Technical Bulletin

Common failure mechanisms in conformal coating: Delamination

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

Delamination in conformal coating is where the coating lifts from the surface of the PCB, leaving the area below exposed.

Causes of Delamination in Conformal Coating

Factors that influence delamination include:

1. Cleanliness of the surface for adhesion
2. Compatibility between the coating and the surface adhered to due to surface energies mismatch
3. Permeability to moisture
4. Degree of coating cure
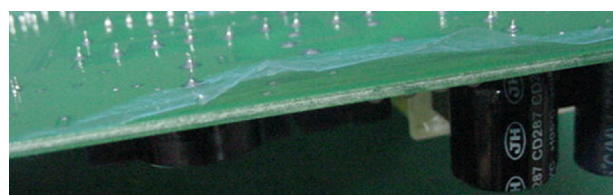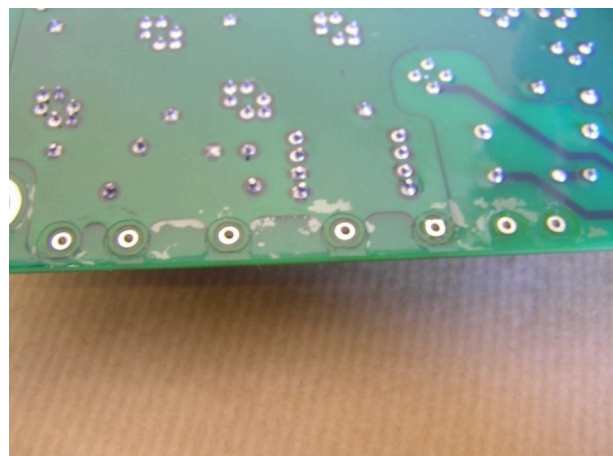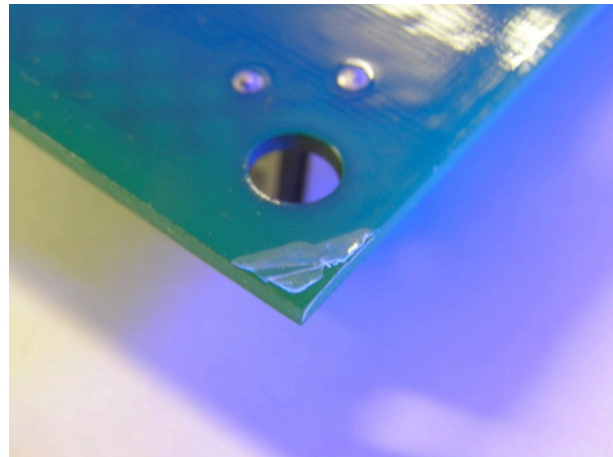
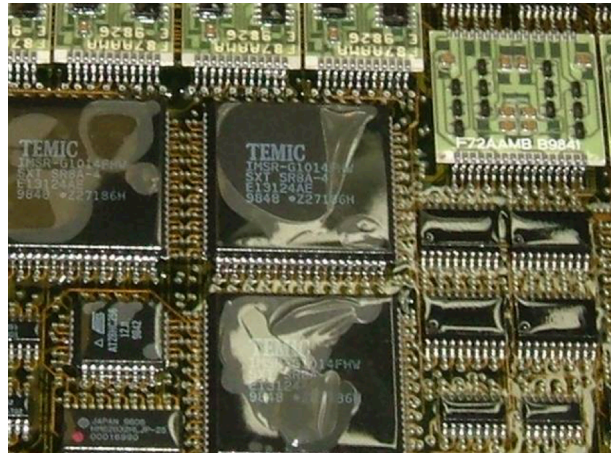Examples of Conformal Coating Delamination

Examples of Delamination Effects

Examples are shown in the images throughout the bulletin where the conformal coating has lifted away from the surfaces, leaving torn and/or non adhered coating, producing a poor finish.

How to stop Delamination in Conformal Coating

It is possible to minimise delamination effects by using techniques such as

- Reducing the coating thickness

- Reduce force drying (thermal profile)

- Remove contamination such as mould release agents

- Apply a primer to treat the board surface

- Change the coating and / or surface finish so the surface energies are more favourable.

Examples of Conformal Coating Delamination

Available Bulletins

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

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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