

Wieland-K20/K21 is a deoxidised copper with limited residual phosphorus content exhibiting very good welding and brazing properties as well as resistance to hydrogen embrittlement. It is characterised by excellent formability. **K21** has a lower content of impurities than **K20**. This results in a particularly low yield strength for soft tubes. The chemical composition of both materials is within the respective standards for Cu-DHP.

Material designation	
EN	Cu-DHP
	CW024A
UNS*	C12200

* Unified Numbering System (USA)

Typical applications
Tubes for air conditioning and refrigeration, heating and solar engineering
Tubes for general applications

Chemical composition (DIN EN 12449)	
Cu	≥ 99.90 %
P	0.015–0.04 %

Physical properties*	
Thermal conductivity	W/(m·K) > 330
Density	g/cm ³ 8,94
Electrical conductivity	MS/m > 45 %IACS > 77

* Reference values at room temperature

Temper (DIN EN12449)	
R200	soft annealed
R250	halfhard
R360	hard

Fabrication properties	
Cold working	excellent
Electroplating	excellent
Hot-dip tinning	excellent
Machinability	poor

Mechanical properties (DIN EN 12449)			
Reference values (min.)	soft	halfhard	hard
R _m (N/mm ²)	200	250	360
R _{p0.2} (N/mm ²)	110 max.	150	320
A (%)	40	20	5
HV	40	70	110
HB	35	65	105

Compliance with the Pressure Equipment Directive 97/23/EC is possible on the basis of the relevant standards.**

Joining	
Brazing	excellent
Soft soldering	excellent
Inert gas shielded arc welding	excellent
Resistance welding	good
Laser welding	good

Corrosion resistance
Resistant to: industrial atmosphere, industrial and drinking water (max. flow velocity approx. 1.5 – 2 m/s), pure water vapour, non-oxidising acids, alkalis (with the exception of ammoniacal and cyanide-containing compounds), neutral saline solutions.
Not resistant to: oxidising acids, moist ammonia, halogenated gases, hydrogen sulphide and seawater.

Industrial tube sizes available				
Type of delivery		Outside diameter mm*	Manufacture	Temper
Straight lengths	plain	6–108	seamless	hard, halfhard or annealed
	inner-grooved	6–16	seamless	hard or annealed
Level-wound coils (LWC) (Coil weight up to 300 kg)	plain	4–28	seamless	hard or annealed
	inner-grooved	5–16	seamless	hard or annealed

* Wall thicknesses, further sizes and other tempers on request

Relevant standards and specifications**

- DIN EN 12449 Seamless, round tubes for general purposes
- DIN EN 12735-1 Seamless, round copper tubes for air conditioning and refrigeration – Part 1: Tubes for piping systems
- DIN EN 12735-2 Seamless, round copper tubes for air conditioning and refrigeration – Part 2: Tubes for equipment
- DIN EN 12451 Seamless, round tubes for heat exchangers
- DIN EN 12452 Rolled, finned, seamless tubes for heat exchangers
- Wieland R-1000 Plain copper tubes (soft) in level-wound coils
- Wieland R-1001 Plain copper tubes (hard) in level-wound coils
- Wieland R-1100 Inner-grooved copper tubes (soft) in level-wound coils