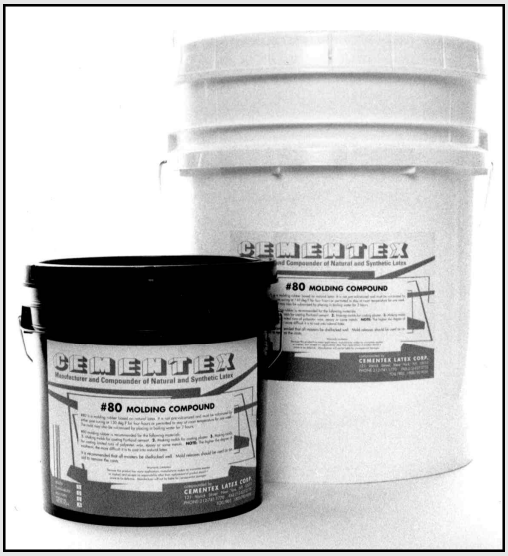
MAKING MOLDS USING NATURAL LATEX



LATEX #80

LATEX #660

LATEX #80 VLA

CREAM LATEX

NEOFLEX

B*ACKGROUND, GUIDELINES AND TIPS FOR USING LATEX #80*

FROM THE MANUFACTURER

The process of latex setting up is called vulcanization. The word comes from the name Vulcan, who was the ancient god of fire. He was a blacksmith to the other gods.

Vulcanization describes the process of heating the latex and setting it at a high temperature so that all the molecules of latex unite and form a single, continuous surface.

When the latex is heated between 100º F and 120º F, for a period of 8 to 12 hours, the process of vulcanization becomes complete, yielding a high-quality mold. Plaster and concrete can be poured with absolute confidence.

Time also promotes vulcanization. A mold can be left at room temperature, kept constant for five or six days and will vulcanize by itself. Still, heating is actually the best way to cure, or vulcanize, a latex mold.

I created a list of some of the problems that beginning mold makers have had with latex. These are the most common difficulties. None of them require more than a bit of attention to avoid.

DELAMINATION: Sometimes a mold maker will put the beginning one or two coats of latex on his or her mold and leave it for four or five days before finishing the mold making process. Unfortunately, after that time, when they try to apply the next coat, it peels off. This occurs because vulcanization has already taken place and the first coats are completely set. As a result, you have delamination.

Be sure that all coats are within 36 hours of the previous coat.

BUBBLING: Sometimes, for a wide variety of reasons, air bubbles rise in the latex when it is applied. These bubbles remain trapped either between layers of latex or between the latex and the model. These can be eliminated by using an air hose (or a drinking straw) and gently massaging an air stream across them until they open and are eliminated. Most bubbles can be avoided by gently using crisscross patterns when applying the latex.

BLISTERING: When the sealant,or shellac, is not fully dried before the latex is applied,the solvents that are still present and evaporating from the shellac become trapped in the latex.Like trapped air, they force the latex away from the surface and create blisters.

Eliminate the blisters with a syringe or needle.Simply burst them and fill in the space with the next coat of latex.

To avoid that problem,leave the shellacked model exposed to the air long enough for all the solvents to evaporate.Usually this only requires that the model be left overnight.

Avoid ultraviolet light, like sunlight, when working with latex.
Progressively, sunlight will disintegrate the latex.

PUDDLING:Latex is applied as a thick liquid.While brushing it onto the mold it will drip and form puddles at the base or in areas where it can gather. Using simple short strokes, continuously brush it back across the model.

Puddling is not a serious problem.Even the puddles will ultimately vulcanize,or cure, over time.

STICKING: While demolding latex,it sometimes has a tendency to stick to itself. Simply dusting both sides of the mold with talcum powder will prevent sticking.

BACK-UP MOLD: Without something to help separate the back-up mold,usually made of polyester resin, from the latex, a heat bond can build between them,causing the latex to stick. This problem is avoided by sealing the surface of the latex with a special high temperature resistant wax. The wax creates a wall between the fiberglass and the latex.

It is important to completely separate the latex
from the heat and chemicals of the setting fiberglass resin.

CONCRETE: When working with concrete,the mold life can be extended by using a mixture of castor oil and alcohol as a lubricant and separator. Mix one part of castor oil to nine parts of alcohol by volume.Brush a light coat of this mixture onto the inside of the mold. Not only does this help lengthen the life of the mold,but it also lubricates the mold and assists the concrete in filling every detail. The lubrication will also allow for an easier removal of the cast piece from the latex.

Good luck. Phone if you have any problems.

Arthur Gononsky

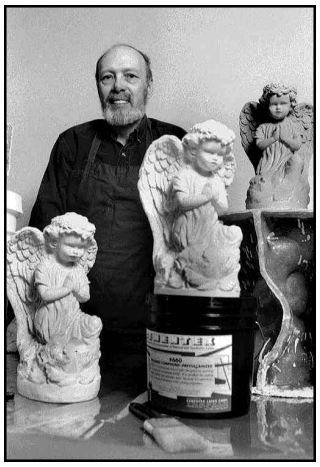
1 SELECTING AND PREPARING THE MODEL

When preparing the model, be sure that you use the appropriate sealants and patching materials. Each material has different characteristics. Concrete, plaster, or ceramic can be patched with clay. Clay, however, must have a sealant applied before patching because the clay will not easily adhere to unpainted plaster. Spray a thin coat (thicker coats will bury the detail) over the plaster before beginning to fill the holes.

On a reproductive model there are seam lines from the pouring originally done. These lines need to be removed. Scrape the plaster until all the seam lines are gone. The intention is to make this copy look like the original before building a mold around it. Since the model is going to be patched, it is best to scrape the seam lines, and imperfections, below the surface and then to bring them even with the surface with clay. Otherwise, regardless of how well you scrape, there will still be marks left where the seam line was scraped.

Gradually, slowly and carefully, work the clay into the indentations and holes that need to be filled. ***(See 2, 3)*** Smooth the surfaces with these patches. Return the model to the condition of the original from which it was cast.

Using a sulfur-free clay will avoid any chemical reactions that can occur between the clay and the latex when it's applied.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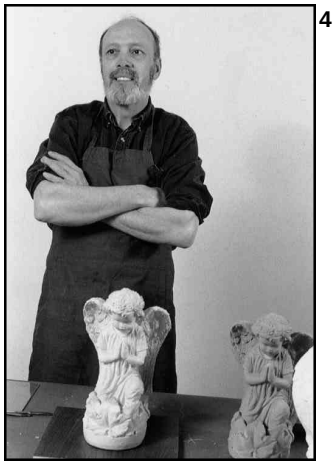
2 SHELLACKING, PAINTING, AND PLACING MODEL ON THE BOARD

After the model has been patched and all the seam lines, bubble holes, etc., have been smoothly filled, the model can be painted and sealed. A thin spray or brush coat is sufficient as long as everything is covered. Paint can fill in the details. Be careful, details that you can still see are not necessarily details that can be felt. A clear shellac can be misleading.

The rubber will duplicate details that can be felt rather than those that can merely be seen. Keep the coat of sealant (paint, shellac) very thin and even.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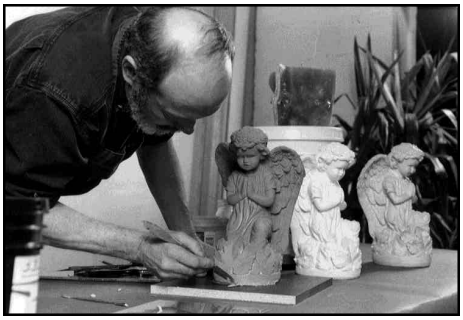

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Use a board for mounting the model that will have at least a couple of inches all around so that a lip can be painted on when the latex mold is made. Latex itself can be used as a glue to attach the model to the board. Paint a thick coat on the bottom of the model, in the center so that it won't be forced out the sides when the model is squeezed down, and set the model in the center of the board. Then wait until it dries enough to firmly attach the model to the board. ***(See 4)***

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When the model is not firmly attached to the board, it can float or shift when the latex coats are being applied. This will cause distortion in the mold.

3 *CLAYING IN THE MODEL*

Latex will seep under the model when it is brushed on unless the model is completely sealed to the board. This is done with clay. Clay snakes are rolled in the hands and pressed evenly around the base of the model.

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In the finished piece, a beveled edge at the bottom will be a protection against chipping. So, the clay that seals the bottom is cut into a bevel. This bevel should be cut or scraped in the clay so that it leans inward a few degrees. Keep it consistent all around the model and be sure that it closes off completely any openings around the bottom of the model. ***(See 5, 6)***

4 *STUDYING THE MODEL AND BUILDING THE SEAMS*

The purpose of seams is to divide the latex mold, when it's built, so that it is easy to remove from the casting. Seam lines should be placed so that any indented, extended, or difficult areas are divided, allowing the mold to be removed in pieces. Without these seams, the areas that are difficult become problems that can destroy the mold when you try to remove it.

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The model being used for explanation in this manual will benefit from two seams. One seam will be underneath the chin, making it easier to stretch the rubber over the head. Another seam will mark a division along one wing so,

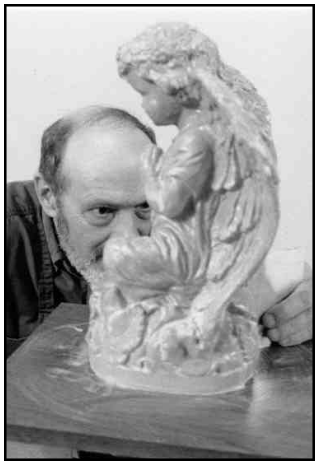
again, the latex will separate and pull around the wings easily. This is the construction of a split mold. The latex will separate where the seams are, but it will still be, altogether, a single piece.

Draw lines where the seams will go; these will be your guides. As you build the seam, stay exactly on the line you drew. ***(See 7, 8)***

The seam will be made from tin or aluminum pieces. Each piece will be fitted to the model and attached to it and to the next piece along the seam. The pieces should be about three or four inches long and about three inches deep.

Building the seam involves placing and removing these pieces repeatedly while you are cutting and adjusting the edges to make them fit perfectly. These pieces, when attached, will be the actual seam. The aluminum squares must be trimmed and adjusted to the model. Each time the tin is removed for fine trimming, it has to be returned to exactly the same spot to avoid absolute confusion. The metal pieces are held against the seam line and trimmed so that they follow the contour of the model. It is a process of repeating the measurement, retrimming, remeasuring, retrimming, remeasuring, etc., until the tin edge follows the contours of the model exactly. This will be your seam divider. ***(See 9, 10)***

Using different short-length pieces, one after the other, trim them into a snug-fitting wall that follows the lines that you drew as seams. When they are attached to the model, with locks to hold the sides in place, they become an edge that is also painted with latex.



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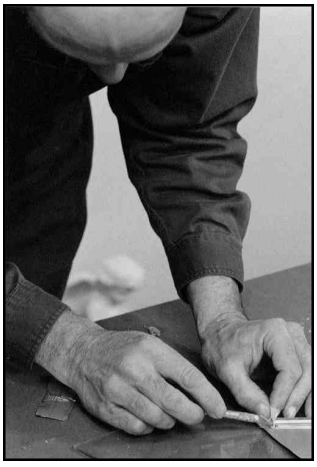

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5 *MAKING A LOCK*

A lock should be about 3/4 of an inch from the surface of the model. It is a tin insert that is built into the seam.

Shape a short piece of tin into a “U”. Cut a slot that is the same length as the “U” into a trimmed seam piece, using an Exacto blade. The “U” shaped piece should fit exactly into that slot. ***(See 11, 12, 13)***

Using tape, cover the flat side of the lock, opposite the side where the “U” sticks out. Be sure it is taped tightly so that no latex can leak through.

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When the completed latex mold is readied for pouring, these locks will insure that the seam line is aligned and straight. In this model, about four locks will be necessary.

6 *ATTACHING THE SEAM TO THE MODEL*

All the tin sections that have been cut and measured against the model, each about three inches long, must now be attached to the model. The pieces with the locks will also be attached.

Attach the pieces of seam to the model with latex. Use a small amount, in the center of the tin piece's edge, that is just enough to hold it. ***(See 14, 15)*** Putting the bond in the center allows you to slightly wiggle the pieces or to swivel them, so that they can butt firmly against the adjoining pieces. The object is to place and bend them so that they become one continuous piece. The locks should be placed along the seam as evenly spaced from each other as possible. ***(See 16, 17, 18, 19)***

When all the pieces have been placed, cover them with a continuous piece of tape. They are then ready for the coating of latex.

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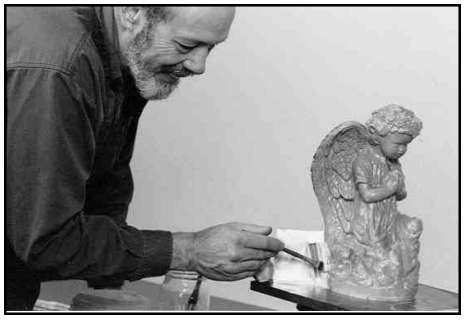

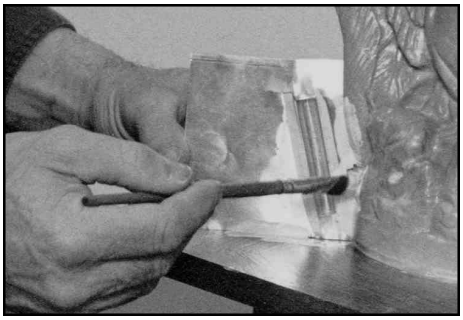

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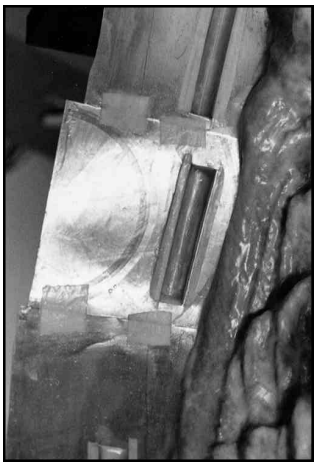

7 COATING THE MODEL WITH LATEX

When applying the first two coats of latex, it is important that they go on smoothly and completely. These are the coats that actually copy the detail. They should be applied smoothly and carefully.

In the first two or three coats, the latex should be applied evenly without it being overworked. Dab the latex into every detail.

The first coat will dry quickly since it is being applied over a dry surface, and the second coat should follow as soon as it does dry. Runs and drips of latex are not crucial at this point since they'll be covered by later coatings. The concern at this point is to be sure that everything is completely coated and all details are filled by dabbing in with the latex.

Brush the latex from the top down and then come back up. Dab the indentations and details. There may be bubbles. Dab these out as well as you can, but they can be covered in later coats if necessary. Altogether, there will probably be about 15 coats of latex that you apply.

Include in the brushing the two-inch border along the base. As you coat the model, also coat the border with latex at the same thickness. Also coat one side of the tin seam line that you have created. ***(See 20, 21, 22, 23)***

Keep your brush at an upright angle as you use it and it will be a lot easier to clean when you're finished. Keep just the outer half of the bristles filled with latex.

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8 CLEANING THE BRUSH

Cleaning the brush is an important part of the process. As in anything else, a better brush will spread latex more efficiently and effectively. Using a cheap, disposable brush is more likely to cause problems.

Cleaning the brush for reuse is simple. Immediately, when finished with a coat, squeeze all the excess latex from the bristles. Drag a stiff wire brush through the bristles to remove any latex clumps. Then, return the brush to a jar of soapy water where it can be stored. The soap puts a coating on the bristles that makes each cleaning easier.

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9 THICKENING CEMENTEX #80 LATEX WITH CECO POWDER

Later coats of latex need to be thicker to fill in undercuts. The inside of the mold follows the detail of the model, but the outside of the latex should be smooth and rounded.

To thicken the latex for this application, CECO powder has been developed. It mixes with the rubber and it does not have any negative side effects that harm the latex.

Mix the CECO into the latex. ***(See 24)*** Make it into a thin paste, or putty. Mix it thoroughly. When the mixture can be dragged up the side of the mixing bowl without sagging or dripping, it is the perfect thickness.

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This paste is going to be used to fill in undercuts. Also, the paste is used to thicken the lip along the base. (This thickness at the base helps prevent the mold from losing its shape.)

Using a procedure of mixing and applying the paste, over a period of several sessions, build up the surface of the mold gradually. Do not apply it too thick, or it will not dry easily. Build up undercuts, and the base and the seam line, gradually. Progressively round out the surface of the mold. Use the paste to fill in undercuts that would become "hooks" if ignored. Any hooks or undercuts will become problems when removing the mother mold. Also, this builds a surface against which the mother mold can be built without gaps. The mother mold will be supporting the latex at every point, avoiding future problems.

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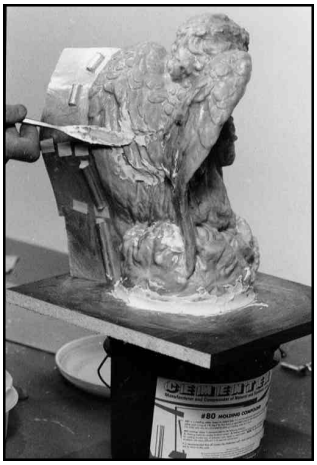
10 COATING THE MODEL WITH LATEX MIXED WITH CECO POWDER

After the undercuts are filled and the outsude of the latex is all rounded, a thicker mix of powder and latex can be applied to build up the mold. This strengthens the mold and smooths out the surface.

Mix latex with about 15% CECO powder. Mix it thoroughly and be sure to mix out all the lumps.

Apply it to the surface of the mold with crisscross patterns. Cover the entire mold. Be sure to brush out any runs or

drips. Go over it at least a second time. Essentially, you are shaping the latex around the surface of the mold. Keep using crisscross patterns; they result in the cleanest surface.
(See 25, 26)



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11 *CURING THE COMPLETED MODEL COATED WITH LATEX*

A latex mold will cure best in a constant temperature, with constant and low humidity. A constant temperature between 95° F and 100° F is ideal. Allow the mold to cure in this temperature range between 8 to 10 hours.

The temperature and humidity are easier to keep constant if you construct a small room (even a cardboard box) where you can cure the molds.

Curing is the easiest step in the mold making process; all you need to do is wait.