wieland

eco ST4®

CuZn42 – CW510L | lead-reduced brass

Material designation

EN	CW510L CuZn42
UNS	not standardized

Chemical composition*

Cu	58 %
Pb	max. 0.2 %
Zn	balance

**Reference values in % by weight*

Material properties and typical applications

eco ST4® is a lead-reduced material that can be machined due to its microstructure and selected composition. It can therefore be used as a substitute for conventional lead-containing machining brasses. Its mechanical properties and corrosion resistance are comparable to those of leaded brasses such as CuZn39Pb3 or CuZn40Pb2.

The material is suitable for sanitary applications and can be used when a maximum of 0.2 % lead is desired.

Physical properties*

Electrical conductivity	MS/m %IACS	15.3 26
Thermal conductivity	W/(m·K)	113
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	21.7
Density	g/cm³	8.21
Moduls 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 %)	90 %
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

eco ST4®

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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	–	

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