

# SILPAK SP-328-4

## 4 Lb. Rigid Polyurethane Foam

Silpak SP-328-4 urethane foam consists of two parts (A and B) that, after mixing, form rigid foam products with a molded density of 5-8 lb/ft<sup>3</sup>. These rigid foams can be used for casting parts or filling voids; consider SP-328-4 foam for production of decorative objects, lightweight mold shells, production parts, models, patterns, fixtures, duplicate masters and general tooling use.

### Features

- Molded density of 5-8 lb/ft<sup>3</sup>.
- 1A:1B mix ratios by volume
- Suitable for casting parts and filling voids

### Applications

For production of:

- Decorative objects
- Lightweight mold shells
- Production parts
- Models
- Patterns
- Fixtures
- General tooling use

### Physical and Handling Properties

Property	Value
Mix ratio by volume	1A : 1B
Mix ratio by weight	112A:100B
Mixed Viscosity, cP	1000
Cream Time	60 sec.
Rise Time	180 sec.
Tack-Free Time	6 min.
Demold Time	20 min.
Free-Rise Density (lb/ft <sup>3</sup> )	4
Molded Density (lb/ft <sup>3</sup> )	5-8

*Values listed above are typical and not intended for use in specifications.*

### Mold Preparation

The RF-Series reproduces minute detail from molds or patterns but may stick when poured on improperly prepared surfaces. Polyethylene and silicone rubber molds do not require a release agent. When casting rigid foams, the use of an appropriate primer paint (or other water-based primer) sprayed in the silicone mold and allowed to dry before casting can help to extend mold life. It will also result in a pre-primed cast part and will help additional paint adhere to the part. Polyurethane rubber or metal molds must be dry and coated with a suitable release agent. Rubber molds and the overall mold construction must be strong enough so as not to distort when subjected to packing pressures.

## Mixing

Before mixing foam, be sure that both Parts A and B are at room temperature and that all tools are ready. RF-Series foams set fast -- meaning that you must work quickly. Measure or weigh Parts A and B into separate containers (e.g., polyethylene pails). Combine Parts A and B and mix immediately with a Turbo Mixer or other high speed mixer until homogeneous. Small mixes can be stirred rapidly by hand. 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.

Once the containers of Parts A and B are opened, they should be used or resealed tightly since atmospheric moisture can contaminate the liquid. PolyPurge, a dry gas product, can be sprayed into opened containers of RF-Series foam to displace moist air before resealing containers to extend shelf life.

## Curing

Packing RF-Series foams to a minimum of 25% more than 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 85 to 100°F prior to casting the first part. Once a mold is heated and cycled, it will maintain heat for continued production.

## Finishing

Cured RF-Series foams will yellow and chalk when exposed to sunlight and should be painted or sealed for exterior use (painting is not recommended on flexible foam). These foams 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.

## Colors

Add PolyColor Dyes to Part B before mixing with Part A to create foams 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.

## Proper Use and Safety

Read all instructions and safety data sheets prior to use. Consult safety data sheets for all recommended safety precautions.

## Storage & Shelf 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.

Part A of RF-Series products 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.

## **Note on Foam Compaction Calculation**

Determine the volume of the space you want to fill with foam in cubic inches (in<sup>3</sup>). Convert the volume to ft<sup>3</sup> by dividing by 1728 in<sup>3</sup>/ft<sup>3</sup>. Determine the desired density of the foam part in pounds per cubic foot (lb/ft<sup>3</sup>). Note: Foam products are typically compacted to at least 25% more than their free-rise density to produce good quality parts. Therefore, to determine the quantity of foam needed, add at least 25% to the free-rise density (e.g., for RF-102,



use at least 2.5 lb/ft<sup>3</sup>). Multiply the volume of the part (ft<sup>3</sup>) by the desired density (lb/ft<sup>3</sup>) to determine how many pounds of foam liquid to mix.

Example:

You intend to make a part that is 4320 in<sup>3</sup>.

Convert to ft<sup>3</sup>:  $4320 \text{ in}^3 \div 1728 \text{ in}^3/\text{ft}^3 = 2.5 \text{ ft}^3$ .

Desired density is 5 lb/ft<sup>3</sup>, so choose RF-102 and determine volume to pour based on packing to 5 lb/ft<sup>3</sup>.

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