

Wieland-Z45/46

CuZn36Pb2As
Dezincification-resistant
machining brass

Extruded and drawn products



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

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/cm ³	8.46
Modulus of elasticity	GPa	105

* Reference values at room temperature

Corrosion resistance

Brass is generally quite resistant against organic substances as well as neutral or alkaline compounds. After exposure to temperatures > 600 °C a thermal treatment at 500–550 °C / 2–3 h is necessary to ensure optimal dezincification resistance. Stress corrosion cracking should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress.

Product standards	
Rod	EN 12164 EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

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.

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	
Machinability (CuZn39Pb3 = 100 %)	80 %
Capacity for being cold worked	good
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

* see section „Corrosion resistance“

Surface treatment	
Polishing	
mechanical	good
electrolytic	poor
Electroplating	excellent

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

Trademarks

Wieland-PSR

Further information is provided in the 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	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	
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	Yield strength		Elongation			Hardness		
	mm from	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 %	A11.3 %	A %	HB		
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	Yield strength		Elongation	Hardness		HB		
	mm from	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A %	HV		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	–	