



C31400

Leaded Commercial Bronze

Chemical Composition

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

	Cu	Fe	Pb	Ni	Zn
Min./Max.	87.5-90.5	0.1	1.3-2.5	0.7	Rem.
Nominal	89	-	1.9	-	9.1

Note: Cu + Sum of Named Elements, 99.6% min.

Applicable Specifications

Product	Specification
Bar	ASTM B140
Rod	ASTM B140
Shapes	ASTM B140
Valves	MILITARY MIL-V-18436

Common Fabrication Processes

Machining

Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Fair
Capacity for Being Cold Worked	Good
Capacity for Being Hot Formed	Poor
Machinability Rating	80

Millard Wire & Specialty Strip Co.

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Thermal Properties

Treatment	Temp./Time – US	Temp./Time – SI
Stress Temperature		
Solution Minimum		
Solution Maximum		
Solution Time		
Solution Medium	None	
Precipitation Value		
Precipitation Time		
Precipitation Medium	None	
Annealing Minimum	800	427
Annealing Maximum	1200	649
Annealing Time		
Hot Works Minimum		
Hot Works Maximum		

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)	EI	Rockwell Hardness				Vickers Hardness	Brinell Hardness			Shear Strength	Fatigue Strength	Izod Impact Strength
										B	C	F	30T		500	500	3000			
	in. mm.	%		F C	ksi MPa	ksi MPa	ksi MPa	ksi MPa	%	B	C	F	30T	500	500	3000	ksi MPa	ksi MPa	ft-lb J	
Rod																				
H02	0.5	25	TYP	68	55	50	-	-	14	61	-	-	-	-	-	-	31	-	0	
	12.7			20	379	345	-	-	14	61	-	-	-	-	-	-	214	-	0	
Bar																				
H02	0.25	0	TYP	68	55	50	-	-	12	61	-	-	-	-	-	-	31	-	0	
	6.35			20	379	345	-	-	12	61	-	-	-	-	-	-	214	-	0	
Rod																				
OS050	1	0	TYP	68	37	12	-	-	45	-	-	55	-	-	-	-	24	-	0	
	25.4			20	255	83	-	-	45	-	-	55	-	-	-	-	165	-	0	
H04	1	20	TYP	68	52	45	-	-	18	58	-	-	-	-	-	-	30	-	0	
	25.4			20	359	310	-	-	18	58	-	-	-	-	-	-	207	-	0	
H02	0.25	37	TYP	68	60	55	-	-	10	65	-	-	-	-	-	-	32	-	0	
	6.35			20	414	379	-	-	10	65	-	-	-	-	-	-	221	-	0	

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

Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1900° F	1038° C
Melting Point - Solidus	1850° F	1010° C
Density	0.319 lb/in ³ at 68° F	8.83 gm/cm ³ @ 20° C
Specific Gravity	8.83	8.83
Electrical Resistivity	24.70 ohms-cmil/ft @ 68° F	4.11 microhm-cm @ 20° C
Electrical Conductivity	42 %IACS @ 68° F	0.246 MegaSiemens/cm @ 20° C
Thermal Conductivity	104 Btu·ft/(hr·ft ² ·°F) at 68°F	180.0 W/m·°K at 20° C
Coefficient of Thermal Expansion	10.20·10 ⁻⁶ per °F (68-572° F)	18.4·10 ⁻⁶ per °C (20-300° C)
Specific Heat Capacity	0.090 Btu/lb/°F at 68° F	377.1 J/kg·°K at 293° K
Modulus of Elasticity in Tension	17000 ksi	117000 MPa
Modulus of Rigidity	6400 ksi	44130 MPa

Tempers Most Commonly Used

Flat Products	
BAR, DRAWN	H02, H04, O60, OS050

Other	
ROD	H02, H04, O60, OS050
SHAPES	M30

Typical Uses

Builders Hardware

Door Knobs

Electrical

Locks, Push Plates, Finish Hardware, Kick Plates, Decorative Hardware, Door Knobs, Hinges

Fasteners

Nuts, Screws

Industrial

Pickling Crates, Pickling Fixtures, Pickling Racks, Screw Machine Parts

Casting Characteristics

No casting characteristics available for this alloy.