

**PYROS GLASS STUDIO**

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## **PYROS TECH NOTE #7**

### **Making Block Molds with Pyros Professional Pourable Silicone**

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A block mold is made by placing the model in a box and pouring liquid rubber over it. The thick layer of rubber provides added strength and stiffness, so this is the most appropriate type of mold for a wide flat object such as a cameo or medallion. Block molds are also best when you want to build a multi-part mold that captures detail from two sides of an object.

#### **About Pourable Silicone Rubber**

Silicone rubber is a man-made material that comes in a wide variety of chemistries, colors, viscosities, hardnesses and setting times. The common feature in all silicones is a molecular backbone made of Silicon-Oxygen pairs, which can be thousands of atoms long. When these chains are linked together by side groups, they form a tough and pliable rubber. Several types are available to the artist.

Tin-cure silicones have an A part and a B part that, when mixed, cure by chemical reaction with a tin catalyst. Pyros Silicones all have a simple 1 to 1 mix by volume, making them easy to measure. Tin-cure silicones are relatively economical and have a library life of several years.

Silicone cure can be inhibited by certain materials, notably latex and materials containing sulfur. **Most oil-based modeling clay contains sulfur, and should not be used with silicone.** Chavant NSP ([www.chavant.com](http://www.chavant.com)) and Klean Klay ([www.kleanklay.com](http://www.kleanklay.com)) are two excellent non-sulfurated modeling clays.

Silicone should be stored tightly closed in a cool, dry place. Excessive heat and humidity will destroy the product. Even stored properly, silicones have a shelf life that is measured in months, not years, so buy only what you need and use it promptly. Silicones should be used at room temperature (70 degrees F), as low temperatures may also keep silicone from setting. Allow your silicone to warm up to room temperature before using. Do not cure at temperatures below 65 degrees F.

#### **Making a 1-part block mold**

##### **You will need:**

- A model to mold
- Non-sulfurated clay
- Pyros Professional Pourable Silicone
- Disposable cups for mixing and measuring
- A flat non-porous work surface, such as a piece of melamine board

##### **Safety first!**

Silicone products are generally safe, but may cause skin irritation in some people. Wear non-latex gloves when using silicone and wash with soap and water when finished.

## 1. Prepare your model

Your model can be made of wax, clay, or any non-porous material. Porous models (wood, shell, dry clay, plaster, etc.) should be sealed with a coat of spray acrylic. Do NOT seal with shellac, which may stick to silicone. Although silicone will release readily from most surfaces, a release agent will make it easier to remove your model from the silicone after it cures. Paste wax (e.g., Butcher's Bowling Alley Wax), petroleum jelly, or a spray-on commercial release agent all work well. If in doubt, test a small amount on a hidden area of your model before using. Pourable silicone *will* stick to clean glass, so use a release agent on glass models.

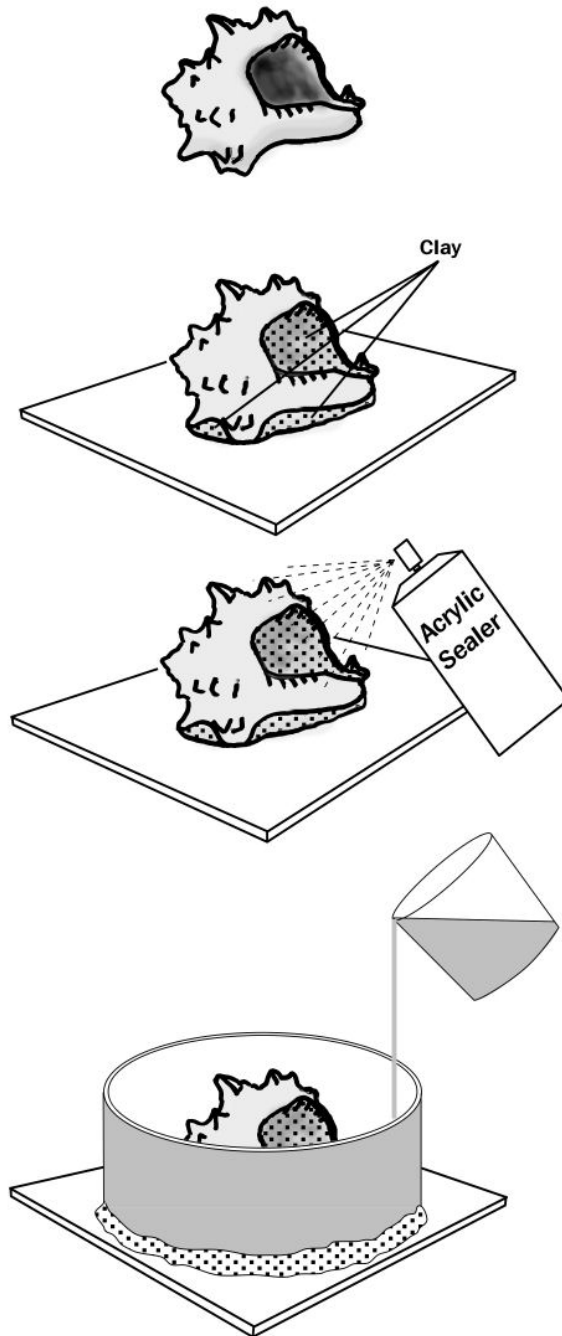
Your model must have at least one flat side that can rest against the work surface. Using clay, wax or hot glue, stick this side to a non-porous work surface such as a sheet of melamine board. The part of your model that is against the surface will become the opening in the mold. Remember, you'll have to be able to remove the model in one piece by stretching the mold around it. If your model is irregular, you can elevate it on a pad of wax or clay.

Severe undercuts should be filled in. If there are very deep indentations or holes in your model that would trap silicone, fill these to within 1/8" of the surface. If you are trying to make a mold of something very thin, such as a leaf, press it onto a 1/8" sheet of clay or soft wax, and then trim around it with a sharp hobby knife.

## 2. Build a mold box

Build a dam around your model, allowing 1/2" clearance on all sides. The dam should be at least 1/2" taller than the model's highest point. The dam can be built of just about anything: clay, cut-off milk or juice cartons, melamine board, glass, and vinyl flooring have all been used with success. Small models can be stuck to the bottom of a plastic cup or food storage container.

The most important thing is to make sure that the dam is strong enough to hold back the liquid silicone, and *completely sealed with clay around the edges and where it meets the work surface*. Uncured silicone will leak through even the tiniest hole. If the mold box or work surface are made of glass, apply a release agent to them.



### **3. Calculate the amount of silicone**

Calculate the amount of silicone you will need using the following procedure. If your mold box is rectangular, measure the length, width and height of the mold box, in inches. Multiply them to get the volume of the mold box in cubic inches:

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

If your mold box is circular, measure the diameter and height, in inches. Calculate the volume, in cubic inches, as follows:

$$\text{Volume} = .785 \times \text{Diameter} \times \text{Diameter} \times \text{Height}$$

Multiply the volume of the mold box by .277. This will give you the number of fluid ounces you will need of *each* of parts A and B.

### **4. Mix the Silicone**

By volume, measure equal parts of A and B. Pour the A part into the B part and mix thoroughly for three minutes. Scrape the sides and bottom of the cup frequently to make sure that all silicone is mixed and there are no streaks.

### **5. Mold your object**

Pour the silicone slowly and steadily into the lowest part of the mold box. Do not pour directly on the model itself. Allow the silicone to slowly rise and flow around the model. To help avoid bubbles, pour the thinnest stream that you can manage from a height of at least a foot. Pyros pourable silicone has very low viscosity, and will flow into the finest details of the model.

### **6. Demold**

Allow the mold to cure at room temperature for at least 90 minutes, then remove the model. The mold will become stronger over the next few days as it releases moisture produced by the curing reaction. This can be accelerated by post-curing at 125 degrees for 4 to 5 hours. Your mold is now ready to use.

### **7. Clean up and store your mold**

Silicone molds should be stored in a cool, dry place out of direct sunlight.