

# ASTM A500 Grade B

## - ALLLAND Production Standards Overview



## Definition and Applications

### 1. Definition

ASTM A500 Grade B is a common standard for structural carbon steel pipes, frequently used in support structures for construction and engineering projects.

ASTM A500 is a standard specification for cold-formed, welded, and seamless structural carbon steel pipes, classified into four grades—A, B, C, and D—based on yield strength.

Grade B is one of the grades within the ASTM A500 specification.

### 2. ALLLAND ASTM A500 Grade B Common Supply Range

| Item                        | Specification             |
|-----------------------------|---------------------------|
| Standard                    | ASTM A500 / A500M         |
| Grade                       | Grade B                   |
| Shape                       | CHS / SHS / RHS           |
| Round Tube Size Range       | 10.3 mm – 820 mm OD       |
| Square Tube Size Range      | 25 × 25 mm – 300 × 300 mm |
| Rectangular Tube Size Range | 40 × 20 mm – 400 × 300 mm |
| Wall Thickness              | 1.5 mm – 25 mm            |
| Standard Length             | 6 m / 12 m                |
| Customized Length           | Available                 |
| Manufacturing Process       | ERW / Cold Formed         |

### 3. Application

ASTM A500 Grade B structural tubes are widely used in steel construction, bridges, infrastructure, and industrial structures.

They are commonly applied in building frames, columns, beams, trusses, machinery supports, and transportation structures.

With higher mechanical strength than Grade A, Grade B tubes are suitable for heavy-duty structural components and load-bearing applications.

They provide excellent weldability, dimensional accuracy, and reliable performance in various engineering projects.

### Critical Tolerances

| Parameter         | Tolerance Requirement                      |
|-------------------|--------------------------------------------|
| Outside Dimension | ±1% of specified outside dimension         |
| Wall Thickness    | ±10% of specified thickness                |
| Length            | According to purchaser requirements        |
| Straightness      | Maximum deviation: 1/8 in. × total length  |
| Corner Radius     | Maximum 3 times wall thickness for SHS/RHS |

### Chemical and Mechanical Properties

#### 1. ASTM A500 Grade B Chemical Composition

| Element        | Maximum Value (%)         |
|----------------|---------------------------|
| Carbon (C)     | 0.26 max                  |
| Manganese (Mn) | 1.35 max                  |
| Phosphorus (P) | 0.035 max                 |
| Sulfur (S)     | 0.035 max                 |
| Copper (Cu)    | 0.20 min (when specified) |

#### 2. ASTM A500 Grade B Mechanical Properties

| Property           | Requirement                               |
|--------------------|-------------------------------------------|
| Tensile Strength   | 58,000 psi (400 MPa) min                  |
| Yield Strength     | 46,000 psi (315 MPa) min                  |
| Elongation (2 in.) | 23% min                                   |
| Type               | Structural Carbon Steel Tube              |
| Shape              | Round, Square, Rectangular Hollow Section |

### Dimension Specifications Table

#### 1. ASTM A500 Grade B Round Hollow Section (CHS) Dimensions

| Outside Diameter (OD) | Wall Thickness (WT) | Weight (kg/m) |
|-----------------------|---------------------|---------------|
| 21.3 mm               | 2.77 mm             | 1.27          |

| Outside Diameter (OD) | Wall Thickness (WT) | Weight (kg/m) |
|-----------------------|---------------------|---------------|
| 26.7 mm               | 2.87 mm             | 1.69          |
| 33.4 mm               | 3.38 mm             | 2.50          |
| 42.2 mm               | 3.56 mm             | 3.39          |
| 48.3 mm               | 3.68 mm             | 4.05          |
| 60.3 mm               | 3.91 mm             | 5.44          |
| 73.0 mm               | 5.16 mm             | 8.63          |
| 88.9 mm               | 5.49 mm             | 11.29         |
| 101.6 mm              | 6.35 mm             | 15.09         |
| 114.3 mm              | 6.02 mm             | 16.07         |
| 139.7 mm              | 6.55 mm             | 21.12         |
| 168.3 mm              | 7.11 mm             | 28.26         |
| 193.7 mm              | 8.18 mm             | 37.28         |
| 219.1 mm              | 8.18 mm             | 42.55         |
| 244.5 mm              | 10.31 mm            | 60.30         |
| 273.0 mm              | 9.27 mm             | 60.31         |
| 323.9 mm              | 9.53 mm             | 73.59         |
| 355.6 mm              | 9.53 mm             | 81.14         |
| 406.4 mm              | 9.53 mm             | 93.18         |

## 2. ASTM A500 Grade B Square Hollow Section (SHS) Dimensions

| Size (W × H) | Wall Thickness (WT) | Weight (kg/m) |
|--------------|---------------------|---------------|
| 25 × 25 mm   | 2.0 mm              | 1.49          |
| 30 × 30 mm   | 2.0 mm              | 1.80          |
| 40 × 40 mm   | 2.0 mm              | 2.42          |
| 40 × 40 mm   | 3.0 mm              | 3.48          |
| 50 × 50 mm   | 2.5 mm              | 3.70          |
| 50 × 50 mm   | 3.0 mm              | 4.39          |
| 60 × 60 mm   | 3.0 mm              | 5.09          |
| 75 × 75 mm   | 3.0 mm              | 6.45          |
| 75 × 75 mm   | 4.0 mm              | 8.39          |
| 80 × 80 mm   | 4.0 mm              | 9.05          |
| 100 × 100 mm | 3.0 mm              | 8.48          |
| 100 × 100 mm | 4.0 mm              | 11.08         |
| 100 × 100 mm | 5.0 mm              | 13.63         |
| 120 × 120 mm | 5.0 mm              | 16.54         |
| 150 × 150 mm | 5.0 mm              | 20.94         |
| 150 × 150 mm | 6.0 mm              | 24.98         |
| 200 × 200 mm | 6.0 mm              | 33.29         |
| 200 × 200 mm | 8.0 mm              | 43.86         |
| 250 × 250 mm | 8.0 mm              | 55.16         |
| 300 × 300 mm | 10.0 mm             | 89.54         |

## 3. ASTM A500 Grade B Rectangular Hollow Section (RHS) Dimensions

| Size (W × H) | Wall Thickness (WT) | Weight (kg/m) |
|--------------|---------------------|---------------|
| 40 × 20 mm   | 2.0 mm              | 1.80          |
| 50 × 25 mm   | 2.0 mm              | 2.20          |
| 60 × 40 mm   | 3.0 mm              | 4.24          |
| 75 × 50 mm   | 3.0 mm              | 5.66          |

| Size (W × H) | Wall Thickness (WT) | Weight (kg/m) |
|--------------|---------------------|---------------|
| 80 × 40 mm   | 3.0 mm              | 5.09          |
| 100 × 50 mm  | 3.0 mm              | 6.84          |
| 100 × 50 mm  | 4.0 mm              | 8.89          |
| 120 × 60 mm  | 4.0 mm              | 10.15         |
| 150 × 75 mm  | 4.0 mm              | 13.45         |
| 150 × 100 mm | 5.0 mm              | 18.46         |
| 200 × 100 mm | 5.0 mm              | 22.79         |
| 200 × 100 mm | 6.0 mm              | 27.11         |
| 250 × 150 mm | 6.0 mm              | 36.54         |
| 300 × 200 mm | 8.0 mm              | 60.00         |
| 350 × 250 mm | 10.0 mm             | 91.20         |
| 400 × 300 mm | 10.0 mm             | 108.00        |

## Surface Treatment & Packing

| Item           | Options                    |
|----------------|----------------------------|
| Surface Finish | Black, galvanized, painted |
| End Type       | Plain End                  |
| Protection     | Plastic caps available     |
| Packing        | Steel bundles with straps  |
| Documents      | MTC, Inspection Report     |

## ALLLAND ASTM A500 Grade B Product Images



The image shows steel pipes actually produced by our company