Wieland-K32

Cu-ETP | Non deoxidized copper

Material designation

EN	Cu-ETP/ CW004A
UNS	C11000

Chemical composition*

Cu	≥ 99.99 %
with oxygen, not deoxidized O_2 max. 0.04 %	

**Reference values in % by weight*

Material properties and typical applications

Wieland-K32 is a copper with a low oxygen content. It exhibits good electrical and thermal conductivity. Due to the oxygen content its use at an elevated temperature in a reducing atmosphere is critical, especially if a hydrogen-containing atmosphere (hydrogen embrittlement) is concerned. This means there are certain restrictions during annealing as well as welding and soldering.

Physical properties*

Electrical conductivity	MS/m %IACS	≥ 57 ≥ 98
Thermal conductivity	W/(m·K)	> 385
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	17.7
Density	g/cm³	8.93
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	good
electrolytic	excellent
Electroplating	excellent

Joining

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

Heat treatment

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

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

Rod	EN 13601 EN 12165
Wire	EN 13601
Section	EN 13605
Tube	EN 13600

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Mechanical properties according to EN

Rod and wire — 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-drawn 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/Height	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	cold-drawn without specified mechanical properties								
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-drawn 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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