

# NC165 NO CLEAN FLUX

## GENERAL DESCRIPTION

NC165 NO CLEAN FLUX is a halide-free, no clean activated material for wave soldering through-hole, mixed and surface mount assemblies. NC165 is completely halide and halogen free, e.g. no hidden halide. NC165 has slightly lower solids content than NC160 for applications where less flux residue is desired. NC165 is formulated to work with FCT Assembly's SN100C Bar Solder and standard Sn/Pb Alloys. NC165 eliminates solder balls while providing excellent solderability with minimal flux residue.

## FLUX CONTROL

- The Specific Gravity of the flux should be maintained between 0.80 and 0.84.
- The amount of flux to be applied during **foaming applications** should be between 800 and 1300 micrograms per square inch of circuit. The amount of flux to be applied during **spray application** should be between 475 and 850 micrograms per square inch of circuit.

## SPRAY SYSTEMS

- NC165 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 deg. 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/minute will suit most applications.

## STORAGE AND HANDLING

Use in well-ventilated area and observe standard precautions for handling and use. Refer to the Material Safety Data Sheet for further information.

## PROCESS CONSIDERATIONS

### • PREHEAT

A topside temperature between 90 and 130 degrees Celsius is recommended.

A bottom side temperature should be 25 degrees Celsius higher than the topside.

### • SOLDER TEMPERATURE

A solder temperature of 250-260 degrees Celsius 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 22.0 and 26.0 with the use of a digital titrator. If the foam fluxer is in continuous operation then the acid number should be checked every two to four hours. An addition of 4% FT-100 by volume will lower the acid number by 1.

## STANDARD PRODUCT AVAILABILITY

UNIT OF MEASURE
<b>1 GALLON JUG</b>
<b>5 GALLON PAIL</b>
<b>55 GALLON DRUM</b>

**SAFETY**

NC165 LEAD FREE FLUX is formulated for foam, spray, wave or dip applications. NC165 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 NC165. 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.

**ANALYSIS (USING A BURET)**

1. Pipet 5 mL of NC165 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 0.1 N base used.

Calculation for acid content of NC165:

**Acid number** (mg NaOH / g flux) = (mLs of 0.1 N base) x 1.37

**ADDITIONS**

Maintain the acid number between 22.0 and 26.0. An addition of 4% FT-100 by volume will lower the acid number by 1.

**CLEANING**

NC165 is a no clean liquid flux and does not need to be removed from the circuit board. If the need arose to remove the flux residue, then the following cleaners could be used.

Kyzen Aquanox: A4625, A4241, A4651US  
 Kyzen Cybersolv: 141-R  
 Kyzen Ionox: I3302

**PHYSICAL PROPERTIES**

Physical Properties	Values
Solids Content	3.4 – 3.8%
Specific Gravity at 20 degrees C	0.80 – 0.84
Acid Number (mgKOH/gm)	22 - 26
Color	Clear to light amber
Copper mirror	Low activity
Halide Content	0.00%
Silver chromate	No halides
Fluoride test	None detected
Ion chromatography	No halides
J-STD-004 Designation	ORL0

**MATERIAL SAFETY DATA SHEETS**

Material Safety Data Sheets (MSDS) are available online at [www.fctassembly.com](http://www.fctassembly.com)