

LOCTITE HYSOL KL 4500-1

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PRODUCT DESCRIPTION

LOCTITE HYSOL KL 4500-1 provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Cure	Heat cure
Product Benefits	• Low stress • High purity • High reliability • Low viscosity • Low wire sweep molding
Filler Weight, %	74
Typical Package Application	TO, Axial Package, Bridge Package and SIP
Application	Molding compound
Flammability	94 V-0
Flame Retardant	Br or Sb

LOCTITE HYSOL KL 4500-1 epoxy molding compound delivers outstanding performance and ease of use. This material is designed to achieve JEDEC Level 3 requirements, at 260°C reflow temperature.

LOCTITE HYSOL KL 4500-1 meets UL 94 V-0 Flammability at 3.175mm thickness.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Gel Time @ 175 °C, seconds	25
Spiral Flow, @ 175°C, cm	85
Shelf Life @ 5°C, days	365

TYPICAL PROCESS DATA

Handling

Preheat Temperature :	
Conventional mold, °C	80 to 100
Automold, seconds	0 to 5
Molding Temperature, °C	150 to 195
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, seconds	60 to 120
Automold, seconds	50 to 90
Post Cure @ 175°C, hours	4 to 6

LOCTITE HYSOL KL 4500-1 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 other wise specified.

Physical Properties:

Coefficient of Thermal Expansion , ppm/°C:	
Below Tg	17
Above Tg	60
Glass Transition Temperature, °C	170
Specific Gravity	1.86
Molded shrinkage, as molded, %	0.25
Flexural ModulusKgf/mm ² :	
@ 25 °C	1,300
Flexural StrengthKgf/mm ² :	
@ 25 °C	14
Thermal Conductivity , W/(m-K)	0.7
Moisture Absorption, %:	
168 hours @ 85°C/85% RH	0.25
Water Extract Data, 20 hours water boil:	
Conductivity, μmhos/cm	23
pH of extract	4.0
Extractable Ionic Content, ppm:	
Chloride (Cl ⁻)	5
Sodium (Na ⁺)	2

Electrical Properties:

Volume Resistivity, ohms-cm, 250 volts:	
@ 25°C	20×10 ¹⁵

GENERAL INFORMATION

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

This product is not recommended for use in pure oxygen and/or oxygen rich systems and should not be selected as a sealant for chlorine or other strong oxidizing materials.

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.

Powder Storage - Powder or preforms 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

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{N/mm}^2 \times 145 = \text{psi}$
 $\text{MPa} \times 145 = \text{psi}$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

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 in respect of which you use them, as well as the intended applications 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 0.2