

# C11000 (Electrolytic Tough Pitch)

## US EPA Registered Antimicrobial

### Chemical Composition

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

	Cu <sup>(1)</sup>	O
Min./Max.	99.90 min-	-
Nominal	-	.04

(1) Cu value includes Ag.

Note: This is a high conductivity copper which has, in the annealed condition a minimum conductivity of 100% IACS except for Alloy C10100 which has a minimum conductivity of 101% IACS.

Note: Oxygen and trace elements may vary depending on the process.

### Mechanical Properties (measured at room temperature, 68 F (20 C))

Temper	Section Size	Cold Work	Typ Min Temp	Tensile Strength	Yield	Yield	Yield	Rockwell Hardness	Vickers Hard.	Brinell Hard.	Shear Strength	Fatigue Strength*	Izod Impact Strength
					Strength (0.5% ext. under load)	Strength (0.2% offset)	Strength (0.05% offset)						
	in. mm.	%	F C	ksi MPa	ksi MPa	ksi MPa	ksi MPa	% B CF 30T500	5003000ksi	MPa	ksi MPa	ft-lb J	
<b>Flat Products</b>													
H02	0.04	0	TYP68	42	36	-	-	1440- 8450	-	-	26	13	0.0
	1		20	290	248	-	-	1440- 8450	-	-	179	90	0.0
M20	0.025	0	TYP68	32	10	-	-	50- - 40-	-	-	22	-	0.0
	0.64		20	221	69	-	-	50- - 40-	-	-	152	-	0.0
<b>Rod</b>													
M20	1	0	TYP68	32	10	-	-	55- - 40-	-	-	22	-	0.0
	25.4		20	221	69	-	-	55- - 40-	-	-	152	-	0.0
<b>Shapes</b>													
M30	0.5	0	TYP68	32	10	-	-	50- - 40-	-	-	22	-	0.0
	12.7		20	221	69	-	-	50- - 40-	-	-	152	-	0.0
M20	0.5	0	TYP68	32	10	-	-	50- - 40-	-	-	22	-	0.0
	12.7		20	221	69	-	-	50- - 40-	-	-	152	-	0.0
<b>Flat Products</b>													
H04	0.04	0	TYP68	50	45	-	-	6 50- 9057	-	-	28	-	0.0
	1		20	345	310	-	-	6 50- 9057	-	-	193	-	0.0
<b>Rod</b>													
H04	0.25	40	TYP68	55	50	-	-	1060- 94-	-	-	29	-	0.0
	6.35		20	379	345	-	-	1060- 94-	-	-	200	-	0.0
<b>Wire</b>													
OS050	0.08	0	TYP68	35	-	-	-	35- - - -	-	-	24	-	0.0
	2		20	241	-	-	-	35- - - -	-	-	165	-	0.0
<b>Flat Products</b>													
H08	0.04	0	TYP68	55	50	-	-	4 60- 9463	-	-	29	14	0.0
	1		20	379	345	-	-	4 60- 9463	-	-	200	97	0.0
H01	0.025	0	TYP68	38	30	-	-	3525- 70-	-	-	25	-	0.0
	0.64		20	262	207	-	-	3525- 70-	-	-	172	-	0.0
<b>Rod</b>													
OS050	1	0	TYP68	32	10	-	-	55- - 40-	-	-	22	-	0.0
	25.4		20	221	69	-	-	55- - 40-	-	-	152	-	0.0
<b>Wire</b>													
H08	0.08	0	TYP68	66	-	-	-	1 - - - -	-	-	33	-	0.0
	2		20	455	-	-	-	1 - - - -	-	-	228	-	0.0
<b>Flat Products</b>													
H04	1	0	TYP68	45	40	-	-	2045- 85-	-	-	26	-	0.0
	25.4		20	310	276	-	-	2045- 85-	-	-	179	-	0.0
OS050	0.025	0	TYP68	32	10	-	-	50- - 40-	-	-	22	-	0.0
	0.64		20	221	69	-	-	50- - 40-	-	-	152	-	0.0
H00	0.025	0	TYP68	36	28	-	-	4010- 60-	-	-	25	-	0.0
	0.64		20	248	193	-	-	4010- 60-	-	-	172	-	0.0
<b>Rod</b>													
H04	2	16	TYP68	45	40	-	-	2045- 85-	-	-	26	-	0.0
	51		20	310	276	-	-	2045- 85-	-	-	179	-	0.0
H04	1	35	TYP68	48	44	-	-	1647- 87-	-	-	27	17	0.0
	25.4		20	331	303	-	-	1647- 87-	-	-	186	117	0.0
<b>Tube</b>													
OS025	0.065	0	TYP68	34	11	-	-	45- - 45-	-	-	23	-	0.0
	1.65		20	234	76	-	-	45- - 45-	-	-	159	-	0.0

H80	0.065	40	TYP68	55	50	-	-	8 60- 9563	-	-	29	-	0.0
	1.65			20	379			8 60- 9563	-	-	200	-	0.0
H55	0.065	15	TYP68	40	32	-	-	2535- 7745	-	-	26	-	0.0
	1.65			20	276			2535- 7745	-	-	179	-	0.0
<b>Flat Products</b>													
M20	0.04	0	TYP68	34	10	-	-	45- - 45-	-	-	23	-	0.0
	1			20	234			45- - 45-	-	-	159	-	0.0
<b>Shapes</b>													
OS050	0.5	0	TYP68	32	10	-	-	50- - 40-	-	-	22	-	0.0
	12.7			20	221			50- - 40-	-	-	152	-	0.0
<b>Wire</b>													
H04	0.08	0	TYP68	55	-	-	-	1 - - - -	-	-	29	-	0.0
	2			20	379			1 - - - -	-	-	200	-	0.0
<b>Flat Products</b>													
OS050	0.04	0	TYP68	32	10	-	-	45- - 40-	-	-	22	-	0.0
	1			20	221			45- - 40-	-	-	152	-	0.0
<b>Shapes</b>													
H04	0.5	15	TYP68	40	32	-	-	3035- - - -	-	-	26	-	0.0
	12.7			20	276			3035- - - -	-	-	179	-	0.0
<b>Tube</b>													
OS050	0.065	0	TYP68	32	10	-	-	45- - 40-	-	-	22	-	0.0
	1.65			20	221			45- - 40-	-	-	152	-	0.0
<b>Flat Products</b>													
OS025	0.04	0	TYP68	34	11	-	-	45- - 45-	-	-	23	11	0.0
	1			20	234			45- - 45-	-	-	159	76	0.0
H10	0.04	0	TYP68	57	53	-	-	4 62- 9564	-	-	29	-	0.0
	1			20	393			4 62- 9564	-	-	200	-	0.0
H01	0.04	0	TYP68	38	30	-	-	2525- 7036	-	-	25	-	0.0
	1			20	262			2525- 7036	-	-	172	-	0.0
H00	0.04	0	TYP68	36	28	-	-	3010- 6025	-	-	25	-	0.0
	1			20	248			3010- 6025	-	-	172	-	0.0
H04	0.025	0	TYP68	50	45	-	-	1250- 90-	-	-	28	-	0.0
	0.64			20	345			1250- 90-	-	-	193	-	0.0

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

### Physical Properties

<="" b="">	US Customary
Melting Point - Liquidus	1981 F
Melting Point - Solidus	1949 F
Density*	0.322 lb/in <sup>3</sup> at 68 F
Specific Gravity	8.910
Electrical Resistivity	10.30 ohms-cmil/ft @ 68 F
Electrical Conductivity**	101 %IACS @ 68 F
Thermal Conductivity	226 Btu · ft/(hr · ft <sup>2</sup> ·°F) at 68F
Coefficient of Thermal Expansion	$9.40 \cdot 10^{-6}$ per °F (68-212 F)
Coefficient of Thermal Expansion	$9.60 \cdot 10^{-6}$ per °F (68-392 F)
Coefficient of Thermal Expansion	$9.80 \cdot 10^{-6}$ per °F (68-572 F)
Specific Heat Capacity	0.092 Btu/lb/°F at 68 F
Modulus of Elasticity in Tension	17000 ksi
Modulus of Rigidity	6400 ksi

\*Actual value .321 - .323.

\*\*Volume and weight basis.