

# ASTM A 53 STEEL PIPE

NPS 1/8" to 26" Std., XS & XXS A.N.S.I. Schedules 10 to 160

## SCOPE

This specification covers seamless, welded black and hot-dipped galvanized steel pipe in NPS 1/8" to 26" Std., XS and XXS, A.N.S.I. Schedules 10 through 160, with nominal average wall thickness. Pipe is intended for mechanical and pressure applications, along with ordinary uses in steam, water, gas and airlines. It is suitable for welding, coiling, bending and flanging. Continuous weld Type F is not intended for flanging. Purpose for which pipe is intended should be stated on order.

## TYPES AND GRADES

**Type F:** Furnace-butt welded, continuous welded Grade A

**Type E:** Electric-resistance welded, Grades A and B

**Type S:** Seamless, Grades A and B

## HOT-DIPPED GALVANIZING

Sets standards for coating of pipe with zinc inside and outside by the hot-dipped process. Weight of coating must not average greater than 1.8 oz. per square foot and not less than 1.6 oz. per square foot.

## CHEMICAL REQUIREMENTS AND PROCESSES

Type S (Seamless pipe) & Type E (Electric-weld)				
Open Hearth, Electric Furnace, or Basic Oxygen	Composition Max%			
	C	Mn	P	S
Grade A	0.25	0.95	0.05	0.06
Grade B	0.30	1.20	0.05	0.06

  

Type F (Furnace-welded pipe)				
Open Hearth, Electric Furnace, or Basic Oxygen	Composition Max%			
	C	Mn	P	S
—	—	—	0.08	0.06

## TENSILE REQUIREMENTS

Continuous Weld (furnace-welded)	Acid-Bessemer	O.H., Basic Oxygen or Elec. Furn
Tensile Strength min., psi	50,000	45,000
Yield Point min., psi	30,000	25,000

  

Seamless or Electric-Weld	Grade A	Grade B
Tensile Strength min., psi	48,000	60,000
Yield Point min., psi	30,000	35,000

## PERMISSIBLE VARIATIONS IN WEIGHT PER FOOT

For Extra Strong and lighter wall thicknesses	Plus or minus 5%
For heavier than Extra Strong wall thicknesses	Plus or minus 10%

## PERMISSIBLE VARIATIONS IN OUTSIDE DIAMETER

**For pipe NPS 1-1/2" and under:** the outside diameter at any point shall not vary more than plus or minus 1/64" from the standard specified.

**For pipe NPS 2" and over:** the outside diameter at any point shall not vary more than plus or minus 1%.

## PERMISSIBLE VARIATIONS IN WALL THICKNESS

The minimum wall thickness at any point shall be not more than 12.5% under the national wall thickness specified.

## HYDROSTATIC TESTING

Hydrostatic inspection test pressures for plain end, threaded and coupled pipe specified. Hydrostatic pressure shall be maintained for not less than 5 seconds for all sizes of seamless and electric-weld pipe.

## MECHANICAL TESTS SPECIFIED

**Tensile Test:** Transverse required on EW sizes 8-5/8" & larger

**Bending Test:** (Cold) Std. and XS: 2" & under. XXS: 1-1/4" & under

	Degree of Bend	Diameter of Mandrel
For Normal A53 Uses	90	12 x nom. dia. of pipe
For Close Coiling	180	8 x nom. dia. of pipe

**Flattening Test:** 2-1/2" and larger Std. and XS.

*(Not required for XXS pipe)*

## NUMBER OF TESTS REQUIRED

**Seamless & Continuous Weld:** Bending, flattening tensile on one length of pipe from each lot of 500 lengths or less of a size.

**Electric-Weld:** Bending and tensile on one length of pipe from each lot of 500 lengths or less of a size.

**Electric-Weld:** Flattening on both crop ends of each length. (Coil, in case of multiple lengths.)

## LENGTHS

- Pipe Lighter than Extra-Strong shall be in single-random lengths of 16 to 22 ft.
- Pipe Extra-Strong and Heavier shall be in single-random lengths of 12 to 22 ft.
- When Extra-Strong or Lighter pipe is ordered in double-random lengths, the order shall have a minimum average of 35 ft.
- Lengths longer than single-random, heavier wall than Extra-Strong are subject to negotiation.

## REQUIRED MARKINGS ON EACH LENGTH

*(On Tags attached to each bundle)*

- Rolled, Stamped or Stenciled
- Manufacturer's name or brand
- Kind of pipe; that is, furnace-butt welded, EW-A, seamless B, etc.
- XS - for extra strong or XXS - for double extra strong
- ASTM A53
- Length of pipe
- Also necessary to indicate when electric furnace or basic oxygen steel is used