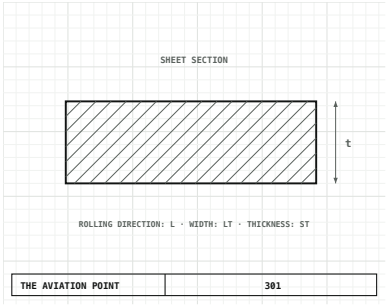
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301 — austenitic stainless steel

The stainless that gets strong by cold rolling.



Schematic

Designation

Item	Value
Designation	301
Class	Steel and stainless
Type	austenitic stainless steel

Composition

Item	Limit	Source
Composition	Chromium 16–18 %, nickel 6–8 %, carbon up to 0.15 %	ASTM A240/A240M Table 1 (UNS S30100)

Properties

Property	Value	Source
Why it is used	The austenitic stainless used most at high strength levels in aircraft, because of its greater work-hardening	MIL-HDBK-5J, par. 2.7.1.0
Strengthened by	Cold working. Cold-worked 301 held above 900 °F loses room-temperature strength	MIL-HDBK-5J, par. 2.7.1.0
Do not	Hold 750–1,650 °F for long periods or cool slowly through that range	MIL-HDBK-5J, par. 2.7.1.0
Specs by temper	AMS 5901 annealed, 5517 ¼ hard, 5518 ½ hard, 5902 ¾ hard, 5519 full hard	MIL-HDBK-5J, Table 2.7.1.0(b)
Catalog item	½ hard 301, 0.025 in, 36 in wide, sold by the foot, listed with firewall metals	A distributor's listing

Design allowables — sheet and strip by temper (properties of AISI 301 table, applicable to 301)

Temper	Specification	Ftu L / LT, ksi	Fty L / LT, ksi	Fsu, ksi	Basis
Annealed	AMS 5901	73 / 75	26 / 30	50	S
¼ hard	AMS 5517	124 / 122	69 / 67	66	A
½ hard	AMS 5518	141 / 142	93 / 92	77	A
¾ hard	AMS 5902	157 / 163	118 / 113	88	A
Full hard	AMS 5519	174 / 175	137 / 125	95	A

Properties of the 300-series alloys that the handbook ties to Table 2.7.1.0(b) by footnote. Fsu and Ftu: Table 2.7.1.0(b), p. 2-223; E 29.0 × 10^3 ksi annealed (L and LT), falling to 26–28 ksi × 10^3 in the hard tempers; density 0.286 lb/in^3. Cold-worked tempers lose strength above 900 °F. Yield, particularly in compression, and longitudinal modulus can be raised appreciably by stress relieving at 500 to 800 °F. MIL-HDBK-5J (2003) is superseded by MMPDS.

Forms and thicknesses in stock

Distributor sheet	Listed	Thickness, in
Stainless Steel Sheet - 301 Ss 1/2 Hard .025	301 SS · 0.025" · 36" wide	.025

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

Notes

- **Temper matters.** The strength table is not interchangeable between tempers.
- **Not for sustained heat in the 750–1,650 °F band.**
- **A weld or heat above 900 °F lowers cold-worked strength.** Ask engineering.

SOURCES · MIL-HDBK-5J, Metallic Materials and Elements for Aerospace Vehicle Structures · FAA AC 43.13-1B CHG 1 · FAA-H-8083-31B, Aviation Maintenance Technician Handbook, Airframe, Volume 1 · MMPDS · ASTM A240/A240M, Plate, Sheet, and Strip of Chromium and Chromium-Nickel Stainless Steel · Distributor listings

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/301/

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

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