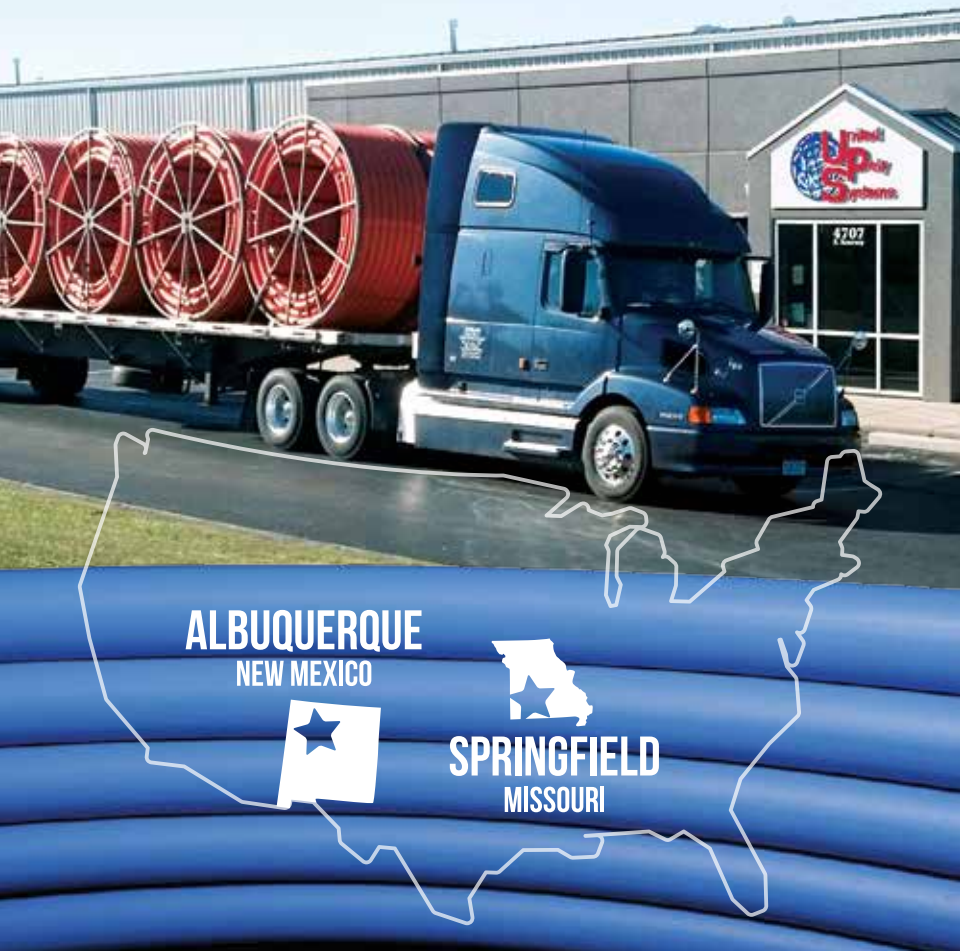
United Poly Systems

Your Industry Connection for Resource Protection

HIGH DENSITY POLYETHYLENE PIPE

from ¾" to 16" in both IPS (iron pipe size) and DIPS (ductile iron pipe size)

UnitedPolySystems.com



Conduit Material Specifications

Applications include: Telecom, Energy, DOT, etc.
Installation: Existing Conduit, Plow, Direct Burial, HDD (Horizontal Directional Drilling)

- May be striped for different indicators.
- Manufactured in IPS and DIPS (4" and up.)
- Available in ¾" to 16" diameters.
- The material requirements for PE conduit shall be classified in accordance with ASTM Standard D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fittings Materials". ASTM D 3350 defines important physical properties of HDPE materials into ranges, or cell classes, so that each property can be defined within a range that is appropriate for the application.

For HDPE conduit according to ASTM F 2160, the High Density Polyethylene material is defined as noted below:

Property	Range or Minimum Requirement	Units	Cell Class	Test Method
Density	0.941-0.955	g/cc	3	ASTM D 792 or 1505
Melt Index[a]	<0.25-0.40	g/10 minutes	3 or 4	ASTM D 1238
Flexural Modulus	110,000-160,000	Psi	4 or 5	ASTM D 790
Tensile Strength	3000-4000	Psi	4 or 5	ASTM D 638
Environmental Stress Crack Resistance[b]	F20>192	Hours (condition C)	3 or 4	ASTM D 1693
HDB	Not Defined		0, 1, 2, 3, or 4	ASTM D2837

[a] A melt mdex of up to 0.55 g/10 mmutes IS allowable provided that all other matenal reqmrements are met.
[b] A ESCR, condition B, 10% Igepal of FIO >96 hours is allowable provided that all other material requirements are met.
*Nominal values are to be used as guidelines only; this is not a product specification and does not indicate minimum or maximum values.

PE4710 Typical Physical Properties *nominal values

Property	Typical Value	Units	Test Method
Density with minimum 2% carbon black	.960	g/cc	ASTM D 792 or 1505
High Load Melt Index	8.5	g/10 minutes	ASTM D 1238
Melt Index	0.08	g/10 minutes	ASTM D 1238
Flexural Modulus	110,000 < 160,000	Psi	ASTM D 790
Tensile Strength @ yield (2 in/min)	3600	Psi	ASTM D 638
Tensile Elogation @ break	740%	%	ASTM D 638
Thermal Expansion	1.0 x 10-4	in/in/°F	ASTM D 696
HDB 73.4° F (23°C)	1600	Psi	ASTM D 2837
HDB 140° F (60°C)	1000	Psi	ASTM D 2837
PENT	>500	Hrs	ASTM F1473
Brittleness Temerature	<-103°F (-75°C)	°F	ASTM D 746
Cell Classification	445574C (black only)		ASTM D 3350

*Nominal values are to be used as guidelines only; this is not a product specification and does not indicate minimum or maximum values.

D2513 Oil & Gas Gathering

Applications include: Oil & gas piping systems (D2513), water transfer, etc.

- May be manufactured with yellow line print for identification
- Manufactured in IPS and DIPS (4" and up.)
- The material requirements for PE pressure pipe shall meet or exceed ASTM Standard D 3350 requirements.

Waterline – AWWA - NSF 61 - F714

Applications include: Municipal & Industrial, Potable Water - NSF, Sewer Line - AWWA/F714, Force Main Sewer-AWWA/F714, etc.

- May be striped for different indicators.
- Manufactured in IPS and DIPS (4" and up.)
- Available in ¾" to 16" diameters.
- United Poly Systems Pressure Pipe is used in oil and gas piping systems (D2513), industrial & mining, force main sewer (AWWA/F714), potable water (NSF), & landfill.
- The material requrements for PE pressure pipe shall meet or exceed ASTM Standard D 3350 requirements. Materials produced for water application shall meet or exceed ASTM D3035.

IPS Sizing and Pressure Ratings

IPS Size	Avg. OD	SDR PSI	7 335	7.3 320	9 250	11 200
3/4	1.05	Min Wall Avg ID Weight p/ft	0.150 0.732 0.180	— — —	0.117 0.802 0.150	0.095 0.849 0.120
1	1.315	Min Wall Avg ID Weight p/ft	0.188 0.916 0.288	0.180 0.933 0.278	0.146 1.005 0.230	0.120 1.061 0.200
1-1/4	1.66	Min Wall Avg ID Weight p/ft	0.237 0.157 0.459	0.227 1.178 0.442	0.184 1.292 0.370	0.151 1.358 0.310
1-1/2	1.90	Min Wall Avg ID Weight p/ft	0.271 1.325 0.600	0.260 1.348 0.580	0.211 1.478 0.480	0.173 1.554 0.400
2	2.375	Min Wall Avg ID Weight p/ft	0.339 1.656 0.939	0.325 1.685 0.906	0.264 1.815 0.760	0.213 1.917 0.640
2-1/2	2.875	Min Wall Avg ID Weight p/ft	0.411 2.004 1.377	0.394 2.040 1.329	0.319 2.198 1.109	0.262 2.351 0.930
3	3.5	Min Wall Avg ID Weight p/ft	0.500 2.44 2.040	0.479 2.484 1.968	0.389 2.675 1.660	0.318 2.826 1.390
4	4.5	Min Wall Avg ID Weight p/ft	0.643 3.137 3.372	0.616 3.193 3.253	0.500 3.440 2.740	0.409 3.633 2.290
5	5.563	Min Wall Avg ID Weight p/ft	0.795 3.878 5.170	0.762 3.947 4.975	0.618 4.253 4.180	0.506 4.490 3.510
6	6.625	Min Wall Avg ID Weight p/ft	0.946 4.619 7.330	0.908 4.701 7.059	0.736 5.065 5.930	0.602 5.349 4.970
7	7.125	Min Wall Avg ID Weight p/ft	— — —	— — —	— — —	— — —
8	8.625	Min Wall Avg ID Weight p/ft	1.232 6.013 12.385	1.182 6.120 11.963	0.958 6.593 9.988	0.784 6.963 8.359
10	10.75	Min Wall Avg ID Weight p/ft	1.536 7.494 19.245	1.473 7.628 18.581	1.194 8.218 15.515	0.977 8.678 12.983
12	12.75	Min Wall Avg ID Weight p/ft	1.821 8.889 27.062	1.747 9.047 26.138	1.417 9.747 21.837	1.159 10.293 18.267
14	14.00	Min Wall Avg ID Weight p/ft	2.000 9.760 32.635	1.918 9.934 31.511	1.556 10.702 26.329	1.273 11.302 22.030
16	16.00	Min Wall Avg ID Weight p/ft	2.286 11.154 42.629	2.192 11.353 41.157	1.778 12.231 34.384	1.455 12.916 28.777

United Poly Systems products are manufactured to strict ASTM, AWWA (American Water Works As

13.5 160	15.5 139	17 130	19 110	21 100	26 80	32.5 65
0.078 0.885 0.100	— — —	— — —	— — —	— — —	— — —	— — —
0.097 1.109 0.160	— — —	— — —	— — —	— — —	— — —	— — —
0.123 1.414 0.255	0.107 1.446 0.224	0.107 1.465 0.206	— — —	— — —	— — —	— — —
0.141 1.618 0.330	0.123 1.654 0.295	0.112 1.676 0.270	— — —	— — —	— — —	— — —
0.176 2.002 0.530	0.153 2.069 0.458	0.140 2.078 0.430	0.125 2.110 0.390	0.113 2.135 0.350	— — —	— — —
0.213 2.449 0.764	0.213 2.424 0.771	0.169 2.516 0.622	— — —	— — —	— — —	— — —
0.259 2.951 1.150	0.226 3.048 0.997	0.206 3.063 0.932	0.184 3.110 0.840	0.167 3.146 0.770	0.135 3.214 0.63	0.1076 3.285 0.494
0.333 3.794 1.900	0.290 3.920 1.645	0.265 3.938 1.514	0.237 3.998 1.390	0.214 4.046 1.260	0.173 4.133 1.03	0.138 4.207 0.83
0.412 4.690 2.910	0.359 4.844 2.517	0.327 4.870 2.352	0.293 4.942 2.120	0.265 5.001 1.930	0.214 5.109 1.57	0.171 5.20 1.27
0.491 5.584 4.10	0.427 5.771 3.566	0.390 5.798 3.340	0.349 5.885 3.010	0.315 5.957 2.730	0.255 6.084 2.23	0.204 6.193 1.781
— — —	— — —	0.419 6.236 3.821	0.375 6.330 3.442	0.339 6.406 3.128	0.274 6.544 2.553	0.219 6.660 2.057
0.639 7.271 6.939	0.556 7.445 6.100	0.507 7.549 5.597	0.454 7.663 5.044	0.411 7.754 4.591	0.332 7.922 3.744	0.265 8.062 3.012
0.796 9.062 10.774	0.694 9.280 9.490	0.632 9.409 8.695	0.566 9.551 7.838	0.512 9.665 7.128	0.413 9.873 5.805	0.331 10.049 4.689
0.944 10.748 15.155	0.823 11.006 13.348	0.750 11.160 12.238	0.671 11.327 11.021	0.607 11.463 10.023	0.490 11.710 8.169	0.392 11.918 6.587
1.037 11.801 18.279	0.903 12.085 16.082	0.824 12.254 14.763	0.737 12.438 13.292	0.667 12.587 12.093	0.538 12.858 9.848	0.431 13.087 7.952
1.185 13.487 23.872	1.032 13.812 21.005	0.941 14.005 19.269	0.842 14.215 17.355	0.762 14.385 15.789	0.615 14.695 12.866	0.492 14.956 10.375

ssociation) NSF 61 (National Sanitation Foundation), API (American Petroleum Institute) standards.

DIPS Sizing and Pressure Ratings PE4710

DIPS Size	Avg. OD	SDR PSI	7 335	9 250	11 200	13.5 160	17 130	21 100	26 80	32.5 65
4	4.80	Min Wall Avg ID Wt. p/ft	.686 3.346 3.87	.533 3.67 3.13	.436 3.876 2.62	.356 4.045 2.18	.282 .4202 1.76	.229 4.315 1.44	.185 4.408 1.18	.148 4.487 .95
6	6.90	Min Wall Avg ID Wt. p/ft	.986 4.81 8	.767 5.274 6.47	.627 5.571 5.42	511 5.817 4.5	.406 6.039 3.64	.329 6.203 2.98	.265 6.338 2.43	212 6.45 1.96
8	9.05	Min Wall Avg ID Wt. p/ft	1.293 6.309 13.76	1.006 6.917 11.13	823 7.305 9.32	.67 7.63 7.75	.532 7.922 6.26	.431 8.136 5.13	.348 8.312 4.19	.278 8.46 3.38
10	11.10	Min Wall Avg ID Wt. p/ft	1.586 7.738 20.7	1.233 8.486 16.74	1.009 8.961 14.03	.822 9.357 11.66	.653 9.716 9.42	.529 9.97 7.72	.427 10.195 6.3	.342 10.376 5.08
12	13.20	Min Wall Avg ID Wt. p/ft	1.886 9.202 29.27	1.467 10.09 23.67	1.2 10.656 19.84	.978 11.127 16.48	.776 11.555 13.32	.629 11.867 10.92	.508 12.123 8.91	.405 12.339 7.19
14	15.30	Min Wall Avg ID Wt. p/ft	2.186 10.666 39.33	1.7 11.696 31.8	1.391 12.351 26.65	1.133 12.898 22.15	.9 13.392 17.89	.729 13.755 14.67	.588 14.053 11.97	.471 14.302 9.66
16	17.40	Min Wall Avg ID Wt. p/ft	2.486 12.13 50.87	1.933 13.302 41.13	1.582 14.046 34.47	1.289 14.667 28.64	1.024 15.229 23.14	.829 15.643 18.97	.669 15.982 15.48	.535 16.265 12.49

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SCH 40 & SCH 80

Size	Avg. OD		SCH 40	SCH 80
¾	1.05	Min Wall Avg ID Weight p/ft	0.113 0.804 0.215	0.154 0.0722 0.188
1	1.315	Min Wall Avg ID Weight p/ft	0.133 0.804 0.145	0.179 0.936 0.277
1-1/4	1.66	Min Wall Avg ID Weight p/ft	0.140 1.360 0.291	0.191 1.255 0.383
1-1/2	1.90	Min Wall Avg ID Weight p/ft	0.145 1.59 0.349	0.200 1.476 0.465
2	2.375	Min Wall Avg ID Weight p/ft	0.154 2.047 0.469	0.218 1.913 0.644
2-1/2	2.875	Min Wall Avg ID Weight p/ft	0.206 2.445 0.744	0.276 2.290 0.982
3	3.5	Min Wall Avg ID Weight p/ft	0.216 3.042 0.973	0.300 2.864 1.315
4	4.5	Min Wall Avg ID Weight p/ft	0.237 3.998 1.387	0.337 3.786 1.923
5	5.563	Min Wall Avg ID Weight p/ft	0.258 5.016 1.882	0.375 4.768 2.668
6	6.625	Min Wall Avg ID Weight p/ft	.280 6.031 2.443	0.432 5.709 3.669

4"sch 40, 5" sch 40 & 6" sch 40 & sch80 are NON COILABLE items due to thin walls

SIDR – Standard Inside Diameter Ratio

Applications include: Telecom, Energy, DOT, etc.

- HDPE manufactured to a controlled inside diameter for applications requiring a more precise inner clearance. SIDR numbers are obtained by deviding the inside diameter by the wall thickness. Contrary to SDR, the higher the SIDR number the thinner the pipe wall will be.
- Manufactured in IPS and DIPS (4" and up.)
- Available in ¾" to 16" diameters.
- The material requirements for PE conduit shall be classified in accordance with ASTM Standard D 3350 "Standard Specification for Polyethylene Plastic Pipe and Fittings Materials". ASTM D 3350 defines important physical properties of HDPE materials into ranges, or cell classes, so that each property can be defined within a range that is appropriate for the application.

SIDR – Sizing Specifications

Nom. Size	SIDR 11.5	SIDR 15	
1-1/4" ID - 1.38	1.64 0.255	–	OD lb/ft
1-1/2" ID - 1.61	1.89 0.330	–	OD lb/ft
3" ID - 3.068	–	3.502 0.926	OD lb/ft
4" ID - 4.026	4.768 2.122	–	OD lb/ft

Due to current tooling limitations, these specifications include the only items United Poly Systems currently offers for Standard Inside Diameter Ratio (SIDR).

For more information or a complete list of products, call 417-708-9887 or visit UnitedPolySystems.com.

United Poly Systems

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United Poly Systems manufacturers High Density Polyethylene Pipe from ¾" to 16" in both IPS (iron pipe size) and DIPS (ductile iron pipe size). Our product is available in any color, smooth or ribbed interior, with or without a pull tape pre-installed and pre-lubricated. **We will customize your order to meet your needs, regardless of size, color, or footage.**

United Poly Systems has an onsite laboratory to ensure we are using the best raw materials available and give you the peace of mind in knowing the finished product you receive is of the highest quality.

We are conveniently located in Springfield, MO and Albuquerque, NM with a very competitive freight advantage to service much of the United States. We are extremely accessible to our customers and put the utmost of time and effort into assuring your needs are met in every way.

UPS manufactures for a variety of markets:

- Communications
- Utility
- Transportation
- Municipal Water
- Irrigation
- Oil and Gas Gathering
- Industrial Applications

Give us a call today for an unmatched customer experience.

We'll discuss your needs and provide you a proposal for delivery.
We also have a wide selection of HDPE products ready to ship.

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