boway 19400

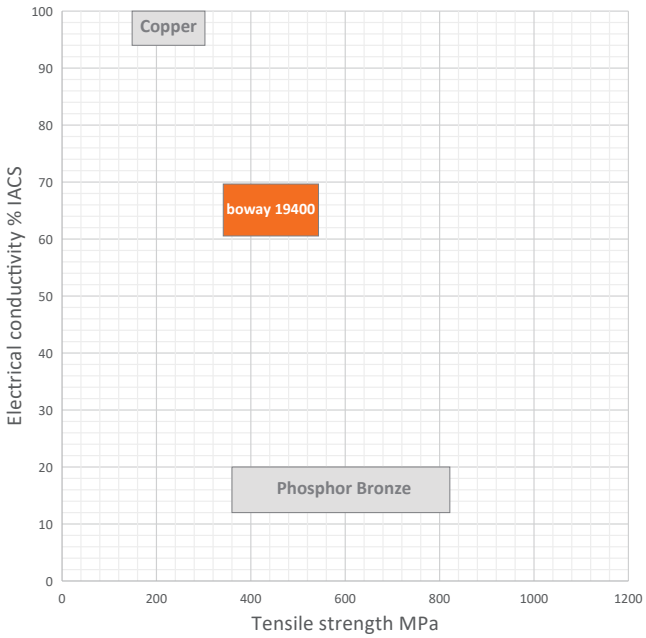
Material Designation

Boway Designation	boway 19400
UNS	C19400
EN	CuFe2P
JIS	C1940
GB(China)	TFe2.5

Chemical Composition*

Fe	2.3	%
P	0.03	%
Cu	Rem.	

* Nominal composition



Application Target

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

Ideal for semiconductor

Characteristics

High strength and good electrical conductivity with excellent softening resistance performance and good corrosion resistance. Standard material for semiconductor applications, stamping as well as etching quality available.

Fabrication Properties

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

Physical Properties*

Density	8.8	g/cm^3
Electrical conductivity@20℃	66	% IACS
	38	MS/m
Thermal conductivity@20° C	280	W/(m·K)
Specific heat capacity	0.385	J/(g·K)
Modulus of elasticity	121	GPa
Poisson's ratio	0.33	
Coefficient of thermal expansion**	17.6	$10^{-6}/K$

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

Rev.2024,10

boway 19400

Mechanical Properties (Values Underlined Are For Reference Only)

Temper	Tensile strength		Yield strength	Elongation	Hardness*
	MPa	ksi	MPa	A50 %	HV
R365(1/2H)	365–435	53–63	≥ 250	≥ 6	110–140
R415(H)	415–485	60–70	≥ 365	≥ 3	125–145
R460(EH)	460–525	67–77	≥ 440	≥ 2	130–155
R480(SH)	485–545	70–79	≥ 460	≥ 2	135–160
R530(ESH)	≥ 530	≥ 77	≥ 500	≥ 1	≥ 150
R550(SSH)	≥ 550	≥ 80	≥ 520	≥ 1	≥ 155
Annealed*	275–435	40–63	≥ 100	10	
Light Anneal	310–380	45–55	160	26	
H02*	365–435	53–63	≥ 250	≥ 6	
H04*	415–485	60–70	≥ 365	≥ 3	
H06*	460–505	67–73	≥ 440	≥ 2	
H08*	485–525	70–76	≥ 460	≥ 2	
H10*	505–550	73–80	≥ 485	≥ 1	

*According to ASTM B152

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

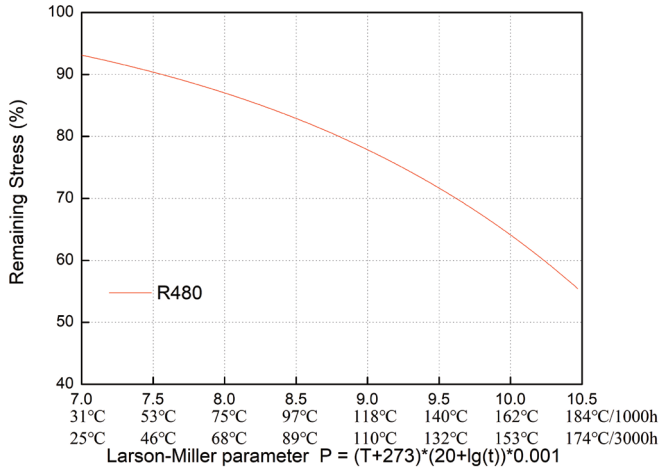
Temper	90° R/T		180° R/T	
	Good Way	Bad Way	Good Way	Bad Way
R365	0	0	1	1
R415	0.5	0.5	1.5	1.5
R460	0.5	1	1.5	1.5
R480	0.8	1.2	2.0	2.0
R530	1.5	2	-	-
R550	-	-	-	-

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

Rev.2024,10

boway 19400

Thermal Stress Relaxation



P=Larson Miller parameter
T=temperature(℃)
t=time(h)
Example:
Application conditions: Maintain for 1000 hours at 105°C.
Formula substitution: T＝105, t＝1000
P=(105+273)×(20+lg(1000))×0.001=8.694
Graph reference: When P＝8.694, 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%.

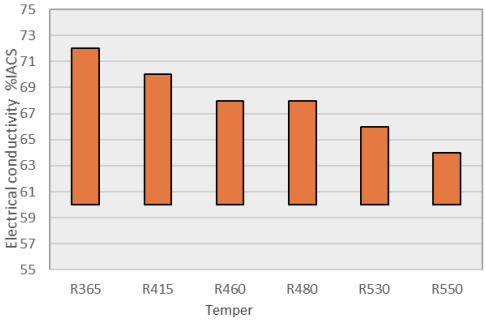
Packaging

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.

Rev.2024,10