

LOCTITE ECCOBOND UF 8828

September 2012

PRODUCT DESCRIPTION

LOCTITE ECCOBOND UF 8828 provides the following product characteristics:

Technology	Cyanate Ester
Appearance	Off-white
Cure	Heat cure
Product Benefits	• High fracture toughness • High flow speed • Self-filleting • Optimized modulus • Low chip warpage • Eliminates the need for secondary fillet dispense process • 260°C reflow capability for Pb-free applications
Application	Underfill
Filler Type	Silica
pH	6.8

LOCTITE ECCOBOND UF 8828 moisture resistant underfill encapsulant is formulated to flow consistently without voids on die sizes over 20 x 20mm, while maintaining a fast flow rate.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Thixotropic Index (0.5/5 rpm)	0.9
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):	
Speed 5 rpm	15,000
Work Life @ 25°C, hours	>12
Shelf Life @ -40°C, days	365
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

15 minute ramp to 165°C + 60 minutes @ 165°C

Alternative Cure Schedule

Prebake 3 hours @ 165°C; 30 minute ramp to 100°C; hold at 100°C for 60 minutes; 30 minute ramp to 165°C; hold at 165°C for 90 minutes

Substrate Temperature

100°C (80°C - 110°C)

Weight Loss on Cure

10 x 10 mm Si die on glass slide, % 0.38

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

Physical Properties

Glass Transition Temperature (Tg) by TMA, °C 128

Coefficient of Thermal Expansion ppm/°C:

Below Tg, ppm/°C	30
Above Tg, ppm/°C	102

Flexural Modulus:

@ -65 °C	N/mm ² 8,232 (psi) (1,193,660)
@ 25 °C	N/mm ² 6,492 (psi) (941,290)
@ 150 °C	N/mm ² 410 (psi) (59,460)
@ 250 °C	N/mm ² 117 (psi) (16,970)

Extractable Ionic Content, @ 100°C ppm:

Chloride (Cl-)	<10
Sodium (Na+)	<10
Potassium (K+)	<10
Water Extract Conductivity, µmhos/cm	42

TYPICAL PERFORMANCE OF CURED MATERIAL

Miscellaneous

Die Shear Strength

2 x 2 mm Ceramic die on BT, kg-f	28
@ 25°C	

Die Shear Strength vs Temperature, kg-f

3 x 3 mm Ceramic die on BT, kg-f

@25°C	@250°C
918	77

GENERAL INFORMATION

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

THAWING:

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. DO NOT open the container before contents reach 22°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
4. DO NOT re-freeze. Once thawed to 22°C, the adhesive should not be re-frozen.

DIRECTIONS FOR USE

1. Thawed adhesive should immediately be placed on dispense equipment for use.
2. If the adhesive is transferred to a final dispensing reservoir, care must be exercised to avoid entrapment of contaminants and/or air into the adhesive.
3. Adhesive must be completely used within the products recommended work life.
4. The substrates should be preheated prior to dispensing in order to ensure even underfill flow under the die. The preheating time depends on the thermal mass and the heating method. Using a thermocouple to measure the actual temperature on top of the substrate near the dispense area is recommended. The

recommended substrate temperature is typically 100°C (80 to 110°C).

5. The underfill volume depends on several factors, including die size, gap height, bump density and fillet height. Dispense pattern will primarily depend on bump layout and die size. Dispensing optimization may be necessary in order to produce void-free parts. A 60 to 80% line (1 to 3 passes) centered along the die size is generally recommended.
6. Minimal delay time between passes is recommended to avoid underfill overflow on top of the die (0 to 20 seconds). The recommended needle size is typically 22 to 25 gage.

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.

Optimal Storage: -40 °C. Storage below minus (-)40 °C or greater than minus (-)40 °C can adversely affect product properties.

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

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

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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Belgium NV, Henkel Electronic Materials NV, Henkel Nederland BV, Henkel Technologies France SAS and Henkel France SA please additionally note the following:

In case Henkel would be nevertheless held liable, on whatever legal ground, Henkel's liability will in no event exceed the amount of the concerned delivery.

In case products are delivered by Henkel Colombiana, S.A.S. the following disclaimer is applicable:

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. 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.

Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

In case products are delivered by Henkel Corporation, Resin Technology Group, Inc., or Henkel Canada Corporation, the following disclaimer is applicable:

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. ® denotes a trademark registered in the U.S. Patent and Trademark Office.

Reference 1