Au HA6
Universal Wire for Fine Pitch and Low Loop

In contrast to doped Au wires, alloyed wire types contain a low percentage of alloying elements. This results in markedly higher wire strength, shorter heat affected zones and better thermal stability without a significant increase in electrical resistance. The increased wire strength, while maintaining all other mechanical properties, permits a reduction of wire diameter together with a marked saving in precious metal costs.

Areas of application
- High frequency bonding
- Low temperature bonding
- Low- and long-loop bonding
- High speed bonding
- Ultra fine pitch bonding
- Ball bumping

Au HA6 Benefits
- High strength and fine pitch wire type
- Increased strength, high loop stiffness
- Very good pull strengths and shear
- Long & low loop geometries
- Optimum stabilized phase formation
- High thermal stability
- Improved reliability

Au HA6 Type

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Microns (µm)</th>
<th>17.5</th>
<th>20</th>
<th>23</th>
<th>25</th>
<th>30</th>
<th>33</th>
<th>38</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mils</td>
<td></td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.2</td>
<td>1.3</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Elongation</td>
<td>%</td>
<td>2 – 6</td>
<td>2 – 6</td>
<td>2 – 6</td>
<td>2 – 8</td>
<td>2 – 8</td>
<td>3 – 8</td>
<td>3 – 8</td>
<td>3 – 8</td>
</tr>
<tr>
<td>Breaking Load</td>
<td>cN</td>
<td>&gt; 4</td>
<td>&gt; 5</td>
<td>&gt; 7</td>
<td>&gt; 9</td>
<td>&gt; 14</td>
<td>&gt; 17</td>
<td>&gt; 20</td>
<td>&gt; 38</td>
</tr>
</tbody>
</table>

For other diameters, please contact Heraeus Bonding Wires sales representative.
HAZ Characteristics for 25 µm diameter

<table>
<thead>
<tr>
<th>Non-Gold Elements</th>
<th>&lt; 100 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic Modulus</td>
<td>&gt; 85 GPa</td>
</tr>
<tr>
<td>Heat Affected Zone (HAZ)</td>
<td>70 – 110 µm</td>
</tr>
<tr>
<td>Melting Point</td>
<td>1063 °C</td>
</tr>
<tr>
<td>Density</td>
<td>19.32 g / cm³</td>
</tr>
</tbody>
</table>

Breaking Load vs. Elongation

<table>
<thead>
<tr>
<th>Elongation</th>
<th>Tensile strength (N / mm²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2%</td>
<td>300</td>
</tr>
<tr>
<td>4%</td>
<td>500</td>
</tr>
<tr>
<td>8%</td>
<td>600</td>
</tr>
</tbody>
</table>

Neck Strength

<table>
<thead>
<tr>
<th>Wire diameter (µm)</th>
<th>Neck breaking force in cN</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>25</td>
<td>12</td>
</tr>
<tr>
<td>30</td>
<td>9</td>
</tr>
</tbody>
</table>

Elastic Modulus > 85 GPa
Heat Conductivity 3.12 W / cm-K
Electrical Resistivity 2.3 µΩ-cm
Coeff. of Linear Expansion (20 – 100 °C) 14.2 ppm / K
Fusing Current for 25 µm, dia 10 mm length (in air) 0.362 A

Gold Wire Segmentation by Properties

Superior Reliability
Widest Bonding Window
Highest Looping Performance

Electrical Performance
Superior Reliability

High Loop / Low Loop

FAB diameter
0.8 mil x 1.65
1.0 mil x 1.49
1.2 mil x 1.75

HA6 Characteristics for 25 µm diameter
Non-Gold Elements < 100 ppm
Elastic Modulus > 85 GPa
Heat Affected Zone (HAZ) 70 – 110 µm
Melting Point 1063 °C
Density 19.32 g / cm³

Fusing Current for 25 µm, dia 10 mm length (in air) 0.362 A

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The data given herein is valid. We reserve the right to make technical alterations.