



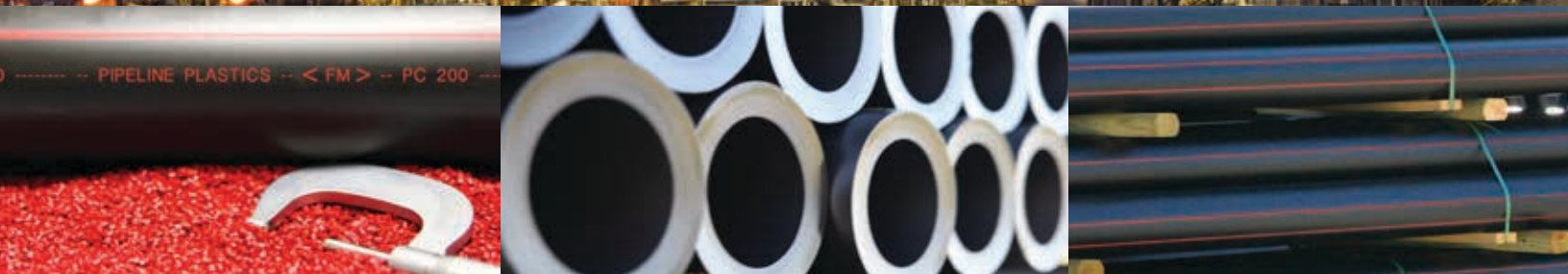
**PIPELINE**<sup>®</sup>  
PLASTICS

**FACTORY MUTUAL**



## APPLICATIONS

Pipeline Plastics FM Approved pipe is manufactured to the requirements of FM 1613 and AWWA C906 using a high performance PE4710 compound with NSF-61 certification meeting the demanding requirements and rigors of fire water protection systems, as well as water and other process piping applications. Pipeline Plastics has FM certification available with or without red stripes in sizes from 2" up to 24" in three pressure classes (PC 200, PC 250, and PC 335), and at all of its current manufacturing plants in Decatur and Levelland, Texas, and Belle Fourche, South Dakota.



## CONFORMANCE

- Plastics Pipe Institute (PPI) TR-4 Listing as PE4710 (also meets PE3408 per D3350-02a)
- FM 1613, "Approval Standard for Polyethylene (PE) Pipe and Fittings for Underground Fire Protections"
- ANSI/AWWA C906, "Polyethylene (PE) Pressure Pipe and Fittings, 4 in. Through 65 in., for Waterworks."
- ASTM F714, "Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Outside Diameter"
- Cell Classification PE445574C per ASTM D3350
- NSF/ANSI Standard 61 Certified for Potable Water Contact
- Hydrostatic Design Basis 1,600 psi @ 73°F (23°C) and 1,000 psi @ 140°F per ASTM D2837
- Color & UV Stabilizer: (C) Black with 2% min Carbon Black per ASTM D3350
- Heat fusion procedure according to ASTM F2620, and PPI TR-33 and TR-41
- Installation is recommended to follow PPI Handbook of Polyethylene Pipe, 2nd Ed.
- Leak testing should be performed according to ASTM F2164, "Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure". Appropriate safety considerations should always be followed.

### Corporate Headquarters

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| Physical Properties                 | Nominal Value*          | Test Method | Physical Properties         | Nominal Value*                  | Test Method |
|-------------------------------------|-------------------------|-------------|-----------------------------|---------------------------------|-------------|
| Density                             | 0.960 g/cm <sup>3</sup> | ASTM D1505  | Elongation @ Break          | >500 %                          | ASTM D638   |
| Melt Index (MI) 190°C/2.16kg        | 0.07 g/10 min           | ASTM D1238  | Flexural Modulus            | 150,000 psi                     | ASTM D790   |
| High Load Melt Index (190°C/21.6kg) | 7 - 16 g/10 min         | ASTM D1238  | Brittleness Temperature     | < -103 °F                       | ASTM D746   |
| SCG Resistance (PENT)               | >500 hours              | ASTM F1473  | Hardness                    | 62 Shore D                      | ASTM D2240  |
| Tensile Stress @ Yield              | 3,500 psi               | ASTM D638   | Vicat Softening Temperature | 256 °F                          | ASTM D1525  |
| Tensile Stress @ Break              | 5,000 psi               | ASTM D638   | Thermal Expansion           | 1.0 x 10 <sup>-4</sup> in/in/°F | ASTM D696   |

\* Nominal values are typical results and are not guaranteed or intended to be used as a product specification or engineering values.

| IPS  | FM 1613 |                                   | FM Approved Pipe Sizes and PCs |                      |               |                      |                      |               |                      |                      |  |
|------|---------|-----------------------------------|--------------------------------|----------------------|---------------|----------------------|----------------------|---------------|----------------------|----------------------|--|
|      | DR      | PR <sup>A</sup> / PC <sup>B</sup> | 7                              |                      |               | 9                    |                      |               | 11                   |                      |  |
|      |         |                                   | 335 psi                        |                      |               | 250 psi              |                      |               | 200 psi              |                      |  |
| Size | OD (in) | Min Wall (in)                     | ID <sup>C</sup> (in)           | Lb / Ft <sup>D</sup> | Min Wall (in) | ID <sup>C</sup> (in) | Lb / Ft <sup>D</sup> | Min Wall (in) | ID <sup>C</sup> (in) | Lb / Ft <sup>D</sup> |  |
| 2"   | 2.375   | 0.339                             | 1.656                          | 0.948                | 0.264         | 1.816                | 0.767                | 0.216         | 1.917                | 0.643                |  |
| 3"   | 3.500   | 0.500                             | 2.440                          | 2.058                | 0.389         | 2.676                | 1.663                | 0.318         | 2.825                | 1.394                |  |
| 4"   | 4.500   | 0.643                             | 3.137                          | 3.400                | 0.500         | 3.440                | 2.751                | 0.409         | 3.633                | 2.307                |  |
| 6"   | 6.625   | 0.946                             | 4.619                          | 7.373                | 0.736         | 5.064                | 5.961                | 0.602         | 5.348                | 4.994                |  |
| 8"   | 8.625   | 1.232                             | 6.013                          | 12.50                | 0.958         | 6.593                | 10.11                | 0.784         | 6.963                | 8.468                |  |
| 10"  | 10.75   | 1.536                             | 7.494                          | 19.42                | 1.194         | 8.218                | 15.70                | 0.977         | 8.678                | 13.16                |  |
| 12"  | 12.75   | 1.821                             | 8.889                          | 27.32                | 1.417         | 9.747                | 22.09                | 1.159         | 10.29                | 18.51                |  |
| 14"  | 14.00   | 2.000                             | 9.760                          | 32.93                | 1.556         | 10.70                | 26.63                | 1.273         | 11.30                | 22.31                |  |
| 16"  | 16.00   | 2.286                             | 11.15                          | 43.01                | 1.778         | 12.23                | 34.77                | 1.455         | 12.92                | 29.15                |  |
| 18"  | 18.00   | 2.571                             | 12.55                          | 54.44                | 2.000         | 13.76                | 44.02                | 1.636         | 14.53                | 36.90                |  |
| 20"  | 20.00   | 2.857                             | 13.94                          | 67.21                | 2.222         | 15.29                | 54.35                | 1.818         | 16.15                | 45.54                |  |
| 22"  | 22.00   | 3.143                             | 15.34                          | 81.31                | 2.444         | 16.82                | 65.75                | 2.000         | 17.76                | 55.10                |  |
| 24"  | 24.00   | 3.429                             | 16.73                          | 96.77                | 2.667         | 18.35                | 78.26                | 2.182         | 19.38                | 65.59                |  |

| DIPS | FM 1613 |                                   | FM Approved Pipe Sizes and PCs |                      |               |                      |                      |               |                      |                      |  |
|------|---------|-----------------------------------|--------------------------------|----------------------|---------------|----------------------|----------------------|---------------|----------------------|----------------------|--|
|      | DR      | PR <sup>A</sup> / PC <sup>B</sup> | 7                              |                      |               | 9                    |                      |               | 11                   |                      |  |
|      |         |                                   | 335 psi                        |                      |               | 250 psi              |                      |               | 200 psi              |                      |  |
| Size | OD (in) | Min Wall (in)                     | ID <sup>C</sup> (in)           | Lb / Ft <sup>D</sup> | Min Wall (in) | ID <sup>C</sup> (in) | Lb / Ft <sup>D</sup> | Min Wall (in) | ID <sup>C</sup> (in) | Lb / Ft <sup>D</sup> |  |
| 4"   | 4.80    | 0.686                             | 3.346                          | 3.872                | 0.533         | 3.669                | 3.129                | 0.436         | 3.875                | 2.625                |  |
| 6"   | 6.90    | 0.986                             | 4.810                          | 8.000                | 0.767         | 5.275                | 6.470                | 0.627         | 5.570                | 5.421                |  |
| 8"   | 9.05    | 1.293                             | 6.309                          | 13.76                | 1.006         | 6.918                | 11.13                | 0.823         | 7.306                | 9.32                 |  |
| 10"  | 11.10   | 1.586                             | 7.738                          | 20.70                | 1.233         | 8.485                | 16.74                | 1.009         | 8.961                | 14.03                |  |
| 12"  | 13.20   | 1.886                             | 9.202                          | 29.28                | 1.467         | 10.09                | 23.68                | 1.200         | 10.66                | 19.84                |  |
| 14"  | 15.30   | 2.186                             | 10.67                          | 39.33                | 1.700         | 11.70                | 31.80                | 1.391         | 12.35                | 26.65                |  |
| 16"  | 17.40   | 2.486                             | 12.13                          | 50.87                | 1.933         | 13.30                | 41.13                | 1.582         | 14.05                | 34.47                |  |
| 18"  | 19.50   | 2.786                             | 13.59                          | 63.89                | 2.167         | 14.91                | 51.67                | 1.773         | 15.74                | 43.29                |  |
| 20"  | 21.60   | 3.086                             | 15.06                          | 78.39                | 2.400         | 16.51                | 63.38                | 1.964         | 17.44                | 53.11                |  |

Note - These tables represent the **only** sizes and DRs available with FM Approvals certification.

- A. PR: Pressure Rating in pounds/sq. in. (psi) for ASTM F714 Water up to 80°F.
- B. PC: Pressure Class as per FM 1613 up to 80°F. See temperature factors for higher operating temperatures.
- C. ID: Inside Diameter may vary due to manufacturing tolerances.
- D. Wt / Ft: Weight per foot in pounds may vary due to manufacturing tolerances.

