ALPHA® PV-200 DISPENSING SOLDER PASTE

DESCRIPTION

ALPHA PV-200 is a no-clean, dispensable, lead-free solder paste. This solder paste is halogen and halide free for outstanding reliability. It is designed for high speed automated or manual dispensing through a wide range of needle sizes. The post soldering residues are clear and colorless, ideal for solar panel assembly applications.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Processed and packaged void-free to assure consistent dispensing results.
- Clear, colorless, tack-free residue.
- Reliable, non-clogging dispensing. From >21 gauge down to 25 gauge needles available depending on the dispense volume requirements.
- Rheology to provide continuous, high speed dispensing (thousands of dispenses per hour) in modern positive displacement dispensers.

PRODUCT INFORMATION

Alloys:	SAC305 (96.5%Sn/3.0%Ag/0.5%Cu)
	Sn/Ag (96.5%Sn/3.5%Ag)
	For other alloys, contact your local ALPHA Sales Office.
Powder Size:	Types 3 available (25 to 45µm per IPC J-STD-005)
Residues:	Approximately 5% by (w/w)
Packaging Sizes:	10cc and 30cc dispense syringes
Lead Free:	RoHS Directive EU/2015/863; amending Annex II of 2011/65/EU.
Metal Percent:	83.3%

APPLICATION GUIDELINES

Formulated for high speed dispensing with manual, time/pressure machines and automatic, positive displacement equipment. This solder paste will provide excellent results for high speed tabbing and stringing operations.

TECHNICAL DATA

Category	Results	Procedures/Remarks
Chemical Properties		
Activity Level	ROL-0 = J-STD Classification	IPC J-STD-004
Halide Content	Halide free (by titration). Passes Ag Chromate Test	IPC J-STD-004
Copper Mirror Test	*Pass*	IPC J-STD-004
Copper Corrosion Test	**Pass**, (No evidence of Corrosion)	IPC J-STD-004
Electrical Properties		
SIR (IPC 7 days @ 85 °C/85% RH)	**Pass**, > 1.9 x 10^{10} ohms	IPC J-STD-004 {Pass ≥ 1 x 10^{8} ohm min}
SIR (Bellcore 96 hrs @ 35 °C /85%RH)	**Pass**, 8.3 x 10^{12} ohms	Bellcore GR78-CORE {Pass ≥ 1 x 10^{11} ohm min}
Electromigration (Bellcore 96 hours @ 65 °C /85%RH 10V 500 hours)	**Pass**, Initial= 5.3 x 10^{10} ohms Final= 1.5 x 10^{11} ohms	Bellcore GR78-CORE {Pass=final > initial/10)
Physical Properties		Using 88.5% Metal, Type #3 Powder.
Color	Clear, Colorless Flux Residue	SAC 305, 405 alloy
Tack Force vs. Humidity (t=8 hours)	**Pass** -Change of <1 g/mm^2 over 24 hours at 25% and 75 % Relative Humidity	IPC J-STD-005
	Pass -Change of <10% when stored at 25±2 °C and 50±10% relative humidity.	JIS Z 3284 Annex 9

Category	Results	Procedures/Remarks
Viscosity	PV-200: 88.5% metal load designated M13 for printing. PV-200: 83.3% metal load designated M04 for dispensing.	Malcom Spiral Viscometer; J-STD-005
Solderball	**Acceptable** (SAC 305 and SAC405 alloys)	IPC J-STD-005
	Pass Class 2, 1 hour and 72 hour	DIN Standard 32 513, 4.4
Spread	**Pass**	JIS Z 3197: 1999 8.3.1.1
Flux Tackiness Test	**Pass**	DIN 32513 Talc Test
Slump	**Pass**	IPC J-STD-005 (10 min 150 °C)
	Pass	DIN Standard 32 513, 5.3
	Pass	JIS Z 32841994 Annex 8

PROCESSING GUIDELINES

PV-200 Processing Guidelines for Solar Applications (The following is a review of general application notes and precautions)			
Storage & Handling	**Dispensing**	**Heating**	**Cleaning**
• Refrigerate to guarantee stability @ 0 to 8 °C (32 to 46 °F) • Shelf life of refrigerated paste is six months. • Paste can be stored for 2 weeks at room temperatures up to 25 °C (77 °F) prior to use. • When refrigerated, warm-up of 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. Printing can be performed at temperatures up to 29 °C (84 °F). • Do not remove worked paste from stencil and mix with unused paste in jar. This will alter rheology of unused paste. • These are starting recommendations and all process settings should be reviewed independently.	Before setup, continuously dispense until the paste has filled the needle insides and paste is flowing freely. Time/pressure dispensers should be set up with manufacturer's guidelines. Pressures of 10 to 20 lbs are recommended without using vacuum suckback. Read the applications notes following regarding needle gap, stringing, and paste volume. More sophisticated dispense systems usually have specific setup and running recommendations. The "needle map" contained in the ALPHA PV-200 Applications Notes recommends dispense volumes scientifically. The insides of dispense mechanisms and needles can be cleaned and lubricated with "purge compounds" or ALPHA PV-200 paste flux available also in syringes. ALPHA PV-200 should be run through the dispense mechanism to wet the walls and exclude any foreign material prior to dispensing.	• Use convection, IR, or combination ovens, hot -plate, vapor phase, hot gun, heat bar or laser equipment • Clean-dry air or nitrogen Atmosphere. **Profile (for oven heating)** A straight ramp heating to reflow and straight ramp down to room temperature of all joints being soldered. This is a general statement given the various methods to reflow dispensed paste and the varied equipment used in dispensing processes.	ALPHA PV-200 residue is designed to remain on the cell after soldering. If post soldering residue cleaning is required, ALPHA BC-2200 aqueous cleaner is recommended for solvent cleaning, agitation for 5 min in the following cleaners is recommended: - ALPHA SM-110E - Bioact™ SC-10E - Kyzen Micronox MX2501 Misprints and stencil cleaning may be done with ALPHA SM-110E, ALPHA SM-440, ALPHA BC-2200 and Bioact SC-10E cleaners.

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 PV-200 is shipped in thermally controlled boxes and should be stored under refrigeration upon receipt at 32 to 46 °F (0 to 8 °C). This will be sufficient to maintain a nominal shelf life of 6 months although a 30 day room temperature shelf life can also be achieved. The paste should be permitted to reach room temperature (usually 2 hours) before unsealing tip and end closures prior to use.

CONTACT INFORMATION

To confirm this document is the most recent version, please contact 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