

Wieland-N31

CuNi7Zn39Pb3Mn2 | Nickel silver (leaded)

Material designation

EN CuNi7Zn39Pb3Mn2
CW400J

UNS not standardized

Chemical composition*

Cu 49 %

Ni 7 %

Pb 3 %

Mn 2 %

Zn balance

*Reference values in % by weight

Physical properties*

Electrical conductivity MS/m 3
%IACS 5

Thermal conductivity W/(m·K) 30

Thermal expansion coefficient (0–300 °C) 10⁻⁶/K 19.5

Density g/cm³ 8.44

Modulus of elasticity GPa 120

*Reference values at room temperature

Corrosion resistance

Nickel silver generally exhibits relatively good corrosion resistance to atmospheric influences, organic substances (perspiration, environmental influences) as well as alkaline and neutral saline solutions.

Product standards

Rod EN 12164
EN 12165

Wire EN 12166

Section EN 12167

Material properties and typical applications

Wieland-N31 is a nickel silver with excellent machining properties making it possible to achieve high mechanical strength. Thanks to good hot working properties, complex shapes of semifinished products can be realized during extruding already.

Wieland-N31 has a silvery colour with a yellowish hue. It is highly suitable for manufacturing a wide variety of sections, precision turned and hot stamped parts requiring higher mechanical strength and higher corrosion resistance than for brass.

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 tempsers.

Fabrication properties

Forming

Machinability 95 %
(CuZn39Pb3 = 100 %)

Capacity for being cold worked poor

Capacity for being hot worked good

Surface treatment

Polishing

mechanical good
electrolytic poor

Electroplating good

Joining

Resistance welding (butt weld) good

Inert gas shielded arc welding fair

Gas welding poor

Hard soldering fair

Soft soldering good

Heat treatment

Melting range 850–900 °C

Hot working 700–800 °C

Soft annealing 600–700 °C
1–3 h

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

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 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								
R500	2	40	2	40	500	350	8	10	12	-	-		
H125	2	40	2	40	-	-	-	-	-	125	165		
R600	2	20	2	20	600	400	2	3	5	-	-		
H155	2	20	2	20	-	-	-	-	-	155	190		
R700	2	5	2	4	700	500	-	-	-	-	-		
H180	2	5	2	4	-	-	-	-	-	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								
R600	6	20	20	600	400	-	5	8	-	-		
H155	6	20	20	-	-	-	-	-	155	190		
R700	3	6	6	700	500	-	-	-	-	-		
H180	3	6	6	-	-	-	-	-	180	-		

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									
H115	1.5	12	-	-	-	-	-	-	115	-		
R500	1.5	12	500	350	-	8	10	12	-	-		
H130	1.5	12	-	-	-	-	-	-	130	170		
R600	1.5	12	600	400	-	2	3	5	-	-		
H165	1.5	12	-	-	-	-	-	-	165	200		
R700	1.5	5	700	500	-	-	-	-	-	-		
H190	1.5	5	-	-	-	-	-	-	190	-		