Advanced General Aviation Transport Experiments

B – Basis Design Allowables for Epoxy – Based Prepreg

FiberCote E-Glass Fabric 7781 / E765

AGATE-WP3.3-033051-105

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J. Tomblin, J. McKenna, Y. Ng, K. S. Raju
National Institute for Aviation Research
Wichita State University
Wichita, KS 67260-0093

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1.0 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. These properties are considered to provide the initial base of the “building block” approach. Additional coupon level tests and subelement tests may be required to fully substantiate the full-scale design.

The test methods and results contained in this document are consistent with MIL-HDBK-17-1E,2D,3E - Military Handbook for Polymer Matrix Composites. All material, specimens, fixtures and test results contained within this document were traceable and conformed by the Federal Aviation Administration (FAA). It should be noted that before application of the basis values presented in this document to design, demonstration of the ability to consistently produce equivalent material properties as that evaluated during this program should be substantiated through an acceptable test program.

1.2 Symbols Used

ν_{12}^{tu}	major Poisson's ratio, tension
$\mu\varepsilon$	micro-strain
E_1^c	compressive modulus, longitudinal
E_1^t	tensile modulus, longitudinal
E_2^c	compressive modulus, transverse
E_2^t	tensile modulus, transverse
F_{12}^{su}	in – plane shear strength
F_{13}^{su}	apparent interlaminar shear strength
F_1^{cu}	compressive strength, longitudinal
F_1^{tu}	tensile strength, longitudinal
F_2^{cu}	compressive strength, transverse
F_2^{tu}	tensile strength, transverse
F^{bu}	bearing strength
G_{12}^{s}	in – plane shear modulus

Superscripts

bu	bearing ultimate
c	compression
cu	compression ultimate
s	shear
su	shear ultimate
t	tension
tu	tension ultimate

Subscripts

1	1 – axis; longitudinal (parallel to warp direction of reinforcement)
2	2 – axis; transverse (parallel to fill direction of reinforcement)
12	in – plane shear
13	interlaminar shear (apparent)
f	fabric

1.3 Acronyms and Definitions

A – Basis	95% lower confidence limit on the first population percentile
AGATE	Advanced General Aviation Transport Experiments
ASTM	American Society for Testing and Materials
B – Basis	95% lower confidence limit on the tenth population percentile
C. V.	coefficient of variation
CTD	cold temperature dry
CPT	cured ply thickness
DMA	dynamic mechanical analysis
dry	specimen tested with an “as fabricated” moisture content
ETD	elevated temperature dry
ETW	elevated temperature wet
FAR	Federal Aviation Regulations
FAW	fiber areal weight
Gl/Ep	glass/epoxy
NASA	National Aeronautics and Space Administration
RTD	room temperature dry
SACMA	Suppliers of Advanced Composite Materials Association
SRM	SACMA Recommended Method
T_g	glass transition temperature
t_{ply}	cured ply thickness
wet	specimen tested with an equilibrium moisture content per section 1.5.2

1.4 References

ASTM Standards

D3039-95	Tensile Properties of Polymer Matrix Composite Materials
D5379-93	Shear Properties of Composite Materials by the V-Notched Beam Method
D2344-89	Apparent Interlaminar Shear Strength of Parallel Fiber Composites by Short – Beam Method
D792-91	Density and Specific Gravity (Relative Density) of Plastics by Displacement
D2584-94	Ignition Loss of Cured Reinforced Plastics
D2734-94	Void Content of Reinforced Plastics
D695-91	Compressive Properties of Rigid Plastics
D5961-96	Bearing Response of Polymer Matrix Composite Laminates

SACMA Standards

SRM 1-94	Compressive Properties of Oriented Fiber-Resin Composites
SRM 8-94	Short Beam Shear Strength of Oriented Fiber-Resin Composites
SRM 18-94	Glass Transition Temperature (T_g) Determination by DMA of Oriented Fiber-Resin Composites

Other Documents

FiberCote Document Number E765 MS100, Material Specification: Carbon Fiber Reinforced Epoxy Resin, Rev. N/A

FiberCote Document Number E765 PS1000, Process Specification: Layup and Cure of Epoxy Prepreg Materials, 270-280°F Curing, Rev. N/A

FAA Document DOT/FAA/AR-00/47: Material Qualification and Equivalency for Polymer Matrix Composite Material Systems, J.S. Tomblin, Y.C. Ng and K.S. Raju, 2001.

MIL-HDBK-17 1E, 2D, 3E – Military Handbook for Polymer Matrix Composites

1.5 Methodology

1.5.1 Test Matrix

Testing was performed according to the test methods delineated in the test matrix, with modifications as referenced in the AGATE report, *Material Qualification and Equivalency for Polymer Matrix Composite Material Systems*. The test matrix for properties included in this document is listed on the next page, with the following notation cited in each column:

 # x #

where the first # represents the required number of prepreg batches, defined as: Prepreg containing 7781 E-glass fabric from one mill roll, impregnated with one batch of resin in one continuous manufacturing operation with traceability to all components. The second # represents the required number of replicates per prepreg batch. For example, “3 x 6” refers to three prepreg batches of material and six specimens per prepreg batch for a total requirement of 18 test specimens.

Table 1.5.1: Test Matrix and Standards Used

TEST	METHOD	NO. OF REPLICATES PER TEST CONDITION				
		CTD[1]	RTD[2]	ETD[3]	ETW[4]	ETW[5]
0^o (warp) Tension Strength	ASTM D3039-95	1x4	3x4	3x4	3x4	3x4
0^o (warp) Tension Modulus, Strength and Poisson's Ratio	ASTM D3039-95	1x2	3x2	3x2	3x2	3x2
90^o (fill) Tension Strength	ASTM D3039-95	1x4	3x4	3x4	3x4	3x4
90^o (fill) Tension Modulus and Strength	ASTM D3039-95	1x2	3x2	3x2	3x2	3x2
0^o (warp) Compression Strength	SACMA SRM 1-94	1x6	3x6	3x6	3x6	3x6
0^o (warp) Compression Modulus	SACMA SRM 1-94	1x2	3x2	3x2	3x2	3x2
90^o (fill) Compression Strength	SACMA SRM 1-94	1x6	3x6	3x6	3x6	3x6
90^o (fill) Compression Modulus	SACMA SRM 1-94	1x2	3x2	3x2	3x2	3x2
In-Plane Shear Strength	ASTM D5379-93	1x4	3x4	3x4	3x4	3x4
In-Plane Shear Modulus and Strength	ASTM D5379-93	1x2	3x2	3x2	3x2	3x2
Short Beam Shear	ASTM D2344-89	1x6	3x6	3x6	3x6	3x6
Fiber Volume	ASTM D2584-94	One sample per panel				
Resin Volume	ASTM D2584-94	One sample per panel				
Void Content	ASTM D2734-94	One sample per panel				
Cured Neat Resin Density	---	Supplied by manufacturer for material				
Glass Transition Temperature	SACMA SRM 18-94	3 dry, 3 wet, and 3 wet conditioned 45 days - per prepreg lot				

Notes :

1 CTD: One prepreg lot of material tested (test temperature = -65 $\pm$ 5^o F, moisture content = as fabricated, soak time at –65 was 3 min.)

2 RTD: Three prepreg lots of material tested (test temperature = 70 $\pm$ 10^o F, moisture content = as fabricated)

3 ETD: Three prepreg lots of material tested (test temperature = 180 $\pm$ 5^o F, moisture content = as fabricated, soak time at 180 was 3 min.)

4 ETW: Three prepreg lots of material tested (test temperature = 180 $\pm$ 5^o F, moisture content = equilibrium per section 1.5.2, soak time at 180 was 60 sec.)

5 ETW: Three prepreg lots of material tested (test temperature = 180 $\pm$ 5^o F, moisture content = 45 days at 85 ± 5 % relative humidity and 145 ± 5 °F, soak time at 180 was 60 sec.)

1.5.2 Environmental Conditioning

All ‘wet’ conditioned samples were exposed to elevated temperature and humidity conditions to establish moisture saturation of the material. Specimens were exposed to 85 ± 5 % relative humidity and 145 ± 5 °F until an equilibrium moisture weight gain of traveler, or witness coupons (1” x 1” x specimen thickness) was achieved. ASTM D5229 and SACMA SRM 11 were used as guidelines for environmental conditioning and moisture absorption.

Effective moisture equilibrium was achieved when the average moisture content of the traveler specimen changed by less than 0.05% for two consecutive readings within a span of 7 ± 0.5 days and was expressed by:

$$\frac{W_i - W_{i-1}}{W_b} < 0.0005$$

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

It is common to see small fluctuations in an unfitted plot of the weight gain vs. time curve. There were no fluctuations that made significant errors in results or caused rejection in the moisture equilibrium criteria. Once the traveler coupons passed the criteria for two consecutive readings, the samples were removed from the environmental chamber and placed in a sealed bag with a moist paper or cotton towel for a maximum of 14 days until mechanical testing. Strain gauged specimens were removed from the controlled environment for a maximum of 2 hours for application of gages in ambient laboratory conditions.

1.5.3 Fluid Sensitivity Screening

Although epoxy-based materials historically have not been shown to be sensitive to fluids other than water or moisture, the influence of some fluids other than water or moisture on the mechanical properties were characterized. These fluids fell into two exposure classifications. The first class was considered to be in contact with the material for an extended period of time, and the second class was considered to be wiped on and off (or evaporate) with relatively short exposure times.

To assess the degree of sensitivity of fluids other than water or moisture, Table 1.5.2 shows the fluids which were used in this qualification plan.

Table 1.5.2: Fluid Types Used for Sensitivity Studies

Fluid Type	Specification	Exposure Classification
Jet Fuel (JP-4)	MIL-T-5624	Extended Period
Hydraulic Fluid (Tri-N-butyl phosphate ester)	MIL-H-5606G	Extended Period
Solvent (Methyl Ethyl Ketone)	Laboratory Grade	Wipe On and Off

To assess the influence of various fluids types, a test method sensitive to matrix degradation was used as an indicator of fluid sensitivity and compared to the unexposed results at both room temperature dry and elevated temperature dry conditions. Table 1.5.3 describes the fluid sensitivity-testing matrix with respect to the fluids defined in Table 1.5.2. Engineering judgment and statistical tests were used to assess the degree of material degradation. The results of this screening are included following the data sheets in section 3.2.2.

Table 1.5.3: Material Qualification Program for Fluid Resistance

Fluid Type	Test Method	Test Temp. (^{o} F)	Exposure[1]	Number of Replicates[2]
Jet Fuel JP-4	ASTM D5379[3]	180	See note 4	5
Hydraulic Fluid	ASTM D5379[3]	180	See note 5	5
Solvent (MEK)	ASTM D5379[3]	Ambient	See note 5	5

Notes :

1 Soaking in fluid at ambient temperature (immersion).
2 Only a single batch of material is required.
3 Shear strength only.
4 Immersion duration = 500 hours $\pm$ 50 hours
5 Immersion duration = 60 to 90 minutes

1.5.4 Normalization Procedures

The normalization procedure attempts to reduce variability in fiber-dominated material properties by adjusting raw test values to a specified fiber volume content. Only the following properties were normalized:

- 0° (warp)Tensile Strength and Modulus
- 90° (fill) Tensile Strength and Modulus
- 0° (warp)Compression Strength and Modulus
- 90° (fill) Compression Strength and Modulus

The normalization procedure was adopted from MIL-HDBK-17-1E, section 2.4.3.3. The procedure which was used to normalize the data is based on three primary assumptions:

- The relationship between fiber volume fraction and ultimate laminate strength is linear over the entire range of fiber/resin ratios. (It neglects the effects of resin starvation at high fiber contents.)

- Fiber volume is not commonly measured for each test sample, so this method accounts for the fiber volume variation between individual test specimens by utilizing a relationship between fiber volume fraction and laminate cured ply thickness. This relationship is virtually linear in the 0.45 to 0.65 fiber volume fraction range.

Additional information is detailed in FAA Document DOT/FAA/AR-00/47: Material Qualification and Equivalency for Polymer Matrix Composite Material Systems. For all normalized data contained in this document, the test values are normalized by cured ply thickness according to:

$$Normalized\ \ Value = Test\ Value \times \frac{CPT_{specimen}}{CPT_{normalizing}}$$

where:

$$CPT_{specimen} = \frac{Average\ \ Sample\ Thickness}{\#\ of\ \ plies}$$

1.5.5 Statistical Analysis

When compared to metallic materials, fiber reinforced composite materials exhibit a high degree of material property variability. This variability is due to many factors, including but not limited to: raw material and prepreg manufacture, material handling, part fabrication techniques, ply stacking sequence, environmental conditions, and testing techniques. This inherent variability drives up the cost of composite testing and tends to render smaller data sets than those produced for metallic materials. This necessitates the usage of statistical techniques for determining reasonable design allowables for composites.

The analyses and design allowable generation for both A and B basis values were performed using the procedure detailed in section 5.3 of FAA Document DOT/FAA/AR-00/47: Material Qualification and Equivalency for Polymer Matrix Composite Material Systems.

1.5.6 Material Performance Envelope and Interpolation

Using the B-basis numbers, a material performance envelope may be generated for the material system by plotting these values as a function of temperature. Figure 1.5.1 shows an example material performance envelope using B-basis values.

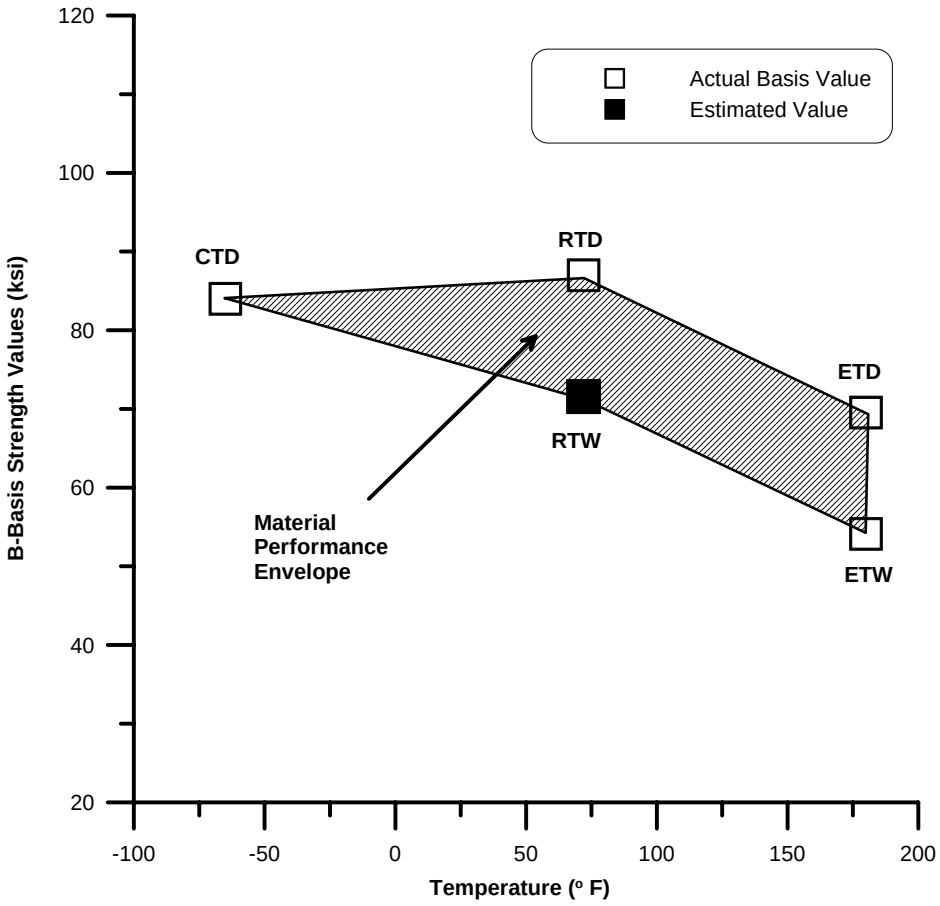


Figure 1.5.1 Material performance envelope.

Since each specific aircraft application of the qualified material may have different Material Operational Limits (MOL) than those tested in the material qualification (which is usually the upper limit), some applications may require a reduced MOL. In this case, simple linear interpolation may be used to obtain the corresponding basis values at the new application MOL.

This interpolation may be accomplished using the following simple relationships assuming $T_{RTD} < T_{MOL} < T_{ETD}$:

For the corresponding MOL "dry" basis value, the "interpolated" basis value using the qualification data is

$$B_{MOL} = B_{RTD} - \frac{(B_{RTD} - B_{ETD})(T_{RTD} - T_{MOL})}{(T_{RTD} - T_{ETD})}$$

where: B_{MOL} = new application basis value interpolated to T_{MOL}
B_{RTD} = basis RTD strength value
B_{ETD} = basis ETD strength value
T_{RTD} = RTD test temperature
T_{ETD} = ETD test temperature
T_{MOL} = new application MOL temperature

For the corresponding MOL "wet" basis value, an estimated Room Temperature Wet (RTW) value must be calculated. This may be accomplished by the simple relation

$$B_{RTW} = B_{RTD} - (B_{ETD} - B_{ETW})$$

The "interpolated" wet basis value using the qualification data may then be obtained by

$$B_{MOL} = B_{RTW} - \frac{(B_{RTW} - B_{ETW})(T_{RTW} - T_{MOL})}{(T_{RTW} - T_{ETW})}$$

where: B_{MOL} = new application basis value interpolated to T_{MOL}
B_{RTW} = estimated basis RTW strength value
B_{ETW} = basis ETW strength value
T_{RTW} = RTW (i.e., RTD) test temperature
T_{ETW} = ETW test temperature
T_{MOL} = new application MOL temperature

These equations may also be used for interpolated mean strengths as well as A-basis values with the appropriate substitutions. It should be noted that because unforeseen material property drop-offs with respect to temperature and environment can occur, *extrapolation* to a higher MOL should not be attempted without additional testing and verification. In addition, the interpolation equations shown above are practical for materials obeying *typical* mechanical behavior. In most cases, some minimal amount of testing may also be required to verify the interpolated values.

1.5.6.1 Interpolation Example

This section provides an example of linear interpolations to a specific application environment less than the tested upper material limit used in qualification. Assuming a specific application environment of 150^{o} F, Figure 1.5.2 depicts the linear interpolation of the B-basis design allowable to this environment. Using the above

equations along with the nominal testing temperatures (see Table 1.5.1), the interpolated basis values at 150^{o} F become

ETD : B_{MOL} = 75.106 ksi

ETW : B_{MOL} = 59.746 ksi

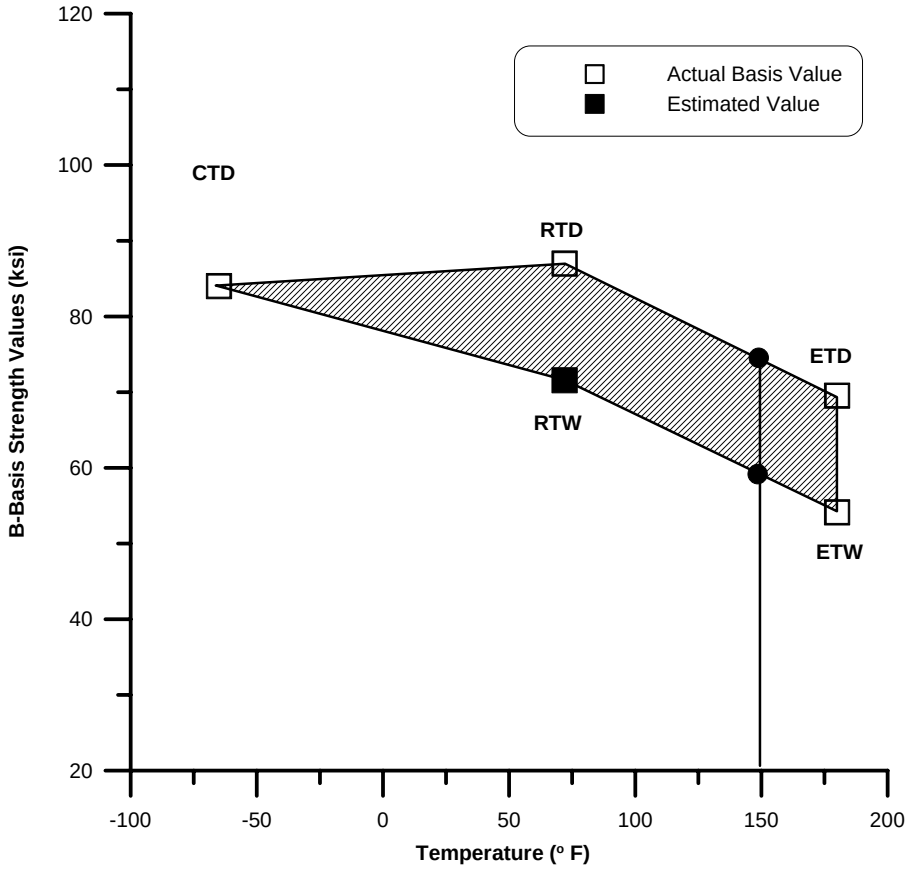


Figure 1.5.2 Example of 150^{o} F interpolation for B-basis values.

2.0 FIBERCOTE 7781/E765 PREPREG PROPERTIES

2.1 Prepreg Documentation by Prepreg Lot

Prepreg Documentation	**Prepreg Manufacturer & Product ID: FiberCote E-765 - 7781** **Material Identification (weave, form, class, etc.): 7781** **Impregnation Method: Solvent**		
Prepreg Batch or Lot #	901070	901071	901072
Batch (Lot) ID as labeled on samples	**1**	**2**	**3**
Date of Manufacture	1/27/99	1/27/99	1/27/99
Expiration Date	7/27/99	7/27/99	7/27/99
Resin Content [%]	37.5 - 38.1	37.4 – 39.0	37.9 – 39.4
Reinforcement Areal Weight ASTM D-3776	8.74 Oz/yd^2	8.91 Oz/yd^2	8.58 Oz/yd^2
Resin Flow 275°F, 50 psi	17.2% - 19.6%	20.2% - 21.3%	13.7% - 19.9%
Gel Time 275°F	298 sec – 303 sec	298 sec – 301 sec	260 sec – 268 sec
Volatile Content	0.2% - 0.3%	0.3% - 0.4%	0.3% - 0.4%
Reinforcement Documentation	**Fiber/Fabric Manufacturer & Product ID: BGF Industries 7781** **Precursor Type: E-Glass** **Nominal Filament Count: ECDE 75-1/0 (816 filaments)** **Finish/Sizing Type and %: FCI-1** **Nominal tow or yarn count/inch: 57x54** **Twist: ---**		
Fabric Batch or Lot #	908292	911371	908355
Date of Manufacture	11/16/98	1/11/99	12/15/98
Average Fiber Density per Lot Manufacturer's Test Method	2.54g/cc	2.54g/cc	2.54g/cc
Matrix Documentation	**Resin Manufacturer & Product ID: FiberCote E-765**		
Matrix Batch or Lot #	9M0137	9M0138	9M0137
Date of Manufacture	1/21/99	1/22/99	1/21/99
Average Neat Resin Density by Lot ASTM D-792	1.225	1.224	1.225

Notes: (1)Test Methods used to determine resin content, reinforcement areal weight, resin flow, gel time, and volatile content are defined in FiberCote Material Specification E765 MS1001. (2) These information and test results were submitted to NIAR by FiberCote Industries, Inc.

2.2 Process Specification

2.2.1 Storage

When not in use, all prepreg materials were stored at or below 0°F.

2.2.2 Out Times

Maximum cumulative out time units did not exceed 180 as defined by the following equations:

N	=	Cumulative Units
N1	=	Days at 0°F (180 max., N2 and N3 equal to zero)
N2	=	Days between 1°F and 59°F (90 max., N1 and N3 equal to zero)
N3	=	Days between 60°F and 85°F (28 max., N1 and N2 equal to zero)
N	=	N1 + 2 x N2 + 6 x N3

This time included shipping time, storage on-the-roll, out time for cutting, and any storage time as a kit of pre-cut plies.

2.2.3 Working Environment

All handling and lay-up of prepreg materials was conducted in a reasonably clean environment. No tool preparation, drilling, grinding, trimming, sanding, or other process creating particles was conducted in the same room as the lay-up of prepregs. There were no solvents, lubricants, mold release agents, or other potential contaminants used or stored in the same room with prepreg materials.

Unless otherwise validated for the material system in use, the area was temperature and humidity controlled such that the minimum temperature was 65°F with a corresponding relative humidity not greater than 63 percent. The maximum temperature was 75°F with a corresponding relative humidity not greater than 46 percent. The temperature and relative humidity values between the minimum and maximum acceptable values listed above formed a straight-line relationship. Procedures for Quality Control to verify and record temperature and humidity conditions were established to ensure environmental stability.

A continuous recording device was used.

Sensors and recording devices maintained calibrations traceable to NIST. Re-calibration frequency was in accordance with manufacturers' recommendations.

Quality Assurance will maintain a file of all continuous records for a minimum of three (3) years.

2.2.4 Mold Preparation

Each mold or lay-up surface was cleaned prior to lay-up, using non-contaminating cleaners, such as Acetone or alcohol. Mold preparation was performed outside the lay-up room.

After cleaning, each mold was treated with non-contaminating release agents in accordance with the supplier's instructions.

Thermocouple quantity and location have been specified on the shop traveler.

Witness panels, when required, were fabricated to specific instructions on the shop traveler and represented at least one zone of the part.

2.2.5 Cutting and Lay-up

The cutting and lay-up area was kept free of contaminants.

Prepreg laminations were pre-cut and grouped into kits for lay-up and cure, therefore, the poly-film backing provided by FiberCote was not be removed until each ply was ready to be placed in the lay-up mold. Kits were stored in sealed, moisture-proof containers until lay-up.

Before lay-up, the prepreg material was near ambient temperature. Upon removal from storage, the prepreg materials were allowed to warm to room temperature inside the sealed moisture-proof bag for 3 1/2 hours.

Any peel ply requirements are specified on the drawing and/or shop traveler.

Because of no other specifications on the drawing, splices were allowed. They overlaped by at least one inch and no two splices in a single ply were placed closer than 24 inches. Minimum distance between splices in adjacent plies was six inches. Butt splices were generally avoided. If butt splices were used, the maximum gap at any point was 0.030 inches. Butt splices had one additional ply of material, the same as the base laminate, which extended for at least one inch on either side of the splice joint. There were at least three plies of unspliced material between any two butt splices.

Splicing was not allowed on material qualification specimens.

White, lint-free cotton gloves were required for hand / personal protection. Talc-free latex or nitrile gloves were acceptable alternates.

No cutting of prepreg materials was permitted on the tool.

Debulking was performed in order to achieve appropriate compaction.

Debulking according to the following procedure was required no less frequently than every eight (8) plies of woven fabric.

a. One layer of porous release fabric was applied over the prepreg lay-up.

b. One layer of breather was applied on top of the porous release film. If the breather was not contaminated with resin or other foreign material, the breather was re-used.

c. Nylon bagging film was installed over the laminate or a silicone rubber bag and was form-fit and edge sealed to the tool with vacuum bag sealant; the vacuum connector was installed through the bag. Multiple vacuum connectors were used so that no point on the part was more than 60 inches from a vacuum source.

   Note: The vacuum connectors were installed on the tool surface outside the perimeter of the laminate wherever possible. Placing the connector in a bag pleat was an acceptable alternate.

d. Vacuum of at least 18 inches Hg was applied for at least 15 minutes at a rate that did not cause the prepreg to shift. When specified by the applicable shop traveler, the laminate was heated to 100°F maximum and held for 10-15 minutes during vacuum application but there were no more than six (6) debulks at 100°F on any lay-up.

Before lay-up, the prepreg material was equilibrated near ambient temperature. Upon removal from storage, the prepreg materials were allowed to warm to room temperature inside the sealed moisture-proof bag for 3 1/2 hours.

2.2.6 Bagging

The procedure was as follows:

a. One layer of porous release fabric was applied over the prepreg lay-up.

b. When specified on the shop traveler, bleeder cloth the same size as the laminate was applied over the release film. All wrinkles were smoothed out.

For laminates of six (6) plies or greater, such as qualification panels, two (2) or four (4) bleeder plies were added to aid in volatiles removal from the relatively tight weaves of E-765 6K 5HS and E-765 7781 materials.

Note: Porous release film and bleeder cloth were not used on Test Panels

c. Breather strings were applied from each corner of the part to contact the breather fabric.

d. One layer on non-porous release film was applied over the lay-up; extending at least 1/2 inch past each edge of the part.

e. One layer of breather fabric was applied over the lay-up ensuring that it formed a path to the breather.

f. Vacuum sources were not on the surface of the part. There were at lease two (2) sources for any part larger than four (4) square ft. For larger parts, at least one vacuum connection was provided for every 18 square ft. of laminate surface. Where possible, the maximum distance to any point on the laminate surface did not exceed 60 inches. Applying extra breather under the vacuum port protected against resin clogging.

g. Nylon bagging film was applied and edge sealed to the tool with vacuum bag sealant.

h. The bag was evacuated to at least 18 inches Hg and was adjusted to eliminate wrinkles and bridging.

i. A vacuum gauge was installed at the vacuum probe connector. The bagged assembly was allowed to stand for at least 15 minutes with an applied vacuum of at least 18 inches Hg. The vacuum source was removed and the bag vacuum monitored. Leakage did not exceed three (3) inches Hg in the first five (5) minutes after the vacuum source was removed.

2.2.7 Cure Cycle

All prepreg materials were cured according to tightly controlled time, temperature and vacuum requirements as shown in Table 2.2.1. Further details are clarified in FiberCote Process Specification E765 PSI1000.

Table 2.2.1: Cure Cycles

Temperature Ramp rate	**Cure Temperature**	**Pressure**	**Cooling Rate**	**Dwell Time At Cure**
°F/Min.	°F (as defined by slowest heating part)	In. Hg	°F/Min.	Minutes
1 - 6	270 - 280	20 - 28	3 - 10	110 - 130

3.0 FIBERCOTE 7781/E765 LAMINA PROPERTIES

3.1 Test Results

3.1.1 Summary

MATERIAL:	FiberCote E-765/7781 E-Glass Fabric	**E765/7781**
PREPREG:	FiberCote E-765-7781	**Summary**
FIBER:	BGF Industries 7781	**RESIN:** FiberCote E-765

T_g (dry): 335.2°F **T_g (wet):** 258.2°F **T_g (45 day wet):** 259.9°F **T_g METHOD:** DMA (SRM 18-94)

PROCESSING: Vacuum bag cure (18+ in. Hg): 270-280°F for 110-130 min.

Date of fiber manufacture	11/16/98 – 1/11/99	**Date of testing**	5/18/99 – 8/28/99
Date of resin manufacture	1/21/99 – 1/22/99	**Date of data submittal**	9/8/99
Date of prepreg manufacture	1/27/99	**Date of analysis**	5/18/99 – 9/2/99
Date of composite manufacture	2/9/99 – 2/23/99		

LAMINA MECHANICAL PROPERTY SUMMARY

Data Reported as: Measured

(Normalized by CPT= 0.0098 in)

	CTD		RTD		ETD		ETW (equilibrium)		ETW (conditioned 45 days)	
	B-Basis	**Mean**	**B-Basis**	**Mean**	**B-Basis**	**Mean**	**B-Basis**	**Mean**	**B-Basis**	**Mean**
F_1^{tu} (ksi)	67.70 (65.75)	73.06 (70.15)	60.83 (60.91)	64.94 (64.39)	57.32 (56.82)	61.08 (59.97)	47.68 (47.51)	50.74 (50.09)	51.34 (51.06)	54.65 (53.85)
E_1^t (Msi)	---	3.95 (3.83)	---	3.73 (3.72)	---	3.61 (3.51)	---	3.42 (3.36)	---	3.54 (3.48)
ν_{12}^t	---	0.168	---	0.157	---	0.128	---	0.103	---	0.129
F_2^{tu} (ksi)	52.81 (51.59)	59.15 (59.23)	47.30 (46.62)	52.36 (52.76)	44.43 (43.76)	49.18 (49.53)	37.15 (36.14)	40.94 (40.68)	39.20 (38.41)	43.40 (43.48)
E_2^t (Msi)	---	3.60 (3.60)	---	3.52 (3.54)	---	3.31 (3.30)	---	3.24 (3.17)	---	3.16 (3.19)
F_1^{cu} (ksi)	77.61 (79.58)	85.13 (87.59)	67.92 (68.94)	73.74 (75.07)	55.95 (56.59)	61.37 (62.29)	47.46 (48.11)	52.06 (52.96)	48.85 (49.39)	53.03 (53.78)
E_1^c (Msi)	---	4.17 (3.89)	---	3.81 (3.78)	---	3.75 (3.72)	---	3.74 (3.74)	---	4.04 (3.92)
F_2^{cu} (ksi)	59.33 (58.36)	67.91 (66.61)	51.93 (52.31)	58.28 (58.57)	41.92 (42.02)	47.05 (47.05)	35.08 (35.17)	39.16 (39.17)	37.07 (37.26)	41.37 (41.48)
E_2^c (Msi)	---	3.91 (3.72)	---	3.72 (3.63)	---	3.59 (3.55)	---	3.53 (3.53)	---	3.47 (3.51)
F_{12}^{su} (ksi)	21.28	23.72	17.39	19.05	13.88	15.23	10.68	11.90	10.95	11.96
G_{12}^s (Msi)	---	0.90	---	0.70	---	0.61	---	0.42	---	0.50
F_{13}^{su*}(ksi)	---	---	6.59	8.10	---	---	---	---	---	---

* *Apparent* interlaminar shear strength

3.1.2 Individual Test Summaries

3.1.2.1 Tension, 1-axis

Tension, 1-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0]_{12}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	33 - 35 wt%	**Comp. density:**	1.81 - 1.86 g/cc
Fiber volume:	44 - 49 vol%	**Void content:**	1.1 to 9.0 %
Ply thickness:	0.0091 - 0.0101 in.		
Ply range:	12 plies		
Test method:	D3039-95	**Modulus calculation:**	linear fit from t from 1000 - 3000 με
Normalized by:	0.0098 in. ply thickness		

		CTD (B)		RTD (A)		ETD (G)		ETW (F)		ETW (K)	
Test Temperature [°F]		-65		75		180		180		180	
Moisture Conditioning		dry		dry		dry		equilibrium		45 days	
Equilibrium at T, RH		as fabricated		as fabricated		as fabricated		145 F, 85 %		145 F, 85 %	
Source code		TDJXXXXB		TDJXXXXA		TDJXXXXG		TDJXXXXF		TDJXXXXK	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	70.15	73.06	64.39	64.94	59.97	61.08	50.09	50.74	53.85	54.65
	Minimum	68.44	69.77	61.65	60.65	55.03	55.38	46.17	46.54	48.10	50.10
	Maximum	71.74	76.28	67.69	69.49	64.58	68.55	53.11	53.24	56.08	57.59
	C.V.(%)	2.31	3.97	2.69	3.45	3.76	4.50	3.06	3.48	3.29	3.46
F_1^{tu} (ksi)	**B-value**	65.75	67.70	60.91	60.83	56.82	57.32	47.51	47.68	51.06	51.34
	A-value	63.33	64.76	58.65	58.16	54.70	54.80	45.74	45.57	49.15	49.08
	No. Specimens	6		18		24		30		28	
	No. Prepreg Lots	1		3		3		3		3	
	Mean	3.83	3.95	3.72	3.73	3.51	3.61	3.36	3.42	3.48	3.54
	Minimum	3.76	3.82	3.67	3.59	3.45	3.51	3.16	3.18	3.42	3.39
	Maximum	3.91	4.07	3.79	3.83	3.56	3.77	3.69	3.61	3.56	3.72
E_1^t (Msi)	**C.V.(%)**	2.73	4.50	1.08	2.82	1.19	2.64	5.40	4.82	1.47	3.02
	No. Specimens	2		6		8		6		6	
	No. Prepreg Lots	1		3		3		3		3	
	Mean		0.168		0.157		0.128		0.103		0.129
ν_{12}^t	**No. Specimens**	2		6		6		6		6	
	No. Prepreg Lots	1		3		3		3		3	

3.1.2.2 Tension, 2-axis

Tension, 2-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0]_{12}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	32 - 37 wt%	**Comp. density:**	1.77 - 1.87 g/cc
Fiber volume:	46 - 50 vol%	**Void content:**	0.0 to 5.7 %
Ply thickness:	0.0089 - 0.0104 in.		
Ply range:	12 plies		
Test method:	D3039-95	**Modulus calculation:**	linear fit from 1000 - 3000 με
Normalized by:	0.0098 in. ply thickness		

		CTD (B)		RTD (A)		ETD (G)		ETW (F)		ETW (K)	
Test Temperature [°F]		-65		75		180		180		180	
Moisture Conditioning		dry		dry		dry		equilibrium		45 days	
Equilibrium at T, RH		as fabricated		as fabricated		as fabricated		145 F, 85 %		145 F, 85 %	
Source code		TDUXXXXB		TDUXXXXA		TDUXXXXG		TDUXXXXF		TDUXXXXK	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_2^{tu} (ksi)	**Mean**	59.23	59.15	52.76	52.36	49.53	49.18	40.68	40.94	43.48	43.40
	Minimum	54.92	56.33	46.95	45.88	43.13	42.45	35.92	36.51	40.27	39.71
	Maximum	63.43	61.26	59.09	56.31	54.63	53.83	48.59	45.70	48.63	45.92
	C.V.(%)	5.44	3.05	7.00	5.80	6.01	5.70	7.79	6.61	6.60	4.91
	B-value	51.59	52.81	46.62	47.30	43.76	44.43	36.14	37.15	38.41	39.20
	A-value	47.15	49.14	42.60	43.99	39.99	41.32	33.02	34.54	35.11	36.46
	No. Specimens	8		18		18		29		18	
	No. Prepreg Lots	1		3		3		3		3	
E_2^t (Msi)	**Mean**	3.60	3.60	3.54	3.52	3.30	3.31	3.17	3.24	3.19	3.16
	Minimum	3.46	3.45	3.42	3.38	3.20	3.18	3.05	3.07	3.07	3.01
	Maximum	3.70	3.80	3.59	3.66	3.54	3.40	3.26	3.48	3.29	3.34
	C.V.(%)	2.92	4.10	1.79	3.03	3.75	2.46	2.23	4.54	2.63	3.61
	No. Specimens	4		6		6		6		6	
	No. Prepreg Lots	1		3		3		3		3	

3.1.2.3 Compression, 1-axis

Compression, 1-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0]_{14}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	33 - 35 wt%	**Comp. density:**	1.78 - 1.84 g/cc
Fiber volume:	45 - 48 vol%	**Void content:**	0.2 to 4.5 %
Ply thickness:	0.0088 - 0.0102 in.		
Ply range:	14 plies		
Test method:	SRM 1-94, D695-91 (mod)	**Modulus calculation:**	linear fit from 1000 - 3000 με
Normalized by:	0.0098 in. ply thickness		

		CTD (B)		RTD (A)		ETD (G)		ETW (F)		ETW (K)	
Test Temperature [°F]		-65		75		180		180		180	
Moisture Conditioning		dry		dry		dry		equilibrium		45 days	
Equilibrium at T, RH		as fabricated		as fabricated		as fabricated		145 F, 85 %		145 F, 85 %	
Source code		TDKXXXXB		TDKXXXXA		TDKXXXXG		TDKXXXXF		TDKXXXXK	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean	87.59	85.13	75.07	73.74	62.29	61.37	52.96	52.06	53.78	53.03
	Minimum	81.06	79.59	69.01	67.92	57.46	58.49	49.83	48.79	49.96	50.31
	Maximum	94.84	92.42	81.17	79.32	67.58	65.69	56.07	54.79	58.25	58.01
	C.V.(%)	5.47	5.65	5.04	4.57	3.75	2.99	3.30	2.96	3.89	3.94
F_1^{cu} (ksi)	**B-value**	79.58	77.61	68.94	67.92	56.59	55.95	48.11	47.46	49.39	48.85
	A-value	74.89	73.21	64.81	64.01	53.26	52.78	45.28	44.77	46.43	46.03
	No. Specimens	7		18		18		20		18	
	No. Prepreg Lots	1		3		3		3		3	
	Mean	3.89	4.17	3.78	3.81	3.72	3.75	3.74	3.74	3.92	4.04
	Minimum	3.85	4.03	3.73	3.63	3.66	3.62	3.66	3.54	3.73	3.76
	Maximum	3.92	4.31	3.84	4.02	3.76	3.83	3.82	3.93	4.27	4.65
	C.V.(%)	1.28	4.70	1.15	3.53	0.91	2.14	1.49	3.97	5.11	7.88
E_1^c (Msi)	**No. Specimens**	2		6		6		6		6	
	No. Prepreg Lots	1		3		3		3		3	

3.1.2.4 Compression, 2-axis

Compression, 2-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0]_{14}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	33 - 36 wt%	**Comp. density:**	1.77 - 1.83 g/cc
Fiber volume:	43 - 47 vol%	**Void content:**	0.4 to 7.0 %
Ply thickness:	0.0090 - 0.0102 in.		
Ply range:	14 plies		
Test method:	SRM 1-94, D695-91 (mod)	**Modulus calculation:**	linear fit from 1000 - 3000 με
Normalized by:	0.0098 in. ply thickness		

		CTD (B)		RTD (A)		ETD (G)		ETW (F)		ETW (K)	
Test Temperature [°F]		-65		75		180		180		180	
Moisture Conditioning		dry		dry		dry		equilibrium		45 days	
Equilibrium at T, RH		as fabricated		as fabricated		as fabricated		145 F, 85 %		145 F, 85 %	
Source code		TDWXXXXB		TDWXXXXA		TDWXXXXG		TDWXXXXF		TDWXXXXK	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_2^{cu} (ksi)	**Mean**	66.61	67.91	58.57	58.28	47.05	47.05	39.17	39.16	41.48	41.37
	Minimum	57.09	57.86	52.20	51.17	40.15	40.10	33.64	33.20	37.52	36.84
	Maximum	74.22	75.70	64.41	64.83	51.22	51.49	43.06	44.01	46.96	46.50
	C.V.(%)	9.80	9.58	5.75	6.36	5.97	6.19	6.46	6.65	5.99	5.80
	B-value	58.36	59.33	52.31	51.93	42.02	41.92	35.17	35.08	37.26	37.07
	A-value	53.82	54.61	48.24	47.80	38.75	38.58	32.42	32.28	34.35	34.11
	No. Specimens	6		18		18		29		30	
	No. Prepreg Lots	1		3		3		3		3	
E_2^c (Msi)	**Mean**	3.72	3.91	3.63	3.72	3.55	3.59	3.53	3.53	3.51	3.47
	Minimum	3.70	3.82	3.58	3.51	3.52	3.42	3.42	3.29	3.34	3.36
	Maximum	3.73	4.00	3.70	3.99	3.58	3.93	3.62	3.79	3.60	3.62
	C.V.(%)	0.62	3.33	1.32	5.32	0.74	5.41	1.93	5.13	2.75	2.81
	No. Specimens	2		6		6		6		6	
	No. Prepreg Lots	1		3		3		3		3	

3.1.2.5 Shear, 12 axis

Shear, 12-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0/90]_{4S}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	32 - 34 wt%	**Comp. density:**	1.81 - 1.87 g/cc
Fiber volume:	47 - 49 vol%	**Void content:**	2.4 to 6.2%
Ply thickness:	0.0084 - 0.0098 in.		
Ply range:	16 plies		
Test method:	D5379-93	**Modulus calculation:**	linear fit from 1000 - 6000 με
Normalized by:	N/A		

		CTD (B)		RTD (A)		ETD (G)		ETW (F)		ETW (K)	
Test Temperature [°F]		-65		75		180		180		180	
Moisture Conditioning		dry		dry		dry		equilibrium		45 days	
Equilibrium at T, RH		as fabricated		as fabricated		as fabricated		145 F, 85 %		145 F, 85 %	
Source code		TDNXXXXB		TDNXXXXA		TDNXXXXG		TDNXXXXF		TDNXXXXK	
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
F_{12}^{su} (ksi)	**Mean**		23.72		19.05		15.23		11.90		11.96
	Minimum		21.20		17.43		14.10		11.02		10.76
	Maximum		25.70		20.88		16.64		12.85		12.93
	C.V.(%)		6.28		5.59		4.81		4.27		4.93
	B-value		21.28		17.39		13.88		10.68		10.95
	A-value		19.93		16.28		12.99		10.00		10.24
	No. Specimens	6		22		18		30		30	
	No. Prepreg Lots	1		3		3		3		3	
G_{12}^{s} (Msi)	**Mean**		0.90		0.70		0.61		0.42		0.50
	Minimum		0.89		0.60		0.54		0.37		0.45
	Maximum		0.90		0.79		0.69		0.46		0.56
	C.V.(%)		0.50		9.40		8.02		8.67		8.02
	No. Specimens	2		6		6		6		6	
	No. Prepreg Lots	1		3		3		3		3	

3.1.2.6 Shear, 13 axis

Shear, 13-axis
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric
$[0]_{12}$

Material:	Fibercote-E765/7781 E-Glass Fabric		
Resin content:	34 - 36 wt%	**Comp. density:**	1.76 - 1.85 g/cc
Fiber volume:	45 - 47 vol%	**Void content:**	1.7 to 4.1%
Ply thickness:	0.0088 - 0.0099 in.		
Ply range:	12 plies		
Test method:	D2344-89	**Modulus calculation:**	N/A
Normalized by:	N/A		

				RTD (A)							
Test Temperature [°F]				75							
Moisture Conditioning				dry							
Equilibrium at T, RH				as fabricated							
Source code				TDQXXXXA							
		Normalized	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**	**Normalized**	**Measured**
	Mean				8.10						
	Minimum				7.10						
	Maximum				9.45						
	C.V.(%)				9.68						
F_{13}^{su}											
(ksi)	**B-value**				6.59						
	A-value				5.52						
	No. Specimens			21							
	No. Prepreg Lots			3							

NOTES: These values represent the apparent interlaminar shear properties and are to be used for quality control purposes only. Do not use these values for interlaminar shear strength design values.

3.1.2.7 Bearing Strength

Bearing Strength
Gl/Ep
Fibercote-E765/7781 E-Glass Fabric

Material: Fibercote-E765/7781 E-Glass Fabric

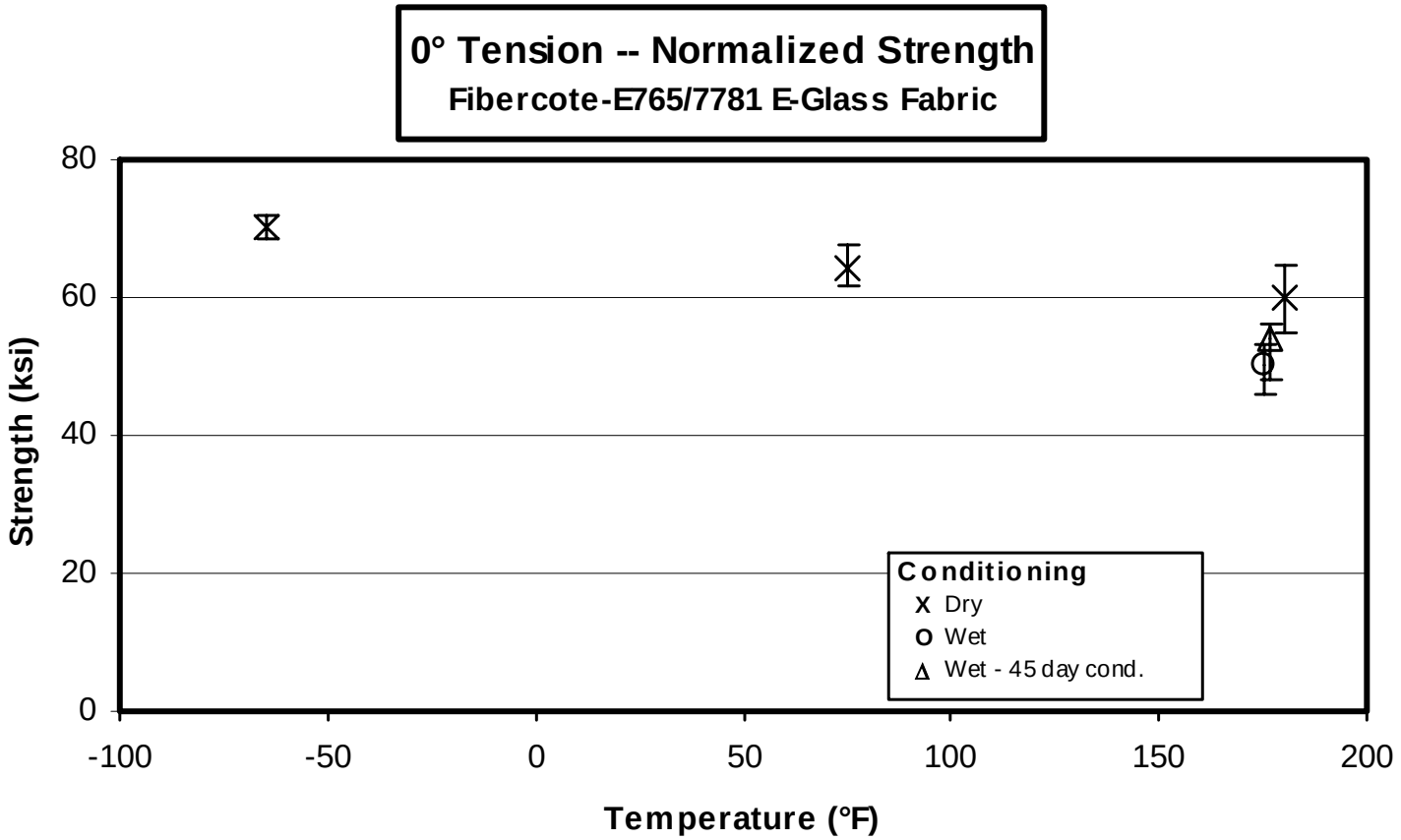
Resin content: 32 - 37 wt% **Comp. density:** 1.69 - 1.88 g/cc
Fiber volume: 42 - 50% **Void content:** 0.4 to 7.7%

Test method: ASTM D953-95
Type of bearing test: Double Shear Pin Bearing
Fastener Type: Hardened Steel Pin
Torque: N/A
Normalized by: Not normalized

		CTD			RTD			ETD			ETW			ETW*		
Test Temperature [°F]		-65			75			180			180			180		
Moisture Conditioning		dry			dry			dry			equilibrium			45 days		
Equilibrium at T, RH		as fabricated			as fabricated			as fabricated			145F,85%			145F,85%		
Source code		TD#XXXXB			TD#XXXXA			TD#XXXXG			TD#XXXXF			TD#XXXXK		
Diameter[in]		0.1875	0.250	0.375	0.1875	0.250	0.375	0.1875	0.250	0.375	0.1875	0.250	0.375	0.1875	0.25	0.375
	Mean	53.99	55.59		52.02	45.49		41.79	33.25		30.03	27.80		30.25	24.58	
F^{bu}	**Minimum**	36.89	52.90		48.40	43.27		39.27	27.79		25.35	22.95		26.79	22.78	
(ksi)	**Maximum**	68.97	59.88		54.52	48.74		43.84	36.59		32.87	30.19		32.22	27.62	
$[45/0/45]_s$ (6 plies)	**C.V.(%)**	25.81	5.29		4.19	5.59		3.72	10.87		7.25	8.34		6.23	7.01	
t_{ply}: 0.0088 - 0.0098 in.																
	Failure Mode	Bearing	Bearing		Bearing	Bearing		Bearing	Bearing		Bearing	Bearing		Bearing	Bearing	
	No. Specimens	6	6		6	6		6	6		8	7		6	7	
	No. Prepreg Lots	1	1		1	1		1	1		1	1		1	1	
	Mean		64.81	59.76		53.84	48.06		42.33	39.72		38.23	32.58		32.78	32.38
F^{bu}	**Minimum**		59.61	55.81		49.83	45.46		41.11	35.76		35.55	31.33		28.02	29.84
(ksi)	**Maximum**		73.83	62.98		62.64	50.35		44.26	42.03		44.30	34.42		35.69	34.56
$[(0/45)_5]_s$ (20 plies)	**C.V.(%)**		8.75	4.12		8.56	5.16		3.05	5.67		9.03	3.23		8.97	5.20
t_{ply}: 0.0098 - 0.0109 in.																
	Failure Mode		Bearing	Bearing		Bearing	Bearing		Bearing	Bearing		Bearing	Bearing		Bearing	Bearing
	No. Specimens		5	6		6	6		6	6		6	8		8	7
	No. Prepreg Lots		1	1		1	1		1	1		1	1		1	1

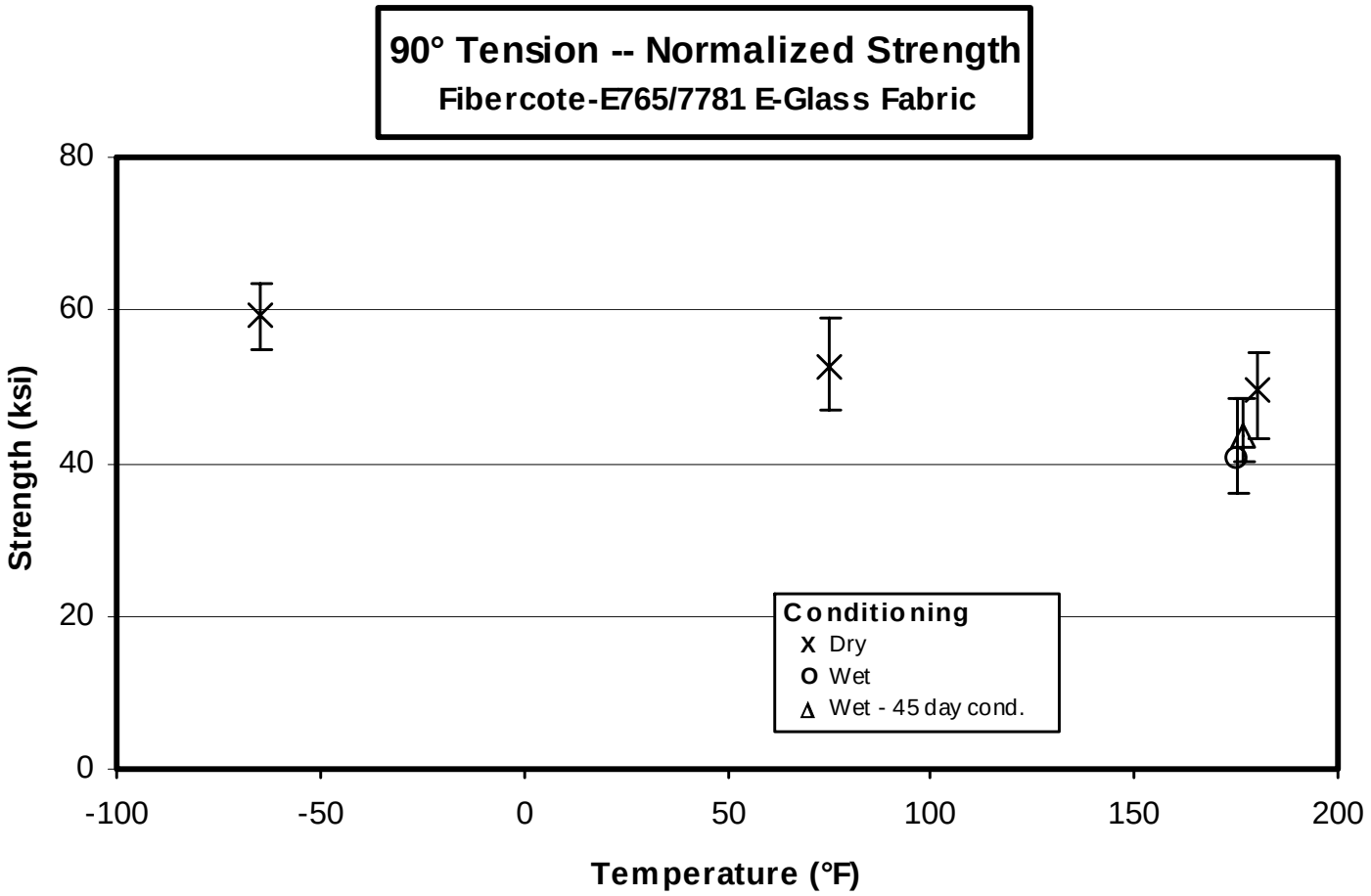
3.1.3 Individual Test Charts

3.1.3.1 Tension, 1-axis



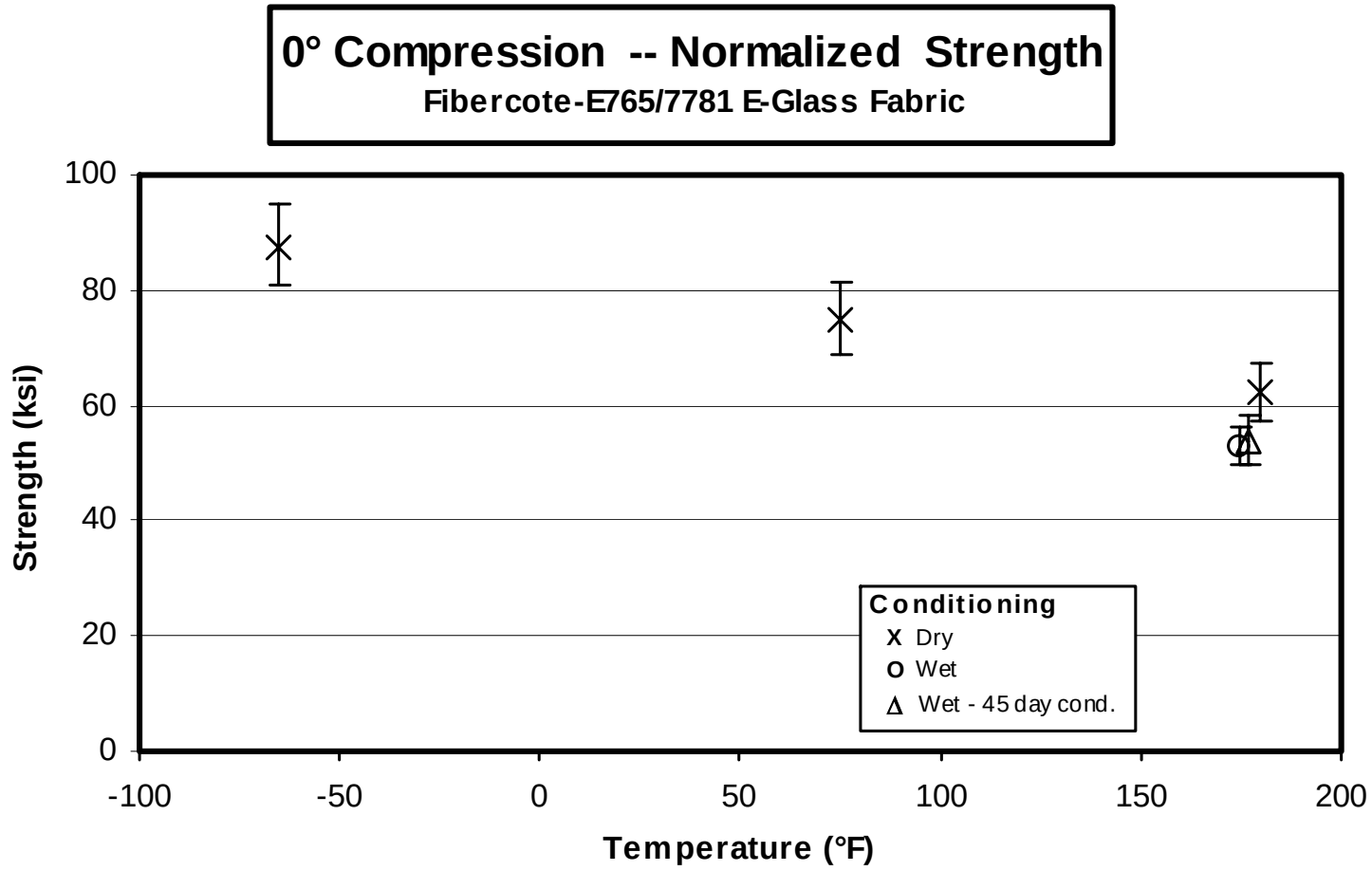
NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet

3.1.3.2 Tension, 2-axis



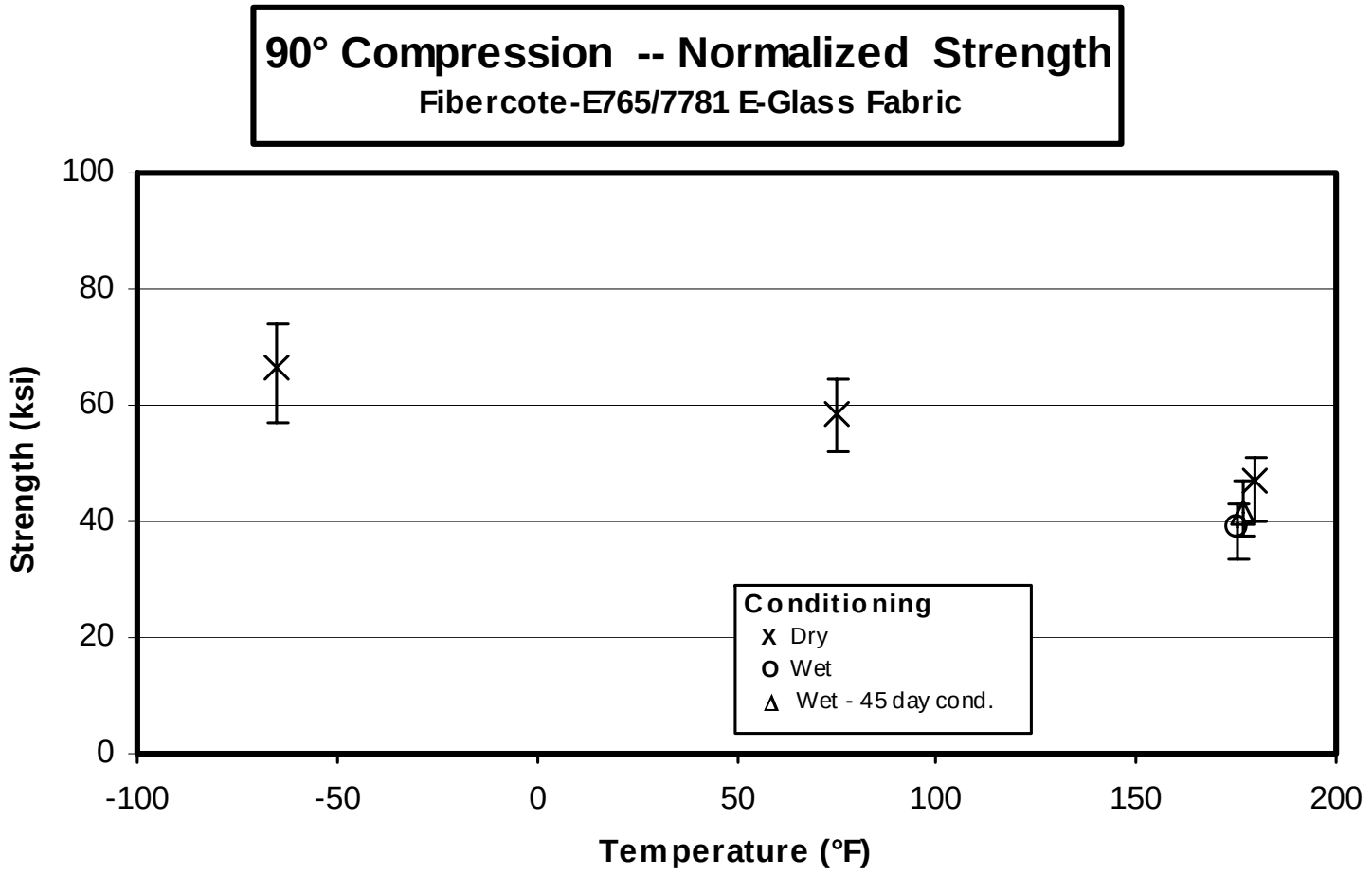
NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet data have been staggered for clarity.

3.1.3.3 Compression, 1-axis



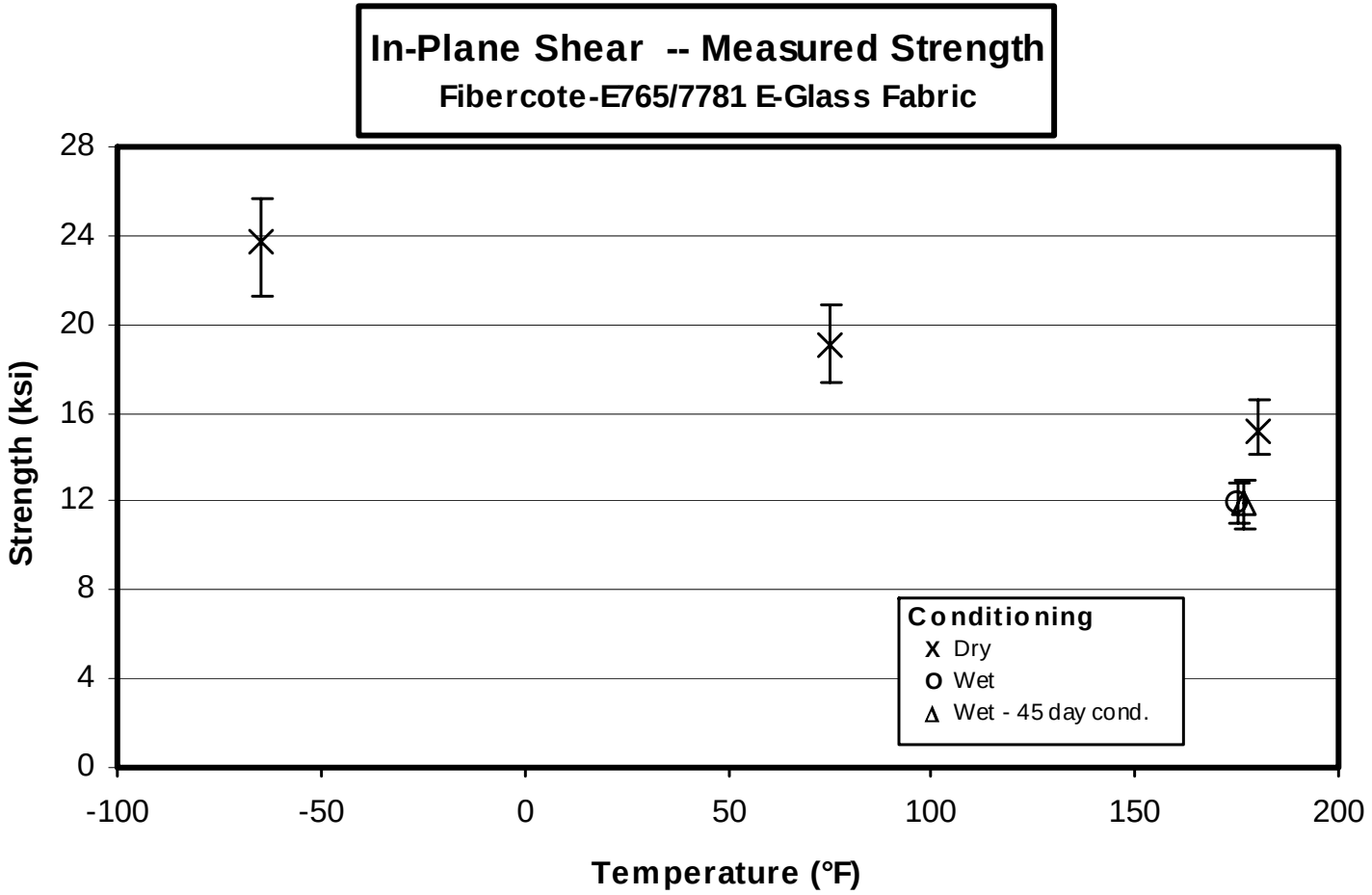
NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet data have been staggered for clarity.

3.1.3.4 Compression, 2-axis



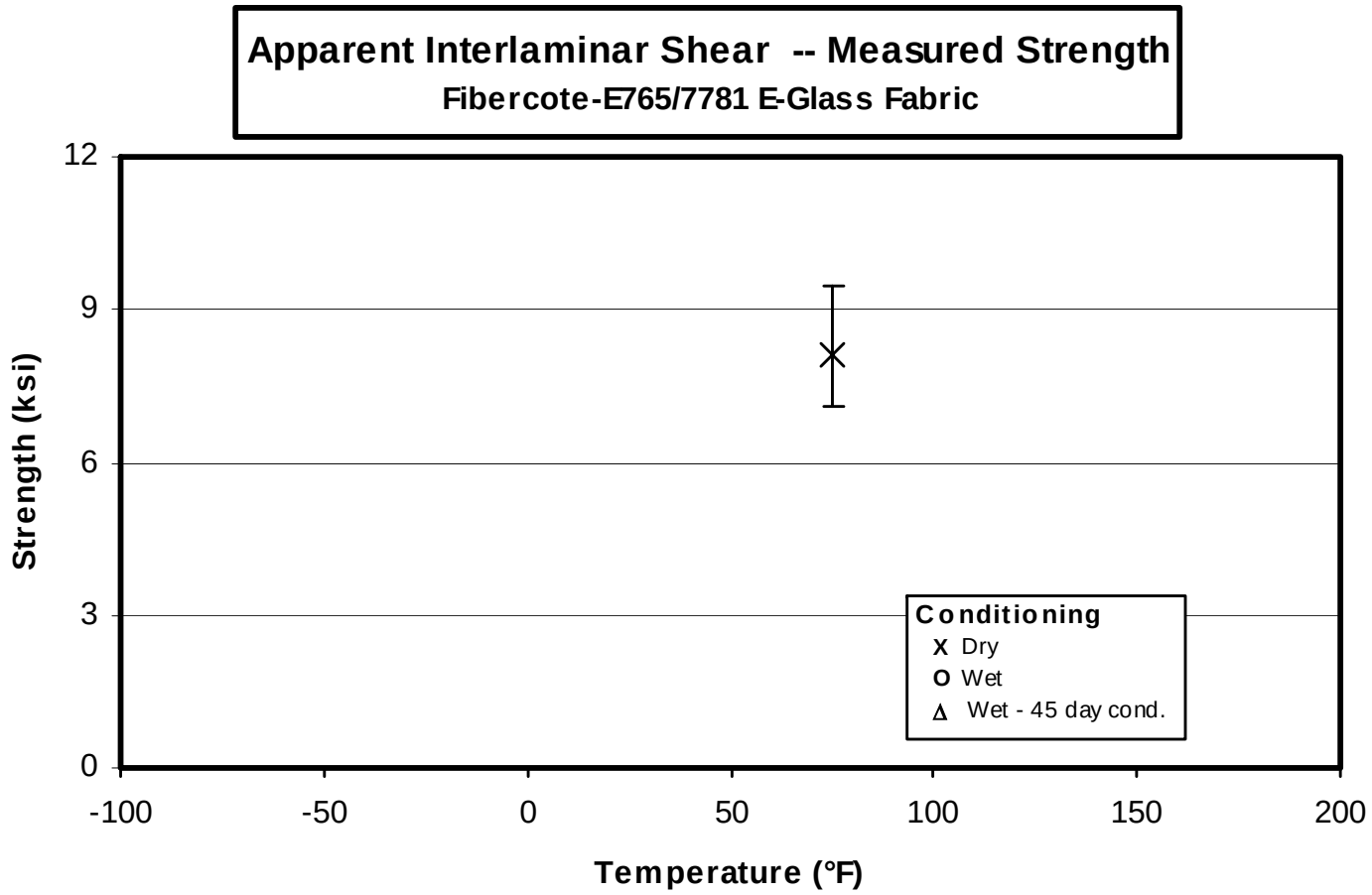
NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet data have been staggered for clarity.

3.1.3.5 Shear, 12 axis



NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet data have been staggered for clarity

3.1.3.6 Shear, 13 axis



NOTE: The symbols represent the 'pooled' average of all tests, and the bars represent the upper and lower limit of the data. The 180° dry and wet data have been staggered for clarity.

3.2 Raw Data

Specimen Naming Convention

Test coupons were identified using an eight-digit specimen code, with the significance of each digit delineated below. A representative sample ID is shown for reference purposes.

T D J 2 1 2 5 F

1st Character: Fabricator
'T' designates FiberCote

2nd Character: Material System
'D' designates 7781 / E765

3rd Character: Test Type
'J' designates 0° Tension Strength and Modulus, other test types will be clearly labeled at the top of each sheet

4th Character: Prepreg Batch ID
See Table 2.1 for FiberCote Batch ID / Sample Batch ID correlation.

5th Character: Panel Number
The panel(s) fabricated for a specific test method.

6th Character: Subpanel Number
The subpanel(s) cut from each panel, with subpanel numbers labeled increasing from reference edge.

7th Character: Sample Number
The sample(s) cut from each subpanel, with sample numbers labeled increasing from reference edge.

8th Character: Test Condition
'A' --- RTD
'B' --- CTD
'F' --- ETW
'G' --- ETD
'K' --- ETW (Conditioned 45 days only)
See Table 1.5.1 for condition parameters.

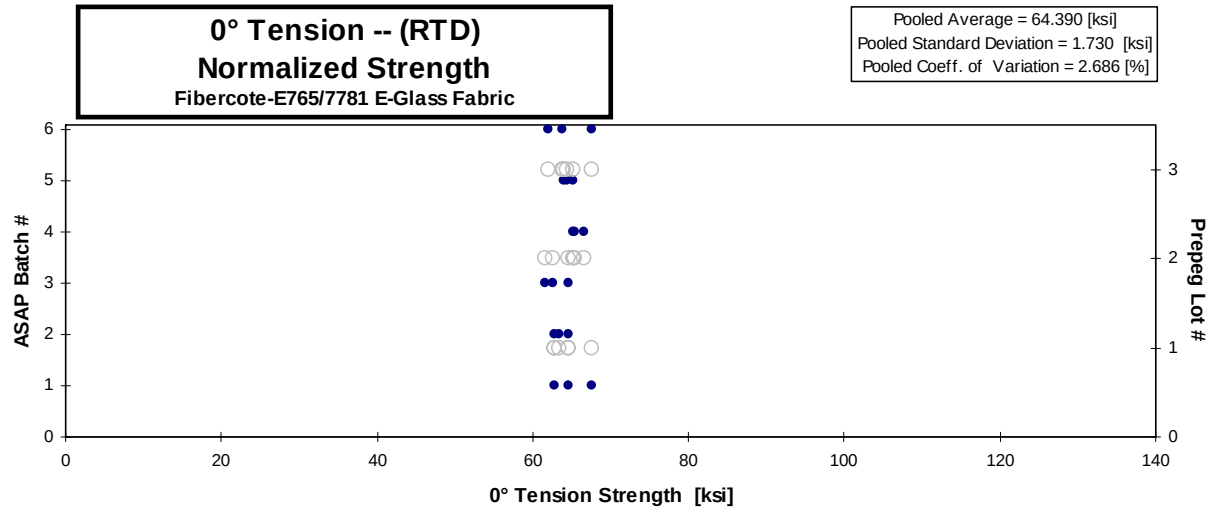
3.2.1 Raw Data Spreadsheets and Scatter Charts

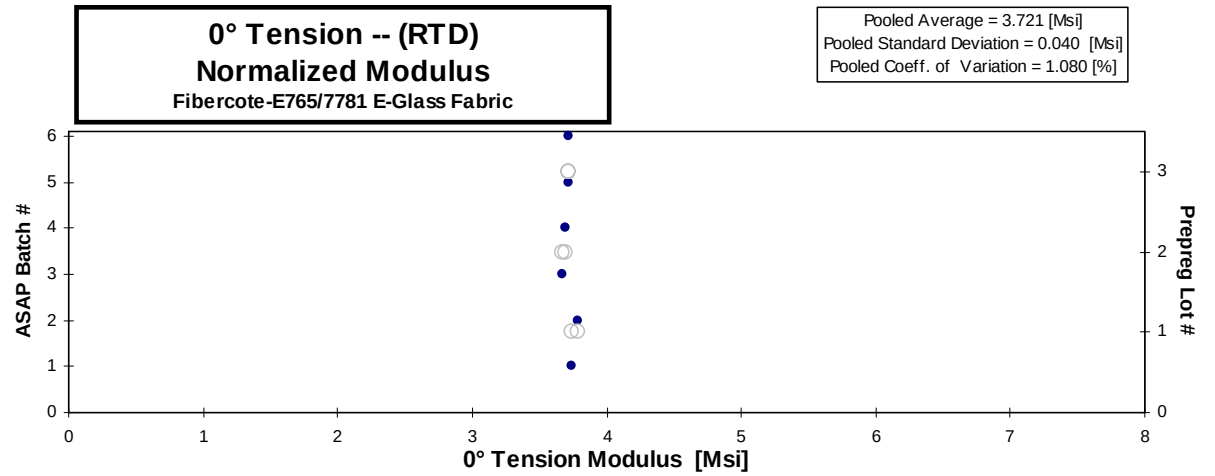
0° Tension -- (RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDJ1511A	1	1	1	69.488	3.835	0.144	0.115	12	0.00955	67.686	3.736
TDJ1512A	1	1	1	65.460			0.113	12	0.00941	62.863	
TDJ1513A	1	1	1	67.014			0.113	12	0.00945	64.630	
TDJ1415A	2	1	2	64.064	3.833	0.157	0.116	12	0.00969	63.328	3.789
TDJ1416A	2	1	2	68.024			0.112	12	0.00930	64.583	
TDJ1417A	2	1	2	64.911			0.114	12	0.00949	62.841	
TDJ2116A	2	2	3	63.148	3.588	0.161	0.120	12	0.01003	64.633	3.672
TDJ2117A	2	2	3	60.649			0.120	12	0.00996	61.646	
TDJ2118A	2	2	3	62.086			0.119	12	0.00988	62.579	
TDJ2216A	1	2	4	65.376	3.624	0.155	0.120	12	0.00998	66.608	3.692
TDJ2217A	1	2	4	63.463			0.121	12	0.01009	65.325	
TDJ2218A	1	2	4	63.956			0.120	12	0.00999	65.179	
TDJ3316A	1	3	5	65.900	3.757	0.159	0.116	12	0.00969	65.190	3.716
TDJ3317A	1	3	5	64.817			0.117	12	0.00973	64.321	
TDJ3318A	1	3	5	66.110			0.114	12	0.00949	64.021	
TDJ3216A	2	3	6	64.689	3.771	0.167	0.116	12	0.00967	63.836	3.722
TDJ3217A	2	3	6	62.186			0.117	12	0.00979	62.115	
TDJ3218A	2	3	6	67.554			0.118	12	0.00981	67.631	

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio			$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**64.939**	**3.735**	**0.157**	**$Average_{norm}$**	**0.00972**	**64.390**	**3.721**
Standard Dev.	**2.242**	**0.105**	**0.008**	**$Standard\ Dev._{norm}$**		**1.730**	**0.040**
Coeff. of Var. [%]	**3.452**	**2.820**	**4.772**	**Coeff. of Var. [%]$_{norm}$**		**2.686**	**1.080**
Min.	**60.649**	**3.588**	**0.144**	**Min.**	**0.0093**	**61.646**	**3.672**
Max.	**69.488**	**3.835**	**0.167**	**Max.**	**0.0101**	**67.686**	**3.789**
Number of Spec.	**18**	**6**	**6**	**Number of Spec.**		**18**	**6**


0° Tension -- (RTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 64.390 [ksi]
Pooled Standard Deviation = 1.730 [ksi]
Pooled Coeff. of Variation = 2.686 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

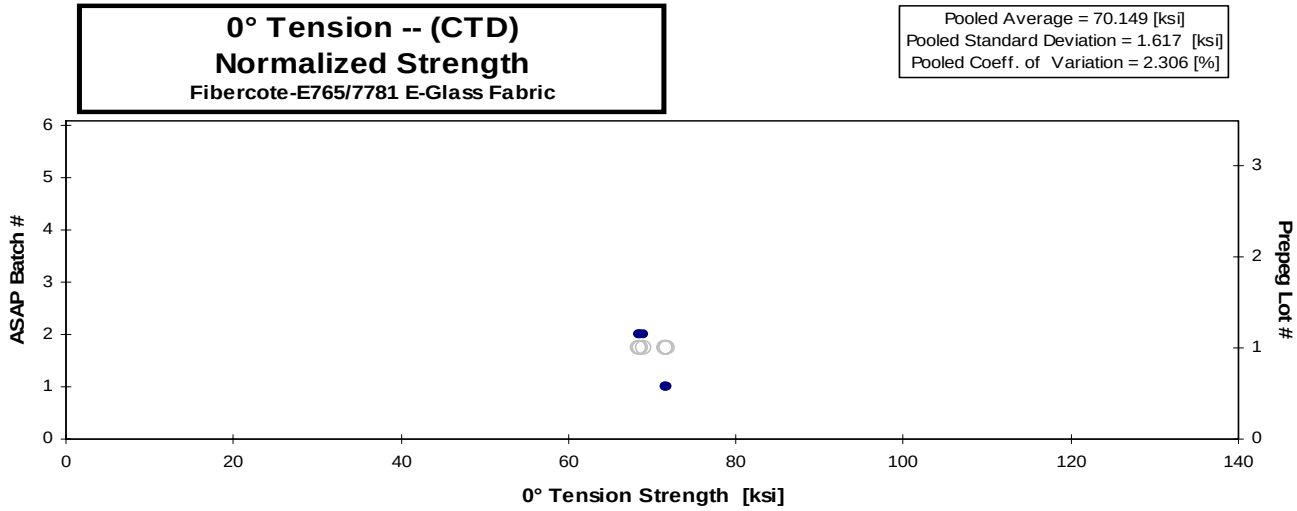

0° Tension -- (RTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.721 [Msi]
Pooled Standard Deviation = 0.040 [Msi]
Pooled Coeff. of Variation = 1.080 [%]
ASAP Batch #
Prepreg Lot #
0° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

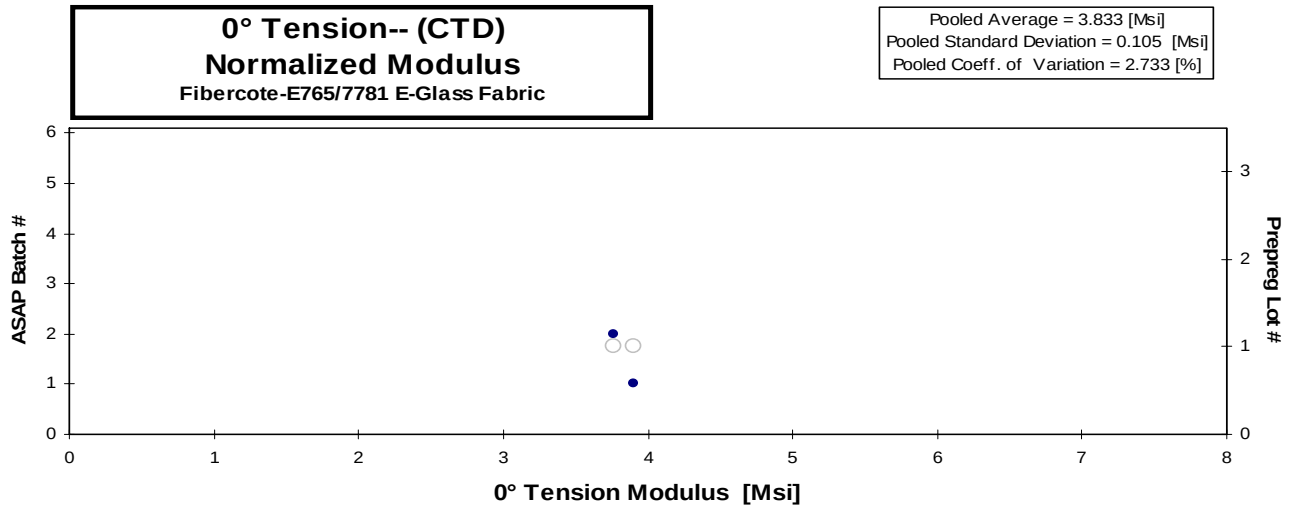
0° Tension-- (CTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDJ1515B	1	1	1	74.589	4.075	0.175	0.113	12	0.00940	71.513	3.907
TDJ1516B	1	1	1	76.282			0.111	12	0.00922	71.742	
TDJ1517B	1	1	1	75.938			0.111	12	0.00924	71.590	
TDJ1411B	2	1	2	70.199	3.824	0.161	0.116	12	0.00963	69.005	3.759
TDJ1412B	2	1	2	69.774			0.115	12	0.00961	68.439	
TDJ1413B	2	1	2	71.601			0.113	12	0.00939	68.608	

Average	**73.064**	**3.949**	**0.168**	**$Average_{norm}$**	**0.00941**	**70.149**	**3.833**
Standard Dev.	**2.902**	**0.178**	**0.009**	**$Standard\ Dev._{norm}$**		**1.617**	**0.105**
Coeff. of Var. [%]	**3.972**	**4.496**	**5.515**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**2.306**	**2.733**
Min.	**69.774**	**3.824**	**0.161**	**Min.**	**0.0092**	**68.439**	**3.759**
Max.	**76.282**	**4.075**	**0.175**	**Max.**	**0.0096**	**71.742**	**3.907**
Number of Spec.	**6**	**2**	**2**	**Number of Spec.**		**6**	**2**


0° Tension -- (CTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 70.149 [ksi]
Pooled Standard Deviation = 1.617 [ksi]
Pooled Coeff. of Variation = 2.306 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6


0° Tension-- (CTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.833 [Msi]
Pooled Standard Deviation = 0.105 [Msi]
Pooled Coeff. of Variation = 2.733 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

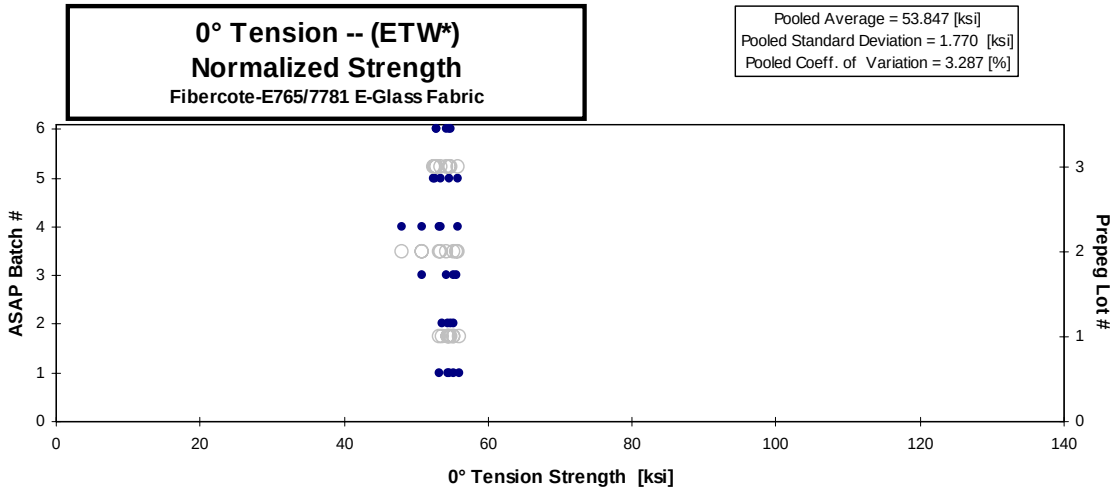
0° Tension -- (ETW*)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

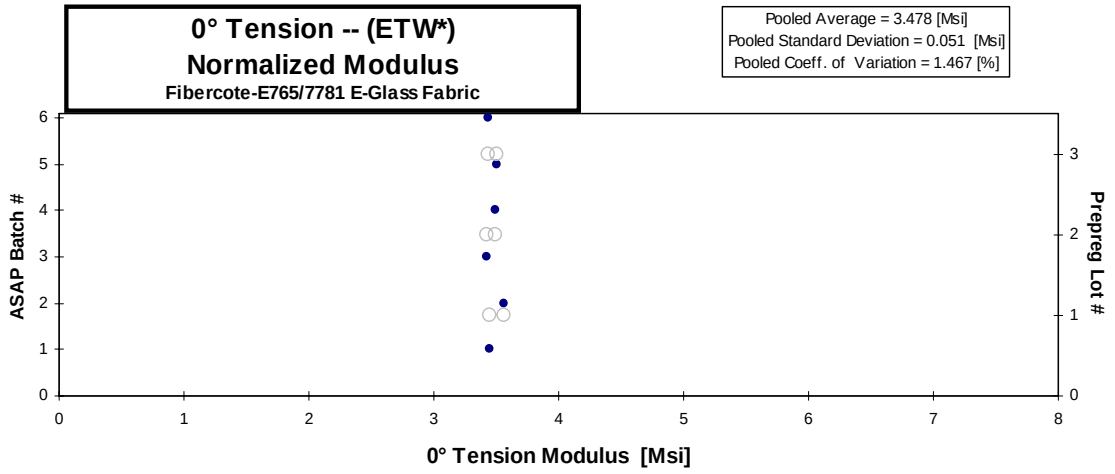
normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDJ1311K	1	1	1	55.822	3.531	0.127	0.115	12	0.00958	54.564	3.451
TDJ1312K	1	1	1	57.589			0.111	12	0.00928	54.529	
TDJ1313K	1	1	1	53.666			0.117	12	0.00971	53.187	
TDJ1314K	1	1	1	56.671			0.116	12	0.00970	56.077	
TDJ1315K	1	1	1	56.028			0.116	12	0.00965	55.146	
TDJ1116K	1	1	2	57.379	3.723	0.115	0.112	12	0.00937	54.841	3.558
TDJ1117K	1	1	2	55.899			0.113	12	0.00941	53.657	
TDJ1118K	1	1	2	56.343			0.115	12	0.00961	55.265	
TDJ1119K	1	1	2	55.759			0.115	12	0.00959	54.542	
TDJ2411K	1	2	3	55.162	3.387	0.121	0.119	12	0.00990	55.725	3.421
TDJ2412K	1	2	3	55.185			0.118	12	0.00980	55.208	
TDJ2413K	1	2	3	50.829			0.118	12	0.00980	50.837	
TDJ2414K	1	2	3	54.381			0.117	12	0.00977	54.188	
TDJ2311K	2	2	4	51.362	3.532	0.131	0.116	12	0.00970	50.860	3.498
TDJ2312K	2	2	4	53.537			0.117	12	0.00977	53.393	
TDJ2313K	2	2	4	55.756			0.118	12	0.00981	55.795	
TDJ2314K	2	2	4	50.097			0.113	12	0.00941	48.095	
TDJ2315K	2	2	4	52.811			0.118	12	0.00987	53.208	
TDJ3111K	1	3	5	54.272	3.550	0.146	0.116	12	0.00967	53.541	3.502
TDJ3112K	1	3	5	54.740			0.118	12	0.00979	54.702	
TDJ3113K	1	3	5	53.240			0.116	12	0.00968	52.598	
TDJ3114K	1	3	5	55.627			0.118	12	0.00983	55.777	
TDJ3115K	1	3	5	52.407			0.118	12	0.00980	52.392	
TDJ3411K	2	3	6	54.262	3.530	0.131	0.115	12	0.00954	52.831	3.437
TDJ3412K	2	3	6	55.852			0.116	12	0.00963	54.910	
TDJ3413K	2	3	6	55.333			0.115	12	0.00962	54.337	
TDJ3414K	2	3	6	53.924			0.115	12	0.00962	52.915	
TDJ3415K	2	3	6	56.397			0.114	12	0.00948	54.583	

*These specimens are conditioned for 45 days only

Average	**54.655**	**3.542**	**0.129**	**$Average_{norm}$**	**0.00966**	**53.847**	**3.478**
Standard Dev.	**1.890**	**0.107**	**0.011**	**$Standard\ Dev._{norm}$**		**1.770**	**0.051**
Coeff. of Var. [%]	**3.458**	**3.021**	**8.160**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.287**	**1.467**
Min.	**50.097**	**3.387**	**0.115**	**Min.**	**0.0093**	**48.095**	**3.421**
Max.	**57.589**	**3.723**	**0.146**	**Max.**	**0.0099**	**56.077**	**3.558**
Number of Spec.	**28**	**6**	**6**	**Number of Spec.**		**28**	**6**


0° Tension -- (ETW*)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 53.847 [ksi]
Pooled Standard Deviation = 1.770 [ksi]
Pooled Coeff. of Variation = 3.287 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

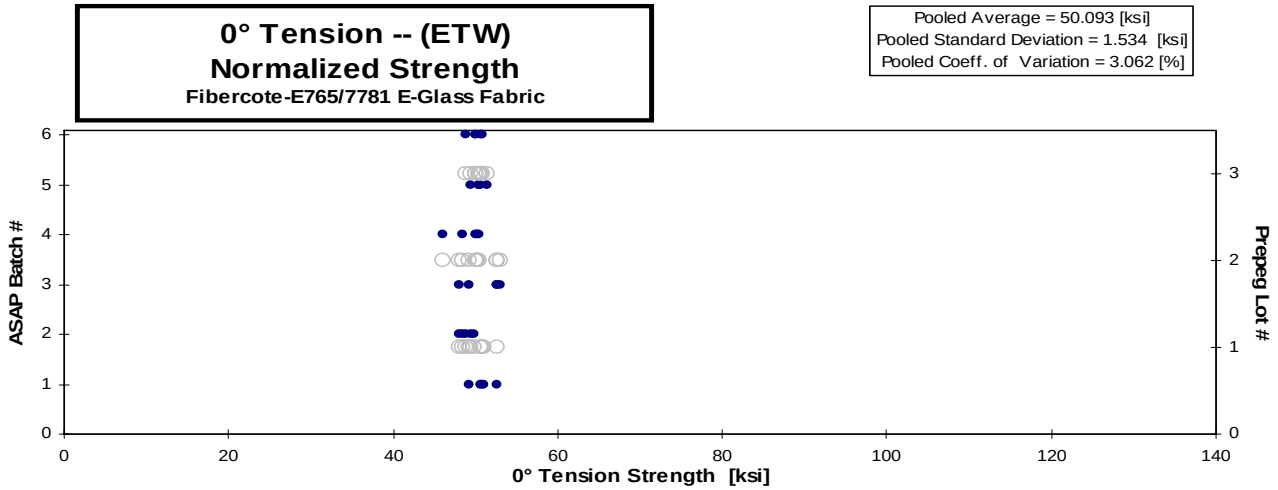

0° Tension -- (ETW*)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.478 [Msi]
Pooled Standard Deviation = 0.051 [Msi]
Pooled Coeff. of Variation = 1.467 [%]
ASAP Batch #
Prepreg Lot #
0° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

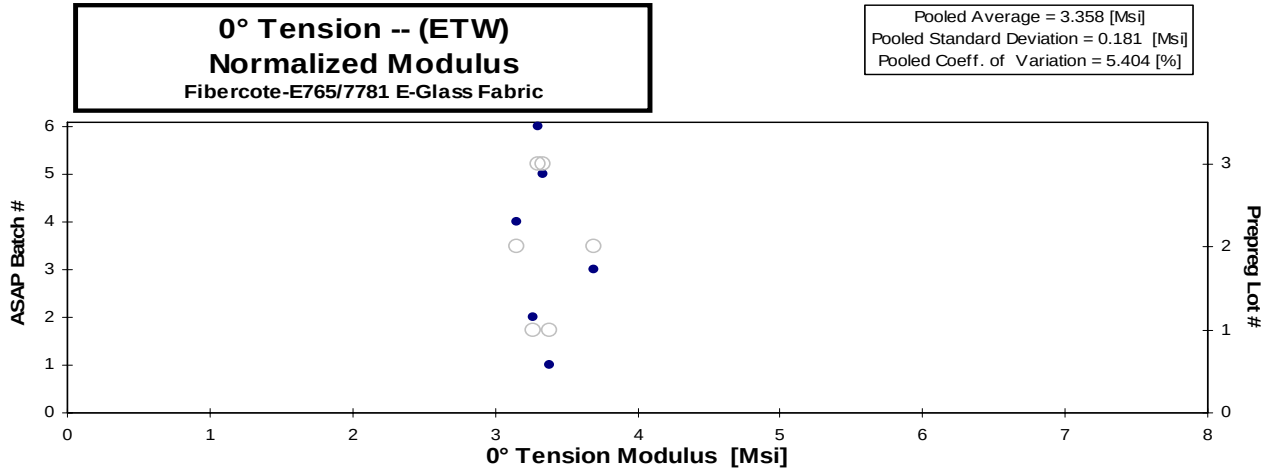
0° Tension -- (ETW)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDJ1111F	1	1	1	51.955	3.567	0.120	0.111	12	0.00929	49.245	3.381
TDJ1112F	1	1	1	52.449			0.114	12	0.00953	50.999	
TDJ1113F	1	1	1	52.476			0.114	12	0.00950	50.877	
TDJ1114F	1	1	1	52.808			0.113	12	0.00938	50.570	
TDJ1115F	1	1	1	53.236			0.116	12	0.00970	52.692	
TDJ1211F	2	1	2	51.632	3.493	0.107	0.110	12	0.00919	48.398	3.274
TDJ1212F	2	1	2	51.963			0.112	12	0.00932	49.423	
TDJ1213F	2	1	2	49.794			0.114	12	0.00946	48.079	
TDJ1214F	2	1	2	51.229			0.114	12	0.00953	49.806	
TDJ1215F	2	1	2	49.592			0.116	12	0.00965	48.847	
TDJ2111F	2	2	3	46.902	3.605	0.081	0.121	12	0.01004	48.065	3.695
TDJ2112F	2	2	3	50.303			0.115	12	0.00958	49.176	
TDJ2113F	2	2	3	51.757			0.121	12	0.01006	53.107	
TDJ2114F	2	2	3	52.591			0.118	12	0.00981	52.643	
TDJ2115F	2	2	3	52.254			0.118	12	0.00986	52.572	
TDJ2211F	1	2	4	46.544	3.183	0.076	0.117	12	0.00972	46.168	3.157
TDJ2212F	1	2	4	50.151			0.118	12	0.00987	50.506	
TDJ2213F	1	2	4	49.338			0.120	12	0.00998	50.240	
TDJ2214F	1	2	4	48.949			0.120	12	0.01001	49.989	
TDJ2215F	1	2	4	47.161			0.121	12	0.01008	48.498	
TDJ3311F	1	3	5	50.948	3.365	0.116	0.116	12	0.00971	50.464	3.333
TDJ3312F	1	3	5	52.006			0.117	12	0.00971	51.519	
TDJ3313F	1	3	5	50.638			0.117	12	0.00975	50.379	
TDJ3314F	1	3	5	50.292			0.115	12	0.00962	49.387	
TDJ3315F	1	3	5	51.026			0.117	12	0.00972	50.592	
TDJ3211F	2	3	6	48.762	3.296	0.120	0.118	12	0.00983	48.893	3.305
TDJ3212F	2	3	6	52.356			0.113	12	0.00938	50.093	
TDJ3213F	2	3	6	50.127			0.118	12	0.00980	50.120	
TDJ3214F	2	3	6	50.997			0.117	12	0.00976	50.773	
TDJ3215F	2	3	6	51.923			0.115	12	0.00956	50.658	

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**50.739**	**3.418**	**0.103**	**Average$_{norm}$**	**0.00968**	**50.093**	**3.358**
Standard Dev.	**1.767**	**0.165**	**0.020**	**Standard Dev$_{norm}$**		**1.534**	**0.181**
Coeff. of Var. [%]	**3.483**	**4.823**	**19.348**	**Coeff. of Var. [%]$_{norm}$**		**3.062**	**5.404**
Min.	**46.544**	**3.183**	**0.076**	**Min.**	**0.0092**	**46.168**	**3.157**
Max.	**53.236**	**3.605**	**0.120**	**Max.**	**0.0101**	**53.107**	**3.695**
Number of Spec.	**30**	**6**	**6**	**Number of Spec.**		**30**	**6**


0° Tension -- (ETW)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 50.093 [ksi]
Pooled Standard Deviation = 1.534 [ksi]
Pooled Coeff. of Variation = 3.062 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

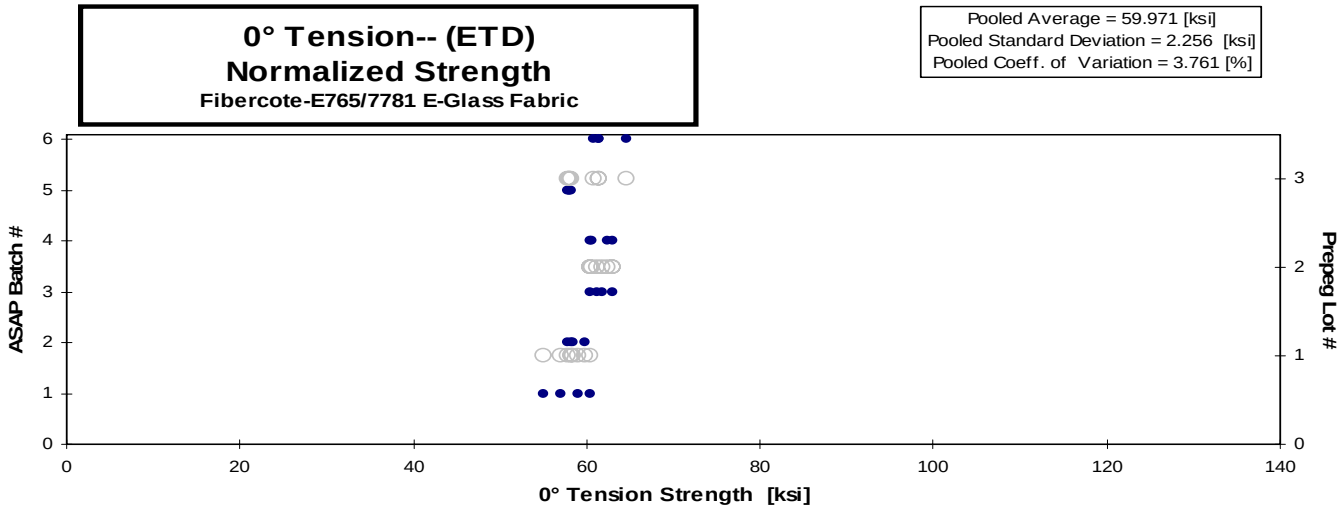

0° Tension -- (ETW)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.358 [Msi]
Pooled Standard Deviation = 0.181 [Msi]
Pooled Coeff. of Variation = 5.404 [%]
ASAP Batch #
Prepreg Lot #
0° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

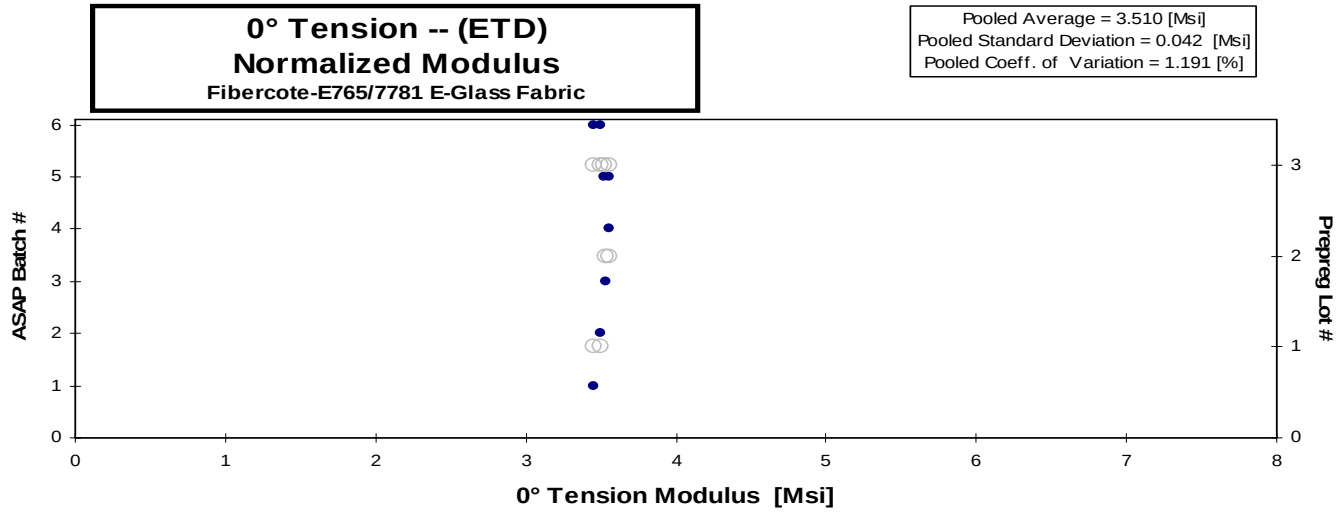
0° Tension -- (ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Poisson's Ratio	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDJ1316G	1	1	1	62.549			0.114	12	0.00947	60.413	
TDJ1317G	1	1	1	55.382			0.117	12	0.00974	55.029	
TDJ1318G	1	1	1	59.719			0.112	12	0.00935	56.985	
TDJ1319G	1	1	1	59.828	3.505	0.127	0.116	12	0.00967	59.014	3.457
TDJ1216G	2	1	2	60.433			0.116	12	0.00971	59.859	
TDJ1217G	2	1	2	58.969			0.116	12	0.00970	58.351	
TDJ1218G	2	1	2	58.421			0.117	12	0.00971	57.883	
TDJ1219G	2	1	2	60.037	3.600	0.125	0.114	12	0.00951	58.284	3.495
TDJ2415G	1	2	3	63.843			0.116	12	0.00967	63.019	
TDJ2416G	1	2	3	63.994			0.114	12	0.00948	61.872	
TDJ2417G	1	2	3	59.242			0.120	12	0.01000	60.451	
TDJ2418G	1	2	3	60.838	3.505	0.132	0.119	12	0.00988	61.312	3.532
TDJ2316G	2	2	4	61.954			0.119	12	0.00988	62.472	
TDJ2317G	2	2	4	60.073			0.119	12	0.00989	60.652	
TDJ2318G	2	2	4	59.991			0.118	12	0.00986	60.357	
TDJ2319G	2	2	4	62.114	3.514	0.139	0.119	12	0.00993	62.933	3.561
TDJ3116G	1	3	5	58.894	3.628		0.115	12	0.00962	57.809	3.561
TDJ3117G	1	3	5	59.509			0.115	12	0.00958	58.151	
TDJ3118G	1	3	5	58.873			0.116	12	0.00967	58.088	
TDJ3119G	1	3	5	60.329	3.662	0.118	0.113	12	0.00942	57.969	3.519
TDJ3416G	2	3	6	65.477	3.772		0.109	12	0.00910	60.828	3.504
TDJ3417G	2	3	6	63.981			0.113	12	0.00942	61.487	
TDJ3418G	2	3	6	62.850			0.115	12	0.00959	61.505	
TDJ3419G	2	3	6	68.550	3.664	0.129	0.111	12	0.00923	64.577	3.451

	Strength [ksi]	Modulus [Msi]	Poisson's Ratio		t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
Average	**61.077**	**3.606**	**0.128**	**$Average_{norm}$**	**0.00963**	**59.971**	**3.510**
Standard Dev.	**2.751**	**0.095**	**0.007**	**Standard $Dev._{norm}$**		**2.256**	**0.042**
Coeff. of Var. [%]	**4.504**	**2.638**	**5.457**	**Coeff. of Var. $[\%]_{norm}$**		**3.761**	**1.191**
Min.	**55.382**	**3.505**	**0.118**	**Min.**	**0.0091**	**55.029**	**3.451**
Max.	**68.550**	**3.772**	**0.139**	**Max.**	**0.0100**	**64.577**	**3.561**
Number of Spec.	**24**	**8**	**6**	**Number of Spec.**		**24**	**8**


0° Tension-- (ETD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 59.971 [ksi]
Pooled Standard Deviation = 2.256 [ksi]
Pooled Coeff. of Variation = 3.761 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

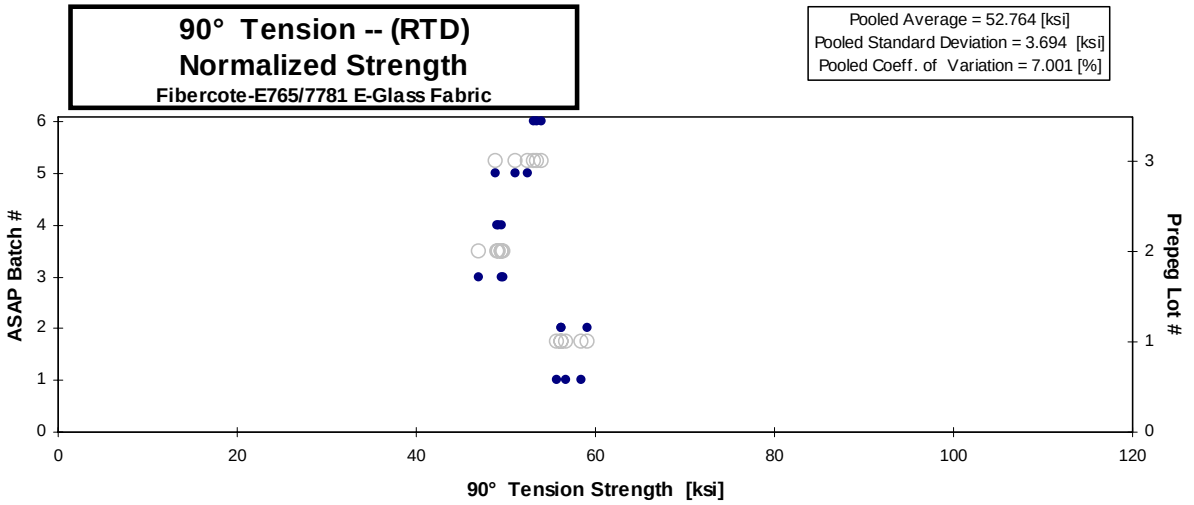

0° Tension -- (ETD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.510 [Msi]
Pooled Standard Deviation = 0.042 [Msi]
Pooled Coeff. of Variation = 1.191 [%]
ASAP Batch #
Prepeg Lot #
0° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

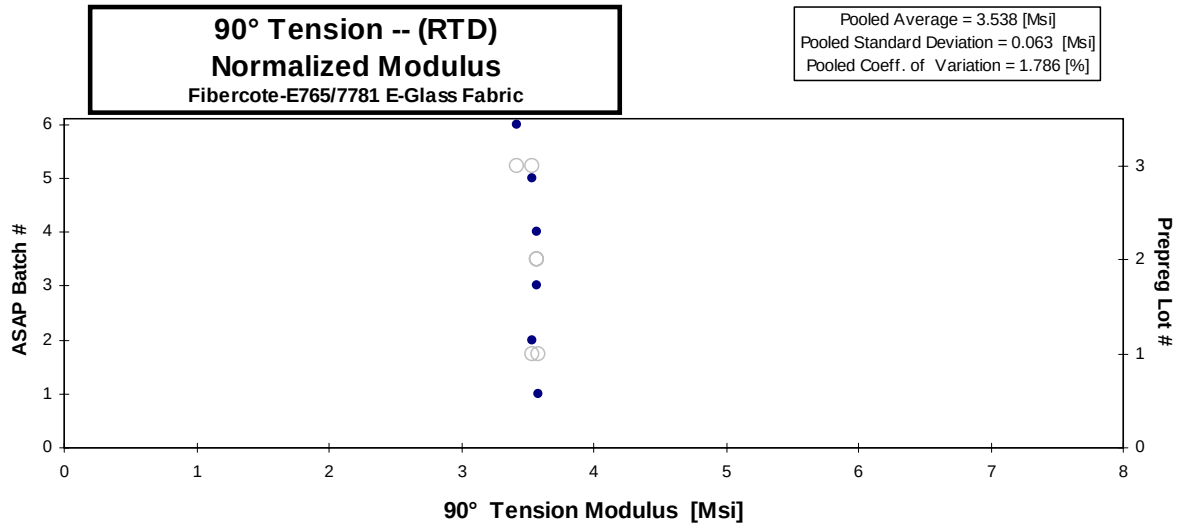
90° Tension-- (RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDU1416A	1	1	1	55.002	3.377	0.125	12	0.01042	58.463	3.589
TDU1417A	1	1	1	52.672		0.124	12	0.01037	55.740	
TDU1418A	1	1	1	54.513		0.122	12	0.01020	56.761	
TDU1516A	2	1	2	54.605	3.435	0.121	12	0.01009	56.199	3.535
TDU1517A	2	1	2	56.313		0.123	12	0.01028	59.091	
TDU1518A	2	1	2	54.338		0.122	12	0.01015	56.278	
TDU2116A	1	2	3	48.483	3.495	0.120	12	0.01001	49.514	3.569
TDU2117A	1	2	3	49.279		0.119	12	0.00990	49.789	
TDU2118A	1	2	3	45.880		0.120	12	0.01003	46.953	
TDU2216A	2	2	4	50.345	3.664	0.115	12	0.00957	49.161	3.578
TDU2217A	2	2	4	50.075		0.116	12	0.00969	49.493	
TDU2218A	2	2	4	48.633		0.119	12	0.00990	49.116	
TDU3116A	4	3	5	53.490	3.608	0.115	12	0.00962	52.505	3.541
TDU3117A	4	3	5	51.878		0.116	12	0.00965	51.077	
TDU3118A	4	3	5	50.921		0.113	12	0.00941	48.893	
TDU3216A	3	3	6	55.179	3.528	0.114	12	0.00949	53.435	3.417
TDU3217A	3	3	6	55.680		0.114	12	0.00952	54.102	
TDU3218A	3	3	6	55.266		0.113	12	0.00943	53.190	

Average	**52.364**	**3.518**	**$Average_{norm}$**	**0.00987**	**52.764**	**3.538**
Standard Dev.	**3.039**	**0.107**	**$Standard\ Dev._{norm}$**		**3.694**	**0.063**
Coeff. of Var. [%]	**5.803**	**3.030**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.001**	**1.786**
Min.	**45.880**	**3.377**	**Min.**	**0.0094**	**46.953**	**3.417**
Max.	**56.313**	**3.664**	**Max.**	**0.0104**	**59.091**	**3.589**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


90° Tension -- (RTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 52.764 [ksi]
Pooled Standard Deviation = 3.694 [ksi]
Pooled Coeff. of Variation = 7.001 [%]
ASAP Batch #
Prepeg Lot #
90° Tension Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

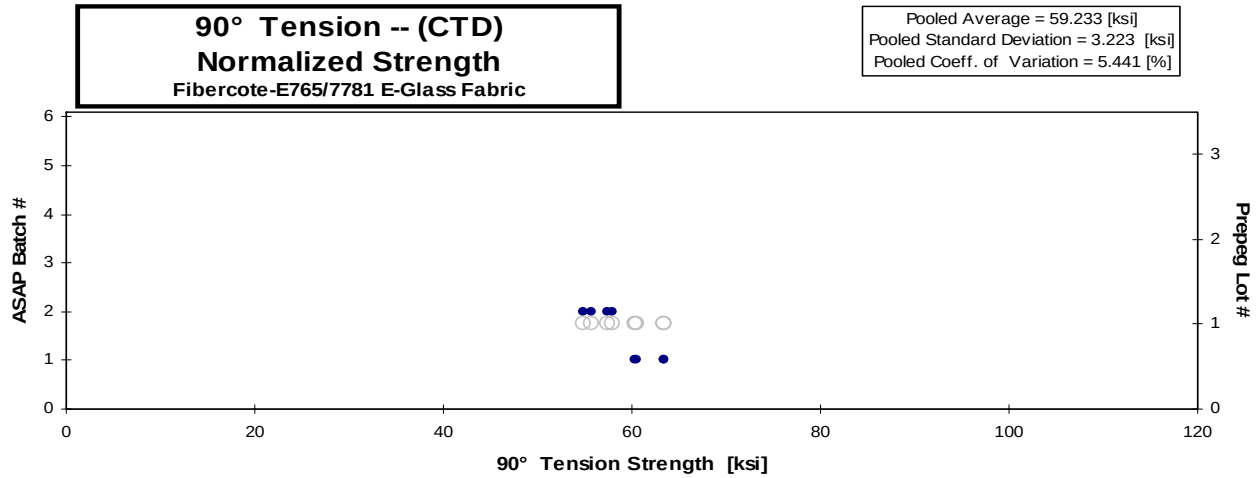

90° Tension -- (RTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.538 [Msi]
Pooled Standard Deviation = 0.063 [Msi]
Pooled Coeff. of Variation = 1.786 [%]
ASAP Batch #
Prepreg Lot #
90° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

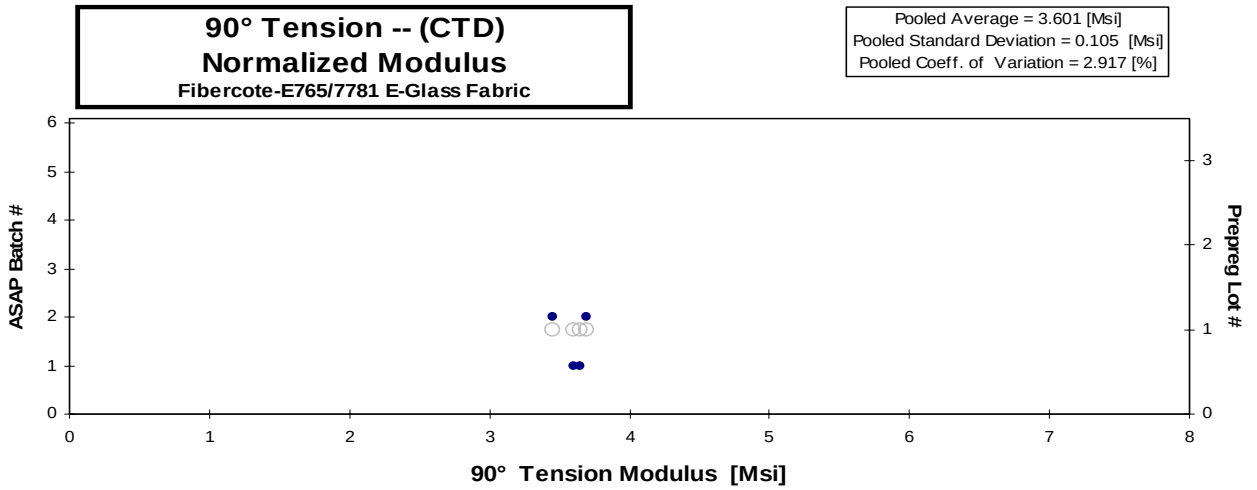
90° Tension-- (CTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{plv} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDU1211B	1	1	1	57.990	3.450	0.123	12	0.01022	60.496	3.599
TDU1212B	1	1	1	60.793		0.123	12	0.01023	63.429	
TDU1213B	1	1	1	60.621		0.123	12	0.01024	63.354	
TDU1214B	1	1	1	58.881	3.562	0.121	12	0.01005	60.383	3.653
TDU1116B	2	1	2	57.311	3.801	0.114	12	0.00953	55.743	3.697
TDU1117B	2	1	2	61.261		0.110	12	0.00920	57.511	
TDU1118B	2	1	2	56.332		0.115	12	0.00955	54.919	
TDU1119B	2	1	2	60.009	3.574	0.114	12	0.00948	58.028	3.456

Average	**59.150**	**3.597**	**$Average_{norm}$**	**0.00981**	**59.233**	**3.601**
Standard Dev.	**1.805**	**0.147**	**$Standard\ Dev._{norm}$**		**3.223**	**0.105**
Coeff. of Var. [%]	**3.052**	**4.098**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.441**	**2.917**
Min.	**56.332**	**3.450**	**Min.**	**0.0092**	**54.919**	**3.456**
Max.	**61.261**	**3.801**	**Max.**	**0.0102**	**63.429**	**3.697**
Number of Spec.	**8**	**4**	**Number of Spec.**		**8**	**4**


90° Tension -- (CTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 59.233 [ksi]
Pooled Standard Deviation = 3.223 [ksi]
Pooled Coeff. of Variation = 5.441 [%]
ASAP Batch #
Prepeg Lot #
90° Tension Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6


90° Tension -- (CTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.601 [Msi]
Pooled Standard Deviation = 0.105 [Msi]
Pooled Coeff. of Variation = 2.917 [%]
ASAP Batch #
Prepreg Lot #
90° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

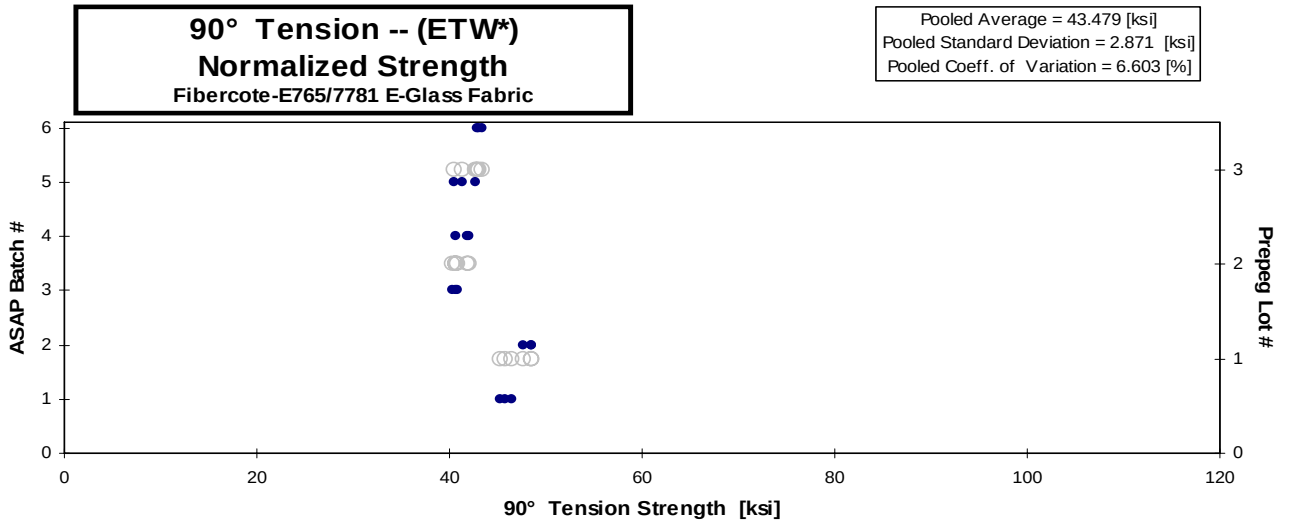
90° Tension-- (ETW*)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

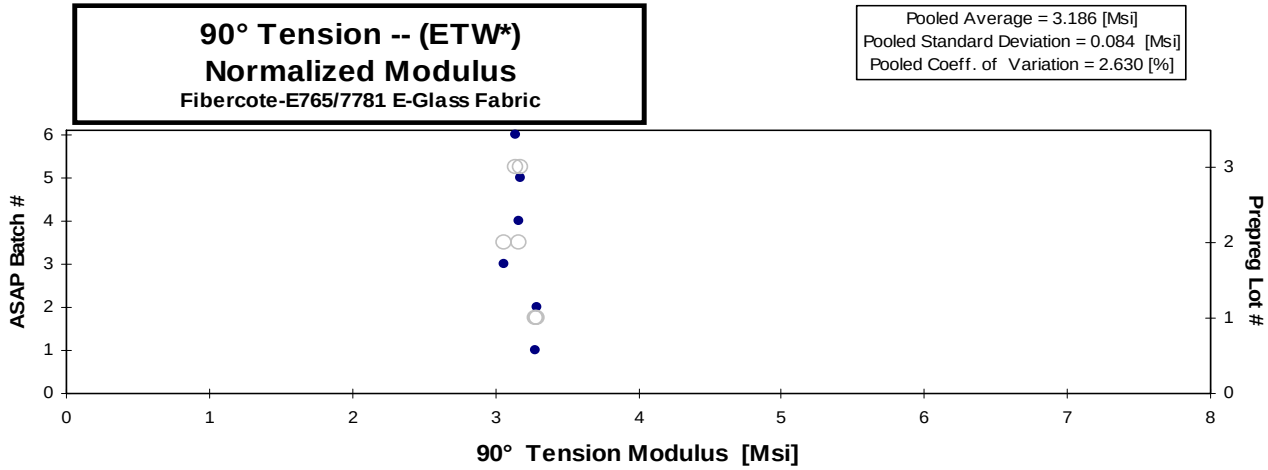
normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDU1511K	2	1	1	44.032	3.151	0.122	12	0.01019	45.767	3.276
TDU1512K	2	1	1	44.561		0.123	12	0.01021	46.431	
TDU1513K	2	1	1	44.609		0.119	12	0.00993	45.222	
TDU1311K	2	1	2	45.783	3.098	0.125	12	0.01040	48.587	3.288
TDU1312K	2	1	2	45.921		0.125	12	0.01038	48.628	
TDU1313K	2	1	2	45.604		0.123	12	0.01026	47.749	
TDU2311K	1	2	3	40.013	3.010	0.120	12	0.00999	40.779	3.067
TDU2312K	1	2	3	39.709		0.120	12	0.01003	40.643	
TDU2313K	1	2	3	40.047		0.118	12	0.00986	40.274	
TDU2411K	2	2	4	40.044	3.113	0.119	12	0.00996	40.679	3.162
TDU2412K	2	2	4	41.412		0.119	12	0.00995	42.064	
TDU2413K	2	2	4	44.408		0.111	12	0.00923	41.840	
TDU3411K	3	3	5	43.442	3.338	0.112	12	0.00934	41.386	3.180
TDU3412K	3	3	5	44.267		0.114	12	0.00946	42.724	
TDU3413K	3	3	5	44.415		0.107	12	0.00894	40.531	
TDU3311K	4	3	6	44.563	3.228	0.114	12	0.00954	43.363	3.141
TDU3312K	4	3	6	43.932		0.115	12	0.00957	42.880	
TDU3313K	4	3	6	44.446		0.114	12	0.00950	43.079	

*These specimens are conditioned for 45 days only

Average	**43.400**	**3.156**	**$Average_{norm}$**	**0.00982**	**43.479**	**3.186**
Standard Dev.	**2.131**	**0.114**	**$Standard\ Dev._{norm}$**		**2.871**	**0.084**
Coeff. of Var. [%]	**4.910**	**3.611**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.603**	**2.630**
Min.	**39.709**	**3.010**	**Min.**	**0.0089**	**40.274**	**3.067**
Max.	**45.921**	**3.338**	**Max.**	**0.0104**	**48.628**	**3.288**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


90° Tension -- (ETW*)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 43.479 [ksi]
Pooled Standard Deviation = 2.871 [ksi]
Pooled Coeff. of Variation = 6.603 [%]
ASAP Batch #
Prepeg Lot #
90° Tension Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

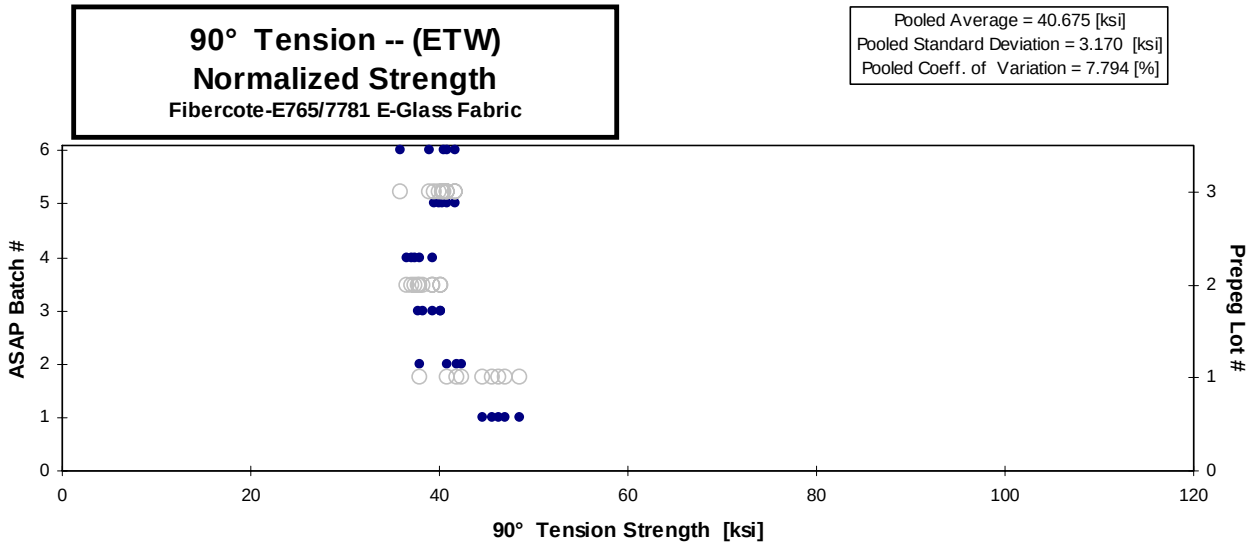

90° Tension -- (ETW*)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.186 [Msi]
Pooled Standard Deviation = 0.084 [Msi]
Pooled Coeff. of Variation = 2.630 [%]
ASAP Batch #
Prepreg Lot #
90° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

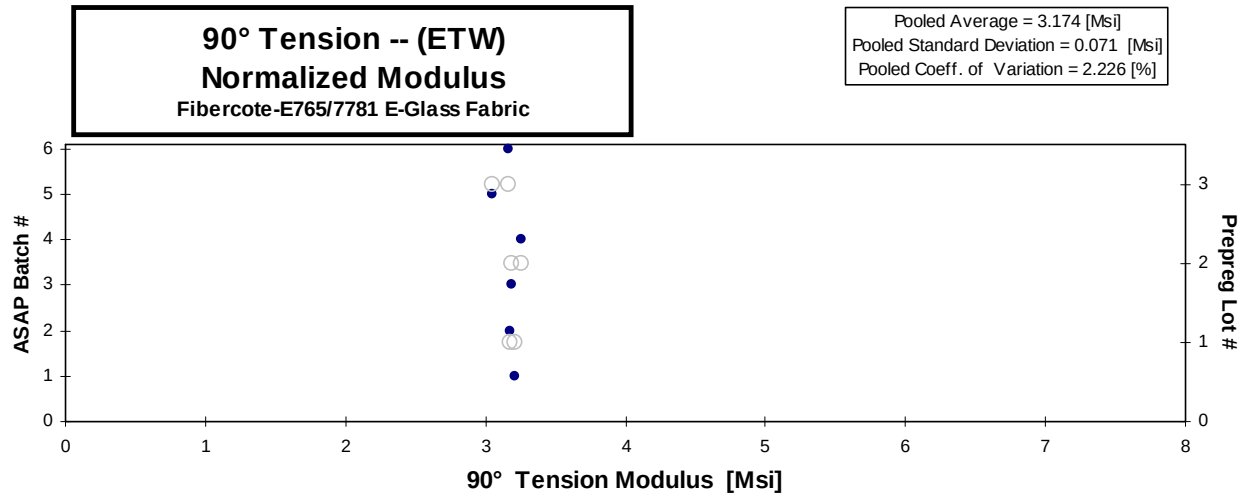
90° Tension-- (ETW)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDU1411F	1	1	1	43.442	3.066	0.123	12	0.01028	45.573	3.216
TDU1412F	1	1	1	44.601		0.124	12	0.01032	46.959	
TDU1413F	1	1	1	44.058		0.124	12	0.01030	46.319	
TDU1414F	1	1	1	45.700		0.125	12	0.01042	48.589	
TDU1415F	1	1	1	44.060		0.119	12	0.00992	44.597	
TDU1111F	2	1	2	39.285	3.289	0.114	12	0.00947	37.944	3.177
TDU1113F	2	1	2	43.607		0.113	12	0.00943	41.957	
TDU1114F	2	1	2	43.805		0.114	12	0.00947	42.340	
TDU1115F	2	1	2	41.995		0.115	12	0.00955	40.918	
TDU2111F	1	2	3	39.499	3.208	0.117	12	0.00974	39.241	3.188
TDU2112F	1	2	3	39.288		0.120	12	0.01002	40.168	
TDU2113F	1	2	3	39.451		0.120	12	0.01000	40.250	
TDU2114F	1	2	3	38.167		0.118	12	0.00983	38.275	
TDU2115F	1	2	3	37.320		0.119	12	0.00992	37.759	
TDU2211F	2	2	4	37.499	3.263	0.117	12	0.00978	37.419	3.256
TDU2212F	2	2	4	37.061		0.117	12	0.00979	37.014	
TDU2213F	2	2	4	39.134		0.118	12	0.00986	39.367	
TDU2214F	2	2	4	37.832		0.118	12	0.00984	37.993	
TDU2215F	2	2	4	36.514		0.118	12	0.00983	36.643	
TDU3111F	4	3	5	42.499		0.116	12	0.00964	41.795	
TDU3112F	4	3	5	41.733	3.112	0.115	12	0.00960	40.869	3.047
TDU3113F	4	3	5	39.835		0.116	12	0.00970	39.434	
TDU3114F	4	3	5	40.950		0.116	12	0.00964	40.295	
TDU3115F	4	3	5	41.282		0.114	12	0.00950	40.029	
TDU3211F	3	3	6	44.900	3.479	0.107	12	0.00890	40.783	3.160
TDU3212F	3	3	6	43.307		0.113	12	0.00945	41.766	
TDU3213F	3	3	6	37.884		0.112	12	0.00929	35.924	
TDU3214F	3	3	6	40.377		0.113	12	0.00945	38.935	
TDU3215F	3	3	6	42.117		0.113	12	0.00941	40.428	

Average	**40.938**	**3.236**	**$Average_{norm}$**	**0.00974**	**40.675**	**3.174**
Standard Dev.	**2.705**	**0.147**	**$Standard\ Dev._{norm}$**		**3.170**	**0.071**
Coeff. of Var. [%]	**6.608**	**4.539**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**7.794**	**2.226**
Min.	**36.514**	**3.066**	**Min.**	**0.0089**	**35.924**	**3.047**
Max.	**45.700**	**3.479**	**Max.**	**0.0104**	**48.589**	**3.256**
Number of Spec.	**29**	**6**	**Number of Spec.**		**29**	**6**


90° Tension -- (ETW)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 40.675 [ksi]
Pooled Standard Deviation = 3.170 [ksi]
Pooled Coeff. of Variation = 7.794 [%]
ASAP Batch #
Prepeg Lot #
90° Tension Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

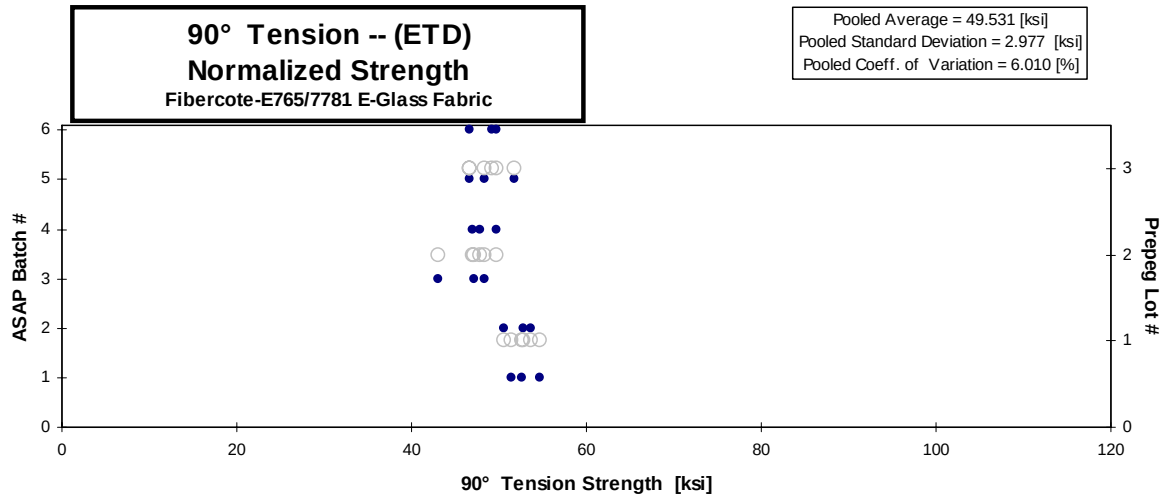

90° Tension -- (ETW)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.174 [Msi]
Pooled Standard Deviation = 0.071 [Msi]
Pooled Coeff. of Variation = 2.226 [%]
ASAP Batch #
Prepreg Lot #
90° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

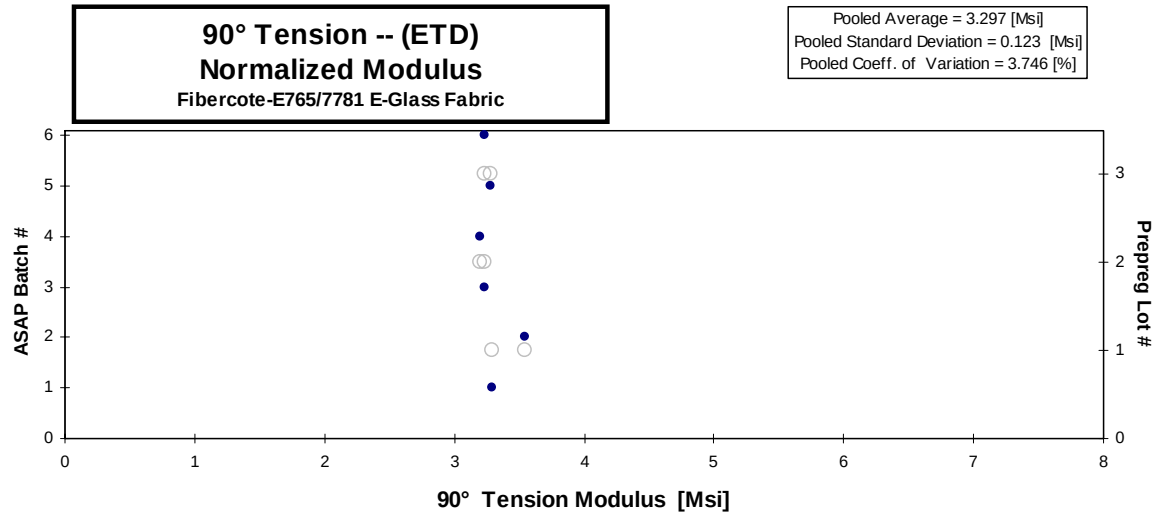
90° Tension-- (ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDU1216G	1	1	1	52.201	3.262	0.119	12	0.00988	52.637	3.289
TDU1217G	1	1	1	49.091		0.123	12	0.01028	51.491	
TDU1218G	1	1	1	52.121		0.123	12	0.01027	54.632	
TDU1316G	2	1	2	51.298	3.382	0.123	12	0.01026	53.690	3.540
TDU1317G	2	1	2	50.785		0.122	12	0.01020	52.872	
TDU1318G	2	1	2	47.638		0.125	12	0.01042	50.649	
TDU2316G	1	2	3	47.465	3.183	0.120	12	0.00998	48.313	3.240
TDU2317G	1	2	3	42.451		0.119	12	0.00996	43.131	
TDU2318G	1	2	3	46.170		0.120	12	0.01000	47.125	
TDU2416G	2	2	4	51.158	3.288	0.114	12	0.00953	49.759	3.198
TDU2417G	2	2	4	47.097		0.119	12	0.00995	47.798	
TDU2418G	2	2	4	46.138		0.120	12	0.00997	46.949	
TDU3415G	3	3	5	53.828	3.401	0.113	12	0.00944	51.837	3.275
TDU3416G	3	3	5	48.470		0.113	12	0.00943	46.656	
TDU3417G	3	3	5	49.838		0.114	12	0.00951	48.383	
TDU3316G	4	3	6	51.285	3.336	0.114	12	0.00951	49.751	3.237
TDU3317G	4	3	6	47.580		0.115	12	0.00960	46.630	
TDU3318G	4	3	6	50.685		0.114	12	0.00952	49.248	

Average	**49.183**	**3.309**	**$Average_{norm}$**	**0.00987**	**49.531**	**3.297**
Standard Dev.	**2.805**	**0.081**	**$Standard\ Dev._{norm}$**		**2.977**	**0.123**
Coeff. of Var. [%]	**5.704**	**2.457**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.010**	**3.746**
Min.	**42.451**	**3.183**	**Min.**	**0.0094**	**43.131**	**3.198**
Max.	**53.828**	**3.401**	**Max.**	**0.0104**	**54.632**	**3.540**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


90° Tension -- (ETD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 49.531 [ksi]
Pooled Standard Deviation = 2.977 [ksi]
Pooled Coeff. of Variation = 6.010 [%]
ASAP Batch #
Prepeg Lot #
90° Tension Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

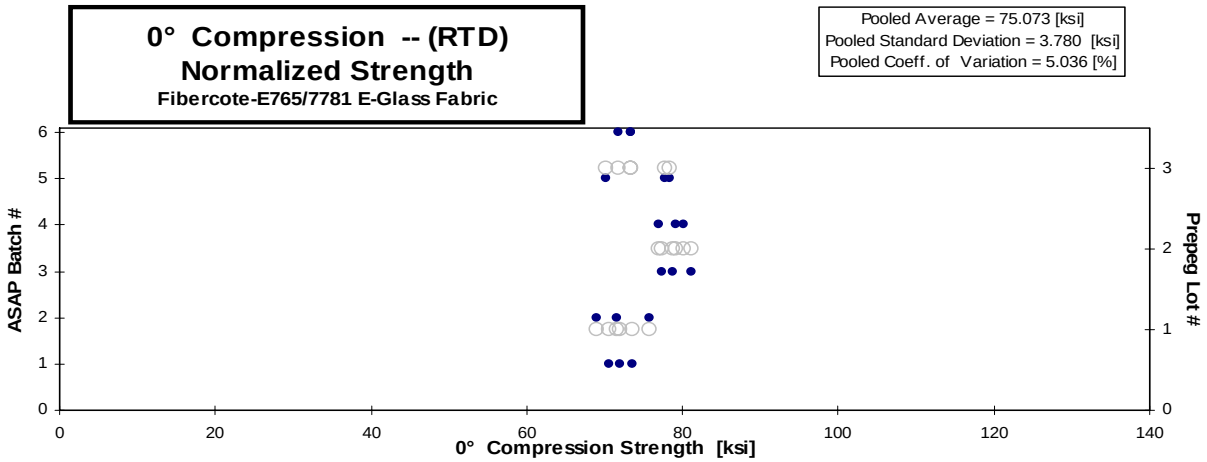

90° Tension -- (ETD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.297 [Msi]
Pooled Standard Deviation = 0.123 [Msi]
Pooled Coeff. of Variation = 3.746 [%]
ASAP Batch #
Prepreg Lot #
90° Tension Modulus [Msi]
0
1
2
3
4
5
6
7
8

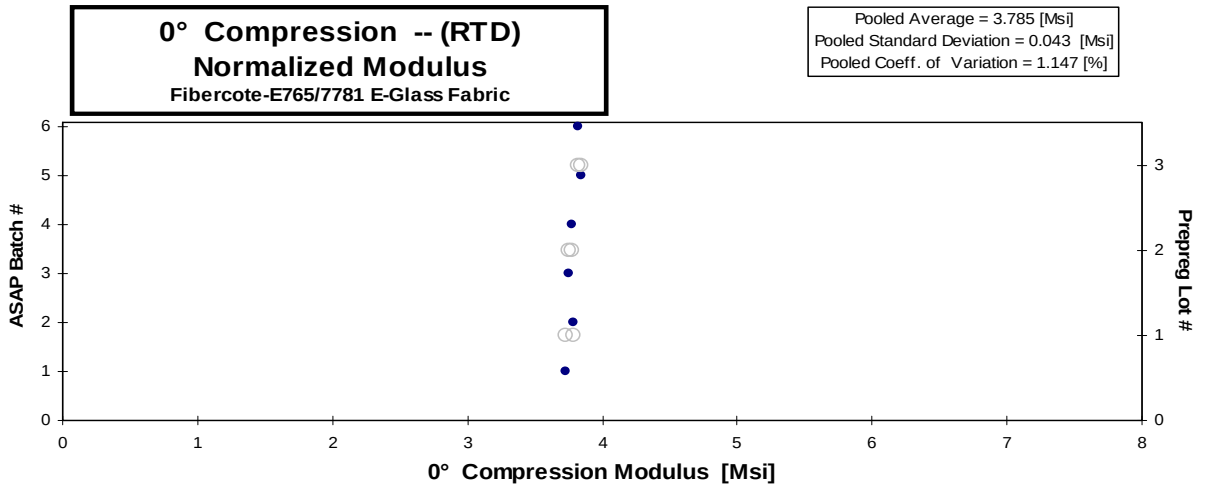
0° Compression -- (RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDK1121A	3	1	1	69.988		0.141	14	0.01009	72.080	
TDK1122A	3	1	1	72.053		0.140	14	0.01001	73.602	
TDK1123A	3	1	1	69.123		0.140	14	0.01001	70.609	
TDL1119A	3	1	1		4.021	0.127	14	0.00909		3.731
TDK1221A	4	1	2	70.253		0.140	14	0.00998	71.571	
TDK1222A	4	1	2	73.077		0.142	14	0.01017	75.820	
TDK1223A	4	1	2	67.919		0.139	14	0.00996	69.008	
TDL1217A	4	1	2		3.849	0.135	14	0.00965		3.789
TDK2121A	3	2	3	74.784		0.142	14	0.01015	77.455	
TDK2122A	3	2	3	78.386		0.142	14	0.01015	81.171	
TDK2123A	3	2	3	76.351		0.142	14	0.01012	78.828	
TDL2117A	3	2	3		3.700	0.139	14	0.00993		3.748
TDK2211A	4	2	4	77.456		0.142	14	0.01016	80.264	
TDK2212A	4	2	4	74.216		0.142	14	0.01015	76.880	
TDK2213A	4	2	4	75.742		0.143	14	0.01024	79.178	
TDL2227A	4	2	4		3.632	0.142	14	0.01018		3.771
TDK3131A	3	3	5	73.252		0.131	14	0.00938	70.128	
TDK3132A	3	3	5	79.321		0.134	14	0.00960	77.702	
TDK3133A	3	3	5	78.338		0.137	14	0.00980	78.367	
TDL3117A	3	3	5		3.823	0.138	14	0.00985		3.842
TDK32Z1A	4	3	6	71.231		0.138	14	0.00988	71.816	
TDK32Z2A	4	3	6	72.630		0.139	14	0.00991	73.451	
TDK32Z3A	4	3	6	73.163		0.138	14	0.00983	73.390	
TDL3227A	4	3	6		3.837	0.137	14	0.00977		3.826

Average	**73.738**	**3.810**	**$Average_{norm}$**	**0.00992**	**75.073**	**3.785**
Standard Dev.	**3.366**	**0.135**	**$Standard\ Dev._{norm}$**		**3.780**	**0.043**
Coeff. of Var. [%]	**4.565**	**3.531**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.036**	**1.147**
Min.	**67.919**	**3.632**	**Min.**	**0.0091**	**69.008**	**3.731**
Max.	**79.321**	**4.021**	**Max.**	**0.0102**	**81.171**	**3.842**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


0° Compression -- (RTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 75.073 [ksi]
Pooled Standard Deviation = 3.780 [ksi]
Pooled Coeff. of Variation = 5.036 [%]
ASAP Batch #
Prepeg Lot #
0° Compression Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

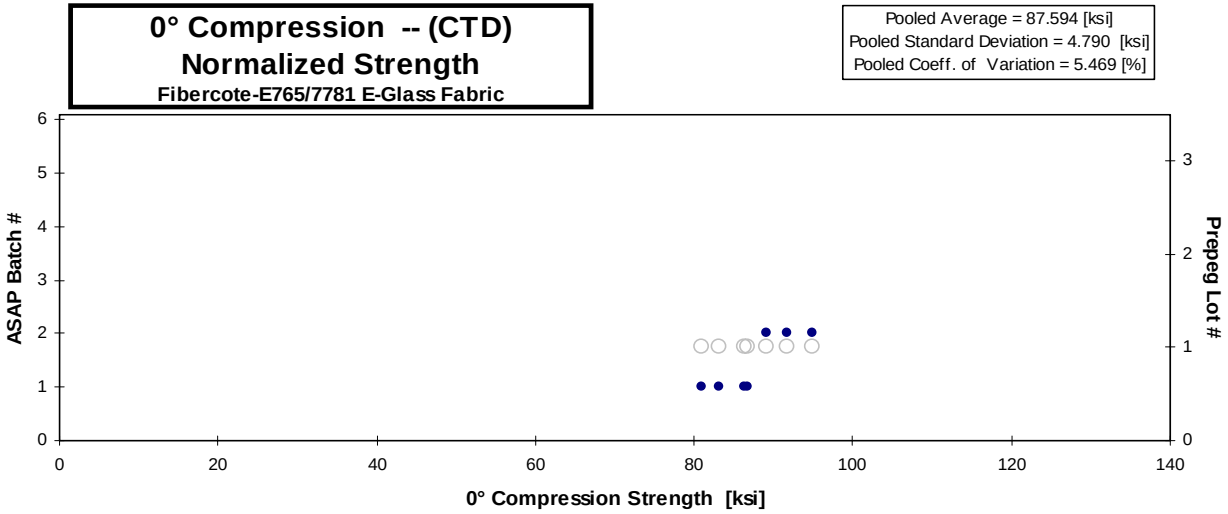

0° Compression -- (RTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.785 [Msi]
Pooled Standard Deviation = 0.043 [Msi]
Pooled Coeff. of Variation = 1.147 [%]
ASAP Batch #
Prepreg Lot #
0° Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

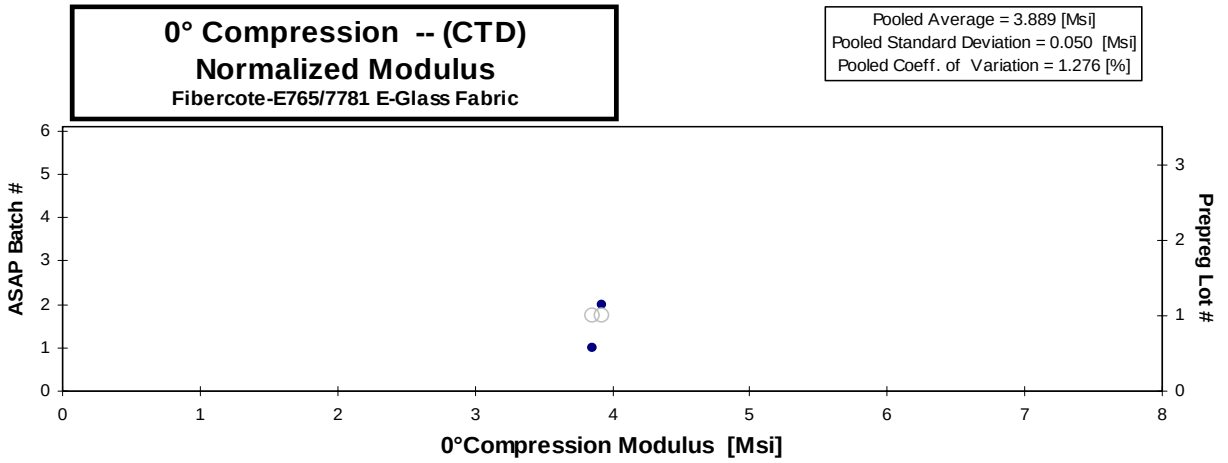
0° Compression -- (CTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDK1125B	3	1	1	83.874		0.141	14	0.01008	86.304	
TDK1126B	3	1	1	83.450		0.143	14	0.01018	86.673	
TDK1127B	3	1	1	79.593		0.140	14	0.00998	81.058	
TDK1128B	3	1	1	79.932		0.143	14	0.01020	83.209	
TDL111BB	3	1	1		4.311	0.123	14	0.00876		3.854
TDK1225B	4	1	2	89.545		0.141	14	0.01005	91.829	
TDK1226B	4	1	2	87.127		0.141	14	0.01004	89.238	
TDK1227B	4	1	2	92.420		0.141	14	0.01006	94.845	
TDL1219B	4	1	2		4.033	0.133	14	0.00953		3.924

Average	**85.134**	**4.172**	**$Average_{norm}$**	**0.00988**	**87.594**	**3.889**
Standard Dev.	**4.808**	**0.196**	**Standard $Dev._{norm}$**		**4.790**	**0.050**
Coeff. of Var. [%]	**5.647**	**4.703**	**Coeff. of Var. $[\%]_{norm}$**		**5.469**	**1.276**
Min.	**79.593**	**4.033**	**Min.**	**0.0088**	**81.058**	**3.854**
Max.	**92.420**	**4.311**	**Max.**	**0.0102**	**94.845**	**3.924**
Number of Spec.	**7**	**2**	**Number of Spec.**		**7**	**2**


0° Compression -- (CTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 87.594 [ksi]
Pooled Standard Deviation = 4.790 [ksi]
Pooled Coeff. of Variation = 5.469 [%]
ASAP Batch #
Prepeg Lot #
0° Compression Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6


0° Compression -- (CTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.889 [Msi]
Pooled Standard Deviation = 0.050 [Msi]
Pooled Coeff. of Variation = 1.276 [%]
ASAP Batch #
Prepreg Lot #
0°Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

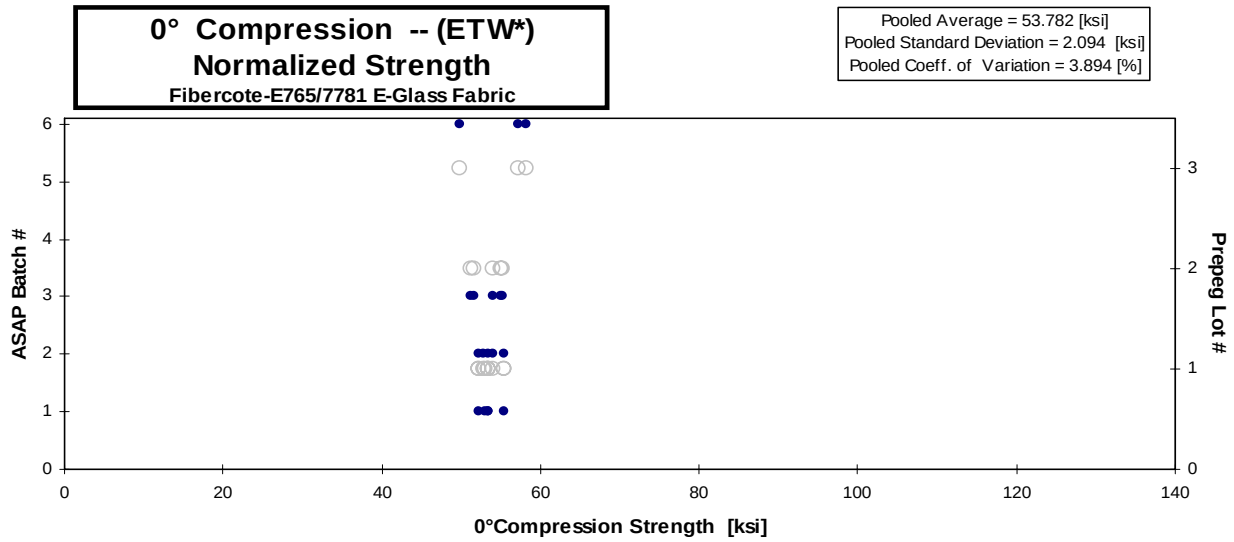
0° Compression -- (ETW*)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

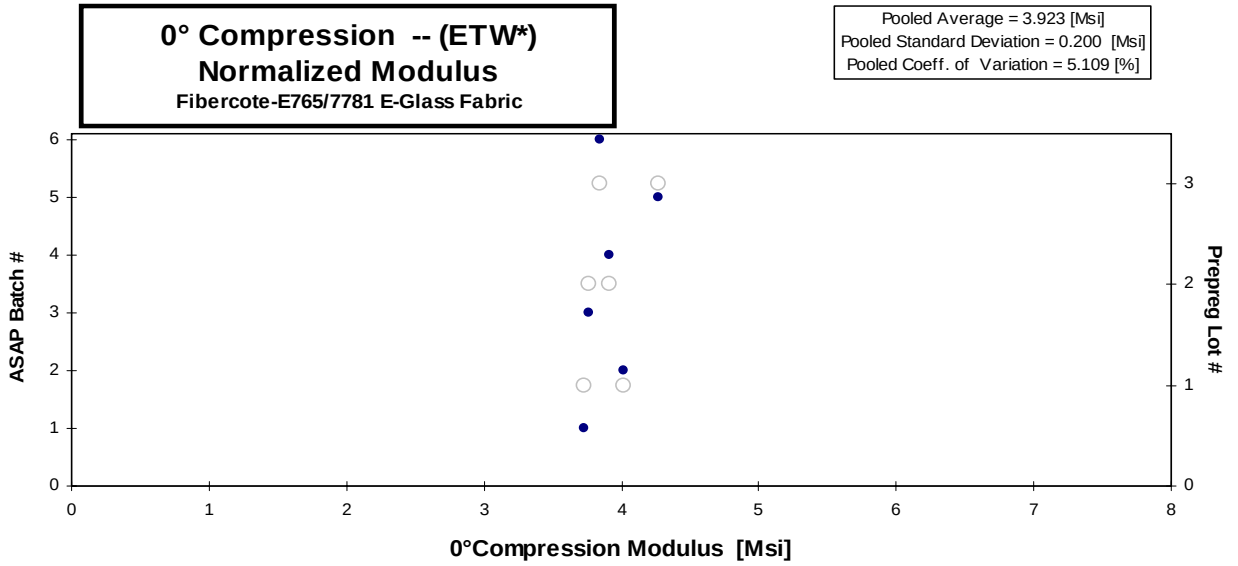
normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDK1116K	3	1	1	50.312		0.142	14	0.01016	52.173	
TDK1117K	3	1	1	51.953		0.141	14	0.01008	53.420	
TDK1118K	3	1	1	54.292		0.140	14	0.00999	55.351	
TDK1119K	3	1	1	51.747		0.140	14	0.01003	52.982	
TDK111AK	3	1	1	51.336		0.143	14	0.01021	53.469	
TDL1111K	3	1	1		3.822	0.134	14	0.00956		3.729
TDK1216K	4	1	2	53.518		0.139	14	0.00989	54.035	
TDK1217K	4	1	2	51.932		0.138	14	0.00984	52.160	
TDK1218K	4	1	2	54.972		0.138	14	0.00988	55.402	
TDK1219K	4	1	2	52.549		0.140	14	0.00997	53.439	
TDK121AK	4	1	2	51.789		0.140	14	0.01001	52.912	
TDL1214K	4	1	2		4.100	0.134	14	0.00960		4.016
TDK2116K	3	2	3	54.064		0.140	14	0.01002	55.256	
TDK2117K	3	2	3	51.069		0.139	14	0.00990	51.590	
TDK2118K	3	2	3	50.522		0.139	14	0.00993	51.212	
TDK2119K	3	2	3	53.605		0.141	14	0.01008	55.119	
TDK211AK	3	2	3	52.860		0.140	14	0.01002	54.054	
TDL2111K	3	2	3		3.995	0.129	14	0.00923		3.764
TDL2224K	4	2	4		3.764	0.142	14	0.01018		3.909
TDL3111K	3	3	5		4.646	0.126	14	0.00902		4.274
TDK3218K	6	3	6	57.059		0.138	14	0.00984	57.309	
TDK3219K	6	3	6	52.886		0.130	14	0.00926	49.956	
TDK321AK	6	3	6	58.013		0.138	14	0.00984	58.245	
TDL3224K	4	3	6		3.934	0.134	14	0.00958		3.845

*these specimens were conditioned for 45 days only

Average	**53.026**	**4.043**	**$Average_{norm}$**	**0.00984**	**53.782**	**3.923**
Standard Dev.	**2.090**	**0.319**	**$Standard\ Dev._{norm}$**		**2.094**	**0.200**
Coeff. of Var. [%]	**3.942**	**7.879**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.894**	**5.109**
Min.	**50.312**	**3.764**	**Min.**	**0.0090**	**49.956**	**3.729**
Max.	**58.013**	**4.646**	**Max.**	**0.0102**	**58.245**	**4.274**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


0° Compression -- (ETW*)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 53.782 [ksi]
Pooled Standard Deviation = 2.094 [ksi]
Pooled Coeff. of Variation = 3.894 [%]
ASAP Batch #
Prepeg Lot #
0°Compression Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

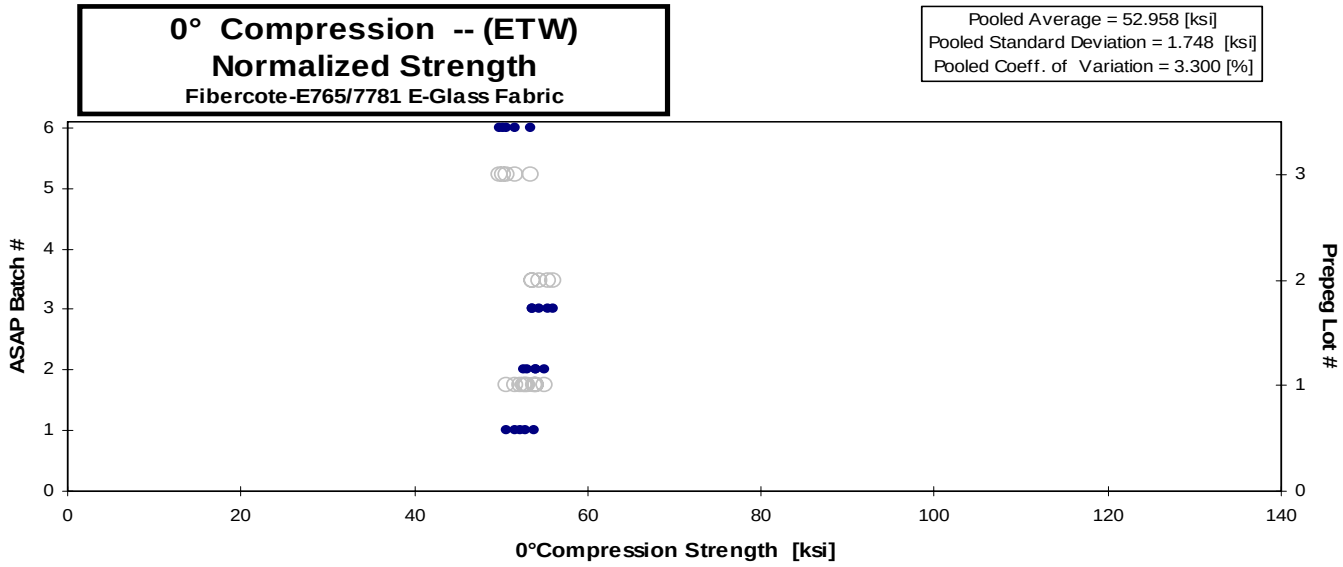

0° Compression -- (ETW*)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.923 [Msi]
Pooled Standard Deviation = 0.200 [Msi]
Pooled Coeff. of Variation = 5.109 [%]
ASAP Batch #
Prepreg Lot #
0°Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

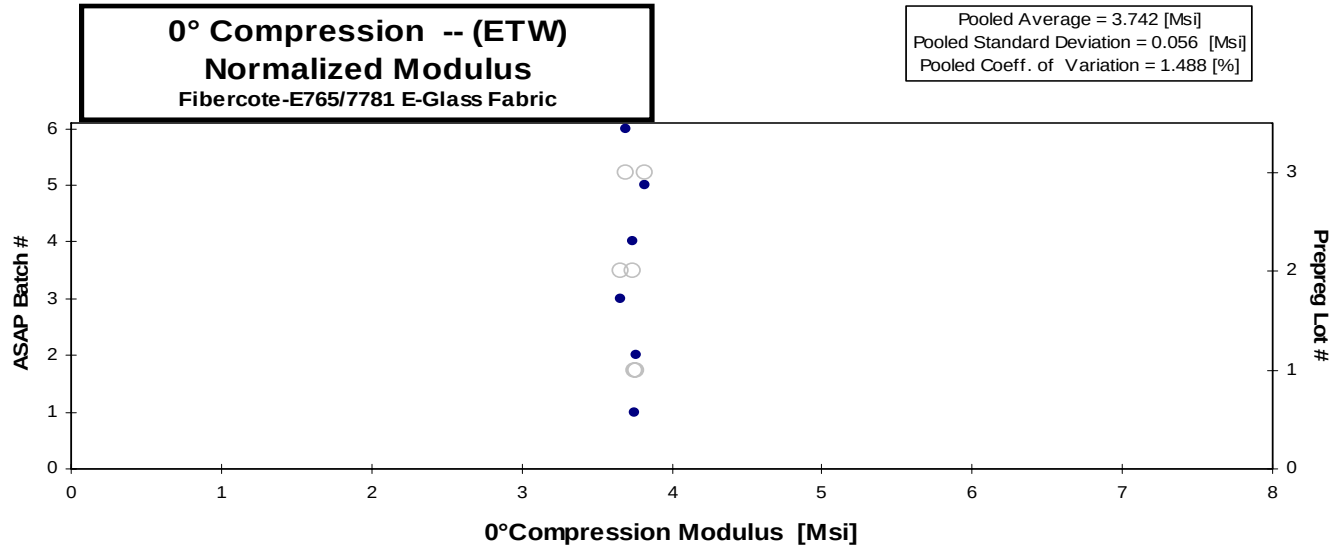
0° Compression -- (ETW)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDK1111F	3	1	1	50.988		0.141	14	0.01004	52.261	
TDK1112F	3	1	1	52.519		0.141	14	0.01005	53.840	
TDK1113F	3	1	1	51.476		0.141	14	0.01006	52.836	
TDK1114F	3	1	1	50.420		0.141	14	0.01005	51.724	
TDK1115F	3	1	1	48.795		0.142	14	0.01016	50.564	
TDL1114F	3	1	1		3.807	0.135	14	0.00966		3.754
TDK1211F	4	1	2	52.615		0.141	14	0.01005	53.947	
TDK1212F	4	1	2	52.571		0.141	14	0.01009	54.103	
TDK1213F	4	1	2	54.792		0.138	14	0.00986	55.111	
TDK1214F	4	1	2	52.296		0.139	14	0.00994	53.039	
TDK1215F	4	1	2	51.358		0.141	14	0.01004	52.612	
TDL1211F	4	1	2		3.928	0.132	14	0.00940		3.768
TDK2111F	3	2	3	52.450		0.140	14	0.01003	53.654	
TDK2112F	3	2	3	52.080		0.141	14	0.01009	53.608	
TDK2113F	3	2	3	53.237		0.140	14	0.01001	54.401	
TDK2114F	3	2	3	54.346		0.142	14	0.01011	56.069	
TDK2115F	3	2	3	53.697		0.142	14	0.01012	55.458	
TDL2114F	3	2	3		3.535	0.142	14	0.01015		3.662
TDL2221F	4	2	4		3.604	0.143	14	0.01019		3.746
TDL3114F	3	3	5		3.841	0.137	14	0.00975		3.821
TDK3211F	6	3	6	53.576		0.137	14	0.00977	53.400	
TDK3212F	6	3	6	49.635		0.138	14	0.00984	49.834	
TDK3213F	6	3	6	51.928		0.134	14	0.00958	50.746	
TDK3214F	6	3	6	50.076		0.138	14	0.00985	50.322	
TDK3215F	6	3	6	52.287		0.136	14	0.00968	51.639	
TDL3221F	4	3	6		3.736	0.136	14	0.00970		3.698

Average	**52.057**	**3.742**	**$Average_{norm}$**	**0.00993**	**52.958**	**3.742**
Standard Dev.	**1.543**	**0.149**	**Standard $Dev._{norm}$**		**1.748**	**0.056**
Coeff. of Var. [%]	**2.965**	**3.974**	**Coeff. of Var. $[\%]_{norm}$**		**3.300**	**1.488**
Min.	**48.795**	**3.535**	**Min.**	**0.0094**	**49.834**	**3.662**
Max.	**54.792**	**3.928**	**Max.**	**0.0102**	**56.069**	**3.821**
Number of Spec.	**20**	**6**	**Number of Spec.**		**20**	**6**


0° Compression -- (ETW)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 52.958 [ksi]
Pooled Standard Deviation = 1.748 [ksi]
Pooled Coeff. of Variation = 3.300 [%]
ASAP Batch #
Prepeg Lot #
0°Compression Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

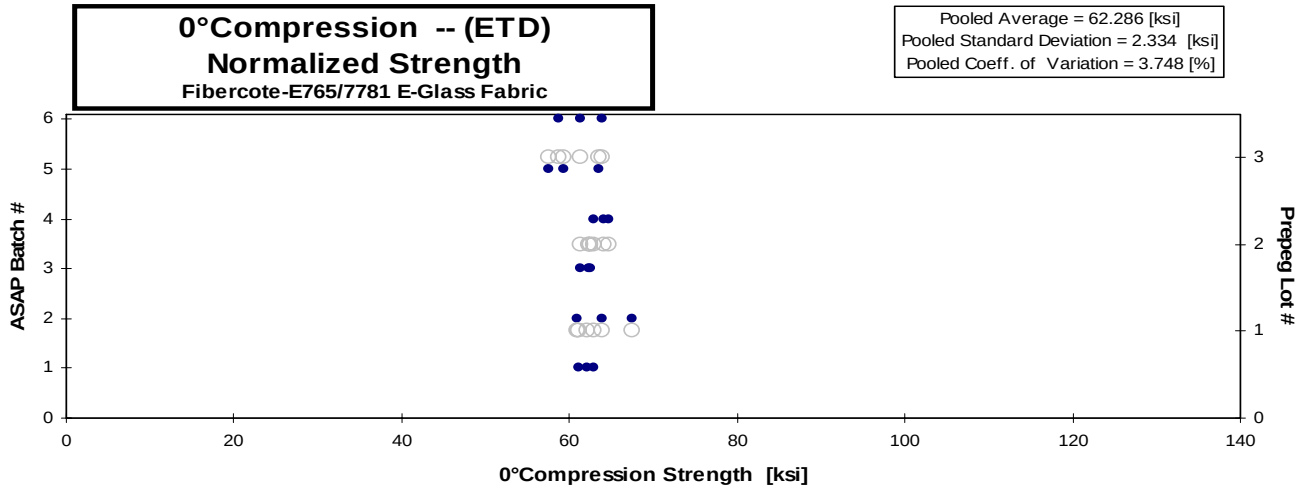

0° Compression -- (ETW)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.742 [Msi]
Pooled Standard Deviation = 0.056 [Msi]
Pooled Coeff. of Variation = 1.488 [%]
ASAP Batch #
Prepreg Lot #
0°Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

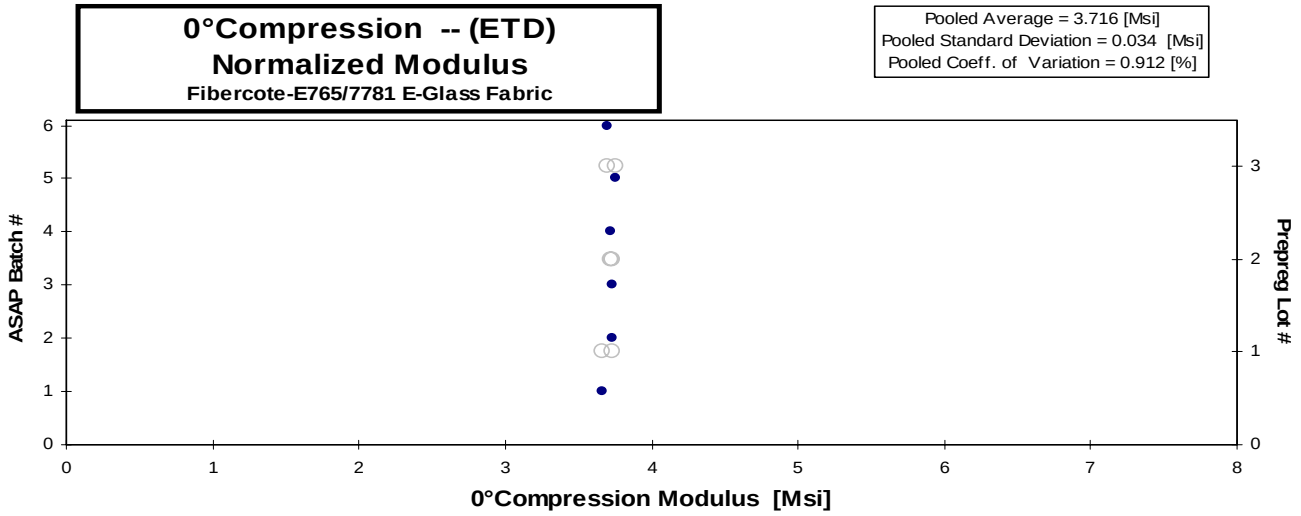
0°Compression -- (ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDK1129G	3	1	1	58.822		0.143	14	0.01019	61.180	
TDK112AG	3	1	1	60.530		0.143	14	0.01019	62.912	
TDK112BG	3	1	1	60.219		0.142	14	0.01012	62.194	
TDL1117G	3	1	1		3.715	0.135	14	0.00966		3.660
TDK1229G	4	1	2	62.650		0.140	14	0.01000	63.905	
TDK122AG	4	1	2	65.691		0.141	14	0.01008	67.583	
TDK122BG	4	1	2	60.446		0.138	14	0.00989	60.974	
TDL121BG	4	1	2		3.835	0.134	14	0.00954		3.735
TDK2125G	3	2	3	60.378		0.140	14	0.00997	61.412	
TDK2126G	3	2	3	60.642		0.141	14	0.01009	62.432	
TDK2127G	3	2	3	61.215		0.140	14	0.01002	62.575	
TDL2119G	3	2	3		3.620	0.141	14	0.01010		3.731
TDK2215G	4	2	4	62.115		0.141	14	0.01010	64.028	
TDK2216G	4	2	4	62.857		0.141	14	0.01008	64.678	
TDK2217G	4	2	4	60.379		0.143	14	0.01022	62.987	
TDL2229G	4	2	4		3.797	0.134	14	0.00959		3.717
TDK3135G	3	3	5	59.901		0.136	14	0.00972	59.388	
TDK3136G	3	3	5	61.450		0.128	14	0.00916	57.463	
TDK3137G	3	3	5	63.698		0.137	14	0.00976	63.432	
TDL3119G	3	3	5		3.814	0.135	14	0.00965		3.756
TDK32Z5G	4	3	6	63.925		0.137	14	0.00979	63.855	
TDK32Z6G	4	3	6	61.308		0.137	14	0.00981	61.363	
TDK32Z7G	4	3	6	58.494		0.138	14	0.00985	58.792	
TDL3229G	4	3	6		3.730	0.136	14	0.00971		3.696

Average	**61.373**	**3.752**	**$Average_{norm}$**	**0.00989**	**62.286**	**3.716**
Standard Dev.	**1.837**	**0.080**	**$Standard\ Dev._{norm}$**		**2.334**	**0.034**
Coeff. of Var. [%]	**2.993**	**2.135**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**3.748**	**0.912**
Min.	**58.494**	**3.620**	**Min.**	**0.0092**	**57.463**	**3.660**
Max.	**65.691**	**3.835**	**Max.**	**0.0102**	**67.583**	**3.756**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


0°Compression -- (ETD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 62.286 [ksi]
Pooled Standard Deviation = 2.334 [ksi]
Pooled Coeff. of Variation = 3.748 [%]
ASAP Batch #
Prepeg Lot #
0°Compression Strength [ksi]
0
20
40
60
80
100
120
140
1
2
3
4
5
6

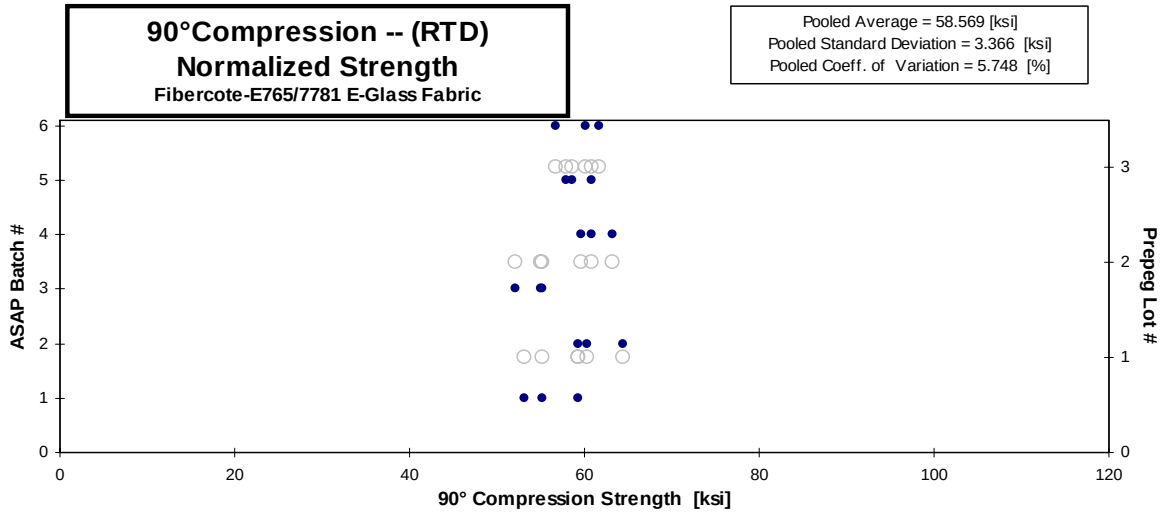

0°Compression -- (ETD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.716 [Msi]
Pooled Standard Deviation = 0.034 [Msi]
Pooled Coeff. of Variation = 0.912 [%]
ASAP Batch #
Prepreg Lot #
0°Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

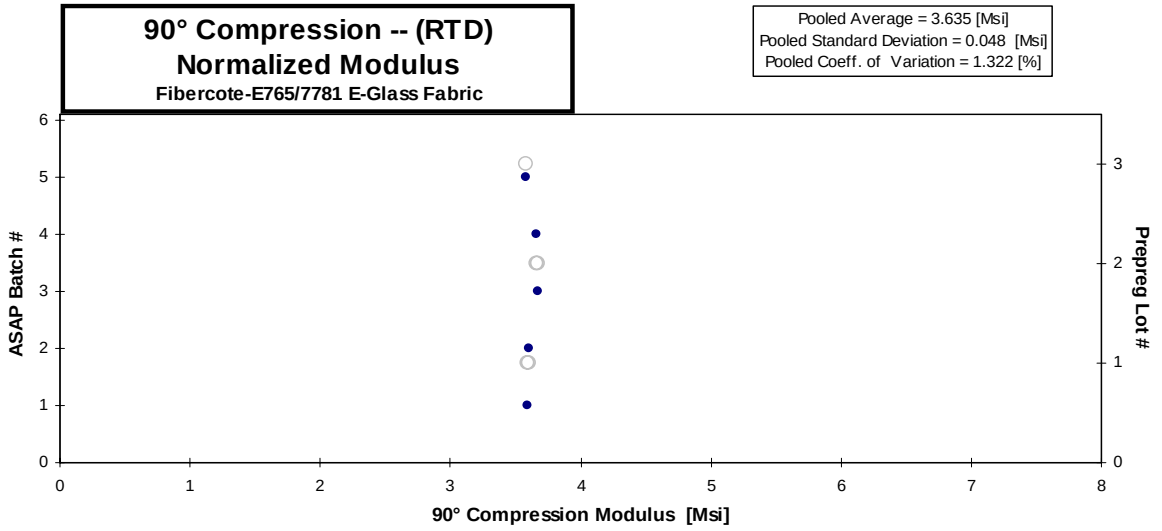
90° Compression-- (RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDW1111A	3	1	1	58.882		0.138	14	0.00987	59.279	
TDW1112A	3	1	1	52.716		0.138	14	0.00989	53.196	
TDW1113A	3	1	1	55.293		0.137	14	0.00980	55.273	
TDZ1119A	3	1	1		3.623	0.136	14	0.00972		3.593
TDW12Z1A	4	1	2	64.826		0.136	14	0.00974	64.412	
TDW12Z2A	4	1	2	60.838		0.136	14	0.00973	60.383	
TDW12Z3A	4	1	2	59.544		0.137	14	0.00975	59.251	
TDZ1227A	4	1	2		3.515	0.141	14	0.01004		3.602
TDW2111A	3	2	3	53.660		0.141	14	0.01006	55.107	
TDW2112A	3	2	3	53.994		0.140	14	0.01002	55.214	
TDW2113A	3	2	3	51.167		0.140	14	0.01000	52.202	
TDZ2119A	5	2	3		3.993	0.126	14	0.00903		3.678
TDW2231A	4	2	4	61.046		0.142	14	0.01015	63.226	
TDW2232A	4	2	4	57.417		0.143	14	0.01020	59.739	
TDW2233A	4	2	4	58.728		0.142	14	0.01017	60.921	
TDZ2227A	4	2	4		3.510	0.143	14	0.01021		3.656
TDW3115A	5	3	5	60.505		0.133	14	0.00950	58.675	
TDW3116A	5	3	5	60.688		0.138	14	0.00983	60.854	
TDW3117A	5	3	5	57.366		0.138	14	0.00989	57.867	
TDZ3129A	5	3	5		3.856	0.128	14	0.00911		3.584
TDW3221A	6	3	6	62.913		0.135	14	0.00962	61.743	
TDW3222A	6	3	6	58.057		0.134	14	0.00957	56.671	
TDW3223A	6	3	6	61.474		0.134	14	0.00960	60.219	
TDZ3237A	6	3	6		3.803	0.133	14	0.00953		3.697

Average	**58.284**	**3.717**	**$Average_{norm}$**	**0.00979**	**58.569**	**3.635**
Standard Dev.	**3.706**	**0.198**	**$Standard\ Dev._{norm}$**		**3.366**	**0.048**
Coeff. of Var. [%]	**6.358**	**5.322**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.748**	**1.322**
Min.	**51.167**	**3.510**	**Min.**	**0.0090**	**52.202**	**3.584**
Max.	**64.826**	**3.993**	**Max.**	**0.0102**	**64.412**	**3.697**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**


90°Compression -- (RTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 58.569 [ksi]
Pooled Standard Deviation = 3.366 [ksi]
Pooled Coeff. of Variation = 5.748 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

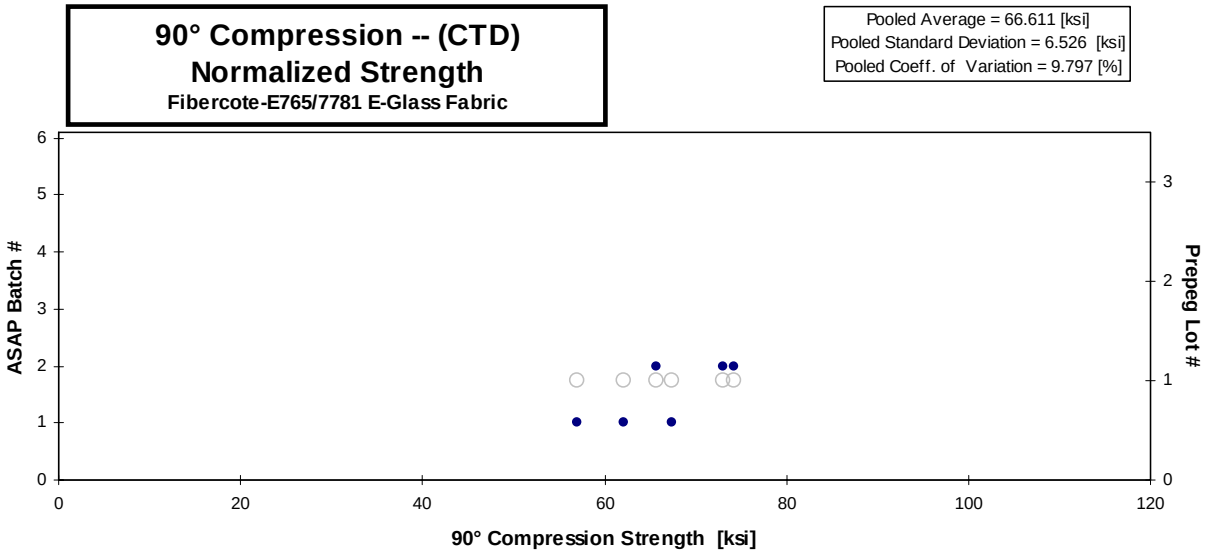

90° Compression -- (RTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.635 [Msi]
Pooled Standard Deviation = 0.048 [Msi]
Pooled Coeff. of Variation = 1.322 [%]
ASAP Batch #
Prepreg Lot #
90° Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

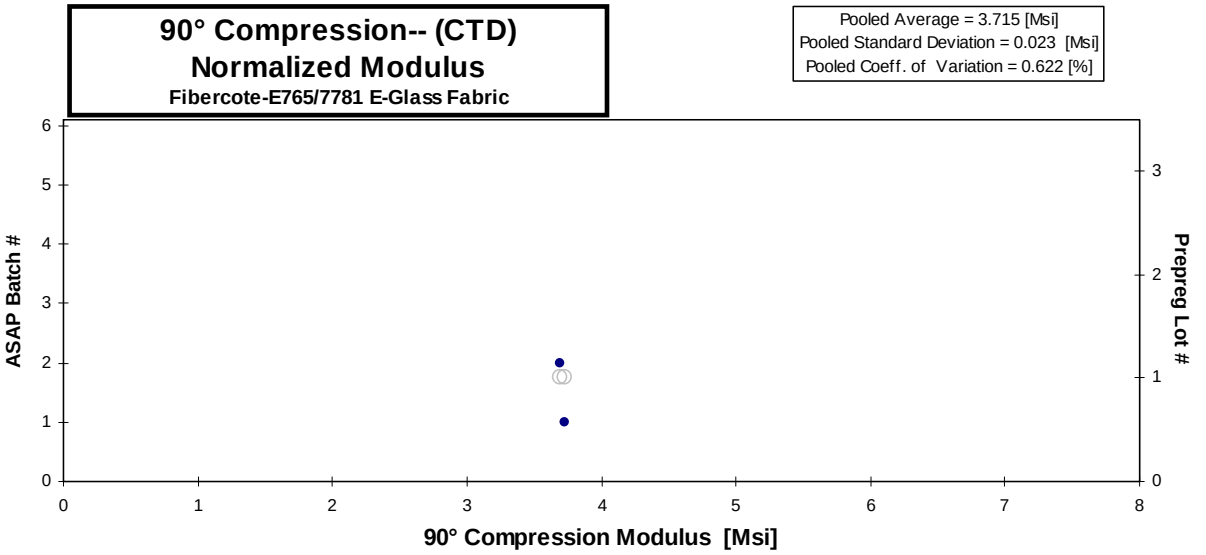
90° Compression -- (CTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{plv} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDW1119B	3	1	1	57.856		0.135	14	0.00967	57.086	
TDW111AB	3	1	1	65.139		0.131	14	0.00934	62.077	
TDW1118B	3	1	1	68.224		0.136	14	0.00969	67.429	
TDZ111BB	3	1	1		4.004	0.128	14	0.00913		3.731
TDW12Z5B	4	1	2	75.701		0.133	14	0.00947	73.121	
TDW12Z6B	4	1	2	74.202		0.137	14	0.00980	74.215	
TDW12Z7B	4	1	2	66.341		0.136	14	0.00971	65.737	
TDZ1229B	4	1	2		3.820	0.133	14	0.00949		3.699

Average	**67.911**	**3.912**	**$Average_{norm}$**	**0.00954**	**66.611**	**3.715**
Standard Dev.	**6.506**	**0.130**	**$Standard\ Dev._{norm}$**		**6.526**	**0.023**
Coeff. of Var. [%]	**9.580**	**3.334**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**9.797**	**0.622**
Min.	**57.856**	**3.820**	**Min.**	**0.0091**	**57.086**	**3.699**
Max.	**75.701**	**4.004**	**Max.**	**0.0098**	**74.215**	**3.731**
Number of Spec.	**6**	**2**	**Number of Spec.**		**6**	**2**


90° Compression -- (CTD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 66.611 [ksi]
Pooled Standard Deviation = 6.526 [ksi]
Pooled Coeff. of Variation = 9.797 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6


90° Compression-- (CTD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.715 [Msi]
Pooled Standard Deviation = 0.023 [Msi]
Pooled Coeff. of Variation = 0.622 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

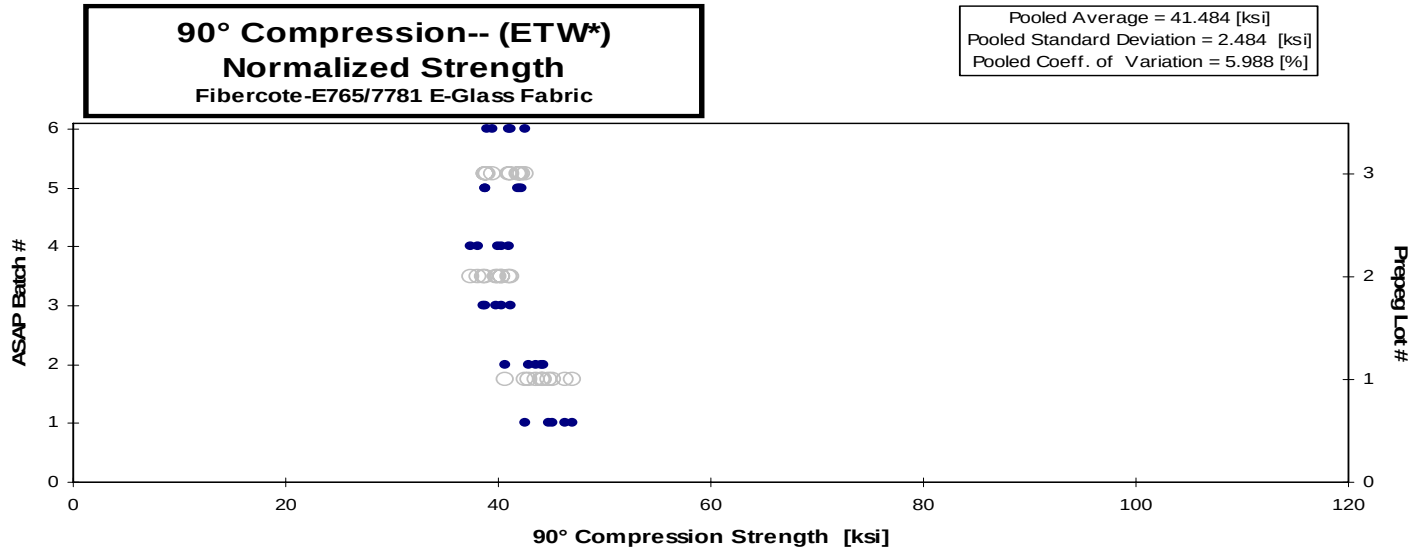
90° Compression-- (ETW*)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

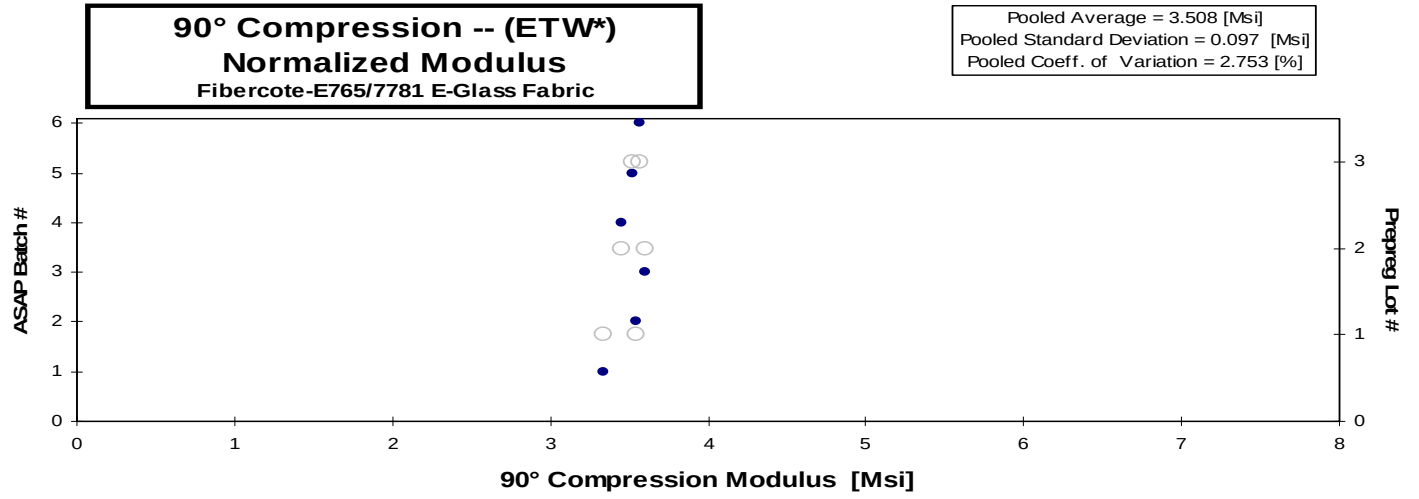
normalizing t_{plv} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDW1126K	3	1	1	46.495		0.139	14	0.00990	46.961	
TDW1127K	3	1	1	44.601		0.139	14	0.00993	45.186	
TDW1128K	3	1	1	44.902		0.137	14	0.00978	44.828	
TDW1129K	3	1	1	45.587		0.140	14	0.00997	46.376	
TDW112AK	3	1	1	43.114		0.136	14	0.00969	42.642	
TDZ1114K	3	1	1		3.391	0.135	14	0.00965		3.339
TDW1216K	4	1	2	40.534		0.138	14	0.00983	40.659	
TDW1217K	4	1	2	42.301		0.142	14	0.01011	43.658	
TDW1218K	4	1	2	43.678		0.138	14	0.00989	44.084	
TDW1219K	4	1	2	42.747		0.142	14	0.01017	44.351	
TDW121AK	4	1	2	41.995		0.140	14	0.01000	42.836	
TDZ1224K	4	1	2		3.456	0.141	14	0.01005		3.544
TDW2216K	4	2	3	38.861		0.142	14	0.01016	40.298	
TDW2217K	4	2	3	38.653		0.141	14	0.01009	39.787	
TDW2218K	4	2	3	38.311		0.139	14	0.00992	38.785	
TDW2219K	4	2	3	38.781		0.137	14	0.00977	38.668	
TDW221AK	4	2	3	40.228		0.141	14	0.01005	41.240	
TDZ2224K	4	2	3		3.447	0.143	14	0.01025		3.605
TDW2126K	3	2	4	36.835		0.140	14	0.00998	37.520	
TDW2127K	3	2	4	39.749		0.139	14	0.00996	40.379	
TDW2128K	3	2	4	40.619		0.139	14	0.00989	41.012	
TDW2129K	3	2	4	39.997		0.137	14	0.00981	40.055	
TDW212AK	3	2	4	38.629		0.136	14	0.00969	38.193	
TDZ2111K	5	2	4		3.358	0.141	14	0.01009		3.456
TDW3126K	5	3	5	39.156		0.136	14	0.00973	38.856	
TDW3127K	5	3	5	41.844		0.137	14	0.00980	41.852	
TDW3128K	5	3	5	41.954		0.138	14	0.00983	42.076	
TDW3129K	5	3	5	38.817		0.137	14	0.00978	38.739	
TDW312AK	5	3	5	42.119		0.138	14	0.00984	42.273	
TDZ3124K	5	3	5		3.541	0.137	14	0.00976		3.528
TDW3216K	6	3	6	44.004		0.133	14	0.00948	42.561	
TDW3217K	6	3	6	42.946		0.131	14	0.00939	41.138	
TDW3218K	6	3	6	41.630		0.135	14	0.00964	40.963	
TDW3219K	6	3	6	40.191		0.135	14	0.00963	39.510	
TDW321AK	6	3	6	41.734		0.128	14	0.00917	39.042	
TDZ3234K	6	3	6		3.622	0.135	14	0.00967		3.573

*These specimens are conditioned for 45 days only

Average	**41.367**	**3.469**	**$Average_{norm}$**	**0.00984**	**41.484**	**3.508**
Standard Dev.	**2.399**	**0.098**	**$Standard\ Dev._{norm}$**		**2.484**	**0.097**
Coeff. of Var. [%]	**5.800**	**2.815**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.988**	**2.753**
Min.	**36.835**	**3.358**	**Min.**	**0.0092**	**37.520**	**3.339**
Max.	**46.495**	**3.622**	**Max.**	**0.0102**	**46.961**	**3.605**
Number of Spec.	**30**	**6**	**Number of Spec.**		**30**	**6**


90° Compression-- (ETW*)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 41.484 [ksi]
Pooled Standard Deviation = 2.484 [ksi]
Pooled Coeff. of Variation = 5.988 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Strength [ksi]

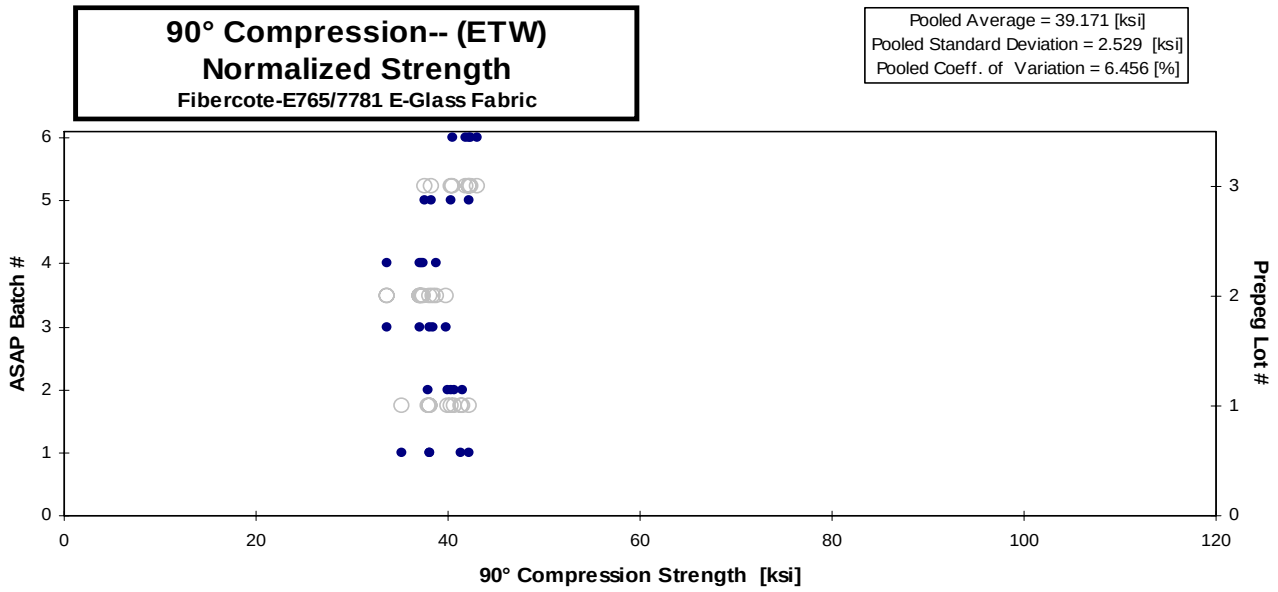

90° Compression -- (ETW*)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.508 [Msi]
Pooled Standard Deviation = 0.097 [Msi]
Pooled Coeff. of Variation = 2.753 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Modulus [Msi]

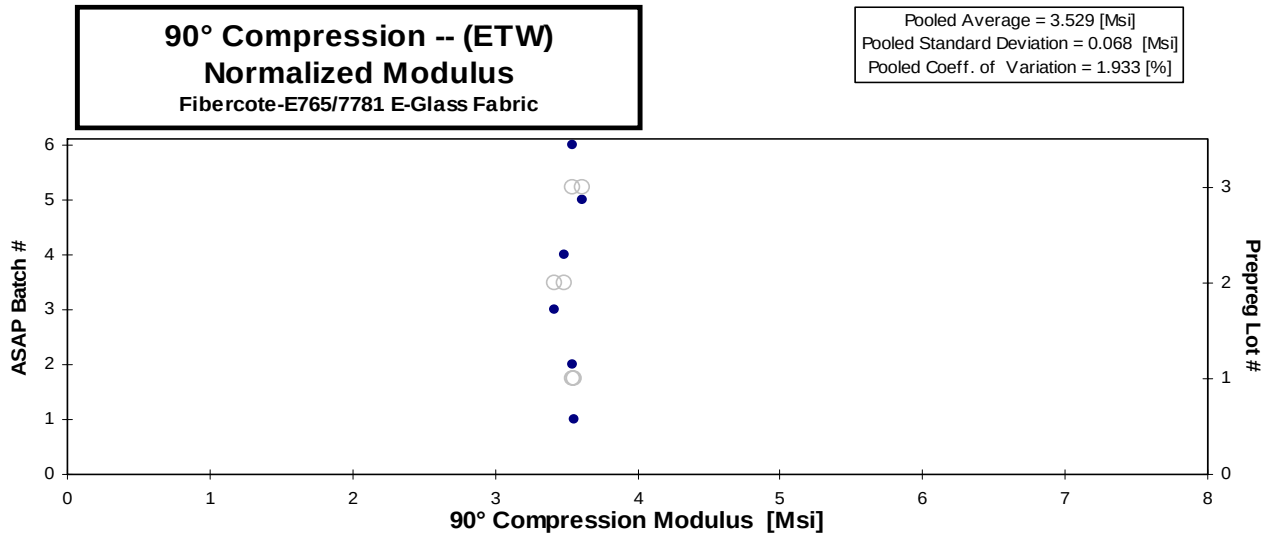
90° Compression-- (ETW)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{plv} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDW1121F	3	1	1	39.971		0.131	14	0.00936	38.164	
TDW1122F	3	1	1	37.687		0.128	14	0.00916	35.228	
TDW1123F	3	1	1	39.216		0.133	14	0.00953	38.144	
TDW1124F	3	1	1	40.714		0.139	14	0.00995	41.344	
TDW1125F	3	1	1	41.681		0.139	14	0.00994	42.259	
TDZ1111F	3	1	1		3.592	0.136	14	0.00971		3.560
TDW1211F	4	1	2	38.340		0.136	14	0.00970	37.962	
TDW1212F	4	1	2	40.322		0.141	14	0.01010	41.571	
TDW1213F	4	1	2	39.569		0.141	14	0.01007	40.651	
TDW1214F	4	1	2	39.379		0.141	14	0.01004	40.326	
TDW1215F	4	1	2	38.846		0.141	14	0.01009	39.992	
TDZ1221F	4	1	2		3.527	0.138	14	0.00984		3.541
TDW2121F	3	2	3	33.195		0.139	14	0.00993	33.643	
TDW2122F	3	2	3	37.980		0.139	14	0.00994	38.534	
TDW2123F	3	2	3	36.413		0.140	14	0.00998	37.090	
TDW2124F	3	2	3	37.682		0.139	14	0.00991	38.115	
TDW2125F	3	2	3	39.304		0.139	14	0.00993	39.813	
TDZ2114F	5	2	3		3.292	0.142	14	0.01018		3.418
TDW2211F	4	2	4	34.924		0.133	14	0.00947	33.760	
TDW2212F	4	2	4	37.388		0.142	14	0.01015	38.737	
TDW2213F	4	2	4	36.195		0.142	14	0.01013	37.421	
TDW2214F	4	2	4	36.058		0.142	14	0.01014	37.294	
TDW2215F	4	2	4	35.853		0.142	14	0.01015	37.146	
TDZ2221F	4	2	4		3.359	0.143	14	0.01018		3.490
TDW3121F	5	3	5	41.919		0.138	14	0.00988	42.270	
TDW3123F	5	3	5	39.991		0.138	14	0.00988	40.319	
TDW3124F	5	3	5	40.626		0.130	14	0.00926	38.368	
TDW3125F	5	3	5	38.715		0.133	14	0.00952	37.607	
TDZ3121F	5	3	5		3.792	0.131	14	0.00935		3.618
TDW3211F	6	3	6	44.006		0.134	14	0.00959	43.060	
TDW3212F	6	3	6	42.948		0.136	14	0.00968	42.416	
TDW3213F	6	3	6	42.446		0.136	14	0.00968	41.920	
TDW3214F	6	3	6	43.012		0.135	14	0.00964	42.299	
TDW3215F	6	3	6	41.279		0.135	14	0.00962	40.505	
TDZ3231F	6	3	6		3.604	0.135	14	0.00965		3.548

Average	**39.161**	**3.528**	**$Average_{norm}$**	**0.00981**	**39.171**	**3.529**
Standard Dev.	**2.603**	**0.181**	**$Standard\ Dev._{norm}$**		**2.529**	**0.068**
Coeff. of Var. [%]	**6.647**	**5.135**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**6.456**	**1.933**
Min.	**33.195**	**3.292**	**Min.**	**0.0092**	**33.643**	**3.418**
Max.	**44.006**	**3.792**	**Max.**	**0.0102**	**43.060**	**3.618**
Number of Spec.	**29**	**6**	**Number of Spec.**		**29**	**6**


90° Compression-- (ETW)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 39.171 [ksi]
Pooled Standard Deviation = 2.529 [ksi]
Pooled Coeff. of Variation = 6.456 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

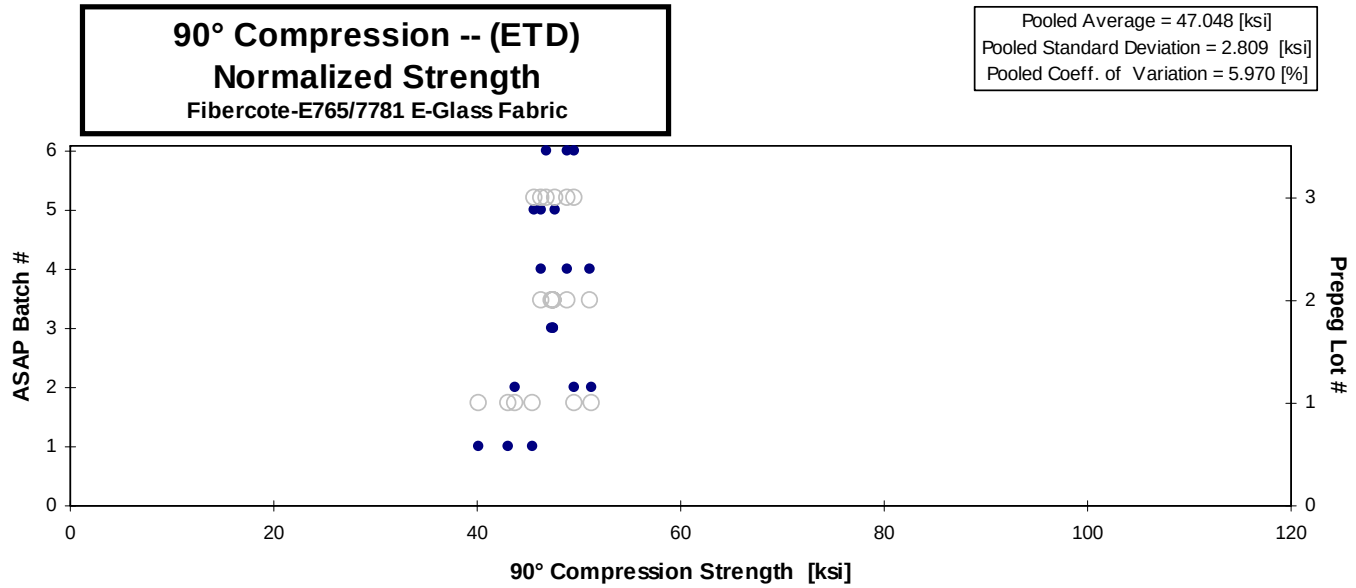

90° Compression -- (ETW)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.529 [Msi]
Pooled Standard Deviation = 0.068 [Msi]
Pooled Coeff. of Variation = 1.933 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

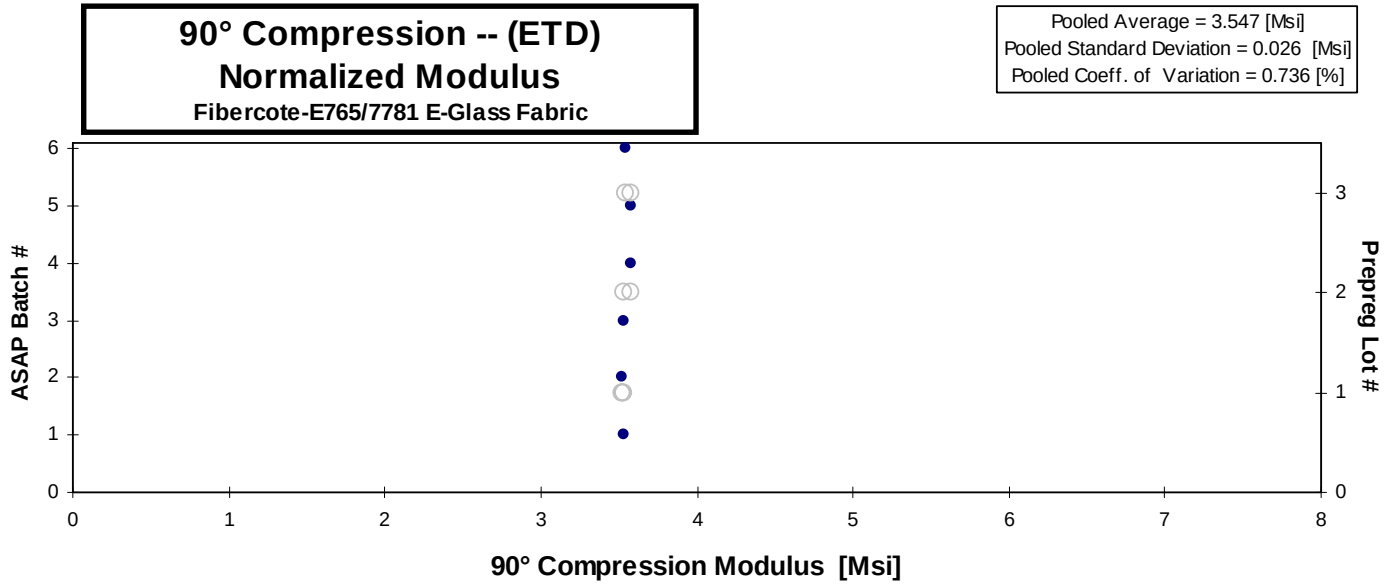
90° Compression -- (ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

normalizing t_{ply} [in]: 0.0098

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]	$Strength_{norm}$ [ksi]	$Modulus_{norm}$ [Msi]
TDW1115G	3	1	1	49.005		0.127	14	0.00908	45.398	
TDW1116G	3	1	1	42.556		0.139	14	0.00991	43.021	
TDW1117G	3	1	1	40.102		0.137	14	0.00981	40.153	
TDZ1117G	3	1	1		3.624	0.134	14	0.00954		3.529
TDW12Z9G	4	1	2	49.610		0.137	14	0.00979	49.546	
TDW12ZAG	4	1	2	44.807		0.134	14	0.00959	43.835	
TDW12ZBG	4	1	2	51.494		0.136	14	0.00975	51.222	
TDZ122BG	4	1	2		3.486	0.139	14	0.00989		3.520
TDW2115G	3	2	3	46.094		0.141	14	0.01010	47.513	
TDW2116G	3	2	3	49.267		0.132	14	0.00946	47.562	
TDW2117G	3	2	3	46.018		0.141	14	0.01007	47.285	
TDZ2117G	5	2	3		3.421	0.141	14	0.01010		3.527
TDW2235G	4	2	4	44.526		0.143	14	0.01018	46.271	
TDW2236G	4	2	4	47.487		0.141	14	0.01009	48.897	
TDW2237G	4	2	4	49.425		0.142	14	0.01014	51.163	
TDZ2229G	4	2	4		3.431	0.143	14	0.01022		3.576
TDW3111G	5	3	5	46.136		0.138	14	0.00986	46.397	
TDW3112G	5	3	5	45.485		0.138	14	0.00984	45.667	
TDW3113G	5	3	5	47.501		0.138	14	0.00984	47.691	
TDZ3127G	5	3	5		3.664	0.134	14	0.00958		3.579
TDW3225G	6	3	6	47.310		0.136	14	0.00971	46.879	
TDW3226G	6	3	6	49.634		0.135	14	0.00964	48.829	
TDW3227G	6	3	6	50.378		0.135	14	0.00964	49.542	
TDZ3239G	6	3	6		3.933	0.124	14	0.00884		3.549

Average	**47.046**	**3.593**	**$Average_{norm}$**	**0.00978**	**47.048**	**3.547**
Standard Dev.	**2.911**	**0.195**	**$Standard\ Dev._{norm}$**		**2.809**	**0.026**
Coeff. of Var. [%]	**6.187**	**5.414**	**$Coeff.\ of\ Var.\ [\%]_{norm}$**		**5.970**	**0.736**
Min.	**40.102**	**3.421**	**Min.**	**0.0091**	**40.153**	**3.520**
Max.	**51.494**	**3.933**	**Max.**	**0.0102**	**51.222**	**3.579**
Number of Spec.	**18**	**6**	**Number of Spec.**		**18**	**6**

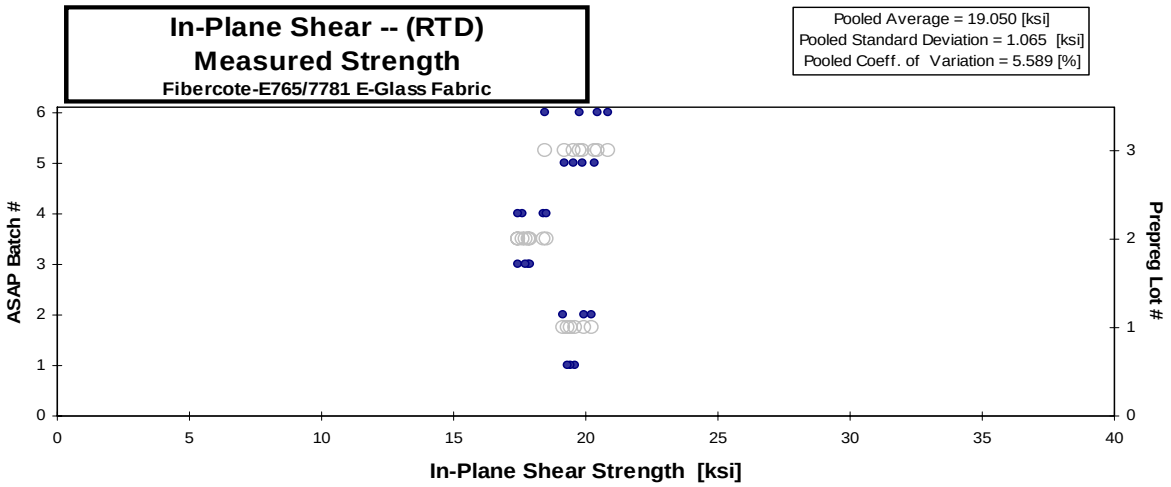

90° Compression -- (ETD)
Normalized Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 47.048 [ksi]
Pooled Standard Deviation = 2.809 [ksi]
Pooled Coeff. of Variation = 5.970 [%]
ASAP Batch #
Prepeg Lot #
90° Compression Strength [ksi]
0
20
40
60
80
100
120
1
2
3
4
5
6

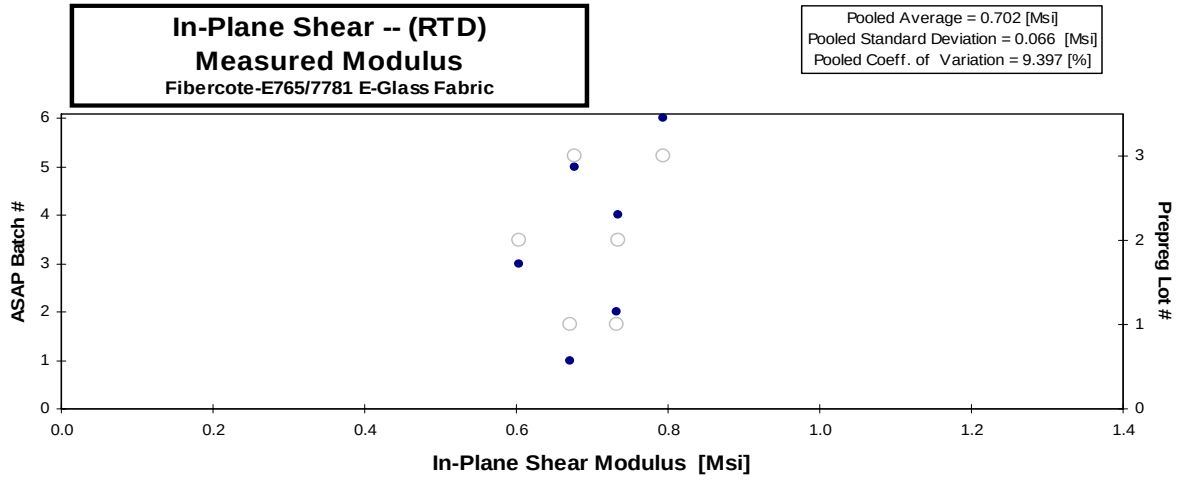

90° Compression -- (ETD)
Normalized Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 3.547 [Msi]
Pooled Standard Deviation = 0.026 [Msi]
Pooled Coeff. of Variation = 0.736 [%]
ASAP Batch #
Prepreg Lot #
90° Compression Modulus [Msi]
0
1
2
3
4
5
6
7
8

In-Plane Shear-- (RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN1122A	5	1	1	19.586	0.672	0.145	16	0.00906
TDN1123A	5	1	1	19.406		0.141	16	0.00881
TDN1124A	5	1	1	19.293		0.139	16	0.00869
TDN1221A	6	1	2	19.152	0.734	0.142	16	0.00887
TDN1222A	6	1	2	20.244		0.141	16	0.00880
TDN1223A	6	1	2	19.953		0.142	16	0.00888
TDN2221A	5	2	3	17.428	0.604	0.156	16	0.00973
TDN2222A	5	2	3	17.847		0.147	16	0.00917
TDN2223A	5	2	3	17.878		0.150	16	0.00938
TDN2224A	5	2	3	17.741		0.155	16	0.00969
TDN2131A	6	2	4	17.612		0.145	16	0.00904
TDN2132A	6	2	4	17.462	0.736	0.151	16	0.00945
TDN2133A	6	2	4	18.431		0.154	16	0.00963
TDN2134A	6	2	4	18.538		0.154	16	0.00960
TDN3121A	5	3	5	19.873	0.676	0.147	16	0.00921
TDN3122A	5	3	5	19.231		0.149	16	0.00931
TDN3123A	5	3	5	20.333		0.148	16	0.00927
TDN3124A	5	3	5	19.534		0.148	16	0.00928
TDN3221A	6	3	6	20.446	0.794	0.137	16	0.00856
TDN3222A	6	3	6	19.752		0.142	16	0.00885
TDN3223A	6	3	6	20.878		0.148	16	0.00926
TDN3224A	6	3	6	18.490		0.148	16	0.00922

Average	**19.050**	**0.702**	**Average**	**0.0092**
Standard Dev.	**1.065**	**0.066**		
Coeff. of Var. [%]	**5.589**	**9.397**		
Min.	**17.428**	**0.604**	**Min.**	**0.0086**
Max.	**20.878**	**0.794**	**Max.**	**0.0097**
Number of Spec.	**22**	**6**		

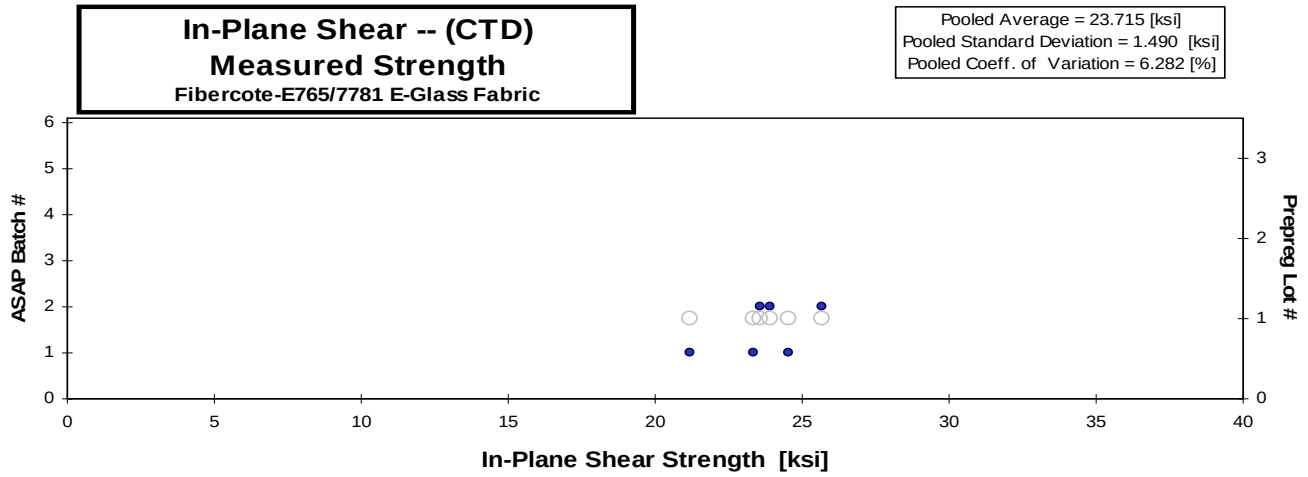

In-Plane Shear -- (RTD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 19.050 [ksi]
Pooled Standard Deviation = 1.065 [ksi]
Pooled Coeff. of Variation = 5.589 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0
5
10
15
20
25
30
35
40
1
2
3
4
6

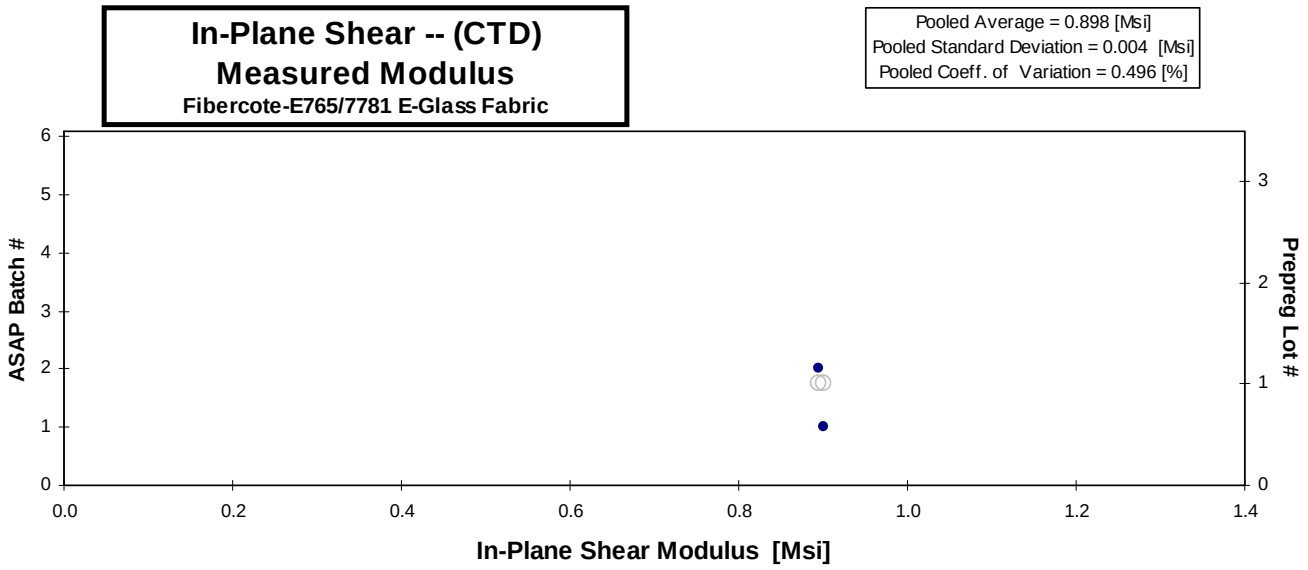

In-Plane Shear -- (RTD)
Measured Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 0.702 [Msi]
Pooled Standard Deviation = 0.066 [Msi]
Pooled Coeff. of Variation = 9.397 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1
2
3
5
6

In-Plane Shear -- (CTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN1125B	5	1	1	21.205	0.901	0.146	16	0.00913
TDN1126B	5	1	1	23.349		0.143	16	0.00893
TDN1127B	5	1	1	24.534		0.144	16	0.00902
TDN1224B	6	1	2	23.577	0.895	0.142	16	0.00885
TDN1225B	6	1	2	23.928		0.142	16	0.00886
TDN1226B	6	1	2	25.697		0.144	16	0.00898

Average	**23.715**	**0.898**	**Average**	**0.0090**
Standard Dev.	**1.490**	**0.004**		
Coeff. of Var. [%]	**6.282**	**0.496**		
Min.	**21.205**	**0.895**	**Min.**	**0.0089**
Max.	**25.697**	**0.901**	**Max.**	**0.0091**
Number of Spec.	**6**	**2**		


In-Plane Shear -- (CTD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 23.715 [ksi]
Pooled Standard Deviation = 1.490 [ksi]
Pooled Coeff. of Variation = 6.282 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0
5
10
15
20
25
30
35
40
1
2
3
4
5
6

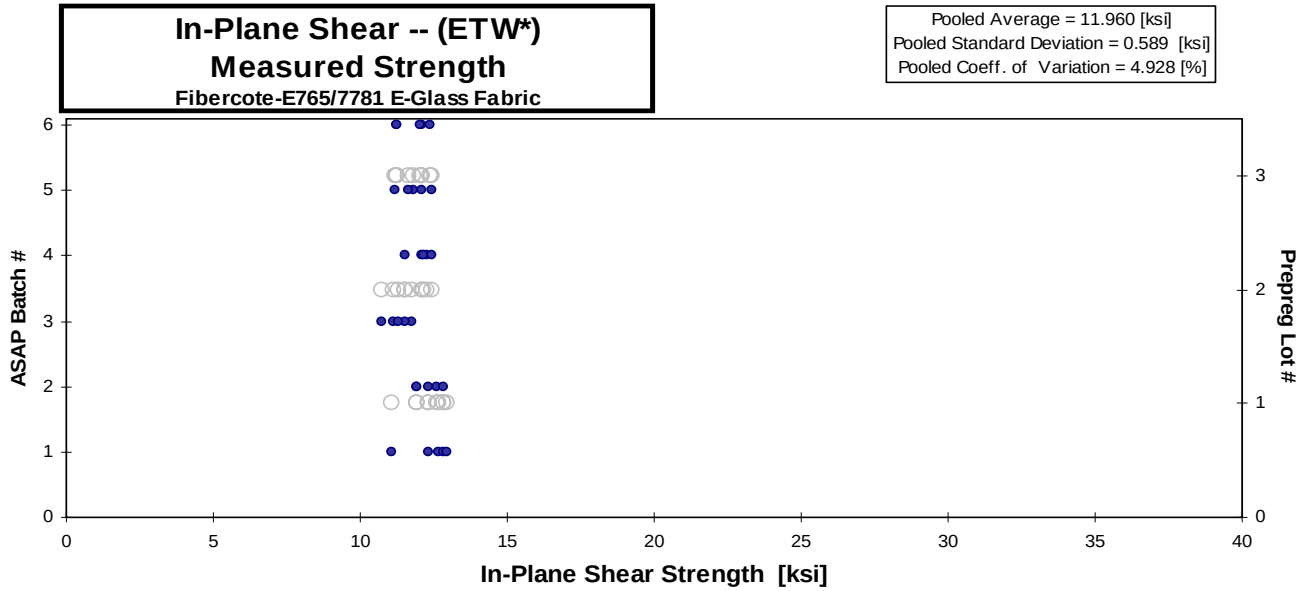

In-Plane Shear -- (CTD)
Measured Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 0.898 [Msi]
Pooled Standard Deviation = 0.004 [Msi]
Pooled Coeff. of Variation = 0.496 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1
2
3
4
5
6

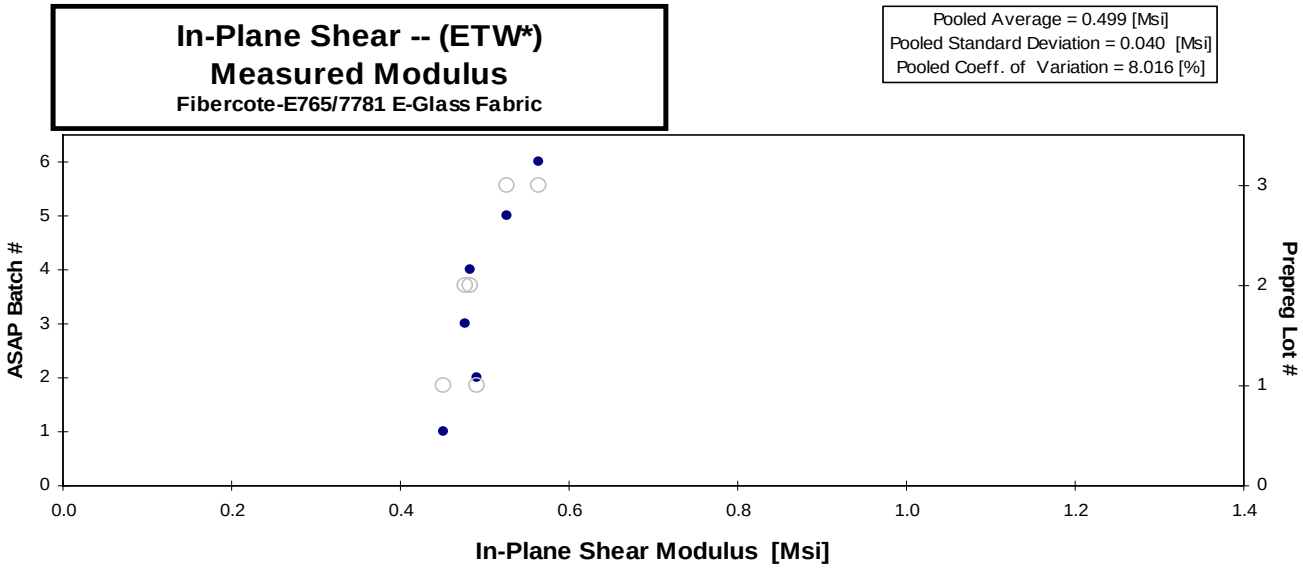
In-Plane Shear -- (ETW*)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{plv} [in]
TDN1136K	5	1	1	11.074	0.452	0.143	16	0.00892
TDN1137K	5	1	1	12.326		0.148	16	0.00922
TDN1138K	5	1	1	12.696		0.147	16	0.00921
TDN1139K	5	1	1	12.834		0.148	16	0.00922
TDN113AK	5	1	1	12.934		0.146	16	0.00913
TDN1216K	6	1	2	12.629	0.492	0.143	16	0.00896
TDN1217K	6	1	2	11.909		0.141	16	0.00884
TDN1218K	6	1	2	12.836		0.144	16	0.00903
TDN1219K	6	1	2	11.929		0.138	16	0.00864
TDN121AK	6	1	2	12.339		0.137	16	0.00858
TDN2216K	5	2	3	11.119	0.477	0.156	16	0.00973
TDN2217K	5	2	3	10.757		0.156	16	0.00973
TDN2218K	5	2	3	11.750		0.155	16	0.00971
TDN2219K	5	2	3	11.519		0.156	16	0.00975
TDN221AK	5	2	3	11.331		0.144	16	0.00898
TDN2126K	6	2	4	11.538	0.483	0.152	16	0.00952
TDN2127K	6	2	4	12.266		0.154	16	0.00963
TDN2128K	6	2	4	12.420		0.153	16	0.00959
TDN2129K	6	2	4	12.114		0.153	16	0.00955
TDN212AK	6	2	4	12.185		0.149	16	0.00934
TDN3116K	5	3	5	11.826	0.528	0.149	16	0.00929
TDN3117K	5	3	5	12.421		0.148	16	0.00922
TDN3118K	5	3	5	11.626		0.139	16	0.00866
TDN3119K	5	3	5	11.202		0.143	16	0.00891
TDN311AK	5	3	5	12.130		0.151	16	0.00941
TDN3216K	6	3	6	12.102	0.564	0.148	16	0.00922
TDN3217K	6	3	6	11.237		0.135	16	0.00844
TDN3218K	6	3	6	12.065		0.148	16	0.00923
TDN3219K	6	3	6	12.411		0.146	16	0.00915
TDN321AK	6	3	6	11.260		0.147	16	0.00920

*These specimens are conditioned for 45 days only

Average	**11.960**	**0.499**	**Average**	**0.0092**
Standard Dev.	**0.589**	**0.040**		
Coeff. of Var. [%]	**4.928**	**8.016**		
Min.	**10.757**	**0.452**	**Min.**	**0.0084**
Max.	**12.934**	**0.564**	**Max.**	**0.0098**
Number of Spec.	**30**	**6**		

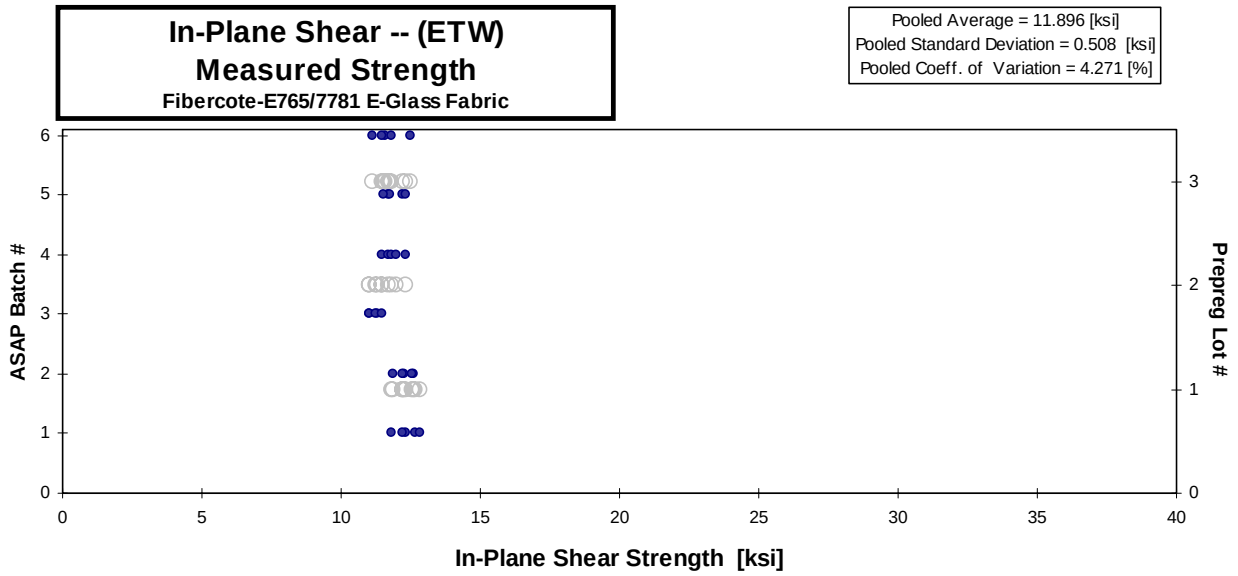

In-Plane Shear -- (ETW*)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 11.960 [ksi]
Pooled Standard Deviation = 0.589 [ksi]
Pooled Coeff. of Variation = 4.928 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0
1
2
3
4
5
6
0
5
10
15
20
25
30
35
40

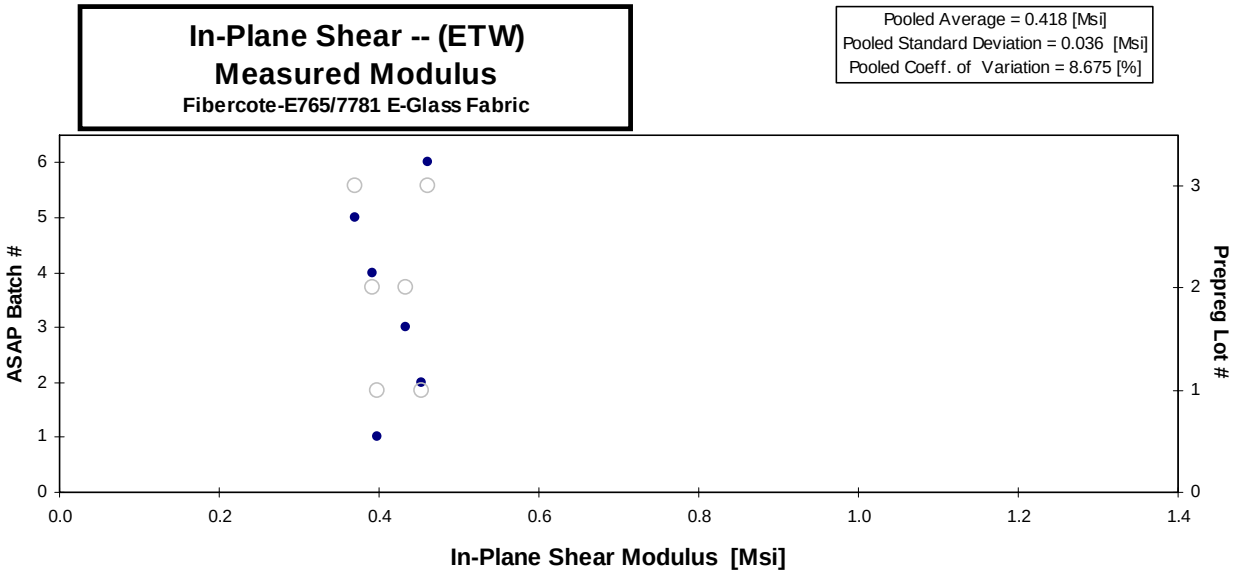

In-Plane Shear -- (ETW*)
Measured Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 0.499 [Msi]
Pooled Standard Deviation = 0.040 [Msi]
Pooled Coeff. of Variation = 8.016 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0
1
2
3
4
5
6
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4

In-Plane Shear -- (ETW)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN1131F	5	1	1	11.814	0.399	0.148	16	0.00925
TDN1132F	5	1	1	12.321		0.140	16	0.00876
TDN1133F	5	1	1	12.232		0.145	16	0.00907
TDN1134F	5	1	1	12.671		0.148	16	0.00923
TDN1135F	5	1	1	12.847		0.148	16	0.00925
TDN1211F	6	1	2	11.874	0.454	0.144	16	0.00898
TDN1212F	6	1	2	12.259		0.144	16	0.00902
TDN1213F	6	1	2	12.600		0.144	16	0.00897
TDN1214F	6	1	2	12.230		0.143	16	0.00896
TDN1215F	6	1	2	12.546		0.144	16	0.00899
TDN2211F	5	2	3	11.308	0.433	0.156	16	0.00972
TDN2212F	5	2	3	11.042		0.153	16	0.00955
TDN2213F	5	2	3	11.018		0.151	16	0.00941
TDN2214F	5	2	3	11.265		0.147	16	0.00919
TDN2215F	5	2	3	11.483		0.156	16	0.00978
TDN2121F	6	2	4	11.499	0.393	0.153	16	0.00957
TDN2122F	6	2	4	11.717		0.147	16	0.00916
TDN2123F	6	2	4	11.825		0.151	16	0.00946
TDN2124F	6	2	4	11.967		0.143	16	0.00895
TDN2125F	6	2	4	12.340		0.153	16	0.00958
TDN3111F	5	3	5	12.210	0.371	0.148	16	0.00928
TDN3112F	5	3	5	11.695		0.150	16	0.00936
TDN3113F	5	3	5	11.768		0.150	16	0.00939
TDN3114F	5	3	5	11.510		0.145	16	0.00908
TDN3115F	5	3	5	12.357		0.150	16	0.00937
TDN3211F	6	3	6	11.604	0.461	0.142	16	0.00886
TDN3212F	6	3	6	11.477		0.147	16	0.00919
TDN3213F	6	3	6	11.130		0.146	16	0.00912
TDN3214F	6	3	6	11.809		0.147	16	0.00921
TDN3215F	6	3	6	12.474		0.147	16	0.00922

Average	**11.896**	**0.418**	**Average**	**0.0092**
Standard Dev.	**0.508**	**0.036**		
Coeff. of Var. [%]	**4.271**	**8.675**		
Min.	**11.018**	**0.371**	**Min.**	**0.0088**
Max.	**12.847**	**0.461**	**Max.**	**0.0098**
Number of Spec.	**30**	**6**		

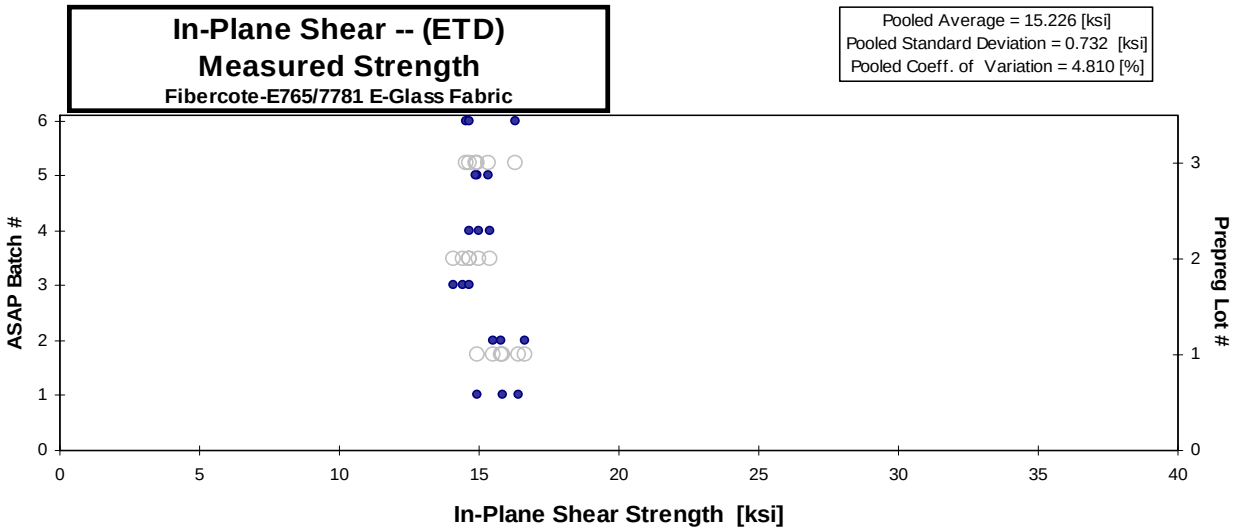

In-Plane Shear -- (ETW)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 11.896 [ksi]
Pooled Standard Deviation = 0.508 [ksi]
Pooled Coeff. of Variation = 4.271 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0
5
10
15
20
25
30
35
40
1
2
3
4
6

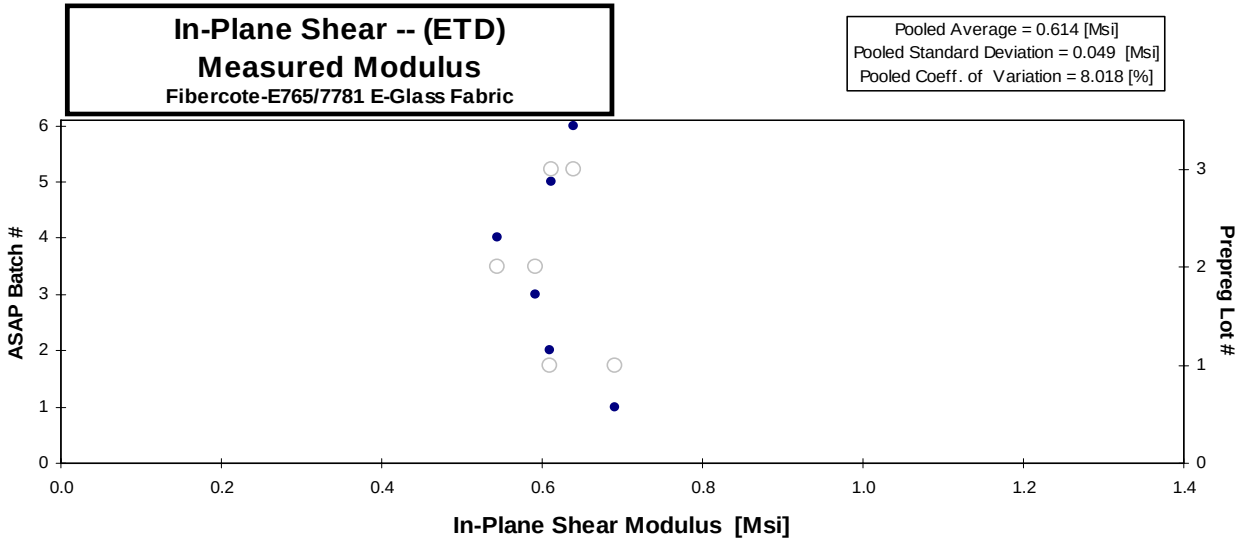

In-Plane Shear -- (ETW)
Measured Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 0.418 [Msi]
Pooled Standard Deviation = 0.036 [Msi]
Pooled Coeff. of Variation = 8.675 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1
2
3
4
5
6

In-Plane Shear -- (ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	ASAP Batch #	Strength [ksi]	Modulus [Msi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN1128G	5	1	1	14.923	0.692	0.146	16	0.00910
TDN1129G	5	1	1	16.420		0.146	16	0.00911
TDN112AG	5	1	1	15.838		0.136	16	0.00850
TDN1227G	6	1	2	15.495	0.609	0.144	16	0.00898
TDN1228G	6	1	2	16.645		0.143	16	0.00894
TDN1229G	6	1	2	15.800		0.137	16	0.00855
TDN2225G	5	2	3	14.417	0.591	0.142	16	0.00885
TDN2226G	5	2	3	14.097		0.153	16	0.00958
TDN2227G	5	2	3	14.637		0.146	16	0.00914
TDN2135G	6	2	4	14.672	0.544	0.154	16	0.00962
TDN2136G	6	2	4	15.412		0.139	16	0.00871
TDN2137G	6	2	4	14.993		0.153	16	0.00955
TDN3125G	5	3	5	14.944	0.612	0.147	16	0.00920
TDN3126G	5	3	5	14.912		0.141	16	0.00883
TDN3127G	5	3	5	15.355		0.138	16	0.00863
TDN3225G	6	3	6	16.303	0.639	0.148	16	0.00923
TDN3226G	6	3	6	14.542		0.148	16	0.00922
TDN3227G	6	3	6	14.660		0.146	16	0.00915

Average	**15.226**	**0.614**	**Average**	**0.0090**
Standard Dev.	**0.732**	**0.049**		
Coeff. of Var. [%]	**4.810**	**8.018**		
Min.	**14.097**	**0.544**	**Min.**	**0.0085**
Max.	**16.645**	**0.692**	**Max.**	**0.0096**
Number of Spec.	**18**	**6**		


In-Plane Shear -- (ETD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 15.226 [ksi]
Pooled Standard Deviation = 0.732 [ksi]
Pooled Coeff. of Variation = 4.810 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Strength [ksi]
0
5
10
15
20
25
30
35
40
1
2
3
4
6

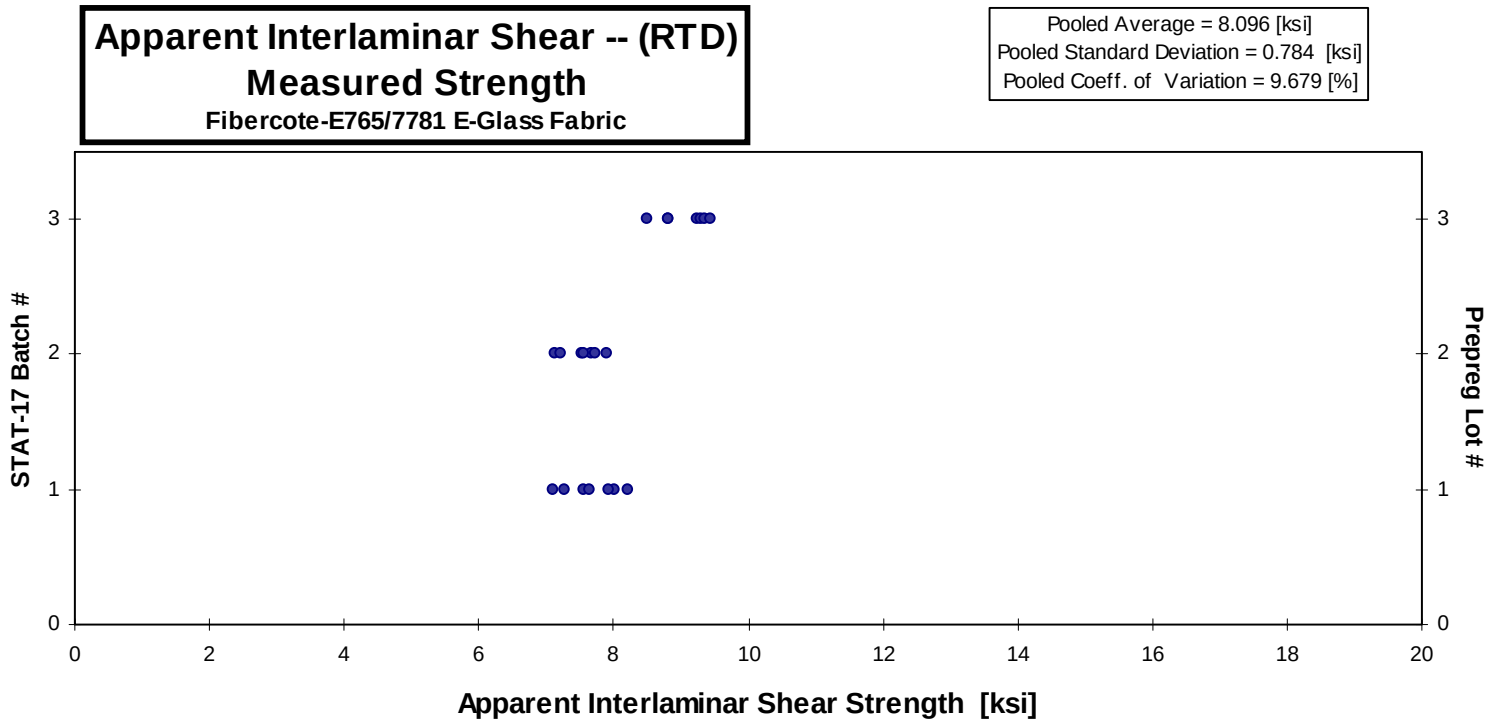

In-Plane Shear -- (ETD)
Measured Modulus
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 0.614 [Msi]
Pooled Standard Deviation = 0.049 [Msi]
Pooled Coeff. of Variation = 8.018 [%]
ASAP Batch #
Prepreg Lot #
In-Plane Shear Modulus [Msi]
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1
2
3
4
5
6

Apparent Interlaminar Shear -- (RTD) Strength

Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Cure Cycle	Prepreg Lot #	STAT-17 Batch #	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDQ1129A	6	1	1	7.5718	0.115	12	0.0096
TDQ112AA	6	1	1	8.0246	0.116	12	0.0097
TDQ112BA	6	1	1	7.0953	0.116	12	0.0097
TDQ112CA	6	1	1	8.2099	0.116	12	0.0097
TDQ112DA	6	1	1	7.6518	0.117	12	0.0098
TDQ112EA	6	1	1	7.2640	0.118	12	0.0098
TDQ112FA	6	1	1	7.9417	0.119	12	0.0099
TDQ2129A	5	2	2	7.1456	0.111	12	0.0092
TDQ212AA	5	2	2	7.6680	0.116	12	0.0097
TDQ212BA	5	2	2	7.9118	0.114	12	0.0095
TDQ212CA	5	2	2	7.5183	0.112	12	0.0093
TDQ212DA	5	2	2	7.2201	0.111	12	0.0092
TDQ212EA	5	2	2	7.5574	0.111	12	0.0093
TDQ212FA	5	2	2	7.7338	0.114	12	0.0095
TDQ3119A	6	3	3	9.2528	0.110	12	0.0092
TDQ311AA	6	3	3	8.8149	0.106	12	0.0088
TDQ311BA	6	3	3	8.5032	0.107	12	0.0089
TDQ311CA	6	3	3	9.2887	0.110	12	0.0092
TDQ311DA	6	3	3	9.3722	0.110	12	0.0092
TDQ311EA	6	3	3	9.4476	0.106	12	0.0088
TDQ311FA	6	3	3	8.8260	0.107	12	0.0089

Average	**8.096**	**Average**	**0.0094**
Standard Dev.	**0.784**		
Coeff. of Var. [%]	**9.679**		
Min.	**7.095**	**Min.**	**0.0088**
Max.	**9.448**	**Max.**	**0.0099**
Number of Spec.	**21**		


Apparent Interlaminar Shear -- (RTD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric
Pooled Average = 8.096 [ksi]
Pooled Standard Deviation = 0.784 [ksi]
Pooled Coeff. of Variation = 9.679 [%]
STAT-17 Batch #
Prepreg Lot #
0
1
2
3
0
2
4
6
8
10
12
14
16
18
20
Apparent Interlaminar Shear Strength [ksi]

Bearing Strength
$[45_f/0_f/45_f]_s$ t=0.070" ,d=0.1875"
Fibercote-E765/ 7781 Glass Fabric

Condition	Specimen Number	Prepreg Lot #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in laminate	Avg. tply [in]		
	TD11321B	1	68.728	0.056	6	0.0093	53.986	**Average**
	TD11322B	1	41.063	0.053	6	0.0088	13.934	**Standard Dev.**
CTD	TD11323B	1	36.893	0.055	6	0.0092	25.810	**Coeff. of Var. [%]**
	TD11324B	1	60.028	0.055	6	0.0092	36.893	**Min.**
	TD11325B	1	48.232	0.055	6	0.0091	68.972	**Max.**
	TD11326B	1	68.972	0.055	6	0.0091	6	**Number of Spec.**
	TD11211A	1	52.891	0.054	6	0.0091	52.021	**Average**
	TD11212A	1	48.402	0.055	6	0.0091	2.178	**Standard Dev.**
RTD	TD11214A	1	50.601	0.054	6	0.0091	4.187	**Coeff. of Var. [%]**
	TD11215A	1	54.524	0.055	6	0.0092	48.402	**Min.**
	TD11216A	1	53.171	0.055	6	0.0091	54.524	**Max.**
	TD11226A	1	52.535	0.053	6	0.0088	6	**Number of Spec.**
	TD11121F	1	30.715	0.055	6	0.0092		
	TD11122F	1	32.869	0.055	6	0.0092		
	TD11123F	1	29.871	0.056	6	0.0093	30.033	**Average**
ETW	TD11124F	1	29.699	0.056	6	0.0094	2.177	**Standard Dev.**
	TD11125F	1	30.386	0.054	6	0.0091	7.250	**Coeff. of Var. [%]**
	TD11126F	1	29.772	0.056	6	0.0093	25.354	**Min.**
	TD11221F	1	25.354	0.054	6	0.0090	32.869	**Max.**
	TD11222F	1	31.599	0.054	6	0.0090	8	**Number of Spec.**
	TD11223K	1	32.222	0.055	6	0.0092	30.250	**Average**
	TD11224K	1	31.374	0.055	6	0.0092	1.883	**Standard Dev.**
ETW*	TD11311K	1	30.681	0.055	6	0.0092	6.226	**Coeff. of Var. [%]**
	TD11312K	1	30.673	0.054	6	0.0090	26.789	**Min.**
	TD11313K	1	26.789	0.056	6	0.0093	32.222	**Max.**
	TD11314K	1	29.764	0.053	6	0.0089	6	**Number of Spec.**
	TD11111G	1	42.230	0.055	6	0.0091	41.787	**Average**
	TD11112G	1	42.497	0.054	6	0.0090	1.554	**Standard Dev.**
ETD	TD11113G	1	41.987	0.054	6	0.0090	3.719	**Coeff. of Var. [%]**
	TD11114G	1	40.893	0.054	6	0.0090	39.273	**Min.**
	TD11115G	1	43.839	0.055	6	0.0092	43.839	**Max.**
	TD11116G	1	39.273	0.054	6	0.0091	6	**Number of Spec.**

*these specimens are conditioned for 45 days only

Bearing Strength
$[45_f/0_f/45_f]_s$ t=0.070" ,d=0.250"
Fibercote-E765/ 7781 Glass Fabric

Condition	Specimen Number	Prepreg Lot #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in laminate	Avg. t_{ply} [in]		
	TD21211B	1	59.880	0.058	6	0.0096	55.586	**Average**
	TD21212B	1	52.903	0.057	6	0.0095	2.938	**Standard Dev.**
CTD	TD21213B	1	55.361	0.058	6	0.0096	5.285	**Coeff. of Var. [%]**
	TD21214B	1	54.037	0.058	6	0.0097	52.903	**Min.**
	TD21215B	1	58.410	0.058	6	0.0097	59.880	**Max.**
	TD21216B	1	52.923	0.058	6	0.0097	6	**Number of Spec.**
	TD21221A	1	45.206	0.057	6	0.0096	45.485	**Average**
	TD21222A	1	43.293	0.058	6	0.0096	2.543	**Standard Dev.**
RTD	TD21223A	1	48.536	0.058	6	0.0096	5.591	**Coeff. of Var. [%]**
	TD21224A	1	48.743	0.056	6	0.0093	43.271	**Min.**
	TD21225A	1	43.271	0.057	6	0.0096	48.743	**Max.**
	TD21226A	1	43.862	0.059	6	0.0098	6	**Number of Spec.**
	TD21111F	1	30.186	0.057	6	0.0095		
	TD21112F	1	29.005	0.056	6	0.0094	27.805	**Average**
	TD21113F	1	27.360	0.057	6	0.0096	2.319	**Standard Dev.**
ETW	TD21114F	1	28.641	0.056	6	0.0093	8.340	**Coeff. of Var. [%]**
	TD21115F	1	28.614	0.057	6	0.0094	22.947	**Min.**
	TD21116F	1	22.947	0.056	6	0.0094	30.186	**Max.**
	TD21121F	1	27.878	0.057	6	0.0095	7	**Number of Spec.**
	TD21321K	1	23.131	0.057	6	0.0095		
	TD21322K	1	24.608	0.057	6	0.0095	24.581	**Average**
	TD21323K	1	22.784	0.057	6	0.0096	1.724	**Standard Dev.**
ETW*	TD21324K	1	27.622	0.057	6	0.0095	7.013	**Coeff. of Var. [%]**
	TD21325K	1	23.349	0.057	6	0.0095	22.784	**Min.**
	TD21326K	1	24.682	0.055	6	0.0091	27.622	**Max.**
	TD21123K	1	25.894	0.057	6	0.0096	7	**Number of Spec.**
	TD21311G	1	36.592	0.057	6	0.0095	33.251	**Average**
	TD21312G	1	36.444	0.057	6	0.0095	3.616	**Standard Dev.**
ETD	TD21313G	1	27.787	0.057	6	0.0094	10.874	**Coeff. of Var. [%]**
	TD21314G	1	30.819	0.057	6	0.0094	27.787	**Min.**
	TD21315G	1	35.844	0.055	6	0.0091	36.592	**Max.**
	TD21316G	1	32.021	0.056	6	0.0093	6	**Number of Spec.**

*these specimens are conditioned for 45 days only

Bearing Strength
$[(0_f/45_f)_5]_s$ t=0.210" ,d=0.250"
Fibercote-E765/ 7781 Glass Fabric

Condition	Specimen Number	Prepreg Lot #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in laminate	Avg. tply [in]		
							64.807	Average
	TD31212B	1	73.833	0.203	20	0.0102	5.673	Standard Dev.
CTD	TD31213B	1	60.466	0.201	20	0.0100	8.753	Coeff. of Var. [%]
	TD31214B	1	65.860	0.211	20	0.0106	59.611	Min.
	TD31215B	1	59.611	0.213	20	0.0106	73.833	Max.
	TD31216B	1	64.264	0.209	20	0.0104	5	Number of Spec.
	TD31221A	1	62.637	0.210	20	0.0105	53.842	Average
	TD31222A	1	54.623	0.201	20	0.0100	4.610	Standard Dev.
RTD	TD31223A	1	49.834	0.211	20	0.0105	8.562	Coeff. of Var. [%]
	TD31224A	1	51.683	0.206	20	0.0103	49.834	Min.
	TD31225A	1	53.072	0.213	20	0.0106	62.637	Max.
	TD31226A	1	51.201	0.212	20	0.0106	6	Number of Spec.
	TD31111F	1	36.190	0.214	20	0.0107	38.233	Average
	TD31112F	1	44.305	0.214	20	0.0107	3.452	Standard Dev.
ETW	TD31113F	1	35.550	0.213	20	0.0106	9.029	Coeff. of Var. [%]
	TD31114F	1	37.391	0.202	20	0.0101	35.550	Min.
	TD31115F	1	35.688	0.211	20	0.0106	44.305	Max.
	TD31121F	1	40.274	0.203	20	0.0101	6	Number of Spec.
	TD31311K	1	34.757	0.210	20	0.0105		
	TD31312K	1	35.387	0.209	20	0.0104		
	TD31313K	1	32.326	0.203	20	0.0102	32.780	Average
	TD31314K	1	34.746	0.201	20	0.0101	2.939	Standard Dev.
ETW*	TD31315K	1	32.319	0.209	20	0.0104	8.967	Coeff. of Var. [%]
	TD31316K	1	35.693	0.207	20	0.0103	28.024	Min.
	TD31124K	1	28.024	0.215	20	0.0107	35.693	Max.
	TD31125K	1	28.988	0.210	20	0.0105	8	Number of Spec.
	TD31321G	1	42.147	0.209	20	0.0105	42.332	Average
	TD31322G	1	41.167	0.201	20	0.0101	1.291	Standard Dev.
ETD	TD31323G	1	41.783	0.207	20	0.0104	3.049	Coeff. of Var. [%]
	TD31324G	1	43.530	0.202	20	0.0101	41.107	Min.
	TD31325G	1	41.107	0.211	20	0.0106	44.256	Max.
	TD31326G	1	44.256	0.209	20	0.0104	6	Number of Spec.

*these specimens are conditioned for 45 days only

Bearing Strength
$[(0_f/45_f)_5]_s$ t=0.210" ,d=0.375"
Fibercote-E765/ 7781 Glass Fabric

Condition	Specimen Number	Prepreg Lot #	Strength [ksi]	Avg. Specimen Thickness [in]	# Plies in laminate	Avg. tply [in]		
	TD41121B	1	62.978	0.200	20	0.0100	59.763	**Average**
	TD41122B	1	60.950	0.201	20	0.0101	2.460	**Standard Dev.**
CTD	TD41123B	1	59.439	0.214	20	0.0107	4.116	**Coeff. of Var. [%]**
	TD41124B	1	60.883	0.196	20	0.0098	55.815	**Min.**
	TD41125B	1	58.511	0.215	20	0.0107	62.978	**Max.**
	TD41126B	1	55.815	0.215	20	0.0107	6	**Number of Spec.**
	TD41311A	1	46.418	0.204	20	0.0102	48.057	**Average**
	TD41312A	1	50.257	0.216	20	0.0108	2.479	**Standard Dev.**
RTD	TD41313A	1	45.455	0.217	20	0.0109	5.159	**Coeff. of Var. [%]**
	TD41314A	1	45.571	0.213	20	0.0107	45.455	**Min.**
	TD41315A	1	50.352	0.217	20	0.0108	50.352	**Max.**
	TD41316A	1	50.291	0.214	20	0.0107	6	**Number of Spec.**
	TD41221F	1	32.882	0.209	20	0.0105		
	TD41222F	1	31.867	0.212	20	0.0106		
	TD41223F	1	31.326	0.207	20	0.0103	32.583	**Average**
	TD41224F	1	33.635	0.212	20	0.0106	1.053	**Standard Dev.**
ETW	TD41225F	1	34.420	0.200	20	0.0100	3.233	**Coeff. of Var. [%]**
	TD41226F	1	31.840	0.211	20	0.0105	31.326	**Min.**
	TD41411F	1	31.878	0.208	20	0.0104	34.420	**Max.**
	TD41412F	1	32.818	0.216	20	0.0108	8	**Number of Spec.**
	TD41111K	1	34.564	0.201	20	0.0100		
	TD41112K	1	32.891	0.217	20	0.0109	32.378	**Average**
	TD41113K	1	33.008	0.214	20	0.0107	1.684	**Standard Dev.**
ETW*	TD41114K	1	33.291	0.208	20	0.0104	5.200	**Coeff. of Var. [%]**
	TD41115K	1	30.331	0.217	20	0.0109	29.842	**Min.**
	TD41116K	1	32.721	0.213	20	0.0106	34.564	**Max.**
	TD41414K	1	29.842	0.197	20	0.0098	7	**Number of Spec.**
	TD41211G	1	42.032	0.198	20	0.0099	39.720	**Average**
	TD41213G	1	39.275	0.205	20	0.0102	2.251	**Standard Dev.**
ETD	TD41214G	1	40.275	0.205	20	0.0103	5.667	**Coeff. of Var. [%]**
	TD41215G	1	39.357	0.204	20	0.0102	35.755	**Min.**
	TD41216G	1	41.624	0.205	20	0.0102	42.032	**Max.**
	TD41413G	1	35.755	0.213	20	0.0106	6	**Number of Spec.**

*these specimens are conditioned for 45 days only

3.2.2 Fluid Sensitivity Raw Data Spreadsheets and Scatter Charts

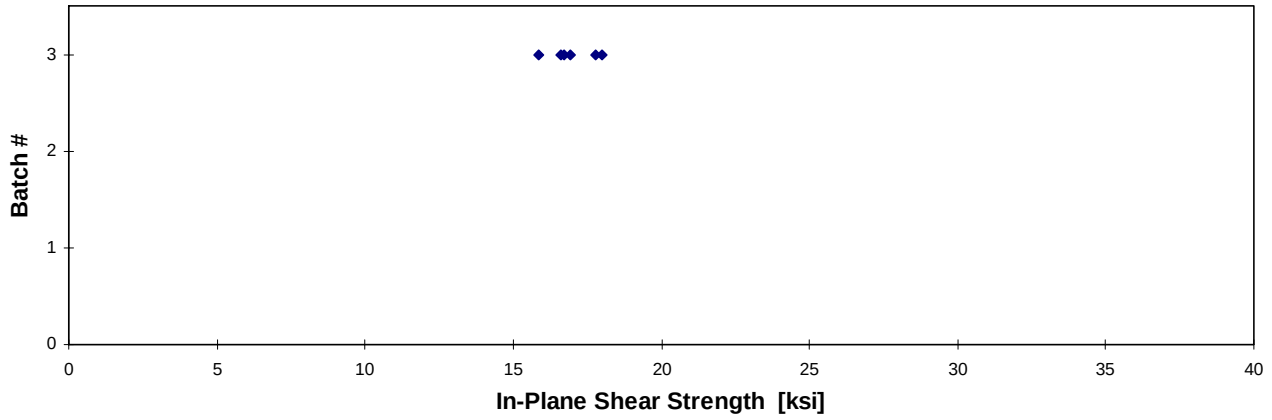
In-Plane Shear -- (MEK - RTD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Batch Number	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN3137T	3	16.717	0.149	16	0.00929
TDN3138T	3	15.853	0.141	16	0.00884
TDN3139T	3	16.924	0.137	16	0.00856
TDN313AT	3	16.607	0.144	16	0.00901
TDN3129T	3	17.785	0.149	16	0.00930
TDN312AT	3	18.001	0.149	16	0.00931

Average	**16.981**			**0.0091**
Standard Dev.	**0.797**			
Coeff. of Var. [%]	**4.691**			
Min.	**15.853**		**Min.**	**0.0086**
Max.	**18.001**		**Max.**	**0.0093**
Number of Spec.	**6**			

In-Plane Shear -- (MEK - RTD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric

Pooled Average = 16.981 [ksi]
Pooled Standard Deviation = 0.797 [ksi]
Pooled Coeff. of Variation = 4.691 [%]



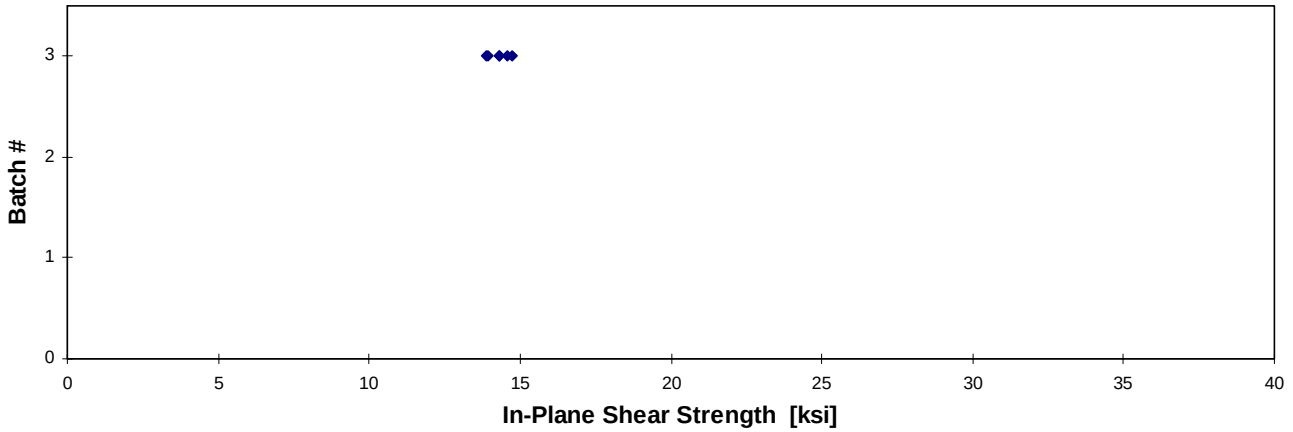
In-Plane Shear -- (JP-4 JET FUEL - ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Batch Number	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN3131R	3	14.299	0.149	16	0.00932
TDN3132R	3	13.871	0.149	16	0.00933
TDN3133R	3	13.939	0.147	16	0.00920
TDN3134R	3	14.325	0.150	16	0.00935
TDN3135R	3	14.600	0.146	16	0.00915
TDN3136R	3	14.760	0.147	16	0.00921

Average	**14.299**		**0.0093**
Standard Dev.	**0.351**		
Coeff. of Var. [%]	**2.454**		
Min.	**13.871**	**Min.**	**0.0092**
Max.	**14.760**	**Max.**	**0.0094**
Number of Spec.	**6**		

In-Plane Shear -- (JP-4 JET FUEL - ETD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric

Pooled Average = 14.299 [ksi]
Pooled Standard Deviation = 0.351 [ksi]
Pooled Coeff. of Variation = 2.454 [%]



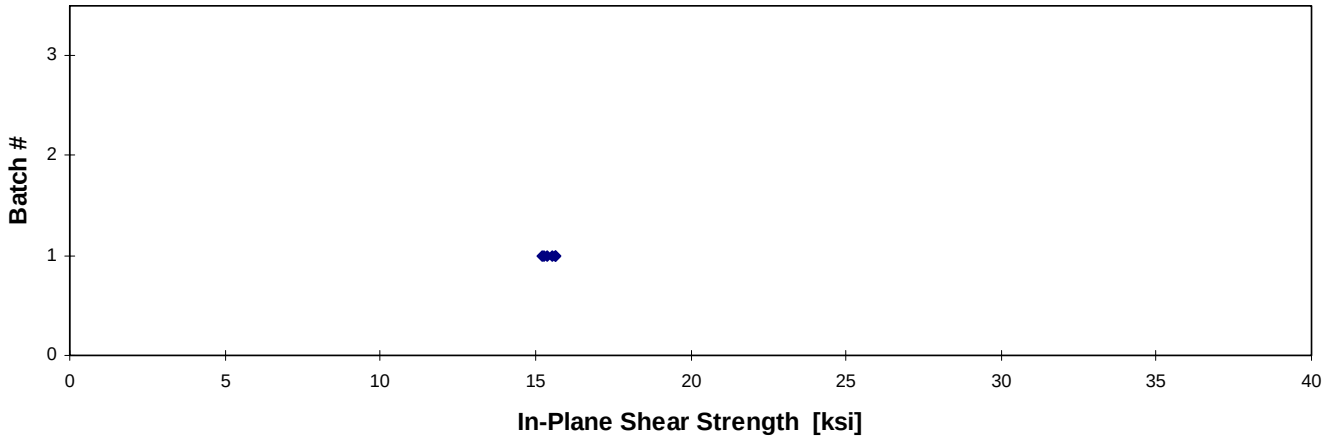
In-Plane Shear -- (Hydraulic Fluid - ETD)
Strength & Modulus
Fibercote-E765/7781 E-Glass Fabric

Specimen Number	Batch Number	Strength [ksi]	Avg. Specimen Thickn. [in]	# Plies in Laminate	Avg. t_{ply} [in]
TDN1231V	1	15.639	0.146	16	0.00913
TDN1232V	1	15.518	0.145	16	0.00905
TDN1233V	1	15.289	0.145	16	0.00909
TDN1234V	1	15.629	0.145	16	0.00905
TDN1235V	1	15.238	0.146	16	0.00913
TDN1236V	1	15.389	0.147	16	0.00917

Average	**15.450**		**0.0091**
Standard Dev.	**0.171**		
Coeff. of Var. [%]	**1.109**		
Min.	**15.238**	**Min.**	**0.0091**
Max.	**15.639**	**Max.**	**0.0092**
Number of Spec.	**6**		

In-Plane Shear -- (Hydraulic Fluid - ETD)
Measured Strength
Fibercote-E765/7781 E-Glass Fabric

Pooled Average = 15.450 [ksi]
Pooled Standard Deviation = 0.171 [ksi]
Pooled Coeff. of Variation = 1.109 [%]



Fluid Sensitivity Comparison:

Average In-Plane Shear Strength with Fluid (ksi)	Same Environment In-Plane Shear Strength without Fluid (ksi)	Worst Case Environment In-Plane Shear Strength (ksi)
MEK (RTD)	(RTD)	(ETW)
16.98	19.05	11.90

The RTD average in-plane shear strength was reduced by 11% after exposure to MEK. However it remained 43% higher than water exposure in ETW conditions.

Average In-Plane Shear Strength with Fluid (ksi)	Same Environment In-Plane Shear Strength without Fluid (ksi)	Worst Case Environment In-Plane Shear Strength (ksi)
JP-4 JET FUEL (ETD)	(ETD)	(ETW)
14.30	15.23	11.90

The ETD average in-plane shear strength was reduced by 6% after exposure to JP-4 Jet Fuel. However it remained 20% higher than water exposure in ETW conditions.

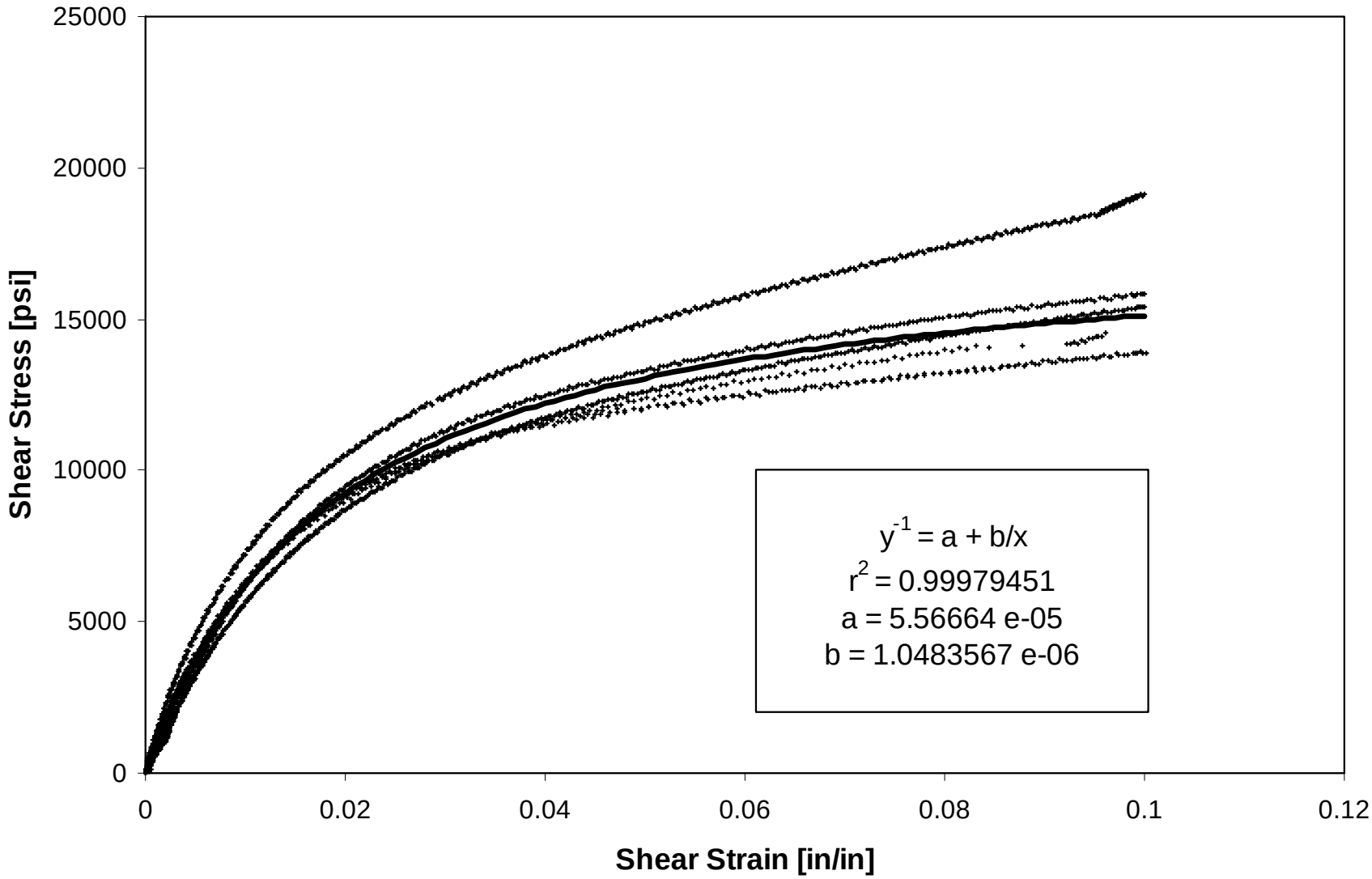
Average In-Plane Shear Strength with Fluid (ksi)	Same Environment In-Plane Shear Strength without Fluid (ksi)	Worst Case Environment In-Plane Shear Strength (ksi)
HYDRAULIC FLUID (ETD)	(ETD)	(ETW)
15.45	15.23	11.90

The ETD average in-plane shear strength was not reduced after exposure to Hydraulic Fluid.

3.2.3 Representative Shear Stress-Strain Curve

The following stress-strain curve is representative of the FiberCote 7781/E765 prepreg system. The tension and compression stress-strain curves are not presented in graphical form. If strain design allowables from these tests are required, simple one-dimensional linear stress-strain relationships may be used to obtain corresponding strain design values. This process should approximate tensile and compressive strain behavior relatively well but may produce extremely conservative strain values in shear due to the nonlinear behavior. A more realistic approach for shear strain design allowables is to use a maximum strain value of 5% (reference MIL-HDBK-17-1E, section 5.7.6). If a nonlinear analysis of the material's shear behavior is required, the curve-fit of the shear stress-strain curve may be used. The representative shear stress-strain curve was obtained by taking the average of all the sample shear curves and determining the best-fit line through the data. The actual data points also presented on the chart to demonstrate material variability.

Shear Stress vs. Shear Strain, RTD

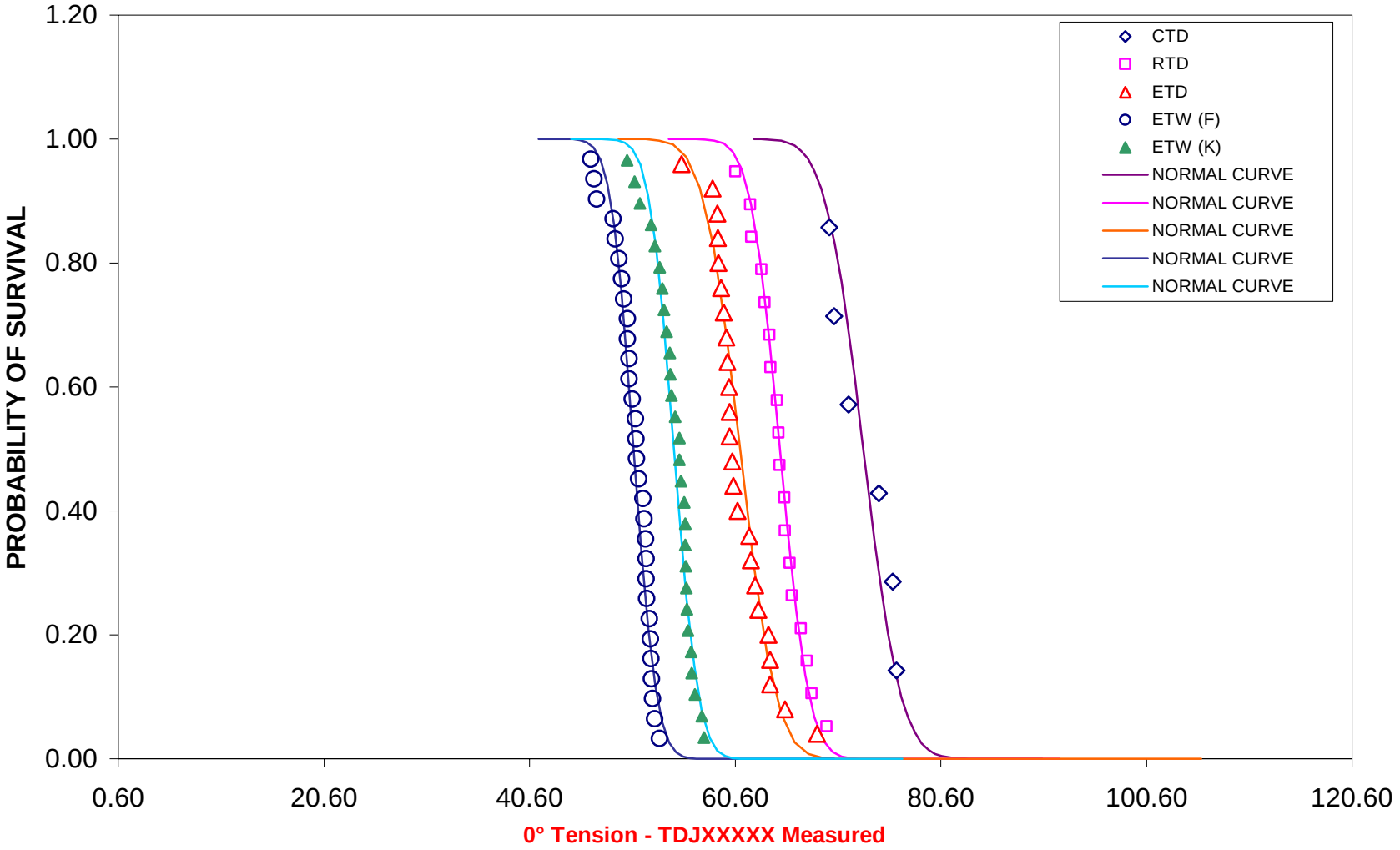


3.3 Statistical Results

3.3.1 Plot By Condition

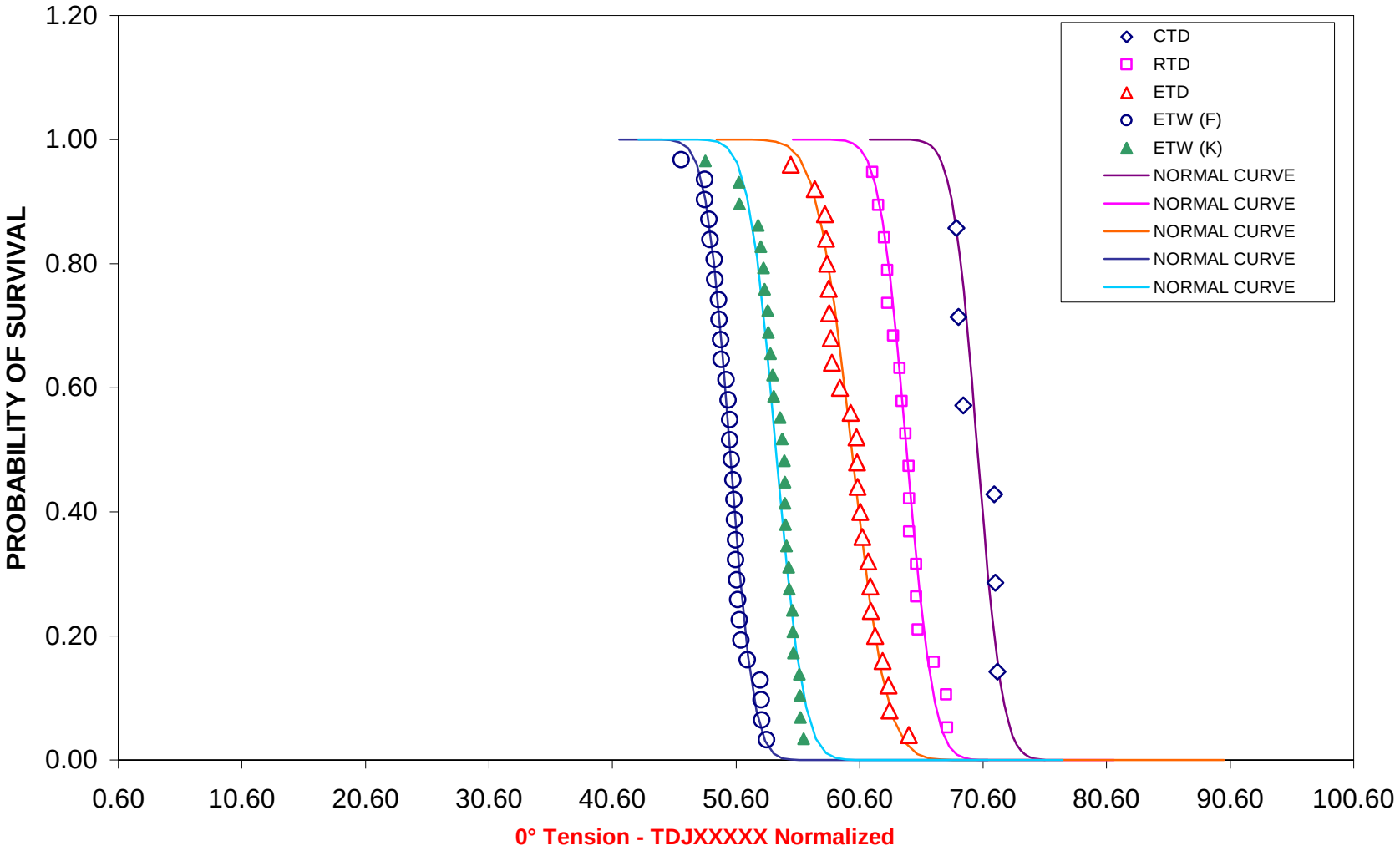
DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

FiberCote E765/7781 E-Glass Fabric
FiberCote



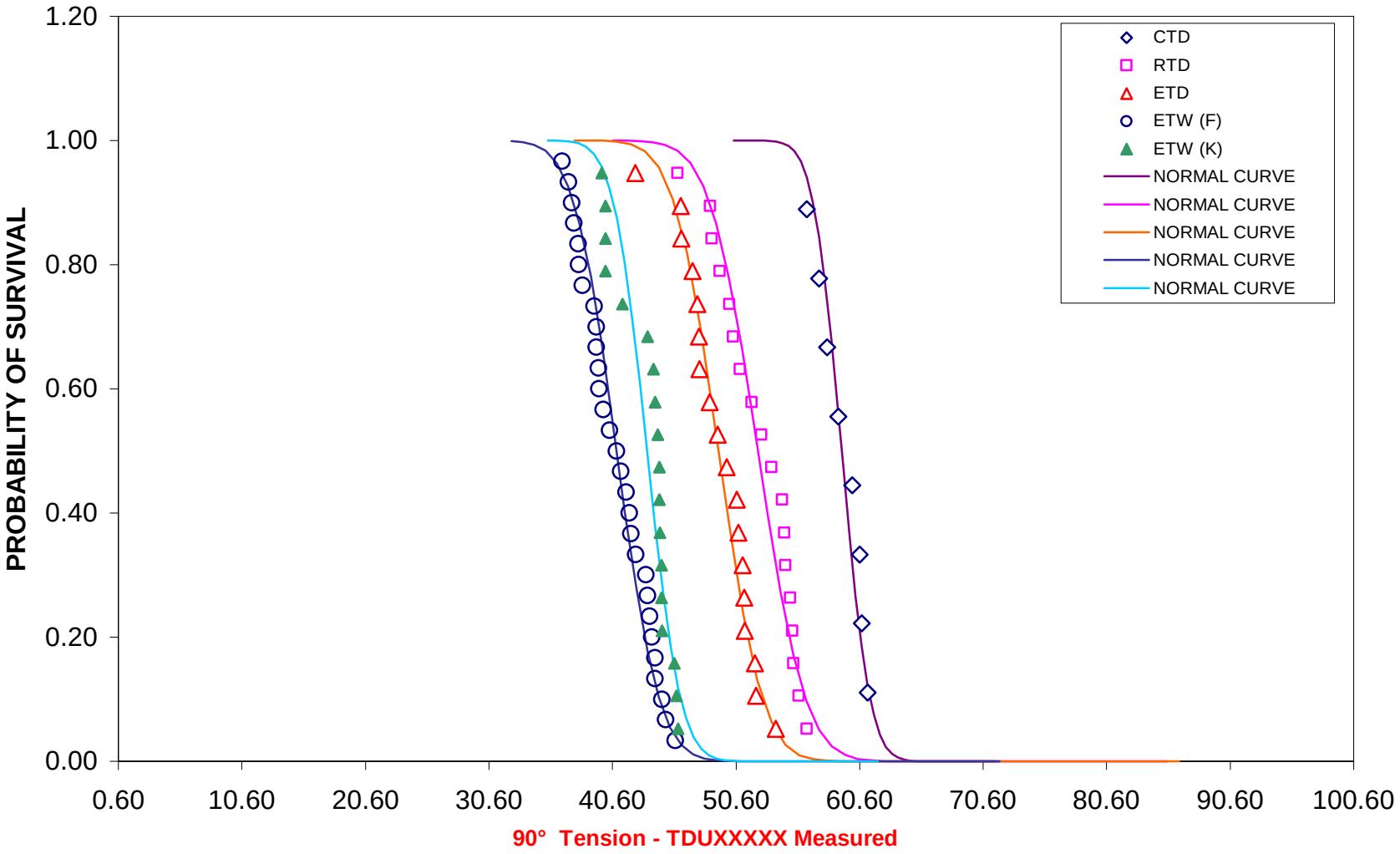
DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

FiberCote E765/7781 E-Glass Fabric
FiberCote



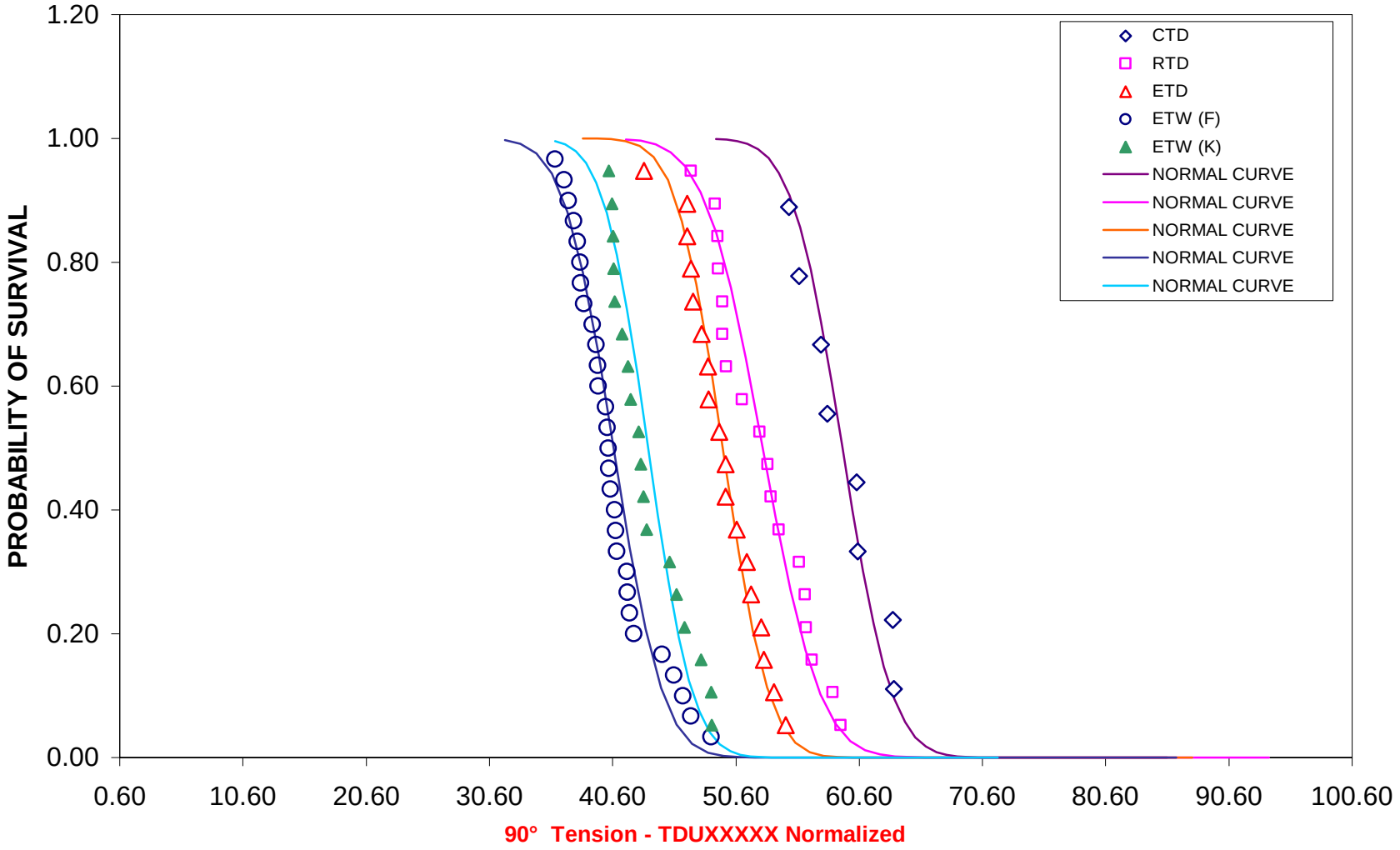
DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

FiberCote E765/7781 E-Glass Fabric
FiberCote

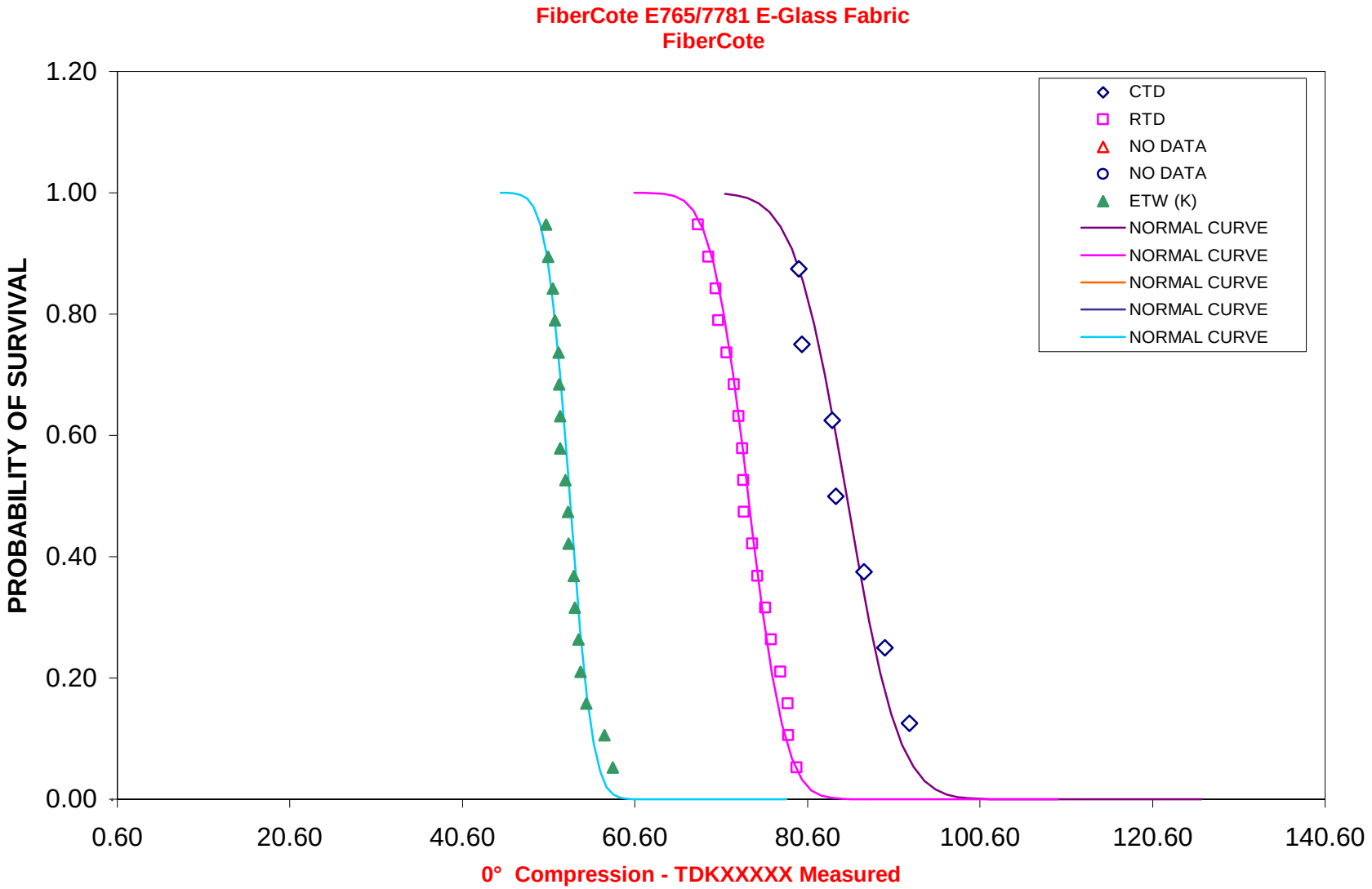


DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

FiberCote E765/7781 E-Glass Fabric
FiberCote

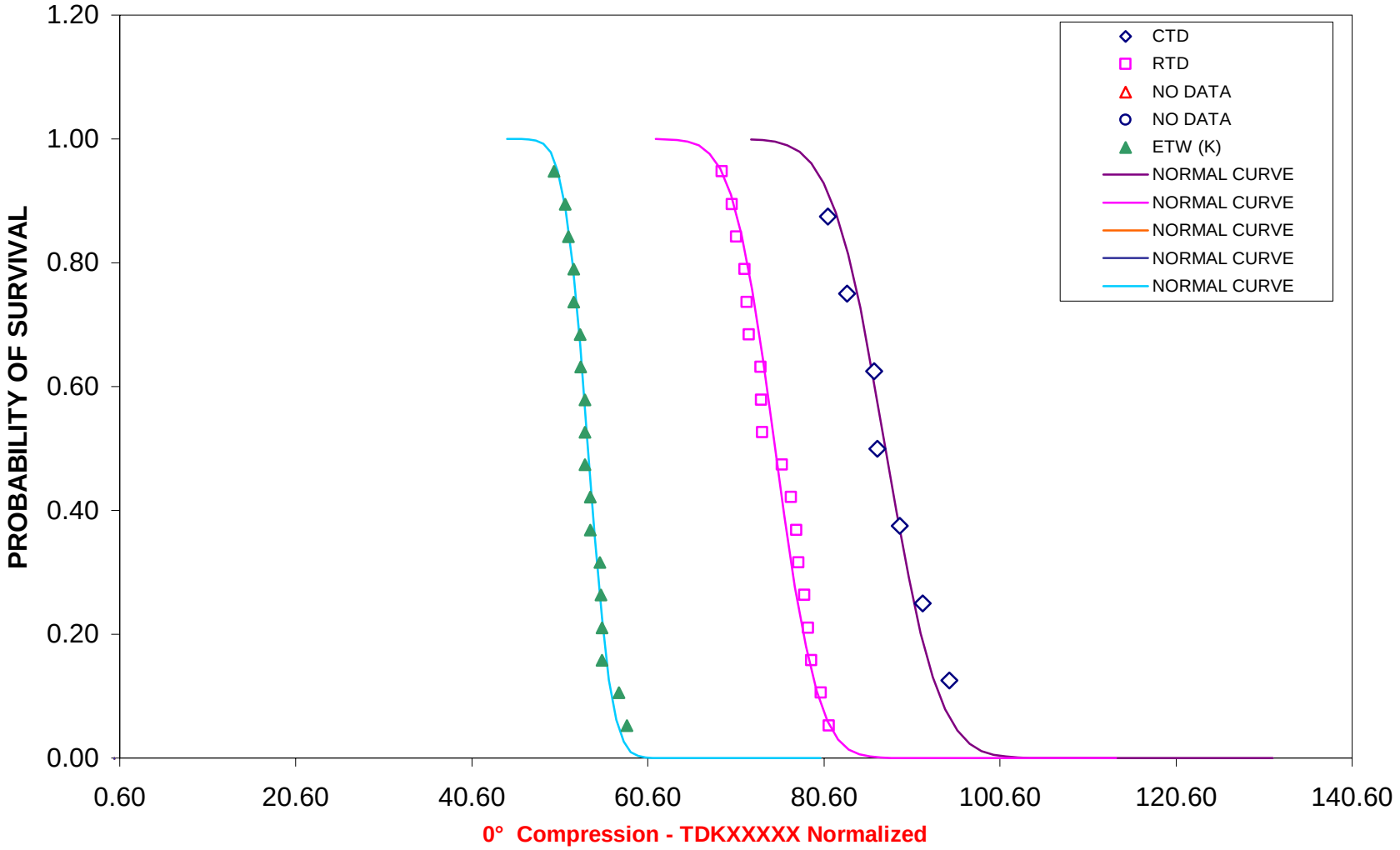


DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

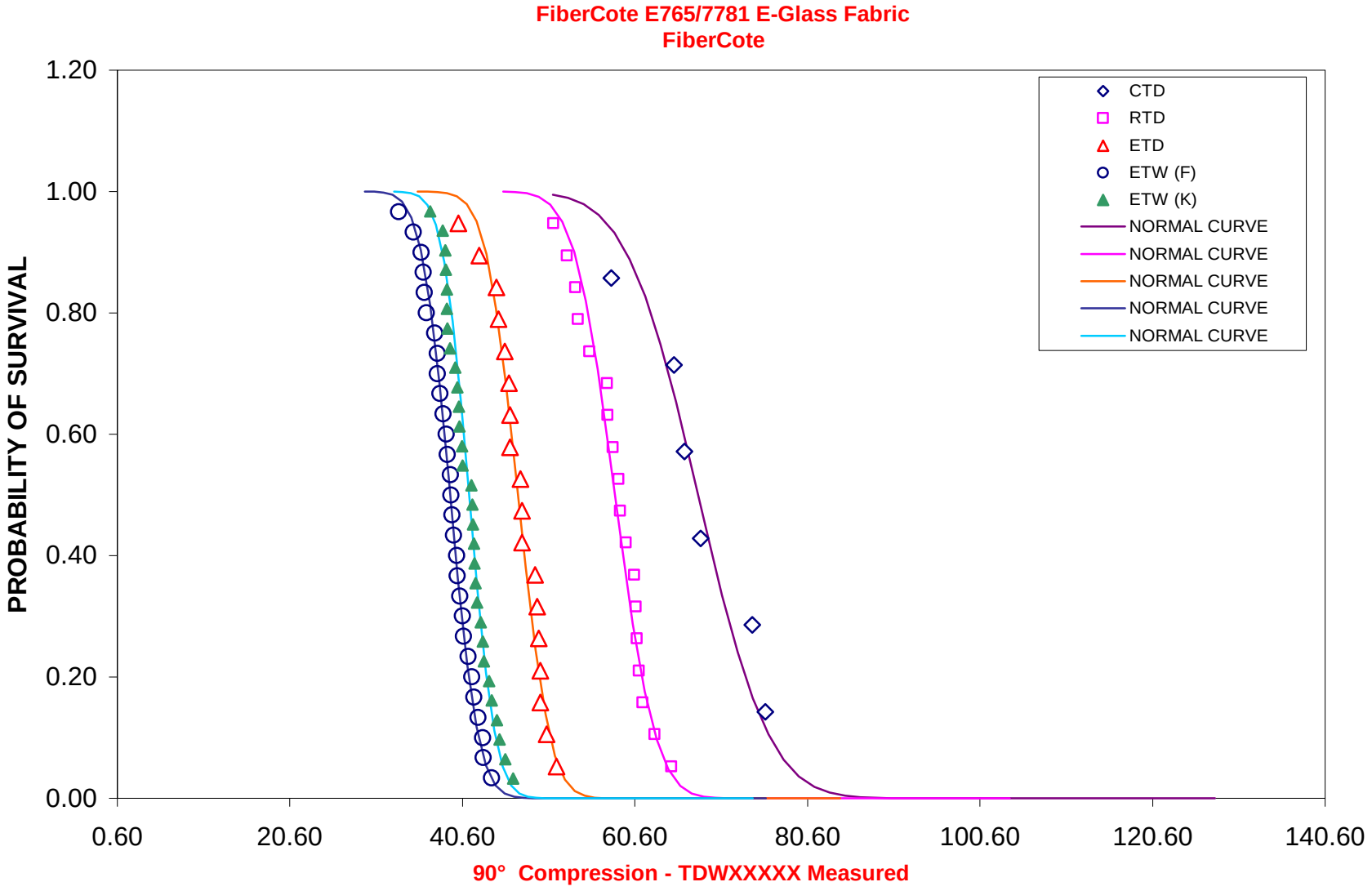


DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

FiberCote E765/7781 E-Glass Fabric
FiberCote

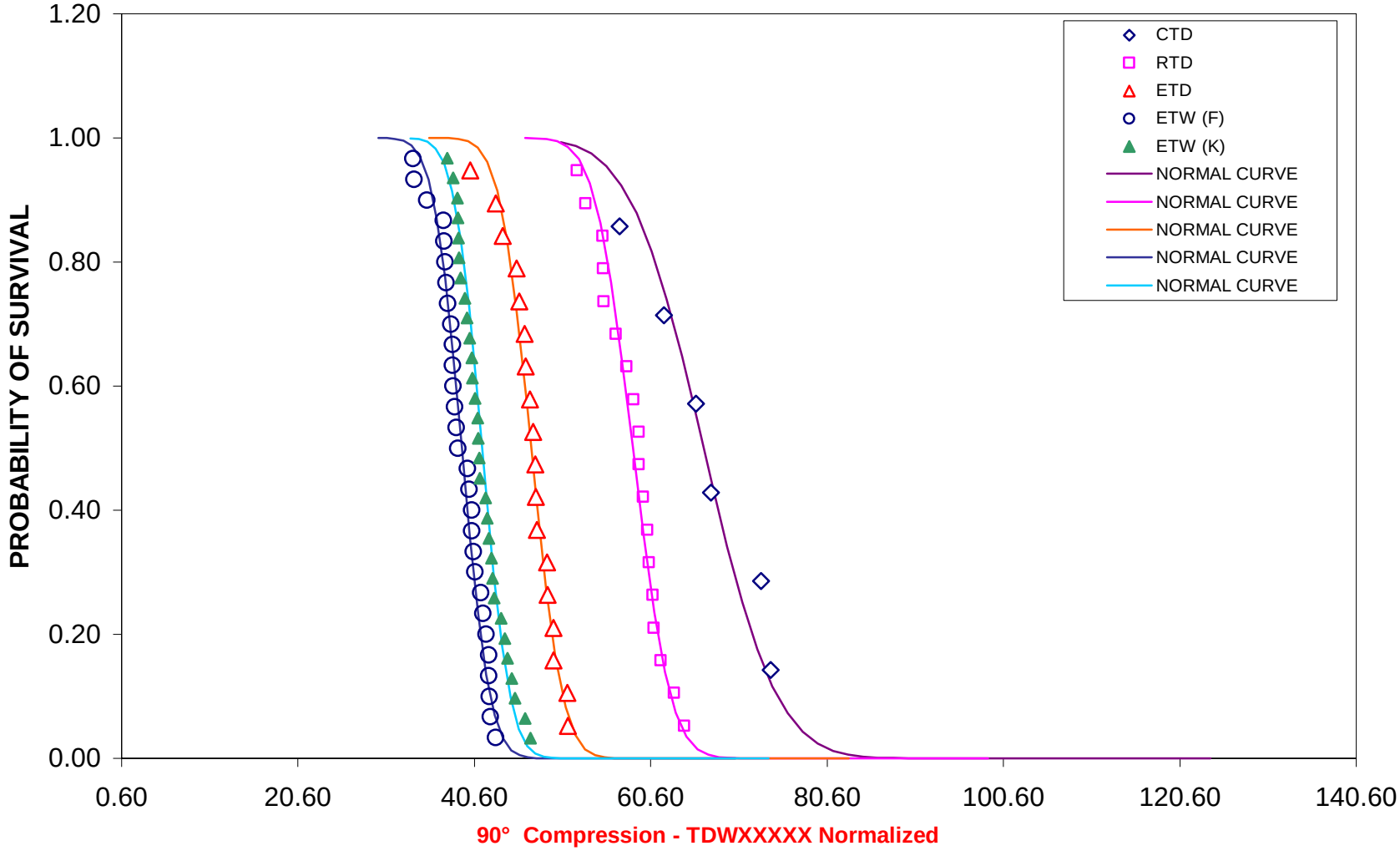


DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

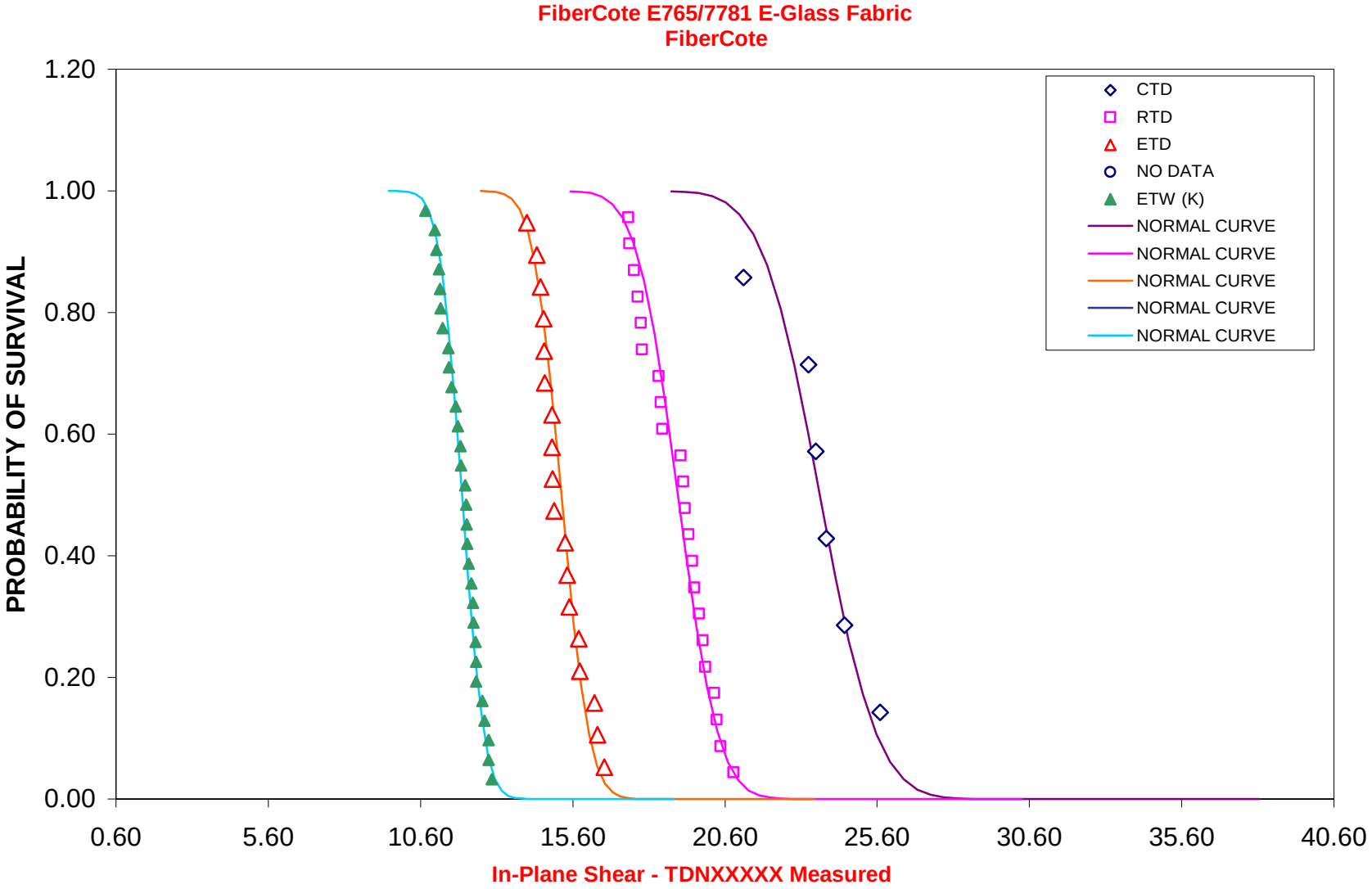


DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS

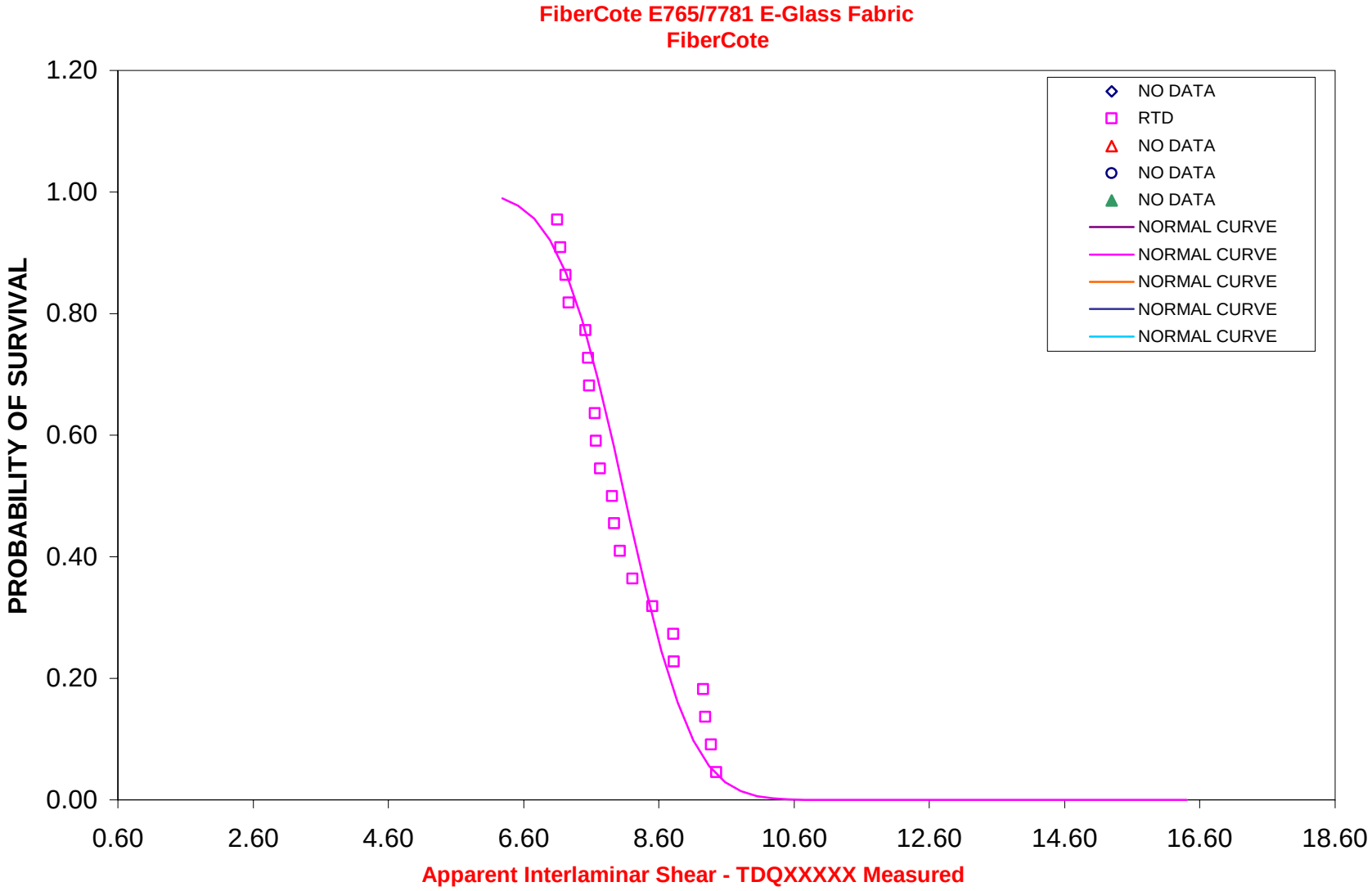
FiberCote E765/7781 E-Glass Fabric
FiberCote



DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS



DISTRIBUTION OF GROUPED DATA FOR DIFFERENT TEST CONDITIONS



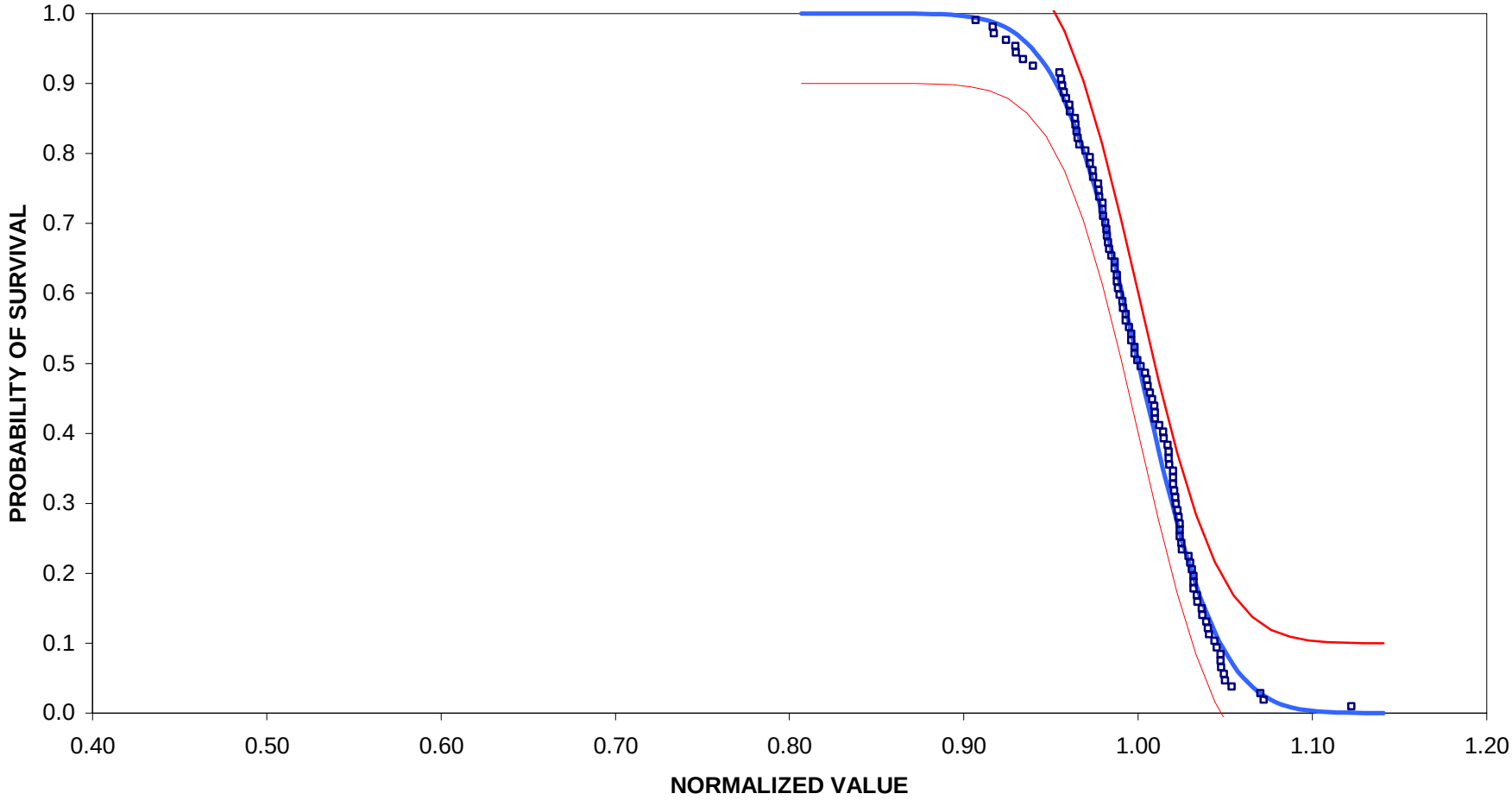
3.3.2 Plot of Pooled Data

DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

0° Tension - TDJXXXXX Measured

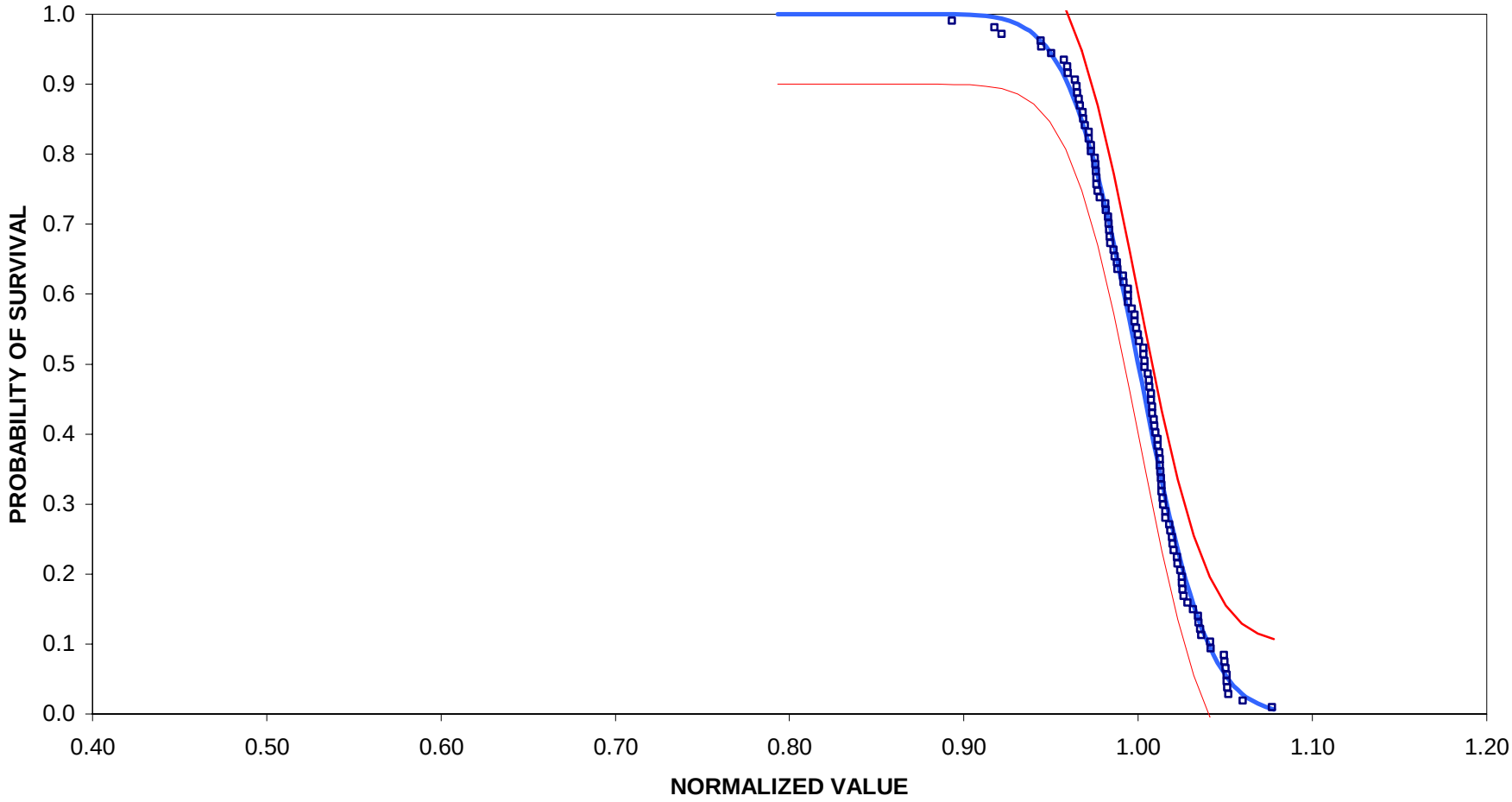


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

0° Tension - TDJXXXXX Normalized

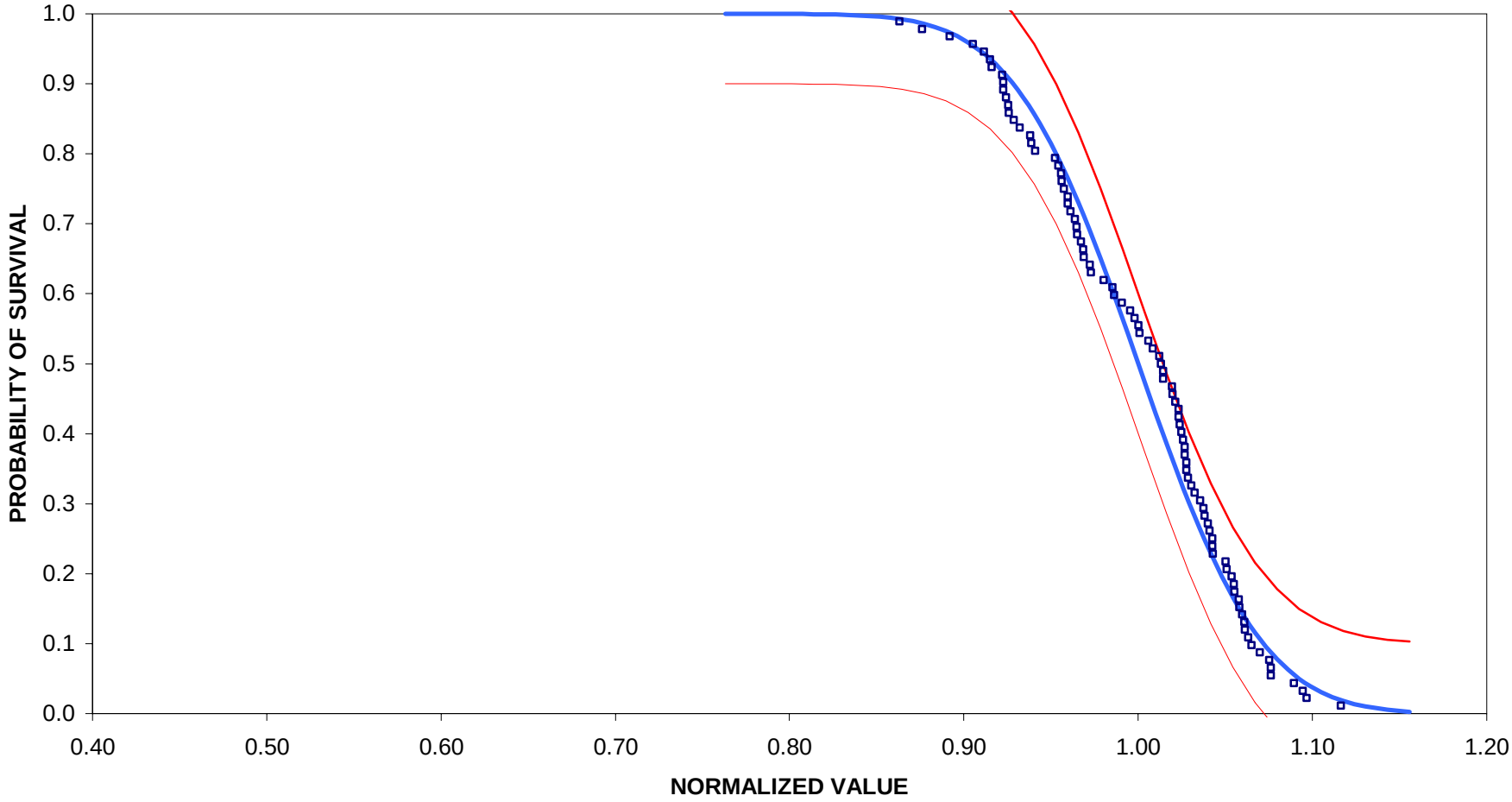


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

90° Tension - TDUXXXXX Measured

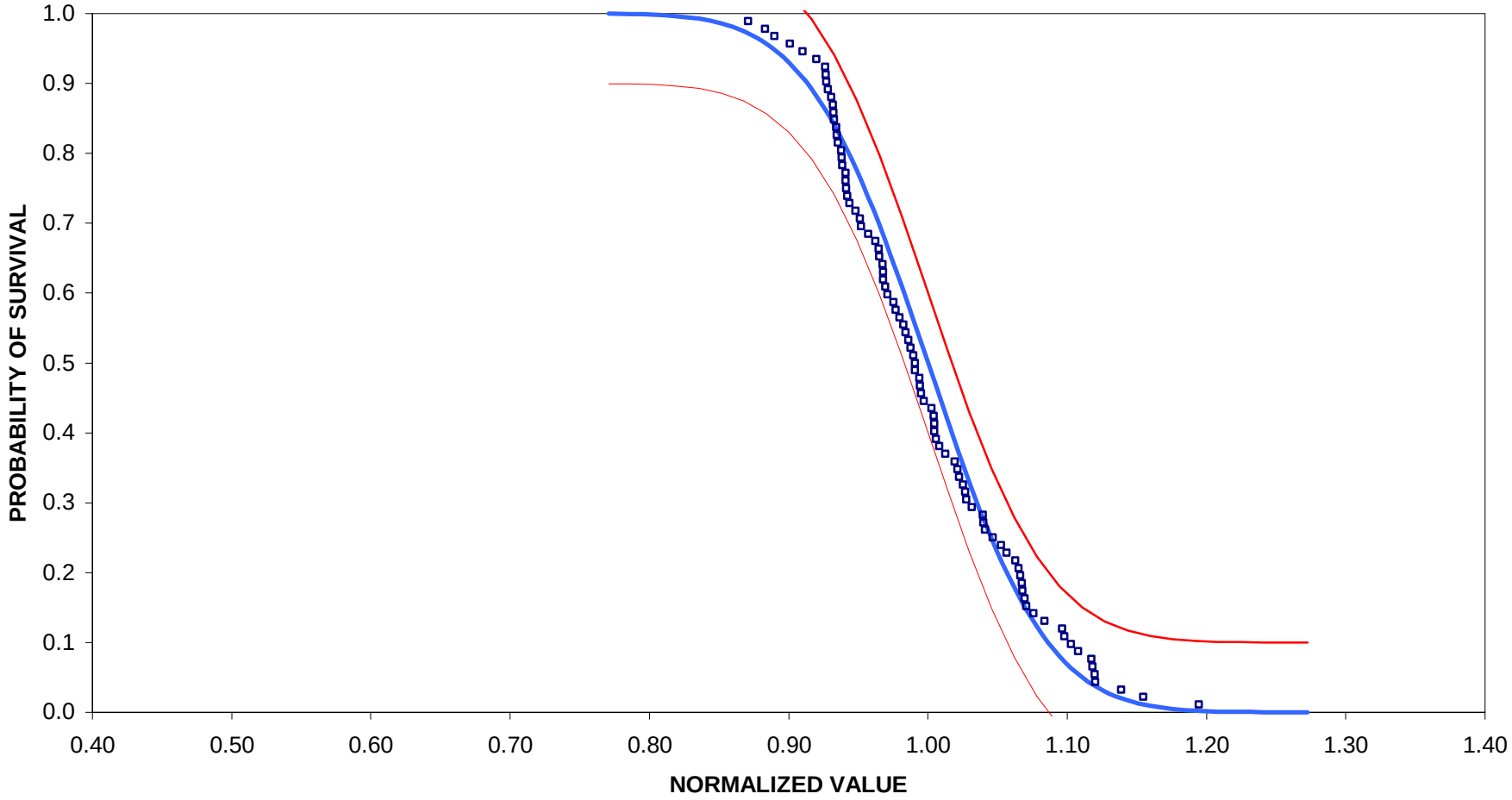


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

90° Tension - TDUXXXXX Normalized

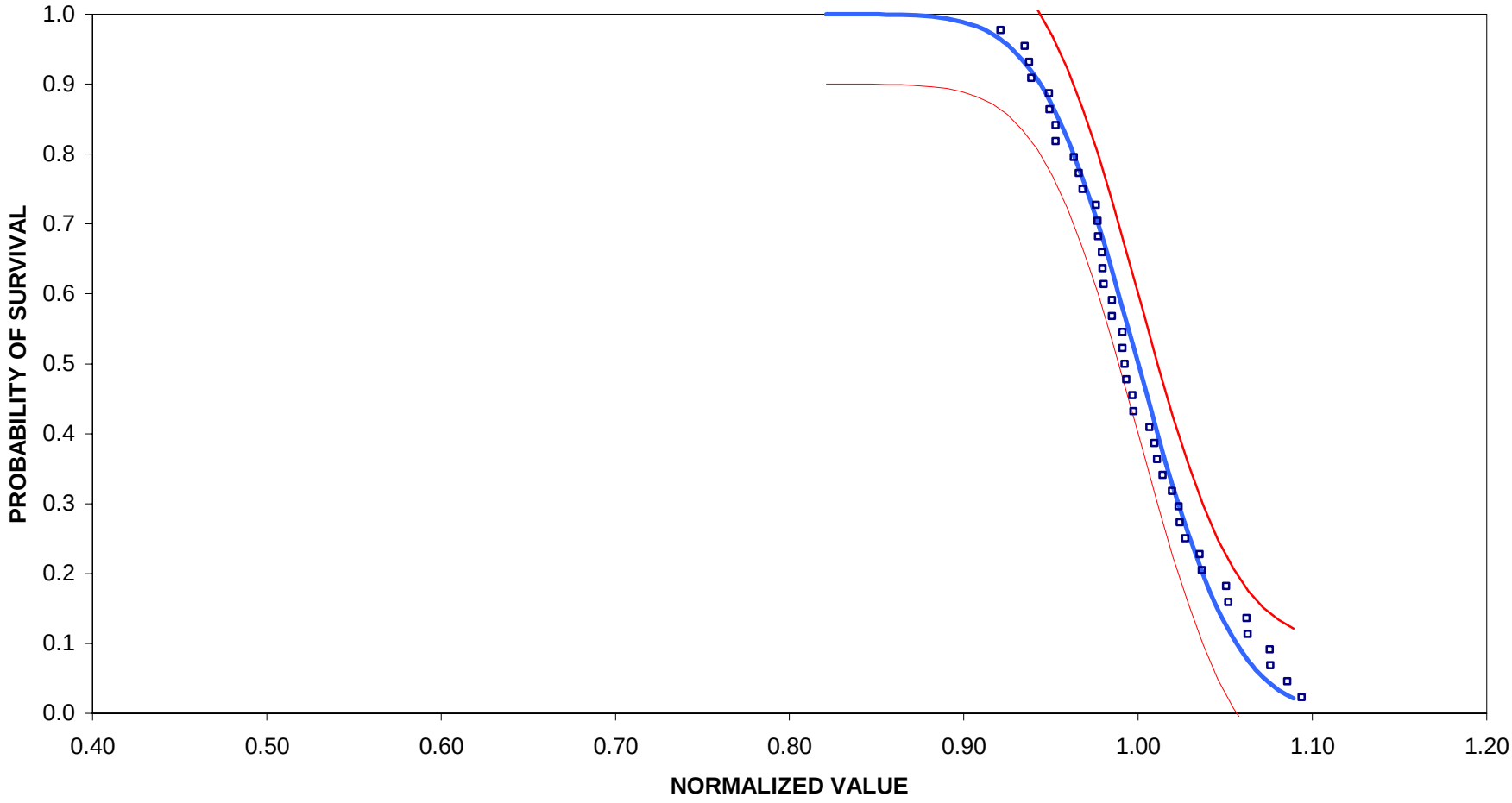


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

0° Compression - TDKXXXXX Measured

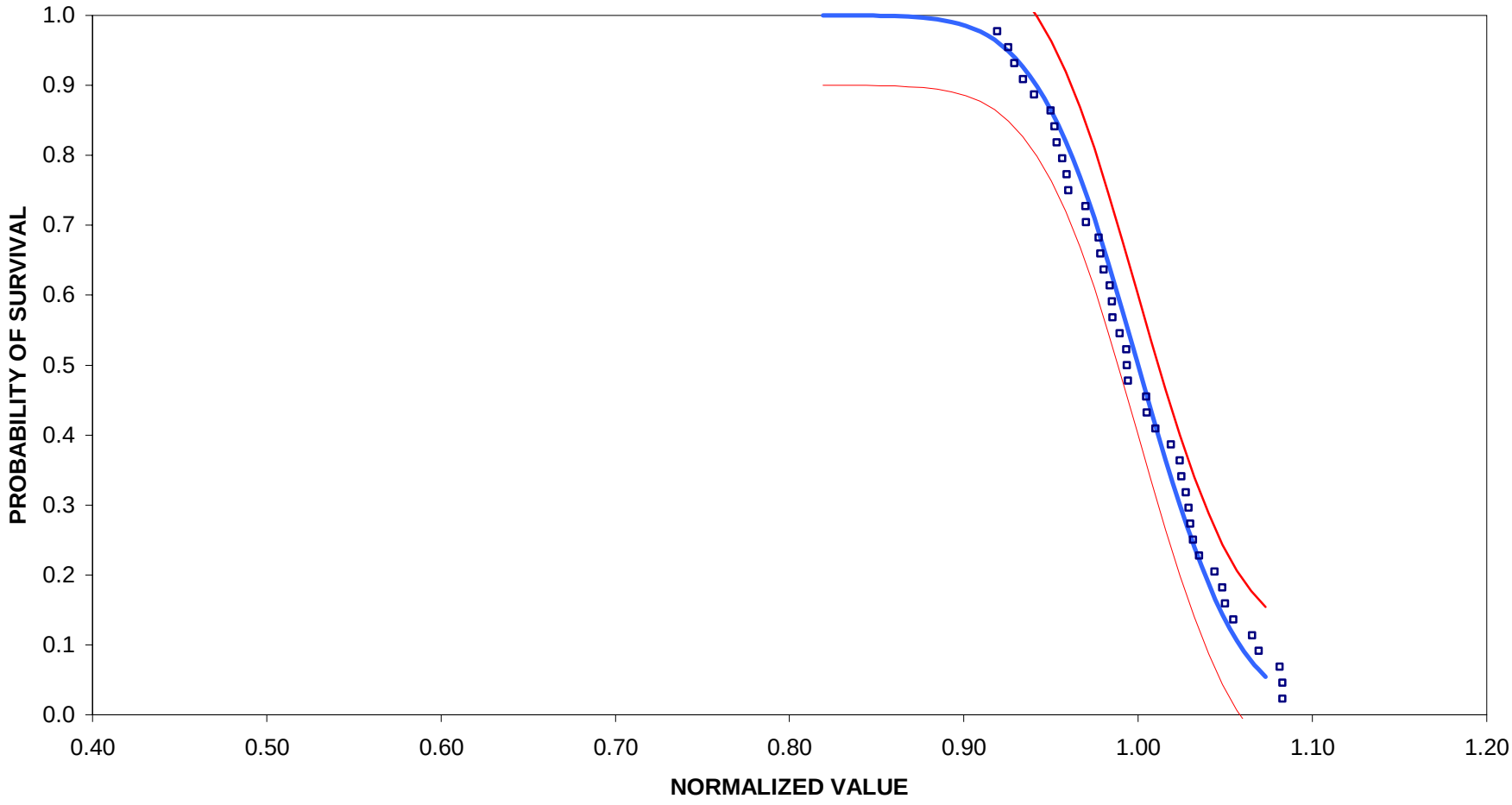


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

0° Compression - TDKXXXXX Normalized

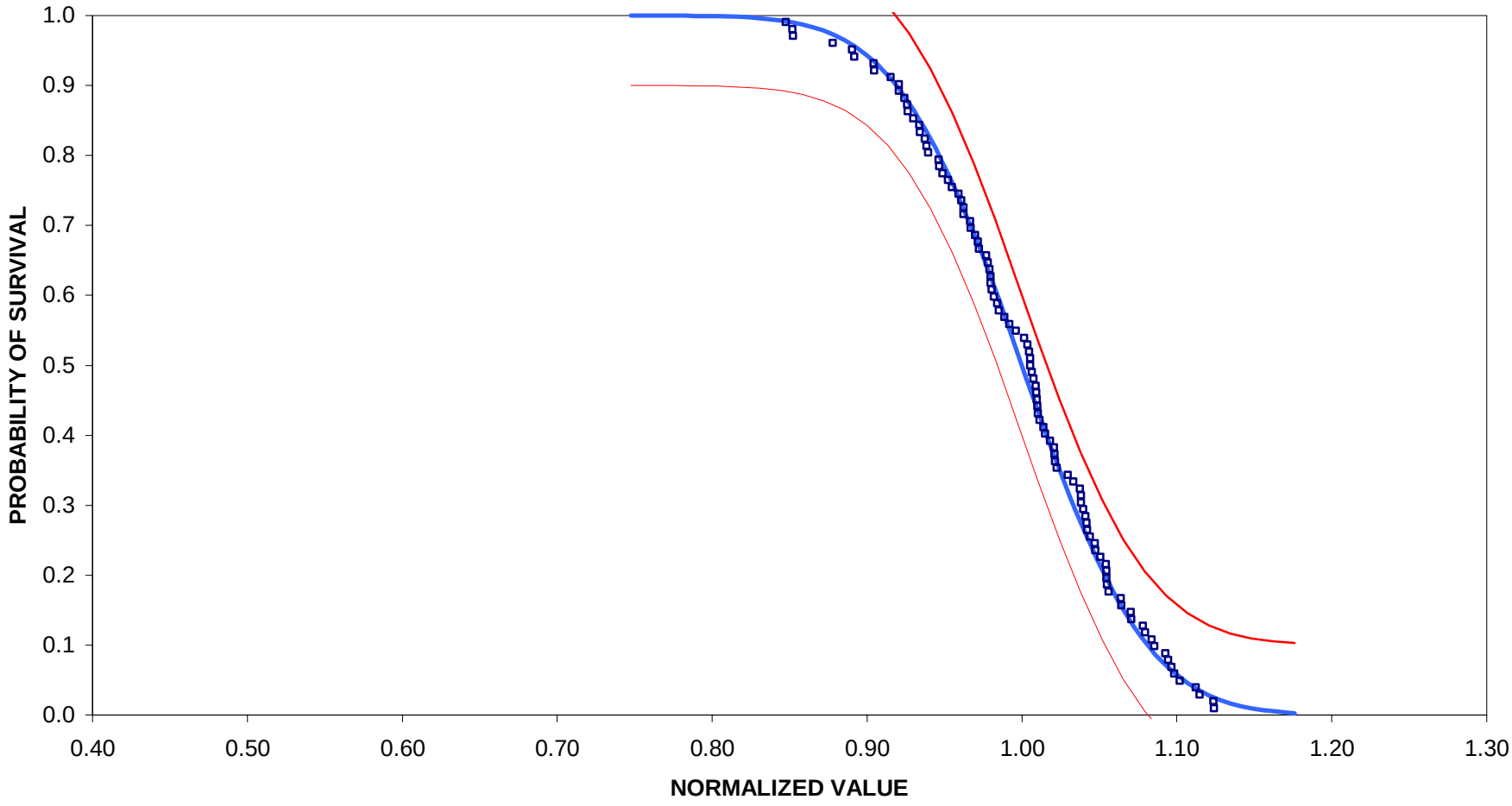


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

90° Compression - TDWXXXXX Measured

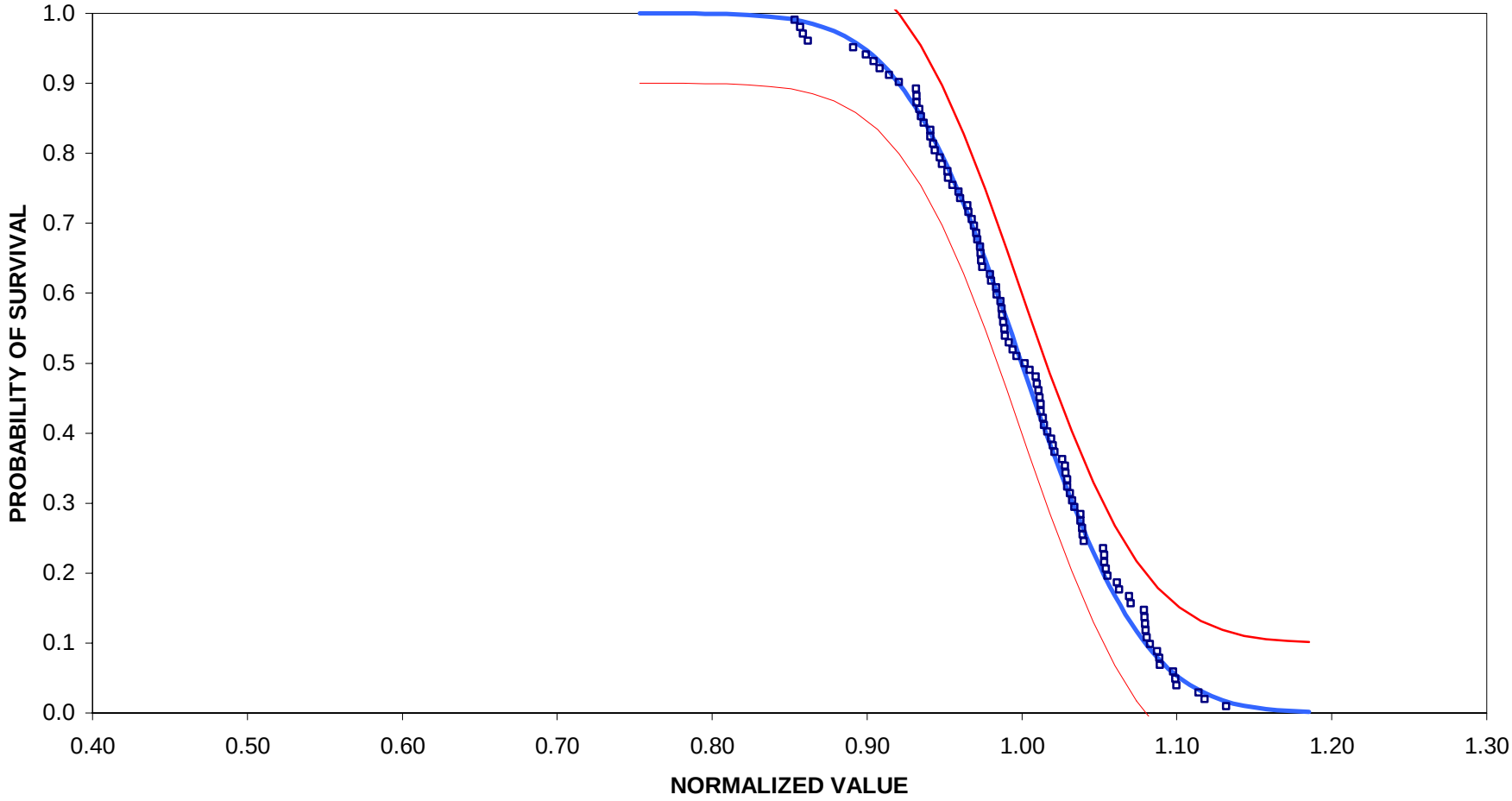


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

90° Compression - TDWXXXXX Normalized

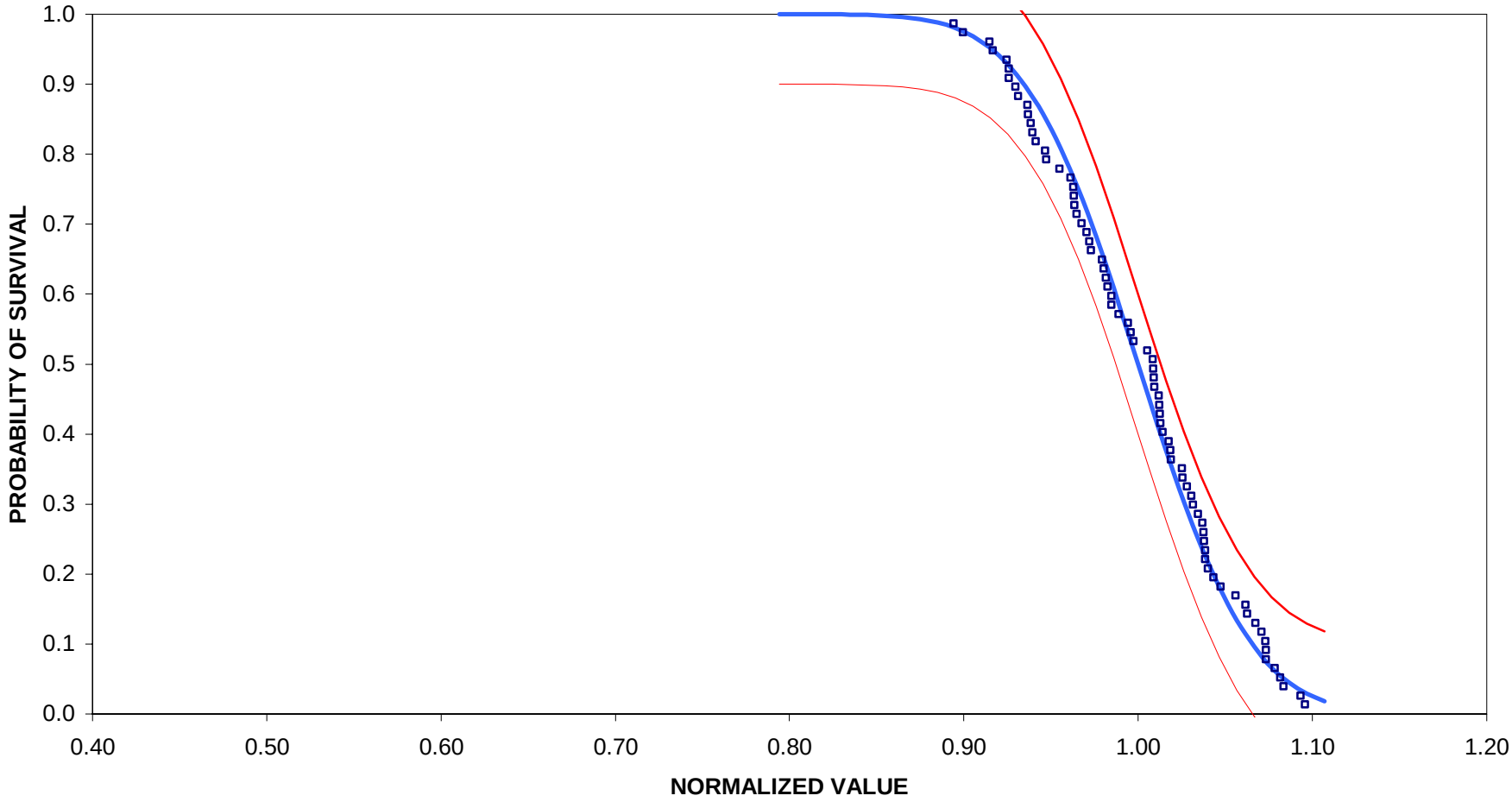


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

FiberCote

In-Plane Shear - TDNXXXXX Measured

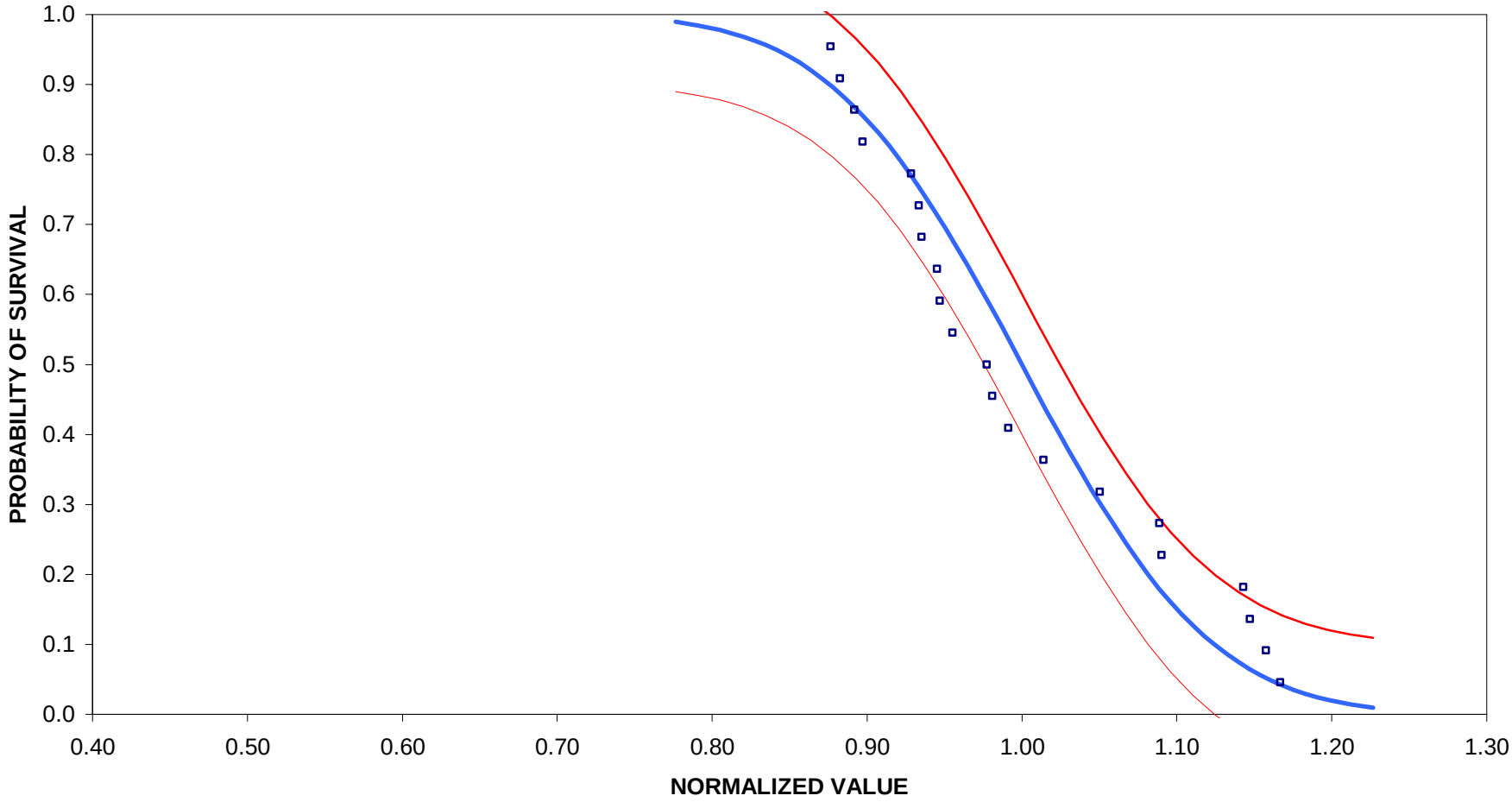


DISTRIBUTION OF POOLED DATA

FiberCote E765/7781 E-Glass Fabric

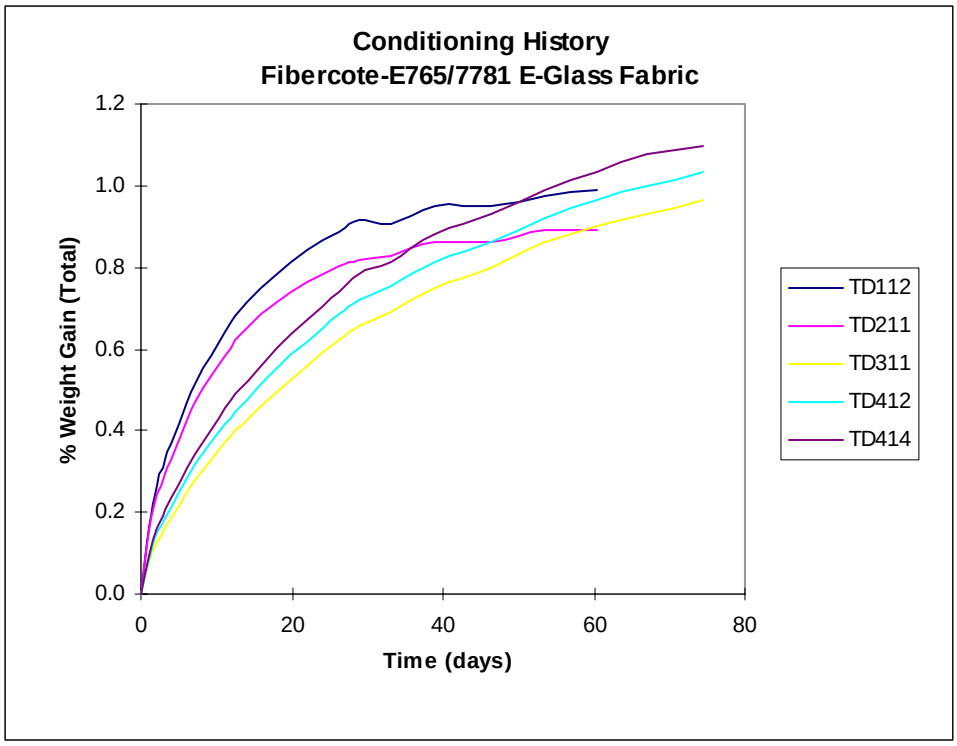
FiberCote

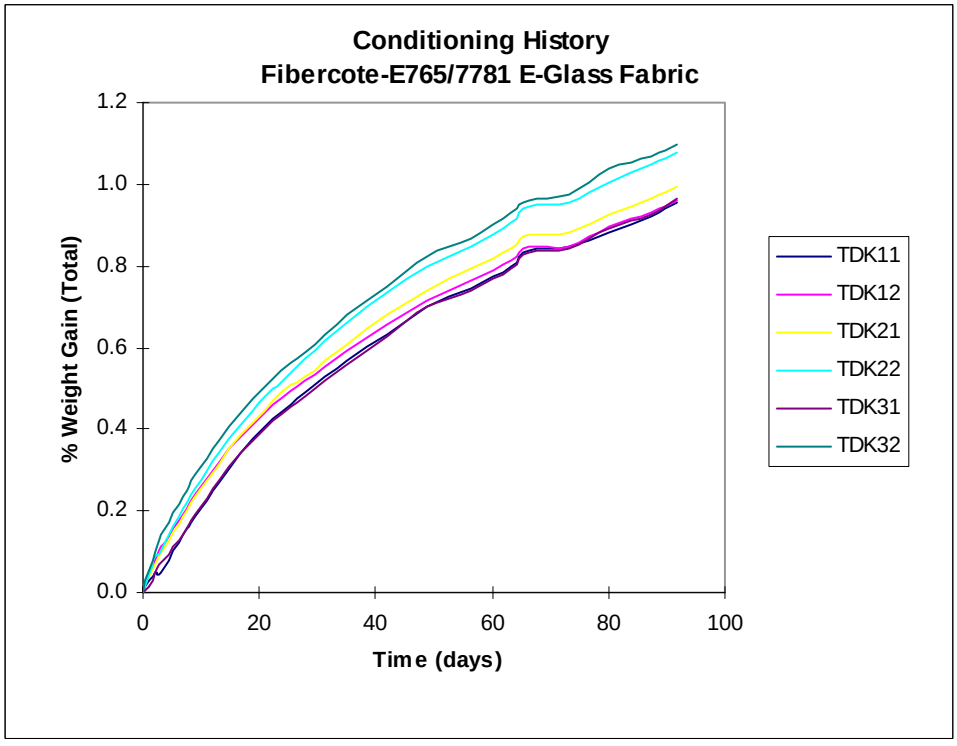
Apparent Interlaminar Shear - TDQXXXXX Measured

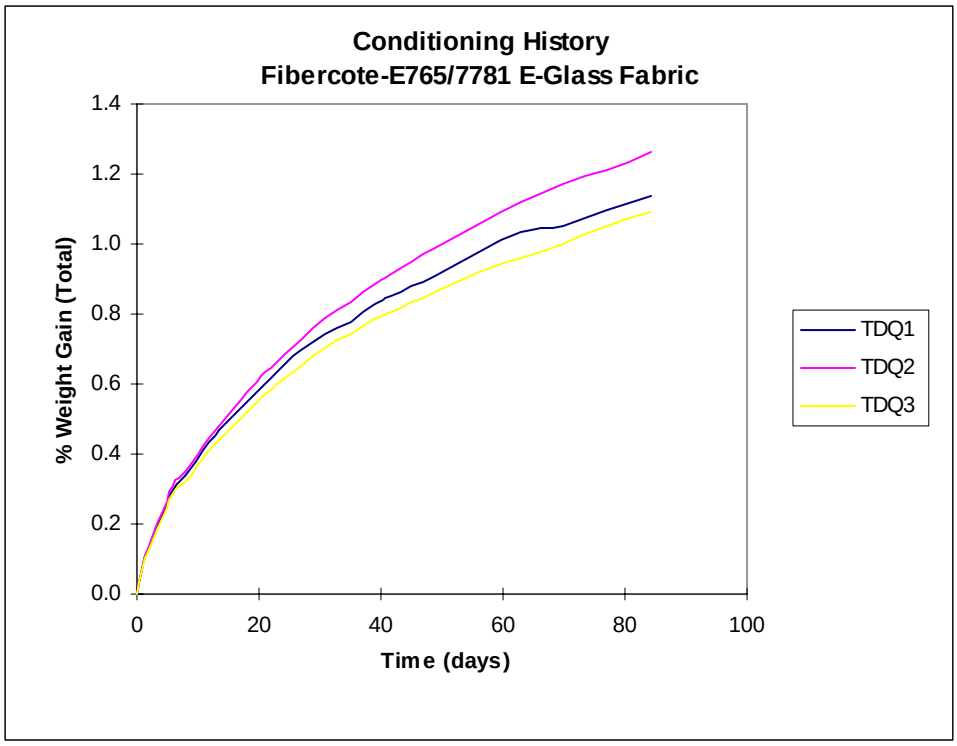


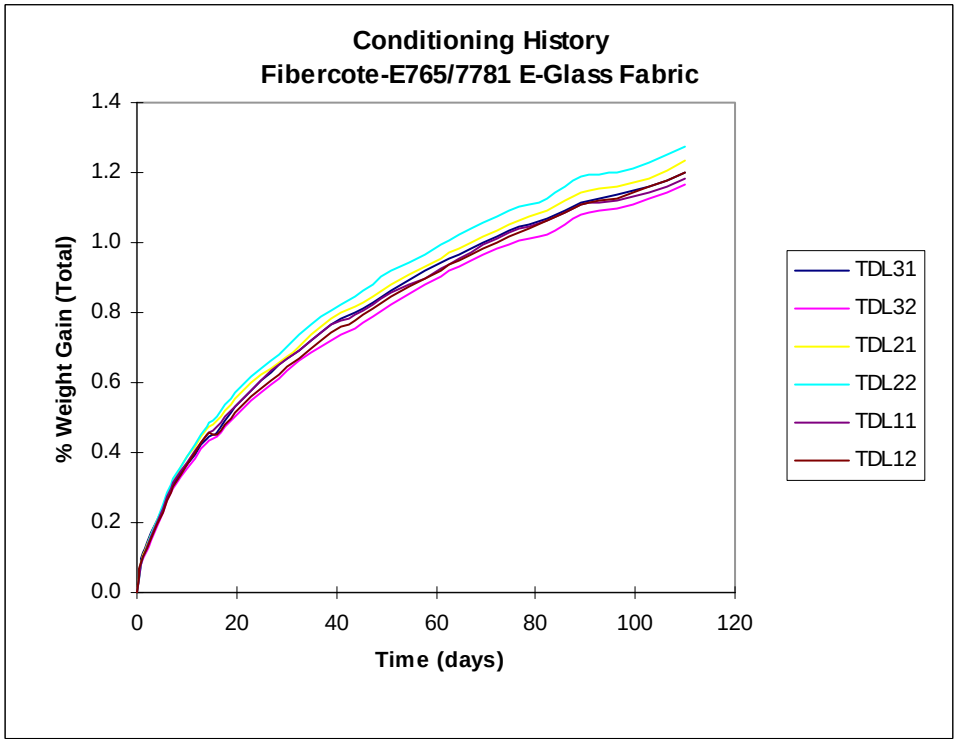
3.4 Moisture Conditioning History Charts

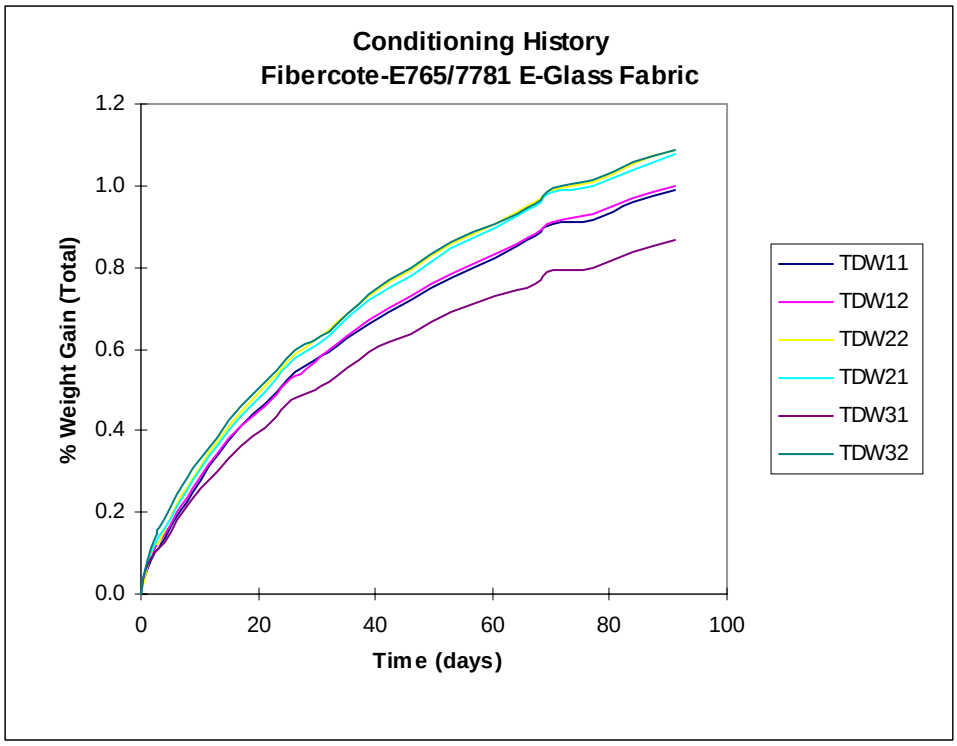
3.4.1 Moisture Equilibrium at 85% RH, 145°F

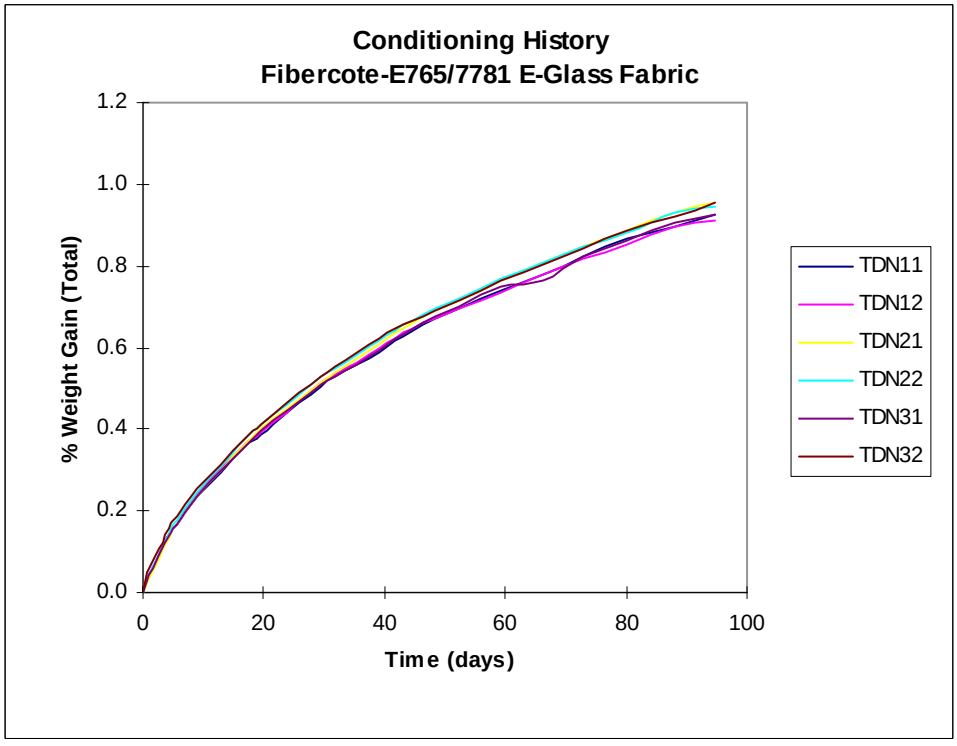

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
Time (days)
TD112
TD211
TD311
TD412
TD414

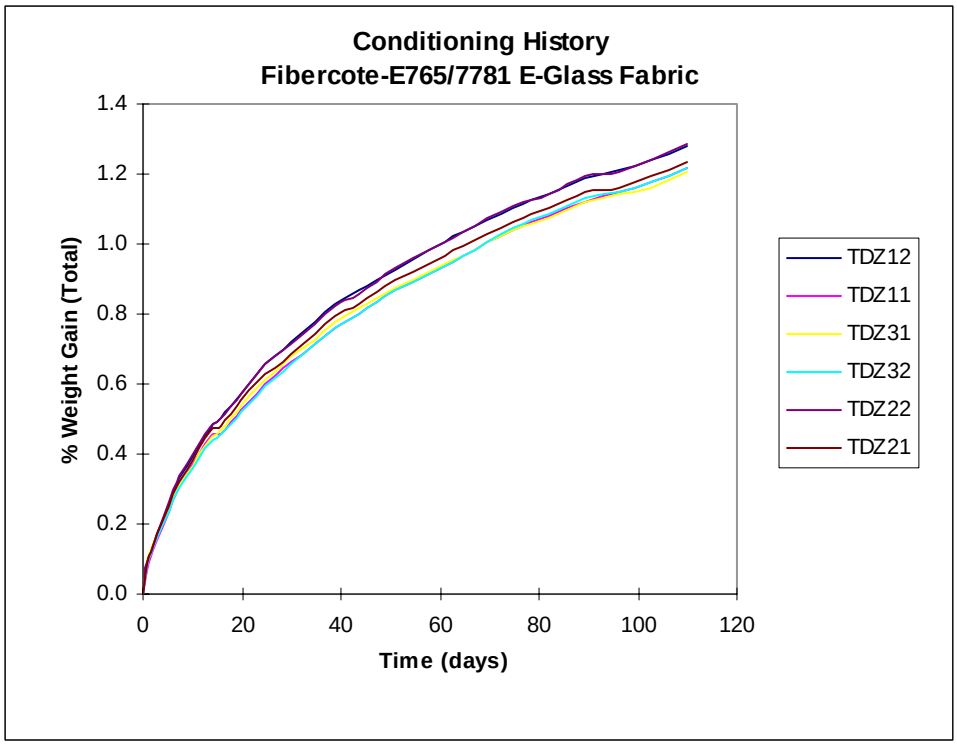

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Time (days)
TDK11
TDK12
TDK21
TDK22
TDK31
TDK32

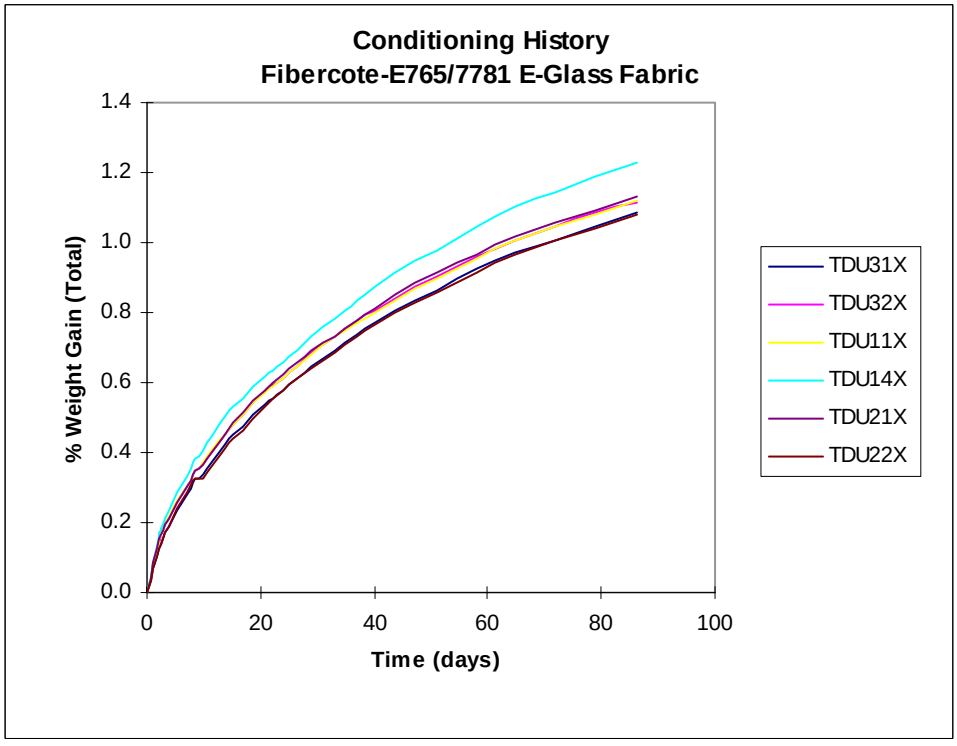

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Time (days)
TDQ1
TDQ2
TDQ3

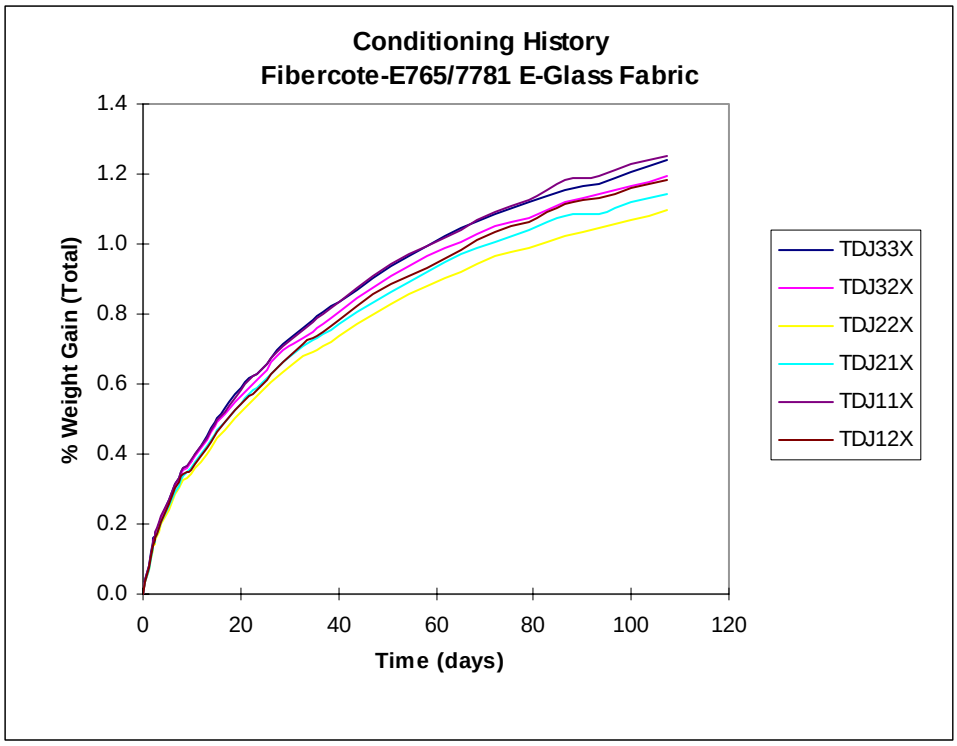

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
120
Time (days)
TDL31
TDL32
TDL21
TDL22
TDL11
TDL12

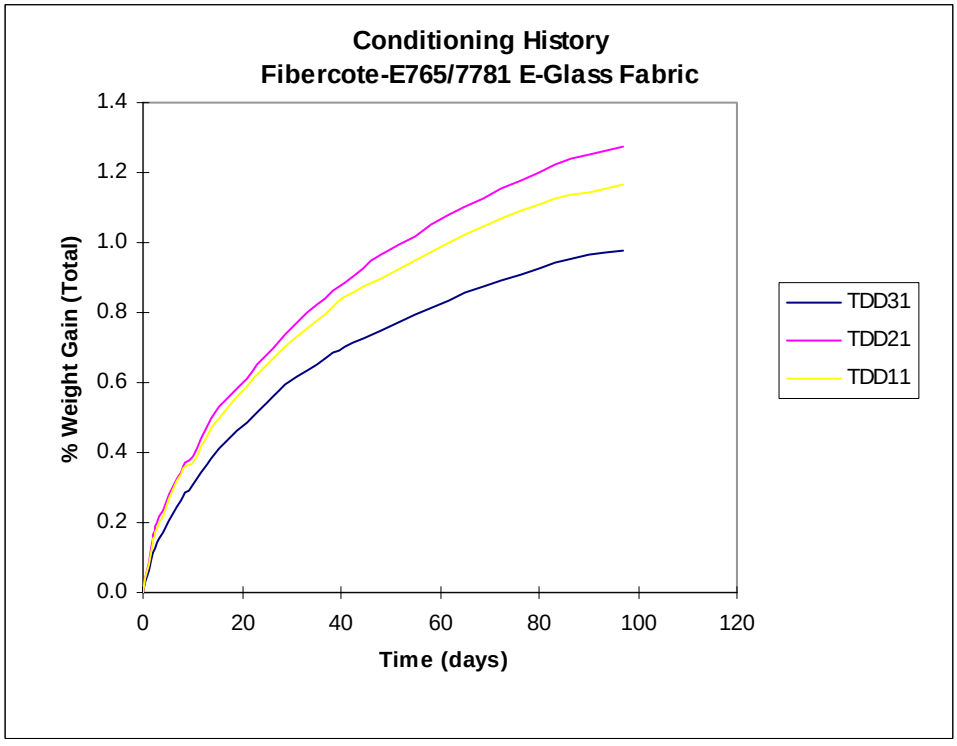

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Time (days)
TDW11
TDW12
TDW22
TDW21
TDW31
TDW32


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Time (days)
TDN11
TDN12
TDN21
TDN22
TDN31
TDN32

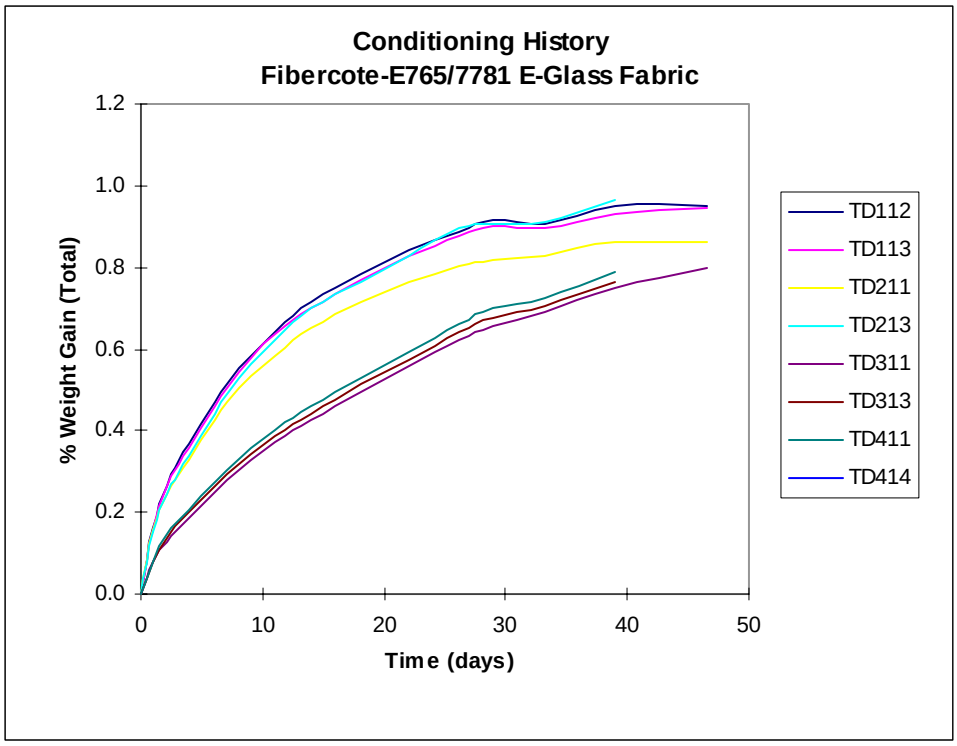

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
120
Time (days)
TDZ12
TDZ11
TDZ31
TDZ32
TDZ22
TDZ21

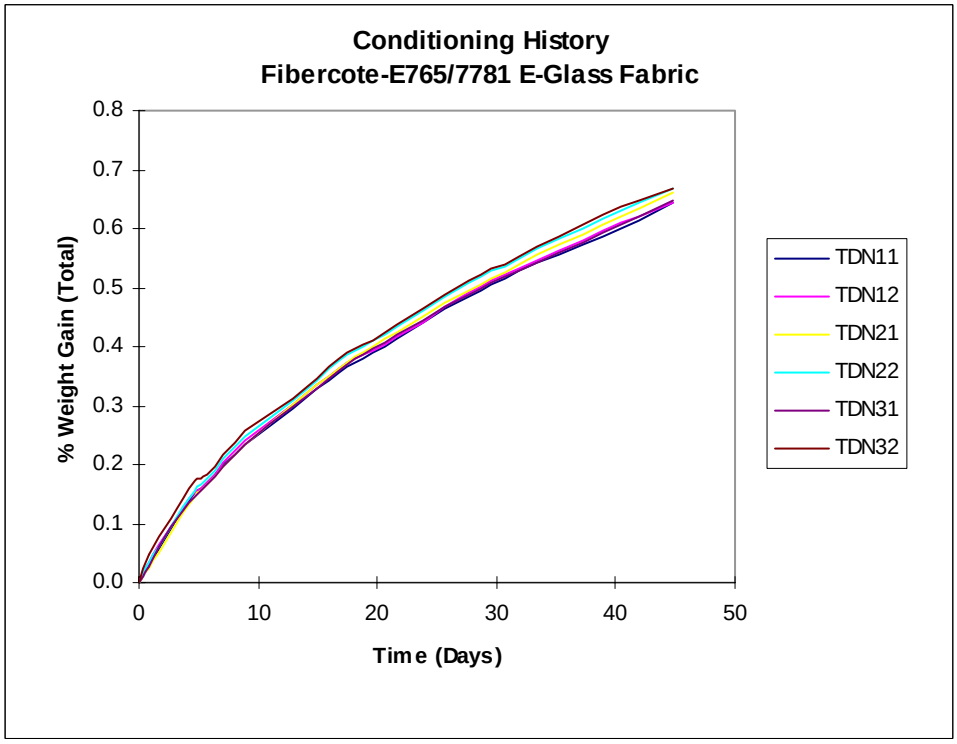

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
Time (days)
TDU31X
TDU32X
TDU11X
TDU14X
TDU21X
TDU22X

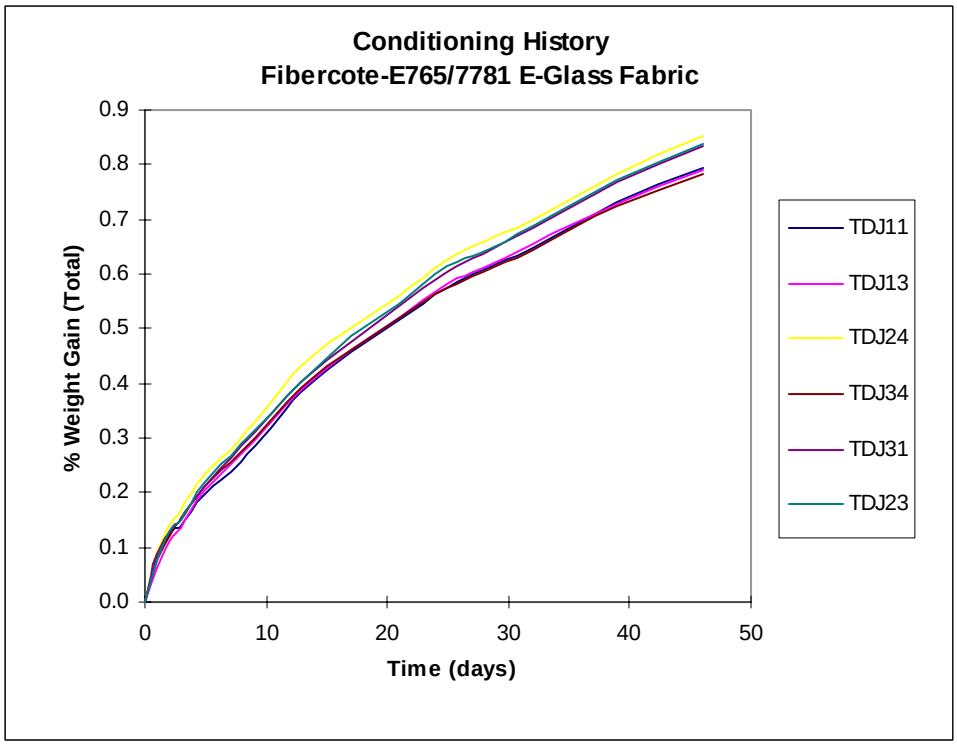

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
120
Time (days)
TDJ33X
TDJ32X
TDJ22X
TDJ21X
TDJ11X
TDJ12X

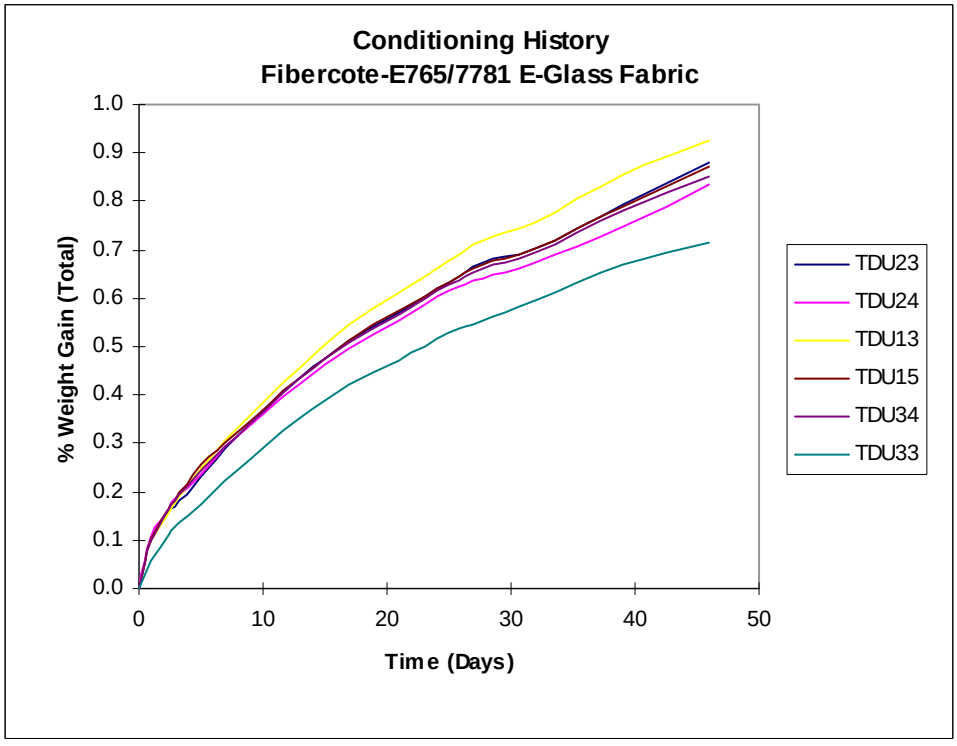

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
20
40
60
80
100
120
Time (days)
TDD31
TDD21
TDD11

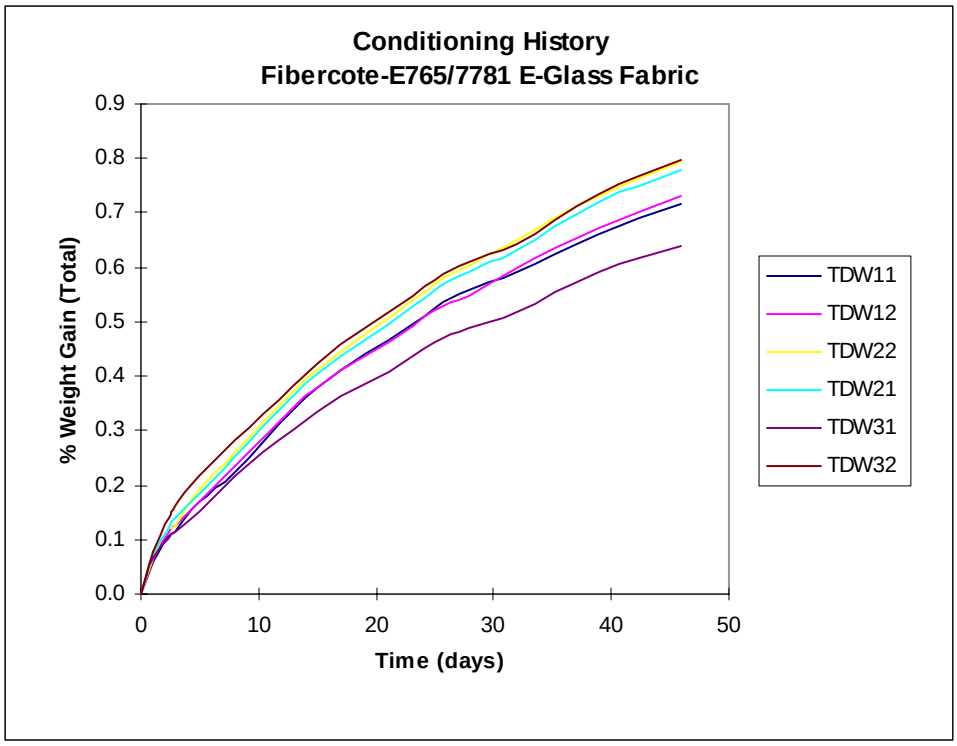
3.4.2 45 Days at 85% RH, 145°F

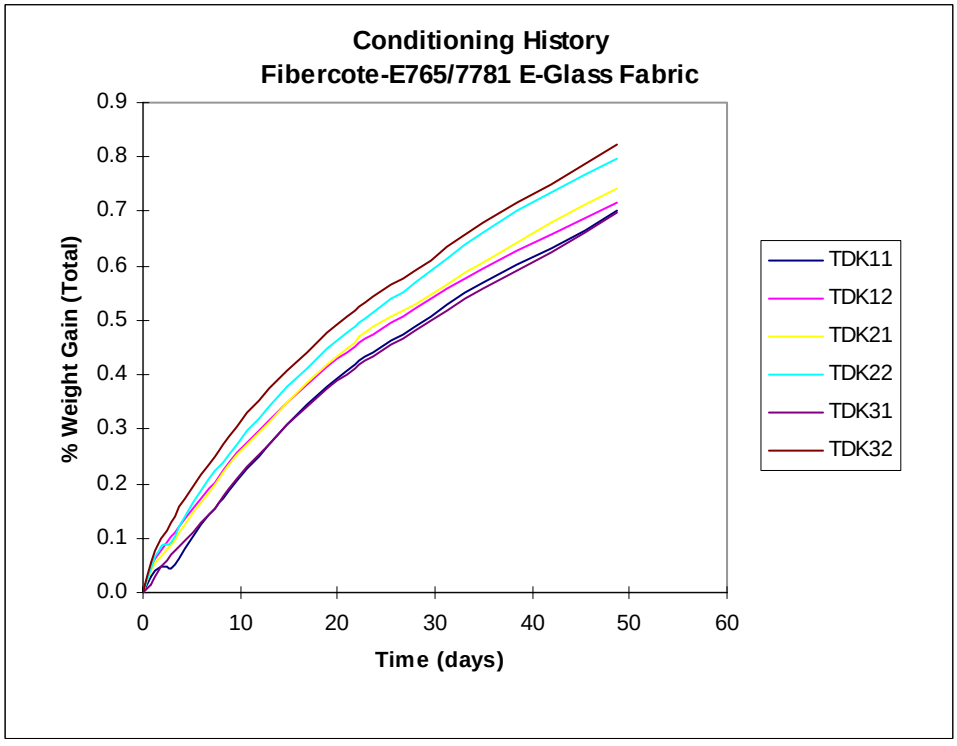

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
Time (days)
TD112
TD113
TD211
TD213
TD311
TD313
TD411
TD414

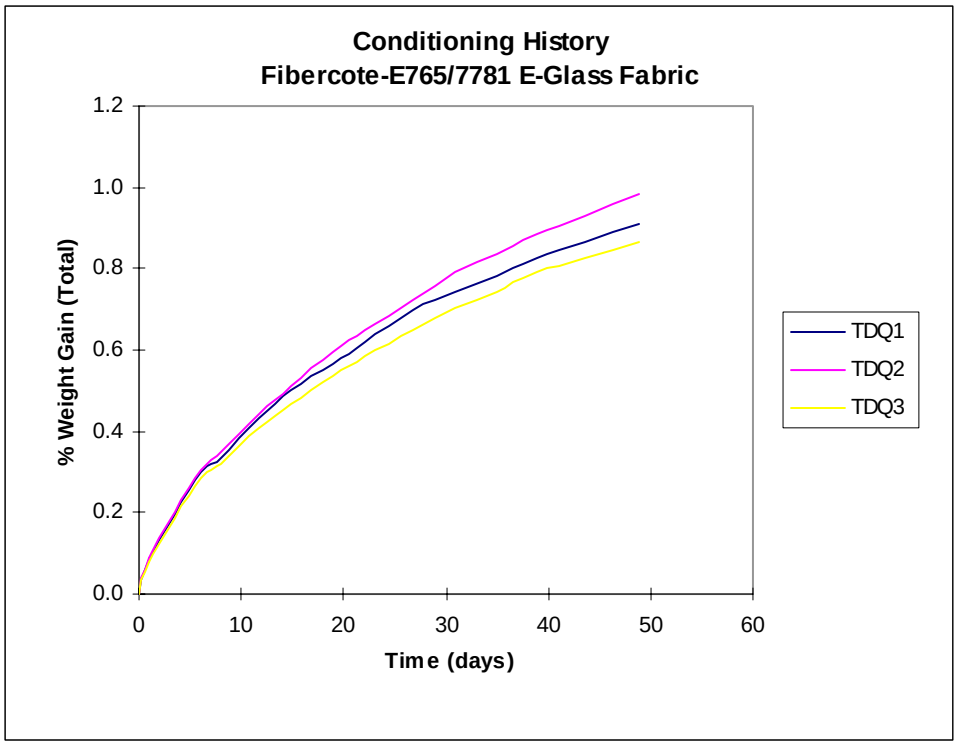

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
40
50
Time (Days)
TDN11
TDN12
TDN21
TDN22
TDN31
TDN32

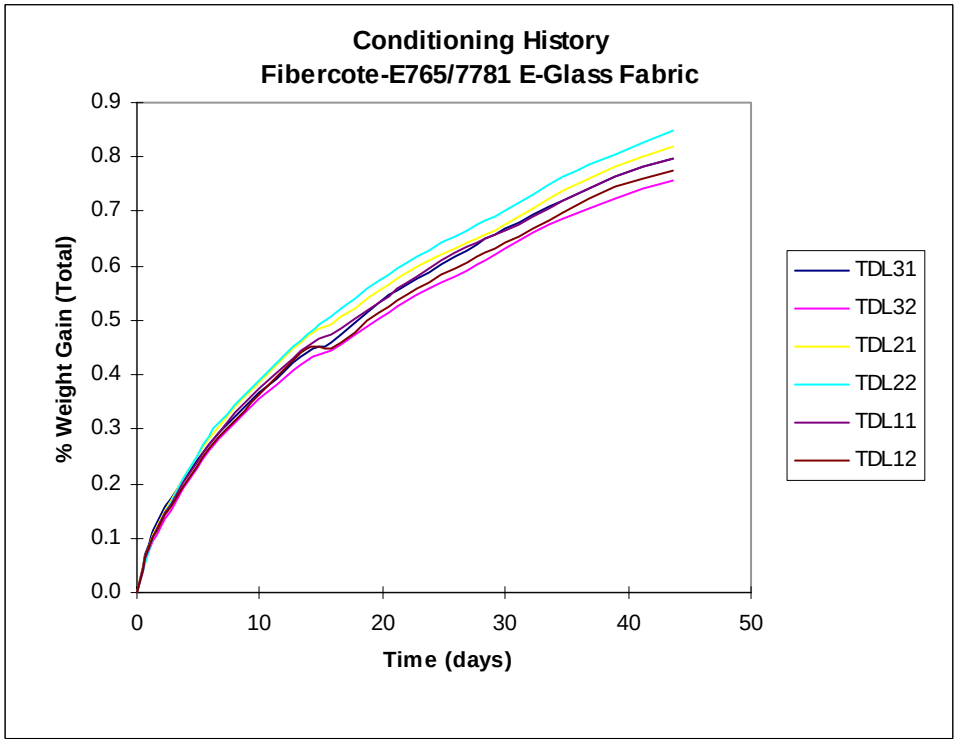

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0
10
20
30
40
50
Time (days)
TDJ11
TDJ13
TDJ24
TDJ34
TDJ31
TDJ23

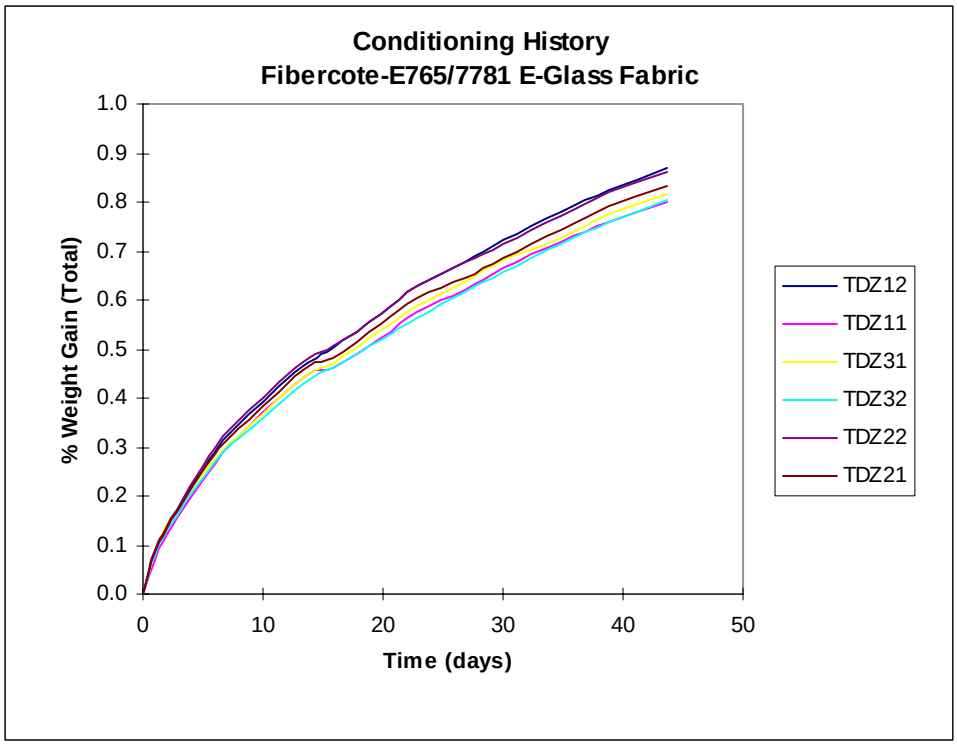

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
0
10
20
30
40
50
Time (Days)
TDU23
TDU24
TDU13
TDU15
TDU34
TDU33

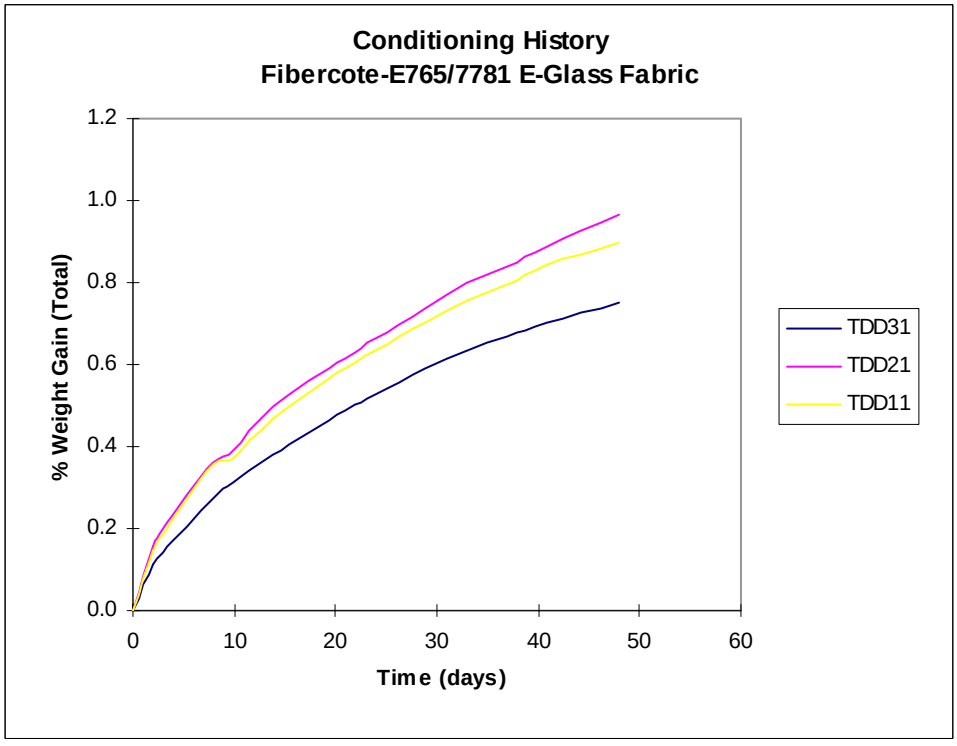

Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0
10
20
30
40
50
Time (days)
TDW11
TDW12
TDW22
TDW21
TDW31
TDW32


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
0
10
20
30
40
50
60
Time (days)
TDK11
TDK12
TDK21
TDK22
TDK31
TDK32


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
60
Time (days)
TDQ1
TDQ2
TDQ3


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
40
50
Time (days)
TDL31
TDL32
TDL21
TDL22
TDL11
TDL12


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
10
20
30
40
50
Time (days)
TDZ12
TDZ11
TDZ31
TDZ32
TDZ22
TDZ21


Conditioning History
Fibercote-E765/7781 E-Glass Fabric
% Weight Gain (Total)
1.2
1.0
0.8
0.6
0.4
0.2
0.0
0
10
20
30
40
50
60
Time (days)
TDD31
TDD21
TDD11

3.5 Physical Test Results

Physical Test Summary
Fibercote-E765/7781 E-Glass Fabric

	Composite Density [g/cc]	Resin Content [wt%]	Fiber Volume [vol%]	Void Content [vol%]
0° Tension (TDJXXXXX)				
No. of Specimens	13	13	13	13
Mean	1.833	34.140	45.859	4.865
Standard Deviation	0.020	0.850	1.923	3.044
90° Tension (TDUXXXXX)				
No. of Specimens	13	13	13	13
Mean	1.800	34.422	47.197	1.690
Standard Deviation	0.048	1.311	1.077	1.538
0° Compression (TDKXXXXX)				
No. of Specimens	11	11	11	11
Mean	1.803	34.299	46.675	2.786
Standard Deviation	0.028	1.091	0.926	1.385
90° Compression (TDWXXXXX)				
No. of Specimens	11	11	11	11
Mean	1.800	34.830	45.753	3.550
Standard Deviation	0.020	1.058	1.491	2.188
In-Plane Shear (TDNXXXXX)				
No. of Specimens	6	6	6	6
Mean	1.846	32.652	47.786	4.161
Standard Deviation	0.019	0.930	0.943	1.645
Interlaminar Shear (TDQXXXXX)				
No. of Specimens	3	3	3	3
Mean	1.799	34.816	46.129	2.768
Standard Deviation	0.043	1.302	0.877	1.222
Bearing (TD#XXXXX)				
No. of Specimens	12	12	12	12
Mean	1.776	34.873	45.563	3.966
Standard Deviation	0.069	1.542	2.815	2.639
Overall No. of Specimens	**69**	**69**	**69**	**69**
Overall Mean	**1.806**	**34.356**	**46.352**	**3.417**
Overall Std. Deviation	**0.044**	**1.276**	**1.798**	**2.359**

DMA Results - Onset Storage Modulus

DRY

As Fabricated		
Sample #	Tg [°C]	Tg [°F]
TDD11D4A	165.77	330.38
TDD11D1A	170.63	339.14
TDD11D2A	171.09	339.97
TDD21D1A	163.87	326.96
TDD21D2A	173.97	345.15
TDD21D3A	171.13	340.03
TDD31D3A	167.04	332.67
TDD31D4A	162.04	323.66
TDD31D5A	170.32	338.57
Average [°F]		**335.17**
Standard Dev. [°F]		**7.09**
Coeff. Of Var. [%]		**2.12**

WET

Moisture Equilibrium at 85% RH		
Sample #	Tg [°C]	Tg [°F]
TDD11D6F	123.93	255.08
TDD11D7F	119.69	247.44
TDD11D8F	121.23	250.21
TDD21D6F	126.24	259.22
TDD21D7F	133.70	272.66
TDD21D8F	127.60	261.68
TDD31D6F	125.53	257.95
TDD31D7F	124.11	255.39
TDD31D8F	129.04	264.28
Average [°F]		**258.21**
Standard Dev. [°F]		**7.56**
Coeff. Of Var. [%]		**2.93**

WET

Conditioned 45 days		
Sample #	Tg [°C]	Tg [°F]
TDD1121K	119.36	246.86
TDD1122K	128.27	262.89
TDD11DBK	126.37	259.47
TDD2121K	128.47	263.25
TDD2122K	126.98	260.56
TDD2123K	128.82	263.87
TDD3122K	128.84	263.91
TDD3123K	126.89	260.40
TDD31DCK	125.34	257.60
Average [°F]		**259.87**
Standard Dev. [°F]		**5.34**
Coeff. Of Var. [%]		**2.06**

DMA Results - Peak Tan Delta

DRY

As Fabricated		
Sample #	Tg [°C]	Tg [°F]
TDD11D4A	195.22	383.39
TDD11D1A	194.23	381.62
TDD11D2A	193.03	379.45
TDD21D1A	189.24	372.64
TDD21D2A	195.80	384.45
TDD21D3A	195.15	383.27
TDD31D3A	192.71	378.87
TDD31D4A	194.98	382.96
TDD31D5A	191.22	376.20
Average [°F]		**380.32**
Standard Dev. [°F]		**3.91**
Coeff. Of Var. [%]		**1.03**

WET

Moisture Equilibrium at 85% RH		
Sample #	Tg [°C]	Tg [°F]
TDD11D6F	143.26	289.87
TDD11D7F	143.99	291.19
TDD11D8F	145.32	293.57
TDD21D6F	149.15	300.47
TDD21D7F	151.12	304.01
TDD21D8F	147.13	296.83
TDD31D6F	144.83	292.70
TDD31D7F	147.67	297.81
TDD31D8F	147.43	297.37
Average [°F]		**295.98**
Standard Dev. [°F]		**4.58**
Coeff. Of Var. [%]		**1.55**

WET

Conditioned 45 days		
Sample #	Tg [°C]	Tg [°F]
TDD1121K	151.60	304.89
TDD1122K	152.59	306.66
TDD11DBK	149.01	300.21
TDD2121K	161.51	322.72
TDD2122K	152.71	306.87
TDD2123K	160.58	321.04
TDD3122K	155.96	312.72
TDD3123K	157.94	316.29
TDD31DCK	158.62	317.51
Average [°F]		**312.10**
Standard Dev. [°F]		**7.83**
Coeff. Of Var. [%]		**2.51**

DMA Results - Peak Loss Modulus

DRY

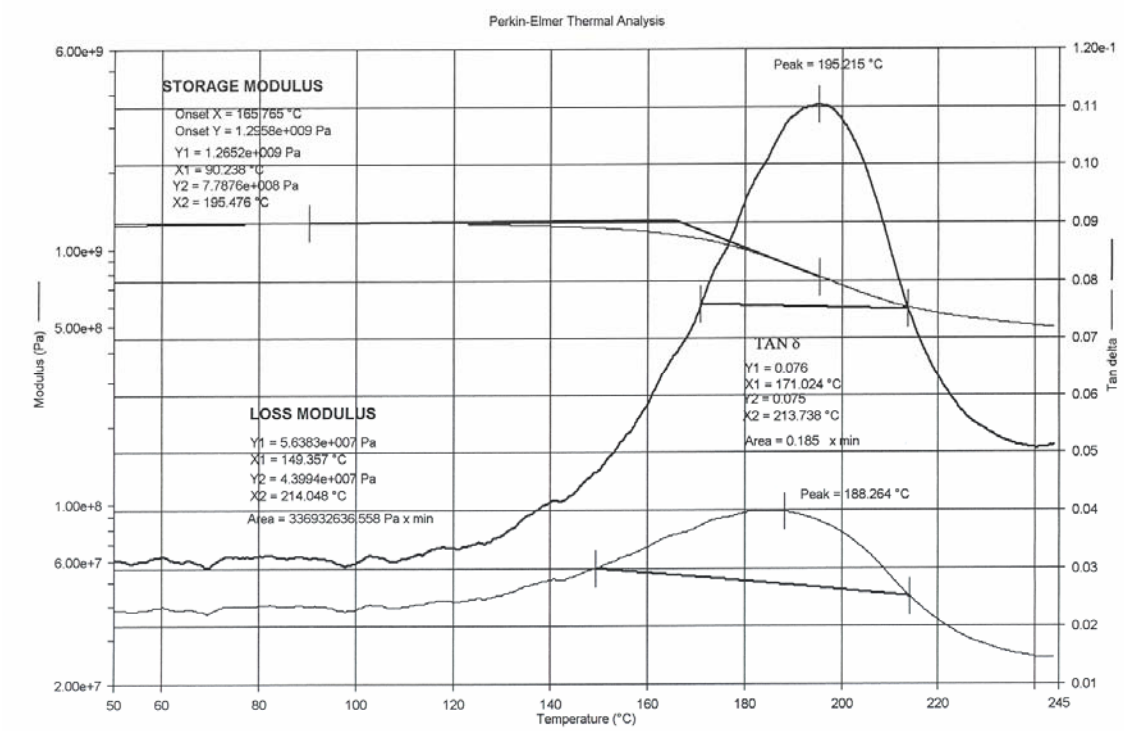
As Fabricated		
Sample #	Tg [°C]	Tg [°F]
TDD11D4A	188.26	370.88
TDD11D1A	176.15	349.07
TDD11D2A	177.14	350.85
TDD21D1A	173.76	344.77
TDD21D2A	177.78	352.00
TDD21D3A	175.96	348.73
TDD31D3A	169.61	337.29
TDD31D4A	171.23	340.22
TDD31D5A	175.96	348.73
Average [°F]		**349.17**
Standard Dev. [°F]		**9.51**
Coeff. Of Var. [%]		**2.72**

WET

Moisture Equilibrium at 85% RH		
Sample #	Tg [°C]	Tg [°F]
TDD11D6F	132.63	270.74
TDD11D7F	133.10	271.58
TDD11D8F	133.85	272.94
TDD21D6F	138.47	281.25
TDD21D7F	142.29	288.11
TDD21D8F	131.39	268.50
TDD31D6F	134.50	274.11
TDD31D7F	133.18	271.72
TDD31D8F	134.71	274.47
Average [°F]		**274.82**
Standard Dev. [°F]		**6.11**
Coeff. Of Var. [%]		**2.22**

WET

Conditioned 45 days		
Sample #	Tg [°C]	Tg [°F]
TDD1121K	133.91	273.04
TDD1122K	134.53	274.16
TDD11DBK	136.54	277.77
TDD2121K	137.59	279.67
TDD2122K	138.23	280.81
TDD2123K	132.35	270.23
TDD3122K	138.56	281.41
TDD3123K	136.78	278.21
TDD31DCK	139.09	282.35
Average [°F]		**277.52**
Standard Dev. [°F]		**4.17**
Coeff. Of Var. [%]		**1.50**



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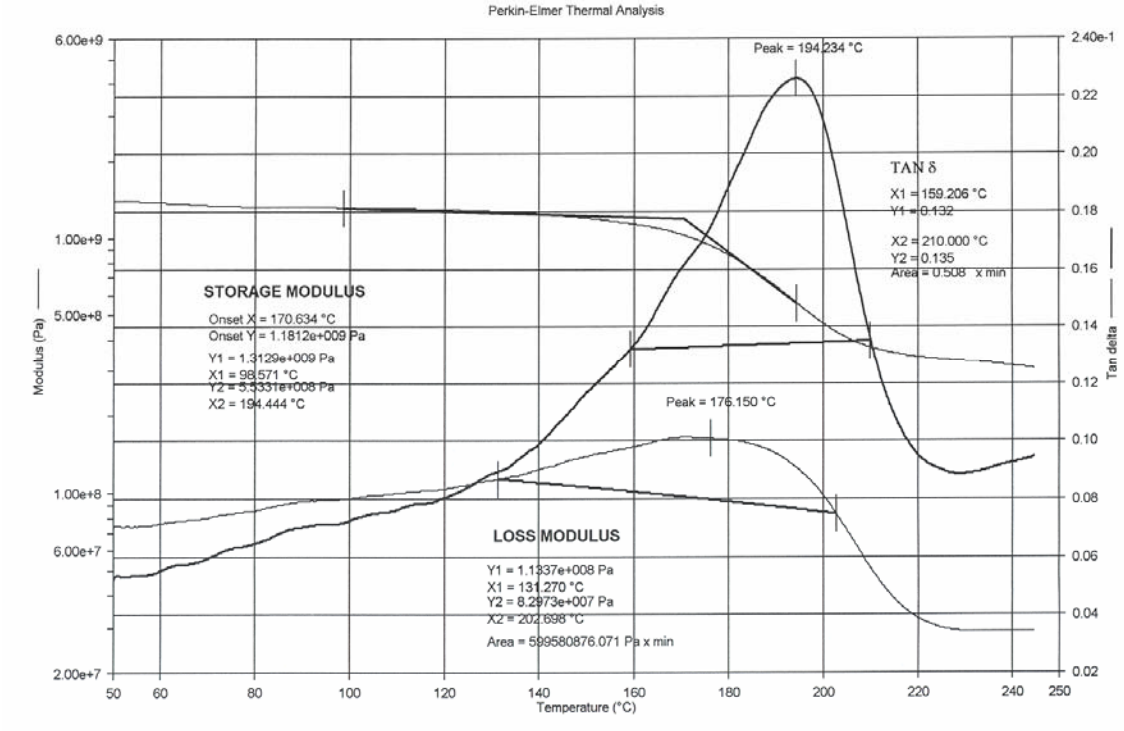

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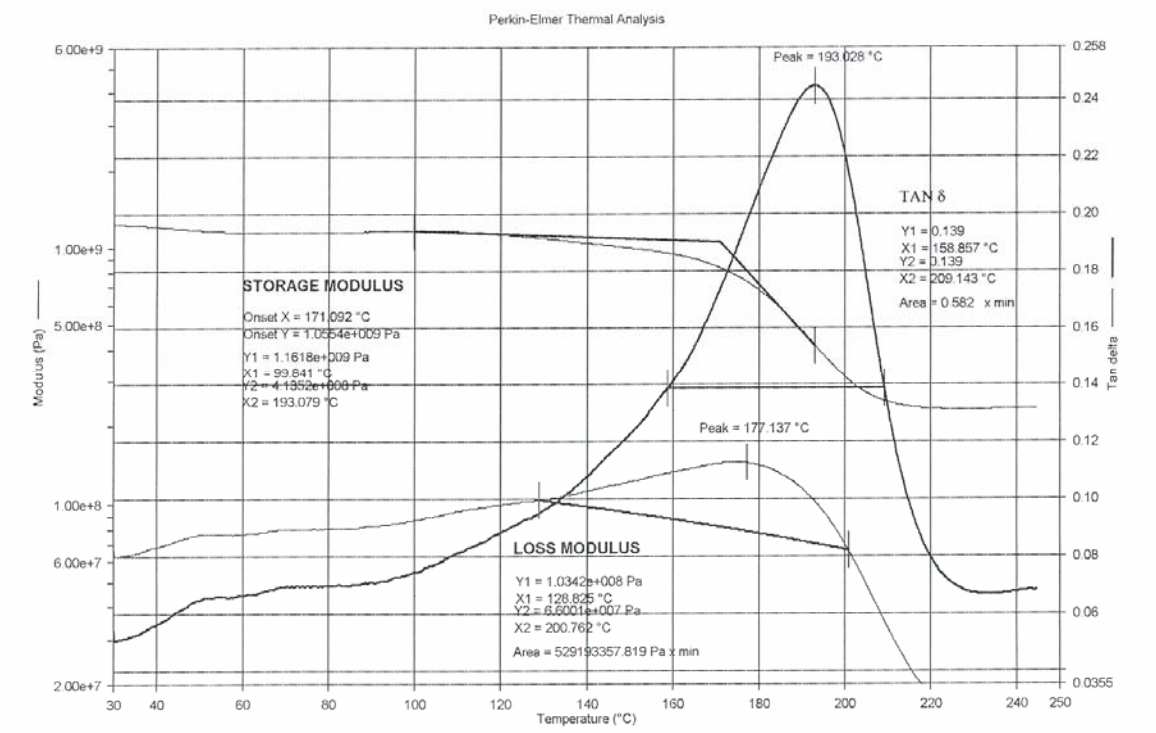

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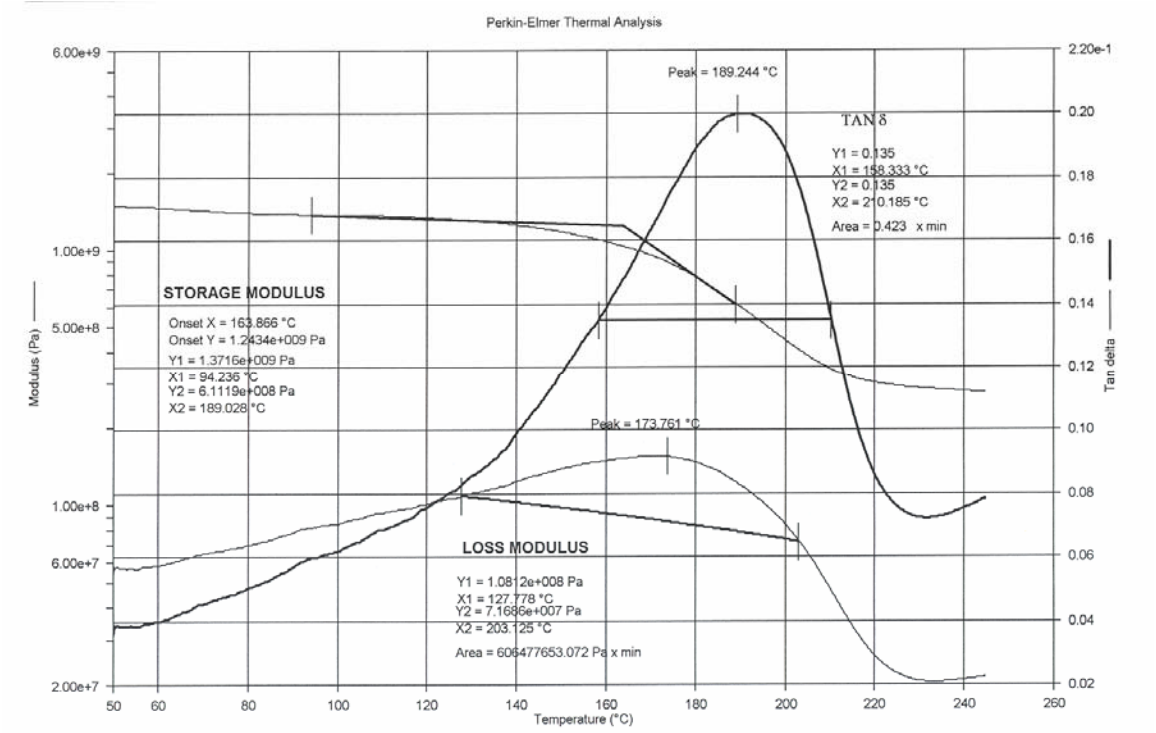

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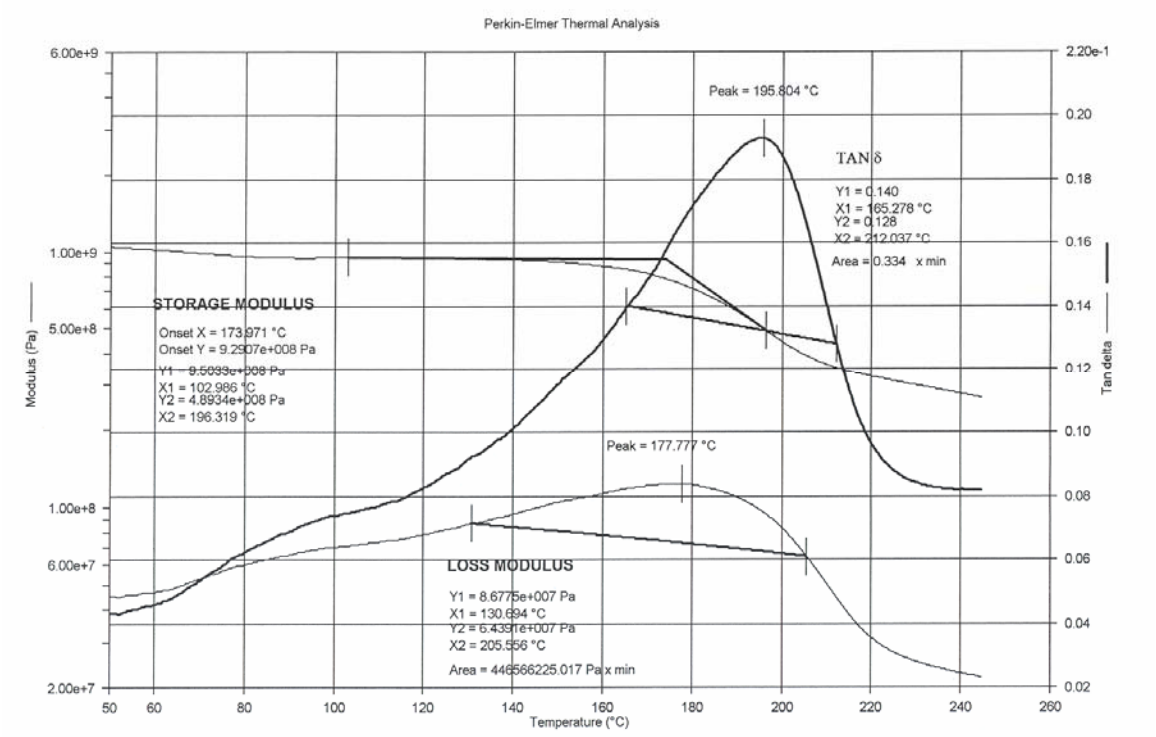

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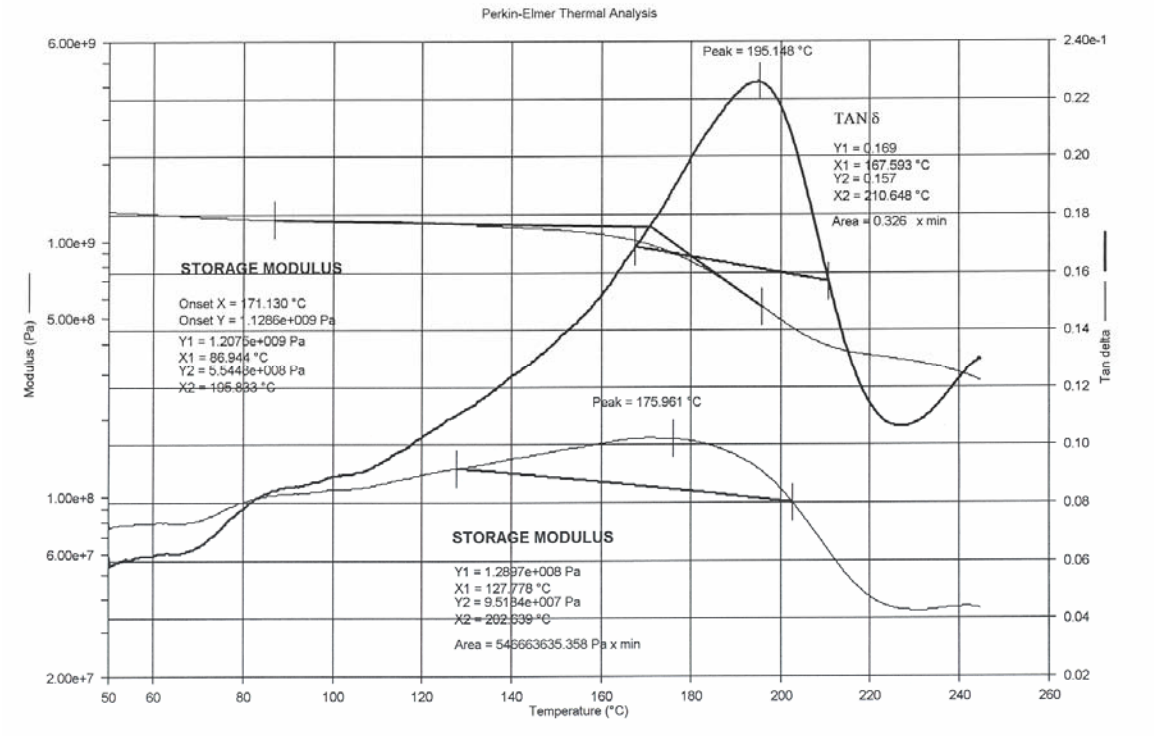

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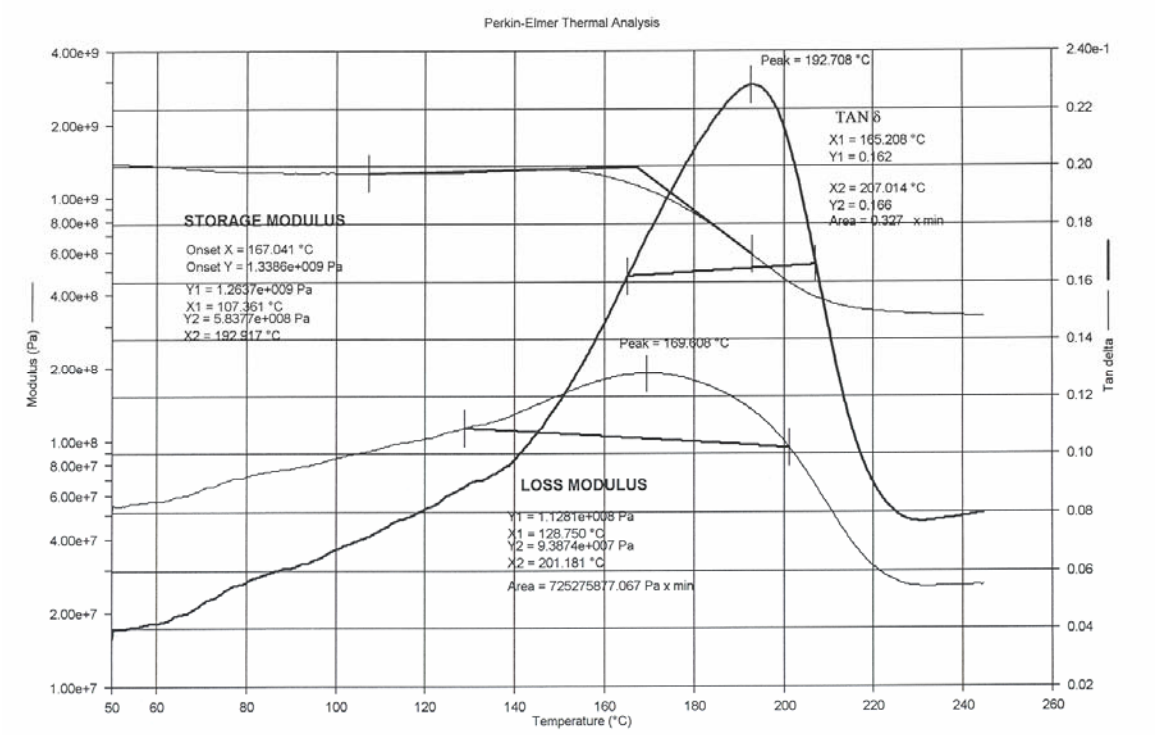

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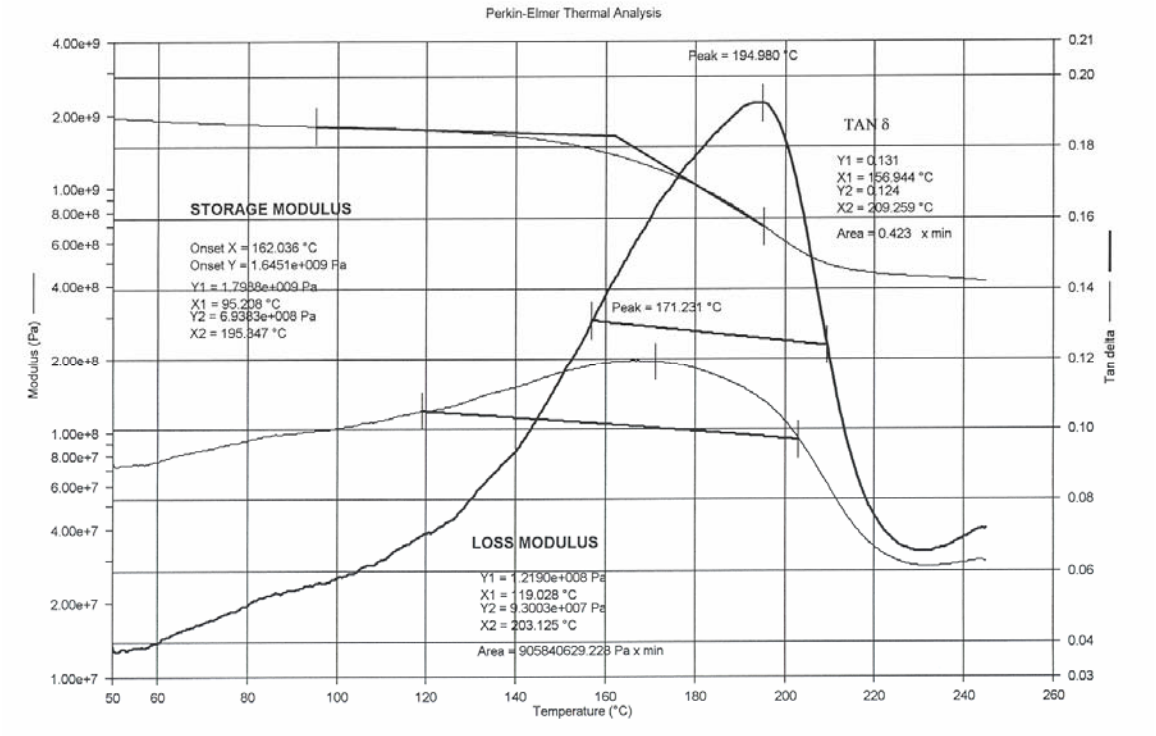

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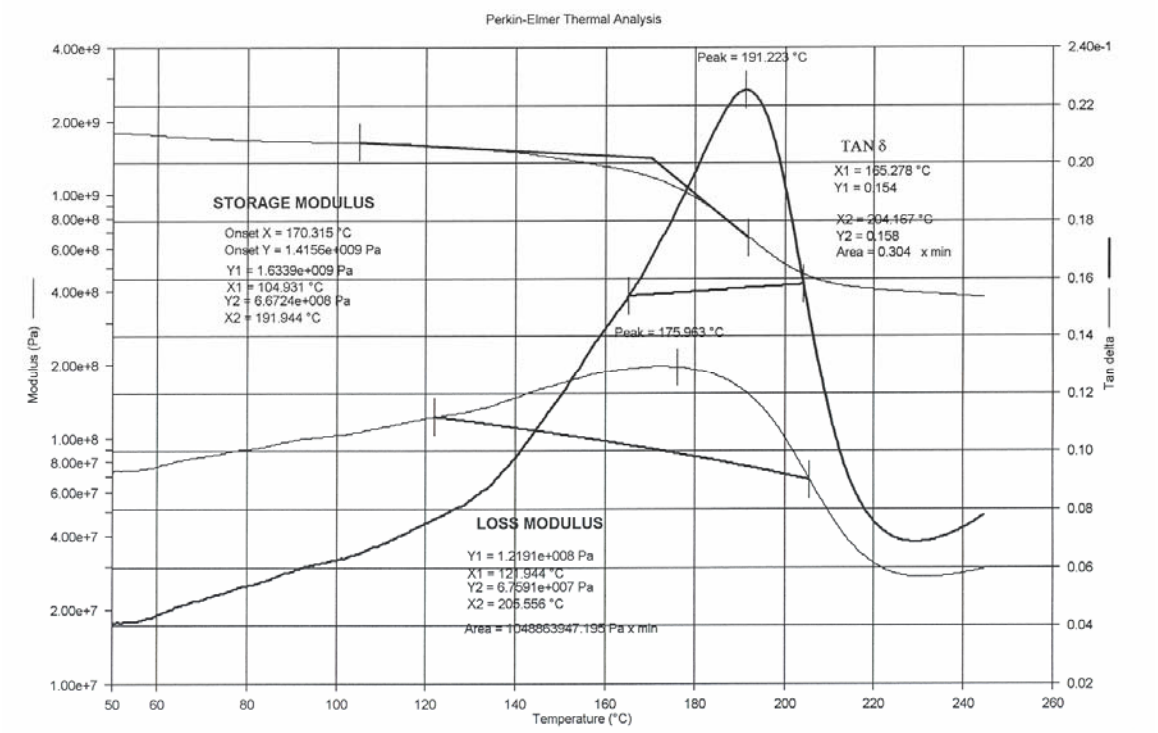

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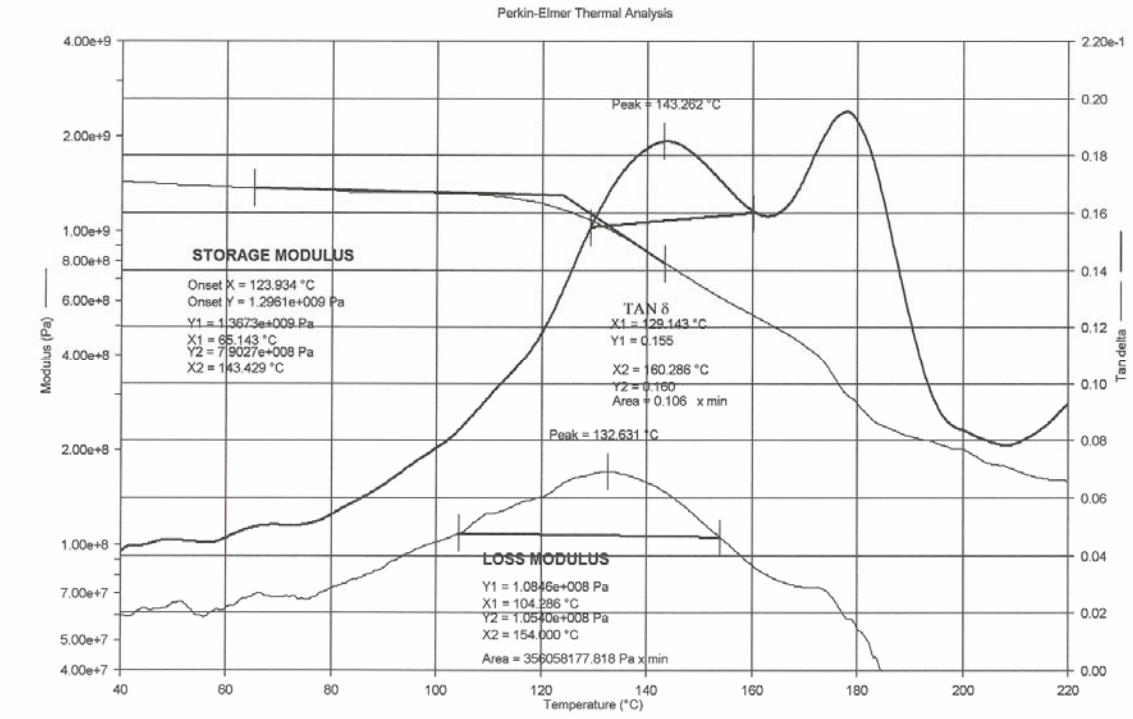

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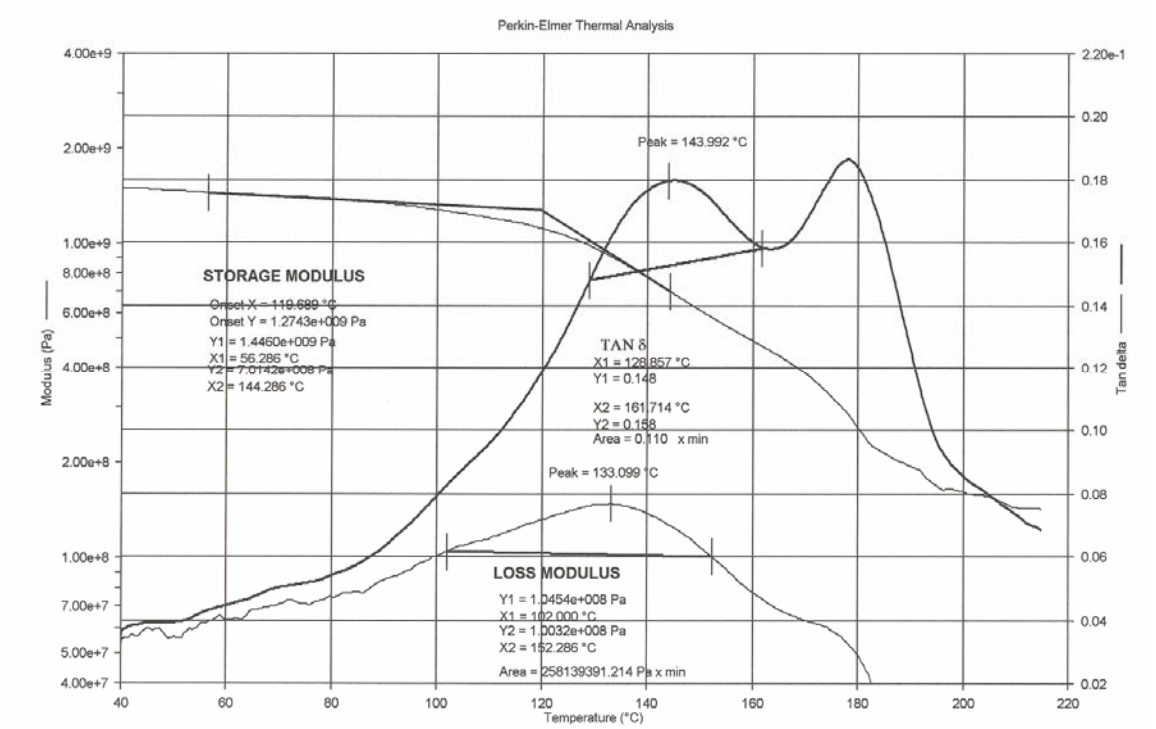

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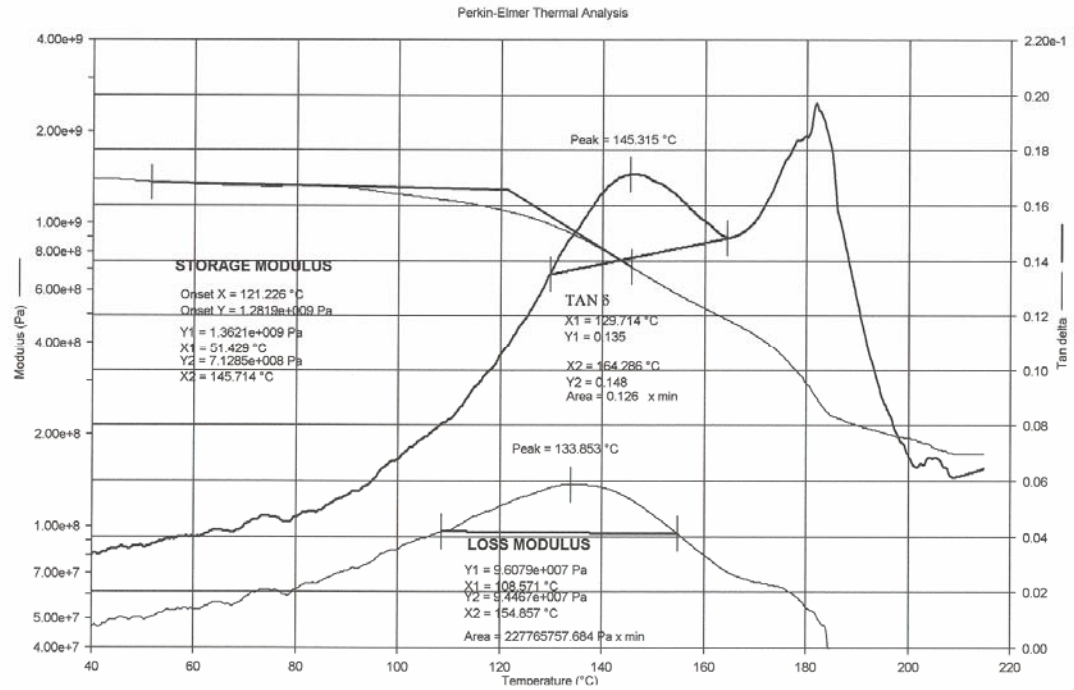

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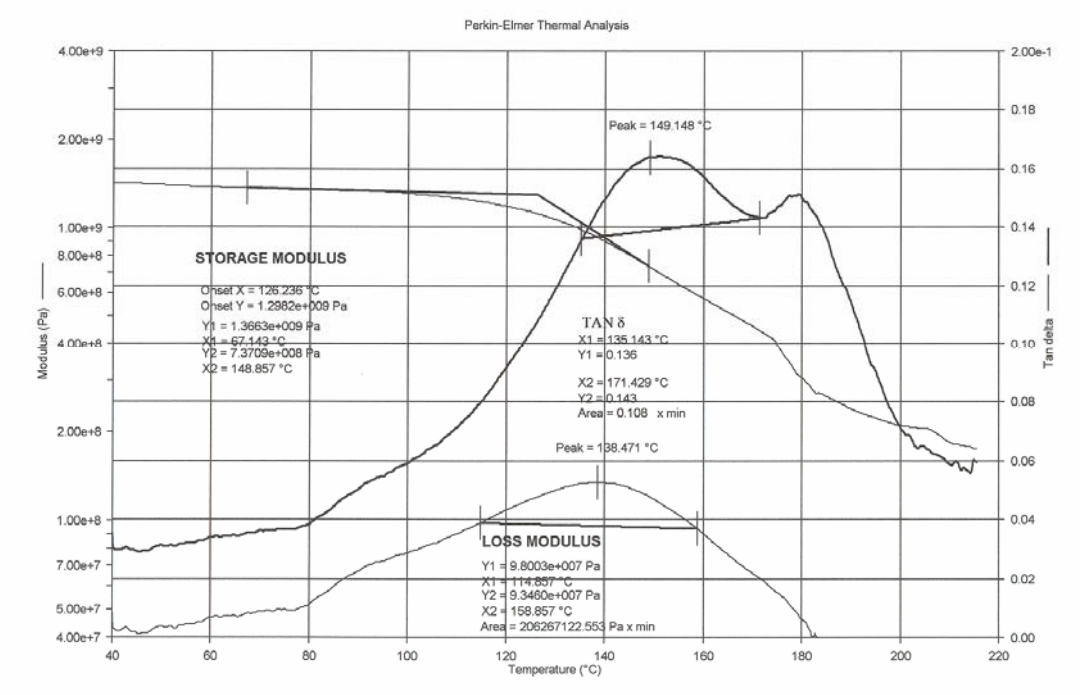

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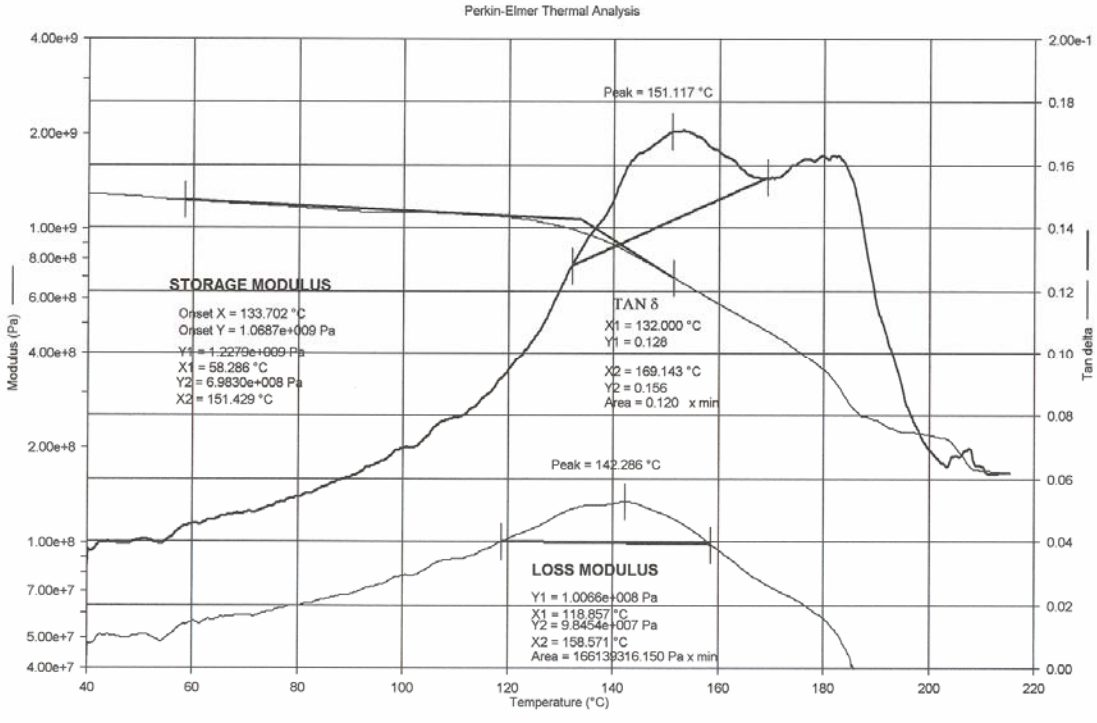

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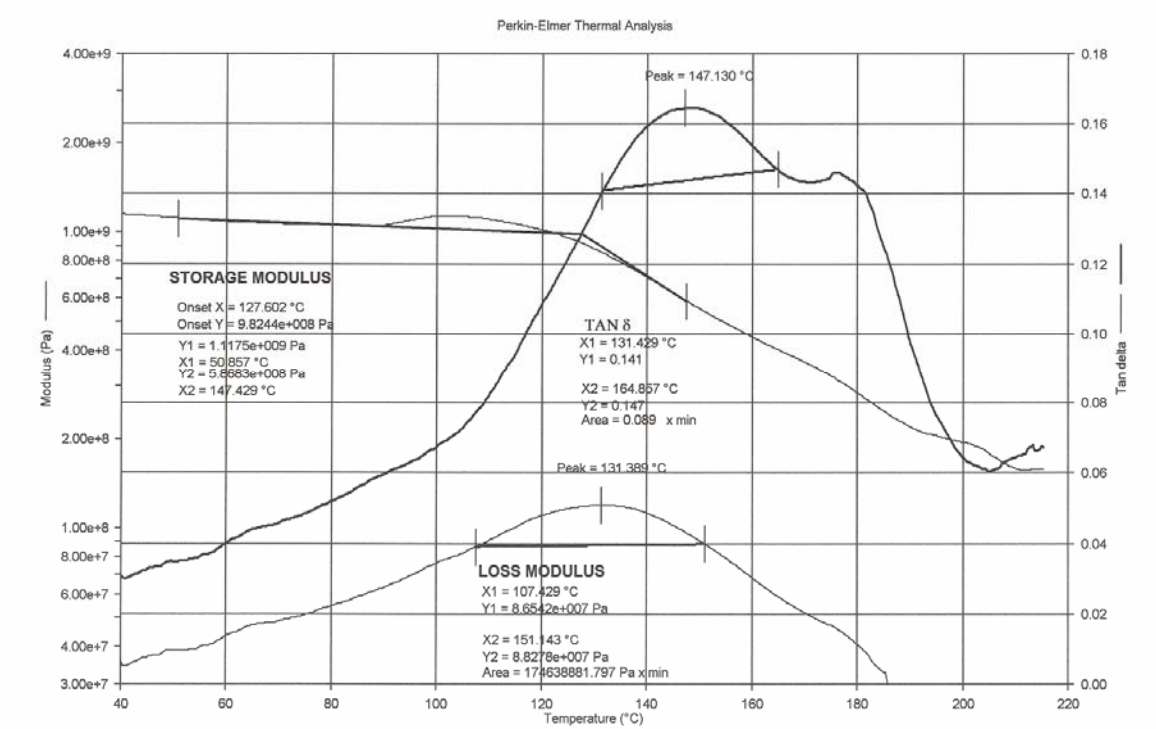

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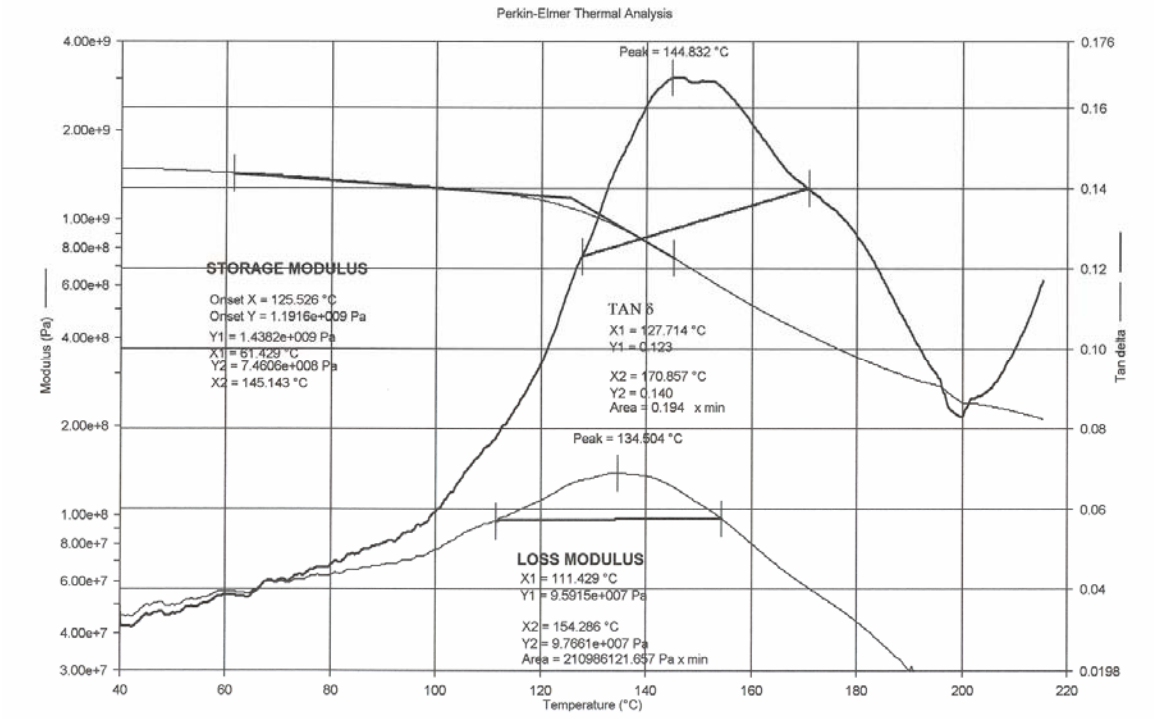

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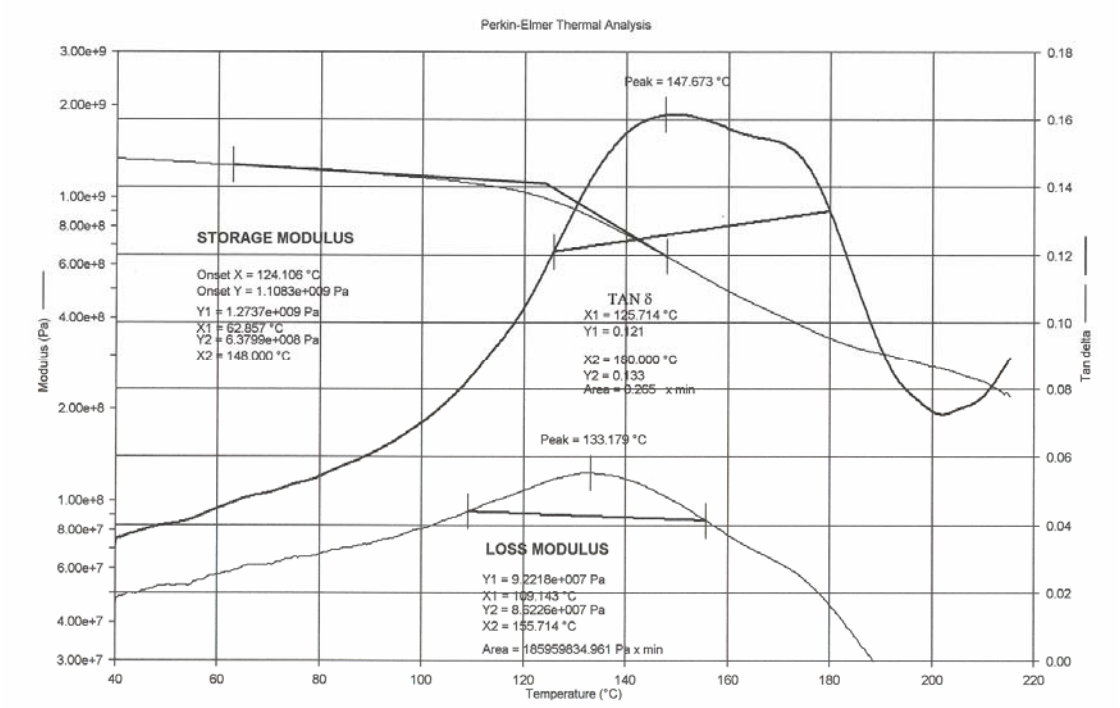

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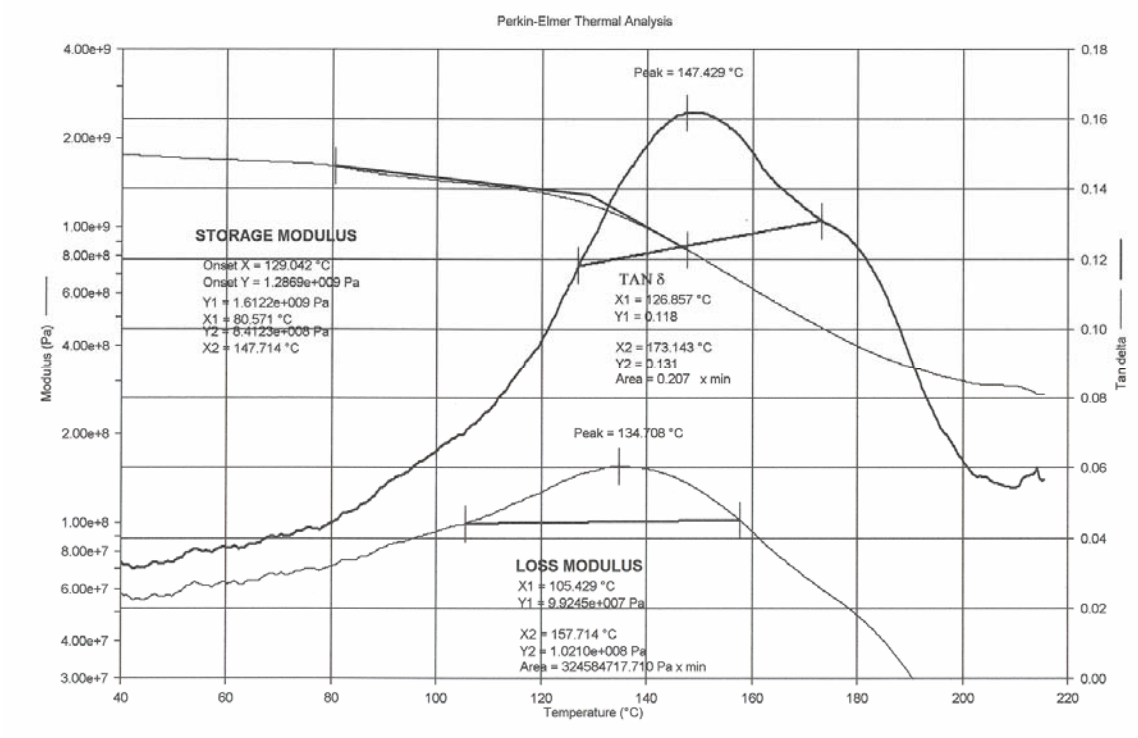

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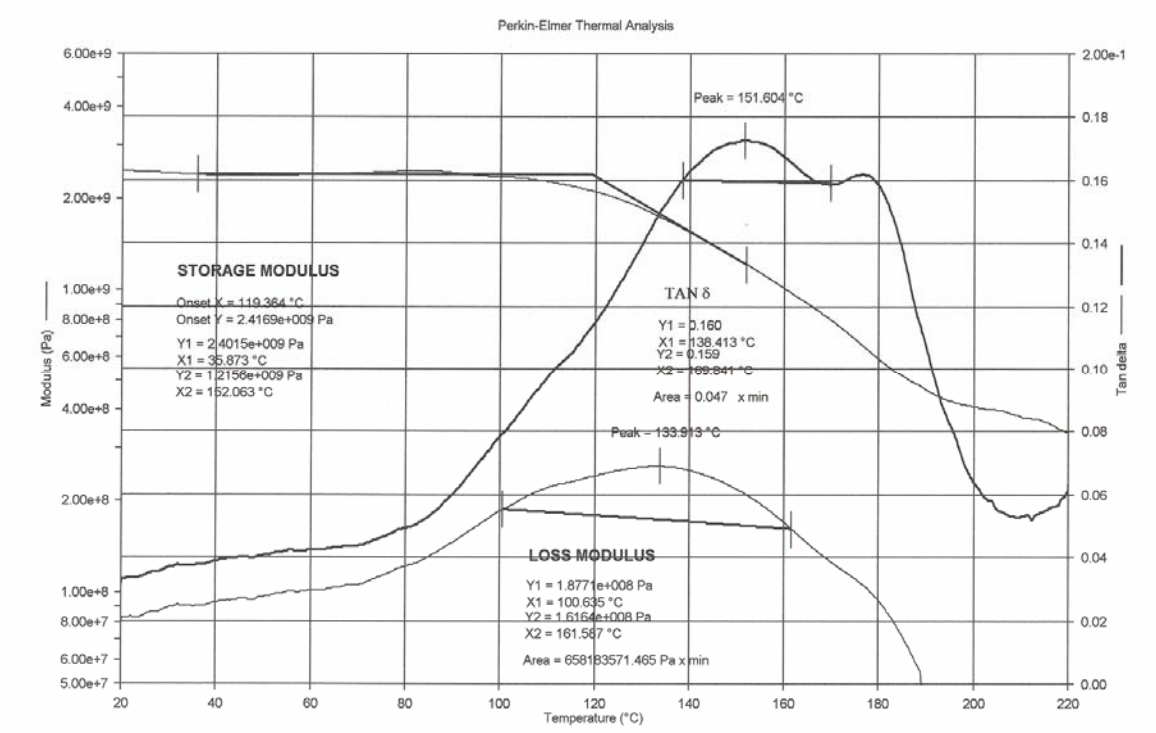

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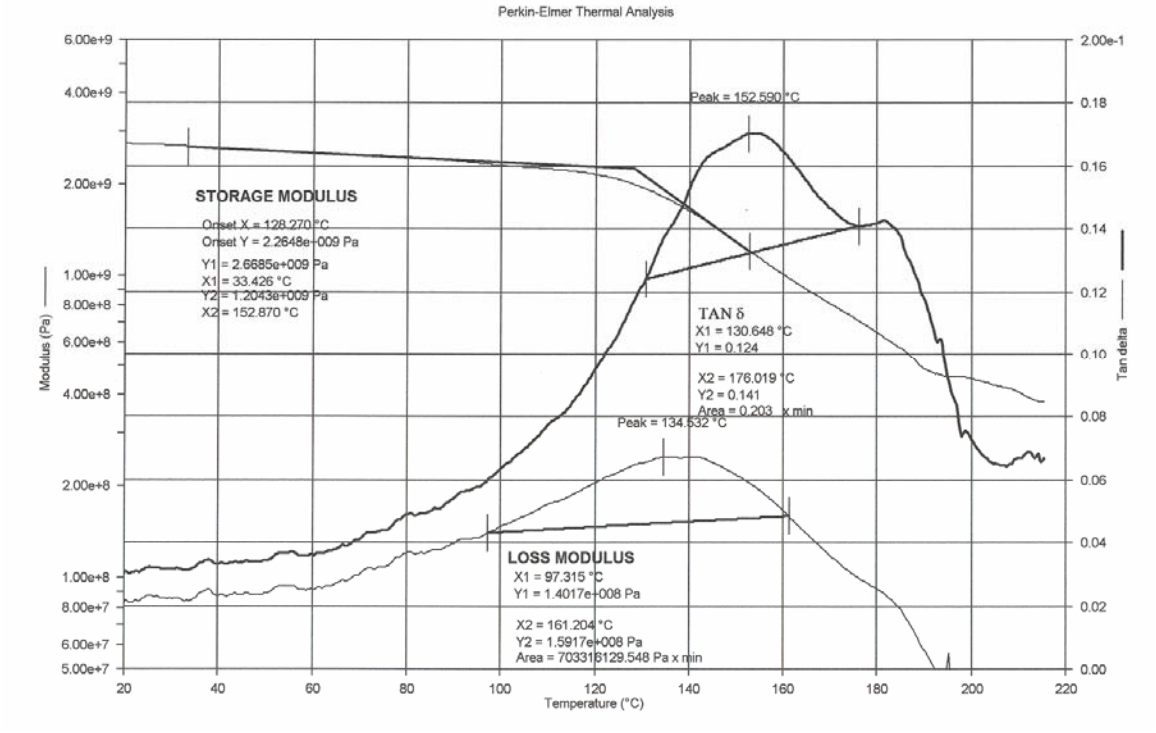

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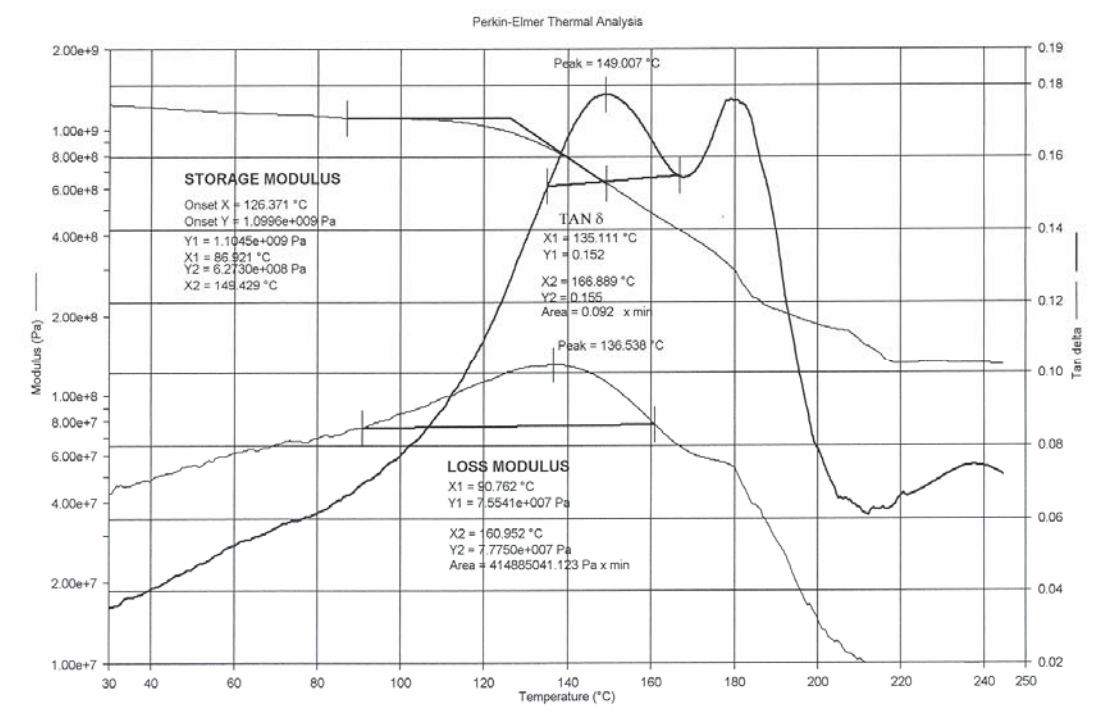

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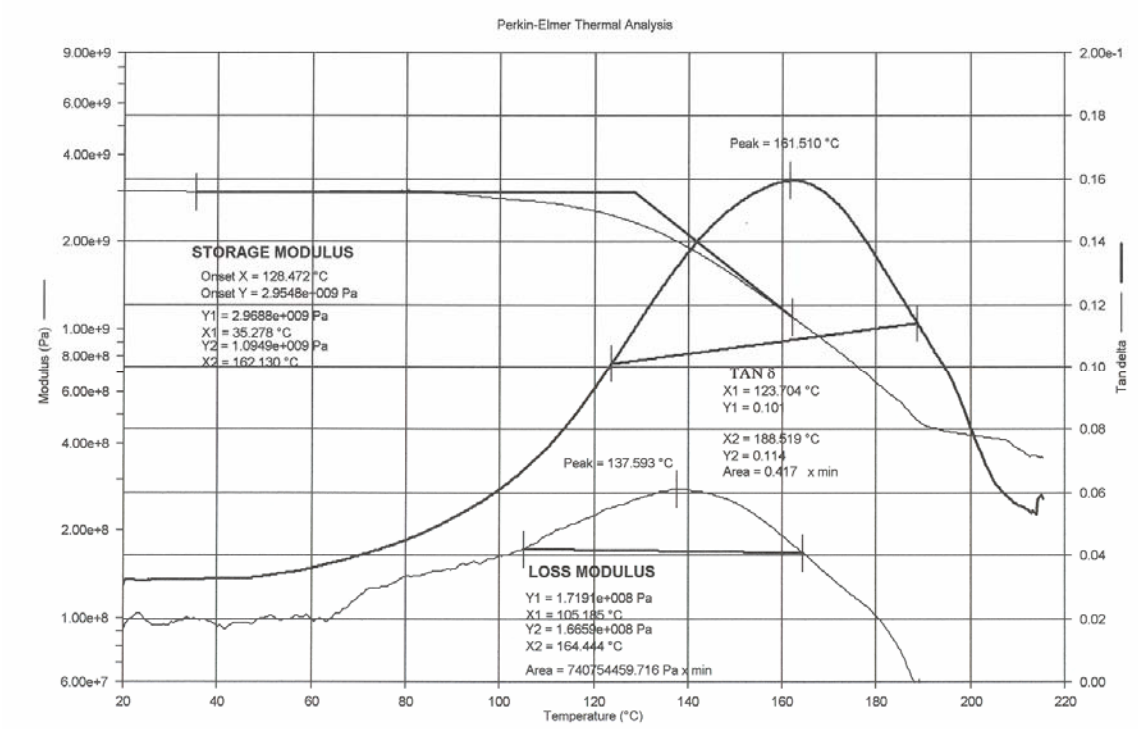

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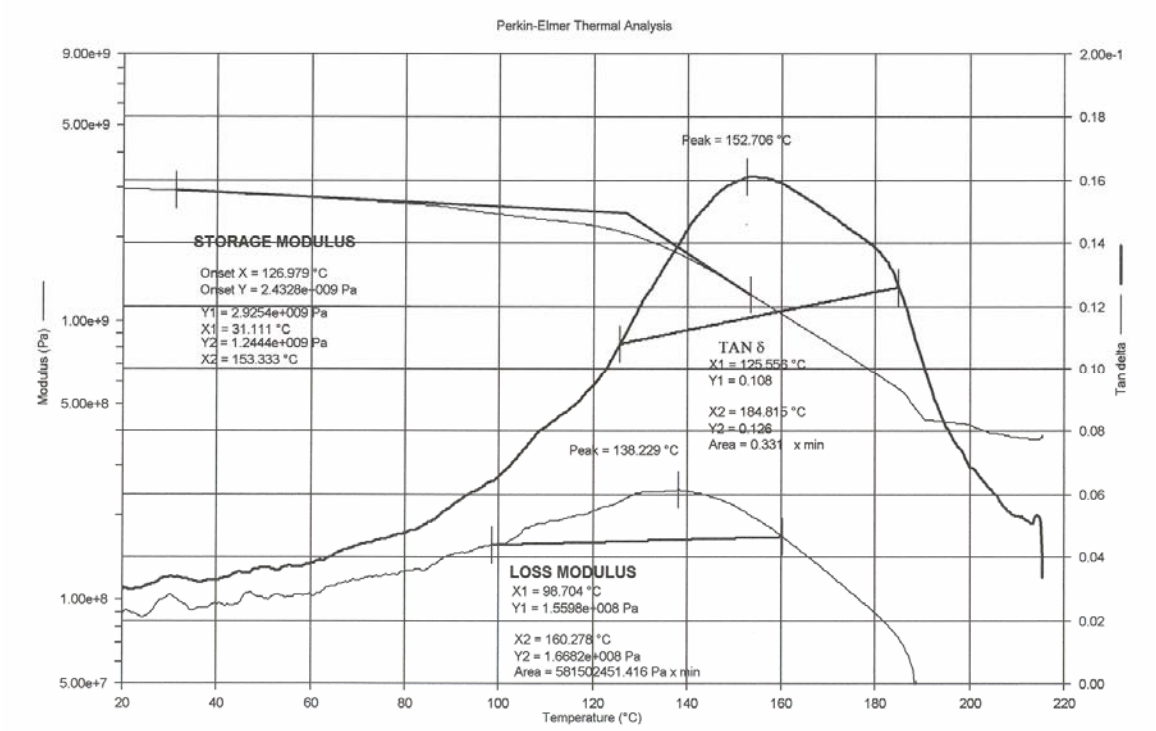

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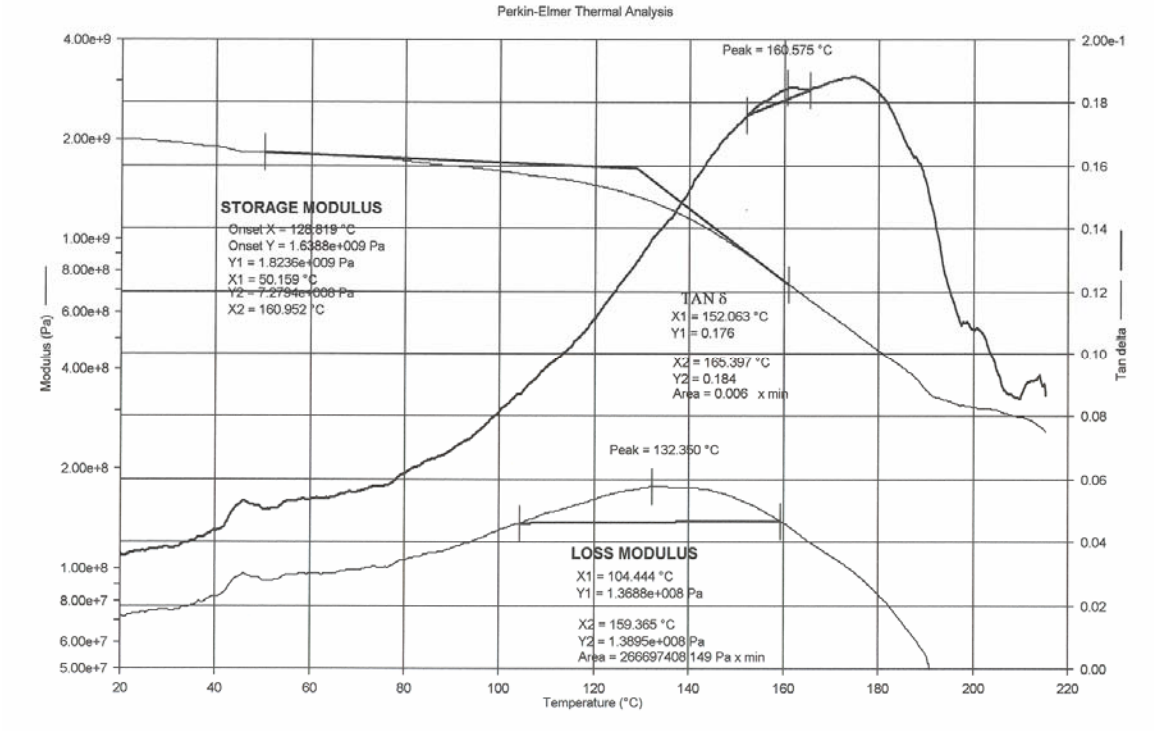

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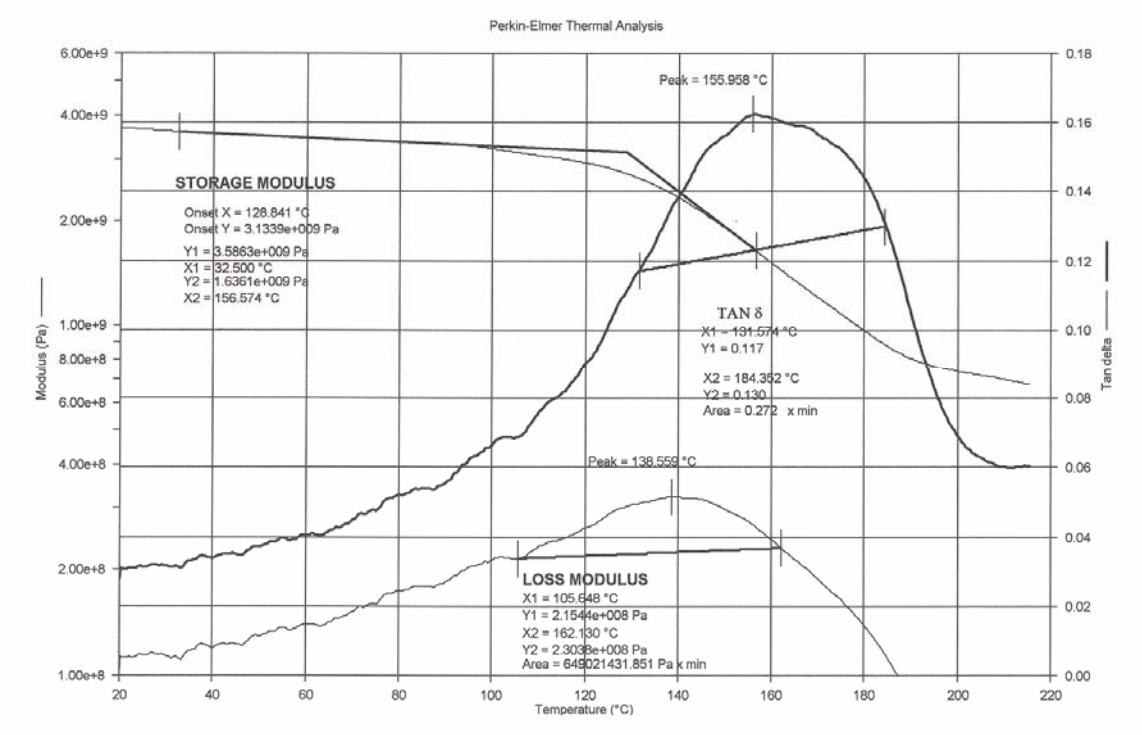

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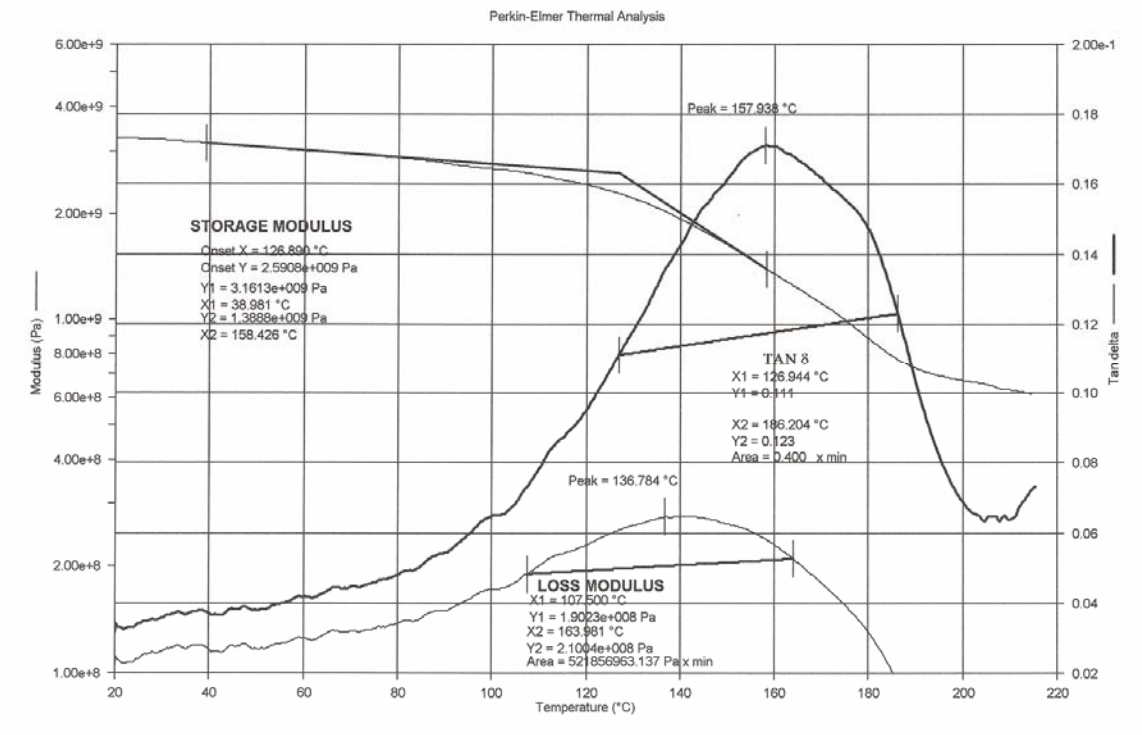

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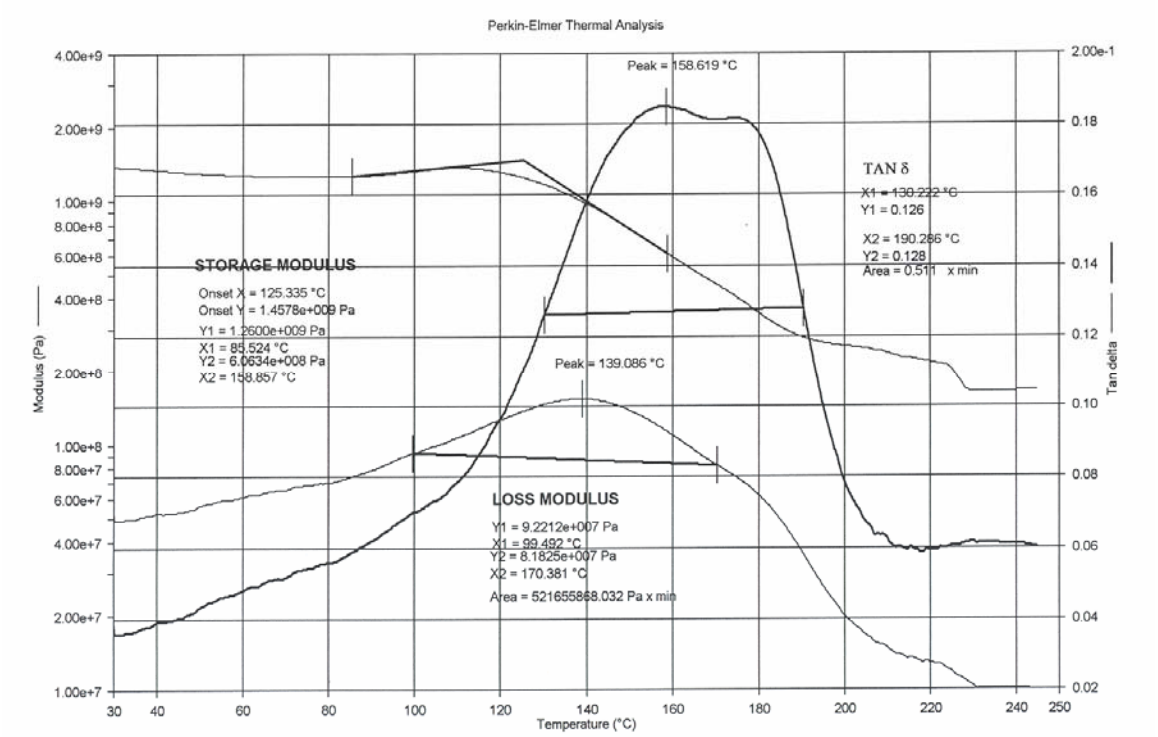
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Peak = 158.619 °C
TAN δ
X1 = 130.222 °C
Y1 = 0.126
X2 = 190.286 °C
Y2 = 0.128
Area = 0.511 x min
STORAGE MODULUS
Onset X = 125.335 °C
Onset Y = 1.4578e+009 Pa
Y1 = 1.2600e+009 Pa
X1 = 85.524 °C
Y2 = 6.0634e+008 Pa
X2 = 158.857 °C
Peak = 139.086 °C
LOSS MODULUS
Y1 = 9.2212e+007 Pa
X1 = 99.492 °C
Y2 = 8.1825e+007 Pa
X2 = 170.381 °C
Area = 521655868.032 Pa x min
Modulus (Pa)
Tan delta
Temperature (°C)
4.00e+9
2.00e+9
1.00e+9
8.00e+8
6.00e+8
4.00e+8
2.00e+8
1.00e+8
8.00e+7
6.00e+7
4.00e+7
2.00e+7
1.00e+7
2.00e-1
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
30
40
60
80
100
120
140
160
180
200
220
240
250

TDD31DCK

4.0 TESTING AND REPORTING COMMENTS

4.1 E-765 Resin Components

The components used in the certification resin batches were:

Component A Shell
Component B Ciba
Component C Phenoxy Associates
Component D Air Products
Component E SKW

The identification of Components A, B, etc is proprietary to FiberCote. Details of the actual identifications are given in a letter from FiberCote to the FAA-Seattle, dated June 30, 1999 (ref. Project #TC1616SE-A).

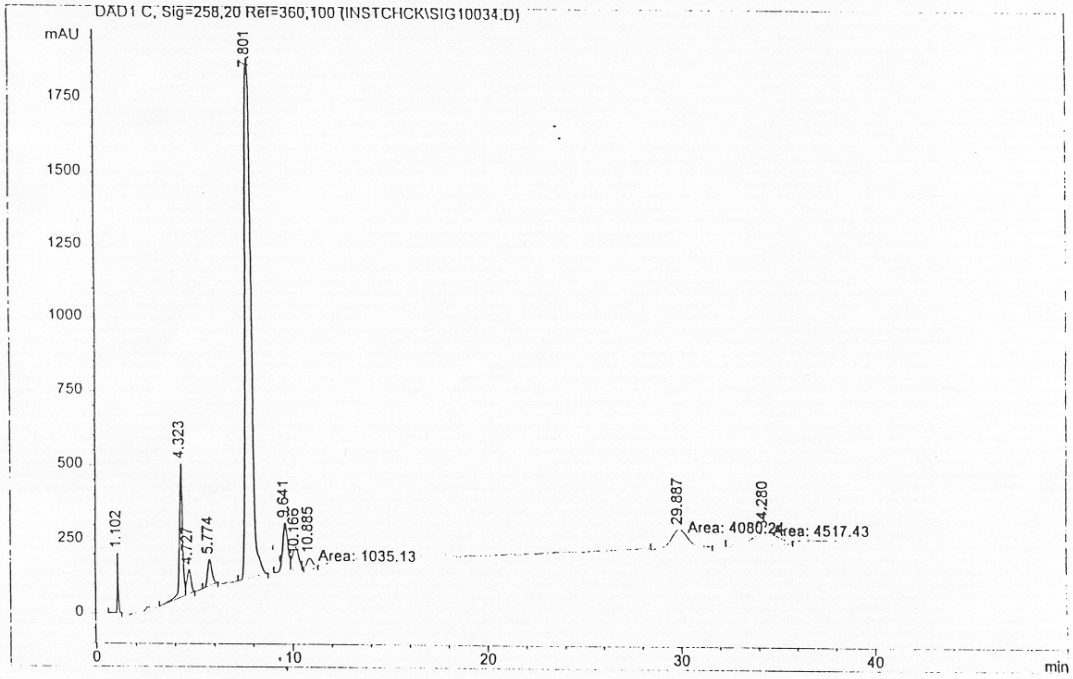
The identification will be made available to users of the material after the execution of a confidentiality agreement.

APPENDIX A: PHYSICAL TEST DATA SUPPLIED BY MATERIAL VENDOR

Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10034.D Sample Name: 121897-IT2

Injection Date : 5/11/98 11:09:47 AM
Sample Name : 121897-IT2 Vial : 5
Acq. Operator : tc
Inj Volume : 10 µl
Acq. Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/11/98 11:05:58 AM by tc
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/11/98 5:02:23 PM by tc
(modified after loading)

This is a fingerprint of E-765 on carbon for FAA qualification. This method is for resin as well as prepreg samples.



Area Percent Report

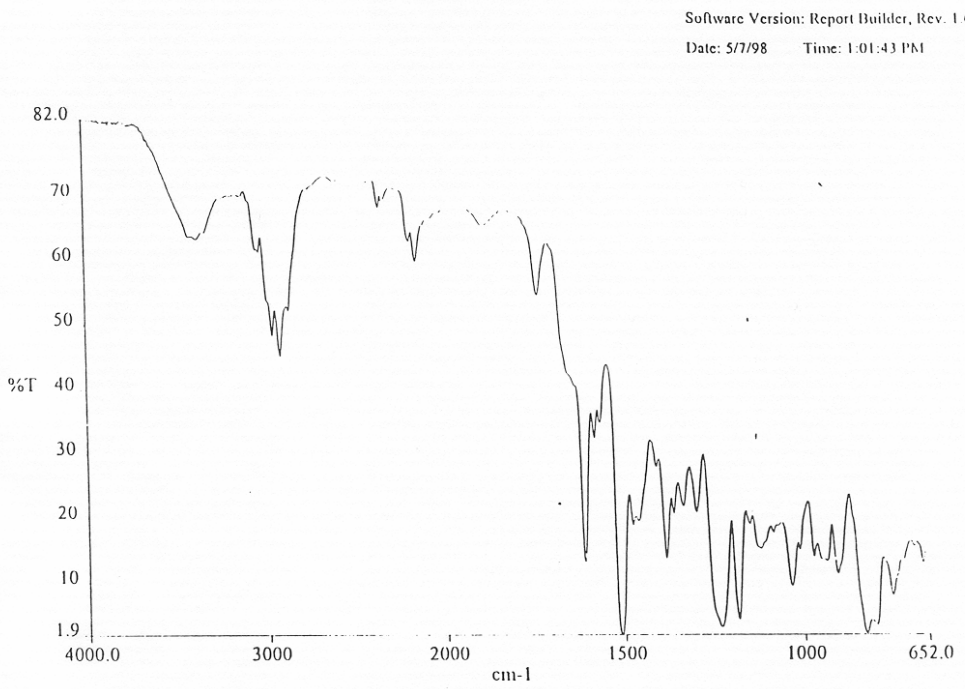
Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 1.00000 [ng/ul] (not used in calc.)

Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10034.D Sample Name: 121897-IT2

Signal 1: DAD1 C, Sig=258,20 Ref=360,100
Results obtained with standard integrator!

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	1.102	BB S	0.0746	955.99011	202.37204	1.5645
2	4.323	BV	0.1724	5029.59131	449.60104	8.2310
3	4.727	VB	0.2146	1125.56775	81.85951	1.8420
4	5.774	BB	0.2263	1300.89587	88.13672	2.1289
5	7.801	BB	0.3480	3.86598e4	1761.87891	63.2674
6	9.641	BV	0.2671	2805.36377	162.25995	4.5910
7	10.166	VV R	0.3244	1595.37610	32.27757	2.6109
8	10.885	MM T	0.4359	1035.12842	39.57526	1.6940
9	29.887	MM T	1.0418	4080.24438	65.27827	6.6774
10	34.280	MM T	1.7469	4517.43066	43.09941	7.3929
Totals :				6.11054e4	2926.33868	

*** End of Report ***



Spectrum Pathname: C:\PEL_DATA\SPECTRA\E765.SP

Date Created: Thu May 07 12:55:04 1998

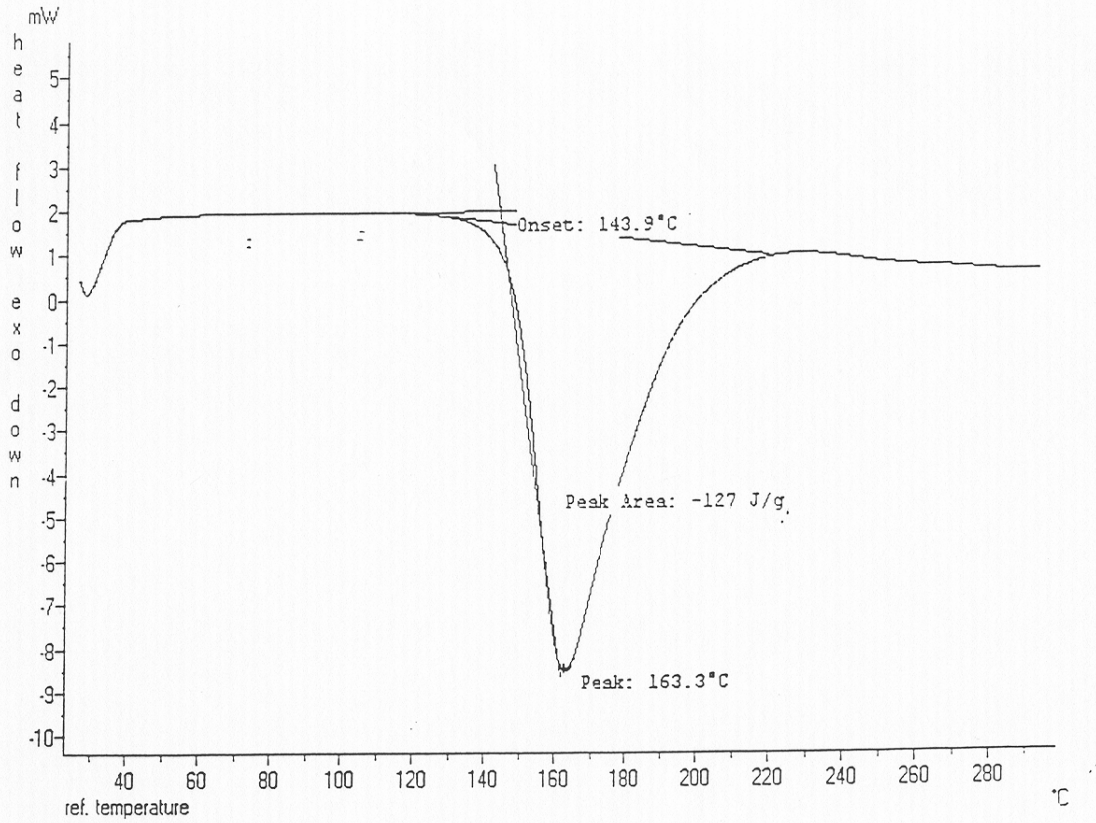
Analyst:

Description: 12897-it2 Run#2

PERKIN ELMER

Thermal Analysis DSC 6

date: 5/7/98 3:01:30 PM

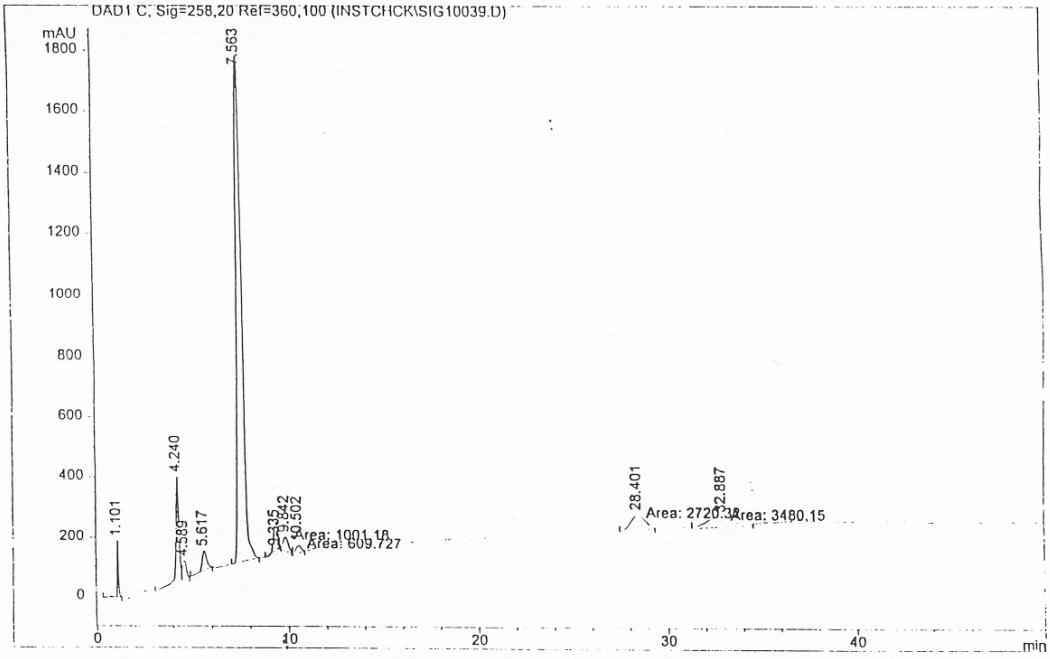


File Name: 121897-IT2 Run#2 Bry.../E765Tg
Run Date: 5/7/98 2:42:37 PM
Sample ID: 121897-IT2 Run#2 Bryte
Sample Weight: 7 mg
Method Title: E765Tg
Method Information:
Comments:

Operator ID: J.Z.
Date Created:
This method contains 1 step.
1: dyn. 30 - 300°C 20°C/min

Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10039.D Sample Name: 123097-IT2

Injection Date : 5/12/98 10:42:15 AM
Sample Name : 123097-IT2 Vial : 7
Acq. Operator : tc
Inj Volume : 10 µl
Acq. Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/12/98 8:54:09 AM by tc
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/12/98 11:59:54 AM by tc
(modified after loading)
This is a fingerprint of E-765 on carbon for FAA qualification. This method is for resin as well as prepreg samples.



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 1.00000 [ng/ul] (not used in calc.)

Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10039.D Sample Name: 123097-IT2

Signal 1: DAD1 C, Sig=258,20 Ref=360,100
Results obtained with standard integrator!

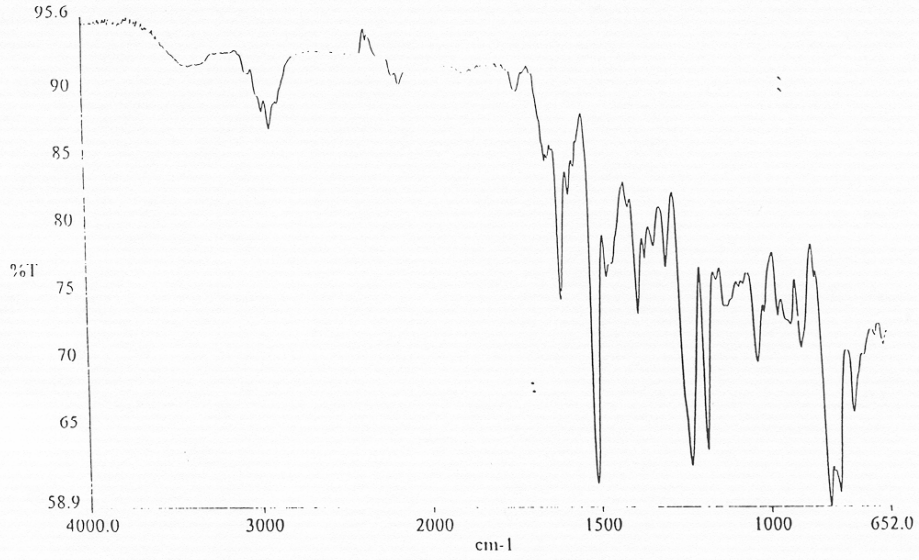
Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	1.101	BB S	0.1138	907.79602	189.63033	1.8741
2	4.240	BV	0.1690	3873.44775	351.42661	7.9966
3	4.589	VB	0.2034	813.08307	61.31213	1.6786
4	5.617	BB	0.2355	1039.08093	66.98481	2.1452
5	7.563	BB	0.3095	3.26280e4	1666.94336	67.3597
6	9.335	BV R	0.2249	1365.65710	1.21569e-14	2.8194
7	9.842	MM T	0.3661	1001.17914	49.65144	2.0669
8	10.502	MM T	0.3573	609.72650	28.44020	1.2588
9	28.401	MM T	0.8952	2720.32373	50.64414	5.6160
10	32.887	MM T	1.7220	3480.15234	33.68317	7.1847
Totals :				4.84384e4	2498.71618	

*** End of Report ***

Instrument 1 5/12/98 12:00:39 PM tc

Software Version: Report Builder, Rev. 1.60

Date: 5/7/98 Time: 2:30:51 PM

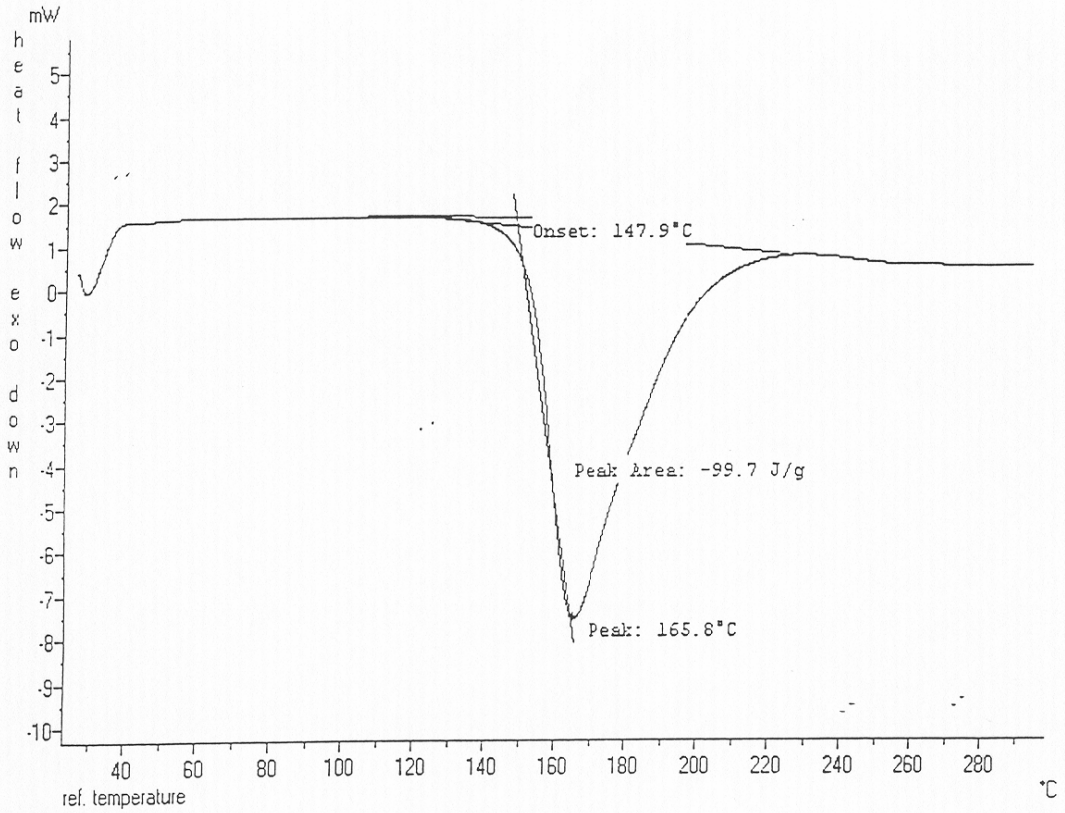


Spectrum Pathname: c:\pel_data\spectra\e7653.sp

Date Created: Thu May 07 14:20:10 1998

Analyst:

Description: 123097-IT2 Run#3



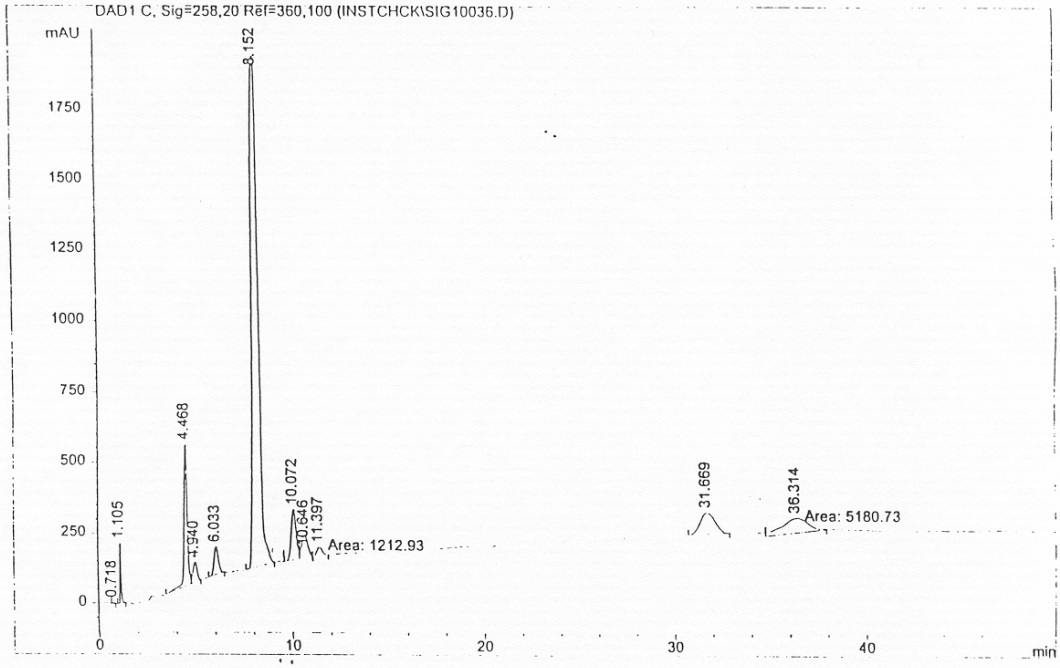
File Name: 123097 IT2 Run#3 Bry.../E765Tg
Run Date: 5/7/98 3:08:58 PM
Sample ID: 123097 IT2 Run#3 Bryte
Sample Weight: 7.5 mg
Method Title: E765Tg
Method Information:
Comments:

Operator ID: J. Z.
Date Created:
This method contains 1 step.
1: dyn. 30 - 300°C 20°C/min

Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10036.D Sample Name: 121997-IT2

Injection Date : 5/11/98 4:06:40 PM
Sample Name : 121997-IT2 Vial : 6
Acq. Operator : tc
Inj Volume : 10 µl
Acq. Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/11/98 11:05:58 AM by tc
(modified after loading)
Analysis Method : C:\HPCHEM\1\METHODS\E-765.M
Last changed : 5/11/98 5:02:23 PM by tc
(modified after loading)

This is a fingerprint of E-765 on carbon for FAA qualification. This method is for resin as well as prepreg samples.



Area Percent Report

Sorted By : Signal
Multiplier : 1.0000
Dilution : 1.0000
Sample Amount : 1.00000 [ng/ul] (not used in calc.)

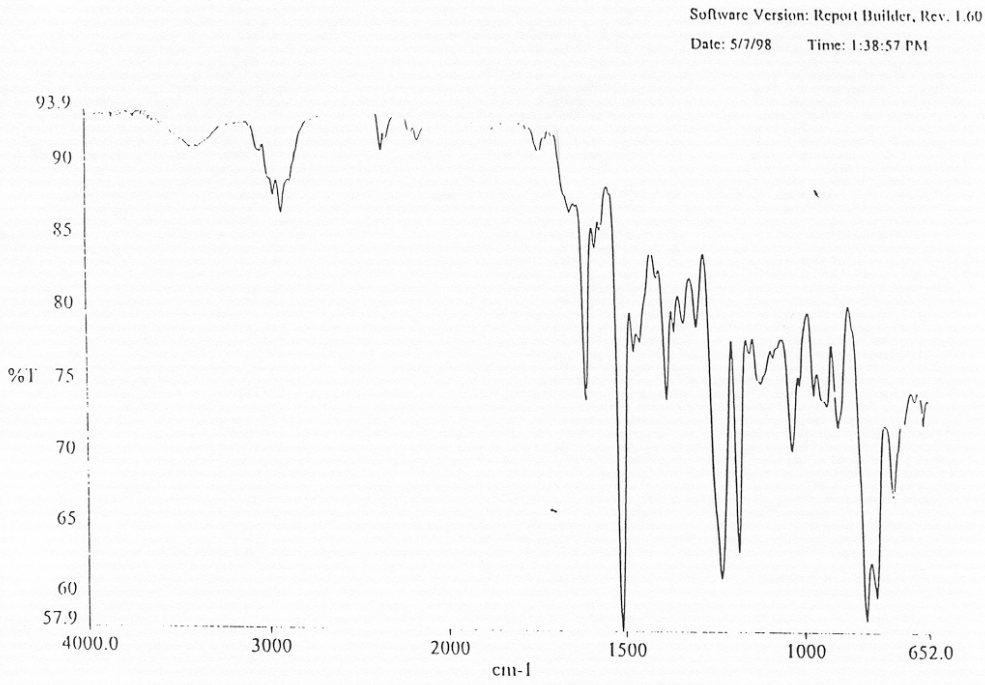
Data File C:\HPCHEM\1\DATA\INSTCHCK\SIG10036.D Sample Name: 121997-IT2

Signal 1: DAD1 C, Sig=258,20 Ref=360,100
Results obtained with standard integrator!

Peak #	RetTime [min]	Type	Width [min]	Area [mAU*s]	Height [mAU]	Area %
1	0.718	BB S	0.0952	23.73905	4.15762	0.0352
2	1.105	BB	0.0694	931.04572	214.53656	1.3820
3	4.468	BV	0.1744	5671.36377	501.83585	8.4182
4	4.940	VB	0.2213	1040.50769	72.54340	1.5445
5	6.033	BB	0.2326	1520.26477	100.45906	2.2566
6	8.152	BB	0.3753	4.27178e4	1808.72888	63.4071
7	10.072	BV	0.2726	3160.37402	179.76189	4.6910
8	10.646	VV R	0.3319	1836.26501	28.99203	2.7256
9	11.397	MM T	0.4499	1212.93237	44.93453	1.8004
10	31.669	BB	0.8408	4075.62134	75.42007	6.0496
11	36.314	MM T	1.6286	5180.72852	53.01877	7.6899
Totals :				6.73706e4	3084.38864	

*** End of Report ***

Instrument 1 5/11/98 5:12:22 PM tc Page 2 of 2



Spectrum Pathname: C:\PEL_DATA\SPECTRA\E7652.SP

Date Created: Thu May 07 13:28:58 1998

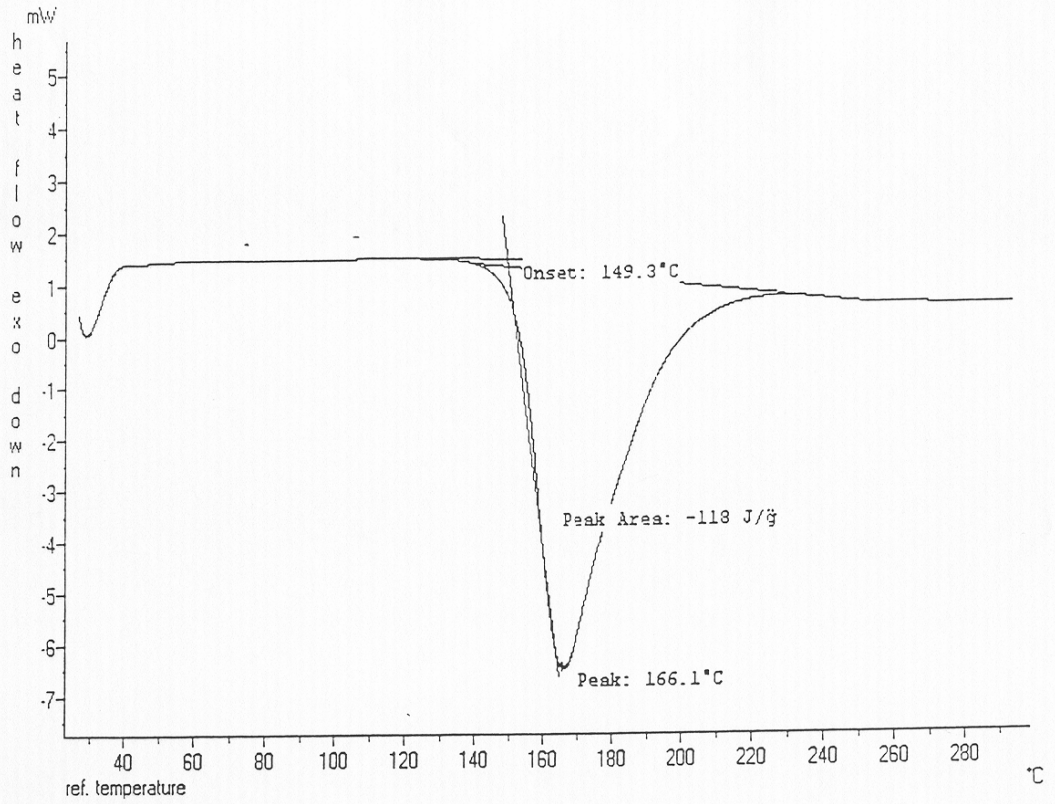
Analyst:

Description: 121997-IT2 Run#2

PERKIN ELMER

Thermal Analysis DSC 6

date: 5/7/98 4:58:13 PM



File Name: 121997-IT2 Run#2 Bry.../E765Tg
Run Date: 5/7/98 3:38:21 PM
Sample ID: 121997-IT2 Run#2 Bryte
Sample Weight: 5.4 mg
Method Title: E765Tg
Method Information:
Comments:

Operator ID: J.Z.
Date Created:
This method contains 1 step.
1: dyn. 30 - 300°C 20°C/min

APPENDIX B: DATES OF PANEL MAUNUFACTURE AND COPY OF FAA FORM 8130-3

1. UNITED STATES

2. **FAA FORM 8130-3**
AIRWORTHINESS APPROVAL TAG
U.S. Department of Transportation
Federal Aviation Administration

3. System Tracking Ref. No.: FC106

4. Organization: PAC USA / FiberCote, 172 East Aurora St., Waterbury, CT 06708-2024

5. Work Order, Contract, or Invoice Number: P.O. 11517

6. Item	7. Description	8. Part Number	9. Eligibility *	10. Quantity	11. Serial/Batch Number	12. Status/Work
1	Test Panels	See Remarks	Lancair LC-4D	79 See Remarks	N/A	Prototype

13. Remarks

CONFORMITY ONLY: Ship to Wichita State University. Ref. FAA Project #TC1616 SE-A, dated 8/21/98

Part Numbers: TDJ11, TDJ12, TDJ13, TDJ14, TDJ15
TDJ21, TDJ22, TDJ23, TDJ24, TDJ25
TDJ31, TDJ32, TDJ33, TDJ34, TDJ35
TDU11, TDU12, TDU13, TDU14, TDU15
TDU21, TDU22, TDU23, TDU24, TDU25
TDU31, TDU32, TDU33, TDU34, TDU35
TDK11, TDK12, TDL11, TDL12,
TDK21, TDK22, TDL21, TDL22
TDK31, TDK32, TDL31, TDL32
TDW11, TDW12, TDZ11, TDZ12
TDW21, TDW22, TDZ21, TDZ22
TDW31, TDW32, TDZ31, TDZ32
TDN11, TDN12, TDN13
TDN21, TDN22, TDN23
TDN31, TDN32, TDN33
TDQ11, TDQ21, TDQ31, TDI11, TDI12
TDI13, TDI21, TDI212, TDI213, TDI311
TDI312, TDI313, TDI411, TDI412, TDI413
TDI414

Limited life parts must be accompanied by maintenance history including total time/total cycles/time since new.

14. New [X]
Newly Overhauled [ ]

Certifies that the new or newly overhauled part(s) identified above, except as otherwise specified in block 13 was (were) manufactured in accordance with FAA approved design data and airworthiness.

NOTE: In case of parts to be exported, the special reqirements of the importing country have been met.

19. **Return to Service in Accordance with FAR 43.9**

Certifies that the work specified in block 13 (or attached) above was carried out in accordance with FAA airworthiness regulations and in respect to the work performed the part(s) is (are) approved for return to service.

N/A

15. Signature	16. FAA Authorization No.: DAR NE800856AC	20. Authorized Signature:	21. Certificate Number:
17. Name *(Typed or Printed)*: Al Pereira	18. Date: 3/3/99	22. Name *(Typed or Printed)*	23. Date:

FAA Form 8130-3 (11-93)

* (Optional) Installer must cross check eligibility with applicable technical data.

E-765 QP1000 QUALIFICATION PLAN
GLASS FABRIC

PANEL BUILD - E-765 PS1000

PANEL #	KIT DATE	DATE LAYUP	CURE DATE/TIME	CURE CYCLE NO.	COMMENTS
TDJ11	2/8/99	2/9	2/10/99 8:00A.M.	1	No Freezer out 2/10 7:00 A.M.
TDJ12	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ13	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDJ14	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ15	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDJ21	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ22	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDJ23	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ24	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDJ25	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ31	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDJ32	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ33	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00 A.M.
TDJ34	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDJ35	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDU11	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00 P.M
TDU12	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00AM
TDU13	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDU14	2/8	2/9	2/10 8:00AM	1	No Freezer out 2/10 7:00 A.M.
TDU15	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 3:00PM
TDU21	2/8	2/9	2/10	1	No Freezer

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E-765 QP1000 QUALIFICATION PLAN
GLASS FABRIC

PANEL BUILD - E-765 PS1000

PANEL #	KIT DATE	DATE LAYUP	CURE DATE/TIME	CURE CYCLE NO.	COMMENTS
TDU22	2/8/99	2/10	2/11 7:30AM	2	out 2/10 7:00AM. Freezer in 2/8 8:00AM
TDU23	2/8	2/9	2/10 8:00AM	1	NU Freezer out 2/10 7:00AM
TDU24	2/8	2/10	2/11 7:30AM	2	Freezer in 2/8 8:00PM out 2/11 7:15AM
TDU25	2/8	2/11	2/12 10:00AM	3	Freezer in 2/8 8:00PM out 2/17 7:00AM.
TDU31	2/8	2/17	2/18 8:00AM	4	Freezer in 2/8 8:00 out 2/11 7:15AM
TDU32	2/8	2/11	2/12 10:00AM	3	Freezer in 2/8 8:00PM out 2/17 7:00AM.
TDU33	2/8	2/17	2/18 8:00AM	4	Freezer in 2/8 8:00PM out 2/11 7:15AM.
TDU34	2/8	2/11	2/12 10:00AM	3	Freezer in 2/8 8:00PM out 2/17 7:00AM.
TDU35	2/8	2/17	2/18 8:00AM	4	Freezer in 2/8 8:00PM out 2/11 7:15AM
TDK11	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDK12	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/11 7:15AM.
TDL11	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDL12	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/11 7:15AM
TDK21	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDK22	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 8:00PM out 2/11 7:15AM
TDL21	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDL22	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/11 7:15AM
TDK31	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM
TDK32	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/11 7:15AM
TDL31	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDL32	2/9	2/17	2/18	4	Freezer in 2/9 3:30PM

E-765 QP1000 QUALIFICATION PLAN
GLASS FABRIC

PANEL BUILD - E-765 PS1000

PANEL #	KIT DATE	DATE LAYUP	CURE DATE/TIME	CURE CYCLE NO.	COMMENTS
TDW11	2/9	2/11	2/12 10:00AM	3	Freezer out 2/11 7:15AM.
TDW12	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDZ11	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/11 7:15AM.
TDZ12	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/17 7:00AM
TDW21	2/9	2/11	2/12 10:00AM	3	Freezer in 2/9 3:30PM out 2/11 7:15AM
TDW22	2/9	2/17	2/18 8:00AM	4	Freezer in 2/9 3:30PM out 2/17 7:00AM.
TDZ21	2/9	2/18	2/19 10:30AM	5	Freezer in 2/9 3:30PM out 2/18 10:00AM
TDZ22	2/9	2/22	2/22 9:00AM	6	Freezer in 2/9 3:30PM out 2/22 2:00AM.
TDW31	2/9	2/18	2/19 10:30AM	5	Freezer in 2/9 3:30PM out 2/18 10:00AM.
TDW32	2/9	2/22	2/22 9:00AM	6	Freezer in 2/9 3:30PM out 2/22 2:00AM.
TDZ31	2/9	2/18	2/19 10:30AM	5	Freezer in 2/9 3:30PM out 2/18 10:00AM.
TDZ32	2/9	2/22	2/22 9:00AM	6	Freezer in 2/9 3:30PM out 2/22 2:00AM
TDN11	2/12	2/18	2/19 10:30AM	5	Freezer in 2/9 5:30PM out 2/18 10:00AM
TDN12	2/12	2/22	2/22 9:00AM	6	Freezer in 2/12 3:00PM. out 2/22 2:00AM
TDN13	2/12	2/18	2/19 10:30AM	5	Freezer in 2/12 3:00P.M. out 2/19 10:00AM.
TDN21	2/18	2/19	2/22 9:00AM	6	Freezer in 2/12 2:00PM out 2/22 2:00AM
TDN22	2/18	2/18	2/19 10:30AM	5	Freezer in 2/19 2:00PM
TDN23	2/18	2/19	2/22 9:00AM	6	No Freezer - out 2/22 2:00AM
TDN31	2/18	2/18	2/19 10:30AM	5	Freezer in 2/19 3:00P.M.
TDN32	2/18	2/19	2/22 9:00AM	6	No Freezer. out 2/22 2:00AM
TDN33	2/18	2/18	2/19 10:30AM	5	Freezer in 2/19 3:00PM

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E-765 QP1000 QUALIFICATION PLAN
GLASS FABRIC

PANEL BUILD - E-765 PS1000

PANEL #	KIT DATE	DATE LAYUP	CURE DATE/TIME	CURE CYCLE NO.	COMMENTS
TDQ11	2/18	2/19	2/22 9:00AM 10:30AM	6	Out 2/23 2:00AM Freezer in 2/19 3:00PM
TDQ21	2/18	2/18	2/19 9:00AM	5	No Freezer. Out 2/22 2:00AM
TDQ31	2/18	2/19	2/22 10:30AM	6	Freezer in 2/19 3:00PM.
TD111	2/18	2/18	2/19 9:00AM	5	No Freezer. Out 2/22 2:00AM
TD112	2/18	2/19	2/22 10:30AM	6	Freezer in 2/19 3:00PM.
TD113	2/18	2/18	2/19 9:00AM	5	No Freezer. Out 2/22 2:00AM
TD211	2/18	2/19	2/22 10:30AM	6	Freezer in 2/19 3:00PM
TD212	2/18	2/18	2/19 9:00AM	5	No Freezer Out 2/22 2:00A
TD213	2/18	2/19	2/22 3:30AM	6	Freezer in 2/19 3:00PM
TD311	2/22	2/22	2/22 7:30AM	7	No Freezer
TD312	2/22	2/22	2/23 3:30PM	8	No Freezer
TD313	2/22	2/22	2/22 7:30AM	7	No Freezer
TD411	2/22	2/22	2/23 3:30PM	8	No Freezer
TD412	2/22	2/22	2/22 7:30AM	7	No Freezer.
TD413	2/22	2/22	2/23 3:30PM	8	No Freezer.
TD414	2/22	2/22	2/22	7	No Freezer

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