

DESCRIPTION: PolyPoxy® Epoxy Clays are two-component, room temperature curing (RTV) systems. When mixed together, these components form a soft, dough-like consistency that ultimately cures to a hard solid with excellent toughness and dimensional stability. The gray Resin and a colored Hardener of PolyPoxy® epoxy clays provide visual assistance to help obtain thorough mixing. Cured epoxy clay can be machined or carved with common wood working tools.

PolyPoxy® 5403 & 5700 Epoxy Clays offer a convenient, accurate, and time-efficient method of duplicating shapes. Engineering changes in plastic duplications can often be made more easily with epoxy clay compared to laminated shapes because of the tendency of laminated shapes to distort when cut.

BEFORE USE: Thoroughly read Safety Data Sheets, product labels and the "SAFETY" section in this Technical Bulletin.

WARNING: THE EPOXY CURE REACTION IS VERY EXOTHERMIC. Do apply in thicknesses greater than the recommended maximum thickness for each product. **DOING SO CAN CAUSE WARPING AND EVEN A FIRE.** Exothermic reactions can be greater when working in temperatures higher than the recommended mixing/application temperature range and when the epoxy is in a mass in the mixing container. It is recommended to only mix as much epoxy as will be needed for a layer. Because epoxy is especially exothermic in masses, it is important to work quickly to get the epoxy out of the mixing container and onto the desired surface.

PREPARATION: In most cases, an epoxy surface coat, and often a layer of laminating epoxy with reinforcement material, are applied to a properly-prepared original master prior to the application of epoxy clay. Looking for a compatible surface coat epoxy? Consider PolyPoxy® 6005, PolyPoxy® 6060 or PolyPoxy® 6126. Looking for a compatible laminating epoxy? Consider PolyPoxy® 5008-2, PolyPoxy® 5010, PolyPoxy® 5105 or PolyPoxy® 5104.

Once the final layer of the surface coat epoxy or laminating epoxy has been applied, allow it to cure to a point where it's tacky, but not wet. At that point, the epoxy clay can be applied.

If a surface coat is not utilized, ensure that porous surfaces are made non-porous with a suitable sealer, such as PVA, lacquer or other coating

PRODUCT LINE FEATURES

- Room-temperature curing (RTV)
- Excellent dimensional accuracy and stability
- Can be hand mixed or machine mixed
- Can be machined or carved with common wood working tools

prior to the application of epoxy clay. The surfaces must then be coated with a release agent such as Pol-Ease® 2300 Release Agent. A small test cure on a comparable surface is recommended.

Before use, be sure that Resin and Hardener are at room temperature (73°F) and that all tools are ready. Surface and air temperatures should be between 60°F and 80°F during mixing, application, and for the entire curing period.

Elevated temperatures will shorten the demold time, while lower temperatures will slow the demold time. Very low temperatures could possibly prevent the cure entirely.

MIXING: Mixing of epoxy clay can be accomplished by kneading the Resin and Hardener together with gloved hands or with the use of a mechanical dough mixer. Hand kneading requires about 10 to 15 minutes per gallon-unit. Dough mixers will blend a gallon-unit in approximately one to two minutes.

HAND MIXING: Always wear protective gloves when handling PolyPoxy® clay. For small quantities, epoxy clay can be weighed out using the mix ratio proportions shown on the label and in the "Physical Properties" section of this Technical Bulletin. When using a gallon-unit of clay, the usual practice is to pour out all of the Resin onto a clean sturdy table and shape it into a loaf. Follow the same method with the Hardener. Divide each loaf into smaller portions based on the mix ratio of the product. As an example, PolyPoxy® 5700 has a mix ratio of 1 Part Resin: 1 Part Hardener by weight. For this product, start by dividing the loaf into quarters by first dividing the loaf into half and then each half into half again. Confirm the accuracy of the measurement by weight and then mix a quarter portion of Resin with a quarter portion of the Hardener by using a kneading action with your hands (similar to kneading bread dough). The material is now ready for use. If more clay is

PHYSICAL PROPERTIES

PolyPoxy® Epoxy Clay Product	PolyPoxy® 5403	PolyPoxy® 5700
Mix Ratio By Weight	100 Parts Resin : 20 Parts Hardener	1 Part Resin : 1 Part Hardener
Shore Hardness*	D68	D55
Cured Color	Gray	Gray
Maximum Thickness of Application	2"	2"
Pot Life	70 min.	120 min.
Demold Time	16 hr.	24 hr.
Total Cure Time	7 days	7 days
Density (in ³ /lb)	26.5	46.9

*Value measured after 7 days at 73°F/23°C.

required, proceed to mix the second quarter portion and so forth.

MACHINE MIXING: A dough mixer is recommended when epoxy clay is used on a regular basis. To mix a gallon-unit of clay, simply place both the Resin and Hardener into the mixing bowl and flip the switch. Mixing is complete when the colored Hardener is thoroughly blended into the Resin – usually in one to two minutes.

APPLYING: As noted in the “Preparation” section of this Technical Bulletin, epoxy clay is often used in conjunction with a surface coat and often a laminating coat. In this case, the application process should begin as soon as the surface coat or laminating coat has firmed up but before it is hard.

Pack the clay onto the surface of the model. Typically, a 1/2” to 1” thickness is satisfactory. Do not exceed a thickness of 2”. Care is needed to avoid air bubbles near the surface. This is best achieved by taking a handful of clay no larger than a baseball and pressing it down while vibrating your hand. The vibration gently settles the clay and forces any entrapped air up through the porosity of the clay. Another handful of clay is then applied overlapping the first and again vibrating to settle the clay and exclude air. Continue until the desired surface is covered.

CURING: Allow epoxy to cure at room temperature for the specified demold time listed in the “Physical Properties” table in this Technical Bulletin. Parts demolded too soon may be subject to deformation. Low temperatures will extend demold time, while higher temperatures will shorten the demold time. Thin parts or thin sections of parts will take longer to cure than thick parts or thick sections of parts.

Although a part may be demolded after the specified demold time, ultimate physical properties will not be achieved until after 7 days at room temperature.

CLEAN UP: Tools should be wiped clean before the epoxy is hard. Denatured alcohol is a good cleaning solvent, but must be handled with extreme caution owing to its flammability and health hazards. Work surfaces can be coated with wax or release agent so that cured plastic can be easily removed.

STORAGE LIFE: For best results, store products in unopened containers at room temperature (60-90°F/15-32°C). Use products within six months from date of shipment.

SAFETY: Before use, thoroughly read Safety Data Sheets and product labels. Follow safety precautions and directions.

Resin: Keep out of reach of children. Avoid breathing fumes, vapors or mists. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash thoroughly with soap and water after handling. Contaminated work clothing should not be allowed outside of the workplace. Take off contaminated clothing and wash it before reuse. If skin rash or irritation occurs, get medical help. Wear eye protection, such as chemical safety glasses/goggles. If in eyes, rinse cautiously with water for several minutes, removing contact lenses if present and easy to do. If eye irritation persists, get medical help. If spilled, collect spillage and avoid release to the environment.

Hardener: Keep out of reach of children. Do not breathe fumes, vapors or mists. Use with adequate general or local exhaust ventilation to minimize exposure levels. If needed, a NIOSH-approved respirator with organic vapor cartridge may be used. If inhaled, remove victim to fresh air and

keep at rest in a position comfortable for breathing. Wear impervious gloves, such as butyl rubber or nitrile rubber. Wash thoroughly with soap and water after handling. Contaminated work clothing should not be allowed out of the workplace. Take off contaminated clothing and wash it before reuse. If skin rash occurs, get immediate medical help. Wear eye protection, such as safety glasses/goggles. If in eyes, immediately rinse with water for several minutes, removing contact lenses if present and easy to do. Get immediate medical help. If swallowed, rinse mouth and do not induce vomiting. Get medical attention immediately. If spilled, collect spillage and avoid release to the environment.

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DISCLAIMER: The information in this bulletin and otherwise provided by Polytek® Development Corp. is considered accurate. However, no warranty is expressed or implied regarding the accuracy of the data, the results to be obtained by the use thereof, or that any such use will not infringe any patent. Before using, the user shall determine the suitability of the product for the intended use and user assumes all risk and liability whatsoever in connection therewith.

ACCESSORIES

Sealers & Release Agents:

Pol-Ease® 2300 Release Agent
Poly PVA Solution (Green or Clear)

Product Life Extender:

Poly Purge Aerosol Dry Gas