

# Wieland-K10

Cu-OFE

## Material designation

EN	Cu-OFE
UNS	not standardized

## Chemical composition\*

Cu	≥ 99.99 %
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\*Reference values in % by weight

## Physical properties\*

Electrical conductivity	MS/m	≥ 58.6
	%IACS	≥ 101
Thermal conductivity	W/(m·K)	> 394
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	17.7
Density	g/cm <sup>3</sup>	8.94
Modulus of elasticity	GPa	127

\*Reference values at room temperature

## Corrosion resistance

Pure copper and high-copper alloys generally exhibit good corrosion resistance due to their precious character and are practically insensitive to stress corrosion cracking.

## Product standards

Material	EN 13604
Rod and Wire	EN 13601
drawn Roundwire	EN 13602
Profil	EN 13605
Tube	EN 13600

## Material properties and typical applications

**Wieland-K10** is a very pure, oxygenfree copper with high electrical and thermal conductivity. The material shows excellent adherence of the oxide skin. It is resistant to heat treatment in reducing atmosphere. Because of its high degree of purity **Wieland-K10** is suitable for high-vacuum applications. Further applications are electronic tubes or semiconductor parts (EN 13604).

## 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 %)	20 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair

### Joining

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

### Surface treatment

Polishing	
mechanical electrolytic	good excellent
Electroplating	excellent

### Heat treatment

Melting range	1,083 °C Liquidus
Hot working	750–900 °C
Soft annealing	250–500 °C 1–3 h
Thermal stress relieving	150–200 °C 1–3 h

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## Mechanical properties according to EN

Rods and Wires														acc. to EN 13601					
Temper	Diameter/Distance across flats round, square, rectangular		Thickness		Width		Tensile strength $R_m$	Yield strength $R_{p0.2}$		Elongation %		Hardness							
	mm		mm		mm		MPa	MPa		A100	A	HB		HV					
	from	to	from	to	from	to	min.	min.	max.	min.	min.	min.	max.	min.	max.				
D	2	160	0.5	40	1	200	cold-finished without specified mechanical properties												
H035	2	160	0.5	40	1	200	–	–	–	–	–	35	65	35	65				
R200	2	160	1	40	5	200	200	–	120	25	35	–	–	–	–				
H065	2	80	0.5	40	1	200	–	–	–	–	–	65	90	70	95				
R250	2	10	1	10	5	200	250	200	–	8	12	–	–	–	–				
R250	> 10	140	> 10	40	> 10	200	250	180	–	–	15	–	–	–	–				
R230	> 30	80	> 10	40	> 10	200	230	160	–	–	18	–	–	–	–				
H085	2	40	0.5	20	1	120	–	–	–	–	–	85	110	90	115				
H075	> 40	80	> 20	40	> 20	160	–	–	–	–	–	75	100	80	105				
R300	2	20	1	10	5	120	300	260	–	5	8	–	–	–	–				
R280	> 20	60	> 10	20	> 10	160	280	240	–	–	10	–	–	–	–				
R260	> 40	60	> 20	40	> 20	160	260	220	–	–	12	–	–	–	–				
H100	2	10	0.5	5	1	120	–	–	–	–	–	100	–	110	–				
R350	2	10	1	5	5	120	350	320	–	3	5	–	–	–	–				

Profiles												acc. to EN 13605			
Temper	Thickness	Width	Tensile strength $R_m$		Yield strength $R_{p0.2}$		Elongation %		Hardness						
	mm	mm	MPa		MPa		A100	A	HV		HB				
	max.	max.	min.	max.	min.	max.	min.	min.	min.	max.	min.	max.			
D	50	180	drawn												
H035	50	180	–	–	–	–	–	–	35	65	35	70			
R200	50	180	200	–	–	120	25	35	–	–	–	–			
H065	10	150	–	–	–	–	–	–	65	95	70	100			
R240	10	150	240	–	–	–	–	15	–	–	–	–			
H080	5	100	–	–	–	–	–	–	80	115	85	120			
R280	5	100	280	–	–	–	–	8	–	–	–	–			

Tubes												acc. to EN 13600			
Temper	Wall thickness		Tensile strength $R_m$		Yield strength $R_{p0.2}$		Elongation %		Hardness						
	mm		MPa		MPa		A	HV		HB					
	from	to	min.	max.	min.	max.	min.	min.	max.	min.	max.				
D	–	–	cold-finished without specified mechanical properties												
H035	–	40	–	–	–	–	–	–	35	60	35	65			
R200	–	40	200	250	–	120	35	–	–	–	–	–			
H065	–	20	–	–	–	–	–	–	60	90	65	95			
R250	–	20	250	300	150	–	15	–	–	–	–	–			
H090	–	10	–	–	–	–	–	–	85	105	90	110			
R290	–	10	290	360	250	–	5	–	–	–	–	–			
H100	–	5	–	–	–	–	–	–	95	–	100	–			
R360	–	5	360	–	320	–	(3)	–	–	–	–	–			