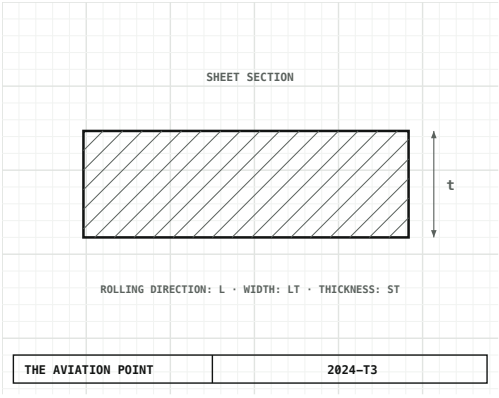
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2024-T3 — wrought aluminum alloy

The default skin alloy of light aircraft structures.



Schematic

Designation

Item	Value
Designation	2024-T3
Class	Aluminum
Type	wrought aluminum alloy

Composition

Element	Limit
Si	0.50
Fe	0.50
Cu	3.8–4.9
Mn	0.30–0.9
Mg	1.2–1.8
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 4037, AMS 4035, AMS-QQ-A-250/4	Bare sheet and plate
AMS-QQ-A-250/5	Clad sheet and plate
AMS 4120, AMS-QQ-A-225/6	Bar, rod, wire
AMS 4152, AMS 4164, AMS 4165, AMS-QQ-A-200/3	Extrusion
AMS 4086, AMS-WW-T-700/3	Drawn tubing

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
Ftu, L, A basis, bare T3 sheet, 0.010–0.128 in	64 ksi	MIL-HDBK-5J Table 3.2.3.0(b1), p. 3-71
Ftu, L, A basis, Alclad T3 sheet	60 ksi to 0.062 in · 62 ksi 0.063–0.128 in	MIL-HDBK-5J Table 3.2.3.0(e1), p. 3-75
Sheet tensile stress behind the AN-3 bolt count in a splice	70,000 psi in Table 4-9 · 55,000 psi in Table 4-10	AC 43.13-1B, Tables 4-9 and 4-10, engineering note d
Minimum bend radius, 0.032" sheet	2t – 4t	AC 43.13-1B, Table 4-6
Minimum bend radius, 0.064" sheet	3t – 5t	AC 43.13-1B, Table 4-6
Brinell hardness (2024-T4)	120	AC 43.13-1B, Table 4-5
Density	0.100 lb/in³ (2.78 g/cm³)	MIL-HDBK-5J; Teal Sheets
Arc / spot welding	C / B	MIL-HDBK-5J Table 3.1.3.4(a)
Stress corrosion, T3 plate	L: A · LT: B · ST: D	MIL-HDBK-5J Table 3.1.2.3.1(a)

The hardness figure is for T4: Table 4-5 does not list T3. The 70,000 and 55,000 psi figures are what the AC used to calculate the AN-3 bolt rows of those two tables. They are not strengths of bare or clad sheet: clad 2024-T3 is named in the title of both tables, and the AC does not say which governs it.

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

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Design allowables, bare 2024-T3 sheet

Property, ksi	0.010-0.128 A	0.010-0.128 B	0.129-0.249 A	0.129-0.249 B
Ftu, L	64	65	65	66
Ftu, LT	63	64	64	65
Fty, L	47	48	47	48
Fty, LT	42	43	42	43
Fcy, L	39	40	39	40
Fcy, LT	45	46	45	46
Fsu	39	40	40	41
Fbru, e/D = 1.5	104	106	106	107
Fbru, e/D = 2.0	129	131	131	133
Fbry, e/D = 1.5	73	75	73	75
Fbry, e/D = 2.0	88	90	88	90

Thickness in inches, AMS 4037 and AMS-QQ-A-250/4, MIL-HDBK-5J Table 3.2.3.0(b1), p. 3-71. E 10.5, Ec 10.7, G 4.0 × 10^3 ksi. 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. Superseded by MMPDS: check it before design use.

Minimum bend radius, inches (AMT Handbook Chart 204)

Alloy and temper	0.020"	0.032"	0.040"	0.063"	0.125"	0.190"
2024-T3, 2024-T4	.09	.12	.16	.22	.50	1.00
2024-T6	.09	.12	.16	.25	.62	1.00

Selected thicknesses from FAA-H-8083-31B Chart 204, p. 4-61. Chart 204 and AC Table 4-6 do not agree everywhere: where they differ, use the larger radius or the SRM.

Forms and thicknesses in stock

Distributor sheet	Listed	Thickness, in
2024T3 Alclad Aluminum Sheet	0.016"–0.250" · Alclad/bare · lb/ft²	.016, .020, .025, .032, .040, .050, .063, .071, .080, .090, .125, .160, .190, .250
2024-T3 Aluminium Sheet	0.020"–0.125" · 4×2, 4×4, 6×4 ft	.020, .025, .032, .040, .050, .063, .071, .080, .090, .125
Aluminum Angle 2024T3	AND 10133 · 1/2"–2" · lb/ft	—
2024-T3 Aluminium Angle	1/2"–3-1/2" legs · per foot	—
2024T3/T4 Aluminum Square Rectangular Bar	35 sizes · lb/ft · T3 or T4	—
Hat Section .020 2024T3 Aluminum - 8Ft	0.020" 2024-T3 · 8 ft · 5 oz	—

As distributors list them, not a statement of what a specification allows.

Weight by thickness

Thickness, in	mm	lb/ft²	kg/m²
0.016	0.41	0.230	1.12
0.020	0.51	0.288	1.41
0.025	0.64	0.360	1.76
0.032	0.81	0.461	2.25
0.040	1.02	0.576	2.81
0.050	1.27	0.720	3.52
0.063	1.60	0.907	4.43
0.071	1.80	1.020	4.98
0.080	2.03	1.150	5.61
0.090	2.29	1.300	6.35
0.125	3.17	1.800	8.79
0.190	4.83	2.740	13.38
0.250	6.35	3.600	17.58

Weight as a distributor lists it. Kilograms and millimetres converted.

SOURCES · FAA AC 43.13-1B CHG 1, Chapter 4 — Tables 4-5, 4-6, 4-9, 4-10 · MMPDS · FAA-H-8083-31, AMT Handbook — Airframe, Volume 1 · MIL-HDBK-5J, Chapter 3 · Aluminum Association, International Alloy Designations, rev. Aug 2018 · FAA-H-8083-31B, AMT Handbook — Airframe, Volume 1, Chapter 4 · Distributor listings

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/2024-t3/

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