

Gas HD

ASTM D2513

Polyethylene Pipe & Tubing for Natural Gas & LPG

Infra Pipes's high-density polyethylene gas pipe and tubing are produced with high-performance polyethylene resins (PE 4710) that surpass industry standards, ensuring superior resistance to environmental stress cracking and exceptional long-term stress rupture durability. It is manufactured and tested to meet or exceed the national standards for gas pressure pipe and tubing, including ASTM D2513 and the regulations in Part 192 of the Federal Gas Pipeline regulations.

MATERIAL PROPERTIES		
Properties (PE 4710)	ASTM Test Method	Nominal Values
Density (Natural)	D1505	0.949 g/cc
Density (Black)	D1505	0.959 g/cc
Hydrostatic Design Basis (HDB) @ 23 deg C	D2837	1,600 psi
Hydrostatic Design Basis (HDB) @ 60 deg C	D2837	1,000 psi
Cell Classification	D3350	445574C
Melt Index (190°C/2.16 kg)	D1238	< 0.10 g /10 min
Flow Rate (190°C/21.6 kg)	D1238	7 – 11 g /10 min
Tensile Strength @ Yield	D638	3,500 psi
Ultimate Elongation	D638	> 600%
Flexural Modulus (2% Secant)	D790	> 130,000 psi
PENT	F1473	> 10,000 psi
Brittleness Temperature	D746	< - 180 deg F
Hardness (Shore D)	D2240	64
Vicat Softening Temperature	D1525	259 deg F
Izod Impact Strength (Notched)	D256	12 ft-lbf/in
Oxidative Resistance Classification	D3350	CC3
Oxidation Induction Time @ 210 deg C	D3895	> 20 min
Thermal Expansion Coefficient	D696	0.0001 in/in/deg F
Resistance to Rapid Crack Propagation (S-4 Pc @ 32°F)	ISO 13477	> 12 bar
Resistance to Rapid Crack Propagation (S-4 Tc @ 5bar)	ISO 13477	< 10 deg F

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ASTM D2513_HD CTS PIPE DIMENSIONS					
	OD Max (in)	OD Min (in)	Max Wall (in)	Min Wall (in)	Avg Wt (lb/ft)
1/4 CTS	0.379	0.371	0.068	0.062	0.03
3/8 CTS	0.504	0.496	0.068	0.062	0.04
1/2 CTS	0.629	0.621	0.068	0.062	0.05
	0.629	0.621	0.099	0.090	0.06
	0.629	0.621	0.114	0.104	0.07
3/4 CTS	0.879	0.871	0.068	0.062	0.07
	0.879	0.871	0.085	0.077	0.08
	0.879	0.871	0.099	0.090	0.09
1 CTS	1.130	1.120	0.069	0.062	0.09
	1.130	1.120	0.101	0.090	0.12
	1.130	1.120	0.111	0.099	0.13
	1.130	1.120	0.113	0.101	0.14
	1.130	1.120	0.136	0.121	0.16
1 1/4 CTS	1.380	1.370	0.069	0.062	0.11
	1.380	1.370	0.101	0.090	0.15
	1.380	1.370	0.136	0.121	0.20
1 3/4 CTS	1.881	1.869	0.069	0.062	0.15

Note: 'D' is based on minimum acceptable wall thickness

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ASTM D2513_HD IPS PIPE DIMENSIONS						
	DR	OD Max (in)	OD Min (in)	Max Wall (in)	Min Wall (in)	Avg Wt (lb/ft)
1/2 IPS	9.33	0.844	0.836	0.101	0.090	0.09
	11	0.844	0.836	0.085	0.076	0.08
3/4 IPS	11	1.054	1.046	0.106	0.095	0.13
	D	1.054	1.046	0.101	0.090	0.12
1 IPS	9.33	1.317	1.307	0.157	0.140	0.23
	9.9	1.307	1.317	0.149	0.133	0.22
	11	1.317	1.307	0.134	0.120	0.20
	13.5	1.317	1.307	0.109	0.097	0.16
	D	1.317	1.307	0.101	0.090	0.15
1 1/4 IPS	6	1.665	1.655	0.310	0.277	0.52
	9.33	1.665	1.655	0.199	0.178	0.36
	10	1.665	1.655	0.186	0.166	0.34
	11	1.665	1.655	0.169	0.151	0.31
	13.5	1.665	1.655	0.138	0.123	0.26
	17	1.665	1.655	0.110	0.098	0.21
1 1/2 IPS	D	1.665	1.655	0.101	0.090	0.20
	11	1.906	1.894	0.194	0.173	0.41
	13.5	1.906	1.894	0.158	0.141	0.34
	17	1.906	1.894	0.125	0.112	0.28
2 IPS	D	1.906	1.894	0.101	0.090	0.23
	9.33	2.381	2.369	0.286	0.255	0.74
	11	2.381	2.369	0.242	0.216	0.64
	13.5	2.381	2.369	0.197	0.176	0.53
3 IPS	11	3.508	3.492	0.356	0.318	1.39
	11.5	3.508	3.492	0.340	0.304	1.34
	13.5	3.508	3.492	0.290	0.259	1.16
4 IPS	9.33	4.509	4.491	0.540	0.482	2.66
	11	4.509	4.491	0.458	0.409	2.30
	11.5	4.509	4.491	0.438	0.391	2.21
	13.5	4.509	4.491	0.373	0.333	1.91
	17	4.509	4.491	0.296	0.264	1.54

Note: 'D' is based on minimum acceptable wall thickness

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ASTM D2513_HD IPS PIPE DIMENSIONS (CONTINUED)

	DR	OD Max (in)	OD Min (in)	Max Wall (in)	Min Wall (in)	Avg Wt (lb/ft)
6 IPS	11	6.636	6.614	0.674	0.602	4.99
	11.5	6.636	6.614	0.645	0.576	4.80
	13.5	6.636	6.614	0.550	0.491	4.15
	17	6.636	6.614	0.437	0.390	3.36
	21	6.636	6.614	0.354	0.316	2.75
8 IPS	11	8.638	8.612	0.879	0.785	8.47
	11.5	8.638	8.612	0.840	0.750	8.14
	13.5	8.638	8.612	0.716	0.639	7.04
	17	8.638	8.612	0.569	0.508	5.69
	21	8.638	8.612	0.459	0.410	4.65
10 IPS	11	10.765	10.735	1.095	0.978	13.16
	11.5	10.765	10.735	1.047	0.935	12.64
	13.5	10.765	10.735	0.893	0.797	10.94
	17	10.765	10.735	0.709	0.633	8.84
	21	10.765	10.735	0.572	0.511	7.22
12 IPS	11	12.767	12.733	1.299	1.160	18.51
	11.5	12.767	12.733	1.242	1.109	17.78
	13.5	12.767	12.733	1.058	0.945	15.38
	17	12.767	12.733	0.804	0.750	12.42
	21	12.767	12.733	0.681	0.608	10.20
14 IPS	11	14.063	13.937	1.426	1.273	22.31
	11.5	14.063	13.937	1.363	1.217	21.43
	13.5	14.063	13.937	1.161	1.037	18.53
	17	14.063	13.937	0.923	0.824	14.99
	21	14.063	13.937	0.747	0.667	12.28
16 IPS	11	16.072	15.928	1.630	1.455	29.15
	11.5	16.072	15.925	1.558	1.391	27.99
	13.5	16.072	15.928	1.327	1.185	24.20
	17	16.072	15.928	1.054	0.941	19.56
	21	16.072	15.928	0.853	0.762	16.03

Note: 'D' is based on minimum acceptable wall thickness

Gas HD ASTM D2513

Pressure Ratings for PE 4710 Gas Pipe & Tubing

For Natural Gas - Design pressures and pressure limitations are defined in Part 192, Title 40 of the Code of Federal Regulations for the Department of Transportation of Natural and Other Gas Pipeline-Department of Transportation, Office of Pipeline Safety.

For LPG Service - Use Recommendation for Polyethylene Piping Systems for LPG and its major components, propane and butane gas, is published by the Plastic Pipe Institute (Technical Report PPI-TR22).

CAUTION: Polyethylene pipe or tubing should be used only in buried, underground applications. This product should never be used in aboveground applications where it is continuously exposed to Ultraviolet light.

