

# STAR Technology

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## Crystallization

### What is crystallization in epoxy resin?

Crystallization by definition refers to the phase change from a liquid to a solid resin. It is similar to water turning from liquid into ice, and vice versa. Like the freeze/thaw cycles of water crystallization of epoxy resin is completely reversible. As water remains unchanged from repeated cycles, so do the original properties of epoxy resin.

### Symptoms of crystallization

At the onset of crystallization, the clear resin begins to look foggy, cloudy, hazy or turbid. Since the crystals are higher in density they will tend to sink to the bottom of the container.

### Why crystallization occurs

Liquid epoxy resins are super-cooled liquids that are supposed to be solid at room temperature with a melt point in the 40°-50° C range. Liquid epoxy resins super-cool due to the slow process of crystallization below the melting temperature. Temperature cycles of as little as 20-30°C are the most common cause of crystallization. Resin purity, viscosity, added fillers and temperature extremes can also lead to crystallization problems.

### Solutions

Increasing the temperature of epoxy resins above 50°C for a few hours will re-melt the resin. Examine resin for clarity before cooling to room temperature (23°C).

### Conclusions

Crystallization of epoxy resin is a common occurrence, but by minimizing temperature fluctuations during storage the tendency to crystallize will be reduced. If crystallization occurs a few hours at a slightly elevated temperature will return the resin to its original clarity and have no effect on the ultimate properties of the epoxy system.

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