

HDPE PIPE

Introduction

TVSB PN® HDPE pipe is manufactured conforming to MS 1058 Part 2:2002 standards for water pipes. It provides high impact strength and is unaffected by acidic soil conditions or other corrosion inducing condition. No protective layers or finishing processes are required, thus avoiding additional expenses and further potential risk of failure. The pipe size ranges from 20mm to 630mm and can have a life span of 50 years under optimum working condition.

2. Specification

2.1 Materials

The material used is High Density Polyethylene (HDPE)

2.2 Compounds

The pipes shall be manufactured from polyethylene (HD 12BK) containing only those antioxidants, UV stabilizer and carbon black necessary for the manufacturer of pipes to this specification and to it end use.

2.3 Color

The color of pipes shall be black or black with blue stripe

2.4 Appearance

The internal and external surfaces of the pipes shall be smooth, clean and free from scoring, cavities and other surfaces defects which may affect pipe performances

Size & Dimension		PE 80				σ = 6.3 Mpa				
Nominal Outer Diameter (mm)	PN 6		PN 8		PN 10		PN 12.5		PN 16	
	S-10		S-8		S-6.3		S-5		S-4	
	Wall Thickness (mm)									
	ey.min	ey.max	ey.min	ey.max	ey.min	ey.max	ey.min	ey.max	ey.min	ey.max
20							2.3	2.7	2.3	2.7
25					2.3	2.7	2.3	2.7	2.8	3.2
32			2.3	2.8	2.4	2.8	2.9	3.3	3.6	4.1
40	2.3	2.7	2.4	2.9	3.0	3.5	3.7	4.2	4.5	5.1
50	2.4	2.8	3.0	3.5	3.7	4.2	4.6	5.2	5.6	6.3
63	3.0	3.5	3.8	4.3	4.7	5.3	5.8	6.5	7.1	8.0
75	3.6	4.1	4.5	5.1	5.5	6.2	6.8	7.6	8.4	9.4
90	4.3	4.9	5.4	6.1	6.6	7.4	8.2	9.2	10.1	11.3
110	5.3	6.0	6.6	7.4	8.1	9.1	10.0	11.2	12.3	13.7
125	6.0	6.8	7.4	8.3	9.2	10.3	11.4	12.7	14.0	15.6
140	6.7	7.5	8.3	9.3	10.3	11.5	12.7	14.1	15.7	17.4
160	7.7	8.6	9.5	10.6	11.8	13.1	14.6	16.2	17.9	20.7
180	8.6	9.6	10.7	11.9	13.3	14.8	16.4	19.0	20.1	23.3
200	9.6	10.7	11.9	13.2	14.7	16.3	18.2	21.1	22.4	25.9
225	10.8	12.0	13.4	14.9	16.6	19.2	20.5	23.7	25.1	29.0
250	11.9	13.2	14.8	16.4	18.4	21.3	22.7	26.3	27.9	32.2
280	13.4	14.9	16.6	19.2	20.6	23.8	25.4	39.4	31.3	36.1
315	15.0	16.7	18.7	21.7	23.2	26.8	28.6	33.0	35.2	40.6
355	16.9	19.6	21.1	24.4	26.1	30.2	32.2	37.2	39.7	45.8
400	19.1	22.1	23.7	27.4	29.4	34.0	36.3	41.9	44.5	51.3
450	21.5	24.9	26.7	30.9	33.1	38.2	40.9	47.2	50.3	58.0
500	23.9	27.6	29.6	34.2	36.8	42.5	45.4	52.4	55.8	64.3
460	26.7	30.9	33.2	38.3	41.2	47.5	50.8	58.6		
630	30.0	34.7	37.3	43.0	46.3	53.4	57.2	65.9		

KEY : PN = Nominal Pressure ey.min = Min. Wall Thickness ey.max = Max wall Thickness σ = Hydrostatic Design Stress

3.1 Standard length

Pipe lengths available :-
 20 - 50mm OD = 100 - 500m coiled lengths
 63 - 110mm OD = 50 - 100m coiled lengths
 110 - 630mm OD = 6 or 12m straight lengths

4. **Inspection & Test**

Properties	Tests	Tests Specification
Physical	Dimension and Ovality	According to MS 1058 Parts 2 (2002)
	Hydrostatic pressure	PE 80 at 80°C $\sigma = 4.6$ Mpa 165h $\sigma = 4.0$ Mpa at 1000h
	Thermal Stability	Oxidation induction time (OIT) > 20 MINUTE at 200°C

5. **Marking**

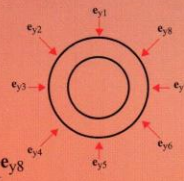
All pipes shall be permanently and legibly marked at maximum intervals of 1 m. The marking shall carry the following information:

- i. Manufacturer's Name/Trade Mark
- ii. Dimension (Nominal Outer Diameter)
- iii. Material and Material Class (PE80)
- iv. Nominal Pressure Class (PN) in bar
- v. Production Date
- vi. Specification Number
MS 1058 PART 2 : 2002
- vii. The word 'WATER'

6. **Mean Wall Thickness**

The arithmetic mean of eight measurement points regularly spaced around the pipe cross section shall include the measured minimum & maximum thickness values rounded up to the next higher 0.1mm.

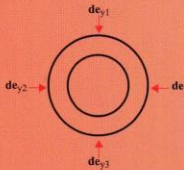
$$e_m = \frac{e_{y1} + e_{y2} + e_{y3} + e_{y4} + e_{y5} + e_{y6} + e_{y7} + e_{y8}}{8}$$



7. **Ovality**

The measures difference between the maximum outside diameter of the pipe at any point and the minimum outside diameter of the pipe at any point in the same cross section.

$$\text{Ovality} = d_{e_{y,max}} - d_{e_{y,min}}$$



8. **Recommended maximum working pressure at 30°C**

Pipe Material / Type	Nominal Pressure (PN)	Series S	Recommended Maximum Working Pressure (bar)
PE 80	16.0	S-4	12.8
	12.5	S-5	10.0
	10.0	S-6.3	8.0
	8.0	S-8	6.4
	6.0	S-10	4.8

9. **Advantages**

Corrosion Resistance - The corrosion resistance property of PE pipe makes it suitable for transporting acidic/corrosive liquids and/or installation in swampy, marshy and corrosive environment.

Impact Strength - Polyethylene pipe has high impact strength and does not break or shatter during handling and transporting.

UV Resistance - Polyethylene has carbon black stabilizer for UV resistance and can be stored or used outdoors over a long period of time without change in properties.

Easy jointing - HDPE pipe offers simple jointing system by electro fusion or butt fusion welding technique to give a strong and leak proof joint.