

LOCTITE STYCAST ES 2505

August 2013

PRODUCT DESCRIPTION

LOCTITE STYCAST ES 2505 provides the following product characteristics:

Technology	Epoxy
Appearance (Resin)	Black liquid
Product Benefits	• General purpose • Low viscosity • Flame retardant • Excellent dielectric properties • RoHS compliant
Application	Encapsulant and Potting
Flammability Rating	UL 94 V0 @ 6 mm thickness

LOCTITE STYCAST ES 2505 is a dielectric grade epoxy encapsulant designed for general purpose applications. It is suitable for potting and encapsulating electrical devices that require flame retardancy.

LOCTITE STYCAST ES 2505 is the RoHS compliant version of STYCAST 2651-40FR.

LOCTITE STYCAST ES 2505 can be used with LOCTITE CAT 11.

CATALYST DESCRIPTION

LOCTITE CAT 11 provides the following product characteristics:

Product Benefits	• Long pot life • Excellent chemical resistance • Good physical and chemical properties at elevated temperatures
Cure	Heat cure
Mix Ratio, by weight - Material:Catalyst	100 : 9.5
Mix Ratio, by Volume - Material:Catalyst	100 : 13

TYPICAL UNCURED PROPERTIES**LOCTITE STYCAST ES 2505**

Density @ 25 °C, g/cc	1.52
Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 6, speed 20	16,000
Shelf Life @ 25°C (from date of manufacture), days	274
Flash Point - See MSDS	

TYPICAL UNCURED PROPERTIES AS MIXED**LOCTITE STYCAST ES 2505 with LOCTITE CAT 11**

Viscosity, Brookfield - RVF, 25 °C, mPa·s (cP):	
Spindle 4, speed 10 rpm	5,000
Work Life, 100 grams, @ 25°C, hours	>4
Flash Point - See MSDS	

TYPICAL CURING PERFORMANCE**Cure Schedule****LOCTITE STYCAST ES 2505 with LOCTITE CAT 11**

8 to 16 hours @ 80°C
2 to 4 hours @ 100°C
30 to 60 minutes @ 120°C

For optimum performance, follow the initial cure with a post cure of 2 to 4 hours at maximum expected operating temperature.

Alternate cure schedules may also be possible. Contact your Henkel representative for further information.

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**LOCTITE STYCAST ES 2505 with LOCTITE CAT 11****Physical Properties**

Hardness, Shore D	72
Coefficient of Linear Thermal Expansion, ppm/°C:	
Below Tg	42
Above Tg	164
Glass Transition Temperature, ASTM D3418, °C	65
Thermal Conductivity, W/(m·K)	0.82
Operating temperature range, °C	-55 to +155
Compressive Strength	N/mm ² 124 (psi) (18,000)

Electrical Properties

Volume Resistivity @ 25 °C, ohm-cm	1.69×10 ¹⁵
Dielectric Constant/ Dissipation Factor:	
@ 1 KHz	4.69/0.014
@ 100 KHz	4.5/0.017
@ 1 MHz	4.38/0.021

GENERAL INFORMATION

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

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. Power mixing is preferred to ensure a homogeneous product.
4. 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.
5. Blend components by hand, using a kneading motion, for 2 to 3 minutes and scrape the bottom and sides of the mixing container frequently to produce a uniform mixture.
6. If possible, power mix for an additional 2 to 3 minutes. Avoid high mixing speeds which could entrap excessive amounts of air or cause overheating of the mixture resulting in reduced working life.
7. To ensure a void-free embedment, vacuum deairing or degassing should be performed to remove any entrapped air introduced during the mixing operation.
8. Vacuum deair mixture at 1 to 5 mm mercury. The foam will rise several times the liquid height and then subside.
9. Continue vacuum deairing until most of the bubbling has ceased. This usually takes 3 to 10 minutes.
10. To facilitate deairing in difficult to deair materials, add 1 to 3 drops of an air release agent, such as ANTIFOAM 88 into 100 grams of mixture.
11. Pour mixture into cavity or mold.
12. 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.
13. 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 : 25 °C

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.

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

Conversions

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

Disclaimer**Note:**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

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.

Reference 0.0