STYCAST 2662
High Temperature Epoxy Encapsulant

Key Feature:	Benefit:
• High temperature resistance	• Casting can survive severe environmental conditions
• Outstanding moisture resistance	• Casting can survive high humidity or wet environments
• Excellent chemical resistance	• Casting can survive harsh chemical exposures

Product Description:

STYCAST 2662 is a filled, epoxy encapsulating resin. It is cured with CATALYST 14, 17 or 17 M 1 to yield a material exhibiting outstanding physical and electrical properties at very high temperatures.

Applications:

STYCAST 2662 is recommended for use in potting electronics which will be exposed to high temperatures or as a high temperature sealer or adhesive.

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.

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.

Properties of Material As Supplied:

Property	Test Method	Unit	Value
Chemical Type			Epoxy
Appearance	Visual		Black
Density	ASTM-D-792	g/cm^3	1.44
Brookfield Viscosity	ASTM-D-2393	Pa.s cP	40 40,000

Choice of Curing Agents			
Curing agent	Catalyst 14	Catalyst 17	Catalyst 17M-1
Description	Powdered epoxy hardener. Cured castings exhibit optimum in high temperature performance and chemical resistance. Long working life.	High temperature resistant epoxy hardener. Long working life. Excellent high temperature performance and chemical resistance to cured castings.	Non crystallizing version of CATALYST 17. Properties and cure are similar but CATALYST 17M-1 is easier to use and handle.
Type of cure	Heat	Heat	Heat

Properties of Material As Mixed:

Property	Test Method	Unit	Value		
			Catalyst 14	Catalyst 17	Catalyst 17M-1
Mix Ratio - Amount of Catalyst per 100 parts of STYCAST 2662		By Weight	25	30	30
Working Life (100 g @ 25°C)	ERF 13-70	Hours	>24	>24	>24
Density	ASTM-D-792	g/cm^3	1.46	1.41	1.41

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.

Catalyst 14	Catalyst 17	Catalyst 17M-1
3 hr @ 150°C	3 hr @ 125°C + 3 hr @ 175°C	
	For large or extremely critical castings:	
	16 hr @ 65°C + 6 hr @ 125°C +6 hr @ 150°C	

Cure Time

Properties of Material After Application:

Property	Test Method	Unit	Value		
			Catalyst 14	Catalyst 17	Catalyst 17M-1
Hardness	ASTM-D-2240	Shore D	88	88	88
Flexural Strength	ASTM-D-790	mPa psi	100 14,500	100 14,500	100 14,500
Thermal Conductivity	ASTM-D-2214	W/m.K Btu-in/hr-ft^2-°F	0.53 3.7	0.53 3.7	0.53 3.7
Water Absorption, 24 hours	ASTM D 570	%	0.01	0.01	0.01
Coefficient of Thermal Expansion	ASTM E 831	10^{-6}/°C	47	47	47
Temperature Range of Use		°C	-20 to +230	-20 to +230	-20 to +230
Outgassing[(1)] TML CVCM	ASTM-E-595	 % %	 0.63 0.00		
Dielectric Strength	ASTM-D-149	kV/mm V/mil	16.5 420	16.5 420	16.5 420
Dielectric Constant @ 1 mHz @ 25°C @ 150°C	ASTM-D-150	-	 3.5 3.6		
Dissipation Factor @ 1 mHz @ 25°C @ 150°C	ASTM-D-150	-	 0.009 0.007		
Volume Resistivity @ 25°C @ 150°C	ASTM-D-257	Ohm-cm	 $>10^{16}$ $>10^{14}$	$>10^{16}$	$>10^{16}$

[(1)] per NASA Reference Publication 1124. Sample tested was cured for 2 hours @ 120°C.

Storage and Handling:

The shelf life of STYCAST 2662 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.

Health and Safety:

The STYCAST 2662 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. For assistance in preparing specifications, please contact Henkel Corporation Quality Assurance for further details.

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."

Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results 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 property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.