Heat resistant imide base material masking tape for fixing semiconductor chip

170 series

Feature
① Solder heat resistant heat resistant tape based on polyimide film
② Excellent adhesive residue to glass and semiconductor. (171)
③ Light peelability (171), strong adhesion (172, 174) grade available

Use
171 Glass for C-MOS camera module, Masking tape for C-MOS
175 Glass for C-MOS camera module, Masking tape for C-MOS
172 Lead frame (provisional) fixing tape (middle adhesive)
174 Lead frame (provisional) fixing tape (strong adhesion)

Construction

Characteristic

<table>
<thead>
<tr>
<th>Product name</th>
<th>Thickness (mm)</th>
<th>Base material (mm)</th>
<th>Adhesive force (N/25mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>171</td>
<td>0.065</td>
<td>0.050</td>
<td>0</td>
</tr>
<tr>
<td>175</td>
<td>0.04</td>
<td>0.025</td>
<td>0</td>
</tr>
<tr>
<td>172</td>
<td>0.04</td>
<td>0.025</td>
<td>3</td>
</tr>
<tr>
<td>174</td>
<td>0.065</td>
<td>0.050</td>
<td>5</td>
</tr>
<tr>
<td>KX174 (Dev.)</td>
<td>0.05</td>
<td>0.025</td>
<td>8</td>
</tr>
</tbody>
</table>

Measurement conditions
- Tensile rate: 300mm/min
- Tension angle: 180 degree
- Adherend: Stainless steel plate
- After bonding, the measured value after 24 hours

<table>
<thead>
<tr>
<th>Product name</th>
<th>Base material (mm)</th>
<th>Tensile strength (MPa)</th>
<th>Elongation (%)</th>
<th>Dielectric breakdown voltage (KV/mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>171</td>
<td>0.050</td>
<td>310</td>
<td>80</td>
<td>18</td>
</tr>
<tr>
<td>175</td>
<td>0.025</td>
<td>340</td>
<td>60</td>
<td>9</td>
</tr>
<tr>
<td>172</td>
<td>0.025</td>
<td>340</td>
<td>60</td>
<td>9</td>
</tr>
<tr>
<td>174</td>
<td>0.050</td>
<td>310</td>
<td>80</td>
<td>18</td>
</tr>
</tbody>
</table>

Test conditions: C2318 C2318 C2318
(1) Adhesive residue property-1

171  General imide tape

| Conditions | After sticking to glass, leave at 250 ° C for 1 minute | After taking out, air cooling at room temperature for 30 minutes. |

→ Take the tape and observe the glass surface

(1) Adhesive residue property-2

| Conditions | 90°C X 1hr | 150°C X 1hr | 200°C X 1hr |

→ Take the tape and observe the stainless steel surface

(2) Chemical resistance

Immerse in an acidic solution (pH 2) of H₂SO₄ for 1 minute.

【Before the test】

【After Test】

Good acid resistance.
Application example for masking process

1. CMOS formation
2. Wire bonding
3. Resin mold (resin seal): CSP
4. Masking tape sticking

Reflow process

【Series 172 - 174】
Fixing tape for IC package molding

1. Preparation of IC chip and fixing tape
2. Paste the fixing tape to the IC chip
3. Peripheral circuit bonding
4. Resin mold
5. Tape peeling
6. Disconnection / Packaging
Selection of product number

<table>
<thead>
<tr>
<th>Adhesion</th>
<th>weak</th>
<th>strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adhesive residue</td>
<td>None</td>
<td>A little much</td>
</tr>
</tbody>
</table>

Base material
- 171
- 172
- 174
- 175
- kx174

Use
- CMOSmasking
- Etching Masking
- Paintingmasking
- Fixed

[Reference material -1] Heat resistance of general resin and general price

ISO 1043 notation
PI Polyimide
PPS Polyphenylene sulfide
PBT Polybutylene terephthalate
POM Polyoxymethylene
PP polypropylene
PE polyethylene

Resin continuous use temperature cost

Continuous temperature °C
- 0
- 50
- 100
- 150
- 200
- 250
- 300
- 350

General price
Thermal stability of polymer

Melting point (heat resistance) \[ Tm = \frac{\Delta Hm}{\Delta Sm} \]

Enthalpy change of melting Intermolecular interaction
\[ \Delta Hm = Ha - Hb \]

Enthalpy change of melting Molecular flexibility
\[ \Delta Sm = Sa - Sb \]

The larger the intermolecular interaction, the larger \( \Delta Hm \).
The smaller the bendability of the molecule, the smaller \( \Delta Sm \).

For improving the thermal durability (thermal stability)

1. Improvement of intermolecular force (intermolecular crystallinity) and improvement of molecular bonding
   - Intermolecular force: Crystalline polymer (Polyamide, etc.)
   - Molecular bond: Silicone resin, fluororesin

2. Introduction of crosslinking structure
   - Rubber: Thermosetting resin (phenol, epoxy resin)

3. Introduction of chain rigidity group
   - Heat resistant polymer: Polyimide, etc.

Precautions on use
- All technical data are prepared based on tests and measured values conducted at the laboratory of Joint Giken Kagaku Co., Ltd. However, product characteristics may vary greatly depending on environment and adherend. Therefore, regarding these characteristic data, it is a reference value, not a guaranteed value. Before using it, please make sure that this product is suitable for the intended use and environment.
- The above measurement is performed at room temperature (23 °C). In case of low temperature (5 °C or less), adhesion may decrease sharply.

Caution on storage
- Please be sure to put it in a box and keep it.
- Please choose a cold and dark place not to be exposed to direct sunlight for the storage location. In particular, please do not expose to high temperature and high humidity (temperature 30 °C or more and humidity 50% or more forbidden).

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Published in December 2018