boway 18160

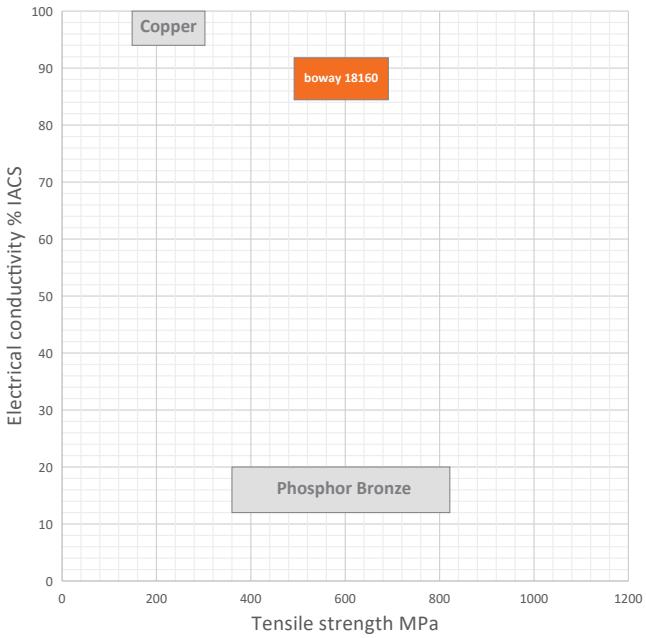
Material Designation

Boway Designation	boway 18160
UNS	C18160
EN	CuCr1Zr
JIS	-
GB(China)	-

Chemical Composition*

Cr	0.7	%
Zr	0.1	%
Cu	Rem.	

* Nominal composition



Application Target

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

Ideal for power connectors

Characteristics

Highest conductivity combined with medium strength, very good bending properties.
Excellent stress relaxation and softening resistance. The alloy for high power contacts.

Fabrication Properties

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

Physical Properties*

Density	8.9	g/cm^3
Electrical conductivity@20°C	88 51	% IACS MS/m
Thermal conductivity@20°C	340	W/(m·K)
Specific heat capacity	0.381	J/(g·K)
Modulus of elasticity	135	GPa
Poisson's ratio	0.33	
Coefficient of thermal expansion**	18.6	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
R480	480–570	70–83	≥ 450	≥ 8	150–190
R540	540–630	79–92	≥ 500	≥ 4	160–200
R600	600–690	87–101	≥ 560	≥ 2	170–200

*For reference only

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
R480	0.5	0.5	1	1
R540	1	1	2	2.5
R600	1.5	2.5	-	-

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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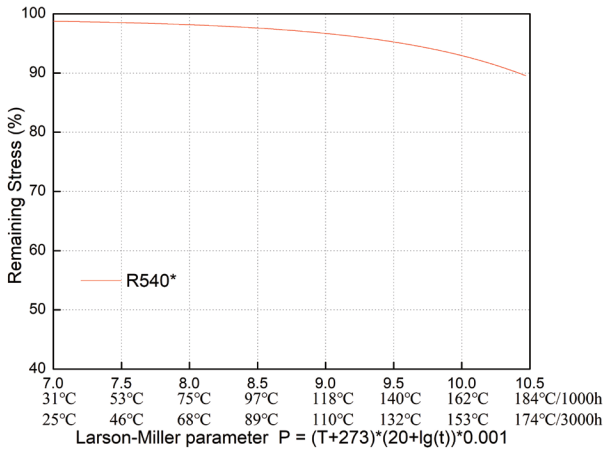
Thermal Stress Relaxation



*Optimized Version

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 93%.
Conclusion: Under the conditions of 150°C /1000h, the remaining stress of this material is close to 93%.

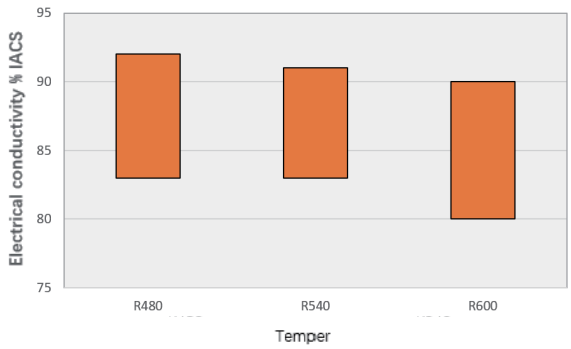
Packaging

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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