



C36000

Free-Cutting Brass

Chemical Composition

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

	Cu	Fe	Pb	Zn
Min./Max.	60.0-63.0	0.35	2.5-3.0	Rem.
Nominal	61.5	-	2.7	35.4

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

Applicable Specifications

Product	Specification
Bar	AMS 4610 ASTM B16 SAE J461, J463
Rod	AMS 4610 ASTM B16 SAE J463, J461
Shapes	ASTM B16 SAE J461, J463
Valves	MILITARY MIL-V-18436
Wire	ASTM B16

Common Fabrication Processes

Machining, Roll Threading and Knurling

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	Good
Oxyacetylene Welding	Not Recommended
Gas Shielded Arc Welding	Not Recommended
Coated Metal Arc Welding	Not Recommended
Spot Weld	Not Recommended
Seam Weld	Not Recommended
Butt Weld	Fair
Capacity for Being Cold Worked	FaIr
Capacity for Being Hot Formed	Fair
Machinability Rating	100

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	1100	594
Annealing Time		
Hot Works Minimum	1300	705
Hot Works Maximum	1450	788



C36000 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
					F	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	
Rod																				
H04	0.375	0	TYP	68	-	-	-	-	-	78	-	-	-	-	-	-	34	-	0	
	12.7			20	-	-	-	-	-	78	-	-	-	-	-	-	234	-	0	
H02	1.5	0	TYP	68	-	-	-	-	-	65	-	-	-	-	-	-	-	-	0	
	38.1			20	-	-	-	-	-	65	-	-	-	-	-	-	-	-	0	
H04	0.625	0	SMIN	68	65	30	-	-	6	-	-	-	-	-	-	-	-	-	0	
	15.9			20	450	205	-	-	6	-	-	-	-	-	-	-	-	-	0	
H02	3	0	SMIN	68	45	15	-	-	20	-	-	-	-	-	-	-	-	-	0	
	76.2			20	310	105	-	-	20	-	-	-	-	-	-	-	-	-	0	
O60	1.5	0	SMIN	68	44	18	-	-	20	-	-	-	-	-	-	-	-	-	0	
	38.1			20	305	18	-	-	20	-	-	-	-	-	-	-	-	-	0	
H02	0.75	0	MIN	68	-	-	-	-	-	70	-	-	-	-	-	-	-	-	0	
	19.1			20	-	-	-	-	-	70	-	-	-	-	-	-	-	-	0	
H02	<0.50	0	TYP	68	-	-	-	-	-	65	-	-	-	-	-	-	32	20	0	
	12.7			20	-	-	-	-	-	65	-	-	-	-	-	-	221	138	0	
Bar																				
H02	<0.50	0	SMIN	68	50	25	-	-	10	-	-	-	-	-	-	-	-	-	0	
	<12.7			20	345	170	-	-	10	-	-	-	-	-	-	-	-	-	0	
O60	1.5	0	SMIN	68	40	15	-	-	25	-	-	-	-	-	-	-	-	-	0	
	38.1			20	275	105	-	-	25	-	-	-	-	-	-	-	-	-	0	
Shapes																				
H01	0.5	11	TYP	68	56	45	-	-	20	62	-	-	-	-	-	-	33	-	0	
	12.7			20	386	310	-	-	20	62	-	-	-	-	-	-	228	-	0	
M30	0.5	0	TYP	68	49	18	-	-	50	-	-	68	-	-	-	-	30	-	0	
	12.7			20	338	124	-	-	50	-	-	68	-	-	-	-	207	-	0	
Rod																				
H02	1.5	0	SMIN	68	50	20	-	-	15	-	-	-	-	-	-	-	-	-	0	
	38.1			20	345	140	-	-	15	-	-	-	-	-	-	-	-	-	0	
O60	<1	0	SMIN	68	48	20	-	-	15	-	-	-	-	-	-	-	-	-	0	
	<25.4			20	330	124	-	-	15	-	-	-	-	-	-	-	-	-	0	
Bar																				
H02	1.5	0	TYP	68	-	-	-	-	-	60	-	-	-	-	-	-	-	-	0	
	38.1			20	-	-	-	-	-	60	-	-	-	-	-	-	-	-	0	
H02	<0.50	0	TYP	68	-	-	-	-	-	65	-	-	-	-	-	-	-	-	0	
	<12.7			20	-	-	-	-	-	65	-	-	-	-	-	-	-	-	0	
Rod																				
H02	4.5	0	SMIN	68	40	15	-	-	20	25	-	-	-	-	-	-	-	-	0	
	114.3			20	275	105	-	-	20	25	-	-	-	-	-	-	-	-	0	
H04	0.25	0	TYP	68	-	-	-	-	-	80	-	-	-	-	-	-	38	-	0	
	6.35			20	-	-	-	-	-	80	-	-	-	-	-	-	262	-	0	
Flat Products																				
H02	0.25	11	TYP	68	56	45	-	-	20	62	-	-	-	-	-	-	33	-	0	
	4.76			20	386	310	-	-	20	62	-	-	-	-	-	-	228	-	0	
Rod																				
H04	0.375	0	SMIN	68	70	35	-	-	4	-	-	-	-	-	-	-	-	-	0	
	12.7			20	480	240	-	-	4	-	-	-	-	-	-	-	-	-	0	
H02	0.75	0	SMIN	68	55	25	-	-	10	-	-	-	-	-	-	-	34	-	0	
	19.1			20	380	170	-	-	10	-	-	-	-	-	-	-	234	-	0	
H02	3	0	TYP	68	-	-	-	-	-	55	-	-	-	-	-	-	-	-	0	
	76.2			20	-	-	-	-	-	55	-	-	-	-	-	-	-	-	0	
Bar																				
O60	<1	0	SMIN	68	44	18	-	-	20	-	-	-	-	-	-	-	-	-	0	
	<25.4			20	305	125	-	-	20	-	-	-	-	-	-	-	-	-	0	

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



Mechanical Properties (cont'd)

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)	El	Rockwell Hardness				Vickers Hardness	Brinell Hardness			Shear Strength	Fatigue Strength	Izod Impact Strength
				F	ksi	ksi	ksi		%	B	C	F	30T	500	500	3000	ksi	ksi	ft-lb
	in.	%		C	MPa	MPa	MPa										MPa	MPa	J
Rod																			
O60	<1	0	TYP	68	-	-	-	-	28	-	-	-	-	-	-	-	30	-	0
	<25.4			20	-	-	-	-	28	-	-	-	-	-	-	-	207	-	0
H04	0.25	0	SMIN	68	80	45	-	-	-	-	-	-	-	-	-	-	-	-	0
	6.35			20	550	310	-	-	-	-	-	-	-	-	-	-	-	-	0
O60	2.5	0	SMIN	68	40	15	-	-	25	-	-	-	-	-	-	-	-	-	0
	63.5			20	40	15	-	-	25	-	-	-	-	-	-	-	-	-	0
H02	<0.50	0	TYP	68	57	25	-	-	7	-	-	-	-	-	-	-	-	-	0
	12.7			20	395	170	-	-	7	-	-	-	-	-	-	-	-	-	0
Bar																			
H02	3	0	SMIN	68	40	15	-	-	20	-	-	-	-	-	-	-	-	-	0
	76.2			20	275	105	-	-	20	-	-	-	-	-	-	-	-	-	0
H02	1.5	0	SMIN	68	45	17	-	-	15	-	-	-	-	-	-	-	-	-	0
	38.1			20	310	115	-	-	15	-	-	-	-	-	-	-	-	-	0
O60	1.5	0	TYP	68	-	-	-	-	22	-	-	-	-	-	-	-	-	-	0
	38.1			20	-	-	-	-	22	-	-	-	-	-	-	-	-	-	0

Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1650° F	899° C
Melting Point - Solidus	1630° F	888° C
Density	0.307 lb/in ³ at 68° F	8.5 gm/cm ³ @ 20° C
Specific Gravity	8.5	8.5
Electrical Resistivity	39.90 ohms-cmil/ft @ 68° F	6.63 microhm-cm @ 20° C
Electrical Conductivity	26 %IACS @ 68° F	0.152 MegaSiemens/cm @ 20 C
Thermal Conductivity	67 Btu·ft/(hr·ft ² ·°F) at 68°F	116.0 W/m·°K at 20° C
Coefficient of Thermal Expansion	11.40·10 ⁻⁶ per °F (68-572° F)	20.5·10 ⁻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	14000 ksi	96500 MPa
Modulus of Rigidity	5300 ksi	36500 MPa

Tempers Most Commonly Used

Flat Products	
BAR, DRAWN	H01, H02

Other	
ROD	H02, O60
SHAPES	H01, H02



Typical Uses

Architecture

Terrazzo Strip

Automotive

Sensor Bodies, Threaded Inserts for Plastic, Fluid Connectors, Thermostat Parts

Builders Hardware

Lock Bodies, Hardware, Fittings

Consumer

Hot Combs (to Straighten Hair)

Fasteners

Bolts, Nuts, Screws

Industrial

Faucet Components, Pneumatic Fittings, Fluid Connectors, Automatic Screw Machine Parts, Unions, Adapters, Screw Machine Products, Gauges, Valve Seats, Valve Trim, Valve Stems, Nozzles, Pinions, Gears

Plumbing

Plumbers' Brass Goods, Faucet Stems, Faucet Seats, Plumbing Fittings

Casting Characteristics

No casting characteristics available for this alloy.