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MacDermid Alpha ELECTRONICS SOLUTIONS

TECHNICAL DATA SHEET

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.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

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: 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/in^2 maximum, as measured by an ionic contamination tester.

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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 to 1,200 µg/in^2 solids Dual : 1,200 to 1,600 µg/in^2 solids
Top-Side Preheat Temperature	80 to 115 °C
Bottom side Preheat Temperature	100 to 135 °C
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 °C/second (35 °F/second) maximum
Conveyor Speed	1.0 to 1.5 m/min.
Contact Angle	4 to 6°
Contact Time	2 to 5 s
Solder Pot Temperature	250 to 275 °C
These are general guidelines have been proven to yield excellent results; however, depending upon your equipment, components, and circuit boards, your optimal settings may be different. 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).	

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 Customer Technical Service Representative for more information. Depending on alloy and production, the user could utilize the below table for soldering reference.

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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.

HALOGEN STATUS

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

TECHNICAL DATA

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 +/- 0.005	Shelf Life (from Date of Mfg.)	360 days
Acid Number (mg KOH/g)	19.4 +/- 2	IPC J-STD-004(B) Designation	ROL0

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CORROSION & 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-TM-650 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 x 10^8 allowed during initial 24 hrs.)	Results (min. of all measurements recorded)		
		< 24 Hrs	24 to 168 Hrs	Visual
"Comb-Down" Un-cleaned	>1.0 x 10^8 Ω	1.3 x 10^8 Ω	6.0 x 10^8 Ω	PASS
"Comb-Up" Un-cleaned	>1.0 x 10^8 Ω	1.2 x 10^9 Ω	3.6 x 10^{10} Ω	PASS
Control Boards	>1.0 x 10^9 Ω	1.4 x 10^{11} Ω	2.3 x 10^{11} Ω	NA
IPC Test Condition (per J-STD-004B TM2.6.3.7): IPC B-24 coupons, 12V, 40 ºC, 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 x 10^{11} Ω	2.7 x 10^{11} Ω	IR (Final) ≧IR (Initial)/10	PASS	PASS
"Comb-Down" Un-cleaned	1.1 x 10^{10} Ω	9.8 x 10^9 Ω	IR (Final) ≧IR (Initial)/10	PASS	PASS
Control	> 1.0 x 10^{12} Ω	> 1.0 x 10^{12} Ω	Not applicable	PASS	PASS
IPC Test Condition (per J-STD-004B TM2.6.14.1): IPC B-25 coupons, 65 ºC, 88.5% RH 500 hours					

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RECYCLING SERVICES

We provide safe and efficient recycling services to help companies meet their environmental and legislative requirements and at the same time, maximize the value of their waste streams.

Our service collects solder dross, solder scrap, and various forms of solder paste waste. Please contact your local sales representative for recycling capabilities in your area.



SAFETY & WARNING

It is recommended that the company/operator read and review the Safety Data Sheets for the appropriate health and safety warnings before use. **Safety Data Sheets are available.**

CONTACT INFORMATION

www.macdermidalpha.com

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Also read carefully warning and safety information on the Safety Data Sheet. This data sheet contains technical information required for safe and economical operation of this product. READ IT THOROUGHLY PRIOR TO PRODUCT USE . Emergency safety directory assistance: US 1 202 464 2554, Europe + 44 1235 239 670, Asia + 65 3158 1074, Brazil 0800 707 7022 and 0800 172 020, Mexico 01800 002 1400 and (55) 5559 1588

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