Product Overview

F-555 Phenolic Prepregs

Park's F-555 is a carbon-filled MIL-R-9299 phenolic resin optimized for coating Carbonized Rayon cloth. F-555 is used extensively in the manufacture of high temperature rocket nozzles, heat shields, and combustion chambers.

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 on a wide variety of reinforcements, including C2, NARC, CYDA and Acordis ENKA
- Available as Broadgoods, Bias Tape and Chopped Molding Compound
- 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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PARK AEROSPACE CORP.

Technical Datasheet

F-555 Phenolic Prepregs

Prepreg Physical Properties

Reinforcement	C2	ENKA	NARC / CYDSA **	Glass	12kTW
Fabric Area Weight (gsm)	330	280	270	610	670
Prepreg Resin Content (%)	31 – 37	31 – 37	31 – 37	28 – 34	39 – 45
Resin Flow (325°F, 150 psi) (%)	5 – 20	5 – 20	5 – 25	--	10 – 20[1]
Volatiles (325°F, 5 min) (%)	2 – 5	2 – 5	2 – 8	2 – 5	<4
Filler Content (%)	9 – 15	9 – 15	8 – 16	--	--

*** Typical Values for carbonized rayon fabric*

[1] *50 psi*

Cured Laminate Physical Properties

Reinforcement	C2	ENKA	NARC / CYDSA **	C2	Glass
Product Form	8HS	8HS	8HS	CMC	18oz. Woven Roving
Per Ply Thickness	0.019	0.015	.016	--	.020
Specific Gravity *ASTM-D-792*	1.37	1.47	1.45	1.47	2.08
Hardness (Barcol) *ASTM-D-2583*	75	75	75	81	68
Specific Heat (btu/lb°F) *ASTM-C-351*	2.1	0.5	0.28	--	--
CTE – with-ply 80 - 400°F (ppm/°F) *ASTM-D-696*	8.6	4.0	4.0	--	--
CTE – x-ply 80 - 400°F (ppm/°F) *ASTM-D-696*	--	6.8	6.8	--	--
Thermal Conductivity with-ply @ 300°F (btu/ft2-hr-°F) *ASTM-C-177*	--	--	0.77	--	--
Thermal Conductivity x-ply @ 300°F (btu/ft2-hr-°F) *ASTM-C-177*	--	0.4	0.05	--	--

*** Typical Values for carbonized rayon fabric*

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	C2	ENKA	NARC / CYDSA **	C2	Glass
Product Form	8HS	8HS	8HS	CMC	18oz. Woven Roving
Tensile Strength, 0° (Ksi) 75°F Dry ASTM-D-638	35	21	26	7.0	51
Tensile Modulus, 0° (Msi) 75°F Dry ASTM-D-638	2.3	2.5	2.4	2.5	4.2
Compressive Strength (Ksi) 75°F Dry ASTM-D-695	46	55	46	42	22
Compressive Modulus (Msi) 75°F Dry ASTM-D-695	3.2	2.8	2.2	2.4	4.7
Flexural Strength (Ksi) 75°F Dry ASTM-D-790	65	39	33	20	33.2
Flexural Modulus (Msi) 75°F Dry ASTM-D-790	2.3	2.8	2.4	2.5	3.4
Short Beam Shear (Ksi) 75°F Dry ASTM-D-5379	4.4	5.1	--	4.4	--

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Prepreg Storage Life

Out Life: 30 days @ 75°F
Shelf Life: 6 months @ 40°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
- Raise product temperature from RT to 200°F at 2 - 5°F/min
- Hold product at 200°F for 30 minutes
- Increase autoclave pressure to 100psi and vent vacuum at 15 – 20 psi
- Raise product temperature to 350 ± 5°F at 2 - 5°F/min
- Hold product at cure temperature for 60 – 90 minutes
- Cool to 150°F at no more than 5°F/min prior to releasing autoclave pressure
- Post Cure:
    - Heat Oven at 2 – 10 °F /min to 350°F and hold 2 hours
    - Heat oven to 400°F and hold 4 hours