

# ALPHA<sup>®</sup> HiTech CU31-2030

## Underfill Epoxy

### DESCRIPTION

**ALPHA HiTech CU31-2030** is a one-component capillary underfill designed for the protection of assembled chip packages onto printed circuit boards. It is a low viscosity underfill which enables fast and efficient flow properties. In addition, it has a high Tg and low modulus which results to excellent reliability performance. **ALPHA HiTech CU31-2030** suitable for assembling BGA, CSP and Flip Chip devices.


READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### FEATURES AND BENEFITS

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

- Low viscosity
- High glass Transition temperature (Tg)
- Low modulus
- Excellent reliability performance
- Room temperature flow capability
- Halogen-free
- Complies with RoHS Directive 2015/863/EU

**APPLICATION GUIDELINES**

Storage	Thawing	Application	Curing
1. Freeze at $\leq -20$ °C to guarantee product stability. 2. Upright Position, tip facing bottom 	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.	ALPHA HiTech CU31-2030 can be effectively dispensed at room temperature condition.	For full property development, cure at the following conditions in a convection oven. <ul style="list-style-type: none"> <li>• 120 °C for <math>\geq 20</math> minutes</li> <li>• 130 °C for <math>\geq 10</math> minutes</li> <li>• 150 °C for <math>\geq 7.5</math> minutes</li> </ul>

**TECHNICAL DATA**

Category	Specification
<b>Typical Uncured Material Properties</b>	
Appearance	Black
Viscosity (RVT Brookfield Spindle #3, 20 rpm @ 25 °C, cP)	*200 to 1,000
Filler Content (SiO <sub>2</sub> ), %	10
Average Filler Size, $\mu\text{m}$	0.7
Maximum Filler Size, $\mu\text{m}$	10
Specific Gravity	1.1 to 1.3
Pot Life @ 25 °C, days	3
Shelf Life @ $\leq -20$ °C, months	6
Available Packaging	10cc, 30cc syringes

\*Note: Values are tentative until specification limits have been established and finalized.

Category	Specification
<b>Typical Cured Materials Properties</b>	
Glass Transition (T <sub>g</sub> ), °C via TMA	168 ± 5
CTE (α <sub>1</sub> ), <T <sub>g</sub> , ppm	56 (± 10%)
CTE (α <sub>2</sub> ), >T <sub>g</sub> , ppm	176 (± 20)
Hardness (Shore D)	80 to 90
Modulus, Mpa (via DMA @ -40 to 250 °C)	2,787
Linear Shrinkage, %	0.60
Volume Shrinkage, %	2.83
Coefficient of Thermal Conductivity, W/mK	0.80
Halogen, ppm (per 3rd Party Lab testing)	Br: Not Detected
	Cl: 90
Extractable Ionic Content - Anion, ppm	Cl: 0.33
Extractable Ionic Content - Cation, ppm	Not Detected
Water Absorption, %	25 °C for 24 hrs: 0.33
	100 °C for 2 hrs: 0.41
DSC Compatibility Test with Flux Residue	ALPHA CVP-390: Pass
	ALPHA OM-340: Pass
	ALPHA OM-353: Pass
	ALPHA OM-358: Pass

Category	Typical Values
<b>Typical Cured Material Properties</b>	
SIR per IPC J-STD-0004B TM-650 Method 2.6.3.7 (40 °C, 90 %RH, 12 V bias)	ALPHA HiTech CU31-2030
	ALPHA HiTech CU31-2030 + ALPHA CVP-390: Pass
	ALPHA HiTech CU31-2030 + ALPHA OM-340: Pass
	ALPHA HiTech CU31-2030 + ALPHA OM-353: Pass
	ALPHA HiTech CU31-2030 + ALPHA OM-358: Pass
Thermal Shock (air to Air) @ -40 to 125 °C / Dwell 30 min / cycle (Alloy: SAC305)	Pass up to 3,000 Cycles
Volume Resistivity, $\Omega \cdot \text{cm}$ (ASTM D257)	$4.3 \times 10^{16}$
Surface Resistivity, $\Omega/\text{cm}^2$ (ASTM D257)	$5.4 \times 10^{16}$
Dielectric Breakdown Strength, kV/mm (ASTM D149)	20
Dielectric Breakdown Voltage, kV (ASTM D149)	61
Dielectric Constant (Low Frequency - 1KHz & 1MHz: ASTM D150)	1 KHz: 4.67
	1 MHz: 4.28
Dissipation Constant (Low Frequency - 1KHz & 1MHz: ASTM D150)	1 KHz: 0.0022
	1 MHz: 0.0052

**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).**

**CONTACT INFORMATION**

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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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