ABLEBOND JM7000

August 2010

PRODUCT DESCRIPTION

ABLEBOND JM7000 provides the following product characteristics:

Technology	Cyanate Ester
Appearance	Silver
Cure	Heat cure
Filler Type	Silver
Product Benefits	• Excellent adhesion • Low moisture in cavity • Low weight loss during cure • Low ionic impurities • High reliability • Minimal voiding • Electrically conductive • Thermally conductive
Application	Die attach
Substrates	Alumina, Gold plated alumina and Heat sinks
Typical Package Application	VLSI packages, Solder sealed ceramic packages and Solder sealed hermetic packaging

ABLEBOND JM7000 die attach adhesive has been formulated for use in high throughput die attach applications. This material has been used successfully on rigid substrates with die sizes up to 700 mils.

ABLEBOND JM7000 has been approved by DESC and Rome Laboratory for military products.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, HAAKE RV-20 Rotoviscometer, 1° cone @ 22 sec^{-1} , cP	9,000
Work Life @ 25°C, hours	8 to 16
Shelf Life @ -40°C (from date of manufacture), year	1

TYPICAL CURING PERFORMANCE

Cure Schedule

30 minutes @ 150°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 :	
Below Tg, ppm/°C	33
Glass Transition Temperature (Tg) by TMA, °C	240
Bulk Thermal Conductivity, :	
@ 90ºC, W/mK	1.1
@ 165ºC, W/mK	1.0
Tensile Modulus, DMTA , MPa:	
Cured 30 minutes @ 300ºC	10,000
Extractable Ionic Content, @ 100°C ppm:	
Chloride (Cl-)	<10
Sodium (Na+)	<15
Potassium (K+)	<15
Decomposition (in N2):	
TGA analysis @ 10ºC/ minute ramp from 25 to 400ºC	
@ 340ºC, %	0.2
@ 400ºC, %	0.3

Electrical Properties:

Volume Resistivity, ohms-cm	≤0.01

TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength:

2 X 2 mm Si die, kg-f,
cured 20 minutes @ 150ºC

Substrate	DSS
Ag/Cu LF	≥5

Tensile Strength :

cured 30 minutes @ 300ºC, MPa

After Cure	After 1000 TC'C"
>17	>17

Radius of Curvature:

Si die on Alumina, meters
cured 30 minutes @ 300ºC

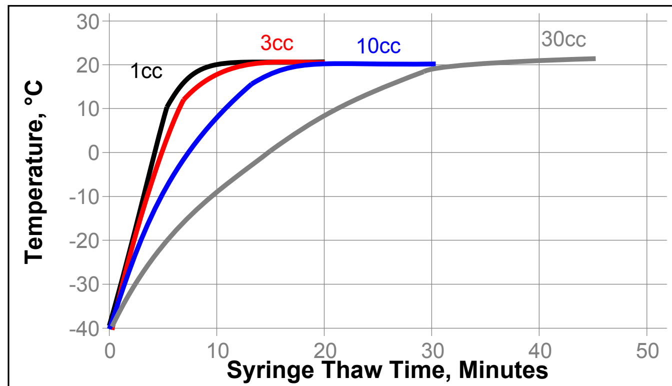
Chip Size:	ROC
15 x 15 mm	> 5

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. Refer to the Syringe Thaw time chart for the thaw time recommendation.
4. DO NOT open the container before contents reach 25°C temperature. Any moisture that collects on the thawed container should be removed prior to opening the container.
5. DO NOT re-freeze. Once thawed to -40°C, the adhesive should not be re-frozen.
6. ABLEBOND JM7000 is non-seperating and is resistant to settling so jar rolling is not required.



DIRECTIONS FOR USE

1. Thawed adhesive should be immediately 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. Apply enough adhesive to achieve a 25 to 38 µm wet bondline thickness, dispensed with approximately 25 to 50 % filleting on all sides of the die.
4. Alternate dispense amounts may be used depending on the application requirements.
5. ABLEBOND JM7000 adhesive exhibits minimum shrinkage during cure, consequently the wet and fired bond line is equivalent.
6. Increase bondline thickness may increase electrical resistance.

POT LIFE

ABLEBOND JM7000 adhesive has demonstrated stable dispense weights over an 8-hour period of continuous usage. Use of the material up to 16 hours is possible with minor machine adjustments to maintain consistent dispensed volume and weight

CURING GUIDELINES

Suggested temperature cures are from 150 to 350º. For applications requiring higher electrical conductivity, a cure cycle at 300ºC for 15 minutes is recommended. Product properties generally will not be reduced by subsequent post die attach thermal exposure, i.e., wire bond, and/or lid seal up to 370ºC.

Acceptable curing equipment for ABLEBOND JM7000 adhesive includes box ovens, heater tunnels, heater rails and belt furnaces. Curing in clean dry air atmosphere is recommended.

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

(°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

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