

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	7.8
	%IACS	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
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 tempsers.

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	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.	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	–	–	–			