

ALPHA[®] PV-61

Low Solids, High Reliability, Pb-Free/Sn-Pb Capable Tapping and Stringing Flux

DESCRIPTION

ALPHA PV-61 is a flux designed to provide the attributes of excellent solderability and high reliability for solar applications in both lead-Free and Tin/Lead processes. Additionally, it provides outstanding solder joint cosmetics with an evenly spread, tack-free residue.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

Features for Pb-Free:

- Good fillet formation
- Uniform application of flux to ribbon
- Excellent wetting to various metallization
- Good micro-solder ball performance in Lead-Free applications

Benefits:

- Excellent Lead-Free soldering performance
- Evenly spread, clear, tack-free residue
- Capable for high density, as well as general purpose Lead-Free soldering processes
- Can be used in Pb-Free or Sn/Pb processes

APPLICATION GUIDELINES

Preparation: In order to maintain consistent soldering performance and electrical reliability, it is important to begin the process with cells that meet established requirements for solderability and ionic cleanliness. It is suggested that assemblers establish specifications on these items with their suppliers and that suppliers provide Certificates of Analysis with shipments and/or assemblers perform incoming inspection.

Flux Application: ALPHA PV-61 can be applied by roll coating, brushing, dipping or spraying.

Control: The flux solids will need to be controlled via thinner addition. For measuring the solids content, Alpha's Flux Solids Control Kit #3, a digital titrator, is suggested. When operating the fluxer continuously, the acid number should be checked every eight hours. Over time, debris

and contaminants will accumulate in recirculating type flux applications. For consistent soldering performance, dispose of spent flux every 40 hours of operation. After emptying the flux, reservoir should be thoroughly cleaned with IPA

Residue Removal: ALPHA PV-61 is a no-clean flux and the residues are designed to be left on the cell. If desired, flux residues can be removed with ALPHA BC-2200 aqueous cleaner, ALPHA 2110 saponifier cleaner and with other commercially available solvent cleaners and saponifier cleaners.

TECHNICAL DATA

Item	Typical Values	Item	Typical Values
Appearance	Clear, pale yellow liquid	Flash Point (T.C.C.)	12 °C
Solids Content, %wt/wt	3.8%	Recommended Thinner	ALPHA 425
Specific Gravity @ 25 °C (77 °F)	0.794 ± 0.003	Shelf Life (from Date of Mfg.)	360 days
Acid Number, mg KOH/g	23.6 ± 1.2	IPC J-STD-004 Designation	ORL0
pH (5% aqueous solution)	3.3		

CORROSION & ELECTRICAL TESTING

Corrosion Test

Test		Requirement	Results
IPC	Silver Chromate Paper (IPC-TM-650 2.3.33)	No Detection of Halide	PASS
	Copper Mirror Test (IPC-TM-650 2.3.15)	No Complete Removal of Copper	PASS
	Copper Corrosion Test (IPC-TM-650 2.3.32)	No Evidence of Corrosion	PASS

IPC J-STD-004 Surface Insulation Resistance (All values in ohms.)

Test	Requirements	Results
"Comb-Down" Un-cleaned	1.0 X 10 ⁸ minimum	2.3 X 10 ¹⁰
"Comb-Up" Un-cleaned	1.0 X 10 ⁸ minimum	2.2 X 10 ¹⁰
Control Boards	2.0 X 10 ⁸ minimum	2.3 X 10 ¹⁰
Test Condition (per IPC-J-STD-004): 85 °C / 85% RH, 7 days, -50V; measurement at 100V; IPC board B-24 (0.4mm lines, 0.5mm spacing)		

JIS Surface Insulation Resistance

Test	Conditions	Requirements	Controls	Results
Initial	Ambient	1.0 X 10 ¹¹ minimum	5.5 X 10 ¹¹	5.8 X 10 ¹¹
After 7 days	40 °C / 90% RH	1.0 X 10 ¹⁰ minimum	5.9 X 10 ¹¹	1.4 X 10 ¹¹
Recovered	25 °C / 75% RH, 7 days	1.0 X 10 ¹¹ minimum	1.1 X 10 ¹²	4.5 X 10 ¹¹
Test Condition: All measurements at 100V, JIS Boards (0.32mm lines, 0.32mm spacing, same as IPC B-25 Boards)				

Bellcore Surface Insulation Resistance (All values in ohms.)

Test	Requirements	Results
"Comb-Down" Un-cleaned	1.0 X 10 ⁸ minimum	2.3 X 10 ¹⁰
"Comb-Up" Un-cleaned	1.0 X 10 ⁸ minimum	2.2 X 10 ¹⁰
Control Boards	2.0 X 10 ⁸ minimum	2.3 X 10 ¹⁰
Test Condition (Per GR-78-Core, Issue 1): 35 °C / 85% RH, 5 days, 48V; measurement at 100V (25mil lines, 50mil spacing)		

Bellcore Electrochemical Migration Resistance (All values in ohms.)

Test	SIR (Initial)	SIR (Final)	Requirement	Result	Visual Result
"Comb-Up" Un-cleaned	9.3 X 10 ⁹	2.3 X 10 ¹¹	SIR (Initial) / SIR (Final) < 10	PASS	PASS
"Comb-Down" Un-cleaned	7.2 X 10 ⁹	6.6 X 10 ⁹	SIR (Initial) / SIR (Final) < 10	PASS	PASS
Test Condition (PER gr 78-core, Issue 1): 65 °C / 85% RH, 500 hours, 10V; measurement at 100V; IPC B-25 B Pattern (12.5mil lines, 12.5mil spacing)					

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.**

CONTACT INFORMATION

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