

# ALPHA<sup>®</sup> CVP-390

No-Clean, Rework and BGA Flux

## DESCRIPTION

**ALPHA CVP-390** is a no-clean flux engineered to be used in the placement and reflow of lead-free solders for BGA attach processes. Before reflow, the flux provides sufficient tack to hold the BGA in place. After reflow, the residue is clear and colorless. This paste flux can also be used in the rework of components.

## FEATURES & BENEFITS

- **Wide Reflow Profile Window:** allows best quality solderability of complicated, high density PWB assemblies in both air and nitrogen reflow, using ramp and soak profiles, as high as 175 to 185 °C
- **Excellent Flux Residue Cosmetics:** after reflow soldering, even using long/high thermal soaking, without charring or burning
- **Halogen Content:** Zero-Halogen, no halogen intentionally added
- **Residue:** Excellent Pin Testing property and Passed JIS Copper Corrosion Test
- **Safe and Environmentally Friendly:** Materials comply with RoHS and Halogen-free requirements, as well as TSCA & EINECS

## APPLICATION GUIDELINES

**ALPHA CVP-390** may be applied by screen printing or pin transfer (substrate) or doctor blade / dip coating (package). It can also be dispensed.

Reflow can be accomplished in clean-dry air or nitrogen-controlled atmosphere. Straight ramp profile is at 0.7 °C/sec and 1.3 °C/sec ramp, 45 to 60 TAL. Soak profiles at 155 to 175 °C, 60 to 100 sec have been determined to give optimal results. If required, good results are also achievable with high soak temperature profiles of 175 to 185°C for 60 sec. Typical peak temperature is 235 to 245 °C.

**Note 1:** Keeping the peak temperature below 241 °C may reduce the number and size of BGA and QFN voids.

**Note 2:** Refer to component and board supplier data for thermal properties at elevated temperatures. Lower peak temperatures require longer TAL for improved joint cosmetics.

**Note 3:** These are profiles that were tested in the lab with acceptable reflow and coalescence performance on SAC alloys, optimization to each board application should still be carried out by users to ensure best results.

**ALPHA CVP-390** residue is designed to remain on the board after reflow and no cleaning is required. If reflowed residue cleaning is required, Vigon A 201 (In-line Cleaning), Vigon A250 (Batch Cleaning) or Vigon US (Ultrasonic Cleaning) are recommended. Vigon is a registered trademark of Zestron.

## HALOGEN STATUS

**ALPHA CVP-390** is a halogen-free product & passes the standards listed in the table below:

Halogen Standards			
Standard	Requirement	Test Method	Status
<b>JEITA ET-7304</b> Definition of Halogen Free Soldering Materials	< 1000 ppm Br, Cl, F in solder material solids	<b>TM EN 14582</b>	Pass
<b>IEC 612249-2-21</b>	Post Soldering Residues contain < 900 ppm each or total of < 1500 ppm Br or Cl from flame retardant source		Pass
<b>JEDEC</b> A Guideline for Defining "Low Halogen" Electronics	Post soldering residues contain < 1000 ppm Br or Cl from flame retardant source		Pass
<b>Zero Halogen:</b> No halogenated compounds have been intentionally added to this product			

**TECHNICAL DATA**

Category	Results	Procedures/Remarks
<b>Chemical Properties</b>		
Activity Level	ROL0	IPC J-STD-004B
Halide Content	Halide free (by titration)	IPC J-STD-004B
Fluoride Spot Test	<b>Pass</b>	JIS-Z-3197-1999 8.1.4.2.4
Halogen Test	<b>Pass</b> , Halogen-free	EN14582, by oxygen bomb combustion, Non-detectable (ND) at < 50 ppm
Corrosivity	<b>Pass</b>	IPC Cu Mirror, Cu Corrosion and Ag Chromate Tests
<b>Electrical Properties</b>		
Water Extract Resistivity	1.3 X 10 <sup>5</sup> Ohm-cm	JIS-Z-3197-1999 8.1.1
SIR (7 days, 40 °C/90%RH, 12 V bias)	<b>Pass</b>	IPC J-STD-004B TM-650 2.6.3.7 (Pass ≥ 1 x 10 <sup>8</sup> ohm)
JIS Electromigration (1000 hrs @ 85 °C/85%RH 48V)	<b>Pass</b>	JIS-Z-3197-1999 8.5.4
Electromigration (Bellcore 500 hrs @ 65°C/85%RH 10V)	<b>Pass</b>	Bellcore GR78 CORE (Pass=final > initial/10)
<b>Physical Properties</b>		
Appearance	Smooth, Off-White to Pale Yellow Paste	
Viscosity (10rpm at 25°C by Malcom Viscometer)	140 to 310 Poise (typical)	
Acid Number (mgKOH/g)	150.00 to 180.00 mgKOH/g (typical)	
Moisture Content	Typically 0.70% max (w/w)	
Fineness of Grind (um)	<10 μm (typical)	

**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 AlphaAssembly.com**

**STORAGE**

The flux should be stored in sealed containers and need not be refrigerated. Shelf life of unopened containers is 6 months from the manufacturing date. If the material has been chilled, the container should be allowed to reach room temperature before opening in order to prevent moisture condensation from ambient air onto the flux.

**CONTACT INFORMATION**

**To confirm this document is the most recent version, please contact  
Assembly@MacDermidAlpha.com**

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

<p><b>North America</b> 109 Corporate Blvd. South Plainfield, NJ 07080, USA 800.367.5460</p>	<p><b>Europe</b> Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 01483.758400</p>	<p><b>Asia</b> 8/F., Paul Y. Centre 51 Hung To Road Kwun Tong, Kowloon, Hong Kong 852.3190.3100</p>
--	---	---

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

DISCLAIMER: All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed. No statement or recommendation shall constitute a representation unless set forth in an agreement signed by officers of seller and manufacturer. NO WARRANTY OF MERCHANTABILITY, WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY IS MADE. The following warranty is made in lieu of such warranties and all other warranties, express, implied, or statutory. Products are warranted to be free from defects in material and workmanship at the time sold. The sole obligation of seller and manufacturer under this warranty shall be to replace any noncompliant product at the time sold. Under no circumstances shall manufacturer or seller be liable for any loss, damage or expense, direct, indirect, incidental or consequential, arising out of the inability to use the product. Notwithstanding the foregoing, if products are supplied in response to a customer request that specifies operating parameters beyond those stated above, or if products are used under conditions exceeding said parameters, the customer by acceptance or use thereof assumes all risk of product failure and of all direct, indirect, incidental and consequential damages that may result from use of the products under such conditions, and agrees to exonerate, indemnify, defend and hold harmless MacDermid, Incorporated and its affiliates therefrom. No suggestion for product use nor anything contained herein shall be construed as a recommendation to use any product in a manner that infringes any patent or other intellectual property rights, and seller and manufacturer assume no responsibility or liability for any such infringement.

© 2019 MacDermid, Inc. and its group of companies. All rights reserved. "(R)" and "TM" are registered trademarks or trademarks of MacDermid, Inc. and its group of companies in the United States and/or other countries.