THE COMPOSITE STORE

TDS
MA420
PLEXUS

DESCRIPTION

Plexus® AO/MA420 is a two-part methacrylate adhesive designed for structural bonding of thermoplastic, metal, and composite assemblies. Combined at a 10:1 ratio, AO420 is a rapid-curing system. Plexus AO420 is the standard choice for composite bonding applications in the transportation industry because it requires virtually no surface preparation. In addition, this product provides a unique combination of excellent fatigue endurance, outstanding impact resistance, and superior toughness. Plexus AO420 is available in amber, blue, or black colors and is supplied in a ready-to-use cartridge, 5- gallon (20-liter) pails, or 50-gallon (200-liter) drums to be dispensed as a non-sagging gel.

CHARACTERISTICS

Cure at ambient temperature

- Open time: 4 – 6 minutes
- Fixture time: 15 – 18 minutes
- Flash point: 9°C
- Service temperature: -55°C to 121°C
- Gap filling: 1 to 8 mm
- Mixed density: 0.97 g/cc

TYPICAL PHYSICAL PROPERTIES (UNCURED) – AMBIENT TEMPERATURE

Property	Adhesive	Activator
Viscosity, cP (x1000)	100,000 – 125,000	50,000 – 70,000
Colour	Cream	Blue
Density, lb/gal (g/cc)	0.96	1.07
Mix ratio by volume	10	1
Mix ratio by weight	8.9	1

TYPICAL MECHANICAL PROPERTIES (CURED) – AMBIENT TEMPERATURE

Tensile (ASTM D638)

- Strength, MPa: 18.6 – 20.6
- Modulus, MPa: 517 – 689
- Elongation at break (%): 100 – 125

CHEMICAL RESISTANCE

Excellent resistance to:

- Hydrocarbons
- Acids and bases (pH 3–10)
- Salt solutions

Susceptible to:

- Polar solvents
- Strong acids and bases

RECOMMENDED FOR:

- ABS
- Acrylics
- FRP (Fiber Reinforced Plastics)
- Gelcoats
- Carbon steel
- PVC
- Polyesters (including DCPD)
- Aluminum
- Stainless steel
- Styrenic materials
- Urethanes (general purpose)
- Vinyl esters

SAFETY AND HANDLING

Plexus MA420 Adhesive (Part A) is flammable. It contains Methacrylate Ester. Keep containers closed after use. Avoid contact with skin and eyes. Wash with soap and water after skin contact. In case of eye contact, flush thoroughly with water for 15 minutes and seek medical attention. Harmful if swallowed. Keep out of reach of children. Keep away from heat, sparks, and open flames.

Note: Due to the fast curing properties of this product, large masses of mixed material will generate significant heat. The heat generated by the exothermic reaction may cause the release of trapped air, vapor, and volatile gases. To prevent this, use only the amount of material that can be applied within the specified open time, and limit bond line thickness to no more than 6 mm. For any questions regarding handling and applications, contact ITW Plexus (+44 1536 314800).

ADHESIVE APPLICATION

Plexus MA420 may be applied manually or using automated equipment. Automated application can be achieved using a variety of meter-mix equipment with a 10:1 ratio, dispensing both components into a static mixer. For information regarding meter-mix equipment, contact ITW Plexus. Pre-measured cartridges and manual dispensing guns are also available.

To ensure maximum bond strength, substrates should be mated within the specified open time. Apply sufficient material to ensure the joint is completely filled when parts are assembled and clamped. All adhesive application, part positioning, and fixturing must be completed within the open time. After this time, parts must remain undisturbed until fixture time is reached.

Automated equipment should be constructed of stainless steel or aluminum. Avoid contact with copper or copper alloys in all equipment, 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.

Cleaning is easiest before the adhesive has cured. For best results, use citrus terpene or N-methyl pyrrolidone (NMP)-based cleaners and degreasers. If the adhesive has already cured, the most effective cleaning method is careful scraping followed by solvent wiping.

EFFECT OF TEMPERATURE

Application at temperatures between 18°C and 26°C ensures proper curing. Below 18°C, the cure rate slows; above 26°C, the cure rate increases. The viscosity of both Part A and Part B is temperature dependent. To ensure consistent dispensing in meter-mix equipment, adhesive and activator temperatures should be kept reasonably constant throughout the year.

STORAGE AND SHELF LIFE

Shelf life for MA420 Adhesive (Part A) is 1 year. Shelf life for Activator (Part B) is 9 months. Shelf life is based on continuous storage between 12°C and 23°C. Prolonged exposure above 23°C will reduce shelf life. Prolonged exposure of activators, including cartridges, to temperatures above 37°C rapidly decreases product reactivity and must be avoided. These products must never be frozen. Refer to product label for expiration date.

DISCLAIMER

All information contained in this data sheet is based on laboratory testing and is not intended for design purposes. ITW Plexus makes no warranties or representations of any kind regarding this data. Due to variability in storage, handling, and application conditions, ITW Plexus cannot accept responsibility for results obtained.