

## 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 180°F to 250°F
- Good electrical properties
- Flame and fire retardant per FAR 25.853
- Wet service temperatures up to 180°F
- Dry service temperatures up to 200°F

### Product Forms

- Available on a wide variety of reinforcements, including fiberglass, quartz (including Astroquartz®), graphite and aramid (including Kevlar®)
- Solution coated fabrics up to 60 inches 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:

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## 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 (Oz/SqYd)	8.95	3.16	8.97	8.5
Prepreg Resin Content (%)	39	45	32	38
Resin Flow (275°F, 50 psi) (%)	14	14	14	18
Volatiles (275°F, 8 min) (%)	1.5	1.5	1.5	1.5
Gel Time (sec)	240	350	240	350
Per Ply Thickness (inches)	.009	.004	.010	.010
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 (Oz/SqYd)	5.69	10.91	5.0	2.9
Prepreg Resin Content (%)	42	42	53	50
Resin Flow (275°F, 50 psi) (%)	10	12	20	6
Volatiles (275°F, 8 min) (%)	2%	2%	2.0	1.0
Gel Time (sec)	360	375	350	490
Per Ply Thickness (inches)	.007	.014	.009	.010
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 (in-lb/3 in) ASTM-D-1781, room temp	14.7	14.8
Flatwise Tensile Strength (psi)	840	693 / 549
Long Beam Flexure Strength (lbs)	205	157 / 130
Long Beam Flexure (P/Y lb/in)	201	152 / 124

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# Aerospace Composite Materials

## E-761 Epoxy Prepregs

### Laminate Mechanical Properties - Glass Reinforced

Reinforcement	7781 E-Glass	120 E-Glass	6781 S2-Glass	4581 Quartz
<b>Tensile Strength, 0° (Ksi)</b> ASTM-D-638				
-65°F Dry	95	83	--	108
70°F Dry	72	66	88	86
160°F Dry	65	60	--	72
200°F Dry	47	53	--	--
70°F Wet	59	50	86	86
160°F Wet	52	42	--	72
<b>Tensile Modulus (Msi)</b> ASTM-D-638				
-65°F Dry	3.5	3.1	--	3.0
70°F Dry	3.7	3.0	--	3.6
160°F Dry	3.7	3.2	--	2.9
200°F Dry	3.9	3.2	--	--
70°F Wet	3.4	3.2	--	2.9
160°F Wet	3.3	2.9	--	--
<b>Compressive Strength (Ksi)</b> ASTM-D-695				
-65°F Dry	84	90	--	74
70°F Dry	66	70	74	65
160°F Dry	55	60	--	59
200°F Dry	52	52	--	--
70°F Wet	56	58	66	--
160°F Wet	47	47	--	34
<b>Compressive Modulus (Msi)</b> ASTM-D-695				
-65°F Dry	3.7	3.2	--	3.3
70°F Dry	3.6	3.2	--	2.9
160°F Dry	3.5	3.1	--	3.1
200°F Dry	3.5	2.9	--	--
70°F Wet	3.6	3.3	--	--
160°F Wet	3.5	3.1	--	3.0
<b>Flexural Strength (Ksi)</b> ASTM-D-790				
-65°F Dry	117	110	--	98
70°F Dry	95	86	118	92
160°F Dry	77	78	--	70
200°F Dry	66	66	--	--
70°F Wet	80	72	--	--
160°F Wet	65	60	--	31
<b>Flexural Modulus (Msi)</b> ASTM-D-790				
-65°F Dry	3.2	2.8	--	2.7
70°F Dry	3.2	2.8	--	3.2
160°F Dry	2.9	2.7	--	2.4
200°F Dry	2.8	2.5	--	--
70°F Wet	3.0	2.7	--	--
160°F Wet	2.7	2.5	--	2.2
<b>Short Beam Shear (Ksi)</b> ASTM-D-2344				
-65°F Dry	11.5	11.6	--	9.0
70°F Dry	9.0	8.0	8.6	7.0
160°F Dry	6.5	6.3	--	5.3
200°F Dry	5.2	5.4	--	2.2
70°F Wet	8.0	7.0	--	--
160°F Wet	6.0	5.2	--	--

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# Aerospace Composite Materials

## E-761 Epoxy Prepregs

### Laminate Mechanical Properties - Non-Glass Reinforced

Reinforcement	3K PW Carbon	3K 8HS Carbon	285 Kevlar®	Spectra® 951 - PT
<b>Tensile Strength, 0° (Ksi)</b> ASTM-D-638				
70°F Dry	94	85	76	65
160°F Dry	86	--	--	--
200°F Dry	79	--	--	--
70°F Wet	90	--	61	--
160°F Wet	82	--	--	--
<b>Tensile Modulus (Msi)</b> ASTM-D-638				
70°F Dry	8.8	8.0	5.0	--
160°F Dry	8.7	--	--	--
200°F Dry	8.7	--	--	--
70°F Wet	8.7	--	4.3	--
160°F Wet	8.4	--	--	--
<b>Compressive Strength (Ksi)</b> ASTM-D-695				
70°F Dry	62	74	28	5
160°F Dry	51	--	--	--
200°F Dry	45	--	--	--
70°F Wet	58	--	26	--
160°F Wet	45	--	--	--
<b>Compressive Modulus (Msi)</b> ASTM-D-695				
70°F Dry	9.0	7.7	4.1	3.9
160°F Dry	9.8	--	--	--
200°F Dry	8.6	--	--	--
70°F Wet	8.4	--	3.8	--
160°F Wet	8.6	--	--	--
<b>Flexural Strength (Ksi)</b> ASTM-D-790				
-65°F Dry	--	--	73	--
70°F Dry	108	6.2	66	14
160°F Dry	84	--	54	--
200°F Dry	79	--	48	--
70°F Wet	100	--	64	--
160°F Wet	71	--	51	--
<b>Flexural Modulus (Msi)</b> ASTM-D-790				
-65°F Dry	--	--	3.6	--
70°F Dry	7.2	7.9	3.8	--
160°F Dry	6.8	--	3.6	--
200°F Dry	6.9	--	3.4	--
70°F Wet	6.9	--	3.9	--
160°F Wet	6.8	--	3.8	--
<b>Short Beam Shear (Ksi)</b> ASTM-D-2344				
-65°F Dry	--	--	5.6	--
70°F Dry	7.4	7.9	6.0	--
160°F Dry	5.5	--	4.9	--
200°F Dry	4.7	--	--	--
70°F Wet	6.5	--	5.4	--
160°F Wet	4.4	--	4.2	--

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#### Prepreg Storage Life

- Tack Life: 14 days @ 75°F
- Out Life: 30 days @ 75°F
- Shelf Life: 6 months @ 0°F

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 40 -100 psi pressure
- Vent Vacuum when autoclave pressure reaches 15 – 20 psi
- Increase from room temperature to 250 – 260 °F at a rate of 2-5°F/min (maximum)
  - Reduce cure temperature to 230°F (maximum) for Spectra® prepregs
- Hold cure temperature for 90 – 120 minutes
- Cool to 150°F at 8°F/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 250 – 260 °F at a rate of 2-5°F/min (maximum)
  - Reduce cure temperature to 230°F (maximum) for Spectra® prepregs
- Hold temperature and vacuum for 90 – 120 minutes
- Cool to 150°F at 8°F/min prior to releasing vacuum

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