COPPER ALLOY No. C27400 *(YELLOW BRASS, 63%)*

Composition – percent

	Nominal	Minimum	Maximum
Copper	62.5	61.0	64.0
Lead			.10
Iron			.05
Zinc	37.5	Remainder	

Nearest Applicable A S T M Specifications

Wire	B134

Physical Properties

	English Units		C. G. S. Units	
Melting Point (Liquidus)	1680	F	916	C
Melting Point (Solidus)		F		C
Density	.305	lb /cu in @ 68 F	8.44	gm /cu cm @ 20 C
Specific Gravity	8.44		8.44	
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	.0000114	per °F from 68 F to 572 F	.0000205	per °C from 20 C to 300 C
Thermal Conductivity	67	Btu /sq ft /ft /hr /°F @ 68 F	.28	cal /sq cm /cm /sec /° C @ 20 C
Electrical Resistivity (Annealed)		Ohms (circ mil /ft) @ 68 F		Microhm-cm @ 20 C
Electrical Conductivity* (Annealed)	27.6	% IACS @ 68 F	.157	Megmho-cm @ 20 C
Thermal Capacity (Specific Heat)	.09	Btu /lb °F @ 68 F	.09	cal /gm /° C @ 20 C
Modulus of Elasticity (Tension)	15,000	ksi	10,500	Kg /sq mm
Modulus of Rigidity	5,600	ksi	3,900	Kg /sq mm

Typical Uses

PLUMBING: Plumbing accessories, traps

Common Fabrication Processes

Blanking, forming and bending, roll threading and knurling, shearing, spinning, squeezing and swaging, stamping, drawing

Fabrication Properties

Capacity for Being Cold Worked . . . . . Excellent
Capacity for Being Hot Formed . . . . . Fair
Hot Forgeability Rating (Forging Brass = 100) . . . . . .
Hot Working Temperature . . . . . F or C
Annealing Temperature . . . . . 800-1300 F or 425-700 C
Machinability Rating (Free Cutting Brass = 100) 35

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

Forms and Tempers Most Commonly Used

	Annealed Tempers: Nominal Grain Size mm .100 (OS100)	.070 (OS070)	.050 (OS050)	.035 (OS035)	.025 (OS025)	.015 (OS015)	Soft Anneal (O60)	Light Anneal (O50)	Rolled or Drawn Tempers: Eighth Hard (H00)	Quarter Hard (H01)	Half Hard (H02)	Three Quarter Hard (H03)	Hard (H04)	Extra Hard (H06)	Spring (H08)	Extra Spring (H10)	Drawn – General Purpose (H58)	Hard Drawn (H80)	Light Drawn – Bending (H55)	Hot Finished Tempers: As Hot Rolled (M20)	As Extruded (M30)	Special Tempers
FLAT PRODUCTS: Strip, Rolled									●	●	●	●	●	●	●	●						
Strip, Drawn									●	●	●	●	●	●	●	●						
Flat Wire, Rolled									●	●	●	●	●	●	●	●						
Flat Wire, Drawn									●	●	●	●	●	●	●	●						
Bar, Rolled									●	●	●	●	●	●	●	●						
Bar, Drawn									●	●	●	●	●	●	●	●						
Sheet									●	●	●	●	●	●	●	●						
Plate									●	●	●	●	●	●	●	●						
ROD																						
WIRE	●	●	●	●	●	●			●	●	●	●	●	●	●	●						
TUBE							●	●									●	●	●			
PIPE																						
SHAPES																						

DRAWN–GENERAL PURPOSE (H58) temper is used for general purpose tube only, usually where there is no real requirement for high strength or hardness on the one hand or for bending qualities on the other.

HARD DRAWN (H80) temper is used only where there is need for a tube as hard or as strong as is commercially feasible for the size in question.

LIGHT DRAWN–BENDING (H55) temper is used only where a tube of some stiffness, but yet capable of readily being bent (or otherwise moderately cold worked) is needed.

Mechanical Properties

Form	Size Section in.	Temper	Tensile Strength ksi	Yield Strength (.5% Ext. under Load) ksi	Yield Strength (.2% Offset) ksi	Elongation in 2 in. %	Rockwell Hardness F	B	30T	Shear Strength ksi	Fatigue Strength ksi	Fatigue Strength Million Cycles
TUBE	1.0 in. OD x .065 in.	.025mm Hard Drawn	56.0	23.0	. . . .	50	82	--	--	. . . .	. . . .	. . . .
			74.0	55.0	. . . .	10	--	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.