

Bismuth Brass

bedra 49250

Material Designation*

UNS	C49250
EN	/
JIS	C6801
GB	HBi60-1.3 (Hbi59-1)

Chemical Composition

Cu	58-61	%
Pb	≤ 0.009	%
Bi	1.8-2.4	%
Sn	≤ 0.30	%
Fe	≤ 0.50	%
Cd	≤ 0.001	%
Zn	Balance	%

Characteristics

The alloy has excellent turning performance, which is comparable to C3604, excellent riveting performance and hot forging performance, as well as excellent mechanical and electrical properties, making it one of the ideal materials to replace lead brass.

Physical Properties

Density ^①	8.41	g/cm ³
Electrical conductivity ^①	24	%IACS
Thermal conductivity ^①	96	W/(m·K)
Coefficient of thermal expansion ^②	18.9	10 ⁻⁶ /K
Modulus of elasticity	100.7	GPa

Note①: Temperature for testing is 20°C.

Note②: Temperature range for testing is 20-300°C.



Typical Applications

The alloy is mainly used in lead-free replacement of leaded brass, with a wide range of applications in the market, such as e-cigarette, connector, valve core, embedded nut, intelligent charging, coffee pot accessories, consumer electronics, hardware, mechanical equipment, construction machinery, 5G accessories, etc.

Fabrication Properties

Cold workability	Fair
Hot workability	Fair
Brazing	Good
Resistance welding	Not recommended
Hot forging compared with C37700	70%
Machinability compared with C36000	90%

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Mechanical Properties

Diameter	Temper	Tensile Strength	Yield Strength	Elongation	Hardness
mm		MPa min.	MPa min.	% min.	HV min.
3 ≤ Φ < 12	H02	420	170	7	120
12 ≤ Φ < 25	H02	420	170	7	120
25 ≤ Φ < 50	H02	390	140	15	100
50 ≤ Φ < 80	H02	390	140	15	100
3 ≤ Φ < 12	H04	500	350	5	140

Tolerance and Delivery Form

Diameter	Tolerance ^③	Ovality	Straight Bar		Straightness
			Length		
mm	mm	mm	mm max.	ft max.	mm/m max.
2 ≤ Φ < 3	0.03	0.0075	2500	8.2	1.0
3 ≤ Φ < 6	0.04	0.01	2500	8.2	0.5
6 ≤ Φ < 10	0.06	0.015	4000	13.1	0.5
10 ≤ Φ < 18	0.08	0.02	4000	13.1	0.5
18 ≤ Φ < 25	0.12	0.03	4000	13.1	0.5
25 ≤ Φ < 40	0.20	0.05	4000	13.1	0.5
40 ≤ Φ < 60	0.30	0.075	4000	13.1	0.5
60 ≤ Φ < 80	0.60	0.15	3000	9.8	3.0
80 ≤ Φ < 100	1.60	0.40	2000	6.6	5.0
100 ≤ Φ ≤ 120	2.00	0.50	1500	4.9	6.0

Note^③: The tolerances listed in the table are specified as all plus or all minus. When tolerances are specified as plus and minus (±), half the values given.

*Composition
Conductivity
Mechanical Properties
Fabrication Properties
Other Physical Properties

ASTM B974-2016a, Pb, for reference only.
ASTM B974-2016a
For reference only.
CDA, Machinability for reference only.
CDA

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