

Filled Addition-Curing Silicone Encapsulant Handling/Application Notes

Description

LORD filled addition-curing silicone encapsulants will not depolymerize when heated in confined spaces. Addition-cured silicones, unlike condensation-cured silicones, do not form byproducts upon curing. This characteristic is why addition-cured silicones exhibit low shrinkage and stress on components as it cures.

Addition-cured silicones have the potential for catalyst inhibition (refer to Cure Inhibition section). Catalyst poisons should be carefully avoided during application.

Handling Recommendations

The inherently low viscosity of most LORD silicone encapsulants will lead to component stratification and filler settling during prolonged storage. It is important to thoroughly re-suspend the ingredients of each individual container prior to combination. This can be accomplished through manual or mechanical means.

Caution: Do not exceed 70°C during the mixing process.

Typical mechanical agitation would include:

- Single shaft dispersion utilizing a 4-inch dispersion blade. Scrape bottom of container with a clean, dry spatula until clumps of agglomerated filler are loosened. Blend thoroughly at 350-500 rpm until a homogeneous mixture is achieved.
- Turbulent agitation employing a common industrial paint shaker. Typically, six minutes on a standard 100 V industrial paint shaker with 3-axis mixing action is sufficient for thorough resuspension.

Deairing and Evacuation

Unless a closed-chamber mechanical mixer is used, air may be introduced into the encapsulant system either during mixing or when catalyzing the mixture. Electrical properties of the silicone encapsulant are best when air bubbles and voids are minimized. Therefore, in extremely high voltage or other critical applications, vacuuming may be appropriate.

Should vacuuming prove to be necessary for the application, the mixed silicone encapsulant should be deaired in a container large enough to allow for expansion from two to five times the original volume.

A vacuum of 2 mm Hg for two to five minutes is generally adequate for small (one quart or less) batches. Larger batches may require longer vacuuming, lower pressures (<2 mm Hg), or introduction of the silicone encapsulant into the chamber in thin streams. Once the silicone encapsulant has been adequately deaired, the vacuum should be slowly released.

Cure Inhibition

Avoid applying addition-cure silicone encapsulants to surfaces that contain cure-inhibiting ingredients. If bonding surface is in question, apply a test patch of the silicone encapsulant to the surface and allow it to set for the normal cure time. Inhibition is indicated by uncured residue on the test surface.

The following is a list of chemical compounds that may inhibit or poison an addition-cured silicone:

Compounds containing Sulfur

- Sulfides
- Thio compounds

Organotin Compounds

- Tin alkoxides
- Tin carboxylates
- Tin catalysts

Compounds containing Nitrogen

- Amines
- Amides
- Nitriles
- Cyanates
- Oximo, Nitroso, Hydrazo, and Azo compounds
- Chelates
 - EDTA
 - NTA

Compounds containing Phosphorous

- Phosphines
- Phosphites

Compounds containing Unsaturated Bonds

- Alkenes and Olefins
- Alkynes
- Acrylates

These compounds can commonly be found in the following materials:

- Latex, vinyl, or neoprene gloves
- Mold release, including those in injection molding plastics
- Natural rubber, rubber bands
- EPDM
- Rubber o-rings, including some used in meter/mix/dispense (MMD) equipment*
- RTV silicones containing organo-tin catalysts
- Tin-cured urethanes or amine-accelerated urethanes
- PVC tapes and masking tapes
- Modelling clay containing sulfur
- Polyesters
- Melamine
- Plastics containing residual plasticizers

** Ask the MMD manufacturer to perform a compatibility test on non-metallic components from their standard re-work kit for both the pumps and the metering unit. Test for cure inhibition by dispensing material onto the components that the product may come into contact with.*

Cleanup

Disposable containers and utensils are recommended when working with silicones. However, when disposable materials are impractical, uncured silicone can be removed by cleaning equipment with solvent. Observe appropriate precautions when using flammable solvents. Solvent-cleaned utensils should be thoroughly dried before reuse; any remaining solvent can contaminate the next application.

Shelf Life/Storage

Refer to applicable technical data sheet for shelf life of each component. A small amount of settling may occur with filled silicone encapsulants; material must be redispersed prior to use.

LORD silicone encapsulants may evolve minute quantities of hydrogen gas. Do not repackage or store material in unvented containers. Adequately ventilate work area to prevent the accumulation of gas.

Cautionary Information

Before using this or any LORD product, refer to the Safety Data Sheet (SDS) and label for safe use and handling instructions.

For industrial/commercial use only. Must be applied by trained personnel only. Not to be used in household applications. Not for consumer use.

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LORD Corporation
World Headquarters

111 Lord Drive
Cary, NC 27511-7923
USA

Customer Support Center (in United States & Canada)

+1 877 ASK LORD (275 5673)

www.lord.com

For a listing of our worldwide locations, visit LORD.com.

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