

# WL130M PE4710 FM Approved Pipe

Metric Pipe Sizes – Class 200 (13.8), 250 (17.2) & 335 (23.1)



**WL Plastics PE4710 FM Approved Pipe** is listed by FM Approvals for underground fire protection service in accordance with FM Approval Standard Class Number 1613, *Polyethylene (PE) Pipe and Fittings for Underground Fire Protection*. **WL Plastics PE4710 FM Approved Pipe** is manufactured from NSF-61 certified HDPE compound that meets or exceeds material designations PE3408 and PE4710. WL Plastics PE4710 compound per WL106 meets or exceeds ASTM D3350 Cell Classification PE445574C and PE345464C.

- **WL Plastics PE4710 FM Approved Pipe** complies with AWWA C901-17, AWWA C906-15 and NFPA 24<sup>(1)</sup>
- **WL Plastics PE4710 FM Approved Pipe** is NSF-61 certified for potable water service.
- Coextruded Red or Blue stripes are available upon request. (WL105)
- Manufactured at FM Approvals Certified WL Plastics plants: Cedar City, UT, Statesboro, GA – Metric 1000mm and smaller sizes; Bowie, TX, Elizabethtown, KY, Rapid City, SD – Metric 630mm and smaller sizes.

**Table 1 – WL Plastics PE4710 FM Approved Metric Pipe – Class 200 (13.8), 250 (17.2) and 335(23.1)**

Metric size	Min OD, mm (in)	Class 200 (13.8)	Class 250 (17.2)	Class 335 (23.1)
		Average ID, mm (in) <sup>(2)</sup>	Average ID, mm (in) <sup>(2)</sup>	Average ID, mm (in) <sup>(2)</sup>
50	50 (1.969)	40.4 (1.591)	38.3 (1.508)	(not available)
63	63 (2.480)	50.9 (2.004)	48.1 (1.894)	(not available)
75	75 (2.953)	60.9 (2.398)	57.5 (2.264)	(not available)
90	90 (3.543)	72.9 (2.264)	68.9 (2.713)	(not available)
110	110 (4.331)	89.3 (3.516)	84.4 (3.323)	76.6 (3.016)
125	125 (4.921)	101.3 (3.988)	95.8 (3.772)	87.3 (3.437)
140	140 (5.512)	113.7 (4.476)	107.4 (4.228)	97.7 (3.846)
160	160 (6.299)	129.7 (5.106)	122.8 (4.835)	111.6 (4.394)
180	180 (7.087)	146.0 (5.748)	138.2 (5.441)	125.7 (4.949)
200	200 (7.874)	162.2 (6.386)	153.4 (6.039)	139.4 (5.488)
225	225 (8.858)	182.5 (7.185)	172.6 (6.795)	157.1 (6.185)
250	250 (9.843)	203.0 (7.992)	192.1 (7.563)	174.6 (6.874)
280	280 (11.024)	227.4 (8.953)	215.0 (8.465)	195.4 (7.693)
315	315 (12.402)	255.8 (10.071)	241.9 (9.524)	220.0 (8.661)
355	355 (13.976)	288.3 (11.350)	272.6 (10.732)	248.0 (9.764)
400	400 (15.748)	324.8 (12.787)	307.2 (12.094)	279.4 (11.000)
450	450 (17.717)	365.4 (14.386)	345.6 (13.606)	314.3 (12.374)
500	500 (19.685)	406.0 (15.984)	384.2 (15.126)	349.5 (13.760)
560	560 (22.047)	454.9 (17.909)	430.3 (16.941)	391.6 (15.417)
630	630 (24.803)	511.6 (20.142)	484.1 (19.059)	440.5 (17.343)
710	710 (27.953)	577.6 (22.740) <sup>(3)</sup>	546.5 (21.516) <sup>(4)</sup>	(not available)
800	800 (31.496)	651.0 (25.630) <sup>(3)</sup>	615.9 (24.248) <sup>(4)</sup>	(not available)
900	900 (35.433)	732.4 (28.835) <sup>(3)</sup>	692.0 (27.244) <sup>(4)</sup>	(not available)
1000	1000 (39.370)	814.9 (32.083) <sup>(3)</sup>	768.9 (30.271) <sup>(4)</sup>	(not available)

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**Table 2 – Pressure Capabilities for Water at 42°C/108°F and Lower, psi (bar) <sup>(5)</sup>**

Class	Operating Pressure	Surge Pressure Allowance		Maximum Pressure <sup>(6)</sup> – Operating plus Surge	
		Occasional	Recurring	Occasional	Recurring
200	200 (13.8)	200 (13.8)	100 (6.9)	400 (27.6)	300 (20.7)
250	250 (17.2)	250 (17.2)	125 (8.6)	500 (34.5)	375 (25.9)
335	335 (23.1)	335 (23.1)	168 (11.6)	670 (46.2)	503 (34.7)

## WL Plastics PE4710 FM Approved Pipe for Underground Fire Mains

WL Plastics PE4710 FM Approved Pipe is produced in Class 200 (200 psi; 13.8 bar), Class 250 (250 psi; 17.2 bar) and Class 335 (335 psi; 23.1 bar). Class ratings are applicable to sustained internal water pressure (working pressure) up to 23°C/73°F. Working Pressure is reduced for sustained water service temperatures above 23°C/73°F.

**Table 3 – Working Pressure, psi (bar)**

Sustained Operating Temperature		Class 200	Class 250	Class 335
°C	°F			
≤23	≤73	200 (13.8)	250 (17.2)	335 (23.1)
27	80	192 (13.2)	240 (16.6)	320 (22.1)
32	90	180 (12.4)	225 (15.5)	300 (20.7)
38	100	168 (11.6)	210 (14.5)	280 (19.3)
43	110	156 (10.8)	195 (13.5)	260 (17.9)
49	120	146 (10.1)	183 (12.6)	243 (16.8)
54	130	136 (9.4)	170 (11.7)	227 (15.7)
60	140	126 (8.7)	158 (10.9)	210 (14.5)

WL Plastics PE4710 FM Approved Pipe for underground fire main service safely withstands repetitive and occasional surge pressures that increase internal pressure above the Class rating without short-term or long-term damage.

- Allowances for repetitive and occasional surge pressures are applied **above** the Class rating.

- The maximum allowable internal pressure during a surge event is the sum of the Class rating and the surge pressure allowance.

Surge pressure allowances are added to the Class rating to accommodate momentary surge pressure events.

- Surge pressure allowance is never applied to increase Class rating for sustained 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 surge pressure allowance; or pipe having a higher Class rating is used to provide higher surge pressure allowance.

- **Allowance for recurring surge pressure (P<sub>RS</sub>).** 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 shutdown and normal control valve opening or closure. The recurring surge pressure allowance is:

$$P_{RS} = 0.5 \times \text{Class}_{ET}$$

- **Allowance for occasional surge pressure (P<sub>OS</sub>).** Occasional surge pressures are generated during infrequently occurring conditions such as emergency operation or system malfunction. Occasional surge pressures can occur during 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 occasional surge pressure allowance is:

$$P_{OS} = 1.0 \times \text{Class}_{ET}$$

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**Table 4 – Allowable Water Flow Velocity for WL Plastics PE4710 FM Approved Pipe (≤23°C/73°F)**

Class	Allowable Sudden Velocity Change <sup>(6)</sup>		Surge pressure, bar, for 1 m/s velocity change	Surge pressure, psi, for 1 ft/s velocity change
	Recurring Surge Event m/s (ft/s)	Occasional Surge Event, m/s (ft/s)		
200	2.1 (7.0)	4.3 (14.0)	3.26	14.4
250	2.4 (7.7)	4.7 (15.4)	3.66	16.2
335	2.7 (8.9)	5.4 (17.7)	4.28	18.9

<sup>(6)</sup> This is the allowable flow velocity where the operating pressure in the pipe (working pressure) is equal to the Class rating pressure. Higher flow velocity is allowable when operating pressure (working pressure) is less than the Class rating. Allowable velocity is increased by adding the pressure difference between operating pressure and class rating to the pressure surge allowance.

For example, the allowable flow velocity in Class 200 (13.8 bar) pipe operating at 150 psi (10.3 bar) is

$$1.7 + \frac{(13.8 - 10.3)}{3.12} = 2.8 \text{ m/s}$$

for recurring surge pressure conditions; or

$$3.3 + \frac{(13.8 - 10.3)}{3.12} = 4.4 \text{ m/s}$$

for occasional surge pressure conditions.



**Contact WL Plastics Customer Service to confirm availability.** (1) WL Plastics FM Approved Pipe is available exclusively in the sizes and pressure classes shown. WL Plastics PE4710 FM Approved pipe complies with FM1613, AWWA C906-15 and NFPA 24. NOT AVAILABLE: pipe manufactured per ASTM F714; custom diameters; custom DR's; DR's and pressure classes not shown. (2) Average ID is for flow estimation only. Actual ID will vary depending on actual dimensions and tolerances. DO NOT use average ID for sizing devices such as stiffeners that install in the pipe ID. All dimensions in millimeters; inch conversions for metric dimensions rounded to the nearest 0.001 in. (3) Cedar City, UT, Statesboro, GA. (4) Cedar City, UT only. (5) Pressure Class "PC" shown in psi (bar). See page 2 for additional information on pressure capabilities. (6) Maximum internal pressure during momentary surge event.

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