

MicroCoat Technologies

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Unparalleled in Polymer Coatings and Adhesives Technology™



Product Data Sheet



MCT Flexible Epoxy Sealing Adhesive 54-177-1

Two Component Flexible Epoxy System for High Performance Bonding, Sealing, with a Fast Set Up and Handling Time.

Product Description

MCT Polymer Adhesive 54-177-1, a longer pot/gel time version of 54-144-1 is a two component *high flow thixotropic* epoxy resin system for a slightly flexible high performance bonding and sealing, as well as small encapsulations, potting and castings. It is formulated to cure readily at room temperature or more quickly at slightly elevated temperatures. One notable property is its very fast curing at room temperature. It has a convenient 2:1 mix ratio by volume and contains no solvents or diluents. MCT Polymer System 54-177-1 produces high strength bonds, which are remarkably resistant to chemicals including water, oil, and many organic solvents, as well as cold sterilants, ETO and gamma radiation. It has a wide service temperature range of -40°F to + 200°F. It bonds well to a wide variety of substrates including metals, glass, ceramics, and many plastics. 54-177-1 has exceptionally low linear shrinkage upon cure. In addition, 54-177-1 will meet USP Class VI specifications but has not been tested as such

Product Advantages

- Convenient mixing: 2 to 1 by weight/volume.
 - Easy application: contact pressure should be enough for cure; In some cases clamping may be necessary.
 - Versatile cure schedules: ambient temperature cures or fast, elevated temperature cures as required.
 - Forms high strength rigid bonds to a wide variety of substrates.
 - Excellent chemical resistance particularly to sterilants and solvents.
 - Exceptionally low shrinkage
- Passes Mold Spore Initiation.

Product Properties

TYPICAL PROPERTIES	TEST METHOD	VALUE
Gel time:		
100 Gram Mass at 75°F:		40 minutes
Thin Film at 75°F:		5 - 6 hrs
Mix Ratio		2:1
Part A:		
Viscosity (cps):	ASTM D2393	5000
Color: Clear/Amber		
Part B:		
Viscosity (cps):	ASTM D2393	5000
Color: Clear/Amber		
Mixed Product: Viscosity (cps):		5000
Color: Tan/white/amber depending on thickness		
Tg (°C):	ASTM D3418:	85
2:1 MIX RATIO CURED PROPERTIES		
Lap Shear [CRS to CRS] (psi):	ASTM D1002	>3400
Tensile Strength (psi):	ASTM D638	5500
Elongation at Break (%):		500
Compressive strength (psi):		8900
Flexural Modulus (psi):		7.55x10 ⁷
Coefficient of Thermal Expansion (unit/ unit /°C):		5.6x10 ⁻⁵
Maximum Service Temperature (°F):		250 [Intermittent]

Shelf life at 75°F, in unopened containers minimum 12 months from ship date

· **Parts A and B available in pint, quart, 1 (one) gallon and 5 (five) gallon containers KITS.**

Preparation of Adhesive and Bonding Surfaces

MCT Polymer Adhesive 54-177-1 is prepared by thoroughly mixing part A with part B. in a 2:1 mix ratio by weight. Mixing should be done slowly to avoid entrapping air. The working life of a mixed 100 gram batch is approximately 15 minutes. It can be lengthened by using shallower mixing vessels or mixing smaller size batches. All bonding surfaces should be carefully cleaned, degreased and dried to achieve maximum bond strengths. When bonding to certain metal surfaces, vulcanized rubbers, etc., chemical etching should be employed for optimal adhesion and environmental durability. Non-porous surfaces should be roughened with sandpaper or emery paper for hard materials.

Adhesive Application and Assembly

MCT Polymer Adhesive 54-177-1 can be conveniently applied with a dispenser ([short dispense needles give the best flow for fine lines](#)), brush, paint roller, syringe, or spatula. Enough mixed adhesive should be applied to obtain a final adhesive bond line thickness of 3-5 mils. This can be accomplished by coating one surface with adhesive film 3-5 mils thick or by coating the two surfaces, each with a 1.5 to 2.5 mil thick layer of adhesive. 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 54-177-1 adhesive system does not contain any volatiles. The parts to be bonded should then be pressed together with just enough pressure to obtain and maintain intimate contact during cure.

Cure

Full Cure Time at 75°F (hours):	16 hrs
Heat Cure: Minutes: Conventional oven: 80°C	45-60 min
Cure Addendum; Using Infrared heat	10-20 minutes

The idea behind an infrared oven is that the convection and conduction heating will properly heat the outside of the product and begin to heat the inside as well. Convection and conduction basically refer to how heat moves and is transferred between objects and are the typical methods by which product is heated in conventional ovens. In an infrared oven, infrared radiation is used to penetrate the product, much like microwave radiation in a microwave oven. The radiation begins cooking the inside of the product faster than in traditional curing techniques where the heat has to travel from the outside of the product toward the center. Experimentation is required to find the exact cure time for each product due to its mass differences

Remove excess adhesive promptly before it hardens using a rag and solvent such as alcohol, toluene, xylene, or acetone.

The thinner the bond line or section thickness, the slower the rate of cure.

Handling and Storage

All epoxy resins should be used with good ventilation, skin contact should be minimized. To remove resin or hardener from skin, use a mild solvent or alcohol, then wash with soap and water. If material enters the eyes, flood with water and consult a physician. Optimum storage is at or below 75°F in closed containers. No special storage conditions are necessary. Containers should be kept closed when not in use to avoid contamination. Cleanup of spills and equipment is readily achieved with acetone, toluene, or xylene employing proper precautions of ventilation and flammability.