

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Family	CDA 1970	ASTM 1972	SAE 1972	SAE Superceded	Alloy Identification	Federal 1967	Military Current	Military Superceded	AMS	CU%	SN%	PB%	ZN%	M%	FE%	AL%	Others%	Tensile Strength		Yield Strength		Elongation		Brinell Hardness 10MM-500KG Typical	Compression Strm.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	

* Chemicals may be varied to yield mechanical properties ■ Brinell 3000 Kg Load • Mechanical properties & specifications will vary when centrifugal cast ksi indicates thousand pounds per square inch