

# ALPHA<sup>®</sup> ATROX<sup>®</sup> CD 560-1

## Zero PFAS<sup>1</sup> Electrically and Thermally Conductive Die Attach

### DESCRIPTION

**ATROX CD 560-1** is a Zero PFAS<sup>1</sup> alternate Ag filler technology die attach paste designed for high throughput automated dispensing for metal lead-frame semiconductor packages. **ATROX CD 560-1** has excellent adhesive strength to PPF (pre-plated frame) and copper lead-frame. **ATROX CD 560-1** has low out gassing which minimizes contamination resulting in excellent reliability performance.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

### TYPICAL PROPERTIES

Material Properties	Method	Value	Remarks
<b>A. Uncured</b>			
Chemical type		Thermosetting	
Color	Visual	Grey	
Viscosity at 25 °C at 5.0 RPM	ASTM D2196-99	10,000 cps	Brookfield Spindle 51
Thixotropic index (0.5 RPM/5.0 RPM)	ASTM D2196-99	3.6	Brookfield Spindle 51
Pot Life @ 23 °C (time to doubling of viscosity)	ISO 10364:1993	> 24 hours	Brookfield Spindle 51
Storage Temperature		-40 (°C/°F)	
Shelf Life @ -40 (°C/°F)		12 months	
<b>B. Cured</b>			
Glass Transition Temperature (Tg)	TMA	82 °C	
Modulus at 25 °C	DMA	5.0 GPa	
Modulus at 260 °C	DMA	0.58 GPa	

<sup>1</sup> Zero PFAS equals no added PFAS.

Material Properties	Method	Value	Remarks
CTE 1 (below Tg)	TMA	45 ppm	
CTE2 (Above Tg)	TMA	225 ppm	
Thermal Conductivity: Bulk	Laser Flash	2.5 W/mK	
Weight loss on cure	TGA	2%	
Volume Resistivity	4-point Probe	0.0006 Ohm-cm	

**DIE SHEAR STRENGTH (2x2 mm<sup>2</sup> BARE SILICON DIE)**

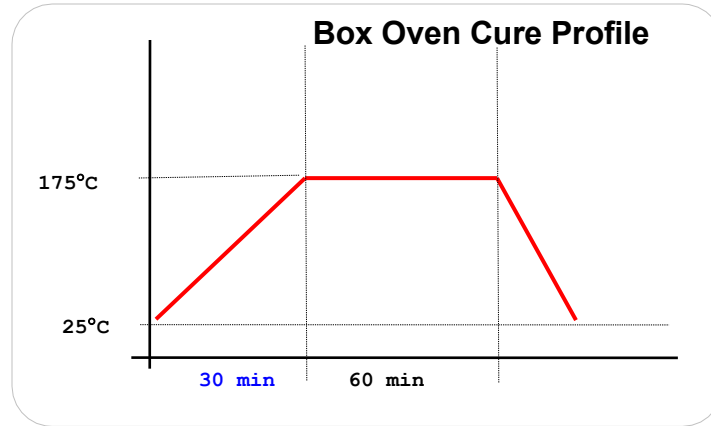
Lead Frame	Cure Condition	Measuring Temperature	Value
Cu	175 °C/1hr	25 °C	13.5 Kg
Cu	175 °C/1hr	260 °C	3.5 Kg
PPF	175 °C/1hr	25 °C	13.0 Kg
PPF	175 °C/1hr	260 °C	3.0 Kg

**MATERIAL APPLICATION**

ATROX CD 560-1 is formulated to be applied using a time pressure pump equipped on most die bonders. The material should be consistently dispensed over time. Equipment settings need to be optimized for desired material deposition response based on model and configuration.

**CURE**

ATROX CD 560-1 cures in 60 minutes in box-oven at 175 °C or 10 minutes in snap cure oven. For box oven cure, it is recommended that the cure schedule includes at ramp at 5 to 10 °C and a controlled cooling cycle to minimize thermal stresses. Depending on thermal mass of application cure times may vary and should be optimized by the end user. Kindly consult with your local Technical Service for recommendations.



**Snap Cure Profile**

Zone	1	2	3	4	5	6	7	Total Time (sec.)
Temp. (C)	60	90	120	160	200	240	200	600

**CLEAN-UP**

Uncured material may be cleaned from dispenser components and surfaces with a variety of solvents, including IPA, acetone, MEK, methylene chloride, etc. Always wash and dry thoroughly prior to re-use of the dispenser components. The cleaning technique should be active cleaning of the components – flush, wash or wipe - followed by a drying step to ensure a clean, dry surface. Do not soak since this can solubilize the hardener within the uncured resin and curing (very difficult to remove). Contact your equipment supplier to ensure the solvent is compatible with their components. Clean and maintain dispense valves as recommended by the equipment manufacturer.

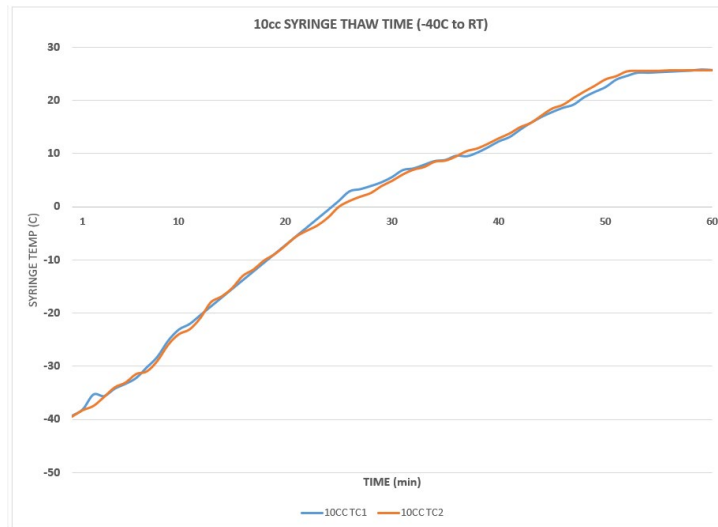
**PACKAGING SIZES**

ATROX CD 560-1 is available in 5 or 10 cc EFD or Musashi syringes.

**SHIPPING & STORAGE**

Material is normally shipped in insulated boxes using dry ice to ensure that the ATROX CD 560-1 maintains all its properties. On receipt, it must be ensured that dry-ice remnants are present in the insulated shipping box. If there is no dry ice, or if the material is not cold, then please contact MacDermid Alpha Electronics Solutions immediately. Exposing to elevated temperatures during shipment and storage will compromise on the performance aspect of the material adversely.

It is recommended to store the syringes of material at -40 °C to maximize shelf life of 12 months. It is recommended that the material be allowed to thaw before usage. Typical thawing times for 5cc and 10cc syringes are presented in chart below. Remove the syringe from freezer and set aside, allowing it to thaw at room temperature, until it reaches room temperature. To prevent contamination of unused product, do not return any material to its original container.



**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.**

**WASTE TREATMENT**

Prior to using any recommendations or suggestions for waste treatment, the user is required to know the appropriate local/state/federal regulations for on-site or off-site treatment which may require permits. If there is any conflict regarding our recommendations, local/state/federal regulations take precedent.

**CONTACT INFORMATION**

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