

Tail Light Molding w/o Equipment

Products used in this How To:

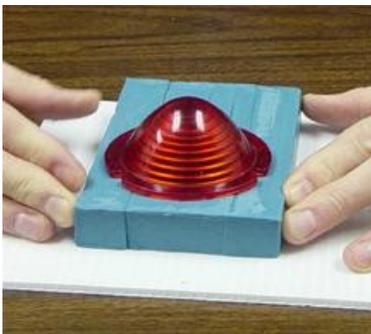
- * Original Tail Light Lens
- * High Strength 2 Silicone Rubber
- * Alumilite Synthetic Clay
- * Rubber to Rubber Mold Release
- * Gram Scale
- * Excel Knife
- * Sculpting Tool
- * Corrugated Plastic
- * Plastic Container
- * Paint Brush
- * Popsicle Stick
- * Cups



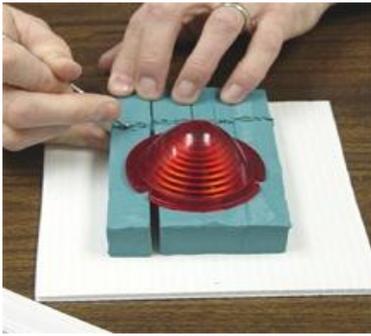
This How To process will walk you through step by step the procedure for making a two piece mold of a tail light lens without the assistance of vacuum.



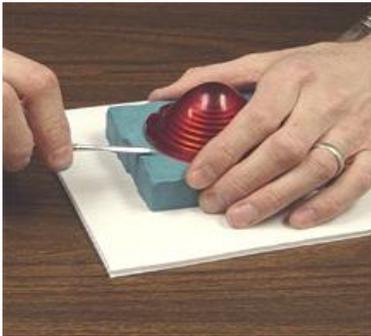
Once you've chosen a lens to reproduce, choose a material to make your mold base and box out of. Here you see us using some inexpensive corrugated plastic. It is easy to cut with an Excel knife and can be used for the base as well as the sides if you so choose.



Using Alumilite's Modeling Clay, make a base for the lens to sit on.



Trim the base of clay approximately a half inch around the lens.



Use Alumilite's sculpting tools to smooth out the surface of the clay and especially the clay that touches the lens. The clay that touches the part will determine the parting line so it is highly recommended to spend the time to make it as clean as possible minimize the amount of flash your cast piece will have.



We chose to use a plastic container that leaves 1/4" clearance between the container and the lens as our mold box. In this picture you can see that we cut the bottom of the container off so we can pour through that hole. Keep your mold box (whatever you choose to use to construct it) tight to your piece to decrease the amount of rubber needed to make the mold.



Once we have cut the container's bottom off, we flip the container over and press it into the clay around the lens leaving a 1/4" gap between the lens and the mold box.



Push the container down into the clay as far as you can. Then trim the excess clay around the mold container and continue to press the container down to the piece of corrugated plastic (mold base).



Before pouring the rubber, make sure to clean any fingerprints, smudges, or clay off of the lens.



Next you will need to calculate how much rubber you need to fill the mold box minus the volume the lens. To calculate the volume of a round mold box you need to know the radius (which is half the diameter or the length across the box). Visit the [Material Calculator](#) page on this site to calculate the amount of silicone and resin you will need for your part.



In this case, the diameter is 3.4". So the radius is half of 3.4" which is 1.7". Multiply 1.7×1.7 (radius squared) $\times 3.14$ (pie) $\times 2$ (height). This will give you the total volume of the mold box. You then need to estimate and subtract the volume of the lense itself. The above equation equals approx 18 cubic inches. There are 21 cubic inches in 1 lb of rubber. So once we subtract the area of the lense sticking up, we estimate needing approximately 1/2 lb of rubber to make the first half of the mold.



We've decided to use Alumilite High Strength 2 silicone mold making rubber because of its phenomenal physical properties (extremely high tear strength) as well as its low viscosity which doesn't require vacuum to achieve a perfectly good bubble free mold.



The instructions tell us to measure 8 cups of base and 4 scoops of catalyst to equal the amount of rubber we require.



We recommend working over an area that is easy to clean up. Most of the mold making and casting materials stain fabric and carpet so be careful not to splash or spill the materials.



Once you've added the catalyst you are now ready to mix. The work time of the High Strength 2 is approx 45 minutes and the demold time is 12-18 hours.



Taking the time to clean up the sides of the cup before mixing will save you even more clean up later. Try to be as neat as possible.



Mix the material thoroughly until absolutely no swirls are remaining. Once you think you have it mixed enough, spend an extra minute or two to mix it one more time.



Slowly pour the rubber over the smooth tail light lens. One optional step that is highly recommended on the inside of the mold that you may want to do before pouring the outside is to paint on the initial layer of silicone to make sure your lens surface is perfectly covered with no air entrapment before pouring all the rubber in the mold box.



Allow the rubber to cure overnight at room temperature before beginning to work on the second half of your lens mold.



Using the rubber as a guide, trim the bottom of the mold box so it sits nice and flat.



Begin removing all of the clay **WITHOUT** removing the lens or the mold from the mold box. Simply remove the clay and nothing else.



Once you have removed every single spec of clay, trim off the rubber that may have flowed underneath the lens with a sharp knife.



Using an Excel knife, cut some locators on the outside of the silicone rubber to the mold box. Put your knife at an angle and cut a wedge shape locator approximately an inch long. Do not allow the knife to get to the original part. You can see one that is already cut at approximately the 11:00 position. It is slightly more shady and will allow the second half of the rubber mold to flow in that channel and locate the two halves.



Once you have cut locators in the first half of the rubber mold, use Alumilite's Rubber to Rubber mold release or Alumilite's UMR to make sure the second layer of rubber will not bond to the first. The mold release only needs to be applied to the rubber and not to the part to prevent witness marks on the lens itself.



If you are using Alumilite's Rubber to Rubber Mold Release, we recommend waiting 5-10 minutes between coats and putting at least 2 if not 3 individual coats on to make sure the rubber does not stick. Also, make sure to shake the bottle well before using.



After calculating the volume required for the second half of the mold the same way we did for the first we realize we need approximately the same amount of rubber for the second half of the mold. Since we already used a 1/2 lb out of the 1 lb kit, we can simply dump the remaining catalyst in the base container of the 1 lb High Strength 2 kit.



Mix the rubber thoroughly. Be sure to scrape the sides and bottom extremely well. This is very important when mixing in a container with a lip. The lip will limit your access to the side walls so make sure to scrape them vertically as well as horizontally.



Once the rubber has been mixed well, use a disposable paint or acetone brush to paint on a thin layer of rubber onto the original lens to make sure the rubber is forced into the detailed cracks and crevices of the inside of the lens. This is a great thing to do when you do not have the ability to vacuum the rubber.



Once you've painted in a skin coat, simply pour the remaining rubber into the mold.



Allow the rubber to cure overnight and then remove the mold from the mold box.



Once you've removed the mold box, find the parting line (area where the two halves of the mold meet) and begin separating the two halves. Do not use a knife. The mold halves should separate using just your fingers.



This picture shows you the two halves of the rubber mold with the lens still inside. If you look closely on the outside of the mold edge, you can see the locators that will line up your mold halves in the correct position.



Remove the original lens and you are now ready to start pouring parts in your high tear strength silicone rubber mold that will produce exact replicas of your original.