

NC160 No Clean Lead Free Flux

INTRODUCTION

NC160 LEAD FREE FLUX is a no clean activated material for wave soldering through-hole, mixed and surface mount assemblies. NC160 is formulated to work with FCT Assembly's SN100c Bar Solder. NC160 eliminates solder balls while providing excellent solderability with minimal flux residue so that cleaning is not necessary. NC160 was formulated especially for Organic Surface Preservative (OSP) coated PC Boards, which are difficult to solder after multiple passes through reflow solder processes.

ATTRIBUTES

- Excellent cosmetics and a low, clear residue
- Superior activity offering good solderability on all surface finishes
- Good topside wetting

APPLICATION

NC160 LEAD FREE FLUX is formulated for foam, spray, wave or dip applications. NC160 is suitable for conventional, mixed and surface mount technologies for telecommunications, computer and general consumer electronics.

Before use read all MSDS information. Previously used flux should be thoroughly cleaned out of the system since small amounts can reduce the performance of the NC160. 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 FCT Assembly 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 0.81-0.83. The amount of flux to be applied during foaming applications should be between 800-1,300 micrograms per square inch of circuit. The amount of flux to be applied during spray application should be between 475-850 micrograms per square inch of circuit.

SPRAY SYSTEMS

NC160 is suitable and enhanced by a 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 4-6 inches. The air knife should be angled between 5-12 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 3.5-6.5 feet will suit most applications.

PREHEAT

A topside temperature between 90-130°C is recommended. A bottom side temperature should be 35°C higher than the topside.

SOLDER TEMPERATURE

A solder temperature between 250-260°C should be maintained for SN100C Lead Free SOLDER.

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 23.0-25.0, with the use of a digital titrator. If the foam fluxer is in continuous operation then the acid number should be checked every 2-4 hours. An addition of 4% FT-100 by volume will lower the acid number by 1.

ANALYSIS (USING A BURET)

Pipet 5 ml of NC160 into titration flask

Add 40-50 ml of D.I. water or IPA

Add 2-3 drops of Phenolphthalein indicator solution and mix well

Titrate the mixture with 0.1 N base from clear to a pink endpoint

Record the volume of NaOH used

Calculation for acid content of NC160:

Acid number (mg NaOH/g flux) = (mils of 0.1N base) X 1.38

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 5-gallon pails and 55-gallon drums.

TEST RESULTS

J-STD-004A (IPC Tm-650) Test	Result
Flux Type (per J-STD-004A)	ROL1
Copper Mirror	Low
Silver Chromate	Pass
Fluoride test	Zero
SIR	Pass
Electromigration	Pass
Physical Properties	Values
Solids Content	5-6%
Specific Gravity at 20°C	0.80-0.88
Acid Number (mg KOH/gm)	21-31
Color	Light Amber

