



# Specification Sheet

Last Modified: May 27, 2017

## C71500

Copper-Nickel, 30%

### Chemical Composition

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

	Cu <sup>(1)</sup>	Fe	Pb	Mn	Ni <sup>(2)</sup>	Zn
<b>Min./Max.</b>	Rem.	.40-1.0	0.05	1	29.0-33.0	1
<b>Nominal</b>	69.5	0.5	-	-	30	-

(1) Cu value includes Ag.

(2) Ni value includes Co.

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

### Applicable Specifications

Product	Specification
Bar	ASTM B122, B151 MILITARY MIL-C-15726 SAE J461, J463
Bolts	ASTM F468
Electrode, Welding	AWS A5.6 MILITARY MIL-E-22200/4
Nuts	ASTM F467
Pipe, Seamless	ASME SB466 ASTM B466
Pipe, Welded	ASTM B608, B467
Plate	ASTM B122 MILITARY MIL-C-15726 SAE J461, J463
Plate, Clad	ASTM B432
Plate, Condenser Tube	ASME SB171 ASTM B171 SAE J463, J461

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## Millard Wire & Specialty Strip Co.

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## Applicable Specifications (cont'd)

Product	Specification
Rod	ASTM B151 MILITARY MIL-C-15726
Screws	ASTM F468
Sheet	ASTM B122 MILITARY MIL-C-15726 SAE J463, J461
Strip	ASTM B122 SAE J461, J463 MILITARY MIL-C-15726
Studs	ASTM F468
Tube, Condenser	ASME SB111 ASTM B552, B111 MILITARY MIL-T-15005 SAE J463, J461
Tube, Finned	ASME SB359 ASTM B359 MILITARY MIL-T-22214
Tube, Seamless	ASME SB466 ASTM B466 MILITARY MIL-T-16420
Tube, U-Bend	ASME SB395 ASTM B395
Tube, Welded	ASME SB543 ASTM B543
Wire	MILITARY MIL-C-1572

## Common Fabrication Processes

Blanking, Drawing, Etching, Forming and Bending, Heading and Upsetting, Piercing and Punching, Roll Threading and Knurling, Shearing, Spinning, Squeezing and Swaging, Stamping



## Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Good
Gas Shielded Arc Welding	Excellent
Coated Metal Arc Welding	Excellent
Spot Weld	Excellent
Seam Weld	Excellent
Butt Weld	Excellent
Capacity for Being Cold Worked	Good
Capacity for Being Hot Formed	Good
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	1200	649
Annealing Maximum	1500	816
Annealing Time		
Hot Works Minimum	1700	927
Hot Works Maximum	1900	1039



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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
					ksi	ksi	ksi	ksi		%	B	C	F	30T	500	500	3000	ksi	ksi	ft-lb
	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	
<b>Rod</b>																				
H02	1	20	TYP	68	75	70	-	-	15	80	-	-	-	-	-	-	-	-	0	
	25.4			20	517	483	-	-	15	80	-	-	-	-	-	-	-	-	0	
<b>Tube</b>																				
OS035	0	0	TYP	68	54	-	-	-	45	36	-	77	-	-	-	-	-	-	0	
	0			20	372	-	-	-	45	36	-	77	-	-	-	-	-	-	0	
OS025	0	0	TYP	68	60	25	-	-	45	45	-	80	-	-	-	-	-	-	0	
	0			20	414	172	-	-	45	45	-	80	-	-	-	-	-	-	0	
<b>Flat Products</b>																				
M20	1	0	TYP	68	55	20	-	-	45	35	-	-	-	-	-	-	-	-	0	
	25.4			20	379	138	-	-	45	35	-	-	-	-	-	-	-	-	0	

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

## Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	2260 F	1238 C
Melting Point - Solidus	2140 F	1171 C
Density	0.323 lb/in <sup>3</sup> at 68 F	8.94 gm/cm <sup>3</sup> @ 20 C
Specific Gravity	8.94	8.94
Electrical Resistivity	225 ohms-cmil/ft @ 68 F	37.4 microhm-cm @ 20 C
Electrical Conductivity	4.60 %IACS @ 68 F	0.027 MegaSiemens/cm @ 20 C
Thermal Conductivity	17 Btu · ft/(hr · ft <sup>2</sup> · °F) at 68F	29.4 W/m · °K at 20 C
Coefficient of Thermal Expansion	9 · 10 <sup>-6</sup> per °F (68-572 F)	16.2 · 10 <sup>-6</sup> 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	22000 ksi	152000 MPa
Modulus of Rigidity	8300 ksi	57230 MPa

## Tempers Most Commonly Used

Flat Products	
PLATE	M20
SHEET	H01, H02, O60
STRIP, ROLLED	H01, H02, H04, O60, OS025

Other	
PIPE	H55, H80, O60
ROD	H02
TUBE	OS015, OS025, OS035



### Typical Uses

#### Architecture

Condensers, Boiler Parts, Heat Exchanger Components, Condenser Components, Process Equipment, Refrigerators, Propeller Sleeves, Ferrules, Heat Exchanger Tubes, Evaporator Tubes, Distiller Tubes, Condenser Plates, Weld Wire, Flexible Metal Hose, Pump Impellers, Welding Backing Rings

#### Marine

Valve Bodies, Sea Water Service, Sea Water Condensers, Salt Water Pipe Fittings, Water Boxes – Salt Water Applications, Salt Water Flanges, Salt Water Piping, Pump Bodies and Internal, Parts-Sea Water, Fittings

### Casting Characteristics

No casting characteristics for this alloy.