

Tail Light Molding w/Equipment

Products used in this How To:

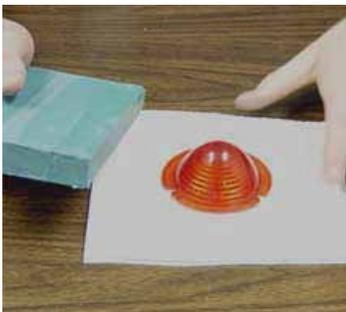
- * Original Tail Light Lens
- * Plat 55 Silicone Rubber
- * Alumilite Synthetic Clay
- * UMR Release
- * Grame Scale
- * Vacuum Chamber
- * Excel Knife
- * Sculpting Tool
- * Corrugated Plastic
- * PVC Pipe
- * Rubbing Alcohol
- * Popsicle Stick
- * Cups



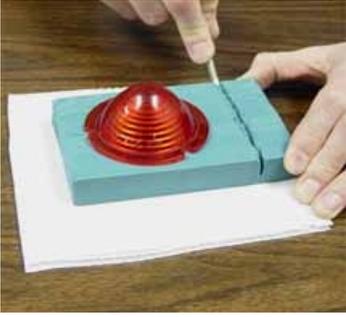
This How To process will walk you through step by step the procedure for making a two piece mold of a tail light lens with the assistance of vacuum.



Choose a lens that is with no scratches, blemishes, dull spots, or cracks to reproduce.



You will need a plastic base and Alumilite's Modeling Clay to get started.



Set the clay on the plastic base and trim it into the basic shape of the lens. Leave approximately 3/4" around the outside of the lens.



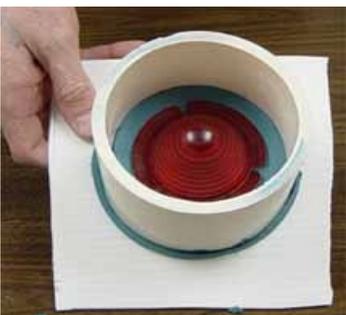
Use a section of PVC pipe or another mold box material such as Corrugated Plastic, recycled plastic container, or metal ring that is approximately 1" in diameter more than the lens. Press the PVC down around the lens. This will serve as your mold box. This will leave approximately 1/2" around the outside of your lens.



Remove the PVC tube from the clay. Press the lens down into the bed of clay and using Alumilite's clay tools, begin smoothing out the clay which will create your seam line between the two halves of the mold. Take your time and make the edge where the clay touches the lens very neat and clean. The cleaner the clay line, the smaller your flash will be on your finished cast lens.



Once you have the clay line as good as you can get it, press the PVC tube back over your lens and into the clay. Then trim the excess clay away from the PVC which will serve as your mold box.



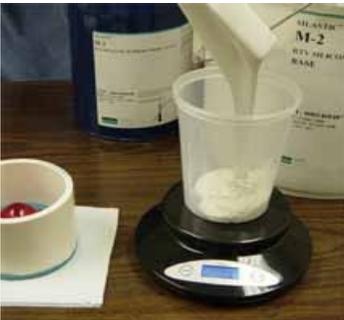
The lens is now clayed up and the mold box is sealed. You are almost ready to pour the first half of your rubber mold.



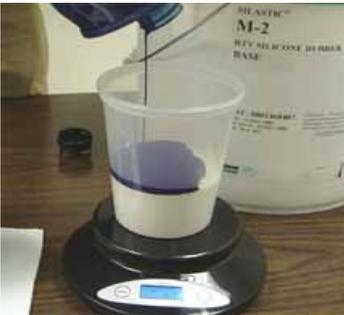
The last thing you want to do is to clean the lens before pouring the rubber. Use some rubbing alcohol and some paper towel to gently clean all fingerprints and clay off of the lens.



You are now ready to pour the rubber. Before we mix, we first must figure out how much rubber we will need. The equation is as followed: radius squared x 3.14 x height The radius is half the diameter (distance across the entire pipe). You also get to subtract the volume of the lense itself. Take a look at the Material Calculator page for more indepth instruction for calculating product requirements.



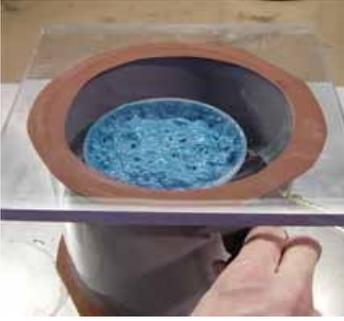
We calculated for this half of the mold we need approximately 3/4" lb of silicone rubber. Therefore we will mix .7 lbs of base and .07 lbs of catalyst to be on the proper 10:1 mix ratio. Measure and mix the rubber in a container much larger than the liquid volume required. When we put the rubber in the vacuum chamber it will grow up to 5 times its liquid volume as it is being degassed.



Do to the fact that we will be vacuuming the rubber to help us make sure we will not have any air entrapment in our rubber mold, we have chosen to use Alumilite's Plat 55 silicone mold making rubber. The Plat 55 is a thick, high durometer, very strong, silicone rubber that has great dimensional stability and is able to reproduce and keep very fine detail for many cast parts. It is one of the absolute best silicone rubbers on the market for two piece rubber molds when you have the ability to vacuum.



Once you've added the catalyst, mix it thoroughly until every swirl on the container wall and throughout the rubber is gone. The Plat 55 has a 90 minute work time so you have plenty of time to mix it thoroughly and vacuum it.



Place the container in a vacuum chamber and turn the pump on. Allow the Plat 55 to rise up and fall on its own before removing it from the vacuum. The magic number is 29" of Hg (mercury) of vacuum to effectively degas the rubber. It is necessary for the rubber to rise up on its own and collapse without allowing atmospheric pressure back in the chamber to ensure you've removed all of the air that you introduced while mixing.



Here you can see the material sagging back down the walls of the container after the material has risen, crested, and fallen. Keep your hand on the release valve to allow atmospheric pressure back in the chamber if the rubber is going to rise up over the top of the container.



Once the rubber has risen and fallen, allow it to bubble under full vacuum for another 1-2 minutes. Then remove the degassed Plat 55 and simply pour the rubber in a corner of the mold box which will cover the lens. We recommend the lens to be covered by at least 1/4" inch of rubber which will be the depth of your mold over the top of the lens.



Once the silicone rubber has cured (typically takes 8 hours at room temp for the Plat 55), remove the mold from the plastic base.



Using Alumilite's clay tools, dig out all of the clay away from the second half of the mold.



Remove every little piece of the clay and **BE SURE NOT TO REMOVE THE LENS FROM THE MOLD OR THE PVC TUBE**. You do **NOT** want to break the seal between the lens and the rubber mold you just poured! Nor do you want to break the seal between the mold and the PVC tube.



Once you have removed all of the clay, use an Exacto knife and cut some "V" shaped wedges in the outside flange area (rubber between the lens and the mold box). You can also use Alumilite Carving Tools to cut U-shaped grooves into the silicone.



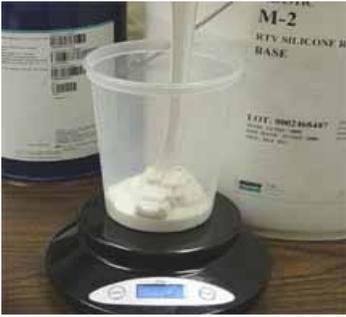
Then peel or pull away the rubber so you have a small groove in the cured rubber. These will act as locators to line up the two halves of the rubber.



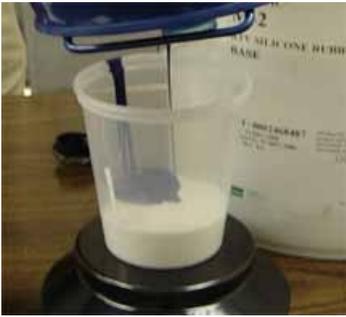
Next mold release the rubber using Alumilite's UMR. Silicone rubber will stick to cured silicone rubber and therefore needs to be released. Simply spray on a thin layer where ever the next pour of liquid silicone will be in contact with the first half of the mold that is already cured.



Before pouring the second half of the silicone rubber, make sure to clean the lens one last time to make sure there is no clay or other contaminants on the surface of the lens.



Calculate the proper amount of silicone needed as we did for the first half of the mold and make sure to mix it in a container much bigger to allow the rubber room to rise and degas.



Measure the proper amount of catalyst and begin mixing.



Mix the rubber thoroughly. Make sure the sides have been scraped and that there are absolutely not swirls in the liquid rubber.



Place the rubber in the vacuum chamber and allow the liquid rubber to grow until it collapses on its own.



Once you have effectively degassed the rubber, slowly pour the second half of the mold allowing the rubber to flow from one side of the mold on its own. Do not dump the material in but rather pour from one spot and allow the material to flow naturally.



Allow the material to cure. The Plat 55 demold time is approximately 8 hours at room temp. Temperature will affect the cure rate. The warmer the temperature, the faster it will cure. The warm temperature will also reduce your work/open time.



Once the rubber has cured, break the tension between the outside edge of the rubber mold and the mold box and push the rubber mold out of the PVC. Rubbing alcohol works to help release the rubber mold from the PVC pipe. Simply squirt a little down the gap and use a dull knife or Alumilite Spatula tool to break the surface tension between the two and easily remove the rubber mold.



Using your hands, work the line where the two pours of rubber meet until they begin to separate.



Once the two halves fully separate, remove your original. You are now ready to begin pouring duplicate lenses using Alumilite's clear resins.