奥蓝德钢管
ALLLAND STEEL PIPE

# ASTM A500

## - ALLLAND Production Standards Overview

## Definition and Applications

### 1. Definition

ASTM A500 is a standard specification for cold-formed welded and seamless carbon steel structural tubes.The main steel grades include Grade A, Grade B, Grade C, and Grade D.

### 2. ALLLAND ASTM A500 Steel Pipe Dimensions

| Parameters | Dimensions |
|---|---|
| **O.D.** | Limitations on Size: ≤ 88 inches（2235mm） |
| **WT** | ≤1000 inches (25.4 mm) |
| **Length** | 5.8 m – 14 m（19' – 46'） |
| **Material** | ASTM A500 Grade A / B / C / D |
| **Process** | SEAMLESS / ERW / SSAW / LSAW |
| **Connection** | Butt-weld / Threaded / Sleeve connection |

### 3. Application

ASTM A500 is mainly applicable to hollow structural profiles (HSS) with circular, square and rectangular cross-sections, and is used in welded, riveted or bolted structures such as buildings and Bridges.

## Critical Tolerances

Our ASTM A500 standard steel pipes are manufactured in strict compliance with the specification requirements.

| Item | Tolerance | Description |
|---|---|---|
| **O.D.** | ±0.75% (O.D. ≥ 50mm) | ±0.5% (O.D. ≤ 50mm) |
| **WT** | ±10% | ≤1000 inches (25.4 mm) |
| **Length** | +13mm / -6mm | Length ≤ 6.5 m |
| | +19mm / -6mm | Length > 6.5 m |

## Chemical and Mechanical Properties

### 1. Chemical Composition (wt%, max)

| Element | Composition, % | | | |
|---|---|---|---|---|
| | Grade A | Grade B | Grade C | Grade D |
| C, max | 0.26 | 0.26 | 0.23 | 0.26 |
| Mn, max | 1.35 | 1.35 | 1.35 | 1.35 |
| P, max | 0.035 | 0.035 | 0.035 | 0.035 |
| S, max | 0.035 | 0.035 | 0.035 | 0.035 |
| Cu, min | 0.20 | 0.20 | 0.20 | 0.20 |

### 2. Mechanical Properties

| Grade | | Tensile Strength, min | Yield Strength, min |
|---|---|---|---|
| **Grade A** | psi | 45000 | 33000 |
| | MPa | 400/450 | 310/315 |
| **Grade B** | psi | 58000 | 46000 |
| | MPa | 400 | 315 |
| **Grade C** | psi | 62000 | 50000 |
| | MPa | 425 | 345 |
| **Grade D** | psi | 58000 | 36000 |
| | MPa | 400 | 250 |

## Dimension Specifications Table

| Outside demension | | | Wall thickness （mm） | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Size | Inch | OD | SCH5S | SCH10S | SCH10 | SCH 20 | SCH30 | SCH40 | SCH60 |
| DN6 | 1/8" | 10.3 | - | 1.24 | - | - | - | 1.73 | - |
| DN8 | 1/4" | 13.7 | - | 1.65 | - | - | - | 2.24 | - |
| DN10 | 3/8" | 17.1 | - | 1.65 | - | - | - | 2.31 | - |
| DN15 | 1/2" | 21.3 | 1.65 | 2.11 | - | - | - | 2.77 | - |
| DN20 | 3/4" | 26.7 | 1.65 | 2.11 | - | - | - | 2.87 | - |

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| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| DN25 | 1" | 33.4 | 1.65 | 2.77 | - | - | - | 3.38 | - |
| DN32 | 1 1/4" | 42.2 | 1.65 | 2.77 | - | - | - | 3.56 | - |
| DN40 | 1 1/2" | 48.3 | 1.65 | 2.77 | - | - | - | 3.68 | - |
| DN50 | 2" | 60.3 | 1.65 | 2.77 | - | - | - | 3.91 | - |
| DN65 | 2 1/2" | 73 | 2.11 | 3.05 | - | - | - | 5.16 | - |
| DN80 | 3" | 88.9 | 2.11 | 3.05 | - | - | - | 5.49 | - |
| DN90 | 3 1/2" | 101.6 | 2.11 | 3.05 | - | - | - | 5.74 | - |
| DN100 | 4" | 114.3 | 2.11 | 3.05 | - | - | - | 6.02 | - |
| DN125 | 5" | 141.3 | 2.77 | 3.4 | - | - | - | 6.55 | - |
| DN150 | 6" | 168.3 | 2.77 | 3.4 | - | - | - | 7.11 | - |
| DN200 | 8" | 219.1 | 2.77 | 3.76 | - | 6.35 | 7.04 | 8.18 | 10.31 |
| DN250 | 10" | 273.1 | 3.4 | 4.19 | - | 6.35 | 7.8 | 9.27 | 12.7 |
| DN300 | 12" | 323.9 | 3.96 | 4.57 | - | 6.35 | 8.38 | 10.31 | 14.27 |
| DN350 | 14" | 355.5 | 3.96 | 4.78 | 6.35 | 7.92 | 9.53 | 11.13 | 15.09 |
| DN400 | 16" | 406.4 | 4.19 | 4.78 | 6.35 | 7.92 | 9.53 | 12.7 | 16.66 |
| DN450 | 18" | 457.2 | 4.19 | 4.78 | 6.35 | 7.92 | 11.13 | 14.27 | 19.05 |
| DN500 | 20" | 508 | 4.78 | 5.54 | 6.35 | 9.53 | 12.7 | 15.09 | 20.62 |
| DN550 | 22" | 558.8 | 4.78 | 5.54 | 6.35 | 9.53 | 12.7 | - | 22.23 |
| DN600 | 24" | 609.6 | 5.54 | 6.35 | 6.35 | 9.53 | 14.27 | 17.48 | 24.61 |
| DN650 | 26" | 660.4 | - | - | 7.92 | 12.7 | - | - | - |
| DN700 | 28" | 711.6 | - | - | 7.92 | 12.7 | 15.88 | - | - |
| DN750 | 30" | 762 | 6.35 | 7.92 | 7.92 | 12.7 | 15.88 | - | - |
| DN800 | 32" | 812.8 | - | - | 7.92 | 12.7 | 15.88 | 17.48 | - |
| DN850 | 34" | 863.6 | - | - | 7.92 | 12.7 | 15.88 | 17.48 | - |
| DN900 | 36" | 914.4 | - | - | 7.92 | 12.7 | 15.88 | 19.05 | - |
| DN950 | 38" | 965.2 | - | - | - | - | - | - | - |
| DN1000 | 40" | 1015 | - | - | - | - | - | - | - |
| DN1050 | 42" | 1066.8 | - | - | - | - | - | - | - |
| DN1100 | 44" | 1117.6 | - | - | - | - | - | - | - |
| DN1150 | 46" | 1188.4 | - | - | - | - | - | - | - |
| DN1200 | 48" | 1219.2 | - | - | - | - | - | - | - |

| Outside demension | | | Wall thickness （mm） | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Size | Inch | OD | SCH 80 | SCH 100 | SCH120 | SCH140 | SCH160 | STD | XS | XXS |
| DN6 | 1/8" | 10.3 | 2.42 | - | - | - | - | 1.73 | 2.41 | - |
| DN8 | 1/4" | 13.7 | 3.02 | - | - | - | - | 2.24 | 3.02 | - |
| DN10 | 3/8" | 17.1 | 3.2 | - | - | - | - | 2.31 | 3.2 | - |
| DN15 | 1/2" | 21.3 | 3.73 | - | - | - | 4.78 | 2.77 | 3.73 | 7.47 |
| DN20 | 3/4" | 26.7 | 3.91 | - | - | - | 5.56 | 2.87 | 3.91 | 7.82 |
| DN25 | 1" | 33.4 | 4.55 | - | - | - | 6.35 | 3.38 | 4.55 | 9.09 |
| DN32 | 1 1/4" | 42.2 | 4.85 | - | - | - | 6.35 | 3.58 | 4.85 | 9.7 |
| DN40 | 1 1/2" | 48.3 | 5.05 | - | - | - | 7.14 | 3.68 | 5.08 | 10.15 |
| DN50 | 2" | 60.3 | 5.54 | - | - | - | 8.74 | 3.91 | 5.54 | 11.07 |
| DN65 | 2 1/2" | 73 | 7.01 | - | - | - | 9.53 | 5.16 | 7.01 | 14.02 |
| DN80 | 3" | 88.9 | 7.62 | - | - | - | 11.13 | 5.49 | 7.52 | 15.24 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| DN90 | 3 1/2" | 101.6 | 8.08 | - | - | - | - | 5.74 | 8.08 | - |
| DN100 | 4" | 114.3 | 8.58 | - | 11.13 | - | 13.49 | 6.02 | 8.56 | 17.12 |
| DN125 | 5" | 141.3 | 9.53 | - | 12.7 | - | 15.88 | 6.55 | 9.53 | 18.05 |
| DN150 | 6" | 168.3 | 10.97 | - | 14.27 | - | 18.26 | 7.11 | 10.97 | 21.95 |
| DN200 | 8" | 219.1 | 12.7 | 15.09 | 18.26 | 20.62 | 23.01 | 8.18 | 12.7 | 22.23 |
| DN250 | 10" | 273.1 | 15.09 | 18.26 | 21.44 | 25.4 | 28.58 | 9.27 | 12.7 | 25.4 |
| DN300 | 12" | 323.9 | 17.48 | 21.44 | 25.4 | 28.58 | 33.32 | 9.53 | 12.7 | 25.4 |
| DN350 | 14" | 355.5 | 19.05 | 23.83 | 27.79 | 31.75 | 35.71 | 9.53 | 12.7 | - |
| DN400 | 16" | 406.4 | 21.44 | 26.19 | 30.96 | 36.53 | 40.49 | 9.53 | 12.7 | - |
| DN450 | 18" | 457.2 | 23.83 | 29.36 | 34.93 | 39.67 | 45.24 | 9.53 | 12.7 | - |
| DN500 | 20" | 508 | 26.19 | 32.54 | 38.1 | 44.45 | 50.01 | 9.53 | 12.7 | - |
| DN550 | 22" | 558.8 | 28.58 | 34.93 | 41.28 | 47.63 | 53.98 | 9.53 | 12.7 | - |
| DN600 | 24" | 609.6 | 30.96 | 38.89 | 46.02 | 52.37 | 59.54 | 9.53 | 12.7 | - |
| DN650 | 26" | 660.4 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN700 | 28" | 711.6 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN750 | 30" | 762 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN800 | 32" | 812.8 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN850 | 34" | 863.6 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN900 | 36" | 914.4 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN950 | 38" | 965.2 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN1000 | 40" | 1015 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN1050 | 42" | 1066.8 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN1100 | 44" | 1117.6 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN1150 | 46" | 1188.4 | - | - | - | - | - | 9.53 | 12.7 | - |
| DN1200 | 48" | 1219.2 | - | - | - | - | - | | | |

## Testing Requirements

### 1. Chemical Composition Test

- Each batch of molten steel must undergo smelting analysis to determine the content of elements such as carbon (C), manganese (Mn), phosphorus (P), sulfur (S), and copper (Cu).

### 2. Tensile Test

- Samples of each batch of steel pipes must be taken for tensile tests to determine their minimum yield strength, minimum tensile strength and elongation.
- Verify whether the core mechanical properties of the steel pipe meet the standards (such as Grade B yield strength ≥315 MPa.

### 3. Flattening Test

- The sample is flattened to the specified distance in three steps to check whether there are cracks or delamination in the weld seam and base metal.

### 4. Flaring Test

- Use a 60° conical Angle tool to expand the pipe end and check if there is any cracking in the weld area.

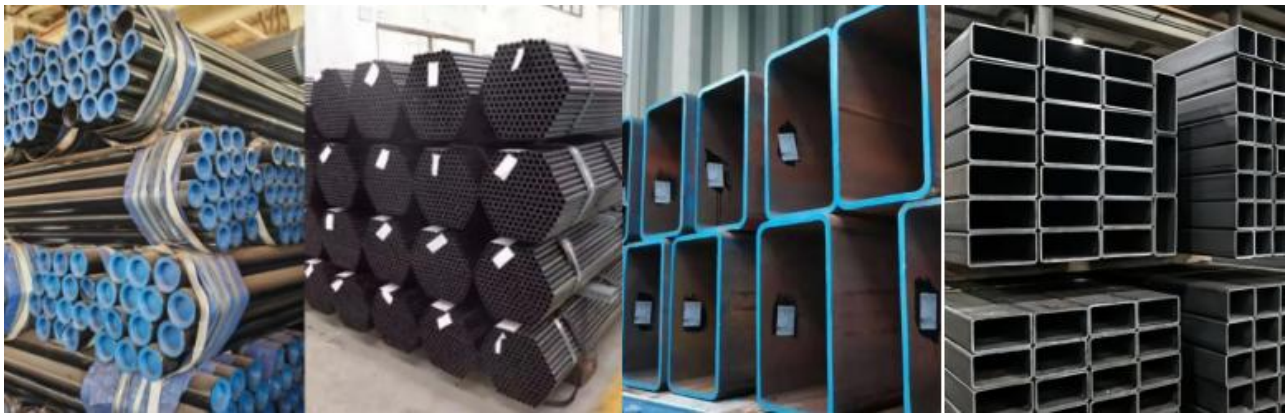
### 5. Dimensional and shape Test

- Each steel pipe shall be inspected for outer diameter, wall thickness, length, straightness, squareness (for rectangular pipes) and torsion, etc. The deviations shall comply with the standard tolerance table.
- It is required to have a surface finish related to the manufacturing process, and there should be no defects with a depth exceeding the wall thickness tolerance upon visual inspection.

## Surface treatment

Method: Oil Coating, Black Coating, Clear Coating, FBE, 3LBE, 3LPP.

## ALLLAND ASTM A500 Product Images



The image shows steel pipes actually produced by our company