

MA830

Technical Data Sheet

PLEXUS[®]
Structural Adhesives

Benefits

Self-priming to metals¹
High toughness
High strength
Gray color for metal bonding
Cartridge available with or without spacer beads

Characteristics

Room Temperature Cure
Working Time²
 Approximately 5 minutes
Fixture Time³
 Approximately 20 minutes
51°F Flash Point
Operating Temperature⁴
 -40°F to 180°F
Gap Filling to 0.012in. to 0.5in.
Mixed Density (no GB/ with GB)
 8.17/8.28 lbs./gal
 (0.98/0.99g/cc)

Chemical Resistance⁵

Excellent resistance to

- Hydrocarbons
- Acids and Bases (3-10 pH)
- Salt Solutions

Susceptible to:

- Polar Solvents
- Strong Acids and Bases

Recommended for:

Metals⁶: Aluminum, Stainless, CRS, Galvanneal, Galvalume

Most Engineered Plastics:
PVC, Acrylics, ABS, Styrenics, Urethanes (General)

FRP: VE, Polyesters (including DCPD modified), Epoxies and Gelcoats

Plexus[®] MA830 is an advanced two-part methacrylate adhesive designed for structural bonding of metals without primers. In addition, MA830 does a superb job of bonding thermoplastic and composite assemblies with little to no surface preparation. Combined at a 10:1 ratio, MA830 has a working time of approximately 5 minutes and achieves approximately 500 psi lap shear strength in 20 minutes. This product provides a unique combination of high strength, excellent fatigue endurance, outstanding impact resistance, and superior toughness. Plexus MA830 is available in gray color with or without 12 mil (0.012-inch) solid glass bead spacers and is supplied in ready-to-use cartridges, 5-gallon pails or 50-gallon drums. The product can be dispensed as a non-sag gel to 3/8 inch using standard meter-mix equipment.

Physical Properties (Uncured) –Room Temperature

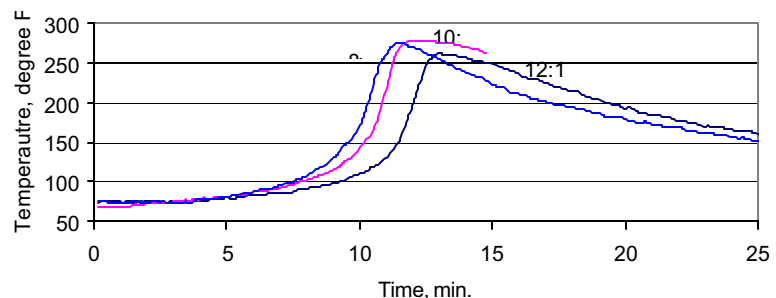
	Adhesive	Activator
Viscosity, cP	90,000 – 120,000	50,000 – 80,000
Color	off-white	Gray or Gray GB
Density, lbs./gal (g/cc)	8.06 (0.97)	9.10 (1.09) or 9.25 (1.11)
Mix Ratio by Volume	10.0	1.0
Mix Ratio by Weight	8.86	1 or 1.02

Mechanical Properties (ASTM D638) (Cured Adhesive⁷)

Tensile Strength, psi	3,200 - 3,800
Tensile Modulus, psi	70,000 - 100,000
Strain to Failure (%)	30 - 60

Lap Shear (ASTM D1002) (dry wiped Al 6061, 0.012 inch gap),

Shear Strength, psi	2,300 – 2,800
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Typical Exotherm Curve for MA830 at 75°F (10 grams)⁸ at various mix ratios

HANDLING AND APPLICATION:

Plexus® MA830 adhesive (Part A) is flammable and contains Methacrylate Ester. Keep containers closed after use. Wear gloves and safety glasses to avoid skin and eye contact. Wash with soap and water after skin contact. In case of eye contact, flush with water for 15 minutes and get medical attention. Harmful if swallowed. Keep out of reach of children. Keep away from heat, sparks, and open flames. Reference the Material Safety Data Sheet for more complete safety information. **NOTE:** Because of the rapid curing nature of this product, excessive heat is generated when large masses of material are mixed at one time. The excessive heat generated by the exotherm can result in the release of entrapped air, steam, and volatile gases. To prevent this, use only enough material as needed for the application within the working time for the product and confine gap thickness of 0.012 inches to no more than 0.5 inch. For gap thicknesses outside this range, consult with an ITW Plexus representative. Questions relative to handling and applications should be directed to ITW Plexus at 800-851-6692.

DISPENSING ADHESIVE:

MA830 may be applied manually or with stainless steel bulk dispensing equipment. Static mixer selection is critical to the proper mixing and performance of Plexus adhesives. ITW Plexus recommends a 10-24 static mixer for MA830 for optimal mixing from standardized cartridges. For additional information concerning meter-mix equipment, contact ITW Plexus Sales Representatives. To assure maximum bond strength, surfaces must be mated within the specified working time. Use sufficient material to ensure the joint is completely filled when parts are mated and clamped. All adhesive application, part positioning, and fixturing should occur *before* the working time of the mix expires. After indicated working time, parts must remain undisturbed until the fixture time is reached. Clean up is easiest *before* the adhesive cures. Citrus terpene or N-methyl pyrrolidone (NMP) containing cleaners and degreasers can be used for best results. If the adhesive is already cured, careful scraping, followed by a solvent wipe may be the most effective method of clean up. **NOTE:** Avoid contact with copper or copper containing alloys in all fittings, pumps, etc. Seals and gaskets should be made of Teflon, Teflon-coated PVC foam, ethylene/propylene or polyethylene. Avoid the use of Viton, BUNA-N, Neoprene or other elastomers for seals and gaskets.

EFFECT OF TEMPERATURE:

Application of adhesive at temperatures between 70°F and 80°F will ensure the most consistent cure. Ambient temperature will always affect the rate of cure. For example, temperatures below 60°F will slow the cure speed; above 80°F will increase cure speed. The viscosities of Parts A and B of this adhesive are affected by temperature. To ensure consistent dispensing in meter-mix equipment, adhesive and activator temperatures should be held reasonably constant throughout the year. Plexus does not recommend bonding below 60°F

STORAGE AND SHELF LIFE:

Shelf life of MA830 adhesive (Part A) is 12 months from day of shipment from ITW Plexus. Shelf life of activator (Part B), including cartridges that contain activators, is 12 months from day of shipment. Shelf life is based on continuous storage between 55°F and 75°F. Long-term exposure above 75°F will reduce the shelf life of these materials. Prolonged exposure of activators, including cartridges that contain activators, above 100°F quickly diminishes the reactivity of the product and should be avoided. This product should never be frozen.

Notes

1. ITW Plexus strongly recommends that all substrates be tested with the selected adhesive in the anticipated service conditions to determine suitability. For severe corrosion durability to aluminum use of PC120 offers superior durability and performance.
2. Working Time: The time elapsed between the moment Parts A and B of the adhesive system are combined and thoroughly mixed and the time when the adhesive is no longer useable at approximate 0.25 inches. Times presented were tested at 75°F.
3. Fixture Time: Varies with ambient temperature, bondline gap thickness, and nature of substrates. Typically at 75°F, MA830 with 0.012-inch gap at a 10:1 ratio by volume reaches 500 psi in 20 minutes and 1,000 psi in 25 minutes (ASTM D1144). Substrate temperature and gap affects fixture time.
4. Ambient temperature affects the performance of this product. At -40°F and 180°F, the lap shear strengths of MA830 on AL 6061 are approximately 3,100 psi and 1,000 psi, respectively.
5. Resistance to chemical exposure varies greatly based on several parameters including; temperature, concentration, bondline thickness, and duration of exposure. The chemical resistance guidelines listed assumes long-term exposures at ambient conditions.
6. Although not necessary, ITW Plexus recommends the removal of all surface oxides and the use of PC120 cleaner/conditioner for optimal performance and environmental resistance. Not recommended for Hot Dipped Galvanized metal.
7. Cure condition – In order to accelerate 100% ultimate strength all samples were cured at 16 hours at 75°F followed with a 16-hour exposure at 110°F. This is not a post bake. Data shows such cure simulates ultimate 100% of cure.
8. In a typical bond line, exotherm temperatures will be lower than the temperatures shown.

All information on this data sheet is based on laboratory testing and is not intended for design purposes. ITW Plexus makes no representations or warranties of any kind concerning this data. Due to variance of storage, handling and application of these materials, ITW Plexus cannot accept liability for results obtained.