

ALPHA[®] LUMET[™] FC39

Zero Halogen, RoHS Compliant Solder Paste for Ultra-Fine Feature LED Assembly & Wafer Bumping, Available in SAC305 & SnCu0.7 (and Maxrel[™], Maxrel Plus)

DESCRIPTION

ALPHA LUMET FC39 is a lead-free, no-clean solder paste designed for fine feature applications including Chip Scale, Flip-Chip LED package assembly and wafer bumping of LED wafers. **ALPHA LUMET FC39** is designed to enable the use of high reliability ALPHA Maxrel, Maxrel Plus and SAC305 alloys with Type 6 and 7 solder powder.

FEATURES & BENEFITS

- Fine feature capable – rectangular pads as small as 60um with 60um micron spacing
- Hot slump performance pass at 0.3 mm.
- Acceptable random solder ball performance in nitrogen reflow
- Excellent coalescence for fine and ultra-fine feature deposits
- Good void performance (IPC Class III)
- Zero Halogen, no halogen intentionally added
- Excellent Pin Testing property and Pass JIS Copper Corrosion Test

PRODUCT INFORMATION

<u>Alloys:</u>	SAC305 (96.5%Sn/3.0%Ag/0.5%Cu) SnCu (99.3%Sn/0.7%Cu) Maxrel [Special Request Only] Maxrel Plus [Special Request Only]
<u>Powder Size</u>	Type 6 (J-STD 005: 15-5um) Type 7 (J-STD 005: 11-2um)
<u>Packaging Sizes:</u>	Type 6 – 500g jar Type 7 – 500g jar, 6" Cartridge Jar (600g & 250g)
<u>Lead-free:</u>	Complies with RoHS Directive 2002/95/EC.

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APPLICATION

ALPHA Lumet FC39 has been formulated for fine pitch stencil printing. Tack life is over 24 hours, depending on process conditions. The following is an example of specification of metal content and viscosity. Stencil life is over 8 hours, although it may vary with the conditions.

SAFETY

While the **ALPHA LUMET FC39** flux system is not considered toxic, its use in typical reflow will generate a small amount of reaction and decomposition vapors. These vapors should be adequately exhausted from the work area. Consult the SDS for additional safety information. The most recent version of the SDS is available from alphaassembly.com.

STORAGE

ALPHA LUMET FC39 should be stored in a refrigerator upon receipt at 0 to 10°C (32-50°F). **ALPHA LUMET FC39** should be permitted to reach room temperature before unsealing its package prior to use (see handling procedures on page 4). This will prevent moisture condensation build up in the solder paste.

When stored properly in a refrigerator (between 0-10°C), Lumet FC39 is stable for 6 months.

HALOGEN STATUS

ALPHA Lumet FC39 is a zero halogen product. It passed all the standards listed in the Table below:

Halogen Standards			
Standard	Requirement	Test Method	Status
JEITA ET-7304 <i>Definition of Halogen Free Soldering Materials</i>	< 1000 ppm Br, Cl, F in solder material solids	TM EN 14582 <i>Solids extraction per IPC TM 2.3.34</i>	Pass
IEC 612249-2-21	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame retardant source		Pass
JEDEC <i>A Guideline for Defining "Low Halogen" Electronics</i>	Post soldering residues contain < 1000 ppm Br or Cl from flame retardant source		Pass

Zero Halogen: - No halogenated compounds have been intentionally added to this product

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TECHNICAL DATA

CATEGORY	RESULTS	PROCEDURES/REMARKS
CHEMICAL PROPERTIES		
Activity Level	ROLO = J-STD Classification	IPC J-STD-004B
Halide Content	Halide free (by titration).	IPC J-STD-004B
Fluoride Spot Test	Pass	JIS-Z-3197-1999 8.1.4.2.4
Halogen Test	Pass, Zero Halogen - No halogen intentionally added	EN14582, by oxygen bomb combustion, Non detectable (ND) at < 50 ppm
Ag Chromate Test	Pass	IPC J-STD-004B
	Pass	JIS-Z-3197-1999 8.1.4.2.3
Copper Mirror Test	Pass	IPC J-STD-004B
	Pass	JIS-Z-3197-1999 8.4.2
Copper Corrosion Test	Pass (No evidence of Corrosion)	IPC J-STD-004B
	Pass (No evidence of Corrosion)	JIS-Z-3197-1999 8.4.1
ELECTRICAL PROPERTIES		
Water Extract Resistivity	13,400 ohm-cm	JIS-Z-3197-1999 8.1.1
SIR (7 days, 40°C/93%RH, 10 V bias)	Pass	IPC J-STD-004B TM 2.6.3.7 (Pass ≥ 1 x 10 ⁸ ohm)
Electromigration (Bellcore 500 hours @ 65°C/85%RH 10V)	Pass	Bellcore GR78-CORE (Pass=final > initial/10)
JIS Electromigration (1000 hours @ 85°C/85%RH 48V)	Pass	JIS-Z-3197-1999 8.5.4

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PROCESSING RECCOMANDATION

STORAGE & HANDLING	PRINTING	REFLOW (see Fig. 1)	CLEANING
<p>1. Refrigerate to guarantee stability @ 0-10°C (32-50°F) When stored under these conditions, the shelf life of FC39 is 6 months.</p> <p>2. When refrigerated, warm up paste container to room temperature for up to 4 hours. Paste must be 19°C (66°F) before processing. Verify paste temperature with a thermometer.</p> <p>Printing should be done at temperatures between 23-25C and at 40-50% RH.</p> <p>3. Paste can be manually stirred before use. A rotating/Centrifugal force mixing operation is not required. If a rotating/centrifugal force mixing is used, 30 - 60 seconds at 300 RPM is adequate.</p> <p>4. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter the rheology of unused paste.</p> <p>5. These are starting recommendations and all process settings should be reviewed independently.</p>	<p><u>STENCIL</u>: Stencil design is subject to many process variables. Contact Alpha stencil site for advice.</p> <p>Typical print parameters generated on 1.5 & 3-mil stencils (38 & 76 microns).</p> <p>Print parameters should be optimized on a case by case basis, depending on application and design.</p> <p><u>SQUEEGEE</u>: Metal (60° recommended)</p> <p><u>PRESSURE</u>: 3Kg/6 inch</p> <p><u>SPEED</u>: 10-25 mm per second</p> <p><u>PASTE ROLL</u>: 1.25 cm (0.5 inch) diameter and make additions as needed. Max roll size will depend upon blade.</p> <p><u>STENCIL RELEASE SPEED</u>: 1mm/sec</p>	<p><u>ATMOSPHERE</u>: Nitrogen preferred</p> <p><u>PROFILE (SAC305 Alloy)</u>: Designed for straight ramp or soak reflow profiles. Soak profile will reduce voiding. Example profile is 175C soak for 60 seconds, 245C peak and Time Above Liquidus of 70 seconds.</p> <p>Note 1: Refer to wafer and substrate data for thermal properties at elevated temperatures. Lower peak temperatures require longer TAL for improved joint cosmetics.</p>	<p>Cleaning of flux residues is not required since the flux residues are resistant to corrosion and exhibit excellent insulation resistance.</p> <p>If reflowed residue cleaning is required, Vigon A201 (in line cleaning), Vigon A 250 (Batch Cleaning) or Vigon US (Ultrasonic Cleaning) are recommended. Vigon is a registered trademark of Zestron.</p> <p>Arakawa Pine Alpha 180 ST cleaner can also be used.</p>

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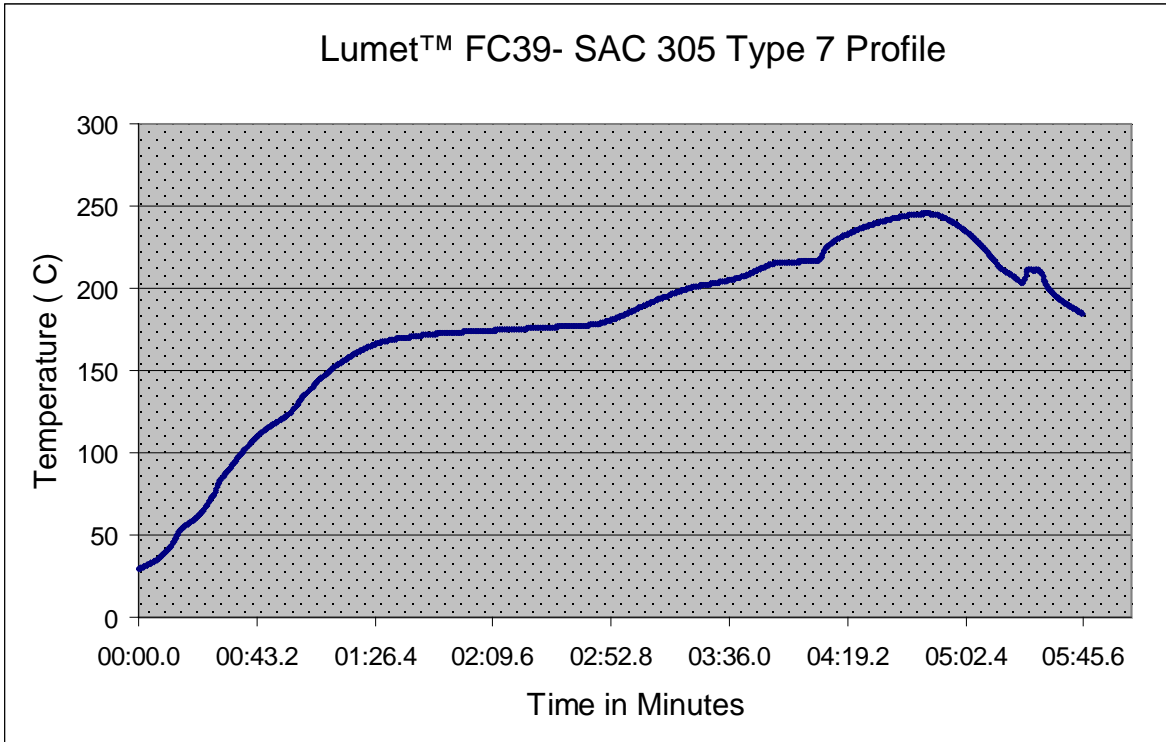


Figure 1. Lumet™ FC39 Reflow Profile Example

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CONTACT INFORMATION

To confirm this is the most recent issue, please contact Alpha Assembly Solutions

AlphaAssembly.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 directory assistance Chemtrec 1 - 800 - 424 - 9300.

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