

eco SZ5®

CuZn40 | lead-free brass according to RoHS

Material designation

EN	CW509L
	CuZn40
UNS	C27450

Chemical composition*

Cu	60 %
Pb	max. 0.100 %
Zn	balance

*Reference values in % by weight

Material properties and typical applications

eco SZ5® is a lead-free material which can nevertheless be machined due to its microstructure. It can therefore be used as a replacement for conventional leaded machining brass when a maximum lead content of 0.100 % is required and when a certain degree of cold formability is required.

The material is lead free according to RoHS und ELV.

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

Physical properties*

Electrical conductivity	MS/m	15
	%IACS	26
Thermal conductivity	W/(m·K)	117
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	20
Density	g/cm ³	8.4
Modulus of elasticity	GPa	95

*Reference values at room temperature

Types of delivery

The Business Unit Extruded Products supplies rods, wires, profiles and tubes. Please ask your contact for the available shapes, dimensions and conditions.

Fabrication properties

Forming

Machinability (CuZn39Pb3 = 100 %)	75 %
Capacity for being cold worked	good
Capacity for being hot worked	good

Surface treatment

Mechanical polishing	excellent
Electrolytic polishing	fair
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	fair
Hard soldering	good
Soft soldering	excellent

Heat treatment

Melting range	870 - 920 °C
Hot working	650 - 750 °C
Soft annealing	450 - 500 °C, 1-3 h
Thermal stress relieving	250 - 350 °C, 1-3 h

Product standards

Rod	EN 12163
	EN 12164
	EN 12165
Wire	EN 12166
Section	EN 12167
Hollow rod	EN 12168
Tube	EN 12449

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 flats		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		–	300	–	15	20	–	–
H070	6	80	5	60	–		–	–	–	–	–	70	100
R410	2	40	2	35	410		230	–	8	10	12	–	–
H100	2	40	2	35	–		–	–	–	–	–	100	145
R500	2	14	2	10	500		350	–	3	5	8	–	–
H120	2	14	2	10	–		–	–	–	–	–	120	–

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	0,5	20	360	–	300	10	15	20	–	–
H080	1,5	20	–	–	–	–	–	–	80	100
R410	0,5	14	410	220	–	8	10	12	–	–
H100	1,5	14	–	–	–	–	–	–	100	160
R500	0,5	8	500	350	–	2	5	–	–	–
H130	1,5	8	–	–	–	–	–	–	130	–