CDA COPPER ALLOY NO. C 715 00 / Copper Nickel, 30%

HUSSEY COPPER

Typical Uses

INDUSTRIAL: Condensers, condenser plates, distiller tubes, evaporator and heat exchanger tubes, ferrules, saltwater piping

Common Fabrication Processes

Forming and bending, welding

Nearest Applicable ASTM Specifications

Flat Products	B122, B151, B171, B402, B432
Pipe	B466, B467
Rod	B151
Tube	B111, B359, B395, B466, B467, B543, B552

Composition-Percent

	Nominal	Min	Max
Copper	69.5	-	-
Lead	-	-	.05
Iron	.5	.40	.7
Zinc	-	-	1.0
Nickel	30.	29.0	33.0
Manganese	-	-	1.0
Copper plus elements with Specific Limits	-	99.5	-

Physical Properties

	English Units	CG.S. Units
Melting Point (Liquidus)	2,260°F	1,240°C
Melting Point (Solidus)	2,140°F	1,170°C
Density	.323 lb./cu. in. @ 68°F	.894 gm./cu. cm @ 20°C
Specific Gravity	8.94	8.94
Coefficient of Thermal Expansion	per °F from 68°F to 212°F	per °C from 20°C to 100°C
Coefficient of Thermal Expansion	per °F from 68°F to 392°F	per °C from 20°C to 200°C
Coefficient of Thermal Expansion	.0000090 per °F from 68°F to 572°F	.0000162 per °C from 20°C to 300°C
Thermal Conductivity	17 Btu./sq. ft./ft./hr./°F @ 68°F	.07 cal./sq. cm/cm/sec./°C @ 20°C
Electrical Resistivity (Annealed)	225 Ohms (circ. mil./ft.) @ 68°F	37.5 Microhm-cm @ 20°C
Electrical Conductivity* (Annealed)	4.6% IACS @ 68°F	.0267 Megohm-cm @ 20°C
Thermal Capacity (Specific Heat)	.09 Btu./lb./°F @ 68°F	.09 cal./gm./°C @ 20°C
Modulus of Elasticity (Tension)	22,000,000 psi	15,500 Kg./sq. mm
Modulus of Rigidity	8,300,000 psi	5,800 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 ____ 1,700-1,900°F or 925-1,050°C
Annealing Temperature ____ 1,200-1,500°F or 650-825°C
Machinability Rating (Free Cutting Brass =100) ____ 20

Suitability for being joined by:
Soldering ____ Excellent
Brazing ____ Excellent
Oxyacetylene Welding ____ Good
Carbon Arc Welding ____ Excellent
Gas Shielded Arc Welding ____ Excellent
Coated Metal Arc Welding ____ Excellent
Resistance Welding { Spot ____ Excellent; Seam ____ Excellent; Butt ____ Excellent

Mechanical Properties

Form	Size Section in.	Temper	Nominal Tensile Strength ksi	Nominal Yield Strength (.5% Ext. Under Load) ksi	Nominal Yield Strength (.2% Offset) ksi	Elongation in 2" - %	Nominal Rockwell Hardness F	Nominal Rockwell Hardness B	Nominal Rockwell Hardness 30T	Shear Strength ksi	Fatigue Strength ksi	Fatigue Strength Million Cyles
FLAT PRODUCT	1.0 in	As Hot Rolled	55.0	20.0	-	45	-	35	-	-	-	-
	1.0 in. OD x .065 in.	.025 mm	60.0	25.0	-	45	80	45	-	-	-	-
TUBE	4.5 in. OD x .109 in.	.035 mm	54.0	-	-	45	77	36	-	-	-	-
ROD	1.0 in.	Half Hard (20%)	75.0	70.0	-	15	-	80	-	-	-	-

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.

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