boway 19920

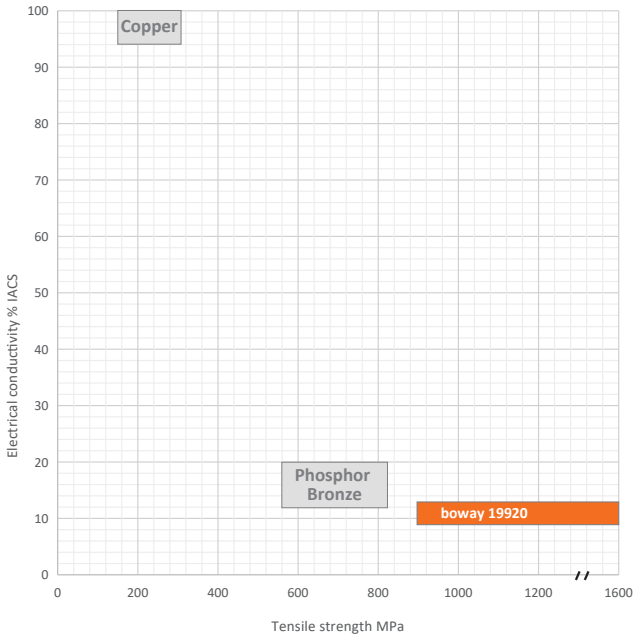
Material Designation

Boway Designation	boway 19920
UNS	C19920
EN	CuTi3
JIS	-
GB (China)	-

Chemical Composition*

Ti	2.5–3.5	%
Others	≤1	%
Cu	Rem.	

* Nominal composition



Application Target

Signal connector	Very suitable
Power connector	Not recommemded
Miniaturized connector	Very suitable
Switch/Relay	Suitable
Semiconductor	Not recommemded

Ideal for signal connector and spring

Characteristics

boway 19920 alloy is a Cu-Ti based alloy. The alloy is beryllium-free combining very high strength with excellent bending properties, superb thermal stress relaxation properties and high fatigue resistance.

Fabrication Properties

Cold forming	Good
Machining	Not suitable
Electroplating	Good
Hot dip tinning	Good
Laser welding	Good
Resistance welding	Good
Soft soldering	Good

Physical Properties*

Density	8.66	g/cm^3
Electrical	12	% IACS
conductivity@20°C	7	MS/m
Thermal conductivity@20°C	50	W/(m·K)
Specific heat capacity	0.39	J/(g·K)
Modulus of elasticity	120	GPa
Poisson's ratio	0.34	
Coefficient of thermal expansion**	17.76	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
R880(H)	880–1000	128–145	800–900	10	280–320
R920(EH)	920–1050	133–152	850–950	6	290–330
R960(SH)	960–1100	139–160	900–1000	3	300–340
R1000(ESH)	1000–1150	145–167	950–1050	2	310–350
R1050(XSH)	1050–1200	152–174	1000–1100	1	320–360
R1100(GSH)	1100–1250	160–181	1050–1200	-	330–370
R1200	1200–1400	174–203	1150–1350	-	350–420
R1300	1300–1600	188–232	1250–1550	-	360–450

*For reference only

Bendability

Bending thickness 0.03-0.2 mm; Bending width: 10 mm

Temper	90° R/T		180° R/T	
	Good Way	Bad Way	Good Way	Bad Way
R880(H)	0	0	-	-
R920(EH)	0	0.5	-	-
R960(SH)	0	1	-	-
R1000(ESH)	-	-	-	-
R1050(XSH)	-	-	-	-
R1100(GSH)	-	-	-	-
R1200	-	-	-	-
R1300	-	-	-	-

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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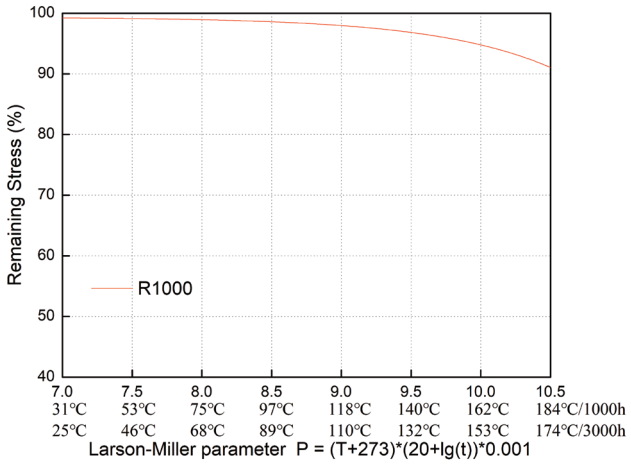
Thermal Stress Relaxation



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)×(20+lg(1000))×0.001=9.729
Graph reference: When P=9.729, the stress retention rate is approximately 95%.
Conclusion: Under the conditions of 150°C/1000h, the remaining stress of this material is close to 95%.

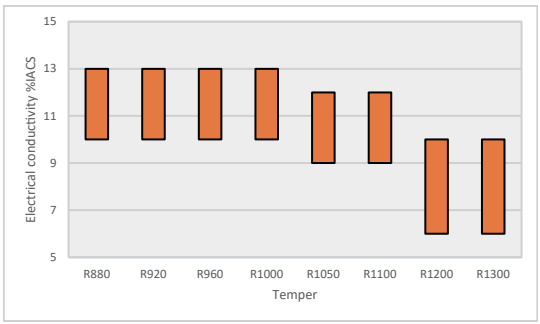
Packaging

Standard coils with outside diameter up to 1300 mm.

Dimensions Available

Strip thickness 0.03-0.2mm,other gauges on request.
R1200-R1300 only provide 0.03-0.08mm thickness,other thickness are negotiable.
Strip width from 8.5mm.

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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