
CAUTION WITH EPOXY CASTINGS

GreenCast 160, GreenPoxy 33, SR1670, SR1280 casting epoxies

Aerontec supply a number of epoxy systems that are suitable for casting. These epoxy resins have hardeners formulated to cure **extremely slowly** in comparison to most other epoxy systems. The slower curing reduces the exothermic heat generated during the cure reaction, allowing thicker casting and/or larger volumes to be cast. These slow curing systems take **much longer to cure** than you may expect (48-72 hours). This also leads to the separation of heavy fillers and leads to different colours diffusing into each other. Once hard the casting will still not be at full strength until post cured or after an appreciable time curing at ambient temperature.

Exotherm

The chemical reaction between curing epoxy resin and hardener generates a significant amount of heat. When this heat cannot escape, it increases the epoxy temperature, causing the epoxy to cure faster, and generate even more heat. The higher temperature increases differential shrinkage in the casting which may lead to induced stress and cracking. A potentially massive build-up of heat can cause the epoxy to **crack and discolour**.

Uncontrolled exotherm may cause the epoxy to foam, smoke, give off dangerous vapours, crack and generate enough heat to melt its container or cause nearby items to catch fire.



Maximum casting thickness

The maximum thickness an epoxy can be cast is a function of multiple variables. Epoxy pot life, ambient temperature, volume of epoxy, depth of the epoxy and the heat sink capability of the surroundings are major variables determining the thickness at which the epoxy will become excessively hot. These multiple, often uncontrolled variables influencing the reaction, means there is no definitive answer to how thick the epoxy can be cast. Only YOU can determine how thick you can cast by controlled experimentation in your own environment. Do not accept any claims of maximum casting thickness without appropriate testing by yourself.

Minimising risk

- Take your time and cast in multiple layers! Allow the previous layer to drop in temperature before pouring an additional layer. Layering also reduces shrinkage.
- Work at cooler temperatures, to slow the cure and reduce the exothermic reaction.
- Use heat sinks, which are objects that can absorb heat. Metal surfaces can conduct away much more heat than chipboard, plywood or silicone.

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