Polytek Development Corp.

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Polygel® Liquid Rubbers Technical Bulletin

Specially Formulated for Making Brush-On or Sprayed Blanket Molds

Why Choose Polygel® Rubbers?

- Easy 1:1 mix by weight or volume
- Fast-- one-day brush-on or sprayed molds
- Tough and strong
- Color-coded mix indication
- Good flow into fine detail
- Good dimensional stability

DESCRIPTION: Polygel® Liquid Rubbers are without equal for making brush-on or sprayed blanket molds. Polygel products consist of two parts (A and B) that immediately thicken to a brushable or trowellable consistency after mixing. These non-sag products are especially useful for application to vertical or overhead surfaces. For brush-on application, use Polygel 35. In circumstances where spray application is best (e.g., large surface areas where brushing may be impractical), use Polygel Spray 35 or Spray 50. Polygel rubber molds are suitable for casting plaster, concrete and waxes, as well as limited casting with polyester, epoxy and polyurethane resins. Since Polygel products bond well to many surfaces, they can also be used as adhesives and sealants.

Polygel® 35 - Brushable mix that cures to the softest, most elastic, Polygel rubber.

Polygel® Spray 35 - Sprayable version of Polygel 35. Use with meter-mix spray equipment.

Polygel® Spray 50 - Designed for spray application using meter-mix spray equipment.

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.

NOTE ON FOUNDRY WAXES: Certain foundry waxes can cause excessive oiling in Polygel® rubbers; this is the case when liquid Polygel® is applied to the foundry wax and when the foundry wax is poured into cured Polygel® molds.

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. Cool temperatures slow the cure; warm temperatures speed the cure.

Weigh Parts A and B into a suitable, clean container. Volume measurement can be used, but is never as accurate as weighing. Mix thoroughly, scraping the sides and bottom of the container until the mix is uniform in color and consistency. Carefully apply the mixed Polygel over a dry, properly-prepared model. When brushing Polygel, allow the first coat to cure enough so that the second coat will not disturb it (usually about 1 hour), and then apply the second coat being careful to cover any thin spots in the first coat. Do not allow prior layers to cure completely before applying subsequent coats. For spray application, Polygel Spray 35 and Spray 50 can be sprayed continuously until the desired mold thickness is achieved. Ideally, blanket molds should be at least 1/4-inch thick, but no more than 3/8-inch. Too thick a layer of rubber causes difficulty when turning a mold back on itself during demolding. Allow rubber to cure at room temperature prior to demolding or building the mold shell. Strength continues to develop for several days.

Rubber molds can be reinforced with Tietex® Fabric, which is strong and wets out better than other fabrics. To reduce tearing, Tietex® can be laminated at the top of a mold seam or strips can be laid around the perimeter of a mold. Embed the fabric in the second or third coat of

PHYSICAL PROPERTIES			
	Polygel® 35	Polygel® Spray 35	Polygel® Spray 50
Mix Ratio By Weight or Volume	1A:1B	1A:1B	1A:1B
Shore Hardness	A35	A35	A50
Working Time (min)	10-15	10	5-7
Cure Time @ 77°F (hr)	16	16	16
Cured Color	Light Blue	Light Blue (Varies)	Green
Initial Mixed Consistency	Medium Thixotropic	Medium Thixotropic	Medium Thixotropic
Specific Volume (in^3/lb)	27.5	27.5	27.5

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rubber while it is still tacky and then cover with a subsequent coat of rubber, which should be as fluid as possible for best penetration of the fabric. Ensure that the Tietex® is not too close to the model surface, so that the weave pattern does not show through to the face of the mold.

THICKER MIXES FOR FILLING UNDERCUTS: If needed, Polygel Liquid Rubbers can be made even thicker by stirring Fumed Silica or Poly Fiber II into the mixed Parts A and B.

USING THE MOLD: In most cases, no release agent is necessary for casting plaster, cement and waxes in Polygel rubber molds; however, a release agent or barrier coat is needed when casting epoxy, polyurethane or polyester resins. If a Polygel mold is to be turned inside out like a sock, lubricate its outside surface with soapy water or petroleum jelly, so that it slides over itself easily. A shell or mother mold can be made of plaster, polyester resin and fiberglass, or Poly 15-Series Liquid Plastic filled with Poly Fiber II or fiberglass (See **Polytek® Mold Making & Casting Manual & Catalog**). If the shell is built with Polytek plastics or other resin, the rubber must be thoroughly coated with paste wax then Pol-Ease® 2300 Release Agent. This will help prevent the plastic from sticking to the rubber. A plaster shell must be sealed with potter's soap, shellac, lacquer or wax to prevent mold distortion during storage or use.

Polygel molds can be stored for years in a cool, dark, dry place in a non-porous mother mold to maintain shape. Cured Polygel rubber should not be exposed to sunlight. Polygel rubbers should not come in contact with skin or foods.

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 cured rubber can be removed.

SAFETY: Before use, read product labels and Safety Data Sheets. Follow safety precautions and directions. Spraying of Polygel products should only be conducted with suitable ventilation and personal protective equipment (i.e., respirators, gloves, coveralls). All Polygel products should be used 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 then soap and water. In case of eye contact, flush with water for 15 minutes and then seek medical attention. Do not use Polygel products where food or body contact may occur. Polygel products 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, 10-lb bag
Poly Fiber II - 1-gal pail, 5-gal pail, bag (15 lb)

PolyColor Dyes

White, Red, Green, Yellow, Blue, Brown & Black
4-oz bottle (0.25 lb), 1.0 pint (1.0 lb)

Reinforcement Material

Tietex® Fabric - 10-ft sheet, 324-ft roll (40-in wide)

PACKAGING

Product(s)	Kit Size	Part A		Part B	
		Weight (lb)	Volume*	Weight (lb)	Volume*
Polygel® 35 Mix Ratio: 1A:1B	4.0 lb 16.0 lb 80 lb 900 lb	2.0 8.0 40 450	1 qt 1 gal 5 gal 55 gal	2.0 8.0 40 450	1 qt 1 gal 5 gal 55 gal
Polygel® Spray 35, Polygel® Spray 50 Mix Ratio: 1A:1B	80 lb	40	5 gal	40	5 gal

*Volume measurements are approximate.