

Supreme 10HTFL

One component, flexibilized epoxy system

Master Bond Polymer System

Key Features

- ✓ High peel and shear strength

✓ Unlimited working life at room temperature
- ✓ Can withstand rigorous thermal cycling

✓ Withstands 1,000 hours 85°C/85% RH

Product Description

Master Bond Supreme 10HTFL, an epoxy that features good toughness, combines convenient processing and a superior physical strength profile. From the handling perspective, Supreme 10HTFL is a true one part system. It is not premixed and frozen and has unlimited working life at room temperature. It is relatively faster curing with typical cure schedules of 20-30 minutes at 300°F or 45-60 minutes at 250°F. Post curing for 1-2 hours at 250-300°F will help to optimize the properties. It is a smooth high viscosity system that flows well. Supreme 10HTFL has an attractive array of advantageous physical strength and electrical insulation properties. Most importantly, it is a forgiving epoxy, that is to say, it is less rigid than typical high temperature resistant epoxies. This “toughness” gives Supreme 10HTFL superior resistance to impact, thermal and mechanical shock and vibration, and allows it to be used in applications with rigorous thermal cycling. The system is a good option when bonding substrates with different coefficients of thermal expansion. In this context, it should be noted that it bonds well to a wide variety of substrates including metals, glass, composites, ceramics, rubber and many plastics.

An additional feature of Supreme 10HTFL is its wide temperature range of 4K to +350°F. It is 100% reactive and does not contain any solvents or diluents. It has good chemical resistance to water, oils, fuels and many cleaning agents. As mentioned before, the epoxy has excellent electrical insulation properties (see chart below). Its natural color is gray, but other colors are available. Also, it can be formulated as a non-flowing paste with the same properties and with the part number Supreme 10HTFLND-2. Supreme 10HTFL should be considered a viable option for challenging applications in the aerospace, electronic, optical, opto-electronic, specialty OEM and related industries.

Product Advantages

- One component system, not premixed and frozen
- Convenient storage at room temperature or refrigerated; freezing not needed nor recommended
- Versatile curing at 250-300°F
- Outstanding toughness, highly resistant to aggressive thermal cycling
- Impressive electrical insulation properties
- Good dimensional stability and low shrinkage upon curing

Typical Properties

Tensile lap shear strength, aluminum to aluminum, 75°F	1,500-1,600 psi
T-peel strength, 75°F	40-50 pli
Tensile strength, 75°F	5,000-6,000 psi
Tensile modulus, 75°F	200,000-250,000 psi
Coefficient of thermal expansion, 75°F	50-60 x 10 ⁻⁶ in/in/°C
Hardness, 75°F	45-65 Shore D
Hardness after 1,000 hours 85°C/85% RH	50 Shore D
Volume resistivity, 75°F	>10 ¹⁴ ohm-cm
Dielectric constant, 75°F, 60 Hz	4.5
Service temperature range	4K to +350°F [4K to +177°C]

Typical Properties (con't)

Solids content	100%
Viscosity, 75°F	350,000-700,000 cps
Color	Gray
Cure schedule options	
250°F	45-60 minutes
300°F	20-30 minutes
Post cure for optimum properties	1-2 hours at 250-300°F
Shelf life in original, unopened containers	
Room temperature	Minimum 3 months, maximum 6 months
Refrigerated	6 months

Preparation of Adhesive

Supreme 10HTFL does not require any mixing prior to use. Some simple stirring is recommended if the adhesive has been stored for a prolonged period of time without use (this could be facilitated by heating the product to 90-110°F). Such stirring should be done slowly to avoid entrapping air. Using the adhesive is easy. Simply apply the measured adhesive on the surface to be bonded evenly and uniformly.

Preparation of Bonding Surfaces

All bonding surfaces should be carefully cleaned, degreased and dried to obtain maximum bond strengths. When bonding to metal or plastic surfaces, chemical etching might have to be used to obtain optimum performance properties. At the minimum, all substrates should be roughened or mechanically abraded followed by solvent cleaning using acetone or xylene.

Application and Assembly

Supreme 10HTFL can be conveniently applied with a spatula, trowel or knife. Enough mixed compound should be applied to obtain a final epoxy bond line thickness of 4-6 mils. Porous surfaces may require somewhat more adhesive to fill the voids than non-porous ones. Thicker glue lines do not increase the strength of a joint but do not necessarily give lower results as the Supreme 10HTFL epoxy system does not contain any volatiles. The parts to be bonded should then be pressed together with just enough pressure to maintain intimate contact during cure. Care should be taken not to squeeze out the material when fixturing. Since the system is 100% reactive and does not contain any solvents or diluents shrinkage on cure is minimal.

Cure

Supreme 10HTFL requires an elevated temperature cure. It cures in 20-30 minutes at 300°F and 45-60 minutes at 250°F. Follow the schedule above with a post cure at 250-300°F for 1-2 hours to help optimize the properties. Remove excess adhesive promptly before it hardens with a spatula. Then wipe with a rag and solvent, such as acetone, toluene or MEK. It is important to note that Supreme 10HTF-1 is exothermic and when curing the epoxy—particularly at 300°F, sections should not exceed 10-15 mils.

Packaging

Product is available in:

- 1/2 Pints
- Pints
- Quarts
- Gallons
- 5 Gallons



Available in specialty packaging including cartridges and syringes.

Handling and Storage

All epoxy resins should be used with good ventilation and skin contact should be avoided. For safe handling details, please consult the product SDS. Supreme 10HTF-1 has a shelf life of minimum 3 months, maximum 6 months at 75°F. Refrigeration at 40-50°F will optimize the shelf life. If refrigerated, it is recommended to heat the material up to 100-110°F for 10-15 minutes, and then allow to return to room temperature before dispensing. Containers should, however, be kept closed when not in use to avoid contamination. Cleanup of spills with acetone or a similar material is fine.

Certifications



Not to Be Used for Specification Purposes

The values contained herein are considered typical properties only and are not intended to be used as specification limits. For assistance in preparing specifications, please contact Master Bond technical support for further details.

Notice

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