

**Wieland-N31**  
CuNi7Zn39Pb3Mn2  
Nickel silver (lead)

**Extruded and drawn products**



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 %IACS	3 5
Thermal conductivity	W/(m·K)	30
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	19.5
Density	g/cm <sup>3</sup>	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 Extruded and Drawn Products Division 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		Surface treatment	
Machinability (CuZn39Pb3 = 100 %)	95 %	<b>Polishing</b>	
Capacity for being cold worked	poor	mechanical	good
Capacity for being hot worked	good	electrolytic	poor
		Electroplating	good
Joining		Heat treatment	
Resistance welding (butt weld)	good	Melting range	850–900 °C
Inert gas shielded arc welding	fair	Hot working	700–800 °C
Gas welding	poor	Soft annealing	600–700 °C 1–3 h
Hard soldering	fair	Thermal stress relieving	300–400 °C 1–3 h
Soft soldering	good		

**Trademarks**

*scriptoline*<sup>®</sup>

Further information is provided in our brochure SCRIPTOLINE.

# Wieland-N31

CuNi7Zn39Pb3Mn2

Nickel silver (lead)

## Mechanical properties according to EN

### Round rods / polygonal rods

acc. to EN 12164

Temper	Diameter		Width across flat		Tensile strength	Yield strength	Elongation at rupture			Hardness	
	mm from	mm to	mm from	mm to	$R_m$	$R_{p0,2}$	A100	A11.3	A	HB	
					MPa min.	MPa 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	Yield strength	Elongation at rupture			Hardness	
	mm from	mm to	$R_m$	$R_{p0,2}$	A100	A11.3	A	HB	
			MPa min.	MPa min.	% min.	% min.	% min.	min.	max.
M	all		as manufactured – without specified mechanical properties						
R600	6	20	600	400	–	5	8	–	–
H155	6	20	–	–	–	–	–	155	190
R700	3	6	700	500	–	–	–	–	–
H180	3	6	–	–	–	–	–	180	–

### Round wires

acc. to EN 12166

Temper	Diameter		Tensile strength	Yield strength	Elongation at rupture			Hardness	
	mm from	mm to	$R_m$	$R_{p0,2}$	A100	A11.3	A	HV	
			MPa min.	MPa min.	% 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	–