

## ASTM A312 TP316Ti Stainless Steel Pipe Specification

Standard Specification for Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes

ASTM A312 pipe is common use stainless pipe for industries.  
It covers diameters from 1/8" to 30" and thickness from SCH 10S to SCH 80S.  
General use material grades are TP316Ti

ASTM A312 316Ti stainless steel pipes are your solution for demanding applications requiring exceptional corrosion resistance and elevated temperature performance. Engineered with titanium stabilization, these pipes offer superior durability and reliability in corrosive environments.

## Chemical Composition of ASTM A312 TP316Ti Pipes

C %	Si %	Mn %	P %	S %	Cr %	Ni %	Mo %	Ti %
0.08 max	0.75 max	2.00 max	0.045 max	0.030 max	16.0-18.0	10.00-14.0	2.00-3.0	5*(C+N)-0.7

stainless steel 316Ti is same as that 316L but it is possessing very good temperature strength and mechanical strength as well. It is having very good corrosion resistance at a higher temperature.

## ASME SA312 TP316Ti Pipes Equivalent Grades

STANDARD	WERKSTOFF NR.	UNS	JIS	BS	GOST	AFNOR	EN
SS 316Ti	1.4571	S31635	SUS 316Ti	320S31	08Ch17N13M2T	Z6CNDT17?123	X6CrNiMoTi17-12-2

## ASTM A312 TP316Ti & equivalent grade Stainless Steel Tube Chemical Composition

Weight %	C	Si	Mn	P	S	Cr	Ni	Mo	Ti	Fe
TP316Ti	0.08 max	0.75 max	2.00 max	0.045 max	0.030 max	16.00- 18.00	10.00- 14.00	2.00- 3.00	5×(C+N)- 0.70	Rem
EN 10216 – 5 1.4571 / X6CrNiMoTi17- 12-2	0.08 max	1.00 max	2.00 max	0.040 max	0.015 max	16.50- 18.50	10.50- 13.50	2.00- 2.50	5×C-0.70	Rem
AISI 316 Ti	0.08 max	0.75 max	2.00 max	0.045 max	0.030 max	16.00- 18.00	10.00- 14.00	2.00- 3.00	5× (C+N)- 0.70	Rem

## Mechanical Properties of ASTM A312 TP316Ti Stainless Steel Pipes

Tensile Strength, Mpa	Yield Strength, MPa	Elongation, %
515 min	205 min	35 min

### A312 pipe Manufacturing Types

ASTM A312 stainless steel pipe and tube covers following manufacturing types (Including hot finished or cold finished):

- a. Seamless Pipe (SMLS): It covers stainless steel seamless pipe or tube in hot rolling or cold drawn.
- b. Welded Pipe (WLD): Welded by an automatic welding process that does not add filler metal when welding.
- c. Cold Worked Pipe (HCW pipe): The heavy cold-worked pipe that apply cold working of not less than 35% reduction in thickness of both wall, and welded to the welded pipe prior to final annealing. Do not use fillers during welding.
- d. Welded and HCW pipe: Welded pipe and HCW pipe of 14 and smaller than NPS 14 shall have a single longitudinal weld. After approval by the purchaser, the welded pipe and HCW pipe with an NPS greater than NPS 14 shall have a single longitudinal or shall be manufactured by forming and welding two longitudinal sections of flat stock. So each welds are to be tested, inspected, inspected or treated.

## **Mechanical Test**

It includes heat treated condition, Transverse or Longitudinal Tension Test or Flatten Test.

### **Transverse or Longitudinal Tension Test**

For lots of not more than 100 pipes, one specimen shall be taken for tensile testing. For lots of more than 100 pipes, two specimens shall be taken from two pipes for tensile testing.

### **Flatten Test**

For material heat treated in batch furnace, (by quenching after hot forming or in a batch-type furnace equipped with recording pyrometers and automatically controlled within a 30°C or less range) 5% of steel pipe should be taken from each heat treated lot flattening test.

For material heat treated in the continuous furnace, sufficient number of pipe to constitute 5% of the lot, but in any case not less 2 lengths for flattening test.

## **Hydrostatic or Nondestructive Electric Test**

Each pipe shall be subjected to the nondestructive electric test or the hydrostatic test. The type of test to be used shall be at the option of the manufacturer, unless otherwise specified in the purchase order .

For pipe whose dimensions equal or exceed NPS10, the purchaser, with the agreement of the manufacturer, is permitted to waive the hydrostatic test requirement when in lieu of such test the purchaser performs a system test. Each length of pipe furnished without the completed manufacturer's hydrostatic test shall include with the mandatory markings the letters "NH."12.4 The nondestructive electric test shall be in accordance with Specification A 999/A 999M.

## ASTM A312 Stainless Steel Tube Tolerance

### Wall Thickness

Permitted Variations in Wall thickness (%)		
Tolerance, % from Nominal		
NPS Designator	Over	Under
1/8 to 2 1/2., all t/D ratios	20.0	12.5
3 to 18 incl., t/D up to 5% incl.	22.5	12.5
3 to 18 incl., t/D > 5%	15.0	12.5
20 and larger, welded, all t/D ratios	17.5	12.5
20 and larger, seamless, t/D up to 5% incl.	22.5	12.5
20 and larger, seamless, t/D > 5%	15.0	12.5

where:

t=Nominal Wall Thickness

D=Ordered Outside Diameter

### Outer Diameter

Permitted Variation in Outside Diameter (mm)		Length (mm)
OD	Tolerance	Tolerance
10.29 - 48.26	+0.40/-0.80	+6/-0
48.26 - 114.30	+0.80/-0.80	
114.30 - 219.08	+1.60/-0.80	
219.08 - 457.20	+2.40/-0.80	

### Length Variations

- Unless otherwise specified, all size from NPS 1/8 to NPS 8 are available in a maximum length of 24 ft. And a length range from 15 to 24 ft. Short length are acceptable, but the number and minimum length are agreed upon by the purchas and the manufacturer.
- If a certain cut length is required, the required length should be specified in the order. The pipe shall not be longer than th specified length and the pipe length shall not exceed 1/4 inch [6 mm].
- Unless otherwise specified, Joints are not allowed to have .