

## Wieland-Z21 Machining brass

## Extruded/drawn products

**Wieland-Z21** is a machining brass which combines the contrasting material properties of machining and cold working exceptionally well. This material is therefore well established in various industries as the standard alloy for machining and cold working. It is available from stock in many dimensions.

### Chemical composition\*

Cu	60.5%
Pb	2%
Zn	balance

\* Reference values in % by weight

### Material designation

EN	CuZn38Pb2
	CW608N
UNS	C35300
DIN*	CuZn38Pb1.5-2.0371
BS*	CZ128
NF*	not standardized

\* Former national standards

### Physical properties\*

Electrical conductivity	MS/m	14
	% IACS	24
Thermal conductivity	W/(m*K)	109
Thermal expansion coefficient (0-300°C)	10 <sup>-6</sup> /K	20.4
Density	g/cm <sup>3</sup>	8.44
Modulus of elasticity	GPa	102

\* Reference values at room temperature

1 GPa = 1 kN/mm<sup>2</sup>

1 MS/m = 1 m/Ω • mm<sup>2</sup>

### Fabrication properties

#### Forming

Machinability (CuZn39Pb3 = 100 %)	90%
Capacity for being cold worked	fair
Capacity for being hot worked	excellent

#### Joining

Resistance welding	fair
Inert gas shielded arc welding	poor
Hard soldering	fair
Soft soldering	excellent

### Corrosion resistance

Machining brass is generally quite resistant against organic substances as well as neutral or alkaline compounds.

\*Stress corrosion cracking and dezincification in warm, acidic waters should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress.

### Surface treatment

Polishing	mechanical	good
	electrolytic	fair
Electroplating		excellent

### Heat treatment

Melting range	895-900 °C
Hot working	650-750 °C
Soft annealing	450-650 °C, 1-3 h
Thermal stress-relieving	200-300 °C, 1-3 h

### Product standards

Rod	EN 12164
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

### Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft/extruded)	to (hard)
R <sub>m</sub> [MPa]	380	540
R <sub>p0.2</sub> [MPa]	140	520
A <sub>5</sub> [%]	45	10
HB	80	160

## Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
Z21	CuZn38Pb2	CW608N	8	160	0.5	20				
Round tubes										
Drawn sections							2.5	130		
Extruded sections								150		
Sectional tubes								120		
Round and polygonal rods									2	125
Round wires									0.3	
Polygonal wires									2	

All values in mm

\* Depending on the form, cross-sections in the lower size range are also available as wire.

**Wieland - Z21**

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