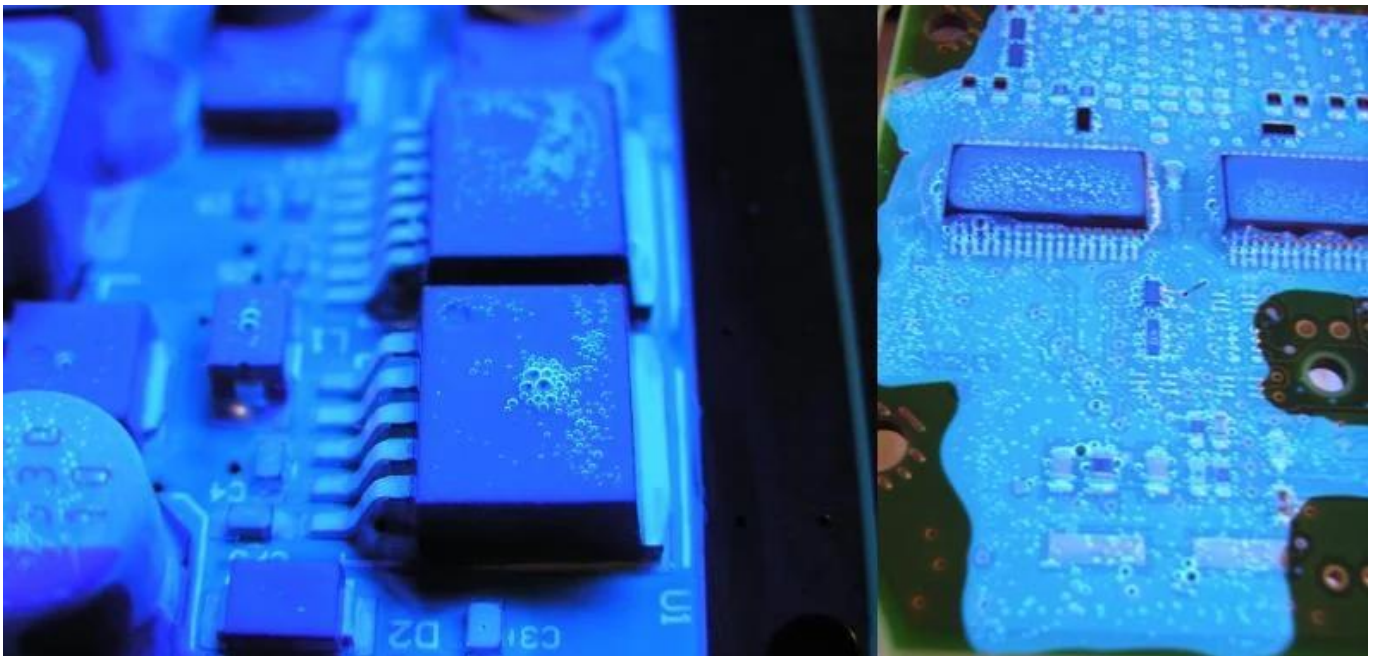


Conformal Coating Defect

Pinholes, Bubbles & Foam

Summary

Common issues like pinholes, bubbles and foam regularly occur in conformal coating application and can compromise PCB protection. Understanding how these defects form—and how to prevent them—is key to improving reliability and reducing costly rework.



Definitions

What are Pinholes, Bubbles & Foam in Conformal Coating?

- Bubbles — trapped pockets of air under the coating film.
- Pinholes — burst bubbles that break through to the PCB surface.
- Foam — extensive bubbling across the coated area.

These defects can reduce insulation resistance, allow moisture, water and other chemicals to penetrate more easily through the coating, and can accelerate corrosion or failure of the PCB.

Root Causes

- Skinning of the wet film traps solvent beneath, which later bursts out.
- Excessive thickness or high viscosity prevents bubbles settling before cure.
- Air under components is expelled during drying/curing and forms bubbles.
- Pressure pots absorbing air cause “champagne” bubbles on application.
- Brush over-working or viscous material introduces bubbles during application.
- Incorrect spray setup (head/pressure) creates excessive bubbles or foam.

Prevention / Best Practices

- Use multiple thin coats with proper flash-off instead of one heavy pass.
- Control cure temperature to avoid surface skinning.
- Reduce air entrapment under parts: slower dip entry, dwell time, and lower viscosity.
- Manage pressure pots: depressurise when idle; don't leave >50% standing under pressure.
- Brush technique: flow the coating; avoid working it into the board.
- Optimise spray parameters: verify head type and atomising/flow pressures.

Troubleshooting & Diagnosis

- Pattern boards/UV inspection — confirm meniscus, edge definition, and bubble density.
- Viscosity & solids checks — monitor solvent loss and restore target windows.
- Pot/line audits — verify pot pressure routines, line flush, and filter condition.
- Spray set-up validation — document head type, gun distance, fan width, and pressures.
- Dip parameters — qualify entry speed, dwell, withdrawal rate, and bath health.
- Cure profile review — ensure progressive ramping to minimise skinning/outgassing.

Related Defects (Links)






- [Pinholes, Bubbles & Foam](#)
- [Orange Peel](#)
- [De-wetting](#)
- [Delamination](#)
- [Cracking](#)
- [Corrosion & Ionic Contamination](#)
- [Capillary / Wicking Around Components](#)

Training & Services (SCH)

SCH offers conformal coating training that goes beyond theory—recognising and preventing pinholes, bubbles, foam, orange peel, de-wetting, delamination, and cracking. We cover process analysis, troubleshooting, materials, and application methods.

Why Choose SCH Services?

Partnering with SCH Services means more than just outsourcing — you gain a complete, integrated platform for Conformal Coating, Parylene & ProShieldESD Solutions, alongside equipment, materials, and training, all backed by decades of hands-on expertise.

-  25+ Years of Expertise – Specialists in coating technologies trusted worldwide.
-  End-to-End Support – Guidance on coating selection, masking, inspection, and ProShieldESD integration.
-  Scalable Solutions – From prototype to high-volume production.
-  Global Reach – Support across Europe, North America, and Asia.
-  Proven Reliability – Built on quality, consistency, and customer satisfaction.