



FCT ASSEMBLY

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Technical Bulletin NC110 No Clean Solder Flux

DESCRIPTION:

NC110 Low Residue NO CLEAN FLUX is a halide-free, non-rosin, organic activated material for wave soldering through-hole, mixed and surface mount assemblies. NC110 is formulated to eliminate bridges or icicles, and provide excellent solderability with minimal flux residue so that cleaning is not necessary.

APPLICATION:

NC110 Low Residue NO CLEAN FLUX is formulated for foam, spray, wave or dip applications. NC110 is suitable for conventional, mixed, and surface mount technologies for telecommunications, computer and general consumer electronics.

Before use read all material safety data information. Previously used flux should be thoroughly cleaned out of the system since small amounts can reduce the performance of the NC110. Conveyors, pallets and fingers should be cleaned. During extended periods of time such as nights and weekends the flux should be removed from the machine and stored in a sealed container. The air stone should be left soaking in Florida CirTech thinners (FT100) and changed before the quality of the foam deteriorates. It is recommended that you use a new stone when replacing Rosin type fluxes. A program should be established for the regular replacement of the flux to avoid the build up of contaminants within the flux. For optimal soldering consistency, the flux should be disposed of once every 40 hours of operation.

FLUX CONTROL: The specific gravity of the flux should be maintained between 0.81 and 0.83. The amount of flux to be applied during **foaming applications** should be between 800 and 1300 micrograms per square inch of solids. The amount of flux to be applied during **spray application** should be between 475 and 850 micrograms per square inch of solids.

SPRAY SYSTEMS: NC110 is suitable and enhanced by the use of a total loss spray system. Ideally an air knife should be fitted even when using a spray system in order to prevent insufficient capillary action when soldering. Spray system air knives should normally be angled slightly towards the system. Excessive white deposits on the topside of the board are usually attributable to excess flux application. Adjustment of the air knife angle, air volume, and pressure can rectify excessive white deposits.

FOAMING SYSTEMS: The air knife hole diameter should be between 1 and 1.5 mm and the distance from the fluxer to the air knife should be approximately 4 to 6 inches. The air knife should be angled between 5 to 12 degrees away from the foam wave so that excess flux can be removed without destroying the foam head.

CONVEYOR SPEED: The ideal conveyor speed is dependent on the type of board and preheat requirements, but a speed between 3.5 to 6.5 feet will suit most applications.

PREHEAT: A topside temperature between 80 and 110 degrees Celsius is recommended.
A bottom side temperature should be 35 degrees Celsius higher than the topside.

SOLDER TEMPERATURE: A solder temperature between 230 and 250 degrees Celsius should be maintained.

THINNING:

The flux solids will need to be controlled by the addition of FT100 flux thinner to compensate for evaporative losses of the flux solvents during operations. In order to control the flux solids it is advisable to monitor the acid number rather than the specific gravity since the solids content is below 5 percent. The acid number should be maintained between 19.0 and 21.0. If the foam fluxer is in continuous operation then the acid number should be checked every two to four hours. An addition of 5.3% FT-100 by volume will lower the acid number by 1.

PHYSICAL PROPERTIES

VALUES

Solids Content	2.2%
Specific gravity at 20 degrees C	0.81 to 0.83
Acid Number (mgKOH/gm)	20
Color	Clear to light Amber
Halide content	ZERO %

ANALYSIS (using a buret)

1. Pipet 5 mL of NC110 into a titration flask.
2. Add 40-50 mL of D.I. water or isopropyl alcohol.
3. Add 2-3 drops of phenolphthalein indicator solution and mix well.
4. Titrate the mixture with 0.1 N base from clear to a pink endpoint.
5. Record the volume of KOH used.

Calculation for acid content of NC110:

$$\text{Acid number (mg KOH / g flux)} = (\text{mls of 0.1 N base}) \times 1.38$$

ADDITIONS

Maintain the acid number between 19.0 and 21.0. An addition of 5.3% FT-100 by volume will lower the acid number by 1.

SAFETY AND HANDLING

Keep away from heat, sparks and open flames. Use in well-ventilated area and observe standard precautions for handling and use. Refer to the Material Safety Data Sheet for further information.

Available in 1-gallon jugs, 5-gallon pails and 55-gallon drums.
Refer to MSDS for additional information.

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