wieland

Wieland-Z45/46

CuZn36Pb2As | Dezincification resistant machining brass

Material designation

EN	CuZn36Pb2As
UNS	C35330

Chemical composition*

Cu	62 %
Pb	max. 2.2 %
As	max. 0.1 %
Zn	balance

**Reference values in % by weight*

Material properties and typical applications

Wieland-Z45, a dezincification-resistant machining brass, is particularly suitable for use in warm, acidic waters. This material passes the dezincification test according to ISO 6509.

For the manufacture of hot-stamped parts Wieland-Z46 with better hot-working properties is recommended. To achieve dezincification resistance a heat treatment may be necessary after hot working.

Physical properties*

Electrical conductivity	MS/m %IACS	14.7 25
Thermal conductivity	W/(m·K)	114
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	20.3
Density	g/cm³	8.46
Moduls of elasticity	GPa	105

**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 %)	80 %
Capacity for being cold worked	good
Capacity for being hot worked	good*

Surface treatment

Polishing mechanical electrolytic	 good poor
Electroplating	excellent

Joining

Resistance welding (butt weld)	fair*
Inert gas shielded arc welding	poor*
Gas welding	poor*
Hard soldering	fair*
Soft soldering	excellent

** see section „Corrosion resistance"*

Heat treatment

Melting range	885–910 °C
Hot working	720–830 °C
Soft annealing	450–550 °C 1–3 h
Thermal stress relieving	250–350 °C 1–3 h

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 EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

Trademarks

Wieland-PSR

Further information is provided in our brochure on PSR.

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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							
R280	6	80	5	60	280	–	200	–	25	30	–	–
H070	6	80	5	60	–	–	–	–	–	–	70	110
R320	6	60	5	50	320	200	–	–	15	20	–	–
H090	6	60	5	50	–	–	–	–	–	–	90	135
R400	2	15	4	13	400	250	–	–	5	8	–	–
H105	2	15	4	13	–	–	–	–	–	–	105	–

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	min.	min.	max.	min.	min.	min.	min.	max.
M	all		as manufactured – without specified mechanical properties							
R280	3	20	280	–	200	20	25	30	–	–
H070	–	–	–	–	–	–	–	–	70	110
R320	3	20	320	200	–	10	15	20	–	–
H090	–	–	–	–	–	–	–	–	90	135
R400	3	10	400	250	–	2	5	8	–	–
H105	–	–	–	–	–	–	–	–	105	–

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	min.	min.	max.	min.	min.	max.	min.	max.
M	–	20	as manufactured – without specified mechanical properties							
R290	–	10	290	–	250	40	–	–	–	–
H080	–	10	–	–	–	–	80	110	75	105
R370	–	10	370	250	–	20	–	–	–	–
H105	–	10	–	–	–	–	105	140	100	135
R440	–	5	440	340	–	10	–	–	–	–
H135	–	5	–	–	–	–	135	–	130	–

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