

# Performance 80D

## 80D Urethane Elastomer

**Product Description:**

Alumilite Performance 80D is a high performance rigid urethane elastomer designed for parts that require extremely high toughness and durability. Performance 80D is great for hand pouring or casting parts using dispensing equipment. The Performance 80D system exhibits ultra-high tear and impact properties producing very tough parts. Performance 80D is based on aromatic urethane chemistry and can be used as a natural clear amber elastomer or pigmented.

**Physical Properties:**

Color	Transparent
Mixed Viscosity (cps)	290
Hardness, (ASTM D-2240) Shore D	80D
Specific Gravity	1.05
Shrinkage (in/in)	.010
Tensile Strength (ASTM D-638) (psi)	11,850
Elongation (in/in)	20%
Heat Deflection (ASTM D-648) (Degrees F)	200

**1:1 Mix Ratio by  
Volume**

**General Properties:**

Color	"A" Side	Clear
	"B" Side	Translucent Yellow
Mix Ratio		1:1 by VOLUME
Shelf Life		1 year
Open Time at 75 Degrees F (100g mass)		4 min
Demold Time at 75 Degrees F (100g mass)		30-60 min
Full Cure Schedule		72 hours

**Packaging:**

28 oz  
2 Gallon  
10 Gallon  
Drum Kit

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

## Instructions

**Keep Alumilite 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 casting resins that 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.

### **1. Mold Preparation**

Before mixing and pouring the resin into your mold to achieve a cast resin piece there are a few things you can do to prepare your mold that will greatly enhance the physical properties and curing of your cast resin piece.

The first thing you can do is to preheat your mold. Warm the mold in a conventional oven at 120-150 degrees F for 15 minutes or warm your mold in a microwave for 1 minute/lb of rubber on high. This will only warm your mold and will not affect the microwave or your mold adversely. It will however help the thin sections of your casting cure more evenly with larger sections and reduce your demold time. It will also help the resin set up uniformly to give you a consistent fully cured cast piece. (It is highly recommended to warm your molds when using the Slow Set, Water Clear, Clear, Flex, Amazing Clear Cast, or parts under a 1/2" in thickness to ensure proper curing.)

**Note: Do not microwave when there is resin in the mold, if you have painted your mold, or if you have already coated the mold with the Metallic Powders.**

### **2. Eliminating and Avoiding Air Bubbles**

To release surface tension and help with minimizing unwanted air bubbles in difficult to fill areas, baby powder your mold prior to casting. Painting or sprinkling baby powder on all the surfaces inside your mold will greatly reduce the amount of surface tension in the mold. As the resin flows into the mold it will physically pick up each particle of the baby powder and will help keep the air bubbles away from the surface of the mold where they can be seen in your finished part. The powder will not change the appearance of your casting. Since the resin picks up and absorbs the baby powder, the white color of the powder will not show up in your finished piece. If you have a small paint brush, simply paint in the baby powder and knock out the excess before casting your part. (Baby powder not recommended when pouring clear parts.)

Warming your mold and baby powdering it prior to casting your piece will greatly enhance the physical properties and appearance of your cast piece by helping it cure properly and aiding in the prevention of air entrapment.

### **3. Mixing**

Before mixing make sure you know the proper mix ratio of the material you are using. Double check the mix ratio. The mix ratio of the Performance 80D is 1:1 by volume. It's important to note and understand mix ratio by weight (with a scale) or by volume using a graduated cup. Please check each individual material you use as some are mixed only by weight or by volume. Varying the mix ratio of Alumilite resins will alter the cure and change the physical properties in a negative way and is NOT recommended. Alumilite resins have been formulated to crosslink completely and altering the mix ratio may leave uncured components in your cast piece that could come out at a later time.

We recommend you mix at least a half an ounce of each side to ensure you have a proper mix ratio. If you measure out 1/4 of an ounce of A in one cup and 1/4 ounce of B in another and dump the A into the B you will be off ratio due to the residue left in the A side cup. In larger amounts of resin batches, this will not be enough to throw off the mix and cause an issue with the resin setting up. But with small amounts of resin (1/4 oz of each side) this will be enough to affect the mix ratio and will typically result in parts that appear darker in color and remain soft (never harden).

Once the materials have been measured out in separate cups, the preferred method of pouring one into another, to decrease the amount of air introduced, is to pour the A side into the B side.

After the materials have been poured together, mix vigorously (keeping the stir stick in contact with the bottom of the cup - reduces air from being introduced into your resin) for approximately 20-30 seconds. Make sure to scrape the sides and the bottom of the mixing cup.

### **4. Pouring**

Once the material is thoroughly mixed, pour the resin slowly down the side of your mold cavity. Tilting your mold will prevent the resin from splashing in the bottom of your mold and creating unwanted air bubbles that would then need to find their way to the top of the mold. Similar to tilting your glass as you pour a beverage rather than letting it splash/cavitate off the bottom creating air bubbles.

Squeezing the brim of the cup to form a point allows you to pour a smaller/slower stream of resin into your mold controlling the flow and

reducing the chance of unwanted air bubble entrapment against the surface of the part.

If your mold has undercuts, pour enough resin into the mold to fill it half way. Then, tilt and rotate the mold in the opposite direction of the undercut to allow the air to escape up the side of the mold. Squeezing or burping the mold at the same time will also help relieve the air trapped in the undercut and allow the bubbles to release from the mold surface. Once you see air bubbles come to the surface of the resin and you can be confident you have removed the air from the undercut, simply top off the mold by pouring the remaining resin into the mold.

#### **5. Open Time**

Performance 80D has an Open Time of 4 minutes at 75 Degrees F (100g mass). Larger amounts of mixed resin will shorten your work time. As warmer ambient room temperature will also shorten work time. To increase the open time of Alumilite resins, simply chill the "A" & "B" sides of the Alumilite in the refrigerator or in a bucket of ice for approximately 30 min. before pouring. This will increase the open time of the Performance 80D by 30-60 seconds. When cooling your resin, we highly recommend preheating your mold to ensure a proper cure.

#### **6. Color – Dyes & Painting**

Alumilite Performance 80D urethane can be dyed or pigmented using a non-water base dyes. Alumilite offers a line of translucent dyes in standard colors that react/crosslink chemically with the resin to achieve beautiful colored resin cast pieces with no worry of leaching or color ever coming out of the cured piece. The dyes are extremely concentrated and color the Performance 80D extremely easily. A maximum of .5% into the A side is needed to completely color the Performance 80D. We do not recommend preloading the dye into the A sides as it can affect the shelf life of the Performance 80D. If you are looking to use a dye, pigment, or filler that you have not used before, we highly recommend making a small test sample to ensure compatibility before using or preloading into the resin.

Painting can be achieved but is best if painted immediately after demolding while the resin is still curing. Once the resin has completely cured and hardened up, paint adhesion is not as strong. Most paints will still bond but may scratch off easier if not applied while the resin is still curing. Another option is to paint your silicone rubber mold, allow the paint to dry, and then cast your resin into the mold. Alumilite resins will chemically bond to the dry paint, and once the resin cures you will demold a perfectly painted piece.

#### **7. Mold Release**

To achieve maximum parts out of your silicone molds or to ensure release out of non-silicone molds (aluminum, urethane elastomers, latex, or any other substrate), we recommend using Alumilite's Stoner Urethane Mold Release. This offers maximum release and puts an effective layer of release on non-porous surfaces to release Alumilite Casting Resins. When using the Stoner Mold Release, some release will transfer to the cast resin part after demolding and may interfere with the ability to paint or bond the cast resin piece. A mild solvent wash and perhaps even some mild abrasion may be required to remove the Stoner from the casting.

Alumilite does offer a "Paintable" mold release called UMR. UMR can be used as a release between silicone to silicone, urethane to urethane, silicone to urethane, and much more. It is an all-purpose mold release that does not interfere with painting unless excessive amounts are used and transferred to your casting.

#### **8. Shelf Life**

The shelf life of Performance 80D is 1 year in an unopened container but a much longer shelf life can be expected even after being opened as long as it is sealed and stored in an area free from moisture contamination (humidity and changing of temperatures such as a garage).

#### **9. Storage**

Urethane resins are sensitive to moisture and must be kept dry at all times. It's best to blanket open drums and bottles with nitrogen or Alumilite's Bloxygen before storing. Keep unused materials tightly sealed in a dry environment. Store drums between 70° and 90° F. Should the components freeze, they can be heated to 100° F and remixed prior to use. Storage of the B component below 65° F will lead to reduced product performance.

#### **10. Moisture Contamination**

Relative humidity or moisture will react with the B side of Performance 80D and crystalize. You may notice crust, crystals, or chunks around the tip or cap or in the bottom of the bottle. If the B side shows signs of moisture contamination, you may need to strain the chunks or crystals with a paint filter or screen to remove them from the resin. Once strained, the B side can be used as normal. However, if the A side has been contaminated by moisture, it will not show any signs of contamination until you cast your piece in which you will notice an excess amount of bubbles or perhaps even a froth or foam on the top side of your casting. Once the polyol side (A side of Performance 80D) has been contaminated with moisture it is extremely difficult to restore. Vacuuming the resin for a long period of time may vaporize and pull the moisture out or a molecular sieve can be mixed in and allowed to react and settle to the bottom with some success.

The absolute best solution is to place caps and lids back onto the containers as soon as you are done measuring the material you need to pour and storing in an environmentally controlled space that contains low humidity.



**11. Work Area & Clean Up**

Mixed Alumilite resins 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. Resin 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 resin is extremely durable and chemical resistant and nearly impossible to remove. There are a couple solutions out in the market that claim to dissolve cured urethanes. If you are in need of such a material, please call us and we can refer you to some possible solutions.