

# ASTM A106 Grade B

## - ALLLAND Production Standards Overview



## Definition and Applications

### 1. Definition

ASTM A106 Grade B is a standard for seamless carbon steel pipes designed for high-temperature applications. Grade B is the most commonly used grade within the ASTM A106 series and is widely used in the energy, oil and gas, and industrial piping sectors.

### 2. ALLLAND ASTM A106 Grade B Steel Pipe Dimensions

| Parameters                   | Dimensions                       |
|------------------------------|----------------------------------|
| <b>O.D.</b>                  | 10.13mm - 1219mm NPS 1/4" - 30"  |
| <b>WT</b>                    | SCH 10 - SCH XXS                 |
| <b>Length</b>                | 5.8–12 m 16–40 ft (typically)    |
| <b>Standards</b>             | ASTM A106 / ASME B36.10M         |
| <b>Manufacturing Process</b> | Seamless only                    |
| <b>Connection</b>            | Butt-weld/ Socket-weld/ Threaded |

### 3. Application

ASTM A106 Grade B seamless steel pipe is widely used for high-temperature and high-pressure fluid transportation. It is commonly applied in oil and gas refineries, petrochemical plants, power generation facilities, and boiler systems. Due to its excellent strength and heat resistance, it is suitable for steam lines, process piping, and pressure piping.

applications. ASTM A106 Grade B pipe is also used in industrial plants where reliable performance under severe operating conditions is required.

## Critical Tolerances

Our ASTM A106 Grade B steel pipes are manufactured in strict compliance with the specification requirements.

| Parameter                    | Tolerance Requirement                                | Notes                                                                                             |
|------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Outside Diameter (OD)</b> | ±1% of specified OD,<br>minimum ±0.50 mm (±0.020 in) | Applicable to the outside diameter measurement of seamless pipe                                   |
| <b>Wall Thickness (WT)</b>   | -12.5% of specified wall thickness                   | No positive tolerance limit is specified by ASTM A106                                             |
| <b>Length</b>                | According to purchaser requirements                  | Standard lengths are usually supplied as single random length (SRL) or double random length (DRL) |
| <b>Straightness</b>          | Pipe shall be reasonably straight                    | Excessive bending or deviation that affects use is not permitted                                  |
| <b>Weight</b>                | ±10% of specified weight for individual pipe         | Based on ASTM A106 requirements for pipe weight variation                                         |

## Chemical and Mechanical Properties

### 1. ASTM A106 Grade B Chemical Composition

| Element         | Maximum / Required Value (%) |
|-----------------|------------------------------|
| Carbon (C)      | 0.30 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 B Mechanical Properties

| Property         | Requirement              |
|------------------|--------------------------|
| Tensile Strength | 60,000 psi (415 MPa) min |
| Yield Strength   | 35,000 psi (240 MPa) min |

| Property                    | Requirement                                               |
|-----------------------------|-----------------------------------------------------------|
| 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) |

**Note:** ASTM A106 Grade B is a seamless carbon steel pipe grade designed for high-temperature and high-pressure service. Its balanced chemical composition and mechanical properties make it widely used in **oil & gas, petrochemical, refinery, power plant, and steam piping systems.**

## 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     |

## ASTM A106 Grade B Common Size Range

- **Outside Diameter (OD):** 1/2" – 48" (21.3 mm – 1219 mm)
- **Wall Thickness:** SCH 10 – SCH XXS (depending on size and pressure requirements)
- **Standard Length:** 5.8 m, 6 m, 11.8 m, 12 m (custom lengths available)
- **Manufacturing Type:** Seamless hot-finished or cold-drawn pipe
- **Standard Reference:** ASTM A106 / ASME B36.10M (Dimensions of Carbon Steel Pipes)

## ALLLAND ASTM A106 Grade B Product Images



The image shows steel pipes actually produced by our company