MaxSoft HR
Copper Wire for High Reliability and Robust Bondability

MaxSoft HR Benefits & Features
- Excellent reliability performance
- Ultra-fine pitch wire bonding capability enabled with improved bonded ball shape
- Improved and enhanced 2nd bond performance over bare Cu wire
- Very good and consistent looping performance
- Longer floor life 10 days compared to bare Cu wire

Bonded Ball Shape

<table>
<thead>
<tr>
<th>Test</th>
<th>Package</th>
<th>Conditions</th>
<th>Test Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCT</td>
<td>BGA</td>
<td>-65~150°C</td>
<td>&gt;2,000 cycles</td>
</tr>
<tr>
<td></td>
<td>Lead Frame</td>
<td></td>
<td>&gt;2,000 cycles</td>
</tr>
<tr>
<td>HTST</td>
<td>BGA</td>
<td>150°C</td>
<td>&gt;2,000 hours</td>
</tr>
<tr>
<td></td>
<td>Lead Frame</td>
<td></td>
<td>&gt;2,000 hours</td>
</tr>
<tr>
<td>uHAST</td>
<td>BGA</td>
<td>130°C/85%RH/33.5Psia</td>
<td>&gt;768 hours</td>
</tr>
</tbody>
</table>

Reliability Test – molded Package (0.7mil)

FAB Morphology

MaxSoft HR
Bare Cu

Recommended Technical Data of MaxSoft HR

<table>
<thead>
<tr>
<th>Diameter (Microns)</th>
<th>15</th>
<th>18</th>
<th>20</th>
<th>23</th>
<th>25</th>
<th>33</th>
<th>38</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microns Mils</td>
<td>0.6</td>
<td>0.7</td>
<td>0.8</td>
<td>0.9</td>
<td>1.0</td>
<td>1.3</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Elongation (%)</td>
<td>5–15</td>
<td>6–16</td>
<td>7–17</td>
<td>7–18</td>
<td>9–21</td>
<td>11–21</td>
<td>11–21</td>
<td>13–25</td>
</tr>
<tr>
<td>Breaking Load (g)</td>
<td>3–6</td>
<td>5–8</td>
<td>7–10</td>
<td>9–13</td>
<td>10–16</td>
<td>18–26</td>
<td>26–34</td>
<td>52–60</td>
</tr>
</tbody>
</table>

For other diameters, please contact Heraeus sales representative.
**Physical Properties**

- **Density**: 8.93 g/cm³
- **Melting Point**: 1054°C
- **Specific Heat Capacity @ 25°C**: 0.71 J/g ∙ °C
- **Coeff. of Thermal Expansion (0 – 100 °C)**: 14.95 µm/m ∙ °C
- **Electrical Resistivity**: 1.74 µΩ ∙ cm
- **FAB Hardness**: 90 – 100 HV (0.01 N/s)
- **Wire Hardness**: 95 – 105 HV (0.01 N/s)
- **Elastic Modulus**: 90 – 100 GPa

**Chemical Composition**

- **Cu Purity**: 99 % min. (2N Cu)
- **Non-Cu elements**: < 1 %

**Other Guidelines**

- **Floor Life**: 10 days
- **Shelf Life Time**: 6 months
- **Shielding Gas**: Forming Gas (95N₂:5H₂)

**2nd Bond Process Window**

- **USG current (mA)**
  - 50: 40 g
  - 70: 60 g
  - 90: 80 g
  - 110: 100 g
  - 130: 120 g
  - 150: 140 g

**Looping Performance**

- **Loops over 10 mil**
  - **Pd/Au_Cu**: 99.70%
  - **MaxSoft**: 99.85%
  - **Bare Cu**: 99.36%

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