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LOCTITE

Technical Data Sheet

# LOCTITE ECCOBOND FP4650

January 2018

## PRODUCT DESCRIPTION

LOCTITE ECCOBOND FP4650 provides the following product characteristics:

| | |
|---|---|
| **Technology** | Epoxy |
| **Appearance** | Black |
| Product Benefits | • High purity<br>• Low thermal expansion |
| Filler content , % | 83 |
| **Cure** | Heat cure |
| **Application** | Encapsulant |

LOCTITE ECCOBOND FP4650 epoxy encapsulant features very low thermal expansion while retaining syringe dispense capabilities.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

| | |
|---|---|
| Viscosity, Brookfield - RVT, mPa·s (cP): | |
| @ 25ºC, Spindle 7, Speed 4 rpm | 325,000 |
| @ 60ºC, Spindle 7, Speed 20 rpm | 17,000 |
| Specific Gravity | 1.91 |
| Pot life @ 25 °C, time required to double viscosity, days | 8 |
| Shelf Life @ -40ºC , days | 270 |
| Flash Point - See SDS | |

## TYPICAL CURING PERFORMANCE

**Gel Time**

Gel Time @ 121 °C, minutes 13

**Recommended Cure Schedule**

1 hour @ 120°C plus 2 hours @ 160°C

**Alternate Cure Schedule**

3 hours @ 170°C

The recommended cure is designed to be used with packages which are affected by higher levels of stress. This cure will give optimum properties.

The alternate cure is designed for robust packages which are not sensitive to stress.

The above cure profile is a guideline recommendation. 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

**Physical Properties** :

| | |
|---|---|
| Glass Transition Temperature (Tg), °C | 140 |
| Coefficient of Linear Thermal Expansion, ppm/ºC: | |
| @ 40 to 120ºC | $15\times10^{-6}$ |
| Extractable Ionic Content @ 121 °C, ppm: | |
| Chloride (Cl-) | 13 |
| Potassium (K+) | 5 |
| Sodium (Na+) | 5 |

## GENERAL INFORMATION

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

**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.

**THAWING:**

1. Frozen packages must be completely thawed before use.
2. Store tip down and warm at room temperature until no longer cool to the touch (normally 20 to 60 minutes).
3. DO NOT thaw in an oven.

**Directions for use**

1. LOCTITE ECCOBOND FP4650 should be dispensed onto a substrate warmed to approximately 80°C. This will help minimize air entrapment.
2. Warm LOCTITE ECCOBOND FP4650 to 30 to 40°C for faster dispensing.
3. **NOTE:** Elevated temperatures reduce working life.

**STORAGE:**

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

**Optimal Storage : ≤-40 °C Do not store above -40ºC.**

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.

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**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:**
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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