

ALPHA® WB-700-TF

VOC-Free, No-Clean Flux

DESCRIPTION

ALPHA WB-700-TF is a VOC-free, halogen-free/resin-free and low-residue no-clean flux for impeccable soldering with the highest activation of Alpha's VOC-free fluxes. **ALPHA WB-700-TF** is designed to be a drop-in replacement for **ALPHA WB-700** for any user wishing to use an NPE/OPE free formulation. It is formulated with a protected blend of organic activators ensuring excellent wetting and good penetration, also in case of passivated copper surfaces after repeated thermal load. Several proprietary additives reduce the surface tension of solder resist and solder thus ensuring drastic reduction of solder globule formation. The **ALPHA WB-700-TF** formula features high temperature resistance and significantly reduces the tendency for solder bridges and shorts.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- VOC-free; compliance with emission regulations
- Excellent wetting; good penetration also on passivated copper after multiple reflow processes
- Strong reduction of bridges and shorts through thermally stable activators
- Drastic 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 99SnCu, 96.5Sn3.5Ag, 95.5Sn4Ag0.5Cu, ALPHA SnCX Plus™ & ALPHA SACX Plus® and others

APPLICATION GUIDELINES

PREPARATION: Employment of printed circuit boards to fulfill codified requirements on solderability and cleanliness is indispensable for steady and sturdy processes and electric dependability. Component inserters should preferably agree on specifications with their suppliers and have this verified by means of a certificate and/or check of goods received. 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 carefully treated 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-TF** 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 - 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 to replace 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 °C; approx. 30 °C higher than Top-Side
Recommended profile	linear rise to desired PCB Top-Side temperature
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 °C/second max.
Conveyor Angle	5° to 8° (6° 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 (Sn63Pb37)	235 to 260°C
Lead-Free alloys	260 to 290°C
<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>	

RESIDUE REMOVAL: **ALPHA WB-700-TF** 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	Typical Values	Item	Typical Values
Appearance	Clear, Colorless Liquid	pH	1.8
Solids Content, wt/wt%	3.50	Flash Point (T.C.C.)	None
Specific Gravity @ 25 °C (77 °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
Corrosion Testing

Test	Requirements	Results
Copper Mirror Tests IPC J-STD-004; TM-650 2.3.32	No evidence of mirror breakthrough for L Classification	PASS
Copper Corrosion Test IPC J-STD-004; TM-650 2.6.15	No evidence of corrosion	PASS

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

Test	Condition	Requirement	Result
"Comb-Up" Uncleaned	85 °C/85% RH, 7 days	$>1.0 \times 10^8$	2.59×10^{10}
"Comb-Down" Uncleaned	85 °C/85% RH, 7 days	$>1.0 \times 10^8$	5.29×10^{10}
Control Boards	85 °C/85% RH, 7 days	$>1.0 \times 10^9$	2.47×10^{11}
IPC Test Condition (per IPC-TM-650 2.6.3.3): -48 V, measurement @ 100 V/IPC B-24 board (0.4 mm lines, 0.5 mm spacing).			

IPC J-STD-004B Electrochemical Migration Resistance (All values in ohms)

Test Condition	SIR (Initial)	SIR (Final)	Requirement	Result
"Comb-Up" Uncleaned	4.90×10^9	1.10×10^{11}	$SIR(\text{Final}) > SIR(\text{Initial}) / 10$	PASS
Comb-Down" Uncleaned	4.55×10^9	1.56×10^{11}	$SIR(\text{Final}) > SIR(\text{Initial}) / 10$	PASS
<i>IPC Test Condition (per IPC-TM-650 2.6.14.1): 65 °C/85 % RH/596 hours/10 V, measurement @ 100 V/IPC B-25B Pattern (12.5 mil lines, 12.5 mil spacing).</i>				

SAFETY & WARNING

Inhaling solder fumes may lead to headaches, dizziness and feeling of sickness. Suitable exhaust for removing the fumes from the working area is recommended. Wear personnel protective equipment when handling or using this material.

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 AlphaAssembly.com**

STORAGE

ALPHA WB-700-TF should be stored in original containers and properly sealed. Material should be stored at 0 to 25 °C. **ALPHA WB-700-TF** 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
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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 directory assistance: Chemtrec 1 - 800 - 424 - 9300.

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