

ATROX[®] NC300-1

Thermally Conductive, Electrically Insulating Die Attach Paste

DESCRIPTION

ATROX NC300-1 is a thermally conductive and electrically insulating die attach adhesive paste. **ATROX NC300-1** is formulated to be applied via time pressure dispensing, with either single needle or showerhead configuration. It has a high glass transition temperature and a low temperature cure for excellent MSL performance on metal and substrate based semiconductor packages.

READ ENTIRE TECHNICAL DATA SHEET BEFORE USING THIS PRODUCT

TYPICAL PROPERTIES

Material Properties (Uncured)	Method	Value	Comments
Chemical Type		Thermosetting	
Color	Visual	Pale Gray	
Viscosity at 25 °C at 5 RPM	ASTMD2196-99	30,000 Kcps	Brookfield DVIII Spindle 51
Thixotropic Index	ASTM D2196-99	4.1	Viscosity 0.5 RPM/5 RPM
Pot Life @ 23 °C (Less than 25% increase in viscosity)	ISO 10364:1993	24 hours	Brookfield DVIII Spindle 51
Storage Temperature		-40 (°C/°F)	
Shelf Life @ -40 (°C/°F)		6 months	
Recommended Cure Conditions	1) Ramp 30 minutes to 150 °C, cure one hour @ 150 °C 2) Ramp 30 minutes to 175 °C, cure 15 minutes @ 175 °C		
Cure Atmosphere	Forced air convection for ATROX NC300-1; inert environment for the protection of substrate, if necessary		

Material Properties (Cured)	Method	Value
Modulus @ 25 °C	ASTM D5023-01	9.86 GPa
Modulus @ 260 °C	ASTM D5023-01	1.20 GPa
Glass Transition Temperature		140 °C
CTE1 Below Tg	ASTM D3386-00	12 ppm
CTE2 Above Tg	ASTM D3386-00	55 ppm
Thermal Conductivity	Laser Flash	2.5 W/m-K
Ionics - Chloride	5 g sample, 50 g DI water, 100 °C for 24 h	< 10 ppm
Sodium		< 10 ppm
Potassium		< 10 ppm

MATERIAL PREPARATION

It is recommended that ATROX NC300-1 be allowed to thaw with syringe tip down before usage. Typical thawing times for 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.

MATERIAL APPLICATION

ATROX NC300-1 is formulated to be applied via time pressure dispensing, with either single needle or showerhead dispensing. Equipment settings need to be optimized for desired material deposition response based on model and configuration.

CURE PROCESS FOR OPTIMUM CURING

A cure profile with a 30 minute ramp to 150 °C, followed by one hour at 150 °C provides optimal properties. An alternate cure profile would be a 30 minute ramp to 175 °C, followed by 15 minutes at 175 °C. Gradual cooling of cured parts is recommended to prevent stresses in assembly. Large thermal masses in curing ovens may require more time. Thermocouples should be used to profile ovens with production quantities of parts.

Inert cure environments may be used for the protection of substrates, but are not required for the cure of polymer.

The correct ramp profile is important to minimize any voids in the polymer joint.

CLEAN-UP

Unused material may be cleaned from dispenser components and surfaces with a variety of solvents, including IPA, acetone, and MEK. Always wash and dry thoroughly before reusing 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. 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 NC300-1 is available in 5 or 10 cc EFD syringes, or 10 cc Musashi Syringes.

SHIPPING & STORAGE

Material is normally shipped in insulated boxes using dry ice to ensure that it maintains all its properties. Upon receipt, ensure 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 adversely compromise the performance of the material.

It is recommended to store the syringes of material at -40 °C for a maximum shelf life of 6 months.

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.**

CONTACT INFORMATION

To confirm this document is the most recent version, please contact
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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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