

IS 319 GR II

FREE MACHINING BRASS

DESCRIPTION

IS 319 Gr II 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. IS 319 Gr II 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. IS 319 Gr II Brass can be precision machined easily. Although ductile in its softened state, IS 319 Gr II Brass is a strong material to work with and maintains its strength even under some of the most demanding conditions. IS 319 Gr II Brass forms a thin protective "patina", which, unlike steel and iron, will not rust when exposed to the atmosphere. As a high-density material, IS 319 Gr II Brass is ideal for heavy industrial parts. IS 319 Gr II Brass is also valued for its high polished finish. IS 319 Gr II Brass is available in Rounds, Flats, Squares, Hexagons, Shapes and Hollows.

CHEMICAL COMPOSITION

| Elements | Min (%) | Max (%) |
|--------------|-----------|---------|
| Cu | 60.00 | 63.00 |
| Pb | 2.50 | 3.70 |
| Fe | - | 0.35 |
| Total Others | - | 0.50 |
| Zn | Remainder | |

MECHANICAL PROPERTIES (AS PER TEMPER HB)

| Range (mm) | From | To | UTS Min (Mpa) | PS Min | Elongation Min (%) | Hardness Min (HV) | Hardness Max (HV) |
|---------------|-------|-------|---------------|--------|--------------------|-------------------|-------------------|
| Round (Dia) | 6.00 | 12.00 | 395.00 | - | 7.00 | 120.00 | 150.00 |
| | 12.00 | 25.00 | 385.00 | - | 10.00 | 115.00 | 145.00 |
| | 25.00 | 50.00 | 345.00 | - | 15.00 | 100.00 | 130.00 |
| | 50.00 | 75.00 | 315.00 | - | 20.00 | 90.00 | 120.00 |
| Hex (A/F) | 6.00 | 12.00 | 395.00 | - | 7.00 | 120.00 | 150.00 |
| | 12.00 | 25.00 | 385.00 | - | 10.00 | 115.00 | 145.00 |
| | 25.00 | 50.00 | 345.00 | - | 15.00 | 100.00 | 130.00 |
| | 50.00 | 70.00 | 315.00 | - | 20.00 | 90.00 | 120.00 |
| Square (A/F) | 6.00 | 12.00 | 395.00 | - | 7.00 | 120.00 | 150.00 |
| | 12.00 | 25.00 | 385.00 | - | 10.00 | 115.00 | 145.00 |
| | 25.00 | 50.00 | 345.00 | - | 15.00 | 100.00 | 130.00 |
| | 50.00 | 60.00 | 315.00 | - | 20.00 | 90.00 | 120.00 |
| Octagon (A/F) | 6.00 | 12.00 | 395.00 | - | 7.00 | 120.00 | 150.00 |
| | 12.00 | 25.00 | 385.00 | - | 10.00 | 115.00 | 145.00 |
| | 25.00 | 50.00 | 345.00 | - | 12.00 | 100.00 | 130.00 |

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FREE MACHINING BRASS

PHYSICAL PROPERTIES

| | |
|---|-------|
| Melting Point - Liquidus°F | 1650 |
| Melting Point - Solidus°F | 1630 |
| Density/lb/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

| 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 |

TYPICAL USES

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