

Wieland-N37

CuNi18Zn19Pb1 | Nickel silver (lead)

Material designation

EN CuNi18Zn19Pb1
CW408J

UNS not standardized

Chemical composition*

Cu 60 %

Ni 17.5 %

Pb 1 %

Zn balance

*Reference values in % by weight

Material properties and typical applications

Wieland-N37 is a nickel silver for machining purposes with a silvery colour and good resistance to tarnishing. It is particularly suitable for the combination of machining and cold working. High mechanical strength can be achieved with this alloy. Nickel silver is characterized by good temperature stability, as required for welding and soldering. Wieland-N37 is mainly used in the optical industry (spectacle hinges).

Physical properties*

Electrical conductivity MS/m 3.2
%IACS 5

Thermal conductivity W/(m·K) 33

Thermal expansion coefficient (0–300 °C) 10⁻⁶/K 17.1

Density g/cm³ 8.74

Modulus of elasticity GPa 130

*Reference values at room temperature

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 temps.

Fabrication properties

Forming

Machinability 60 %
(CuZn39Pb3 = 100 %)

Capacity for being cold worked fair

Capacity for being hot worked poor

Surface treatment

Polishing

mechanical good
electrolytic fair

Electroplating good

Corrosion resistance

In general excellent resistance to corrosion in seawater, industrial atmosphere and to stress corrosion cracking.

Joining

Resistance welding (butt weld) good

Inert gas shielded arc welding fair

Gas welding poor

Hard soldering fair

Soft soldering excellent

Heat treatment

Melting range 1,050–1,100 °C

Hot working 900–975 °C

Soft annealing 600–700 °C
1–3 h

Thermal stress relieving 300–400 °C
1–3 h

Product standards

Rod EN 12164

Wire EN 12166

Section EN 12167

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Mechanical properties according to EN

Round rods/polygonal rods											acc. to EN 12164	
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.	min.	min.	min.	min.	max.	
M	all		all		as manufactured – without specified mechanical properties							
R420	2	50	2	50	420	260	12	16	20	–	–	
H110	2	50	2	50	–	–	–	–	–	110	145	
R520	2	10	2	10	520	420	3	5	6	–	–	
H130	2	10	2	10	–	–	–	–	–	130	155	
R650	2	8	2	8	650	580	–	–	–	–	–	
H150	2	8	2	8	–	–	–	–	–	150	180	

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	to	min.	min.	min.	min.	min.	min.	max.		
M	all			as manufactured – without specified mechanical properties								
R420	6		50	420	260	–	16	20	–	–		
H110	6		50	–	–	–	–	–	110	145		
R520	3		6	520	420	–	3	–	–	–		
H130	3		6	–	–	–	–	–	130	155		

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									
R420	1.5	12	420	260	–	12	16	20	–	–		
H115	1.5	12	–	–	–	–	–	–	115	155		
R520	1.5	10	520	420	–	3	5	6	–	–		
H135	1.5	10	–	–	–	–	–	–	135	165		
R650	1.5	8	650	580	–	–	–	–	–	–		
H160	1.5	8	–	–	–	–	–	–	160	190		