C95500

Material Notes: High strength, heat treatable.

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

Applications: Valve guides and seats in aircraft engines, corrosion-resistant parts, bushings, gears, worms, pickling hooks and baskets, agitators.

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

Key Words: Nickel aluminum bronze, ASTM B148, ASTM B148-9D

Physical Properties	Metric	English	Comments
Density	7.53 g/cc	0.272 lb/in³	
Mechanical Properties	**Metric**	**English**	**Comments**
Hardness, Brinell	192	192	as cast; 3000 kg load
	230	230	TQ50 temper; 3000 kg load
Hardness, Rockwell B	87	87	as cast
	96	96	TQ50 temper
Tensile Strength, Ultimate	620 MPa	89900 psi	as cast
	760 MPa	110000 psi	TQ50 temper
Tensile Strength, Yield	275 MPa	39900 psi	as cast
	415 MPa	60200 psi	TQ50 temper
Elongation at Break	5.0 %	5.0 %	TQ50 temper, in 50 mm
	6.0 %	6.0 %	as cast, in 50 mm
Reduction of Area	5.0 %	5.0 %	TQ50 temper
	7.0 %	7.0 %	as cast
Creep Strength	17.0 MPa	2470 psi	for 10E-5%/h, at 425°C
	38.0 MPa	5510 psi	for 10E-5%/h, at 370°C
	72.0 MPa	10400 psi	for 10-E5%/h, at 315°C
Modulus of Elasticity	110 GPa	16000 ksi	as cast
	115 GPa	16700 ksi	TQ50 temper
Compressive Yield Strength	825 MPa	120000 psi	as cast, at permanent set of 10%
	1030 MPa	149000 psi	TQ50 temper, at permanent set of 10%
Compressive Strength	895 MPa	130000 psi	as cast
	1140 MPa	165000 psi	TQ50 temper
Poissons Ratio	0.32	0.32	

Fatigue Strength	215 MPa @# of Cycles 1.00e+8	31200 psi @# of Cycles 1.00e+8	as cast, rotating beam
	260 MPa @# of Cycles 1.00e+8	37700 psi @# of Cycles 1.00e+8	TQ50 temper, rotating beam
Machinability	50 %	50 %	UNS C36000 (free-cutting brass) = 100%
Shear Modulus	42.0 GPa	6090 ksi	
Shear Strength	44.0 MPa	6380 psi	TQ50 temper
Izod Impact	18.0 J @Temperature 20.0 °C	13.3 ft-lb @Temperature 68.0 °F	
Charpy Impact	14.0 J	10.3 ft-lb	Keyhole

Electrical Properties	**Metric**	**English**	**Comments**
Electrical Resistivity	0.0000203 ohm-cm @Temperature 20.0 °C	0.0000203 ohm-cm @Temperature 68.0 °F	
Magnetic Permeability	1.2	1.2	TQ50 temper, 16 kA/m field strength
	1.3	1.3	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	0.418 J/g-°C	0.0999 BTU/lb-°F	
Thermal Conductivity	42.0 W/m-K @Temperature 20.0 °C	291 BTU-in/hr-ft²-°F @Temperature 68.0 °F	
Melting Point	1040 - 1055 °C	1900 - 1931 °F	
Solidus	1040 °C	1900 °F	
Liquidus	1055 °C	1931 °F	

Processing Properties	**Metric**	**English**	**Comments**
Annealing Temperature	620 - 7050 °C	1150 - 12700 °F	

Component Elements Properties	**Metric**	**English**	**Comments**
Aluminum, Al	10 - 11.5 %	10 - 11.5 %	
Copper, Cu	>= 78 %	>= 78 %	
Iron, Fe	3.0 - 5.0 %	3.0 - 5.0 %	
Manganese, Mn	<= 3.5 %	<= 3.5 %	
Nickel, Ni	3.0 - 5.5 %	3.0 - 5.5 %	
Other	<= 0.50 %	<= 0.50 %	

Descriptive Properties			
Elastic Limit		310 MPa	as cast
		415 MPa	TQ50 temper