CuZn20 is a solid solution strengthened copper alloy containing 20% zinc (brass). CuZn20 has very good cold formability and is suited for bending, stamping and other cold forming processes. The alloy may be soldered and brazed, welding has to be executed with care, due to the raised zinc content. As the zinc content increases, the strength improves, yet the conductivity and ductility are reduced. CuZn20 has a good resistance to stress corrosion cracking, yet the alloy should be stress relieved if exposed to an ammonia atmosphere. Due to the raised zinc content brass has economical advantages. Fields of application are architecture, stamped and deep drawn products, jewelry, musical instruments, cosmetic packaging and components of mechanical electrical engineering.

**Composition**

<table>
<thead>
<tr>
<th>Element</th>
<th>Cu</th>
<th>Fe</th>
<th>Pb</th>
<th>Zn</th>
<th>Al</th>
<th>Ni</th>
<th>Sn</th>
</tr>
</thead>
<tbody>
<tr>
<td>[%]</td>
<td>79-81</td>
<td>0.05 max</td>
<td>0.05 max</td>
<td>rem</td>
<td>0.02 max</td>
<td>0.3 max</td>
<td>0.1 max</td>
</tr>
</tbody>
</table>

This alloy is in accordance with RoHS 2002/96/CE for electric & electronic components and 2002/53/CE for the automotive industry.

**Physical properties**

- Melting point: 999 °C
- Density: 8.7 g/cm³
- Thermal conductivity: $c_p$ @ 20°C: 0.38 [kJ/kgK]
- Electrical conductivity: $\geq 33$ [%IACS]
- Young's modulus: 142 [GPa]
- Coefficient of thermal expansion: $\alpha$ @ 20°C: 119 $[10^{-6}/K]$

**Mechanical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>R270</th>
<th>R320</th>
<th>R400</th>
<th>R480</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensile Strength [MPa]</td>
<td>270-320</td>
<td>320-400</td>
<td>400-480</td>
<td>$\geq 480$</td>
</tr>
<tr>
<td>Yield Strength [MPa]</td>
<td>$\leq 150$</td>
<td>$\geq 200$</td>
<td>$\geq 320$</td>
<td>$\geq 440$</td>
</tr>
<tr>
<td>Elongation $%$</td>
<td>$\geq 36$</td>
<td>$\geq 20$</td>
<td>$\geq 5$</td>
<td>$\geq 1$</td>
</tr>
<tr>
<td>Hardness HV [Vickers]</td>
<td>55-85</td>
<td>85-120</td>
<td>120-155</td>
<td>$\geq 155$</td>
</tr>
<tr>
<td>Bend ratio $90^\circ$ [r]</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>0.5 1</td>
</tr>
<tr>
<td>Bend ratio $180^\circ$ [r]</td>
<td>0 0</td>
<td>0 0</td>
<td>0 0</td>
<td>1 1.5</td>
</tr>
</tbody>
</table>

Other tempers are available upon request. $r = x \times t$ (thickness $t \leq 0.5$mm) GW bend axis transverse to rolling direction, BW bend axis parallel to rolling direction.

**Fabrication properties**

- Cold formability: excellent
- Hot formability: good
- Soldering: excellent
- Brazing: excellent
- Oxyacetylene welding: good
- Gas shielded arc welding: good
- Resistance welding: fair
- Machinability: fair
### Electrical Conductivity

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

Brass is resistant to: Natural, industrial and salt bearing atmospheres, drinking water, alkaline and neutral saline solutions.

Brass is not resistant to: Acids, ammonia, halogenide, cyanide and hydrogen sulfide solutions and atmospheres as well as sea water (especially at high flow rates).

CuZn20 has a certain sensitivity to stress corrosion cracking and is resistant to dezincification, different to brass alloys with higher zinc contents. Yet the alloy should be stress relieved if stress corrosion cracking might be an issue.

### Typical uses

Architectural, stamped and deep drawn products, jewelry, musical instruments, cosmetic packaging, components of electrical and mechanical engineering.

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This leaflet is for general information only and is not subject to revision. No claims can be derived from it unless there is evidence of intent or gross negligence. The data given are no warranty that the product is of a specified quality and they cannot replace expert advice or the customer’s own test.