

# Wieland-K20/21

Cu-DHP  
Deoxidized copper

# Extruded and drawn products



Material designation	
EN	Cu-DHP, CW024A
UNS	C12200

Chemical composition*	
Cu	≥ 99.90 %
P	0.015–0.040 %

deoxidized  
\* nach EN12449

Physical properties*		
Electrical conductivity	MS/m %IACS	> 45 > 77
Thermal conductivity	W/(m·K)	> 330
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	132

\* Reference values at room temperature

### Corrosion resistance

Resistant to industrial atmosphere, industrial and drinking water (max. flow rate approx. 1.5 to 2 m/s), pure water vapour, non oxidizing acids, alkalis (except for ammoniacal and cyanide-containing compounds), neutral saline solutions.

Not resistant to oxidizing acids, moist ammonia and halogenated gases, hydrogen sulphide, seawater.

Product standards	
Tube	EN 12449
Rod	EN 12165

### Material properties and typical applications

**Wieland-K20/K21** is a deoxidized copper with limited residual phosphorus content possessing excellent welding and hard soldering properties as well as resistance to hydrogen embrittlement. It also has excellent formability and is used where requirements for electrical conductivity are not high. K21 has a low level of impurities compared to K20 making it possible to achieve particularly low yield strength values for soft tubes.

### 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		Surface treatment	
Machinability (CuZn39Pb3 = 100 %)	20 %	<b>Polishing</b>	
Capacity for being cold worked	excellent	mechanical	good
Capacity for being hot worked	good	electrolytic	excellent
		Electroplating	excellent
Joining		Heat treatment	
Resistance welding (butt weld)	fair	Melting range	1083 °C
Inert gas shielded arc welding	excellent	Hot working	750–950 °C
Gas welding	good	Soft annealing	350–500 °C 1–3 h
Hard soldering	excellent	Thermal stress-relieving	150–200 °C 1–3 h
Soft soldering	excellent		

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## Mechanical properties according to EN

Tubes acc. to EN 12449									
Temper	Wall thickness mm max.	Tensile strength $R_m$ MPa min.	Yield strength		Elongation $A$ % min.	Hardness HV		HB	
			$R_{p0.2}$ MPa min.	MPa max.		min.	max.	min.	max.
M	20	–	–	–	–	–	–	–	–
R200	20	200	–	110	40	–	–	–	–
H040	20	–	–	–	–	40	65	35	60
R250	10	250	150	–	20	–	–	–	–
H070	10	–	–	–	–	70	100	65	95
R290	5	290	250	–	5	–	–	–	–
H095	5	–	–	–	–	95	120	90	115
R360	3	360	320	–	–	–	–	–	–
H110	3	–	–	–	–	110	–	105	–

Rods acc. to EN 12165				
Temper	Diameter		Hardness HB	
	mm from	mm to	min.	max.
M	all		as manufactured	
H040	6	160	40	–