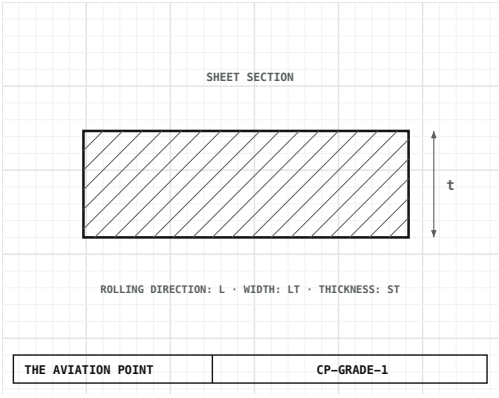
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CP titanium Grade 1 — commercially pure titanium

The softest and most formable titanium: 35 ksi minimum tensile.



Schematic

Designation

Item	Value
Designation	CP titanium Grade 1
Class	Titanium
Type	commercially pure titanium

Properties

Property	Value	Source
Type	Unalloyed titanium, annealed; excellent formability, readily welded or brazed	MIL-HDBK-5J, par. 5.2.1.0
MIL-HDBK-5J name	CP-4 under AMS-T-9046, equal in strength to ASTM Grade 1	MIL-HDBK-5J, Table 5.2.1.0(b); ASTM B265 grade strengths
Specification	AMS-T-9046 (CP-4)	MIL-HDBK-5J, Table 5.2.1.0(a)
Oxygen limit	0.18 % max (interstitials set the grade)	ASTM B265-10 Table 2 (Grade 1)
Full anneal	1,000 to 1,300 °F for 10 to 30 minutes	MIL-HDBK-5J, par. 5.2.1.0
Stress relief	900 to 1,000 °F for 30 minutes	MIL-HDBK-5J, par. 5.2.1.0
Density	0.163 lb/in³ (about 4.51 g/cm³, converted)	MIL-HDBK-5J, Table 5.2.1.0(b)

Design allowables — CP titanium Grade 1 sheet, strip and plate, annealed

Property	S basis	Unit
Ftu, L and LT	35	ksi
Fty, L and LT	25	ksi
Elongation, L and LT (0.025 in and over)	24	%
E	15.5	10^3 ksi
G	6.5	10^3 ksi
Density	0.163	lb/in³

The handbook labels the four sheet strength levels CP-4 to CP-1, with minimum Ftu of 35, 50, 65 and 80 ksi; this page assigns them to Grades 1 to 4 by strength, as ASTM B265 does. Check the spec on your certificate: the handbook yield figures are the AMS and MIL-T-9046 minimums and may differ from ASTM B265 minimums (B265-10 gives 20 ksi minimum yield for Grade 1 against 25 ksi in the handbook; Grades 2 to 4 agree at 40, 55 and 70 ksi).

Notes

- **Annealed values.** Forming and heat change them.
- **Not a substitute for an alloy grade** or for aluminum; the drawing names the grade.

SOURCES · FAA AC 43.13-1B CHG 1 · FAA-H-8083-31B, Aviation Maintenance Technician Handbook, Airframe, Volume 1 · MIL-HDBK-5J, Metallic Materials and Elements for Aerospace Vehicle Structures · FAA AC 43.13-1B CHG 1 · MMPDS · ASTM B265, Titanium and Titanium Alloy Strip, Sheet, and Plate

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/cp-grade-1/

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

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