

# Wieland-K46

Cu-ETP1/CW003A

## Material designation

EN Cu-ETP1  
CW003A

UNS C11000

## Chemical composition\*

Cu  $\geq 99.99\%$

oxygen free  
not desoxidized  $\leq 140$  ppm

\*Reference values in % by weight

## Physical properties\*

Electrical conductivity MS/m  $\geq 58$   
%IACS  $\geq 100$

Thermal conductivity W/(m·K)  $> 385$

Thermal expansion coefficient (0–300 °C)  $10^{-6}/K$  17.7

Density g/cm<sup>3</sup> 8.93

Modulus 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)  $\geq 460$ .

## 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 20 %  
(CuZn39Pb3 = 100 %)

Capacity for being cold worked excellent

Capacity for being hot worked fair

### Surface treatment

Polishing  
mechanical good  
electrolytic 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