



Copper Development
Association Inc.

Application Datasheet

Standard Designation for Wrought Copper Alloys

Revision Date: October 21, 2024

High Copper Alloys (C16000 - C19999)

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

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		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%			
C16200*																													
Cadmium Copper		Rem ⁽¹⁾⁽²⁾									0.02															0.7 Cd	1.2 Cd	active	
C16210*																											0.50 Cd	1.20 Cd	inactive 03/92
C16400*	99.8 ⁽²⁾				0.20	0.40			0.02																	0.6 Cd	0.9 Cd	inactive 07/74	
C16500*		Rem ⁽¹⁾⁽²⁾			0.50	0.7			0.02																	0.6 Cd	1.0 Cd	active	
C17000*		Rem ⁽²⁾⁽¹⁾															0.20	1.60	1.85	0.20 ⁽³⁾					0.20			active	
C17200*		Rem ⁽¹⁾⁽²⁾															0.20	1.80	2.00	0.20 ⁽³⁾					0.20			active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		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%		
C17300 Copper Beryllium		Rem ⁽¹⁾⁽²⁾	0.20	0.6													0.20	1.80	2.00	0.20 ⁽³⁾					0.20			active
C17400* Beryllium Copper		Rem ⁽²⁾⁽¹⁾							0.20 ⁽³⁾							0.20	0.15	0.50	0.15	0.35 ⁽³⁾				0.20			inactive 03/92	
C17410* Copper Beryllium		Rem ⁽¹⁾⁽²⁾							0.20							0.20	0.15	0.50	0.35	0.6				0.20			active	
C17420* Copper Beryllium		Rem ⁽²⁾							0.20							0.20	0.05	0.15	0.05	0.6				0.20			inactive 03/92	
C17450* Copper Beryllium		Rem ⁽¹⁾⁽²⁾			0.25				0.20				0.50	1.0		0.20	0.15	0.50						0.20	0.50 Zr	active		
C17455 Copper Beryllium		Rem ⁽¹⁾⁽²⁾	0.20	0.6	0.25				0.20				0.50	1.0 ⁽⁴⁾		0.20	0.15	0.50						0.20	0.50 Zr	active		
C17460* Copper Beryllium		Rem ⁽¹⁾⁽²⁾			0.25				0.20				1.0	1.4		0.20	0.15	0.50						0.20	0.50 Zr	active		
C17465 Copper Beryllium		Rem ⁽¹⁾⁽²⁾	0.20	0.6	0.25				0.20				1.0 ⁽⁴⁾	1.4		0.20	0.15	0.50						0.20	0.50 Zr	active		
C17500* Copper Beryllium		Rem ⁽²⁾⁽¹⁾							0.10							0.20	0.4	0.7	2.4	2.7				0.20			active	
C17510* Copper Beryllium		Rem ⁽¹⁾⁽²⁾							0.10				1.4	2.2		0.20	0.2	0.6		0.3				0.20			active	
C17520* Copper Beryllium		Rem ⁽²⁾											0.50	1.5		0.10	0.30								0.06 Mg 0.10 Zr	0.30 Mg 0.30 Zr	inactive 03/92	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		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%		
C17530*																												
Copper Beryllium		Rem ⁽²⁾⁽¹⁾									0.20			1.8 ⁽⁴⁾	2.5		0.6	0.20	0.40					0.20			active	
C17540		Rem ⁽²⁾⁽¹⁾									0.2			0.8	1.3		0.4	0.7	0.8	1.3				0.2			active	
C17600*		Rem ⁽²⁾									0.10						0.20	0.25	0.50	1.4	1.7					0.9 Ag	1.1 Ag	inactive 03/92
C17700*		Rem ⁽²⁾									0.10						0.40	0.70	2.4	2.7				0.20	0.40 Te	0.6 Te	inactive 03/92	
C18000		Rem ⁽¹⁾⁽²⁾									0.15			1.8	3.0 ⁽⁴⁾									0.10	0.8	0.40	0.8	active
C18020		Rem ⁽²⁾⁽⁵⁾			0.05	0.25	0.10	0.30															0.10	0.30		0.05	active	
C18025		Rem ⁽²⁾⁽⁵⁾			0.15	0.25	0.05	0.15															0.20	0.30	0.03	0.07	0.01 Mg 0.03 Mg active	
C18030		Rem ⁽²⁾⁽⁵⁾			0.08	0.12					0.005	0.015											0.10	0.20			active	
C18040		Rem ⁽⁶⁾⁽²⁾			0.20	0.30	0.05	0.15			0.005	0.015											0.25	0.35			active	
C18045	99.1 ⁽⁵⁾⁽²⁾				0.20	0.30	0.15	0.30															0.20	0.35		0.05	active	
C18050		Rem ⁽²⁾⁽⁷⁾																					0.05	0.15			0.005 Te 0.015 Te active	
C18060		Rem ⁽⁵⁾			0.10												0.01	0.15	0.20	0.40	0.01	0.15	0.01 Mg	.15 Mg	active			
C18070	99.0 ⁽²⁾⁽⁷⁾																						0.15	0.40	0.02	0.07	0.01 Ti 0.40 Ti active	
C18080		Rem ⁽⁸⁾⁽⁷⁾									0.02	0.20											0.20	0.7	0.01	0.10	0.01 Ag 0.01 Ti 0.30 Ag 0.15 Ti active	
C18085		Rem ⁽¹⁾																					0.20	1.0	0.01	0.50	0.01 Ag 0.01 Ti 0.30 Ag 0.8 Ti active	
C18090	96.0 ⁽⁹⁾⁽²⁾				0.50	1.2					0.30	1.2											0.20	1.0			0.15 Ti 0.8 Ti active	
C18095		Rem ⁽¹⁾									0.15	0.50											0.6	1.0	0.01	0.12	0.10 Ti 0.40 Ti active	
C18100	98.7 ⁽²⁾⁽¹⁾																						0.40	1.2			0.03 Mg 0.08 Zr 0.06 Mg 0.20 Zr active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		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%	
C18135		Rem ⁽²⁾⁽¹⁾																			0.20	0.6			0.20 Cd	0.6 Cd	active
C18140		Rem ⁽²⁾⁽¹⁾																		0.15	0.45	0.005	0.05	0.05 Zr	0.25 Zr	active	
C18141 High Copper Alloy MZC1		Rem ⁽²⁾⁽¹⁾					0.20										0.10				0.20	0.40	0.01	0.03	0.002 Mg 0.07 Zr	0.05 Mg 0.13 Zr	active
C18142		Rem ⁽¹⁾⁽¹⁰⁾																		0.20	0.30			0.05 Mg	0.30 Mg	active	
C18143 High Copper		Rem ⁽²⁾⁽¹⁾				0.20										0.10				0.20	0.40	0.01	0.03	0.07 Zr	0.05 Mn 0.13 Zr	active	
C18145		Rem ⁽¹⁾⁽²⁾					0.10	0.30												0.10	0.30			0.05 Zr	0.15 Zr	active	
C18147		Rem ⁽⁵⁾																		0.15	0.35			0.02 Zr	0.05 Zr	active	
C18148		Rem ⁽⁹⁾									0.004	0.02								0.50	0.80			0.03 Zr	0.10 Zr	active	
C18150		Rem ⁽¹¹⁾⁽²⁾																		0.50	1.5			0.02 Zr	0.20 Zr	active	
C18160		Rem ⁽¹¹⁾⁽¹⁰⁾						0.10											0.20	1.20		0.10	0.05 Zr	0.25 Zr	active		
C18200 Chromium Copper		Rem ⁽¹⁾⁽²⁾		0.05				0.10												0.6	1.2		0.10			active	
C18400 Chromium Copper		Rem ⁽²⁾⁽¹⁾					0.7		0.15		0.05									0.40	1.2		0.10	0.005 As 0.005 Ca 0.05 Li		active	
C18500 High Copper		Rem ⁽²⁾		0.015							0.04									0.40	1.0			0.08 Ag	0.12 Ag	inactive 03/92	
C18550 Chromium Copper		Rem ⁽²⁾			0.10	0.14														0.6	1.0					inactive 03/92	
C18600		Rem ⁽²⁾⁽¹⁾						0.25	0.8			0.25							0.10	0.10	1.0				0.05 Ti 0.05 Zr	0.50 Ti 0.40 Zr	active
C18610		Rem ⁽²⁾⁽¹⁾						0.10				0.25						0.25	0.8	0.10	1.0			0.05 Ti 0.05 Zr	0.50 Ti 0.40 Zr	active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		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%		
C18620*					0.03	0.15	0.02	0.10			0.040	0.075	0.02	0.06					0.14	0.21								
High Copper	99.40 ⁽²⁾																										active	
C18625*	99.40 ⁽²⁾⁽¹⁾				.01	.10		.10			.05	.09		.10					.15	.35							active	
C18660*		Rem ⁽⁵⁾⁽²⁾			0.08		0.10	0.15	0.03	0.08											0.01	0.02	0.01	0.02	0.03 Mg	0.07 Mg	active	
C18661*		Rem ⁽¹⁾⁽²⁾			0.20			0.10	0.001	0.02															0.10 Mg	0.7 Mg	active	
C18665*	99.0 ⁽²⁾										0.002	0.04													0.40 Mg	0.9 Mg	active	
C18670		Rem ⁽¹⁾⁽²⁾																								1.2 Mg	1.9 Mg	active
MSP5																												
C18700					0.8	1.5																					active	
Free-Machining Cu	99.5 ⁽²⁾⁽¹²⁾																											
C18835*	99.0 ⁽¹⁾⁽²⁾				0.05	0.15	0.55	0.30		0.10		0.01															active	
C18900*		Rem ⁽¹⁾⁽²⁾			0.02	0.6	0.9	0.10			0.05			0.01							0.15	0.40	0.10 Mn	0.30 Mn	active			
C18910*		Rem ⁽²⁾									0.15											0.50		0.50 Mn	0.50 Mn	inactive 12/98		
C18980*	⁽¹⁾ 98.0 ⁽²⁾				0.02	1.0					0.15										0.50		0.50 Mn	0.50 Mn	active			
C18990		Rem ⁽⁵⁾⁽²⁾				1.8	2.2				0.005	0.015								0.10	0.20					active		
C19000*		Rem ⁽²⁾⁽¹⁾			0.05		0.8		0.10	0.15	0.35	0.9	1.3													active		
C19002*		Rem ⁽²⁾⁽¹⁾			0.05	0.02	0.30	0.01	0.35	0.10		0.05	1.4	1.7 ⁽⁴⁾							0.20	0.35	0.02 Ag 0.005 Zr	0.01 Mg 0.05 Zr	0.50 Ag 0.01 Mg 0.05 Zr	active		
C19005		Rem ⁽¹⁾⁽²⁾			0.05	0.02	0.30	0.20	0.7	0.10		0.05	1.4 ⁽⁴⁾	1.7							0.20	0.35	0.50 Ag 0.01 Mg 0.08 Zr	0.02 Mg	0.15 Mg	active		
C19010*		Rem ⁽²⁾⁽¹⁾									0.01	0.05	0.8	1.8							0.15	0.35				active		
C19015*		Rem ⁽⁷⁾⁽²⁾									0.02	0.20	0.50	2.4							0.10	0.40	0.02 Mg	0.15 Mg	0.02 Mg	0.15 Mg	active	

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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%		
C19020*		Rem ⁽⁷⁾⁽²⁾			0.30	0.9					0.01	0.20	0.50	3.0														active
C19022*		Rem ⁽¹⁾⁽²⁾			0.009	0.3	1.0		0.2		0.04	0.01	0.07	0.3	1.0 ⁽⁴⁾													active
C19024*		Rem ⁽⁵⁾⁽²⁾			0.01	.02	0.8		0.05		0.02	0.008	0.05	0.10	0.6												active	
C19025*		Rem ⁽²⁾⁽¹¹⁾			0.7	1.1		0.20		0.10	0.03	0.07	0.8	1.2													active	
C19026		Rem ⁽¹⁾			0.01	0.7	1.1		0.50			0.03	0.07	0.8	1.2										0.07	0.25	active	
C19027*		Rem ⁽¹¹⁾⁽²⁾			1.20	1.80		0.20		0.10	0.03	0.15	0.50	1.20													0.20 Mg	active
C19030*		Rem ⁽²⁾⁽¹¹⁾			0.02	1.0	1.5			0.10	0.01	0.03	1.5	2.0														active
C19040*	CAC5 High Copper	96.1 ⁽²⁾⁽⁷⁾			0.02	1.0	2.0		0.8		0.06	0.02	0.09	0.7	0.9 ⁽⁴⁾										0.010		0.02 Mn	active
C19050*	SPKFC-5E High Copper	95.1 ⁽²⁾⁽⁷⁾			0.02	0.8	2.5		1.0	0.05	0.15	0.08	0.20	0.50 ⁽⁴⁾	1.0													active
C19100		Rem ⁽¹⁾⁽²⁾			0.10			0.50		0.20	0.15	0.35	0.9	1.3												0.35 Te	0.6 Te	active
C19140		Rem ⁽¹⁾⁽²⁾			0.40	0.8		0.05	0.50		0.05	0.15	0.35	0.8	1.2													active
C19150		Rem ⁽¹⁾⁽²⁾			0.50	1.0		0.05			0.05	0.15	0.35	0.8	1.2												active	
C19160		Rem ⁽²⁾⁽¹⁾			0.8	1.2		0.05	0.50		0.05	0.15	0.35	0.8	1.2												active	
C19170*	KLF170 High Copper	96.8 ⁽⁷⁾⁽²⁾			0.02	0.8		1.0	0.05	0.15	0.08	0.20	0.50 ⁽⁴⁾	1.0										0.010			active	
C19200*		98.5 ⁽⁷⁾						0.20	0.8	1.2	0.01	0.04															active	
C19210*		Rem ⁽⁷⁾							0.05	0.15	0.025	0.04															active	

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C19215*		Rem ⁽⁷⁾					1.1	3.5	0.05	0.20	0.025	0.050															active
C19217		Rem ⁽¹³⁾							0.09	0.20	0.05	0.09														0.05 Mn 0.20 Mn	active
C19220*		Rem ⁽⁷⁾			0.05	0.10			0.10	0.30	0.03	0.07	0.10	0.25												0.005 B 0.015 B	active
C19240* Super KFC	97.5 ⁽⁷⁾			0.02	0.8		1.0	0.15	0.45	0.04	0.20													0.010		0.020 Mn	active
C19250* SPKFC-5W High Copper	95.8 ⁽²⁾⁽⁷⁾			0.02	0.8	2.5		1.0	0.15	0.45	0.04	0.20												0.010		0.02 Mn	active
C19260*	98.5 ⁽⁵⁾							0.40	0.8																0.02 Mg 0.20 Ti 0.15 Mg 0.40 Ti	active	
C19280*		Rem ⁽⁷⁾			0.30	0.7	0.30	0.7	0.50	1.5	0.005	0.015															active
C19300* High Copper Alloy	92.0	94.0		0.003	0.03		Rem	2.05	2.60								0.02										inactive 08/73
C19400*	97.0			0.03		0.05	0.20	2.1	2.6	0.015	0.15															active	
C19410*		Rem ⁽⁷⁾			0.6	0.9	0.10	0.20	1.8	2.3	0.015	0.050														active	
C19419* CAC19 High Copper	96.7 ⁽⁷⁾⁽²⁾			0.02	0.05	0.18	0.10	0.40	1.7	2.3		0.03	0.04 ⁽⁴⁾											0.03 0.09	0.04 Mn	active	
C19450*		Rem ⁽⁷⁾			0.8	2.5			1.5	3.0	0.005	0.05														active	
C19500*	96.0 ⁽⁷⁾			0.02	0.10	1.0		0.20	1.0	2.0	0.01	0.35					0.02		0.30	1.3						active	
C19520	96.6 ⁽⁷⁾		0.01	3.5					0.50	1.5																active	
C19600* High Copper Alloy		Rem					0.35	0.9	1.2	0.25	0.35															inactive 03/92	
C19700*		Rem ⁽⁷⁾		0.05	0.20		0.20	0.30	1.2	0.10	0.40		0.05					0.05							0.01 Mg 0.20 Mg 0.05 Mn	active	
C19710*		Rem ⁽¹⁾		0.05	0.20		0.20	0.05	0.40	0.07	0.15		0.10 ⁽⁴⁾												0.03 Mg 0.06 Mg 0.05 Mn	active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		Be		Co		Cr		Si		Other Named Elements		Status
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C19720*		Rem ⁽¹⁾		0.05	0.20		0.20	0.05	0.50	0.05	0.15		0.10 ⁽⁴⁾													0.06 Mg 0.20 Mg 0.05 Mn	active
C19750*		Rem ⁽⁷⁾		0.05	0.05	0.40		0.20	0.35	1.2	0.10	0.40		0.05					0.05							0.01 Mg 0.20 Mg 0.05 Mn	active
C19800*		Rem ⁽⁷⁾			0.10	1.0	0.30	1.5	0.02	0.50	0.01	0.10													0.10 Mg 1.0 Mg	active	
C19810*		Rem ⁽⁷⁾					1.0	5.0	1.5	3.0		0.10													0.10 Mg 0.10 Ti 0.10 Zr	active	
C19900*		Rem ⁽¹⁾																								2.9 Ti 3.5 Ti	active
C19910*		Rem ⁽¹⁾							0.17	0.23															2.9 Ti 3.4 Ti	active	
C19920		Rem ⁽¹⁾		0.05									0.01	0.30											2.5 Ti 0.01 Nb 3.5 Ti 0.30 Nb	active	

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

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

(2) = Cu value includes Ag.

(3) = Ni + Co 0.20% min.: Ni + Fe + Co 0.6% max.

(4) = Ni value includes Co.

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

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

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

(8) = Not including Ag.

(9) = Cu + Sum of Named Elements 99.85% min.

(10) = Includes Ag.

(11) = Cu + Sum of Named Elements 99.7% min.

(12) = Includes Pb.

(13) = Cu + Sum of Named Elements, 99.95% min.