Technical Data Sheet

LOCTITE STYCAST 1090 CAT 27-1

June 2020

PRODUCT DESCRIPTION

LOCTITE STYCAST 1090 CAT 27-1 provides the following product characteristics:

Technology	Epoxy
Appearance (Resin)	Black
Components	Two components - requires mixing
Mix Ratio, by weight - Resin : Hardener	100 : 16
Mix Ratio, by volume - Base : Hardener	100 : 13
Product Benefits	• Low density syntactic foam • Low CTE • Low dielectric constant • Low shrinkage • Good moisture resistance • Excellent chemical resistance • Good physical strength
Cure	Oven Cure
Application	Encapsulation
Operating Temperature	-40 to 175 °C

LOCTITE STYCAST 1090 CAT 27-1 is designed for encapsulation and potting of electronic assemblies that require lower weight such as aerospace applications. LOCTITE STYCAST 1090 CAT 27-1 is also available in the color white.

LOCTITE STYCAST 1090 can be used with a variety of catalysts. For more information on mixed properties when used with other available catalysts, please contact your local technical service representative for assistance and recommendations.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Part A Properties *LOCTITE STYCAST 1090*

Viscosity, Brookfield , 25 °C, mPa·s (cP):	
Speed 10 rpm, # 7	135,000
Specific Gravity	0.85
Shelf Life @ 25°C, months	12
Flash Point - See SDS	

Part B Properties *LOCTITE CAT 27-1*

Viscosity @ 25 °C, mPa·s (cP)	250 to 300
Flash Point - See SDS	

Mixed Properties

Mixed Density , g/cm³	0.827
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

Convection Box Oven:
4 hours @ 120°C

The above cure profile is a guideline recommendation. 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

Physical Properties

Density, g/cm³	0.849
Coefficient of Thermal Expansion, TMA:	
Below Tg, µm/(m.ºC)	45
Above Tg, µm/(m.ºC)	122
Glass Transition Temperature, °C:	
(Tg) by DMA @ tan delta	129
(Tg) by TMA	83
Thermal Conductivity , W/(m-K)	0.18
Hardness, Shore D	80
Volume Shrinkage on Cure, %	2.7
Linear Shrinkage, %	0.9
Water Absorption, %:	
1 day @ 25°C	0.07
1 week @ 25°C	0.3

Young's modulus (E) :

@ -40°C	N/mm²	2,138
	(psi)	(310,000)
@ 0°C	N/mm²	2,038
	(psi)	(296,000)
@ 25°C	N/mm²	2,001
	(psi)	(290,000)
@ 50°C	N/mm²	1,962
	(psi)	(285,000)
@ 100°C	N/mm²	1,596
	(psi)	(231,000)
@ 150°C	N/mm²	48
	(psi)	(6,960)

Electrical Properties

Volume Resistivity, ohm-cm	1.8×10^{15}
Surface Resistivity, ohms	9.3×10^{13}
Dielectric Strength, kV/mm	24
Dielectric Constant / Dissipation Factor :	
@ 50 Hz	3.2/0.124
@ 1 kHz	3.0/0.032
@ 1 MHz	2.7/0.023

GENERAL INFORMATION

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

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.

DIRECTIONS FOR USE

1. Complete cleaning of the substrates should be performed to remove contamination such as oxide layers, dust, moisture, salt and oils which can cause poor adhesion or corrosion in a bonded 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. Accurately weigh resin and hardener into a clean container in the recommended ratio.
4. 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.
5. 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.
6. To ensure a void-free embedment, vacuum deairing should be used to remove any entrapped air introduced during the mixing operation.
7. 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.
8. Continue vacuum deairing until most of the bubbling has ceased. This usually takes 3 to 10 minutes.
9. To facilitate deairing in difficult to deair materials, add a few drops of an air release agent, such as ANTIFOAM 88 into 100 grams of mixture.
10. Gentle warming will also help, but pot life will be shortened.
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.

Certain resins and hardeners are prone to crystallization. If crystallization does occur, warm the contents of the shipping container to 50 to 60°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.

Conversions

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = 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 1