

# C51900

## CuSn6

### Alloy Designation

EN	CuSn6
DIN CEN/TS 13388	CW452K
UNS	C51900

### Chemical Composition (Balance)

Weight percentage

Cu	Rest	%
Sn	6	%
P	0.1	%

### Characteristics

**CuSn6** provides an excellent combination of strength, cold formability and hardness. It is wear resistant, has good corrosion resistance and soldering properties.

Due to its high strength and good spring properties combined with good machining properties it is used for all kind of springs, Connectors, Bourdon tubes or flexible metal tubes.

### Main Applications

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

### Mechanical Properties (EN 1652)

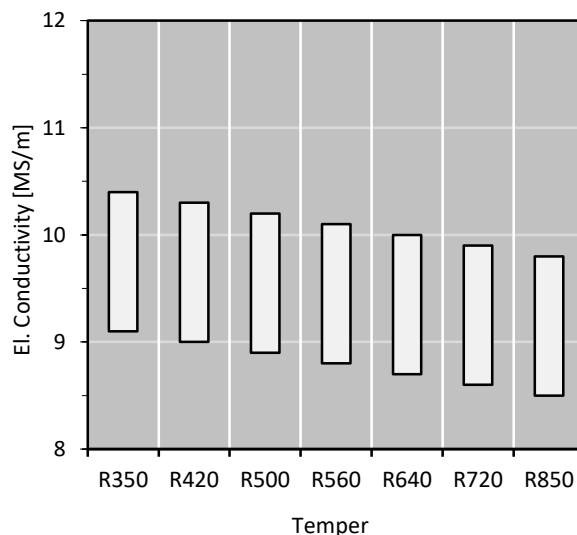
Temper	Tensile Strength	Yield Strength Standard	Yield Strength Bending optimized	Elongation Bending optimized min.	Hardness * HV	Bendability 90°	
	Rm	Rp <sub>0.2</sub>	Rp <sub>0.2</sub>	A <sub>50mm</sub>	HV	gw rel. Bending Radius R/T	bw
<small>* Only information ** Thickness 0.15 - 0.60 mm</small>	MPa	MPa	MPa	%	HV	Strip Thickness ≤ 0.50mm	
<b>R350</b>	350 .. 420	≤ 300 *		45	80 .. 120	0	0
<b>R420</b>	420 .. 520	≥ 350	≥ 340	29	120 .. 170	0	0
<b>R500</b>	500 .. 590	≥ 450	≥ 410	22	160 .. 190	0	0
<b>R560</b>	560 .. 650	≥ 520	≥ 490	15	180 .. 210	0	0
<b>R640</b>	640 .. 730	≥ 590	≥ 570	12	200 .. 230	0	0.5
<b>R720</b>	≥ 720	≥ 650	≥ 620	4	≥ 210	1	-
<b>R850 **</b>	≥ 850		≥ 800	1.5	≥ 240	1	-

### Physical Properties

Typical values in annealed temper at 20 °C

Density		8.95	g/cm <sup>3</sup>
Thermal expansion coefficient	20 .. 300 °C	18.5	10 <sup>-6</sup> /K
Specific heat capacity		0.377	J/(g·K)
Thermal conductivity		75	W/(m·K)
Electrical conductivity	MS/m	9	MS/m
Electrical conductivity	IACS	16	%
Thermal coefficient of electrical resistance	(0 .. 100 °C)	0.7	10 <sup>-3</sup> /K
Modulus of elasticity	GPa	115	GPa

### Electrical Conductivity



#### Fabrication Properties \*

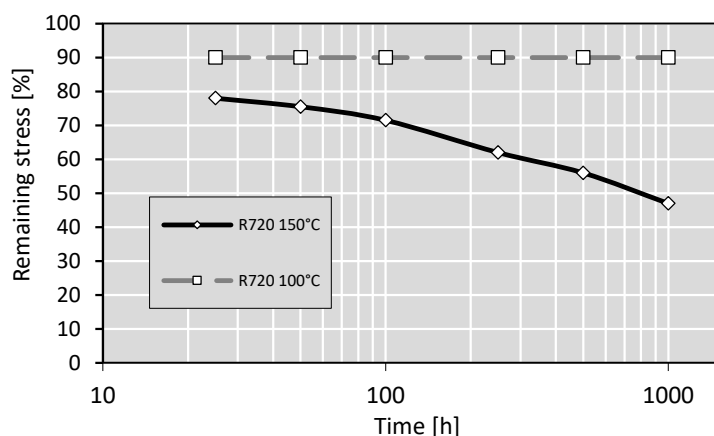
Cold Forming Properties	Excellent
Machinability (Rating 20)	Less suitable
Electroplating Properties	Excellent
Hot Tinning Properties	Excellent
Soft Soldering, Brazing	Excellent / Good
Resistance Welding	Good
Gas Shielded Arc Welding	Good
Laser Welding	Good

\* For more details call our technical service

#### Corrosion Resistance \*

**CuSn6** has a good resistance to seawater, different agents and industrial atmosphere and has a good resistance to tarnishing.

#### 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  $R_{p0.2}$   
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