



# Specification Sheet

Last Modified: May 27, 2017

## C51100

### Chemical Composition

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

	Cu	Fe	Pb	P	Sn	Zn
<b>Min./Max.</b>	Rem.	0.1	0.05	.03-.35	3.5-4.9	0.3
<b>Nominal</b>	95.6	-	-	0.2	4.2	-

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

### Applicable Specifications

Product	Specification
Bar	ASTM B103
Bearings and Bushings	MILITARY MIL-B-13501
Plate	ASTM B103
Plate, Bridge and Bearing	ASTM B100
Sheet	ASTM B103
Sheet, Bridge and Bearing	ASTM B100
Strip	ASTM B103, B888

### Common Fabrication Processes

Blanking, Drawing, Forming and Bending, Roll Threading and Knurling, Shearing, Stamping

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**Millard Wire & Specialty Strip Co.**

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## 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	Excellent
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		



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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 Hardness	Brinell Hardness			Shear Strength	Fatigue Strength	Izod Impact Strength
										B	C	F	30T		500	500	3000			
	in.	%		F	ksi	ksi	ksi	ksi	%								ksi	ksi	ft-lb	
	mm.			C	MPa	MPa	MPa	MPa									MPa	MPa	J	
<b>Flat Products</b>																				
H02	0.04	0	TYP	68	166	54	143	-	34	70	-	-	65	-	-	-	-	-	0	
	1			20	1144	372	986	-	34	70	-	-	65	-	-	-	-	-	0	
OS015	0.04	0	TYP	68	49	-	23	-	50	-	-	76	-	-	-	-	-	-	0	
	1			20	338	-	159	-	50	-	-	76	-	-	-	-	-	-	0	
HR08	0	0	TYP	68	98	-	88	-	8	-	-	-	-	-	-	-	-	-	0	
	0			20	676	-	607	-	8	-	-	-	-	-	-	-	-	-	0	
OS035	0.04	0	TYP	68	48	-	19	-	47	-	-	73	-	-	-	-	-	-	0	
	1			20	331	-	131	-	47	-	-	73	-	-	-	-	-	-	0	
H06	0.04	0	TYP	68	92	-	89	-	4	91	-	-	78	-	-	-	-	-	0	
	1			20	634	-	614	-	4	91	-	-	78	-	-	-	-	-	0	
H03	0.04	0	TYP	68	74	-	72	-	11	84	-	-	72	-	-	-	-	-	0	
	1			20	510	-	496	-	11	84	-	-	72	-	-	-	-	-	0	
H04	0.04	0	TYP	68	80	74	76	-	8	86	-	-	74	-	-	-	-	-	0	
	1			20	552	510	524	-	8	86	-	-	74	-	-	-	-	-	0	
HR02	0	0	TYP	68	63	-	51	-	26	-	-	-	-	-	-	-	-	-	0	
	0			20	434	-	352	-	26	-	-	-	-	-	-	-	-	-	0	
HR06	0	0	TYP	68	92	-	81	-	10	-	-	-	-	-	-	-	-	-	0	
	0			20	634	-	558	-	10	-	-	-	-	-	-	-	-	-	0	
H08	0.04	0	TYP	68	103	80	99	-	1	93	-	-	79	-	-	-	-	-	0	
	1			20	710	552	683	-	1	93	-	-	79	-	-	-	-	-	0	
HR04	0	0	TYP	68	80	-	73	-	15	-	-	-	-	-	-	-	-	-	0	
	0			20	552	-	503	-	15	-	-	-	-	-	-	-	-	-	0	
OS050	0.04	0	TYP	68	46	-	16	-	48	-	-	70	-	-	-	-	-	-	0	
	1			20	317	-	110	-	48	-	-	70	-	-	-	-	-	-	0	
OS025	0.04	0	TYP	68	50	-	21	-	46	-	-	75	-	-	-	-	-	-	0	
	1			20	345	-	145	-	46	-	-	75	-	-	-	-	-	-	0	
H10	0.04	0	TYP	68	103	80	98	-	2	95	-	-	80	-	-	-	-	-	0	
	1			20	710	552	676	-	2	95	-	-	80	-	-	-	-	-	0	
H01	0.04	0	TYP	68	55	50	43	-	36	48	-	-	45	-	-	-	-	-	0	
	1			20	379	345	296	-	36	48	-	-	45	-	-	-	-	-	0	

\*Fatigue Strength:  $100 \times 10^6$  cycles, unless indicated as [N] $\times 10^6$ .

## Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1945 F	1063 C
Melting Point - Solidus	1785 F	974 C
Density	0.320 lb/in <sup>3</sup> at 68 F	8.86 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.86	8.86
Electrical Resistivity	52 ohms-cmil/ft @ 68 F	8.64 microhm-cm @ 20 C
Electrical Conductivity	20 %IACS @ 68 F	0.117 MegaSiemens/cm @ 20 C
Thermal Conductivity	48.40 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68F	83.8 W/m · °K at 20 C
Coefficient of Thermal Expansion	$9.90 \cdot 10^{-6}$ per °F (68-572 F)	$17.8 \cdot 10^{-6}$ 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	H01, H02, H03, H04, H06, H08, H10, OS015, OS025, OS035, OS050

## Typical Uses

### Architecture

Bridge Bearing Plates

### Electrical

Terminals, Switch Parts, Fuse Clips, Electronic Connectors

### Fasteners

Lock Washers, Fasteners

### Industrial

Bellows, Textile Machinery, Perforated Sheets, Springs, Sleeve Bushings, Diaphragms, Clutch Disks, Beater Bar, Chemical Hardware

## Casting Characteristics

No casting characteristics for this alloy.