# 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 ACCORDING TO ASTM B16 (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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## MECHANICAL PROPERTIES ACCORDING TO ASTM B16 (AS PER TEMPER HO2)

| 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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## FREE MACHINING BRASS

## 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$^{-6}$ 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

| | |
|---|---|
| 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$^{-6}$ 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 |
| Machinability Rating | 100 |

## TYPICAL USES

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



RAJHANS METALS PRIVATE LIMITED
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