

boway 51100 SG

Material Designation

| | |
|-------------------|----------------|
| Boway Designation | boway 51100 SG |
| UNS | C51100 |
| EN | CuSn4 |
| JIS | C5111 |
| GB(China) | QSn4-0.3 |

Chemical Composition*

| | | |
|----|-----------|---|
| Sn | 4 | % |
| P | 0.03-0.35 | % |
| Cu | Rem. | |

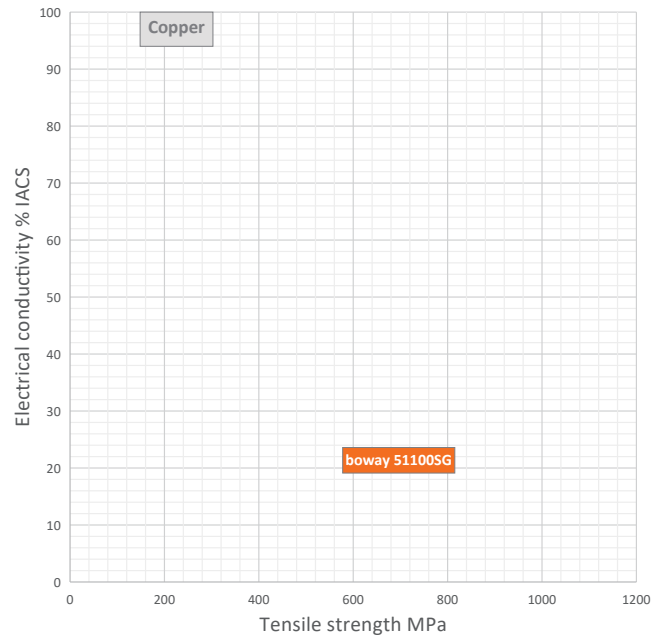
* Nominal composition

Application Target

| | |
|------------------------|-----------------|
| Signal connector | Suitable |
| Power connector | Not recommended |
| Miniaturized connector | Suitable |
| Switch/Relay | Suitable |
| Semiconductor | Not recommended |

Fabrication Properties

| | |
|--------------------|-----------|
| Cold forming | Very good |
| Machining | Average |
| Electroplating | Very good |
| Hot dip tinning | Very good |
| Laser welding | Good |
| Resistance welding | Good |
| Soft soldering | Very good |



Characteristics

Very fine microstructure provides excellent bendability and fatigue performance combined with high strength. Replacement for CuSn6. Good corrosion resistance and low sensitive to stress corrosion cracking as well as excellent solderability.

Physical Properties*

| | | |
|------------------------------------|-------|---------------------|
| Density | 8.8 | g/cm ³ |
| Electrical conductivity@20°C | 19 | % IACS |
| Thermal conductivity@20°C | 11 | MS/m |
| Specific heat capacity | 100 | W/(m·K) |
| Modulus of elasticity | 0.377 | J/(g·K) |
| Poisson's ratio | 120 | GPa |
| Coefficient of thermal expansion** | 0.33 | 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 |
| R580 | 580–680 | 84–98 | ≥ 530 | ≥ 13 | 170–230 |
| R660 | 660–760 | 95–110 | ≥ 630 | ≥ 7 | 180–240 |
| R700 | 700–800 | 101–116 | ≥ 690 | ≥ 3 | 190–250 |

*For reference only

Bendability Bending thickness ≤ 0.4 mm; Bending width: 10 mm

| Temper | 90° R/T | | 180° R/T | |
|--------|----------|-----|----------|---------|
| | Good Way | | Good Way | Bad Way |
| R580 | 0 | 0 | 0 | 1 |
| R660 | 0.5 | 2.5 | 1.5 | 3 |
| R700 | 1 | 4 | - | - |

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

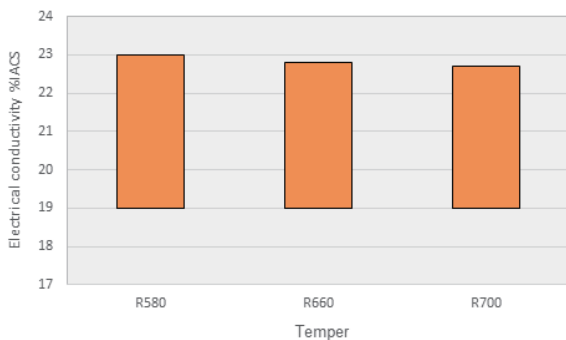
Packaging

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 0.08–0.4 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. For solid solution fine grain materials fatigue strength might increase up to 1/2 of tensile strength.

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