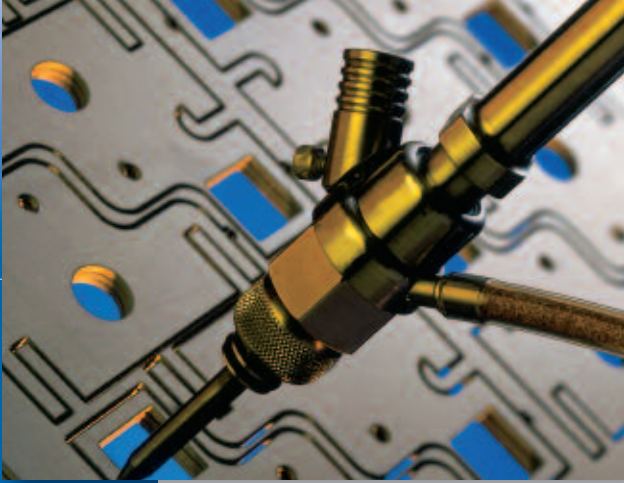




Castle Metals®



Aluminum Plate



*Your foremost provider
of specialty products,
services and solutions*

Quirk Guide



Aluminum Plate Quik Guide

TYPICAL PROPERTIES⁽¹⁾

	ALLOY	TEMPER	THICKNESS	MECHANICAL						
				Tensile properties			Hardness	Shear	Fatigue	Modulus
				Strength Ksi		Elongation Percent Minimum in 2" or 4" dia	Brinell Number 500 Kg Load 10 mm ball	Ultimate Shearing Strength Ksi	Endurance Limit Ksi	Modulus of Elasticity Ksi x 10 ⁶
				Ultimate Minimum	Yield Minimum					
Heat Treatable Mill tests reports Available on request	2024	T351	¼"-4"	57-64	41-42	4-12	120	40	—	10.6
	6061	T651	¼"-14"	40-42	35	6-10	95	27	—	10.0
	7075	T651	¼"-6"	67-68	54-78	3-9	150	48	23	10.4
	7075	T7351	¼"-4"	61-69	48-57	6-7	—	—	—	—
Specialty Products Heat Treatable Mill tests reports Available on request	7050	T7451	½"-6"	67-74	57-64	2-10	—	44	—	10.4
		T7651		70-77	60-67	1.5-9		47		
Cast Plate	MIC-6 ⁽³⁾	N/A	¼"-4"	24 Typical	15 Typical	3	65	—	—	—

All Wrought Plate Meets AMS-QQ-A-250, AMS, ASTM Specifications.

- (1) The typical properties are not guaranteed, as in most cases they are averages for various sizes, product forms, and manufacturing methods. The data is intended only as a basis for comparing alloys and tempers and should not be specified as engineering requirements, or used for design purposes.
- (2) Composition in percent: maximum unless shown as range.
- (3) MIC-6 is a registered trademark of ALCOA.

The information in this quik guide is correct to the best of our knowledge. A. M. Castle & Co. assumes no responsibility for errors or omissions. A. M. Castle & Co. publishes this quik guide for guidance to their customers and reserves the right to add or delete items without notice.

CHEMICAL COMPOSITION LIMITS⁽²⁾

Silicon	Iron	Copper	Manganese	Magnesium	Chromium	Zinc	Titanium	Other		Typical Applications	Alloy
								Each	Total		
0.50	0.50	3.8-4.9	0.30-0.90	1.2-1.8	0.10	0.25	0.15	0.05	0.15	Aircraft Structures	2024
0.40-0.80	0.70	0.15-0.40	0.15	0.80-1.2	0.04-0.35	0.25	0.15	0.05	0.15	Heavy duty structures requiring good corrosion resistance, truck & marine, railroad cars	6061
0.40	0.50	1.2-2.0	0.30	2.1-2.9	0.18-0.28	5.1-6.1	0.20	0.05	0.15	Aircraft, aerospace applications	7075
0.40	0.50	1.2-2.0	0.30	2.1-2.9	0.18-0.28	5.1-6.1	0.20	0.05	0.15	Aircraft, aerospace applications	7075
0.12	0.15	2.0-2.6	0.10	1.9-2.6	0.04	5.7-6.7	0.06	0.05	0.15	Fuselage, frames, bulkheads	7050
0.10	0.12	1.2-1.9	0.06	1.9-2.6	0.04	5.2-6.2	0.06	0.05	0.15	Fracture critical components such as high performance aircraft parts	7475
—	—	—	—	—	—	—	—	—	—	Continuous cast tooling plate meets severe flatness requirements, unsurpassed machinability and stability. Machined both sides to 25 Micro — inches typical.	MIC-6⁽³⁾

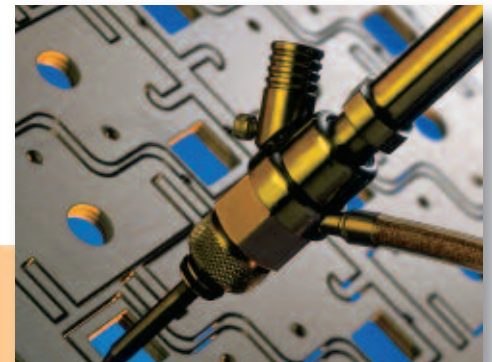
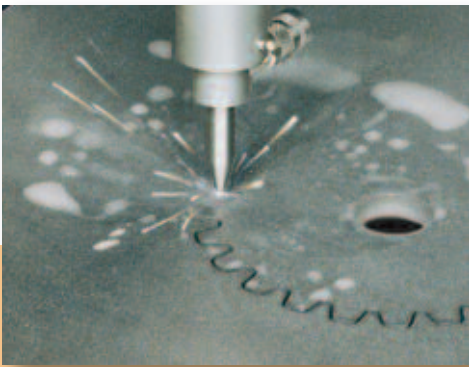




PLATE SPECIFICATIONS

ALLOY	AMS-QQ-A	AMS	ULTRASONIC INSPECTON	ASTM/ASME	OTHERS
2024	250/4	4037, 4035	AMS-STD 2154 CLA, BSS 7055	B209	—
6061	250/11	4025, 4026 4027	N/A	B209	—
7075-T651	250/12	4045	AMS-STD 2154 CLA, BSS 7055	B209	—
7075-T7351	250/12	4078	AMS-STD 2154 CLA, BSS 7055, ASTM B594	B209	MMS 159
7050	—	4050 4201	AMS-STD 2154 CLA, BSS 7055 PS 21211	E399	MMS 1420 BMS7-323
7475-T7351	—	4202	AMS-STD 2154 CLA	—	—
MIC-6 ⁽³⁾	—	—	—	—	—

The specifications indicated are for general reference purposes and don't always represent Castle Metals® buying specifications.

Castle Metals® inventories a full range of stock size plate. As part of our overall marketing program, Castle offers a variety of services including:

- Stocking Programs
- Heat Lot Segregation
- Complete Traceability
- Mill Test Reports
- Complete Plate Processing
- Just In Time Delivery
- On-Line Order Entry

AEROSPACE ALLOYS

Castle stocks 2024, 6061, 7075, 7050, 7475 in plate, sheet, and coil.

THICKNESS TOLERANCE ⁽⁴⁾ FOR SHEET AND PLATE FOR AEROSPACE ALLOYS													
ALLOYS 2014, 2024, 2124, 2219, 2324, 2419, 7050, 7150, 7178, 7475. NOTE: ALSO APPLICABLE TO THE ALLOYS LISTED WHEN SUPPLIED S ALCLAD.													
SPECIFIED THICKNESS, INCHES		SPECIFIED WIDTH — Inches											
		Up thru 39.37	Over 39.37 thru 47.24	Over 47.24 thru 55.12	Over 55.12 thru 59.06	Over 59.06 thru 70.87	Over 70.87 thru 78.74	Over 78.74 thru 86.61	Over 86.61 thru 98.43	Over 98.43 thru 118.11	Over 118.11 thru 137.80	Over 137.80 thru 157.48	Over 157.49 thru 177.17
Over	Thru	TOLERANCE — Inches plus and minus ^{(5) (6)}											
0.0059	0.010	0.0010	0.0020	0.0020	0.0020	—	—	—	—	—	—	—	—
0.010	0.016	0.0015	0.0025	0.0025	0.0025	—	—	—	—	—	—	—	—
0.016	0.025	0.0015	0.0025	0.0025	0.0025	—	—	—	—	—	—	—	—
0.025	0.032	0.0015	0.0015	0.0020	0.0030	0.0030	—	—	—	—	—	—	—
0.032	0.039	0.0015	0.0015	0.0020	0.0030	0.0030	0.0035	0.0035	0.007	—	—	—	—
0.039	0.047	0.0020	0.0020	0.0020	0.0030	0.0030	0.0035	0.0035	0.008	0.010	0.011	—	—
0.047	0.065	0.0020	0.0020	0.0030	0.0030	0.0030	0.0035	0.0035	0.009	0.011	0.013	—	—
0.063	0.079	0.0020	0.0020	0.0030	0.0035	0.0035	0.0035	0.0035	0.010	0.013	0.015	—	—
0.079	0.098	0.0020	0.0020	0.0035	0.0040	0.0040	0.0045	0.0045	0.011	0.015	0.018	—	—
0.098	0.126	0.0035	0.0035	0.0035	0.0045	0.0045	0.0045	0.0045	0.013	0.016	0.020	—	—
0.126	0.158	0.0040	0.0040	0.0045	0.007	0.007	0.009	0.009	0.015	0.018	0.022	—	—
0.158	0.197	0.0055	0.007	0.007	0.009	0.009	0.011	0.011	0.018	0.022	0.026	—	—
0.197	0.248	0.009	0.012	0.012	0.012	0.017	0.017	0.021	0.021	0.025	0.029	—	—
0.248	0.315	0.012	0.015	0.015	0.015	0.019	0.019	0.024	0.024	0.029	0.033	0.041	0.051
0.315	0.394	0.017	0.018	0.018	0.018	0.022	0.022	0.028	0.028	0.033	0.039	0.047	0.059
0.394	0.630	0.023	0.023	0.023	0.023	0.028	0.028	0.033	0.033	0.039	0.047	0.059	0.070
0.630	0.984	0.031	0.031	0.031	0.031	0.037	0.043	0.043	0.043	0.051	0.060	0.070	0.085
0.984	1.575	0.039	0.039	0.039	0.039	0.047	0.047	0.055	0.055	0.065	0.075	0.090	0.105
1.575	2.362	0.055	0.055	0.055	0.055	0.060	0.060	0.070	0.070	0.090	0.100	0.115	—
2.362	3.150	0.075	0.075	0.075	0.075	0.085	0.085	0.100	0.100	0.110	0.125	—	—
3.150	3.937	0.100	0.100	0.100	0.100	0.115	0.115	0.130	0.130	0.150	0.160	—	—
3.937	6.299	0.130	0.130	0.130	0.130	0.145	0.145	0.165	0.165	—	—	—	—

Note: Capability to provide tighter tolerances may vary with supplier

- (4) When a dimension is specified other than as an equal bilateral tolerance, the value of the standard tolerance is that which applies to the mean of the maximum and minimum dimensions permissible under the tolerance for the dimension under consideration.
- (5) Refer to Aluminum Standards & Data, Table 7.7a, for non-heat treat alloys & 6061 plate.
- (6) Alloy 6061 is stocked in one half commercial gauge tolerance on the plus side of the specified thickness.



Aluminum Plate Processing Capabilities

Plate Sawing

- Through 20" Thickness
- 146" Maximum Length

Plate Shearing

- Up to .750" Thick
- 20' Maximum Length

Precision Plate Sawing

- Cutting Tolerance As Close As $\pm .005$ "
- Finish — Approximate 32 RMS
- Through 6" Thickness
 - $\pm .005$ Through 6"
 - $\pm .030$ Over 6" Through 8"
- 12' Maximum Length
- Closer Tolerances are available upon request

Precision Cut-Off Saw

- Cuts A Variety Of Shapes Including Rod, Bar And Plate
- Thicknesses Up To 6"
- Micro Finish — Approximate 32 RMS
- Tolerance $\pm .005$

Circle/Ring/Contour Shape Sawing

- 1/4" Through 10 Thick
- 3" Through 72" OD
- 35" Max ID

Waterjet Cutting

- Powerful Water Stream
- Cuts Any Shape
- Extremely Precise
- Saves Time and Money by Eliminating Secondary Operations
- Omnidirectional Shapecutting Will Allow Tight Angles and Sharp Corners
- No Heat Affected Zone for Customer to Remove
- Small Kerf (0.030" – 0.060") Will Improve Material Utilization
- Through 6" Thick

Cutting tolerance, surface finish and other equipment capabilities can vary due to grade, thickness and finished dimensions. Customer must specify tolerance required



CONTOUR SAWING



PRECISION PLATE SAW



WATERJET CUTTING

CALL **800.BUY.CSTL (289-2785)** FOR THE CASTLE LOCATION NEAR YOU

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