

Aerospace Composite Materials

V-376 Cyanate Ester Prepregs

Product Overview

Park's V-376 is a Cyanate Ester matrix providing excellent electrical and mechanical properties for harsh aircraft shipboard, and undersea applications for Radomes, Antenna, and Reflectors. Simple processing and good handling characteristics make V-376 an ideal alternative to BMI and polyimide resin systems.

Key Features & Benefits

- Outstanding electrical properties (Dk, Df)
- Excellent Moisture resistance properties
- Simplified handling and processing characteristics
- Minimal degradation of mechanical properties in Hot/Wet environments
- Self-Adhesive to many types of foam and honeycomb core

Product Forms

- Available on a wide variety of reinforcements, including fiberglass and quartz
- Solution coated fabrics up to 152 cm wide
- Compatible with autoclave, vacuum bag/oven or press molding processes

Applications / Qualifications

- Radomes
- Reflectors
- Antenna
- Signature Control

Qualified Specifications

- GC110 LM

For Information about Park's materials:

Newton, KS +1.316.283.6500

info@parkaerospace.com

www.parkaerospace.com



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Prepreg Physical Properties

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
Fiber Areal Weight (gsm)	303	285	112	288
Resin Solids (%)	39 ±3	39 ±3	38 ±3	38 ±3
Volatile Content (% Max)	2	2	1.5	1.5
Flow – 163°C @ 345 KPa (%)	18 ±10	18 ±10	23±10	23±10
Gel time @ 163°C (sec)	50-250	50-250	50-250	50-250

Laminate Physical / Electrical Properties

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
Cure per ply thickness (cm.)	.023	.028	.013	.025
Dielectric Constant (Dk) @ 9.375 GHz	4.0	3.2 – 3.3	3.3	3.3
Loss Tanget (Df) @ 9.375 GHz	0.011	0.004 – 0.007	.007	.007
Glass Transition (Tg, DMA)	178°C with post-cure 148°C w/o post-cure			
Z-Axis CTE	52 ppm/°C			
Moisture Absorption 14 day soak at 71°C	0.67% by weight			

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Laminate Mechanical Properties

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
Tensile Strength, 0° (MPa)				
24°C Dry	386	690	662	648
82°C Wet	--	483	--	--
149°C Wet	--	--	490	427
149°C Dry	359	648	--	--
204°C Dry	--	421	--	--
ASTM-D-638				
Tensile Modulus (GPa)				
24°C Dry	21.4	26.2	24.8	23.4
82°C Wet	--	22.1	--	--
149°C Wet	--	--	22.8	23.4
149°C Dry	22.1	27.6	--	--
104°C Dry	--	24.8	--	--
ASTM-D-638				
Flexural Strength, 0° (MPa)				
24°C Dry	621	758	710	786
82°C Wet	--	586	--	--
149°C Dry	558	517	--	--
204°C Dry	--	290	--	--
ASTM-D-790				
Flexural Modulus (GPa)				
24°C Dry	23.4	24.8	23.4	22.8
82°C Wet	--	24.8	--	--
149°C Dry	21.4	22.1	--	--
204°C Dry	--	16.5	--	--
ASTM-D-790				
Compressive Strength (MPa)				
24°C Dry	400	517	476	531
82°C Wet	--	448	--	--
149°C Wet	--	--	317	372
149°C Dry	345	414	400	427
204°C Dry	--	345	--	--
ASTM-D-695				
Compressive Modulus (GPa)				
24°C Dry	--	24.1	24.8	22.8
82°C Wet	--	22.8	--	--
149°C Wet	--	--	24.8	24.1
149°C Dry	--	23.4	25.5	24.1
204°C Dry	--	23.4	--	--
ASTM-D-695				

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Laminate Mechanical Properties (continued)

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
Short Beam Shear (MPa)				
24°C Dry	115	58.6	63.4	75.8
82°C Wet	--	51.7	--	--
149°C Dry	82.1	38.6	--	--
204°C Dry	--	17.9	--	--
ASTM-D-2344				
In-Plane Shear Strength (MPa)				
24°C Dry	--	118.6	--	--
71°C Dry	--	110	--	--
71°C Wet	--	98.6	--	--
ASTM-D-3518				
In-Plane Shear Modulus (GPa)				
24°C Dry	--	4.8	--	--
71°C Dry	--	4.1	--	--
71°C Wet	--	4.1	--	--
ASTM-D-3518				
Compression After Impact Strength, 1500 mm kg/mm				
NASA 1092	--	11.8	--	--
Compression After Impact Modulus , 1500 mm kg/mm				
NASA 1092	--	1.1	--	--

All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a Park representative directly. Park reserves the right to change these typical values as a natural process of refining our testing equipment and techniques.

Processing Guidelines

Prepreg Storage Life

Tack Life: 14 days @ 24°C
Out Life: 21 days @ 24°C
Shelf Life: 12 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 610 mmHg vacuum (minimum) for 1 hour before beginning heat cycle
- Apply 345 – 690 kPa autoclave pressure and vent vacuum when autoclave pressure reach 103 – 138 kPa
- Increase from room temperature to 177°C +/- 6°C at a rate of 1 - 3°C/min (maximum)
- Hold cure temperature for 120 - 240 minutes
- Cool to 66°C at 1- 5°C/min prior to releasing autoclave pressure
- Post cure of 213°C for 2 – 4 hours is recommended