

# ALPHA<sup>®</sup> SLS 26F

## Low Solids, No-Clean Flux

### DESCRIPTION

**ALPHA SLS 26F** provides the broadest process window for a rosin/resin-free, no-clean flux. After wave soldering, **ALPHA SLS 26F** leaves no visible residue to interfere with pin testing. **ALPHA SLS 26F** is designed to provide excellent soldering results (low defects rates) to tin-lead coated PCB's and to bare copper with organic coatings.

**ALPHA SLS 26F** is an active, rosin/resin-free, low solids, no-clean flux. It is formulated with a thermally stable activator system, comprised of a proprietary activator system. The activators are designed to provide the broadest operating window from a low solids, no-clean flux, while maintaining a high level of long-term electrical reliability. After wave soldering, **ALPHA SLS 26F** leaves no visible residue with most solder masks, which can be pin tested.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### FEATURES AND BENEFITS

- High activity for excellent soldering and low defect rates
- Leaves no visible residue to interfere with pin testing
- Residues are compatible with a broad range of conformal coatings
- Meets Bellcore requirements for long-term electrical reliability

### APPLICATION GUIDELINES

**Preparation** - In order to maintain a consistent level of soldering performance and electrical reliability, it is important to start the process with circuit boards and components which 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/components is 5µg/in<sup>2</sup> maximum, as measured by an ionic contamination tester.

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. When switching from one flux to another, the use of a new foam stone is recommended (for foam fluxing).

Conveyors, fingers and pallets should be cleaned. ALPHA SM-110 Solvent Cleaner has been found to be very useful for these cleaning applications. When foam fluxing, do not use hot fixtures or pallets. Hot fixtures/pallets will deteriorate the foam head.

**Flux Application** - ALPHA SLS 26F is formulated to be applied by foam, wave or spray methods. If foam fluxing, the foam fluxer should be supplied with compressed air which is free of oil and water. Keep the flux tank full at all times. The top of the foam stone should be a maximum of 1-½ inches below the surface of the flux. Adjust the air pressure to produce the optimum foam height with a fine, uniform foam head. A uniform coating of flux is essential to successful soldering.

If using the foam or wave method of application, an air knife is recommended after the fluxing operation. An air knife will help ensure that the flux is uniformly distributed across the board and will remove the excess flux. If spray fluxing, the uniformity of the coating can be visually checked by running a piece of cardboard through the spray fluxer or by processing a board sized tempered glass plate through the spray and through the preheat section.

Operating Parameter	Recommendation
Flux application	Foam, Spray, Wave
Amount of Flux Applied	Foam: 1,000 to 2,000 µg/in <sup>2</sup> of solids Spray: 450 to 750 µg/in <sup>2</sup> of solids
<b>Foam Fluxing</b>	
Foam Stone Pore Size	20 to 50 µm
Distance that Top of Stone is Submerged Below Surface	1 to 1½ inches (25 to 40 mm) maximum
Foam Fluxer Chimney Opening	3/8 to 1/2 inch (10 to 13 mm)
Pressure of Air to Foam Fluxer	1 to 2 psi
<b>Foam fluxing Using Air Knife</b>	
Air Knife Hole Diameter	1 to 1.5 mm
Distance Between Holes	4 to 5 mm
Air Knife Pressure	about 2 psi
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	190 to 230 °F (85 to 110 °C)
Bottom-side Preheat Temperature	About 65 °F (35 °C) higher than topside

Operating Parameter	Recommendation
Maximum Ramp Rate of Topside Temperature (to avoid component damage)	2 °C/second (3.5 °F/second) maximum
Conveyor Angle	5 to 8° (6° most common)
Conveyor Speed	4 to 6 ft/min (1.2 to 1.8 m/min)
Contact Time	1.5 to 3.5 sec (2 to 2½ sec most common)
Maximum Change in Temperature from Preheat to Solder Wave	180 °F (100 °C) Max. Temperature Change
Solder Pot Temperature	460 to 500 °F (235 to 260 °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, and solder pot temperature and board orientation).	

**Flux Solids Control** - If foam, wave, or rotary drum spray fluxing, the flux solids will need to be controlled via thinner addition to replace evaporative losses of the flux solvent. As with any flux with less than 5% solids content, specific gravity is not an effective measurement for assessing and controlling the solids content. Monitoring and controlling the acid number is recommended for maintaining the solids content. The acid number should be controlled to between 17.4 and 19.4. Alpha's Flux Solids Control Kit #3, a digital titrator is suggested. Request Alpha's Technical Bulletin SM-458 for details on the kit and titration procedure.

When operating the foam fluxer continuously, the acid number should be checked every two-to-four hours. Over time, debris and contaminants will accumulate in recirculating type flux applicators. For consistent soldering performance, dispose of spent flux every 40 hours of operation. After emptying the flux, the reservoir and foam stone should be thoroughly cleaned with flux thinner.

**Residue Removal** - ALPHA SLS 26F is a no-clean flux and the residues are designed to be left on the board. However, if desired, ALPHA SLS 26F residues can be removed with ALPHA 2110 or with Bioact Solvent Cleaner.

**Touch-Up/Rework** - For a touch-up flux, use of the ALPHA Cleanline Write Flux Applicator with ALPHA NR205 flux and ALPHA Cored Solder are recommended for hand soldering applications.

**TECHNICAL DATA**

Parameters	Typical Values	Parameters/Test Method	Typical Values
Appearance	Clear colorless liquid	Flash Point (T.C.C.)	12 °C (53.6 °F)
Solid Content (wt/wt%)	1.9	Recommended Thinner	ALPHA 26F Additive
Acid Number (mg KOH/g)	17.65 ± 1.55	Shelf Life (from Date of Mfg.)	360 days
Halide Content (equiv. Chlorides)	None	Packaging Size	1, 5, and 55 Gallons
Specific Gravity @ 25°C (77°F)	0.806 ± 0.005	Bellcore TR-NWT-000078, Issue 3 Compliant	Yes
Pounds Per Gallon	6.7	IPC J-STD-004 Classification	ORM0

**CORROSION & ELECTRICAL TESTING**
**Corrosion Testing**

Test	Requirements	Results
Silver Chromate Paper Test	No Detection of Halide	Passes
Copper Mirror Test	No Complete Removal of Copper	Passes
IPC Copper Corrosion Test	Minor Corrosion Acceptable	Type M

**Bellcore Surface Insulation Resistance (all values in ohms)**

Test Conditions	Requirements	Results
"Comb-Up" - Uncleaned	2.0 x 10 <sup>10</sup> minimum	9.6 x 10 <sup>10</sup>
"Comb-Down" - Uncleaned	2.0 x 10 <sup>10</sup> minimum	3.3 x 10 <sup>10</sup>
Control Board	4.0 x 10 <sup>10</sup> minimum	3.0 x 10 <sup>12</sup>

Bellcore Test Condition (per TR-NWT-000078, Issue 3): 35 °C/85%RH/120 Hours/-50 volts, measurement @ 100V/B-25 B board (12.5 mil lines/12.5 mil spacing).

**IPC Surface Insulation Resistance (all values in ohms)**

Test Conditions	Requirements	Results
IPC-SF-818, Class 3 - Uncleaned	1.0 x 10 <sup>8</sup> minimum	9.7 x 10 <sup>9</sup>
IPC Test Condition (per IPC-5F-818, Class 3): 85 °C/85%RH/168 Hours/-50V, measurement @ 100V/IPC B-25 B board (12.5 mil lines, 12.5 mil spacing).		

**Bellcore Electromigration (all values in ohms)**

Test Condition	SIR (Initial)	SIR (Final)	Requirement	Result	Visual Result
Bellcore "Comb-Up" Uncleaned	1.7 x 10 <sup>10</sup>	2.1 x 10 <sup>10</sup>	SIR (Initial)/SIR (Final) < 10	Passes	No Dendrites or Corrosion
Bellcore "Comb-Down" Uncleaned	5.4 x 10 <sup>9</sup>	6.9 x 10 <sup>9</sup>	SIR (Initial)/SIR (Final) < 10	Passes	No Dendrites or Corrosion
Bellcore Test Condition (per TR-NWT-000078, Issue 3): 85 °C/85%RH/500 Hours/10V, measurement @ 100V/IPC B25 B 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](http://MacdermidAlpha.com/assembly-solutions/knowledge-base).**

**CONTACT INFORMATION**

To confirm this document is the most recent version, please contact  
**Assembly@MacDermidAlpha.com**  
[www.macdermidalpha.com](http://www.macdermidalpha.com)

<p><b>North America</b>          109 Corporate Blvd.          South Plainfield, NJ 07080, USA          1.800.367.5460</p>	<p><b>Europe</b>          Unit 2, Genesis Business Park          Albert Drive          Woking, Surrey, GU21 5RW, UK          44.01483.758400</p>	<p><b>Asia</b>          8/F., Paul Y. Centre          51 Hung To Road          Kwun Tong, Kowloon, Hong Kong          852.3190.3100</p>
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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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