TECHNICAL BULLETIN

ALPHA® OM-234HF Solder Paste

Zero-halogen, High Temperature Stable, Lead Free Solder Paste

DESCRIPTION

ALPHA OM-234HF is a lead free, zero-halogen, no-clean solder paste designed to provide consistent printing capability, good solder ball performance and prolong tack strength at varying environmental exposure condition.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

- **Excellent performance for jetting and dispensing** reduces cycle time and touch up costs when jetting is used, minimizing jetting head/dispense needle need for cleaning
- **Excellent deposit consistency**: high process capability index across all board designs.
- **Long, High Tack Force Life:** ensures high pick-and-place yields, good self-alignment and a low tomb-stoning defect rate
- **Reduced Random Solder Ball Levels:** minimizes rework and increases first time yield
- **Excellent Solder Joint and Flux Residue Cosmetics:** after reflow soldering, even using long/high thermal soaking, without charring or burning
- **Wide Process Window:** the reflow process window will give high soldering yield with good cosmetics and minimized rework.
- **Good Voiding Performance:** meets IPC-7095 Class II Requirement with soak profile
- **Halogen Content:** zero-halogen
- **Electrical Reliability:** classified as ROL0, Passes IPC J-STD-004B and JIS SIR

PRODUCT INFORMATION

Alloys:	SAC305, SACX0307, SACX® Plus 0807
Powder Size:	Type 4, Type 6, & Type 7
Packaging Sizes:	5,10, 30cc Syringe, 500gm Jar
Lead Free:	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU.
	NOTE: For other alloys, powder size and packaging sizes, contact your local Alpha Sales Office.

APPLICATION GUIDELINES

While the ALPHA OM-234HF 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.

ALPHA OM-234HF is formulated for dispensing and jet printing applications. It can also be used for printing application.

For dispensing applications, a typical needle is found in Figure 2 below (page 3). An alternative method of ensuring the quality of the solder paste that will be dispensed is to purge the needle of any paste after 24 hours of the syringe sitting idle without use. If the needle is removed from the syringe, the original tip cap (see Figure 1, page 3) should be placed on the syringe to ensure there is no paste drying.

The table below shows estimates of the amount of paste that may be in the syringe needle. Needles that are compliant with Leur lock connections should be used.

Estimates of Volume of Solder Pastes with Common Needle Gauges				
Needle Gauge	Inner Diameter (cm)	Length (cm)	Paste Volume in Needle (cc)	Grams of Solder Paste
21	0,0584	1.27	0.003	0.014
21	0.0584	2.54	0.007	0.028
25	0.0305	1.27	0.001	0.004
25	0.0305	2.54	0.002	0.008

Any dry paste that accumulates at the top of the needle during use should be removed with a dry, lint free cloth.

Care should be taken so that syringes are not stored near a heat source. This may cause the solder paste to increase above room temperature and will shorten the room temperature shelf life of the paste.

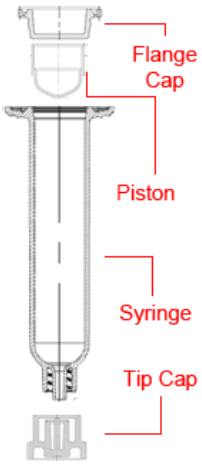


Figure 1: Typical syringe*

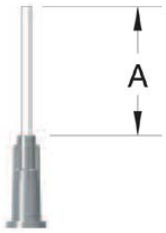


Figure 2: Typical needle*

"A" = length of the needle
*NOTE: Images not to scale

HALOGEN STATUS

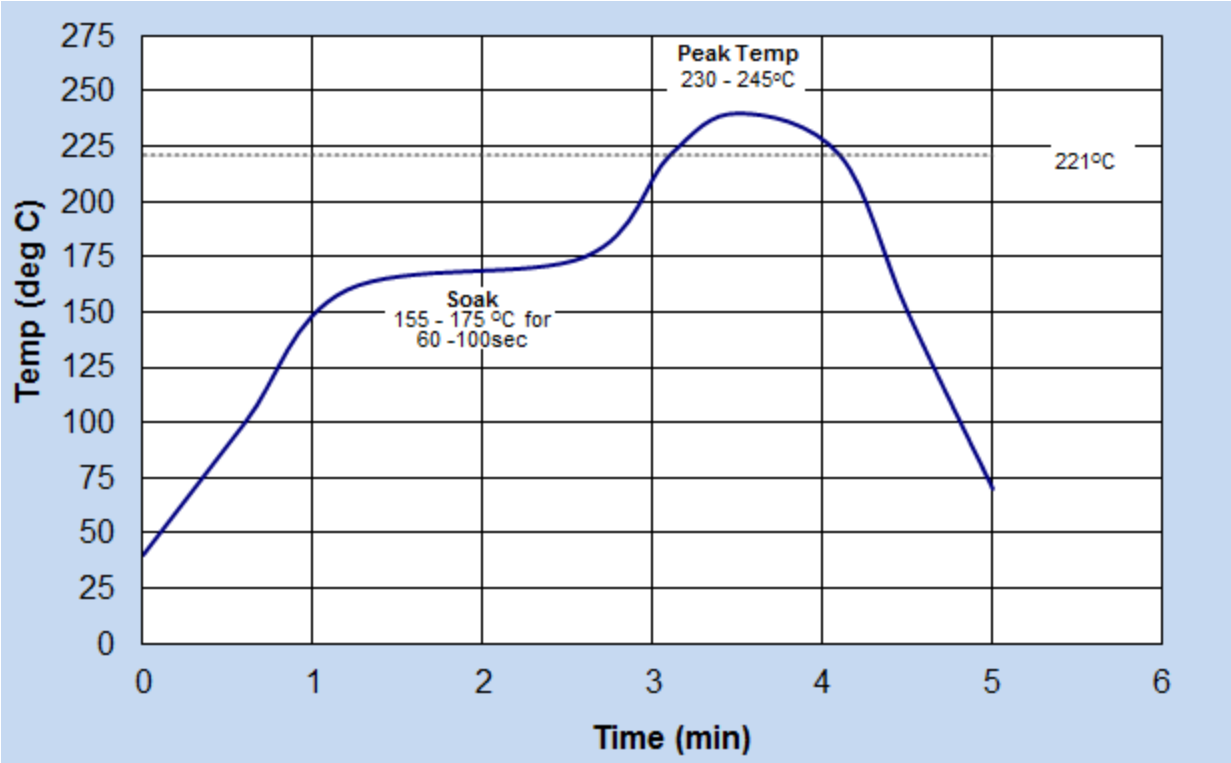
Halogen Standards			
Standard	**Requirement**	**Test Method**	**Status**
JEITA ET-7304 Definition of Halogen Free Soldering Materials	< 1000 ppm Br, Cl, F in solder material solids	TM EN 14582	Pass
IEC 612249-2-21	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame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

TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL0	IPC J-STD-004A
Halide Content	Halide free (by titration)	IPC J-STD-004A
Fluoride Spot Test	**Pass**	JIS Z 3197:1999 8.1.4.2.4
Ag Chromate Test	**Pass**	IPC J-STD-004A
	Pass	JIS Z 3197:1999 8.1.4.2.3
Copper Mirror Test	**Pass**	IPC J-STD-004A
	Pass	JIS Z 3197:1999 8.4.2
Copper Corrosion Test	**Pass** (No evidence of Corrosion)	IPC J-STD-004A
	Pass (No evidence of Corrosion)	JIS Z 3197:1999 8.4.1
Electrical Properties		
SIR (IPC 7 days @ 85 °C /85% RH)	**Pass**	IPC J-STD-004 (Pass ≥ 1 x 10^8ohm)
JIS Electromigration (1000 hrs @ 85 °C/85%RH 48V)	**Pass** No Migration after 1000 hrs	JIS Z 3197:1999 8.5.4
PHYSICAL PROPERTIES (Using SAC305)		
Color	Clear, Colorless Flux Residue	
Tack Force vs. Time	**Pass**; > 100gf over 24 hrs at 25 °C/50% RH	JIS Z 3284, Annex 9
Solderball	**Preferred;** Tested after 4 hrs storage @ 25 ºC, 50% RH	IPC TM-650 2.4.43
	Pass Level 2; Tested after 4 hrs storage at 25 °C @ 25%, 50%, 5% RH	JIS Z 3284 Annex 11
Hot Slump	**Pass;** 0.3mm gap	JIS Z 3284:1994 Annex 8

REFLOW PROFILES

Figure 1: Typical Soak Reflow Profile for SAC Alloys



Note 1: Lab test with best voiding performance and possibility of meeting IPC-7095 Class III specification was observed using soak preheat at 150 to 160 °C for 50 to 70 seconds, peak temperature 235 to 240 °C at TAL of 60 to 70 sec profile. Ramp profiles at 0.7 °C/s are also applicable.

Note 2: Refer to component and board supplier data for thermal properties at elevated temperatures. Lower peak temperatures require longer TAL for improved joint cosmetics.

Note 3: The processing guidelines recommended and typical reflow profiles presented were tested in the lab with acceptable performance. Optimization to each board application should still be carried out by users to ensure best results.

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.**

STORAGE

ALPHA OM-234HF should be stored in a refrigerator upon receipt at 0 to 10 °C (32 to 50 °F). Shelf life is 6 months from manufacturing date when stored at this condition.

ALPHA OM-234HF should be permitted to reach room temperature before unsealing its package prior to use. 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 to ensure paste is at 19 °C (66 °F) or greater before setup. Do not remove worked paste from stencil and mix with unused paste in jar. This will alter the rheology of unused paste.

CONTACT INFORMATION

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

www.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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