

## Tin Bronze

# Bz4 (C51100)

### Material Designation\*

UNS	C51100
EN	CuSn4 (CW 450 K)
JIS	C5111
GB	QSn4-0.3

### Chemical Composition

Cu	Balance	%
Sn	3.5-4.9	%
P	0.03-0.35	%



### Characteristics

Bz4 is a tin bronze with good electroplating properties, high mechanical properties, corrosion resistance and high elasticity. It has good performance under pressure in cold and hot conditions.

### Typical Applications

It is widely used for automobile parts industry, such as clutch friction plates, connectors, lock washers, etc.

### Physical Properties

Density <sup>①</sup>	8.9	g/cm <sup>3</sup>
Electrical conductivity <sup>①</sup>	20	%IACS
Thermal conductivity <sup>①</sup>	90	W/(m·K)
Coefficient of thermal expansion <sup>②</sup>	18.2	10 <sup>-6</sup> /K
Modulus of elasticity	125	GPa

Note<sup>①</sup>: Temperature for testing is 20°C.

Note<sup>②</sup>: Temperature range for testing is 20-300°C.

### Fabrication Properties

Cold workability	Excellent
Hot workability	Poor
Brazing	Excellent
Machinability compared with C36000	20%

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## Mechanical Properties

Diameter	Temper	Tensile Strength	Yield Strength	Elongation
mm		MPa	MPa min.	%
0.1 < $\Phi$ ≤ 1.0	H02	540-740	370	--
1.0 < $\Phi$ ≤ 2.0	H02	520-720	350	--
2.0 < $\Phi$ ≤ 4.0	H02	500-700	330	≥4
4.0 < $\Phi$ ≤ 6.0	H02	480-680	310	≥8
6.0 < $\Phi$ ≤ 8.5	H02	460-660	290	≥10
0.1 < $\Phi$ ≤ 1.0	H04	880-1130	700	--
1.0 < $\Phi$ ≤ 2.0	H04	860-1060	680	--
2.0 < $\Phi$ ≤ 4.0	H04	830-1030	650	--
4.0 < $\Phi$ ≤ 6.0	H04	780-980	600	--
6.0 < $\Phi$ ≤ 8.5	H04	690-950	510	--

## Tolerance and Delivery Form

Diameter	Standard coil weights	Tolerance <sup>③</sup>	Coil ID
mm	kg	mm	mm
0.1 < $\Phi$ ≤ 0.3	1-5	0.01	Spool packing
0.5 < $\Phi$ ≤ 0.8	5-12	0.01	160-200
0.8 < $\Phi$ ≤ 1.1	15-25	0.02	270-300
1.1 < $\Phi$ ≤ 1.6	18-30	0.02	260-300
1.6 < $\Phi$ ≤ 2.5	25-40	0.03	320-350
2.5 < $\Phi$ ≤ 4.0	30-45	0.03	370-400
4.0 < $\Phi$ ≤ 6.5	45-60	0.04	370-400
6.5 < $\Phi$ ≤ 10.0	200-400	0.04	1000-1200
8.0 < $\Phi$ ≤ 12.0	200-400	0.05	1200-1400

Note<sup>③</sup>: The tolerances listed in the table are specified as all plus or all minus. When tolerances are specified as plus and minus ( $\pm$ ), half the values given.

\*Composition UNS  
 Conductivity UNS  
 Mechanical Properties For reference only, measured at room temperature, 68°F(20°C).  
 Fabrication Properties UNS, Machinability for reference only.  
 Other Physical Properties For reference only

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