

Cleaning after soldering or not?

Introduction

The questions if cleaning the boards from flux residues after soldering is necessary can only be answered when the aspects involved in that decision are all known. This paper is meant to give some background information so that one knows what the decisive factors are.

When must be cleaned?

When the flux residues can inflict with the correct functioning of the printed board circuit, or when the residues on the surface inflict with a coating or potting that must be applied after soldering, cleaning after soldering is necessary or even mandatory.

When cleaning is necessary one should already be aware of that when the board is in a design stage. All components on the board should be of a "closed" type so that no cleaning agent will be entrapped in capillaries. All components must be able to withstand the cleaning process.

The cleaning process itself should be controlled, so that the boards after this cleaning process should have and maintain the specified necessary cleanliness level.

Flux residues can affect the isolation resistance of the board surface, but also on clean boards this might be an issue.

Depending on the circuit requirements this isolation resistance might not fall below a certain minimum level, as that can inflict with the function of the circuit. Also corrosion or the growth of intermetallic dendrites between circuit parts should be avoided.

If the board can meet these requirements under the specified environmental conditions is often tested with so-called comb track patterns. Such a test can be done with several patterns and pattern configurations under specified climatic- and measuring conditions.

Normally the flux supplier's data sheet contains information about isolation resistance test results. The user should compare these data with his requirements.

When might be cleaned?

Cleaning might be necessary or helpful if the flux residues inflict with in-circuit testing e.g. when flux residues contaminate the test pins, or if the residues are hard to penetrate.

When can be refrained from cleaning?

If the flux residues that remain on the board do not affect the function or reliability of the circuit within the specified climatic and lifetime requirements for the product, then there is for that reason no necessity for cleaning.

This means that relatively mild fluxes should be used for the soldering process. This again implies that the solderability of all components involved, inclusive the PCB, should be in perfect condition.

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