# EP21LVMed

## Master Bond Polymer System

*Low viscosity, two component epoxy compound*

## Key Features

- ✓ **USP Class VI certified**
- ✓ **Outstanding thermal cycling resistance**
- ✓ **Cures at room temperature or elevated temperatures**
- ✓ **Excellent chemical resistance**
- ✓ **Serviceable from -65°F to +250°F**

### Product Description

Master Bond EP21LVMed is a two component, low viscosity epoxy resin system for high performance bonding, sealing, coating, encapsulating and casting. It is formulated to cure readily at room temperature or more quickly at elevated temperatures. To optimize the system's properties and to ensure biocompatibility, a highly recommended cure schedule is overnight at room temperature followed by 2-3 hours at 150-200°F. It has a convenient one to one mix ratio by weight. EP21LVMed produces high strength, durable bonds which hold up well to thermal cycling and resist many chemicals including water, acids, bases and most importantly, EtO, radiation and many cold sterilants. It is serviceable over the wide temperature range of -65°F to +250°F. It bonds well to a variety of substrates including metals, glass, ceramics, wood, rubbers and many plastics. Once cured, EP21LVMed is an outstanding electrical insulator. This, combined with its low viscosity, makes this system an excellent encapsulating and potting epoxy. It fully passes USP Class VI testing for biocompatibility and it is widely used for medical applications. EP21LVMed contains no solvents or diluents. The color of Part A is clear, while the color of Part B is amber.

### Product Advantages

- Convenient mixing: one to one mix ratio by weight
- Easy application: only contact pressure required while curing; adhesive spreads readily
- High bonding strength to a wide variety of substrates
- Superior physical strength properties
- Good electrical insulation properties; ideal for potting and encapsulation
- Resists EtO and radiation as well as many chemical sterilants

### Typical Properties

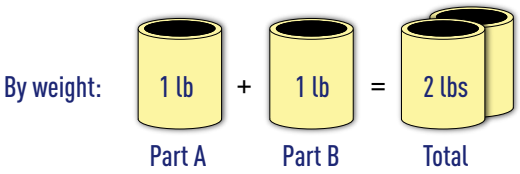
| | |
|---|---|
| **Bond shear strength, aluminum to aluminum, 75°F** | **>2,800 psi** |
| **Coefficient of thermal expansion, 75°F** | **50-55 x $10^{-6}$ in/in/°C** |
| **Volume resistivity, 75°F** | **>$10^{15}$ ohm-cm** |
| **Hardness, 75°F** | **>70 Shore D** |
| **Tensile strength, 75°F** | **>7,500 psi** |
| **Tensile modulus, 75°F** | **300,000-350,000 psi** |
| **Dielectric constant, 75°F , 60Hz** | **2.79** |
| **Dielectric strength, 75°F (1/8 inch thick test specimen)** | **440 volts/mil** |
| **Service temperature range** | **-65°F to +250°F [-54°C to +121°C]** |

## Mixing and Curing

| | |
|---|---|
| Shelf life at 75°F, in original, unopened containers | 6 months |
| Mixing ratio, Part A to B | 1:1 by weight |
| Viscosity of Part A, 75°F | 10,000-14,000 cps |
| Viscosity of Part B, 75°F | 11,000-15,000 cps |
| Working life after mixing, 75°F; 100 gram batch | 60-75 minutes |
| Cure schedule options | |
| 75°F | 24-48 hours |
| 200°F | 2-3 hours |

## Preparation of Adhesive

Master Bond EP21LVMed is prepared for use by thoroughly mixing Part A with Part B in a one to one mix ratio by weight.




Mixing should be done slowly to avoid trapping air. The working life of a mixed 100 gram batch is 60-75 minutes. It can be further lengthened by using shallow mixing vessels or mixing smaller size batches.

## Preparation of Bonding Surfaces

All bonding surfaces should be carefully cleaned, degreased and dried to obtain maximum bond strength. Also when bonding to metal surfaces especially, chemical etching should be employed to exhibit optimal environmental durability. Non-porous surfaces can be roughened with sandpaper or emery paper for hard materials. Castings can be accomplished in rubber, plastic or metal molds after application of approximate mold releases.

## Adhesive Application

For bonding or sealing, EP21LVMed can be conveniently applied with a brush or a paint roller. Enough mixed adhesive should be applied to obtain an adhesive bond line thickness of 3-5 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 EP21LVMed epoxy resin 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 adhesive during fixturing. In addition, Master Bond Polymer System EP21LVMed can produce excellent protective coatings on both metallic and non-metallic surfaces. Thick coatings (10 mils and more) can readily be deposited with only one application. Furthermore, such coatings are free from pinholes and other defects. For potting and casting, EP21LVMed is readily pourable and can be processed by conventional methods to produce high quality castings. It may be necessary to vacuum degas in order to remove the relatively few air bubbles that may have been formed when mixing.

## Cure

Master Bond Polymer Adhesive EP21LVMed can be cured at room temperature or at elevated temperatures as desired. At room temperature, EP21LVMed cures within 24-48 hours. Faster cures can be realized at elevated temperatures, e.g. 2-3 hours at 200°F. To optimize the properties and ensure desired biocompatibility, the recommended cure schedule is overnight at room temperature, followed by 1-2 hours at 150-200°F. Remove excess adhesive prompt ly before it hardens with a spatula. Then wipe with a rag and solvent such as xylene, toluene or lacquer thinner. The thinner the layer of epoxy, the slower the cure.

## Packaging

Product is available in:

- 1/2 Pint kits
- Pint kits
- Quart kits
- Gallon kits
- 5 Gallon kits


Specialty packaging is also available in gun dispensers, FlexiPak™ and premixed and frozen 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 MSDS. Optimum storage is at or below 75°F in closed containers. No special storage conditions are necessary. Containers should, however, be kept closed when not in use to avoid contamination. Cleanup of spills and equipment is readily achieved with aromatic or ketone solvents employing proper precautions of ventilation and flammability.

## Certifications

USP Class VI Certified

RoHS COMPLIANT

## 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

Master Bond believes the information on the data sheets is reliable and accurate as is technical advice provided by the company. Master Bond makes no warranties, expressed or implied, regarding the accuracy of the information, and assumes no liability regarding the handling and use of this product.