

eco SX1

CuZn31Mn2SiAl | Lead free special brass

Material designation

EN	not standardized
UNS	not standardized

Chemical composition*

Cu	64 %
Mn	2 %
Si	1 %
Al	1 %
Ni	0.5 %
Fe	0.5 %
Zn	balance

*Reference values in % by weight

Physical properties*

Electrical conductivity	MS/m	9.9
	%IACS	17
Thermal conductivity	W/(m·K)	75
Thermal expansion coefficient (0–300 °C)	10 ⁻⁶ /K	19.6
Density	g/cm ³	8.18
Modulus of elasticity	GPa	117

*Reference values at room temperature

Corrosion resistance

Special brass generally has excellent corrosion resistance due to alloying additions. **Eco SX1** is characterised by good resistance to organic substances and neutral or alkaline compounds.

Product standards

not standardized

Material properties and typical applications

Eco SX1 is a special brass that exhibits very high wear resistance due to silicides embedded in the structure. The alloy is suitable for slide bearings used in mixed friction applications such as valve stem guides and applications that require resistance to stress relaxation. **eco SX1** is also suitable as a lead-free alternative for machined ballpoint pen tips, optimising their wear resistance over the writing length.

Eco SX1 is well suited to hot-stamped parts requiring higher mechanical strength and higher resistance to wear.

The material is lead free according to ELV-directive (Pb max. 0.1 %).

Types of delivery

The BU Extruded Products supplies bars, wire, sections and tubes. Please get in touch with your contact person regarding the available delivery forms, dimensions and tempsers.

Fabrication properties

Forming

Machinability (CuZn39Pb3 = 100 %)	70 %
Capacity for being cold worked	good
Capacity for being hot worked	excellent

Surface treatment

Polishing mechanical	good
electrolytic	poor
Electroplating	fair

Joining

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

Heat treatment

Melting range	840–885 °C
Hot working	600–750 °C
Soft annealing	570–680 °C 1–3 h
Thermal stress relieving	300–420 °C 1–3 h

Trademarks

wieland ecoline

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Typical mechanical properties

Round wire for ballpoint pen tips

Temper	Tensile strength R_m	Yield strength $R_{p0.2}$	Elongation %	Hardness
	MPa	MPa	A100	HV
drawn	approx. 600	approx. 450	> 2	approx. 200