



TECHNICAL DATA SHEET

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17-4PH Stainless Steel

Wrought Precipitation Hardening Stainless Steel

Document Control

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Specification	AMS 5643 / ASTM A564 Type 630	Product Form / UNS	Bar, forging, plate by product form/spec / UNS S17400

Engineering use note: Starter-library values are intended for engineering screening and template standardization. Verify against the latest governing specification, drawing, PO, and MTR before production release.

1. General Description

17-4PH is a chromium-nickel-copper martensitic precipitation-hardening stainless steel used when high strength and moderate corrosion resistance are required. It can be aged to several strength levels with low distortion and is widely used in aerospace, energy, and precision mechanical hardware.

2. Chemical Composition (wt%)

Property	Value
Chromium (Cr)	15.0-17.5
Nickel (Ni)	3.0-5.0
Copper (Cu)	3.0-5.0
Niobium + Tantalum (Nb+Ta)	0.15-0.45
Carbon (C)	<=0.07
Manganese (Mn)	<=1.00
Silicon (Si)	<=1.00
Phosphorus (P)	<=0.04
Sulfur (S)	<=0.03
Iron (Fe)	Balance

3. Mechanical Properties

Property	Value
Condition	H900 (typical reference)
Ultimate tensile strength	≥ 1310 MPa
0.2% yield strength	≥ 1170 MPa
Elongation	≥ 10 %
Hardness	Approx. 38-44 HRC

4. Physical Properties

Property	Value
Density	7.75 g/cm ³
Elastic modulus	196 GPa
Thermal conductivity	18 W/m.K
Melting range	1400-1440 C

5. Heat Treatment / Processing

Typically supplied solution treated, then age hardened to conditions such as H900, H1025, H1075, or H1150 depending on the required balance of strength and toughness.

6. Corrosion / Environmental Performance

Moderate corrosion resistance, generally better than martensitic stainless steels and adequate for many atmospheric and mildly corrosive environments. Not intended for severe chloride pitting/crevice corrosion service.

7. Key Characteristics

- Very high strength after aging
- Single-step precipitation hardening
- Good machinability in solution-treated condition
- Low distortion heat treatment
- Good combination of strength and corrosion resistance

8. Typical Applications

- Aircraft fittings
- Shafts and fasteners
- Valve stems
- Pump hardware
- High-strength machine components

9. Standards & Equivalents

AMS 5643
ASTM A564 Type 630
UNS S17400



10. Notes & Limitations

Condition-specific requirements vary significantly. Confirm the required aging condition on the drawing and procurement specification before release.