boway 70318

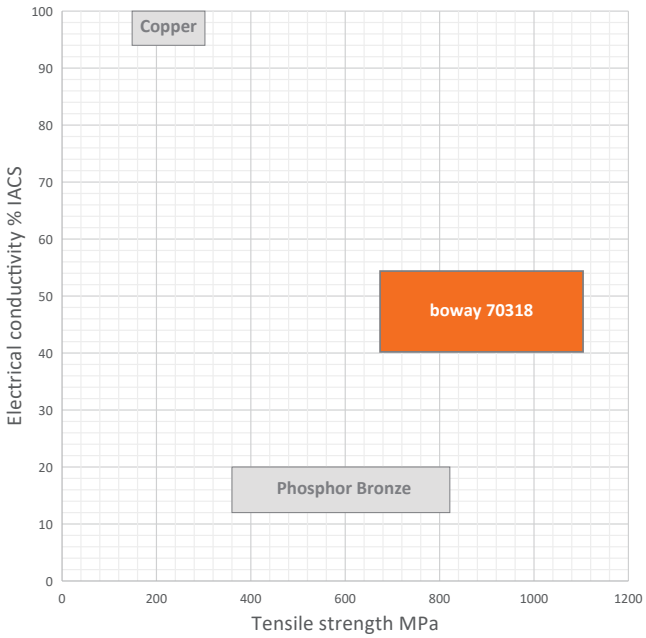
Material Designation

Boway Designation	boway 70318
UNS	C70318
EN	CuNi3CoSi
JIS	-
GB(China)	-

Chemical Composition*

Ni	3	%
Co	0.9	%
Si	0.9	%
Cu	Rem.	
Other	≤0.5	%

* Nominal composition



Application Target

Signal connector	Very suitable
Power connector	Suitable
Miniaturized connector	Suitable
Switch/Relay	Very suitable
Semiconductor	Suitable

Well suited for BTB connectors, particularly for USB type-c, relay springs, high speed connectors and others

Characteristics

Very high strength combined with superb forming properties, medium to high conductivity.
Very good stress relaxation resistance. Not sensitive to stress corrosion cracking.

Fabrication Properties

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

Physical Properties*

Density	8.82	g/cm^3
Electrical conductivity@20°C	50	% IACS
	29	MS/m
Thermal conductivity@20°C	190	W/(m·K)
Specific heat capacity	0.38	J/(g·K)
Modulus of elasticity	130	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

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Mechanical Properties

Temper	Tensile strength		Yield strength	Elongation	Hardness
	MPa	ksi	MPa	A50 %	HV
R600(TR04)	⩾ 600	⩾ 87	540-680	⩾ 4	⩾ 190
R690(TM02)	690–830	100–120	⩾ 680	⩾ 6	⩾ 200
R770(TM04)	770–900	110–130	⩾ 750	⩾ 4	⩾ 220
R840(TM06)	840–970	122–140	⩾ 810	⩾ 1	⩾ 240
R920(TM08)	920–1060	133–154	⩾ 880	⩾ 1	⩾ 260
R980(TM10)	980–1120	142–163	⩾ 940	⩾ 1	⩾ 280

*For reference only

Bendability

Bending thickness: ≤ 0.3 mm,R690-R840 bending width:10mm; R920-R980 bending width:1.0mm

Temper	90° R/T		180° R/T	
	Good Way	Bad Way	Good Way	Bad Way
R600(TR04)	0	0	-	-
R690(TM02)	0	0	-	-
R770(TM04)	0.5	0.5	-	-
R840(TM06)	1	1	-	-
R920(TM08)	1	1	-	-
R980(TM10)	3	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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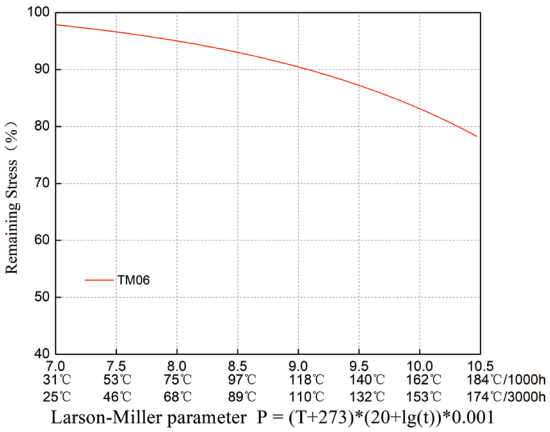


Thermal Stress Relaxation

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)×(20+lg(1000))×0.001=9.729

Graph reference: When P = 9.729, the stress retention rate is approximately 85%.

Conclusion: Under the conditions of 150°C / 1000h, the remaining stress of this material is close to 85%.

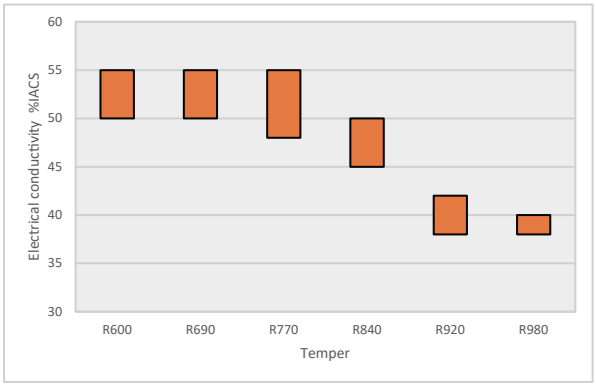
Packaging

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 0.05–0.3 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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