

# ALPHA<sup>®</sup> WS-619 LF Solder Paste

Lead-Free, Water Soluble

## DESCRIPTION

**ALPHA WS-619 LF** lead-free solder paste is completely water soluble and halide free. **ALPHA WS-619 LF** is designed for both stencil and dispensing applications in surface mounting processes where aqueous post reflow cleaning is required.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

## FEATURES & BENEFITS

- Minimal foam is generated from cleaned flux residues in recirculating post-cleaning equipment.
- High Reflow Tolerance using a variety of reflow profiles & a wide temperature range.
- Excellent wetting characteristics on all types of copper protective coatings (including OSPs).
- Compatible with either nitrogen or air reflow.

## PRODUCT INFORMATION

<u>Alloys:</u>	SAC305, SAC405, 96.5Sn3.5Ag
<u>Rheology:</u>	Stencil printing and dispensing
<u>Powder Size:</u>	Type 3, Type 4

## APPLICATION GUIDELINES

Formulated for standard and fine pitch printing. ALPHA WS-619 LF is suitable for ultrafine pitch applications when used in conjunction with ALPHA CUT Laser Cut Stencils (up to 16 mils pitch). This paste is also designed for dispensing.

**TECHNICAL INFORMATION**

Category	ALPHA WS-619 LF SAC 305/405 88.5-3-M21 (stencil printing)	ALPHA WS-619 LF SAC305 86-4-M10 (dot dispensing)
<b>Physical Properties</b>		
Appearance (flux residues after reflowed)	Light yellowish color (before water washed)	Light yellowish color (before water washed)
Metal content (%)	88.5%	86.0%
Viscosity (Poise, Malcom spiral viscometer @10rpm)	Available in M16 and M21	Designated M10
Stencil life (55%RH, 22C)	>4 hours	Not applicable
Printability	Suitable for fine pitch printing applications (up to 16 mils pitch components, 15 mils circle)	Not applicable
Response to pause	Good	Not applicable
Dispensability	Not applicable	Yes

<b>ALPHA WS-619 Flux System</b>		
Category	Results	Procedure/Remarks
<b>Electrical Properties</b>		
SIR (IPC)	Pass (>10 <sup>8</sup> ohms), cleaned	4 days, 7 days 85°C/85% RH
SIR (Bellcore)	Pass (>10 <sup>11</sup> ohms), cleaned	4 days, 35°C/85% RH
Electromigration (500 hour Bellcore)	Pass visual and electrical, cleaned	500 hrs, 85°C/85% RH
<b>Chemical Properties</b>		
Halide content (IPC J-Std-004)	None by titration	
Corrosivity (IPC J-Std-004)	Not applicable for water soluble solder paste	
Flux Designation (IPC J-Std-004)	ORH0 – Organic Flux, High Activity, 0% Halide by titration	

**PROCESSING GUIDELINES**

Storage-Handling	Printing / Dispensing	Reflow	Cleaning
<ul style="list-style-type: none"> <li>Refrigerate to guarantee stability @ 32 to 50 °F (0 to 10 °C)</li> <li>Shelf life of refrigerated paste is 3 months</li> <li>Warm-up of 500g jar to room temperature (should be ~ 6 hours). Set up printer with room temperature paste. Check paste temperature with a thermometer.</li> <li>Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste.</li> </ul>	<p><b><u>Stencil:</u></b> Recommend ALPHA CUT Laser Cut Stencil @ 0.005 inch (5 mil) thick for 0.016 inch (16 mil) pitch</p> <p><b><u>Squeegee:</u></b> Metal (Recommended)</p>	<p><b><u>Atmosphere:</u></b> Clean-dry air or nitrogen atmosphere.</p> <p><b><u>Profile (Printing):</u></b></p> <ul style="list-style-type: none"> <li>Ramp @ 40 °C/sec to 170 °C between 65 to 105 seconds</li> <li>Soak from 170 °C to 225 °C between 30 to 120 seconds</li> <li>TAL 45 to 90 Sec</li> <li>Peak temperature: 235 to 240 °C</li> <li>Ramp down to R.T.@ 1 to 6 °C/sec.</li> </ul> <p><b><u>Profile (Dispensing):</u></b> A straight ramp heating to reflow and straight ramp down to room temperature of all joints being soldered.</p>	<p>ALPHA WS-619 LF is designed to be water rinsed in washing operations with minimal foaming in recirculating systems.</p> <p>The flux residues from ALPHA WS-619 LF are completely water soluble. This allows for more flexible washing conditions which can be board design specific.</p>

REFLOW PROFILES

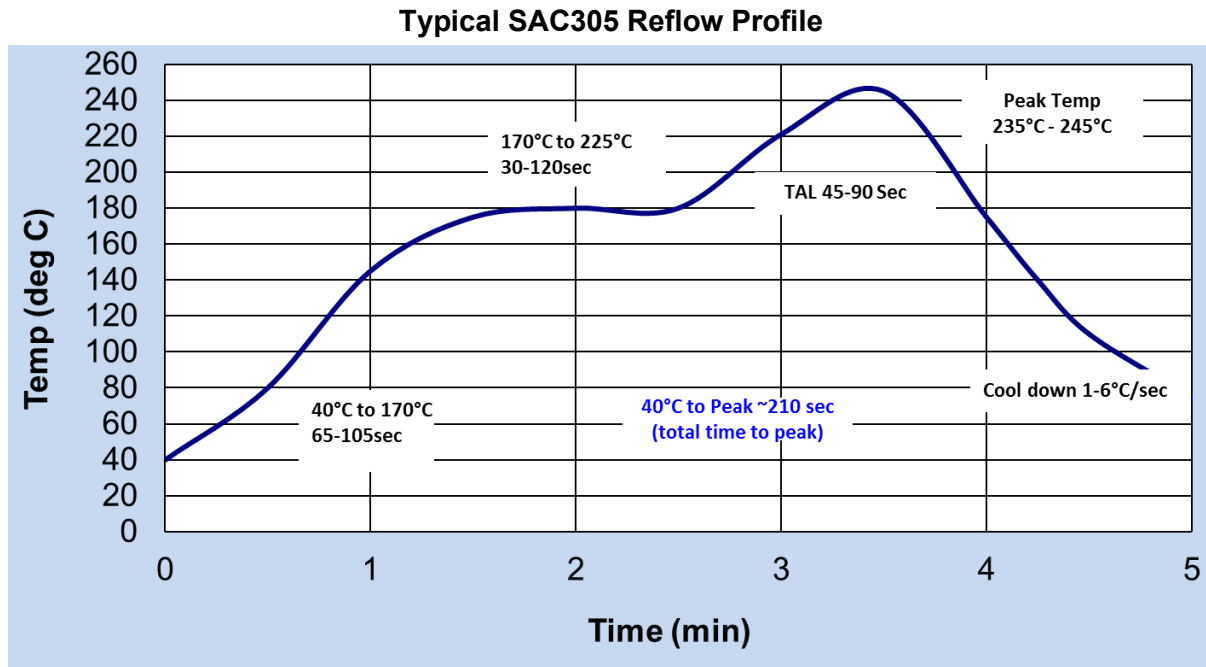


Figure 1 –General Soak Reflow Profile Recommendation for SAC alloys

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).**

**STORAGE**

ALPHA WS-619 is shipped in thermally controlled boxes and should be stored refrigerated upon receipt at 32 to 50 °F (0 to 10 °C). ALPHA WS-619 should be permitted to reach room temperature before unsealing its package prior to use.

**CONTACT INFORMATION**

**To confirm this document is the most recent version, please contact  
[Assembly@MacDermidAlpha.com](mailto: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

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