Product Overview

F-557 Phenolic Prepregs

Park's F-557 is a high purity silica filler phenolic resin coated on Commercial or Aerospace grade silica fabric. F-557 is used in the manufacture of intermediate temperature ablative rocket nozzles, heat shields, and combustion chambers in highly oxidative environments.

Key Features & Benefits

- Provides a combination of high-strength and ablative properties for demanding applications
- Low thermal expansion
- Good Tack and Drape properties

Product Forms

- Available in Broadgoods, Molding Compound and Bias Tape
- Solution coated fabrics up to 60 inches wide
- Compatible with Autoclave or Press Molding processes

Applications / Qualifications

- Rocket Nozzles
- Combustion Chambers
- Heat Shields
- Rocket Motor Throat Sections

For Information about Park's materials:

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Technical Datasheet

F-557 Phenolic Prepregs

Prepreg Physical Properties

	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Nominal Prepreg Weight (oz/yd)	30	30	30
Resin Solids Content (%)	30 – 36	30 – 36	30 – 36
Filler Content (%)	3.4 – 5.4	3.4 – 5.4	3.4 – 5.4
Resin Flow (325°F, 150 psi) (%)	7 – 17	10 – 25	10 – 25
Volatiles (275°F, 8 min) (%)	2 – 5	2 – 5	2 – 5
Nominal Cured Ply Thickness (in)	0.021	0.021	

Cured Laminate Physical Properties

Reinforcement	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Specific Gravity ASTM-D-792	1.7	1.7	
Hardness (Barcol) ASTM-D-2583	70	70	
Specific Heat (btu/lb°F) ASTM-C-351	0.24	0.24	0.24
Thermal Conductivity (BTU/ft2 hr °F) @ 300°F ASTM-C-177	0.225	0.225	



Technical Datasheet

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Laminate Mechanical Properties

Reinforcement	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound	Chopped Molding Compound
Cure Cycle	325°F	325°F	325°F	325°F
	Autoclave	Autoclave	2500 psi	2500 psi & Post-Cure
Tensile Strength, 0° (Ksi)				
75°F Dry	13	13	4.3	5.4
ASTM-D-638 / ASTM-D-3039b *				
Tensile Modulus, 0° (Msi)				
75°F Dry	2.4	2.5	2.5	2.2
ASTM-D-638				
Compressive Strength (Ksi)				
75°F Dry	24	30	25.5	31
ASTM-D-695				
Compressive Modulus (Msi)				
75°F Dry	2.4	2.9		
ASTM-D-695				
Flexural Strength (Ksi)				
75°F Dry	23	17	8.5	15
ASTM-D-790				
Flexural Modulus (Msi)				
75°F Dry	1.7	2.3		2.1
ASTM-D-790				

^{*} Fabric tested to ASTM-D-638. CMC tested to ASTM-D-3039b

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 values based on a nature process of refining our testing equipment and techniques.



Processing Guidelines

F-557 Phenolic Prepregs

Prepreg Storage Life

Out Life: 30 days @ 75°F Shelf Life: 6 months @ 40°F (dry) 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 (Broadgoods)

- Apply 24"Hg vacuum (minimum) for 1 hour before beginning heat cycle
- Apply 10 psi autoclave pressure
- Raise product temperature from RT to 250°F at 2 5°F/min
- Increase autoclave pressure to 40psi, vent vacuum at 15 20 psi
- Hold product at 250 ± 5°F for 30 minutes
- Raise product temperature to $325 \pm 5^{\circ}F$ at $2 5^{\circ}F/min$
- Hold product at cure temperature for 60 90 minutes
- Cool to 150°F at no more than 8°F/min prior to releasing autoclave pressure

Press Cure Cycle (Chopped Molding Compound)

- Apply 2,500 psi pressure during cure
- Cure product at 325°F for 60 minutes
- After releasing from mold, post-cure 2 hours at 350°F (optional)

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