

Wieland-M10/11

CuZn10 | Brass (lead free)

Material designation

EN	CuZn10 CW501L
UNS	C22000

Chemical composition*

Cu	90 %
Pb	< 0.05 %
Zn	balance

*Reference values in % by weight

Material properties and typical applications

Wieland-M10/11 has excellent cold working properties due to its very high copper content.

It is highly suited for stamping, riveting, crimping, flanging, cold extruding or other cold working operations. It is used, for example, in the jewellery industry.

Physical properties*

Electrical conductivity	MS/m %IACS	24.7 42
Thermal conductivity	W/(m·K)	184
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	18.2
Density	g/cm ³	8.8
Modulus of elasticity	GPa	124

*Reference values at room temperature

Types of delivery

The BU Global Extruded & Cast 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 (CuZn39Pb3 = 100 %)	20 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair

Surface treatment

Polishing	
mechanical	excellent
electrolytic	excellent
Electroplating	excellent

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	good
Gas welding	good
Hard soldering	excellent
Soft soldering	excellent

Heat treatment

Melting range	1025–1045°C
Hot working	750–900 °C
Soft annealing	450–600 °C 1–3 h
Thermal stress relieving	200–300 °C 1–3 h

Product standards

Rod	EN 12163
Wire	EN 12166
Tube	EN 12449

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Mechanical properties according to EN

Round rods/polygonal rods												acc. to EN 12163	
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.	max.	min.	min.	min.	min.	max.	
M	all		all		as manufactured – without specified mechanical properties								
R240	4	80	4	80	240	–	150	–	40	45	–	–	
H050	4	80	4	80	–	–	–	–	–	–	50	95	
R320	4	40	4	40	320	220	–	–	23	25	–	–	
H090	4	40	4	40	–	–	–	–	–	–	90	120	
R380	4	10	4	10	380	280	–	–	11	12	–	–	
H110	4	10	4	10	–	–	–	–	–	–	110	150	

Tubes										acc. to EN 12449	
Temper	Wall thickness		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %	Hardness				
	mm		MPa	MPa		A100	HV		HB		
	max.	min.	min.	min.	max.	min.	min.	max.	min.	max.	
M	20		as manufactured – without specified mechanical properties								
R240	20	–	240	–	140	40	–	–	–	–	
H050	20	–	–	–	–	–	50	80	45	75	
R300	10	–	300	180	–	20	–	–	–	–	
H075	10	–	–	–	–	–	75	105	70	100	
R360	5	–	360	280	–	8	–	–	–	–	
H100	5	–	–	–	–	–	100	–	95	–	

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									
R240	4	20	240	–	170	43	45	47	–	–		
H050	4	20	–	–	–	–	–	–	50	100		
R320	1,5	20	320	220	–	20	23	25	–	–		
H095	1,5	20	–	–	–	–	–	–	95	125		
R380	0,5	10	380	280	–	10	11	12	–	–		
H115	1,5	10	–	–	–	–	–	–	115	155		
R440	0,5	6	440	330	–	4	5	–	–	–		
H135	1,5	6	–	–	–	–	–	–	135	180		
R530	0,5	4	530	450	–	–	–	–	–	–		
H160	1,5	4	–	–	–	–	–	–	160	–		