

**Wieland**

**WICONNEC<sup>®</sup>**

**Materials for joining technology  
and electronics**



## Company profile

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

Wieland's history dates back to the early 19th century. The founder Philipp Jakob Wieland took over his uncle's art and bell foundry in Ulm in 1820 and by 1828 he was producing brass sheet and wire. In 1865 the Vöhringen plant started production. Over the years further branches were opened in Germany and abroad.

The Wieland Group has today several manufacturing companies, slitting centres and trading subsidiaries in many European countries as well as in USA, South Africa, Singapore and China.



## WICONNEC®

WICONNEC® alloys are free-cutting copper and bronze materials. They have been specially developed for connectors which are produced by machining and have to meet different requirements regarding high strength and high electrical conductivity.

The **WICONNEC®** family of alloys comprises

- **WICONNEC®-K41** (CuNi1Pb1P) - C19160
- **WICONNEC®-K44\*** (CuNi1Pb0.5P) - C19140
- **WICONNEC®-KC1** (CuPb1P) - CW113C - C18700
- **WICONNEC®-B44** (CuSn4Zn4Pb4P) - CW456K - C54400

On request, selected lead-containing machining brasses known in joining technology can be supplied with the property profile offered by the WICONNEC® alloys.

\* *under development*



## Properties and requirements

**WICONNEC®-alloys** meet the requirements of the RoHS Directive; 1 to 4 % lead is homogeneously distributed in the microstructure.

**WICONNEC®-standard** ensures a maximum diameter variation of 2 µm over the rod length and 5 µm within a bundle and 10 µm within a box.

**WICONNEC®-rods** meet the tolerance h8 with a maximum guaranteed out-of-roundness of 0.1 % of the rod diameter.

**WICONNEC®-K41/-K44** and **WICONNEC®-B44** meet the requirements of the contact retention test (CECC22140).

## Applications

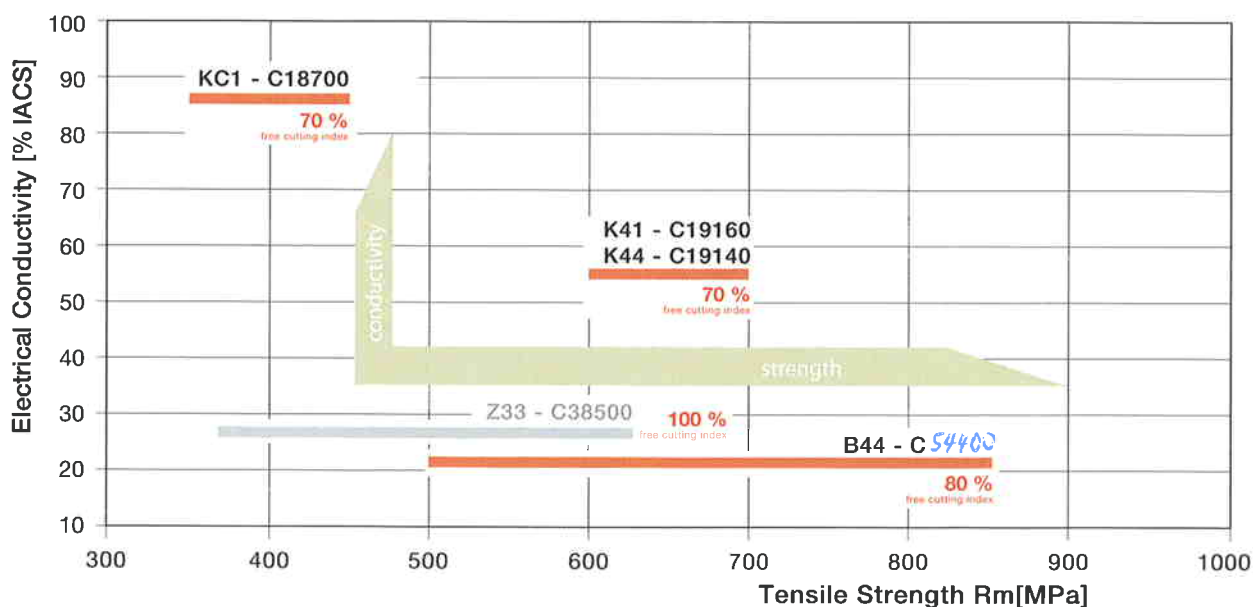
**WICONNEC®-KC1** - connectors requiring high electrical conductivity.

**WICONNEC®-K41** - connectors requiring high strength and good spring properties.

**WICONNEC®-K44** - for applications similar to those of K41, recommended when there are cold-forging processes during production.

**WICONNEC®-B44** - connectors requiring very high strength and outstanding spring properties.

Properties	WICONNEC®-KC1	WICONNEC®-K41/-K44	WICONNEC®-B44
Composition [wt%]	Pb 1; P 0.01; Cu balance	Ni 1; Pb 1; P 0.25; Cu balance	Sn 4; Zn 4; Pb 4; P 0.2; Cu balance
Material designation [EN]	CuPb1P / CW113C	not standardized	CW456K CuSn4Pb4Zn4
Material designation [UNS]	not standardized	C19160	C54400
Product standards	EN 12164 rods	–	EN 12164 rod
Machinability [%] (CuZn39Pb3 = 100 %)	70	70	80
Formability cold / hot	good	good	good
Electrical conductivity [% IACS]	86	> 55	21
Thermal conductivity [W/(mK)]	356	245	86,5
Tensile strength [MPa]	350 - 450	600 - 700	500 - 850
Yield strength R <sub>p0.2</sub> [MPa]	340	550	350 - 700
Elongation A <sub>5</sub> [%]	8	5	6
Hardness HB	120	170	150
Types of delivery	WICONNEC®-KC1	WICONNEC®-K41/-K44	WICONNEC®-B44
Round rods	1,5 – 25	1,5 – 18	1,5 – 20
Polygonal rods/wires	2 – 12	2 – 8	2 – 10
Round wires	1,5 – 12	1,5 – 8	1,5 – 10



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