

# WL Plastics PE3408 AWWA C906 Water Pipe



## AWWA C906 DIPS Pipe Sizes and Pressure Ratings

AWWA C906 DIPS Size	Avg OD	DR	7.3	9	11	13.5	15.5	17	21	26	32.5
		PC	254	200	160	128	110	100	80	64	51
		PC + P <sub>OS</sub>	508	400	320	256	220	200	160	128	102
		PC + P <sub>RS</sub>	381	300	240	192	165	150	120	96	77
4	4.80	min wall	0.658	0.533	0.436	0.356	0.310	0.282	0.229	0.185	0.148
		avg ID	3.406	3.669	3.875	4.046	4.143	4.201	4.315	4.409	4.487
		lb/ft	3.69	3.08	2.57	2.14	1.88	1.72	1.42	1.15	0.93
6	6.90	min wall	0.945	0.767	0.627	0.511	0.445	0.406	0.329	0.265	0.212
		avg ID	4.896	5.275	5.570	5.816	5.956	6.040	6.203	6.337	6.450
		lb/ft	7.61	6.36	5.32	4.42	3.89	3.57	2.92	2.38	1.92
8	9.05	min wall	1.240	1.006	0.823	0.670	0.584	0.532	0.431	0.348	0.278
		avg ID	6.422	6.918	7.306	7.629	7.812	7.921	8.136	8.312	8.460
		lb/ft	13.10	10.95	9.16	7.59	6.69	6.13	5.02	4.10	3.30
10	11.10	min wall	1.521	1.233	1.009	0.822	0.716	0.653	0.529	0.427	0.342
		avg ID	7.876	8.485	8.961	9.357	9.582	9.716	9.979	10.195	10.376
		lb/ft	19.71	16.46	13.77	11.43	10.06	9.23	7.56	6.16	4.98
12	13.20	min wall	1.808	1.467	1.200	0.978	0.852	0.776	0.629	0.508	0.406
		avg ID	9.367	10.091	10.656	11.127	11.395	11.554	11.867	12.124	12.339
		lb/ft	27.86	23.28	19.48	16.17	14.23	13.04	10.70	8.72	7.03
14	15.30	min wall	2.096	1.700	1.391	1.133	0.987	0.900	0.729	0.588	0.471
		avg ID	10.857	11.696	12.351	12.897	13.207	13.392	13.755	14.052	14.302
		lb/ft	37.44	31.27	26.17	21.71	19.11	17.53	14.37	11.70	9.45
16	17.40	min wall	2.384	1.933	1.582	1.289	1.123	1.024	0.829	0.669	0.535
		avg ID	12.347	13.301	14.047	14.668	15.020	15.230	15.643	15.981	16.265
		lb/ft	48.42	40.44	33.85	28.09	24.73	22.68	18.58	15.14	12.21
18	19.50	min wall	2.671	2.167	1.773	1.444	1.258	1.147	0.929	0.750	0.600
		avg ID	13.837	14.907	15.742	16.438	16.833	17.068	17.531	17.910	18.228
		lb/ft	60.80	50.81	42.52	35.27	31.04	28.48	23.34	19.02	15.34
20	21.60	min wall	2.959	2.400	1.964	1.600	1.394	1.271	1.029	0.831	0.665
		avg ID	15.327	16.512	17.437	18.208	18.646	18.906	19.419	19.839	20.191
		lb/ft	74.61	62.33	52.17	43.29	38.10	34.95	28.63	23.35	18.83
24	25.80	min wall		2.867	2.345	1.911	1.665	1.518	1.229	0.992	0.794
		avg ID		19.723	20.828	21.748	22.271	22.583	23.195	23.696	24.117
		lb/ft		88.94	74.40	61.75	54.36	49.86	40.85	33.29	26.86
30	32.00	min wall			2.909	2.370	2.065	1.882	1.524	1.231	0.985
		avg ID			25.833	26.975	27.623	28.009	28.770	29.391	29.913
		lb/ft			116.67	96.82	85.23	78.15	64.03	52.22	42.12
36	38.30	min wall				2.837	2.471	2.253	1.824	1.473	1.178
		avg ID				32.285	33.062	33.524	34.434	35.177	35.802
		lb/ft				138.71	122.06	111.97	91.73	74.79	60.29
42	44.50	min wall					3.296	2.871	2.618	2.119	1.712
		avg ID					37.512	38.414	38.951	40.008	40.872
		lb/ft					187.24	164.78	151.17	123.82	100.99
48	50.80	min wall						3.277	2.988	2.419	1.954
		avg ID						43.852	44.465	45.672	46.658
		lb/ft						214.71	196.97	161.36	131.59

(1) Contact WL Plastics Customer Service to confirm availability and for sizes and DR's not shown. (2) Avg ID = Avg OD - (2.12 x min wall), and is for flow estimation only. Actual ID will vary depending on specification dimensions and tolerances. Consult specifications or measure pipe to determine actual pipe ID for devices such as stiffeners that install in the pipe bore. (3) PC, PC + P<sub>OS</sub> and PC + P<sub>RS</sub> are in psi for water at 80°F or less. Ratings are reduced at higher temperatures. PC = steady pressure rating. PC + P<sub>OS</sub> = steady pressure + surge allowance = Maximum permissible pressure in pipe during occasional surge event. PC + P<sub>RS</sub> = steady pressure + surge allowance = Maximum permissible pressure in pipe during recurring surge event. P<sub>OS</sub> = 0.5 x PC; P<sub>RS</sub> = 1.0 x PC. (4) All dimensions in inches. (5) NSF-61 certification for potable water available as an option. Specify NSF-61 certification on purchase order when required. (6) Color stripes on pipe OD available as an option. Specify color stripes on purchase order when required. Blue stripes are used for NSF-61 certified pipe; other stripe colors are available for non-NSF-61 pipe. See WL105 or contact WL Plastics Customer Service.

# WL Plastics AWWA C906 PE 3408 Pipe for Water Distribution and Transmission

Pressure Class (PC) is the steady internal pressure that can be applied to the pipe excluding surge pressure. PC is determined from:

$$PC = \frac{2 \times HDB \times 0.5 \times F_T}{(DR - 1)}$$

Where PC = pressure class, psi  
 HDB = ASTM D 2837 Hydrostatic Design Basis, psi  
 (1600 psi at 73°F (23°C))  
 F<sub>T</sub> = temperature compensation multiplier  
 DR = pipe dimension ratio

PC applies to water operating temperatures up to 80°F (27°C). Temperature compensation multipliers are applied for operating temperatures above 80°F (27°C).

## WL Plastics PE 3408 Temperature Compensation Multipliers, F<sub>T</sub>

Maximum Operating Temperature		Multiplier, F <sub>T</sub>
°F	°C	
up to 80	up to 27	1.0
from 81 to 90	from 28 to 32	0.9
from 91 to 100	from 33 to 38	0.8
from 101 to 110	from 39 to 43	0.71
from 111 to 120	from 44 to 49	0.64
from 121 to 130	from 50 to 54	0.57
from 131 to 140	from 55 to 60	0.50

WL Plastics AWWA C906 PE 3408 pipes can withstand momentary maximum pressures that are significantly above the pipe's Pressure Class without short-term or long-term damage because of the visco-elastic nature of the material. Therefore, allowances for momentary surge pressures are applied above the pipe's PC. Surge allowance is applicable only to surge event pressure, never to steady operating pressure, that is, surge allowance cannot be used to supplement steady operating pressure.

**Recurring surge pressure (P<sub>RS</sub>).** Recurring surge pressures occur frequently and are inherent in the design and operation of the system. Recurring surge pressures may be caused by normal pump start-up or shutdown and normal valve opening or closure. The allowance for recurring surge pressure is:

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

**Occasional Surge Pressure (P<sub>OS</sub>).** Occasional surge pressures are caused by emergency operations. 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, and pressure-relief-valve failure. The allowance for occasional surge pressure is:

$$P_{RS} = 1.0 \times PC$$

## Surge Pressures Generated By Sudden Water Flow Velocity Change In WL Plastics PE 3408 Pipes Operating At Service Temperatures Up To 80°F (27°C)

Pipe DR	Surge Pressure from Sudden Velocity Change	
	5.0 fps Velocity Change	1.0 fps Velocity Change
17	56.3 psig	11.3 psig
11	71.9 psig	14.4 psig
9	80.9 psig	16.2 psig

## Pressure Class, Surge Allowance and Corresponding Sudden Velocity Change For WL Plastics PE 3408 Pipe Operating At Service Temperatures Up To 80°F (27°C)

DR	PC, psi	Recurring Surge Events		Occasional Surge Events	
		P <sub>RS</sub> , psi	Corresponding Sudden velocity Change, fps	P <sub>OS</sub> , psi	Corresponding Sudden velocity Change, fps
9	200	100	6.2	200	12.4
11	160	80	5.6	160	11.1
17	100	50	4.4	100	8.9

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