

LOCTITE STYCAST 4640

February 2022

PRODUCT DESCRIPTION

LOCTITE STYCAST 4640 provides the following product characteristics:

Technology	Silicone
Appearance (Resin)	Amber liquid
Appearance (Catalyst)	Clear liquid
Product Benefits	• Two components • Lightweight • Temperature resistant • Readily pourable • Room temperature cure capability
Mix Ratio by weight - Material:Catalyst	100 / 0.1 to 0.4
Cure	Room temperature or Heat cure
Application	Potting or Encapsulation
Operating Temperature	-65 to +260 °C

LOCTITE STYCAST 4640 RTV condensation cure silicone rubber syntactic foam is engineered to yield a flexible, low density material with a low dielectric constant and dissipation factor. It is designed for airborne potting, sealing and caulking applications requiring low weight and excellent dielectric properties.

LOCTITE STYCAST 4640 can be used with LOCTITE CAT 50 AMB or LOCTITE CAT 50-2 AMB.

TYPICAL UNCURED PROPERTIES

LOCTITE STYCAST 4640

Brookfield Viscosity mPa·s (cP)	45,000
Density, g/cm ³	0.75
Shelf Life @ 18 to 25°C, days	180
Flash Point - See SDS	

LOCTITE CAT 50 AMB

Brookfield Viscosity mPa·s (cP)	85
Flash Point - See SDS	

TYPICAL UNCURED PROPERTIES AS MIXED

LOCTITE STYCAST 4640 with LOCTITE CAT 50 AMB

Brookfield Viscosity mPa·s (cP)	45,000
Density, g/cm ³	0.75
Work Life @ 25 °C, 100 gram mass, minutes	60
Flash Point - See SDS	

LOCTITE STYCAST 4640 with LOCTITE CAT 50-2 AMB

Brookfield Viscosity, mPa·s (cP)	45,000
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule (As Mixed)

LOCTITE STYCAST 4640 with LOCTITE CAT 50 AMB

16 to 24 hours @ 25°C
2 to 4 hours @ 65°C

For optimum performance above 125°C is anticipated, a post cure schedule of 1-2 hours at 25-30°C increments up to the highest expected use temperature is recommended to properly condition the silicone rubber.

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and specific application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

TYPICAL PROPERTIES OF CURED MATERIAL

LOCTITE STYCAST 4640 with LOCTITE CAT 50 AMB

Physical Properties

Hardness, Shore A	70
Elongation, %	135
Water Absorption, 24-hr boil, %	<0.1

Electrical Properties

Volume Resistivity @ 25°C, ohms-cm	>1×10 ¹⁴
Dielectric Strength, volts/mil	250
Dielectric Constant / Dissipation Factor @ 1 MHz	2.0 / 0.004

LOCTITE STYCAST 4640 with LOCTITE CAT 50-2 AMB**Physical Properties**

Hardness, Shore A	64
Elongation, %	51
Glass Transition Temperature, °C	≤50
Coefficient of Thermal Expansion, $\mu\text{m}/\text{m}^\circ\text{C}$: Above Tg	193

Electrical Properties

Dielectric Constant / Dissipation Factor :	
@ 50 Hz	3.2/0.266
@ 1 KHz	2.3/0.086
@ 1 MHz	2.1/0.005

TYPICAL PERFORMANCE OF CURED MATERIAL**LOCTITE STYCAST 4640 with LOCTITE CAT 50 AMB****Miscellaneous**

Tensile Strength	N/mm ²	1.4
	(psi)	(200)

LOCTITE STYCAST 4640 with LOCTITE CAT 50-2 AMB**Miscellaneous**

Tensile Strength	N/mm ²	1.96
	(psi)	(284)
Tear Strength, Kg/cm		1,030

GENERAL INFORMATION

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

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. This RTV silicone product is based on condensation cure chemistry and will cure in contact with most materials without cure inhibition.
3. This product is not recommended for use in closed molds or sealed molds which could prevent its exposure to moisture or the escape of reaction by-products required to complete the cure.
4. Catalysts used to cure this product may cause corrosion of copper and other sensitive metals.
5. 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.
6. Power mixing is preferred to ensure a homogeneous product.
7. Accurately weigh the liquid RTV silicone and catalyst into a clean container in the recommended ratio.
8. To facilitate the addition of catalyst, the use of a medicine dropper which has been previously calibrated to determine the number of drops per gram is recommended.
9. Working life and cure time are shortened as the amount of catalyst is increased.
10. Low catalyst concentrations are recommended for applications requiring thick sections or use at temperatures in excess of 125°C.
11. Blend components by hand, using a kneading motion, for 2 to 3 minutes. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture.
12. Scrape the bottom and sides of the mixing container frequently to produce a uniform mixture.
13. If possible, power mix for an additional 2 to 3 minutes. Avoid

high mixing speeds. This can entrap excessive amounts of air. It can also cause overheating of the mixture, resulting in reduced working life.

14. To ensure a void-free embedment, vacuum deairing or degassing should be performed to remove any entrapped air introduced during the mixing operation.
15. Pump-down or pull vacuum on the mixture to achieve an ultimate vacuum or absolute pressure of 1 to 5 torr or mm Hg. The foam will rise several times in the liquid height and then subside.
16. Continue vacuum deairing until most of the bubbling has ceased. This usually takes 3 to 10 minutes.
17. In general, silicone materials exhibit outstanding release properties and will not adhere to most substrates.
18. If adhesion is required, apply a thin, uniform coating of LOCTITE STYCAST S 11NC PRIMER to the desired clean, dry substrates. Allow the LOCTITE STYCAST S 11NC PRIMER to dry for 30-60 minutes at room temperature before applying this silicone material.
19. Pour mixture into cavity or mold.
20. 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: +4°C. Storage below +4°C or above +4°C can adversely affect product properties.

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 Henkel Representative.

Conversions

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

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local Henkel representative for assistance and recommendations on the specifications of this product.

Disclaimer

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, 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 2