Technical Data Sheet

LOCTITE ABLESTIK 6202C-X

January 2015

PRODUCT DESCRIPTION
LOCTITE ABLESTIK 6202C-X provides the following product characteristics:

<table>
<thead>
<tr>
<th>Technology</th>
<th>Proprietary Hybrid Chemistry</th>
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</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Yellow</td>
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<tr>
<td>Filler Type</td>
<td>Silica</td>
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<tr>
<td>Cure</td>
<td>Heat cure</td>
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</tbody>
</table>

Product Benefits
- Stencil printing
- Low moisture uptake
- Low flow (<150µm)
- Low warpage
- Long work life
- Low modulus

Application
- Die attach

Substrates
- Laminate

Typical Package
- Chip scale packages and Stencil printing

LOCTITE ABLESTIK 6202C-X B-stageable adhesive is ideal for laminate-based packages where tolerance and bleed need to be minimized. This low modulus adhesive is recommended for large die sizes.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Thixotropic Index (0.5/5 rpm) | 2.5
Viscosity, Brookfield CP51, 25 °C, mPa·s (cP):
  Speed 5 rpm               | 30,000
  Work Life @ 25°C, days    | 7
  Storage Life @ -40°C (from date of manufacture), days | 365
  Print Open Time, hours    | 15
  Flash Point - See SDS

TYPICAL PROCESS DATA

Recommended B-Stage Condition
- 30 minute ramp from RT + 90 minutes @ 125°C + 30 minute ramp down to RT in vented magazine in oven with good air flow

Dwell Time after B-Stage
- Without Predry, hours | 8
- With Predry, days | 10

Pre-Dry Prior to Die Attach
- 4 to 10 minutes @ 90 to 95°C
  (Based on substrate thickness and complexity. Needs to be optimized for each customer based on real-life data)

Recommended when there is a significant amount of time (i.e., 4 hours or more) between B-stage and die attach.

Chip Attach
- Die Temperature, °C | 150 to 175
- Substrate Temperature, °C | 30 to 70
- Force, kg-f | 6 to 12
- Time, seconds | 0.5 to 1.5

Post Die Attach Dwell
- Prior to Cure, hours | 24

TYPICAL CURING PERFORMANCE

Cure Schedule
- 30 minutes ramp from 30 to 90°C, hold 60 minutes plus
- 30 minutes ramp to 175°C, hold 60 minutes in vented magazine in oven with good air flow

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 | 70
| Above Tg, ppm/°C | 232
| Glass Transition Temperature (Tg) by TMA, °C | 40
| Tensile Modulus, DMTA :
  @ 25 °C | N/mm² (psi) | 894 (129,663)
  @ 150 °C | N/mm² (psi) | 5 (725)
  @ 250 °C | N/mm² (psi) | 6 (812)
| Extractable Ionic Content, :
  Chloride (Cl-) | 25
  Sodium (Na+) | 10
  Potassium (K+) | 10
| Water Extract Conductivity, µmhos/cm | 120
| Moisture Absorption @ Saturation, wt.% @ 85°C/85°RH | 1.03
| Density before B-Stage, g/cc | 1.1
| Density after B-Stage, g/cc | 1.15

TYPICAL PERFORMANCE OF CURED MATERIAL

Shear Strength
- 2 x 2 mm Si die on ceramic, kg-f:
  @ 25°C | 10
  @ 245°C | 1

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. 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.
4. DO NOT re-freeze. Once thawed to 25°C, the adhesive should not be re-frozen.

DIRECTIONS FOR USE
1. Apply enough adhesive to the stencil to ensure complete filling of the stencil with a 15 to 20 mm diameter bead. Typically, this requires 20 to 50 cc of adhesive, depending on the stencil size. For two-directional printing, double beading 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.

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Note:
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Conversions
(°C x 1.8) + 32 = °F
kV/mm x 25.4 = V/mil
mm / 25.4 = inches
N x 0.225 = lb/F
N/mm x 5.71 = lb/in
psi x 145 = N/mm²
MPa = N/mm²
N·m x 8.851 = lb·in
N·m x 0.738 = lb·ft
N·mm x 0.142 = oz·in
mPa·s = cP
Reference 2

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