

# Polyethylene

## Pressure & Non Pressure Pipes





## **INTRODUCTION**

Water is a prime resource and is vital to the welfare of society and to the uninterrupted economic growth of all countries. Water, however, needs an efficient distribution system to ensure that it is available in the right place when needed and can be conveyed away in the form of waste water or sewage safely. To fulfil this need SAPPCO was formed to produce Polyethylene piping systems to the latest internationally recognized Standards requirements.

During recent years the adoption of polyethylene pipework has accelerated in all developed countries. This rapid growth in the use of polyethylene pipe is due in part to benefits over steel or ductile iron pipe systems, but possibly more to the development of several advanced Jointing techniques which eliminate the use of metal fittings. The introduction of new high performance polyethylene pipe compounds by the leading international manufacturers has also widened the scope of applications.

SAPPCO Polyethylene pipes are manufactured from these New Generation of readymade black pipe compounds. These compounds contain correct type and quantity of carbon black which is perfectly dispersed to give the maximum possible protection from sunlight and heat.

SAPPCO manufacture and specify pipe products most suitable for the special environmental conditions prevailing in Saudi Arabia and in the Gulf Areas.

## **CUSTOMER SATISFACTION**

SAPPCO's most important objective "Customer Satisfaction" is achieved with the comprehensive provision of high-quality products and services. As a leader in the plastic pipe industry.

- Continually develop/manufacture new products.
- Modernize manufacturing extrusion system equipments.
- The quality management system (QMS) is characterized by a certified and upgraded QMS in accordance with ISO 9001
- In addition, our well experienced staff offers extensive industry knowledge and field experience with thermoplastic piping products to the customers.
- Continuous evaluation and improvement of the process.
- Customer satisfaction is SAPPCO's top objective.



## **APPLICATIONS**

Polyethylene pipes are strong, tough, non-toxic, light in weight and resistant to corrosion and have been widely adopted in a variety of piping systems and are rapidly replacing most pipes of conventional materials.

Polyethylene has proved very successful in the drinking water supply sector for domestic service lines, mains schemes, geothermal, green house heating, sprinklers and irrigation systems, tube well installations, hospitals, laboratories, mine slurry transportation, industrial process lines, for natural gas distribution system, for lining steel pipe, drainage, sewerage soil and waste discharge system. SAPPCO Polyethylene pipe is also suitable for use in “trench less technology” and other underground power cable laying systems.

Polyethylene has very good fatigue strength and special provisions for water surges frequently allowed when designing other thermoplastic pipe work systems are not normally necessary.

## **APPROVAL FROM INDEPENDENT LABORATORIES**

### **LISTING AND APPROVAL - SAPPCO PE 100 BLACK PIPE**

PASSED FULL TESTS OF EFFECT ON WATER QUALITY - BS 6920

Listed in the WRAS Directory.



WRAS independent-assessment authority managed by WRc-NSF Ltd.





MANUFACTURING STANDARDS

SAPPCO polyethylene pipes are manufactured and comply with the following standards for various applications.

ORGANIZATION		DESCRIPTION	
EN	GERMANY CEN	DIN 8074 DIN 8075  DIN EN 12201-2	Polyethylene (PE) Pipes (PE80, PE100)- Dimensions Polyethylene (PE) Pipes, General quality requirements Piping system for drainage and sewerage Polyethylene Pipes for Soil and waste discharge Plastic piping system for water supply and for drainage and sewerage under pressure-Polyethylene
	INTERNATIONAL	ISO 4427-1/2	Polyethylene pipes for water supply-Specification HDPE pipes for Soil and waste discharge system
	BRITAIN	BS EN 12201-2	Plastic piping system for water supply-polyethylene pipe

MATERIAL CLASSIFICATION

Polyethylene pipe materials are classified according to Minimum Required Strength (MRS) values according to ISO and Hydrostatic Design Basis (HDB) according to ASTM method, which is used to determine the design stress for designing the pipeline. This value indicates the long-term internal resistance to pressure for 50 years at 20 °C in water.

TABLE 1 : MATERIAL CLASSIFICATION

STANDARD	DESCRIPTION	DESIGNATION
ISO 4427-1 / 2	MIN. REQUIRED STRENGTH (MRS)	PE 100 / MRS 10.0 MPa

QUALITY MANAGEMENT SYSTEM (QMS)

SAPPCO has established and applies an upgraded Quality Management System (QMS) and is certified in accordance with EN ISO 9001:2015 SAPPCO controls the entire manufacturing process from raw material to the pipe produced.

- Inspection of pipes produced on each machine is carried out “round the clock” to make sure that exact standard pipe is delivered to the customers.





## PROPERTIES

Material: HIGH DENSITY POLYETHYLENE (PE 100).

All typical Properties Values @ 23 °C.

**Table 3 : Physical, Mechanical, Thermal & Electrical Properties.**

Physical Properties	Method	Unit	Value
Density @ 23° c	ISO 1183	g /Cm <sup>3</sup>	0.950
Melt Flow Rate @ 190° c weight 5 kg Load	ISO 1133	g/10 min	0.23
Carbon Black Content	ISO 6964	%	≥2.0
Mechanical Properties	Method	Unit	Value
Tensile strength @ Yield (23°C, v = 50 mm/min)	ASTM D638	Mpa	23
Tensile Elongation @ Yield	ISO 527	%	≥ 350
Tensile Modulus	ASTM D 638	Mpa	900
Hardness (shore D) (3 sec)	ISO 868	-	63
Minimum Required Strength (MRS)	ISO/9080	Mpa	10
Thermal Properties	Method	Unit	Value
Vicat softening Point @50 N(VST/B)	ISO 306	°C	74
Oxidation induction Time (OIT 210°C)	EN 728	Min	>20
Thermal conductivity	ASTM D 2336	W/m-k	0.45
Electrical Properties	Method	Unit	Value
Surface Resistance	DIN/IEC 60197	Ω	≥10 <sup>14</sup>
Di Electrical Strength	DIN/IEC 60243	KV/mm	20
Specific Volume Resistively	DIN/IEC 60093	Ω. Cm	≥10 <sup>16</sup>

### NOTE:

- 1: Typical values: not to be construed as specification limits.
- 2: Data should not be used for specification work.
- 3: Test specimen according to ISO 527-2 type 1BA, thickness 2mm with 50 mm/min test speed.

## CHEMICAL RESISTANCE

SAPPCO PE PIPE is resistant to all kinds of chemicals and withstands all kinds of water, soils, corrosive liquids, and a harsh environment. However, if used for any oxidizing agents or in doubt, please check with us.

SAPPCO Polyethylene Pipes satisfy the requirements of ISO 4427-1/2 & DIN 8075 supplement and ISO/TR 10358 for Chemical resistance.



## PRESSURE PIPES FOR WATER SUPPLY

### FOR WATER SUPPLY, DRAINAGE AND SEWERAGE UNDER PRESSURE

TABLE 3 : Pipe dimension based on SASO ISO 4427-2, DIN 8074, EN 12201-2

NOMINAL PIPE	SDR 26		SDR 17		SDR 13.		SDR 11		SDR 9	
	PN 6		PN 10		6PN 12.5		PN 16		PN 20	
Size	Wall thickness	Weight	Wall thickness	Weight	Wall thickness	Weight	Wall thickness	Weight	Wall thickness	Weight
DN/OD	MIN	Nominal	MIN	Nominal	MIN	Nominal	MIN	Nominal	MIN	Nominal
mm	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m	mm	kg/m
20					2.00	0.107	2.00	0.112	2.30	0.133
25			2.00	0.137	2.00	0.144	2.30	0.171	3.00	0.200
32			2.00	0.187	2.40	0.232	3.00	0.272	3.60	0.327
40			2.40	0.295	3.00	0.356	3.70	0.430	4.50	0.509
50	2.00	0.314	3.00	0.453	3.70	0.549	4.60	0.666	5.60	0.788
63	2.50	0.494	3.80	0.721	4.70	0.873	5.80	1.050	7.10	1.260
75	2.90	0.675	4.50	1.020	5.60	1.240	6.80	1.470	8.40	1.760
90	3.50	0.978	5.40	1.460	6.70	1.770	8.20	2.120	10.10	2.540
110	4.20	1.430	6.60	2.170	8.10	2.620	10.00	3.140	12.30	3.780
125	4.80	1.840	7.40	2.76	9.20	3.370	11.40	4.080	14.00	4.870
140	5.40	2.320	8.30	3.460	10.30	4.220	12.70	5.080	15.70	6.110
160	6.20	3.040	9.50	4.520	11.80	5.500	14.60	6.670	17.90	7.960
180	6.90	3.790	10.70	5.710	13.30	6.980	16.40	8.420	20.10	10.10
200	7.70	4.690	11.90	7.050	14.70	8.860	18.20	10.40	22.40	12.40
225	8.60	5.890	13.40	8.930	16.60	10.90	20.50	13.10	25.20	15.80
250	9.60	7.300	14.80	11.00	18.40	13.40	22.70	16.20	27.90	19.40
280	10.70	9.100	16.60	13.70	20.60	16.80	25.40	20.30	31.30	24.30
315	12.10	12.10	18.70	17.40	23.20	21.20	28.60	25.60	35.20	30.80
355	13.60	13.60	21.10	22.10	26.10	26.90	32.20	32.50	39.70	39.10
400	15.30	15.30	23.70	28.00	29.40	34.10	36.30	41.30	44.70	49.60
450	17.20	17.20	26.70	35.40	33.10	43.20	40.90	52.30	50.30	62.70
500	19.10	19.10	29.70	43.80	36.80	53.30	45.40	64.50	55.80	77.30
560	21.40	21.40	33.20	54.80	41.20	66.90	50.80	80.80	62.50	97.00
630	24.10	45.90	37.40	69.40	46.30	84.60	57.20	102.00		



**SYMBOLS AND ABBRIVIATIONS**

**PN/PR:** Nominal working pressure at 20°C in (Bar/Psi)  
**SDR/DR:** Standard dimension Ratio (class of pipe)  
**DN/OD:** Nominal pipe size, related to outside diameter ratio (SDR)

**NOTES:**

- 1. Pipes as per ISO 4427-1/2 in Table 3 for water applications and Supplied in Black Color with four Blue Stripes outside of easy Identification.
- 2. EN standards are Identical to BS EN and DIN EN with respective number.  
1 BAR = 0.1 MPa = 0.1 N/mm2 = 145 Psi = 100 KPa = 0.987 atm.

**EFFECT OF ELEVATED TEMPERATURE**

The maximum working pressure given in TABLES is rated for use with Potable water at 23°C. To determine pressure at elevated temperature, appropriate derating Safety factor is to be applied as stated in TABEL 5 below.

**TABLE 5 : DERATING FACTORS FOR POLYETHYLENE PIPES AT ELEVATED TEMP.**

Elevated Temperature	° F	68	86	104	122	149
	° C	20	30	40	50	65
Derating Safety factor	factor	1.0	0.87	0.74	0.67	0.4

**COLOUR OF PIPE**

Color of SAPPCO PE Pipe is black suited for extreme weathering conditions and where U.V. attack can occur.

**PIPE LENGTH**

Polyethylene pipes in the size range 20 to 125 mm outside diameter are available in coils (rolls) of 100 meters lengths.  
The pipes in larger diameters are supplied in straight lengths of 6 and 12 meters.  
Other lengths can be supplied by arrangement.



## NON-PRESSURE POLYETHYLENE (PE) PIPES

### FOR SOIL AND WASTE DESCHARGE SYSTEMS (LOW AND HIGH TEMPERATURE)

TABLE 6 : Dimension based on DIN EN 1519-1 and ISO 8770

NOM.SIZE (OD) MM	SDR - 33 S - 16		SDR - 26 S - 12.5	
	W. TH MM	NOM. WEIGHT KG/M	W. TH MM	NOM. WEIGHT KG/M
	MIN		MIN	
32	3.0	0.282	-	
40	3.0	0.360	-	
50	3.0	0.458	-	
63	3.0	0.586	-	
75	3.0	0.696	-	
90	-		3.5	0.988
110	-		4.2	1.45
125	-		4.8	1.86
160	-		6.2	3.08
200	-		7.7	4.74
250	-		9.6	7.38
315	-		12.1	11.7

#### NOTES:

SAPPCO PE 100 Black Pipes are produced as per DIN EN 1519-1 as Plain Ended Pipes without chamfer.

## FOR UNDERGROUND - DRAINAGE AND SEWERAGE

TABLE 7 : Dimension based on EN 12666-1 and DIN 8074

NOM.SIZE (OD) MM	SDR - 26 S - 12.5 SN - 4		SDR - 21 S - 10 SN - 8		SDR - 17 S - 8 SN - 16	
	W. TH MM	NOM. WEIGHT KG/M	W. TH MM	NOM. WEIGHT KG/M	W. TH MM	NOM. WEIGHT KG/M
	MIN		MIN		MIN	
110	4.2	1.45	5.3	1.79	6.6	2.19
125	4.8	1.86	6.0	2.29	7.4	2.79
160	6.2	3.08	7.7	3.75	9.5	4.57
200	7.7	4.74	9.6	5.84	11.9	7.12
250	9.6	7.38	11.9	9.02	14.8	11.1
315	12.1	11.7	15.0	14.3	18.7	17.6
400	15.3	18.8	19.1	23.1	23.7	28.3
500	19.1	29.2	23.9	36.1	29.7	44.2
630	24.1	46.4	30.0	57.0	37.4	70.2

#### NOTES:

SAPPCO PE 100 Black Pipes are produced as per DIN EN 12666 - 1 as Plain Ended Pipes without chamfer.

**SN:** Nominal Ring stiffness expressed as (kN/m<sup>2</sup>)



## **TRENCHLESS TECHNOLOGY “HORIZONTAL DIRECTIONAL DRILLING”**

INSTALLATION OF HDPE PIPING UNDER THE EXISTING ROADS, RAILWAYS, AIRPORT RUNWAYS, RIVERS AND CANALS.

SAPPCO HDPE pipes are well suited for the utility ducting/ piping (for telecom & fiber optics networks and power cables) installed using the latest state of the art trenchless horizontal directional drilling technology for further inquiries please consult our Technical sales.

## **CONTRACTION AND EXPANSION**

The co-efficient of linear expansion of Polyethylene pipes is greater than that of metallic pipes. This must be taken when designing polyethylene pipe installations. For above ground systems the pipe must be designed considering the derating factor for pressure, and a suitable support or restraints will be required to prevent the expansion and contraction.

## **TRANSPORTATION HANDLING AND STORAGE**

During transportation and storage, polyethylene pipe coils should be laid on flat bed which must be free from nails, stones and sharp edges. When handled, care should be exercised to avoid damage to the wall surfaces and thus pipes should not be dragged or dropped over the ground or hard surfaces. Metal slings, hooks or chains should not come into direct contact with the pipe. The pipe, if stored in an open area must not be stacked high and protected from direct sunlight or heat. Coils may be stored on edge or stacked flat and must not be in contact with hot surfaces. Straight pipe stacking should be carried out in staggered position.

## **COILING AND UNCOILING**

During manufacturing pipes are coiled on mechanical coilers and taped at several points to form neat, compact and stable coils which will withstand repeated handling during transportation and storage. Care should be exercised when uncoiling, particularly with sizes 63 mm and above. Movement of the free outer pipe end should always be controlled. Do not allow uncoiling of larger sizes to be done in such a way that the pipe leaves the coil in spiral form. It can be extremely difficult to straighten coiled pipe without damage by excess bending and the creation of potentially dangerous condition.



## HDPE PIPES JOINTING METHODS

### HDPE PIPES BUTT FUSION WELDING:

Butt fusion is to use a butt fusion machine to heat the end of the pipe. After the end of the pipe is melted, it is quickly attached, maintaining a certain pressure, and then cooling to achieve the purpose of welding. HDPE pipes small and big sizes can be connected by the butt fusion process. This method is economical and reliable, and the tension and pressure of the joint have higher strength than the pipe itself.



### HDPE PIPES ELECTROFUSION WELDING:

Electrofusion connection is to insert the two pipe ends to be connected into the sleeve with the electric heating wire embedded, pass the electric current through the electric heating wire, heat the pipe fittings to the melting temperature and fix it to the interface for cooling, then forming a tight and firm joint. It includes electrofusion socket connections and electrofusion saddle connections. The guarantee of the stable quality of the electrofusion connection mainly depends on strict compliance with the prescribed operating procedures and the quality of the electrofusion pipe fittings.

### HDPE PIPES MECHANICAL CONNECTION:

A pipe fitting that mechanically connects polyethylene (PE) pipe to another section of polyethylene (PE) pipe or pipe accessories. It can be assembled at the construction site or pre-installed at the factory. The methods are threaded connection, PP quick connector connection, welding or flange (including PE flange) and metal parts to connect and assemble.





## **INSTALLATION BURIED PIPEWORK**

### **LAYING**

Pipes can be laid and installed above or underground. When pipes are laid and installed on the natural surface, the pipeline route must be clear of any obstructions, and sufficient space must be allowed for expansion/contraction movement. When pipes are laid and installed underground, EN 1610 shall be referred for the trench width and the backfilling, compaction etc.

### **TRENCH EXCAVATION**

Excavation of the trench to be done in a safe way and protection must be given depending on the soil conditions. Contractor should refer to EN 1610 or ATV 139 standards.

PE pipes have a density less than that of water, and may float if water is present in the trench, and the pipes are not restrained. Trench excavations need to be kept free of water, and if necessary, dewatering equipment installed.

The actual trench width adopted will be influenced by the soil conditions, the jointing systems, and whether joints are made in the trench. The installation procedure. While installing the pipe, care must be taken for any sharp objects or large stones.

### **MAXIMUM AND MINIMUM COVER DEPTH**

Where the PE pipe grade line is not specified, the cover over the top of the PE pipes needs to be set so that adequate protection from external loads, third party damage, and construction traffic is provided.

A minimum cover depth of 1.2 meters should be allowed when pipes are installed under roads. In open country or under side walks where top loading is unlikely to occur a minimum cover depth of 0.45 meters is recommended. At depth less than 0.45 meter elsewhere than under roads concrete slabs on a cushion of fill material above the pipe should be used.

### **BEDDING**

The excavated trench floors must be trimmed even, and free from all rocks, and hard objects. In poor soil conditions, an additional layer of bedding material may need to be introduced, and a geofabric restraint of bedding/backfill material may be required. In order to provide the necessary base, the thickness of bedding should not be less than  $\frac{1}{3}$  of the diameter and minimum of 150 mm thick. This thickness should however be increased for irregular, soft or wet bottoms. Care should be taken to ensure that the bedding is adequate, not at points only, to prevent localized loss of gradient or bridging.



**SIDEFILLING**

PE pipes act as flexible pipes to resist external loading, and the side support materials must be evenly added to the same compaction standards as the bedding materials so that the installed PE pipe is not disturbed.

Side fill materials should be built up equally on both sides of the pipes in layers of 150mm, and compacted evenly. Vibrating plate compactors must not be used until there is a 300mm layer of overlay soil over the crown of the PE pipe.

Detector tapes, or marker strips, should be laid on top of the overlay once a layer of 150mm soil has been compacted. The overlay materials should be built up in compacted layers until the overlay material is to a level of a minimum of 150 mm above the top of the PE pipes.

Large diameter (450 mm and above) PE pipes require the overlay materials to be carried to a cover of 300mm above the top of the PE pipes

**BACKFILLING**

This should be laid in layers not exceeding 300 mm in thickness and each layer being well compacted. Special consideration and selection of backfilling material will be necessary if the risk of surface subsidence is an important factor, for example under roads with heavy traffic.

It is recommended that backfilling must be done during the coldest hours of the The remainder of the trench, or embankment fill may be made with the previously excavated native materials. These must be free from large rocks, vegetable matter, and contaminated materials, and all materials must have a maximum particle size less than 75 mm.

Where PE pipelines are installed in areas with high external loads, then the backfill materials must be of the same standard as the bedding and overlay materials. Large diameter PE pipe installations may require the compaction at each stage of the installation to be confirmed by test.

It is recommended that backfilling must be done during the coldest hours of the day.

**INSTALLATION PIPE ABOVE GROUND**

If neat appearance is important, the use of straight pipe is preferred and adequate support must be given to the pipe.

All fittings must be restrained and supported on a proper support, and a distance must be maintained to avoid any sagging due to the weight of the pipe and the temperatures.

A closer support distance is to be maintained for a higher temperature operation, which is recommended in the table according to DVS 2210. Further details contact our Technical team.

TABLE 8 : Maximum Support Spacing

Nominal Pipe Size mm	16	20-32	40-50	63-90	110-125	140-160	200
Space cm	46	61	69	84	107	122	150



## **HYDRAULIC TESTING OF PIPELINE**

- The pressure testing of PE pipeline shall be conducted with water. The temperature of test water should be preferably at 23°C when testing above 23°C to use safety factor as given in TABLE 5.
- The jointed pipeline should slowly be filled with clean water. It is essential that all air is removed from the line prior to commencing the test procedure. Entrapped air can result in erroneous pressure/time recordings.
- Test sections may be either the complete line, or, in large installations, in sections such that the test section can be filled with water within 5 hours to allow pressure observations. Pressure should be built up evenly in the line without pressure shock.
- The test pressure and duration shall meet the requirements of local regulations where applicable or mutually agreed.
- The line should be pressurized to 1.5 times of the system DESIGN OPERATING PRESSURE, note the pressure at the lowest elevation possible. Maintain the pressure for 30 minutes and check for any leaks or drop in pressure.
- A smaller drop in pressure may be observed due to thermal expansion. However, this does not indicate leakage in the pipeline.

### **IMPORTANT NOTES:**

1. Pipeline systems should be constructed to avoid excessive water hammer/ surge pressure.
2. Air must be purged from pipelines before applying pressure.
3. Joint must be covered and protected from heat particularly in the mid day time.
4. Non-pressure pipelines installed are tested to low pressures for a specific period of time (leakage tests).
5. In hot weather pressure test in early morning is recommended.



## **ADVANTAGES : SAPPCO POLYETHYLENE PIPES**

### **LOW WEIGHT**

SAPPCO-PE is low weight and is easy to transport and handle, cost saving with fast, easier installation.

### **RESISTANCE TO LOW TEMPERATURES**

The elasticity of SAPPCO-PE makes pipe systems resistant even if the water freezes inside.

### **IMPACT RESISTANCE**

Thanks to its high elasticity, SAPPCO-PE is resistant to impact even at 0°C, therefore it gives no particular problem during installation at low temperatures.

### **ABSENCE OF CLOGGING**

The smooth surfaces of SAPPCO-PE allow a perfect downflow of every kind of waste water and the self cleaning of the pipe systems.

### **BEHAVIOR IN PRESENCE OF FIRE**

SAPPCO-PE does not emit any toxic gas during combustion.

### **RESISTANCE TO HIGH TEMPERATURES**

SAPPCO-PE guarantee resistance to peaks of temperature up to 80°C and is therefore also suitable for the conveyance of waste water of washing-machines and dish-washers.

### **ELASTICITY**

SAPPCO-PE is suitable for buildings exposed to vibrations in seismic and tsunami areas and on the crossing of expansion joints.

### **RESISTANCE TO UV RAYS**

By the addition optimum amount of carbon black, SAPPCO-PE is stabilized to UV rays and therefore can be installed in the open air without ageing problems.

### **EASE OF JOINTING BY MEANS OF WELDING**

The prerogative of SAPPCO-PE is welding (both butt and electrofusion welding), which facilitates a completely airtight pipe system.

### **THERMAL CONDUCTIVITY**

The water in PE pipe changes its temperature more slowly than in any other conventional pipe because its thermal conductivity is very low : 0.38 W/m. Therefore a rapid thermal load on the pipe will not be able to heat it completely. Also the chances of bursting the pipe are reduced by the ability of the pipe wall to take up expansion.



## **RESISTANCE TO ABRASION**

SAPPCO-PE pipe is resistant to abrasion; its extra thick wall offer additional protection.

## **NON-TOXIC**

SAPPCO-PE pipes are suitable for use in the food industry, food canning and packing industry for the transportation lines in various industries.

## **RENOVATION**

Suitability for renovation, lining and insertion into steel pipe.

## **RESISTANCE TO CORROSION**

PE pipe is resistance to all form of corrosion.

## **WATER-TIGHT SYSTEM**

Fully fused jointing ensure water-tight system.

## **DESIGN LIFE**

SAPPCO-PE pipe made with correct and specifically approved pipe grade ready-made compound, ensure maintenance free design life.

## **AVAILABILITY**

SAPPCO-PE pipe is locally available and proudly **MADE IN SAUDI ARABIA.**



## **HDPE PIPES ADVANTAGES:**

- 50-year design life
- Resistant to corrosion
- Chemically inert
- Very smooth
- Light
- Environment friendly
- UV Resists
- Non-toxic
- Flexible installation
- Long lengths
- Absorbs surge
- Available in coils
- Non-destructive methods
- Abrasion resistant
- Joints with many method

## **INTRODUCTION**

Water is a prime resource and is vital to the welfare of society and to the economic growth of all countries. Today water is becoming a scarce commodity and the biggest challenge faced is the access of the clean water due to ageing infrastructure and rising population. As cities continue to expand rapidly, the demand for cost-effective water supply and distribution becomes important. The concept of sustainable cities is achieved by using effective & efficient water supply & distribution systems to end users through leak proof pipe network.

In order to achieve a sustainable network decision are to be made of what kind material to be used to avoid from the past experiences of the more industrialized developed countries. Piping network experience severe irreversible corrosive environment, if not protected internally and externally will rapidly deteriorate as the result of complex chemical reaction due to the presence of air, soil and electrical current.

The choice of HDPE pipe and fittings surely reduces and the remedies such problems, offering the best suitable piping system for the complicated environmental conditions prevailing in the Kingdom and neighboring countries.

Polyethylene (PE) materials were initially introduced in the UK in 1933 and have progressively been used in the pipeline industry since 1950's. Since then, the physical properties of the PE materials have been continually improved in crack propagation resistance, increased hydrostatic pressure, resistance, ductility, and elevated temperature resistance resulting from developments in the manufacturing methods.

The well recognized attributes of high impact resistance, ease of jointing and installation, flexibility, smooth hydraulic flow characteristics, high abrasion resistance, and excellent chemical resistance have resulted in increased applications of PE in the pipeline industry in various areas such as water supply, mining slurries, irrigation, sewer and general industrial applications.



SAPPCO Polyethylene pipes are manufactured from the new generation materials, suitable for environmental conditions prevailing in the Kingdom and in other countries.

With confidence in our abilities, we are surging ahead, stronger, and more determined to fulfill all our dreams.

- Best price leadership through offering value for money product range.
- Highest level of customer delight through deliver cent percent error free products
- Highest competitive quality products through continuous innovation and research

## **CUSTOMER SATISFACTION**

SAPPCO has been leading the industry for manufacturing and supply of HDPE piping system.

SAPPCO's most important objective of customer satisfaction is achieved through a comprehensive and quality focused research program to provide the customer a high-quality products and services.

Customer Satisfaction has been SAPPCO's top objective and is achieved through

- Products has to pass through a strict quality control procedures in accordance to ISO 9001 and the industry standards.
- Our well-experienced employees offer extensive knowledge and the field experience.
- Review of existing facilities and continual improvements is always a priority, parallel to the consistent production process.

**SAPPCO's Products reflects the eminence through the standards that we pursue in being the largest manufacturers of plastic pipe in the middle east. We ensure to deliver quality, value, and durability for our customers through focused communication and meeting their requirements.**

## **APPLICATIONS**

SAPPCO HDPE pipes provides a wide range of product assortment that is aimed at increasing clients work efficiency and reducing the cost, as well as cost cutting during the selection of the pipelines.

Due to its excellent properties like strength, toughness, non-toxicity, light in weight and resistant to corrosion and chemicals long life, HDPE pipes have been widely adopted in a variety of piping systems that can replace most pipes from conventional materials. Polyethylene has very good fatigue strength and special provisions for water surges frequently allowed when designing other thermoplastic pipe work systems are not normally necessary

SAPPCO HDPE pipes can be used for various applications like potable water network, geothermal, green house heating, sprinklers and irrigation systems, tube well installations, slurry transportation in mining sector, industrial process lines, for natural gas distribution system, as liner for steel pipe, drainage, sewerage soil and waste discharge system.



SAPPCO Polyethylene pipe is also suitable for use in “trench less technology” and other underground power cable laying systems.

### **HDPE PIPES APPLICATIONS**

- 01-** Water networks
- 02-** Sewage systems
- 03-** Fire-fighting systems
- 04-** Insulation/Sleeves/Jacket
- 05-** Chilled water /cooling water
- 06-** Submarine pipelines
- 07-** Chemical applications
- 08-** Storm water drainage
- 09-** Desalination
- 10-** Mining industry
- 11-** Natural Gas networks.





# CERTIFICATES & APPROVALS



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