PolyFoam™ Series

Self-Skinning, Rigid & Flexible Polyurethane Casting Foams

DESCRIPTION: PolyFoam™ Series Casting Foams consist of liquid Parts A and B that, after mixing, form self-skinning foams. PolyFoams can be used to cast rigid or flexible objects with densities in the range of 3 to 20 lb/ft^3. Consider PolyFoams for production of decorative objects, light-weight mold shells, production parts, models, patterns, fixtures, duplicate masters and general tooling use. PolyFoam systems are practically odorless and do not contain toluene diisocyanate, MOCA, heavy metals or HCFCs. PolyFoam R-2, R-5 and R-8 are rigid foams. PolyFoam F-3 and F-5 are flexible for casting soft parts.

MOLD PREPARATION: PolyFoams reproduce minute detail from molds or patterns, but may stick when poured on improperly prepared surfaces. Perform a trial casting on a surface finish similar to the actual mold in order to avoid damaging a valuable mold. Polyethylene and silicone rubber molds (i.e., made from PlatSil® 71 or 73 Series) do not require a release agent. A suitable barrier coat such as Barrier PF can help to extend mold life when using rigid foams. If Barrier PF is used, Pol-Ease® PF Release Agent should be applied to the mold prior to applying Barrier PF. Polyurethane rubber (i.e., Poly 74- or 75-Series) or metal molds must be dry and coated with a suitable release agent (i.e., paste wax, PolyCoat or PVA Solution). Rubber molds must be stiff enough so as not to distort when subjected to packing pressures.

MIXING: Before mixing resins, be sure that both Parts A and B are at room temperature and that all tools and molds are ready to go! PolyFoams set fast -- meaning that you must work quickly. Measure or weigh Parts A and B into separate containers (i.e, polyethylene pails). Combine Parts A and B and mix immediately with a Turbo Mixer or other high speed mixer for 15 seconds.

POLYFOAM™ PHYSICAL PROPERTIES

	R-2	R-5/R-8	F-3	F-5
Mix Ratio (by weight or volume, unless otherwise noted)	1A:1B	1A:1B	1A:2B (by weight)	1A:1B
Mix Viscosity (cP)	500	1100	2000	1400
Cream Time (sec)	30	45	25	45
Rise Time (min)	3	2	1.5	3-5
Tack-Free Time (min)	10	3	3	25
Demold Time (min)	30	10-15	10	30-60
Free-Rise Density (lb/ft^3)	2.5	5 (R-5) 8 (R-8)	3	5
Molded Density (lb/ft^3)	4-8	8-20	5-8	8-15

FEATURES

- Self-skinning foams
- Rigid and flexible foams
- Densities range from 3 to 20 lb/ft^3

Pour mix into cavity as quickly as possible since foaming starts immediately. If too much time elapses, the foam will rise in the mixing container and the mix may be lost.

CURING: Packing PolyFoams to a minimum of 2 to 3 lb/ft^3 above their free-rise density is recommended to achieve good surface detail and mold fill. A lid with small vents to allow air to escape as foam rises should be firmly clamped in place prior to rise. Once foam begins to rise, avoid stirring or other movement that will cause cells to collapse. Castings should be allowed to remain in the mold until thoroughly cured. Parts demolded too soon may be subject to deformation. For best casting results, the mold should be warmed to 75 to 85°F prior to casting the first part. Once a mold is heated and cycled, it will maintain heat for continued production.

FINISHING: Cured PolyFoam systems will yellow and chalk when exposed to sunlight and should be painted or sealed for exterior use. PolyFoam R-2, R-5 and R-8 can be easily drilled, sanded and machined. If a casting is to be painted or coated, adhesion of the coating should be checked carefully over a period of time to determine that it is satisfactory for the intended use. If all mold release is removed by detergent washing, most oil paints should work well. When casting rigid foams, the use of an appropriate primer/barrier coat, such as Barrier PF, sprayed in the mold and allowed to dry before casting, will result in a pre-primed cast part and will help additional paint adhere to the part.

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 a release agent so that cured foam can be removed.

SAFETY: Before use, read product labels and Material Safety Data Sheets. Follow safety precautions and directions. 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 call physician. Use only with adequate ventilation. Poly Plastics are not to be used where

POLYFOAM™ PACKAGING			
	Unit Weight (lb)	Components	
		Part A (lb)	Part B (lb)
PolyFoam™ R-2, R-5, R-8 and F-5 Mix Ratio 1A:1B (By Weight or Volume)	4.0 16.0 80.0 900	1 qt (2.0) 1 gal (8.0) 5 gal (40.0) 55 gal (450)	1 qt (2.0) 1 gal (8.0) 5 gal (40.0) 55 gal (450)
PolyFoam™ F-3 Mix Ratio 1A:2B (By Weight)	6.0 24.0	1 qt (2.0) 1 gal (8.0)	2 x 1 qt (4.0) 2 x 1 gal (16.0)

food or prolonged body contact may occur. PolyFoam burns readily when ignited. Care should be taken with sanding dust and other easily ignitable forms of these products.

STORAGE LIFE: At least six months in unopened containers stored at room temperature (60-90°F). Once containers of Parts A and B are opened, they should be used or resealed tightly as atmospheric moisture contamination may degrade product integrity causing excess foaming, pressure build up and poor cure properties.

PolyFoam F-5 Part A may crystallize, develop sediment and become cloudy if stored at temperatures below 60°F. To restore product, loosen lid (to avoid pressure buildup) and warm product to 120-160°F until the liquid is clear. Before use, let product cool to room temperature. Using a crystallized or cloudy Part A may result in a foam with inferior physical properties.

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.

Note on PolyFoam Compaction Calculation:
Determine the volume of the space you want to fill with foam (in^3). Determine the desired density of the foam part in pounds per cubic foot (lb/ft^3). Divide the desired density by 1728 cubic inches (in^3). The result will be a decimal "factor" (0.004576 or similar). Multiply the volume of the space you want to fill (in^3) by the "factor." The result equals the pounds of PolyFoam liquid to prepare.

ACCESSORIES

Pol-Ease® PF Release Agent
1 qt (2.0 lb), 5 gal (40 lb)

Barrier PF Barrier Coat
1 qt (2.0 lb), 5 gal (40 lb)

Poly Coat
(Sealer & Semi-Permanent Release Agent)
1 qt (1.5 lb)

Poly PVA Solution
Green or Clear
1 qt (2.0 lb), 5 gal (32 lb)

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