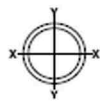




ASTM A53



COLD-FORMED ERW BLACK STEEL PIPE ROUND PIPE IN GRADES A and B

EXCERPTS FROM ASTM A53 SPEC TYPE E

TOLERANCES IN OUTSIDE DIAMETERS:	<u>Largest Outside Diameter, across flats, in.(mm)</u> NPS 1-1/2 (48.26) pipe and under: NPS 2 (60.32) pipe and larger:		<u>Tolerance, plus and minus, in.(mm)</u> 1/64(0.397) 1 percent						
TOLERANCES IN WALL THICKNESS:	Minus 12.5% of nominal thickness.								
TOLERANCES IN WEIGHTS:	Plus and Minus 10 % of tabulated weight.								
TOLERANCES IN LENGTHS:	Not specified for uniform length.								
CHEMICAL REQUIREMENTS: percent:	C	Mn	P	S	Cu	Ni	Nb	Mo	V
	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>	<u>max.</u>
Grade A	0.25	0.95	0.050	0.045	0.040	0.040	0.040	0.015	0.008
Grade B	0.30	1.20	0.050	0.045	0.040	0.040	0.040	0.015	0.008
MECHANICAL PROPERTIES:	Yield Strength min., <u>psi (MPa)</u>	Tensile Strength min., <u>psi (MPa)</u>	Elongation % in 2 in. <u>(50.80 mm)</u>	*The minimum elongation in 2 in. (50 mm) shall be that determined by the following equation: $q = 625000 [1940] A^{0.2} / U^{0.9}$ where A = cross-sectional area of the tension specimen, rounded to the nearest 0.01 in. ² [1 mm ²], based on the specified outside diameter or the nominal specimen width and specified wall thickness. If the area calculated is equal to or greater than 0.75 in. ² [500 mm ²], then the value 0.75 in. ² [500 mm ²] shall be used, and U = specified tensile strength, psi [MPa]					
Grade A	30000(205)	48000(330)	*						
Grade B	35000(240)	60000(415)	*						
MECHANICAL TESTS:	Tensile Test: Transverse test required on NPS 8 (219.1 mm) and larger. Bending Test: NPS 2 (60.32 mm) and smaller for normal A-53 uses shall stand cold bending through 90 deg around a cylindrical mandrel, the diameter of which is 12 times the nominal pipe diameter. Flattening Test: Shall be made on pipe over NPS 2 with wall thicknesses extra strong and lighter. A specimen flattened cold between parallel plates, with the weld located either 0 or 90 deg from the line of direction of force, in three - steps: first to two thirds of the original outside diameter, second to one third, and third until the specimen breaks or the opposite walls of the pipe meet.								
MILL-INSPECTION HYDROSTATIC TEST:	Test pressures shall not exceed 2,500 psi (17.2 MPa) for NPS 3 (88.90 mm) and under, or 2,800 psi (19.3 MPa) for all sizes over NPS 3 (88.90 mm) pipe.								
NON DESTRUCTIVE ELECTRONIC TEST:	The weld seam of each length of ERW pipe NPS 2 and larger shall be tested with a nondestructive electric test, such as ultrasonic or electromagnetic inspection.								