

P<sup>2</sup>SI<sup>®</sup> 700LM (AFRPE<sup>®</sup>-LM) is the *most thermally stable* resin transfer molding (RTM) system available on the market today. P<sup>2</sup>SI<sup>®</sup> 700LM has a glass transition temperature in excess of 700°F (371°C) without a post cure, does not microcrack after standard RTM processing, provides excellent mechanical performance, dielectric properties, durability, and processability. With a long pot life, P<sup>2</sup>SI<sup>®</sup> 700LM's robust processing window allows amenability to a variety of component shapes and sizes, and production environments. P<sup>2</sup>SI<sup>®</sup> 700LM exhibits better thermo-oxidative stability than PMR-15 (and most other PMR-type prepreg systems in the industry) and has the added advantage of being RTM processable, providing the potential for significant reductions in production costs for many components. With a dry service temperature in excess of 600°F (316°C), it is one of the most versatile materials available in the industry.

### Rheological Properties

Property	Value
Softening Temperature, °F (°C)	361 (183)
Cure Exotherm, °F (°C)	716 (380)
Processing Window (Δ), °F (°C)	387 (197)
Pot Life at Temperature, h	
500°F (260°C)	> 2
550°F (288°C)	> 1
572°F (300°C)	> 0.5
Viscosity at Temperature, Poise	
500°F (260°C)	80
550°F (288°C)	24
572°F (300°C)	10

### Neat Resin Properties

Property	Neat Resin	Test Method
Glass Transition Temperature (tan δ), °F (°C)	774 (412)	ASTM D7028
Glass Transition Temperature, °F (°C)	723 (384)	ASTM D3418
Moisture Diffusivity, cm <sup>2</sup> /s	1.43 x 10 <sup>-7</sup>	ASTM D5229
Equilibrium Moisture Content, %	3.4	ASTM D5229
Mass Density, g/cm <sup>3</sup>	1.31	ASTM D792
Coefficient of Thermal Expansion, %/°C	4.66 10 <sup>-3</sup>	ASTM E831
Fracture Toughness, psi ·√in.	780	ASTM D5045

## Typical Properties for T650-35/8HS Textile Composite Laminates – Processed via RTM (Quasi-Isotropic)

Property	UC309 Sizing	Un-sized	Test Method
Thermo-Oxidative Mass Loss, 4-ply, %			—
Aging Condition: 600°F (316°C) / 768h	< 2.4	< 1.5	
Aging Condition: 700°F (371°C) / 100h	< 2.9	< 1.7	
Compression Strength, ksi (MPa)			ASTM D695
550°F (288°C)	61 (421)	68 (469)	
600°F (316°C)	62 (427)	65 (448)	
Aging Condition: 600°F (316°C) / 768h			
550°F (288°C)	59 (407)	61 (421)	
600°F (316°C)	52 (359)	58 (400)	
Aging Condition: 700°F (371°C) / 100h			
550°F (288°C)	48 (331)	62 (427)	
600°F (316°C)	48 (331)	53 (365)	
Aging Condition: Moisture Saturated			
550°F (288°C)	22 (152)	45 (310)	
600°F (316°C)	16 (110)	17 (117)	
Interlaminar Shear Strength, ksi (MPa)			ASTM D2344
550°F (288°C)	7.0 (48)	6.8 (47)	
600°F (316°C)	6.4 (44)	6.8 (47)	
Aging Condition: 600°F (316°C) / 768h			
550°F (288°C)	5.1 (35)	5.4 (37)	
600°F (316°C)	4.9 (34)	5.4 (37)	
Aging Condition: 700°F (371°C) / 100h			
550°F (288°C)	5.1 (35)	5.7 (39)	
600°F (316°C)	4.9 (34)	5.9 (41)	
Aging Condition: Moisture Saturated			
550°F (288°C)	3.8 (26)	4.2 (29)	
600°F (316°C)	2.8 (19)	2.7 (19)	
Flexural Strength, ksi (MPa)			ASTM D790
550°F (288°C)	110 (758)	100 (690)	
Aging Condition: 600°F (316°C) / 768h			
550°F (288°C)	65 (448)	87 (600)	
Aging Condition: 700°F (371°C) / 100h			
550°F (288°C)	78 (538)	85 (586)	
Aging Condition: Moisture Saturated			
550°F (288°C)	58 (400)	49 (338)	

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