Equivalent Grades of General-Purpose Aluminium & Aluminium Alloys

ISO	France NF	USA ASTM	Germany DIN		UK BS		Italy UNI	Switzerland VSM	Sweden SIS	Japan JIS
A199.0Cu	1100	1100	-	-	-	-	-	-	-	A 1100
AlCu4Mg1	2024	2024	AlCuMg2	3.1355	-	-	3583	AlCu4Mg1,5	-	A 2024
AlMn0,5Mg0,5	3105	3105	AlMn0,5Mg0,5	3.0505	(N31)	3015	-	-	-	A 3105
AlMg2,5	5052	5052	AlMg2,5	3.3523	-	-	3574	(AlMg2,5)	(4120)	A 5052
AlMg4,5Mn	5083	5083	AlMg4,5Mn	3.3547	N8	5083	7790	AlMg4,5Mn	(4140)	A 5083
AlMg1SiCu	6061	6061	AlMg1SiCu	3.3211	H20	6061	6170	-	-	A 6061
AlZn6MgCu	7075	7075	AlZnMgCu1,5	3.4365	-	7075	3735	AlZn6MgCu1,5	-	A 7075

Physical Properties of Wrought Aluminium Alloys

		Average coefficient of thermal expansion		Approximate melting range		Thermal conductivity at 25°C (77°F)		Electrical conductivity at 20°C (68°F), %IACS		Electrical resistivity at 20°C (68°F)	
Alloy	Temper	µm/m °C	µin./in °F	°C	°F	W/m °C	Btu in./ft² h °F	Equal volume	Equal weight	Ω mm²/m	Ω circ mil/ft
1100	0	23.6	13.1	645-655	1190-1215	222	1540	59	194	0.030	18
2024	T3	23.2	12.9	500-638	935-1180	121	840	30	96	0.058	35
	T4	23.2	12.9	500-638	935-1180	121	840	30	96	0.058	35
	T351	23.2	12.9	500-638	935-1180	121	840	30	96	0.058	35
5052	H32	23.75	13.2	607-650	1125-1200	138	960	35	116	0.050	30
	H34	23.75	13.2	607-650	1125-1200	138	960	35	116	0.050	30
5083	0	23.75	13.2	590-638	1095-1180	117	810	29	98	0.060	36
6061	T6	23.6	13.1	580-650	1080-1205	167	1160	43	142	0.040	24
6063	T5	23.4	13.0	615-655	1140-1210	209	1450	55	181	0.032	19
7075	T6	23.6	13.1	475-635	890-1175	130	900	33	105	0.0515	31

Mechanical Properties of Various Wrought Aluminium Alloys

	Ultimate tensile strength		Tensile yield strength		Elogation in 50 mm (2 in.), %			Ultimate shearing strength		Fatigue endurance limit (b)		Modulus of elasticity (c)	
Alloy / Temper	MPa	ksi	MPa	ksi	1.6 mm (1/16 in.) thick specimen	1.3 mm (1/2 in.) thick specimen	Hardness HB(a)	MPa	ksi	MPa	ksi	GPa	10^6 psi
1100													
H14	125	18	115	17	9	20	32	75	11	50	7	69	10.0
2024													
T3	485	70	345	50	18	-	120	285	41	140	20	73	10.6
T4	470	68	325	47	20	19	120	285	41	140	20	73	10.6
T351	470	68	325	47	20	19	120	285	41	140	20	73	10.6
5052													
H32	230	33	195	28	12	18	60	140	20	115	17	70	10.2
H34	260	38	215	31	10	14	68	145	21	125	18	70	10.2
5083													
H116	315	46	230	33	-	16	-	-	-	160	23	71	10.3
H321	315	46	230	33	-	16	-	-	-	160	23	71	10.3
6061													
T6	310	45	275	40	12	17	95	205	30	95	14	69	10.0
T651	310	45	275	40	12	17	95	205	30	95	14	69	10.0
7075													
T6	570	83	505	73	11	11	150	330	48	160	23	72	10.4
T651	570	83	505	73	11	11	150	330	48	160	23	72	10.4

Mechanical Properties Aluminium MIC-6 Cast Plate

	Tensile Strength*	Yield Strength*	Elongation %	Brinell Hardness	Coefficient of thermal expansion		Thermal conductivity	Electrical conductivity	Modulus of elasticity
	-	-	-	-	(Avg./°F)	(Avg./°F) 68-212°F	cal 68-392°F	(68°F), % / cm.s °C	IACS
Typical	166 MPa	105 MPa	3	65	13.1×10^{-6} in/in °F	13.6×10^{-4} in/in °F	0.34	36	10.3×10^{6} psi

Aluminium Chemical Composition

	%	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Al
AA1100	Min. Max.	Si + Fe 0.95		0.05 0.20	0.05	-	-	0.10	-	Remainder
AA2024	Min. Max.	0.50	0.50	3.80 4.90	0.30 0.90	1.20 1.80	0.10	0.25	0.15	Remainder
AA3105	Min. Max.	0.60	0.70	0.30	0.30 0.80	0.20 0.80	0.20	0.40	0.10	Remainder
AA5052	Min. Max.	0.25	0.40	0.10	0.10	2.20 2.80	0.15 0.35	0.10	-	Remainder
AA5083	Min. Max.	0.40 0.70	0.40	0.10 0.15	0.40 1.00	0.05 0.25	0.05 0.25	0.25	0.15	Remainder
AA6061	Min. Max.	0.40 0.80	0.70	0.40 1.20	0.15	0.80 1.20	0.04 0.35	0.25	0.15	Remainder
AA7075	Min. Max.	0.40	0.50	2.00	0.30	2.10 2.90	0.18 0.28	5.10 6.10	0.20	Remainder

Aluminium Charateristics & Applications

	Characteristics	Typical Applications
AA1100	This alloy is commercially pure aluminium. It is a low strength non-heat-treatable grade, but is does possess excellent formability and weldability. Corrosion resistance is also superb, making the alloy a fine choice in food and chemical processing. In anodizing quality it responds very well to the process and other decorative finished,making it suitable for a wide range of architectural applications. This alloy also has excellent thermal and electrical conductivity.	Anodizing architectural applications, spun hollowware, light reflectors, food and chemical handling components.
AA2024	2024 is a heat-treated, high strength alloy with excellent fatigue resistance and is widely used in the aircraft industry. The alloy may be resistance welded. While its corrosion resistance is relatively low, this is increased by cladding the material with a thin surface layer of high purity aluminium (Alclad). In rod and bar from 2024 has the strength and machinability necessary for the manufacture of parts where a good strength to weight to weight ratio is required.	In rod and bar - aircraft parts, truck wheels, screw machine products, rivets, bolts. In Alclad Sheet & Plate - aircraft applications such as fuselage and wing skinnings.
AA5052	5052 is one of the higher strength non-heat-treatable alloys. It has a high fatigue strength and so is a good choice for structures subjected to excessive vibration. The alloy has excellent corrosion resistance, particularly in marine atmospheres. The formability of the grade is excellent and in the annealed condition it offers higher strengths than 1100 grade.	High strength sheet metal work, marine components, appliances fuel and oil tubing.
AA5083	This is the highest strength non-heat-treatable alloy in commercial use. 5083 has good formability and weldability and retains excellent tensile strength in the weld zone by virtue of its as-rolled properties. It is used most often in structures requiring high weld efficiency and maximum weld strength. 5083 also has excellent resistance to corrosion.	Highly stressed welded assemblies, dump truck boxes, storage tanks, cryogenic vessels.
AA6061	6061 is a heat-treatable grade widely used in light to medium strength structural applications. The alloy has good corrosion resistance and weldability and possesses good formability in the 0 to T4 tempers. 6061 does lose appreciable strength when welded and its is replaced by the 5000 series alloys where after-weld strength is a prime consideration.	Structural areas where both strength and corrosion resistance, truck bodies and frames, towers.
AA7075	7075 is a very high strength heat-treatable alloy that is used extensively for highly stressed parts in the aircraft industry. The corrosion resistance of the alloy is only fair and it can be clad with a more corrosion resistance grade if need be. Machinability is good in the T6 temper but 7075 is not considered weldable by ordinary fusion methods.	High strength to weight ratio areas, aircraft components.