

Vitronics Soltec

By G. Schouten

The effect of different fluxes on soldering of OSP protected boards soldering

Introduction

Sometimes a large difference between fluxes regarding the topside filling can be found.

For OSP coated boards the reason lies probably in the solubility of the OSP coating in the flux during soldering.

Storage and soldering

After the OSP coating is applied as an organic solderability preservative, this coating will loose its solubility for fluxes in due time. The reason for that is that the coating will polymerise in due time, giving a longer molecule structure. These longer molecules are less soluble in flux thinners.

If the preservative coating is not completely removed from the metal (copper) surface, wetting by solder will be obscured and soldering quality problems may occur.

The solubility rate of the OSP coating also depends on the type of thinner that is used in a flux. That is one of the reasons that fluxes can give different results, although the flux specifications may look quite similar.

Once the coating is dissolved in the flux, solder wetting is possible. Next the activator used in the flux can make the difference in soldering results during the soldering process.

So both, the solvent and the activators, may affect the final soldering result, especially when soldering on OSP boards.

Often serious solderability problems can only be avoided when the boards are soldered within a few months (< 6) after the board manufacturing date, thus by reducing the storage time of the bare boards as much as possible.

Multi soldering processes

The use of OSP coated boards in multi soldering processes, such as reflow followed by wave soldering or double reflow with two reflow processes, is not recommended.

The reason is that in the first process the coating will loose its protective properties > 150°C after the first thermal treatment. The unprotected copper will now oxidise rather fast due to the high process temperatures. In the next process these oxidised copper surfaces may now give a solderability problem.

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