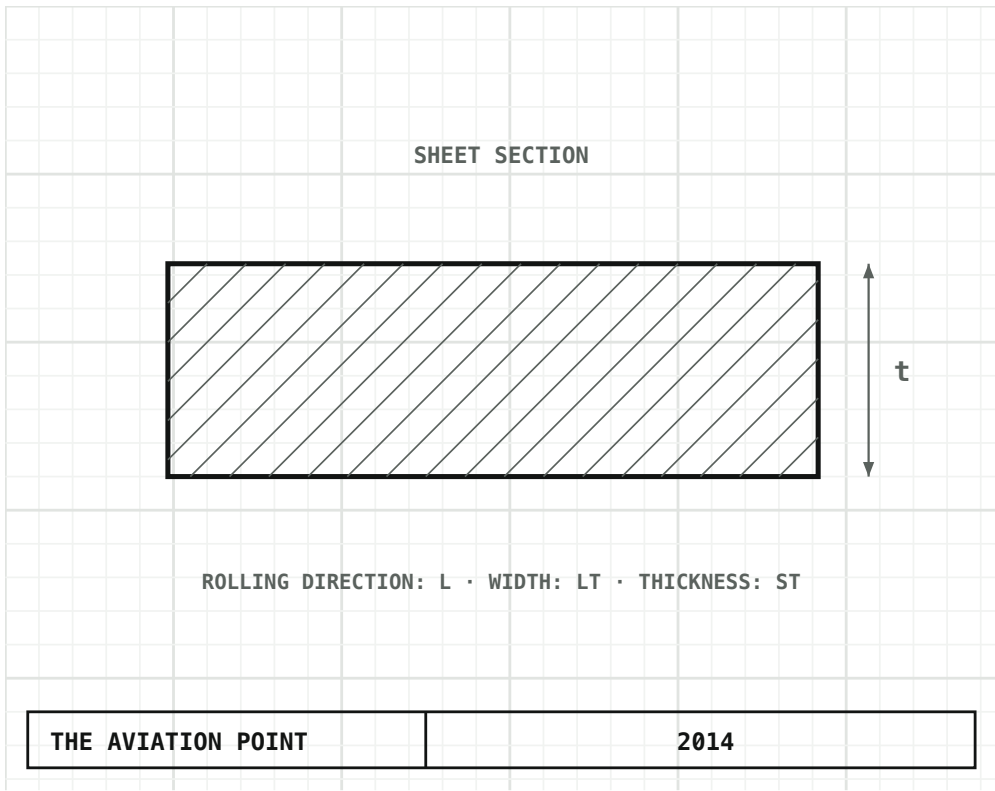
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2014 — wrought aluminum alloy

A heavy-duty aluminum-copper alloy for forgings, plate, extrusions and fittings.



Schematic

Designation

Item	Value
Designation	2014
Class	Aluminum
Type	wrought aluminum alloy

Composition

Element	Limit
Si	0.50–1.2
Fe	0.7
Cu	3.9–5.0
Mn	0.40–1.2
Mg	0.20–0.8
Cr	0.10
Zn	0.25
Ti	0.15
Al	Remainder

A single number is a maximum. Other elements: 0.05 each, 0.15 total, except where the Teal Sheets say otherwise. Source: Aluminum Association Teal Sheets (Aug 2018).

Specifications and forms

Specification	Form
AMS 4028, AMS 4029	Bare sheet and plate
AMS-QQ-A-250/3	Clad sheet and plate
AMS 4121, AMS-QQ-A-225/4	Bar and rod
AMS 4153, AMS-QQ-A-200/2	Extrusion
AMS-A-22771, AMS-QQ-A-367, AMS 4133	Forging

Specifications as listed by MIL-HDBK-5J. Federal QQ-A specifications passed to SAE as AMS-QQ-A. Check the current revision.

Properties

Property	Value	Source
Density	0.101 lb/in³ (2.80 g/cm³)	MIL-HDBK-5J; Teal Sheets
Brinell hardness, O / T6	45 / 135	AC 43.13-1B Table 4-5
Arc / spot welding, T6	B / B	MIL-HDBK-5J Table 3.1.3.4(a)
Arc / spot welding, O	C / D	MIL-HDBK-5J Table 3.1.3.4(a)
Stress corrosion, 2014-T6	ST: D in all forms	MIL-HDBK-5J Table 3.1.2.3.1(a)

A D rating means failures have occurred in service or would be expected under any sustained stress.

Design allowables, 2014-T6 sheet, bare and clad, 0.040–0.249 in

Property, ksi	Bare A	Bare B	Clad A	Clad B
Ftu, L	67	68	65	67
Ftu, LT	66	67	64	66
Fty, L	59	60	57	59
Fty, LT	58	59	56	58
Fcy, L	59	60	57	59

Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.

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Property, ksi	Bare A	Bare B	Clad A	Clad B
Fcy, LT	60	61	58	60
Fsu	40	41	39	40
Fbru, e/D = 1.5	100	102	97	100
Fbru, e/D = 2.0	127	129	123	127
Fbry, e/D = 1.5	83	84	80	83
Fbry, e/D = 2.0	94	96	91	94

Bare: AMS 4028, Table 3.2.1.0(b1), p. 3-28. Clad: AMS-QQ-A-250/3, Table 3.2.1.0(c1), p. 3-30. S, A and B are the MIL-HDBK-5J statistical bases. L is the longitudinal grain direction, LT the long transverse. Bearing values are dry-pin values.

Weight by thickness

Thickness, in	mm	lb/ft²	kg/m²
0.016	0.41	0.233	1.14
0.020	0.51	0.291	1.42
0.025	0.64	0.364	1.78
0.032	0.81	0.465	2.27
0.040	1.02	0.582	2.84
0.050	1.27	0.727	3.55
0.063	1.60	0.916	4.47
0.071	1.80	1.033	5.04
0.080	2.03	1.164	5.68
0.090	2.29	1.309	6.39
0.100	2.54	1.454	7.10
0.125	3.17	1.818	8.88

Computed for density 0.101 by our sheet weight calculator. Kilograms and millimetres converted.

Notes

- **Not a source of design allowables.** Values are for reference. MMPDS and the SRM govern a repair.
- **Not a substitution approval.** A different alloy or temper needs approved data.
- **Not for sustained tension across the grain.** See the D rating above.

SOURCES · FAA AC 43.13-1B CHG 1, Chapters 4 and 7 · FAA-H-8083-31B, AMT Handbook — Airframe, Volume 1, Chapter 4 · MIL-HDBK-5J, Chapter 3 · Aluminum Association, International Alloy Designations, rev. Aug 2018 · MMPDS

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Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.