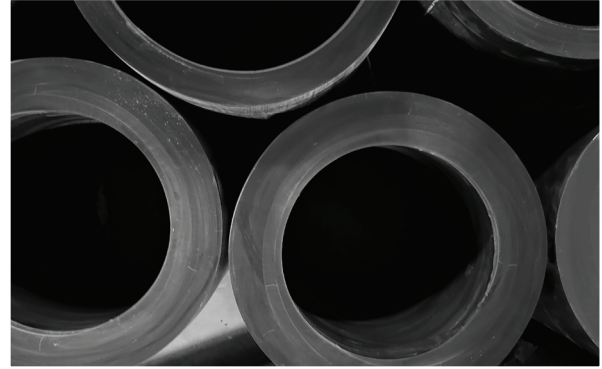


Hard-Line™

Hard-Line is United Poly Systems HPDE pipe for high pressure, high corrosive and heavy wall applications. Hard-Line is rated for higher operating pressure and has a thicker wall than standard pipes. It is available in IPS (Iron Pipe Size) size from 1¼- to 10-in. diameter. Typical product lines include SDR5, SDR6 and SDR7. Specific products can be de-rated for certain applications. Hard-Line can be striped to indicate different applications.



Applications

- Railroad crossings
- Bore installations under waterway (lake, river, etc.)
- Nuclear sites
- Oil and gas sites
- Mines
- Any application where high pressure and/or high corrosive use is necessary

PE4710 Typical Physical Properties

PROPERTY	TYPICAL VALUE	UNITS	TEST METHOD
Density with minimum 2% carbon black	0.960	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 Elongation @ Break	740%		ASTM D 638
Thermal expansion	1.0 x 10 ⁻⁴	in/ in / 0	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	hr	ASTM F1473
Brittleness Temperature	< -103°F (-75°C)	°F	ASTM D 746
Cell Classification	445574C (black only)		ASTM D 3350

These are nominal values and used as guidelines only.

This is not a product specification and does not indicate minimum or maximum operating values.

The material requirements for Hard-Line pressure pipe meets or exceeds ASTM Standard D3350 “Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.” ASTM D3350 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.

IPS Sizes

IPS SIZE	AVG. OD	SDR PSI	5 500	6 400	7 335
1¼ in.	1.66	Min Wall Avg ID Weight p/ft	0.332 0.956 0.600	0.277 1.073 0.520	0.237 1.157 0.459
1½ in.	1.90	Min Wall Avg ID Weight p/ft	0.380 1.094 0.785	0.317 1.229 0.682	0.271 1.325 0.600
2 in.	2.375	Min Wall Avg ID Weight p/ft	0.475 1.368 1.227	0.396 1.536 1.065	0.339 1.656 0.939
3 in.	3.50	Min Wall Avg ID Weight p/ft	0.700 2.016 2.665	0.583 2.263 2.314	0.500 2.440 2.040
4 in.	4.50	Min Wall Avg ID Weight p/ft		0.750 2.910 3.824	0.643 3.137 3.372
6 in.	6.625	Min Wall Avg ID Weight p/ft		1.104 4.284 8.289	0.262 2.351 0.930
8 in.	8.625	Min Wall Avg ID Weight p/ft		1.438 5.578 14.049	0.946 4.619 7.330
10 in.	10.75	Min Wall Avg ID Weight p/ft		1.792 6.952 21.825	1.536 7.494 19.245

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