C51000

CuSn5

Alloy Designation	
EN	CuSn5
DIN CEN/TS 13388	CW451K
UNS	C51000

Chemical Composition (Balance) Weight percentage		
Cu	Rest	%
Sn	5	%
P	0.1	%

Characteristics

CuSn5 provides an excellent combination of strength, excellent formability and hardness. It has a good electrical conductivity and corrosion resistance. Soldering and brazing properties are excellent.

Main Applications

Stamped parts, Connectors, Contact springs, Spring elements, Ultra high strength spring elements, Membranes, Switch elements, Fixed contacts.

Mechanical Properties (EN 1652)

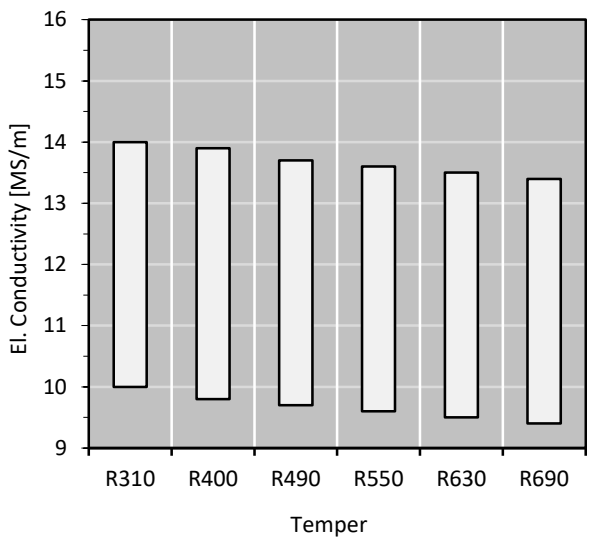
Temper * only information	**Tensile Strength** **Rm**	**Yield Strength** Standard **$Rp_{0.2}$**	**Yield Strength** Bending optimized **$Rp_{0.2}$**	**Elongation** Bending optimized (min.) **A_{50mm}**	**Hardness *** **HV**	**Bending** optimized quality 90° gw / bw rel. Bending Radius R/T	
	MPa	MPa	MPa	%	HV	Strip Thickness ≤ 0.50mm	
R310	310 .. 390	≤ 250 *			70 ..105	0	0
R400	400 .. 500	≥ 340		17	120 .. 160	0	0
R490	490 .. 580	≥ 450	≥ 440	19	160 .. 190	0	0
R550	550 .. 640	≥ 500	≥ 480	13	180 .. 210	0	0.5
R630	630 .. 720	≥ 570	≥ 560	7	200 .. 230	0	1
R690	≥ 690	≥ 630	≥ 600	4	≥ 220	2	3

Physical Properties

Typical values in annealed temper at 20 °C

Density		8.94	g/cm³
Thermal expansion coefficient	20 .. 300 °C	17.8	10^{-6}/K
Specific heat capacity		0.38	J/(g·K)
Thermal conductivity		90	W/(m·K)
Electrical conductivity	MS/m	10	MS/m
Electrical conductivity	IACS	17	%
Thermal coefficient of electrical resistance	(0 .. 100 °C)	0.1	10^{-3}/K
Modulus of elasticity	GPa	120	GPa

Electrical Conductivity



Fabrication Properties *

Cold Forming Properties	Excellent
Machinability (Rating 20)	Less suitable
Electroplating Properties	Excellent
Hot Tinning Properties	Excellent
Soft Soldering, Brazing	Excellent
Resistance Welding	Good
Gas Shielded Arc Welding	Good
Laser Welding	Good

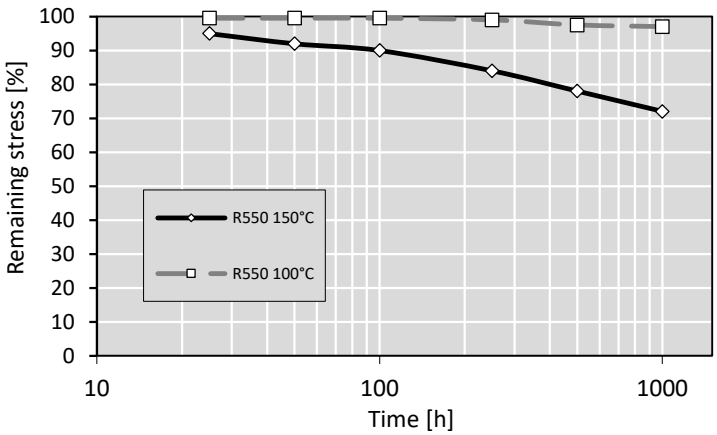
*For more details call our technical service

Corrosion Resistance *

CuSn5 has a good resistance to seawater, different agents and industrial atmosphere.

Largely insensitive to stress corrosion cracking.

Relaxation Properties



Relaxation values give an indication about stress relieve of strip under tension for a certain time and temperature.

Typical test sample thickness is 0.3 – 0.6 mm.

Initial Stress
80% von $Rp_{0,2}$
Parallel Rolling Direction

Bend Fatigue (at room temperature)

The fatigue strength gives an indication about the resistance to variations in applied tension. It is measured under symmetrical alternating load. The maximum bending load for 10^7 load cycles without crack is measured. Dependent on the temper class it is approximately 1/3 of the tensile strength R_m.

Available delivery forms *

Strips in coils
Traverse-wound coils with drum weights up to 1.5 t
TECSTRIP®_multicoil up to 2.5 t
Hot-Dip-Tinned strips in thickness range 0.10 up to 1.20 mm

* For more details call our sales service