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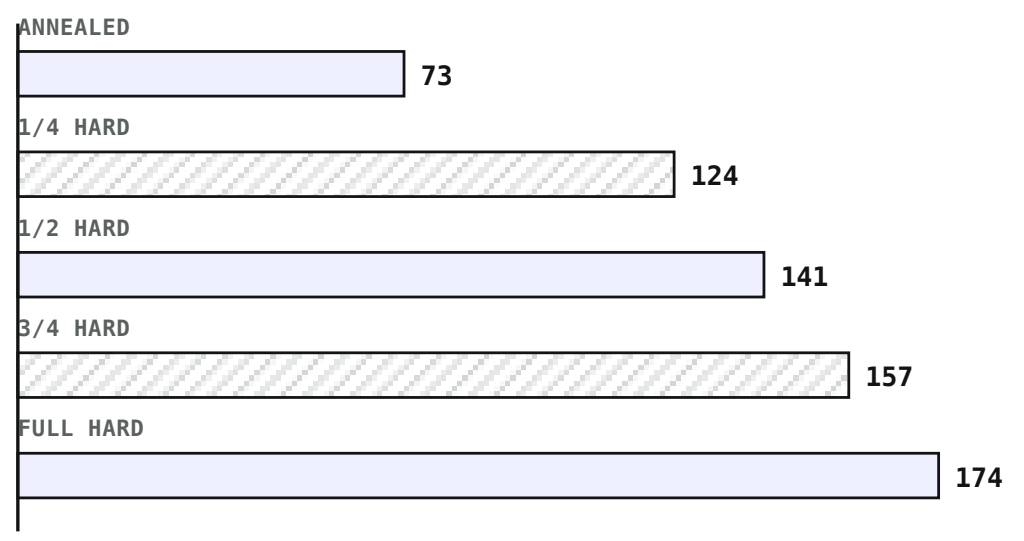
301 Stainless Steel

The stainless that gets strong by cold rolling.

REFERENCE DRAWING — NOT APPROVED DATA · THE SRM ALWAYS GOVERNS

301 STAINLESS

FTU, L DIRECTION, BY TEMPER · KSI



PARTS LIST

#	ITEM	NOTE	SRC
1	Annealed	AMS 5901	HDBK-5J
2	1/4 hard	AMS 5517	HDBK-5J
3	1/2 hard	AMS 5518	HDBK-5J
4	Full hard	AMS 5519	HDBK-5J

READ BEFORE USE

A-BASIS L VALUES; ANNEALED IS S BASIS

NOT ABOVE 900 F WHEN COLD WORKED

TEMPER IS THE MATERIAL

NOTES

1. Dimensions in inches. Do not scale: the SRM sets the values.
2. For reference. The applicable manual always governs.
3. Based on MIL-HDBK-5J, AC 43.13-1B.

REVISIONS

REV	DESCRIPTION	DATE
A	First issue	2026-10-30

The Aviation Point.	Structural repair reference		
TITLE: 301 by temper			
DRAWING NO.: TAP-DWG-068	REV: A	SCALE: NTS	SHEET: 1 OF 1
APPLIES TO: Aircraft materials			
DO NOT SCALE DRAWING			

301 stainless: Ftu, L direction, by temper Values from MIL-HDBK-5J, S basis unless noted.

Key facts

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

Key points

- **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.

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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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

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