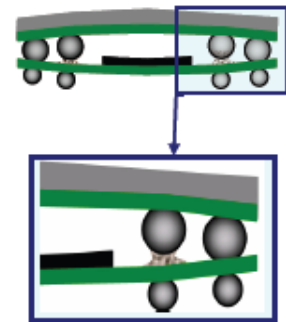


## ALPHA<sup>®</sup> POP-38

### No Clean, Lead-Free, Zero-Halogen, ROL0 Solder Paste for Package on Package Assembly

#### DESCRIPTION

To meet the demand of high-density and memory/logic options for sophisticated electronic devices, many assemblers are evaluating package on package (PoP) technology. PoP assemblies allow for higher electronic functionality per unit circuit board area. The benefit is low cost product memory customization, and highly flexible manufacturing. Unlike PoP flux gel, **ALPHA PoP-38** solder paste helps to minimize defects associated with non-planar processor/memory combinations during the reflow process. The use of paste can help reduce costly defects associated with soldering known good memory devices to known good processor packages by bridging gaps that PoP flux alone may not.



**ALPHA POP-38** was designed to minimize expensive rework and scrap by providing highly repeatable paste volumes to BGA memory packages, while offering resistance to shear forces associated with PoP dip application equipment.

**ALPHA PoP-38** maintains its rheology, even under frequent exposure to high shear, for 24 hours. This means highly reproducible volumes of paste pick up in normal PoP dipping applications, reducing defects, increasing yields and reducing scrap.

**ALPHA POP-38** is a no-clean lead-free solder paste. By optimizing ultra-fine solder powder and physical properties of paste, it is ideal for 150 to 300  $\mu$  offset BGA packages, while leaving a clear, colorless, residue with very high electrical resistivity.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

#### PRODUCT INFORMATION

<u>Alloy:</u>	SAC305, SAC405, SACX Plus 0807
<u>Powder Size Distribution:</u>	Type 6 (5 to 15 $\mu$ m)
<u>Packaging:</u>	500g jar, 600/1,200g Cartridges, 30 cc syringes

**APPLICATION GUIDELINES**
**Dip Thickness**

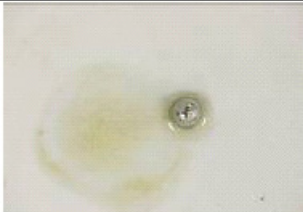
Generally, transfer amounts depend on paste thickness. Please adjust the paste thickness according to your bump diameter. 50% of the solder sphere offset is a typical setting for the depth of the paste. Excessive depth may lead to random solder balls. Insufficient depth could lead to insufficient pick up volume.

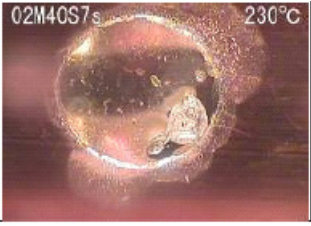
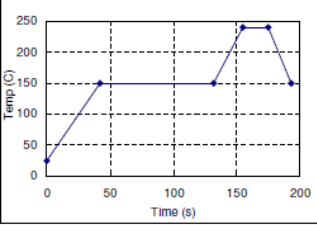
**HALOGEN STATUS**

Halogen Standards			
Standard	Requirement	Test Method	Status
<b>JEITA ET-7304A</b> Definition of Halogen Free Soldering Materials	< 1000 ppm Br, Cl, I, F in solder material solids	<b>TM EN 14582</b>	Pass
<b>IEC 612249-2-21</b>	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame retardant source		Pass
<b>JEDEC</b> A Guideline for Defining "Low Halogen" Electronics	Post soldering residues contain < 1000 ppm Br or Cl from flame retardant source		Pass
<b>Zero Halogen:</b> No halogenated compounds have been intentionally added to this product			

**TECHNICAL DATA**

Category	Results	Procedures/Remarks
<b>Chemical Properties</b>		
Activity Level	ROLO	IPC J-STD-004B
Halide Content	Halide free (by titration), < 0.05%	IPC J-STD-004B
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
Copper Mirror Test	Pass	IPC J-STD-004B

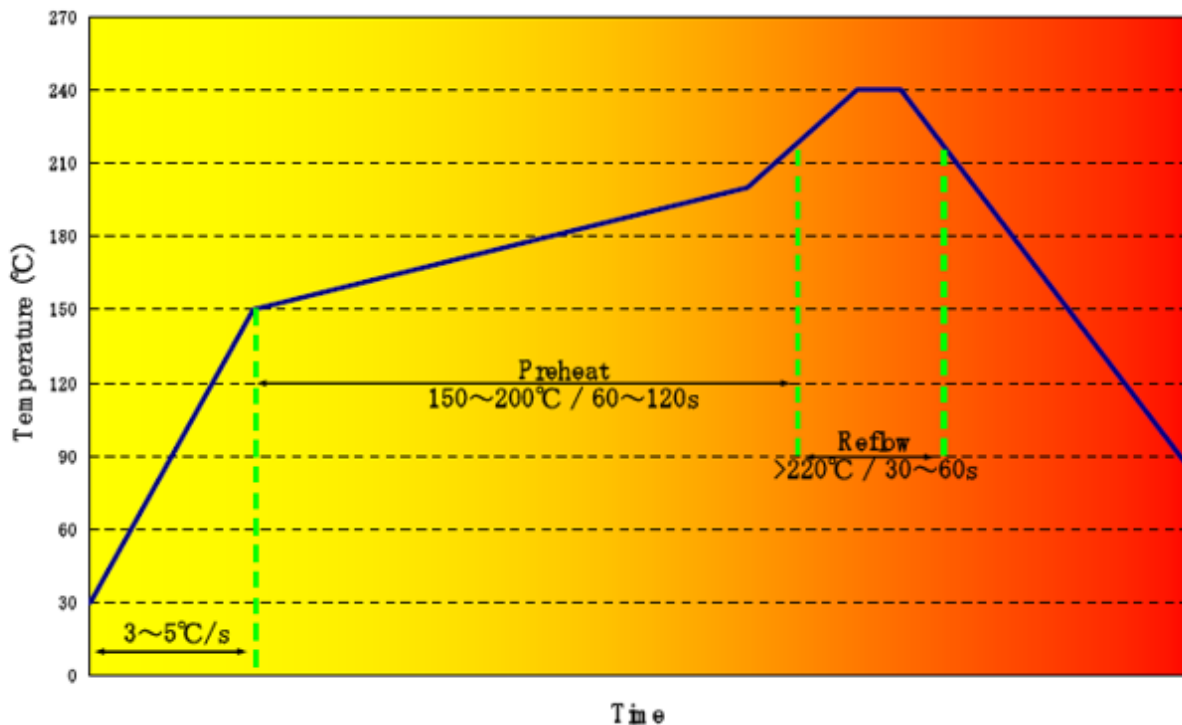
Category		Results	Procedures/Remarks
		Pass	JIS-Z-3197-1999 8.4.2
Copper Corrosion Test		Pass (No evidence of Corrosion)	IPC J-STD-004B
		Pass (No evidence of Corrosion)	JIS Z 3197:1999 8.4.1
<b>Electrical Properties</b>			
SIR (7 days, 40 °C/90%RH, 12.5V bias, 40 °C/90%RH)		Pass	IPC J-STD-004B TM-650 2.6.3.7 (Pass $\geq 1 \times 10^8$ ohm)
Bellcore SIR (96 hrs @- 48V, 35 °C/85%RH)		Pass	Bellcore GR78-CORE (Pass $\geq 1 \times 10^8$ ohm)
IPC/Bellcore Electromigration (96 hrs @ 65 °C/85% RH + 500 hrs @10V, 65 °C/85% RH)		Pass	Bellcore GR78-CORE (Final > initial/10)
JIS Electromigration (1000 hrs@85°C/85%RH 48V)		Pass	JIS Z 3197:1999 8.5.4 (Final Reading $>1.0 \times 10^9$ ohm, No migration after 1000 hours)
<b>Physical Properties</b>			
Color		Clear, Colorless Flux Residue	
Viscosity		75% metal load, Type 6, viscosity designated as M05	Malcom Spiral Viscometer; J-STD-005
Tack Force	25 °C/55%RH	> 100 gf for more than 24-hr	<u>JIS Z 3284:1994</u> Stencil: 200, Immersion speed: 2.0mm/s Press: 50g, Press time: 0.2sec Test speed: 10mm/s
	32 °C/20%RH	> 100gf for more than 6-hr	
Solder Ball on Ceramic Plate		Acceptable/Preferred 	1. Print paste with 200 $\mu$ m thickness stencil on ceramic plate (solder ball test) and Cu plate (solderability test). 2. Reflow with the following profile:

Category	Results	Procedures/Remarks
Solderability on Cu Plate	 <p>Good spread &amp; no de-wetting</p>	 <p>3.</p>

**REFLOW PROFILES**

**ALPHA PoP-38 SAC305 Typical Reflow Profile**

Atmosphere	N2 or Air reflow
Rate of Temperature Increase	3 to 5 °C/sec
Preheat	150 to 200 °C/60 to 120 sec
Reflow	228 °C and above for 30 to 90 sec
Peak Temperature	235 to 245 °C



**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 POP-38** should be stored in a refrigerator upon receipt at 0 to 10°C (32-50°F). **ALPHA POP-38** should be permitted to reach room temperature before unsealing its package prior to use. This will prevent moisture condensation build up in the solder paste.

**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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