

POLYMER COMPOSITES, INC.

1871 Lake Pl., Ontario, CA 91761 • (909) 673-1007 • Fax: (909) 673-1605

MAX 1618 A/B

Technical Data Sheet

DESCRIPTION

MAX 1618 A/B is two-component epoxy based resin system that specifically addresses the performance aspects of absolute crystal clarity color stability yellowing from direct sunlight exposure while demonstrating mechanical performance suitable for structural composites fabrication.

It is highly resistant to blushing, exhibits high gloss, and absolute water clarity upon cure when used as an aesthetic or protective coating for wood and a variety of other substrates. MAX 1618 A/B is also an excellent choice for composite fabric lamination; it works well with carbon fiber, fiberglass, Kevlar® and other hybrid, natural and synthetic fabrics.

MAX 1618 A/B performs well in bonding a variety of substrates such as glass, fiberglassed surfaces, soft and hard metal alloy with the proper surface preparation. Plastic substrates such as polycarbonate, ABS, PVC and polypropylene (PP) will also yield excellent adhesion with minimal surface preparation; low surface energy (LSE) plastics such as PET and HDPE will require a Corona or flame treating to improve its surface tension adequate for bonding and adhesion; please refer to our SURFACE TREATING OF PLASTICS publication to learn more about this process.

MAX 1618 A/B will also bond to materials such as concrete, masonry, ceramic and stone plastics. MAX 1618 A/B is 100% solids and does not contain Ozone Depleting Chemicals (ODC), non-reactive plasticizers or solvent fillers.

It can be utilized as an electrically insulative compound suitable for electronic potting or encapsulating of printed circuit boards and other high and low AC/DC voltage circuitry. MAX 1618 A/B does not promote oxidation in copper circuitry and is an excellent anticorrosion protective coatings for ferrous metals and metals prone to oxidation. MAX 1618 A/B resists extreme and repeated thermal shocks making it well suited for bonding substrates with dissimilar thermal expansion and contraction coefficients.

MAX 1618 A/B performs well in a wide range of service temperature. It demonstrates good reaction at temperature below 50°F and low dimensional shrinkage upon cure. MAX 1618 A/B is generally room temperature cured but can be snap-cured at elevated temperatures for a short period of time.

Physical Properties

Density	1.10 g/cc
Form and Color	Clear Liquid
Viscosity	200 +/- 25 cPS @ 25°C Mixed
Mix Ratio	50 Parts B to 100 Parts A By Weight
Working Time	30 Minutes @25°C (77°F 100 gm mass)
Peak Exotherm	70°C (158°F, 100 gm mass)
Handle Time	2.5 Hours Thin Film Set Time
Full Cure Time	48 Hours minimum @ 25°C (77°F)

Mechanical Properties

Hardness	87 +/- 5 Shore D
Tee-Peel Strength	5.7 Lbs Per Inch Width Polycarbonate
Tensile Shear Strength	2,300 psi @ 25°C (77°F)
6063 T4 Aluminum	1,800 psi @ -80°C (-112°F)
Overlap Shear	550 psi @ 100°C (212°F)
Elongation	6.0% @ 25°C (77°F)
Flexural Strength	13,500 psi @ 25°C (77°F)
Flexural Modulus	500 psi @ 25°C (77°F)
Compressive Strength	8,200 psi @ 25°C (77°F)
Heat Distortion Temp	80°C (176°F)

Electrical Properties

Volume Resistivity	2.7 x 10 ¹² Ohms-cm (Ω-cm)
Dielectric Strength	510 Volts/Mil @ 60 Hz

APPLICATION AND USAGE

Precaution: As with industrial chemicals of the same nature, avoid direct skin contact by using protective gloves and eyewear. Always practice safety first.

General Mixing Technique

Weigh out two parts "Part A" to one part "Part B" by weight or by volume (2:1 Mix Ratio) in to a clean container. Mix using a spatula or a low speed mixer to avoid excess air entrapment mix gently and scrape the sides and bottom of the container to insure complete mixing. Transfer into another clean container and continue to mix for another minute, Dispense from the second mix container only.

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To use MAX 1618 as decoupage coating, tabletop or plaque coating:

- Sand off any old coating to expose bare wood.
- Mix and apply a coating of MAX 1618 A/B and allow the resin to penetrate and absorb into the all exposed sides of the wood.
- Repeat application until a point of saturation is achieved and allow to cure for 24 hours.
- Sand the surface to using 280-grit sandpaper and clean with a tack rag to remove ducts and other surface contaminants.
- If imbedding pictures or other items onto the tabletop, plaques or a decoupage projects, secure the items using MAX 1618 as an adhesive and allow to set-up before coating. Make sure to laminate the picture or imbedded item so no air bubble is entrapped in between the two surfaces.
- Allow to cure for 3 to 6 hours or until the item is well secured.
- Determine the volume of resin to be mixed using the following equation

$$\text{LENGTH X WIDTH X COATING THICKNESS} / 231 \text{ CUBIC INCHES PER GALLON} = \text{CUBIC INCHES OF COATING NEED}$$

FOR EXAMPLE

$$50 \text{ INCHES X } 36 \text{ INCHES X } 0.010 \text{ (10 MILS)} = 18 \text{ CUBIC INCHES}$$
$$18/231 = .0779 \text{ GALLON OF MIXED RESIN}$$

USE THESE FACTORS TO CONVERT GALLON NEEDED INTO VOLUMETRIC OR WEIGHT MEASUREMENTS

FLUID GALLON VOLUME CONVERSION	
1 GALLON =	231 CUBIC INCHES
1 GALLON =	128 OUNCES
1 GALLON =	3.7854 LITERS
1 GALLON =	4 QUARTS
1 GALLON =	16 CUPS
FLUID GALLON MASS CONVERSIONS	
1 GALLON OF MIXED UNFILLED EPOXY RESIN =	9.23 POUNDS
1 GALLON OF MIXED UNFILLED EPOXY RESIN =	4195 GRAMS

FOR EXAMPLE:

$$231 \text{ X } .0779 = 17.99 \text{ CUBIC INCHES OR } 4195 \text{ GRAMS X } .0779 = 326.79 \text{ GRAMS OF MIXED RESIN}$$

COMPONENT	MIX RATIO BY PARTS	MIX RATIO BY PERCENT	AMOUNT NEEDED
PART A RESIN	100	66.67%	326.79 X 66.67%= 217.87 GRAMS
PART B CURING AGENT	50	33.33%	326.79 X 33.33%= 108.91 GRAMS

217.87 GRAMS+108.91 GRAMS =326.79 GRAMS OF MIXED RESIN

- Pour the mixed MAX 1618 into another container and mix for another minute (this insures that no tacky spots caused by unmixed material will be applied) and pour or brush or foam roller (use foam roller for a lint free application) coat apply unto the substrate to be sealed. Allow the coating to flow out evenly and protect the surface from airborne dust and debris until it has set-up. If a thicker coating is desired, allow to set-up for at least 6 hours before applying subsequent coats. To remove stubborn surface bubbles, pass a flame from a propane torch over the surface very, very quickly and the bubbles will pop.
- Allow the completed coating to cure for at least 24 hours before handling. Optional step for a supper high gloss finish: Upon full cure of the coating, lightly wet sand the surface using a 1800 grit then an a 2000 grit polishing sand paper or rubbing compound and apply durable car polish.

To use MAX 1618 as a laminating or impregnating resin for fiberglass or other composite fabrics:

- Precut or measure out the correct shape, length or pattern and the number of layers of fabric needed to achieve the desired thickness.
- Clean the surface to be reinforced or laminated. Please refer to our Surface Preparation bulletin.
- For the best balance composite laminate performance, calculate the fabric to resin ratio at 65 to 35 percent by weight.
- Apply a thin layer of the mixed MAX 1618 unto the to the prepared surface to be reinforced, replicated or overlaid and then apply the composite fabric and allow the resin to absorb through the fabric and equalize. Aid the resin to wet-out the fiber glass using a brush or roller and repeat application of subsequent layers of fabric until the desire thickness is achieved. Use a rubber squeegee to remove excess resin. Clean up excess resin run off before it has a chance to set-up using rag dampened with acetone or MEK.
- Allow curing at room temperature for 24 to 36 hours.

To use MAX 1618 as a casting resin:

As a casting resin, MAX 1618 A/B can be used with silicone RTV molds, LSE plastics and fiberglass and resin molds properly prepared with adequate mold release.

- Clean the mold and apply a good quality release agent such as wax mold release or PVA mold release.
- Slowly pour the mixed MAX 1618 into the mold cavity, allowing any entrapped air bubbles to rise to the surface.
- Allow curing at room temperature for 24 to 36 hours.
- De-mold the cured part.

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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.

IMPORTANT NOTICE

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