wieland

Wieland-K60

CuCr1Zr | High copper alloy

Material designation

EN	CuCr1Zr CW106C
UNS	C18150

Chemical composition*

Cu	balance
Cr	0.5–1.2 %
Zr	0.03–0.2 %

**Reference values in % by weight*

Material properties and typical applications

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).

Distribution of **Wieland-K60** via our service company Wieland Duro GmbH.

Physical properties*

Electrical conductivity	MS/m %IACS	≥ 43 ≥ 74
Thermal conductivity	W/(m·K)	> 320
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	17.6
Density	g/cm³	8.92
Moduls of elasticity	GPa	130

**Reference values at room temperature*

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 (CuZn39Pb3 = 100 %)	s 30%	a 40%	aw 50%
Capacity for being cold worked	excellent	good	good
Capacity for being hot worked	fair		

** s = solution annealed, a = age hardened, aw = age hardened + cold worked*

Surface treatment

Polishing mechanical electrolytic	 good fair
Electroplating	good

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.

Joining

Resistance welding (butt weld)	fair**
Inert gas shielded arc welding	fair**
Gas welding	fair**
Hard soldering	fair**
Soft soldering	excellent

*** high temperatures alter the age hardened condition*

Heat treatment

Melting range	1,070–1,080 °C
Hot working	850–1020 °C
Soft annealing	600–800 °C 1–3 h
Thermal stress relieving	–
Age hardening	upon request

Product standards

Rod	EN 12163 EN 12165
Wire	EN 12166
Section	EN 12167

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Machanical properties according to EN

Round rods / polygonal rods — acc. to EN 12163

Temper	Diameter mm		Width across flat mm		Tensile strength R_m MPa	Yield strength $R_{p0,2}$ MPa	Elongation %			Hardness	
							A100	A11.3	A	HB	
	from	to	from	to	min.	min.	min.	min.	min.	min.	max.
M	all		all		as manufactured – without specific mechanical properties						
R370	> 50	100	> 25	100	370	250	–	–	16	–	–
H120	> 50	100	> 25	100	–	–	–	–	–	120	160
R430	> 30	50	10	25	430	350	–	–	10	–	–
H135	> 30	50	10	25	–	–	–	–	–	135	175
R470	4	> 30	–	–	470	420	–	6	8	–	–
H150	4	> 30	–	–	–	–	–	–	–	150	180

Rectangular rods — acc. to EN 12167

Temper	Width across flats mm		Tensile strength R_m MPa	Yield strength $R_{p0,2}$ MPa	Elongation %			Hardness HB	
					A100	A11.3	A		
	from	to	min.	min.	min.	min.	min.	min.	max.
M	all		as manufactured – without specific mechanical properties						
R370	30	100	370	250	–	–	16	–	–
H120	30	100	–	–	–	–	–	120	160
R430	3	50	430	350	3	6	10	–	–
H135	3	50	–	–	–	–	–	135	175
R470	3	30	470	420	2	5	8	–	–
H150	3	30	–	–	–	–	–	150	180

Round wires — acc. to EN 12166

Temper	Diameter mm		Tensile stregth R_m MPa	Yield strength $R_{p0,2}$ MPa	Elongation %			Hardness HB	
					A100	A11.3	A		
	from	to	min.	min.	min.	min.	min.	min.	max.
M	all		as manufactured – without specific mechanical properties						
R370	2	10	370	250	8	12	16	–	–
H125	2	10	–	–	–	–	–	125	170
R430	2	10	430	350	5	8	10	–	–
H145	2	10	–	–	–	–	–	145	185
R470	2	10	470	420	3	6	8	–	–
H160	2	10	–	–	–	–	–	160	190

Rods — acc. to EN 12165

Temper	Diameter mm		Tensile stregth R_m MPa	Yield strength $R_{p0,2}$ MPa	Elongation %			Hardness HB	
					A100	A11.3	A		
	from	to	min.	min.	min.	min.	min.	min.	max.
M	all		as manufactured – without specific mechanical properties						
H070	8	80	–	–	–	–	–	70	150

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