

Replicator 400

Filled Casting Urethane

Product Description:

Alumilite's Replicator 400 provides users with an excellent multi-purpose filled urethane casting system that is extremely user friendly. The Replicator 400 is great for nests, fixtures, vacuum form tools, and thermo form tooling. The cured cast pieces can be easily machined and polished. The Replicator 400 is easy to use and has a mix ratio of 1:1 by weight. The fillers do settle over time and need to be agitated prior to measuring. Once mixed, poured, and cured, the Replicator 400 gives you an incredibly tough tooling resin that is great for a wide variety of industrial applications. The material features a 6 minute work time with a demold time that ranges from 2-3 hours depending on the mass of the material being cast. The Replicator 400 contains no solvents which make it a great choice when pouring against polystyrene. The material also features minimal shrink and is fire retardant.

Physical Properties:

Color	Green or White
Mixed Viscosity (cps)	1,800
Hardness, (ASTM D-2240) Shore D	80
Specific Gravity	1.65
Shrinkage (in/in)	.0007
Tensile Strength (ASTM D-638) (psi)	4,200
Elongation (in/in)	<2%
Heat Deflection (ASTM D-648) (Degrees F)	200
Compression (psi)	9,000

General Properties:

Color	"A" Side	Brown
	"B" Side	Green
Mix Ratio		1:1 by wt.
Shelf Life		1 year
Open Time at 75 Degrees F (100g mass)		6-8 minutes
Demold Time at 75 Degrees F (100g mass)		2-3 hours
Full Cure Schedule		72 hours

Packaging:	Quart Kit	2.5 lbs A/2.5 lbs B
	Gallon Kit	10 lbs A/10 lbs B
	5 Gallon Kit	50 lbs A/50 lbs of B

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. Material Preparation

The fillers in the Replicator line of Alumilite's resins will settle to the bottom of the container during shipping as well as during extended periods of it sitting on the shelf prior to use. The fillers need to be remixed and homogenous prior to measuring, mixing and pouring the resins. This can normally be accomplished by simply using a stiff stir stick in approximately 5-10 minutes. Other options would be to use a drill mixer or a paint shaker. If you have a local paint supply company, you could take the gallons to the store and ask them to put them on their shaker for 5-10 minutes which would bring the material back to its original state with the fillers completely blended in.

2. 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 Replicators is 1:1 by WEIGHT. It's important to note and understand mix ratio is by weight (with a scale) and should not be mixed strictly by volume using a graduated cup. 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.

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 thoroughly (keeping the stir stick in contact with the bottom of the cup - reduces air from being introduced into your resin) for approximately 30-60 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 cavity, if possible, can 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 pour. Similar to tilting your glass as you pour a beverage rather than letting it splash/cavitate off the bottom creating air bubbles.

5. Open Time

Open time of the Replicators run 6-8 minutes and are based on 100 gram samples at 70°F. Larger amounts of mixed resin will shorten your work time. 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 Replicators by 2-5 minutes. When cooling your resin, we highly recommend preheating your mold to ensure a proper cure especially when pouring small or thin parts.

6. Color – Dyes & Painting

Alumilite Replicator 400 come standard in green but is also available in white. Alumilite's line of Replicators are typically not painted or dyed but can be without issue using Alumilite's Coloring dyes or any other 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. Alumilite also offers Fluorescent colored dyes to achieve brighter colors in your casting. Use a maximum of 5% dye into the B side of the Replicators to achieve bright and solid colors. If you wish to preload the dye into the Replicators to achieve consistent colors in every cast, add the dye to the B side and mix thoroughly. 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

Mold release is also used 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). For optimum release, 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 any of Alumilite's 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 Replicator series is 1 year in an unopened container but the longer the material sets, the more the filler will want to hard pack in the bottom of the containers and the more effort it will take to bring it back in suspension prior to use.

9. Moisture Contamination

Relative humidity or moisture will react with the A side of the Replicators. You may notice crust, crystals, chunks, or even a solid skin over the top of the resin in the can. If the A 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 A side can be used as normal. However, if the B 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 (B side of Replicators) 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.

10. 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.