

Wieland-M20

CuZn20
Brass (lead free)

Extruded and drawn products



Material designation	
EN	CuZn20/CW503L
UNS	C24000

Chemical composition*	
Cu	80 %
Pb	< 0,05 %
Zn	balance

* Reference values in % by weight

Physical properties*		
Electrical conductivity	MS/m	19
	%IACS	32
Thermal conductivity	W/(m·K)	142
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	18.8
Density	g/cm ³	8.67
Modulus of elasticity	GPa	119

* Reference values at room temperature

Corrosion resistance

Brasses with a high copper content are generally resistant to organic substances and neutral or alkaline compounds. They are virtually unsusceptible to stress corrosion cracking.

Product standards	
Rod	EN 12163
Wire	EN 12166
Tube	EN 12449

Material properties and typical applications

Wieland-M20 has excellent cold working properties due to its high copper content. It is very well suited for stamping, riveting, crimping, flanging, cold extruding or other cold working operations.

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 %)	20 %	Polishing	
Capacity for being cold worked	excellent	mechanical	excellent
Capacity for being hot worked	fair	electrolytic	excellent
		Electroplating	excellent
Joining		Heat treatment	
Resistance welding (butt weld)	good	Melting range	970–1010 °C
Inert gas shielded arc welding	good	Hot working	750–900 °C
Gas welding	good	Soft annealing	450–600 °C 1–3 h
Hard soldering	excellent	Thermal stress relieving	200–300 °C 1–3 h
Soft soldering	excellent		

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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 _m MPa min.	R _{p0,2} MPa min. MPa max.		A100 % min.	A11.3 % min.	A % min.	HB min. max.	
M	all		all		as manufactured – without specified mechanical properties							
R260	4	80	4	80	260	–	170	–	40	45	–	–
H065	4	80	4	80	–	–	–	–	–	–	65	100
R360	4	40	4	40	360	210	–	–	18	20	–	–
H100	4	40	4	40	–	–	–	–	–	–	100	130
R450	4	10	4	8	450	300	–	–	6	7	–	–
H130	4	10	4	8	–	–	–	–	–	–	130	190

Tubes acc. to EN 12449

Temper	Wallthickness mm max.	Tensile strength	Yield strength		Elongation at rupture	Hardness		HB		
		R _m MPa min.	R _{p0,2} MPa min. MPa max.		A % min.	HV min. max.		min.	max.	
M	20	as manufactured – without specified mechanical properties								
R260	20	260	–	160	45	–	–	–	–	
H055	20	–	–	–	–	55	85	50	80	
R320	10	320	200	–	25	–	–	–	–	
H085	10	–	–	–	–	85	120	80	115	
R390	5	390	200	–	10	–	–	–	–	
H115	5	–	–	–	–	115	–	110	–	

Round wires acc. to EN 12166

Temper	Diameter		Tensile strength	Yield strength		Elongation at rupture			Hardness		
	mm from	mm to	R _m MPa min.	R _{p0,2} MPa min. MPa max.		A100 % min.	A11.3 % min.	A % min.	HV min. max.		
M	all		as manufactured – without specified mechanical properties								
R260	4	20	260	–	170	40	42	45	–	–	
H065	4	20	–	–	–	–	–	–	65	105	
R360	1.5	20	360	210	–	16	18	20	–	–	
H105	1.5	20	–	–	–	–	–	–	105	140	
R450	0.5	5	450	300	–	5	6	–	–	–	
H140	1.5	5	–	–	–	–	–	–	140	200	
R540	0.1	3	540	450	–	2	–	–	–	–	
H165	1.5	3	–	–	–	–	–	–	165	–	