

Wieland-Z23

CuZn36Pb3 | Machining brass

Material designation

EN CuZn36Pb3
CW603N

UNS C36000

Chemical composition*

Cu 61 %

Pb 3 %

Zn balance

*Reference values in % by weight

Physical properties*

Electrical conductivity MS/m 13
%IACS 22

Thermal conductivity W/(m·K) 100

Thermal expansion coefficient (0–300 °C) 10⁻⁶/K 20.6

Density g/cm³ 8.5

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-Z23 is a free machining brass which combines the contrasting material properties of free machining and cold working exceptionally well. This material is particularly well established in various industries in the USA as the standard free machining alloy C36000.

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 90 %
(CuZn39Pb3 = 100 %)

Capacity for being cold worked fair

Capacity for being hot worked good

Joining

Resistance welding (butt weld) fair

Inert gas shielded arc welding poor

Gas welding poor

Hard soldering fair

Soft soldering excellent

Surface treatment

Polishing

mechanical good
electrolytic fair

Electroplating excellent

Heat treatment

Melting range 885–900 °C

Hot working 700–800 °C

Soft annealing 450–600 °C
1–3 h

Thermal stress relieving 200–300 °C
1–3 h

Trademarks



Further information is provided in our brochure on Wiconnec.

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Mechanical properties according to EN

Round rods/polygonal rods												acc. to EN 12164	
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								
R340	10	80	10	60	340	–	280	–	–	20	–	–	
H070	10	80	10	60	–	–	–	–	–	–	70	120	
R400	2	25	2	20	400	200	–	4	8	12	–	–	
H100	2	25	2	20	–	–	–	–	–	–	100	140	
R480	2	14	2	10	480	350	–	3	5	8	–	–	
H125	2	14	2	10	–	–	–	–	–	–	125	–	

Rectangular rods												acc. to EN 12167	
Temper	Thickness				Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm				MPa	MPa		A100	A11.3	A	HB		
	from	to	from	to	min.	min.	max.	min.	min.	min.	min.	max.	
M	all				as manufactured – without specified mechanical properties								
R340	3	20			340	–	280	10	15	20	–	–	
H070	3	20			–	–	–	–	–	–	70	120	
R400	3	10			400	200	–	4	8	12	–	–	
H100	3	10			–	–	–	–	–	–	100	140	
R480	3	10			480	350	–	2	5	8	–	–	
H125	3	10			–	–	–	–	–	–	125	–	

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		
	from	to	from	to	min.	min.	max.	min.	min.	max.	min.	max.	
M	–	20			as manufactured – without specified mechanical properties								
R300	–	10			300	–	250	35	–	–	–	–	
H080	–	10			–	–	–	–	80	110	75	105	
R400	–	10			400	250	–	15	–	–	–	–	
H105	–	10			–	–	–	–	105	140	100	135	
R460	–	5			460	350	–	10	–	–	–	–	
H135	–	5			–	–	–	–	135	–	130	–	

Round wires												acc. to EN 12166	
Temper	Diameter				Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness		
	mm				MPa	MPa		A100	A11.3	A	HB		
	from	to	from	to	min.	min.	max.	min.	min.	min.	min.	max.	
M	all				as manufactured – without specified mechanical properties								
R340	0.5	20			340	–	280	10	15	20	–	–	
H080	1.5	20			–	–	–	–	–	–	80	130	
R400	0.5	14			400	200	–	4	8	12	–	–	
H100	1.5	14			–	–	–	–	–	–	100	150	
R480	0.5	8			480	350	–	2	5	–	–	–	
H135	1.5	8			–	–	–	–	–	–	135	–	

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