

Wieland-K32 Copper Cu-ETP

Extruded/drawn products

Wieland-K32 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.

Chemical composition*		Material designation	
Cu	≥99.90 %	EN	Cu-ETP, CW004A
		UNS	C11000
with oxygen, non-deoxidized		DIN*	E-Cu57, 2.0060
(O max. 0.04 % or		BS*	C101
O max. 0.06 % if agreed)		NF*	Cu-a1

* Reference values in % by weight

* Former national standards

Physical properties*			Fabrication properties		Corrosion resistance*	
Electrical conductivity	MS/m	≥58	Forming			Pure copper and high-copper alloys generally exhibit good corrosion resistance due to their precious character and are practically insensitive to stress corrosion cracking.
	% IACS	≥98	Machinability	20%		
Thermal conductivity	W/(m·K)	>385	(CuZn39Pb3 = 100 %)			
Thermal expansion coefficient	(0-300°C) 10 ⁻⁶ /K	17.7	Capacity for being cold worked	excellent		
Density	g/cm ³	8.93	Capacity for being hot worked	fair		
Modulus of elasticity	GPa	127	Joining			
			Resistance welding	good		
			Inert gas shielded arc welding	fair		
			Hard soldering	good		
			Soft soldering	excellent		

* Reference values at room temperature

1 GPa = 1 kN/mm²

1 MS/m = 1 mΩ · mm²

Surface treatment			Product standards	
Polishing	mechanical	good	Rod	EN 13601
	electrolytic	excellent	Wire	EN 13601
Electroplating		excellent	Section	EN 13605
			Tube	EN 13600
Heat treatment				
Melting point		1083°C liquidus		
Hot working		750 - 900°C		
Soft annealing		250 - 500°C, 1-3 h		
Thermal stress-relieving		150 - 200°C, 1-3 h		

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

Reference values	from (soft)	to (hard)
R _m [MPa]	230	390
R _{p0.2} [MPa]	70	350
A ₅ [%]	50	3
HB	50	110

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
K32	Cu-ETP	CW004A	6	300	0,3	20				
Round tubes			6	300	0,3	20				
Drawn sections							2.5	150		
Extruded sections								150		
Sectional tubes								230		
Round and polygonal rods									2	250
Round wires									0.3	
Polygonal wires									2	

Wieland - K32

All values in mm

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

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