

# K18/K32

Cu-ETP | Non deoxidized copper

## Material designation

EN	Cu-ETP/ CW004A
UNS	C11000

## Chemical composition\*

Cu	≥ 99.99 %
with oxygen, not deoxidized	
O <sub>2</sub> max.	0.04 %

\*Reference values in % by weight

## Physical properties\*

Electrical conductivity	MS/m	≥ 57
	%IACS	≥ 98
Thermal conductivity	W/(m·K)	> 385
Thermal expansion coefficient (0–300 °C)		
	10 <sup>-6</sup> /K	17.7
Density	g/cm <sup>3</sup>	8.93
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 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

## Material properties and typical applications

**K18/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.

## 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		Surface treatment	
Machinability (CuZn39Pb3 = 100 %)	20 %	Polishing	
Capacity for being cold worked	excellent	mechanical	good
Capacity for being hot worked	fair	electrolytic	excellent
		Electroplating	excellent
Joining		Heat treatment	
Resistance welding (butt weld)	fair	Melting range	1,083 °C
Inert gas shielded arc welding	poor	Hot working	750–900 °C
Gas welding	poor	Soft annealing	250–500 °C 1–3 h
Hard soldering	good	Thermal stress relieving	150–200 °C 1–3 h
Soft soldering	excellent		

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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	–	–	–	15	–	–	–	–				
H080	5	100	–	–	–	–	–	80	115	85	120				
R280	5	100	280	–	–	–	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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