

الاتحاد لصناعة الأنابيب  
Union Pipes Industries KSA

# Product Catalogue

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# OVERVIEW

## Polymers

Polymers for pressure pipe applications have improved enormously over the last fifty years since they were first manufactured. The current polymers, PE80 were developed in the 1980's and called "second generation" polymers and PE100, developed in the 1990's and called a "third generation" polymers. PE80 has a MRS (Minimum Require Strength) of 8MPa and an allowable design stress ( $\sigma$ ) of 6.3MPa with a Safety Factor of 1.25. PE100 has a MRS of 10 MPa and an allowable design stress ( $\sigma$ ) of 8MPa with a Safety Factor of 1.25; also called the Design Factor (C) according to ISO.

The PE80 and PE100 polymers are usually produced in two consecutive reactors giving two peaks in the molecular weight distribution graph and are called bimodal HDPE compared to conventional unimodal HDPE. The "third generation" I-IDPE polymers have higher strength without reducing processability and they have higher stress crack resistance than the "second generation" polymers; particularly important for gas pipelines.

The stress/time curves, sometimes called creep/rupture curves or regression curves, for PE80 exhibit a bend, or "knee", in the curves for elevated temperatures. This bend is at the point between the flatter portion and the steeper portion of the curves and is the transition between ductile failure in the former and brittle failure in the latter.

The stress/time curves for "third generation" bimodal I-IDPE polymers exhibit no "knee", therefore, even long term failures will be the ductile mode described above and the curves at elevated temperatures provide a longer time to burst than the older grades.

**Union Pipes manufactures a range of HDPE products for various applications. Our products range from 5mm Diameter to 2000 mm Diameter with a pressure class of 04 to 34 (Varies for different sizes).**

**We also have a variety of fittings for use with our pipes, including valves, mouldied and fabricated fittings. On-site installation services is available.**



## Features & Benefits

- High impact strength.
- Excellent corrosion resistance.
- Very good chemical resistance.
- Excellent abrasion resistance.
- Chemically inert and unaffected by acidic soil conditions.
- Biologically inert to micro organisms.
- Can be fusion welded, ensuring absolutely leak free joints.
- Very smooth bore and low friction loss.
- Low mass (about 1/8 of steel) and ease of handling.
- High flexibility, enabling long lengths to be coiled.
- Inherent resistance to effects of ground movement.
- Non-toxic and safe for drinking water.
- LOW installation cost and maintenance free.
- Large range of sizes, from 16mm 2000mm.
- Very suitable for rehabilitation of old pipelines with trenchless technologies.

## Applications

Union Pipes pressure pipe produced under this standard is applicable in the following:

- Mining
- Waterworks
- Irrigation
- Gaslines
- Plumbing
- Firefightin
- Sewerag
- Telecom Duct

PE pipe systems have been used successfully in numerous applications, general as well as highly specialised, in industrial and civil sectors. The most common applications are the following:

1. Compressed air and ventilation air.
2. Protection of electrical and telephone cables.
3. High temperature liquids and gases.
4. Gas, petroleum and its derivatives.
5. Corrosive water water and effluents.
6. Potable water.
7. Pneumatic transport.
8. Drainage and sub-soil drainage.
9. Dewatering

### Water Supply

Polyethylene (PE) pipes offer distinct advantages over other materials (eg. steel, fibre cement, concrete, etc.) especially when used for water supply and in areas with a high water table, in which their installation is simplified by jointing outside the trench.

#### Some examples:

- Potable water reticulation.
- Sewage reticulation.
- Water works & water treatment plants.

Furthermore, because of their flexibility and low weight, they are ideal for use in underwater environments in various applications, such as marine outfalls.

PE Pipes have yielded excellent results when used in mining applications. Owing to their high abrasion and corrosion resistance, ease of handling and installation and their high mechanical strength, they are ideal for:

- Tailings (slurries and effluents).
- Irrigating leaching piles.
- Acid and alkaline solutions.
- Concentrate pipelines (reduction works and drainage).



- Fire fighting installations.
- Drinking water lines.
- Chilled water lines.
- Compressed air lines.
- Ventilation ducting.

### Agriculture / Irrigation

PE pipes are used in agriculture and domestic / commercial irrigation with either non-permanent or permanent coupling systems. Due to the flexibility of the pipe, it can be coiled, which facilitates transport (pipe sizes upto 160 mm can be supplied in 50m, 100m or longer coils).

## PIPES

### ISO 4427-2

We manufacture PE100 HDPE piping as per ISO 4427. We currently manufacture from 5mm-2000mm diameter pipes.

### Flow Rates, Velocities & Friction Losses

Approximate flow rates, flow velocities and friction losses in straight HDPE pressure pipes without fittings.

### Physical and Mechanical Properties

#### Physical Properties

Physical Properties	Test Mode	Values	Unit
Density	ISO 1183	0.958	g/cm <sup>3</sup>
Melt Flow Index (190 °C / 21.6Kg)	ISO 1133	6.5	g/10 min.
Melt Flow Index (190 °C/5Kg)	ISO 1133	0,23	g/10 min
Vicat Softening point (5Kg)	ISO 306	67	°C
Crystalline Melting Range	ISO 3146-85	130- 133	°C
Viscosity Num	ISO 1628-3	390	cm <sup>3</sup> /g

#### Mechanical Properties

Physical Properties	Test Mode	Values	Unit
Shore D. Hardness	ISO 868	61	-
Tensile @ Yield	ISO 527	26	MPa
Ultimate Tensil	ISO 527	35	MPa
Ultimate Elongation	ISO 527	>600	%
Elastic Modules	ISO 527	900	MPa
Flexural Stress (3.5% Deflection)	ISO 178	19	MPa
Notched Impact (Charpy) acN 23 °C	ISO 119	20	KJ/m <sup>3</sup>
Notched Impact (Charpy) acN 30 °C	ISO 179	6	KJ/m <sup>3</sup>
Thermal Stability 210 °C	ISO 10837	>60	MIN
Carbon Black Content	ASTM D 1603	>2	%



## PRESSURE Reduction Co-Efficient

### Pressure Reduction Co-Efficient for PE 100 as Per ISO 4427:2007:

When a HDPE piping system is operated at a continuous constant temperature higher than 20°C, a pressure reduction co-efficient as given in the below tables are applicable.

From the below table, Pressure rating of different SDRs at various level of temperature can be determined, therefore pipe selection can be made early at the design stage.

PE 100							
Temperature °C	20	25	30	35	40	45	50
<b>Pressure Reduction Co-efficient</b>	1	0.93	0.87	0.80	0.74	0.675	0.61
<b>SDR</b>	Pressure in Bar						
<b>7.4</b>	25.0	23.3	21.8	20.0	18.5	16.87	15.25
<b>9.0</b>	20.0	18.6	17.4	16.0	14.8	13.50	12.20
<b>11.0</b>	16.0	14.9	13.9	12.8	11.8	10.80	9.76
<b>13.6</b>	12.5	11.6	10.9	10.0	9.3	8.40	7.60
<b>17.0</b>	10.0	9.3	8.7	8.0	7.4	6.80	6.10
<b>21.0</b>	8.0	7.4	7.0	6.4	5.9	5.40	4.90
<b>26.0</b>	6.0	5.6	5.2	4.8	4.4	4.00	3.70
<b>33.0</b>	5.0	4.7	4.4	4.0	3.7	3.50	3.20
<b>41.0</b>	4.0	3.7	3.5	3.2	3.0	2.70	2.40



الاتحاد لصناعة الأنابيب  
**HDPE Pipes Specs**  
UNION PIPES

# POLYETHYLENE PIPE - STANDARD DIMENSIONS

## SPECIFICATIONS ACCORDING TO ISO 4427

Nominal outside diameter (DN)	Mean outside diameter		Maximum out of roundness	SDR 41				SDR 33				SDR 26			
				Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter	
	Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
16	16.0	16.3	1.2	—	—	—	—	—	—	—	—	—	—	—	—
20	20.0	20.3	1.2	—	—	—	—	—	—	—	—	—	—	—	—
25	25.0	25.3	1.2	—	—	—	—	—	—	—	—	—	—	—	—
32	32.0	32.3	1.3	—	—	—	—	—	—	—	—	—	—	—	—
40	40.0	40.4	1.4	—	—	—	—	—	—	—	—	—	—	—	—
50	50.0	50.5	1.4	—	—	—	—	—	—	—	—	—	—	—	—
63	63.0	63.6	1.5	—	—	—	—	—	—	—	—	2.4	2.8	57.4	58.8
75	75.0	75.7	1.6	—	—	—	—	2.3	2.7	69.6	71.1	2.9	3.3	68.4	69.9
90	90.0	90.9	1.8	—	—	—	—	2.8	3.2	83.6	85.3	3.5	4.0	82.0	83.9
110	110.0	111.0	2.2	2.7	3.1	103.8	105.6	3.4	3.9	102.2	104.2	4.3	4.9	100.2	102.4
125	125.0	126.2	2.5	3.1	3.6	117.8	120.0	3.9	4.4	116.2	118.4	4.8	5.4	114.2	116.6
140	140.0	141.3	2.8	3.5	4.0	132.0	134.3	4.3	4.9	130.2	132.7	5.4	6.1	127.8	130.5
160	160.0	161.5	3.2	4.0	4.5	151.0	153.5	4.9	5.5	149.0	151.7	6.2	7.0	146.0	149.1
180	180.0	181.7	3.6	4.4	5.0	170.0	172.9	5.5	6.2	167.6	170.7	6.9	7.7	164.6	167.9
200	200.0	201.8	4.0	4.9	5.5	189.0	192.0	6.2	7.0	186.0	189.4	7.7	8.6	182.8	186.4
225	225.0	227.1	4.5	5.5	6.2	212.6	216.1	6.9	7.7	209.6	213.3	8.6	9.6	205.8	209.9
250	250.0	252.3	5.0	6.2	7.0	236.0	239.9	7.7	8.6	232.8	236.9	9.6	10.7	228.6	233.1
280	280.0	282.6	9.8	6.9	7.7	264.6	268.8	8.6	9.6	260.8	265.4	10.7	11.9	256.2	261.2
315	315.0	317.9	11.1	7.7	8.6	297.8	302.5	9.7	10.8	293.4	298.5	12.1	13.5	288.0	293.7
355	355.0	358.2	12.5	8.7	9.7	335.6	340.8	10.9	12.1	330.8	336.4	13.6	15.1	324.8	331.0
400	400.0	403.6	14.0	9.8	10.9	378.2	381.8	12.3	13.7	372.6	379.0	15.3	17.0	366.0	373.0
450	450.0	454.1	15.6	11.0	12.2	425.6	432.1	13.8	15.3	419.4	426.5	17.2	19.1	411.8	419.7
500	500.0	504.5	17.5	12.3	13.7	472.6	479.9	15.3	17.0	466.0	473.9	19.1	21.2	457.6	466.3
560	560.0	565.0	19.6	13.7	15.2	529.6	537.7	17.2	19.1	521.8	530.7	21.4	23.7	512.6	522.3
630	630.0	635.7	22.1	15.4	17.1	595.8	604.9	19.3	21.4	587.2	597.1	24.1	26.7	576.6	587.5
710	710.0	716.4	24.9	17.4	19.3	671.4	681.6	21.8	24.1	661.8	672.8	27.2	30.1	649.8	662.0
800	800.0	807.2	28.0	19.6	21.7	756.6	768.0	24.5	27.1	745.8	758.2	30.6	33.8	732.4	746.0
900	900.0	908.1	31.5	22.0	24.3	851.4	864.1	27.6	30.5	839.0	852.9	34.4	38.0	824.0	839.3
1000	1000.0	1009.0	35.0	24.5	27.1	945.8	960.0	30.6	33.8	932.4	947.8	38.2	42.2	915.6	932.6
1200	1200.0	1210.0	42.0	29.4	32.5	1135.0	1151.2	36.7	40.5	1119.0	1136.6	45.9	50.6	1098.8	1118.2
1400	1400.0	1410.0	49.0	34.4	38.0	1324.0	1341.2	42.9	47.3	1305.4	1324.2	53.2	58.7	1282.6	1303.6
1600	1600.0	1610.0	56.0	39.3	43.3	1513.2	1531.4	49.0	54.0	1492.0	1512.0	61.3	67.6	1464.8	1487.4
1800	1800.0	1816.2	—	43.8	48.3	1703.4	1728.6	54.5	60.1	1679.8	1707.2	69.1	76.2	1647.6	1677.4
2000	2000.0	2018.0	—	48.8	53.8	1892.4	1920.4	60.6	66.8	1866.4	1896.8	76.9	84.7	1830.6	1864.2

# POLYETHYLENE PIPE - STANDARD DIMENSIONS

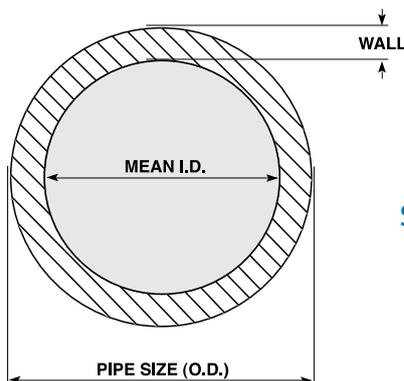
## SPECIFICATIONS ACCORDING TO ISO 4427

Nominal outside diameter (DN)	Mean outside diameter		Maximum out of roundness	SDR 21				SDR 17				SDR 13.6			
				Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter	
	Min.	Max.		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
16	16.0	16.3	1.2	—	—	—	—	—	—	—	—	—	—	—	—
20	20.0	20.3	1.2	—	—	—	—	—	—	—	—	1.6	1.9	16.2	17.1
25	25.0	25.3	1.2	—	—	—	—	1.6	1.9	21.2	22.1	1.9	2.2	20.6	21.5
32	32.0	32.3	1.3	1.6	1.9	28.2	29.1	1.9	2.2	27.6	28.5	2.4	2.8	26.4	27.5
40	40.0	40.4	1.4	1.9	2.2	35.6	36.6	2.4	2.8	34.4	35.6	3.0	3.4	33.2	34.4
50	50.0	50.5	1.4	2.4	2.8	44.4	45.7	3.0	3.4	43.2	44.5	3.7	4.2	41.6	43.1
63	63.0	63.6	1.5	3.0	3.4	56.2	57.6	3.8	4.3	54.4	56.0	4.7	5.3	52.4	54.2
75	75.0	75.7	1.6	3.6	4.1	66.8	68.5	4.5	5.1	64.8	66.7	5.5	6.2	62.6	64.7
90	90.0	90.9	1.8	4.3	4.9	80.2	82.3	5.4	6.1	77.8	80.1	6.6	7.4	75.2	77.7
110	110.0	111.0	2.2	5.3	6.0	98.0	100.4	6.6	7.4	95.2	97.8	8.1	9.1	91.8	94.8
125	125.0	126.2	2.5	6.0	6.7	111.6	114.2	7.4	8.3	108.4	111.4	9.2	10.3	104.4	107.8
140	140.0	141.3	2.8	6.7	7.5	125.0	127.9	8.3	9.3	121.4	124.7	10.3	11.5	117.0	120.7
160	160.0	161.5	3.2	7.7	8.6	142.8	146.1	9.5	10.6	138.8	142.5	11.8	13.1	133.8	137.9
180	180.0	181.7	3.6	8.6	9.6	160.8	165.4	10.7	11.9	156.2	160.3	13.3	14.8	150.4	155.1
200	200.0	201.8	4.0	9.6	10.7	178.6	182.6	11.9	13.2	173.6	178.0	14.7	16.3	167.4	172.7
225	225.0	227.1	4.5	10.8	12.0	201.0	205.5	13.4	14.9	195.2	200.3	16.6	18.4	188.2	193.9
250	250.0	252.3	5.0	11.9	13.2	223.6	228.5	14.8	16.4	217.2	222.7	18.4	20.4	209.2	215.5
280	280.0	282.6	9.8	13.4	14.9	250.2	255.8	16.6	18.4	243.2	249.4	20.6	22.8	234.4	241.4
315	315.0	317.9	11.1	15.0	16.6	281.8	287.9	18.7	20.7	273.6	279.5	23.2	25.7	263.6	271.5
355	355.0	358.2	12.5	16.9	18.7	317.6	324.4	21.1	23.4	308.2	316.0	26.1	28.9	297.2	306.0
400	400.0	403.6	14.0	19.1	21.2	357.6	365.4	23.7	26.2	347.6	356.2	29.4	32.5	335.0	344.8
450	450.0	454.1	15.6	21.5	23.8	402.4	411.1	26.7	29.5	391.0	400.7	33.1	36.6	376.8	387.9
500	500.0	504.5	17.5	23.9	26.4	447.2	456.7	29.6	32.7	434.6	445.3	36.8	40.6	418.8	430.9
560	560.0	565.0	19.6	26.7	29.5	501.0	511.7	33.2	36.7	486.6	498.7	41.2	45.5	469.0	482.7
630	630.0	635.7	22.1	30.0	33.1	563.8	575.7	37.3	41.2	547.6	561.1	46.3	51.1	527.8	543.1
710	710.0	716.4	24.9	33.9	37.4	635.2	648.6	42.1	46.5	617.0	632.2	52.2	57.6	594.8	612.0
800	800.0	807.2	28.0	38.1	42.1	715.8	731.0	47.4	52.3	695.4	712.4	58.8	64.8	670.4	689.6
900	900.0	908.1	31.5	42.9	47.3	805.4	822.3	53.5	59.0	782.2	801.1	66.2	73.0	754.0	775.7
1000	1000.0	1009.0	35.0	47.7	52.6	894.8	913.6	59.3	65.4	869.2	890.4	72.5	79.9	840.2	864.0
1200	1200.0	1210.0	42.0	57.2	63.1	1073.8	1095.6	67.9	74.8	1050.4	1075.0	88.2	97.2	1005.6	1034.4
1400	1400.0	1410.0	49.0	66.7	73.5	1253.0	1279.2	82.4	90.8	1218.4	1247.8	102.9	113.3	1173.4	1206.8
1600	1600.0	1610.0	56.0	76.2	84.0	1432.0	1462.0	94.1	103.7	1392.6	1426.2	117.6	129.5	1341.0	1379.2
1800	1800.0	1816.2	—	85.7	94.4	1611.2	1644.8	105.9	116.6	1566.8	1604.4	—	—	—	—
2000	2000.0	2018.0	—	95.2	104.9	1790.2	1827.6	117.6	129.5	1741.0	1782.8	—	—	—	—

# POLYETHYLENE PIPE - STANDARD DIMENSIONS

## SPECIFICATIONS ACCORDING TO ISO 4427

Nominal outside diameter (DN)	Mean outside diameter		Maximum out of roundness	SDR 11				SDR 9				SDR 7.4			
	Min.	Max.		Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter		Wall thickness		Mean inside diameter	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
16	16.0	16.3	1.2	1.6	1.9	12.2	13.1	1.8	2.1	11.8	12.7	2.2	2.6	10.8	11.9
20	20.0	20.3	1.2	1.9	2.2	15.6	16.5	2.3	2.7	14.6	15.7	2.8	3.2	13.6	14.7
25	25.0	25.3	1.2	2.3	2.7	19.6	20.7	2.8	3.2	18.6	19.7	3.5	4.0	17.0	18.3
32	32.0	32.3	1.3	2.9	3.3	25.4	26.5	3.6	4.1	23.8	25.1	4.4	5.0	22.0	23.5
40	40.0	40.4	1.4	3.7	4.2	31.6	33.0	4.5	5.1	29.8	31.4	5.5	6.2	27.6	29.4
50	50.0	50.5	1.4	4.6	5.2	39.6	41.2	5.6	6.3	37.4	39.3	6.9	7.7	34.6	36.7
63	63.0	63.6	1.5	5.8	6.5	50.0	52.0	7.1	8.0	47.0	47.0	8.6	9.6	43.8	46.4
75	75.0	75.7	1.6	6.8	7.6	59.8	62.1	8.4	9.4	56.2	56.2	10.3	11.5	52.0	55.1
90	90.0	90.9	1.8	8.2	9.2	71.6	74.5	10.1	11.3	67.4	67.4	12.3	13.7	62.6	66.3
110	110.0	111.0	2.2	10.0	11.1	87.8	91.0	12.3	13.7	82.6	86.4	15.1	16.8	76.4	80.8
125	125.0	126.2	2.5	11.4	12.7	99.6	103.4	14.0	15.5	94.0	98.2	17.1	19.0	87.0	92.0
140	140.0	141.3	2.8	12.7	14.1	111.8	115.9	15.7	17.4	105.2	109.9	19.2	21.3	97.4	102.9
160	160.0	161.5	3.2	14.6	16.2	127.6	132.3	17.9	19.8	120.4	125.7	21.9	24.2	111.6	117.7
180	180.0	181.7	3.6	16.4	18.2	143.6	148.9	20.1	22.3	135.4	141.5	24.6	27.2	125.6	132.5
200	200.0	201.8	4.0	18.2	20.2	159.6	165.4	22.4	24.8	150.4	157.0	27.3	30.2	139.6	147.2
225	225.0	227.1	4.5	20.5	22.7	179.6	186.1	25.1	27.8	169.4	176.9	30.8	34.0	157.0	165.5
250	250.0	252.3	5.0	22.7	25.1	199.8	206.9	27.9	30.8	188.4	196.5	34.2	37.8	174.4	183.9
280	280.0	282.6	9.8	25.4	28.1	223.8	231.8	31.3	34.6	210.8	220.0	38.3	42.3	195.4	206.0
315	315.0	317.9	11.1	28.6	31.6	251.8	260.7	35.2	38.9	237.2	247.5	43.0	47.4	220.2	231.9
355	355.0	358.2	12.5	32.2	35.6	283.8	293.8	39.6	43.7	267.6	279.0	48.5	53.5	248.0	261.2
400	400.0	403.6	14.0	36.3	40.1	319.8	331.0	44.7	49.3	301.4	314.2	54.6	60.2	279.6	294.4
450	450.0	454.1	15.6	40.9	45.1	359.8	372.3	50.2	55.4	339.2	353.7	61.5	67.8	314.4	331.1
500	500.0	504.5	17.5	45.4	50.1	399.8	413.7	55.8	61.5	377.0	392.9	—	—	—	—
560	560.0	565.0	19.6	50.8	56.0	448.0	463.5	62.5	68.9	422.2	438.4	—	—	—	—
630	630.0	635.7	22.1	57.2	63.1	503.8	521.3	70.3	77.5	475.0	493.2	—	—	—	—
710	710.0	716.4	24.9	64.5	71.1	567.8	587.4	79.3	87.4	535.2	557.8	—	—	—	—
800	800.0	807.2	28.0	72.5	80.0	640.0	662.0	89.3	98.4	603.2	628.6	—	—	—	—
900	900.0	908.1	31.5	81.7	90.0	720.0	744.7	—	—	—	—	—	—	—	—
1000	1000.0	1009.0	35.0	90.2	99.4	801.2	828.6	—	—	—	—	—	—	—	—



**SDR = OD ÷ WALL THICKNESS**

# GAS PIPES

## PE Pipe Technical Data as per ISO 4437

HDPE is the right choice for your Gas application due to its characteristics such as strength, flexibility, inertness, quality, light weight and ease of maintenance and installation.

PE pipes for GAS service as per ISO 4437 standards which undergo rigorous quality checks throughout the entire production process to ensure their reliability and effectiveness for gas transportation. The preferred series of pipes are SDR 11 and SDR 17 for gas applications. Pipes

are available in coils of 50 and 100 meters for sizes up to 160mm in order to reduce the number of joints to make a cost effective choice for contractors and clients.

Pipes are also available in straight lengths of 6 or 12 meters. The jointing can be done by Butt-Fusion or Electro-Fusion methods, providing a completely homogeneous leak free system.

### Pipe Sizes & Corresponding Wall Thickness as per ISO 4437

Nominal Outside Diameter	PE 100 - MRS 10 MPa		PE 80 - MRS 8 MPa	
	SDR 17 PN 6.25	SDR 11 PN 10	SDR 17 PN 5	SDR 11 PN 8
	Wall Thickness		Wall Thickness	
mm	mm		mm	
20	-	2.3 - 2.7	-	2.3 - 2.7
25	-	2.3 - 2.7	-	2.3 - 2.7
32	2.3 - 2.7	3.0 - 3.5	2.3 - 2.7	3.0 - 3.5
40	2.4 - 2.8	3.7 - 4.2	2.4 - 2.8	3.7 - 4.2
50	3.0 - 3.5	4.6 - 5.2	3.0 - 3.5	4.6 - 5.2
63	3.8 - 4.3	5.8 - 6.5	3.8 - 4.3	5.8 - 6.5
75	4.5 - 5.1	6.8 - 7.6	4.5 - 5.1	6.8 - 7.6
90	5.4 - 6.1	8.2 - 9.2	5.4 - 6.1	8.2 - 9.2
110	6.6 - 7.4	10.0 - 11.1	6.6 - 7.4	10.0 - 11.1
125	7.4 - 8.3	11.4 - 12.7	7.4 - 8.3	11.4 - 12.7
140	8.3 - 9.3	12.7 - 14.1	8.3 - 9.3	12.7 - 14.1
160	9.5 - 10.6	14.6 - 16.2	9.5 - 10.6	14.6 - 16.2
180	10.7 - 11.9	16.4 - 18.2	10.7 - 11.9	16.4 - 18.2
200	11.9 - 13.2	18.2 - 20.2	11.9 - 13.2	18.2 - 20.2
225	13.4 - 14.9	20.5 - 22.7	13.4 - 14.9	20.5 - 22.7
250	14.8 - 16.4	22.7 - 25.1	14.8 - 16.4	22.7 - 25.1
280	16.6 - 18.4	25.4 - 28.1	16.6 - 18.4	25.4 - 28.1
315	18.7 - 20.7	28.6 - 31.6	18.7 - 20.7	28.6 - 31.6
355	21.1 - 23.4	32.2 - 35.6	21.1 - 23.4	32.2 - 35.6
400	23.7 - 26.2	36.4 - 40.1	23.7 - 26.2	36.4 - 40.1
450	26.7 - 29.5	40.9 - 45.1	26.7 - 29.5	40.9 - 45.1
500	29.7 - 32.8	45.5 - 50.1	29.7 - 32.8	45.5 - 50.1
560	33.2 - 36.7	50.9 - 56.1	33.2 - 36.7	50.9 - 56.1
630	37.4 - 41.3	57.3 - 63.2	37.4 - 41.3	57.3 - 63.2

#### NOTE:

- SDR 11 & SDR 17 are the series commonly used for gas application.
- Other SDRs are also available upon request.
- Outer diameter & Wall thickness is according to ISO 11922-1.
- For applications above 20 Deg C – suitable de-rating factors apply.
- PE 100 Minimum Required Strength (MRS) is 10 Mpa.
- PE 80 Minimum Required Strength (MRS) is 8 Mpa.
- All dimensions for BS EN 1555 are same as ISO 4437 except for 20 & 25 mm (min 3mm Wall Thickness for SDR 11).

## PE100 PIPE SUPPORT SPACINGS

### Above ground horizontally pipework max support spacing (meters)

"Diameter (mm)"	SDR 26	SDR 21	SDR 17	SDR 13.6	SDR 11	SDR 9	SDR 7.4
20	-	-	-	-	-	-	0.70
25	-	-	-	-	0.70	0.75	0.80
32	-	-	0.75	0.80	0.85	0.85	0.90
40	-	-	0.90	0.90	1.00	1.05	1.05
50	-	0.95	1.00	1.05	1.15	1.15	1.20
63	1.05	1.10	1.20	1.25	1.30	1.40	1.40
75	1.20	1.25	1.35	1.40	1.50	1.55	1.60
90	1.30	1.40	1.50	1.55	1.65	1.70	1.80
110	1.35	1.50	1.60	1.70	1.80	1.85	1.90
125	1.50	1.65	1.75	1.85	1.95	2.00	2.05
140	1.65	1.80	1.90	2.00	2.10	2.20	2.25
160	1.80	1.90	2.05	2.15	2.25	2.35	2.40
180	1.90	2.00	2.15	2.25	2.40	2.55	2.55
200	2.00	2.15	2.30	2.40	2.55	2.65	2.70
225	2.15	2.30	2.50	2.60	2.70	2.80	2.90
250	2.25	2.40	2.60	2.70	2.85	3.00	3.05
280	2.40	2.60	2.75	2.90	3.05	3.15	3.25
315	2.50	2.70	2.90	3.05	3.20	3.30	3.40
355	2.70	2.90	3.10	3.25	3.40	3.55	3.65
400	2.90	3.00	3.30	3.45	3.65	3.80	3.90
450	3.00	3.20	3.40	3.60	3.75	3.90	4.00
500	3.15	3.40	3.60	3.80	4.00	4.15	-
560	3.35	3.60	3.85	4.00	4.25	4.40	-
630	3.60	3.85	4.10	4.30	4.55	4.70	-
710	3.80	4.10	4.40	4.60	4.85	-	-
800	4.05	4.30	4.65	4.90	5.15	-	-
900	4.30	4.50	4.95	5.15	5.45	-	-
1000	4.55	4.70	5.20	5.45	5.75	-	-

The transportation of gases with a density of <math><0.01\text{ g/cm}^3</math>, the support distances can be increased as stated below.

SDR 17 +45%

SDR 11 +30%

SDR 7.4 +21%

As polyethylene is a flexible pipe material, adequate pipe support must be provided to prevent sagging when polyethylene pipes have to be installed above ground. Pipe supports should be designed to support both the pipe weights and its contents and also accommodate the weight of any heavy fittings, valves etc. The pipe brackets, straps or plinths should have non-abrasive surfaces to prevent damage to the pipe. The support and bracketing design should allow for the stresses generated from thermal movement and if, for aesthetic reasons pipe deflection is unacceptable, continuous pipe support should be provided. The table above gives recommendations for maximum support spacing's for a pipe full of water at an ambient temperature of 20°C or below. At a temperature of 40°C and above continuous support is recommended for visual acceptance.

As the pipeline cools, any contraction will be resisted by the pipe clamps and when reheated to its normal operation temperature pipe sagging between supports will be minimized. Polyethylene is a good insulating material (thermal conductivity 0.38w°C) and will help prevent or delay the freezing of the pipe contents. Care needs to be taken with regards to expansion and contraction, as a result of temperature changes, when installing. Please ask our technical team for more information.

The pipe itself will not fail if the contents do freeze as polyethylene can safely expand to cater for increased volume. It is however good practice for operational reasons to insulate pipe work to prevent freezing and to ensure the insulation is water proof. Pipe work should be protected from possible impact damage and provision should be made for draining down horizontal pipe runs at low points in the system.



City waste dumping grounds are designed to handle the leachates which could be in liquid and gases forms. The collection, transmission and disbursement of these leachates need to be through closed piping network. The piping used should be inherent to the chemical effects of the leachate.

HDPE being inert materials, they get totally unaffected by most of the chemicals and even chemicals which affect the plastic materials, have been conveyed through these pipes for minimum 100 years without much damage to the piping system.

River water infiltration galleries are prepared to collect the clean water (free from silt, clay) from the river bed for use in city water supply, thermal power plants, coal mines, or any industrial application. In the design of infiltration gallery, the network of perforated/ slotted HDPE pipes covered with geo textile/fabric are installed at the specific depth below river bed, above which layer of graded gravels are packed to stop silt, clay flowing in to HDPE pipes. The water percolated through these graded gravels, gets filtered through geo textile/fabric and the clean filtered water enters in to HDPE pipes through perforations or slots which is further conveyed to jack/intake wells using HDPE pipes.

HDPE pipes supplied for such applications could be plain ended, male-female threaded, spigot and socket coupling type. The type of pipe joint depends on direction, of installation of pipes & site conditions, that is, horizontal or vertical. The perforation made in HDPE pipe could be drilled holes or slotted. The perforations could be all along the surface of pipe or certain specific area on pipe circumference.

### Technical specifications

#### Range:

- Ø90 to 400 mm
- Pressure Rating 2.5 to 25 kgf/cm<sup>2</sup>
- Also available with tracer for easy detection

#### Standard

- Pipes as per ISO 4427 & stating as per Company Standard

#### Length

- 1m, 2m, 3m, 6m & 12m

#### Material Grades

- PE-63 · PE-80 · PE 100 (Black Colour)

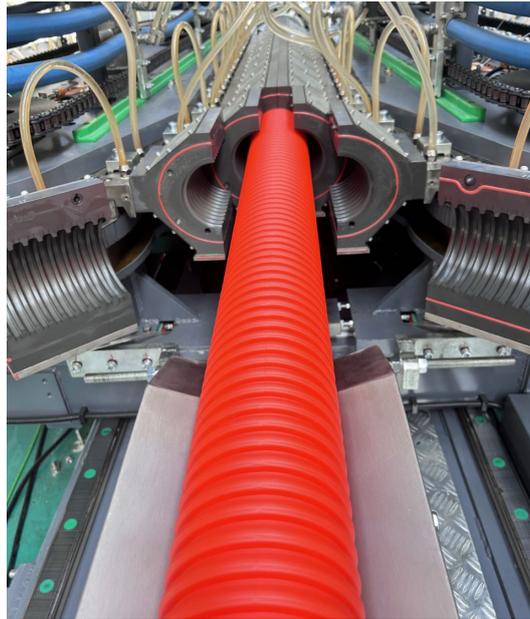
#### Applications:

- Leachate Collection.
- City Waste Dumping ground (Gas + Liquid).
- Collection of Methane Gas from landfills.
- Dispersion of Oxygen for Fast.
- Decomposing of Waste in Dumping Yards.
- River Water Infiltration Gallery.
- Sub Surface Drainage for Stadiums, Cricket Grounds, Airport Runways, Rain water harvesting systems, break testing, tracks & Railway tracks.

#### Type of Joints

- Spigot & Socket Threaded.
- Spigot & Socket Coupling.
- Butt Fusion & Electro Fusion Joint.
- Quick Connect.
- Sure-Loc+.
- Flange Joints.
- Sleeve Joints.
- Rubber Ring Joints.

# PE Corrugated Piping System for Electrical Cable Duct



PE Corrugated pipes are an ideal blend of structural strength and flexibility that serves well in buried or unburied conditions. As a conduit system PE corrugated pipes are used for the protection of insulated conductors, cables in electrical and communication system, high tension power cable installation.

PE itself is an extremely versatile piping material with many properties that makes ideal for use in underground and above ground conduit systems. The lightweight PE allows for easier and less costly transportation and installation cost. Not brittle or rigidly hard, it is not easily susceptible to cracking during pipe handling and installation activities. Once formed in to a corrugated pipes, PE pipe is resistant to abrasion, corrosion, chemical scouring and is structurally strong with the ability to support large loads. PE corrugated pipe is a flexible piping system that performs well in both high cover and low cover applications. Its unique ability to support and distribute live and dead load enables it to meet almost every installation conditions.

PE corrugated piping systems are specified and extensively used as cable ducts in Railway, BSNL and other private companies, OFC backbone routes, Public Works Departments/CPWD, State & National Highways/NHAI, Metro Traffic Signal projects, Airports etc.

## Technical specifications

### Range

- Single/Double Wall Corrugated (SWC/DWC) - OD/ID (mm)
  - 100,150,200,250,300,400,500,600.
  - Available in Light, Normal and Medium class with separate coupler.
- Double Wall Corrugated (DWC) - Nominal Internal Dia.(mm)
  - 100,150,200,250,300,400,500,600
  - Available in SN 4, 6 and 8 with integral socket.
- Standards
  - EN 13476-1, DIN 16961
- Length
  - Available in straight lengths of 6/12 meters for all sizes and in coils up to 600 mm OD in different colours.
- Applications
  - Power Cable Conduit.
  - Telecom Cable Duct.

# PE Corrugated Piping System for Sewerage



The biggest concern facing communities with a deteriorating sewage system is the cost of installation and surface disruption.

PE Corrugated pipes are an ideal blend of structural strength and flexibility that serves well in buried or unburied conditions.

PE itself is an extremely versatile piping material with many properties that makes ideal for use in underground and above ground conduit systems.

The lightweight PE allows for easier and less costly transportation and installation cost. Not brittle or rigidly hard, it is not easily susceptible to cracking during pipe handling and installation activities.

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Polyethylene Pipe promises to be a long-term and cost effective solution to this problem. It is well suited for a wide range of sewage applications in all sorts of circumstances.

Its inherent physical characteristics make it impervious to the extremely aggressive and corrosive materials associated with sewage systems.

## Technical specifications

### Range

- Single / Double Wall Corrugated (SWC/DWC) - OD/ID (mm)
  - 100,150,200,250,300,400,500,600
- Available in Light, Normal and Medium class with separate coupler.
- Double Wall Corrugated (DWC) - Nominal Internal Dia.(mm).
  - 135, 250, 300, 400, 500.
  - Available in SN 4, 6 and 8 with integral socket.
- Standards
  - EN 13476 / DIN 16961
- Length
  - Available in straight lengths of 6/12 meters for all sizes and in coils upto 160 mm OD in different colours.
- Applications
  - Sewerage System.
  - Underground Gravity Piping System.
  - Rain Water Disposal system under tracks in the Metro-Rails and high way Road Bridges.

## Test Parameters as

Property	Unit	Value
Base density of PE Granules	Kg/m <sup>3</sup>	> 930
MFR @ 190°C and 5 kg load of PE Granules	g/10 min	< 1.6
OIT of PE resin @ 200°C	Minutes	> 20
Resistance to internal Pressure for PE material in pipe form*	MPa	No failure during test period
80°C & 165 hrs Duration	for Circumferential stress	4.0
80°C & 1000 hrs Duration	selected	2.8
Resistance to heating (Oven Test) at 110°C		The pipe shall show no delamination, cracks or bubble
Wall thickness < 8mm	Minutes	30
Wall thickness > 8mm	Minutes	60
Impact Strength	TIR	< 10%
Ring Stiffness	-	> relevant SN
Ring Flexibility	-	Pass the 30% deflection position Test
Water tightness test @ 0.5 bar for 1 minute	-	No leakage
Water tightness of elastomeric ring seal joint @ 0.05 bar with joint deflection		
d < 315 mm - 2.0 deg.		No leakage
315 mm < d < 630 mm - 1.5 deg.		No leakage



Sub soil drainage systems are used to collect leachate under landfill sites as well as used to control and direct underground water transport and to encourage proper surface water percolation and control water levels in Airport Runways, Golf Courses, Athletic Fields, Hillside Development projects and in agricultural fields to improve soil condition.

Consequences of water logging, poor aeration in agricultural farms results in lesser plant growth and if such poor drainage conditions exists over years result in saline farms. A solution to this issue is Sub Surface Drainage using underground gravity network of PE Drain Well Corrugated Pipes where excess/surplus water which is present in plant root zone is drained out of farm. Pipe & fittings up to 600 mm diameter are available as per EN 13476 / DIN 16961.

## **Advantages of Sub Surface Drainage (SSD)**

- SSD removes excess/surplus water from water-logged farms.
- SSD increases crop yield substantially by reducing salts from saline land transforming in to cultivable-fertile agricultural land.
- SSD occupy no land area because it is installed underground, & does not interfere with farming operations.
- SSD is the only solution for reclamation of over irrigated agricultural farms, water logged soils, saline lands resulted because of over irrigation.

## **Technical specifications**

### **Range:**

- Single/Double Wall Corrugated (SWC/DWC) - OD/ID (mm)
  - 63/52, 75/62, 90/77, 120/106, 125/103,
  - 180/153, 200/173, 250/215
  - Available in Light, Normal and Medium class with separate coupler.
- Double Wall Corrugated (DWC) - Nominal Internal Dia.(mm)
  - 100,150,200,250,300,400,500,600.
  - Available in SN 4, 6 and 8 with integral socket.

### **Standards**

- EN 13476 / DIN 16961.

### **Length**

- Available in straight lengths of 6/12 meters for all sizes and in coils upto 160 mm OD in different colours.

### **Applications**

- Drainage & Sewerage Lines.
- Detention/ Retention Storm Water Lines.
- Building & Construction.
- Agriculture/ Subsurface Drainage.

## HDPE Microduct & Accessories for Telecommunication Application

Microduct is a pipe that bundles (micro-mini) ducts together into a bundle (Bundle). Made from high quality HDPE raw materials, it is resistant to pressure but has a pipe wall that is not too thick. In order to be able to cut the outer pipe wall (Sheath) in the process of separating Fiber Optic communication cables, the inner surface of the microduct pipe is highly slippery. Suitable for

installing Fiber Optic communication cables with air blowing (Air Blowing). Microduct pipes are suitable for installation in both large and small sizes (Trenching and Micro Trenching) and jacking (HDD).



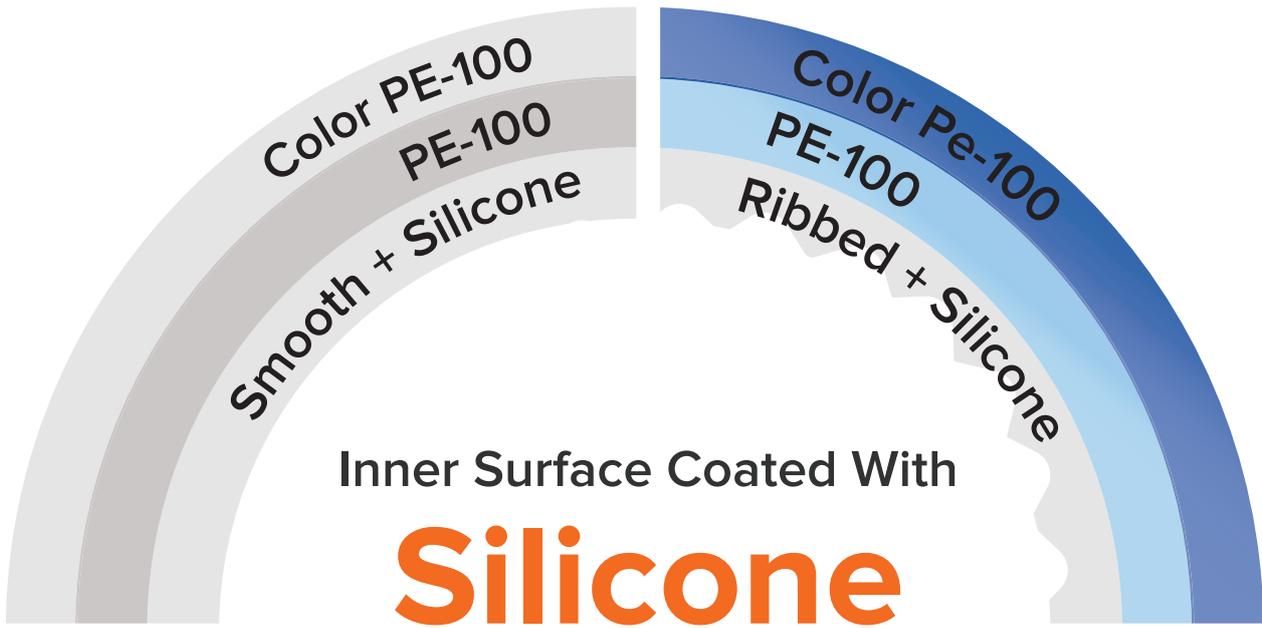
### Bundle ( Micro-Mini) Ducts

The outer sheath is rugged High Density Poly Ethylene HDPE providing excellent protection from the physical environment.

- Silicone coated ducts.
- Can bundle up to 24 pieces of pipe (Micro-Mini) Ducts in bundle.
- Available Tracer Wire, Ripcords installed.

## Optional Feature

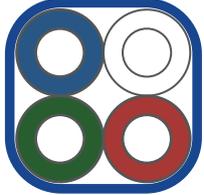
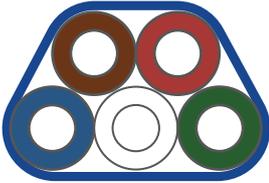
- Various configurations with different size between 5/3.5mm and 42/36 (Material : HDPE).
- Wide range of number of inner tube from 1 way to 24+1 way.
- Ribbed & Smooth Type.
- Rip cords.
- Insulated Locatable copper wire.



One way or several ways micro ducts are combined by a certain order and covered by dual PE sheathing to form tube bundle, which can allow more duct hole numbers in a limited space. Will be a hole or a number of microtubules in a certain way arranged

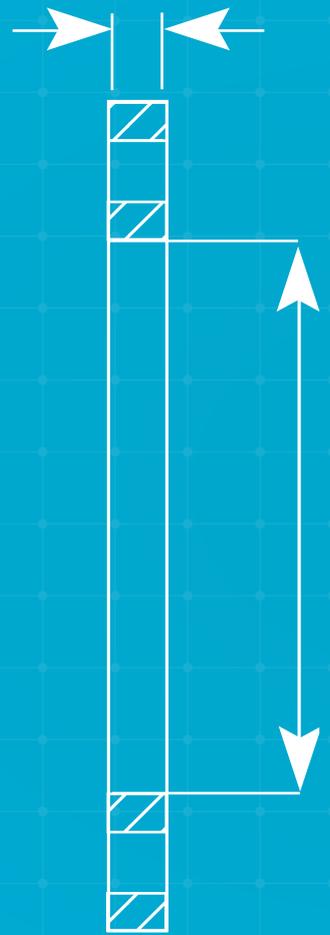
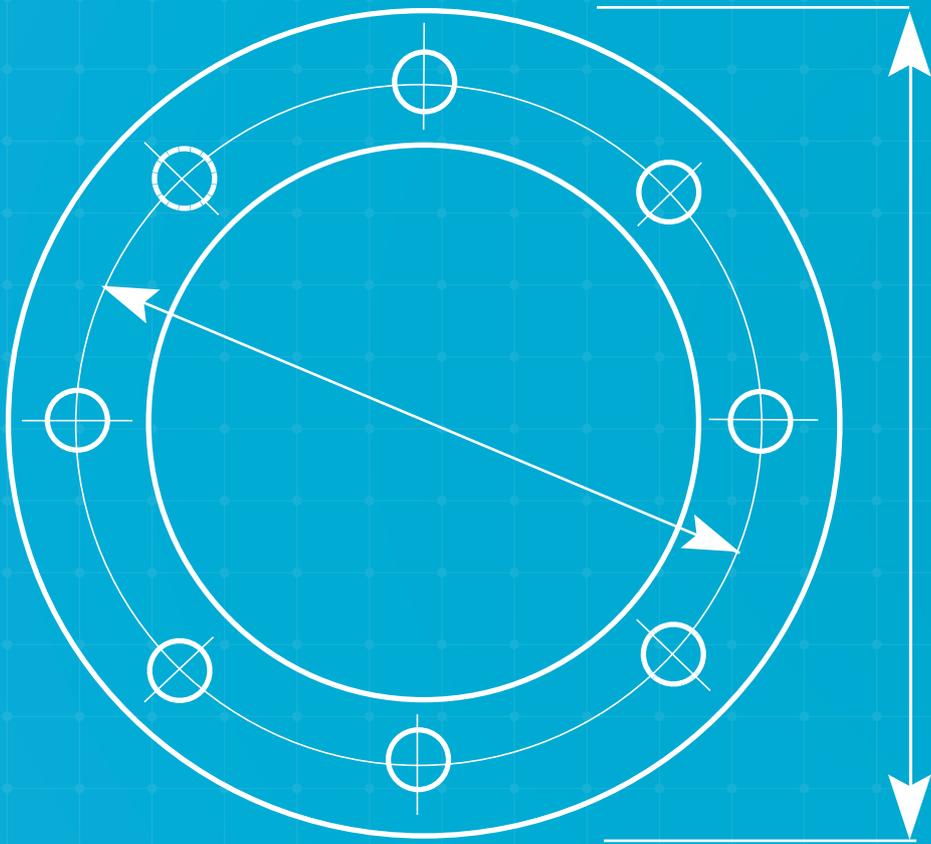
in combination, the outer layer of double-layer PE sheath, constitute a bundle, you can in a limited space to accommodate more pipe holes.

## Common Buried Bundle Configuration

			
4 Way	5 Way	4 Way Flat	7 Way
7/3.5mm	7/3.5mm	7/3.5mm	7/3.5mm
10/6mm	10/6mm	10/6mm	10/6mm
12/8mm	12/8mm	12/8mm	12/8mm
14/10mm	14/10mm	14/10mm	14/10mm
16/12mm	16/12mm		16/12mm
18/14mm			
20/16mm			20/16mm
25/20mm		14/10mm	25/20mm
28/24mm			
32/26.5mm	32/26.5mm		
42/36mm			

## Common Buried Bundle Configuration

12 Way	2 Way	24 Way
7/3.5mm	7/3.5mm	7/3.5mm
8/5mm	8/5mm	
10/6mm	10/6mm	
12/8mm	12/8mm	
	14/10mm	
	16/12mm	
	18/14mm	
	20/16mm	
	25/20mm	
	28/24mm	
	32/26.5mm	
	42/36mm	



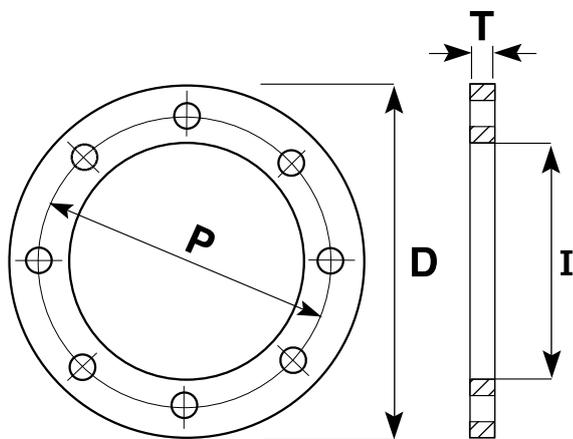


# **INDUSTRY DATA**



## PN16 BS EN 1092 FLANGE PATTERN

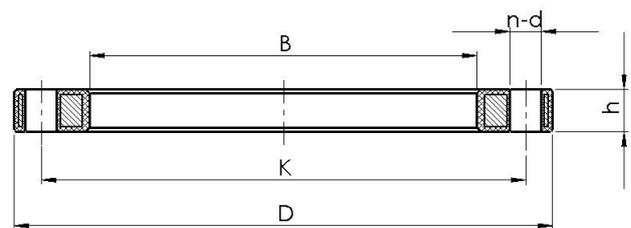
SIZE	NOMINAL	INCH	P	I	D	T	BOLT HOLES	
(MM)	FLANGE SIZE	SIZE	(MM)	(MM)	(MM)	(MM)	NO X DIA	BOLT
20	15	1/2"	65	32	95	16	4x14	M12
25	20	3/4"	75	37	105	18	4x14	M12
32	25	1"	85	44	115	18	4x14	M12
40	32	1 1/4"	100	52	140	18	4x18	M16
50	40	1 1/2"	110	62	150	18	4x18	M16
63	50	2"	125	74	165	18	4x18	M16
75	65	2 1/2"	145	87	185	18	4x18	M16
90	80	3"	160	103	200	20	8x18	M16
110	100	4"	180	125	220	20	8x18	M16
125	100	4"	180	140	220	20	8x18	M16
125	125	5"	210	140	250	22	8x18	M16
140	125	5"	210	158	250	22	8x18	M16
160	150	6"	240	175	285	22	8x22	M20
180	150	6"	240	185	285	22	8x22	M20
200	200	8"	295	230	340	24	12x22	M20
225	200	8"	295	240	340	24	12x22	M20
250	250	10"	355	290	405	26	12x26	M24
280	250	10"	355	300	405	26	12x26	M24
315	300	12"	410	345	460	28	12x26	M24
355	350	14"	470	373	520	30	16x26	M24
400	400	16"	525	425	580	32	16x30	M27
450	450	18"	585	480	640	40	20x30	M27
500	500	20"	650	533	715	44	20x33	M30
630	600	24"	770	660	840	54	20x36	M33



## Standard: ASME B16.5 Class150

### Backing Ring 150CL' With steel insert for stub end PP-Steel, Black Unite:mm

Size	dn	D	K	B	h	n	d	kg
1/2 "	20	98	60	32	14	4	16	0.32
3/4"	25	108	70	37	14	4	16	0.40
1'	32	120	79	44	14	4	16	0.50
1 1/4"	40	140	89	52	16	4	16	0.90
1 1/2"	50	150	98	63	16	4	16	0.98
2"	63	165	121	78	20	4	20	1.26
2 1/2"	75	185	140	92	20	4	20	1.62
3"	90	200	152	108	22	4	20	2.08
4"	110	230	191	128	22	8	20	2.46
(4")	125B	230	191	140	22	8	20	2.14
5"	125	260	216	140	24	8	23	3.74
(5")	140	260	216	158	24	8	23	3.22
6"	160	286	241	178	26	8	23	4.40
(6")	180	286	241	195	26	8	23	3.36
8"	200	345	298	235	28	8	23	5.65
(8")	225	345	298	240	28	8	23	5.56
10"	250	410	361	288	30	12	26	8.32
(10")	280	410	362	294	30	12	26	7.74
12"	315	485	432	345	35	12	26	14.15
14"	355	535	476	376	40	12	30	20.68
16"	400	600	540	430	40	16	30	24.70
18"	450	640	578	470	45	16	32	31.84
20"	500	700	635	533	45	20	32	32.58
22"	560	760	692	590	50	20	35	42.00
24"	630	820	749	645	50	20	35	46.32



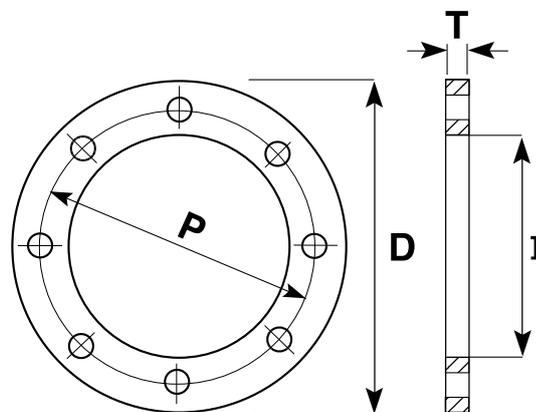
## TABLE ANSI

GALVANISED BACKING RING (5461)  
 STAINLESS BACKING RING (5462)  
 NYLON COATED BACKING RING (5464)  
 FOR EXAMPLE: A 110MM GALVANISED BACKING RING  
 WOULD HAVE A CODE 5461.0110

SIZE	NOMINAL	INCH	P	I	D	T	BOLT HOLES	
(MM)	FLANGE SIZE	SIZE	(MM)	(MM)	(MM)	(MM)	NO X DIA	BOLT
20	15	1/2"	60.5	32	90	6	4x16	1/2"
25	20	3/4"	70	37	98	6	4x16	1/2"
32	25	1"	79.5	44	108	6	4x16	1/2"
40	32	1 1/4"	89	52	117	6	4x16	1/2"
50	40	1 1/2"	98.5	62	127	8	4x16	1/2"
63	50	2"	120.5	78	152	8	4x20	5/8"
75	65	2 1/2"	139.5	92	178	8	4x20	5/8"
90	80	3"	152	108	191	10	4x20	5/8"
110	100	4"	190.5	128	229	10	8x20	5/8"
125	100	4"	190.5	140	229	10	8x20	5/8"
125	125	5"	216	140	254	13	8x23	3/4"
140	125	5"	216	158	254	13	8x23	3/4"
160	150	6"	241	178	279	13	8x23	3/4"
180	150	6"	241	195	279	13	8x23	3/4"
200	200	8"	298.5	235	343	13	8x23	3/4"
225	200	8"	298.5	240	343	13	8x23	3/4"
250	250	10"	362	290	406	13	12x26	7/8"
280	250	10"	362	300	406	16	12x26	7/8"
315	300	12"	432	345	483	16	12x26	7/8"
355	350	14"	476	376	535	19	12x29	1"
400	400	16"	540	430	600	22	16x29	1"
450	450	18"	578	480	635	22	16x32	1 1/8"
500	500	20"	635	533	700	25	20x32	1 1/8"
630	600	24"	749	660	813	29	20x35	1 1/4"

### Note

These rings are suited to PE100 Pressure.



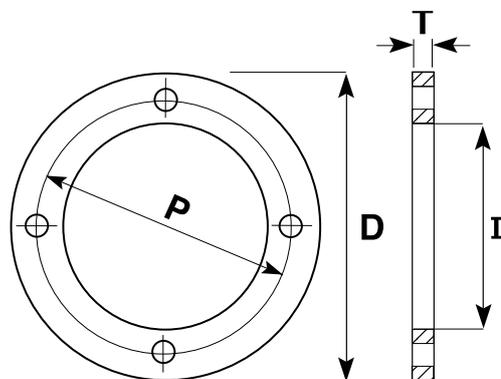
**BS EN 1092  
PN16**

PP BLACK COATED STEEL BACKING RING (5415)  
FOR EXAMPLE: A 110MM GALVANISED BACKING RING  
WOULD HAVE A CODE 5415.0110

SIZE	NOMINAL	INCH	P	I	D	T	BOLT HOLES	
(MM)	FLANGE SIZE	SIZE	(MM)	(MM)	(MM)	(MM)	NO X DIA	BOLT
20	15	1/2"	65	32	95	14	4x14	M12
25	20	3/4"	75	37	105	14	4x14	M12
32	25	1"	85	44	115	14	4x14	M12
40	32	1 1/4"	100	52	140	16	4x18	M16
50	40	1 1/2"	110	62	150	18	4x18	M16
63	50	2"	125	74	165	18	4x18	M16
75	65	2 1/2"	145	87	185	18	4x18	M16
90	80	3"	160	103	200	18	8x18	M16
110	100	4"	180	125	220	18	8x18	M16
125	100	4"	180	140	220	18	8x18	M16
125	125	5"	210	140	250	22	8x18	M16
140	125	5"	210	158	250	22	8x18	M16
160	150	6"	240	175	285	22	8x22	M20
180	150	6"	240	185	285	22	8x22	M20
200	200	8"	295	230	340	22	12x22	M20
225	200	8"	295	240	340	22	12x22	M20
250	250	10"	355	290	405	22	12x26	M24
280	250	10"	355	300	405	22	12x26	M24
315	300	12"	410	345	460	22	12x26	M24
355	350	14"	470	373	520	26	16x26	M24
400	400	16"	525	425	580	30	16x30	M27
450	450	18"	585	480	640	40	20x30	M27
500	500	20"	650	533	715	44	20x33	M30
630	600	24"	770	660	840	54	20x36	M33

**Note**

These rings are suited to PE100 Pressure.

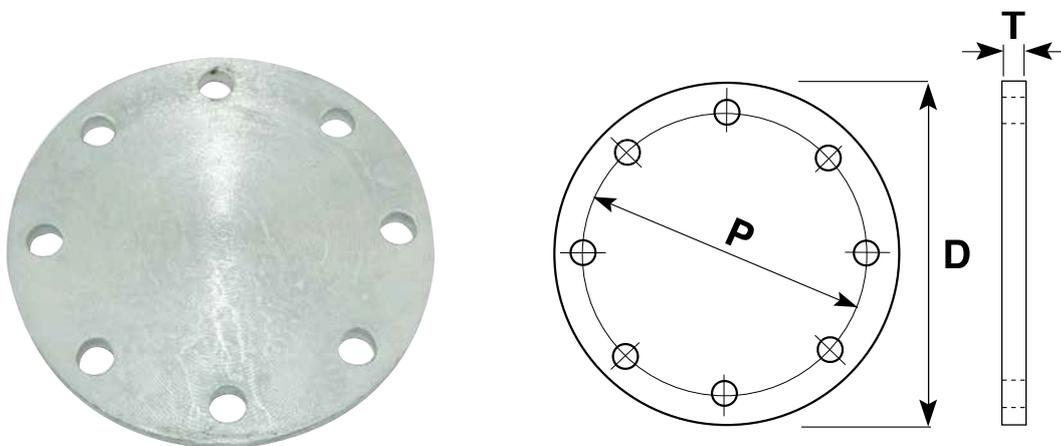


# BLIND FLANGE

SIZE (MM)	NOMINAL FLANGE SIZE	INCH SIZE
20	15	1/2"
25	20	3/4"
32	25	1"
40	32	1 1/4"
50	40	1 1/2"
63	50	2"
75	65	2 1/2"
90	80	3"
110	100	4"
125	100	4"
125	125	5"
160	150	6"
180	150	6"
200	200	8"
225	200	8"
250	250	10"
280	250	10"
315	300	12"
355	350	14"
400	400	16"
450	450	18"
500	500	20"
560	550	22"
630	600	24"
710	650	26"
800	700	28"

## Note

These rings are suited to PE100 Pressure.



# EPDM RUBBER GASKET

TABLE D • TABLE E • PN16 • ANSI 150

PIPE SIZE (MM)	INCH SIZE	TABLE D PCD	TABLE E PCD	PN16 PCD	ANSI 150 PCD
20	1/2"	67	67	65	60.5
25	3/4"	73	73	75	70
32	1"	83	83	85	79.5
40	1 1/4"	87	87	100	89
50	1 1/2"	98	98	110	98.5
63	2"	114	114	125	120.5
75	2 1/2"	127	127	145	139.5
90	3"	146	146	160	152
110	4"	178	178	180	190.5
125	4"	178	178	180	-
125	5"	210	210	210	216
140	5"	210	210	210	216
160	6"	235	235	240	241
180	6"	235	235	240	241
200	8"	292	292	295	298.5
225	8"	292	292	295	298.5
250	10"	356	356	355	362
280	10"	356	356	355	362
315	12"	406	406	410	432
355	14"	470	470	470	476
400	16"	521	521	525	540
450	18"	584	584	585	578
500	20"	641	641	650	635
560	22"	699	699	-	692
630	24"	756	756	770	749
710	26"	845	845	-	-
800	28"	984	984	-	-

## Note

These gaskets are suited to PE100 Pressure.



# GASKET 1.5MM FIBRE RING TYPE

## FOR POTABLE WATER, GAS & CHEMICALS DESCRIPTION

It is a good quality compressed sheet material based on a blend of aramid and inorganic fibres with a nitrile rubber binder system.

### SERVICE

It is a general purpose material suitable for use in wide range of applications, including hot and cold water, steam, oils, fuels, gases and a wide range of general chemicals.

### APPROVALS/ COMPLIANCE

DIN-DVGW (Gas Industry) 93.01-e-845.

WRAS Potable Water: Registration No.0008505.

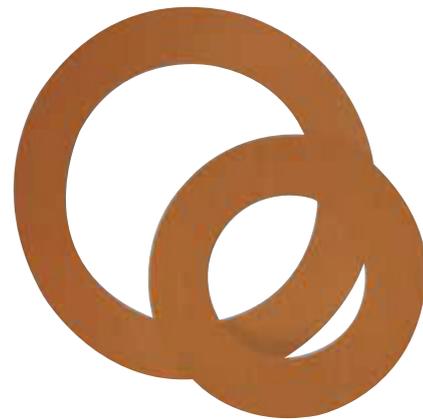
Complies with BS Specification 7531 Grade

### PRESSURE/TEMPERATURE LIMITS GRAPH

1. Suitable subject to chemical compatibility.
2. Suitable in some cases but check your application requirement with us.
3. Contact the Technical Team for applications with higher temperatures and pressures. Applicable to 1.5mm and below.

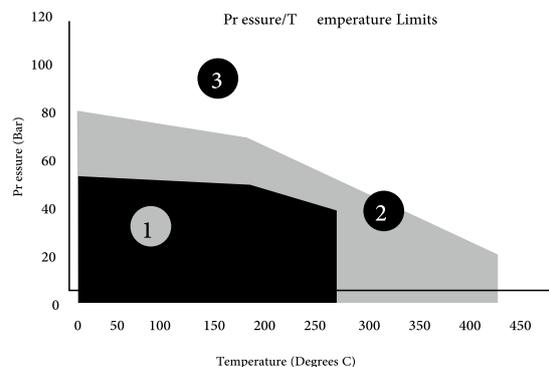
The operating temperature of non-asbestos sheet material is related to the thickness of materials selected. Thinner materials give better temperature and pressure properties.

TYPICAL PHYSICAL PROPERTIES		
THICKNESS		1.5MM
DENSITY		2.0G/CC
TENSILE STRENGTH	ASTM F152	12MPA
COMPRESSION	ASTM F36	9%
RECOVERY	ASTM F36	50%MIN
RESIDUAL STRESS	BS7531 (3000C)	23MPA
	DIN 52913	29MPA
GAS LEAKAGE	BS 7531 <1.0CC/MIN	
ASTM OIL 1	THICKNESS INCREASE	2.00%
IRM 903 OIL	THICKNESS INCREASE	5.00%
ASTM FUEL B	THICKNESS INCREASE	4.00%



### Note

- These gaskets have inside diameter to suit SDR17.
- Other gasket sizes and materials are available on request.

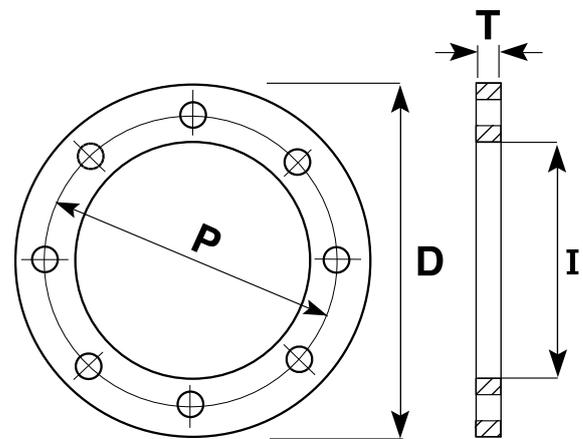


### Note

These rings are suited to the Stream PE100 Pressure.

## TABLE ANSI FLANGE PATTERN

SIZE	NOMINAL	INCH	P	I	D	T	BOLT HOLES	
(MM)	FLANGE SIZE	SIZE	(MM)	(MM)	(MM)	(MM)	NO X DIA	BOLT
20	15	1/2"	60.5	32	90	6	4x16	1/2"
25	20	3/4"	70	37	98	6	4x16	1/2"
32	25	1"	79.5	44	108	6	4x16	1/2"
40	32	1 1/4"	89	52	117	6	4x16	1/2"
50	40	1 1/2"	98.5	62	127	8	4x16	1/2"
63	50	2"	120.5	78	152	8	4x20	5/8"
75	65	2 1/2"	139.5	92	178	8	4x20	5/8"
90	80	3"	152	108	191	10	4x20	5/8"
110	100	4"	190.5	128	229	10	8x20	5/8"
125	100	4"	190.5	140	229	10	8x20	5/8"
125	125	5"	216	140	254	13	8x23	3/4"
140	125	5"	216	158	254	13	8x23	3/4"
160	150	6"	241	178	279	13	8x23	3/4"
180	150	6"	241	195	279	13	8x23	3/4"
200	200	8"	298.5	235	343	13	8x23	3/4"
225	200	8"	298.5	240	343	13	8x23	3/4"
250	250	10"	362	290	406	13	12x26	7/8"
280	250	10"	362	300	406	16	12x26	7/8"
315	300	12"	432	345	483	16	12x26	7/8"
355	350	14"	476	376	535	19	12x29	1"
400	400	16"	540	430	600	22	16x29	1"
450	450	18"	578	480	635	22	16x32	1 1/8"
500	500	20"	635	533	700	25	20x32	1 1/8"
630	600	24"	749	660	813	29	20x35	1 1/4"





## **HDPE electrofusion Fittings Specs**

الاتحاد لصناعة الأنابيب  
UNION PIPES

# LARGE DIAMETER ELECTROFUSION ELBOWS AND EQUAL TEES

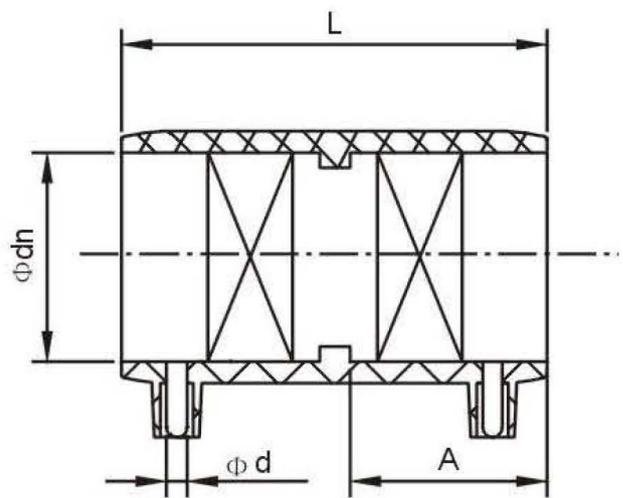
FOR GAS AND WATER



# Electrofusion Fitting Series

## Electrofusion Coupler

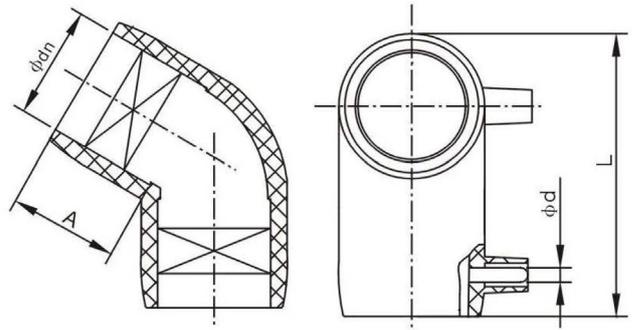
Specifications $\Phi$ dn	L	A	$\Phi$ d
20	85	40	4.7
25	90	43	4.7
32	90	44	4.7
40	95	45	4.7
50	105	50	4.7
63	110	50	4.7
75	135	65	4.7
90	130	63	4.7
110	150	70	4.7
125	165	80	4.7
140	170	80	4.7
160	180	85	4.7
180	208	100	4.7
200	208	100	4.7
225	220	105	4.7
250	215	105	4.7
315	225	110	4.7
355	265	130	4.7
400	310	150	4.7
500	370	180	4.7
560	380	185	4.7
630	420	205	4.7



# Electrofusion Fitting Series

## Electrofusion Elbow 45°

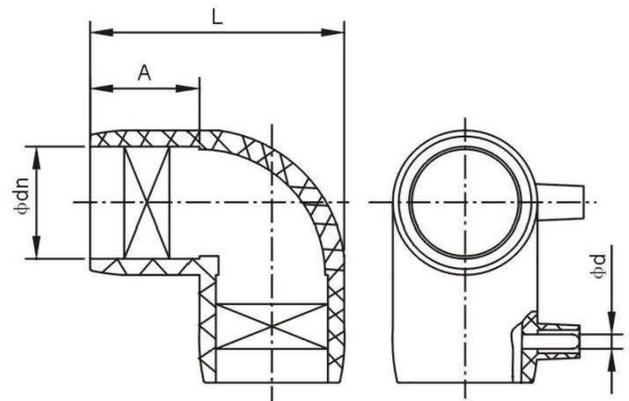
Specifications $\Phi dn$	L	A	$\Phi d$
50X45°	130	50	4.7
63X45°	180	63	4.7
90X45°	230	83	4.7
110X45°	270	85	4.7
160X45°	280	85	4.7
200x45°	330	100	4.7
250X45°	420	115	4.7
315X45°	470	125	4.7
315X45°	580	140	4.7



# Electrofusion Fitting Series

## Electrofusion Elbow 90°

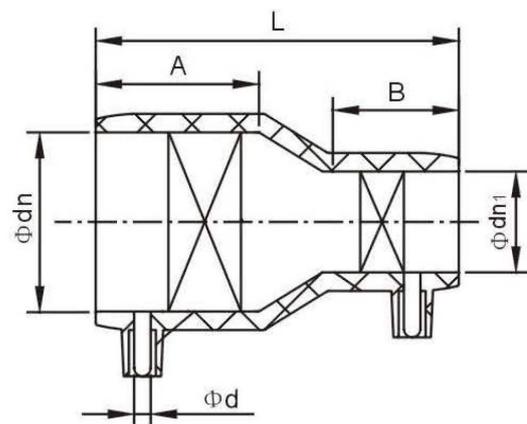
Specifications $\Phi dn \times 90^\circ$	L	A	$\Phi d$
25 X 90°	85	42	4.7
32 X 90°	94	45	4.7
40 X 90°	95	50	4.7
50 X 90°	110	50	4.7
63 X 90°	130	55	4.7
75 X 90°	155	60	4.7
90 X 90°	170	65	4.7
110 X 90°	195	70	4.7
125 X 90°	225	80	4.7
160 X 90°	265	80	4.7
180 X 90°	295	85	4.7
200 X 90°	330	102	4.7
250 X 90°	395	113	4.7
315 X 90°	482	127	4.7
400 X 90°	590	140	4.7



# Electrofusion Fitting Series

## Electrofusion Reducer

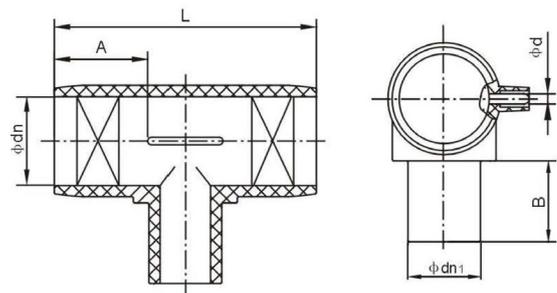
Specifications $\Phi dn \times \Phi dn1$	L	A	B	$\Phi d$
25 X 20	94	42	35	4.7
32 X 20	94	42	40	4.7
32 X 25	94	42	40	4.7
40 X 25	100	50	40	4.7
40 X 32	100	50	40	4.7
50 X 25	110	55	40	4.7
50 X 32	110	55	40	4.7
50 X 40	110	50	50	4.7
63 X 25	115	60	40	4.7
63 X 32	120	60	40	4.7
63 X 40	120	55	40	4.7
63 X 50	120	55	50	4.7
75 X 50	120	65	50	4.7
75 X 63	130	65	50	4.7
90 X 50	140	65	55	4.7
90 X 63	140	65	55	4.7
90 X 75	145	65	60	4.7
110 X 63	160	75	55	4.7
110 X 75	155	75	60	4.7
110 X 90	155	75	65	4.7
125 X 63	160	80	60	4.7
125 X 90	160	80	70	4.7
125 X 110	165	85	69	4.7
160 X 90	195	94	74	4.7
160 X 110	195	95	75	4.7
160 X 125	195	95	75	4.7
200 X 110	210	95	80	4.7
200 X 160	210	95	85	4.7
250 X 110	230	100	80	4.7
250 X 160	230	110	90	4.7
250 X 200	230	110	100	4.7
315 X 200	240	100	100	4.7
315 X 250	240	100	100	4.7
400 X 250	260	110	105	4.7
400 X 315	260	110	105	4.7



# Electrofusion Fitting Series

## Electrofusion Reducer Tee

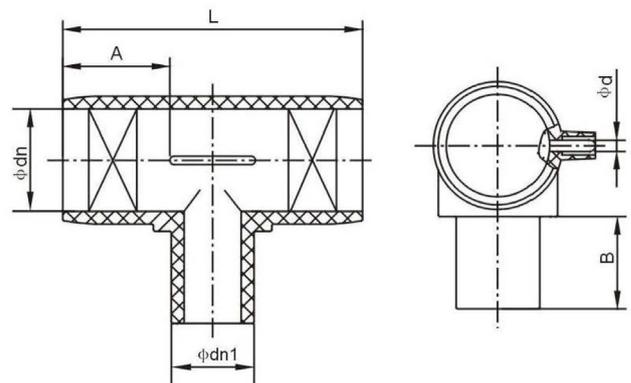
Specifications $\Phi dn \times \Phi dn1 \times \Phi dn$	L	A	B	$\Phi d$
25 X 20 X 25	105	45	50	4.7
32 X 20 X 32	120	45	50	4.7
32 X 25 X 32	120	45	55	4.7
40 X 25 X 40	125	45	55	4.7
40 X 32 X 40	125	45	55	4.7
50 X 25 X 50	145	50	50	4.7
50 X 32 X 50	145	50	50	4.7
50 X 40 X 50	145	50	50	4.7
63 X 25 X 63	130	50	50	4.7
63 X 32 X 63	135	50	50	4.7
63 X 40 X 63	140	50	50	4.7
63 X 50 X 63	160	55	55	4.7
75 X 32 X 75	195	70	70	4.7
75 X 40 X 75	195	70	70	4.7
75 X 50 X 75	195	70	70	4.7
75 X 63 X 75	195	70	70	4.7
90 X 32 X 90	210	70	70	4.7
90 X 40 X 90	210	70	70	4.7
90 X 50 X 90	210	70	70	4.7
90 X 63 X 90	210	70	70	4.7
90 X 75 X 90	210	70	70	4.7
110 X 32 X 110	240	75	75	4.7
110 X 40 X 110	240	75	75	4.7
110 X 50 X 110	240	75	75	4.7
110 X 63 X 110	240	75	80	4.7
110 X 75 X 110	240	75	80	4.7
110 X 90 X 110	240	75	80	4.7
125 X 90 X 125	255	80	85	4.7
125 X 110 X 125	255	80	85	4.7
160 X 63 X 160	305	90	90	4.7
160 X 75 X 160	305	90	90	4.7
160 X 90 X 160	305	90	90	4.7
160 X 110 X 160	305	90	90	4.7
160 X 125 X 160	305	90	80	4.7
200 X 90 X 200	360	98	75	4.7
200 X 110 X 200	360	98	75	4.7
200 X 160 X 200	360	98	90	4.7
250 X 110 X 250	405	98	95	4.7
250 X 160 X 250	405	98	110	4.7
250 X 200 X 250	405	98	110	4.7
315 X 110 X 315	520	125	100	4.7
315 X 160 X 315	520	125	100	4.7
315 X 200 X 315	520	125	100	4.7
315 X 250 X 315	520	125	120	4.7
400 X 110 X 400	600	125	115	4.7
400 X 160 X 400	600	125	115	4.7
400 X 200 X 400	600	125	115	4.7
400 X 250 X 400	600	125	115	4.7
400 X 315 X 400	600	125	115	4.7



# Electrofusion Fitting Series

## Electrofusion Tee

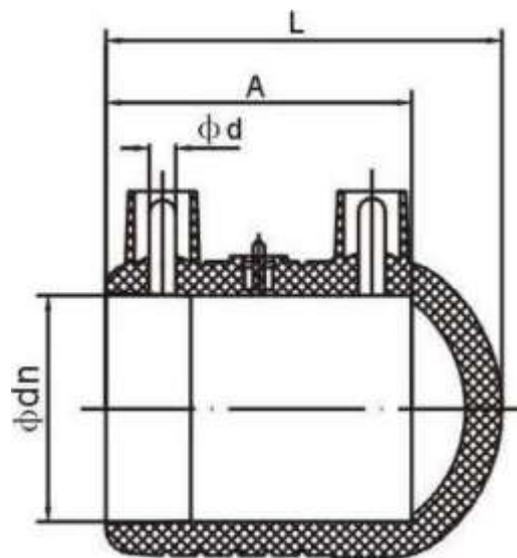
Specifications $\Phi dn \times \Phi dn1 \times \Phi dn$	L	A	B	$\Phi d$
20X20X20	100	40	40	4.7
25X25X25	105	45	50	4.7
32X32X32	120	45	55	4.7
40X40X40	125	45	60	4.7
50X50X50	145	55	60	4.7
63X63X63	165	55	60	4.7
75X75X75	195	68	70	4.7
90X90X90	210	68	75	4.7
110X110X110	240	75	79	4.7
125X125X125	255	80	85	4.7
160X160X160	310	90	95	4.7
180X180X180	340	98	100	4.7
200X200X200	360	98	105	4.7
250X250X250	405	98	115	4.7
315X315X315	520	125	115	4.7
400X400X400	600	125	115	4.7



# Electrofusion Fitting Series

## Electrofusion End Cap

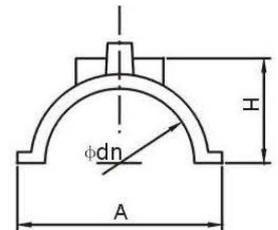
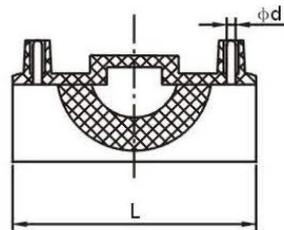
Specifications $\Phi dn \times 90^\circ$	L	A	$\Phi d$
32	60	45	4.7
40	70	55	4.7
50	70	55	4.7
63	80	55	4.7
90	95	55	4.7
110	105	70	4.7
160	135	96	4.7
200	155	104	4.7
250	165	123	4.7
315	190	152	4.7
400	205	160	4.7



# Electrofusion Fitting Series

## Electrofusion Repair Saddle

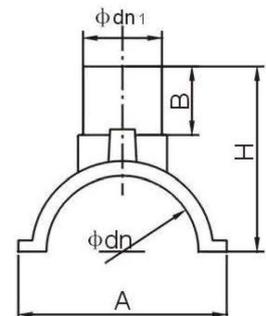
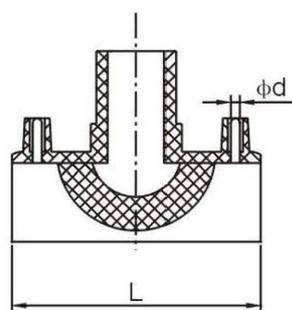
Specifications $\Phi dn$	L	A	H	$\Phi d$
90	145	154	68	4.7
110	145	160	60	4.7
160	190	230	78	4.7
200	190	235	90	4.7
250	190	300	65	4.7
315	190	300	75	4.7



# Electrofusion Fitting Series

## Electrofusion Branch Saddle

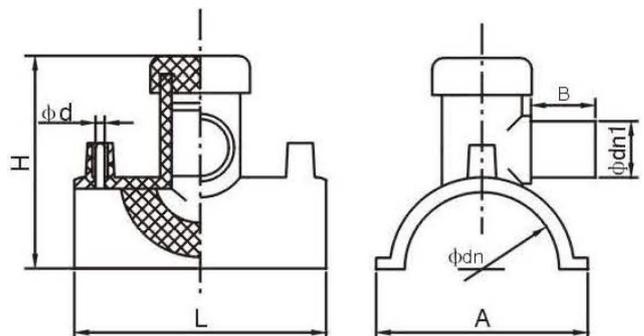
Specifications $\Phi dn \times \Phi dn1$	L	A	B	H	$\Phi d$
63X32	145	155	80	145	4.7
90X63	145	155	80	145	4.7
110X32	145	160	80	145	4.7
110X63	145	160	80	145	4.7
160X63	190	230	100	185	4.7
160X90	190	230	100	185	4.7
200X63	190	235	110	185	4.7
200X90	190	235	115	195	4.7
250X63	190	300	115	195	4.7
250X90	190	300	115	195	4.7
315X63	190	300	115	195	4.7
315X90	190	300	120	200	4.7



# Electrofusion Fitting Series

## Electrofusion Tapping Saddle

Specifications $\Phi dn \times \Phi dn1$	L	A	B	H	$\Phi d$
63X25	110	104	50	129	4.7
63X32	110	104	50	129	4.7
90X25	140	130	75	185	4.7
90X50	140	130	75	185	4.7
90X63	140	130	75	185	4.7
110X20	130	155	55	145	4.7
110X25	130	155	55	145	4.7
110X32	130	155	55	145	4.7
110X50	145	160	75	175	4.7
110X63	145	160	75	175	4.7
160X63	190	240	85	225	4.7
160X90	190	240	160	225	4.7
200X63	190	255	85	215	4.7
200X90	190	255	160	215	4.7
250X63	190	265	85	215	4.7
250X90	190	265	160	215	4.7
315X63	190	310	85	240	4.7
315X90	190	310	160	240	4.7





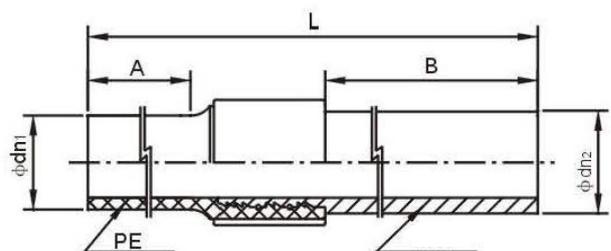
## **PE/Steel Transition Fitting Series**

الإتحاد لصناعة الأنابيب  
UNION PIPES

# PE/Steel Transition Fitting Series

## PE/Steel Transition Pipe

Specifications		PE $\Phi$ dn1	$\Phi$ dn2	L	A	B
25X 3/4"	25	25	27	395	95	225
32X 3/4"	32	32	27	405	105	225
32X 1"	32	32	34	405	105	225
40X 1"	40	40	34	405	110	225
40X 1 1/4"	40	40	42	405	115	225
50X 1 1/2"	50	50	48	410	115	225
63X 1 1/2"	63	63	48	410	155	225
63X 2"	63	63	57	410	115	225
63X 2"	63	63	60	410	115	225
75X 2 1/2"	75	75	76	550	100	355
90X 2 1/2"	90	90	76	535	100	355
90X 3"	90	90	89	540	95	355
110X 3"	110	110	89	550	125	355
110X 4"	110	110	108	550	105	355
160X 6"	160	160	159	575	160	325
200	200	200	203	600	165	345
200	200	200	219	600	150	345
250	250	250	245	650	180	360
250	250	250	273	680	200	370
315	315	315	299	680	205	370
315	315	315	325	680	245	425



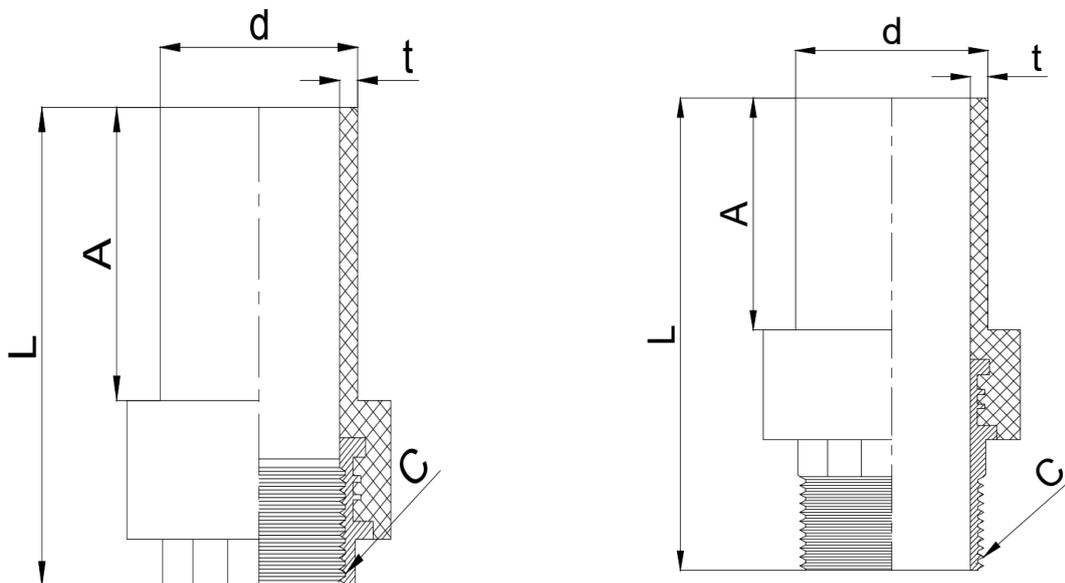
## Transition Adapter

### PE Brass Metal Transition Adapter (Male Threaded):-

Size (mm)	Pressure (Bar)	L (mm)	A (mm)
20	16	81	41
25	16	82	42
32	16	93	44
40	16	107	49
50	16	122	60
63	16	140	70
75	16	155	80
90	16	165	83

### PE Brass Metal Transition Adapter (Female Threaded):-

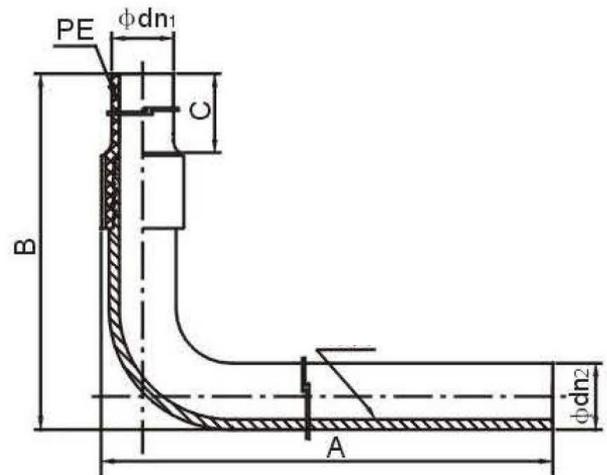
Size (mm)	Pressure (Bar)	L (mm)	A (mm)
20	16	73	41
25	16	73	42
32	16	79	44
40	16	89	49
50	16	103	60
63	16	116	70
75	16	122	75
90	16	142	80



# PE/Steel Transition Fitting Series

## PE/Steel Transition Pipe Elbow

Specifications		PE $\Phi$ dn1	$\Phi$ dn2	A	B	C
25X3/4"	25	25	27	740	410	80
32X1"	32	32	34	740	410	80
40X1"	40	40	34	740	410	80
40X 1 1/4"	40	40	42	740	410	80
50X 1 1/2"	50	50	48	740	410	80
63X 1 1/2"	63	63	48	740	410	80
63X2"	63	63	57	740	410	80
63X2"	63	63	60	740	410	80



# PE/Steel Transition Fitting Series

## PE/Steel Transition Threaded

Specifications	
25X3/4"	25
32X3/4"	32
32X1"	32
40X1"	40
40X1 1/4"	40
50X1 1/2"	50
63X1 1/2"	63
40X2"	63



# PUDDLE FLANGES

## PE100 · SDR11 - SDR26

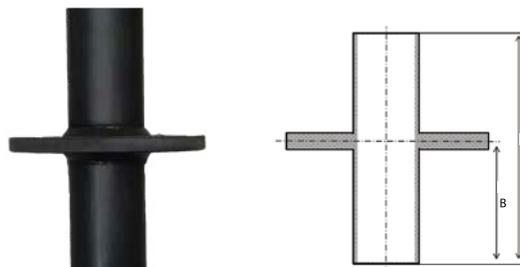
PIPE SIZE	STANDARD LENGTH 500MM*		
	SDR11	SDR17	SDR26
110	SDR11	SDR17	SDR26
125	SDR11	SDR17	SDR26
140	SDR11	SDR17	SDR26
160	SDR11	SDR17	SDR26
180	SDR11	SDR17	SDR26
200	SDR11	SDR17	SDR26
225	SDR11	SDR17	SDR26
250	SDR11	SDR17	SDR26

PIPE SIZE	STANDARD LENGTH 600MM*		
	SDR11	SDR17	SDR26
280	SDR11	SDR17	SDR26
315	SDR11	SDR17	SDR26
355	SDR11	SDR17	SDR26
400	SDR11	SDR17	SDR26
450	SDR11	SDR17	SDR26
500	SDR11	SDR17	SDR26
560	SDR11	SDR17	SDR26
630	SDR11	SDR17	SDR26

PIPE SIZE	STANDARD LENGTH 800MM*		
	SDR11	SDR17	SDR26
710	SDR11	SDR17	SDR26
800	SDR11	SDR17	SDR26
900	SDR11	SDR17	SDR26
1000	SDR11	SDR17	SDR26

### Note

More sizes and puddle flange configurations available  
- contact us for more information.





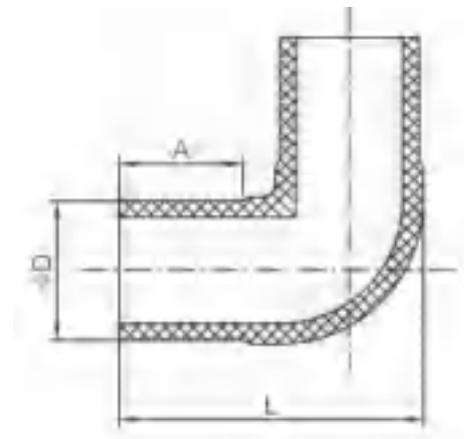
## **HDPE Butt Fusion Fittings Specs**

الاتحاد لصناعة الأنابيب  
UNION PIPES

# PE BUTT FUSION FITTINGS

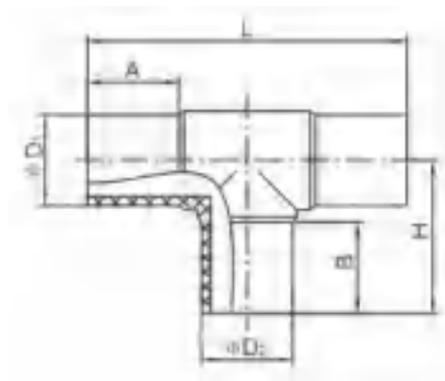
## Elbow 90°

Specifications ΦD×90°	L mm	A mm
50×90°	120	66
63×90°	133	63
75×90°	165	70
90×90°	182	79
110×90°	214	82
125×90°	242	87
140×90°	244	88
160×90°	260	85
180×90°	297	97
200×90°	308	97
225×90°	367	115
250×90°	362	100
280×90°	433	130
315×90°	460	125
355×90°	540	150
400×90°	600	180
450×90°	655	160
500×90°	704	160
500×90°	784	160
630×90°	860	170
710×90°	900	170
800×90°	990	170



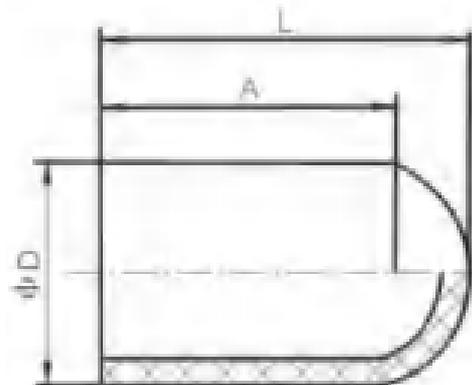
## Equal Tee

Specifications $\Phi D1 \times \Phi D2 \times D1$	L mm	A mm	B mm	H mm
50×50×50	170	55	55	82
63×63×63	200	63	63	104
75×75×75	230	70	70	114
90×90×90	260	79	79	133
110×110×110	290	82	82	145
125×125×125	315	87	87	160
140×140×140	345	92	92	170
160×160×160	325	75	75	170
180×180×180	420	105	105	225
200×200×200	377	75	84	200
225×225×225	484	120	120	230
250×250×250	517	120	120	265
280×280×280	590	140	140	300
315×315×315	615	130	125	310
355×355×355	630	120	120	350
400×400×400	670	120	120	360
450×450×450	805	150	175	430
500×500×500	855	150	180	485
560×560×560	910	145	180	525
630×630×630	990	145	180	530
710×710×710	1140	150	190	565
800×800×800	1260	150	190	610



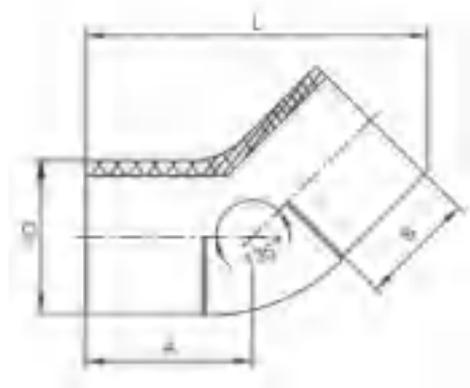
# End Cap

Specifications ΦD	L mm	A mm
20	45	41
25	46	41
32	51	45
40	87	67
50	90	66
63	85	74
75	84	70
90	92	79
110	97	82
125	106	87
140	135	105
160	119	98
180	145	110
200	147	112
225	155	118
250	170	130
280	166	140
315	190	150
355	215	155
400	220	160
500	240	190
630	240	190
710	150	120
800	150	120
900	150	120
1000	150	120
1200	190	150



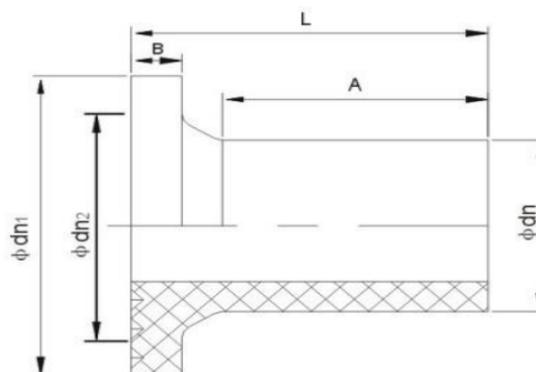
# Elbow 45°

Specifications ΦD×45°	L mm	A mm	B mm
50×45°	155	60	70
63×45°	160	63	79
75×45°	180	70	89
90×45°	228	79	114
110×45°	246	82	118
125×45°	248	87	115
160×45°	310	98	138
180×45°	340	100	159
200×45°	355	112	167
225×45°	398	120	173
250×45°	420	129	192
280×45°	465	140	215
315×45°	490	150	220
355×45°	530	145	240
400×45°	610	160	272
450×45°	660	170	285
500×45°	735	170	315
560×45°	760	170	325
630×45°	820	170	330
710×45°	830	170	350
800×45°	900	170	350



# Reducer

Specifications $\Phi dn1 \times \Phi dn2$	L mm	A mm	B mm
63×25	139	63	55
63×32	147	63	55
63×40	141	63	55
63×50	150	63	55
75×32	149	70	55
75×40	150	76	55
75×50	143	70	55
75×63	150	70	63
90×32	163	79	55
90×40	162	79	55
90×50	161	79	55
90×63	168	79	63
90×75	169	79	70
110×40	169	82	55
110×50	166	82	55
110×63	173	82	63
110×75	181	82	70
110×90	177	82	79
125×63	189	87	63
125×75	195	105	75
125×90	183	87	79
125×110	185	87	82
140×90	224	92	79
140×110	220	92	82
160×32	202	98	70
160×63	195	98	63
160×75	204	98	70
160×90	212	98	79
160×110	211	98	82
160×125	216	98	87
180×90	231	110	79
180×110	219	110	82
180×125	233	105	87
180×160	229	105	87
200×63	210	112	63
200×90	220	108	79
200×110	228	112	82
200×125	220	112	90
200×160	226	112	85
200×180	245	112	105

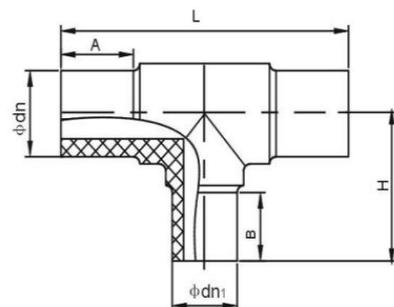


## Reducer

Specifications Ødn1×Ødn2	L mm	A mm	B mm
225×90	226	105	79
225×110	245	105	82
225×160	249	105	90
225×180	249	105	90
225×200	246	105	90
250×90	224	117	79
250×110	221	108	82
250×125	234	109	87
250×160	244	110	98
250×180	237	110	105
250×200	250	110	103
250×225	231	105	90
280×160	257	107	85
280×225	247	110	85
280×250	247	110	90
315×90	240	115	79
315×110	241	115	82
315×160	254	115	98
315×180	253	115	100
315×200	253	115	92
315×225	245	115	90
315×250	246	115	90
355×200	270	100	100
355×250	270	100	100
355×280	260	100	100
355×315	240	100	100
400×200	260	100	100
400×250	250	100	100
400×315	250	100	100
400×355	250	100	100
450×200	260	100	100
450×250	260	100	100
450×315	250	100	100
450×355	250	100	100
450×400	240	100	100
500×400	250	100	100
500×450	250	100	100
560×500	260	100	100
630×500	260	100	100
710×630	250	100	100
800×710	260	110	100

# Reducing Tee

Specifications $\Phi dn \times \Phi dn_1 \times dn$	L mm	A mm	B mm	H mm
50×32×50	165	55	55	81
50×40×50	165	55	55	81
63×25×63	168	63	45	85
63×32×63	172	63	45	87
63×40×63	180	63	50	93
63×50×63	190	63	55	96
75×32×75	180	70	39	90
75×40×75	205	70	45	93
75×50×75	205	70	55	100
75×63×75	225	70	63	107
90×32×90	215	79	45	105
90×40×90	220	79	50	108
90×50×90	230	79	55	110
90×63×90	245	79	63	118
90×75×90	252	79	70	126
110×32×110	220	82	50	115
110×40×110	230	82	50	119
110×50×110	238	82	55	123
110×63×110	250	82	63	118
110×75×110	264	82	70	137
110×90×110	275	82	79	135
125×63×125	320	87	63	143
125×75×125	314	87	70	152
125×90×125	309	87	79	151
125×110×125	318	87	82	160
140×110×140	315	92	82	164
140×125×140	330	92	87	167
160×50×160	270	96	70	161
160×63×160	275	98	63	153
160×75×160	287	98	70	167
160×90×160	300	98	79	175
160×110×160	325	98	82	175
160×125×160	335	98	87	181
160×140×160	345	98	92	186
180×90×180	338	105	79	181
180×110×180	355	105	82	187
180×125×180	365	105	87	91

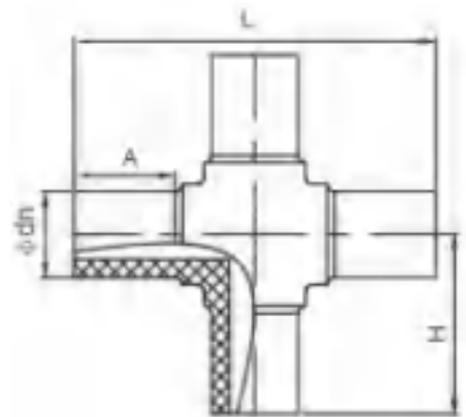


## Reducing Tee

Specifications Φdn×Φdn1×dn	L mm	A mm	B mm	H mm
200×63×200	305	112	63	176
200×75×200	310	112	70	183
200×90×200	330	112	73	191
200×110×200	355	112	82	196
200×125×200	370	112	87	201
200×160×200	420	112	98	207
225×90×225	345	120	79	207
225×110×225	365	120	82	212
225×160×225	417	120	98	212
225×180×225	433	95	86	209
250×90×250	395	129	79	218
250×110×250	395	129	82	216
250×125×250	410	129	87	221
250×160×250	398	95	81	218
250×180×250	460	129	105	245
250×200×250	379	75	112	254
280×90×280	410	140	79	235
280×110×280	430	140	82	238
280×160×280	480	140	98	254
280×200×280	520	140	112	268
280×225×280	545	140	122	278
280×250×280	570	140	129	285
315×90×315	420	150	79	255
315×110×315	442	150	82	225
315×160×315	450	130	77	247
315×180×315	503	150	105	291
315×200×315	455	110	95	285
315×225×315	550	150	120	292
315×250×315	460	80	80	248
315×280×315	582	140	110	320
355×250×355	620	170	120	290
355×315×355	620	120	120	290
400×200×400	670	130	150	380
400×250×400	670	130	150	380
400×315×400	670	160	150	380
400×355×400	670	145	150	380
450×315×450	805	195	150	405
450×400×450	805	170	170	410
500×125×500	860	190	90	370
500×160×500	860	190	98	378
500×250×500	860	190	115	400
500×315×500	860	190	150	425
500×400×500	860	190	170	430
560×160×560	910	235	98	455
560×250×560	910	205	129	465
560×355×500	910	235	135	465
560×400×560	910	235	165	500
630×400×630	995	255	165	530
630×500×630	990	210	180	510

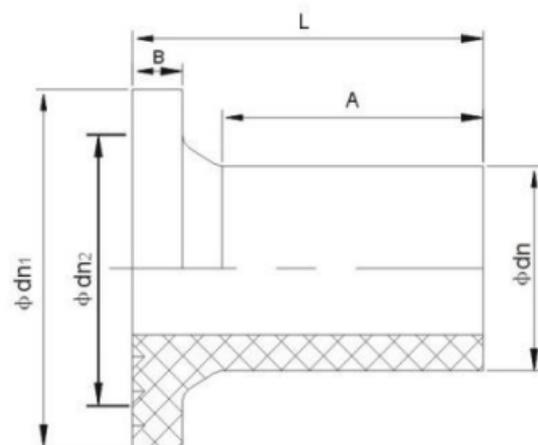
# Cross

Specifications Ødn	L mm	A mm	H mm
63	230	63	115
90	265	79	132
110	290	82	143
125	295	85	148
160	405	106	215
200	420	98	210
250	500	110	250
315	615	130	307
355	654	132	327
400	685	140	315
450	740	140	365
500	810	150	400
560	875	150	430
630	960	160	475
710	1140	210	565
800	1280	235	635



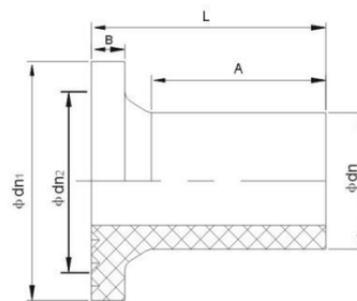
## Flange Adaptor (Stub End)

Specifications Φdn	Φdn1	L mm	A mm	B mm
20	44	83	62	7
25	44	83	61	8
32	67	83	62	10
40	77	78	61	12
50	87	88	71	12
63	101	88	70	12
75	121	94	75	13
90	137	98	76	18
110	158	106	81	18
125	158	130	103	21
140	187	128	99	22
160	212	135	104	26
180	212	137	101	29
200	268	154	113	34
225	267	144	108	29
250	320	156	120	29
280	323	168	128	35
315	370	173	133	33
355	432	173	132	33
400	482	182	132	32
450	525	185	129	47
500	580	211	144	47
560	685	180	125	47
630A	685	205	145	50
630B	720	205	145	50
710	800	185	110	56
800	905	185	110	56
900	1005	185	110	56
1000	1100	185	110	56
1200	1330	335	215	70



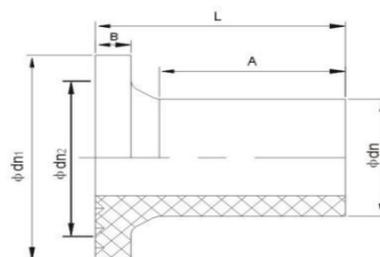
## Flange Adaptor (Short neck)

Specifications $\Phi$ dn	$\Phi$ dn1 mm	L mm	A mm	B mm
63	102	50	20	13
75	122	58	14	14
90	138	80	35	17
110	158	80	35	18
125	158	80	35	25
140	188	85	30	22
160	212	80	26	26
180	212	80	30	30
200	268	100	30	32
225	268	100	40	30
250	320	100	28	32
280	320	100	35	32
315	370	100	40	35



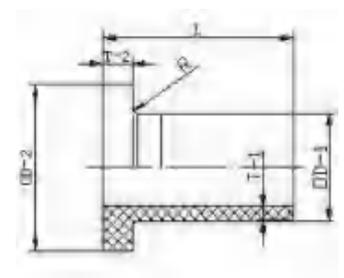
## Flange Adaptor (Long neck)

Specifications $\Phi$ dn	$\Phi$ dn1 mm	L mm	A mm	B mm
63	102	115	82	13
75	122	115	79	16
90	138	135	88	17
110	158	135	82	18
125	158	175	133	21
140	188	175	125	22
160	212	175	120	26
180	212	190	140	26
200	268	175	102	32
225	268	175	115	30
250	320	175	100	32
280	320	175	110	35
315	370	265	205	35



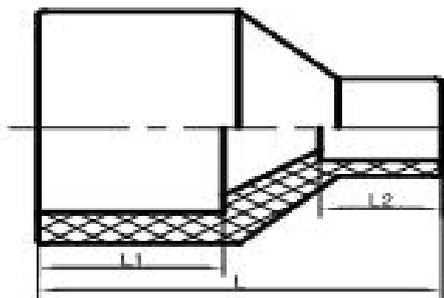
## Flange Adaptor (ASTM Standard)

Size	SDR	OD-1	T-1	L	OD-2	T-2
2"	11	2.37	0.22	5.98	4	0.4
		60.198mm	5.588mm	151.892mm	101.6mm	10.16mm
2"	17	2.37	0.14	5.98	4	0.4
		60.198mm	3.556mm	151.892mm	101.6mm	10.16mm
3"	11	3.5	0.32	5.98	5	0.6
		88.9mm	8.128mm	151.892mm	127mm	15.24mm
3"	17	3.5	0.2	5.98	5	0.6
		88.9mm	5.08mm	151.892mm	127mm	15.24mm
4"	11	4.5	0.41	5.98	6.6	0.8
		114.3mm	10.414mm	151.892mm	167.64mm	20.32mm
4"	17	4.5	0.26	5.98	6.6	0.8
		114.3mm	6.604mm	151.892mm	167.64mm	20.32mm
6"	11	6.63	0.6	7.99	8.5	0.8
		168.402mm	15.24mm	202.946mm	215.9mm	20.32mm
6"	17	6.63	0.39	7.99	8.5	0.8
		168.402mm	9.906mm	202.946mm	215.9mm	20.32mm
8"	11	8.63	0.78	9.02	10.6	0.8
		219.202mm	19.812mm	229.108mm	269.24mm	20.32mm
8"	17	8.63	0.51	9.02	10.6	0.8
		219.202mm	13.9954mm	229.108mm	269.24mm	20.32mm
10"	11	10.75	0.98	9.02	12.8	1.3
		273.05mm	24.892mm	229.108mm	325.12mm	33.02mm
10"	17	10.75	0.63	9.02	12.8	0.9
		273.05mm	16.002mm	229.108mm	325.12mm	22.86mm
12"	11	12.75	1.16	10.79	15	1.5
		323.85	29.464mm	274.066mm	381mm	38.1mm
12"	17	12.75	0.75	10.79	15	1
		323.85	19.05mm	274.066mm	381mm	25.4mm
14"	11	14	1.27	11	17.5	1.7
		355.6mm	32.258mm	279.4mm	444.5mm	43.18mm
14"	17	14	0.82	11	17.5	1.1
		355.6mm	20.828mm	279.4mm	444.5mm	27.94mm
16"	11	16	1.45	12	20	1.9
		406.4mm	36.83mm	304.8mm	508mm	48.26mm
16"	17	16	0.94	12	20	1.2
		406.4mm	24.13mm	304.8mm	508mm	30.48mm
18"	11	18	1.64	12	21.1	2.1
		457.2mm	41.656mm	304.8mm	535.94mm	53.34mm
18"	17	18	1.06	12	21.1	1.4
		457.2mm	26.924mm	304.8mm	535.94mm	35.56mm
20"	11	20	1.82	12	23.5	2.3
		508mm	46.228mm	304.8mm	596.9mm	58.42mm
20"	17	20	1.18	12	23.5	1.5
		508mm	29.972mm	304.8mm	596.9mm	38.1mm
22"	11	22	2	12	25.6	2.5
		558.8mm	50.8mm	304.8mm	650.24mm	63.5mm
22"	17	22	1.29	12	25.6	1.6
		558.8mm	32.766mm	304.8mm	650.24mm	40.64mm
24"	11	24	2.18	14	27.9	2.9
		609.6mm	55.372mm	355.6mm	708.66mm	73.66mm
24"	17	24	1.41	14	27.9	1.8
		609.6mm	35.702mm	355.6mm	708.66mm	45.702mm



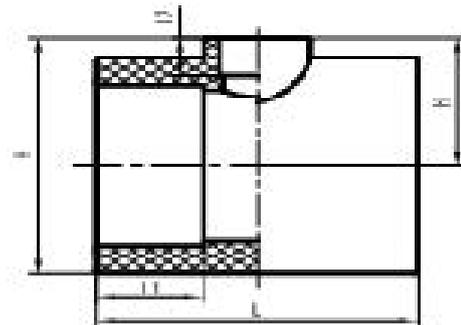
# Reducer

Specifications	L mm	L1 mm	L2 mm
S25×20	38	16	14.5
S32×20	41	18.1	14.5
S32×25	40	18.1	16
S40×20	47.5	20.5	14.5
S40×25	46.5	20.5	16
S40×32	46.5	20.5	18.1
S50×20	59	23.5	14.5
S50×25	53	23.5	16
S50×32	52	23.5	18.1
S50×40	52	23.5	20.5
S63×20	64	27.4	14.5
S63×25	63	27.4	16
S63×32	62	27.4	18.1
S63×40	60	27.4	20.5
S63×50	58.5	27.4	23.5
S75×32	78	31	18.1
S75×40	76.5	31	20.5
S75×50	75	31	23.5
S75×63	74	31	27.4



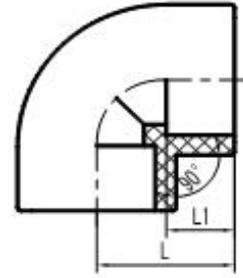
## Reducing Tee

Specifications	L mm	L1 mm	L2 mm	H mm	H1 mm
T25×20	64	16	14.5	44	27
T32×20	66	18.1	14.5	54	33
T32×25	70	18.1	16	57	36
T40×20	71	20.5	14.5	64	37.5
T40×25	74	20.5	16	64.5	38
T40×32	78	20.5	18.1	66	39.5
T50×20	71	23.5	14.5	76	43
T50×25	81	23.5	16	76.5	43.5
T50×32	86	23.5	18.1	80.5	47.5
T50×40	93	23.5	20.5	83.5	50.5
T63×20	82	27.4	14.5	90	49
T63×25	88	27.4	16	93	52
T63×32	94	27.4	18.1	95	54
T63×40	101	27.4	20.5	96.5	55.5
T63×50	110	27.4	23.5	97	56
T75×40	108	31	20.5	109.5	61
T75×50	120	31	23.5	110	61.5



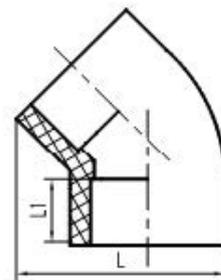
## 90° Elbow

Specifications	L mm	L1 mm
L20	28.5	14.5
L25	32.5	16
L32	38	18.1
L40	44.5	20.5
L50	52.5	23.5
L63	63	27.4
L75	68	29.8



## 45° Elbow

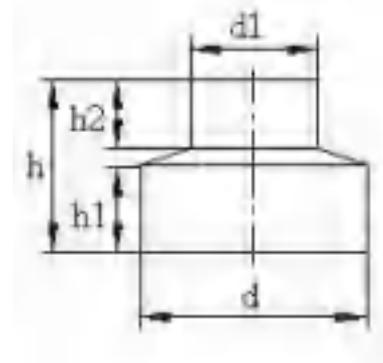
Specifications	L mm	L1 mm
L20	46.8	14.5
L25	52.4	16
L32	63.1	18.1
L40	75.5	20.5
L50	90.2	23.5
L63	108.3	27.4
L75	124.9	30



# PE SYPHON DRAINAGE FITTINGS

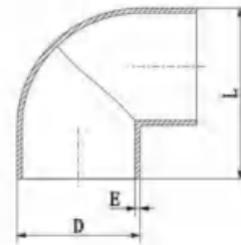
## Eccentric Reducer

Size (mm)	d (mm)	d1(mm)	h1 (mm)	h2 (mm)	Wall Thickness (mm)
56*50	56 0/+0.5	50 0/+0.5	36 0/+2.0	37 0/+2.0	2.3 0/+0.5
63*50	63 0/+0.5	50 0/+0.5	34 0/+2.0	34 0/+2.0	2.4 0/+0.5
63*56	63 0/+0.6	56 0/+0.5	33 0/+2.0	35 0/+2.0	2.4 0/+0.5
75*50	75 0/+0.7	50 0/+0.5	34 0/+2.0	34 0/+2.0	2.9 0/+0.5
75*56	75 0/+0.7	56 0/+0.5	33 0/+2.0	35 0/+2.0	2.9 0/+0.5
75*63	75 0/+0.7	63 0/+0.6	34 0/+2.0	34 0/+2.0	2.9 0/+0.5
90*50	90 0/+0.9	50 0/+0.5	33 0/+2.0	34 0/+2.0	3.5 0/+0.6
90*56	90 0/+0.9	56 0/+0.5	34 0/+2.0	34 0/+2.0	3.5 0/+0.6
90*63	90 0/+0.9	63 0/+0.6	33 0/+2.0	34 0/+2.0	3.5 0/+0.6
90*75	90 0/+0.9	75 0/+0.7	33 0/+2.0	34 0/+2.0	3.5 0/+0.6
110*50	110 0/+1.0	50 0/+0.5	34 0/+2.0	34 0/+2.0	4.2 0/+0.7
110*56	110 0/+1.0	56 0/+0.5	34 0/+2.0	34 0/+2.0	4.2 0/+0.7
110*63	110 0/+1.0	63 0/+0.6	34 0/+2.0	34 0/+2.0	4.2 0/+0.7
110*75	110 0/+1.0	75 0/+0.7	35 0/+2.0	35 0/+2.0	4.2 0/+0.7
110*90	110 0/+1.0	90 0/+0.9	34 0/+2.0	34 0/+2.0	4.2 0/+0.7
125*50	125 0/+1.2	50 0/+0.5	34 0/+2.0	34 0/+2.0	4.8 0/+0.7
125*56	125 0/+1.2	56 0/+0.5	34 0/+2.0	34 0/+2.0	4.8 0/+0.7
125*63	125 0/+1.2	63 0/+0.6	34 0/+2.0	34 0/+2.0	4.8 0/+0.7
125*75	125 0/+1.2	75 0/+0.7	33 0/+2.0	33 0/+2.0	4.8 0/+0.7
125*90	125 0/+1.2	90 0/+0.9	33 0/+2.0	34 0/+2.0	4.8 0/+0.7
125*110	125 0/+1.2	110 0/+1.0	34 0/+2.0	34 0/+2.0	4.8 0/+0.7
160*75	160 0/+1.5	75 0/+0.7	34 0/+2.0	34 0/+2.0	6.2 0/+0.9
160*90	160 0/+1.5	90 0/+0.9	34 0/+2.0	34 0/+2.0	6.2 0/+0.9
160*110	160 0/+1.5	110 0/+1.0	34 0/+2.0	34 0/+2.0	6.2 0/+0.9
160*125	160 0/+1.5	125 0/+1.2	36 0/+2.0	34 0/+2.0	6.2 0/+0.9
200*90	200 0/+1.8	90 0/+0.9	76 0/+2.0	60 0/+2.0	6.2 0/+1.0
200*110	200 0/+1.8	110 0/+1.0	76 0/+2.0	60 0/+2.0	7.7 0/+1.0
200*125	200 0/+1.8	125 0/+1.2	76 0/+2.0	64 0/+2.0	7.7 0/+1.0
200*160	120 0/+1.8	160 0/+1.5	76 0/+2.0	62 0/+2.0	7.7 0/+1.0
250*110	250 0/+2.3	110 0/+1.0	78 0/+2.0	60 0/+2.0	9.6 0/+1.2
250*125	250 0/+2.3	125 0/+1.2	78 0/+2.0	60 0/+2.0	9.6 0/+1.2
250*160	250 0/+2.3	160 0/+1.5	79 0/+2.0	60 0/+2.0	9.6 0/+1.2
250*200	250 0/+2.3	200 0/+1.8	79 0/+2.0	60 0/+2.0	9.6 0/+1.2
315*160	315 0/+2.9	160 0/+1.5	79 0/+2.0	62 0/+2.0	12.1 0/+1.5
315*200	315 0/+2.9	200 0/+1.8	79 0/+2.0	62 0/+2.0	12.1 0/+1.5
315*250	315 0/+2.9	250 0/+2.3	79 0/+2.0	67 0/+2.0	12.1 0/+1.5



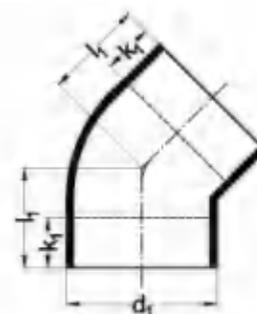
## 90 Degree Elbow

Size (mm)	D (mm)	L (mm)	E Wall Thickness (mm)
50	50 0/+0.5	86 0/+2.5	2.3 0/+0.5
56	56 0/+0.5	90 0/+2.5	2.3 0/+0.5
63	63 0/+0.6	102 0/+2.5	2.4 0/+0.5
75	75 0/+0.7	120 0/+2.5	2.9 0/+0.5
90	90 0/+0.9	128 0/+2.5	3.5 0/+0.6
110	110 0/+1.0	151 0/+2.5	4.2 0/+0.7
125	125 0/+1.2	168 0/+2.5	4.8 0/+0.7
160	160 0/+1.5	195 0/+2.5	6.2 0/+0.9
200	200 0/+1.8	274 0/+2.5	7.7 0/+1.0
250	250 0/+2.3	300 0/+2.5	9.6 0/+1.2
315	315 0/+2.9	369 0/+2.5	12.1 0/+1.5



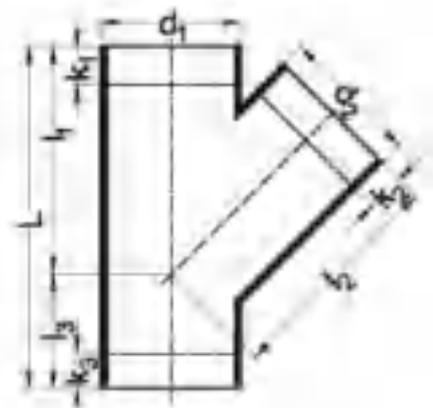
## 45 Degree Elbow

Size (mm)	D (mm)	L (mm)	L (mm)	E Wall Thickness (mm)
50	50 0/+0.5	48 0/+2.0	35 0/+2.0	2.3 0/+0.5
56	56 0/+0.5	52 0/+2.0	39 0/+2.0	2.3 0/+0.5
63	63 0/+0.6	52 0/+2.0	36 0/+2.0	2.4 0/+0.5
75	75 0/+0.7	57 0/+2.0	38 0/+2.0	2.9 0/+0.5
90	90 0/+0.9	60 0/+2.0	39 0/+2.0	3.5 0/+0.6
110	110 0/+1.0	72 0/+2.0	45 0/+2.0	4.2 0/+0.7
125	125 0/+1.2	81 0/+2.0	53 0/+2.0	4.8 0/+0.7
160	160 0/+1.5	87 0/+2.0	53 0/+2.0	6.2 0/+0.9
200	200 0/+1.8	113 0/+2.0	70 0/+2.0	7.7 0/+1.0
250	250 0/+2.3	121 0/+2.0	70 0/+2.0	9.6 0/+1.2
315	315 0/+2.9	144 0/+2.0	76 0/+2.0	12.1 0/+1.5



## 45 Degree Y Tee

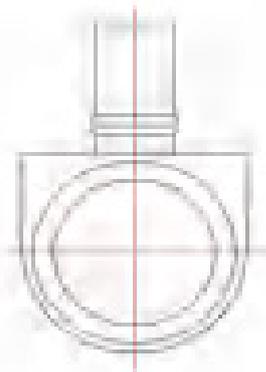
Size (mm)	L (mm)	d*1(mm)	L*2(mm)	d*2(mm)	Wall Thickness (mm)
50	157 0/+3.0	50 0/+0.5	110 0/+2.0	50 0/+0.5	2.3 0/+0.5
56	162 0/+3.0	56 0/+0.5	108 0/+2.0	56 0/+0.5	2.3 0/+0.5
63	188 0/+3.0	63 0/+0.6	128 0/+2.0	63 0/+0.6	2.4 0/+0.5
75	199 0/+3.0	75 0/+0.7	142 0/+2.0	75 0/+0.7	2.9 0/+0.5
90	245 0/+3.0	90 0/+0.9	176 0/+2.0	90 0/+0.9	3.5 0/+0.6
110	255 0/+3.0	110 0/+1.0	183 0/+2.0	110 0/+1.0	4.2 0/+0.7
125	312 0/+3.0	125 0/+1.2	226 0/+2.0	125 0/+1.2	4.8 0/+0.7
160	330 0/+3.0	160 0/+1.5	247 0/+2.0	160 0/+1.5	6.2 0/+0.9
200	485 0/+3.0	200 0/+1.8	396 0/+2.0	200 0/+1.8	7.7 0/+1.0
250	575 0/+3.0	250 0/+2.3	479 0/+2.0	250 0/+2.3	9.6 0/+1.2
315	726 0/+3.0	315 0/+2.9	614 0/+2.0	315 0/+2.9	12.1 0/+1.5
63*50	151 0/+3.0	63 0/+0.6	105 0/+2.0	50 0/+0.5	2.4 0/+0.5
90*75	226 0/+3.0	90 0/+0.9	170 0/+2.0	75 0/+0.7	3.5 0/+0.6
75*50	164 0/+3.0	75 0/+0.7	130 0/+2.0	50 0/+0.5	2.9 0/+0.5
75*63	195 0/+3.0	75 0/+0.7	148 0/+2.0	63 0/+0.6	2.9 0/+0.5
90*50	176 0/+3.0	90 0/+0.9	142 0/+2.0	50 0/+0.5	2.4 0/+0.6
90*63	194 0/+3.0	90 0/+0.9	166 0/+2.0	63 0/+0.6	2.4 0/+0.6
110*63	204 0/+3.0	110 0/+1.0	162 0/+2.0	63 0/+0.6	4.2 0/+0.7
110*75	210 0/+3.0	110 0/+1.0	170 0/+2.0	75 0/+0.7	4.2 0/+0.7
110*90	256 0/+3.0	110 0/+1.0	195 0/+2.0	90 0/+0.9	4.2 0/+0.7
125*75	237 0/+3.0	125 0/+1.2	190 0/+2.0	75 0/+0.7	4.2 0/+0.7
125*90	268 0/+3.0	125 0/+1.2	205 0/+2.0	90 0/+0.9	4.8 0/+0.7
125*110	279 0/+3.0	125 0/+1.2	223 0/+2.0	110 0/+1.0	4.8 0/+0.7
160*110	265 0/+3.0	160 0/+1.5	225 0/+2.0	110 0/+1.0	6.2 0/+0.9
160*125	309 0/+3.0	160 0/+1.5	245 0/+2.0	125 0/+1.2	6.2 0/+0.9
200*110	310 0/+3.0	200 0/+1.8	265 0/+2.0	110 0/+1.0	7.7 0/+1.0
200*125	301 0/+3.0	200 0/+1.8	270 0/+2.0	125 0/+1.2	7.7 0/+1.0
200*160	377 0/+3.0	200 0/+1.8	315 0/+2.0	160 0/+1.5	7.7 0/+1.0
250*110	309 0/+3.0	250 0/+2.3	295 0/+2.0	110 0/+1.0	9.6 0/+1.2
250*125	310 0/+3.0	250 0/+2.3	287 0/+2.0	125 0/+1.2	9.6 0/+1.2
250*160	353 0/+3.0	250 0/+2.3	322 0/+2.0	160 0/+1.5	9.6 0/+1.2
315*110	318 0/+3.0	315 0/+2.9	323 0/+2.0	110 0/+1.0	12.1 0/+1.5
315*125	367 0/+3.0	315 0/+2.9	328 0/+2.0	125 0/+1.2	12.1 0/+1.5
315*160	367 0/+3.0	315 0/+2.9	340 0/+2.0	160 0/+1.5	12.1 0/+1.5



# PE MACHINED FITTINGS

## Machined Equal Tee

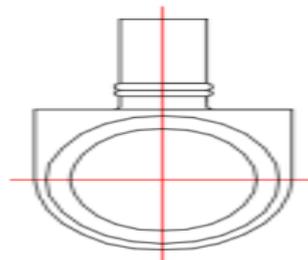
Size(mm)	SDR					
	7	9	11	17	21	26
110	✓	✓	✓	✓	✓	✓
125	✓	✓	✓	✓	✓	✓
160	✓	✓	✓	✓	✓	✓
180	✓	✓	✓	✓	✓	✓
200	✓	✓	✓	✓	✓	✓
225	✓	✓	✓	✓	✓	✓
250	✓	✓	✓	✓	✓	✓
315	✓	✓	✓	✓	✓	✓
355	✓	✓	✓	✓	✓	✓
400	✓	✓	✓	✓	✓	✓
450	✓	✓	✓	✓	✓	✓
500	✓	✓	✓	✓	✓	✓
560	✓	✓	✓	✓	✓	✓
630	✓	✓	✓	✓	✓	✓
710	✓	✓	✓	✓	✓	✓
800		✓	✓	✓	✓	✓
900			✓	✓	✓	✓
1000			✓	✓	✓	✓
1200			✓	✓	✓	✓
1400			✓	✓	✓	✓
1600			✓	✓	✓	✓



# Machined Reducing Tee

Size(mm)	SDR					
	7	9	11	17	21	26
355/280	✓	✓	✓	✓	✓	✓
355/225	✓	✓	✓	✓	✓	✓
355/180	✓	✓	✓	✓	✓	✓
355/160	✓	✓	✓	✓	✓	✓
355/110	✓	✓	✓	✓	✓	✓
400/315	✓	✓	✓	✓	✓	✓
400/280	✓	✓	✓	✓	✓	✓
400/225	✓	✓	✓	✓	✓	✓
400/160	✓	✓	✓	✓	✓	✓
400/110	✓	✓	✓	✓	✓	✓
450/315	✓	✓	✓	✓	✓	✓
450/280	✓	✓	✓	✓	✓	✓
450/225	✓	✓	✓	✓	✓	✓
450/160	✓	✓	✓	✓	✓	✓
450/110	✓	✓	✓	✓	✓	✓
500/400	✓	✓	✓	✓	✓	✓
500/315	✓	✓	✓	✓	✓	✓
500/280	✓	✓	✓	✓	✓	✓
500/225	✓	✓	✓	✓	✓	✓
500/160	✓	✓	✓	✓	✓	✓
560/450	✓	✓	✓	✓	✓	✓
560/355	✓	✓	✓	✓	✓	✓
560/280	✓	✓	✓	✓	✓	✓
560/225	✓	✓	✓	✓	✓	✓
560/160	✓	✓	✓	✓	✓	✓
630/500	✓	✓	✓	✓	✓	✓
630/400	✓	✓	✓	✓	✓	✓
630/355	✓	✓	✓	✓	✓	✓
630/280	✓	✓	✓	✓	✓	✓
630/160	✓	✓	✓	✓	✓	✓

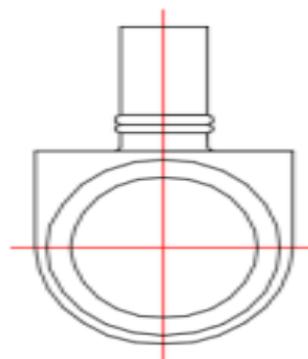
Size(mm)	SDR					
	7	9	11	17	21	26
710/630	✓	✓	✓	✓	✓	✓
710/500	✓	✓	✓	✓	✓	✓
710/400	✓	✓	✓	✓	✓	✓
710/355	✓	✓	✓	✓	✓	✓
800/630		✓	✓	✓	✓	✓
800/500		✓	✓	✓	✓	✓
800/400		✓	✓	✓	✓	✓
800/355		✓	✓	✓	✓	✓
900/630	✓	✓	✓	✓	✓	✓
900/500	✓	✓	✓	✓	✓	✓
900/400	✓	✓	✓	✓	✓	✓
900/355			✓	✓	✓	✓
1000/800			✓	✓	✓	✓
1000/630			✓	✓	✓	✓
1000/500			✓	✓	✓	✓
1000/400			✓	✓	✓	✓
1100/630			✓	✓	✓	✓
1100/400			✓	✓	✓	✓
1200/1000			✓	✓	✓	✓
1200/800			✓	✓	✓	✓
1200/630			✓	✓	✓	✓
1200/400			✓	✓	✓	✓
1400/1000				✓	✓	✓
1400/800				✓	✓	✓
1400/630				✓	✓	✓
1400/400				✓	✓	✓
1600/1000				✓	✓	✓
1600/800				✓	✓	✓
1600/630				✓	✓	✓
1600/400				✓	✓	✓



# Machined Eccentric / Scour Tee

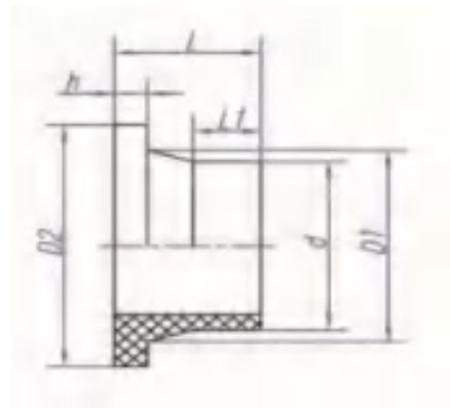
Size(mm)	SDR					
	7	9	11	17	21	26
355/160	V	V	V	V	V	V
355/125	V	V	V	V	V	V
355/110	V	V	V	V	V	V
400/200	V	V	V	V	V	V
400/160	V	V	V	V	V	V
400/125	V	V	V	V	V	V
400/110	V	V	V	V	V	V
450/225	V	V	V	V	V	V
450/200	V	V	V	V	V	V
450/160	V	V	V	V	V	V
450/125	V	V	V	V	V	V
450/110	V	V	V	V	V	V
500/225	V	V	V	V	V	V
500/200	V	V	V	V	V	V
500/160	V	V	V	V	V	V
500/125	V	V	V	V	V	V
500/110	V	V	V	V	V	V
560/225	V	V	V	V	V	V
560/200	V	V	V	V	V	V
560/160	V	V	V	V	V	V
560/125	V	V	V	V	V	V
560/110	V	V	V	V	V	V
630/280	V	V	V	V	V	V
630/225	V	V	V	V	V	V
630/200	V	V	V	V	V	V
630/160	V	V	V	V	V	V
630/125	V	V	V	V	V	V
630/110	V	V	V	V	V	V
710/315	V	V	V	V	V	V
710/225	V	V	V	V	V	V
710/200	V	V	V	V	V	V

Size(mm)	SDR					
	7	9	11	17	21	26
710/160	V	V	V	V	V	V
710/110	V	V	V	V	V	V
800/315		V	V	V	V	V
800/225		V	V	V	V	V
800/200		V	V	V	V	V
800/160		V	V	V	V	V
800/125		V	V	V	V	V
800/110		V	V	V	V	V
900/315			V	V	V	V
900/225			V	V	V	V
900/200			V	V	V	V
900/160			V	V	V	V
900/125			V	V	V	V
900/110			V	V	V	V
1000/315			V	V	V	V
1000/225			V	V	V	V
1000/200			V	V	V	V
1000/160			V	V	V	V
1000/125			V	V	V	V
1000/110			V	V	V	V
1200/1000			V	V	V	V
1200/710			V	V	V	V
1200/450			V	V	V	V
1200/200			V	V	V	V
1400/1000			V	V	V	V
1400/710			V	V	V	V
1400/450			V	V	V	V
1600/1000			V	V	V	V
1600/200			V	V	V	V
1600/450			V	V	V	V



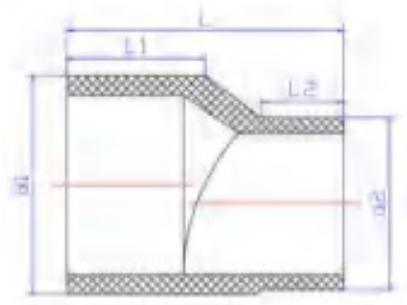
## Machined Flange Adaptor/ Full face ( Stub End)

Size(mm)	SDR	As4129	ISO4427	South African	ASTM F2880
110	7/9/11/13.6/17/21/26	✓	✓	✓	✓
125	7/9/11/13.6/17/21/26	✓	✓	✓	✓
140	7/9/11/13.6/17/21/26	✓	✓	✓	✓
160	7/9/11/13.6/17/21/26	✓	✓	✓	✓
180	7/9/11/13.6/17/21/26	✓	✓	✓	✓
200	7/9/11/13.6/17/21/26	✓	✓	✓	✓
225	7/9/11/13.6/17/21/26	✓	✓	✓	✓
250	7/9/11/13.6/17/21/26	✓	✓	✓	✓
280	7/9/11/13.6/17/21/26	✓	✓	✓	✓
315	7/9/11/13.6/17/21/26	✓	✓	✓	✓
355	7/9/11/13.6/17/21/26	✓	✓	✓	✓
400	7/9/11/13.6/17/21/26	✓	✓	✓	✓
450	7/9/11/13.6/17/21/26	✓	✓	✓	✓
450	7/9/11/13.6/17/21/26	✓	✓	✓	✓
500	7/9/11/13.6/17/21/26	✓	✓	✓	✓
560	7/9/11/13.6/17/21/26	✓	✓	✓	✓
630	7/9/11/13.6/17/21/26	✓	✓	✓	✓
710	7/9/11/13.6/17/21/26	✓	✓	✓	✓
800	7/9/11/13.6/17/21/26	✓	✓	✓	✓
900	7/9/11/13.6/17/21/26	✓	✓	✓	✓
1000	11/13.6/17/21/26	✓	✓	✓	✓
1200	11/13.6/17/21/26	✓	✓	✓	✓
1400	11/13.6/17/21/26	✓	✓	✓	✓
1600	11/13.6/17/21/26	✓	✓	✓	✓
1800	11/13.6/17/21/26	✓	✓	✓	✓
2000	11/13.6/17/21/26	✓	✓	✓	✓



# Machined Eccentric Reducer

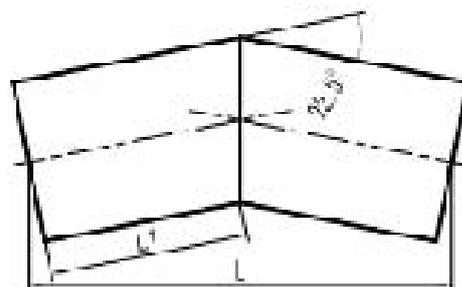
<b>d1</b>	<b>d2</b>	<b>L</b>	<b>L1</b>	<b>L2</b>
mm	mm	mm	mm	mm
SDR 7/9/11/13.6/17/21/26				
63	32~50	140	60	50
75	40~63	140	60	50
90	50~75	160	80	50
110	63~90	180	80	70
125	63~110	180	80	70
140	63~125	180	80	70
160	63~140	190	80	80
180	90~160	200	90	80
200	90~180	210	100	80
225	90~200	220	100	90
250	90~225	220	100	90
280	110~250	230	110	90
315	110~280	230	110	90
355	110~315	240	110	100
400	110~355	240	110	100
450	160~400	250	120	100
500	160~450	260	120	110
560	160~500	260	120	110
630	160~560	260	120	110
710	200~630	300	140	120
800	250~710	300	140	120
900	315~800	290	140	120
1000	400~900	300	140	130
1200	450~1000	310	150	130



# PE FABRICATED FITTINGS

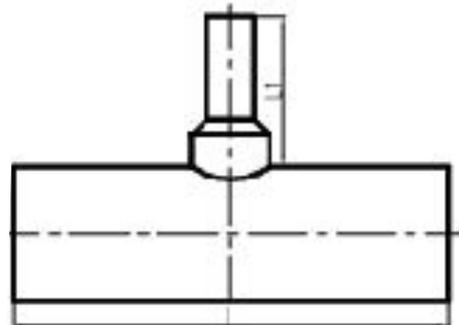
## Elbow 11.25° /22.5°/30°

Specifications mm	SDR11	SDR13.6	SDR17	SDR21	SDR26
90	✓	✓	✓		
110	✓	✓	✓		
125	✓	✓	✓	✓	
140	✓	✓	✓	✓	
160	✓	✓	✓	✓	
180	✓	✓	✓	✓	
200	✓	✓	✓	✓	✓
225	✓	✓	✓	✓	✓
250	✓	✓	✓	✓	✓
280	✓	✓	✓	✓	✓
315	✓	✓	✓	✓	✓
355	✓	✓	✓	✓	✓
400	✓	✓	✓	✓	✓
450	✓	✓	✓	✓	✓
500	✓	✓	✓	✓	✓
560	✓	✓	✓	✓	✓
630	✓	✓	✓	✓	✓
710	✓	✓	✓	✓	✓
800	✓	✓	✓	✓	✓
900	✓	✓	✓	✓	✓
100	✓	✓	✓	✓	✓
1100	✓	✓	✓	✓	✓
1200	✓	✓	✓	✓	✓



# Reducing Tee Saddle

Specifications	L mm	L1 mm
T355X160	700	200
T400X160	700	200
T450X160	700	200
T450X200	700	200
T500X160	700	200
T500X200	700	200
T560X160	700	200
T560X200	700	200
T630X160	700	200
T630X200	700	200





الاتحاد لصناعة الأنابيب  
**Fabricated HDPE**  
UNION PIPES

## Fabricated HDPE

**Dia:** DN110 mm up to DN 1600mm .

**Pressure Class:** SDR21, SDR17, SDR13.6, SDR11, SDR9, SDR7.4, SDR6.

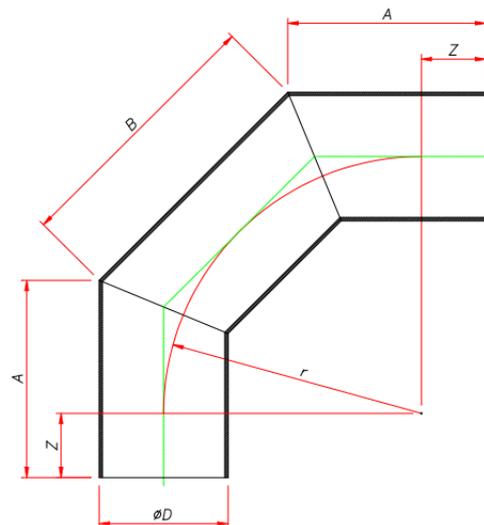


# Fabricated HDPE 90 Degree Elbow

## 1.90° BENDS - 3 SEGMENTS

Bending radius  $r=2d$

D	R	Z	A	B
110	220	55	169	228
125	250	63	192	259
140	280	70	215	290
160	320	80	246	331
180	360	90	276	373
200	400	100	307	414
225	450	113	345	466
250	500	125	384	518
280	560	140	430	580
315	630	158	484	652
355	710	178	545	735
400	800	200	614	828
450	900	225	691	932
500	1000	250	768	1036
560	1120	280	860	1160
630	1260	315	967	1305
710	1420	355	1090	1470
800	1600	400	1228	1657
900	1800	450	1382	1864
1000	2000	500	1536	2071
1200	2400	600	1843	2485

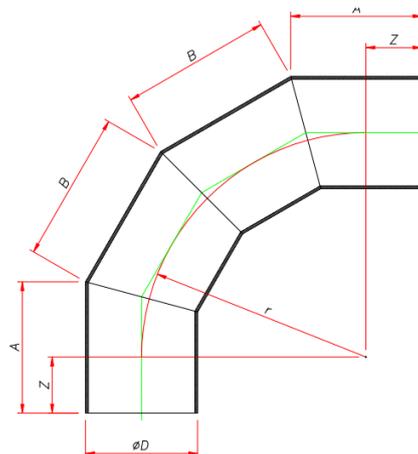


# Fabricated HDPE 90 Degree Elbow

## 90° BENDS - 4 SEGMENTS

Bending radius  $r=2d$

D	R	Z	A	B
125	250	63	146	167
140	280	70	164	188
160	320	80	187	214
180	360	90	211	241
200	400	100	234	268
225	450	113	263	301
250	500	125	292	335
280	560	140	328	375
315	630	158	369	422
355	710	178	415	476
400	800	200	468	536
450	900	225	526	603
500	1000	250	585	670
560	1120	280	655	750
630	1260	315	737	844
710	1420	355	83	951
800	1600	400	936	1072
900	1800	450	1053	1206
1000	2000	500	1170	1340
1200	2400	600	1404	1608

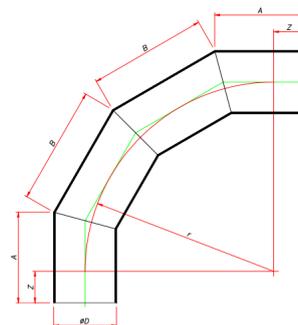


# Fabricated HDPE 90 Degree Elbow

## 90° BENDS - 4 SEGMENTS

Bending radius  $r=3d$

D	R	Z	A	B
90	270	45	129	169
110	330	55	158	206
125	375	63	180	234
140	420	70	201	263
160	480	80	230	300
180	540	90	259	338
200	600	100	288	375
225	675	113	324	422
250	750	125	359	469
280	840	140	403	525
315	945	158	453	591
355	1065	178	510	666
400	1200	200	575	750
450	1350	225	647	844
500	1500	250	719	938
560	1680	280	805	1050
630	1890	315	906	1182
710	2130	355	1021	1332
800	2400	400	1150	1501
900	2700	450	1294	1688
1000	3000	500	1438	1876
1200	3600	600	1725	2251

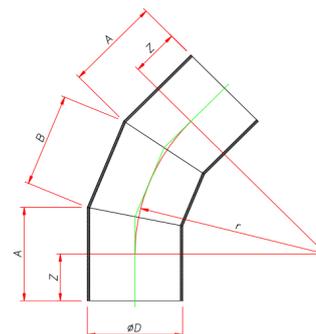


# Fabricated HDPE 45 Degree Elbow

## 45° BENDS - 3 SEGMENTS

Bending radius  $r=2d$

D	R	Z	A	B
90	180	25	120	115
110	220	30	140	135
125	250	60	150	174
140	280	70	180	195
160	320	80	191	223
180	360	134	238	270
200	400	134	238	270
225	450	113	224	224
250	500	125	249	249
280	560	140	279	278
315	630	158	314	313
355	710	178	354	353
400	800	200	399	398
450	900	225	449	448
500	1000	250	499	497
560	1120	280	558	557
630	1260	315	628	627
710	1420	355	708	706
800	1600	400	798	796
900	1800	450	898	895
1000	2000	500	997	995
1200	2400	600	1197	1193

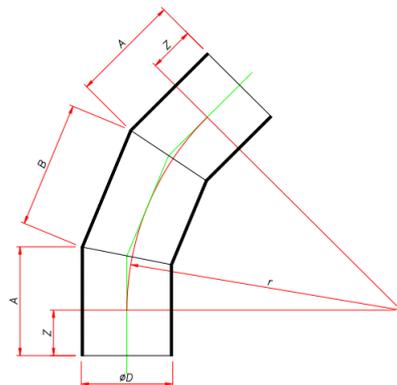


# Fabricated HDPE 45 Degree Elbow

## 45° BENDS - 3 SEGMENTS

Bending radius  $r=3d$

D	R	Z	A	B
125	375	63	150	174
140	420	70	167	195
160	480	80	191	223
180	540	90	215	251
200	600	100	239	278
225	675	113	269	313
250	750	125	299	348
280	840	140	335	390
315	945	158	377	439
355	1065	178	425	494
400	1200	200	478	557
450	1350	225	538	627
500	1500	250	598	696
560	1680	280	670	780
630	1890	315	754	877
710	2130	355	849	989
800	2400	400	957	1114
900	2700	450	1077	1253
1000	3000	500	1196	1392
1200	3600	600	1435	1671

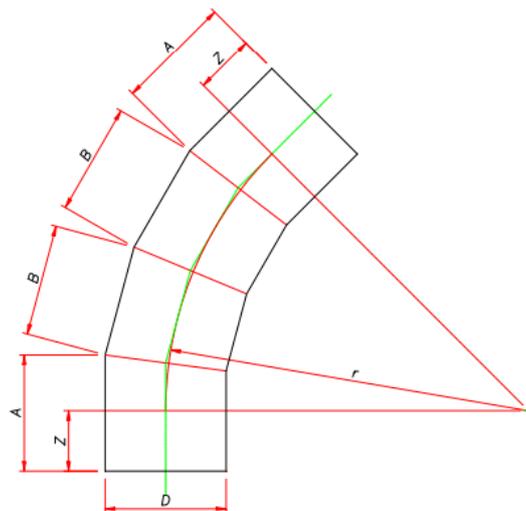


# Fabricated HDPE 45 Degree Elbow

## 45° BENDS - 4 SEGMENTS

Bending radius  $r=3d$

D	R	Z	A	B
315	945	158	303	290
355	1065	178	341	327
400	1200	200	384	369
450	1350	225	432	415
500	1500	250	480	461
560	1680	280	538	516
630	1890	315	605	581
710	2130	355	682	654
800	2400	400	769	737
900	2700	450	865	839
1000	3000	500	961	922
1200	3600	600	1153	1106

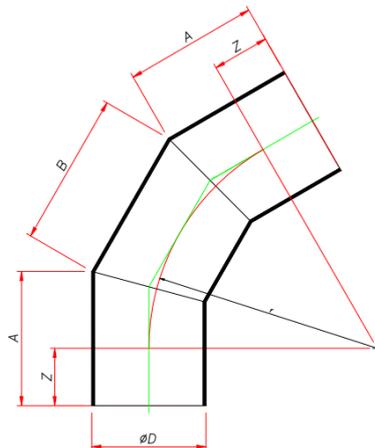


# Fabricated HDPE 60 Degree Elbow

## 60° BENDS - 3 SEGMENTS

Bending radius  $r=2d$

D	R	Z	A	B
125	250	63	146	167
140	280	70	164	188
160	320	80	187	214
180	360	90	211	241
200	400	100	234	268
225	450	113	263	301
250	500	125	292	335
280	560	140	328	375
315	630	158	369	422
355	710	178	415	476
400	800	200	468	536
450	900	225	526	603
500	1000	250	585	670
560	1120	280	655	750
630	1260	315	737	844
710	1420	355	831	951
800	1600	400	936	1072
900	1800	450	1053	1206
1000	2000	500	1170	1340
1200	2400	600	1404	1608

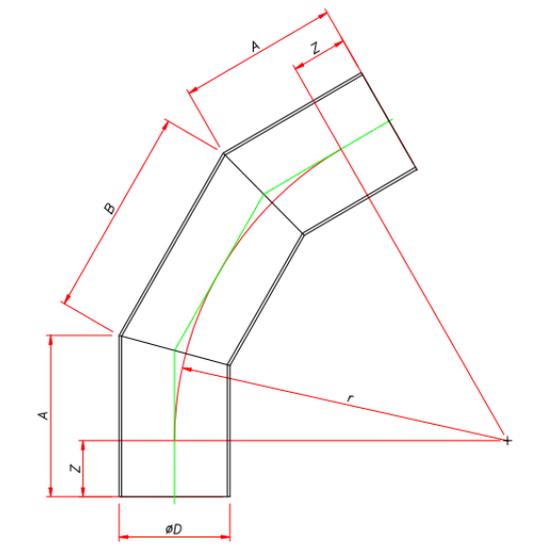


# Fabricated HDPE 60 Degree Elbow

## 60° BENDS - 3 SEGMENTS

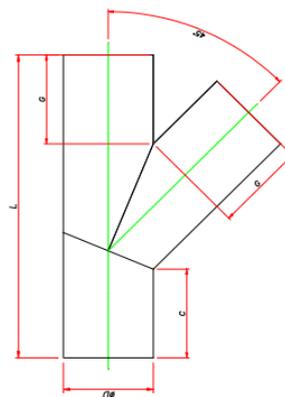
Bending radius  $r=3d$

D	R	Z	A	B
315	630	158	369	422
355	710	178	415	476
400	800	200	468	536
450	900	225	526	603
500	1000	250	585	670
560	1120	280	655	750
630	1260	315	737	844
710	1420	355	831	951
800	1600	400	936	1072
900	1800	450	1053	1206
1000	2000	500	1170	1340
1200	2400	600	1404	1608



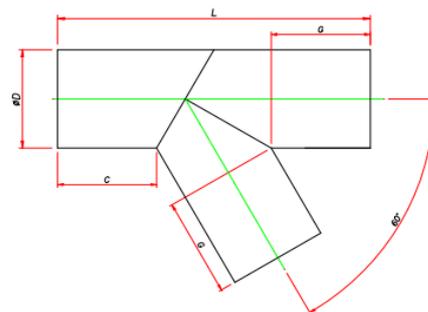
# Fabricated HDPE 45° TEE

D	C	G	L
90	90	113	330
110	110	121	387
125	125	138	439
140	140	154	492
160	160	160	546
180	180	180	615
200	200	200	683
225	225	225	768
250	250	250	854
280	280	280	956
315	315	315	1075
355	195	195	893
400	220	220	1006
450	248	248	1131
500	275	275	1257
560	308	308	1408
630	315	347	1584
710	355	355	1714
800	400	400	1931
900	450	450	2173



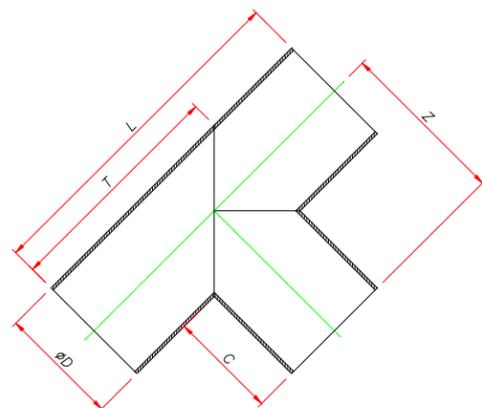
## Fabricated HDPE 60° TEE

D	C	G	L
90	90	162	356
110	110	176	413
125	125	200	469
140	140	210	512
160	160	224	569
180	180	234	622
200	200	260	691
225	225	270	755
250	250	250	789
280	280	280	883
315	315	315	994
355	320	320	1141
400	360	360	1286
450	405	4005	1446
500	300	300	1307
560	336	336	1464
630	504	504	1899
710	568	568	2140
800	640	640	2411
900	720	720	2713



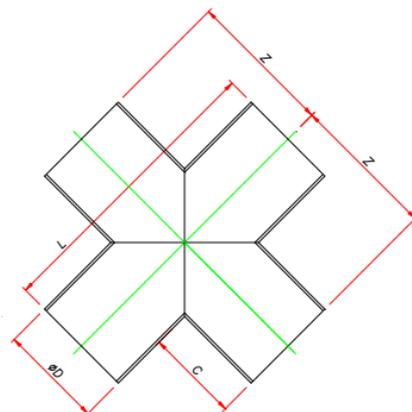
# Fabricated HDPE 90° TEE

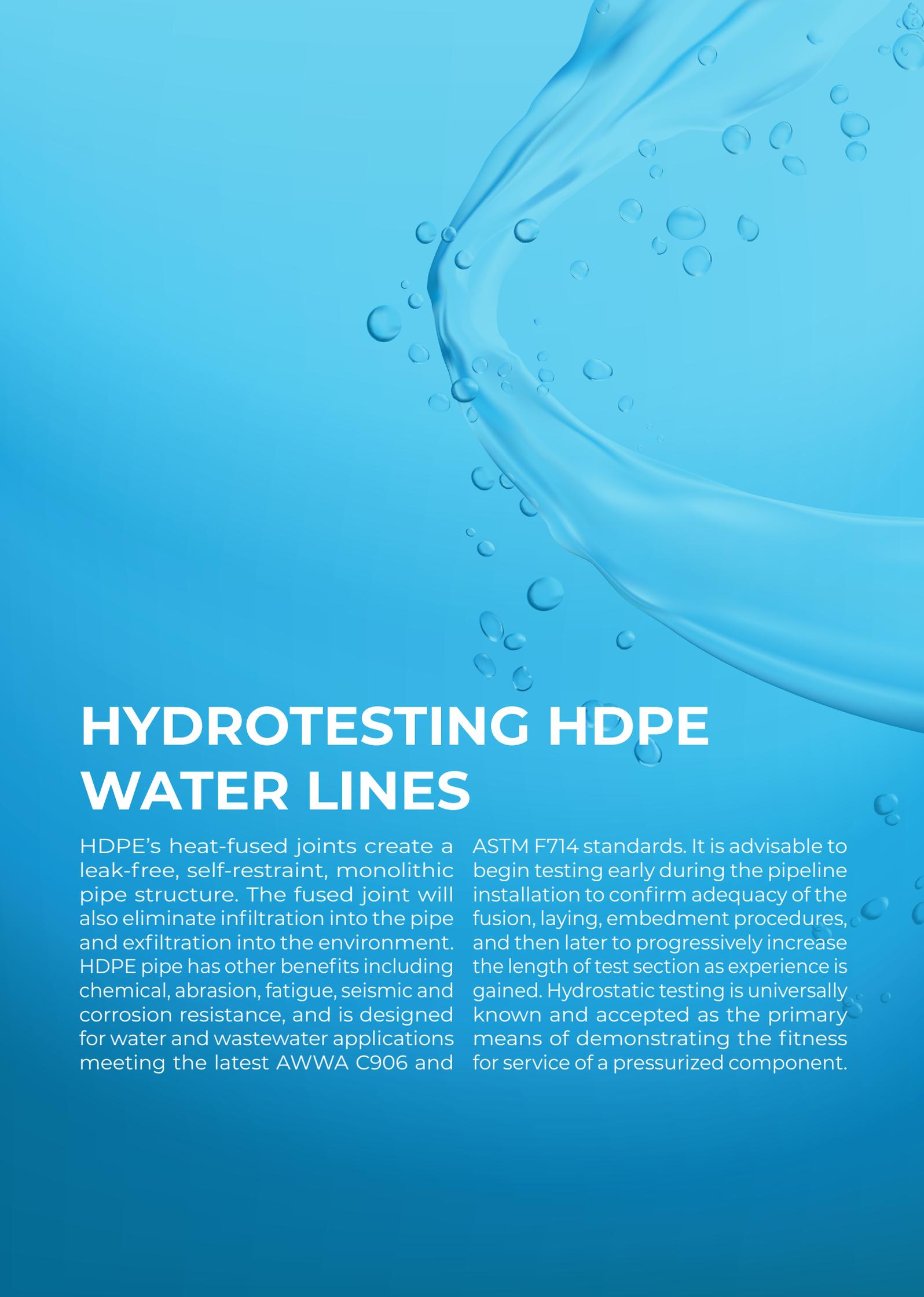
D	C	G	L	T
90	90	135	270	180
110	110	165	330	220
125	125	188	375	250
140	140	210	420	280
160	160	240	480	320
180	180	270	540	360
200	200	300	600	400
225	225	338	675	450
250	250	375	750	500
280	280	420	840	560
315	315	473	945	630
355	284	462	923	639
400	320	520	1040	720
450	360	585	1170	810
500	400	650	1300	900
560	448	728	1456	1008
630	504	819	1638	1134
710	568	923	1846	1278
800	640	1040	2080	1440
900	720	1170	2340	1620
1000	800	1300	2600	1800



## Fabricated HDPE CROSSES

D	C	G	L	T
90	90	135	270	180
110	110	165	330	220
125	125	188	375	250
140	140	210	420	280
160	160	240	480	320
180	180	270	540	360
200	200	300	600	400
225	225	338	675	450
250	250	375	750	500
280	280	420	840	560
315	315	473	945	630
355	284	462	923	639
400	320	520	1040	720
450	360	585	1170	810
500	400	650	1300	900
560	448	728	1456	1008
630	504	819	1638	1134
710	568	923	1846	1278
800	640	1040	2080	1440
900	720	1170	2340	1620
1000	800	1300	2600	1800





# HYDROTESTING HDPE WATER LINES

HDPE's heat-fused joints create a leak-free, self-restraint, monolithic pipe structure. The fused joint will also eliminate infiltration into the pipe and exfiltration into the environment. HDPE pipe has other benefits including chemical, abrasion, fatigue, seismic and corrosion resistance, and is designed for water and wastewater applications meeting the latest AWWA C906 and

ASTM F714 standards. It is advisable to begin testing early during the pipeline installation to confirm adequacy of the fusion, laying, embedment procedures, and then later to progressively increase the length of test section as experience is gained. Hydrostatic testing is universally known and accepted as the primary means of demonstrating the fitness for service of a pressurized component.



## PE Pipe- Design and Installation and is summarized below:

- Test pressure: Up to 1.5 times the working pressure and is taken at the lowest point in elevation along the pipe's test section.
- Leak test can be dangerous; restrain test section against movement.
- Fill slowly to remove air.
- Maintain test pressure for 4 hours; add makeup water as needed to keep the pressure constant; water amount is not monitored.
- Reduce pressure by 10 psi and monitor pressure for 1 hour.
- Pass if pressure stays within 5% of the reduced pressure. In addition, the AWWA M55 (Chapter 9) describes general hydrostatic testing, based on ASTM F2164.

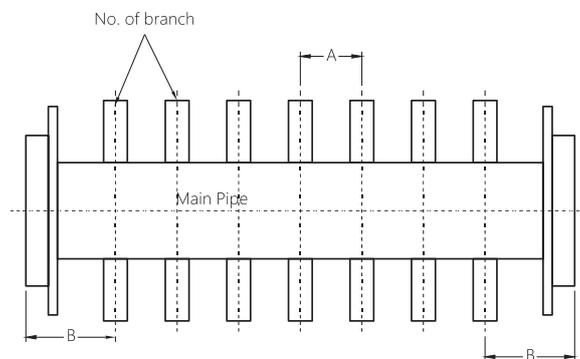
# Fabricated Fittings

## HEADER / MANIFOLD

Main Pipe (Size, mm)	Branch Pipe (Size, mm)
90	63
110	63, 75
125	63, 75, 90
140	63, 75, 90, 110
160	63, 75, 90, 110, 125
180	63, 75, 90, 110, 125, 140
200	63, 75, 90, 110, 125, 140, 160
225	63, 75, 90, 110, 125, 140, 160, 180
250	63, 75, 90, 110, 125, 140, 160, 180, 200
280	63, 75, 90, 110, 125, 140, 160, 180, 200, 225
315	63, 75, 90, 110, 125, 140, 160, 180, 200, 225, 250
355	63, 75, 90, 110, 125, 140, 160
400	63, 75, 90, 110, 125, 140, 160, 180, 200
450	63, 75, 90, 110, 125, 140, 160, 180, 200, 225
500	160, 180, 200, 225
560	160, 180, 200, 225, 250
630	200, 225, 250, 315

### Note

Header and chamber are available up to 2000 mm as per customer requirement.



### Note

All specification as per requirement/customise

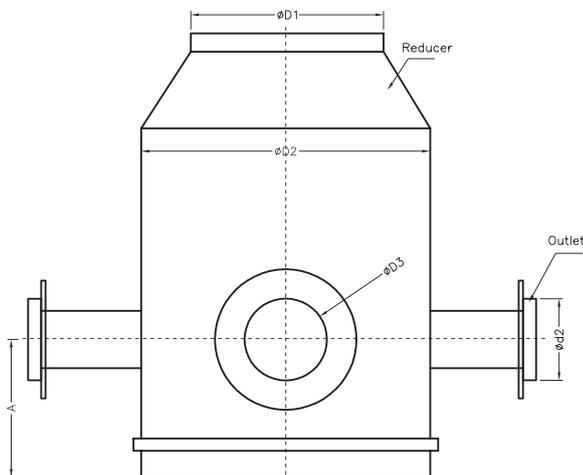
## Special Fittings

### MANHOLE / CHAMBER

$\Phi D$	$\Phi D1^*$	$\Phi D2$	$\Phi D3$	A
500	500	160	250	500
710	710	200	315	500
1000	1000	315	500	500
1200	1200	355	710	800
1600	1600	500	1000	800

- Can be supplied as per requirement.

- Sizes other than above specified can also be supplied to suit the specific requirement.

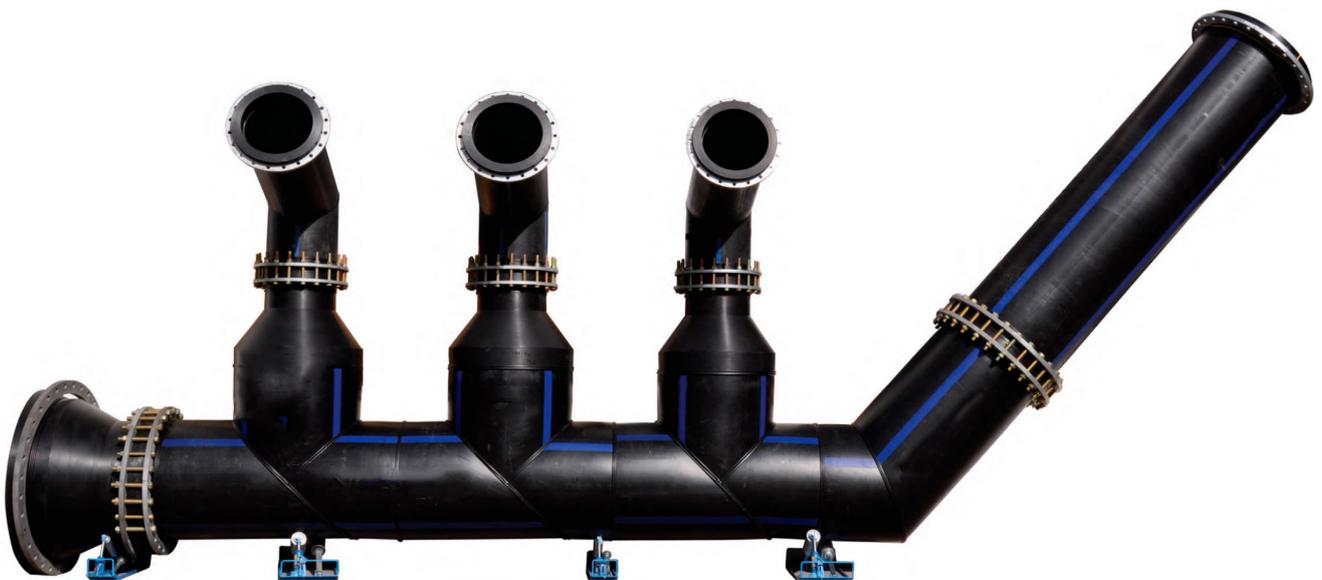
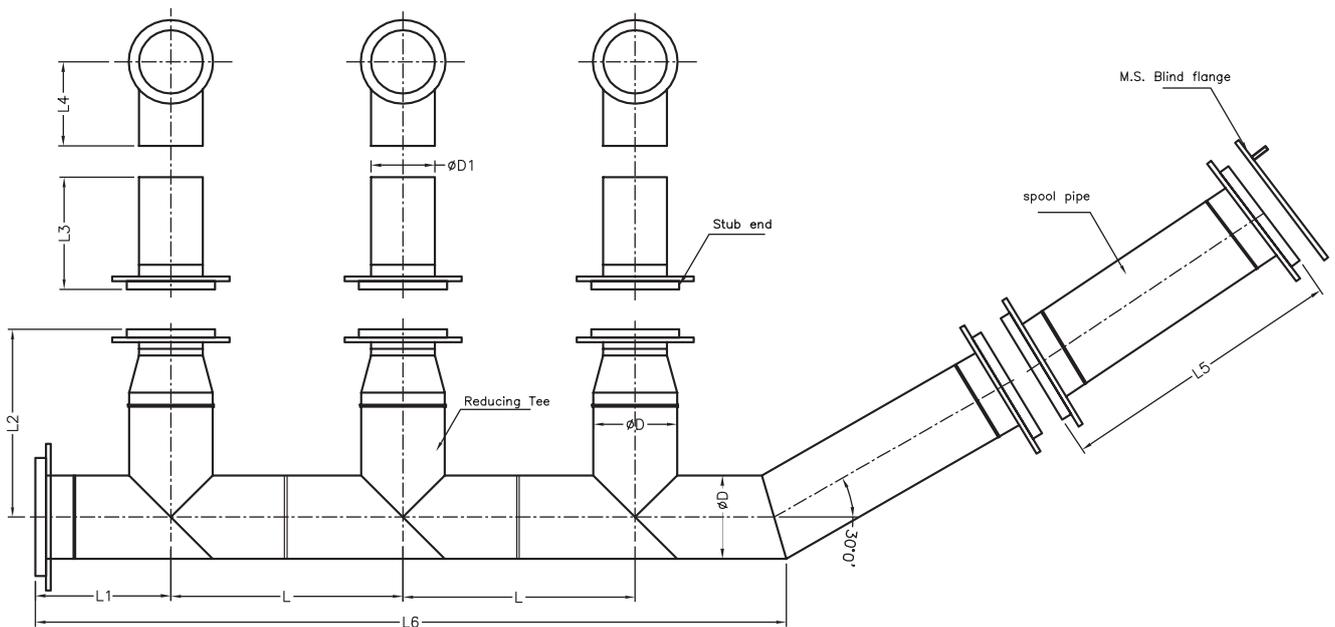


# Special Fittings

## DIFFUSER

In desalination plants, the brine water remaining after passing through the membranes is waste and has to be disposed off. The disposal of this brine has to be done at specific rate and in specific fashion deep into the sea so that it does not get mixed with the suction water again. Apart from that the disposal has to be at specific rate so that brine concentration does not exceed particular level which may affect the aquatic life and ultimately eco system. The fittings used to do that job are called diffusers.

We do manufacture and supply the diffusers required for such application. Product we supply is capable to withstand the different forces acting on it deep into the sea.



## Saddle Fusion Joint

The conventional technique to join a saddle to the pipe, consists the simultaneously heating both the external surface of the pipe & the matching the surface of the “saddle” type fitting with concave & convex shaped heating tools until both surfaces reach the proper fusion temp.

This machine provides the operator better alignment and force control, which is very important for fusion joint quality.

### The seven steps involved in a making saddle fusion joint.

1. Clean the pipe surface area.
2. Install the appropriate size heater saddle adapters.
3. Prepare the surfaces of the pipe and fitting in accordance with the recommended procedures.
4. Align the parts.
5. Heat both the pipe and the saddle fitting.
6. Press and hold the parts together.
7. Cool the joint and remove the joint from machine.



## ELECTROFUSION PROCEDURE GUIDELINES

1. Cut the pipe square and remove burrs. Check pipe end for damage, correct O.D. and ovality and wipe away loose dirt.
2. Without removing the protective wrap, place the centre of the electrofusion fitting alongside the pipe end and mark the pipe around the circumference, approximately 15mm past the end of the socket using a felt tip pen.
3. Using a pipe scraping tool, scrape the entire surface of the pipe over the marked area to a depth of approx 0.3mm, preferably as a continuous ribbon or strip. Note: The use of mechanical scraping tools is recommended as hand scraping requires great care and can be timeconsuming especially on larger diameter pipes. It is essential that material is removed by scraping or peeling; scratching or abrading is not sufficient, and will affect joint integrity.
4. Using disposable isopropanol welding wipes, clean the scraped area of the pipes (and the inside of the fitting if required). Once scraped and wiped do not touch the cleaned ends of the pipe or the inside of the fitting with your hands or rags. Ensure that pipe and fitting are completely dry before assembling fitting. Do not use any other cleaning fluid, primer or solvent.
5. Good practice is to cut one side of the bag around the fitting, check that the inside of the fitting is clean and dry and insert the first scraped pipe end. Leave the bag over the fitting whilst you scrape the second pipe end to protect fitting from contamination. Then remove bag and insert second pipe into the fitting. If fitting is a very tight fit and has to be tapped on, take care to keep the fitting square as the windings can be damaged. Alternatively, scrape pipe again.
6. Ensure the pipe ends are in contact with the centre stop and then put a witness mark at both ends of the fitting.
7. For all socket electrofusion fittings, (couplers, reducers, elbows, and tees) clamps must be used. The clamps must be adjusted to suit the particular size and type of fitting being welded so the pipes cannot move during the fusion cycle. If possible, rotate the fitting to check that the pipe ends are correctly aligned. If pipe is out of shape, re-rounding clamps should also be used.
8. If using a generator, check that there is sufficient fuel in the generator to complete the joint. Start the generator and check for correct operation.
9. Turn on the welder and connect the ECU output leads to the fitting terminals.
10. Operate the ECU according to the instructions, which should be carefully read and understood prior to any welding operations. The ECU will either have some form of automatic operating system or require manual operation. Whichever system the ECU uses, all fittings are marked with fusion time and cool time in seconds plus the necessary input voltage.
11. Once the weld is complete and the machine has stopped, remove the leads to the fitting, taking care not to disturb the fitting. Visually check the fitting to make sure the two rising melt indicators have come out (usually min. of 3mm) and that the pipe has not moved during the weld. Allow the full cool time to elapse before removing clamps or moving pipe. The last join should have completely cooled down before the pipeline is pressurized. NB: Electrofusion fittings should be left in the protective bag until needed and must not be left in direct sunlight.



# TECHNICAL INFORMATION

## POLYETHYLENE

Most of our fittings are made from PE, which benefits from the following characteristics:

- Good insulator – can help prevent the freezing of liquid pipe system contents.
- Resistant to abrasion and corrosion.
- Flexible and rugged.
- Resistant to chemical attack – It does not rot, rust, pit, corrode or lose wall thickness through chemical or electrical reaction with the surrounding soil.
- Light weight – reducing the need and costs of heavy machinery.

PE is therefore a good choice where traditional pipe materials would be unsuitable, where ground movement occurs and where aggressive ground conditions are present.

Several types of PE exist. Each type is characterised by its minimal required stress. PE used in electrofusion fittings has the following characteristics:

ISO PE CLASSIFICATION	MINIMAL REQUIRED STRESS	LONG-TERM HYDROSTATIC RESISTANCE AT 20° C
PE80	8 MPa	6.3 MPa
PE100	10 MPa	8 MPa

PE80 has been widely used for gas, water and industrial applications for many years. Whilst we still continue to produce products made from PE80 we hope to offer, where possible all products in PE100.

PE100 is a higher performance, higher density PE, which demonstrates exceptional resistance to rapid crack propagation and long-term stress cracking. Due to the higher performance this type of PE allows for thinner walls at the same operating pressure.

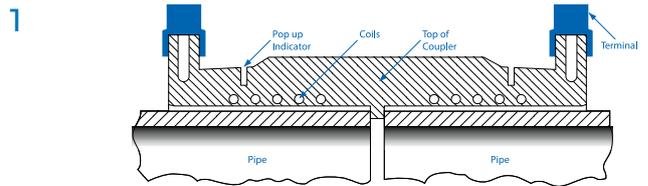
## JOINING PE TO PE BY FUSION

Pipes of similar materials and/or wall thickness can be joined by butt-fusion or electrofusion. Pipes of similar materials but differing wall thickness can only be joined through the use of electrofusion. Butt-welding different pipe materials i.e. PE80 to PE100 is not recommended on site.

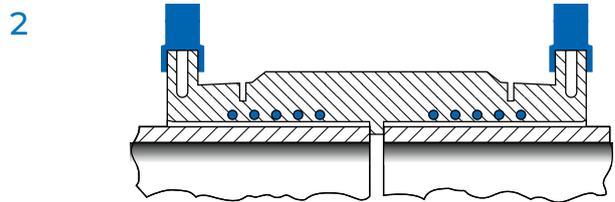
## ELECTROFUSION

All electrofusion fittings contain an electrical heating coil, which when energised causes the adjacent material to melt and form an expanding pool. When this comes into contact with the pipe it also causes the surface of the pipe to melt, this molten material then mixes together. After the heat cycle the fitting and pipe are left to cool so that the molten material can solidify and form a sound joint.

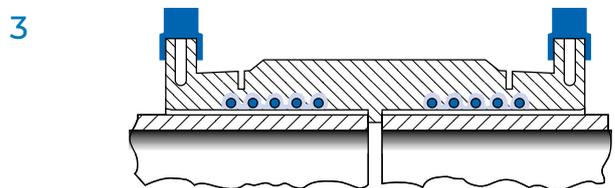
## ELECTROFUSION CYCLE



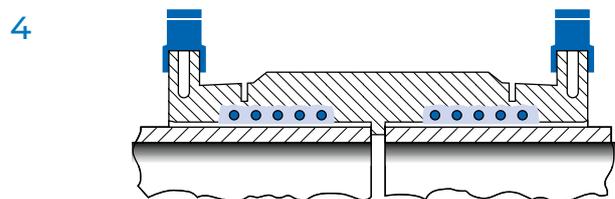
Pipe positioned in coupler prior to energising coil



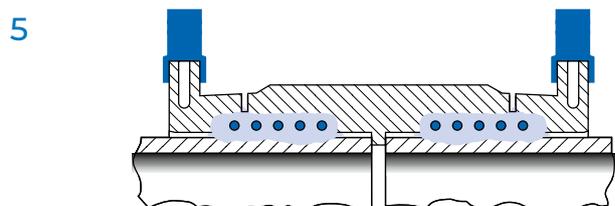
Coil energised.



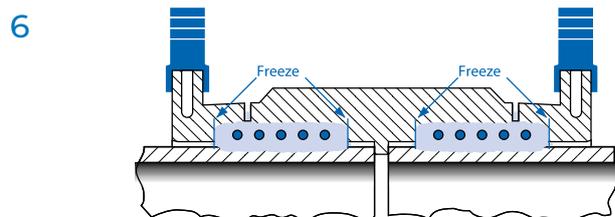
Material surrounding coil starts to melt.



Area of melt extends leading to expansion towards pipe surface.



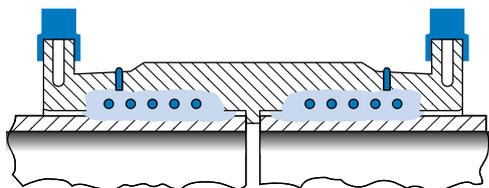
Heat transfers to pipe wall and pipe material starts to melt.



Melt solidifies at the start of the cold zones, thereby sealing the melt zone. Further input of energy causes increase in melt pressure.

## TECHNICAL INFORMATION

7



Melt pressure reaches optimum value at end of energising cycle. The pop up indicator appears to show fusion is complete.

The electrofusion range contains couplers, reducers, tapping tees, branching saddles, elbows, tees, repair saddles and the module "O". Available in both metric and imperial sizes with 4.0mm terminal pins.

Our fittings are available in 16 bar (water) and 10 bar (gas) rating. Care should be taken to ensure that the pressure rating of the fittings is equal to or greater than that of the pipe.

The electrical heating coils within fittings are positioned to ensure optimum melt pressure. This is achieved by:

- Positioning heating coils as close to the joint surface as possible.
- Keeping heat distribution uniform.
- Controlling melt pressure and temperature.
- Protecting the heating coils from damage.

All our electrofusion products contain a universal fitting, which can be fused with two types of fusion sets that will energise the electrical heating coil:

### 1. MANUAL

Each fitting displays the parameters required to program a manual electrofusion unit, either on the fitting itself or on an instruction card contained within the fitting packaging. The information will display the voltage required, fusion time, temperature correction with regards to the surrounding temperature and also the cooling down period.

### 2. BAR CODE

Each fitting displays a bar code that contains the information required by the electrofusion unit. This information can be scanned and the machine will automatically start the fusion process.

As part of our range we also offer electrofusion control units. These can be purchased with the bar code reading function or with manual fusion parameter entry.

### 3. TRACEABILITY

Traceability bar codes containing specific information relating to the manufacture of the product are available on request.

If using the bar code reading facility of electrofusion units the bar code system will automatically adjust the fusion time by small amounts to compensate for variations in ambient temperatures. Contact our Technical Team for additional data relating to extremes of temperature.

## BUTT-FUSION

Butt-fusion should only be used for jointing PE of the same SDR value and is the method where the ends of two pieces of PE (pipe and fitting) are heated to a molten state and pressed together for a specific fusion/cooling time to form a homogeneous bond. The surfaces are heated through the use of electrically heated plates on a butt-fusion welding machine.

The joint formed is fully resistant to end thrust and has identical performance under pressure as the pipe.

We offer a range of spigot fittings in both PE80 and PE100 including reducers, tees, elbows, caps, stub flanges and buttfusion machines.

## CONDITIONS OF USE

### Temperature

The normal fusing temperature range is from -5°C to +23°C. The fittings are designed to work between -10°C and +45°C (metric sizes) and -30°C and +50°C (imperial sizes) with automatic fusion temperature correction.

### Operating Pressure

The levels of pressure used for the hydraulic pressure resistance tests, allow the definition, according to the current regulation in each country, the maximum operating pressures:

MARKING	MAXIMUM PRESSURES GENERALLY USED	TEST PRESSURES AND TEST DURATION
PE80 - SDR11	4 bar gas 12.5 bar water	80 °C 8 bar (=4MPa) 1,000 hours 80 °C 9 bar (=4.5MPa) 165 hours
PE80 - SDR9	10 bar gas 16 bar water	80 °C 10 bar (=4MPa) 1,000 hours 80 °C 11.25 bar (=4.5MPa) 165 hours
PE100 - SDR11	10 bar gas 16 bar water	80 °C 10 bar (=5MPa) 1,000 hours 80 °C 10.8 bar (=5.4MPa) 165 hours

In no case should the pressure be higher than the values authorised by the current regulations in each country.

## MAXIMUM OPERATING PRESSURE

The maximum operating pressure (PMS) of piping items is the maximum inner allowable operating pressure for this item for the kind of application considered.

The PMS is linked to the nominal pressure according to the use envisaged. It can be inferior or superior to the nominal pressure depending on whether the conditions of service are more or less severe than the reference conditions.

## TECHNICAL INFORMATION

### NOMINAL PRESSURE

The nominal pressure (PN) of piping items is expressed by a number that indicates the capability of this item to withstand an inner pressure. It corresponds to the value expressed in bar of an inner water pressure maintained constant that the piping items have to withstand without failing for 50 years at a temperature of 20°C. The nominal pressures are directly calculated from the long-term hydrostatic resistance at 20 °C.

$$PN - 20 = \frac{\sigma \cdot e}{D - e}$$

PN = nominal pressure

$\sigma$  = long-term hydrostatic resistance at 20°C (MPa)

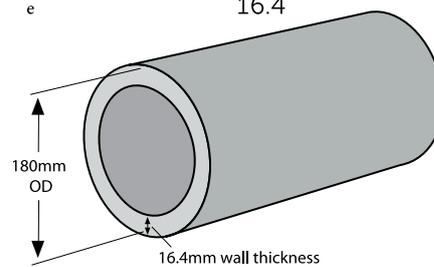
e = (Minimum) nominal thickness of the pipe walls expressed in mm

D = nominal outside diameter (mm)

### STANDARD DIMENSIONAL RATIO

The Standard Dimensional Ratio (SDR) is a rounded number expressing the ratio of the nominal diameter (outside minimal diameter) – DN on the nominal thickness (minimal wall thickness) – e.

$$SDR = \frac{DN}{e} \quad SDR11 = \frac{180}{16.4}$$



Relationship between wall thickness and outside diameter (OD)

## GUARANTEES

### QUALITY ASSURANCE

Our fittings are designed to ensure total security during use.

Important cold areas prevent any spraying of molten substance. The fusion area dimensions allow optimum quality fusion.

All fittings are manufactured according to the quality system based on the requirements of the ISO 4427 standard. Quality controls and checks take place throughout all stages of our manufacturing process ensuring the highest quality. These tests are completed by qualified technicians within a laboratory environment.

### PRODUCT MARKINGS

Where applicable, our fittings incorporate the following information:

- Material.
- SDR.
- Nominal Size (mm).
- Fusion Time.
- Cooling Time.
- Application Information (Gas or Water).
- Certifying Symbols and Standards.

### TECHNICAL SUPPORT

For further information on our products or for help and support please contact our Technical Team on.

### PRODUCT PACKAGING

PE fittings are packaged in individual bags, within boxes/crates to prevent exposure to dust and light.

### DISCLAIMER

As the company's products are used for a multiplicity of purposes and as the company has no control over the method of their applications or use, the company excludes all conditions or warranties, expressed or implied by statute or otherwise, as to their products and/or their fitness for any particular purpose. Any technical co-operation between the company and the customer is given for customers assistance only and without liability on the part of the company.



# UNION PIPES INDUSTRY

## SAUDI ARABIA FOUNDRY

**TOTAL AREA**

80.700 M<sup>2</sup>

**COVERED AREA**

21.000 M<sup>2</sup>



King abdulla Economic City .. Rabigh .. North Of Jeddah



# Production Consistency

UPI's range of modern European machinery ensures consistent high quality of pipes and fabrications.

## 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.



# PE Pressure Pipe Uses

- 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





## PE Pressure Pipe 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

# Polypropylene (PP) & Polyethylene (PE) Gravity Pipes

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 3500mm.

Applications include seawater intake and outfalls, storm water drainage, sewerage and industrial applications. Manholes and tanks can also be fabricated to particular requirements.





## Structured Wall Pipes uses

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

## Structured Wall Pipe 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

## Corrugated Pipes PE and PP Uses

### *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

## Corrugated Pipe 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.

**APPROVAL  
&  
CERTIFICATION**







Your organization is now successfully prequalified and added as a Vendor for The Red Sea Development Company.

You will be contacted via your provided contact name once a package that matches your capability is ready to be issued out to the market.

Thank you for taking time to participate in our prequalification process.

You are receiving this email because your customer, The Red Sea Development Company, has identified you as the appropriate contact for this correspondence. If you are not the correct contact, please contact The Red Sea Development Company.

The Red Sea Development Company

Offices | Data Policy | Contact Us | Customer Support

Powered by 

**Vendor Number: VDR15614329**

لحوان الوطني: رقم الصني ٠٦٦١٠، منطقة التنمية الصناعية صرحة الأولى، مدينة مكة عيلا الاقتصادية، ازم البردي ٠٣٦١٨١، رقم الإصلي ٠٦٧٠٠، رايح المصنعة العربية السعودية  
National Address : Building no.3654, Industrial Area Phase 1- King Abdullah Economic City, Zip code 23989, additno. 6704, Rabigh, K.S.A

SASO Certificate



الهيأة السعودية للمواصفات والمقاييس والقياس والحدود  
Saudi Standards, Metrology and Quality Org.



**شهادة ترخيص باستعمال علامة الجودة**  
License For Use of The Quality Mark

رقم الترخيص: 201800507011

SASO certifies that it has granted the right to use (SASO) quality mark on the following products, after fulfilling the required requirements according to the related normative references:

The Establishment:	شركة الاتحاد لصناعة الأنابيب المصنوعة	التشابه:	
The Establishment's Address:	رايغ - مدينة الملك عبدالله الاقتصادية	عنوان المنشأة:	
Production Line Location:	رايغ - مدينة الملك عبدالله الاقتصادية	موقع خط الإنتاج:	
Normative References:	SASO ISO 4427-2/2019	المراجع القياسية:	
The Trade Mark:	الاتحاد لصناعة الأنابيب	العلامة التجارية:	
The Product:	انابيب عميد الايثيلين لإمدادات المياه (PE100)	المنتج:	التصنيع المصنوعي
Date of Granting:	2018/09/14	تاريخ الصنع:	
Date of Renewal:	2021/09/15	تاريخ التجديد:	
Date of Expiry:	2024/09/14	تاريخ الانتهاء:	

نائب المحافظ للتخطيط والعمليات  
Vice-Governor, Operations and Conformity

المهندس/ سعود بن راشد المعسكر  
Eng. Saud R. AlAskar



الهيئة السعودية للمواصفات والمقاييس والقياس والحدود  
Saudi Standards, Metrology and Quality Org.

تأكد من صحة هذه الشهادة برأي زيارة موقعنا على الإنترنت وأي تغيير في هذا الشهادة يلغها  
To verify this certification visit SASO website, and any changes or modification on this certificate will affect its validity.

1 / 2

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الهيأة السعودية للمواصفات والمقاييس والقياس والحدود  
Saudi Standards, Metrology and Quality Org.



**ملحق شهادة ترخيص استعمال علامة الجودة**  
Appendix (License For Use of The Quality Mark)

رقم الترخيص	تاريخ الصنع	تاريخ التجديد	تاريخ الانتهاء
201800507011	14/09/2024		

شركة الاتحاد لصناعة الأنابيب المصنوعة  
201800507011  
14/09/2024

التيب عبد الإلهج لإمدادات المياه (PE100)  
العلامة التجارية الأنابيب



الهيئة السعودية للمواصفات والمقاييس والقياس والحدود  
Saudi Standards, Metrology and Quality Org.

تأكد من صحة هذه الشهادة برأي زيارة موقعنا على الإنترنت وأي تغيير في هذا الشهادة يلغها  
To verify this certification visit SASO website, and any changes or modification on this certificate will affect its validity.

2 / 2

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# Union Pipes Industry KSA Aramco Approval

Saudi Arabian Oil Company  
Supplier Relationship Management  
P.O. Box 9387  
Dhahran 31311  
Saudi Arabia

Tel: (966 13) 874-0950  
Fax: (966 13) 874-1495



أرامكو السعودية  
saudi aramco

July 13, 2023

**SQU-041-23**

**Ziyad Al Horaibi, Chairman Representative**  
Union Pipes Industry LLC  
P.O. BOX 6704  
Makkah 23899  
Saudi Arabia

Fax 1 26146 677

**Mr. Al Horaibi**

We are pleased to inform you that your company is included in the Saudi Aramco Supplier Information System under Vendor Code No. 10061799, and Plant ID 30008648 for the following products provided your company continues to meet relevant Saudi Arabian and Saudi Aramco standards.

SCOM	Description
6000000039*	PIPE & FITTINGS, NONMETALLIC, SOLID WALL

\*Approved with limitations

This approval, however, should not be construed as a commitment by Saudi Aramco to purchase from you. Being approved as a supplier only grants your company the opportunity, along with other approved sources, to respond to requests for submitting proposals in accordance with Saudi Aramco's established policies and procedures. All purchase agreements and orders will be issued based on the name and address stated in your commercial registration (CR), as stated above.

Saudi Aramco wishes to remind you that being recognized as a potential supplier is a privilege which carries with it serious obligations and responsibilities to act in a legal and ethical manner. We wish to remind you of the Saudi Aramco Supplier Code of Conduct (SCOC) which you acknowledged. Failure to abide by the principles set forth in the SCOC can result in adverse actions being taken by Saudi Aramco against you including suspension of you as a supplier. Saudi Aramco also expects each of its suppliers to satisfy each of the requirements of any purchase agreements or orders which might be placed and to act responsibly and reliably as a supply chain supplier.

Page 1 of 2

Saudi Arabian Oil Company (Saudi Aramco) is a company formed by Royal Decree No. M/6 dated 04/02/409H, and is a joint stock company, with certificate of registration number 20220130 having its principal office at P.O. Box 9387, Dhahran, Saudi Arabia and a fully paid capital of SAR 60,000,000,000.  
Saudi Aramco: Company General Use

Saudi Arabian Oil Company  
Supplier Relationship Management  
P.O. Box 9387  
Dhahran 31311  
Saudi Arabia

Tel: (966 13) 874-0950  
Fax: (966 13) 874-1495



أرامكو السعودية  
saudi aramco

**SQU-041-23**

Please note that evidence of representation from your supply source(s) must be supported by letter(s) of confirmation stipulating the territorial coverage and specific product lines involved. Your supply sources must have been accepted as qualified suppliers of the range of materials that you wish to supply. It is also important that you advise us immediately of any changes in the agreements which you have negotiated with your supply sources and/or any changes in your contact information such as postal address, telephone and fax numbers.

**Suppliers should apply for Saudi Aramco Supplier Portal access by forwarding a request to [portal-registration@aramco.com](mailto:portal-registration@aramco.com).** The Supplier Portal is the main electronic business tool used between Saudi Aramco and its suppliers and serves to improve the flow and accuracy of key supply chain information.

For linking applicable SCATs, please communicate with Standardization Engineer Abdullah Alghassab on (013) 874-1264 or on [abdullah.alghassab@aramco.com](mailto:abdullah.alghassab@aramco.com)

For further information or assistance, please contact Rashid Almahasheer on (013) 874-7534 or the Supplier Help Desk on (013) 874-2222 or on [SupplierHelpDesk@aramco.com](mailto:SupplierHelpDesk@aramco.com)



**Mohammed Alshuayl, Supervisor**  
Supplier Qualification Unit

It is the responsibility of the supplier to notify Saudi Aramco Supplier Relations Management Unit of the following:

1. Change of Name/ Address/ Owner(s)
2. Any change of the supplier location (sub-sourcing fabrication of major components)
3. Discontinuation of fabrication or supply of approved commodities (SCOMs, SCATs and/or MSGs)

Page 2 of 2

Saudi Arabian Oil Company (Saudi Aramco) is a company formed by Royal Decree No. M/6 dated 04/02/409H, and is a joint stock company, with certificate of registration number 20220130 having its principal office at P.O. Box 9387, Dhahran, Saudi Arabia and a fully paid capital of SAR 60,000,000,000.  
Saudi Aramco: Company General Use

**Services and Contracts Business Line**  
**Localization and Qualification Department**



Date: 22/11/2020  
Vendor Name: UNIONPIPESINDUSTRY  
P.O. Box : 91322  
C. R. NO: 4602004151  
E-mail : mismat@upi-sa.com

**Subject: VENDOR'S REGISTRATION NOTIFICATION**

Greetings..

We are pleased to inform you that, the commercial documents have been evaluated and your company is now registered with Saudi Electricity Company under Vendor No ( 2007480 )

To complete your technical qualification, please fill up the prequalification forms/ requirements whenever it is applicable. These forms are available in SEC Website ( <https://www.se.com.sa/en-us/business/Pages/ManufacturersPrequalification.aspx> ) and please make sure to select the materials based on the mentioned activity in your Commercial Registration

To Login E-Bidding System: (<https://www.se.com.sa/c-Bid/home>)  
Vendor ID: 2007480  
Password: [REDACTED]

When you log on to the system as first time, please change your password immediately through e-bidding link which available on SEC webpage.

Thank you for your interest to do business with Saudi Electricity Company.

**Best Regard,**

Localization and Qualification Team  
[MYRQD@SE.COM.SA](mailto:MYRQD@SE.COM.SA)



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[www.se.com.sa](http://www.se.com.sa) | C.R.1010158983


Member of the FM Global Group

### Certificate of Compliance

This certificate is issued for the following:

**Polyethylene (PE) Pipe and Fittings for Underground Fire Protection Service**

(see attached table)

**Prepared for:** Union Pipes Industry – K.S.A  
Industrial Area Phase -1, Building 3654  
King Abdullah Economic City,  
Rabigh 23989  
Saudi Arabia

**Manufactured by:** Union Pipes Industry – K.S.A  
Industrial Area Phase -1, Building 3654  
King Abdullah Economic City,  
Rabigh 23989  
Saudi Arabia

FM Approvals Class: 1613 (February 2017)  
Approval Identification: PR462388      Date Approved: March 16, 2022

To verify the availability of the Approved product, please refer to [www.approvalguide.com](http://www.approvalguide.com)

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.

*David B. Fuller*  
David B. Fuller  
VP, Manager of Fire Protection  
FM Approvals  
1151 Boston-Providence Turnpike  
Norwood, MA 02062 USA



Page 1 of 3


Member of the FM Global Group

### Certificate of Compliance

**Union Pipes Industry – K.S.A., Polyethylene Pipe and Fittings**

Product Designation	Nominal Pipe Size, mm.	Pressure Rating, bar (psig)	Remarks
SDR11 Pipe	50, 63, 75, 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 Pipe	50, 63, 75, 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a
SDR7.4 Pipe	50, 63, 75, 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a
SDR11 30 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 30 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a
SDR7.4 30 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a
SDR11 45 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 45 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a
SDR7.4 45 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a
SDR11 60 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 60 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a
SDR7.4 60 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a
SDR11 1-90 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 1-90 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a
SDR7.4 1-90 deg Elbow (3 segment)	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a
SDR11 Equal Tee, 3 seg.	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800	13.1 (190)	a
SDR9 Equal Tee, 3 seg.	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	16.2 (235)	a

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Member of the FM Global Group

### Certificate of Compliance

Product Designation	Nominal Pipe Size, mm.	Pressure Rating, bar (psig)	Remarks
SDR7.4 Equal Tee, 3 seg.	90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400	20 (290)	a

**Remarks:**  
a. Pipe and fittings may be directly connected together by the butt fusion process. Manufacturer fusion instructions must be strictly followed for a proper fusion joint. The pipe and fittings may also be joined to other FM Approved steel flanged pipe and fittings by using FM Approved flange adapters

Page 3 of 3

Approval Number 2012557  
Test Report: M107093

24<sup>th</sup> March 2021

Union Pipes Industry Co. Ltd.  
Building No. 2654, Industrial Area Phase 1,  
King Abdulah Economic City,  
Zip Code 23969,  
Addt No. 6704,  
Rabigh  
Saudi Arabia



Water Regulations Advisory Scheme Ltd.  
Unit 13,  
Willow Road,  
Pen y Fan Industrial Estate,  
Cwmnwl,  
Gwent,  
NP11 4EG

**WATER REGULATIONS ADVISORY SCHEME LTD. (WRAS)**  
**MATERIAL APPROVAL**

The material referred to in this letter is suitable for contact with wholesome water for domestic purposes having met the requirements of BS6920-1:2000 and/or 2014 'Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of the water'.

The reference relates solely to its effect on the quality of the water with which it may come into contact and does not signify the approval of its mechanical or physical properties for any use.

**POLYETHYLENE COMPONENTS. 5240**

'Union Pipes Industry – K.S.A. HDPE Pipe', manufactured from 'P6006' by Union Pipes Industry Co. Ltd, Rabigh, Saudi Arabia. Black coloured, extruded HDPE pipe.

For use with water up to 60 °C.

**APPROVAL NUMBER: 2012557**  
**APPROVAL HOLDER: UNION PIPES INDUSTRY CO. LTD.**

The Scheme reserves the right to review approval.  
Approval 2012557 is valid between December 2020 and December 2025

An entry, as above, will accordingly be included in the Water Fittings Directory on-line under the section headed, 'Materials which have passed full tests of effect on water quality'.

The Directory may be found at: [www.wrassapprovals.co.uk/approvals-directory/](http://www.wrassapprovals.co.uk/approvals-directory/)

Yours Faithfully



**Ian Hughes**  
**WRAS Approvals Manager**

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The Water Regulations Advisory Scheme Ltd. Registered in England No. 08903920 Registered office: 6D Lovick Close Hazel Grove Stockport SK7 5ED  
WRAS Appr 204F1 ver 1.0 Tel: +44(0)333 207 9000 Fax: +44(0)1493 248 540 Email: [info@wras.co.uk](mailto:info@wras.co.uk) Website: [www.wrass.co.uk](http://www.wrass.co.uk) Page 1 of 2

**WRAS MATERIAL APPROVAL - MATERIALS WHICH HAVE PASSED FULL TESTS OF EFFECT ON WATER QUALITY**

The material referred to in this letter is suitable for contact with water for domestic purposes. **Approval of this material does not signify the approval of its mechanical or physical properties for any use.**

Manufacturers or applicants may only quote in their sales literature terms which are used in this letter, namely that: 'the material as listed, having passed the tests of effect on water quality, is suitable for use in contact with wholesome water'

This may be abbreviated to 'Water Regulations Advisory Scheme - Approved Material' or 'WRAS Approved Material'.

The scope of an Approval does not extend to rebranded materials unless otherwise agreed by the Scheme.

**Use of the WRAS Approved Material Logo**

Approval holders may use the WRAS Approved Material logo and make reference to any approval issued by WRAS Ltd. in respect of a particular material or range of materials provided the approval is, and remains valid.

Approval holders are entitled to use the logo on the packing, promotional literature and point of sale advertising Approved Materials.

**Modifications to existing Approvals**

It is a condition of WRAS Material Approval that NO changes or modifications to the Approved Material, be made without the Approval Holder first notifying WRAS Ltd. Full details of the proposed changes must be provided to the Scheme. Failure to comply with this condition will immediately invalidate a previously granted Approval.

**Re-Approval**

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the MAS application form which will be included with the letter and return to WRAS (via e-mail or post).

Please note it is the responsibility of the Approval Holder to ensure the Approval remains valid. WRAS Ltd. accepts no liability for the delay in granting approval where this is caused by circumstances outside of the Scheme's control.

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The Water Regulations Advisory Scheme Ltd. Registered in England No. 08903920 Registered office: 6D Lovick Close Hazel Grove Stockport SK7 5ED  
WRAS Appr 204F1 ver 1.0 Tel: +44(0)333 207 9000 Fax: +44(0)1493 248 540 Email: [info@wras.co.uk](mailto:info@wras.co.uk) Website: [www.wrass.co.uk](http://www.wrass.co.uk) Page 2 of 2

Cer. NO :	RQ-23-036	<b>شهادة اعتماد النوعية</b>		<b>stc</b>
Approval Date :	03/Dec/2023	<b>TYPE APPROVAL CERTIFICATE</b>		
Valid Up To :	03/Jan/2025			
<p>This is to certify that the undernoted manufacturer has been approved for the listed products below in accordance to STC specifications: <span style="float: right;">تم منح هذه الشهادة للمصنِّع الموضح بياناته لفائمة المنتجات أدناه حسب مواصفات STC:</span></p>				
<b>Manufacturer Name</b>	<b>Union Pipes Industry Co</b>	<b>اسم المصنِّع :</b>	<b>شركة الاتحاد لصناعة الأنابيب</b>	
<b>Country of origin</b>	<b>KSA</b>	<b>بلد المنشأ :</b>	<b>المملكة العربية السعودية</b>	
<b>For Below Products:</b>			<b>المنتجات التالية :</b>	
Ser.No.	Mic.No.	AR/Description	EN/Description	Spec. Issue
1	2740050200089	قناة صغيرة كملن حتى 32 سم	Plain HDPE Duct, Single Mini-Duct, Full Black, 32 mm OD	VD 101
2	2740050200092	قناة صغيرة كملن حتى 32 سم	Plain HDPE Duct, Single Mini-Duct, Full Orange, 32 mm OD	VD 101
3	2740050200078	قناة صغيرة كملن حتى 32 سم	Plain HDPE Duct, Single Mini-Duct, Black (4 Orange Stripes), 32 mm OD	VD 101
4	197079001003	قناة صغيرة ، بولي إيثيلين عالي الكثافة ، قطر خارجي 20 مم	Duct, HDPE, Mini-duct, Full black 20 mm OD	VD 101
<p>مدير إدارة ضمان الجودة التقنية Technology Quality Assurance Director</p> <p>م / بدر بن محمد السعيد</p>		<p>مدير شعبة المواصفات والمعايير التقنية Technology Standardization Section Manager</p> <p>م / بدر بن عبد الرحمن الرشيد</p>		
<p><b>Very Important:-</b> 1-Receipt of this certificate from Type Approval Applicant will be considered a full compliance commitment with the mentioned technical specifications in this certificate with latest updates provided to him. 2- The type Approval Certificate of the product(s) does not mean by any form the guarantee to receive request(s) or purchase order(s) from STC.</p>		<p><b>هلم جازن:</b> 1- إن استلام طالب الاعتماد لهذه الشهادة يعتبر تعهداً منه بالالتزام التام بالمواصفة الفنية الموضحة عليها في هذه الشهادة مع آخر تحديثات المواصفة التي يتم تزويده بها. 2- شهادة المطابقة النوعية المنتج (المنتجات) لا تعني بأي شكل من الأشكال ضمان تلقي أي طلب (طلبات) توريد أو أمر (أوامر) شراء من شركة STC.</p>		
<p><b>This Certificate has been printed and stamped electronically and doesn't need a signature</b></p>				

DAS CERTIFICATION



**Quality Management System**  
**Certificate of Approval**  
 This is to certify that the QMS of  
**Union Pipes Industry (UPI)**  
 PO Box 3654 Industrial Area Ph.1  
 King Abdullah Economic City 23989-6704  
 Saudi Arabia

Has been assessed and found to meet the requirements of  
**ISO 9001:2015**

This certificate is valid for the following scope of operations  
**Manufacture of Polyethylene & Polypropylene Pipes and Fittings**

Authorised by:  **Stan Wright**  
 Director

Date of Certificate Issue: 8 June 2023  
 Certificate Valid Until: 7 June 2026  
Recertification audit before 7 May 2026. Certified since 3 May 2017. This certificate is the property of SN Registrars (Holdings) Limited and remains valid subject to satisfactory annual Surveillance audits.

**SN Registrars (Holdings) Limited**  
 002  
 Registration House, 22b Church Street,  
 Rushden, Northamptonshire,  
 NN10 9YT, UK  
 Tel: +44 (0) 1933 381859  
 Email: enquiries@snregistrars.com  
 Web: www.snregistrars.com

Certificate Number: DAS 17371691/48/Q/48/OU Rev:



DAS CERTIFICATION



**Environmental Management System**  
**Certificate of Approval**  
 This is to certify that the EMS of  
**Union Pipes Industry (UPI)**  
 PO Box 3654 Industrial Area Ph.1  
 King Abdullah Economic City 23989-6704  
 Saudi Arabia

Has been assessed and found to meet the requirements of  
**ISO 14001:2015**

This certificate is valid for the following scope of operations  
**Manufacture of Polyethylene & Polypropylene Pipes and Fittings**

Authorised by:  **Stan Wright**  
 Director

Date of Certificate Issue: 21 June  
 2023 Certificate Valid Until: 20 June  
 2026  
Recertification audit before 20 May 2026. Certified since 7 June 2017. This certificate is the property of SN Registrars (Holdings) Limited and remains valid subject to satisfactory annual Surveillance audits.

**SN Registrars (Holdings) Limited**  
 Registration House, 22b Church Street,  
 Rushden, Northamptonshire,  
 NN10 9YT, UK  
 Tel: +44 (0) 1933 381859  
 Email: enquiries@snregistrars.com  
 Web: www.snregistrars.com

Certificate Number: DAS 46055035/48/E Rev: 002



DAS CERTIFICATION



**Occupational Health & Safety Management System**  
**Certificate of Approval**  
 This is to certify that the OHSMS of  
**Union Pipes Industry (UPI)**  
 PO Box 3654 Industrial Area Ph.1  
 King Abdullah Economic City 23989-6704  
 Saudi Arabia

Has been assessed and found to meet the requirements of  
**ISO 45001:2018**

This certificate is valid for the following scope of operations  
**Manufacture of Polyethylene & Polypropylene Pipes and Fittings**

Authorised by:  **Stan Wright**  
 Director

Date of Certificate Issue: 30 June 2023  
 Certificate Valid Until: 29 June 2026  
Recertification audit before 29 May 2026. Certified since 17 May 2017. This certificate is the property of DAS Certification Ltd and remains valid subject to satisfactory annual Surveillance audits.

**DAS Certification Ltd**  
 Registration House, 22b Church Street,  
 Rushden, Northamptonshire,  
 NN10 9YT, UK  
 Tel: +44 (0) 1933 381859  
 Email: enquiries@dascertification.co.uk  
 Web: www.dascertification.co.uk

Certificate Number: DAS 74937669/48/OU Rev: 002





الاتحاد لصناعة الأنابيب  
Union Pipes Industries KSA



📍 Building no.3654, Industrial Area Phase 1 King  
Abdullah Economic City, Zip code 23989,  
addit.no. 6704, Rabigh, K.S.A.

☎ +966 553331204 / +966 558766277 Sales Dept.  
+966 500001010 Plant

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🌐 www.upi-sa.com