

ALPHA[®] SMX-018

Rosin-Based, Low Activity, Low Residue Flux

DESCRIPTION

ALPHA SMX-018 is a rosin-based, low activity and low-residue flux designed for chip mounting on electronics where high reliability is required.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- ALPHA SMX-018 is designed for assemblies where Sn/Ag/Cu type lead-free solder is applied.
- ALPHA SMX-018 is optimally formulated for SMT assemblies by reducing non-wetting and the occurrence of solder bridging.
- ALPHA SMX-018 exhibits sufficient insulating property as the flux residues are non-corrosive and non-hygroscopic.

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.

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 SMX-018 is suggested to be applied by spray or foam application.

A proper preheat setting will help to achieve optimum soldering performance. Refer to recommendations below:

Operating Parameter	Recommendation
Flux application	Spray, Foam
Amount of Flux Applied	Spray: 375 µg/in ² of solids/in ² maximum
Top-Side Preheat Temperature	100 to 120 °C
Bottom side Preheat Temperature	100 to 140 °C
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 °C/second (35 °F/second) maximum
Conveyor Speed	1.2 to 1.8 m/min.
Contact Angle	5 to 7° (6° is recommended)
Contact Time	2 to 5 sec
Solder Pot Temperature	255 to 265 °C
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).	

Follow the guidelines below for foam fluxing:

- Adjust the height of foam to the proper level.
- Keep the proper level by adding fresh ALPHA SMX-018.
- The specific gravity should be maintained at 0.832 +/- 0.010 by adding ALPHA 425.
- Clean the fluxer at regular intervals to remove oil, water or flux residues.
- Clean the fluxer using ALPHA 425 at the time of replacing ALPHA SMX-018.

Control: ALPHA SMX-018 flux should be applied by spray and foam 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.

Residue Removal: ALPHA SMX-018 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.

TECHNICAL DATA

Item	Typical Values	Item	Typical Values
Appearance	Clear, Pale Yellow	Flash Point (T.C.C.)	15 °C
Solids Content, wt/wt	7.5%	Recommended Thinner	ALPHA 425
Specific Gravity @ 25 °C (77 °F)	0.832 +/- 0.005	Shelf Life (from Date of Mfg.)	360 days
Acid Number (mg KOH/g)	39.30 +/- 5	IPC J-STD-004 Designation	ROM0
Chloride Ion Content (%)	None	Packaging Size	1, 5 and 55 gallon

CORROSION & ELECTRICAL TESTING
Corrosion Test

Test		Requirement for ROL0	Results
IPC	Silver Chromate Paper IPC-TM 650	No detection of halide	PASS
	Copper Mirror Test IPC-TM 650	Breakthrough in <50% of test area	PASS
JIS	Silver Chromate Paper JIS-Z-3197	No detection of halide	PASS
	Copper Mirror Test JIS-Z-3197	Breakthrough in <50% of test area	PASS

Bellcore Electrochemical Migration Resistance (All values shown are in ohms)

Test	Conditions	Requirements	Results
Bellcore ECM	85 °C/85% RH, 1000 hrs	> 1.0 x 10 ⁹	Pass
10V Bias, measurement @ 100V/JIS-2 Type Board Heat Treatment: Apply 0.05ml of flux and dry at 100 °C for 3 minutes			

IPC-J-STD-004 Surface Insulation Resistance (All values shown are in ohms)

Test	Conditions	Requirements	Results
"Comb-Up"	85 °C/85% RH, 7 days	> 1.0 x 10 ⁹	3.5 x 10 ⁹
"Comb-Down"	85 °C/85% RH, 7 days	> 1.0 x 10 ⁹	2.0 x 10 ⁹
Control Boards	85 °C/85% RH, 7 days	>1.0 x 10 ⁹	4.1 x 10 ⁹
IPC Test Condition (per J-STD-004): 46V, measurement @ 100V			

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 or [link here](#).



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 at MacdermidAlpha.com/assembly-solutions/knowledge-base.**

STORAGE

The 12-month shelf life information is valid for the ALPHA SMX-018 product in factory-sealed containers from the date of manufacture. Containers of this material should be protected from exposure to direct sunlight and precipitation which may cause container failure over time.

CONTACT INFORMATION

**To confirm this document is the most recent version, please contact
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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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