

# C35600

## FREE MACHINING BRASS

### DESCRIPTION

C35600 Free machining brass, produced from a combination of copper and zinc, has the highest machinability of all copper alloys, and is the standard against which all the others are compared to. 356 Brass, known for its strength and resistance to corrosion with properties closely resembling that of steel, is one of the most popular copper alloys used today. 356 Brass can be precision machined easily. Although ductile in its softened state, 356 Brass is a strong material to work with and maintains its strength even under some of the most demanding conditions. 356 Brass forms a thin protective "patina", which, unlike steel and iron, will not rust when exposed to the atmosphere. As a high-density material, 356 Brass is ideal for heavy industrial parts. 356 Brass is also valued for its high polished finish. 356 Brass is available in Rounds, Flats, Squares, Hexagons, Shapes and Hollows.

### CHEMICAL COMPOSITION

Elements	Min (%)	Max (%)
Cu	60.00	63.00
Pb	2.00	3.00
Fe	-	0.15
Total others	-	0.50
Zn	Remainder	

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### MECHANICAL PROPERTIES (AS PER TEMPER HO2)

Range (Inch)	From	To	UTS Min (Ksi)	UTS Max (Ksi)	PS Min (Ksi)	Elongation Min (%)	Hardness Min (HRB)	Hardness Max (HRB)	
Round (Dia)	0.0590	0.500	57.00	80.00	25.00	7.00	-	-	
	0.500	1.000	55.00	70.00	25.00	10.00	60.00	80.00	
	1.000	2.000	50.00	60.00	20.00	15.00	50.00	75.00	
	2.000	2.957	50.00	60.00	20.00	15.00	40.00	70.00	
Hex (A/F)	0.118	0.500	57.00	80.00	25.00	7.00	-	-	
	0.500	1.000	55.00	70.00	25.00	10.00	60.00	80.00	
	1.000	2.000	50.00	60.00	20.00	15.00	50.00	75.00	
	2.000	2.756	50.00	60.00	20.00	15.00	40.00	70.00	
Square (A/F)	0.118	0.500	57.00	80.00	25.00	7.00	-	-	
	0.500	1.000	55.00	70.00	25.00	10.00	60.00	80.00	
	1.000	2.000	50.00	60.00	20.00	15.00	50.00	75.00	
	2.000	2.362	50.00	60.00	20.00	15.00	40.00	70.00	
Octagon (A/F)	0.118	0.500	57.00	80.00	25.00	7.00	-	-	
	0.500	1.000	55.00	70.00	25.00	10.00	60.00	80.00	
	1.000	2.000	50.00	60.00	20.00	15.00	50.00	75.00	
	2.000	2.362	50.00	60.00	20.00	15.00	40.00	70.00	
Rectangle	Thickness	0.118	0.500	50.00	-	25.00	10.00	-	-
	Width	0.118	0.500						
	Thickness	0.500	1.000	45.00	-	17.00	15.00	45.00	85.00
	Width	0.500	1.000						
	Thickness	1.000	2.000	40.00	-	15.00	20.00	40.00	80.00
	Width	1.000	2.756						

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Range (Inch)	From	To	UTS Min (MPa)	UTS Max (MPa)	PS Min (MPa)	Elongation Min (%)	Hardness Min (HRB)	Hardness Max (HRB)	
Round (Dia)	1.5	12.00	395.00	555.00	170.00	7.00	-	-	
	12.00	25.00	360.00	485.00	170.00	10.00	60.00	80.00	
	25.00	50.00	345.00	425.00	140.00	15.00	50.00	75.00	
	50.00	75.00	345.00	425.00	140.00	15.00	40.00	70.00	
Hex (A/F)	1.5	12.00	395.00	555.00	170.00	7.00	-	-	
	12.00	25.00	360.00	485.00	170.00	10.00	60.00	80.00	
	25.00	50.00	345.00	425.00	140.00	15.00	50.00	75.00	
	50.00	75.00	345.00	425.00	140.00	15.00	40.00	70.00	
Square (A/F)	1.5	1.5	395.00	555.00	170.00	7.00	-	-	
	12.00	25.00	360.00	485.00	170.00	10.00	60.00	80.00	
	25.00	50.00	50.00	425.00	140.00	15.00	50.00	75.00	
	50.00	75.00	345.00	425.00	140.00	15.00	40.00	70.00	
Octagon (A/F)	1.5	12.00	395.00	555.00	170.00	7.00	-	-	
	12.00	25.00	360.00	485.00	170.00	10.00	60.00	80.00	
	25.00	50.00	345.00	425.00	140.00	15.00	50.00	75.00	
	50.00	75.00	345.00	425.00	140.00	15.00	40.00	70.00	
Rectangle	Thickness	3.00	12.00	345.00	-	170.00	10.00	-	-
	Width	3.00	12.00						
	Thickness	12.00	25.00	310.00	-	115.00	15.00	45.00	85.00
	Width	12.00	25.00						
	Thickness	25.00	50.00	275.00	-	105.00	20.00	40.00	80.00
	Width	25.00	70.00						

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### PHYSICAL PROPERTIES

Melting Point - Liquidus°F	1650
Melting Point - Solidus°F	1630
Densitylb/cu in. at 68°F	0.307
Specific Gravity	8.5
Electrical Conductivity% IACS at 68°F	26
Thermal ConductivityBtu/ sq ft/ ft hr/ °F at 68°F	67
Coefficient of Thermal Expansion 68-57210 <sup>-6</sup> per °F (68 – 572°F)	11.4
Specific Heat CapacityBtu/ lb /°F at 68°F	0.09
Modulus of Elasticity in Tensionksi	14000
Modulus of Rigidityksi	5300

### FABRICATION PROPERTIES

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	Poor
Capacity for Being Hot Formed	Fair
Machinability Rating	100

### TYPICAL USES

- > Automotive
- > Builders Hardware
- > Consumer
- > Fasteners
- > Industrial
- > Plumbing