ALPHA® 859-13S

Water Soluble Flux

DESCRIPTION

ALPHA 859-13S flux is intermediate-activity flux based on water soluble resin, and do not contain organic acid activators. This flux can be effectively cleaned with plain water. The base resin is a derivative of rosin but, unlike rosin, does not have any of the inherent fluxing capabilities of rosin, nor does it dry to hard, encapsulating residues, as does rosin.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

APPLICATION GUIDELINES

This flux is recommended for mass soldering applications where traditional organic water soluble fluxes are considered too corrosive. They have excellent characteristics for foam application and can also be applied by wave, spray, dip, and brush techniques.

ALPHA 859-13S is suitable for soldering to the following metals, provided the surfaces to be soldered are not excessively tarnished:

Cadmium (Plate)	Platinum	Terne (Plate)	Copper	Silver
Tin (Hot Dipped)	Gold	Solder (Plate)	Tin (Plate)	Palladium

Operating Parameter	Recommendation
Flux application	Foam, Wave, Spray
Amount of Flux Applied	Foam, Wave: 3,000 to 4,000 µg/in^2 of solids Spray: 2000 to 3,500 µg/in^2 of solids
Foam Fluxing	
Foam Stone Pore Size	20 to 50 µm
Distance that Top of Stone is Submerged Below Flux	1 to 1 ½ inches (25 to 40 mm)
Foam Fluxer Chimney Opening	3/8 to ½ inch (10 to 13 mm)
Foam Fluxing Using Air Knife	
Air Knife Hole Diameter	1 to 1.5 mm
Distance Between Holes	4 to 5 mm

Operating Parameter	Recommendation
Distance from Fluxer to Air Knife	4 to 6 inches (10 to 15 cm)
Air Knife Angle Back toward Fluxed from perpendicular	3 to 5°
Top-Side Preheat Temperature	85 to 120 °C
Bottom side Preheat Temperature	About 35 °C higher than topside (for complex boards, use higher preheat >115 °C)
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 °C/second maximum
Conveyor Speed	2 to 6 feet/minute (0.6 to 1.8 meters/minute)
Contact Angle	5 to 8° (6° most common)
Contact Time	1.5 to 6.0 seconds (2½ to 3 seconds most common)
Solder Pot Temperature	Tin-Lead: 235 to 260 °C Lead-Free: 260 to 270 °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. 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: The consistency of ALPHA 859-13S should be maintained by the addition of thinner to compensate for evaporation losses. It is recommended that the specific gravity @ 25 °C / 77 °F be maintained between 0.823 and 0.833 by the addition of thinner. Only ALPHA 425 Thinner should be used for this purpose to ensure consistency of flux foaming and soldering characteristics.

Residue Removal: The residues of ALPHA 859-13S can easily be removed with hot water cleaning, and there is a minimum amount of foaming during residue removal. Disposal of water washing effluents presents no problems, since they are biodegradable. However, pH adjustment and pre-treatment to remove dissolved lead may be necessary. If desired, ALPHA 2444 Rinse Aid can be used. To avoid the risk of corrosion, residues should be thoroughly cleaned, preferably, immediately or not beyond four hours after processing.

TECHNICAL DATA

Item	Typical Values	Item	Typical Values
Appearance	Clear, Amber liquid	Flash Point (T.C.C.)	17 °C/62 °F
Solids Content, wt/wt	25%	IPC J-STD-004 Designation	ORH1
Specific Gravity @ 25 °C (77 °F)	0.828 ± 0.005	Recommended Thinner	**ALPHA 425**
pH (5% Solution)	6.7	Shelf Life (from Date of Mfg.)	540 days

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.**

CONTACT INFORMATION

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