



C42500

Chemical Composition

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

	Cu	Fe	Pb	P	Sn	Zn
Min./Max.	87.0-90.0	0.05	0.05	0.35	1.5-3.0	Rem.
Nominal	88.5	-	-	-	2	9.5

Note: Cu + Sum of Named Elements, 99.7% min.

Applicable Specifications

Product	Specification
Bar, Rolled	ASTM B591
Plate	ASTM B591
Sheet	ASTM B591
Strip	ASTM B888, B591

Common Fabrication Processes

Blanking, Drawing, Forming, Piercing

Fabrication Properties

Joining Technique	Suitability
Soldering	Excellent
Brazing	Excellent
Oxyacetylene Welding	Good
Gas Shielded Arc Welding	Good
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Good
Capacity for Being Cold Worked	Excellent
Capacity for Being Hot Formed	Fair
Machinability Rating	30

Millard Wire & Specialty Strip Co.

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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	1300	705
Annealing Time		
Hot Works Minimum	1455	791
Hot Works Maximum	1545	84

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		B	C	F	30T		500	500	3000			
	in.	%		F	ksi	ksi	ksi	%												
	mm.			C	MPa	MPa	MPa													J
Flat Products																				
OS015	0.04	0	TYP	68	47	20	19	-	47	-	-	79	45	-	-	-	-	-	-	0
	1			20	324	138	131	-	47	-	-	79	45	-	-	-	-	-	-	0
H02	0.04	0	TYP	68	63	50	59	-	20	75	-	-	68	-	-	-	-	-	-	0
	1			20	434	345	407	-	20	75	-	-	68	-	-	-	-	-	-	0
OS035	0.04	0	TYP	68	45	18	15	-	49	-	-	70	32	-	-	-	-	-	-	0
	1			20	310	124	103	-	49	-	-	70	32	-	-	-	-	-	-	0
H06	0.04	0	TYP	68	82	70	79	-	7	90	-	-	74	-	-	-	-	-	-	0
	1			20	565	483	545	-	7	90	-	-	74	-	-	-	-	-	-	0
H03	0.04	0	TYP	68	68	57	65	-	15	80	-	-	70	-	-	-	-	-	-	0
	1			20	469	393	448	-	15	80	-	-	70	-	-	-	-	-	-	0
H04	0.04	0	TYP	68	76	63	73	-	9	86	-	-	73	-	-	-	-	-	-	0
	1			20	524	434	503	-	9	86	-	-	73	-	-	-	-	-	-	0
H08	0.04	0	TYP	68	89	75	85	-	4	92	-	-	76	-	-	-	-	-	-	0
	1			20	614	517	586	-	4	92	-	-	76	-	-	-	-	-	-	0
OS025	0.04	0	TYP	68	46	18	18	-	48	-	-	72	36	-	-	-	-	-	-	0
	1			20	317	124	124	-	48	-	-	72	36	-	-	-	-	-	-	0
H10	0.04	0	TYP	68	92	76	89	-	2	92	-	-	76	-	-	-	-	-	-	0
	1			20	634	524	614	-	2	92	-	-	76	-	-	-	-	-	-	0
H01	0.04	0	TYP	68	54	45	46	-	35	60	-	-	56	-	-	-	-	-	-	0
	1			20	372	310	317	-	35	60	-	-	56	-	-	-	-	-	-	0

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



Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1890 F	1032 C
Melting Point - Solidus	1850 F	1010 C
Density	0.316 lb/in ³ at 68 F	8.75 gm/cm ³ @ 20 C
Specific Gravity	8.78	8.78
Electrical Resistivity	37 ohms-cmil/ft @ 68 F	6.15 microhm-cm @ 20 C
Electrical Conductivity*	28 %IACS @ 68 F	0.164 MegaSiemens/cm @ 20 C
Thermal Conductivity	69 Btu · ft/(hr · ft ² · °F) at 68F	119.4 W/m · °K at 20 C
Coefficient of Thermal Expansion	10.20 · 10 ⁻⁶ per °F (68-212 F)	18.4 · 10 ⁻⁶ per °C (20-100 C)
Specific Heat Capacity	0.090 Btu/lb/°F at 68 F	377.1 J/kg · °K at 293 K

*To achieve a conductivity of 28% IACS, the maximum phosphorus shall be .05%.

Tempers Most Commonly Used

Flat Products	
BAR, ROLLED	H02, H03, H04
SHEET	H01, H02, H03, H04, H06, H08, H10, OS015, OS025, OS035
STRIP, ROLLED	H01, H02, H03, H04, H06, H10, OS015, OS025, OS035

Typical Uses

Building

Weather Stripping

Fasteners

Pen Clips

Electrical

Switch Springs, Terminals,
Switches, Electrical Connectors,
Fuse Clips, Connectors

Industrial

Contact Springs, Bushings

Casting Characteristics

No casting characteristics for this alloy.