

Industrial City of Abu Dhabi - ICAD1 Plot No# 37H1

GPS Coordinate (N 24° 19' 18", E 54° 30' 30")

P.O. Box: 9650, Abu Dhabi, United Arab Emirates
Te.: +971 2 5500102, Fax: +971 2 5500105
info@upi.ae - www.upi.ae

PRODUCTS

NO	ITEM	WALL TYPE	MATERIAL	DIMENSION
1	PIPES & FITTINGS	SOLID	HDPE - HIGH DENSITY POLYETHYLENE	UPTO DN 2000MM
2		SPIRAL		UPTO DN 4000MM
3		SPIRAL	PP - POLYPROPYLENE	UPTO DN 315MM
4		DWP/ CORRUGATED	HDPE - HIGH DENSITY POLYETHYLENE	UPTO DN 4000MM
5	MANHOLES CHAMBERS	SOLID / SPIRAL	HDPE - HIGH DENSITY POLYETHYLENE	UPTO DN 4000MM
6		SOLID / SPIRAL	PP - POLYPROPYLENE	
7	TANKS & RESERVOIRS	SOLID / SPIRAL	HDPE - HIGH DENSITY POLYETHYLENE	UPTO DN 4000MM
8		SOLID / SPIRAL	PP - POLYPROPYLENE	
9	LINERS	T-LOCK / PLAIN	PE - POLYETHYLENE	Plain - 1.6mm to 8mm, T-lock 1.6mm to 3.5mm



UAE



KSA




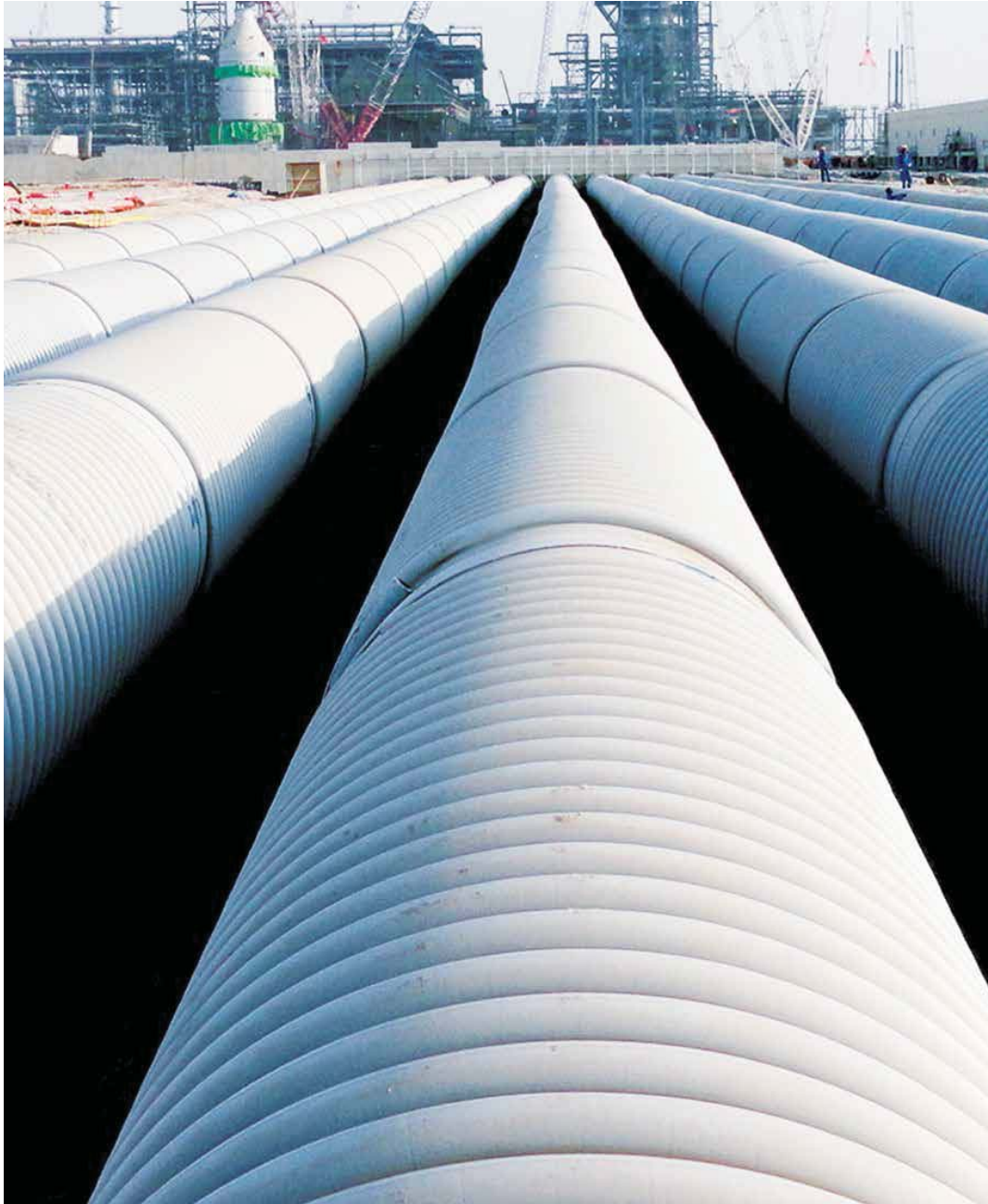
INDIA



الاتحاد لصناعة الأنابيب
Union Pipes Industry

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Introduction

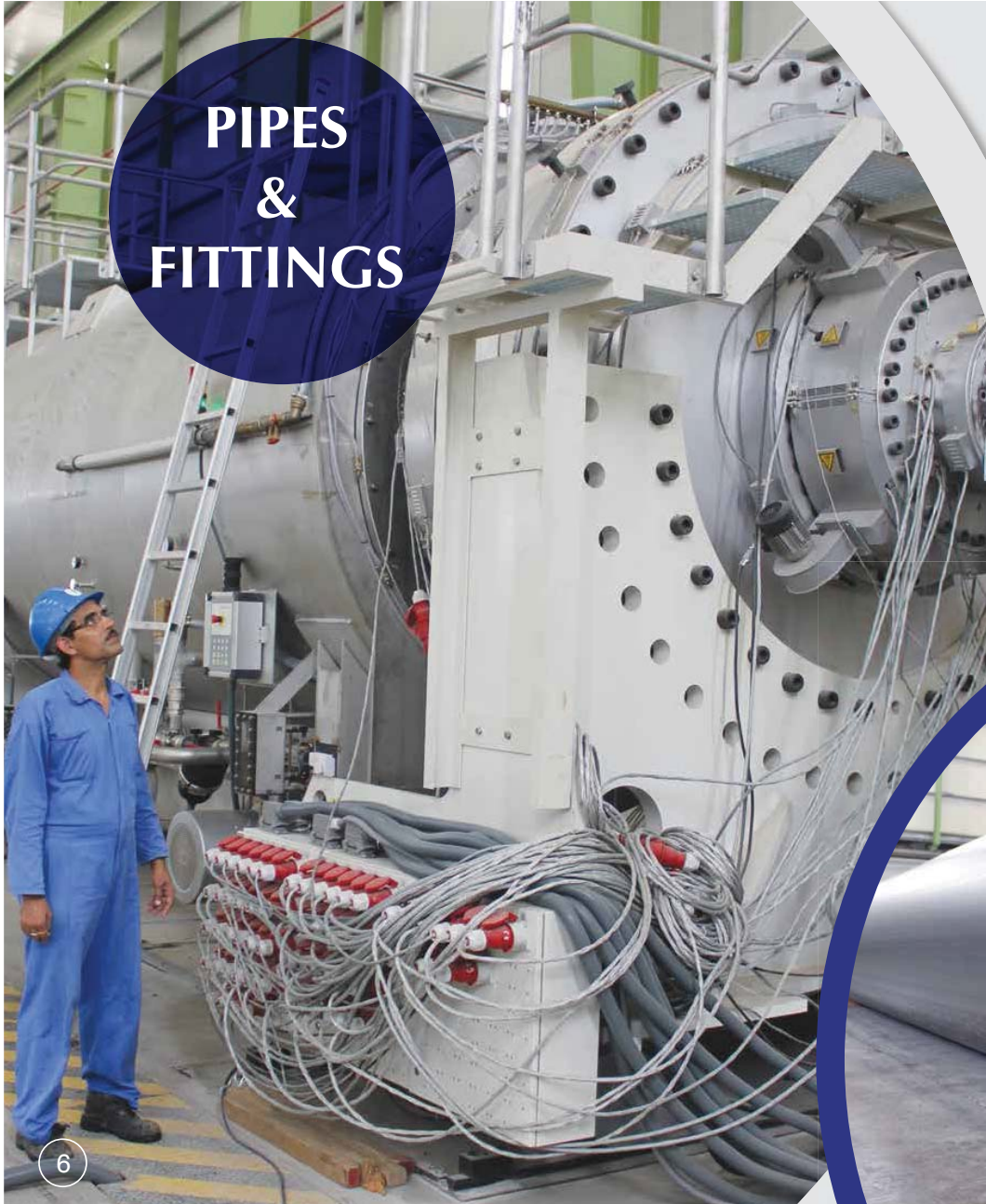
Union Pipes Industry LLC (UPI) was established in Abu Dhabi in 1999 to cater for the needs of the UAE and MENA regional markets for high quality plastics pipes. UPI manufactures a range of rugged and durable pipes from Polyethylene (PE) and Polypropylene (PP). Typically, pressure pipes are manufactured from 10 to 2000mm diameter whilst structured wall gravity pipes are manufactured up to 4000mm.

Plastics pipes have been widely specified for potable water, sewage, irrigation, gas distribution, and are now being used for cooling water, sea-water intakes and oilfield applications.

UPI manufactures and supplies a comprehensive range of fittings including reducers, bends, tees and connections to all other pipe materials. UPI pipes are approved by various federal and local government departments, utilities and oil companies. To support the Client, UPI has an experienced engineering team and can supply site services ranging from hire of welders and welding machines to full EPC services.



PIPES & FITTINGS



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Polyethylene (PE) Pressure Pipes

UPI manufactures solid wall Polyethylene and Polypropylene Pressure pipes using the most up-to-date extrusion machinery supported by technologically advanced automation systems and ultra sound thickness controls.

The production range is from 10mm to 2000mm outside diameter (OD) with a pressure range from 3.2 bar (45 psi) to 25 bar (360 psi), and higher for special circumstances.

The standard lengths of the pipes are 12, 18 and 24 meters. However we can supply any length on customer request. Small diameter pipes from 16mm to 110mm can be supplied in coils from 100 to 500 meters.

Pipes with special diameters and thickness can be manufactured for different uses such as re-lining of oil pipes and industrial applications.

Our pipe production is according to the international standards ISO 4427 and ISO 4437.



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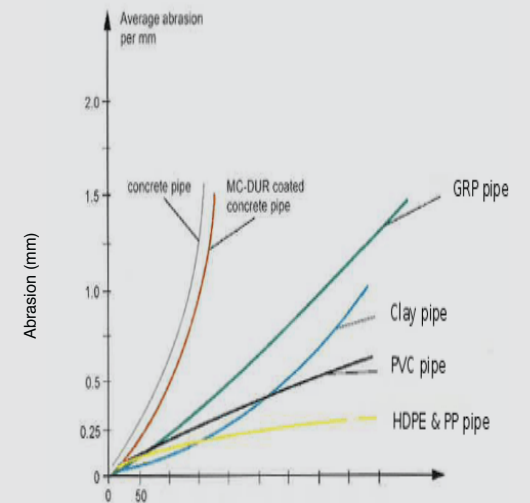
Polyethylene (PE) Pressure Pipes

Applications:

- Potable water
- Irrigation
- Sewerage : new / relining
- Storm water
- Industrial piping
- Desalination
- Petrochemical
- Nuclear
- Chilled / cooling water
- Fire water mains
- Gas distribution
- Crude oil flow lines & liners
- Dredging and slurry pipelines
- Underwater piping Intakes & Outfalls

Advantages:

- 50 year design life
- Resistant to corrosion
- Chemically inert
- Welded joints
- Very smooth
- Light
- Durable
- Non-polluting
- Resists UV attack
- Non-toxic
- No anchor blocks
- Flexible
- Long lengths
- Narrow trench
- Absorbs surge
- Does not fatigue
- Available in coils
- Non-destructive methods
- Relining
- Abrasion resistant
- Locally available
- Fittings available locally



HDPE has a superior abrasion resistance

Structural Gravity Pipes PP & HDPE

UPI manufactures Spiral Wound Gravity Pipes by using Bauku technology to produce these huge pipes for sea-water projects. The material and manufacturing technology can in fact be used to manufacture any diameter of gravity pipe up to 4000mm.



Applications:

- Sewerage
- Stormwater drainage
- Seawater intake & outfalls
- Manholes
- Silos
- Water tanks
- Industrial Applications

Advantages:

- 50 year design life
- Resistant to corrosion
- Chemically inert
- Welded joints
- Very smooth
- Light
- Durable
- Non-polluting
- Resists UV attack
- Non-toxic

Corrugated Pipes PE & PP

UPI has introduced twin walled pipes to their range. Using UNICOR technology UPI can now manufacture corrugated pipe in HDPE and PP up to 315mm dia.

Such pipes include:

PP and HDPE sewerage / drainage pipes to EN 13476-3
Coilable HDPE cable conduit to EN 50086 -2-4



Applications:

Drainage pipes to EN 13476-3

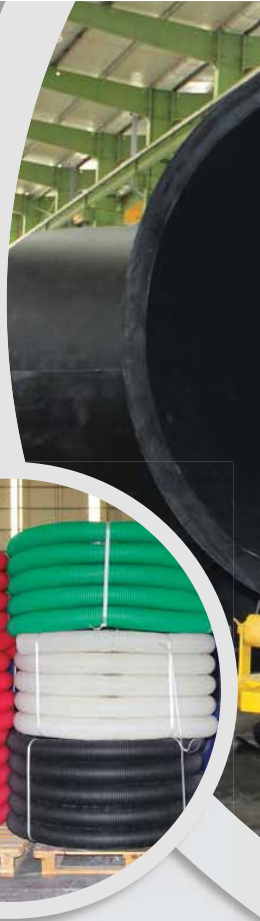
Sewerage
Stormwater drainage
Industrial discharge
Land drainage

Cable Conduit to EN 50086-2-4

Power distribution
Telecommunications
Industrial control systems

Advantages:

Single or twin wall construction
PP for stiffness
HDPE for flexibility
Continuous pipe lengths in coils
Welded or push fit connections



Fittings Fabrication

UPI fabricates PE & PP fittings to International Standards or other specifications to meet the specific demands of the customer. Fabricated fittings are suitable for both butt-fusion and electro-fusion joints. UPI also supplies related fittings such as electro-fusion couplers, saddles and mechanical fittings to provide a complete guaranteed system.

The size range of the fabricated PE fittings are from 50mm to 2000mm. Specially configured fittings are also manufactured according to the customers' requirement. UPI also fabricates PP fittings, Manholes, Silos & Tanks. A rigorous test program ensures consistent quality for our fabricated fittings.



MANHOLES & CHAMBERS PP & HDPE

Applications

Sewerage Systems
Irrigation Systems
Stormwater Systems
Potable Water Systems
Industrial Applications

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HDPE / PP Manholes and Chambers complying with the requirements of BS EN 13598-2 : 2009.

Manholes & Chambers are available in various internal diameters ranging from 300mm up to 4000 mm. The typical depths to invert can range from 1 metre to 6 metres and deeper in special cases. These units are provided with required inlet and outlet pipe, benching, lifting lugs and also with PE / PP ladder (if required).

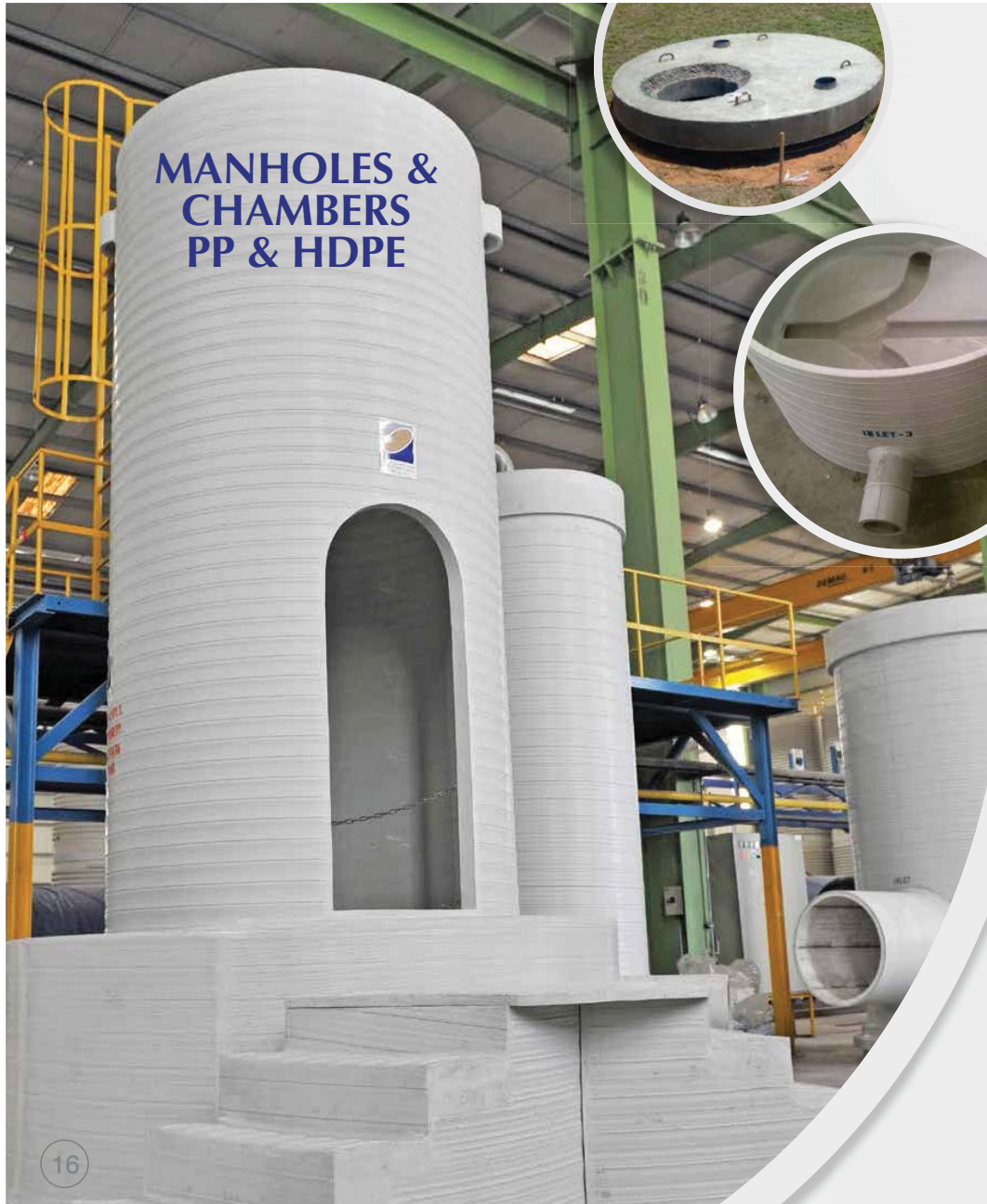
The versatility of UPI's HDPE / PP manholes & chambers makes them the ideal choice for housing, municipal and industrial applications. The maintenance free material offers following advantages over the conventional types (e.g. Concrete coated / lined, GRP):

- SUSTAINABLE / ESTIDAMA COMPLIANT
- ENVIRONMENT FRIENDLY
- CUSTOM BUILT PRODUCTS
- WIDE RANGE OF SIZES
- LIGHT WEIGHT— TIME & COST SAVING
- HIGH CHEMICAL RESISTANCE
- HIGH ABRASION RESISTANCE
- NON CORROSIVE COMPONENTS
- 100 % LEAK FREE JOINTS / IMPERVIOUS WALLS
- TESTED PRIOR TO INSTALLATION
- LONGER SHAFT LENGTH
- SMOOTH FLOW, LOW FRICTION LOSS
- SAFE UNDER TRAFFIC
- HDPE— UV RESISTANT
- NO WATERPROOFING OR COATING REQUIRED
- LONG LIFE / DURABLE (MIN. 50 YEARS)
- MAINTENANCE FREE
- 100% LOCAL PRODUCT
- APPROVED BY GOVERNMENT (e.g. ADSSC, AAM)

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MANHOLES & CHAMBERS PP & HDPE



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Manufacturing

HDPE / PP manholes and chambers are manufactured using an automated process of extrusion that is specifically designed to wind extruded material spirally onto a preheated and revolving mandrel. Overlap on the edge is fused homogeneously together while it is in the hot plastic state, producing a smooth internal surface. Once the manhole or chamber body is extruded, it is allowed to cool in open space and therefore subjected to less induced stress. Following this, the manhole or chamber's base is extrusion welded on the manhole's body and additionally secured with suitable stiffeners.

Subsequently, manhole or chamber's fittings and accessories are installed. The sizes and orientation of the inlet and outlet pipes, vent pipe, channel's slope are customized to customers' requirement. This allows for more precise installation of these units at site and is time and cost effective. The entire manhole or chamber is then ready to be installed at site without the need for any major additional work to be done at site.



Concept

HDPE / PP manholes and chambers are designed to resist the radial and axial loads induced by earth pressure, ground water and traffic loads. Wall thickness and stiffness are determined based on inputs from design consultant / client. Manhole or chamber stiffness should be in compliance with BS EN 13598-2 or other applicable international standard (s). Factors such as installation depth, traffic and area load, ground water table, soil characteristics and other installation conditions should be analysed. Antifloatation weight may be incorporated if deemed necessary.



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TANKS & RESERVOIRS PP & HDPE

Applications

Sewerage Tanks
Irrigation Water Tanks
Potable Water Tanks
Stormwater Retention
Detention Tanks
Waste / Septic Tanks
Industrial Tanks
Chemical Storage Tanks
Silos

UPI manufactures robust HDPE / PP storage tanks and reservoirs that serve the storage needs of the housing, municipal and industrial sector. Individual tanks capacity range from 100 gallons to 40,000 gallons or above. Tank units can be assembled in series to form reservoirs with total capacity exceeding 2 million gallons depending on space availability. Tanks / Reservoirs can be installed above the ground or underground and are provided with required inlet, outlet pipe, manhole entry, vent pipes, and PE / PP ladder (if required).

The versatility of UPI's HDPE / PP Tanks makes them the ideal choice for the storage of water and a diverse range of chemicals, grains, effluents and corrosive materials. The maintenance free material offers following advantages over the conventional types (e.g., Concrete, Steel, GRP):

- SUSTAINABLE / ESTIDAMA COMPLIANT
- ENVIRONMENT FRIENDLY
- INERT AND NON-TOXIC MATERIALS
- CUSTOM BUILT PRODUCTS
- WIDE RANGE OF SIZES
- LIGHT WEIGHT - TIME & COST SAVING
- HIGH CHEMICAL & ABRASION RESISTANCE
- NON CORROSIVE COMPONENTS
- 100 % LEAK FREE JOINTS / IMPERVIOUS WALLS
- HYDRO TESTED PRIOR TO INSTALLATION
- NO WATERPROOFING OR COATING
- SAFE UNDER TRAFFIC
- UV RESISTANT
- EASILY CLEANED, NO ALGAE GROWTH
- LONG LIFE / DURABLE (MIN. 50 YEARS)
- MAINTENANCE FREE
- 100% LOCAL PRODUCT
- APPROVED BY GOVERNMENT

TANKS & RESERVOIRS PP / HDPE

Manufacturing

Tanks are manufactured by using an automated process of extrusion that is specifically designed to wind extruded and hot plastic state material spirally onto a pre-heated and revolving mandrel. Overlap on the edge is fused homogeneously together while it is in the hot plastic state, producing a smooth internal surface. Once the tank body is extruded, it is allowed to cool in open space and therefore subjected to less induced stress. Following this, the tank end caps and entry manholes with stiffeners are extrusion welded on the tank body. Subsequently, tank fittings and accessories are installed onto the tank. The sizes and orientation of the fittings are customized to customers' requirement. This allows for more precise installation of the tank at site and save time and it is cost effective. The entire tank is then ready to be installed at site without the need for any major additional work to be done at site.



Concept

Tanks are manufactured as to resist the static horizontal or vertical pressure. The tank walls are produced to resist the radial and axial loads induced by its contents and/or environment. Vertical tanks of considerable height (e.g., > 6m) can also be produced with varying wall thickness for optimum options and cost efficiency. Pressure capacity and stiffness are based on inputs from design consultant / client. For horizontal tanks in underground applications, stiffness / buckling guidelines should be in compliance with BSEN 1295 or to other applicable international standard. Factors such as installation depth, traffic and area load, ground water table, soil characteristics and other installation conditions should be analysed. Antifloatation blocks should be provided if deemed necessary.



PE LINER T-LOCK & PLAIN

Utilising years of experience with polyethylene pipe extrusion, Union Pipes Industry LLC now manufactures PE Liner (T-Lock & Plain) as permanent protection for concrete pipes, other structures and applications. PE is the most chemically resistant member of the polyolefin family on account of its dense configuration. Nowadays, it is the most commonly used membrane in various applications. It offers great ultraviolet protection and ageing resistance from the severe stresses of weather and it is manufactured from the high quality resins following a rigorous QA/QC program.



Properties	Description
Material	PE
Thickness	Plain – 1.6mm to 8mm, With T-lock 1.6mm to 3.5mm
Colors	Black (Other colors on request)
Applications	Lining of RC Pipes, PCC Units, Underground Structures, Foundations, Culverts, Reservoirs and Tanks, Under Roads etc.

PE LINER

Applications

- Internal protection concrete sewers, manholes and drainage pipes
- External protection foundations and sub-structures
- Internal / external protection culverts
- Concrete structures containing corrosive liquids
- Fertiliser storage
- Internal lining of reservoirs

Advantages

- Environmental Friendly (Estidama)
- Selected polyethylene resins providing flexibility and strength
- Easily cut to suit any shape or form
- Ideal protection against corrosive elements
- Suitable for potable water applications
- Low coefficient of friction
- High resistance to abrasion
- Perfectly weldable for complete sealing
- Perfect water proof performance
- Seepage and humidity resistance
- No chloride and sulphates attacks
- No Hydrogen Sulphide attacks
- Excellent physical and mechanical performance
- High tearing resistance
- Good deformation adaptability
- High puncture resistance
- High aging resistance
- High UV resistance
- Anti-acid & alkali
- Excellent low high temperature resistance
- Safe, long life span

Properties

Test	Units	Value	Standard
PE Material			
Density	g/cc	≥0.93	ISO 1183 / ASTM D792
Color		Black	Other colors on request
Carbon Black Content	%	2.00 - 3.00	ASTM D1603
Melt Flow Index(2.16kg)	g/10min	≤1.30	ISO 1133 / ASTM D1238
OIT	min.	>20 @200° C	ASTM D3895

Sheet Dimensions

Thickness (T-Lock)	mm	1.60 - 3.50	ASTM D4801
Thickness (Plain)	mm	1.60 - 8mm	ASTM D4801
Length	m	As required	

Physical properties

Durometer Hardness -1sec	Shore-D	≥50	ASTM D2240
Durometer Hardness -10sec	Shore D	≥40	ASTM D2240
Tensile Strength @ yield	MPa	≥12	ASTM D638
Tensile Strength @ break	MPa	≥20	ASTM D638
Elongation at break	%	>600	ASTM D638
Tear resistance	N	≥150	ASTM D1004
Puncture resistance	N	≥300	ASTM D4833
Water Absorption	%	≤0.4	ASTM D570

Injection Molding Industrial Pallets

UPI makes plastic pallets and skids for their applications because they are durable, strong, resistant to bacterial growth, sterile, easy to clean, and not conducive to cross-contamination. Some of the many industries that use plastic pallets include material handling, food and beverage, automotive manufacturing, medical equipment, agriculture, pharmaceutical manufacturing and packaging, medical equipment, retail manufacturing and packaging, shipping, packaging, postal services, chemical, and more.



Quality, Health, Safety & Environment Commitment



Quality Assurance and Quality Control

UPI is ISO 9001: 2008 certified company from UKAS approved certification body. We are in transition phase to get certify for latest ISO 9001: 2015 standard.

UPI ensures the quality requirements of the Client are met at every stage. This is typically by way of a project specific Inspection & Test Plan, agreed with the Client. In all situations, UPI has a comprehensive Quality Control system that monitors every stage of production, from receipt of raw material to delivery of product.



Health & Safety

UPI is OHSAS: 2007 certified company from UKAS approved certification body. UPI's resident HSE team is dedicated to eliminating hazards and reducing associated risk to a level as low as reasonably practicable.

Environment

UPI is ISO 14001: 2004 certified company from UKAS approved certification body. We are in transition phase to get certify for latest ISO 14001: 2015 standard. Welded plastics pipes are recognized as one of the major factors in reducing water leakage around the world. UPI ensures that their facilities do not pollute the environment and aim to re-cycle over 90% of the waste produced.



Technical Support

UPI's experienced professional staff can provide comprehensive technical support regarding:

- Material selection
- Design Criteria; Methods and Standards
- Application of Specifications and Standards
- Pipe selection and approvals
- Joining techniques
- Selection of fittings and fixings
- Installation techniques
- Testing methods

UPI maintains a comprehensive technical reference library which includes most relevant current International Standards.



Site Services:

UPI has established a full range of site services which can be tailored to suit the requirements of the Client and the Project. UPI has a wide range of site welding, installation and testing machinery covering all pipe sizes from 63mm to 3000mm diameter for PP & PE Pipes and Fittings.



Contract Options Include:

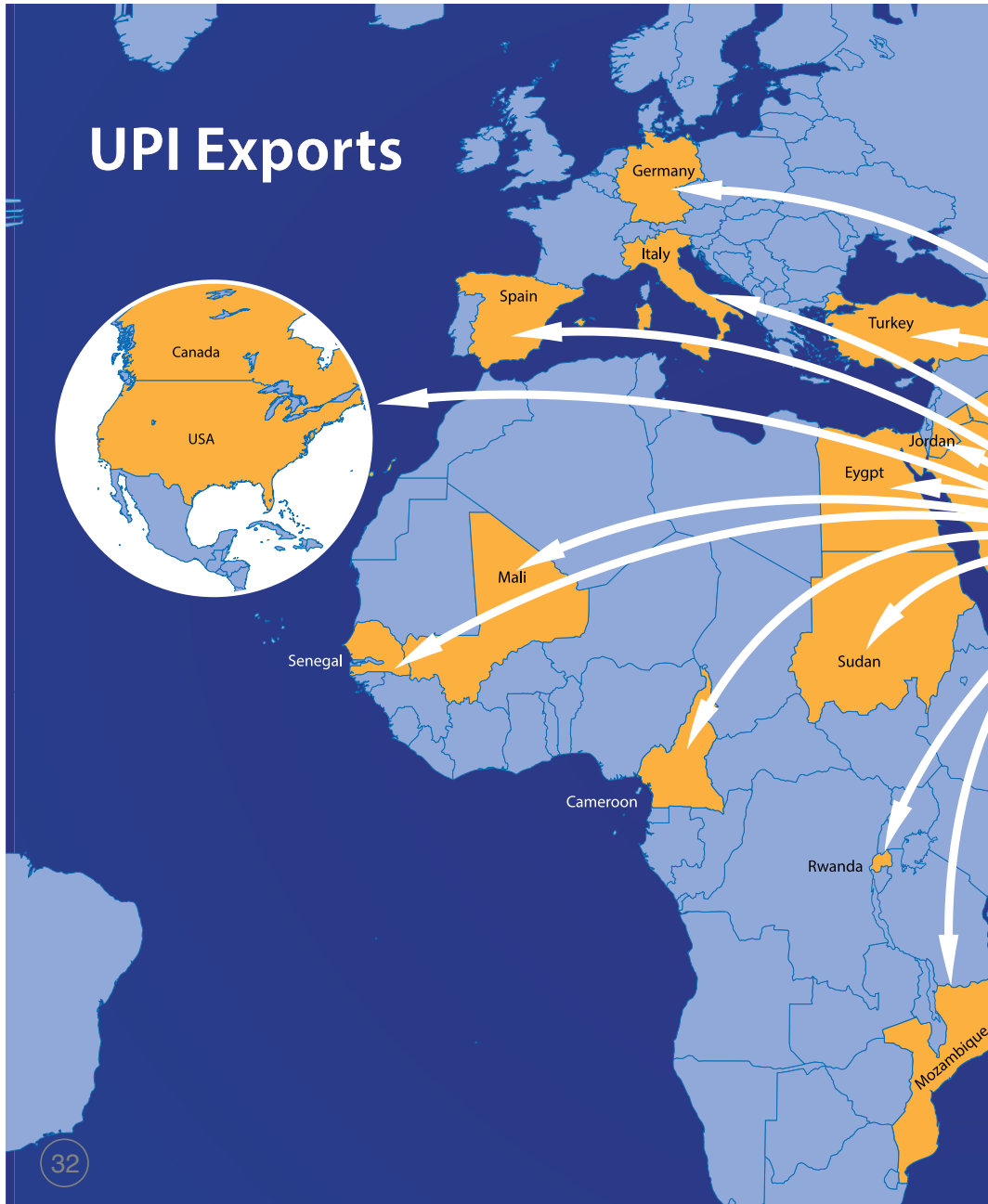
Supply of pipe and fittings only + technical support
Supply of pipe and fittings + welding supervision
Supply of pipe and fittings + welders and welding machines
Weld and welder testing
Supply and Installation of pipes and fittings, including testing
Full EPC Contract Service



Customer Service

UPI has invested in staff recruitment and training to provide unrivalled customer care and support. UPI's customers are assured of the company's full support in all aspects of plastics pipeline technology from pipe selection and design through installation and testing. Each production run is tailored to our customer's requirements and pipe lengths can be adjusted to maximize transport and installation efficiencies.

UPI Exports



Awards

UPI is awarded by Gulf Petrochemicals and Chemicals Association (GPCA) for excellence in plastic products and processes for development of various pioneering and innovative products manufactured first time in the world;

- 1) Fully rated HDPE reducing Tee – 2000 mm diameter (Excellence Award – 2012)
- 2) Butt fusion welding of PP (Block Co-polymer) pipes – ID 3000 mm (Excellence Award first runner-up – 2014)
- 3) Large diameter GRP-PE-GRP coupling spool – OD 2167 mm (Excellence Award – 2016)



Approvals

We've achieved results for our clients in Infrastructure, building and Oil and Gas works. Our clients find real value in working with us because of the quality of product that we manufacture with innovative technologies and world-class machinery. Most of all, it's because our focus is on client outcomes. Just a few of the many organisations are listed below.

Infrastructure

	Office of the H.H. President Abu Dhabi
	Municipality of Abu Dhabi UAE
	Abu Dhabi Sewerage Services Co(ADSSC) UAE
	Abu Dhabi Distribution Co(ADDC) UAE
	Ashghal, Qatar
	Kahra-Maa Qatar
	Emirates Nuclear Energy Corporation
	Al Ain Distribution Co.
	Ministry of Housing Electricity and Water, Oman
	Ministry of Municipal Affairs & Agriculture Qatar

Oil and Gas

	Takreer Abu Dhabi
	Borouge Abu Dhabi
	ZADCO Abu Dhabi
	Petroleum Development Oman (PDO) OMAN
	Qatar Petroleum Qatar
	Saudi Aramco KSA
	ADCO Abu Dhabi
	ADGAS Abu Dhabi
	Tatweer Petroleum Bahrain
	Kuwait Oil Company

Consultants

	Hyder Consulting
	Tebodin Consultants Engineers
	Ital Consult
	AECOM
	Dar Al Handasah
	Dorsch Consult
	Mott MacDonald
	KEO
	De Leuw Cather Ltd. (Parsons Group)
	LEAD CONSULT

Major EPC Projects

Sea Water Intake & Outfall Projects Using Polypropylene (PP) Pipes

Sea Water Intake for RRE Project

Client: Takreer
Size: 3,000mm
Quantity: 16,400 metres (Offshore)
Scope: EPC Contract

Sea Water Intake for CBDC Project

Client: Takreer
Size: 3,000mm
Quantity: 4,150 metres (Offshore)
Scope: EPC Contract

Sea Water Intake for Borouge 3 Project

Client: Borouge
Size: 3,000mm
Quantity: 15,400 metres (Offshore)
Scope: EPC Contract

Sea Water Outfall for RRE Project

Client: Takreer
Size: 2,000mm
Quantity: 22,500 metres (Onshore)
Scope: EPC Contract

Cooling & Return Water Supply Lines Using Polyethylene (PE) Pipes and Fittings

Underground HDPE Onshore for
Borouge 3 Project (U&O)

Client: BOROUGE
Main Contractor: Hyundai
Size: 2,000mm to 63mm PN20 to PN6.3
Quantity: 110,000 Metres
Material: HDPE
Scope: Supply & Installation



Underground HDPE Onshore for
Borouge 3 Project (LDPE & PO Plant)

Client: BOROUGE
Main Contractor: TSJ
Size: 2,000mm to 63mm PN20 to PN6.3
Quantity: 18,000 Metres
Material: HDPE
Scope: Supply & Installation

Effluent Water Injection Line Using Polyethylene (PE) Pipes



Effluent Water Injection Line

Client: ZADCO
Size: 560mm SDR7.27
Operating Pressure: 25 bar
Quantity: 4,600 Metres (Offshore)
Material: HDPE
Scope: EPC Contract

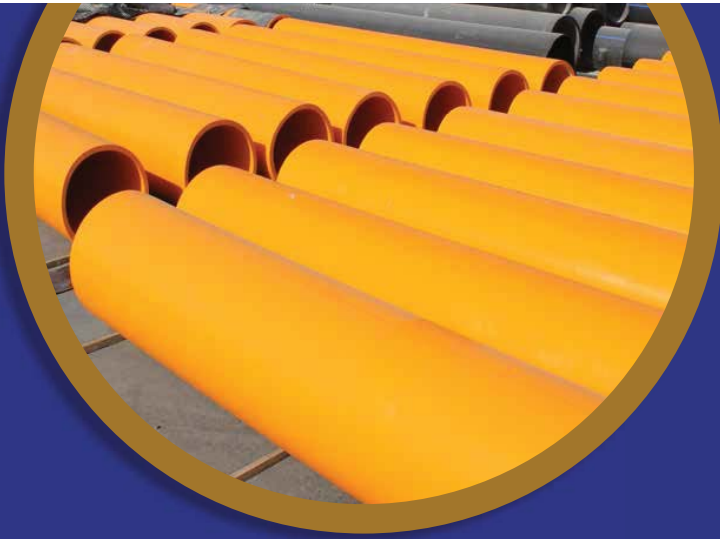
ENEC – Braka Nuclear Power Plant

Supply & Welding of Safety Related PE
Pipes & Fittings
6,480 m of 36" OD (914mm) SDR17 &
SDR13.6 Fittings
ASTM 714, ASME Code Case N-755-1

UPI is the pioneer Vendor approved in
mid of 2012 by ENEC/KEPCO/HSIV for
Safety Related HDPE – Pipes and Fittings
for the Nuclear Application (As per Code
Case N755-1, ASME Boiler and Pressure
Vessel Standards Committee).

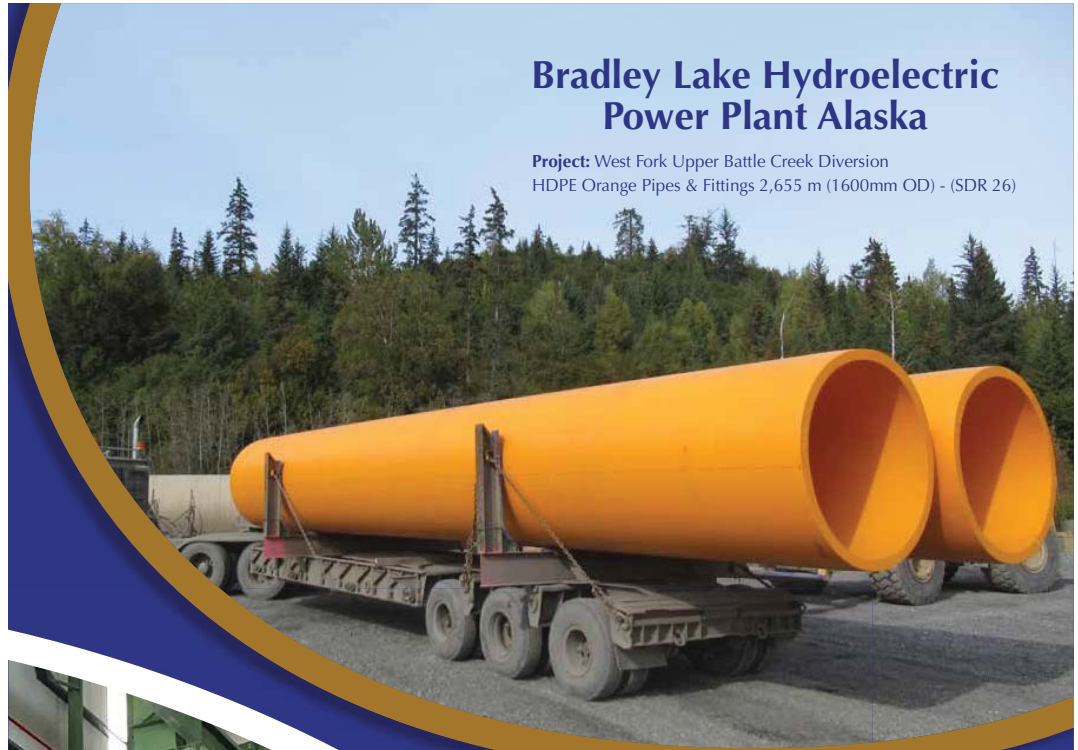
2013-2014, UPI has supplied and
installed Safety Related HDPE-Pipes and
Fittings for Barakah Nuclear Project / Abu
Dhabi – UAE.





Bradley Lake Hydroelectric Power Plant Alaska

Project: West Fork Upper Battle Creek Diversion
HDPE Orange Pipes & Fittings 2,655 m (1600mm OD) - (SDR 26)



MAADEN MINES – KSA

Supply of Slurry Water HDPE Lines for New
Phosphate Plant (Wa'ad Al Shamal)
15,400 m - (710 & 1200 mm OD) - (SDR11 & 13.6)



NWC - Al Haer Waste Water Conveyor - KSA

HDPE Pipes - 1,324 m – (3.2m OD – SN 3.9 KN/m²
– 100mm thk.)
500m String Welded with Special Customized
Welding Machine (3.2m) - Butt Fusion





Technical Data Sheet

HDPE Water Pipes as per ISO - 4427, PE 100, Design Stress 8.0 Mpa

Size Designation DN	Wall Series											
	S-12.5 (SDR 26)			S-8 (SDR 17)			S-5 (SDR 11)			S-4 (SDR 9)		
	Nominal Pressures											
	PN 6.3			PN 10			PN 16			PN 20		
de	e	di	kg/m ²	e	di	kg/m ²	e	di	kg/m ²	e	di	kg/m ²
mm	mm	mm		mm	mm		mm	mm		mm	mm	
16	-	-	-	-	-	-	-	-	-	2.0	12.0	0.10
20	-	-	-	-	-	-	2.0	16.0	0.12	2.3	15.4	0.14
25	-	-	-	-	-	-	2.3	20.4	0.18	3.0	19.0	0.22
32	-	-	-	2.0	28.0	0.20	3.0	26.2	0.29	3.6	24.8	0.34
40	-	-	-	2.4	35.2	0.31	3.7	32.6	0.45	4.5	31.0	0.53
50	2.0	46.0	0.32	3.0	44.0	0.47	4.6	40.8	0.69	5.6	38.8	0.82
63	2.5	58.0	0.48	3.8	55.4	0.75	5.8	51.4	1.09	7.1	48.8	1.30
75	2.9	69.2	0.69	4.5	66.0	1.05	6.8	61.4	1.53	8.4	58.2	1.83
90	3.5	83.0	0.99	5.4	79.2	1.52	8.2	73.6	2.20	10.1	69.8	2.64
110	4.2	101.6	1.45	6.6	96.8	2.24	10.0	90.0	3.26	12.3	85.4	3.91
125	4.8	115.4	1.87	7.4	110.2	2.87	11.4	102.2	4.23	14.0	97.0	5.05
140	5.4	129.2	2.36	8.3	123.4	3.59	12.7	114.6	5.26	15.7	108.6	6.34
160	6.2	147.6	3.09	9.5	141.0	4.69	14.6	130.8	6.91	17.9	124.2	8.25
180	6.9	166.2	3.85	10.7	158.6	5.92	16.4	147.2	8.73	20.1	139.8	10.40
200	7.7	184.6	4.77	11.9	176.2	7.31	18.2	163.6	10.80	22.4	155.2	12.90
225	8.6	207.8	5.99	13.4	198.2	9.28	20.5	184.4	13.60	25.2	174.6	16.30
250	9.6	230.8	7.41	14.8	220.4	11.40	22.7	204.6	16.70	27.9	194.2	20.10
280	10.7	258.6	9.24	16.6	246.8	14.30	25.4	229.2	21.00	31.3	217.4	25.10
315	12.1	290.8	11.80	18.7	277.6	18.00	28.6	257.8	26.60	35.2	244.6	31.70
355	13.6	327.8	14.90	21.1	312.8	23.00	32.2	290.6	33.70	39.7	275.6	40.30
400	15.3	369.4	18.80	23.7	352.6	29.00	36.3	327.4	42.80	44.7	310.6	51.20
450	17.2	415.6	24.30	26.7	396.6	36.80	40.9	368.2	54.30	50.3	349.4	64.70
500	19.1	461.8	30.00	29.7	440.6	45.30	45.4	409.2	66.90	55.8	388.4	79.90
560	21.4	517.2	37.70	33.2	493.6	56.90	50.8	458.4	83.80	62.5	435.0	97.00
630	24.1	581.8	47.70	37.4	555.2	71.90	57.2	515.6	106.00	70.5	489.0	126.00
710	27.2	655.6	60.50	42.1	625.8	91.40	64.5	581.0	133.9	-	-	-
800	30.6	738.8	76.70	47.4	705.2	116.00	72.6	654.8	170.1	-	-	-
900	34.4	831.2	97.00	53.3	793.4	147.00	81.7	736.6	215.2	-	-	-
1000	38.2	923.6	120.00	59.3	881.4	181.00	90.2	819.6	265.7	-	-	-
1200	45.9	1108.2	172.00	67.9	1064.2	256.04	-	-	-	-	-	-
1400	53.5	1293.0	234.00	82.4	1235.0	348.00	-	-	-	-	-	-
1600	61.2	1477.6	306.00	94.1	1411.0	453.00	-	-	-	-	-	-
1800	69.1	1661.8	392	105.9	1588.2	587	-	-	-	-	-	-
2000	76.9	1846.2	485	117.6	1764.8	724	-	-	-	-	-	-

SDR : Standard Dimension Ratio
e : Wall Thickness
PN : Nominal Pressure Rating (bar)
de : Outside Diameter Of Pipe
di : Inside Diameter Of Pipe

We also manufacture HDPE Pipes to all other International Standards and
Liner Pipes to Client's Specification and Requirements

* Indicative

Technical Data Sheet

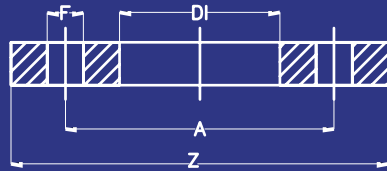
HDPE Gas Pipes as per ISO - 4437, PE 100, Design Stress 5.0 Mpa

Size Designation DN	Wall Series											
	S-12.5 (SDR 26)			S-8 (SDR 17)			S-5 (SDR 11)			S-4 (SDR 9)		
	Nominal Pressures											
	PN 3.9			PN 6.3			PN 10			PN 12		
de	e	di	kg/m*	e	di	kg/m*	e	di	kg/m*	e	di	kg/m*
mm	mm	mm		mm	mm		mm	mm		mm	mm	
16	-	-	-	-	-	-	-	-	-	2.0	12.0	0.10
20	-	-	-	-	-	-	2.0	16.0	0.12	2.3	15.4	0.14
25	-	-	-	-	-	-	2.3	20.4	0.18	3.0	19.0	0.22
32	-	-	-	2.0	28.0	0.20	3.0	26.2	0.29	3.6	24.8	0.34
40	-	-	-	2.4	35.2	0.31	3.7	32.6	0.45	4.5	31.0	0.53
50	2.0	46.0	0.32	3.0	44.0	0.47	4.6	40.8	0.69	5.6	38.8	0.82
63	2.5	58.0	0.48	3.8	55.4	0.75	5.8	51.4	1.09	7.1	48.8	1.30
75	2.9	69.2	0.69	4.5	66.0	1.05	6.8	61.4	1.53	8.4	58.2	1.83
90	3.5	83.0	0.99	5.4	79.2	1.52	8.2	73.6	2.20	10.1	69.8	2.64
110	4.2	101.6	1.45	6.6	96.8	2.24	10.0	90.0	3.26	12.3	85.4	3.91
125	4.8	115.4	1.87	7.4	110.2	2.87	11.4	102.2	4.23	14.0	97.0	5.05
140	5.4	129.2	2.36	8.3	123.4	3.59	12.7	114.6	5.26	15.7	108.6	6.34
160	6.2	147.6	3.09	9.5	141.0	4.69	14.6	130.8	6.91	17.9	124.2	8.25
180	6.9	166.2	3.85	10.7	158.6	5.92	16.4	147.2	8.73	20.1	139.8	10.40
200	7.7	184.6	4.77	11.9	176.2	7.31	18.2	163.6	10.80	22.4	155.2	12.90
225	8.6	207.8	5.99	13.4	198.2	9.28	20.5	184.4	13.60	25.2	174.6	16.30
250	9.6	230.8	7.41	14.8	220.4	11.40	22.7	204.6	16.70	27.9	194.2	20.10
280	10.7	258.6	9.24	16.6	246.8	14.30	25.4	229.2	21.00	31.3	217.4	25.10
315	12.1	290.8	11.80	18.7	277.6	18.00	28.6	257.8	26.60	35.2	244.6	31.70
355	13.6	327.8	14.90	21.1	312.8	23.00	32.2	290.6	33.70	39.7	275.6	40.30
400	15.3	369.4	18.80	23.7	352.6	29.00	36.3	327.4	42.80	44.7	310.6	51.20
450	17.2	415.6	24.30	26.7	396.6	36.80	40.9	368.2	54.30	50.3	349.4	64.70
500	19.1	461.8	30.00	29.7	440.6	45.30	45.4	409.2	66.90	55.8	388.4	79.90
560	21.4	517.2	37.70	33.2	493.6	56.90	50.8	458.4	83.80	62.5	435.0	97.00
630	24.1	581.8	47.70	37.4	555.2	71.90	57.2	515.6	106.00	70.5	489.0	126.00
710	27.2	655.6	60.50	42.1	625.8	91.40	64.5	581.0	133.9	-	-	-
800	30.6	738.8	76.70	47.4	705.2	116.00	72.6	654.8	170.1	-	-	-
900	34.4	831.2	97.00	53.3	793.4	147.00	81.7	736.6	215.2	-	-	-
1000	38.2	923.6	120.00	59.3	881.4	181.00	90.2	819.6	265.7	-	-	-
1200	45.9	1108.2	172.00	67.9	1064.2	256.04	-	-	-	-	-	-
1400	53.5	1293.0	234.00	82.4	1235.0	348.00	-	-	-	-	-	-
1600	61.2	1477.6	306.00	94.1	1411.0	453.00	-	-	-	-	-	-

* Indicative

Technical Data Sheet

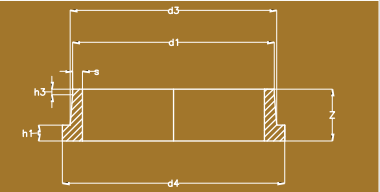
FLANGES



Pipe	Z	10 BAR						Z	16 BAR					
Size		DI	A	F	Thick	No. of		DI	A	F	Thick	No. of		
mm	mm	mm	mm	Dia.	mm	Holes	mm	mm	mm	Dia.	mm	Holes		
50	165	66	125	18	16	4	165	66	125	18	16	4		
63	185	78	145	18	16	4	185	78	145	18	16	4		
75	200	90	160	18	16	8	200	90	160	18	16	8		
90	200	110	160	18	16	8	200	110	160	18	16	8		
110	220	128	180	18	16	8	220	128	180	18	16	8		
125	250	135	210	18	16	8	250	135	210	18	16	8		
140	285	158	210	22	16	8	285	158	210	22	16	8		
160	285	178	240	22	16	8	285	178	240	22	16	8		
180	285	188	240	22	17	8	285	188	240	22	17	8		
200	340	235	295	22	17	8	340	235	295	22	17	12		
225	340	238	295	22	19	8	340	238	295	22	19	12		
250	395	288	350	22	19	12	405	288	355	26	19	12		
280	395	294	350	22	21	12	405	294	355	26	21	12		
315	445	338	400	22	21	12	460	338	410	26	21	12		
355	505	376	460	22	23	16	520	376	470	26	23	16		
400	565	430	515	26	24	16	580	430	525	30	24	16		
450	615	520	565	26	26	20	640	520	585	30	26	20		
500	670	533	620	26	28	20	715	533	650	33	28	20		
560	780	600	725	30	28	20	840	600	770	36	28	20		
630	780	650	725	30	31	20	840	650	770	36	31	20		
710	895	743	840	30	35	24	910	743	840	36	35	24		
800	1015	845	950	33	38	24	1025	845	950	39	38	24		
900	1115	947	1050	33	42	28	1125	947	1050	39	42	28		
1000	1230	1050	1160	36	45	28	1255	1050	1170	42	45	28		
1200	1455	1260	1380	39	52	32	1485	1260	1390	48	52	32		
1400	1675	1470	1590	42	55	36	1685	1470	1590	48	55	36		
1600	1915	1680	1820	48	60	40	1930	1680	1820	56	60	40		

Technical Data Sheet

STUB ENDS

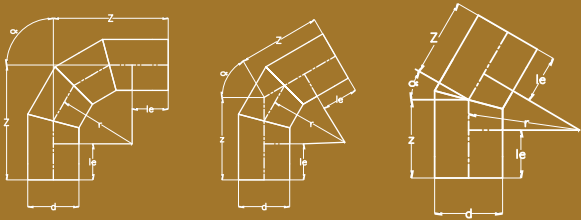


d1	SDR - 11						SDR - 17					
	s	d3	d4	z	h1	h3	s	d3	d4	z	h1	h3
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
20	2.0	27.0	45.0	50.0	7.0	30.0	-	-	-	-	-	-
25	2.3	33.0	58.0	50.0	9.0	28.0	-	-	-	-	-	-
32	3.0	40.0	68.0	50.0	10.0	27.0	-	-	-	-	-	-
40	3.7	50.0	78.0	50.0	11.0	24.0	-	-	-	-	-	-
50	4.6	61.0	88.0	50.0	12.0	23.0	3.0	61.0	88.0	50.0	12.0	23.0
63	5.8	75.0	102.0	50.0	14.0	16.0	3.8	75.0	102.0	50.0	14.0	16.0
75	6.9	89.0	122.0	50.0	16.0	14.0	4.5	89.0	122.0	50.0	16.0	14.0
90	8.2	105.0	138.0	80.0	17.0	43.0	5.4	105.0	138.0	80.0	17.0	43.0
110	10.0	125.0	158.0	80.0	18.0	37.0	6.6	125.0	158.0	80.0	18.0	37.0
125	11.4	132.0	158.0	80.0	25.0	35.0	7.4	132.0	158.0	80.0	18.0	42.0
140	12.8	155.0	188.0	80.0	25.0	27.0	8.3	155.0	188.0	80.0	18.0	34.0
160	14.6	175.0	212.0	80.0	25.0	27.0	9.5	175.0	212.0	80.0	18.0	34.0
180	16.4	180.0	212.0	80.0	30.0	20.0	10.7	180.0	212.0	80.0	20.0	30.0
200	18.2	232.0	268.0	100.0	32.0	28.0	11.9	232.0	268.0	100.0	24.0	36.0
225	20.5	235.0	268.0	100.0	32.0	38.0	13.4	235.0	268.0	100.0	24.0	46.0
250	22.8	285.0	320.0	100.0	35.0	25.0	14.8	285.0	320.0	100.0	25.0	35.0
280	25.5	291.0	320.0	100.0	35.0	35.0	16.6	291.0	320.0	100.0	25.0	45.0
315	28.7	335.0	370.0	100.0	35.0	25.0	18.7	335.0	370.0	100.0	25.0	35.0
355	32.3	373.0	430.0	120.0	40.0	40.0	21.1	373.0	430.0	120.0	30.0	50.0
400	36.4	427.0	482.0	120.0	46.0	29.0	23.7	427.0	482.0	120.0	33.0	42.0
450	41.0	500.0	550.0	130.0	60.0	10.0	26.7	500.0	550.0	120.0	46.0	14.0
500	45.5	530.0	585.0	120.0	60.0	10.0	29.7	530.0	585.0	120.0	46.0	24.0
560	51.0	615.0	685.0	130.0	60.0	10.0	33.2	615.0	685.0	120.0	50.0	10.0
630	57.3	642.0	685.0	120.0	60.0	20.0	37.4	642.0	685.0	120.0	50.0	30.0
710	-	-	-	-	-	-	42.1	737.0	800.0	120.0	50.0	20.0
800	-	-	-	-	-	-	47.4	840.0	905.0	120.0	52.0	18.0
900	-	-	-	-	-	-	53.3	944.0	1005.0	120.0	55.0	15.0
1000	-	-	-	-	-	-	59.3	1047.0	1110.0	140.0	60.0	10.0
1200	-	-	-	-	-	-	70.6	1245.0	1330.0	170.0	70.0	70.0
1800	-	-	-	-	-	-	105.9	1850	1970	230	130	40
2000	-	-	-	-	-	-	117.6	2050	2200	250	150	40

Note: Other SDR available on request.

Technical Data Sheet

BENDS

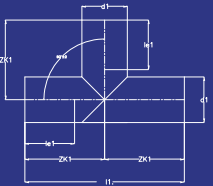


90 Deg bend							60 & 45 Deg bend				30 & 22.5 Deg bend				
Pipe size mm	Outer Diameter(d)		Wall thickness mm				le	r	Angle α ($\pm 2^\circ$)						Pipe size mm
	Min. mm	Max. mm	SDR 17		SDR 11		Min	mm	Z (+/- 5%)						
			Min.	Max.	Min.	Max.			90°	60°	45°	30°	22.5°		
90	90	90.9	5.4	6.3	8.2	9.5	150	135	315	245	218	194	194	90	
110	110	111.0	6.6	7.6	10.0	11.5		165	315	245	218	194	194	110	
125	125	126.2	7.4	8.6	11.4	13.2		188	338	258	228	200	200	125	
140	140	141.3	8.3	9.6	12.7	14.7		210	360	271	237	206	206	140	
160	160	161.5	9.5	11.0	14.6	16.8		240	390	288	249	214	214	160	
180	180	181.7	10.7	12.4	16.4	19.6		270	420	305	262	222	222	180	
200	200	201.8	11.9	13.7	18.2	21.8		300	450	323	274	230	230	200	
225	225	227.1	13.4	15.5	20.5	24.5		338	488	345	290	241	241	225	
250	250	252.3	14.8	17.1	22.7	27.2	250	375	625	466	412	350	350	250	
280	280	282.6	16.6	19.9	25.4	30.4		420	670	492	424	362	362	280	
315	315	317.9	18.7	22.4	28.6	34.3		473	773	576	498	428	428	315	
355	355	358.2	21.1	25.3	32.2	38.6		533	833	608	520	443	443	355	
400	400	403.6	23.7	28.4	36.3	43.5	300	600	900	646	548	461	461	400	
450	450	454.1	26.7	32.0	40.9	49.0		675	975	689	580	481	481	450	
500	500	504.5	29.7	35.6	45.4	54.4		750	1100	783	665	551	551	500	
560	560	565.0	33.2	39.8	50.8	60.7		840	1190	835	698	575	575	560	
630	630	635.7	37.4	44.8	57.2	67.1	350	945	1295	896	741	603	603	630	
710	710	716.4	42.1	50.5	64.6	76.9		1065	1415	965	792	636	636	710	
800	800	807.2	47.4	56.8	72.8	86.7		1200	1550	1043	847	672	672	800	
900	900	908.1	53.3	63.2	81.9	97.5		1350	1750	1179	960	762	762	900	
1000	1000	1009.0	59.3	69.2	91.0	108.3	400	1500	1900	1266	1022	802	802	1000	
1200	1200	1210.0	70.6	80.5	109.1	129.9		1800	2100	1400	1200	900	900	1200	
1400	1400	1412.6	82.4	98.1	127.3	151.5		2100	2500	1650	1440	1200	1200	1400	
1600	1600	1614.0	94.2	112.1	145.5	173.2		2400	3100	1400	1670	1450	1450	1600	
1800	1800	1816.2	105.9	116.6	-	-	600	2700	3300	2160	1730	1330	1130	1800	
2000	2000	2018	117.6	129.5	-	-	750	3000	3750	2490	2000	1560	1340	2000	

Note: Other SDR available on request.

Technical Data Sheet

EQUAL TEE



Pipe Size	Outer Diameter(d1)		Wall thickness mm				le 1	l1	Zk1	Pipe size
	Min.	Max.	SDR 17		SDR 11					
mm	mm	mm	Min.	Max.	Min.	Max.	+/- 5%	+/- 5%	+/- 5%	mm
50	50	50.5	3	3.5	4.6	5.3	150	350	175	50
63	63	63.6	3.8	4.4	5.8	6.7	150	370	185	63
75	75	75.7	4.5	5.2	6.8	7.9	150	400	200	75
90	90	90.9	5.4	6.3	8.2	9.5	150	410	205	90
110	110	111.0	6.6	7.6	10.0	11.5	150	410	205	110
125	125	126.2	7.4	8.6	11.4	13.2	150	430	215	125
140	140	141.3	8.3	9.6	12.7	14.7	150	440	220	140
160	160	161.5	9.5	11.0	14.6	16.8	150	460	230	160
180	180	181.7	10.7	12.4	16.4	19.6	150	480	240	180
200	200	201.8	11.9	13.7	18.2	21.8	150	500	250	200
225	225	227.1	13.4	15.5	20.5	24.5	150	530	265	225
250	250	252.3	14.8	17.1	22.7	27.2	250	750	375	250
280	280	282.6	16.6	19.9	25.4	30.4	250	780	390	280
315	315	317.9	18.7	22.4	28.6	34.3	340	1000	500	315
355	355	358.2	21.1	25.3	32.2	38.6	375	1300	650	355
400	400	403.6	23.7	28.4	36.3	43.5	450	1400	700	400
450	450	454.1	26.7	32.0	40.9	49.0	475	1500	750	450
500	500	504.5	29.7	35.6	45.4	54.4	530	1560	780	500
560	560	565.0	33.2	39.8	50.8	60.7	520	1600	800	560
630	630	635.7	37.4	44.8	57.2	67.1	585	1800	900	630
710	710	716.4	42.1	50.5	64.6	76.9	595	1900	950	710
800	800	807.2	47.4	56.8	72.8	86.7	600	2000	1000	800
900	900	908.1	53.3	63.2	81.9	97.5	650	2200	1100	900
1000	1000	1009.0	59.3	69.2	91.0	108.3	700	2400	1200	1000
1200	1200	1210.0	70.6	80.5	109.1	129.9	950	3100	1550	1200
1400	1400	1412.6	82.4	98.1	127.3	151.5	1050	3500	1820	1400
1600	1600	1614.0	94.2	112.1	145.5	173.2	1200	4000	2080	1600
2000	2000	2018	117.6	129.5	-	-	1600	5000	2600	2000

Technical Data Sheet

POLYETHYLENE (PE) PIPES PRODUCTION POSSIBILITY CHART AS PER ISO 4427-2

Pipe Series	SDR 6	SDR 7.4	SDR 9	SDR 11	SDR 13.6	SDR 17	SDR 21	SDR 26	SDR 33	SDR 41
	S 2.5	S 3.2	S 4	S 5	S 6.3	S 8	S 10	S 12.5	S 16	S 20
Nominal Pressure, PN in Bar										
PE 100	-	PN 25	PN 20	PN 16	PN 12.5	PN 10	PN 8	PN 6	PN 5	PN 4
Nom. Size	Wall Thicknesses									
16	✓	✓	✓	✓						
20	✓	✓	✓	✓						
25	✓	✓	✓	✓	✓					
32	✓	✓	✓	✓	✓	✓				
40	✓	✓	✓	✓	✓	✓	✓			
50	✓	✓	✓	✓	✓	✓	✓	✓		
63	✓	✓	✓	✓	✓	✓	✓	✓		
75	✓	✓	✓	✓	✓	✓	✓	✓	✓	
90	✓	✓	✓	✓	✓	✓	✓	✓	✓	
110	✓	✓	✓	✓	✓	✓	✓	✓	✓	
125	✓	✓	✓	✓	✓	✓	✓	✓	✓	
140	✓	✓	✓	✓	✓	✓	✓	✓	✓	
160	✓	✓	✓	✓	✓	✓	✓	✓	✓	
180	✓	✓	✓	✓	✓	✓	✓	✓	✓	
200	✓	✓	✓	✓	✓	✓	✓	✓	✓	
225	✓	✓	✓	✓	✓	✓	✓	✓	✓	
250	✓	✓	✓	✓	✓	✓	✓	✓	✓	
280	✓	✓	✓	✓	✓	✓	✓	✓	✓	
315	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
355	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
400		✓	✓	✓	✓	✓	✓	✓	✓	✓
450		✓	✓	✓	✓	✓	✓	✓	✓	✓
500		✓	✓	✓	✓	✓	✓	✓	✓	✓
560		✓	✓	✓	✓	✓	✓	✓	✓	✓
630		✓	✓	✓	✓	✓	✓	✓	✓	✓
710			✓	✓	✓	✓	✓	✓	✓	✓
800				✓	✓	✓	✓	✓	✓	✓
900				✓	✓	✓	✓	✓	✓	✓
1000				✓	✓	✓	✓	✓	✓	✓
1200					✓	✓	✓	✓	✓	✓
1400					✓	✓	✓	✓	✓	✓
1600					✓	✓	✓	✓	✓	✓
1800						✓	✓	✓	✓	✓
2000						✓	✓	✓	✓	✓

Note:

✓	- Production Applicable
	- Feasibility study on request

Non standard SIZES/SDR on request

Above pressure classes are based on 20 Deg temperature.

Technical Data Sheet

POLYETHYLENE (PE) FITTINGS - MACHINED REDUCING TEES - PRODUCTION CHART

PE 100		SDR 7.4	SDR 9	SDR 11	SDR 13.6	SDR 17	SDR 21	SDR 26
Nominal Size DN/OD	Upto Reduced Size DN/OD							
2000	1200						✓	✓
1800	1000					✓	✓	✓
1600	900				✓	✓	✓	✓
1400	800				✓	✓	✓	✓
1200	710				✓	✓	✓	✓
1000	630			✓	✓	✓	✓	✓
900	560			✓	✓	✓	✓	✓
800	500			✓	✓	✓	✓	✓
710	450			✓	✓	✓	✓	✓
630	400	✓	✓	✓	✓	✓	✓	✓
560	355	✓	✓	✓	✓	✓	✓	✓
500	315	✓	✓	✓	✓	✓	✓	✓
450	225	✓	✓	✓	✓	✓	✓	✓
400	200	✓	✓	✓	✓	✓	✓	✓
355	180	✓	✓	✓	✓	✓	✓	✓
315	160	✓	✓	✓	✓	✓	✓	✓
280	140	✓	✓	✓	✓	✓	✓	✓
250	125	✓	✓	✓	✓	✓	✓	✓
225	110	✓	✓	✓	✓	✓	✓	✓
200	90	✓	✓	✓	✓	✓	✓	✓

