

# ALPHA<sup>®</sup> ATROX<sup>®</sup> 800HT7A1

## Electrically and Thermally Conductive Die Attach

### DESCRIPTION

**ALPHA ATROX 800HT7A1** is an ultra-low stress thermosetting conductive die attach with high thermal conductivity designed for high power exposed pad semiconductors. **ATROX 800HT7A1** has very low shrinkage during cure and low condensable organics which ensure excellent package reliability.

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	20,629 cps	Brookfield Spindle 51
Thixotropic index (0.5 RPM/5.0 RPM)	ASTM D2196-99	6.14	Brookfield Spindle 51
Pot Life @ 23 °C (time to doubling of viscosity)	ISO 10364:1993	>24 hours	Brookfield Spindle 51
Storage Temperature		-40 +/-5	
Shelf Life @ -40 (°C/°F)		6 months	
<b>B. Cured</b>			
Glass Transition (Tg)	TMA	21 °C	
Modulus at 25 °C	DMA	4.9 GPa	
Modulus at 260 °C	DMA	0.57 GPa	

Material Properties	Method	Value	Remarks
CTE 1 (below Tg)	TMA	43 ppm	
CTE 2 (below Tg)	TMA	146 ppm	
Thermal Conductivity: Bulk Keff	Laser Flash	78 W/mK 36 W/mK	
Volume Resistivity	4-Point Probe	0.00003 Ohm-cm	
% Moisture Absorption	72 hrs @ 85%RH/85 °C	< 0.68%	
Weight loss during cure	TGA of cured sample- Ramp to 200 °C	< 2.7 %	

**DIE SHEAR STRENGTH (5.0 MM X 5.0 MM BARE SI)**

Lead Frame	Cure Condition	Measuring Temperature	Value
Ag	30 min to 150C + 30 min at 150 °C + 200 °C for 120 min	25 °C	45 Kg-F
Cu	30 min to 150C + 30 min at 150 °C + 200 °C for 120 min	25 °C	44 Kg-F

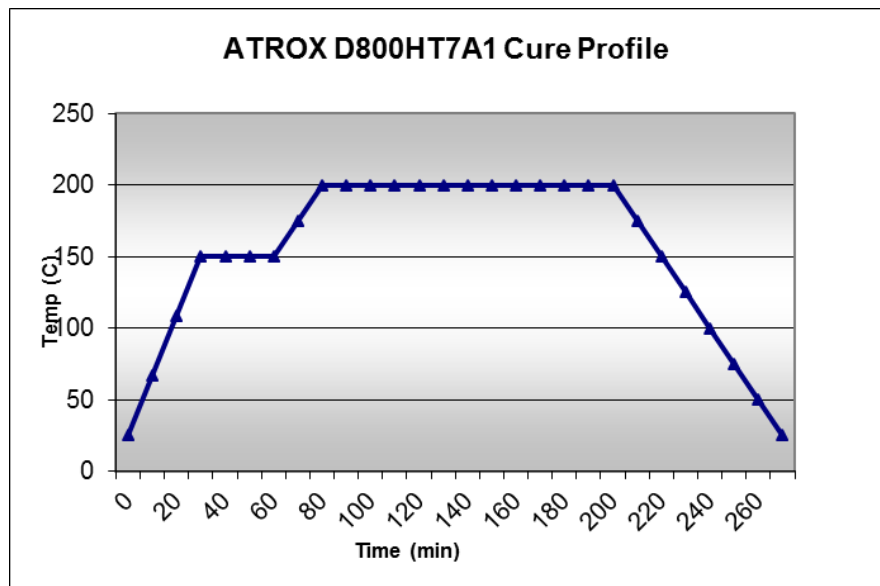
**MATERIAL APPLICATION**

ATROX 800HT7A1 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 800HT7A1 cures using step cure profile of 30 minutes to a 150 °C for 30 minutes followed by slow ramp of 20 minutes to 200 °C followed by soaking for a minimum of 120 minutes. It is recommended that the cure schedule includes controlled cooling cycle to minimize thermal stresses. It is possible to use higher cure temperature such as 250 °C to increase the adhesion of the die attach. However, it is recommended to optimize the cure profile for void formation especially for large die sizes

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



**RELIABILITY PERFORMANCE**

ATROX 800HT7A1 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 your local Technical Service Representative for optimizing critical parameters for specific packages.

For optimum results it is recommended to set the Bond Line Thickness to approximately 1 mil after cure.

**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.

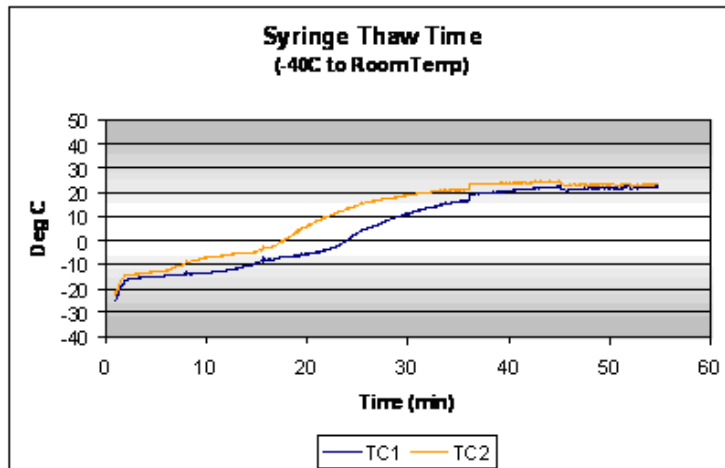
**PACKAGING SIZES**

ATROX 800HT7A1 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 800HT7A 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 for a maximum shelf life of 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 chart below. Remove the syringe from freezer and set aside, allowing it to thaw at room temperature, until it reaches room temperature (90 minutes maximum for 30cc syringe). 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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