

PRODUCT DATA SHEET

DESCRIPTION

Toray MicroPly™ TC263 Blue is a toughened film adhesive for honeycomb core and laminate bonding. It features a 21-day out life and offers structural performance in a high peel strength adhesive. It may be used in low pressure vacuum only out-of-autoclave processes or in autoclave processes at 1 bar (15 psi).

FEATURES

- ▶ High peel strength
- ▶ May be cured in autoclave or under vacuum only pressure
- ▶ Good composite-to-composite bonding
- ▶ Good honeycomb-to-composite bonding

PRODUCT TYPE

Epoxy Film Adhesive

SERVICE TEMPERATURE

93°C (200°F)

CURE SCHEDULE

2 hours at 121°C (250°F)

SHELF LIFE

Out Life:	21 days out life ≤ 24°C (75°F) and ≤ 60% RH
Frozen Storage Life:	12 months at ≤ -18°C (≤ 0°F)

Out life is the maximum time allowed at 24°C (75°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

Dielectric Constant	2.97 at 10 GHz
Loss Tangent	0.017 at 10 GHz
Outgassing (TML)	0.34%
Outgassing (CVMC)	0.03%
Outgassing (WVR)	0.17%

PHYSICAL PROPERTIES

T _g by DMA (E' Onset) after 121°C (250°F) 2 hours cure	110–115°C (230–239°F)
Tack Level	Low to medium
Supported Film Weights	170 and 293gsm (0.035 and 0.06 psf)

Also available unsupported at 70gsm (0.015 psf) nominal



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MicroPly™

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COMMON FILM WEIGHTS/CONFIGURATIONS

Product Name	Carrier	Weight gsm/psf	Roll Quantity	Film Width
TC263U Blue, 0.015 psf, 0.91 m (36")	Unsupported	70gsm/0.015 psf	46.5 m ² (500 ft ²)	0.91 m (36")
TC263 Blue, 0.035 psf, NWFG, 10gsm, 0.91 m (36")	Non-Woven Fg	171gsm/0.035 psf	46.5 m ² (500 ft ²)	0.91 m (36")
TC263 Blue, 0.060 psf, NWFG, 10gsm, 0.91 m (36")	Non-Woven Fg	293gsm/0.060 psf	46.5 m ² (500 ft ²)	0.91 m (36")

MECHANICAL PROPERTIES ON SUPPORTED ADHESIVE

Property	Condition	Method	Film Area Wt.	Cure A		Cure B	
Tensile Lap Shear Strength	RTD	ASTM D1002	170gsm/0.035 psf	19.6 MPa	2842 psi	33.8 MPa	4899 psi
Tensile Lap Shear Strength	ETD	ASTM D1002	170gsm/0.035 psf	-	-	23.9 MPa	3470 psi
T-Peel Strength	RTD	ASTM D1876	170gsm/0.035 psf	55–67 N/25 mm	12–25 lb f/in	-	-
Tensile Lap Shear Strength	RTD	ASTM D1002	293gsm/0.06 psf	-	-	41.4 MPa	6000 psi
T-Peel Strength	RTD	ASTM D1876	170gsm/0.035 psf	-	-	103.0 N/25 mm	23 lb f/in

EDT = 90°C (180°F), Cure A - 2 hours at 121°C (250°F) under vacuum pressure, Cure B - 2 hours at 121°C (250°F) under 1 bar (15 psi) autoclave pressure

ADHESIVE CURE: 0.060 psf 106 F_g, 2 HOURS AT 121°C (250°F) UNDER 30 psi AUTOCLAVE PRESSURE

Property	Condition	Method	Results	
Flatwise Tensile	CTD ⁴	ASTM C 297 25 mm x 25 mm (1"x1")	73 MPa	10607 psi
Flatwise Tensile	RTD	ASTM C 297 25 mm x 25 mm (1"x1")	61 MPa	8822 psi
Flatwise Tensile	ETD ⁴	ASTM C 297 25 mm x 25 mm (1"x1")	46 MPa	6672 psi
Honeycomb ¹ Flatwise Tensile	CTD	ASTM C 297 50 mm x 50 mm (2"x2")	7 MPa	1037 psi
Honeycomb ¹ Flatwise Tensile	RTD	ASTM C 297 50 mm x 50 mm (2"x2")	5 MPa	740 psi
Honeycomb ¹ Flatwise Tensile	ETD ⁴	ASTM C 297 50 mm x 50 mm (2"x2")	5 MPa	654 psi
Lap Shear Al-Al	CTD	ASTM D 1002	36 MPa	5171 psi
Lap Shear Al-Al	RTD	ASTM D 1002	37 MPa	5363 psi
Lap Shear Al-Al	ETD ⁴	ASTM D 1002	23 MPa	3387 psi
Lap Shear Al-Al	ETW ⁴	ASTM D 1002	26 MPa	3747 psi
Thick-Adherend Lap Shear Strength ²	CTD	ASTM D 5656	76 MPa	11018 psi
Thick-Adherend Lap Shear Strength	RTD	ASTM D 5656	46 MPa	6642 psi
Thick-Adherend Lap Shear Strength	ETD	ASTM D 5656	34 MPa	4886 psi
Thick-Adherend Lap Shear Strength	ETW ⁴	ASTM D 5656	21 MPa	2992 psi

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**ADHESIVE CURE: 0.060 psf 106 F_g,
2 HOURS AT 121°C (250°F) UNDER 30 psi AUTOCLAVE PRESSURE**

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Property	Condition	Method	Results	
Thick-Adherend Lap Shear Modulus	CTD	ASTM D 5656	0.6 GPa	0.088 Msi
Thick-Adherend Lap Shear Modulus	RTD	ASTM D 5656	0.4 GPa	0.061 Msi
Thick-Adherend Lap Shear Modulus	ETD ⁴	ASTM D 5656	0.2 GPa	0.034 Msi
Thick-Adherend Lap Shear Modulus	ETW	ASTM D 5656	0.1 GPa	0.014 Msi
T-peel	CTD	ASTM D 1876	81 N/25 mm	18 lb/in
T-peel	RTD	ASTM D 1876	95 N/25 mm	21 lb/in
T-peel	ETD	ASTM D 1876	80 N/25 mm	18 lb/in
Floating Roller Peel	CTD	ASTM D 3167	100 N/25 mm	23 lb/in
Floating Roller Peel	RTD	ASTM D 3167	221 N/25 mm	50 lb/in
Floating Roller Peel	ETD ⁴	ASTM D 3167	234 N/25 mm	53 lb/in
G _{1c} DCB ³	RTD	D6-83079-131	385 J/m ²	2.20 in-lb/in ²
G _{2c} ENF (Pre-crack) ³	RTD	D6-83079-132	1711 J/m ²	9.78 in-lb/in ²
Lap Shear GrEp-GrEp ³	CTD	ASTM D 1002	17 MPa	2398 psi
Lap Shear GrEp-GrEp ³	RTD	ASTM D 1002	19 MPa	2721 psi
Lap Shear GrEp-GrEp ³	ETD ⁴	ASTM D 1002	11 MPa	1600 psi
Lap Shear GrEp-GrEp ³	ETW ⁴	ASTM D 1002	4 MPa	535 psi

Notes: All aluminum surfaces have been FPL etched and BR127 primed

¹Plascore Aluminum core XR1-7.9-0.250-N-5052 0.5"t

²Bonded and tested at National Institute for Aviation Research (NIAR) Wichita, KS

³Bonded to grit a blasted standard-modulus graphite fabric with 121–135°C (250–275°F) final cure epoxy (HX42)

⁴CTD is 18°C (65°F), ETD is tested at 82°C (180°F), ETW is tested at 82°C (180°F) after 14 days 85% RH and 71°C (160°F) humidity exposure

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