


الاتحاد لصناعة الأنابيب

Union Pipes Industries KSA

# Product Catalogue

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# OVERVIEW

**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.**

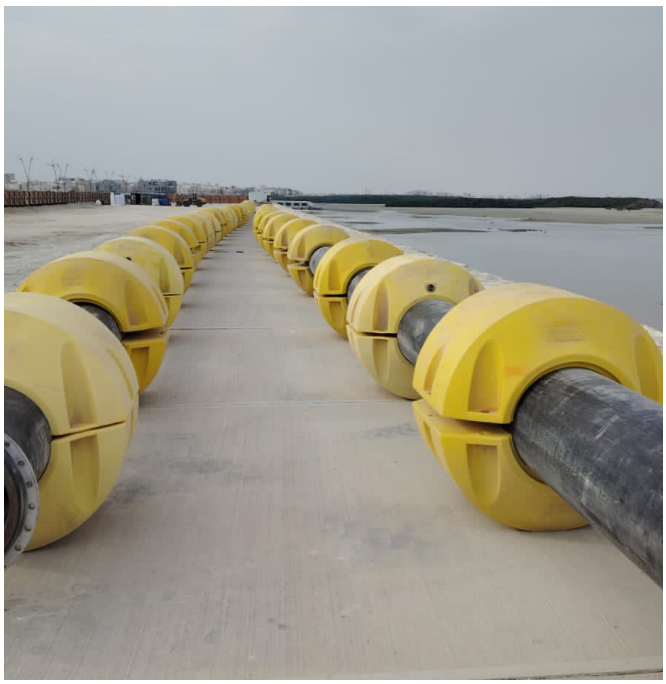
## Polymers

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 PEIOO, 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 (o) of 6.3MPa with a Safety Factor of 1.25. PEIOO has a MRS of 10 MPa and an allowable design stress (o) of 8MPa with a Safety Factor of 1.25; also called the Design Factor (C) according to ISO.

The PE80 and PEIOO 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.



## 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 mechancial 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 4427-1

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/cm3 |
| 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 | cm3/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/m3 |
| Notched Impact (Charpy) acN 30˚C | ISO 179 | 6 | KJ/m3 |
| Thermal Stability 210˚C | ISO 10837 | >60 | MIN |
| Carbon Black Content | ASTM D 1603 | >2 | % |

## NOMINAL PRESSURE RATINGS

### Specifications according to ISO 4427

| Standard Dimension Ratio (SDR) | PN Rating | MPa | PSI | Head Pressure (m) | PN Rating | MPa | PSI | Head Pressure (m) |
|---|---|---|---|---|---|---|---|---|
| SDR 41 | PN 3.2 | 0.32 | 46 | 32 | PN 4 | 0.40 | 58 | 40 |
| SDR 33 | PN 4 | 0.40 | 58 | 40 | - | - | - | - |
| SDR 26 | - | - | - | - | PN 6.3 | 0.63 | 91 | 63 |
| SDR 21 | PN 6.3 | 0.63 | 91 | 63 | PN 8 | 0.80 | 116 | 80 |
| SDR 17 | PN 8 | 0.80 | 16 | 80 | PN 10 | 1.00 | 145 | 100 |
| SDR 13.6 | PN 10 | 1.00 | 145 | 100 | PN 12.5 | 1.25 | 181 | 125 |
| SDR 11 | PN 12.5 | 1.25 | 181 | 125 | PN 16 | 1.60 | 232 | 160 |
| SDR 9 | PN 16 | 1.60 | 232 | 160 | PN 20 | 2.00 | 290 | 200 |
| SDR 7.4 | PN 20 | 2.00 | 290 | 200 | PN 25 | 2.50 | 363 | 250 |

***Note:***

*Series 1 pipes are classified in terms of the nominal pressure rating (PN). The number used to describe PN is 10 times the value of the maximum allowable operating pressure (MAOP) at 20°C.*

## EFFECTS OF TEMPERATURE ON PRESSURE

### Pressure derating due to temperature. Maximum allowable operating pressure (maop) - PE100

| Temp °C | | PN 4 | PN 6.3 | PN 8 | PN 10 | PN 12.5 | PN 16 | PN 20 | PN 25 |
|---|---|---|---|---|---|---|---|---|---|
| 20 | Metres of head pressure | 40 | 63 | 80 | 100 | 125 | 160 | 200 | 250 |
| 25 | | 40 | 63 | 80 | 100 | 125 | 160 | 200 | 250 |
| 30 | | 38 | 59 | 75 | 94 | 118 | 150 | 188 | 235 |
| 35 | | 36 | 56 | 71 | 89 | 116 | 143 | 179 | 224 |
| 40 | | 34 | 53 | 68 | 84 | 106 | 135 | 169 | 221 |
| 45 | | 32 | 50 | 64 | 80 | 100 | 127 | 159 | 199 |
| 50 (36y) | | 30 | 48 | 60 | 76 | 95 | 121 | 151 | 189 |
| 55 (24y) | | 29 | 45 | 57 | 72 | 89 | 115 | 143 | 179 |
| 60 (12y) | | 27 | 43 | 54 | 68 | 85 | 109 | 136 | 170 |
| 80 (1y) | | 21 | 34 | 43 | 53 | 67 | 86 | 107 | 134 |

***Note:***

*This table conforms with DIN 8074 . Where the temperature is constant during the life of the pipeline, it is expected to exceed 50 years service for temperatures up to 45°C. We recommend that PE100 is only used for applications up to 50°C continuous.*

# 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

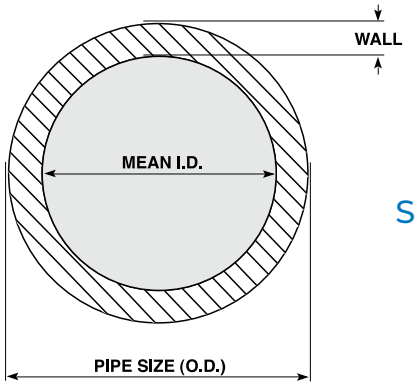
## SPECIFICATIONS ACCORDING TO ISO 4427

| 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 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 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 | 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<br>PN 6.25 | SDR 11<br>PN 10 | SDR 17<br>PN 5 | SDR 11<br>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 <0.01 g/cm³, 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.

# HDPE Perforated/ Slotted Piping 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 infi ltration galleries are prepared to collect the clean water (free from slit, clay) from the river bed for use in city water supply, thermal power plants, coal mines, or any industrial application. In the design of infi ltration gallery, the network of perforated/ slotted HDPE pipes covered with geo textile/fabric are installed at the specifi c 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 fi ltered through geo textile/fabric and the clean fi ltered 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 specifi c area on pipe circumference.

## Technical specifications

### *Range:*

- Ø90 to 400 mm
- Pressure Rating 2.5 to 25 kgf/cm²
- 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)

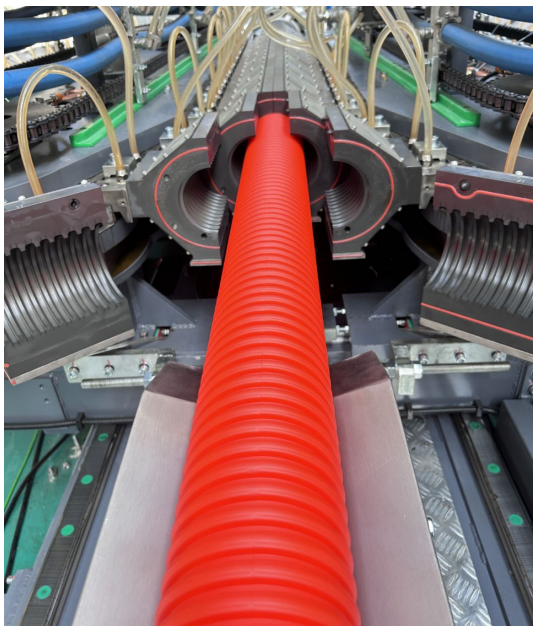
### *Applications:*

- Leachate Collection.
- City Waste Dumping ground (Gas + Liquid).
- Collection of Methane Gas from landfi lls.
- Dispersion of Oxygen for Fast.
- Decomposing of Waste in Dumping Yards.
- River Water Infi ltration 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 servers 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 specifi ed 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 Traffi c Signal projects, Airports etc.

## Technical specifi cations

### *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 defferent 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 servers 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.

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.

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 specifi cations

### *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 defferent 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$^3$ | > 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* | | No failure during test period |
| | MPa | |
| 80°C & 165 hrs Duration | for Circumfer-ential stress | 4.0 |
| 80°C & 1000 hrs Duration | selected | 2.8 |
| Resistance to heating (Oven Test) at 110°C | | The pipe shall show no delamina-tion, 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 deflec-tion | | |
| d < 315 mm - 2.0 deg. | | No leakage |
| 315 mm < d < 630 mm – 1.5 deg. | | No leakage |

# PE Corrugated Piping System for Sub Surface Drainage

Sub soil drainage systems are used to collect leachate under landfi ll 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 fi elds 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 & fi ttings 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 defferent 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).

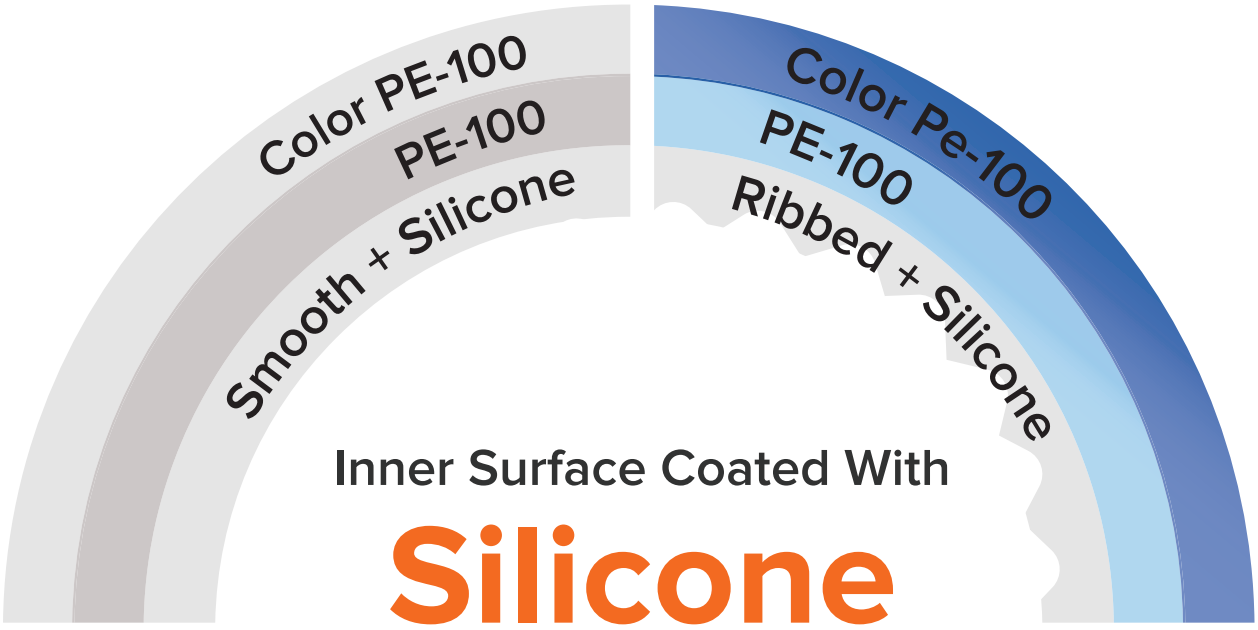
## Bundle ( Micro-Mini) Ducts

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.

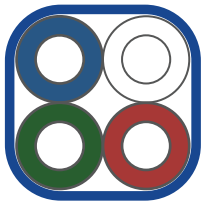
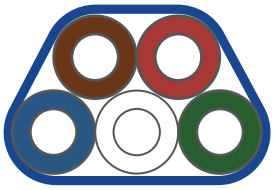
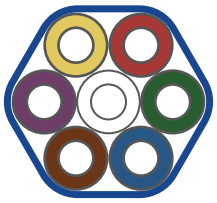
## Optional Feature

- 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.

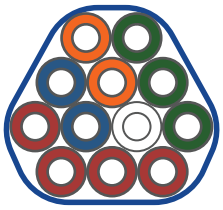
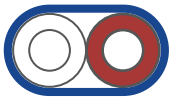
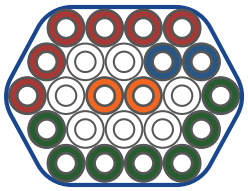


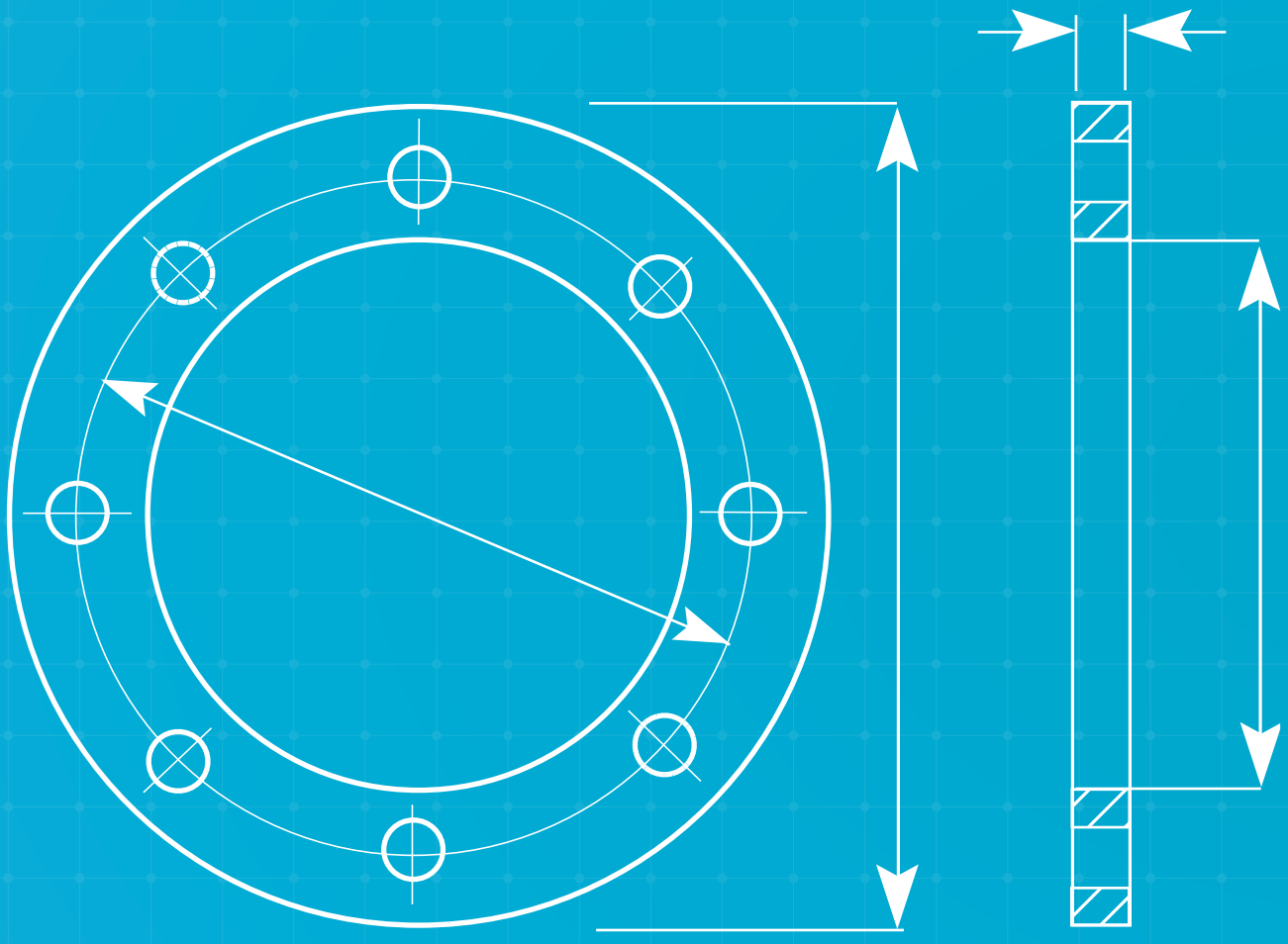

One way or several ways micro ducts are combined by a certain order and covered by dual PE sheathing to form tube bundle, which can allow more duct hole numbers in a limited space. Will be a hole or a number of microtubules in a certain way arranged in combination, the outer layer of double-layer PE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

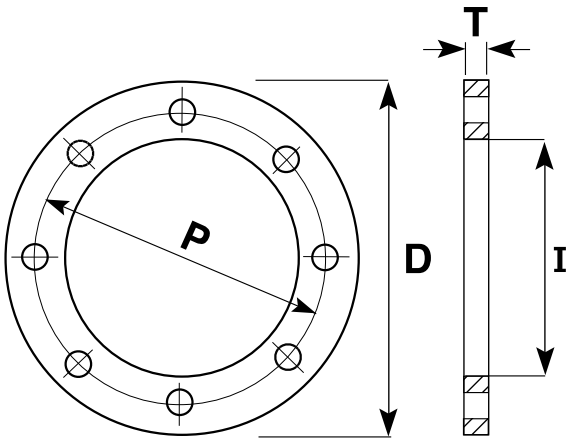
|  |  |  |
|---|---|---|
| **12 Way** | **2 Way** | **24 Way** |
| 7/3.5mm | 7/3.5mm | 7/3.5mm |
| 8/5mm | 8/5mm | |
| 10/6mm | 10/6mm | |
| 12/8mm | 12/8mm | |
| | 14/10mm | |
| | 16/12mm | |
| | 18/14mm | |
| | 20/16mm | |
| | 25/20mm | |
| | 28/24mm | |
| | 32/26.5mm | |
| | 42/36mm | |



# INDUSTRY DATA

## PN16 BS EN 1092 FLANGE PATTERN

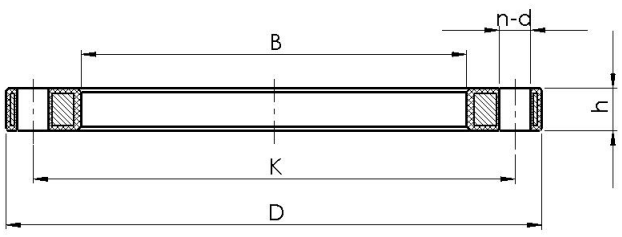
| SIZE | NOMINAL | INCH | P | I | D | T | BOLT HOLES | |
|---|---|---|---|---|---|---|---|---|
| (MM) | FLANGE SIZE | SIZE | (MM) | (MM) | (MM) | (MM) | NO X DIA | BOLT |
| 20 | 15 | 1/2” | 65 | 32 | 95 | 16 | 4x14 | M12 |
| 25 | 20 | 3/4” | 75 | 37 | 105 | 18 | 4x14 | M12 |
| 32 | 25 | 1” | 85 | 44 | 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 |



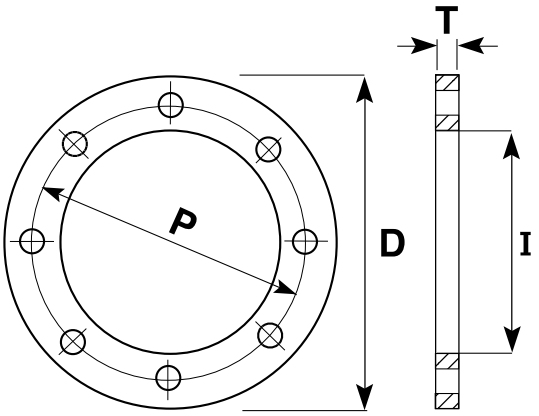
## TABLE ANSI

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.



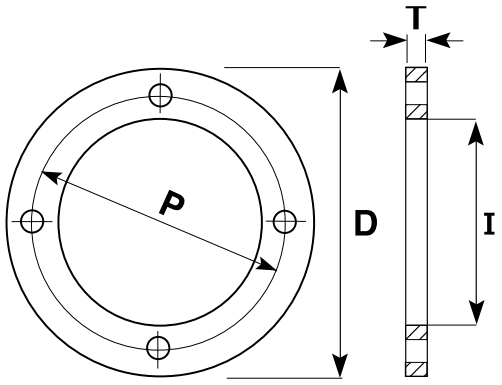
## BS EN 1092 PN16

## 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.

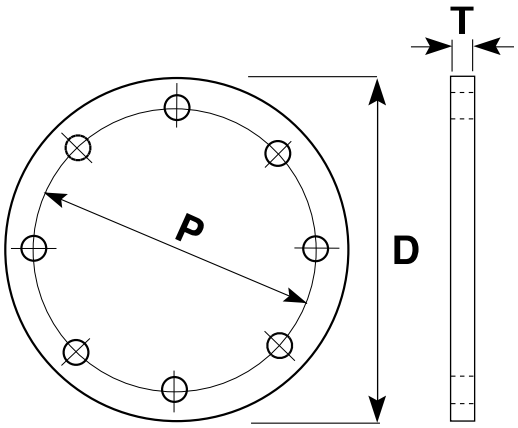



# BLIND FLANGE

| SIZE | NOMINAL | INCH |
|---|---|---|
| (MM) | FLANGE SIZE | 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 | INCH | TABLE D | TABLE E | PN16 | ANSI 150 |
|---|---|---|---|---|---|
| (MM) | SIZE | PCD | PCD | PCD | 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.

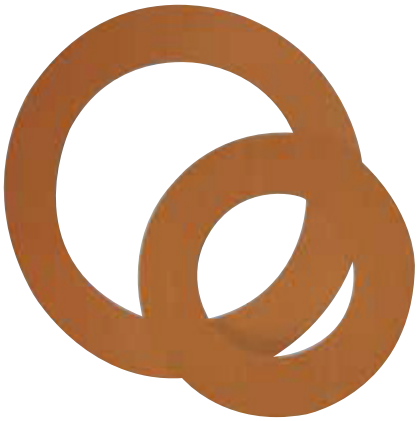
Complies with BS Specification 7531 Grade

## 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.

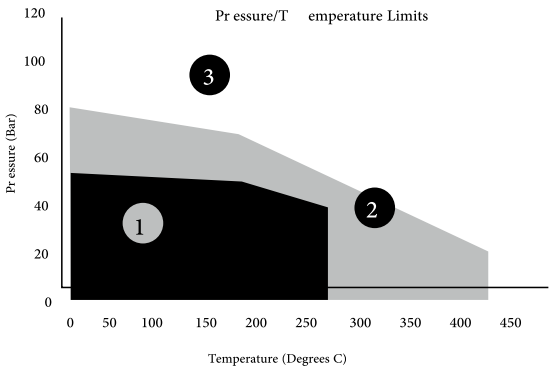
The operating temperature of non-asbestos sheet material is related to the thickness of materials selected. Thinner materials give better temperature and pressure properties.

| 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.

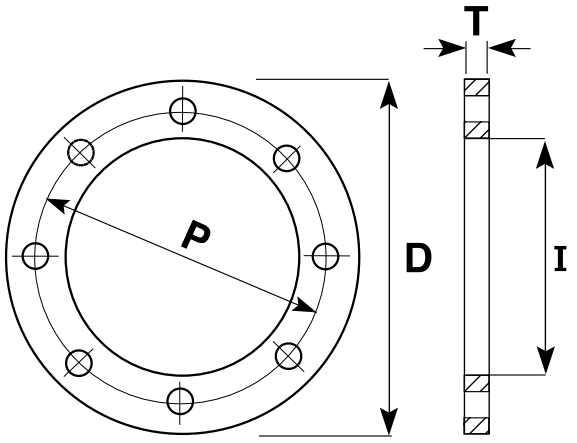



## Note

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” |



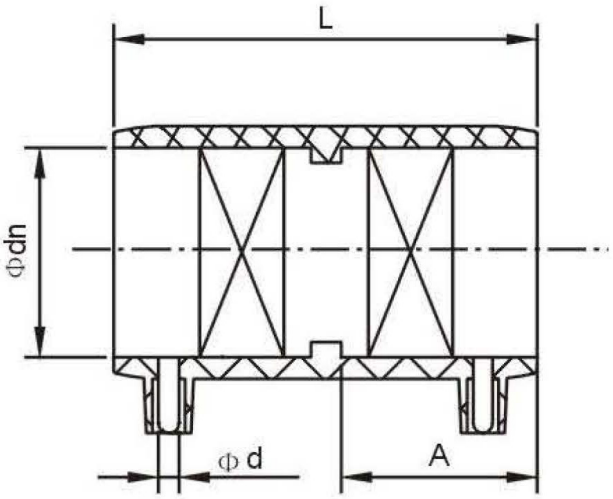
# LARGE DIAMETER ELECTROFUSION ELBOWS AND EQUAL TEES

## FOR GAS AND WATER

# Electrofusion Fitting Series

## Electrofusion Coupler

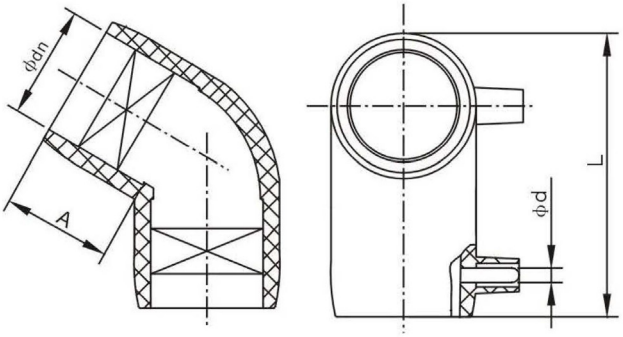
| Specifications Φ dn | L | A | Φd |
|---|---|---|---|
| 20 | 85 | 40 | 4.7 |
| 25 | 90 | 43 | 4.7 |
| 32 | 90 | 44 | 4.7 |
| 40 | 95 | 45 | 4.7 |
| 50 | 105 | 50 | 4.7 |
| 63 | 110 | 50 | 4.7 |
| 75 | 135 | 65 | 4.7 |
| 90 | 130 | 63 | 4.7 |
| 110 | 150 | 70 | 4.7 |
| 125 | 165 | 80 | 4.7 |
| 140 | 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°

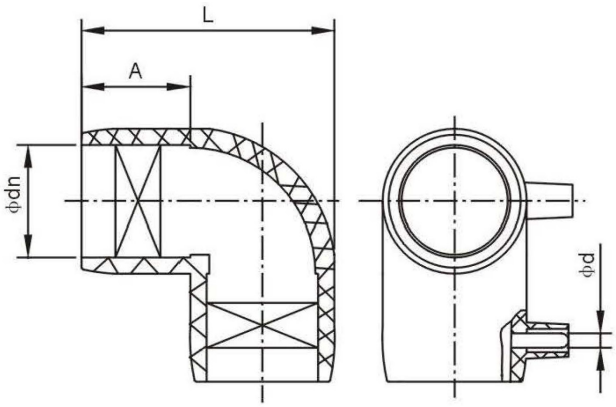
| Specifications Φdn | L | A | Φd |
|---|---|---|---|
| 50X45° | 130 | 50 | 4.7 |
| 63X45° | 180 | 63 | 4.7 |
| 90X45° | 230 | 83 | 4.7 |
| 110X45° | 270 | 85 | 4.7 |
| 160X45° | 280 | 85 | 4.7 |
| 2oox45° | 330 | 100 | 4.7 |
| 250X45° | 420 | 115 | 4.7 |
| 315X45° | 470 | 125 | 4.7 |
| 315X45° | 580 | 140 | 4.7 |



# Electrofusion Fitting Series

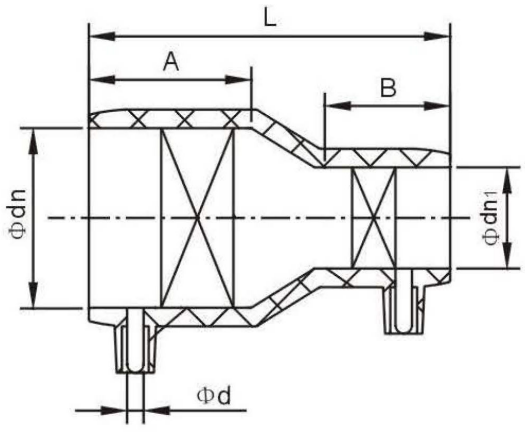
## Electrofusion Elbow 90°

| Specifications Φdn X 90° | L | A | Φd |
|---|---|---|---|
| 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 Reducer

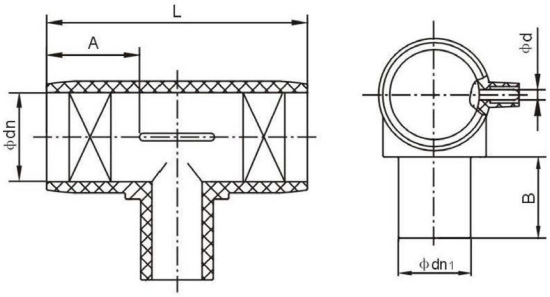
| Specifications Φdn X Φdn1 | L | A | B | Φd |
|---|---|---|---|---|
| 25 X 20 | 94 | 42 | 35 | 4.7 |
| 32 X 20 | 94 | 42 | 40 | 4.7 |
| 32 X 25 | 94 | 42 | 40 | 4.7 |
| 40 X 25 | 100 | 50 | 40 | 4.7 |
| 40 X 32 | 100 | 50 | 40 | 4.7 |
| 50 X 25 | 110 | 55 | 40 | 4.7 |
| 50 X 32 | 110 | 55 | 40 | 4.7 |
| 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 X50 | 120 | 65 | 50 | 4.7 |
| 75 X63 | 130 | 65 | 50 | 4.7 |
| 90 X50 | 140 | 65 | 55 | 4.7 |
| 90 X63 | 140 | 65 | 55 | 4.7 |
| 90 X75 | 145 | 65 | 60 | 4.7 |
| 110 X63 | 160 | 75 | 55 | 4.7 |
| 110 X75 | 155 | 75 | 60 | 4.7 |
| 110 X90 | 155 | 75 | 65 | 4.7 |
| 125 X63 | 160 | 80 | 60 | 4.7 |
| 125 X90 | 160 | 80 | 70 | 4.7 |
| 125 X110 | 165 | 85 | 69 | 4.7 |
| 160 X90 | 195 | 94 | 74 | 4.7 |
| 160 X110 | 195 | 95 | 75 | 4.7 |
| 160 X125 | 195 | 95 | 75 | 4.7 |
| 200 X110 | 210 | 95 | 80 | 4.7 |
| 200 X160 | 210 | 95 | 85 | 4.7 |
| 250 X110 | 230 | 100 | 80 | 4.7 |
| 250 X160 | 230 | 110 | 90 | 4.7 |
| 250 X200 | 230 | 110 | 100 | 4.7 |
| 315 X200 | 240 | 100 | 100 | 4.7 |
| 315 X250 | 240 | 100 | 100 | 4.7 |
| 400 X250 | 260 | 110 | 105 | 4.7 |
| 400 X315 | 260 | 110 | 105 | 4.7 |



# Electrofusion Fitting Series

## Electrofusion Reducer Tee

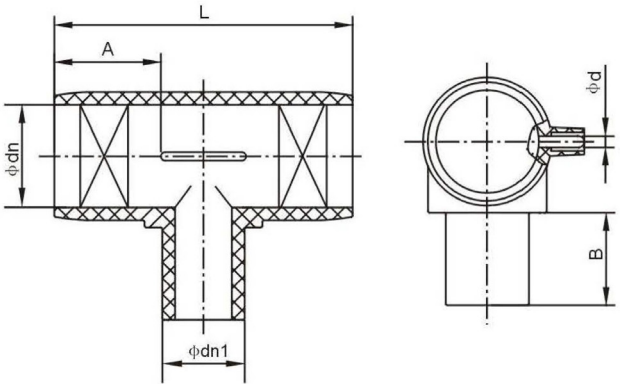
| Specifications Φdn X Φdn1 X Φdn | L | A | B | Φ d |
|---|---|---|---|---|
| 25 X 20 X 25 | 105 | 45 | 50 | 4.7 |
| 32 X 20 X 32 | 120 | 45 | 50 | 4.7 |
| 32 X 25 X 32 | 120 | 45 | 55 | 4.7 |
| 40 X 25 X 40 | 125 | 45 | 55 | 4.7 |
| 40 X 32 X 40 | 125 | 45 | 55 | 4.7 |
| 50 X 25 X 50 | 145 | 50 | 50 | 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 X200 | 360 | 98 | 90 | 4.7 |
| 250 X 110 X250 | 405 | 98 | 95 | 4.7 |
| 250 X 160 X250 | 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 X250 X 315 | 520 | 125 | 120 | 4.7 |
| 400 X 110X 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 Reducer Tee

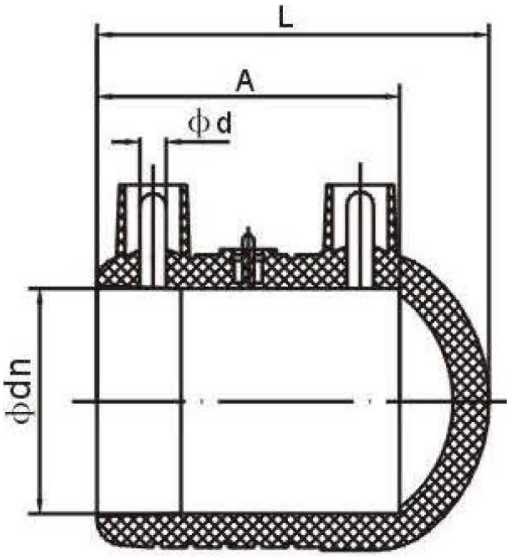
| Specifications Φdn X Φdn1 X Φdn | L | A | B | Φ d |
|---|---|---|---|---|
| 20X20X20 | 100 | 40 | 40 | 4.7 |
| 25X25X25 | 105 | 45 | 50 | 4.7 |
| 32X32X32 | 120 | 45 | 55 | 4.7 |
| 40X40X40 | 125 | 45 | 60 | 4.7 |
| 50X50X50 | 145 | 55 | 60 | 4.7 |
| 63X63X63 | 165 | 55 | 60 | 4.7 |
| 75X75X75 | 195 | 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

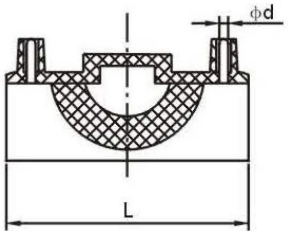
| Specifications Φdn X 90° | L | A | Φ d |
|---|---|---|---|
| 32 | 60 | 45 | 4.7 |
| 40 | 70 | 55 | 4.7 |
| 50 | 70 | 55 | 4.7 |
| 63 | 80 | 55 | 4.7 |
| 90 | 95 | 55 | 4.7 |
| 110 | 105 | 70 | 4.7 |

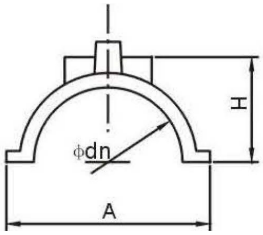


# Electrofusion Fitting Series

## Electrofusion Repair Saddle

| Specifications Φdn | L | A | H | Φ 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 |

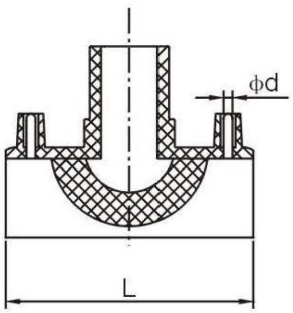


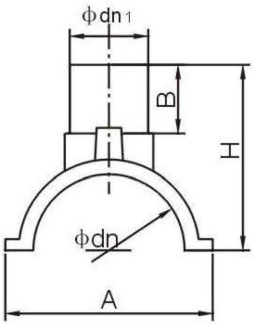



# Electrofusion Fitting Series

## Electrofusion Branch Saddle

| Specifications Φdn × Φdn1 | L | A | B | H | Φ 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 |

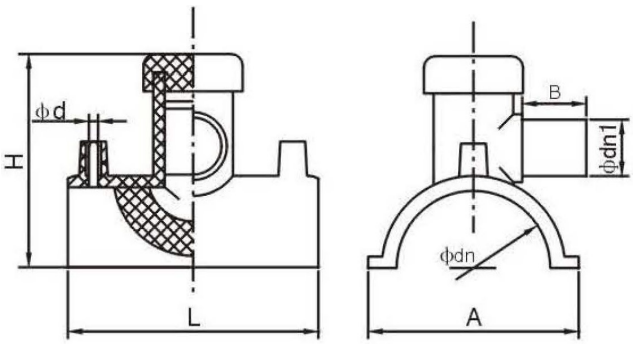


# Electrofusion Fitting Series

## Electrofusion Tapping Saddle

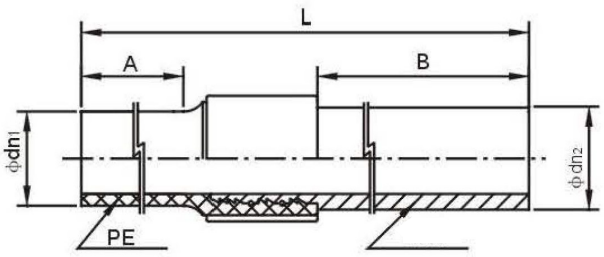
| Specifications Φdn × Φdn1 | L | A | B | H | Φ d |
|---|---|---|---|---|---|
| 63X25 | 110 | 104 | 50 | 129 | 4.7 |
| 63X32 | 110 | 104 | 50 | 129 | 4.7 |
| 90X25 | 140 | 130 | 75 | 185 | 4.7 |
| 90X50 | 140 | 130 | 75 | 185 | 4.7 |
| 90X63 | 140 | 130 | 75 | 185 | 4.7 |
| 110X20 | 130 | 155 | 55 | 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

## PE/Steel Transition Pipe

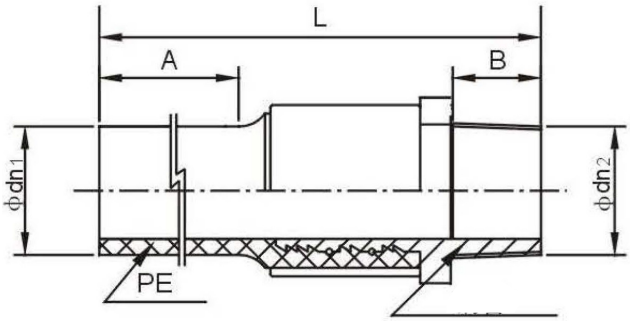
| Specifications | | PE Φdn1 | Φdn2 | L | A | B |
|---|---|---|---|---|---|---|
| 25X 3/4" | 25 | 25 | 27 | 395 | 95 | 225 |
| 32X 3/4" | 32 | 32 | 27 | 405 | 105 | 225 |
| 32X 1" | 32 | 32 | 34 | 405 | 105 | 225 |
| 40X 1" | 40 | 40 | 34 | 405 | 110 | 225 |
| 40X 11/4" | 40 | 40 | 42 | 405 | 115 | 225 |
| 50X 11/2" | 50 | 50 | 48 | 410 | 115 | 225 |
| 63X 11/2" | 63 | 63 | 48 | 410 | 155 | 225 |
| 63X2" | 63 | 63 | 57 | 410 | 115 | 225 |
| 63X2" | 63 | 63 | 60 | 410 | 115 | 225 |
| 75X 21/2" | 75 | 75 | 76 | 550 | 100 | 355 |
| 90X 21/2" | 90 | 90 | 76 | 535 | 100 | 355 |
| 90X3" | 90 | 90 | 89 | 540 | 95 | 355 |
| 110X3" | 110 | 110 | 89 | 550 | 125 | 355 |
| 110X4" | 110 | 110 | 108 | 550 | 105 | 355 |
| 160X6" | 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 |



# PE/Steel Transition Threaded

## PE/Steel Transition Threaded

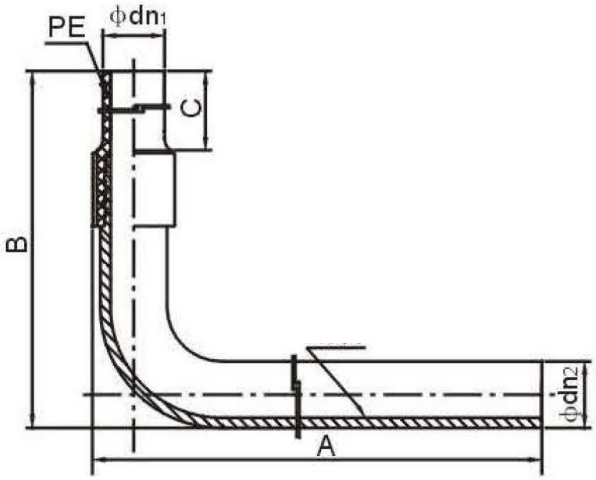
| Specifications | | PE Φdn1 | Φdn2 | L | A | B |
|---|---|---|---|---|---|---|
| 32X1" | 32 | 32 | 1 | 170 | 80 | 25 |
| 40X $1_{1/4}$" | 40 | 40 | | 170 | 80 | 25 |
| 50X $1_{1/2}$" | 50 | 50 | 11 | 170 | 80 | 25 |
| 63X2" | 63 | 63 | | 170 | 80 | 25 |



# PE/Steel Transition Fitting Series

## PE/Steel Transition Pipe Elbow

| Specifications | | PE Φdn1 | Φdn2 | 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

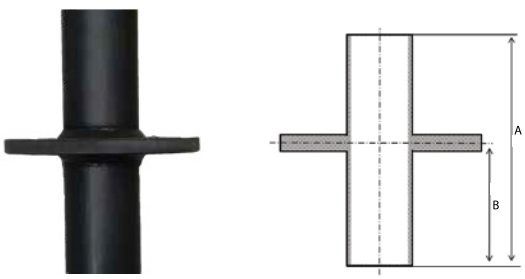
| PIPE SIZE | STANDARD LENGTH 500MM* | | |
|---|---|---|---|
| | SDR11 | SDR17 | SDR26 |
| 110 | SDR11 | SDR17 | SDR26 |
| 125 | SDR11 | SDR17 | SDR26 |
| 140 | SDR11 | SDR17 | SDR26 |
| 160 | SDR11 | SDR17 | SDR26 |
| 180 | SDR11 | SDR17 | SDR26 |
| 200 | SDR11 | SDR17 | SDR26 |
| 225 | SDR11 | SDR17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

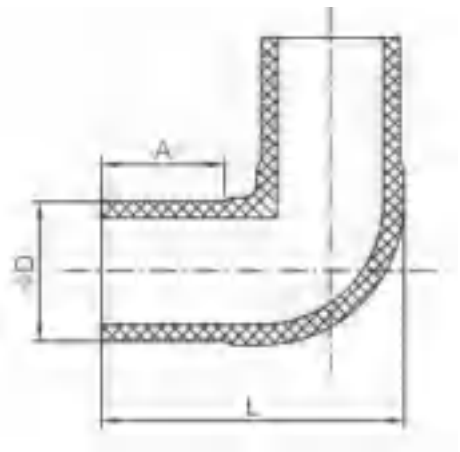
More sizes and puddle flange configurations available
- contact us for more information.



# PE BUTT FUSION FITTINGS

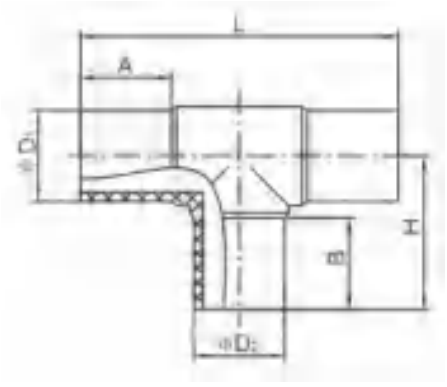
## Elbow 90°

| 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 |



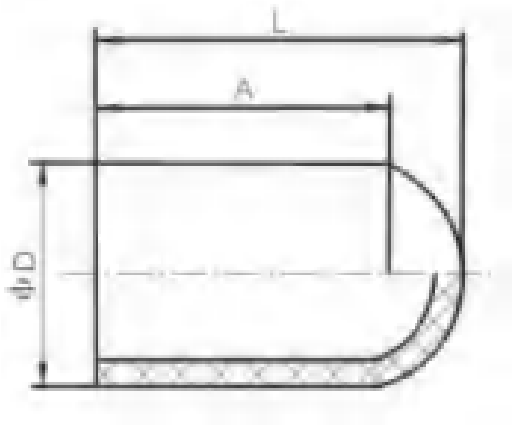
## Equal Tee

| Specifications ΦD1×ΦD2×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 |



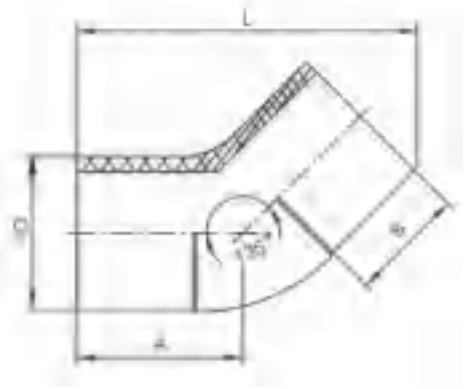
# End Cap

| Specifications<br>ΦD | L<br>mm | A<br>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 |



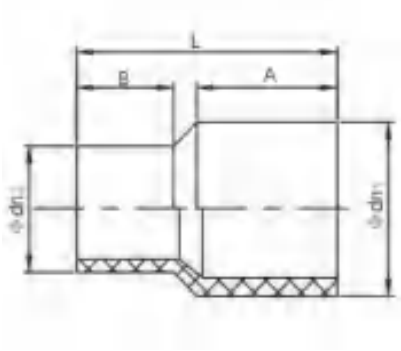
# Elbow 45°

| 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 Φdn1×Φdn2 | 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 |

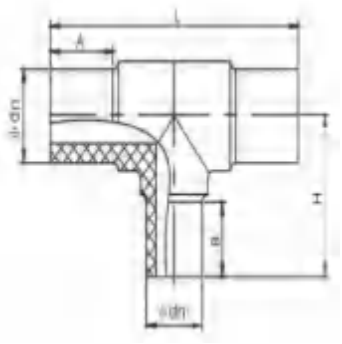


## Reducer

| Specifications Φdn1×Φdn2 | 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 Φdn×Φdn1×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

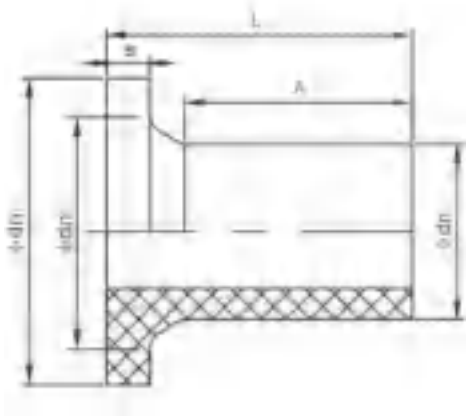
| Specifications Φdn×Φdn1×dn | L mm | A mm | B mm | H mm |
|---|---|---|---|---|
| 200×63×200 | 305 | 112 | 63 | 176 |
| 200×75×200 | 310 | 112 | 70 | 183 |
| 200×90×200 | 330 | 112 | 73 | 191 |
| 200×110×200 | 355 | 112 | 82 | 196 |
| 200×125×200 | 370 | 112 | 87 | 201 |
| 200×160×200 | 420 | 112 | 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 Φdn | 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 |

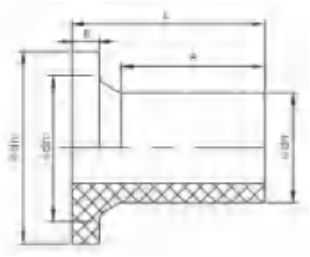
# Flange Adaptor (Stub End)

| 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 |



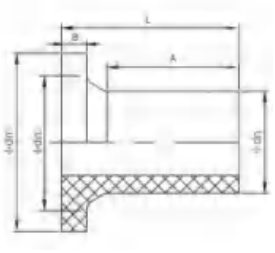
## Flange Adaptor (Short neck)

| Specifications Φdn | Φdn1 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 |



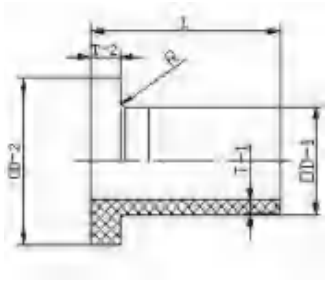
## Flange Adaptor (Long neck)

| Specifications Φdn | Φdn1 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 |



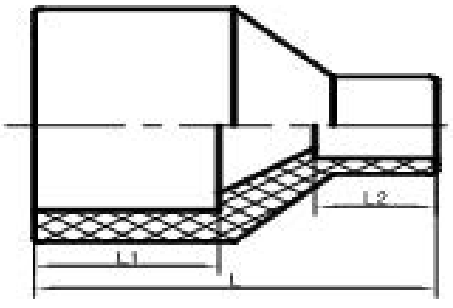
# Flange Adaptor (ASTM Standard)

| 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 |
| 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 |



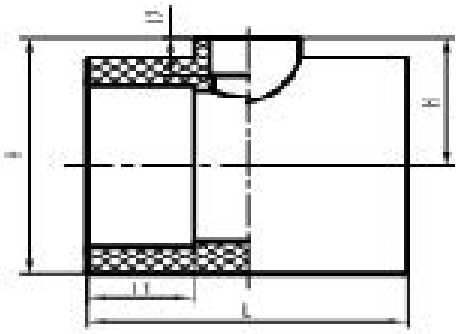
# Reducer

| 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 |



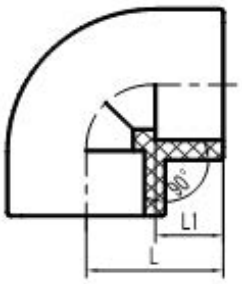
## Reducing Tee

| 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 |



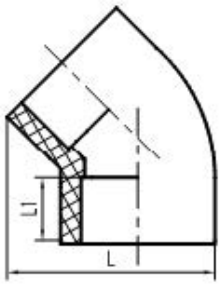
## 90° Elbow

| 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

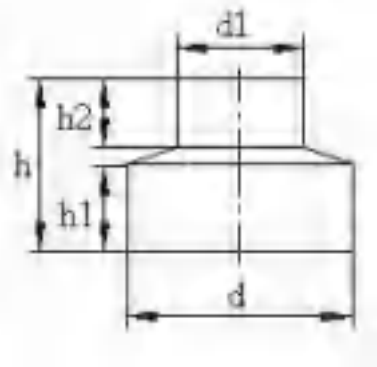
| Specifications | L mm | L1 mm |
|---|---|---|
| L20 | 46.8 | 14.5 |
| L25 | 52.4 | 16. |
| L32 | 63.1 | 18.1 |
| L40 | 75.5 | 20.5 |
| L50 | 90.2 | 23.5 |
| L63 | 108.3 | 27.4 |
| L75 | 124.9 | 30 |



# PE SYPHON DRAINAGE FITTINGS

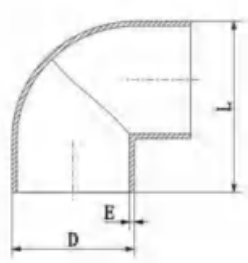
## Eccentric Reducer

| Size (mm) | d (mm) | d1(mm) | h1 (mm) | h2 (mm) | Wall Thckness (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 | 330/+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 | 670/+2.0 | 12.1 0/+1.5 |



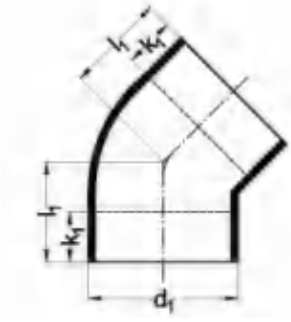
## 90 Degree Elbow

| 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 |



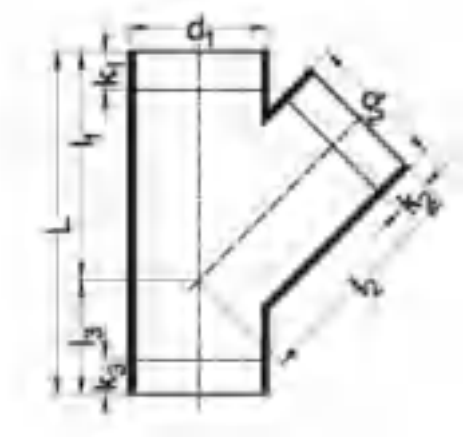

## 45 Degree Elbow

| 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

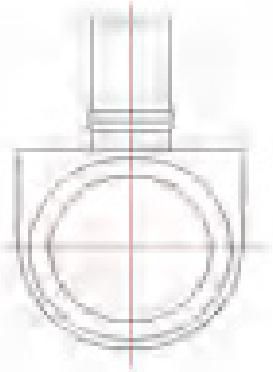
| Size (mm) | L (mm) | d*1(mm) | L*2(mm) | d*2(mm) | Wall Thckness (mm) |
|---|---|---|---|---|---|
| 50 | 157 0/+3.0 | 50 0/+0.5 | 110 0/+2.0 | 50 0/+0.5 | 2.3 0/+0.5 |
| 56 | 162 0/+3.0 | 56 0/+0.5 | 108 0/+2.0 | 56 0/+0.5 | 2.3 0/+0.5 |
| 63 | 188 0/+3.0 | 63 0/+0.6 | 128 0/+2.0 | 63 0/+0.6 | 2.4 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

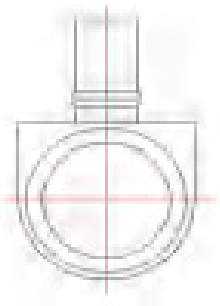
| Size(mm) | SDR | | | | | |
|---|---|---|---|---|---|---|
| | 7 | 9 | 11 | 17 | 21 | 26 |
| 110 | V | V | V | V | V | V |
| 125 | V | V | V | V | V | V |
| 160 | V | V | V | V | V | V |
| 180 | V | V | V | V | V | V |
| 200 | V | V | V | V | V | V |
| 225 | V | V | V | V | V | V |
| 250 | V | V | V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



# Machined Reducing Tee

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

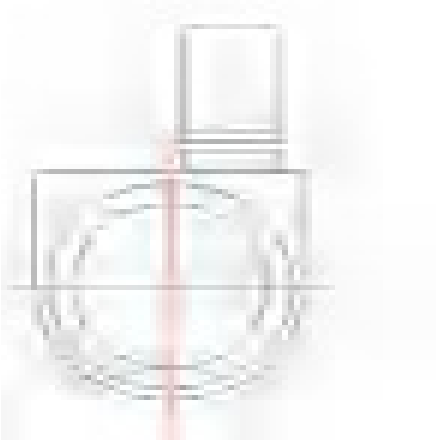
| Size(mm) | SDR | | | | | |
|---|---|---|---|---|---|---|
| | 7 | 9 | 11 | 17 | 21 | 26 |
| 710/630 | V | V | V | V | V | V |
| 710/500 | V | V | V | V | V | V |
| 710/400 | V | V | V | V | V | V |
| 710/355 | V | V | V | V | V | V |
| 800/630 | | V | V | V | V | V |
| 800/500 | | V | V | V | V | V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



# Machined Eccentric / Scour Tee

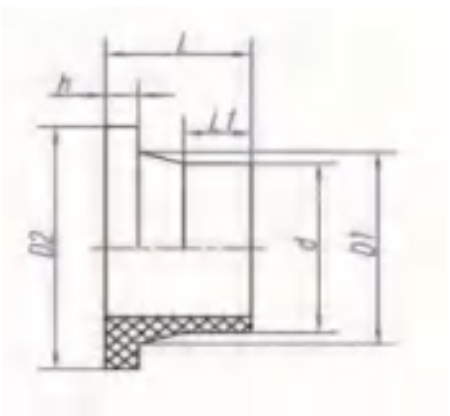
| Size(mm) | SDR | | | | | |
|---|---|---|---|---|---|---|
| | 7 | 9 | 11 | 17 | 21 | 26 |
| 355/160 | V | V | V | V | V | V |
| 355/125 | V | V | V | V | V | V |
| 355/110 | V | V | V | V | V | V |
| 400/200 | V | V | V | V | V | V |
| 400/160 | V | V | V | V | V | V |
| 400/125 | V | V | V | V | V | 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 |



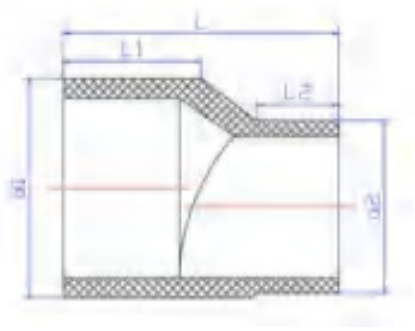
# Machined Flange Adaptor/ Full face ( Stub End)

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



# Machined Eccentric Reducer

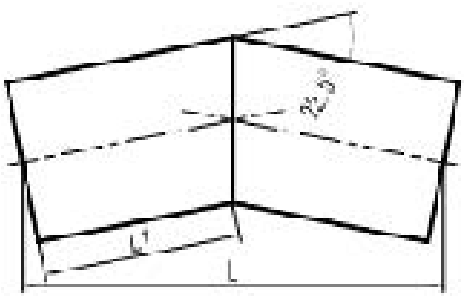
| d1 | d2 | L | L1 | L2 |
|---|---|---|---|---|
| mm | mm | mm | mm | mm |
| SDR 7/9/11/13.6/17/21/26 | | | | |
| 63 | 32~50 | 140 | 60 | 50 |
| 75 | 40~63 | 140 | 60 | 50 |
| 90 | 50~75 | 160 | 80 | 50 |
| 110 | 63~90 | 180 | 80 | 70 |
| 125 | 63~110 | 180 | 80 | 70 |
| 140 | 63~125 | 180 | 80 | 70 |
| 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

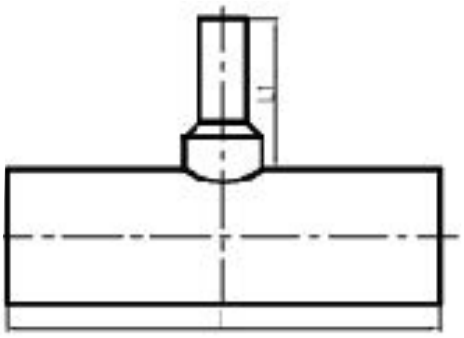
## Elbow 11.25° /22.5°/30°

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



# Reducing Tee Saddle

| Specifications | L<br>mm | L 1<br>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 |



## Fabricated HDPE

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

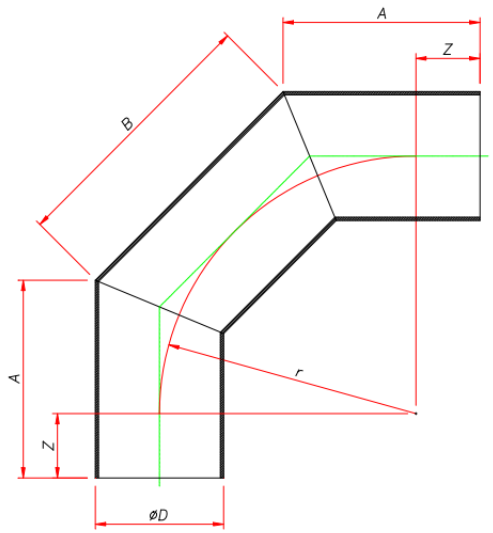
**Pressure Class:** SDR21, SDR17, SDR13.6, SDR11, SDR9, SDR7.4, SDR6.

# 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 |

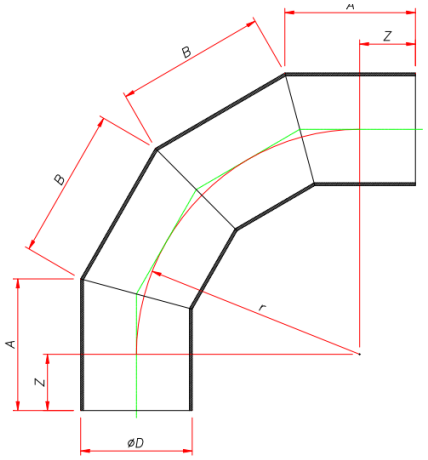


# Fabricated HDPE 90 Degree Elbow

## 90° BENDS - 4 SEGMENTS

*Bending radius r=2d*

| D | R | Z | A | B |
|---|---|---|---|---|
| 125 | 250 | 63 | 646 | 667 |
| 140 | 280 | 70 | 664 | 688 |
| 160 | 320 | 80 | 687 | 464 |
| 180 | 360 | 90 | 466 | 446 |
| 200 | 400 | 100 | 434 | 468 |
| 225 | 450 | 113 | 463 | 306 |
| 250 | 500 | 125 | 494 | 335 |
| 280 | 560 | 140 | 348 | 375 |
| 315 | 630 | 158 | 369 | 444 |
| 355 | 710 | 178 | 465 | 476 |
| 400 | 800 | 200 | 468 | 536 |
| 450 | 900 | 225 | 546 | 603 |
| 500 | 1000 | 250 | 585 | 670 |
| 560 | 1120 | 280 | 655 | 750 |
| 630 | 1260 | 315 | 737 | 844 |
| 710 | 1420 | 355 | 836 | 956 |
| 800 | 1600 | 400 | 936 | 6074 |
| 900 | 1800 | 450 | 6053 | 6406 |
| 1000 | 2000 | 500 | 6670 | 6340 |
| 1200 | 2400 | 600 | 6404 | 6608 |

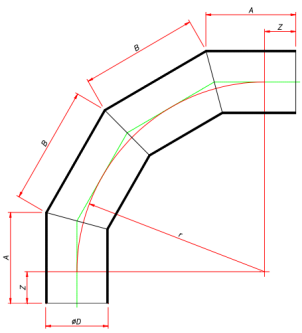


# Fabricated HDPE 90 Degree Elbow

## 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 |

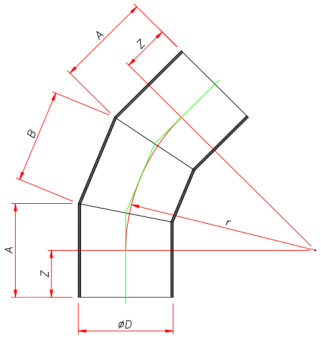


# Fabricated HDPE 45 Degree Elbow

## 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 |

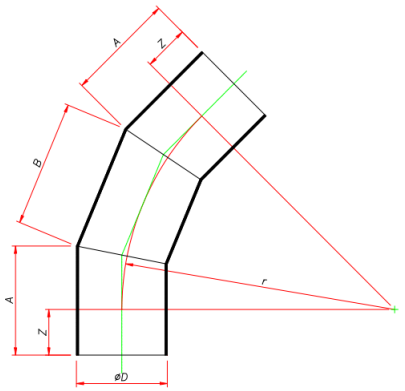


# Fabricated HDPE 45 Degree Elbow

## 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 |

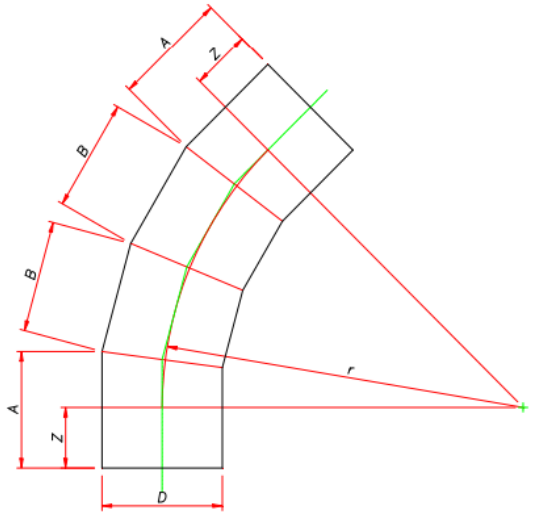


# Fabricated HDPE 45 Degree Elbow

## 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 |

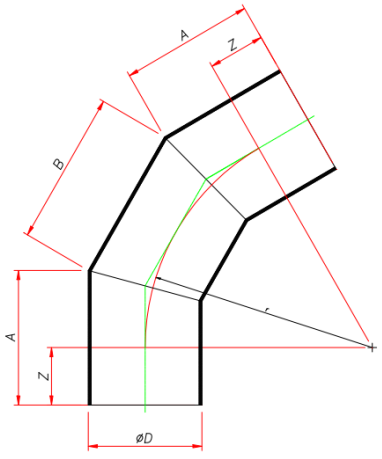


# Fabricated HDPE 60 Degree Elbow

## 60° BENDS - 3 SEGMENTS

*Bending radius r=2d*

| D | R | Z | A | B |
|---|---|---|---|---|
| 125 | 250 | 63 | 646 | 667 |
| 140 | 280 | 70 | 664 | 688 |
| 160 | 320 | 80 | 687 | 464 |
| 180 | 360 | 90 | 466 | 446 |
| 200 | 400 | 100 | 434 | 468 |
| 225 | 450 | 113 | 463 | 306 |
| 250 | 500 | 125 | 494 | 335 |
| 280 | 560 | 140 | 348 | 375 |
| 315 | 630 | 158 | 369 | 444 |
| 355 | 710 | 178 | 465 | 476 |
| 400 | 800 | 200 | 468 | 536 |
| 450 | 900 | 225 | 546 | 603 |
| 500 | 1000 | 250 | 585 | 670 |
| 560 | 1120 | 280 | 655 | 750 |
| 630 | 1260 | 315 | 737 | 844 |
| 710 | 1420 | 355 | 836 | 956 |
| 800 | 1600 | 400 | 936 | 6074 |
| 900 | 1800 | 450 | 6053 | 6406 |
| 1000 | 2000 | 500 | 6670 | 6340 |
| 1200 | 2400 | 600 | 6404 | 6608 |

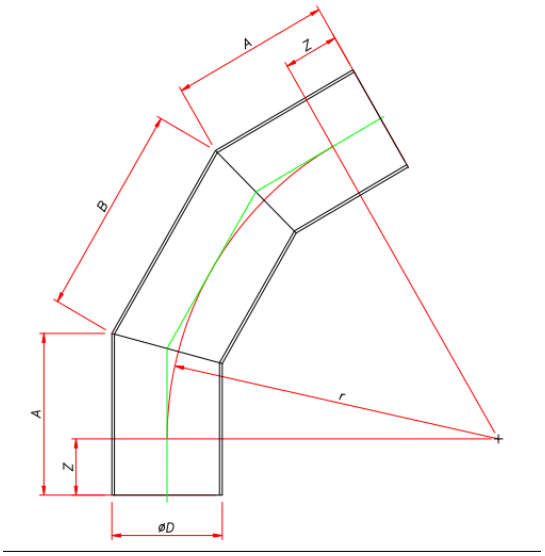


# Fabricated HDPE 60 Degree Elbow

## 60° BENDS - 3 SEGMENTS

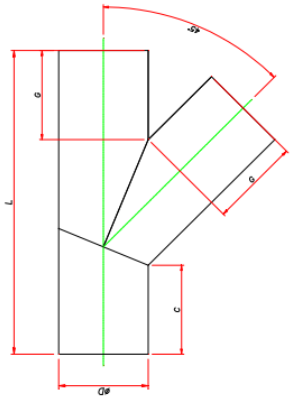
*Bending radius r=3d*

| 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 |



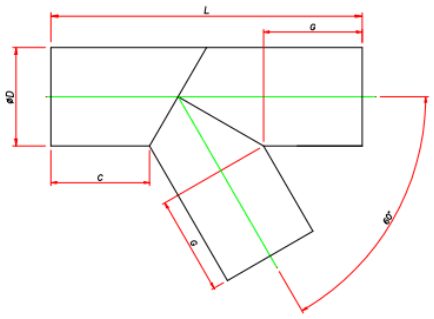
# Fabricated HDPE 45° TEE

| 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 |



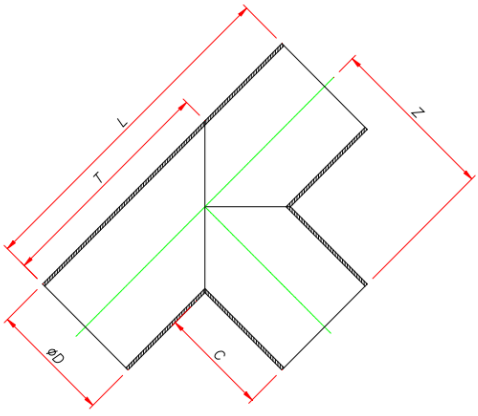
# Fabricated HDPE 60° TEE

| 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 |



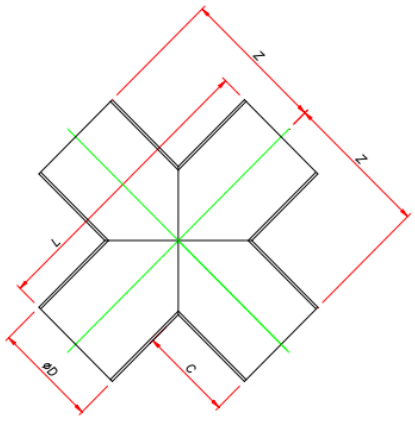
# Fabricated HDPE 90° TEE

| 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.

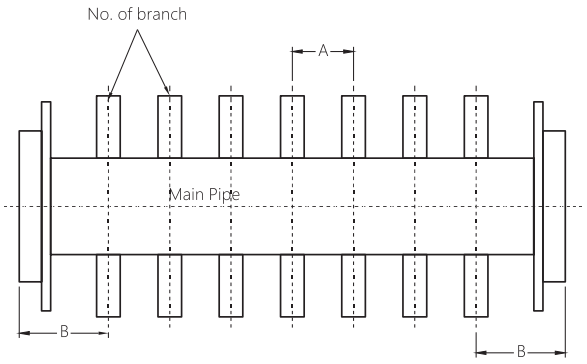
# Fabricated Fittings

## 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***

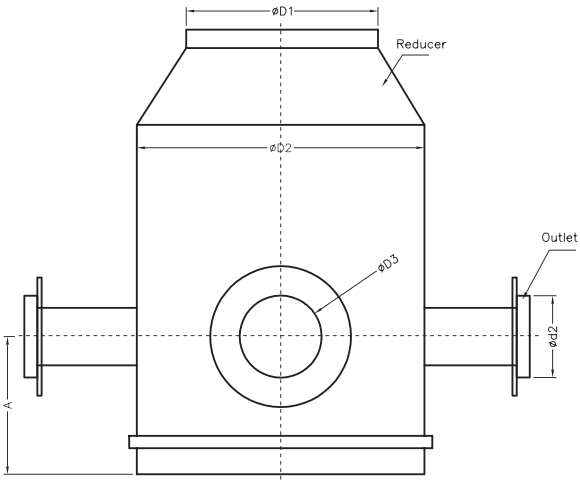
*All specifi cation as per requirement/ customise*

## MANHOLE / CHAMBER

| ΦD | ΦD1* | ΦD2 | ΦD3 | 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.*

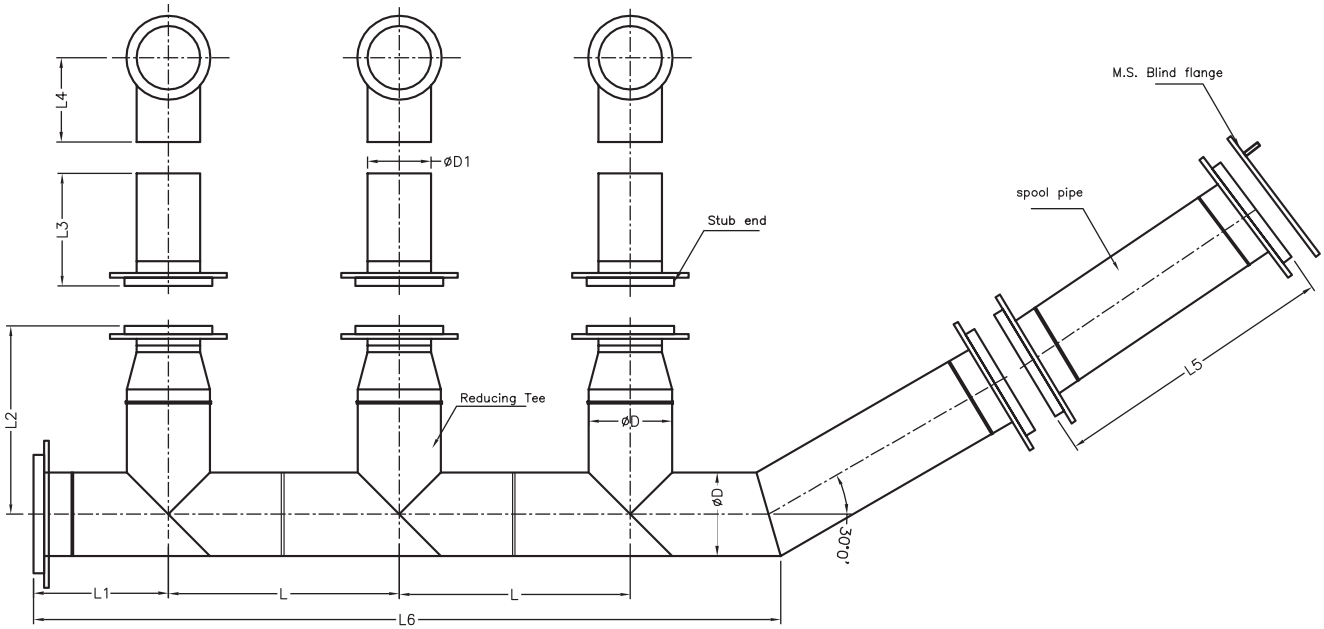
*- Sizes other than above specifi ed can also be supplied to suit the specifi c requirement.*

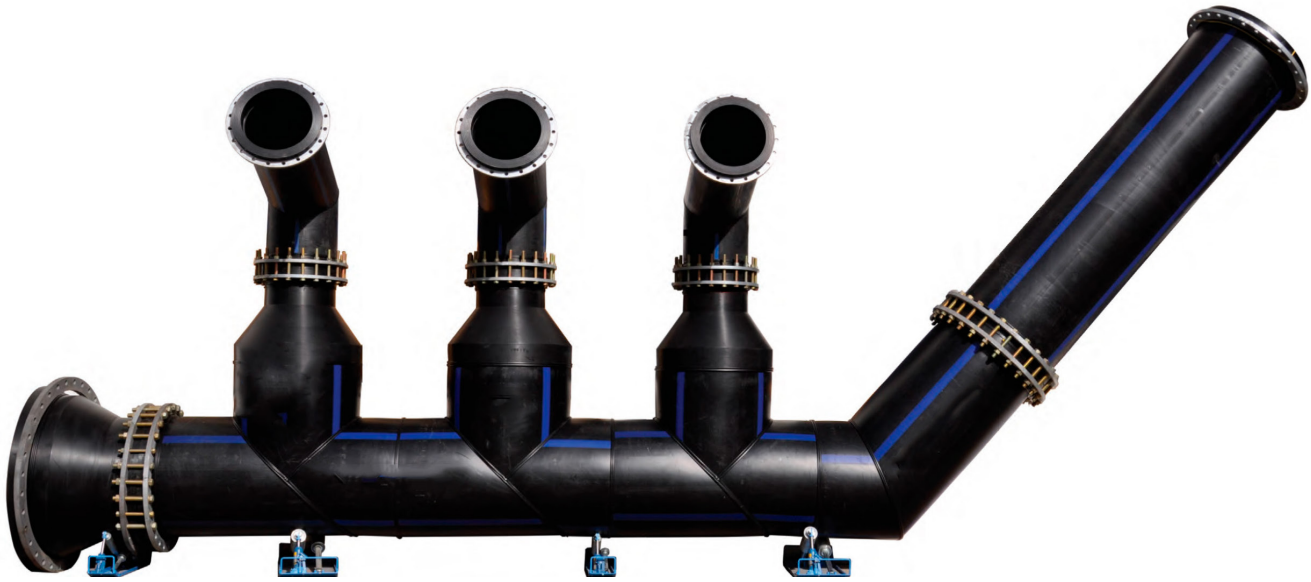



## DIFFUSER

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 specifi c rate and in specifi c fashion deep into the sea so that it does not gets mixed with the suction water again. Apart from that the disposal has to be at specifi c rate so that brine concentration does not exceed particular level which may affect the aquatic life and ultimately eco system. The fi ttings 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 fi tting with concave & convex shaped heating tools until both surfaces reach the proper fusion temp.

This machine provides the operator better alibnment 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 fi tting 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.

## 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 loose 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.

## JOINTING PE TO PE BY FUSION

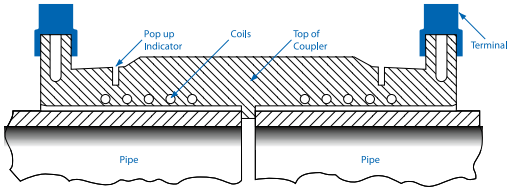
Pipes of similar materials and/or wall thickness can be jointed by butt-fusion or electrofusion. Pipes of similar materials but differing wall thickness can only be jointed through the use of electrofusion. Butt-welding different pipe materials i.e. PE80 to PE100 is not recommended on site.

## 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.

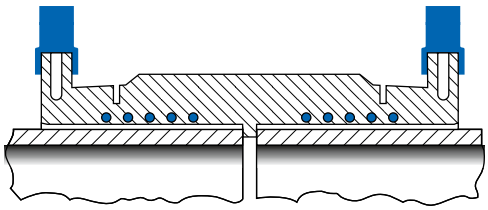
## ELECTROFUSION CYCLE

1



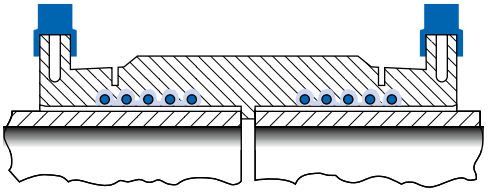

Pipe positioned in coupler prior to energising co

2



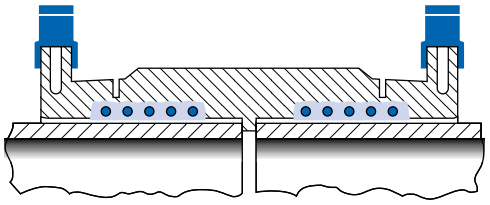
Coil energised.

3



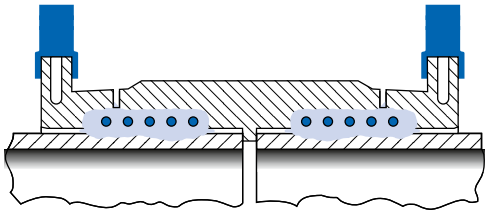
Material surrounding coil starts to melt.

4



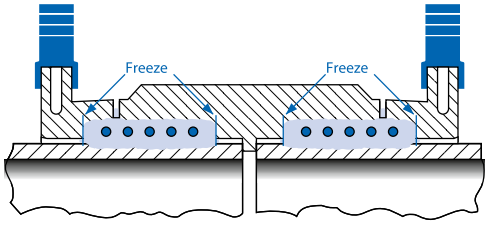
Area of melt extends leading to expansion towards pipe surface.

5



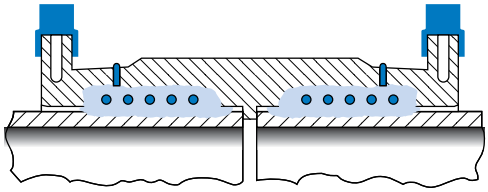
Heat transfers to pipe wall and pipe material starts to melt.

6




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

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 - SDR 11 | 4 bar gas<br>12.5 bar water | 80 °C 8 bar ( =4MPa) 1,000 hours<br>80 °C 9 bar ( =4.5MPa) 165 hours |
| PE80 - SDR 9 | 10 bar gas<br>16 bar water | 80 °C 10 bar ( =4MPa) 1,000 hours<br>80 °C 11.25 bar ( =4.5MPa) 165 hours |
| PE100 - SDR11 | 10 bar gas<br>16 bar water | 80 °C 10 bar ( =5MPa) 1,000 hours<br>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.

## 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.

$$PN - 20 \quad \frac{\sigma . e}{D - e}$$

PN = nominal pressure

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

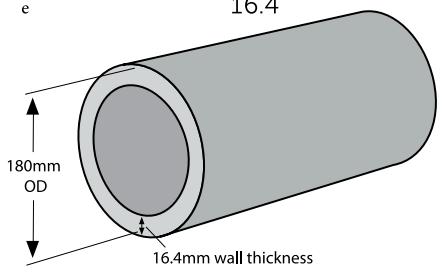
e = (Minimum) nominal thickness of the pipe walls expressed in mm

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.

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




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 M²

**COVERED AREA**

21.000 M²

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-todate 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 t 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.

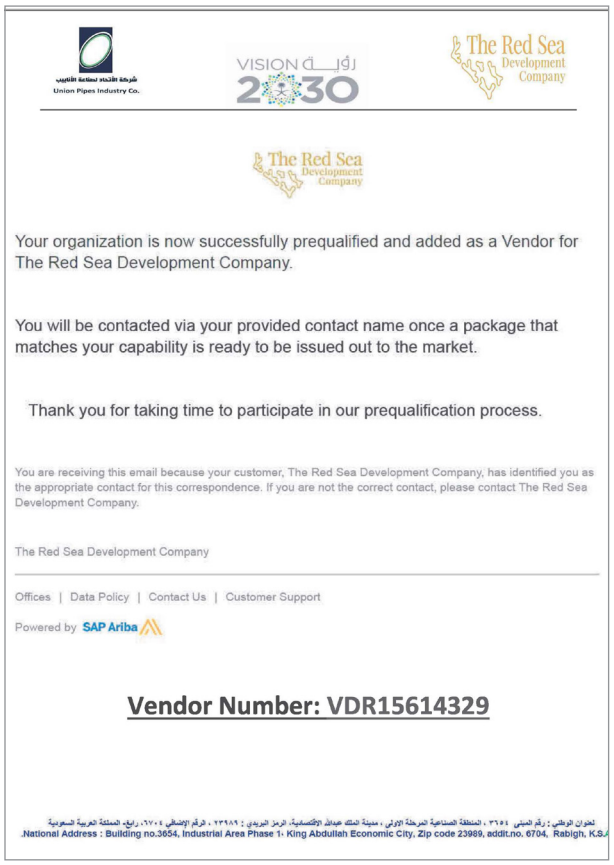
The size range of the fabricated PE fittings are from 50mm to 2000mm.

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

## Red-Sae-Approval



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 SAP Ariba

**Vendor Number: VDR15614329**

## SASO Certificate

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

License Number: 2018005070111 رقم الترخيص:

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:

تشهد الهيئة السعودية للمواصفات والمقاييس والجودة بأنها رخصت باستعمال علامة الجودة على المنتجات الموضحة أدناه بعد استيفائها للمتطلبات اللازمة وفق المراجع القياسية الخاصة بها:

| | |
|---|---|
| The Establishment: | شركة الاتحاد لصناعة الانابيب المحدودة :المنشأة |
| The Establishment's Address: | رابغ - مدينة الملك عبدالله الاقتصادية :عنوان المنشأة |
| Production Line Location: | رابغ - 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 عديد الإيثلين لإمدادات المياه (PE100) :المنتج (تفاصيل المنتج في الملحق) |
| Date of Granting: | 2018/09/14 :تاريخ المنح |
| Date of Renwal: | 2021/09/15 :تاريخ التجديد |
| Date of Expiry: | 2024/09/14 :تاريخ الانتهاء |

نائب المحافظ للمطابقة والعمليات
Vice-Governor, Operations and Conformity

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

تتأكد من صحة هذه الشهادة برجى زيارة موقعنا على الإنترنت وأي خلط أو تغيير في هذه الشهادة يلغيها
To verify this certification visit SASO website, and any changes or modification on this certificate will affect its validity.

1 / 2

المملكة العربية السعودية | ص.ب 3437 الرياض 11471 | T 920009085 | F +966114520086 | www.saso.gov.sa | info@saso.gov.sa
Kingdom of Saudi Arabia | P.O.Box 3437 Riyadh 11471

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

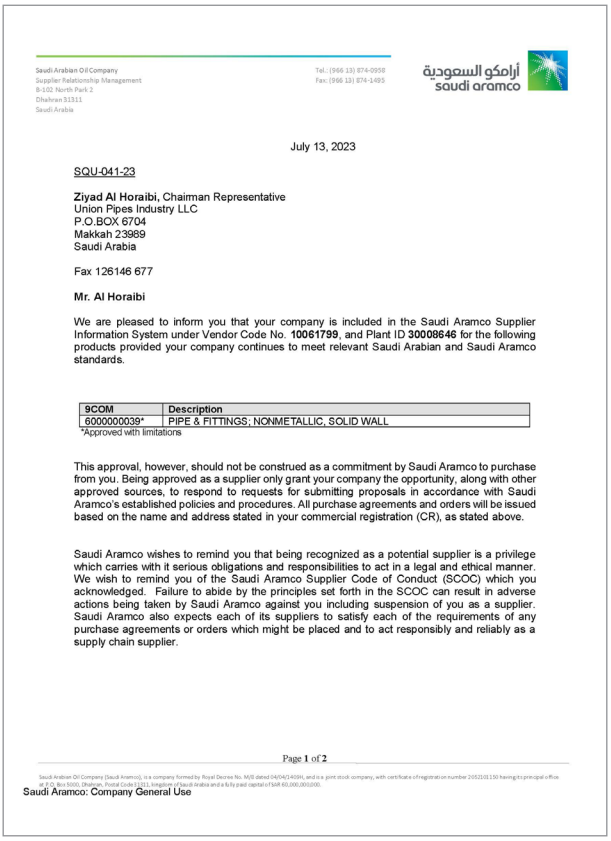
The establishment: شركة الاتحاد لصناعة الانابيب المحدودة
Certificate No: 2018005070111
Certificate Expiration Date: 14/09/2024
Product: انابيب عديد الإيثلين لإمدادات المياه (PE100)
Brand Name: الاتحاد لصناعة الأنابيب

| م No. | الصنف Classification | المقاسات Size | تاريخ المنح/التجديد Date of Granting/Renewal |
|---|---|---|---|
| 1 | ضغط تشغيلي (SDR7.4) (PN25) | (450,400,355,315,280,250,225,200,180,160,140,125,110,90,75,63,50,40,32,25,20,16) مم | 2021/09/15 |
| 2 | ضغط تشغيلي (SDR9) (PN20) | (800,710,630,560,500,450,400,355,315,280,250,225,200,180,160,140,125,110,90,75,63,50,40,32,25,20,16) مم | 2021/09/15 |
| 3 | ضغط تشغيلي (SDR11) (PN16) | (1000,900,800,710,630,560,500,450,400,355,315,280,250,225,200,180,160,140,125,110,90,75,63,50,40,32,25,20) مم | 2021/09/15 |
| 4 | ضغط تشغيلي (SDR17) (PN10) | (1200,1000,900,800,710,630,560,500,450,400,355,315,280,250,225,200,180,160,140,125,110,90,75,63,50,40,32) مم | 2021/09/15 |
| 5 | ضغط تشغيلي (SDR26) (PN6) | (1200,1000,900,800,710,630,560,500,450,400,355,315,280,250,225,200,180,160,140,125,110,90,75,63,50) مم | 2021/09/15 |
| 6 | ضغط تشغيلي (SDR41) (PN4) | (1200,1000,900,800,710,630,560,500,450,400,355,315) مم | 2021/09/15 |

الإدارة العامة لمنح الشهادات

2 / 2

# Union Pipes Industry KSA Aramco Approval



Saudi Arabian Oil Company
Supplier Relationship Management
B-102 North Park 2
Dhahran 31311
Saudi Arabia

Tel.: (966 13) 874-0958
Fax: (966 13) 874-1495

July 13, 2023

SQU-041-23

**Ziyad Al Horaibi,** Chairman Representative
Union Pipes Industry LLC
P.O.BOX 6704
Makkah 23989
Saudi Arabia

Fax 126146 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 **30008646** for the following products provided your company continues to meet relevant Saudi Arabian and Saudi Aramco standards.

| 9COM | Description |
|---|---|
| 6000000039* | PIPE & FITTINGS; NONMETALLIC, SOLID WALL |

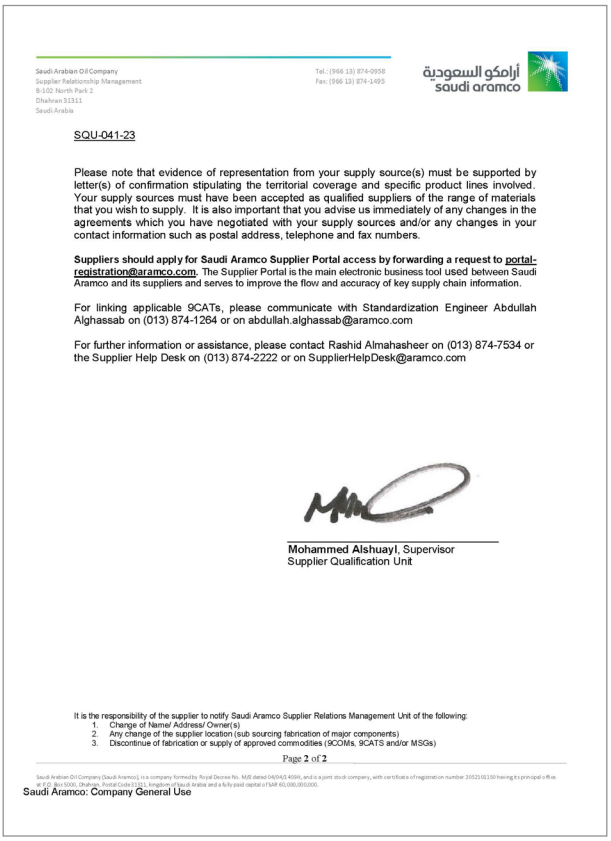
*Approved with limitations

This approval, however, should not be construed as a commitment by Saudi Aramco to purchase from you. Being approved as a supplier only grant 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.



Saudi Arabian Oil Company (Saudi Aramco), is a company formed by Royal Decree No. M/8 dated 04/04/1409H, and is a joint stock company, with certificate of registration number 2052101150 having its principal office at P.O. Box 5000, Dhahran, Postal Code 31311, Kingdom of Saudi Arabia and a fully paid capital of SAR 60,000,000,000.
Saudi Aramco: Company General Use



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Fax: (966 13) 874-1495

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.** 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 9CATs, please communicate with Standardization Engineer Abdullah Alghassab on (013) 874-1264 or on 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

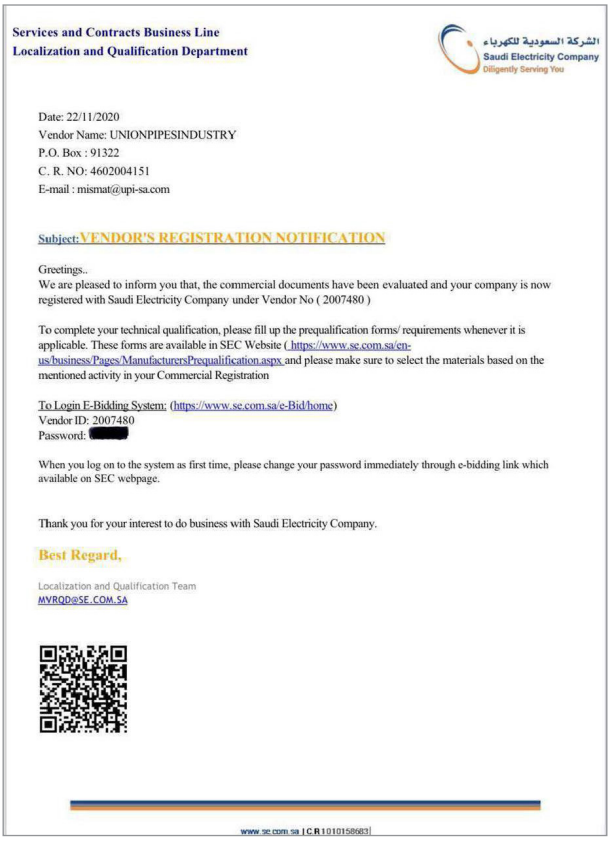
**Mohammed Alshuayl**, Supervisor
Supplier Qualification Unit

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. Discontinue of fabrication or supply of approved commodities (9COMs, 9CATS and/or MSGs)



Saudi Arabian Oil Company (Saudi Aramco), is a company formed by Royal Decree No. M/8 dated 04/04/1409H, and is a joint stock company, with certificate of registration number 2052101150 having its principal office at P.O. Box 5000, Dhahran, Postal Code 31311, Kingdom of Saudi Arabia and a fully paid capital of SAR 60,000,000,000.
Saudi Aramco: Company General Use

# Union Pipes Industry KSA Electracity



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

الشركة السعودية للكهرباء
Saudi Electricity Company
Diligently Serving You

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/e-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
MVRQD@SE.COM.SA

www.se.com.sa | C.R 1010158683

# Union Pipes Industry KSA FM

FM APPROVED

## 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

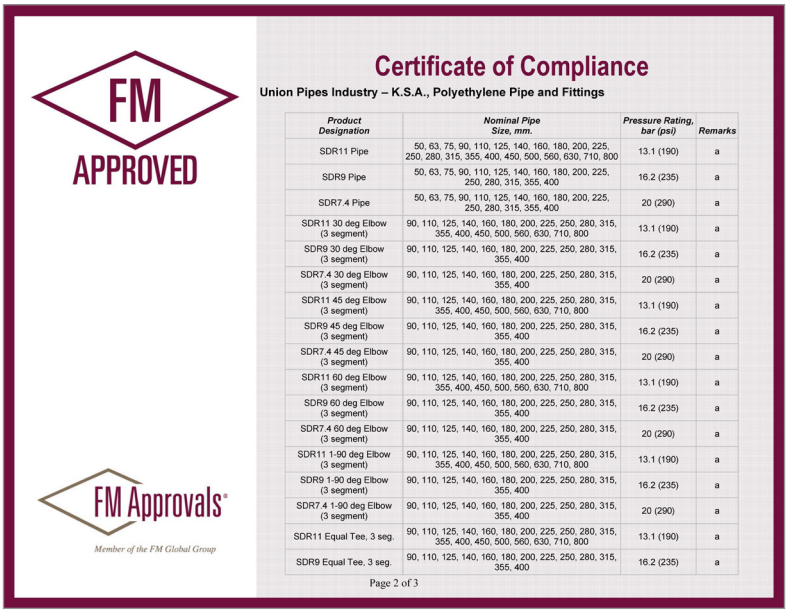
To verify the availability of the Approved product, please refer to www.approvalguide.com

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
VP, Manager of Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062 USA

FM Approvals
Member of the FM Global Group

Page 1 of 3



FM APPROVED

## Certificate of Compliance

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

| *Product Designation* | *Nominal Pipe Size, mm.* | *Pressure Rating, bar (psi)* | *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 |

FM Approvals
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FM APPROVED

## Certificate of Compliance

| *Product Designation* | *Nominal Pipe Size, mm.* | *Pressure Rating, bar (psi)* | *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*

FM Approvals
Member of the FM Global Group

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# Union Pipes Industry KSA WRAS

Approval Number 2012557
Test Report: M107093

24th March 2021

Union Pipes Industry Co. Ltd.
Building No. 3654, Industrial Area Phase 1,
King Abdullah Economic City,
Zip Code 23989,
Addit No. 6704,
Rabigh
Saudi Arabia

Water Regulations Advisory Scheme Ltd.
Unit 13,
Willow Road,
Pen y Fan Industrial Estate,
Crumlin,
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.wrasapprovals.co.uk/approvals-directory/

Yours Faithfully

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



**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 MA3 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.

# Type Approval Certificate-( Union Pipes Industry Co) RQ-23 -36 P

Cer. NO : RQ-23-036
Approval Date : 03/Dec/2023
Vatid Up To : 03/Jun/2025

**شهادة اعتماد النوعية**
**TYPE APPROVAL CERTIFICATE**

stc

This is to certify that the undernoted manufacturer has been approved for the listed products below in accordance to STC specifications:

تم منح هذه الشهادة للمصنّع الموضح بياناته لقائمة المنتجات أدناه حسب مواصفات STC:

| | | | |
|---|---|---|---|
| Manufacturer Name | Union Pipes Industry Co | شركة الاتحاد لصناعة الأنابيب | اسم المصنّع : |
| Country of origin | KSA | المملكة العربية السعودية | بلد المنشاء : |

For Below Products: للمنتجات التالية :

| Ser No. | Mic No. | AR/Description | EN/Description | Spec. Issue |
|---|---|---|---|---|
| 1 | 2740050200089 | قناة صغيرة انابيب دي بي إي، اسود , 32 مم | Plain HDPE Duct, Single Mini-Duct, Full Black, 32 mm OD | VD 101 |
| 2 | 2740050200092 | قناة صغيرة انابيب دي بي إي، برتقالي , 32 مم | Plain HDPE Duct, Single Mini-Duct, Full Orange, 32 mm OD | VD 101 |
| 3 | 2740050200078 | قناة صغيرة انابيب دي بي إي، اسود (مخطط برتقالي) , 32 مم | Plain HDPE Duct, Single Mini-Duct, Black (4 Orange Stripes), 32 mm OD | VD 101 |
| 4 | 1917019001003 | قناة صغيرة ، بولي ايثيلين عالي الكثافة ، بقطر خارجي 20 مم | Duct, HDPE, Mini-duct, Full black 20 mm OD | VD 101 |

مدير إدارة ضمان الجودة التقنية
Technology Quality Assurance Director

م / بحر بن محمد السعيد

مدير شعبة المواصفات والمعايير التقنية
Technology Standardization Section Manager

م / بحر بن عبد الرحمن الرشيد

stc
قطاع استراتيجية وهيكلة التقنية
الإدارة العامة لبرامج التقنية والعمليات
إدارة ضمان الجودة التقنية

Very Important:-
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.

هام جداً:-
1- إن استلام طالب الاعتماد لهذه الشهادة يعتبر تعهداً منه بالالتزام التام بالمواصفة الفنية المنصوص عليها في هذه الشهادة مع آخر تحديثات المواصفة التي يتم تزويده بها .
2- شهادة المطابقة النوعية للمنتج (المنتجات) لا تعني بأي شكل من الأشكال ضمان تلقي أي طلب (طلبات) توريد أو أمر (أوامر) شراء من شركة STC.

This Certificate has been printed and stamped electronically and doesn't need a signature

## ISO 9001-2015 Valid June 2026

DAS CERTIFICATION

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

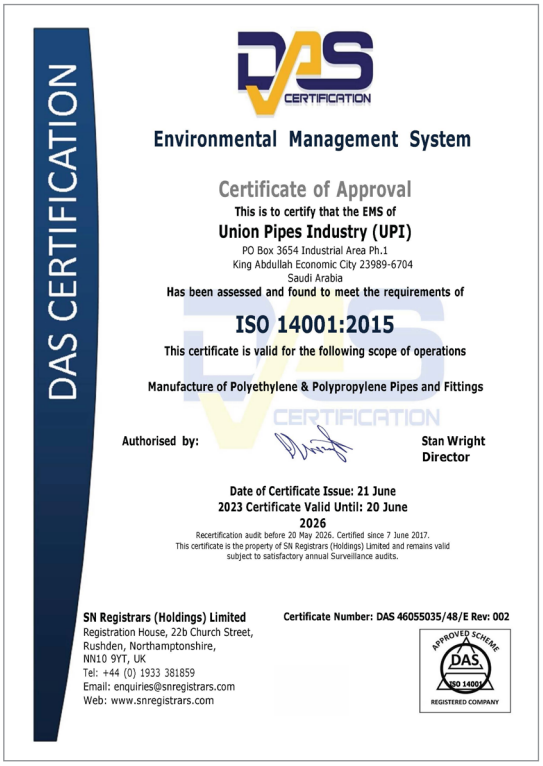
Recertification audit before 7 May 2026. Certified since 3 May 2017. This certificate is the property of SN Registrars (Holdings) Limited and remains valid subject to satisfactory annual Surveillance audits.

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:

APPROVED SCHEME DAS ISO 9001 REGISTERED COMPANY

## ISO 14001 Valid up to June 2026



DAS CERTIFICATION

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

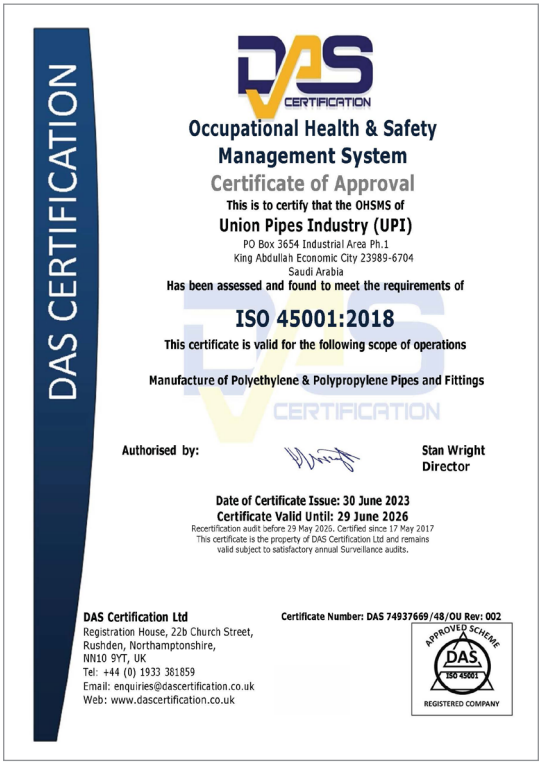
Recertification audit before 20 May 2026. Certified since 7 June 2017. This certificate is the property of SN Registrars (Holdings) Limited and remains valid subject to satisfactory annual Surveillance audits.

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

APPROVED SCHEME DAS ISO 14001 REGISTERED COMPANY

## ISO 45001-2018 Valid up to June 2026



DAS CERTIFICATION

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

APPROVED SCHEME DAS ISO 45001 REGISTERED COMPANY

# 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.

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+966 546680922 Plant

info@upi-sa.com

www.upi-sa.com