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2024-T4 and 2024-T351 Aluminum

The same alloy as 2024-T3 in two neighbouring tempers.

REFERENCE DRAWING — NOT APPROVED DATA · THE SRM ALWAYS GOVERNS

THE MARKING

ALLOY NUMBER, THEN TEMPER

2024 – T 3 51

1 2 3 4

SERIES

FIRST DIGIT: MAIN ALLOYING ELEMENT

SERIES	ELEMENT	EXAMPLES
1xxx	Aluminum, 99 % or more	1100
2xxx	Copper	2024, 2219
3xxx	Manganese	3003
5xxx	Magnesium	5052, 5086
6xxx	Magnesium and silicon	6061, 6063
7xxx	Zinc	7075, 7050

BASIC TEMPER LETTERS

AC 43.13-1B TABLE 4-4

LETTER	MEANING
F	As fabricated. No property limits
O	Annealed: the softest temper
H	Strain-hardened (non heat-treatable)
T	Heat-treated to a stable temper

PARTS LIST

#	WHAT IT SAYS
1	Alloy number: the composition
2	T: heat-treated
3	3: solution treated, cold-worked
4	51: stretched 1 to 3 % set

NOTES

1. Dimensions in inches. Do not scale: the SRM sets the values.
2. For reference. The applicable manual always governs.
3. Based on AC 43.13-1B Table 4-4, AA Teal Sheets.

REVISIONS

REV	DESCRIPTION	DATE
A	First issue	2026-10-30

The Aviation Point. Structural repair reference

TITLE: Aluminum alloy and temper code

DRAWING NO.	REV	SCALE	SHEET
TAP-DWG-047	A	NTS	1 OF 1

APPLIES TO: Wrought aluminum alloys

DO NOT SCALE DRAWING

Temper meanings from AC 43.13-1B Table 4-4. Full list: aluminum temper chart.

Key facts

Property	Value	Source
Temper T4	Solution heat-treated, naturally aged to a stable condition	AC 43.13-1B Table 4-4
Temper T351	Solution heat-treated, stretched 1 to 3 % permanent set	AC 43.13-1B Table 4-4
Density	0.100 lb/in³ (2.78 g/cm³)	MIL-HDBK-5J; Teal Sheets
Brinell hardness, 2024-T4	120 (500 kg load, 10 mm ball)	AC 43.13-1B Table 4-5
Arc welding / spot welding	C (limited) / B (special techniques)	MIL-HDBK-5J Table 3.1.3.4(a)
Stress corrosion, 2024-T3, T4 plate	L: A · LT: B · ST: D (lowest)	MIL-HDBK-5J Table 3.1.2.3.1(a)

Composition limits, weight percent

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

Design allowables, 2024-T4 coiled sheet and T351 plate

Property, ksi	T4 A	T4 B	T351 A	T351 B
Ftu, L	62	64	64	66
Ftu, LT	62	64	64	66

Educational reference only, not approved data. Always consult the applicable SRM, AMM, or AC 43.13-1B and your certifying authority.

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Property, ksi	T4 A	T4 B	T351 A	T351 B
Fty, L	40	42	48	50
Fty, LT	40	42	42	44
Fcy, L	40	42	39	41
Fcy, LT	40	42	45	47
Fsu	37	38	38	39
Fbru, e/D = 1.5	93	96	97	100
Fbru, e/D = 2.0	118	122	119	122
Fbry, e/D = 1.5	56	59	72	76
Fbry, e/D = 2.0	64	67	86	90

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

Bend radii (AC 43.13-1B Table 4-6)

Alloy and temper	0.016"	0.032"	0.064"	0.128"	0.182"	0.258"
2024-O	0	0 – 1t	0 – 1t	0 – 1t	0 – 1t	0 – 1t
2024-T3	1½t – 3t	2t – 4t	3t – 5t	4t – 6t	4t – 6t	5t – 7t

Specifications and product forms

Specification	Form
AMS 4037	Bare sheet and plate
AMS 4035	Bare sheet and plate
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

Key points

- **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 welding.** AC par. 4-89d lists 2024 among alloys not to be welded.

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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