PIPELINE PLASTICS

FACTORY MUTUAL

FM APPROVED

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 26" to 36" in PC200 at all of its current manufacturing plants in Decatur and Levelland, Texas, Fair Bluff, North Carolina 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 Standard 14/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.

Physical Properties	Nominal Value*	Test Methods	Physical Properties	Nominal Value*	Test Methods
Density	0.960 g/cm3	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	62 Shore D	ASTM D1525
Tensile Stress @ Break	5,000 psi	ASTM D638	Thermal Expansion	1.0 x 10^{-4} 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.

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IPS	FM 1613	FM Approved Pipe Sizes and PCs								
	DR	7			9			11		
	PR[A]/PC[B]	335 psi			250 psi			200 psi		
Size	OD (in)	Min Wall (in)	ID[C] (in)	Lb/Ft[D]	Min Wall (in)	ID[C] (in)	Lb/Ft[D]	Min Wall (in)	ID[C] (in)	Lb/Ft[D]
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	12.13	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
26"	26.00							2.364	20.99	76.95
28"	28.00							2.545	22.60	89.25
30"	30.00							2.727	24.22	102.47
32"	32.00							2.909	25.83	116.60
34"	34.00							3.091	27.45	131.60
36"	36.00							3.273	29.06	147.55

DIPS	FM 1613	FM Approved Pipe Sizes and PCs								
	DR	7			9			11		
	PR[A]/PC[B]	335 psi			250 psi			200 psi		
Size	OD (in)	Min Wall (in)	ID[C] (in)	Lb/Ft[D]	Min Wall (in)	ID[C] (in)	Lb/Ft[D]	Min Wall (in)	ID[C] (in)	Lb/Ft[D]
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
24"	25.80							2.345	20.83	75.78
30"	32.00							2.909	25.83	116.60
36"	38.30							3.482	30.92	167.02

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 tolorances.
D. Wt / Ft: Weight per foot in pounds may vary due to manufacturing tolorances.