Product Overview

F-554 Phenolic Prepregs

Park's F-554 is a high purity silica filled phenolic resin coated on Commercial or Aerospace grade silica fabric. F-554 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 MIL-R-9299

Product Forms

- Available in Broadgoods, Chopped Molding Compound and Bias Tape
- Solution coated fabrics up to 152 cm 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-554 Phenolic Prepregs

Prepreg Physical Properties

	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Nominal Prepreg Weight (gsm)	1051	1017	1017
Resin Solids Content (%)	29 -35	30 – 36	30 – 36
Filler Content (%)	2 – 4	2 – 4	2 – 4
Resin Flow (163°C, 1034 kPa) (%)	8 – 17	7 – 17	7 – 17
Volatiles (163°C, 10 min) (%)	2 – 5	2 – 5	2 – 4
Nominal Cured Ply Thickness (cm)	0.053	0.053	--

Cured Laminate Physical Properties

Reinforcement	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Specific Gravity *ASTM-D-792*	1.7	1.7	1.7
Hardness (Barcol) *ASTM-D-2583*	70	70	75
Specific Heat (J/g °C) *ASTM-C-351*	1.00	1.00	0.96
Thermal Conductivity (J/s m°C) @ 149°C *ASTM-C-177*	2.7	2.7	2.7

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.

Technical Datasheet

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Laminate Mechanical Properties

Reinforcement	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Cure Cycle	163°C Autoclave	163°C Autoclave	163°C 13.8 MPa
Tensile Strength, 0° (MPa) 24°C Dry ASTM-D-638	131	89.6	62
Tensile Modulus, 0° (GPa) 24°C Dry ASTM-D-638	19.3	16.5	26.2
Compressive Strength (MPa) 24°C Dry ASTM-D-695	324	165	276
Compressive Modulus (GPa) 24°C Dry ASTM-D-695	21.4	16.5	13.8
Flexural Strength (MPa) 24°C Dry ASTM-D-790	200	159	110
Flexural Modulus (GPa) 24°C Dry ASTM-D-790	17.9	17.2	21
Short Beam Shear (MPa) 24°C Dry ASTM-D-2344	26.9	--	--

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Processing Guidelines

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Prepreg Storage Life

Out Life: 30 days @ 24°C
Shelf Life: 6 months @ 4°C (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 610 mmHg vacuum (minimum) for 1 hour before beginning heat cycle
- Apply 68.9 kPa autoclave pressure
- Raise product temperature from RT to 121°C at 1 - 3°C/min
- Increase autoclave pressure to 276 kPa, vent vacuum at 103 – 138 kPa
- Hold product at 121 ± 3°C for 30 minutes
- Raise product temperature to 163 ± 3°C at 1 - 3°C/min
- Hold product at cure temperature for 60 – 90 minutes
- Cool to 66°C at no at no more than 5°C/min prior to releasing autoclave pressure

Press Cure Cycle (Chopped Molding Compound)

- Apply 6.89-13.8 MPa pressure during cure
- Cure product at 163°C for 90 - 120 minutes