



# STYCAST<sup>®</sup> 2651-1

## One Component Epoxy Encapsulant

Key Feature:	Benefit:
• One component	• Ease of use
• Good thermal shock resistance	• Finished parts withstand harsh environmental exposure
• Good adhesion to a wide variety of substrates	• Reliable electronic assemblies

### Product Description:

STYCAST 2651-1 is a one component, medium viscosity, filled, general purpose epoxy encapsulation resin. It has good thermal shock properties and adheres to a wide variety of substrates. STYCAST 2651-1 is similar in cured properties to STYCAST 2651 cured with CATALYST 11.

### Applications:

STYCAST 2651-1 is designed for potting and encapsulating small electrical and electronic assemblies.

### Instructions For Use:

Thoroughly read the information concerning health and safety contained in this bulletin before using. Observe all precautionary statements that appear on the product label and/or contained in individual Material Safety Data Sheets (MSDS).

To ensure the long term performance of the potted or encapsulated electrical / electronic

### Properties of Material As Supplied:

Property	Test Method	Unit	Value
Chemical Type			Epoxy
Appearance	Visual		Black liquid
Density	TP-13	g/cm <sup>3</sup>	1.60
Brookfield Viscosity	TP-10 or TP-11 20 rpm # 7	Pa.s cP	52 52,000

### Cure Schedule:

Cure at any one of the recommended cure schedules. For optimum performance, follow the initial cure with a post cure of 2 - 4 hours at 150°C. This product generates moderate heat during cure. No adverse exotherm effects are obtained when cured at 120°C in masses up to approximately 50 grams.

assembly, complete cleaning of 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.

Some filler settling 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.

To ensure a void-free embedment, vacuum deairing or degassing should be performed to remove any entrapped air introduced during the mixing operation. Pump-down or pull vacuum on the mixture to achieve an ultimate vacuum or absolute pressure of 1- 5 torr or mm Hg. The foam will rise several times the liquid height and then subside. Continue vacuum deairing until most of the bubbling has ceased. This usually requires 3-10 minutes.

To facilitate deairing in difficult to deair materials, add 1-3 drops of an air release agent, such as ANTIFOAM 88, into 100 grams of mixture. Gentle warming will also help, but working life will be shortened.

Pour mixture into cavity or mold. 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. Further vacuum deairing in the mold may be required for critical applications.

Temperature	Cure Time
°C	Time (hours)
80	8
100	6
120	4

**Properties of Material After Application:**

Property	Test Method	Unit	Value
Hardness	TP-311	Shore D	88
Flexural Strength	ASTM-D-790	mPa psi	103 15,000
Compressive Strength	TP-207	mPa psi	107 15,500
Tensile Strength	TP-239	mPa psi	55 8,000
Linear Shrinkage	TP-320	cm/cm	0.002
Water Absorption	24 hour boil	%	0.1
Coefficient of Thermal Expansion	TMA	10 <sup>-6</sup> /°C	45
Thermal Conductivity	ASTM-D-2214	W/m.K Btu-in/hr-ft <sup>2</sup> -°F	0.58 4.0
Temperature Range of Use		°C	-40 to +155
Dielectric Strength	TP-297	kV/mm V/mil	17.3 440
Dielectric Constant @ 60 Hz @ 1 kHz @ 1 mHz	TP-184	- - -	4.7 4.5 3.7
Dissipation Factor @ 60 Hz @ 1 kHz @ 1 mHz	TP-184	- - -	0.02 0.01 0.02
Volume Resistivity @ 25°C	TP-183	Ohm-cm	1 X 10 <sup>15</sup>
Arc Resistance	ASTM-D-495	Seconds	182

TPs are internal test procedures typically derived from ASTM or other norms. Copies of these procedures can be obtained upon request.

**Storage and Handling:**

The shelf life of STYCAST 2651-1 is 3 months at 25°C. For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended.

**Health and Safety:**

The STYCAST 2651-1, like most epoxy compounds, possesses the ability to cause skin and eye irritation upon contact. Certain individuals may also develop an allergic reaction after exposure (skin contact, inhalation of vapors, etc.) which may manifest itself in a number of ways including skin rashes and an itching sensation. Handling this product at elevated temperatures may also generate vapors irritating to the respiratory system.

Good industrial hygiene and safety practices should be followed when handling this product. Proper eye protection and appropriate chemical resistant clothing should be worn to minimize direct contact. Consult the Material Safety Data Sheet (MSDS) for detailed recommendations on the use of engineering controls and personal protective equipment.

*This information is only a brief summary of the available safety and health data. Thoroughly review the MSDS for more complete information before using this product.*

**Attention Specification Writers:**

The values contained herein are considered typical properties only and are not intended to be used as specification limits.

**Medical Implantable Disclaimer**

"In the event this product is intended by you for use in implantation in the human body, you are hereby advised that Henkel Corporation has not performed clinical testing of these materials for implantation in the human body nor has Henkel Corporation sought, nor received, approval from the FDA for the use of these material in implantation in the human body. It is YOUR responsibility, as a manufacturer of any such device, to ensure that all materials and processes relating to the manufacture of any medical device fully comply with all applicable federal, state and local laws, rules, regulations and requirements as well as any such laws, rules, regulations, directives or other orders of any foreign country where such product is sold. If you have not undertaken the necessary investigations to ensure compliance you are advised NOT TO USE this product in the manufacture of any device which is to be implanted in the human body. No representative of ours has any authority to change the foregoing provisions."

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