ABOUT THE PRESENTER
Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

IPC Specifications,

Related Questions and Interpretations

ABOUT THE PRESENTER
Leo Lambert
Vice President & Technical Director, EPTAC

Question #1

Existing Condition:

- ENIG SMT pads on a flex circuit, pads use teardrop layout and the component size is 0603. Original circuits were HASL, new products have ENIG

Question:

- Will this create any gold embrittlement with the use of ENIG?

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #1

- From IPC 6012 Table 3-2 Final Finish and Coating Requirements, the parameters for ENIG coating is as shown

ENIG	Electroless Nickel - minimum	3 µm [118 µin]	IPC-4552	b4
	Immersion Gold - minimum	0.05 µm [1.97 µin][5]		b4

- Using an 0603 component with 3 mil of paste
- The amount of gold in the joint is less than .2% which is not an issue for any intermetallics.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #2

Original solder joint is not high temp enough for the product operational application.

- Joints made with 63/37 alloy

Question:

- Can the existing solder be cleaned off and re-soldered with this alloy and will the joint be ok with the strength and temperature parameters of the Sn95/Ag5 Alloy

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinarseries

Question #2

- Looking at Sn95/Ag 5 as a replacement alloy.
  - Liquidus temp of Sn95/Ag5 is 221 -225C
  - Not a eutectic material
- Liquidus of 63/37 alloy is 183C
- Cleaning off the 63/37 and re-soldering with the new alloy will change the existing alloy, which will need to be evaluated.

-

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #2

Alloy Composition	Melting Point (C)	Tensile Strength (ksi)	0.2% yield strength (ksi)	0.01% yield strength (ksi)	Uniform elongation
Sn63/Pb37	183	4.92	3.34	1.9	1.38
Sn95.Ag5	221-240	8.09	5.86	3.95	0.84

http://www.aimsolder.com/sites/default/files/alloy_information.pdf

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #3

- I have always had in the back of my head that burnt flux is a defect for all class 3 assemblies. But upon further review I have not been able to identify the specific section of the IPC-A-610F standard which identifies burnt flux as an acceptable or defect condition. I understand that if the laminate is burnt it is a defect condition, but I am not clear on burnt flux for a no-clean process.

- This is from IPC-A-610 10.6.1 Cleanliness flux Residues

Acceptable – Class 1,2,3

- No discernible residue from cleanable fluxes is allowed.
- Flux residues from no-clean processes may be allowed.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #3

- Flux residues are flux residues, regardless of whether they are burnt or not.
- The low solid content fluxes are designed to have the activators in the flux volatize off during the soldering operation and the residues left behind are benign.
- Fully active fluxes if left behind the activators are susceptible to the absorption of moisture
- Burnt flux implies the carbonization of the rosin material or any other material and this material is very susceptible to the absorption of moisture.
- Secondly if the residues are burnt they will impact the ability to visually inspect the solder joints, so they have to be removed.
- Therefore from my perspective burnt flux is a defect for all 3 classes of products.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Question #4

- The interpretation of paragraph 5.4.1.7 of 001.

5.4.1.7 Lead and Wire End Extensions The lead and wire ends should not extend beyond the terminal more than one (1) lead diameter. Minimum electrical clearance requirements **shall** [D1D2D3] be met.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC

eptac webinar series

Question #4

There are **two** conditions which are discussed in this paragraph,

- One is the lead and wire ends extending beyond the terminal base more than one (1) lead diameter.
- This is a ***should*** condition and there is no defect condition associated with this recommendation.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinarseries

Question #4

- The defect criteria is based upon the lead end violating the minimum electrical clearance to nearby components or conductive surfaces.
- If the extension of the wire or lead does violate the minimum electrical clearance then it is a defect for all three classes of products, **[D1D2D3].**

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinarseries

Question #5

- It was noticed in Rev F of J-STD-001 there is no upper limit for humidity.
- We've been 70-80% for the past week but I can't find where we can't be above 70% any more.

ABOUT THE PRESENTER
Leo Lambert
Vice President & Technical
Director, EPTAC

eptac webinarseries

Question #5

- Moisture references in 001

3.8 Components Components (e.g., electronic devices, mechanical parts, printed boards) selected for assembly **shall [D1D2D3]** be compatible with all materials and processes, e.g., temperature ratings, used to manufacture the assembly/ product.

Moisture or process sensitive components (as classified by IPC/JEDEC J-STD-020, ECA/IPC/JEDEC J-STD-075 or other documented classification procedure) **shall [D1D2D3]** be handled in a manner consistent with IPC/JEDEC J-STD-033 or other documented procedure.

4.2.2 Temperature and Humidity When humidity decreases to a level of 30% or lower, the Manufacturer **shall [N1D2D3]** verify that electrostatic discharge control is adequate. For process control, more restrictive temperature and humidity limits may be required.

4.2.2.1 Temperature For operator comfort and solderability maintenance, the temperature should be maintained between 18°C [64.4°F] and 30°C [86°F].

4.2.2.2 Humidity The range (lower and upper limits) of humidity in the assembly area **shall [N1D2D3]** allow soldering (including solderability maintenance) and assembly materials to function correctly in the process, based on vendor recommendations or documented evidence of process performance. For operator comfort the relative humidity should not exceed 70%.

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

eptac webinar series

Thank You
Any Questions?

ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical Director, EPTAC

Further Information

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

800-643-7822 ext 215

For information on any of EPTAC's or IPC's Certification Courses, please visit our website at http://www.eptac.com

Fore ease of getting the EPTAC website,

We now have an APP

get our APP at

www.Eptacapp.com