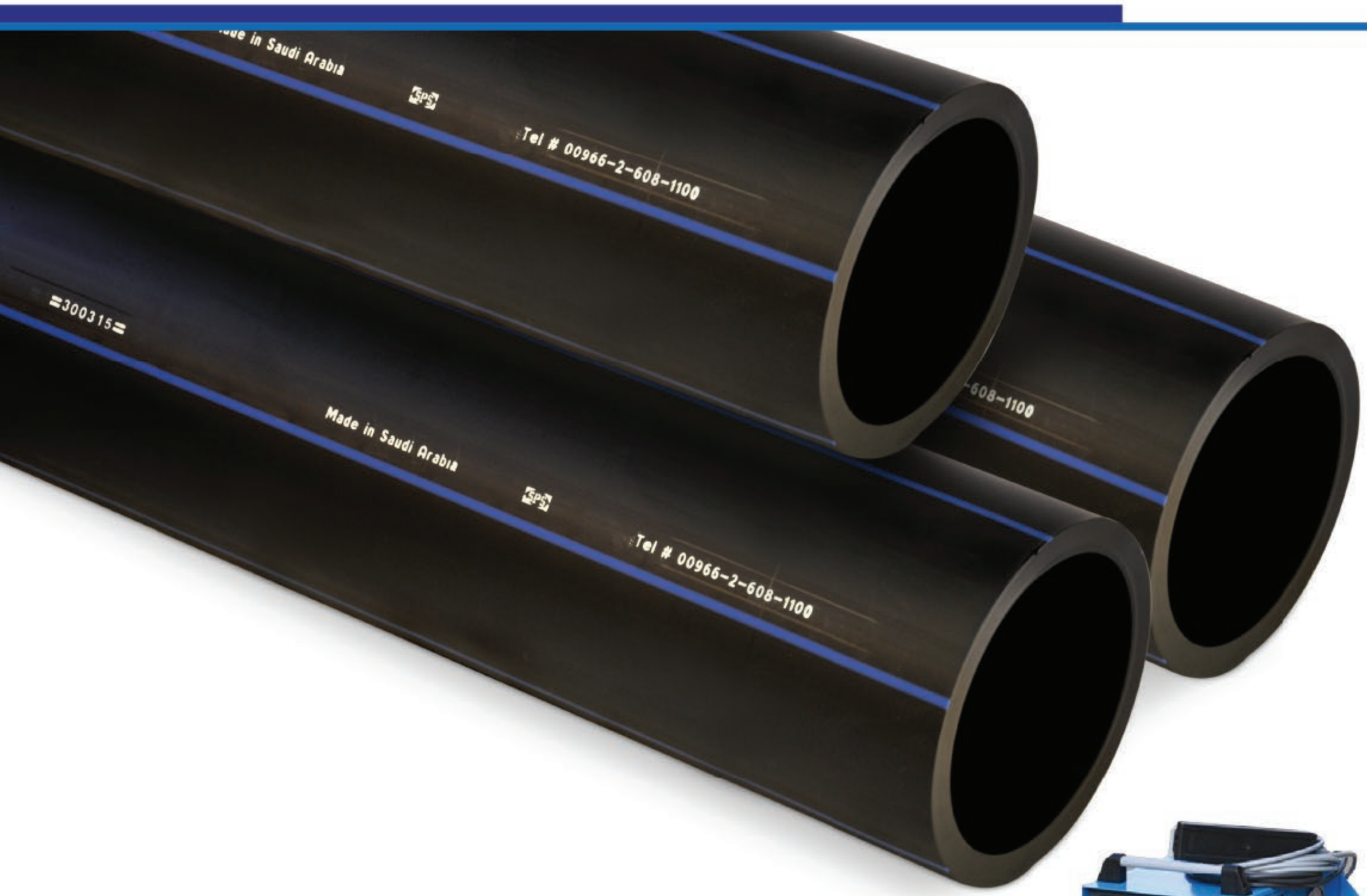
مصنع شركة أنظمة الأنابيب السعودية المحدودة

SAUDI PIPE SYSTEMS CO. LTD.®



PE 100 Fitting and Welding Machines

NSF · UKAS QUALITY MANAGEMANT · ISO 9001:2008 SYSTEM CERTIFICATION SGS · WRAS Water Regulations Advisory Scheme · UL FM APPROVED · SPS


HÖRNER
HST 300 Junior
HÖRNER

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EXECUTION A BUTT WELDING ACCORDING TO DV's 2007 STANDART;

1) The parts to be welded are inserted in the clamps of the machine and the trimmer unit is put between the parts.

2) The ends of the parts to be welded are trimmed till that 100% contact will be obtained between the ends of the parts.

3) Trimmer is taken out and the heater which was heated till 220c is inserted between the parts. For the purpose of equalizing the temperatures of each part, at the beginning the parts are heated for a certain period under a pushing pressure of 0.15 N/mm2

4) After the time for heating under pressure elapsed, the parts are continued to be heated under a very small pushing pressure of 0.01 NImm2 (or zero pressure).

5) After the pressurless heating period has elapsed, the heater is taken out and the parts are pushed towards each other with a pushing pressure of 0.15 N/mm2.

6) After the period for pushing without heater under pressure has elapsed, the pressure is released to zero and the parts are leaved to cool down.

EXECUTION OF AN ELEC-TROFUSION WELDING ACCORDING TO DVS 2207 STANDART:

1) The pipes upper surface is cleaned from dirts and dusts using a scraper and alcohol.

2) The extend of the welding on the pipe is marked accord ing to the insertion point in the socket.

3) Socket is inserted on the pipe.

4) The electrodes of the electrofusion welding machine is inserted to the jacks on the socket.

5) The records of the socket is transferred to the welding machine by rubbing the electrode of the welding machine to the barcode on the socket.

6) When the note "Ready" appears on the screen of the machine, START button is pressed and welding is started.

WARNING: In case of inter-ruption of electrofusion operation after start due to any reason, it is recom-mended to make the opera-tion again from the make the operation again from the beginning using a new socket. Because, if you continue welding, there is a risk of less or excess heating of the wires resulting with inproper or insufficient fusion. To be the safe side, it will be better to renew the welding operation with a new socket.

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High Density Polyethylene (HDPE)

Pipe Seamless extruded high density, Ultra-violet stabilized corona-treated, having a material classification according to EN 12201.

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INTRODUCTION:

SAUDI PIPE SYSTEMS COMPANY (SPS) is one of the leading water pipe systems manufacturersin Saudi Arabia It has successfully established its own factories in Jeddah Industrial city.

SPS product are manufactured according to the international standards and was satisfactorily awarded with an ISO 9001:2008.

SPS policy states that: **"SPS is committed to excellence in supplying products and services of thehigh quality with maximum regard and respect to the environment."**

SAUDI PIPE SYSTEMS COMPANY (SPS) is consisted of Four major manufacturing factorieswhich are all located in Jeddah Industrial zone.

- SPS Valve Factory
- SPS Casting Foundry
- GRP Plant (Glass Reinforced Polyester Pipes & Fittings)
- Polyethylene Plant (HDPE Pipes & Fittings)

POLYETHYLENE

After the great success in fiberglass pipes and valve, SF5 company has established its mostadvanced plant of full automated Extruction lines for High density polyethylene pipes (HDPEpipe).

With the most advanced machinery and equipment HDPE pipes are produced. SPS is meeting the customer requirements according to EN-12201-DIN 8075,
DIN- 8074 & ISO-4427 Standards. HDPE pipes are used in many applications such as watersewage and gas mains.

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ADVANTAGE OF POLYETHYLENE (PE100)

- High impact and breakage resistance.
- Very high resistance to direct sunlight (uv resistance for tong time this is supplied by ultraviolet light resistance agent mixed to the PE raw material.
- There is no need to take protection precautions at the time of installation like cathodic protection.
- Availability of connection at a place out of the trench.
- Advantage of being not affected from earth movements like landslide , earthquakes etc.
- PE pipes require less fittings for connection because they are elastic and in many place they do not require connection where the other types do. because PE pipes are bendablewith a radius of 20 times of its out diameter. the other pipe type do not have this advantage.
- advantage of mobilization of the PE pipe production facilities this enable very big saving in transport costs for projects where large diameter pipes are required.
- Advantage of higher durability & advantage of easy installation and transport without material loss.
- PE pipes do not require concrete block at the place like bending and tee separations.
- PE pipes do not require welding characteristics.
- Very good adoption to earth movements.
- Many different pressure resistance option, PE pipe can be produced resistant to 12 different pressure class from 2.5 bar up to 32 bar.
- High resistance to chemical, not affected from corrosion , decaying and abrasion.
- Advantage of perfect leak proof no crack no break and no deformation.
- Advantage of safe application in irregular surface like sea, river lake passages at place where there sockets etc.
- Availability of more than one connection method (butt welding. electro fusion welding , push fit sockets etc.)
- Advantage of having perfectly smooth internal surface because of this advantage of PE pipes in comparison to the other pipe types this brings considerable saving in the overallcost of the line and the services costs.

POLYETHYLENE

For nearly 50 years, POLYETHYLENE (PE) has been used to transport fluids. its ability towithstand harsh chemicals without corrosion and leak as well as the tight installation,POLYETHYLENE (PE) has been regarded as the ideal material for the gas industry, thecontinuing technological improvement of POLYETHYLENE materials has resulted in the rapidgrowth of numerous usages of POLYETHYLENE (PE) in both water and gas industries since theearly '70's. POLYETHYLENE (PE) is now the material of choice. it is superb in resistingcorrosion. additionally, butt welding pe joints offer leak-free connection which outperformsany other competing materials in terms of reliability and longevity, not to mention theremarkable savings on the installation costs and life of the materials.

These improvements in pe materials resulted for the water industry to adopt it for its pressuretransmission network. the improvements are mainly the development of PE8O and PEIOO. inthis catalogue, PEIOO will be the basis of the discussion,
although some references will be made for PE8O.

Why opt for high performance POLYETHYLENE (PEIOO)?

POLYETHYLENE (PE100) is considered as the most heavy duty amongst other types of pe pipes.compared to not Prodcue, PE100 is best used for water & gas mains with its maximumworking pressure. it has enhanced toughness, higher permissible design strength and improvedresistance to rapid crack propagation. "high strength" HDPE (PEIOO) pipes offer the waterengineer substantial benefits in performance efficiency and economy of its use.

PE100 pipes are also used in various applications such as:

- Portable water line
- sewage pumping mains
- fire mains
- chilled water

* submarine pipe lines

* industrial and chemical applications

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SAUDI PIPE SYSTEMS CO. LTD.®

PRODUCT SPECIFICATIONS

HDPE (PE 80)

Production Range : DN 16 mm - DN 630mm
Pressure Rating : 5 bars - 12.6 bars

HDPE (PE 100)

Production Range : DN 16 mm - DN 630mm
Pressure Rating : 6 bars - 16 bars

Production Standard

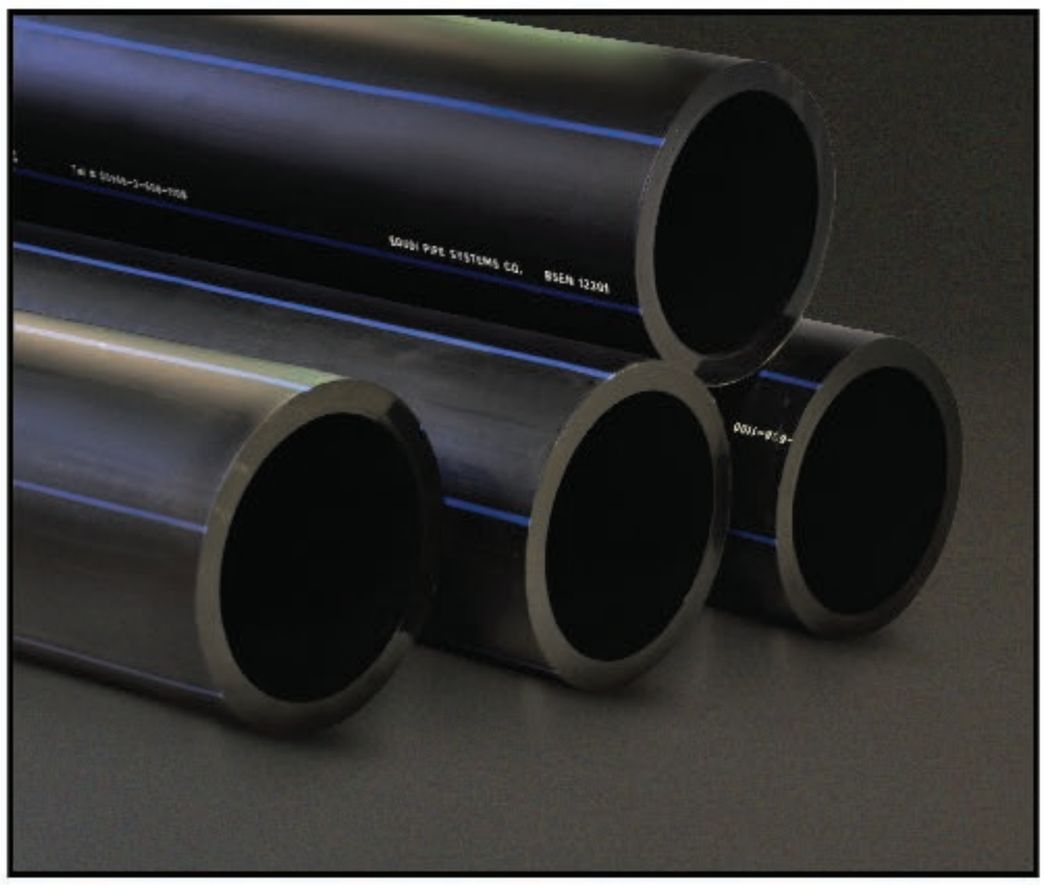
British Standards : EN 12201

Wide Application

- Potable water
- Sewage & Drainage

*Transport of slurry

- Domestic Gas
- Strom water Drainage
- Irrigation



Relationship Between SDR & PN:

SDR	NOMINAL PRESSSURE (PN) INBARS FOR MATERIAL CLASS	
	PE 80	PE 100
11	12.5	16
17	8	10
26	5	6

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HIGH DENSITY POLYETHYLENE PIPES

WHY POLYETHYLENE?

Because of its high resistance for corrosion & flexibility HDPE has features & characteristics ;some of them are as follow

- High resistance to attack form various types of chemical, No electrochemical corrosion
- Perfect leak proof; No crack No break and No deformation.
- Excellent burst strength properties.
- High impact and breakage resistance.
- Light weight, easy installation & transportation without materials lost.
- Minimum service life over 50 years under normal condition

Pipe Length

“ Straight Pipes

Pipes are available in 6 meter & 12 meter effective length, Special Length is Available onRequest.

” Coil Pipes

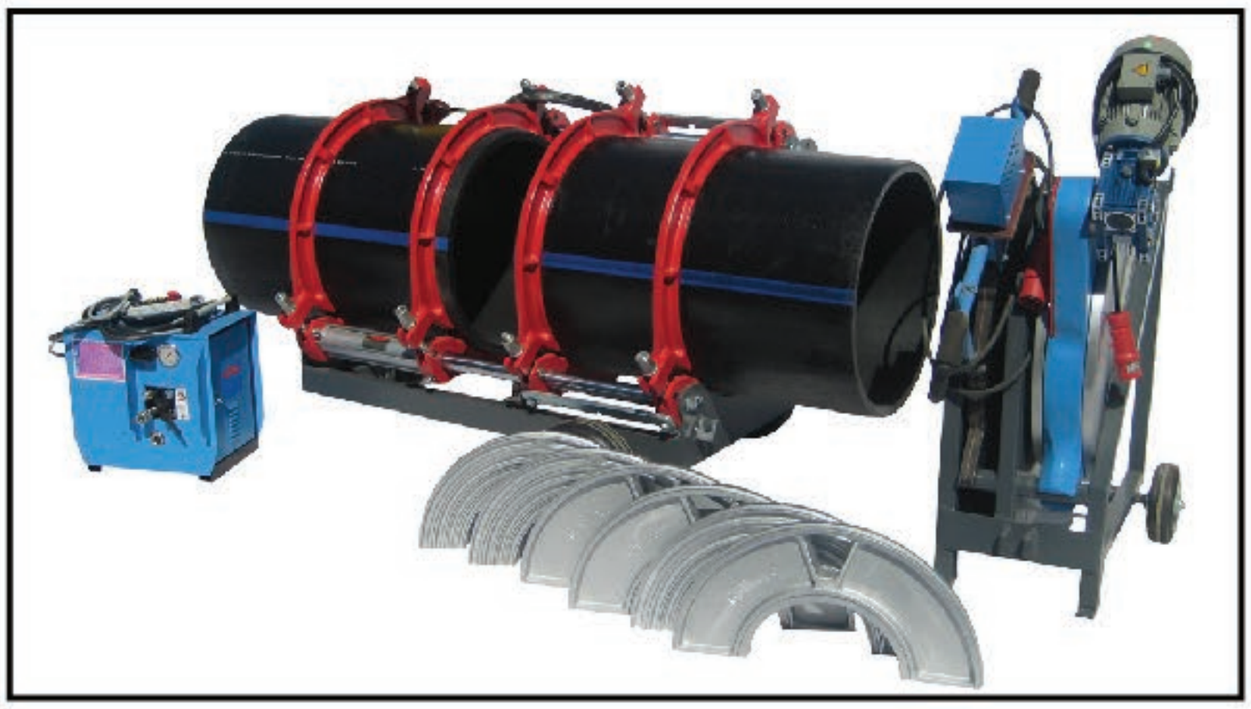
Standard Coiled length are 50, 100 & 150 meters. Unless Special Order is done.

Fittings

A Wide Range of fittings are available such as Elbow, Tee, Wyes, Reducers & End caps for bothPressure and Non Pressure Application

Jointing Methods :

- Butt welding Method
- Electro fusion Welding
- Flange joints
- Mechanical Coupler
- Push-fitt Socket Connection
- Fabrication fitting for Non pressure application.



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DIMENSIONAL CHARACTERISTICS OF HDPE PE 100

(Outside Diameter & Wall Thickness)

OUTSIDE DIAMETER OD mm	SDR		
	SDR 26	SDR 17	SDR 11
	NOMINAL PRESSURE		
	PN 6	PN 10	PN 16
	e_n Wall Thickness	e_n Wall Thickness	e_n Wall Thickness
16	-	-	-
20	-	-	2
25	-	-	2.3
32	-	2	3
40	-	2.4	3.7
50	2	3	4.6
63	2.5	3.8	5.8
75	2.9	4.5	6.8
90	3.5	5.4	8.2
110	4.2	6.6	10
125	4.8	7.4	11.4
140	5.4	8.3	12.7
160	6.2	9.5	14.6
180	6.9	10.7	16.4
200	7.7	11.9	18.2
225	8.6	13.4	20.5
250	9.6	14.8	22.7
280	10.7	16.6	25.4
315	12.1	18.7	28.6
355	13.6	21.1	32.2
400	15.3	23.7	36.3
450	17.2	26.7	40.9
500	19.1	29.7	45.4
560	21.4	33.2	50.8
630	24.1	37.4	57.2

en - Nominal Wall Thickness
SDR - Standard Dimension Ratio
Dimension - mm

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DIMENSIONAL CHARACTERISTICS OF HDPE PE 80

(Outside Diameter & Wall Thickness)

OUTSIDE DIAMETER OD mm	SDR		
	SDR 26	SDR 17	SDR 11
	NOMINAL PRESSURE		
	PN 5	PN 8	PN 12.5
	e_n Wall Thickness	e_n Wall Thickness	e_n Wall Thickness
16	-	-	-
20	-	-	2
25	-	-	2.3
32	-	2	3
40	-	2.4	3.7
50	2	3	4.6
63	2.5	3.8	5.8
75	2.9	4.5	6.8
90	3.5	5.4	8.2
110	4.2	6.6	10
125	4.8	7.4	11.4
140	5.4	8.3	12.7
160	6.2	9.5	14.6
180	6.9	10.7	16.4
200	7.7	11.9	18.2
225	8.6	13.4	20.5
250	9.6	14.8	22.7
280	10.7	16.6	25.4
315	12.1	18.7	28.6
355	13.6	21.1	32.2
400	15.3	23.7	36.3
450	17.2	26.7	40.9
500	19.1	29.7	45.4
560	21.4	33.2	50.8
630	24.1	37.4	57.2

en - Nominal Wall Thickness
SDR - Standard Dimension Ratio
Dimension - mm

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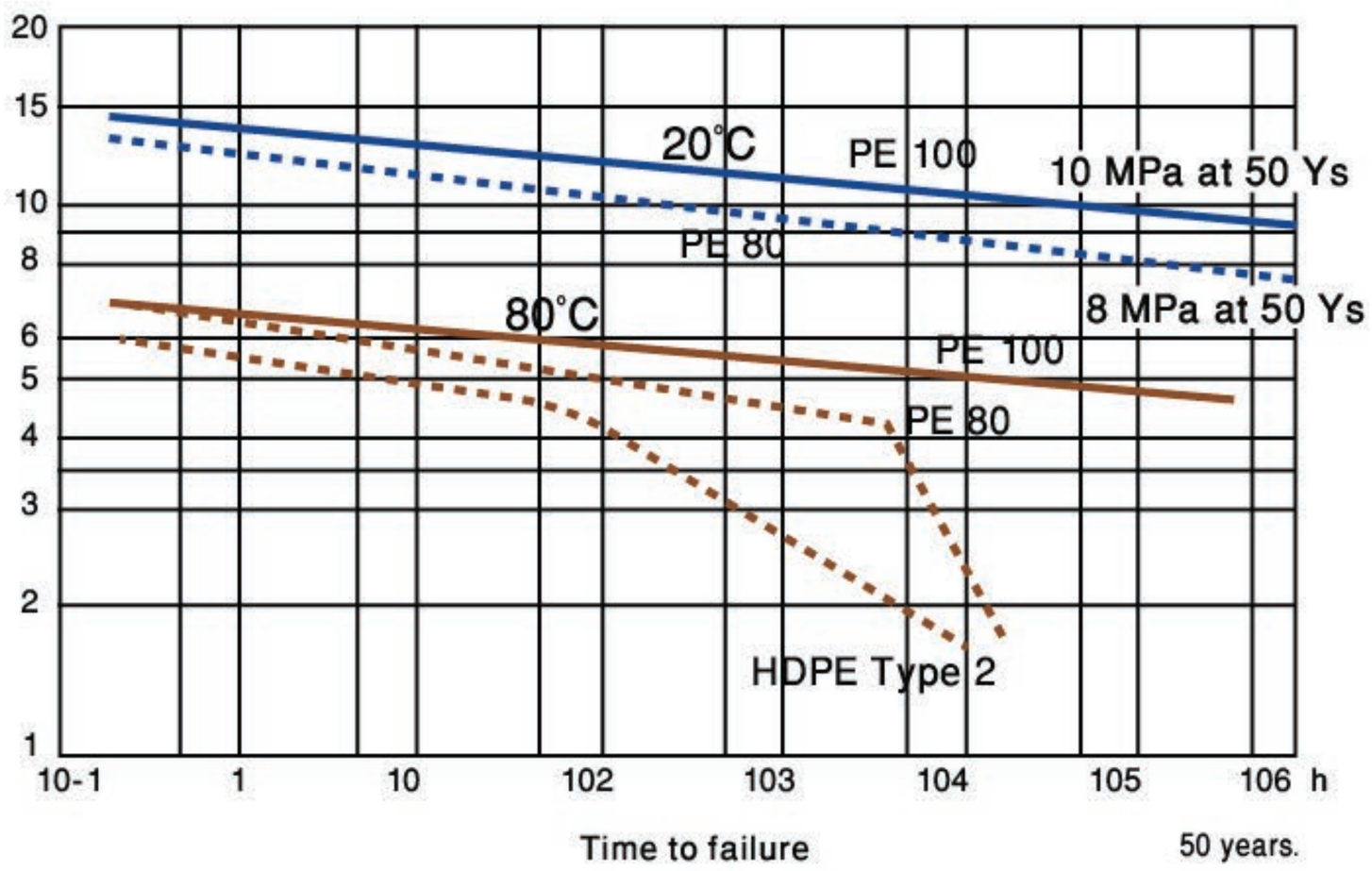
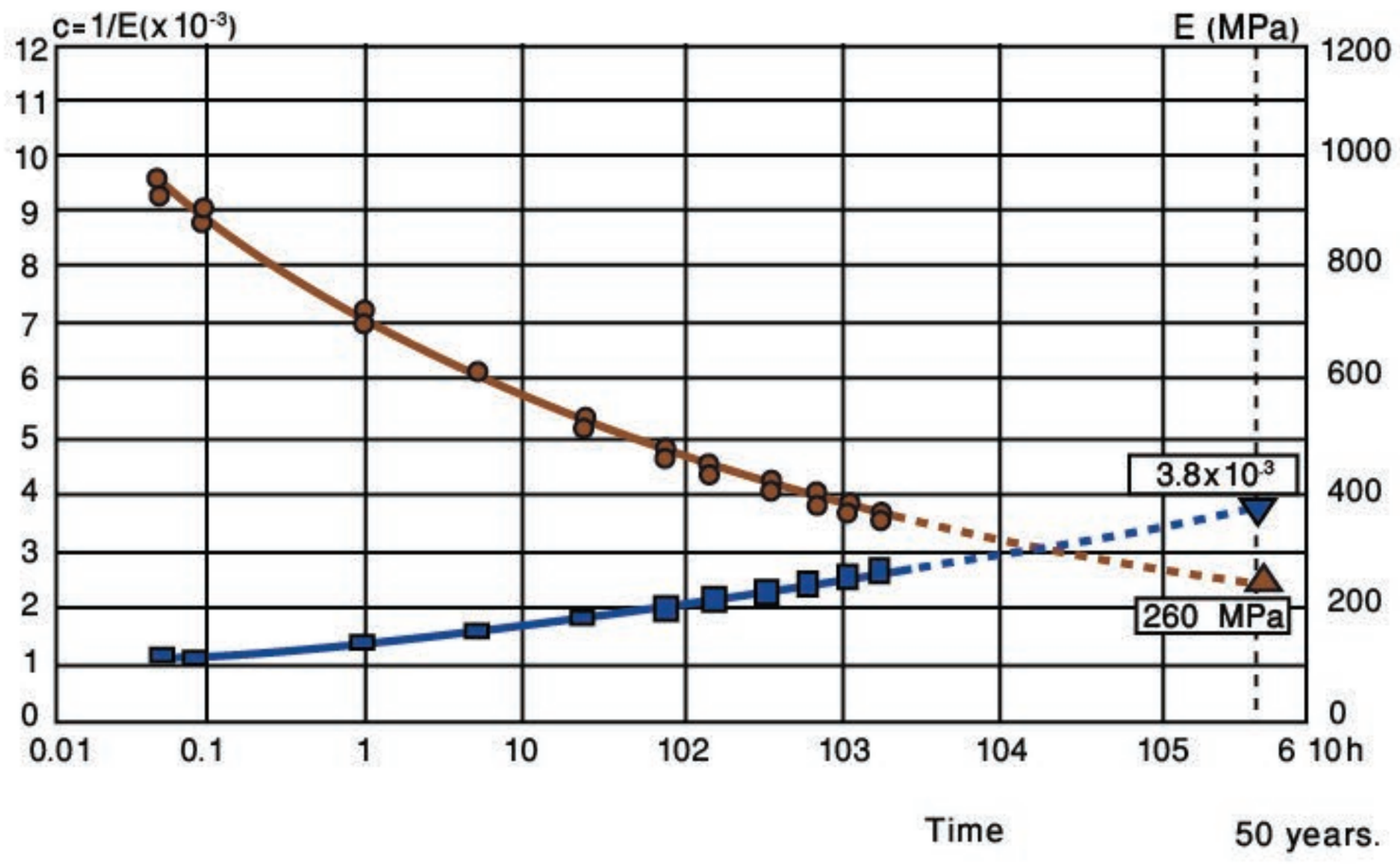
ADVANTAGE OF MINIMUM 50 YEARS SERVICES LIFE PE PIPES

The curve in the figure below shown the change in the physical properties of PE 100 pipes time. The production design of PE 100 pipes is done for a services life of 50 years so the minimum services life of PE 100 pipes is minimum 50 years.

Circumferecial stress



C=1/E(x10^3



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POLYETHYLENE TECHNICAL SPECIFICATION

POLYMER DATA	PE 100	UNIT	TEST METHOD
DENSITY AT 23°c	0.966	Gr/cm^3	ISO 1183
VISCOSITY NUMBER	360	Cm^3/gr	ISO 1628 -3
Mfr 190 / 5 Kg	0.22	Gr/10 min	ISO 1133
MECHNICAL PROPERTIES			
YIELD STRESS	23	Mpa	ISO 527
ELONGATION AT YIELD	9	%	ISO 527
TENSILE MODULUS	900	Mpa	ISO 527
NOTCHED IMPACT STRENGHT	26	Kj/m^2	ISO 179 / 1ea
23° c			
20° c	13	Kj/m^2	ISO 179 / 1ea
OTHER PROPETIES			
OXIDATION - INDUCTION TIME AT 210'c	>20	Min	En 728
CARBON BLACK CONTENT	2.3± 0.2	%	ISO 6964
CARBON BLACK DISPERSION	Grade 3	-------	ISO 18553
MRS MINIMUM REQUIRED STRENGTH	>10	Mpa	ISO TR9080
RESISTANCE TO S.C.P (SLOW CRACK	>3000	H	EN 33479
PROPAGATION) 4.6 Mpa 80°C NOTCHED			
RESISTANCE TO RC.P (RAPID CRACK	>25	Bar	ISO DIS 13477
PROPAGATION S4 TEST 110/10mm. O °c			
ELONGATION AT BREAK	350	%	EN ISO 6259
LINEAR THERMAL EXPANSION		%	EN 638
SPECIFIC THERMAL CAPACITY		C -1	ASTM D 696 (20-60°C)
ELECTRICAL PROPERTIES			
ELECTRIC STRENGTH	>20	Kv/mm	BS 2782 201 b
VOLUME RESISTIVITY	>10 ^13	©m	BS 2782 201 a
SURFACE RESISTIVITY	>10^19		BS 2782 201 a
RELATIVE PERMITIVITY	2.6	-	BS 2067 (1 to 20 mhz)
LOSS TANGENT	3 X 10^ -4		BS 2067

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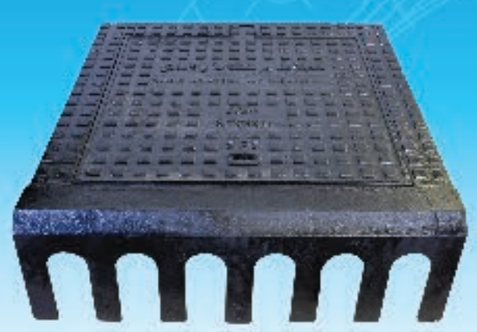
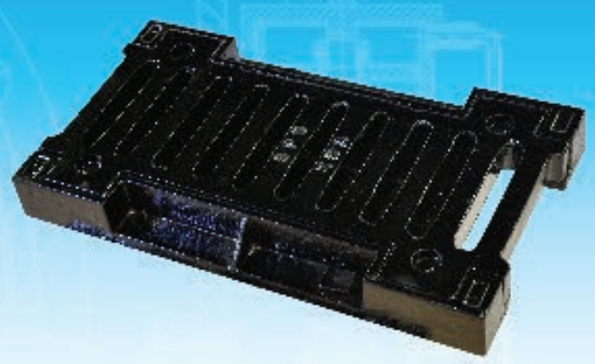
FIRE SYSTEM LINE



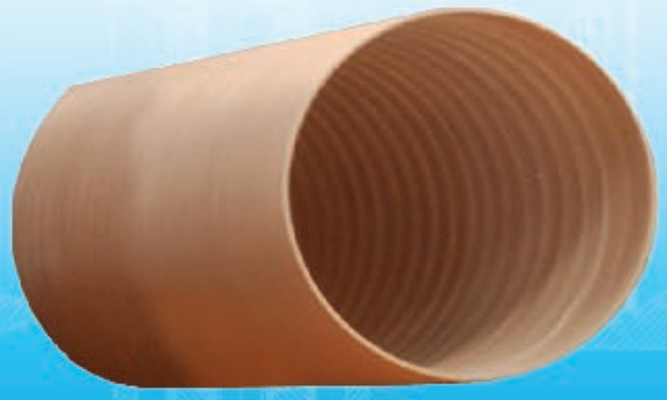
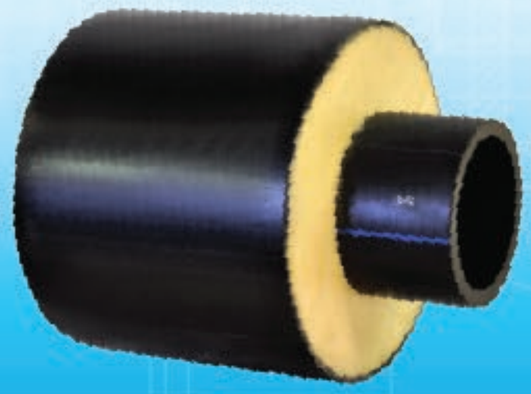
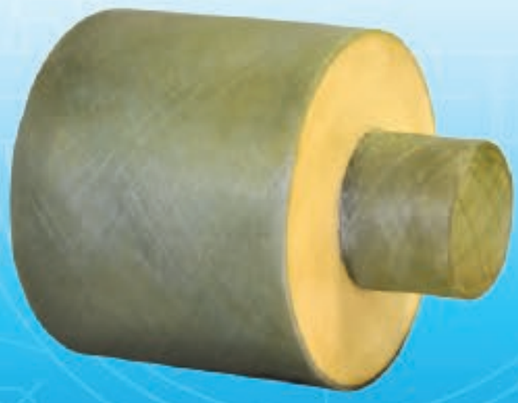


GRATING & MANHOLE LINE






GRP & PRE-INSULATED LINE

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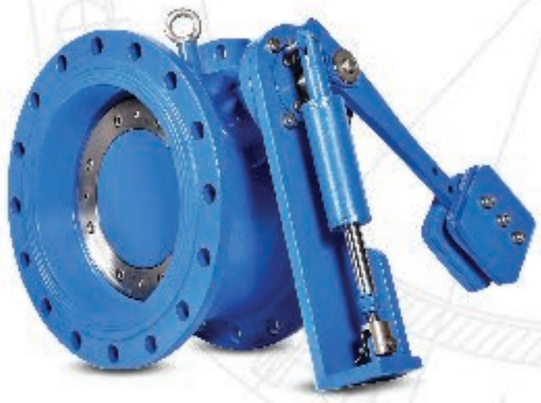
PRODUCTION LINE

VALVE LINE








DUCTILE IRON FITTING LINE




HDPE PE100 LINE




SPS

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أنابيب وقطع عالية الكثافة من البولي إيثلين • أغطية وشبكات غرف التفتيش

GRP Pipes & Fittings • DI Valves & Fittings • HDPE Pipes & Fittings
• Pre-Insulated Pipes & Fittings • Manhole Covers & Gratings

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