

ALPHA[®] WB-700

VOC-Free, No-Clean Flux

DESCRIPTION

ALPHA WB-700 is a VOC-free halogen-free/resin-free and low-residue no-clean flux for impeccable soldering with highest activation of Alpha's VOC-free fluxes that meet the requirements of the Bellcore ECM specification. **ALPHA WB-700** is formulated with a proprietary blend of organic activators ensuring excellent wetting and good penetration, even in case of passivated copper surfaces after repeated thermal load. Proprietary additives reduce surface tension on solder resist and solder, thus ensuring drastic reduction of solder globule formation. The **ALPHA WB-700** formulation features high temperature resistance and significantly reduces the tendency for solder bridges and shorts.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Meets Bellcore Electro-Chemical Migration requirements
- VOC-free; compliance with emission regulations
- Excellent wetting; good penetration also for passivated copper after multiple reflow processes
- Strong reduction of bridges and shorts through thermally stable activators
- Significant reduction of solder globules by effective reduction of solder resist surface tension
- Content has extremely low and non-adhesive flux residues; offers excellent adaptability at contact test and results to visually clean PCBs
- Suitable for lead-free solders such as 99Sn1Cu, 96.5Sn3.5Ag, 95.5Sn4Ag0.5Cu, ALPHA SnCX Plus, ALPHA SACX[®] Plus and others

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 further widespread requirement on printed circuit board and component cleanliness is the maximum limit of 5 µg NaCl/in² measured with an ionic contamination tester.

The printed circuit boards should be handled carefully during the process. PCBs should always be gripped by their edges. Use of clean, lint-free gloves is recommended. Conveyor belts, transport fingers, and magazines should be cleaned. ALPHA SM-110 has proved to be extremely suitable for this purpose.

Flux Application: ALPHA WB-700 is suitable for spray application. The homogeneity of flux application can be visually checked. For this purpose, a printed circuit board or sheet of glass (heat-resisting) is transported over the spray fluxer and pre-drying units to be evaluated then.

Control: The fluxing agent must be checked when used by drum fluxers. Compensate dilution losses by adding distilled water. Density control does not represent an effective method of checking solid content as this is the case with all solid-lean fluxes. The acid number should be maintained in the range 27.0 to 29.0. Check is best made using titration. The acid number should be checked every 8 hours during continuous operation. Dirt and pollution will accumulate in the flux reservoir with increasing usage period. We recommend replacing the flux after 40 hours operating time with fresh one in order to ensure having always the same good soldering results. Rinse flux reservoir with distilled water after emptying.

Operating Parameter	Recommendation
Amount of Flux Applied by Spray	75 to 160 $\mu\text{g}/\text{cm}^2$ (500 to 1000 $\mu\text{g}/\text{in}^2$ solid matter)
Preheating PCB Top-Side; PCB Bottom-Side	105 to 120 $^{\circ}\text{C}$; approx. 30 $^{\circ}\text{C}$ higher than Top-Side
Recommended Profile	linear rise to desired PCB Top-Side temperature
Maximum Ramp Rate of Top-side Temperature (to avoid component damage)	2 $^{\circ}\text{C}/\text{second}$ max.
Conveyor Angle	5 to 8 $^{\circ}$ (6 $^{\circ}$ typical)
Conveyor Speed	1 to 1.8 m/min
Solder Contact Period	1.5 to 4 seconds (2.5 to 3 seconds most common)
Solder Pot Temperature (63Sn37Pb)	235 to 260 $^{\circ}\text{C}$
Lead-Free alloys	260 to 290 $^{\circ}\text{C}$
<p>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).</p>	

Residue Removal: ALPHA WB-700 is a no-clean flux and the residues are designed for staying on the assembly. However, the residues can be removed with water if required.

TECHNICAL DATA

Item	Specification	Item	Specification
Appearance	Clear, Colorless Liquid	pH, as is	~1.8
Solids Content, wt/wt%	3.50	Flash Point (T.C.C.)	None
Density @ 20 °C (68 °F)	1.009 ± 0.003	Shelf Life (from Date of Mfg.)	360 Days
Acid Number (mg KOH/g)	28.0 ± 1.0	IPC J-STD-004 Designation	ORL0

CORROSION & ELECTRICAL TESTING
BELLCORE SURFACE INSULATION RESISTANCE (All values in ohms.)

Test	Conditions	Requirements	Results
"Comb-Down" Un-cleaned	35 °C/85% RH, 5 days	> 1.0 x 10 ¹¹	1.5 x 10 ¹¹
"Comb-Up" Un-cleaned	35 °C/85% RH, 5 days	> 1.0 x 10 ¹¹	1.0 x 10 ¹²
Control Boards	35 °C/85% RH, 5 days	> 2.0 x 10 ¹¹	9.0 x 10 ¹¹
Bellcore Test Condition (per GR 78-CORE, Issue 1): 48 Volts, measurement @ 100V/25 mil lines/50 mil spacing			

BELLCORE ELECTROMIGRATION RESISTANCE (All values in ohms.)

Test	SIR (Initial)	SIR (Final)	Requirement	Result	Visual Result
"Comb-Up" Un-cleaned	1.0 x 10 ¹⁰	9.2 x 10 ¹⁰	SIR(Initial) / SIR(Final) <10	PASS	PASS
"Comb-Down" Un-cleaned	2.4 x 10 ⁹	6.7 x 10 ⁹	SIR(Initial) / SIR(Final) <10	PASS	PASS
Bellcore Test Condition (per GR 78-CORE, Issue1): 65 °C/85% RH/500 Hours/10V, measurement @ 100V/IPC B-25B Pattern (12.5 mil lines, 12.5 mil spacing)					

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

ALPHA WB-700 should be stored in original containers and properly sealed. Material should be stored at (0 to 25 °C). ALPHA WB-700 contains water as solvent. The flux will freeze at temperatures below 0 °C.

CONTACT INFORMATION

**To confirm this document is the most recent version, please contact
 Assembly@MacDermidAlpha.com
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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