wieland

Wieland-K46

Cu-ETP1/CW003A

Material designation

EN	Cu-ETP1 CW003A
UNS	C11000

Chemical composition*

Cu	≥ 99.99 %
oxygen free not desoxidized	≤ 140 ppm

**Reference values in % by weight*

Physical properties*

Electrical conductivity	MS/m %IACS	≥ 58 ≥ 100
Thermal conductivity	W/(m·K)	> 385
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	17.7
Density	g/cm³	8.93
Moduls of elasticity	GPa	127

**Reference values at room temperature*

Corrosion resistance

Pure copper and high-copper alloys generally exhibit good corrosion resistance due to their inert character and are practically insensitive to stress corrosion cracking.

Product standards

Wire	EN 13602
Section	EN 13605

Material properties and typical applications

Wieland-K46 is a copper with a low oxygen content. It exhibits good electrical and thermal conductivity. Due to the oxygen content its use at an elevated temperature in a reducing atmosphere is critical, especially if a hydrogen-containing atmosphere (hydrogen embrittlement) is concerned. This means there are certain restrictions during annealing as well as welding and soldering. Main applications are within the superconductor technology.

This material is more pure than C11000. As K46 is a selected variant of K16, very high RRR values can be achieved RRR (293K/4,2K) ≥ 460.

Types of delivery

The BU Extruded Products supplies bars, wire, sections and tubes. Please get in touch with your contact person regarding the available delivery forms, dimensions and tempers.

Fabrication properties

Forming

Machinability (CuZn39Pb3 = 100 %)	20 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair

Surface treatment

Polishing mechanical electrolytic	 good excellent
Electroplating	excellent

Joining

Resistance welding (butt weld)	good
Inert gas shielded arc welding	fair
Hard soldering	good
Soft soldering	excellent

Heat treatment

Melting range	1,083 °C
Hot working	750–900 °C
Soft annealing	250–500 °C 1–3 h
Thermal stress relieving	150–200 °C 1–3 h

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