

> METLBOND 2550 FILM ADHESIVE

TECHNICAL DATA SHEET



DESCRIPTION

Metlbond 2550 is a 350°F (177°C) cure, 440° (227°C) post-cure, modified BMI film adhesive with good high-temperature adhesive properties for bonding composites, metals and sandwich structures.

FEATURES & BENEFITS

- Service temperature of -67 to 450°F (-55 to 232°C) dry / 375°F (191°C) wet
- Six-fold toughness increase over first generation BMI adhesives
- Outstanding bond strength with composites and metals
- Controlled flow for sandwich structural bonding
- Epoxy-like processing with 21+ days shop life at 75°F (24°C)
- No volatiles evolved during cure
- Co-cures with Cytec's BMI composite systems
- Reticulation capability with unsupported variant

SUGGESTED APPLICATIONS

- Honeycomb sandwich bonding
- Metal-to-metal bonding
- Metal-to-composite bonding
- Composite-to-composite bonding

CHARACTERISTICS

Table 1 | Metlbond 2550M, G, U and B Availability

Nominal Weight, psf (gsm)	0.030 – 0.100 (146 – 489)
Supporting Carrier	mat, unsupported, glass/Kapton® glass
Nominal Thickness, in (mm)	0.006 – 0.109 (0.152 – 2.77)
Roll Length, yds (m)	60 (54.9)
Roll Width, in (mm)	36 – 50 (914 – 1270)

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Table 2 | Physical Characteristics

Shelf Life	Six months at 0°F (-18°C) Three months at 40°F (4°C)
Shop Life	21+ days at 75°F (24°C)
Storage	Storage at or below 0°F (-18°C). To prevent moisture pickup, a sealed container should not be opened until the adhesives reaches ambient temperature
Volatiles	Less than 1%
Tg Dry	480°F (250°C) Tan Delta Peak

PROPERTIES

Table 3 | Mechanical Properties: Standard Cure – Metal Bonding

Property	Test Temperature	2550G 0.60 psf (293 gsm)	2500G 0.80 psf (391 gsm)	2500G 0.10 psf (489 gsm)
Lap Shear¹ Metal/Metal psi (MPa)	67°F (-55°C)	-	-	3040 (21.0)
	75°F (24°C)	3500 (24.1)	3500 (24.1)	3000 (20.7)
	350°F (177°C)	3200 (22.1)	3000 (20.7)	2700 (18.6)
	375°F (191°C)	-	-	2300 (15.9)
	450°F (232°C)	-	-	1700 (11.7)
Bell Peel² psi (MPa)	-67°F (-55°C)	-	-	19 (0.13)
	75°F (24°C)	-	-	19 (0.13)
	375°F (191°C)	-	-	22 (0.15)
	450°F (232°C)	-	-	24 (0.17)
Sandwich Peel³ in lb/3 in (Nm/m)	75°F (24°C)	6 (9)	-	21 (31)

Table 4 | Thermal Aging: Standard Cure – Metal Bonding

Property	Test Temperature	Non-Exposed Control	500 Hours 375°F (191°C)	1000 Hours 375°F (191°C)
Lap Shear¹ Metal/Metal psi (MPa)	75°F (24°C)	3000 (20.7)	3100 (21.4)	3300 (22.8)
	375°F (191°C)	2700 (18.6)	3600 (24.8)	3200 (22.1)

¹ 2024-T3, FPL, etch, ASTM D-1002

² 2024-T3, FPL, etch, phosphoric acid anodize

³ 2024-T3, phosphoric acid anodized 0.020 inch aluminium skins, 5052, 1/4 inch cell 7.9 lb/ft³ density 0.5 inch thick aluminium core

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Table 5 | Mechanical Properties: Standard Cure – Composite Bonding

Property	Test Temperature	0.10 psf (489 gsm)
Single Lap Shear ⁵ psi (MPa)	75°F (24°C)	2475 (17.1)
	450°F (232°C)	1576 (10.9)
Double Lap Shear ⁴ psi (MPa)	75°F (24°C)	3400 (23.4)
	350°F (177°C) Wet*	2500 (17.2)
	375°F (191°C) Wet*	2150 (14.8)
Flatwise Tensile ¹ Co-cured skins psi (MPa)	75°F (24°C)	740 (5.1)
	375°F (191°C)	940 (6.5)
Flatwise Tensile ¹ Pre-cured skins psi (MPa)	75°F (24°C)	890 (6.1)
	375°F (191°C)	1040 (7.2)
Flatwise Tensile ² Co-cured skins psi (MPa)	75°F (24°C)	550 (3.8) core failure
	375°F (191°C)	460 (3.2) core failure
Flatwise Tensile ² Pre-cured skins psi (MPa)	75°F (24°C)	550 (3.8) core failure
	375°F (191°C)	510 (3.5) core failure
Flatwise Tensile ³ psi (MPa)	75°F (24°C)	530 (3.7) core failure

¹5250-3/AS4, 7.9 lb/ft³ density, 1/8 inch cell, 0.5 inch thick

²5150-3/AS4, HRH-327 core, 1/8 inch cell, 0.625 inch thick

³5140-4/IM7, 8.1 lb/ft³ density, 1/4 inch cell, 0.5 inch thick core

³5150-4/AS4, CYCOM® 8930 peel ply, pre-cured, composite/composite

³5150-3/AS4, CYCOM 8930 peel ply, pre-cured, composite/composite

* Wet conditioning 72-hour water boil

Cytec recommends drying all non-metallic core and composite adherends prior to bonding

APPLICATION PROCEDURES

Recommended Cure Cycles

Initial Cure

1. Apply full vacuum
2. Apply 30 psi (210 kPa) pressure; vent vacuum at 20 psi (140 kPa)
3. Heat from room temperature to 350°F (177°C) at a rate of 2 – 5°F (1 – 3°C)/minute
4. Hold at 350°F (177°C) for 240 minutes
5. Cool under pressure below 120°F (59°C) at a rate of 2 – 5°F/minute (1 – 3°C/minute)

Post Cure

FM 2550 should be post cured free standing in an air circulating oven using the following cure cycle

1. Heat from room temperature to 440°F (227°C) at a rate of 2 – 5°F/minute (1 – 3°C/minute)
2. Hold at 440°F (227°C) for 360 minutes
3. Cool below 120°F (59°C) at a rate of 2 – 5°F/minute (1 – 3°C/minute)

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Alternate Cure

Alternate cure cycles are available. Consult Cytec Engineered Materials Technical Service for information.

Lay-up Procedure

1. Remove FM 2550 from refrigerator storage and allow the adhesive to warm to room temperature before unpackaging the roll
2. Remove one of the interliners and place the exposed adhesive against the surface to be bonded. Care should be taken to prevent air entrapment between the film adhesive and substrates especially in large area bonds.
3. If additional tack is desired, the adhesive may be heated to as high as 120°F (49°C) without altering the adhesive properties
Before heat tacking ensure the film is properly positioned, otherwise removal will be difficult.
4. Remove the other interliner and complete the assembly

PRODUCT HANDLING AND SAFETY

Cytec Engineered Materials recommends wearing clean, impervious gloves when working with adhesives 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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