wieland

eco M60

CuZn40 | Lead free brass according to RoHS

Material designation

EN	CuZn40 CW509L
UNS	C27450

Chemical composition*

Cu	60 %
Pb	max. 0.1000 %
Zn	balance

**Reference values in % by weight*

Material properties and typical applications

Eco M60 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 0.1000 % is required and when a certain degree of cold formability is required. There should be no higher demands on mechanical properties and corrosion resistance.

The material is lead free according to RoHS und ELV.

Physical properties*

Electrical conductivity	MS/m %IACS	14.5 25
Thermal conductivity	W/(m·K)	120
Thermal expansion coefficient (0–300 °C)	10^{-6}/K	12
Density	g/cm³	8.39
Moduls 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 %)	50 %
Capacity for being cold worked	good
Capacity for being hot worked	good

Surface treatment

Polishing	
mechanical electrolytic	excellent fair
Electroplating	excellent

Joining

Resistance welding (butt weld)	good
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	450–550 °C 1–3 h
Thermal stress relieving	250–350 °C 1–3 h

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

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 R_m	Yield strength $R_{p0.2}$		Elongation %			Hardness	
	mm		mm		MPa	MPa		A100	A11.3	A	HB	
	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	–	–
H120	2	14	2	10	–	–	–	–	–	–	120	–

Round wires										acc. to EN 12166
Temper	Diameter		Tensile strength R_m	Yield strength $R_{p0.2}$		Elongation %			Hardness	
	mm		MPa	MPa		A100	A11.3	A	HV	
	from	to	min.	min.	max.	min.	min.	min.	min.	max.
M	all		as manufactured							
R360	6	20	360	–	300	10	15	20	–	–
H080	6	20	–	–	–	–	–	–	80	110
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	–

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