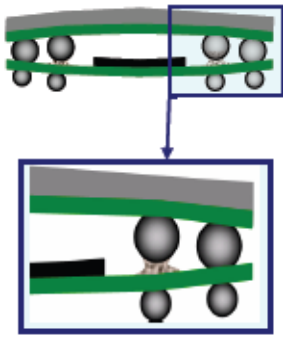
ALPHA® PoP-34

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-34** 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-34 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-34 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-34 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 µ offset BGA packages, while leaving a clear, colorless, residue with very high electrical resistivity.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

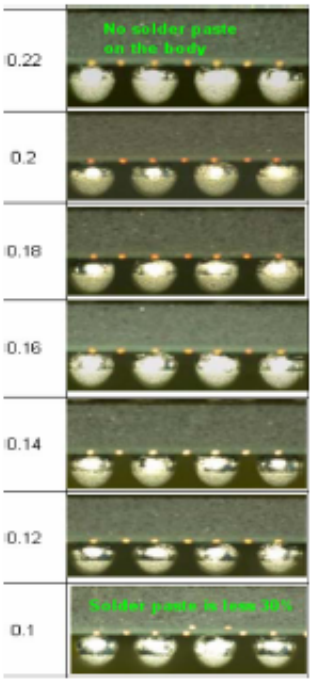
PRODUCT INFORMATION

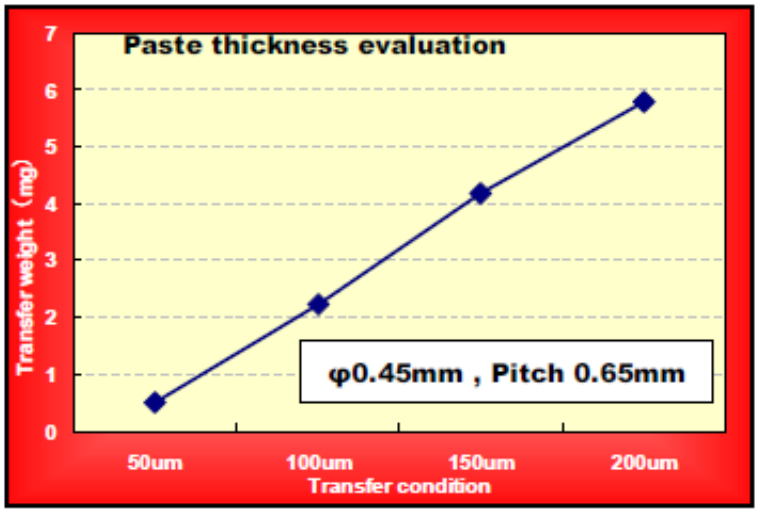
Alloy:	SAC305, SAC405, SACX® Plus 0807
Powder Size Distribution:	Type 5 (15 to 20µm) & Type 6 (5 to 15µm)
Packaging:	10 cc syringes, 30 cc syringes

APPLICATION GUIDELINES

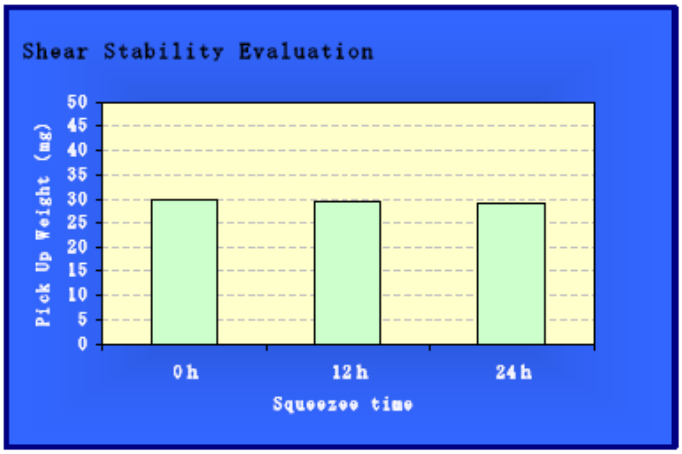
Dip Thickness

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.



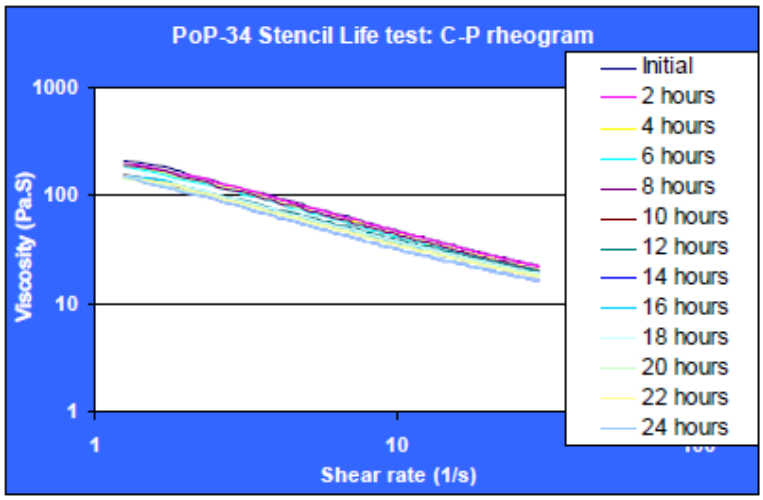


Continuous Squeegee Stability



ALPHA POP-34 viscosity is stable after continuous squeegee for 24 hours (25 °C/50%Rh). This graph shows how the rheology of PoP 34 remains stable over 24 hours exposure to shear. The

shear was generated by a doctor blade passing at a height of 200 microns over the bottom of the paste reservoir at a speed of 50mm/sec. (2 inches/sec.) in 30 second intervals. Paste samples were then tested every 2 hours using a Bohlin CVO-50 (cone/plate) Rheometer. No significant change in rheology over 24 hours was observed.



HALOGEN STATUS

Halogen Standards			
Standard	**Requirement**	**Test Method**	**Status**
JEITA ET-7304A Definition of Halogen Free Soldering Materials	< 1000 ppm Br, Cl, I, 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

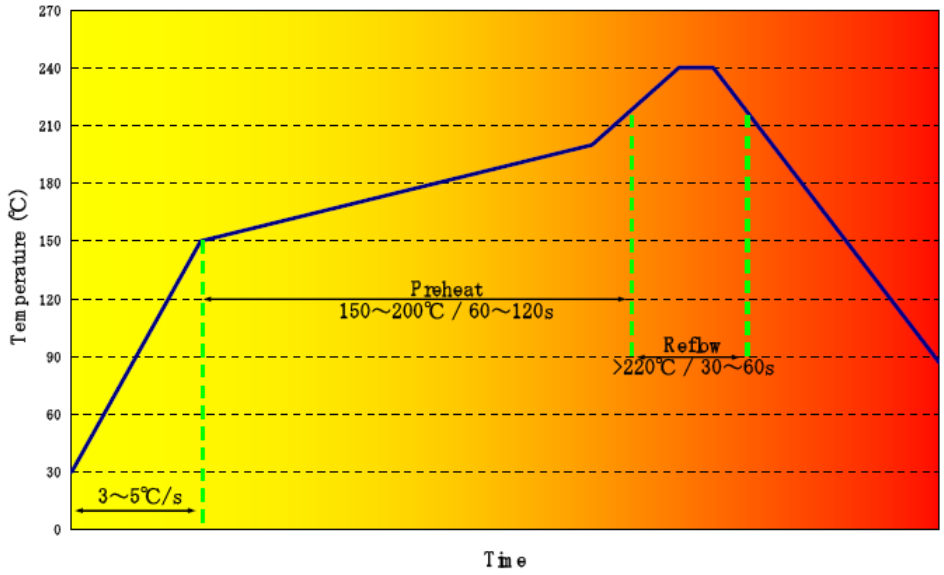
Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL0	IPC J-STD-004B
Halide Content	Halide free (by titration), < 0.05%	IPC J-STD-004B
Halogen Test	Pass, Zero Halogen - No halogen intentionally added	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
Ag Chromate Test	Pass	IPC J-STD-004B
Copper Mirror Test	Pass	IPC J-STD-004B
	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		
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 ≥ 1 x 10^8ohm)
Bellcore SIR (96 hours@-48V, 35 °C/85%RH)	Pass	Bellcore GR78-CORE (Pass ≥ 1 x 10^8ohm)
IPC/Bellcore Electromigration (96 hours@65 °C/85% RH + 500 hours@10V, 65 °C/85% RH)	Pass	Bellcore GR78-CORE (Final > initial/10)
JIS Electromigration (1000 hours @ 85 °C/85%RH 48V)	Pass	JIS Z 3197:1999 8.5.4 (Final Reading >1.0 x 10^9ohm, No migration after 1000 hours)
Physical Properties		
Color	Clear, Colorless Flux Residue	
Viscosity	85% metal load, Type 5, viscosity designated as M05	Malcom Spiral Viscometer; J-STD-005

Category	Results	Procedures/Remarks
	85% metal load, Type 6, viscosity designated as M05	
Viscosity Stability at 25 ºC for 14 days	Pass	Malcom Spiral Viscometer
Solder Ball	Acceptable/Preferred (SAC305) Tested initially and after 4 hours storage @ 25%, 50% and 85% RH	IPC J-STD-005 TM-650 2.4.43/JIS Z3284 Annex 11
Spread	81%	JIS Z 3197:1999 8.3.1.1
Stencil Life	>24 hours	25 °C (77 °F)

REFLOW PROFILES

ALPHA PoP-34 SAC 305 Typical Reflow Profile

Atmosphere	N2 or Air reflow
Rate of Temperature Increase	3 to 5 ºC/s
Preheat	150 to 200 °C/ 60 to 120sec.
Reflow	220 °C and above for 30 to 90sec.
Peak Temperature	235 to 245 ºC



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 POP-34 should be stored in a refrigerator upon receipt at 0 to 10 ºC (32 to 50 °F). ALPHA POP-34 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

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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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