wieland

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 %IACS	3.6 6
Thermal conductivity	W/(m·K)	30
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	16.5
Density	g/cm³	8.73
Moduls 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).

The material composition meets the requirements of the CPSIA.

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 electrolytic	 excellent 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	–

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