



## C14500

Tellurium-Bearing

### Chemical Composition

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

	Cu <sup>(1)(2)</sup>	P	Te
Min./Max.	99.90 min	.004-.012	.40-.70
Nominal	99.50	0.008	0.55

(1) Cu value includes Ag.

(2) Includes Te + P.

Note: Includes oxygen-free or deoxidized grades with deoxidizers (such as phosphorus, boron, lithium or others ) in an amount agreed upon.

### Applicable Specifications

Product	Specification
Bar	ASTM B301
Bar, Forging	ASTM B124
Brazing Filler Metal	FEDERAL QQ-B-650
Fittings	ASME B16.22
Forgings, Die	ASTM B283
Rod	ASTM B301
SAE J463, J461	
Rod, Forging	ASTM B124
Shapes	ASTM B301
Shapes, Forging	ASTM B124
Shapes, Refinery	ASTM B216
Wire	ASTM B301

### Common Fabrication Processes

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

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## Fabrication Properties

Joining 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

## Thermal Properties

Treatment	Temp./Time – US	Temp./Time – SI
Stress Temperature		
Solution Minimum		
Solution Maximum		
Solution Time		
Solution Medium	None	
Precipitation Value		
Precipitation Time		
Precipitation Medium	None	
Annealing Minimum	800	427
Annealing Maximum	1200	649
Annealing Time		
Hot Works Minimum	1400	761
Hot Works Maximum	1600	872



# C14500 Specification Sheet

## Mechanical Properties

(Measured at Room Temperature, 68°F (20°C))

Temper	Section Size	Cold Work	Typ/Min	Temp	Tensile Strength	Yield Strength (0.5% ext. under load)	Yield Strength (0.2% offset)	Yield Strength (0.05% offset)	EI	Rockwell Hardness				Vickers Hardness	Brinell Hardness			Shear Strength	Fatigue Strength	Izod Impact Strength
										B	C	F	30T		500	500	3000			
	in.	%		F	ksi	ksi	ksi	ksi	%											
	mm.			C	MPa	MPa	MPa	MPa									MPa	MPa	J	
<b>Rod</b>																				
H02	2	15	TYP	68	42	39	-	-	35	-	-	-	-	-	-	-	25	-	0.0	
	51			20	290	269	-	-	35	-	-	-	-	-	-	-	172	-	0.0	
OS015	0.5	0	TYP	68	33	11	-	-	46	-	-	43	-	-	-	-	22	-	0.0	
	12.7			20	228	76	-	-	46	-	-	43	-	-	-	-	152	-	0.0	
H00	0.5	6	TYP	68	38	30	-	-	26	36	-	-	44	-	-	-	25	-	0.0	
	12.7			20	262	207	-	-	26	36	-	-	44	-	-	-	172	-	0.0	
<b>Wire</b>																				
H00	0.08	0	TYP	68	38	30	-	-	20	-	-	-	-	-	-	-	25	-	0.0	
	2			20	262	207	-	-	20	-	-	-	-	-	-	-	172	-	0.0	
<b>Flat Products</b>																				
H02	0.04	0	TYP	68	42	36	-	-	14	40	-	84	50	-	-	-	26	13	0.0	
	1			20	290	248	-	-	14	40	-	84	50	-	-	-	179	90	0.0	
M20	0.25	0	TYP	68	32	10	-	-	50	-	-	40	-	-	-	-	22	-	0.0	
	6.35			20	221	69	-	-	50	-	-	40	-	-	-	-	152	-	0.0	
H04	0.25	0	TYP	68	50	45	-	-	12	50	-	90	-	-	-	-	28	-	0.0	
	6.35			20	345	310	-	-	12	50	-	90	-	-	-	-	193	-	0.0	
<b>Rod</b>																				
H04	0.5	35	TYP	68	48	44	-	-	15	48	-	-	-	-	-	-	27	-	0.0	
	12.7			20	331	303	-	-	15	48	-	-	-	-	-	-	186	-	0.0	
H02	0.25	20	TYP	68	-	-	-	-	18	43	-	-	-	-	-	-	26	-	0.0	
	6.35			20	-	-	-	-	18	43	-	-	-	-	-	-	179	-	0.0	
H02	0.25	0	SMIN	68	38	30	-	-	12	-	-	-	-	-	-	-	-	-	0.0	
	6.35			20	260	205	-	-	12	-	-	-	-	-	-	-	-	-	0.0	
OS050	1	0	TYP	68	32	10	-	-	50	-	-	40	-	-	-	-	22	-	0.0	
	25.4			20	221	69	-	-	50	-	-	40	-	-	-	-	152	-	0.0	
H04	1	35	TYP	68	48	44	-	-	20	48	-	-	-	-	-	-	27	-	0.0	
	25.4			20	331	303	-	-	20	48	-	-	-	-	-	-	186	-	0.0	
H02	0.5	20	TYP	68	43	40	-	-	20	43	-	-	50	-	-	-	26	-	0.0	
	12.7			20	296	276	-	-	20	43	-	-	50	-	-	-	179	-	0.0	
H02	0.25	20	TYP	68	38	40	-	-	-	-	-	-	-	-	-	-	-	-	0.0	
	6.35			20	296	276	-	-	-	-	-	-	-	-	-	-	-	-	0.0	
<b>Tube</b>																				
H55	0.065	15	TYP	68	40	32	-	-	20	35	-	-	-	-	-	-	24	-	0.0	
	1.65			20	276	221	-	-	20	35	-	-	-	-	-	-	165	-	0.0	
<b>Rod</b>																				
H02	1	20	TYP	68	42	40	-	-	25	42	-	-	-	-	-	-	25	-	0.0	
	25.4			20	290	276	-	-	25	42	-	-	-	-	-	-	172	-	0.0	
<b>Wire</b>																				
OS035	0.08	0	TYP	68	33	11	-	-	40	-	-	-	-	-	-	-	25	-	0.0	
	2			20	228	76	-	-	40	-	-	-	-	-	-	-	152	-	0.0	
H04	0.08	0	TYP	68	56	51	-	-	3	-	-	-	-	-	-	-	30	-	0.0	
	2			20	386	352	-	-	3	-	-	-	-	-	-	-	207	-	0.0	
<b>Rod</b>																				
H02	0.0625	0	SMIN	68	38	30	-	-	8	-	-	-	-	-	-	-	-	-	0.0	
	1.6			20	260	205	-	-	8	-	-	-	-	-	-	-	-	-	0.0	
H04	0.25	45	TYP	68	53	49	-	-	10	54	-	-	-	-	-	-	29	29	0.0	
	6.35			20	365	338	-	-	10	54	-	-	-	-	-	-	200	200	0.0	
<b>Wire</b>																				
H02	0.08	0	TYP	68	51	41	-	-	6	-	-	-	-	-	-	-	27	-	0.0	
	2			20	352	283	-	-	6	-	-	-	-	-	-	-	186	-	0.0	
<b>Tube</b>																				
OS050	0.065	0	TYP	68	32	10	-	-	40	-	-	40	-	-	-	-	22	-	0.0	
	2			20	221	69	-	-	40	-	-	40	-	-	-	-	152	-	0.0	

\*Fatigue Strength:  $100 \times 10^6$  cycles, unless indicated as  $[N] \times 10^6$ .



## Physical Properties

Property	US Customary	Metric
Melting Point - Liquidus	1976° F	1080° C
Melting Point - Solidus	1924° F	1051° C
Density	0.323 lb/in <sup>3</sup> at 68° F	8.94 gm/cm <sup>3</sup> @ 20° C
Specific Gravity	8.94	8.94
Electrical Resistivity	11.20 ohms-cmil/ft @ 68° F	1.86 microhm-cm @ 20° C
Electrical Conductivity	93 %IACS @ 68° F	0.544 MegaSiemens/cm @ 20° C
Thermal Conductivity	205 Btu·ft/(hr·ft <sup>2</sup> ·°F) at 68° F	354.8 W/m·°K at 20° C
Coefficient of Thermal Expansion	9.50·10 <sup>-6</sup> per °F (68-212° F)	17.1·10 <sup>-6</sup> per °C (20-100° C)
Coefficient of Thermal Expansion	9.70·10 <sup>-6</sup> per °F (68-392° F)	17.5·10 <sup>-6</sup> per °C (20-200° C)
Coefficient of Thermal Expansion	9.90·10 <sup>-6</sup> per °F (68-572° F)	17.8·10 <sup>-6</sup> per °C (20-300° C)
Specific Heat Capacity	0.092 Btu/lb/°F at 68° F	393.5 J/kg · °K at 293° K
Modulus of Elasticity in Tension	17000 ksi	117000 MPa
Modulus of Rigidity	6400 ksi	44130 MPa

## Tempers Most Commonly Used

Flat Products	
BAR, DRAWN	H02

Other	
ROD	H00, H01, H02, H04, OS015, OS035, OS050
TUBE	H55, H58, O60
WIRE	H00, H01, H02, H04, OS035

## Typical Uses

### Architecture

Fire Protection

### Electrical

Switch Parts, Motor Parts, Electrical Connectors, Soldering Copper, Transistor Bases

### Industrial

Welding Torch Tips, Forgings, Furnace Brazed Articles, Soldering Tips, Screw Machine Products

### Plumbing

Plumbing Fittings, Sprinkler Heads, Fixtures



## Casting Characteristics

No casting characteristics available for this alloy.