

Engineering Reference
Typical Mechanical Properties of Aluminum Alloys

Alloy and Temper	Tension				Hardness Brinell Number 500 kg Load 10 mm Ball	Ultimate Shearing Strength ksi	Fatigue Endurance Limit ksi	Modulus of Elasticity ksi x 10 ³
	Strength ksi		Elongation % in 2in					
	Ultimate	Yield	1/16" Thick Specimen	1/2" Diameter Specimen				
1060-O	10	4	43		19	7	3	10
1060-H12	12	11	16		23	8	4	10
1060-H14	14	13	12		26	9	5	10
1060-H16	16	15	8		30	10	6.5	10
1060-H18	19	18	6		35	11	6.5	10
1100-O	13	5	35	45	23	9	5	10
1100-H12	16	15	12	25	28	10	6	10
1100-H14	18	17	9	20	32	11	7	10
1100-H16	21	20	6	17	38	12	9	10
1100-H18	24	22	5	15	44	13	9	10
1350-O	12	4				8		10
1350-H12	14	12				9		10
1350-H14	16	14				10		10
1350-H16	18	16				11		10
1350-H19	27	24				15	7	10
2011-T3	55	43		15	95	32	18	10.2
2011-T8	59	45		12	100	35	18	10.2
2014-O	27	14		18	45	18	13	10
2014-T4,T451	62	42		20	105	38	20	10.6
2014-T6,T651	70	60		13	135	42	18	10.6
Alclad2014-O	25	10	21			18		10.5
Alclad2013-T3	63	40	20			37		10.5
Alclad2014-T4,T451	68	60	10			41		10.5
2017-O	26	10		22	45	18	13	10.5
2017-T4,T451	62	40		22	105	38	18	10.5
2018-761	61	46		12	120	39	17	10.8
2024-O	27	11	20	22	47	18	13	10.6
2024-T3	70	50	18		120	41	20	10.6
2024-T4,T351	68	47	20	19	120	41	20	10.6
22024-T361	72	57	13		130	42	18	10.6
Alclad2024-O	26	11	20			18		10.6
Alclad2024-T3	65	44.5	18			40		10.6
Alclad2024-T4,T351	64	42	19			40		10.6
Alclad2024-T361	67	63	11			41		10.6
Alclad2024-T81,T851	65	60	6			40		10.6
Alclad2024-T861	70	66	6			42		10.6
2025-T6	58	37		19	110	35	18	10.4

2036-T4	49	28	24					18	10.3
2117-T4	43	24		27		70	28	14	10.3
2124-T851	70	64		8					10.6
2218-T72	48	37		11		95	30		10.8
2219-O	25	11	18						10.6
2219-T42	52	27	20						10.6
2219-T31,T351	52	36	17						10.6
2219-T37	57	46	11						10.6
2219-T62	60	42	10					15	10.6
2219-T81,T851	66	51	10					15	10.6
2219-T87	69	57	10					15	10.6
2618-T61	64	54		10		115	38	18	10.8
3003-O	16	6	30	40		28	11	7	10
3003-H12	19	18	10	20		35	12	8	10
3003-H14	22	21	8	16		40	14	9	10
3003-H16	26	25	5	14		47	15	10	10
3003-H18	29	27	4	10		55	16	10	10
Alclad3003-O	16	6	30	40			11		10
Alclad3003-H12	19	18	10	20			12		10
Alclad3003-H14	22	21	8	16			14		10
Alclad3003-H16	26	25	5	14			15		10
Alclad3003-H18	29	27	4	10			16		10
3004-O	26	10	20	25		45	16	14	10
3004-H32	31	25	10	17		52	17	15	10
3004-H34	35	29	9	12		63	18	15	10
3004-H36	36	33	5	9		70	20	16	10
3004-H38	41	36	5	6		77	21	16	10
Alclad3004-O	26	10	20	25			16		10
Alclad3004-H32	31	25	10	17			17		10
Alclad3004-H34	35	29	9	12			18		10
Alclad3004-H36	38	33	5	9			20		10
Alclad3004-H38	41	36	5	6			21		10
3105-O	17	8	24				12		10
3105-H12	22	19	7				14		10
3105-H14	25	22	5				15		10
3105-H16	28	25	4				16		10
3105-H18	31	28	3				17		10
3105-H22	24	20	11				14		10
3105-H24	26	22	10				15		10
3105-H25	26	23	8				15		10
3105-H26	24	24	9				16		10
3105-H28	26	26	8				17		10
4032-T6	55	46		9		120	38	16	11.4
5005-O	18	6	25			28	11		10
5005-H12	20	19	10				14		10

5005-H14	2223	22	6			14		10
5005-H16	26	25	5			15		10
5005-H18	29	28	4			16		10
5005-H32	20	17	11		36	14		10
5005-H34	23	20	8		41	14		10
5005-H36	26	24	6		46	15		10
5005-H38	29	27	5		51	16		10
5050-O	21	8	24		36	15	12	10
5050-H32	25	21	9		46	17	13	10
5050-H34	28	24	8		53	18	13	10
5050-H36	30	26	7		58	19	14	10
5050-H38	32	29	6		63	20	14	10
5052-O	28	13	25	30	47	18	16	10.2
5052-H32	33	28	12	18	60	20	17	10.2
5052-H34	38	31	10	14	68	21	18	10.2
5052-H36	40	35	8	10	73	23	19	10.2
5052-H38	42	37	7	8	77	24	20	10.2
5056-O	42	22		35	65	26	20	10.3
5056-H18	63	59		10	105	34	22	10.3
5056-H38	60	50		15	100	32	22	10.3
5083-O	42	21		22		25		10.3
5083-H116	46	33		16			23	10.3
5083-H321	46	33		16			23	10.3
5086-O	38	17	22			23		10.3
5086-H32	42	30	12					10.3
5086-H116	42	30	12					10.3
5086-H34	47	37	10			27		10.3
5086-H112	39	19	14					10.3
5154-O	35	17	27		58	22	17	10.2
5154-H32	39	30	15		67	22	18	10.2
5154-H34	42	33	13		73	24	19	10.2
5154-H36	45	36	12		78	26	20	10.2
5154-H38	48	39	10		80	28	21	10.2
5154-H112	35	17	25		63		17	10.2
5252-H25	34	25	11		68	21		10
5252-H38,H28	41	35	5		75	23		10
5254-O	35	17	27		58	22	17	10.2
5254-H32	39	30	15		67	22	18	10.2
5254-H34	42	33	13		73	24	19	10.2
5254-H36	45	36	12		78	26	20	10.2
5254-H38	48	39	10		80	28	21	10.2
5254-H112	35	17	25		63		17	10.2
5454-O	36	17	22		62	23		10.2
5454-H32	40	30	10		73	24		10.2
5454-H34	44	35	10		81	26		10.2

5454-H111	38	26	14			70	23			10.2
5454-H112	36	18	18			62	23			10.2
5456-O	45	23		24						10.3
5456-H25	45	24		22						10.3
5456-H116	51	37		16		90	30			10.3
5456-H321	51	37		16		90	30			10.3
5457-O	19	7	22			32	12			10
5457-H25	26	23	12			48	16			10
5457-H38,H28	30	27	6			55	18			10
5652-O	28	13	25	30		47	18	16		10.2
5652-H32	33	28	12	18		60	20	17		10.2
5652-H34	38	31	10	14		68	21	18		10.2
5652-H36	40	35	8	10		73	23	19		10.2
5652-H38	42	37	7	8		77	24	20		10.2
5657-H25	23	20	12			40	12			10
5657-H38,H28	28	24	7			50	15			10
6061-O	18	8	25	30		30	12	9		10
6061-T4,T451	35	21	22	25		65	24	14		10
6061-T6,T651	45	40	12	17		95	30	14		10
Alclad 6061-O	17	7	25				11			10
Alclad 6061-T4,T451	33	19	22				22			10
Alclad 6061-T6,T651	42	37	12				27			10
6063-O	13	7				25	10	8		10
6061-T1	22	13	20			42	14	9		10
6063-T4	25	13	22							10
6063-T5	27	21	12			60	17	10		10
6063-T6	35	31	12			73	22	10		10
6063-T83	37	35	9			82	22			10
6063-T831	30	27	10			70	18			10
6063-T832	42	39	12			95	27			10
6066-O	22	12		18		43	14			10
6066-T4,T451	52	30		18		90	29			10
6066-T6	57	52		12		120	34	16		10
6070-T6	55	51	10				34	14		10
6101-H111	14	11								10
6101-T6	32	28	15			71	20			10
6262-T9	58	55		10		120	35	13		10
6351-T4	36	22	20							10
6351-T6	45	41	14			95	29	13		10
6463-T1	22	13	20			42	14	10		10
6463-T5	27	21	12			60	17	10		10
6463-T6	35	31	12			74	22	10		10
7049-T73	75	65		12		135	44			10.4
7049-T7352	75	63		11		135	43			10.4
7050-T76510,T73511	72	63		12						10.4

7050-T7451	76	68		11		44		10.4
7050-T7651	80	71		11		47		10.4
7075-O	33	15	17	16	60	22		10.4
7075-T6,T651	83	73	11	11	150	48	23	10.4
Alclad 7075-O	32	14	17			22		10.4
Alclad 7075-T6, T651	76	67	11			46		10.4
7175-T74	76	66		11	135	42	23	10.4
7178-O	33	15	15	16				10.4
7178-T6, T651	88	78	10	11				10.4
7178-T76	83	73		11				10.3
Alclad 7176-O	32	14	16					10.4
Alclad 7178-T6, T651	81	71	10					10.4
7475-T61	82	71	11					10.2
7475-T651	85	74		13				10.4
7475-T7351	72	61		13				10.4
7475-T761	75	65	12					10.2
7475-T7654	77	67		12				10.4
Alclad 7575-T61	75	66	11					10.2
Alclad 7475-T761	71	61	12					10.2
8176-H24	17	14	15			10		1