

LOCTITE ECCOBOND 931-1

October 2014

PRODUCT DESCRIPTION

LOCTITE ECCOBOND 931-1 provides the following product characteristics:

Technology	Epoxy
Appearance	Clear amber
Cure	Heat cure
Product Benefits	- One component - Low viscosity - High reliability - Provides environmental and mechanical protection
Application	Encapsulant

LOCTITE ECCOBOND 931-1 epoxy encapsulant is designed for general potting applications. The low viscosity and excellent wetting properties of LOCTITE ECCOBOND 931-1 allows for complete impregnation of tightly wounded coils. Its low exothermic reaction allows large castings to be cured in one step.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity @ 25 °C, cPs	300
Density, g/cm ³	1.1
Shelf Life @ -40°C (from date of manufacture), days	365
Shelf Life @ 5°C (from date of manufacture), days	182
Work Life @ 25°C, hours	6
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

- 1 hour @ 100°C
- 5 mins @ 100°C plus 24 hours @ 25°C
- 3 mins @ 130°C plus 24 hours @ 25°C

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

Hardness, Shore D	88
Density, g/cm ³	1.2
Coefficient of Thermal Expansion, TMA:	
Below Tg, ppm/°C	67
Above Tg, ppm/°C	240
Glass Transition Temperature (Tg), °C,	100
Weight Loss, %:	
@ 150 °C	0.08
@ 250 °C	0.3
@ 300 °C	1.0
Water Extract Conductivity, μmhos/cm	51

Storage Modulus:

@ -40°C	N/mm ²	5,830
	(psi)	(846,000)
@ 25°C	N/mm ²	4,180
	(psi)	(606,000)
@ 125°C	N/mm ²	125,000
	(psi)	(1.81×10 ⁺⁷)

Extractable Ionic Content, ppm:

Chloride (Cl ⁻)	100
Sodium (Na ⁺)	5
Potassium (K ⁺)	5

Thermal Conductivity @ 121°C, W/(m-K) 0.2

Electrical Properties

Dielectric Strength, kV/mm	27.6
Dielectric Strength, volts/mil	700
Dielectric Constant	4.5
Dissipation Factor	0.026
Volume Resistivity, ohm-cm	2×10 ¹⁴

GENERAL INFORMATION

For safe handling information on this product, consult the Material Safety Data Sheet, (MSDS).

THAWING:

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
4. DO NOT re-freeze. Once thawed to 25°C, the adhesive should not be re-frozen.

DIRECTIONS FOR USE

1. Complete cleaning of the components and substrates should be performed to remove contamination such as dust, moisture, salt and oils which can cause electrical failure, poor adhesion or corrosion in an embedded part.
2. Some separation of components is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use.
3. To ensure a void-free embedment, vacuum deairing or degassing should be performed to remove any entrapped air introduced during the mixing operation.
4. Pump-down or pull vacuum on the mixture to achieve an ultimate vacuum or absolute pressure of 1 to 5 torr or mm Hg. The foam will rise several times in the liquid height and then subside.
5. Continue vacuum deairing until most of the bubbling has ceased. This usually takes 3 to 10 minutes.
6. Pour mixture into cavity or mold.
7. Gentle warming of the mold or assembly reduces the viscosity. This improves the flow of the material into the unit having intricate shapes or tightly packed coils or components.
8. Further vacuum deairing in the mold may be required for critical applications.

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: -40°C. Storage below -40°C or greater than -40°C can adversely affect product properties.

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} = \text{N/mm}^2$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

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