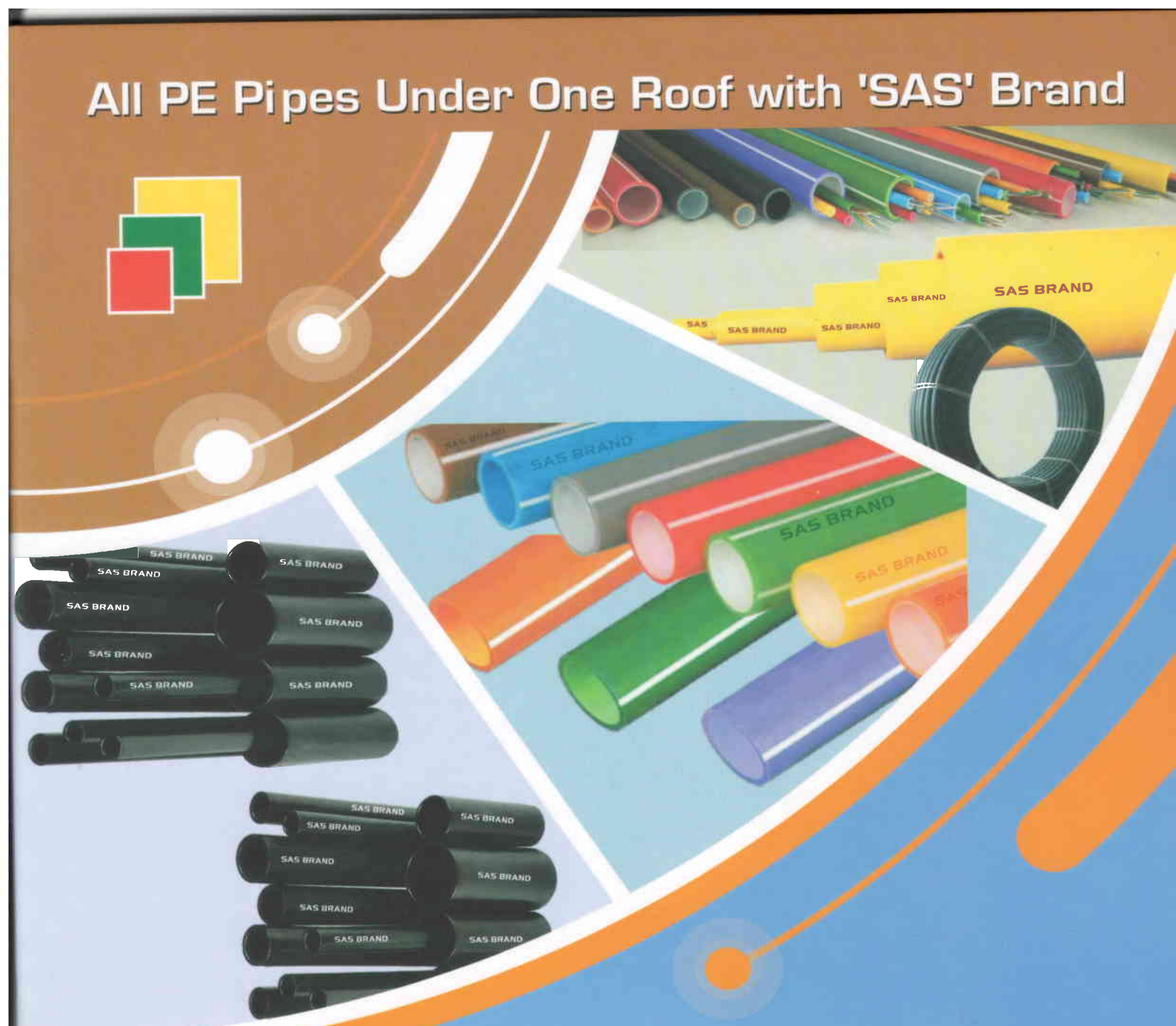
All PE Pipes Under One Roof with 'SAS' Brand



SAS POLYMERS PRIVATE LIMITED

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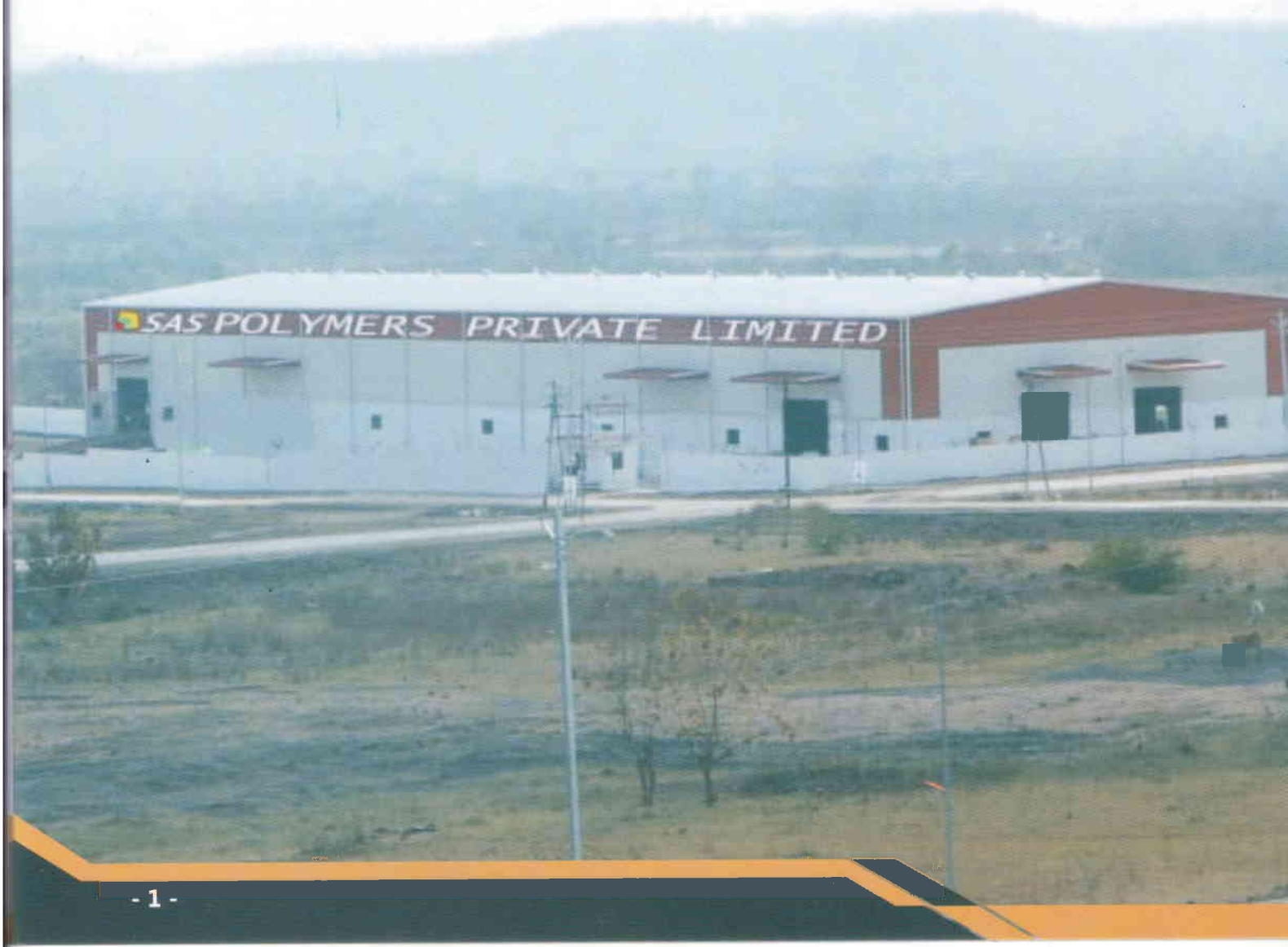
Company Profile

SAS Polymers Pvt. LTd., is a centrally located unit at Borgaon, Dist. Chhindwara (M.P.), having ISO 9001:2008 accredited and ISI certified enterprises offering a wide range of PE Pipes for various applications in the segment of Water Supply, Sewerage, Gaseous, Duct and Micro Irrigation System.

Our unit is fully equipped with modern technological machinery and equipment, having installed capacity of 20,000 M.T. / Annum of Polymer Pipes along with suitable PE Fittings.



Our Vision

To make significant contribution to our environment by avoiding deforestation through the use of Polymer Piping System and to provide clean, Hygienic Water as well as pollution free sewerage / Gas distribution to the nation.

Our Mission

To provide best quality of closed Polymer Piping System at reasonable cost, so that, Water Wastage, Electricity Savings, Agricultural/Horticultural Productivity Enhancement, clean and Hygienic Potable Water could be achieved.

Values

a) OPENNESS : We encourage open forum and welcome new Ideas.

b) TRANSPARANCY : We believe in Transparency for all our business activities.

c) CUSTOMER FOCUS ORIENTED : Our focus is always on the customer's requirement and provide them best product and services at economical price.

d) TEAM WORK : We actively participate and share our information, ideas and views with each other enthusiastically to make a better result for the product.

e) INNOVATION : With the help of New Technological Development and our own R & D activities. We adopt the new ideas and modern techniques, required for betterment of our End users.

f) WORKING AS A SOLUTION PROVIDER : We are not only bare a manufacturer of Piping System, but also work as a solution provider for our customers to provide them right product at right price.

2 (A) HDPE PIPES [AS PER IS 4984:2016]

SAS' brand H.D.P.E. Pipes are manufactured from Virgin Raw Material and are a cost effective solution for water supply, Irrigation, Jet/Submersible pumps. These pipes are made under strict quality control process confirming to various Indian and International Standards.

Advantages

- Light Weight
- Best for high altitudes
- Corrosion Resistant
- Low Cost in Transportation, handling and Installation
- High Abrasion Resistant
- Reliable weldable joints

Jointing Techniques

- Butt Welding
- Electro Fusion Welding
- Compression Fittings
- 'D' Joint Technique
- Socket and Spigot Joint

Applications

- Potable Water Supply Schemes
- Coils for Jet/Submersible Pump
- Irrigation & Agricultural
- Fire Fighting System
- Ducting

Standard Dimension Ratio (SDR) and Corresponding Wall Thickness (e) of Pipes (Clauses 7.2 and E-4.3)

SDR Grade	SDR 41		SDR 33		SDR 26		SDR 21		SDR 17		SDR 13.6		SDR 11		SDR 9		SDR 7.4		SDR 6	
PE 63 PE 80 PE 100	PN 2 PN 2.5 PN 3.5		PN 2.5 PN 3.2 PN 4		PN 3.2 PN 4 PN 5		PN 4 PN 5 PN 6		PN 5 PN 6 PN 8		PN 6 PN 8 PN 10		PN 8 PN 10 PN 12.5		- PN 12.5 PN 16		- PN 16 PN 20		- PN 20 -	
Nominal OD, dn mm	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}	e_{Min}	e_{Max}
(1)	mm (2)	mm (3)	mm (4)	mm (5)	mm (6)	mm (7)	mm (8)	mm (9)	mm (10)	mm (11)	mm (12)	mm (13)	mm (14)	mm (15)	mm (16)	mm (17)	mm (18)	mm (19)	mm (20)	mm (21)
16	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.3	2.2	2.6	2.7	3.1
20	-	-	-	-	-	-	-	-	-	-	-	-	2.0	2.3	2.3	2.7	2.8	3.2	3.4	3.9
25	-	-	-	-	-	-	-	-	-	-	2.0	2.3	2.3	2.7	2.8	3.2	3.4	3.9	4.2	4.8
32	-	-	-	-	-	-	-	-	2.0	2.3	2.4	2.8	3.0	3.4	3.6	4.1	4.4	5.0	5.4	6.1
40	-	-	-	-	-	-	2.0	2.3	2.4	2.8	3.0	3.4	3.7	4.2	4.5	5.1	5.5	6.2	6.7	7.5
50	-	-	-	-	2.0	2.3	2.4	2.8	3.0	3.4	3.7	4.2	4.6	5.2	5.6	6.3	6.8	7.6	8.4	9.4
63	-	-	-	-	2.5	2.9	3.0	3.4	3.8	4.3	4.7	5.3	5.8	6.5	7.0	7.8	8.6	9.6	10.5	11.7
75	2.0	2.3	2.3	2.7	2.9	3.3	3.6	4.1	4.5	5.1	5.6	6.3	6.9	7.7	8.4	9.4	10.2	11.4	12.5	13.9
90	2.2	2.6	2.8	3.2	3.5	4.0	4.3	4.9	5.3	6.0	6.7	7.5	8.2	9.2	10.0	11.1	12.2	13.6	15.0	16.6
110	2.7	3.1	3.4	3.9	4.3	4.9	5.3	6.0	6.5	7.3	8.1	9.1	10.0	11.1	12.3	13.7	14.9	16.5	18.4	20.4
125	3.1	3.6	3.8	4.3	4.9	5.5	6.0	6.7	7.4	8.3	9.2	10.3	11.4	12.7	13.9	15.4	16.9	18.7	20.9	23.1
140	3.5	4.0	4.3	4.9	5.4	6.1	6.7	7.5	8.3	9.3	10.3	11.5	12.8	14.2	15.6	17.3	19.0	21.0	23.4	25.9
160	4.0	4.5	4.	5.5	6.2	7.0	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	5.0	5.5	6.2	7.0	7.8	8.6	9.6	10.6	11.8	13.3	14.8	16.4	18.2	20.0	22.1	24.4	27.0	30.0	33.1
200	4.9	5.5	6.1	6.9	7.7	8.6	9.6	10.7	11.8	13.1	14.8	16.4	18.2	20.2	22.3	24.7	27.1	30.0	33.4	36.9
225	5.5	6.2	6.9	7.7	8.7	9.7	10.8	12.0	13.3	14.8	16.6	18.4	20.5	22.7	25.0	27.6	30.5	33.7	37.5	41.4
250	6.1	6.9	7.6	8.5	9.7	10.8	12.0	13.3	14.8	16.4	18.4	20.4	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	14.9	16.5	18.3	20.6	22.8	25.5	28.2	31.2	34.5	37.9	41.8	46.7	51.5
315	7.7	8.6	9.6	10.7	12.2	13.6	15.0	16.6	18.6	20.6	23.2	25.7	28.7	31.7	35.0	38.6	42.6	47.0	52.5	57.9
355	8.7	9.7	10.5	12.0	13.7	15.2	17.0	18.8	20.9	23.1	26.2	29.0	32.3	35.7	39.5	43.6	48.0	52.9	59.2	65.3
400	9.8	10.9	12.2	13.6	15.4	17.1	19.1	21.2	23.6	26.1	29.5	32.6	36.4	40.2	44.5	49.1	54.1	59.7	66.7	73.5
450	11.0	12.2	13.7	15.2	17.4	19.3	21.5	23.8	26.5	29.3	33.1	36.6	41.0	45.2	50.0	55.1	60.9	67.1	75.0	82.6
500	12.2	13.6	15.2	16.9	19.3	21.4	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	91.9

2. (B) H. D. P. E. Pipes (As per IS 14333 : 1996)

Our "SAS" brand H. D. P. E. Sewerage pipes are manufactured in the range from 63 mm to 500 mm OD in PE63, PE80, PE100 Material Grade for Pr. Rating 2.5 kg/cm^2, to 10 kg/cm^2 used for Sanitation, Sewer waste water and industrial Effluent disposals

Dimension Sheet for IS 14333 : 1996 (PE 80 Grade)

Dia of Pipe mm (OD)	WALL THICKNESS (mm)									
	PN 2.5		PN 4		PN 6		PN 8		PN 10	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
63	--	--	3.0	3.5	4.4	5.1	5.8	6.6	7.0	7.9
75	2.3	2.8	3.6	4.2	5.3	6.1	6.9	7.8	8.4	9.5
90	2.8	3.3	4.3	5.0	6.3	7.2	8.2	9.3	10.0	11.2
110	3.4	4.0	5.3	6.1	7.7	8.7	10.0	11.2	12.3	13.8
125	3.8	4.4	6.0	6.8	8.8	9.9	11.4	12.8	13.9	15.5
140	4.3	5.0	6.7	7.6	9.8	11.0	12.8	14.3	15.6	17.4
160	4.9	5.6	7.7	8.7	11.2	12.6	14.6	16.3	17.8	19.8
180	5.5	6.3	8.6	9.7	12.6	14.1	16.4	18.3	20.0	22.2
200	6.1	7.0	9.6	10.8	14.0	15.6	18.2	20.3	22.3	24.8
225	6.9	7.8	10.8	12.1	15.7	17.5	20.5	22.3	25.0	27.7
250	7.6	8.6	12.0	13.4	17.5	19.5	22.8	25.3	27.8	30.8
280	8.5	9.6	13.4	15.0	19.6	21.8	25.5	28.3	31.2	34.6
315	9.6	10.8	15.0	16.7	22.0	24.4	28.7	31.8	35.0	38.7
355	10.8	12.1	17.0	18.9	24.8	27.5	32.3	35.8	39.5	43.7
400	12.2	14.3	19.1	22.2	28.0	32.4	36.4	42.1	44.5	51.4
450	13.7	16.0	21.5	25.0	31.4	36.4	41.0	47.4	50.0	57.7
500	15.2	17.7	23.9	27.7	34.9	40.4	45.5	52.6	55.6	64.2

Dimension Sheet for IS 14333 : 1996 (PE 100 Grade)

Dia of Pipe mm (OD)	WALL THICKNESS(mm)					
	PN 6		PN 8		PN 10	
	Min	Max	Min	Max	Min	Max
63	3.6	4.2	4.7	5.4	5.8	6.6
75	4.3	5.0	5.6	6.4	6.9	7.8
90	5.1	5.9	6.7	7.6	8.2	9.3
110	3.6	7.2	8.2	9.3	10.0	11.2
125	7.1	8.1	9.3	10.5	11.4	12.8
140	8.0	9.0	10.4	11.7	12.8	14.3
160	9.1	10.3	11.9	13.3	14.6	16.3
180	10.2	11.5	13.4	15.0	16.4	18.3
200	11.4	12.8	14.9	16.6	18.2	20.3
225	12.8	14.3	16.7	18.6	20.5	22.8
250	14.2	15.9	18.6	20.7	22.8	25.3
280	15.9	17.7	20.8	23.1	25.2	28.3
315	17.9	19.9	23.4	26.0	28.7	31.8
355	20.1	22.4	26.3	29.2	32.3	35.8
400	22.7	26.4	29.7	34.4	36.4	42.1
450	25.5	29.6	33.4	38.7	41.0	47.4
500	28.4	32.9	37.1	42.9	45.5	52.6

2. (C) H. D. P. E. Sprinkler Pipes (As per IS 17425 : 2020)

"SAS" H. D. P. E. Sprinkler pipes are specially designed and manufactured for Sprinkler and farm Irrigation System with a quick connecting Coupler which ensures specially joint and easy detachment. It's Nitrate Seal gives Pressure Tight and Leak Proof Joints.

Quoter Dia (mm)	WALL THICKNESS (mm)					
	Class - 1		Class - 2		Class - 3	
	Min	Max	Min	Max	Min	Max
63	---	---	2.0	2.4	2.5	2.9
75	2.0	2.4	2.5	2.9	3.0	3.4
90	2.2	2.6	2.9	3.4	3.5	4.1
110	2.7	3.2	3.4	3.9	4.2	4.8
140	3.5	4.1	4.3	5.0	5.4	6.1

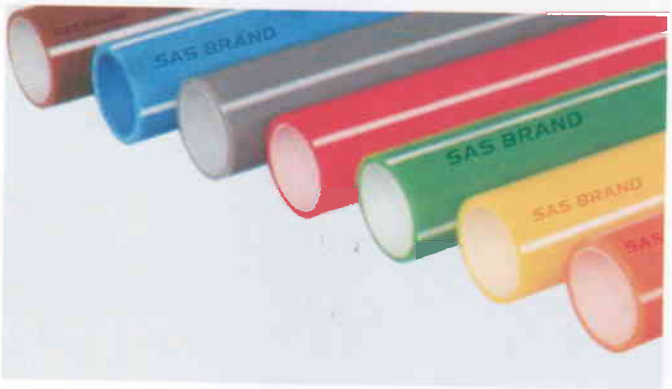
2. (D) H. D. P. E. Duct Pipes (As per DOT Standard)

(1) OFC Ducting for Telecom / Data Network

Standard Dimensions (OD / ID)	Inner Layer Wall Thickness (mm)	Tensile Strength Min (N / mm^2)	Co-officient of Friction
32 / 26	0.24 to 0.36	20	< 0.06
40 / 33	0.28 to 0.42	20	< 0.06
50 / 42	0.32 to 0.48	20	< 0.06

H. D. P. E. Pipes for Electrical Cable Ducting

"SAS" PE Pipes are manufactured as per IS 4984 : 2016, which are being successfully used for Electrical Cable Ducting in the range of 20 mm to 500 mm OD with all Pr. Ratings and Material grade as per Client's requirements.



2. (E) M. D. P. E. Pipes for Gaseous Application [As per IS 14885 : 2000 or ISO 4437 (Gas)]

"SAS" M. D. P. E. Pipes are manufactured with state of the art machinery using latest processing Technology and fulfill the performance requirement of National and International Specifications. Currently 98% of the total pipe line for Natural Gas Distribution Industry is polyethylene, not in India only but all over World.

Due to its cost effectiveness, Safety, Dependability and salient features, It has become the First Choice for this application.

Dimension Sheet for IS 14885 : 2000

Dia of Pipe mm (OD)	WALL THICKNESS(mm)							
	SDR 17.6		SDR 13.6		SDR 11		SDR 9	
	Min	Max	Min	Max	Min	Max	Min	Max
16	2.3	2.7	2.3	2.7	3.0	3.4	3.0	3.4
20	2.3	2.7	2.3	2.7	3.0	3.4	3.0	3.4
25	2.3	2.7	2.3	2.7	3.0	3.4	3.0	3.4
32	2.3	2.7	2.3	2.7	3.0	3.4	3.6	4.1
40	2.3	2.7	3.2	3.4	3.7	4.2	4.5	5.1
50	2.9	3.3	3.7	4.2	4.6	5.2	5.6	6.3
63	3.6	4.1	4.7	5.3	5.8	6.5	7.1	8.0
75	4.3	4.9	5.5	6.2	6.8	7.6	8.4	9.4
90	5.2	5.9	6.6	7.4	8.2	9.2	10.1	11.3
110	6.3	7.1	8.1	9.1	10.0	11.1	12.3	13.7
125	7.1	8.0	9.2	10.3	11.4	12.7	14.0	15.5
140	8.0	8.9	10.3	11.5	12.7	14.1	15.7	17.4

2. (F) LLDPE Pipes for Drip Lateral (As per IS 12786 : 1989)

"SAS" Brand LLDPE Drip Tubes are available from 12mm to 32 mm in various pressure class as per IS 12786 : 1989. These Tubes are manufactured from most Modern, State of the Art Equipment with Special Grade Virgin Plastic Material. It maintains class dimensional tolerances to ensure best field emission uniformity.

Specialization and Salient Features of Unit

(a) Wide Range of Products

All type of Polyethylene Pipes like water Supply, Sewerage, Ducting, Irrigation and Gaseous would be available under our roof as per various Indian and International Standards.

(b) Reasonable Price with Superior Quality

We don't believe in making money through Big margins but with over low over heads, we wanted to provide our products at reasonable cost to our customers by maintaining it's quality as well as better Services.

(c) Corporate Culture

Our Company believes in business ethics, team-work healthy atmosphere with employee's Interaction, having a vision, mission and values. It also includes generalized believes & behaviours, Company-vide value system, Management strategies, Employees Communication and relations, Transparency, work environment and attitude.

(d) Modern Machines with Automization

All our Plant-Machinery and other Equipments related to processing of Polymer Pipes for Maintaining its quality, are fully equipped with Latest Technology and full Automization such as Best Testing Equipment, Extrusion Process Control Method in Pipe Manufacturing Process.

(e) Centrally Located in Indian Map

Our all products will be available for all Indian Customers. Being Centrally Located Logistically, the freight Charges to all our customers would be very economical.

Jointing of HDPE / MDPE Pipes

The Main Jointing Technique of HDPE Pips is "BUTT FUSION" If HDPE Pipes are joined properly, the strength and life of Thermo Fusion Butt Welding, will be more than its Parent Material.

Based on the application, diameter and pressure rating of the pipe, Installation type and various other parameters, different type of Jointing Techniques are being adopted. The main Jointing Methods are being described as follows :

(A) PERMANENT JOINTING SYSTEM

(1) **Butt Fusion :** This Fusion Jointing is a method of Joining PE Pipes using Thermal Fusion. Both the ends or surfaces, are cleaned and put perpendicular to x-asis. After doing end-preparation, fusion of PE Pipe (after putting a heating plate between two ends) do a Monotholic Bead of the same material is prepared which gives a strong, leak free Joint.

(2) **Electro Fusion :** Electro-Fusion Jointing is done with the help of Integral Heating elements. Sockets are used to join both ends and Electric current is passed through the embedded wire which heats the wire and melts the polymer, fusing the fittings to the pipe. The current is given to the electro fusion fittings by means of a Control Box.

(B) DETACHABLE JOINTING SYSTEM

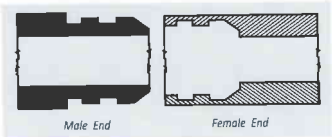
(1) **Compression Joint :** The Joints are done without Fusion (Thermal or Electro) and Could be done to Plain ends of PE Pipes or PE Fittings. These are commonly applied in House Service Connections in Smaller dia of Pipes (Upto 110 mm OD)

(2) **Universal Flanged Joint :** This is a Universal Joint which is used for Joining PE Pipes with any other Pipe. It is done by Fusion Welding of a Stub End (Pipe end/Collar) with a PE Pipe and a Metallic / Plastic Back-up Flange with appropriately sized and spaced Bolt holes permit Bolting to Standard or Specially sized flanges. A Gasket is properly placed between these two flanges, to make a tight and leak free Joint.

(3) **Quick Release Coupling Joint :** This type of Joint is most commonly used in Sprinkler Irrigation, Mining, Civil Construction, Flood Irrigation in Agriculture etc. where quick engagement and disengagement of Joints are required. One part of Coupler (Male) in welded at one end of Pipe while Second Part of coupler (Female) is welded at another end of Pipe.

(4) **Insert Type Joint :** This type of Joint is mainly used in Borewell / Pump Suction or PE Pipes are to be connected with Metallic fittings or G. I. Flange / Pump Connection. One end of PE Pipe is heated upto 120°C in any Heavy ail / Glycol and then Serrated Metallic Nipple is insterted to PE Pipes.

(5) **Threaded Joint :** This type of Joints are used for low Pressure Applications and with PE Pipes, having thicker Walls. It should be noted that such threading on PE Pipes, reduces the factor of safety and hence working pressure in the lower classes will have to be assumed for design purpose.



(6) **Snap Tight Joint :** These type of Joints are used for Gravity type flow and for low Pressure Applications. In this technique, One end of the Pipe is flared for a distances of 6"-8" depending upon the diameter and inserted in another end of Pipe. The second end can be chambered for easy insertion.

Installation Procedures of PE Pipes

(1) UNDERGROUND INSTALLATIONS

(A) BURRIED INSTALLATIONS

It generally involves Trench Excavation Placing Pipe in the trench, Backfilling around the pipe and then do backfilling to the required Finished grade. Pipe application, service requirement, Size and Pressure Rating of the Pipe, Soil condition backfill soil quality, Burial depth and jointing requirement will all affect the Installation.

(B) UNDER WATER INSTALLATION

These are special Installation done. Pipeline used for Sea/River crossing by providing Concert Rings / Slabs on pipes for its Sinking.

(C) TRENCH LESS - HORIZONTAL DIRECTIONAL DRILLING

In this technology, PE Pipes are placed with Minimum disruption to surface activities and other underground services. It is ideal for installing infrastructure beneath Highways, Roads and Railway tracks without affecting traffice load on these networks. HDD is used for crossing of Rivers, Streams, Lakes, Buildings and other Structure.

(D) PIPE IN PIPE TECHNOLOGY

In some cable of damaged / corroded M. S., C. I., D. I. or S W. piping system, rehabilitation by open excavation is not possible. These old pipes can be removed by New PE Pipe.

(2) ABOVE GROUND INSTALLATIONS

Many applications require that a pipe is laid out of strung out across the existing terrain. It may simply be placed on the ground surface.

Maintenance of PE Pipes

The Frequency of repair to PE Pipes, depend upon a number of factors such as

(a) Above or Below ground Installation.

(b) Direct burial or Slip lined.

(c) Location of other Utility Plant and Pipe Work.

The following Procedures are being adopted to rectify the leakages in PE Pipes.

1) More extensive damage will require the Section of Pipe to be cut-out and replaced. This is a relatively simple process, firstly Isolating the damaged section by the use of **"SQUEEZE-OFF TOOL"** cutting out the section and replacing with new pipe using Either flanged Joint or Electro-fusion coupler to tie-in the section. It is important that the replacement section is of the suitable diameter and Pressure Rating to maintain the integrity of the pipe line.

2) Small Leakage can be repaired by putting repairing clamps or repairing collars as per the site conditions and type of Leakage.

Comparison of HDPE Pipe with other Pipes

A) HDPE V/S DI Pipes

Sr. No.	Criteria	HDPE Pipe	DI Pipe / MS Pipe
1	Pipe Performance	Pipeline efficiency does not detoriate with time.	Pipeline efficiency detoriates with time.
2	Dependability for Pipe performance and Chemical Resistance.	Pipe performance and Chemical Resistance of HDPE Pipe is not dependent on any other material.	In case of Metal pipe over all performance depends on other materials and their quality. a) Resistance to External Corrosion depends on - Quality and continunity of Metallic Zinc & Bituminous pairs used for external protection. b) Resistence to Internal Corrosion and "C" value depends on quality of CM and Epoxy Lining. c) Cement Mortar Lining may fail due to following reasons : 1. Negative Surge Pressure. 2. Disbonding 3. Deflection of pipe 4. Cracks 5. Difference in temperature. d) Sockets do not have protection by Cement Mortar Lining.
3	Any surface in pipe line which is not protected ?	All surfaces are protected and characteristics like Resistance is constant and same at all location.	Socket is not protected (by CML). Hence Corrosion may start at the socket and result in improper seat for rubber ring i.e. Leakage, Contamination of Water, Pitting in Pipe etc.
4	Earthquake Effect	The Flexibility & Strong joints make HDPE Pipe well suited for dynamic soils including areas prone to Earthquake	May have major Leakage problem after Soil Movement or Earthquakes.
5	Surge Pressure	HDPE pressure pipe will produce very low surge pressure. Surge pressure is about 20% of Metal Pipe.	Surge pressure is 5 times of HDPE pipe surge pressure. Need surge protection devices.
6	Surge Pressure protection device / Concrete-Thrust blocks.	Not required.	Required.
7	Ability to withstand Surge Pressure	HDPE pipe can withstand pressure up to 2.3 times Rated Pressure.	DI pipe can withstand only up to 1.5 times Rated Pressure.

Sr. No.	Criteria	HDPE Pipe	DI Pipe / MS Pipe
8	Suitability in BC soil, against Soil Movement or Soil Settlement.	HDPE pipe takes care for soil movement and settlement of soil, suitable in BC & Expansive soil also.	Soil Settlement of Movement will not be tolerated. Not suitable in BC & Expansive soil also. Needs lot of care in these situations.
9	Corrosion, holes in pipes etc.	Not possible due to its excellent material properties.	Major problem due to its material properties.
10	Infiltration problmes	HDPE pipes with fused joints simply do not leak, eliminating infiltration problems.	Infiltration is Experienced in almost every scheme.
11	Chemical Resistance	HDPE pipes has superb chemical resistance and is the material of choice in harsh chemical environment. Pipe is safe over pH Value 1 to 14.	There is no safe pH range i.e. no resistance. These pipes are Corroded by even small quantity any chemical.
12	Joint Type	Heat Fusion Joint is Mostly used. Other types of joints are Electrofusion Joints, Flange Joint.	Rubber Ring Joint.
13	Joint Strength	Joint is as Strong as Pipe Material	Joint is much more Weaker than Pipe Material.
14	Joint Leakages	Joints are Leak free	All over world it is accepted that Leakages are Minimum 25% and goes up to 65%
15	Joint Leakages Location	No Leakage in total length of pipeline.	Every joint is potential point for leakages. i.e. at every 10 to 20 feet.
16	Joint Performance with temperature	Joint performance does not on temperature of water and quality of any other material. pipe is subjected to continuous temp. more than 30°C. De-rating in pipe pressure. Normally pipe specs are designed for water temp. of 30°C.	Joint performance depends on temperature of water. DI pipe manufacturer recommends storage of Rubber Ring below 25°C temperature. This means if water temperature is above 25°C then performance will be affected. Performance depends on quality of Rubber Ring. This means if temperature is more than 25°C then joint performance will not be up to mark and this is one of the main reason for leakage.
17	Bending of Pipes	Because of excellent joints the pipe can bend with radius of 25 times diameter.	Only 1 to 2 Degree deflection is possible which is almost negligible and hence bends are required at each change in direction

Sr. No.	Criteria	HDPE Pipe	DI Pipe / MS Pipe
18	Efficient life and Life Cycle Cost-with respect to pipe material cost only.	Efficient life is 100 years. The Life Cycle cost of P pipe is Zero.	Efficient life is 35 years. For 100 years efficient performance, the Life Cycle cost is more than 116 times its original cost.
19	Ease to work.	The combination of flexibility and leak free joints allow for unique and cost effective types of installation methods. Such as we can do the welding & testing of maximum length of pipes on ground and then just push the into the trench. Possible to install in water logged area, river crossing, sea outfall etc.	Due to Rigidity of the pipe and rubber ring joint the installation has to be done inside the trench. Installation in Water Logged Areas, under River Crossings, Sea / River Outfall etc. is not possible.
20	Hazen William's "C" Factor	Remains 150 through out the life span of 100 years	120 with CM lining, but may come down to 70 to 90 after 35 years. Resulting in more pumping cost of less discharge.
21	Roughness Projection inside the pipe (Expected & Actual)	Expected = 0.03 mm and Actual = 0.005 mm	Expected = 0.03 mm and Actual = 0.1 to 2 mm

Comparison of HDPE Pipe with other Pipes

HDPE V/S RCC Pipes

Sr. No.	Parameter	HDPE Pipes	RCC Pipes
Heat Fused Joints :			
1	Joints	HDPE pipe can be heat fused together to form a joint that is as strong as or stronger than the pipe itself and is leak free. This eliminates the potential leak points every 10-20 feet. Nos. of Joints are less	In RCC pipe joints - The potential leak points are at every 10 feet. Nos of Joints are more.
2	Life Cycle Cost	The Life Cycle Cost of HDPE pipe differs from other pipe materials because the "allowable water leakage" is zero	RCC at Bottom or stabilisation of soil in marshy land is required to maintain proper slope.
3	RCC at Bottom or stabilisation of soil in marshy land-To maintain proper slope	Not Required. HDPE pipe has fused joints are self restraining, weight of pipe is less. There is no chance of settlement and Hence no need of PCC at Bottom / stabilisation of soil.	PCC at Bottom or stabilisaiton of soil in marshy land is required to maintain proper slope.
4	Joint Performance	Excellent	Not good. Lot of chances of leakage
5	Soil Movement / Settlement	In case of Pumping - HDPE takes care of soil settlement /movement. Suitable in BC & expansive soil also.	No suitable in BC & expansive soil also.
6	Infiltration problems	HDPE pipe's fused joints simply do not leak, eliminating infiltration problems.	Experienced Infiltration with almost every scheme
Flexible and Fatigue Resistant			
7	Bending Radius	HDPE pipe can be bent to a radius 25 times the nominal pipe diameter. This can eliminate many fittings required for directional changes in a piping system where fitting and thrust blocks or restrains are required with alternate materials.	Required lot of fittings & thrust blocks.
8	Earthquake	The flexibility of HDPE pressure pipe makes it well suited for dynamic soils including areas prone to earthquake.	All over India earthquake is a major Issue. RCC pipe will not good in earthquake prone areas.
9	Type of joint	Heat Fusion	Push on / CM mortar.
10	Joint deflection	Radius 20 - 25 D	Not allow
Construction Advantages			
11	Ease to work.	The combination of flexibility and leak free joints for unique & cost effective types of methods. Such as we can do the welding & testing of max. length of pipes on ground. Ease to installed in water logged area, river crossing, sea outfall etc.	Required lot of fittings & thrust blocks.

Sr. No.	Parameter	HDPE Pipes	RCC Pipes
12	Cost effective and fast installation is possible.	The alternate installation methods (Horizontal Directional Drilling, Pipe Brushing, Slip lining, Plow and Plant, Submerged or Floating Pipe, etc.) can save considerable time and money.	Slow & Costly.
13	Handling	Polyethylene is about one-eighth the density of steel. It does not require the use of heavy lifting equipment for installation	Required heavy lifting equipments. For good result reqd. curing for 28 days.
Cost Effective, Long Term and Permanent			
14	Over all Cost	Polyethylene pipe installations are cost effective and have long term cost advantages due to its physical properties, leak free joints, reduced maintenance costs, Low initial pumping cost & dose not increases with it's life.	Less cost effective.
15	Replacement Cost	The polyethylene pipe industry estimates a service life HDP pipe to conservatively be 50-100 years. This relates to savings in replacement costs for generations to come.	High Life almost 15 to 25 years
Corrosion, Chemical Resistant, Tree root problems			
16	Resistant to tree root problems	HDPE pipe will not corrode tuberculoses or support biological growth, no tree root problems.	RCC pipe may corrode tuberculoses, may face tree root problems.
17	Chemical Resistance	HDPE pipe has superb chemical resistance and is the material of choice in harsh chemical environments. Suitable in PH value 1 to 14.	Poor resistance. With OPC alloable PH is 6 to 9.
18	Chemical Resistance & Corrosion Resistance	Due to its inherent properties of material	Poor resistance. With OPC alloalbe PH is 6 to 9.
19	Impact strength	Polyethylene pipe is better able to structurally withstand and impact	Not as good as HDP
20	Hazen William's "C" Factor	150	120 value may come down to 70 after 10 years.
21	Hazen William's "C" Factor Variations	Doesn't change over time	Change over time
22	Flow Capacity	HDPE pipe has a smooth ID that does not corrode and maintains its flow capability over time.	Not maintaining its flow capability over time.
23	Life	Almost 100 Years with 100% efficiency	About 20 Years with 50% efficiency
24	Contamination of water inside the pipe or out side of the pipe.	Not Possible	More chances.

Application of PE Pipes

Municipal Corporations & Public Utilities

- Pumping Mains for Water
- Potable Water Distribution System
- House Service Connections
- Water Treatment Plant
- Waste Water Treatment Plants
- Aeration and Odor Control Ducting
- Infiltration Gallery
- Landfill - Leachate Collection & Conveyance
- Landfill-Methane Gas extraction & Convenyence

Infrastructure

- Untreated and Treated Effluent
- Stay Cable Pipe for Cable Stayed Bridges
- Desalination Plant
- Culverts and Storm Water Drains
- Thermal & Nuclear Power Station
- Hydel Power Plants
- Dredging & Sand Stowing

Industrial

- Pulp & Paper
- Chemical Process Lines
- Corrosive Liquids
- Effluent Disposal
- Building & Construction
- Fertilizers
- Food Processing Industry
- Marine Intake and Outfall
- Salt Pan
- Fire Fighting Systems
- Material Handling-Pneumatic
- Conveyance of Particulates
- Fly-Ash Slurry and others

Ducting

- Electrical Cable Ducting
- Telecommunication Cable Ducting
- Optical Fibre Cable Ducting
- Micro Duct - House Connection

Gas

- Natural and LP Gas Distribution
- Coal Bed Methane Gas Collection & Distribution

Sewerage

- Pumping Main for Sewerage
- Force Main for Sewer
- Gravity Main for Sewer
- Rehabilitation of Sewer Lines

Mining Industry

- Lead Lines
- Coal Decant Systems
- Mine Drainage
- Coal Tailings
- Slurry and Sludge Transport
- De-watering
- Dust Suppression
- Sand Stowing

Irrigation & Agricultural

- Raising Main & Distribution Systems
- Lift and Gravity Irrigation
- Drip Irrigation
- Gated Pipe Irrigation
- Sprinkle Irrigation
- Sub Soil Drainage
- Aquaculture

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