



Application Datasheet

Standard Designation for Wrought Copper Alloys

Revision Date: October 21, 2024

Coppers (C10100 - C15999)

* = are alloys registered with the U.S. EPA as Antimicrobial.

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status	
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C10100* Oxygen-Free-Electronic OFE	99.99 ⁽¹⁾⁽²⁾⁽³⁾			0.0005		0.0001		0.0010		0.0003				0.0025		0.0005				0.0005		0.0004		0.0002				active
C10200* Oxygen-Free OF	99.95 ⁽⁴⁾⁽¹⁾⁽⁵⁾																			0.0010							active	
C10300* Oxygen-Free Copper OFXLP	99.95 ⁽⁵⁾⁽⁶⁾							0.001	0.005																		active	
C10400* Oxygen-Free with Ag OFS	99.95 ⁽¹⁾⁽⁵⁾⁽⁴⁾												0.027 ⁽⁷⁾							0.0010							active	
C10500* Oxygen-Free with Ag OFS	99.95 ⁽¹⁾⁽⁵⁾⁽⁴⁾												0.034 ⁽⁸⁾							0.001							active	
C10700* Oxygen-Free with Ag OFS	99.95 ⁽⁵⁾⁽⁴⁾⁽¹⁾												0.085 ⁽⁹⁾							0.001							active	
C10800* OFLP	99.95 ⁽⁶⁾⁽⁵⁾							0.005	0.012																		active	

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status	
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C10850 Oxygen-Free with Mg MOFC-HR	99.95 ⁽¹⁰⁾⁽¹¹⁾																									0.002 Mg	0.013 Mg	active
C10900* Oxygen-Free	99.99 ⁽⁵⁾																									0.001 Bi	inactive 03/11	
C10910*	99.95 ⁽¹¹⁾⁽⁵⁾																			0.005							active	
C10920*	99.90 ⁽⁵⁾																			0.02							active	
C10930*	99.90 ⁽⁵⁾												0.044 ⁽¹²⁾							0.02							active	
C10940*	99.90 ⁽⁵⁾												0.085 ⁽⁹⁾							0.02							active	
C11000* Electrolytic Tough Pitch ETP	99.90 ⁽¹³⁾⁽¹¹⁾⁽⁵⁾																										active	
C11010* Remelted High Conductivity RHC	99.90 ⁽⁵⁾⁽¹³⁾⁽¹¹⁾																										active	
C11020* Fire-Refined High Conductivity FRHC	99.90 ⁽¹¹⁾⁽¹³⁾⁽⁵⁾																										active	
C11025* Fire Refined High Conductivity FRHC	99.90 ⁽¹⁴⁾⁽¹⁵⁾⁽⁵⁾		0.0150	0.0450		0.0080		0.0020						0.0150		0.0010				0.0100	0.0400			0.0050		0.0010	active	
C11030* Chemically Refined Tough Pitch CRTP	99.90 ⁽⁵⁾⁽¹¹⁾⁽¹³⁾																										active	
C11040*	99.90 ⁽¹⁶⁾⁽¹⁷⁾⁽¹¹⁾			0.0005				0.0010						0.0025		0.0005				0.0100	0.0650			0.0004		0.0002	active	
C11045* ETP ETP	99.90 ⁽¹⁸⁾⁽⁵⁾			0.0005				0.0010						0.0025		0.0005				0.0100	0.0650			0.0004		0.0002	active	
C11050 ETP-R	99.90 ⁽¹⁹⁾			0.0005				0.0030						0.0025		0.0005				0.0100	0.0650			0.0004		0.0002	active	
C11080 Replaced by C13100	99.8 ⁽⁵⁾																										inactive 03/92	

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C11100* Electronic Tough Pitch, Anneal Resistant ETP	99.90 ⁽²⁰⁾⁽⁵⁾⁽¹¹⁾																										active
C11300* Tough Pitch with Ag STP	99.90 ⁽⁵⁾⁽¹³⁾⁽¹¹⁾												0.027 ⁽⁷⁾														active
C11400* Tough Pitch with Ag STP	99.90 ⁽¹³⁾⁽⁵⁾⁽¹¹⁾												0.034 ⁽⁸⁾														active
C11500* Tough Pitch with Ag STP	99.90 ⁽¹³⁾⁽¹¹⁾⁽⁵⁾												0.054 ⁽²¹⁾														active
C11600* Tough Pitch with Ag STP	99.90 ⁽¹¹⁾⁽⁵⁾⁽¹³⁾												0.085 ⁽⁹⁾														active
C11700*	99.9 ⁽⁵⁾⁽²²⁾								0.04							0.004	0.02										active
C11900* Copper Alloy	99.93 ⁽⁵⁾							0.002	0.010																		inactive 02/73
C11904* Copper Alloy	99.90 ⁽⁵⁾												0.027 ⁽²³⁾														inactive 03/92
C11905* Copper Alloy	99.90 ⁽⁵⁾												0.034 ⁽⁸⁾														inactive 03/92
C11906	99.90												0.054														inactive
C11907* Copper Alloy	99.90 ⁽⁵⁾												0.085 ⁽⁹⁾														inactive 03/92
C12000* Phosphorus- Deoxidized, Low Residual P DLP	99.90 ⁽⁵⁾							0.004	0.012																		active
C12100* Phosphorus- Deoxidized, Low Residual P DLPS	99.90 ⁽⁵⁾							0.005	0.012				0.014 ⁽²⁴⁾														active

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C12200* Phosphorus-Deoxidized, High Residual P DHP	99.9 ⁽²⁵⁾⁽⁵⁾								0.015	0.040																	active
C12210*	99.90 ⁽⁵⁾								0.015	0.025																	active
C12220*	99.9 ⁽⁵⁾								0.040	0.065																	active
C12300* Phosphorus-Deoxidized, High Residual P DHPS	99.90 ⁽⁵⁾								0.015	0.040			0.014 ⁽²⁴⁾														active
C12500* Fire-Refined Tough Pitch FRTP	99.88 ⁽⁵⁾			0.004											0.012							0.003		0.025 ⁽²⁶⁾	0.050 Ni 0.003 Bi	active	
C12510*	99.9 ⁽⁵⁾			0.020		0.080		0.05		0.03												0.003		0.025 ⁽²⁶⁾	0.05 Sn 0.050 Ni 0.005 Bi	active	
C12600	99.5 ⁽⁵⁾								0.20	0.40																	active
C12700* Copper Alloy	99.88 ⁽⁵⁾			0.004									0.027 ⁽²³⁾		0.012								0.003		0.025 ⁽²⁶⁾	0.050 Ni 0.003 Bi	inactive 03/92
C12800* Copper Alloy	99.76 ⁽⁵⁾			0.004									0.034 ⁽⁸⁾		0.012								0.003		0.025 ⁽²⁶⁾	0.050 Ni 0.003 Bi	inactive 03/92
C12900* Fire-Refined Tough Pitch with Ag FRSTP	99.88 ⁽⁵⁾			0.004										0.054 ⁽²¹⁾		0.012							0.003		0.025 ⁽²⁷⁾	0.050 Ni 0.003 Bi	active
C13000 Copper Alloy	99.88 ⁽⁵⁾			0.004									0.085 ⁽⁹⁾		0.012								0.003		0.025 ⁽²⁶⁾	0.05 Ni 0.003 Bi	inactive 03/92
C13100*	99.8 ⁽⁵⁾																										active
C13150* Copper	99.5 ⁽⁵⁾																										active
C13400* Copper Alloy	99.99 ⁽⁵⁾									0.0005			0.027 ⁽²³⁾														inactive 12/72
C13500* Copper Alloy	99.99 ⁽⁵⁾									0.0005			0.034 ⁽⁸⁾														inactive 12/72

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status	
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C13600* Copper Alloy	99.99 ⁽⁵⁾								0.0005				0.054 ⁽²¹⁾														inactive 12/72	
C13700* Copper Alloy	99.99 ⁽⁵⁾								0.0005				0.085 ⁽⁹⁾														inactive 12/72	
C14100 Copper Alloy	99.40 ⁽⁵⁾														0.15	0.50											inactive 07/74	
C14180*	99.90 ⁽⁵⁾			0.02					0.075		0.01																active	
C14181*	99.90 ⁽⁵⁾			0.002		0.002			0.002																0.005 C 0.002 Cd	active		
C14200* Phosphorus- Deoxidized, Arsenical DPA	99.4 ⁽⁵⁾								0.015	0.040					0.15	0.50											active	
C14210* Copper Alloy	99.20 ⁽⁵⁾								0.013	0.050					0.30	0.50											inactive 03/92	
C14300* Cadmium Copper, Deoxidized	99.90 ⁽⁵⁾⁽²⁸⁾																								0.05 Cd	0.15 Cd	active	
C14310* Cadmium Copper	99.90 ⁽⁵⁾⁽²⁸⁾																								0.10 Cd	0.30 Cd	inactive 03/92	
C14400* Copper Alloy	99.90 ⁽⁵⁾					0.05		0.03	0.013	0.025												0.003		0.02	0.10 Sn	0.20 Sn 0.05 Ni	inactive 03/92	
C14410*	99.90 ⁽²⁹⁾⁽⁵⁾			0.05				0.05	0.005	0.020															0.10 Sn	0.20 Sn	active	
C14415*	99.96 ⁽²⁹⁾																								0.10 Sn	0.15 Sn	active	
C14420*	99.90 ⁽⁵⁾⁽³⁰⁾																							0.005	0.05	0.04 Sn	0.15 Sn	active
C14425 Copper Copper	99.97 ⁽³¹⁾⁽⁵⁾			0.10		0.10		0.020		0.010															0.25 Sn	0.35 Sn 0.020 Ni ⁽³²⁾	active	
C14430* Copper Alloy		Rem ⁽⁵⁾																							0.25 Sn	0.35 Sn	inactive 03/92	
C14435	99.4 ⁽³³⁾																			0.001					0.30 Sn	0.60 Sn	active	
C14440* Copper Alloy	99.96 ⁽⁵⁾																								0.005 Sn	0.01 Sn	inactive 03/92	

UNS #	Cu		Pb		Zn		Fe		P		Al		Ag		As		B		O		Sb		Te		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C14500* Tellurium-Bearing PTE	99.90 ⁽³⁴⁾⁽³⁵⁾⁽⁵⁾								0.004	0.012													0.40	0.7			active
C14510* Tellurium-Bearing	99.85 ⁽³⁴⁾⁽⁵⁾			0.05					0.010	0.030													0.30	0.7			active
C14520* Phosphorus- Deoxidized, Tellurium- Bearing DPTE	99.90 ⁽³⁴⁾⁽⁵⁾								0.004	0.020													0.40	0.7			active
C14530*	99.90 ⁽³⁶⁾								0.001	0.010													0.003 ⁽³⁷⁾	0.023	0.003 Sn	0.023 Sn	active
C14700* Sulfur-Bearing	99.90 ⁽⁵⁾⁽³⁸⁾⁽³⁵⁾								0.002 ⁽³⁸⁾	0.005															0.20 S	0.50 S ⁽³⁸⁾	active
C14710* Copper Alloy	99.90 ⁽³⁵⁾⁽³⁹⁾			0.05 ⁽³⁹⁾					0.010 ⁽³⁹⁾	0.030															0.05 S	0.15 S ⁽³⁹⁾	inactive 03/92
C14720 Copper Alloy	99.50 ⁽³⁸⁾⁽³⁵⁾⁽⁵⁾			0.1					0.010	0.030 ⁽³⁸⁾															0.20 S ⁽³⁸⁾	0.50 S	inactive 03/92
C14730 Sulfur Bearing Copper	99.80 ⁽⁵⁾																										inactive 03/92
C14750* High Copper Alloy		Rem ⁽⁵⁾⁽⁴⁰⁾								0.012															0.05 Mn 0.20 S	0.50 Mn 0.50 S	active
C15000* Zirconium Copper		Rem ⁽⁵⁾⁽⁴¹⁾																							0.10 Zr	0.20 Zr	active
C15100*	99.80 ⁽⁴¹⁾⁽⁵⁾																								0.05 Zr	0.15 Zr	active
C15150*	99.90 ⁽⁵⁾																								0.015 Zr	0.030 Zr	active
C15500*	99.75 ⁽⁵⁾								0.040	0.080			0.027	0.10 ⁽²³⁾											0.08 Mg	0.13 Mg	active
C15600* Copper Alloy	99.6 ⁽⁵⁾								0.06	0.09															0.20 Co	0.30 Co 0.02 Mg	active
C15630		Rem ⁽⁴²⁾							0.015	0.040															0.60 Ni	0.90 Ni	active
C15650* MA5J Copper	99.9 ⁽⁵⁾								0.015	0.040															0.04 Co	0.06 Co	active
C15710* Copper Alloy	99.71 ⁽⁵⁾			0.01				0.01			0.08	0.12							0.07	0.15							inactive 03/92

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	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C15715* Dispersion Strengthened Alloy	99.62 ⁽⁵⁾			0.01				0.01				0.13	0.17 ₍₄₃₎							0.12 ₍₄₃₎	0.19							active
C15720* Dispersion Strengthened Alloy	99.52 ⁽⁵⁾			0.01				0.01				0.18 ₍₄₃₎	0.22							0.16	0.24 ₍₄₃₎							active
C15725* Dispersion Strengthened Alloy	99.43 ⁽⁵⁾			0.01				0.01				0.23 ₍₄₃₎	0.27							0.20 ₍₄₃₎	0.28							active
C15730* Copper Alloy	98.94 ⁽⁵⁾							0.04				0.26	0.34 ₍₄₃₎				0.22			0.32 ₍₄₃₎	0.46							active
C15735* Copper Alloy	99.24 ⁽⁵⁾			0.01				0.01				0.33	0.37							0.29	0.37							inactive 03/92
C15750* Dispersion Strengthened Copper C3/60	98.56 ⁽⁵⁾							0.04				0.42 ₍₄₃₎	0.50					0.22		0.52	0.68 ₍₄₃₎							active
C15760* Dispersion Strengthened Alloy	98.77 ⁽⁵⁾			0.01				0.01				0.58 ₍₄₃₎	0.62							0.52	0.59 ₍₄₃₎							active
C15780* Copper Alloy	98.10 ⁽⁵⁾							0.04				0.66 ₍₄₃₎	0.74					0.22		0.76 ₍₄₃₎	0.90							active
C15790* Copper Alloy	97.68 ⁽⁵⁾							0.04				0.88 ₍₄₃₎	0.96					0.22		0.96 ₍₄₃₎	1.10							active
C15815* Dispersion Strengthened Alloy	97.82 ⁽⁵⁾			0.01				0.01				0.13	0.17 ₍₄₃₎				1.2	1.8			0.19 ₍₄₃₎							active
C15900* Dispersion Strengthened Coper C3/11	97.51 ⁽⁵⁾							0.04				0.76	0.84 ₍₄₃₎							0.40 ₍₄₃₎	0.54					0.27 C 0.66 Ti	0.33 C 0.74 Ti	active

* = are alloys registered with the U.S. EPA as Antimicrobial.

(1) = 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.

(2) = Cu is determined by the difference between the impurity total and 100 %. For alloy C10100 the Cu value is exclusive of Ag.

- (3) = The following additional impurity maximum limits shall apply: Bi 1ppm (0.0001%); Cd 1ppm (0.0001%); Mn 0.5ppm (0.00005%); Ni 10ppm (0.0010%); Se 3ppm (0.0003%); S 15ppm (0.0015%); Sn 2ppm (0.0002).
- (4) = Cu is determined by the difference between the impurity total and 100%.
- (5) = Cu value includes Ag.
- (6) = Includes P.
- (7) = Ag 0.027% min is the equivalent of, Ag 8 Troy Oz min.
- (8) = Ag 0.034% min is the equivalent of, Ag 10 Troy Oz min.
- (9) = Ag 0.085% min is the equivalent of, Ag 25 Troy Oz min.
- (10) = Cu + Sum of Named Elements, 99.95% min.
- (11) = This is a high conductivity copper which has, in the annealed condition a minimum conductivity of 100% IACS.
- (12) = Ag 0.044% min is the equivalent of, Ag 13 Troy Oz min.
- (13) = Oxygen and trace elements may vary depending on the process.
- (14) = The following additional maximum limits shall apply: Se 10 ppm (0.0010%); Bi 5 ppm (0.0005%); Sn 150 ppm (0.0150%); Ni 150 ppm (0.0150%); S 20 ppm (0.0020%); Cd 100 ppm (0.0100%).
- (15) = The total maximum allowable of named elements is 750 ppm (0.0750%) not including oxygen.
- (16) = Cu value is exclusive of Ag
- (17) = The following additional maximum limits shall apply: Se 2ppm (0.0002%); Bi 1.0ppm (0.00010%); Group Total Te + Se +Bi 3ppm(0.0003%); Sn 5ppm (0.0005%); Ni 10ppm (0.0010%); S 15ppm (0.0015%). The total maximum allowable of named elements is 65 ppm (0.0065%) - does not include oxygen.
- (18) = These total maximum limits shall apply; Se 2ppm(0.0002%); Bi 0.5ppm (0.00005%); Sn 5 ppm (0.0005%); Ni 10ppm (0.0010%); S 15 ppm (0.0015%).
- (19) = The following additional impurity maximum limits shall apply: Bi 1 ppm (0.0015%); Ni 15 ppm (0.0015%); S 15 ppm (0.0015%); Se 2 ppm (0.0002%); Sn 15 ppm (0.0015%);
- (20) = Small amounts of Cd or other elements may be added by agreement to improve the resistance to softening at elevated temperatures.
- (21) = Ag 0.054% min is the equivalent of, Ag 16 Troy Oz min.
- (22) = Includes B + P.
- (23) = Ag 0.027 - 0.10% min is the equivalent of, Ag 8 - 30 Troy Oz min.
- (24) = Ag 0.014% min is the equivalent of, Ag 4 Troy Oz min.
- (25) = This includes oxygen-free Cu which contains P in an amount agreed upon.
- (26) = 0.025 Te + Se.
- (27) = Includes Te + Se.
- (28) = Includes Cd. Deoxidized with Li or other suitable elements as agreed upon.
- (29) = Includes Cu + Ag + Sn.
- (30) = Includes Te + Sn.
- (31) = Cu + Sum of Named Elements, 99.97% Min.
- (32) = Includes Co.
- (33) = Cu + Sum of Named Elements 99.7% min.
- (34) = Includes Te + P.
- (35) = Includes oxygen-free or deoxidized grades with deoxidizers (such as phosphorus boron lithium or others in an amount agreed upon).
- (36) = Includes Ag + Sn + Te + Se

(37) = Tellurium and/or Selenium

(38) = Includes Cu + S + P.

(39) = Includes Ag, S, P, and Pb

(40) = Cu + Sum of Named Elements 99.8% min.

(41) = Cu + Sum of Named Elements 99.9% min.

(42) = Cu + Sum of Named Elements 99.5% min.

(43) = All aluminum present as Al_2O_3 ; 0.04% oxygen present as Cu_2O with a negligible amount in solid solution with copper.