

## Wieland-S40 Special brass

## Extruded/drawn products

**Wieland-S40** is a special brass with very high wear resistance due to silicides embedded in the structure. This alloy is used for slide bearings and valve guides as well as for construction components in mechanical engineering. Wieland-S40 is also highly suitable for hot stamped parts requiring higher mechanical strength and higher wear resistance.

### Chemical composition\*

Cu	58%
Mn	2%
Al	1.5%
Pb	0.7%
Si	0.5%
Zn	balance

\* Reference values in % by weight

### Material designation

EN	CuZn37Mn3Al2PbSi
	CW713R
UNS	C67420
DIN*	CuZn40Al2-2.0550
BS*	not standardized
NF*	not standardized

\* Former national standards

### Physical properties\*

Electrical conductivity	MS/m	7.8
	% IACS	13
Thermal conductivity	W/(m*K)	63
Thermal expansion coefficient (0-300°C)	10 <sup>-6</sup> /K	20.4
Density	g/cm <sup>3</sup>	8.12
Modulus of elasticity	GPa	93

\* Reference values at room temperature

1 GPa = 1 kN/mm<sup>2</sup>

1 MS/m = 1 m/Ω • mm<sup>2</sup>

### Fabrication properties

#### Forming

Machinability	50%
(CuZn39Pb3 = 100 %)	
Capacity for being cold worked	poor
Capacity for being hot worked	excellent

#### Joining

Resistance welding	good
Inert gas shielded arc welding	good
Hard soldering	poor
Soft soldering	poor

### Corrosion resistance

Special brass generally exhibits excellent corrosion resistance due to alloying additions. Wieland S40 is characterized by good resistance to organic substances and neutral or alkaline compounds.

### Surface treatment

Polishing	mechanical	good
	electrolytic	poor
Electroplating		fair

### Heat treatment

Melting range	875-910 °C
Hot working	600-700 °C
Soft annealing	500-650 °C, 1-3 h
Thermal stress-relieving	350-450 °C, 1-3 h

### Product standards

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

### Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft/extruded)	to (hard)
R <sub>m</sub> [MPa]	540	780
R <sub>p0.2</sub> [MPa]	290	600
A <sub>5</sub> [%]	20	12
HB	140	190

## Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
S40	CuZn37Mn3Al2PbSi	CW713R	13	200	2.75	30				
Round tubes										
Drawn sections							3.5	50		
Extruded sections								150		
Sectional tubes										
Round and polygonal rods									4	125
Round wires									2	
Polygonal wires									2	

All values in mm

\* Depending on the form, cross-sections in the lower size range are also available as wire.

**Wieland - S40**

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