Energy-DOT PE4710

PIPELINE® PLASTICS

Applications

Pipeline Plastics ENERGY-DOT product is a PE4710 high performance bimodal, high density polyethylene (HDPE) pipe designed to meet the requirements of federally regulated pipelines transporting natural and other gas under the jurisdiction of 49 CFR 192. ENERGY-DOT is manufactured in conformance with D2513-11 which also conforms with D2513-09a, the most currently referenced version in the federal code, and does not contain rework material in conformance with 49 CRF 192.59(d).

Conformance

- Contains no rework in conformance with 49 CFR 192.59(d)
- ASTM D2513-11 Standard Specification for Polyethylene (PE) Gas Pressure Pipe, Tubing and Fittings
- ASTM F2619 Standard Specification for High-Density Polyethylene (PE) Line Pipe
- API 15LE Specification for Polyethylene Line Pipe (PE)
- Cell Classification PE445574C per ASTM D3350
- Plastics Pipe Institute (PPI) TR-4 Listing as PE4710 (also meets PE3408 per D3350-02a)
- 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.

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Physical Properties	Nominal Value*	Test Method
Density	0.960 g/cm3	ASTM D1505
Melt Index (MI) 190°C/2.16kg	0.07 g/10 min	ASTM D1238
High Load Melt Index (190°C/21.6kg)	7 - 16 g/10 min	ASTM D1238
SCG Resistance (PENT)	500 hours	ASTM F1473
Tensile Stress @ Yield	3,500 psi	ASTM D638
Tensile Stress @ Break	5,000 psi	ASTM D638

Physical Properties	Nominal Value*	Test Method
Elongation @ Break	>500 %	ASTM D638
Flexural Modulus (2% secant)	150,000 psi	ASTM D790
Brittleness Temperature	< -103 °F	ASTM D746
Hardness	62 Shore D	ASTM D2240
Vicat Softening Temperature	256 °F	ASTM D1525
Thermal Expansion Coefficient	1.0 x 10^{-4} in/in/°F	ASTM D696

Nominal Pipe Sizes		DR 7			DR 9			DR 11			DR 13.5			DR 17		
IPS Size	*Nominal OD (in)*	*Min Wall*	*ID (avg)*	*Wt / Ft*	*Min Wall*	*ID (avg)*	*Wt / Ft*	*Min Wall*	*ID (avg)*	*Wt / Ft*	*Min Wall*	*ID (avg)*	*Wt / Ft*	*Min Wall*	*ID (avg)*	*Wt / Ft*
1 ¼"	1.660	0.237	1.157	0.462	0.184	1.269	0.375	0.151	1.340	0.314	0.123	1.399	0.260			
1 ½"	1.900	0.271	1.325	0.607	0.211	1.452	0.491	0.173	1.534	0.411	0.141	1.602	0.341			
2"	2.375	0.339	1.656	0.948	0.264	1.816	0.767	0.216	1.917	0.643	0.176	2.002	0.532	0.140	2.079	0.431
3"	3.500	0.500	2.440	2.058	0.389	2.676	1.663	0.318	2.825	1.394	0.259	2.950	1.160	0.206	3.064	0.935
4"	4.500	0.643	3.137	3.400	0.500	3.440	2.751	0.409	3.633	2.307	0.333	3.793	1.914	0.265	3.939	1.550
6"	6.625	0.946	4.619	7.373	0.736	5.064	5.961	0.602	5.348	4.994	0.491	5.585	4.151	0.390	5.799	3.354
8"	8.625	1.232	6.013	12.50	0.958	6.593	10.11	0.784	6.963	8.468	0.639	7.271	7.035	0.507	7.549	5.689
10"	10.75	1.536	7.494	19.42	1.194	8.218	15.70	0.977	8.678	13.16	0.796	9.062	10.93	0.632	9.409	8.830
12"	12.75	1.821	8.889	27.32	1.417	9.747	22.09	1.159	10.29	18.51	0.944	10.75	15.38	0.750	11.16	12.43
14"	14.00	2.000	9.760	32.93	1.556	10.70	26.63	1.273	11.30	22.31	1.037	11.80	18.54	0.824	12.25	14.98
16"	16.00	2.286	11.15	43.01	1.778	12.23	34.77	1.455	12.92	29.15	1.185	13.49	24.21	0.941	14.00	19.58
18"	18.00	2.571	12.55	54.44	2.000	13.76	44.02	1.636	14.53	36.90	1.333	15.17	30.64	1.059	15.76	24.76
20"	20.00	2.857	13.94	67.21	2.222	15.29	54.35	1.818	16.15	45.54	1.481	16.86	37.83	1.176	17.51	30.58
22"	22.00	3.143	15.34	81.31	2.444	16.82	65.75	2.000	17.76	55.11	1.630	18.54	45.78	1.294	19.26	37.00
24"	24.00	3.429	16.73	96.77	2.667	18.35	78.26	2.182	19.38	65.59	1.778	20.23	54.48	1.412	21.01	44.02

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

** Pressure ratings are dependent upon temperature, environmental, and/or chemical considerations which may require the use of additional service factors. The listed pressure ratings are based on PE 4710 materials with 1,000 psi HDS in water environment at 73°F. See PPI TR-9, "Recommended Design Factors for Thermoplastic Pipe", and PPI Handbook of PE Pipe, Chapter 6 – Design of PE Piping Systems for additional guidance. Maximum design temperature is 140°F. Federal design requirements will take precedence for regulated piping systems.