



Guide to Our Services

Robotic Hot Solder Dip (RHSD)

Tin Whisker Mitigation – US Navy-qualified process removes 100% of the pure tin and replaces it with SnPb (tin-lead).

Gold Mitigation – Removes gold and replaces it with SnPb. Typically required to cover the effective seating plane.

RoHS Compliance – Removes the SnPb and replaces it with SAC305 (tin silver copper) or any other specified alloy.

Test

X-Ray Fluorescence Analysis (XRF) – Used to determine lead (Pb) content of termination finishes and plating thickness.

Fine and Gross Leak Testing – Also referred to as Seal Test, these tests verify that the hermetic seal of a component is intact and typically follows Trim and Form and/or RHSD of a glass-sealed device.

Solderability Testing – Verify termination finishes will readily accept solder during assembly using J-STD-002 test or other military specification.

Cleanliness Testing – Determines ionic contamination on the part that can cause current leakage between leads.



Modification and Repair

BGA Reballing for Conversion to Tin-Lead or RoHS-Compliance – Flushes all balls and alloy residue on the pads and replaces balls of Sn63Pb37, SAC305, or any other specified alloy.

Trim and Form – Forms and trims straight leads for surface mount placement per the customer's drawing or Corfin Industries can propose a drawing. An RHSD process typically follows this process to coat leads and prevent oxidization.

Re-Conditioning of Bent Leads – Robotic process realigns leads that are bent and scans to verify results.

Lead-Attach to Leadless Chip Carriers – Reduce solder joint stress by attaching J-shape and L-shape leads to LCC's using thermocompression bonding.

Assembly Support

Tape and Reel – Components can be placed on Tape and Reel in the quantities desired for issue to the production floor.

Kitting – Components are placed in quantities and packaging that are process-friendly. Kitting is usually in conjunction with trim and form and/or RHSD services, but is also offered for hardware (nuts and bolts, etc.) Kits can be inventoried at Corfin Industries and partial quantities shipped per schedule or request from the customer.

Robotic Solder Dip Solves Tin Whisker Problem

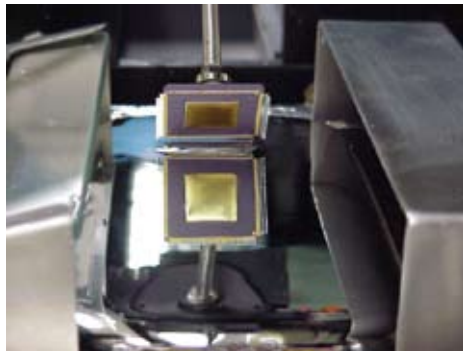
S1057 - Tin Whisker Mitigation



Objective

The rapid rise of a worldwide lead-free movement driven by strong legislative and market forces is causing manufacturers to rid their products of lead. As a result, many electronic component manufacturers are transitioning from tin-lead surface finishes to pure tin. Pure tin components are known to cause tin whiskers. Tin whiskers are electrically conductive hair-like filaments of pure tin that “grow” over time, often in large quantities, from any type of hardware that has been coated with a pure tin finish. Tin whiskers have been responsible for many electrical shorting failures, with an estimated loss of at least a billion dollars worth of satellites, missiles, and other electronic equipment.

Robotically controlled solder pot dips have been shown to successfully replace pure tin plating with a tin-lead solder coat on 100% of a component’s lead surfaces on selected components. It was not well understood which types of component packages could be successfully 100% solder pot dipped without collateral damage to their reliability from thermal shock. This ManTech project specifically addressed this problem.



Payoff

This project has successfully provided a qualification of the robotic solder dip process on a variety of electronic packaging designs. It has identified which types of tin-plated component packages can be successfully solder pot dipped to remove all the tin plate and still meet military reliability requirements. The process will allow many programs to avoid

costly redesigns and production interruptions.

Implementation

The project report will provide users with the detailed information needed to employ the qualified process in their programs for the part types successfully tested, should they so choose. A number of companies provide robotic solder dipping services. It would be the responsibility of an individual program to verify that a solder dip vendor is capable of meeting the process requirements. A separate commercialization experiment, funded and conducted by an industry participant, is piloting the creation of a niche industry that would allow their programs to purchase tin-plated components from a parts distributor, have them routed to their qualified solder dip vendor for dipping and then delivered directly to the program as tin-lead finished parts.

Processing for this US NAVY ManTech Project provided by:



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Period of Performance

Jan. 2004 to Jan. 2005

Platform

PEO (Ships)
PEO (Carriers)
PEO (Subs)
PEO (T)
J-UCAS

REPTECH

Business Enterprise

Other

Stakeholder

PEO (IWS)

Performing Activity

BMPCOE

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Total ManTech Investment

\$1,000,000