

ASTM A312 TP316 / TP316L Seamless Pipe Specification

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ASTM A312 / ASME SA312 Standard Introduction

ASTM A312 / ASME SA312 covers seamless, welded, and heavily cold worked austenitic stainless steel pipes intended for high-temperature and general corrosive service. TP316 and TP316L are molybdenum-bearing stainless steels with enhanced corrosion resistance.

TP316 / TP316L Material Description

ASTM A312 TP316 and TP316L are austenitic stainless steels containing molybdenum, which improves resistance to pitting and crevice corrosion in chloride environments. TP316L has a lower carbon content, making it more suitable for welded applications.

Chemical Composition of ASTM A312 TP316 / TP316L (wt.%)

Element	TP316	TP316L
Carbon (C)	0.08 max	0.03 max
Manganese (Mn)	2.00 max	2.00 max
Silicon (Si)	1.00 max	1.00 max
Phosphorus (P)	0.045 max	0.045 max
Sulfur (S)	0.030 max	0.030 max
Chromium (Cr)	16.0 – 18.0	16.0 – 18.0
Nickel (Ni)	10.0 – 14.0	10.0 – 14.0
Molybdenum (Mo)	2.0 – 3.0	2.0 – 3.0

Mechanical Properties (Typical)

Property	Minimum Requirement
Tensile Strength	≥ 515 MPa
Yield Strength (0.2%)	≥ 205 MPa
Elongation	≥ 35 %

Heat Treatment

ASTM A312 TP316 / TP316L seamless pipes shall be supplied in the solution annealed condition followed by rapid cooling to restore corrosion resistance.

Size Range and Supply Condition

Outside Diameter: 1/8" NB – 24" NB

Wall Thickness: SCH 5S / SCH 10S / SCH 40S / SCH 80S

Manufacturing Process: Seamless

Length: Random length or fixed length

Typical Applications

Chemical processing equipment, petrochemical plants, marine and offshore systems, heat exchangers, food and pharmaceutical industries, and corrosive service piping.

Inspection and Testing

Chemical analysis, mechanical testing, hydrostatic test or non-destructive electric test, eddy current testing, dimensional inspection, and visual examination are carried out in accordance with ASTM A312.

Certification and Documentation

EN 10204 3.1 Mill Test Certificate (MTC), Manufacturer Test Report (MTR), and third-party inspection certificates are available upon request.

