

# RIVERSIDE BRASS & ALUMINUM FOUNDRY LIMITED

## C84400 (Valve Metal)

Last Updated: Jan 27, 2006

### 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.	78.0-82.0	.005	.25	.40	6.0-8.0	1.0	.02	.005	.08	2.3-3.5	7.0-10.0
Nominal	81.0	-	-	-	7.0	-	-	-	-	3.0	9.0

(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, 99.3% min.

### Applicable Specifications

Product	Specification
Centrifugal	ASTM B271
Continuous	ASTM B505
Fittings	ASME B16.24, B16.18, B16.23, B16.26, B16.32, B16.15 ASTM B584
Ingot	ASTM B30
Sand	ASTM B584, B763
Unions	FEDERAL WW-U-516

### Common Fabrication Processes

#### Casting

#### Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Fair
Machinability Rating	90

### 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	%				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	34	15	-	-	26	-	-	-	55	-	-	-	-	8.0
	0.0			20	234	103	-	-	26	-	-	-	55	-	-	-	-	11.0
M01	0.0	0	SMIN	68	29	13	-	-	18	-	-	-	-	-	-	-	-	0.0
	0.0			20	200	90	-	-	18	-	-	-	-	-	-	-	-	0.0
<b>As Centrifugal Cast</b>																		
M02	0.0	0	SMIN	68	29	13	-	-	18	-	-	-	-	-	-	-	-	0.0
	0.0			20	200	90	-	-	18	-	-	-	-	-	-	-	-	0.0
<b>As Continuous Cast</b>																		
M07	0.0	0	SMIN	68	30	15	-	-	16	-	-	-	-	-	-	-	-	0.0
	0.0			20	207	103	-	-	16	-	-	-	-	-	-	-	-	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	1840 F	1004 C
Melting Point - Solidus	1549 F	843 C
Density	0.314 lb/in <sup>3</sup> at 68 F	8.69 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.69	8.69
Electrical Resistivity	63.3 ohms-cmil/ft @ 68 F	10.53 microhm-cm @ 20 C
Electrical Conductivity	16 %IACS @ 68 F	0.095 MegaSiemens/cm @ 20 C
Thermal Conductivity	41.8 Btu · ft/(hr · ft <sup>2</sup> ·oF)at 68F	72.4 W/m · oK at 20 C
Coefficient of Thermal Expansion	10.0 ·10 <sup>-6</sup> per oF (68-572 F)	18.0 ·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	13000 ksi	89600 MPa
Magnetic Permeability	1.0	1.0

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

**Typical Uses**

**Architecture**

Ornamental Fixtures

**Builders Hardware**

Door Hardware for Prisons, Hardware, Dead Bolt Locks, Cases for Dead Bolt Locks

**Building**

Cooling Equipment, Heating Equipment

**Consumer**

Musical Instruments

**Electrical**

Electrical Equipment

**Industrial**

Valves, Valves for Water Meters, Low Pressure Fittings, Valve Bodies for the Water Industry, Valve Seat, Pump Fixtures

**Marine**

Marine Hardware, Boat Parts, Nuts for Transducers

**Plumbing**

Fixtures, Pipe Fittings

The above data used by permission from the **Copper Development Association Inc.** A complete Description of all UNS Copper Alloys is available at [www.copper.org](http://www.copper.org)