boway 51900

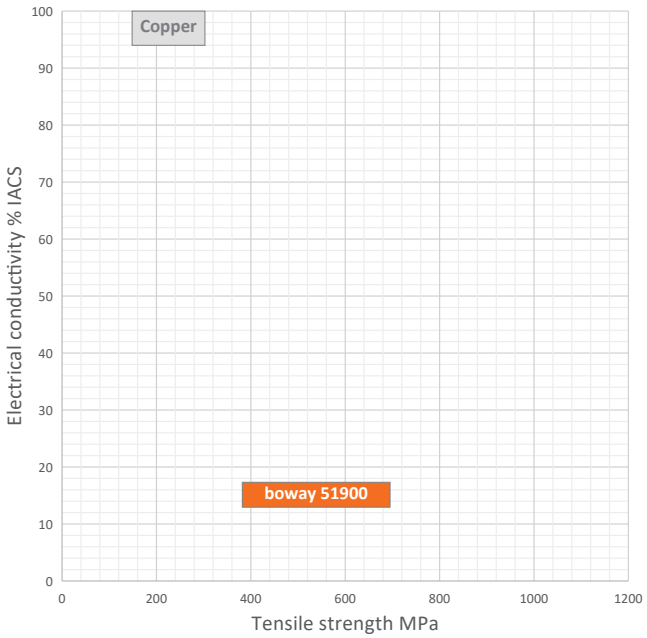
Material Designation

Boway Designation	boway 51900
UNS	C51900
EN	CuSn6
JIS	C5191
GB(China)	QSn6-0.2

Chemical Composition*

Sn	6	%
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

Standard Bronze. Excellent formability and high strength combined with low sensitive to stress corrosion cracking. Very good corrosion resistance as well as excellent solderability. Low hot cracking tendency with resistance welding.

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	15	% IACS
	9	MS/m
Thermal conductivity@20°C	75	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**	18.5	10^{-6}/K

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

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Mechanical Properties (Values Underlined Are For Reference Only)

Temper	Tensile strength		Yield strength	Elongation	Hardness
	MPa	ksi	MPa	A50 %	HV
R390(1/4H)	390–510	57–74	≥ 320	≥ 35	100–160
R490(1/2H)	490–620	72–90	≥ 420	≥ 20	150–205
R560	560–650	81–94	≥ 500	≥ 8	180–210
R590(H)	590–685	86–100	≥ 510	≥ 8	180–230
R635(EH)	635–720	93–105	≥ 570	≥ 5	200–240
R690(SH)	≥ 690	≥ 100	≥ 620	-	≥ 210
Annealed*	330–435	48–63			
H02*	440–545	64–79			
H04*	550–660	80–96			

*According to ASTM B103

Bendability Bending thickness ≤ 0.5 mm; Bending width: 10 mm

Temper	90° R/T		180° R/T	
	Good Way	Bad Way	Good Way	Bad Way
R390	0	0.5	0.5	1.5
R490	0.5	1	1	2
R590	1	1.5	2	3
R635	2	4	3	8
R690	-	-	-	-

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

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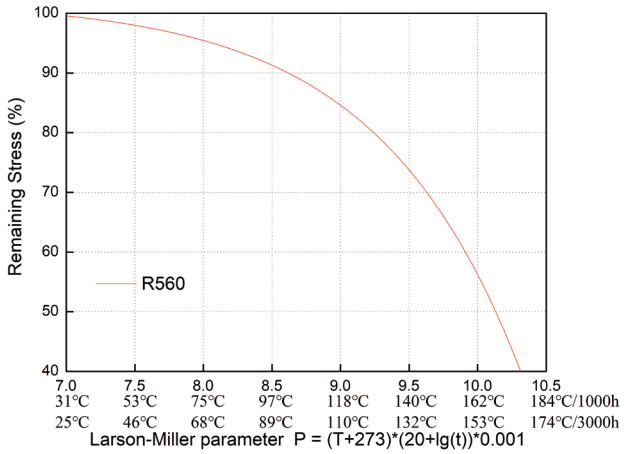
Thermal Stress Relaxation



P=Larson Miller parameter
T=temperature(℃)
t=time(h)
Example:
Application conditions: Maintain for 1000 hours at 125°C.
Formula substitution: T＝125, t＝1000
P=(125+273)×(20+lg (1000))×0.001=9.154
Graph reference: When P＝9.154, the stress retention rate is approximately 82%.
Conclusion: Under the conditions of 125°C /1000h, the remaining stress of this material is close to 82%.

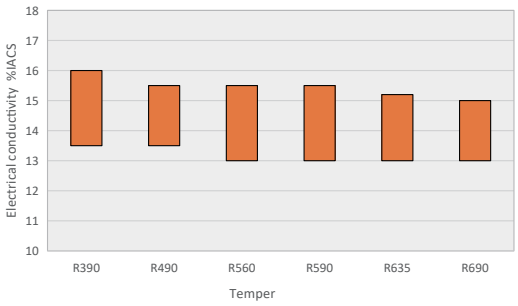
Packaging

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 0.08–3.0 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.

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