



FCT Assembly
LEADERS IN TECHNOLOGY

VOC551

VOC Free Water Washable Flux

DESCRIPTION

VOC551 VOC Free Flux is a halide activated organic flux for wave soldering through-hole, mixed and surface mount assemblies. VOC551 eliminates solder balls while providing excellent solderability producing shiny joints and the residues are easily removed with plain water.

APPLICATION

VOC551 FLUX is formulated for foam, spray, wave or dip applications. VOC551 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 VOC551. 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 deionized water. 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 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

VOC551 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 flux should be maintained approximately ½ inch above the foaming stone to give a uniform foam head. 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 3.0 to 5.5 feet will suit most applications.

PREHEAT

A topside temperature between 100 and 130 degrees Celsius is recommended.
A bottom side temperature should be 35 degrees Celsius higher than the topside.

SOLDER TEMPERATURE

A solder temperature between 255 and 270 degrees Celsius should be maintained for SN100C LEAD FREE SOLDER. For 63/37, a temperature of 245-255 degrees Celsius is recommended.

THINNING

Flux maintenance is much simpler with VOC Free fluxes as evaporative loss in a foam flux process is much less than with an alcohol based flux. No thinning is generally required in normal foam flux use. If thinning is required, the Analysis described below is recommended.

CLEANING

Circuit boards soldered with VOC551 must be cleaned due to the aggressive nature of the flux. It is recommended that boards be cleaned with hot water (110-150°F) with a final deionized water rinse. No additional cleaning agents are required unless there are other contaminants present such as handling or processing residues. These can easily be removed with the addition of FCT RA2000 cleaner at 1-2% concentration to the wash bath.

PHYSICAL PROPERTIES

	VALUES
Solids Content	23 +/- 2%
Specific gravity at 25 degrees C	1.040-1.080
Acid Number (mgKOH/gm)	31-35
Color	Clear, colorless to light yellow
Halide content	1.0%

ANALYSIS (using a buret)

1. Pipet 5 mL of VOC551 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 NaOH used.

Calculation for acid content of VOC551:

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

ADDITIONS

Maintain the acid number between 38.0 and 44.0 using deionized water as thinner. An addition of 3% D.I Water by volume will lower the acid number by 1.

SAFETY AND HANDLING

VOC 551 is water based and is subject to freezing. The minimum storage temperature is 40°F (4°C). Should the flux freeze, it is easily reconstituted by stirring at room temperature. 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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