

Reference



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Reference and Information

Industry Acronyms

Abbreviation	Meaning
ASR	Anodeless Service Riser
BF	Butt Fusion
BMI	Black Malleable Iron
BS	Branch Saddle
BUR	Back Up Ring
CC	Corp Thread
CSR	Compression Service Riser
DIPS	Ductile Iron Pipe Size
EF	Electrofusion
FA	Flange Adapter
FIS	Flange Insulation Kit
FPT	Female Pipe Thread
GJ	Ground Joint
GMI	Galvanized Malleable Iron
HDPE	High Density Polyethylene
ID	Inside Diameter
IPS	Imperial Pipe Size
MDPE	Medium Density Polyethylene
MJ	Mechanical Joint
MPT	Male Pipe Thread
OD	Outside Diameter
OR	O-Ring
PE	Polyethylene
SF	Socket Fusion
SS	Stainless Steel or Service Saddle
TE	Threaded Externally Coated (Transition)
TFVI	Transition Fitting Victaulic
TI	Threaded Internally Coated (Transition)
TSR	Transition Service Riser
TT	Tapping Tee

DESIGN-FLOW® | DIPS HDPE PIPE

DUCTILE IRON PIPE SIZE PE4710 | HIGH DENSITY POLYETHYLENE PIPE

GF CENTRAL PLASTICS AVAILABLE STANDARDS:

DESIGN-FLOW® M & I PE4710 HDPE ASTM F714/D3035 AWWA C906 NSF-61

Size		DR 32.5 CLASS 65 WPR @ 65psi			DR 26 CLASS 80 WPR @ 80psi			DR 21 CLASS 100 WPR @ 100psi			DR 17 CLASS 125 WPR @ 125psi		
DIPS Pipe Size	Pipe OD (in)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)
4"	4.800	4.487	0.148	0.95	4.408	0.185	1.18	4.315	0.229	1.44	4.202	0.282	1.76
6"	6.900	6.450	0.212	1.96	6.338	0.265	2.43	6.203	0.329	2.98	6.039	0.406	3.64
8"	9.050	8.460	0.278	3.38	8.312	0.348	4.19	8.136	0.431	5.13	7.922	0.532	6.26
10"	11.100	10.376	0.342	5.08	10.195	0.427	6.30	9.979	0.529	7.72	9.716	0.653	9.42
12"	13.200	12.339	0.406	7.19	12.123	0.508	8.91	11.867	0.629	10.92	11.555	0.776	13.32
14"	15.300	14.302	0.471	9.66	14.053	0.588	11.97	13.755	0.729	14.67	13.392	0.900	17.89
16"	17.400	16.265	0.535	12.49	15.982	0.669	15.48	15.643	0.829	18.97	15.229	1.024	23.14
18"	19.500	18.228	0.600	15.69	17.910	0.750	19.44	17.531	0.929	23.83	17.068	1.147	29.07
20"	21.600	20.191	0.665	19.25	19.838	0.831	23.86	19.419	1.029	29.24	18.905	1.271	35.66
24"	25.800	24.117	0.794	27.46	23.697	0.992	34.04	23.195	1.229	41.71	22.582	1.518	50.88
30"	32.000	29.913	0.985	42.24	29.391	1.231	52.36	28.770	1.524	64.17	28.009	1.882	78.28
36"	38.300	35.802	1.178	60.51	35.177	1.473	75.00	34.434	1.824	91.92	33.524	2.253	112.13
**Note: <FM> Pipe Only in 4" to 24" diameter.													

Pressure Ratings are calculated using 0.63 design factor for HDS at 73°F as listed in PPI TR-4 for PE 4710 materials. Temperature, chemical and environmental use considerations may require use of additional design factors. Pipe weights are calculated in accordance with PPI-7 TR-7. Average inside diameter is calculated with nominal OD and minimum wall thickness plus 6%. Actual ID's will vary and are controlled by the dimensions and tolerances listed in the applicable pipe specifications. PER AWWA C906 the working pressure rating equals the pressure class, with an allowance included in the WPR for pressure surge. The pressure and surge design basis for ployethylene pipe is different from the PVC and DI pipe design basis.

Pressure Rating Formula: $P = 2 * 1000 / DR - 1 = 2000 / 16 = 125\text{-psi}$

Other sizes and DR's are available. Please contact your customer service representative at **1.800.499.6927** or **www.gfcp.com**

****DESIGN-FLOW® FM Approved PE4710 HDPE FM1613**
DESIGN-FLOW® Gray SL PE4710 HDPE ASTM F714/D3035

DR 13.5 CLASS 160 WPR @ 160psi			DR 11 CLASS 200 (FM - CLASS 150) WPR @ 200psi			DR 9 CLASS 250 (FM - CLASS 200) WPR @ 250psi			DR 7 CLASS 335 (FM - CLASS 267) WPR @ 335psi		
Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)
4.045	0.356	2.18	3.876	0.436	2.62	3.670	0.533	3.13	3.346	0.686	3.87
5.817	0.511	4.50	5.571	0.627	5.42	5.274	0.767	6.47	4.810	0.986	8.00
7.630	0.670	7.75	7.305	0.823	9.32	6.917	1.006	11.13	6.309	1.293	13.76
9.357	0.822	11.66	8.961	1.009	14.03	8.486	1.233	16.74	7.738	1.586	20.70
11.127	0.978	16.48	10.656	1.200	19.84	10.090	1.467	23.67	9.202	1.886	29.27
12.898	1.133	22.15	12.351	1.391	26.65	11.696	1.700	31.80	10.666	2.186	39.33
14.667	1.289	28.64	14.046	1.582	34.47	13.302	1.933	41.13	12.130	2.486	50.87
16.439	1.444	35.97	15.741	1.773	43.29	14.906	2.167	51.66	13.594	2.786	63.89
18.208	1.600	44.14	17.436	1.964	53.12	16.512	2.400	63.38	15.058	3.086	78.39
21.749	1.911	62.97	20.829	2.345	75.78	19.722	2.867	90.43	17.986	3.686	111.83
26.975	2.370	96.87	25.833	2.909	116.58	24.462	3.556	139.12	-	-	-
32.285	2.837	138.77	30.918	3.482	167.01	-	-	-	-	-	-

STANDARD SIZES AND DR'S
 SHOWN IN BOLD PRINT.

$$DR = \frac{\text{Pipe OD (in)}}{\text{Min. Wall Thickness (in)}}$$

The Long-Term Hydrostatic Strength of PE4710 Polyethylene Pipe is 1600 psi at 73.4 F. All pipe sizes with the same DR and Long-Term Hydrostatic Strength will have equal operating pressure capability.

DESIGN-FLOW® | IPS HDPE PIPE

IRON PIPE SIZE PE4710 | HIGH DENSITY POLYETHYLENE PIPE

GF CENTRAL PLASTICS AVAILABLE STANDARDS:

DESIGN-FLOW® M & I PE4710 HDPE ASTM F714/D3035 AWWAC901/C906 NSF-61

DESIGN-FLOW® OIL & GAS PE4710/PE3608 ASTM D2513-09 CFR-192

Size		DR 32.5 CLASS 65 WPR @ 65psi			DR 26 CLASS 80 WPR @ 80psi			DR 21 CLASS 100 WPR @ 100psi			DR 19 CLASS 110 WPR @ 110psi			DR 17 CLASS 125 WPR @ 125psi			
IPS Pipe Size	Pipe OD (in)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	Avg ID (in)	Min Wall (in)	Weight (lbs/ft)	
2"	2.375	-	-	-	-	-	-	-	-	-	-	-	-	2.078	0.140	0.43	
3"	3.500	-	-	-	-	-	-	-	-	-	-	-	-	3.063	0.206	0.94	
4"	4.500	-	-	-	-	-	-	4.046	0.214	1.27	-	-	-	3.938	0.265	1.55	
5"	5.563	-	-	-	5.109	0.214	1.58	5.001	0.265	1.94	4.942	0.293	2.13	4.870	0.327	2.37	
6"	6.625	-	-	-	6.084	0.255	2.24	5.957	0.315	2.75	5.886	0.349	3.02	5.798	0.390	3.36	
8"	8.625	-	-	-	7.921	0.332	3.80	7.754	0.411	4.66	7.663	0.454	5.12	7.550	0.507	5.69	
10"	10.750	-	-	-	9.874	0.413	5.91	9.665	0.512	7.24	9.551	0.556	7.96	9.410	0.632	8.83	
12"	12.750	-	-	-	11.711	0.490	8.31	11.463	0.607	10.19	11.327	0.671	11.20	11.160	0.750	12.43	
14"	14.000	-	-	-	12.859	0.538	10.02	12.586	0.667	12.28	12.438	0.737	13.50	12.253	0.824	14.98	
16"	16.000	-	-	-	14.696	0.615	13.09	14.385	0.762	16.04	14.215	0.842	17.63	14.005	0.941	19.57	
18"	18.000	-	-	-	16.533	0.692	16.57	16.183	0.857	20.30	15.992	0.947	22.32	15.755	1.059	24.77	
20"	20.000	18.695	0.615	16.50	18.370	0.769	20.45	17.982	0.952	25.07	17.768	1.053	27.55	17.507	1.176	30.58	
22"	22.000	20.565	0.677	19.97	20.206	0.846	24.75	19.778	1.048	30.33	19.545	1.158	33.34	19.257	1.294	37.00	
24"	24.000	22.434	0.738	23.76	22.043	0.923	29.45	21.577	1.143	36.10	21.322	1.263	39.67	21.007	1.412	44.03	
26"	26.000	24.304	0.800	27.89	23.880	1.000	34.57	23.375	1.238	42.36	23.099	1.368	46.56	22.758	1.529	51.67	
28"	28.000	26.174	0.862	32.34	25.717	1.077	40.09	25.173	1.333	49.13	24.876	1.474	54.00	24.508	1.647	59.93	
30"	30.000	28.043	0.923	37.13	27.554	1.154	46.02	26.971	1.429	56.40	26.653	1.579	61.99	26.259	1.765	68.80	
32"	32.000	29.913	0.985	42.24	29.391	1.231	52.36	28.770	1.524	64.17	28.429	1.684	70.53	28.009	1.882	78.28	
36"	36.000	33.652	1.108	53.46	33.065	1.385	66.27	32.366	1.714	81.21	31.983	1.895	89.26	31.511	2.118	99.07	
		**Note: <FM> Pipe Only in 2" to 24" diameter.															

Pressure Ratings are calculated using 0.63 design factor for HDS at 73°F as listed in PPI TR-4 for PE 4710 materials. Temperature, chemical and environmental use considerations may require use of additional design factors. Pipe weights are calculated in accordance with PPI-7 TR-7. Average inside diameter is calculated with nominal OD and minimum wall thickness plus 6%. Actual ID's will vary and are controlled by the dimensions and tolerances listed in the applicable pipe specifications. PER AWWA C906 the working pressure rating equals the pressure class, with an allowance included in the WPR for pressure surge. The pressure and surge design basis for polyethylene pipe is different from the PVC and DI pipe design basis.

Pressure Rating Formula: $P = 2 * 1000 / DR - 1 = 2000 / 16 = 125\text{-psi}$

Other sizes and DR's are available. Please contact your customer service representative at **1.800.499.6927** or **www.gfcp.com**

DIPS LOAD CHART

DIPS Pipe Size	Pipe OD (in)	Bundle Style	SDR	Joints per Pack	Joints per Layer	Layers per Truck	Packs per Truck	Joints per Truck	Feet per Truck	
							40's / 50's	40's / 50's	40's	50's
4"	4.800	Hard Pack	9	29 / 29	58	6	12	348 / 290	13920	14500
			11 - 32.5	29 / 29	5h8	6	12	348	13920	17400
6"	6.900	Hard Pack	9	13 / 13	26	6	12	156 / 143	6240	7150
			11 - 32.5	13 / 13	26	6	12	156	6240	7800
8"	9.050	Hard Pack	9	6 / 5	11	9	18 / 15	99 / 83	3960	4150
			11 - 32.5	6 / 5	11	9	18	99	3960	4950
10"	11.100	Bulk Pack	9	5 / 4	9	7	14 / 12	63 / 54	2520	2700
			11 - 32.5	5 / 4	9	7	14	63	2520	3150
12"	13.200	Bulk Pack	9	4 / 3	7	6	12 / 11	42 / 39	1680	1950
			11 - 32.5	4 / 3	7	6	12	42	2680	2100
14"	15.300	Bulk Pack	9	3	6	5	10 / 9	30 / 27	1200	1350
			11 - 32.5	3	6	5	10	30	1200	1500
16"	17.400	Bulk Pack	9	3 / 2	5	5	10 / 9	25 / 22	1000	1100
			11 - 32.5	3 / 2	5	5	10	25	1000	1250
18"	19.500	Bulk Pack	9	3 / 2	5	4	8 / 7	20 / 18	800	900
			11 - 32.5	3 / 2	5	4	8	20	800	1000
20"	21.600	Bulk Pack	9 - 11	2 / 2	4	4	8 / 7	16 / 14	640	700
			13.5 - 32.5	2 / 2	4	4	8	16	640	800
24"	25.800	Bulk Pack	9 - 32.5	2 / 1	3	3	6	9	360	450
30"	32.000	Bulk Pack	11	2 / 1	3	3	6 / 5	9 / 8	360	400
			13.5 - 32.5	2 / 1	3	3	6	9	360	450
36"	38.300	Strip Load	13.5 - 32.5	1 / 1	2	2	4	4	160	200

IPS LOAD CHART

IPS Pipe Size	Pipe OD (in)	Bundle Style	SDR	Joints per Pack*	Joints per Layer*	Layers per Truck*	Packs per Truck		Joints per Truck		Feet per Truck	
							40's / 50's	40's / 50's	40's	50's		
2"	2.375	Soft Pack	7	88 / 88	176	6	11	968	38720	48400		
			9 - 32.5	88 / 88	176	6	12	1056	42240	52800		
3"	3.500	Hard Pack	7	50 / 50	100	7	11 / 9	550 / 450	22000	22500		
			9	50 / 50	100	7	13 / 11	650 / 550	26000	27500		
			11	50 / 50	100	7	14 / 13	700 / 650	28000	32500		
			13.5 - 32.5	50 / 50	100	7	14	700	28000	35000		
4"	4.500	Hard Pack	7	29 / 29	58	7	11 / 9	319 / 261	12760	13050		
			9	29 / 29	58	7	14 / 11	406 / 319	16240	15950		
			11 - 32.5	29 / 29	58	7	14	406	16240	20300		
5"	5.563	Hard Pack	7	15 / 15	30	8	14 / 12	210 / 180	8400	9000		
			9	15 / 15	30	8	16 / 14	240 / 210	9600	10500		
			13.5 - 32.5	15 / 15	30	8	16	240	9600	12000		
6"	6.625	Hard Pack	7	13 / 13	26	7	12 / 9	156 / 117	6240	5850		
			11	13 / 13	26	7	14 / 12	182 / 156	7280	7800		
			13.5 - 32.5	13 / 13	26	7	14	182	7280	9100		
8"	8.625	Hard Pack	7	12 / 10	22	5	8 / 6	88 / 66	3520	3300		
			9	12 / 10	22	5	10 / 8	110 / 88	4400	4400		
			13.5 - 32.5	12 / 10	22	5	10	110	4400	5500		
10"	10.750	Bulk Pack	7	5 / 4	9	7	13 / 10	59 / 45	2360	2250		
			9	5 / 4	9	7	14 / 13	63 / 58	2520	2900		
			11 - 32.5	5 / 4	9	7	14	63	2520	3150		
12"	12.750	Bulk Pack	7	4 / 4	8	6	10 / 8	40 / 32	1600	1600		
			9	4 / 4	8	6	12 / 10	48 / 40	1920	2000		
			11 - 32.5	4 / 4	8	6	12	48	1920	2400		
14"	14.000	Bulk Pack	7	4 / 3	7	6	10 / 8	35 / 28	1400	1400		
			9	4 / 3	7	6	12 / 10	42 / 35	1680	1750		
			11 - 32.5	4 / 3	7	6	12	42	1680	2100		

IPS Pipe Size	Pipe OD (in)	Bundle Style	SDR	Joints per Pack*	Joints per Layer*	Layers per Truck*	Packs per Truck		Joints per Truck		Feet per Truck	
							40's / 50's	40's / 50's	40's	50's		
16"	16.000	Bulk Pack	7	3 / 3	6	5	9 / 7	27 / 21	1080	1050		
			9	3 / 3	6	5	10 / 9	30 / 27	1200	1350		
			11 - 32.5	3 / 3	6	5	10	30	1200	1500		
18"	18.000	Bulk Pack	7	3 / 2	5	5	8 / 7	20 / 17	800	850		
			9	3 / 2	5	5	10 / 8	25 / 20	1000	1000		
			11 - 32.5	3 / 2	5	5	10	20	1000	1250		
20"	20.000	Hard Pack	7	3 / 2	5	4	7 / 5	17 / 13	680	650		
			9	3 / 2	5	4	8 / 7	20 / 17	800	850		
			11 - 32.5	3 / 2	5	4	8	20	800	1000		
22"	22.000	Hard Pack	7	2 / 2	4	4	7 / 5 ^{1/2}	14 / 11	560	550		
			9	2 / 2	4	4	8 / 7	16 / 14	640	700		
			11 - 32.5	2 / 2	4	4	8	16	640	800		
24"	24.000	Bulk Pack	7	2 / 2	4	4	6 / 4 ^{1/2}	12 / 9	480	450		
			9	2 / 2	4	4	7 / 6	14 / 12	560	600		
			11	2 / 2	4	4	8 / 7	16 / 14	640	700		
			13.5 - 32.5	2 / 2	4	4	8	16	640	800		
26"	26.000	Bulk Pack	7	2 / 1	3	3	6 / 6.5	9 / 8	360	400		
			9 - 32.5	2 / 1	3	3	6	9	360	450		
28"	28.000	Bulk Pack	9	2 / 1	3	3	6 / 5	9 / 8	360	400		
			11 - 32.5	2 / 1	3	3	6	9	360	450		
30"	30.000	Bulk Pack	9	2 / 1	3	3	6 / 5	9 / 7	360	350		
			11 - 32.5	2 / 1	3	3	6	9	360	450		
32"	32.000	Bulk Pack	11	2 / 1	3	3	6 / 5	9 / 8	360	400		
			13.5 - 32.5	2 / 1	3	3	6	9	360	450		
36"	36.000	Strip Load	9 - 32.5	1 / 1	2	2	4	4	160	200		