18027 Bishop Avenue
Carson, CA 90746-4019
Phone: (800) 374-3872 Fax: (310) 202-7247
resinformulators.com

ResinFormulators
INNOVATIVE MATTERS

TECHNICAL DATA SHEET

CRYSTALLIZATION OF LIQUID EPOXY RESINS

Description

If you have used epoxy resins for any length of time you have probably encountered the phenomenon of crystallization. This is a random phenomenon and may take the appearance of a haze or slushy appearance for clear resins to a waxy solid for heavily filled resins. This is different from the cured state (hard, glassy) and is in no way harmful to the epoxy resin. Since this is a random phenomenon, it will not necessarily affect the entire lot or all of the cans from a lot. You may have a pallet with two dozen cans on it and only one or two will be affected.

Most liquid epoxies are super cooled liquids, that is to say they remain liquid below their normal freezing points. Crystallization in super cooled fluids may be initiated by a number of events. The most common is a sudden drop in temperature or prolonged exposure to cold temperatures. But it may also be initiated by physical shock, such dropping a can, repetitive remixing without heating or the addition of fillers. The addition of fillers will tend to increase the risk of crystallizing and the addition of certain diluents will tend to reduce the risk, but the risk is never zero. Once crystallization is initiated it will tend to proceed to completion unless something interrupts the process; slowly at ambient temperatures and faster if it is cold.

Restoring a crystallized resin is safe and simple. Loosen the lid and warm the resin to 140-150°F. Oven warming is best but pail or drum heaters may be used with care. Once the contents are at temperature, remove the lid and mix thoroughly (power mixers may be required for filled resins). After cooling the resin will be ready to use and will remain in the restored state until another event initiates crystallization. Should the resin re-crystallize, the above procedure may be repeated as often as necessary provided that care has been taken to ensure that the resin has not been contaminated with foreign materials. Any epoxy resin may be restored this way, but one component systems may require special instructions.

Doug Soden
Senior Research Chemist
Resin Formulators

05-21-2019