

Typical Uses

INDUSTRIAL: Condensers, condenser plates, ferrules, welded tubing for evaporators, heat exchangers, distillers, saltwater piping, ship hull plates

Common Fabrication Processes

Forming and bending, welding, drawing, shearing, and stamping

Composition-Percent

	Nominal	Min	Max
Copper	88.6	-	-
Lead	-	-	.02
Iron	1.4	1.0	1.8
Zinc	-	-	0.5
Nickel	10.0	9.0	11.00
Manganese	-	-	1.0
Phosphorus	-	-	.02
Sulphur	-	-	.02
Carbon	-	-	.05
Copper plus sum of named elements	-	99.5	-

Physical Properties	English Units	CG.S. Units
Melting Point (Liquidus)	2,100°F	1,150°C
Melting Point (Solidus)	2,010°F	1,100°C
Density	.323 lb./cu. in. @ 68°F	8.94 gm./cu. cm @ 20°C
Specific Gravity	8.94	8.94
Coefficient of Thermal Expansion	.0000095 per °F from 68°F to 572°F	.0000171 per °C from 20°C to 300°C
Thermal Conductivity	26 Btu./sq. ft./hr./°F @ 68°F	.11 cal./sq. cm/cm/sec./°C @ 20°C
Electrical Resistivity (Annealed)	115 Ohms (circ. mil./ft.) @ 68°F	19.1 Microhm-cm @ 20°C
Electrical Conductivity* (Annealed)	9.0% IACS @ 68°F	.0522 Megohm-cm @ 20°C
Thermal Capacity (Specific Heat)	.09 Btu./lb./°F @ 68°F	.09 cal/gm./°C @ 20°C
Modulus of Elasticity (Tension)	18,000,000 psi	12,700 Kg/sq. mm
Modulus of Rigidity	6,800,000 psi	4,800 Kg/sq. mm

*Volume basis

Fabrication Properties

Capacity for being Cold Worked _____ Good
 Capacity for being Hot Formed _____ Good
 Hot Forgeability Rating (Forging Brass =100) _____ -
 Hot Working Temperature _____ 1,550-1,750°F or 850-950°C
 Annealing Temperature _____ 1,100-1,500°F or 600-825°C
 Machinability Rating (Free Cutting Brass =100) _____ 20

Suitability for being joined by:
 Soldering _____ Excellent
 Brazing _____ Excellent
 Oxyacetylene Welding _____ Fair
 Carbon Arc Welding _____ Not Recommended
 Gas Shielded Arc Welding _____ Excellent
 Coated Metal Arc Welding _____ Good
 Resistance Welding { Spot _____ Good
 Seam _____ Good
 Butt _____ Excellent

Mechanical Properties

Form	Size Section	Temper	Nominal Tensile Strength psi	Nominal Yield Strength (½% Extension Under Load) psi	Reduction of Area - %	Elongation in 2" - %	Nominal Rockwell Hardness			Shear Strength psi	Fatigue Strength	
							F	B	30T		psi	Million Cycles
STRIP	0.050 in.	0.025 mm	44,000	16,000	-	42	65	15	26	-	-	-
		Half Hard	60,000	57,000	-	10	100	72	70	-	-	-

The values listed above represent reasonable approximations suitable for general engineering use. Due to commercial variations in composition and to manufacturing limitations, they should not be used for specification purposes. See applicable A.S.T.M. specification references.