

# RIVERSIDE BRASS

## & ALUMINUM FOUNDRY LIMITED

### C86300 (Manganese Bronze)

Last Updated: Jan 27, 2006

#### Chemical Composition

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

	Cu(1)	Al	Fe	Pb	Mn	Ni(2)	Sn	Zn
Min./Max.	60.0-66.0	5.0-7.5	2.0-4.0	.20	2.5-5.0	1.0	.20	22.0-28.0
Nominal	63.0	6.2	3.0	-	3.7	-	-	25.0

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

(2) Ni value includes Co.

Note: Cu + Sum of Named Elements, 99.0% min.

#### Applicable Specifications

Product	Specification
Centrifugal	AMS 4862 ASTM B271 SAE J462, J461
Continuous	ASTM B505
Ingot	ASTM B30 FEDERAL QQ-C-523
Precision	MILITARY MIL-C-11866
Sand	AMS 4862 ASTM B763, B584, B22 SAE J462, J461

#### Common Fabrication Processes

Casting

#### Fabrication Properties

Joining Technique	Suitability
Soldering	Poor
Brazing	Poor
Oxyacetylene Welding	Poor
Gas Shielded Arc Welding	Poor
Coated Metal Arc Welding	Good
Machinability Rating	8

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

Temper	Section Size	Cold Work	Typ/Min	Temp	Tensile Strength	Yield Strength (0.5% ext. under load)	Yield Strength (0.2% offset)	Yield Strength (0.05% offset)	El	Rockwell Hardness			Vickens Hard.	Brinell Hard.	Shear Strength	Fatigue Strength*	Izod Impact Strength	
										%	B	C/F30T						
	in.	%		F	ksi	ksi	ksi	ksi	%	B	C	F30T	500	500	3000	ksi	ksi	ft-lb
	mm.			C	MPa	MPa	MPa	MPa								MPa	MPa	J
<b>As Sand Cast</b>																		
M01	0.0	0	TYP	68	119	62	-	-	18	-	-	-	-	-	225	-	25	15.0
	0.0			20	821	427	-	-	18	-	-	-	-	-	225	-	172	20.0
<b>As Centrifugal Cast</b>																		
M02	0.0	0	SMIN	68	110	60	-	-	12	-	-	-	-	-	-	-	-	0.0
	0.0			20	758	414	-	-	12	-	-	-	-	-	-	-	-	0.0
<b>As Continuous Cast</b>																		
M07	0.0	0	SMIN	68	110	62	-	-	14	-	-	-	-	-	-	-	-	0.0
	0.0			20	758	427	-	-	14	-	-	-	-	-	-	-	-	0.0
<b>As Sand Cast</b>																		
M01	0.0	0	SMIN	68	110	60	-	-	12	-	-	-	-	-	223	-	-	0.0
	0.0			20	760	415	-	-	12	-	-	-	-	-	223	-	-	0.0

\*Fatigue Strength: 100 x 10<sup>6</sup> cycles,  
unless indicated as [N]X 10<sup>6</sup>.

Physical Properties

<>	US Customary	Metric
Melting Point - Liquidus	1693 F	923 C
Melting Point - Solidus	1625 F	885 C
Density	0.283 lb/in <sup>3</sup> at 68 F	7.83 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	7.83	7.83
Electrical Resistivity	130.8 ohms-cmil/ft @ 68 F	21.74 microhm-cm @ 20 C
Electrical Conductivity	8 % IACS @ 68 F	0.046 MegaSiemens/cm @ 20 C
Thermal Conductivity	20.5 Btu · ft/(hr · ft <sup>2</sup> ·oF)at 68F	35.5 W/m · oK at 20 C
Coefficient of Thermal Expansion	12.0 · 10 <sup>-6</sup> per oF (68-572 F)	21.6 · 10 <sup>-6</sup> per oC (20-300 C)
Specific Heat Capacity	0.09 Btu/lb/oF at 68 F	377.1 J/kg · oK at 293 K
Modulus of Elasticity in Tension	14200 ksi	97900 MPa
Magnetic Permeability*	1.09	1.09

\*Field Strength 16 kA/m

**Tempers Most Commonly Used** No information available.

**Typical Uses**

**Builders Hardware**

Brackets

**Electrical**

Electrical Components, Switches

**Fasteners**

Screw Down Nuts, Screw Down Nuts

**Industrial**

Wear Rings for Forming Dies for Wood Pulp Industry, Large Valve Stems, Hydraulic Cylinder Parts, Propellers, Bridge Pins, Forming Dies for Wood Pulp Industry, Cams, Gib, Gears, Hydraulic Cylinder Parts, Slow Speed, Heavy Load Bearings, Bushings, High Strength Machine Parts, Hooks, Frames, Struts

**Marine**

Marine Hardware, Rudders, Covers for Marine Hardware, Clamps, Boat Parts

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