C110 (ETP)

Composition

Cu* (%)
99.90 min

*) Incl. Ag

Physical Properties

Temper	Melting point (liquidus) °F °C	Density lb/in^3 g/cm3	Specific heat cap. at 68 F (20 °C) Btu/lb°F kJ/(kg°K)	Electrical cond. Nom in black % IACS	Thermal cond. at 68 F (20 °C) Btu/ft h °F W/(m°K)	Mod. of elasticity X1000 ksi GPa	Coef.of therm.exp at 68 F (20 °C) 10^{-6}/°F 10-6/°C
All	1981 1083	0.323 8.9	0.092 0.394	100 100	226 391	17 117	9.8 17.6

Mechanical Properties

At max 0.040" (1 mm)

Temper	$R_{p0.2}$ Yield strength ksi N/mm^2	R_m Tensile strength ksi N/mm^2	A_{50} Elongation 2" %	Hardness for reference HR30T HV	Min bend ratio 90°		Min bend ratio 180°	
					GW	BW	GW	BW
Soft	10 69	26-38 179-262	35		0.0	0.0	0.0	0.0
H02 (1/2H)	37 255	37-46 255-317	20	50 90	0.0	0.5	0.0	1.0
H04 (H)	45 310	43-52 297-359	8	58 100	1.0	2.0	2.0	3.0
H06 (EH)	50 349	47-56 324-386	3	60 105	2.0	3.0	2.5	
H08 (SH)	52 359	50-58 345-400	3	63 110	3.0		4.0	
H10 (ES)	54 373	52 min 359 min	2	61 min 112				

Other tempers are avaliable upon request.
Data for information only and not for use as purchase specification.
Yield strength, Elongation and Hardness are typical values for each temper.

C110 (ETP)

Alloy attributes

Electrolytic Tough Pitch Copper (ETP) - 110 alloy 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.

Superior electrical and thermal conductivity
Excellent corrosion resistance
Good formability
High scrap value

Typical applications

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.

Design limitations

Exposure to hydrogen at elevated temperatures causes embrittlement. Brazing in hydrogen containing atmospheres must be avoided. Brazing and welding must be done in inert atmospheres only. Exposure to high sulfide media should be avoided.

Applicable specifications

ASTM B152, B370, ASME SB152