Technical Data Sheet

LOCTITE STYCAST 3050 BLK

December 2016

PRODUCT DESCRIPTION

LOCTITE STYCAST 3050 BLK provides the following product characteristics:

Technology	Epoxy
Appearance (Resin)	Black
Product Benefits	• Very low viscosity • Excellent penetration into tightly packed assemblies • Good machinability • General purpose
Application	Encapsulant
Typical Assembly Applications	High density circuit assemblies, Coil windings

LOCTITE STYCAST 3050 BLK is designed for potting and encapsulation applications with very small physical spacing between parts. The filler system is non-abrasive and readily machinable. This is a consideration when using a dispensing equipment or where subsequent machining of the cured part is required.

LOCTITE STYCAST 3050 BLK can be used with LOCTITE CAT 9, LOCTITE CAT 9M or LOCTITE CAT 11

CATALYST DESCRIPTION

LOCTITE CAT 9 provides the following product characteristics:

Product Benefits	• General purpose • Good chemical resistance • Good physical strength
Cure	Room temperature cure
Mix Ratio, by weight - Material:Catalyst	100 : 7.5
Mix Ratio, by Volume - Material:Catalyst	100 : 12

LOCTITE CAT 9M provides the following product characteristics:

Product Benefits	
Cure	Room temperature and Heat cure
Mix Ratio, by weight - Material:Catalyst	100 : 6
Mix Ratio, by Volume - Material:Catalyst	100 : 6

LOCTITE CAT 11 provides the following product characteristics:

Product Benefits	• Long pot life • Good chemical resistance • Good physical and chemical properties at elevated temperatures
Cure	Heat cure
Mix Ratio, by weight - Material:Catalyst	100 : 9
Mix Ratio, by Volume - Material:Catalyst	100 : 13

TYPICAL UNCURED PROPERTIES

LOCTITE STYCAST 3050 BLK

Density, ASTM-D-792, g/cm³	1.61
Viscosity, Brookfield , ASTM D2393, °C, mPa·s (cP)	2,000
Shelf Life @ 25°C (from date of manufacture), days	183
Flash Point - See SDS	

LOCTITE CAT 9

Viscosity @ 25 °C, mPa·s (cP)	93
Flash Point - See SDS	

LOCTITE CAT 9M

Specific Gravity @ 25ºC	0.99
Viscosity @ 25 °C, mPa·s (cP)	90
Flash Point - See SDS	

LOCTITE CAT 11

Viscosity @ 65 °C, mPa·s (cP)	47
Flash Point - See SDS	

TYPICAL UNCURED PROPERTIES AS MIXED

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9

Density, ASTM-D-792, g/cm³	1.54
Viscosity, Brookfield , ASTM D2393, °C, mPa·s (cP)	600
Work Life, 100 grams, @ 25ºC, minutes	45

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9M

Specific Gravity @ 25ºC	1.51
Work Life, 100 grams, @ 25ºC, minutes	40

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 11

DensityASTM D792, g/cm³	1.55
Viscosity, Brookfield , ASTM D2393, °C, mPa·s (cP)	300
Work Life, 100 grams, @ 25ºC, hour	>4

TYPICAL CURING PERFORMANCE

Cure Schedule

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9

16 to 24 hours @ 25°C
4 to 6 hours @ 45°C
1 to 2 hours @ 65°C

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9M

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

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 11

8 to 16 hours @ 80°C
2 to 4 hours @ 100°C
30 to 60 hours @ 120°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 3050 BLK with LOCTITE CAT 9

Physical Properties

Hardness, Shore D, ASTM D2240	88
Operating temperature range, ºC	-40 to +130
Linear Shrinkage, ASTM D2566, cm/cm	0.003
Thermal Conductivity, ASTM D-2214, W/(m-K)	1.44

Electrical Properties

Volume Resistivity @ 25 °C, ASTM D257, ohm-cm	5×10^{15}
Dielectric Constant / Dissipation Factor, ASTM D150:	
@ 1 MHz	4.2/0.4
Dielectric Strength , ASTM D149, kV/mm	15.7

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9M

Physical Properties

Hardness, Shore D @ 25 °C	88
Thermal Conductivity, W/(m-K)	0.3
Operating temperature range, ºC	-40 to 130
Linear Shrinkage, %	0.3

Electrical Properties

Volume Resistivity, ohm-cm	5×10^{15}

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 11

Physical Properties

Hardness, Shore D, ASTM D2240	88
Coefficient of Thermal Expansion , ASTM D-3386, ppm/°C	40
Linear Shrinkage, ASTM D2566, cm/cm	0.003
Thermal Conductivity, ASTM D-2214, W/(m-K)	0.4
Operating temperature range, ºC	-55 to +155

Electrical Properties

Volume Resistivity, ASTM D257, ohm-cm:	
@ 25ºC	2×10^{14}
@ 100ºC	3×10^{11}
Dielectric Constant / Dissipation Factor:	
@ 1 MHz	3.9/0.04
Dielectric Strength , ASTM D149, kV/mm	15.7

TYPICAL CURED PERFORMANCE AS MIXED

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 9

Miscellaneous

Flexural Strength, ASTM D790	N/mm² (psi)	75 (10,900)
Compressive Strength , ASTM-D695	N/mm² (psi)	144 (20,900)
Tensile Strength , ASTM D412	N/mm² (psi)	54 (7,800)

LOCTITE STYCAST 3050 BLK with LOCTITE CAT 11

Miscellaneous

Flexural Strength, ASTM D790	N/mm² (psi)	34.5 (5,000)
Compressive Strength , ASTM-D695	N/mm² (psi)	83 (12,000)
Tensile Strength , ASTM D412	N/mm² (psi)	38 (5,500)

GENERAL INFORMATION

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

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. 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 5 mm 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 grams 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 : 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

Disclaimer
Note:
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Reference 1