

E-761 Epoxy Prepregs

Park's E-761 is a versatile self-adhesive epoxy matrix for use in aerospace and commercial applications where ease of processing and cost are key considerations

Key Features & Benefits

- Controlled flow for ease of processing
- Self adhesive for honeycomb or foam sandwich laminates without the use of film adhesive
- Flexible cure temperature range of 82°C to 121°C
- Good electrical properties
- Flame and fire retardant per FAR 25.853
- Wet service temperatures up to 82°C

Product Forms

- Available on a wide variety of reinforcements, including fiberglass, quartz (including Astroquartz®), graphite and aramid (including Kevlar®)
- Solution coated fabrics up to 152 cm wide
- Also available on aluminized fiberglass (TEF-7)
- Compatible with Autoclave, Vacuum Bag/Oven or Press Cure processes

Applications / Qualifications

- Radomes
- Aircraft Interiors
- Secondary Aircraft Structures
- Sandwich Panels
- MRI Resonators
- Widely specified on commercial and military aircraft programs

- Tested in accordance with BMS-8-79 upon request

For Information about Park's materials:

Newton, KS +1.316.283.6500

info@parkaerospace.com

www.parkaerospace.com



E-761 Epoxy Prepregs

Prepreg and Laminate Physical Properties - Glass Reinforced

Reinforcement	7781 E-Glass	120 E-Glass	6781 S2-Glass	4581 Quartz
Fabric Area Weight (gsm)	303	107	304	288
Prepreg Resin Content (%)	39	45	32	38
Resin Flow (135°C, 345 KPa) (%)	14	14	14	18
Volatiles (135°C, 8 min) (%)	1.5	1.5	1.5	1.5
Gel Time (sec)	240	350	240	350
Per Ply Thickness (cm)	.023	.010	.025	.025
Tg (dry, by DMA)	115°C / 240°F			

Prepreg and Laminate Physical Properties – Non-Glass Reinforcements

Reinforcement	3K PW Carbon	3K 8HS Carbon	285 Kevlar®	Spectra® 951 - PT
Fabric Area Weight (gsm)	193	370	170	98
Prepreg Resin Content (%)	42	42	53	50
Resin Flow (135°C, 345 KPa) (%)	10	12	20	6
Volatiles (135°C, 8 min) (%)	2%	2%	2.0	1.0
Gel Time (sec)	360	375	350	490
Per Ply Thickness (cm)	.018	.036	.023	.025
Tg (dry, by DMA)	115°C / 240°F			

Selected Laminate Electrical Properties

	Frequency	Dielectric Constant (Dk)	Loss Tangent (Df)
E-761 w/ E-Glass	9.375 GHz	4.20	0.013
	18 GHz	4.20	0.013
E-761 w/ Quartz	9.375 GHz	3.30	0.009
	18 GHz	3.15	0.008
E-761 w/ Spectra® 951	5 – 18 GHz	2.6 – 2.8	0.010

Sandwich Properties (7781 reinforcement)

	Mold Surface	Bag Surface
Climbing Drum Peel (mm kg/76 mm) ASTM-D-1781, room temp	6.67	6.71
Flatwise Tensile Strength (kPa)	5790	4780 / 3785
Long Beam Flexure Strength (kg)	93	71/ 59
Long Beam Flexure (P/Y kg/cm)	35.9	27 / 22

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Aerospace Composite Materials

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Laminate Mechanical Properties - Glass Reinforced

Reinforcement	7781 E-Glass	120 E-Glass	6781 S2-Glass	4581 Quartz
Tensile Strength, 0° (MPa) ASTM-D-638				
-54°C Dry	655	572	--	744
21°C Dry	496	455	607	593
71°C Dry	448	414	--	496
93°C Dry	324	365	--	--
21°C Wet	407	345	593	593
71°C Wet	359	290	--	496
Tensile Modulus (GPa) ASTM-D-638				
-54°C Dry	24.1	21.4	--	20.7
21°C Dry	25.5	20.7	--	24.8
71°C Dry	25.5	22.1	--	20.0
93°C Dry	26.9	22.1	--	--
21°C Wet	23.4	22.1	--	20.0
71°C Wet	22.7	20.0	--	--
Compressive Strength (MPa) ASTM-D-695				
-54°C Dry	579	621	--	510
21°C Dry	455	483	510	448
71°C Dry	379	414	--	407
93°C Dry	359	359	--	--
21°C Wet	386	400	455	--
71°C Wet	324	324	--	234
Compressive Modulus (GPa) ASTM-D-695				
-54°C Dry	25.5	22.1	--	22.8
21°C Dry	24.8	22.1	--	20.0
71°C Dry	24.1	21.4	--	21.4
93°C Dry	24.1	20.0	--	--
21°C Wet	24.8	22.8	--	--
71°C Wet	24.1	21.4	--	20.7
Flexural Strength (MPa) ASTM-D-790				
-54°C Dry	807	758	--	676
21°C Dry	655	593	814	634
71°C Dry	531	538	--	483
93°C Dry	455	455	--	--
21°C Wet	552	496	--	--
71°C Wet	448	414	--	214
Flexural Modulus (GPa) ASTM-D-790				
-54°C Dry	22.1	19.3	--	18.6
21°C Dry	22.1	19.3	--	22.1
71°C Dry	20.0	18.6	--	16.5
93°C Dry	19.3	17.2	--	--
21°C Wet	20.7	18.6	--	--
71°C Wet	18.6	17.2	--	15.2
Short Beam Shear (MPa) ASTM-D-2344				
-54°C Dry	79.3	80.0	--	62.1
21°C Dry	62.1	55.2	59.3	48.3
71°C Dry	44.8	43.4	--	36.5
93 °C Dry	35.9	37.2	--	15.2
21°C Wet	55.2	48.3	--	----
71°C Wet	41.4	35.9	--	

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Laminate Mechanical Properties - Non-Glass Reinforced

Reinforcement	3K PW Carbon	3K 8HS Carbon	285 Kevlar®	Spectra® 951 - PT
Tensile Strength, 0° (MPa) ASTM-D-638				
23°C Dry	648	586	524	448
71°C Dry	593	--	--	--
93°C Dry	545	--	--	--
23°C Wet	621	--	421	--
71°C Wet	565	--	--	--
Tensile Modulus (GPa) ASTM-D-638				
23°C Dry	60.7	55.2	34.5	--
71°C Dry	60.0	--	--	--
93°C Dry	60.0	--	--	--
23°C Wet	60.0	--	29.6	--
71°C Wet	57.9	--	--	--
Compressive Strength (MPa) ASTM-D-695				
23°C Dry	427	510	193	34.5
71°C Dry	352	--	--	--
93°C Dry	310	--	--	--
23°C Wet	400	--	179	--
71°C Wet	310	--	--	--
Compressive Modulus (GPa) ASTM-D-695				
23°C Dry	62.1	53.1	28.3	26.9
71°C Dry	67.6	--	--	--
93°C Dry	59.3	--	--	--
23°C Wet	57.9	--	26.2	--
71°C Wet	59.3	--	--	--
Flexural Strength (MPa) ASTM-D-790				
-54°C Dry	--	--	503	--
23°C Dry	745	42.7	455	96.5
71°C Dry	579	--	372	--
93°C Dry	545	--	331	--
23°C Wet	690	--	441	--
71°C Wet	490	--	352	--
Flexural Modulus (GPa) ASTM-D-790				
-54°C Dry	--	--	24.8	--
23°C Dry	49.6	54.5	26.2	--
71°C Dry	46.9	--	24.8	--
93°C Dry	47.6	--	23.4	--
23°C Wet	47.6	--	26.9	--
71°C Wet	46.9	--	26.2	--
Short Beam Shear (MPa) ASTM-D-2344				
-54°C Dry	--	--	38.6	--
23°C Dry	51.0	54.5	41.4	--
71°C Dry	37.9	--	33.8	--
93°C Dry	32.4	--	--	--
23°C Wet	44.8	--	37.2	--
71°C Wet	30.3	--	29.0	--

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Prepreg Storage Life

Tack Life: 14 days @ 24°C
Out Life: 30 days @ 24°C
Shelf Life: 6 months @ -18°C

Note: The following guidelines are provided to assist Park material users with general recommendations for successful processing. The recommendations are for general review purposes only and process adjustments may be required to achieve optimum results in your specific manufacturing environment.

Autoclave Cure Cycle

- Apply 24"Hg vacuum (minimum) and 276-690 kPa pressure
- Vent Vacuum when autoclave pressure reaches 103 – 138 kPa
- Increase from room temperature to 121 – 127 °C at a rate of 1-3°C/min (maximum)
 - Reduce cure temperature to 110°C (maximum) for Spectra® prepregs
- Hold cure temperature for 90 – 120 minutes
- Cool to 66°C at 5°C/min prior to releasing autoclave pressure

Vacuum Bag / Oven Cure Cycle

- Apply 24"Hg vacuum (minimum) and maintain throughout cure cycle
- Increase from room temperature to 121 – 127 °C at a rate of 1-3°C/min (maximum)
 - Reduce cure temperature to 110°C (maximum) for Spectra® prepregs
- Hold temperature and vacuum for 90 – 120 minutes
- Cool to 66°C at 5°C/min prior to releasing vacuum

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