

# ALPHA<sup>®</sup> PV-71

## Zero-Halogen, Low-Residue and Low-Solid Liquid Flux for Photovoltaic Assembly

### DESCRIPTION

**ALPHA PV-71** is a zero halogen, halide free, low solid no-clean flux specifically designed to meet the demanding requirements of the Photovoltaic industry when higher pull strength is deemed necessary. This flux is designed such that it limits flux deposits inside tabbing and stringing equipment and spray nozzles, with practically zero residue after soldering. **ALPHA PV-71** is a low solids formula employing a unique proprietary activator system which provides excellent soldering in standard module assembly processes & methods that are widely used (preheat and soldering).

**ALPHA PV-71** is an alcohol based, low residue formulation delivering reliability in both Pb-free and SnPb applications. Additionally, it also provides excellent solder joint cosmetics with practically no residues left after soldering.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### FEATURES & BENEFITS

- Quick flux activation even under short soldering time and higher preheating loss
- Minimal and tack free residues for low equipment maintenance and downtime
- Excellent Peel Force Resistivity
- Fast Wetting
- Compatible with different encapsulants
- Suitable for dipping or spraying method

### APPLICATION GUIDELINES

ALPHA PV-71 flux is engineered to support most standard solar module assembly applications, such as non-contact high speed soldering systems including manual contact soldering. This flux has a wide process window and works well with standard reflow process. Care should be taken to ensure flux is applied only on soldering area to avoid overspray which will result in excessive loading. This is a no-clean flux, no cleaning is needed.

ALPHA PV-71 flux can be maintained by titration. Assistance in controlling the flux by this method can be obtained through our Customer Technical Service department. Acid number should be controlled between 13.0 to 18.0.

**TECHNICAL DATA**

Parameter	Typical Value	Parameter	Typical Values
Appearance	Clear colorless liquid	pH, (5% solution)	2.7 to 4.2
Solids Content, wt/wt	1.65%	Flash Point (T.C.C.)	11.7 °C
Specific Gravity @ 25° C (77 °F)	0.770 to 0.810	Shelf Life	2 Years
Acid Number (mg KOH/g)	13.0 to 18.0	IPC J-STD-004A Designation	ORL0

**CORROSION AND ELECTRICAL TESTING**
**Corrosion Test**

Test	Requirement	Results
Silver Chromate Paper Test IPC-TM 650 Test Method 2.3.33	No detection of halide	No discoloration of paper. Classified as "Halide Free"
Copper Mirror Test IPC-TM 650 Test Method 2.6.15	No complete removal of copper	No evidence of mirror breakthrough. Classified as "L"
Copper Corrosion Test IPC-TM 650 Test Method 2.3.32	No evidence of corrosion	Minor corrosion without pitting is observed. Classified as "L"

**J-STD-004A Surface Insulation Resistance**

Test	Conditions	Requirements	Results
"Comb-Down" - Uncleaned	85 °C/85% RH, 7 days	> 1.0 x 10 <sup>8</sup> Ω	PASS
"Comb-Up" - Uncleaned	85 °C/85% RH, 7 days	> 1.0 x 10 <sup>8</sup> Ω	PASS
IPC J-STD-004A - Control Boards	85 °C/85% RH, 7 days	> 1.0 x 10 <sup>9</sup> Ω	PASS
IPC Test Condition (per J-STD-004A): 85 °C/85%RH/7days/-50V, measurement @ 100V/IPC B-24 board (0.4mm lines, 0.5mm spacing). All values in ohms.			

**Bellcore Electromigration**

Test	SIR (Initial)	SIR (Final)	Requirement	Result	Visual Result
"Comb-Up" Un-cleaned	$3.29 \times 10^{11} \Omega$	$3.20 \times 10^{11} \Omega$	SIR (Initial)/SIR (Final) < 10	PASS	PASS
"Comb-Down" Un-cleaned	$6.26 \times 10^8 \Omega$	$3.67 \times 10^9 \Omega$	SIR (Initial)/SIR (Final) < 10	PASS	PASS
Bellcore Test Condition (per GR-78 CORE Issue 1): 65 °C/85%RH/500 Hours/10V, measurement @ 100V/IPC B-25 B Pattern (12.5 mil lines, 12.5 mil 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](http://MacdermidAlpha.com/assembly-solutions/knowledge-base).**

**STORAGE**

Recommend to store ALPHA PV-71 at temperatures between 10 to 43 °C. An unopened container stored under this condition has a storage up to 2 years.

**CONTACT INFORMATION**

**To confirm this document is the most recent version, please contact [Assembly@MacDermidAlpha.com](mailto:Assembly@MacDermidAlpha.com)**

[www.macdermidalpha.com](http://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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