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AeroMarine Products Epoxy #300/11 Dielectric Potting Compound

AeroMarine Products Epoxy #300/11 is a high performance epoxy used primarily for potting and encapsulating electronic circuits. It is available either in black or clear amber. The black version is extremely popular for hiding proprietary circuitry. It is also used as a coating to provide a dielectric barrier.

Features:

- Long work life
- Room temperature cure
- Low viscosity
- Simple, noncritical 1-1 mix ratio

****IF USING THE BLACK VERSION, YOU MUST TURN THE CONTAINER UPSIDE DOWN EVERY 7 DAYS TO MAINTAIN COLOR DISPERSION. SHAKE THE BLACK RESIN VIGOROUSLY FOR 2 MINUTES BEFORE USING!****

Specifications:

Viscosity:	3000cps maximum
Color:	Clear Amber or Black
Work life:	45-60 minutes@70F
Cure time:	24 hours@70F
Thermal Conductivity:	4.2 BTU/hr/ft ² /°F/in.
Shear strength:	2500psi
Tensile Strength	8000 psi
Flexural strength:	12,800psi
Dielectric Constant	3.5 @ 1 KHz @ 23°C (73°F)
Volume Resistivity	4.1 x 10 ¹⁴ ohm-cm
Modulus of elasticity:	5.7 x 10 ⁶
Dielectric Strength:	450 volts per mil (.001")

Directions for use:

Mix the resin and hardener in equal parts by weight or volume. AeroMarine Products Epoxy #300/11 begins to gel in about 45 minutes, depending on the size of the batch and the temperature. Apply to clean dry surfaces. Cleaning with acetone, alcohol, or MEK is recommended. Sanding or abrading surfaces generally increases bond strength.

For industrial or professional use only

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Best practices when using epoxy 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 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. 3/8" is about the maximum thickness to pour most epoxies.

Don't vary the mix ratio- Old style polyester resins were catalyzed with a chemical called MEKp. You could vary the mix ratio to get different reaction speeds. Modern epoxies, polyurethanes, and silicones are different. They don't use a true "catalyst", but have a different kind of reaction method. Varying the mix ratio usually results in a mess.

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. Do not try to mix expanding foam twice because it begins to set in less than a minute.

Mix in plastic containers. Paper cups contain moisture which may adversely affect the resin, especially polyurethanes. Avoid waxed paper cups.

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.



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Storage- Epoxy hardeners usually last forever. Epoxy resins; however, tend to freeze even at fairly high temperatures, sometimes into the fifty degree Fahrenheit range. If allowed to freeze, “epoxy ice” can form in the container. It usually looks like swirls of white stuff suspended in the resin. It can be reconstituted by warming at 120F for a couple of hours- or you can use the “non-ice” part of the epoxy.

Spraying- Epoxies don’t spray well- they tend to run off vertical surfaces when sprayed.

Clean-up- Aerosol carburetor cleaner to clean up spills and messes. Otherwise just about any solvent will work, including acetone, MEK, toluene, xylene, and lacquer thinner. Avoid regular paint thinner (mineral spirits). To clean hands use “Fast Orange” hand cleaner available in automotive supply stores.

Thinning- Thinning is not recommended for most applications. There are very few exceptions. The most common acceptable use of a thinner is when using epoxy to penetrate wood. In this case about 10% is a good amount of thinner to use. Keep in mind that thinners are flammable, so spread the epoxy promptly after thinning to keep the exothermic heat from building up.

Test- Always make a test to 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.