

# Plat 55

## Silicone Mold Making Rubber

**Product Description:**

Alumilite's Plat 55 silicone mold making rubber is platinum base, FDA food compliant silicone rubber that is great for making 2 piece dimensionally stable molds. The Plat 55 is a high durometer (stiff) silicone that is great for making prototype design and production tooling as well as nests, fixtures, architectural, foam, and artistic molds. It is great for making simple one and two piece molds. Its high viscosity makes vacuuming or meter mix dispensing the material highly recommended however can be used successfully by painting on the original coat and then pouring the remaining material over the initial coat to help relieve surface bubbles if vacuuming is not an option. The Plat 55 reproduces extremely fine detail. Plat 55 works well for making food grade molds for candy, chocolate, fondant, ice, and gelatin. When making 2 part molds, Alumilite's UMR mold release, Rubber to Rubber Mold Release, or Vaseline must be applied to prevent it from bonding to itself. Plat 55 is a platinum base silicone and care must be taken to eliminate the possibility of contamination from items containing tin, sulfur, vinyl, amines, and organotin salts which may inhibit or prevent the silicone from curing where ever they come in contact with these elements.

**Physical Properties:**

Color	Blue
Mixed Viscosity (cps)	80,000
Hardness, (ASTM D-2240) Shore A	55-60
Specific Gravity	1.29
Shrinkage (in/in)	NIL
Tensile Strength (ASTM D-638) (psi)	700
Elongation (in/in)	200%
Temperature Range (Degrees F)	-67 to 395
Tear Strength (ppi)	85

**General Properties:**

Color	"A" Side - Base	White
	"B" Side - Catalyst	Blue
Mix Ratio		10:1 by wt.
Shelf Life		1 year
Open Time at 75 Degrees F (100g mass)		45 minutes
Demold Time at 75 Degrees F (100g mass)		6-12 hours
Full Cure Schedule		7 days

	<u>Approximate Volume:</u>	
<b>Packaging:</b>	1 lb	Pint Kit
	5 lbs	½ gallon
	10 lbs	1 gallon
	50 lbs	5 gallon
	484 lbs	55 gallons

**Safety:** Read complete labels, SDS, and technical data sheet including instructions before using.

## Instructions

**Keep materials out of the reach of children, do not take internally, and do not use in any way other than it's intended use.**

### **Before Starting**

Make sure your work area is appropriate for measuring, mixing, and pouring mold making materials as they can and will stain any porous materials such as carpet and clothing. Also make sure to use and store materials in an area where children cannot reach or access.

### **Food Compliant**

When measured/mixed properly and fully cured, the Plat 55 complies with FDA 21 CFF 177.2600 and can be used safely in contact with food. It is highly recommended to allocate molds intended for food use to only be used for food and no other casting materials to prevent contamination.

### **1. Mold Preparation**

Before measuring, mixing and pouring your mold, there are a few things you can do to ensure a good mold.

Thoroughly clean and remove all dirt/contaminates. **Make sure mold box and part are sealed to eliminate possibility of leakage or silicone wicking into the part.** The silicone will leak out of any small crack in your mold box and it is imperative that you make sure your mold box is sealed prior to pouring. If your mold box does leak, try using hot melt, super glue/accelerator, clay, tape, or any other material to try to stop the leak. This is not an easy task as it is like trying to stop an oil leak which is why it is so important to double and triple check your box is sealed prior to pouring your mixed rubber.

Mold release is required when pouring against another silicone if you do not want the two to bond, as when making two piece molds. Use Alumilite's UMR, Rubber to Rubber Mold Release, or a thin layer of Vaseline are adequate to avoid the two pours from bonding to one another. Avoid contact with all porous materials such as fabric, clothing, carpet, and other non sealed materials as the Plat series mold making rubber will wick in, bond, and attach itself to those porous materials.

Make sure that your master is fastened securely to your mold base to prevent it from floating.

### **2. Calculating Material Needed**

There are approximately 21 cubic inches volume per 1 lb of silicone rubber. Therefore, to calculate your needed material find the area of your mold box minus the area your master in cubic inches.

An easy to use calculator is available at <http://www.alumilite.com/store/pg/12-Volume-Calculator.aspx>

### **3. Mix Ratio**

The mix ratio of the Plat 55 is 10:1 by Weight. A gram scale with an accuracy to the nearest 1 gram is recommended or measure using graduated cups that depict accurate volume measurements. If you are using the 1 lb kit, use the 1 oz cups and scoop provided in the kit. Measure 1 SCOOP OF CATALYST for every 2 OUNCES OF BASE and follow the instruction sheet provided with the kit when making small pours.

Plat 55 is one of the few products you are able to vary the physical properties, specifically the hardness, by changing the mix ratio. The hardness of the Plat 55 when mixed at a 10:1 ratio is 55-60A. If you under catalyze the Plat 55, it will still harden in close to the amount of time however the hardness will decrease. If you mix 100 parts base to 8 parts of catalyst, the hardness will drop approximately 8-10A to be approximately 45-50A. 100:6 will result in an approximate hardness of 35A. 100:5 will result in a hardness of approximately 25-30A. We do not recommend going less than 100:5 mix ratio. When altering mix ratio to arrive at the hardness you desire, please understand tensile, elongation, and tear strength will change.

### **4. Open Time**

Alumilite's Plat 55 has an Open Time of 45 minutes at 75 Degrees F (100g mass). Demold time is approximately 6-12 hours. Relative humidity and temperature will affect the cures speed. The more humid and warmer the environment is, the faster it will cure. Temperature alone will accelerate the cure of the Plat series rubber.

### **5. Measuring and Mixing**

Make sure to use a big enough container which gives you plenty of head space to thoroughly mix the rubber. IF you are planning to degas/vacuum the silicone, be sure to use a container that is approximately 2-3 times the liquid amount of rubber you plan to mix. This will allow the rubber to expand/grow in the container without over flowing into your vacuum chamber.

Once the two sides have been measured in your container, you are ready to start mixing. Mix THOROUGHLY. Scrape sides, stick, and bottom multiple times to ensure you have effectively mixed all of the material. When you think you have it completely mixed, repeat



the process and mix it again. The Plat series of mold making rubber has plenty of open time which allows you the time necessary to make sure you have mixed it thoroughly. Mixing should take a good 2-3 minutes.

Once mixed, degas if you have the ability to. Degassing will remove the air introduced while mixing. Although not required, it is recommended to remove any air as your mold will be more dense, perform better, and theoretically last longer if it does not have any air inside of it.

#### **6. Pouring**

Once the material is thoroughly mixed, pour the mixed rubber slowly in one corner of your mold box and allow the rubber to flow slowly and naturally around your master. This process allows the rubber to roll over your master avoiding air entrapment. Avoid pouring the rubber directly over or onto your master.

#### **Eliminating and Avoiding Air Bubbles**

If you do not have the capability to degas, there are a couple of techniques that will help ensure air will not become trapped against your master and show on your mold surface. First, is once you've mixed your rubber, brush an initial skin layer the mixed rubber over your master using a disposable paint brush. This will ensure the rubber wets out the surface of your master and not allow air to stick or hold onto the surface forcing any air bubbles to float up and away from your master. Once the surface has been coated/wet out, hold your mixed rubber high above one corner of your mold box and pour a small thin stream of rubber and slowly fill the mold box. The thin stream will stretch/pop any air bubbles as you pour. As the thin stream fills the mold box, the skin coat you painted onto your master will prevent any air from sticking to the surface of your mold.

#### **7. Inhibition**

Platinum 55 as well as all other platinum base silicones are susceptible to inhibition. Inhibition is when the material comes in contact with certain materials and fails to cure (remains wet ... never hardens) whereas the rest of the material not in contact with the certain materials will cure absolutely fine. These materials will act like a poison and not allow the Platinum base silicone to cure. Most of the time this ruins your mold and wastes the silicone you attempted to make the mold out of. Therefore it is very important to know that the material you are pouring the Platinum base silicone rubber over is not going to impede, inhibit, or prevent it from curing.

Materials consisting of or that are known to inhibit platinum base silicones are: tin or amine cured resins, vinyl (duct tape, pvc, etc), sulphur (clays), cyanoacrylates (super glue), latex, neoprene, Buna N, and natural rubbers (rubber stamps).

Whenever you are in question and are not 100% sure the material you are pouring is compatible with the Plat series, it is recommended to test in a small area prior to pouring the entire mold. Simply clay up a flat, low detail, easy to access area and pour a test batch of the Plat over the substrate in question to make sure it cures properly before continuing to make your mold.

#### **8. Storage & Shelf Life**

Store in a cool dry place. Unopened containers will have a shelf life of 1 year when properly stored at room temperature. Avoid high humidity areas and replace lids to containers as soon as you are finished using. If you are finished using the product for a period of time, purge opened containers with dry nitrogen or Alumilite's Bloxygen before re-sealing and storing.

#### **9. Mold Life**

Mold life expectancy is a variable of many different factors including but not limited to the type of resin being used in the mold, the length of time the resin is in the mold, the exotherm of the resin, cycle times, the design of the part, the intricacies of the detail, the force needed to demold, etc. Even with all of these factors, there are some things you can do to get the most life out of your molds. In no particular order, here are some of the ways to extend the life of your molds. Use mold release such as Stoner or UMR. Avoid leaving castings sit in the molds any longer than they need to (especially overnight). Allow molds time to cool from peak resin exotherms prior to pouring the next part. Use Silicone Oil to condition molds whenever you stop production for a day or two as well as condition molds with Silicone Oil prior to storing for periods of time. Integrate a bake out process of 400 degrees for 2 hours and allow to cool back down prior to running more parts every 25% of the expected mold life (this process will draw silicone oil back to the surface of your mold rejuvenating what has been lost or depleted from the casting process). Store molds in a clean and dry environment.

UMR, Stoner, or Silicone Oil should not be used as a mold release when using the Mold Putty for food applications. If a release is needed for a food application, a food grade release such as Pam cooking spray should be used.

#### **10. Work Area & Clean Up**

Mixed Plat mold making rubber will absorb into porous materials and will stain! Avoid clothing, carpet, upholstery, and any other porous materials which will stain and will not come out. Mold making and casting is best done in a designated work area such as a basement, garage, or hobby room with adequate air movement or ventilation. Cover any surfaces including floors with plastic sheeting, cardboard, or plywood to prevent damage from spilled resin. To clean up unmixed or still liquid material, use rubbing alcohol on a rag or paper towel to quickly clean and remove. Once cured, the materials are extremely resistant and nearly impossible to remove. There are a couple solutions out in the market that claim to dissolve cured silicones and urethanes. If you are in need of such a material, please call us and we may be able to refer you to some possible solutions.