

Wieland-N22

CuNi12Zn24 | Lead free nickel silver

Material designation

EN CuNi12Zn24
CW403J

UNS C75700

Chemical composition*

Cu 65.5 %

Ni 12 %

Pb ≤ 0.0100 %

Zn balance

*Reference values in % by weight

Physical properties*

Electrical conductivity MS/m 4.4
%ACS 7

Thermal conductivity W/(m·K) 42

Thermal expansion coefficient (0–300 °C) 10⁻⁶/K 18

Density g/cm³ 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).

The material composition meets the requirements of the CPSIA.

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 tempers.

Fabrication properties

Forming

Machinability 25 %
(CuZn39Pb3 = 100 %)

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

Polishing

mechanical excellent
electrolytic excellent

Electroplating excellent

Heat treatment

Melting range 1,020–1,065 °C

Hot working 820–950 °C

Soft annealing 600–750 °C
1–3 h

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

Trademarks

scriptoline[®]

Further information is provided in our brochure Scriptoline.

Wieland-N22

CuNi21Zn24 | Lead free nickel silver

Mechanical properties according to EN

Round rods / polygonal rods												acc. to EN 12163	
Temper	Diameter		Width across flat		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.	max.	min.	min.	min.	min.	max.	
M	alle		alle		wie gefertigt – ohne Vorgabe mechanischer Werte								
R308	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	–	–	
H170	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	Thicknes		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	alle		wie gefertigt – ohne Vorgabe mechanischer Werte								
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		Tensile strength R _m	Yield strength R _{p0,2}		Elongation %			Hardness		
	mm		MPa	MPa		A100	HB				
	max.	min.	min.	min.	max.	min.	min.	max.	min.	max.	
M	20		wie gefertigt – ohne Vorgabe mechanischer Werte								
R380	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 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	alle		wie gefertigt – ohne Vorgabe mechanischer Werte									
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	–		

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