C23000

Extruded and drawn	
Product description	Red brass 85%
Tempers	H01 quarter hard, H02 half hard, H04 hard
Solids	3/8" to 2 1/2" O.D.
Hex	3/8" to 2" O.D.
Standard lengths	144"

Similiar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C23000	B927 B927M					

Chemical composition

Cu (%)	Pb (%)	Zn (%)	Fe (%)
84.00-86.00	0.05	Remain	0.05

Chemical composition according to ASTM B927/B927M-23

Note: Cu + sum of named elements, 99.8% min. Single values represent maximums.

Typical uses

Architecture

Etching parts, trim, weather strip

Builders hardware

Kick plates

Consumer

Badges, coinage, compacts, costume jewelry, dials, fire extinguisher cases, lipstick containers, medallions, nameplates, plaques, rouge boxes, tokens, zippers

Electrical

Conduit, rotor bars (AC motors), screw shells, sockets

Fasteners

Eyelets, fasteners

Industrial

Condensor tubes, fire extinguishers, flexible metal hose, heat exchanger shells, heat exchangers, pickling crates, pump cylinder liners, radiator cores, tags, tubing for heat exchangers, tubing for instrumentation

Other

Fire hose couplings

Plumbing

Fittings, j-bends, pipe, pipe nipples, pipe service lines, pump lines, service lines, traps

Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in³ at 68 ° F)
C23000	30	0.316

Mechanical properties

Mechanical properties according to ASTM B927/B927M-23
C23000
H01 quarter hard

Size range under ½" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
44	305	20	140	15		

Size range ½" diameter rod to 1" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
42	290	17	115	17		

Size range over 1" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
40	275	15	103	19		

C23000 continued

C23000
H02 half hard

Size range under ½" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
50	345	30	205	7	70	

Size range ½" diameter rod to 1" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
45	310	27	185	10	70	

Size range over 1" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
40	275	25	170	12	70	

C23000 continued

C23000
H04 hard

Size range under ½" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
63	435	40	275	5	82	

Size range ½" diameter rod to 1" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
60	415	37	255	7	82	

Size range over 1" to 2" diameter rod

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or 4x thickness, min	Rockwell "B" hardness	Remarks
ksi	MPa	ksi	MPa	%	typical HRB	
58	400	35	240	9	82	

Physical properties

	US customary	Metric
Melting point – liquidus	1830 °F	999 °C
Melting point – solidus	1770 °F	966 °C
Density	0.313 lb/in³ at 68 °F	8.67 gm/cm³ at 20 °C
Specific gravity	8.67	8.67
Electrical conductivity	32% IACS at 68 °F	0.186 MegaSiemens/cm at 20 °C
Thermal conductivity	81 Btu/sq ft/ft hr/ °F at 68 °F	140.3 W/m at 20 °C
Coefficient of thermal expansion 68-572	10.6 · 10^{-6} per °F (68-572 °F)	18.4 · 10^{-6} per °C (20-300 °C)
Specific heat capacity	0.09 Btu/lb/ °F at 68 °F	377.1 J/kg at 20 °C
Modulas of elasticity in tension	16000 ksi	110317 MPa
Modulas of rigidity	6000 ksi	41369 MPa

Physical properties provided by CDA

Fabrication properties

Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene welding	Good
Gas shielded arc welding	Good
Coated metal arc welding	Not recommended
Spot weld	Fair
Seam weld	Not recommended
Butt weld	Good
Capacity for being cold worked	Excellent
Capacity for being hot formed	Good
Machinability rating	30

Fabrication properties provided by CDA

Thermal properties

Treatment	Minimum*	Maximum*
Annealing	800	1350
Hot treatment	1450	1650

Thermal properties provided by CDA

**Temperature is measured in Fahrenheit.*

Common fabrication processes

Blanking, coining, drawing, etching, forming and bending, heading and upsetting, piercing and punching, roll threading and knurling, shearing, spinning, squeezing and swaging, stamping

Common fabrication processes provided by CDA