

Wieland-K20/K21

Deoxidized copper

Wieland-K20/K21 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. K21 has a low level of impurities compared to K20 making it possible to achieve particularly low yield strength values for soft tubes.

Extruded/drawn products

Chemical composition*

Cu	≥99.90 %
P	0.015 - 0.040%

*according to EN 12449

Material designation

EN	Cu-DHP, CW024A
UNS	C12200
DIN*	SF-Cu, 2.0090
BS*	C106
NF*	Cu-b1

* Former national standards

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/cm ³	8.94
Modulus of elasticity	GPa	132

Fabrication properties

Forming

Machinability	20%
(CuZn39Pb3 = 100 %)	
Capacity for being cold worked	excellent
Capacity for being hot worked	good
Joining	
Resistance welding	good
Inert gas shielded arc welding	excellent
Hard soldering	excellent
Soft soldering	excellent

Corrosion resistance*

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

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

* Reference values at room temperature

1 GPa = 1 kN/mm²

1 MS/m = 1 m/Ω · mm²

Surface treatment

Polishing	mechanical	good
	electrolytic	excellent
Electroplating		excellent

Heat treatment

Melting point	1083°C
Hot working	750-950°C
Soft annealing	350-500°C, 1-3 h
Thermal stress-relieving	150-200°C, 1-3 h

Product standards

Rod	EN 12163
	EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

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

Reference values	from (soft)	to (hard)
R _m [MPa]	240	440
R _{p0.2} [MPa]	60	420
A ₁₀ [%]	45	2
HB	55	115

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
K20/K21	Cu-DHP	CW024A	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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