

Wieland-K12 Copper Cu-HCP

Extruded/drawn products

Wieland-K12 is an oxygen-free copper which is resistant during heat treatment in reducing atmosphere. As the amount of phosphorus added for deoxidation is only limited, the material retains its high electrical and thermal conductivity. Joining operations such as soldering and welding are possible without restriction.

Chemical composition*

Cu	≥99.95 %
P	0.002 - 0.007 %
deoxidized, oxygen-free	

* Reference values in % by weight

Material designation

EN	Cu-HCP, CW021A
UNS	C10300
DIN*	SE-Cu, 2.0070
BS*	not standardized
NF*	not standardized

* Former national standards

Physical properties*

Electrical conductivity	MS/m	≥57
	% IACS	98
Thermal conductivity	W/(m*K)	>385
Thermal expansion coefficient (0-300°C)	10 ⁻⁶ /K	17.7
Density	g/cm ³	8.94
Modulus of elasticity	GPa	127

* Reference values at room temperature

1 GPa = 1 kN/mm²

1 MS/m = 1 m/Ω • mm²

Fabrication properties

Forming

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

Joining

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

Corrosion resistance*

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

Surface treatment

Polishing	mechanical	good
	electrolytic	excellent
Electroplating		excellent

Product standards

Rod	EN 13601
Wire	EN 13601
Section	EN 13605
Tube	EN 13600

Heat treatment

Melting point	1083°C liquidus
Hot working	750 - 900°C
Soft annealing	250 - 500°C, 1-3h
Thermal stress-relieving	150 - 200°C, 1-3h

Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft)	to (hard)
R _m [MPa]	230	270
R _{p0.2} [MPa]	70	200
A ₅ [%]	50	25
HB	50	75

Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
K12	Cu-HCP	CW021A	6	300	0.3	20				
Round tubes										
Drawn sections							2.5	150		
Extruded sections								150		
Sectional tubes								230		
Round and polygonal rods									2	250
Round wires									0.3	
Polygonal wires									2	

All values in mm

* Depending on the form, cross-sections in the lower size range are also available as wire.

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