

Wieland-M15/M16

CuZn15 | Brass (lead free)

Material designation

EN	CuZn15 CW502L
UNS	C23000

Chemical composition*

Cu	85 %
Pb	< 0.05 %
Zn	balance

Wieland-M16

Pb	≤ 90 ppm
Cd	< 50 ppm

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m %IACS	21.1 36
Thermal conductivity	W/(m·K)	159
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	18.5
Density	g/cm ³	8.75
Modulus of elasticity	GPa	122

*Reference values at room temperature

Corrosion resistance

In general excellent resistance to corrosion in seawater, industrial atmosphere and to stress corrosion cracking.

Product standards

Rod	EN 12163
Wire	EN 12166
Tube	EN 12449

Material properties and typical applications

Wieland-M15 exhibits good cold working properties due to its high copper content. This alloy is suitable for stamping, riveting, crimping, flanging, cold extrusion or other cold working operations.

With its reduced contents of lead and cadmium our Wieland-M16 meets the requirements of the Oeko-Tex Standard 100 product class I and 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 (CuZn39Pb3 = 100 %)	20 %
Capacity for being cold worked	excellent
Capacity for being hot worked	fair

Surface treatment

Polishing	
mechanical	excellent
electrolytic	excellent
Electroplating	excellent

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	1005–1025 °C
Hot working	750–900 °C
Soft annealing	450–600 °C 1–3 h
Thermal stress relieving	200–300 °C 1–3 h

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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								
R260	4	80	4	80	260	–	170	–	40	45	–	–	
H060	4	80	4	80	–	–	–	–	–	–	60	115	
R340	4	40	4	40	340	200	–	–	20	22	–	–	
H100	4	40	4	40	–	–	–	–	–	–	100	130	
R430	4	10	4	10	430	350	–	–	8	10	–	–	
H130	4	10	4	10	–	–	–	–	–	–	130	170	

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.	max.	min.	min.	max.	min.	max.		
M	20		as manufactured – without specified mechanical properties									
R260	20		260	–	150	42			–	–	–	–
H050	20		–	–	–	–			50	80	45	75
R310	10		310	200	–	20			–	–	–	–
H080	10		–	–	–	–			80	110	75	105
R370	5		370	290	–	10			–	–	–	–
H105	5		–	–	–	–			105	–	100	–

Round wires											acc. to EN 12166	
Temper	Diameter		Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness			
	mm		MPa	MPa		A100			HB			
	from	to	min.	min.	max.	min.	min.	min.	min.	max.		
M	all		as manufactured – without specified mechanical properties									
R260	4	20	260	–	170	33	35	38	–	–		
H060	4	20	–	–	–	–	–	–	60	120		
R340	1.5	20	340	200	–	18	20	22	–	–		
H105	1.5	20	–	–	–	–	–	–	105	135		
R430	0.5	5	430	350	–	6	8	–	–	–		
H135	1.5	5	–	–	–	–	–	–	135	175		
R530	0.5	3	530	450	–	3	–	–	–	–		
H155	1.5	3	–	–	–	–	–	–	155	–		