

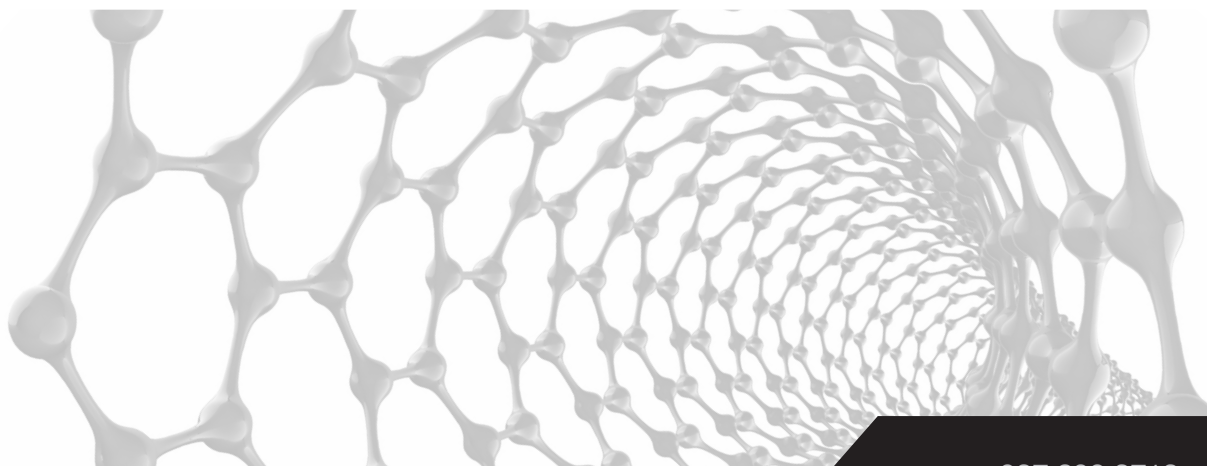
P²SI[®] 635LM provides a unique balance of thermal stability, resin infusion processability, mechanical performance, and affordability. P²SI[®] 635LM offers significant versatility compared to competitive products in the marketplace, including a high-use temperature (up to 550°F continuous), low-melt viscosity, large processing window, and flexible cure behavior. Cure cycles range from 600°F/4h with a post cure to 700°F/1h without a post cure. The ability to be cured for short times or lower temperatures is amenable to both cure temperature restrictions and component production schedules. P²SI[®] 635LM exhibits good thermo-oxidative stability, mechanical performance, and flexibility, making it one of the most versatile new materials we offer. P²SI[®] 635LM is available as a PMR-type prepreg or as a melt-processable solid.

RHEOLOGICAL PROPERTIES

PROPERTY	VALUE
Softening Temperature, °F (°C)	279 (137)
Cure Exotherm Temperature, °F (°C)	621 (327)
Processing Window (Δ), °F (°C)	342 (190)
Minimum Dynamic Viscosity, Poise	
626°F (330°C)	3
Pot Life at Temperature, h	
500°F (260°C)	2
536°F (280°C)	2
572°F (300°C)	1
Maximum Viscosity at Temperature, Poise	
500°F (260°C)	60
536°F (280°C)	50
572°F (300°C)	40

RESIN PROPERTIES

PROPERTY	NEAT RESIN	T650-35 8HS/UC309	16781 S-2 GLASS	TEST METHOD
Glass Transition Temperature, °F (°C)	635 (335)	—	—	ASTM D3418
Glass Transition Temperature, °F (°C)				ASTM D7028
Storage Modulus, E'	—	626 (330)	628 (331)	
Loss Modulus, E''	—	666 (352)	682 (361)	
tanδ	—	687 (364)	694 (368)	
Maximum Moisture Gain, 8-ply, %	—	1.03	—	ASTM D5229
Thermo-Oxidative Mass Loss, %				—
600°F (316°C) / 100h	—	0.51	0.73	
550°F (288°C) / 646h	—	0.45	—	



TYPICAL MECHANICAL PROPERTIES FOR TEXTILE COMPOSITE LAMINATES

PROPERTY	T650-35 8HS/UC309	16781 S-2 GLASS	TEST METHOD
THREE-POINT FLEXURAL STRENGTH, ksi (MPa)			ASTM D790
75°F (23°C)	136 (938)	127 (876)	
Aging: 600°F (316°C) / 100h			
75°F (23°C)	116 (800)	—	
Aging: 550°F (288°C) / 646h			
75°F (23°C)	109 (752)	—	
550°F (288°C)	90 (621)	—	
Aging: Moisture Saturated			
75°F (23°C)	101 (694)	—	
550°F (288°C)	70 (483)	—	
INTERLAMINAR SHEAR STRENGTH, ksi (MPa)			ASTM D2344
75°F (23°C)	12.1 (83.4)	9.8 (67.6)	
Aging: 600°F (316°C) / 100h			
75°F (23°C)	10.3 (71.0)	—	
Aging: 550°F (288°C) / 646h			
75°F (23°C)	6.3 (43.4)	—	
550°F (288°C)	6.0 (41.4)	—	
Aging: Moisture Saturated			
75°F (23°C)	6.8 (46.9)	—	
550°F (288°C)	5.3 (36.5)	—	

LAMINATE PROPERTIES	DESIZED T650-35 8HS	TEST METHOD
SHORT BEAM SHEAR KSI (MPA)		ASTM D790
75°F (23°C)	8.7 (59.8)	
550°F (288°C)	4.7 (32.6)	
Moisture Saturated 500°F (260°C)	2.7 (18.6)	
TENSION STRENGTH KSI (MPA)		ASTM D3039
-65°F (-54°C)	90.1 (621)	
75°F (23°C)	94.6 (653)	
550°F (288°C)	83.3 (574)	
Moisture Saturated 500°F (260°C)	71.2 (491)	
COMPRESSION STRENGTH KSI (MPA)		ASTM D695
75°F (23°C)	70.8 (488)	
550°F (288°C)	63.4 (437)	
Moisture Saturated 500°F (260°C)	35.5 (245)	
OPEN HOLE COMPRESSION STRENGTH KSI (MPA)		Northrop NAI-1504C
75°F (23°C) 48.0 (331)	48.0 (331)	
550°F (288°C) 34.3 (236)	34.3 (236)	
Moisture Saturated 500°F (260°C)	32.6 (224)	

LAMINATE PROPERTIES	DESIZED T650-35 8HS	TEST METHOD
OPEN HOLE TENSION STRENGTH KSI (MPA)		ASTM D5766
-65°F (-54°C)	66.3 (457)	
75°F (23°C)	66.1 (456)	
550°F (288°C)	65.7 (453)	
Moisture Saturated 500°F (260°C)	62.6 (431)	
COMPRESSION AFTER IMPACT STRENGTH KSI (MPA)		ASTM D7137
75°F (23°C)	38.1 (263)	
SINGLE SHEAR BEARING STRENGTH KSI (MPA)		ASTM D5961
75°F (23°C)	156 (1076)	
550°F (288°C)	114 (787)	
Moisture Saturated 500°F (260°C)	110 (764)	

LAMINATE PROPERTIES	DESIZED T650-35 8HS	TEST METHOD
SHORT BEAM SHEAR STRENGTH KSI (MPA)		ASTM D2344
-65°F (-54°C)	9.5 (65.7)	
75°F (23°C)	9.6 (66.5)	
350°F (177°C)	7.7 (52.7)	
550°F (288°C)	5.6 (38.7)	
Moisture Saturated 350°F (177°C)	7.2 (49.3)	
Moisture Saturated 500°F (260°C)	3.2 (22.1)	
WARP TENSION STRENGTH KSI (MPA)		ASTM D3039
-65°F (-54°C)	114 (784)	
75°F (23°C)	133 (914)	
550°F (288°C)	107 (738)	
Moisture Saturated 350°F (177°C)	110 (757)	
Moisture Saturated 500°F (260°C)	109 (751)	
FILL TENSION STRENGTH KSI (MPA)		ASTM D3039
-65°F (-54°C)	105 (726)	
75°F (23°C)	137 (941)	
550°F (288°C)	100 (689)	
Moisture Saturated 350°F (177°C)	112 (774)	
Moisture Saturated 500°F (260°C)	110 (759)	
IN-PLANE SHEAR STRENGTH KSI (MPA)		ASTM D3518
-65°F (-54°C)	12.6 (86.7)	
75°F (23°C)	13.2 (90.8)	
350°F (177°C)	13.6 (93.7)	
450°F (232°C)	11.0 (75.9)	
500°F (260°C)	9.6 (66.3)	
550°F (288°C)	9.2 (63.1)	
Moisture Saturated 350°F (177°C)	12.6 (87.1)	
Moisture Saturated 450°F (232°C)	10.7 (73.9)	
Moisture Saturated 500°F (260°C)	10.0 (68.6)	

LAMINATE PROPERTIES	DESIZED T650-35 8HS	TEST METHOD
WARP COMPRESSION STRENGTH KSI (MPA)		ASTM D695
-65°F (-54°C)	95.3 (657)	
75°F (23°C)	88.0 (607)	
350°F (177°C)	68.3 (471)	
450°F (232°C)	53.8 (371)	
500°F (260°C)	44.1 (304)	
550°F (288°C)	44.6 (308)	
Moisture Saturated 350°F (177°C)	53.7 (370)	
Moisture Saturated 450°F (232°C)	41.0 (283)	
Moisture Saturated 500°F (260°C)	28.9 (199)	
FILL COMPRESSION STRENGTH KSI (MPA)		ASTM D695
-65°F (-54°C)	68.1 (470)	
75°F (23°C)	78.1 (538)	
350°F (177°C)	55.8 (384)	
450°F (232°C)	50.2 (346)	
500°F (260°C)	45.5 (314)	
550°F (288°C)	47.8 (329)	
Moisture Saturated 350°F (177°C)	51.7 (356)	
Moisture Saturated 450°F (232°C)	40.2 (277)	
Moisture Saturated 500°F (260°C)	30.9 (213)	

* tests other than ASTM D2344 normalized to 60% Vf

FLUID SENSITIVITY SCREENING	DESIZED T650-35 8HS	TEST METHOD
SHORT BEAM SHEAR KSI (MPA)		ASTM D2344
Short Duration Contact		
Fluid Type		
Control-Saturated 75°F (23°C)	8.9 (61.4)	
350°F (177°C)	6.7 (46.1)	
MEK wash fluid	7.6 (52.4)	
350°F (177°C)	5.2 (35.9)	
Polypropylene Glycol deicer	8.8 (60.9)	
350°F (177°C)	7.5 (51.9)	
Isopropyl Alcohol Deicer	9.1 (62.6)	
350°F (177°C)	7.2 (49.6)	
15 Day Duration Contact		
Fluid Type		
Control Dry 75°F (23°C)	9.3 (64.4)	
350°F (177°C)	7.2 (49.8)	
Control Wet 75°F (23°C)	8.9 (61.4)	
350°F (177°C)	6.7 (46.1)	
Methyl Ethyl Ketone 75°F (23°C)	7.6 (52.4)	
350°F (177°C)	5.2 (35.9)	

Propylene Glycol 75°F (23°C)	8.8 (60.9)
350°F (177°C)	7.5 (51.9)
Isopropanol 75°F (23°C)	9.1 (62.6)
350°F (177°C)	7.2 (49.6)
LL Aviation Fuel 75°F (23°C)	9.8 (67.4)
350°F (177°C)	7.3 (50.6)
Jet Fluid 75°F (23°C)	9.5 (65.2)
350°F (177°C)	7.4 (50.9)
Hyd. Oil-5606 75°F (23°C)	9.9 (68.2)
350°F (177°C)	7.9 (54.3)
Hyd. Oil-83282 75°F (23°C)	9.7 (66.9)
350°F (177°C)	7.7 (53.1)
Standard Oil 75°F (23°C)	9.8 (67.4)
350°F (177°C)	7.7 (52.8)
Sea Water 75°F (23°C)	9.3 (63.9)
350°F (177°C)	6.8 (47.0)
Skydrol LD-4 75°F (23°C)	10.2 (70.2)
350°F (177°C)	7.6 (52.5)
Skydrol /Water 75°F (23°C)	9.9 (68.2)
350°F (177°C)	7.4 (50.8)
Turbine oil 75°F (23°C)	10.1 (70.0)
350°F (177°C)	7.6 (52.5)
Polyalphaolefin 75°F (23°C)	9.4 (64.8)
350°F (177°C)	7.6 (52.2)

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