

Wieland-K12

Cu-HCP
Oxygen free copper



Material designation	
EN	Cu-HCP / CW021A
UNS	C10300

Chemical composition*	
Cu	≥ 99,95 %
P	0,002-0,007 %

deoxidized, oxygen free

* Reference values in % by weight

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/cm ³	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 inert character and are practically insensitive to stress corrosion cracking.

Product standards	
Rod	EN 13601
Wire	EN 13601
Section	EN 13605
Tube	EN 13600

Material properties and typical applications

Wieland-K12 is an oxygen free copper which is resistant during heat treatment in reducing atmosphere (resistant to hydrogen embrittlement according to EN ISO 2626). As the amount of phosphorus added for deoxidation is only limited, the material retains its high electrical and thermal conductivity. Joining operations such as soldering and welding are possible without restriction.

Types of delivery

The Extruded and Drawn Products Division 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	good
electrolytic	excellent
Electroplating	excellent

Heat treatment	
Melting range	1083 °C
Hot working	750–900 °C
Soft annealing	250–500 °C 1–3 h
Thermal stress relieving	150–200 °C 1–3 h

Wieland-K12

Cu-HCP

Oxygen free copper

Mechanical properties according to EN

Rods and Wires											acc. to EN 13601					
Temper	Diameter/ Distance across flat round, square, rectangular		Thickness		Width square		Tensile strength		Yield strength		Elongation		Hardness			
	mm from	mm to	mm from	mm to	mm from	mm to	R _m		R _{p0.2}		A100	A	HB		HV	
							MPa min.	MPa max.	MPa min.	MPa 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 mm max.	Width mm max.	Tensile strength		Yield strength		Elongation		Hardness					
			R _m		R _{p0.2}		A100	A	HB		HV			
			MPa min.	MPa max.	MPa min.	MPa 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		Yield strength		Elongation		Hardness					
	mm von	mm bis	R _m		R _{p0.2}		A		HB		HV			
			MPa min.	MPa max.	MPa min.	MPa 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)	–	–	–	–			

Wieland-Werke AG

www.wieland.com

Graf-Arco-Str. 36, 89079 Ulm, Germany, Phone +49 (0)731 944-0, Fax +49 (0)731 944-2772, info@wieland.de

This leaflet is for your general information only and is not subject to revision. No claims can be derived from it unless there is evidence of intent or gross negligence. The data presented is not guaranteed and does not replace expert advice.