

Polymer Composites Incorporated

1871 South Lake Place Ontario California 91761

Tel. (909) 673 -1625 Fax (909) 673 1605

www.polymercompositesinc.com

MAX BOND A/B THIXOTROPIC NON-SAG VERSION High Strength Epoxy Adhesive Resin System

Description And Product Highlights

- *Non-Critical Mix Ratio, Equal Parts by Volume* ◀
- *Non-sagging, Stay In Place, Clean Adhesive Placement* ◀
- *Bonds Steel, Aluminum, Soft Metals, Concrete, Ceramic* ◀
- *High Performance Resin For Composites Bonding* ◀
 - *Excellent Impact Resistance* ◀
 - *Excellent Balance of Strength and Flexibility* ◀
- *Excellent Water/Salt Water Resistant for Marine/Aero Applications* ◀
 - *Low Shrinkage And Dimensional Stability* ◀
 - *Wide range of service temperature* ◀

MAX BOND THIXOTROPIC A/B is a two-part modified epoxy/polyamide based adhesive system specially formulated to provide structural bond strength to a variety of substrates. It is a thickened version of the MAX BOND System where flow control or non-sagging applications on vertical and overhead application is to be employed. When used in heat-cured applications, MAX BOND THIXOTROPIC A/B will demonstrate minimal or controlled flow eliminating excessive resin run-off and resulting in a clean adhesive placement.

MAX BOND THIXOTROPIC A/B demonstrates exceptional mechanical properties that are well suited for many industrial and construction bonding applications. It provides excellent resistance to saltwater, acidic and caustic exposure and retains its cured physical properties even after prolonged water immersion.

MAX BOND THIXOTROPIC A/B exhibits structural bond strengths to numerous substrates commonly used in composites industry such as, steel, aluminum, metals and alloys, resin impregnated composites, and most plastics. It performs well in wide range of service temperature and resists cracking and delamination due to cyclic vibration, thermal expansion and contraction.

MAX BOND THIXOTROPIC A/B will cure in humid and low temperature conditions. It is generally room temperature cured but can be snap cured at elevated temperatures for a short period of time.

MAX BOND THIXOTROPIC A/B is 100 % reactive solids and does not contain Ozone Depleting Chemicals (ODC).

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PHYSICAL PROPERTIES -Liquid

Density (Mixed)	1.10 gm/cc, Degassed
Form and Color	Part A – Translucent Gel Part B – Amber Gel
Viscosity Mixed	125,000 cPs @ 77°F (25°C) Mixed, Thixotropic
Mix Ratio	Equal Parts By Volume
Working Time	100 Parts Resin To 90 Parts Hardener By weight
Peak Exotherm	90 Minutes @ 77°F (25°C) (200 gm mass) 120°F 200 gram mass

Room Temperature Cure:
36 Hours. Minimum
72 Hours Full Cure @ 77°F

Cure Time *Heat Cure:*
2 Hours. @ Room temperature plus 120 min. @ 212°F

Accelerated Heat Cure:
30 Minutes @ 150°F plus 120 minutes @ 250°F

PHYSICAL PROPERTIES -Cured

Vertical Flow @ Room Temperature	0.10 inch 10 Grams 90° Until Cure
Hardness	85 Shore D Durometer
Linear Coefficient of Thermal Expansion	3.2×10^{-5} inch/inch/ °F
Approx. Heat Distortion Temperature	220°F
Maximum Operating Temperature	225°F
NASA Outgassing	0.79% Total Mass Loss (TML)
Collected Volatile Condensable Material	0.01

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MECHANICAL PROPERTIES

Vertical Flow	0.10 inch	
Tee-Peel Strength 180°	5 Lbs. per inch Width	Aluminum to Aluminum
Compressive Strength	15,800 psi @ 77°F (25°C)	ASTM D-695
Flexural Ultimate Strength	12,000 psi @ 77°F (25°C)	ASTM D-790
Flat wise Tensile	500 psi @77°F 550 psi @-67°F	
Hardness	85 ± 5 Shore D	
Elongation	2.3% Maximum Yield	
Tensile Strength	8,800 psi	
Service Temperature	-67°F to 250°F	

Tensile Shear Strength (Mil-A-5090 D)				
	-395°F	-148°F	75°F	158°F
Original	2400 psi	2800 psi	3800 psi	550 psi
30 Day 100% Humidity Exposure	2500 psi	2600 psi	3900 psi	400 psi
30 Day 100% Salt Spray Exposure	2500 psi	3000 psi	3200 psi	600 psi

Tensile Shear:

Specimens were fabricated from 2024 T3 aluminum, 1 inch wide, and ½ inch overlap.

Humidity Exposure: Condition in counter flow environmental cabinet at 162°F

Salt Spray: In accordance with MIL-A 00509C and Federal Test Method Standard 152

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Tensile Strength and Peel Adhesion of MAX BOND to other substrates

Substrate	Surface Treatment	Cure Condition	Shear Strength @ 77°F	Shear Strength @ -319°F	T-peel Per Inch Width @ 77°F	T-peel Per Inch Width @ 319°F
Teflon -TFE	Naphthalene Wipe	48 Hrs, @ 77°F	2300	1800	10	5
Teflon -TFE	Naphthalene Wipe	1 Hr. @ 250°F	2800	3200	10	5
Teflon - FEP	Naphthalene Wipe	48 Hrs, @ 77°F			12	4
Teflon - FEP	Naphthalene Wipe	1 Hr. @ 250°F	3000	5300	15	15
KE L- F	Solvent Wipe	1 Hr. @ 250°F	2600	5000	10	17
Tedlar	Solvent Wipe	48 Hrs, @ 77°F	2300	1600	5	2
Nylon FM63	Solvent Wipe	48 Hrs, @ 77°F	1000	700		
Zytel 61		700	1500	700		
Zytel 61	Solvent Wipe	48 Hrs, @ 77°F	1200	800	1	
Chloro-Butyl Rubber	Solvent Wipe	48 Hrs, @ 77°F	320	2300	5	5
Viton A-HY	Solvent Wipe	1 Hr. @ 250°F	1400	4800	19	7
Adiprene C	Solvent Wipe	1 Hr. @ 250°F	2600	3800	15	10
Thiokol FA	Solvent Wipe	1 Hr. @ 250°F	130	1300	7	2
Hypalon 40	Solvent Wipe	1 Hr. @ 250°F	2800	4400	15	4
Copper Foil	Dilute Nitric Acid	48 Hrs, @ 77°F	1400	1000	2	5
Lead Foil	Dilute Nitric Acid	48 Hrs, @ 77°F	1700	700	5	1
Tin Foil	Dilute Nitric Acid	48 Hrs, @ 77°F	2400	2200	4	3
Cadmium Foil	Dilute Nitric Acid	48 Hrs, @ 77°F	1500	900	1	1

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Electrical Properties of MAX BOND

Property	Test Method	Results
Dielectric Constant 60 Cycles – RT 1000 Cycles - RT	ASTM-D-159-47-T	3.24 3.21
Volume Resistivity	ASTM-D-257-252T	1.25×10^{14} ohms-cm
Arc Resistance	ASTM-D-47T	78 seconds
Power Factor 60 Cycles – RT 1000 Cycles - RT	ASTM-D-150-47T	0.0087 0.0106
Dielectric Strength	ASTM-D-149-44	460 volts/mil
Loss Factor 60 Cycles – RT 1000 Cycles - RT	ASTM-D-150-47T	0.0337 0.0341

CHEMICAL RESISTANCE TEST – 10 Day Soak Test @ 77°F (25°C)

	WEIGHT CHANGE, %
Distilled Water	1.23
Sulfuric Acid 30%	1.9
Nitric Acid	3.8
Toluene	3.7
Sodium Hydroxide	10.00
Anti-Freeze	No Effect
Motor Oil soak	No Effect

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Mixing Instructions

Dispense equal parts of Part A and Part B and mix thoroughly until a homogenous consistency is achieved. The mixture will turn translucent milky amber but will clarify during cure. For mix metering application, ensure that an equal flow rate of Part A and Part B is achieved. A 24 element static mixer provides excellent mix results. Attach the static mixer and dispense and discard approximately 1-ounce material before using the material. Dispense the material in on corner of the component casing and allow the material to completely flow through out. This technique will reduce voids and air entrapment.

The working time is approximately 90 minutes and less if mixed and kept in mass larger than 400 grams or a pint volume.

Bonding Applications

To insure a strong bond, items or substrates to be bonded must be clean and free from contaminants such dust, grease, oils and other foreign materials. Please refer to the Surface Preparation And Proper Bonding Techniques Section.

Apply via brush or roller coat properly mixed resin on both substrates and clamp or apply adequate pressure so that a thin bondline is achieved (.003 to .007 inch minimum bondline thickness). For dispensing machine application, apply a 1/8-inch diameter bead for every 1 square of bonding surface, clamp or support until cured. Handling strengths will develop in 10 hours at 77°F. Refer to curing schedule for full cure and heat curing techniques.

PACKAGING AND STORAGE

MAX BOND A/B Thixotropic is available in 5 gallon and 55 gallon Kits. Use size kits and special packaging requests are also available. MAX BOND A/B should be stored in a cool dry place. DO NOT store above 30°C for prolonged period.

SAFETY NOTE

This product is for industrial use only. Please review all precautions before using this product. As with all products of the same nature, avoid prolonged inhalation and repeated skin contact. Always wear safety goggles and impervious rubber gloves when handling this material. Large mass curing of this product is not recommended for it may produce noxious fumes.

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