F-552 Phenolic Prepregs

Park's F-552 is a high purity silica filled phenolic resin coated on high strength grade silica fabric. F-552 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
- Conforms to WS-21053
- Resin conforms to MIL-R-9299

Product Forms

- Available in Broadgoods, Chopped Molding Compound and Bias Tape
- Solution coated fabrics up to 38" 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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Prepreg Physical Properties

	Aerospace Silica Phenolic
Nominal Prepreg Weight (oz/sqyd)	30
Resin Solids Content (%)	29 - 36
Filler Content (%)	4 - 11
Resin Flow (325°F, 150 psi) (%)	10 - 20
Volatiles (325°F, 10 min) (%)	3 – 5.5
Nominal Cured Ply Thickness (in)	0.021

Cured Laminate Physical Properties

Reinforcement	Aerospace Silica Phenolic
Specific Gravity (g/cc) *ASTM-D-792*	1.8
Barcol Hardness *ASTM-D-2583*	70
Specific Heat (BTU/lb°F) *ASTM-C-351*	0.26
Thermal Conductivity (BTU/ft²-hr°F) @ 250°F With Ply Across Ply *ASTM-C-177*	 0.29 0.40
Thermal Diffusivity (ft²/hr) @ 250°F With Ply Across Ply *ASTM-C-177*	 0.014 0.012
CTE [*µin/(in·°F)]* @ 75 - 340°F With Ply Across Ply *ASTM-E-831*	 5.8 18.8

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.

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Laminate Mechanical Properties

Reinforcement	Aerospace Silica Fabric
Cure Cycle	325°F 1,000 psi Press Cure
Tensile Strength, 0° (Ksi) 75°F Dry ASTM-D-638	16.48
Tensile Modulus, 0° (Msi) 75°F Dry ASTM-D-638	1.25
Tensile Strength, 90° (Ksi) 75°F Dry ASTM-D-638	16.50
Tensile Modulus, 90° (Msi) 75°F Dry ASTM-D-638	1.3
Compressive Strength (Ksi), 0° 75°F Dry ASTM-D-695	60.8
Compressive Modulus (Msi), 0° 75°F Dry ASTM-D-695	3.5
Compressive Strength (Ksi), 90° 75°F Dry ASTM-D-695	40.3
Compressive Modulus (Msi), 90° 75°F Dry ASTM-D-695	2.9
Short Beam Shear (Ksi) 0° 75°F Dry ASTM-D-2344	5.9

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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 ± 5°F at 2 - 5°F/min
- Hold product at cure temperature for 60 – 90 minutes
- Cool to 150°F at no at no more than 8°F/min prior to releasing autoclave pressure

Press Cure Cycle (Chopped Molding Compound)

- Apply 1,000 - 2,000 psi pressure during cure
- Cure product at 325°F for 90 – 120 minutes