



TYPICAL USES

Builders Hardware	Door Knobs
Electrical	Electrical Plug Type Connectors, Connectors for Wire and Cable
Fasteners	Nuts, Screws
Industrial	Pickling Crates, Pickling Fixtures, Pickling Racks, Screw Machine Parts

Bronze Family:	Leaded Commercial Bronze
Tempers:	H02 HALF HARD, H04 HARD
Solids:	3/8" to 2" OD
Hex:	3/8" to 2" OD
Rectangles:	Consult Mill
Standard Lengths:	144"

SIMILAR OR EQUIVALENT SPECIFICATION

CDA	ASTM	ASARCON	SAE	AMS	FEDERAL	INGOT	MILITARY	OTHER
C31400	ASTM B140						MIL-V-18436	Leaded Commercial Bronze

CHEMICAL COMPOSITION

Alloy	Cu%	Pb%	Zn%	Fe%	Ni%	P%
C31400	87.50-90.50	1.30-2.50	Remainder	0.10	0.70	N/A

Chemical Composition according to ASTM B140-07

Note: Single values represent maximums.

MACHINABILITY

Alloy	Machinability Rating	Density (lb/cu in.)
C31400	80	0.319

MECHANICAL PROPERTIES

ALLOY: C31400 CONTINUED

Mechanical Properties according to ASTM B140-07

C31400**H02 HALF HARD TEMPER****SIZE RANGE: 1/2" DIAMETER AND UNDER**

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation in 2 in. or 50 mm min, %	Brinell Hardness, min	Remarks
ksi	MPa	ksi	MPa			
50	345	30	205	7	N/A	

SIZE RANGE: OVER 1/2" DIAMETER TO 1" INCLUSIVE

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation in 2 in. or 50 mm min, %	Brinell Hardness, min	Remarks
ksi	MPa	ksi	MPa			
45	310	27	185	10	N/A	

SIZE RANGE: OVER 1"

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation in 2 in. or 50 mm min, %	Brinell Hardness, min	Remarks
ksi	MPa	ksi	MPa			
40	275	25	170	12	N/A	

C31400**H04 HARD TEMPER****SIZE RANGE: 1/2" DIAMETER AND UNDER**

Tensile Strength, min		Yield Strength, at .5% extension under load min		Elongation in 2 in. or 50 mm min, %	Brinell Hardness, min	Remarks
ksi	MPa	ksi	MPa			
53	365	40	275	6	N/A	

PHYSICAL PROPERTIES

ALLOY: C31400 CONTINUED

	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	8.830	8.83
Electrical Resistivity	24.70 ohms-cmil/ft @ 68 F	4.11 microhm-cm @ 20 C
Electrical Conductivity	420 %IACS @ 68 F	0.246 MegaSiemens/cm @ 20 C
Thermal Conductivity	104 Btu · ft/(hr · ft ² ·oF) at 68F	180.0 W/m · oK at 20 C
Coefficient of Thermal Expansion	10.20 · 10 ⁻⁶ per oF (68-572 F)	18.4 · 10 ⁻⁶ per oC (20-300 C)
Specific Heat Capacity	0.090 Btu/lb/oF at 68 F	377.1 J/kg · oK at 293 K
Modulus of Elasticity in Tension	17000 ksi	117000 MPa
Modulus of Rigidity	6400 ksi	44130 MPa

Physical Properties provided by CDA

FABRICATION PRACTICES

Joining Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene Welding	Not Recommended
Gas Shield 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

Fabrication Properties provided by CDA

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		

Thermal Properties provided by CDA