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Change is Coming:

New Revisions J-STD-001E, IPC-A-610E and IPC-A-600H

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Changes are Coming: **New Revisions** **J-STD-001E** **IPC-A-610E,** **IPC-A-600H**

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Overall Comments

- Documents must be:
 - Technically Accurate
 - Agree with each other
 - Effective in getting the message to the readers

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The Update Process

- IPC is mandated by ANSI to update their documents every five years
- Comments are collected, discussed and dispositioned
- Drafts are printed for review and other comment periods
- Final draft send to membership for comments or approval



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Where to find drafts of document



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<ul style="list-style-type: none"> IPC About IPC About Membership IPC Members Only More IPC Resources IPC China IPC Europe 	<ul style="list-style-type: none"> Industry Industry Data Government Relations Environment, Health & Safety Councils & Associations For Executives 	<ul style="list-style-type: none"> Knowledge Standards Training and Certification Professional Development E-Mail Forums Business Resources Technical Resources IPC Lead Free/RoHS Web Site PCB Tools and Calculators Online Presentation Library 	<ul style="list-style-type: none"> News Industry News IPC News Event/Education News Product News Media Links 	<ul style="list-style-type: none"> Events IPC Calendar IPC APEX EXPO IPC Midwest 	<ul style="list-style-type: none"> Contact Us Online Store Privacy Policy Disclosure/Legal
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Go to the IPC web site www.ipc.org and go to the knowledge column



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Where to find drafts of document

Find the IPC standards, guidelines, and publications you're looking for in the [IPC online store](#).

[Committee Home Pages](#)

Complete listing of IPC Committees, Chairs, Meeting Minutes, Document Drafts and Comments

[IPC Status of Standardization](#)

This report shows the status of IPC documents under development.

[IPC Document Revision Table](#)

Table of published IPC documents, with publication and revision dates

- Click on the committee home pages

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Where to find drafts of document

- + [4-30 Environmental, Health & Safety Steering Committee](#)
- + [5-20 Assembly & Joining Processes Committee](#)
- + [5-20CN China Assembly & Joining Processes Committee](#)
- [5-22 Soldering Subcommittee](#)
 - > [5-22A J-STD-001 Task Group](#)
 - > [5-22AS Space Electronic Assemblies J-STD-001 Addendum Task Group](#)
 - > [5-22BT J-STD-001 Training TG](#)
 - > [5-22F J-STD-001 Handbook Task Group](#)
 - > [5-22G DPMO & Assemblies, Attributes & Variables Identif.](#)
 - > [5-22H Thermal Profiling Guide Task Group](#)

- Click on + 5-20 for drop down menu
- Click on 5-22a for 001



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Committee **5-22A J-STD-001 Task Group**

Chair Teresa M.Rowe, AAI Corporation

Vice Chair Daniel L.Foster, Defense Acquisition Inc.

Staff Liaison [Jack Crawford](#)

Committee Charter This task group is responsible for the joint industry national soldering standard, J-STD-001, and will support revision activities as necessitated by industry or technology developments.

Committee Minutes

Drafts

[Draft for September 2009 001E meeting](#)

[Draft for the 9-10 June 2009 combined J-STD-001E & IPC-A-610E meeting](#)

[J-STD-001E draft for March 2009 Meeting](#)

[J-STD-001E draft following the Sep08 meeting](#)

[J-STD-001E April 2008 Post-Meeting Draft](#)

[J-STD-001E April 2008 Meeting Draft](#)

[J-STD-001E draft following Oct07 Meeting](#)

[J-STD-001E First Working Draft September 2007](#)

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Where to find drafts of document

IPC J-STD-001E

Requirements for Soldered Electrical and Electronic Assemblies

Draft for September 2009 Meeting
Updated 13 September 09



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J-STD-001

- There were over 200 comments for the new draft, some editorial and some technical

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Example of comment page

<p>Dan Foster, DAI</p>	<p>4.2.3</p>	<p>22</p>	<p>Change From: Illumination at the surface of workstations should be at least 1000 lm/m2. Light sources should be selected to prevent shadows</p> <p>To: Illumination at the surface of workstations shall NE1, NE2, D3 be at least 1000 lm/m2 [approximately 93 foot candles]. Light sources should be selected to prevent shadows.</p> <p>Note: In selecting a light source, the color temperature of the light is an important consideration. Light ranges from 3000-5000 ° K enable users to differentiate various metal alloys (i.e. copper lead and Kovar lead) and contaminants.</p>	<p>Add reference foot candles</p> <p>Explains the need for 3000-5000 ° K light range to differentiate between copper and Kovar</p>	<p>Comment was modified to continue to use the word should instead of shall. Using shall creates another element needing to be monitored which is not necessary.</p> <p>9/09</p>
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Highlights of 001 Changes

- Added requirements for soldering to lead-free components for class 3
- Alloy composition to table 3-2
- Reorganization of paragraphs
- Introduction of Wire Wrap vs Overwrap
- Document flowdown related to COTS
- Added moisture sensitive and process sensitive component usage
- Changed gold removal process
- Added heat shrinkable soldering devices
- Updated wire and cable preparation
- Updated wire wrap tables
- Plus many editorial and format changes

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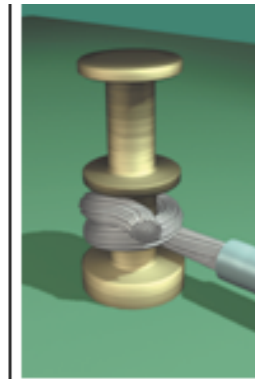
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Couple of 001 Picture Changes

Add figures



610D Fig 6-62



620A Fig 4-20

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- Now acceptable wire wrap criteria



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IPC-A-610

- Over 410 comments submitted for acceptance and resolution
- Schaumburg meeting covered the last 42 comments
- Synergy meeting covered 40 comments

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IPC-A-610

- Section on wireless wrap was discussed from the perspective of removing it from the 610 document as well as the 620 document and creating a downloadable document covering the total wireless wrap topic.

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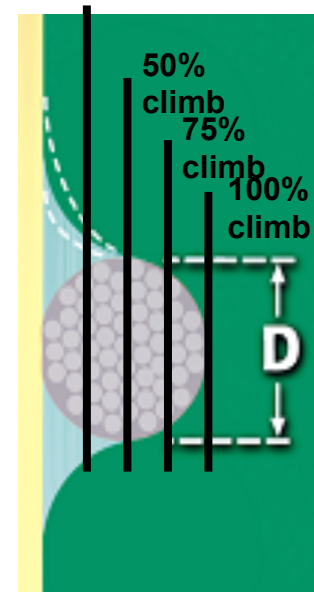


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IPC-A-610, Clarification of Wetting Climb



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- Recommendation to add illustrations from the 620A tng slide that depicts solder climb and solder depression
50% climb
75% climb
100% climb

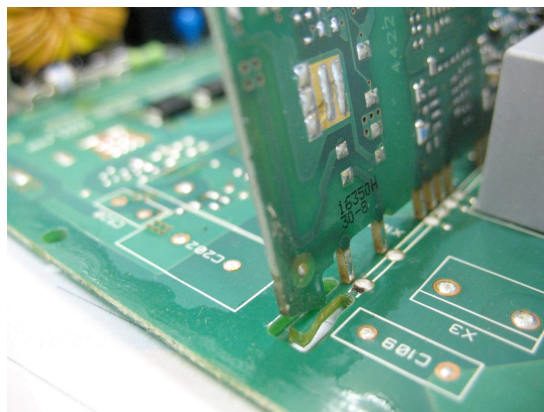
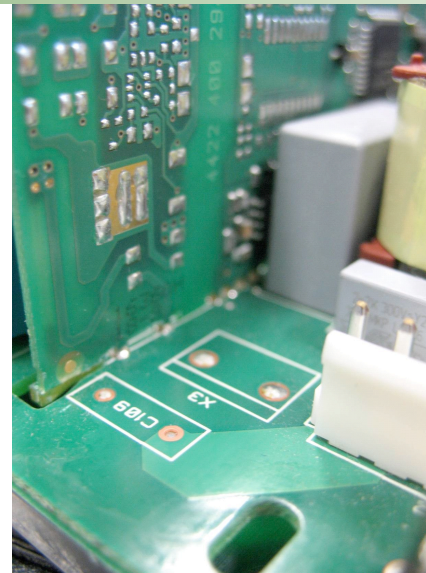
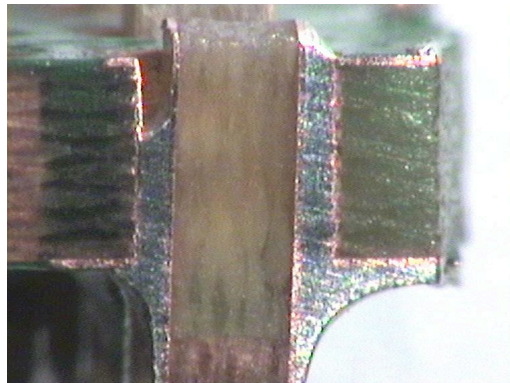


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IPC-A-610, New Item – Board inserted into slots



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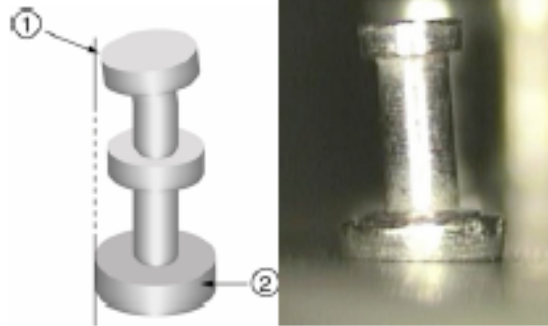
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IPC-A-610, 6.1.1.1

Figure 6-2
610D Fig 6-12 combine with this photo added by
graphics working group Aug09



1. Top edge
2. Base

Acceptable - Class 1, 2, 3

- Terminal is bent, but the top edge does not extend beyond the base.

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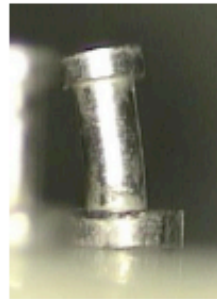
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IPC-A-610, 6.1.1.1

Figure 6-3 graphics working group Aug09

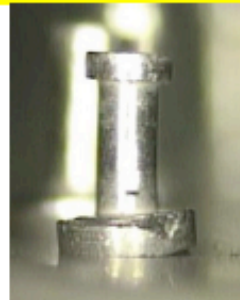


Acceptable - Class 1

Defect - Class 2, 3

- The top edge of the terminal is bent beyond the edge of the base.

Figure 6-4 Pix added by graphics working group
Aug09 and related comment added to list



Defect - Class 1, 2, 3

- The center post is fractured.

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610 - 6.1.1.1 Criteria Modified to accept the proposal

Target - 1, 2, 3

Terminal base circumference is in full contact with the land, with no evidence of mechanical distortion of land.

Terminal may be rotated by finger force once swaged.

Terminal is vertically stable (no vertical movement).

Acceptable - Class 1, 2, 3

Terminal base circumference exhibits >270 degree contact with the land, with non-contact gap not exceeding one (1) land thickness.

Terminal may be rotated by finger force once swaged.

Terminal is vertically stable (no vertical movement).

Acceptable - Class 1, 2

Defect – Class 3

Terminal base circumference exhibits >180 degree contact with the land, with non-contact gap not exceeding two (2) land thicknesses.

Defect - Class 1, 2, 3

Terminal is not vertically stable.

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610 – 6.2.4 Criteria added



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- Burnt shrink sleeving information added to section.



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610 New Criteria



Figure 3-2: A head-on-pillow defect that was verified optically without the aid of mounting and polishing.

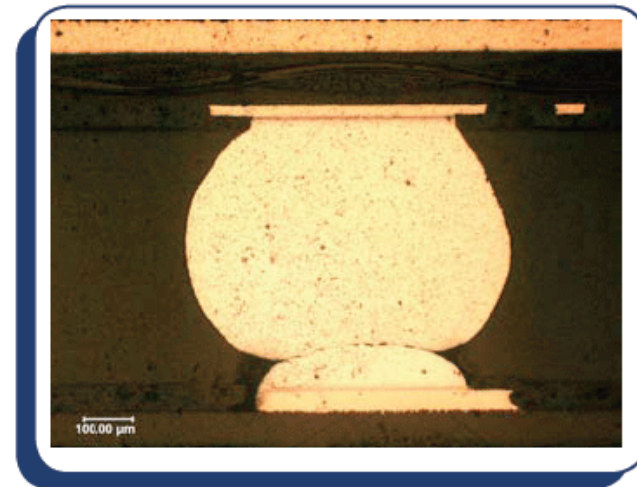


Figure 3-3: Head-on-pillow that required high magnification to be clearly identified

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001 & 610 Synergy

- This was worked to resolved 40 comments
- The intent of this meeting was to go over comments that addressed both the 001 and 610 documents

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Major Synergy Items

- Component height requirements as defined in 610, 7.3 and 001 7.3.1.
- Class 2 hole fill requirements allowing certain height of solder for different board thicknesses. This has been proposed for quite a while from the class 2 community and it finally was accepted this year.
- All the comments were reviewed and answered; now the documents have to be updated into a newer draft for review by the committee.



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A-600 Additions 2.5.6 Cap Plating

2.5.6 Cap Plating of Filled Holes – (Visual)

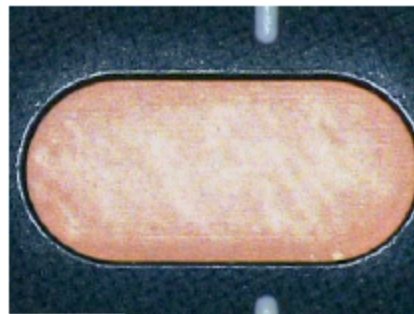


Figure 256a

Target Condition – Class 1, 2, 3

- Copper surface is planar with no indication of cap plating



Figure 256b

Acceptable - Class 1, 2, 3

- When cap plating of the filled via is specified on the procurement documentation, the requirements of 2.7.1.1 and the requirements of IPC-6010 for rectangular and round surface mount pads shall apply.
- No voids over the resin fill area.
- Visually discernable protrusions (bumps) and/or depressions (dimples) over via fill are acceptable providing they meet the microsection requirements of IPC-6010.

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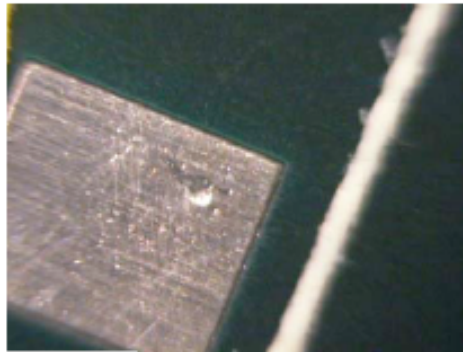


Figure 256c

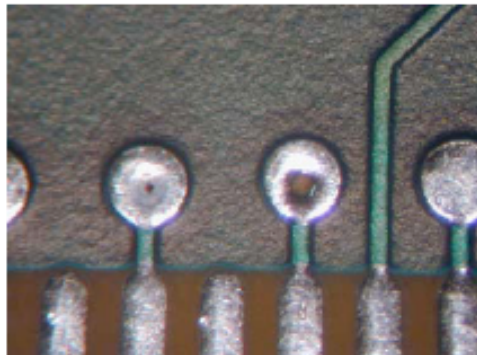


Figure 256d

Nonconforming - Class 1, 2, 3
- Defects either do not meet or exceed above
criteria



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2.9.7 Tenting of Via Holes

2.9.7 Tenting (Via Holes)

Tenting refers to a via with a dry film mask material applied bridging over the via wherein no additional materials are in the hole. It may be applied to one side or both sides of the via structure (see Figure 297c), though single sided tenting is not recommended.

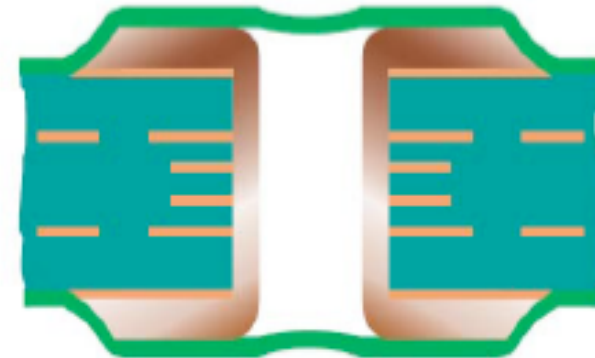


Figure 297c

Note: This graphic is for illustrative purposes only and does not require a microsection evaluation.

- Clarification of terms.

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Added Section 2.10.1.3 Conductor Thickness

2.10.1.3 Conductor Thickness



Target Condition - Class 1, 2, 3

- Conductor thickness meets dimensional requirements of artwork or procurement documentation.

Acceptable - Class 2, 3

- Any combination of isolated edge roughness, nicks, pinholes, depressions and scratches that reduces the conductor thickness by 20% of the minimum value or less.
- There is no occurrence (edge roughness, nicks, etc.) greater than 10% of the conductor length or more than 13 mm [0.512 in], whichever is less.

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2.10.2 Better explanation of annular ring

Measurement of External Annular Ring

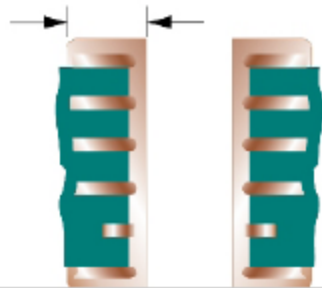
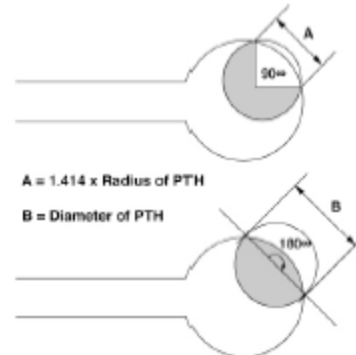


Figure 2012a External Annular Ring



$A = 1.414 \times \text{Radius of PTH}$
 $B = \text{Diameter of PTH}$

Figure 2012c Breakout of 90° and 180°

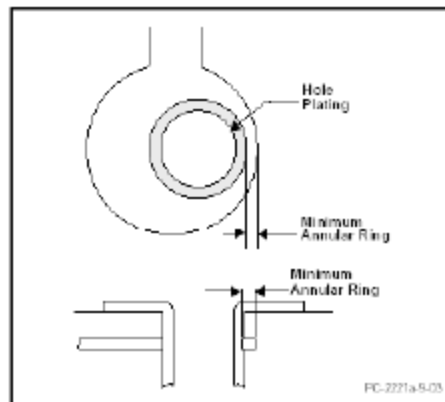


Figure 2012b Internal Annular Ring

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2.10.3 External Annular Ring

2.10.3 External Annular Ring – Supported Holes

A supported hole is a hole within a PB that has its inside surfaces plated or otherwise reinforced.



Figure 2103a

Target Condition - Class 1, 2, 3
• Holes are centered in the lands.

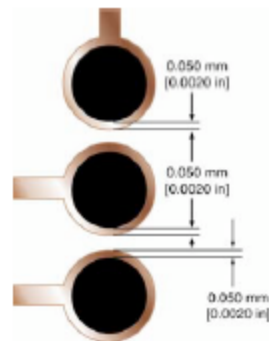


Figure 2103b

Acceptable - Class 3
• Holes are not centered in the lands, but the annular ring measures 0.050 mm [0.0020 in] or more.
• The minimum external annular ring may have 20% reduction of the minimum annular at the measurement area due to defects such as pits, dents, nicks, pinholes, or splay.



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3.3.9 Copper Wrap Plating

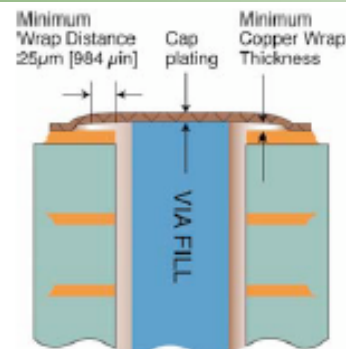


Figure 339a Surface Copper Wrap Measurement (Applicable to all filled PTHs)

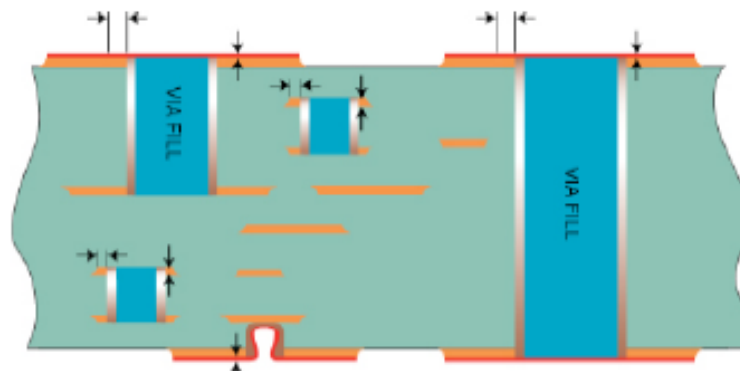


Figure 339b Wrap Copper Removed by Excessive Sanding/Planarization (Not Acceptable)
Note: Dimension lines and arrows indicate where wrap copper has been removed.

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3.3.9 Copper Wrap Plating

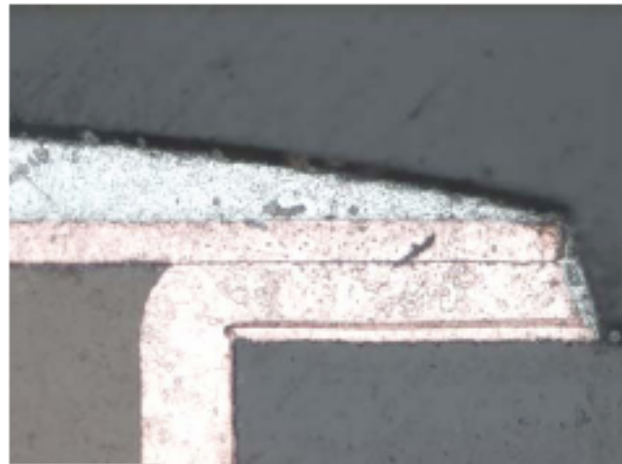


Figure 339c

Target Condition - Class 1, 2, 3

Acceptable - Class 3

- Wrap plating is continuous from the filled plated hole onto the external surface and extends by a minimum of 25 μm [984 μin] where an annular ring is required.
- Wrap thickness is not less than 12 μm [472 μin] for through, blind and buried vias.
- Wrap thickness is not less than 6 μm [236 μin] for blind and buried microvias.
- Wrap thickness is not less than 7 μm [276 μin] for buried via cores (> two layers).
- Reduction of surface wrap copper plating by processing (sanding, etching, planarization, etc.) does not result in insufficient wrap plating.

Note: Cap plating, if required, over filled holes is not considered in wrap copper thickness measurements.

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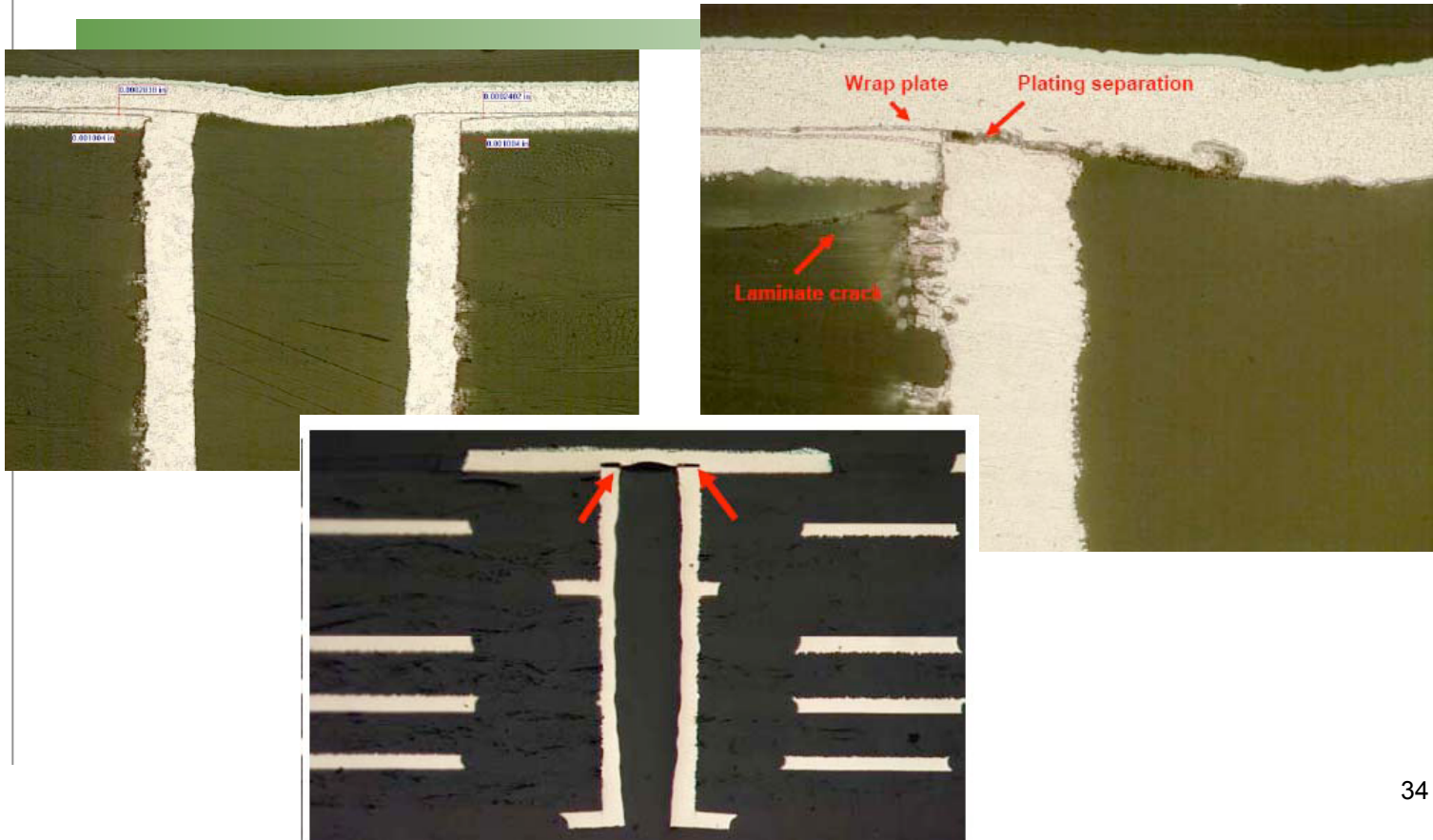


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3.3.9 Copper Wrap Plating Criteria



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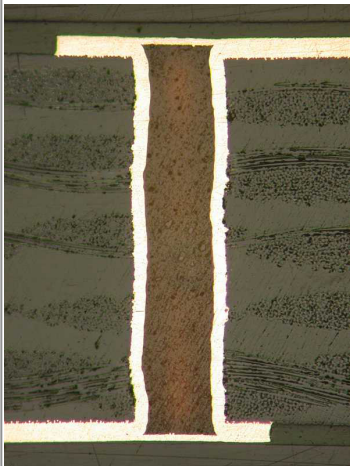


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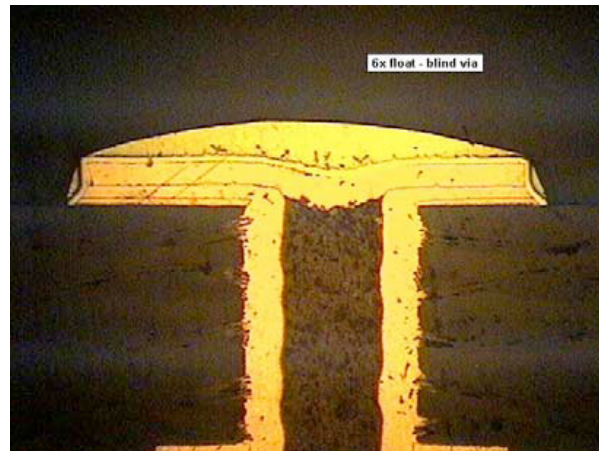


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Leo Lambert
Vice President,
Technical Director

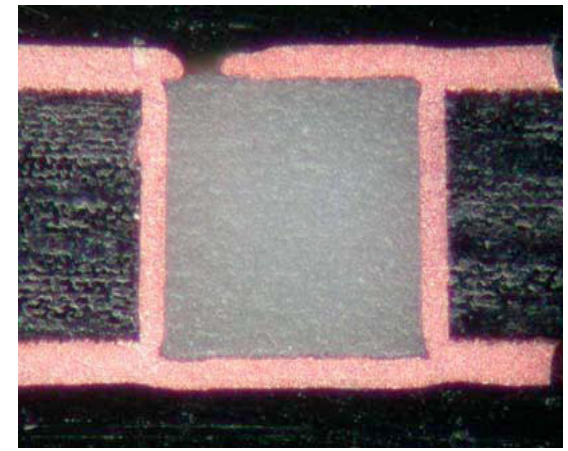
3.3.17 Cap Plating of Filled Holes



Target



Acceptable



Nonconforming

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When are they going to be released?

- Looking for final review by the end of 2009.
- Going out for committee comments and resolvment by early 2010
- Projected publication around APEX in April

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Further Information

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