

Technical Data Sheet

MASTER BOND POLYMER SYSTEM EP30AN-1

Two Component, Room Temperature Curing, Low Viscosity Epoxy
for Potting, Sealing, Coating and Bonding Featuring Exceptionally High
Thermally Conductivity and Excellent Electrical Insulation Properties.

Now NASA Approved for Low Outgassing Applications

% CVCM = 0.02

% TML = 0.82

Product Description

Master Bond Polymer System EP30AN-1 is a two part epoxy for high performance potting, sealing, coating and bonding featuring exceptionally high thermal conductivity, excellent electrical insulation properties and NASA low outgassing approval. It will cure at room temperature or more rapidly at elevated temperatures. Other attractive properties include superb dimensional stability and superior physical strength properties. Its low viscosity and excellent flow characteristics make it an ideal thermally conductive potting epoxy. EP30AN-1 is also an excellent adhesive/sealant forming durable, rigid bonds that resist to thermal cycling and chemicals including water, oils, etc. over the wide temperature range of -60°F to 250°F. The coefficient of thermal expansion is desirably low. The color of part A is gray and part B is clear. Master Bond EP30AN-1 is widely used in applications where thermal conductivity, electrical isolation and low outgassing properties are required. It is particularly well suited to high vacuum environments.

Product Advantages

- Easy application: adhesive spreads or pours evenly and smoothly.
- Versatile cure schedules: ambient temperature cures or fast elevated temperature cures as required.
- High bond strength to a wide variety of substrates; excellent adhesive properties.
- Exceptionally high thermal conductivity with excellent electrical insulation properties.
- Low thermal expansion coefficient; superior dimensional stability.
- Good physical strength characteristics; especially high compressive strength.
- Low viscosity with excellent flowability; ideal for potting and casting.
- Outstanding resistance to a wide range of chemicals.
- Meets NASA low outgassing specifications

Product Properties

- Mixing ratio, by weight, part A to B 10/1
- Viscosity, mixed compound, 75°F, cps 5-6,000cps
- Working life after mixing, 75°F, 100 gram mass, minutes 30-40
- Cure schedule
 - 75°F 24-36 hours
 - 200°F 1-2 hours
- Bond strength, shear, aluminum/aluminum
 - Room temperature cure, 75°F, psi >900
 - After 30 days water immersion, 75°F, psi >800
- Thermal conductivity, 75°F, BTU·in/ft²·hr·°F25
- Coefficient of thermal expansion, in/in x 10⁻⁶/°C26
- Volume resistivity, ohm-cm
 - 77°F 4.8 x 10¹⁴
 - 200°F 1.0 X 10¹²
- Dielectric constant, 77°F
 - 60Hz 6.4
 - 1 KHz 6.2
 - 1 MHz 5.9
- Dielectric strength, 77°F, volts/mil (1/8" thick test specimen) 420
- Tensile strength, 77°F, psi 7,800
- Compressive strength, 77°F, psi 15,500
- Hardness, Shore D 90
- Service temperature range, °F -60°F to +250°F
- Shelf life at 75°F, in unopened containers 6 months
- Parts A and B available in pint, quart, gallon and 5 gallon containers

Preparation of Adhesive and Bonding Surfaces

Master Bond Polymer System EP30AN-1 is prepared for use by thoroughly mixing part A with part B in a ten-to-one mix ratio by weight. Mixing should be done slowly to avoid entrapping air. Color coding of EP30AN-1 makes mixing easy: part A is colored off gray; part B is clear. Simply mix parts A and B in a ten-to-one weight ratio and stir until color is uniform. The working life of a mixed 100 gm batch is about 30-40 minutes. It can be substantially lengthened by using shallower mixing vessels or mixing smaller size batches. All bonding surfaces should be carefully cleaned, degreased and dried to obtain maximum bond strength. When bonding to metal surfaces, chemical etching should be employed when the bonded joints are to exhibit optimal environmental durability. Non-porous surfaces should be roughened with sandpaper or emery paper for hard materials.

Adhesive Application and Assembly

Master Bond Polymer System EP30AN-1 can be conveniently applied with a spatula, knife, trowel, brush, paint roller, etc. Enough mixed adhesive should be applied to obtain a final adhesive bond line thickness of 4-6 mils thick or by coating the two surfaces, each with a 2-3 mil thick layer of adhesive. Porous surfaces may require somewhat more adhesive to fill the voids than non-porous ones. Thicker glue lines do not increase the strength of a joint but do not necessarily give lower results as the EP30AN-1 system does not contain any volatiles. The parts to be bonded should then be pressed together with just enough pressure to maintain intimate contact during cure. In casting applications, it may be necessary to vacuum degas in order to remove the relatively few air bubbles that may have been formed when mixing.

Cure

Master Bond Polymer System EP30AN-1 can be cured at room temperature or at elevated temperatures as desired. At room temperature the Master Bond Polymer System EP30AN-1 cures within 24-36 hours. Faster cures can be realized at elevated temperatures, e.g., 1-2 hours at 200°F. At room temperature, bonds then continue to gain in strength with the maximum reached within 1-2 days. Remove any excess adhesive promptly before it hardens with a spatula. Then wipe with a rag or solvent such as MEK, toluene or acetone. The thinner the section of epoxy, the slower the rate of cure.

Handling and Storage

All epoxy resins should be used with good ventilation, taking care to minimize skin contact. EP30AN-1 employs a low toxicity hardener. To remove resin or hardener from skin, use solvent, then wash with mild soap and water. If material enters the eyes, flood with water and consult a physician. Optimum storage is at or below 75°F in closed containers. No special storage conditions are necessary. Containers should however be kept closed when not in use to avoid contamination. Cleanup of spills and equipment is readily achieved with aromatic or ketone solvents employing proper precautions of ventilation and flammability.

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