

eco SW5

CuZn21Si3P | Lead-free special brass

Material designation

EN CW724R
CuZn21Si3P

UNS C69300

Chemical composition¹

Cu	76 %
Si	3,3 %
P	0,05 %
Zn	Rest
Pb	max. 0,0500 %

¹Reference values in % by weight

Physical properties²

Electrical conductivity	MS/m	4,5
	%IACS	7,8
Thermal conductivity	W/(m·K)	35
Density	g/cm ³	8,25
Modulus of elasticity	GPa	~ 100

²Reference values at room temperature

Corrosion resistance³

Special brass generally exhibits good corrosion resistance due to alloying additions. The addition of silicon increases the tarnish resistance and the sensitivity to stress corrosion cracking and dezincification is reduced.

³Reference values

Product standards

Rod EN 12163
EN 12164
EN 12165

Wire EN 12166

Section EN 12167

Material properties and typical applications

eco SW5 is a lead-free special brass resisting high load and exhibiting good corrosion resistance as well as excellent machinability. This alloy is suited to the production of machined and drop forged parts. eco SW5 is available as machining rod and in hot stamping quality and is designed for applications where high strength is needed. With its lead content not exceeding 500 ppm, it meets the requirements of Entry 63 in Annex XVII of the Reach Regulation.

eco SW5 is used, among other things, for jewellery and watch parts and for the production of other consumer products.

The material is lead-free according to RoHS and ELV.

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 tempers.

Fabrication properties

Forming

Machinability (CuZn39Pb3 = 100 %) 90 %

Capacity for being cold worked good

Capacity for being hot worked excellent

Joining

Resistance welding (butt weld) good

Inert gas shielded arc welding good

Gas welding good

Hard soldering good

Soft soldering good

Surface treatment⁴

Polishing

mechanical good
electrolytic poor

Electroplating good

⁴for further fabrication properties, please call your contact person.

Heat treatment

Melting range 860 – 925 °C

Hot working 680 – 750 °C

Soft annealing 550 – 580 °C
1 – 3 h

Trademarks

wieland ecoline

eco SW5

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Mechanical properties according to EN

Round rods/polygonal rods													acc. to EN 12163	
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 – without specified mechanical properties									
R500	6	80	35	80	500	–	450	–	13	15	–	–		
H130	6	80	35	80	–	–	–	–	–	–	130	180		
R600	10	40	15	40	600	300	–	–	–	12	–	–		
H150	10	40	15	40	–	–	–	–	–	–	150	220		
R670	2	20	2	15	670	400	–	8	9	10	–	–		
H170	2	20	2	15	–	–	–	–	–	–	170	–		

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 – without specified mechanical properties									
R500	6	80	35	80	500	–	450	–	–	15	–	–		
H130	6	80	35	80	–	–	–	–	–	–	130	180		
R600	10	40	15	40	600	300	–	–	–	12	–	–		
H150	10	40	15	40	–	–	–	–	–	–	150	220		
R670	2	20	2	15	670	400	–	8	9	10	–	–		
H170	2	20	2	15	–	–	–	–	–	–	170	–		

Rectangular rods													acc. to EN 12167	
Temper	Thickness				Tensile strength R _m	Yield strength R _{p0.2}		Elongation %			Hardness			
	mm				MPa	MPa		A100	A11.3	A	HB			
	from	to			min.	min.	max.	min.	min.	min.	min.	max.		
M			all		as manufactured – without specified mechanical properties									
R500	2		20		500	–	450	12	13	15	–	–		
H130	2		20		–	–	–	–	–	–	130	170		
R600	2		20		600	300	–	–	11	12	–	–		
H150	2		20		–	–	–	–	–	–	150	190		
R670	2		7		670	400	–	8	9	10	–	–		
H170	2		7		–	–	–	–	–	–	170	220		

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	HB			
	from	to			min.	min.	max.	min.	min.	min.	min.	max.		
M			all		as manufactured – without specified mechanical properties									
R500	0.5		20		500	–	450	12	13	15	–	–		
H110	1.5		20		–	–	–	–	–	–	110	170		
R600	0.5		8		600	300	–	10	11	12	–	–		
H130	1.5		8		–	–	–	–	–	–	130	190		
R670	0.5		8		670	400	–	8	9	10	–	–		
H160	1.5		8		–	–	–	–	–	–	160	220		
R750	0.5		8		750	450	–	2	3	–	–	–		
H200	1.5		8		–	–	–	–	–	–	200	–		

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