



How-Do-We-Do-That?

Casting & Molding

Making a One Piece Mold

A one-piece mold is recommended when there is a flat side to the original that is not cosmetic, even when undercuts are present.



1. The first thing you must do is to determine what you are going to make a mold of. Whatever you choose, make sure it is in perfect condition. The mold making rubber and casting resin will pick up every little flaw that is in the original and will duplicate it in the mold and casting.



2. Fasten the flat side of your original to a piece of plastic or wood using glue, clay, double sided tape, or super glue. This will prevent the original from floating after you pour the silicone mold making rubber over it. The flat side will give you a nice open area to pour in.



3. Make a mold box out of plastic, wood, metal, poster board, PVC, or any other cup or container. Leave .25"-.375" between your mold box and your original. Seal your mold box with Alumilite's Synthetic Modeling Clay to prevent the mixed silicone rubber from leaking out of your mold box before it cures.



4. Measure the silicone rubber according to the instructions provided with the silicone and mix thoroughly. Once mixed thoroughly, slowly pour the rubber from one corner of your mold box allowing the silicone to flow naturally around your piece. (We have chosen to use HS III due to the large undercuts - bear's chins)



5. Let the rubber cure (typically takes overnight). Once the rubber has hardened, begin demolding the original. If you cannot disassemble the box itself, use a dull knife or spatula to remove the mold. Rubbing alcohol helps by releasing the surface tension and making the silicone slippery.



6. Once the mold has been removed from the mold box, flex the cured silicone mold and remove your original. You now have a perfect mold of your unharmed original. You are now ready to make identical castings of your original.

Casting Your Piece

Before mixing the resin, preheat your mold to ensure proper curing of the resin casting. Place the rubber mold in a microwave for a minute on high or place the mold in a conventional oven for 30 min. at 150F. The other helpful hint in making flawless castings is to powder the inside of your mold with baby powder. The baby powder will release the surface tension and decrease the chance that air bubbles will get trapped. Prior to casting make sure you blow or knock out all

excess powder from the mold.



1. Measure the Alumilite resins according to their proper mix ratio (generally 1:1 by wt or volume). Mix vigorously for 20-25 seconds until thoroughly mixed.

Use plastic or paper cups when mixing Alumilite resins. (Do not use Styrofoam cups)



2. Once you've mixed the material thoroughly by scraping the sides and the bottom, slowly pour the resin into your warm mold by tilting it and letting the resin flow down the sides of the mold. Squeeze and tap the mold to assist any unwilling air bubbles to release from the sides of the mold and to help them float to the surface.



3. The open time of most Alumilite resins is 90 seconds. The color change is the end of the open time and the point in which it will turn color and begin setting up. The finished color of Alumilite Regular is an opaque tan (white and black resin is available along with coloring dyes to color the resin yourself).



4. Once the resin has hardened (approx. 5 minutes), flex the mold and remove your perfectly cast piece. Your piece is now ready to be painted, sanded, or tapped.

You are now ready to mix up more Alumilite resin and cast your next perfect replica of your original.

Making a Two Piece Mold



The first step is to create or select your original. Your original can be made of any nonporous material (clay, metal, wood, plastic, plaster, Sculpey, etc.) A two-piece mold is required when there is detail on both the front and backside of the piece and undercuts are present which makes a one-piece mold impossible (bear's arms going in opposite directions). Once you've

determined you will need a two-piece mold, decide where you want your parting line.



Try to put this in the place where it will be noticed the least. We have decided to have the part go down the side of the bear to avoid seeing it from the front (picture on the right shaded where the front and back halves of the mold will meet). We will pour the part from the least cosmetic place on the original, which would be the bottom of the bear's feet.



Take Alumilite's Synthetic Modeling Clay and embed the bear to the parting line on your piece (as shown on the left). If the clay is too firm to work with effectively, warm it in an oven or microwave to soften it. It is vital that you use synthetic clay. Sulfur based clays can inhibit the curing of your silicone rubber and ruin your mold. Now that you have your clay built up to the parting line, create your mold box around your piece. Build the mold box so that you have at least .25" - .375" around your original. The box can be constructed out of many different materials. We have used corrugated plastic in this example. Some other options include plastic cups,

PVC pipe, angle iron, boxes coated with plastic wrap, and even Lego's. Carve a small trench in the clay that surrounds your piece. This will create a 'marker' or 'locator' so that both halves of the mold will line up and fit together perfectly every time you put your mold together.



Make sure you have completely removed all modeling clay off of your original before pouring the silicone. Carefully clean your original with a little soap & water or rubbing alcohol. Let the original dry completely and make sure your mold box is sealed. When the box is complete and the original is clean and free from any clay or fingerprints, mix and pour the silicone rubber over the original.



All of the Dow Corning silicone that we carry is mixed 10 parts base to 1 part catalyst (measured by weight). Be certain to completely mix your silicone. Any portion that isn't mixed will not cure. The rubber will be fully cured in 24 hours (only 4-8 hours if you use the Alumilite Quickset RTV).

When fully cured, flip the mold over and start by removing the clay by hand. Use a toothbrush to remove the clay in hard to

reach areas. **DO NOT REMOVE YOUR ORIGINAL FROM THE RUBBER!** This will break the tight seal and may cause additional rubber to flow into the areas that are already cured.



Once you have completely removed the clay, coat the rubber with Alumilite's Rubber to Rubber Mold Release. This will prevent the second layer of silicone rubber from adhering to the first. Vaseline works great for this if you do not have any of rubber-to-rubber release. **DO NOT MOLD RELEASE THE ORIGINAL** and be sure not to miss any rubber sections of your mold. Any area not coated with release agent will stick and will require cutting to separate the two halves apart.



Note: Silicone Rubber will not stick to anything (including your original) other than another silicone rubber. To have the second half of the mold release from the first, you must have a mold release in between the layers where ever the two halves will touch. Including the outside portions of the mold next to the mold box.



Once you've put mold release between the first and second half of the mold, mix and pour the second half of your mold. When the second layer dries (24 hours, 4-8 hours with Alumilite's Quickset RTV) your almost done. Remove your mold box and separate the 2 halves of the mold (as shown on the left). All that's left is to cut your pour hole. As mentioned above, we have chosen the bottom of the bear's feet as our pour hole (most inconspicuous location cosmetically). Use an exacta knife and cut a 'u' shaped hole where it will be the least noticeable.

Use the same knife to cut vent holes to relieve the undercut formed by the position of the bear's left hand in the mold. This will allow excess air to escape that would otherwise be caught in the undercut and cause a visible air pocket. Use these only if there are constant problems with air entrapment in one particular area. You are now ready to pour your first piece out of your two-piece mold.



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