

# 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 (Inch)	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

# IS 319 GR II

# 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