

[MatWeb](#), The Online Materials Database

Beryllium Copper, UNS C17200, TD02 Temper Strip

Subcategory: Beryllium Alloy; Copper Alloy; Metal; Nonferrous Metal

Key Words: BeCu; CDA 172, CB101, ISO CuBe2, CEN CW101C, A4/2, beryllium bronze; Alloy 25

Component	Wt. %
Be	1.8 - 2
Co + Ni	Min 0.2
Co + Ni + Fe	Max 0.6
Cu	97
Other	Max 0.5
Pb	Max 0.1

Material Notes:

Good to excellent corrosion resistance. Excellent cold workability; good hot formability. Commonly fabricated by blanking, forming and bending, turning, drilling, tapping.

Applications: springs, flexible metal hose, Bourdon tubing, bellows, clips, washers, retaining rings, and other parts subject to severe forming conditions but require high strength, anelasticity, and fatigue and creep resistance; in parts that require high strength or wear resistance along with good electrical conductivity and/or magnetic characteristics such as navigational instruments, non-sparking safety tools, firing pins, bushings, valves, pumps, shafts, and rolling mill parts.

Physical Properties	Metric	English	Comments
Density	8.25 g/cc	0.298 lb/in ³	at 20°C (68°F); during age hardening, 2% max. decrease in length and 6% max. increase in density.

Mechanical Properties

Hardness, Rockwell B	88 - 96	88 - 96	
Hardness, Rockwell B	92 - 103	92 - 103	For rod, bar, plate and tubing <9.5 mm thickness of diameter
Hardness, HR30T	74 - 79	74 - 79	

Hardness, Vickers	185 - 225	185 - 225	
Tensile Strength, Ultimate	655 - 900 MPa	95000 - 131000 psi	For rod, bar, plate and tubing, <9.5 mm thickness of diameter
Tensile Strength, Yield	515 - 655 MPa	74700 - 95000 psi	At 0.2% offset
Elongation at Break	10 - 20 %	10 - 20 %	For rod, bar, plate and tubing, <9.5 mm thickness of diameter, In 50 mm
Elongation at Break	5 - 25 %	5 - 25 %	in 50 mm
Modulus of Elasticity	125 - 130 GPa	18100 - 18900 ksi	
Poisson's Ratio	0.3	0.3	
Fatigue Strength	220 - 260 MPa	31900 - 37700 psi	Reversed Bending; 10 ⁸ cycles
Machinability	20 %	20 %	UNS C36000 (free-cutting brass) = 100%
Shear Modulus	50 GPa	7250 ksi	

Electrical Properties

Electrical Resistivity	1.01418e-005 - 1.1494e-005 ohm-cm	1.01418e-005 - 1.1494e-005 ohm-cm	at 20°C (68°F)
------------------------	-----------------------------------	-----------------------------------	----------------

Thermal Properties

CTE, linear 20°C	16.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	9.28 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	from 20-100°C (68-212°F)
CTE, linear 100°C	17 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	9.44 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	from 20-200°C (68-390°F)
CTE, linear 250°C	17.8 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$	9.89 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$	from 20-300°C (68-570°F)
Specific Heat Capacity	0.42 J/g $\cdot^\circ\text{C}$	0.1 BTU/lb $\cdot^\circ\text{F}$	
Thermal Conductivity	130 - 133 W/m-K	902 - 923 BTU-in/hr-ft ² $\cdot^\circ\text{F}$	at 200°C
Thermal Conductivity	105 - 130 W/m-K	729 - 902 BTU-in/hr-ft ² $\cdot^\circ\text{F}$	at 20°C (68°F)
Melting Point	865 - 980 °C	1590 - 1800 °F	
Solidus	865 °C	1590 °F	

Liquidus	980 °C	1800 °F
----------	--------	---------

Processing Properties

Processing Temperature	845 °C	1550 °F	Hot-Shortness Temperature
Annealing Temperature	760 - 790 °C	1400 - 1450 °F	
Solution Temperature	760 - 790 °C	1400 - 1450 °F	
Aging Temperature	260 - 425 °C	500 - 797 °F	
Hot-Working Temperature	650 - 800 °C	1200 - 1470 °F	
Recrystallization Temperature	730 °C	1350 °F	

References are available for this material.

Copyright 1996-2006 by Automation Creations, Inc. The information provided by MatWeb is intended for personal, non-commercial use. The contents, results, and technical data from this site may not be reproduced either electronically, photographically or substantively without permission from Automation Creations, Inc. No warranty, neither expressed nor implied, is given regarding the accuracy of this information. The user assumes all risk and liability in connection with the use of information from MatWeb.