

# Wieland-M20

CuZn20 | Brass (lead free)

## Material designation

EN	CuZn20 CW503L
UNS	C24000

## Chemical composition\*

Cu	80 %
Pb	< 0.05 %
Zn	balance

\*Reference values in % by weight

## 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.

## Physical properties\*

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

\*Reference values at room temperature

## 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

## 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.

## 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

# Wieland-M20

CuZn20 | Brass (lead free)

## Mechanical properties according to EN

Round rods/polygonal rods												acc. to EN 12163	
Temper	Diameter		Width across flats		Tensile strength R <sub>m</sub>	Yield strength R <sub>p0.2</sub>		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	–	–	
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	10	450	300	–	–	6	7	–	–	
H130	4	10	4	10	–	–	–	–	–	–	130	190	

Tubes										acc. to EN 12449		
Temper	Wall thickness		Tensile strength R <sub>m</sub>	Yield strength R <sub>p0.2</sub>		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	–	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 R <sub>m</sub>	Yield strength R <sub>p0.2</sub>		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	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	–		