

C90500 (Gun Metal)

Chemical Composition

(%max., unless shown as range or min.)

	Cu ⁽¹⁾	Al	Sb	Fe	Pb	Ni ⁽²⁾	P ⁽³⁾	Si	S	Sn	Zn
Min./Max.	86.0-89.0	.005	.20	.20	.30	1.0	.05	.005	.05	9.0-11.0	1.0-3.0
Nominal	87.5	-	-	-	-	-	-	-	-	10.0	2.0

(1) In determining Cu min., Cu may be calculated as Cu + Ni.

(2) Ni value includes Co.

(3) For continuous castings, P shall be 1.5%, max.

Note: Cu + Sum of Named Elements, 99.7% min.

Mechanical Properties (measured at room temperature, 68 F (20 C))

Temper	Section Size	Cold Work	Typ/Min	Temp	Tensile Strength		Yield Strength		E _l	Rockwell Hardness	Vickers Hard.	Brinell Hard.	Shear Strength	Fatigue Strength*	Izod Impact Strength	
					(0.5% ext. under load)	(0.2% offset)	(0.05% offset)	(0.05% offset)								
	in.	%		F	ksi	ksi	ksi	ksi		% B C F 30T 500	5003000ksi	MPa	ksi	ksi	ft-lb	
	mm.			C	MPa	MPa	MPa	MPa				MPa	MPa	MPa	J	
As Sand Cast																
M01	0.0	0	TYP	68	45	22	-	-	25	- - - -	-	75	-	-	13	10.0
	0.0			20	310	152	-	-	25	- - - -	-	75	-	-	90	13.0
As Centrifugal Cast																
M02	0.0	0	TYP	68	45	22	-	-	25	- - - -	-	75	-	-	13	10.0
	0.0			20	310	152	-	-	25	- - - -	-	75	-	-	90	13.0
M02	0.0	0	SMIN	68	40	18	-	-	20	- - - -	-	-	-	-	-	0.0
	0.0			20	276	124	-	-	20	- - - -	-	-	-	-	-	0.0
As Continuous Cast																
M07	0.0	0	SMIN	68	44	25	-	-	10	- - - -	-	-	-	-	-	0.0
	0.0			20	303	172	-	-	10	- - - -	-	-	-	-	-	0.0
As Sand Cast																
M01	0.0	0	SMIN	68	40	18	-	-	20	- - - -	-	-	-	-	-	0.0
	0.0			20	275	124	-	-	20	- - - -	-	-	-	-	-	0.0

*Fatigue Strength: 100×10^6 cycles, unless indicated as $[N] \times 10^6$.

Physical Properties

<="" b="">	US Customary
Melting Point - Liquidus	1830 F
Melting Point - Solidus	1570 F
Density	0.315 lb/in ³ at 68 F
Specific Gravity	8.720
Electrical Resistivity	94 ohms-cmil/ft @ 68 F
Electrical Conductivity	11 %IACS @ 68 F
Thermal Conductivity	43.20 Btu · ft/(hr · ft ² · °F) at 68F
Coefficient of Thermal Expansion	$11 \cdot 10^{-6}$ per °F (68-572 F)
Specific Heat Capacity	0.090 Btu/lb · °F at 68 F
Modulus of Elasticity in Tension	15000 ksi
Magnetic Permeability	1