C14500

Standard-stocked product	Extruded and drawn

Product description	Tellurium copper
Tempers	H02 half hard, H04 hard
Solids	3/8" to 2 3/4" O.D.*
Rectangles	Consult mill
Standard lengths	144" * Consult mill for other sizes

Typical uses

Architecture

Fire protection

Electrical

Electrical connectors, motor parts, soldering copper, switch parts, transistor bases

Industrial

Forgings, furnace-brazed articles, screw machine products, soldering tips, welding torch tips

Plumbing

Fixtures, plumbing fittings, sprinkler heads

Similiar or equivalent specification

CDA	ASTM	SAE	AMS	Federal	Military	Other
C14500	B124 B124M B301 B301M	J461 J463				Tellurium-bearing (PTE)

Chemical composition

Cu (%)[1]	P (%)	Te (%)
99.90 min	0.004-0.012	0.40-0.70

Chemical composition according to ASTM B301/B301M-13(2020)

[1]Includes silver, tellurium, and phosphorus
Note: Includes oxygen-free or deoxidized grades with deoxidizers (such as phosphorus, boron, lithium, or other) in an amount agreed upon. Unless otherwise noted, single values represent maximums.

Machinability

Copper alloy UNS no.	Machinability rating	Density (lb/in^3 at 68 $^\circ$ F)
C14500	85	0.323

Mechanical properties

Mechanical properties according to ASTM B301/B301M-13(2020)
C14500
H02 half hard

Size range 1/16" diameter rod to 1/4" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
38	260	30	205	8	76	

Size range over 1/4" diameter rod to 2 5/8" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
38	260	30	205	12	76	

C14500
H04 hard

Size range 1/16" diameter rod (round only) to 1/4" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, in 4x diameter or specimen thickness, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
48	330	40	275	4	81	

Size range over 1/4" diameter rod (round only) to 1 1/4" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
44	305	38	260	8	81	

Size range over 1 1/4" diameter rod (round only) to 3" inclusive

Tensile strength, min		Yield strength, at 0.5% extension under load, min		Elongation, 4x diameter or specimen thickness, min	Brinell hardness (500 kg load)	Remarks
ksi	MPa	ksi	MPa	%	typical BHN	
40	275	35	240	8	81	

Physical properties

	US customary	Metric
Melting point – liquidus	1976˚F	1080˚C
Melting point – solidus	1924˚F	1051˚C
Density	0.323 lb/in³ at 68˚F	8.94 gm/cm³ at 20˚C
Specific gravity	8.94	8.94
Electrical conductivity	93% IACS at 68˚F	0.539 MegaSiemens/cm at 20˚C
Thermal conductivity	205 Btu/sq ft/ft hr/˚F at 68˚F	355 W/m at 20˚C
Coefficient of thermal expansion 68-212	9.5 · 10^{-6} per˚F (68-212˚F)	16.5 · 10^{-6} per˚C (20-100˚C)
Coefficient of thermal expansion 68-392	9.7 · 10^{-6} per˚F (68-392˚F)	16.8 · 10^{-6} per˚C (20-200˚C)
Coefficient of thermal expansion 68-572	9.9 · 10^{-6} per˚F (68-572˚F)	17.1 · 10^{-6} per˚C (20-300˚C)
Specific heat capacity	0.092 Btu/lb/˚F at 68˚F	385.5 J/kg at 20˚C
Modulas of elasticity in tension	17000 ksi	117212 MPa
Modulas of rigidity	6400 ksi	44127 MPa

Physical properties provided by CDA

Fabrication properties

Technique	Suitability
Soldering	Excellent
Brazing	Good
Oxyacetylene welding	Fair
Gas shielded arc welding	Fair
Coated metal arc welding	Not recommended
Spot weld	Not recommended
Seam weld	Not recommended
Butt weld	Fair
Capacity for being cold worked	Good
Capacity for being hot formed	Good
Forgeability rating	65
Machinability rating	85

Fabrication properties provided by CDA

Thermal properties

Treatment	Minimum*	Maximum*
Annealing	800	1200
Hot treatment	1400	1600

Thermal properties provided by CDA

**Temperature is measured in Fahrenheit.*

Common fabrication processes

Cold – Drawing, machining, moderate cold heading;
Hot – Extrusion, forging (closed die only)

Common fabrication processes provided by CDA