

Wieland-K60 High copper alloy

Extruded/ drawn products

Wieland-K60 is an age hardenable copper alloy combining good electrical and thermal conductivity with high strength. Depending on the application, different tempers (solution annealed, age hardened, cold worked, etc.) can be defined. Wieland-K60 is highly suitable for use in welding technology, e.g. as welding electrode (especially at high temperatures).

Chemical Composition

Cu	balance
Cr	0.5 - 1.2 %
Zr	0.03 - 0.3 %

* Reference values in % by weight acc. to EN 12163

Material Designation

EN	CuCr1Zr, CW106C
UNS	C18200
DIN*	CuCrZr, 2.1293
BS*	CC102
NF*	not standardized

* Former national standards

Physical Properties*

Electrical conductivity	MS/m	≥43
	% IACS	≥74
Thermal conductivity	W/(m*K)	>320
Thermal expansion coefficient (0-300 °C)	10 ⁻⁶ /K	17.6
Density	g/cm ³	8.92
Modulus of elasticity	kN/mm ²	130

* Reference values at room temperature
1 GPa = 1 kN/mm²
1 MS/m = 1 m/Ω • mm²

Fabrication Properties

Forming

Temper	s	a	aw
Machinability	30%	40%	50%
(CuZn39Pb3 = 100 %)			
Cold working	excellent	good	good
Hot working			good

Joining

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

Surface Treatment

Polishing	mechanical	good
	electrolytical	fair
Electroplating		good

Heat Treatment

Melting range	1070 - 1080°C
Hot working	850 - 1020°C
Soft annealing	600 - 800°C, 1-3h
Thermal stress relieving	300 - 350°C, 1-3h

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

Rod	EN 12163
	EN 12165
Wire	EN 12166
Section	EN 12167
Tube	EN 12449

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

Reference values*	solution anleaded "s"	age hardened "a"	age hardened
R _m [N/mm ²]	230	460	470-570
R _{p0,2} [N/mm ²]	80	340	420-540
A ₅ [%]	40	20	15 - 10
HB	65	130	140-170

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
K60	CuCr1Zr	CW106C	6	145	1.5	15				
Round tubes										
Drawn sections							2.5	80		
Extruded sections								125		
Sectional tubes										
Round and polygonal rods									2	150
Round wires									0.3	
Polygonal wires									2	

Wieland - K60

Al values in mm

Distribution via TDM (Thyssen Duro Metall GmbH), Kornwestheim, Germany

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

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