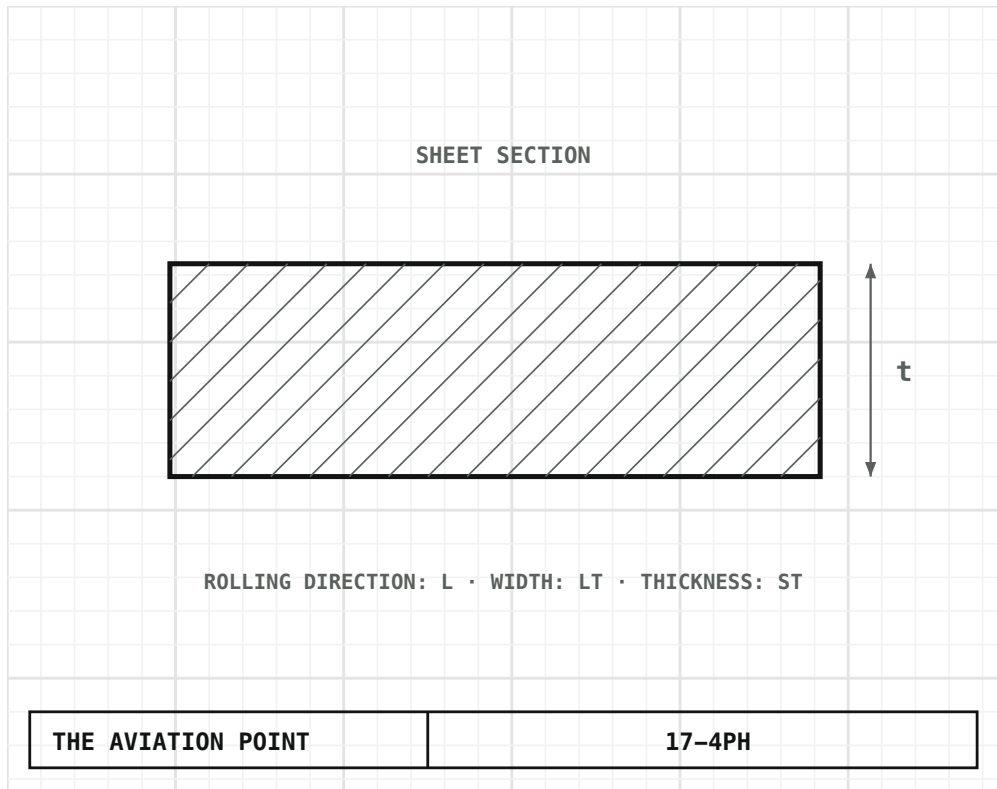
THE AVIATION POINT · THEAVIATIONPOINT.COM · THE AVIATION POINT · THEAVIATIONPOINT.COM · THE AVIATION POINT · THEAVIATIONPOINT.COM

17-4PH — precipitation-hardening stainless steel

Martensitic precipitation-hardening stainless in every product form.



Schematic

Designation

Item	Value
Designation	17-4PH
Class	Steel and stainless
Type	precipitation-hardening stainless steel

Composition

Item	Limit	Source
Composition	Carbon 0.07 %, chromium 16.5 %, nickel 4 %, copper, columbium or tantalum	AC 43.13-1B CHG 1, Table 4-3

Properties

Property	Value	Source
Class	Precipitation hardening, martensitic	AC 43.13-1B Table 4-3; MIL-HDBK-5J par. 2.6.9.0
Temperature	Good corrosion and oxidation resistance up to 600 °F	MIL-HDBK-5J, par. 2.6.9.0
Sheet, strip, plate	AMS 5604	MIL-HDBK-5J, Table 2.6.9.0(b)
Forgings, tubing, rings	AMS 5643	MIL-HDBK-5J, Table 2.6.9.0(d)
Machining	Best in H1150 and H1150M; precautions of austenitic stainless but work hardening is not a problem	MIL-HDBK-5J, par. 2.6.9.0
Size change in aging	Contraction 0.0004–0.0006 in/in to H900, 0.0008–0.0010 in/in to H1150	MIL-HDBK-5J, par. 2.6.9.0

Design allowables — 17-4PH sheet, strip and plate, by condition (S basis)

Condition	Ftu, LT	Fty, LT	Min. elongation, 0.015–0.186 in	Min. elongation, 0.187–0.625 in
H900	190	170	5	8
H925	170	155	5	8
H1025	155	145	5	8
H1075	145	125	5	9
H1100	140	115	5	10
H1150	135	105	8	10

E = 28.5 × 10^3 ksi, G = 11.2 × 10^3 ksi, density 0.282 lb/in^3 (H900), 0.283 (H1075), 0.284 (H1150). Forgings and rings (AMS 5643) reach H1150M at Ftu 115 / Fty 75 ksi. Fcy, Fsu and bearing values are in Table 2.6.9.0(b), p. 2-197. Source: MIL-HDBK-5J (31 Jan 2003).

Notes

- **Never use in Condition A.** It is a fabrication condition.
- **H900 and H925 are not for parts needing fracture toughness** (the handbook says this for 15-5PH, a close relative).
- **Weld repair: the SRM.**

SOURCES · MIL-HDBK-5J, Metallic Materials and Elements for Aerospace Vehicle Structures · FAA AC 43.13-1B CHG 1 · MMPDS

SCAN · OPEN THIS DATA SHEET
theaviationpoint.com/parts/materials/17-4ph/

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