

# C95300

**Material Notes:** Heat treatable. Except where noted, all property values listed below are for sand casting.


**Recommended Casting Methods:** Centrifugal, Continuous, Permanent Mold, Plaster, and Sand.

**Applications:** Electrical applications, pickling baskets, nuts, gears, steel mill slippers, marine equipment, welding jaws, non-sparking hardware.

Classified under: Aluminum bronzes. ASTM B148; formerly ASTM B148-9B

**Key Words:** Aluminum bronze, ASTM B148, ASTM B148-9B

Physical Properties	Metric	English	Comments
Density	7.53 g/cc	0.272 lb/in <sup>3</sup>	
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	140	140	as cast; 3000 kg
	174	174	TQ50 temper; 3000 kg
Hardness, Rockwell B	67	67	as cast
	81	81	TQ50 temper
Tensile Strength, Ultimate	450 MPa	65300 psi	as cast
	550 MPa	79800 psi	TQ50 temper
Tensile Strength, Yield	170 MPa	24700 psi	as cast
	275 MPa	39900 psi	TQ50 temper
Elongation at Break	12 %	12 %	TQ50 temper, in 50 mm
	20 %	20 %	as cast, in 50 mm
Reduction of Area	14 %	14 %	TQ50 temper
	25 %	25 %	as cast
Modulus of Elasticity	110 GPa	16000 ksi	
Compressive Strength	760 MPa	110000 psi	as cast
	825 MPa	120000 psi	TQ50 temper
Poissons Ratio	0.314	0.314	
Fatigue Strength	152 MPa	22000 psi	as cast
	@# of Cycles 1.00e+8	@# of Cycles 1.00e+8	
Machinability	55 %	55 %	UNS C36000 (free-cutting brass) = 100%
Shear Modulus	42.0 GPa	6090 ksi	
Izod Impact	38.0 J	28.0 ft-lb	Cast and annealed
	@Temperature -20.0 - 100 °C	@Temperature -4.00 - 212 °F	

Charpy Impact 

31.0 J                      22.9 ft-lb  
 @Temperature -20.0 - 100 °C @Temperature -4.00 - 212 °F

Keyhole, cast and annealed

37.0 J                      27.3 ft-lb  
 @Temperature -20.0 - 100 °C @Temperature -4.00 - 212 °F

Keyhole, TQ50 temper

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000133 ohm-cm @Temperature 20.0 °C	0.0000133 ohm-cm @Temperature 68.0 °F	
Magnetic Permeability	1.07	1.07	8 kA/m field strength

Thermal Properties	Metric	English	Comments
CTE, linear	16.2 µm/m-°C @Temperature 20.0 - 300 °C	9.00 µin/in-°F @Temperature 68.0 - 572 °F	
Specific Heat Capacity	0.375 J/g-°C	0.0896 BTU/lb-°F	
Thermal Conductivity	63.0 W/m-K @Temperature 20.0 °C	437 BTU-in/hr-ft²-°F @Temperature 68.0 °F	
Melting Point	1040 - 1045 °C	1900 - 1913 °F	
Solidus	1040 °C	1900 °F	
Liquidus	1045 °C	1913 °F	

Processing Properties	Metric	English	Comments
Annealing Temperature	595 - 650 °C	1100 - 1200 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	9.0 - 11 %	9.0 - 11 %	
Copper, Cu	>= 86 %	>= 86 %	
Iron, Fe	0.80 - 1.5 %	0.80 - 1.5 %	
Other	<= 1.0 %	<= 1.0 %	

**Descriptive Properties**

Elastic Limit	125 MPa 205 MPa	as cast TQ50 temper
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