

# LOCTITE<sup>®</sup> ABLESTIK 5025E

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**PRODUCT DESCRIPTION**

LOCTITE<sup>®</sup> ABLESTIK 5025E provides the following product characteristics:

<b>Technology</b>	Epoxy Film
<b>Appearance</b>	Silver
<b>Cure</b>	Heat cure
<b>Product Benefits</b>	<ul style="list-style-type: none"> <li>Thin, uniform bondline control</li> <li>Provides RF/EMI shielding</li> <li>Electrically conductive in x, y, z axes</li> <li>Excellent electrical and thermal conductivity</li> <li>Passes NASA outgassing</li> </ul>
<b>Application</b>	Die attach
<b>Adhesive Film Thickness</b>	4 mil
<b>Typical Package Application(s)</b>	Microwave circuitry and Heat sink attach
<b>Filler Type</b>	Silver
<b>pH</b>	6.0

LOCTITE<sup>®</sup> ABLESTIK 5025E unsupported epoxy adhesive film is ideal for bonding "hot" devices onto heat sinks in applications where electrical insulation is not required.

LOCTITE<sup>®</sup> ABLESTIK 5025E passes NASA outgassing standards.

**MIL-STD-883**

LOCTITE<sup>®</sup> ABLESTIK 5025E meets the requirements of MIL-STD-883, Method 5011.

**TYPICAL PROPERTIES OF UNCURED MATERIAL**

Work Life @ 25°C, days	91
Shelf Life @ 5°C (from date of manufacture), days	183

**TYPICAL CURING PERFORMANCE**

<b>Cure Schedule</b>	
30 minutes @ 150°C	
<b>Alternative Cure Schedule</b>	
2 hours @ 125°C	
<b>Weight Loss on Cure</b>	
10 x 10 mm Si die on glass slide, %	0.15

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	65
Above Tg, ppm/°C	150
Glass Transition Temperature (Tg) by TMA, °C	90
Thermal Conductivity @ 121°C, W/(m-K)	6.5
Tensile Modulus, DMTA :	
@ -65 °C	N/mm <sup>2</sup> 5,400 (psi) (790,000)
@ 25 °C	N/mm <sup>2</sup> 3,700 (psi) (530,000)
@ 150 °C	N/mm <sup>2</sup> 49 (psi) (7,100)
@ 250 °C	N/mm <sup>2</sup> 28 (psi) (4,000)

**Extractable Ionic Content, @ 100°C:**

Chloride (Cl-)	50
Sodium (Na+)	30
Potassium (K+)	5
Water Extract Conductivity, μmhos/cm	15
Moisture Absorption @ Saturation, wt.% @ 0.5 85°C/85°RH	

**Electrical Properties**

Volume Resistivity, ohms-cm	≤0.0005
Bond Joint Resistance, ohms/0.5 sq inch	<0.002

**TYPICAL PERFORMANCE OF CURED MATERIAL**
**Shear Strength**

Die Shear Strength @ 25 °C:	
2 X 2 mm Si die on Ag/Cu LF, kg-f	13
Lap Shear Strength, Al to Al	N/mm <sup>2</sup> 13 (psi) (>2,000)

**GENERAL INFORMATION**

Please consult the Safety Data Sheet (SDS) for safe handling information of this product.

**THAWING:**

1. It is recommended that the film be kept in its original packaging and should be handled with care. Any unnecessary external force to the box or the film itself such as bending and/or flexing should be avoided.

It is recommended that the film be thawed to room temperature in its original packaging. The recommended thawing time is: 6 hours minimum @ +5 to 25°C.

**Surface Preparation**

1. Proper preparation of substrates is critical to optimize epoxy adhesive flow and adhesion. The substrate water contact angle (WCA) is a good indicator of the capillary forces that drive resin flow and adhesion. Henkel recommends industry standards of <math><50^\circ</math> for substrate WCA. This allows the epoxy resin to better wet the substrate. Users may want to establish the precise relationship between WCA and product performance for their specific application.
2. Substrate surface chemistry is impacted by the entire substrate supply chain including supplier manufacturing methods, packaging, handling, plasma treatment, storage conditions, exposure to environment, and subsequent cleaning steps.

**Directions for Use**

1. LOCTITE® ABLESTIK 5025E adhesive film is unsupported.
2. Handle carefully to avoid any stretching or flexing when frozen.
3. It may be helpful during handling to keep at least one sheet of release paper attached.
4. Preheat surface to be bonded to approximately 45°C.
5. Remove release paper from one side of the adhesive film.
6. Apply film to one of the bonding surfaces.
7. Remove any trapped air by pressing on the surface.
8. Allow device to cool to room temperature.
9. Remove the release paper from the other side of the adhesive film. Attach the remaining adherend.
10. Apply spring loaded clamp or dead weight to provide continuous pressure of at least 2 to 10 psi during cure cycle.
11. Place assembly in a preheated oven and cure at the recommended cure schedule.

**NOTE:** This adhesive film is not recommended for use on bare aluminum surfaces. Poor ohmic contact will result.

**AVAILABILITY**

1. LOCTITE® ABLESTIK 5025E adhesive is available in die cut preforms or sheet stock.
2. This material is only available with 5011 certification.

**Storage**

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

**Optimal Storage: 5°C. Storage below 5°C or greater than 5°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.

**Not for product specifications**

The technical data contained herein are intended as reference only. Please contact your local Henkel representative for assistance and recommendations on the specifications of this product.

**Conversions**

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

**Disclaimer**

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.

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Reference 0.8