

PRODUCT DATA SHEET

DESCRIPTION

Toray MicroPly™ TC4015 cyanate ester film adhesive has been formulated for use in specific applications where low moisture absorption and high temperature bond strength is important. The resin system's strength and toughness when bonding solid, laminate, honeycomb, or foam core structures is comparable, and often greater, than high performance epoxy adhesives and polyimides especially at elevated temperatures.

Due to the cyanate ester resin system's inherently low shrinkage during cure, bonded structures will retain less inherent stress, and will therefore remain dimensionally stable during thermal cycling. This factor is of extreme importance when bonding structures for use in space. Finally, like other cyanate ester-based products, Toray's TC4015 film adhesive displays low outgassing and good microcracking resistance to assure structural integrity even after severe environmental exposure.

PRODUCT TYPE

177°C (350°F) Cure Cyanate Ester Film Adhesive

TYPICAL APPLICATIONS

- ▶ Space structures
- ▶ Ablative bonding
- ▶ High temperature structures

SHELF LIFE

| | |
|-----------------------------|---|
| Out Life: | 14 days out life ≤ 21°C (70°F) and ≤ 60% RH |
| Frozen Storage Life: | 6 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.

TYPICAL NEAT RESIN PROPERTIES

| | |
|-------|-----------------------------------|
| T_g | 321°C (610°F) after 232°C (450°F) |
|-------|-----------------------------------|

SERVICE TEMPERATURE

260°C (500°F) Dry after 232°C (450°F) post cure

CURE PROFILE

| | |
|------------------------|----------------------------|
| Initial Cure | 177°C (350°F) or 2 hours |
| Freestanding Post Cure | 232°C (450°F) for > 1 hour |

PRODUCT FORMATS

| | | |
|-------------------|------------|-----------------|
| Unsupported Films | 49–293gsm | 0.010–0.060 psf |
| Supported Films | 171–488gsm | 0.035–0.100 psf |



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MicroPly™

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MECHANICAL PROPERTIES

| Tensile Lap Shear Strength* | Condition | Method | Results | |
|-----------------------------|-----------|------------|----------|----------|
| 25°C (77°F) | RTD | ASTM D1002 | 15.2 MPa | 2200 psi |
| 260°C (500°F) | RTD | ASTM D1002 | 17.9 MPa | 2600 psi |

Supported, 293gsm (0.060 PSF) NWFG areal weight adhesive bonding 2024 aluminum with TCAC Primer 2A
Data above based on limited lot data, and is not for specification values

Revised 02/2020

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