

LOCTITE HYSOL GR 640HV-FF

November 2015

PRODUCT DESCRIPTION

LOCTITE HYSOL GR 640HV-FF provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Cure	Heat cure
Product Benefits	• Green product • Fine filler • High moldability • High reliability • Low stress
Filler Weight, %	75
Typical Package Application	SOT/SOD and SMX
Application	Molding compound
Flammability Rating	UL 94 V0 @ 1/8 inch thickness

LOCTITE HYSOL GR 640HV-FF epoxy molding compound delivers outstanding performance and ease of use. It is especially formulated for small package molding with gate size as little as 100 µm. This material is designed to achieve JEDEC Level 1 requirements, at 260 °C reflow temperature.

LOCTITE HYSOL GR 640HV-FF meets UL 94 V-0 Flammability at 1/8 inch thickness.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Gel Time @ 175 °C, seconds	24
Spiral Flow, @ 175°C, inches	21
Shelf Life @ 5°C (from date of manufacture), days	365

TYPICAL PROCESS DATA

Handling

Preheat Temperature:	
Conventional mold, °C	80 to 100
Automold, seconds	0 to 5
Molding Temperature, °C	170 to 190
Molding Pressure, Kg/cm ²	40 to 100
Transfer Time:	
Conventional mold, seconds	10 to 15
Automold, seconds	4 to 10
Curing Time, @ 175 °C:	
Conventional mold	60 to 120
Automold	50 to 90
Hot Hardness, Shore D @ 175 °C, after 90 seconds	82
Post Mold Cure @ 175 °C, hours	4 to 8

LOCTITE HYSOL GR 640HV-FF has been formulated to provide the best possible moldability and as wide a molding latitude as possible. Although molding and curing conditions will vary from situation to situation, recommended starting ranges are shown above.

TYPICAL PROPERTIES OF CURED MATERIAL

All measurements taken at 25 °C, unless otherwise noted. All physical, electrical and analytical measurements taken on specimens cured for 2 minutes @ 175 °C with post cure of 6 hours at 175 °C, unless otherwise specified.

Physical Properties

Specific Gravity, g/cm ³	1.86
Glass Transition Temperature, °C:	
(Tg) via TMA	169
Loss modulus peak @ DMA	164
Tan δ peak @ DMA	177
Coefficient of Thermal Expansion, TMA, ppm/°C:	
Below Tg	17
Above Tg	55
Flexural Strength @ 25 °C	N/mm ² 133 (psi) (19,290)
Flexural Modulus @ 25 °C	N/mm ² 14,431 (psi) (2,093,040)
Storage Modulus, DMA:	
@ 25 °C	N/mm ² 17,048 (psi) (2,472,603)
@ 175 °C	N/mm ² 3,631 (psi) (526,632)
@ 260 °C	N/mm ² 1,279 (psi) (185,503)
Moisture Absorption, 24 hours PCT, %	0.5

Application Specific Properties

Thermal Conductivity, W/(m-K)	0.76
Shrinkage on Cure, after post cure under 175°C @ 6.0 33 hours, %	
Extractable Ionic Content @ 100 °C, , after 20 hours extract, ppm:	
Chloride (Cl ⁻)	21
Sodium (Na ⁺)	7.5
pH of extract @ 100 °C, after 20 hours	6.2
Electrical Conductivity, µS/cm:	
After 20 hours extract @ 100 °C	26

Electrical Properties

Volume resistivity @ 21°C, 500 V, Ω-cm	22×10 ¹⁵
Dielectric Constant @ 1 MHz	3.85

GENERAL INFORMATION

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

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.

Storage

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

Mold Compound materials should be stored at 5°C or below, in closed containers. After removal from cold storage, the material **MUST** be allowed to come to room temperature, in the sealed container, to avoid moisture contamination. The suggested waiting time for a standard 15 kg carton box is 24 hours.

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.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$

$\text{kV/mm} \times 25.4 = \text{V/mil}$

$\text{mm} / 25.4 = \text{inches}$

$\text{N} \times 0.225 = \text{lb}$

$\text{N/mm} \times 5.71 = \text{lb/in}$

$\text{psi} \times 145 = \text{N/mm}^2$

$\text{MPa} = \text{N/mm}^2$

$\text{N} \cdot \text{m} \times 8.851 = \text{lb} \cdot \text{in}$

$\text{N} \cdot \text{m} \times 0.738 = \text{lb} \cdot \text{ft}$

$\text{N} \cdot \text{mm} \times 0.142 = \text{oz} \cdot \text{in}$

$\text{mPa} \cdot \text{s} = \text{cP}$

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