

# eco SZ5<sup>®</sup>

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

## Physical properties\*

Electrical conductivity	MS/m	15
	%ACS	26
Thermal conductivity	W/(m·K)	117
Thermal expansion coefficient (0–300 °C)	10 <sup>-6</sup> /K	12
Density	g/cm <sup>3</sup>	8.4
Modulus of elasticity	GPa	95

\*Reference values at room temperature

## 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.

## Product standards

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

## Material properties and typical applications

eco SZ5<sup>®</sup> 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.

## 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

## 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

## 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 <sub>m</sub>	R <sub>p0.2</sub>		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 <sub>m</sub>		R <sub>p0.2</sub>		A100	A11.3	A	HB				
	mm	mm	MPa		MPa		%	%	%					
	from	to	min.	max.	min.	max.	min.	min.	min.	min.	max.			
M	all		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	-				