

Wieland-N22

Nickel silver (lead-free)

Extruded/drawn products

Wieland-N22 is silver-coloured and provides good resistance to tarnishing. It is a single-phase alloy and therefore exhibits excellent cold working properties. High strength can be achieved. Characteristic of nickel silver is good temperature resistance which is necessary for welding and soldering. Wieland-N22 is used, i.a., in the optical industry (spectacle components).

Chemical composition*

Cu	65.5%
Ni	12%
Zn	balance

* Reference values in % by weight

Material designation

EN	CuNi12Zn24
	CW403J
UNS	C75700
DIN*	CuNi12Zn24, 2.0730
BS*	NS104
NF*	CuNi12Zn24

* Former national standards

Physical properties*

Electrical conductivity	MS/m	4.4
	% IACS	7
Thermal conductivity	W/(m*K)	42
Thermal expansion coefficient (0-300°C)	10 ⁻⁶ /K	18
Density	g/cm ³	8.67
Modulus of elasticity	GPa	125

* 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	1020-1065 °C
Hot working	820-950 °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]	400	910
R _{p0.2} [MPa]	180	740
A ₁₀ [%]	45	2
HB	90	160

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
N22	CuNi12Zn24	CW403J	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	

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All values in mm

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

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