EMH-Copper Tubes in Cu-DHP

Cu-DHP is a deoxidized copper with limited residual phosphorus content possessing excellent welding and hard soldering properties as well as resistance to hydrogen embrittlement. It also has excellent formability and is used where requirements for electrical conductivity are not high.

### Chemical Composition *

<table>
<thead>
<tr>
<th>Element</th>
<th>% by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu</td>
<td>≥ 99.9 %</td>
</tr>
<tr>
<td>P</td>
<td>0.015 – 0.04 %</td>
</tr>
</tbody>
</table>

deoxidized and oxygen-free

* Standard values in % by weight

### Material Description

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>Cu-DHP, CW024A</td>
</tr>
<tr>
<td>UNS</td>
<td>C12200</td>
</tr>
<tr>
<td>DIN*</td>
<td>SF-Cu, 2.0090</td>
</tr>
<tr>
<td>BS*</td>
<td>C106</td>
</tr>
<tr>
<td>NF*</td>
<td>Cu-b1</td>
</tr>
</tbody>
</table>

* former national standards

### Processing Properties

#### Forming

- Machinability (CuZn39Pb3 = 100%) 20 %
- Cold forming: excellent
- Hot forming: good

#### Joining

- Resistance welding: good
- Inert gas shielded arc welding: excellent
- Hard soldering: excellent
- Soft soldering: excellent

#### Surface Treatment

- Polishing: mechanical: good, electrolytical: excellent
- Electroplating: excellent

### Heat Treatment

- Melting point: 1,083 °C
- Hot forming: 750 – 950 °C
- Soft annealing: 350 – 500 °C, 1-3 h
- Thermal stress-relieving: 150 – 200 °C, 1-3 h

### Corrosion Resistance

Resistant to industrial atmosphere, industrial and drinking water (max. flow rate approx. 1.5-2 m/s), pure water vapour, non oxidizing acids, alkalis (except for compounds containing ammoniac and cyanide), neutral saline solutions.

Not resistant to oxidizing acids, moist ammonia and halogenated gases, hydrogen sulphide, seawater.

### Physical Properties *

#### Electrical conductivity

- MS/m: > 45
- % IACS: > 77

#### Thermal conductivity

- W/(m*K): > 330

#### Thermal expansion coefficient

- (0 – 300 °C) 10⁻⁶/K: 17.7

#### Density

- g/cm³: 8.94

#### Modulus of elasticity

- GPa: 132

* Standard values at room temperature

1 GPa = 1 kN/mm²
1 MS/m = 1 m/Ω • mm

### Mechanical Properties

(Attainable values, depending on the dimension and form)

<table>
<thead>
<tr>
<th>Property</th>
<th>Standard (from)</th>
<th>Standard (to)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rm</td>
<td>200</td>
<td>440</td>
</tr>
<tr>
<td>Re,2</td>
<td>60</td>
<td>420</td>
</tr>
<tr>
<td>A5</td>
<td>40</td>
<td>2</td>
</tr>
<tr>
<td>HB</td>
<td>35</td>
<td>115</td>
</tr>
</tbody>
</table>

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