



CALIFORNIA METAL-X BRASS & BRONZE INGOT

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RED & SEMI RED BRASSES

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
833		Contact Metal	93-1½-1½-4	92.0-94.0	1.0-2.0	1.0-2.0	2.0-6.0	—	—	—	—	—	—	—	—	—	—	—
*8345		Oshalloy	88-2½-2-6½-1Ni	87.0-89.0	2.0-3.5	1.5-3.0	5.5-7.5	0.30	0.25	.8-1.5	—	0.03	0.005	0.005	0.08	—	—	—
*836	115	Red-Brass	85-5-5-5	84.0-86.0	4.0-6.0	4.0-6.0	4.0-6.0	0.30	0.25	1.0	—	0.03	0.005	0.005	0.08	—	—	—
*844	123	Semi-Red	81-3-7-9	78.0-82.0	2.3-3.5	6.0-8.0	7.0-10.0	0.40	0.25	1.0	—	0.02	0.005	0.005	0.08	—	—	—

BISMUTH TIN BRONZE

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
89833		Lead-free bronze	89-5-5-2	89 - 91	4.0 - 6.0	0.09	4.0 - 6.0	0.30	0.25	1.0	—	0.30	0.005	0.005	0.10	—	—	1.7 -2.7
89836		Lead-free bronze	89-5-3-2	89 - 91	4.0 - 6.0	0.09	2.0 - 4.0	0.20	0.25	1.0	—	0.05	0.005	0.005	0.30	—	—	1.6-2.2

YELLOW BRASSES

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
852	400	Yellow Brass	72-1-3-24	70.0-74.0	.7-2.0	1.5-3.8	20.0-27.0	0.6	0.20	1.0	—	0.02	0.005	0.05	0.05	—	—	—
854	403	Ylw Brss w/Alum	67-1-3-29	65.0-70.0	.50-1.5	1.5-3.8	24.0-32.0	0.7	—	1.0	—	—	0.35	0.05	—	—	—	—
857	405.2	Yellow Brass	61-1-1-37	58.0-64.0	.50-1.5	.8-1.5	32.0-40.0	0.7	—	1.0	—	—	0.8	0.05	—	—	—	—
858	405.1	Yellow Brass	62-1-1-36	57.0 Min.	1.5	1.5	31.0-41.0	0.5	0.05	0.5	0.25	0.01	0.55	0.25	0.05	—	—	—

MANGANESE BRONZES

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
862	423	High Tensile	63-27-3-4-3	60.0-66.0	0.20	0.20	22.0-28.0	2.0-4.0	—	1.0	2.5-5.0	—	3.0-4.9	—	—	—	—	—
863	424	High Tensile	61-27-3-6-3	60.0-66.0	0.20	0.20	22.0-28.0	2.0-4.0	—	1.0	2.5-5.0	—	5.0-7.5	—	—	—	—	—
864	420	Low Tensile	58-1-39-1-1-.5	56.0-62.0	0.5-1.5	0.5-1.5	34.0-42.0	.40-2.0	—	1.0	.10-1.0	—	.50-1.5	—	—	—	—	—
865	421	Low Tensile	58-39-1-1-1	55.0-60.0	1.0	0.40	36.0-42.0	.40-2.0	—	1.0	.10-1.5	—	.50-1.5	—	—	—	—	—
867	422	High Tensile	57-38-2-2-1	55.0-60.0	1.5	.5-1.5	30.0-38.0	1.0-3.0	—	1.0	.10-3.0	—	1.0-3.0	—	—	—	—	—

SILICON BRONZES

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
873	500	Everdur	95-1-4	94.0 Min.	—	—	0.25	0.20	—	—	.8-1.5	<.01	<.01	3.5-4.5	—	—	—	—
875	500	Tombasil	82-14-4	79.0 Min.	—	—	12.0-16.0	—	—	—	—	<.01	<.01	3.0-5.0	—	—	—	—
875M	500	Modified Tombasil	80-18-2	77.0 Min.	—	—	16.0-18.5	—	—	—	—	<.01	<.01	1.5-2.5	—	—	—	—
876	500	Herculoy	91-5-4	88.0 Min.	—	—	4.0-7.0	0.20	—	—	0.25	<.01	<.01	3.5-5.5	—	—	—	—
87610	500	92-4-4	92-4-4	90.0 Min.	—	—	3.0-5.0	0.20	—	—	0.25	<.01	<.01	3.0-5.0	—	—	—	—
87850		EcoBrass	76-22-3	74 - 78	0.30	—	20 - 24	0.10	0.10	0.20	0.10	.05 - .20	<.01	2.7-3.4				

TIN BRONZES

Percentages are maximums unless otherwise noted.

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	Mn	P	Al	Si	S	As	Se	Bi
903	225	Navy G	88-8-0-4	86.0-89.0	7.5-9.0	0.30	3.0-5.0	0.20	0.20	1.0	—	0.05	0.005	0.005	0.05	—	—	—
905	210	Tin Bronze	88-10-0-2	86.0-89.0	9.0-11.0	0.30	1.0-3.0	0.20	0.20	1.0	—	0.05	0.005	0.005	0.05	—	—	—
907	205	Tin Bronze	89-11	88.0-90.0	10.0-12.0	0.30	0.50	0.15	0.20	0.50	—	0.30	0.005	0.005	0.05	—	—	—
911		Tin Bronze	84-16	82.0-85.0	15.0-17.0	0.25	0.25	0.25	0.20	0.8	—	1.0	0.005	0.005	0.05	—	—	—
913	194	Tin Bronze	81-19	79.0-82.0	18.0-20.0	0.25	0.25	0.25	0.20	0.50	—	1.0	0.005	0.005	0.05	—	—	—

* Due to DTSC (Department of Toxic Substance Control) & AQMD (Air Quality Management District) regulations, CMX no longer manufactures these alloys

CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	S	P	Al	Si	Mn
LEADED TIN BRONZES															
Percentages are maximums unless otherwise noted.															
* 922	245	Navy M	88-6-1½-4½	86.0-90.0	5.8-6.5	1.0-1.8	3.5-5.0	0.20	0.20	0.8	0.05	0.03	0.005	0.005	
* 927	206	Leaded Tin Brz	88-10-2-0	86.0-89.0	9.3-11.0	1.0-2.3	0.8	0.15	0.20	0.8	0.05	0.30	0.005	0.005	
* 932	315	Leaded Tin Brz	83-7-7-3	82.0-84.0	6.5-7.5	6.5-7.5	2.5-4.0	0.20	0.30	0.8	0.08	0.03	0.005	0.005	
* 937	305	Bearing Brz	80-10-10	78.0-81.0	9.3-10.7	8.3-10.7	0.8	0.1	0.50	0.8	0.08	0.05	0.005	0.005	
ALUMINUM BRONZES															
Percentages are maximums unless otherwise noted.															
CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe		Ni			Al	Si	Mn
952	415A	Alum Bronze	88-3-9	86.0 Min.	—	—	—	2.5-4.0		—			8.5-9.5	—	—
953	415B	Alum Bronze	89-1-10	86.0 Min.	—	—	—	.80-1.5		—			9.0-11.0	—	—
954	415C	Alum Bronze	85-4-11	83.0 Min.	—	—	—	3.0-5.0		1.5			10.0-11.5	—	0.50
955	415D	Alum Bronze	81-4-4-11	78.0 Min.	—	—	—	3.0-5.0		3.0-5.5			10.0-11.5	—	3.50
957	415F	Superstone	75-2-3-8-12	71.0 Min.	—	—	—	2.0-4.0		1.5-3.0			7.0-8.5	0.10	1.0-14.0
958	415	Alum Bronze	81-4-5-9-1	79.0 Min.	—	—	—	3.5-4.5		4.0-5.0			8.5-9.5	0.05	.8-1.5
NICKEL SILVERS															
Percentages are maximums unless otherwise noted.															
CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	S	P	Al	Si	Mn
973	410	Nickel Silver	12% Nickel	53.0-58.0	1.5-3.0	8.0-11.0	17.0-25.0	1.50	0.35	11.0-14.0	0.08	0.05	0.005	0.15	0.50
976	412	Nickel Silver	20% Nickel	63.0-67.0	3.5-4.5	3.0-5.0	3.0-9.0	1.50	0.25	19.0-21.5	0.08	0.05	0.005	0.15	1.0
SPECIAL ALLOYS															
Percentages are maximums unless otherwise noted.															
CA#	Ingot #	Description	Nom.	Cu	Sn	Pb	Zn	Fe	Sb	Ni	S	P	Al	Si	Mn
964		70/30 Cu/Ni	B122, B466	Rem.		0.01		.25 - 1.50	.50 - 1.50	28.0 - 32.0	0.02	0.02		0.5	1.5
995		NDZ Alloy	87-4-4½-1-1-1	Rem.	—	0.25	.50-2.0	3.0-5.0	—	3.5-5.5	—	—	.50-2.0	.50-2.0	0.50
997		White Tombasil	58-22-5-12-1-1	54.0 Min.	1.0	2.0	19.0-25.0	1.0	—	4.0-6.0	—	—	.50-3.0	—	1.0-15.0
9975		White Brass	58-20-0-20-1-1	55.0-61.0	.5-2.5	.5-2.5	17.0-23.0	1.0	—	5.0	—	—	.25-3.0	—	7.0-23.0
SOME COMMON YARD ALLOYS															
Percentages are maximums unless otherwise noted.															
CA#	Ingot #	Description	ASTM	Cu	Sn	Pb	Zn	Fe	Be	Ni	S	P	Al	Si	Mn
110		Electrolytic	B187, B124	99.9											
122		Phosphorized	B187, B124	99.9								.015-.04			
170		Beryllium Copper	B194, B196	Rem.					1.6-1.79	0.20			0.20	0.20	
172		Beryllium Copper	B194, B196	Rem.		0.02			1.8-2.0	0.20			0.20	0.20	
194		High Copper	B640, B543	97 min.		0.03	.05-.20	2.1-2.6				.015-.15			
220		90/10 Copper	B36, B134	89.0-91.0		0.05	Rem.	0.05							
260		70/30 Copper	B36, B134	68.5-71.5		0.07	Rem.	0.05							
360		Free Cutting Brass	B16	60-63		2.5-3.7	Rem.	0.35							
425		Phos Bronze	B591, B888	87-90	1.5-3.0	0.05	Rem.	0.05				0.35			
443		Admiralty	B171, B135	70-73	.8-1.2	0.07	Rem.	0.06							
464		Naval Brass	B21, B124	59.0-62.0	.5-1.0	0.20	Rem.	0.10							
510		Phos Bronze	B103, B139	Rem.	4.2-5.8	0.05	0.30	0.10				.03-.35			
521		Phos Bronze	B103, B139	Rem.	7.0-9.0	0.05	0.20	0.10				.03-.35			
544		Phos Bronze	B103, B139	Rem.	3.5-4.5	3.5-4.5	1.5-4.5	0.10				.01-.50			
655		Silicon Bronze	B98, B99	Rem.	0.8	0.05	1.5	0.8		0.6				2.8-3.8	.5-1.3
706		90/10 Cu/Ni	B111, B395.	Rem.		0.05	1.0	1.0-1.8		9.0-11.0					1.0
710		80/20 Cu/Ni	B122, B466	Rem.		0.05	1.0	1.0		19.0-23.0					1.0
715		70/30 Cu/Ni	B122, B466	Rem.		0.05	1.0	.4-1.0		29.0-33.0					1.0
725		Copper Nickel	B122	Rem.	1.8-2.8	0.05	0.5	0.6		8.5-10.5					0.2
729		Copper Nickel	B740	Rem.	4.5-5.7	0.05		0.6		20.0-22.0					0.6
745		Nickel Silver	B122, B151	63.5-66.5		0.10	Rem.	0.25		9.0-11.0					0.5
R-Monel		Alloy 405	Monel 400	28 - 34				2.5		63 - 65	0.024			0.05	2.0