Technical Data Sheet

MA8105 / MA8105GB

Description

Plexus® MA8105 is an advanced direct-to-metal, two-part methacrylate structural adhesive. It is designed for structural bonding of various metals, plastic, and composite assemblies. MA8105 does a superb job of bonding of metals, engineered thermoplastics (including polyamides), and composite assemblies with little to no surface preparation. Combined at a 1:1 ratio by volume, this product offers a unique combination of low odor, high-strength, toughness, and fatigue resistance. Plexus MA8105 contains 0.012-inch (0.3mm) inert glass beads and is available with and without glass-bead spacers (GB) in Bulk 5-gallon (20-liter) pails, or 50-gallon (200-liter) drums and is supplied only with glass-beads spacers in ready-to-use 50-ml, 400-ml cartridges, all to be dispensed as a non-sagging gel.

Typical Uncured Properties	Part A	Part B
Color	Off White	Gray
Mix Ratio by Volume	1.00	1.00
Mix Ratio by Weight	1.02	1.00
Component Density, g/ml (lb/gal)	0.98 (8.12)	0.96 (8.01)
Component Viscosity, cP x1000	70 - 140	50 - 120
VOC's during cure	< 1%	
Shelf Life, Months	12	

Typical Cured Properties	
Peak Exo Time (10g), min	8 - 10
Peak Exo Temp (10g), °F (°C)	~280 (138)
Gap Tolerance, in. (mm)	0.01 – 0.5 (0.25 – 12.7)
Hardness, Shore D	72
Tensile Strength, psi (MPa)	3,500 - 3,800 (24.1-26.2)
Tensile Modulus, kpsi (MPa)	200 - 240 (1,380 - 1,655)
Elongation at Break, %	5 - 11

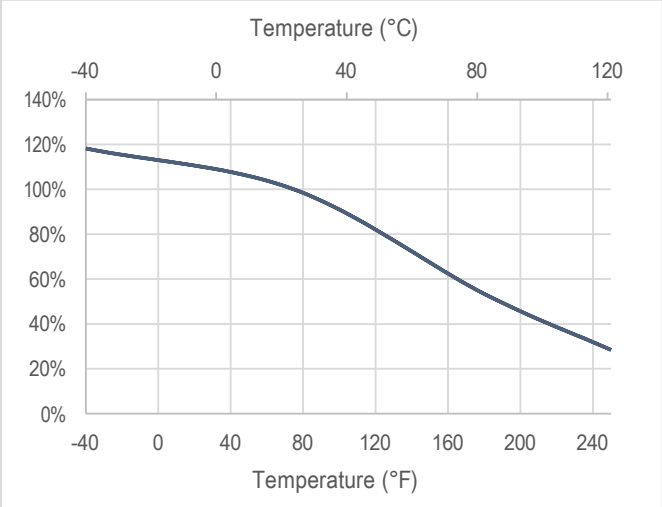
Tensile tested in accordance with ASTM D638

Cure Profile at Different Temperatures

Temperature	60°F (15.6°C)	75°F (23.9°C)	90°F (32.2°C)
Work Time, min	5 - 7	3 - 6	2 - 4
Time to 50 psi (0.3 MPa), min	15 - 17	12 - 14	9 - 11
Time to 500 psi (3.4 MPa), min	19 - 21	14 - 16	11 - 13
Time to 1000 psi (6.9 MPa), min	28 - 32	18 - 22	14 - 16

Strength Retention vs Temperature

(ASTM D1002 on AL 6061)



Substrate	Lap Shear (Typical) ASTM D1002 psi	MPa	Failure Mode
Aluminum	2,694	18.6	CF
Aluminum,1000hr Salt Fog	2,436	16.8	CF
Stainless	2,961	20.4	CF
G70	2,178	15.0	CF
CRS	3,083	21.3	CF
ABS	628	4.3	SF
FRP	2,398	16.5	SF
Polyamide (nylon) 6,6 GF	2,041	14.1	SF

SF = Substrate Failure, CF = Cohesive Failure, AF = Adhesive Failure

Application

1. To ensure maximum bond strength, surfaces must be mated within the specified working time.
2. Use sufficient material to fill the joint completely when parts are mated and fixed.
3. Apply adhesive using handheld cartridges or automatic meter/mix/dispense equipment.
4. Load the cartridge into the dispenser and remove the end caps.
5. Attach mixing tip and dispense a mixer's length of adhesive.
6. Apply adhesive to the substrate and mate the parts within the work time of the adhesive.
7. Fix in position until a sufficient bond strength is achieved.

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Application

Surface Preparation - Plexus typically requires little or no surface preparation, but is dependent on the material and degree of contamination on the bonding area. For optimal performance, ITW PP recommends surfaces are free of grease, dirt, and other contaminants.

Plastics and coated metals - wipe with a dry rag or a light solvent may be sufficient.

Raw metal - wipe with a dry rag or a light solvent may be sufficient.

Metals may be affected by the degree of oxidation, scaling, fluids or other contaminants.

Composites - dust free surfaces can be bonded as is, or may require light abrasion to remove mold releases, or to increase the surface area.

Other surfaces should have the same considerations. ITW PP recommends customers test to determine the optimal preparation for their materials to assure suitability.

Recommended Application Temperature

Application of adhesive at temperatures between 65°F (18°C) and 85°F (30°C) will ensure proper cure. Temperatures below 65°F (18°C) or above 85°F (30°C) will slow down or increase cure rate significantly. Temperature affects viscosities of Parts A and B of this adhesive.

To ensure the consistent dispensing of adhesive and activator, material temperature should be held reasonably constant throughout the year.

Clean-Up

Clean up is easiest before the adhesive has cured. Common lab solvents, Citrus terpene or N-methyl pyrrolidone (NMP)-containing cleaners, degreasers, and soap & water can be used for best results. If the adhesive is already cured, careful scraping, followed by a wiping with a cleaning agent, may be the most effective method of clean up.

Temperature Resistance

See Strength versus Temperature Resistance chart on Page 1.

Bulk Dispensing of Drums or Pails

Plexus may be applied manually or with bulk dispensing equipment. Bulk equipment must be explosion proof. When using Bulk product with glass beads, assure the bulk dispensing equipment is designed for such material, as glass beads can cause equipment wear. All parts in direct contact with the products should be stainless steel. Avoid contact with brass, carbon steel, 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. Automation may be accomplished by a variety of manufacturers.

Safety & Handling

ITW PP recommends users to follow all recommended safe practices for handling its product. Refer to the products' Safety Data Sheet (SDS) and label for health and safety information before using this product. Also refer to itwpp.com for additional information and other frequently asked questions.

Note: when mixing a large mass of material at one time, a large amount of heat may be generated due to the exothermic reaction created by the rapid curing of the product. This heat can result in the release of entrapped air, steam, and volatile gases. To prevent this, dispense only enough material as needed for the application and for use within the working time of the product and confine gap thickness to no more than its maximum gap fill capability

Chemical Resistance

Degree of direct or indirect contact may have an impact on chemical resistance

Excellent Resistance to: Hydrocarbons, acids and bases (pH 3-10) and Salt Solutions

Susceptible to: Strong Polar Solvents, Strong Acids, and Bases

Shelf Life & Recommended Storage

Shelf Life is based on continuous storage between 55°F and 77°F (13°C and 25°C).

Exposure, intermittent or prolonged exposure, above 80°F (27°C) will result in a reduction of shelf life. Exposure above 100ºF (38ºC) can quickly degrade shelf life and should be avoided. Shelf Life may be extended by cool storage between 45°F and 65°F (7°C and 18°C). If stored cold, allow the product to return to room temperature before using.

Product Use

Industrial Use Only. Many factors beyond ITW PP control and uniquely within user's knowledge and control can affect the performance of this product in any particular application. Given the variety of factors that can affect use and performance, the end user is solely responsible for evaluating any ITW PP product and determining its suitability and fitness for a particular purpose product design, production, final application, and end result.

Exclusion of Warranties

The Data stated here are typical values and offered in good faith. Given the variety of factors that can affect the use and performance of an ITW PP product, the end user is responsible for evaluating any ITW PP product and determining whether it is fit for purpose and suitable for user's design, production, and final application. Unless an additional Warranty is expressly stated, ITW PP warrants that the ITW PP product meets the applicable ITW PP product specification at the time ITW PP Ships the product. As to the herein described materials and test results, there are no warranties which extend beyond the description on the face hereof. ITW PP MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANT ABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY OR CONDITION ARISING OUT OF A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE. IF THE ITW PP product does not conform to this warranty, then the sole and exclusive remedy is, at ITW PP's option, replacement of the ITW PP product or refund of the purchase price

Limitation of Liability

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