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TECHNICAL BULLETIN

ALPHA® 615 SERIES

Super RMA Flux

DESCRIPTION

ALPHA 615 flux meets MIL-F-14256 requirements for flux type RMA, making it suitable for all military work requiring conformance to DOD-STD-2000. ALPHA 615 also meets the IPC J-STD-004 standard for type ROL0, the lowest flux residue corrosivity category, and the highest surface insulation resistance rating.

The standard solids content for **ALPHA 615** is 37%. Where use of a lower solids flux is appropriate, such as when wave soldering surface mount boards, **ALPHA 615-25** (25% solids) and **ALPHA 615-15** (15% solids) are available.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES & BENEFITS

- Maximum achievable RMA activity. Very fast wetting flux.
- Very cleanable, even with high preheat. No white residue.
- Excellent foaming properties. Uniform, consistent flux coverage.

APPLICATION GUIDELINES

ALPHA 615 is designed for wave soldering printed circuit assemblies that must use an RMA flux meeting military specifications. While formulated to have excellent foaming properties, wave and spray fluxing can also be used.

All three solids levels of ALPHA 615 flux should be maintained by periodic measurement of flux specific gravity (corrected to 77 °F) and kept to within +0.015 and -0.005 of the nominal values.

While topside preheat temperatures of 180 to 200 °F are sufficient for ALPHA 615 flux activation, higher preheat conditions may be required for assemblies that have significant heat sinking characteristics, or when attempting to minimize the temperature gradient that ceramic chip components see between preheat and the solder wave.

Under conditions of extreme preheat, most RMA fluxes become extremely difficult to clean after soldering, especially with mild fluorocarbon-blend solvents. ALPHA 615 flux residues clean very well with either mild fluorocarbon-blend solvents or aqueous saponifier (ALPHA 2110).

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Touch-Up/Rework: Use of the ALPHA 615 Flux Pen and ALPHA Cored Solder Wire is recommended for hand soldering applications.

TECHNICAL DATA

ALPHA 615 is the most effective soldering flux yet developed for achieving excellent soldering yields with complex Military assemblies, while clearly passing all requirements for an RMA, non-conductive, non-corrosive flux.

Wetting balance and solder spread tests are widely used quantitative measures for comparing flux activity. The faster the speed of solder wetting, as measured by the wetting balance, and the greater the area of solder spread, i.e. spread factor percent, the more efficient the flux is for promoting solder wetting. The superior activity of ALPHA 615 can be seen from the following test data:

	ALPHA 615	Brand A	Brand B
Spread Factor[1]	91.7%	90.2%	86.8%
Wetting Speed[2]	0.41 seconds	0.47 seconds	0.64 seconds

[1] Test conducted using oxidized copper and 60Sn/40Pb flowed at 500 °F for 15 seconds.

[2] Test conducted using oxidized copper, 60Sn/40Pb at 500 °F, 5 mm immersion depth, and 10 seconds cycle time. Wetting speed is measured as time for wetting to reach equilibrium.

ALPHA 615 has also demonstrated the ability to prevent solder icicle formation, when tested according to the method developed by Philips-Eindhoven, Netherlands, “Determination of the Flux Efficiency to Prevent Formation of Icicles (and Bridges).”

Physical Properties	Typical Values		
	615	615-25	615-15
Appearance	Amber Liquid		Light Amber Liquid
Specific Gravity @ 25 °C (77 °F)	0.876 ± 0.005	0.845 ± 0.005	0.817 ± 0.005
Solids Content, % wt/wt	37	25	15
Water Extract Resistivity, ohm-cm, per MIL-F-14256, typical	170,000	190,000	225,000
Shelf Life (from Date of Manufacturing)	540 days		
IPC J-STD-004 Flux Classification	ROL0		
Flash Point (T.C.C.)	12 °C (53.6 °F)		
Recommended Alpha Thinner	ALPHA 425		

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CORROSION & ELECTRICAL TESTING

Corrosion Data	Results		
	615	615-25	615-15
Chlorides and Bromides, per MIL-F-14256 (Silver Chromate Paper)	Pass	Pass	Pass
Copper Mirror, per MIL-F-14256	Pass	Pass	Pass
Copper Corrosion, IPC J-STD-004	No Corrosion	No Corrosion	No Corrosion

Surface Insulation Test	Results		
	615	615-25	615-15
35 °C / 85% RH, Comb-up/down, Uncleaned per Bellcore TR-NWT-000078, Issue 3	> 1.0×10^{11} ohms	No data	No data
85 °C / 85% RH, Comb-down, Cleaned, per IPC J-STD-004	> 1.0×10^{8} ohms	> 1.0×10^{8} ohms	> 1.0×10^{8} ohms

Electromigration Test	Results		
	615	615-25	615-15
65 °C / 85% RH, Comb-up/down, Uncleaned per Bellcore GR-78, CORE Issue 1	PASS	PASS	PASS

AVAILABILITY

ALPHA 615 series fluxes are available in 1, 5 and 55 gallon as well as 1, 10, 20, and 25 liter containers. ALPHA 615 is also available in Flux Pen form (15mL/pen) for touch-up/rework application.

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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 Assembly@MacDermidAlpha.com

www.macdermidalpha.com

North America 109 Corporate Blvd. South Plainfield, NJ 07080, USA 1.800.367.5460	**Europe** Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 44.01483.758400	**Asia** 8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100

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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