wieland

Wieland-K10

Cu-OFE

Material designation

EN	Cu-OFE
UNS	not standardized

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).

Chemical composition*

Cu	≥ 99.99 %

**Reference values in % by weight*

Physical properties*

Electrical conductivity	MS/m %IACS	≥ 58.6 ≥ 101
Thermal conductivity	W/(m·K)	> 394
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	17.7
Density	g/cm³	8.94
Moduls of elasticity	GPa	127

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

Surface treatment

Polishing	
mechanical electrolytic	good excellent
Electroplating	excellent

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.

Joining

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

Product standards

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

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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 square		Width square		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.	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	160	–	–	15	–	–	–	–
H080	5	100	–	–	–	–	–	80	115	85	120
R280	5	100	280	240	–	–	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)	–	–	–	–

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