Technical Data Sheet

# LOCTITE STYCAST 2651 W1 CAT 27-1

June 2021

## PRODUCT DESCRIPTION

LOCTITE STYCAST 2651 W1 CAT 27-1 provides the following product characteristics:

| | |
|---|---|
| **Technology** | Epoxy |
| Appearance (Resin) | Black |
| Product Benefits | • General purpose<br>• Low temperature cure<br>• Flexible processing<br>• Low coefficient of thermal expansion |
| **Cure** | Room temperature or Heat cure |
| **Application** | Encapsulation, Potting |
| Key Substrates | Metals , Plastics and Ceramics |

LOCTITE STYCAST 2651 W1 CAT 27-1 epoxy encapsulant is designed for general potting and encapsulation applications.

LOCTITE STYCAST 2651 W1 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.

## CATALYST DESCRIPTION

LOCTITE CAT 27-1 provides the following product characteristics:

| | |
|---|---|
| Product Benefits | • Long pot life<br>• Excellent chemical resistance<br>• Good physical and chemical properties at elevated temperatures |
| **Cure** | Heat cure |

## TYPICAL UNCURED PROPERTIES

**LOCTITE STYCAST 2651 W1**

| | |
|---|---|
| Viscosity, Brookfield , 25 °C, mPa·s (cP) | 225,000 |
| Density, g/cm³ | 1.59 |
| Shelf Life @ 18 to 25°C (from date of manufacture), days | 365 |
| Flash Point - See SDS | |

**LOCTITE STYCAST 2651 W1 with LOCTITE CAT 27-1**

| | |
|---|---|
| Viscosity @ 25 °C, mPa·s (cP) | 275 |
| Density, g/cm³ | 1.05 |

## TYPICAL UNCURED PROPERTIES AS MIXED

**LOCTITE STYCAST 2651 W1 with LOCTITE CAT 27-1**

| | |
|---|---|
| Mix Ratio, Material:Catalyst: | |
| By Weight | 100 : 12 |
| By Volume | 100 : 18.5 |
| Work Life, 100 grams @ 25°C, minutes | 120 |
| Flash Point - See SDS | |

## TYPICAL CURING PERFORMANCE

**Cure Schedule**

**LOCTITE STYCAST 2651 W1 with LOCTITE CAT 27-1**

4 hours @ 120°C

Cure at any one of the recommended cure schedules. For optimum performance, follow the initial cure with a post cure of 4 to 6 hours at the highest expected use temperature.

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 2651 W1 with LOCTITE CAT 27-1**

**Physical Properties**

| | |
|---|---|
| Hardness, Shore D | 93 |
| Glass Transition Temperature, °C: | |
| (Tg) by TMA | 142 |
| (Tg) by DMA | 141 |
| Coefficient of Thermal Expansion ppm/°C: | |
| Below Tg | 54 |
| Above Tg | 144 |
| Weight Loss, %: | |
| @150°C | 0.06 |
| @200°C | 0.14 |
| @250°C | 0.26 |
| @300°C | 0.4 |
| @700°C | 51.0 |
| Thermal Conductivity , W/(m-K) | 0.64 |
| Linear Shrinkage, % | 0.73 |

| | | |
|---|---|---|
| Water Absorption, %: | | |
| After 1 day @ 25ºC | | 0.03 |
| After 7 days @ 25ºC | | 0.1 |
| Operating temperature, ºC | | 175 to 200 |
| Storage Modulus: | | |
| @ 35°C | N/mm² (psi) | 4,000 (580,000) |
| @ 50°C | N/mm² (psi) | 3,900 (566,000) |
| @ 100°C | N/mm² (psi) | 3,580 (519,000) |
| @ 150°C | N/mm² (psi) | 115 (16,700) |

**Electrical Properties-Hysol**

| | |
|---|---|
| Surface Resistivity, ohm | $5.6\times10^{15}$ |
| Volume Resistivity, ohm-cm | $2.2\times10^{15}$ |
| Dielectric Constant/ Dissipation Factor: | |
| @ 50 Hz | 5.3/0.05 |
| @ 1 kHz | 5.1/0.045 |
| @ 1 MHz | 4.2/0.04 |

## GENERAL INFORMATION

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

### Directions for Use

1. 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.

2. 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. Power mixing is preferred to ensure homogeneous product.

3. 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.

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. If possible, power mix to 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.

5. To ensure a void-free embedment, vacuum de-airing should be used to remove any entrapped air introduced during the mixing operation. Vacuum de-air mixture at 1 to 5 mm mercury. The foam will rise several times the liquid height and then subside. Continue to vacuum de-airing until most of the bubbling has ceased. This usually requires 3 to 10 minutes.

6. To facilitate deairing, gentle warming will also help but working life will be shortened. Reduced viscosity provides easy air release upon standing for a few minutes.

7. 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 .

8. NOTE: During storage at room temperature for long periods, it is possible that the viscosity of can increase and may exceed its upper specification limit. The viscosity can be brought back to the normal level by moderate mixing.

### Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage : 18 to 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 Henkel 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

(°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

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