



# Application Datasheet

## Standard Designation for Wrought Copper Alloys

- C20000-C29999: Copper-Zinc Alloys (*Yellow Brasses*)
- C30000-C39999: Copper-Zinc-Lead Alloys (*Leaded Brasses*)
- C40000-C49999: Copper-Zinc-Tin Alloys (*Tin Brasses*)

Revision Date: May 31, 2023

### Brasses (C20000 - C49999)

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

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C20500* Brass	97.0	98.0		0.02				Rem		0.05					inactive 03/92
C21000* Gilding, 95%	94.0	96.0 <sup>(1)</sup>		0.05				Rem		0.05					active
C22000* Commercial Bronze, 90%	89.0	91.0 <sup>(1)</sup>		0.05				Rem		0.05					active
C22600* Jewelry Bronze, 87-1/2%	86.0	89.0 <sup>(1)</sup>		0.05				Rem		0.05					active
C23000* Red Brass, 85%	84.0	86.0 <sup>(1)</sup>		0.05				Rem		0.05					active
C23030*	83.5 <sup>(1)</sup>	85.5		0.05				Rem		0.05			0.20 Si	0.40 Si	active
C23400*	81.0	84.0 <sup>(1)</sup>		0.05				Rem		0.05					active
C24000* Low Brass, 80%	78.5 <sup>(1)</sup>	81.5		0.05				Rem		0.05					active
C24080	78.0 <sup>(1)</sup>	82.0		0.20				Rem						0.10 Al	active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C25000* Brass	74.0	76.0		0.05				Rem		0.05					inactive 03/92
C25600*	71.0	73.0 <sup>(2)</sup>		0.05				Rem		0.05					active
C26000* Cartridge Brass, 70%	68.5 <sup>(2)</sup>	71.5		0.07				Rem		0.05					active
C26100* Brass	68.5	71.5 <sup>(2)</sup>		0.05				Rem		0.05	0.02	0.05	0.02 As	0.06 As	inactive 03/92
C26130*	68.5	71.5 <sup>(2)</sup>		0.05				Rem		0.05			0.02 As	0.08 As	active
C26200*	67.0	70.0 <sup>(2)</sup>		0.07				Rem		0.05					active
C26380 Brass	68.0	72.0		0.30				Rem		0.05				0.10 Ag	inactive 03/92
C26800* Yellow Brass, 66%	64.0	68.5 <sup>(2)</sup>		0.09				Rem		0.05					active
C27000* Yellow Brass, 65%	63.0	68.5 <sup>(2)</sup>		0.09				Rem		0.07					active
C27200* Yellow Brass	62.0	65.0 <sup>(2)</sup>		0.07				Rem		0.07					active
C27250	62.0	65.0 <sup>(3)</sup>		0.009				Rem		0.35	0.05	0.40	0.20 C	0.009 Bi 1.2 C 0.009 Si	active
C27400* Yellow Brass, 63%	61.0	64.0 <sup>(2)</sup>		0.09				Rem		0.05					active
C27450 Yellow Brass	60.0 <sup>(3)</sup>	65.0		0.25				Rem		0.35					active
C27451 Yellow Brass Yellow Brass	61.0	65.0 <sup>(3)</sup>		0.25				Rem		0.35	0.05	0.20			active
C27453 Copper Zinc Alloy	61.5 <sup>(3)</sup>	63.5		0.25		0.15		Rem		0.15			0.02 As	0.15 As	active
C27460	60.0 <sup>(3)</sup>	62.0		0.25	0.15	0.35		Rem		0.10	0.15	0.25	0.20 Ni 0.080 Al 0.060 Si	0.35 Ni 0.16 Al 0.090 Si	active
C27550	60.0	63.0 <sup>(3)</sup>		0.04				Rem		0.35		0.40	0.20 C	0.009 Bi 1.2 C 0.009 Si	active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C28000* Muntz Metal, 60%	59.0	63.0 <sup>(2)</sup>		0.09				Rem		0.07					active
C28200 Copper Zinc Alloy	58.0	61.0		0.03				Rem		0.05	0.12	0.22		0.005 Al 0.05 Si	inactive 02/73
C28300* Yellow Brass	58.0 <sup>(4)</sup>	62.0		0.09			31.0	41.0		0.35			0.10 S	0.20 B 0.01 Mn 0.65 S 0.20 Zr	active
C28310* Yellow Brass	58.0 <sup>(4)</sup>	62.0		0.09			31.0	41.0		0.35			0.01 Mn 0.10 S	0.20 B 0.20 Mn 0.65 S 0.20 Zr	active
C28320* Yellow Brass	58.0	62.0 <sup>(4)</sup>		0.09			31.0	41.0		0.35			0.10 S	0.20 B 0.10 C 0.20 Mn 0.65 S 0.30 Ti 0.20 Zr	active
C28330* Low-Lead Yellow Brass	58.0	62.0 <sup>(4)</sup>		0.09			31.0	39.0		0.35			0.10 Sb	0.10 B 0.10 C 0.20 Mn 0.25 S 1.5 Sb 0.10 Ti 0.10 Zr	active
C28340	61.0 <sup>(3)</sup>	62.0	.17	.25	.30	.40		Rem <sup>(5)</sup>		.12			.07 As .65 Bi	.20 Ni .17 As <sup>(6)</sup> .75 Bi .04 Cd .02 Cr .05 Mn .05 Sb .05 Si	active
C28500 Copper-Zinc- Alloy Brass	57.0	59.0 <sup>(7)</sup>		0.25				Rem		0.35					active
C28550	57.0	60.0 <sup>(3)</sup>		0.04				Rem		0.35		0.40	0.20 C	0.009 Bi 1.2 C 0.009 Si	active
C28580 Brass	49.0	52.0		0.50				Rem		0.10				0.10 Al	inactive 03/92
C29800 Copper Zinc Alloy	49.0	52.0		0.50				Rem		0.10				0.10 Al	inactive 07/74
C31000 Copper Zinc Lead Alloy	89.0	91.0	0.30	0.7				Rem		0.10					inactive 07/74
C31200	87.5	90.5 <sup>(8)</sup>	0.7	1.2				Rem		0.10				0.25 Ni	active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C31400 Leaded Commercial Bronze	87.5	90.5 <sup>(8)</sup>	1.3	2.5				Rem		0.10				0.7 Ni	active
C31600 Leaded Commercial Bronze (Nickel-Bearing)	87.5	90.5 <sup>(8)</sup>	1.3	2.5				Rem		0.10	0.04	0.10	0.7 Ni	1.2 Ni	active
C32000 Leaded Red Brass	83.5 <sup>(8)</sup>	86.5	1.5	2.2				Rem		0.10				0.25 Ni	active
C32500 Copper Zinc Lead Alloy	72.0	74.5	2.5	3.0				Rem		0.10					inactive 07/74
C32510 Leaded Brass	69.0	72.0	0.30	0.7				Rem					0.02 As	0.06 As	active
C33000 Low Leaded Brass (Tube)	65.0	68.0 <sup>(8)</sup>	0.25	0.7				Rem		0.07					active
C33100 Leaded Brass	65.0	68.0	0.8	1.5				Rem		0.06					inactive 03/92
C33200 High Leaded Brass (Tube)	65.0	68.0 <sup>(8)</sup>	1.5	2.5				Rem		0.07					active
C33500 Low-Leaded Brass	62.0 <sup>(8)</sup>	65.0	0.25	0.7				Rem		0.15 <sup>(9)</sup>					active
C33530 Leaded Brass	62.5	66.5	0.30	0.8				Rem		0.10			0.02 As	0.06 As	inactive 03/92
C34000 Medium Leaded Brass, 64-1/2%	62.0 <sup>(8)</sup>	65.0	0.8	1.5				Rem		0.15 <sup>(9)</sup>					active
C34200 High Leaded Brass, 64-1/2%	62.0 <sup>(8)</sup>	65.0	1.5	2.5				Rem		0.15 <sup>(9)</sup>					active
C34400 Leaded Brass	62.0	66.0	0.50	1.0				Rem		0.10					inactive 02/81
C34500	62.0 <sup>(8)</sup>	65.0	1.5	2.5				Rem		0.15					active
C34700 Leaded Brass	62.5	64.5	1.0	1.8				Rem		0.10					inactive 02/81
C34800 Leaded Brass	61.5	63.5	0.40	0.8				Rem		0.10					inactive 02/81

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C34900 Leaded Brass	61.0	64.0	0.10	0.50				Rem		0.10					inactive 02/82
C35000 Medium Leaded Brass, 62%	60.0 <sup>(8)(10)</sup>	63.0	0.8	2.0				Rem		0.15 <sup>(9)</sup>					active
C35300 High Leaded Brass, 62%	60.0 <sup>(3)(10)</sup>	63.0	1.5	2.5				Rem		0.15 <sup>(9)</sup>					active
C35330 DZR Brass	59.5	64.0 <sup>(3)</sup>	1.5	3.5 <sup>(11)</sup>				Rem					0.02 As	0.25 As	active
C35340 Leaded Brass	60.0	63.0	1.5	2.5				Rem	0.10	0.30					inactive 03/92
C35350 Leaded Brass	61.0 <sup>(3)</sup>	63.0	2.0	4.5		0.6		Rem		0.4	0.05	0.2		0.3 Ni	active
C35600 Extra High Leaded Brass	60.0 <sup>(3)</sup>	63.0	2.0	3.0				Rem		0.15 <sup>(9)</sup>					active
C36000 Free-Cutting Brass	60.0	63.0 <sup>(3)</sup>	2.5	3.0				Rem		0.35					active
C36010 Leaded Brass Free-Cutting Brass	60.0	63.0 <sup>(3)</sup>	3.1	3.7				Rem		0.35					active
C36200 Leaded Brass	60.0	63.0	3.5	4.5				Rem		0.15					inactive 03/92
C36300 Copper-Zinc-Lead Alloy	61.0	63.0 <sup>(3)</sup>	0.25	0.7				Rem		0.15	0.04	0.15			active
C36500 Leaded Muntz Metal, Uninhibited	58.0 <sup>(8)</sup>	61.0	0.25	0.7		0.25		Rem		0.15					active
C36600 Leaded Muntz Metal, Arsinical	58.0	61.0	0.25	0.7		0.25		Rem		0.15			0.02 As	0.06 As	inactive 03/92
C36700 Leaded Muntz Metal, Antimonial	58.0	61.0	0.25	0.7		0.25		Rem		0.15			0.02 Sb	0.10 Sb	inactive 03/92
C36800 Leaded Brass	58.0	61.0	0.25	0.7		0.25		Rem		0.15	0.02	0.10			inactive 03/92
C37000 Free-Cutting Muntz Metal	59.0	62.0 <sup>(8)</sup>	0.8	1.5				Rem		0.15					active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C37100	58.0	62.0 <sup>(8)</sup>	0.6	1.2				Rem		0.15					active
C37700 Forging Brass	58.0 <sup>(3)</sup>	61.0	1.5	2.5				Rem		0.30					active
C37710	56.5 <sup>(3)</sup>	60.0	1.0	3.0				Rem		0.30					active
C37800 Leaded Brass	56.0	59.0	1.5	2.5				Rem		0.30					inactive 03/92
C38000 Architectural Bronze, Low Leaded	55.0	60.0 <sup>(3)</sup>	1.5	2.5		0.30		Rem		0.35				0.50 Al	active
C38010 Leaded Brass	55.0	60.0	1.5	3.0				Rem		0.30			0.10 Al	0.6 Al	inactive 03/92
C38500 Architectural Bronze	55.0 <sup>(3)</sup>	59.0	2.5	3.5				Rem		0.35					active
C38510 Leaded Brass	56.0	60.0	2.5	4.5				Rem							inactive 03/92
C38590 Leaded Brass	56.5	60.0	2.0	3.5				Rem		0.35					inactive 03/92
C38600 Leaded Brass	56.0	59.0	2.5	3.5				Rem		0.35				0.02 Sb	inactive 02/82
C40400*		Rem <sup>(2)</sup>			0.35	0.7	2.0	3.0							active
C40410* Copper-Zinc-Tin Alloy	95.0	99.0 <sup>(2)</sup>		0.05	0.1	0.40		Rem		0.05					active
C40500* Penny Bronze	94.0 <sup>(2)</sup>	96.0		0.05	0.7	1.3		Rem		0.05					active
C40800* Silicon Brass	94.0	96.0		0.05	1.8	2.2		Rem		0.05					inactive 03/92
C40810*	94.5 <sup>(2)</sup>	96.5		0.05	1.8	2.2		Rem	0.08	0.12	0.028	0.04	0.11 Ni	0.20 Ni	active
C40820*	94.0 <sup>(3)</sup>			0.02	1.0	2.5	0.20	2.5				0.05	0.10 Ni	0.50 Ni	active
C40850*	94.5 <sup>(2)</sup>	96.5		0.05	2.6	4.0		Rem	0.05	0.20	0.01	0.20	0.05 Ni	0.20 Ni	active
C40860*	94.0 <sup>(2)</sup>	96.0		0.05	1.7	2.3		Rem	0.01	0.05	0.02	0.04	0.05 Ni	0.20 Ni	active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C40900 Copper Zinc Tin Alloy	92.0	94.0		0.05	0.50	0.8		Rem		0.05					inactive 07/74
C40950*	91.5 <sup>(2)</sup>	94.5		.05	.30	.8		Rem		.03	.01	.08	.30 Ni <sup>(12)</sup>	.8 Ni	active
C41000*	91.0 <sup>(2)</sup>	93.0		0.05	2.0	2.8		Rem		0.05					active
C41100* Tin Brass	89.0	92.0 <sup>(2)</sup>		0.09	0.30	0.7		Rem		0.05					active
C41110* Copper Zinc Tin Alloy	90.0	94.0 <sup>(2)</sup>		0.05	0.10	0.50		Rem		0.05					active
C41120*	89.0	92.0 <sup>(2)</sup>		0.05	0.30	0.7		Rem	0.05	0.20	0.01	0.35	0.05 Ni	0.20 Ni	active
C41125*	86.5 <sup>(3)</sup>	90.5		.05	.50	.9		Rem		.03		.06		.8 Ni	active
C41300* Tin Brass	89.0 <sup>(2)</sup>	93.0		0.09	0.7	1.3		Rem		0.05					active
C41500* Tin Brass	89.0	93.0 <sup>(2)</sup>		0.09	1.5	2.2		Rem		0.05					active
C41900 Tin Brass	89.0	92.0		0.10	4.5	5.5		Rem		0.05					inactive 07/74
C42000*	88.0 <sup>(2)</sup>	91.0			1.5	2.0		Rem				0.25			active
C42100* Tin Brass	87.5	89.0		0.05	2.2	3.0		Rem		0.05		0.35	0.15 Mn	0.35 Mn	inactive 03/92
C42200*	86.0 <sup>(2)</sup>	89.0		0.05	0.8	1.4		Rem		0.05		0.35			active
C42210* Tin Brass	86.0	89.0 <sup>(2)(13)</sup>		0.01	1.1	1.6		Rem		0.035	0.001	0.010		0.5 Ni <sup>(14)</sup> 0.005 Te <sup>(15)</sup> 0.005 Se <sup>(15)</sup>	active
C42220*	88.0 <sup>(2)</sup>	91.0		0.05	0.7	1.4		Rem	0.05	0.20	0.02	0.05	0.05 Ni	0.20 Ni	active
C42230 BW33520	87.0 <sup>(3)</sup>	91.0		0.01	0.40	1.5		Rem		0.05			0.30 Co 0.05 Si	1.5 Co 0.05 Mn 0.30 Si	active
C42300	87.0 <sup>(3)</sup>	91.0		0.01	0.50	1.5		Rem					0.50 Ni 0.10 Si	1.5 Ni 0.30 Si	active
C42500*	87.0	90.0 <sup>(2)</sup>		0.05	1.5	3.0		Rem		0.05		0.35			active
C42510															inactive 12/98

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C42520*	88.0 <sup>(2)</sup>	91.0		0.05	1.5	3.0		Rem	0.05	0.20	0.01	0.20	0.05 Ni	0.20 Ni	active
C42600*	87.0	90.0 <sup>(13)(2)</sup>		0.05	2.5	4.0		Rem	0.05	0.20	0.01	0.20	0.05 Ni	0.20 Ni <sup>(12)</sup>	active
C43000* Tin Brass	84.0	87.0 <sup>(2)</sup>		0.09	1.7	2.7		Rem		0.05					active
C43200 Tin Brass	85.0	88.0		0.35	0.40	0.6		Rem		0.05		0.35			inactive 03/92
C43400*	84.0	87.0 <sup>(2)</sup>		0.05	0.40	1.0		Rem		0.05					active
C43500* Tin Brass	79.0	83.0 <sup>(2)</sup>		0.09	0.6	1.2		Rem		0.05					active
C43600*	80.0 <sup>(2)</sup>	83.0		0.05	0.20	0.50		Rem		0.05					active
C43800* Copper Zinc Tin Alloy	79.0	82.0		0.05	1.0	1.5		Rem		0.05					inactive 07/74
C44200* Copper Zinc Tin Alloy	70.0	73.0		0.07	0.8	1.2		Rem		0.06					inactive 05/71
C44250*	73.0 <sup>(8)</sup>	76.0		0.07	0.50	1.5		Rem		0.20		0.10		0.20 Ni	active
C44300* Admiralty, Arsenical	70.0	73.0 <sup>(8)</sup>		0.07	0.8	1.2 <sup>(16)</sup>		Rem		0.06			0.02 As	0.06 As	active
C44400* Admiralty, Antimonial	70.0	73.0 <sup>(8)</sup>		0.07	0.8 <sup>(16)</sup>	1.2		Rem		0.06			0.02 Sb	0.10 Sb	active
C44500* Admiralty, Phosphorized	70.0 <sup>(8)</sup>	73.0		0.07	0.8	1.2 <sup>(16)</sup>		Rem		0.06	0.02	0.10			active
C44710	65.5 <sup>(2)</sup>	71.5		0.05	0.20	0.8		Rem		0.03	0.005	0.05	1.5 Ni	2.5 Ni	active
C44730		Rem <sup>(3)</sup>		.05	.50	1.5	27.0	31.0		.6		.05	.8 Ni <sup>(12)</sup> .10 Si	2.5 Ni .7 Cr .40 Mg .40 Mn .6 Si .40 Zr	active
C44750* Tin Brass		Rem <sup>(8)</sup>		0.05	0.30	3.0	27.0	31.5	0.10	1.5					active
C45450* Tin Brass	65.0	66.0			0.10	0.30		Rem			0.10	0.30	0.20 Al	0.40 Al	inactive 03/92



UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C45470* Copper-Zinc-Tin Aluminum Alloy	64.0	69.0 <sup>(3)</sup>		.09	0.6	0.9		Rem					0.30 Al	0.8 Al	active
C46200 Naval Brass, 63-1/2%	62.0	65.0 <sup>(8)</sup>		0.20	0.50	1.0		Rem		0.10					active
C46210* Tin Brass	61.0	64.0		0.05		1.0		Rem						0.03 Al 0.50 Si	inactive 03/92
C46250* HONLUX 01	62.0	65.0 <sup>(17)(3)</sup>		.09	.50	1.0		37.0		.10	.05	.15	.05 Mg	.20 Mg	active
C46270	62.0 <sup>(18)</sup>	65.0		0.10	0.8	1.5		Rem		0.10		0.20	0.6 Si	0.10 Ni 0.10 Mn 1.2 Si	active
C46400 Naval Brass, Uninhibited	59.0 <sup>(8)</sup>	62.0		0.20	0.50	1.0		Rem		0.10					active
C46420 Tin Brass	61.0	63.5		0.20	1.0	1.4		Rem		0.20					inactive 03/92
C46500 Naval Brass, Arsenical	59.0 <sup>(8)</sup>	62.0		0.20	0.50	1.0		Rem		0.10			0.02 As	0.06 As	active
C46600 Tin Brass	59.0	62.0		0.20	0.50	1.0		Rem		0.10			0.02 Sb	0.10 Sb	inactive 03/92
C46700 Tin Brass	59.0	62.0		0.20	0.50	1.0		Rem		0.10	0.02	0.10			inactive 03/92
C46750	59.2 <sup>(3)</sup>	62.5		.25	1.00	1.80		Rem		.10	.05	.15	.05 Sb	.50 Ni <sup>(12)</sup> .15 Sb	active
C47000 Naval Brass Welding and Brazing Rod	57.0 <sup>(8)</sup>	61.0		0.05	0.25	1.0		Rem						0.01 Al	active
C47200 Copper Zinc Tin Alloy	49.0	52.0		0.50	3.0	4.0		Rem		0.10					inactive 07/74
C47600 Tin Brass	86.0	88.0	1.8	2.2	1.8	2.2		Rem		0.05	0.03	0.07	0.05 Mn	0.15 Mn	inactive 03/92
C47940	63.0 <sup>(8)</sup>	66.0	1.0	2.0	1.2	2.0		Rem	0.10	1.0			0.10 Ni <sup>(12)</sup>	0.50 Ni	active
C48200 Naval Brass, Medium Leaded	59.0 <sup>(8)</sup>	62.0	0.40	1.0	0.50	1.0		Rem		0.10					active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C48500 Naval Brass, High Leaded	59.0 <sup>(8)</sup>	62.0	1.3	2.2	0.50	1.0		Rem		0.10					active
C48510 Tin Brass	59.0	62.0	1.0	2.5	0.7	1.5		Rem					0.02 As	0.25 As	inactive 02/81
C48600 DZR Brass	59.0	62.0 <sup>(8)</sup>	1.0	2.5	0.30	1.5		Rem					0.02 As	0.25 As	active
C48640	59.0	62.0 <sup>(3)</sup>	1.0	3.0	0.50	2.0		Rem		0.40	0.05	0.25		0.3 Ni	active
C48645	60.0 <sup>(3)</sup>	63.0	1.0	2.5	0.10	1.5		Rem		0.30	0.02	0.25	0.10 Ni	1.0 Ni	active
C48650 Replaced by C48600															inactive 02/81
C49080 Tin Brass	49.0	52.0		0.50	3.0	4.0		Rem						0.10 Al	inactive 03/92
C49100	85.5 <sup>(3)</sup>	87.5		.09		.30		14.5		.30		.10	.30 Te	.30 Ni .9 Te	active
C49250* Copper-Zinc-Bismuth Copper-Zinc-Bismuth	58.0	61.0 <sup>(3)</sup>		0.09		0.30		Rem		0.50			1.8 Bi	2.4 Bi 0.001 Cd	active
C49255 Copper-Zinc-Bismuth	58.0 <sup>(3)</sup>	60.0		0.09		0.50		Rem		0.10		0.10	1.7 Bi 0.02 Se	0.3 Ni 2.9 Bi 0.0075 Cd 0.10 Si 0.07 Se	active
C49260* GEM Brass	58.0	63.0 <sup>(3)</sup>		0.09		0.50		Rem		0.50	0.05	0.15	0.50 Bi	1.8 Bi 0.001 Cd 0.10 Si	active
C49265 Low Leaded GEM Brass	58.0 <sup>(13)(3)</sup>	62.0	0.09	0.25		0.50		Rem		0.30	0.05	0.12	0.50 Bi	1.3 Bi 0.001 Cd 0.10 Si	active
C49300* Lead-Free Bismuth Alloy Lead-Free	58.0 <sup>(3)</sup>	62.0		0.09	1.0	1.8		Rem		0.10			0.5 Bi	0.3 Ni 2.5 Bi 0.0075 Cd 0.50 Sb 0.10 Si 0.20 Se	active
C49340* GEM Brass	60.0	63.0 <sup>(3)(13)</sup>		0.09	0.50	1.5		Rem		0.12	0.05	0.15	0.50 Bi	2.2 Bi 0.001 Cd 0.10 Si	active
C49345 Low Leaded GEM Brass	60.0	64.0 <sup>(3)(13)</sup>	0.09	0.25	0.50	1.5		Rem		0.30	0.05	0.12	0.50 Bi	1.3 Bi 0.001 Cd 0.10 Si	active

UNS #	Cu		Pb		Sn		Zn		Fe		P		Other Named Elements		Status
	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	Min%	Max%	
C49350* Bismuth Brass Alloy	61.0 <sup>(3)</sup>	63.0		0.09	1.5	3.0		Rem		0.12	0.04	0.15	0.50 Bi 0.02 Sb	2.5 Bi 0.10 Sb 0.30 Si	active
C49355* Copper Zinc Bismuth Alloy	63.0 <sup>(3)</sup>	69.0		0.09	0.50	2.0	27.0	35.0		0.10			0.50 Bi 1.0 Si	0.001 B 1.5 Bi 0.10 Mn 2.0 Si	active
C49360* Tin-Eco(bismuth)		Rem <sup>(3)</sup>		0.09	1.0	2.0	19.0	22.0					0.50 Bi 2.0 Si	1.5 Bi 3.5 Si	active

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

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

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

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

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

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

(6) = P may be substituted for As.

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

(8) = Cu + Sum of Named Elements 99.6% min.

(9) = For flat products, the iron shall be 0.10% max.

(10) = Cu, 61.0% min. for rod.

(11) = Pb may be reduced to 1.0% by agreement.

(12) = Ni value includes Co.

(13) = Cu value includes Ag.

(14) = Includes Co.

(15) = Te + Se 0.006% max.

(16) = For tubular products, the minimum Sn content may be 0.9%.

(17) = Includes Lanthanum 0.01-0.08

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