

Poly 77-Series Liquid Rubbers

Technical Bulletin

DESCRIPTION: Poly 77-Series rubbers consist of a two parts (A and B), which, after mixing, cure at room temperature to flexible mold rubbers. Consider Poly 77-Series rubbers for casting plaster, concrete and wax. Resins may also be cast with proper release agents. Poly 77-Series systems have been formulated to provide excellent abrasion and tear resistance for maximum mold life and performance. The high elongation characteristic of these rubbers enables easy demolding and reduces mold damage when used in high volume casting applications.

MODEL PREPARATION: Porous models, such as wood, plaster, stone, pottery or masonry must be sealed. Multiple coats of paste wax dried and buffed will seal most surfaces. Potters soap can be used as a sealer for plaster. Lacquer, paint, PVA, and Pol-Ease® 2350 Release Agent also work well as sealers for many surfaces. The properly-sealed model should then be coated with a release agent (e.g., Pol-Ease® 2300 Release Agent). Alternatively, PolyCoat, a sealer and semi-permanent release agent, can be used on most porous or non-porous models. Porous models must be vented from beneath to prevent trapped air from forming bubbles in the rubber.

Models made of sulfur-containing modeling clay (e.g., Roma Plastilina) should be sealed with shellac. [CAUTION: When shellac is used as the sealer, it must be thoroughly coated with release agent because polyurethane rubbers bond tenaciously to shellac.]

Non-porous models (e.g., metals, plasticine, wax, glazed ceramics, fiberglass and polyurethanes) should be coated with release agent such as Pol-Ease® 2300 Release Agent or PolyCoat.

If there is any question about the compatibility between the liquid mold rubber and the prepared model surface, perform a test cure on an identical surface to determine that complete curing and good release are obtained.

MIXING AND CURING: Before use, be sure that Parts A and B are at room temperature and that all tools are ready. Surface and air temperatures should be above 60°F during application and for the entire curing period.

Check mix ratio. Weigh Part B into a clean metal or plastic mixing container and then weigh the appropriate amount of Part A into the same container. Mix thoroughly. Hand mixing with a Poly

High-Performance, High-Elongation, Polyurethane Mold Making Rubbers

Why Choose Poly 77-Series Rubbers?

- High-performance, high-elongation rubbers
- Easy-to-use formulations with 1:1 mix ratios
- Easy demolding without damaging molds
- Make tough, long-lasting molds

Paddle is best to avoid mixing air into the rubber. While mixing, scrape the sides and bottom several times to ensure thorough mixing. Pour the rubber as soon after mixing as possible for best flow and air bubble release. Vacuum degassing helps to provide bubble-free molds, but is usually not necessary.

Allow rubber to cure at room temperature, 77°F (25°C). Carefully demold after approximately 16 hours. Final cure properties are obtained in about seven days, but molds may be used with care after curing for 24-48 hours. Heat accelerates the cure -- low temperatures slow the cure. Avoid curing in areas where the temperature is below 60°F (15°C).

Both Parts A and B react with atmospheric moisture and, therefore, should be resealed or used up as soon as possible after opening. Before resealing, Poly Purge, a heavier-than-air, dry gas, can be sprayed into open containers to displace moist air and extend storage life. For 55-gallon drums of Parts A and B, affix Drierite® cartridges on the small bung during dispensing to protect product from moist air entering the drum.

SOFTENING THE RUBBER: Add Poly 74/75 Part C Softener to 77-Series products for a lower viscosity mix and a softer cured rubber. When using Part C, cure time is longer and there is some loss of strength in the rubber and increased tendency to shrink after repeated castings. Determine the quantity of Part C required through experimentation.

PHYSICAL PROPERTIES

PHYSICAL PROPERTIES	
	77-50
Mix Ratio By Weight	1A:1B
Shore Hardness	A50
Pour Time (min)	15
Cured Color	Tan
Mixed Viscosity (cP)	1,500
Specific Volume (in ³ /lb)	27.5

ACCELERATING THE CURE: Cure time can be shortened with the addition of an Accelerator, such as Poly 74/75 Part X, or by adding heat. Exercise caution when using Part X since the rapid onset of gelling may trap air bubbles on or near the surface of the model. Heat also accelerates the cure. It is recommended not to exceed 140°F (60°C).

USING THE MOLD: Typically, no release agent is necessary when casting plaster or wax in Poly 77-Series molds. For casting plaster: sponge, dip or spray the mold with Pol-Ease® Mold Rinse and then pour plaster on the wet mold to reduce air bubbles in the plaster and aid release. For casting resin, first spray the mold with Pol-Ease® 2300 Release Agent or PolyCoat. For casting concrete, use a form release, such as Pol-Ease® 2650 or 2601. Avoid solvent-containing releases since they can cause mold distortion (i.e., shrinkage or swelling).

After repeated casting with certain resins, plaster and concrete, molds may shrink slightly since these materials extract oils from the mold. The proper selection of release agent and/or barrier coat can minimize this effect. If shrinkage becomes evident, a light application of Pol-Ease® Mold Dressing can help to restore the mold to its original dimensions.

Poly 77-Series molds can last many years if stored undistorted on a flat surface in a cool, dry location out of direct sunlight. UV resistance of Poly rubbers can be improved by adding Poly UV Additive. At 0.5% of the total weight of the liquid mix, UV Additive reduces the characteristic surface degradation caused by sunlight and other UV sources.

CLEAN UP: Tools should be wiped clean before the rubber cures. Denatured ethanol is a good cleaning solvent, but it must be handled with extreme caution owing to its flammability and health hazards. Work surfaces can be waxed or coated with Pol-Ease® 2300 Release Agent so cured rubber can be removed.

SAFETY: Before use, read product labels and Safety Data Sheets. Follow safety precautions and directions. Use only with adequate ventilation. Contact with uncured products may cause eye, skin and respiratory irritation, and dermal and/or respiratory sensitization. Avoid contact with skin and eyes. If skin contact occurs, remove with waterless hand cleaner then soap and water. In case of eye contact, flush with water for 15 minutes and call physician. Poly 77-Series products are not to be used where food or body contact may occur. Poly 77-Series rubbers burn readily when ignited.

SHELF LIFE: For best results, store products in unopened containers at room temperature (60-90°F/15-32°C). Use products within six months. Part Bs darken with age, but product performance is not affected.

DISCLAIMER: The information in this bulletin and otherwise provided by Polytek® 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:

Accelerator
Poly 74/75 Part X Accelerator - 1 lb, 8 lb

Sealers & Release Agents
Pol-Ease® 2300 Release Agent - 12-oz can, case of 12
Pol-Ease® 2350 Release Agent - 1.5 lb, 26 lb
Pol-Ease® 2450 Release Agent - 1.5 lb, 30 lb
Pol-Ease® 2601 Release Agent - 2 lb, 40 lb
Pol-Ease® 2650 Release Agent (Silicone-Free) - 1.5 lb, 35 lb
Pol-Ease® 2500 Release Agent - 12-oz can, case of 12
PolyCoat Semi-Permanent Sealer/Release - 1 qt, 1 gal
Pol-Ease® Mold Dressing - 40 lb
Pol-Ease® Mold Rinse - 40 lb
Poly PVA Solution (Green or Clear) - 2 lb, 40 lb

Softener
Poly 74/75 Part C Softener - 1 lb, 8 lb, 40 lb

Product Life Extender
Poly Purge Aerosol Dry Gas - 10-oz can, case of 12

Thickeners
Fumed Silica - 5-gal pail, bag (~10 lb)
Poly Fiber II - 1-gal pail, 5-gal pail, bag (15 lb)

UV Stabilizer
UV Additive - 4-oz bottle, 1-pint bottle (1 lb)

Reinforcement Material for Blanket Molds
Tietex® Fabric (40-in wide) - 10-ft sheet, 324-ft roll

PACKAGING					
Product(s)	Kit Size (lb)	Part A		Part B	
		Weight (lb)	Volume *	Weight (lb)	Volume *
Poly 77-50	80	40	5 gal	40	5 gal
Mix Ratio: 1A:1B	900	450	55 gal	450	55 gal

*Volume measurements are approximate.