

# Brass and Bronze Standard Casting Alloys Chart of Specifications

## Specifications

## Nominal Chemical Compositions

## Mechanical Properties

Family	CDA 1970	ASTM 1972	SAE 1972	SAE Superceded	Alloy Identification	Federal 1967	Military Current	Military Superceded	AMS	CU%	SN%	PB%	ZN%	M%	FE%	AL%	Others%	Tensile Strength		Yield Strength		Elongation		Brinell Hardness 10MM-500KG Typical	Compression Strm. P.S.I.-.001" set	IMPACT Strn. Izod-R Lbs.	Weight Lbs. per Cu.In.	Machinability free cut YB-100	REPORTED USES	
																		Min (ksi)	Typ (ksi)	Min (ksi)	Typ (ksi)	Min (%)	Typ (%)							
Redbrass	833				131					93	1-1/2	1-1/2	4					32	10	35	35				.318	35	Electrical Hardware Parts			
	836	B145-836	836	40	115	QQ-C-390(B5)	C-22229 Gr2	B-16444GrA	4855B	85	5	5	5					30	37	14	17	20	30	50-65	14,000	9	.318	84	General Miscellaneous, Low-pressure Valves & Fittings, Pumps	
	838	B145-838	838		120	QQ-C-390(B4)		B-16540 GrC		83	4	6	7					29	35	12	16	15	25	50-60	11,500		.312	90	General Free Machining Alloy, Low Pressure Fittings, Hardware	
Semi Redbrass	844	B145-844			123	QQ-C-390(B2)				81	3	7	9					29	34	13	15	18	26	50-60		6-10	.314	90	Plumbing Fittings, Faucets, Hardware & Ornamental Castings	
	848	B-145-848			130	QQ-C-390(B1)				76	3	6	15					25	36	12	14	15	30	50-60	12,800		.310	90	Plumbing Fittings, Faucets, Stops & Wastes, Hardware	
Yellow Brass	852	B-146-852	852		400	QQ-C-390(A4)		B-17668 Gr2		72	1	3	24					35	38	12	13	25	35	40-50	8,000		.305	80	Plumbing Fixtures & Fittings, Andirons & Ornamental Castings	
	854	B-146-854	854	41	403	QQ-C-390(A3)		B-17668 Gr1		67	1	3	29					30	34	11	12	20	35	40-60	9,000		.305	80	Plumbing, Furniture, Hardware & Ornamental Fittings	
	857	B146-857			405-2	QQ-C-390(A2)	C-15345 Gr3	B-17511A GrA		63	1	1	34.7			.3		40	50	14	18	15	40	75			.304	80	Plumbers Flanges, Fittings, Ornamental, Hardware & Ship Trim	
Manganese Bronze	862	B-147-862	862	430A	423	QQ-C-390(C4)	C-22229 Gr9	B-16522 Gr2		64*			Rem. 26		3	4		90	95	45	48	18	20	170-195	50,000		.288	30	Brackets, Shafts, Gears & Structural Parts	
	863	B147-863	863	430B	424	QQ-C-390(C7)	C-22229 Gr8	B-16522 Gr1	4862B	63*			Rem. 25		3	6		110	119	60	83	12	18	225	60,000	15	.283	8	Screw Down Nuts, Slow-speed Heavy Load Bearings Gears, Gibs & Cams	
	865	B147-865	865	43	421	QQ-C-390(C3)	C-22229 Gr7	B-16443 Gr1	4860A	58	.5		40		1	1	MN-.25	65	71	25	28	20	30	130	24,000	20-40	.301	26	Strength Appls., Propellers for Salt & Fresh Water. Machinery Parts substituting for Steel & Malleable Iron	
Copper-Silicon	872	B198-872	872		500	QQ-C-390(X2)	C-22229 Gr4			Rem.	1Max.		5 Max.	1.5 Max.	2.5 Max	1.5 Max	Si 4	45	55	18	25	20	30	85			.302	40	Corrosion Brazing & Welding Applications Substitute for Tin-zinc Bronzes	
	875	B198-875	875		500	QQ-C-390(X1)				82 Rem.		.5 Max.	14				Si 4	60	67	24	30	16	21	120-135			.299	50	Corrosion, Brazing & Welding Applications Substitute for Tin-zinc Bronzes	
Tin Bronze	903	B143-903	903	620	225	QQ-C-390(D5)	C-22229 Gr1	M-16576 GrA		88	8		4					40	45	18	21	20	30	60-75	13,000		.318	30	Bearings & Bushings Pump Impellers, Piston Rings, Pump Bodies, Valves, Steam Fittings, Gears	
	905	B143-905	905	62	210	QQ-C-390(D6)			4845D	88	10	.3 Max.	2					40	45	18	22	20	25	75	13,000	10-14	.315	30	Bearings & Bushings Pump Impellers, Piston Rings, Pump Bodies, Valves, Steam Fittings, Gears	
	907		907	65	205					89	11	.5 Max.	.5 Max.					35	44	18	22	10	20	80	13,000	10-14	.317	20	Worm Wheels & Gears, Bearings for Heavy Loads & Relatively Low Speeds	
Leaded Tin Bronze	922	B143-922	922	622	245	QQ-C-390(D4)	B-16541			88	6	1.5	4.5					34	40	16	20	22	30	60-72	12,000	11-18	.312	42	Medium-pressure Hydraulic & Steam to 550°F. Marine & Ornamental Castings	
	923	B143-923	923	621	230	QQ-C-390(D3)	C-15345 Gr10	B-16540GrAorB		87	8	1 Max.	4					36	40	16	20	18	25	60-75	9,000	12	.317	42	High-pressure Hydraulic & Steam Equipment, Structural Castings	
	926				215				4846A	87	10		2					40	44	18	20	20	30	65-80	12,000	7	.315	40	Lead Screw Nuts, Heavy-Duty Bearings, Pump Pistons	
	927		927	63	206					88	10	2	.7 Max.					35	42		21	10	20	77	12,000	7-10	.317	45	Lead Screw Nuts, Heavy-Duty Bearings, Pump Pistons	
High Leaded Tin Bronze	932	B144-932	932	660	315	QQ-C-390(E7)	C-15345 Gr12	B-16261 GrVI		83	7	7	3					30	35	14	18	12	20	60-70		6	.322	70	General Purpose Bushings, Washers, Non-pressure Applications	
	934				310	QQ-C-390(E8)	C-22229 Gr3	B-16261 GrII		84	8	8	.7 Max.					25	32		16	8	20	55-65		5	.320	70	Bearings & Bushings	
	935	B144-935	935	66	326	QQ-C-390(E9)				85	5	9	1	.5 Max.				25	32	12	16	8	20	55-65	13,000		.320	70	High Speed, Light Load Bushings Mild Acid Applications	
	937	B144-937	937	64	305	QQ-C-390(E10)			4842A	80	10	10		.7 Max.				25	35	12	18	8	20	55-70	13,000	5	.320	80	High Speed, Heavy-pressure Bushings, Acid-resisting to Sulphite Fluids	
	938	B144-938	938	67	319	QQ-C-390(E6)		B-16261 GrIV		78	7	15		.75 Max.				25	30	14	16	10	18	50-60	12,000	5	.334	80	Low Friction, Moderate Pressure Bushings, Railroad Applications, Acid Resisting	
	943	B144-943	943		322	QQ-C-390(E1)		B-16261 GrV	4840A	70	5	25		.7 Max.				21	27		13	7	10	42-55	11,000	5	.336	80	High Speed, Light to Medium Pressure Bushings, Railroad & Soft Metal Applications	
Aluminum Bronze	952	B148-952	952	68A	415A	QQ-C-390(G6)	C-22229 Gr5	B-16033 GrI		88					3	9		65	80	25	27	20	35	110-140	27,000	35	.276	50	Gun Mountings & Slides, Landing Gear Parts, Pickling Tank & Mild Alkali Appls., Marine Engine & Propellers	
	953	B148-953	953	68B	415B	QQ-C-390(G7)		B-16033 Gr2		89					1	10		65	75	25	27	20	140	20,000	20	.272	55	Gears, Cams, Stripper Nuts, Slippers, High Temperature Applications, Mining Machine Parts		
	954	B148-954	954		415C	QQ-C-390(G5)	C-15345 Gr13	B-16033 Gr3	48708 48728	85					4	11		75	85	30	35	12	18	140-170		14	.269	60	Spur & Low-speed, Heavily Loaded Worm Gears, Nuts Pump & Landing Gear Parts	
	955	B148-955	955		415D	QQ-C-390(G3)	C-22229 Gr8	B-16033 Gr4		81					4	4	11		90	100	40	44	6	12	180-200		13	.272	50	Used under extreme conditions such as Tank Gun Recoil Mechanisms & Landing Gear Parts
	958				415D	QQ-C-390(G8)		B-21230Gr1 B-23921		81					5	4	9	MN 1	85	95	35	38	18	25	150-170	20	.276	50	Propeller Hub, Blades & Other Parts - Including Valves, in Contact with Sea Water	
Copper Nickel	962	B369-962	962				C-20159 Gr2			88.6				10	1.4			45	49	25	29	20	36	90-100			.323	10	Component Parts of Hems Being Used for Sea Water Corrosion Resistance	
	964	B369-964				QQ-C-390(X9)	C-20159 Gr1			69.1				30	.9			60	68	32	37	20	28	120-140			.323	20	Valves, Pump Bodies, Flanges, Elbows Being Used for Sea Water Corrosion Resistance	
Nickel Silver	973	B149-973			410		C-15345 Gr7			56	2	10	20	12				30	35	15	17	8	20	50-60			.321	70	Hardware, Valves, Statuary & Ornamental Castings	
	976	B149-976			412		C-17112			64	4	4	8	20				30	40	17	24	8	20	75-90			.321	70	Marine Furniture, Hardware & Ornamental Castings	
	978	B149-978			413					66	5	2	2	25				45	55	22	30	15	16	120-150			.320	60	Dairy & Food Processing Fittings, White Ornamental & Hardware	