

> FM[®] 10 EPOXY SYNTACTIC CORE

TECHNICAL DATA SHEET



DESCRIPTION

FM[®] 10 is a syntactic epoxy core material which is reinforced with hollow glass micro-balloons. FM 10 syntactic core is designed as a cost and/or weight saving alternative in the manufacture of thin [below 0.20 inches (5.1 mm) thick], stiffness critical composite panels.

FM 10 syntactic core is compatible with nearly all commercially available 350°F (177°C) epoxy advanced composites. FM 10 will co-cure with these composites without the use of an adhesive film with.

FM 10 is supplied with a non-woven Kevlar[®] mat (aromatic polyamide fiber) which improves handling characteristics in addition to increasing the material's flexural strength. The product is slightly tacky for ease of handling. The product is supplied in sheet or roll form between two layers of release paper.

FEATURES & BENEFITS

- 350°F (177°C) service temperature
- Replaces honeycomb core in lightweight panels
- 350°F (177°C) co-cure with most epoxy advanced composites
- Low density core
- Radar transparent
- Excellent strength-to-weight ratio

SUGGESTED APPLICATIONS

- Thin composite panels where weight, cost and/or stiffness are critical

CHARACTERISTICS

Table 1 | Product Description

Thickness	0.040 ± 0.002 inches (1.02 ± 0.05 mm)
Density	38 ± 2 pcf (0.61 ± 0.032 g/cc)
Color	White
Shop Life	10 days at 80°F (27°C) or below
Shelf Life	6 months from date of shipment at recommended storage conditions
Recommended Storage	Store at or below 0°F (-18°C)

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PROPERTIES

Table 2 | Mechanical Performance: Structural Sandwich

Properties	Test Temperature		
	-67°F (-55°C)	75°F (24°C)	350°F (177°C)
Flatwise Tension, psi (MPa)	1600 (11.04)	1800 (12.4)	2100 (14.5)
Block Compression ¹ , psi (MPa)	13500 (93.15)	10000 (69.0)	7000 (48.3)
Horizontal Beam Shear ² , psi (MPa)	11500 (79.35)	7000 (48.3)	4500 (31.0)

¹ Compression coupons tested without skins. Coupon dimension 3.2 inches (80 mm) by 0.50 inches (12.7 mm) by 0.020 inch (0.51 mm). Compression in the 3.2 inch (80 mm) direction in a support fixture

² Short beam shear

Table 3 | Mechanical Performance: After Environmental Exposure

Properties	Test Temperature	
	75°F (24°C)	350°F (177°C)
Flatwise Tension , psi (MPa) 30 day exposure in 100% RH at 160°F (71°C) Skydrol LD4 fluid at 160°F (71°C) Jet fuel at 75°F (24°C) Turbine oil at 75°F (24°C)	2950 (20.4) 2680 (18.5) 2400 (16.6) 2260 (15.6)	1740 (12.0)
Block Compression¹ , psi (MPa) 30 day exposure in 100% RH at 160°F (71°C) Skydrol LD4 fluid at 160°F (71°C) Jet fuel at 75°F (24°C) Turbine oil at 75°F (24°C)	11520 (79.5) 10360 (71.5) 8660 (59.8) 8280 (57.1)	7000 (48.3)
Horizontal Beam Shear , psi (MPa) 30 day exposure in 100% RH at 160°F (71°C) Skydrol LD4 fluid at 160°F (71°C) Jet fuel at 75°F (24°C) Turbine oil at 75°F (24°C)	8640 (59.6) 9540 (65.8) 8660 (59.8) 8280 (57.1)	2040 (14.1)

¹ Compression coupons tested without skins. Coupon dimension 3.2 inches (80 mm) by 0.50 inches (12.7 mm) by 0.020 inch (0.51 mm). Compression in the 3.2 inch (80 mm) direction in a support fixture

Cure cycle: Apply full vacuum, apply 20 psi (0.14 MPa), vent bag. Apply 70 psi (0.48 MPa). 60 minutes ramp to 350°F (177°C), 60 minutes at 350°F (177°C).

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APPLICATION NOTES

Cure Cycle

The recommended cure cycle for FM 10 syntactic core is as follows:

1. Apply full vacuum
2. Apply 20 psi (0.14 MPa) and vent vacuum
3. Apply 70 psi (0.48 MPa)
4. Ramp from ambient to 350 ± 10°F (177 ± 6°C) in 60 minutes
5. Hold at 350 ± 10°F (177 ± 6°C) for 60 minutes
6. Cool under pressure to 180°F (82°C) or lower
7. Release pressure

PRODUCT HANDLING AND SAFETY

Cytec Engineered Materials recommends wearing clean, impervious gloves when working with syntactic core to reduce skin contact and to avoid contamination of the product.

Materials Safety Data Sheets (MSDS) and product labels are available upon request and can be obtained from any Cytec Engineered Materials Office.

DISPOSAL OF SCRAP MATERIAL

Disposal of scrap material should be in accordance with local, state, and federal regulations.

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