

WL104 – DIPS (DIOD) PRESSURE CLASS PIPE



CONTACT WL PLASTICS CUSTOMER SERVICE TO CONFIRM THE AVAILABILITY OF SIZES SHOWN, AND FOR PC'S AND DR'S NOT SHOWN. SEE TABLE FOOTNOTES FOR ADDITIONAL INFORMATION.

DIPS Size ^A	Average OD, in	Pressure Class ^B , psi DR	ASTM F714 PE4710						ASTM F714/AWWA C906 PE3608/PE3408					
			PC350	PC300	PC250	PC200	PC150	PC100	PC350	PC300	PC250	PC200	PC150	PC100
			6.7	7.7	9	11	14.3	21	5.6	6.3	7.4	9	11.7	17
4	4.80	Min wall, in	0.591	0.514	0.533	0.436	0.336	0.229	0.707	0.629	0.649	0.533	0.410	0.282
		Avg ID ^C , in	2.707	2.870	3.669	3.875	4.088	4.315	2.461	2.627	3.425	3.669	3.930	4.201
		Weight, lb/ft	2.707	2.408	3.093	2.587	2.040	1.423	3.127	2.849	3.663	3.093	2.447	1.732
6	6.90	Min wall, in	0.716	0.623	0.767	0.627	0.483	0.329	0.857	0.762	0.932	0.767	0.590	0.406
		Avg ID ^C , in	3.281	3.478	5.275	5.570	5.877	6.203	2.983	3.185	4.923	5.275	5.650	6.040
		Weight, lb/ft	3.976	3.539	6.396	5.348	4.215	2.940	4.595	4.184	7.563	6.396	5.062	3.585
8	9.05	Min wall, in	1.030	0.896	1.006	0.823	0.633	0.431	1.232	1.095	1.223	1.006	0.774	0.532
		Avg ID ^C , in	4.717	5.000	6.918	7.306	7.708	8.136	4.288	4.578	6.457	6.918	7.410	7.921
		Weight, lb/ft	8.221	7.315	11.004	9.207	7.245	5.051	9.495	8.643	13.016	11.004	8.710	6.162
10	11.10	Min wall, in	1.351	1.175	1.233	1.009	0.776	0.529	1.616	1.437	1.500	1.233	0.949	0.653
		Avg ID ^C , in	6.186	6.558	8.485	8.961	9.454	9.979	5.624	6.005	7.920	8.485	9.089	9.716
		Weight, lb/ft	14.144	12.582	16.543	13.845	10.894	7.604	16.335	14.876	19.581	16.543	13.099	9.276
12	13.20	Min wall, in	1.657	1.442	1.467	1.200	0.923	0.629	1.982	1.762	1.784	1.467	1.128	0.776
		Avg ID ^C , in	7.588	8.044	10.091	10.656	11.243	11.867	6.898	7.365	9.418	10.091	10.808	11.554
		Weight, lb/ft	21.276	18.937	23.405	19.581	15.409	10.752	24.574	22.373	27.693	23.405	18.516	13.110
14	15.30	Min wall, in	1.970	1.714	1.700	1.391	1.070	0.729	2.357	2.095	2.068	1.700	1.308	0.900
		Avg ID ^C , in	9.023	9.566	11.696	12.351	13.032	13.755	8.203	8.758	10.917	11.696	12.528	13.392
		Weight, lb/ft	30.082	26.770	31.438	26.308	20.704	14.444	34.752	31.635	37.209	31.438	24.886	17.623
16	17.40	Min wall, in	2.284	1.987	1.933	1.582	1.217	0.829	2.732	2.429	2.351	1.933	1.487	1.024
		Avg ID ^C , in	10.459	11.088	13.301	14.047	14.820	15.643	9.508	10.151	12.415	13.301	14.247	15.230
		Weight, lb/ft	40.424	35.970	40.654	34.027	26.780	18.680	46.689	42.512	48.109	40.654	32.176	22.802
18	19.50	Min wall, in	2.597	2.260	2.167	1.773	1.364	0.929	3.107	2.762	2.635	2.167	1.667	1.147
		Avg ID ^C , in	11.894	12.609	14.907	15.742	16.609	17.531	10.813	11.545	13.914	14.907	15.967	17.068
		Weight, lb/ft	52.274	46.527	51.074	42.738	33.637	23.459	60.385	54.976	60.427	51.074	40.423	28.625
20	21.60	Min wall, in	2.910	2.532	2.400	1.964	1.510	1.029		3.429	2.919	2.400	1.846	1.271
		Avg ID ^C , in	13.330	14.131	16.512	17.437	18.398	19.419		14.331	15.412	16.512	17.686	18.906
		Weight, lb/ft	65.646	58.420	62.659	52.440	41.250	28.783		84.725	74.148	62.659	49.585	35.134
24	25.80	Min wall, in		2.805	2.867	2.345	1.804	1.229				2.867	2.205	1.518
		Avg ID ^C , in		15.653	19.723	20.828	21.975	23.195				19.723	21.125	22.583
		Weight, lb/ft		104.259	91.123	76.229	59.995	41.852				91.123	72.106	51.086
30	32.00	Min wall, in			2.909	2.238	1.524					2.735	1.882	
		Avg ID ^C , in				25.833	27.256	28.770				26.202	28.009	
		Weight, lb/ft				117.285	92.313	64.370				110.930	78.557	

Contact WL Plastics Customer Service to confirm availability and for PC's and DR's not shown. (A) DIPS (DIOD) sizes per ASTM F714 and AWWA C906. (B) Pressure Class rating (PC) in psi is for water at 73°F (23°C) and lower. PC will vary for water at other temperatures. See WL106A PE3608/PE3408 Pipe Compound, WL106B PE4710 Pipe Compound and WL118 Pressure Rating. (C) Calculated Avg ID = Avg OD - (2.12 x min wall), and is for estimating water flow. Pipe ID is approximate, not a specification dimension. (D) All dimensions in inches. (E) NSF-61 certification for potable water available on request. (F) See WL101 and WL124 for fusion, electrofusion, mechanical joining and installation information. (G) The information in this publication does not constitute a guarantee or warranty for piping installations and cannot be guaranteed because the conditions of use are beyond our control. The user of this information assumes all risk associated with its use. See WL125 Terms and Conditions of Sale. Changes to this publication may occur from time to time without notice. Contact WL Plastics Corporation to determine if you have the most current edition. Copying without change permitted.

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WL Plastics DIPS Pressure Class Pipe for Water Distribution and Transmission

WL Plastics DIPS Pressure Class Pipe is produced in PC350, PC300, PC250, PC200, PC150 and PC100 in PE4710 and PE3608 compounds. Pressure Class is for continuous internal water pressure at 73°F (23°C) and lower temperatures, including surge pressure allowances above the PC. Pressure Class is reduced for service temperatures above 73°F (23°C).

$$PC_T = PC \times F_T$$

Where PC_T = Pressure Class rating for water at temperature other than 73°F (23°C), psi

PC = Pressure Class for water $\leq 73^\circ\text{F}$ ($\leq 23^\circ\text{C}$), psi

F_T = temperature multiplier

Table 1 – Temperature Multipliers, F_T ,

Continuous Use Temperature		Multiplier, F_T	
°F	°C	PE4710	PE3608
73 and lower	23 and lower	1.00	1.00
above 73 to 80	above 23 to 27	0.98	0.97
above 80 to 90	above 27 to 32	0.93	0.90
above 90 to 100	above 32 to 38	0.87	0.82
above 100 to 110	above 38 to 43	0.81	0.75
above 110 to 120	above 43 to 49	0.76	0.68
above 120 to 130	above 49 to 54	0.70	0.61
above 130 to 140	above 54 to 60	0.65	0.54

WL Plastics DIPS Pressure Class Pipe withstands surge pressures that momentarily increase internal pressure above the PC rating without short-term or long-term damage.

- Allowances for momentary surge pressures are applied above the Pressure Class rating, not deducted from PC.
- The allowable pressure in the pipe during a momentary surge pressure event is the sum of PC and the surge pressure allowance.

Surge pressure allowances are added to PC and always available for a momentary surge pressure event. Surge pressure allowance is never used to supplement PC for steady operating pressure (working pressure). If the potential surge pressure is greater than the surge pressure allowance, operating pressure (working pressure) is reduced and the difference is applied to the surge pressure allowance; or pipe having a higher PC is used to provide higher surge pressure allowance.

- **Allowance for recurring surge pressure (P_{RS}).** Recurring surge pressures occur frequently and are inherent to the normal design and operation of the system. Recurring surge pressures may be caused by normal pump start-up or shut down and normal control valve opening or closure. The allowance for recurring surge pressure is:

$$P_{RS} = 0.5 \times PC_T$$

- **Allowance for occasional surge pressure (P_{OS}).** Occasional surge pressures are generated during irregularly occurring conditions such as emergency operation or system malfunction. Occasional surge pressures are often the result of firefighting or a malfunction, such as a power failure or system component failure, including pump seize-up, valve-stem failure, or pressure-relief-valve failure. The allowance for occasional surge pressure is:

$$P_{OS} = 1.0 \times PC_T$$

Table 2 – PC, Surge Pressure Allowance and Maximum Pressure for Water at $\leq 73^\circ\text{F}$ ($\leq 23^\circ\text{C}$), psi

PC	Surge Pressure Allowance		Max. Pressure during Surge Event	
	P_{RS}	P_{OS}	$PC + P_{RS}$	$PC + P_{OS}$
350	175	350	475	700
300	150	300	450	600
250	125	250	375	500
200	100	200	300	400
150	75	150	225	300
100	50	100	150	200

Table 3 – Velocity* for Water at $\leq 73^\circ\text{F}$ ($\leq 23^\circ\text{C}$)

PC	Allowable Sudden Velocity Change for PE4710, ft/sec		Surge pressure for 1 fps velocity change, psi		Allowable Sudden Velocity Change for PE3608, ft/sec		Surge pressure for 1 fps velocity change, psi	
	Occas.	Recur.	Occas.	Recur.	Occas.	Recur.	Occas.	Recur.
350	18.0	9.0	19.4	15.9	7.9	22.0		
300	16.8	8.4	17.8	14.9	7.4	20.2		
250	18.9	9.5	13.2	17.1	8.6	14.6		
200	16.7	8.4	12.0	15.1	7.6	13.2		
150	14.3	7.1	10.5	12.9	6.5	11.6		
100	11.4	5.7	8.7	10.3	5.2	9.7		

* This is the water flow velocity for working pressure equal to PC (WP = PC). Higher flow velocity is allowable where working pressure is lower than PC (WP < PC) because the pressure difference (PC – WP) may be applied to surge pressure allowance, thus increasing allowable velocity.

For example, the allowable flow velocities for WP = 110 psi in PC150 PE3608 pipe are 9.9 fps for recurring surge pressure conditions, and 16.3 fps for occasional surge pressure conditions:

$$6.5 + \frac{(150 - 110)}{11.6} = 9.9 \text{ fps recurring}$$

$$12.9 + \frac{(150 - 110)}{11.6} = 16.3 \text{ fps occasional}$$