

**Wieland-N22**  
CuNi12Zn24  
Lead free nickel silver

**Extruded and  
drawn products**



Material designation	
EN	CuNi12Zn24 CW403J
UNS	C75700

Chemical composition*	
Cu	65,5 %
Ni	12 %
Zn	balance

\* Reference values in % by weight

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

\* Reference values at room temperature

**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.

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

**Material properties and typical applications**

**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).

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

Joining	
Resistance welding (butt weld)	excellent
Inert gas shielded arc welding	fair
Gas welding	fair
Hard soldering	excellent
Soft soldering	excellent

Surface treatment	
<b>Polishing</b>	
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

**Trademarks**



Further information is provided in our brochure SCRIPTOLINE.

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## Mechanical properties according to EN

Round rods / polygonal rods											acc. to EN 12163	
Temper	Diameter		Width across flat		Tensile strength	Yield strength		Elongation at rupture			Hardness	
	mm from	mm to	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	A11.3 %	A %	HB	
											min.	max.
M	all		all		as manufactured – without specified mechanical properties							
R380	2	50	2	50	380	–	290	28	33	38	–	–
H085	2	50	2	50	–	–	–	–	–	–	85	125
R450	2	40	2	40	450	200	–	8	10	12	–	–
H125	2	40	2	40	–	–	–	–	–	–	125	150
R540	2	10	2	10	540	400	–	2	3	5	–	–
H160	2	10	2	10	–	–	–	–	–	–	160	190
R640	2	4	2	4	640	500	–	–	–	–	–	–
H190	2	4	2	4	–	–	–	–	–	–	190	–

Rectangular rods											acc. to EN 12167	
Temper	Thickness		Tensile strength	Yield strength		Elongation at rupture			Hardness			
	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	A11,3 %	A %	HB			
									min.	max.		
M	all		as manufactured – without specified mechanical properties									
R450	6	40	450	200	–	10	12	–	–	–		
H125	6	40	–	–	–	–	–	–	125	150		
R540	3	6	540	400	–	2	–	–	–	–		
H160	3	6	–	–	–	–	–	–	160	190		

Tubes											acc. to EN 12449	
Temper	Wallthickness mm max.	Tensile strength	Yield strength		Elongation at rupture		Hardness		HB			
		R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	HV		min.	max.			
									min.	max.		
M	20	–	as manufactured – without specified mechanical properties									
R340	10	340	–	290	45	–	–	–	–	–		
H075	10	–	–	–	–	75	110	70	105	–		
R420	5	420	240	–	25	–	–	–	–	–		
H110	5	–	–	–	–	110	140	105	135	–		
R490	3	490	390	–	10	–	–	–	–	–		
H135	3	–	–	–	–	135	–	130	–	–		

Round wires											acc. to EN 12166	
Temper	Diameter		Tensile strength	Yield strength		Elongation at rupture			Hardness			
	mm from	mm to	R <sub>m</sub> MPa min.	R <sub>p0,2</sub> MPa min. max.		A100 %	A11.3 %	A %	HV			
									min.	max.		
M	all		as manufactured – without specified mechanical properties									
R380	1.5	20	380	–	290	28	33	38	–	–		
H090	1.5	20	–	–	–	–	–	–	90	130		
R450	1.5	12	450	200	–	8	10	12	–	–		
H130	1.5	12	–	–	–	–	–	–	130	160		
R540	0.1	10	540	400	–	2	3	5	–	–		
H170	1.5	10	–	–	–	–	–	–	170	200		
R640	0.1	4	640	500	–	–	–	–	–	–		
H200	1.5	4	–	–	–	–	–	–	200	–		
R800	0.1	1.5	800	700	–	–	–	–	–	–		
H220	–	1.5	–	–	–	–	–	–	220	–		

Wieland-Werke AG

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