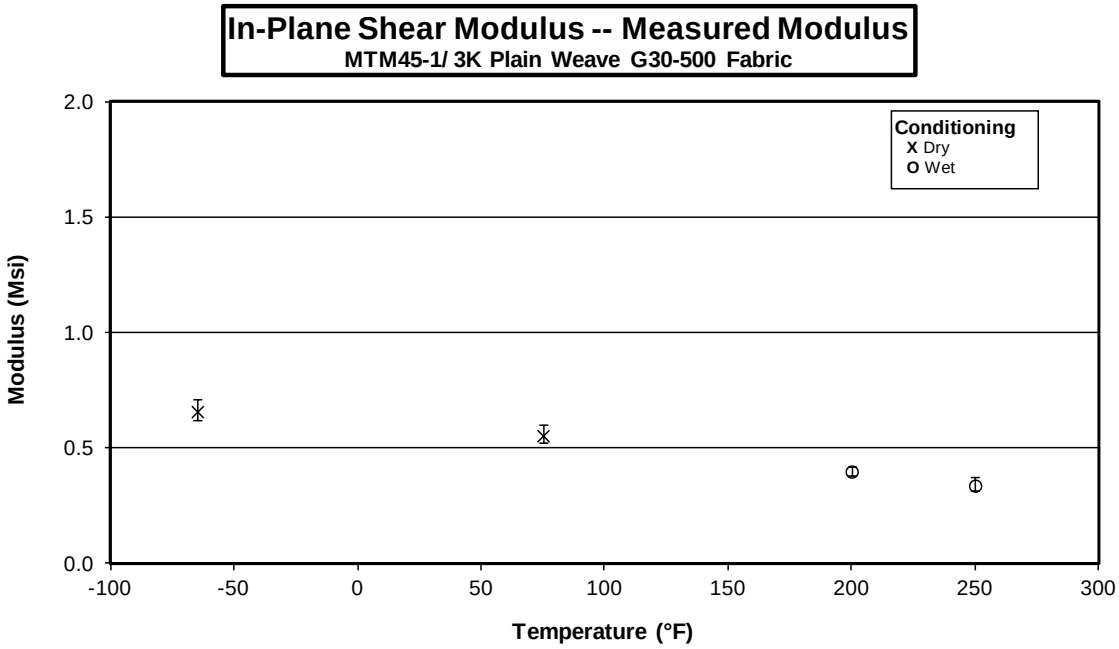




3.5 In-Plane Shear Properties

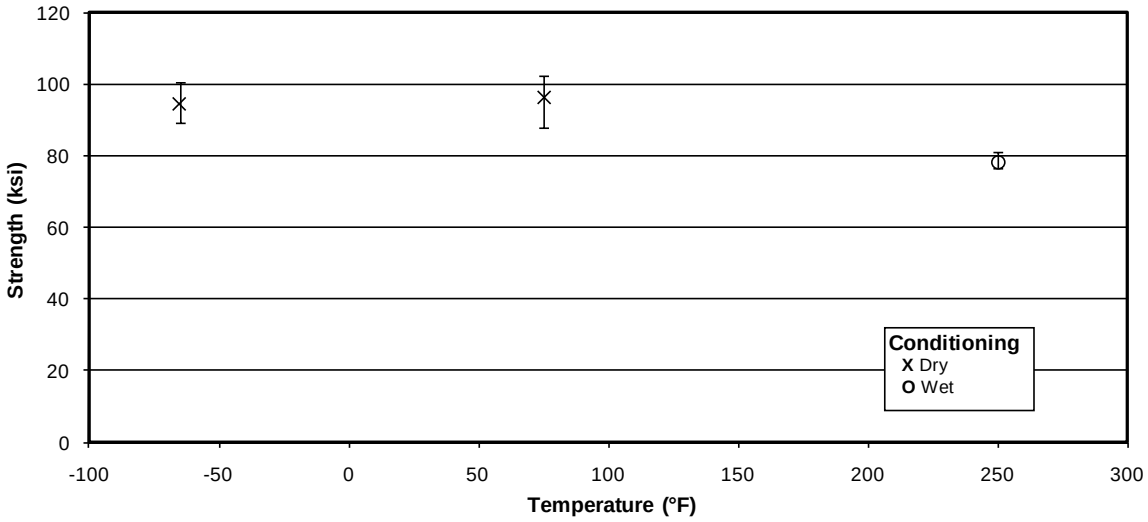




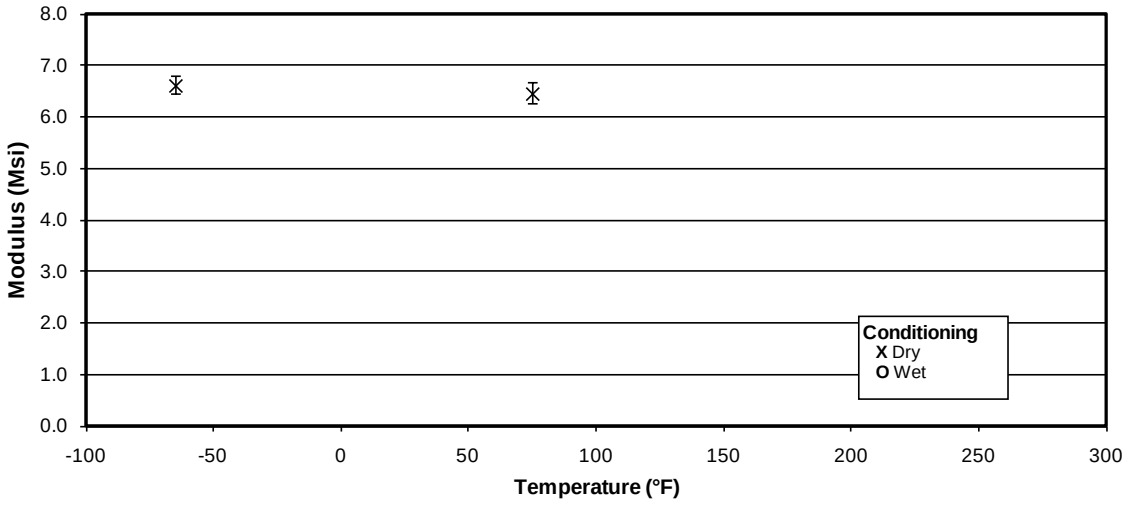

In-Plane Shear Modulus -- Measured Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Conditioning
X Dry
O Wet
Modulus (Msi)
2.0
1.5
1.0
0.5
0.0
-100
-50
0
50
100
150
200
250
300
Temperature (°F)

3.6 Unnotched Tension 1 Properties

Laminate Unnotched Tension (UNT1) Strength -- Normalized
MTM45-1/ 3K Plain Weave G30-500 Fabric

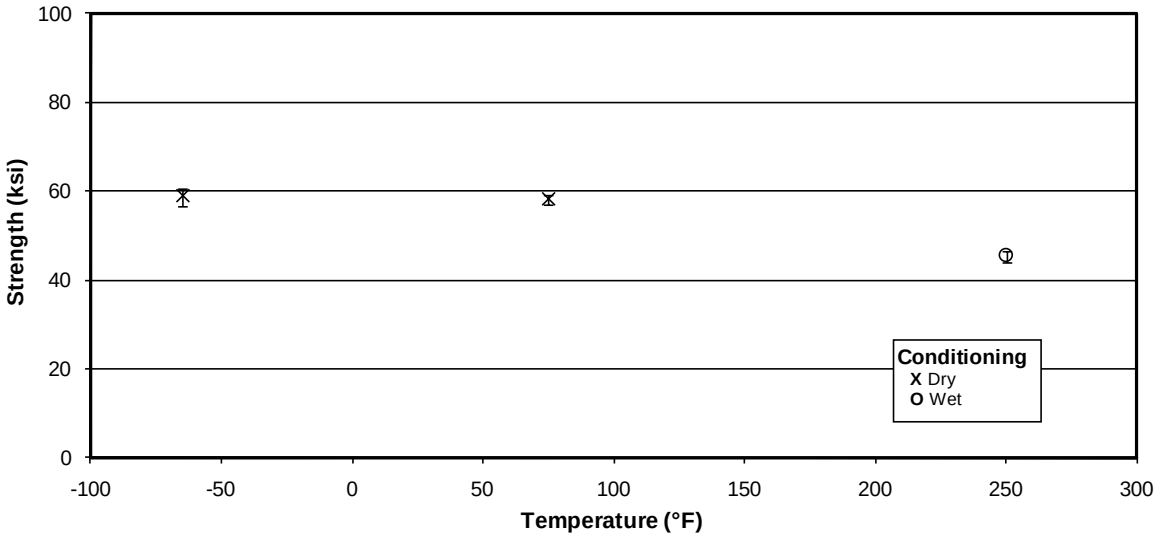


Laminate Unnotched Tension (UNT1) Modulus -- Normalized
MTM45-1/ 3K Plain Weave G30-500 Fabric

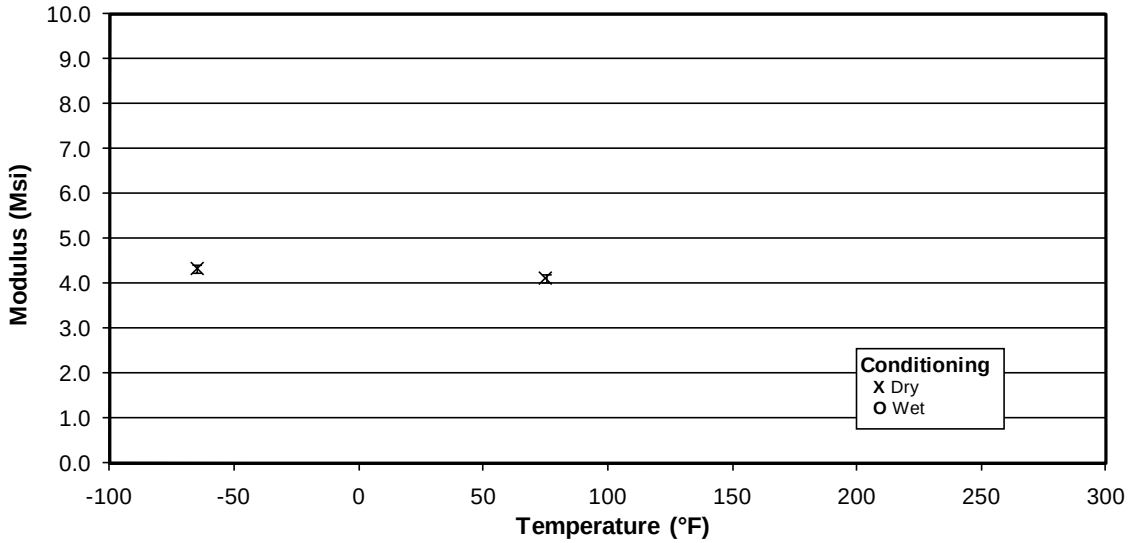


3.7 Unnotched Tension 2 Properties

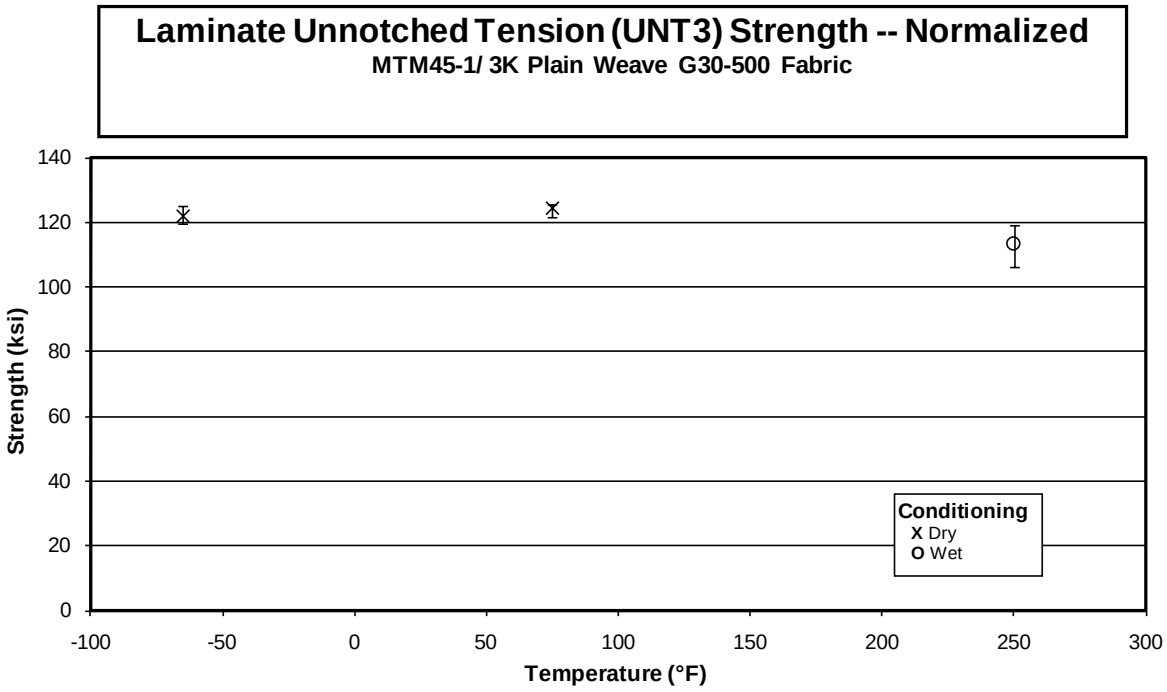
Laminate Unnotched Tension (UNT2) Strength -- Normalized
MTM45-1/ 3K Plain Weave G30-500 Fabric

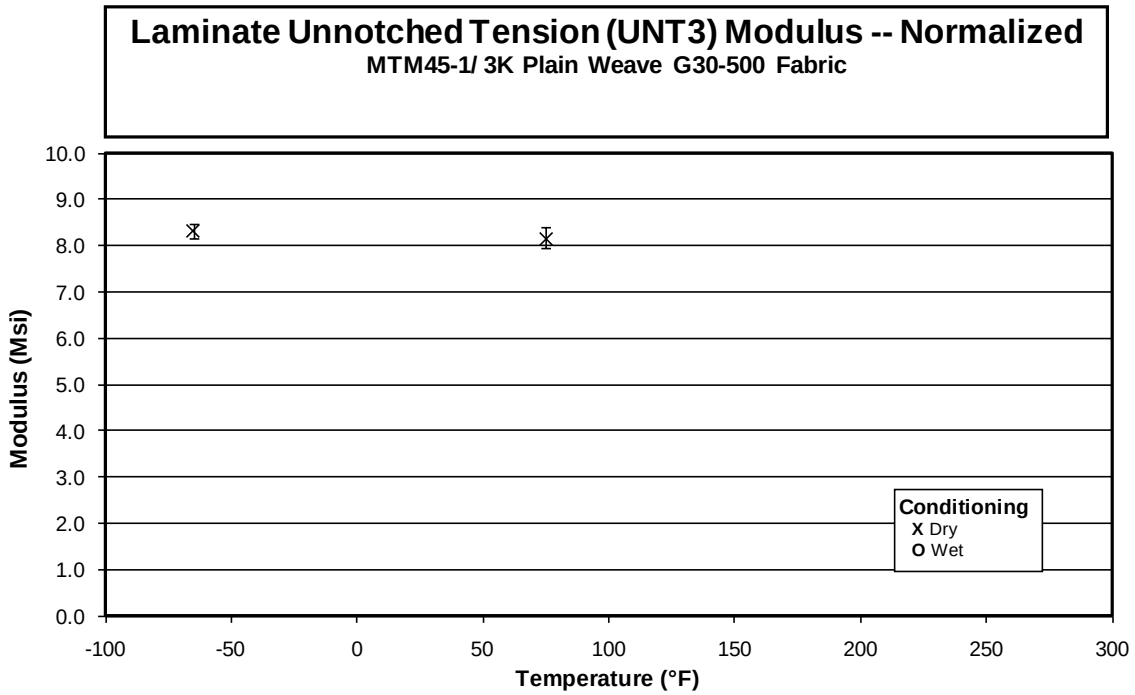


Laminate Unnotched Tension (UNT2) Modulus -- Normalized
MTM45-1/ 3K Plain Weave G30-500 Fabric

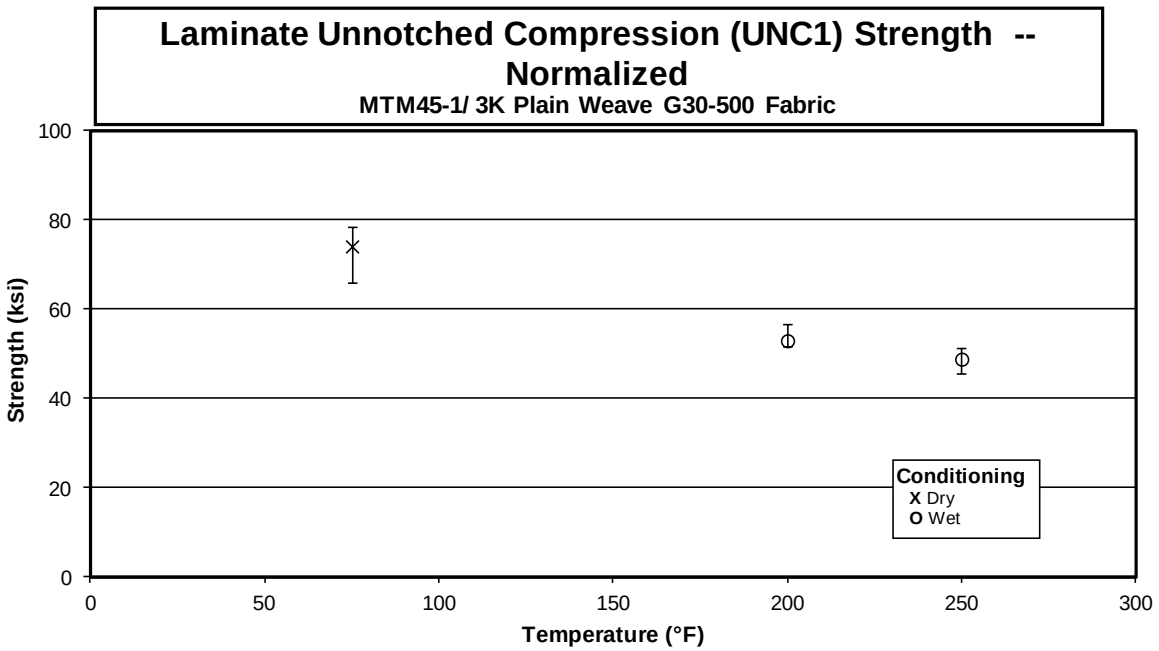


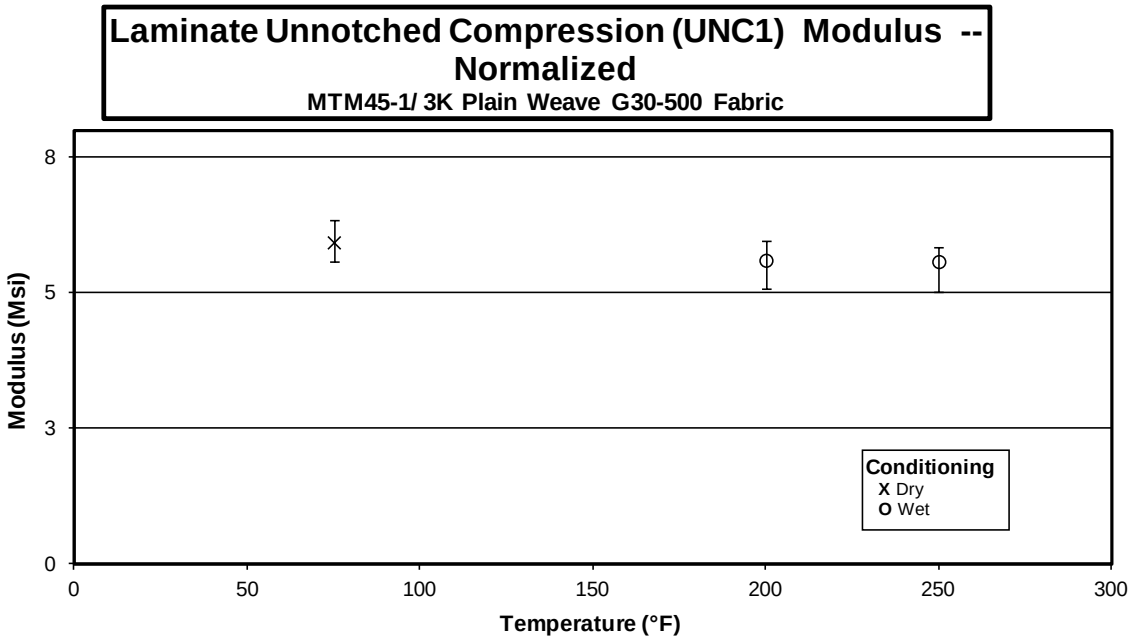
3.8 Unnotched Tension 3 Properties



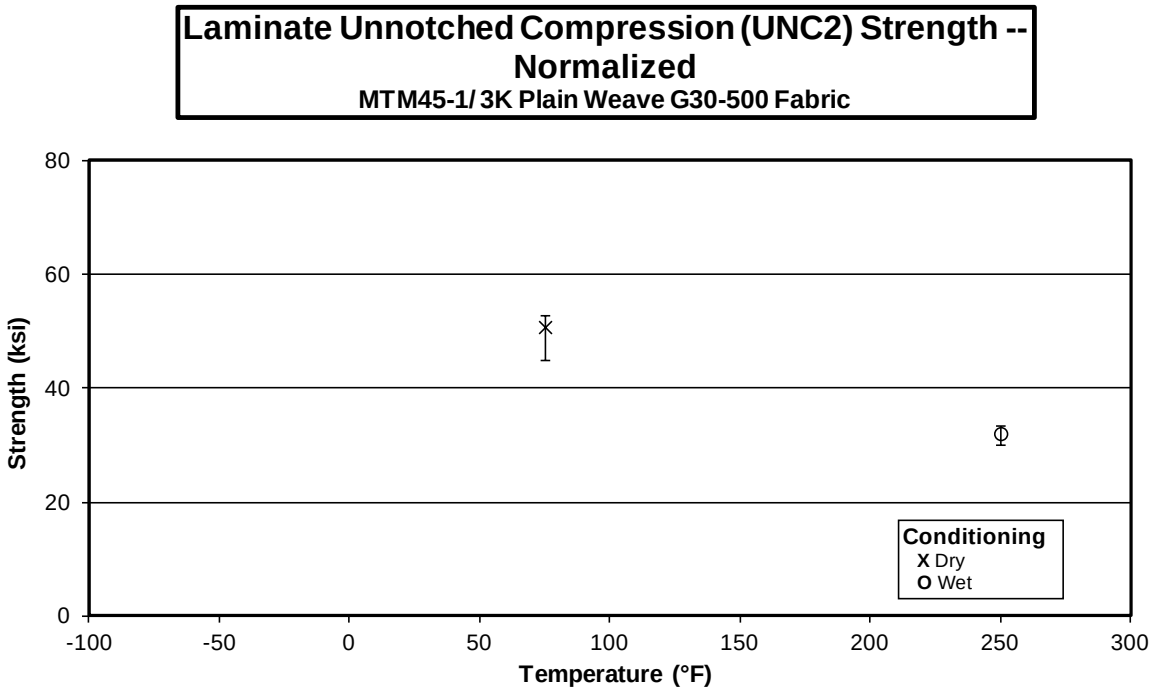


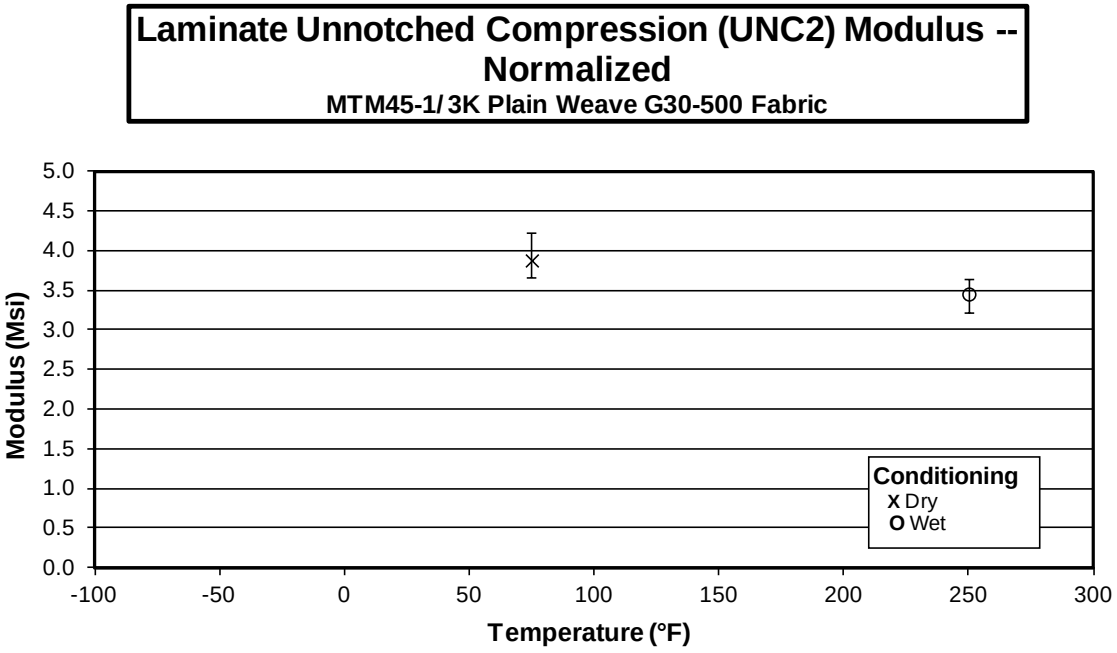
3.9 Unnotched Compression 1 Properties



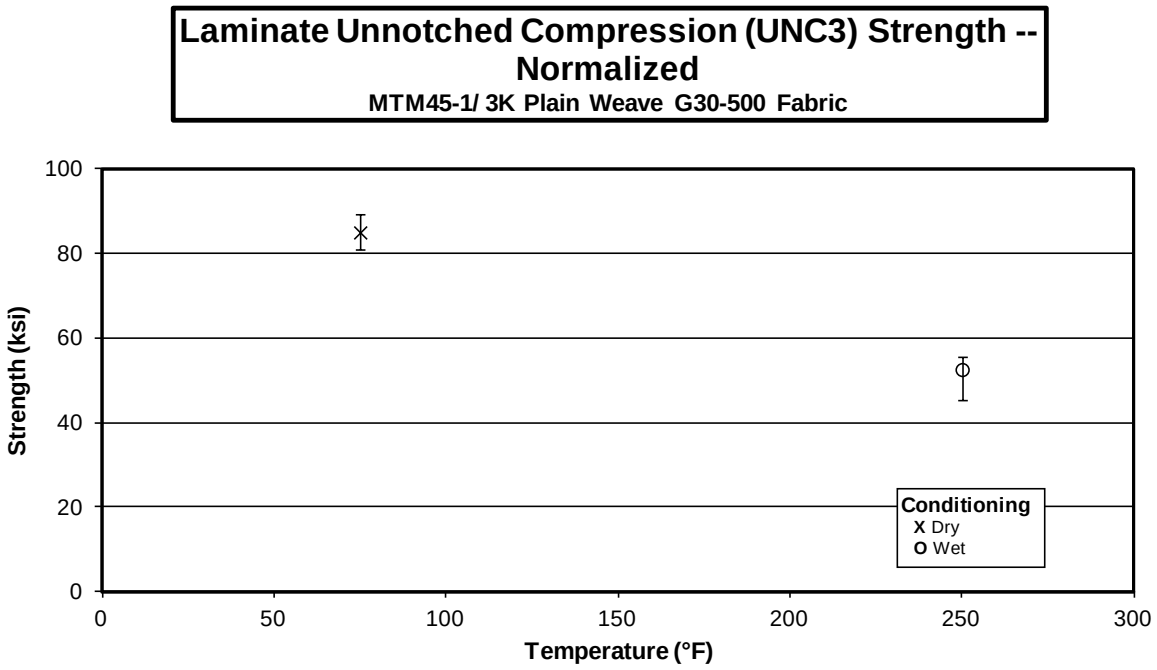


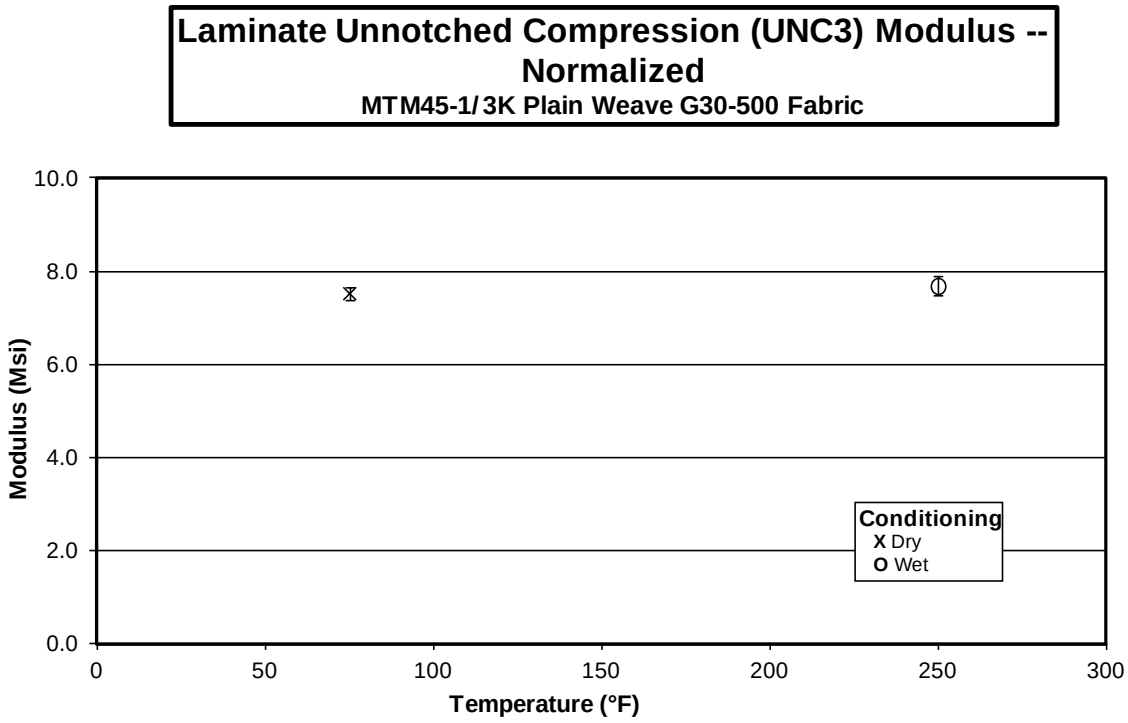
3.10 Unnotched Compression 2 Properties



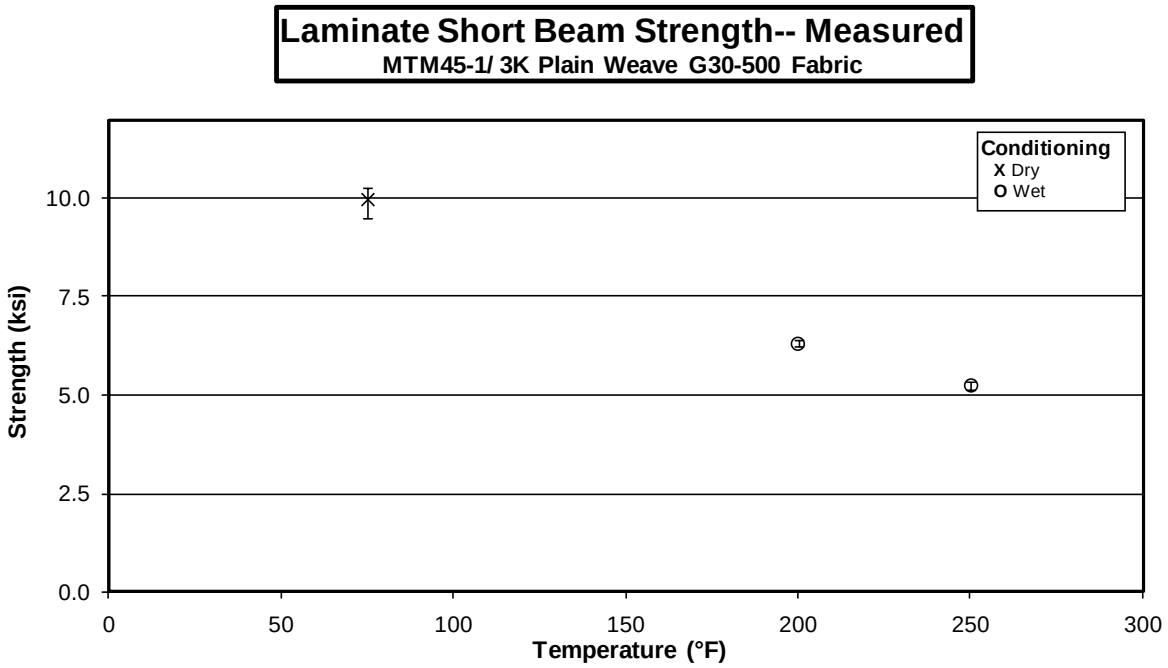


3.11 Unnotched Compression 3 Properties

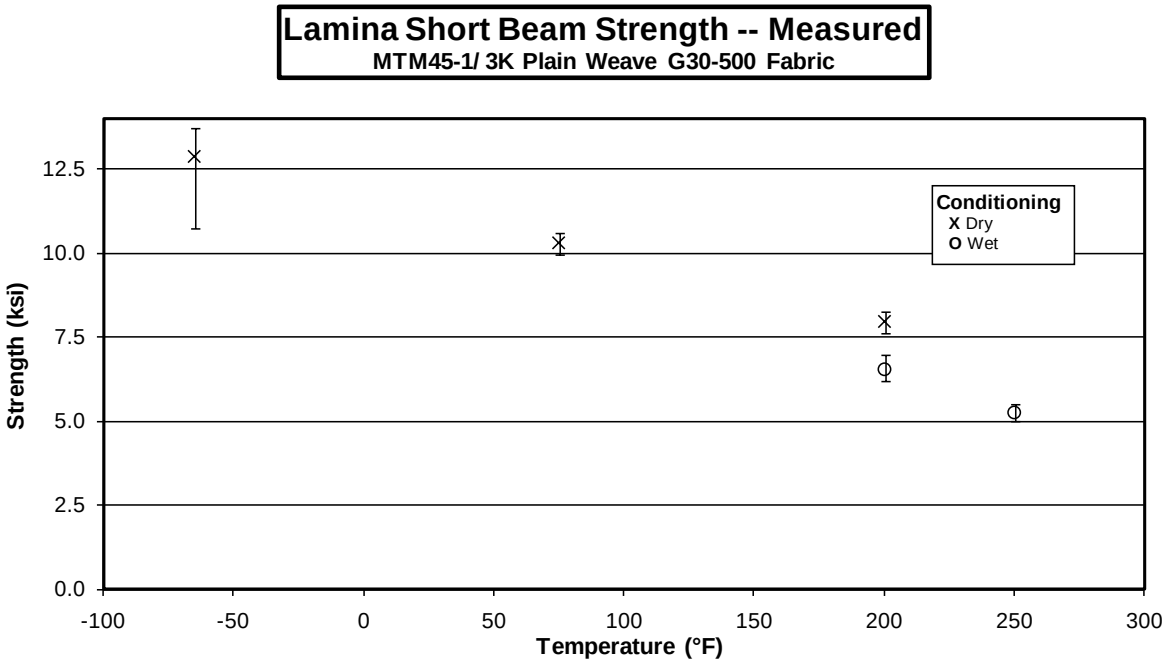




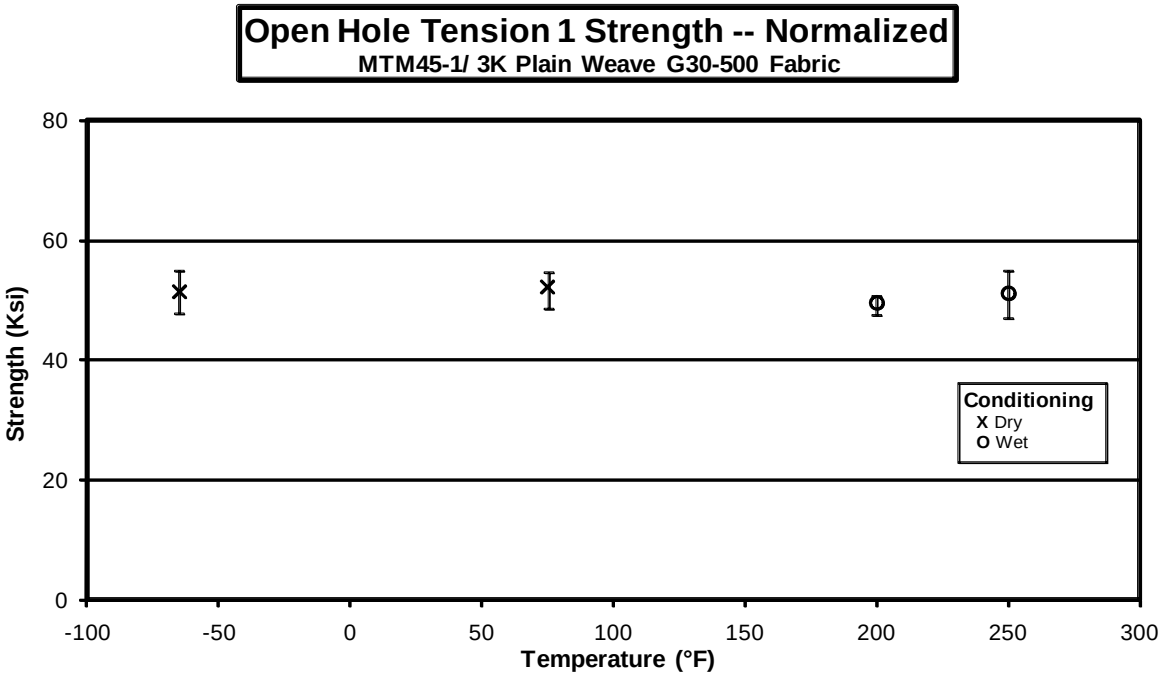
3.12 Laminate Short Beam Strength Properties



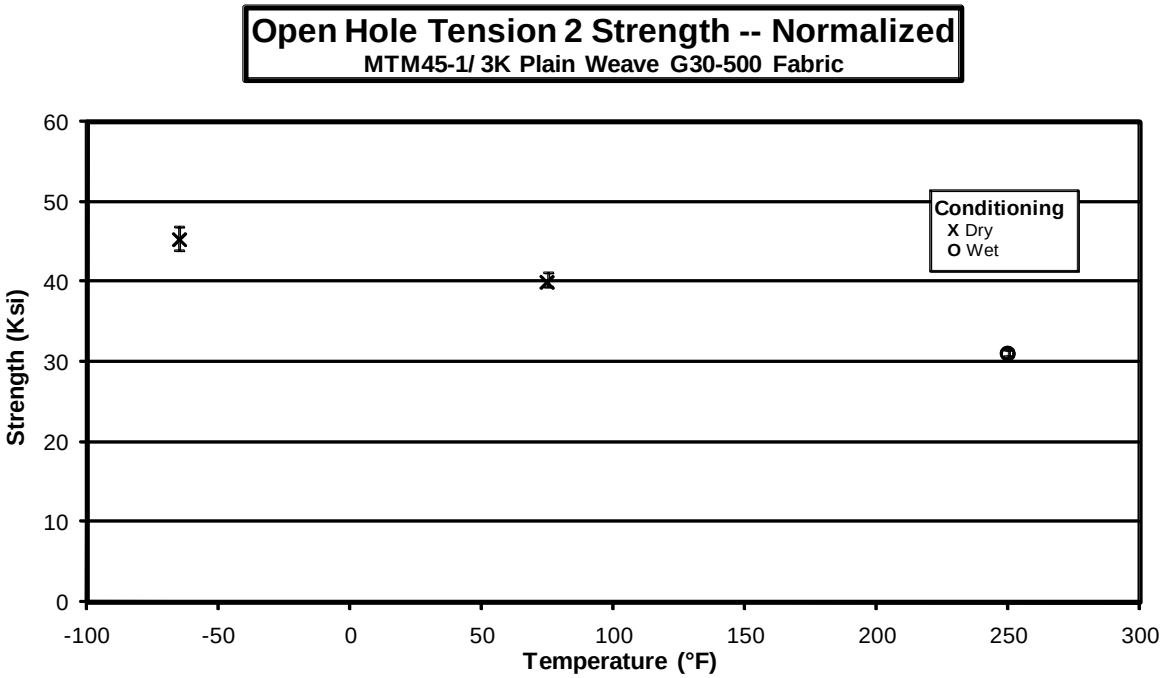
3.13 Lamina Short Beam Strength Properties



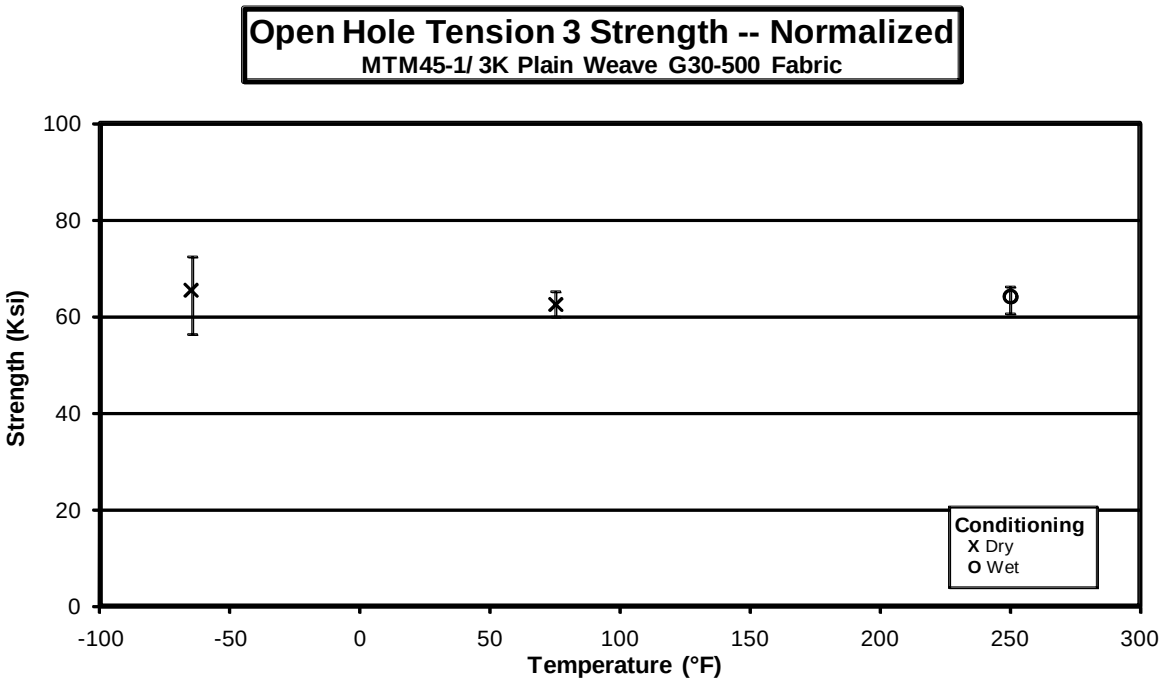
3.14 Open Hole Tension 1 Properties



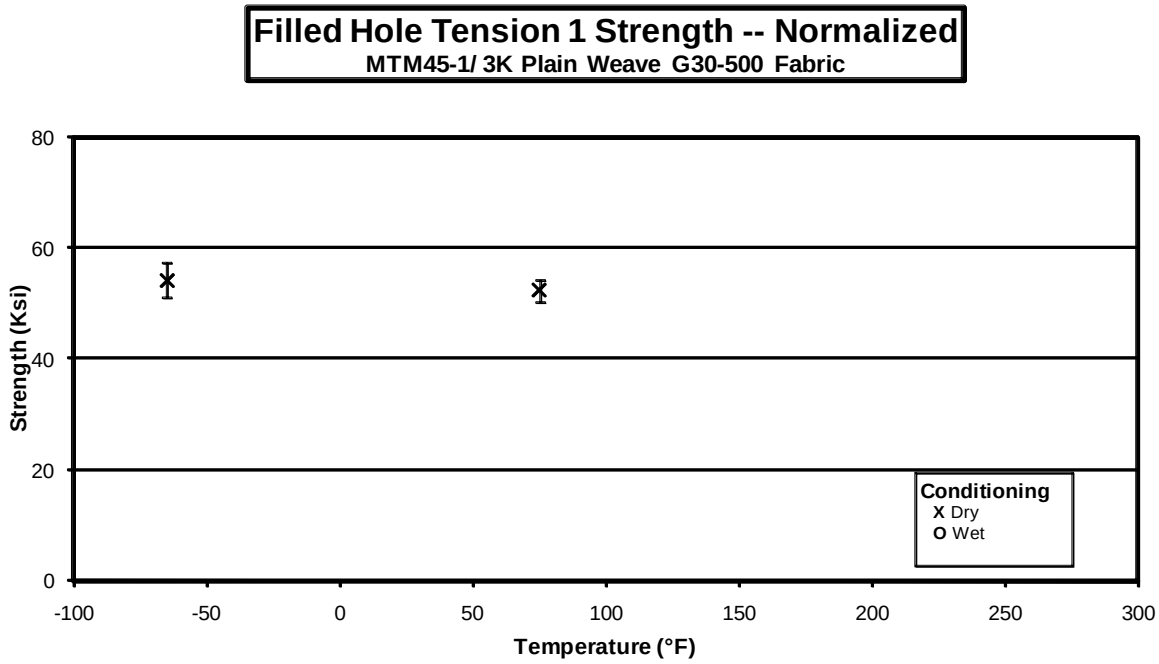
3.15 Open Hole Tension 2 Properties



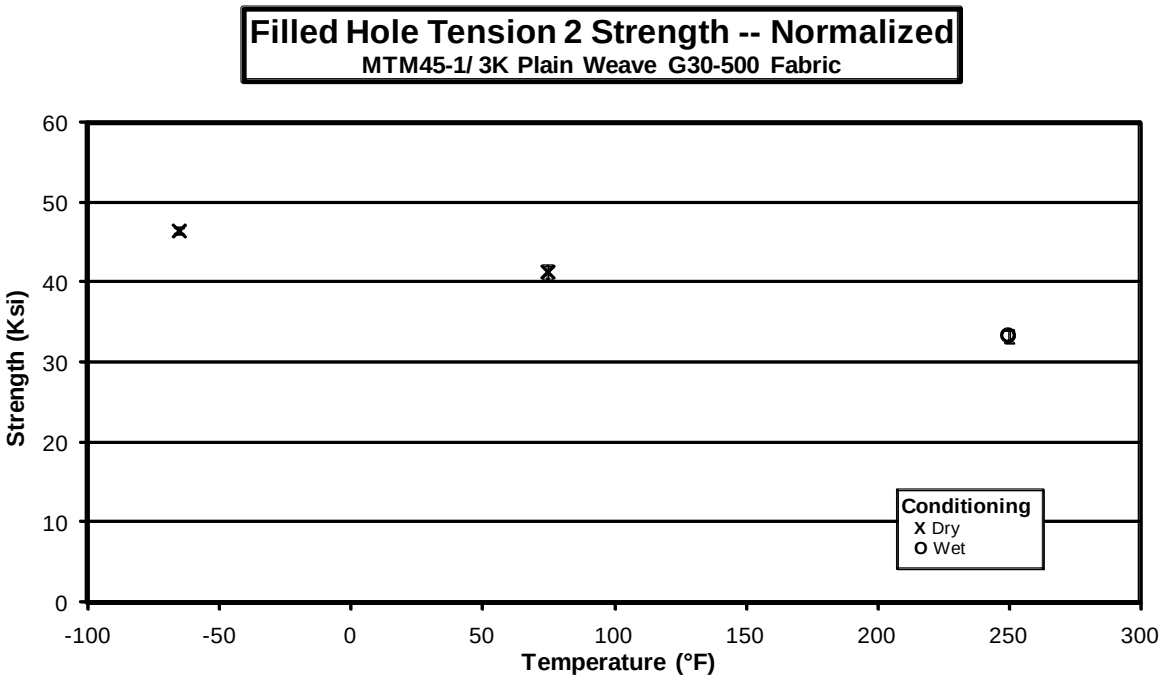
3.16 Open Hole Tension 3 Properties



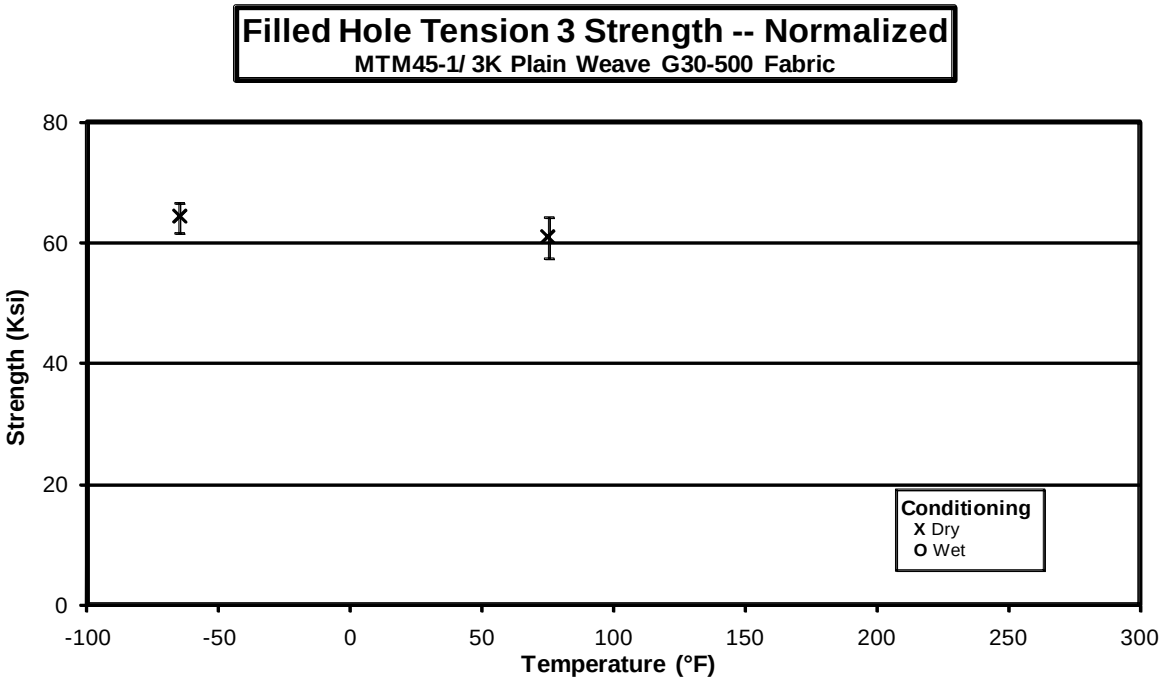
3.17 Filled Hole Tension 1 Properties



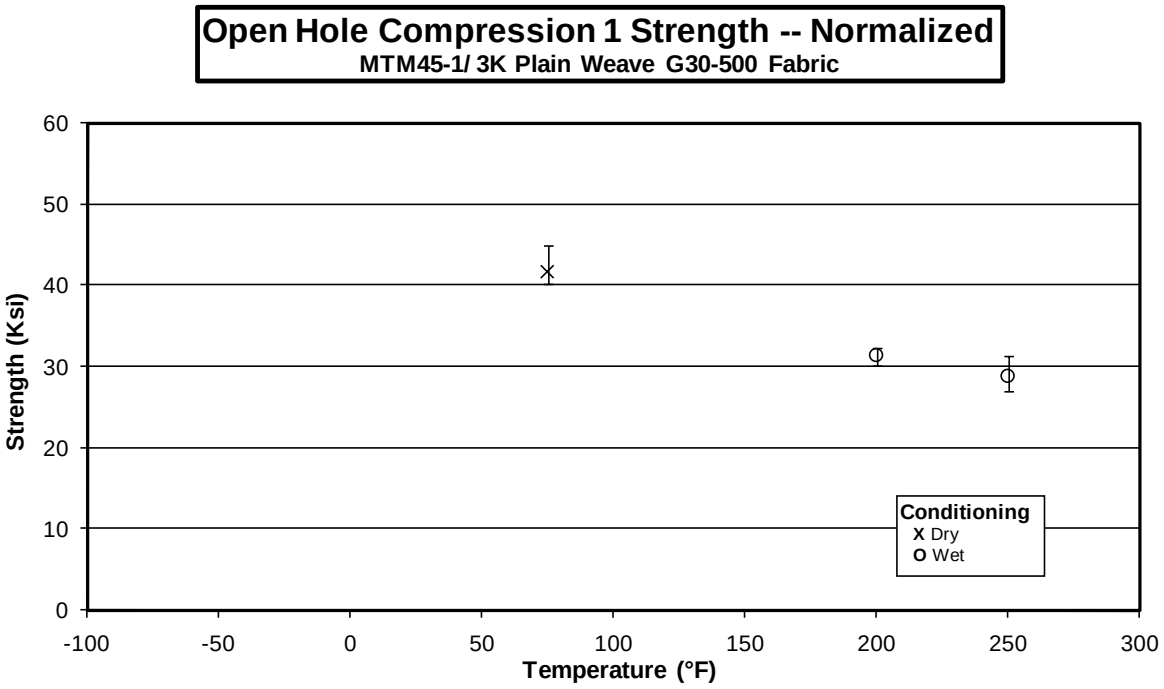
3.18 Filled Hole Tension 2 Properties



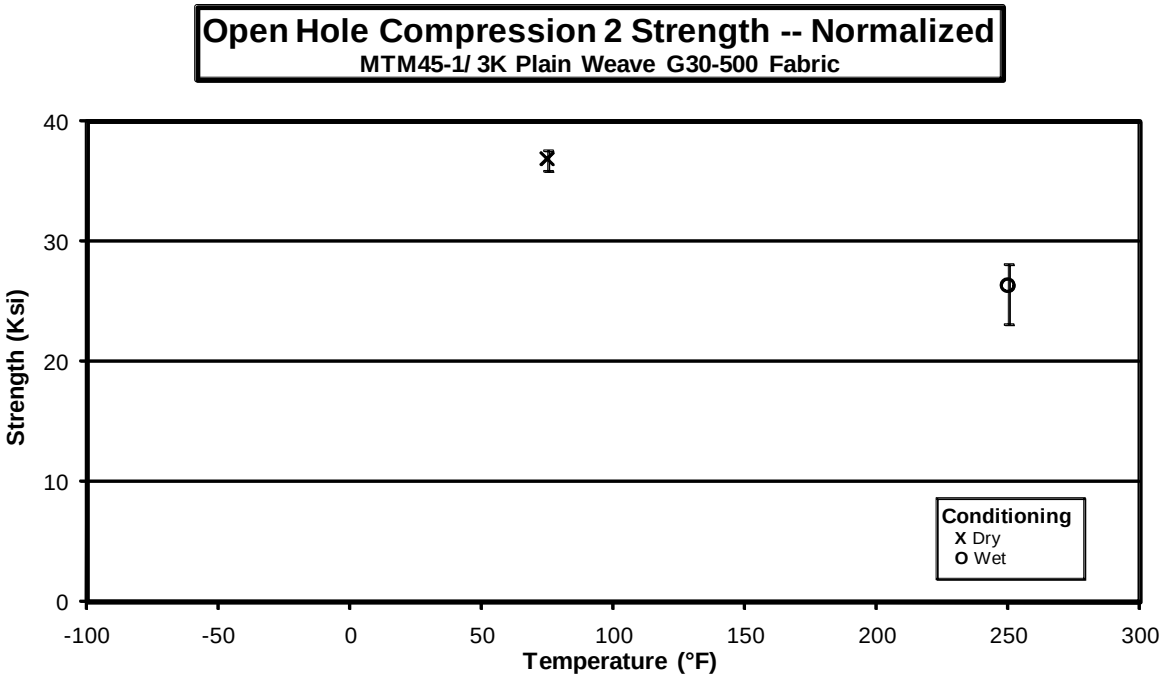
3.19 Filled Hole Tension 3 Properties



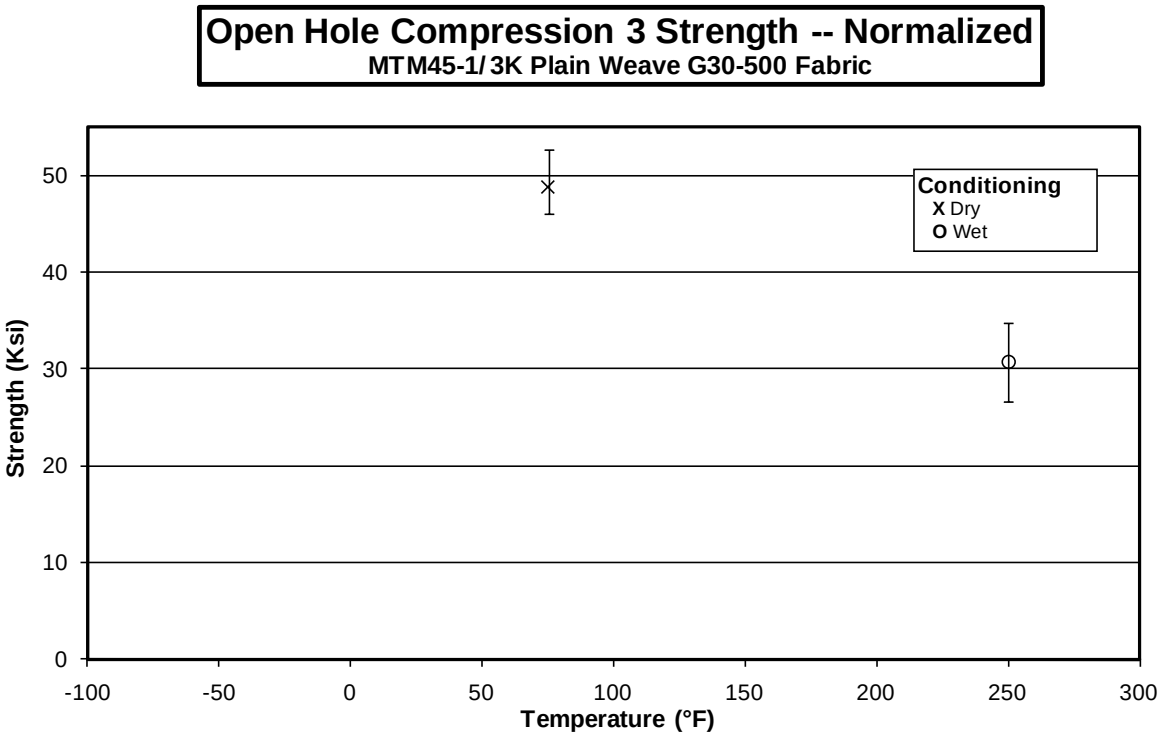
3.20 Open Hole Compression 1 Properties



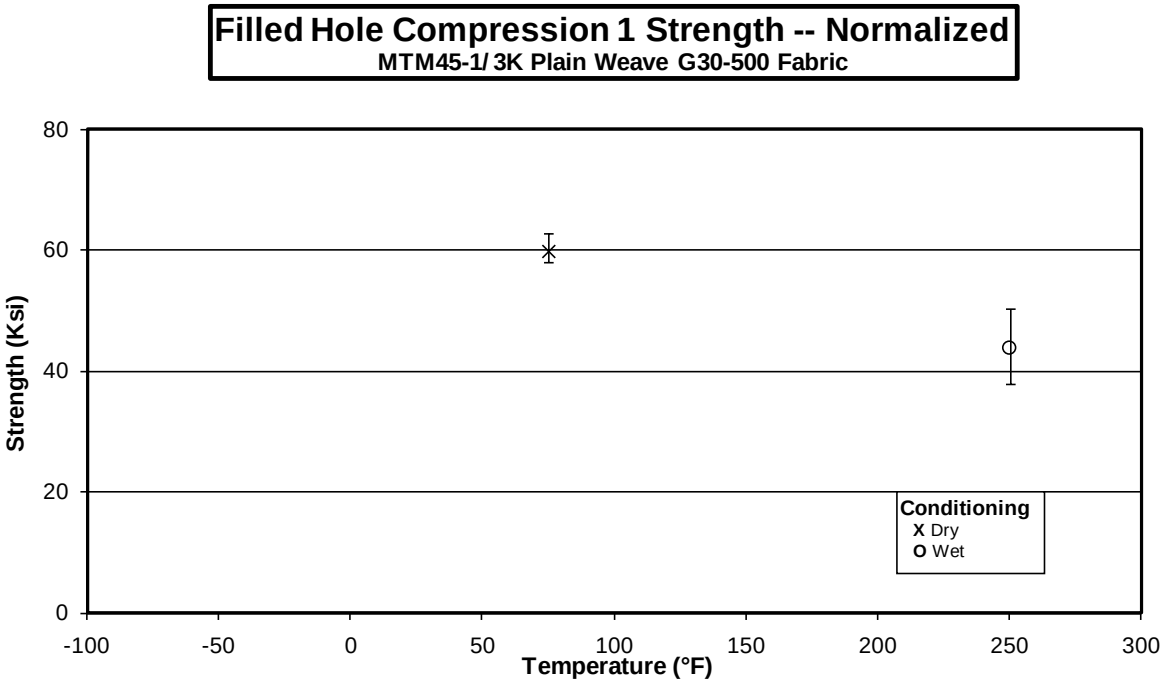
3.21 Open Hole Compression 2 Properties



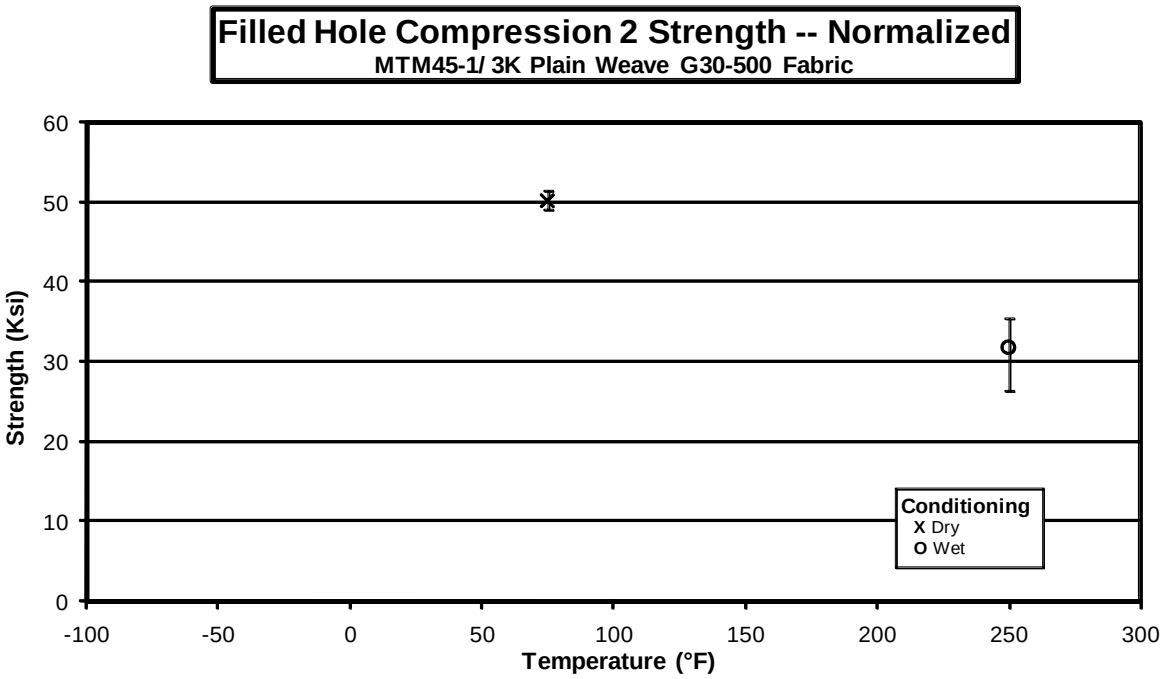
3.22 Open Hole Compression 3 Properties



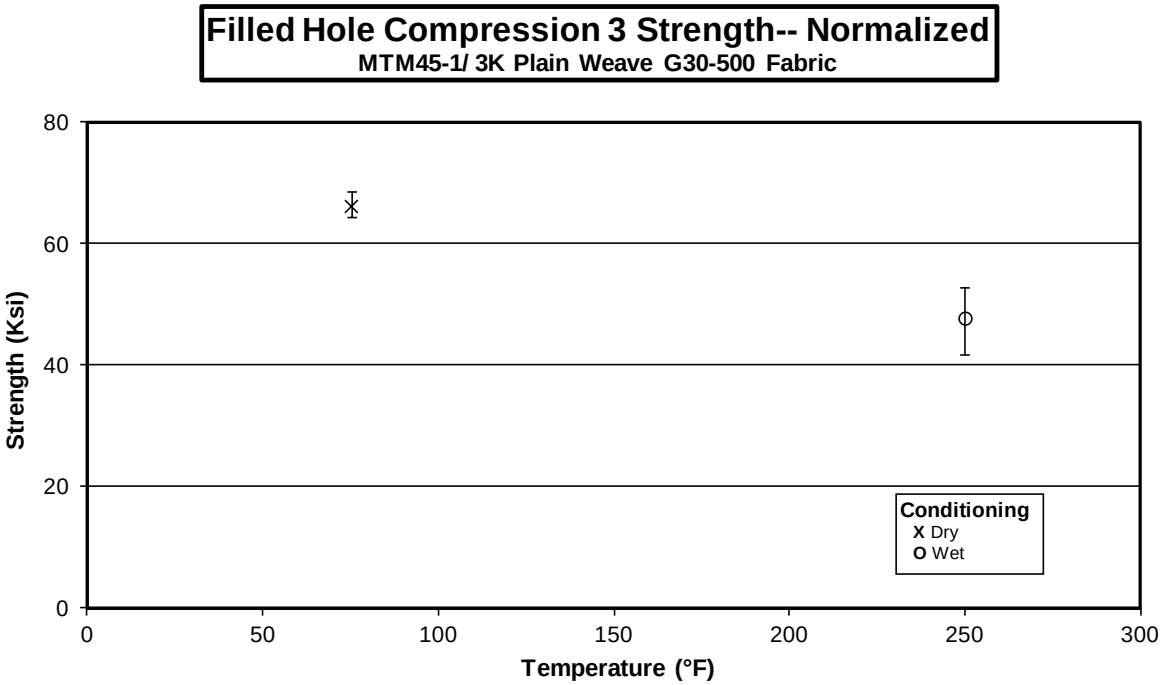
3.23 Filled Hole Compression 1 Properties



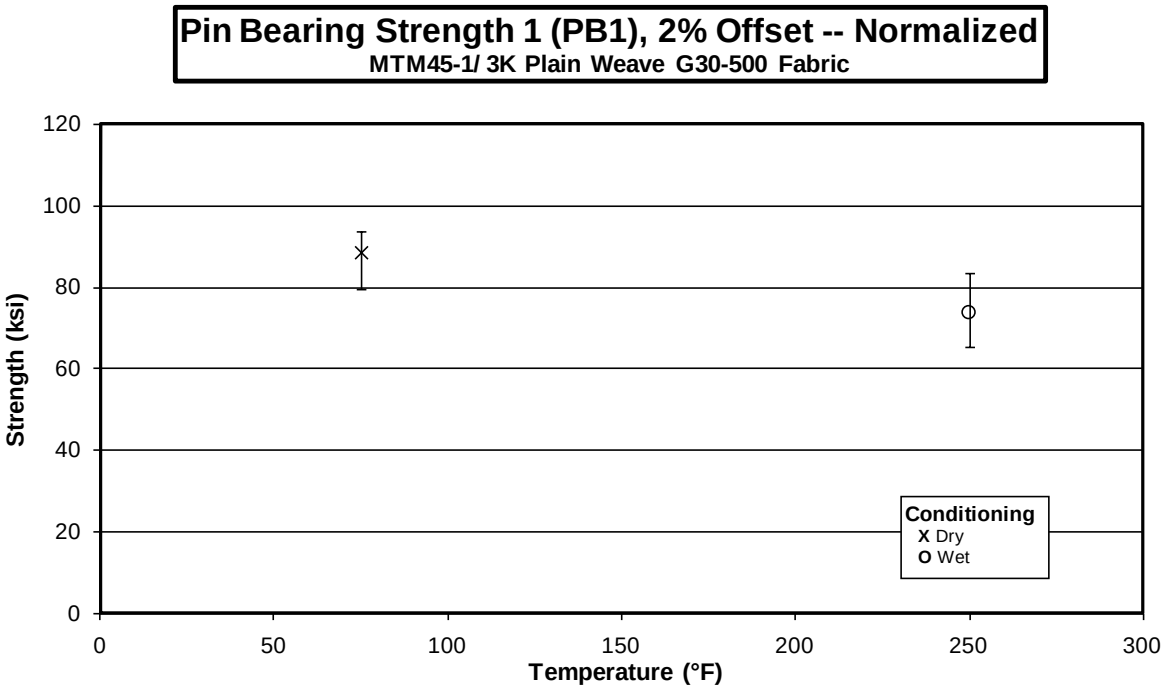
3.24 Filled Hole Compression 2 Properties



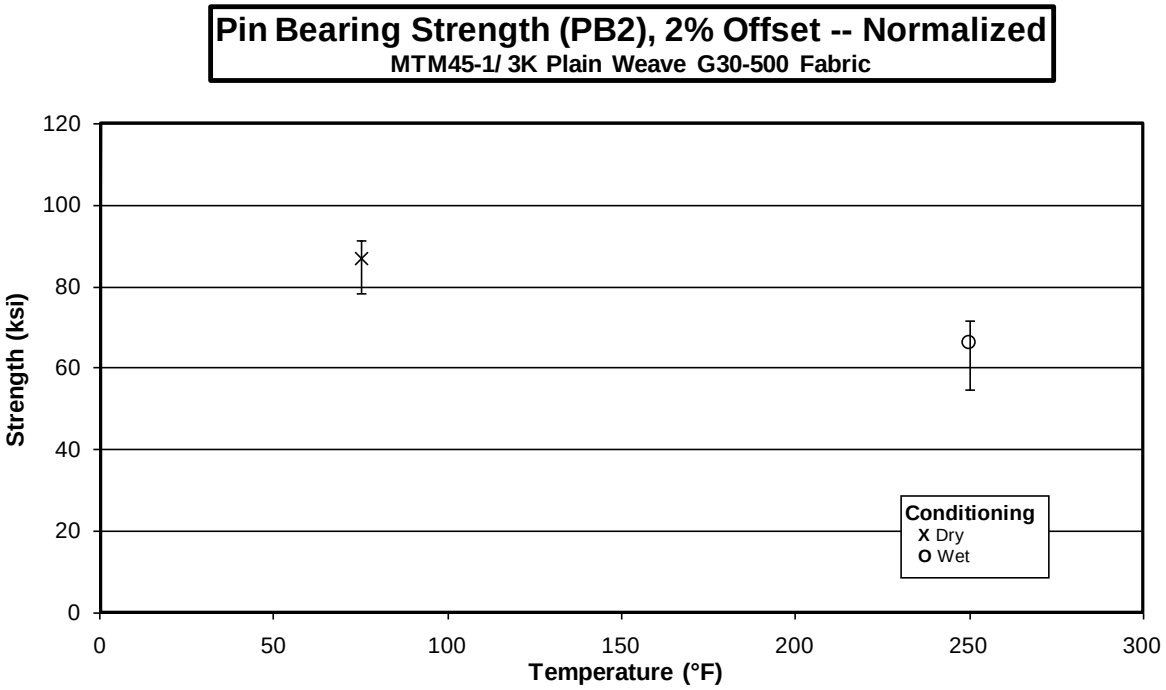
3.25 Filled Hole Compression 3 Properties



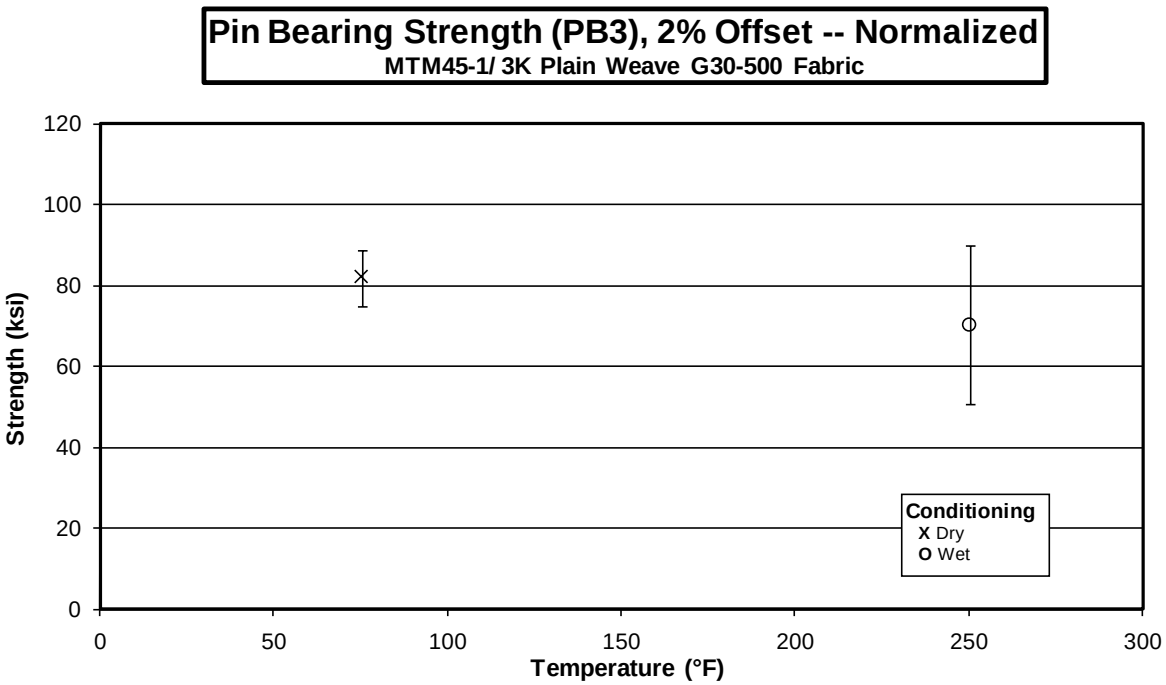
3.26 Pin Bearing 1 Properties



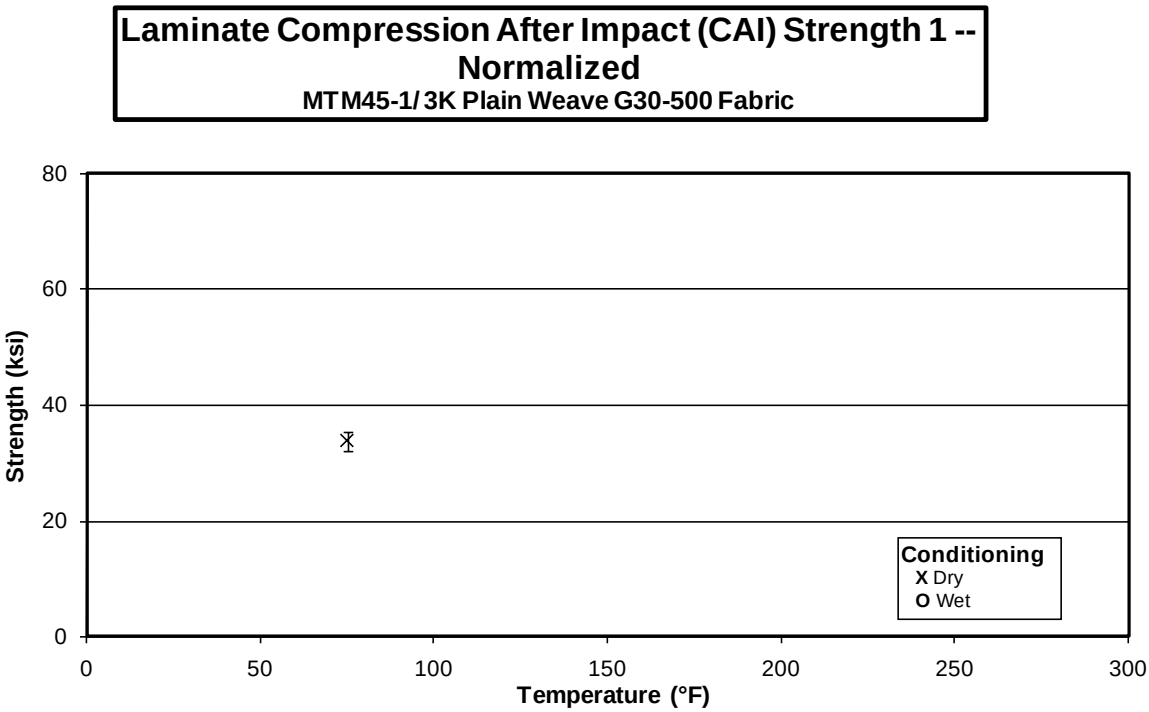
3.27 Pin Bearing 2 Properties



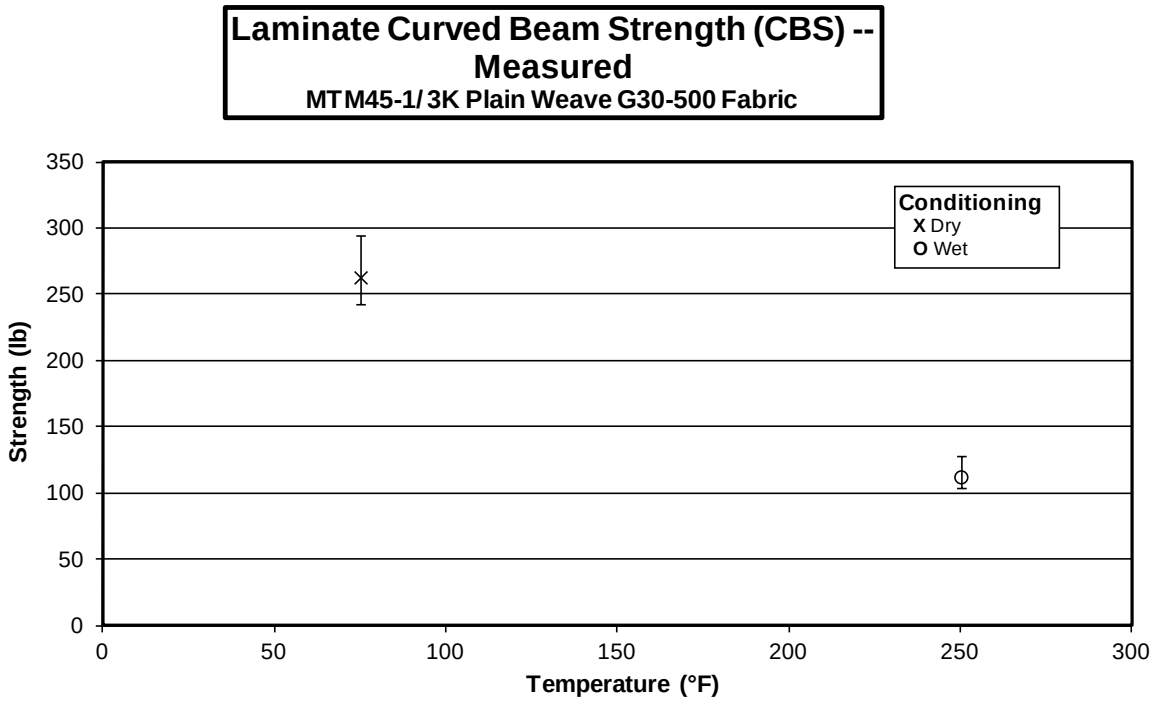
3.28 Pin Bearing 3 Properties

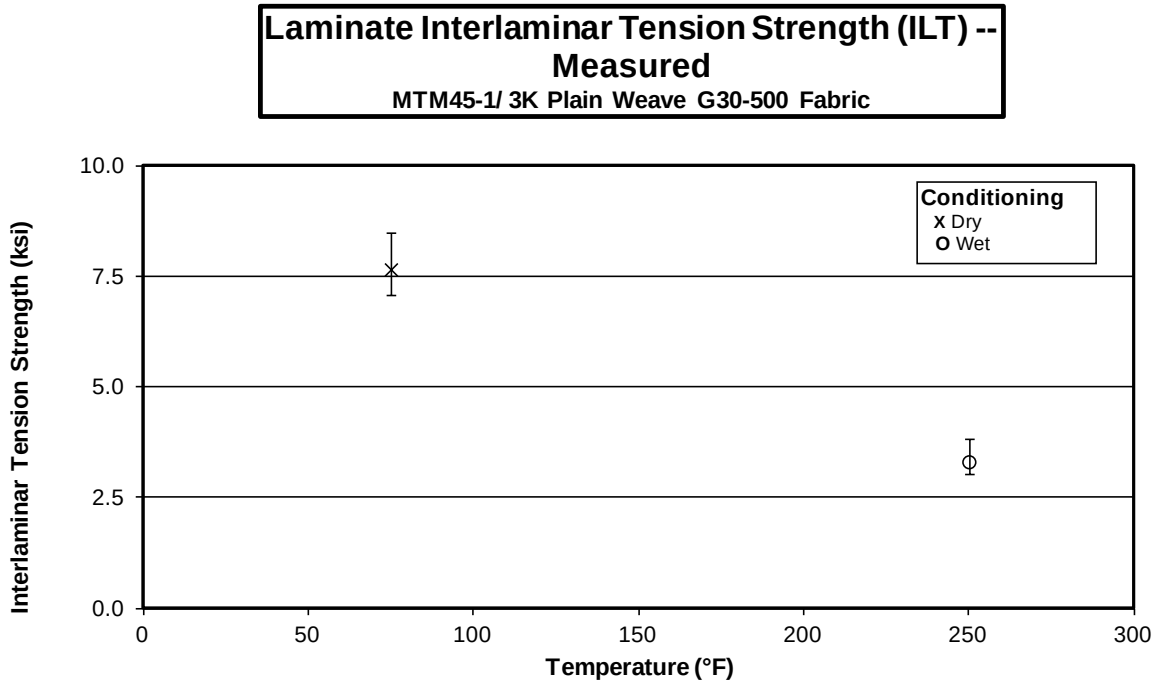


3.29 Compression Strength After Impact 1 Properties



3.30 Interlaminar Tension Properties





4. Raw Data

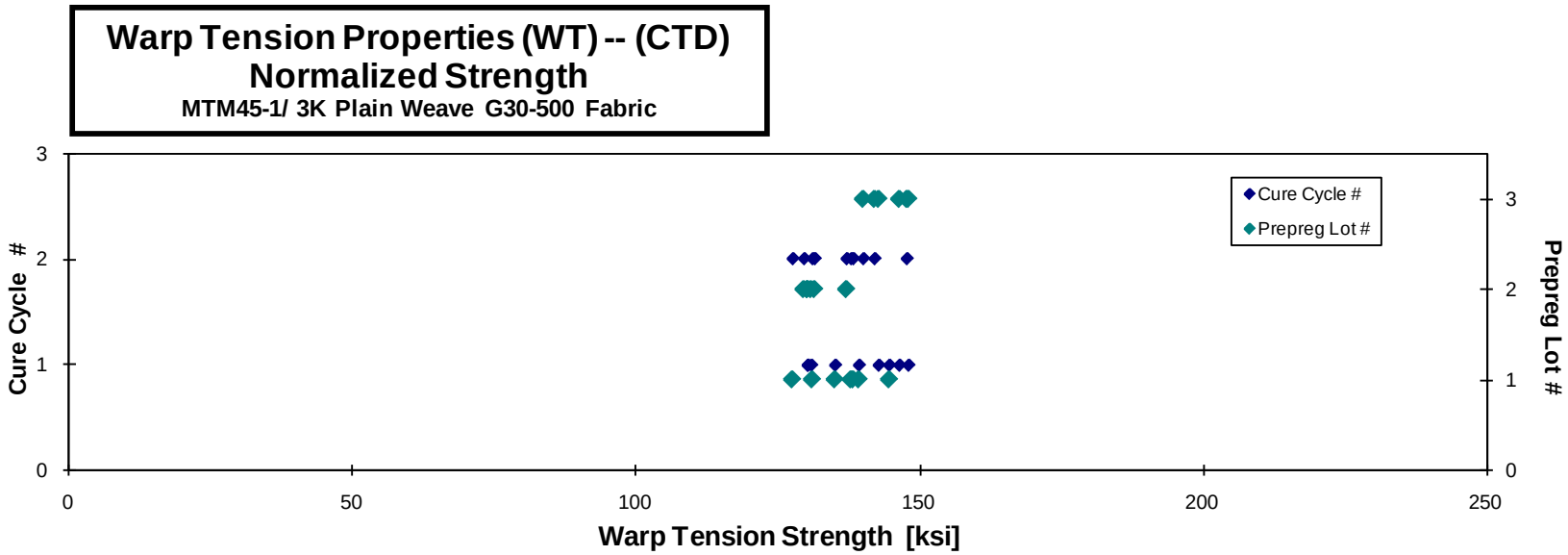
4.1 Warp Tension Properties

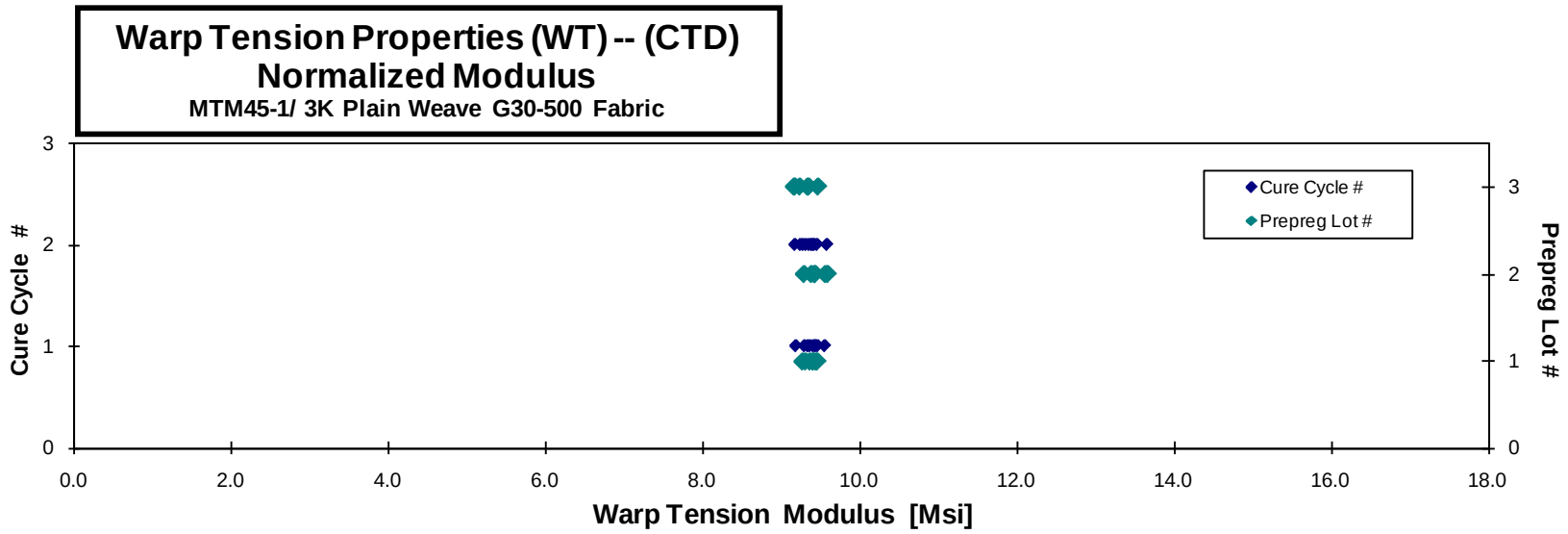
Warp Tension Properties (WT) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NJA111B	A	MH1	1	1	142.817	9.285	0.112	14	LAT	0.0080	144.603	9.401
A0NJA112B	A	MH1	1	1	135.901	9.133	0.113	14	LAT	0.0081	139.280	9.360
A0NJA113B	A	MH1	1	1	132.511	9.253	0.113	14	LAT	0.0081	135.087	9.433
A0NJA211B	A	MH2	1	2	135.586	9.150	0.112	14	LAB	0.0080	137.895	9.306
A0NJA212B	A	MH2	1	2	125.145	9.270	0.113	14	LAB	0.0081	127.615	9.453
A0NJA213B	A	MH2	1	2	135.203	9.189	0.113	14	LGM	0.0081	138.279	9.398
A0NJA214B	A	MH2	1	2	128.547	9.088	0.113	14	LAB	0.0081	131.104	9.269
A0NJB115B	B	MH1	2	1	127.709	9.199	0.113	14	LGM	0.0081	130.884	9.428
A0NJB116B	B	MH1	2	1	127.074	9.058	0.113	14	LGM	0.0081	130.291	9.287
A0NJB117B	B	MH1	2	1	126.879	9.306	0.114	14	LGM	0.0081	130.244	9.553
A0NJB215B	B	MH2	2	2	129.875	9.262	0.112	14	LGM	0.0080	131.499	9.378
A0NJB216B	B	MH2	2	2	134.867	9.426	0.112	14	LGM	0.0080	137.102	9.582
A0NJB217B	B	MH2	2	2	128.972	9.370	0.111	14	LAB	0.0079	129.614	9.417
A0NJC115B	C	MH1	3	1	146.911	9.392	0.111	14	LAB	0.0080	147.996	9.461
A0NJC116B	C	MH1	3	1	146.516	9.340	0.111	14	LWB	0.0079	146.383	9.332
A0NJC117B	C	MH1	3	1	143.636	9.231	0.110	14	LAT	0.0079	142.749	9.174
A0NJC211B	C	MH2	3	2	140.504	9.378	0.110	14	LAB	0.0079	140.038	9.347
A0NJC212B	C	MH2	3	2	146.857	9.110	0.111	14	LAB	0.0079	147.698	9.162
A0NJC213B	C	MH2	3	2	138.456	9.002	0.113	14	LGM	0.0081	142.023	9.234

Average	**135.472**	**9.234**	**$Average_{norm}$**	**0.0080**	**137.389**	**9.367**
Standard Dev.	**7.377**	**0.121**	**$Standard\ Dev._{norm}$**		**6.637**	**0.113**
Coeff. of Var. [%]	**5.445**	**1.313**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.831**	**1.202**
Min.	**125.145**	**9.002**	**Min.**	**0.0079**	**127.615**	**9.162**
Max.	**146.911**	**9.426**	**Max.**	**0.0081**	**147.996**	**9.582**
Number of Spec.	**19**	**19**	**Number of Spec.**		**19**	**19**


Warp Tension Properties (WT) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Warp Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3


Warp Tension Properties (WT) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Warp Tension Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

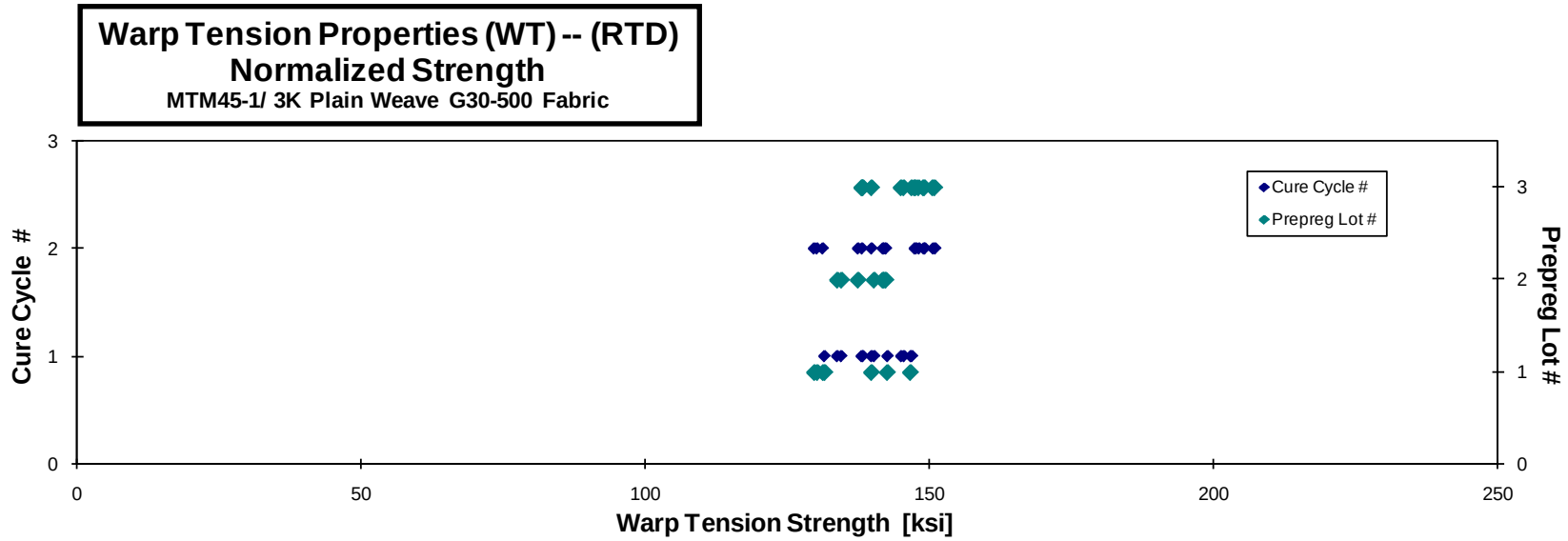
Warp Tension Properties (WT) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

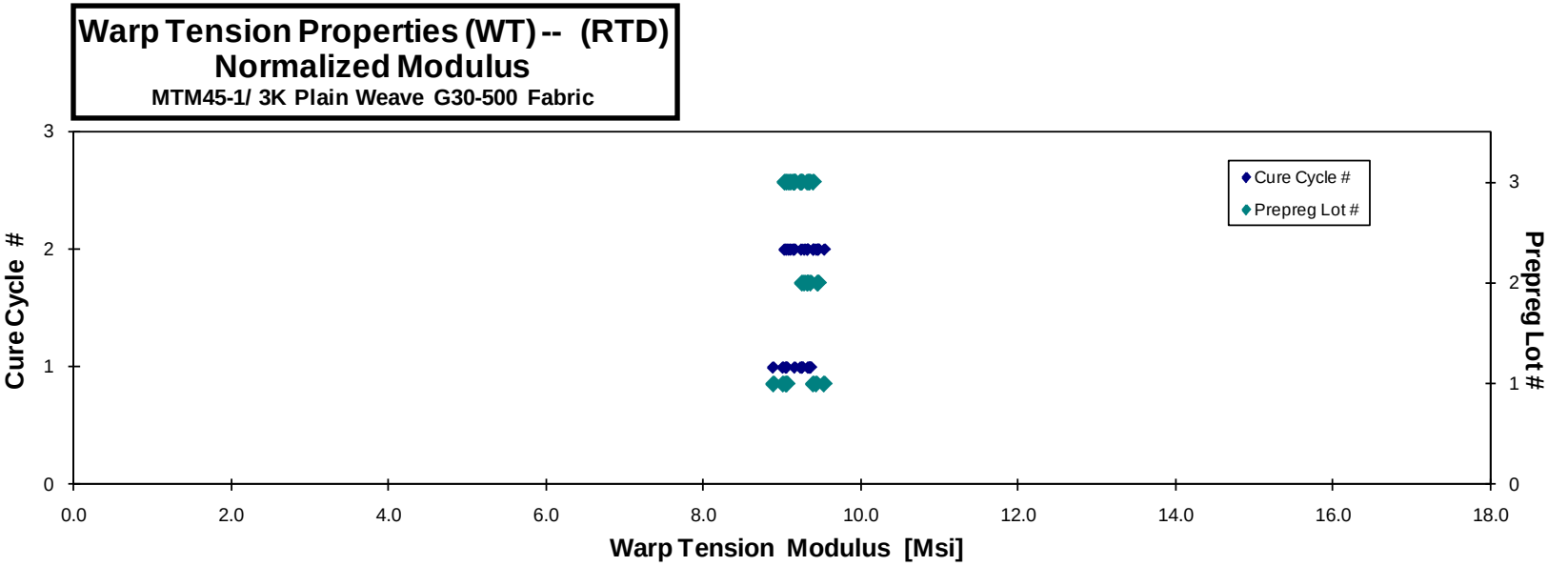
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NJA115A	A	MH1	1	1	129.224	8.733	0.113	14	LAB	0.0080	131.542	8.890
A0NJA116A	A	MH1	1	1	144.702	8.934	0.112	14	LAT,LWB	0.0080	146.578	9.050
A0NJA117A	A	MH1	1	1	137.194	8.896	0.113	14	LAB	0.0080	139.737	9.061
A0NJA118A	A	MH1	1	1	139.728	8.835	0.113	14	LAT,LWB	0.0081	142.528	9.012
A0NJA215A	A	MH2	1	2	127.286	9.220	0.113	14	LAB	0.0081	129.722	9.396
A0NJA216A	A	MH2	1	2	129.261	9.463	0.111	14	LAT	0.0080	130.235	9.534
A0NJA217A	A	MH2	1	2	130.031	9.348	0.112	14	LAB	0.0080	131.246	9.435
A0NJB111A	B	MH1	2	1	140.038	9.244	0.111	14	LAT,LGM	0.0079	140.207	9.255
A0NJB112A	B	MH1	2	1	132.880	9.267	0.111	14	LWT	0.0080	133.761	9.328
A0NJB113A	B	MH1	2	1	132.104	9.198	0.113	14	LAT	0.0080	134.473	9.363
A0NJB211A	B	MH2	2	2	137.618	9.179	0.114	14	LAT,LAB	0.0081	141.724	9.453
A0NJB212A	B	MH2	2	2	139.217	9.123	0.113	14	LAB	0.0081	142.259	9.322
A0NJB213A	B	MH2	2	2	134.912	9.116	0.113	14	LAT	0.0080	137.393	9.284
A0NJB2R8A	B	MH2	2	2	141.558	9.434	0.111	14	LAB / LAT	0.0079	141.963	9.461
A0NJC111A	C	MH1	3	1	150.242	9.451	0.108	14	LAB	0.0077	146.800	9.235
A0NJC112A	C	MH1	3	1	147.053	9.391	0.109	14	LGM	0.0078	144.926	9.255
A0NJC113A	C	MH1	3	1	145.001	9.318	0.111	14	LAT,LWB	0.0079	145.394	9.343
A0NJC1RCA	C	MH1	3	1	135.686	8.991	0.113	14	LAT / LAB	0.0080	138.242	9.160
A0NJC1RDA	C	MH1	3	1	136.075	9.221	0.112	14	LAB	0.0080	138.023	9.353
A0NJC215A	C	MH2	3	2	143.738	8.803	0.114	14	LAT,LGM	0.0081	147.507	9.034
A0NJC216A	C	MH2	3	2	143.715	8.893	0.113	14	LAT,LAB	0.0081	147.267	9.113
A0NJC217A	C	MH2	3	2	147.981	8.974	0.113	14	LGM,LWB	0.0081	150.835	9.147
A0NJC218A	C	MH2	3	2	148.418	9.118	0.112	14	LAT,LWB	0.0080	150.476	9.244
A0NJC2R4A	C	MH2	3	2	135.435	9.217	0.113	14	LAT/LAB	0.0081	138.088	9.398
A0NJC2RCA	C	MH2	3	2	146.285	8.920	0.113	14	LWT/LWB	0.0080	149.041	9.088
A0NJC2RDA	C	MH2	3	2	139.078	9.015	0.111	14	LAT	0.0079	139.749	9.058
A0NJC2RHA	C	MH2	3	2	146.825	9.036	0.112	14	LAT/LWT	0.0080	148.838	9.160
A0NJC2RIA	C	MH2	3	2	148.235	9.336	0.110	14	LWB/LAB	0.0079	148.012	9.322

	Strength	Modulus
Average	**139.626**	**9.131**
Standard Dev.	**6.716**	**0.208**
Coeff. of Var. [%]	**4.810**	**2.283**
Min.	**127.286**	**8.733**
Max.	**150.242**	**9.463**
Number of Spec.	**28**	**28**

	Avg. t_{ply}	$Strength_{norm}$	$Modulus_{norm}$
$Average_{norm}$	**0.0080**	**141.306**	**9.241**
Standard $Dev._{norm}$		**6.412**	**0.162**
Coeff. of Var. $[\%]_{norm}$		**4.538**	**1.754**
Min.	**0.0077**	**129.722**	**8.890**
Max.	**0.0081**	**150.835**	**9.534**
Number of Spec.		**28**	**28**


Warp Tension Properties (WT) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3

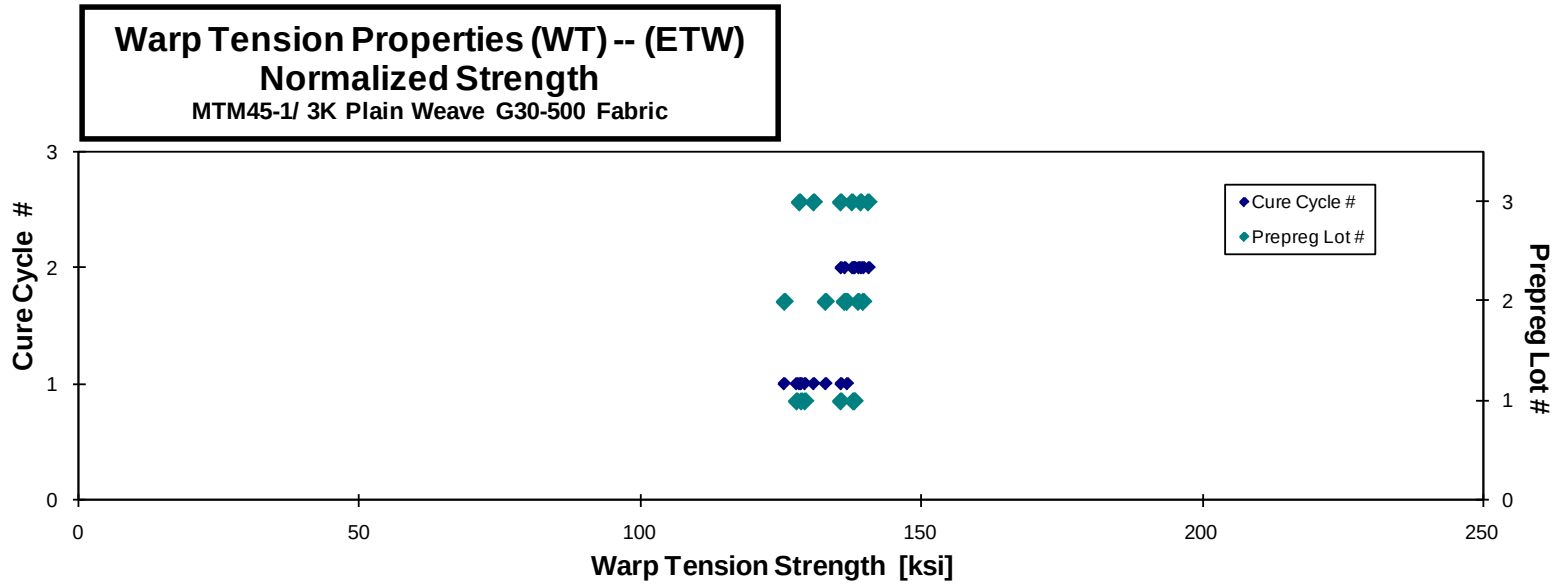

Warp Tension Properties (WT) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Tension Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

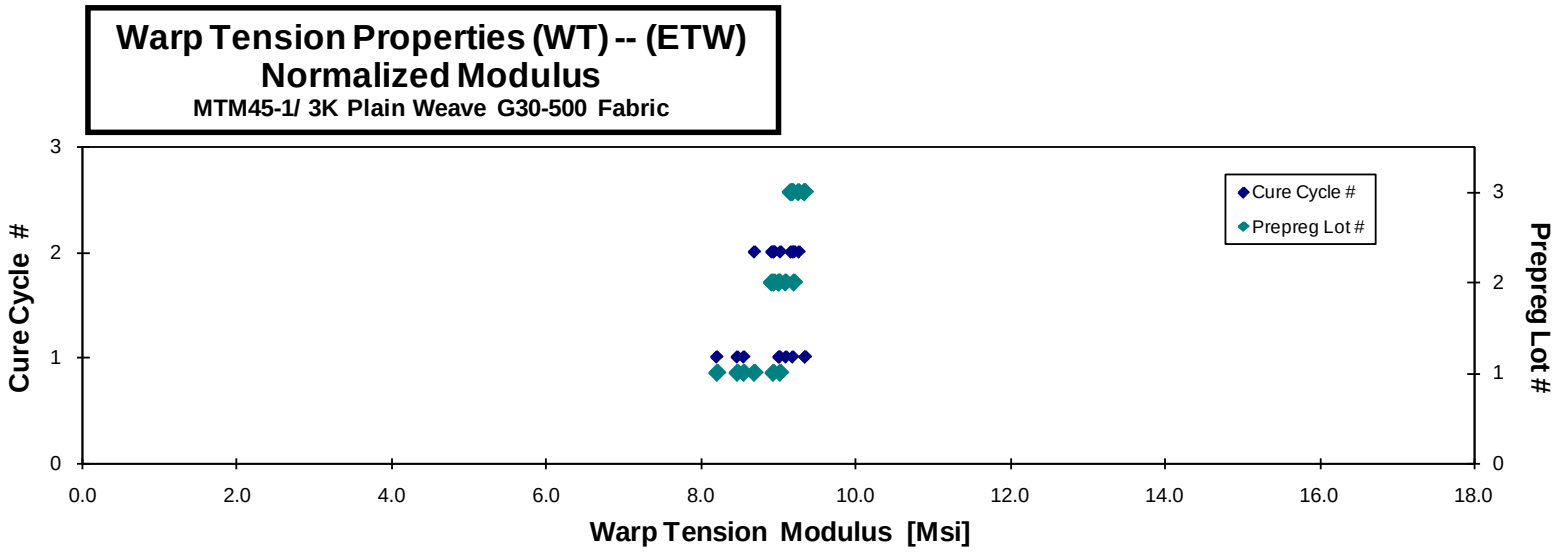
Warp Tension Properties (WT) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NJA119N	A	MH1	1	1	128.539	8.464	0.111	14	LGM	0.0079	128.713	8.475
A0NJA11AN	A	MH1	1	1	127.308	8.521	0.111	14	LGM	0.0079	127.884	8.560
A0NJA11BN	A	MH1	1	1	126.898	8.056	0.113	14	LGM / LAB	0.0081	129.365	8.213
A0NJA219N	A	MH2	1	2	138.336	8.951	0.111	14	LWT / LWB	0.0079	138.211	8.943
A0NJA21AN	A	MH2	1	2	137.762	8.681	0.111	14	LGM	0.0079	138.011	8.697
A0NJA21BN	A	MH2	1	2	136.135	9.056	0.110	14	LGM	0.0079	135.766	9.031
A0NJB11EN	B	MH1	2	1	138.038	9.181	0.110	14	LWB / LGM	0.0078	136.853	9.102
A0NJB11FN	B	MH1	2	1	133.529	9.055	0.110	14	LGM	0.0079	133.046	9.022
A0NJB11GN	B	MH1	2	1	125.176	8.973	0.111	14	LGM	0.0079	125.704	9.011
A0NJB21EN	B	MH2	2	2	140.649	9.328	0.109	14	LGM	0.0078	138.890	9.211
A0NJB21FN	B	MH2	2	2	138.542	9.091	0.109	14	LGM	0.0078	136.433	8.953
A0NJB21GN	B	MH2	2	2	141.759	9.049	0.109	14	LGM	0.0078	139.751	8.921
A0NJC11EN	C	MH1	3	1	128.652	9.187	0.113	14	LWB / LWT	0.0080	130.920	9.349
A0NJC11FN	C	MH1	3	1	133.229	9.175	0.113	14	LWB / LWT	0.0081	135.758	9.349
A0NJC11GN	C	MH1	3	1	124.954	8.942	0.114	14	LWB / LWT	0.0081	128.400	9.189
A0NJC219N	C	MH2	3	2	138.180	9.004	0.113	14	LWT / LWB	0.0080	140.679	9.167
A0NJC21AN	C	MH2	3	2	138.783	9.337	0.110	14	LGM	0.0078	137.779	9.269
A0NJC21BN	C	MH2	3	2	137.347	9.063	0.112	14	LWT / LWB	0.0080	139.333	9.194

Average	**134.101**	**8.951**	**$Average_{norm}$**	**0.0079**	**134.528**	**8.981**
Standard Dev.	**5.659**	**0.327**	**$Standard\ Dev._{norm}$**		**4.795**	**0.313**
Coeff. of Var. [%]	**4.220**	**3.648**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.564**	**3.480**
Min.	**124.954**	**8.056**	**Min.**	**0.0078**	**125.704**	**8.213**
Max.	**141.759**	**9.337**	**Max.**	**0.0081**	**140.679**	**9.349**
Number of Spec.	**18**	**18**	**Number of Spec.**		**18**	**18**


Warp Tension Properties (WT) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3


Warp Tension Properties (WT) -- (ETW)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Tension Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

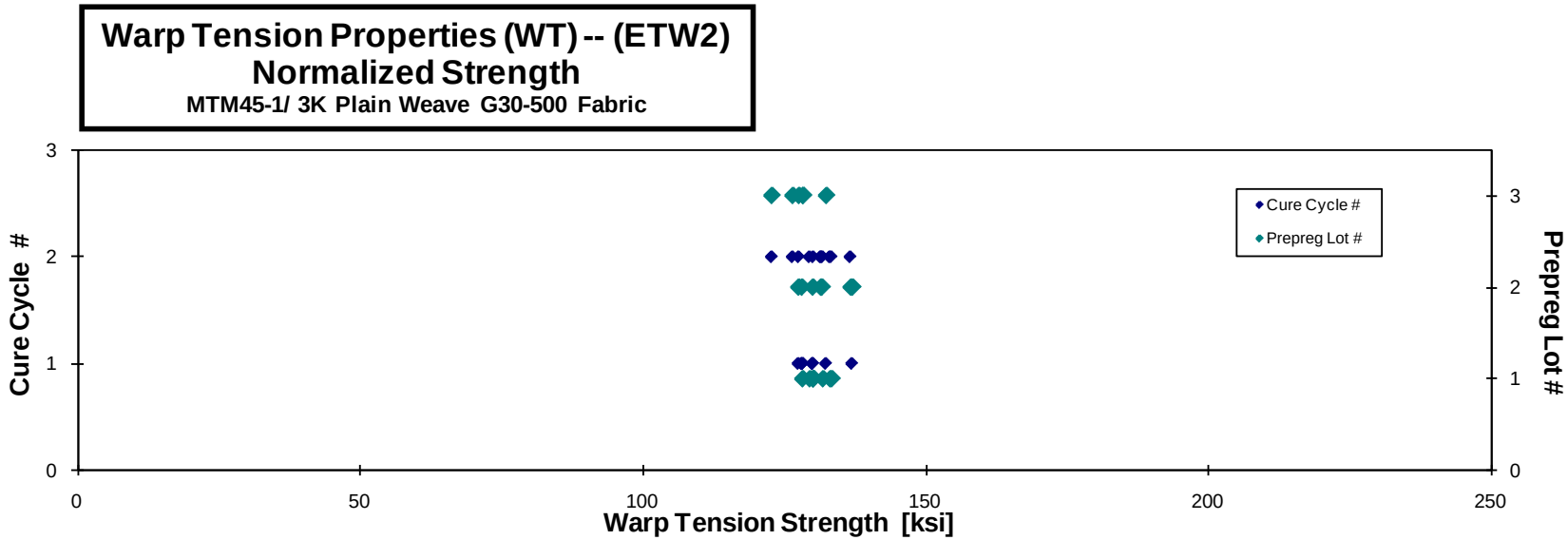
Warp Tension Properties (WT) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NJA11ED	A	MH1	1	1	128.771	0.112	14	LGM	0.0080	130.129
A0NJA11FD	A	MH1	1	1	130.414	0.110	14	LGM,LWB	0.0079	130.080
A0NJA11GD	A	MH1	1	1	128.463	0.110	14	LGM	0.0079	128.250
A0NJA21ED	A	MH2	1	2	127.971	0.113	14	LGM	0.0080	130.169
A0NJA21FD	A	MH2	1	2	133.738	0.110	14	LWT,LWB	0.0079	133.093
A0NJA21GD	A	MH2	1	2	131.906	0.111	14	LGM	0.0079	131.827
A0NJA21HD	A	MH2	1	2	129.453	0.111	14	LGM	0.0079	129.512
A0NJA21ID	A	MH2	1	2	136.463	0.108	14	LGM	0.0077	133.378
A0NJB119D	B	MH1	2	1	134.883	0.112	14	LGM	0.0080	137.018
A0NJB11AD	B	MH1	2	1	131.336	0.108	14	LGM	0.0077	128.110
A0NJB11BD	B	MH1	2	1	130.368	0.108	14	LGM	0.0077	127.539
A0NJB11DD	B	MH1	2	1	132.328	0.109	14	LGM	0.0078	130.034
A0NJB219D	B	MH2	2	2	135.540	0.112	14	LGM	0.0080	136.724
A0NJB21AD	B	MH2	2	2	130.834	0.111	14	LWT / LWB	0.0079	131.642
A0NJB21BD	B	MH2	2	2	131.946	0.110	14	LGM	0.0079	131.449
A0NJC119D	C	MH1	3	1	128.452	0.110	14	LGM	0.0079	128.316
A0NJC11AD	C	MH1	3	1	130.854	0.112	14	LGM	0.0080	132.412
A0NJC11BD	C	MH1	3	1	126.465	0.112	14	LWB / LWT	0.0080	128.352
A0NJC21ED	C	MH2	3	2	122.682	0.111	14	LWT / LWB	0.0079	122.830
A0NJC21FD	C	MH2	3	2	124.896	0.112	14	LWT / LGM	0.0080	126.515
A0NJC21GD	C	MH2	3	2	125.482	0.112	14	LWT / LGM	0.0080	127.600

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

Average	**130.154**	**$Average_{norm}$**	**0.0079**	**130.237**
Standard Dev.	**3.531**	**$Standard\ Dev._{norm}$**		**3.287**
Coeff. of Var. [%]	**2.713**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.524**
Min.	**122.682**	**Min.**	**0.0077**	**122.830**
Max.	**136.463**	**Max.**	**0.0080**	**137.018**
Number of Spec.	**21**	**Number of Spec.**		**21**


Warp Tension Properties (WT) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Warp Tension Strength [ksi]
0
50
100
150
200
250
0
1
2
3

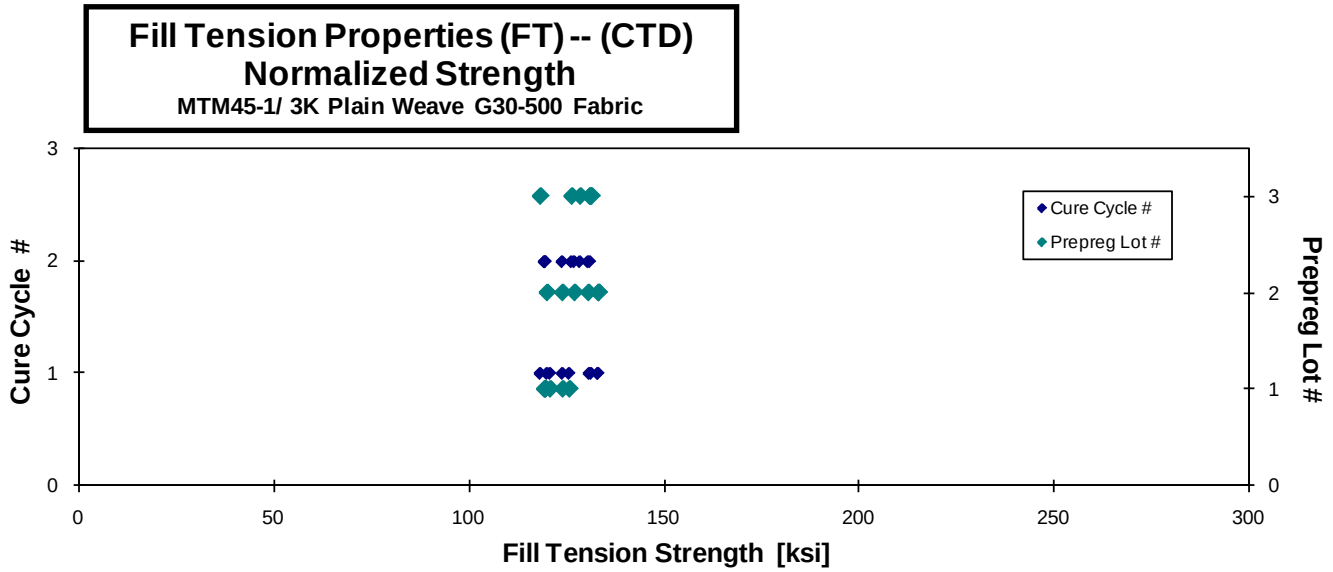
4.2 Fill Tension Properties

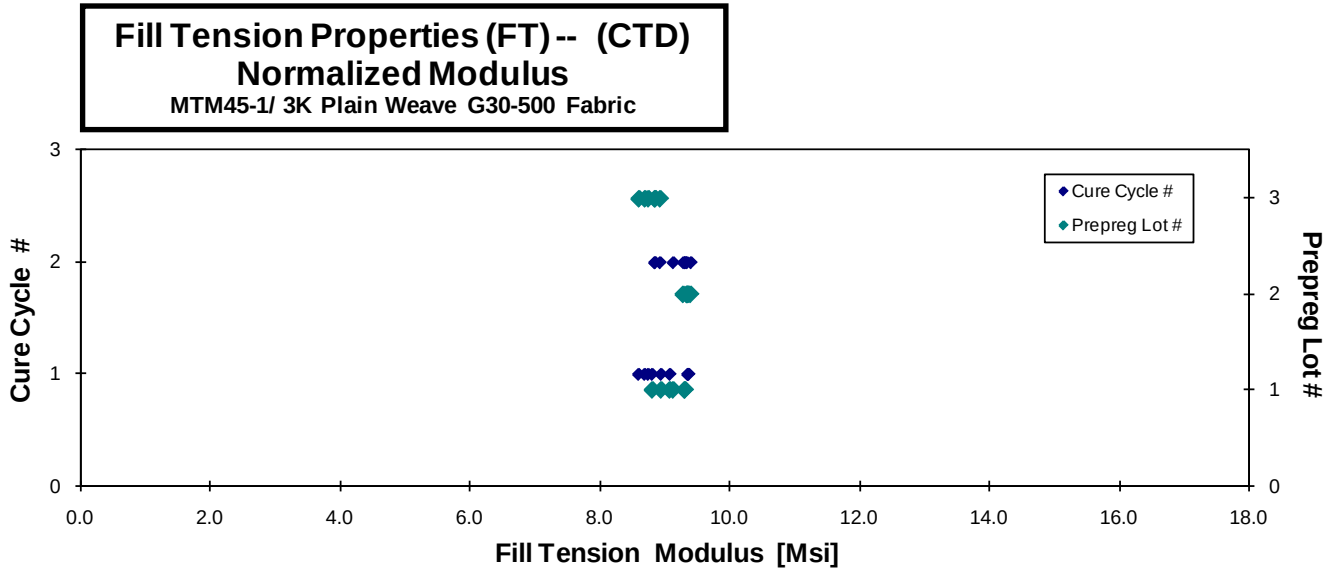
Fill Tension Properties (FT) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NUA115B	A	MH1	1	1	122.999	8.875	0.111	14	LWB	0.0080	123.907	8.941
A0NUA116B	A	MH1	1	1	125.385	9.057	0.111	14	LGM	0.0079	125.631	9.075
A0NUA117B	A	MH1	1	1	118.716	8.660	0.112	14	LAB	0.0080	120.702	8.805
A0NUA211B	A	MH2	1	2	123.009	9.606	0.107	14	LGM	0.0077	119.227	9.311
A0NUA212B	A	MH2	1	2	122.642	9.547	0.108	14	LAB	0.0077	119.519	9.304
A0NUA213B	A	MH2	1	2	120.046	9.172	0.110	14	LAT	0.0079	119.449	9.126
A0NUB115B	B	MH1	2	1	118.887	9.270	0.112	14	LGM	0.0080	119.909	9.350
A0NUB116B	B	MH1	2	1	132.469	9.326	0.111	14	LGM	0.0079	132.988	9.363
A0NUB117B	B	MH1	2	1	133.995	9.408	0.110	14	LGM/LWT	0.0078	133.107	9.346
A0NUB211B	B	MH2	2	2	140.898	10.023	0.102	14	LWT/LWB	0.0073	130.473	9.281
A0NUB212B	B	MH2	2	2	130.999	9.635	0.107	14	LGM/LWT	0.0077	126.933	9.336
A0NUB213B	B	MH2	2	2	124.684	9.459	0.110	14	LGM	0.0078	123.838	9.395
A0NUC115B	C	MH1	3	1	129.872	8.683	0.111	14	LAB	0.0080	130.792	8.744
A0NUC116B	C	MH1	3	1	117.189	8.618	0.112	14	LGM	0.0080	118.178	8.691
A0NUC117B	C	MH1	3	1	130.204	8.528	0.112	14	LGM	0.0080	131.283	8.599
A0NUC211B	C	MH2	3	2	136.238	9.199	0.106	14	LWT/LWB	0.0076	130.962	8.843
A0NUC212B	C	MH2	3	2	129.338	9.146	0.108	14	LGM/LWT	0.0077	126.219	8.925
A0NUC213B	C	MH2	3	2	129.552	8.933	0.110	14	LGM/LWT	0.0078	128.381	8.852

Average	**127.062**	**9.175**	**$Average_{norm}$**	**0.0078**	**125.639**	**9.071**
Standard Dev.	**6.605**	**0.407**	**$Standard\ Dev._{norm}$**		**5.232**	**0.272**
Coeff. of Var. [%]	**5.198**	**4.441**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.165**	**2.996**
Min.	**117.189**	**8.528**	**Min.**	**0.0073**	**118.178**	**8.599**
Max.	**140.898**	**10.023**	**Max.**	**0.0080**	**133.107**	**9.395**
Number of Spec.	**18**	**18**	**Number of Spec.**		**18**	**18**


Fill Tension Properties (FT) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Tension Strength [ksi]
0
50
100
150
200
250
300
0
1
2
3


Fill Tension Properties (FT) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Tension Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

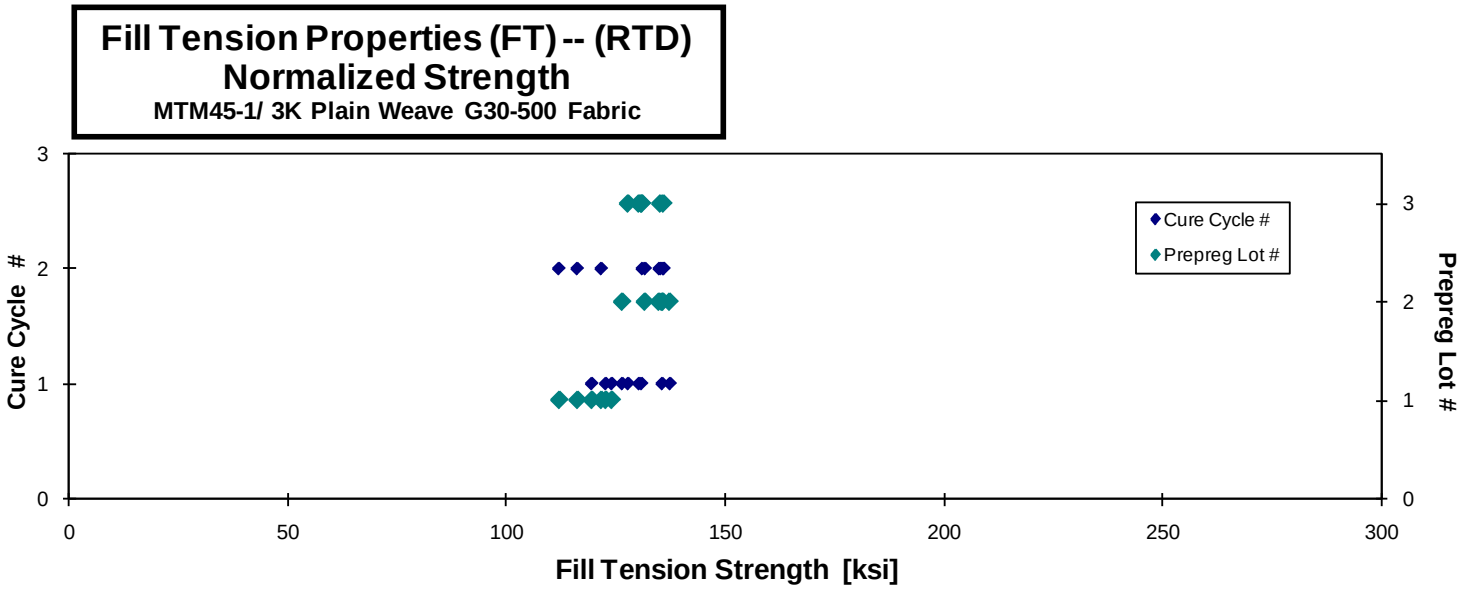
Fill Tension Properties (FT) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

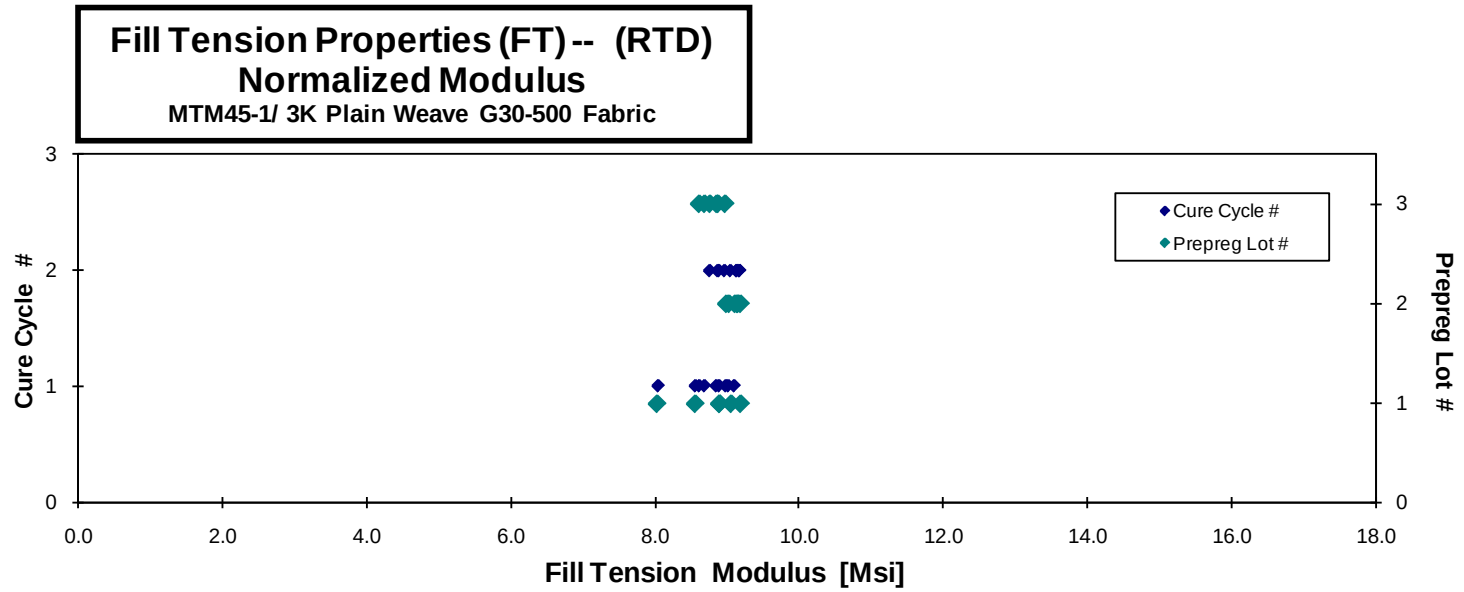
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NUA111A	A	MH1	1	1	126.270	9.151	0.107	14	LAB	0.0077	122.674	8.890
A0NUA112A	A	MH1	1	1	120.602	8.638	0.110	14	LGM	0.0078	119.475	8.557
A0NUA113A	A	MH1	1	1	124.995	8.096	0.110	14	LGM	0.0078	124.053	8.035
A0NUA215A	A	MH2	1	2	115.113	8.966	0.112	14	LGM	0.0080	116.172	9.048
A0NUA216A	A	MH2	1	2	121.320	9.153	0.111	14	LAB	0.0079	121.649	9.178
A0NUA217A	A	MH2	1	2	110.360	8.759	0.112	14	LAB	0.0080	111.989	8.888
A0NUB111A	B	MH1	2	1	133.838	9.634	0.104	14	LGM	0.0075	126.436	9.101
A0NUB112A	B	MH1	2	1	138.979	9.129	0.109	14	LGM	0.0078	137.325	9.020
A0NUB113A	B	MH1	2	1	134.403	8.908	0.112	14	LGM	0.0080	135.537	8.983
A0NUB215A	B	MH2	2	2	133.367	9.031	0.112	14	LGM	0.0080	134.874	9.133
A0NUB216A	B	MH2	2	2	134.731	9.104	0.111	14	LWT/LGM/LAB	0.0080	135.807	9.177
A0NUB217A	B	MH2	2	2	131.139	9.105	0.111	14	LGM	0.0079	131.653	9.141
A0NUC111A	C	MH1	3	1	137.471	9.088	0.105	14	LWT/LWB	0.0075	130.262	8.611
A0NUC112A	C	MH1	3	1	131.885	8.964	0.107	14	LGM	0.0077	127.771	8.684
A0NUC113A	C	MH1	3	1	131.987	8.928	0.110	14	LGM	0.0078	130.833	8.850
A0NUC215A	C	MH2	3	2	135.138	8.754	0.111	14	LGM	0.0079	135.199	8.758
A0NUC216A	C	MH2	3	2	130.240	8.818	0.111	14	LWT/LWB	0.0079	131.005	8.870
A0NUC217A	C	MH2	3	2	134.029	8.842	0.112	14	LGM	0.0080	135.908	8.966

Average	**129.215**	**8.948**	
Standard Dev.	**7.876**	**0.306**	
Coeff. of Var. [%]	**6.096**	**3.416**	
Min.	**110.360**	**8.096**	
Max.	**138.979**	**9.634**	
Number of Spec.	**18**	**18**	

$Average_{norm}$	**0.0078**	**128.257**	**8.883**
$Standard\ Dev._{norm}$		**7.500**	**0.284**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**5.848**	**3.194**
Min.	**0.0075**	**111.989**	**8.035**
Max.	**0.0080**	**137.325**	**9.178**
Number of Spec.		**18**	**18**


Fill Tension Properties (FT) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
50
100
150
200
250
300
Fill Tension Strength [ksi]

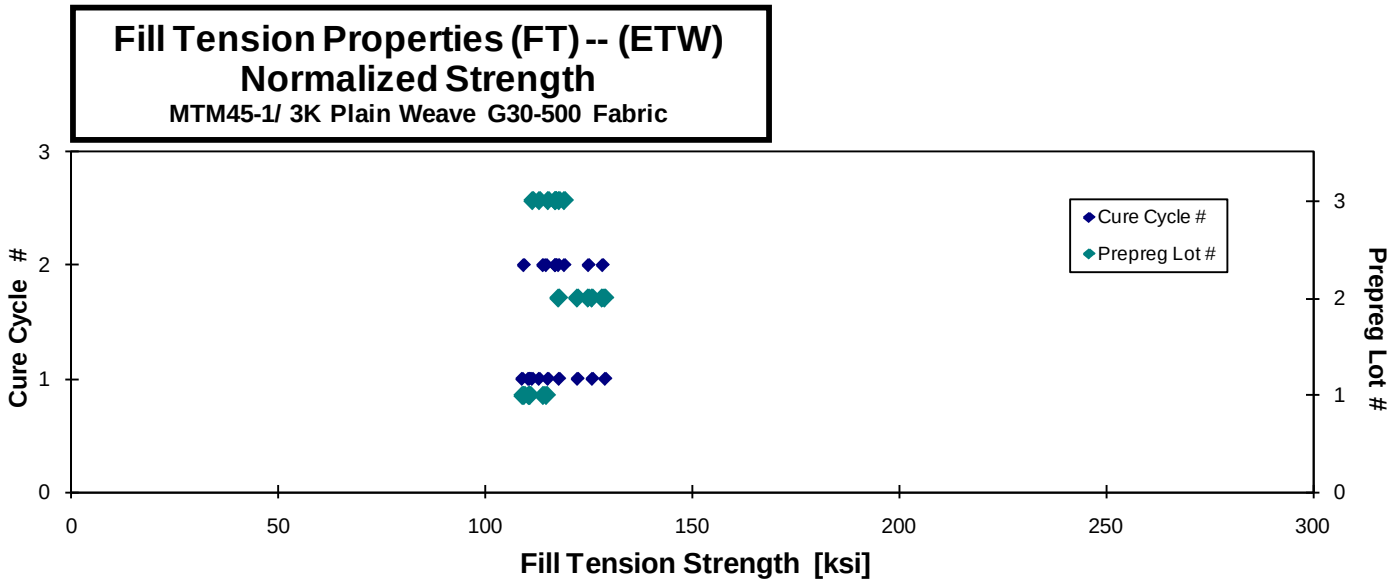

Fill Tension Properties (FT) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
Fill Tension Modulus [Msi]

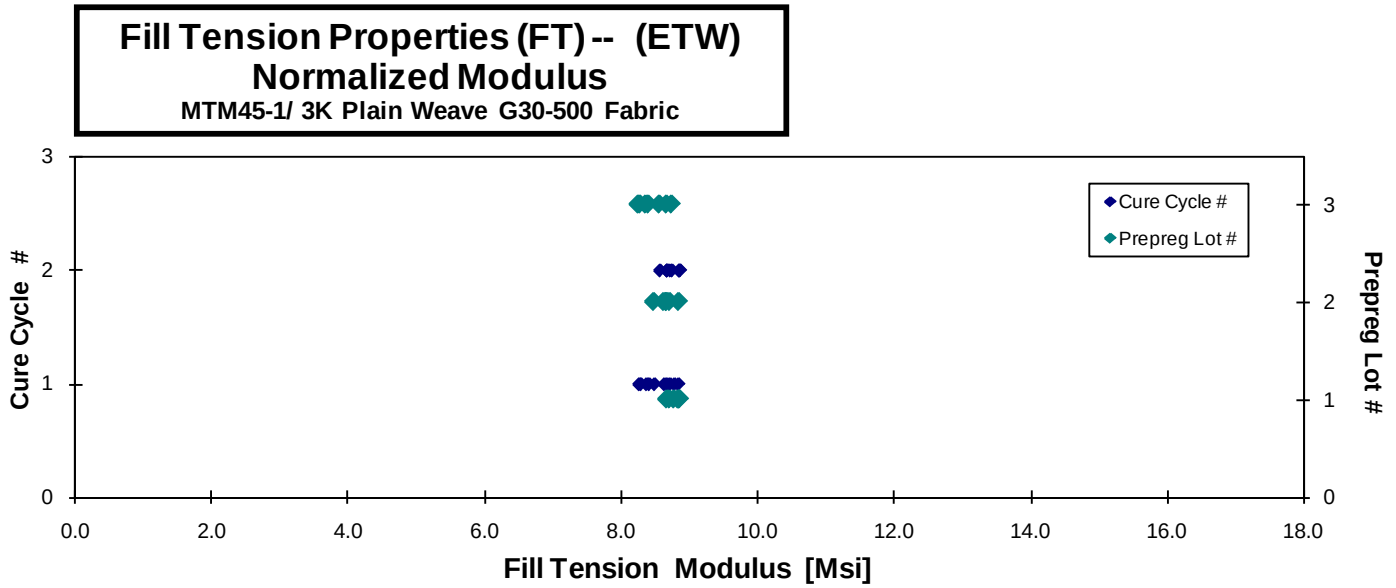
Fill Tension Properties (FT) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NUA11EN	A	MH1	1	1	109.530	8.649	0.112	14	LGM	0.0080	110.421	8.719
A0NUA11FN	A	MH1	1	1	106.729	8.668	0.113	14	LGM	0.0081	108.885	8.843
A0NUA11GN	A	MH1	1	1	109.595	8.695	0.112	14	LGM	0.0080	110.701	8.783
A0NUA219N	A	MH2	1	2	113.903	8.674	0.111	14	LGM / LWB	0.0079	113.954	8.678
A0NUA21AN	A	MH2	1	2	113.594	9.208	0.106	14	LWT / LWB	0.0076	109.281	8.858
A0NUA21BN	A	MH2	1	2	114.528	8.853	0.111	14	LGM / LWT	0.0079	114.718	8.868
A0NUB119N	B	MH1	2	1	128.609	8.647	0.111	14	LGM	0.0079	129.016	8.674
A0NUB11AN	B	MH1	2	1	130.128	8.772	0.107	14	LGM	0.0076	125.893	8.486
A0NUB11BN	B	MH1	2	1	122.394	8.639	0.111	14	LWB / LWT	0.0079	122.302	8.632
A0NUB218N	B	MH2	2	2	125.052	8.727	0.111	14	LWT / LGM	0.0079	124.958	8.720
A0NUB219N	B	MH2	2	2	128.018	8.827	0.111	14	LWB / LWT	0.0079	128.385	8.852
A0NUB21AN	B	MH2	2	2	126.360	9.310	0.103	14	LGM	0.0074	117.696	8.672
A0NUC11DN	C	MH1	3	1	112.181	8.307	0.111	14	LGM / LWT	0.0080	112.993	8.367
A0NUC11EN	C	MH1	3	1	113.856	8.313	0.112	14	LGM	0.0080	115.142	8.407
A0NUC11FN	C	MH1	3	1	110.305	8.208	0.112	14	LWM / LWT	0.0080	111.336	8.285
A0NUC11GN	C	MH1	3	1	115.807	8.116	0.113	14	LGM	0.0080	117.831	8.258
A0NUC218N	C	MH2	3	2	115.668	8.576	0.112	14	LGM	0.0080	116.975	8.673
A0NUC219N	C	MH2	3	2	115.086	8.611	0.112	14	LWT / LWB	0.0080	116.907	8.747
A0NUC21AN	C	MH2	3	2	116.944	8.412	0.113	14	LGM	0.0080	119.112	8.568

Average	**117.278**	**8.643**	**$Average_{norm}$**	**0.0079**	**117.184**	**8.636**
Standard Dev.	**7.214**	**0.300**	**$Standard\ Dev._{norm}$**		**6.342**	**0.192**
Coeff. of Var. [%]	**6.151**	**3.469**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.412**	**2.225**
Min.	**106.729**	**8.116**	**Min.**	**0.0074**	**108.885**	**8.258**
Max.	**130.128**	**9.310**	**Max.**	**0.0080**	**129.016**	**8.868**
Number of Spec.	**19**	**19**	**Number of Spec.**		**19**	**19**


Fill Tension Properties (FT) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Tension Strength [ksi]
0
50
100
150
200
250
300
0
1
2
3


Fill Tension Properties (FT) -- (ETW)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Tension Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

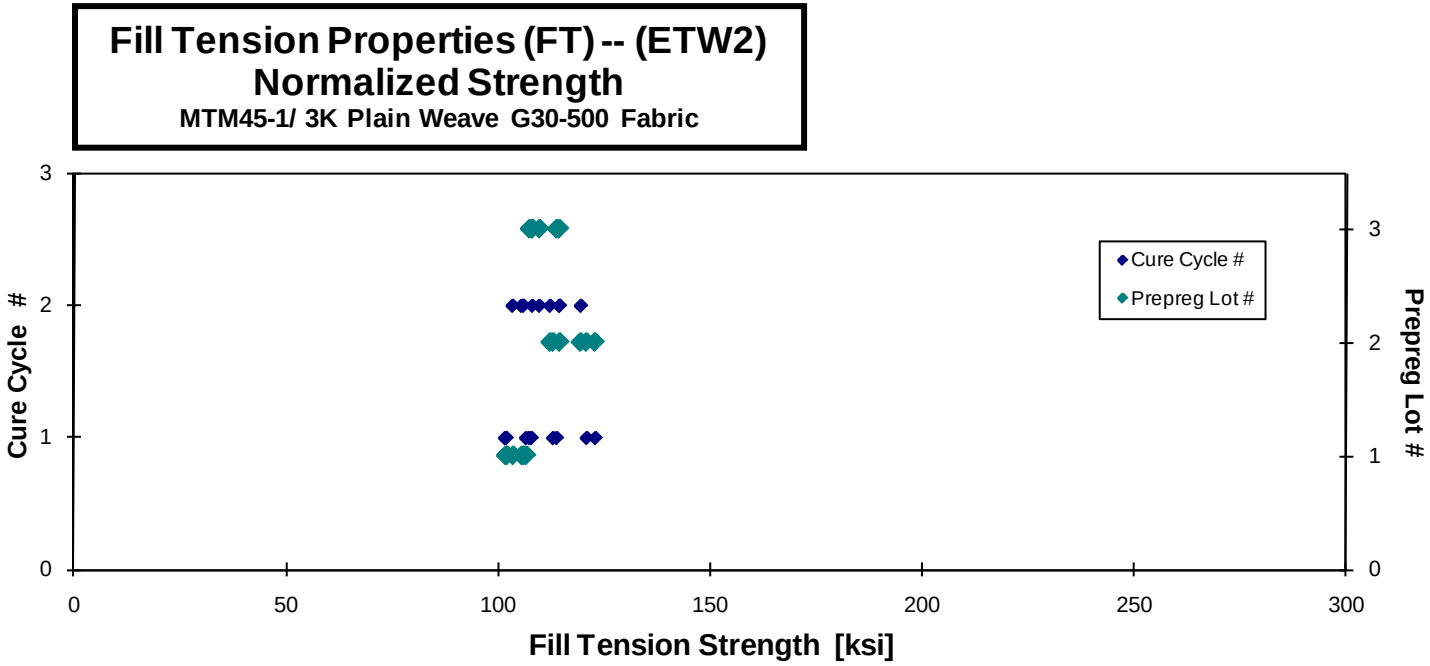
Fill Tension Properties (FT) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{pl} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NUA11AD	A	MH1	1	1	108.709	0.104	14	LGM	0.0074	101.960
A0NUA11CD	A	MH1	1	1	106.239	0.111	14	LGM	0.0079	106.527
A0NUA11DD	A	MH1	1	1	99.745	0.113	14	LWT / LGM	0.0080	101.609
A0NUA21ED	A	MH2	1	2	100.305	0.114	14	LWT	0.0081	103.388
A0NUA21FD	A	MH2	1	2	103.531	0.113	14	LGM	0.0080	105.450
A0NUA21GD	A	MH2	1	2	103.377	0.113	14	LGM	0.0081	105.947
A0NUB11ED	B	MH1	2	1	109.934	0.114	14	LGM	0.0081	112.866
A0NUB11FD	B	MH1	2	1	117.153	0.114	14	LGM	0.0081	120.719
A0NUB11ID	B	MH1	2	1	118.896	0.114	14	LGM	0.0082	122.766
A0NUB21CD	B	MH2	2	2	118.158	0.107	14	LGM	0.0076	114.401
A0NUB21DD	B	MH2	2	2	114.850	0.108	14	LWT / LWB	0.0077	112.167
A0NUB21ED	B	MH2	2	2	120.627	0.109	14	LGM	0.0078	119.355
A0NUC119D	C	MH1	3	1	106.361	0.112	14	LGM	0.0080	107.275
A0NUC11AD	C	MH1	3	1	111.755	0.113	14	LGM	0.0080	113.708
A0NUC11BD	C	MH1	3	1	105.614	0.113	14	LGM	0.0081	107.826
A0NUC21ED	C	MH2	3	2	113.891	0.111	14	LGM	0.0079	114.338
A0NUC21FD	C	MH2	3	2	108.982	0.111	14	LGM	0.0079	109.655
A0NUC21GD	C	MH2	3	2	106.645	0.112	14	LGM	0.0080	108.011

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

Average	**109.709**	**$Average_{norm}$**	**0.0080**	**110.443**
Standard Dev.	**6.396**	**$Standard\ Dev._{norm}$**		**6.282**
Coeff. of Var. [%]	**5.830**	**Coeff. of Var. [%]$_{norm}$**		**5.688**
Min.	**99.745**	**Min.**	**0.0076**	**101.609**
Max.	**120.627**	**Max.**	**0.0082**	**122.766**
Number of Spec.	**18**	**Number of Spec.**		**18**


Fill Tension Properties (FT) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
50
100
150
200
250
300
Fill Tension Strength [ksi]

4.3 Warp Compression Properties

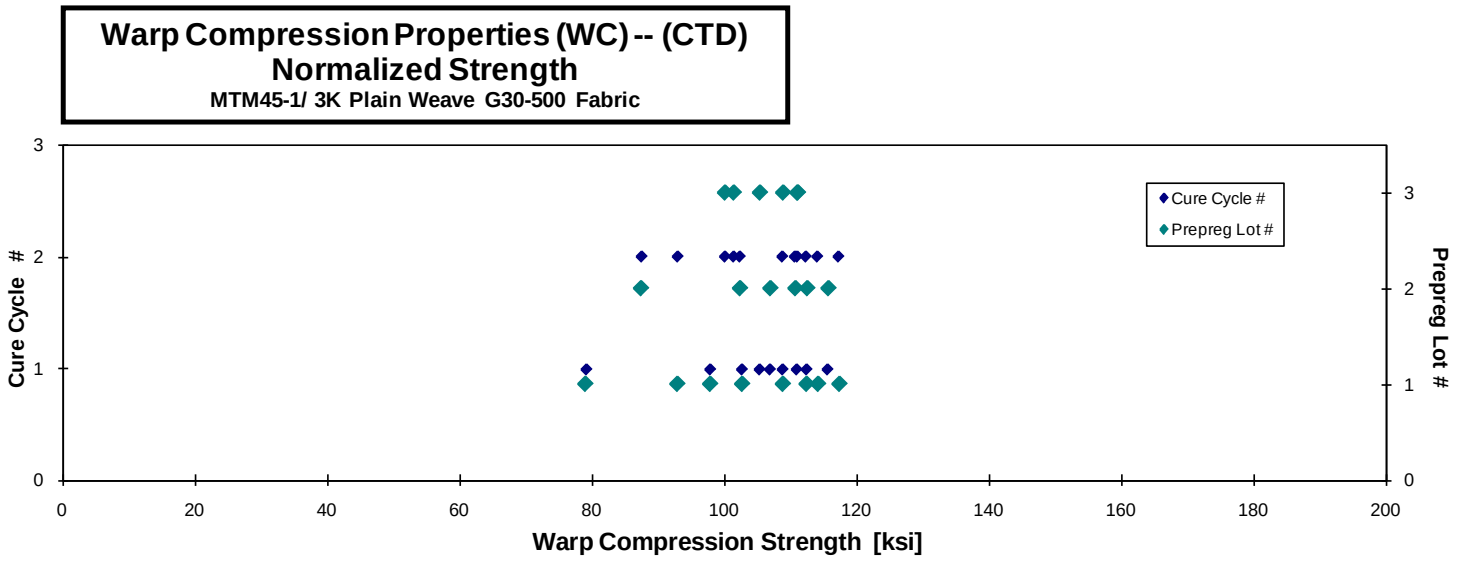
Warp Compression Properties (WC) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

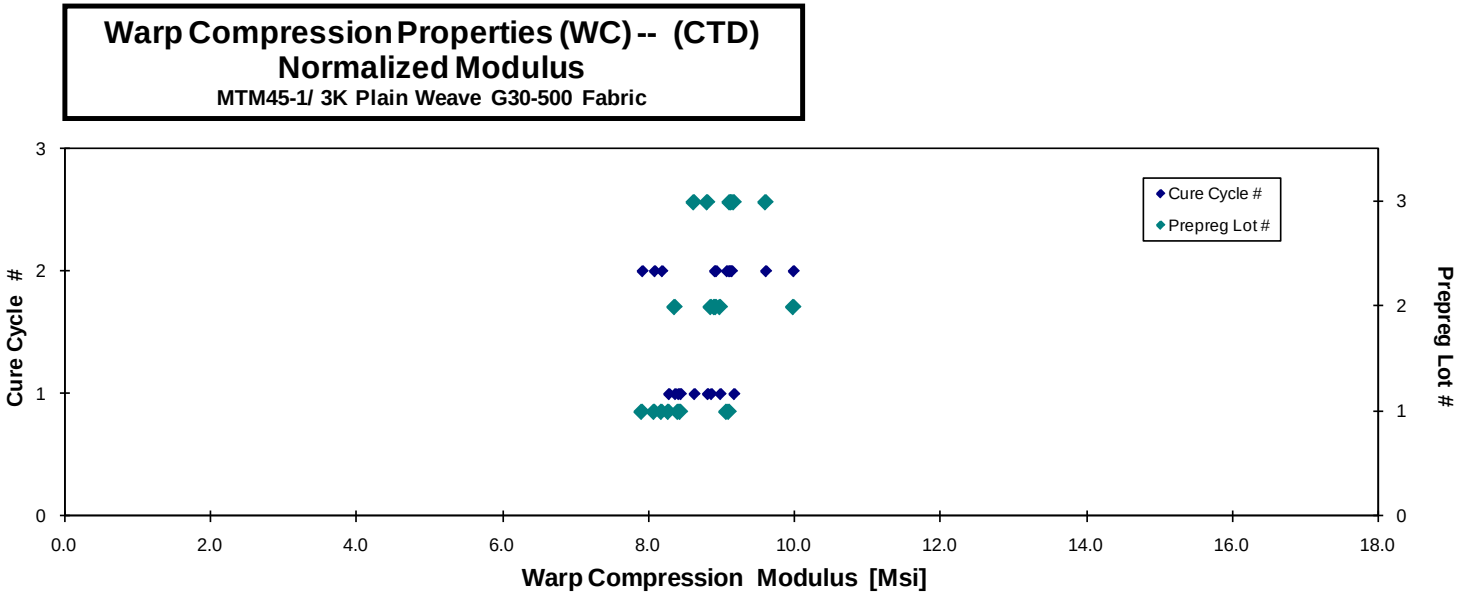
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NLA11BB	A	MH1	1	1	81.255	8.510	0.047	0.138	18	HGM	0.0077	79.045	8.279
A0NLA11CB	A	MH1	1	1	102.650	8.414	0.072	0.142	18	HAT	0.0079	102.601	8.410
A0NLA11DB	A	MH1	1	1	98.116	8.468	0.049	0.142	18	HAT	0.0079	97.794	8.440
A0NLA221B	A	MH2	1	2	92.066	7.846	0.034	0.143	18	BGM	0.0080	92.864	7.914
A0NLA222B	A	MH2	1	2	116.224	8.999	0.048	0.143	18	HAB	0.0080	117.218	9.076
A0NLA224B	A	MH2	1	2	107.832	8.118	0.041	0.143	18	BGM	0.0080	108.717	8.185
A0NLA225B	A	MH2	1	2	111.338	8.015	0.040	0.143	18	BGM	0.0080	112.277	8.083
A0NLA226B	A	MH2	1	2	112.810	9.011	0.043	0.144	18	BGM	0.0080	114.013	9.107
A0NLB122B	B	MH1	2	1	106.458	8.335	0.057	0.143	18	HGM	0.0079	106.845	8.365
A0NLB124B	B	MH1	2	1	111.425	8.785	0.084	0.143	18	BGM	0.0080	112.391	8.861
A0NLB125B	B	MH1	2	1	114.933	8.937	0.071	0.143	18	BGM	0.0079	115.566	8.986
A0NLB227B	B	MH2	2	2	86.554	9.895	0.059	0.144	18	BGM/HAT	0.0080	87.407	9.992
A0NLB229B*	B	MH2	2	2	100.778	8.779	0.027	0.144	18	HAT	0.0080	102.279	8.910
A0NLB22AB	B	MH2	2	2	109.580	8.846	0.049	0.144	18	HAT	0.0080	110.607	8.929
A0NLC111B	C	MH1	3	1	109.007	8.934	0.035	0.137	18	BGM	0.0076	105.276	8.628
A0NLC112B	C	MH1	3	1	114.006	9.433	0.032	0.138	18	BGM	0.0077	110.892	9.175
A0NLC113B	C	MH1	3	1	113.653	9.208	0.068	0.136	18	BGM/HAT	0.0076	108.764	8.812
A0NLC21GB	C	MH2	3	2	111.166	9.158	0.032	0.142	18	BGM	0.0079	110.983	9.143
A0NLC21HB	C	MH2	3	2	100.939	9.574	0.035	0.143	18	BAB/HAT	0.0079	101.342	9.612
A0NLC21IB	C	MH2	3	2	100.876	9.198	0.035	0.141	18	BAB/HAT	0.0078	100.025	9.120

*Linear graph cannot be obtained for poisson ratio

Average	**105.083**	**8.823**	**0.048**	**$Average_{norm}$**	**0.0079**	**104.845**	**8.801**
Standard Dev.	**9.689**	**0.529**	**0.016**	**$Standard\ Dev._{norm}$**		**9.777**	**0.520**
Coeff. of Var. [%]	**9.220**	**5.995**	**33.229**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**9.326**	**5.904**
Min.	**81.255**	**7.846**	**0.027**	**Min.**	**0.0076**	**79.045**	**7.914**
Max.	**116.224**	**9.895**	**0.084**	**Max.**	**0.0080**	**117.218**	**9.992**
Number of Spec.	**20**	**20**	**20**	**Number of Spec.**		**20**	**20**


Warp Compression Properties (WC) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Warp Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3


Warp Compression Properties (WC) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Warp Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

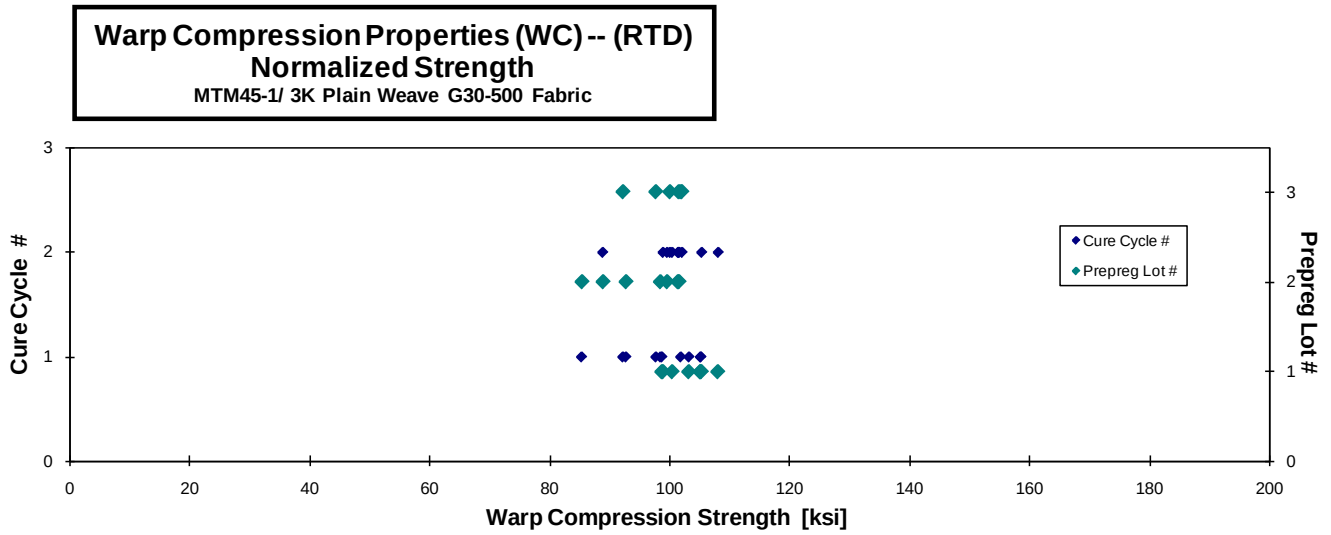
Warp Compression Properties (WC) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

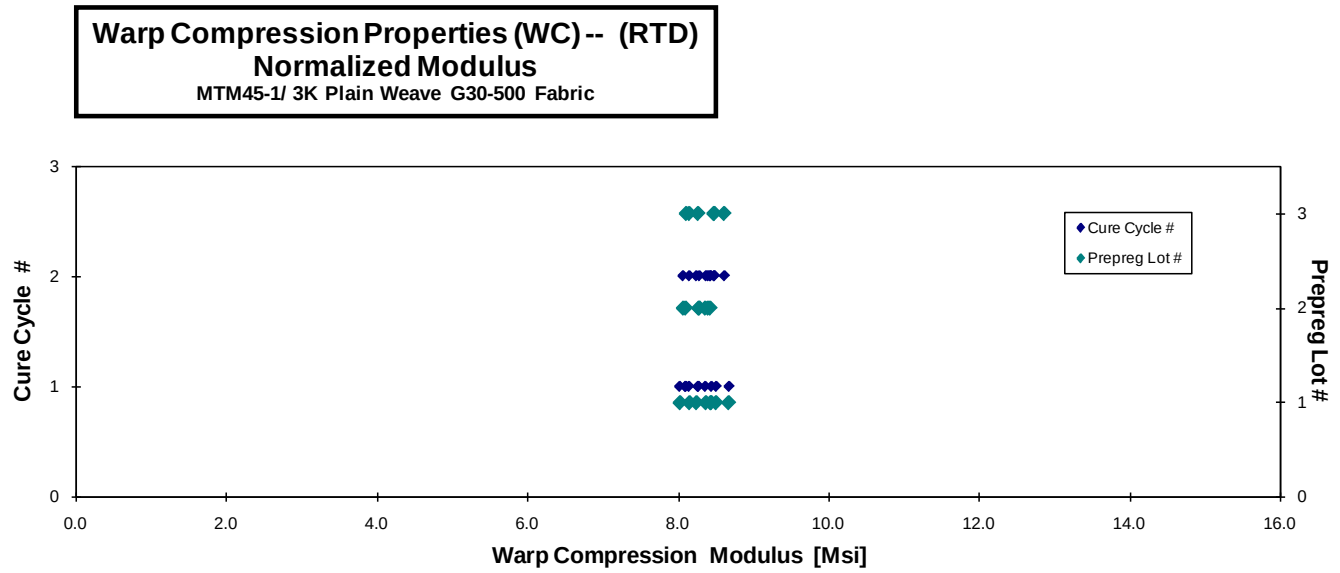
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NLA11FA	A	MH1	1	1	100.098	8.622	0.049	0.140	18	BAT	0.0078	98.690	8.501
A0NLA11GA	A	MH1	1	1	104.091	8.087	0.057	0.141	18	BGM	0.0078	103.201	8.018
A0NLA11HA	A	MH1	1	1	106.997	8.827	0.083	0.140	18	HAT	0.0078	105.103	8.671
A0NLA11IA	A	MH1	1	1	105.128	8.433	0.059	0.142	18	HAT/HGM	0.0079	105.189	8.438
A0NLA211A	A	MH2	1	2	102.448	8.598	0.048	0.139	18	BAT	0.0077	100.419	8.428
A0NLA227A	A	MH2	1	2	97.218	8.008	0.048	0.145	18	BAB	0.0080	98.881	8.145
A0NLA228A	A	MH2	1	2	107.003	8.157	0.054	0.144	18	BGM/BAB	0.0080	108.069	8.238
A0NLA229A	A	MH2	1	2	104.183	8.275	0.069	0.144	18	BGM	0.0080	105.319	8.365
A0NLB127A	B	MH1	2	1	84.678	8.031	0.057	0.143	18	BGM/BAB	0.0080	85.323	8.092
A0NLB12AA	B	MH1	2	1	91.615	8.171	0.068	0.144	18	BGM	0.0080	92.699	8.268
A0NLB12BA	B	MH1	2	1	98.073	8.324	0.054	0.143	18	BGM	0.0079	98.452	8.356
A0NLB223A	B	MH2	2	2	100.843	8.235	0.066	0.143	18	HAB	0.0079	101.375	8.278
A0NLB224A	B	MH2	2	2	101.298	8.370	0.049	0.143	18	BGM	0.0079	101.583	8.394
A0NLB225A	B	MH2	2	2	98.615	7.984	0.041	0.144	18	BGM/BAB	0.0080	99.574	8.062
A0NLB226A	B	MH2	2	2	88.817	8.419	0.049	0.142	18	BGM	0.0079	88.848	8.422
A0NLC114A	C	MH1	3	1	96.876	8.555	0.070	0.135	18	BAB/BGM	0.0075	92.187	8.141
A0NLC115A	C	MH1	3	1	105.202	8.533	0.063	0.138	18	BAB	0.0076	101.823	8.259
A0NLC116A	C	MH1	3	1	102.747	8.520	0.050	0.135	18	BGM	0.0075	97.689	8.101
A0NLC21BA	C	MH2	3	2	100.820	8.421	0.043	0.143	18	BGM	0.0080	101.517	8.479
A0NLC21CA	C	MH2	3	2	99.779	8.448	0.055	0.143	18	BGM/HAB	0.0079	100.048	8.471
A0NLC21DA	C	MH2	3	2	100.523	8.480	0.057	0.144	18	HAB	0.0080	102.054	8.609

Average	**99.860**	**8.357**	**0.057**
Standard Dev.	**5.724**	**0.226**	**0.010**
Coeff. of Var. [%]	**5.732**	**2.703**	**17.997**
Min.	**84.678**	**7.984**	**0.041**
Max.	**107.003**	**8.827**	**0.083**
Number of Spec.	**21**	**21**	**21**

$Average_{norm}$	**0.0079**	**99.431**	**8.321**
Standard $Dev._{norm}$		**5.609**	**0.183**
Coeff. of Var. $[\%]_{norm}$		**5.641**	**2.196**
Min.	**0.0075**	**85.323**	**8.018**
Max.	**0.0080**	**108.069**	**8.671**
Number of Spec.		**21**	**21**


Warp Compression Properties (WC) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3

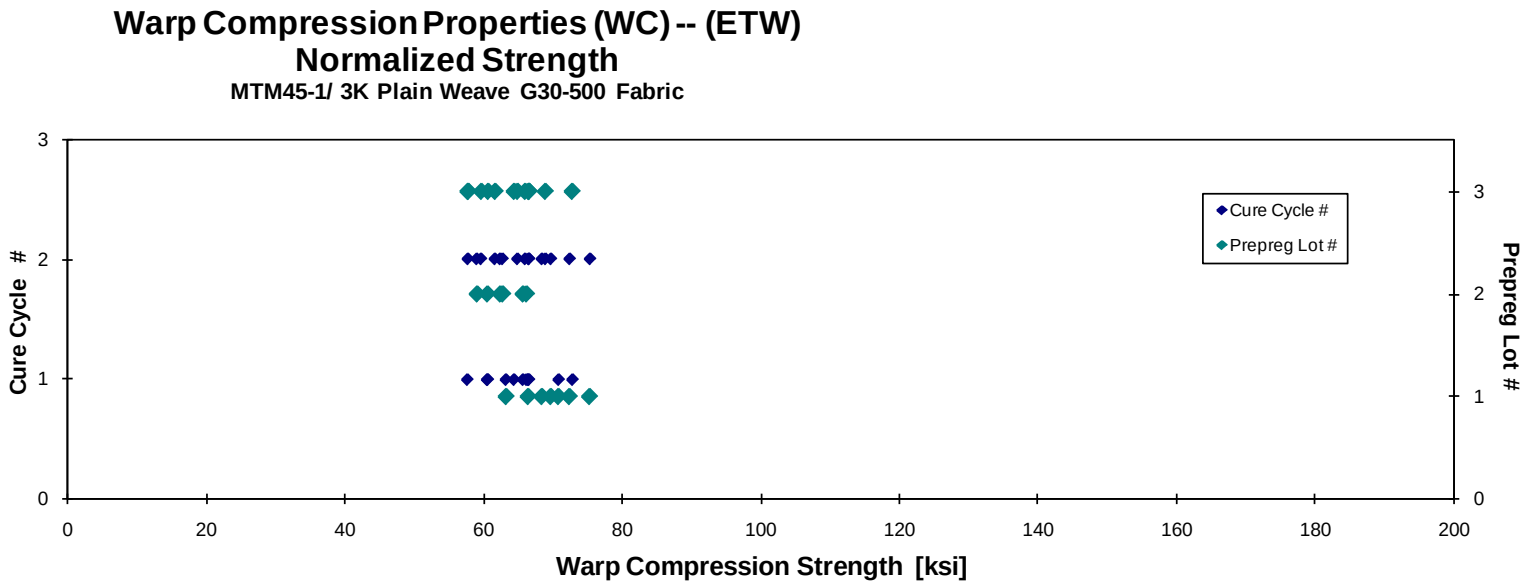

Warp Compression Properties (WC) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
0
1
2
3

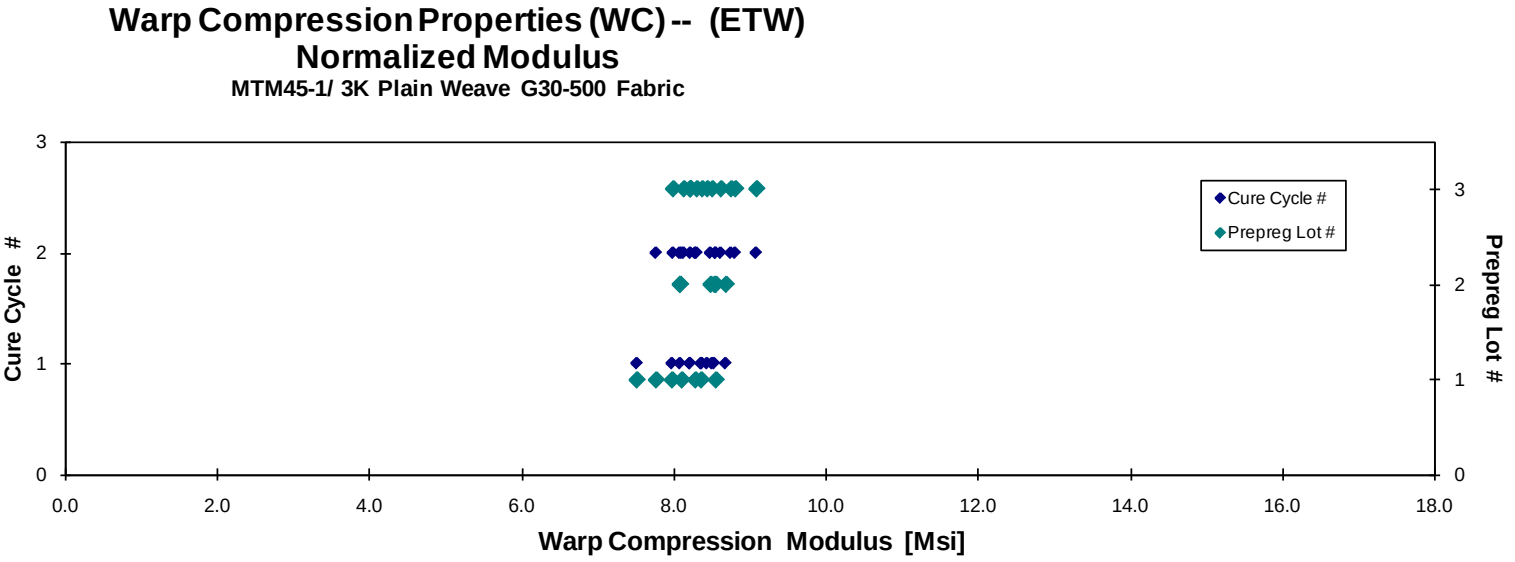
Warp Compression Properties (WC) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NLA116N	A	MH1	1	1	63.205	7.502	0.040	0.142	18	HGM	0.0079	63.228	7.505
A0NLA117N	A	MH1	1	1	71.439	8.035	0.045	0.141	18	HAT	0.0078	70.845	7.968
A0NLA118N	A	MH1	1	1	66.942	8.415	0.052	0.141	18	BGM/BAB	0.0078	66.432	8.351
A0NLA219N	A	MH2	1	2	75.795	8.141	0.047	0.141	18	HAT	0.0079	75.378	8.096
A0NLA21AN	A	MH2	1	2	74.230	8.755	0.050	0.139	18	BGM	0.0077	72.438	8.544
A0NLA21BN	A	MH2	1	2	68.989	8.342	0.027	0.141	18	HGM	0.0078	68.431	8.275
A0NLA21CN	A	MH2	1	2	70.410	7.834	0.029	0.141	18	HAB	0.0078	69.725	7.758
A0NLB115N	B	MH1	2	1	68.450	8.970	0.053	0.138	18	HGM/BGM	0.0076	66.203	8.676
A0NLB116N	B	MH1	2	1	62.725	8.836	0.054	0.137	18	BGM	0.0076	60.513	8.524
A0NLB11GN	B	MH1	2	1	67.254	8.266	0.040	0.139	18	BGM	0.0077	65.693	8.074
A0NLB219N	B	MH2	2	2	64.598	8.797	0.054	0.138	18	HGM	0.0077	62.736	8.543
A0NLB21AN	B	MH2	2	2	60.555	8.697	0.051	0.139	18	HGM	0.0077	59.008	8.475
A0NLB21CN	B	MH2	2	2	63.714	8.243	0.044	0.139	18	BGM	0.0077	62.378	8.070
A0NLC11CN	C	MH1	3	1	66.709	8.502	0.048	0.137	18	HGM	0.0076	64.395	8.207
A0NLC11EN	C	MH1	3	1	75.193	8.633	0.041	0.138	18	HGM	0.0077	72.849	8.364
A0NLC11FN	C	MH1	3	1	68.547	8.449	0.043	0.138	18	HGM	0.0077	66.562	8.204
A0NLC211N	C	MH2	3	2	68.927	8.265	0.067	0.137	18	HGM	0.0076	66.568	7.982
A0NLC212N	C	MH2	3	2	66.094	8.134	0.059	0.142	18	HGM	0.0079	66.001	8.123
A0NLC213N	C	MH2	3	2	60.688	8.442	0.051	0.140	18	HGM	0.0078	59.621	8.294
A0NLC1RAN1	C	MH1	3	1	63.593	8.845	0.041	0.136	18	HGM	0.0075	60.612	8.431
A0NLC1RBN2	C	MH1	3	1	59.359	8.748	0.047	0.138	18	HGM	0.0077	57.655	8.497
A0NLC2R4N	C	MH2	3	2	66.818	8.248	0.061	0.142	18	HGM	0.0079	66.512	8.211
A0NLC2R9N	C	MH2	3	2	65.601	8.839	0.041	0.141	18	HGM	0.0078	64.893	8.744
A0NLC2RAN	C	MH2	3	2	58.243	9.158	0.048	0.141	18	HGM	0.0078	57.731	9.077
A0NLC2REN	C	MH2	3	2	69.030	8.811	0.057	0.142	18	HGM	0.0079	68.941	8.800
A0NLC2RFN	C	MH2	3	2	60.918	8.511	0.055	0.144	18	HGM	0.0080	61.632	8.610

Average	**66.463**	**8.478**	**0.048**	**$Average_{norm}$**	**0.0078**	**65.268**	**8.323**
Standard Dev.	**4.708**	**0.377**	**0.009**	**Standard $Dev._{norm}$**		**4.718**	**0.339**
Coeff. of Var. [%]	**7.084**	**4.447**	**18.991**	**Coeff. of Var. $[\%]_{norm}$**		**7.229**	**4.077**
Min.	**58.243**	**7.502**	**0.027**	**Min.**	**0.0075**	**57.655**	**7.505**
Max.	**75.795**	**9.158**	**0.067**	**Max.**	**0.0080**	**75.378**	**9.077**
Number of Spec.	**26**	**26**	**26**	**Number of Spec.**		**26**	**26**


Warp Compression Properties (WC) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3

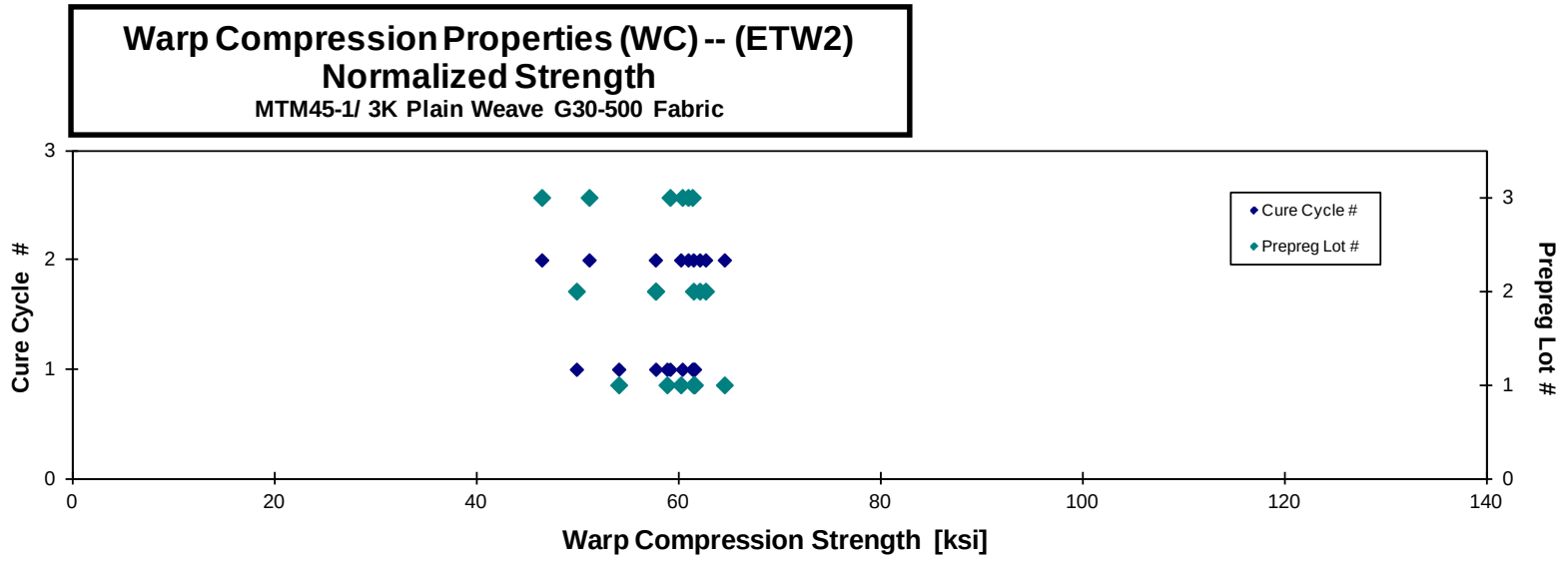

Warp Compression Properties (WC) -- (ETW)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

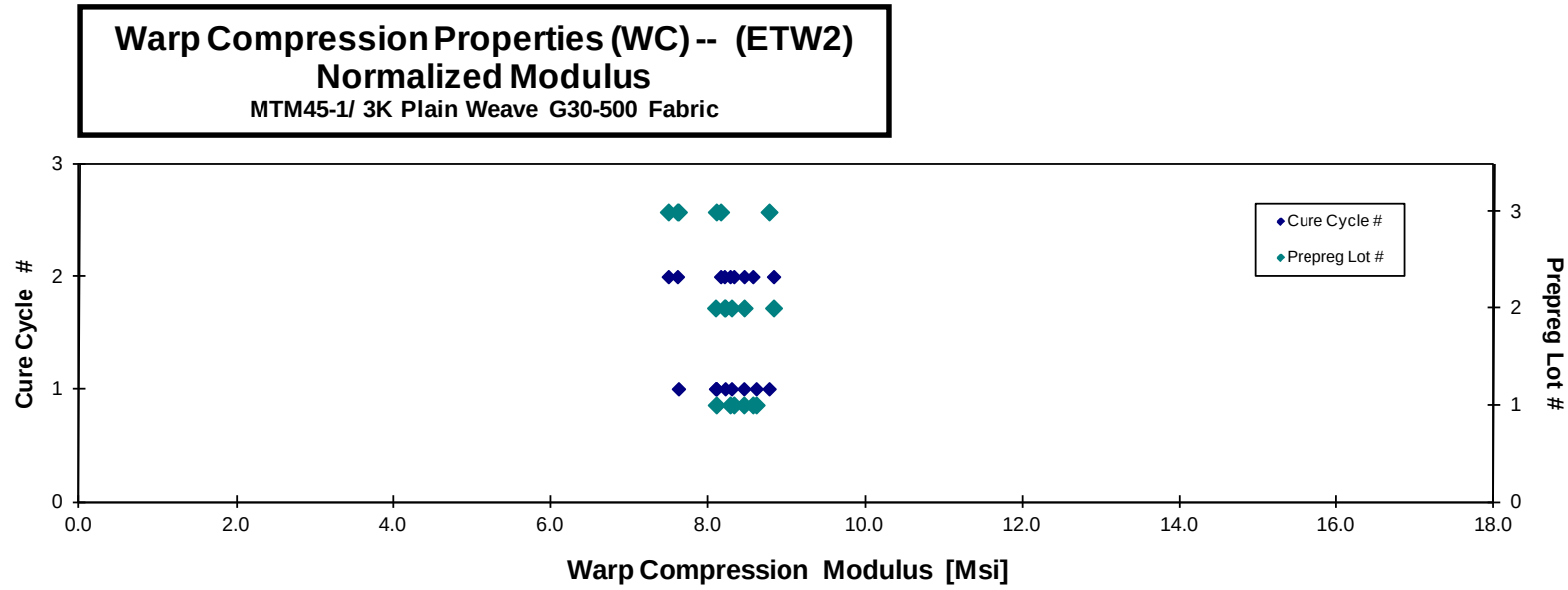
Warp Compression Properties (WC) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NLA112D	A	MH1	1	1	54.915	8.733	0.039	0.140	18	HGM	0.0078	54.098	8.603
A0NLA113D	A	MH1	1	1	59.349	8.161	0.055	0.141	18	HAB	0.0078	58.876	8.096
A0NLA114D	A	MH1	1	1	62.488	8.568	0.039	0.140	18	HAB	0.0078	61.602	8.446
A0NLA21ED	A	MH2	1	2	60.932	8.659	0.077	0.141	18	HAT	0.0078	60.240	8.561
A0NLA21FD	A	MH2	1	2	62.336	8.387	0.033	0.140	18	HGM	0.0078	61.481	8.272
A0NLA21GD	A	MH2	1	2	65.339	8.420	0.043	0.141	18	HAT	0.0078	64.558	8.319
A0NLB117D	B	MH1	2	1	59.728	8.489	0.068	0.138	18	HGM	0.0076	57.761	8.209
A0NLB118D	B	MH1	2	1	51.490	8.342	0.061	0.138	18	HGM	0.0077	49.915	8.087
A0NLB119D	B	MH1	2	1	64.053	8.635	0.054	0.137	18	BGM	0.0076	61.493	8.290
A0NLB21ED	B	MH2	2	2	59.121	8.397	0.044	0.139	18	HGM	0.0077	57.728	8.199
A0NLB21FD	B	MH2	2	2	63.615	8.654	0.061	0.139	18	HGM	0.0077	62.117	8.450
A0NLB21GD	B	MH2	2	2	64.594	9.091	0.071	0.138	18	HGM	0.0077	62.694	8.824
A0NLC117D	C	MH1	3	1	64.097	9.154	0.046	0.136	18	BAB/HAB	0.0076	61.385	8.767
A0NLC118D	C	MH1	3	1	62.637	8.398	0.065	0.137	18	HAT	0.0076	60.391	8.097
A0NLC119D	C	MH1	3	1	60.962	7.846	0.061	0.138	18	HGM/BGM	0.0077	59.176	7.616
A0NLC216D	C	MH2	3	2	61.172	7.629	0.052	0.142	18	HGM	0.0079	60.964	7.603
A0NLC217D	C	MH2	3	2	46.781	7.537	0.048	0.141	18	HGM	0.0078	46.474	7.488
A0NLC218D	C	MH2	3	2	51.023	8.129	0.049	0.143	18	HGM	0.0079	51.166	8.152

Average	**59.702**	**8.402**	**0.054**	**$Average_{norm}$**	**0.0077**	**58.451**	**8.227**
Standard Dev.	**5.263**	**0.431**	**0.012**	**$Standard\ Dev._{norm}$**		**4.905**	**0.374**
Coeff. of Var. [%]	**8.816**	**5.132**	**22.781**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**8.392**	**4.550**
Min.	**46.781**	**7.537**	**0.033**	**Min.**	**0.0076**	**46.474**	**7.488**
Max.	**65.339**	**9.154**	**0.077**	**Max.**	**0.0079**	**64.558**	**8.824**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**		**18**	**18**


Warp Compression Properties (WC) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Strength [ksi]
0
20
40
60
80
100
120
140
0
1
2
3


Warp Compression Properties (WC) -- (ETW2)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Warp Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

4.4 Fill Compression Properties

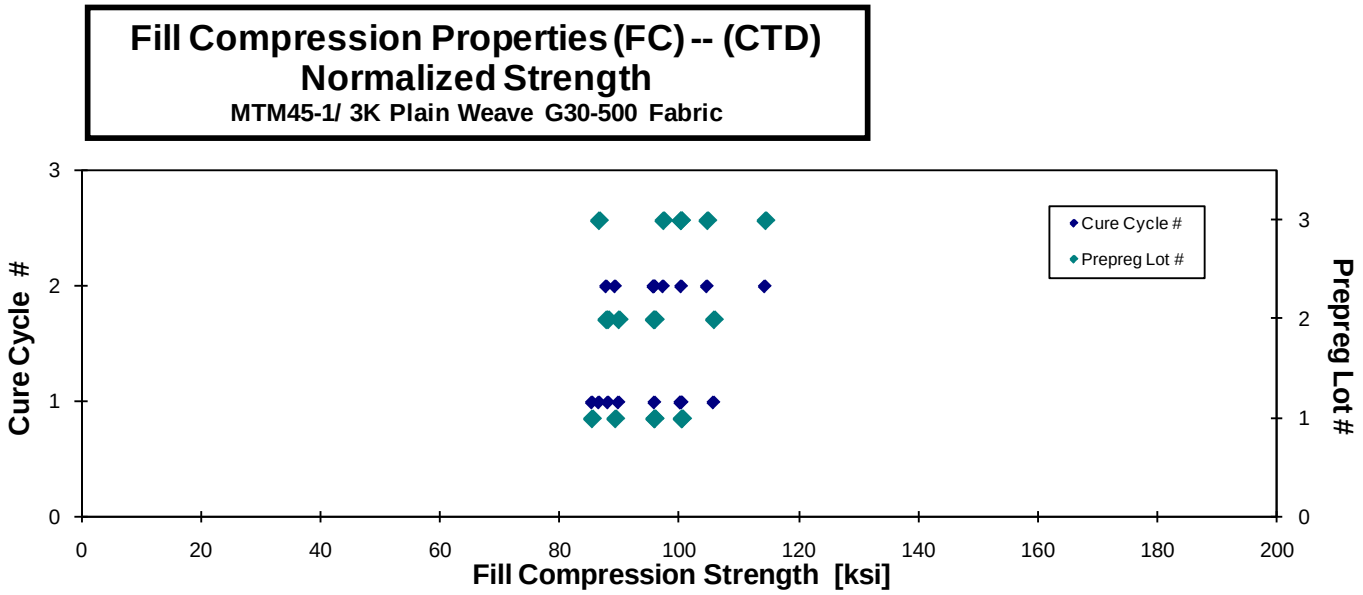
Fill Compression Properties (FC) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

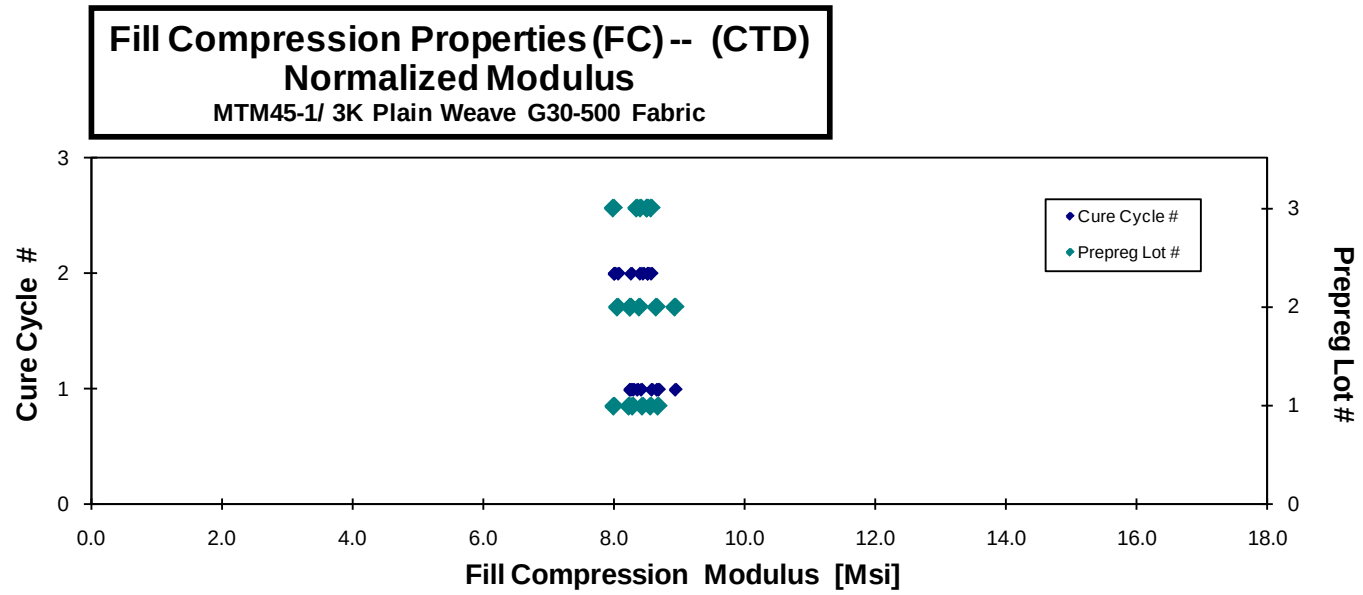
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NZA111B	A	MH1	1	1	91.734	9.310	0.063	0.133	18	BGM	0.0074	85.519	8.679
A0NZA112B	A	MH1	1	1	105.694	8.720	0.065	0.135	18	BGM	0.0075	100.528	8.294
A0NZA113B	A	MH1	1	1	99.425	8.536	0.066	0.137	18	BGM/HGM	0.0076	95.964	8.239
A0NZA211B	A	MH2	1	2	107.683	9.185	0.059	0.133	18	HAT	0.0074	100.439	8.567
A0NZA212B	A	MH2	1	2	91.978	8.240	0.054	0.138	18	BGM/HGM	0.0077	89.391	8.008
A0NZA213B	A	MH2	1	2	96.876	8.531	0.067	0.141	18	HGM	0.0078	95.877	8.443
A0NZB111B	B	MH1	2	1	96.882	8.894	0.026	0.132	18	BGM	0.0073	89.967	8.259
A0NZB112B	B	MH1	2	1	92.352	9.357	0.052	0.136	18	BGM	0.0075	88.196	8.936
A0NZB113B	B	MH1	2	1	108.101	8.838	0.023	0.139	18	BGM	0.0077	105.833	8.653
A0NZB214B	B	MH2	2	2	99.160	8.330	0.083	0.138	18	BAB	0.0076	95.987	8.063
A0NZB215B	B	MH2	2	2	97.356	8.532	0.037	0.140	18	HAB	0.0078	95.804	8.396
A0NZB216B	B	MH2	2	2	88.743	8.338	0.039	0.141	18	BGM	0.0078	87.900	8.259
A0NZC117B	C	MH1	3	1	103.910	8.651	0.045	0.137	18	BGM/HGM	0.0076	100.354	8.355
A0NZC118B	C	MH1	3	1	83.755	8.284	0.030	0.147	18	BGM	0.0082	86.680	8.573
A0NZC119B	C	MH1	3	1	96.881	8.126	0.032	0.147	18	HAT	0.0082	100.310	8.414
A0NZC214B	C	MH2	3	2	113.957	7.968	0.048	0.143	18	BAB	0.0079	114.411	8.000
A0NZC215B	C	MH2	3	2	104.306	8.477	0.055	0.143	18	BGM	0.0079	104.734	8.512
A0NZC216B	C	MH2	3	2	95.956	8.390	0.077	0.144	18	BGM	0.0080	97.407	8.517

Average	**98.597**	**8.595**	**0.051**
Standard Dev.	**7.614**	**0.395**	**0.017**
Coeff. of Var. [%]	**7.723**	**4.591**	**34.008**
Min.	**83.755**	**7.968**	**0.023**
Max.	**113.957**	**9.357**	**0.083**
Number of Spec.	**18**	**18**	**18**

$Average_{norm}$	**0.0077**	**96.406**	**8.398**
Standard $Dev._{norm}$		**7.639**	**0.245**
Coeff. of Var. $[\%]_{norm}$		**7.924**	**2.918**
Min.	**0.0073**	**85.519**	**8.000**
Max.	**0.0082**	**114.411**	**8.936**
Number of Spec.		**18**	**18**


Fill Compression Properties (FC) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3

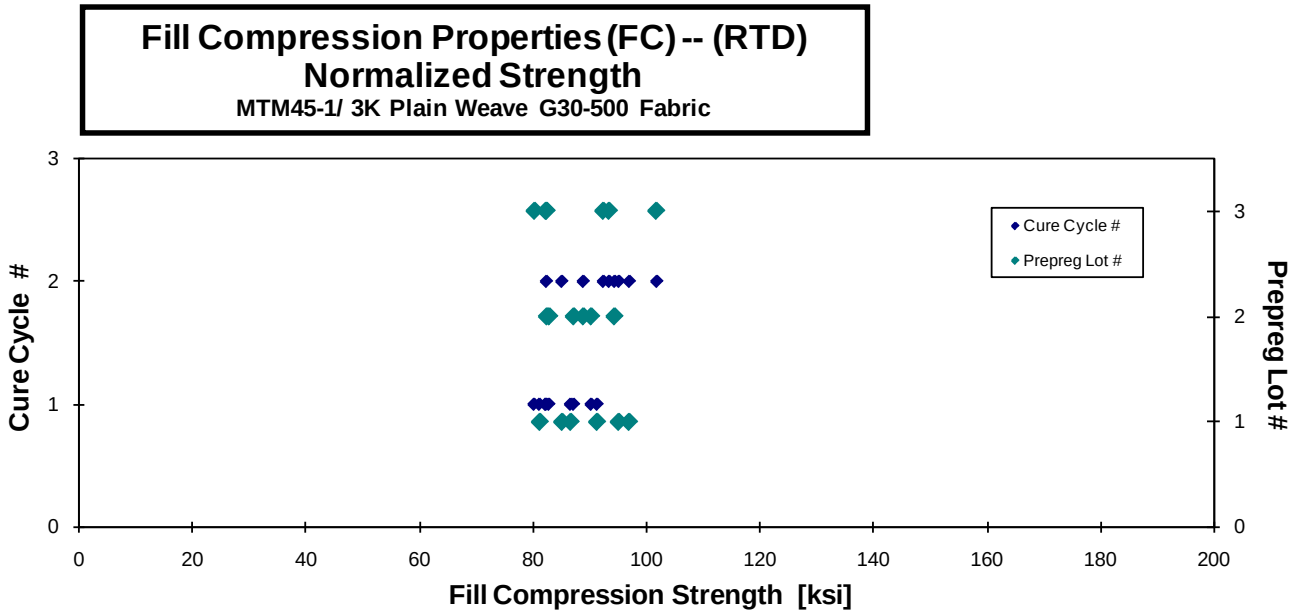

Fill Compression Properties (FC) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
18.0
0
1
2
3

Fill Compression Properties (FC) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NZA114A	A	MH1	1	1	83.050	8.631	0.057	0.139	18	HGM	0.0077	81.289	8.448
A0NZA115A	A	MH1	1	1	88.055	8.323	0.026	0.140	18	HGM	0.0078	86.724	8.197
A0NZA116A	A	MH1	1	1	92.851	8.336	0.062	0.140	18	BAB	0.0078	91.371	8.203
A0NZA214A	A	MH2	1	2	95.723	8.296	0.052	0.141	18	BGM	0.0079	95.185	8.249
A0NZA215A	A	MH2	1	2	96.591	8.125	0.053	0.143	18	BGM	0.0079	97.010	8.160
A0NZA216A	A	MH2	1	2	85.191	8.289	0.046	0.142	18	HGM	0.0079	85.211	8.291
A0NZB117A	B	MH1	2	1	81.881	8.006	0.037	0.144	18	BGM	0.0080	82.946	8.110
A0NZB118A	B	MH1	2	1	86.108	8.146	0.064	0.144	18	BGM	0.0080	87.258	8.255
A0NZB119A	B	MH1	2	1	88.700	8.423	0.116	0.145	18	BGM	0.0080	90.332	8.578
A0NZB211A	B	MH2	2	2	101.931	8.649	0.050	0.132	18	BAB	0.0073	94.440	8.013
A0NZB212A	B	MH2	2	2	87.386	8.663	0.046	0.134	18	BGM	0.0075	82.521	8.181
A0NZB213A	B	MH2	2	2	91.819	8.188	0.065	0.138	18	BGM	0.0077	88.956	7.933
A0NZC111A	C	MH1	3	1	79.173	7.811	0.058	0.148	18	HAB	0.0082	82.346	8.124
A0NZC112A	C	MH1	3	1	83.165	8.315	0.066	0.141	18	BGM	0.0078	82.492	8.248
A0NZC113A	C	MH1	3	1	84.986	8.886	0.064	0.134	18	BGM	0.0075	80.354	8.402
A0NZC217A	C	MH2	3	2	92.195	8.079	0.038	0.144	18	HAB/BGM	0.0080	93.470	8.191
A0NZC218A	C	MH2	3	2	100.208	7.934	0.057	0.144	18	BGM/HAB	0.0080	101.805	8.060
A0NZC219A	C	MH2	3	2	90.838	7.885	0.050	0.145	18	BGM	0.0080	92.467	8.026

Average	**89.436**	**8.277**	**0.056**	**$Average_{norm}$**	**0.0078**	**88.677**	**8.204**
Standard Dev.	**6.361**	**0.293**	**0.018**	**$Standard\ Dev._{norm}$**		**6.210**	**0.160**
Coeff. of Var. [%]	**7.112**	**3.543**	**32.914**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.003**	**1.944**
Min.	**79.173**	**7.811**	**0.026**	**Min.**	**0.0073**	**80.354**	**7.933**
Max.	**101.931**	**8.886**	**0.116**	**Max.**	**0.0082**	**101.805**	**8.578**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**		**18**	**18**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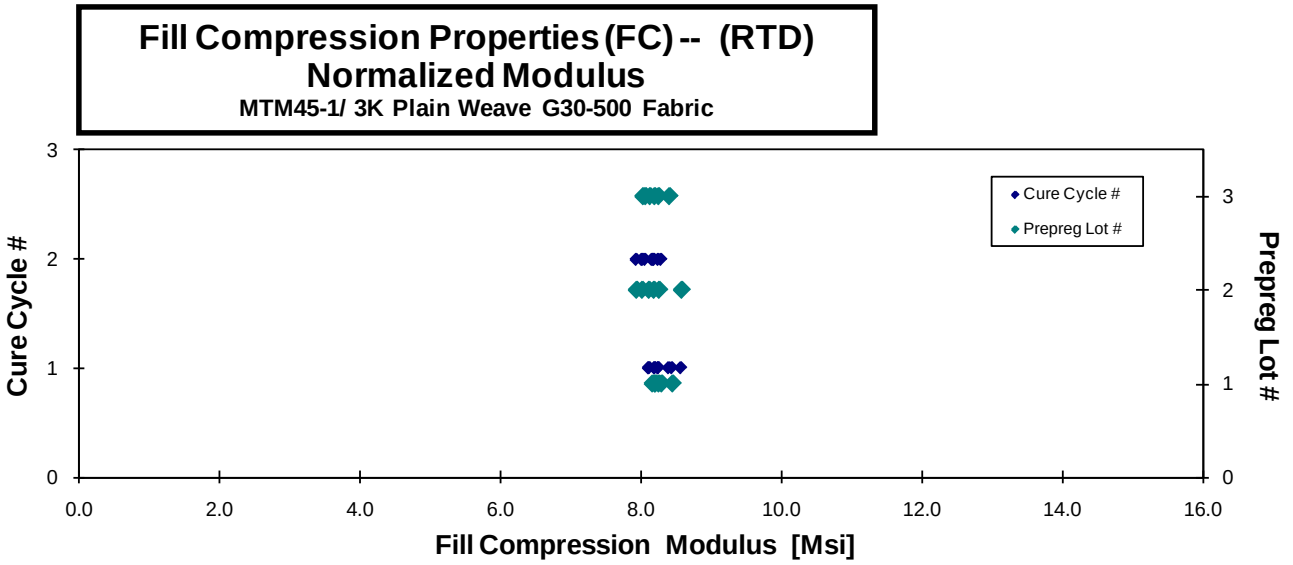
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200


Fill Compression Properties (FC) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0

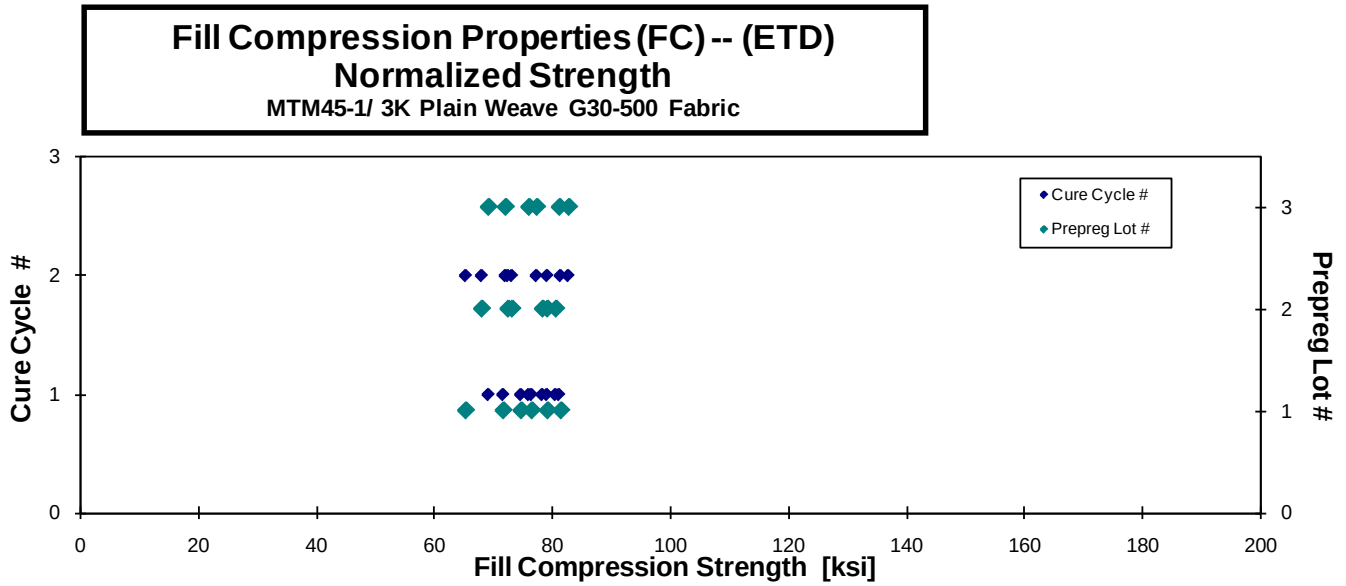
Fill Compression Properties (FC) -- (ETD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

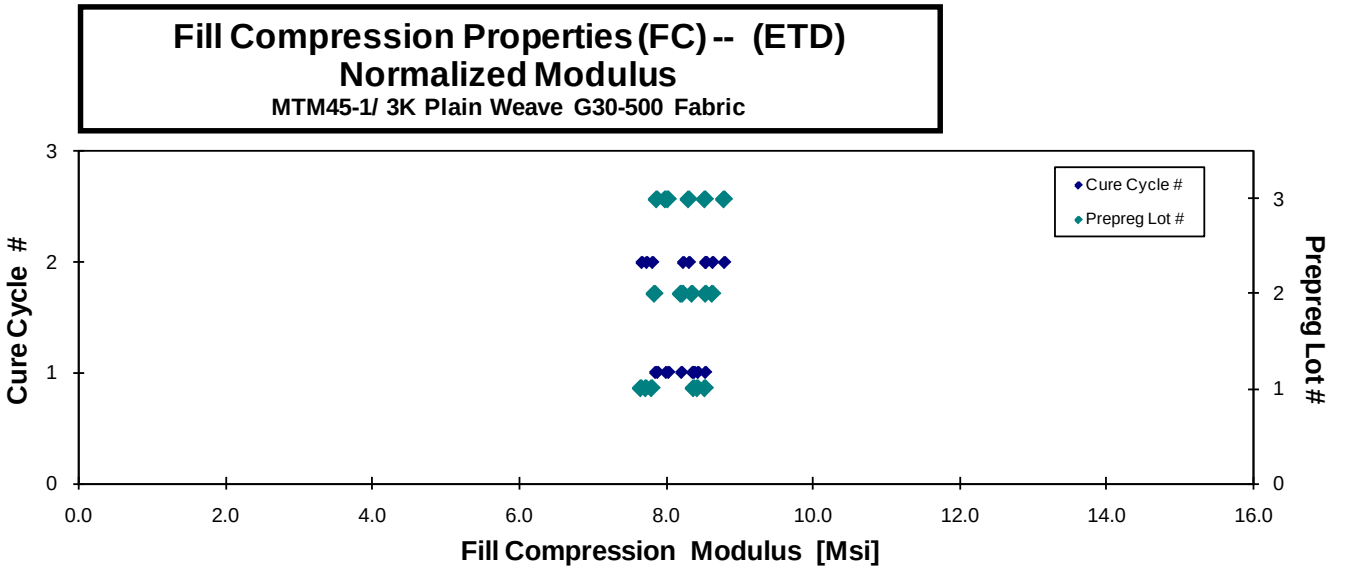
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NZA117C	A	MH1	1	1	77.724	8.521	0.042	0.140	18	BGM	0.0078	76.421	8.378
A0NZA118C	A	MH1	1	1	75.803	8.562	0.043	0.140	18	HAT	0.0078	74.630	8.430
A0NZA119C	A	MH1	1	1	72.915	8.687	0.063	0.140	18	BGM	0.0078	71.616	8.532
A0NZA217C	A	MH2	1	2	81.031	7.778	0.037	0.143	18	HAB	0.0079	81.325	7.806
A0NZA219C	A	MH2	1	2	78.992	7.652	0.060	0.142	18	HAB	0.0079	79.066	7.659
A0NZA2RDC*	A	MH2	1	2	65.751	7.780	0.033	0.141	18	BGM	0.0078	65.296	7.726
A0NZB114C	B	MH1	2	1	79.508	7.894	0.055	0.141	18	BAB	0.0079	79.024	7.846
A0NZB115C	B	MH1	2	1	79.920	8.299	0.054	0.143	18	HAB	0.0080	80.472	8.356
A0NZB116C	B	MH1	2	1	77.479	8.125	0.043	0.144	18	HAB	0.0080	78.233	8.204
A0NZB217C	B	MH2	2	2	68.417	8.686	0.079	0.141	18	BGM	0.0079	67.992	8.632
A0NZB218C	B	MH2	2	2	73.040	8.615	0.047	0.141	18	BGM	0.0078	72.424	8.542
A0NZB219C	B	MH2	2	2	73.356	8.258	0.022	0.142	18	BGM	0.0079	73.090	8.228
A0NZC114C	C	MH1	3	1	75.450	7.942	0.038	0.143	18	HAT	0.0080	75.937	7.993
A0NZC115C	C	MH1	3	1	67.729	7.716	0.060	0.145	18	HAT	0.0081	69.127	7.875
A0NZC116C	C	MH1	3	1	78.379	7.760	0.058	0.147	18	BAB	0.0082	81.071	8.026
A0NZC211C	C	MH2	3	2	82.344	9.093	0.040	0.133	18	HAT	0.0074	77.258	8.531
A0NZC212C	C	MH2	3	2	85.673	9.115	0.049	0.137	18	HAT	0.0076	82.640	8.792
A0NZC213C	C	MH2	3	2	73.250	8.453	0.071	0.140	18	BGM	0.0078	72.005	8.309

*Specimen is a retest to replace one with bad failure

Average	**75.931**	**8.274**	**0.050**	**$Average_{norm}$**	**0.0079**	**75.424**	**8.215**
Standard Dev.	**5.261**	**0.469**	**0.014**	**$Standard\ Dev._{norm}$**		**4.981**	**0.340**
Coeff. of Var. [%]	**6.929**	**5.669**	**28.659**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.604**	**4.142**
Min.	**65.751**	**7.652**	**0.022**	**Min.**	**0.0074**	**65.296**	**7.659**
Max.	**85.673**	**9.115**	**0.079**	**Max.**	**0.0082**	**82.640**	**8.792**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**		**18**	**18**


Fill Compression Properties (FC) -- (ETD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3

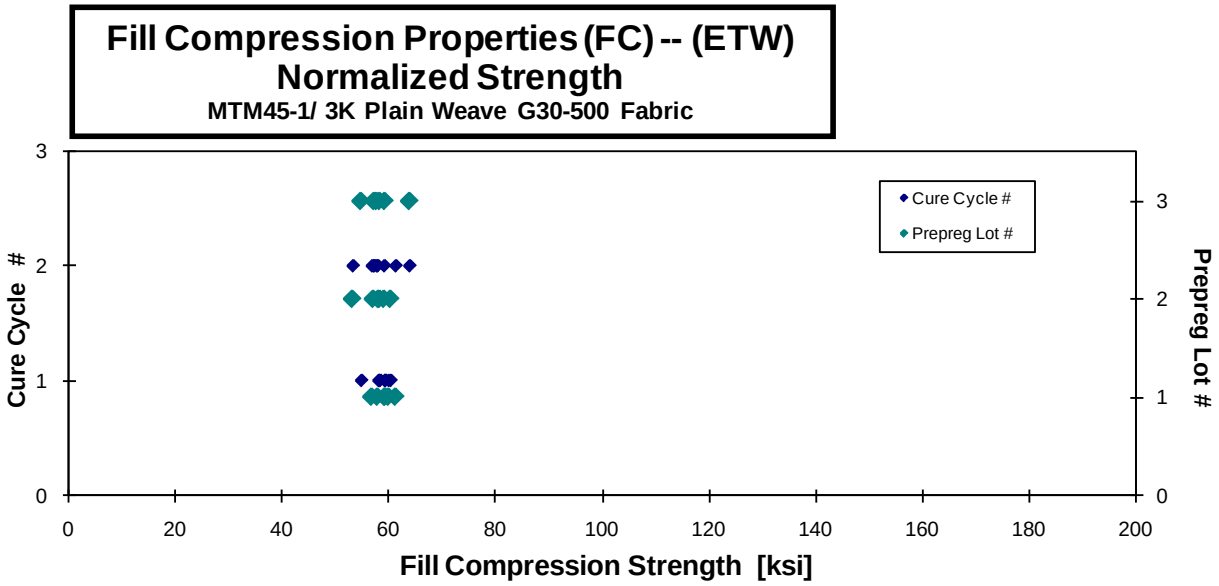

Fill Compression Properties (FC) -- (ETD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
0
1
2
3

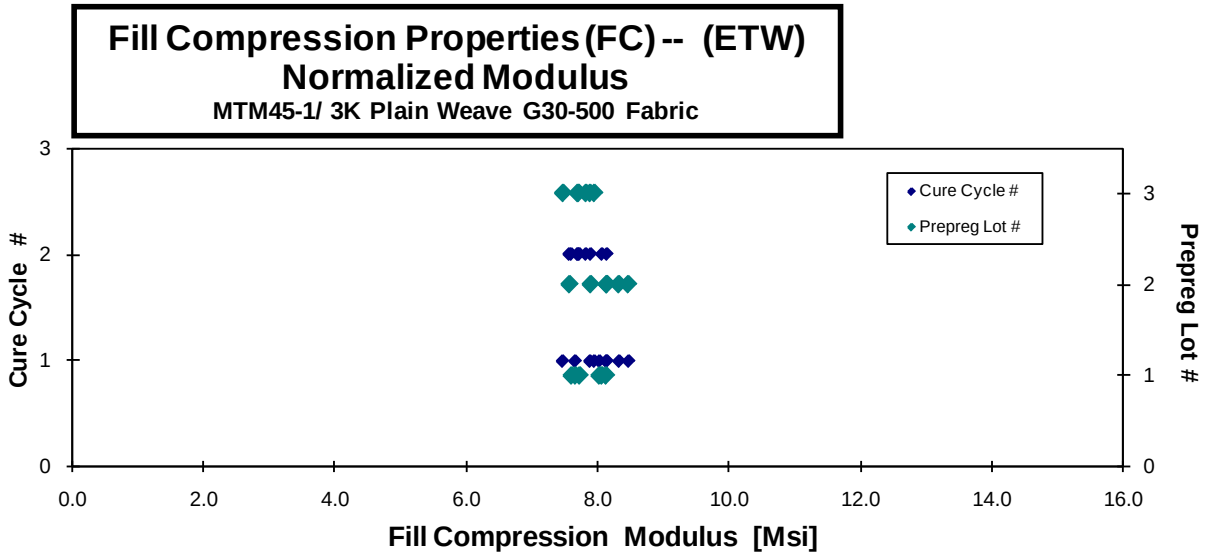
Fill Compression Properties (FC) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NZA11EN	A	MH1	1	1	60.235	8.178	0.046	0.141	18	HGM	0.0078	59.825	8.122
A0NZA11FN	A	MH1	1	1	60.078	8.135	0.032	0.140	18	HGM	0.0078	59.219	8.019
A0NZA11GN	A	MH1	1	1	60.278	7.798	0.059	0.139	18	HGM	0.0077	59.113	7.647
A0NZA21AN	A	MH2	1	2	57.324	7.652	0.047	0.143	18	HGM	0.0080	57.774	7.712
A0NZA21BN	A	MH2	1	2	56.235	7.990	0.029	0.143	18	HAB	0.0080	56.703	8.056
A0NZA21CN	A	MH2	1	2	60.479	7.509	0.040	0.144	18	HGM	0.0080	61.110	7.587
A0NZB11AN	B	MH1	2	1	57.514	8.223	0.084	0.144	18	HGM	0.0080	58.188	8.319
A0NZB11BN	B	MH1	2	1	57.519	8.077	0.068	0.143	18	HGM	0.0080	57.923	8.134
A0NZB11DN	B	MH1	2	1	59.882	8.425	0.038	0.143	18	BGM	0.0079	60.170	8.465
A0NZB21AN	B	MH2	2	2	59.710	7.649	0.031	0.140	18	HGM	0.0078	58.976	7.555
A0NZB21CN	B	MH2	2	2	57.112	7.900	0.013	0.142	18	HGM	0.0079	56.991	7.883
A0NZB21DN	B	MH2	2	2	53.540	8.194	0.034	0.141	18	HGM	0.0078	53.132	8.132
A0NZC11AN	C	MH1	3	1	55.899	7.566	0.054	0.148	18	HGM	0.0082	58.172	7.874
A0NZC11BN	C	MH1	3	1	56.905	7.177	0.059	0.148	18	HGM	0.0082	59.106	7.455
A0NZC11CN	C	MH1	3	1	52.844	7.670	0.081	0.147	18	HGM	0.0082	54.702	7.940
A0NZC21EN	C	MH2	3	2	63.007	7.597	0.018	0.144	18	HAB	0.0080	63.701	7.681
A0NZC21FN	C	MH2	3	2	57.008	7.618	0.064	0.144	18	HAB	0.0080	57.589	7.696
A0NZC21GN	C	MH2	3	2	56.716	7.753	0.057	0.143	18	HAB	0.0080	57.134	7.810

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**57.905**	**7.840**	**0.047**	**$Average_{norm}$**	**0.0080**	**58.307**	**7.894**
Standard Dev.	**2.562**	**0.320**	**0.020**	**Standard $Dev._{norm}$**		**2.323**	**0.277**
Coeff. of Var. [%]	**4.424**	**4.081**	**42.227**	**Coeff. of Var. $[\%]_{norm}$**		**3.984**	**3.512**
Min.	**52.844**	**7.177**	**0.013**	**Min.**	**0.0077**	**53.132**	**7.455**
Max.	**63.007**	**8.425**	**0.084**	**Max.**	**0.0082**	**63.701**	**8.465**
Number of Spec.	**18**	**18**	**18**	**Number of Spec.**		**18**	**18**


Fill Compression Properties (FC) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3

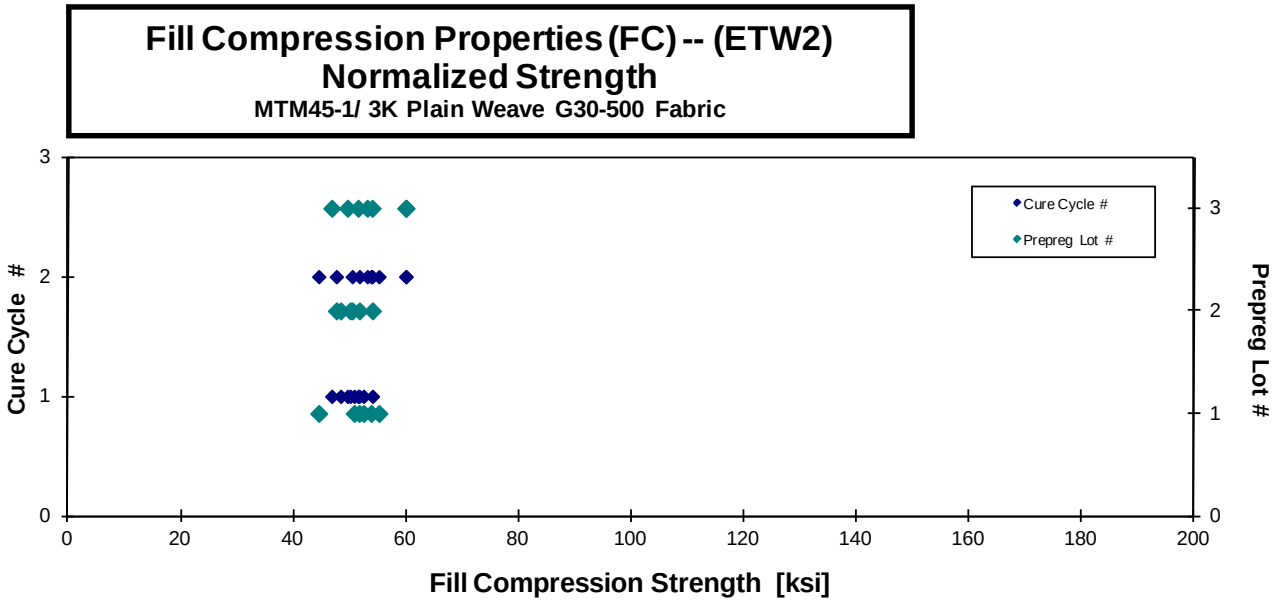

Fill Compression Properties (FC) -- (ETW)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
0
1
2
3

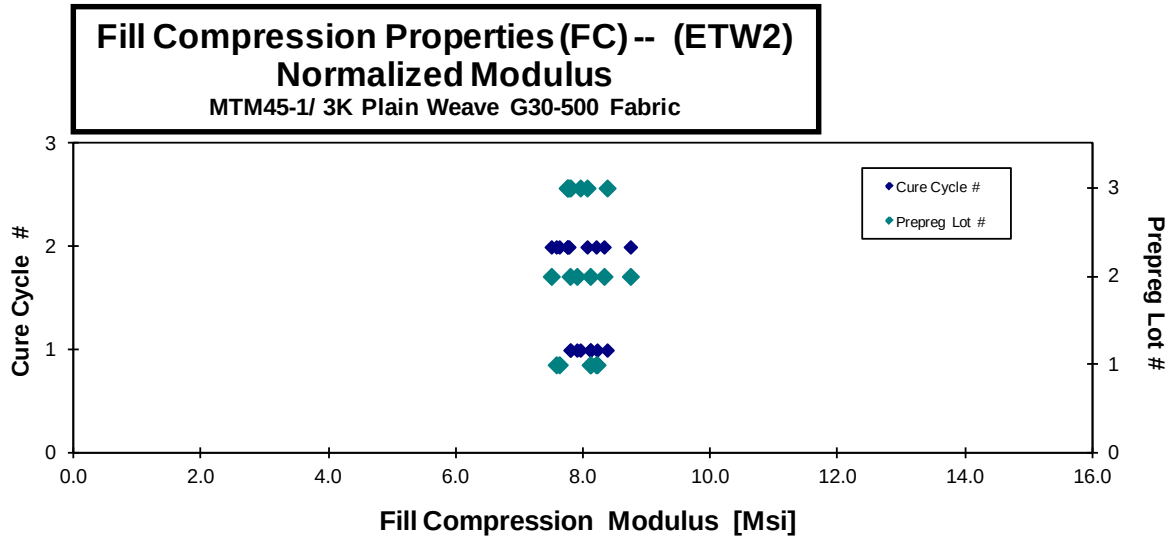
Fill Compression Properties (FC) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NZA11AD	A	MH1	1	1	51.563	8.234	0.064	0.140	18	HAB/BGM	0.0078	50.771	8.108
A0NZA11BD	A	MH1	1	1	52.710	8.385	0.054	0.139	18	HGM	0.0077	51.648	8.216
A0NZA11CD	A	MH1	1	1	53.264	8.241	0.080	0.140	18	HGM	0.0078	52.433	8.113
A0NZA21ED	A	MH2	1	2	53.453	7.529	0.044	0.143	18	BGM	0.0079	53.779	7.575
A0NZA21FD	A	MH2	1	2	54.843	8.152	0.069	0.143	18	HGM	0.0079	55.170	8.201
A0NZA21HD	A	MH2	1	2	44.260	7.586	0.050	0.143	18	HGM	0.0079	44.472	7.622
A0NZB11ED	B	MH1	2	1	49.941	7.881	0.037	0.143	18	HGM	0.0079	50.053	7.899
A0NZB11FD	B	MH1	2	1	54.056	8.114	0.099	0.142	18	HGM	0.0079	54.018	8.108
A0NZB11GD	B	MH1	2	1	47.945	7.724	0.069	0.143	18	BGM	0.0080	48.367	7.792
A0NZB21ED	B	MH2	2	2	50.930	8.827	0.031	0.141	18	HGM	0.0078	50.423	8.739
A0NZB21FD	B	MH2	2	2	52.287	8.419	0.035	0.141	18	HGM	0.0078	51.705	8.325
A0NZB21GD	B	MH2	2	2	48.119	7.578	0.042	0.141	18	BGM	0.0078	47.606	7.497
A0NZC11ED	C	MH1	3	1	45.146	8.080	0.041	0.147	18	HGM	0.0082	46.786	8.374
A0NZC11FD	C	MH1	3	1	48.036	7.705	0.028	0.147	18	HGM	0.0082	49.579	7.952
A0NZC11GD	C	MH1	3	1	50.197	7.606	0.079	0.146	18	HGM	0.0081	51.462	7.798
A0NZC21AD	C	MH2	3	2	58.782	7.600	0.060	0.145	18	BGM	0.0081	59.933	7.749
A0NZC21BD	C	MH2	3	2	58.879	7.631		0.145	18	HGM	0.0080	59.977	7.773
A0NZC21CD	C	MH2	3	2	53.049	7.619	0.045	0.145	18	BGM	0.0080	53.957	7.749
A0NZC21DD	C	MH2	3	2	52.693	8.000	0.034	0.143	18	BGM	0.0080	53.082	8.059

Average	**51.587**	**7.943**	**0.053**	**$Average_{norm}$**	**0.0079**	**51.854**	**7.981**
Standard Dev.	**3.882**	**0.369**	**0.020**	**$Standard\ Dev._{norm}$**		**3.938**	**0.313**
Coeff. of Var. [%]	**7.524**	**4.641**	**37.306**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.594**	**3.920**
Min.	**44.260**	**7.529**	**0.028**	**Min.**	**0.0077**	**44.472**	**7.497**
Max.	**58.879**	**8.827**	**0.099**	**Max.**	**0.0082**	**59.977**	**8.739**
Number of Spec.	**19**	**19**	**18**	**Number of Spec.**		**19**	**19**


Fill Compression Properties (FC) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Strength [ksi]
0
20
40
60
80
100
120
140
160
180
200
0
1
2
3


Fill Compression Properties (FC) -- (ETW2)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Fill Compression Modulus [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
16.0
0
1
2
3

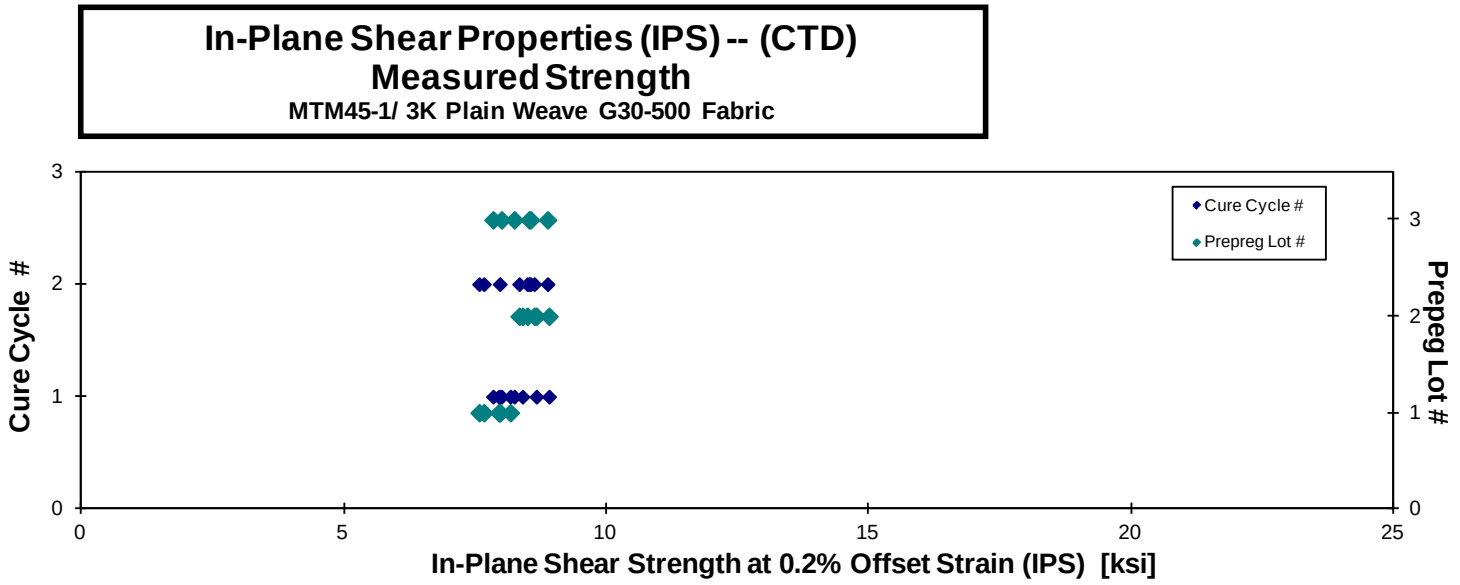
4.5 In-Plane Shear Properties

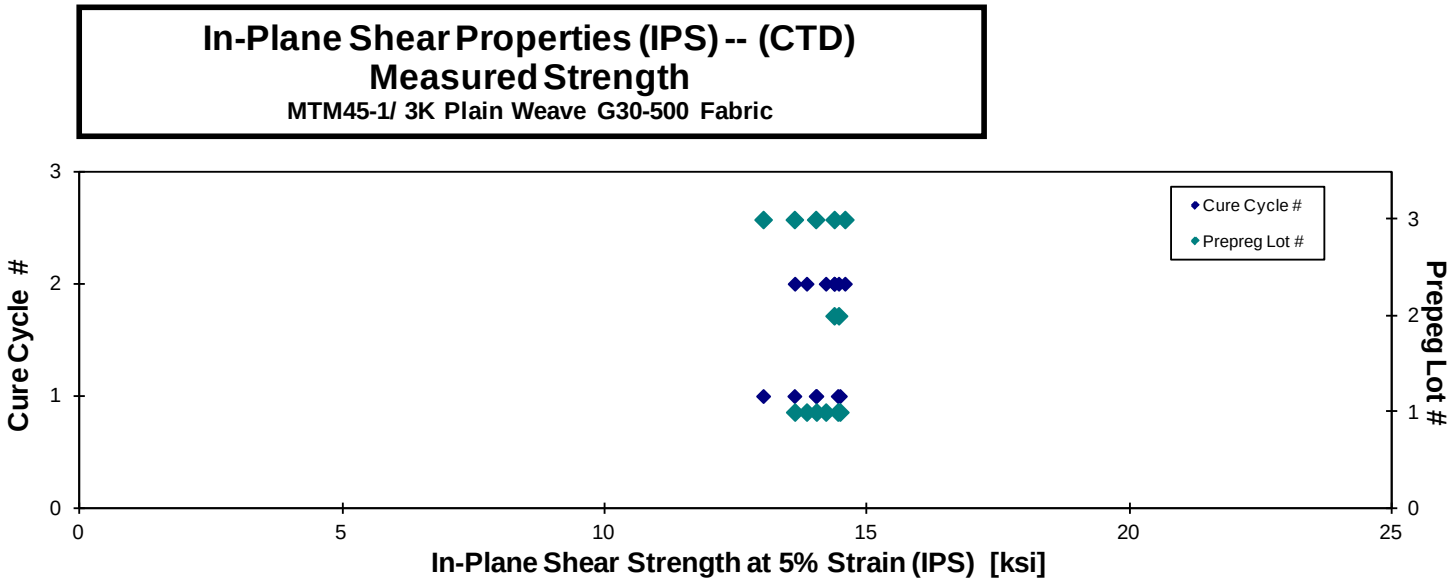
In-Plane Shear Properties (IPS) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

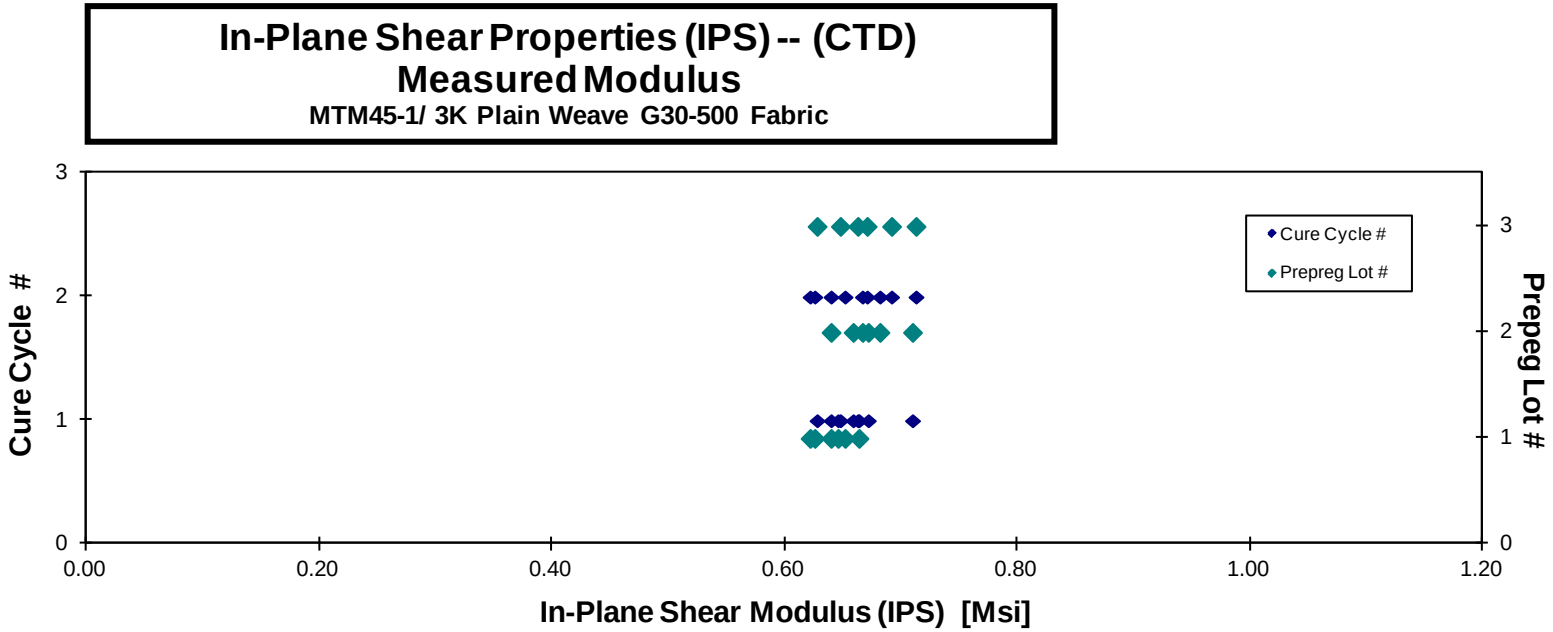
Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength at 5% Strain [ksi]	0.2% Offset Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]
A0NNA114B	A	MH1	1	1	14.028	7.950	0.640	0.064	8	0.0081
A0NNA115B	A	MH1	1	1	14.476	8.171	0.664	0.062	8	0.0078
A0NNA116B	A	MH1	1	1	14.436	7.973	0.646	0.065	8	0.0081
A0NNA215B	A	MH2	1	2	14.207	7.970	0.652	0.062	8	0.0077
A0NNA216B	A	MH2	1	2	13.616	7.577	0.622	0.065	8	0.0081
A0NNA217B	A	MH2	1	2	13.842	7.667	0.626	0.063	8	0.0079
A0NNB115B*	B	MH1	2	1		8.908	0.710	0.064	8	0.0080
A0NNB116B*	B	MH1	2	1		8.402	0.659	0.064	8	0.0080
A0NNB117B*	B	MH1	2	1		8.668	0.672	0.065	8	0.0081
A0NNB215B	B	MH2	2	2	14.452	8.627	0.682	0.064	8	0.0079
A0NNB216B*	B	MH2	2	2		8.340	0.640	0.066	8	0.0082
A0NNB217B	B	MH2	2	2	14.366	8.494	0.667	0.064	8	0.0081
A0NNC115B	C	MH1	3	1	13.610	8.003	0.648	0.066	8	0.0082
A0NNC116B	C	MH1	3	1	14.016	8.246	0.663	0.064	8	0.0080
A0NNC117B	C	MH1	3	1	13.015	7.842	0.628	0.068	8	0.0085
A0NNC211B*	C	MH2	3	2		8.880	0.713	0.062	8	0.0077
A0NNC212B	C	MH2	3	2	14.368	8.528	0.671	0.063	8	0.0079
A0NNC213B	C	MH2	3	2	14.571	8.555	0.692	0.063	8	0.0079

*5% values not available, strain gauge failed before 50 000 micro strain reached

Average	**14.077**	**8.267**	**0.661**	**Average**	**0.0080**
Standard Dev.	**0.455**	**0.397**	**0.027**	**Standard Dev.**	
Coeff. of Var. [%]	**3.229**	**4.799**	**4.016**	**Coeff. of Var. [%]**	
Min.	**13.015**	**7.577**	**0.622**	**Min.**	**0.0077**
Max.	**14.571**	**8.908**	**0.713**	**Max.**	**0.0085**
Number of Spec.	**13**	**18**	**18**	**Number of Spec.**	**18**


In-Plane Shear Properties (IPS) -- (CTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength at 0.2% Offset Strain (IPS) [ksi]

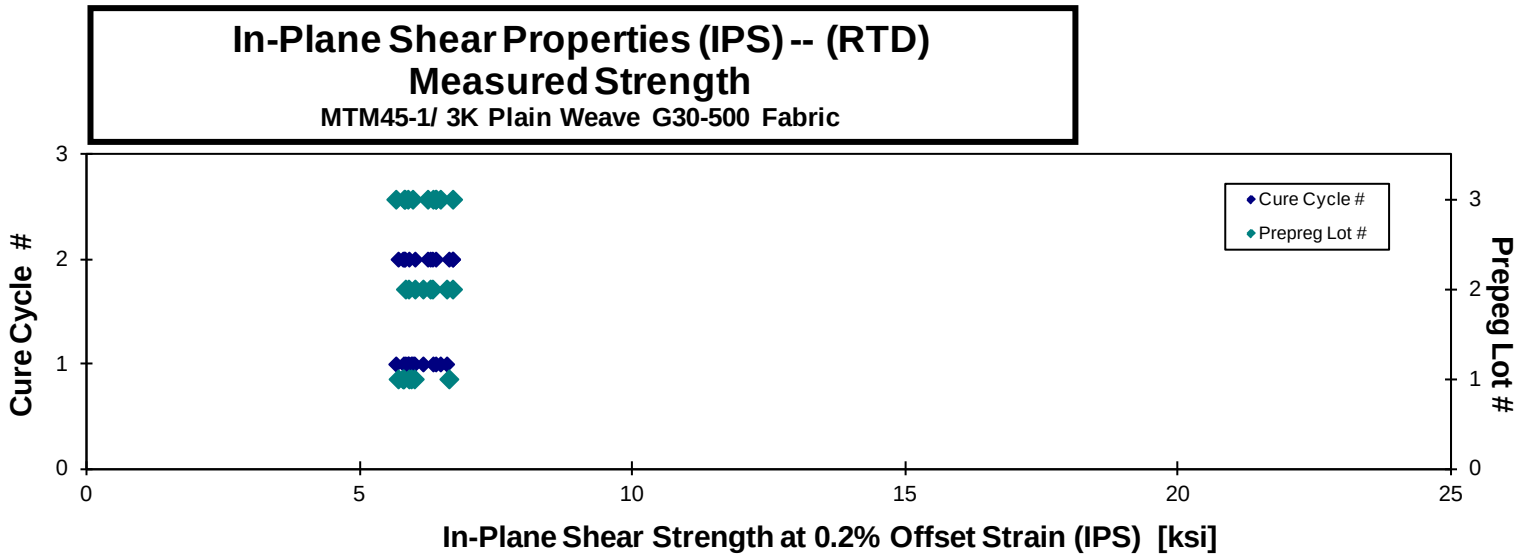

In-Plane Shear Properties (IPS) -- (CTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
In-Plane Shear Strength at 5% Strain (IPS) [ksi]

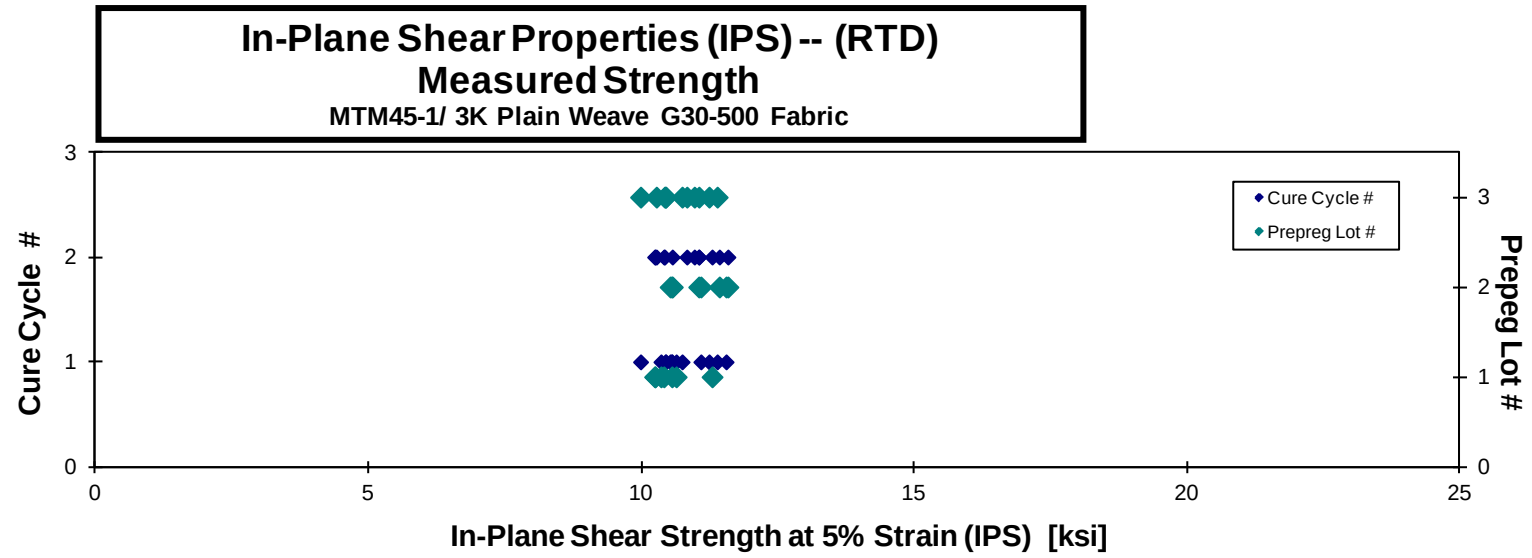

In-Plane Shear Properties (IPS) -- (CTD)
Measured Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.00
0.20
0.40
0.60
0.80
1.00
1.20
In-Plane Shear Modulus (IPS) [Msi]

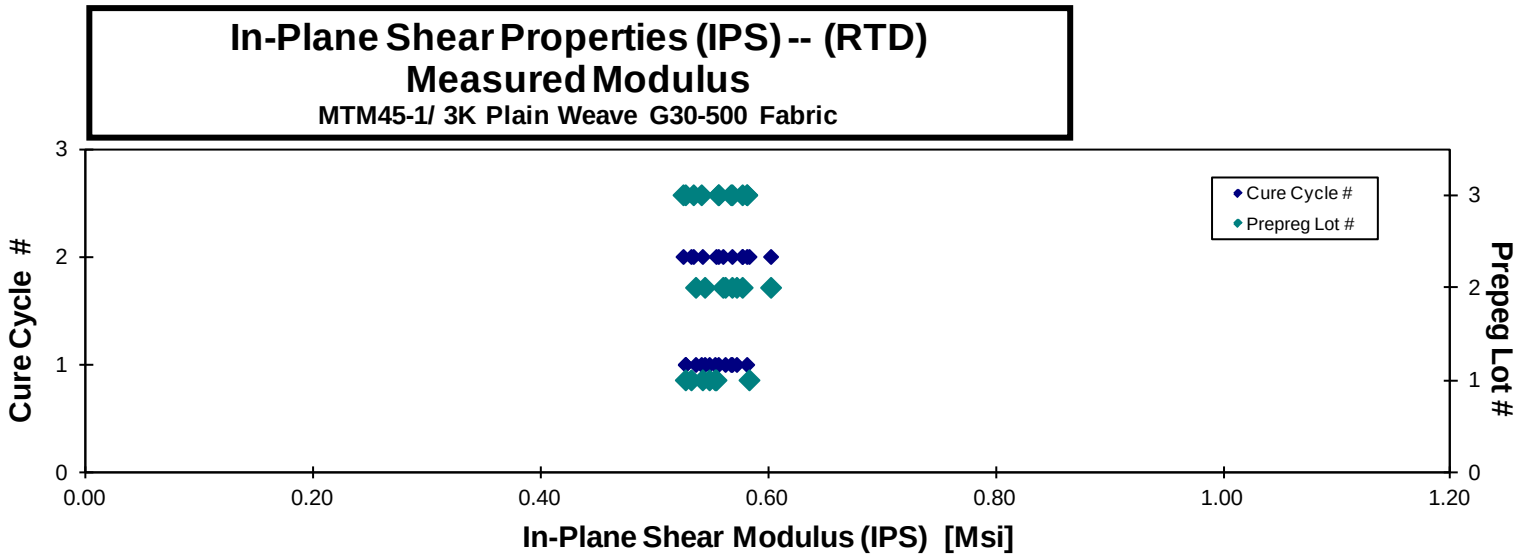
In-Plane Shear Properties (IPS) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength at 5% Strain [ksi]	0.2% Offset Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]
A0NNA111A	A	MH1	1	1	10.365	5.796	0.527	0.063	8	0.0079
A0NNA112A	A	MH1	1	1	10.566	5.935	0.548	0.064	8	0.0080
A0NNA113A	A	MH1	1	1	10.644	5.993	0.553	0.063	8	0.0079
A0NNA211A	A	MH2	1	2	10.257	5.783	0.542	0.062	8	0.0078
A0NNA212A	A	MH2	1	2	10.418	5.894	0.554	0.061	8	0.0076
A0NNA213A	A	MH2	1	2	10.251	5.696	0.532	0.064	8	0.0080
A0NNB111A	B	MH1	2	1	10.534	5.887	0.544	0.064	8	0.0080
A0NNB112A	B	MH1	2	1	10.559	5.830	0.536	0.066	8	0.0083
A0NNB113A	B	MH1	2	1	11.096	6.151	0.562	0.065	8	0.0082
A0NNB211A	B	MH2	2	2	11.591	6.324	0.568	0.063	8	0.0078
A0NNB212A	B	MH2	2	2	11.057	6.284	0.577	0.064	8	0.0080
A0NNB213A	B	MH2	2	2	10.573	6.004	0.560	0.065	8	0.0081
A0NNC111A	C	MH1	3	1	10.446	5.961	0.556	0.063	8	0.0078
A0NNC112A	C	MH1	3	1	9.991	5.654	0.527	0.065	8	0.0081
A0NNC113A	C	MH1	3	1	10.452	5.874	0.541	0.064	8	0.0080
A0NNC215A	C	MH2	3	2	10.281	5.806	0.534	0.063	8	0.0079
A0NNC216A	C	MH2	3	2	10.431	5.817	0.525	0.066	8	0.0083
A0NNC217A	C	MH2	3	2	10.977	6.237	0.577	0.062	8	0.0078
A0NNC1R1A	C	MH1	3	1	11.395	6.469	0.567	0.064	8	0.0080
A0NNC1R2A	C	MH1	3	1	10.752	6.335	0.581	0.065	8	0.0081
A0NNB1R3A	B	MH1	2	1	11.558	6.586	0.572	0.064	8	0.0080
A0NNC1R4A	C	MH1	3	1	11.246	6.384	0.568	0.065	8	0.0081
A0NNC2R2A	C	MH2	3	2	11.060	6.695	0.581	0.066	8	0.0082
A0NNA2R3A	A	MH2	1	2	11.301	6.626	0.583	0.062	8	0.0077
A0NNB2R4A	B	MH2	2	2	11.435	6.694	0.602	0.064	8	0.0081
A0NNC2R5A	C	MH2	3	2	10.839	6.384	0.556	0.064	8	0.0080

Average	**10.772**	**6.119**	**0.557**	**Average**	**0.0080**
Standard Dev.	**0.454**	**0.327**	**0.020**	**Standard Dev.**	
Coeff. of Var. [%]	**4.210**	**5.341**	**3.669**	**Coeff. of Var. [%]**	
Min.	**9.991**	**5.654**	**0.525**	**Min.**	**0.0076**
Max.	**11.591**	**6.695**	**0.602**	**Max.**	**0.0083**
Number of Spec.	**26**	**26**	**26**	**Number of Spec.**	**26**


In-Plane Shear Properties (IPS) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
5
10
15
20
25
In-Plane Shear Strength at 0.2% Offset Strain (IPS) [ksi]


In-Plane Shear Properties (IPS) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
5
10
15
20
25
In-Plane Shear Strength at 5% Strain (IPS) [ksi]

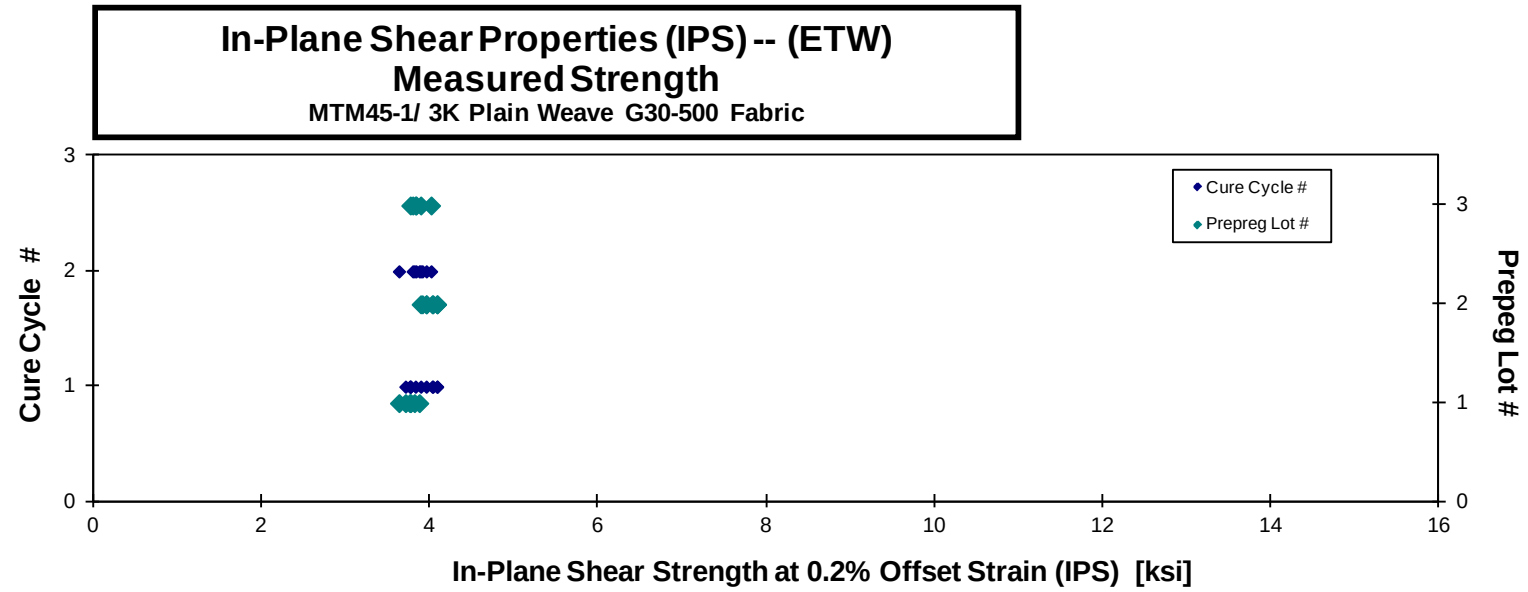

In-Plane Shear Properties (IPS) -- (RTD)
Measured Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepeg Lot #
0
1
2
3
0.00
0.20
0.40
0.60
0.80
1.00
1.20
In-Plane Shear Modulus (IPS) [Msi]

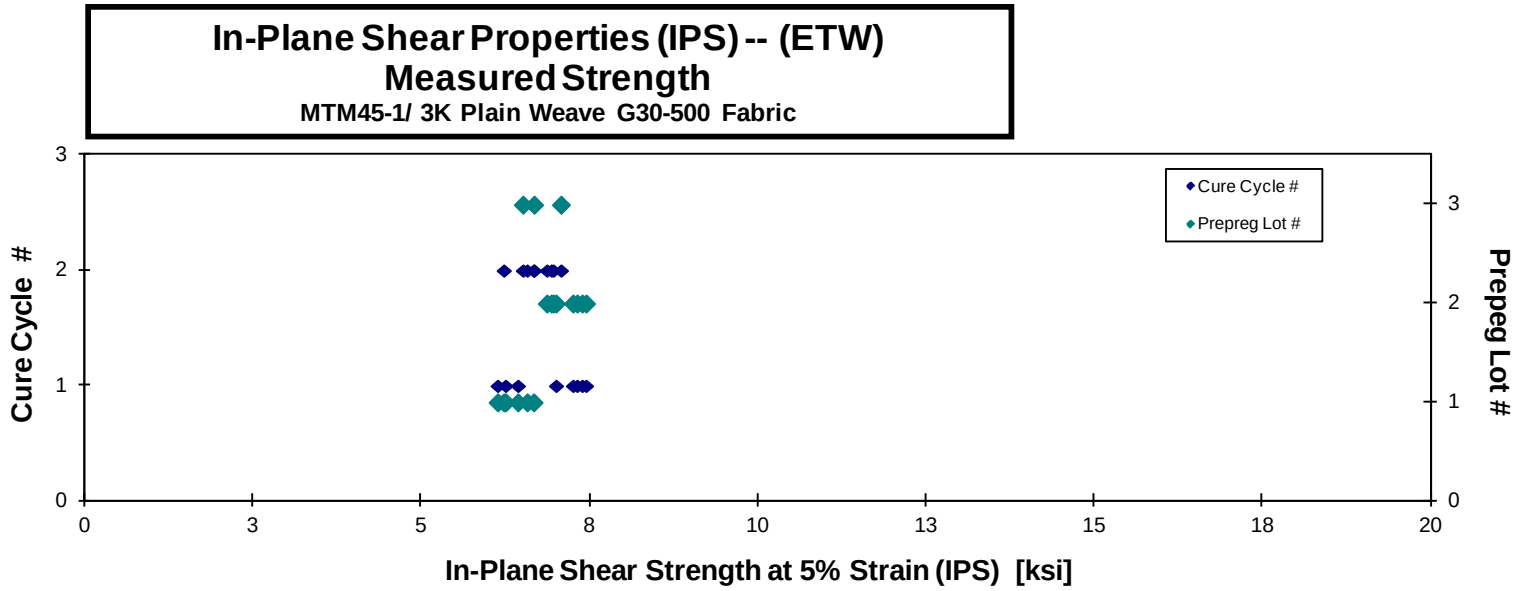
In-Plane Shear Properties (IPS) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

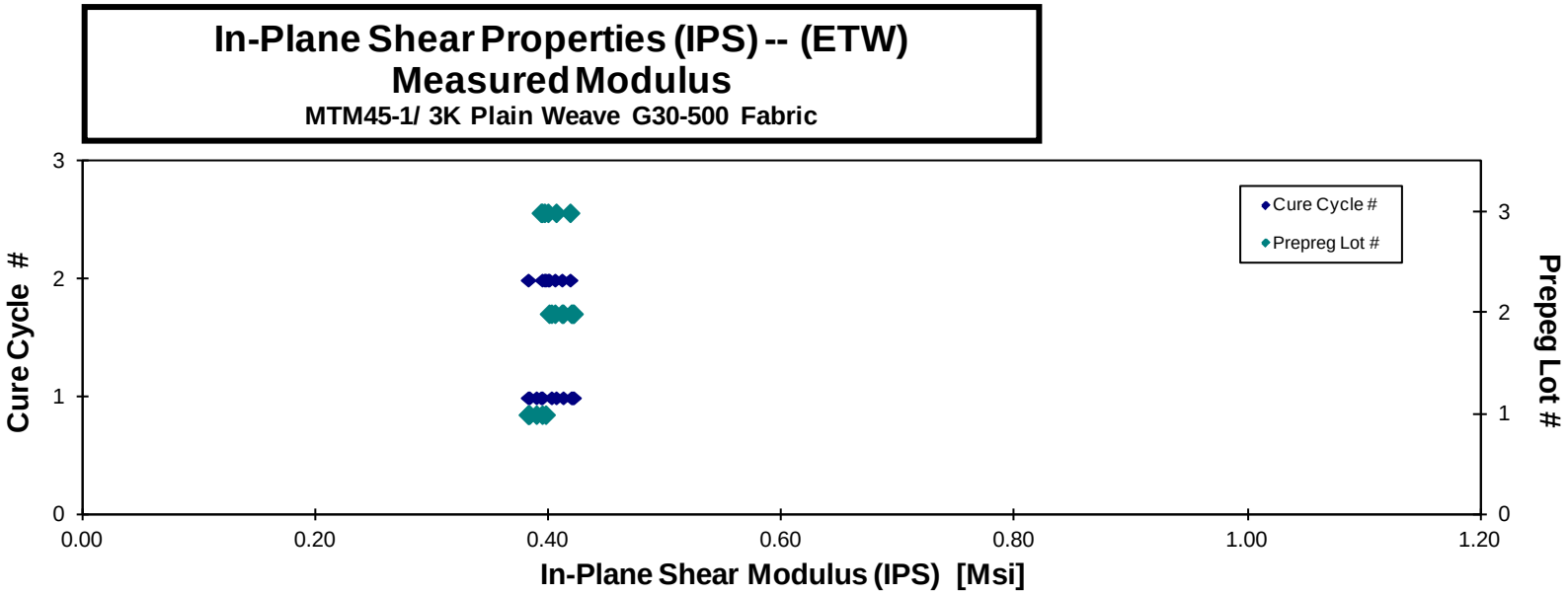
Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength at 5% Strain [ksi]	0.2% Offset Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]
A0NNA118N	A	MH1	1	1	6.433	3.764	0.382	0.064	8	0.0080
A0NNA119N	A	MH1	1	1	6.250	3.704	0.383	0.064	8	0.0079
A0NNA11AN	A	MH1	1	1	6.132	3.755	0.389	0.063	8	0.0079
A0NNA21FN	A	MH2	1	2	6.223	3.627	0.382	0.063	8	0.0079
A0NNA21GN	A	MH2	1	2	6.666	3.869	0.397	0.064	8	0.0080
A0NNA21HN	A	MH2	1	2	6.570	3.811	0.394	0.064	8	0.0080
A0NNB11FN	B	MH1	2	1	7.313	4.022	0.402	0.065	8	0.0081
A0NNB11EN	B	MH1	2	1	7.388	4.080	0.421	0.065	8	0.0081
A0NNB11GN	B	MH1	2	1	7.446	4.081	0.420	0.065	8	0.0081
A0NNB11HN	B	MH1	2	1	7.251	4.030	0.419	0.065	8	0.0081
A0NNB11IN	B	MH1	2	1	6.999	3.951	0.412	0.063	8	0.0079
A0NNB21AN	B	MH2	2	2	6.929	3.952	0.411	0.063	8	0.0079
A0NNB21BN	B	MH2	2	2	6.958	3.905	0.400	0.064	8	0.0081
A0NNB21CN	B	MH2	2	2	6.863	3.885	0.405	0.065	8	0.0082
A0NNC11AN*	C	MH1	3	1		3.762	0.393	0.066	8	0.0083
A0NNC11BN*	C	MH1	3	1		3.823	0.394	0.064	8	0.0079
A0NNC11CN*	C	MH1	3	1		3.886	0.406	0.065	8	0.0082
A0NNC21AN	C	MH2	3	2	6.508	3.791	0.399	0.064	8	0.0081
A0NNC21BN	C	MH2	3	2	7.073	4.009	0.418	0.063	8	0.0079
A0NNC21CN	C	MH2	3	2	6.674	3.830	0.396	0.066	8	0.0082

*5% values not available, strain gauge failed before 50 000 micro strain reached

Average	**6.804**	**3.877**	**0.401**	**Average**	**0.0080**
Standard Dev.	**0.417**	**0.127**	**0.013**	**Standard Dev.**	
Coeff. of Var. [%]	**6.123**	**3.275**	**3.150**	**Coeff. of Var. [%]**	
Min.	**6.132**	**3.627**	**0.382**	**Min.**	**0.0079**
Max.	**7.446**	**4.081**	**0.421**	**Max.**	**0.0083**
Number of Spec.	**17**	**20**	**20**	**Number of Spec.**	**20**


In-Plane Shear Properties (IPS) -- (ETW)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
2
4
6
8
10
12
14
16
In-Plane Shear Strength at 0.2% Offset Strain (IPS) [ksi]


In-Plane Shear Properties (IPS) -- (ETW)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
3
5
8
10
13
15
18
20
In-Plane Shear Strength at 5% Strain (IPS) [ksi]

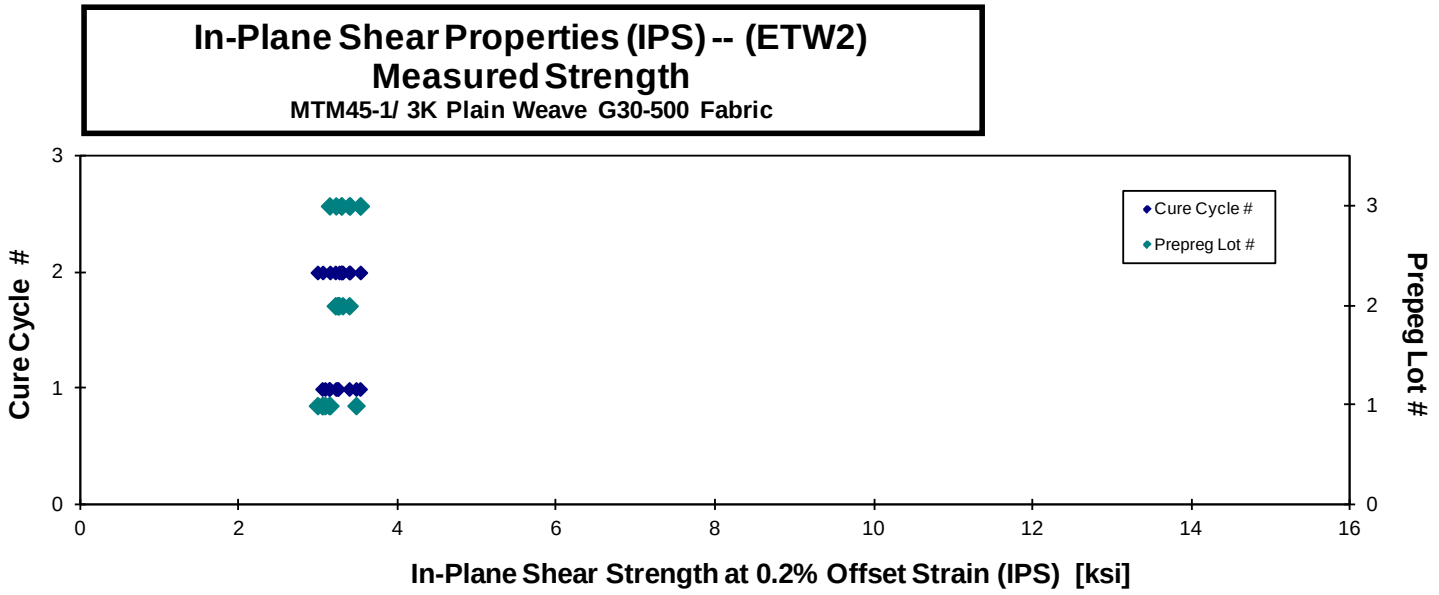

In-Plane Shear Properties (IPS) -- (ETW)
Measured Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.00
0.20
0.40
0.60
0.80
1.00
1.20
In-Plane Shear Modulus (IPS) [Msi]

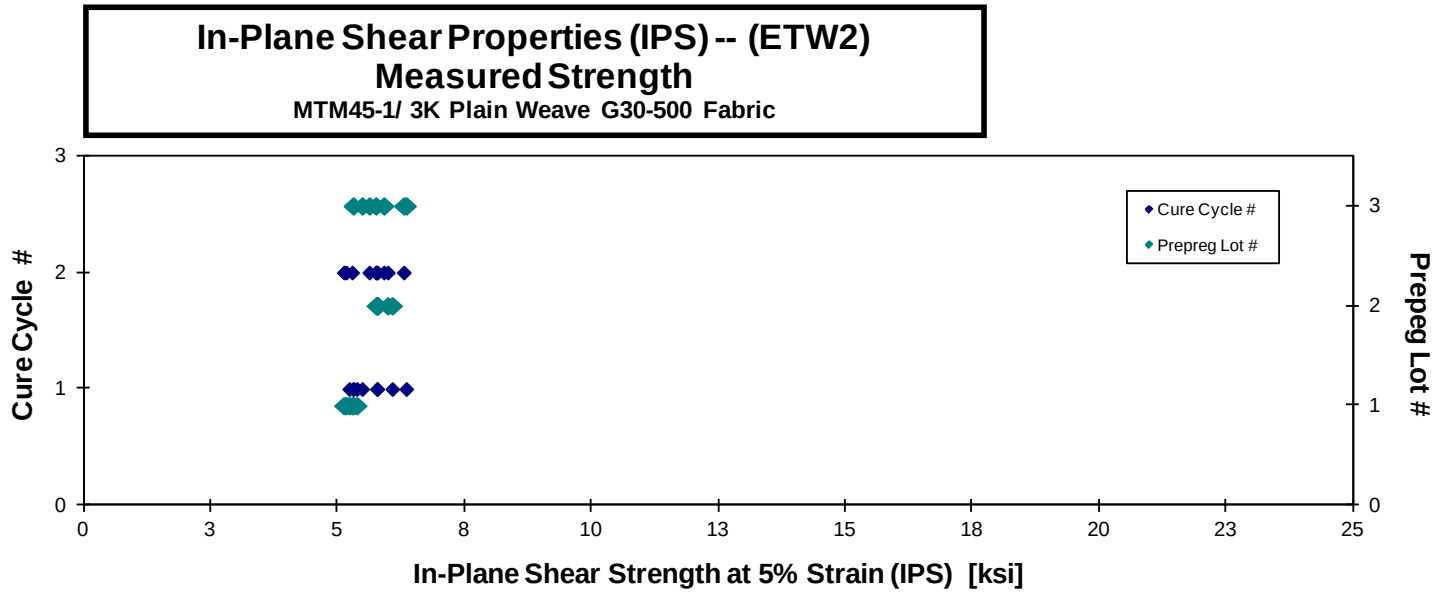
In-Plane Shear Properties (IPS) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

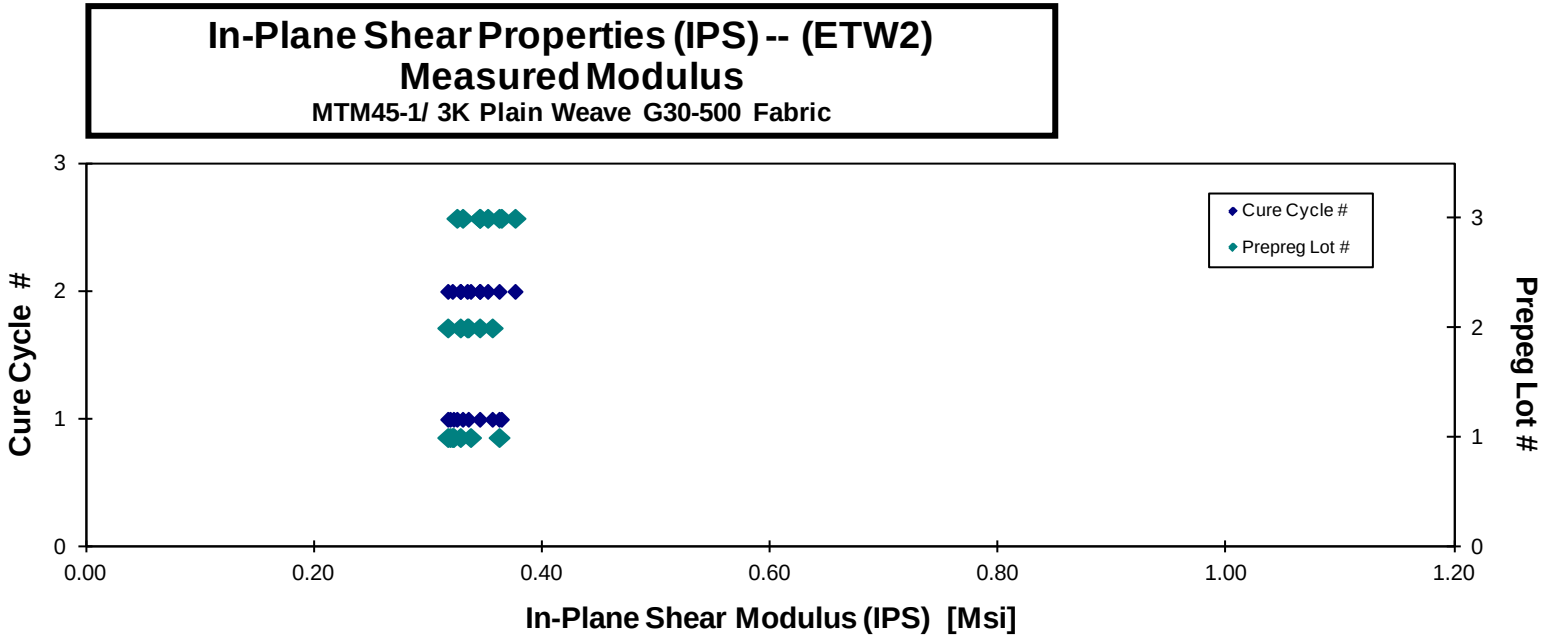
Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength at 5% Strain [ksi]	0.2% Offset Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]
A0NNA11DD	A	MH1	1	1	5.398	3.076	0.318	0.063	8	0.0079
A0NNA11ED	A	MH1	1	1	5.329	3.126	0.323	0.063	8	0.0079
A0NNA11FD	A	MH1	1	1	5.248	3.040	0.320	0.064	8	0.0080
A0NNA11GD*	A	MH1	1	1		3.467	0.363	0.062	8	0.0077
A0NNA219D	A	MH2	1	2	5.305	3.138	0.338	0.063	8	0.0078
A0NNA21AD	A	MH2	1	2	5.186	3.047	0.329	0.063	8	0.0078
A0NNA21BD	A	MH2	1	2	5.142	2.981	0.322	0.065	8	0.0081
A0NNB11BD	B	MH1	2	1	5.794	3.240	0.346	0.065	8	0.0082
A0NNB11CD	B	MH1	2	1	6.095	3.381	0.357	0.064	8	0.0080
A0NNB11DD	B	MH1	2	1	5.799	3.235	0.336	0.065	8	0.0081
A0NNB21FD	B	MH2	2	2	5.803	3.254	0.329	0.063	8	0.0079
A0NNB21GD	B	MH2	2	2	5.779	3.206	0.318	0.065	8	0.0081
A0NNB21HD	B	MH2	2	2	6.007	3.297	0.335	0.065	8	0.0081
A0NNC11ED	C	MH1	3	1	5.503	3.213	0.331	0.065	8	0.0082
A0NNC11GD	C	MH1	3	1	5.326	3.133	0.326	0.067	8	0.0084
A0NNC11HD	C	MH1	3	1	6.370	3.518	0.365	0.066	8	0.0082
A0NNC21ED	C	MH2	3	2	5.643	3.281	0.346	0.065	8	0.0081
A0NNC21FD	C	MH2	3	2	6.322	3.389	0.363	0.065	8	0.0081
A0NNC21GD	C	MH2	3	2	5.930	3.380	0.353	0.064	8	0.0081
A0NNC21HD	C	MH2	3	2		3.521	0.377	0.064	8	0.0081
A0NNC21ID	C	MH2	3	2	5.772	3.282	0.346	0.065	8	0.0082

*strain gauge failed before reaching 5% strain

Average	**5.671**	**3.248**	**0.340**	**Average**	**0.0080**
Standard Dev.	**0.374**	**0.155**	**0.018**	**Standard Dev.**	
Coeff. of Var. [%]	**6.588**	**4.784**	**5.162**	**Coeff. of Var. [%]**	
Min.	**5.142**	**2.981**	**0.318**	**Min.**	**0.0077**
Max.	**6.370**	**3.521**	**0.377**	**Max.**	**0.0084**
Number of Spec.	**19**	**21**	**21**	**Number of Spec.**	**21**


In-Plane Shear Properties (IPS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepeg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
2
4
6
8
10
12
14
16
In-Plane Shear Strength at 0.2% Offset Strain (IPS) [ksi]


In-Plane Shear Properties (IPS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepeg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
3
5
8
10
13
15
18
20
23
25
In-Plane Shear Strength at 5% Strain (IPS) [ksi]


In-Plane Shear Properties (IPS) -- (ETW2)
Measured Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepeg Lot #
In-Plane Shear Modulus (IPS) [Msi]
0.00
0.20
0.40
0.60
0.80
1.00
1.20
0
1
2
3

4.6 Unnotched Tension 1 Properties

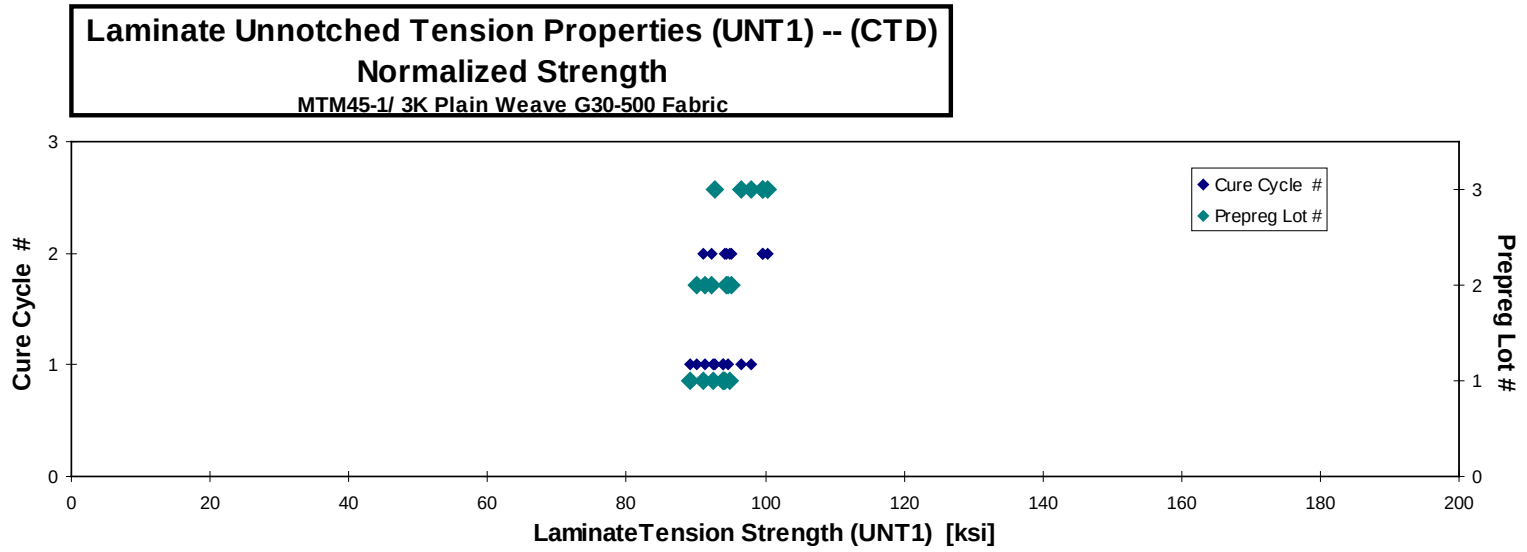
Laminate Unnotched Tension Properties (UNT1) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

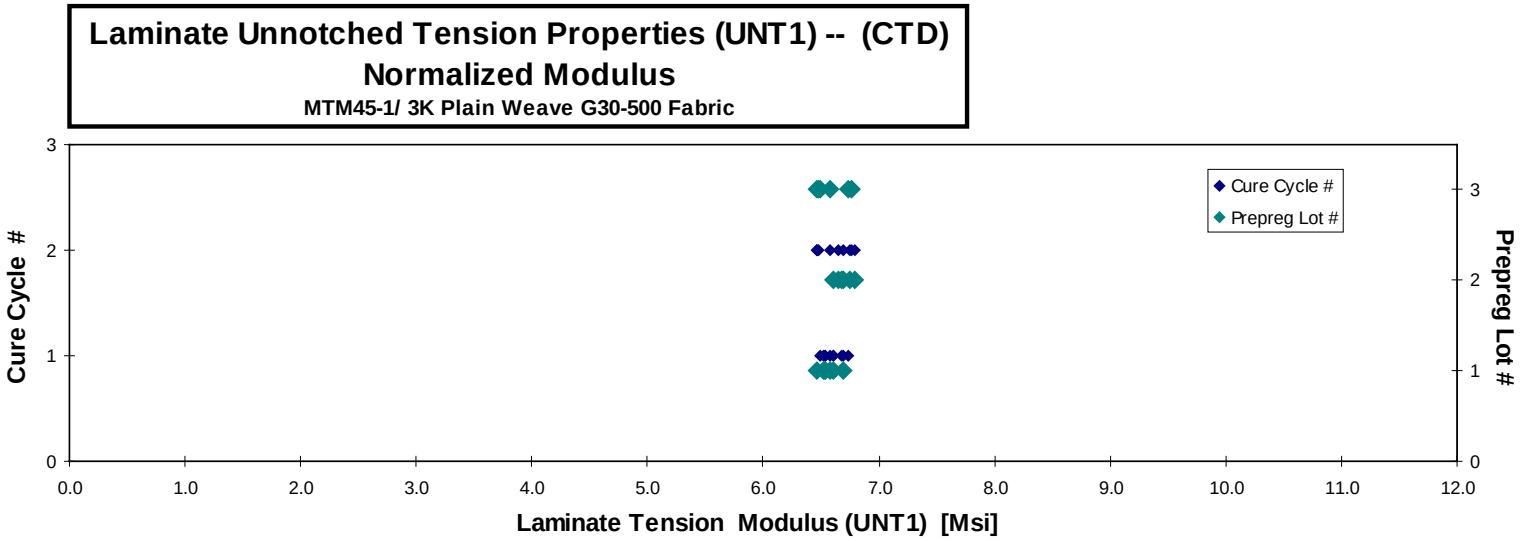
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NAA111B	A	MH1	1	1	94.709	6.662	0.125	16	LWB	0.0078	93.972	6.610
A0NAA112B	A	MH1	1	1	89.079	6.530	0.127	16	LWT	0.0079	89.185	6.538
A0NAA113B	A	MH1	1	1	92.164	6.493	0.127	16	LWT,LWB	0.0079	92.516	6.518
A0NAA114B	A	MH1	1	1	93.755	6.518	0.127	16	LGM	0.0079	93.990	6.534
A0NAA211B	A	MH2	1	2	91.691	6.620	0.126	16	LWB	0.0079	91.147	6.581
A0NAA212B	A	MH2	1	2	94.460	6.440	0.127	16	LWT	0.0079	94.908	6.471
A0NAA213B	A	MH2	1	2	92.444	6.566	0.129	16	LGM	0.0080	94.126	6.685
A0NAB115B	B	MH1	2	1	93.154	6.501	0.128	16	LGM	0.0080	94.566	6.600
A0NAB116B	B	MH1	2	1	89.813	6.581	0.128	16	LGM	0.0080	91.234	6.685
A0NAB117B	B	MH1	2	1	89.190	6.605	0.128	16	LGM	0.0080	90.119	6.674
A0NAB215B	B	MH2	2	2	92.950	6.645	0.129	16	LWB	0.0081	95.095	6.798
A0NAB216B	B	MH2	2	2	91.130	6.671	0.128	16	LGM	0.0080	92.283	6.755
A0NAB219B	B	MH2	2	2	93.859	6.611	0.127	16	LGM	0.0079	94.428	6.651
A0NAC117B	C	MH1	3	1	89.423	6.258	0.131	16	LGM	0.0082	92.842	6.497
A0NAC118B	C	MH1	3	1	92.424	6.305	0.132	16	LWB	0.0082	96.433	6.579
A0NAC119B	C	MH1	3	1	94.531	6.494	0.131	16	LGM	0.0082	98.058	6.736
A0NAC217B	C	MH2	3	2	97.408	6.320	0.129	16	LGM	0.0081	99.630	6.464
A0NAC218B	C	MH2	3	2	97.272	6.274	0.130	16	LGM	0.0082	100.389	6.475
A0NAC219B	C	MH2	3	2	96.730	6.569	0.130	16	LWB	0.0081	99.612	6.765

Average	**92.957**	**6.509**	
Standard Dev.	**2.579**	**0.132**	
Coeff. of Var. [%]	**2.774**	**2.028**	
Min.	**89.079**	**6.258**	
Max.	**97.408**	**6.671**	
Number of Spec.	**19**	**19**	

$Average_{norm}$	**0.0080**	**94.449**	**6.611**
$Standard\ Dev._{norm}$		**3.211**	**0.107**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**3.400**	**1.621**
Min.	**0.0078**	**89.185**	**6.464**
Max.	**0.0082**	**100.389**	**6.798**
Number of Spec.		**19**	**19**


Laminate Unnotched Tension Properties (UNT1) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
160
180
200
LaminateTension Strength (UNT1) [ksi]

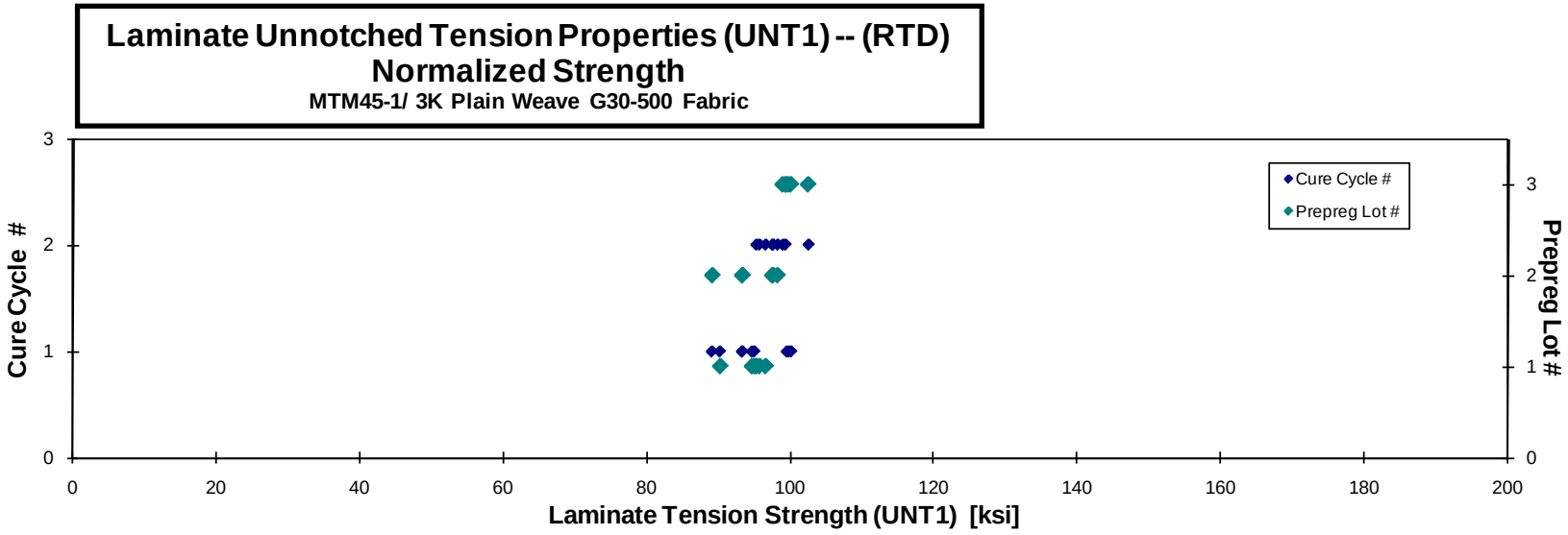

Laminate Unnotched Tension Properties (UNT1) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
Laminate Tension Modulus (UNT1) [Msi]

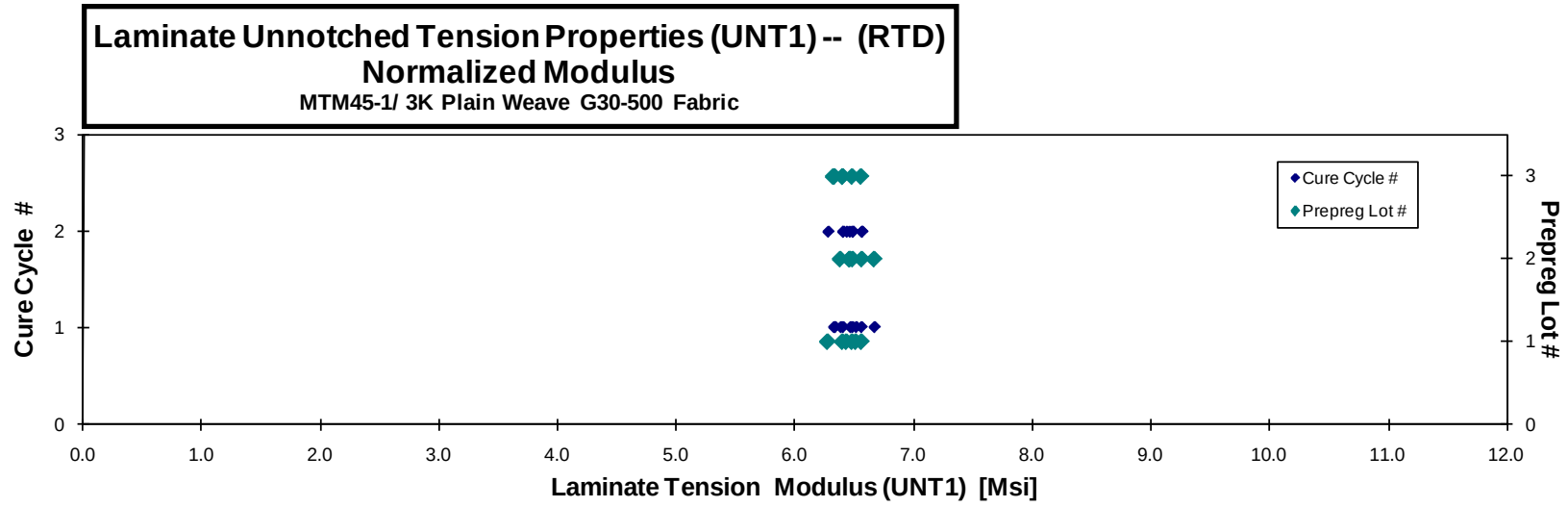
Laminate Unnotched Tension Properties (UNT1) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NAA116A	A	MH1	1	1	89.289	6.447	0.128	16	LWT	0.0080	90.195	6.512
A0NAA117A	A	MH1	1	1	94.139	6.427	0.127	16	LGM	0.0080	94.934	6.481
A0NAA118A	A	MH1	1	1	93.864	6.351	0.127	16	LGM	0.0080	94.607	6.401
A0NAA216A	A	MH2	1	2	95.266	6.251	0.127	16	LGM	0.0079	95.655	6.277
A0NAA217A	A	MH2	1	2	94.782	6.529	0.127	16	LGM	0.0079	95.232	6.560
A0NAA218A	A	MH2	1	2	96.490	6.433	0.126	16	LGM	0.0079	96.503	6.434
A0NAB112A	B	MH1	2	1	87.727	6.285	0.128	16	LGM	0.0080	89.092	6.383
A0NAB113A	B	MH1	2	1	91.786	6.362	0.128	16	LGM	0.0080	93.262	6.464
A0NAB114A	B	MH1	2	1	91.975	6.574	0.128	16	LGM/LWB	0.0080	93.273	6.667
A0NAB211A	B	MH2	2	2	98.057	6.453	0.127	16	LWT/LWB	0.0079	98.161	6.460
A0NAB212A	B	MH2	2	2	95.989	6.466	0.128	16	LGM	0.0080	97.432	6.563
A0NAB213A	B	MH2	2	2	95.148	6.327	0.130	16	LGM	0.0081	97.545	6.486
A0NAC111A	C	MH1	3	1	97.804	6.222	0.128	16	LGM	0.0080	99.416	6.325
A0NAC112A	C	MH1	3	1	97.382	6.384	0.130	16	LGM	0.0081	100.014	6.557
A0NAC113A	C	MH1	3	1	96.337	6.121	0.131	16	LGM	0.0082	99.703	6.335
A0NAC211A	C	MH2	3	2	95.803	6.180	0.131	16	LGM	0.0082	99.239	6.402
A0NAC212A	C	MH2	3	2	99.680	6.309	0.130	16	LGM	0.0081	102.414	6.482
A0NAC213A	C	MH2	3	2	94.618	6.128	0.132	16	LWT/LWB	0.0083	98.872	6.404

Average	**94.785**	**6.347**	**$Average_{norm}$**	**0.0080**	**96.419**	**6.455**
Standard Dev.	**3.038**	**0.131**	**$Standard\ Dev._{norm}$**		**3.495**	**0.097**
Coeff. of Var. [%]	**3.205**	**2.068**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.625**	**1.508**
Min.	**87.727**	**6.121**	**Min.**	**0.0079**	**89.092**	**6.277**
Max.	**99.680**	**6.574**	**Max.**	**0.0083**	**102.414**	**6.667**
Number of Spec.	**18**	**18**	**Number of Spec.**		**18**	**18**


Laminate Unnotched Tension Properties (UNT1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
160
180
200
Laminate Tension Strength (UNT1) [ksi]


Laminate Unnotched Tension Properties (UNT1) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
Laminate Tension Modulus (UNT1) [Msi]

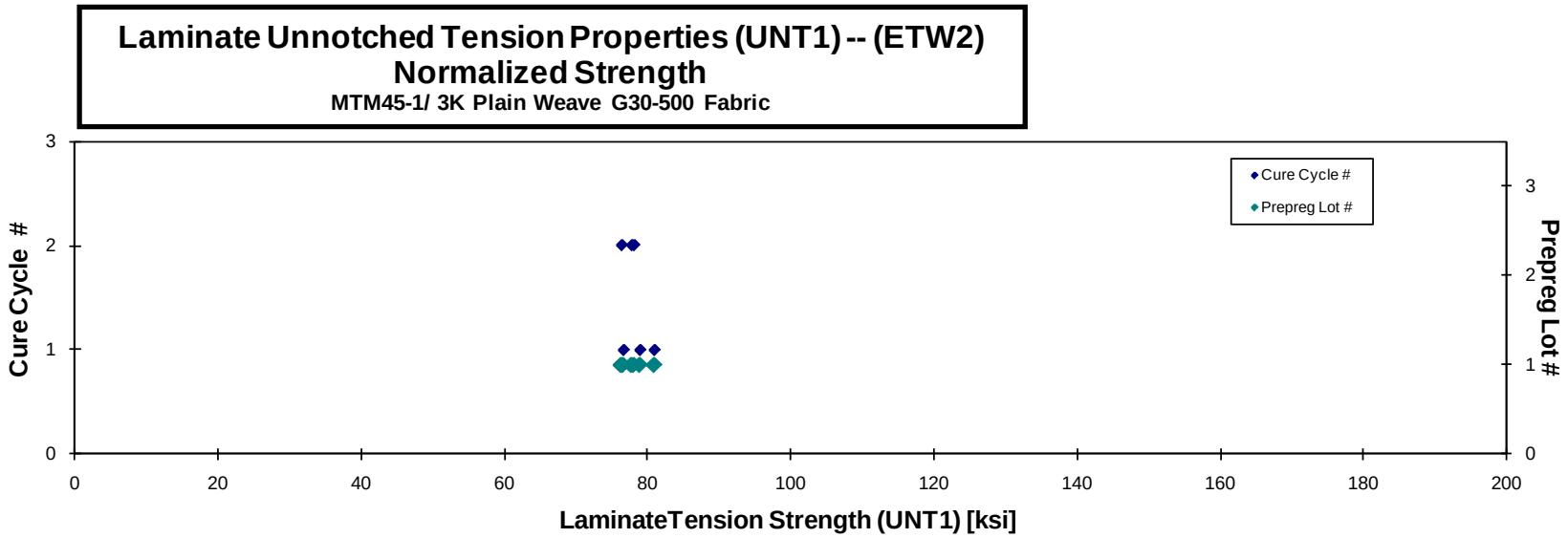
Laminate Unnotched Tension Properties (UNT1) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NAA11BD	A	MH1	1	1	80.300	0.127	16	XGM / AGM	0.0080	80.946
A0NAA11CD	A	MH1	1	1	77.931	0.128	16	XGM / AGM	0.0080	78.938
A0NAA11DD	A	MH1	1	1	76.167	0.127	16	XGM / AGM	0.0079	76.629
A0NAA21AD	A	MH2	1	2	77.276	0.128	16	AGM	0.0080	78.102
A0NAA21BD	A	MH2	1	2	76.883	0.128	16	AGM	0.0080	77.785
A0NAA21CD	A	MH2	1	2	76.358	0.126	16	AGM	0.0079	76.368

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

Average	**77.486**	**$Average_{norm}$**	**0.0080**	**78.1279**
Standard Dev.	**1.519**	**$Standard\ Dev._{norm}$**		**1.677**
Coeff. of Var. [%]	**1.960**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.146**
Min.	**76.167**	**Min.**	**0.0079**	**76.368**
Max.	**80.300**	**Max.**	**0.0080**	**80.946**
Number of Spec.	**6**	**Number of Spec.**		**6**


Laminate Unnotched Tension Properties (UNT1) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
160
180
200
LaminateTension Strength (UNT1) [ksi]

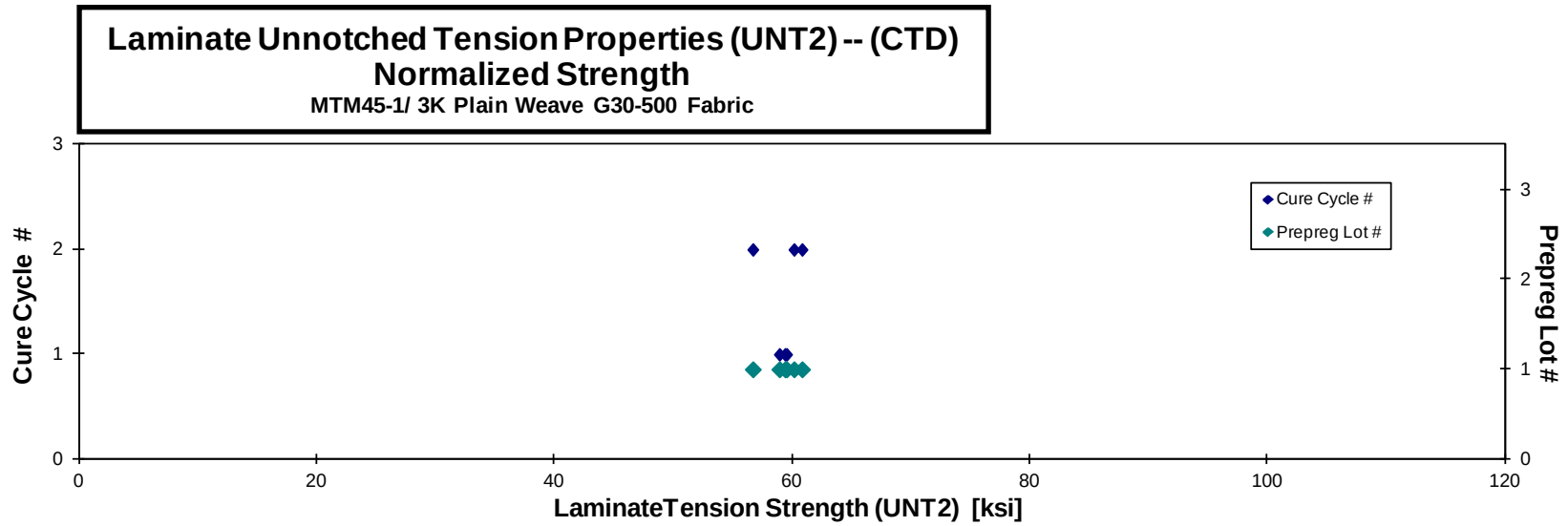
4.7 Unnotched Tension 2 Properties

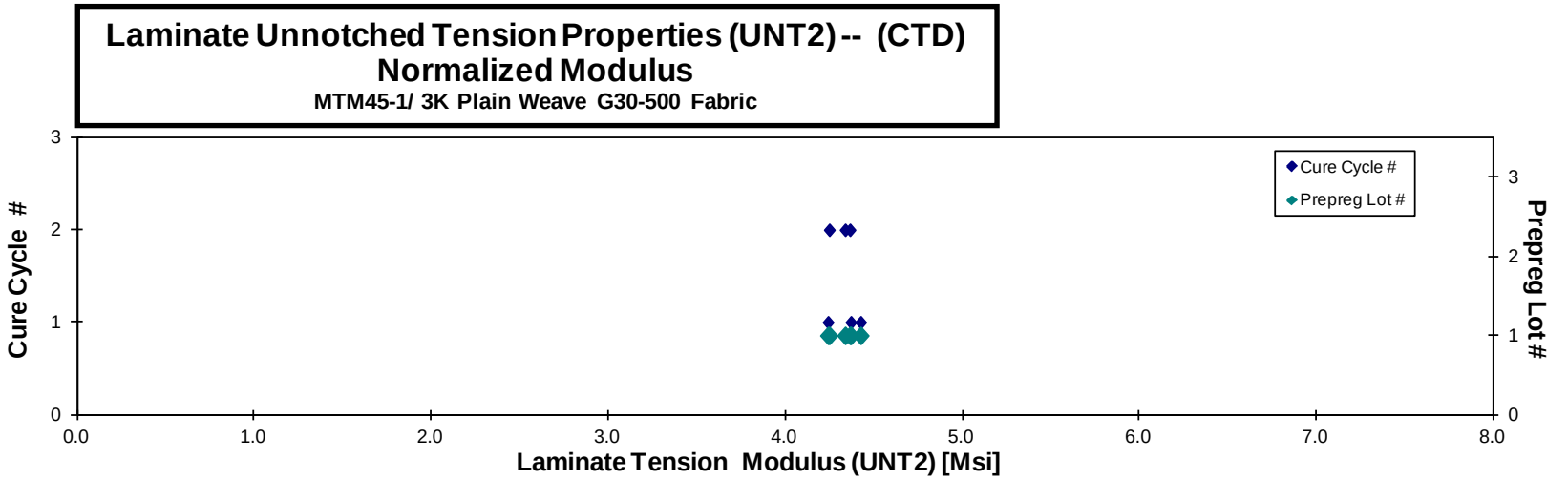
Laminate Unnotched Tension Properties (UNT2) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NBA111B	A	MH1	1	1	58.389	4.331	0.159	20	AWB	0.0080	58.858	4.366
A0NBA112B	A	MH1	1	1	58.457	4.346	0.161	20	AWT	0.0080	59.462	4.421
A0NBA113B	A	MH1	1	1	58.650	4.188	0.160	20	AWB	0.0080	59.331	4.237
A0NBA211B	A	MH2	1	2	60.348	4.215	0.159	20	AWT	0.0080	60.761	4.244
A0NBA212B	A	MH2	1	2	55.196	4.224	0.162	20	AWB	0.0081	56.623	4.333
A0NBA213B	A	MH2	1	2	58.660	4.257	0.162	20	AGM	0.0081	60.083	4.360

Average	**58.283**	**4.260**	**$Average_{norm}$**	**0.0080**	**59.186**	**4.327**
Standard Dev.	**1.680**	**0.065**	**$Standard\ Dev._{norm}$**		**1.419**	**0.073**
Coeff. of Var. [%]	**2.882**	**1.519**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.397**	**1.683**
Min.	**55.196**	**4.188**	**Min.**	**0.0080**	**56.623**	**4.237**
Max.	**60.348**	**4.346**	**Max.**	**0.0081**	**60.761**	**4.421**
Number of Spec.	**6**	**6**	**Number of Spec.**		**6**	**6**


Laminate Unnotched Tension Properties (UNT2) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
LaminateTension Strength (UNT2) [ksi]

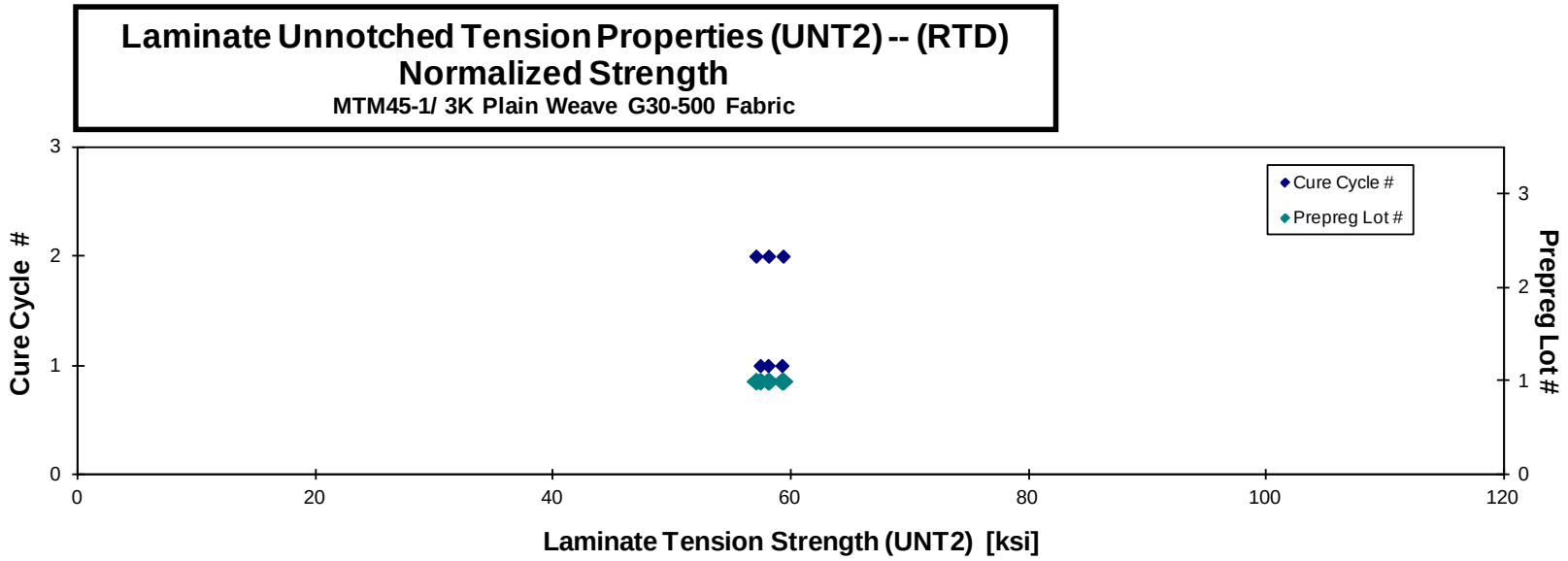

Laminate Unnotched Tension Properties (UNT2) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Laminate Tension Modulus (UNT2) [Msi]

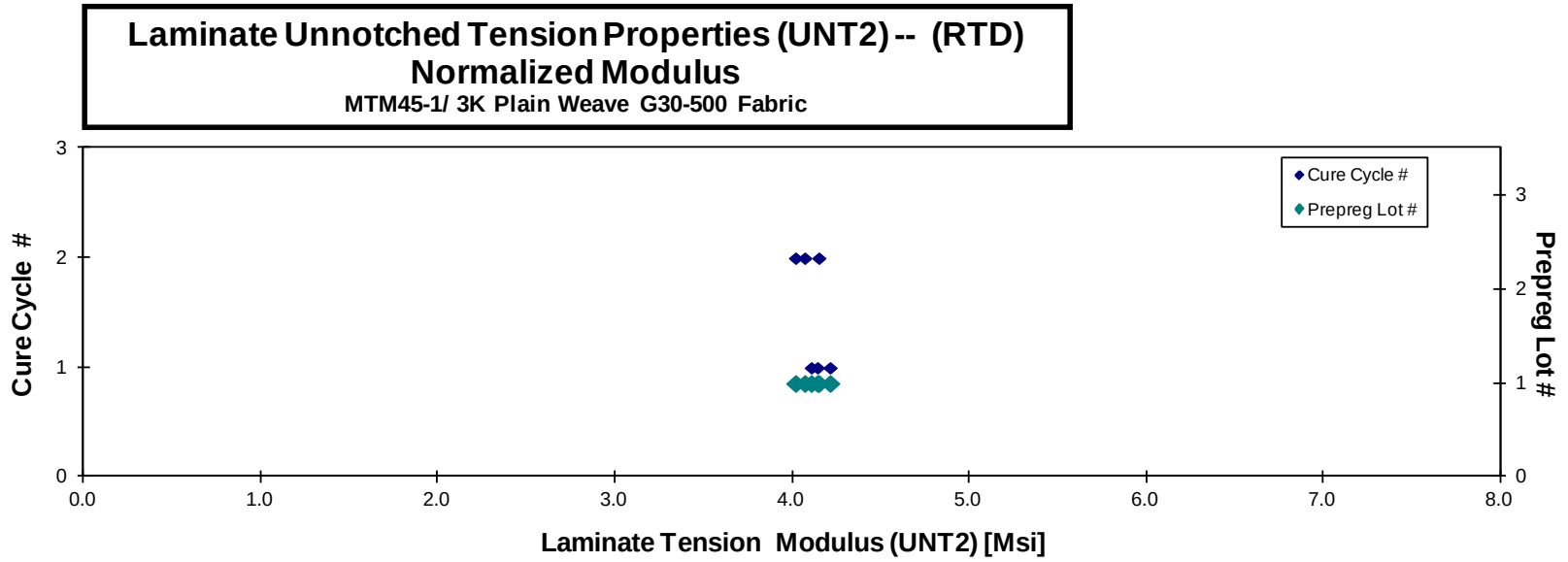
Laminate Unnotched Tension Properties (UNT2) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NBA116A	A	MH1	1	1	57.768	4.111	0.162	20	AGM	0.0081	59.267	4.218
A0NBA117A	A	MH1	1	1	56.679	4.045	0.162	20	AGM	0.0081	58.102	4.147
A0NBA118A	A	MH1	1	1	56.381	4.036	0.161	20	AGM	0.0080	57.440	4.112
A0NBA215A	A	MH2	1	2	57.970	3.979	0.162	20	AGM	0.0081	59.364	4.075
A0NBA216A	A	MH2	1	2	55.653	3.922	0.162	20	AWB	0.0081	57.080	4.023
A0NBA217A	A	MH2	1	2	56.576	4.042	0.162	20	AGM	0.0081	58.145	4.154

Average	**56.838**	**4.023**	**$Average_{norm}$**	**0.0081**	**58.233**	**4.121**
Standard Dev.	**0.878**	**0.065**	**$Standard\ Dev._{norm}$**		**0.931**	**0.068**
Coeff. of Var. [%]	**1.544**	**1.607**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.598**	**1.646**
Min.	**55.653**	**3.922**	**Min.**	**0.0080**	**57.080**	**4.023**
Max.	**57.970**	**4.111**	**Max.**	**0.0081**	**59.364**	**4.218**
Number of Spec.	**6**	**6**	**Number of Spec.**		**6**	**6**


Laminate Unnotched Tension Properties (UNT2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
Laminate Tension Strength (UNT2) [ksi]


Laminate Unnotched Tension Properties (UNT2) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Laminate Tension Modulus (UNT2) [Msi]

Laminate Unnotched Tension Properties (UNT2) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

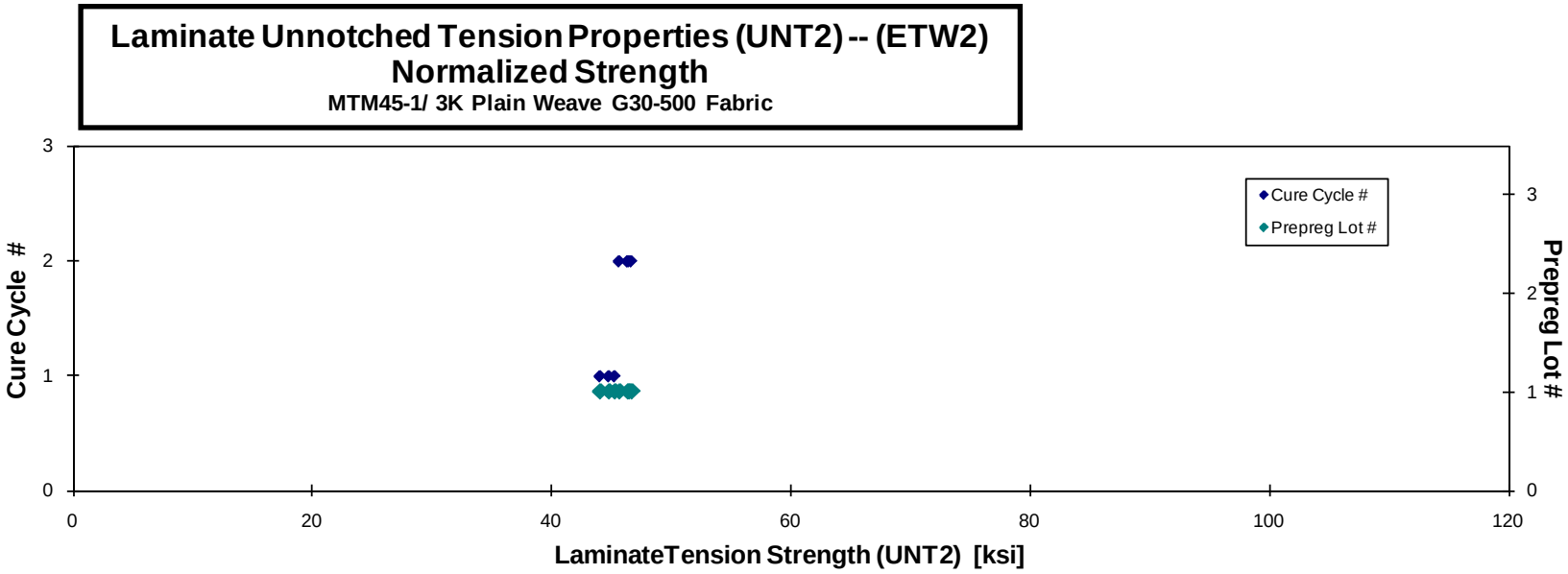
normalizing t_{pl} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NBA11AD	A	MH1	1	1	43.241	0.161	20	AGM	0.0081	44.094
A0NBA11BD	A	MH1	1	1	43.847	0.162	20	AGM	0.0081	44.828
A0NBA11CD	A	MH1	1	1	43.724	0.164	20	AGM	0.0082	45.306
A0NBA219D	A	MH2	1	2	45.395	0.163	20	AGM	0.0081	46.692
A0NBA21AD	A	MH2	1	2	45.142	0.162	20	AGM / AWB	0.0081	46.375
A0NBA21BD	A	MH2	1	2	45.259	0.162	20	AGM	0.0081	46.486
A0NBA21CD	A	MH2	1	2	44.697	0.161	20	AWT	0.0081	45.683

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

Average	**44.472**	
Standard Dev.	**0.860**	
Coeff. of Var. [%]	**1.933**	
Min.	**43.241**	
Max.	**45.395**	
Number of Spec.	**7**	

$Average_{norm}$	**0.0081**	**45.638**
$Standard\ Dev._{norm}$		**0.960**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.103**
Min.	**0.0081**	**44.094**
Max.	**0.0082**	**46.692**
Number of Spec.		**7**


Laminate Unnotched Tension Properties (UNT2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
LaminateTension Strength (UNT2) [ksi]
0
1
2
3
0
20
40
60
80
100
120

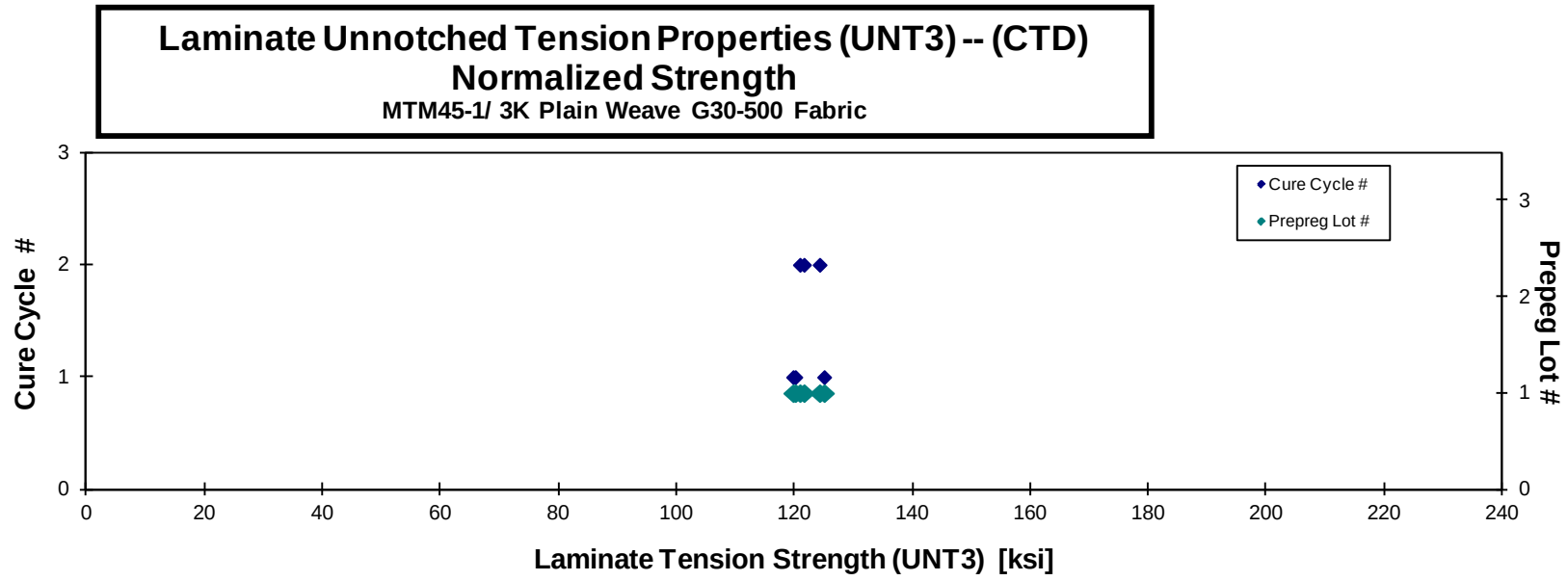
4.8 Unnotched Tension 3 Properties

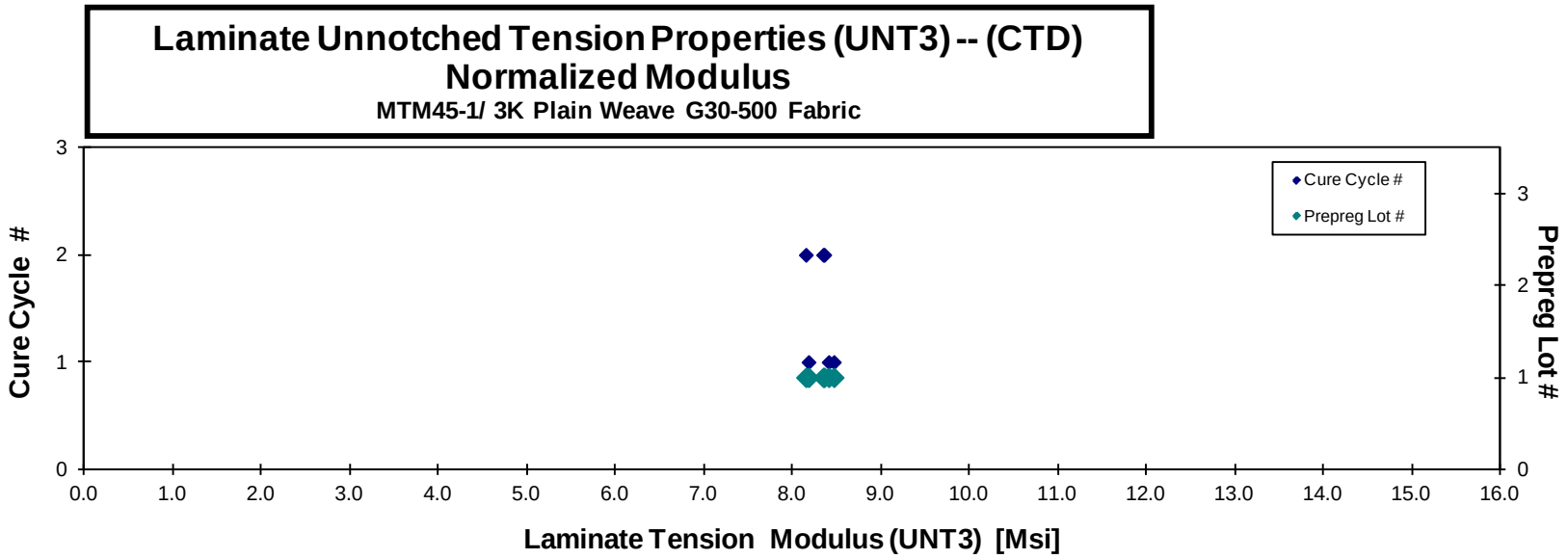
Laminate Unnotched Tension Properties (UNT3) -- (CTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NCA111B	A	MH1	1	1	121.247	8.543	0.118	15	LAT/LWB	0.0078	120.240	8.472
A0NCA112B	A	MH1	1	1	118.416	8.087	0.120	15	LWB/LAT	0.0080	119.865	8.186
A0NCA113B	A	MH1	1	1	122.865	8.261	0.121	15	LGM/LAT	0.0080	125.129	8.413
A0NCA211B	A	MH2	1	2	123.145	8.076	0.120	15	LAT/AWB	0.0080	124.357	8.156
A0NCA212B	A	MH2	1	2	121.146	8.313	0.119	15	LWT/LAB	0.0079	121.708	8.352
A0NCA213B	A	MH2	1	2	119.852	8.283	0.120	15	AGM	0.0080	121.015	8.363

Average	**121.112**	**8.261**	**$Average_{norm}$**	**0.0080**	**122.052**	**8.324**
Standard Dev.	**1.793**	**0.172**	**$Standard\ Dev._{norm}$**		**2.193**	**0.126**
Coeff. of Var. [%]	**1.481**	**2.077**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.796**	**1.516**
Min.	**118.416**	**8.076**	**Min.**	**0.0078**	**119.865**	**8.156**
Max.	**123.145**	**8.543**	**Max.**	**0.0080**	**125.129**	**8.472**
Number of Spec.	**6**	**6**	**Number of Spec.**		**6**	**6**


Laminate Unnotched Tension Properties (UNT3) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Tension Strength (UNT3) [ksi]
0
20
40
60
80
100
120
140
160
180
200
220
240


Laminate Unnotched Tension Properties (UNT3) -- (CTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Tension Modulus (UNT3) [Msi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0

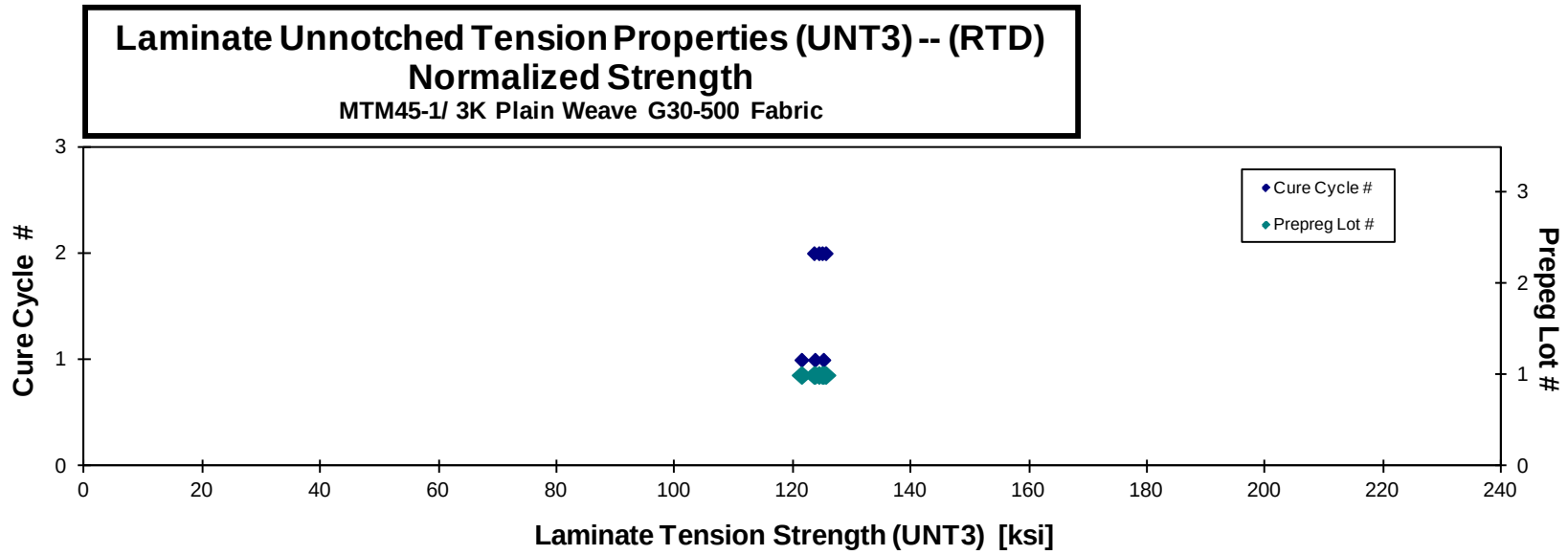
Laminate Unnotched Tension Properties (UNT3) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

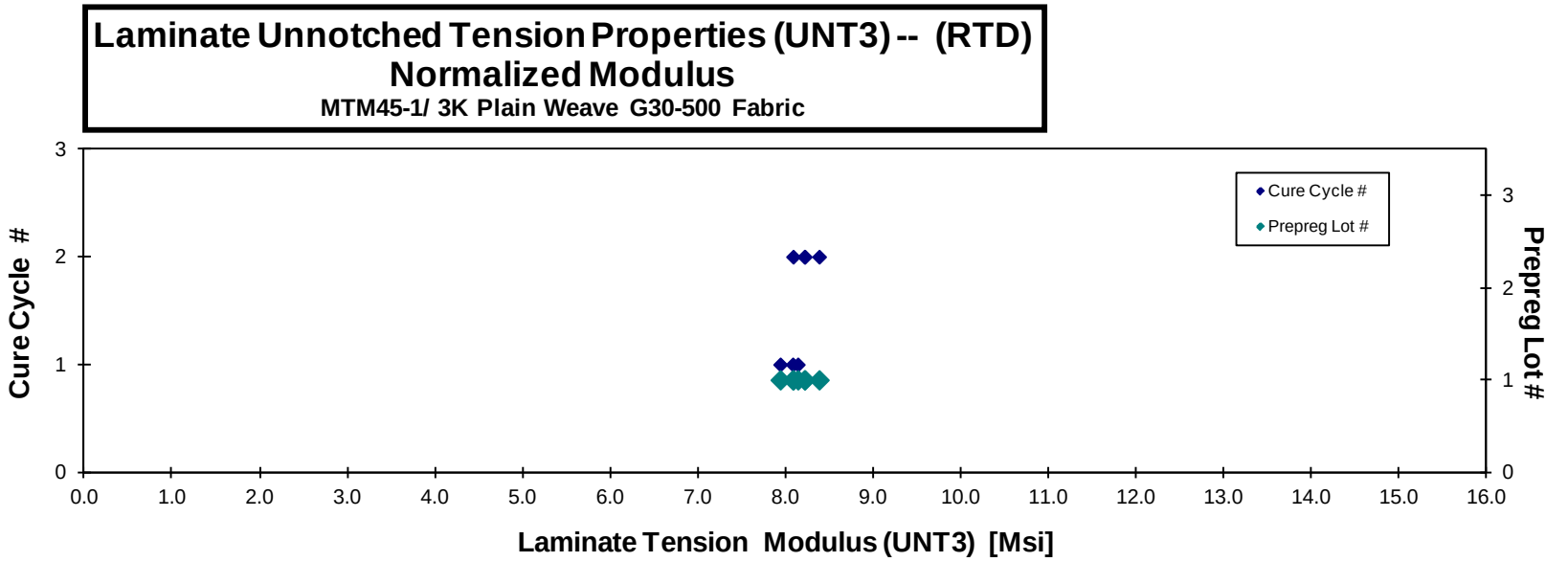
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NCA116A	A	MH1	1	1	122.024	8.029	0.120	15	LAB/LWT	0.0080	123.809	8.146
A0NCA117A	A	MH1	1	1	123.478	7.974	0.120	15	LGM	0.0080	125.249	8.088
A0NCA118A	A	MH1	1	1	121.728	7.958	0.118	15	LGM	0.0079	121.539	7.946
A0NCA216A	A	MH2	1	2	122.414	8.089	0.121	15	LGM	0.0080	124.480	8.226
A0NCA217A	A	MH2	1	2	121.353	7.942	0.121	15	LGM/LAB/LAT	0.0081	123.657	8.093
A0NCA218A	A	MH2	1	2	124.290	8.134	0.120	15	LGM	0.0080	125.636	8.222
A0NCA219A	A	MH2	1	2	123.409	8.280	0.120	15	LWT/LAB	0.0080	125.041	8.389

	Strength [ksi]	Modulus [Msi]
Average	**122.671**	**8.058**
Standard Dev.	**1.075**	**0.121**
Coeff. of Var. [%]	**0.876**	**1.498**
Min.	**121.353**	**7.942**
Max.	**124.290**	**8.280**
Number of Spec.	**7**	**7**

	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
$Average_{norm}$	**0.0080**	**124.202**	**8.159**
$Standard\ Dev._{norm}$		**1.383**	**0.139**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**1.114**	**1.708**
Min.	**0.0079**	**121.539**	**7.946**
Max.	**0.0081**	**125.636**	**8.389**
Number of Spec.		**7**	**7**


Laminate Unnotched Tension Properties (UNT3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
160
180
200
220
240
Laminate Tension Strength (UNT3) [ksi]


Laminate Unnotched Tension Properties (UNT3) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
9.0
10.0
11.0
12.0
13.0
14.0
15.0
16.0
Laminate Tension Modulus (UNT3) [Msi]

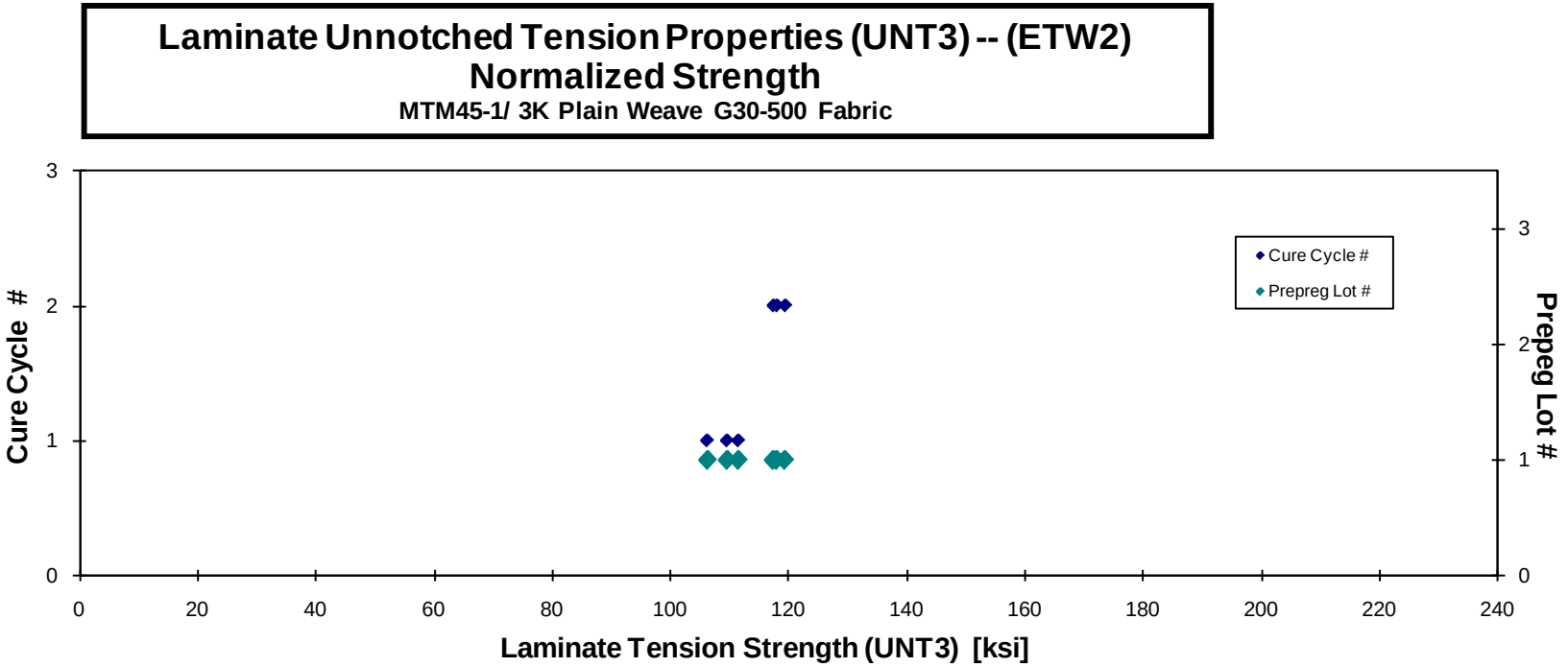
Laminate Unnotched Tension Properties (UNT3) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NCA11AD	A	MH1	1	1	108.627	0.120	15	LGM	0.0080	109.575
A0NCA11BD	A	MH1	1	1	105.272	0.120	15	LGM	0.0080	106.249
A0NCA11CD	A	MH1	1	1	110.904	0.119	15	AWT/LWB	0.0079	111.466
A0NCA21AD	A	MH2	1	2	118.419	0.119	15	LGM	0.0080	119.335
A0NCA21BD	A	MH2	1	2	115.066	0.121	15	LGM	0.0081	117.364
A0NCA21CD	A	MH2	1	2	115.606	0.121	15	LGM	0.0081	117.947

ETW2 Modulus data not reported due to suspected improper strain gage instrumentation.

Average	**112.316**	**$Average_{norm}$**	**0.0080**	**113.656**
Standard Dev.	**4.916**	**$Standard\ Dev._{norm}$**		**5.305**
Coeff. of Var. [%]	**4.377**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.668**
Min.	**105.272**	**Min.**	**0.0079**	**106.249**
Max.	**118.419**	**Max.**	**0.0081**	**119.335**
Number of Spec.	**6**	**Number of Spec.**		**6**


Laminate Unnotched Tension Properties (UNT3) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepeg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
160
180
200
220
240
Laminate Tension Strength (UNT3) [ksi]

4.9 Unnotched Compression 1 Properties

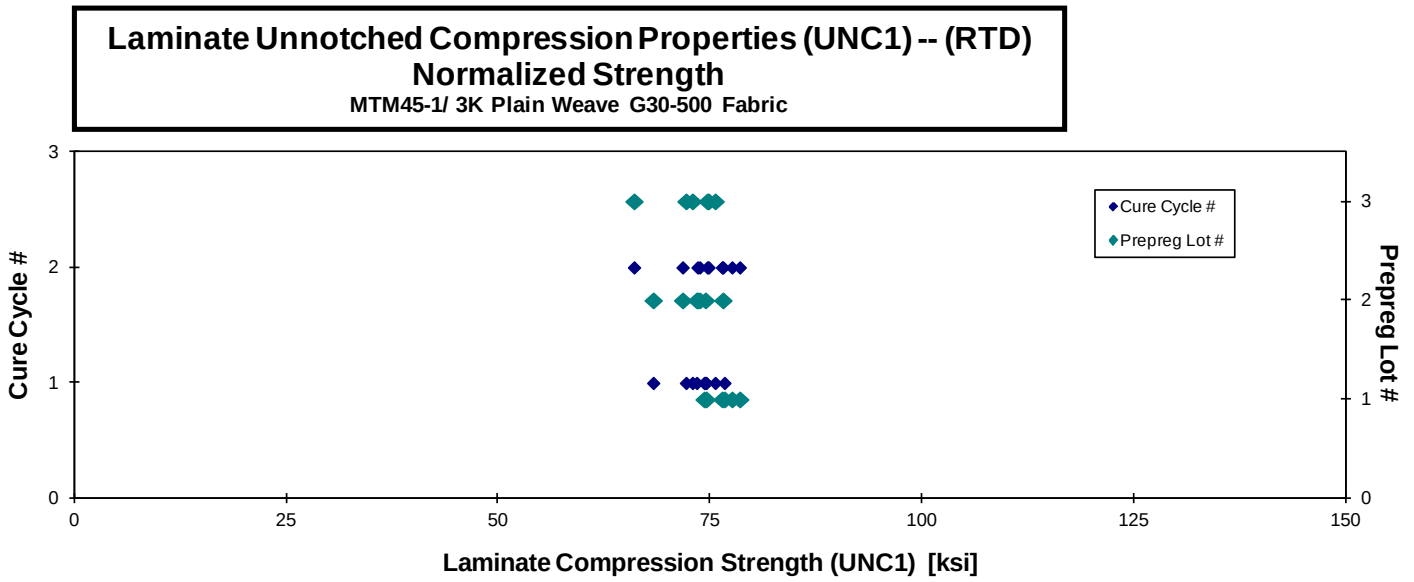
Laminate Unnotched Compression Properties (UNC1) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

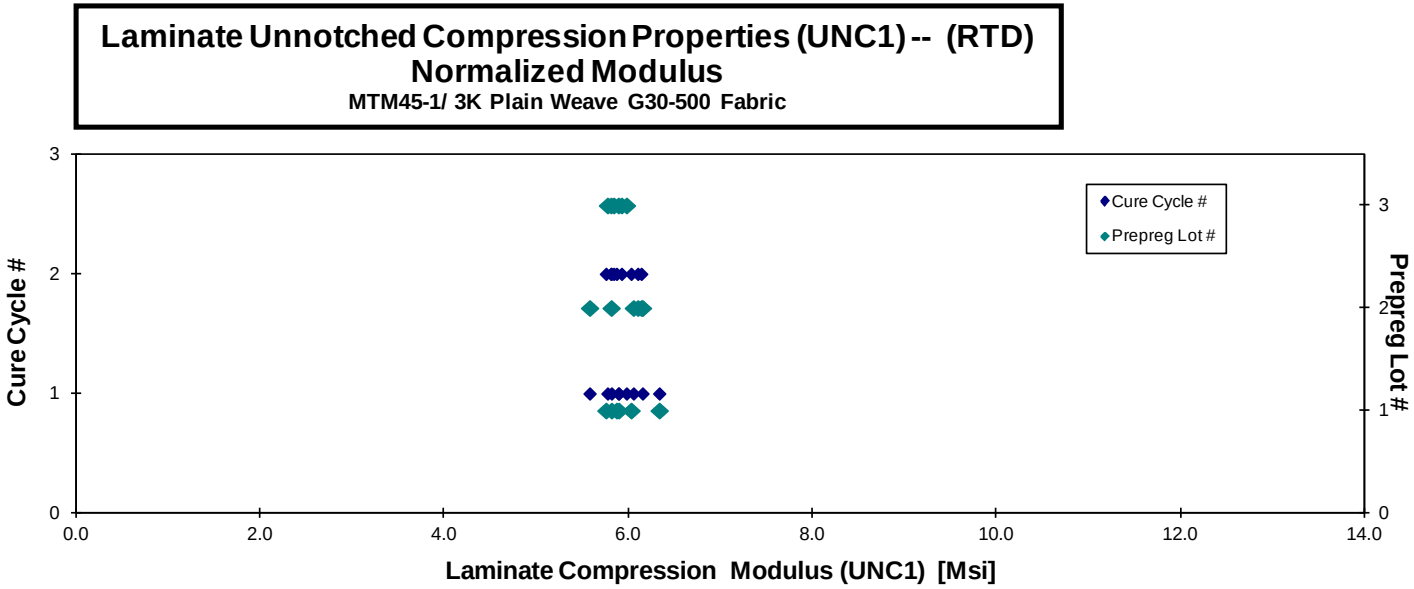
normalizing t_{ply} [in] 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NWA111A	A	MH1	1	1	75.078	6.404	0.369	0.188	24	BGM	0.0078	74.352	6.342
A0NWA112A**	A	MH1	1	1	75.467	5.971	0.324	0.187	24	BGM	0.0078	74.591	5.902
A0NWA113A	A	MH1	1	1	77.322	5.867	0.327	0.188	24	BGM	0.0078	76.744	5.823
A0NWA211A**	A	MH2	1	2	79.944	5.865	0.305	0.186	24	BGM	0.0078	78.552	5.763
A0NWA212A**	A	MH2	1	2	76.815	6.064	0.341	0.189	24	BGM/BAT	0.0079	76.464	6.036
A0NWA213A	A	MH2	1	2	78.032	5.908	0.346	0.189	24	BGM	0.0079	77.634	5.878
A0NWB111A**	B	MH1	2	1	75.883	5.689	0.292	0.186	24	BGM	0.0078	74.502	5.585
A0NWB112A**	B	MH1	2	1	68.331	6.159	0.343	0.190	24	BGM	0.0079	68.343	6.160
A0NWB113A**	B	MH1	2	1	73.294	6.047	0.311	0.190	24	BGM	0.0079	73.468	6.061
A0NWB211A**	B	MH2	2	2	75.478			0.185	24	BGM	0.0077	73.574	
A0NWB212A	B	MH2	2	2	74.951	6.202	0.312	0.187	24	BGM	0.0078	73.824	6.109
A0NWB213A	B	MH2	2	2	71.887	5.826	0.278	0.189	24	BGM	0.0079	71.811	5.820
A0NWB214A	B	MH2	2	2	76.387	6.132	0.326	0.190	24	BGM	0.0079	76.569	6.147
A0NWC111A	C	MH1	3	1	74.272	5.945	0.306	0.184	24	BGM	0.0077	72.209	5.780
A0NWC112A**	C	MH1	3	1	76.393	6.045	0.329	0.188	24	BGM/BAT	0.0078	75.648	5.986
A0NWC113A**	C	MH1	3	1	72.850	5.889	0.319	0.190	24	BGM	0.0079	72.965	5.898
A0NWC211A**	C	MH2	3	2	74.830	5.856	0.308	0.189	24	HAT	0.0079	74.718	5.847
A0NWC212A**	C	MH2	3	2	66.587	5.862	0.350	0.188	24	BGM	0.0078	66.078	5.817
A0NWC213A**	C	MH2	3	2	75.446	5.978	0.310	0.188	24	BGM	0.0078	74.869	5.932

AONWB211A does not have a linear relationship between stress and strain within the 1000-3000 strain range
** indicate thickness along length exceed the variation tolerance (<.002 in per ASTM D 6641)

Average	**74.697**	**5.984**	**0.322**	**$Average_{norm}$**	**0.0078**	**74.048**	**5.938**
Standard Dev.	**3.153**	**0.168**	**0.022**	**$Standard\ Dev._{norm}$**		**3.010**	**0.180**
Coeff. of Var. [%]	**4.221**	**2.803**	**6.923**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.065**	**3.026**
Min.	**66.587**	**5.689**	**0.278**	**Min.**	**0.0077**	**66.078**	**5.585**
Max.	**79.944**	**6.404**	**0.369**	**Max.**	**0.0079**	**78.552**	**6.342**
Number of Spec.	**19**	**18**	**18**	**Number of Spec.**		**19**	**18**


Laminate Unnotched Compression Properties (UNC1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC1) [ksi]
0
25
50
75
100
125
150
0
1
2
3


Laminate Unnotched Compression Properties (UNC1) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC1) [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
14.0
0
1
2
3

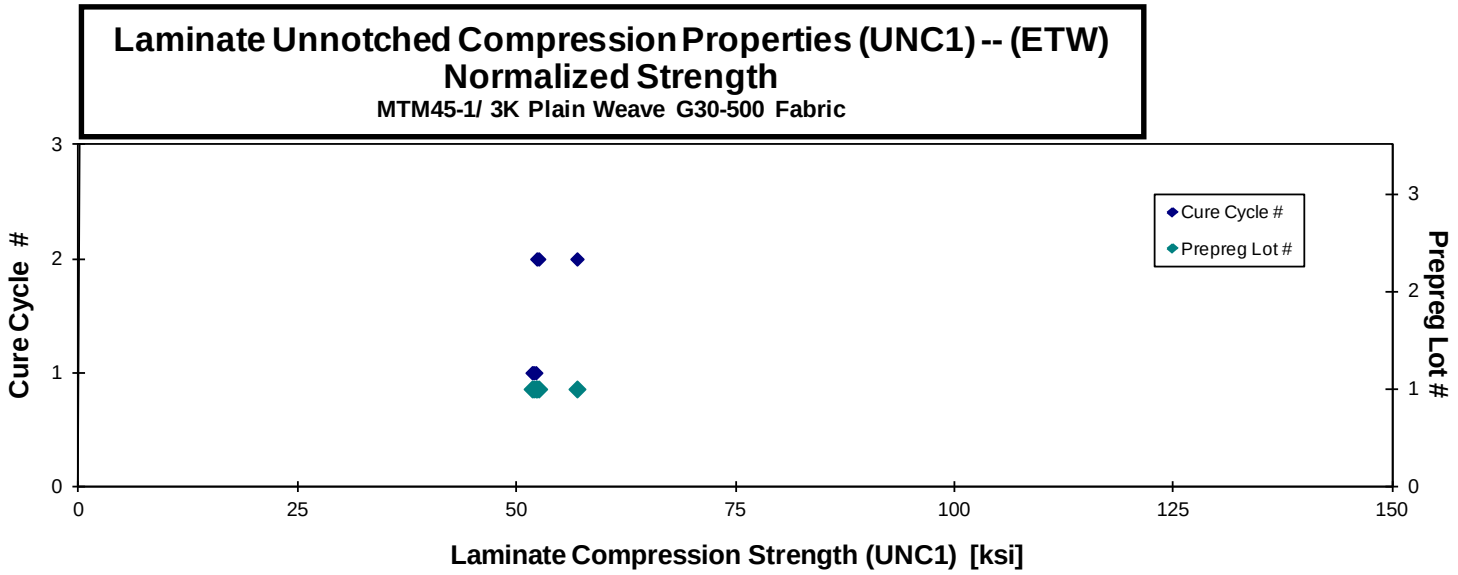
Laminate Unnotched Compression Properties (UNC1) -- (ETW)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

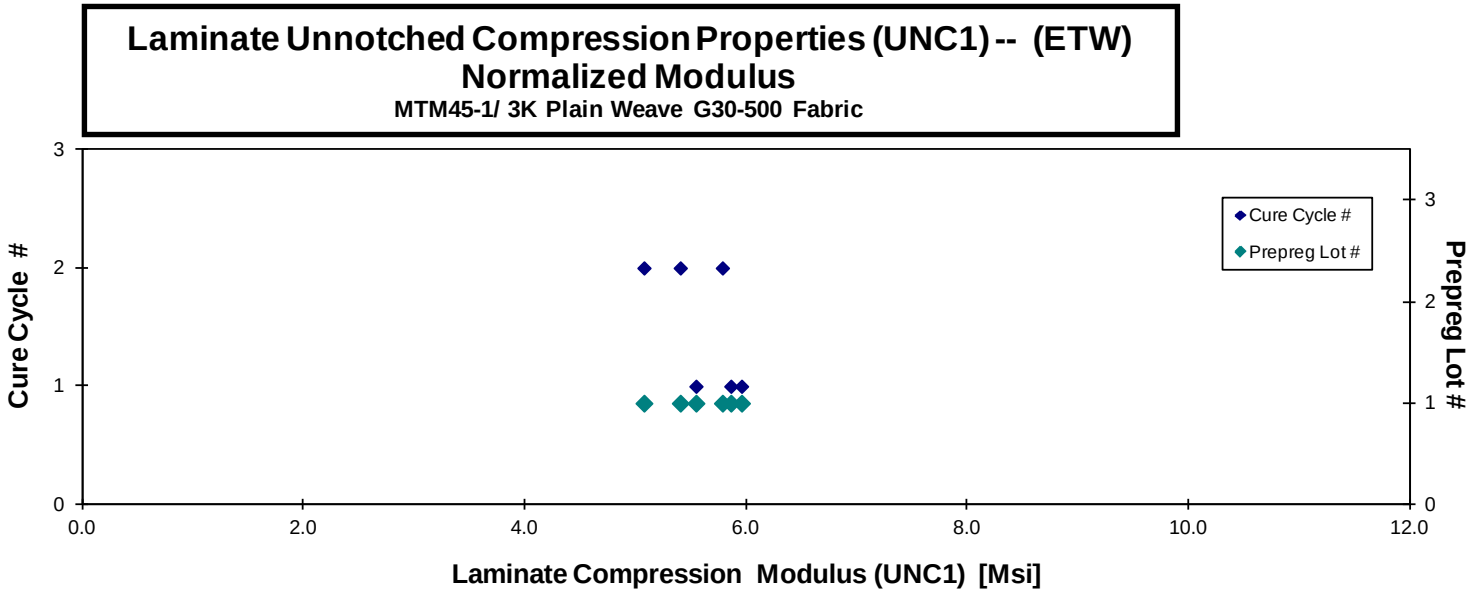
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NWA117N	A	MH1	1	1	52.533	5.614	0.301	0.187	24	BGM	0.0078	51.923	5.549
A0NWA118N	A	MH1	1	1	52.989	6.055	0.347	0.187	24	HGM	0.0078	52.164	5.961
A0NWA119N	A	MH1	1	1	51.823	5.873	0.289	0.189	24	BGM	0.0079	51.746	5.864
A0NWA214N	A	MH2	1	2	56.692	5.390	0.290	0.190	24	BGM	0.0079	56.871	5.407
A0NWA215N**	A	MH2	1	2	51.945	5.046	0.276	0.191	24	HGM	0.0080	52.283	5.079
A0NWA216N**	A	MH2	1	2	52.318	5.768	0.319	0.190	24	BGM	0.0079	52.497	5.788

** indicate thickness along length exceed the variation tolerance (<.002 in per ASTM D 6641)

Average	**53.050**	**5.624**	**0.304**	**$Average_{norm}$**	**0.0079**	**52.914**	**5.608**
Standard Dev.	**1.833**	**0.363**	**0.026**	**Standard $Dev._{norm}$**		**1.956**	**0.331**
Coeff. of Var. [%]	**3.455**	**6.447**	**8.451**	**Coeff. of Var. $[\%]_{norm}$**		**3.697**	**5.894**
Min.	**51.823**	**5.046**	**0.276**	**Min.**	**0.0078**	**51.746**	**5.079**
Max.	**56.692**	**6.055**	**0.347**	**Max.**	**0.0080**	**56.871**	**5.961**
Number of Spec.	**6**	**6**	**6**	**Number of Spec.**		**6**	**6**


Laminate Unnotched Compression Properties (UNC1) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC1) [ksi]
0
25
50
75
100
125
150
0
1
2
3


Laminate Unnotched Compression Properties (UNC1) -- (ETW)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC1) [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3

Laminate Unnotched Compression Properties (UNC1) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

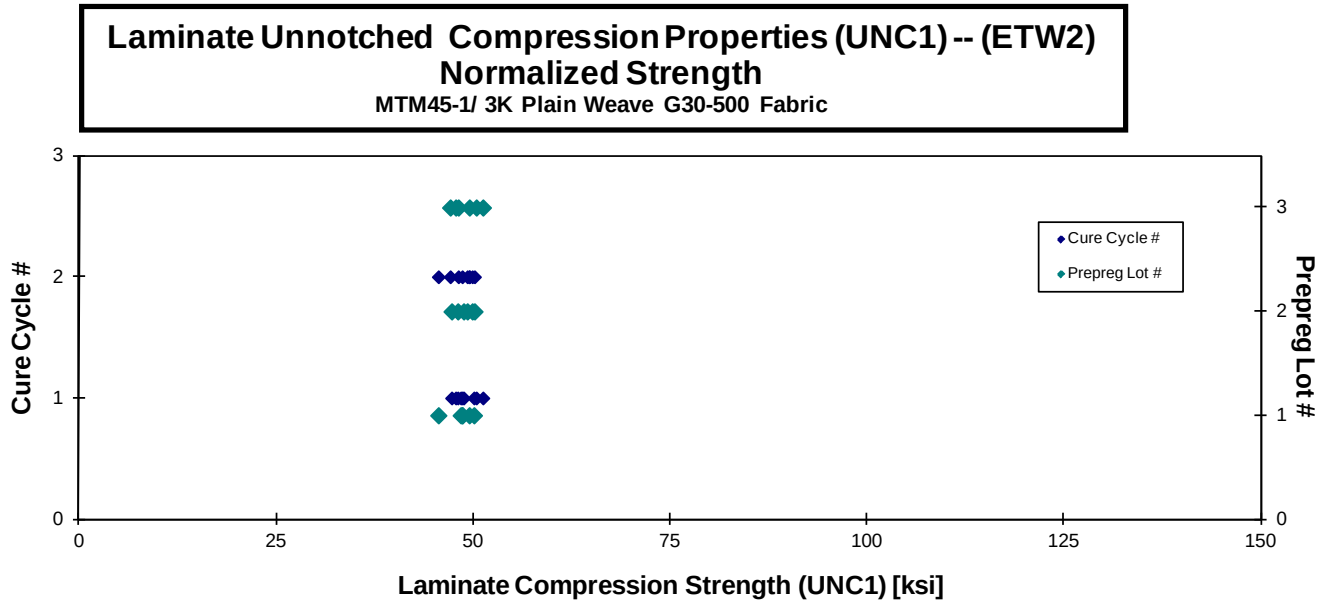
normalizing t_{ply} [in]: 0.0079

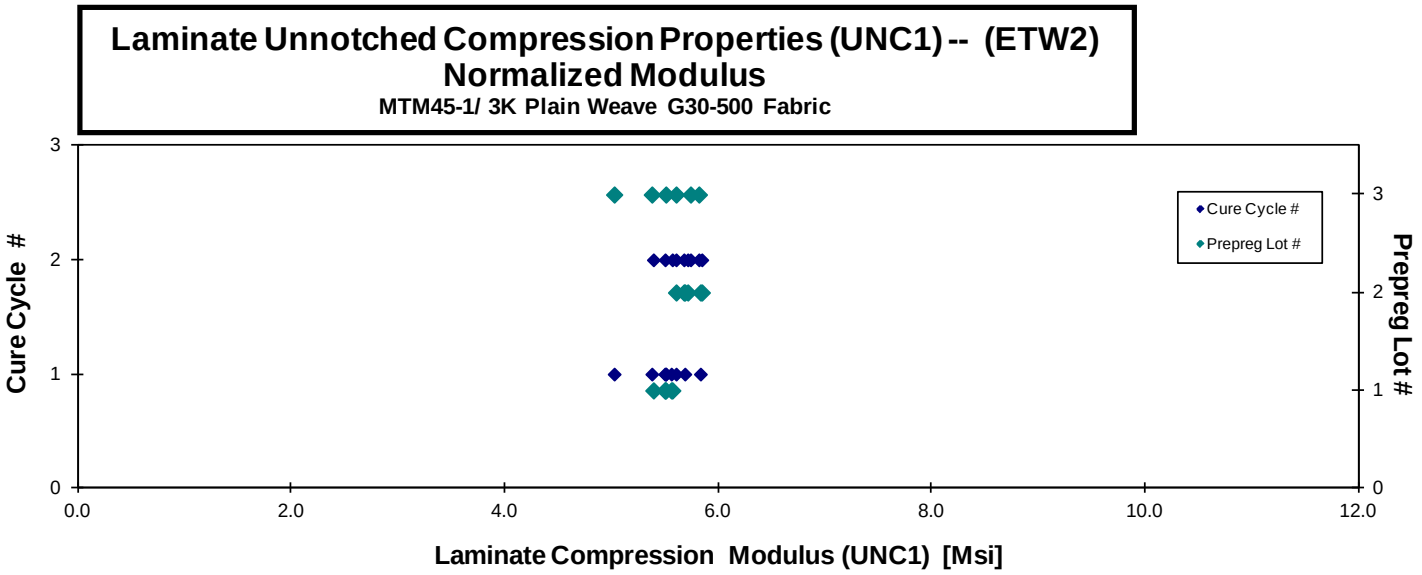
Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NWA11AD	A	MH1	1	1	49.588	5.507	0.309	0.192	24	BGM	0.0080	50.085	5.562
A0NWA11BD	A	MH1	1	1	48.593	5.509	0.276	0.190	24	HGM	0.0079	48.601	5.510
A0NWA11CD	A	MH1	1	1	48.804	5.546	0.308	0.188	24	BGM/HGM	0.0078	48.414	5.502
A0NWA218D*	A	MH2	1	2	48.913	5.540	0.298	0.188	24	BGM	0.0078	48.595	5.504
A0NWA219D	A	MH2	1	2	45.488	5.385	0.308	0.190	24	BGM	0.0079	45.568	5.394
A0NWA21AD*	A	MH2	1	2	49.631	5.588	0.320	0.189	24	BGM	0.0079	49.487	5.572
A0NWB115D*	B	MH1	2	1	48.516	5.659	0.286	0.191	24	BGM	0.0079	48.777	5.689
A0NWB116D*	B	MH1	2	1	46.949	5.571	0.340	0.191	24	HGM	0.0080	47.254	5.607
A0NWB117D*	B	MH1	2	1	48.091	5.842	0.301	0.189	24	BGM	0.0079	48.036	5.835
A0NWB215D	B	MH2	2	2	49.116	5.702	0.326	0.190	24	BGM	0.0079	49.241	5.717
A0NWB216D*	B	MH2	2	2	49.700	5.795	0.339	0.191	24	HGM	0.0080	50.159	5.848
A0NWB217D*	B	MH2	2	2	49.816	5.674	0.328	0.190	24	HGM	0.0079	49.873	5.680
A0NWC116D*	C	MH1	3	1	51.660	5.070	0.264	0.188	24	HGM	0.0078	51.224	5.027
A0NWC117D*	C	MH1	3	1	47.803	5.384	0.330	0.189	24	HGM	0.0079	47.769	5.380
A0NWC118D*	C	MH1	3	1	50.335	5.506	0.334	0.190	24	BGM	0.0079	50.383	5.511
A0NWC216D*	C	MH2	3	2	47.133	5.614	0.331	0.189	24	HGM/BGM	0.0079	47.075	5.607
A0NWC217D*	C	MH2	3	2	49.531	5.824	0.321	0.190	24	BGM	0.0079	49.505	5.821
A0NWC218D*	C	MH2	3	2	48.067	5.738	0.319	0.190	24	HGM	0.0079	48.105	5.743

* indicate thickness along length exceed the variation tolerance (<.002 in per ASTM D 6641)

Average	**48.763**	**5.581**	**0.313**
Standard Dev.	**1.407**	**0.186**	**0.022**
Coeff. of Var. [%]	**2.885**	**3.326**	**6.885**
Min.	**45.488**	**5.070**	**0.264**
Max.	**51.660**	**5.842**	**0.340**
Number of Spec.	**18**	**18**	**18**

$Average_{norm}$	**0.0079**	**48.786**	**5.584**
$Standard\ Dev._{norm}$		**1.380**	**0.198**
$Coeff.\ of\ Var.\ [\%]_{norm}$		**2.828**	**3.543**
Min.	**0.0078**	**45.568**	**5.027**
Max.	**0.0080**	**51.224**	**5.848**
Number of Spec.		**18**	**18**


Laminate Unnotched Compression Properties (UNC1) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC1) [ksi]
0
25
50
75
100
125
150
0
1
2
3


Laminate Unnotched Compression Properties (UNC1) -- (ETW2)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC1) [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3

4.10 Unnotched Compression 2 Properties

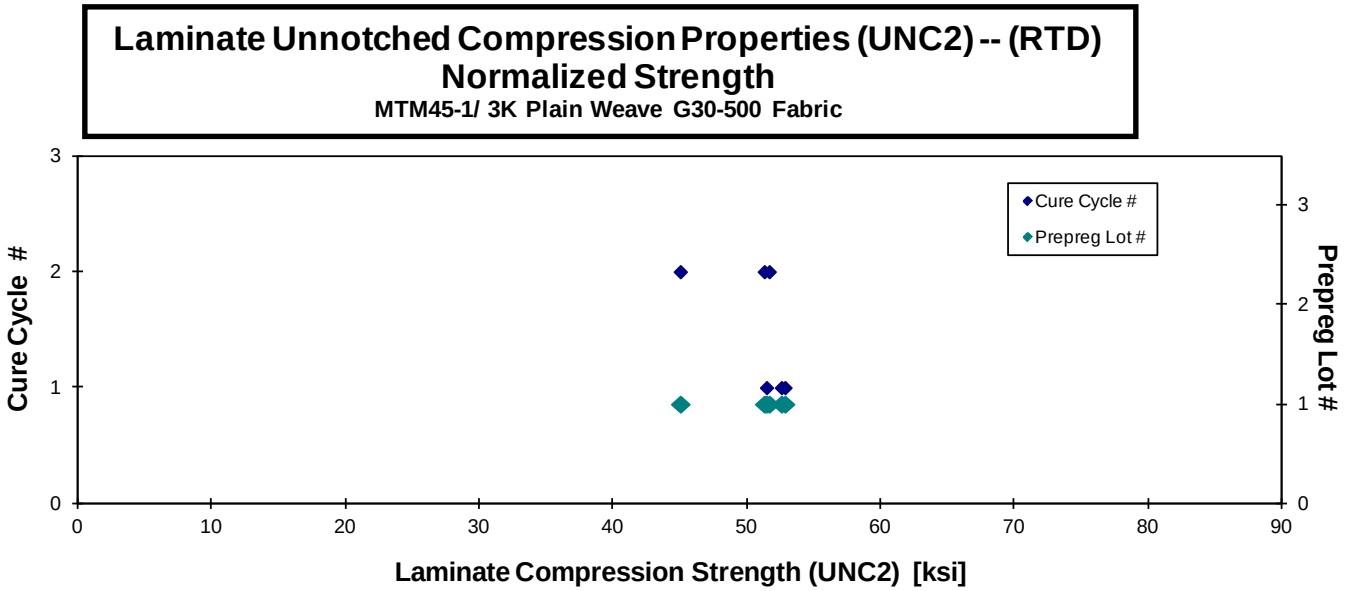
Laminate Unnotched Compression Properties (UNC2) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

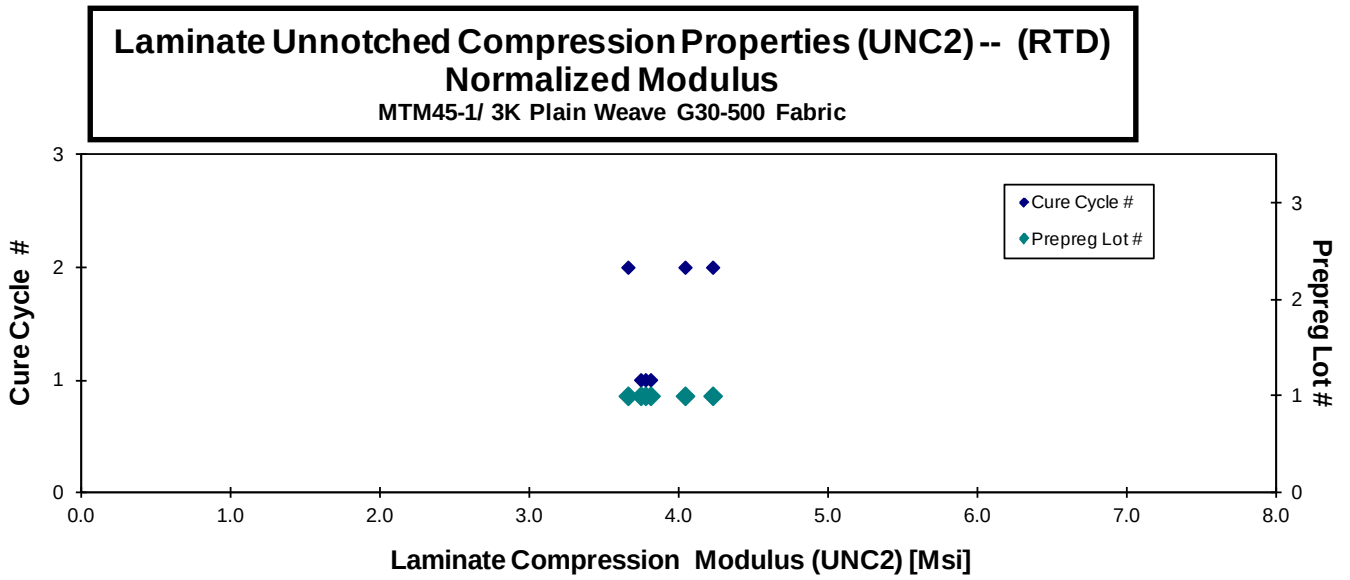
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NXA111A	A	MH1	1	1	52.654	3.749	0.546	0.158	20	BGM	0.0079	52.649	3.749
A0NXA112A	A	MH1	1	1	51.150	3.752	0.513	0.159	20	BGM	0.0080	51.533	3.780
A0NXA113A	A	MH1	1	1	52.047	3.752	0.531	0.161	20	BGM	0.0080	52.915	3.815
A0NXA211A	A	MH2	1	2	46.220	3.755	0.512	0.154	20	HGM	0.0077	45.089	3.663
A0NXA212A	A	MH2	1	2	52.478	4.291	0.631	0.156	20	HGM	0.0078	51.736	4.230
A0NXA213A	A	MH2	1	2	51.552	4.060	0.589	0.157	20	BGM	0.0079	51.367	4.045

Average	**51.017**	**3.893**	**0.554**
Standard Dev.	**2.416**	**0.231**	**0.047**
Coeff. of Var. [%]	**4.736**	**5.923**	**8.528**
Min.	**46.220**	**3.749**	**0.512**
Max.	**52.654**	**4.291**	**0.631**
Number of Spec.	**6**	**6**	**6**

$Average_{norm}$	**0.0079**	**50.881**	**3.880**
Standard $Dev._{norm}$		**2.905**	**0.214**
Coeff. of Var. $[\%]_{norm}$		**5.710**	**5.511**
Min.	**0.0077**	**45.089**	**3.663**
Max.	**0.0080**	**52.915**	**4.230**
Number of Spec.		**6**	**6**


Laminate Unnotched Compression Properties (UNC2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
80
90
Laminate Compression Strength (UNC2) [ksi]

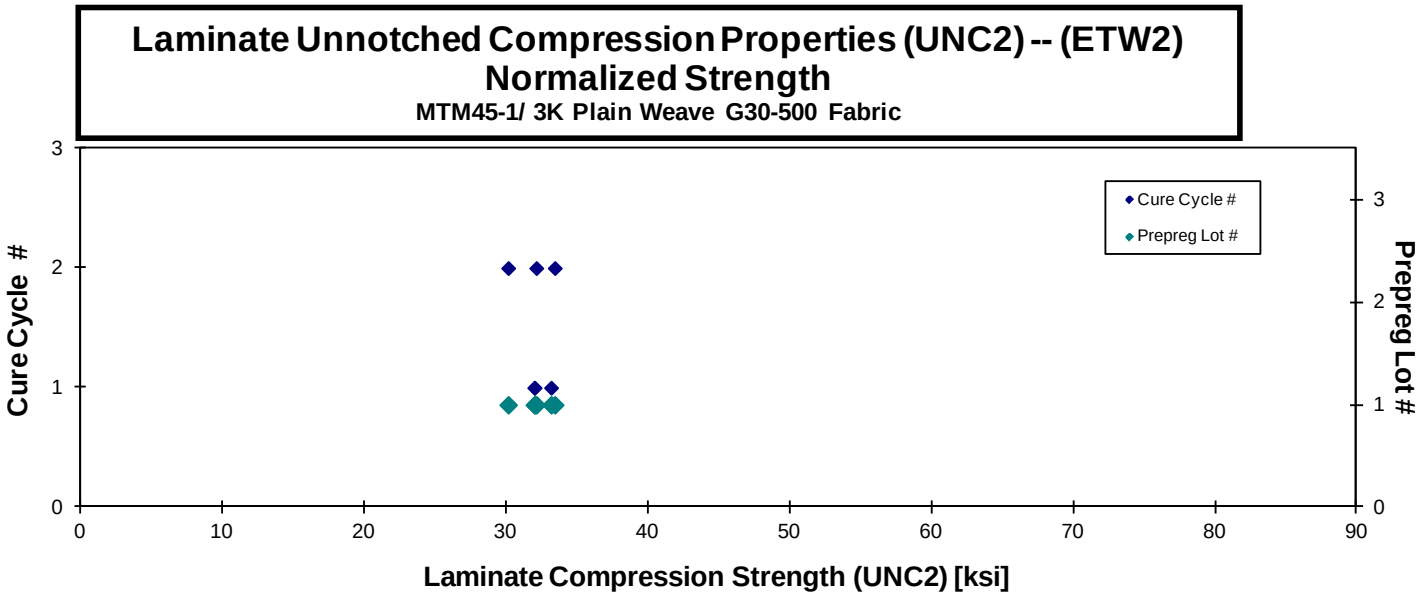

Laminate Unnotched Compression Properties (UNC2) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
Laminate Compression Modulus (UNC2) [Msi]

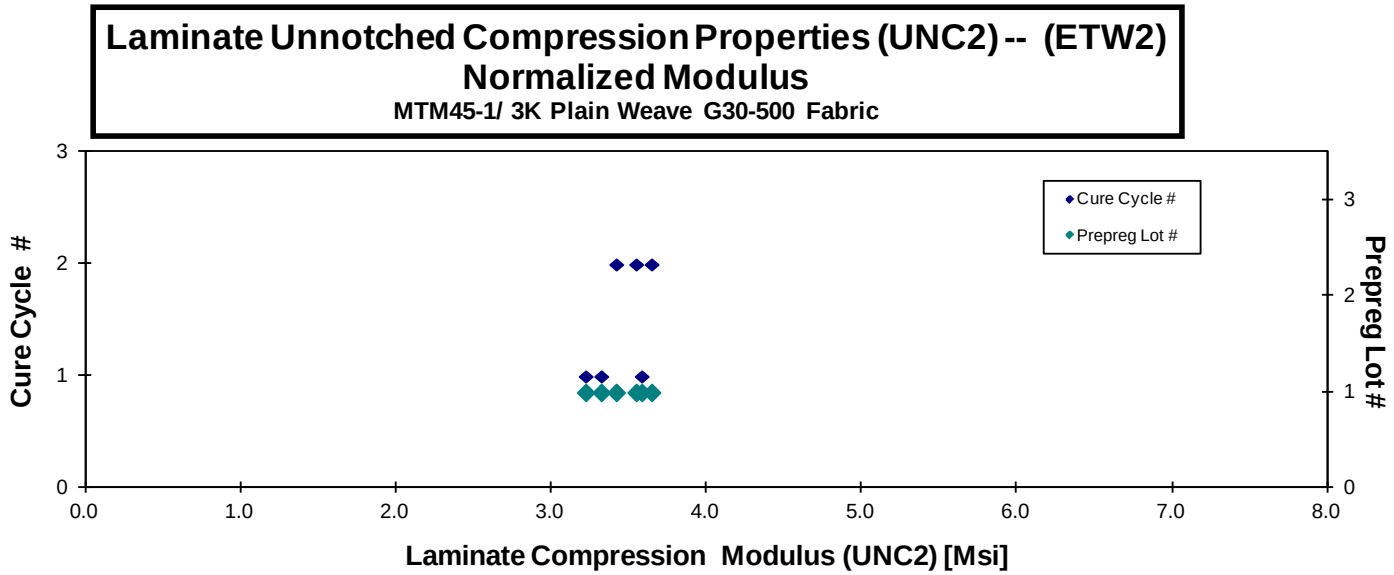
Laminate Unnotched Compression Properties (UNC2) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NXA116D	A	MH1	1	1	32.154	3.472	0.552	0.163	20	BGM	0.0082	33.182	3.583
A0NXA117D	A	MH1	1	1	31.159	3.136	0.528	0.162	20	HGM	0.0081	32.013	3.222
A0NXA118D	A	MH1	1	1	31.491	3.269	0.551	0.161	20	HGM	0.0080	32.006	3.322
A0NXA215D	A	MH2	1	2	30.269	3.660	0.601	0.157	20	HGM	0.0079	30.158	3.646
A0NXA216D	A	MH2	1	2	32.442	3.581	0.593	0.157	20	HGM	0.0078	32.138	3.547
A0NXA217D	A	MH2	1	2	33.785	3.454	0.560	0.156	20	BGM	0.0078	33.443	3.419

Average	**31.883**	**3.429**	**0.564**	**$Average_{norm}$**	**0.0080**	**32.157**	**3.457**
Standard Dev.	**1.207**	**0.195**	**0.028**	**$Standard\ Dev._{norm}$**		**1.161**	**0.164**
Coeff. of Var. [%]	**3.786**	**5.691**	**4.941**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.612**	**4.748**
Min.	**30.269**	**3.136**	**0.528**	**Min.**	**0.0078**	**30.158**	**3.222**
Max.	**33.785**	**3.660**	**0.601**	**Max.**	**0.0082**	**33.443**	**3.646**
Number of Spec.	**6**	**6**	**6**	**Number of Spec.**		**6**	**6**


Laminate Unnotched Compression Properties (UNC2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC2) [ksi]
0
10
20
30
40
50
60
70
80
90
0
1
2
3


Laminate Unnotched Compression Properties (UNC2) -- (ETW2)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC2) [Msi]
0.0
1.0
2.0
3.0
4.0
5.0
6.0
7.0
8.0
0
1
2
3

4.11 Unnotched Compression 3 Properties

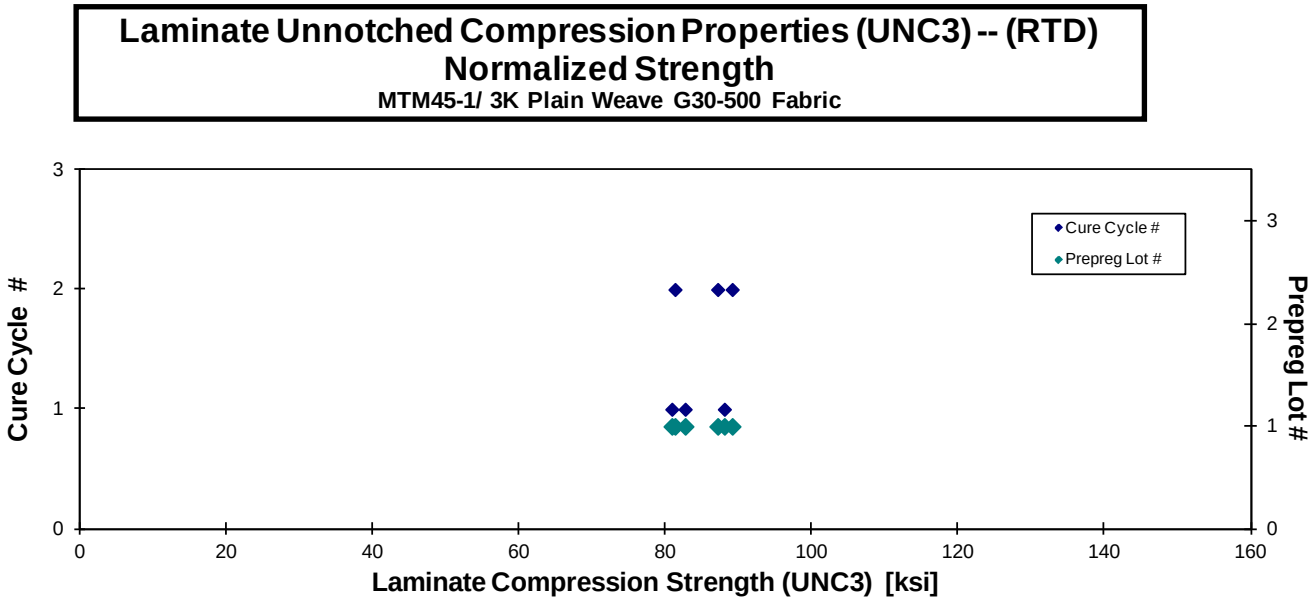
Laminate Unnotched Compression Properties (UNC3) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

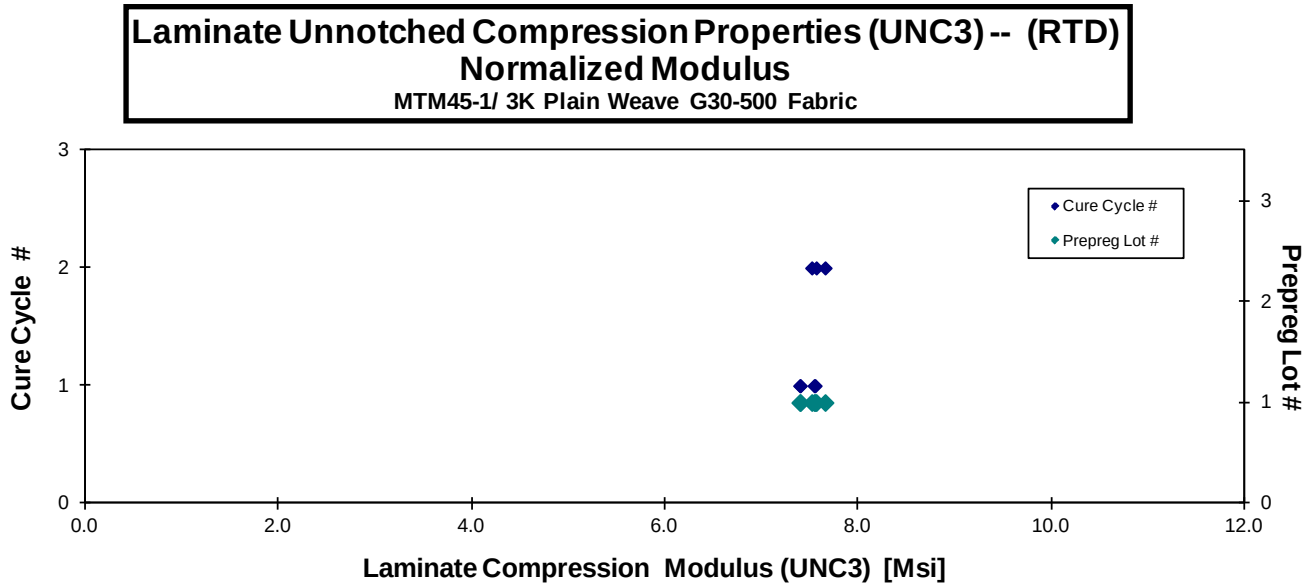
normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NYA111A	A	MH1	1	1		7.468	0.132	0.156	20	**HIB**	0.0078		7.392
A0NYA112A	A	MH1	1	1	81.102	7.574	0.147	0.158	20	BGM	0.0079	80.854	7.551
A0NYA113A	A	MH1	1	1	89.036	7.627	0.137	0.156	20	BGM	0.0078	88.031	7.541
A0NYA114A	A	MH1	1	1	82.741	7.404	0.141	0.158	20	BGM	0.0079	82.671	7.398
A0NYA211A	A	MH2	1	2	89.138	7.738	0.142	0.154	20	BGM	0.0077	87.116	7.563
A0NYA212A	A	MH2	1	2	82.028	7.585	0.154	0.157	20	BGM	0.0078	81.284	7.516
A0NYA213A	A	MH2	1	2	89.402	7.680	0.157	0.157	20	BGM	0.0079	89.100	7.654

Strength not included because of bad failure

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**85.575**	**7.582**	**0.144**	**$Average_{norm}$**	**0.0078**	**84.843**	**7.516**
Standard Dev.	**3.999**	**0.116**	**0.009**	**Standard $Dev._{norm}$**		**3.654**	**0.093**
Coeff. of Var. [%]	**4.673**	**1.530**	**6.289**	**Coeff. of Var. $[\%]_{norm}$**		**4.307**	**1.242**
Min.	**81.102**	**7.404**	**0.132**	**Min.**	**0.0077**	**80.854**	**7.392**
Max.	**89.402**	**7.738**	**0.157**	**Max.**	**0.0079**	**89.100**	**7.654**
Number of Spec.	**6**	**7**	**7**	**Number of Spec.**		**6**	**7**


Laminate Unnotched Compression Properties (UNC3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC3) [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3

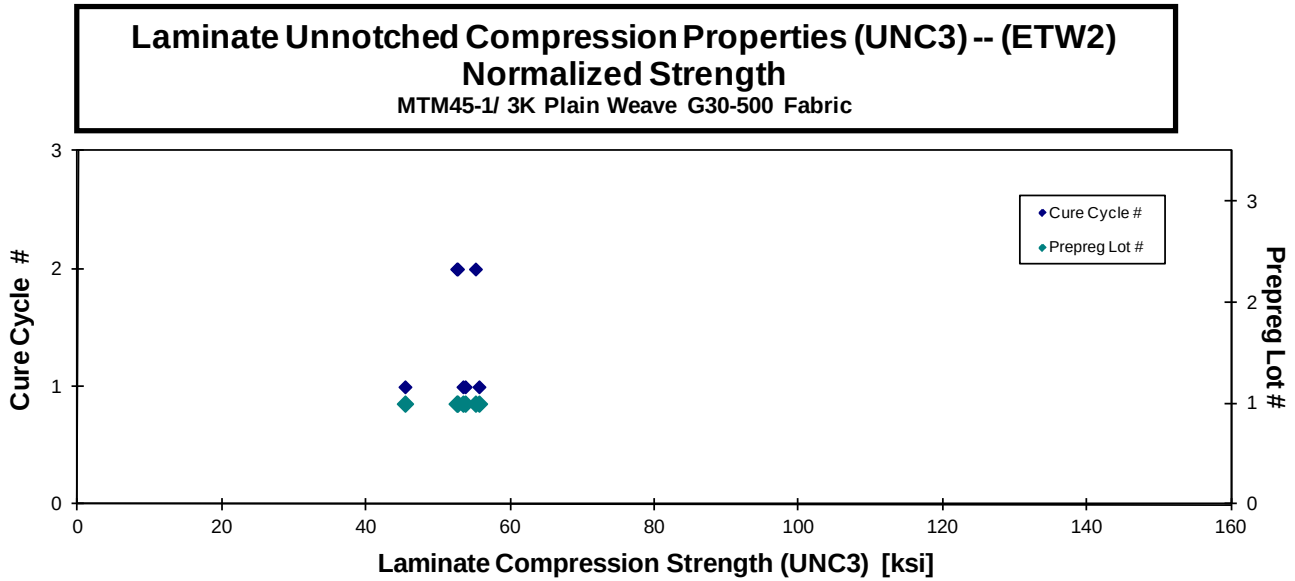

Laminate Unnotched Compression Properties (UNC3) -- (RTD)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC3) [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3

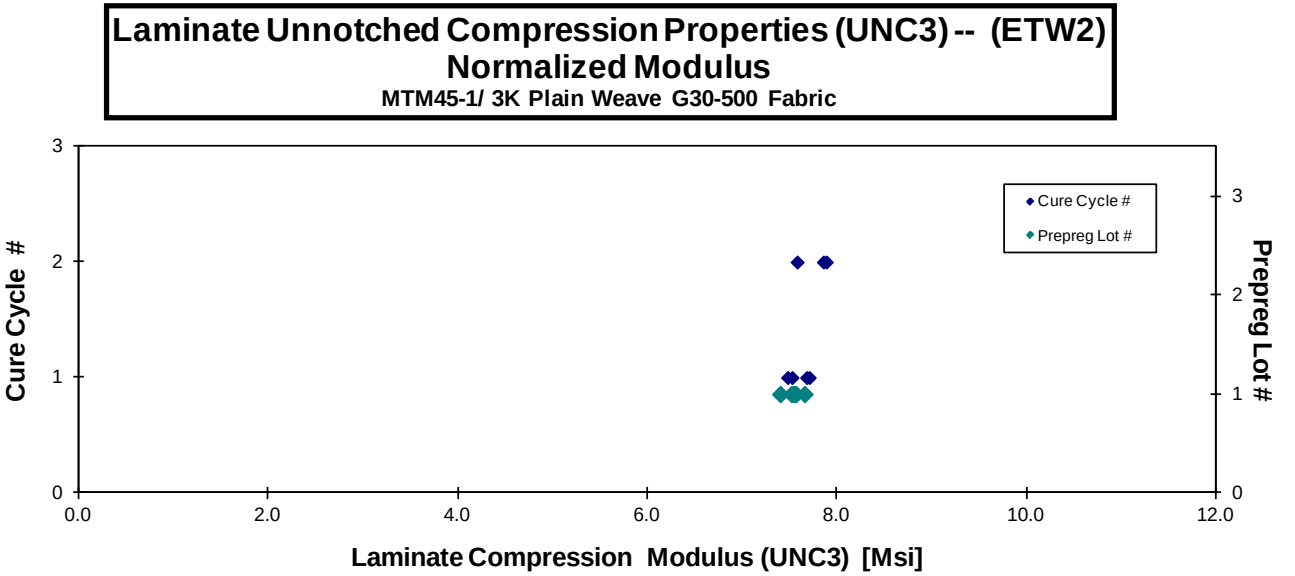
Laminate Unnotched Compression Properties (UNC3) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
A0NYA117D	A	MH1	1	1	55.912	7.513	0.131	0.157	20	HGM/BGM	0.0079	55.635	7.476
A0NYA118D	A	MH1	1	1	45.738	7.739	0.144	0.157	20	BGM/HGM	0.0078	45.367	7.676
A0NYA119D	A	MH1	1	1	53.799	7.577	0.138	0.157	20	HGM	0.0078	53.413	7.523
A0NYA11AD	A	MH1	1	1	54.561	7.825	0.160	0.156	20	HGM	0.0078	53.721	7.704
A0NYA216D	A	MH2	1	2	54.656	7.814	0.165	0.159	20	HGM	0.0080	55.146	7.884
A0NYA217D	A	MH2	1	2	52.745	7.589	0.152	0.158	20	HGM	0.0079	52.656	7.576
A0NYA218D	A	MH2	1	2	52.418	7.834	0.156	0.158	20	BAB	0.0079	52.545	7.853

Average	**52.833**	**7.699**	**0.149**	**$Average_{norm}$**	**0.0079**	**52.640**	**7.670**
Standard Dev.	**3.348**	**0.136**	**0.012**	**$Standard\ Dev._{norm}$**		**3.414**	**0.157**
Coeff. of Var. [%]	**6.336**	**1.763**	**8.161**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.485**	**2.053**
Min.	**45.738**	**7.513**	**0.131**	**Min.**	**0.0078**	**45.367**	**7.476**
Max.	**55.912**	**7.834**	**0.165**	**Max.**	**0.0080**	**55.635**	**7.884**
Number of Spec.	**7**	**7**	**7**	**Number of Spec.**		**7**	**7**


Laminate Unnotched Compression Properties (UNC3) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Strength (UNC3) [ksi]
0
20
40
60
80
100
120
140
160
0
1
2
3

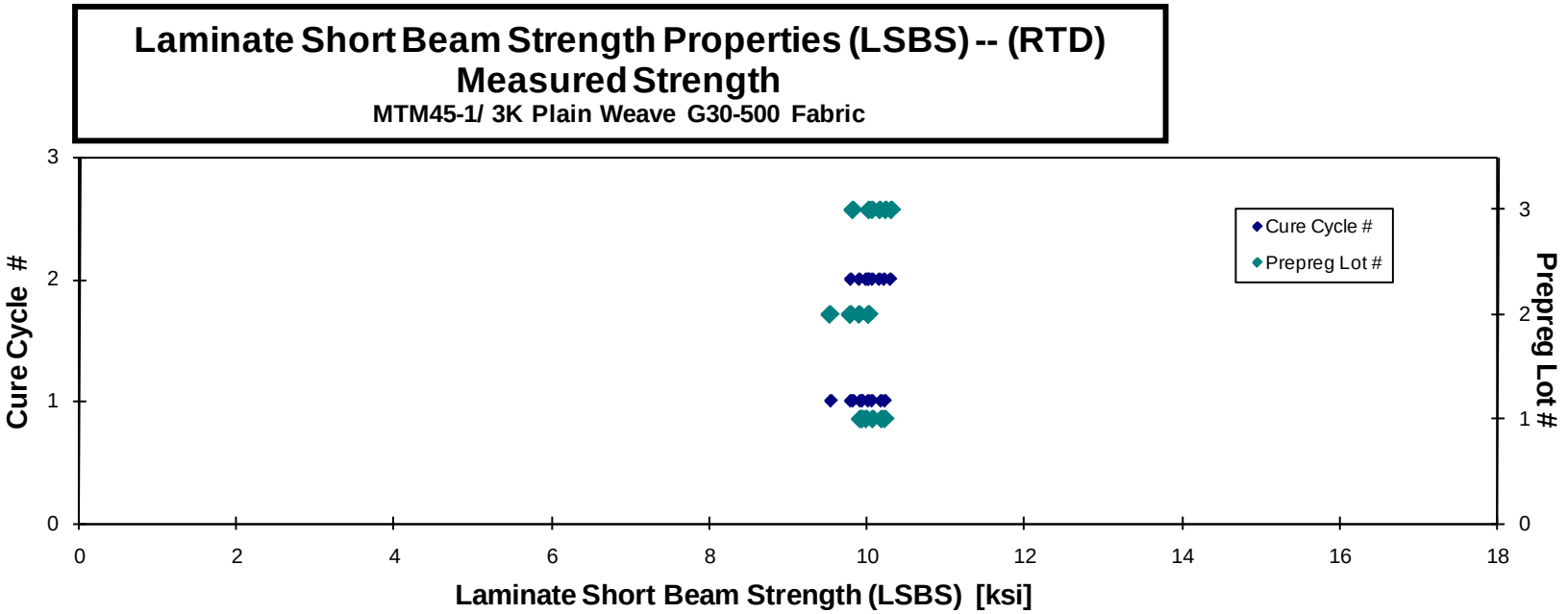

Laminate Unnotched Compression Properties (UNC3) -- (ETW2)
Normalized Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Compression Modulus (UNC3) [Msi]
0.0
2.0
4.0
6.0
8.0
10.0
12.0
0
1
2
3

4.12 Laminate Short Beam Strength Properties

Laminate Short Beam Strength Properties (LSBS) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NqA1W1A	A	MH1	1	1	9.908	0.187	24	0.0078	Interlaminar shear
A0NqA1W2A	A	MH1	1	1	10.175	0.187	24	0.0078	Interlaminar shear
A0NqA1W3A	A	MH1	1	1	9.934	0.188	24	0.0078	Interlaminar shear
A0NqA2W1A	A	MH2	1	2	10.214	0.188	24	0.0078	Interlaminar shear
A0NqA2W2A	A	MH2	1	2	9.982	0.189	24	0.0079	Interlaminar shear
A0NqA2W3A	A	MH2	1	2	10.063	0.187	24	0.0078	Interlaminar shear
A0NqB1W8A	B	MH1	2	1	10.011	0.189	24	0.0079	Interlaminar Shear
A0NqB1WAA	B	MH1	2	1	9.530	0.189	24	0.0079	Interlaminar Shear
A0NqB1WCA	B	MH1	2	1	9.785	0.189	24	0.0079	Interlaminar Shear
A0NqB2W8A	B	MH2	2	2	9.785	0.189	24	0.0079	Interlaminar Shear
A0NqB2W9A	B	MH2	2	2	9.895	0.188	24	0.0079	Interlaminar Shear
A0NqB2WAA	B	MH2	2	2	10.012	0.189	24	0.0079	Interlaminar Shear
A0NqC1W1A	C	MH1	3	1	10.058	0.186	24	0.0078	Interlaminar Shear
A0NqC1W3A	C	MH1	3	1	9.815	0.186	24	0.0077	Interlaminar Shear
A0NqC1W4A	C	MH1	3	1	10.225	0.186	24	0.0078	Interlaminar Shear
A0NqC2W3A	C	MH2	3	2	10.016	0.188	24	0.0078	Interlaminar Shear
A0NqC2W4A	C	MH2	3	2	10.296	0.188	24	0.0078	Interlaminar Shear
A0NqC2W6A	C	MH2	3	2	10.153	0.189	24	0.0079	Interlaminar Shear

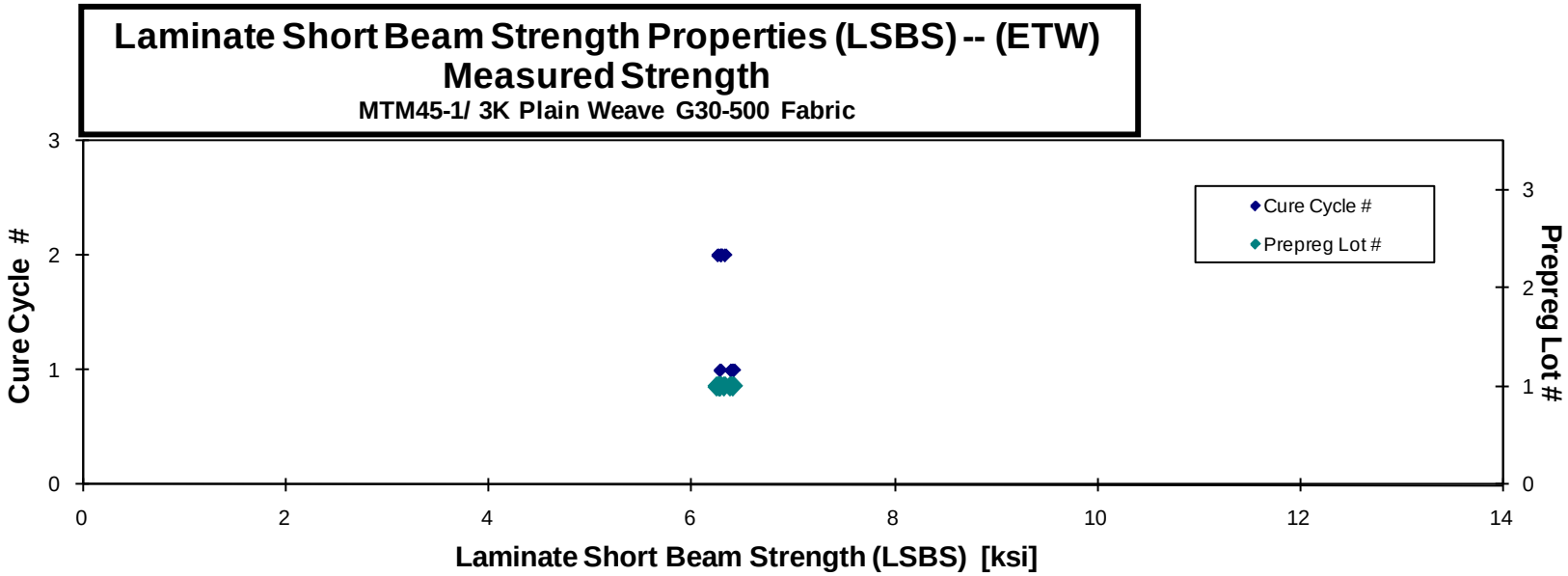
Average	**9.992**	**Average**	**0.0078**
Standard Dev.	**0.191**	**Standard Dev.**	
Coeff. of Var. [%]	**1.907**	**Coeff. of Var. [%]**	
Min.	**9.530**	**Min.**	**0.0077**
Max.	**10.296**	**Max.**	**0.0079**
Number of Spec.	**18**	**Number of Spec.**	**18**


Laminate Short Beam Strength Properties (LSBS) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
2
4
6
8
10
12
14
16
18
Laminate Short Beam Strength (LSBS) [ksi]

Laminate Short Beam Strength Properties (LSBS) -- (ETW)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NqA1W9N	A	MH1	1	1	6.421	0.188	24	0.0078	Interlaminar Shear
A0NqA1WAN	A	MH1	1	1	6.394	0.188	24	0.0078	Interlaminar Shear
A0NqA1WCN	A	MH1	1	1	6.287	0.187	24	0.0078	Interlaminar Shear
A0NqA2W9N	A	MH2	1	2	6.335	0.187	24	0.0078	Interlaminar Shear
A0NqA2WBN	A	MH2	1	2	6.298	0.189	24	0.0079	Interlaminar Shear
A0NqA2WCN	A	MH2	1	2	6.294	0.188	24	0.0078	Interlaminar Shear
A0NqA2WDN	A	MH2	1	2	6.264	0.188	24	0.0078	Interlaminar Shear

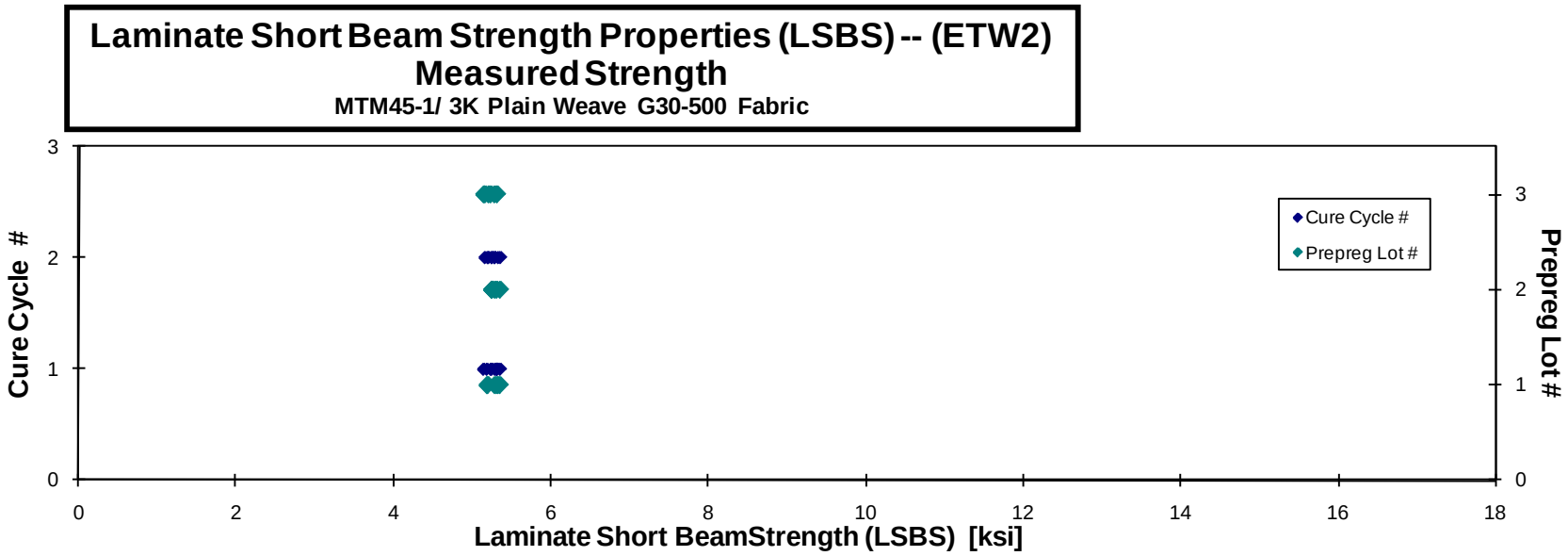
Average	**6.328**	**Average**	**0.0078**
Standard Dev.	**0.059**	**Standard Dev.**	
Coeff. of Var. [%]	**0.933**	**Coeff. of Var. [%]**	
Min.	**6.264**	**Min.**	**0.0078**
Max.	**6.421**	**Max.**	**0.0079**
Number of Spec.	**7**	**Number of Spec.**	**7**


Laminate Short Beam Strength Properties (LSBS) -- (ETW)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Short Beam Strength (LSBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14

Laminate Short Beam Strength Properties (LSBS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NqA1W4D	A	MH1	1	1	5.185	0.188	24	0.0078	Interlaminar Shear
A0NqA1W5D	A	MH1	1	1	5.309	0.188	24	0.0078	Interlaminar Shear
A0NqA1W6D	A	MH1	1	1	5.353	0.188	24	0.0078	Interlaminar Shear
A0NqA2W4D	A	MH2	1	2	5.328	0.187	24	0.0078	Interlaminar Shear
A0NqA2W5D	A	MH2	1	2	5.195	0.187	24	0.0078	Interlaminar Shear
A0NqA2W8D	A	MH2	1	2	5.285	0.187	24	0.0078	Interlaminar Shear
A0NqB1W1D	B	MH1	2	1	5.312	0.190	24	0.0079	Interlaminar Shear
A0NqB1W2D	B	MH1	2	1	5.247	0.191	24	0.0079	Interlaminar Shear
A0NqB1W3D	B	MH1	2	1	5.287	0.191	24	0.0080	Interlaminar Shear
A0NqB2W3D	B	MH2	2	2	5.249	0.187	24	0.0078	Interlaminar Shear
A0NqB2W5D	B	MH2	2	2	5.356	0.188	24	0.0078	Interlaminar Shear
A0NqB2W7D	B	MH2	2	2	5.247	0.187	24	0.0078	Interlaminar Shear
A0NqC1W7D	C	MH1	3	1	5.317	0.186	24	0.0078	Interlaminar Shear
A0NqC1W8D	C	MH1	3	1	5.234	0.186	24	0.0077	Interlaminar Shear
A0NqC1W9D	C	MH1	3	1	5.142	0.186	24	0.0078	Interlaminar Shear
A0NqC2W7D	C	MH2	3	2	5.284	0.188	24	0.0078	Interlaminar Shear
A0NqC2W8D	C	MH2	3	2	5.160	0.188	24	0.0078	Interlaminar Shear
A0NqC2W9D	C	MH2	3	2	5.206	0.189	24	0.0079	Interlaminar Shear

Average	**5.261**	**Average**	**0.0078**
Standard Dev.	**0.064**	**Standard Dev.**	
Coeff. of Var. [%]	**1.223**	**Coeff. of Var. [%]**	
Min.	**5.142**	**Min.**	**0.0077**
Max.	**5.356**	**Max.**	**0.0080**
Number of Spec.	**18**	**Number of Spec.**	**18**

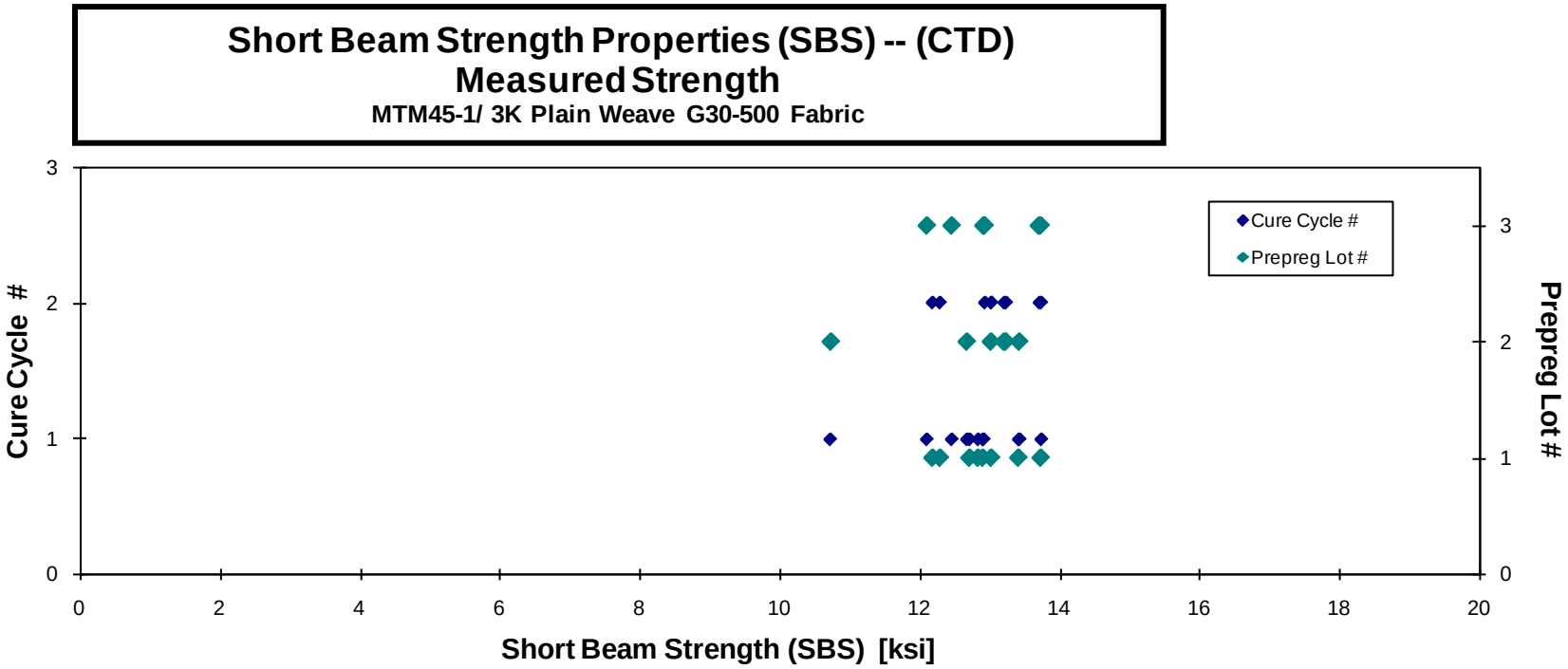

Laminate Short Beam Strength Properties (LSBS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Short BeamStrength (LSBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16
18

4.13 Lamina Short Beam Strength Properties

Short Beam Strength Properties (SBS) -- (CTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NQA1U5B	A	MH1	1	1	12.904	0.108	14	0.0077	Interlaminar shear
A0NQA1U6B	A	MH1	1	1	13.415	0.110	14	0.0078	Interlaminar shear
A0NQA1U7B	A	MH1	1	1	12.715	0.109	14	0.0078	Interlaminar shear
A0NQA1U8B	A	MH1	1	1	13.736	0.110	14	0.0079	Interlaminar shear
A0NQA1U9B	A	MH1	1	1	12.836	0.109	14	0.0078	Interlaminar shear
A0NQA2U6B	A	MH2	1	2	13.024	0.109	14	0.0078	Interlaminar shear
A0NQA2U7B	A	MH2	1	2	12.185	0.109	14	0.0078	Interlaminar shear
A0NQA2U8B	A	MH2	1	2	12.291	0.109	14	0.0078	Interlaminar shear
A0NQB2U1B	B	MH2	2	2	13.208	0.106	14	0.0076	Interlaminar shear
A0NQB2U4B	B	MH2	2	2	13.235	0.113	14	0.0081	Interlaminar shear
A0NQB2U5B	B	MH2	2	2	13.022	0.112	14	0.0080	Interlaminar shear
A0NQB1U5B	B	MH1	2	1	10.727	0.109	14	0.0078	Interlaminar shear
A0NQB1U6B	B	MH1	2	1	12.676	0.105	14	0.0075	Interlaminar shear
A0NQB1U9B	B	MH1	2	1	13.427	0.106	14	0.0076	interlaminar shear
A0NQC1U5B	C	MH1	3	1	12.459	0.108	14	0.0077	interlaminar shear
A0NQC1U7B	C	MH1	3	1	12.104	0.109	14	0.0078	interlaminar shear
A0NQC1U8B	C	MH1	3	1	12.915	0.106	14	0.0076	interlaminar shear
A0NQC2U6B	C	MH2	3	2	13.710	0.112	14	0.0080	interlaminar shear
A0NQC2U7B	C	MH2	3	2	13.735	0.112	14	0.0080	interlaminar shear
A0NQC2U8B	C	MH2	3	2	12.932	0.112	14	0.0080	Interlaminar shear

Average	**12.863**	**Average**	**0.0078**
Standard Dev.	**0.701**	**Standard Dev.**	
Coeff. of Var. [%]	**5.447**	**Coeff. of Var. [%]**	
Min.	**10.727**	**Min.**	**0.0075**
Max.	**13.736**	**Max.**	**0.0081**
Number of Spec.	**20**	**Number of Spec.**	**20**

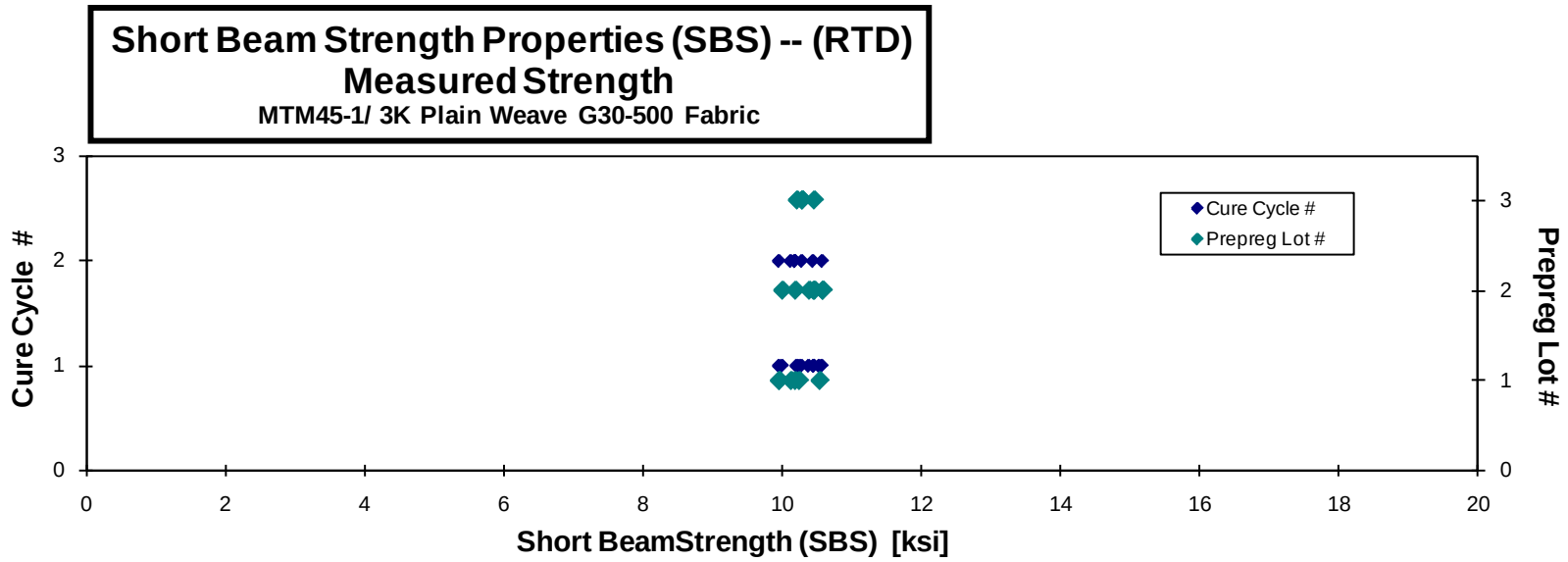

Short Beam Strength Properties (SBS) -- (CTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short Beam Strength (SBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20

Short Beam Strength Properties (SBS) -- (RTD) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NQA1U2A	A	MH1	1	1	10.538	0.106	14	0.0075	Interlaminar shear
A0NQA1U3A	A	MH1	1	1	10.244	0.108	14	0.0077	Interlaminar shear
A0NQA1U4A	A	MH1	1	1	9.957	0.107	14	0.0077	Interlaminar shear
A0NQA2U1A	A	MH2	1	2	9.957	0.108	14	0.0077	Interlaminar shear
A0NQA2U4A	A	MH2	1	2	10.186	0.107	14	0.0077	Interlaminar shear
A0NQA2U5A	A	MH2	1	2	10.127	0.108	14	0.0077	Interlaminar shear
A0NQB2U7A	B	MH2	2	2	10.583	0.111	14	0.0079	Interlaminar shear
A0NQB2U8A	B	MH2	2	2	10.189	0.110	14	0.0079	Interlaminar shear
A0NQB2U9A	B	MH2	2	2	10.450	0.113	14	0.0081	Interlaminar shear
A0NQB1U1A	B	MH1	2	1	10.465	0.107	14	0.0076	Interlaminar shear
A0NQB1U2A	B	MH1	2	1	10.579	0.108	14	0.0077	Interlaminar shear
A0NQB1U3A	B	MH1	2	1	10.387	0.108	14	0.0077	Interlaminar shear
A0NQB1U4A	B	MH1	2	1	10.003	0.111	14	0.0079	interlaminar shear
A0NQC1U1A	C	MH1	3	1	10.457	0.111	14	0.0079	interlaminar shear
A0NQC1U2A	C	MH1	3	1	10.211	0.110	14	0.0079	interlaminar shear
A0NQC1U3A	C	MH1	3	1	10.285	0.111	14	0.0079	interlaminar shear
A0NQC2U1A	C	MH2	3	2	10.288	0.112	14	0.0080	interlaminar shear
A0NQC2U2A	C	MH2	3	2	10.336	0.110	14	0.0079	interlaminar shear
A0NQC2U3A	C	MH2	3	2	10.431	0.110	14	0.0078	interlaminar shear
A0NQC2U4A	C	MH2	3	2	10.188	0.109	14	0.0078	interlaminar shear

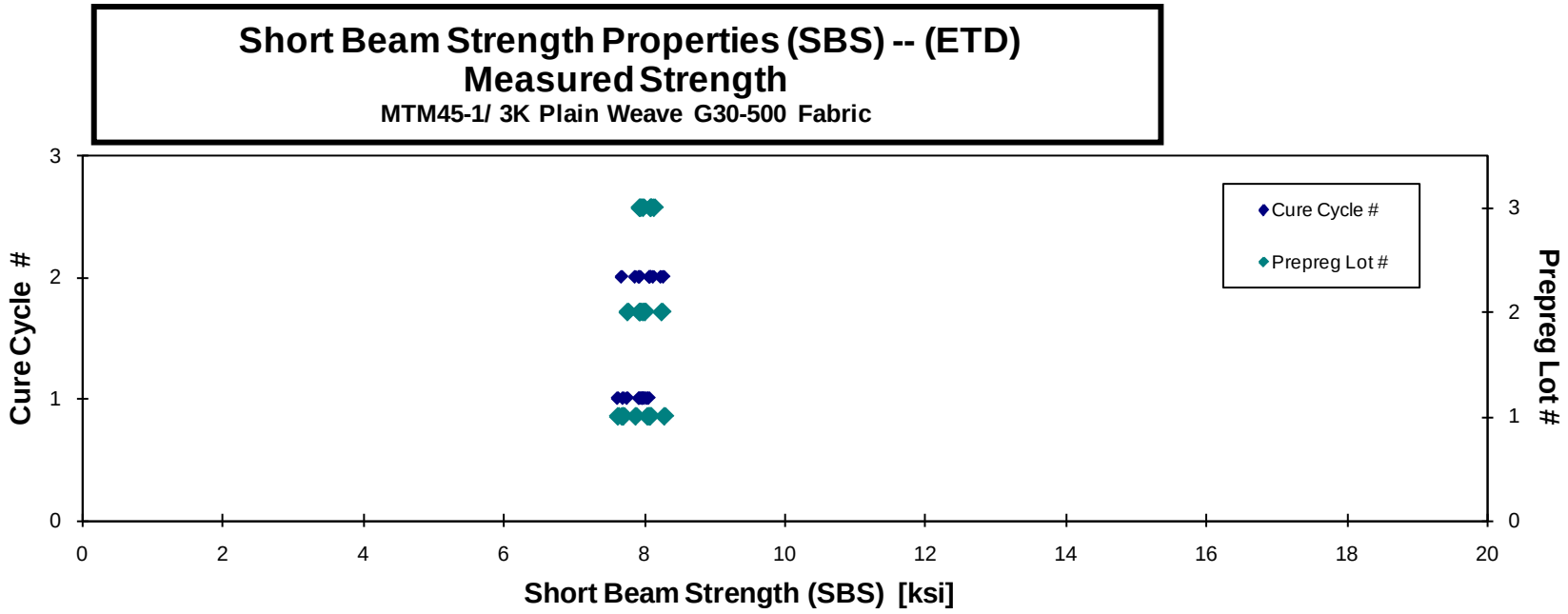
Average	**10.293**	**Average**	**0.0078**
Standard Dev.	**0.194**	**Standard Dev.**	
Coeff. of Var. [%]	**1.888**	**Coeff. of Var. [%]**	
Min.	**9.957**	**Min.**	**0.0075**
Max.	**10.583**	**Max.**	**0.0081**
Number of Spec.	**20**	**Number of Spec.**	**20**


Short Beam Strength Properties (SBS) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Short BeamStrength (SBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20

Short Beam Strength Properties (SBS) -- (ETD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NQA1UBC	A	MH1	1	1	8.044	0.111	14	0.0079	interlaminar shear/ compression
A0NQA1UCC	A	MH1	1	1	7.704	0.109	14	0.0078	interlaminar shear
A0NQA1UDC	A	MH1	1	1	7.627	0.110	14	0.0079	interlaminar shear/ compression
A0NQA1UEC	A	MH1	1	1	8.071	0.110	14	0.0079	interlaminar shear/ compression
A0NQA2UAC	A	MH2	1	2	7.683	0.109	14	0.0078	interlaminar shear/ compression
A0NQA2UBC	A	MH2	1	2	8.281	0.108	14	0.0077	interlaminar shear
A0NQA2UCC	A	MH2	1	2	7.876	0.111	14	0.0079	interlaminar shear
A0NQA2UDC	A	MH2	1	2	8.082	0.110	14	0.0078	interlaminar shear
A0NQB2UAC	B	MH2	2	2	7.930	0.111	14	0.0079	interlaminar shear
A0NQB2UBC	B	MH2	2	2	8.243	0.113	14	0.0080	interlaminar shear
A0NQB2UEC	B	MH2	2	2	7.944	0.112	14	0.0080	interlaminar shear
A0NQB1UAC	B	MH1	2	1	7.980	0.110	14	0.0079	interlaminar shear
A0NQB1UCC	B	MH1	2	1	7.762	0.110	14	0.0079	interlaminar shear
A0NQB1UDC	B	MH1	2	1	8.007	0.110	14	0.0079	interlaminar shear
A0NQC1UAC	C	MH1	3	1	7.932	0.108	14	0.0077	interlaminar shear
A0NQC1UBC	C	MH1	3	1	7.981	0.111	14	0.0080	interlaminar shear
A0NQC1UCC	C	MH1	3	1	7.948	0.108	14	0.0077	interlaminar shear
A0NQC2U9C	C	MH2	3	2	8.134	0.110	14	0.0078	interlaminar shear
A0NQC2UAC	C	MH2	3	2	8.086	0.112	14	0.0080	interlaminar shear
A0NQC2UCC	C	MH2	3	2	8.091	0.111	14	0.0079	interlaminar shear

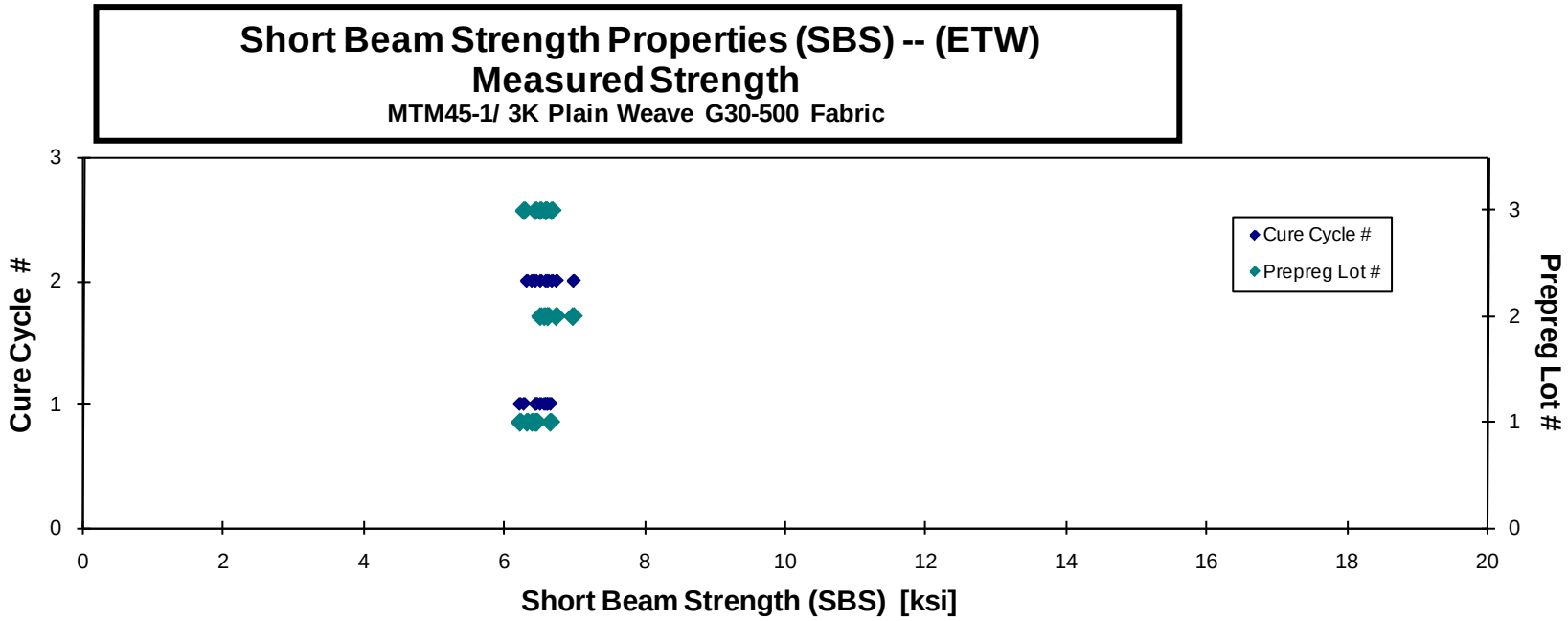
Average	**7.970**	**Average**	**0.0079**
Standard Dev.	**0.175**	**Standard Dev.**	
Coeff. of Var. [%]	**2.199**	**Coeff. of Var. [%]**	
Min.	**7.627**	**Min.**	**0.0077**
Max.	**8.281**	**Max.**	**0.0080**
Number of Spec.	**20**	**Number of Spec.**	**20**


Short Beam Strength Properties (SBS) -- (ETD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short Beam Strength (SBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20

Short Beam Strength Properties (SBS) -- (ETW)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NQA1ULN	A	MH1	1	1	6.456	0.110	14	0.0078	interlaminar shear
A0NQA1UMN	A	MH1	1	1	6.652	0.110	14	0.0078	interlaminar shear
A0NQA1UON	A	MH1	1	1	6.219	0.110	14	0.0079	interlaminar shear
A0NQA2UKN	A	MH2	1	2	6.392	0.110	14	0.0078	interlaminar shear
A0NQA2ULN	A	MH2	1	2	6.443	0.109	14	0.0078	interlaminar shear
A0NQA2UMN	A	MH2	1	2	6.320	0.110	14	0.0079	interlaminar shear
A0NQB2UFN	B	MH2	2	2	6.973	0.113	14	0.0081	interlaminar shear
A0NQB2UGN	B	MH2	2	2	6.734	0.113	14	0.0081	interlaminar shear
A0NQB2UHN	B	MH2	2	2	6.616	0.113	14	0.0080	interlaminar shear
A0NQB1ULN	B	MH1	2	1	6.566	0.108	14	0.0077	interlaminar shear
A0NQB1UMN	B	MH1	2	1	6.615	0.107	14	0.0076	interlaminar shear
A0NQB1UNN	B	MH1	2	1	6.508	0.108	14	0.0077	interlaminar shear
A0NQC1UNN	C	MH1	3	1	6.441	0.108	14	0.0077	interlaminar shear
A0NQC1UPN	C	MH1	3	1	6.279	0.108	14	0.0077	interlaminar shear
A0NQC1UQN	C	MH1	3	1	6.592	0.107	14	0.0077	interlaminar shear
A0NQC2URN	C	MH2	3	2	6.586	0.110	14	0.0079	interlaminar shear
A0NQC2USN	C	MH2	3	2	6.511	0.111	14	0.0079	interlaminar shear
A0NQC2UTN	C	MH2	3	2	6.672	0.112	14	0.0080	interlaminar shear

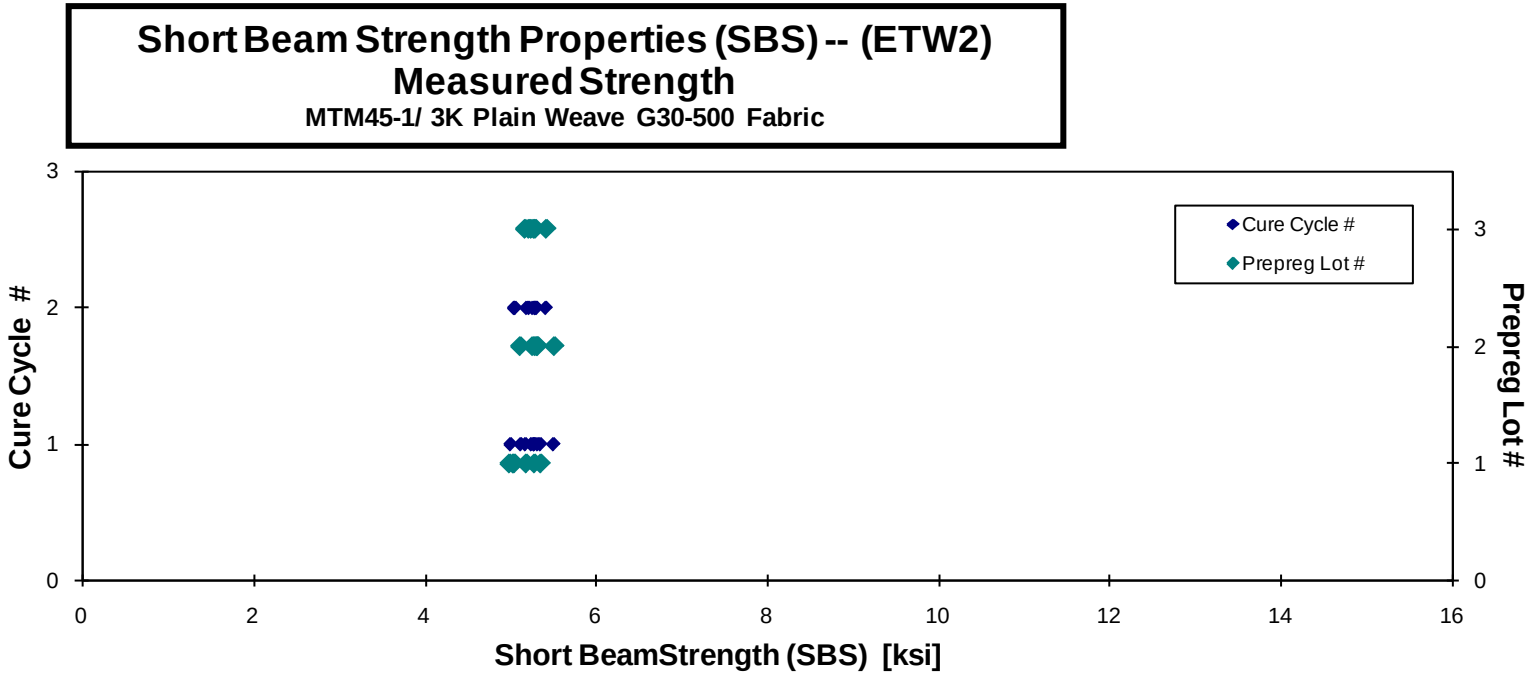
Average	**6.532**	**Average**	**0.0078**
Standard Dev.	**0.178**	**Standard Dev.**	
Coeff. of Var. [%]	**2.729**	**Coeff. of Var. [%]**	
Min.	**6.219**	**Min.**	**0.0076**
Max.	**6.973**	**Max.**	**0.0081**
Number of Spec.	**18**	**Number of Spec.**	**18**


Short Beam Strength Properties (SBS) -- (ETW)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short Beam Strength (SBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20

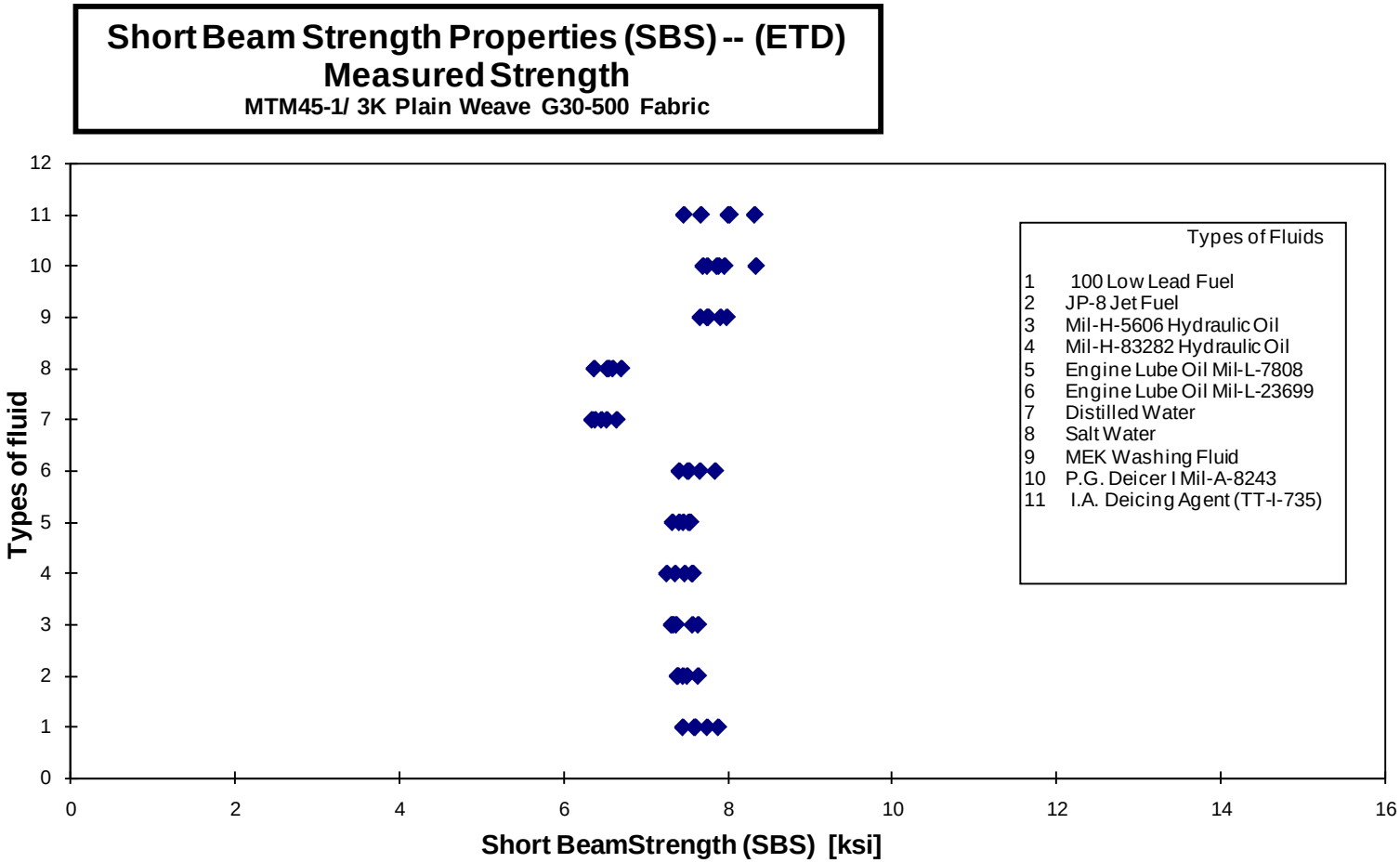
Short Beam Strength Properties (SBS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Failure Mode
A0NQA1UFD	A	MH1	1	1	5.353	0.110	14	0.0079	Interlaminar shear
A0NQA1UHD	A	MH1	1	1	5.282	0.110	14	0.0078	Interlaminar shear
A0NQA1UID	A	MH1	1	1	4.995	0.110	14	0.0079	Interlaminar shear
A0NQA2UED	A	MH2	1	2	5.052	0.109	14	0.0078	Interlaminar shear
A0NQA2UID	A	MH2	1	2	5.038	0.109	14	0.0078	Interlaminar shear
A0NQA2UJD	A	MH2	1	2	5.188	0.110	14	0.0079	Interlaminar shear
A0NQB2UND	B	MH2	2	2	5.287	0.112	14	0.0080	Interlaminar shear
A0NQB2UOD	B	MH2	2	2	5.261	0.111	14	0.0079	Interlaminar shear
A0NQB2UQD	B	MH2	2	2	5.309	0.111	14	0.0079	Interlaminar shear
A0NQB1UGD	B	MH1	2	1	5.319	0.108	14	0.0077	Interlaminar shear
A0NQB1UHD	B	MH1	2	1	5.118	0.110	14	0.0079	Interlaminar shear
A0NQB1UID	B	MH1	2	1	5.510	0.108	14	0.0077	Interlaminar shear
A0NQC1UHD	C	MH1	3	1	5.174	0.109	14	0.0078	Interlaminar shear
A0NQC1UID	C	MH1	3	1	5.245	0.110	14	0.0078	Interlaminar shear
A0NQC1UJD	C	MH1	3	1	5.276	0.111	14	0.0079	Interlaminar shear
A0NQC2UID	C	MH2	3	2	5.418	0.111	14	0.0080	Interlaminar shear
A0NQC2UJD	C	MH2	3	2	5.217	0.111	14	0.0079	Interlaminar shear
A0NQC2UKD	C	MH2	3	2	5.294	0.110	14	0.0079	Interlaminar shear

Average	**5.241**	**Average**	**0.0079**
Standard Dev.	**0.132**	**Standard Dev.**	
Coeff. of Var. [%]	**2.515**	**Coeff. of Var. [%]**	
Min.	**4.995**	**Min.**	**0.0077**
Max.	**5.510**	**Max.**	**0.0080**
Number of Spec.	**18**	**Number of Spec.**	**18**


Short Beam Strength Properties (SBS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Short BeamStrength (SBS) [ksi]
0
1
2
3
0
2
4
6
8
10
12
14
16

4.14 Fluid Sensitivity Summary (Short Beam Strength)



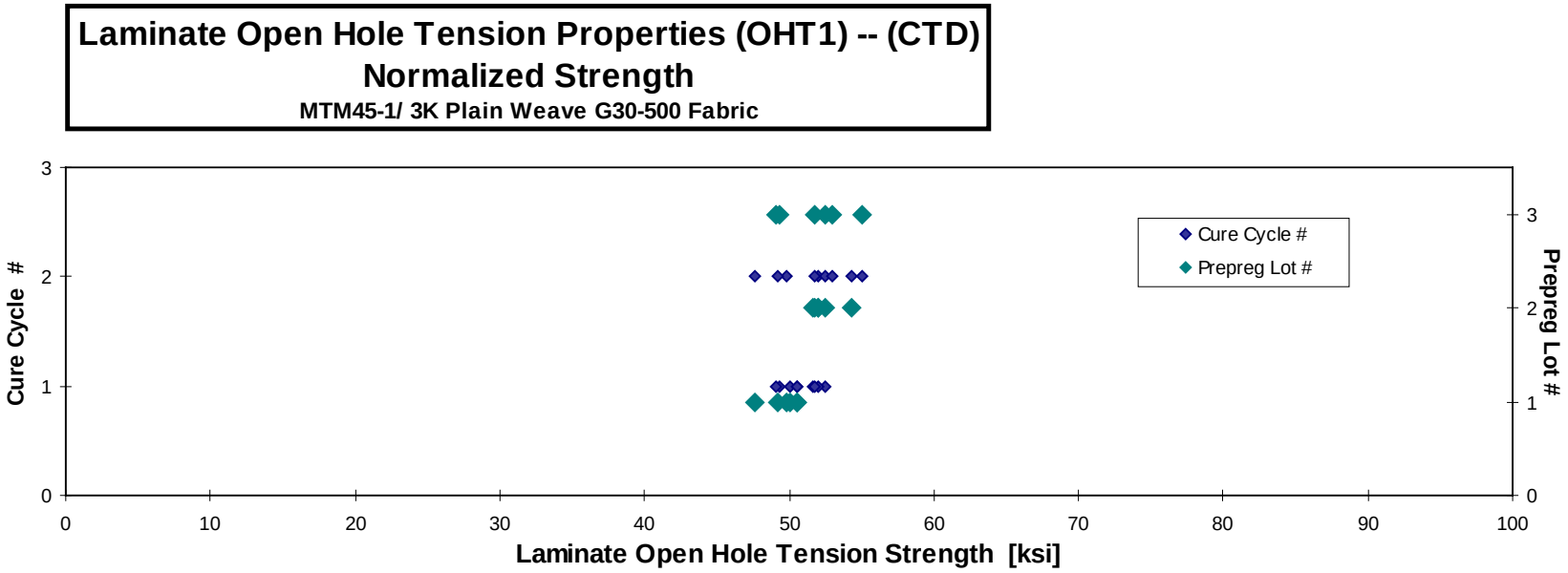
4.15 Open Hole Tension 1 Properties

Laminate Open Hole Tension Properties (OHT1) -- (CTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NDA114B	A	MH1	1	1	48.682	0.130	16	0.0081	LGM	0.0081	50.094
A0NDA115B	A	MH1	1	1	49.197	0.130	16	0.0081	LGM	0.0081	50.507
A0NDA116B	A	MH1	1	1	49.189	0.130	16	0.0081	LGM	0.0081	50.603
A0NDA214B	A	MH2	1	2	50.046	0.126	16	0.0079	LGM	0.0079	49.769
A0NDA215B	A	MH2	1	2	48.426	0.124	16	0.0078	LGM	0.0078	47.691
A0NDA216B	A	MH2	1	2	49.843	0.125	16	0.0078	LGM	0.0078	49.186
A0NDB115B	B	MH1	2	1	50.514	0.131	16	0.0082	LGM	0.0082	52.512
A0NDB116B	B	MH1	2	1	50.669	0.130	16	0.0081	LGM	0.0081	52.038
A0NDB117B	B	MH1	2	1	50.280	0.130	16	0.0081	LGM	0.0081	51.586
A0NDB211B	B	MH2	2	2	53.647	0.128	16	0.0080	LGM	0.0080	54.291
A0NDB212B	B	MH2	2	2	51.998	0.126	16	0.0079	LGM	0.0079	51.998
A0NDB213B	B	MH2	2	2	51.549	0.127	16	0.0079	LGM	0.0079	51.801
A0NDC115B	C	MH1	3	1	51.251	0.122	16	0.0076	LGM	0.0076	49.339
A0NDC116B	C	MH1	3	1	51.127	0.121	16	0.0076	LGM	0.0076	49.124
A0NDC117B	C	MH1	3	1	53.309	0.123	16	0.0077	LGM	0.0077	51.777
A0NDC215B	C	MH2	3	2	52.997	0.131	16	0.0082	LGM	0.0082	55.038
A0NDC216B	C	MH2	3	2	50.825	0.131	16	0.0082	LGM	0.0082	52.548
A0NDC217B	C	MH2	3	2	51.019	0.131	16	0.0082	LGM	0.0082	52.936

Average	**50.809**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**51.269**
Standard Dev.	**1.509**			**$Standard\ Dev._{norm}$**		**1.897**
Coeff. of Var. [%]	**2.971**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.700**
Min.	**48.426**	**Min.**	**0.0076**	**Min.**	**0.0076**	**47.691**
Max.	**53.647**	**Max.**	**0.0082**	**Max.**	**0.0082**	**55.038**
Number of Spec.	**18**			**Number of Spec.**		**18**


Laminate Open Hole Tension Properties (OHT1) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90
100

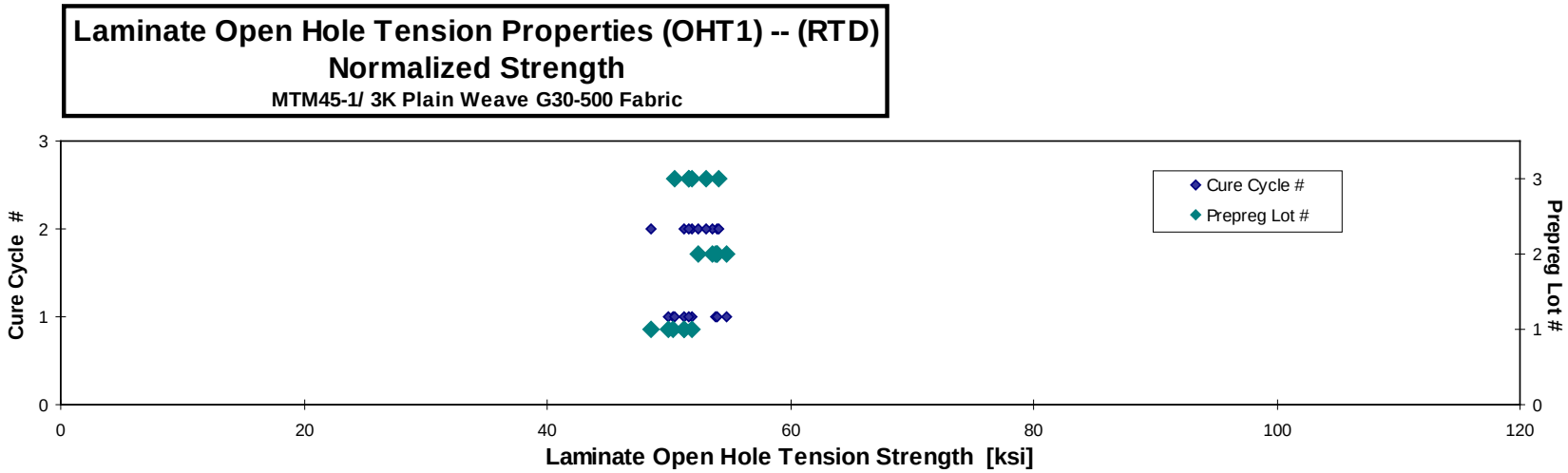
Laminate Open Hole Tension Properties (OHT1) -- (RTD) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NDA111A	A	MH1	1	1	49.259	0.129	16	0.0081	LGM	0.0081	50.402
A0NDA112A	A	MH1	1	1	48.796	0.129	16	0.0081	LGM	0.0081	49.934
A0NDA113A	A	MH1	1	1	49.905	0.130	16	0.0081	LGM	0.0081	51.248
A0NDA211A	A	MH2	1	2	52.710	0.124	16	0.0078	LGM	0.0078	51.904
A0NDA212A	A	MH2	1	2	52.073	0.124	16	0.0078	LGM	0.0078	51.242
A0NDA213A	A	MH2	1	2	49.403	0.124	16	0.0078	LGM	0.0078	48.549
A0NDB111A	B	MH1	2	1	52.570	0.130	16	0.0081	LGM	0.0081	53.873
A0NDB112A	B	MH1	2	1	54.437	0.127	16	0.0079	LGM	0.0079	54.717
A0NDB113A	B	MH1	2	1	52.013	0.131	16	0.0082	LGM	0.0082	53.933
A0NDB215A	B	MH2	2	2	53.595	0.127	16	0.0080	LGM	0.0080	54.040
A0NDB216A	B	MH2	2	2	52.024	0.127	16	0.0080	LGM	0.0080	52.422
A0NDB217A	B	MH2	2	2	52.916	0.128	16	0.0080	LGM	0.0080	53.641
A0NDC111A	C	MH1	3	1	54.974	0.119	16	0.0075	LGM	0.0075	51.908
A0NDC112A	C	MH1	3	1	53.537	0.122	16	0.0076	LGM	0.0076	51.667
A0NDC113A	C	MH1	3	1	53.097	0.120	16	0.0075	LGM	0.0075	50.541
A0NDC211A	C	MH2	3	2	50.165	0.130	16	0.0081	LGM	0.0081	51.700
A0NDC212A	C	MH2	3	2	52.471	0.130	16	0.0082	LGM	0.0082	54.139
A0NDC214A	C	MH2	3	2	51.176	0.131	16	0.0082	LGM	0.0082	53.092

Average	**51.951**	**Average**	**0.0079**	**$Average_{norm}$**	**52.164**
Standard Dev.	**1.810**			**$Standard\ Dev._{norm}$**	**1.701**
Coeff. of Var. [%]	**3.485**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**	**3.260**
Min.	**48.796**	**Min.**	**0.0075**	**Min.**	**48.549**
Max.	**54.974**	**Max.**	**0.0082**	**Max.**	**54.717**
Number of Spec.	**18**			**Number of Spec.**	**18**

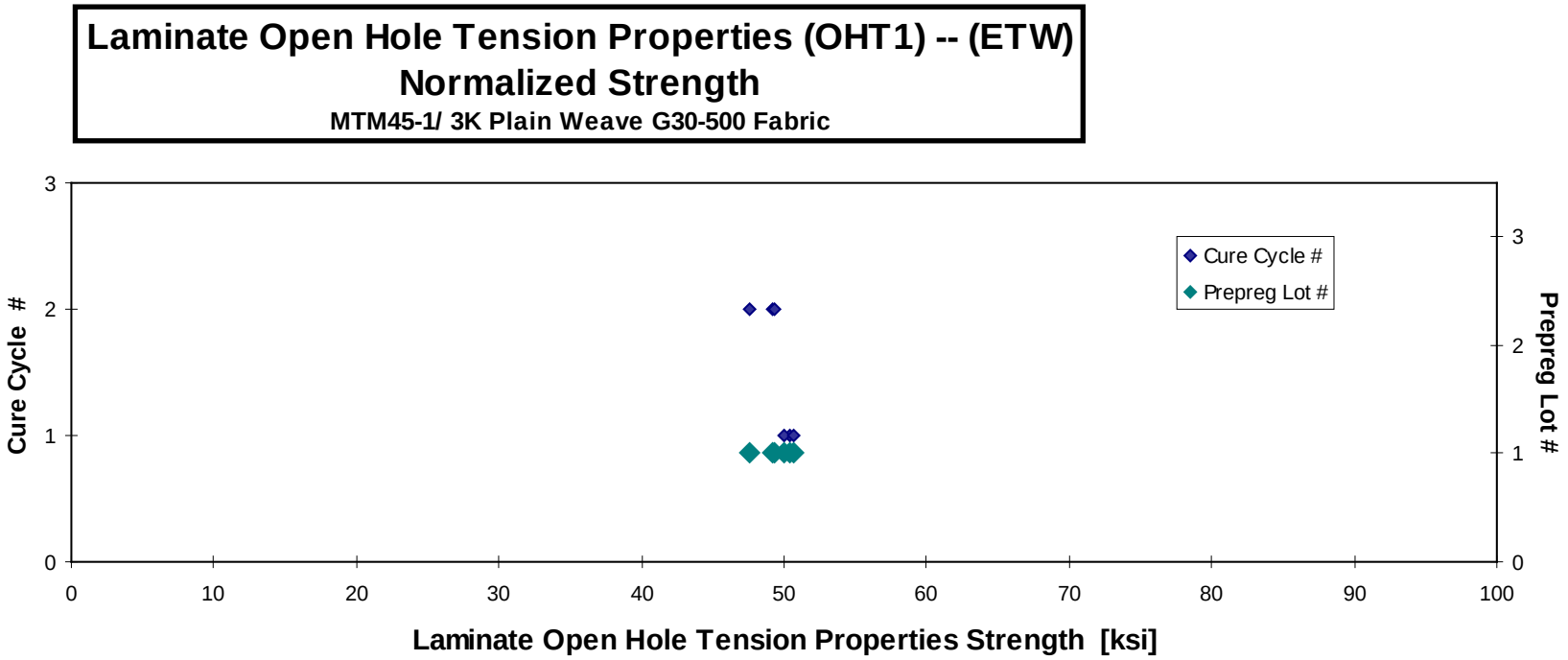

Laminate Open Hole Tension Properties (OHT1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
20
40
60
80
100
120

Laminate Open Hole Tension Properties (OHT1) -- (ETW)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_p [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NDA11AN	A	MH1	1	1	48.756	0.131	16	0.0082	LGM / AGM	0.0082	50.344
A0NDA11BN	A	MH1	1	1	48.141	0.131	16	0.0082	LGM / AGM	0.0082	50.001
A0NDA11CN	A	MH1	1	1	48.684	0.132	16	0.0082	LGM / AGM	0.0082	50.674
A0NDA21AN	A	MH2	1	2	49.298	0.126	16	0.0079	LGM / AGM	0.0079	49.129
A0NDA21BN	A	MH2	1	2	47.915	0.126	16	0.0078	LGM / AGM	0.0078	47.593
A0NDA21CN	A	MH2	1	2	49.616	0.126	16	0.0079	LGM / AGM	0.0079	49.355

Average	**48.735**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**49.516**
Standard Dev.	**0.651**			**$Standard\ Dev._{norm}$**		**1.108**
Coeff. of Var. [%]	**1.336**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.237**
Min.	**47.915**	**Min.**	**0.0078**	**Min.**	**0.0078**	**47.593**
Max.	**49.616**	**Max.**	**0.0082**	**Max.**	**0.0082**	**50.674**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Open Hole Tension Properties (OHT1) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Properties Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90
100

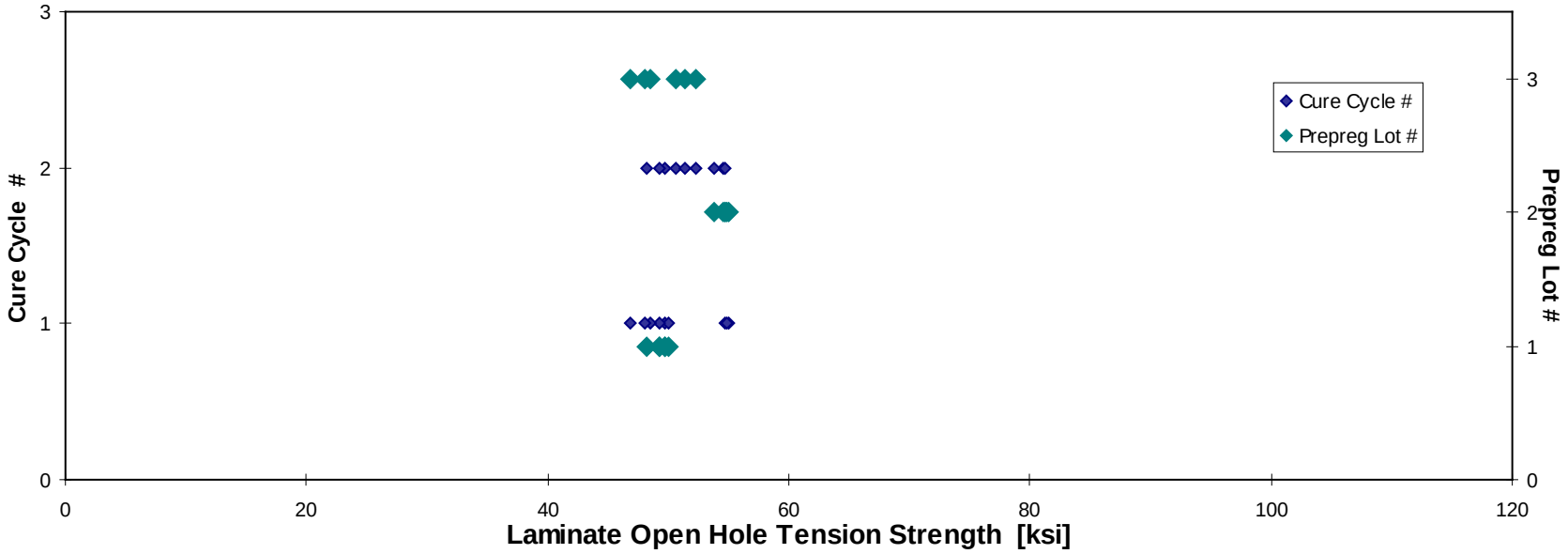
Laminate Open Hole Tension Properties (OHT1) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NDA117D	A	MH1	1	1	48.313	0.130	16	0.0081	AGM	0.0081	49.785
A0NDA118D	A	MH1	1	1	48.526	0.130	16	0.0082	AGM	0.0082	50.061
A0NDA119D	A	MH1	1	1	47.939	0.130	16	0.0081	AGM / LGM	0.0081	49.216
A0NDA217D	A	MH2	1	2	50.686	0.124	16	0.0078	LGM / AGM	0.0078	49.777
A0NDA218D	A	MH2	1	2	49.736	0.125	16	0.0078	LGM / AGM	0.0078	49.257
A0NDA219D	A	MH2	1	2	48.039	0.127	16	0.0079	LGM / AGM	0.0079	48.204
A0NDB119D	B	MH1	2	1	53.500	0.130	16	0.0081	LGM / AGM	0.0081	54.947
A0NDB11AD	B	MH1	2	1	53.451	0.129	16	0.0081	LGM / AGM	0.0081	54.734
A0NDB11BD	B	MH1	2	1	53.811	0.129	16	0.0081	AGM	0.0081	54.918
A0NDB219D	B	MH2	2	2	53.646	0.129	16	0.0080	AGM	0.0080	54.580
A0NDB21AD	B	MH2	2	2	53.970	0.128	16	0.0080	AGM	0.0080	54.760
A0NDB21BD	B	MH2	2	2	53.041	0.128	16	0.0080	AGM	0.0080	53.846
A0NDC119D	C	MH1	3	1	49.008	0.121	16	0.0076	LGM / AGM	0.0076	46.921
A0NDC11AD	C	MH1	3	1	50.803	0.121	16	0.0076	AGM	0.0076	48.559
A0NDC11BD	C	MH1	3	1	49.870	0.122	16	0.0076	LGM / AGM	0.0076	47.996
A0NDC219D	C	MH2	3	2	48.955	0.131	16	0.0082	LGM / AGM	0.0082	50.665
A0NDC21AD	C	MH2	3	2	50.637	0.131	16	0.0082	LGM / AGM	0.0082	52.280
A0NDC21BD	C	MH2	3	2	49.412	0.131	16	0.0082	LGM / AGM	0.0082	51.353

Average	**50.741**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**51.214**
Standard Dev.	**2.226**			**$Standard\ Dev._{norm}$**		**2.770**
Coeff. of Var. [%]	**4.387**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.410**
Min.	**47.939**	**Min.**	**0.0076**	**Min.**	**0.0076**	**46.921**
Max.	**53.970**	**Max.**	**0.0082**	**Max.**	**0.0082**	**54.947**
Number of Spec.	**18**			**Number of Spec.**		**18**

Laminate Open Hole Tension Properties (OHT1) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric



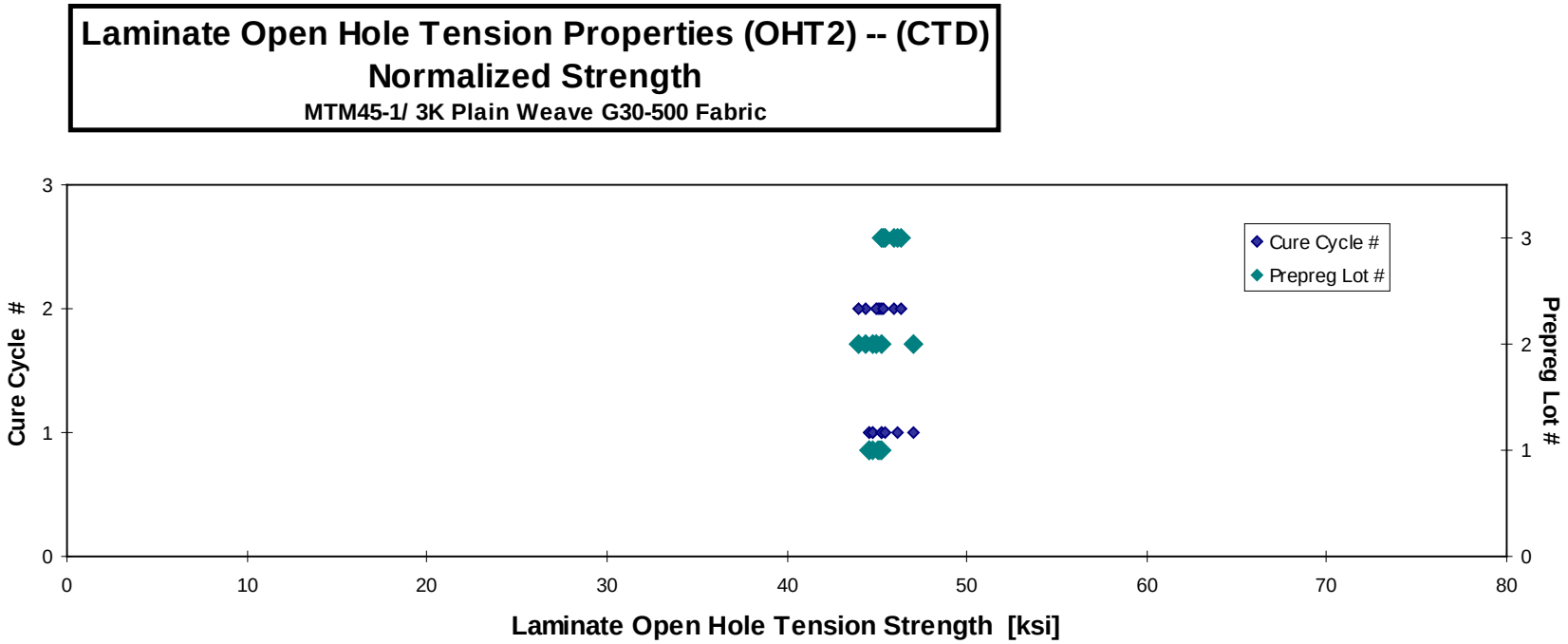
4.16 Open Hole Tension 2 Properties

Laminate Open Hole Tension Properties (OHT2) -- (CTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NEA115B	A	MH1	1	1	43.424	0.162	20	0.0081	AGM	0.0081	44.570
A0NEA116B	A	MH1	1	1	43.446	0.162	20	0.0081	AGM	0.0081	44.578
A0NEA117B	A	MH1	1	1	43.450	0.163	20	0.0081	AGM	0.0081	44.765
A0NEA211B	A	MH2	1	2	44.170	0.162	20	0.0081	AGM	0.0081	45.232
A0NEA212B	A	MH2	1	2	44.177	0.161	20	0.0081	AGM	0.0081	45.118
A0NEA213B	A	MH2	1	2	44.288	0.161	20	0.0080	AGM	0.0080	45.054
A0NEB111B	B	MH1	2	1	44.723	0.158	20	0.0079	AGM	0.0079	44.766
A0NEB112B	B	MH1	2	1	44.153	0.162	20	0.0081	AGM	0.0081	45.247
A0NEB113B	B	MH1	2	1	45.983	0.161	20	0.0081	AGM	0.0081	46.987
A0NEB211B	B	MH2	2	2	45.066	0.158	20	0.0079	AGM	0.0079	44.971
A0NEB212B	B	MH2	2	2	43.785	0.160	20	0.0080	AGM	0.0080	44.413
A0NEB213B	B	MH2	2	2	43.314	0.161	20	0.0080	AGM	0.0080	44.018
A0NEC111B	C	MH1	3	1	44.228	0.162	20	0.0081	AGM	0.0081	45.264
A0NEC112B	C	MH1	3	1	44.361	0.162	20	0.0081	AGM	0.0081	45.442
A0NEC113B	C	MH1	3	1	44.491	0.164	20	0.0082	AGM	0.0082	46.195
A0NEC211B	C	MH2	3	2	44.647	0.163	20	0.0081	AGM	0.0081	45.933
A0NEC212B	C	MH2	3	2	43.555	0.165	20	0.0082	AGM	0.0082	45.356
A0NEC213B	C	MH2	3	2	44.763	0.163	20	0.0082	AGM	0.0082	46.307

Average	**44.224**	**Average**	**0.0081**	**$Average_{norm}$**	**45.234**
Standard Dev.	**0.683**			**$Standard\ Dev._{norm}$**	**0.739**
Coeff. of Var. [%]	**1.545**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**	**1.633**
Min.	**43.314**	**Min.**	**0.0079**	**Min.**	**44.018**
Max.	**45.983**	**Max.**	**0.0082**	**Max.**	**46.987**
Number of Spec.	**18**			**Number of Spec.**	**18**

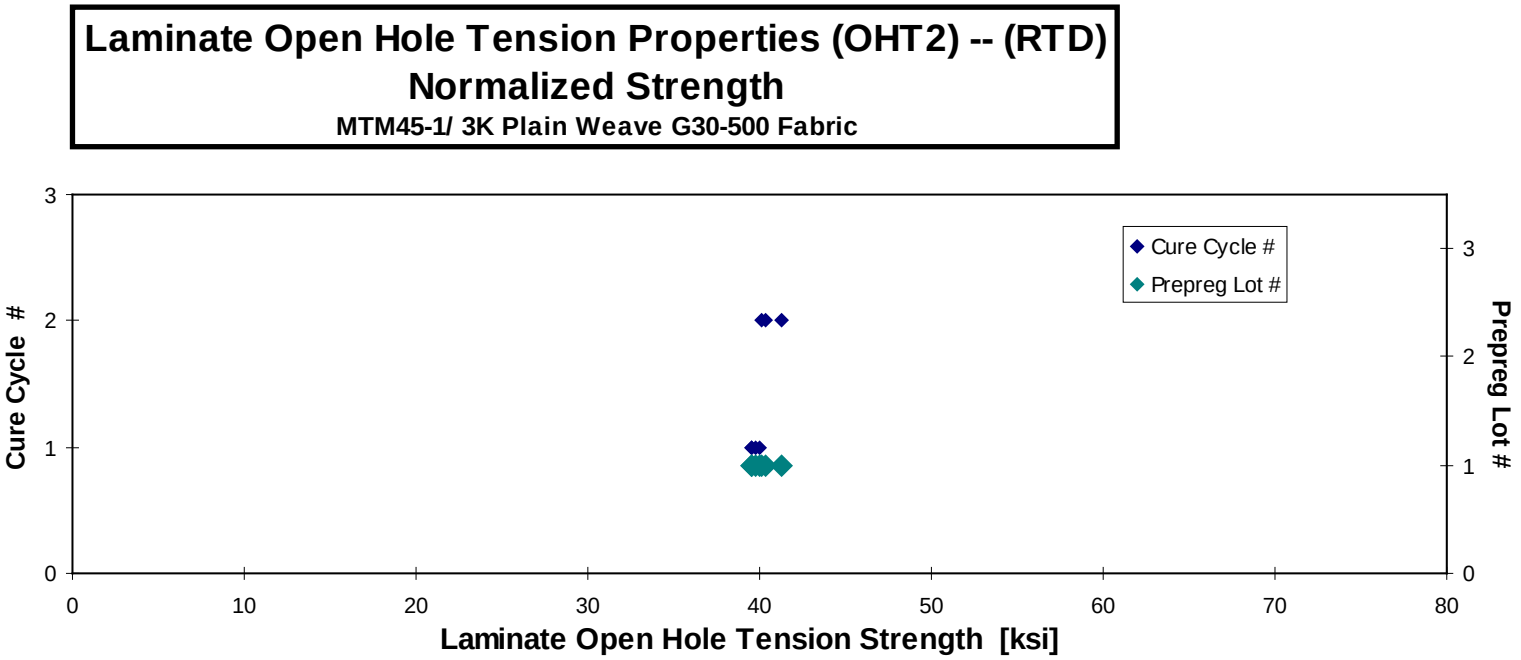

Laminate Open Hole Tension Properties (OHT2) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80

Laminate Open Hole Tension Properties (OHT2) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NEA111A	A	MH1	1	1	39.458	0.159	20	0.0080	AGM	0.0080	39.712
A0NEA112A	A	MH1	1	1	38.609	0.162	20	0.0081	AGM	0.0081	39.567
A0NEA113A	A	MH1	1	1	38.568	0.162	20	0.0081	AGM	0.0081	39.483
A0NEA114A	A	MH1	1	1	38.952	0.162	20	0.0081	AGM	0.0081	40.008
A0NEA215A	A	MH2	1	2	39.349	0.162	20	0.0081	AGM	0.0081	40.345
A0NEA216A	A	MH2	1	2	40.559	0.161	20	0.0080	AGM	0.0080	41.226
A0NEA217A	A	MH2	1	2	39.299	0.161	20	0.0081	AGM	0.0081	40.083

Average	**39.256**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**40.061**
Standard Dev.	**0.675**			**$Standard\ Dev._{norm}$**		**0.597**
Coeff. of Var. [%]	**1.719**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.491**
Min.	**38.568**	**Min.**	**0.0080**	**Min.**	**0.0080**	**39.483**
Max.	**40.559**	**Max.**	**0.0081**	**Max.**	**0.0081**	**41.226**
Number of Spec.	**7**			**Number of Spec.**		**7**

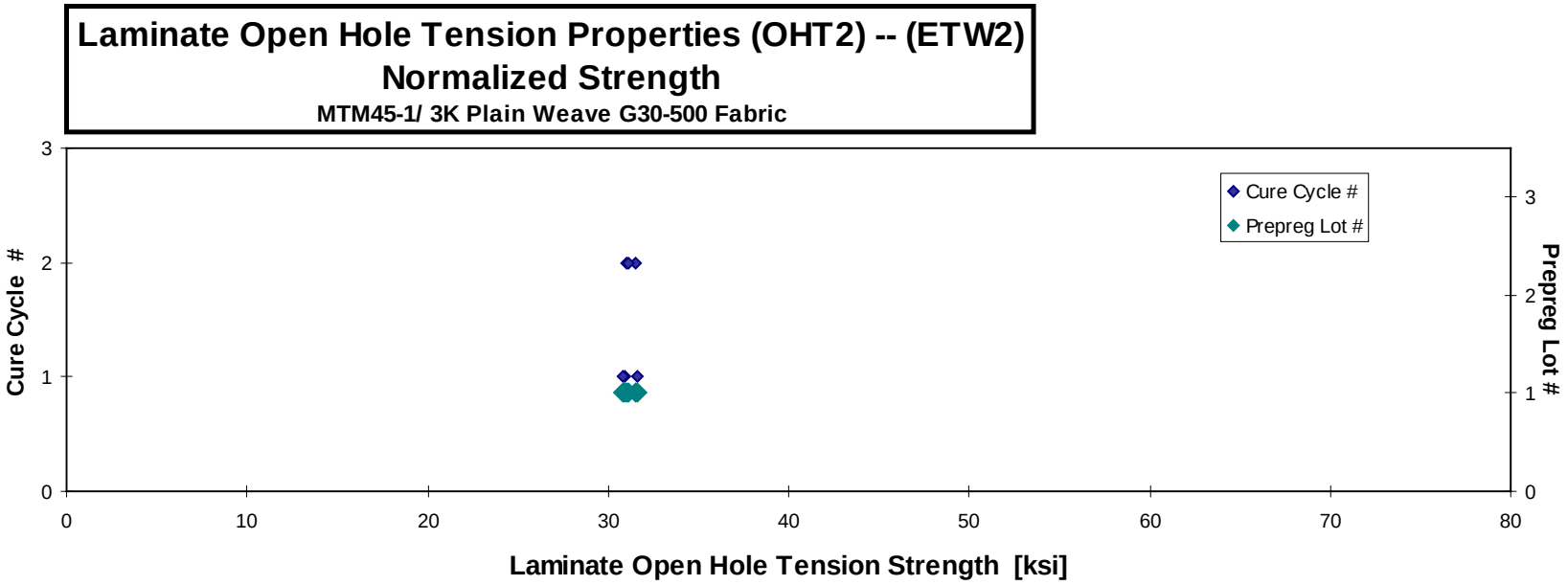

Laminate Open Hole Tension Properties (OHT2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80

Laminate Open Hole Tension Properties (OHT2) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NEA119D	A	MH1	1	1	30.622	0.163	20	0.0082	AGM	0.0082	31.620
A0NEA11AD	A	MH1	1	1	29.905	0.163	20	0.0082	AGM	0.0082	30.899
A0NEA11BD	A	MH1	1	1	29.920	0.163	20	0.0081	AGM	0.0081	30.820
A0NEA219D	A	MH2	1	2	31.346	0.159	20	0.0080	AGM	0.0080	31.564
A0NEA21AD	A	MH2	1	2	30.212	0.162	20	0.0081	AGM	0.0081	31.003
A0NEA21BD	A	MH2	1	2	30.883	0.159	20	0.0080	AGM	0.0080	31.144

Average	**30.481**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**31.175**
Standard Dev.	**0.574**			**$Standard\ Dev._{norm}$**		**0.342**
Coeff. of Var. [%]	**1.884**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.096**
Min.	**29.905**	**Min.**	**0.0080**	**Min.**	**0.0080**	**30.820**
Max.	**31.346**	**Max.**	**0.0082**	**Max.**	**0.0082**	**31.620**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Open Hole Tension Properties (OHT2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
80
Laminate Open Hole Tension Strength [ksi]

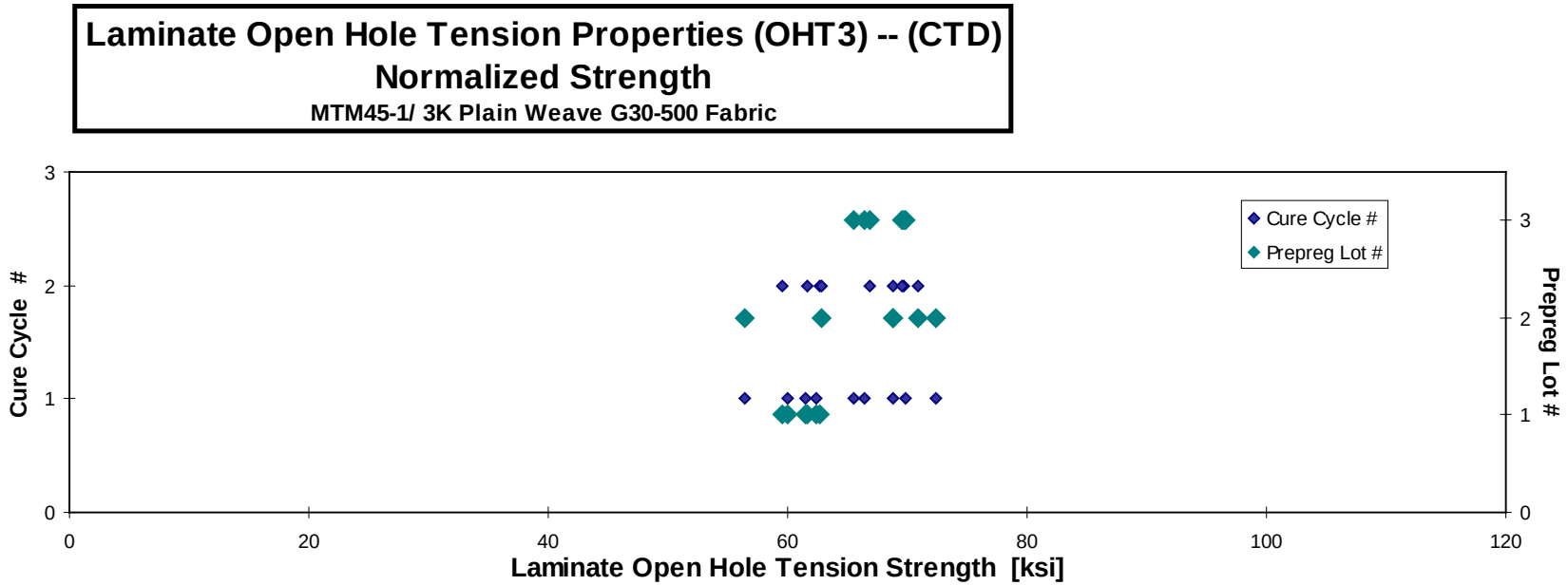
4.17 Open Hole Tension 3 Properties

Laminate Open Hole Tension Properties (OHT3) -- (CTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NFA211B	A	MH2	1	2	61.288	0.119	15	0.0079	LGM	0.0079	61.573
A0NFA212B	A	MH2	1	2	62.245	0.119	15	0.0079	LGM	0.0079	62.630
A0NFA213B	A	MH2	1	2	58.830	0.120	15	0.0080	LGM	0.0080	59.566
A0NFA119B	A	MH1	1	1	59.040	0.120	15	0.0147	LGM	0.0080	60.020
A0NFA11AB	A	MH1	1	1	61.516	0.120	15	0.0146	LGM	0.0080	62.399
A0NFA11DB	A	MH1	1	1	60.689	0.120	15	0.0145	LGM	0.0080	61.449
A0NFB211B	B	MH2	2	2	62.983	0.118	15	0.0079	LGM	0.0079	62.823
A0NFB212B	B	MH2	2	2	70.981	0.118	15	0.0079	LGM	0.0079	70.851
A0NFB213B	B	MH2	2	2	68.735	0.119	15	0.0079	LGM	0.0079	68.735
A0NFB111B	B	MH1	2	1	56.550	0.118	15	0.0079	LGM	0.0079	56.359
A0NFB112B	B	MH1	2	1	68.884	0.118	15	0.0079	LGM	0.0079	68.758
A0NFB113B	B	MH1	2	1	72.590	0.118	15	0.0079	LGM	0.0079	72.426
A0NFC111B	C	MH1	3	1	62.617	0.124	15	0.0083	LGM	0.0083	65.523
A0NFC112B	C	MH1	3	1	64.433	0.122	15	0.0081	LGM	0.0081	66.444
A0NFC113B	C	MH1	3	1	67.356	0.123	15	0.0082	LGM	0.0082	69.876
A0NFC211B	C	MH2	3	2	68.136	0.121	15	0.0081	LGM	0.0081	69.717
A0NFC212B	C	MH2	3	2	64.855	0.122	15	0.0082	LGM	0.0082	66.935
A0NFC213B	C	MH2	3	2	67.513	0.122	15	0.0081	LGM	0.0081	69.479

Average	**64.402**	**Average**	**0.0091**	**$Average_{norm}$**	**0.0080**	**65.309**
Standard Dev.	**4.504**			**$Standard\ Dev._{norm}$**		**4.591**
Coeff. of Var. [%]	**6.993**			**Coeff. of Var. [%]$_{norm}$**		**7.030**
Min.	**56.550**	**Min.**	**0.0079**	**Min.**	**0.0079**	**56.359**
Max.	**72.590**	**Max.**	**0.0147**	**Max.**	**0.0083**	**72.426**
Number of Spec.	**18**			**Number of Spec.**		**18**


Laminate Open Hole Tension Properties (OHT3) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
20
40
60
80
100
120

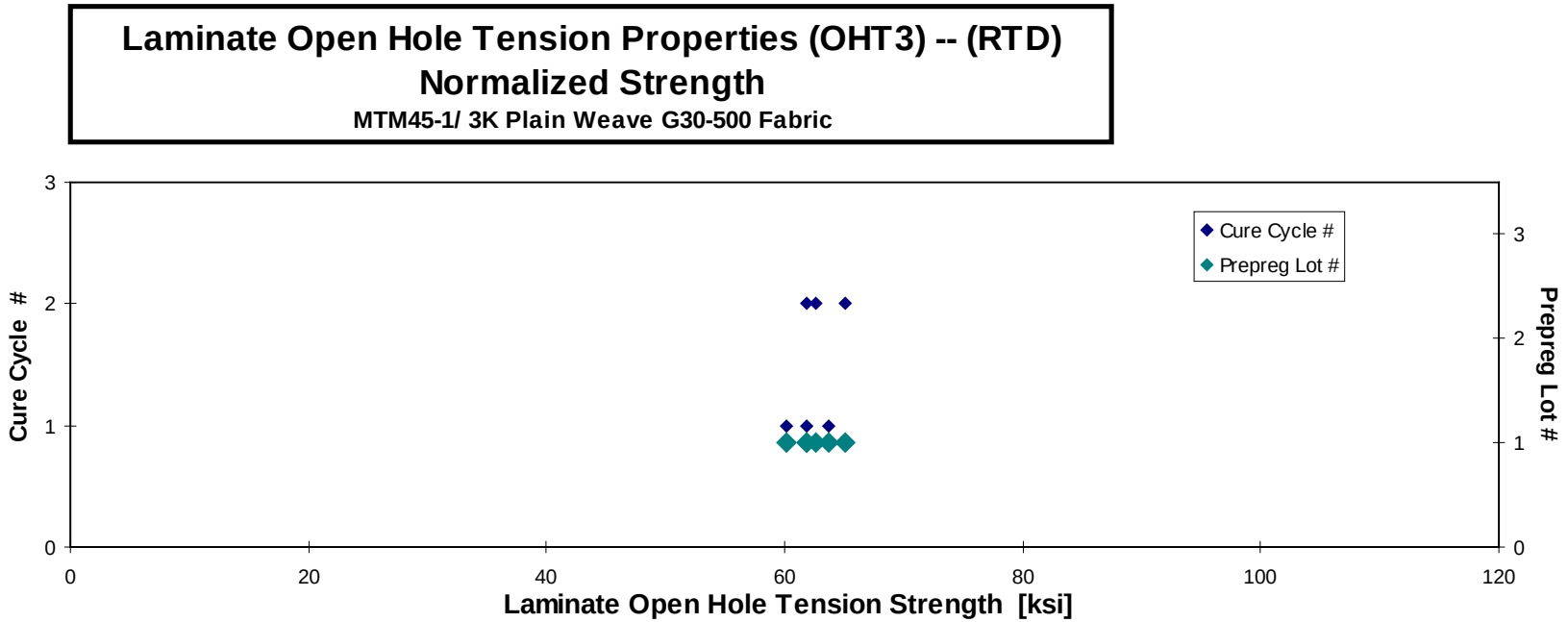
Laminate Open Hole Tension Properties (OHT3) -- (RTD) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NFA215A	A	MH2	1	2	64.682	0.119	15	0.0080	LGM	0.0080	65.110
A0NFA216A	A	MH2	1	2	62.258	0.119	15	0.0080	LGM	0.0080	62.652
A0NFA217A	A	MH2	1	2	61.615	0.119	15	0.0079	LGM	0.0079	61.927
A0NFA112A	A	MH1	1	1	62.494	0.117	15	0.0078	LGM	0.0078	61.809
A0NFA113A	A	MH1	1	1	60.160	0.118	15	0.0079	LGM	0.0079	60.143
A0NFA114A	A	MH1	1	1	63.859	0.118	15	0.0079	LGM	0.0079	63.706

Average	**62.511**	**Average**	**0.0079**	**$Average_{norm}$** **0.0079** **62.558**
Standard Dev.	**1.608**			**$Standard\ Dev._{norm}$** **1.710**
Coeff. of Var. [%]	**2.572**			**$Coeff.\ of\ Var.\ [\%]_{norm}$** **2.734**
Min.	**60.160**	**Min.**	**0.0078**	**Min.** **0.0078** **60.143**
Max.	**64.682**	**Max.**	**0.0080**	**Max.** **0.0080** **65.110**
Number of Spec.	**6**			**Number of Spec.** **6**

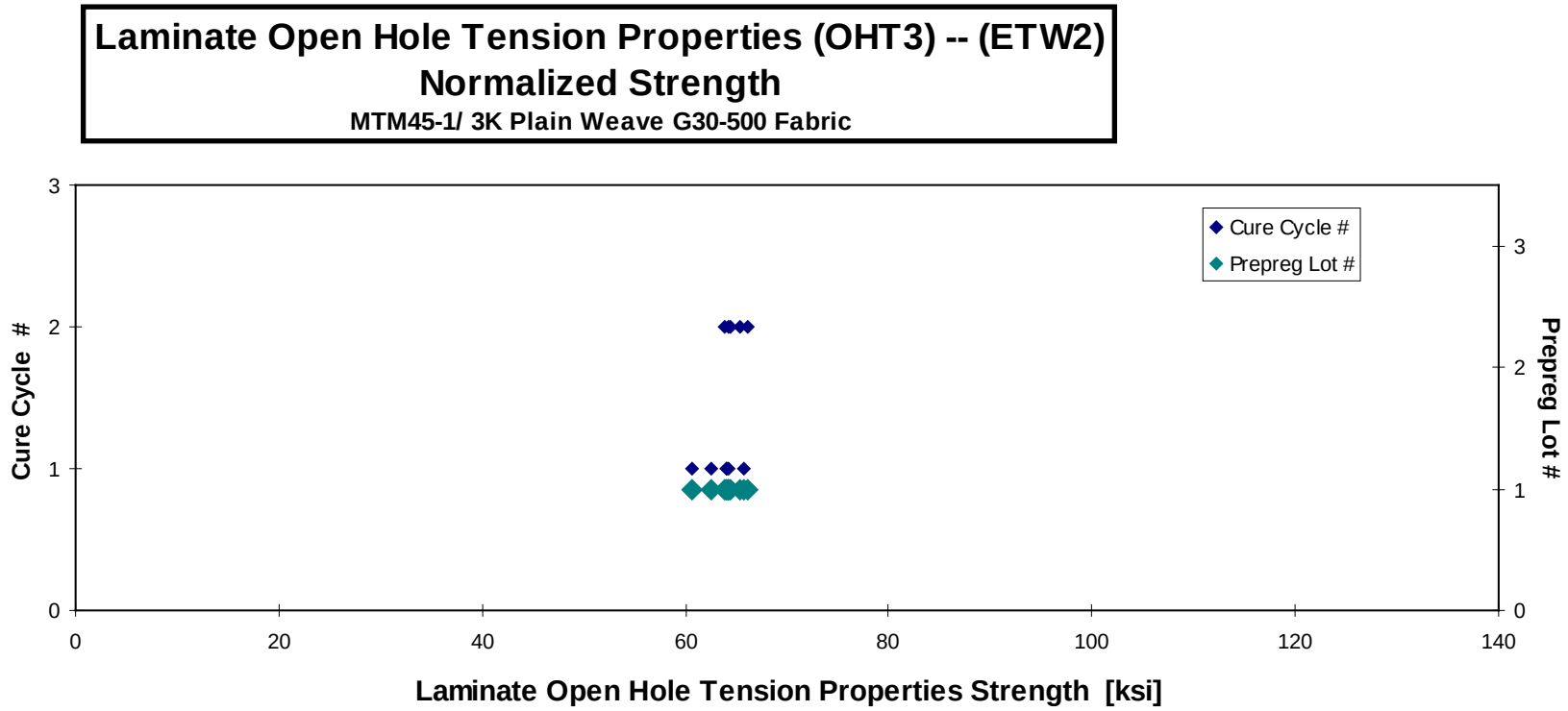

Laminate Open Hole Tension Properties (OHT3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Tension Strength [ksi]
0
1
2
3
0
20
40
60
80
100
120

Laminate Open Hole Tension Properties (OHT3) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NFA219D	A	MH2	1	2	64.682	0.120	15	0.0080	LGM	0.0080	65.446
A0NFA21AD	A	MH2	1	2	62.466	0.121	15	0.0081	LGM	0.0081	63.802
A0NFA21BD	A	MH2	1	2	66.147	0.119	15	0.0079	LGM	0.0079	66.147
A0NFA21CD	A	MH2	1	2	64.004	0.119	15	0.0079	LGM	0.0079	64.148
A0NFA21DD	A	MH2	1	2	63.801	0.120	15	0.0080	LGM	0.0080	64.384
A0NFA115D	A	MH1	1	1	64.076	0.119	15	0.0079	LGM	0.0079	64.094
A0NFA116D	A	MH1	1	1	65.506	0.119	15	0.0079	LGM	0.0079	65.838
A0NFA117D	A	MH1	1	1	62.057	0.119	15	0.0080	LGM	0.0080	62.563
A0NFA118D	A	MH1	1	1	59.954	0.120	15	0.0080	LGM	0.0080	60.662
A0NFA11BD	A	MH1	1	1	62.875	0.121	15	0.0081	LGM	0.0081	64.130
A0NFA11CD	A	MH1	1	1	63.227	0.120	15	0.0080	LGM	0.0080	64.232

Average	**63.527**	**Average**	**0.0080**	**$Average_{norm}$** **0.0080** **64.131**
Standard Dev.	**1.711**			**$Standard\ Dev._{norm}$** **1.529**
Coeff. of Var. [%]	**2.694**			**Coeff. of Var. [%]$_{norm}$** **2.384**
Min.	**59.954**	**Min.**	**0.0079**	**Min.** **0.0079** **60.662**
Max.	**66.147**	**Max.**	**0.0081**	**Max.** **0.0081** **66.147**
Number of Spec.	**11**			**Number of Spec.** **11**


Laminate Open Hole Tension Properties (OHT3) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
140
Laminate Open Hole Tension Properties Strength [ksi]

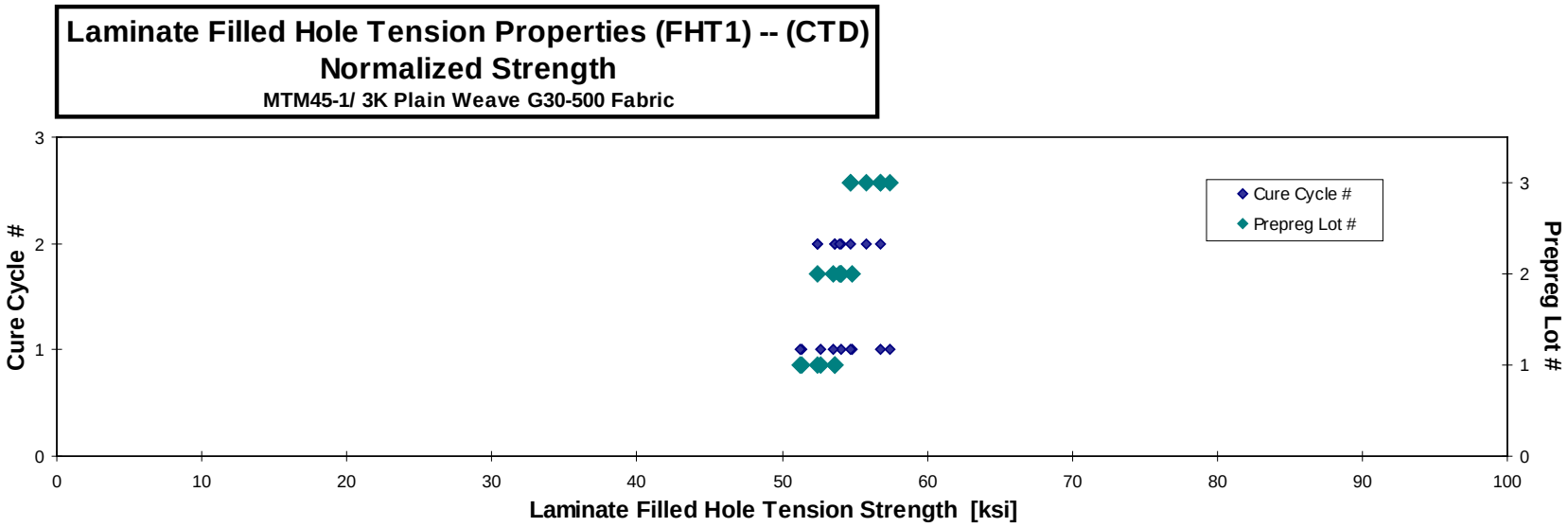
4.18 Filled Hole Tension 1 Properties

Laminate Filled Hole Tension Properties (FHT1) -- (CTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N4A111B	A	MH1	1	1	50.880	0.128	16	0.0080	LGM	0.0080	51.323
A0N4A112B	A	MH1	1	1	51.653	0.129	16	0.0081	LGM	0.0081	52.634
A0N4A113B	A	MH1	1	1	50.943	0.127	16	0.0080	LGM	0.0080	51.265
A0N4A211B	A	MH2	1	2	53.152	0.128	16	0.0080	LGM	0.0080	53.614
A0N4A212B	A	MH2	1	2	51.863	0.128	16	0.0080	LGM	0.0080	52.431
A0N4A213B	A	MH2	1	2	52.570	0.129	16	0.0081	LGM	0.0081	53.679
A0N4B111B	B	MH1	2	1	54.533	0.127	16	0.0080	LGM	0.0080	54.885
A0N4B112B	B	MH1	2	1	53.065	0.129	16	0.0080	LGM	0.0080	54.065
A0N4B113B	B	MH1	2	1	52.175	0.130	16	0.0081	LGM	0.0081	53.544
A0N4B211B	B	MH2	2	2	54.002	0.127	16	0.0079	LGM	0.0079	54.102
A0N4B212B	B	MH2	2	2	53.518	0.127	16	0.0080	LGM	0.0080	53.928
A0N4B213B	B	MH2	2	2	51.192	0.130	16	0.0081	LGM	0.0081	52.474
A0N4C111B	C	MH1	3	1	55.658	0.129	16	0.0081	LGM	0.0081	56.810
A0N4C112B	C	MH1	3	1	55.658	0.130	16	0.0082	LGM	0.0082	57.420
A0N4C113B	C	MH1	3	1	52.808	0.131	16	0.0082	LGM	0.0082	54.771
A0N4C211B	C	MH2	3	2	53.402	0.130	16	0.0081	LGM	0.0081	54.712
A0N4C212B	C	MH2	3	2	54.221	0.130	16	0.0081	LGM	0.0081	55.822
A0N4C213B	C	MH2	3	2	54.360	0.132	16	0.0082	LGM	0.0082	56.761

	Strength [ksi]	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
Average	53.092	0.0081	54.124
Standard Dev.	1.478		1.781
Coeff. of Var. [%]	2.784		3.291
Min.	50.880	0.0079	51.265
Max.	55.658	0.0082	57.420
Number of Spec.	18		18

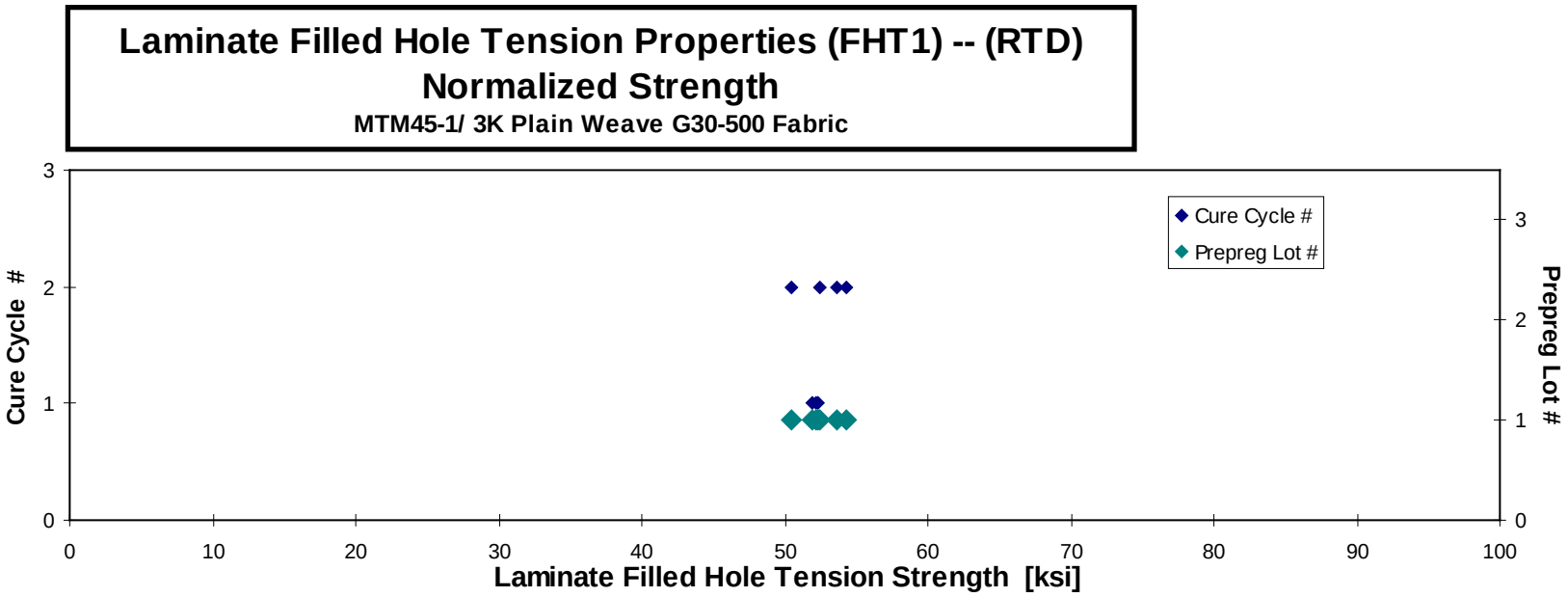

Laminate Filled Hole Tension Properties (FHT1) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
1
2
3

Laminate Filled Hole Tension Properties (FHT1) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N4A116A	A	MH1	1	1	51.294	0.129	16	0.0081	LGM	0.0081	52.376
A0N4A117A	A	MH1	1	1	51.820	0.127	16	0.0080	LGM	0.0080	52.189
A0N4A118A	A	MH1	1	1	51.148	0.128	16	0.0080	LGM	0.0080	51.977
A0N4A216A	A	MH2	1	2	51.396	0.129	16	0.0081	LGM	0.0081	52.426
A0N4A217A	A	MH2	1	2	53.588	0.128	16	0.0080	LGM	0.0080	54.245
A0N4A218A	A	MH2	1	2	49.597	0.129	16	0.0080	LGM	0.0080	50.454
A0N4A219A	A	MH2	1	2	52.777	0.128	16	0.0080	LGM	0.0080	53.592

Average	**51.660**	**Average**	**0.0080**	**$Average_{norm}$** **0.0080** **52.466**
Standard Dev.	**1.272**			**$Standard\ Dev._{norm}$** **1.211**
Coeff. of Var. [%]	**2.463**			**$Coeff.\ of\ Var.\ [\%]_{norm}$** **2.309**
Min.	**49.597**	**Min.**	**0.0080**	**Min.** **0.0080** **50.454**
Max.	**53.588**	**Max.**	**0.0081**	**Max.** **0.0081** **54.245**
Number of Spec.	**7**			**Number of Spec.** **7**


Laminate Filled Hole Tension Properties (FHT1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
90
100
0
1
2
3

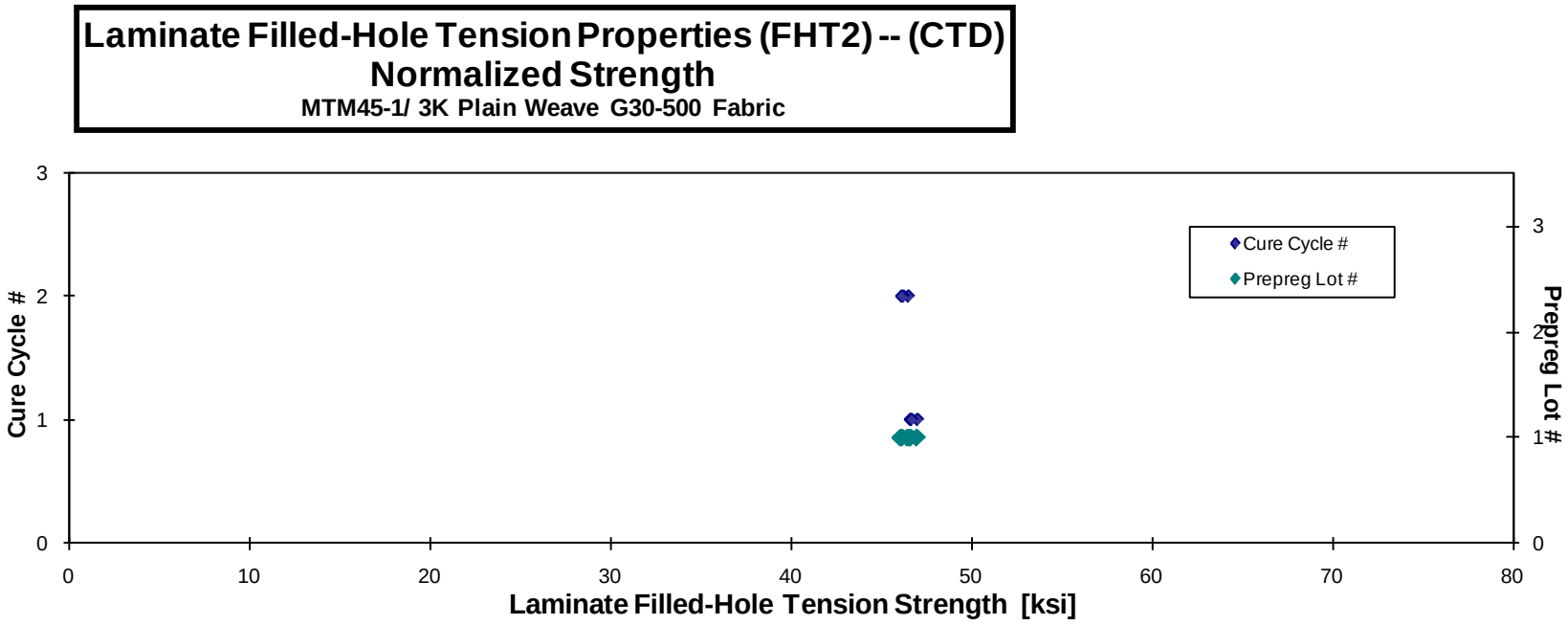
4.19 Filled Hole Tension 2 Properties

Laminate Filled-Hole Tension Properties (FHT2) -- (CTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N5A111B	A	MH1	1	1	46.108	0.160	20	0.0080	AGM	0.0080	46.614
A0N5A112B	A	MH1	1	1	46.066	0.161	20	0.0081	AGM	0.0081	47.013
A0N5A113B	A	MH1	1	1	45.264	0.163	20	0.0081	AGM	0.0081	46.678
A0N5A211B	A	MH2	1	2	47.044	0.156	20	0.0078	AGM	0.0078	46.498
A0N5A212B	A	MH2	1	2	45.851	0.159	20	0.0080	AGM	0.0080	46.213
A0N5A213B	A	MH2	1	2	46.340	0.157	20	0.0079	AGM	0.0079	46.124

Average	**46.112**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**46.523**
Standard Dev.	**0.585**			**$Standard\ Dev._{norm}$**		**0.325**
Coeff. of Var. [%]	**1.268**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**0.698**
Min.	**45.264**	**Min.**	**0.0078**	**Min.**	**0.0078**	**46.124**
Max.	**47.044**	**Max.**	**0.0081**	**Max.**	**0.0081**	**47.013**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Filled-Hole Tension Properties (FHT2) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
80
Laminate Filled-Hole Tension Strength [ksi]

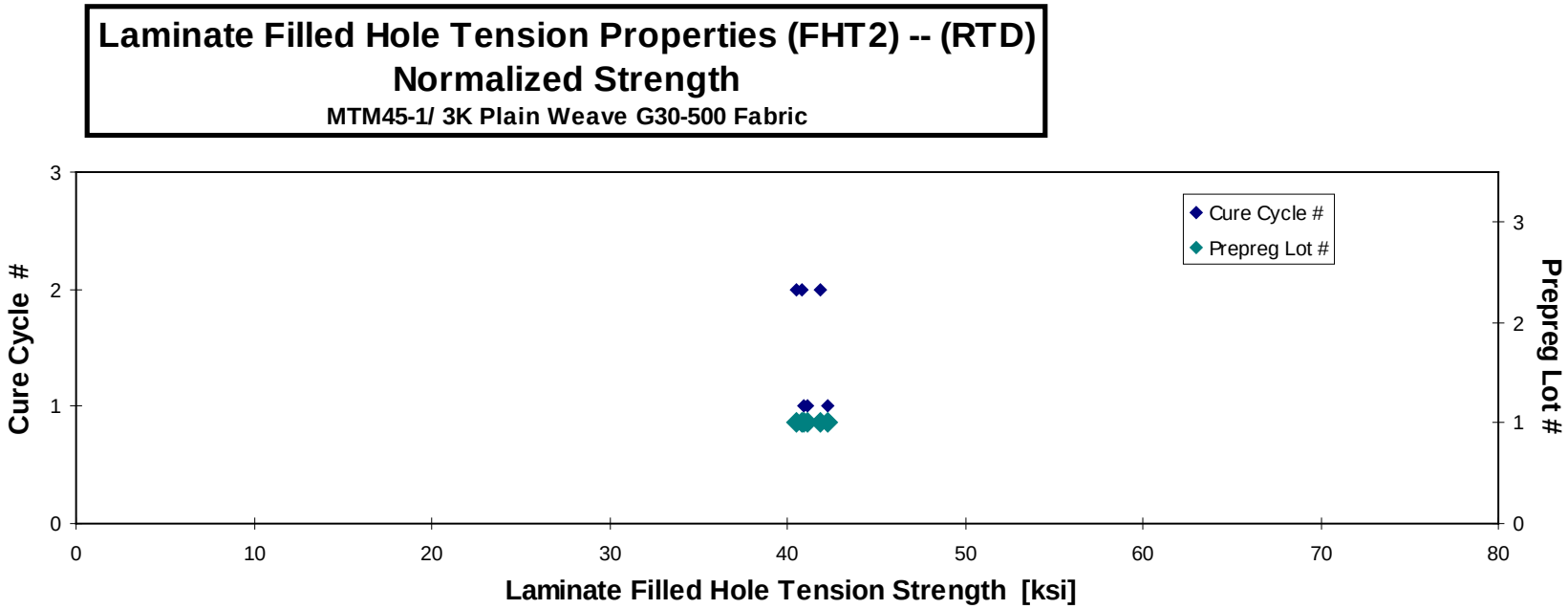
Laminate Filled-Hole Tension Properties (FHT2) -- (RTD) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N5A115A	A	MH1	1	1	41.391	0.161	20	0.0081	AGM	0.0081	42.273
A0N5A116A	A	MH1	1	1	39.978	0.162	20	0.0081	AGM	0.0081	40.957
A0N5A117A	A	MH1	1	1	40.429	0.161	20	0.0080	AGM	0.0080	41.116
A0N5A215A	A	MH2	1	2	41.236	0.156	20	0.0078	AGM	0.0078	40.810
A0N5A216A	A	MH2	1	2	41.119	0.161	20	0.0080	AGM	0.0080	41.834
A0N5A217A	A	MH2	1	2	39.717	0.161	20	0.0081	AGM	0.0081	40.518

Average	**40.645**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**41.251**
Standard Dev.	**0.705**			**$Standard\ Dev._{norm}$**		**0.667**
Coeff. of Var. [%]	**1.734**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.616**
Min.	**39.717**	**Min.**	**0.0078**	**Min.**	**0.0078**	**40.518**
Max.	**41.391**	**Max.**	**0.0081**	**Max.**	**0.0081**	**42.273**
Number of Spec.	**6**			**Number of Spec.**		**6**

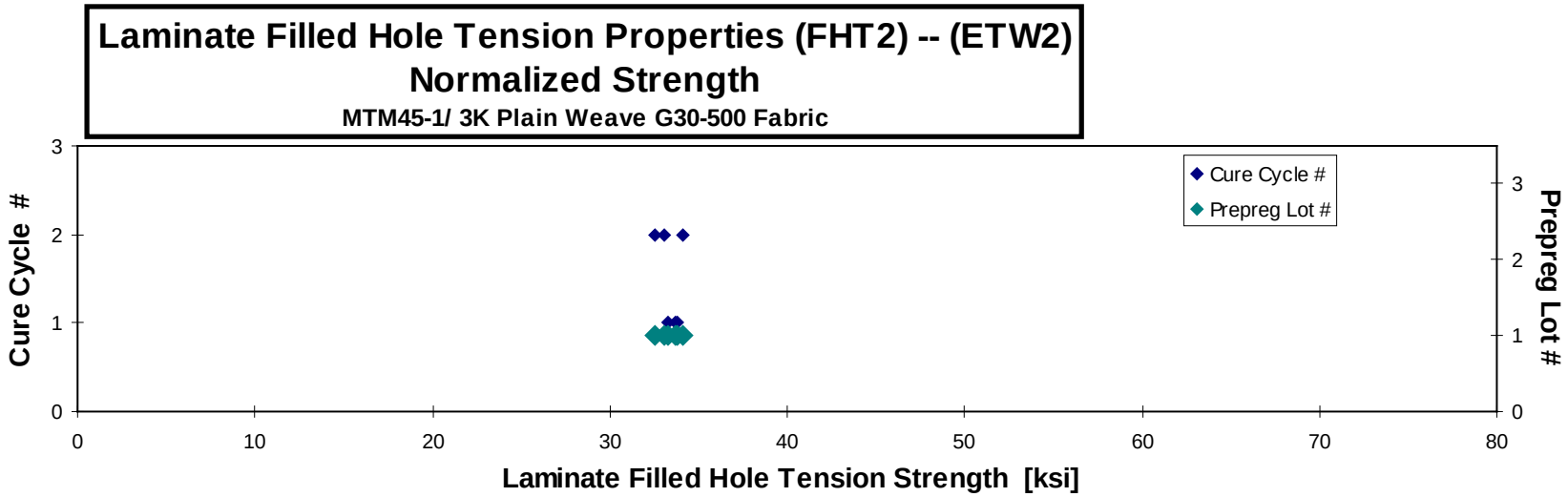

Laminate Filled Hole Tension Properties (FHT2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Tension Strength [ksi]
0
10
20
30
40
50
60
70
80
0
1
2
3

Laminate Filled-Hole Tension Properties (FHT2) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N5A119D	A	MH1	1	1	32.707	0.163	20	0.0082	AGM	0.0082	33.814
A0N5A11AD	A	MH1	1	1	32.797	0.162	20	0.0081	AGM	0.0081	33.717
A0N5A11BD	A	MH1	1	1	32.469	0.162	20	0.0081	AGM	0.0081	33.229
A0N5A219D	A	MH2	1	2	33.697	0.160	20	0.0080	AGM	0.0080	34.138
A0N5A21AD	A	MH2	1	2	31.946	0.164	20	0.0082	AGM	0.0082	33.082
A0N5A21BD	A	MH2	1	2	32.020	0.161	20	0.0080	AGM	0.0080	32.588

Average	**32.606**	**Average**	**0.0081**	**$Average_{norm}$**	**33.428**
Standard Dev.	**0.638**			**$Standard\ Dev._{norm}$**	**0.566**
Coeff. of Var. [%]	**1.956**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**	**1.693**
Min.	**31.946**	**Min.**	**0.0080**	**Min.**	**32.588**
Max.	**33.697**	**Max.**	**0.0082**	**Max.**	**34.138**
Number of Spec.	**6**			**Number of Spec.**	**6**


Laminate Filled Hole Tension Properties (FHT2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
80
Laminate Filled Hole Tension Strength [ksi]

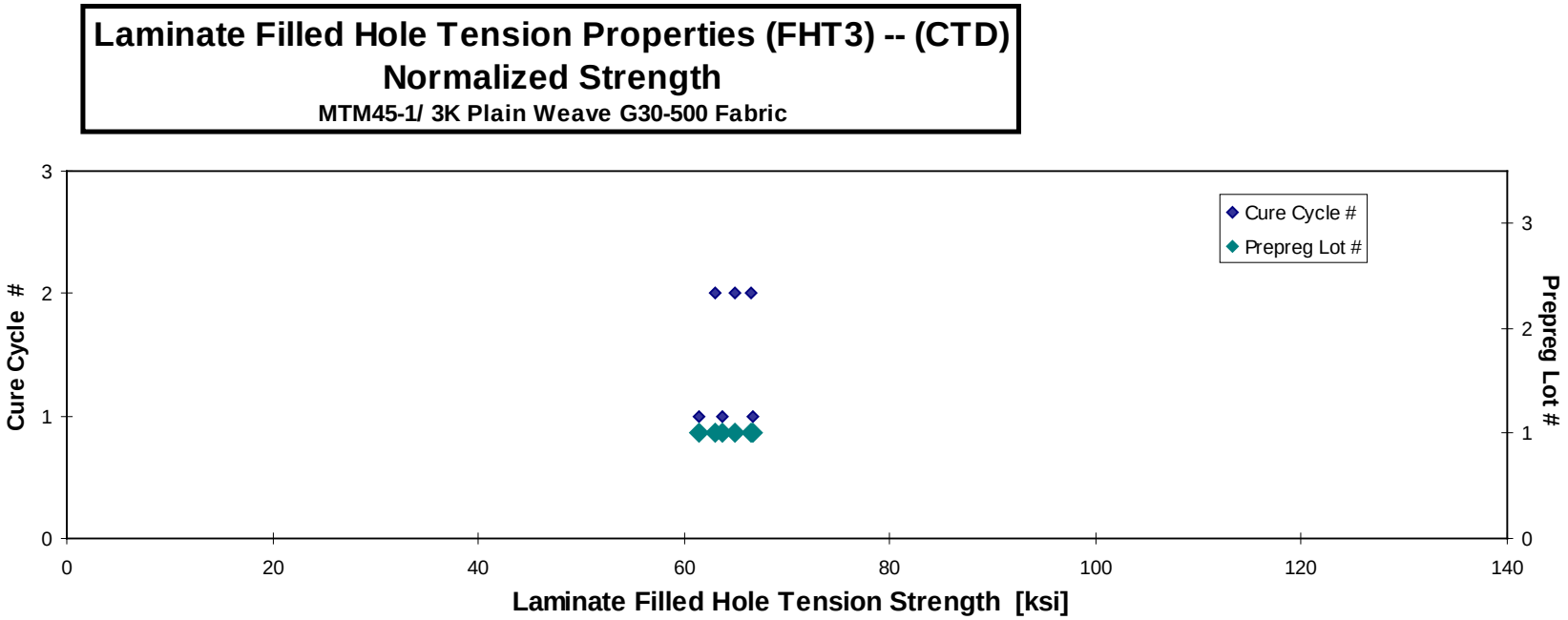
4.20 Filled Hole Tension 3 Properties

Laminate Filled-Hole Tension Properties (FHT3) -- (CTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N6A115B	A	MH1	1	1	59.823	0.122	15	0.0081	LGM	0.0081	61.522
A0N6A116B	A	MH1	1	1	61.729	0.122	15	0.0082	LGM	0.0082	63.692
A0N6A117B	A	MH1	1	1	64.650	0.122	15	0.0082	LGM	0.0082	66.714
A0N6A215B	A	MH2	1	2	63.828	0.121	15	0.0080	LGM	0.0080	64.942
A0N6A216B	A	MH2	1	2	61.459	0.122	15	0.0081	LGM	0.0081	63.024
A0N6A217B	A	MH2	1	2	65.447	0.120	15	0.0080	LGM	0.0080	66.496

Average	**62.823**	**Average**	**0.0081**	**$Average_{norm}$**	**64.398**
Standard Dev.	**2.158**			**$Standard\ Dev._{norm}$**	**2.036**
Coeff. of Var. [%]	**3.436**			**Coeff. of Var. $[\%]_{norm}$**	**3.161**
Min.	**59.823**	**Min.**	**0.0080**	**Min.**	**0.0080**	**61.522**
Max.	**65.447**	**Max.**	**0.0082**	**Max.**	**0.0082**	**66.714**
Number of Spec.	**6**			**Number of Spec.**	**6**

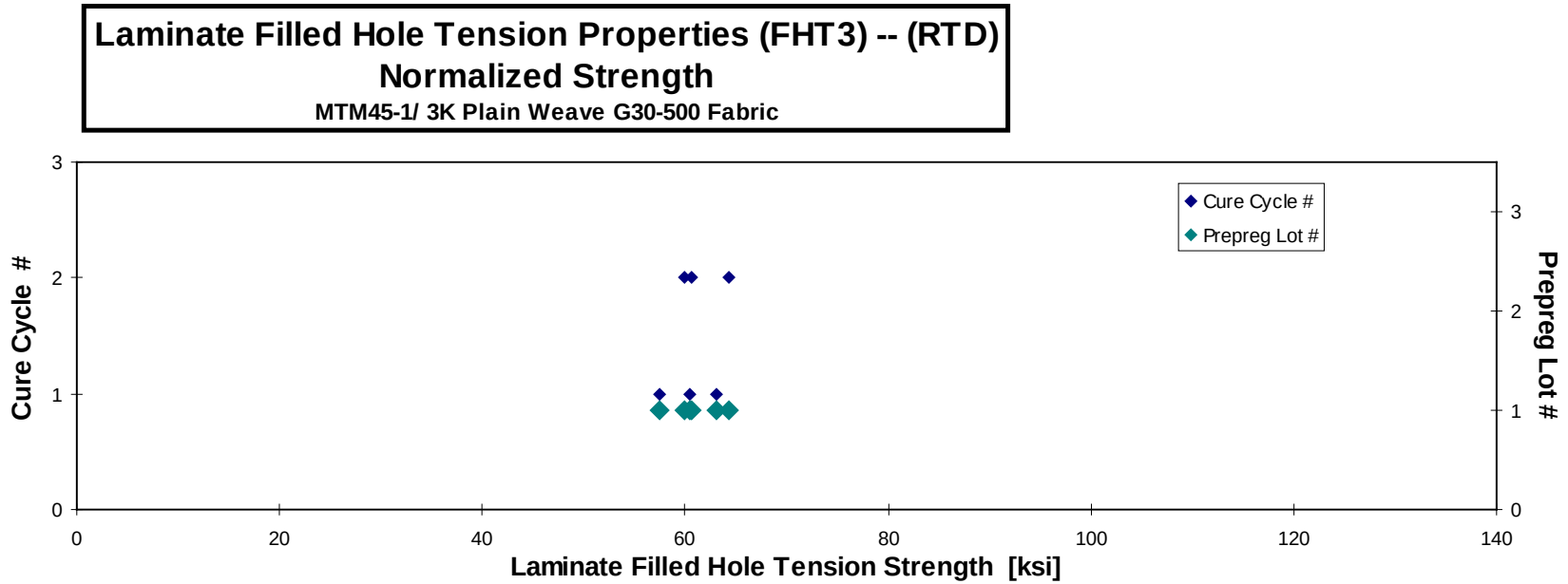

Laminate Filled Hole Tension Properties (FHT3) -- (CTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Tension Strength [ksi]
0
1
2
3
0
20
40
60
80
100
120
140

Laminate Filled-Hole Tension Properties (FHT3) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N6A111A	A	MH1	1	1	58.118	0.123	15	0.0082	LGM	0.0082	60.375
A0N6A112A	A	MH1	1	1	61.585	0.121	15	0.0081	LGM	0.0081	63.066
A0N6A113A	A	MH1	1	1	56.248	0.121	15	0.0081	LGM	0.0081	57.474
A0N6A211A	A	MH2	1	2	61.865	0.123	15	0.0082	LGM	0.0082	64.258
A0N6A212A	A	MH2	1	2	59.211	0.120	15	0.0080	LGM	0.0080	59.894
A0N6A213A	A	MH2	1	2	59.542	0.121	15	0.0080	LGM	0.0080	60.639

Average	**59.428**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**60.951**
Standard Dev.	**2.120**			**$Standard\ Dev._{norm}$**		**2.410**
Coeff. of Var. [%]	**3.568**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.954**
Min.	**56.248**	**Min.**	**0.0080**	**Min.**	**0.0080**	**57.474**
Max.	**61.865**	**Max.**	**0.0082**	**Max.**	**0.0082**	**64.258**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Filled Hole Tension Properties (FHT3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Tension Strength [ksi]
0
1
2
3
0
20
40
60
80
100
120
140

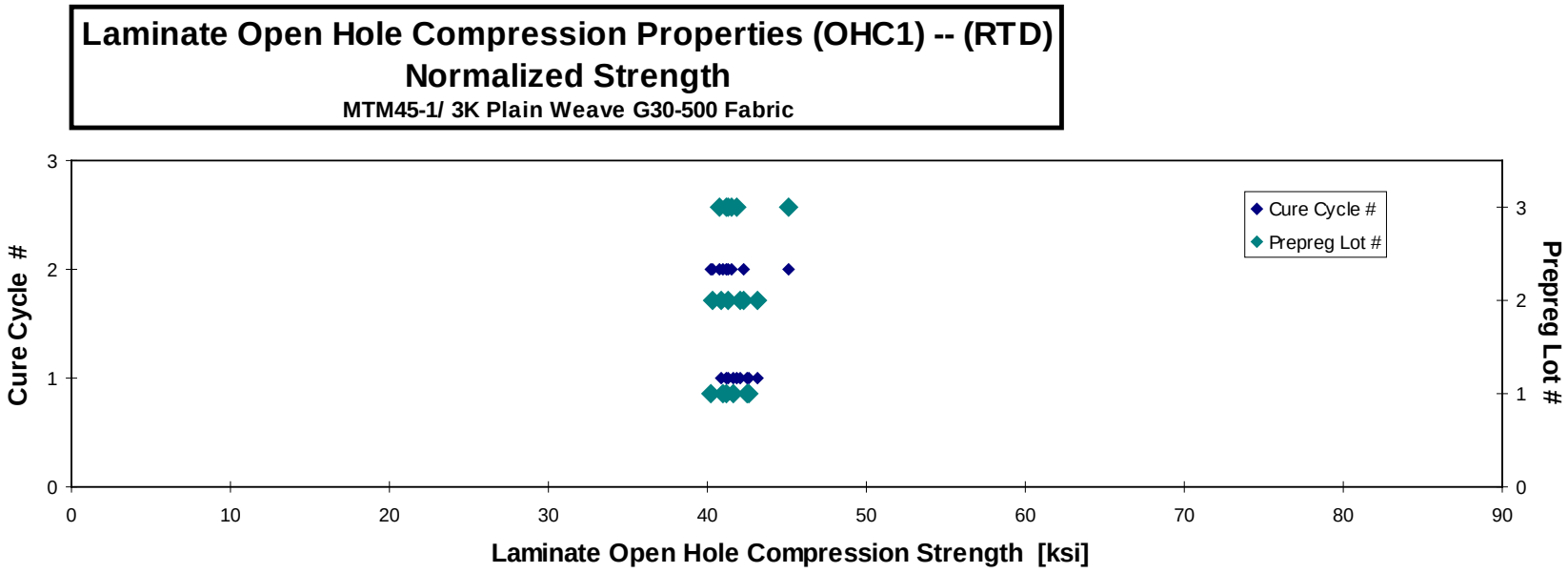
4.21 Open Hole Compression 1 Properties

Laminate Open Hole Compression Properties (OHC1) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NGA111A	A	MH1	1	1	41.843	0.129	16	0.0080	LGM	0.0080	42.582
A0NGA112A	A	MH1	1	1	41.246	0.130	16	0.0081	LGM	0.0081	42.459
A0NGA113A	A	MH1	1	1	40.637	0.129	16	0.0081	LGM	0.0081	41.617
A0NGA211A	A	MH2	1	2	40.642	0.128	16	0.0080	LGM	0.0080	41.248
A0NGA212A	A	MH2	1	2	39.258	0.129	16	0.0081	LGM	0.0081	40.200
A0NGA213A	A	MH2	1	2	40.069	0.129	16	0.0081	LGM	0.0081	41.004
A0NGB111A	B	MH1	2	1	40.214	0.128	16	0.0080	LGM	0.0080	40.839
A0NGB112A	B	MH1	2	1	42.053	0.130	16	0.0081	LGM	0.0081	43.178
A0NGB113A	B	MH1	2	1	41.058	0.130	16	0.0081	LGM	0.0081	42.092
A0NGB211A	B	MH2	2	2	40.170	0.127	16	0.0079	LGM	0.0079	40.292
A0NGB212A	B	MH2	2	2	40.862	0.128	16	0.0080	LGM	0.0080	41.336
A0NGB213A	B	MH2	2	2	41.998	0.127	16	0.0079	LGM	0.0079	42.253
A0NGC111A	C	MH1	3	1	40.891	0.129	16	0.0081	LGM	0.0081	41.856
A0NGC112A	C	MH1	3	1	39.608	0.131	16	0.0082	LGM	0.0082	41.143
A0NGC113A	C	MH1	3	1	39.455	0.132	16	0.0083	LGM	0.0083	41.260
A0NGC211A	C	MH2	3	2	40.344	0.130	16	0.0081	LGM	0.0081	41.525
A0NGC212A	C	MH2	3	2	43.327	0.131	16	0.0082	LGM	0.0082	45.064
A0NGC213A	C	MH2	3	2	39.179	0.132	16	0.0082	LGM	0.0082	40.785

Average	**40.714**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**41.707**
Standard Dev.	**1.095**			**$Standard\ Dev._{norm}$**		**1.151**
Coeff. of Var. [%]	**2.690**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.759**
Min.	**39.179**	**Min.**	**0.0079**	**Min.**	**0.0079**	**40.200**
Max.	**43.327**	**Max.**	**0.0083**	**Max.**	**0.0083**	**45.064**
Number of Spec.	**18**			**Number of Spec.**		**18**


Laminate Open Hole Compression Properties (OHC1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90

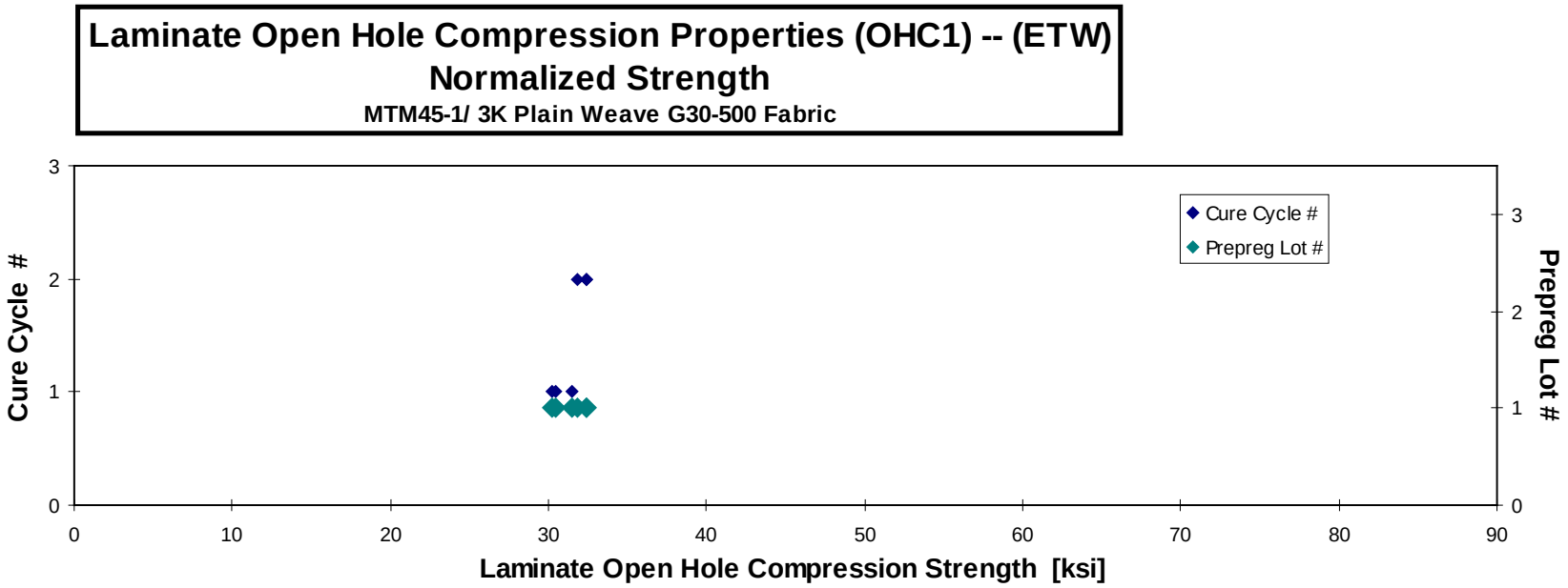
Laminate Open Hole Compression Properties (OHC1) -- (ETW) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NGA11AN	A	MH1	1	1	30.574	0.130	16	0.0081	LGM	0.0081	31.449
A0NGA11BN	A	MH1	1	1	29.542	0.129	16	0.0081	LGM	0.0081	30.259
A0NGA11CN	A	MH1	1	1	29.000	0.133	16	0.0083	LGM	0.0083	30.476
A0NGA215N	A	MH2	1	2	31.408	0.130	16	0.0081	LGM	0.0081	32.364
A0NGA216N	A	MH2	1	2	31.979	0.128	16	0.0080	LGM	0.0080	32.350
A0NGA217N	A	MH2	1	2	31.005	0.130	16	0.0081	LGM	0.0081	31.863

Average	**30.584**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**31.460**
Standard Dev.	**1.131**			**$Standard\ Dev._{norm}$**		**0.915**
Coeff. of Var. [%]	**3.698**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.908**
Min.	**29.000**	**Min.**	**0.0080**	**Min.**	**0.0080**	**30.259**
Max.	**31.979**	**Max.**	**0.0083**	**Max.**	**0.0083**	**32.364**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Open Hole Compression Properties (OHC1) -- (ETW)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90

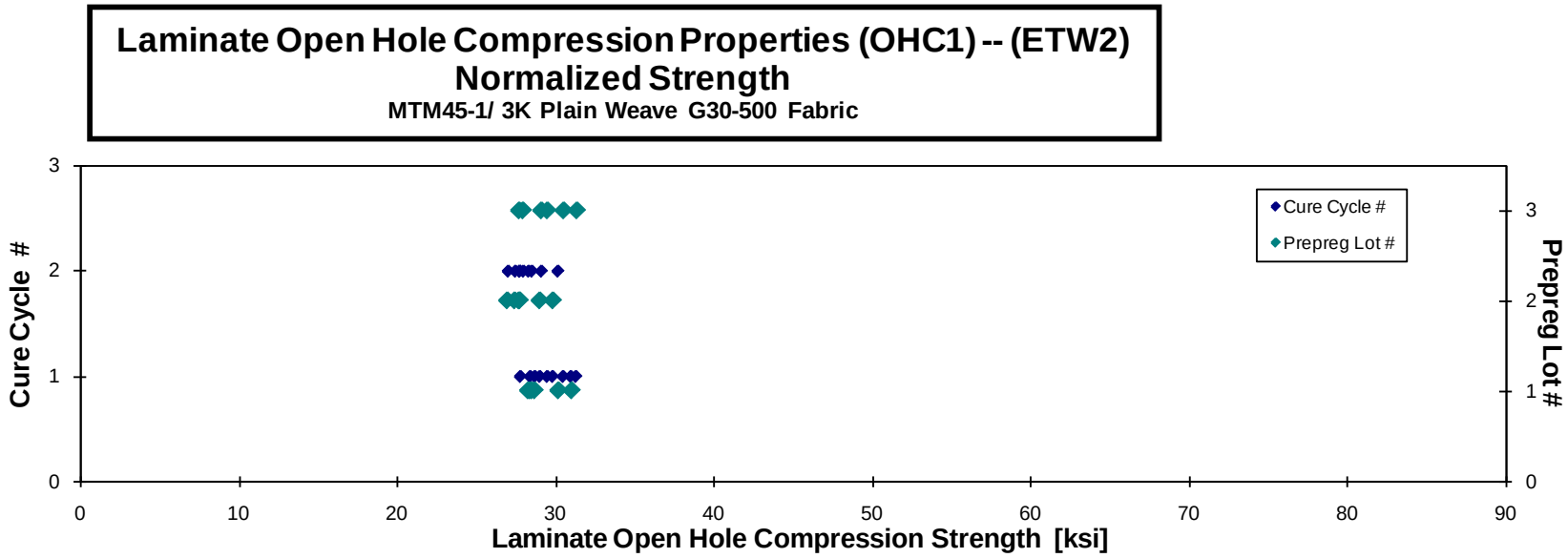
Laminate Open Hole Compression Properties (OHC1) -- (ETW2) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NGA115D	A	MH1	1	1	29.774	0.132	16	0.0082	LGM	0.0082	31.018
A0NGA116D	A	MH1	1	1	27.394	0.131	16	0.0082	LGM	0.0082	28.427
A0NGA117D	A	MH1	1	1	27.807	0.131	16	0.0082	LGM	0.0082	28.723
A0NGA21AD	A	MH2	1	2	29.466	0.130	16	0.0081	LGM	0.0081	30.197
A0NGA21BD	A	MH2	1	2	27.627	0.131	16	0.0082	LGM	0.0082	28.538
A0NGA21CD	A	MH2	1	2	27.580	0.130	16	0.0081	LGM	0.0081	28.325
A0NGB115D	B	MH1	2	1	27.095	0.130	16	0.0081	LGM	0.0081	27.803
A0NGB116D	B	MH1	2	1	28.495	0.129	16	0.0081	LGM	0.0081	29.040
A0NGB117D	B	MH1	2	1	29.070	0.130	16	0.0081	LGM	0.0081	29.856
A0NGB215D	B	MH2	2	2	26.566	0.129	16	0.0080	LGM	0.0080	27.028
A0NGB216D	B	MH2	2	2	27.216	0.129	16	0.0081	LGM	0.0081	27.747
A0NGB217D	B	MH2	2	2	26.977	0.129	16	0.0080	LGM	0.0080	27.485
A0NGC115D	C	MH1	3	1	29.754	0.133	16	0.0083	LGM	0.0083	31.343
A0NGC116D	C	MH1	3	1	29.391	0.131	16	0.0082	LGM	0.0082	30.523
A0NGC117D	C	MH1	3	1	28.228	0.132	16	0.0083	LGM	0.0083	29.512
A0NGC215D	C	MH2	3	2	26.531	0.132	16	0.0083	LGM	0.0083	27.766
A0NGC216D	C	MH2	3	2	26.875	0.132	16	0.0082	LGM	0.0082	27.998
A0NGC217D	C	MH2	3	2	28.211	0.131	16	0.0082	LGM	0.0082	29.144

	Strength [ksi]	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
Average	28.003	0.0082	28.915
Standard Dev.	1.097		1.260
Coeff. of Var. [%]	3.919		4.357
Min.	26.531	0.0080	27.028
Max.	29.774	0.0083	31.343
Number of Spec.	18		18


Laminate Open Hole Compression Properties (OHC1) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90

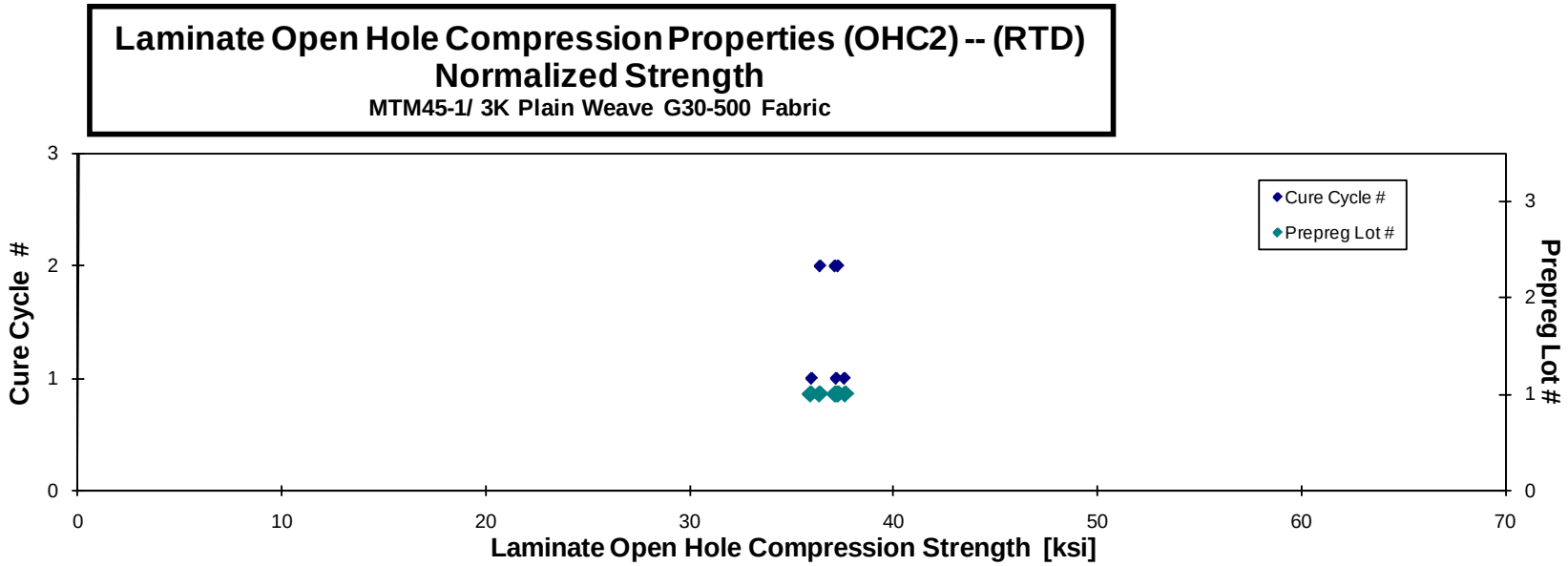
4.22 Open Hole Compression 2 Properties

Laminate Open Hole Compression Properties (OHC2) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NHA111A	A	MH1	1	1	36.710	0.160	20	0.00801	LGM	0.0080	37.209
A0NHA112A	A	MH1	1	1	35.761	0.159	20	0.00795	LGM	0.0079	35.968
A0NHA113A	A	MH1	1	1	36.652	0.162	20	0.00811	LGM	0.0081	37.627
A0NHA211A	A	MH2	1	2	36.860	0.160	20	0.00799	LGM	0.0080	37.300
A0NHA212A	A	MH2	1	2	36.667	0.160	20	0.00800	LGM	0.0080	37.147
A0NHA213A	A	MH2	1	2	36.159	0.159	20	0.00795	LGM	0.0080	36.396

Average	**36.468**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**36.941**
Standard Dev.	**0.420**			**$Standard\ Dev._{norm}$**		**0.626**
Coeff. of Var. [%]	**1.151**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.693**
Min.	**35.761**	**Min.**	**0.0079**	**Min.**	**0.0079**	**35.968**
Max.	**36.860**	**Max.**	**0.0081**	**Max.**	**0.0081**	**37.627**
Number of Spec.	**6**			**Number of Spec.**		**6**

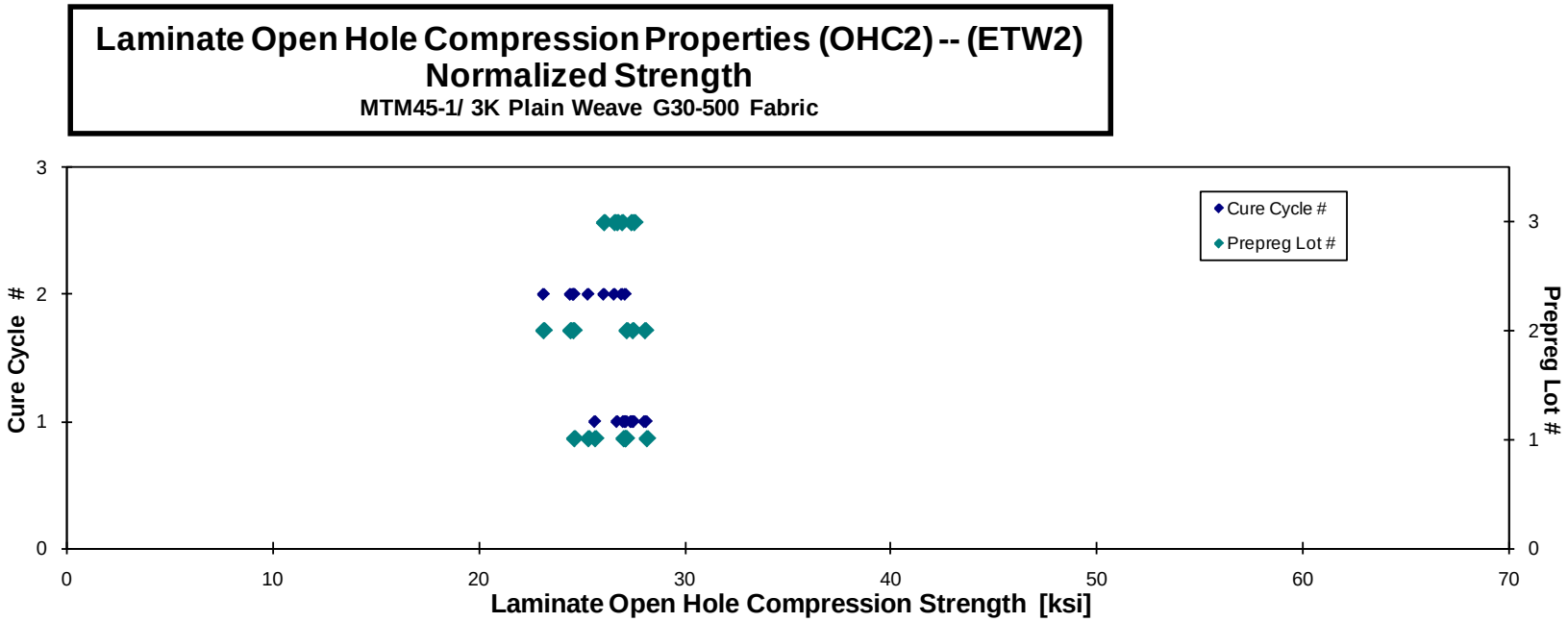

Laminate Open Hole Compression Properties (OHC2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
Laminate Open Hole Compression Strength [ksi]

Laminate Open Hole Compression Properties (OHC2) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NHA115D	A	MH1	1	1	26.387	0.162	20	0.0081	LGM / AGM	0.0081	27.041
A0NHA116D	A	MH1	1	1	27.342	0.163	20	0.0081	LGM / AGM	0.0081	28.158
A0NHA117D	A	MH1	1	1	25.420	0.160	20	0.0080	LGM	0.0080	25.664
A0NHA118D	A	MH1	1	1	26.540	0.161	20	0.0081	LGM	0.0081	27.125
A0NHA215D	A	MH2	1	2	23.962	0.163	20	0.0081	LGM / AGM	0.0081	24.662
A0NHA216D	A	MH2	1	2	26.476	0.162	20	0.0081	LGM	0.0081	27.140
A0NHA217D	A	MH2	1	2	24.635	0.163	20	0.0081	LGM / AGM	0.0081	25.340
A0NHB111D	B	MH1	2	1	26.869	0.160	20	0.0080	LGM /AGM	0.0080	27.187
A0NHB112D	B	MH1	2	1	26.795	0.162	20	0.0081	LGM /AGM	0.0081	27.479
A0NHB113D	B	MH1	2	1	27.081	0.164	20	0.0082	LGM /AGM	0.0082	28.067
A0NHB211D	B	MH2	2	2	22.659	0.162	20	0.0081	LGM /AGM	0.0081	23.182
A0NHB212D	B	MH2	2	2	24.060	0.162	20	0.0081	LGM /AGM	0.0081	24.621
A0NHB213D	B	MH2	2	2	23.869	0.162	20	0.0081	LGM /AGM	0.0081	24.481
A0NHC111D	C	MH1	3	1	26.812	0.162	20	0.0081	LGM	0.0081	27.412
A0NHC112D	C	MH1	3	1	26.509	0.164	20	0.0082	LGM / AGM	0.0082	27.552
A0NHC113D	C	MH1	3	1	25.963	0.163	20	0.0081	LGM / AGM	0.0081	26.738
A0NHC211D	C	MH2	3	2	25.403	0.162	20	0.0081	LGM / AGM	0.0081	26.100
A0NHC212D	C	MH2	3	2	25.374	0.166	20	0.0083	LGM / AGM	0.0083	26.603
A0NHC213D	C	MH2	3	2	25.865	0.165	20	0.0082	LGM / AGM	0.0082	26.967

Average	**25.685**	**Average**	**0.0081**	**$Average_{norm}$** **0.0081** **26.396**
Standard Dev.	**1.305**			**$Standard\ Dev._{norm}$** **1.373**
Coeff. of Var. [%]	**5.080**			**$Coeff.\ of\ Var.\ [\%]_{norm}$** **5.202**
Min.	**22.659**	**Min.**	**0.0080**	**Min.** **0.0080** **23.182**
Max.	**27.342**	**Max.**	**0.0083**	**Max.** **0.0083** **28.158**
Number of Spec.	**19**			**Number of Spec.** **19**


Laminate Open Hole Compression Properties (OHC2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70

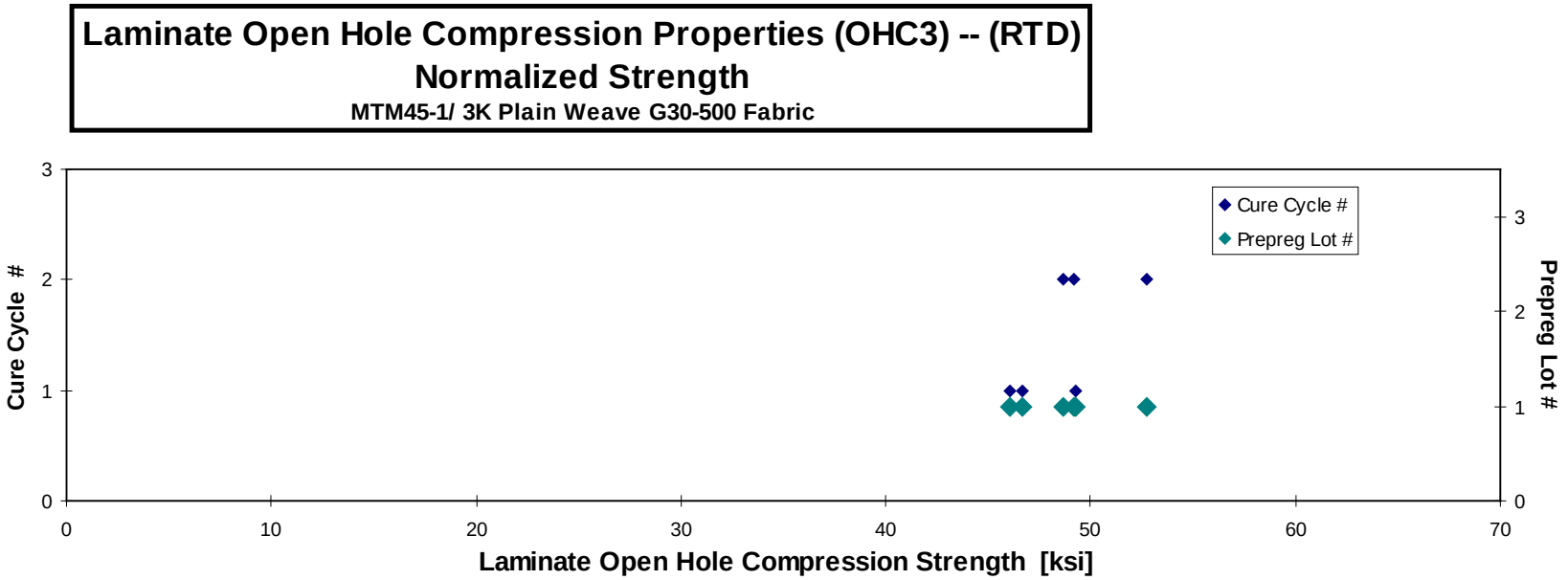
4.23 Open Hole Compression 3 Properties

Laminate Open Hole Compression Properties (OHC3) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NIA112A	A	MH1	1	1	45.140	0.122	15	0.0082	LGM	0.0082	46.651
A0NIA113A	A	MH1	1	1	47.265	0.124	15	0.0082	LGM	0.0082	49.305
A0NIA114A	A	MH1	1	1	44.065	0.124	15	0.0083	LGM	0.0083	46.048
A0NIA211A	A	MH2	1	2	47.968	0.122	15	0.0081	LGM	0.0081	49.216
A0NIA212A	A	MH2	1	2	46.974	0.123	15	0.0082	LGM	0.0082	48.678
A0NIA213A	A	MH2	1	2	50.959	0.123	15	0.0082	LGM	0.0082	52.758

Average	**47.062**	**Average**	**0.0082**	**$Average_{norm}$**	**0.0082**	**48.776**
Standard Dev.	**2.397**			**$Standard\ Dev._{norm}$**		**2.379**
Coeff. of Var. [%]	**5.094**			**Coeff. of Var. [%]$_{norm}$**		**4.877**
Min.	**44.065**	**Min.**	**0.0081**	**Min.**	**0.0081**	**46.048**
Max.	**50.959**	**Max.**	**0.0083**	**Max.**	**0.0083**	**52.758**
Number of Spec.	**6**			**Number of Spec.**		**6**


Laminate Open Hole Compression Properties (OHC3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70

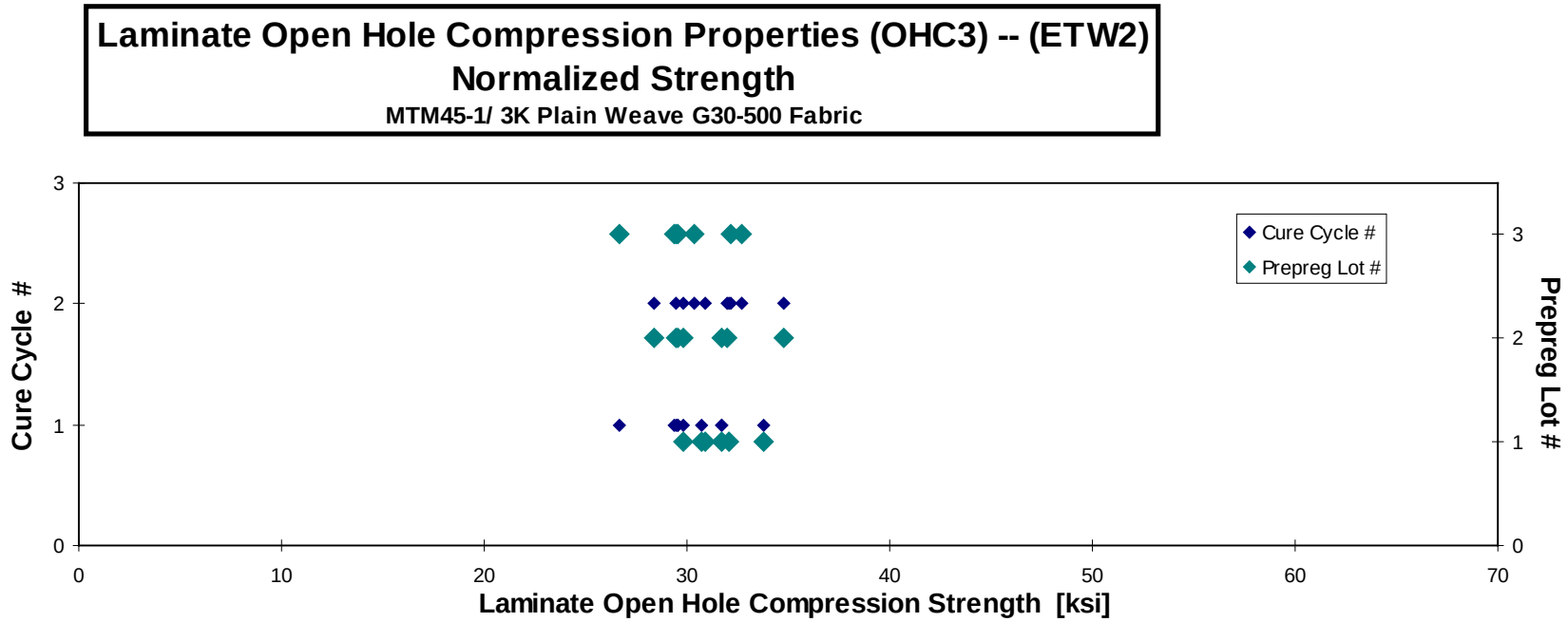
Laminate Open Hole Compression Properties (OHC3) -- (ETW2) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Modes	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NIA215D	A	MH2	1	2	31.079	0.122	15	0.0082	LGM	0.0082	32.115
A0NIA216D	A	MH2	1	2	29.846	0.123	15	0.0082	LGM	0.0082	30.878
A0NIA217D	A	MH2	1	2	28.775	0.123	15	0.0082	LGM	0.0082	29.775
A0NIA115D	A	MH1	1	1	32.317	0.124	15	0.0083	LGM	0.0083	33.758
A0NIA117D	A	MH1	1	1	30.288	0.124	15	0.0083	LGM	0.0083	31.672
A0NIA118D	A	MH1	1	1	29.352	0.124	15	0.0083	LGM	0.0083	30.748
A0NIB111D	B	MH1	2	1	31.512	0.119	15	0.0079	LGM	0.0079	31.667
A0NIB112D	B	MH1	2	1	29.155	0.120	15	0.0080	LGM	0.0080	29.553
A0NIB113D	B	MH1	2	1	29.379	0.120	15	0.0080	LGM	0.0080	29.859
A0NIB211D	B	MH2	2	2	31.503	0.120	15	0.0080	LGM	0.0080	31.937
A0NIB212D	B	MH2	2	2	34.108	0.121	15	0.0081	LGM	0.0081	34.803
A0NIB213D	B	MH2	2	2	27.600	0.122	15	0.0081	LGM	0.0081	28.357
A0NIB214D	B	MH2	2	2	28.720	0.122	15	0.0081	LGM	0.0081	29.504
A0NIC211D	C	MH2	3	2	31.751	0.122	15	0.0081	LGM	0.0081	32.662
A0NIC212D	C	MH2	3	2	30.894	0.123	15	0.0082	LGM	0.0082	32.124
A0NIC213D	C	MH2	3	2	29.276	0.123	15	0.0082	LGM	0.0082	30.318
A0NIC111D	C	MH1	3	1	25.623	0.123	15	0.0082	LGM	0.0082	26.682
A0NIC112D	C	MH1	3	1	28.040	0.124	15	0.0083	LGM	0.0083	29.432
A0NIC113D	C	MH1	3	1	27.818	0.125	15	0.0084	LGM	0.0084	29.402
A0NIC114D	C	MH1	3	1	28.113	0.125	15	0.0083	LGM	0.0083	29.572

Average	**29.758**		**Average**	**0.0082**		**$Average_{norm}$**	**0.0082**	**30.741**
Standard Dev.	**1.960**					**$Standard\ Dev._{norm}$**		**1.894**
Coeff. of Var. [%]	**6.588**					**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.160**
Min.	**25.623**		**Min.**	**0.0079**		**Min.**	**0.0079**	**26.682**
Max.	**34.108**		**Max.**	**0.0084**		**Max.**	**0.0084**	**34.803**
Number of Spec.	**20**					**Number of Spec.**		**20**


Laminate Open Hole Compression Properties (OHC3) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Laminate Open Hole Compression Strength [ksi]
0
10
20
30
40
50
60
70
1
2
3

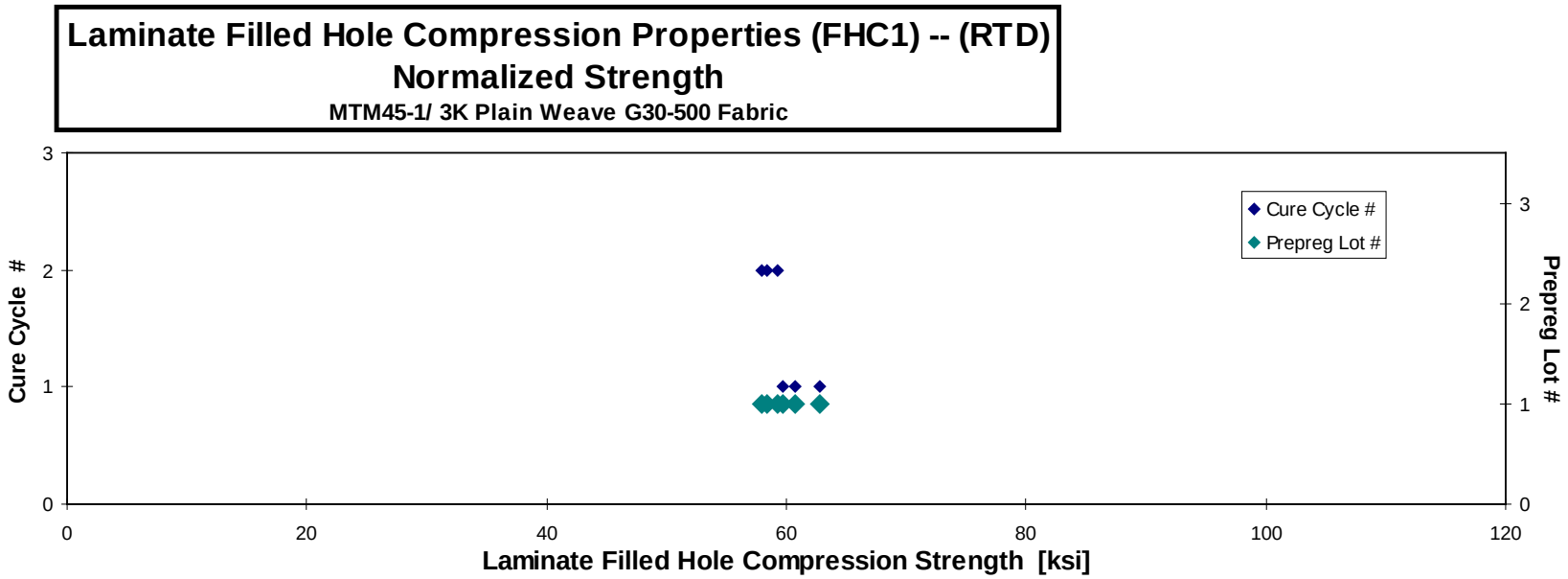
4.24 Filled Hole Compression 1 Properties

Laminate Filled Hole Compression Properties (FHC1) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N7A111A	A	MH1	1	1	60.790	0.126	16	0.0079	LGF	0.0079	60.766
A0N7A112A	A	MH1	1	1	58.715	0.128	16	0.0080	LGF	0.0080	59.683
A0N7A113A	A	MH1	1	1	62.106	0.128	16	0.0080	LGF	0.0080	62.810
A0N7A211A	A	MH2	1	2	58.597	0.128	16	0.0080	LGF	0.0080	59.270
A0N7A212A	A	MH2	1	2	57.624	0.128	16	0.0080	LGF	0.0080	58.368
A0N7A213A	A	MH2	1	2	56.400	0.130	16	0.0081	LGF	0.0081	57.903

Average	**59.039**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**59.800**
Standard Dev.	**2.085**			**$Standard\ Dev._{norm}$**		**1.785**
Coeff. of Var. [%]	**3.532**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.986**
Min.	**56.400**	**Min.**	**0.0079**	**Min.**	**0.0079**	**57.903**
Max.	**62.106**	**Max.**	**0.0081**	**Max.**	**0.0081**	**62.810**
Number of Spec.	**6**			**Number of Spec.**		**6**

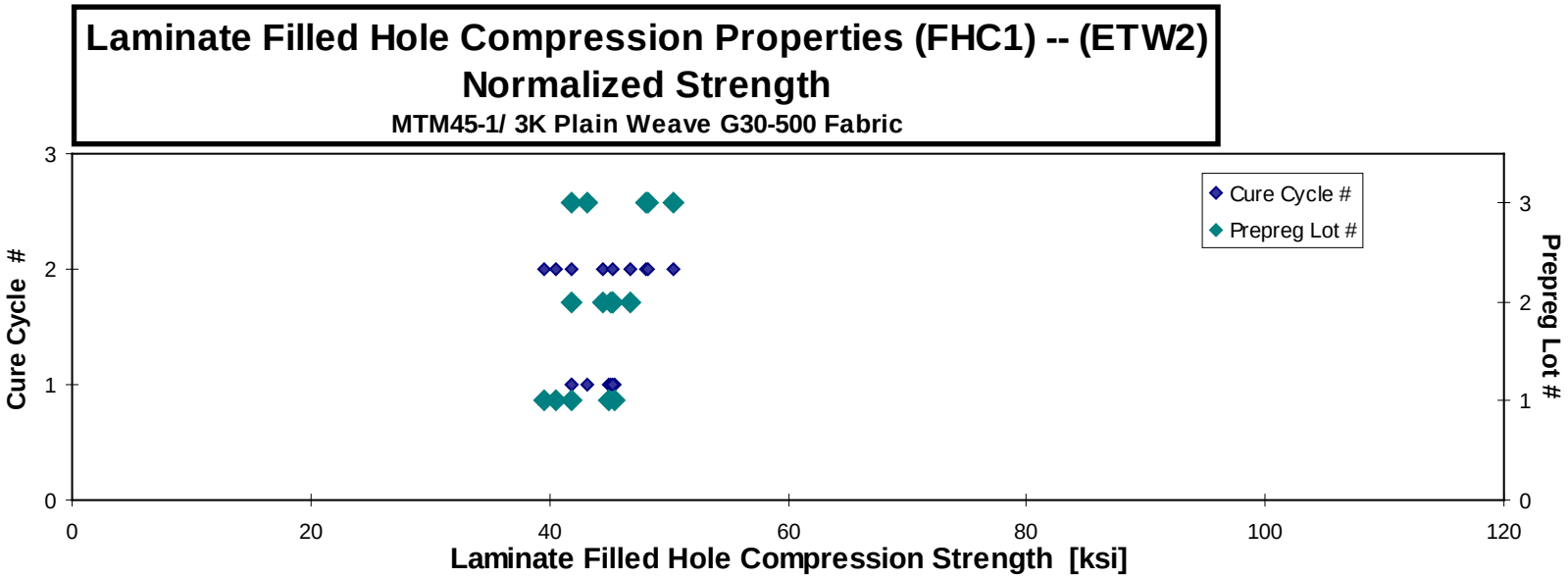

Laminate Filled Hole Compression Properties (FHC1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Compression Strength [ksi]
0
20
40
60
80
100
120
0
1
2
3

Laminate Filled Hole Compression Properties (FHC1) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N7A116D	A	MH1	1	1	44.832	0.128	16	0.0080	LGF	0.008	45.506
A0N7A117D	A	MH1	1	1	44.415	0.128	16	0.0080	LGT	0.008	45.029
A0N7A215D	A	MH2	1	2	40.838	0.129	16	0.0081	LGF	0.008	41.834
A0N7A217D	A	MH2	1	2	39.586	0.130	16	0.0081	LGM	0.008	40.619
A0N7A218D	A	MH2	1	2	37.998	0.131	16	0.0082	LGF	0.008	39.502
A0N7B111D	B	MH1	2	1	40.987	0.129	16	0.0081	LGF	0.008	41.928
A0N7B112D	B	MH1	2	1	43.730	0.130	16	0.0081	LGF	0.008	45.079
A0N7B113D	B	MH1	2	1	44.230	0.129	16	0.0081	LGF	0.008	45.233
A0N7B211D	B	MH2	2	2	44.307	0.127	16	0.0079	LGF	0.008	44.412
A0N7B212D	B	MH2	2	2	43.993	0.130	16	0.0081	LGF	0.008	45.229
A0N7B213D	B	MH2	2	2	45.876	0.129	16	0.0081	LGF	0.008	46.783
A0N7C111D	B	MH1	3	1	39.788	0.128	16	0.0080	LGF	0.008	40.171
A0N7C112D	C	MH1	3	1	42.138	0.130	16	0.0081	LGF	0.008	43.189
A0N7C113D	C	MH1	3	1	40.554	0.130	16	0.0082	LGF	0.008	41.843
A0N7C211D	C	MH2	3	2	47.585	0.128	16	0.0080	LGF	0.008	48.112
A0N7C212D	C	MH2	3	2	49.366	0.129	16	0.0081	LGF	0.008	50.401
A0N7C213D	C	MH2	3	2	47.190	0.129	16	0.0081	LGF	0.008	48.217

Average	**43.377**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**44.299**
Standard Dev.	**3.137**			**$Standard\ Dev._{norm}$**		**3.064**
Coeff. of Var. [%]	**7.233**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.916**
Min.	**37.998**	**Min.**	**0.0079**	**Min.**	**0.0079**	**39.502**
Max.	**49.366**	**Max.**	**0.0082**	**Max.**	**0.0082**	**50.401**
Number of Spec.	**17**			**Number of Spec.**		**17**


Laminate Filled Hole Compression Properties (FHC1) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
20
40
60
80
100
120
Laminate Filled Hole Compression Strength [ksi]

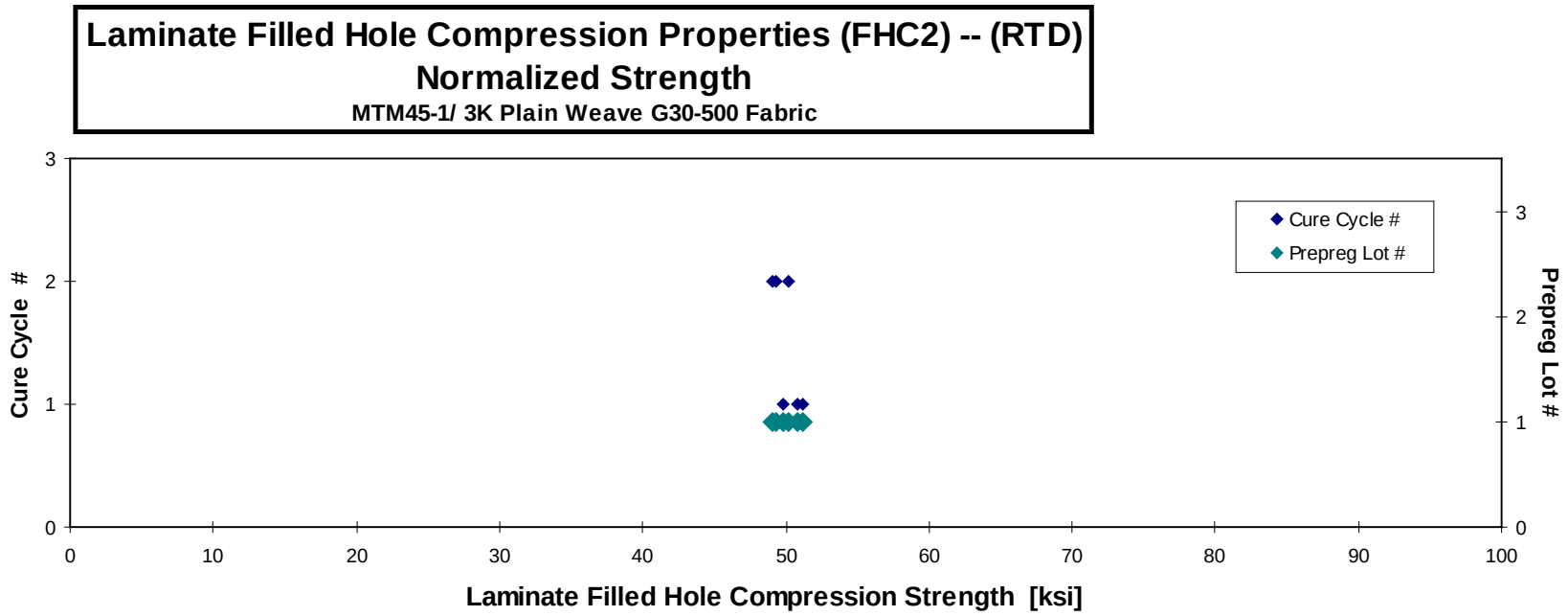
4.25 Filled Hole Compression 2 Properties

Laminate Filled Hole Compression Properties (FHC2) -- (RTD)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N8A116A	A	MH1	1	1	50.489	0.159	20	0.0079	AGM	0.0079	50.798
A0N8A117A	A	MH1	1	1	48.743	0.161	20	0.0081	AGF	0.0081	49.772
A0N8A118A	A	MH1	1	1	50.382	0.160	20	0.0080	LGF	0.0080	51.131
A0N8A211A	A	MH2	1	2	49.385	0.157	20	0.0079	AGF	0.0079	49.072
A0N8A213A	A	MH2	1	2	48.631	0.160	20	0.0080	AGF	0.0080	49.334
A0N8A214A	A	MH2	1	2	49.140	0.161	20	0.0081	AGF	0.0081	50.177

Average	**49.462**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**50.047**
Standard Dev.	**0.802**			**$Standard\ Dev._{norm}$**		**0.811**
Coeff. of Var. [%]	**1.622**			**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**1.621**
Min.	**48.631**	**Min.**	**0.0079**	**Min.**	**0.0079**	**49.072**
Max.	**50.489**	**Max.**	**0.0081**	**Max.**	**0.0081**	**51.131**
Number of Spec.	**6**			**Number of Spec.**		**6**

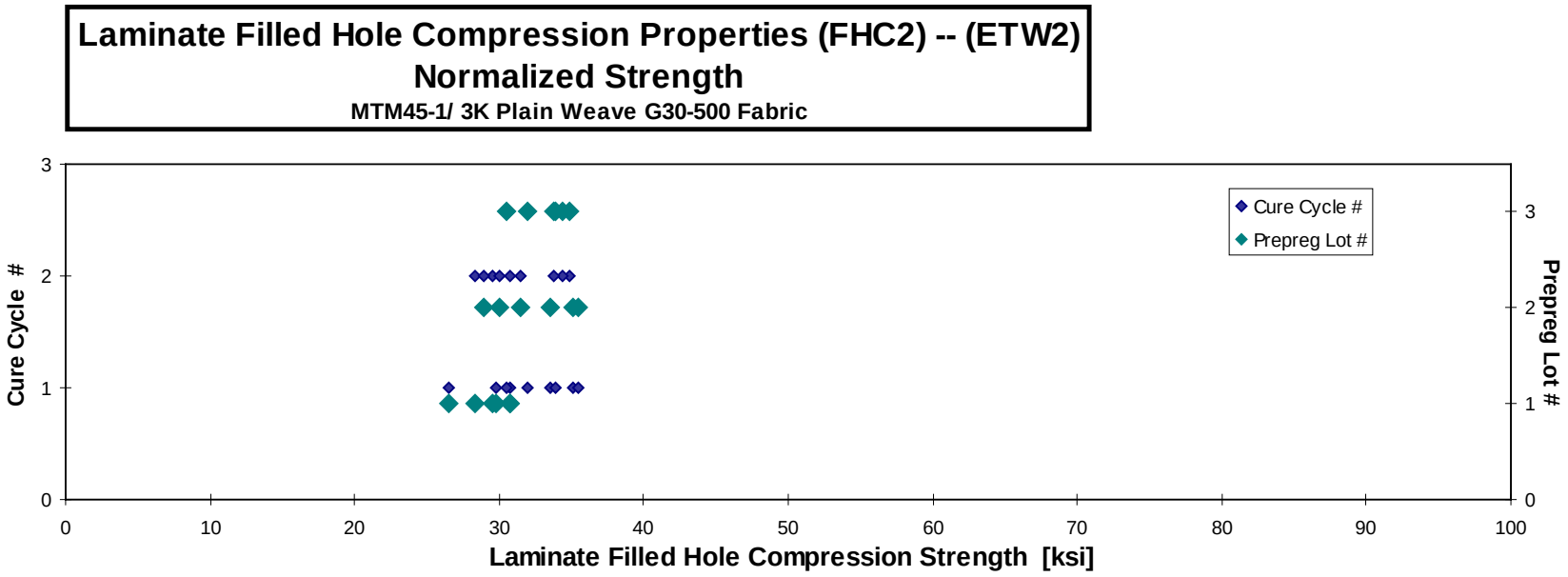

Laminate Filled Hole Compression Properties (FHC2) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
10
20
30
40
50
60
70
80
90
100
Laminate Filled Hole Compression Strength [ksi]

Laminate Filled Hole Compression Properties (FHC2) -- (ETW2)
Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N8A111D	A	MH1	1	1	26.546	0.158	20	0.0079	LGF	0.0079	26.524
A0N8A112D	A	MH1	1	1	29.438	0.160	20	0.0080	AGF	0.0080	29.733
A0N8A114D	A	MH1	1	1	30.313	0.160	20	0.0080	AGF	0.0080	30.725
A0N8A215D	A	MH2	1	2	29.133	0.160	20	0.0080	AGF	0.0080	29.566
A0N8A216D	A	MH2	1	2	30.379	0.160	20	0.0080	AGF	0.0080	30.805
A0N8A217D	A	MH2	1	2	27.781	0.161	20	0.0081	AGF	0.0081	28.385
A0N8B111D	B	MH1	2	1	32.801	0.161	20	0.0081	AGF	0.0081	33.489
A0N8B112D	B	MH1	2	1	34.233	0.162	20	0.0081	AGF	0.0081	35.143
A0N8B114D	B	MH1	2	1	34.262	0.163	20	0.0082	AGF	0.0082	35.433
A0N8B211D	B	MH2	2	2	28.193	0.162	20	0.0081	AGF	0.0081	28.978
A0N8B212D	B	MH2	2	2	31.137	0.160	20	0.0080	AGF	0.0080	31.488
A0N8B213D	B	MH2	2	2	29.282	0.162	20	0.0081	AGF	0.0081	30.045
A0N8C111D	C	MH1	3	1	31.040	0.163	20	0.0081	AGF	0.0081	31.925
A0N8C112D	C	MH1	3	1	32.734	0.163	20	0.0082	AGF	0.0082	33.856
A0N8C113D	C	MH1	3	1	29.966	0.161	20	0.0080	AGF	0.0080	30.504
A0N8C211D	C	MH2	3	2	34.071	0.162	20	0.0081	AGF	0.0081	34.876
A0N8C212D	C	MH2	3	2	33.489	0.162	20	0.0081	AGF	0.0081	34.439
A0N8C213D	C	MH2	3	2	32.785	0.163	20	0.0081	AGF	0.0081	33.726

Average	**30.977**	**Average**	**0.0081**	**$Average_{norm}$**	**31.647**
Standard Dev.	**2.364**			**Standard $Dev._{norm}$**	**2.600**
Coeff. of Var. [%]	**7.633**			**Coeff. of Var. $[\%]_{norm}$**	**8.215**
Min.	**26.546**	**Min.**	**0.0079**	**Min.**	**26.524**
Max.	**34.262**	**Max.**	**0.0082**	**Max.**	**35.433**
Number of Spec.	**18**			**Number of Spec.**	**18**


Laminate Filled Hole Compression Properties (FHC2) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90
100

4.26 Filled Hole Compression 3 Properties

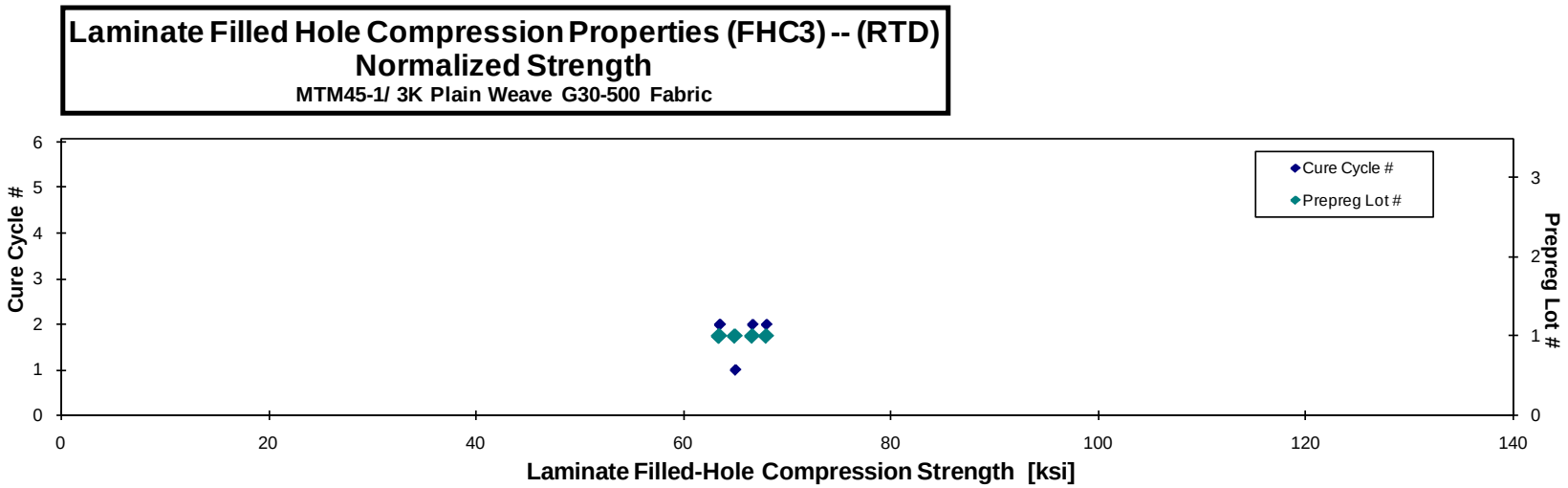
Laminate Filled Hole Compression Properties (FHC3) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N9A114A	A	MH1	1	1	64.985	0.121	15	0.0080	LGT	0.0080	66.082
A0N9A217A	A	MH2	1	2	67.982	0.120	15	0.0080	LGM	0.0080	68.785
A0N9A218A	A	MH2	1	2	63.462	0.120	15	0.0080	LGM	0.0080	64.443
A0N9A219A	A	MH2	1	2	66.645	0.120	15	0.0080	LGB	0.0080	67.385
A0N9A21AA	A	MH2	1	2	63.503	0.121	15	0.0081	LGM	0.0081	64.789

One specimen short due to improper failure mode received

Average	**65.315**	**Average**	**0.0080**	**$Average_{norm}$** **0.0080** **66.297**
Standard Dev.	**1.981**			**$Standard\ Dev._{norm}$** **1.812**
Coeff. of Var. [%]	**3.034**			**$Coeff.\ of\ Var.\ [\%]_{norm}$** **2.733**
Min.	**63.462**	**Min.**	**0.0080**	**Min.** **0.0080** **64.443**
Max.	**67.982**	**Max.**	**0.0081**	**Max.** **0.0081** **68.785**
Number of Spec.	**5**			**Number of Spec.** **5**


Laminate Filled Hole Compression Properties (FHC3) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
4
5
6
0
1
2
3
0
20
40
60
80
100
120
140
Laminate Filled-Hole Compression Strength [ksi]

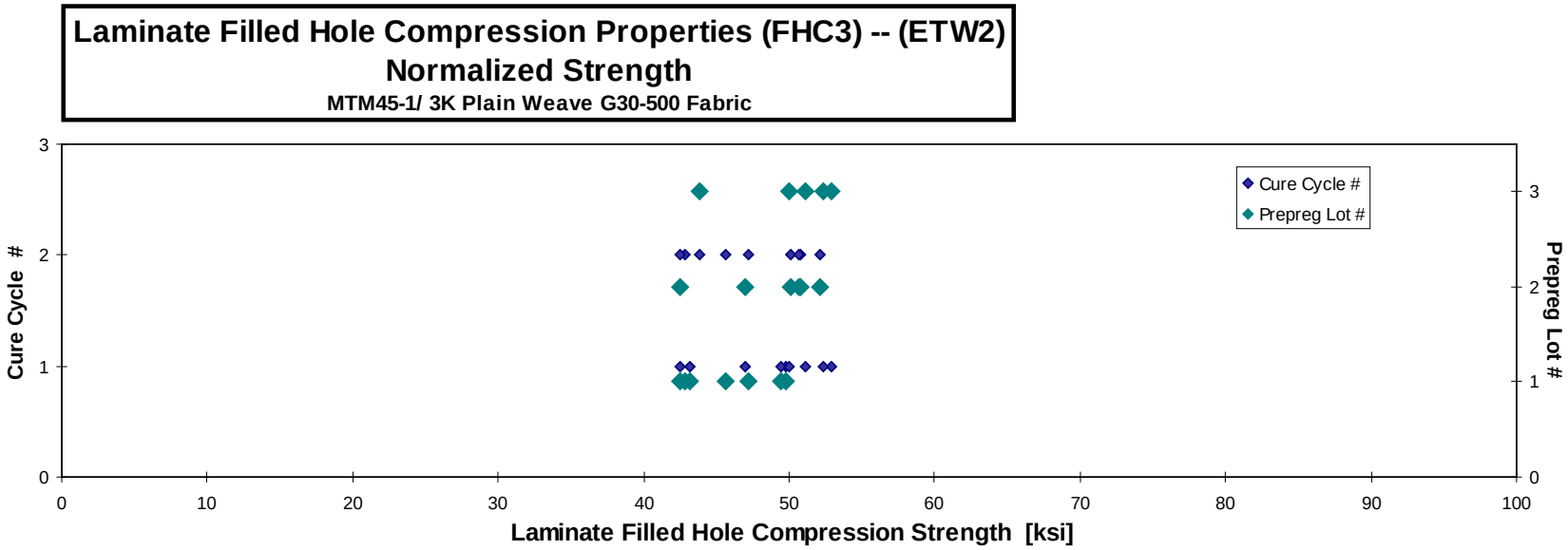
Laminate Filled Hole Compression Properties (FHC3) -- (ETW2) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0N9A116D	A	MH1	1	1	49.232	0.120	15	0.00798	LGF	0.0080	49.814
A0N9A117D	A	MH1	1	1	49.030	0.119	15	0.00798	LGF	0.0080	49.423
A0N9A119D	A	MH1	1	1	42.979	0.119	15	0.00798	LGF	0.0079	43.148
A0N9A213D	A	MH2	1	2	44.921	0.120	15	0.00800	LGF	0.0080	45.628
A0N9A214D	A	MH1	1	2	42.334	0.120	15	0.00801	LGF	0.0080	42.894
A0N9A215D	A	MH2	1	2	41.961	0.120	15	0.00801	LGT	0.0080	42.557
A0N9A216D	A	MH2	1	2	46.467	0.120	15	0.00802	LGF	0.0080	47.199
A0N9B113D	B	MH1	2	1	46.323	0.120	15	0.00800	LGF	0.0080	46.935
A0N9B116D	B	MH1	2	1	42.135	0.120	15	0.00797	LGT	0.0080	42.491
A0N9B211D	B	MH2	2	2	49.711	0.120	15	0.00797	LGF	0.0080	50.138
A0N9B212D	B	MH2	2	2	49.595	0.121	15	0.00809	LGF	0.0081	50.774
A0N9B213D	B	MH2	2	2	48.943	0.123	15	0.00819	LGF	0.0082	50.712
A0N9B214D	B	MH2	2	2	51.109	0.121	15	0.00807	LGM	0.0081	52.181
A0N9C113D	C	MH1	3	1	49.056	0.121	15	0.0081	LGB	0.0081	50.008
A0N9C114D	C	MH1	3	1	51.551	0.122	15	0.0081	LGF	0.0081	52.928
A0N9C115D	C	MH1	3	1	50.353	0.120	15	0.0080	LGF	0.0080	51.111
A0N9C116D	C	MH1	3	1	51.525	0.120	15	0.0080	LGF	0.0080	52.366
A0N9C211D	C	MH2	3	2	43.707	0.119	15	0.0079	LGF	0.0079	43.891

Average	**47.274**	**Average**	**0.0080**	**$Average_{norm}$**	**0.0080**	**48.011**
Standard Dev.	**3.448**			**$Standard\ Dev._{norm}$**		**3.705**
Coeff. of Var. [%]	**7.293**			**Coeff. of Var. [%]$_{norm}$**		**7.717**
Min.	**41.961**	**Min.**	**0.0079**	**Min.**	**0.0079**	**42.491**
Max.	**51.551**	**Max.**	**0.0082**	**Max.**	**0.0082**	**52.928**
Number of Spec.	**18**			**Number of Spec.**		**18**


Laminate Filled Hole Compression Properties (FHC3) -- (ETW2)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Filled Hole Compression Strength [ksi]
0
1
2
3
0
10
20
30
40
50
60
70
80
90
100

4.27 Pin Bearing 1 Properties

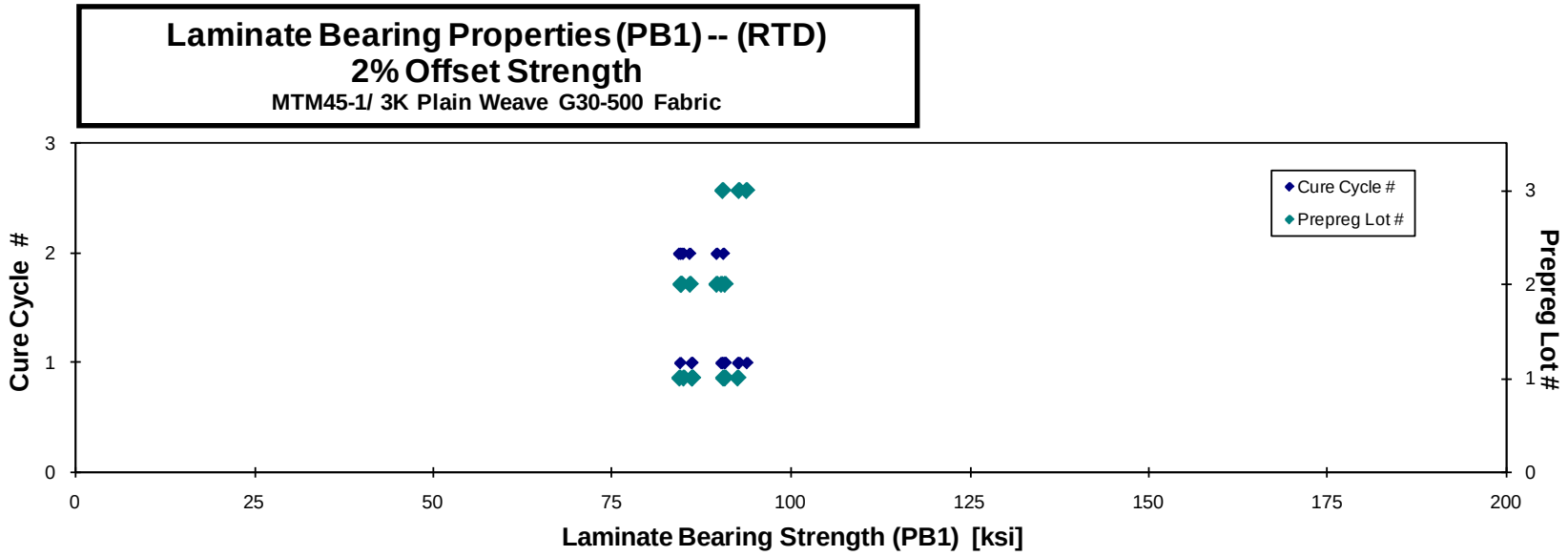
Laminate Bearing Properties (PB1) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N1A111A	A	MH1	1	1	86.116	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	87.002
A0N1A112A	A	MH1	1	1	86.067	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	87.452
A0N1A113A	A	MH1	1	1	92.489	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	93.758
A0N1A114A	A	MH1	1	1	90.703	0.126	16	0.0079	2% OFFSET FOR UBS* / B1I	0.0079	90.667
A0N1A211A	A	MH2	1	2	84.885	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	85.836
A0N1A212A	A	MH2	1	2	90.468	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	91.983
A0N1A213A	A	MH2	1	2	84.312	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	85.891
A0N1B112A	B	MH1	2	1	90.178	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	91.700
A0N1B113A	B	MH1	2	1	84.477	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	85.524
A0N1B114A	B	MH1	2	1	90.688	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	91.717
A0N1B211A	B	MH2	2	2	85.795	0.126	16	0.0079	2% OFFSET FOR UBS* / B1I	0.0079	85.852
A0N1B212A	B	MH2	2	2	84.577	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	86.060
A0N1B213A	B	MH2	2	2	89.529	0.129	16	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	91.690
A0N1C111A	C	MH1	3	1	92.646	0.121	16	0.0076	2% OFFSET FOR UBS* / B1I	0.0076	89.006
A0N1C112A	C	MH1	3	1	93.720	0.121	16	0.0076	2% OFFSET FOR UBS* / B1I	0.0076	90.062
A0N1C113A	C	MH1	3	1	90.370	0.122	16	0.0076	2% OFFSET FOR UBS* / B1I	0.0076	86.938
A0N1C211A	C	MH2	3	2	78.658	0.128	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	79.343
A0N1C212A*	C	MH2	3	2	69.395	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	70.612
A0N1C213A*	C	MH2	3	2	75.386	0.129	16	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	76.858
A0N1C214A*	C	MH2	3	2	77.814	0.129	16	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	79.137
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

* results vary due to fixture hole deformation, data not plotted

Average	**87.981**	**Average**	**0.0079**	**$Average_{norm}$**	**0.0079**	**88.263**
Standard Dev.	**3.989**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**3.556**
Coeff. of Var. [%]	**4.534**	**Coeff. of Var. [%]**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**4.029**
Min.	**78.658**	**Min.**	**0.0076**	**Min.**	**0.0076**	**79.343**
Max.	**93.720**	**Max.**	**0.0081**	**Max.**	**0.0081**	**93.758**
Number of Spec.	**17**	**Number of Spec.**	**17**	**Number of Spec.**		**17**


Laminate Bearing Properties (PB1) -- (RTD)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Bearing Strength (PB1) [ksi]
0
1
2
3
0
25
50
75
100
125
150
175
200

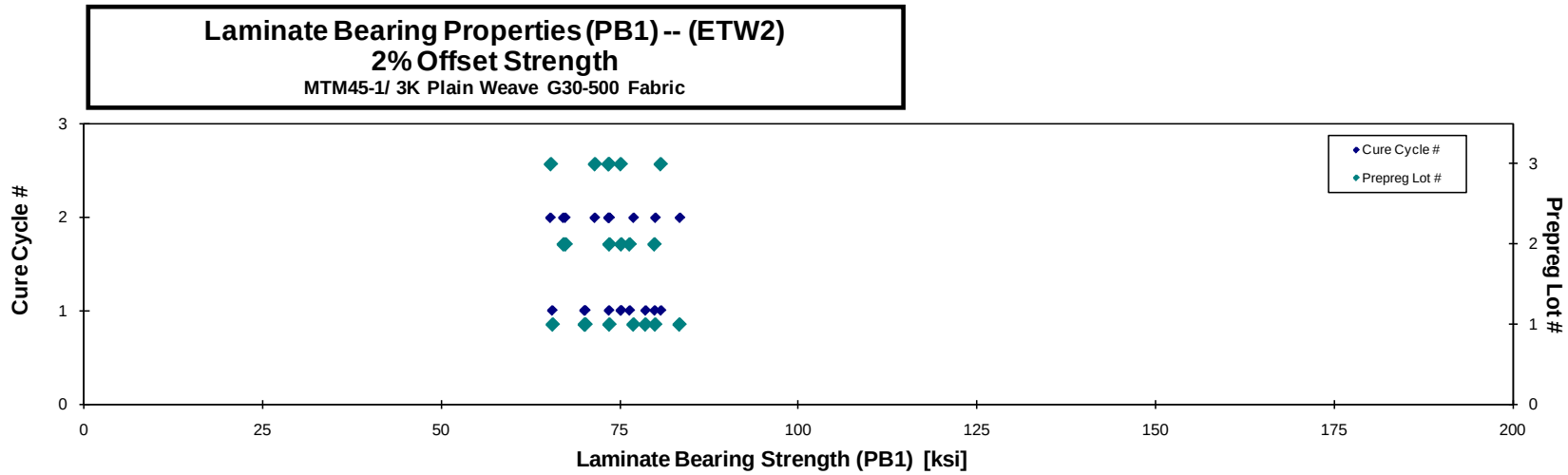
Laminate Bearing Properties (PB1) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N1A115D	A	MH1	1	1	64.912	0.128	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	65.545
A0N1A116D	A	MH1	1	1	69.330	0.128	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	70.162
A0N1A117D	A	MH1	1	1	76.287	0.130	16	0.0081	2% OFFSET FOR UBS / B1I	0.0081	78.600
A0N1A118D	A	MH1	1	1	69.408	0.128	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	70.049
A0N1A216D	A	MH2	1	2	82.731	0.127	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	83.396
A0N1A217D	A	MH2	1	2	76.889	0.126	16	0.0079	2% OFFSET FOR UBS / B1I	0.0079	76.920
A0N1A218D	A	MH2	1	2	72.205	0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	73.529
A0N1A219D	A	MH2	1	2	78.584	0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	79.973
A0N1B115D	B	MH1	2	1	74.090	0.128	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	75.193
A0N1B116D	B	MH1	2	1	78.836	0.122	16	0.0077	2% OFFSET FOR UBS / B1I	0.0077	76.372
A0N1B117D	B	MH1	2	1	79.465	0.127	16	0.0079	2% OFFSET FOR UBS / B1I	0.0079	79.874
A0N1B216D	B	MH2	2	2	66.117	0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	67.364
A0N1B219D	B	MH2	2	2	70.520	0.120	16	0.0075	2% OFFSET FOR UBS / B1I	0.0075	67.089
A0N1B21AD	B	MH2	2	2	75.643	0.123	16	0.0077	2% OFFSET FOR UBS / B1I	0.0077	73.529
A0N1C116D	C	MH1	3	1	78.690	0.121	16	0.0075	2% OFFSET FOR UBS / B1I	0.0075	75.121
A0N1C117D	C	MH1	3	1	77.184	0.120	16	0.0075	2% OFFSET FOR UBS / B1I	0.0075	73.480
A0N1C118D	C	MH1	3	1	80.293	0.127	16	0.0079	2% OFFSET FOR UBS / B1I	0.0079	80.748
A0N1C215D*	C	MH2	3	2		0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	
A0N1C216D*	C	MH2	3	2		0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	
A0N1C217D	C	MH2	3	2	72.193	0.129	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	73.402
A0N1C218D	C	MH2	3	2	70.570	0.128	16	0.0080	2% OFFSET FOR UBS / B1I	0.0080	71.491
A0N1C219D*	C	MH2	3	2		0.124	16	0.0077	2% OFFSET FOR UBS / B1I	0.0077	
A0N1C21AD	C	MH2	3	2	65.014	0.127	16	0.0079	2% OFFSET FOR UBS / B1I	0.0079	65.288
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

*extensometer slipped

Average	**73.948**	**Average**	**0.0079**	**$Average_{norm}$**	**0.0079**	**73.856**
Standard Dev.	**5.317**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**5.224**
Coeff. of Var. [%]	**7.191**	**Coeff. of Var. [%]**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.073**
Min.	**64.912**	**Min.**	**0.0075**	**Min.**	**0.0075**	**65.288**
Max.	**82.731**	**Max.**	**0.0081**	**Max.**	**0.0081**	**83.396**
Number of Spec.	**20**	**Number of Spec.**	**23**	**Number of Spec.**		**20**


Laminate Bearing Properties (PB1) -- (ETW2)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
25
50
75
100
125
150
175
200
Laminate Bearing Strength (PB1) [ksi]

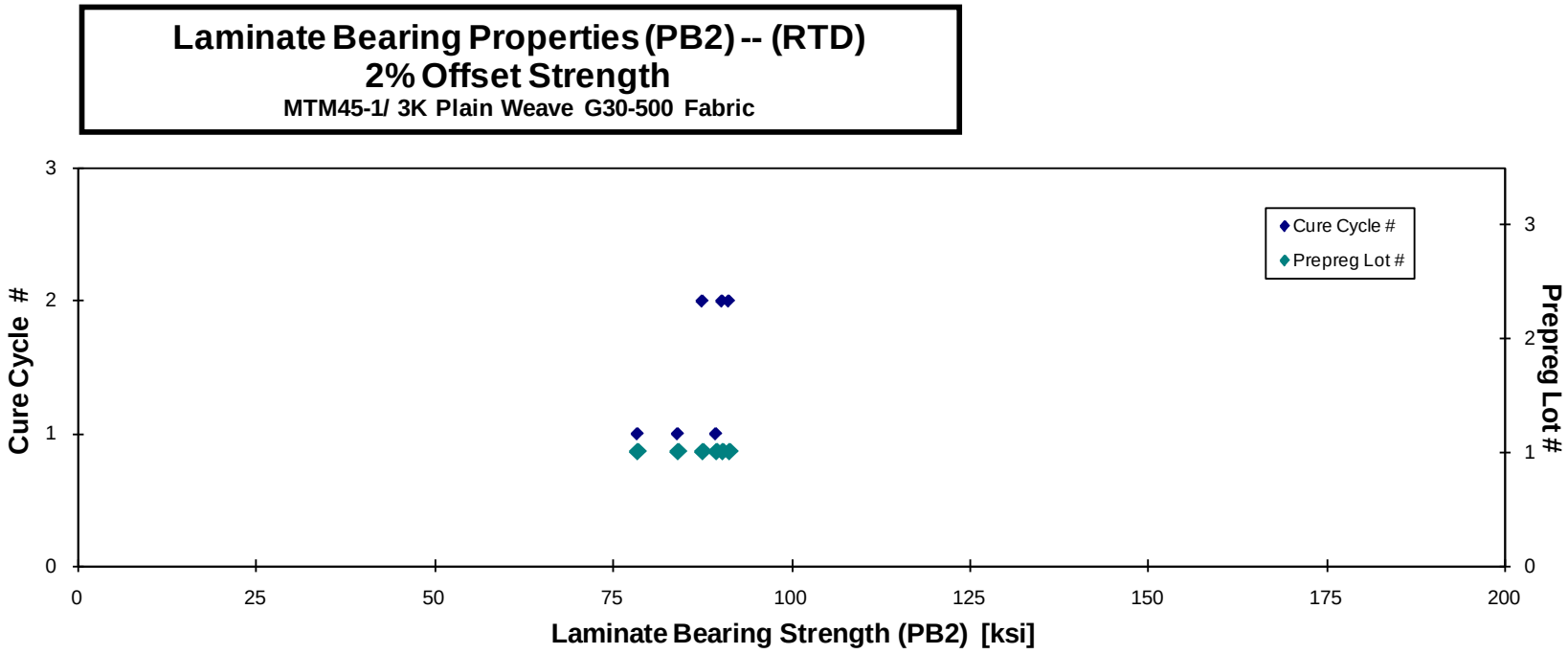
4.28 Pin Bearing 2 Properties

Laminate Bearing Properties (PB2) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N2A111A	A	MH1	1	1	90.497	0.156	20	0.0078	2% OFFSET FOR UBS* / B1I	0.0078	89.409
A0N2A112A	A	MH1	1	1	82.758	0.160	20	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	84.033
A0N2A113A	A	MH1	1	1	78.263	0.158	20	0.0079	2% OFFSET FOR UBS* / B1I	0.0079	78.378
A0N2A211A	A	MH2	1	2	90.260	0.158	20	0.0079	2% OFFSET FOR UBS* / B1I	0.0079	90.269
A0N2A212A	A	MH2	1	2	90.134	0.160	20	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	91.218
A0N2A213A	A	MH2	1	2	86.361	0.160	20	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	87.491
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

Average	**86.379**	**Average**	**0.0079**	**$Average_{norm}$**	**0.0079**	**86.800**
Standard Dev.	**5.002**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**4.846**
Coeff. of Var. [%]	**5.791**	**Coeff. of Var. [%]**		**Coeff. of Var. $[\%]_{norm}$**		**5.583**
Min.	**78.263**	**Min.**	**0.0078**	**Min.**	**0.0078**	**78.378**
Max.	**90.497**	**Max.**	**0.0080**	**Max.**	**0.0080**	**91.218**
Number of Spec.	**6**	**Number of Spec.**	**6**	**Number of Spec.**		**6**

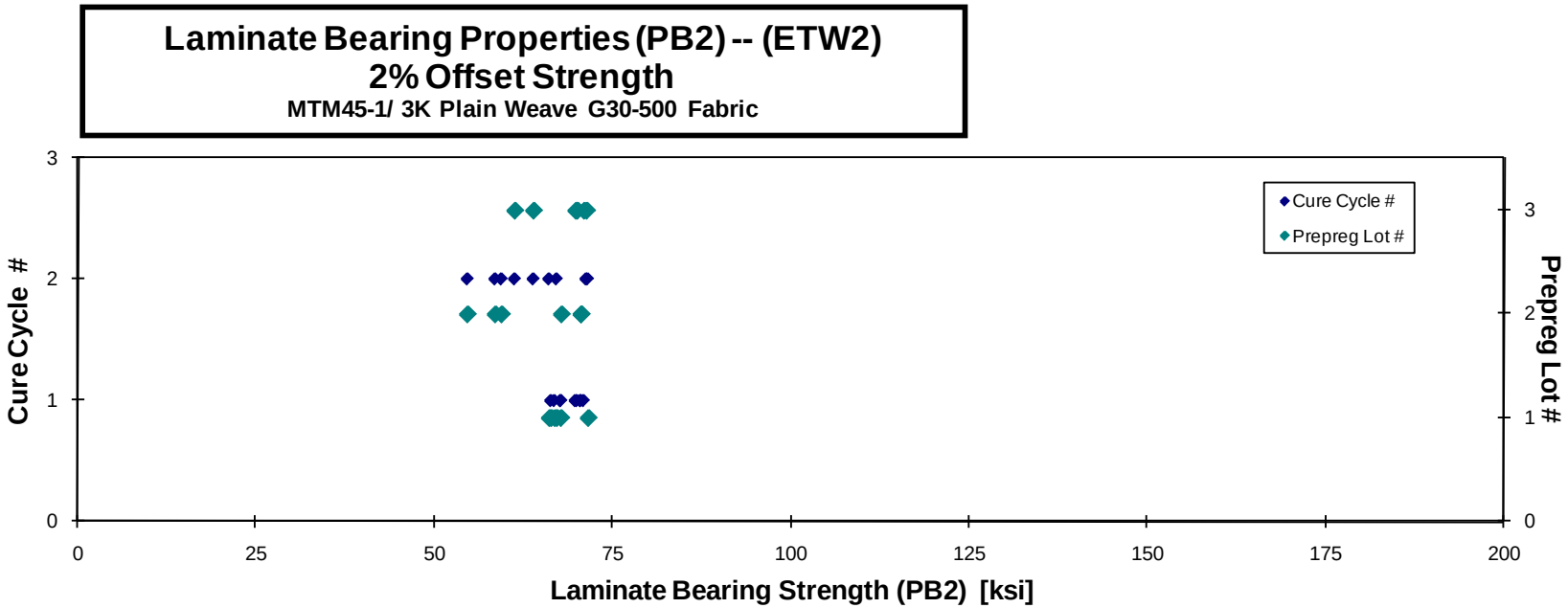

Laminate Bearing Properties (PB2) -- (RTD)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Bearing Strength (PB2) [ksi]
0
1
2
3
0
25
50
75
100
125
150
175
200

Laminate Bearing Properties (PB2) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N2A117D	A	MH1	1	1	67.217	0.159	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	67.720
A0N2A118D	A	MH1	1	1	64.764	0.162	20	0.0081	2% OFFSET FOR UBS / B1I	0.0081	66.369
A0N2A11AD	A	MH1	1	1	69.009	0.153	20	0.0077	2% OFFSET FOR UBS / B1I	0.0077	66.862
A0N2A215D	A	MH2	1	2	71.187	0.159	20	0.0079	2% OFFSET FOR UBS / B1I	0.0079	71.562
A0N2A216D	A	MH2	1	2	66.755	0.159	20	0.0079	2% OFFSET FOR UBS / B1I	0.0079	67.163
A0N2A217D	A	MH2	1	2	66.411	0.157	20	0.0079	2% OFFSET FOR UBS / B1I	0.0079	66.103
A0N2B111D	B	MH1	2	1	66.951	0.160	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	67.798
A0N2B112D	B	MH1	2	1	69.388	0.161	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	70.545
A0N2B117D	B	MH1	2	1	69.711	0.160	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	70.579
A0N2B212D	B	MH2	2	2	60.421	0.155	20	0.0078	2% OFFSET FOR UBS / B1I	0.0078	59.389
A0N2B213D	B	MH2	2	2	59.611	0.155	20	0.0078	2% OFFSET FOR UBS / B1I	0.0078	58.504
A0N2B214D	B	MH2	2	2	55.292	0.156	20	0.0078	2% OFFSET FOR UBS / B1I	0.0078	54.603
A0N2C112D	C	MH1	3	1	70.882	0.158	20	0.0079	2% OFFSET FOR UBS / B1I	0.0079	70.979
A0N2C115D	C	MH1	3	1	68.500	0.161	20	0.0081	2% OFFSET FOR UBS / B1I	0.0081	69.815
A0N2C116D	C	MH1	3	1	69.116	0.160	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	70.042
A0N2C211D	C	MH2	3	2	60.803	0.159	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	61.258
A0N2C215D	C	MH2	3	2	70.471	0.160	20	0.0080	2% OFFSET FOR UBS / B1I	0.0080	71.340
A0N2C216D	C	MH2	3	2	63.530	0.159	20	0.0079	2% OFFSET FOR UBS / B1I	0.0079	63.892
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

Average	**66.112**	**Average**	**0.0079**	**$Average_{norm}$**	**0.0079**	**66.362**
Standard Dev.	**4.506**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**4.968**
Coeff. of Var. [%]	**6.815**	**Coeff. of Var. [%]**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.486**
Min.	**55.292**	**Min.**	**0.0077**	**Min.**	**0.0077**	**54.603**
Max.	**71.187**	**Max.**	**0.0081**	**Max.**	**0.0081**	**71.562**
Number of Spec.	**18**	**Number of Spec.**	**18**	**Number of Spec.**		**18**


Laminate Bearing Properties (PB2) -- (ETW2)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Bearing Strength (PB2) [ksi]
0
1
2
3
0
25
50
75
100
125
150
175
200

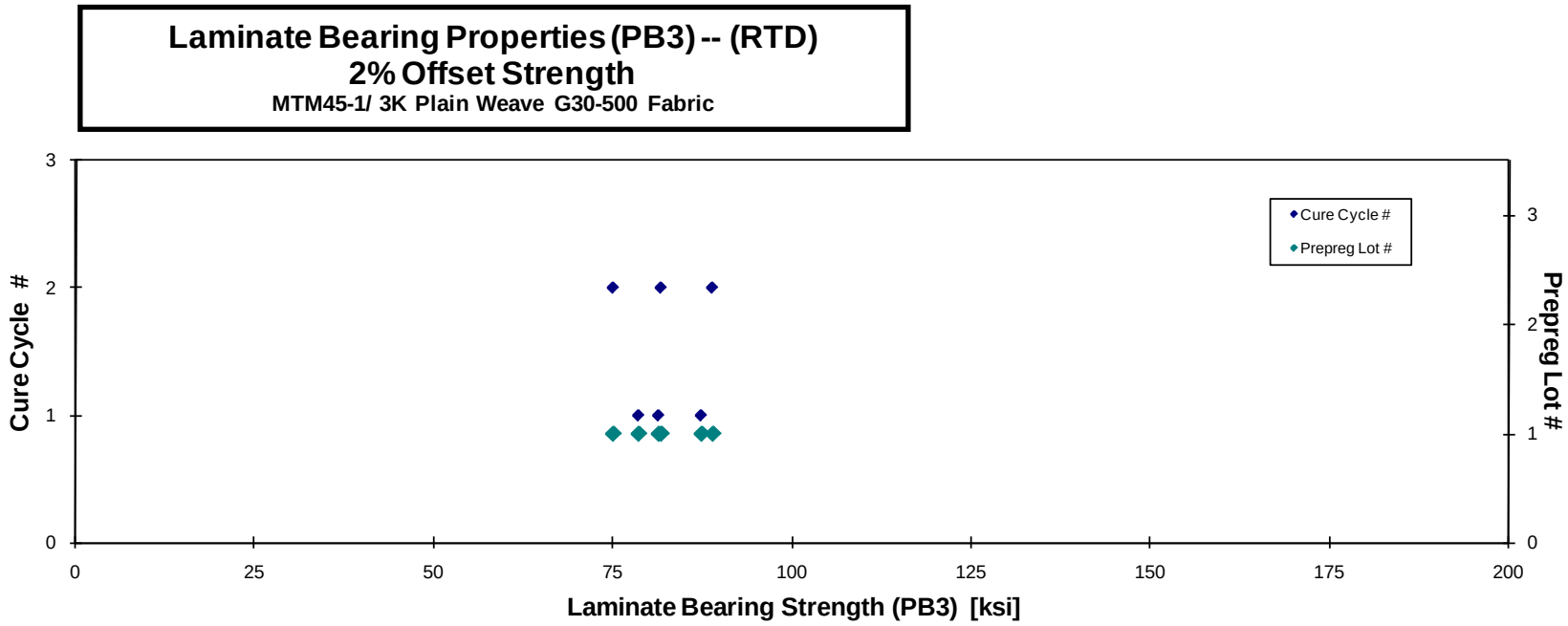
4.29 Pin Bearing 3 Properties

Laminate Bearing Properties (PB3) -- (RTD)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]
0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N3A111A	A	MH1	1	1	85.600	0.121	15	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	87.321
A0N3A112A	A	MH1	1	1	76.344	0.122	15	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	78.545
A0N3A113A	A	MH1	1	1	79.274	0.122	15	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	81.347
A0N3A211A	A	MH2	1	2	74.307	0.120	15	0.0080	2% OFFSET FOR UBS* / B1I	0.0080	74.987
A0N3A212A	A	MH2	1	2	86.991	0.121	15	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	88.888
A0N3A213A	A	MH2	1	2	79.793	0.121	15	0.0081	2% OFFSET FOR UBS* / B1I	0.0081	81.690
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

Average	**80.385**	**Average**	**0.0081**	**$Average_{norm}$**	**0.0081**	**82.130**
Standard Dev.	**5.014**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**5.240**
Coeff. of Var. [%]	**6.237**	**Coeff. of Var. [%]**		**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.381**
Min.	**74.307**	**Min.**	**0.0080**	**Min.**	**0.0080**	**74.987**
Max.	**86.991**	**Max.**	**0.0081**	**Max.**	**0.0081**	**88.888**
Number of Spec.	**6**	**Number of Spec.**	**6**	**Number of Spec.**		**6**

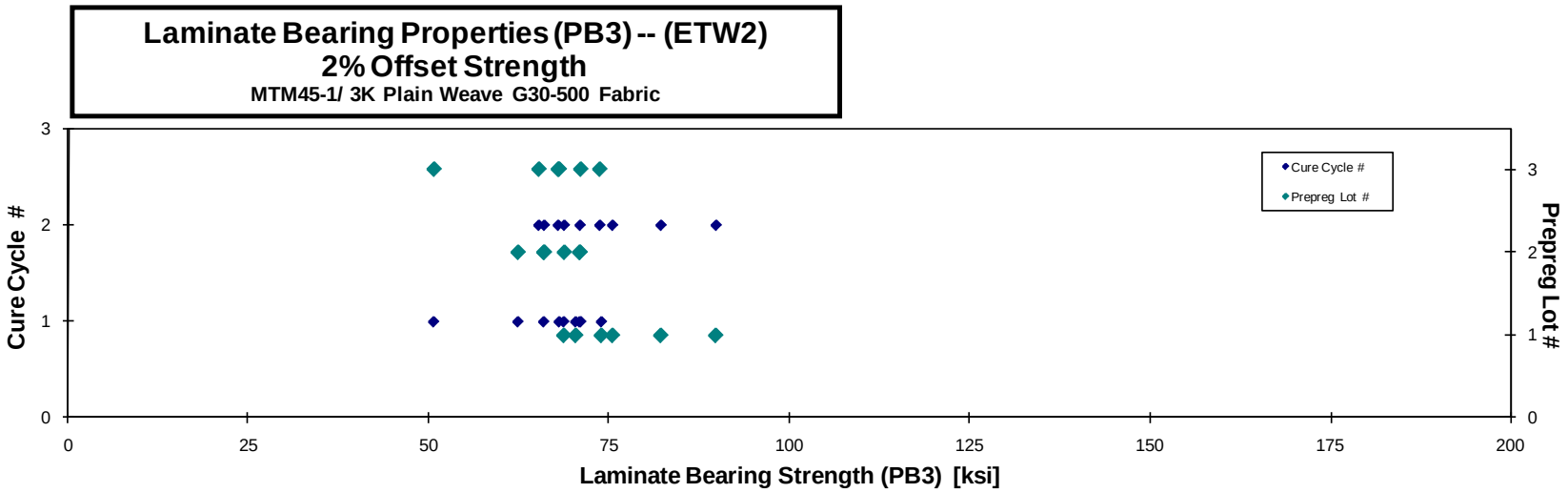

Laminate Bearing Properties (PB3) -- (RTD)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
Laminate Bearing Strength (PB3) [ksi]
0
1
2
3
0
25
50
75
100
125
150
175
200

Laminate Bearing Properties (PB3) -- (ETW2)
Strength & Modulus
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	2% Offset Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. tply [in]	Comments	Avg. t_{ply} [in]	2% $Strength_{norm}$ [ksi]
A0N3A118D	A	MH1	1	1	70.456	0.116	15	0.0077	2% OFFSET FOR UBS / B1I	0.0077	68.772
A0N3A119D	A	MH1	1	1	76.059	0.115	15	0.0077	2% OFFSET FOR UBS / B1I	0.0077	73.983
A0N3A11AD	A	MH1	1	1	71.445	0.117	15	0.0078	2% OFFSET FOR UBS / B1I	0.0078	70.420
A0N3A215D	A	MH2	1	2	73.697	0.121	15	0.0081	2% OFFSET FOR UBS / B1I	0.0081	75.531
A0N3A216D	A	MH2	1	2	89.120	0.120	15	0.0080	2% OFFSET FOR UBS / B1I	0.0080	89.872
A0N3A217D	A	MH2	1	2	85.835	0.114	15	0.0076	2% OFFSET FOR UBS / B1I	0.0076	82.237
A0N3B113D	B	MH1	2	1	62.983	0.117	15	0.0078	2% OFFSET FOR UBS / B1I	0.0078	62.424
A0N3B114D	B	MH1	2	1	66.348	0.118	15	0.0079	2% OFFSET FOR UBS / B1I	0.0079	65.993
A0N3B115D	B	MH1	2	1	70.559	0.119	15	0.0079	2% OFFSET FOR UBS / B1I	0.0079	70.965
A0N3B214D	B	MH2	2	2	68.005	0.120	15	0.0080	2% OFFSET FOR UBS / B1I	0.0080	68.847
A0N3B215D	B	MH2	2	2	69.177	0.122	15	0.0081	2% OFFSET FOR UBS / B1I	0.0081	71.035
A0N3B217D	B	MH2	2	2	64.852	0.121	15	0.0080	2% OFFSET FOR UBS / B1I	0.0080	66.074
A0N3C111D	C	MH1	3	1	53.469	0.112	15	0.0075	2% OFFSET FOR UBS / B1I	0.0075	50.754
A0N3C112D	C	MH1	3	1	74.073	0.114	15	0.0076	2% OFFSET FOR UBS / B1I	0.0076	71.125
A0N3C115D	C	MH1	3	1	71.546	0.113	15	0.0075	2% OFFSET FOR UBS / B1I	0.0075	68.134
A0N3C211D	C	MH2	3	2	73.510	0.119	15	0.0079	2% OFFSET FOR UBS / B1I	0.0079	73.768
A0N3C212D	C	MH2	3	2	63.838	0.121	15	0.0081	2% OFFSET FOR UBS / B1I	0.0081	65.319
A0N3C214D	C	MH2	3	2	65.217	0.124	15	0.0082	2% OFFSET FOR UBS / B1I	0.0082	68.005
									Ultimate Bearing Strength / B1I: B:Bearing, 1:first hole, I: Inapplicable (not on bolt, nut or head side)		

Average	**70.566**	**Average**	**0.0079**	**$Average_{norm}$**	**0.0079**	**70.181**
Standard Dev.	**8.127**	**Standard Dev.**		**$Standard\ Dev._{norm}$**		**8.043**
Coeff. of Var. [%]	**11.516**	**Coeff. of Var. [%]**		**Coeff. of Var. [%]$_{norm}$**		**11.460**
Min.	**53.469**	**Min.**	**0.0075**	**Min.**	**0.0075**	**50.754**
Max.	**89.120**	**Max.**	**0.0082**	**Max.**	**0.0082**	**89.872**
Number of Spec.	**18**	**Number of Spec.**	**18**	**Number of Spec.**		**18**


Laminate Bearing Properties (PB3) -- (ETW2)
2% Offset Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Prepreg Lot #
Cure Cycle #
Prepreg Lot #
0
1
2
3
0
25
50
75
100
125
150
175
200
Laminate Bearing Strength (PB3) [ksi]

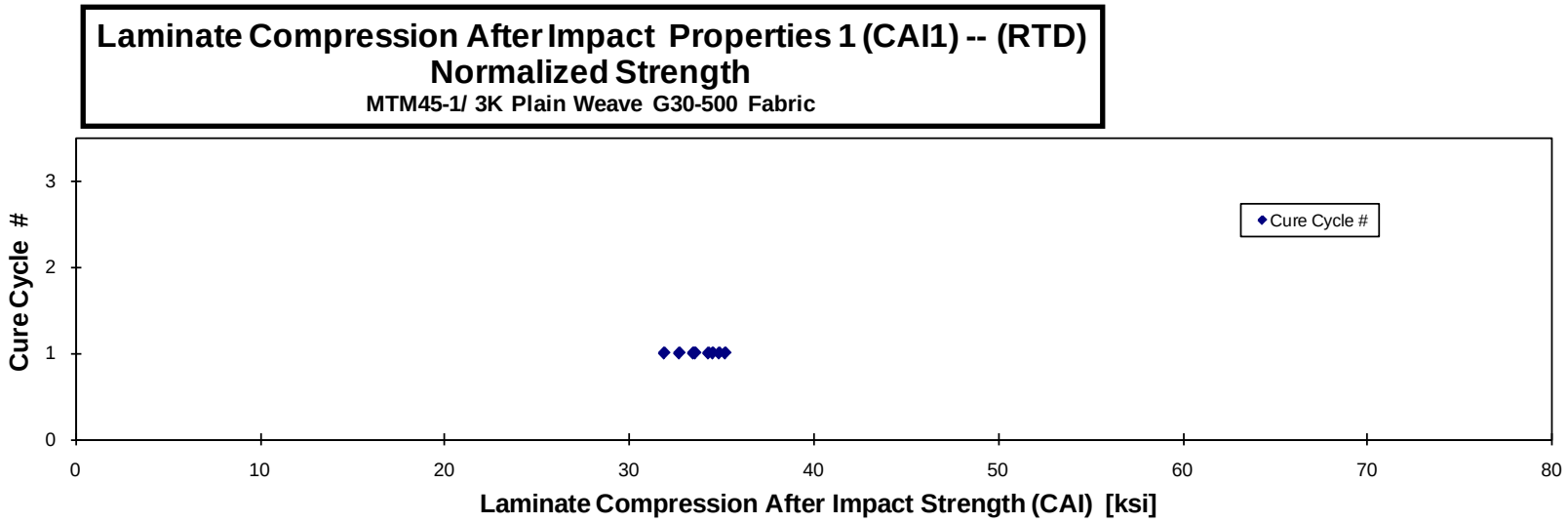
4.30 Compression Strength After Impact 1 Properties

Laminate Compression After Impact Properties (CAI) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

normalizing t_{ply} [in]: 0.0079

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Measured Impact Energy (in-lbf)	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Failure Mode	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]
A0NKA111A	A	MH1	1	1	238.02	34.714	0.157	20	LGM	0.0079	34.553
A0NKA112A	A	MH1	1	1	238.98	34.065	0.159	20	LDM	0.0080	34.317
A0NKA113A	A	MH1	1	1	236.04	33.217	0.159	20	LDM	0.0080	33.493
A0NKA114A	A	MH1	1	1	238.83	31.779	0.159	20	LDM	0.0079	31.920
A0NKA115A	A	MH1	1	1	238.26	34.847	0.160	20	LDM	0.0080	35.229
A0NKA116A	A	MH1	1	1	238.10	34.692	0.159	20	LGM	0.0079	34.901
A0NKA117A	A	MH1	1	1	239.26	33.702	0.158	20	LGM	0.0079	33.599
A0NKA118A	A	MH1	1	1	239.00	32.516	0.159	20	LDM	0.0080	32.739

Average	**33.691**	**$Average_{norm}$**	**0.0079**	**33.844**
Standard Dev.	**1.120**	**$Standard\ Dev._{norm}$**		**1.126**
Coeff. of Var. [%]	**3.325**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.326**
Min.	**31.779**	**Min.**	**0.0079**	**31.920**
Max.	**34.847**	**Max.**	**0.0080**	**35.229**
Number of Spec.	**8**	**Number of Spec.**		**8**

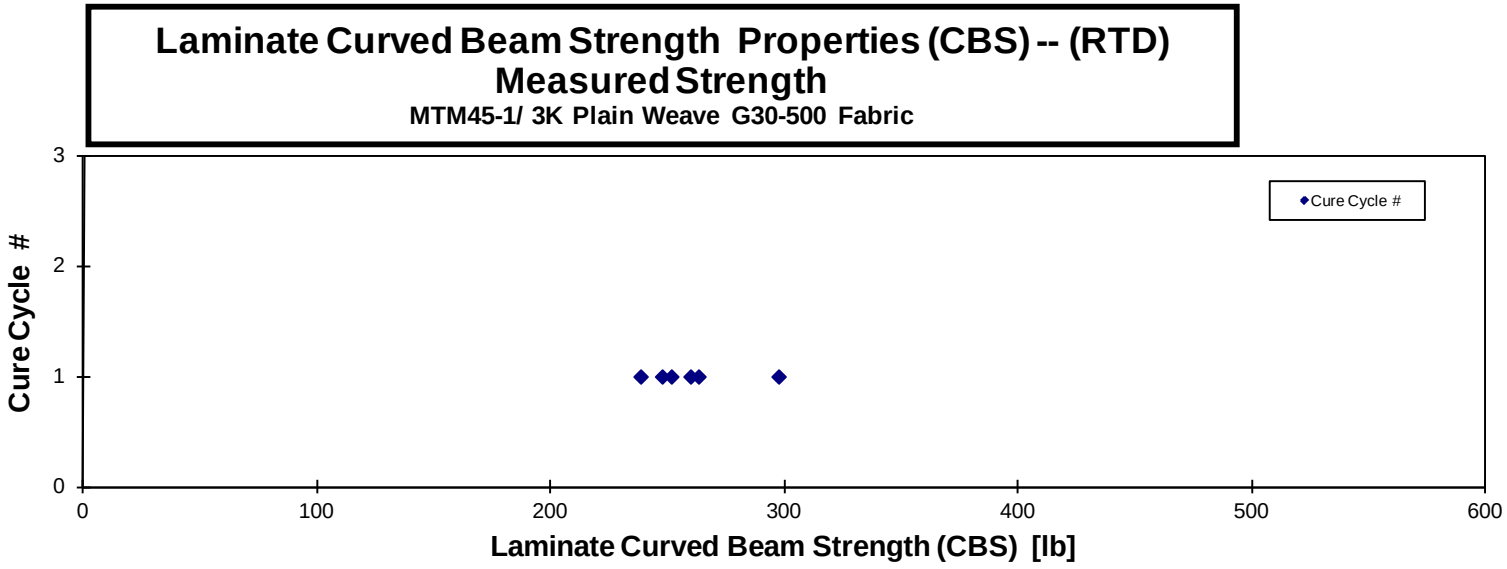

Laminate Compression After Impact Properties 1 (CAI1) -- (RTD)
Normalized Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Cure Cycle #
0
1
2
3
0
10
20
30
40
50
60
70
80
Laminate Compression After Impact Strength (CAI) [ksi]

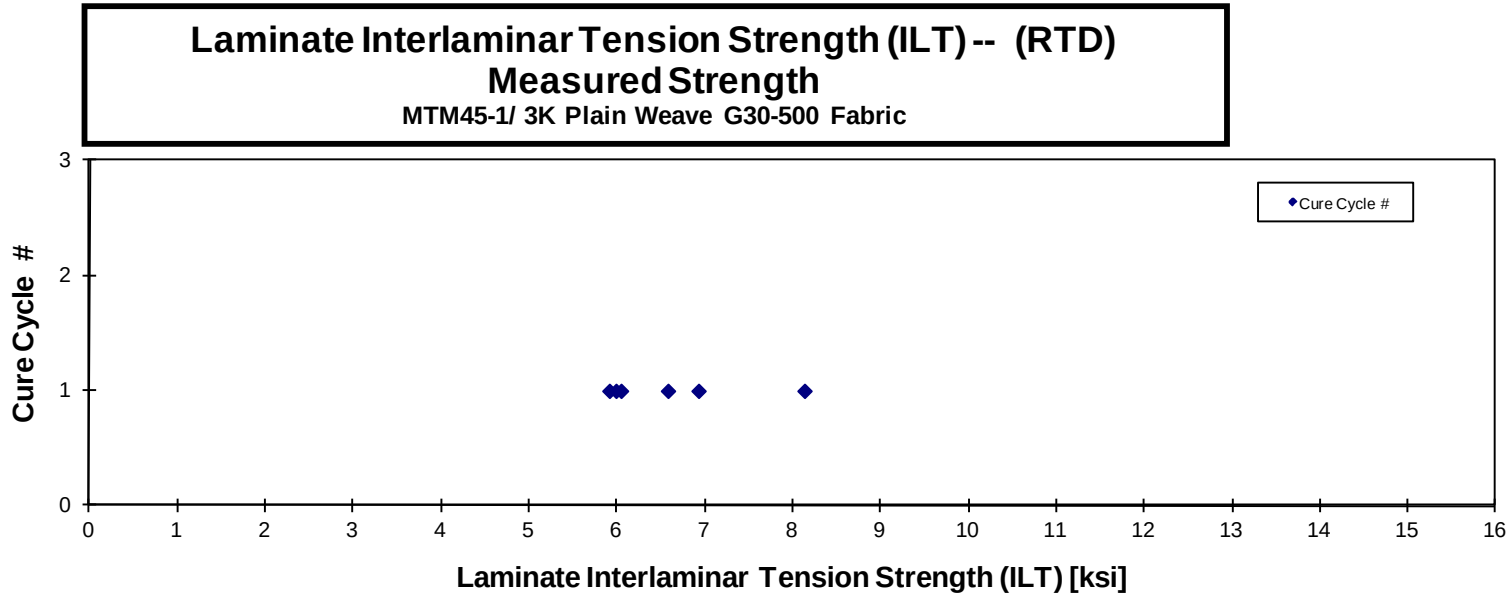
4.31 Interlaminar Tension Properties

Laminate Curved Beam Strength Properties (ILT) -- (RTD) Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric

Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate
A0NMA111A	A	MH1	1	1	238.105	5.911	0.160	20
A0NMA112A	A	MH1	1	1	259.469	6.578	0.160	20
A0NMA113A	A	MH1	1	1	251.252	5.986	0.159	20
A0NMA114A	A	MH1	1	1	297.144	8.131	0.161	20
A0NMA115A	A	MH1	1	1	262.884	6.926	0.160	20
A0NMA116A	A	MH1	1	1	247.310	6.044	0.161	20

Average	**259.361**	**6.596**
Standard Dev.	**20.507**	**0.850**
Coeff. of Var. [%]	**7.907**	**12.885**
Min.	**238.105**	**5.911**
Max.	**297.144**	**8.131**
Number of Spec.	**6**	**6**


Laminate Curved Beam Strength Properties (CBS) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Cure Cycle #
0
1
2
3
0
100
200
300
400
500
600
Laminate Curved Beam Strength (CBS) [lb]

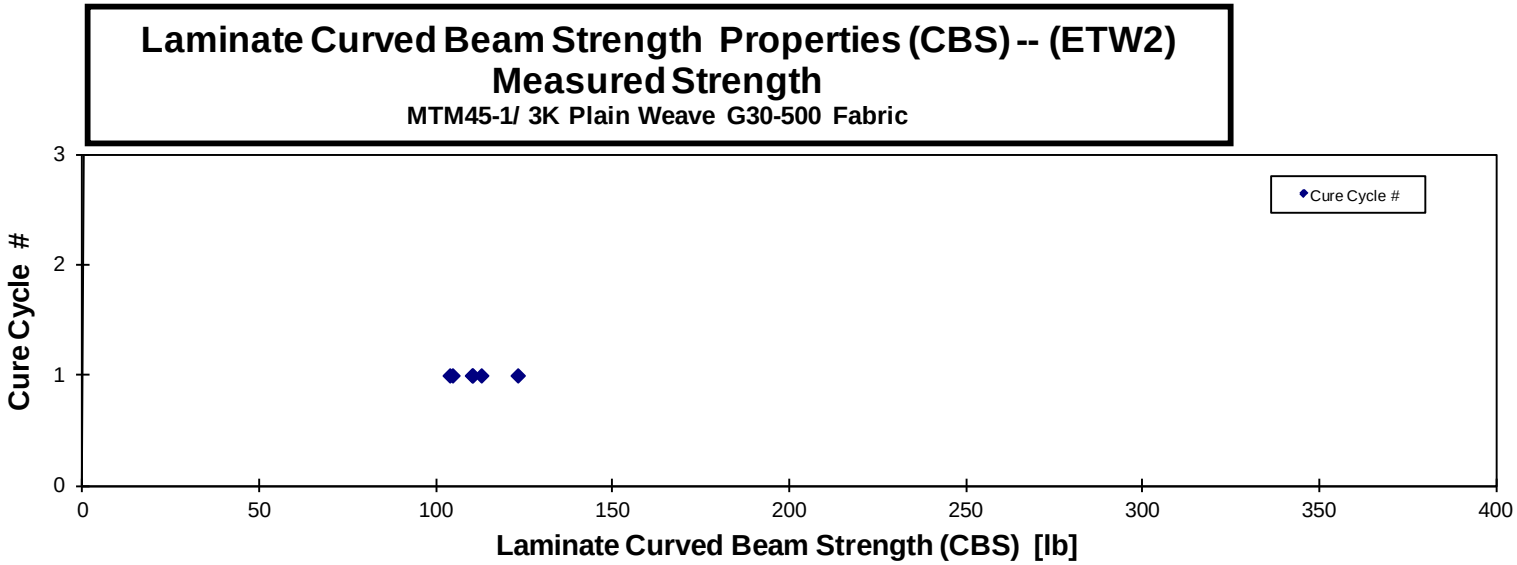

Laminate Interlaminar Tension Strength (ILT) -- (RTD)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Cure Cycle #
0
1
2
3
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Laminate Interlaminar Tension Strength (ILT) [ksi]

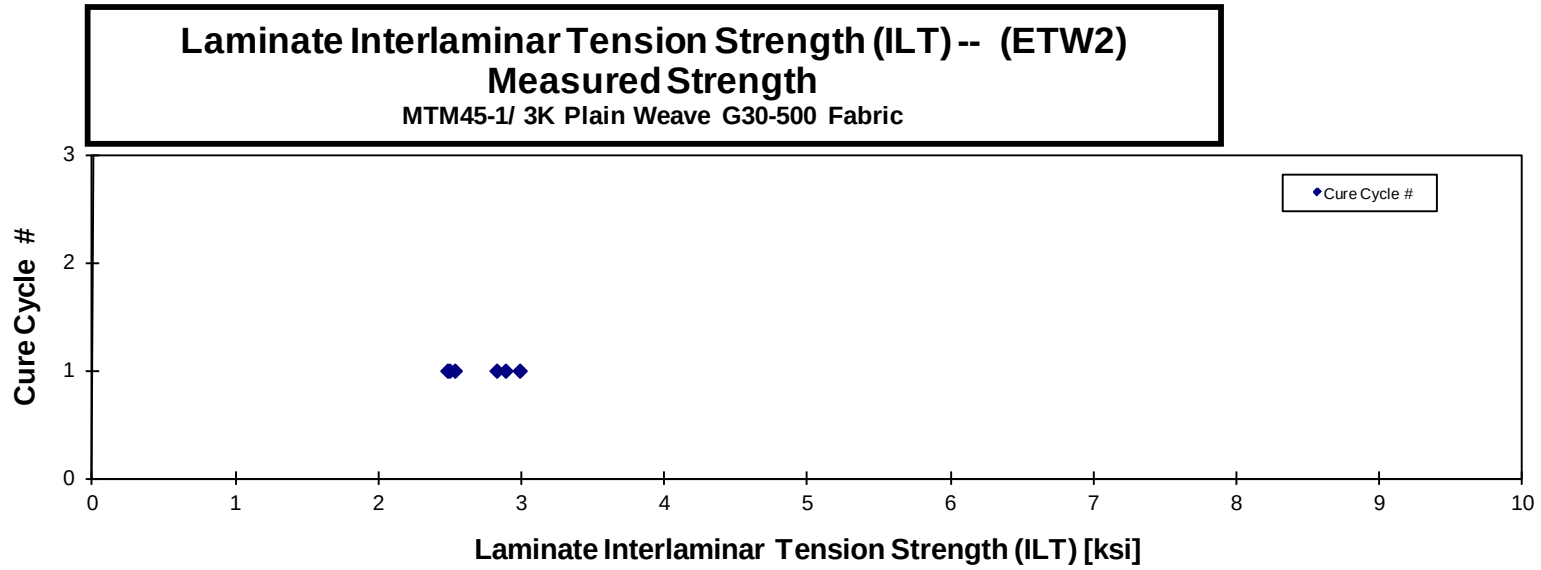
Laminate Curved Beam Strength Properties (ILT) -- (ETW2) Strength

MTM45-1/ 3K Plain Weave G30-500 Fabric

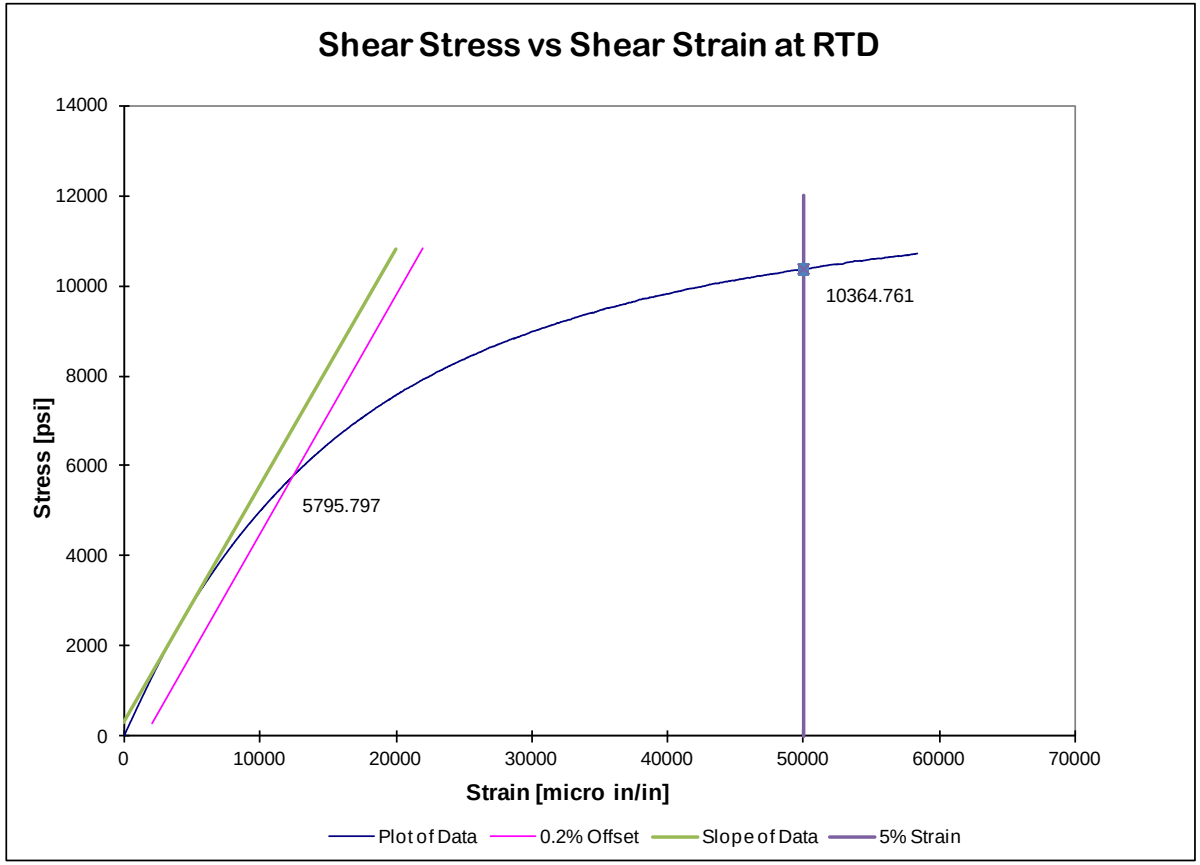
Specimen Number	ACG Batch #	ACG Cure Cycle	Prepreg Lot #	Cure Cycle #	Curved Beam Strength [lb]	Interlaminar Tension Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate
A0NMA117D	A	MH1	1	1	110.035	2.885	0.160	20
A0NMA118D	A	MH1	1	1	104.525	2.530	0.160	20
A0NMA119D	A	MH1	1	1	103.744	2.493	0.159	20
A0NMA11AD	A	MH1	1	1	112.665	2.479	0.156	20
A0NMA11BD	A	MH1	1	1	122.994	2.823	0.157	20
A0NMA11CD	A	MH1	1	1	110.216	2.984	0.160	20

Average	**110.697**	**2.699**
Standard Dev.	**6.960**	**0.224**
Coeff. of Var. [%]	**6.287**	**8.289**
Min.	**103.744**	**2.479**
Max.	**122.994**	**2.984**
Number of Spec.	**6**	**6**


Laminate Curved Beam Strength Properties (CBS) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Cure Cycle #
0
1
2
3
0
50
100
150
200
250
300
350
400
Laminate Curved Beam Strength (CBS) [lb]


Laminate Interlaminar Tension Strength (ILT) -- (ETW2)
Measured Strength
MTM45-1/ 3K Plain Weave G30-500 Fabric
Cure Cycle #
Cure Cycle #
0
1
2
3
0
1
2
3
4
5
6
7
8
9
10
Laminate Interlaminar Tension Strength (ILT) [ksi]

5. Shear Stress vs. Shear Strain, RTD



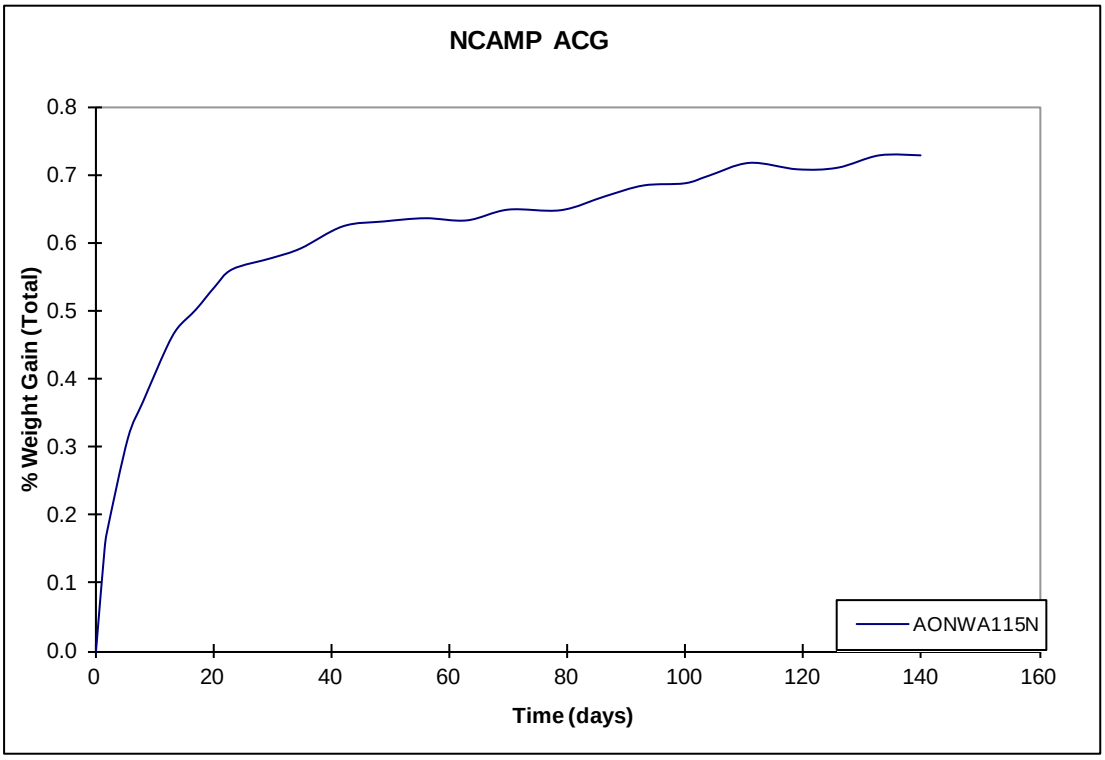
6. FLUID SENSITIVITY COMPARISON

Code	Average Interlaminar Short Beam Strength With Fluid (ksi) (ETD)	Same Environment Short Beam Strength Without Fluid (ksi) (ETD)	Worst Case Environment Short Beam Strength (ksi) (ETW)	% Strength Reduction With Respect to ETD (no fluid)
FS 1	7.655	7.954	6.438	3.761
FS 2	7.473	7.954	6.438	6.046
FS 3	7.444	7.954	6.438	6.413
FS 4	7.444	7.954	6.438	6.412
FS 5	7.450	7.954	6.438	6.338
FS 6	7.589	7.954	6.438	4.589
FS 7	6.466	7.954	6.438	18.713
FS 8	6.545	7.954	6.438	17.708
FS 9	7.814	7.954	6.438	1.756
FS 10	7.918	7.954	6.438	0.449
FS 11	7.899	7.954	6.438	0.695

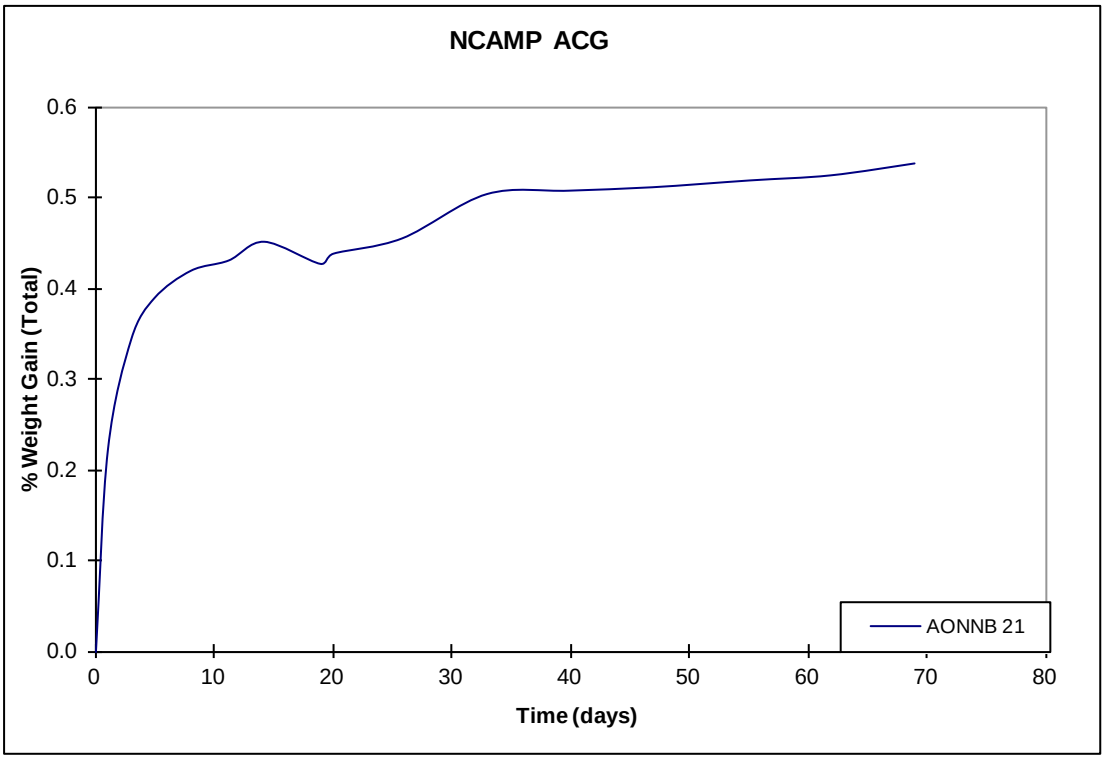
* Worst Case Environment strength derived from the C batch, cure cycle 1 because that is where the FSBS specimens came from

7. MOISTURE CONDITIONING CHARTS

7.1 Unnotched Compression 1 – Thickest Panel



7.2 In-Plane Shear Properties – Thinnest Panel



The rest of the curves can be found on the CD that accompanies this report, under the file located in the ACG- PWC2 Carbon 3K\A0060112C1\CONDITIONING\Master Conditioning List.

8. DMA Results

8.1 DMA Results – MH Cure Cycle

AITR1392-	PWC2-	UNC2-	A-	MH2	DMA-A-MP1507C	178.18	352.72		159.63	319.33		200.16	392.29		192.75	378.95	
AITR1392-	PWC2-	PB2-	A-	MH1	DMA-A-MP1507C	178.38	353.08		158.86	317.95		201.27	394.29		193.18	379.72	
AITR1392-	PWC2-	PB3-	A-	MH1													
AITR1392-	PWC2-	UNC1-	A-	MH1	DMA-A-MP1507D	180.6	357.08		159.64	319.35		202.1	395.78		195	383.00	
AITR1392-	PWC2-	OHT3-	A-	MH1	DMA-A-MP1507D	182.94	361.29		158.93	318.07		202.41	396.34		195.24	383.43	
AITR1392-	PWC2-	CAI1-	A-	MH1													
AITR1392-	PWC2-	WT-	A-	MH2	DMA-A-MP1507G	181.7	359.06		159.17	318.51		202.98	397.36		196.1	384.98	
AITR1392-	PWC2-	FT-	A-	MH2	DMA-A-MP1507G	179.74	355.53		160.98	321.76		201.42	394.56		197.96	388.33	
AITR1392-	PWC2-	WC-	A-	MH1													
AITR1392-	PWC2-	FC-	A-	MH1													
AITR1392-	PWC2-	IPS-	A-	MH2													
AITR1392-	PWC2-	UNC2-	A-	MH1													
AITR1392-	PWC2-	UNC3-	A-	MH1													
AITR1392-	PWC2-	FHT2-	A-	MH2													
AITR1392-	PWC2-	OHC1-	A-	MH2													
AITR1392-	PWC2-	FHC3-	A-	MH2													
AITR1392-	PWC2-	PB1-	A-	MH1													
AITR1392-	PWC2-	PB2-	A-	MH2													
AITR1392-	PWC2-	WT-	A-	MH1	DMA-A-MP1507H	180.73	357.31		158.67	317.61		202.08	395.74		195.7	384.26	
AITR1392-	PWC2-	FT-	A-	MH1	DMA-A-MP1507H	181.38	358.48		158.28	316.90		202.42	396.36		193.79	380.82	
AITR1392-	PWC2-	WC-	A-	MH2													
AITR1392-	PWC2-	FC-	A-	MH2													
AITR1392-	PWC2-	IPS-	A-	MH1													
AITR1392-	PWC2-	UNT3-	A-	MH2													
AITR1392-	PWC2-	UNC3-	A-	MH2													
AITR1392-	PWC2-	FHT1-	A-	MH2													
AITR1392-	PWC2-	OHC2-	A-	MH2				**360.57**			**320.57**			**398.20**			**386.22**
AITR1392-	PWC2-	FHC1-	A-	MH2													
AITR1392-	PWC2-	FHC2-	A-	MH2													
AITR1392-	PWC2-	FHC3-	A-	MH1													
AITR1392-	PWC2-	PB1-	A-	MH2													
AITR1392-	PWC2-	UNT1-	A-	MH1	DMA-A-MP1507J	187.18	368.92		165.38	329.68		209.12	408.42		209.03	408.25	
AITR1392-	PWC2-	UNT2-	A-	MH1	DMA-A-MP1507J	187.14	368.85		174.08	345.34		208.64	407.55		208.5	407.30	
AITR1392-	PWC2-	UNT3-	A-	MH1													
AITR1392-	PWC2-	OHT2-	A-	MH1													
AITR1392-	PWC2-	OHT3-	A-	MH2													
AITR1392-	PWC2-	FHT1-	A-	MH1													
AITR1392-	PWC2-	FHT2-	A-	MH1													
AITR1392-	PWC2-	FHT3-	A-	MH1													
AITR1392-	PWC2-	OHC1-	A-	MH1													
AITR1392-	PWC2-	OHC2-	A-	MH1													
AITR1392-	PWC2-	OHC3-	A-	MH1													
AITR1392-	PWC2-	FHC1-	A-	MH1													
AITR1392-	PWC2-	FHC2-	A-	MH1													
AITR1392-	PWC2-	UNT1-	A-	MH2	DMA-A-MP1507K	182.18	359.92		158.23	316.81		203.83	398.89		196.4	385.52	
AITR1392-	PWC2-	UNT2-	A-	MH2	DMA-A-MP1507K	181.84	359.31		157.94	316.29		203.96	399.13		195.86	384.55	
AITR1392-	PWC2-	UNC1-	A-	MH2													
AITR1392-	PWC2-	OHT2-	A-	MH2													
AITR1392-	PWC2-	FHT3-	A-	MH2													
AITR1392-	PWC2-	OHC3-	A-	MH2													
AITR1392-	PWC2-	PB3-	A-	MH2													
AITR1392-	PWC2-	ILT1-	A-	MH1	DMA-A-MP1507P	187.06	368.71		156.53	313.75		203.8	398.84		194.19	381.54	
					DMA-A-MP1507P	186.52	367.74		158.12	316.62		204.03	399.25		191.34	376.41	

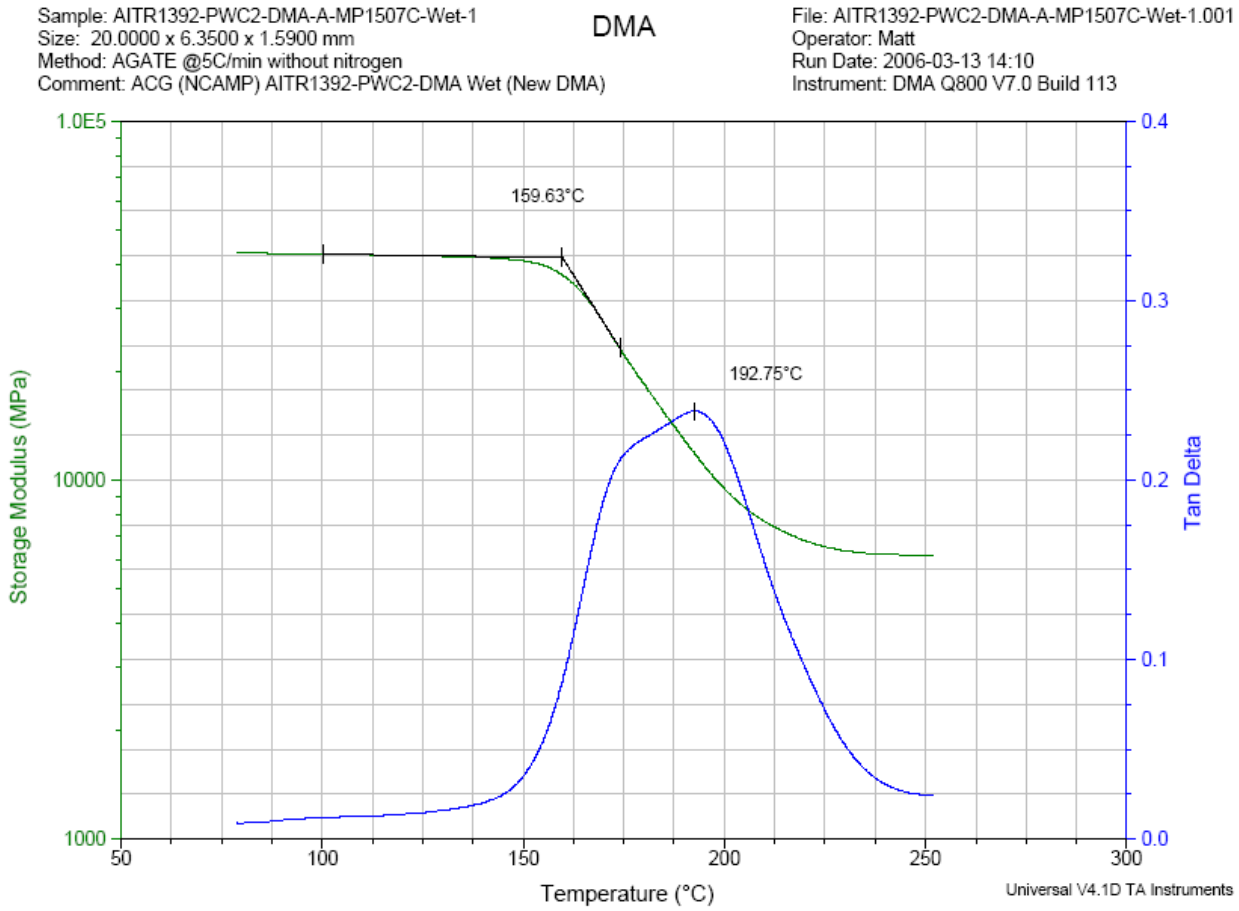
AITR1392-	PWC2-	WT-	B-	MH1	DMA-B-MP1507A	182.93	361.27		161.62	322.92		204.38	399.88		196.86	386.35	
AITR1392-	PWC2-	FT-	B-	MH1	DMA-B-MP1507A	183.64	362.55		160.02	320.04		203.34	398.01		195.88	384.58	
AITR1392-	PWC2-	WC-	B-	MH1													
AITR1392-	PWC2-	IPS-	B-	MH1													
AITR1392-	PWC2-	UNT1-	B-	MH1													
AITR1392-	PWC2-	UNC1-	B-	MH1													
AITR1392-	PWC2-	OHT1-	B-	MH1													
AITR1392-	PWC2-	OHT3-	B-	MH1													
AITR1392-	PWC2-	FHT1-	B-	MH1													
AITR1392-	PWC2-	OHC2-	B-	MH1													
AITR1392-	PWC2-	OHC3-	B-	MH1													
AITR1392-	PWC2-	FHC1-	B-	MH1													
AITR1392-	PWC2-	FHC3-	B-	MH1													
AITR1392-	PWC2-	PB1-	B-	MH1													
AITR1392-	PWC2-	PB2-	B-	MH1													
AITR1392-	PWC2-	PB3-	B-	MH1													
AITR1392-	PWC2-	WT-	B-	MH2	DMA-B-MP1507B	179.96	355.93		158.68	317.62		201.33	394.39		194.83	382.69	
AITR1392-	PWC2-	FT-	B-	MH2	DMA-B-MP1507B	179.53	355.15		157.53	315.55		201.38	394.48		192.96	379.33	
AITR1392-	PWC2-	WC-	B-	MH2													
AITR1392-	PWC2-	IPS-	B-	MH2				**357.68**			**319.01**			**396.11**			**383.42**
AITR1392-	PWC2-	UNT1-	B-	MH2													
AITR1392-	PWC2-	UNC1-	B-	MH2													
AITR1392-	PWC2-	OHT1-	B-	MH2													
AITR1392-	PWC2-	OHT3-	B-	MH2													
AITR1392-	PWC2-	FHT1-	B-	MH2													
AITR1392-	PWC2-	OHC1-	B-	MH1													
AITR1392-	PWC2-	OHC3-	B-	MH2													
AITR1392-	PWC2-	FHC1-	B-	MH2													
AITR1392-	PWC2-	FHC3-	B-	MH2													
AITR1392-	PWC2-	PB1-	B-	MH2													
AITR1392-	PWC2-	PB2-	B-	MH2													
AITR1392-	PWC2-	PB3-	B-	MH2													
AITR1392-	PWC2-	FC-	B-	MH2	DMA-B-MP1507C	181.02	357.84		158.76	317.77		200.92	393.66		193.3	379.94	
AITR1392-	PWC2-	OHT2-	B-	MH2	DMA-B-MP1507C	180.34	356.61		161.18	322.12		202.22	396.00		195.36	383.65	
AITR1392-	PWC2-	OHC1-	B-	MH2													
AITR1392-	PWC2-	FC-	B-	MH1	DMA-B-MP1507D	180.45	356.81		160.24	320.43		202.07	395.73		196.68	386.02	
AITR1392-	PWC2-	OHT2-	B-	MH1	DMA-B-MP1507D	181.62	358.92		159.5	319.10		202.33	396.19		195.59	384.06	
AITR1392-	PWC2-	FHC2-	B-	MH1	DMA-B-MP1507G	179.28	354.70		159.43	318.97		202.4	396.32		194.99	382.98	
					DMA-B-MP1507G	180.58	357.04		157.55	315.59		202.48	396.46		195.87	384.57	

AITR1392-	PWC2-	IPS-	C-	MH1	DMA-C-MP1507C	180.94	357.69		164.12	327.42		202.41	396.34		200.02	392.04	
AITR1392-	PWC2-	OHT1-	C-	MH1	DMA-C-MP1507C	182.14	359.85		161.49	322.68		202.64	396.75		202.73	396.91	
AITR1392-	PWC2-	OHC3-	C-	MH1													
AITR1392-	PWC2-	FHC1-	C-	MH1													
AITR1392-	PWC2-	PB1-	C-	MH1													
AITR1392-	PWC2-	OHC3-	C-	MH2	DMA-C-MP1507D	181.06	357.91		160.16	320.29		201.63	394.93		195.41	383.74	
AITR1392-	PWC2-	FHC1-	C-	MH2	DMA-C-MP1507D	182.54	360.57		159.85	319.73		202.37	396.27		195.4	383.72	
AITR1392-	PWC2-	FHC2-	C-	MH1													
AITR1392-	PWC2-	FHC3-	C-	MH1													
AITR1392-	PWC2-	PB1-	C-	MH2													
AITR1392-	PWC2-	PB2-	C-	MH1													
AITR1392-	PWC2-	PB3-	C-	MH1													
AITR1392-	PWC2-	WC-	C-	MH1	DMA-C-MP1507E	180.05	356.09		157.71	315.88		202.61	396.70		197.64	387.75	
AITR1392-	PWC2-	FC-	C-	MH1	DMA-C-MP1507E	180.85	357.53		160.39	320.70		202.22	396.00		195.09	383.16	
AITR1392-	PWC2-	IPS-	C-	MH2													
AITR1392-	PWC2-	UNT1-	C-	MH1													
AITR1392-	PWC2-	UNC1-	C-	MH1													
AITR1392-	PWC2-	OHT1-	C-	MH2													
AITR1392-	PWC2-	OHT2-	C-	MH1				**362.73**			**321.63**			**398.20**			**386.95**
AITR1392-	PWC2-	OHT3-	C-	MH1													
AITR1392-	PWC2-	FHT1-	C-	MH1													
AITR1392-	PWC2-	OHC1-	C-	MH1													
AITR1392-	PWC2-	OHC2-	C-	MH1													
AITR1392-	PWC2-	WC-	C-	MH2	DMA-C-MP1507F	180.21	356.38		161.2	322.16		201.75	395.15		193.85	380.93	
AITR1392-	PWC2-	FC-	C-	MH2	DMA-C-MP1507F	182.3	360.14		158.67	317.61		202.66	396.79		194.01	381.22	
AITR1392-	PWC2-	UNT1-	C-	MH2													
AITR1392-	PWC2-	UNC1-	C-	MH2													
AITR1392-	PWC2-	OHT2-	C-	MH2													
AITR1392-	PWC2-	OHT3-	C-	MH2													
AITR1392-	PWC2-	FHT1-	C-	MH2													
AITR1392-	PWC2-	OHC1-	C-	MH2													
AITR1392-	PWC2-	OHC2-	C-	MH2													
AITR1392-	PWC2-	FHC2-	C-	MH2													
AITR1392-	PWC2-	FHC3-	C-	MH2													
AITR1392-	PWC2-	PB2-	C-	MH2													
AITR1392-	PWC2-	PB3-	C-	MH2													
AITR1392-	PWC2-	SBS-	C-	MH1	DMA-C-MP1507X	193.42	380.16		163.21	325.78		207.96	406.33		199.65	391.37	
					DMA-C-MP1507X	193.88	380.98		162.25	324.05		208.17	406.71		198.14	388.65	
					Average [°F]		360.36			320.42			397.58			385.61	
					Standard Deviation [°F]		6.59			5.61			3.95			6.91	
					Coefficient of Var. [%]		1.83			1.75			0.99			1.79	

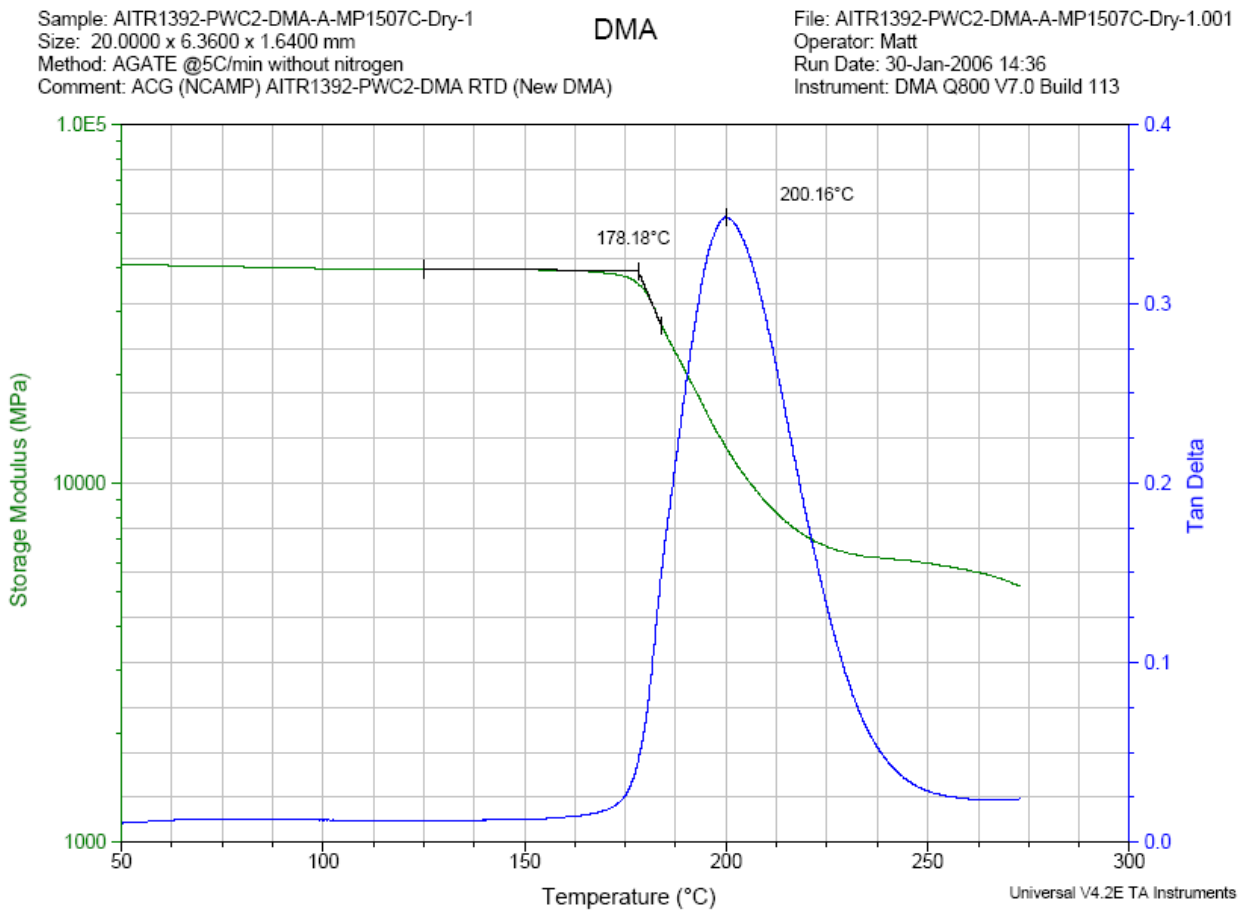
Table 8-1: DMA Results – MH Cure Cycle

8.2 DMA Wet Batch A

These charts are only examples. The remaining files can be obtained in the ACG-PWC2 Carbon 3K\A0060112C1\A0NXXXXXX (PWC2)\Thermal folder.



8.3 DMA Dry Batch A



9. Prepreg Physical Test Results

The following physical test results were obtained at ACG's Tulsa, OK facility. The HPLC result table is an example only, the remaining charts are available with the CD accompanying this report.

RESIN	FIBER	BATCH #	D.O.M.	J/G	PEAK TEMP	RC% RANGE	FAW RANGE	CUSTOMER:	LTCP
						INDIVIDUAL:	INDIVIDUAL:	MAT SPEC:	ACGM1001-13/PCD025
XF0504	CF0526a	17359	6-Dec-05	N/A	N/A	AVERAGE: 36%+/-2%RC	AVERAGE:	SHIP DATE:	
								INITIALS:	
								S.O. # :	18866

ALL INFORMATION SHOULD BE OBTAINED FROM THE SALES ORDER

	TEST PIECE	SAMPLE WEIGHT (GRAMS)	FOIL WEIGHT (GRAMS)	PREPREG WEIGHT (G.S.M.)	SAMPLE AFTER DEVOL	FIBER WEIGHT (G.S.M.)	FIBER WEIGHT (%)	RESIN WEIGHT (%)	VOLATILE CONTENT (%)	GEL TIME N/A
ROLL 1	M	2.96	1.2849	296	3.1503	186.54	63.02027	36.97973	1.2801	FOIL WEIGHT
	C	2.9694	1.2625	296.94	3.1158	185.33	62.41328	37.58672	4.1826	SAMPLE & FOIL
	O	2.9882	1.2693	298.82	3.1316	186.23	62.3218	37.6782	4.1748	AFTER DEVOL.
AVERAGE				**297.25**		**186.03**	**62.59**	**37.41**	**0.27**	VOL (%)
ROLL 2	M	3.026	1.2673	302.6	3.1588	189.15	62.50826	37.49174	1.266	FOIL WEIGHT
	C	3.0306	1.271	303.06	3.1548	188.38	62.15931	37.84069	4.2302	SAMPLE & FOIL
	O	3.0339	1.2762	303.39	3.1872	191.1	62.98823	37.01177	4.2173	AFTER DEVOL.
AVERAGE				**303.02**		**189.54**	**62.55**	**37.45**	**0.44**	VOL (%)
ROLL 3	M	2.9	1.2767	290	3.1034	182.67	62.98966	37.01034	1.2706	FOIL WEIGHT
	C	2.9381	1.283	293.81	3.127	184.4	62.76165	37.23835	4.2552	SAMPLE & FOIL
	O	2.9092	1.2833	290.92	3.121	183.77	63.16857	36.83143	4.2451	AFTER DEVOL.
AVERAGE				**291.58**		**183.61**	**62.97**	**37.03**	**0.34**	VOL (%)
ROLL 4	M	2.9142	1.2786	291.42	3.1088	183.02	62.80283	37.19717	1.2155	FOIL WEIGHT
	C	2.9364	1.2774	293.64	3.105	182.76	62.23948	37.76052	4.3496	SAMPLE & FOIL
	O	2.9429	1.279	294.29	3.1206	184.16	62.57773	37.42227	4.3401	AFTER DEVOL.
AVERAGE				**293.12**		**183.31**	**62.54**	**37.46**	**0.30**	VOL (%)
ROLL 5	M	3.0098	1.2772	300.98	3.1825	190.53	63.30321	36.69679	1.2736	FOIL WEIGHT
	C	3.021	1.275	302.1	3.187	191.2	63.2903	36.7097	4.3628	SAMPLE & FOIL
	O	2.9933	1.2741	299.33	3.1373	186.32	62.24568	37.75432	4.3539	AFTER DEVOL.
AVERAGE				**300.80**		**189.35**	**62.95**	**37.05**	**0.29**	VOL (%)
ACG431I/102196/ISSUE3									1.2776	FOIL WEIGHT
									4.3418	SAMPLE & FOIL
									4.3338	AFTER DEVOL.
									0.26	VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)

DSC Results		Flow Results		Gel Times	
Peak Exo.	232.12 °C	1	21.20%	Neat@200c	5m 23s
Enthalpy	329.64 j/g	2	22.30%	Prepreg@120°c	
		3	22.30%	1	60m 10s
		Avg.	21.93%	2	60m 07s
		1	20.96%	3	59m 43s
		2	22.50%	Prepreg@120°c	
		3	23.30%	1	60m 55s
		Avg.	22.25%	2	61m 02s
				3	60m 42s

Table 9-1: Batch A Physical Test Results

RESIN	FIBER	BATCH #	D.O.M.	J/G	PEAK TEMP	RC% RANGE	FAW RANGE	CUSTOMER:	LTCP
						INDIVIDUAL:	INDIVIDUAL:	MAT SPEC:	ACGM1001-13
MTM45-1	CF0526a	17277	18-Nov-05	N/A	N/A	AVERAGE: 36%+/-3%RC	AVERAGE:	SHIP DATE:	
								INITIALS:	
								S.O. # :	18866

ALL INFORMATION SHOULD BE OBTAINED FROM THE SALES ORDER

	TEST PIECE	SAMPLE WEIGHT (GRAMS)	FOIL WEIGHT (GRAMS)	PREPREG WEIGHT (G.S.M.)	SAMPLE AFTER DEVOL	FIBER WEIGHT (G.S.M.)	FIBER WEIGHT (%)	RESIN WEIGHT (%)	VOLATILE CONTENT (%)	GEL TIME N/A
ROLL 1	M	2.9015	1.2953	290.15	3.1721	187.68	64.68378	35.31622	1.2883	FOIL WEIGHT
	C	2.8992	1.2921	289.92	3.1604	186.83	64.44192	35.55808	4.2404	SAMPLE & FOIL
	O	2.9445	1.295	294.45	3.1585	186.35	63.28749	36.71251	4.2309	AFTER DEVOL.
AVERAGE				**291.51**		**186.95**	**64.14**	**35.86**	**0.32**	VOL (%)
ROLL 2	M	2.9424	1.2928	294.24	3.1749	188.21	63.96479	36.03521	1.2877	FOIL WEIGHT
	C	3.0037	1.2918	300.37	3.1568	186.5	62.09009	37.90991	4.2405	SAMPLE & FOIL
	O	3.0034	1.2904	300.34	3.1553	186.49	62.09296	37.90704	4.2283	AFTER DEVOL.
AVERAGE				**298.32**		**187.07**	**62.72**	**37.28**	**0.41**	VOL (%)
ROLL 3	M	2.9791	1.2851	297.91	3.1599	187.48	62.93176	37.06824	1.2917	FOIL WEIGHT
	C	2.9113	1.2838	291.13	3.171	188.72	64.82327	35.17673	4.2802	SAMPLE & FOIL
	O	2.9347	1.2817	293.47	3.1672	188.55	64.24848	35.75152	4.2703	AFTER DEVOL.
AVERAGE				**294.17**		**188.25**	**64.00**	**36.00**	**0.33**	VOL (%)
ROLL 4	M	2.9472	1.2807	294.72	3.1531	187.24	63.53149	36.46851	1.2807	FOIL WEIGHT
	C	3.0151	1.2809	301.51	3.1457	186.48	61.84869	38.15131	4.17	SAMPLE & FOIL
	O	3.0084	1.2821	300.84	3.1485	186.64	62.03962	37.96038	4.1586	AFTER DEVOL.
AVERAGE				**299.02**		**186.79**	**62.47**	**37.53**	**0.39**	VOL (%)
ROLL 5	M	2.9436	1.2886	294.36	3.1539	186.53	63.36798	36.63202	1.2942	FOIL WEIGHT
	C	2.9655	1.289	296.55	3.142	185.3	62.48525	37.51475	4.2142	SAMPLE & FOIL
	O	2.9194	1.2888	291.94	3.1366	184.78	63.29383	36.70617	4.2058	AFTER DEVOL.
AVERAGE				**294.28**		**185.54**	**63.05**	**36.95**	**0.29**	VOL (%)
ACG431I/102196/ISSUE3									1.2812	FOIL WEIGHT
									4.2054	SAMPLE & FOIL
									4.196	AFTER DEVOL.
									0.32	VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)

DSC Results		Flow Results		Gel Times	
Peak Exo.	232.60 °C	1	20.00%	Neat@200c	6m 25s
Enthalpy	333.55 j/g	2	21.00%	Prepreg@120°c	
		3	20.00%	1	60m 44s
		Avg.	20.30%	2	60m 52s
		1	19.70%	3	61m 53s
		2	21.00%	Prepreg@120°c	
		3	19.00%	1	61m 16s
		Avg.	19.90%	2	61m 38s
				3	61m 44s

Table 9-2: Batch B Physical Test Results

RESIN	FIBER	BATCH #	D.O.M.	J/G	PEAK TEMP	RC% RANGE	FAW RANGE	CUSTOMER:	LTCP
						INDIVIDUAL:	INDIVIDUAL:	MAT SPEC:	ACGM1001-13
MTM45-1	CF0526a	17289	22-Nov-05	N/A	N/A	AVERAGE: 36%+/-3%RC	AVERAGE:	SHIP DATE:	
								INITIALS:	
								S.O. # :	18866

ALL INFORMATION SHOULD BE OBTAINED FROM THE SALES ORDER

	TEST PIECE	SAMPLE WEIGHT (GRAMS)	FOIL WEIGHT (GRAMS)	PREPREG WEIGHT (G.S.M.)	SAMPLE AFTER DEVOL	FIBER WEIGHT (G.S.M.)	FIBER WEIGHT (%)	RESIN WEIGHT (%)	VOLATILE CONTENT (%)	GEL TIME N/A
ROLL 1	M	2.9025	1.2743	290.25	3.1552	188.09	64.80276	35.19724	1.2765	FOIL WEIGHT
	C	3.0243	1.2775	302.43	3.1611	188.36	62.28218	37.71782	4.3057	SAMPLE & FOIL
	O	3.0572	1.2823	305.72	3.1729	189.06	61.8409	38.1591	4.292	AFTER DEVOL.
AVERAGE				**299.47**		**188.50**	**62.98**	**37.02**	**0.45**	VOL (%)
ROLL 2	M	2.9863	1.2879	298.63	3.1559	186.8	62.55232	37.44768	1.2742	FOIL WEIGHT
	C	3.0029	1.2822	300.29	3.1884	190.62	63.47864	36.52136	4.3301	SAMPLE & FOIL
	O	3.0535	1.2789	305.35	3.1687	188.98	61.88963	38.11037	4.32	AFTER DEVOL.
AVERAGE				**301.42**		**188.80**	**62.64**	**37.36**	**0.33**	VOL (%)
ROLL 3	M	2.9116	1.2768	291.16	3.1542	187.74	64.48001	35.51999	1.2736	FOIL WEIGHT
	C	3.0172	1.2821	301.72	3.1731	189.1	62.674	37.326	4.2677	SAMPLE & FOIL
	O	3.049	1.2816	304.9	3.168	188.64	61.86947	38.13053	4.2579	AFTER DEVOL.
AVERAGE				**299.26**		**188.49**	**63.01**	**36.99**	**0.33**	VOL (%)
ROLL 4	M	3.0101	1.2844	301.01	3.1572	187.28	62.2172	37.7828	1.272	FOIL WEIGHT
	C	2.9905	1.2892	299.05	3.1673	187.81	62.80221	37.19779	4.1718	SAMPLE & FOIL
	O	2.9015	1.2849	290.15	3.1646	187.97	64.78373	35.21627	4.1622	AFTER DEVOL.
AVERAGE				**296.74**		**187.69**	**63.27**	**36.73**	**0.33**	VOL (%)
ROLL 5	M	2.9862	1.2854	298.62	3.149	186.36	62.40707	37.59293	1.2733	FOIL WEIGHT
	C	3.0161	1.2822	301.61	3.1624	188.02	62.33878	37.66122	4.2386	SAMPLE & FOIL
	O	3.0228	1.282	302.28	3.1688	188.68	62.41895	37.58105	4.2268	AFTER DEVOL.
AVERAGE				**300.84**		**187.69**	**62.39**	**37.61**	**0.40**	VOL (%)
ACG431I/102196/ISSUE3									1.2902	FOIL WEIGHT
									4.1933	SAMPLE & FOIL
									4.185	AFTER DEVOL.
									0.29	VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)
										FOIL WEIGHT
										SAMPLE & FOIL
										AFTER DEVOL.
										VOL (%)

DSC Results	
Peak Exo.	231.34 °C
Enthalpy	389.96 j/g

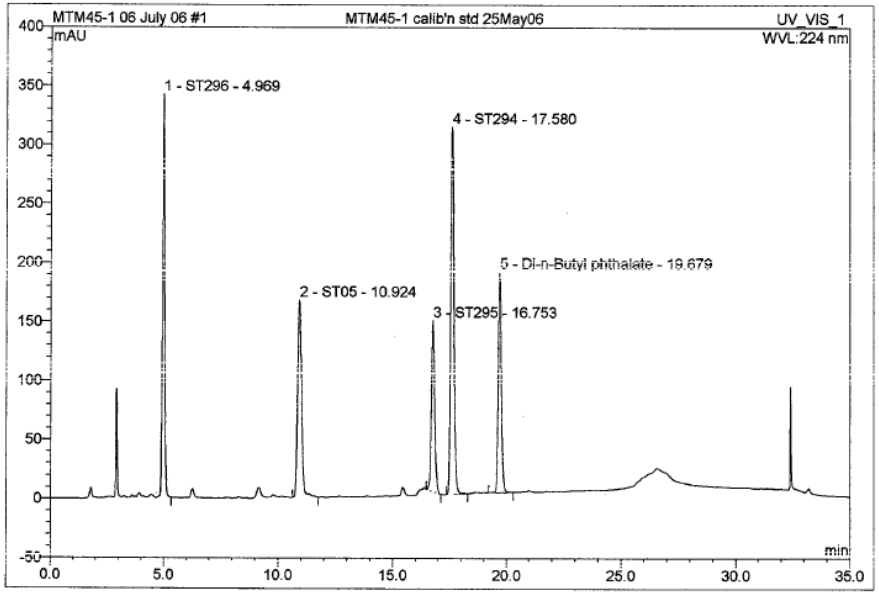
Flow Results	
1	20.23%
2	20.70%
3	21.77%
Avg.	20.90%
1	22.34%
2	21.38%
3	22.80%
Avg.	22.17%

Gel Times	
Neat@200c	5m 33s
Prepreg@120°c	
1	60m 24s
2	60m 46s
3	60m 59s
Prepreg@120°c	
1	59m 30s
2	59m 59s
3	60m 09s

Table 9-3: Batch C Physical Test Results

1 MTM45-1 calib'n std 25May06

Sample Name:	**MTM45-1 calib'n std 25May06**	*Injection Volume:*	**5.0**
Vial Number:	**1**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**224**
Control Program:	**MTM45-1**	*Bandwidth:*	**1**
Quantif. Method:	**MTM45-1 istd**	*Dilution Factor:*	**1.0000**
Recording Time:	**6/7/2006 10:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**35.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height mAU	Area mAU*min	Rel.Area %	Amount mg/ml	Type
1	4.97	ST296	340.610	36.934	21.42	0.072	BMB
2	10.92	ST05	167.119	32.673	18.95	0.503	BMB
3	16.75	ST295	144.876	23.575	13.67	0.083	BMB
4	17.58	ST294	311.157	49.999	29.00	0.159	BMB
5	19.68	Di-n-Butyl phthalate	186.886	29.223	16.95	0.200	BMB
Total:			1150.648	172.405	100.00	1.017	

Table 9-4: HPLC Results

10. Deviations

Deviations from ACG MTM45-1 G30-500 PW test plan:

1. Short beam shear specimen length is 6 times thickness, not 1.5 inches. Justification: Longer specimens may restrict shear failure to the center section only and preclude shear failures that run to one end of the specimens.
2. Lamina Short Beam Strength specimens were taken from FT(14 plies) instead of FC (18 plies) panel.
3. Use 350 ohm instead of 120 ohm strain gages. Specifically, in page 6,
   a. D3039: CEA-XX-250UW-120 will be replaced by CEA-XX-250UW-350
   b. D6641: CEA-XX-125UT-120 will be replaced by CEA-XX-125UT-350

Justification: 350 ohm gages will produce less heat than 120 ohm gages so we can increase excitation voltage to increase signal to noise ratio.

4. Option to use one 350 ohm biaxial gage instead of using two 120 ohm single axial gage
   a. D3518: two CEA-XX-250UW-120 will be replaced by one CEA-XX-125UT-350

Justification: Using one biaxial gage will ensure that the two single axial elements are perfectly perpendicular to each other.

5. The Filled-Hole Compression specimens were tested at ACG. This deviation was due to improper failure mode.

The following statement was obtained from Advanced Composites Group regarding the FHC specimens that were tested at their facility. Some of the specimens were tested at NIAR, but did not obtain the proper failure mode because of the problems with test fixture, discussed below.

“We used the ASTM D 6484 fixture that we purchased from Dr. Don Adams at Wyoming Test Fixtures. This is the same one NIAR has, although we did perform one slight modification to replace the small external brace plates with thicker and longer plates to prevent deformation of the fixture supports. This modification was discussed with Dr. Adams and he concurred that other customers like Boeing had experienced similar problems as to the ones we were having with the fixture.

As the panels were compressed the centers bulged through the thickness slightly and when failure occurred it was too violent in the center area that it was bowing the steel holding fixture. Replacing the short external plates with full length external support plates allowed the fixture to operate as designed but prevented fixture deformation when testing the stronger materials. Therefore we adopted the use of these supports for all FHC testing from that point forward.

I have sent Dr. Adams photos of the modification and he was satisfied that this modification would not impact the testing in any way, other than a positive support to protect the fixture.

We do not have a test machine that has the capability of gripping that fixture in hydraulic jaws so we came up with an alternative method that Dr. Adams also uses. We added 4 additional bolts and nuts to each end of the fixture and torqued those to simulate grip pressure. The torque applied to the fixture was purely for gripping purposes since we do not have hydraulic grips to keep the specimen in place and prevent slippage in the fixture, which would ultimately result in end crushing failure modes.

The initial testing was witnessed by Clarence Dill our contract DER."