

COPPER No. C11000 (ELECTROLYTIC TOUGH PITCH)

Composition — percent

Table with 3 columns: Element, Nominal, Minimum, Maximum. Rows: Copper (incl. Silver) with values .04, 99.90, .04; Oxygen with values .04, *, .04.

*Oxygen and trace elements may vary depending on the process.

Nearest Applicable A S T M Specifications

Table mapping ASTM specifications to product forms. Rows: Bolts, Flat Products, Nuts, Pipe, Rod, Screws, Shapes, Studs, Tube, Wire. Columns: F468, B48, B101, B124, B133, B152, B187, B272, B370, B451, B506, F467, B188, B49, B124, B133, B187, F468, B124, B133, B187, B283, F468, B124, B133, B187, B283, B111, B188, B447, B1, B2, B3, B8, B33, B47, B49, B116, B172, B173, B174, B189, B226, B228, B229, B246, B286, B298, B355, B470, B496, B566.

Physical Properties

Table of physical properties. Columns: English Units, C. G. S. Units. Rows: Melting Point (Liquidus), Melting Point (Solidus), Density, Specific Gravity, Coefficient of Thermal Expansion, Thermal Conductivity, Electrical Resistivity (Annealed), Thermal Capacity (Specific Heat), Modulus of Elasticity (Tension), Modulus of Rigidity.

* Volume and Weight Basis

Typical Uses

- ARCHITECTURAL: building fronts, downspouts, flashing, gutters, roofing, screening, spouting gaskets, radiators
AUTOMOTIVE: bus bars, conductivity wire, contacts, radio parts, switches, terminals
ELECTRICAL: ball floats, butts, cotter pins, nails, rivets, soldering copper, tacks
MISCELLANEOUS: anodes, chemical process equipment, kettles; pans, printing rolls, rotating bands, road bed expansion plates, vats

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

Fabrication Properties

Table of fabrication properties. Rows: Capacity for Being Cold Worked, Capacity for Being Hot Formed, Hot Forgeability Rating (Forging Brass = 100), Hot Working Temperature, Annealing Temperature, Machinability Rating (Free Cutting Brass = 100).

Suitability for being joined by:

Table mapping joining methods to suitability. Rows: Soldering, Brazing, Oxyacetylene Welding, Gas Shielded Arc Welding, Coated Metal Arc Welding, Resistance Welding (Spot, Seam, Butt).

Forms and Tempers Most Commonly Used

Large grid table mapping product forms to temper grades. Columns: Annealed Tempers, Rolled or Drawn Tempers, Hot Finished Tempers. Rows: FLAT PRODUCTS, 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

Table of mechanical properties. Columns: Form, Size Section, Temper, Tensile Strength, Yield Strength (1.5% Ext., .2% Offset), Elongation in 2 in., Rockwell Hardness, Shear Strength, Fatigue Strength. Rows: FLAT PRODUCTS, ROD, WIRE, TUBE, SHAPES.

** Elongation in 10 inches. ** Elongation in 60 inches.

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.