

Technical Bulletin

Common failure mechanisms in conformal coating: De-wetting

In conformal coating, there are several mechanisms that cause failure of printed circuit boards (PCBs). In a series of technical bulletins SCH will examine the common failure mechanisms in conformal coating including capillary flow, delamination, cracking, loss of adhesion, de-wetting, corrosion, orange peel, pinholes, bubbles and foam.

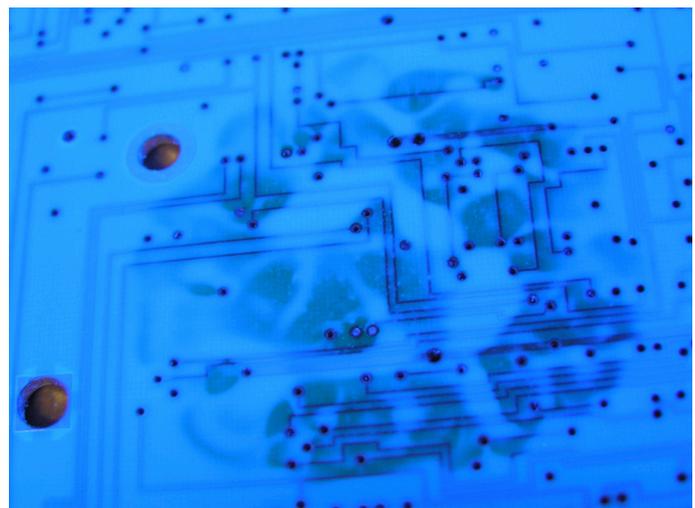
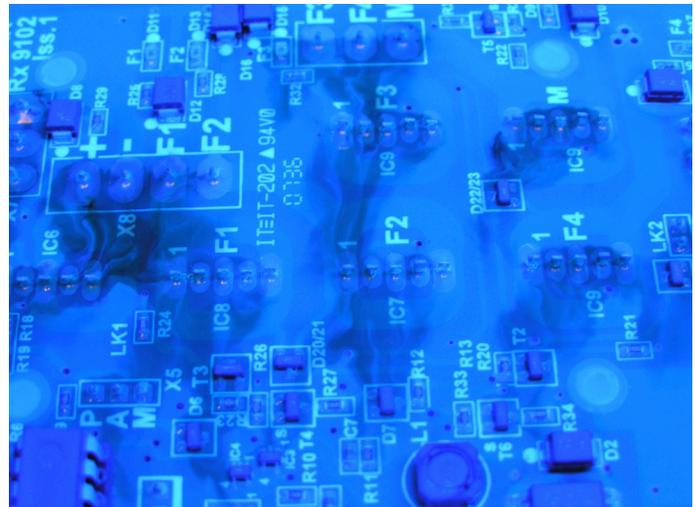
Definition

De-wetting is the tendency of the coating material to refuse to wet the surface that it has been applied to evenly.

Causes of de-wetting in Conformal Coating

Factors that influence de-wetting usually involve non-ionic contamination such as:

1. Residues from board manufacture including silicone surfactants from solder resist & HASL rinse contamination
2. Component residues like mould release agents
3. Silicone oil from adhesives in production.
4. Soldering processes
5. Cleaning bath contamination where rinsing has failed
6. Operator handling adding contaminants



Examples of conformal coating de-wetting

Examples of De-wetting

Examples are shown in the images throughout the bulletin where the conformal coating has de-wetted, potentially providing inadequate coating protection to the board surface.

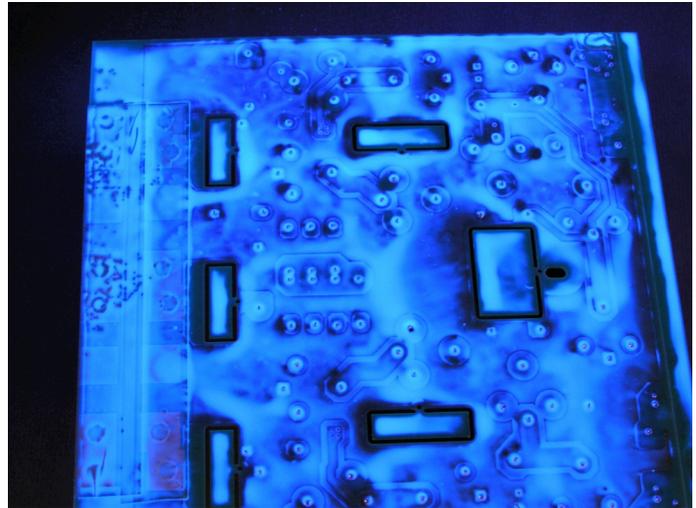
How to stop De-wetting in Conformal Coating

It is possible to minimise conformal coating de-wetting effects by three processes:

1. Minimise the contaminants that are on the component parts before assembly. This includes laminate & component cleanliness control before assembly and selection of low residue process materials including fluxes and pastes.
2. Clean the boards before coating to ensure cleanliness.
3. After coating, locally strip the de-wetted area and re-apply the coating to the correct specification.

Available Bulletins

Common Conformal Coating Failure Mechanisms covering delamination, loss of adhesion, de-wetting, corrosion, orange peel, pin holes, bubbles and foam.



Examples of Conformal Coating De-wetting

SCH Technologies offer

- Conformal coating Subcontract Services
- Conformal Coating Application Equipment
- Conformal Coatings
- Conformal Coating Training courses
- Conformal Coating Consultation & troubleshooting

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