

ALPHA® ATROX® CD 590-HT2

Zero-PFAS¹ High Thermal Conductive Die Attach Paste

DESCRIPTION

ATROX CD 590-HT2 is a thermosetting electrically conductive die attach designed for substrate based as well as metal lead frame semiconductor packages. **ATROX CD 590-HT2** combines high thermal conductivity with excellent electrical performance to provide a high reliability die attach solution with broad die size and multipackage capability.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

TYPICAL PROPERTIES

Material Properties	Method	Value	Remarks
A. Uncured			
Chemical type		Thermosetting	
Color	Visual	Grey	
Viscosity at 25°C at 5.0 RPM	ASTM D2196-99	21,000 cps	Brookfield Spindle 51
Thixotropic index (0.5 RPM/5.0 RPM)	ASTM D2196-99	6.9	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)		> 6 months	
B. Cured			
Glass Transition (T _g)	DMA	68 °C	
Modulus at 25 °C	DMA	4.8 GPa	
Modulus at 260 °C	DMA	0.15 GPa	
CTE1(Below T _g)	TMA	25 ppm	

¹ Zero-PFAS equals no added PFAS

Material Properties	Method	Value	Remarks
CTE2 (Above Tg)	TMA	166 ppm	
Thermal Conductivity: Bulk	Laser Flash	10 W/mK	
Volume Resistivity	4-Point probe	0.00004 Ohm-cm	

DIE SHEAR STRENGTH (7.0 MM X 7.0 MM Bare Silicon Die)

Substrate	Cure Condition	Measuring Temperature	Value
Cu	125 °C/30 min +175 °C/120 min	25 °C	85 Kg-F
Au	125 °C/30 min +175 °C/120 min	25 °C	81 Kg-F
Solder Mask	125 °C/30 min +175 °C/120 min	25 °C	82 Kg-F

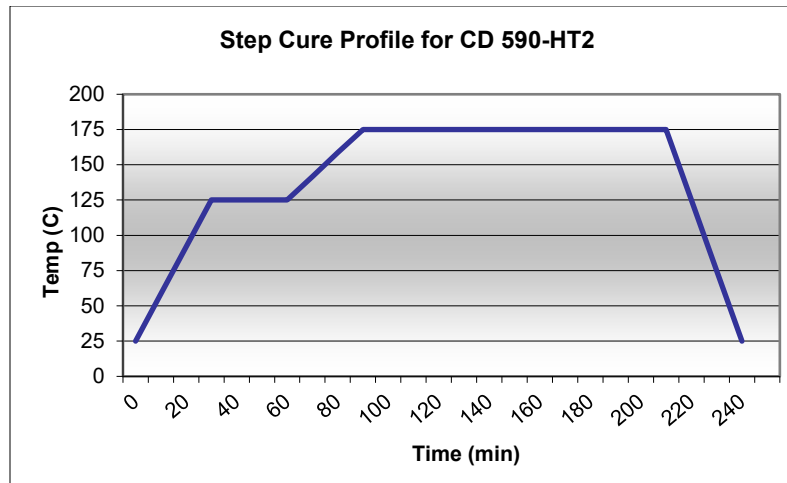
MATERIAL APPLICATION

ATROX CD 590-HT2 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 590-HT2 cures using ramp profile with 30 minute soak at 125 °C + ramp to 175 °C and soak for 120 minutes. It is recommended that the cure schedule includes at ramp at 5 to 10 °C and a controlled cooling cycle to minimize thermal stresses. Alternatively, the material can be cured at higher peak temperatures such as 200 °C to enhance the adhesion of the material.

Depending on thermal mass of application cure times may vary and should be optimized by the end user.



RELIABILITY PERFORMANCE

ATROX CD 590-HT2 is recommended for excellent reliability with stable Electrical and Thermal performance during MSL and Thermal Cycling. There is no limitation on die size for metalized OR Bare Silicon die packages. However, it is recommended to consult with our Technical Service for optimizing critical parameters for specific packages.

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.

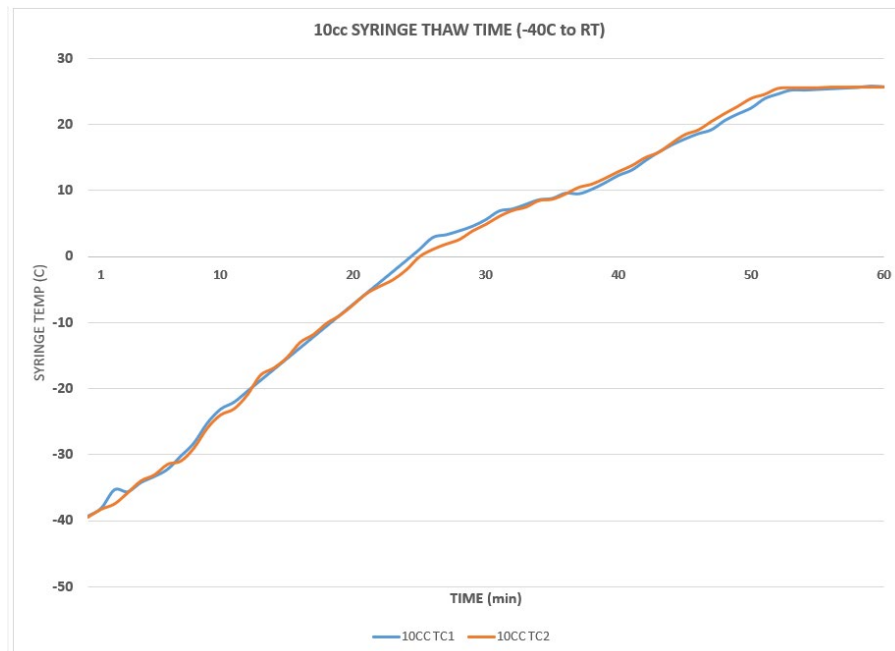
PACKAGING SIZES

ATROX CD 590-HT2 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 590-HT2 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 Alpha Advanced Materials 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 for a shelf life of at least 6 months. It is recommended that the material be allowed to thaw before usage. Typical thawing times for 5cc and 10cc syringes are presented in the chart below. Remove the syringe from the freezer and set it aside, allowing it to thaw at room temperature until it reaches room temperature (90 minutes maximum for 30cc syringe). To prevent contamination of unused products, 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

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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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