POLYETHYLENE PipingSystem

... The next generation piping

The Supreme Industries Ltd., is an acknowledged leader of India's plastic industry. It is credited with pioneering several path breaking products and has been a torch bearer in the transition from conventional to advanced plastic piping products in the country. Its customer centric approach fuels its research for designing unmatched quality products to meet the aspirations of its quality conscious customers. The innovative product portfolio offered by Supreme is extensive in range and application and comprises variety of pipes and vast spectrum of fittings totaling around 9000 diverse products.

Supreme offers complete range of Polyethylene (PE) pipes up to 800mm sizes in different material grades and pressure classes. These pipes are manufactured using superior quality virgin raw material with the help of state-of-the-art manufacturing facilities. Supreme PE pipes are designed to cater application requirements of water supply, irrigation, bore-wells, drainage, infrastructure projects and industries. These pipes are equipped with many outstanding features that assures long term system performance at lower maintenance cost.

IS:4984

CM/L-7789412

Unique Features

- **High reliability and proven service per formance**
- **Excellent chemical and corrosion resistance**
- **Excellent flow characteristics**
- **High impact strength**
- **Long service life**

Jeevan bhar ka saath...

Polyethylene Piping System

The system

Supreme polyethylene pipes are safe, long lasting and cost effective solution for variety of applications. Stringent tests on raw material and finished goods helps to ensure the quality as per the national and international standards.

Supreme PE pipes are manufactured according to IS:4984 and ISO:4427 and are tested by WRc-NSF, UK that endorses its suitability for potable water.

Features and benefits

- Excellent UV, low temperature and abrasion resistance
- Excellent water hammer resistance
- Excellent weldability
- Wide variety of installation methods
- Easy, quick and economical installation
- Ideal in shifting soil condition and earthquake prone areas

Pipes

Size range - 20 to 800 mm

Pressure class - SDR 41 to SDR 6 (PN 2 to 20)

Grades - PE 63, PE 80 and PE 100.

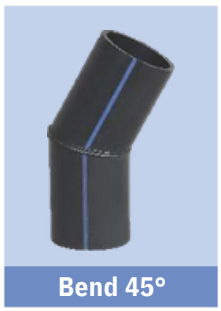
Fittings

We offer varieties of PE fittings in 63 to 800 mm sizes in PN 6, 10, 12.5 and 16 pressure class to complete the system requirements. 63 to 800 mm sizes are available in PE100 whereas 63 to 400 mm sizes are available in PE80. Stub Ends, Reducer and End Caps are available in moulded form whereas rest of the fittings like Bends 11.25° / 22.5° / 30° / 45° / 60° / 75° / 90°, Equal Tees, Cross Tees, Single Y's, Double Y's are available in handmade form.

Bend 11.25°

Bend 22.5°

Bend 30°


Bend 45°

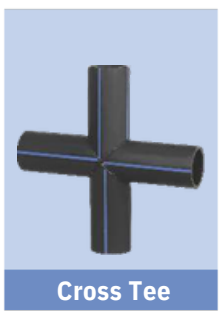
Bend 60°

Bend 75°

Bend 90°

Equal Tee

Single Y


Cross Tee

End Cap

Stub End & Reduc

Standards

Application	Grade	Applicable standard
Potable water mains, house connections	PE 63, PE 80 and PE	IS:4984, ISO:4427, DIN 8074/75, AS/NZS
Rural and agricultural pipes	100 PE 63 and PE 80	4130 IS:14151 (P-1)
Column pipes for submersible pumps in coil form	PE 63 and PE 80	IS:4984
Sprinkler and drip irrigation	PE 63 and above grade	IS:14151 Part - 1 and 2
Sewerage/Subsoil drainage	PE 80 and PE 100	IS:14333
Coal handling in mines	PE 80 and PE 100	IS:4984, IS:14333
Industrial applications	PE 63, PE 80 and PE	IS:4984, IS:14333
ID Pipes for submersible pump	100 PE 63 and PE 80	Company standard

Polyethylene Piping System

Applications of HDPE Pipes

Water supply	Industrial	Environmental protection	Agriculture	Other
Transportation and distribution systems (gravity and pressure systems)	Disposal of effluents, chemicals and treated/ untreated water	Underground drainage and sewerage application/ rehabilitation of existing sewers	Column piping for submersible and jet pumps	Transportation of chemicals, solids, gas and oils
House service connection from municipal water bodies and SEZ layout's	As hydro transport system for handling and conveyance of iron, coal and cement slurry in mines	Effluent and waste treatment plants	Suction and delivery pipes	Under water pipelines/ desalination plants
	For conveyance of edible oil, fruit pulps, juices, milks and other liquid food materials	Dust suppression piping systems in cement industry	Sprink ler irrigation system	
	As a ventilation and air conditioning duct	Sand slurry disposal pipes in dredging	Lift irrigation	
		De-gassing pipes in water effluent marine outfalls	I nsec ticide spraying	

Standard dimension ratio (SDR) and corresponding wall thicknesses of pipes as per IS 4984:2016

SDR	SDR 41		SDR 33		SDR 26		SDR 21		SDR 17		SDR 13.6		SDR 11		SDR 9		SDR 7.4		SDR 6	
	Nominal Pressure (PN) Bar																			
PE 63	PN2		PN		PN		PN 4		PN 6 PN 8 PN 10				PN 8		-		-		-	
PE 80	PN 2.5		2.5		3.2		PN 5		PN 6				PN 10		PN 12.5		PN		PN 20	
PE 100	PN 3		PN		PN 4		PN 6		PN 8				PN 12.5		PN 16		16		-	
Nominal OD	Min	Max	Min 3.2 PN 4	Max	Min PN 5	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max PN 20	Min	Max
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.8	2.1	2.2	2.5	2.7	3.1
20	-	-	-	-	-	-	-	-	-	-	-	-	1.9	2.2	2.3	2.6	2.7	3.1	3.4	3.8
25	-	-	-	-	-	-	-	-	-	-	1.9	2.2	2.3	2.6	2.8	3.2	3.4	3.8	4.2	4.7
32	-	-	-	-	-	-	-	-	1.9	2.2	2.4	2.7	2.9	3.3	3.6	4.1	4.4	4.9	5.4	6.0
40	-	-	-	-	-	-	1.9	2.2	2.4	2.7	3.0	3.4	3.7	4.2	4.5	5.1	5.4	6.0	6.7	7.5
50	-	-	-	-	2.0	2.3	2.4	2.7	3.0	3.4	3.7	4.2	4.6	5.2	5.6	6.3	6.8	7.6	8.4	9.3
63	-	-	-	-	2.5	2.9	3.0	3.4	3.7	4.2	4.7	5.3	5.8	6.5	7.0	7.8	8.6	9.6	10.5	11.7
75	1.9	2.2	2.3	2.6	2.9	3.3	3.6	4.1	4.5	5.1	5.6	6.3	6.9	7.7	8.4	9.3	10.2	11.3	12.5	13.9
90	2.2	2.5	2.8	3.2	3.5	4.0	4.3	4.8	5.3	5.9	6.7	7.5	8.2	9.1	10.0	11.1	12.2	13.5	15.0	16.6
110	2.7	3.1	3.4	3.8	4.3	4.8	5.3	6.0	6.5	7.3	8.1	9.0	10.0	11.1	12.3	13.6	14.9	16.5	18.4	20.3
125	3.1	3.5	3.8	4.3	4.8	5.4	6.0	6.7	7.4	8.2	9.2	10.2	11.4	12.7	13.9	15.4	16.9	18.7	20.9	23.1
140	3.5	4.0	4.3	4.8	5.4	6.0	6.7	7.5	8.3	9.2	10.3	11.4	12.8	14.2	15.6	17.3	19.0	21.0	23.4	25.8
160	3.9	4.4	4.9	5.5	6.2	6.9	7.7	8.6	9.5	10.6	11.8	13.1	14.6	16.2	17.8	19.7	21.7	24.0	26.7	29.5
180	4.4	4.9	5.5	6.2	7.0	7.8	8.6	9.6	10.6	11.8	13.3	14.7	16.4	18.1	20.0	22.1	24.4	26.9	30.0	33.1
200	4.9	5.5	6.1	6.8	7.7	8.6	9.6	10.7	11.8	13.1	14.7	16.3	18.2	20.1	22.3	24.6	27.1	29.9	33.4	36.8
225	5.5	6.2	6.9	7.7	8.7	9.7	10.8	12.0	13.3	14.7	16.6	18.4	20.5	22.7	25.0	27.6	30.5	33.7	37.5	41.4
250	6.1	6.8	7.6	8.5	9.7	10.8	12.0	13.3	14.7	16.3	18.4	20.3	22.8	25.2	27.8	30.7	33.8	37.3	41.7	46.0
280	6.9	7.7	8.5	9.5	10.8	12.0	13.4	14.8	16.5	18.3	20.6	22.8	25.5	28.2	31.2	34.4	37.9	41.8	46.7	51.5
315	7.7	8.6	9.6	10.7	12.2	13.5	15.0	16.6	18.6	20.6	23.2	25.6	28.7	31.7	35.0	38.6	42.6	47.0	52.5	57.9
355	8.7	9.7	10.8	12.0	13.7	15.2	16.9	18.7	20.9	23.1	26.1	28.8	32.3	35.6	39.5	43.6	48.0	52.9	59.2	65.2
400	9.8	10.9	12.2	13.5	15.4	17.0	19.1	21.1	23.6	26.1	29.5	32.6	36.4	40.1	44.5	49.1	54.1	59.6	66.7	73.5
450	11.0	12.2	13.7	15.2	17.3	19.1	21.5	23.8	26.5	29.3	33.1	36.5	40.9	45.1	50.0	55.1	60.9	67.1	75.0	82.6
500	12.2	13.5	15.2	16.8	19.3	21.3	23.9	26.4	29.5	32.6	36.8	40.6	45.5	50.2	55.6	61.3	67.6	74.5	83.4	91.8
560	13.7	15.2	17.0	18.8	21.6	23.9	26.7	29.5	33.0	36.4	41.2	45.4	50.9	56.1	62.3	68.6	75.7	83.4	93.4	102.8
630	15.4	17.0	19.1	21.1	24.3	26.8	30.0	33.1	37.1	40.9	46.4	51.1	57.3	63.1	70.0	77.1	85.2	93.8	105.0	115.6
710	17.3	19.1	21.6	23.9	27.3	30.1	33.9	37.4	41.8	46.1	52.2	57.5	64.6	71.2	78.9	86.9	96.0	105.7	118.4	130.3
800	19.5	21.6	24.3	26.8	30.8	34.0	38.1	42.0	47.1	51.9	58.9	64.9	72.8	80.2	88.9	97.9	108.2	119.1		-
																			-	

* Pressure ratings marked in red color are not covered under ISI mark

Jointing techniques

Supreme Polyethylene pipes can be jointed by different means, some of the jointing techniques are given below:

- Butt fusion
- Electro fusion
- Socket fusion
- Compression joint
- Flanged joint
- Coupling joint

Length and packaging

Size range (mm)	**Coil length** (m)
20 - 50	100, 200, 500 and 1000
63 - 75	100, 200 and 300
90 -110	50, 100 and Straight length of 6 - 12m
125 - 800	Straight length 6 - 12m

Polyethylene Piping System

Water hammer resistance

HDPE can withstand repetitive pressure surge that exceeds the static pressure rating of the pipe giving it an excellent resistance to water hammer. In DI pipe, anticipated surge pressure is the highest. Surge pressure in PE is 44% less than PVC and 81% less than DI. PE can withstand surge pressure up to 150- 200 % of the designed pressure.

When PE is used, piping system components are subjected to a significantly lower surge.

Butt-Welding (procedure)

Butt welding is normally used for Polyethylene piping system.

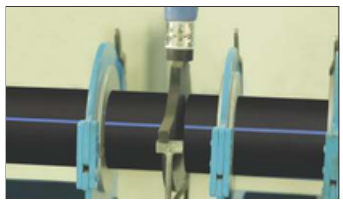
In butt welding, fusion areas i.e. pipe or fitting ends are heated and joined by means of mechanical pressure.

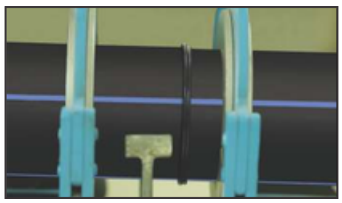
1. **Cleaning** – Clean the pipe, fitting surfaces and heating plate.
2. **Alignment** –Surfaces of the two parts to be joined should be checked for alignment and matching so that the gap must not exceed 0.5mm at any point. If the gap exceeds, machining is recommended.
3. **Heating** – Set and ensure heating plate temperature at 200° to 220°C. Once the fusion temperature is attained, position the heating plate in the butt welding machine.
4. **Apply pressure** – Press the pipe or fitting surfaces against the heating element with the required force until the entire circumference of each of the joining faces rests completely against it and a bead is formed.
5. **Joining-** After the recommended heating time, remove the heating element and push the heated pipe ends together immediately with pressure to form a joint.
6. **Cooling** – Allow the recommended cooling time as per the pipe size to get the required strength.

   (Kindly refer the table for standard heating and cooling time)

Checking the Welding bead

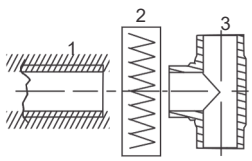
A bead should be formed around the entire circumference of the pipe. Jointing of two-lip point should be above the pipe circumference means always being positive (fig. 7).



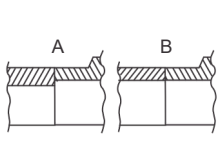


Recommended values for the heated tool butt-welding of pipes and fittings

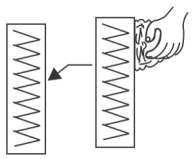
Wall thickness (mm)	Height of bead (mm)	Heating time (sec)	Changeover time max (sec)	Time to reach full jointing (sec)	Cooling time under joining pressure (min)
up to 4.5	0.5	45	5	5	6
4.5 -7	1.0	45-70	5-6	5-6	6-10
7 - 12	1.5	70-120	6-8	6-8	10-16
12-19	2.0	120-190	8-10	8-11	16-24
19-26	2.5	190-260	10-12	11-14	24-32
26-37	3.0	260-370	12-16	14-19	32-45
37-50	3.5	370-500	16-20	19-25	45-60
50-70	4.0	500-700	20-25	25-35	60-80



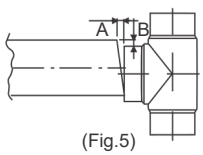
(Fig.1)
1) Pipe 2) Heating tool 3) Fitting



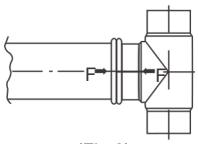
(Fig.2)
A) Incorrect B) Correct



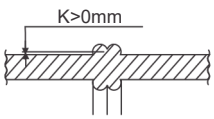
(Fig.3) (Fig.4)



(Fig.5)



(Fig.6)



(Fig.7)

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