

MA557 Technical Data Sheet

Benefits

- No Surface Preparation
- High Toughness
- Excellent Durability
- 100% Reactive
- Non-Sagging
- Long working time
- Excellent Gap Filling

Characteristics

- Room Temperature Cure Working Time² -
 - Approx. 90 min. @ 77°F
 - Approx. 45 min. @ 95°F
- Fixture Time³
 - 700 psi in 3 hours @77°F
- 51°F Flash Point
- Operating Temperature
 - 67°F to 250°F
- Gap Filling to 1.5 inches
- Mixed Density
 - 8.01 lbs/gal (.96 g/cc)

Chemical Resistance⁴

- Excellent resistance to
 - Hydrocarbons
 - Acids and Bases (3-10 pH)
 - Salt Solutions
- Susceptible to:
 - Polar Solvents
 - Strong Acids and Bases

Recommended for:

- ABS
- Acrylics
- FRP
- Gelcoats⁶
- Polyesters (including DCPD modified)
- PVC
- Urethanes (General)
- Styrenics
- Vinyl Esters

Plexus[®] MA557 is a two-part methacrylate adhesive designed for structural bonding of composite, thermoplastic and metal assemblies¹. Plexus MA557 was uniquely formulated to eliminate problems associated with adhesive “swim” (slide) and sag, even when applied to a vertical surface. In addition MA557 does not boil in gaps up to one and a half-inch thick. Combined at a 10:1 ratio, it has a working time of approximately 90 minutes and achieves 700 psi in 3 hours at 77°F. It also reaches 75% of ultimate shear strength in approximately 5 hours at 77°F. As with other Plexus adhesives, this product is a standard for structural bonding in the marine industry because it requires virtually no surface preparation. MA557 provides a combination of excellent fatigue endurance, outstanding impact resistance, and superior toughness. Plexus MA557 is available in blue and is supplied in 490-ml cartridges, 5-gallon pails and 50-gallon drums for dispensing from standard meter-mix equipment. This material is not recommended for hand mixing.

Physical Properties (Uncured) -Room Temperature

	Adhesive	Activator
Viscosity, cP x 1000	180 – 220	40 –60
Color	Off-White	Blue
Density, lbs/gal (g/cc)	7.92 (0.95)	8.90 (1.07)
Mix Ratio by Volume	10	1
Mix Ratio by Weight	8.90	1

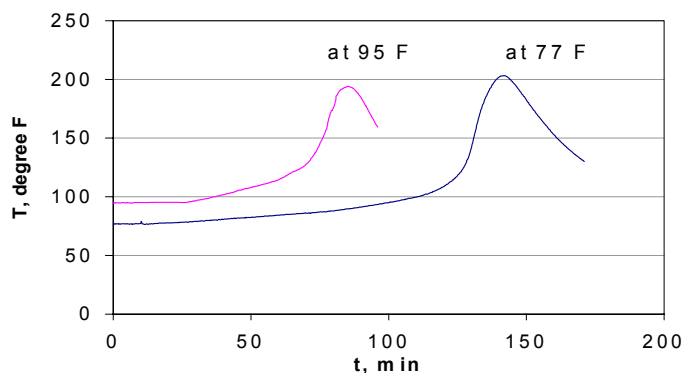
Mechanical Properties (Cured) -Room Temperature

Tensile (ASTM D638)

Strength, psi	2000 - 2500
Modulus, psi	55,000 – 65,000
Strain to Failure (%)	120 - 160

Lap Shear on Steel (ASTM D1002, Stainless steel, 30 mil bondline)

Cohesive Strength, psi	1250 – 1550
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Typical Exotherm Curve for MA557 at 77°F and 95°F (30 grams)⁵

HANDLING AND APPLICATION

Plexus[®] MA557 adhesive (Part A) is flammable. Contents include 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. For more complete health and safety information contact ITW Plexus for a Material Safety Data Sheet (MSDS).

Note: Because of the rapid curing features of this product, large amounts of heat are generated when large masses of material are mixed at one time. The heat generated by the exotherm resulting from the mixing of large masses of adhesive can result in the release of entrapped air, steam, and volatile gases. To prevent this, use only enough material as needed for use within the working time for the product and confine gap thickness to no more than 1.5 inches. Questions relative to handling and applications should be directed to ITW Plexus at 800-851-6692.

DISPENSING ADHESIVE

MA557 may be applied manually or with automated equipment. Automated application may be accomplished with a variety of 10 to 1 meter mix equipment delivering both components to a static mixer. For information concerning meter-mix equipment, contact ITW Plexus Sales Representatives. Pre-measured cartridges are also available, as well as the hand-held guns with which to dispense the adhesive. For more information, contact ITW Plexus at (800) 851-6692. 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 has expired. After indicated working time, parts must remain undisturbed until the fixture time is reached. Automated equipment should be constructed of stainless steel or aluminum. 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. Clean up is easiest *before* the adhesive has cured. 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.

EFFECT OF TEMPERATURE

Application of adhesive at temperatures between 65°F and 95°F will ensure proper cure. Temperatures below 65°F will significantly slow cure speed; above 95°F will significantly 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.

STORAGE AND SHELF LIFE

Shelf life of MA557 adhesive (Part A) is 1 year from day of shipment from ITW Plexus. Shelf life of activator (Part B), including cartridges that contain activators, is 9 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 product's reactivity and should be avoided. Shelf life can be extended by refrigeration (45°F - 55°F). These products 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.
- 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 becomes a gel and is no longer useable.
- 3 Fixture Time: Varies from ambient temperature and bond line thickness. End user should determine what is best for their process. MA557 reaches 700 psi and 1000 psi (i.e. 75% of its ultimate shear strength) in 3 and 5 hours respectively at 77°F
- 4 Resistance to chemical exposure varies greatly based on several parameters including temperature, concentration, bondline thickness and duration of exposure. The chemical resistance guidelines listed assume long term exposures at ambient conditions.
- 5 In a typical bond line, exotherm temperatures will be lower than the temperatures shown.
- 6 Urethane-modified super-weathering gelcoats may require an alternate adhesive. As with all substrates, these gelcoats should be tested with the selected adhesive to determine suitability.

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. ITW Plexus recommends all substrates be tested with the selected adhesive to determine appropriate suitability.