

# Wieland-N29

CuNi18Zn20  
Nickel silver (lead free)

## Extruded and drawn products



Material designation	
EN	CuNi18Zn20 CW409J
UNS	not standardized

Chemical composition*	
Cu	62%
Ni	18%
Pb	< 0,03%
Zn	balance

\* Reference values in % by weight

Physical properties*		
Electrical conductivity	MS/m %IACS	3.6 6
Thermal conductivity	W/(m·K)	30
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	16.5
Density	g/cm <sup>3</sup>	8.73
Modulus of elasticity	GPa	132

\* 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 12163
Wire	EN 12166
Section	EN 12167
Tube	EN 12449

**Werkstoffeigenschaften und typische Anwendungen**  
**Wieland-N29** is a lead-free nickel silver which has a silvery colour and good resistance to tarnishing due to its high nickel content. Being a single-phase material, it exhibits excellent cold working properties. Also very high mechanical strength can be achieved. Nickel silver is characterized by good temperature resistance necessary for welding and soldering. **Wieland-N29** is mainly used in the optical industry (spectacle arms, hinges).

**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	
<b>Forming</b>	
Machinability (CuZn39Pb3 = 100 %)	25 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair
<b>Joining</b>	
Resistance welding (butt weld)	excellent
Inert gas shielded arc welding	fair
Gas welding	fair
Hard soldering	excellent
Soft soldering	excellent
<b>Surface treatment</b>	
<b>Polishing</b>	
mechanical	excellent
electrolytic	excellent
Electroplating	excellent
<b>Heat treatment</b>	
Melting range	1050–1100 °C
Hot working	900–980 °C
Soft annealing	600–750 °C 1–3 h
Thermal stress relieving	300–400 °C 1–3 h

**Trademarks**  
*scriptoline*<sup>®</sup>  
Further information is provided in our brochure SCRIPTOLINE.

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## Mechanical properties according to EN

### Round rods / polygonal rods acc. to EN 12163

Temper	Diameter		Width across flat		Tensile strength	Yield strength		Elongation at rupture			Hardness	
	mm from	mm to	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	A11.3 %	A %	HB	
											min.	max.
M	all		all		as manufactured – without specified mechanical properties							
R400	2	50	2	50	400	–	290	25	30	35	–	–
H095	2	50	2	50	–	–	–	–	–	–	95	135
R480	2	40	2	40	480	250	–	7	9	11	–	–
H140	2	40	2	40	–	–	–	–	–	–	140	175
R580	2	10	2	10	580	400	–	–	–	–	–	–
H170	2	10	2	10	–	–	–	–	–	–	170	210
R660	2	4	2	4	660	550	–	–	–	–	–	–
H200	2	4	2	4	–	–	–	–	–	–	200	–

### Rectangular rods acc. to EN 12167

Temper	Thickness		Tensile strength	Yield strength	Elongation at rupture			Hardness		
	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min.	A100 %	A11,3 %	A %	HB		
					min.	min.	min.	min.	max.	
M	all		as manufactured – without specified mechanical properties							
R480	6	40	480	250	–	9	11	–	–	
H140	6	40	–	–	–	–	–	140	175	
R580	3	6	580	400	–	–	–	–	–	
H170	3	6	–	–	–	–	–	170	210	

### Tubes acc. to EN 12449

Temper	Wallthickness mm max.	Tensile strength	Yield strength		Elongation at rupture		Hardness			
		R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	HV		HB		
					min.	min.	min.	max.	min.	max.
M	20	–	as manufactured – without specified mechanical properties							
R340	10	340	–	290	45	–	–	–	–	–
H075	10	–	–	–	–	75	110	70	105	–
R420	5	420	240	–	25	–	–	–	–	–
H110	5	–	–	–	–	110	140	105	135	–
R490	3	490	390	–	10	–	–	–	–	–
H135	3	–	–	–	–	135	–	130	–	–

### Round wires acc. to EN 12166

Temper	Diameter		Tensile strength	Yield strength	Elongation at rupture			Hardness		
	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min.	A100 %	A11.3 %	A %	HV		
					min.	min.	min.	min.	max.	
M	all		as manufactured – without specified mechanical properties							
R400	1.5	20	400	–	290	25	30	35	–	–
H105	1.5	20	–	–	–	–	–	–	105	145
R480	0.1	12	480	250	–	7	9	11	–	–
H145	1.5	12	–	–	–	–	–	–	145	185
R580	0.1	10	580	400	–	2	3	5	–	–
H180	1.5	10	–	–	–	–	–	–	180	220
R660	0.1	4	660	550	–	–	–	–	–	–
H210	1.5	4	–	–	–	–	–	–	210	–
R800	0.1	1.5	800	750	–	–	–	–	–	–
H230	–	1.5	–	–	–	–	–	–	230	–