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PRODUCT DATA SHEET

Silicon Bronze C64700

Copper Alloys

C64700 is a copper nickel silicon alloy, known as a silicon bronze, which is typically used in resistance welding electrodes, for brazing and as fasteners.

It is a precipitation hardening alloy, which can also be cold worked for higher strength.

Chemical Composition

(%max., unless shown as range or min.)

	Copper	Iron	Lead	Nickel	Silicon	Zinc
Min./Max.	Rem.	0.10	0.10	1.6 - 2.2	0.40 - 0.8	0.50
Nominal	97.5	-	-	1.9	0.6	-

(1) Copper value includes silver

(2) Nickel value includes cobalt

Note: Copper + Sum of Named Elements, 99.5% minimum.

Applicable Specifications

Product	Specification
Bar	ASTM B411
Rod	ASTM B411
Wire	ASTM B412

Common Fabrication Processes

No information available.

Fabrication Properties

No information available.

Mechanical Properties in the TF00 (precipitation hardened) temper

(room temperature, 20°C)

Form	Diameter / distance between surfaces mm	Tensile Strength minimum MPa	Yield Strength (0.5% extension under load) minimum MPa	Elongation in 4D minimum %
Round rod	2.38 – 38.1	620	515	8
	38.2 – 50.8	550	485	8
Hexagonal & octagonal bar	3.18 – 38.1	620	515	8
	38.2 – 50.8	550	485	8
Square bar	4.78 – 25.4	620	515	8
	25.4 – 38.1	550	485	8
Rectangular bar	4.78 – 38.1	550	485	8
Round, hexagon, octagonal wire	1.02 – 19.0	620	515	5
Square wire	< 4.775 thick	620	515	5
Rectangular wire	< 31.75 wide	620	485	5

The technical advice and recommendations made in this Product Data Sheet should not be relied or acted upon without conducting your own further investigations, including corrosion exposure tests where needed. Please consult current editions of standards for design properties.

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Physical Properties

	Metric
Density	8.91 gm/cm ³ @ 20°C
Specific Gravity	8.91
Resistivity TF00 (precipitation hardened)	0.34836 – 0.5854 ohms.g/m ²
Conductivity TF00 (precipitation hardened)	44.0 – 26.0% IACS

Tempers Most Commonly Used

TB00	Solution heat treated
TF00	Precipitation hardened
TD00	Solution heat treated and cold worked, 1/8 hard
TD01	Solution heat treated and cold worked, ¼ hard
TD02	Solution heat treated and cold worked, ½ hard
TD03	Solution heat treated and cold worked, ¾ hard
TD04	Solution heat treated and cold worked, full hard

Typical Uses**Electrical**

Resistance Welding Electrodes (electrical conductivity, oxidation resistance, resistance to thermal softening), Motor Rotor Bar (electrical resistivity, brazability)

Fasteners

Fasteners (electrical conductivity, high strength, heat treatable)

Industrial

Brazing Rod, Welding Rod (electrical and thermal conductivity, resistance to thermal softening)