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Leo Lambert
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webinar series

2020 Questions and Answers

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Topics of Customer Questions

- Formed leads need to be reformed

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Reforming Existing Formed Leads Space Products

Question: Component leads were formed by supplier, they need to be reformed, it this OK?

- According to J-STD-001 Section 6.1.1 Lead Forming, The lead forming process **shall not** damage lead seals, welds or internal component connections.
- According to the Space document, Leads shall not be reformed except for minor adjustment to bend angles.

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How Does RoHS 3 Impact Manufacturing

- RoHS 3 includes exemptions for lead, however we’re not sure how they are applied.
- Lead free solder has not been required by any of our customers
- What are the RoHS 3 parameters for the use of tin/lead solder in cable assemblies?

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How Does RoHS 3 Impact Manufacturing

This is the expanded list for RoHS 3 effective July 2019 is as follows:

- Cadmium (0.01 %)
- Lead (0.1 %)
- Mercury (0.1 %)
- Hexavalent chromium (0.1 %)
- Polybrominated biphenyls (PBB) (0.1 %)
- Polybrominated diphenyl ethers (PBDE) (0.1 %)
- **Bis(2-ethylhexyl) phthalate (DEHP) (0.1 %)**
- **Butyl benzyl phthalate (BBP) (0.1 %)**
- **Dibutyl phthalate (DBP) (0.1 %)**
- **Diisobutyl phthalate (DIBP) (0.1 %)**

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Conformal Coating vs. Soldermask

- Can conformal coating be used to fix flaking solder mask?
- Two materials, two functions
  - Solder mask is to reduce the amount of solder being used and protect the board
  - Conformal coating is to protect the assembly from environmental stresses, water, dust, etc.

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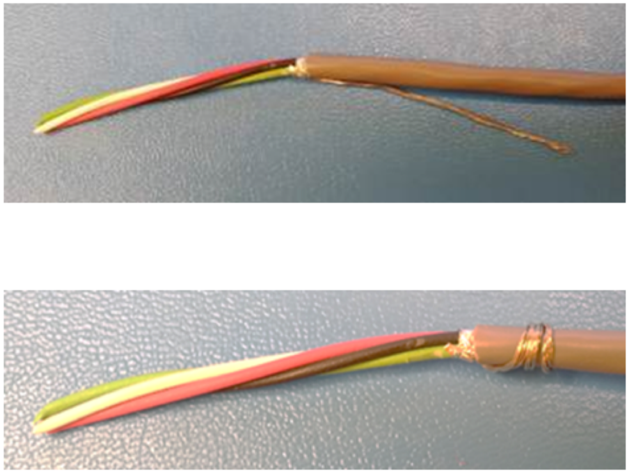
Fold back Shield

- How long does the drain wire need to be?
- Can the drain /shield be wound as shown



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Fold Back Shield

- The length of contact between the shield and the drain wire being attached is at least 3 wire diameters of the drain wire, per Section 15.2.1.1.1 of 620C

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Fold Back Shield

NASA-STD-8739.4
February 1998

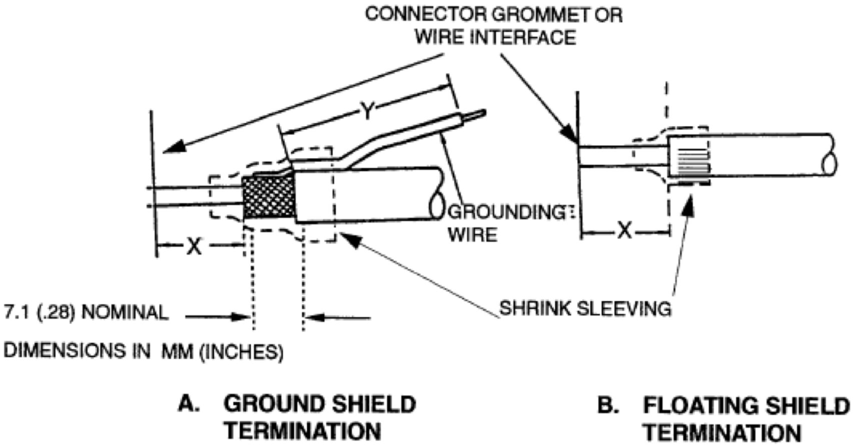

Figure 11-8. Conductor Exposure for Individual Shield Termination Types

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Measuring Gull Wing Fillet Height

When one is inspecting a board with 200 surface mount components and find there are 8 components that are hard to determine the fillet height, should inspector go through some form of measurement aid on the components that arguable?

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Measuring Gull Wing Fillet Height

- The answer is NO!
- The height of the solder fillet on Gull wing components is based upon Process controls and the amount of solder paste deposited on the pads.
- We don't want inspectors measuring anything, those numbers are only in the book for referee purposes as defined in 1.4.1

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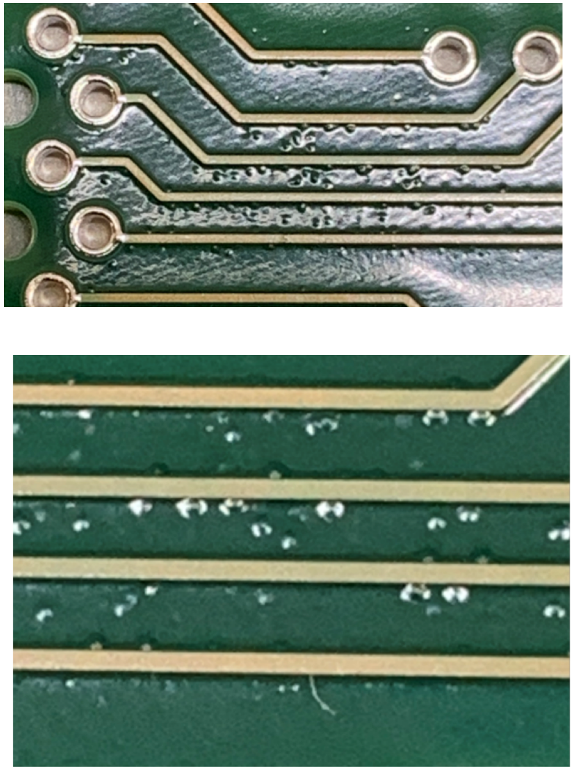
Bubbles or Blisters



- What are they Bubbles or Blisters?

- They appear to be bubbles. As stated in 600 they are not allowed on Class 2 and 3, products. The intent is entrapment of moisture and the exposure of the vertical edges of the conductor where dendritic growth originates.

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Who can Inspect the Product?

- Does IPC allow inspection of one’s own work?

- IPC has no requirement as to whom inspects the product!
- The instructions for that is based upon the manufacturing facility and their organization
- One must question the knowledge of the inspectors themselves to decide if they can inspect their own work
- An Action Item would be to audit the training records to verify these qualifications.

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Jumper Wires to SMT Components

Condition

- Jumper wires connecting 2 SMT chip components
- OEM installed an uninsulated wire straight across the two components with lap solder joint
- Secured the wire with adhesive
- Is stress relief necessary

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Jumper Wires to SMT Components

- Stress Relief is necessary and
- Can be accomplished with a small bend in the wire

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Wire Window Strip Used For Ground Connection

Question is:

Should the window strip be tinned before it is assembled and soldered to the braid?

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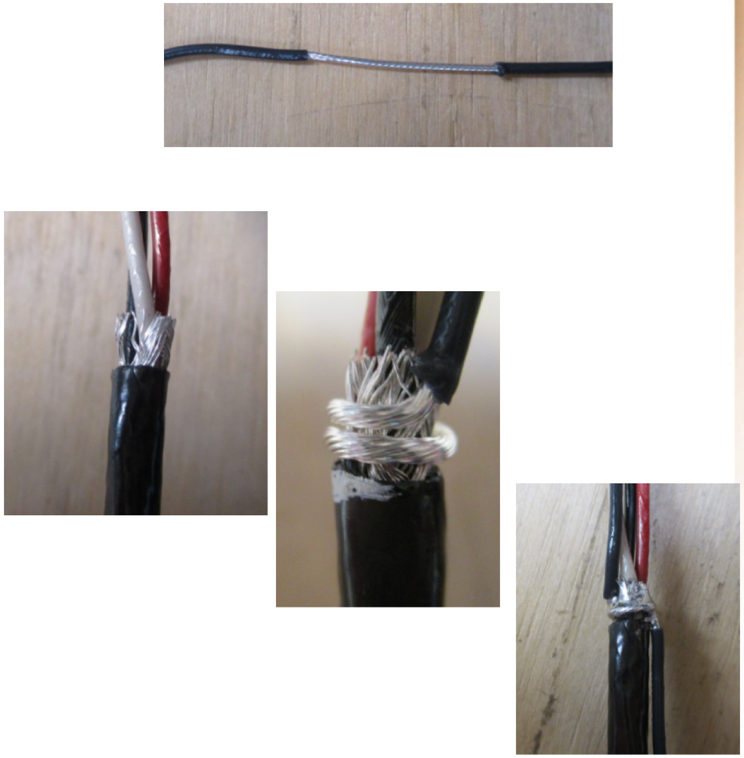
Wire Window Strip Used For Ground Connection

- Verify window strip is long enough to completely encircle the cable shield
- There is no need to tin the wire strip
- Observe for birdcaging during assembly making sure it does not happen
- Acceptance is based on J-STD-001, Par. 4.8



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ENIG Gold Removal
Yes or NO?

- An SMT component has gold terminations and those gold terminations are ENIG, shall the gold be removed?

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ENIG Gold Removal
Yes or NO?

Ref J-STD-001, Par 4.5 Removal of Component Surface Finishes

“Certain surface finishes on component termination of PCB lands may impact the quality of the solder connection.”

“Under either of the following conditions, the PCBs or parts are exempt from the requirement for finish removal stated in 4.5.1 and 4.5.2”

- For electroless nickel immersion gold (ENIG), nickel-palladium-gold (NiPdAu), or electroless nick electroless palladium immersion gold (ENEPIG} finishes

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Conductor Width Reduction

- For Class 3, if a conductor width is reduced greater than 20% and the base material is exposed would it be acceptable?

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Conductor Width Reduction

From IPC-A-600, section 2.10.1.1 Conductor Width.

Class 2 & 3 width reduction of 20%

Class 1 width reduction of 30%

Due to “Any combination of isolated anomalies such as edge roughness, nicks, pinholes, and scratches which exposed base material and reduces the conductor width by 20% of the minimum value or less.

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Thank You
Any Questions?

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Further Information

For questions regarding this webinar, please contact Leo Lambert at leo@eptac.com or call at

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