

	Copper			High-copper alloy					High-performance alloy								Brass					Special brass		Phosphor Bronze				Copper-nickel alloy				Nickel silver						
CDA No.	10200	11000	12200	14415	19210	19400	19700	19720	15100	18070	18080	19005	19010	19020	19025	70250	70350	21000	22000	23000	26000	26800	27200	42500	68800	51000	51100	51900	52100	71000	71500	72500	-	75200	75700	76400	77000	
Wieland Alloy	K11	K32	K19	K81	K80	K65	K85	-	K82	K75	K88	K73	K76	-	-	K55	K57	M05	M10	M15	M30	M33	M37	S12	S23	B15	B14	B16	B18	-	-	L49	L96	-	N12	N18	N17	
Nominal Composition	≥ 99.95 Cu	≥ 99.90 Cu	≥ 99.90 Cu	99.9 Cu	99.9 Cu	97.4 Cu	99.1 Cu	99.5 Cu	99.9 Cu	99.5 Cu	99.1 Cu	97.8 Cu	98.4 Cu	97.3 Cu	97.9 Cu	96.2 Cu	96.8 Cu	95.0 Cu	90.0 Cu	85.0 Cu	70.0 Cu	67.0 Cu	63.0 Cu	88.0 Cu	74.0 Cu	95.0 Cu	96.0 Cu	94.0 Cu	92.0 Cu	80.0 Cu	70.0 Cu	89.0 Cu	85.0 Cu	65.0 Cu	64.0 Cu	62.0 Cu	55.0 Cu	
		≤ 0.040 O	0.015 -	0.1 Sn	0.1 Fe	2.4 Fe	0.6 Fe	0.3 Fe	0.1 Zr	0.3 Cr	0.5 Cr	1.5 Ni	1.3 Ni	2.0 Ni	1.0 Ni	3.0 Ni	1.5 Ni	5.0 Zn	10.0 Zn	15.0 Zn	30.0 Zn	33.0 Zn	37.0 Zn	9.0 Zn	22.1 Zn	5.0 Sn	4.0 Sn	6.0 Sn	8.0 Sn	20.0 Ni	30.0 Ni	9.0 Ni	9.0 Ni	18.0 Ni	12.0 Ni	18.0 Ni	18.0 Ni	
			0.040 P		0.03 P	0.12 Zn	0.1 Mg	0.1 Mg		0.1 Ti	0.2 Ag	0.4 Zn	0.25 Si	0.6 Sn	1.0 Sn	0.65 Si	1.1 Co							3.0 Sn	3.5 Al							2.0 Sn	6.0 Sn	17.0 Zn	24.0 Zn	20.0 Zn	27.0 Zn	
						0.03 P	0.2 P	0.1 P			0.02 Si	0.08 Fe	0.3 Si	0.03 P	0.1 P	0.05 P	0.15 Mg	0.6 Si								0.4 Co												
Density	0.322	0.322	0.322	0.323	0.321	0.322	0.319	0.319	0.323	0.321	0.322	0.321	0.321	0.322	0.322	0.318	0.319	0.320	0.318	0.316	0.309	0.306	0.305	0.317	0.296	0.320	0.320	0.318	0.318	0.323	0.323	0.321	0.321	0.316	0.313	0.315	0.314	
Modulus of Elasticity	17	17	17	18	18	17.5	17.5	17	17.5	20	20.3	18.4	18.4	18.8	18.8	19	19	17	17	17	16	15	15	16	16.8	17.5	17.5	17	16	20	22	20	18.8	18	18	20	18	
Electr. Conductivity	100	100	79	88	91	64	80	85	95	83	80	50	53	50	40	43	50	56	44	37	28	28	26	28	17	19	22	17	13	6.5	5	11	10	6	8	6	6	
Therm. Conductivity	226	226	196	202	202	150	185	185	208	190	185	144	144	115	100	110	115	135	109	92	73	70	69	69	40	47	48	43	36	21	17	32	31	19	23	19	18	
Coef. of therm. Exp.	9.8	9.8	9.8	10.0	9.4	9.8	9.6	9.6	9.8	10.0	9.8	9.3	9.3	9.4	9.4	9.8	9.8	10.0	10.1	10.3	10.9	11.1	11.2	10.2	10.0	9.9	9.9	10.0	10.1	9.1	9.0	9.2	9.6	9.0	9.0	9.8	9.3	
ASTM Spec. No	B152			-	B888	B888	B888	B465	B888	-	B936	(B422)	B422	B422	B422	B422	-	B36	B36	B36	B36	B36	B36	B591	B592	B103	B103	B103	B103	B122	B122	B122	-	B122	-	-	B122	
Annealed (O61) (TM00)	Tensile	26 - 38			27 - 42	40 - 63	43 - 53		37 - 42							90 - 110		34 - 40	36 - 42	39 - 47	45 - 61	44 - 61		41 - 47	77 - 87	46 - 56	46 - 54	48 - 63	56 - 65	43 - 53	(≥ 52)	45 - 65	87 - 122	53 - 63			61 - 76	
	Yield	(10)			≥ 16	≥ 16	≥ 16		≥ 9							≥ 65		(10)	(12)	≥ 8	≥ 10	(23)		≥ 13	≥ 44	≥ 19	≥ 16		≥ 23	(21)	(28)	(21)	≥ 73	≥ 18			(32)	
	% Elong.	(35)			≥ 30	≥ 10	≥ 20		≥ 35							≥ 10		(45)	(47)	≥ 43	≥ 40	(52)		≥ 47	≥ 30	≥ 48	≥ 45		≥ 60	(40)	(≥ 30)	(35)	≥ 10	≥ 29			(43)	
1/4 Hard (H01) (HR01) (TM01) (Light Anneal)	Tensile	34 - 42			43 - 53	45 - 55		40 - 45								49 - 68		37 - 47	40 - 50	44 - 54	49 - 59	49 - 59	49 - 59	49 - 59	87 - 101	49 - 61	46 - 58		63 - 75	47 - 63	58 - 72	55 - 75		58 - 72			69 - 87	
	Yield	(32)			≥ 20	(23)		≥ 26								≥ 42		(30)	(33)	≥ 23	≥ 21	(34)		≥ 20	≥ 63	≥ 22	≥ 20		≥ 35	(40)	(47)	(63)		≥ 26			(63)	
	% Elong.	(23)			≥ 20	(26)		≥ 11								≥ 15		(30)	(27)	≥ 15	≥ 34	(42)		≥ 24	≥ 10	≥ 32	≥ 25		≥ 40	(15)	(17)	(15)		≥ 14			(26)	
1/2 Hard (H02) (HR02) (TM02)	Tensile	37 - 46			47 - 60	53 - 63	53 - 63	53 - 63	43 - 51							58 - 70	63 - 76	95 - 120	42 - 52	47 - 57	51 - 61	57 - 67	55 - 65	56 - 66	57 - 69	97 - 112	58 - 73	55 - 70	64 - 79	69 - 84	56 - 70	66 - 80	65 - 80	116 - 131	66 - 80			78 - 95
	Yield	(37)			≥ 44	≥ 36	≥ 36	(48)	≥ 35							(63)	≥ 58	≥ 83	(44)	(47)	≥ 43	≥ 42	(44)		≥ 51	≥ 82	≥ 47	≥ 42		≥ 51	(57)	(68)	(68)	≥ 109	≥ 48			(78)
	% Elong.	(20)			≥ 5	≥ 6	≥ 6	(17)	≥ 4							≥ 5	≥ 9	≥ 7	(17)	(12)	≥ 8	≥ 19	(36)		≥ 13	≥ 3	≥ 10	≥ 12		≥ 25	(5)	(6)	(10)	≥ 7	≥ 6			(14)
3/4 Hard (H03) (TM03)	Tensile	41 - 50			52 - 62			47 - 56								100 - 125		46 - 56	52 - 62	57 - 67	64 - 74	62 - 72	63 - 73	62 - 74		68 - 79	67 - 82		80 - 92					74 - 86			88 - 101	
	Yield	(43)			≥ 50			≥ 45								≥ 95		(50)	(54)	≥ 51	≥ 44	(53)		≥ 54		≥ 61	≥ 64		≥ 70					≥ 69			(92)	
	% Elong.	(14)			≥ 4			≥ 2								≥ 5		(9)	(6)	≥ 4	≥ 8	(25)		≥ 10		≥ 10	≥ 6		≥ 18					≥ 4			(8)	
Hard (H04) (HR04) (TM04)	Tensile	43 - 52			56 - 66	60 - 70	60 - 70	60 - 70	53 - 62		70 - 81		71 - 80	65 - 74	72 - 83		112 - 131	50 - 59	57 - 66	63 - 72	71 - 81	68 - 78	70 - 80	70 - 82	106 - 120	76 - 91	72 - 87	80 - 96	85 - 100	67 - 79	75 - 88	75 - 90	123 - 138	78 - 91			92 - 109	
	Yield	(45)			≥ 54	≥ 53	≥ 53	(60)	≥ 51		≥ 65		≥ 59	(67)	≥ 68		109 - 124	(53)	(58)	≥ 57	≥ 64	(57)		≥ 62	≥ 95	≥ 74	≥ 70		≥ 78	(70)	(78)	(80)	≥ 116	≥ 75			(98)	
	% Elong.	(9)			≥ 3	≥ 3	≥ 2	(7)	≥ 2		≥ 7		≥ 10	≥ 3	≥ 5		≥ 4	(5)	(4)	≥ 4	≥ 6	(19)		≥ 6	≥ 2	≥ 9	≥ 2		≥ 12	(2)	(3)	(3)	≥ 3	≥ 3			(4)	
Extra Hard (H06) (HR06) (TM06)	Tensile	47 - 56			60 - 70	67 - 73	67 - 73	67 - 73	59 - 65				75 - 86	71 - 80	78 - 89		123 - 142	56 - 64	64 - 72	72 - 80	83 - 92	79 - 89	81 - 91	76 - 88	113 - 127	88 - 103	84 - 99		97 - 112	72 - 84	80 - 92	80 - 95	≥ 131	86 - 98			102 - 117	
	Yield	(50)			≥ 58	≥ 64	≥ 64	(67)	≥ 57				≥ 64	(73)	≥ 74		118 - 134	(59)	(63)	≥ 65	≥ 76	(67)		≥ 70	≥ 102	≥ 85	≥ 81		≥ 92	(75)	(83)	(85)	≥ 123	≥ 85			(107)	
	% Elong.	(4)			≥ 2	≥ 2	≥ 2	(6)	≥ 1				≥ 9	≥ 3	≥ 4		≥ 1	(≤ 2)	(2)	≥ 3	≥ 2	(7)		≥ 5	≥ 2	≥ 2	≥ 1		≥ 10	(≥ 1)	(2)	(2)	≥ 3	≥ 3			(≥ 1)	
Spring (H08) (HR08) (TM08)	Tensile	50 - 58			64 - 74	70 - 76	70 - 76		64 - 71		78 - 90		84 - 94	≥ 77	84 - 95			60 - 68	69 - 77	78 - 86	91 - 100	86 - 95		84 - 94	123 - 133	95 - 110	91 - 105		105 - 119	78 - 87	84 - 94	85 - 100		90 - 101			108 - 123	
	Yield	(52)			≥ 62	≥ 67	≥ 67		≥ 62		≥ 75		≥ 78	≥ 74	≥ 81			(63)	(68)	≥ 69	≥ 80	(71)		≥ 79	≥ 111	≥ 92	≥ 88		≥ 100	(79)	(86)	(90)		≥ 88			(112)	
	% Elong.	(3)			≥ 1	≥ 2	≥ 2		≥ 1		≥ 2		≥ 8	≥ 2	-			(≤ 2)	(≥ 1)	≥ 3	≥ 1	(5)		≥ 3	≥ 1	≥ 1	≥ 1		≥ 3	(≤ 2)	(≥ 1)	(≥ 1)	≥ 3	≥ 1			(≤ 1)	
Extra Spring (H10)	Tensile	> 52			≥ 66	73 - 80	73 - 80								91 - 106			61 - 69	72 - 80	82 - 90	95 - 104	90 - 99		≥ 92	≥ 130	100 - 114	96 - 109		110 - 122			90 - 105		≥ 96			> 116	
	Yield	(≥ 51)			≥ 64	≥ 70	≥ 70								≥ 88			(64)	(70)	≥ 73	≥ 83	(73)		≥ 85	≥ 117	≥ 98	≥ 92		≥ 105			(95)		≥ 95			(≥ 115)	
	% Elong.	(≤ 3)			≥ 1	≥ 1	≥ 1								-			(≤ 2)	(≤ 1)	≥ 2	≥ 1	(≤ 5)		-	≥ 1	≥ 1	≥ 1	≥ 1			(≤ 1)		≥ 1				(≤ 1)	

Density: lb/in³
 Mod. of Elast ksi
 Elect. Cond.: %IACS

Thermal Conductivity: Btu.ft/(ft².h.*F)
 Coef. of Thermal Exp.: 10-6/*F
 Tensile Strength: R_m ksi

Yield Strength: R_{p0.2} ksi
 Elongation: A₅₀ %
 Nomal values with the parantheses ()

