

eco SZ4®

CuZn42 – CW510L | lead-free brass according to RoHS

Material designation

EN	CW510L CuZn42
UNS	not standardized

Chemical composition*

Cu	58 %
Pb	max. 0.100 %
Zn	balance

*Reference values in % by weight

Material properties and typical applications

eco SZ4® is a lead-free material that can still be adequately machined due to its microstructure and selected composition. It can therefore be used as a substitute for conventional lead-containing machining brasses if a lead content of max. 0.1 % is required. Its mechanical properties and corrosion resistance are comparable to those of leaded brasses such as CuZn39Pb3 or CuZn40Pb2.

The material is lead-free in accordance with RoHS and ELV.

Material accepted for products in contact with drinking water as per 4 MS positive list.

Physical properties*

Electrical conductivity	MS/m %ACS	15.3 26
Thermal conductivity	W/(m·K)	113
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	21.7
Density	g/cm ³	8.21
Modulus of elasticity	GPa	107

*Reference values at room temperature

Types of delivery

The BU Global Extruded & Cast 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 %)	85 %
Capacity for being cold worked	poor
Capacity for being hot worked	excellent

Surface treatment

Polishing	mechanical electrolytic	good poor
Electroplating		excellent

Corrosion resistance

Machining brass is generally quite resistant against organic substances as well as neutral or alkaline compounds. Stress corrosion cracking should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress. Dezincification in warm, acidic waters should also be taken into consideration.

Joining

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

Heat treatment

Melting range	870 - 900°C
Hot working	550 - 650°C
Soft annealing	450 - 500 °C, 2 - 3 h
Thermal stress-relieving	200 - 300°C, 1 - 3 h

Product standards

Rod	EN 12164
	EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168

Trademarks

wieland ecoline

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Dimensions and mechanical properties according to standards

Round rods / polygonal rods acc. to EN 12164

Temper	Diameter		Width across flat		Tensile strength	Yield strength		Elongation			Hardness	
					R _m	R _{p0.2}		A100	A11.3	A	HB	
	mm	mm	mm	mm	MPa	MPa		%	%	%		
	from	to	from	to	min.	min.	max.	min.	min.	min.	min.	max.
M	all		all		as manufactured							
R360	6	80	5	60	360	–	320	–	15	20	–	–
H090	6	80	5	60	–	–	–	–	–	–	90	125
R430	2	40	2	35	430	220	–	6	8	10	–	–
H110	2	40	2	35	–	–	–	–	–	–	110	160
R500	2	14	2	10	500	350	–	–	3	5	–	–
H135	2	14	2	10	–	–	–	–	–	–	135	–

Round wires acc. to EN 12166

Temper	Diameter		Tensile strength	Yield strength		Elongation			Hardness	
			R _m	R _{p0.2}		A100	A11.3	A	HB	
	mm	mm	MPa	MPa		%	%	%		
	from	to	min.	min.	max.	min.	min.	min.	min.	max.
M	all		as manufactured							
R360	6	20	360	–	320	–	15	20	–	–
H095	6	20	–	–	–	–	–	–	95	130
R430	0.5	14	430	220	–	6	8	10	–	–
H115	1.5	14	–	–	–	–	–	–	115	170
R500	0.5	8	500	350	–	2	5	–	–	–
H145	1.5	8	–	–	–	–	–	–	145	–