

# EasyFlo Series Liquid Plastics

# Technical Bulletin

**DESCRIPTION:** EasyFlo Series Liquid Plastics are excellent for casting decorative objects, sculpture reproductions, production parts, tools, models, duplicate masters and more. EasyFlo products are mercury-free systems that consist of two parts (A and B) that, after mixing, quickly cure to tough polyurethane plastics. Since Parts A and B are very low in viscosity, they are easy to mix, provide excellent detail penetration, and make bubble-free castings without vacuum degassing or pressure casting techniques.

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

Rapid demold times make EasyFlo products ideal for high-volume, fast-cast applications. All EasyFlo products can be easily color-cast, painted or machined. Most EasyFlo products can be filled for various cold-cast techniques such as cold-cast bronze, marble, etc. Thin-walled castings made from EasyFlo have surprising strength and lack the brittleness typical of other low viscosity, fast polyurethane resins.

Choose the EasyFlo product that's best for your application:

**EasyFlo 60** pours like water, so making bubble-free parts is easy and fast (2 to 2.5 min. working time, 15 to 30 min. demold).

**EasyFlo 90** is useful when a longer working time (5 min.) is needed to complete a pour. For thin parts, the demold time is longer and molds may need to be preheated (100-120°F) to reduce surface bubbles and speed demold.

**EasyFlo 120** is best for rotocasting or slush casting to create hollow parts. This is a tough plastic - hollow parts are nearly unbreakable.

## PRODUCT LINE FEATURES

- Easy 1A:1B mix ratios by volume
- Very low viscosities
- Rapid demold
- Reproduces fine detail
- Tough, non-brittle formulas
- Excellent bubble release
- Reduced need for pressure or vacuum
- Pourable & sprayable versions

**EasyFlo Black** cures to a black color without the addition of PolyColor Dyes.

**EasyFlo Clear** cures to a pale amber color and is often used with PolyColors to make transparent, colored castings. It is also excellent in applications using fillers (e.g., bronze powder) intended for visual appeal.

**EasyFlo 100FR** is a pourable, UL-94 (V-0) fire-retardant plastic.

**EasyFlo Spray FR** is a sprayable, UL-94 (V-0) fire-retardant plastic. Use the portable Plas-Pak sprayer or high-volume spray equipment to apply hardcoat over foam or for sprayed-up hollow castings.

**MOLD PREPARATION:** These products reproduce minute detail from a mold or pattern but may stick or foam when poured on improperly prepared surfaces. A trial casting on a surface finish similar to the final

## PHYSICAL PROPERTIES

Product	EasyFlo 60	EasyFlo 90	EasyFlo 120	EasyFlo Black	EasyFlo Clear	EasyFlo 100 FR	EasyFlo Spray FR
Mix Ratio by Volume	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B	1A:1B
Mix Ratio by Weight	100A:90B	100A:90B	100A:90B	1A:1B	100A:85B	1A:1B	100A:90B
Shore Hardness*	D65	D70	D65	D70	D72	D65	D75
Pot Life (1-lb mix)	2-2.5 min.	5 min.	2-2.5 min.	1.5-2 min.	2-2.5 min.	2-2.5 min.	N/A (Spray)
Demold Time <sup>†</sup> @ 73°F	15-30 min.	60-120 min.	15-30 min.	10-15 min.	15-30 min.	15-30 min.	5-10 min.
Cured Color	White	White	Off-White	Black	Amber	Off-White/Tan	Off-White
Mixed Viscosity (cP)	60	200	120	200	110	120	250
Specific Volume (in <sup>3</sup> /lb)	26.9	26.1	26.9	26.4	25.5	25.2	23.9
Specific Gravity	1.03	1.06	1.03	1.05	1.08	1.10	1.16
Linear Shrinkage* <sup>^</sup> (in/in)	0.0041	<0.001	0.0065	0.008	0.0154	0.0065	ND
Elongation* (%)	13.9	5.1	10.3	6.3	7.7	9	8.3
Max Exotherm (°F)	230	175	200	245	208	200	251
Heat Deflection Temp.*	149	164	146	197	133	165	175
Tensile Strength* (psi)	2,936	4,387	3,534	3,835	4,091	3,170	7,110
Elastic Modulus* (psi)	72,627	134,685	85,149	76,056	97,532	85,928	165,600
Flexural Modulus* (psi)	93,112	157,356	133,765	120,904	165,733	117,878	280,007
Flexural Strength, 5% Strain* (psi)	3,915	6,125	4,845	5,521	6,007	4,284	10,545

\*All values measured after 7 days at 73°F/23°C. †Demold time varies with thickness of casting and the amount of accelerator used. ^Shrinkage is primarily caused by gelling while hot then cooling. N/A = Not Applicable

mold should be made to avoid damaging a valuable mold. Polyethylene and silicone rubber molds (e.g., TinSil® and PlatSil® silicone rubber) do not require a release agent. When casting EasyFlo plastics in silicone molds, the use of an appropriate primer 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. Latex, polyurethane rubber (e.g., 74- and 75-Series rubbers) or metal molds must be dry and require a coat of a suitable release agent (e.g., Pol-Ease® 2300 Release Agent).

**MIXING:** All EasyFlo plastics have 1A:1B mix ratios by volume (100A:90B by weight, except for EasyFlo Clear and EasyFlo 100FR). 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.

Read product labels to determine if pre-mixing of Part A or Part B component is required. Use metal or plastic mixing vessels and spatulas to avoid introducing moisture (paper or wood tools can introduce moisture). Measure equal volumes of A and B into a mixing container such as a polyethylene pail. Mix immediately, thoroughly scraping sides and bottom for one minute. Pour mix into mold cavity as quickly as possible.

Once the containers of Parts A and B are opened, they should be used or resealed tightly since atmospheric moisture contamination may cause foaming of the plastic. PolyPurge, a dry gas product, can be sprayed into opened containers of EasyFlo Series plastics to displace moist air before resealing containers to extend shelf life.

**SPRAYING:** Consult the “Plas-Pak Spray Systems” Technical Bulletin before spraying EasyFlo Spray FR.

**CURING:** Castings should be allowed to remain in the mold until thoroughly cured. Parts demolded too soon may be subject to deformation. Use of pre-warmed molds will hasten curing. Low temperatures will slow the curing and extend demold time. Thin castings or thin sections of castings will take longer to cure than thick castings or thick sections of castings. Refer to the Physical Properties table for individual product pour and demold times.

**ADDITIVES:** Poly 15 Part X Accelerator is a powerful catalyst that increases the speed of curing. Stir Poly 15 Part X into the Part B before adding Part A. A few drops in a one-pound mix speeds the cure significantly. Exotherm (heat of reaction) and thus shrinkage on cooling may be increased. Experiment to determine the right amount of Poly 15 Part X to use but never use more than 1% of the total weight of the mix or the final physical properties may be affected.

Fillers can be added to EasyFlo products to vary appearance, density and cost. It is imperative that any filler be thoroughly dried before mixing with resin. Fillers should be added after Part A and Part B are mixed. Add PolyFiber II to thicken the uncured mix to make a paste-like consistency. Microballoons can be added to create a lower density material. Bronze powder, calcium carbonate or other dry fillers can be added for varying effects. PolyFil ND, a neutral-density filler, can be added to reduce the cost of castings and lower the exotherm, thereby reducing shrinkage. Experiment by adding fillers at varying levels up to ~50% by weight of the mixed resin.

**COLORS:** Add PolyColor Dyes to EasyFlo Part B before mixing with Part A to create plastics of any color. Add up to 0.5% PolyColor Dye of the total mixed weight when using PolyColor Black, Brown, Blue, Green, Red and Yellow. Add up to 2% PolyColor Dye of the total mixed weight when using PolyColor White and Fleshtone.

**FINISHING:** EasyFlo Plastics yellow and chalk when exposed to sunlight and should be painted or sealed for exterior use. The adhesion of this 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 work well. An auto body primer sprayed onto the clean casting and allowed to cure for at least 24 hours can help paint adhere better. EasyFlo Plastics can be easily drilled, sanded and machined.

**CLEAN UP:** Tools should be scraped clean before the plastic 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.

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

**Part A:** Keep out of reach of children. Avoid breathing fumes, vapors or mists. Use only outdoors or in a well-ventilated area. 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. If respiratory irritation occurs, get medical help. If swallowed, get medical help immediately and do not induce vomiting. Wear impervious gloves, such as butyl rubber or nitrile rubber. Take off contaminated clothing and wash it before reuse. Wash body thoroughly with soap and water after handling. If skin 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.

**Part B:** Keep out of reach of children. Keep away from flames and hot surfaces. Do not eat, drink, or smoke while using this product. 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. Wear eye protection, such as safety glasses/goggles. If in eyes, rinse with water for several minutes, removing contact lenses if present and easy to do. If eye irritation occurs, get medical help.

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

**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

**Fillers:**

Bronze Powder  
PolyFil ND

**Accelerator:**

Poly 15 Part X Accelerator

**Sealers & Release Agents:**

Pol-Ease® 2300 Release Agent  
Pol-Ease® 2500 Release Agent  
PolyCoat Sealer & Release Agent  
Poly PVA Solution (Green or Clear)

**Thickeners:**

PolyFiber II

**Product Life Extender:**

PolyPurge Aerosol Dry Gas

**Colors:**

PolyColor Dyes  
Black - Brown - Blue - Green - Red  
- Yellow - White - Fleshtone