

ALPHA[®] RMA-390 DH4

Solder Paste

DESCRIPTION

ALPHA RMA-390 DH4 is a rosin-based solder paste designed for surface mount processes and other demanding electronics assembly applications utilizing post reflow cleaning. Because of its unique activator package and other special additives, **ALPHA RMA-390 DH4** is suitable to remain on the circuit board without cleaning.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

PRODUCT INFORMATION

<u>Alloys:</u>	63Sn37Pb, 5Sn92.5Pb2.5Ag, 62Sn36Pb,2Ag For other alloys, contact your local Alpha Sales Office
<u>Powder Size:</u>	Type 4, Type 3, Type 2
<u>Packaging Sizes:</u>	500 gram jars & 6 inch cartridges
<u>Lead Free:</u>	Complies with RoHS Directive 2002/95/EC

APPLICATION GUIDELINES

ALPHA RMA-390 DH4 is best applied by stencil printing. Working time on the stencil is four hours, and tack life is four hours. The number 3 particle size configuration is suitable for printing through stencil apertures as small as 9 mils in the smallest dimension while the type 2 particle size configuration is capable of printing through apertures down to 15 mils in the smallest dimension.

ALPHA RMA-390 DH4's activator system enables the flux to penetrate even moderately tarnished surfaces among the following metals:

Silver	Copper
Solder (Pastes)	Gold
Solder (Hot Dip)	Tin (Hot Dip)
Cadmium (Plate)	Tin (Plate)

High ambient temperatures should be avoided in the handling of ALPHA RMA390 DH4. The production environment should be 18 to 27 °C (65 to 80 °F) and 30 to 60% relative humidity. Production stencils can be cleaned using BIOACT® EC-8™ at 60 to 66 °C (140 to 150 °F) followed by hot air drying.

PHYSICAL PROPERTIES

Physical and Chemical Properties of Flux

Category	Results
Water Extract	>100,000 ohm-cm;
Resistivity	RMA class
Corrosiveness	Passes Copper Mirror
Halide Content	Passes Silver Chromate Paper Test
SIR (ohms)	>3.0 x 10 ¹¹ comb up or down, cleaned or uncleaned
Residues	Approximately 7% by weight; suitable to leave on the board
J-STD-004 Classification	ROL1

VISCOMETRY

ALPHA RMA-390 DH4 was developed using spiral viscometry. Nominal readings of 2600 poise, (260 Pascal Seconds) to 3600 poise (360 Pascal Seconds) characterize its rheology at 5 RPM. Absolute magnitude of the slope ranges from .4 to .58. Equivalent 5 RPM T-Bar spindle readings are approximately 800K centipoise and 1,100K centipoise respectively. Typical tack and penetration using 89% metal loading and particle size 3 are:

Tack Force: >3.0 grams/mm²

Penetration: >6.0 mils on 10 mil print

PLACEMENT

Nominal squeegee speeds from 20mm/second to 25mm/second are suitable as beginning settings. Roll diameter cross- section should be 1.25 to 1.50 cm. Stencil aspect ratio (width of smallest aperture divided by stencil thickness; Wa/Ts) should be 2.0 or greater as an initial setting.

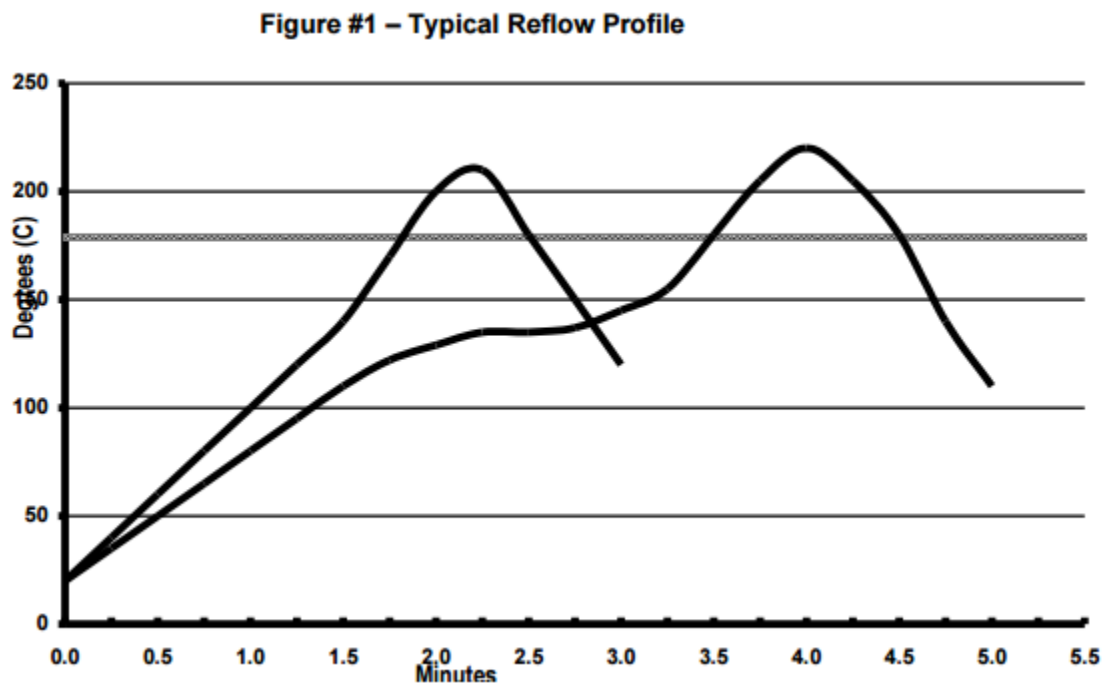
REFLOW PROFILES

ALPHA RMA-390 DH4 can be successfully reflowed in infrared, convection, hot stage, hot bar, belt or vapor phase systems. Since circuit boards and components come to thermal equilibrium based on surface area and mass, the following board- level temperatures are provided as an initial guide to reflow of ALPHA RMA-390 DH4:

Parameter	Guidelines
Ramp Rate	1 to 3 °C/second to 120 to 160 °C
Soak	120 to 160 °C for 2 minutes
Ramp Rate	0.5 to 1 °C/second to 210 to 220 °C
Time above Liquidous	45 to 75 seconds

Total heating dwell time may be 5 to 7 minutes depending on thermal inertia and component sensitivity. A representative profile for 63/37 alloy is provided at Figure 1.

FIGURE 1



RESIDUE REMOVAL

ALPHA RMA-390 DH4 can be safely left on the circuit board after reflow without cleaning. If cleaning is desired, most commercially available electronic assembly cleaning solvents are effective, including ALPHA 565, BIOACT EC-7TM or EC-7RTM. BIOACT is a semi-aqueous cleaner designed to meet the most demanding cleaning requirements with complete environmental compatibility. Flux residues are also removable by saponification with ALPHA 2110 in water.

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 RMA-390 DH4 is shipped in thermally controlled cartons and should be stored refrigerated upon receipt. Storage temperatures of 0 to 10°C (32 to 50 °F) are sufficient to maintain ALPHA RMA-390 DH4's nominal shelf life of six months. ALPHA RMA-390 DH4 should be permitted to achieve room temperature before unsealing the package.

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

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