

PE PIPE





INTRODUCTION

PE material exhibits a lot of advantages over traditional materials for pressure pipe applications. PE pipe also applicable for sewerage, drainage, sub-duct for electrical & telecommunication cabling

GENERAL SPECIFICATION

Material:
PE100

Certified Standard:

Water Pipe:

MS1058: PART 2: 2005

ISO4427: PART 2: 2019

TNB:

Certified Supplier of Tenaga Nasional

Gas Pipe:

MS1086: PART 2: 2007

ISO4437: PART 2: 2014

Size:

20mm through 630mm availability

Pressure Rating:

PN6, PN8, PN10, PN12.5, PN16, PN20

Colour:

Water Supply:

Black with blue stripes

Electrical (TNB):

Red

Telecommunication:

Black, Black with Orange stripes

Sewer:

Black with Brown stripes

Gas:

Yellow

ADVANTAGE

- Corrosion Resistance : PE pipes are corrosion free
- Flexibility : Allows good conformity to most terrain contour
- Long Length and availability in coil (up to 125mmOD) : Enable jointless laying of longer pipe line
- Resistance to abrasion: Ability to handle many types of slurries and other abrasive elements
- Superior Flow: Smooth interior surface ensures good flow of water and prevent crust formation on the pipe
- Dampen/ Eliminate Water Hammer : Can withstand higher transient pressure than conventional pipes because of greater elasticity
- Tough and Durable: Has higher impact strength
- Lower Overall Cost: Significant cost saving in terms of transportation, cheaper installation and maintenance.
- Light Weight: 6-10 times lighter than conventional pipes
- Fully Welded Leak Free joints

APPLICATION

- Water Supply
- Sewerage
- Drainage
- Sub-duct for electrical and telecommunication cabling
- Gas Supply



DESIGN CONSIDERATION

- PE pipe is produced using an extrusion process, nominal pipe diameters DN refer to the external diameter, OD
- Pipe internal diameter (ID) necessary for the flow capacity required.
- Maximum operation pressure on the pipeline
- **Service temperature :**
 - For water pipe: 20°C as a reference temperature

Note : For application operating at constant temperatures greater than 20°C and up to 40°C a pressure reduction coefficient as given in table below may be applicable:

Temperature (°C)	Coefficient
20	1.00
30	0.87
40	0.74

- For other temperatures between each step, interpolation is permitted
 - For gas pipe: not exceeding 35°C
- Material: PE100
 - Designations PE100 are based on minimum required strength (MRS) which means the long-term strength of the respective materials in accordance to ISO 12162.

Material Designation	Minimum Required Strength (MRS) MPa
PE100	10.0

- PE100 has higher elastic modulus, yield stress, strain hardening modulus and viscous stress.
- Suggested Manning's n Value
 - For clear water application n = 0.009
 - For sanitary sewer application n = 0.010

STANDARD DETAILS

SPIROLITE PE PIPE WEIGHT CHART (PE100)

PE 100

SDR	26		21		17		13.6		11		9	
PN	6		8		10		12.5		16		20	
MINIMUM WALL THICKNESS (mm)												
OD(mm)	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
20									2.0	0.117	2.3	0.133
25							2.0	0.149	2.3	0.171	3.0	0.212
32					2.0	0.194	2.4	0.231	3.0	0.279	3.6	0.328
40			2.0	0.246	2.4	0.295	3.0	0.362	3.7	0.431	4.5	0.512
50	2.0	0.311	2.4	0.373	3.0	0.453	3.7	0.550	4.6	0.669	5.6	0.793
63	2.5	0.492	3.0	0.578	3.8	0.722	4.7	0.877	5.8	1.057	7.1	1.266
75	2.9	0.674	3.6	0.828	4.5	1.019	5.6	1.242	6.8	1.476	8.4	1.779
90	3.5	0.978	4.3	1.188	5.4	1.465	6.7	1.780	8.2	2.139	10.1	2.566
110	4.2	1.435	5.3	1.782	6.6	2.180	8.1	2.636	10.0	3.172	12.3	3.813
125	4.8	1.848	6.0	2.278	7.4	2.780	9.2	3.397	11.4	4.115	14.0	4.932
160	6.2	3.060	7.7	3.741	9.5	4.555	11.8	5.553	14.6	6.732	17.9	8.044
180	6.9	3.809	8.6	4.699	10.7	5.760	13.3	7.046	16.4	8.506	20.1	10.175
200	7.7	4.726	9.6	5.825	11.9	7.111	14.7	8.645	18.2	10.495	22.4	12.587
225	8.6	5.938	10.8	7.360	13.4	9.019	16.6	10.977	20.5	13.282	25.2	15.930
250	9.6	7.357	11.9	9.006	14.8	11.052	18.4	13.522	22.7	16.334	27.9	19.577
280	10.7	9.177	13.4	11.370	16.6	13.885	20.6	16.943	25.4	20.478	31.3	24.609
315	12.1	11.691	15.0	14.288	18.7	17.583	23.2	21.473	28.6	25.922	35.2	31.132
355	13.6	14.775	16.9	18.142	21.1	22.379	26.1	27.225	32.2	32.907	39.7	39.540
400	15.3	18.735	19.1	23.133	23.7	28.282	29.4	34.524	36.3	41.777	44.7	50.155
450	17.2	23.688	21.5	29.254	26.7	35.832	33.1	43.731	40.9	52.902	50.3	63.504
500	19.1	29.225	23.9	36.098	29.7	44.280	36.8	53.967	45.4	65.285	55.8	78.262
560	21.4	36.634	26.7	45.180	33.2	55.472	41.2	67.708	50.8	81.787		
630	24.1	46.418	30.0	57.073	37.4	70.258	46.3	85.580	57.2	103.625		

OD : Outer Diameter
SDR : Standard Dimension Ratio
PN : Nominal Pressure

STANDARD LENGTH

Pipes from 20mm to 32mm OD supplied in coils of 100 metres of straight length of 6 or 12 meters.

Pipes from 40mm to 110mm OD supplied in coils of 50 and 100 metres or straight length of 6 or 12 meters.

Pipes from 110mm to 630mm OD supplied in straight length of 6 and 12 meters.

STANDARD DETAILS

PE TNB RED PIPE

**Note:**

- Installation method by Horizontal Directional Drilling (HDD) recommend to refer Table PE 80 Wall thickness Table
- Installation method by Open Trench recommend to refer Table PE 100 Wall thickness Table
- Joining sockets are available upon request.

PE 80

SDR		13.6		11		
PN		10		12.5		
WALL THICKNESS (mm)						
OUTER DIAMETER (mm)	Min (mm)	Max (mm)	Weight (kg/m)	Min (mm)	Max (mm)	Weight (kg/m)
110	8.1	9.1	2.617	10.0	11.1	3.149
160	11.8	13.1	5.513	14.6	16.2	6.683
180	13.3	14.8	6.994	16.4	18.2	8.444
200	14.7	16.3	8.582	18.2	20.2	10.418
315	23.2	25.7	21.316	28.6	31.6	25.733

PE 100

SDR		17		13.6		
PN		10		12.5		
WALL THICKNESS (mm)						
OUTER DIAMETER (mm)	Min (mm)	Max (mm)	Weight (kg/m)	Min (mm)	Max (mm)	Weight (kg/m)
110	6.6	7.4	2.180	8.1	9.1	2.636
160	9.5	10.6	4.555	11.8	13.1	5.553
180	10.7	11.9	5.760	13.3	14.8	7.046
200	11.9	13.2	7.111	14.7	16.3	8.645
315	18.7	20.7	17.583	23.2	25.7	21.473

STANDARD DETAILS

PE TELEKOM BLACK PIPE

**Note:**

- Installation method by Horizontal Directional Drilling (HDD) recommend to refer Table PE 80 Wall thickness Table
- Installation method by Open Trench recommend to refer Table PE 100 Wall thickness Table
- Joining sockets are available upon request.

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JOINTING

1) Mechanical Joint by Compression Fitting

Mechanical joint is using compression fitting type to perform the jointing. Compression fitting designed with many mechanical small parts which can hold the pipe tightly by using the compression force. This fitting maximum can go up to 4 inch (110mm) diameter only. Usually this will use for indoor purpose, supply upon request.

2) Butt Fusion Joint by Butt Fusion Fittings



The most widely used method for joining individual lengths of PE pipe and pipe to PE fittings is by heat fusion of the pipe butt ends. Lesso brand is available to supply upon request.

3) Butt Fusion Joint by Fabricated Fittings



Fabricated fittings usually will be use for larger diameter of PE pipe and pipe to PE fittings is by heat fusion of the pipe butt ends. Lesso brand is available to supply upon request.

4) Electrofusion



Electrofusion is a method of joining PE pipe using electrofusion fittings that have built-in electric heating elements which are used to weld and join the pipes and fittings together. Lesso brand is available to supply upon request.



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