

**ALLOY 314****C31400 (CDA 314) - LEADED COMMERCIAL BRONZE**

Leaded Commercial Bronze C31400 combines the natural corrosion resistance of C22000 with the machinability typical of leaded brasses. Like C22000, it is an alpha brass nominally composed of 89% copper and 9% zinc, but it also contains approximately 2% lead to impart free-cutting characteristics. The relatively low zinc content of C31400 provides excellent corrosion resistance in potable water along with a pleasing golden color that matches C22000 hardware.

Alloy C31400 is also suitable for outdoor use due to its resistance to stress corrosion cracking and to corrosion in general, but where the highest strength is not required.

**C31400 STANDARDS & PROPERTIES**

SIZE CHARTS: ROUNDS | HEX

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

	Cu	Fe	Pb	Ni	Zn
<b>Min./Max.</b>	87.5-90.5	.10	1.3-2.5	.7	Rem.
<b>Nominal</b>	89.0	-	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

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**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 Hard.	Brinell Hard.		Shear Strength	Fatigue Strength*	Izod Impact Strength
										% B	C	F	30 T		500	500			
	in.	%		F	ksi	ksi	ksi	ksi	%	B	C	F	30 T	500	500	3000	ksi	ksi	ft-lb
	mm.			C	MPa	MPa	MPa	MPa									MPa	MPa	J
<b>Bar</b>																			
H02	0.25	0	TYP	68	55	50	-	-	12	61	-	-	-	-	-	-	31	-	0.0
	6.35			20	379	345	-	-	12	61	-	-	-	-	-	-	214	-	0.0
<b>Rod</b>																			
H02	0.5	25	TYP	68	55	50	-	-	14	61	-	-	-	-	-	-	31	-	0.0
	12.7			20	379	345	-	-	14	61	-	-	-	-	-	-	214	-	0.0
H02	0.25	37	TYP	68	60	55	-	-	10	65	-	-	-	-	-	-	32	-	0.0
	6.35			20	414	379	-	-	10	65	-	-	-	-	-	-	221	-	0.0
H04	1	20	TYP	68	52	45	-	-	18	58	-	-	-	-	-	-	30	-	0.0
	25.4			20	359	310	-	-	18	58	-	-	-	-	-	-	207	-	0.0
OS050	1	0	TYP	68	37	12	-	-	45	-	-	55	-	-	-	-	24	-	0.0
	25.4			20	255	83	-	-	45	-	-	55	-	-	-	-	165	-	0.0

**Physical Properties**

	US Customary	Metric
Melting Point - Liquidus	1900 F	1038 C
Melting Point - Solidus	1850 F	1010 C
Density	0.319 lb/in <sup>3</sup> at 68 F	8.83 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.83	8.83
Electrical Resistivity	24.7 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	104.0 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68F	180.0 W/m · °K at 20 C
Coefficient of Thermal Expansion	10.2 · 10 <sup>-6</sup> per °F (68-572 F)	18.4 · 10 <sup>-6</sup> per °C (20-300 C)
Specific Heat Capacity	0.09 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

**Temper 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**

Electrical Plug Type Connectors, Connectors for Wire and Cable

**Fasteners**

Screws, Nuts

**Industrial**

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