

SAPPCO  
سابكو

# Linear Low Density PolyEthylene Pipes & Tubing

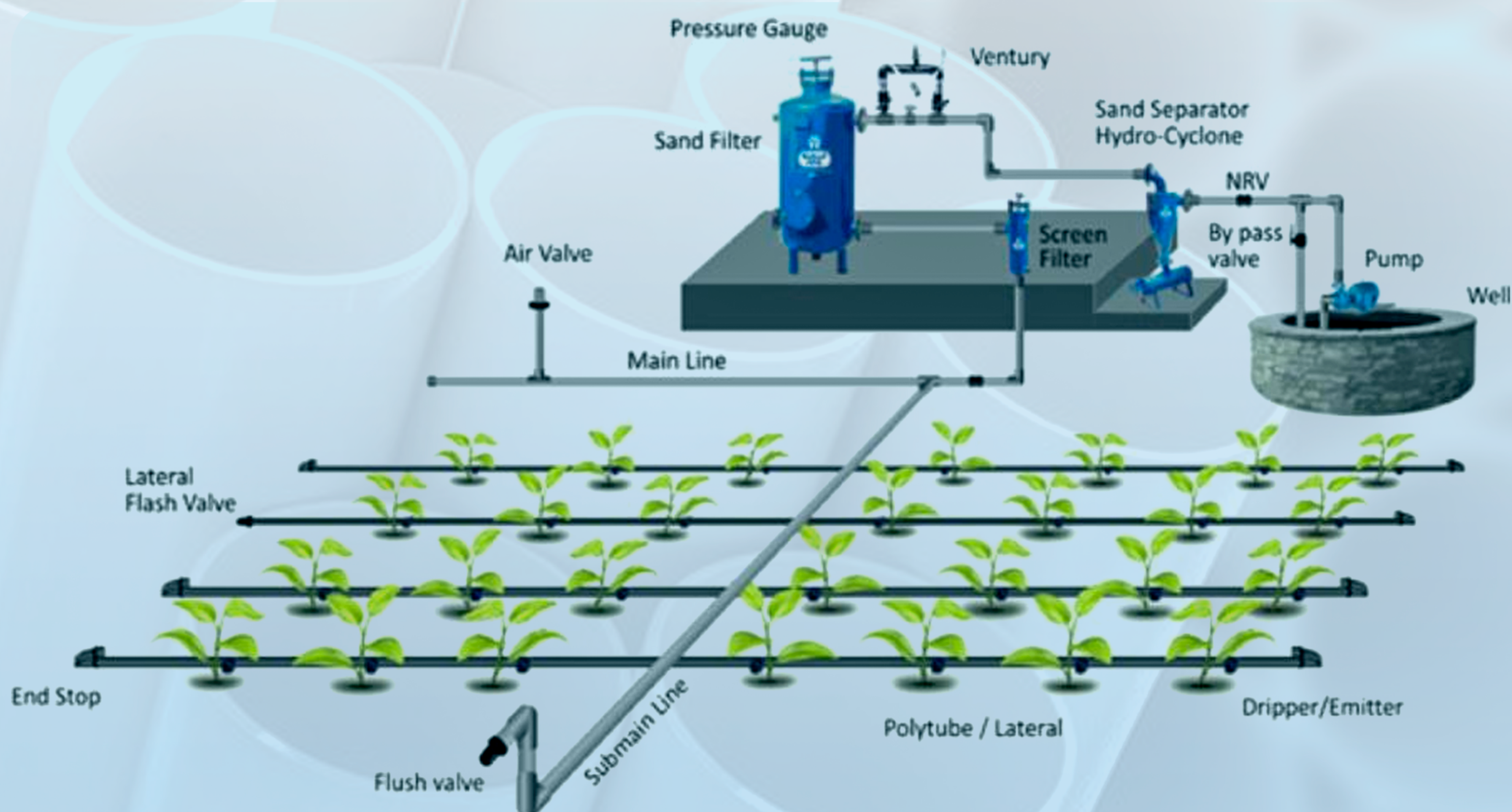
For Drip, Irrigation System and Water Supply Networks



## LLDPE PIPE



## TYPICAL POLYETHYLENE PIPE IRRIGATION NETWORK





## **ABOUT US**

For more than five decades, SAPPCO (Saudi Plastic Products Company Limited) has been a leader in the manufacturing of plastic pipe products for the infrastructure, building, construction and services industries in the Kingdom of Saudi Arabia.

Thousands of kilometers of SAPPCO Pipes are now serving urban, domestic, agricultural and industrial needs throughout the Kingdom.

At SAPPCO, we are committed to identifying and endorsing pipe products that are ideally suited to the unique environmental conditions found in Saudi Arabia and other Gulf States.

We are confident that this brochure will effectively acquaint you with the exceptional versatility of SAPPCO's pipe-manufacturing capability, as well as our comprehensive range of products and systems. Our goal is to meet customers' needs in a cost-effective and reliable manner, ensuring optimal efficiency throughout the process.

SAPPCO's Practical Experience is now at your disposal to build better systems, in less time, for an economical cost".



## **MATERIAL**

SAPPCO Polyethylene pipes are manufactured using (LLDPE) a Linear Low-Density Polyethylene pipes-grade compound containing suitable antioxidant and very well dispersed carbon black (pigment and UV-Stabilizer) which ensures excellent resistance to outdoor weathering. The virgin Linear LDPE pipe-grade compound meets the requirements of American Standard ASTM D 3350 for cell classification PE 122111 C, and designated as type 1. class C, category 4 (PE 14).

## **MANUFACTURING STANDARDS**

SAPPCO pipes are manufactured in accordance with International Standards ISO 4427, European Standard EN 12201-2, German Standard DIN 8072, and the Australian Standard AS 2698.1

For SAPPCO specification and customer specified model number, LLDPE pipes are usually manufactured for customers' specific need such as the drip-irrigation applications.

## **APPLICATION**

SAPPCO manufactured LLDPE pipe are suitable for use in irrigation systems such as Landscape, Turf, Trickle and Micro irrigation. SAPPCO pipe and tubing may be used above or below ground and are conveniently compatible with irrigation fittings available in the market.

## **QUALITY MANAGEMENT SYSTEM**

SAPPCO operates an upgraded Quality Management System in accordance with ISO 9001-2015 standards, and has been successfully assessed and certified in this respect.

Regular testing of all pipes produced at our factory is carried out in our well-equipped laboratory and as laid down in the standards.

## **LENGTH OF COIL**

Pipes are available in standard coil of 150 & 300 meter. Pipes in other lengths can be supplied on order.

## **IMPORTANT NOTE**

SAPPCO recommends to forbear using grease or detergents for insertion of fitting, as it may cause stress cracking. If necessary, the use of water on fittings is recommended.



MATERIAL PROPERITIES

LINEAR LOW-DENSITY POLYETHYLENE (LLDPE) COMPOUND

All values at 23°C unless otherwise specified.

TABLE 1

| Physical Properties                  | Method         | Unit               | Value      |
|--------------------------------------|----------------|--------------------|------------|
| Density (Compound) @ 23° c           | ISO 1183       | g /Cm <sup>3</sup> | 0.922      |
| MFR @ 190° c weight 2.16 kg Load     | ISO 1133       | g/10 min           | 0.33       |
| ESCR                                 | ASTM 1693-B    | hours              | ≥ 5000     |
| Carbon black content                 | ISO 6964       | %                  | 2.5        |
| Mechanical Properties                | Method         | Unit               | Value      |
| Tensile stress at break, MD          | ASTM D882      | MPa                | 31         |
| Tensile strain @ break               | ISO 527        | %                  | ≥ 350      |
| Hardness (shore D) (3 sec)           | ISO 868        | -                  | 55-58      |
| Thermal Properties                   | Method         | Unit               | Value      |
| Vicat softening point @50 N(VST/B)   | ISO 306        | ° C                | 95         |
| Oxidation induction time (OIT 210°C) | EN 728         | Min                | >20        |
| Thermal conductivity                 | ASTM D 2336    | W/m-k              | 0.45       |
| Liner thermal expansion (α )         | BS 6431 part15 | K-1                | 1.3 X 10-4 |

CHEMICAL PROPERTIES

SAPPCO LLDPE pipes are unaffected by all types of soil, water (irrigation, drinking or waste), corrosive liquids, most common acids and alkalies, dissolved fertilizers and biocides and all forms of corrosion normally encountered in metallic pipes. It is tasteless, odorless, non-toxic and cannot be attacked by bacteria throughout its lifetime.





SAPPCO LINEAR LDPE TUBING FOR DRIP IRRIGATION

Table 2: Dimensions based on SAPPCO Specification (Customer specified)

| MODEL NUMBER | NOMINAL TUBE SIZE | NOMINAL INSIDE DIAMETER |       | NOMINAL OUTSIDE DIAMETER |       | NOMINAL WALL THICKNESS |      |
|--------------|-------------------|-------------------------|-------|--------------------------|-------|------------------------|------|
|              |                   | Inch                    | mm    | Inch                     | mm    | inch                   | mm   |
| 490          | 1/2               | 0.490                   | 12.45 | 0.690                    | 17.53 | 0.100                  | 2.54 |
| 520          | 13.2mm            | 0.520                   | 13.21 | 0.620                    | 15.75 | 0.050                  | 1.3  |
| 580          | 1/2               | 0.580                   | 14.73 | 0.690                    | 17.53 | 0.055                  | 1.4  |
| 600          | 1/2               | 0.600                   | 15.24 | 0.704                    | 17.88 | 0.052                  | 1.3  |
| 620          | 16mm              | 0.620                   | 15.75 | 0.700                    | 17.78 | 0.040                  | 1.0  |
| 720          | 18mm              | 0.720                   | 18.29 | 0.830                    | 21.08 | 0.055                  | 1.5  |
| 810          | 3/4               | 0.810                   | 20.57 | 0.930                    | 23.62 | 0.060                  | 1.5  |
| 824          | 3/4               | 0.824                   | 20.93 | 0.944                    | 23.98 | 0.060                  | 1.5  |
| 1049         | 1.049             | 26.64                   | 1.189 | 30.20                    | 0.070 | 1.8                    |      |

Working pressure 3 bar at 20°C

SAPPCO LINEAR LDPE PIPE FOR MICRO-IRRIGATION APPLICATION

Table 3: Dimensions based on AS 2968.1

| PIPE SIZE | NOMINAL OUTSIDE DIAMETER | NOMINAL WALL THICKNESS | NOMINAL WEIGHT |
|-----------|--------------------------|------------------------|----------------|
| mm        | mm                       | mm                     | Kg/M           |
| 13        | 12.9                     | 1.2                    | 0.051          |
| 16        | 16.0                     | 1.2                    | 0.062          |
| 19        | 19.1                     | 1.3                    | 0.080          |
| 25        | 25.4                     | 1.5                    | 0.121          |
| 32        | 31.7                     | 2.0                    | 0.200          |

Working pressure 3 bar at 20°C



EFFECT OF ELEVATED TEMPERATURE

The nominal working pressures of the Pipes given in Tables 2, 3 and 4 are for operational conditions at 20°C. Since LLDPE is a thermoplastic material, the continuous working pressure rating must be reduced by multiplying with reduction factors as higher temperatures as given in Table 5.

Table 5 : Pressure Reduction factors based on ISO 13761

| Material classification | Pressure reduction factors <sup>a b</sup> |       |       |       |       |       |       |
|-------------------------|---|-------|-------|-------|-------|-------|-------|
|                         | 20 °C                                     | 25 °C | 30 °C | 35 °C | 40 °C | 45 °C | 50 °C |
| PE                      | 1,00                                      | 0,92  | 0,85  | 0,79  | 0,73  | 0,67  | 0,63  |

NOTE:

- 1. Referencing the ISO 9080:2012 shall be made for extrapolation time limits.
- 2. The ISO 9080:2012 extrapolation factors are 50 for 40°C, 30 for 45°C and 18 for 50°C, that when the material is tested at a maximum temperature of 80°C. If the material is tested at a higher temperature than 80°C, then other extrapolation factors may apply.





# CERTIFICATES & APPROVALS



## GENERAL CERTIFICATES & APPROVALS







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@ Email: [sales@sappco.com.sa](mailto:sales@sappco.com.sa)



S A P P C O G R O U P

**Riyadh head office**

☎ 966114480448

📍 P.O Box 40042, Riyadh 11499, Saudi Arabia



**Dammam office**

☎ 966138471703/ 3323

📍 P.O Box 1703, Dammam 31412, Saudi Arabia

**Jeddah Office**

☎ 966122864284/4285