CDA COPPER NO. C 105 00 / Oxygen-Free with Silver

Typical Uses

Electrical: Bus bars and bus conductors, and other electrical conductors wave guides, copper to glass seals in electronic appliances

Common Fabrication Processes

Blanking, coining, coppersmithing, drawing, etching, forming and bending, heading and upsetting, hot forging and pressing, piercing and punching, roll threading and knurling, shearing, spinning, squeezing and swaging, stamping

Composition- Percent

	Nominal	Min	Max
Copper + Silver	-	99.95	-
Silver	-	10 oz./ton*	-

* 1 Troy ounce per avoirdupois ton =0.0034%

Physical Properties	English Units	CG.S. Units
Melting Point (Liquidus)	1981°F	1083°C
Melting Point (Solidus)	°F	°C
Density	.323 lb./cu. In. a 68°F	8.94 gm./cu. Cm a 20°C
Specific Gravity	8.94	8.94
Coefficient of Thermal Expansion	.0000094 per °F from 68°F to 212°F	.0000170 per °C from 20°C to 100°C
Coefficient of Thermal Expansion	.0000096 per °F from 68°F to 392°F	.0000173 per °C from 20°C to 200°C
Coefficient of Thermal Expansion	.0000098 per °F from 68°F to 572°F	.0000177 per °C from 20°C to 300°C
Thermal Conductivity	226 Btu./sq. ft./ft./hr./°F @68°F	.934 cal/sq. cm/cm/seC/°C @ 20°C
Electrical Resistivity (Annealed)	10.3 Ohms (circ. Mil./ft.) @ 68° F	1.71 Microhm-cm @20°C
Electrical Conductivity (Annealed)	101% IACS @ 68°F	.586 Megohm-cm @ 20°C
Thermal Capacity (Specific Heat)	.092 Btu./lb./°F @ 68°F	.092 Cal/gm./°C @ 20°C
Modulus of Elasticity (Tension)	17,000,000 psi	12,000 Kg/sq. mm
Modulus of Rigidity	6,400,000 psi	4,500 Kg/sq. mm

*Volume basis after precipitation heat treatment

Fabrication Properties

Capacity for being Cold Worked — Excellent
Capacity for Hot Formed — Excellent
Hot Forgeability Rating (Forging Brass =100) — 65
Hot Working Temperature — 1400-1600°F or 750-875°C
Annealing Temperature — 700-1400°F or 375-750°C
Machinability Rating (Free Cutting Brass =100) — 20

Suitability for being joined by:

Soldering — Excellent
Brazing — Excellent
Oxyacetylene Welding — Fair
Carbon Arc Welding — Fair
Gas Shielding Arc Welding — Good
Coated Metal Arc Welding — Not Recommended
Resistance Welding
- Spot — Not Recommended
- Seam — Not Recommended
- Butt — Good

Mechanical Properties

Form	Size Selection	Temper	Tensile Strength psi	Yield Strength (1/2%) Extension Under Load) psi	Reduction Of Area %	Elongation in 2"- %	Rockwell Hardness			Shear Strength psi	Fatigue Strength	
							F	B	30T		psi	Million Cycles
FLAT PRODUCTS	0.040 in	0.050 mm	32,000	10,000	-	45	40	-	-	22,000	-	-
		0.025 MM	34,000	11,000	-	45	45	-	-	23,000	11,000	100
		Eighth Hard	36,000	28,000	-	30	60	10	25	25,000	-	-
		Quarter Hard	38,000	30,000	-	25	70	25	36	25,000	-	-
		Half Hard	42,000	36,000	-	14	84	40	50	26,000	13,000	100
		Hard	50,000	45,000	-	6	90	50	57	28,000	13,000	100
		Spring	55,000	50,000	-	4	94	60	63	29,000	14,000	100
		Extra Spring	57,000	53,000	-	4	95	62	64	29,000	-	-
		As Hot Rolled	34,000	10,000	-	45	45	-	-	23,000	-	-
	0.250 in.	0.050 mm	32,000	10,000	-	50	40	-	-	22,000	-	-
		Eighth Hard	36,000	28,000	-	40	60	10	-	25,000	-	-
		Quarter Hard	38,000	30,000	-	35	70	25	-	25,000	-	-
		Hard	50,000	45,000	-	12	90	50	-	28,000	-	-
		As Hot Rolled	32,000	10,000	-	50	40	-	-	22,000	-	-
	1.0 in.	Hard	45,000	40,000	-	20	85	45	-	26,000	-	-

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 specifications purposes. See applicable A.S.T.M. specification reference.

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