

LOCTITE ABLESTIK JM 7000

January 2022

PRODUCT DESCRIPTION

LOCTITE ABLESTIK JM 7000 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(s)	VLSI packages, Solder sealed ceramic packages and Solder sealed hermetic packaging

LOCTITE ABLESTIK JM 7000 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.

LOCTITE ABLESTIK JM 7000 has been approved by DESC and Rome Laboratory for military products.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Viscosity, HAAKE RV-20 Rotoviscometer, mPa·s (cP):

Cone 1° @ Shear rate 22 s ⁻¹	9,000
Work Life @ 25°C, hours	8 to 16
Shelf Life @ -40°C (from date of manufacture), days	365

TYPICAL CURING PERFORMANCE

Cure Schedule

30 minutes @ 150°C

Suggested temperature cures are from 150 to 350°C. For applications requiring higher electrical conductivity, a cure cycle of 15 minutes @ 300°C is recommended. Product properties will not be reduced by subsequent post die attach thermal exposure, i.e., wirebond, and/or lid seal up to 370°C.

The above cure profiles are guideline recommendations. Cure conditions (time and temperature) may vary based on customers' experience and specific 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, W/(m·K):

@ 90°C	1.1
@ 165°C	1.0

Tensile Modulus, DMTA :

Cured 30 minutes @ 300°C	N/mm ² (psi)	10,000 (1,450,377)
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Extractable Ionic Content, @ 100°C:

Chloride (Cl ⁻)	<10
Sodium (Na ⁺)	<15
Potassium (K ⁺)	<15
Fluoride (F ⁻)	<10

Decomposition (in N₂):

TGA analysis @ 10°C/ minute ramp from 25 to 400°C

@ 340°C, %	0.2
@ 400°C, %	0.3

Electrical Properties

Sample cured 30 minutes @ 300°C

Volume Resistivity, ohm-cm	≤0.01
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TYPICAL PERFORMANCE OF CURED MATERIAL

Die Shear Strength:

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

Substrate	DSS
Ag/Cu LF	≥5

Tensile Strength :

cured 30 minutes @ 300°C, MPa

After Cure	After 1000 TC°C"
>17	>17

Radius of Curvature:

Si die on Alumina, meters
cured 30 minutes @ 300°C

Chip Size:	ROC
15 x 15 mm	> 5

TYPICAL ENVIRONMENTAL RESISTANCE**Outgassing Properties**

Outgassing, NASA Outgassing:

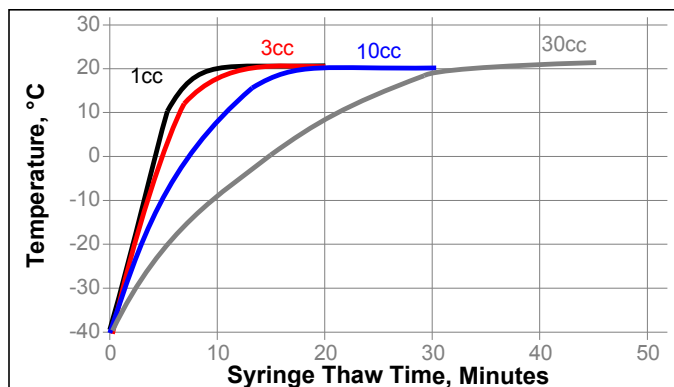
TML, %	0.15
CVCM, %	<0.01
WVR, %	0.07

GENERAL INFORMATION

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

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. LOCTITE ABLESTIK JM 7000 is non-separating and is resistant to settling so jar rolling is not required.

**Directions for Use**

1. Thawed material 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. Apply enough adhesive to achieve a 25 to 38 µm wet bondline thickness, dispensed with approximately 25 to 50 % filletting on all sides of the die.
4. Alternate dispense amounts may be used depending on the application requirements.
5. LOCTITE ABLESTIK JM 7000 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

LOCTITE ABLESTIK JM 7000 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

Acceptable curing equipment for LOCTITE ABLESTIK JM 7000 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 Henkel Representative.

Conversions

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

Disclaimer

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