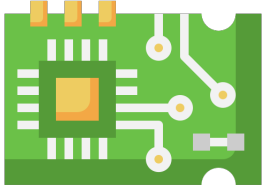


# Polyurethane Conformal Coatings

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.

Polyurethane conformal coatings come as single-component, two-component, UV-curable, and water-borne systems. Although polyurethanes provide good chemical and moisture resistance, they are often hard to rework and have low tolerance in humid environments.

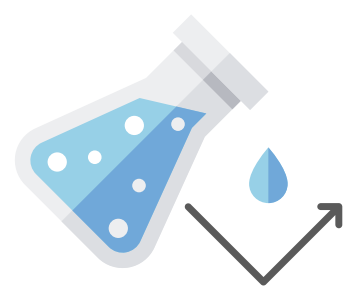
## Strengths



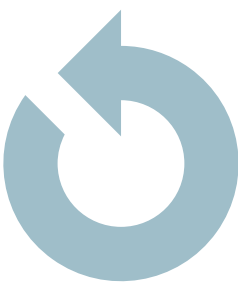
Good Dielectric Properties



Good Moisture Resistance



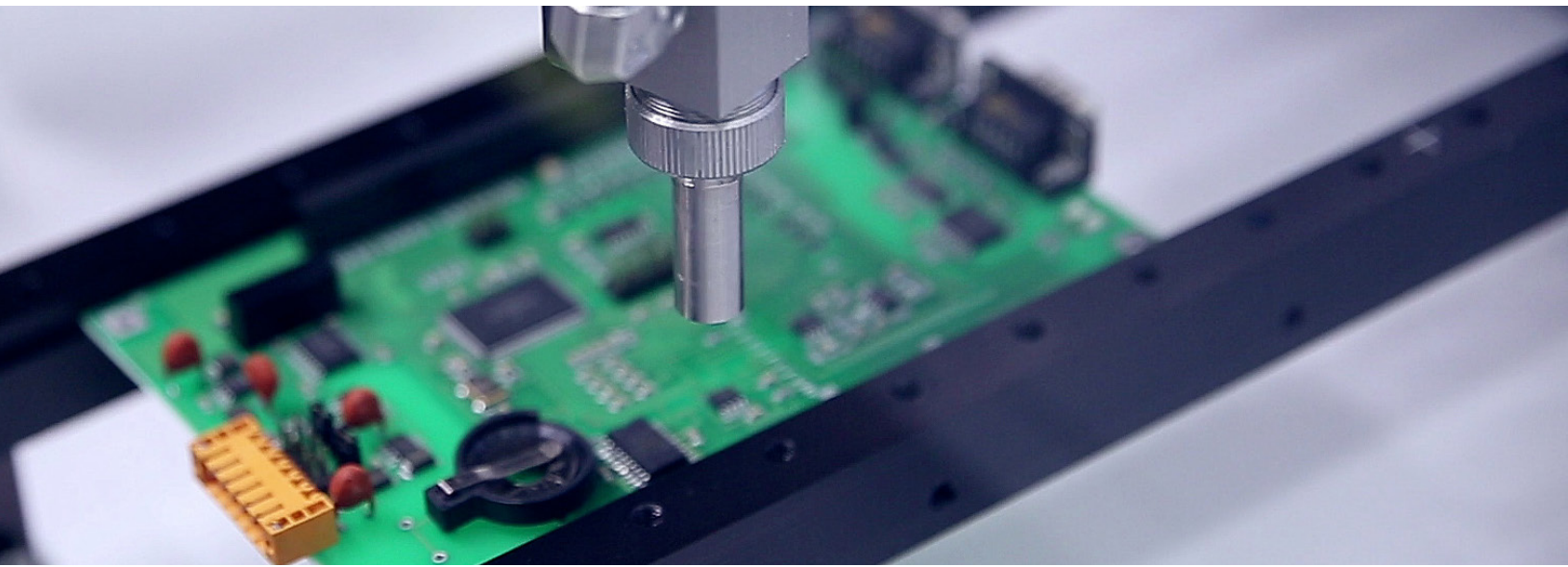
Solvent Resistance



Less Reversion Potential



Abrasion Resistance



## Weaknesses of Cure Type

### Solvent Evaporation

- ▲ Moisture affects cure rate and desired properties
- ▲ Long complete cure time (up to 30 days)
- ▲ Health and safety concerns
- ▲ Potential for high stress during temperature cycling conditions
- ▲ 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
- ▲ High VOC potential
- ▲ Reacts violently with presence of water
- ▲ 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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