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**Technical Guide**

# Focus On: **Internal Mold Release (IMRs)**

It is important that the user weighs the amount of internal mold release (IMR) based on neat resin weight. As a point of departure for first evaluations, always use 0.5% (5 parts /1000) IMR by resin weight. NOTE: The specific gravities of IMR and resin are frequently different, so addition by volume is not recommended.

**Testing the Effect of IMR on Resin Cure Time – The Cup Test**
Begin with an equal quantity of resin for all tests.

A. First Cup-CONTROL: Measure 200 grams of neat resin and appropriate catalyst. Determine gel-time and cure time.

B. Second Cup: Measure 200 grams of neat resin and 1 gram of IMR. Stir thoroughly, add catalyst, and determine gel and cure time. If the results are quite similar to CONTROL, proceed to step C.

C. Third Cup: Measure 200 grams of neat resin, 1 gram of IMR. Stir thoroughly, add catalyst, color, and filler. Determine and compare gel and cure times to CONTROL.

D. In highly filled resin systems, the IMR can be absorbed by the filler, so a slightly higher level of IMR may be necessary. Up to 1% IMR by weight of the resin can usually be used without a severe effect on gel or cure time. If necessary, perform another cup test as in Step C, but this time add 2 grams of IMR.

**REMEMBER:**
If the IMR adversely affects the cure, evaluate a different material.

Thorough dispersion of the IMR is a key factor in effective performance. Always add the IMR before the catalyst.

In epoxy resin systems, mix the IMR into the resin or the hardener - whichever component has the lower viscosity. Base the level of the IMR on the weight of the entire system. Epoxy systems may require up to 1.5% IMR.

IMRs are effective because they migrate to the mold surface with the exotherm of the resin. The minimum temperature required for effectiveness is 140°F (60°C). For systems with low temperature cures or exotherms, molds can be heated, or heat lamps can be employed.

Fiberglass molds should always be prepared with an external mold release to seal surface porosity and to maintain a good gloss and surface condition of the mold. Periodically applying an external release will help maintain molds in good condition.