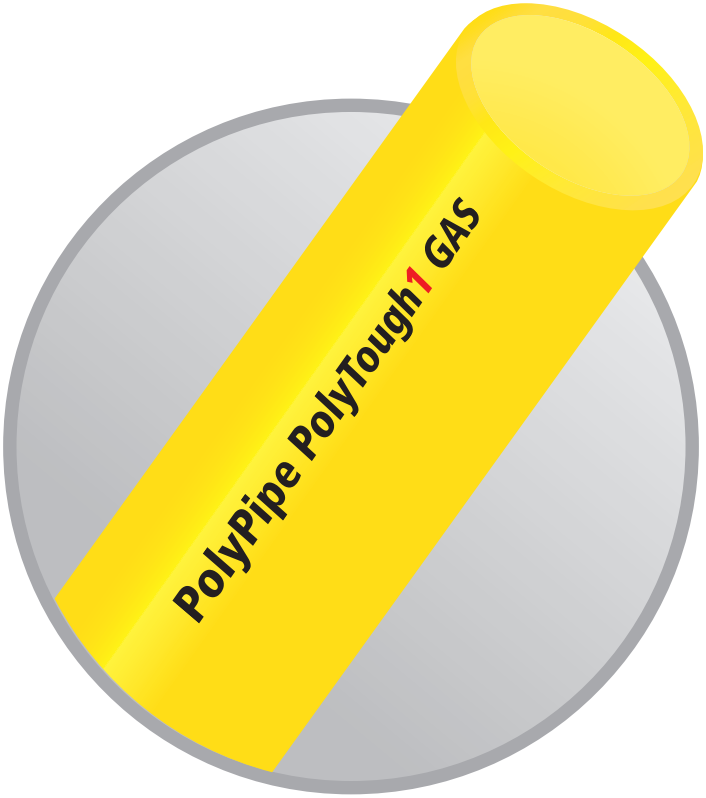
PolyPipe FOR GAS DISTRIBUTION



POLYTOUGH1™

Bimodal MDPE for the Safest and Most Durable Gas Distribution System.

FEATURES:

- **POLYTOUGH1** (PE2708) Manufactured from Dow® Continuum™ DGDA 2420 bimodal resin
- BARCODE printline per ASTM F2897 for DIMP compliance and in accordance with 49 CFR Part 192 (Amdt. 192-124)
- Outstanding resistance to Slow Crack Growth (SCG) and Rapid Crack Propagation (RCP)
- High Performance Resin for Demanding Applications
- Manufactured in accordance with ASTM D2513
- Meets ASTM D3350 material grade PE2708
- Industry leader in adoption of rework-free (7/2012)

SAMPLE PRINTLINE:	4"IPS SDR 11.5 - DURA-LINE POLYPIPE® POLYTOUGH1™ GDY20 GAS - PE2708 - CEE - ASTM D2513 - D##J##NR - 3EA – 22JAN19 –- COIL XX ###FT
APPLICATION:	Natural Gas Distribution
SIZE RANGE:	1/2" - 1" CTS & 1/2" - 16" IPS. Contact Dura-Line for additional sizes.
COLOR/STRIPE:	Solid Yellow

POLYTOUGH1™ is a high performance medium density gas distribution pipe that provides the highest resistance to **Slow Crack Growth (SCG)** and **Rapid Crack Propagation (RCP)** currently available in the industry. These unique properties bring enhanced integrity for gas distribution systems.

TL9000 ISO 9001 REGISTERED

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Medium Density PolyPipe for Gas Distribution is manufactured using either bimodal MDPE resin with enhanced performance properties or conventional unimodal MDPE resins.

TYPICAL PHYSICAL PROPERTIES

PROPERTY	ASTM TEST METHOD	*NOMINAL VALUES	
		Bi-Modal PolyTough 1–PE2708	Uni-Modal PE2708
Density, Natural	D1505	0.940 gm/cc	0.939 gm/cc
Density, Yellow	D1505	0.943 gm/cc	0.943 gm/cc
Melt Index (190°C/2.16 kg)	D1238	>0.15 gm/10 min.	0.20 gm/10 min.
Flow Rate (190°C/21.6 kg)	D1238	9.5 gm/10 min.	20 gm/10 min.
Tensile Strength @ Yield	D638	2,800 psi	2,800 psi
Ultimate Elongation	D638	>800%	>800%
Flexural Modulus – 2% Secant	D790	100,000 psi	100,000 psi
PENT	F1473	>15,000 hrs.	>1000 hrs.
Brittleness Temperature	D746	<-180°F	<-180°F
Hardness, Shore D	D2240	64	--
Vicat Softening Temperature	D1525	248°F	248°F
Izod Impact Strength (Notched)	D256	10 ft – lbf/in	10 ft – lbf/in
Volume Resistivity	D991	--	
Thermal Expansion Coefficient	D696	1.0x10-4 in/in/°F	1.0x10-4 in/in/°F
Rapid Crack Propagation (RCP)			
Resistance to Rapid Crack Propagation, Ful Scale, Pc @ 32˚F (0˚C)	ISO 13478	>560 psi	90 psi
Resistance to Rapid Crack Propagation, S-4 Pc @ 32˚F (0˚C)	ISO 13477	>145 psi	15 psi
Resistance to Rapid Crack Propagation, S-4 Tc @ 5bar	ISO 13477	<28˚F	60˚F
CELL CLASSIFICATION:	D3350	234373E	234373E
PPI HYDROSTATIC DESIGN BASIS: (As listed in PPI TR-4)	D2837	1,250 psi @ 73.4°F 1,000 psi @ 140°F	1,250 psi @ 73.4°F 1,000 psi @ 140°F

*Nominal values are intended to be guides only, and not as specification limit.

*Some of the data listed above was determined from compression molded test specimens: therefore may deviate from pipe specimens.

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PE2708 GAS PIPE DATA AND PRESSURE RATINGS – CTS & IPS

NOMINAL PIPE SIZE, INCHES		DR	DESIGN PRESSURE RATING* FOR NATURAL GAS, PSIG @ 73°F	DIMENSIONS		STANDARD LENGTH, FT	WEIGHT LBS/FT
				Average OD, inches	Min. Wall Thickness, inches		
CTS	½	–	125	0.625	0.090[1]		
	1	–	87	1.125	0.090	500	0.126
	1	–	77	1.125	0.099	500	0.139
						1,000	0.065
IPS	½	9.3	123	0.840	0.090	500	0.092
	¾	11[1]	100	1.050	0.095	500	0.123
	1	11[1]	100	1.315	0.120	500	0.193
	1 ¼	10[1]	111	1.660	0.166	500	0.335
	1 ¼	11[1]	100	1.660	0.151	500	0.308
	1 ½	11[1]	100	1.900	0.173	500	0.404
	2	11[1]	100	2.375	0.216	250	0.631
	2	11[1]	100	2.375	0.216	500	0.631
	2	11[1]	100	2.375	0.216	1,500	0.631
	3	11	100	3.500	0.318	500	1.370
	3	11.5[1]	95	3.500	0.304	500	1.317
	3	11[1]	100	3.500	0.318	40	1.370
	3	11.5[1]	95	3.500	0.304	40	1.317
	4	11[1]	100	4.500	0.409	40	2.265
	4	11.5[1]	95	4.500	0.391	40	2.176
	4	13.5[1]	80	4.500	0.333	40	1.882
	6	11	100	6.625	0.602	40	4.909
	6	11.5[1]	95	6.625	0.576	40	4.717
	6	13.5[1]	80	6.625	0.491	40	4.079
	8	11	100	8.625	0.784	40	8.320
	8	11.5[1]	95	8.625	0.750	40	7.995
	8	13.5[1]	80	8.625	0.639	40	6.913
	10	11	100	10.750	0.977	40	12.924
	10	11.5	95	10.750	0.935	40	12.419
	10	13.5	80	10.750	0.796	40	10.739
	12	11	100	12.750	1.159	40	18.180
	12	11.5	95	12.750	1.109	40	17.471
	12	13.5	80	12.750	0.944	40	15.106
	16	11	100	16.000	1.455	40	28.630

* Ratings are in accordance with DOT CFR 49, Part 192, §192.121 and §192.123.

* Effective July 14, 2004, the maximum design pressure was amended to 125 psig (reference §192.123a) when designed in accordance with §192.121 for nominal pipe sizes up through 12"IPS (§192.123e.3).

* Effective January 22, 2019, the Pipeline Safety Plastic Pipe Rule, 49 CFR Part 192 – Docket No. PHMSA-2014-0098: Amdt. No. 192-124, RIN 2137-AE93 was published to the Federal Register on 11/20/18 with an effective date of 1/22/19. This rule includes an increase in the Design Factor from 0.32 to 0.40 for all pipes meeting the minimum wall thickness requirements in 192.121. This section also limits design pressure to 125psig for pipe sizes ≤12" IPS and 100psig for pipe sizes >12" IPS.

NOTES:

- 1 Products tested and certified by IAPMO. • Some sizes are special order. Call for availability on sizes or DR's not shown.
- The above weights are calculated per PPI TR-7, using a density of 0.943 gm/cc.

NOTES: