

ASTM A312 TP310S Stainless Steel Pipes - Specification

ASTM A312 TP310S is a low-carbon, high-temperature, corrosion-resistant **austenitic stainless steel pipe**. It is ideal for **severe environments**, including **oxidizing, sulfidizing, and carburizing atmospheres**, due to its high **chromium and nickel content**. The **low carbon (S)** variant improves **weldability** and minimizes **sensitization** during welding.

Product Specification

Property	Specification
Standard	ASTM A312 / ASME SA312
Grade	TP310S (UNS S31008)
Form	Seamless / Welded / ERW / EFW Pipes
Size Range	½" NB to 24" NB (DN15 to DN600)
Wall Thickness	SCH 5S, 10S, 40S, 80S, 160, XXS, Custom
Pipe Length	Single Random (5 - 7m), Double Random (11 - 13m), or Cut Length
Pipe Ends	Plain End (PE), Beveled End (BE), Threaded End (TE)
Finish	Annealed, Pickled,

Chemical Composition (% by Weight)

Element	TP310S (UNS S31008)
Chromium (Cr)	24.0 - 26.0
Nickel (Ni)	19.0 - 22.0
Carbon (C)	≤ 0.08
Manganese (Mn)	≤ 2.00
Silicon (Si)	≤ 1.50
Phosphorus (P)	≤ 0.045
Sulfur (S)	≤ 0.030
Iron (Fe)	Balance

Mechanical Properties (Annealed Condition)

Property	Value
Tensile Strength	≥ 515 MPa
Yield Strength (0.2% offset)	≥ 205 MPa
Elongation (in 50 mm)	$\geq 35\%$
Hardness (Brinell)	≤ 217 HB
Density	7.90 g/cm ³
Melting Range	1400 – 1455° C

Heat Treatment

- Pipes shall be supplied in the **solution-annealed condition**.
- **Annealing Temperature:** 1040 – 1150° C
- Cooling: Air or water quench

Testing Requirements

Test Type	Requirement
Tensile Test	Required for each heat & size
Hardness Test	Optional if tensile test is done
Flattening & Flare Test	For seamless pipes
Hydrostatic Test	Mandatory (or NDT if agreed)
NDT (Eddy Current/UT)	Optional / as per client request
PMI & IGC Test	On request

Applicable Standards

- ASTM A312 / ASME SA312 - Seamless & Welded Austenitic SS Pipe
- ASTM A999 - General Requirements for Stainless Steel Pipe
- EN 10216 / EN 10217 equivalents available upon request
- ISO / PED / NORSOK compliance on demand

Applications

- Furnace tubes and radiant coils
- Petrochemical & refinery piping
- Power generation & heat exchangers
- Thermal processing equipment
- Waste incineration & flue gas systems
- High-temperature structural components

Marking & Certification

- Pipes are marked with: Grade / Standard / Heat No. / Size / Manufacturer
- Supplied with **Mill Test Certificate (EN 10204 3.1)**
- Third-party inspection (TPI) from SGS, BV, Lloyd's available



ASTM A312 TP310S Stainless Steel Seamless Pipes PMI