



E1216

June 2010

PRODUCT DESCRIPTION

E1216 provides the following product characteristics:

Technology	Epoxy
Appearance	Black
Cure	Heat cure
Product Benefits	<ul style="list-style-type: none"> • Snap curable • Fast, void-free underfill of area array devices • Excellent stability during shipping, storage and use • Excellent adhesion and strength • Non-anhydride curing chemistry
Application	Underfill
Devices	CSP, BGA and Flip Chip

E1216 is a new, innovative capillary flow underfill designed for high volume assembly operations that require an underfill that flows very fast, fully cures in the length of one reflow oven, but is stable enough to be easily shipped and used in large volume cartridges (up to 20 oz). It is specifically formulated to eliminate anhydride-type curing agents for those users who prefer to work with anhydride-free products.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity Brookfield, mPa (cP) 5 rpm, #3	6,000
Flow Rate @ 100°C, seconds 1cm travel, 180micron gap	9
Specific Gravity	1.45
Work Life @ 25°C, days	5
Shelf Life @ -20°C, months	6
Flash Point - See MSDS	

TYPICAL CURING PERFORMANCE

Cure Schedule

Snap Cure or In-line Cure

3 minutes @ 165 °C

Fast Cure

4 minutes @ 150 °C

Low Temperature Cure

10 minutes @ 130 °C

Substrate Temperature

100°C (70°C - 100°C)

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:

Coefficient of Thermal Expansion, ppm/°C: Below Tg	34
Glass Transition Temperature (Tg) by TMA, °C	115

GENERAL INFORMATION

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

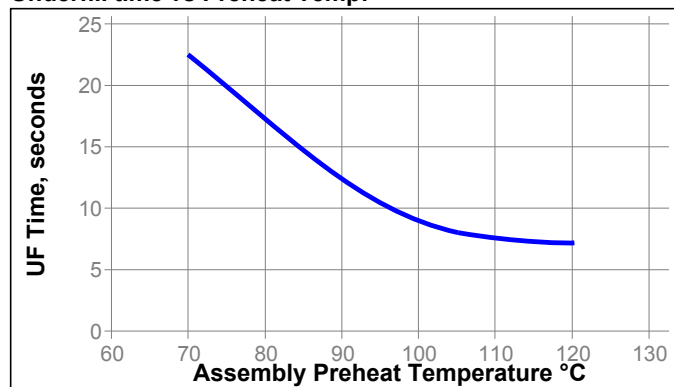
THAWING:

1. Allow container to reach room temperature before use.
2. After removing from the freezer, set the syringes to stand vertically while thawing.
3. Thaw for 4 hours (6, 12, or 20oz cartridges) prior to use.

DIRECTIONS FOR USE

1. While it is not essential, the underfill area should be cleaned of contaminants and obstructions to optimize the speed and quality of the underfill
2. Preheat assembly to between 70°C and 100°C. Higher temperatures reduce underfill times. Preheat assembly to 100°C for best results.
3. Use the graph below to determine the estimated underfilling time for your desired assembly preheat temperature.
4. Dispense a bead of the underfill using a syringe fitted with a 21 gauge needle (or larger) on one (line) or two sides (L-Shape) of the device perimeter
5. Syringe tip heating is not needed, but can be used
6. Very large devices may require multiple beads of underfill, but for most no second or 'fillet pass' is required
7. Because of its low viscosity and outstanding wetting characteristics, E1216 is designed to 'self-fillet' the opposite sides of the device

Underfill time vs Preheat Temp:



Note: Use for estimate only. Data generated on Glass to Glass slide assembly with 180 micron gap, time is to flow a distance of 1 cm.



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: -20°C. Storage greater than or below -20°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 0.3