# LOCTITE STYCAST 2850FT March 2015

LOCTITE CAT 23LV provides the following product characteristics:
Product Benefits ● Low color
● Low viscosity
● Long pot life
● Excellent thermal shock and impact resistance
● Excellent low temperature properties
● Excellent adhesion to glass
**Cure** Room temperature cure

**PRODUCT DESCRIPTION**
LOCTITE STYCAST 2850FT provides the following product characteristics:
**Technology** Epoxy
Appearance (Resin) Black
Product Benefits ● Thermally conductive ● Electrically insulative
● Thermal shock resistant
● Low CTE

Technical Data Sheet
● Can be used with a variety of catalysts
epoxy encapsulant
Mix Ratio, by weight - Material:Catalyst
100 : 7.5
**Application** Thermally conductive
Applications
Encapsulating
Mix Ratio, by Volume - Material:Catalyst
100 : 17.5
Typical Assembly
Operating Temperature -65 to 105ºC

LOCTITE CAT 24LV provides the following product characteristics:
Product Benefits ● Low viscosity
● Excellent adhesion
● Thermal shock and impact resistant
● Excellent low temperature properties
● Fast cure

LOCTITE STYCAST 2850FT is recommended for encapsulation of components that require heat dissipation and thermal shock properties.

LOCTITE STYCAST 2850FT is also available in the unpigmented version.

LOCTITE STYCAST 2850FT can be used with LOCTITE CAT 9, LOCTITE CAT 11, LOCTITE CAT 23LV or LOCTITE CAT 24LV product characteristics:
**Cure** Room Temperature
Material:Catalyst
Mix Ratio, by weight - 100 : 8
Mix Ratio, by Volume - 100 : 17.5
Operating Temperature -65 to 105ºC

**CATALYST DESCRIPTION**
LOCTITE CAT 9 provides the following
Product Benefits ● General purpose ● Good chemical resistance
● Good physical strength
**Cure** Room temperature cure
Mix Ratio, by weight - Material:Catalyst
Mix Ratio, by Volume - Material:Catalyst
100 : 3.5 100 : 8.5
Operating Temperature -40 to 130ºC
Spindle 14, speed 3 rpm 250,000 Density, g/cm³ 2.4

**TYPICAL UNCURED PROPERTIES LOCTITE STYCAST 2850FT**
Viscosity - Small Sample Adapter, mPa·s (cP): (Equivalent Parameters)
Brookfield Viscosity , mPa·s (cP):
Spindle 7, Speed 10 rpm 250,000 Brookfield

LOCTITE CAT 11 provides the following product characteristics: Product Benefits ● Long pot life
● Excellent chemical resistance
● Good physical and chemical properties
Shelf Life @ 18 to 25°C (from date of manufacture), days
Flash Point - See SDS
**LOCTITE CAT 9**
365
**Cure** Heat cure
Viscosity @ 25 °C, mPa·s (cP) 92 Density , g/cm³ 1.0
at elevated temperatures
Mix Ratio, by weight - Material:Catalyst
100 : 4.5 100 : 9.5
Mix Ratio, by Volume - Material:Catalyst
Flash Point - See SDS **LOCTITE CAT 11**
Operating Temperature -55 to 155ºC
Viscosity @ 25 °C, mPa·s (cP) 48 Flash Point - See SDS

**LOCTITE CAT 23LV**
Viscosity @ 25 °C, mPa·s (cP) 25 Flash Point - See SDS

**LOCTITE CAT 24LV**
Viscosity @ 25 °C, mPa·s (cP) 35 Density , g/cm³ 1.02 Flash Point - See SDS

## TYPICAL UNCURED PROPERTIES AS MIXED LOCTITE STYCAST 2850FT with LOCTITE CAT 9

Viscosity @ 25 °C, mPa·s (cP) 58,000 Density, g/cm³ 2.29 Work Life, 100 grams, @ 25ºC, minutes 45

**LOCTITE STYCAST 2850FT with LOCTITE CAT 11**
Viscosity @ 25 °C, mPa·s (cP) 64,000 Density, g/cm³ 2.29 Work Life, 100 grams, @ 25ºC, hours 4

**LOCTITE STYCAST 2850FT with LOCTITE CAT 23LV**
Viscosity @ 25 °C, mPa·s (cP) 5,600 Density, , g/cm³ 2.19 Work Life, 100 grams, @ 25ºC, hour 1

**LOCTITE STYCAST 2850FT with LOCTITE CAT 24LV**
Work Life, 100 grams, @ 25ºC, minutes 30

## TYPICAL CURING PERFORMANCE

**Cure Schedule**

**LOCTITE STYCAST 2850FT with LOCTITE CAT 9**
16 to 24 hours @ 25°C
4 to 6 hours @ 45°C
1 to 2 hours @ 65°C

**LOCTITE STYCAST 2850FT with LOCTITE CAT 11**
8 to 16 hours @ 80°C
2 to 4 hours @ 100°C
30 to 60 minutes @ 120°C

**LOCTITE STYCAST 2850FT with LOCTITE CAT 23LV** 16 to 24 hours @ 25°C
4 to 6 hours @ 45°C
2 to 4 hours @ 65°C

**LOCTITE STYCAST 2850FT with LOCTITE CAT 24LV** 8 to 16 hours @ 25°C
4 to 6 hours @ 45°C
2 hours @ 65°C

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

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 2850FT with LOCTITE CAT 9**

**Physical Properties**



Hardness, Shore D 96 Linear Shrinkage, % 0.2 Water Absorption (24 hr immersion), % 0.03 Coefficient of Thermal Expansion :
Alpha 1, ppm 35.0 Alpha 2, ppm 98.9 Glass Transition Temperature, °C 86 Thermal Conductivity, W/(m-K) 1.25

**Electrical Properties**
Dielectric Strength, kV/mm 14.4 Dielectric Constant / Dissipation Factor:
@ 1mHz 5.01/0.028 Volume Resistivity @ 25 °C, ohm-cm $1\times10^{15}$

**Outgassing Properties**
Outgassing , per NASA Reference Publication 1124: Cured 24 hours @ 25ºC
TML, % 0.25 CVCM, % 0.01

**LOCTITE STYCAST 2850FT with LOCTITE CAT 11 Physical Properties**
Hardness, Shore D 96 Linear Shrinkage, % 0.2 Water Absorption (24 hr immersion), % 0.05 Coefficient of Thermal Expansion :
Alpha 1, ppm 31.2 Alpha 2, ppm 97.9 Glass Transition Temperature, °C 115 Thermal Conductivity, W/(m-K) 1.28

**Electrical Properties**
Dielectric Strength , kV/mm 15.0 Dielectric Constant/ Dissipation Factor:
@ 1 MHz 5.36/0.043 Volume Resistivity @ 25 °C, ohm-cm $1\times10^{15}$

**Outgassing Properties**
Outgassing , per NASA Reference Publication 1124: Sample cured 4 hours @ 80ºC
TML, % 0.29 CVCM, % 0.02

**LOCTITE STYCAST 2850FT with LOCTITE CAT 23LV Physical Properties**
Hardness, Shore D 92 Linear Shrinkage, , % 0.3 Water Absorption (24 hr immersion), % 0.02 Coefficient of Thermal Expansion :
Alpha 1, ppm 39.4 Alpha 2, ppm 111.5 Glass Transition Temperature, °C 68 Thermal Conductivity, W/(m-K) 1.1

**Electrical Properties**
Volume Resistivity @ 25 °C, ohm-cm $1\times10^{15}$ Dielectric Constant / Dissipation Factor:
@ 1 mHz 5.36/0.051 Dielectric Strength , kV/mm 14.8

**LOCTITE STYCAST 2850FT with LOCTITE CAT 24LV Physical Properties**

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Asia

Hardness, Shore D 92 Linear Shrinkage, % 0.51 Water Absorption (24 hr immersion), % 0.14 Coefficient of Thermal Expansion :

Alpha 1, ppm 47 Alpha 2, ppm 120 Glass Transition Temperature (Tg), °C 39 Thermal Conductivity, W/(m-K) 1.01

**Electrical Properties**

Volume Resistivity @ 25ºC, ohm-cm $2.0\times10^{14}$ Surface Resistivity, ohms $7.2\times10^{15}$ Dielectric Constant / Dissipation Factor:

@ 1 MHz 6.0/0.037

**TYPICAL CURED PERFORMANCE AS MIXED**

**LOCTITE STYCAST 2850FT with LOCTITE CAT 9**

**Miscellaneous**

Flexural Strength N/mm² 92 (psi) (13,300)

Compressive Strength N/mm² 155 (psi) (22,500)

**LOCTITE STYCAST 2850FT with LOCTITE CAT 11**

**Miscellaneous**

Flexural Strength N/mm² 117 (psi) (17,000)

Compressive Strength N/mm² 193 (psi) (27,900)

**LOCTITE STYCAST 2850FT with LOCTITE CAT 23LV**

**Miscellaneous**

Flexural Strength N/mm² 106 (psi) (15,300)

Compressive Strength N/mm² 120 (psi) (17,400)

**GENERAL INFORMATION**

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

**DIRECTIONS FOR USE**

1. Certain resins and hardeners are prone to crystallization. If crystallization does occur, warm the contents of the shipping container to 50 to 60ºC until all crystals have dissolved. Shipping container must be loosely covered during the warming stage to prevent any pressure build-up.
2. Allow contents to cool to room temperature before continuing. 3. 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.
4. 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.
5. Power mixing is preferred to ensure a homogeneous product. 6. 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. 7. 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.
8. 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.

9. To ensure a void-free embedment, vacuum deairing or degassing should be performed to remove any entrapped air introduced during the mixing operation.
10. Vacuum deair mixture at 1 to 5mm mercury. The foam will rise several times the liquid height and then subside.
11. Continue vacuum deairing until most of the bubbling has ceased. This usually takes 3 to 10 minutes.
12. To facilitate deairing in difficult to deair materials, add 1 to 3 drops of an air release agent, such as ANTIFOAM 88 into 100 gram of mixture.
13. Gentle warming will also help, but pot life will be shortened.
14. Pour mixture into cavity or mold.
15. 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.
16. 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 : 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 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**

(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb
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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