

# ALPHA<sup>®</sup> RMA-390 DH3 SOLDER PASTE

## DESCRIPTION

**ALPHA RMA-390 DH3** is a rosin based solder paste designed for surface mount and other demanding electronic assembly applications. The rosin base flux has shown to withstand temperatures in excess of 300 °C and capable in high lead or lead-free alloy compositions.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

## PRODUCT INFORMATION

ALPHA RMA-390 DH3 is available in the following Vaculoy alloys:

Alloys: 62Sn/36Pb/2Ag, 63Sn/37Pb, 96.5Sn/3.5Ag, 10Sn/88Pb/2Ag, SAC305  
Powder Size: Type 2, Type 3  
Packaging Sizes: 500 gram jars, 6in & 12in cartridges, 10 and 30 cc syringes

## TECHNICAL DATA

Property	Result	Procedure
<b>Chemical Properties</b>		
Activity level	ROL1 J-STD classification, Cu mirror corrosivity – PASS (L)	IPC J-STD 004
	Cu corrosion (10 day) – PASS	IPC J-STD 004
Halide Content	< 0.05 %	Titration
<b>Electrical Properties</b>		
SIR (7 days 85 °C / 85 %RH)	2.8 x 10 <sup>9</sup> Ohms (Pass > 1 x 10 <sup>8</sup> )	IPC J-STD 004
SIR (Bellcore 96 hrs, 35 °C/85% RH)	4.6 x 10 <sup>11</sup> Ohms (Pass > 1 x 10 <sup>11</sup> )	Bellcore GR78-CORE
Electromigration (Bellcore 500 hr. 65 °C/85%RH)	Initial: 1.52 x 10 <sup>9</sup> Ohms Final: 5.68 x 10 <sup>9</sup> Ohms	Bellcore GR78-CORE (Pass: Final > Initial / 10)

Additional Designation (per obsolete specification): RMA, meets QQS-S-571E, Q.P.L listed #57102086

**PLACEMENT**

ALPHA RMA-390 DH3 can be applied by stencil or by screen. Working time on the stencil or screen is about four (4) hours. Tack time is about four (4) hours. This product is extremely versatile and can be accommodated to a wide variety of specifications. The following configurations are offered for specific applications.

Application Method	Nominal Metal Particle Size		Malcom Viscosity Information		
	± 1%	J-STD-006	Designation	Range @ 5 rpm	
Stencil Printing Fine Pitch	90%	Type 3	M13	2122 to 4057	

(Additional application specific products are available)

**REFLOW PROFILES**
**Reflow (Sn/Pb Alloys)**

Reflow of ALPHA RMA-390DH3 can be achieved with a variety of equipment including Infrared, Convection, Vapor Phase, Conductive Belt, or Hot Air. Since substrates and components come to thermal equilibrium based on surface area and mass, the following describe equilibrium temperatures measured at board level. A representative IR profile is given below.

Reflow	Recommendation
Ramp Rate	1 to 3 °C/sec. to 120 to 160 °C
Soak	120 to 160° C for 2 minutes
Ramp Rate	0.5 to 1 °C/second to 210 to 230 °C
Time Above Liquidus	45 to 75 seconds

Alloy	Liquidus °C (°F)	Solidus °C (°F)
62Sn/36Pb/2Ag	179 (354)	179 (354)
63Sn/37Pb	183 (361)	183 (361)
96.5Sn/3.5Ag	221 (430)	221 (430)
10Sn/88Pb/2Ag	299 (570)	268 (514)

Total heating dwell time may be 4 to 7 min. depending on thermal inertia and component sensitivity.

**Reflow SAC305 Alloy**

Setting Zone*	Optimal Dwell Period	Extended window
40 to 221 °C	2:30 to 4:30 min.	< 5:00 min.
170 to 221 °C	0:30 to 2:00 min	< 2:30 min.
120 to 221 °C	1:25 to 3:00 min.	< 3:30 min.
TAL (217 to 221 °C)	45 to 90 sec.	Not Recommended
Peak temperature	235 to 245 °C	Compatible with most common surface finishes. (ENTEK HT, ENTEK OM, AlphaSTAR, ENIG, SACX <sup>®</sup> HASL). Coldest point on the PCB can be as low as 230 °C. Paste can withstand 250 °C during reflow.
Joint cool down rate	1 to 6 °C/second	Recommended to prevent surface cracking issues.

Alloy	Meting Range
SAC305	217 to 221° Melting Range

**RESIDUE REMOVAL**

ALPHA RMA-390DH3 is a rosin based flux system designed for complete solvent washability of flux residue after reflow. Most commercial electronic assembly cleaning solvents are effective, including ALPHA 565 or BIOACT<sup>®</sup> EC-7 a semi aqueous cleaner designed to meet the most demanding cleaning requirements with complete ecological compatibility. Flux residues can also be removed by saponification with ALPHA 2110 in water.

**SHIPPING**

Temperatures over 90 °F should be avoided in handling ALPHA RMA-390 DH3. During the summer, this product is shipped in a thermally controlled carton. It should not be left on a shipping dock or exposed to heat after receipt.

**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**

Refrigerated storage is required. Typically, paste should be stored at 0 to 10 °C (32 to 50 °F). Before use, paste should be allowed to come to room temperature. Shelf life of paste refrigerated at 0 to 10 °C (32 to 50 °F) is six months from date of manufacture. The production environment should be 65 to 80 °F and 30 to 60% RH.

**CONTACT INFORMATION**

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