

ALPHA[®] HITECH[™] CU31-2031

Underfill Epoxy

DESCRIPTION

ALPHA HITECH CU31-2031 is a one-component capillary underfill designed to reinforce BGA assembly. It has a dual unique attribute, able to flow beneath the component at room temperature and protect assembly from thermo-mechanical and drop shock effects effectively. It is also compatible with our no-clean solder pastes.


READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

FEATURES AND BENEFITS

The balanced set of features and benefits for this material are:

- Room temperature flow capability
- Excellent Surface Insulation Resistance Performance
- Excellent reliability performance
- Compatible with Alpha’s solder paste – OM340, OM353 and CVP-390V
- Halogen-Free
- Complies with RoHS Directive 2015/863/EU

APPLICATION GUIDELINES

Storage	Thawing	Application	Curing
<ol style="list-style-type: none"> 1. Freezing at < -20 °C to guarantee product stability. 2. Upright Position, Tip is facing down. 	<ol style="list-style-type: none"> 1. Remove the syringe from the freezer. 2. Set aside at room temperature for 2 hours. 3. Do not open the cap before the product is sufficiently thawed. 4. Product should not be refrozen after thawed. 5. To prevent contamination of unused product, do not return any material to its original container. 	<p>ALPHA HITECH CU31-2031 can be effectively dispensed at room temperature condition.</p>	<p>Curing condition:</p> <ul style="list-style-type: none"> ≥15 mins at 120 °C ≥10 mins at 130 °C ≥7 mins at 140 °C ≥5 mins at 150 °C (Convection oven)

TECHNICAL DATA

Category	Specification
Typical Properties of Uncured Material	
Appearance	Black
Viscosity, cP (RVT Brookfield #3, 20rpm @25 °C)	620
Specific Gravity	1.2
Pot Life @ 25 °C, days	3
Shelf Life @ < -20 °C, months	6
Available Packaging	Various Available

Category	Specification	
Typical Properties of Cured Material		
Glass Transition (T _g), °C (via TMA)	110	
CTE (α ₁), <T _g , ppm/°C	55	
CTE (α ₂), >T _g , ppm/°C	188	
Hardness, Shore D	79	
Modulus, Mpa (via DMA @ 0 to 200 °C)	3,737	
Linear Shrinkage, %	0.80	
Volume Shrinkage, %	1.30	
Coefficient of Thermal Conductivity, W/mK	0.48	
Halogen, ppm (per 3rd Party Lab testing)	Br	N.D.
	Cl	551
	F	N.D.
Water Absorption, %	25 °C for 24 hrs	0.71
	100 °C for 2 hrs	0.68
DSC Compatibility Test with Flux Residue	ALPHA OM-340	PASS
	ALPHA OM-353	PASS

Category	Specification	
	ALPHA CVP-390	PASS
SIR per IPC J-STD-004B TM-650 Method 2.6.3.7 (40 °C, 90 %RH, 12 V bias)	CU31-2031	PASS
	CU31-2031 + ALPHA CVP-390	PASS
	CU31-2031 + ALPHA OM-340	PASS
	CU31-2031 + ALPHA OM-353	PASS
SIR per IPC J-STD-004A TM-650 Method 2.6.3.3 (85 °C, 85 %RH, 45 to 50V bias)	CU31-2031	PASS
	CU31-2031 + ALPHA CVP-390V	PASS
	CU31-2031 + ALPHA OM-353	PASS
Thermal Shock (Air to Air) Characteristic Life (η), cycles @ -40 to 125 °C / Dwell 30 min (Alloy: SAC305), BGA228	SAC305	SAC305 + CU31-2301
	1566	3752
	Baseline	236%
Drop Shock, times Shock G: 1,500/ Drop height: 25 to 26 cm/ Pulse duration: 0.5 msec half sine, (Alloy: SAC305) wave, BGA84	SAC305	SAC305 + CU31-2031
	968	9587
	Baseline	1034%
Volume Resistivity, Ω .cm (ASTM D257)	4 x 10 ¹⁶	
Surface Resistivity, Ω /cm ² (ASTM D257)	3 x 10 ¹⁶	
Dielectric Breakdown Strength, kV/mm (ASTM D149)	30	
Dielectric Breakdown Voltage, kV (ASTM D149)	54	
Dielectric Constant, (Low Frequency, ASTM 150)	100 kHz	3.96
	1 MHz	3.55
Dissipation Constant (Low Frequency, ASTM D150)	100 kHz	0.0034
	1 MHz	0.0091
Dielectric Constant (High Frequency, ASTM D150)	1 GHz	3.21
	2 GHz	3.21
Dissipation Constant (High Frequency, ASTM D150)	1 GHz	0.0123
	2 GHz	0.0188

*Note: The values on the table are intended as a reference. it is not an absolute value.

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**

CONTACT INFORMATION

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

<p>North America 300 Atrium Drive Somerset, NJ 08873, USA 800.367.5460</p>	<p>Europe Unit 2, Genesis Business Park Albert Drive Woking, Surrey, GU21 5RW, UK 01483.758400</p>	<p>Asia 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.