

# Wieland-Z45/46

CuZn36Pb2As | Dezincification resistant machining brass

## Material designation

EN	CuZn36Pb2As
UNS	C35330

## Chemical composition\*

Cu	6 %
Pb	max. 2.2 %
As	max. 0.1 %
Zn	balance

\*Reference values in % by weight

## Physical properties\*

Electrical conductivity	MS/m	14.7
	%IACS	25
Thermal conductivity	W/(m·K)	114
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	20.3
Density	g/cm <sup>3</sup>	8.46
Modulus of elasticity	GPa	105

\*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
	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 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	good
electrolytic	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

## 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 <sub>m</sub>	Yield strength R <sub>p0.2</sub>		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	–	–	–	15	20	–	–	
H090	6	60	5	50	–	–	–	–	–	–	90	135	
R400	2	15	4	13	400	–	–	–	5	8	–	–	
H105	2	15	4	13	–	–	–	–	–	–	105	–	

Rectangular rods												acc. to EN 12167	
Temper	Thickness			Tensile strength R <sub>m</sub>	Yield strength R <sub>p0.2</sub>		Elongation %			Hardness			
	mm			MPa	MPa		A100	A11.3	A	HB			
	from	to	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	–	–	10	15	20	–	–		
H090	–	–	–	–	–	–	–	–	–	90	135		
R400	3	–	10	400	–	–	2	5	8	–	–		
H105	–	–	–	–	–	–	–	–	–	105	–		

Tubes												acc. to EN 12449	
Temper	Wall thickness		Tensile strength R <sub>m</sub>	Yield strength R <sub>p0.2</sub>		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	–	–		