



ALPHA® EF-6808HF

HALOGEN-FREE, LOW SOLIDS, ALCOHOL BASED NO-CLEAN LIQUID SOLDERING FLUX

DESCRIPTION

ALPHA® EF-6808HF is a halogen-free, low solids, alcohol based, no-clean flux for use in a variety of automated and manual soldering applications. While effective on many types of assemblies, this flux has been found to exhibit excellent hole fill on assemblies with high-density components. Additionally, **ALPHA® EF-6808HF** exhibits low bridging, icicles and solder balls in both SnPb and Pb-free processes. Flux residues are uniform, transparent, tack free and highly pin testable. **ALPHA® EF-6808HF** is highly reliable and complies with all current Halogen-Free industry standards.

FEATURES & BENEFITS

Features

- **ALPHA® EF-6808HF** contains a unique blend of solvents, activators, rosins, surfactants and other ingredients

Benefits

- **ALPHA® EF-6808HF** is good for the environment as it complies with all current halogen-free industry standards
- **ALPHA® EF-6808HF** produces highly reliable assemblies meeting the toughest ECM / SIR requirements
- **ALPHA® EF-6808HF** exhibits excellent soldering in both single and dual wave processes using a variety of SnPb and Pb-free alloys
- **ALPHA® EF-6808HF** leaves uniform, tack free and pin testable residues

APPLICATION GUIDELINES

PREPARATION: In order to maintain consistent soldering performance and electrical reliability, it is important to begin the process with circuit boards and components that meet established requirements for solderability and ionic cleanliness. It is suggested that assemblers establish specifications on these items with their suppliers and that suppliers provide Certificates of Analysis with shipments and/or assemblers perform incoming inspection. A common specification for the ionic cleanliness of incoming boards and components is 10 µg/in² maximum, as measured by an Omegameter with heated solution.

Care should be taken in handling the circuit boards throughout the process. Boards should always be held at the edges. The use of clean, lint-free gloves is also recommended.

Conveyors, fingers and pallets should be cleaned regularly to reduce the build-up of flux residues. ALPHA® AutoClean 40 cleaner is recommended for this process.





FLUX APPLICATION: ALPHA® EF-6808HF is suggested to be applied by spray application. A proper preheat setting will help to achieve a goal of best soldering performance. Please refer below recommend preheat setting:

OPERATING PARAMETER	Recommendation
Flux application	Spray
Amount of Flux Applied	Single : 800 – 1,200 µg/in ² solids Dual : 1,200 – 1,600 µg/in ² solids
Top-Side Preheat Temperature	80°C ~115°C
Bottom side Preheat Temperature	100°C ~135°C
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2°C/second (35°F/second) maximum
Conveyor Speed	1.0 ~ 1.5 m/min.
Contact Angle	4° ~ 6°
Contact Time	2 ~ 5 sec
<i>These are general guidelines which have proven to yield excellent results; however, depending upon your equipment, components, and circuit boards, your optimal settings may be different. In order to optimize your process, it is recommended to perform a design experiment, optimizing the most important variables (amount of flux applied, conveyor speed, topside preheat temperature, solder pot temperature and board orientation).</i>	

CONTROL:

ALPHA® EF-6808HF flux should be applied by spray fluxing application. A uniform coating of flux is essential to successful soldering. When applying flux, it is important to run a series of tests to ensure that the flux is being applied uniformly, that it is penetrating from top to bottom of the board on all holes to be soldered and to make sure that excessive amounts of flux are not being applied. There are various methods for conducting these tests. Consult with your local *Alpha Customer Technical Service Representative* for more information. Depending on alloy and production, user could utilize below table for soldering reference.

RESIDUE REMOVAL: ALPHA® EF-6808HF is a no-clean flux and the residues are designed to be left on the board. If desired, flux residues can be removed with Alpha 2110 saponifier cleaner and with other commercially available solvent cleaners and saponifier cleaners.

HEALTH & SAFETY

Please refer to the Material Safety Data Sheet as the primary source of health and safety information. Inhalation of the volatilized flux activator fumes, which are generated at soldering temperatures, may cause headaches, dizziness and nausea. Suitable fume extraction equipment should be used to remove the flux from the work area. An exhaust at the exit end of the wave solder machine may also be needed to completely capture the fumes. Observe precautions during handling and use. Suitable protective clothing should be worn to prevent the material from coming in contact with skin and eyes.

TECHNICAL SPECIFICATIONS

Item	Typical Values	Item	Typical Values
Appearance	Clear, Light Amber	Flash Point (T.C.C.)	17°C
Solids Content, wt/wt	4.0%	Recommended Thinner	ALPHA 425
Specific Gravity @ 25°C (77°F)	0.793	Shelf Life	12 months
Acid Number (mg KOH/g)	19	IPC J-STD-004(B) Designation	ROL0

HALOGEN CLASS

Standard	Requirement	Test Method	Status
IEC 61249-2-21	Post soldering residues contain <900ppm each or total of <1500ppm Br or Cl from flame retardant source	TM EN 14582 Solids extraction per IPC TM 2.3.34	PASS
JEDEC A Guideline for Defining "Low Halogen" Electronic products	Post soldering residues contain <1000ppm Br or Cl from flame retardant source		PASS

CORROSION AND ELECTRICAL TESTING - SAC305 Alloy

CORROSION TEST

Test		Requirement for ROL0	Results
IPC	Silver Chromate Paper IPC-TM 650 Test Method 2.3.33	No detection of halide	PASS
	Copper Mirror Test IPC-TM 650 Test Method 2.3.32	No complete removal of copper	PASS
	Copper Corrosion Test IPC-TM650 Test Method 2.6.15	No evidence of corrosion	PASS
JIS	Copper Corrosion Test JIS Z 3197:1999 Test Method 8.4.1	No evidence of corrosion	PASS

IPC J-STD-004B SURFACE INSULATION RESISTANCE

Test	Requirements ($<1.0 \times 10^9$ allowed during initial 24 hrs.)	Results (min. of all measurements recorded)		
		< 24 Hrs	24 – 168 Hrs	Visual
"Comb-Down" Un-cleaned	$>1.0 \times 10^8 \Omega$	$1.3 \times 10^8 \Omega$	$6.0 \times 10^8 \Omega$	PASS
"Comb-Up" Un-cleaned	$>1.0 \times 10^8 \Omega$	$1.2 \times 10^9 \Omega$	$3.6 \times 10^{10} \Omega$	PASS
Control Boards	$>1.0 \times 10^9 \Omega$	$1.4 \times 10^{11} \Omega$	$2.3 \times 10^{11} \Omega$	NA

IPC Test Condition (per J-STD-004B TM2.6.3.7): IPC B-24 coupons, 12V, 40°C, 90% RH, measurements recorded @ 20min intervals

IPC J-STD-004B ELECTROCHEMICAL MIGRATION RESISTANCE

Test	SIR (Initial)	SIR (Final)	Requirement	Result	Visual Result
"Comb-Up" Un-cleaned	$1.2 \times 10^{11} \Omega$	$2.7 \times 10^{11} \Omega$	IR (Final) \geq IR (Initial)/10	PASS	PASS
"Comb-Down" Un-cleaned	$1.1 \times 10^{10} \Omega$	$9.8 \times 10^9 \Omega$	IR (Final) \geq IR (Initial)/10	PASS	PASS
Control	$> 1.0 \times 10^{12} \Omega$	$> 1.0 \times 10^{12} \Omega$	Not applicable	PASS	PASS

IPC Test Condition (per J-STD-004B TM2.6.14.1): IPC B-25 coupons, 65°C, 88.5% RH 500Hours