



# UF3801

December 2009

## PRODUCT DESCRIPTION

UF3801 provides the following product characteristics:

<b>Technology</b>	Epoxy
<b>Appearance</b>	Black liquid
<b>Cure</b>	Heat cure
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>• One component</li> <li>• Reworkable</li> <li>• Fast cure at moderate temperatures</li> <li>• Minimal stress on other components</li> <li>• High Tg</li> <li>• Compatible with most Pb-free and halogen-free solders</li> <li>• Stable electrical performance in Temperature Humidity Bias</li> </ul>
<b>Application</b>	Underfill
<b>Typical Package Application</b>	Chip scale packages and BGA

UF3801 reworkable epoxy underfill is designed for CSP and BGA applications. It cures quickly at moderate temperatures to minimize stress to other components, and when cured provides excellent mechanical stress protection for solder joints.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity @ 25°C, MPa	379
Physica MCR100, Spindle CP50-1, 1000S-1	
Specific Gravity	1.13
Pot Life @ 25°C, days	3
Shelf Life @ -20°C, months	6
Flash Point - See MSDS	

## TYPICAL CURING PERFORMANCE

### Cure Schedule

10 minutes @ 130°C

**Note:** This is a bondline / material temperature.

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:

Coefficient of Thermal Expansion :	
Below Tg, ppm/°C	52
Above Tg, ppm/°C	183
Glass Transition Temperature (Tg) by TMA, °C	76
Storage Modulus, 25°C, GPa	3.0

## GENERAL INFORMATION

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

## Rework Procedure

1. Heat part to 240°C or greater using a hot air nozzle on standard BGA rework equipment.
2. The component can then be twisted and removed.
3. Residue can be removed by using a tacky or liquid flux with a soldering iron.

## 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 to -15°C. Storage below -40°C or greater than -15°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

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

**Note**

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.

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Reference 0.1