

SIL-MOLD™ SI-12

Applications

Sil-Mold™ SI-12 is a tin-cure (or condensation-cure) silicone molding system used to make flexible molds. Some of the most common uses of Sil-Mold SI-12 are making molds for point-of-purchase displays, rapid prototypes, special effects, taxidermy, and sculpture reproductions.

Characteristics

Sil-Mold SI-12 is mixed ten-to-one by weight and cures at room temperature in twenty-four hours. It cures to a soft (Shore A12 ± 2), yellow rubber. Molds made from Sil-Mold SI-12 exhibit low linear shrinkage, a long mold life, high strength properties, and thermal stability.

Instructions for Use

Prepare Master and Mold Housing

First, clean and dry your master thoroughly. If the master has a porous surface (clay, concrete, plaster, etc.) or is made of sulfur-based clay, you must seal it. You can use polyurethane varnish, polyurethane sealant, or paste wax to seal your master. Next, anchor your master and seal the base so that Sil-Mold SI-12 does not leak under your master. A hot glue gun works to anchor the master and seal the base at the same time. Also, you should seal all of your mold housing connections with sulfur-free clay or hot glue.

Measure Base and Catalyst

Note: Sil-Mold SI-12 provides approximately 1 hour to mix and pour the mold before it begins to gel.

Make sure that the base and catalyst are room temperature before mixing them. Please note that in cold weather it may take up to 24 hours for the base and catalyst to reach room temperature. Using a clean, dry, plastic container and a scale, measure ten parts of the base (part A) and one part of the catalyst (part B). For example, if you need 10 pounds of Sil-Mold SI-12 to make a mold of your master, measure 9.10 pounds of the base in one container and .90 of the catalyst in another container.

Mix Base and Catalyst

After you prepare the master and measure the base and catalyst, you are ready to mix the base and catalyst. Combine the two ingredients for several minutes until there are no color striations visible. Scrape the sides and bottom of the container while combining the two ingredients. You must mix the base and catalyst completely so that Sil-Mold SI-12 will cure correctly. Because Sil-Mold SI-12 is very thick, you should degas Sil-Mold SI-12 to 30" hg in a vacuum chamber to remove the air bubbles that form during mixing.

Pour Mold

To ensure that no air bubbles form over the details of your master, you may brush a thin base coat onto the master and then pour the rest of the Sil-Mold SI-12. After you apply the base coat or if you choose not to apply a base coat, pour the Sil-Mold SI-12 slowly to cover the master. The best way to pour a mold is to tilt your mold housing slightly and pour into one spot at the corner, allowing the material to cover your master slowly like the flow of lava. Pour slowly so that any air bubbles that may have formed during mixing can break over the lip of the container.

Demold and Cure Mold

Once you have poured your mold, allow the mold to cure 16 hours before demolding. To prolong the life of the mold, allow it to cure for 2 days before using it.



Properties

Base (Part A) and Catalyst (Part B)

The following table lists the properties of the base and catalyst of Sil-Mold SI-12 before they have been mixed.

Property	Base (Part A)	Catalyst (Part B)
Color	White	Yellow
Mix Ratio by Weight	10	1
Shelf Life	6 Months	6 Months
Viscosity @ 77° F (25° C), CPS	50,000	80

Mixed Base (Part A) and Catalyst (Part B)

The following is a list of the properties of Sil-Mold SI-12 after the base and catalyst have been mixed.

Property	Time	Temperature
Mix Time*	4–5 Minutes	75° F (24° C)
Pot Life*	2–4 Hours	75° F (24° C)
Gel Time*	1 Hour	75° F (24° C)
Cure Time*	24 Hours	75° F (24° C)
Demold Time*	16 Hours	75° F (24° C)

*Mix time, pot life, gel time, cure time, and demold time vary depending on mass and component temperature.

Cured Sil-Mold SI-12

The following table explains the properties of Sil-Mold SI-12 after it has cured.

Property	Cured Product
Color	Yellow
Coverage, lb./in. ³	24.9
Elongation, %	450
Modulus, PSI, 100%	40
200%	122
300%	257
Rebound, Bashore, %	62
Shrinkage, %	0.3–0.35
Shore Hardness	A12 ± 2
Specific Gravity	1.11
Tear, Die C, PLI	68
Tear, Split, PLI	21
Ultimate Tensile, PSI	551

Storage and Handling

Keep the Sil-Mold SI-12 container tightly closed when not in use and store at temperatures between 60–80° F (16–26.67° C). Do not expose the base or catalyst to moisture! If moisture contaminates Sil-Mold SI-12, it will not cure. If these storage requirements are met, the material carries a shelf life warranty of six months.

Be sure to read the *Material Safety Data Sheet* that comes with Sil-Mold SI-12. When working with Sil-Mold SI-12, please observe the following safety precautions.

- Use only in well-ventilated areas.
- Wear safety glasses, chemical-resistant rubber or plastic gloves, and an apron.
- Avoid prolonged or repeated contact with skin.
- In the case of skin contact, wash with soap and water.
- In the case of eye contact, flush with water for 15 minutes and seek medical attention.
- If swallowed, do not induce vomiting and seek medical attention immediately.

Sil-Mold™ SI-12 Product Bulletin

The conditions for your use and application of our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis at least must include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. PUMA Polymers has not necessarily done such testing. All information is given without warranty or guarantee. It is expressly understood and agreed that customer assumes and hereby expressly releases PUMA Polymers from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind PUMA Polymers. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.