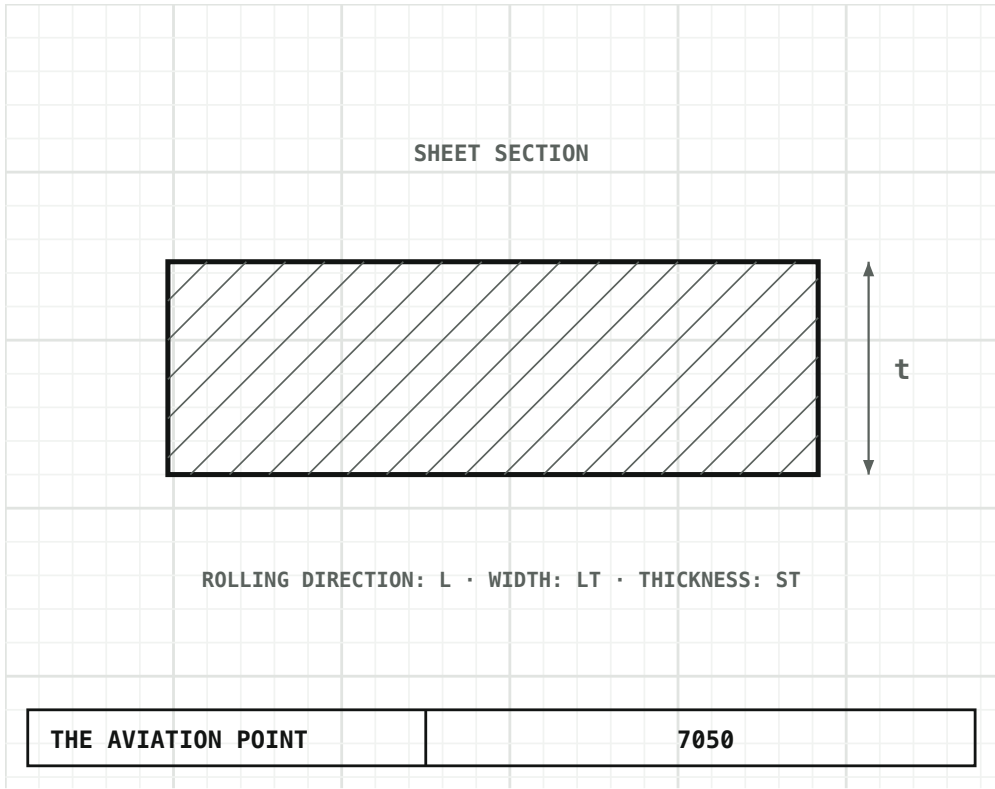
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7050 — wrought aluminum alloy

The thick-section alloy.



Schematic

Designation

Item	Value
Designation	7050
Class	Aluminum
Type	wrought aluminum alloy

Composition

Element	Limit
Si	0.12
Fe	0.15
Cu	2.0–2.6
Mn	0.10
Mg	1.9–2.6
Cr	0.04
Zn	5.7–6.7
Ti	0.06
Zr	0.08–0.15
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 4050, AMS 4201	Bare plate
AMS 4107, AMS 4333	Die forging
AMS 4108	Hand forging
AMS 4340, AMS 4341, AMS 4342	Extruded shape
AMS-A-22771	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	0.102 lb/in³ (2.83 g/cm³)	MIL-HDBK-5J; Teal Sheets
E / Ec / G	10.3 / 10.6 / 3.9 × 10³ ksi	MIL-HDBK-5J Table 3.7.4.0(b1)
Arc / spot welding	C / B	MIL-HDBK-5J Table 3.1.3.4(a)
Stress corrosion, T74 plate	L: A · LT: A · ST: B	MIL-HDBK-5J Table 3.1.2.3.1(a)
Stress corrosion, T76 plate	L: A · LT: A · ST: C	MIL-HDBK-5J Table 3.1.2.3.1(a)
Rivet shear, driven 7050-T731	43 ksi	MIL-HDBK-5J Table 8.1.2(b)

Sheet is not listed: MIL-HDBK-5J gives plate, forgings and extrusions.

Design allowables, 7050-T7451 plate

Property, ksi	0.250–1.500 A	0.250–1.500 B	3.001–4.000 A	3.001–4.000 B	7.001–8.000 A	7.001–8.000 B
Ftu, L	74 (S)	76	72	74	68	71
Ftu, LT	74	76	72	75	68	71
Fty, L	64 (S)	67	62 (S)	65	58 (S)	63

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

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Property, ksi	0.250–1.500 A	0.250–1.500 B	3.001–4.000 A	3.001–4.000 B	7.001–8.000 A	7.001–8.000 B
Fty, LT	64	66	62	65	58	61
Fcy, L	63	64	60	63	55	57
Fcy, LT	66	68	65	68	59	62
Fsu	42	43	43	45	44	46
Fbru, e/D = 1.5	107	110	107	111	103	108
Fbru, e/D = 2.0	140	144	140	144	132	138
Fbry, e/D = 1.5	86	89	90	94	83	87
Fbry, e/D = 2.0	101	104	104	109	98	102

Thickness in inches, AMS 4050, MIL-HDBK-5J Table 3.7.4.0(b1), p. 3-324. (S) marks a value printed as S basis. 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.

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.

SOURCES · 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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