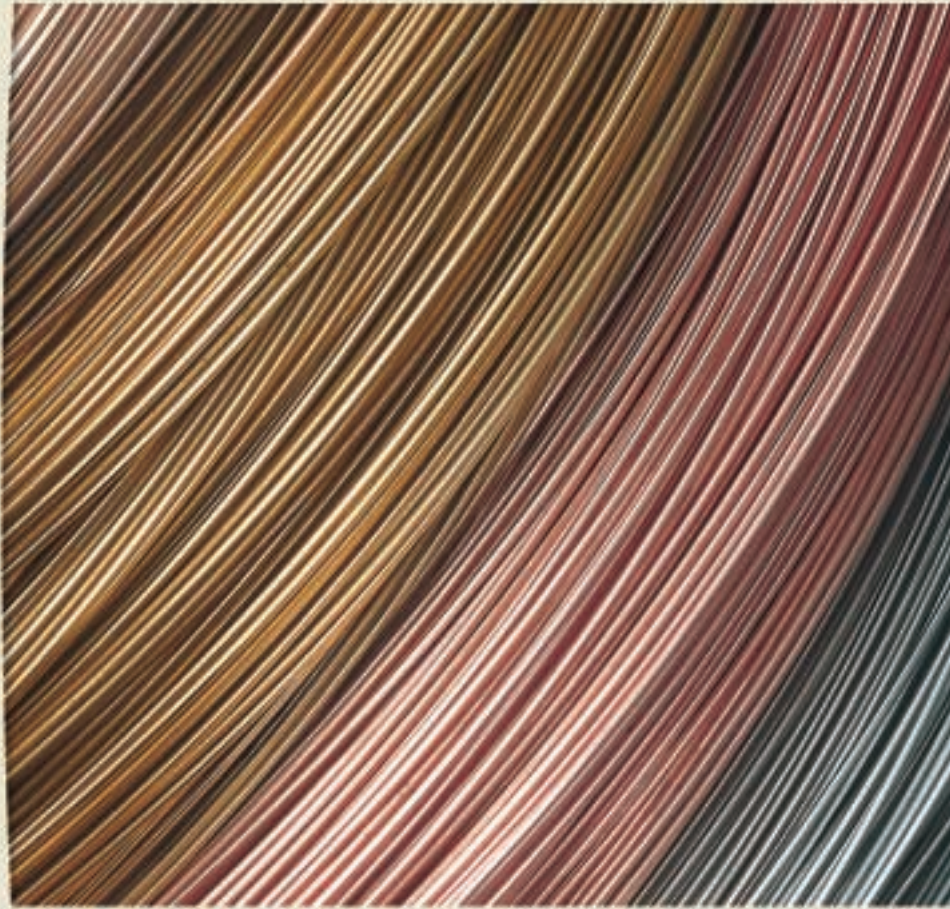


Wieland



High-performance
copper-alloy wire

Wieland

Company portrait

The Wieland Group headquartered in Ulm, Germany, is one of the world's leading manufacturers of semi-finished and special products in copper and copper alloys: strip, sheet, tube, rod, wire and sections as well as slide bearings, finned tubes and heat exchangers.

Wieland's roots go right back to the early 19th century. In 1820 its founder, Philipp Jakob Wieland, took over his uncle's art and bell foundry in Ulm, and by 1828 he was already producing brass sheet and wire.

Today, the Wieland Group comprises manufacturing companies, slitting centres and trading subsidiaries in many European countries as well as in the USA, South Africa, Singapore and the People's Republic of China.

Material competence



In Wieland's own foundries, every year several hundred thousand tons of material are continuously cast.

Looking back on 180 years of experience in copper alloys, today Wieland produces a total of about 150 different alloys.

Wire is available in a variety of standard and special copper materials.

- High copper alloys and copper-magnesium
- Bronze
- Brass
- Nickel silver and high strength special alloys

Dimensions

Ø 0.3 mm to 4.5 mm
 Ø 0.012 inch to 0.18 inch
 on request up to 14 mm/0.55 inch

Material designation				Tensile strength**	Electrical conductivity
Wieland	EN	UNS		MPa	% IACS
			Copper	360	100
K81	CuSn0.15	C14415	Improved strength, 85 % conductivity	500	85
KB9	CuSn0.3	n.n.	Improved strength, high conductivity	530	72
K88	CuCrAgFeTiSi*	C18080	High strength, high conductivity	640	80
K65	CuFe2P	C19400	Medium strength and conductivity	600	60
K55	CuNi3SiMg*	C70250	Highest strength, high thermal stability	790	35
KY1	CuMg0.1*	C15500		530	80
KY2	CuMg0.4	n.n.		740	62
B03	CuSn4	n.n.	Phosphor bronze	680	20
B05	CuSn5	C51000	Phosphor bronze 5 % A	680	17
B06	CuSn6	C51900	Phosphor bronze	740	16
B09	CuSn8	C52100	Phosphor bronze 8 % C	790	12
M15	CuZn15	C23000	Red brass	540	36
M20	CuZn20	C24000	Low brass	540	32
M30	CuZn30	C26000	Cartridge brass	630	28
M36	CuZn36	C27000	Yellow brass, also C27200	630	25
M38	CuZn37	C27400	Yellow brass 63 %	630	25
N22	CuNi12Zn24	C75700	Nickel silver 65-12	660	7
N29	CuNi18Zn20	C76400	Nickel silver	700	6
N39	CuNi12Zn25Pb	C79200	Leaded nickel silver	530	7
ΨLV7	CuNi20Mn20*	n.n.	Spray-formed, high strength alloy	>> 1000	2

*: Not specified in EN

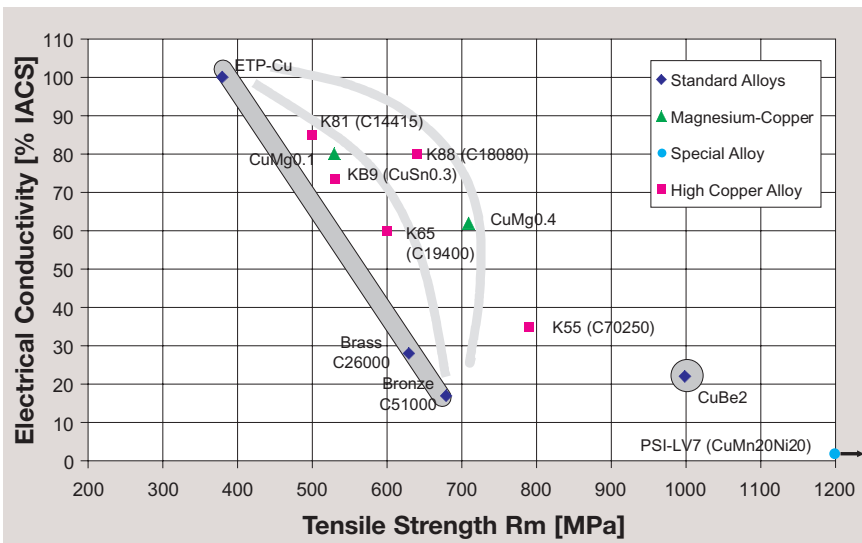
**.: Reference values of 2 mm (0.079 in) redraw wire

High-performance copper alloys for electronic wire

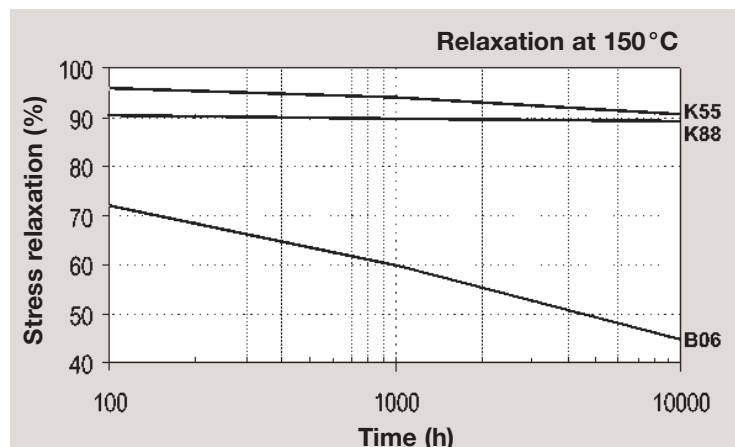
Electronic applications require material properties which sometimes are counteracting, such as electrical conductivity and mechanical strength. The Wieland alloy variety enables the customer to choose the optimum combination.

Commonly used materials are copper, bronze, brass and beryllium-copper. Due to metallurgical know-how and the results of R&D activities Wieland is able to offer a variety of additional alloys. Some of these alloys are substitutes for alloys with hazardous elements.

New developments are the precipitation hardening alloys K55 and K88 which combine a considerable strength increase compared to copper and reasonable electrical conductivity. Additionally they show higher resistance to stress relaxation and softening.

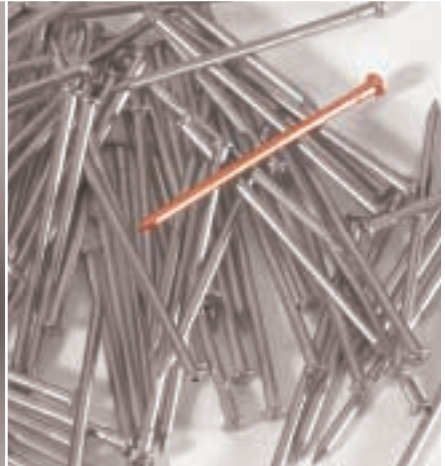


Also available is the high strength material Ψ LV7 (CuNi20Mn20) made by the high-tech manufacturing process spray forming. This alloy is precipitation hardenable as well. Its strength is very high, reaching values of more than 1000 MPa in the annealed condition.



Applications

Wieland's customers are redrawers as well as manufacturers in the automotive, telecommunications, computer and other industries. They produce connector pins, stranded wire, EDM wire, wire braids e. g. for filters, springs, cold forged parts, welding wire, wire brushes, ballpen tips and more.



High-performance free cutting copper alloys

Many applications require machining of small diameter wire and rods. Sometimes either the strength or the electrical conductivity of standard leaded brass is too low. Then a high-performance free cutting copper alloy is appropriate. These materials combine good machinability with high strength or excellent electrical conductivity.



Material designation				Tensile strength*	Electrical conductivity	Machinability
Wieland	EN	UNS		MPa	% IACS	%
			Copper	360	100	
			Leaded brass	520	25	100
KC1	CuPb1	C18700	Free machining copper		> 85	70
			Ø 2 - 4 mm	380		
			Ø 4 - 6 mm	350		
			> Ø 6 mm	330		
K41	CuNi1Pb1	C19160	High strength free machining copper		> 55	70
			Ø 2 - 4 mm	650		
			Ø 4 - 6 mm	600		
			> Ø 6 mm	550		
B44	CuSn4Pb4Zn4	C54400	Phosphor bronze B-2		19	90
			Ø 2 - 4 mm	750		
			Ø 4 - 6 mm	600		
			Ø 6 - 12 mm	500		
			> Ø 12 mm	< 500		

*: Reference values achievable with standard production

Wieland

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