

Wieland-S40

CuZn37Mn3Al2PbSi
Special brass

Extruded and drawn products



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/cm ³	8.12
Modulus 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
Wire	EN 12166

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 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		Surface treatment	
Machinability (CuZn39Pb3 = 100 %)	50 %	Polishing	
Capacity for being cold worked	poor	mechanical	good
Capacity for being hot worked	excellent	electrolytic	poor
		Electroplating	fair
Joining		Heat treatment	
Resistance welding (butt weld)	good	Melting range	875–910 °C
Inert gas shielded arc welding	good	Hot working	600–700 °C
Gas welding	fair	Soft annealing	500–650 °C 1–3 h
Hard soldering	poor	Thermal stress relieving	350–450 °C 1–3 h
Soft soldering	poor		

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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 at rupture			Hardness	
	mm from	mm to	mm from	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 % min.	A11.3 % min.	A % min.	HB 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	Yield strength		Elongation at rupture			Hardness		
	mm from	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 % min.	A11.3 % min.	A % min.	HB 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	Wall thickness			Tensile strength	Yield strength		Elongation at rupture			Hardness	
	mm from	mm over	mm to	R _m MPa min.	R _{p0.2} MPa min. MPa max.		A100 % min.	A11.3 % min.	A % min.	HB 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	Yield strength	Elongation at rupture		Hardness		HB	
		R _m MPa min.	R _{p0.2} MPa min.	A100 % min.		HV 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	–