

Wieland-Z21

CuZn38Pb2
Machining brass

Extruded and drawn products



Material designation	
EN	CuZn38Pb2/CW608N
UNS	not standardized

Chemical composition*	
Cu	60.5 %
Pb	2 %
Zn	balance

* Reference values in % by weight

Physical properties*		
Electrical conductivity	MS/m %IACS	14 24
Thermal conductivity	W/(m·K)	109
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	20.4
Density	g/cm ³	8.44
Modulus of elasticity	GPa	102

* Reference values at room temperature

Corrosion resistance
Machining brass is generally quite resistant against organic substances as well as neutral or alkaline compounds. Stress corrosion cracking should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress. Dezincification in warm, acidic waters should also be taken into consideration.

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

Material properties and typical applications

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.

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 %)	90 %	Polishing	
Capacity for being cold worked	fair	mechanical	good
Capacity for being hot worked	excellent	electrolytic	fair
		Electroplating	excellent
Joining		Heat treatment	
Resistance welding (butt weld)	fair	Melting range	895–900 °C
Inert gas shielded arc welding	poor	Hot working	650–750 °C
Gas welding	poor	Soft annealing	450–650 °C 1–3 h
Hard soldering	fair	Thermal stress relieving	200–300 °C 1–3 h
Soft soldering	excellent		

Wieland-Z21

CuZn38Pb2

Machining brass

Mechanical properties according to EN

Round rods/polygonal rods												acc. to EN 12164	
Temper	Diameter		Width across flats		Tensile strength	Yield strength		Elongation			Hardness		
	mm from	mm to	mm from	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 %	A11.3 %	A %	HB		
											min.	max.	
M	all		all		as manufactured – without specified mechanical properties								
R360	6	80	5	60	360	–	300	–	15	20	–	–	
H070	6	80	5	60	–	–	–	–	–	–	70	100	
R410	2	40	2	35	410	230	–	8	10	12	–	–	
H100	2	40	2	35	–	–	–	–	–	–	100	145	
R500	2	14	2	10	500	350	–	3	5	8	–	–	
H120	2	14	2	10	–	–	–	–	–	–	120	–	

Rectangular rods												acc. to EN 12167	
Temper	Thickness				Tensile strength	Yield strength		Elongation			Hardness		
	mm from	mm to			R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 %	A11.3 %	A %	HB		
											min.	max.	
M	all				as manufactured – without specified mechanical properties								
R360	3			20	360	–	300	10	15	20	–	–	
H070	3			20	–	–	–	–	–	–	70	100	
R410	3			10	410	220	–	8	10	12	–	–	
H100	3			10	–	–	–	–	–	–	100	145	
R500	3			10	500	350	–	2	5	8	–	–	
H120	3			10	–	–	–	–	–	–	120	–	

Tubes												acc. to EN 12449	
Temper	Wall thickness				Tensile strength	Yield strength		Elongation	Hardness				
	mm from	mm to			R _m MPa min.	R _{p0.2} MPa min. MPa max.		A %	HV		HB		
									min.	max.	min.	max.	
M	–			20	as manufactured – without specified mechanical properties								
R340	–			10	340	–	250	35	–	–	–	–	
H080	–			10	–	–	–	–	80	110	75	105	
R410	–			10	410	250	–	15	–	–	–	–	
H105	–			10	–	–	–	–	105	140	100	135	
R470	–			5	470	350	–	10	–	–	–	–	
H135	–			5	–	–	–	–	135	–	130	–	

Round wires												acc. to EN 12166	
Temper	Diameter				Tensile strength	Yield strength		Elongation			Hardness		
	mm from	mm to			R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 %	A11.3 %	A %	HB		
											min.	max.	
M	all				as manufactured – without specified mechanical properties								
R360	0.5			20	360	–	300	10	15	20	–	–	
H080	1.5			20	–	–	–	–	–	–	80	110	
R410	0.5			14	410	220	–	8	10	12	–	–	
H100	1.5			14	–	–	–	–	–	–	100	160	
R500	0.5			8	500	350	–	2	5	–	–	–	
H130	1.5			8	–	–	–	–	–	–	130	–	

Wieland-Werke AG

www.wieland.com

Graf-Arco-Str. 36, 89079 Ulm, Germany, Phone +49 (0)731 944-0, Fax +49 (0)731 944-2772, info@wieland.de

This leaflet is for your general information only and is not subject to revision. No claims can be derived from it unless there is evidence of intent or gross negligence. The data presented is not guaranteed and does not replace expert advice.