



MECHANICAL PROPERTY LIMITS FOR COMMONLY USED ALUMINUM PERMANENT MOLD CASTING ALLOYS ①

Alloy	Temper ②	MINIMUM PROPERTIES				% Elongation in 2 inches or 4 times diameter	Typical Brinell Hardness ③ 500 – kgf load 10 – mm ball
		Tensile Strength					
		Ultimate		Yield (0.2% Offset)			
ksi	(Mpa)	ksi	(Mpa)				
204.0	T4	48.0	(330)	29.0	(200)	8.0	—
208.0	T4	33.0	(230)	15.0	(105)	4.5	60–90
208.0	T6	35.0	(240)	22.0	(150)	2.0	75–105
208.0	T7	33.0	(230)	16.0	(110)	3.0	65–95
222.0	T551	30.0	(205)	—	—	—	100–130
222.0	T65	40.0	(275)	—	—	—	125–155
242.0	T571	34.0	(230)	—	—	—	90–120
242.0	T61	40.0	(275)	—	—	—	95–125
296.0	T6	35.0	(240)	—	—	2.0	75–105
308.0	F	24.0	(165)	—	—	2.0	55–85
319.0	F	28.0	(195)	14.0	(95)	1.5	70–100
319.0	T6	34.0	(235)	—	—	2.0	75–105
332.0	T5	31.0	(215)	—	—	—	90–120
333.0	F	28.0	(195)	—	—	—	65–100
333.0	T5	30.0	(205)	—	—	—	70–105
333.0	T6	35.0	(240)	—	—	—	85–115
333.0	T7	31.0	(215)	—	—	—	75–105
336.0	T551	31.0	(215)	—	—	—	90–120
336.0	T65	40.0	(275)	—	—	—	110–140
354.0	T61	48.0	(330)	37.0	(255)	3.0	—
354.0	T62	52.0	(360)	42.0	(290)	2.0	—
355.0	T51	27.0	(185)	—	—	—	60–90
355.0	T6	37.0	(255)	—	—	1.5	75–105
355.0	T62	42.0	(290)	—	—	—	90–120
355.0	T7	36.0	(250)	—	—	—	70–100
355.0	T71	34.0	(235)	27.0	(185)	—	65–95
C355.0	T61	40.0	(275)	30.0	(205)	3.0	75–105
356.0	F	21.0	(145)	—	—	3.0	40–70
356.0	T51	25.0	(170)	—	—	—	55–85
356.0	T6	33.0	(230)	22.0	(150)	3.0	65–95
356.0	T7	25.0	(170)	—	—	3.0	60–90
356.0	T71	25.0	(170)	—	—	3.0	60–90
A356.0	T61	37.0	(255)	26.0	(180)	5.0	70–100
357.0	T6	45.0	(310)	—	—	3.0	75–105
A357.0	T61	45.0	(310)	36.0	(250)	3.0	85–115
359.0	T61	45.0	(310)	34.0	(235)	4.0	75–105
359.0	T62	47.0	(325)	38.0	(260)	3.0	85–115
443.0	F	21.0	(145)	7.0	(50)	2.0	30–60
B443.0	F	21.0	(145)	6.0	(40)	2.5	30–60
A444.0	T4	20.0	(140)	—	—	20.0	—
513.0	F	22.0	(150)	12.0	(85)	2.5	45–75
535.0	F	35.0	(240)	18.0	(125)	8.0	60–90
705.0	T5	37.0	(255)	17.0	(120)	10.0	55–85
707.0	T7	45.0	(310)	35.0	(240)	3.0	80–110
711.0	T1	28.0	(195)	18.0	(125)	7.0	55–85
713.0	T5	32.0	(220)	22.0	(150)	4.0	60–90
850.0	T5	18.0	(125)	—	—	8.0	30–60
851.0	T5	17.0	(115)	—	—	3.0	30–60
851.0	T6	18.0	(125)	—	—	8.0	—
852.0	T5	27.0	(185)	—	—	3.0	55–85

- ① Values represent properties obtained from separately cast test bars and are derived from ASTM B-108, Standard Specification for Aluminum-Alloy Permanent Mold Castings; Federal Specification QQ-A-596d, Aluminum Alloy Permanent and Semi-Permanent Mold Castings; and Military Specification MIL-A-21180c, Aluminum Alloy Castings, High Strength. Unless otherwise specified, the average tensile strength, average yield strength and average elongation values of specimens cut from castings shall be not less than 75 percent of the tensile strength and yield values and not less than 25 percent of the elongation values given above. The customer should keep in mind that (1) some foundries may offer additional tempers for the above alloys, and (2) foundries are constantly improving casting techniques and, as a result, some may offer minimum properties in excess of the above.
- ② F indicates "as cast" condition; refer to AA-CS-M11 for recommended times and temperatures of heat treatment for other tempers to achieve properties specified.
- ③ Hardness values are given for information only; not required for acceptance.