

# ASTM A 106

## Seamless Pressure Pipe

### Grades A & B

#### Submittal Data

#### Scope

Covers seamless carbon steel Grades A & B pipe for high pressure and high temperature service. Pipe is suitable for bending, flanging, and similar forming operations and for welding. Applications include: Refineries, Power Plants, Boilers, Ship Building, and other specialized applications.

#### Heat Treatment

Hot-finished pipe need not be heat treated. Cold-drawn pipe shall be heat treated after the final cold draw pass at a temperature of 1200°F or higher.

#### Hydrostatic & Nondestructive Electric Testing

Hydrostatic inspection test pressure is 2500 psi for sizes NPS 2 and under. Test pressure shall be maintained for a minimum of 5 seconds.

When specified by the purchaser, pipe may be tested by the nondestructive electric test in lieu of the hydrostatic test.

#### End Finish

##### Plain End:

NPS 1-1/2 and smaller shall be either plain end square cut or plain end beveled at the option of the manufacturer. NPS 2 ends shall be beveled to angle 30° +5°, -0° with a root face of 1/16" ± 1/32".

##### Threaded Pipe:

Threads comply with ANSI Standard B 1.20.1

##### Couplings:

Couplings comply with ASTM Standard A 865

#### Available Coatings

ASTM A 106 seamless pipe is available in four different coatings:

- Exclusive Blue Diamond® Coating
- Hot-Dipped Galvanized
- Pickled and Oiled
- Bare

#### Chemical Requirements Composition, % Max

Carbon <sup>A</sup>	Manganese	Phosphorus	Sulfur
.25	0.27/0.93	.035	.035

Silicon	Copper <sup>B</sup>	Nickel <sup>B</sup>	Chromium <sup>B</sup>
0.10 Min	.40	.40	.15

Molybdenum <sup>B</sup>	Vanadium <sup>B</sup>
.15	.08

<sup>A</sup>For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.35%

<sup>B</sup>The combination of these five elements shall not exceed 1.00%

#### Tensile Requirements

Yield Strength, min	35,000 psi
Tensile Strength, min	60,000 psi
Elongation in 2"	35% Minimum

#### Bending Test (Cold) For NPS 2 and under

	Degree Of Bend	Diameter of Mandrel
Standard	90°	12 X pipe O.D.
Close Coiling	180°	8 X pipe O.D.

#### Frequency of Tests

Tensile tests and flattening tests are required on one length of pipe from each lot of 400 lengths or fraction thereof for each size.

#### Dimensions and Weights

The dimensions and weights furnished under this specification are in agreement with the standardized dimensions and weights specified in ANSI B 36.10.

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#### Plain End Dimensions Schedules 40 & 80

Nominal Size	O.D. Inches	Schedule 40		Schedule 80	
		Wall	Weight, Lb/Ft	Wall	Weight, Lb/Ft
1/8	0.405	.068	0.24	.095	0.31
1/4	0.540	.088	0.43	.119	0.54
3/8	0.675	.091	0.57	.126	0.74
1/2	0.840	.109	0.85	.147	1.09
3/4	1.050	.113	1.13	.154	1.48
1	1.315	.133	1.68	.179	2.17
1-1/4	1.660	.140	2.27	.191	3.00
1-1/2	1.900	.145	2.72	.200	3.63
2	2.375	.154	3.66	.218	5.03

#### Plain End Dimensions Schedules 160 & XXS

Nominal Size	O.D. Inches	Schedule 160		Schedule XXS	
		Wall	Weight, Lb/Ft	Wall	Weight, Lb/Ft
1/8	0.405	N/A	N/A	N/A	N/A
1/4	0.540	N/A	N/A	N/A	N/A
3/8	0.675	N/A	N/A	N/A	N/A
1/2	0.840	.188	1.31	.294	1.72
3/4	1.050	.219	1.95	.308	2.44
1	1.315	.250	2.85	.358	3.66
1-1/4	1.660	.250	3.77	.382	5.22
1-1/2	1.900	.281	4.86	.400	6.41
2	2.375	N/A	N/A	N/A	N/A

#### Permissible Variations in Wall Thickness

Minimum wall thickness at any point shall not be more than 12.5% under nominal wall thickness specified. Maximum wall thickness at any point shall not be greater than 20.0% over nominal wall thickness.

#### Workmanship

Visual imperfections such as scabs, seams, laps or tears shall not exceed 5% of the nominal wall thickness.

#### Permissible Variations in Outside Diameter

NPS 1-1/2 and under     ± 1/64"  
NPS 2                             ± 1/32"

#### Permissible Variations in Weight per Foot

Pipe shall not vary more than 10% over and 3.5% under the standard specified.

#### Product Marking

Each length of pipe is continuously stenciled to show the manufacturer, specification (A106), size (O.D. & wall), "A & B" for Grades A & B, 2500 psi, length and heat number

#### Manufacturing Location

All product furnished by Wheatland Tube Company and Sharon Tube Company are manufactured by Sharon Tube in Sharon, PA, USA.

#### Hot-Dipped Galvanized

Pipe is galvanized to the requirements of ASTM A 53. The average weight of zinc coating shall not be less than 1.8 ounces per square foot of surface (inside and outside).

When galvanized pipe is bent or otherwise fabricated to a degree that causes the zinc coating to stretch or compress beyond the limit of elasticity, some flaking of the coating may occur.