

**Wieland-N32**  
CuNi12Zn30Pb1  
Nickel silver

**Extruded and  
drawn products**



Material designation	
EN	CuNi12Zn30Pb1 CW406J
UNS	not standardized

Chemical composition*	
Cu	57%
Ni	12%
Pb	1%
Zn	balance

\* Reference values in % by weight

Physical properties*		
Electrical conductivity	MS/m %IACS	4.2 7
Thermal conductivity	W/(m·K)	42
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	18.2
Density	g/cm <sup>3</sup>	8.62
Modulus of elasticity	GPa	120

\* Reference values at room temperature

**Corrosion resistance**

Nickel silver generally exhibits good corrosion resistance to atmospheric influences, organic substances (perspiration, environmental influences) as well as alkaline and neutral saline solutions.

Product standards	
Rod	EN 12164
Wire	EN 12166

**Material properties and typical applications**

**Wieland-N32** is a silver-coloured alloy for machining purposes that provides good resistance to tarnishing. It is particularly suitable for the combination of machining and cold working. Nickel silver is characterized by good temperature resistance, as required for welding and soldering.

**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	
Machinability (CuZn39Pb3 = 100 %)	70 %
Capacity for being cold worked	fair
Capacity for being hot worked	poor

Joining	
Resistance welding (butt weld)	good
Inert gas shielded arc welding	fair
Gas welding	poor
Hard soldering	fair
Soft soldering	excellent

Surface treatment	
<b>Polishing</b>	
mechanical	good
electrolytic	fair
Electroplating	good

Heat treatment	
Melting range	998–1040 °C
Hot working	850–925 °C
Soft annealing	600–700 °C 1–3 h
Thermal stress relieving	300–400 °C 1–3 h

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## Mechanical properties according to EN

### Round rods / polygonal rods acc. to EN 12164

Temper	Diameter		Width across flat		Tensile strength	Yield strength	Elongation at rupture			Hardness	
	mm from	mm to	mm from	mm to	$R_m$	$R_{p0.2}$	A100	A11.3	A	HB	
					MPa min.	MPa min.	% min.	% min.	% min.	min.	max.
M	all		all		as manufactured – without specified mechanical properties						
R420	2	50	2	50	420	260	12	16	20	–	–
H110	2	50	2	50	–	–	–	–	–	110	145
R520	2	10	2	10	520	420	3	5	6	–	–
H130	2	10	2	10	–	–	–	–	–	130	155
R650	2	8	2	8	650	580	–	–	–	–	–
H150	2	8	2	8	–	–	–	–	–	150	180

### Round wires acc. to EN 12166

Temper	Diameter		Tensile strength	Yield strength	Elongation at rupture			Hardness		
	mm from	mm to	$R_m$	$R_{p0.2}$	A100	A11.3	A	HV		
			MPa min.	MPa min.	% min.	% min.	% min.	min.	max.	
M	all		as manufactured – without specified mechanical properties							
R420	1.5	12	420	260	–	12	16	20	–	–
H115	1.5	12	–	–	–	–	–	–	115	155
R520	1.5	10	520	420	–	3	5	6	–	–
H135	1.5	10	–	–	–	–	–	–	135	165
R650	1.5	8	650	580	–	–	–	–	–	–
H160	1.5	8	–	–	–	–	–	–	160	190