

### 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 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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### F-557 Phenolic Prepregs

#### Prepreg Physical Properties

	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound
Nominal Prepreg Weight (gsm)	1017	1017	1017
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 (163°C, 1034 kPa) (%)	7 – 17	10 – 25	10 – 25
Volatiles (135°C, 8 min) (%)	2 – 5	2 – 5	2 – 5
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 <i>ASTM-D-792</i>	1.7	1.7	--
Hardness (Barcol) <i>ASTM-D-2583</i>	70	70	--
Specific Heat (J/g °C) <i>ASTM-C-351</i>	1.00	1.00	1.00
Thermal Conductivity (J/s m°C) @ 149°C <i>ASTM-C-177</i>	0.381	0.381	0.381

### F-557 Phenolic Prepregs

#### Laminate Mechanical Properties

Reinforcement	Commercial Silica Fabric	Aerospace Silica Fabric	Chopped Molding Compound	Chopped Molding Compound
Cure Cycle	163°C Autoclave	163°C Autoclave	163°C 17.2 MPa	163°C 17.2 MPa & Post-Cure
Tensile Strength, 0° (MPa) 24°C Dry ASTM-D-638 / ASTM-D-3039b *	89.6	89.6	29.6	37.2
Tensile Modulus, 0° (GPa) 24°C Dry ASTM-D-638	16.5	17.2	17.2	15.2
Compressive Strength (MPa) 24°C Dry ASTM-D-695	165	207	175.8	214
Compressive Modulus (GPa) 24°C Dry ASTM-D-695	16.5	20.0	--	--
Flexural Strength (MPa) 24°C Dry ASTM-D-790	159	117	58.6	103
Flexural Modulus (GPa) 24°C Dry ASTM-D-790	11.7	15.9	--	14.5

\* 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.

### F-557 Phenolic Prepregs

#### 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 689 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 more than 5°C/min prior to releasing autoclave pressure

#### Press Cure Cycle (Chopped Molding Compound)

- Apply 17.2 MPa pressure during cure
- Cure product at 163°C for 60 minutes
- After releasing from mold, post-cure 2 hours at 177°C (optional)

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