

Wieland-N29 Nickel silver (lead-free)

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).

Extruded/drawn products

Chemical composition*

Cu	62%
Ni	18%
Zn	balance

* Reference values in % by weight

Material designation

EN	CuNi18Zn20 CW409J
UNS	not standardized
DIN*	CuNi18Zn20, 2.0740
BS*	NS106
NF*	CuNi18Zn20

* Former national standards

Physical properties*

Electrical conductivity	MS/m	3.6
	% IACS	2
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
1 GPa = 1 kN/mm²
1 MS/m = 1 m/Ω • mm²

Fabrication properties

Forming

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

Joining

Resistance welding	excellent
Inert gas shielded arc welding	excellent
Hard soldering	excellent
Soft soldering	excellent

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.

Surface treatment

Polishing	mechanical	excellent
	electrolytic	excellent
Electroplating		excellent

Heat treatment

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

Product standards

Rod	EN 12163
Wire	EN 12166
Section	EN 12167
Tube	EN 12449

Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft/extruded)	to (hard)
R _m [MPa]	430	1060
R _{p0.2} [MPa]	150	960
A ₅ [%]	50	2
HB	100	190

(Values achievable with wire)

Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
N29	CuNi18Zn20	CW409J	10	50	0.2	5				
Round tubes			10	50	0.2	5				
Drawn sections							2.5	20		
Extruded sections										
Sectional tubes								50		
Round and polygonal rods									2	42
Round wires									0.3	
Polygonal wires									2	

All values in mm

* Depending on the form, cross-sections in the lower size range are also available as wire.

Wieland - N29

Wieland

Wieland-Werke AG

89070 Ulm

Germany

Telephone:

+49 (0) 731 944 - 0

Telefax:

+49 (0) 731 944 - 28 79

info@wieland.de

www.wieland.de

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