

Technical Bulletin

Common failure mechanisms in conformal coating: Corrosion

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.

Conformal Coating Failure Mechanism: Corrosion

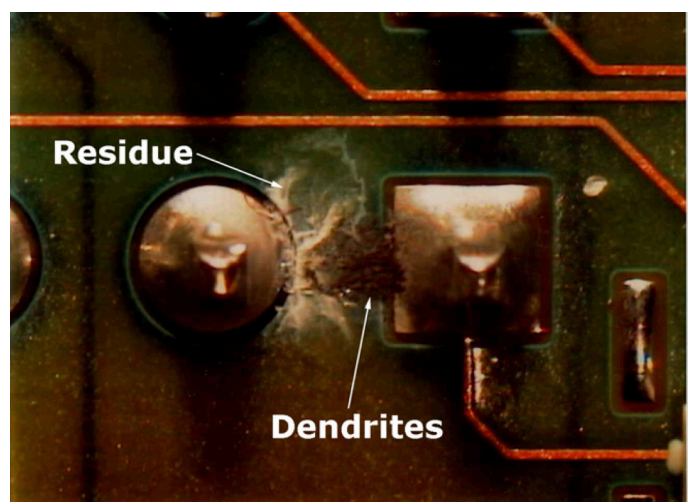
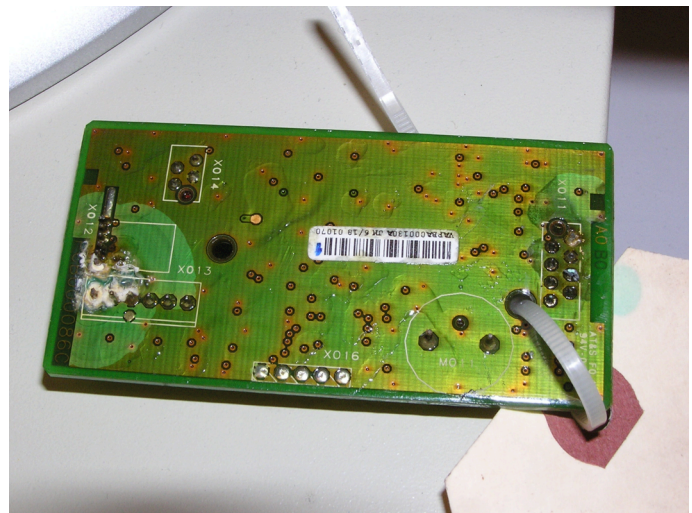
Definition

The chemical or electrochemical reaction between a material, usually a metal, and its environment that produces a deterioration of the material and its properties.

Causes of corrosion in Conformal Coating

Factors that influence corrosion and, or electrochemical migration, usually revolve around ionic contamination the cleanliness of a PCB. These contaminants come from electronic processes such as:

- Board fabrication.
- Components.
- Assembly equipment.
- Soldering.
- Operator handling.
- Incorrect cleaning



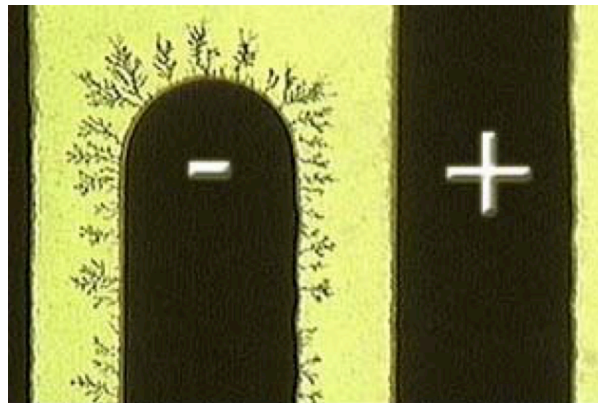
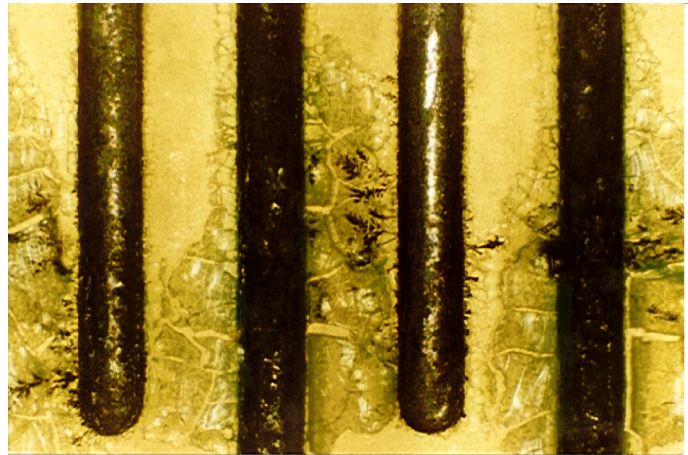
Examples of Conformal Coating corrosion

How to stop Corrosion in Conformal Coating

It is possible to minimise the majority of corrosion effects by using an effective cleaning process.

However, if you are using a no clean process then you may want to consider:

- Full inspection of Incoming boards and components for solderability and cleanliness.
- All operators wear gloves.
- "low residue" no clean flux/paste utilised.
- The soldering window fine tuned and the system controlled.
- Low residue wire/flux used for rework.
- Process controls are put in place the process is validated.
- Ultimately, it is possible to control corrosion issues but process control is crucial.



Dendrites formation around cathode

Examples of corrosion

Available Bulletins

Common Conformal Coating Failure Mechanisms covering delamination, loss of adhesion, dewetting, corrosion, orange peel, pin holes, 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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