



STYCAST 2651 MM-FR

Fire Resistant, Epoxy Encapsulant

Key Feature:	Benefit:
• Fire resistance	• Casting resists burning
• Machinability	• Casting can be cut, drilled and tapped easily
• Low viscosity	• Ease of use

Product Description:

STYCAST 2651 MM-FR is a fire resistant, low viscosity, filled epoxy encapsulant. It features excellent machinability and good fire resistance properties especially when cured with CATALYST 11 (when cured with CATALYST 9, STYCAST 2651 MM-FR drips when burning).

Applications:

STYCAST 2651 MM-FR is designed for applications requiring fire resistance combined with low viscosity and low abrasion. It is especially useful for machine dispensing and for parts that require post molding machining.

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	Value
Chemical Type			Epoxy
Appearance	Visual		Black
Density	ASTM-D-792	g/cm ³	1.65
Brookfield Viscosity	ASTM-D-2393 5 rpm # 5	Pa.s cP	35 35,000

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, 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.

Choice of Curing Agents		
Curing agent	Catalyst 9	Catalyst 11
Description	General purpose with good chemical resistance and physical strength.	Long pot life, excellent chemical resistance, good physical and chemical properties at elevated temperatures.
Type of cure	Room	Heat
Viscosity Pa.s cP	0.080 to 0.105 80 to 105	0.035 to 0.060 @ 65 °C 35 to 60 @ 65 °C

Properties of Material As Mixed:

Property	Test Method	Unit	Value	
			Catalyst 9	Catalyst 11
Mix Ratio - Amount of Catalyst per 100 parts of STYCAST 2651 MM-FR		By Weight	6.5	8
Working Life (100 g @ 25°C)	ERF 13-70		45 minutes	>4 Hours
Density	ASTM-D-792	g/cm ³	1.58	1.59
Brookfield Viscosity	ASTM-D-2393	Pa.s cP	7.8 7,800	8 8,000

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 the highest expected use temperature. Alternate cure schedules may also be possible. Contact your Henkel Corporation Technical Representative for further information.

Temperature °C	Cure Time	
	Catalyst 9	Catalyst 11
25	16-24 hr	
45	4-6 hr	
65	1-2 hr	
80		8-16 hr
100		2-4 hr
120		30-60 min

Properties of Material After Application:

Property	Test Method	Unit	Value	
			Catalyst 9	Catalyst 11
Hardness	ASTM-D-2240	Shore D	83	89
Temperature Range of Use		°C	-40 to +130°C	-55 to +155°C
Fire Resistance		-	Self extinguish	Self extinguish (drips)
Dielectric Strength	ASTM-D-149	kV/mm V/mil	17	17
			425	425
Dielectric Constant @ 1 MHz	ASTM-D-150	-	3.7	3.8
Dissipation Factor @ 1 MHz	ASTM-D-150	-	0.04	0.02
Volume Resistivity @ 25°C	ASTM-D-257	Ohm-cm	>10 ¹⁴	>10 ¹⁴

Storage and Handling:

The shelf life of STYCAST 2651 MM-FR is 6 months at 25°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.

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.

Health and Safety:

The STYCAST 2651 MM-FR 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.

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. For assistance in preparing specifications, please contact Henkel Corporation Quality Assurance for further details.

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Medical Implantable Disclaimer

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