Technical Data Sheet

# LOCTITE HYSOL KL G450

July 2012

## PRODUCT DESCRIPTION

LOCTITE HYSOL KL G450 provides the following product characteristics:

| | |
|---|---|
| **Technology** | Epoxy |
| Appearance | Black |
| **Cure** | Heat cure |
| Product Benefits | • Green product<br>• High reliability |
| Filler Weight, % | 81 |
| Typical Package Application | TO, ZIP, SIP, SDIP, SOP, SOJ and QFP |
| **Application** | Molding compound |
| Flammability | 94 V-0 |

LOCTITE HYSOL KL G450 epoxy molding compound contains no bromine, antimony or phosphorus flame retardant. LOCTITE HYSOL KL G450 epoxy molding compound delivers outstanding performance and ease of use.

LOCTITE HYSOL KL G450 meets UL 94 V-0 Flammability at 6.35mm thickness.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---|
| Gel Time @ 175 °C, seconds | 28 |
| Spiral Flow, @ 175°C, cm | 96 |
| Shelf Life: | |
| @ 5ºC, months | 12 |

## 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/cm² | 40 to 100 |
| Transfer Time: | |
| Conventional mold, seconds | 10 to 20 |
| Automold, seconds | 4 to 10 |
| Curing Time, @ 175ºC, seconds: | |
| Conventional mold, | 60 to 100 |
| Automold, | 50 to 90 |
| Post Cure @ 175°C, hours | 4 to 8 |

LOCTITE HYSOL KL G450 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 | 16 |
| Above Tg | 54 |
| Glass Transition Temperature, °C | 135 |
| Specific Gravity | 1.85 |
| Molded shrinkage, as molded, % | 0.44 |
| Flexural Strength Kgf/mm² : | |
| @ 25 °C | 13 |
| Flexural Modulus Kgf/mm² : | |
| @ 25 °C | 1,698 |
| Thermal Conductivity, W/(m-K) | 0.8 |
| Moisture Absorption, %: | |
| 72 hours @ 85ºC/85% RH | 0.22 |
| Water Extract Data, 90 minutes water boil: | |
| Conductivity, µmhos/cm | 20 |
| pH of extract | 8.7 |
| Extractable Ionic Content, ppm: | |
| Chloride (Cl-) | <10 |
| Sodium (Na+) | <1 |

| | |
|---|---|
| Bromide (Br) | <2 |

**Electrical Properties**:

| | |
|---|---|
| Volume Resistivity, ohms-cm, 250 volts: | |
| @ 25ºC | $11.2\times10^{15}$ |

## 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 5ºC 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**
(°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
N/mm² x 145 = psi
MPa x 145 = psi
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP

**Note**
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Reference 0.1