Do I need to clean off 'No Clean' flux residue before applying a conformal coating?

Yes.

It is true that the residue left behind from No Clean Flux is non corrosive and non conductive and will not harm your circuit; however, there is still residue. Conformal Coatings are very sensitive to surface cleanliness. If your surface is not free from all oils or residues, the result is uneven protection.

For details on how to remove the residue, refer to the following AppGuide,

http://www.mgchemicals.com/downloads/appguide/appguide1205.pdf

Cat. No. 4140-400G

Types of Fluxes

Fluxes fall into 2 catagories rosin based, and so called water soluble (the flux itself is not water soluble however the residue left after soldering is). There are 2 important specifications for fluxes used in electronics, ANSI/IPC-SF- 818 and MIL-F-14256E.

ANSI/IPC-SF818 spells out 3 assembly classes, class 1 consumer products, class 2 general industrial, class 3 high reliability and military electronics. Both specifications are similar in terms of tests and test methods required to characterize flux and flux performance (see table 1), although there are some language differences.

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Rosin Fluxes

Rosin based fluxes are made from rosin which is extracted from pine sap. The purified product is known as "Water White Rosin". The active ingredient is an organic acid, abietic acid and may contain homologs such as dehydro abietic acid and leviopmaric acid (1,2). In addition to rosin other activators may be present at different levels to increase the ability to clean and deoxidize. Activators are compounds that decompose at soldering temperatures yielding ammonia or hydrochloric acid in the process. Flux activity is catagorized as R (rosin only) RMA (rosin mildly activated) and RA (rosin activated). A low boiling solvent such as isopropanol is used as the vehicle so they are flammable.

In addition to the rosin / activator ratio the solids content (specific gravity) of the flux can be varied. A higher solids content will be used for boards with a high density of connections, and visa versa.

Cat. No. 835

Type R containing only rosin is the least active and is recommended for surfaces very clean to start with. It leaves virtually no residue behind.

Type RMA contains a small amount of additional activator to enhance cleaning and deoxidation leaving only a minimum amount of inert residue behind. A characteristic of RMA fluxes is that the remaining residue be noncorrosive, tack free, and exhibit a high degree of freedom from ionic contamination after cleaning.

Type RA are most active of the rosin fluxes, and leave the most residue, however the residues can be removed with appropriate flux cleaners. These 3 fluxes (R, RMA, RA) are the only ones specified for mil spec work (Mil-F-14256E , ANSI/IPC-SF-818 Class 3).

Water Soluble Fluxes

The so called water soluble fluxes are divided into two categories, organic and inorganic based on composition. Organic fluxes are more active than RA rosin, and inorganic are the most active of all.

**Source: Finishing Industries*