T E C H N I C A L U P D A T E

Ferrous and Nonferrous Vacuum and Air Melt Alloys

Among the many attributes of the investment casting process are the substantial number of both ferrous and nonferrous alloys which can be produced. The charts and tables on the following pages present only the most popular alloys and alloy families, showing in many instances the minimum mechanical properties which are obtainable. If an alloy to meet your requirements is not included please contact your nearest Hitchiner sales representative or our main office in Milford, New Hampshire at (603) 673-1100. New alloys are constantly being developed by Hitchiner to meet special requirements. Remember that the process is not limited to special or costly alloys. Your selection can range from the cast irons to the superalloys.

CARBON AND LOW ALLOY STEELS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
1010 (G10100)	IC 1010	Fair	As Cast	50,000	30,000	30	HRB50	Electrical components, weldable; no post heat
1015 (G10150)	IC 1015	Fair	As Cast	50,000	30,000	25	HRB55	High impact strength weldable; no post heat
1018			As Cast	65,000	45,000	20	HRB60	
(G10180)	QQ S 681	Fair	Annealed	65,000	35,000	25	HRB60	High impact, carburizing,
			Norm & Draw 300˚F	70,000	45,000	25	HRB70	weldable; no post heat
1020	IC 1020		As Cast	60,000	45,000	20	HRB60	
(G10200)	MIL S 22141	Fair	Annealed	57,500	37,500	28	HRB60	High impact, carburizing,
			Norm & Draw 300˚F	65,000	45,000	20	HRB60	weldable; no post heat
1030	IC 1030	Good	As Cast	70,000	45,000	12	HRB70	Fusion welding or
(G10300)	MIL S 22141		Annealed	65,000	40,000	25	HRB70	flame hardening grade
			As Cast	85,000	55,000	7	HRB85	
1040	IC 1040	Good	Annealed	70,000	40,000	22	HRB70	Medium strength structural
(G10400)	MIL S 22141		Quench & Draw 300˚F	135,000	90,000	8	HRC28	parts
			Quench & Draw 1000˚F	100,000	90,000	10	HRC24	
1045	QQ S 681	Good	Annealed	75,000	40,000	20	HRB75	Medium strength structural
(G10450)			Quench & Drawn	140,000	95,000	7	HRC30	parts
1050	IC 1050	Good	Annealed	90,000	45,000	14	HRB85	Induction hardening
(G10500)	MIL S 22141		Quench & Drawn	150,000	100, 000	6	HRC35	
1060	IC 1060	Good	Annealed	100,000	55,000	12	HRB90	Good strength and impact
(G10600)			Quench & Draw	160,000	140,000	3	HRC57	combination
1095	IC 1095	Good	Annealed	100,000	70,000	20	HRB95	General purpose, high carbon
(G10950)	SAE 1095		Quench & Drawn	200,000	150,000	9	HRC52	tool steel
4130	AMS 5336		Annealed	80,000	60,000	18	HRB85	Structural parts requiring
(G41300)	MIL S 22141	Very Good	Quench & Temper 350˚F	200,000	170,000	6	HRC38	welding, high fatigue
	QQ S 681		Quench & Temper 1250˚F	105,000	85,000	18	HRC42	resistance and strength
	AMS 5338		Annealed	90,000	60,000	17	HRB85	Structural parts; Good
4140	MIL S 22141	Very Good	Quench & Temper 350˚F	220,000	200,000	4	HRC43	combination of fatigue, wear
(G41400)	QQ S 681		Quench & Temper 900˚F	180,000	155,000	9	HRC33	resistance and hardness
			Quench & Temper 1250˚F	110,000	90,000	17	HRB91	surface hardenable
	AMS 5330		Annealed	90,000	70,000	15	HRB85	Structural parts; good
4340	IC 4340	Very Good	Quench & Temper 350˚F	220,000	205,000	4	HRC44	combination of fatigue, wear
(G43400)	MIL S 22141		Quench & Temper 900˚F	180,000	160,000	6	HRC34	resistance and hardness;
			Quench & Temper 1250˚F	110,000	90,000	16	HRB91	better hardenability than 4140
6150	IC 6150		Annealed	100,000	60,000	12	HRB90	
(G61500)	MIL S 22141	Very Good	Quench & Temper 350˚F	230,000	210,000	2	HRC45	High strength and hardness
			Quench & Temper 1250˚F	110,000	90,000	10	HRC33	
8620	MIL S 22141	Good	Annealed	70,000	50,000	22	HRB80	Carburizing alloy steel for
(G86200)	QQ S 681		Quench & Temper 1200˚F	100,000	80,000	16	HRC28	stressed parts
8730	IC 8730		Annealed	80,000	60,000	18	HRB85	Structural parts; good
(G87300)	MIL S 22141	Good	Quench & Temper 350˚F	200,000	170,000	6	HRC38	combination of fatigue and
	QQ S 681		Quench & Temper 1250˚F	105,000	85,000	18	HRC42	hardness
52100	IC 52100		Annealed				HRC25 Max	
(G51986)	MIL S 22141	Good	Quench & Temper 800˚F	230,000	220,000	1	HRC46	High hardness and abrasion
			Quench & Temper 1000˚F	180,000	170,000	5	HRC58	resistance
Nitralloy	MIL S 22141	Fair	Annealed	90,000	45,000	12	HRB91	Nitriding steel
(J24056)			Quench & Temper 1100˚F	140,000	125,000	8	HRC25	

TOOL STEELS

Alloy	UNS Nbr	Castability	Approximate Tempered Hardness	Distortion in Heat Treating	Toughness	Wear Resistance	Resistance To Softening At High Heat
A-2	T30102	Good	HRC55	Best	Poor to Fair	Good	Good
A-6	T30106	Fair	HRC55	Best	Poor to Fair	Good	Fair
D-2	T30402	Good	HRC60	Best	Poor	Very Good	Good
D-3	T30493	Good	HRC60	Very Good	Poor	Very Good	Good
H-11	T20811	Fair	HRC52	Very Good	Poor	Fair	Good
H-12	T20812	Fair	HRC53	Very Good	Fair	Fair	Good
H-13	T20813	Good	HRC50	Very Good	Fair	Fair	Good
L-6	T61206	Fair	HRC62	Good	Fair	Poor	Poor
M-2	T11302	Fair	HRC63	Fair	Poor	Very Good	Very Good
M-4	T11304	Fair	HRC64	Fair	Poor	Best	Very Good
M-42	T11342	Fair	HRC68	Fair	Poor	Very Good	Best
M-52	T11352	Good	HRC62	Fair	Poor	Very Good	Very Good
0-1	T31501	Good	HRC60	Very Good	Poor to Fair	Fair	Poor
0-2	T31502	Good	HRC60	Very Good	Poor to Fair	Fair	Poor
0-7	T31507	Good	HRC62	Very Good	Poor to Fair	Fair	Poor
S-1	T41901	Very Good	HRC50	Fair	Good	Poor	Fair
S-2	T41902	Very Good	HRC56	Poor	Good	Poor	Poor
S-4	T41904	Good	HRC56	Poor	Good	Poor	Poor
S-5	T41905	Very Good	HRC58	Fair	Good	Poor	Poor
S-7	T41907	Very Good	HRC55	Fair	Good	Poor	Fair
T-l	T12001	Fair	HRC63	Fair	Poor	Very Good	Very Good

PRECIPITATION HARDENING STAINLESS STEEL

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
15-5 PH (J92110)	AMS 5347 ASTM A 747 IC 15-5PH	Good	Normalize & Solution Anneal plus Aging	160,000	130,000	8	HRC38	Same as 17-4 except greater ductility in thick sections
17-4 PH (J92180)	AMS 5355 ASTM A 747 IC 17-4PH MIL S 81591	Very Good	Normalize & Solution Anneal or Dble Solution Anneal			10	HRC28-36	Age hardening alloy; best combination of corrosion resistance and hardness; most popular
			Normalize & Solution Anneal or Dble Solution Anneal plus Aging	180,000	160,000	6	HRC40	
CD-4MCU (J93370)	ASTM A 351 ASTM A 743	Good	Solution Anneal plus Aging	100,000	70,000	12	HRC30	Best combination of strength corrosion resistance

300 SERIES STAINLESS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
302 CF-20 (J92501)	AMS 5358 ASTM A 743 MIL 5 81591	Excellent	As Cast or Solution Annealed	65,000	30,000	35	HRB85	Best combination of castability and corrosion resistance
303 CF-16F (J92511)	AMS 5341 ASTM A 743 MIL 5 81591	Good	As Cast or Solution Annealed	65,000	30,00	35	HRB85	Free machining stainless
304 CF-8 (J92600)	ASTM A 743 MIL 5 867	Excellent	As Cast or Solution Annealed	65,000	30,000	35	HRB85	Better corrosion resistance than 302 or 303
304L CF-3 (J92700)	AMS 5370 ASTM A 351 MIL S 22216	Excellent	As Cast or Solution Annealed	63,000	28,000	35	HRB85	Cryogenic applications, weldable
310 CK-20 (S31000)	AMS 5366 ASTM A 351 MIL S 22216	Good	As Cast or Solution Annealed	60,000	30,000	35	HRB85	Oxidation resistance to 2,000˚F
316 CF-8M (J92900)	AMS 5360 ASTM A 351 MIL S 867	Excellent	As Cast or Solution Annealed	65,000	30,000	35	RB85	Food equipment; paper making equipment, marine use
347 CF-8C (J92710)	AMS 5362 ASTM A 351 MIL S 81591	Very Good	As Cast or Solution Annealed	70,000	32,000	30	HRB85	Weldable grade, stable to 1500˚F
CN-7M (J95150)	ASTM A 351 ASTM A 743	Good	As Cast or Solution Annealed	65,000	25,000	35	HRB80	Sulfuric acid resistant

400 SERIES STAINLESS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
410 CA-15 (J91150)	AMS 5350 ASTM A 217 MIL S 81591	Very Good	Annealed Air or Oil Quench Hardened & Tempered	70,000 160,000 180,000 200,000	45,000 120,000 140,000 150,000	20 12 8 6	HRB90 Max HRC36 HRC40 HRC42	Good combination of hardness and corrosion resistance
416 (S41600)	AMS 5349 IC 416 MIL S 81591	Fair	Annealed Air or Oil Quench Hardened & Tempered	70,000 95,000 160,000	40,000 75,000 130,000	15 12 5	HRB95 Max HRB95 HRC38	Free machining grade of 410; not as tough as 410
420 CA-40 (J91153)	ASTM A 743 MIL S 81591	Good	Annealed Low Carbon Hardened & Tempered High Carbon Hardened & Tempered	90,000 200,000 200,000	60,000 150,000 150,000	12 3 3	HRC28 Max HRC46 HRC48	Similar to 410; higher hardness but less tough; better wear resistance
430 (S4300)		Good	Annealed	60,000	45,000	15	HRB95 Max	Better corrosion and heat resistance of series
431 CB-30 (J91803)	AMS 5353 ASTM A 743 MIL S 81591	Good	Annealed Hardened & Tempered	90,000 170,000	60,000 130,000	12 5	HRC28 Max HRC38	Best corrosion resistance of series
436 Greek Ascoloy (J91631)	AMS 5354	Very Good	Hardened & Tempered	90,000	65,000	3	HRC36 Max	Heat resistant to 1000˚F
440A (S44002)	IC 440A MIL S 22216 MIL S 81591	Fair	Annealed Hardened & Tempered Hardened, Deep Frozen & Tempered	90,000 — —	60,000 — —	2 Nil Nil	HRC30 Max HRC50 HRC52	Cutlery and molds; high hardness
440C (S44004)	AMS 5352 MIL S 22216 MIL S 81591	Fair	Annealed Hardened & Tempered	90,000 —	60,000 —	2 Nil	HRC30 Max HRC58	Highest hardness; best cutlery grade
440F (S44020)	IC 440F	Fair	Hardened & Tempered	—	—	Nil	HRC55	Free machining grade of 440C

DUCTILE IRON

Alloy (UNS Nbr)	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Brinell Hardness	Strength	Machinability	May Substitute For
MIL I 11466									
Class 1	Very Good	Heat Treated	120,000	90,000	2	HB243			
2	Very Good	Heat Treated	100,000	75,000	4	HB203			
3	Very Good	Heat Treated	85,000	60,000	6	HB179			
4	Very Good	Heat Treated	80,000	60,000	3	HB163			
5	Very Good	Heat Treated	60,000	45,000	10	HB121			
6	Very Good	Heat Treated	60,000	40,000	18	HB121			
60-40-18 (F32800)	Very Good	As Cast	60,000	40,000	18	HB121	Lowest	Easiest	1010, 1020 or 1030
60-45-10	Very Good	Heat Treated	60,000	45,000	10	140-200	Low	Easy	
60-45-12 (F33100)	Very Good	As Cast	60,000	45,000	12	HB121	Low	Easy	8620
60-45-15 (F33100)	Very Good	Heat Treated	60,000	45,000	15	140-190	Low	Easy	
80-55-06 (F33800)	Very Good	As Cast	80,000	55,000	6	HB163	Medium	Medium	1040, 4130, 4140, 8630 or 8640
80-60-03 (F34100)	Very Good	As Cast	80,000	60,000	3	HB163	Medium	Medium	
100-70-03 (F34800)	Very Good	Heat Treated	100,000	70,000	3	240-300	High	Medium	4330, 4340, 4620 or 8730
120-90-02	Very Good	Heat Treated	120,000	90,000	2	270-350	High	Medium	
Ni-Resist (F47001)	Very Good	Heat Treated	60,000	—	8	140-200	Low	Medium	
ADI-2 Austempered	Very Good	Heat Treated	150,000	125,000	7	302-363	Highest	Medium	Low alloy steels

CAST IRON

Alloy	Castability	Condition	Min Hardness	Ultimate Tensile Strength PSI	% Elongation	Remarks
Ni-Hard, Type I (F45000)	Very Good	Stress relieved or deep frozen and stress relieved	HRC55	40,000	Nil	Excellent abrasion resistant white iron
Ni-Hard, Type IV (F45003)	Very Good	Stress relieved or deep frozen and stress relieved	HRC55	45,000	Nil	More resistant to spalling than Ni-Hard, Type 1

MAGNETICALLY HARD ALLOYS

Alloy Type	Castability	Condition	Residual Flux Density (Gauss)	Coercive Force (Oersteds)	Energy Product BH X 106	Hardness
Alnico 2	Fair	As Cast	7,500	550	1.65	HRC45
Alnico 4	Fair	As Cast	6,300	630	1.40	HRC45
Alnico 5	Poor	As Cast	12,700	640	5.25	HRC50
Alnico 7	Poor	As Cast	7,000	1,170	3.00	HRC60

MAGNETICALLY SOFT ALLOYS

Alloy (UNS Nbr)	Castability	Condition	Magnetic Properties	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
1.2% SiFe	Fair	As Cast	BR = 16,850 HC = 0.3	50,000	37,000	30	HRB50	Solenoid switches, pole pieces, relays
1.5% SiFe	Fair	As Cast		53,000	40,000	20	HRB55	Solenoid switches, pole pieces, relays
1.8% SiFe	Poor	As Cast	BR = 16,625 HC = 0.2	53,000	40,000	20	HRB55	Solenoid switches, pole pieces, relays
2.5% SiFe	Poor	As Cast	BR = 16,375 HC = 0.18	—	—	Nil	HRB80	Low residual magnetism in D.C. circuits
47-50	Good	As Cast	BR = 15,800	45,000	20,000	35	HRB45	Use for very high field strengths

COBALT BASE ALLOYS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
Cobalt 6 (R30006)	AMS 5387	Good	As Cast	100,000	85,000	3	HRC40	Best impact. Oxidation resistant to 1600˚F
Cobalt 12 (R30012)	MIL C 24248	Good	As Cast	—	—	Nil	HRC42	More wear resistant, not as tough as 6
Cobalt 21 (R30021)	AMS 5385 ASTM A 732	Very Good	As Cast Tested at 1500˚F	75,000	60,000	8	HRC34 Max	High strength up to 1500˚F and oxidation resistance to 2100˚F
Cobalt 31 (R30031)	AMS 5382	Very Good	As Cast	110,000	70,000	6	HRC34 Max	Resistant to oxidizing and reducing atmospheres to 2100˚F
Cobalt 36		Good	As Cast	90,000	60,000	15	HRC30	Good strength up to 1800˚F
Cobalt J		Fair	As Cast	—	—	Nil	HRC55	Wear resistant with low impact
Alloy 93		Fair	As Cast	—	—	Nil	RC61	Best wear resistance
N-155 (R30155)	AMS 5376	Good	As Cast Tested at 1500˚F	45,000		15	HRC21 Max	High strength up to 1500˚F and oxidation resistance to 2000˚F

NICKEL BASE ALLOYS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
Alloy B (N10001)	AMS 5396 ASTM A 494	Good	As Cast	75,000	50,000	12	HRB200	Resistant to hydrochloric acid
Alloy C (N10002)	AMS 5388 ASTM A 494	Fair	AS Cast Tested at 1500˚F	75,000	45,000	12	HRB200	Resistant to wet chlorine gas. Oxidation resistant to 1800˚F
Alloy X (N06002)	AMS 5390	Poor	As Cast Tested at 1500˚F	35,000	—	12	HRB96 Max	Oxidation resistant to 2200˚F
Inconel 600 (N06040)		Fair	As Cast	65,000	35,000	10	HRB80	Resists oxidation up to 2000˚F corrosive vapors above 800˚F
Monel 410 (N04400)	ASTM A 494	Fair	As Cast	65,000	32,000	25	HRB65	Corrosion resistance and toughness

VACUUM CAST — NICKEL BASE ALLOYS

Alloy Type	Similar Designation	Castability	Weldable	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	% Reduction In Area	MIN. STRESS RUPTURE PROPERTIES Temp ˚F	Stress PSI	Hours Life	% Elong
Inconel 100	AMS 5397	Fair	No	115,000	95,000	5		1800	29,000	23	4
Inconel 625	AMS 5401	Good	Yes	85,000	45,000	25					
Inconel 713C	AMS 5391	Excellent	No	110,000	100,000	3		1800	22,000	30	5
Inconel 713LC	AMS 5377	Excellent	No	110,000	100,000	5	8	1800	22,000	30	5
Inconel 718	AMS 5383	Excellent	Yes	125,000	110,000	5	10	1300	65,000	23	3
Inconel 792	PWA 1467	Fair	No					1400	94,000	23	2.5
								1800	27,000	28	4
Inconel 939	MTS 1348	Good	No					1598	29,000	23	3
Rene 41	AMS 5399	Very Good	Yes	110,000	90,000	3	5	1650	25,000	25	5
Rene 80	C50TF28	Good	No	90,000	60,000		15	1800	27,500	23	5
Rene 108	B50TF262	Poor	No	135,000	100,000	8	10	1800	30,000	20	
Rene 125	C50TF60	Good	No	145,000	120,000		6	1800	30,000	40	4
Haynes 230	PWA 1474	Good	Yes	75,000	40,000	25	25	1700	9,000	23	5

VACUUM CAST — COBALT BASE ALLOYS

Alloy Type	Similar Designation	Castability	Weldable	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	% Reduction In Area	MIN. STRESS RUPTURE PROPERTIES Temp ˚F	Stress PSI	Hours Life	% Elong
X-40	C50TF21,ClB	Good	Yes					1800	12,000	18	15
MAR M 509	B50TF89	Good	No	100,000	70,000	2.0	2.4	2000	9,000	23	6
	PWA 647										

PRATT & WHITNEY AIRCRAFT (UNIQUE) — NICKEL BASE ALLOYS

Alloy Type	Similar Designation	Castability	Weldable	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	MINIMUM STRESS RUPTURE PROPERTIES Temp ˚F	Stress PSI	Hours Life	% Elong
B1900 + Hf	PWA 1455	Very Good	No	120,000	105,000	5.0	1800	29,000	23	55
	PWA 1475	Very Good	No				1900	15,000	17	1

ALUMINUM ALLOYS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
A354 (A13540)	MIL A 21180	Very Good	Solution Treated plus Aging	50,000	42,000	2	RF85	Highest yield strength premium quality alloy
355 (A03550)	ASTM B 26 QQ A 601	Very Good	Solution Treated plus Aging	35,000	25,000	3	RF80	Good strength and corrosion resistance
C355 (A33550)	AMS 4215 MIL A 21180 QQ A 601	Very Good	Low Tensile Heat Treatment	38,000	25,000	5	RF80	Premium quality alloy; good strength and corrosion resistance
			High Tensile Heat Treatment	40,000	30,000	3	RF85	
356 (A03560)	AMS 4260 ASTM B 26 QQ A 601	Excellent	Solution Treated plus Aging	36,000	24,000	5	BF70	Most popular aluminum alloy
A356 (A13560)	AMS 4218 MIL A 21180	Excellent	Low Tensile Heat Treatment	38,000	28,000	5	RF75	Good strength, corrosion resistance, stability and weldability—poor brazability
			High Tensile Heat Treatment	40,000	30,000	3	RF80	
A357 (A13570)	AMS 4219 ASTM B 108 MIL A 21180	Very Good	Solution Treated plus Aging	45,000	35,000	3	RF85	Higher strength than A-356
40E (A07120)	ASTM B 26 QQ A 601	Poor	As Cast 3 weeks aging	35,000	26,000	3	RF75	Not heat treatable; good brazing characteristics
43 (A04430)	MIL C 11866	Good	As Cast	17,000	9,000	6	RF35	High corrosion resistance
Tenzaloy (A07130)	ASTM B 26 QQ A 601	Fair	As Cast 3 weeks aging	35,000	26,000	3	RF75	Good for color anodizing
B195 (A02960)	ASTM B 108 QQ A 596	Fair	Solution Treated plus Aging	30,000	25,000	2	RF70	Takes better polish; easier to anodize
Precedent 71 (A07710)		Poor	Solution Treated plus Aging	47,000	39,000	4	RF90	High strength high temperature resistance—good brazability
A201 (A02010)	AMS 4223 MIL A 21180	Poor	Solution Treated plus Aging	56,000	48,000	3	Bfl30	Highest strength alloy—excellent machinability

PREMIUM QUALITY ALUMINUM

A356 — **MIL-A-21180**

Class	1	2	3	10	11	12
Tensile Strength PSI	38,000	40,000	45,000	38,000	33,000	32,000
Yield Strength, PSI (0.2% offset)	28,000	30,000	34,000	28,000	27,000	22,000
Elongation, % in 2"	5	3	3	5	3	2

COPPER BASE ALLOYS

Alloy (UNS Nbr)	Similar Designation	Castability	Condition	TYPICAL MECHANICAL PROPERTIES Strength PSI Tensile	Yield	% Elong	Min Hardness	Remarks
Aluminum Bronze								
Grade C (C95400)	MIL C 22087 QQ C 390	Poor	As Cast Heat Treated	75,000 90,000	30,000 45,000	8 6	RB80 RB91	Excellent corrosion resistance
Grade D (C95500)	ASTM B 148 MIL C 22087 QQ C 390	Poor	As Cast Heat Treated	90,000 110,000	40,000 60,000	6 5	RB91 RB93	Excellent corrosion resistance; higher strength than Grade C
Manganese Bronze								
Low Tensile (C86500)	AMS 4860 ASTM B 147 MIL C 22087	Poor	As Cast	65,000	35,000	16	RB60	Toughness and shock resistant
High Tensile (C86300)	AMS 4862 ASTM B 147 MIL C 22087	Poor	As Cast	110,000	60,000	8	RB95	Harder, less tough than low tensile
Silicon Brass (C87400)	ASTM B 584 MIL C 11866 QQ C 390	Very Good	As Cast	60,000	35,000	16	RB55	Good castability
Silicon Bronze (C87200)	ASTM B 763 QQ C 390	Fair	As Cast	45,000	28,000	12	RB50	High strength at elevated temperatures
Red Brass 85-5-5-5 (C83600)	AMS 4855 MIL C 22087 QQ C 390	Very Good	As Cast	30,000	20,000	20	RB30	Good machinability; pipe fittings
Yellow Brass (C85700)	ASTM B 584 MIL 17688	Poor	As Cast	30,000	11,000	20	RB35	Better machinability than naval brass; pipe fittings
Phosphor Bronze	ASTM B 427 QQ C 390 SAE 65	Fair	As Cast	45,000	25 000	30	RB45	Cast gears and gear blanks
Navy G (C90300)	ASTM B 584 MIL C 22087 QQ C 390	Fair	As Cast	40,000	20 000	30	RB40	Bearings, bushings
Navy M (C92200)	ASTM B 61 MIL C 15345	Good	As Cast	35,000	16,000	30	RB35	Better machinability than Navy G
BeCu 10C (C82000)	MIL C 19464	Good	As Cast Solution Anneal Hardened	45,000 40,000 90,000	20,000 9,000 50,000	15 20 5	RB50 RB20 RB90	Best electrical conductivity; difficult to cast
BeCu 20C (C82500)	AMS 4890 MIL C 11866 QQ C 390	Excellent	As Cast Solution Anneal Hardened Under Aged	70,000 60,000 155,000 110,000	45,000 30,000 140,000 90,000	15 20 1 3	RB75 RB60 RC40 RC24-30	Easiest to cast; most popular
BeCu 165C (C82400)		Very Good	As Cast Solution Anneal Hardened	70,000 60,000 155,000	40,000 20,000 140,000	15 30 1	RB60 RB59 RC38	Good castability
BeCu 275C (C82800)	MIL C 19464 QQ C 390	Good	As Cast Solution Anneal Hardened	75,000 70,000	50,000 40,000	12 15 0	RB75 RB70 RC44	Highest hardness