

## PRODUCT DATA SHEET

### DESCRIPTION

Toray MicroPly™ 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

<b>Out Life:</b>	28 days out life ≤ 21°C (70°F) and ≤ 60% RH
<b>Frozen Storage Life:</b>	12 months at ≤ -18°C (≤ 0°F)

Out life is the maximum time allowed at 21°C (70°F) or below and 60% or less RH before cure, after a single frozen storage cycle in the original unopened packaging at -18°C (0°F) or below for a period not exceeding the frozen storage life noted above.

### 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 <sub>g</sub> (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% <sup>1</sup>

(1) Meet NASA requirements for space structure.



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**MicroPly™**

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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.