



# POLYETHYLENE

High Density

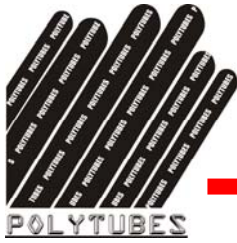
PE-3408/PE-3608

*ISO 9001: 2000  
CERTIFIED*

*ENGINEERED FOR  
WATER AND MINING  
PIPING SYSTEMS*

PLASTIC MANUFACTURES "SINCE 1953"






## Water/Sewer/Mining Services

### **POLYTUBES** HIGH MOLECULAR WEIGHT (HMW) High Density Polyethylene Pipe for

#### General Information

**POLYTUBES** extrudes and fabricates its polyethylene pipe from a **High Molecular Weight (HMW)** High Density Polyethylene (H.D.P.E.) hexene copolymer resin manufactured by  **NOVA** Chemicals™ Novapol HD-2007-H. This material provides an excellent combination of toughness, durability and environmental stress crack resistance for pressure and non pressure pipe applications. Typical applications where **POLYTUBES** piping systems could be used include potable water, sewage, drainage, mine tailings, slurries, saltwater, chemical process fluids, acids, caustic solutions, crude oil and other demanding applications where conventional materials have limitations. **POLYTUBES** polyethylene piping systems offers some unique characteristics and allow the design engineer to take advantage of these attributes such as low cost installation, good rough handling resistance, cold temperature brittleness resistance, excellent chemical resistance, will not corrode and long service life with minimal maintenance requirements. More importantly, **POLYTUBES** piping systems are flexible enough, even in large diameters to withstand earth movement without damage to the pipe or the permanent joints.

This material is listed by the Canadian Standards Association (CSA) and Plastic Pipe Institute (PPI) as a PE-3408 resin with a hydrostatic design basis (HDB) of 1600 psi for water at 23°C. Thus, a Grade P34 polyethylene is designated as a PE-3408/PE-3608, after applying the 0.5 design safety factor; the design working stress for 23°C is 800 psi with a cell classification of PE345464C as per ASTM D3350.

Identification of **POLYTUBES** polyethylene pipe by cell classification is as follows:

<u>PROPERTY</u>	<u>NOMINAL VALUE</u>	<u>CELL CLASS</u>
Density	0.955 gm/cm <sup>3</sup>	3
Melt Index	<0.10 dg/min	4
Flexural Modulus	135,000 psi	5
Tensile Strength, yield	3,300 psi	4
Slow Crack Growth, (Pent Test)	100 hrs	6
Hydrostatic Design Basis	1600 psi	4
Colour/UV Stabilizer	Carbon Black	C



## Water/Sewer/Mining Services

### Pipe Properties

	<i>Units</i>	<i>Typical Values</i>	<i>ASTM Test Method</i>
Pipe Ring Tensile Strength @ Yield	MPa	23	D2290
Pipe Density	g/cm <sup>3</sup>	0.955	D1505
Carbon Black Content	%	2.1	D1603
Thermal Stability	°C	260	D3350
Long Term Hydrostatic Strength @ 23°C	psi	1600	D2837
Long Term Hydrostatic Strength @ 60°C	psi	630	D2837
Elevated Temperature Sustained Pressure Tests @ 80°C			
725 psi	hours	1000	n/a
480 psi	hours	3600	n/a
Coefficient, of Linear Thermal Expansion	in./in./°F	0.8x10 <sup>-4</sup>	D696
Thermal Conductivity	BTU/hr/ft <sup>2</sup> /°F/in	2.4	C177
Cell Classification		PE 345464C	D3350

### Resin Properties

Flow Rate	dg/min	8.5	D1238
Density	g/cm <sup>3</sup>	0.947	D1505
Tensile Strength at Yield	MPa	22.8	D638
Elongation (@Break)	%	850	D638
Izod Impact Resistance @ 23°C	ft.-lb./inch	7	D256
Flexural Modulus (@2% Strain)	psi	125,000	D790
Environmental Stress Crack Resistance	hours	>10,000	D1693
Coefficient, of Linear Thermal Expansion	in./in./°F	0.8x10 <sup>-4</sup>	D696

#### **HD-2007-H is also listed under the following standards:**

- Plastic Pipe Institute (PPI). Standard Grade Listing as a PE-3408/PE-3608 material with a Hydrostatic Design Basis (HDB) of 1600 psi for water at 23°C and 630 psi for water at 60°C.
- Canadian Standards Assoc. (CSA) B137.1 as PE-3408/PE-3608 with a HDB of 1600 psi for potable water. **POLYTUBES** carries a CSA listing up to 6" in diameter.
- Canadian General Standards Board (CGSB) 41-GP-25M - "Pipe, Polyethylene for the transport of Liquids".
- National Sanitation Foundation (NSF) Standards 14 and 61 for potable water pipe and fittings.



## Water/Sewer/Mining Services

### **POLYTUBES IPS PIPE DIMENSIONS 1600 P.S.I. HDB**

**POLYTUBES** offers a comprehensive range of H.D.P.E. pipes in both metric and IPS outside diameters. The design pressure for **POLYTUBES** pipe is determined in accordance to the Standard ISO equation shown below:

$$P = \frac{2S}{R-1} \times F$$

Where:

*P* design pressure, **psi**

*S* hydrostatic design basis (HDB) at 23°C, =1600 psi  
(HDB=11.03 Mpa for PE-3408/PE-3608)

*F* service fluid factor (0.5 is recommended for water)

*R* ratio of pipe outside diameter to pipe minimum wall thickness.

Note: The Environmental or temperature factor is an additional de-rating factor to compensate for temperatures higher than 23°C. (Consult your **POLYTUBES** representative for higher temperature de-rating factor)

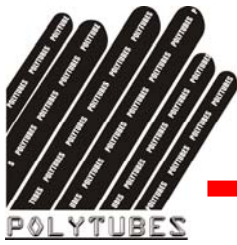
The recommended continuous working pressures for **POLYTUBES PE-3408/PE-3608** are identified by the SERIES NUMBER 45, 60, 80, 100, 130, 160, 200, 255 @ 23°C for water applications for 50 years.

* SDR	32.5	26	21.0	17.0	13.5	11.0	9.0	7.3
Pressure Rating	50	65	80	100	130	160	200	255

$$(* \text{ Standard Dimension Ratio} = \frac{\text{Outside Pipe Diameter}}{\text{Minimum Pipe Wall Thickness}})$$

With the main dimensions conforming to the requirements of the following **Standards**:

- \* CAN/CSA 137.1
- \* CGSB-41-GP-25M
- \* ASTM F-714
- \* ASTM D-3035
- \* AWWA C901/C906



## Water/Sewer/Mining Services

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### Normal Packaging Configurations

*POLYTUBES* pipe is available in the following packaging configuration:

For actual crate dimensions piece per crate and crates per truckload, please discuss with your *POLYTUBES* representative.

### ***Straight Lengths (Crates)***

***Available :***

***Pipe Sizes: 88.9 mm (3")  
to  
762 mm (30")***

***Lengths:***

***12.2 meter (40')***

***15.24 meter (50')***

***18.29 meter (60')***




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### ***REELS***

Reel dimension will be limited to a maximum:

Pipe weight of 1800 kgs (4000 lbs) on Wooden Reels.

Pipe weight of 2300 kgs (5000 lbs) on Steel Reels.

***Available :***

***26.7 mm (3/4") up to 3000 meter (9850 ft)***

***33.4 mm (1") 3000 meter (9850 ft)***

***42.2 mm (1 1/4") 1500 meter (4900 ft)***

***48.3 mm (1 1/2") 1500 meter (4900 ft)***

***60.3 mm (2") 1200 meter (3950 ft)***

***73.0 mm (2 1/2") 800 meter (2600 ft)***

***88.9 mm (3") 500 meter (1650 ft)***

***114.3 mm (4") 400 meter (1300 ft)***

***141.3 mm (5") Available***

***168.3 mm (6") upon request***



For actual REEL dimensions quantity per truckload, please discuss with your *POLYTUBES* representative.



## Water/Sewer/Mining Services

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### COILS

*Available : (feet)*

*3/4" (26.7 mm)*

*150 meters (500 ft)*

*1" (33.4 mm)*

*150 meters (500 ft)*

*1 1/4" (42.2 mm)*

*150 meters (500 ft)*

*1 1/2" (42.2 mm)*

*150 meters (500 ft)*

*2" (60.3 mm)*

*150 meters (500 ft)*



For actual coil dimensions, coils per pallet and pallets per truckload, please discuss with your **POLYTUBES** representative.

### OTHER PRODUCTS MANUFACTURED BY POLYTUBES

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- *Polyethylene pipe for natural gas services*
- *Polyethylene pipe for gas gathering applications*
- *Wide range of diameters of pipe in Low and Medium Density Polyethylene for various applications*
- *Custom extrusion available upon request.*
- *Conduit*

***PLASTIC MANUFACTURES - "SINCE 1953"***

## PE-3408/PE-3608 PIPE TUBING DIMENSIONS

Diameter <i>Inches</i>	O.D.		Series No.	SDR No.	Minimum Wall Thickness		Pipe Weight	
	<i>Inches</i>	<i>mm</i>			<i>Inches</i>	<i>mm</i>	<i>lbs/ft</i>	<i>lbs/m</i>
3/4"	1.050	26.7	100	17.0	0.062	1.57	0.08	0.28
	1.050	26.7	160	11.0	0.095	2.41	0.12	0.41
1"	1.315	33.4	100	17.0	0.077	1.96	0.13	0.43
	1.315	33.4	160	11.0	0.119	3.02	0.20	0.64
1 1/4"	1.660	42.2	80	21.0	0.079	2.00	0.17	0.56
	1.660	42.2	100	17.0	0.098	2.49	0.21	0.69
	1.660	42.2	130	13.5	0.123	3.12	0.26	0.84
	1.660	42.2	160	11.0	0.151	3.84	0.31	1.02
1 1/2"	1.900	48.3	80	21.0	0.090	2.29	0.22	0.74
	1.900	48.3	100	17.0	0.112	2.8	0.27	0.90
	1.900	48.3	130	13.5	0.141	3.58	0.34	1.11
	1.900	48.3	160	11.0	0.173	4.40	0.41	1.34
	1.900	48.3	200	9.0	0.211	5.40	0.49	1.60
	1.900	48.3	255	7.3	0.260	6.61	0.58	1.91
2"	2.375	60.3	65	26.0	0.091	2.32	0.29	0.95
	2.375	60.3	80	21.0	0.113	2.87	0.35	1.15
	2.375	60.3	100	17.0	0.140	3.50	0.43	1.40
	2.375	60.3	130	13.5	0.176	4.47	0.52	1.73
	2.375	60.3	160	11.0	0.216	5.50	0.64	2.09
	2.375	60.3	200	9.0	0.264	6.70	0.76	2.50
	2.375	60.3	255	7.3	0.325	8.25	0.91	2.99
2 1/2"	2.875	73.0	65	26.0	0.111	2.81	0.42	1.38
	2.875	73.0	80	21.0	0.137	3.48	0.51	1.68
	2.875	73.0	100	17.0	0.169	4.29	0.63	2.06
	2.875	73.0	130	13.5	0.213	5.41	0.77	2.54
	2.875	73.0	160	11.0	0.261	6.63	0.94	3.08
	2.875	73.0	200	9.0	0.319	8.10	1.12	3.67
	2.875	73.0	255	7.3	0.394	10.00	1.33	4.38
3"	3.500	88.9	80	21.0	0.167	4.20	0.76	2.50
	3.500	88.9	100	17.0	0.206	5.20	0.93	3.05
	3.500	88.9	130	13.5	0.259	6.58	1.15	3.77
	3.500	88.9	160	11.0	0.318	8.10	1.398	4.55
	3.500	88.9	200	9.0	0.389	9.90	1.66	5.44
	3.500	88.9	255	7.3	0.479	12.16	1.98	6.49
4"	4.500	114.3	80	21.0	0.214	5.40	1.26	4.13
	4.500	114.3	100	17.0	0.265	6.70	1.54	5.04
	4.500	114.3	130	13.5	0.333	8.46	1.90	6.23
	4.500	114.3	160	11.0	0.409	10.40	2.29	7.52
	4.500	114.3	200	9.0	0.500	12.70	2.74	8.99
	4.500	114.3	255	7.3	0.616	15.65	3.27	10.73
5"	5.563	141.3	80	21.0	0.265	6.73	1.95	6.39
	5.563	141.3	100	17.0	0.327	8.31	2.35	7.71
	5.563	141.3	130	13.5	0.412	10.46	2.91	9.55
	5.563	141.3	160	11.0	0.506	12.85	3.51	11.52
	5.563	141.3	200	9.0	0.618	15.7	4.18	13.71
	5.563	141.3	255	7.3	0.762	19.35	5.00	16.40

SPECIAL DIMENSIONS NOT LISTED ARE AVAILABLE UPON REQUEST

## PE-3408/PE-3608 PIPE TUBING DIMENSIONS

Diameter <i>Inches</i>	O.D.		Series No.	SDR No.	Minimum Wall Thickness		Pipe Weight	
	<i>Inches</i>	<i>mm</i>			<i>Inches</i>	<i>mm</i>	<i>lbs/ft</i>	<i>lbs/m</i>
6"	6.625	168.3	50	32.5	0.204	5.18	1.80	5.93
	6.625	168.3	65	26.0	0.255	6.47	2.24	7.35
	6.625	168.3	80	21.0	0.315	8.00	2.73	8.94
	6.625	168.3	100	17.0	0.390	9.90	3.33	10.92
	6.625	168.3	130	13.5	0.491	12.47	4.13	13.55
	6.625	168.3	160	11.0	0.602	15.30	4.97	16.30
	6.625	168.3	200	9.0	0.736	18.70	5.94	19.48
	6.625	168.3	255	7.3	0.908	23.06	7.09	23.26
7"	7.125	181.0	50	32.5	0.219	5.57	2.09	6.87
	7.125	181.0	65	26.0	0.274	6.96	2.59	8.50
	7.125	181.0	80	21.0	0.339	8.61	3.14	10.30
	7.125	181.0	100	17.0	0.419	10.64	3.84	12.59
	7.125	181.0	130	13.5	0.528	13.41	4.75	15.60
	7.125	181.0	160	11.0	0.648	16.46	5.73	18.80
	7.125	181.0	200	9.0	0.792	20.12	6.85	22.46
	7.125	181.0	255	7.3	0.976	24.79	8.19	26.88
8"	8.625	219.1	50	32.5	0.265	6.74	3.07	10.06
	8.625	219.1	65	26.0	0.332	8.43	3.80	12.46
	8.625	219.1	80	21.0	0.411	10.40	4.62	15.16
	8.625	219.1	100	17.0	0.507	12.90	5.64	18.50
	8.625	219.1	130	13.5	0.639	16.22	7.00	22.97
	8.625	219.1	160	11.0	0.784	19.9	8.42	27.62
	8.625	219.1	200	9.0	0.958	24.30	10.06	33.01
	8.625	219.1	255	7.3	1.182	30.00	12.01	39.40
10"	10.750	273.1	50	32.5	0.331	8.40	4.76	15.63
	10.750	273.1	65	26.0	0.413	10.50	5.90	19.35
	10.750	273.1	80	21.0	0.512	13.00	7.18	23.55
	10.750	273.1	100	17.0	0.632	16.10	8.76	28.74
	10.750	273.1	130	13.5	0.796	20.26	10.89	35.73
	10.750	273.1	160	11.0	0.977	24.80	13.08	42.91
	10.750	273.1	200	9.0	1.194	30.30	15.63	51.28
	10.750	273.1	255	7.3	1.477	37.20	19.40	64.80
12"	12.750	323.9	50	32.5	0.392	9.96	6.70	21.99
	12.750	323.9	65	26.0	0.490	12.46	8.30	27.22
	12.750	323.9	80	21.0	0.607	15.40	10.10	33.12
	12.750	323.9	100	17.0	0.750	19.10	12.32	40.43
	12.750	323.9	130	13.5	0.944	23.98	15.31	50.23
	12.750	323.9	160	11.0	1.159	29.40	18.40	60.36
	12.750	323.9	200	9.0	1.417	36.00	21.99	72.13
	12.750	323.9	255	7.3	1.767	44.70	27.40	89.40
14"	14.000	355.6	50	32.5	0.431	10.94	8.08	26.51
	14.000	355.6	65	26.0	0.538	13.68	10.00	32.82
	14.000	355.6	80	21.0	0.667	16.94	12.22	40.09
	14.000	355.6	100	17.0	0.824	20.92	14.91	48.91
	14.000	355.6	130	13.5	1.037	26.34	18.44	60.50
	14.000	355.6	160	11.0	1.273	32.33	22.20	72.83
	14.000	355.6	200	9.0	1.556	39.52	26.49	86.90
	14.000	355.6	255	7.3	1.957	49.70	33.40	110.40
16"	16.000	406.4	50	32.5	0.492	12.5	10.55	34.62
	16.000	406.4	65	26.0	0.615	15.63	13.07	42.87
	16.000	406.4	80	21.0	0.762	19.35	15.97	52.39
	16.000	406.4	100	17.0	0.941	23.90	19.46	63.84
	16.000	406.4	130	13.5	1.185	30.09	24.09	79.04
	16.000	406.4	160	11.0	1.455	36.96	29.00	95.14
	16.000	406.4	200	9.0	1.778	45.16	34.61	113.54
	16.000	406.4	255	7.3	2.227	56.40	43.40	140.40
18"	18.000	457.2	50	32.5	0.554	14.07	13.35	43.82
	18.000	457.2	65	26.0	0.690	17.58	16.54	54.26
	18.000	457.2	80	21.0	0.857	21.77	20.19	66.24
	18.000	457.2	100	17.0	1.059	26.90	24.65	80.08
	18.000	457.2	130	13.5	1.333	33.86	30.48	100.00
	18.000	457.2	160	11.0	1.636	41.55	36.69	120.38

SPECIAL DIMENSIONS NOT LISTED ARE AVAILABLE UPON REQUEST



## PE-3408/PE-3608 PIPE TUBING DIMENSIONS

Diameter <i>Inches</i>	O.D.		Series No.	SDR No.	Minimum Wall Thickness		Pipe Weight	
	<i>Inches</i>	<i>Inches</i>			<i>Inches</i>	<i>mm</i>	<i>lbs/ft</i>	<i>lbs/m</i>
<b>20"</b>	20.000	508.0	50	32.5	0.615	15.63	16.49	54.10
	20.000	508.0	65	26.0	0.769	19.54	20.42	66.99
	20.000	508.0	80	21.0	0.952	24.18	24.92	81.76
	20.000	508.0	100	17.0	1.176	29.97	30.42	99.81
	20.000	508.0	130	13.5	1.481	37.62	37.64	123.50
	20.000	508.0	160	11.0	1.818	46.18	45.30	148.63
	20.000	508.0	200	9.0	2.222	56.44	54.28	178.08
	20.000	508.0	255	7.3	2.740	69.59	64.83	212.69
<b>22"</b>	22.000	558.8	50	32.5	0.677	17.19	19.95	65.46
	22.000	558.8	65	26.0	0.846	21.49	24.71	81.05
	22.000	558.8	80	21.0	1.048	26.62	30.19	99.05
	22.000	558.8	100	17.0	1.294	32.87	36.81	120.77
	22.000	558.8	130	13.5	1.630	41.40	45.56	149.48
	22.000	558.8	160	11.0	2.000	50.80	54.82	179.86
	22.000	558.8	200	9.0	2.440	62.09	65.68	215.48
<b>24"</b>	24.000	609.6	50	32.5	0.738	18.76	23.74	77.90
	24.000	609.6	65	26.0	0.923	23.45	29.40	96.46
	24.000	609.6	80	21.0	1.143	29.03	35.92	117.85
	24.000	609.6	100	17.0	1.412	35.86	43.82	143.77
	24.000	609.6	130	13.5	1.778	45.16	54.22	177.90
	24.000	609.6	160	11.0	2.182	55.42	65.24	214.05
	24.000	609.6	200	9.0	2.667	67.73	78.08	256.18
<b>26"</b>	26.000	660.4	50	32.5	8.00	20.32	27.86	91.43
	26.000	660.4	65	26.0	1.00	25.4	34.51	113.21
	26.000	660.4	80	21.0	1.238	31.45	42.29	138.73
	26.000	660.4	100	17.0	1.529	38.85	51.58	169.22
	26.000	660.4	130	13.5	1.926	48.92	63.83	209.40
	26.000	660.4	160	11.0	2.364	60.04	76.81	251.99
	26.000	660.4	200	9.0	2.889	73.38	91.73	300.96
<b>28"</b>	28.000	711.2	50	32.5	0.862	21.88	32.32	106.04
	28.000	711.2	65	26.0	1.077	27.35	40.06	131.042
	28.000	711.2	80	21.0	1.333	33.87	49.09	161.06
	28.000	711.2	100	17.0	1.647	41.84	59.88	196.46
	28.000	711.2	130	13.5	2.074	52.68	74.10	243.11
	28.000	711.2	160	11.0	2.545	64.65	89.17	292.55
<b>30"</b>	30.000	762.0	50	32.5	0.923	23.45	37.10	121.73
	30.000	762.0	65	26.0	1.154	29.31	45.94	150.72
	30.000	762.0	80	21.0	1.429	36.29	56.30	184.70
	30.000	762.0	100	17.0	1.765	44.82	68.67	225.30
	30.000	762.0	130	13.5	2.222	56.44	84.98	278.79
	30.000	762.0	160	11.0	2.727	69.27	102.26	335.49

SPECIAL DIMENSIONS NOT LISTED ARE AVAILABLE UPON REQUEST