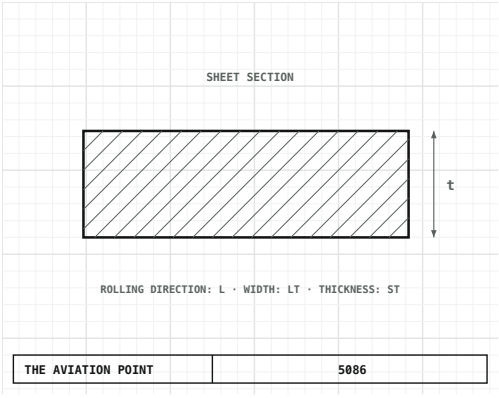
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5086 — wrought aluminum alloy

A tough, medium-strength aluminum-magnesium alloy, stronger than 5052, for use from -452 to 150 °F.



Schematic

Designation

Item	Value
Designation	5086
Class	Aluminum
Type	wrought aluminum alloy

Composition

Element	Limit
Si	0.40
Fe	0.50
Cu	0.10
Mn	0.20–0.7
Mg	3.5–4.5
Cr	0.05–0.25
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-QQ-A-250/7	Sheet and plate
AMS-QQ-A-200/5	Extruded bar, rod and shapes

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	0.096 lb/in³ (2.66 g/cm³)	MIL-HDBK-5J; Teal Sheets
Service range	-452 to 150 °F	MIL-HDBK-5J 3.5.3.0
Arc welding	A	MIL-HDBK-5J Table 3.1.3.4(a)
Spot welding	B (O), A (H tempers)	MIL-HDBK-5J Table 3.1.3.4(a)
E / Ec / G	10.2 / 10.4 / 3.85 × 10³ ksi	MIL-HDBK-5J Table 3.5.3.0(b)

Density and moduli are printed once in the handbook table.

Design allowables, 5086 sheet and plate

Property, ksi	O A	O B	H32 A	H32 B	H34 S	H36 S
Ftu, L	35	36	40	41	44	47
Ftu, LT	35	36	40	41	44	47
Fty, L	14	15	28	30	34	38
Fty, LT	14	15	26	28	33	37
Fcy, L	14	15	26	28	32	35
Fcy, LT	14	15	28	30	34	38
Fsu	21	22	24	25	26	27
Fbru, e/D = 1.5	52	53	58	61	64	68

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

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Property, ksi	O A	O B	H32 A	H32 B	H34 S	H36 S
Fbru, e/D = 2.0	70	72	80	82	88	94
Fbry, e/D = 1.5	24	26	39	42	48	53
Fbry, e/D = 2.0	28	30	48	51	58	65

O and H32: 0.020–2.000 in. H34: 0.009–1.000 in. H34 and H36 are S basis. AMS-QQ-A-250/7, MIL-HDBK-5J Table 3.5.3.0(b), p. 3-238. 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.
- **Not above 150 °F under constant high stress.**

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

SCAN · OPEN THIS DATA SHEET
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Reference data. The aircraft manufacturer's documentation (SRM / IPC) takes precedence.