

Wieland-N29

CuNi18Zn20 | Lead free nickel silver

Material designation

EN	CuNi18Zn20 CW409J
UNS	not standardized

Chemical composition*

Cu	62 %
Ni	18 %
Pb	< 0.01 %
Zn	balance

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m	3.6
	%IACS	6
Thermal conductivity	W/(m·K)	30
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	16.5
Density	g/cm ³	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

Material properties and typical applications

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 (temple, hinges).

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

Machinability (CuZn39Pb3 = 100 %)	25 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair

Surface treatment

Polishing	
mechanical	excellent
electrolytic	excellent
Electroplating	excellent

Joining

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

Heat treatment

Melting range	1,050–1,100 °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[®]

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 flats		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm		mm		MPa	MPa		A100	A11.3	A	HB		
	from	to	from	to	min.	min.	max.	min.	min.	min.	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 R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm		MPa	MPa		A100	A11.3	A	HB		
	from	to	min.	min.	max.	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	125	
R580	3	6	580	400	–	–	–	–	–	–	
H170	3	6	–	–	–	–	–	170	210	165	

Tubes acc. to EN 12449

Temper	Wall thickness	Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm	MPa	MPa		A100			HV		HB
	max.	min.	min.	max.	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	–	–	–	–	
H119	5	–	–	–	–	110	140	105	135	
R490	3	490	390	–	10	–	–	–	–	
H170	3	–	–	–	–	135	–	130	–	

Round wires acc. to EN 12166

Temper	Diameter		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm		MPa	MPa		A100	A11.3	A	HB		
	from	to	min.	min.	max.	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	–	