

# PRODUCT CATALOG

HDPE & PP PIPING SYSTEMS



# UNION PIPE

INDUSTRIES

ENGINEERED SOLUTIONS FOR WATER, INFRASTRUCTURE AND INDUSTRY

PIPES | FITTINGS | FLANGES | FABRICATION | SITE SUPPORT



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A clear route through our products and capabilities

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# BUILT FOR CRITICAL INFRASTRUCTURE

Union Pipes Industry (UPI-SA) manufactures advanced polyethylene (PE) and polypropylene (PP) piping systems from its facility in King Abdullah Economic City, Rabigh, north of Jeddah.

## PRESSURE SYSTEMS

HDPE & PP pressure pipes engineered for water, irrigation, gas, firefighting and industrial applications.

## GRAVITY SYSTEMS

Structured-wall and corrugated pipe solutions for sewage, drainage, cable protection and infrastructure.

## ENGINEERED FITTINGS

Standard and custom HDPE & PP fabricated fittings, supported by installation and site services.

## QUALITY THROUGH EVERY STAGE

- 1 RAW MATERIAL INSPECTION
- 2 PRODUCTION PLANNING
- 3 ADVANCED MANUFACTURING
- 4 TESTING & QUALITY CONTROL
- 5 PACKAGING & DELIVERY

*Mission: deliver reliable, innovative and environmentally responsible polymer piping solutions with strong technical support from selection through installation.*



## APPLICATIONS & SERVICE REACH



POTABLE WATER



IRRIGATION



SEWAGE & WASTEWATER



GAS DISTRIBUTION



FIREFIGHTING SYSTEMS



TELECOMMUNICATION DUCTS



MINING



INDUSTRIAL PIPING

### WHY UPI-SA

- International manufacturing standards
- Custom orders for project-specific requirements
- Rigorous inspection and product testing
- Technical support and customer service
- Solutions designed for long-term infrastructure resilience

*Company information updated from the official UPI-SA website - August 2026.*



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

#### Mechanical Properties

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

## 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 | 116 | 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

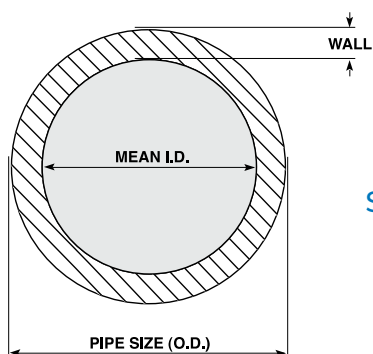
### SPECIFICATIONS ACCORDING TO ISO 4427

| 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 | —              | —    | —                    | —     | —              | —    | —                    | —     |



$$\text{SDR} = \text{OD} \div \text{WALL THICKNESS}$$

## 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<br>Outside<br>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 | The transportation of gases with a density of <0.01 g/cm <sup>3</sup> , the support distances can be increased as stated below. |
|-----------------|--------|--------|--------|----------|--------|-------|---------|---------------------------------------------------------------------------------------------------------------------------------|
| 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    | SDR 17 +45%                                                                                                                     |
| 140             | 1.65   | 1.80   | 1.90   | 2.00     | 2.10   | 2.20  | 2.25    | SDR 11 +30%                                                                                                                     |
| 160             | 1.80   | 1.90   | 2.05   | 2.15     | 2.25   | 2.35  | 2.40    | SDR 7.4 +21%                                                                                                                    |
| 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   | -     | -       |                                                                                                                                 |

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

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

### Technical specifications

#### Range:

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

#### Standard

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

#### Length

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

#### Material Grades

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

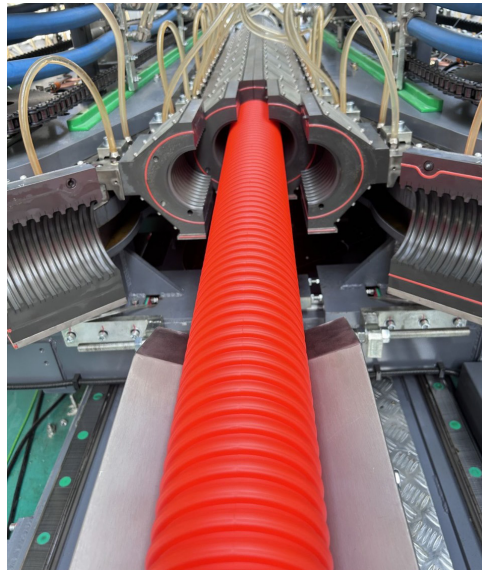
#### Applications:

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

#### Type of Joints

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

## PE Corrugated Piping System for Electrical Cable Duct



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

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

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

### Technical specifications

#### Range

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

## PE Corrugated Piping System for Sewerage



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

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

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

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

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 specifications

#### Range

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

### Test Parameters as

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

## PE Corrugated Piping System for Sub Surface Drainage



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

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

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

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

### **Technical specifications**

#### **Range:**

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

#### **Standards**

- EN 13476 / DIN 16961.

#### **Length**

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

#### **Applications**

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

## HDPE Microduct & Accessories for Telecommunication Application

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

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



### Bundle ( Micro-Mini) Ducts

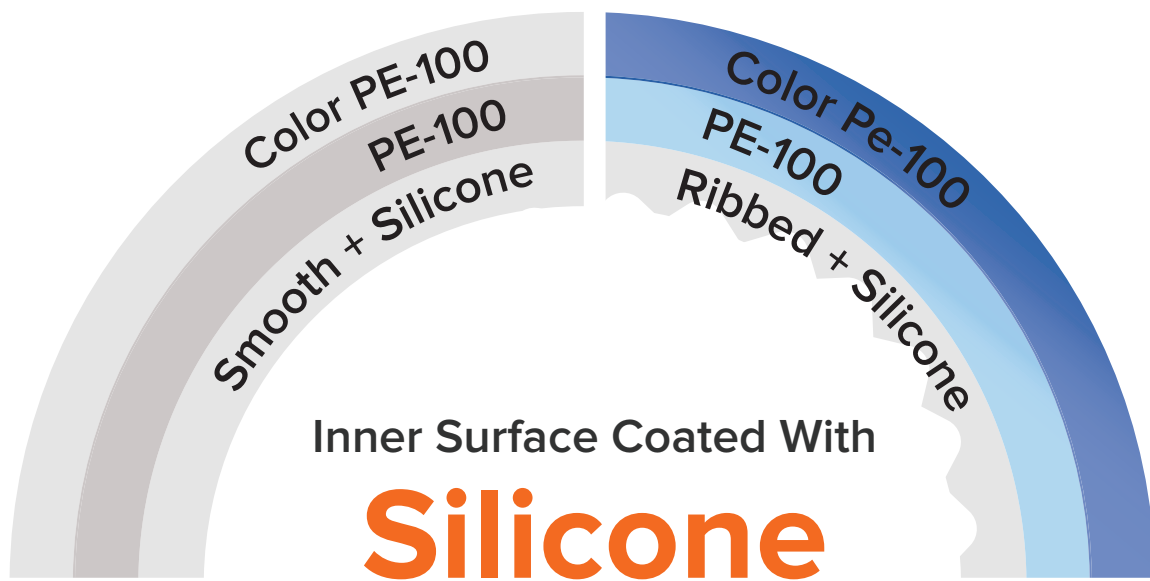
The outer sheath is rugged High Density Poly Ethylene HDPE providing excellent protection from the physical environment.

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



## Optional Feature

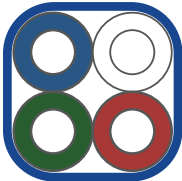
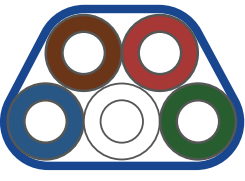
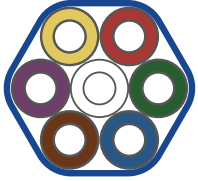
- Various configurations with different size between 5/3.5mm and 42/36 (Material : HDPE).
- Wide range of number of inner tube from 1 way to 24+1 way.
- Ribbed & Smooth Type.
- Rip cords.
- Insulated Locatable copper wire.



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

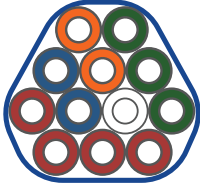
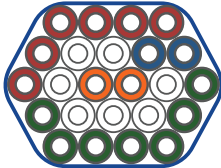
in combination, the outer layer of double-layer PE sheath, constitute a bundle, you can in a limited space to accommodate more pipe holes.

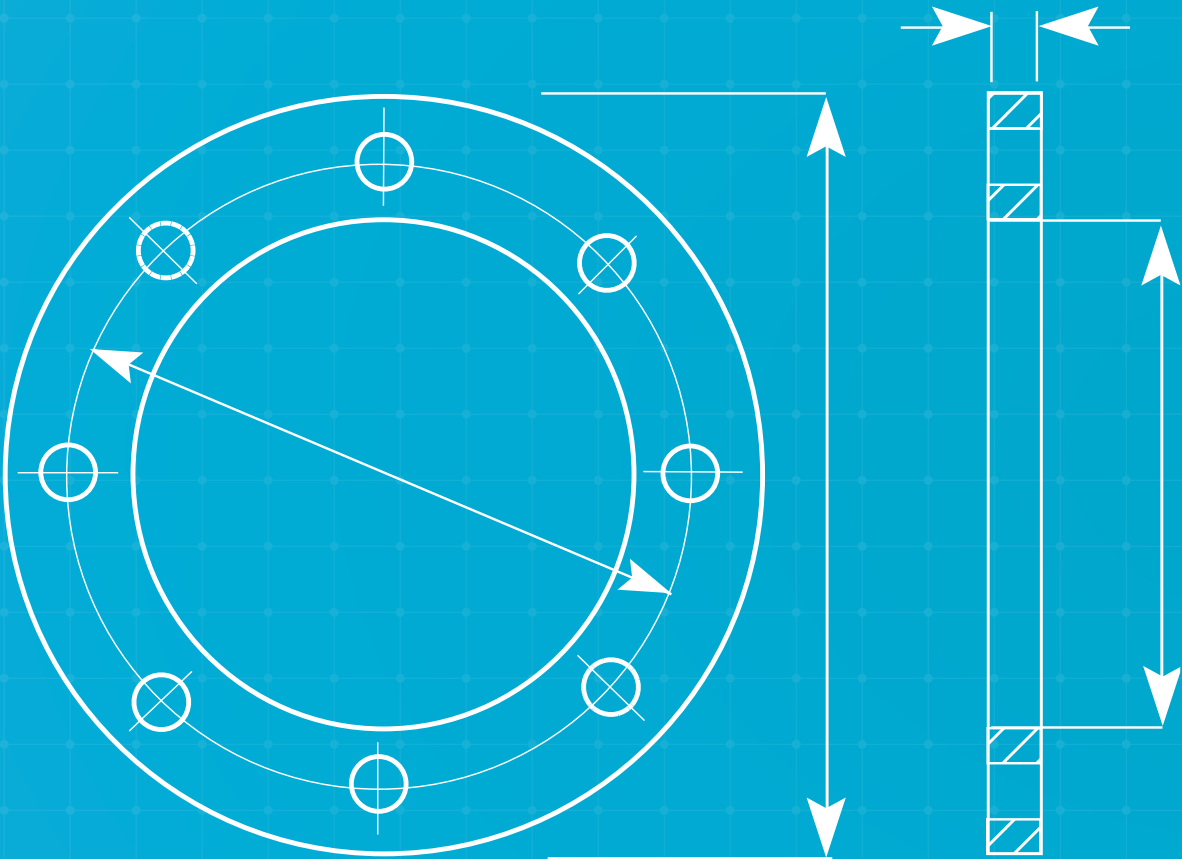
Common Buried Bundle Configuration

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



Common Buried Bundle Configuration

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





# INDUSTRY DATA

03

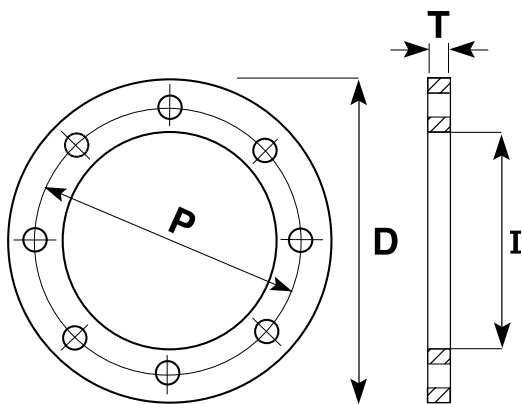
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Flange standards, dimensions and material options

- BS EN 1092
- ASME B16.5
- ANSI PATTERNS
- GASKETS AND BACKING RINGS

## PN16 BS EN 1092 FLANGE PATTERN

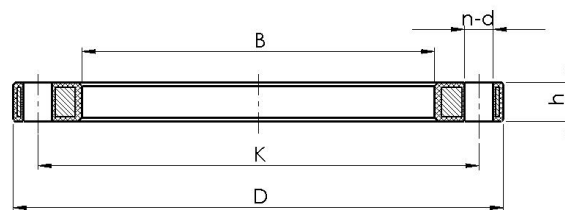
| SIZE | NOMINAL     | INCH   | P    | I    | D    | T    | BOLT HOLES |      |
|------|-------------|--------|------|------|------|------|------------|------|
| (MM) | FLANGE SIZE | SIZE   | (MM) | (MM) | (MM) | (MM) | NO X DIA   | BOLT |
| 20   | 15          | 1/2"   | 65   | 32   | 95   | 16   | 4x14       | 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 |



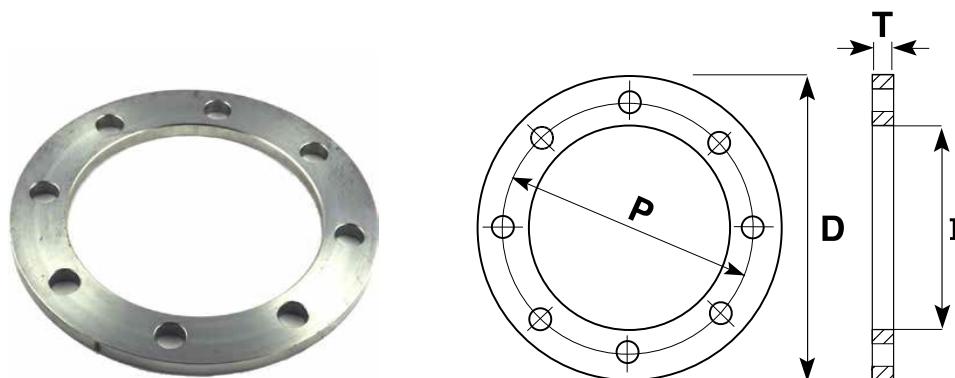
## TABLE ANSI

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.



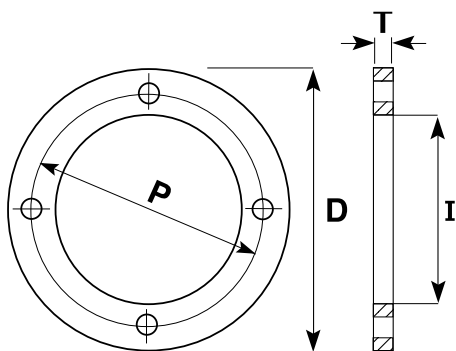
**BS EN 1092  
PN16**

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.



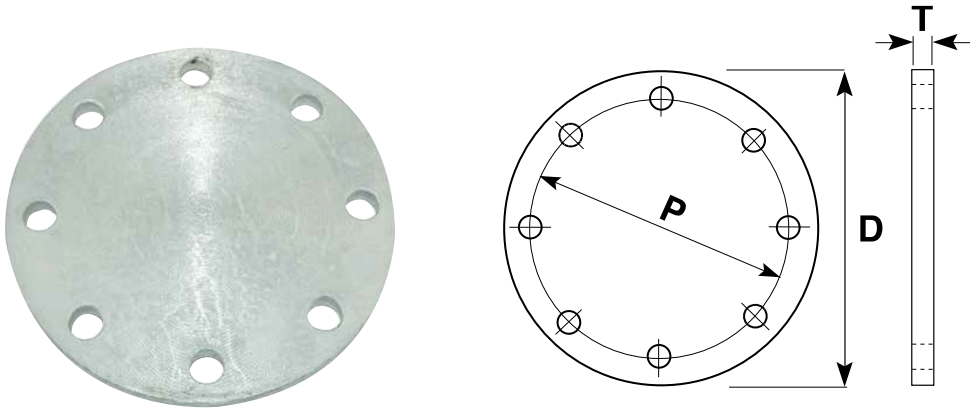


BLIND FLANGE

| 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.

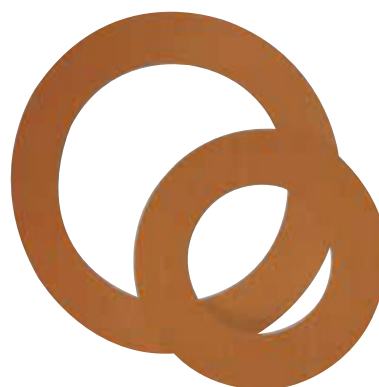
Complies with BS Specification 7531 Grade

### 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.

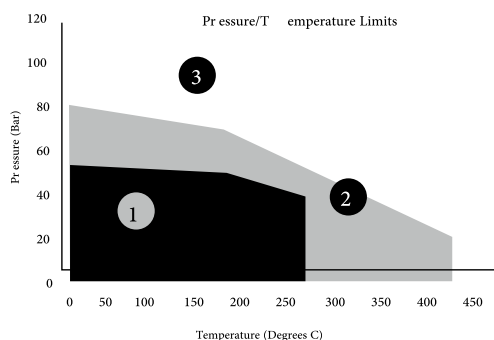
The operating temperature of non-asbestos sheet material is related to the thickness of materials selected. Thinner materials give better temperature and pressure properties.

| 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.

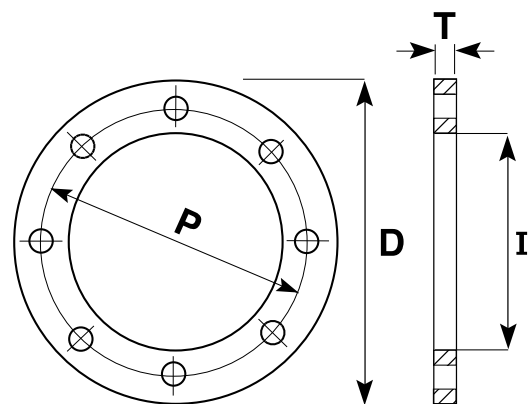


### Note

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

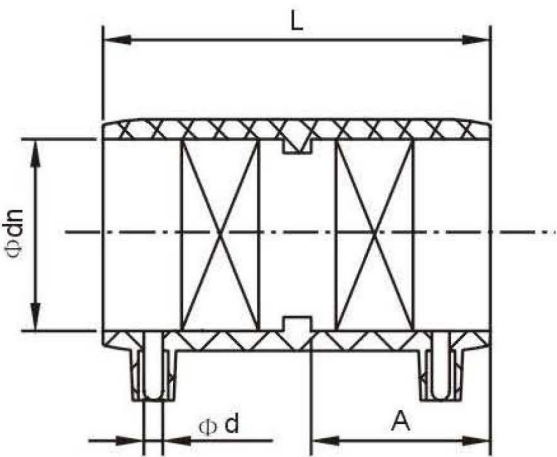
FOR GAS AND WATER



Electrofusion Fitting Series

Electrofusion Coupler

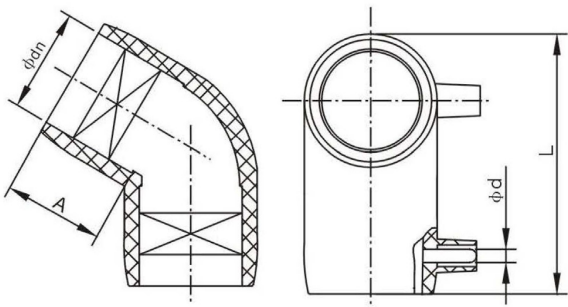
| Specifications $\Phi$ dn | L   | A   | $\Phi$ d |
|--------------------------|-----|-----|----------|
| 20                       | 85  | 40  | 4.7      |
| 25                       | 90  | 43  | 4.7      |
| 32                       | 90  | 44  | 4.7      |
| 40                       | 95  | 45  |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



Electrofusion Fitting Series

Electrofusion Elbow 45°

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

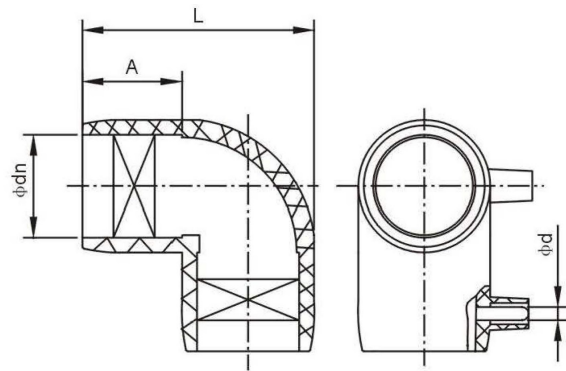




## Electrofusion Fitting Series

### Electrofusion Elbow 90°

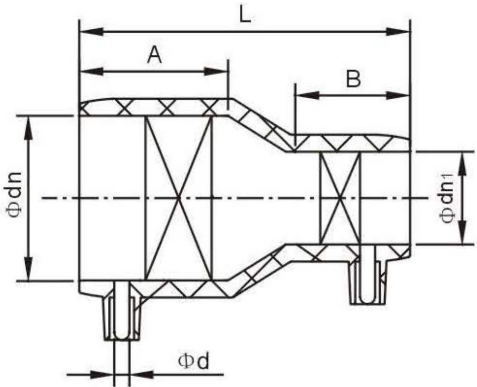
| Specifications $\Phi dn \times 90^\circ$ | L   | A   | $\Phi d$ |
|------------------------------------------|-----|-----|----------|
| 25 X 90°                                 | 85  | 42  | 4.7      |
| 32 X 90°                                 | 94  | 45  | 4.7      |
| 40 X 90°                  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



Electrofusion Fitting Series

Electrofusion Reducer

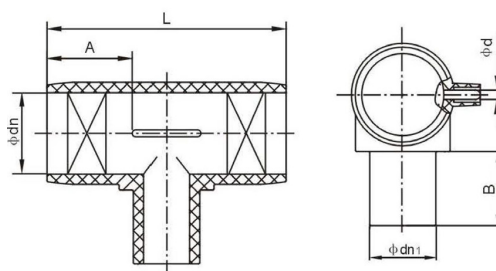
| Specifications $\Phi dn \times \Phi dn1$ | L   | A   | B   | $\Phi d$ |
|------------------------------------------|-----|-----|-----|----------|
| 25 X 20                                  | 94  | 42  | 35  | 4.7      |
| 32 X 20                                  | 94  | 42  | 40  | 4.7      |
| 32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



## Electrofusion Fitting Series

### Electrofusion Reducer Tee

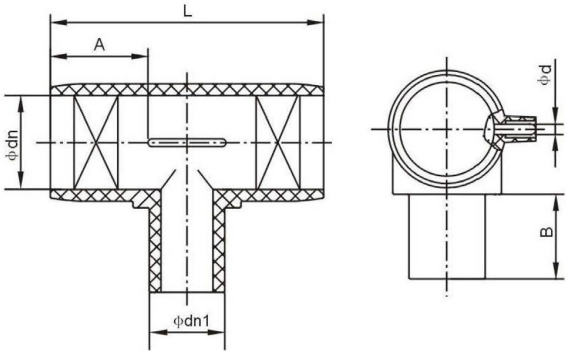
| Specifications $\Phi dn \times \Phi dn1 \times \Phi dn$ | L   | A   | B   | $\Phi d$ |
|---------------------------------------------------------|-----|-----|-----|----------|
| 25 X 20 X 25                                            | 105 | 45  | 50  | 4.7      |
| 32 X 20 X 32                   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



Electrofusion Fitting Series

Electrofusion Reducer Tee

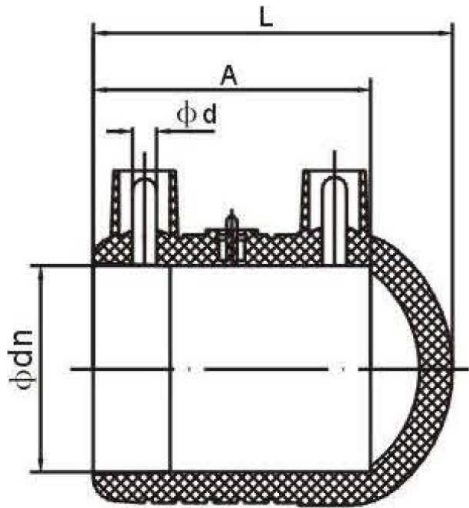
| Specifications $\Phi dn \times \Phi dn1 \times \Phi dn$ | L   | A   | B   | $\Phi d$ |
|---------------------------------------------------------|-----|-----|-----|----------|
| 20X20X20                                                | 100 | 40  | 40  | 4.7      |
| 25X25X25                       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



Electrofusion Fitting Series

Electrofusion End Cap

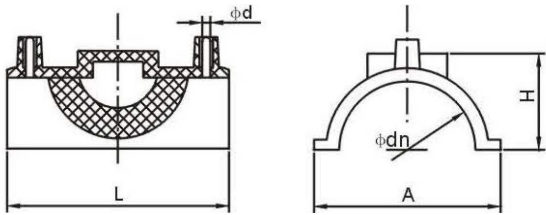
| Specifications $\Phi dn \times 90^\circ$ | L   | A  | $\Phi d$ |
|------------------------------------------|-----|----|----------|
| 32                                       | 60  | 45 | 4.7      |
| 40                                       | 70  | 55 | 4.7      |
| 50                                       | 70  | 55 | 4.7      |
| 63                                       | 80  | 55 | 4.7      |
| 90                                       | 95  | 55 | 4.7      |
| 110                                      | 105 | 70 | 4.7      |



Electrofusion Fitting Series

Electrofusion Repair Saddle

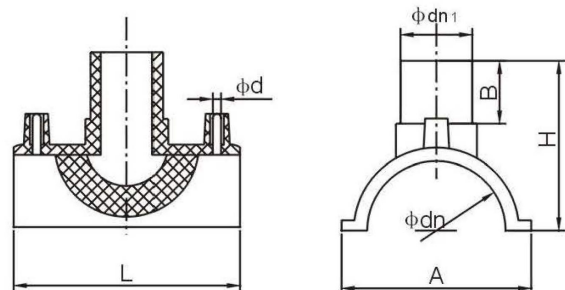
| Specifications $\Phi$ dn | L   | A   | H  | $\Phi$ d |
|--------------------------|-----|-----|----|----------|
| 90                       | 145 | 154 | 68 | 4.7      |
| 110                      | 145 | 160 | 60 | 4.7      |
| 160                      | 190 | 230 | 78 | 4.7      |
| 200          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



## Electrofusion Fitting Series

### Electrofusion Branch Saddle

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

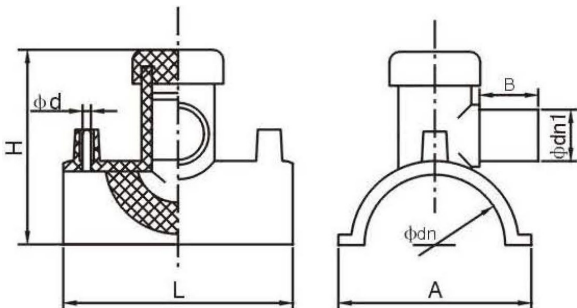




Electrofusion Fitting Series

Electrofusion Tapping Saddle

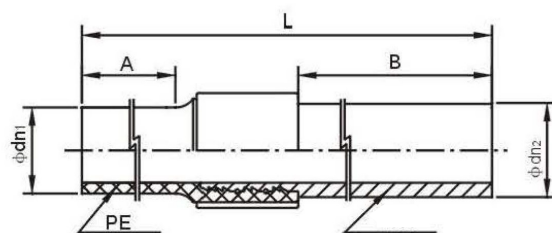
| Specifications $\Phi dn \times \Phi dn1$ | L   | A   | B   | H   | $\Phi d$ |
|------------------------------------------|-----|-----|-----|-----|----------|
| 63X25                                    | 110 | 104 | 50  | 129 | 4.7      |
| 63X32                                    | 110 | 104 | 50 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



## PE/Steel Transition Fitting Series

### PE/Steel Transition Pipe

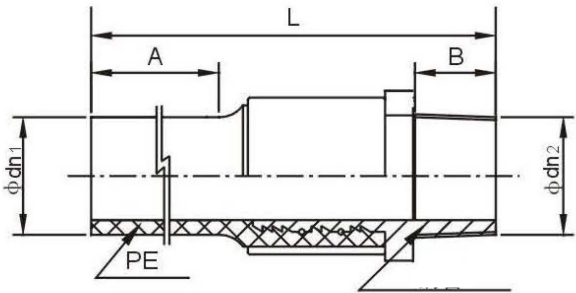
| Specifications |     | PE $\Phi$ dn1 | $\Phi$ dn2 | L   | A   | B   |
|----------------|-----|---------------|------------|-----|-----|-----|
| 25X 3/4"       | 25  | 25            | 27         | 395 | 95  | 225 |
| 32X 3/4"       | 32  | 32            | 27         | 405 | 105 | 225 |
| 32X 1"         | 32  | 32            | 34         | 405 | 105 | 225 |
| 40X 1"         | 40  | 40            | 34         | 405 | 110 | 225 |
| 40X 1 1/4"     | 40  | 40            | 42         | 405 | 115 | 225 |
| 50X 1 1/2"     | 50  | 50            | 48         | 410 | 115 | 225 |
| 63X 1 1/2"     | 63  | 63            | 48         | 410 | 155 | 225 |
| 63X2"          | 63  | 63            | 57         | 410 | 115 | 225 |
| 63X2"          | 63  | 63            | 60         | 410 | 115 | 225 |
| 75X 2 1/2"     | 75  | 75            | 76         | 550 | 100 | 355 |
| 90X 2 1/2"     | 90  | 90            | 76         | 535 | 100 | 355 |
| 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

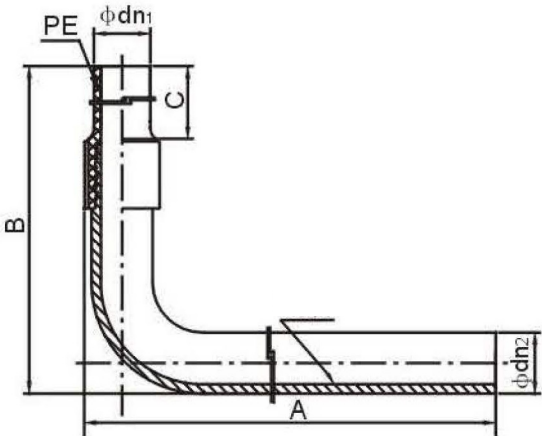
| Specifications |    | PE $\Phi$ dn1 | $\Phi$ dn2 | L   | A  | B  |
|----------------|----|---------------|------------|-----|----|----|
| 32X1"          | 32 | 32            | 1          | 170 | 80 | 25 |
| 40X 1 1/4"     | 40 | 40            |            | 170 | 80 | 25 |
| 50X 1 1/2"     | 50 | 50            | 11         | 170 | 80 | 25 |
| 63X2"          | 63 | 63            |            | 170 | 80 | 25 |



PE/Steel Transition Fitting Series

PE/Steel Transition Pipe Elbow

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



PE/Steel Transition Fitting Series

PE/Steel Transition Threaded

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



## PUDDLE FLANGES

### PE100 • SDR11 - SDR26

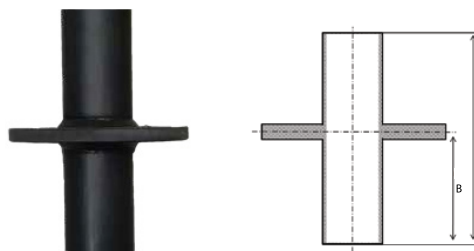
| PIPE SIZE | STANDARD LENGTH 500MM* |       |       |
|-----------|------------------------|-------|-------|
|           | SDR11                  | SDR17 | SDR26 |
| 110       | SDR11                  | SDR17 | SDR26 |
| 125       | SDR11                  | SDR17 | SDR26 |
| 140       | SDR11      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

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

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

#### Note

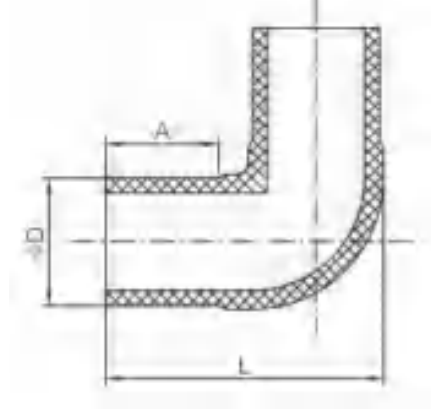
More sizes and puddle flange configurations available  
- contact us for more information.



PE BUTT FUSION FITTINGS

Elbow 90°

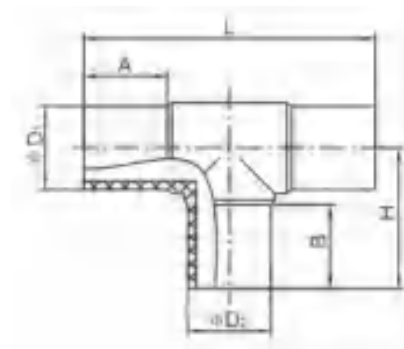
| Specifications<br>ΦD×90° | L<br>mm | A<br>mm |
|--------------------------|---------|---------|
| 50×90°                   | 120     | 66      |
| 63×90°                   | 133     | 63      |
| 75×90°                   | 165     | 70      |
| 90×90°                   | 182     | 79      |
| 110×90°                  | 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     |





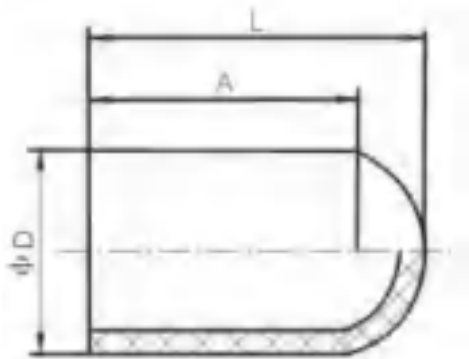
## Equal Tee

| Specifications<br>$\Phi D1 \times \Phi D2 \times D1$ | L<br>mm | A<br>mm | B<br>mm | H<br>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     |



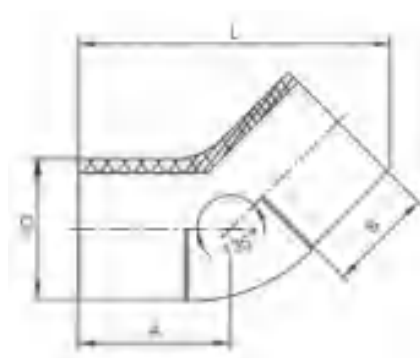
End Cap

| 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     |



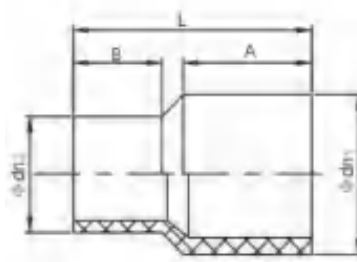
## Elbow 45°

| Specifications<br>ΦD×45° | L<br>mm | A<br>mm | B<br>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<br>$\Phi dn1 \times \Phi dn2$ | L<br>mm | A<br>mm | B<br>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     |

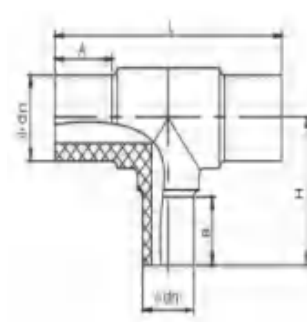


## Reducer

| Specifications<br>Φdn1×Φdn2 | L<br>mm | A<br>mm | B<br>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<br>Φdn×Φdn1×dn | L<br>mm | A<br>mm | B<br>mm | H<br>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      |

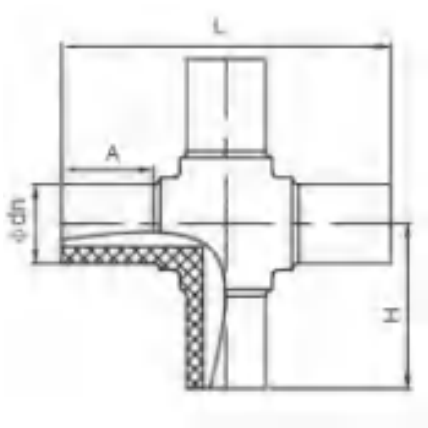


## Reducing Tee

| Specifications<br>Φdn×Φdn1×dn | L<br>mm | A<br>mm | B<br>mm | H<br>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

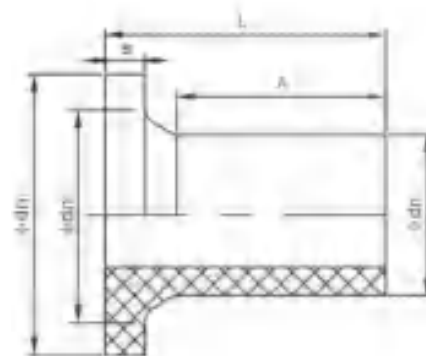
| Specifications<br>Φdn | L<br>mm | A<br>mm | H<br>mm |
|-----------------------|---------|---------|---------|
| 63                    | 230     | 63      | 115     |
| 90                    | 265     | 79      | 132     |
| 110                   | 290     | 82      | 143     |
| 125                   | 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     |





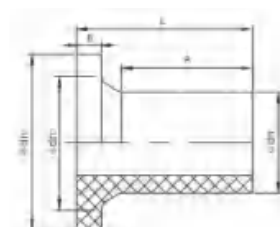
## Flange Adaptor (Stub End)

| Specifications<br>$\Phi dn$ | $\Phi dn1$ | L<br>mm | A<br>mm | B<br>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      |



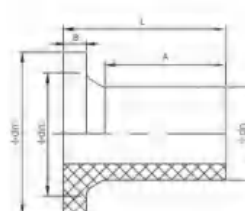
## Flange Adaptor (Short neck)

| Specifications<br>$\Phi$ dn | $\Phi$ dn1<br>mm | L<br>mm | A<br>mm | B<br>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      |



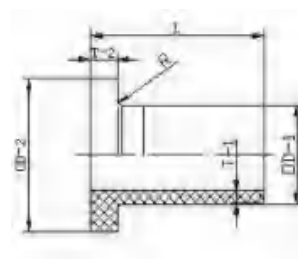
## Flange Adaptor (Long neck)

| Specifications<br>$\Phi$ dn | $\Phi$ dn1<br>mm | L<br>mm | A<br>mm | B<br>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      |



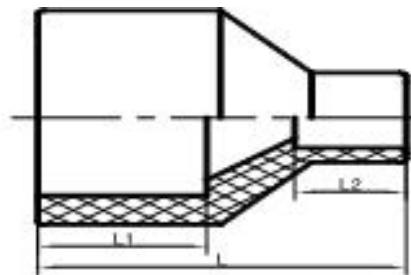
## Flange Adaptor (ASTM Standard)

| 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     |



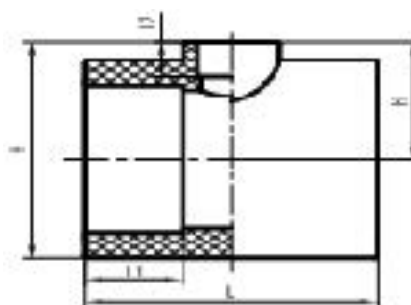
## Reducer

| Specifications | L<br>mm | L1<br>mm | L2<br>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<br>mm | L1<br>mm | L2<br>mm | H<br>mm | H1<br>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<br>mm | L1<br>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

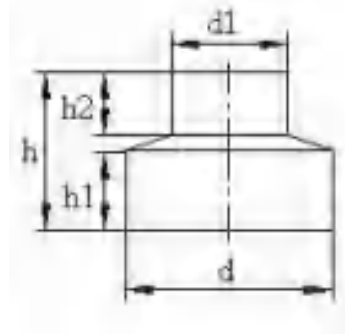
| Specifications | L<br>mm | L1<br>mm |
|----------------|---------|----------|
| L20            | 46.8    | 14.5     |
| L25            | 52.4    | 16.      |
| L32            | 63.1    | 18.1     |
| L40            | 75.5    | 20.5     |
| L50            | 90.2    | 23.5     |
| L63            | 108.3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



## PE SYPHON DRAINAGE FITTINGS

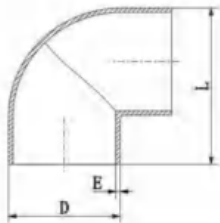
## Eccentric Reducer

| Size (mm) | d (mm)     | d1(mm)     | h1 (mm)   | h2 (mm)   | Wall Thickness (mm) |
|-----------|------------|------------|-----------|-----------|---------------------|
| 56*50     | 56 0/+0.5  | 50 0/+0.5  | 36 0/+2.0 | 37 0/+2.0 | 2.3 0/+0.5          |
| 63*50     | 63 0/+0.5  | 50 0/+0.5  | 34 0/+2.0 | 34 0/+2.0 | 2.4 0/+0.5          |
| 63*56     | 63 0/+0.6  | 56 0/+0.5  | 33 0/+2.0 | 35 0/+2.0 | 2.4 0/+0.5          |
| 75*50     | 75 0/+0.7  | 50 0/+0.5  | 34 0/+2.0 | 34 0/+2.0 | 2.9 0/+0.5          |
| 75*56     | 75 0/+0.7  | 56 0/+0.5  | 33 0/+2.0 | 35 0/+2.0 | 2.9 0/+0.5          |
| 75*63     | 75 0/+0.7  | 63 0/+0.6  | 34 0/+2.0 | 34 0/+2.0 | 2.9 0/+0.5          |
| 90*50     | 90 0/+0.9  | 50 0/+0.5  | 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         |



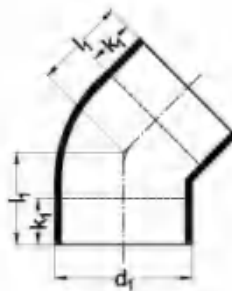
90 Degree Elbow

| 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

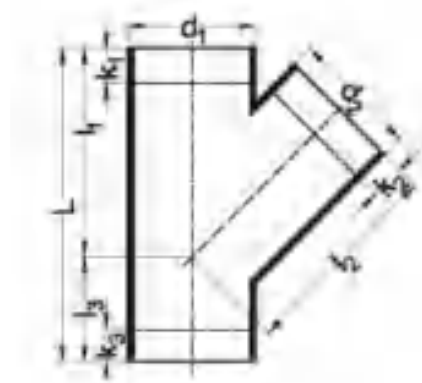
| Size (mm) | D (mm)     | L (mm)     | L (mm)    | E Wall Thickness (mm) |
|-----------|------------|------------|-----------|-----------------------|
| 50        | 50 0/+0.5  | 48 0/+2.0  | 35 0/+2.0 | 2.3 0/+0.5            |
| 56        | 56 0/+0.5  | 52 0/+2.0  | 39 0/+2.0 | 2.3 0/+0.5            |
| 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

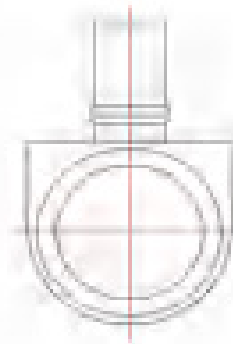
| Size (mm) | L (mm)     | d*1(mm)    | L*2(mm)    | d*2(mm)    | Wall Thickness (mm) |
|-----------|------------|------------|------------|------------|---------------------|
| 50        | 157 0/+3.0 | 50 0/+0.5  | 110 0/+2.0 | 50 0/+0.5  | 2.3 0/+0.5          |
| 56        | 162 0/+3.0 | 56 0/+0.5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



PE MACHINED FITTINGS

Machined Equal Tee

| Size(mm) | SDR |   |    |    |    |    |
|----------|-----|---|----|----|----|----|
|          | 7   | 9 | 11 | 17 | 21 | 26 |
| 110      | 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  |

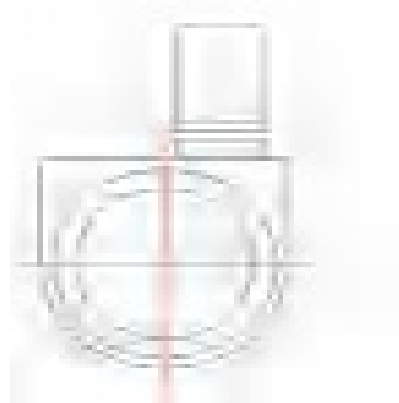
| Size(mm)  | SDR |   |    |    |    |    |
|-----------|-----|---|----|----|----|----|
|           | 7   | 9 | 11 | 17 | 21 | 26 |
| 710/630   | V   | V | V  | V  | V  | V  |
| 710/500   | V   | V | V  | V  | V  | V  |
| 710/400   | V   | V | V  | V  | V  | V  |
| 710/355   | V   | V | V  | V  | V  | 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

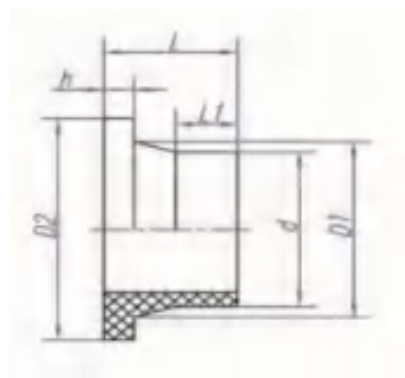
| Size(mm) | SDR |   |    |    |    |    |
|----------|-----|---|----|----|----|----|
|          | 7   | 9 | 11 | 17 | 21 | 26 |
| 355/160  | V   | V | V  | V  | V  | V  |
| 355/125  | V   | V | V  | V  | V  | V  |
| 355/110  | V   | V | V  | V  | V  | V  |
| 400/200  | V   | V | V  | V  | V  | V  |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



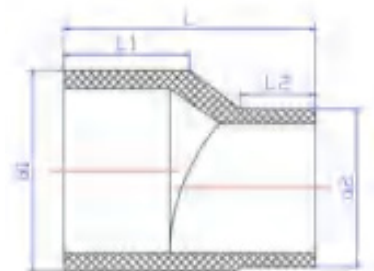
## Machined Flange Adaptor/ Full face ( Stub End)

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



## Machined Eccentric Reducer

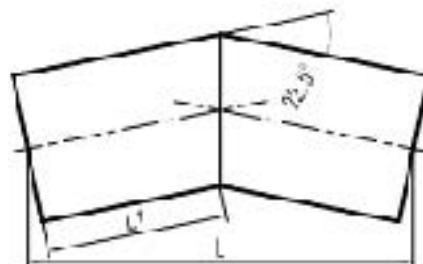
| d1                       | d2       | L   | L1  | L2  |
|--------------------------|----------|-----|-----|-----|
| mm                       | mm       | mm  | mm  | mm  |
| SDR 7/9/11/13.6/17/21/26 |          |     |     |     |
| 63                       | 32~50    | 140 | 60  | 50  |
| 75                       | 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

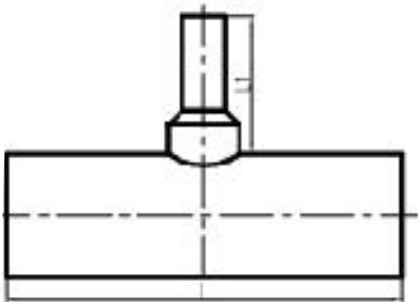
## Elbow 11.25° /22.5°/30°

| Specifications<br>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 | L1<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.

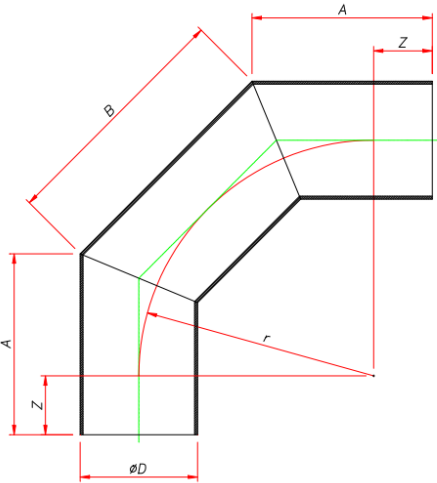


Fabricated HDPE 90 Degree Elbow

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 |

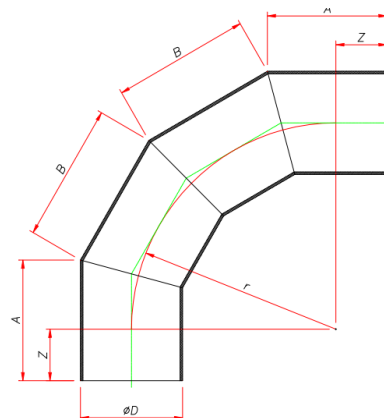


## Fabricated HDPE 90 Degree Elbow

### 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 |

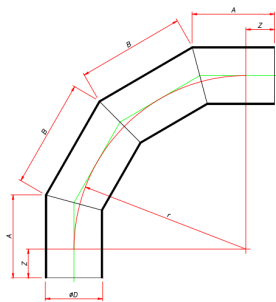


Fabricated HDPE 90 Degree Elbow

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 |

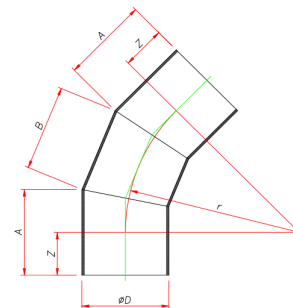


## Fabricated HDPE 45 Degree Elbow

### 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 |

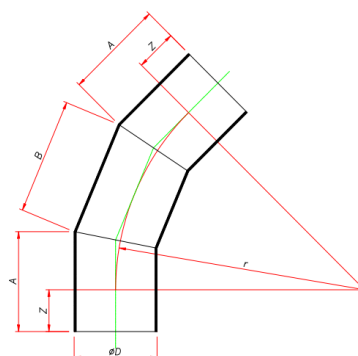


## Fabricated HDPE 45 Degree Elbow

### 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 |

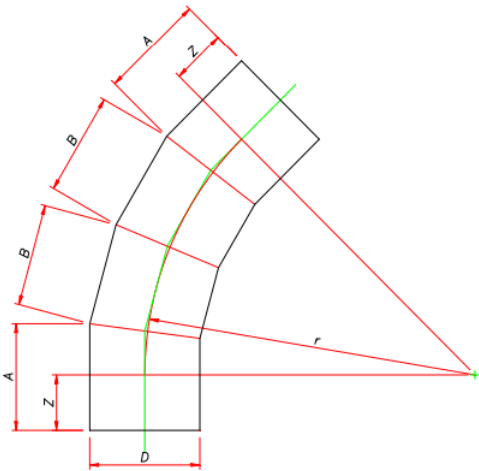


Fabricated HDPE 45 Degree Elbow

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 |

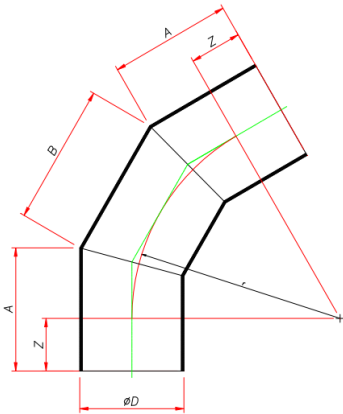


Fabricated HDPE 60 Degree Elbow

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 |



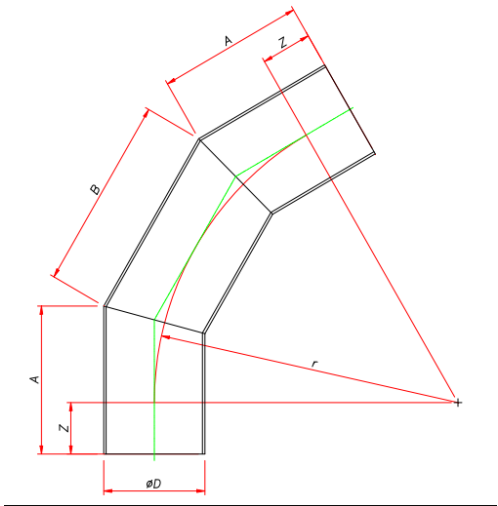


Fabricated HDPE 60 Degree Elbow

60° BENDS - 3 SEGMENTS

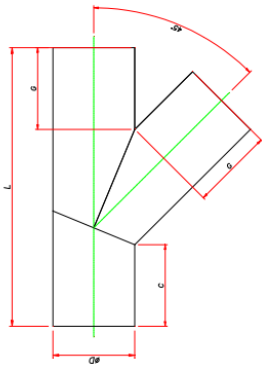
Bending radius  $r=3d$

| 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 |



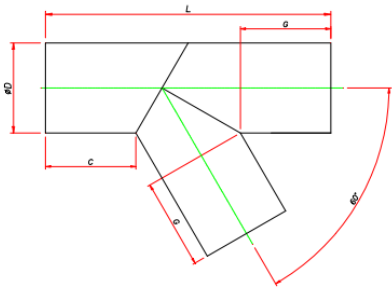
Fabricated HDPE 45° TEE

| 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 |



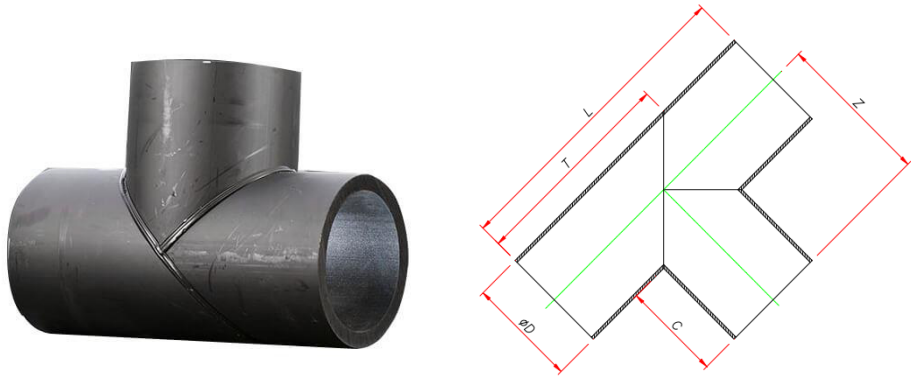
Fabricated HDPE 60° TEE

| 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 |



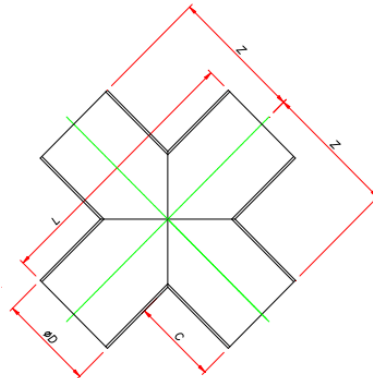
Fabricated HDPE 90° TEE

| 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

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Field guidance for HDPE water lines

- **PRESSURE TESTING**
- **LEAK DETECTION**
- **STABILIZATION**
- **SAFE COMMISSIONING**





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

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

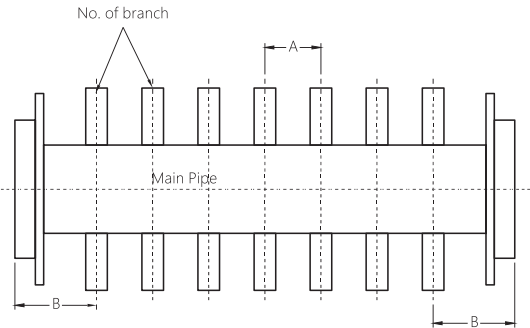
Fabricated Fittings

HEADER / MANIFOLD

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

Note

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



Note

All specification as per requirement/ customise

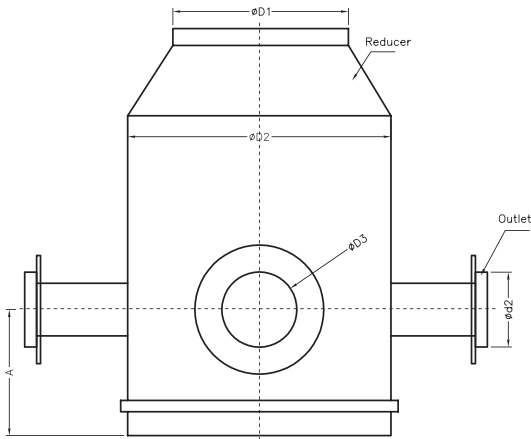


Special Fittings

MANHOLE / CHAMBER

| 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 specified can also be supplied to suit the specific requirement.

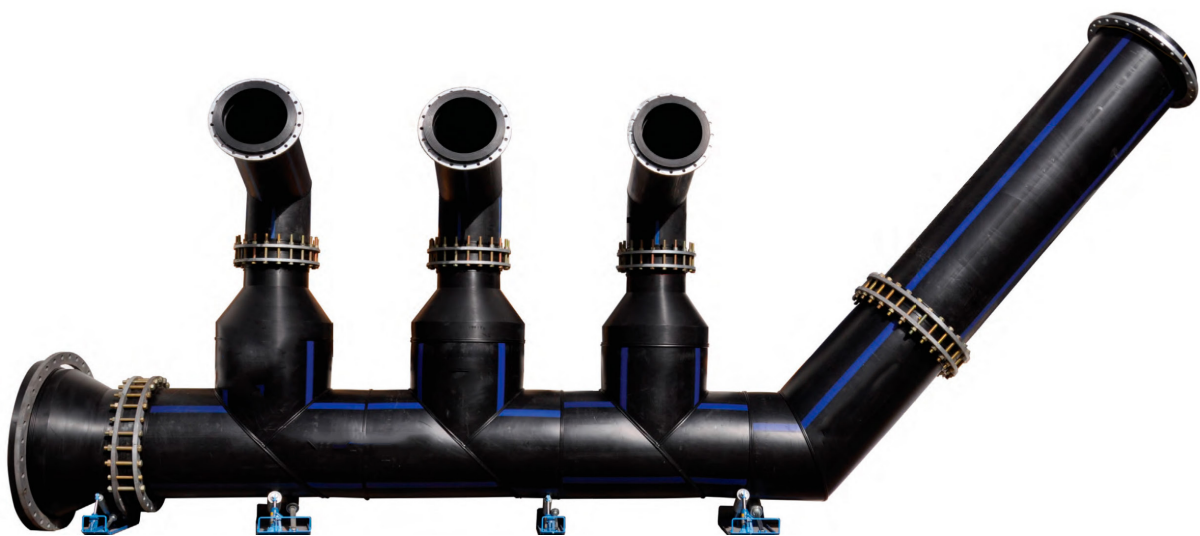
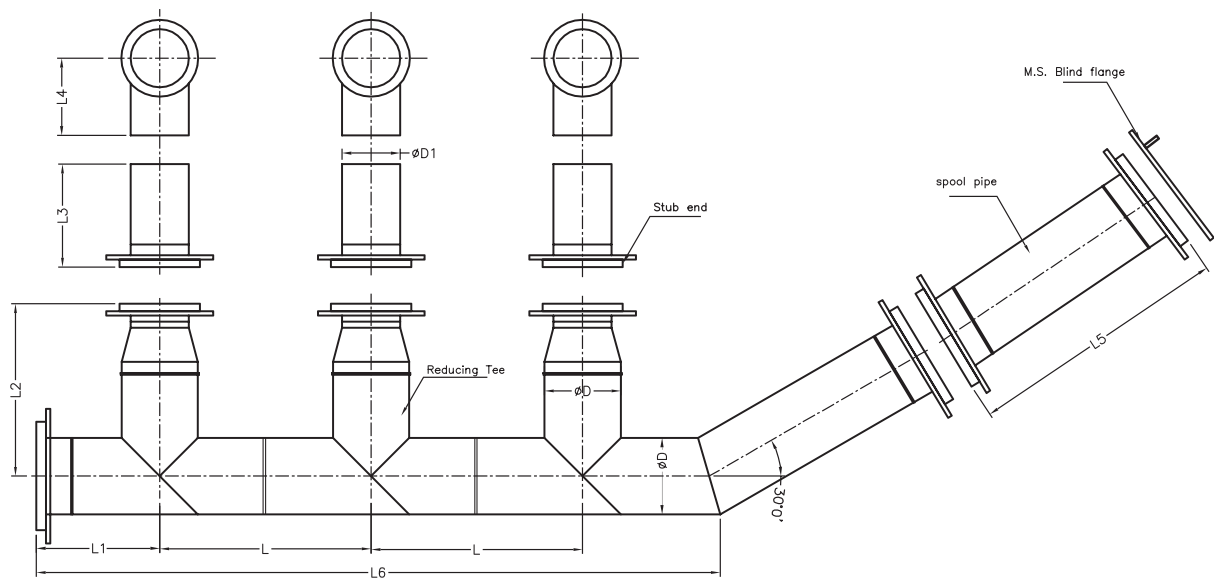


## Special Fittings

### DIFFUSER

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

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



## Saddle Fusion Joint

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

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

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

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



## ELECTROFUSION PROCEDURE GUIDELINES

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



## TECHNICAL INFORMATION

### POLYETHYLENE

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

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

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

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

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

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

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

### JOINING PE TO PE BY FUSION

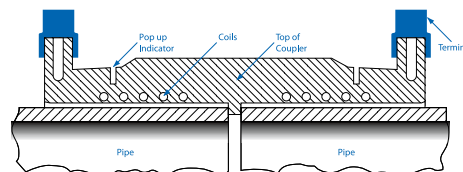
Pipes of similar materials and/or wall thickness can be joined by butt-fusion or electrofusion. Pipes of similar materials but differing wall thickness can only be joined through the use of electrofusion. Butt-welding different pipe materials i.e. PE80 to PE100 is not recommended on site.

### ELECTROFUSION

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

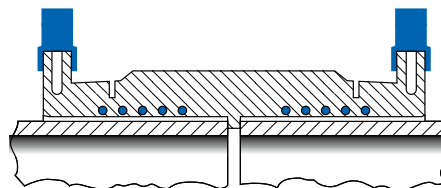
### ELECTROFUSION CYCLE

1



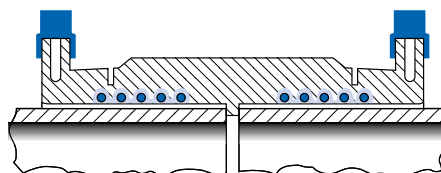
Pipe positioned in coupler prior to energising coil

2



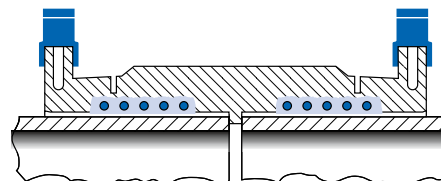
Coil energised.

3



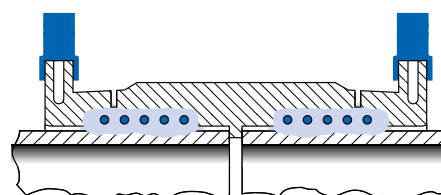
Material surrounding coil starts to melt.

4



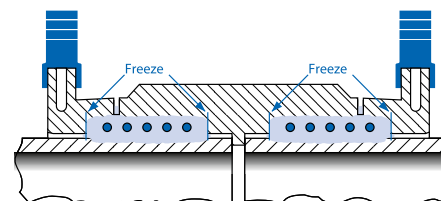
Area of melt extends leading to expansion towards pipe surface.

5



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

6

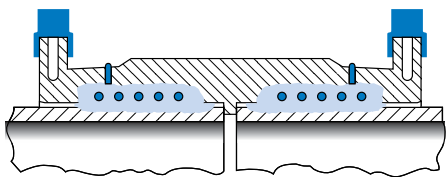


Melt solidifies at the start of the cold zones, thereby sealing the melt zone. Further input of energy causes increase in melt pressure.



## TECHNICAL INFORMATION

7



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

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

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

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

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

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

### 1. MANUAL

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

### 2. BAR CODE

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

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

### 3. TRACEABILITY

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

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

## BUTT-FUSION

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

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

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

## CONDITIONS OF USE

### Temperature

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

### Operating Pressure

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

| MARKING       | MAXIMUM PRESSURES GENERALLY USED | TEST PRESSURES AND TEST DURATION                                        |
|---------------|----------------------------------|-------------------------------------------------------------------------|
| PE80 - SDR11  | 4 bar gas<br>12.5 bar water      | 80 °C 8 bar (=4MPa) 1,000 hours<br>80 °C 9 bar (=4.5MPa) 165 hours      |
| PE80 - SDR9   | 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 (=4MPa) 1,000 hours<br>80 °C 10.8 bar (=4.5MPa) 165 hours  |

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

## MAXIMUM OPERATING PRESSURE

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

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

## TECHNICAL INFORMATION

### NOMINAL PRESSURE

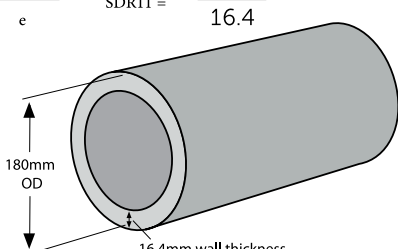
The nominal pressure (PN) of piping items is expressed by a number that indicates the capability of this item to withstand an inner pressure. It corresponds to the value expressed in bar of an inner water pressure maintained constant that the piping items have to withstand without failing for 50 years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

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

PN = nominal pressure  
 $\sigma$  = long-term hydrostatic resistance at 20°C (MPa)  
 e = (Minimum) nominal thickness of the pipe walls expressed in mm  
 D = nominal outside diameter (mm)

### STANDARD DIMENSIONAL RATIO

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

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


180mm OD  
16.4mm wall thickness

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.





# MANUFACTURING

07

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**Integrated pipe and fitting production**

- KING ABDULLAH ECONOMIC CITY, RABIGH
- PRESSURE AND GRAVITY SYSTEMS
- CUSTOM FABRICATION
- QUALITY CONTROL





# Production Consistency

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

## Polyethylene (PE) Pressure Pipes

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

The production range is from 10mm to 2000mm outside diameter (OD) with a pressure range from 3.2 bar (45 psi) to 25 bar (360 psi), and higher for special circumstances. The standard lengths of the pipes are 12, 18 and 24 meters. However we can supply any length on

customer request. Small diameter pipes from 16mm to 110mm can be supplied in coils from 100 to 500 meters.

Pipes with special diameters and thickness can be manufactured for different uses such as re-lining of oil pipes and industrial applications. Our pipe production is according to the international standards ISO 4427 and ISO 4437.





## PE Pressure Pipe Uses

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





## PE Pressure Pipe Advantages

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

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

UPI manufactures Spiral Wound Gravity Pipes by using Bauku technology to produce these huge pipes for sea-water projects. The material and manufacturing technology can in fact be used to manufacture any diameter of gravity pipe up to 3500mm.

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







## Structured Wall Pipes uses

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

## Structured Wall Pipe Advantages

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



## Corrugated Pipes PE & PP

UPI has introduced twin walled pipes to their range. Such pipes include:

Using UNICOR technology UPI can now manufacture corrugated pipe in HDPE and PP up to 315mm dia.

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

## Corrugated Pipes PE and PP Uses

### *Drainage pipes to EN 13476-3*

- Sewerage
- Stormwater drainage
- Industrial discharge
- Land drainage

### *Cable Conduit to EN 50086-2-4*

- Power distribution
- Telecommunications
- Industrial control systems

## Corrugated Pipe Advantages

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





## Fittings Fabrication

UPI fabricates PE & PP fittings to International Standards or other specifications to meet the specific demands of the customer.

Fabricated fittings are suitable for both butt-fusion and electro- fusion joints.

UPI also supplies related fittings such as electro-fusion couplers, saddles and mechanical fittings to provide a complete guaranteed system.

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

Specially configured fittings are also manufactured according to the customers' requirement. UPI also fabricates PP fittings, Manholes, Silos & Tanks.

A rigorous test program ensures consistent quality for our fabricated fittings.

# **APPROVAL & CERTIFICATION**



# APPROVALS & CERTIFICATION08

Compliance supporting trusted performance

- FM APPROVAL
- WRAS APPROVAL
- SASO CERTIFICATE
- ISO 9001 / 14001 / 45001

## Union Pipes Industry KSA Aramco Approval

|                                                                                                                      |                                                  |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Saudi Arabian Oil Company<br>Supplier Relationship Management<br>B-102 North Park 2<br>Dhahran 31311<br>Saudi Arabia | Tel: (966 13) 874-0938<br>Fax: (966 13) 874-5495 |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|

أرامكو السعودية  
 saudiaramco

July 13, 2023

**SQU-041-23**

**Ziyad Al Horaibi, Chairman Representative**  
 Union Pipes Industry LLC  
 P.O. BOX 6704  
 Makkah 23659  
 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.

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

\*Approved with limitations

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

Page 1 of 2

Saudi Arabian Oil Company (Saudi Aramco), is a company formed by Royal Decree No. M53 dated 04/04/40AH, and is a joint stock company, with certificate of registration number 2002010201 having its principal office at P.O. Box 30000, Dhahran, Saudi Arabia (22522), registered capital of Saudi Arabia and a fully paid capital of SAR 60,000,000,000.

**Saudi Aramco: Company General Use**

|                                                                                                                      |                                                  |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Saudi Arabian Oil Company<br>Supplier Relationship Management<br>B-102 North Park 2<br>Dhahran 31311<br>Saudi Arabia | Tel: (966 13) 874-0938<br>Fax: (966 13) 874-5495 |
|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|

أرامكو السعودية  
 saudiaramco

**SQU-041-23**

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

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

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

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

**Mohammed Alshuayl, Supervisor**  
 Supplier Qualification Unit

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

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

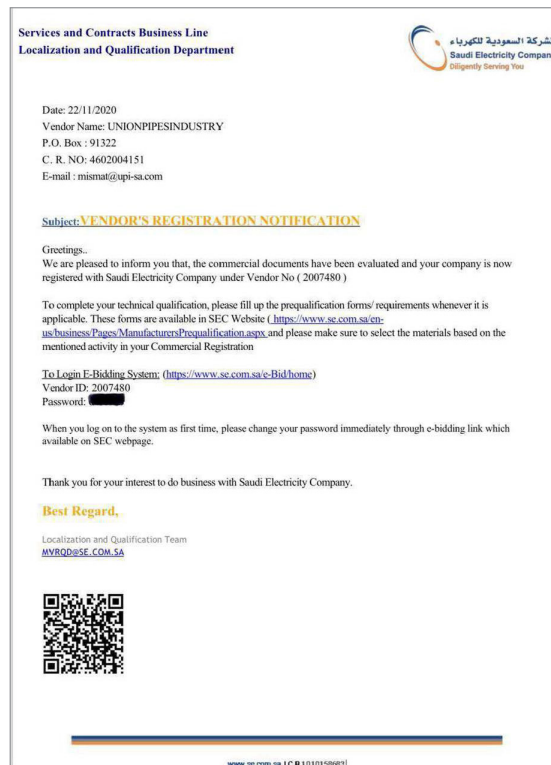
Page 2 of 2

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**Saudi Aramco: Company General Use**

REFERENCE COPY - confirm current certificate validity with UPI-SA before contractual use.

## Union Pipes Industry KSA Electracity



## Union Pipes Industry KSA FM



### 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 -I, Building 3654  
King Abdullah Economic City,  
Rabigh 23989  
Saudi Arabia

**Manufactured by:**

Union Pipes Industry - K.S.A.  
Industrial Area Phase -I, Building 3654  
King Abdullah Economic City,  
Rabigh 23989  
Saudi Arabia

FM Approvals Class: 1613 (February 2017)

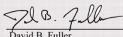
Approval Identification: PR462388
Date Approved: March 16, 2022

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

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



Member of the FM Global Group



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



Page 1 of 3



### 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 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 90 deg Elbow (3 segment)   | 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400                                           | 16.2 (235)                 | a       |
| SDR7 4 90 deg Elbow (3 segment) | 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400                                           | 20 (290)                   | a       |
| SDR11 Equal Tee, 3 seg.         | 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800             | 13.1 (190)                 | a       |
| SDR9 Equal Tee, 3 seg.          | 90, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400                                           | 16.2 (235)                 | a       |



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Page 2 of 3



### 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



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Page 3 of 3

REFERENCE COPY - confirm current certificate validity with UPI-SA before contractual use.



## Union Pipes Industry KSA WRAS

Approval Number 2012557  
Test Report: M107093

24<sup>th</sup> March 2021  
Union Pipes Industry Co. Ltd.  
Building No. 3654, Industrial Area Phase 1,  
King Abdulrah Economic City,  
Zip Code 23969,  
Addi No. 6704,  
Rabigh,  
Saudi Arabia



Water Regulations Advisory Scheme Ltd.  
Unit 13,  
Willow Road,  
Pen y Fan Industrial Estate,  
Cwmni,  
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/](http://www.wrasapprovals.co.uk/approvals-directory/)

Yours Faithfully

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

\*The Water Regulations Advisory Scheme Ltd. Registered in England No. 06603920 Registered office: 60 Lovick Close Hazel Grove Stockport SK7 5ED.  
WRAS Appr 25v1 ver 1.0 Tel: +44(0)203 207 9000 Fax: +44(0)1495 283 540 E-mail: info@wras.co.uk website: www.wras.co.uk

Page 1 of 2

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

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

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

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

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

**Use of the WRAS Approved Material Logo**

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

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

**Modifications to existing Approvals**

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

**Re-Approval**

WRAS will write to you 1 year before the approval expires asking whether you would like to renew it. Please complete the relevant section of the 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.

\*The Water Regulations Advisory Scheme Ltd. Registered in England No. 06603920 Registered office: 60 Lovick Close Hazel Grove Stockport SK7 5ED.  
WRAS Appr 25v1 ver 1.0 Tel: +44(0)203 207 9000 Fax: +44(0)1495 283 540 Email: info@wras.co.uk website: www.wras.co.uk

Page 2 of 2

REFERENCE COPY - confirm current certificate validity with UPI-SA before contractual use.



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

Cer. NO : RQ-23-036  
Approval Date : 03/Dec/2023  
Valid 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 للمصنع الموضح بياناته لفائمه المنتجات أدناه حسب مواصفات STC:

**Manufacturer Name** : Union Pipes Industry Co  
**Country of origin** : KSA  
**اسم المصنع** : شركة الاتحاد لصناعة الأنابيب  
**بلد المنشأ** : المملكة العربية السعودية

**For Below Products:** المنتجات التالية:

| Ser No. | Misc No.     | Alt/Description                                          | EN/Description                                                        | Spec Issue |
|---------|--------------|----------------------------------------------------------|-----------------------------------------------------------------------|------------|
| 1       | 274006200069 | قناة صغيرة أسود 32 مم                                    | Plain HDPE Duct, Single Mini-Duct, Full Black, 32 mm OD               | VD 101     |
| 2       | 274006200092 | قناة صغيرة أسود 32 مم                                    | Plain HDPE Duct, Single Mini-Duct, Full Orange, 32 mm OD              | VD 101     |
| 3       | 274006200078 | قناة صغيرة أسود 32 مم (مخطط برتقالي)                     | Plain HDPE Duct, Single Mini-Duct, Black (4 Orange Stripes), 32 mm OD | VD 101     |
| 4       | 197079001003 | قناة صغيرة ، بولي إيثيلين عالي الكثافة ، قطر خارجي 20 مم | Duct, HDPE, Mini-duct, Full black 20 mm OD                            | VD 101     |

**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

**ملاحظات:**  
1- إن استلام طلب 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 تقني أي طلب (طلبات) توريد أو أمر (أوامر) شراء من شركة STC.

**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.

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

## ISO 9001-2015 Valid June 2026



## ISO 14001 Valid up to June 2026



## ISO 45001-2018 Valid up to June 2026



REFERENCE COPY - confirm current certificate validity with UPI-SA before contractual use.



Sales, technical support and project coordination across Saudi Arabia and export markets.

## HEAD OFFICE & FACTORY

Building 3654, Industrial Area Phase 1  
King Abdullah Economic City, Rabigh 23989  
Kingdom of Saudi Arabia

### GENERAL

[info@upi-sa.com](mailto:info@upi-sa.com)

### EXPORT / EPC

[export@upi-sa.com](mailto:export@upi-sa.com) | +966 56 751 0780

### DAMMAM SALES

[i.ezzeldin@upi-sa.com](mailto:i.ezzeldin@upi-sa.com) | +966 55 876 6277

### RIYADH SALES

[m.mansi@upi-sa.com](mailto:m.mansi@upi-sa.com) | +966 55 333 1204

### JEDDAH SALES

[eslam.galal@upi-sa.com](mailto:eslam.galal@upi-sa.com) | +966 53 335 9930

**upi-sa.net**

*Updated using information published on the official company website in August 2026.*