

SAPPCO
سابكو

PE PIPE

WITH PRE INSTALLED PULL ROPE



SUB DUCT FOR FIBRE OPTIC CABLE INSTALLATION

INTRODUCTION

The Kingdom of Saudi Arabia uses the latest and well proven technology for the development of industrial, Commercial and all types of public service and infrastructure projects. In line with this prudent practice, the Telecommunication Industry has adopted the use of fiber optic cables.

For the installation of fiber optic cables, government bodies and semi-governmental entities such as the the Ministry of P.T.T. (MOPTT), Saudi Telecom and SEC have specified the use of long-term performance Sub-duct, Mini Duct and Main Duct made from latest generation of High Density Polyethylene (HDPE) piping compounds.

To fulfill this need SAPPCO has designed and manufactured HDPE Sub-Duct and Mini Duct so that exposure to the environmental conditions of Saudi Arabia during storage, transport, installation, and operation shall not degrade the physical or operation and maintenance characteristics of the Sub-Duct and Mini Duct.

Our Sub-Duct, Mini Duct and Main Duct are manufactured from the specifically designed pipe grade of higher strength grade compound, in which perfect pigment has been evenly dispersed to provide the maximum possible protection from sunlight and heat.

The expertise of our Technical team is always available for guidance and assistance when needed on use of pipe products.

APPLICATION SUB-DUCT/MINI DUCT

This Technical document was prepared to illustrate the main applications of the HDPE Sub-Duct and Mini Duct within the Telecommunication Industry in Saudi Arabia and GCC.

High Density Polyethylene (HDPE) Sub-Duct and Mini duct are mainly used in Telecommunication for security and convenience when hauling in small diameter fiber optic cables.

The Sub-Duct is also available with a pre-installed rope to facilitate the pulling of Fiber Optic Cables through the duct.

Four Sub-Ducts of small diameter may be installed in HDPE or PVC duct. There is also the single Sub-Duct may be installed over existing cables in ducts to protect the fiber optic cables during hauling in.

Mini Duct is also available with longitudinal grooves (Ribbed) on its inner surface or with smooth bore.

Mini Duct is used for direct buried application to protect cables.

MATERIAL CLASSIFICATION

STANDARD	DESCRIPTION	DESIGNATION
EN ISO 12162/DIN 8075	Minimum Required Strength	PE 100 / MRS 10.0 MPa
ASTM D 3350	Cell Classification	345440 C/E

MANUFACTURING STANDARDS

DIN 8074	Polyethylene Pipes - PE 80, PE 100 - Dimensions
DIN 8075	Polyethylene Pipes - General quality requirements, testing
STC, TS 4111	Technical Specification for Ducts, HDPE Main, Mini & Micro Ducts
SEC, 23-SDMS-01	Material Specification for Ducts, HDPE Main, Mini & Micro Ducts
ASTM D 3035	PE Plastic Pipe (DR-PR) Based on Controlled outside Diameter

QUALITY MANAGEMENT SYSTEM

SAPPCO operates Quality Management System in accordance with quality standard EN ISO 9001 and thereby has been ASSESSED and CERTIFIED successfully.

Routine testing is carried out as laid down in relevant PE Ducts manufacturing and testing standards requirements in our well-equipped laboratory.

Sub-Duct, Mini Duct and Main Duct are available and may be applied in different colors.



LENGTH

- 1. Coils are available in any length up to 500 meters depending on size.
- 2. Alternatively on sturdy wooden reels available in any length up to 2000 meters.

MATERIAL PROPERTIES

TABLE 1 - HIGH DENSITY POLYETHYLENE (HDPE)
All values at 23 °C unless otherwise specified

TYPICAL PROPERTY VALUES

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
POLYMER PROPERTIES			
Melt Flow Rate (MFR) ⁽¹⁾			
@ 190°C & 5 kg load ⁽¹⁾	0.33	g/10 min	ISO 1133
@ 190°C & 21.6 kg load	9	g/10 min	ISO 1133
Density at 23°C	952	kg/m³	ASTM D1505
MECHANICAL PROPERTIES			
Tensile Strength at Yield ⁽²⁾	24	MPa	ASTM D638
Tensile Elongation at Yield	9	%	ISO 527-1/-2
Tensile modulus	1500	MPa	ASTM D638
Charpy Impact Notched @ 23°C	250	J/m	ASTM D6110
Hardness (Shore D) ⁽³⁾	55	-	ASTM D2240
THERMAL PROPERTIES			
Vicat Softening Point	73	°C	ASTM D1525

CHEMICAL RESISTANCE

SAPPCO PE PIPE is resistant to all kinds of water, soils, corrosive liquids, most common acids, alkalis, and all forms of corrosion normally encountered in metallic pipes. Care must be taken when PE pipes are used for oxidizing agents.

SAPPCO HDPE DUCTS - With And Without Pull Rope Inside

TABLE 2	Dimensions Based on DIN 8074		
Duct Type	Nominal Outside Diameter mm	Nominal Wall Thickness mm	Nominal Weight kg/m
Sub-Duct	32	2.0	0.196
	50	2.9	0.440

TABLE 3	Dimensions Based on DIN 8074 SDR 11		
Nominal Duct Size mm	Nominal Outside Diameter mm	Nominal Wall Thickness mm	Nominal Weight kg/m
32	32	3.0	0.279
40	40	3.7	0.430
50	50	4.6	0.666

NOTE: PIPES CAN BE EXTRUDED WITH DIFFERENT COLORS AS PER REQUIREMENTS.

TABLE 4	Dimensions Based on ASTM - D3035 SDR 11		
Nominal Duct Size inch	Nominal Outside Diameter mm	Nominal Wall Thickness mm	Nominal Weight kg/m
1	33.40	3.05	0.299
1 - 1/4	42.16	3.84	0.465
1 - 1/2	48.26	4.39	0.610
2	60.33	5.49	0.952

- NOTE:
- 1. ABOVE SUB-DUCT ARE PRE-INSTALLED PULL ROPE INSIDE.
 - 2. STANDARD SUB-DUCT COLORS AVAILABLE IN SAPPCO ARE BLACK, BLUE, GREEN, ORANGE, RED AND WHITE.

TABLE 5	Dimensions Based on SAPPCO SPEC. and DIN 8074		
Longitudinal (Ribbed) Groove Conduit Series	Nominal Outside Diameter mm	Nominal Wall Thickness mm	Nominal Weight kg/m
GC 12	50	4.6	0.680

NOTE: HDPE DUCT OTHER DIMENSIONS ARE AVAILABLE ON REQUEST.

SAPPCO HDPE DUCTS

SEC AND STC SPECIFICATIONS
MAIN-DUCTS & MINI-DUCTS

TABLE 6	Dimensions based on DIN 8074			
HDPE	Nominal Outside Diameter	Nominal Wall Thickness	Nominal Weight	SDR of duct
Duct type	mm	mm	kg/m	Class
Mini - Ducts	20	0.8	0.108	SDR 13.6
	32	0.9	0.189	SDR 17
	40	2.4	0.294	SDR 17
	50	3.0	0.452	SDR 17
Main Ducts	75	3.5	0.806	SDR 22
	110	5.0	1.67	SDR 22

- NOTES:**
- 1. DIMENSIONS ARE BASED ON SEC 23-SDMS-01 AND STC TS 4111 SPECIFICATIONS.
 - 2. DUCTS ARE PRE-INSTALLED WITH PULL ROPE INSIDE.
 - 3. FOR DUCTS IN OTHER DIMENSIONS ARE UPON REQUEST AND PRIOR CONSULTATION WITH TECHNICAL SALES.

CERTIFICATES & APPROVALS



GENERAL CERTIFICATES & APPROVALS





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