Wieland-S40

CuZn37Mn3Al2PbSi | Special brass

Material designation

EN	CuZn37Mn3Al2PbSi CW713R
UNS	C67420

Chemical composition*

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

**Reference values in % by weight*

Physical properties*

Electrical conductivity	MS/m %IACS	7.8 13
Thermal conductivity	W/(m·K)	63
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	20.4
Density	g/cm³	8.12
Moduls of elasticity	GPa	93

**Reference values at room temperature*

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.

Product standards

Rod	EN 12164 EN 12165
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

Material properties and typical applications

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.

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 %)	50 %
Capacity for being cold worked	poor
Capacity for being hot worked	excellent

Joining

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

Surface treatment

Polishing	
mechanical electrolytic	good 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

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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							
R540	5	80	5	60	540	280	–	–	12	15	–	–
H130	5	80	5	60	–	–	–	–	–	–	130	170
R590	5	50	5	40	590	370	–	–	8	10	–	–
H150	5	50	5	40	–	–	–	–	–	–	150	220

Round wires — acc. to EN 12167

Temper	Diameter		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							
R540	> 10	20	540	280	–	–	–	15	–	–
H130	> 10	20	–	–	–	–	–	–	130	170
R590	3	10	590	370	–	5	8	10	–	–
H150	3	10	–	–	–	–	–	–	150	220

Hollow rods — acc. to EN 12168

Temper	Diameter			Tensile strength R_m	Yield strength $R_{p0.2}$		Elongation %			Hardness	
	mm			MPa	MPa		A100	A11.3	A	HB	
	from	over	to	min.	min.	max.	min.	min.	min.	min.	max.
M	all			as manufactured – without specified mechanical properties							
R540	–	10	30	540	280	–	–	12	15	–	–
H130	–	10	30	–	–	–	–	–	–	130	170
R590	5	–	10	590	370	–	–	8	10	–	–
H150	5	–	10	–	–	–	–	–	–	150	220

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	
	max.	min.	min.	min.	min.	max.	min.	max.
M	20	as manufactured – without specified mechanical properties						
R540	8	540	250	10	–	–	–	–
H145	8	–	–	–	145	185	140	180
R590	5	590	320	8	–	–	–	–
H155	5	–	–	–	155	195	150	190
R640	3	640	350	5	–	–	–	–
H165	3	–	–	–	165	–	160	–

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