

EpoxySet Epoxy Mounting Resin

Date: 10/2020, v1.7

Refer to the SDS document for additional safety information.



GHS05

GHS07

GHS08

GHS09

EpoxySet is a colorless, clear cold mounting epoxy resin for potting/encapsulation of metallographic samples that cures in 8 hours at room temperature. It exhibits excellent adhesion, very low shrinkage and minimal viscosity, allowing it to penetrate open pores and cavities to maximize edge retention and support.

Technical Information	
Mixing Ratio (by weight)	100:12 (Resin:Hardener)*
Mixed Viscosity	300 cP
Curing Schedule (Room Temperature) (1.25" ø x 1" H mount)	6-10 hours*
Pot Life	2 hours @ 100 g
Peak Exothermic Curing Temperature	54 °C (130 °F)*
Durometer Hardness	89D
Shrinkage	0.00008%, Inch/Inch
Izod Impact/Tensile Strength	0.94/7600 psi
Glass Transition Temperature	55-75 °C (131-167 °F)
Light Refractive Index	1.519

* Optimum mixing ratio; larger volume mixtures cure at higher temperatures and faster rates.

Instructions

1. Clean the sample using micro organic soap, isopropyl alcohol and/or an ultrasonic cleaner to improve mounting material adhesion and prevent outgassing. Dry with heat or clean air to remove all moisture prior to mounting.
2. Using a scale with 0.1 g precision, weigh and mix components in a single plastic cup.
Note: Do not use wax lined or paper cups. Unless they are cooled in water, the use of disposable mounting cups is also not recommended to avoid melting the cup itself.
3. Mix thoroughly by scraping both the sides and bottom of the mixing cup for approximately 2-3 minutes until the mixture appears homogenous.
4. Pour the mixture over the sample in the mounting cup.
5. Let the mount harden/cure.

Note: If pouring more than 200 g of epoxy at once, the epoxy may generate too much heat and cause smoking and fuming, as well as degradation of the sample and the mold. Reducing the amount of epoxy mixed and poured at once may help reduce heat and allow for a better cure. It is recommended to mix about 150 g at a time and to pour no more than can cover 0.5"-1" segments. Use of a conductive mold, like a steel cylinder, can also reduce heat.

Table 1: EpoxySet Standard Curing Parameters

Mount Size	Cure Time (Hours)*	Mixing Ratio	Weight (g)**	
			Resin	Hardener
 1" / 25 mm	8-10	100:13	12.87	1.67
 1.25" / 32 mm	6-8	100:12	20.31	2.44
 1.5" / 38 - 40 mm	4-6	100:11	29.51	3.25
 2" / 50 mm	3-4	100:8.5-10	41.67	4.17

* Variations in room temperature and mixing ratios will influence performance and the data in the table above. The larger the mass, the higher the temperature reached during curing and the faster the epoxy will cure. Place large molds into a shallow bath of water to reduce temperature. Measure both parts with the same cup.

** Per one (1) mount

Eliminating Bubbles & Air Pockets

Vacuum impregnation and/or a pressure chamber can be used to eliminate bubble formation by filling open pores and cavities, which can interfere with adhesion of the mounting resin to the sample and can collect debris during grinding and polishing. Debris will contaminate the polishing cloths, leaving scratches on the polished surface. After pouring the epoxy, place the cup into the vacuum chamber and vacuum for 3-5 minutes at 25-30 inHg. Release the vacuum slowly. Then, cure the mount in a pressure chamber at 25-30 psi.

2-Hour Cure Time

The cure time for EpoxySet can be shortened from 8 hours to 2 hours by adding heat. Once a mount is ready to cure, heat it on a hot plate or in an oven at 38 °C (100 °F) for 1 hour. This is not recommended for heat-sensitive specimens.

Back-Filling

Back-filling is a process where a sample with an inaccessible area that needs support is mounted, ground to expose the air pocket and then remounted in epoxy. Vacuum is used to pull the air from the pocket that is displaced with epoxy, providing support to the structure. When back-filling, be sure to use enough epoxy to fully cure and harden.

Sample Removal

EpoxySet is non-soluble in water when cured. If a sample needs to be removed from epoxy that is cured or not fully cured, it can be dissolved using Allied's Epoxy Dissolver (#145-50210). The time required to dissolve the epoxy can be reduced if the excess is ground or cut prior.