boway 51100 SG

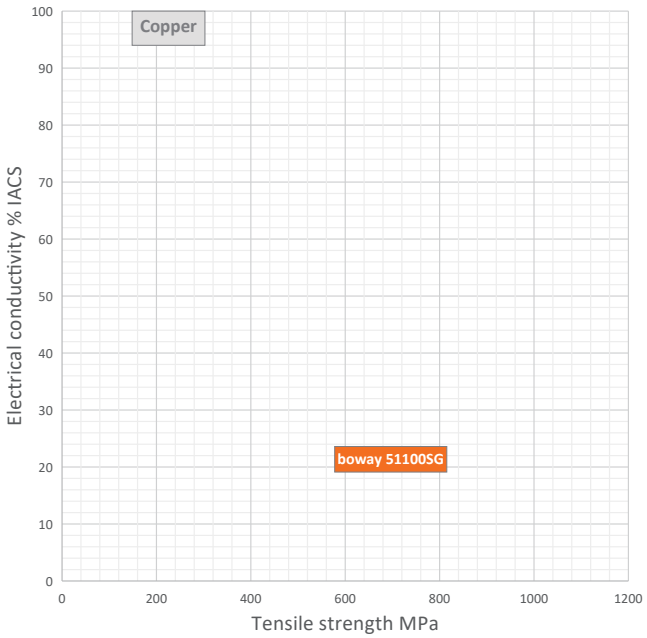
Material Designation

Boway Designation	boway 51100 SG
UNS	C51100
EN	CuSn4
JIS	C5111
GB(China)	QSn4–0.3

Chemical Composition*

Sn	4	%
P	0.03–0.35	%
Cu	Rem.	

* Nominal composition



Application Target

Signal connector	Suitable
Power connector	Not recommended
Miniaturized connector	Suitable
Switch/Relay	Suitable
Semiconductor	Not recommended

Characteristics

Very fine microstructure provides excellent bendability and fatigue performance combined with high strength. Replacement for CuSn6. Good corrosion resistance and low sensitive to stress corrosion cracking as well as excellent solderability.

Fabrication Properties

Cold forming	Very good
Machining	Average
Electroplating	Very good
Hot dip tinning	Very good
Laser welding	Good
Resistance welding	Good
Soft soldering	Very good

Physical Properties*

Density	8.8	g/cm^3
Electrical conductivity@20° C	19 11	% IACS MS/m
Thermal conductivity@20° C	100	W/(m·K)
Specific heat capacity	0.377	J/(g·K)
Modulus of elasticity	120	GPa
Poisson's ratio	0.33	
Coefficient of thermal expansion**	17.8	10^{-6}/K

* Typical values at room temperature for reference
** Average value between 20–300° C

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Mechanical Properties

Temper	Tensile strength		Yield strength	Elongation	Hardness*
	MPa	ksi	MPa	A50 %	HV0.2
R580	580–680	84–98	≥ 530	≥ 13	170–230
R660	660–760	95–110	≥ 630	≥ 7	180–240
R700	700–800	101–116	≥ 690	≥ 3	190–250

*For reference only

Bendability

Bending thickness ≤ 0.4 mm; Bending width: 10 mm

Temper	90° R/T		180° R/T	
	Good Way		Good Way	Bad Way
R580	0	0	0	1
R660	0.5	2.5	1.5	3
R700	1	4	-	-

90° bend test according to EN ISO7438, 180° bend test according to ASTM B820, shown values might show orange-peel, however no crack.

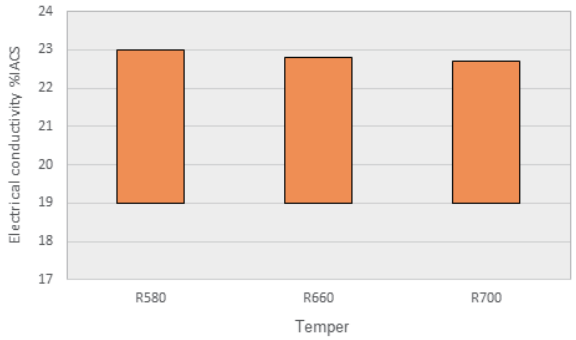
Packaging

Standard coils with outside diameter up to 1300 mm.
Traverse-wound coils with drum weight up to 500 kg.
Multiple-coil up to 3 tons.

Dimensions Available

Strip thickness 0.08–0.4 mm, other gauges on request.
Strip width from 8.5 mm.
Electroplated and Hot-dip tinned strip available.

Electrical Conductivity



Fatigue Strength

The fatigue strength is defined as the maximum bending stress amplitude which a material withstands for 10.000.000 load cycles under symmetrical alternate load without breaking. It depends on the temper selected and can be estimated typically by 1/3 of tensile strength. For solid solution fine grain materials fatigue strength might increase up to 1/2 of tensile strength.

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