



Figure 1. The Photo of Actual ATEE2850

### FEATURES

- High thermal conductivity
- Good chemical resistance
- Long life after opening
- Low coefficient of thermal expansion
- Electrical insulation
- High intensity
- Good physical and chemical properties after temperature rises
- NASA Degassing Standards

### APPLICATIONS

It is used as an encapsulant for components which need heat dissipation and thermal shock properties.

### DESCRIPTIONS

ATEE2850 is a double-component, thermally conductive epoxy that can be used with varieties of catalysts. It features a low coefficient of thermal expansion and excellent electrical insulative properties.

### SPECIFICATIONS

Table 1. Characteristics.

Technology	Epoxy
Appearance	Black
Component	Two components: need blending
<b>Blending Ratio</b>	
By weight-resin: curing agent	100: 4. 5
By volume-resin: curing agent	100: 9. 5
Method of curing	Heat curing
Application	Encapsulant
Operating temperature	-55°C ~155°C

### TYPICAL PROPERTIES OF MATERIAL BEFORE CURING

Table 2. Properties of ATEE2850

Properties	Unit	Value
Chemistry		Epoxy
Appearance		Black
Specific gravity	g/cm <sup>3</sup>	2.35-2.45
Brookfield viscosity	mPa.s (cP)	20,000-250,000
Storage life@25°C	month	12

Table 3. Properties of Catalyst 11

Curing agent	Catalyst 11
Description	Long potting life, good chemical resistance, excellent physical and chemical properties when heating up.
Curing type	Heat curing
Viscosity	35-60 mPa.s @ 65°C

Table 4. Properties of Mixture of ATEE2850 and catalyst 11

Properties	Unit	Value
Brookfield viscosity	mPa.s(cP)	64,000
Specific gravity	g/cm <sup>3</sup>	2.29
Working life (100g, @25°C)	Hour	>4

\*Mixing proportion: Quantity of catalyst that added in every 100 portions of ATEE2850.

### TYPICAL PROPERTIES WHEN CURING

#### Curing Time:

8 to 16 hours at 80°C  
 2 to 4 hours at 100°C  
 30 to 60 minutes at 120°C

#### The Second Curing Time:

2-4 hours, at the highest expected operating temperature.

**Notes:** The above curing information is recommended for your reference. Specific curing conditions (time and temperature) may vary according to customers' experience and their application requirements as well as customer's curing equipment, oven loading and actual oven temperatures.

### TYPICAL PROPERTIES OF MATERIAL AFTER CURING

Table 5.

Properties	Test method	Unit	Value
Hardness	ASTM-D-2240	Shore D	96
Flexural strength	ASTM D790	N/mm <sup>2</sup> (psi)	117 17,000
Compressive strength	ASTM-D-695	mPa psi	193 27,900
Linear shrinkage	ASTM-D-2566	cm/cm	0.002
Water absorption (24hours)	ASTM-D-570	%	0.05
Thermal conductivity	ASTM-D-2214	W/mK	1,28
Glass transition temperature (Tg)	ASTM-D-3418*	°C	115
Coefficient of thermal expansion a <sup>1</sup> a <sup>2</sup>	ASTM D 3386	ppm/°C ppm/°C	(Below Tg) 31.2 (Above Tg) 97.9
Operating temperature range		°C	-55 to +155
Degassing			
Total mass loss	ASTM-E-595	%	0.29
CVCM		%	0.02

Dielectric strength	ASTM-D-149	kV/mm V/mil	15.0 380
Dielectric constant @ 1 MHz	ASTM-D-150	-	5.36
Dissipation factor @ 1 MHz	ASTM-D-150	-	0.043
Volume resistivity @ 25°C	ASTM-D-257	Ohm-cm	10 <sup>15</sup>

**Unit Conversion:**

$$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$$

$$\text{kV/mm} \times 25.4 = \text{V/mil}$$

$$\text{mm} / 25.4 = \text{inches}$$

$$\text{N} \times 0.225 = \text{lb}$$

$$\text{N/mm} \times 5.71 = \text{lb/in}$$

$$\text{N/mm}^2 \times 145 = \text{psi}$$

$$\text{MPa} \times 145 = \text{psi}$$

$$\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$$

$$\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$$

$$\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$$

$$\text{mPa}\cdot\text{s} = \text{cP}$$

**DIRECTIONS FOR USE**

- Cleaning the substrate material completely should be done to remove contamination, such as oxide layers, dust, moisture, salt and grease, which can cause poor adhesion or corrosion in blinding parts.
- When shipping and storage, the separation of some ingredients of product may happen. For this reason, it is suggested that the contents in the storage container be blended thoroughly before applying.
- Weigh resin and hardener accurately in suggested ratio, and put them into a clean container.
- Mix ingredient with hands kneading for 2 to 3 minutes and scrape the bottom and sides of the mixing container frequently to produce an even mixture.
- If possible, mix the ingredient for another 2 or 3 minutes. Try to avoid high mixing speed which may make excessive amount air infiltrate or cause overheating of mixture, resulting in span life reduced.
- Vacuum degassing should be applied to remove infiltrated air which is brought in during the mixing operation to ensure a bubble free product.
- Apply vacuum degassing to the mixture at 1-5 mm mercury. The foam will rise over the liquid level and then subside.
- Go on with vacuum degassing till most of foam disappears. This procedure usually takes 3 to 10 minutes.
- To facilitate degassing in materials which is difficult to degas, some drops of air release agent can be added, e.g. add ANTIFOAM 88 into 100g mixture.
- Gentle warming will be also helpful to vacuum degassing, but it may cause pot life to be shortened.
- Pour mixture into mold or cavity.
- Gentle warming of the mold or assembly may reduce the viscosity. This improves the flow of the material into the unit having intricate shapes or tightly packed coils or components.
- For critical applications, follow-up vacuum degassing in the mold may be required

**STORAGE**

In general, the shelf life of ATEE2850 is 12 months at 25°C. To achieve the longest shelf life, store it in original, tightly covered containers. Storage in cool, clean and dry place is suggested. The shelf life may vary depending on method of application and storage temperature. Some certain resins and hardeners are prone to crystallization. If crystallization does occur, heat up the contents of the container to 50°C~60°C until all crystals are dissolved. Please make sure the container is loosely covered during heating to prevent any pressure build-up. Allow contents to cool to room temperature before continuing. Don't put back the polluted product into the container again. We are not responsible for the polluted product or the product that are stored under the non-designated condition. Need more information, please contact our technical staff.

**HEALTH AND SAFETY**

Like many epoxy compounds, the ATEE2850, may cause skin or eye irritation upon contact. Certain individuals may also come with an allergic reaction after exposure (skin contact, inhalation of vapors, etc.) which may manifest itself in a good many ways, including skin rashes and an itching sensation. Dealing this product at rising

temperature may also cause vapors which can irritate the respiratory system. Relevant industrial health and safety measures should be taken when dealing this product. Correct eye protection and proper chemical-resistant clothing should be worn to minimize direct contact. Refer to the *Material Safety Data Sheet (MSDS)* for detailed recommendation on the use of project control and self-protective measures. The above information is only a brief summary of the necessary health and safety suggestion. Please read the *MSDS* for more detailed information before applying this product.

**NOTE**

The information above is furnished for reference only and is believed to be reliable. We cannot take the responsibility for the results which are obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of

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**ORDERING INFORMATION**

Table 6. Unit Price

Part#	Name	Weight	Unit Price
ATEE2850	Epoxy encapsulant	10g	\$5
Catalyst 11	Curing agent	0.45g	

**NOTICE**

- ATI reserves the right to make changes to its products or to discontinue any product or service without notice, and advise customers to obtain the latest version of relevant information to verify, before placing orders, that information being relied on is current and complete.
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