

ASTM A 53	This specification covers seamless and 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 air lines. 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 less than 1.8 oz. per square foot and not less than 1.6 oz. per square foot.																																														
Chemical Requirements and Processes	<p style="text-align: center;">Type S (Seamless pipe) & Type E (Electric-weld)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Open-Hearth, Electric - Furnace or Basic Oxygen</td> <td style="width: 10%;"></td> <td style="width: 30%; text-align: center;">Composition---Max %</td> <td style="width: 30%;"></td> </tr> <tr> <td>Grade A</td> <td style="text-align: center;">C</td> <td style="text-align: center;">Mn</td> <td style="text-align: center;">P</td> </tr> <tr> <td>Grade B</td> <td style="text-align: center;">0.25</td> <td style="text-align: center;">0.95</td> <td style="text-align: center;">0.05</td> </tr> <tr> <td></td> <td style="text-align: center;">0.30</td> <td style="text-align: center;">1.20</td> <td style="text-align: center;">0.05</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">S</td> <td style="text-align: center;">0.06</td> </tr> <tr> <td></td> <td></td> <td style="text-align: center;">0.06</td> <td></td> </tr> </table> <p style="text-align: center;">Type F (Furnace-welded pipe)</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 30%;">Open-Hearth, Electric - Furnace or Basic Oxygen</td> <td style="width: 10%;"></td> <td style="width: 30%; text-align: center;">Composition---Max %</td> <td style="width: 30%;"></td> </tr> <tr> <td></td> <td style="text-align: center;">C</td> <td style="text-align: center;">Mn</td> <td style="text-align: center;">P</td> </tr> <tr> <td></td> <td style="text-align: center;">----</td> <td style="text-align: center;">----</td> <td style="text-align: center;">0.08</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">S</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">0.06</td> </tr> </table>			Open-Hearth, Electric - Furnace or Basic Oxygen		Composition---Max %		Grade A	C	Mn	P	Grade B	0.25	0.95	0.05		0.30	1.20	0.05			S	0.06			0.06		Open-Hearth, Electric - Furnace or Basic Oxygen		Composition---Max %			C	Mn	P		----	----	0.08				S				0.06
Open-Hearth, Electric - Furnace or Basic Oxygen		Composition---Max %																																													
Grade A	C	Mn	P																																												
Grade B	0.25	0.95	0.05																																												
	0.30	1.20	0.05																																												
		S	0.06																																												
		0.06																																													
Open-Hearth, Electric - Furnace or Basic Oxygen		Composition---Max %																																													
	C	Mn	P																																												
	----	----	0.08																																												
			S																																												
			0.06																																												
Tensile Requirements	Continuous Weld (furnace-welded) Tensile Strength min., psi Yield Point min., psi Seamless or Electric-Weld Tensile Strength min., psi Yield Point min., psi	Acid-Bessemer 50,000 30,000 Grade A 48,000 30,000	O.H., Basic Oxygen or Elec. Furn. 45,000 25,000 Grade B 60,000 35,000																																												
Permissible Variations in Weights 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 1½" 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 nominal wall thickness specified.																																														
Hydrostatic Testing	Hydrostatic inspection test pressures for plain end and threaded and coupled pipe are 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" and larger. Bending Test (Cold) Std. and XS-2" and under. XXS-1¼" and under. <table border="0" style="width: 100%;"> <tr> <td style="width: 40%;"></td> <td style="width: 30%; text-align: center;">Degree of Bend</td> <td style="width: 30%; text-align: center;">Diameter of Mandrel</td> </tr> <tr> <td>For Normal A53 Uses</td> <td style="text-align: center;">90</td> <td style="text-align: center;">12 x nominal diameter of pipe</td> </tr> <tr> <td>For Close Coiling</td> <td style="text-align: center;">180</td> <td style="text-align: center;">8 x nominal diameter of pipe</td> </tr> </table> Flattening Test 2½" and larger Std. and XS. (Not required for XXS pipe)				Degree of Bend	Diameter of Mandrel	For Normal A53 Uses	90	12 x nominal diameter of pipe	For Close Coiling	180	8 x nominal diameter of pipe																																			
	Degree of Bend	Diameter of Mandrel																																													
For Normal A53 Uses	90	12 x nominal diameter of pipe																																													
For Close Coiling	180	8 x nominal diameter of 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 (Or Tags attached to each Bundle)	Rolled, Stamped or Stenciled Name or brand of manufacturer. Kind of pipe, that is, furnace-buttwelded, EW-A, seamless B, etc. XS -- for extra strong. XXS -- for double extra strong. ASTM A53. Also necessary to indicate when electric-furnace, or basic-oxygen steel is used. Length of pipe.																																														