



# STYCAST 2850 GT

## Thermally Conductive Epoxy Encapsulant

Key Feature	Benefit
Good thermal conductivity	Dissipation of heat from embedded components
Low coefficient of thermal expansion	Low stress on embedded components

### Product Description :

STYCAST 2850 GT is a two component, thermally conductive epoxy encapsulant that can be used with a variety of catalysts. It features a low coefficient of thermal expansion and excellent electrical insulative properties. The fillers in STYCAST 2850 GT are slightly gritty and very hard, finished part must be ground.

### Applications :

STYCAST 2850 GT is designed for encapsulation of components which need heat dissipation and thermal shock properties.

### 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 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.

### Properties Of Material As Supplied :

Property	Test Method	Unit	Typical Value
Chemistry			Epoxy
Appearance	Visual		Black liquid
Density	ASTM-D-792	g/cm <sup>3</sup>	2,32
Brookfield Viscosity	ASTM-D-2393 5 rpm # 7	Pa.s	400

Some filler settling is common during shipping or storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use. Power mixing is preferred to ensure a homogeneous product.

Accurately weigh resin and hardener into a clean container in the recommended ratio. Weighing apparatus having an accuracy in proportion to the amounts being weighed should be used.

Blend components by hand, using a kneading motion, for 2 - 3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture. If possible, power mix for an additional 2 - 3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.

To ensure a void-free embedment, vacuum deairing should be used to remove any entrapped air introduced during the mixing operation. Vacuum deair mixture at 1 - 5 mm mercury. 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 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.

### Choice Of Curing Agents :

Curing Agent	CATALYST 9	CATALYST 24 LV	CATALYST 11
Description	General purpose with good chemical resistance and physical strength	Low viscosity, excellent adhesion, thermal shock and impact resistance. Excellent low temperature properties and fast cure.	Long pot life, excellent chemical resistance, good physical and chemical properties at elevated temperatures.
Type of Cure	Room	Room	Heat
Viscosity (Pa.s)	0,080 to 0,105	0,030 – 0,040	0,035 – 0,060 @ 35°C
Density (g/cm <sup>3</sup> )	0,95 – 1,05	1,00 – 1,05	1,00 – 1,10

### Properties Of Material As Mixed:

Property	Test Method	Unit	Typical Value		
			CATALYST 9	CATALYST 24 LV	CATALYST 11
Mix Ratio – Amount of Catalyst per 100 parts of STYCAST 2850 GT		By Weight By Volume	3,5 8	7 16,5	4 9
Working Life (100 g @ 25°C)			45 minutes	30 minutes	4 hours minimum
Density	ASTM-D-792	g/cm <sup>3</sup>	2,29	2,20	2,29
Brookfield Viscosity	ASTM-D-2393	Pa.s	305	17	100

### Cure Schedule :

Cure at any of the recommended cure schedules. For optimum performance, follow the initial cure with a post cure of 2 - 4 hours at the highest expected use temperature. Alternate cure schedules may also be possible. Contact your local P<sup>^</sup> \ ^ / Ö [ ! ] [ ! a a } Technical Representative for further information.

Temperature (°C)	Cure Time		
	CATALYST 9	CATALYST 24 LV	CATALYST 11
25	16 – 24 h	8 – 16 h	
45	4 – 6 h	4 – 6 h	
65	2 h	2 h	
80			8 – 16 h
100			2 – 4 h
120			60 min



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#### Properties Of Material After Application :

Property	Test Method	Unit	Typical Value		
			CATALYST 9	CATALYST 24 LV	CATALYST 11
Hardness	ASTM-D-2240	Shore D	96	94	96
Flexural Strength	ASTM-D-790	MPa	104	103	123
Compressive Strength	ASTM-D-695	MPa	164	110	187
Linear Shrinkage	ASTM-D-2566	cm/cm	0,004	0,004	0,005
Water Absorption (24 hours)	ASTM-D-570	%	0,01	0,05	0,03
Coefficient of Thermal Expansion	ASTM-D-3386 $\alpha^1$ $\alpha^2$	$10^{-6}/^{\circ}\text{C}$	29,7	31,9	27,4
		$10^{-6}/^{\circ}\text{C}$	96,0	93,0	87,3
Glass Transition Temperature	ASTM-D-3418	$^{\circ}\text{C}$	77	47	111
Thermal Conductivity	ASTM-D-2214	W/m.K	1,36	1,12	1,31
Temperature Range of Use		$^{\circ}\text{C}$	-40 to +130	-65 to +105	-55 to +155
Outgassing (1)	ASTM-D-595				
	TML	%	0,33	-	-
	CVCM	%	0,00	-	-
Dielectric Strength	ASTM-D-149	kV/mm	15,3	15,0	14,6
Dielectric @ 1 MHz	ASTM-D-150		5,21	5,41	5,41
Dissipation Factor @ 1 MHz	ASTM-D-150		0,036	0,059	0,047
Volume Resistivity @ 25 $^{\circ}\text{C}$	ASTM-D-257	Ohm.cm	$10^{15}$ minium	$10^{15}$ minium	$10^{15}$ minium

(1) Outgassing : per NASA Reference Publication 1124. Sample tested was cured for 7 days at 25 $^{\circ}\text{C}$ .

#### Storage And Handling :

The shelf life of STYCAST 2850 GT is 12 months at 25 $^{\circ}\text{C}$ . For best results, store in original, tightly covered containers. Storage in cool, clean and dry areas is recommended. Usable shelf life may vary depending on method of application and storage temperature. Certain resins and hardeners are prone to crystallisation. If crystallisation does occur, warm the contents of the shipping container to 50 - 60 $^{\circ}\text{C}$  until all crystals have dissolved. Be sure the shipping container is loosely covered during the warming stage to prevent any pressure build-up. Allow contents to cool to room temperature before continuing.

Storage Temperature ( $^{\circ}\text{C}$ )	Usable Shelf Life
18 to 25	1 year



It is recommended to consult the P^}\^|Ô[!] [! ;aa} product literature, including material safety data sheets, prior to using P^}\^|Ô[!] [! ;aa} products. These may be obtained from your local sales office.

**Note :**

Please note that Technical Data Sheets may be updated from time to time. Customers are advised that the latest technical bulletins are always available upon request.

**Attention Specification Writers :**

The technical information contained herein is generally consistent with the properties of the material and should not be used in the preparation of specifications, as it is intended for reference only. This technical information has been derived from one batch of material and may not exactly match the properties of each individual delivered batch. For assistance in preparing specifications, please contact your local P^}\^|Ô[!] [! ;aa} office for details. Please contact P^}\^|Ô[!] [! ;aa} Quality Assurance for test method details.

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