CuNi2Si0.4

Comparable standards: UNS C70260 • EN CW111C
Aurubis designations: C7026

Description

CuNi2Si0.4 is a precipitation-hardened copper alloy. It combines medium electrical conductivity (min. 40% IACS) with high strength and very good relaxation behaviour. This is achieved by the application of a special process consisting of cold working and heat treatment. CuNi2Si0.4 also has excellent spring properties and good corrosion resistance. Fields of application are automotive, connectors, leadframes and electrical engineering.

### Composition

<table>
<thead>
<tr>
<th></th>
<th>Cu*</th>
<th>Ni**</th>
<th>Si</th>
<th>Fe</th>
<th>Mn</th>
<th>Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td>rem</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.02 max</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.2 max</td>
<td></td>
<td>0.1 max</td>
<td></td>
</tr>
</tbody>
</table>

Composition of this alloy is in accordance with RoHS for electric & electronic components and ELV for the automotive industry.

### Physical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point [°C]</td>
<td>1087</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.8</td>
</tr>
<tr>
<td>Specific heat capacity [kJ/kgK]</td>
<td>0.38</td>
</tr>
<tr>
<td>Young’s modulus [GPa]</td>
<td>130</td>
</tr>
<tr>
<td>Thermal cond. [W/mK]</td>
<td>156-195</td>
</tr>
<tr>
<td>Electrical cond. [%IACS]</td>
<td>≥ 23</td>
</tr>
<tr>
<td>α @20-300°C [10⁻⁶/K]</td>
<td>≥ 40</td>
</tr>
<tr>
<td>α</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: The specified conductivity applies to the soft condition only.

### Mechanical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength [MPa]</td>
<td></td>
</tr>
<tr>
<td>Yield Strength [MPa]</td>
<td>≥ 380</td>
</tr>
<tr>
<td>Elongation A₅₀ [%]</td>
<td>≥ 16</td>
</tr>
<tr>
<td>Hardness HV [-]</td>
<td>130-150</td>
</tr>
</tbody>
</table>

### Fabrication properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold formability</td>
<td>good</td>
</tr>
<tr>
<td>Hot formability</td>
<td>excellent</td>
</tr>
<tr>
<td>Soldering</td>
<td>good</td>
</tr>
<tr>
<td>Brazing</td>
<td>good</td>
</tr>
<tr>
<td>Oxyacetylene welding</td>
<td>good</td>
</tr>
<tr>
<td>Gas shielded arc welding</td>
<td>good</td>
</tr>
<tr>
<td>Resistance welding</td>
<td>good</td>
</tr>
<tr>
<td>Machinability</td>
<td>fair</td>
</tr>
</tbody>
</table>

### Electrical properties

The electrical conductivity depends on chemical composition, the level of cold deformation and the grain size. A high level of deformation as well as a small grain size decrease the conductivity.
### Corrosion Resistance

CuNi2Si0.4 is resistant to: Natural and industrial atmospheres as well as maritime air, drinking and service water, non oxidizing acids, alkaline solutions and neutral saline solutions. CuNi2Si0.4 is not resistant to: Ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres, oxidizing acids and sea water (especially at high flow rates).

### Typical uses

Automotive, electrical engineering, connectors, springs, relays, sockets, clips, leadframes, pins