Wieland-S31

CuZn31Si1 | Special brass

Material designation

EN	CuZn31Si1 CW708R
UNS	–

Material properties and typical applications

Wieland-S31 is a special brass exhibiting high resistance to load and wear due to embedded hard silicides and also good high-temperature strength. **Wieland-S31** is primarily used in highload sliding applications (e.g. bearing bushings, sleeves and other sliding elements).

Chemical composition*

Cu	68 %
Si	1 %
Pb	0.8 %
Zn	balance

**Reference values in % by weight*

Physical properties*

Electrical conductivity	MS/m %IACS	8.9 15
Thermal conductivity	W/(m·K)	71
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	19.2
Density	g/cm³	8.41
Moduls of elasticity	GPa	108

**Reference values at room temperature*

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 %)	40 %
Capacity for being cold worked	good
Capacity for being hot worked	fair

Surface treatment

Polishing	
mechanical electrolytic	excellent poor
Electroplating	fair

Joining

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

Heat treatment

Melting range	880–915 °C
Hot working	750–800 °C
Soft annealing	500–600 °C 1–3 h
Thermal stress relieving	250–350 °C 1–3 h

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 12163
Tube	EN 12449

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Mechanical properties according to EN

Round rods/polygonal rods											acc. to EN 12163
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	
					min.	min.	min.	min.	min.	min.	max.
M	all		all		as manufactured – without specified mechanical properties						
R460	5	40	5	40	460	240	–	18	22	–	–
H120	5	40	5	40	–	–	–	–	–	120	160
R530	5	14	5	14	530	350	–	10	12	–	–
H140	5	14	5	14	–	–	–	–	–	140	–

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						
R440	8	440	200	20	–	–	–	–
H115	8	–	–	–	115	115	110	150
R490	8	490	250	15	–	–	–	–
H145	8	–	–	–	145	–	140	–

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