boway 42500

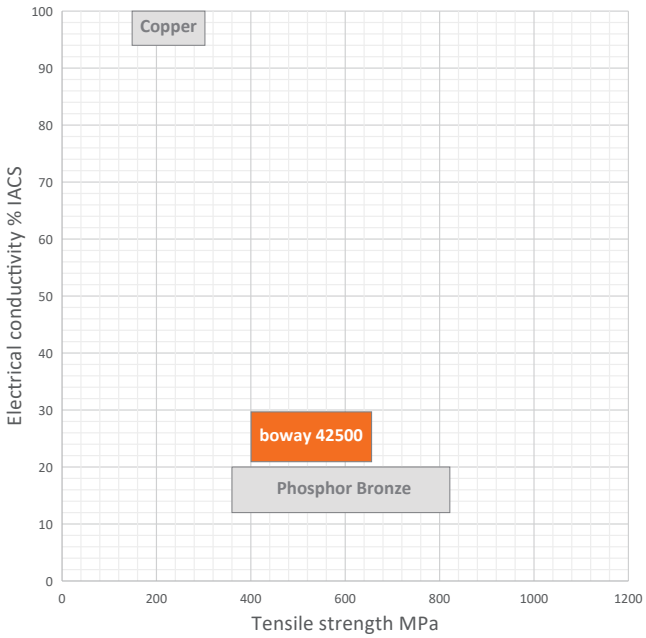
Material Designation

Boway Designation	boway 42500
UNS	C42500
EN	CuSn3Zn9
JIS	-
GB(China)	HSn88-2

Chemical Composition*

Cu	88	%
Sn	3	%
Zn	Rem.	

* Nominal composition



Application Target

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

Ideal for automotive, industrial connectors, spring

Characteristics

Medium conductivity, comparable strength with bronze,excellent fatigue performance and good wear resistance. Resistant to atmospheric and seawater corrosion, insensitive to stress corrosion cracking.

Fabrication Properties

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

Physical Properties*

Density	8.75	g/cm^3
Electrical	28	% IACS
conductivity@20°C	16	MS/m
Thermal conductivity@20°C	120	W/(m·K)
Specific heat capacity	0.38	J/(g·K)
Modulus of elasticity	115	GPa
Poisson's ratio	0.34	
Coefficient of thermal expansion**	18.4	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
R395(1/2H)	395–485	57–70	355–465	≥18	110–150
R430(3/4H)	430–510	62–73	400–490	≥12	130–170
R485(H)	485–565	70–81	455–545	≥9	160–180
R525(EH)	525–605	76–87	495–585	≥7	170–190
R580(SH)	580–650	84–94	550–630	≥3	180–200
R635(ESH)	≥635	≥92	≥600	-	≥200
Annealed*	285–325	41–47	≥90	≥47	
H01*	340–405	49–59	≥140	≥24	
H02*	395–460	57–67	≥290	≥13	
H03*	425–510	62–74	≥375	≥10	
H04*	485–565	70–82	≥430	≥6	
H06*	525–605	76–88	≥480	≥5	
H08*	580–650	84–94	≥545	≥3	
H10*	≥635	≥92	≥585	-	

*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
R395	0	0	0	0
R430	0	0	0	0
R485	0	0.5	0.5	1
R525	0.5	1	1	1.5
R580	1.5	2.5	2	3
R635	-	-	-	-

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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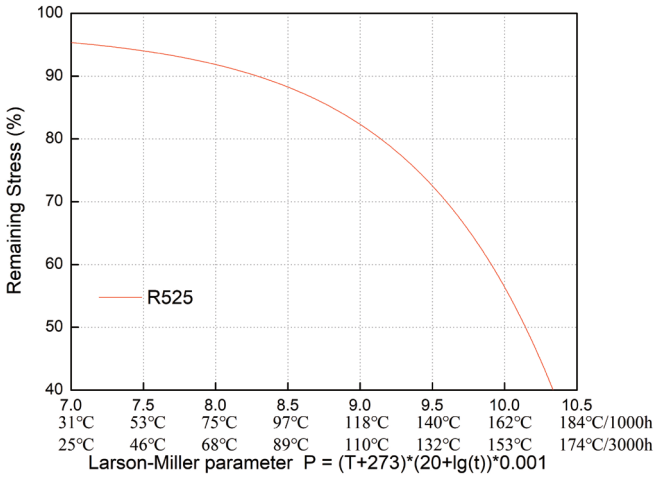
Thermal Stress Relaxation



P=Larson Miller parameter
T=temperature(℃)
t=time(h)
Example:
Application conditions: Maintain for 1000 hours at 125°C.
Formula substitution: T＝125, t＝1000
P=(125+273)×(20+lg (1000))×0.001=9.154
Graph reference: When P＝9.154, the stress retention rate is approximately 80%.
Conclusion: Under the conditions of 125°C /1000h, the remaining stress of this material is close to 80%.

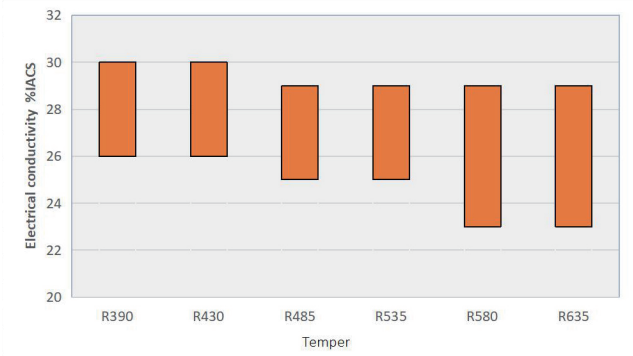
Packaging

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 0.1–2mm, 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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