

## MATERIAL SPECIFICATIONS

### A. PIPES AND FITTINGS

#### A.1. Galvanized Iron (GI)

A.1.1. Pipes shall conform to the requirements of the ASTM A53/A53M (Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless) or the latest revision or its equivalent and shall be Schedule 40.

Pipe fittings shall conform to the requirements of ASME/ANSI B16.3 (Malleable Iron Threaded Fittings Class 150 and 300) and shall be Class 150.

A.1.2. The pipe shall be practically straight and both ends of the pipe shall be at right angle to the axis of the pipe. The inside and outside surfaces of the pipe shall be free from injurious defects. Unless otherwise specified, the length of the pipe shall be 6 meters. The tolerance shall be plus 6 meters without negative tolerance. Pipes shall be clearly marked with Trademark, Nominal Size, Length and Class of Pipe.

A.1.3. The pipe and fitting threads shall be made according to "American Standard Pipe Taper Thread (NPT) with taper angle equal to 1'47".

A.1.4. Pipes and fittings shall be coated with zinc, both inside and outside surfaces, in accordance to ASTM A153/A153M-05 (Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware)

**Table 1. GI Pipe and Fitting Dimensions**

Nominal Pipe Size, in	½	¾	1	1¼	1½	2	3	4
Nominal Diameter, mm	15	20	25	32	40	50	75	100
<i>Pipes</i>								
Outside Diameter, mm	21.3	26.7	33.4	42.2	48.3	60.3	88.9	114.3
Wall Thickness, mm	2.8	2.9	3.4	3.6	3.7	3.9	5.49	6.02
Tolerance								
outside	+0.397	+0.397	+0.397	+0.397	+0.397	+1%	+1%	+1%
wall thickness	-12.5%	-12.5%	-12.5%	-12.5%	-12.5%	-12.5%	-12.5%	-12.5%
Weight per meter, kg	1.27-1.34	1.66-1.78	2.50-2.62	3.38-3.55	3.75-4.23	5.80-5.43	10.3-11.3	14.5-16.1
<i>Fittings</i>								
<b>90° Elbow</b>								
Length	28.45	33.27	38.10	44.45	46.74	57.15	78.23	96.27
Weight, kg	0.11	0.18	0.29	0.43	0.56	0.79	2.34	4
<b>45° Elbow</b>								
Length	22.35	24.89	28.45	32.77	36.32	42.67	55.12	66.29
Weight, kg	0.07	0.10	0.15	0.38	0.52	0.77	2.11	3.46
<b>St. Elbow</b>								
Length, ME	40.89	48.01	54.10	61.98	67.82	83.06	114.55	114.27
Length, FE	28.45	33.02	38.10	44.45	49.28	57.15	78.23	96.27
Weight, kg	0.11	0.18	0.29	0.49	0.66	1.06	2.99	4.94
<b>Tee</b>								
Length	28.45	33.27	38.10	44.45	49.28	57.15	78.23	96.27
Weight, kg	0.16	0.25	0.41	0.59	0.78	1.19	3.22	5.12
<b>Cross Tee</b>								
Length	28.45	33.27	38.10	44.45	49.28	57.15	78.23	96.27

## Brass

- B.4.10. Brass valves shall be full port, screwed-in bonnet and non-rising stem.
- B.4.11. The valve body, bonnet and solid wedge disc shall be brass conforming to ASTM B584 Alloy C84400-1996 or the latest revision or its equivalent. The minimum pressure rating shall be 125psi saturated steam pressure and 200psi non-shock water, oil or gas.
- B.4.12. The valve shall be threaded end conforming to ASME B1.20.1 (NPT)

**Table 4. Brass Gate Valve Dimensions**

Nominal Pipe Size, in	½	¾	1	1¼	1 ½	2
Nominal Diameter, mm	15	20	25	32	40	50
Length, mm	35-43	39-45	43-54	48-61	54-63	58-72
Height, mm	71-72	77-84	88-98	103-116	114-125	134-153
Handwheel Diameter, mm	54-55	54-55	60-61	72-77	72-77	80-83

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