

**DESCRIPTION:** Use Poly 81-Series rubbers to make firm molds, mold facings, stamping tools, industrial parts, rollers, gaskets, mold shells, bumpers or pads. Poly 81-Series rubbers consist of two liquid parts (A and B), which, after mixing, cure at room temperature to tough, durable rubbers. They offer low sensitivity to moisture, and low viscosity for easy mixing and pouring.

**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 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.

## Tough, Durable Polyurethane Rubbers

### Why Choose Poly 81-Series Rubbers?

- Firm rubbers with Shore A90 or D45
- Hard, yet flexible
- Easy-to-use formulations
- Reproduce fine details
- Make tough, long-lasting molds, tools & parts

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.

**USING THE MOLD:** Typically, no release agent is necessary when casting plaster or wax in Poly 81-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

### PHYSICAL PROPERTIES

	81-90	81-D45
Mix Ratio By Weight	100A:40B	100A:20B
Shore Hardness	A90	D45
Pour Time (min)	23	19
Demold Time (hr)	16	16
Cured Color	Varies	Varies
Mixed Viscosity (cP)	2,000	1,600
Specific Volume (in <sup>3</sup> /lb)	26.6	26.4

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 81-Series molds last many years if stored undistorted on a flat, non-porous surface in a cool, dry location out of direct sunlight. If occasional outdoor use is required, add 0.5% UV Additive to the total mix weight to reduce the characteristic surface degradation caused by sunlight. Never store Poly 81-Series molds outside as UV exposure will eventually degrade the rubber.

**CLEAN UP:** Wipe tools clean before the rubber cures. Denatured ethanol is a good cleaning solvent, but is highly flammable and must be handled with caution. Coat work surfaces with wax, Pol-Ease® 2300 Release Agent or PolyCoat so that cured rubber can be easily 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 or alcohol, and then soap and water. In case of eye contact, flush with water for 15 minutes and call physician. Poly 81-Series products are not to be used where food or body contact may occur. Poly 81-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:**

*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 - 1qt, 1 gal  
 Pol-Ease® Mold Dressing - 40 lb  
 Pol-Ease® Mold Rinse - 40 lb  
 Poly PVA Solution (Green or Clear) - 2 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 81-90 Mix Ratio: 100A:40B	11.2	8.0	1 gal	3.2	1.5 qt
	56	40	5 gal	16.0	2 gal
	280	200	25 gal	80	10 gal
	630	450	55 gal	180	22 gal
Poly 81-D45 Mix Ratio: 100A:20B	9.6	8.0	1 gal	1.6	1.5 pt
	48	40	5 gal	8.0	1 gal
	192	200	20 gal	32.0	4 gal
	540	450	55 gal	90	11 gal

\*Volume measurements are approximate.