

# 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 60 inches 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:

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Technical Datasheet

## V-376 Cyanate Ester Prepregs

### 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 – 325°F @ 50psi (%)	18 ±10	18 ±10	23±10	23±10
Gel time @ 325°F (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 (in.)	.009	.011	.005	.010
Dielectric Constant (Dk) @ 9.375 GHz	4.0	3.2 – 3.3	3.3	3.3
Loss Tangent (Df) @ 9.375 GHz	0.011	0.004 – 0.007	.007	.007
Glass Transition (Tg, DMA)	352°F with post-cure 298°F w/o post-cure			
Z-Axis CTE	52 ppm/°C			
Moisture Absorption 14 day soak at 160°F	0.67% by weight			

All test data provided are typical values and not intended to be specification values. For review of critical specification tolerances, please contact a company representative directly.

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## V-376 Cyanate Ester Prepregs

### Laminate Mechanical Properties

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
<b>Tensile Strength, 0° (Ksi)</b>				
75°F Dry	56	100	96	94
180°F Wet	--	70	--	--
300°F Wet	--	--	71	62
300°F Dry	52	94	--	--
400°F Dry	--	61	--	--
ASTM-D-638				
<b>Tensile Modulus (Msi)</b>				
75°F Dry	3.1	3.8	3.6	3.4
180°F Wet	--	3.2	--	--
300°F Wet	--	--	3.3	3.4
300°F Dry	3.2	4.0	--	--
400°F Dry	--	3.6	--	--
ASTM-D-638				
<b>Flexural Strength, 0° (Ksi)</b>				
75°F Dry	90	110	103	114
180°F Wet	--	85	--	--
300°F Dry	81	75	--	--
400°F Dry	--	42	--	--
ASTM-D-790				
<b>Flexural Modulus (Msi)</b>				
75°F Dry	3.4	3.6	3.4	3.3
180°F Wet	--	3.6	--	--
300°F Dry	3.1	3.2	--	--
400°F Dry	--	2.4	--	--
ASTM-D-790				
<b>Compressive Strength (Ksi)</b>				
75°F Dry	58	75	69	77
180°F Wet	--	65	--	--
300°F Wet	--	--	46	54
300°F Dry	50	60	58	62
400°F Dry	--	50	--	--
ASTM-D-695				
<b>Compressive Modulus (Msi)</b>				
75°F Dry	--	3.5	3.6	3.3
180°F Wet	--	3.3	--	--
300°F Wet	--	--	3.6	3.5
300°F Dry	--	3.4	3.7	3.5
400°F Dry	--	3.4	--	--
ASTM-D-695				



### V-376 Cyanate Ester Prepregs

#### Laminate Mechanical Properties (continued)

Reinforcement	7781 E-Glass	581 Quartz	4503 Quartz	4581 Quartz
<b>Short Beam Shear (Ksi)</b>				
75°F Dry	16.7	8.5	9.2	11.0
180°F Wet	--	7.5	--	--
300°F Dry	11.9	5.6	--	--
400°F Dry	--	2.6	--	--
ASTM-D-2344				
<b>In-Plane Shear Strength (Ksi)</b>				
75°F Dry	--	17.2	--	--
160°F Dry	--	16.0	--	--
160°F Wet	--	14.3	--	--
ASTM-D-3518				
<b>In-Plane Shear Modulus (Msi)</b>				
75°F Dry	--	0.7	--	--
160°F Dry	--	0.6	--	--
160°F Wet	--	0.6	--	--
ASTM-D-3518				
<b>Compression After Impact Strength, 1500 in.lb./in</b>				
NASA 1092	--	26	--	--
<b>Compression After Impact Modulus , 1500 in.lb./in</b>				
NASA 1092	--	2.5	--	--

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 @ 75°F  
 Out Life: 21 days @ 75°F  
 Shelf Life: 12 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) for 1 hour before beginning heat cycle
- Apply 50 – 100 psi autoclave pressure and vent vacuum when autoclave pressure reach 15 – 20 psi
- Increase from room temperature to 350°F +/- 10° at a rate of 1 - 6°F/min (maximum)
- Hold cure temperature for 120 - 240 minutes
- Cool to 150°F at 3 - 10°F/min prior to releasing autoclave pressure
- Post cure of 415°F for 2 – 4 hours is recommended

