

PRODUCT DATA SHEET

DESCRIPTION

Toray EM-5A is a 177°C (350°F) cure expanding cyanate ester syntactic film (core splice). Its unexpanded density is approximately 50 pcf (0.80 g/cc) and exhibits an expansion ratio of up to 4x. It is available in continuous film rolls or in sheet form from thicknesses of 10–125 mils (0.25–3.18 mm).

Standard widths are 61 cm (24”), but alternative widths up to 127 cm (50”) are available upon request.

FEATURES

- ▶ Ambient work life of more than 28 days
- ▶ Good handleability and drape with minimal slump
- ▶ Flexible cure processing under vacuum, autoclave, or press
- ▶ Co-curable with composite prepregs
- ▶ Lightweight film core: 50 pcf, nom. (0.80 g/cc)

PRODUCT TYPE

177°C (350°F) Cure Cyanate Ester Syntactic Core Splice Film

TYPICAL APPLICATIONS

- ▶ Aerospace structures
- ▶ Satellite and space structure

SHELF LIFE

Out Life:	28 days at 25°C (77°F)
Frozen Storage Life:	12 months at -18°C (< 0°F)

Out Life is the time during which the material retains enough tack, drape, and handling for easy component lay-up.

CORE SPLICE PHYSICAL PROPERTIES

Unexpanded	50 pcf, nom. (0.80 g/cc)
Expanded Density	12-18 pcf (0.19–0.29 g/cc) expanded
Minimum Density at Full Expansion	10 pcf (0.16 g/cc) at 4x expansion
Dry T _g (by DSC)	204°C (400°F) cured 2 hours at 177°C (350°F)
Gel Time at 177°C (350°F)	~ 8 minutes
Volatile Content	< 1%
Outgassing Data	TML 0.59% CVCM 0.01% ¹

(1) Meet NASA requirements for space structure.



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MECHANICAL PROPERTIES

Properties	Condition	Method	Results	
Tube Shear at 3.0x expansion	24°C (75°F)	Internal	8.8 MPa	1280 psi

Cured at 177°C/350°F/ at 1–3°C/min (2–5°F/min) for 90 minutes.

TYPICAL CURE PARAMETERS

- ▶ Heat to 177°C (350°F) +5°C/0°C (+10°F/0°F) at ramp of 1–2.5°C/min. (2–5°F/min.) Ideal ramp rate is 2F/min (1C/min).
- ▶ Hold at 177°C (350°F) for 1.5 to 2 hours. Cool.