



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

“Flux” Friend or Foe?



ABOUT THE PRESENTER

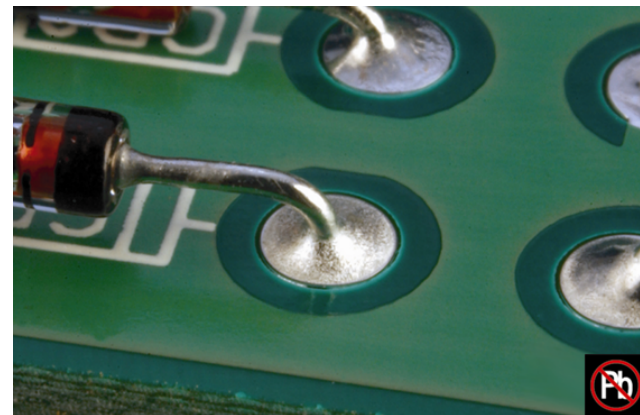
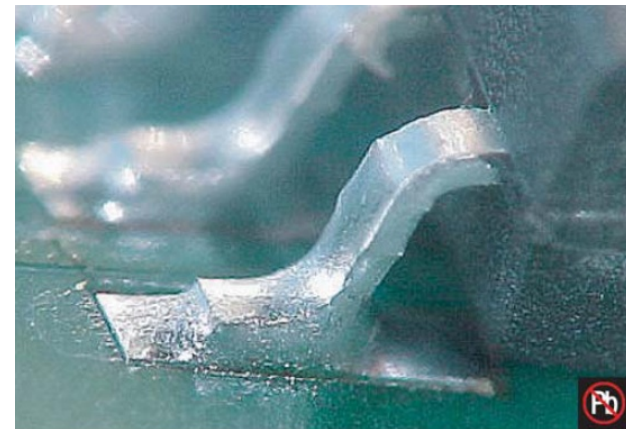
Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe

- Q: Why do we use flux and what does it do?
- It helps clean the surface of light oxidation.
- Protects the pad being soldered from re-oxidation during the heating process of soldering.
- The end result is the flux helps to promote the wetting of solder to the surface that is being soldered.





ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: When using external flux for soldering applications, what are some of the common issues or concerns that need to be considered?
- Per IPC-J-STD-001 and IPC-A-610 your flux **shall (D1, D2, D3)** be compatible with the solder being used.

Example: compatibility between all the fluxes used on the assembly, paste flux, cored solder flux, wave flux, etc.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: Does the flux residue need to be cleaned once the solder application is finished?
- The flux specification sheet will identify if the flux needs to be cleaned and will provide the best application on how to accomplish this task
- Always check your work instructions as well for this information.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Some customers may require you to clean the residue off regardless of the manufacturing requirements.
- If you are going to conformal coat your assemblies usually you will need to remove all flux residues for the conformal coat to adhere to the surface properly.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

- Q: If using low solid flux (no clean) was the flux heat activated properly?
- All fluxes have some level of acid in them (this helps to clean up the light oxidation that may be present on the soldering surface), low solid content flux also known as (no clean flux) have a low level of acid.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- If this flux is not heat activated per the manufacturing spec sheet, will the remaining flux residue still remain corrosive.
- If some of this flux when applied to the assembly during a hand soldering application spreads out and runs beneath components or around adjacent areas and the heating source did not heat this area to soldering temperatures then the flux may not have heat activated properly and is still active.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

- Q: What do the letters L, M and H stand for and what do the numbers 0 and 1 stand for?
- The letters L, M and H represent the activity level of the flux/ flux residue.
- L = Low, M = Medium, H = High.
- The numbers 0 and 1 represent the present of Halides (Salts); 0 = No Halides present, 1 = Halides present.

Example: L0 would be low activity with no halides present; M1 would be medium activity with halides present.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: How are these activity levels or presence of halides determined for flux types?
- Depending on the results from these tests the manufacture can now qualify the flux type.



ABOUT THE PRESENTER

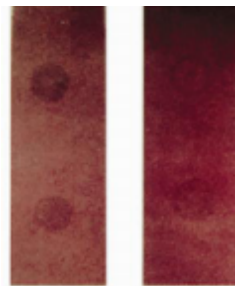
Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

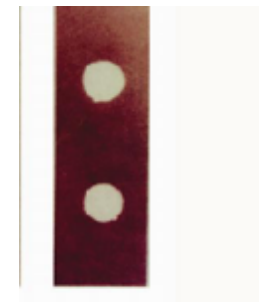
- Copper Mirror if the flux breaks thru at all and the % of the area it broke thru.
- No Breakthrough = L,
- Less than 50% Breakthrough = M,
- Greater than 50% Breakthrough = H



L
No Breakthrough



M
Less Than 50% Break



H
Greater Than 50% Breakth



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Percentage (%) of halides present by concentration such as Chlorides (Cl), Bromides (Br) and Fluorides (F), in liquid fluxes or extracted flux solutions.
- Corrosion test: Has three levels of consideration none at all, minor corrosion or major corrosion.
- Surface Insulation Resistance (SIR) Test: Will be done on an unclean unit and cleaned unit.
- Electrochemical Migration (ECM) Test: Will be done on an unclean unit and cleaned unit.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: What are the differences between RO, RE, OR and IR type fluxes?
- We can reference IPC-J-STD-004 Section 3 for this information.
- RO = Rosin composed of natural rosin extracted from pine trees and refined.
- RE = Resin composed of natural and synthetic resins other than rosins.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- OR = Organic composed of organic materials other than rosin and resin.
- IN = Inorganic, a solution of inorganic acids and /or salts.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

- Q: What are the different forms of flux ?
- A: Core flux found in solder core, like solder used to do hand soldering.
- Liquid flux used as external flux for applications like hand soldering, wave soldering and dip soldering.
- Paste as in SMT paste to print onto PCB's for assembly.
- Tacky flux used in applications where high heat is required and you need the flux to hold its form, etc BGA or BTC rework





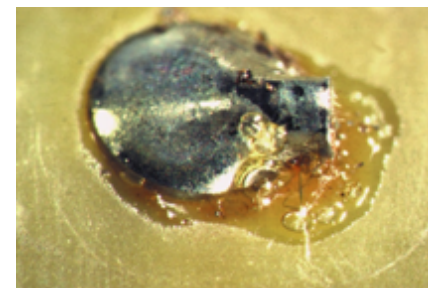
ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: What types of fluxes need to be cleaned?
- Fluxes that have medium to high activity levels (M or H type flux).
- Fluxes that have Halides (salts) in them.
- You should always check the manufactures date sheet to verify proper cleaning applications.





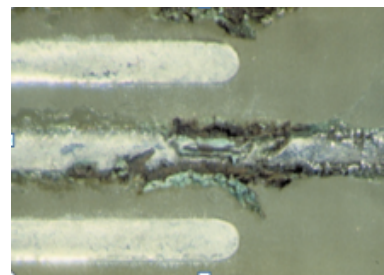
ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: What can happen if these fluxes are not cleaned off the assembly?
- Fluxes that are identified as needing to be cleaned if not cleaned off the assembly will result in contamination, corrosion and can promote dendrite growth. Ultimately the failure of the unit.





ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: How are M and H type flux with Halides cleaned off the assembly?
- Some fluxes are water soluble using an aqueous wash system. However some fluxes will require a stronger chemical base to clean.
- You will need to verify the proper clean process by checking the manufactures data sheet.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

- Q: What determines a no clean flux?
- Flux that has low solids and no halides (L0).
- However you should always check the manufactures data sheet on proper applications of use and cleaning.



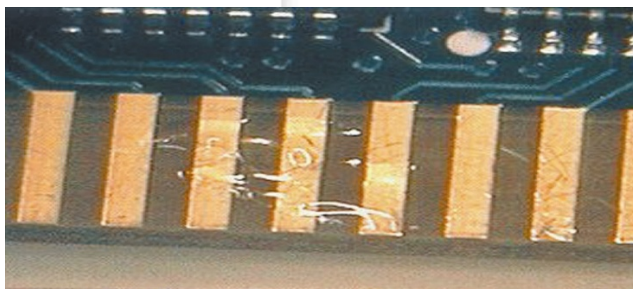
ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: When does no clean flux need to be cleaned?
- If it's on electrical contacts, mating surfaces or test points.
- Is tacky (not dry) were finger prints and particles can get entrapped.





ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- If the assembly will be conformal coated flux residue may cause a barrier between the board surface and the adhesive component of the conformal coating.
- If the flux is on a surface that was not heat activated properly, it will remain active.
- When the customer requires it on their documentation.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



eptac
webinar series

Flux Friend or Foe (cont.)

- Q: Is there a preferred process to clean no-clean flux?
- Most no-clean flux clean up with isopropyl alcohol.
- It is best to check the data sheet from the manufacture for best cleaning results.



ABOUT THE PRESENTER

Leo Lambert
Vice President & Technical
Director, EPTAC



Flux Friend or Foe (cont.)

- Q: If I clean no-clean flux off the assembly are there any issues or concerns, if not completely removed?
- No clean flux when heat active correctly it leaves behind a film or coating on the solder connection.
- This coating will protect the solder connection from oxidizing.
- If you clean off the coating but do not remove it completely the residual residue can become corrosive due to reactivating from moisture in the air.



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>

For ease of getting the EPTAC website,
We now have an APP
get our APP at
www.Eptacapp.com