

PREPREGS

PRODUCT : **AFRPE®-4**

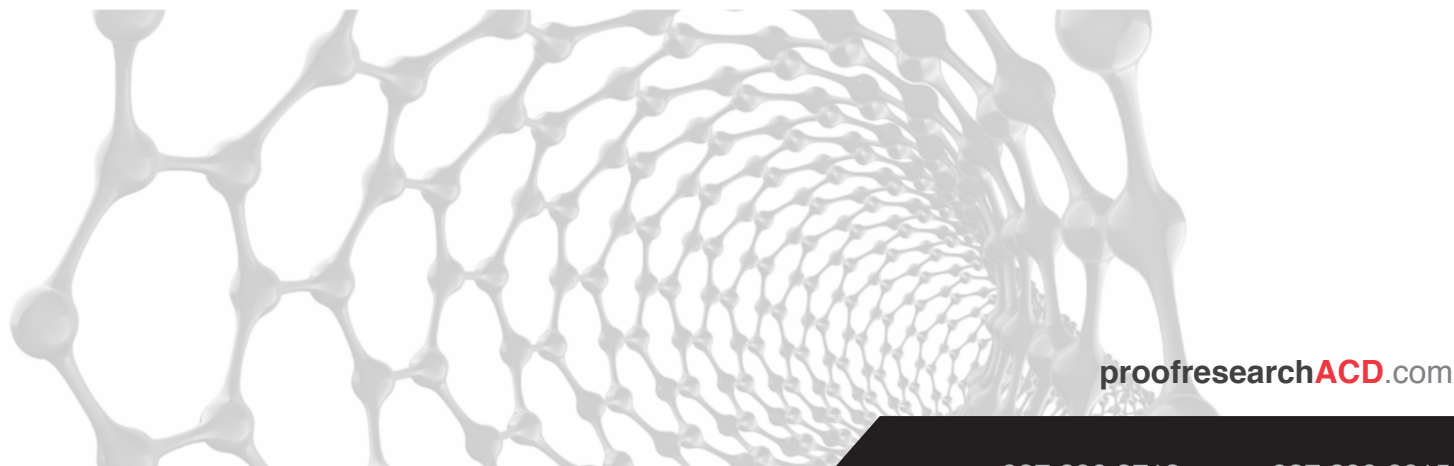
AFRPE®-4 is an aerospace-qualified, high-temperature structural thermosetting polyimide prepeg with service temperatures up to 600°F. AFRPE®-4 is an autoclave-processable, thermally-stable, addition-curing thermoset polyimide with an excellent balance of processability, thermo-oxidative stability (TOS), environmental durability and mechanical performance. This system exhibits exceptional toughness, good dielectric properties, low toxicity (prepregs are based on ethanol and are MDA free), and may be autoclave processed into thick (greater than 1-inch), microcrack-free, low-void laminates. AFRPE®-4 is the industry-preferred product when a combination of processability, thermo-oxidative stability, toughness and structural performance are required. This state-of-the-art composite system is available as a prepreg (carbon, glass, quartz or ceramic reinforcements) or as a resin.

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'	—	—	628 (331)	
Loss Modulus, E''	—	—	682 (361)	
tanδ	—	—	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	—	



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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)	—	

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