

# Silicone Moldmaking Materials From Dow Corning






## *A Guide to Techniques and Materials*

### Choosing a molding technique

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There are three basic types of molds: block molds, glove molds and skin molds. The best type to use for a particular object depends on its shape, intricacy, size and mobility.

### Types of molds

Characteristics of Original		Suggested Molding Technique	Advantages
<ul style="list-style-type: none"> <li>• A "flat back"</li> <li>• No deep undercuts</li> </ul>		One-part block mold	<ul style="list-style-type: none"> <li>• Fastest and easiest molding technique</li> <li>• Casting material can be poured</li> <li>• Casting material can be leveled with a spatula or by gentle vibration</li> </ul>
<ul style="list-style-type: none"> <li>• Detail on all sides</li> <li>• No deep undercuts</li> </ul>		Two-part block mold	<ul style="list-style-type: none"> <li>• Thick, durable mold</li> <li>• Easy to handle</li> <li>• Easy to demold</li> <li>• Ideal for use with casting material that should cool down slowly or for faster curing of some catalyzed resins</li> </ul>
<ul style="list-style-type: none"> <li>• A "flat back"</li> <li>• Deep undercuts and fine detail on the other side</li> </ul>		One-part glove mold	<ul style="list-style-type: none"> <li>• Easy to demold</li> <li>• Ideal for casting materials requiring quick cool-down</li> </ul>
<ul style="list-style-type: none"> <li>• Detail and undercuts on all sides</li> </ul>		Two-part glove mold	<ul style="list-style-type: none"> <li>• Very complex shapes can be reproduced</li> <li>• Easy to demold</li> <li>• Multipart molds are possible</li> </ul>
<ul style="list-style-type: none"> <li>• Large size</li> <li>• Extreme undercuts</li> <li>• Original cannot be moved</li> </ul>		Brush-on skin mold	<ul style="list-style-type: none"> <li>• Easy to demold, even with complicated originals</li> <li>• Economical for large originals</li> </ul>

# Making silicone molds

## One-part block mold

### Step 1.

Prepare the original.

### Step 2.



Prepare a molding box of wood, plastic or metal, making sure there is a minimum clearance of 1/2 inch between the edges of the original and the sides of the box, and a minimum clearance of 1/2 inch between the highest point of the original and the top of the box sides.

### Step 3.



Mount the original to the base of the molding box. This can be accomplished by putting a strip of inhibitor-free modeling clay\* around the edge of the back of the original. Press the original firmly onto the box base. For a more secure mounting, drill a hole in the center of the base and attach the original to the base with a wood screw.

### Step 4.

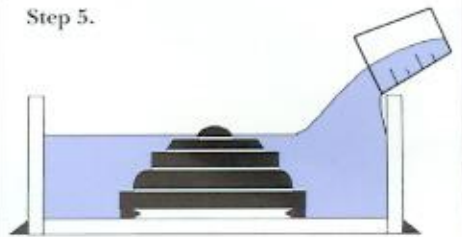


Construct the molding box around the original. Carefully seal around the edges of the box and between the original and the box with sulfur-free pattern (filleting) wax or inhibitor-free modeling clay. This is necessary to prevent the liquid silicone rubber from seeping out. If you prefer castings with a smooth, high-gloss finish, ensure that the original is highly polished.

 Silicone Moldmaking Material

\* See "Modeling Clay" in "Suppliers of Moldmaking Equipment and Materials," Form No. 10-525.

### Step 5.



Prepare the molding material and pour it into the box, holding the container as close to the box as possible. Pour slowly to allow the material to fill all the crevices and level off. Continue pouring until the top of the silicone material is a minimum of 1/2 inch above the highest point of the original.

### Step 6.

Cure for 24 hours at room temperature.

### Step 7.



Remove the wax or clay sealing the sides of the box and disassemble the box.

### Step 8.



Separate the mold from the original.

# Two-part block mold

## Step 1.

Prepare the original.

## Step 2.

Prepare a molding box with sides, base and lid of wood, plastic or metal, making sure there is a minimum clearance of 1/2 inch around the original.

## Step 3.



Seal the edges of the box with sulfur-free filleting wax or inhibitor-free modeling clay.

## Step 4.



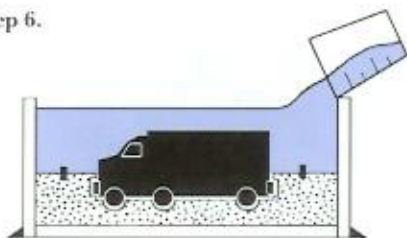
Wrap, in aluminum foil or plastic wrap, the half of the original that will be embedded in clay in the bottom of the box. Embed the original up to the pre-established parting line.

## Step 5.



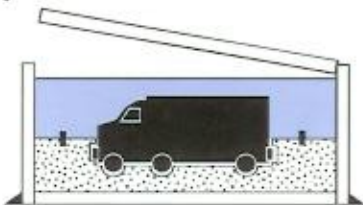
Insert alignment pegs into the clay.

## Step 6.



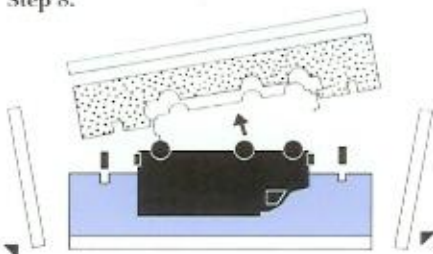
Prepare the molding material and pour it into the box, holding the container as low as possible. Pour slowly to allow the material to fill all the crevices and level off. Continue pouring until the top of the silicone material is a minimum of 1/2 inch above the highest point of the original.

## Step 7.



Cure for 24 hours at room temperature.

## Step 8.



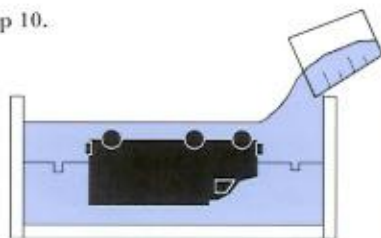
Invert the box and disassemble it. Remove the clay, foil or plastic wrap, and alignment pegs.

## Step 9.



Reassemble the box and apply a release agent to the exposed area of silicone.

## Step 10.

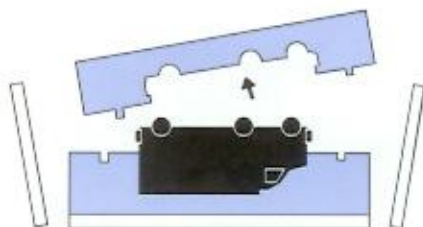


Holding the container as close to the box as possible, pour in the silicone material. Pour slowly to allow the material to fill all the crevices and level off. Continue pouring until the top of the silicone material is a minimum of 1/2 inch above the highest point of the original.

## Step 11.

Cure for 24 hours at room temperature.

## Step 12.



Disassemble the box and separate both parts of the mold from the original.

## Step 13.



To prepare the mold for casting, drill two or more holes through it. The casting material will be poured into the mold cavity through one hole, and the air will escape through the other(s).

**NOTE:** If the original is relatively simple and not too large, it is possible to omit the use of the clay. Instead, pour the silicone material directly into the box to form the first half of the mold.

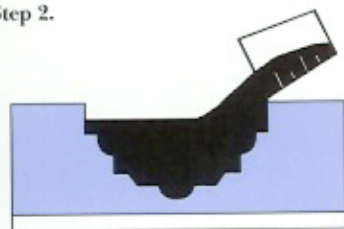
# Casting into a silicone mold

## One-part block mold

### Step 1.

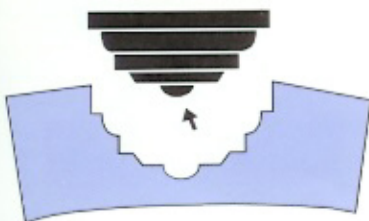
Prepare the casting material according to the manufacturer's instructions.

### Step 2.



With the mold on a flat, level surface, pour the casting material slowly into the mold, holding the container of casting material as close to the mold as possible. Brushing, vibrating or gently shaking will help to ensure that the casting material flows into all the crevices.

### Step 3.



When the casting material has set, separate the mold from the casting using a firm, even pressure.

### Step 4.



Smooth any rough edges by light filing or sanding.

**NOTE:** For easier demolding, some one-piece block molds require cutting. A predetermined parting line is marked on the master prior to casting the silicone mold. Once the master is removed from the mold, the seam line is matched up and the mold is held together, usually with rubber bands or tape.

## Two-part block mold

### Step 1.

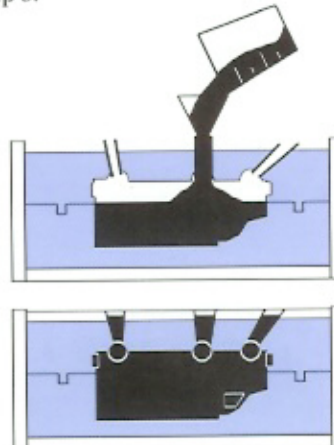
Reassemble the mold in the original molding box, ensuring that all parts are held firmly together.

### Step 2.



Insert lengths of plastic tubing into the drilled holes. The plastic tubing in the air-escape hole(s) should protrude 1/2 inch from the mold. The plastic tubing in the filler hole must be long enough to reach above the top edge of the mold when it is in casting position.

### Step 3.



Prepare the casting material according to the manufacturer's instructions.

With the mold in casting position, pour the casting material into the mold through a funnel inserted in the end of the filler tube. Hold the container of casting material as close to the funnel as possible. Keep pouring slowly until material rises in the air-escape tube(s). Vibrate or gently shake the mold so the material flows into all the crevices and any trapped air bubbles rise through the air-escape tube(s).

When casting with certain casting resins, it is necessary to cover the plastic tubes with a sheet of paper or plastic to prevent inhibition.

### Step 4.

When the casting material has set, separate the mold from the casting using firm, even pressure.

### Step 5.



Remove the plastic tubing and cut off the runners. Smooth any rough edges by light filing or sanding.

**NOTE:** If the casting is large or intricate, it may be advisable to pour the casting material into the mold until it is half full, vibrate or de-air it in a vacuum chamber, and then pour in the rest of the casting material.

# Making silicone glove molds

## One-part glove mold

### Step 1.

Prepare the original.

### Step 2.



Prepare a molding box of wood, plastic or metal, making sure there is a minimum clearance of 1/2 inch around the original.

### Step 3.



Place a strip of inhibitor-free modeling clay around the edge of the back of the original. Press the back of the original firmly onto the molding box base. Remove all excess clay. Mark the position of the original on the base.

### Step 4.



Cover the original with aluminum foil or plastic wrap. Then apply a 1/8-inch layer of inhibitor-free modeling clay over the aluminum foil or plastic wrap.

### Step 5.



Assemble the molding box around the original. Pour a backing material, such as plaster, urethane resin, etc., into the box until it is full. Allow it to set until fully hardened. This is usually referred to as the "mother mold."

NOTE: Fiberglass-reinforced polyester can also be used to make lightweight counter molds or one- and two-part glove molds.

### Step 6.



Disassemble the box. Lift off the mother mold and make one filler hole and several air-escape holes in it. Remove the clay and the aluminum foil or plastic wrap from the original.

### Step 7.

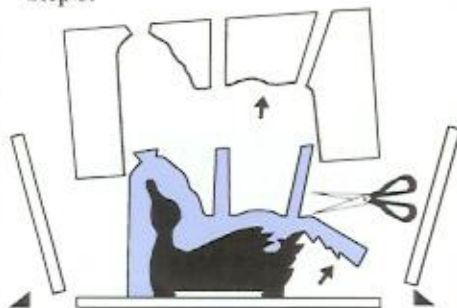


Put the mother mold and the reassembled box back in position over the original. Pour the silicone material slowly into the filler hole in the mother mold. Continue pouring until silicone material comes up the air-escape holes.

### Step 8.

Cure for 24 hours at room temperature.

### Step 9.



Disassemble the box, remove the mother mold and peel the silicone rubber from the original.

## Two-part glove mold

### Step 1.

Prepare the original.

### Step 2.

Prepare a molding box with sides, base and lid of wood, plastic or metal, making sure there is a minimum clearance of 1/2 inch around the original.

### Step 3.



Wrap the original in aluminum foil or plastic wrap. Fill the box with presoftened clay. Embed the original in the clay up to the pre-established parting line.

### Step 4.



Cover the visible half of the original with a 1/8-inch layer of inhibitor-free modeling clay. Insert alignment pegs into the clay.

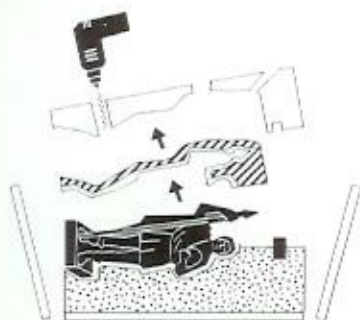
### Step 5.



Pour the backing material over the original until it is completely covered. Allow to set until fully hardened.

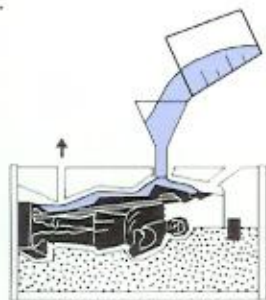
Continued on next page

**Step 6.**



Disassemble the box. Lift off the mother mold and make one filler hole and several air-escape holes in it. Discard the layer of clay. Remove the aluminum foil or plastic wrap from the exposed half of the original.

**Step 7.**

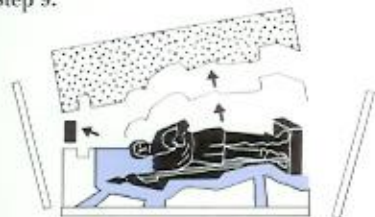


Put the mother mold and the reassembled box back in position over the original. Prepare the molding material and pour it slowly into the filler hole in the mother mold. Continue pouring until silicone material comes up the air-escape holes.

**Step 8.**

Cure for 24 hours at room temperature.

**Step 9.**



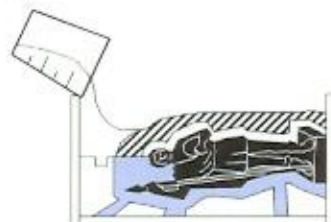
Invert the box and disassemble it. Remove and discard the clay filling half of the box and the alignment pegs.

**Step 10.**



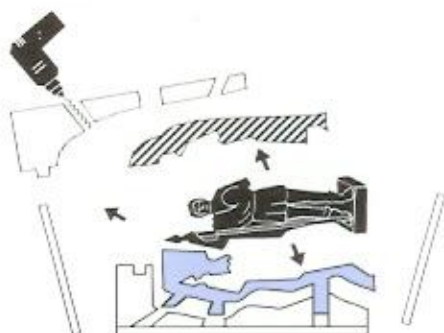
Reassemble the box and apply a release agent to the inside. Cover the visible half of the original with a 1/8-inch layer of inhibitor-free modeling clay.

**Step 11.**



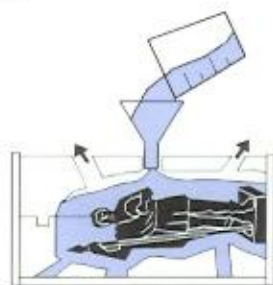
Pour backing material over the original until it is completely covered. Allow it to set until fully hardened.

**Step 12.**



Disassemble the box. Lift off the mother mold and make one filler hole and several air-escape holes in it. Discard the layer of clay and the remaining aluminum foil or plastic wrap.

**Step 13.**



Put the mother mold and the reassembled box back in position over the original. Prepare the molding material and pour it slowly into the filler hole in the mother mold. Continue pouring until silicone material comes up the air-escape holes.

**Step 14.**

Cure for 24 hours at room temperature.

**Step 15.**



Disassemble.

**Step 16.**



To prepare the mold for casting, drill two or more holes through it. The casting material will be poured into the mold cavity through one hole and the air will escape through the other(s).

# Casting into a silicone glove mold

## One-part glove mold

### Step 1.

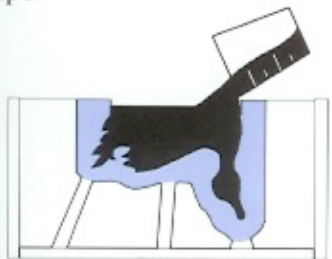
Reassemble the glove mold in the mother mold in the molding box.

### Step 2.



Prepare the casting material according to the manufacturer's instructions.

### Step 3.



With the mold on a flat, level surface, pour the casting material slowly into the mold, holding the container of casting material as close to the mold as possible. Brushing, vibrating or gently shaking will help to ensure that the casting material flows into all the crevices.

### Step 4.



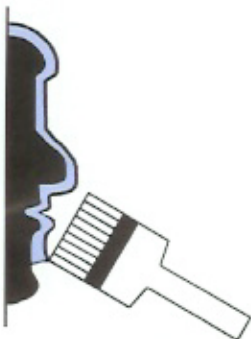
When the casting material has set, remove it from the mold using firm, even pressure.

# Making a brush-on skin mold

### Step 1.

Prepare the original.

### Step 2.



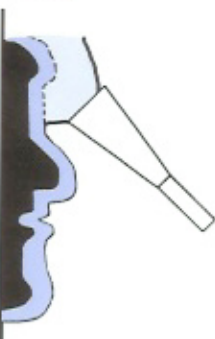
Paint the original with a thin precoat of base and catalyst mixture. This coating should be applied by brushing, and, to ensure a void-free coating, the mixture should be de-aired prior to use.

If air bubbles form during application of the RTV material, break them with a light air spray or by hand.

Cure at room temperature until the surface is tacky.

**NOTE:** Increasing the ratio of the catalyst to base will accelerate curing so the coating will become tacky much faster. This also will result in a thicker skin layer on the original.

### Step 3.



Prepare a mixture of thixotropic material following the instructions supplied with the product.

### Step 4.

Using a brush or spatula, cover the precoat with a 1/4- to 3/8-inch layer of the thixotropic coating. If the original is large, it is advisable to prepare the thixotropic coating in several batches, applying it to one section at a time.

**NOTE:** To smooth the surface of the thixotropic coating, dip a spatula in 200<sup>®</sup> Fluid, 50 cs, and groom the surface. Or wet a wash cloth and tap the surface of the skin mold to flatten the peaks. (The extra moisture will aid in the cure of the tin-cured rubbers.)

### Step 5.



Cure for 24 hours at room temperature. Support the skin mold with a counter mold of glass-fiber-reinforced polyester, plaster or urethane foam.

## Two-part glove mold

Replace the glove mold in the two halves of the counter mold and clamp them firmly together. Proceed as for a two-part block mold, described on page 4.

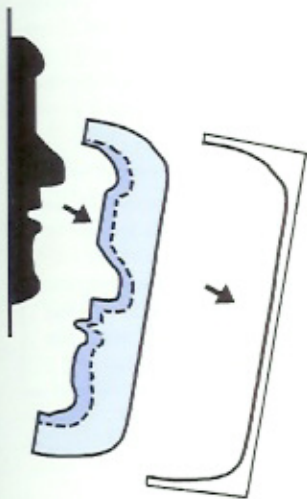
 Thixotropic Material

*Continued on next page*

# Casting a brush-on skin mold

## Brush-on skin mold *Continued*

### Step 6.



Carefully remove the counter mold and place it securely on a horizontal surface.

### Step 7.

Peel the rubber from the original.

### Step 8.



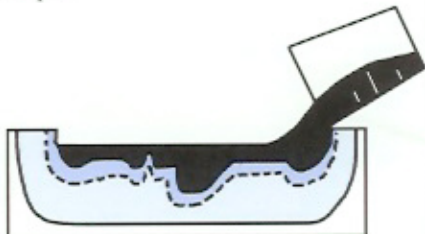
Reassemble the silicone mold in the counter mold.

■ Silicone Moldmaking Material  
■ Thixotropic Material

### Step 1.

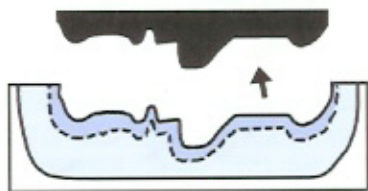
Position the mold in casting position in its counter mold. Prepare the casting material according to the manufacturer's instructions.

### Step 2.



Pour the casting material slowly into the mold, holding the container of casting material as close to the mold as possible. Brushing, vibrating or gently shaking will help to ensure that the casting material flows into all the crevices.

### Step 3.



When the casting material has set, separate the mold from the casting using a firm, even pressure.

### Step 4.



Smooth any rough edges by light filing or sanding.

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Printed in USA

3/8900

Form No. 10-587

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