boway 19010

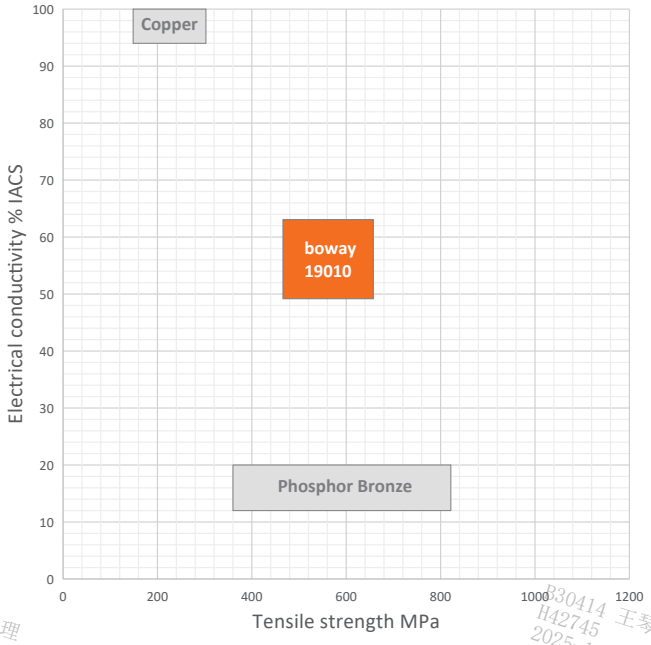
Material Designation

Boway Designation	boway 19010
UNS	C19010
EN	CuNi1.5Si
JIS	-
GB(China)	-

Chemical Composition*

Ni	0.8–1.8	%
Si	0.15–0.35	%
P	0.01–0.05	%
Cu	Rem.	

* Nominal composition



Application Target

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

Ideal for power connectors

Characteristics

Medium conductivity and medium strength combined with good stress relaxation resistance and good formability. Used for applications up to 120° C when using tinned surface. Lower end HPA.

Fabrication Properties

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

Physical Properties*

Density	8.9	g/cm^3
Electrical conductivity@20° C	57	% IACS
	33	MS/m
Thermal conductivity@20° C	260	W/(m·K)
Specific heat capacity	0.377	J/(g·K)
Modulus of elasticity	130	GPa
Poisson's ratio	0.33	
Coefficient of thermal expansion**	16.8	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
R410	410–480	59–70	≥ 360	≥ 6	125–155
R460	460–530	67–77	≥ 430	≥ 5	135–165
R490	490–560	71–81	≥ 410	≥ 10	145–175
R520	520–590	75–86	≥ 460	≥ 8	150–180
R580	580–655	84–95	≥ 520	≥ 6	180–220
TM04*	490–550	71–80	≥ 410	≥ 10	140–170
TM06*	520–590	75–86	≥ 440	≥ 9	150–180
TM08*	580–650	84–94	≥ 540	≥ 8	170–200

*According to ASTM B888

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
R410	0.5	0.5	1	1
R460	0.5	1	1	2
R490	0.8	1	1.5	2
R520	1	1.5	1.5	2
R580	1	1.5	2	3

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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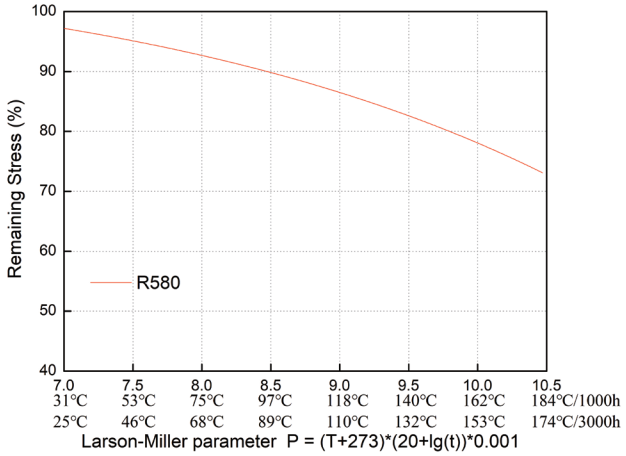
Thermal Stress Relaxation



P=Larson Miller parameter
T=temperature(℃)
t=time(h)
Example:
Application conditions: Maintain for 1000 hours at 150°C.
Formula substitution: T＝150, t＝1000

$$P=(150+273)\times(20+\lg(1000))\times 0.001=9.729$$

Graph reference: When P＝9.729, the stress retention rate is approximately 80%.
Conclusion: Under the conditions of 150°C / 1000h, the remaining stress of this material is close to 80%.

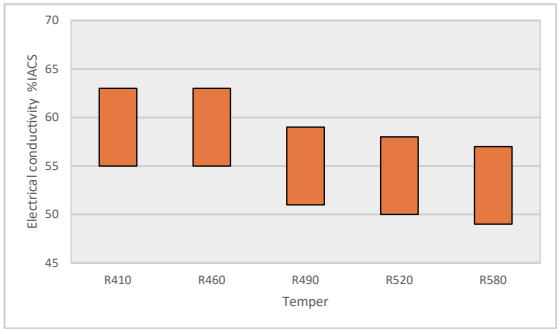
Packaging

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.
Hot-dip tinned and electroplated 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.