



C52100

Phosphor Bronze, 8% C

Chemical Composition

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

	Cu	Fe	Pb	P	Sn	Zn
Min./Max.	Rem.	0.1	0.05	.03-.35	7.0-9.0	0.2
Nominal	92	-	-	0.19	8	-

Note: Cu + Sum of Named Elements, 99.5% min.

Applicable Specifications

Product	Specification
Bar	ASTM B103, B139
Electrode, Welding	AWS A5.6 MILITARY MIL-E-23765/3
Plate	ASTM B103
Rod	ASTM B139
Rod, Welding	AWS A5.15
Shapes	ASTM B139
Sheet	ASTM B103 SAE J463, J461
Strip	ASTM B888, B103 SAE J461, J463
Wire	ASTM B159

Common Fabrication Processes

Blanking, Drawing, Forming and Bending, Shearing, Stamping

Millard Wire & Specialty Strip Co.

449 Warwick Industrial Drive • Warwick, RI 02886
Phone: (401) 737-9330 • Fax: (401) 737-9340



Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Fair
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Fair
Spot Weld	Good
Seam Weld	Fair
Butt Weld	Excellent
Capacity for Being Cold Worked	Good
Capacity for Being Hot Formed	Poor
Machinability Rating	20

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	900	483
Annealing Maximum	1250	677
Annealing Time		
Hot Works Minimum		
Hot Works Maximum		



C52100 Specification Sheet

Mechanical Properties

(Measured at Room Temperature, 68°F (20°C))

	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	
	in.	%		F	ksi	ksi	ksi	ksi	%	B	C	F	30T	500	500	3000	ksi	ksi	ft-lb
	mm.			C	MPa	MPa	MPa	MPa									MPa	MPa	J
Wire																			
H06	0.08	0	TYP	68	140	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	965	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Wire																			
OS015	0.04	0	TYP	68	65	-	-	-	60	-	-	85	-	-	-	-	-	-	0
	1			20	448	-	-	-	60	-	-	85	-	-	-	-	-	-	0
H02	0.04	0	TYP	68	77	-	64	-	34	84	-	-	73	-	-	-	-	-	0
	1			20	531	-	441	-	34	84	-	-	73	-	-	-	-	-	0
Wire																			
H01	0.08	0	TYP	68	81	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	558	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flat Products																			
HR08	0	0	TYP	68	112	-	102	-	11	-	-	-	-	-	-	-	-	-	0
	0			20	772	-	703	-	11	-	-	-	-	-	-	-	-	-	0
H06	0.04	0	TYP	68	105	-	100	-	9	96	-	-	80	-	-	-	-	-	0
	1			20	724	-	689	-	9	96	-	-	80	-	-	-	-	-	0
OS035	0.04	0	TYP	68	58	-	-	-	65	-	-	80	-	-	-	-	-	-	0
	1			20	400	-	-	-	65	-	-	80	-	-	-	-	-	-	0
H04	0.04	0	TYP	68	93	-	87	-	19	93	-	-	78	-	-	-	-	-	22
	1			20	641	-	600	-	19	93	-	-	78	-	-	-	-	-	152
HR06	0	0	TYP	68	105	-	93	-	15	-	-	-	-	-	-	-	-	-	0
	0			20	724	-	641	-	15	-	-	-	-	-	-	-	-	-	0
HR02	0	0	TYP	68	77	-	62	-	39	-	-	-	-	-	-	-	-	-	0
	0			20	531	-	427	-	39	-	-	-	-	-	-	-	-	-	0
H08	0.04	0	TYP	68	112	-	108	-	5	98	-	-	81	-	-	-	-	-	0
	1			20	772	-	745	-	5	98	-	-	81	-	-	-	-	-	0
HR04	0	0	TYP	68	93	-	80	-	23	-	-	-	-	-	-	-	-	-	0
	0			20	641	-	552	-	23	-	-	-	-	-	-	-	-	-	0
Rod																			
H02	0.5	20	TYP	68	80	65	-	-	33	85	-	-	-	-	-	-	-	-	0
	12.7			20	552	448	-	-	33	85	-	-	-	-	-	-	-	-	0
Wire																			
OS035	0.08	0	TYP	68	60	24	-	-	65	-	-	-	-	-	-	-	-	-	0
	2			20	414	165	-	-	65	-	-	-	-	-	-	-	-	-	0
H04	0.08	0	TYP	68	130	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	896	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Rod																			
OS050	0.04	0	TYP	68	55	-	-	-	70	-	-	75	-	-	-	-	-	-	0
	1			20	379	-	-	-	70	-	-	75	-	-	-	-	-	-	0
Rod																			
H02	0.08	0	TYP	68	105	-	-	-	-	-	-	-	-	-	-	-	-	-	0
	2			20	724	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Flat Products																			
OS025	0.04	0	TYP	68	60	24	-	-	63	50	-	82	-	-	-	-	-	-	0
	1			20	414	165	-	-	63	50	-	82	-	-	-	-	-	-	0
H10	0.04	0	TYP	68	120	-	-	-	2	100	-	-	82	-	-	-	-	-	0
	1			20	827	-	-	-	2	100	-	-	82	-	-	-	-	-	0

*Fatigue Strength: 100 x 10⁶ cycles, unless indicated as [N]X 10⁶.



Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1880° F	1027° C
Melting Point - Solidus	1620° F	882° C
Density	0.318 lb/in ³ at 68° F	8.8 gm/cm ³ @ 20° C
Specific Gravity	8.8	8.8
Electrical Resistivity	79.80 ohms-cmil/ft @ 68° F	13.27 microhm-cm @ 20° C
Electrical Conductivity	13 %IACS @ 68° F	0.076 MegaSiemens/cm @ 20° C
Thermal Conductivity	36 Btu·ft/(hr·ft ² ·°F) at 68F	62.3 W/m·°K at 20° C
Coefficient of Thermal Expansion	10.10·10 ⁻⁶ per °F (68-572° F)	18.2·10 ⁻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	16000 ksi	110000 MPa
Modulus of Rigidity	6000 ksi	41370 MPa

Tempers Most Commonly Used

Flat Products	
STRIP, ROLLED	H02, H04, H06, H08, H10

Other	
ROD	H02
SHAPES	M30
WIRE	H01, H02, H04, H06

Typical Uses

Architecture

Bridge Bearing Plates

Building

Thermostat Bellows

Consumer

Power Conductor for Electro-Surgical Pencil, Coinage, Cymbals

Electrical

Electronic Connectors, Electrical Connectors, Cold Headed Parts, Electrical Flexing Contact Blades, Electrical Flexing Contact Blades, Wire Brushes, Switch Parts, Fuse Clips



Typical Uses (cont'd)

Fasteners

Cotter Pins, Fasteners, Heavy Duty, Lock Washers

Industrial

Cold Headed Parts, Thrust Bearings, Truss Wire, Pneumatic Hammers, Doctor Blades, Paper Industry, Bourdon Tubing, Well Drill Equipment, Clutch Disks, Welding Wire, Diaphragms, Beater Bar, Bellows, Springs, Helical Extension, Springs, Helical Torsion, Clips, Heavy Duty, Gears, Pinions, Textile Machinery, Perforated Sheets, Chemical Hardware, Springs, Heavy Duty, Sleeve Bushings

Marine

Marine Parts

Casting Characteristics

No casting characteristics available for this alloy.