



Product Overview

P<sup>2</sup>SI 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 700LM has a glass transition temperature in excess of 700°F (371°C) without a postcure, 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 700LM’s robust processing window allows amenability to a variety of component shapes and sizes, and production environments.

P<sup>2</sup>SI 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, it is one of the most versatile materials available in industry.

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Key Features

- ***Most thermally stable RTM system on the market today***
- **Glass transition temperature in excess of 700°F (371°C) without a postcure**
- **No carcinogenic or mutagenic components**
- **Good toughness**
- **Hydrolytically stable**
- **Excellent dielectrics**
- **Processable by liquid molding techniques, including RTM**
- **Shelf life: infinite**



**Durability and Performance**

**P<sup>2</sup>SI 700LM Neat Resin Properties**

Property	Value
Glass Transition Temperature (tan δ)	774°F (412°C)
Glass Transition Temperature (DSC)	723°F (384°C)
Moisture Diffusivity	1.43 x 10 <sup>-7</sup> cm <sup>2</sup> /s
Equilibrium Moisture Content	3.4%
Mass Density	1.31 g/cm <sup>3</sup>
Coefficient of Thermal Expansion	4.66 x 10 <sup>-3</sup> %/°C
Thermal Decomposition Temperature	901°F (483°C)
Fracture Toughness	780 psi √in.

**P<sup>2</sup>SI 700LM Rheological Properties**

Property	Value
Softening Temperature	361°F (183°C)
Cure Exotherm	716°F (380°C)
Processing Window	387°F (197°C)
Pot Life/Viscosity at 260°C	> 2 h / 80 Poise
Pot Life/Viscosity at 280°C	> 1 h / 24 Poise
Pot Life/Viscosity at 300°C	> 30 minutes / 10 Poise

**T650-35 8HS/P<sup>2</sup>SI 700LM Thermo-Oxidative Mass Loss (4 Ply Laminates)**

Fiber Sizing	Aging Condition	Mass Loss
Unsize Fiber	600°F/768 h	< 1.5%
	700°F/100 h	< 1.7%
UC309 Sized Fiber	600°F/768 h	< 2.4%
	700°F/100 h	< 2.9%

**T650-35 8HS/P<sup>2</sup>SI 700LM 550°F Compressive Strength**

Fiber Sizing	Aging Condition	Compression Strength, ksi (MPa)
Unsize Fiber	none	68 (469)
	600°F/768 h	61 (421)
	700°F/100 h	62 (427)
	moisture saturated	45 (310)



**T650-35 8HS/P<sup>2</sup>SI 700LM 550°F Compressive Strength (Continued)**

Fiber Sizing	Aging Condition	Compression Strength, ksi (MPa)
UC309 Sized Fiber	none	61 (421)
	600°F/768 h	59 (407)
	700°F/100 h	48 (331)
	moisture saturated	22 (152)

**T650-35 8HS/P<sup>2</sup>SI 700LM 600°F Compressive Strength**

Fiber Sizing	Aging Condition	Compression Strength, ksi (MPa)
Unsize Fiber	none	65 (448)
	600°F/768 h	58 (400)
	700°F/100 h	53 (365)
	moisture saturated	17 (117)
UC309 Sized Fiber	none	62 (427)
	600°F/768 h	52 (359)
	700°F/100 h	48 (331)
	moisture saturated	16 (110)

**T650-35 8HS/P<sup>2</sup>SI 700LM 550°F Interlaminar Shear Strength**

Fiber Sizing	Aging Condition	ILSS, ksi (MPa)
Unsize Fiber	none	6.8 (47)
	600°F/768 h	5.3 (37)
	700°F/100 h	5.7 (39)
	moisture saturated	4.2 (29)
UC309 Sized Fiber	none	7.0 (48)
	600°F/768 h	5.1 (35)
	700°F/100 h	5.1 (35)
	moisture saturated	3.8 (26)

**T650-35 8HS/P<sup>2</sup>SI 700LM 600°F Interlaminar Shear Strength**

Fiber Sizing	Aging Condition	ILSS, ksi (MPa)
Unsize Fiber	none	6.8 (47)
	600°F/768 h	5.3 (37)
	700°F/100 h	6.0 (41)
	moisture saturated	2.7 (19)



**T650-35 8HS/P<sup>2</sup>SI 700LM 600°F Interlaminar Shear Strength (Continued)**

Fiber Sizing	Aging Condition	ILSS, ksi (MPa)
UC309 Sized Fiber	none	6.4 (44)
	600°F/768 h	4.9 (34)
	700°F/100 h	5.0 (34)
	moisture saturated	2.8 (19)

**T650-35 8HS/P<sup>2</sup>SI 700LM 550°F Flexural Strength**

Fiber Sizing	Aging Condition	Flexural Strength, ksi (MPa)
Unsize Fiber	none	100 (690)
	600°F/768 h	87 (600)
	700°F/100 h	85 (586)
	moisture saturated	49 (338)
UC309 Sized Fiber	none	110 (758)
	600°F/768 h	65 (448)
	700°F/100 h	78 (538)
	moisture saturated	58 (400)

**Important Notice**

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