



Application Datasheet

Standard Designation for Cast Copper Alloys

- C83300-C83999: Copper-Tin-Zinc and Copper-Tin-Zinc-Lead Alloys (*Red and Leaded Red Brasses*)
- C84000-C84999: Copper-Tin-Zinc and Copper-Tin-Zinc-Lead Alloys (*Semi-Red and Leaded Semi-Red Brasses*)
- C85000-C85999: Copper-Zinc Alloys (*Yellow Brasses*)
- C86000-C86999: Manganese Bronze and Leaded Manganese Bronze Alloy (*High Strength Yellow Brasses*)
- C87000-C87999: Copper-Silicon Alloys (*Silicon Bronzes and Silicon Brasses*)
- C88000-C89999: Copper-Bismuth and Copper-Bismuth-Selenium Alloys

Revision Date: May 20, 2025

Brasses (C83300 - C89999)

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

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C83300	92.0 ⁽¹⁾⁽²⁾	94.0	1.0	2.0	1.0	2.0	2.0	6.0																											active
C83400	88.0	92.0 ⁽²⁾⁽¹⁾		0.50		0.20	8.0	12.0		0.25		0.03 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005					active
C83410 Red Brass	88.0	91.0		0.10	1.0	2.0		Rem		0.05				0.05		0.005																			inactive 03/92
C83420 Red Brass	88.0 ⁽¹⁾⁽²⁾	92.0		0.50	0.25	0.7		Rem		0.10																									inactive 03/92
C83450	87.0 ⁽²⁾⁽¹⁾	89.0	1.5	3.0	2.0	3.5	5.5	7.5		0.30		0.03 ⁽³⁾	0.8	2.0 ⁽⁴⁾		0.005										0.08		0.25		0.005					active
C83460*		Rem ⁽⁵⁾⁽²⁾		.09	2.5	4.5	4.0	6.0	.50	1.0	.05	.10		1.0 ⁽⁴⁾		.005									.15	.6	.25		.005					active	
C83470* Copper Tin Zinc Alloy	90.0	96.0 ⁽²⁾⁽⁵⁾		0.09	3.0	5.0	1.0	3.0		0.50		0.10 ⁽⁶⁾		1.0 ⁽⁴⁾		0.01									0.20	0.6		0.20		0.01				active	
C83500	86.0 ⁽¹⁾⁽²⁾	88.0	3.5	5.5	5.5	6.5	1.0	2.5		0.25		0.03 ⁽³⁾	0.50 ⁽⁴⁾	1.0		0.005										0.08		0.25		0.005				active	
C83520 Red Brass		Rem	3.5	4.5	3.5	4.5				0.30				1.0																				inactive 03/92	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C83600 Ounce Metal	84.0	86.0 ⁽²⁾⁽¹⁾	4.0	6.0	4.0	6.0	4.0	6.0		0.30		0.05 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C83700 Red Brass	83.0	88.0		0.50		1.00		Rem		0.30		0.05		0.30		0.005	0.05	0.20												0.005								inactive 03/92
C83800 Hydraulic Bronze	82.0 ⁽¹⁾⁽²⁾	83.8	5.0	7.0	3.3	4.2	5.0	8.0		0.30		0.03 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C83810		Rem ⁽¹⁾⁽²⁾	4.0	6.0	2.0	3.5	7.5	9.5		0.50 ⁽⁷⁾				2.0 ⁽⁴⁾		0.005														0.10								active
C84000* Semi-Red Brass	82.0	89.0 ⁽¹⁾		0.09	2.0	4.0	5.0	14.0		0.40		0.05	0.50	2.0		0.005									0.01	0.10	0.65		0.02							0.10 B 0.10 Zr	active	
C84010* Semi-Red Brass	82.0 ⁽¹⁾	89.0		0.09	2.0	4.0	5.0	14.0		0.40		0.05	0.50	2.0		0.005							0.01	0.20	0.10	0.65		0.02							0.10 B 0.10 Zr	active		
C84020* Semi-Red Brass	82.0 ⁽¹⁾	89.0		0.09	2.0	4.0	5.0	14.0		0.40		0.05	0.50	2.0											0.20	0.10	0.65		0.02						0.10 B 0.10 C 0.10 Ti 0.10 Zr	active		
C84030* Low Lead Semi-Red Brass	82.0 ⁽¹⁾	89.0		0.09	2.0	4.0	5.0	14.0		0.40		0.05	0.50	2.0											0.20	0.10	0.65	0.10	1.5						0.10 B 0.10 C 0.10 Ti 0.10 Zr	active		
C84100	78.0	85.0 ⁽⁵⁾	0.05	0.25	1.5	4.5	12.0	20.0		0.30		0.05		0.50 ⁽⁴⁾		0.01				0.09								0.05		0.01							active	
C84200	78.0 ⁽¹⁾⁽²⁾	82.0	2.0	3.0	4.0	6.0	10.0	16.0		0.40		0.05 ⁽³⁾		0.8 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C84400 Valve Metal	78.0 ⁽¹⁾⁽²⁾	82.0	6.0	8.0	2.3	3.5	7.0	10.0		0.40		0.02 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C84410		Rem ⁽²⁾⁽¹⁾ (8)	7.0	9.0	3.0	4.5	7.0	11.0						1.0 ⁽⁴⁾		0.01			0.05											0.2								active
C84500	77.0 ⁽²⁾⁽¹⁾	79.0	6.0	7.5	2.0	4.0	10.0	14.0		0.40		0.02 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C84800 Plumbing Goods Brass	75.0	77.0 ⁽²⁾⁽¹⁾	5.5	7.0	2.0	3.0	13.0	17.0		0.40		0.02 ⁽³⁾		1.0 ⁽⁴⁾		0.005										0.08		0.25		0.005								active
C85200 Leaded Yellow Brass	70.0	74.0 ⁽²⁾⁽⁹⁾	1.5	3.8	0.7	2.0	20.0	27.0		0.6		0.02		1.0		0.005										0.05		0.20		0.05								active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C85210	70.0	75.0 ⁽¹⁰⁾⁽²⁾	2.0	5.0	1.0	3.0		Rem		0.8				1.0		0.005	0.02	0.06																	inactive 03/92
C85300 Yellow Brass	68.0	72.0 ⁽⁹⁾		0.50		0.50		Rem				0.50																							inactive 08/77
C85310 Yellow Brass	68.0 ⁽¹⁰⁾⁽²⁾	73.0	2.0	5.0		1.5		Rem		0.8				1.0		0.0	0.02	0.06																	inactive 03/92
C85400 No.1 Yellow Brass	65.0	70.0 ⁽²⁾⁽¹⁰⁾	1.5	3.8	0.50	1.5	24.0	32.0		0.7				1.0 ⁽⁴⁾		0.35														0.05					active
C85430	66.0	72.0 ⁽⁵⁾	0.01	0.25	0.6	1.7	27.0	31.0		0.30	0.01	0.15		0.30 ⁽⁴⁾	0.50	1.2				0.10													0.02 B	active	
C85450* Copper Zinc Alloy	60.0 ⁽⁵⁾	64.0		0.09	0.50	1.5		Rem	0.30	1.0				1.0 ⁽⁴⁾		1.0																			active
C85470*	60.0	65.0 ⁽⁵⁾		.09	1.0	4.0		Rem	.20	.02	.25				.10	1.0																			active
C85500	59.0 ⁽²⁾⁽⁹⁾	63.0		0.20		0.20		Rem	0.20					0.20 ⁽⁴⁾																					active
C85550* Low Silicon Brass	59.0	64.0 ⁽⁵⁾		0.09		0.30		Rem	0.15					0.20 ⁽¹¹⁾		0.30											0.30	1.0							active
C85560	60.0	64.0 ⁽¹²⁾⁽⁵⁾	.10	.25	.20	.50		Rem ⁽¹³⁾	.15					.20		.05	.20 ⁽¹⁴⁾	.60	.90																active
C85563	61.5	63.5 ⁽⁵⁾	0.20	1.6		0.30		Rem	0.30					0.20	0.50	0.7	0.04	0.14																	active
C85566	62.0	65.0 ⁽⁵⁾		0.20		0.30		Rem	0.20					0.20	0.45	0.7	0.02	0.04								0.02	0.05		0.02						active
C85570	59.0 ⁽⁵⁾⁽¹²⁾	65.0		0.25		0.50		Rem	0.30		0.20			0.20 ⁽⁴⁾	0.10	0.50	0.02	0.16											0.05	0.50					active
C85600 Copper Zinc Alloy	59.0	63.0		0.20		0.20		Rem						0.20																					inactive 02/82
C85610 Yellow Brass	63.0	66.0	1.0	2.0	1.2	2.0		Rem	0.10	1.0				2.0																			1.0 Be	inactive 05/82	
C85660	62.0	64.0 ⁽¹⁵⁾⁽¹²⁾		0.25		0.30		Rem	0.30					0.20 ⁽⁴⁾	0.50	0.7	0.02	0.15																	active
C85690	62.5 ⁽¹⁵⁾	65.0		0.10	0.30	0.9		Rem			0.03	0.09			0.02	0.06														0.05	0.15	0.001 B 0.03 Cr	0.003 B 0.09 Cr	active	
C85700 Leaded Yellow Brass	58.0	64.0	0.8	1.5	0.50	1.5	32.0	40.0		0.7				1.0		0.8														0.05					active
C85705	58.0	60.0 ⁽⁵⁾	1.8	2.5		0.8		Rem	0.50	0.8		0.02	0.50	1.2	0.04	0.8																			active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C85710 Yellow Brass	58.0	63.0	1.0	2.5	1.0		Rem		0.8				1.0	0.20	0.8																				inactive 03/92
C85800	57.0 ⁽¹⁶⁾⁽²⁾			1.5	1.5	31.0	41.0		0.50				0.50 ⁽⁴⁾	0.55		0.05								0.25	0.05	0.05	0.25								active
C85900* Yellow Brass	58.0	62.0 ⁽¹⁾		0.09	1.5	31.0	41.0		0.50				1.5	0.10	0.6									0.01	0.10	0.65	0.20	0.25					0.20 B 0.20 Zr	active	
C85910* Yellow Brass	58.0 ⁽¹⁾	62.0		0.09	1.5	31.0	41.0		0.50				1.5	0.10	0.6									0.01	0.20	0.10	0.65	0.20	0.25				0.20 B 0.20 Zr	active	
C85920* Yellow Brass	58.0	62.0 ⁽¹⁾		0.09	1.5	31.0	41.0		0.50				1.5	0.10	0.6											0.10	0.65	0.20	0.25				0.20 B 0.10 C 0.30 Ti 0.20 Zr	active	
C85930* Low-Lead Yellow Brass	58.0 ⁽¹⁾	62.0		0.09	1.5	31.0	41.0		0.50				1.5	0.10	0.6											0.10	0.65	0.10	1.5	0.25			0.20 B 0.10 C 0.30 Ti 0.20 Zr	active	
C86100 Manganese Bronze	66.0 ⁽¹⁷⁾⁽²⁾	68.0		0.20	0.20		Rem	2.0	4.0						4.5	5.5							2.5	5.0										active	
C86200	60.0 ⁽¹⁷⁾⁽²⁾	66.0		0.20	0.20	22.0	28.0	2.0	4.0				1.0 ⁽⁴⁾	3.0	4.9									2.5	5.0									active	
C86300 Manganese Bronze	60.0	66.0 ⁽¹⁷⁾⁽²⁾		0.20	0.20	22.0	28.0	2.0	4.0				1.0 ⁽⁴⁾	5.0	7.5									2.5	5.0									active	
C86350* Manganese Bronze Alloy	60.0	64.0 ⁽⁵⁾		0.09	0.8		Rem		1.0				0.50 ⁽⁴⁾	0.30	1.1							0.10	2.0	5.0										active	
C86400 Manganese Bronze	56.0	62.0 ⁽¹⁷⁾⁽²⁾	0.50	1.5	0.50	1.5	34.0	42.0	0.40	2.0			1.0 ⁽⁴⁾	0.50	1.5									0.10	1.5									active	
C86500 Manganese Bronze	55.0 ⁽²⁾⁽¹⁷⁾	60.0		0.40	1.0	36.0	42.0	0.40	2.0				1.0 ⁽⁴⁾	0.50	1.5									0.10	1.5									active	
C86550	57.0 ⁽²⁾⁽¹⁷⁾			0.50	1.0		Rem	0.7	2.0				1.0 ⁽⁴⁾	0.50	2.5									0.10	3.0			0.10						active	
C86700	55.0	60.0 ⁽²⁾⁽¹⁷⁾	0.50	1.5	1.5	30.0	38.0	1.0	3.0				1.0 ⁽⁴⁾	1.0	3.0									0.10	3.5									active	
C86800	53.5	57.0 ⁽¹⁷⁾⁽²⁾		0.20	1.0		Rem	1.0	2.5			2.5	4.0 ⁽⁴⁾		2.0									2.5	4.0									active	
C87200 Silicon Bronze	89.0			0.50	1.0		5.0		2.5		0.50				1.5													1.0	5.0					inactive 09/82	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%		
C87300* Silicon Bronze	94.0 ⁽⁵⁾		0.09				0.25		0.20													0.8	1.5					3.5	4.5									active
C87400	79.0 ⁽¹⁸⁾		1.0				12.0 16.0								0.8														2.5	4.0								active
C87410 Yellow Brass	79.0 ⁽¹⁸⁾		1.0				12.0 16.0								0.8	0.03	0.06												2.5	4.0								inactive 03/92
C87420 Copper Silicon	79.0 ⁽¹⁸⁾		1.0				12.0 16.0								0.8										0.03	0.06	2.5	4.0										inactive 03/92
C87430 Copper Silicon	79.0 ⁽¹⁸⁾		1.0				12.0 16.0				0.03	0.06			0.8													2.5	4.0									inactive 03/92
C87440	81.0 ⁽⁵⁾		0.09	0.20	11.0	16.0		0.20		0.15		0.10															0.50	2.0									active	
C87500* Coppe Silicon Alloy	79.0 ⁽⁵⁾		0.09				12.0 16.0								0.50													3.0	5.0									active
C87510	79.0		0.50				12.0 16.0								0.50	0.03	0.06											3.0	5.0								inactive 03/92	
C87520 Copper Silicon	79.0		0.50				12.0 16.0								0.50										0.03	0.06	3.0	5.0										inactive 03/92
C87530 Copper Silicon	79.0		0.50				12.0 16.0				0.03	0.06			0.50													3.0	5.0								inactive 03/92	
C87600* Copper Silicon Alloy	88.0 ⁽⁵⁾		0.09				4.0 7.0		0.20																		3.5	5.5									active	
C87610* Cast Copper- Silicon	90.0 ⁽⁵⁾		0.09				3.0 5.0		0.20																		3.0	5.0									active	
C87700* Silicon Bronze Silicon Bronze	87.5 ⁽¹⁸⁾		0.09	2.0	7.0	9.0		0.50		0.15		0.25														0.10	2.5	3.5									active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C87710* Silicon Bronze Silicon Bronze	84.0 ⁽¹⁸⁾		0.09		2.0	9.0	11.0		0.50		0.15		0.25										0.8			0.10	3.0	5.0							active
C87800* Cast Silicon Bronze	80.0 ⁽⁵⁾		0.09		0.25	12.0	16.0		0.15		0.01		0.20 ⁽⁴⁾	0.15		0.05					0.01		0.15		0.05	0.05	3.8	4.2						active	
C87845* Copper- Silicon- Brass	75.0	78.0 ⁽⁵⁾	0.02		0.10		Rem		0.10	0.03	0.06		0.20 ⁽⁴⁾	0.09		0.015										0.015	2.5	2.9				0.015 Cr		active	
C87850* Copper Silicon Alloy	74.0 ⁽⁵⁾	78.0	0.09		0.30		Rem		0.10	0.05	0.20		0.20 ⁽⁴⁾													0.10	2.7	3.4						active	
C87860*	75.0 ⁽⁵⁾	79.0	.09		.30		Rem		.10	.05	.20		.20 ⁽⁴⁾															2.7	3.5		.002 Zr	.030 Zr		active	
C87870*	75.0	79.0 ⁽⁵⁾	.09	.30	.7	16.0	23.0		.10	.05	.20		.20 ⁽⁴⁾															2.7	3.5			.030 Zr		active	
C87900 Copper Silicon	63.0		0.25		0.25	30.0	36.0		0.40		0.01		0.50	0.15		0.05								0.15	0.05	0.05	0.8	1.2						active	
C87950	58.0 ⁽⁵⁾	65.0	0.09	0.30	1.5		Rem				0.15			0.10	0.8													0.30	1.5					active	
C89320*	87.0 ⁽⁵⁾	91.0	0.09	5.0	7.0		1.0		0.20		0.30		1.0 ⁽⁴⁾	0.005			4.0	6.0							0.08	0.35		0.005						active	
C89325	84.0	88.0 ⁽¹⁷⁾⁽¹⁹⁾	0.10	9.0	11.0		1.0		0.15		0.10		1.0 ⁽⁴⁾	0.005			2.7	3.7							0.08	0.50		0.005						active	
C89510* SeBiLOY I (EnviroBrass I)	86.0 ⁽⁵⁾	88.0	0.09	4.0	6.0	4.0	6.0		0.20		0.05		1.0 ⁽⁴⁾	0.005			0.50	1.5 ⁽²⁰⁾							0.08	0.25		0.005	0.35 ⁽²⁰⁾	0.75				active	
C89520* SeBiLOY II (EnviroBrass II)	85.0	87.0 ⁽⁵⁾	0.09	5.0	6.0	4.0	6.0		0.20				1.0 ⁽⁴⁾	0.005			1.6 ⁽²¹⁾	2.2							0.08	0.25		0.8	1.1 ⁽²¹⁾					active	
C89530 Copper- Bismuth- Selenium Alloy Brasses	84.0 ⁽⁵⁾	89.0	0.20	3.5	6.0	7.0	9.0		0.30		0.05		1.0 ⁽⁴⁾	0.01			1.0	2.0							0.20		0.01	0.10	0.30					active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C89535 Copper-Bismuth Alloy	84.0	89.0 ⁽⁵⁾	.25	2.5	5.5	5.0	9.0		0.30		0.40	0.30 ⁽⁴⁾	1.0		0.01				0.8	2.0						0.20		0.01		0.50					active
C89537*	84.0 ⁽⁵⁾	86.0	.09	3.0	6.0	5.0	13.0		.50									.50	3.0	.01	.10					.6	1.2			.0005 B	.0020 B		active		
C89540	58.0	64.0 ⁽⁵⁾	0.10		1.2	32.0	38.0		0.50				1.0 ⁽⁴⁾	0.10	0.60				0.6	1.2									0.10					active	
C89545	66.0	72.0 ⁽⁵⁾	0.09		0.50	27.0	31.0		0.30	0.01	0.15		1.0 ⁽⁴⁾	0.6	1.5				0.20	0.9			0.30					0.30				0.02 B		active	
C89550* SeBiLOY III (EnviroBrass III)	58.0 ⁽⁵⁾	64.0	0.09	0.00	1.2	32.0	38.0		0.50		0.01		1.0 ⁽⁴⁾	0.10	0.6				0.6	1.2					0.05	0.05		0.25	0.01	0.10				active	
C89560* Copper-Zinc-Bismuth	58.0 ⁽⁵⁾	61.0	0.09		0.25		Rem		0.12					0.30	0.8				1.0	2.4											0.0003 B	0.0015 B 0.001 Cd		active	
C89570*	58.0 ⁽⁵⁾	63.0	.09	.20	1.5	35.0	38.0		.50	.05	.15	.15	.50 ⁽⁴⁾	.10	1.0				.05	1.5										.0001 B	.0020 B		active		
C89580*	57.0 ⁽⁵⁾	64.0	.09		.50		Rem		.10				.30 ⁽⁴⁾	.10	1.2				.10	1.0														active	
C89710 Green Brass	61.5 ⁽¹⁵⁾	62.5	0.10	0.50	0.6		Rem			0.15	0.20			0.15	0.25				0.15	0.30			0.20	0.40		0.25	0.35				0.002 B	0.005 B		active	
C89720* Copper-Bismuth Alloy TECO	63.0 ⁽⁵⁾		0.09	0.6	1.5	26.0	32.0		0.10		0.02		0.10 ⁽⁴⁾	0.35	1.5				0.50	2.0			0.10		0.02	0.20	0.40	1.0			0.0005 B	0.01 B		active	
C89831	87.0 ⁽¹⁷⁾ (19)	91.0	0.10	2.7	3.7	2.0	4.0		0.30		0.050		1.0 ⁽⁴⁾		0.005				2.7	3.7					0.08	0.25		0.005						active	
C89833* Copper Bismuth Alloy	86.0	91.0 ⁽¹⁾	0.09	4.0	6.0	2.0	6.0		0.30		0.050		1.0 ⁽⁴⁾		0.005				1.7	2.7					0.08	0.25		0.005						active	
C89835* Federalloy III-932	85.0	89.0 ⁽¹⁷⁾⁽¹⁹⁾	0.09	6.0	7.5	2.0	4.0		0.20		0.10		1.0 ⁽⁴⁾		0.005				1.7	2.7					0.08	0.35		0.005						active	
C89836 Copper Bismuth Alloy	87.0	91.0 ⁽⁵⁾	0.25	4.0	7.0	2.0	4.0		0.35		0.06		0.90 ⁽⁴⁾		0.005				1.5	3.5					0.08	0.25		0.005						active	
C89837	84.0	88.0 ⁽¹⁹⁾⁽¹⁷⁾	0.10	3.0	4.0	6.0	10.0		0.30		0.050		1.0 ⁽⁴⁾		0.005				0.7	1.2					0.08	0.25		0.005						active	
C89838	78.0	85.0 ⁽⁵⁾	0.09	1.5	4.0	12.0	18.0		0.30		0.05		0.50 ⁽⁴⁾		0.01				0.20	0.9						0.05	0.01							active	
C89839	80.0 ⁽⁵⁾	82.0	0.20	0.8	1.5	15.5	18.5		0.30		0.03		0.20 ⁽⁴⁾		0.005				0.40	1.0						0.20	0.005							active	

UNS #	Cu		Pb		Sn		Zn		Fe		P		Ni		Al		As		Bi		Mg		Mn		S		Sb		Si		Se		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%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C89841 Copper-Bismuth Alloy	73.0	77.0 ⁽⁵⁾			0.30	18.0	23.0		0.10				0.20 ⁽¹¹⁾	0.01				0.50	1.0				0.10			0.10	2.8	3.4							active
C89842* Copper-Zinc-Tin-Bismuth	78.0	82.0 ⁽⁵⁾	0.09	2.0	3.0		Rem		0.30	0.005	0.02	0.10 ⁽⁴⁾	0.50	0.005				1.5	2.5						0.05		0.005								active
C89844	83.0	86.0 ⁽¹⁾	0.20	3.0	5.0	7.0	10.0		0.30		0.05		1.0 ⁽⁴⁾	0.005				2.0	4.0					0.08	0.25	0.005									active
C89845* Copper-Bismuth-Alloy	82.5	87.5 ⁽⁵⁾	0.09	3.0	5.0	6.0	9.0		0.30		0.05	1.5	2.5 ⁽⁴⁾	0.01				1.0	2.0						0.25		0.01								active
C89940*	64.0	68.0 ⁽⁵⁾	0.01	3.0	5.0	3.0	5.0	0.7	2.0	0.10	0.15	20.0 ⁽⁴⁾	23.0	0.005				4.0	5.5				0.20	0.05	0.10	0.15									active

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

(1) = Cu + Sum of Named Elements 99.3% min.

(2) = In determining Cu min., Cu may be calculated as Cu + Ni.

(3) = For continuous castings P shall be 1.5% max.

(4) = Ni value includes Co.

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

(6) = For continuous castings, P shall be 1.0% max.

(7) = Fe + Sb + As shall be 0.50% max.

(8) = Fe + Sb + As shall be .8% max.

(9) = Cu + Sum of Named Elements 99.1% min.

(10) = Cu + Sum of Named Elements 98.9% min.

(11) = Includes Co.

(12) = Cu value includes Ag.

(13) = For optimum DZR properties , Zn should not exceed 38%.

(14) = P may be substituted for As.

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

(16) = Cu + Sum of Named Elements 98.7% min.

(17) = Cu + Sum of Named Elements 99.0% min.

(18) = Cu + Sum of Named Elements 99.2% min.

(19) = 0.01 - 2.0% as any single or combination of Ce La or other rare earth(x) elements as agreed upon. (x)ASM International definition: one of the group of chemically similar metals with atomic numbers 57 through 71

commonly referred to as lanthanides

(20) = Experience favors Bi:Se \geq 2:1

(21) = Bi:Se \geq 2:1