C95400

Material Notes: Good wear resistance, heat treatable. Except where noted, all property values are for sand casting.

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

Applications: Pump impellers, bearings, gears, worms, bushings, valve seats and guides, rolling mill slippers, slides, nonsparking hardware.

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

Key Words: Aluminum bronze, ASTM B148, ASTM B148-9C, CDA 954

Physical Properties	Metric	English	Comments
Density	7.45 g/cc	0.269 lb/in³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	170	170	as cast; 3000 kg
	195	195	TQ50 temper; 3000 kg
Hardness, Rockwell B	83	83	as cast
	94	94	TQ50 temper
Tensile Strength, Ultimate	515 MPa	74700 psi	as cast
	620 MPa	89900 psi	TQ50 temper
	475 MPa @Temperature 315 °C	68900 psi @Temperature 599 °F	
	480 MPa @Temperature 300 °C	69600 psi @Temperature 572 °F	
	520 MPa @Temperature 250 °C	75400 psi @Temperature 482 °F	
	560 MPa @Temperature 200 °C	81200 psi @Temperature 392 °F	
	585 MPa @Temperature 150 °C	84800 psi @Temperature 302 °F	
	600 MPa @Temperature 100 °C	87000 psi @Temperature 212 °F	
	610 MPa @Temperature 50.0 °C	88500 psi @Temperature 122 °F	
	615 MPa @Temperature 25.0 °C	89200 psi @Temperature 77.0 °F	
Tensile Strength, Yield	205 MPa	29700 psi	as cast
	310 MPa	45000 psi	TQ50 temper
	210 MPa @Strain 0.500 %, Temperature 100 °C	30500 psi @Strain 0.500 %, Temperature 212 °F	

	210 MPa @Strain 0.500 %, Temperature 150 °C	30500 psi @Strain 0.500 %, Temperature 302 °F	
	210 MPa @Strain 0.500 %, Temperature 200 °C	30500 psi @Strain 0.500 %, Temperature 392 °F	
	220 MPa @Strain 0.500 %, Temperature 250 °C	31900 psi @Strain 0.500 %, Temperature 482 °F	
	220 MPa @Strain 0.500 %, Temperature 50.0 °C	31900 psi @Strain 0.500 %, Temperature 122 °F	
	225 MPa @Strain 0.500 %, Temperature 25.0 °C	32600 psi @Strain 0.500 %, Temperature 77.0 °F	
	230 MPa @Strain 0.500 %, Temperature 300 °C	33400 psi @Strain 0.500 %, Temperature 572 °F	
	235 MPa @Strain 0.500 %, Temperature 315 °C	34100 psi @Strain 0.500 %, Temperature 599 °F	
Elongation at Break	8.0 %	8.0 %	TQ50 temper, in 50 mm
	12 %	12 %	as cast, in 50 mm
Reduction of Area	6.0 %	6.0 %	TQ50 temper
	12 %	12 %	as cast
	12 % @Temperature 315 °C	12 % @Temperature 599 °F	
	13 % @Temperature 300 °C	13 % @Temperature 572 °F	
	14 % @Temperature 40.0 °C	14 % @Temperature 104 °F	
	15 % @Temperature 50.0 °C	15 % @Temperature 122 °F	
	15 % @Temperature 250 °C	15 % @Temperature 482 °F	
	16 % @Temperature 100 °C	16 % @Temperature 212 °F	
	17 % @Temperature 150 °C	17 % @Temperature 302 °F	
	17 % @Temperature 200 °C	17 % @Temperature 392 °F	
Creep Strength	20.0 MPa	2900 psi	for 10E-5%/h, at 425°C
	30.0 MPa	4350 psi	for 10E-5%/h, at 370°C
	51.0 MPa	7400 psi	for 10-E5%/h, at 315°C
	115 MPa	16700 psi	for 10E-5%/h, at 230°C
Modulus of Elasticity	110 GPa	16000 ksi	
Compressive Strength	940 MPa	136000 psi	as cast
	1070 MPa	155000 psi	TQ50 temper
Poissons Ratio	0.316	0.316	
Fatigue Strength	240 MPa @# of Cycles 1.00e+8	34800 psi @# of Cycles 1.00e+8	Reverse Bending
Machinability	60 %	60 %	UNS C36000 (free-cutting brass) = 100%

Shear Modulus	41.0 GPa	5950 ksi	
Izod Impact	15.0 J	11.1 ft-lb	TQ50 temper
	22.0 J	16.2 ft-lb	as cast
Charpy Impact	9.00 J	6.64 ft-lb	Keyhole, TQ50 temper
	15.0 J	11.1 ft-lb	Keyhole, as cast

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	1.2	1.2	TQ50 temper, 16 kA/m field strength
	1.27	1.27	as cast, 16 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	0.420 J/g-°C	0.100 BTU/lb-°F	
Thermal Conductivity	59.0 W/m-K @Temperature 20.0 °C	409 BTU-in/hr-ft²-°F @Temperature 68.0 °F	
Melting Point	1025 - 1040 °C	1877 - 1900 °F	
Solidus	1025 °C	1877 °F	
Liquidus	1040 °C	1900 °F	

Processing Properties	**Metric**	**English**	**Comments**
Annealing Temperature	620 °C	1150 °F	

Component Elements Properties	**Metric**	**English**	**Comments**
Aluminum, Al	10 - 11.5 %	10 - 11.5 %	
Copper, Cu	>= 83 %	>= 83 %	
Iron, Fe	3.0 - 5.0 %	3.0 - 5.0 %	
Manganese, Mn	<= 0.50 %	<= 0.50 %	
Nickel, Ni	<= 2.5 %	<= 2.5 %	
Other	<= 0.50 %	<= 0.50 %	