

ASTM A106 Grade C

- ALLLAND Production Standards Overview



Definition and Applications

1. Definition

ASTM A106 Grade C is the highest-strength grade within the ASTM A106 series, established by ASTM International. ASTM A106 is a key standard for seamless carbon steel pipes used in high-temperature applications. ASTM A106 Grade C is a high-strength seamless carbon steel pipe suitable for high-temperature transmission lines, industrial pressure pipelines, and oil and gas transportation.

2. ALLLAND ASTM A106 Grade C Steel Pipe Dimensions

Item	Specification
Standard	ASTM A106 / A106M
Pipe Type	Seamless Carbon Steel Pipe
Grade	Grade C
Size Range	NPS 1/8 – NPS 48 (DN 6 – DN 1200)
Outside Diameter	10.3 mm – 1219 mm
Wall Thickness	SCH 10 – SCH XXS (or customized)
Length	5.8 m, 6 m, 11.8 m, 12 m (custom lengths available)
Manufacturing Process	Hot Finished / Cold Drawn Seamless

3. Application

ASTM A106 Grade C seamless steel pipe is designed for **high-temperature and high-pressure service applications**.

It is widely used in **oil and gas refineries, petrochemical plants, power generation facilities, and boiler systems.**

With higher strength compared with Grade B, it is suitable for **steam pipelines, pressure vessels, heat exchangers, and industrial process piping.**

ASTM A106 Grade C provides reliable performance in demanding environments requiring excellent mechanical properties and heat resistance.

Critical Tolerances

Standard Reference: ASTM A106 / A106M – Seamless Carbon Steel Pipe for High-Temperature Service

Parameter	Tolerance Requirement	Notes
Outside Diameter (OD)	±1% of specified OD, minimum ±0.50 mm (±0.020 in)	Measured at any point along the pipe length
Wall Thickness (WT)	-12.5% of specified wall thickness	No positive tolerance limit is specified
Length	According to purchaser requirements	Common supply lengths: SRL (Single Random Length) and DRL (Double Random Length)
Weight	±10% of specified weight for individual pipe	Based on ASTM A106 requirements
Straightness	Pipe shall be reasonably straight	Excessive curvature affecting installation is not permitted
End Finish	Plain ends unless otherwise specified	Beveled ends or special end preparation available upon request

Note: ASTM A106 Grade C pipes supplied by ALLLAND can be produced with customized dimensions, heat treatment, NDT inspection, and third-party inspection according to project requirements.

Chemical and Mechanical Properties

1. ASTM A106 Grade C Chemical Composition

Element	Maximum / Required Value (%)
Carbon (C)	0.35 max
Manganese (Mn)	0.29–1.06
Phosphorus (P)	0.035 max
Sulfur (S)	0.035 max
Silicon (Si)	0.10 min
Chromium (Cr)	0.40 max
Copper (Cu)	0.40 max
Molybdenum (Mo)	0.15 max
Nickel (Ni)	0.40 max
Vanadium (V)	0.08 max

2. ASTM A106 Grade C Mechanical Properties

Property	Requirement
Tensile Strength	70,000 psi (485 MPa) min
Yield Strength	40,000 psi (275 MPa) min
Elongation in 2 in. (50 mm)	30% min (longitudinal)
Elongation in 2 in. (50 mm)	16.5% min (transverse)
Hardness	Not specified by ASTM A106 (unless required by purchaser)

Dimension Specifications Table

Nominal Pipe Size (NPS)	DN	Outside Diameter (OD)	Wall Thickness (WT) Sch 40	Wall Thickness (WT) Sch 80	Weight Sch 40	Weight Sch 80
1/2"	DN15	21.3 mm	2.77 mm	3.73 mm	1.27 kg/m	1.62 kg/m
3/4"	DN20	26.7 mm	2.87 mm	3.91 mm	1.69 kg/m	2.20 kg/m
1"	DN25	33.4 mm	3.38 mm	4.55 mm	2.50 kg/m	3.24 kg/m
1-1/4"	DN32	42.2 mm	3.56 mm	4.85 mm	3.39 kg/m	4.47 kg/m
1-1/2"	DN40	48.3 mm	3.68 mm	5.08 mm	4.05 kg/m	5.41 kg/m
2"	DN50	60.3 mm	3.91 mm	5.54 mm	5.44 kg/m	7.48 kg/m
2-1/2"	DN65	73.0 mm	5.16 mm	7.01 mm	8.63 kg/m	11.41 kg/m
3"	DN80	88.9 mm	5.49 mm	7.62 mm	11.29 kg/m	15.27 kg/m
4"	DN100	114.3 mm	6.02 mm	8.56 mm	16.07 kg/m	22.31 kg/m
6"	DN150	168.3 mm	7.11 mm	10.97 mm	28.26 kg/m	42.56 kg/m
8"	DN200	219.1 mm	8.18 mm	12.70 mm	42.55 kg/m	64.64 kg/m
10"	DN250	273.0 mm	9.27 mm	15.09 mm	60.31 kg/m	96.20 kg/m
12"	DN300	323.9 mm	9.53 mm	17.48 mm	73.59 kg/m	130.69 kg/m
14"	DN350	355.6 mm	9.53 mm	19.05 mm	81.14 kg/m	158.83 kg/m
16"	DN400	406.4 mm	9.53 mm	21.44 mm	93.18 kg/m	205.35 kg/m

Testing Requirements of ASTM A106 Grade C Seamless Steel Pipe

Test Item	Description
Chemical Analysis	Heat analysis and product analysis are performed to verify that the chemical composition meets ASTM A106 Grade C requirements.
Tensile Test	Tensile testing is conducted to confirm the pipe meets the specified requirements for tensile strength, yield strength, and elongation.
Hydrostatic Test	Each pipe is subjected to a hydrostatic pressure test to verify pressure resistance and ensure leak-free performance.
Flattening Test	The flattening test evaluates the pipe's ductility and ability to withstand deformation without cracking.
Nondestructive Testing (NDT)	Ultrasonic Testing (UT) or other approved NDT methods may be performed to detect internal or surface defects.

Test Item	Description
Dimensional Inspection	Outside diameter, wall thickness, length, straightness, and surface condition are inspected to ensure compliance with dimensional requirements.
Visual Inspection	The pipe surface is examined for defects, ensuring proper surface quality and workmanship.
Material Traceability	Each pipe is traceable through heat number, test certificate, and production records to guarantee quality consistency.

ALLLAND ASTM A106 Grade C Product Images



The image shows steel pipes actually produced by our company