Acrylic Conformal Coatings

Conformal coatings are applied to printed circuit boards (PCBs) to protect them from environmental stress such as salt, corrosion, humidity, and moisture, mitigate tin whiskers, and provide a barrier to electrically insulate components. A wide variety of conformal coating types are available, each with their own strengths and weaknesses.

Acrylic conformal coatings are liquid conformal coatings that often require use of solvents. Acrylics are easy to rework but have poor chemical resistance. They excel on printed circuit boards for moisture protection. However, in applications with possible exposure to solvents, acrylic conformal coatings do not provide the best protection.

Strengths



Ease of Rework



Simple Drying Process





High Fluorescence



Ease of Viscosity Adjustment



Weaknesses of Cure Type

Solvent Evaporation

- ▲ High VOC potential
- ▲ Difficult to maintain viscosity
- ▲ Requires close monitoring of solvent concentration, hence creates a 2-part scenario
- ▲ Flammability
- ▲ High probability of reversion under temperature and humidity stress conditions

Heat Cure

- Cure is dependent on thickness
- Component mass affects time and temperature of cure process
- ▲ Susceptible to cure inhibition
- ▲ Shrinkage (3% 10%), potential for damaging fragile (e.g., glass) components
- ▲ Should be used with caution for low temperature components

UV Cure

- ▲ One-component coatings require accurate application material to avoid shadowed areas
- Two-part systems require meter mix equipment
- ▲ Some coatings are more difficult to rework
- UV intensity and wavelength effects cure
- Some secondary cure mechanisms require heat exposure



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