

C11000 (Cu-ETP)

18 08 US

Comparable standards: UNS C11000 • EN CW004A • JIS C110
 Aurubis designations: C110 • PNA211

Description

Electrolytic Tough Pitch Copper (ETP) is the most widely used of the coppers because of its combination of electrical and thermal conductivity, corrosion resistance, workability and aesthetic beauty. The superb corrosion resistance makes it a favored material for building applications and when exposed to weather for long periods, even centuries, this copper will develop a relatively impervious protective film which eventually becomes the familiar green patina of weathered copper. The beauty and ease of finishing make this copper a favorite for articles in the home.

Composition

Cu*
[%]
99.90 min
*) Incl. Ag

Physical properties

Melting point	Density	Specific heat cap. at 20°C	Electrical cond.	Thermal cond. at 20°C	Mod. of elasticity	Coef. of therm exp. at 20°C
[°F] [°C]	[lb/in³] [g/cm³]	[Btu/lb°F] [kJ/kgK]	[%IACS] [MS/m]	[Btu/ft h °F] [W/mK]	x1000 ksi [GPa]	[10 ⁻⁶ /°F] [10 ⁻⁶ /K]
1981 1083	0.323 8.9	0.092 0.394	100 58	226 391	17 117	9.8 17.6

The specified conductivity applies to the soft condition only

Mechanical properties

	Tensile strength Rm	Yield strength Rp0.2 nominal	Elongation 2" nominal	Hard-ness nominal HR30T HV	min bend ratio 90°		min. bend ratio 180°	
	[ksi] [MPa]	[ksi] [MPa]	[%]		GW	BW	GW	BW
Soft	26-38 179-262	10 69	35		0.0	0.0	0.0	0.0
H02 (1/2H)	37-46 255-317	37 255	20	50 90	0.0	0.5	0.0	1.0
H04 (H)	43-52 297-359	45 310	8	58 100	1.0	2.0	2.0	3.0
H06 (EH)	47-56 324-386	50 349	3	60 105	2.0	3.0	2.5	
H08 (SH)	50-58 345-400	52 359	3	63 110	3.0		4.0	
H10 (ES)	52 min 359 min	54 373	2	61 min 112 min				

Other tempers are available upon request.

GW bend axis transverse to rolling direction. BW bend axis parallel to rolling direction

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**Fabrication
properties**

Electrical and thermal conductivity	superior
Corrosion resistance	excellent
Formability	good

Typical uses

Architectural metal-work, gutters, flashing, roofing, downspouts, perforated metal screens, automotive and industrial radiators, electrical conductors, contacts, terminals, chemical process equipment, vats, kettles, pans. pots, cooking utensils, electric percolator bodies, lamps, dishes, and planters for home and office.

**Applicable
specifications**

ASTM B152, B370, ASME SB152