

LOCTITE STYCAST 2057

January 2015

PRODUCT DESCRIPTION

LOCTITE STYCAST 2057 provides the following product characteristics:

Technology	Ероху
Appearance (Resin)	Black
Product Benefits	Low viscosity
	 Good machinability
	General purpose
	Rapid air release
	• Can be used with a variety of catalysts
Application	Encapsulant, Potting

LOCTITE STYCAST 2057 is a general purpose encapsulant designed for machine dispensing and for parts requiring post molding machining. It contains a soft filler formulated to reduce abrasion in meter/mix equipment and to enhance machinability in the cured product.

LOCTITE STYCAST 2057 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 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
Operating Temperature - Continuous	-40 to 130°C
Operating Temperature - Intermittent	-40 to 150°C

LOCTITE CAT 28 provides the following product characteristics:

Product Benefits	 Long pot life
	 Excellent chemical resistance
	 Good physical and chemical properties at elevated temperatures
Cure	Heat cure
Mix Ratio by weight - Material:Catalyst	100 / 13
Operating Temperature - Continuous	-40 to 175°C
Operating Temperature - Intermittent	-40 to 200°C

LOCTITE CAT 24LV provides the following product characteristics: Product Benefits Low color Low viscosity • Long pot life ٠ Excellent thermal shock and impact . resistance Excellent low temperature properties . Excellent adhesion to glass • Cure Room temperature cure Mix Ratio by weight -100 / 15.5 Material:Catalyst Operating Temperature -65 to 105°C - Continuous

TYPICAL UNCURED PROPERTIES

Operating Temperature -65 to 120°C

LOCTITE STYCAST 2057	
Density, g/cm ³	1.6
Viscosity, Brookfield , 25 °C, mPa·s (cP):	
Spindle 5, speed 50 rpm	5.5
Shelf Life @ 18 to 25°C (from date of manufacture), days	365
Flash Point - See SDS	
LOCTITE CAT 9	
Density, g/cm ³	1
Viscosity @ 25 °C mPars (cP)	90

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

LOCTITE CAT 28

Intermittent

Density, g/cm ³	1.05
Viscosity @ 25 °C, mPa·s (cP)	275
Flash Point - See SDS	

LOCTITE CAT 24LV

Density, g/cm ³	1.05
Viscosity @ 25 °C, mPa·s (cP)	35
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

LOCTITE STYCAST 2057 with LOCTITE CAT 9

- 16 to 24 hours @ 25°C
- 4 to 6 hours @ 45°C
- 1 to 2 hours @ 65°C
- LOCTITE STYCAST 2057 with LOCTITE CAT 28 4 hours @ 120°C



LOCTITE STYCAST 2057 with LOCTITE CAT 24LV 24 hours @ 25°C 6 to 8 hours @ 45°C 2 to 4 hours @ 65°C

For optimum performance, follow the initial cure with a post cure of 2 to 4 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 their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

TYPICAL PROPERTIES OF CURED MATERIAL LOCTITE STYCAST 2057 with LOCTITE CAT 9

LOCTITE STYCAST 2057 with LOCTITE CAT Physical Properties :	9 9	
Hardness, Shore D		90
Coefficient of Thermal Expansion , TMA: Below Tg, ppm/°C Above Tg, ppm/°C		38 122
Glass Transition Temperature, °C: Tg by TMA Tg by DMA, tan delta Tg by DMA, @ onset point		62 98 78
Young's modulus (E) : @ 35°C	N/mm² (psi)	6,166 (894,302)
@ 50°C @ 100°C	N/mm ² (psi) N/mm ² (psi)	5,912 (857,463) 256 (37,129)
@ 150°C	N/mm² (psi)	94 (13,633)
Weight Loss, %: @ 150°C @ 200°C @ 250°C @ 300°C @ 700°C		0.09 0.32 0.53 1.1 50.7
Linear Shrinkage, %		0.26
Water Absorption, %: After 1 day @ RT After 7 days @ RT After 1 hour @ 100°C		0.03 0.09 0.29
Electrical Properties:		
Surface Resistivity, ohms Volume Resistivity, ohm-cm		7.4×10 ¹⁶ 1.5×10 ¹⁵
Dielectric Constant / Dissipation Factor: @ 50 Hz @ 1 KHz @ 1 MHz		4.6/0.018 4.8/0.01 4.4/0.019
LOCTITE STYCAST 2057 with LOCTITE CAT Physical Properties :	28	
Hardness, Shore D		91
Coefficient of Thermal Expansion , TMA: Below Tg, ppm/°C Above Tg, ppm/°C		51 132

Glass Transition Temperature, °C: 33 Tg by TMA, tan delta 114 Tg by DMA, (@ onset point 94 Young's modulus (E): (B69,791) @ 50°C N/mm2 5,782 (psi) (B69,791) @ 100°C N/mm2 5,782 (psi) (B69,791) (B69,791) @ 100°C N/mm2 7,734 (psi) (B50°C (D8) @ 150°C (D8) (251,495) Weight Loss, %: (psi) (3,916) Weight Loss, %: 0.28 0.28 @ 250°C 0.42 0.30°C 0.8 @ 700°C 5.1,7 1.7 1.7 Linear Shrinkage, % 0.99 After 1 day @ RT 0.92 After 1 day @ RT 0.09 After 1 day @ RT 0.91 After 1 day @ RT 0.90 4.5×10°6 10°5 Dielectric Constant / Dissipation Factor: (% 4.40.005 114 @ 1 MHz 4.5×10°6 137 137 136 Dielectric Constant / Dissipation Factor: 137 137 136			
Tg by DMA, ian delta Tg by DMA, @ onset point 94 Young's modulus (E): (689,791) @ 35°C N/mm² 5,997 @ 50°C (751) (838,608) @ 100°C (751) (838,608) @ 100°C (751) (512,145) @ 150°C 0.08 (251,455) @ 150°C 0.08 (251,455) @ 150°C 0.42 (250°C @ 200°C 0.28 (250°C @ 200°C 0.57 (251,455) Weight Loss, %: 0.28 (250°C @ 200°C 0.59 0.42 @ 300°C 0.59 0.59 Water Absorption, %: 4.5×10° After 7 days @ RT 0.09 After 1 hour @ 100°C 0.14 Electrical Properties: 4.4/0.005 @ 1 HHz 4.5×10° Volume Resistivity, ohm-cm 9.6×10° Dielectric Constant / Dissipation Factor: (200) @ 1 HHz 4.5×0022 Bardness, Shore D 87 Coefficient of Thermal Expansion : 38 T g by DMA, an delta	Glass Transition Temperature, °C:		
Tg by DMA, @ onset point 94 Young's modulus (E) : (psi) (869,791) @ 50°C (psi) (883,608) @ 100°C N/mm² 5,782 (psi) (10) (10) (10) @ 150°C (psi) (10) @ 150°C (psi) (251,495) @ 150°C 0.8 (250,70) @ 200°C 0.28 (250,70) @ 250°C 0.42 (2300°C) @ 250°C 0.42 (2300°C) @ 200°C 0.57 (00) @ 200°C 0.14 (10) Linear Shrinkage, % 0.59 (11) Water Absorption, %:			
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Water Absorption, %: After 1 day @ RT0.02 0.09 After 7 days @ RT0.09 0.09 0.14After 1 hour @ 100°C0.14Electrical Properties: Surface Resistivity, ohms 4.5×10^{16} 0.00Volume Resistivity, ohms 4.5×10^{16} 0.00 9.6×10^{15} Dielectric Constant / Dissipation Factor: @ 50 Hz $4.4/0.005$ (@ 1 KHz $4.7/0.004$ (@ 1 MHzCOETITE STYCAST 2057 with LOCTITE CAT 24LV Physical Properties : Hardness, Shore D87 Coefficient of Thermal Expansion : Above Tg, ppm/°C87 Coefficient of Thermal Expansion : Above Tg, ppm/°C137 Glass Transition Temperature, °C: Tg by TMA38 Tg by DMA, an delta63 51 (788,135) Q 35°CN/mm2 (psi) (788,135) $Vimm2$ (622,211) (Q 100°C $5,434$ (psi) (5,946) (Q 150°C 0.28 (Q 200°C Q 150°CN/mm2 (psi) (622,211) (Q 150°C 0.28 (Q 300°C 0.28 (Q 300°C 0.18 (NameWater Absorption, %: After 1 day @ RT 0.22 0.22	-		
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Image: Surface Resistivity, ohms 4.5×10 ¹⁶ Surface Resistivity, ohm-cm 9.6×10 ¹⁵ Dielectric Constant / Dissipation Factor: 9.6×10 ¹⁵ @ 50 Hz 4.4/0.005 @ 1 KHz 4.7/0.004 @ 1 MHz 4.5/0.022 ECUTITE STYCAST 2057 with LOCTITE CAT 24LV Physical Properties : Hardness, Shore D 87 Coefficient of Thermal Expansion : Above Tg, pm/°C Glass Transition Temperature, °C: 137 Glass Transition Temperature, °C: 137 Tg by TMA 38 Tg by DMA, @ onset point 51 Young's modulus (E) : 0 @ 35°C N/mm² 5,434 (psi) (788,135) @ 50°C N/mm² 4,290 (psi) (5,946) (psi) @ 100°C N/mm² 4,1 (psi) (5,946) (psi) @ 150°C 0.28 (psi) @ 200°C 0.46 (psi) @ 200°C 0.51 0.85 @ 700°C 51.2	After 7 days @ RT		0.09
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@ 300°C 0.85 @ 700°C 51.2 Linear Shrinkage, % 0.18 Water Absorption, %:	-		
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Linear Shrinkage, %0.18Water Absorption, %:	-		
After 1 day @ RT 0.22 After 7 days @ RT 0.59			
After 7 days @ RT 0.59			
			0.22
After 1 hour @ 100°C 0.63			
	After 1 hour @ 100°C		0.63

Electrical Properties:	
Surface Resistivity, ohms	5.5×10 ¹⁶
Volume Resistivity, ohm-cm	1.1×10 ¹⁵
Dielectric Constant / Dissipation Factor:	
@ 50 Hz	5.3/0.004
@ 1 KHz	5.5/0.008
@ 1 MHz	4.9/0.039

GENERAL INFORMATION

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

DIRECTIONS FOR USE

- 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. 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.
- 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 should be used 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. Apply adhesive to all surfaces to be bonded and join together.
- 13. In most applications only contact pressure is required.

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. $\begin{array}{l} \mbox{Conversions} \\ (^{\circ}C x 1.8) + 32 = ^{\circ}F \\ kV/mm x 25.4 = V/mil \\ mm / 25.4 = inches \\ N x 0.225 = lb \\ N/mm x 5.71 = lb/in \\ N/mm^2 x 145 = psi \\ MPa = N/mm^2 \\ MPa x 145 = psi \\ N\cdotm x 8.851 = lb\cdotin \\ N\cdotm x 0.738 = lb\cdotft \\ N\cdotm m x 0.142 = oz\cdotin \\ mPa * s = cP \end{array}$

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 and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.

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Reference 0.0