

# 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

## Physical properties\*

Electrical conductivity	MS/m	≥ 43
	%IACS	≥ 74
Thermal conductivity	W/(m·K)	> 320
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	17.6
Density	g/cm <sup>3</sup>	8.92
Modulus of elasticity	GPa	130

\*Reference values at room temperature

## 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

## 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 affiliated company Duro Metall GmbH.

## 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	a	aw
	30%	40%	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

### 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

### Surface treatment

Polishing	
mechanical	good
electrolytic	fair
Electroplating	good

### 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

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## Mechanical properties according to EN

Round rods / polygonal rods											acc. to EN 12163	
Temper	Diameter		Width across flat		Tensile strength $R_m$	Yield strength $R_{p0.2}$	Elongation %			Hardness		
	mm		mm		MPa	MPa	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		Tensile strength $R_m$	Yield strength $R_{p0.2}$	Elongation %			Hardness			
	mm		MPa	MPa	A100	A11.3	A	HB			
	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		Tensile strength $R_m$	Yield strength $R_{p0.2}$	Elongation %			Hardness			
	mm		MPa	MPa	A100	A11.3	A	HB			
	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		Tensile strength $R_m$	Yield strength $R_{p0.2}$	Elongation %			Hardness			
	mm		MPa	MPa	A100	A11.3	A	HB			
	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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