



AeroMarine Products, Inc.
8659 Production Avenue
San Diego, CA 92121
(877) 342-8860

www.aeromarineproducts.com
info@aeromarineproducts.com

AeroMarine Crystal Clear Casting Resin

Rigid Urethane Casting Compound

PRODUCT OVERVIEW

Crystal Clear is water clear and made specifically for applications that require absolute clarity and UV resistance. Low viscosity ensures easy mixing and pouring. Crystal Clear cures at room temperature* with negligible shrinkage. Cured castings are UV resistant and are not brittle. Vibrant colors and color effects are achieved by adding pigment dispersions. Applications include encapsulation, making prototype models, lenses, sculpture reproductions, decorative cast pieces, jewelry, prototype models, special effects and props.

CAUTION: NOT FOR HOME USE. THIS PRODUCT IS FOR INDUSTRIAL USE ONLY. Proper ventilation is required to minimize the risk of inhalation and dermal sensitization.

TECHNICAL OVERVIEW

Mixing Ratio: 1:1 by volume
Shore D Hardness: 80D*
Pot Life*: 20 minutes
Full Cure*: 16 hours
Casting Thickness Min./Max*: 1/2" - 3" (1.27cm - 7.62cm)

Properties	Viscosity	G/CC	Cu. In./Lb.	Tensile Strength	Compressive Modulus	Shrinkage	Mix Ratio
Part A	300 cps	1.04	-	-	-	-	100 pbw
Part B	800 cps	1.03	-	-	-	-	90 pbw
Mixed	600 cps	1.036	26.7	2,500 psi	40,000 psi	-	-

Elongation/Break: 10%
Tensile Modulus: 110,000 psi
Flex. Strength: 11,000 psi
Dielectric Strength - 260 mls. thick vpm: 260
Volume Resistivity @ (ohms/cm): 1.4 X 10¹⁵
Dielectric Constant @ 25C at 1 Khz: 3.34
Dissipation Factor @ 25C at 1Khz: 0.01

*Cure time depends on casting thickness and configuration.

AeroMarine Products (seller) make no warranties, express or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. User is responsible for determining whether the seller's product is fit for a particular purpose and suitable for a user's particular method of application. Many factors can affect the use and performance of seller's product. Given the variety of factors that can affect the use and performance of seller's product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the seller's product to determine whether it is fit for a particular purpose and is suitable for the user's method of application.

If the seller's product is proven to be defective, THE EXCLUSIVE REMEDY, AT SELLER'S OPTION, SHALL BE TO REFUND THE PURCHASE PRICE OF OR TO REPAIR OR REPLACE THE DEFECTIVE PRODUCT. Seller shall not otherwise be liable for loss or damages, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including, but not limited to, contract, negligence, warranty, or strict liability.



AeroMarine Products, Inc.
8659 Production Avenue
San Diego, CA 92121
(877) 342-8860

www.aeromarineproducts.com
info@aeromarineproducts.com

Crystal Clear Casting Resin Best Practices

Ventilation - good ventilation is essential. Make sure mixing tools & containers are absolutely dry.

Selecting A Mold Rubber - Crystal Clear Casting Resin should be cast into AeroMarine Silicone mold rubbers. If you are unsure about surface compatibility, a trial casting should be made.

Measuring - Materials should be stored and used in a warm environment (72° F / 23° C). The proper mixing ratio is 1:1 by volume. **IMPORTANT:** Shelf life of product is drastically reduced after opening. Immediately replace container lids after dispensing. Use remaining product as soon as possible.

Mixing & Pouring - Mix thoroughly for 2 -3 minutes making sure that you scrape the sides and bottom of your container several times. If coloring or filling Crystal Clear product, add filler or pigment dispersion to Part B and mix thoroughly before adding Part A. If vacuum degassing prior to pouring, subject mixture to 29 h.i.g. mercury in a suitable vacuum chamber for 2 -3 minutes or until mixture rises, breaks and falls. Allow for 3 to 4 times volume expansion in mixing container.

Pouring - If casting Crystal Clear into a rubber mold, pour mixture in a single spot at the lowest point of the mold. If encapsulating an object, do not pour the mixture directly over the object. Let the mixture seek its level. A uniform flow will help minimize entrapped air.

For Best Results - Best results are obtained using a **pressure casting technique**. After pouring the mixed compound, the entire casting assembly (mold, dam structure, etc.) is placed in a pressure chamber and subjected to 60 PSI (4.2 kg/cm²) air pressure for at least two hours. **Because no two applications are quite the same, a small test application to determine suitability for your project is recommended if performance of this material is in question.**

Casting Storage, Thickness and Curing

Casting Storage: Materials should be stored and used in a warm environment (72° F / 33° C). Castings will reach ultimate physical properties at room temperature in 5 - 7 days. Castings removed from mold before recommended cure may exhibit a tacky surface that can be eliminated by exposing casting to 150 F / 65 C for 6 hours.

Casting Thickness & Cure Time: The cure time and ultimate shrinkage of all Crystal Clear products will vary depending on mass concentration, thickness of the casting, mold configuration, etc. For example, a 200 gram mass of Crystal Clear will cure faster if left to cure in a conical vessel (cup) versus a casting dispersed as a thin sheet measuring 3 centimeters square by 1 mm thick. This is due to the heat generated by the concentration of material in the cup versus heat that is dissipated from the sheet casting.

**Crystal Clear casting resin should be poured in thickness between ½" to 3" for optimal cure. Pouring Crystal Clear casting resin outside of this thickness range may result in an uncured casting.

Safety First

Be careful. Crystal Clear Part A is a modified aliphatic diisocyanate. Vapors, which can be significant if heated or sprayed, cause lung damage and sensitization. Use only with adequate ventilation. Contact with skin and eyes may cause severe irritation. Flush eyes with water for 15 minutes and seek immediate medical attention. Remove from skin with waterless hand cleaner followed by soap and water. Part B is irritating to the eyes and skin. Avoid prolonged or repeated skin contact. Remove from skin with soap and water. If contaminated, flush eyes with water for 15 minutes and seek immediate medical attention. Use only with adequate ventilation.



AeroMarine Products, Inc.
8659 Production Avenue
San Diego, CA 92121
(877) 342-8860

www.aeromarineproducts.com
info@aeromarineproducts.com

AeroMarine Products best practices when using urethane casting resin

Never mix less than about 3 ounces of product. When manufacturers design and test their resins they normally write the specifications for 100 gram batches, which is about 3 ounces. There are two bad things that can happen when mixing a smaller batch. Because the sample is small, it is much more difficult to get the mix ratio correct. Also, these mixtures are exothermic, meaning that they generate heat in order to cure. A tiny batch does not generate enough heat to cure the resin properly.

Avoid mixing with drill motors. Mixing with an electric drill can cause a few problems. Frequently they don't get into every corner of the mixing container. Also, if they spin too fast they can generate friction in the resin causing it to exotherm out of control resulting in premature curing. Powered mixing also can generate a lot of air bubbles.

If you use a mold release, let it dry for a while. A spray can of mold release contains a lot of solvents and propellants- these compounds need to evaporate off the surface so they don't cause bubbles. Check the dry time of the mold release from the directions on the label.

Don't vary the mix ratio. Unlike some polyester resins, altering the mix ratio to vary the cure cycle doesn't work with urethanes.

Consider mixing everything twice- especially if you are a beginner. Mix the two components together, then transfer the mixture to another container and mix them again. The theory is that the liquids clinging to the sides and bottom of the containers don't get mixed well. By transferring the mixture to another container, you are assured that everything is well mixed. Any unmixed material stays in the first container.

When using fast, water-thin casting resins you may only have time to mix it once, but since it is water thin it will probably mix fine in one mix.

Mix in plastic containers. Paper cups contain moisture which may adversely affect the polyurethane. Avoid waxed paper cups because the wax may melt and contaminate the resin.

How to avoid air bubbles- Air bubbles in urethanes are almost always caused by moisture. Do everything possible to avoid moisture getting into the mix. This includes replacing the lids onto the containers promptly after use as well as avoiding using the product during rainy days or times of high humidity. Avoid pouring against an unsealed water based product such as plaster or hydrocal. Consider sealing plaster or hydrocal with something such as Krylon Clear Acrylic. We stock an aerosol nitrogen blanket called "Extend-It" that can increase the shelf life of the urethane during storage.

Avoid mixing a large batch- At least until you are familiar with the product. The larger the batch, the more exotherm or heat is generated in the cure cycle. If you are casting a large part, consider mixing small batches to make the process more manageable. Thickness of the pour also affects the exotherm and cure speed. A very thin pour will take much longer to cure than a thick pour.

Shake or stir well before use- The liquid components may settle in the containers during storage. Therefore it is a good idea to shake or stir the components separately before mixing. Let it sit a few minutes to let any bubbles rise to the surface after shaking the container.

Test- Always make a test determine the feasibility of your process. There are many unforeseen factors that can affect the outcome of your project. Running a controlled test may be inconvenient, but it can make the "Learning Curve" of processing these products much easier.

Important: *The information contained in this bulletin is considered accurate. However, no warranty is expressed or implied regarding the accuracy of data, the results to be obtained from the use thereof, or that any such use will not infringe upon a patent. User shall determine the suitability of the product for the intended application and assume all risk and liability whatsoever.*