ITW PLEXUS

TECHNICAL DATA SHEET

PLEXUS MA590

Description

Plexus® MA590 is a two-part methacrylate adhesive designed for structural bonding of thermoplastic, metal, and composite assemblies[1]. Combined at a 1:1 ratio, MA590 has a working time of 90 to 105 minutes and has a fixture time of 180 to 240 minutes. This product has been designed for use on large marine structures where a very long open time product is needed. Plexus MA590 is commonly used for bonding stringers and liners into large fiberglass boats with bond lines up to 25mm thick. In addition, this product provides a unique combination of excellent fatigue endurance, outstanding impact resistance, and superior toughness. Plexus MA590 is grey when mixed and is available in easy-to-use 400 ml cartridges, 20 litre pails, and 200 litre drums to be dispensed as a non-sagging gel using standard meter-mix equipment.

Characteristics	Room Temperature Cure	
	▪ Working Time[2]	90 - 105 minutes
	▪ Fixture Time[3]	5.5 MPa in 3 hours 7.6 MPa in 4 hours
	▪ Operating Temperature	-55°C to 121°C
	▪ Gap Filling up to	1- 37mm[7]
	▪ Mixed Density	0.92g/cc
	▪ Flash Point	11ºC

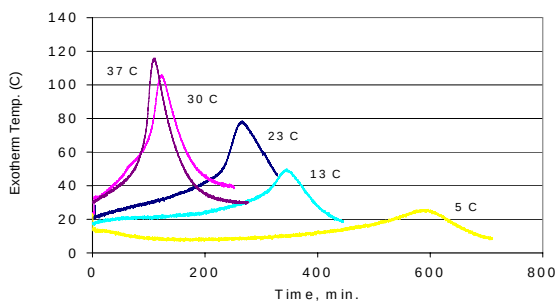
Chemical Resistance[4]	Excellent resistance to:	Susceptible to:
	▪ Hydrocarbons	▪ Polar Solvents
	▪ Acids and Bases (3-10 pH)	▪ Strong Acids and Bases
	▪ Salt Solutions	

Physical Properties (uncured) – Room Temperature		Adhesive	Activator
	Viscosity, cP	175,000-220,000	175,000-220,000
	Colour	White	Black
	Density, lbs/gal (g/cc)	0.91	0.94
	Mix Ratio by Volume	1	1
	Mix Ratio by Weight	1	1
	Mixed Color - Grey		

Mechanical Properties (Cured) Room Temperature	Tensile (ASTM D638)	
	▪ Strength, MPa	13.8 – 17.2
	▪ Modulus, MPa	276 – 345
	▪ Strain to Failure (%)	130–160

Recommended for:			
	▪ ABS	▪ PVC	▪ Styrenics
	▪ Acrylics	▪ Polyesters (including DCPD modified)	▪ Urethanes (general)
	▪ FRP		▪ Vinyl Esters
	▪ Gelcoats[6]		

Lap Shear (ASTM D1002)	Cohesive Strength MPa	9.7 – 12.4



Typical Exotherm Curve for MA590 at 23°C (30 grams)[5]

PLEXUS MA590

HANDLING AND APPLICATION

Plexus® MA590 adhesive (Part A) and activator (Part B) are 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 heath 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 37mm. Questions relative to handling and applications should be directed to ITW Plexus at +44(0)870 458 758

DISPENSING ADHESIVE

MA590 may be applied manually or with automated equipment. Automated application may be accomplished with a variety of 1 to 1 meter mix equipment delivering both components to a static mixer. For 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 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 pyrolidone (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 18ºC and 26ºC will ensure proper cure. Temperatures below 18ºC will slow cure speed; above 26ºC 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.

STORAGE AND SHELF LIFE

Shelf life of MA590 adhesive and activator is 6 months from day of shipment from ITW Plexus. Shelf life is based on continuous storage between 12°C and 23°C. Long term exposure above 23°C will reduce the shelf life of these materials. Shelf life can be extended by refrigeration (7°C - 12°C). These products should never be frozen.

For expiry date please see label on packaging

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 is no longer useable. Times presented were tested at 23ºC.
3. Fixture Time: The interval of time after which surface being joined will support a 1 kg dead weight on a 12.7 mm overlap joint 25.4 mm wide without movement. Times presented were tested at 23ºC.
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.
7. For bond gaps below the minimum quoted please contact ITW Plexus.

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