

Lubrizol



FLOWGUARD
BENDABLE
COMPOSITE PIPE

CPVC-AL-CPVC MULTILAYER COMPOSITE PIPE

Product Standards

- › NSF 14 & 61
- › NSF-SE-7033
- › NSF U.P. Code

Availability

- › 1/2", 3/4", 1" CTS
- › Straight Lengths (10' and 20')
- › Coils

FlowGuard® Bendable Multilayer Piping

A select product for many applications.

Our highly reliable FlowGuard® Bendable multilayer composite pipe combines the performance benefits of CPVC with the strength and durability of metal to offer the ultimate piping system.

This brochure provides product specifications and performance information to help you select the proper pipe size for your application.

Common Applications

- › Water service laterals
- › Building supply lines
- › Under-slab plumbing distribution
- › Rough plumbing service
- › Concrete-encased piping
- › Partition piping
- › Rigid applications (shower risers)
- › Seamless (joint-free) runs
- › Architectural or decorative exposed installations (e.g. surface mounted, winding, scrolling installs)
- › Stub-out piping

Features and Benefits

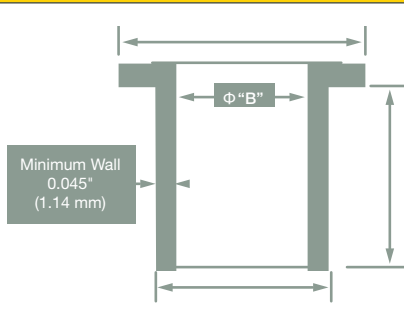
- › Corrosion-resistant
- › Resistant to oxidative degradation by common chlorine disinfection methods
- › Pressure rating
 - 400 psig at 73°F
 - 100 psig at 180°F
- › Coefficient of linear thermal expansion similar to metal (2.2×10^{-5} in/in°F)
- › Suitable for buried installation using trenchless methods
 - Resistant to rock impingement
 - Superior crush strength to HDPE
 - More resistant to kinking and flattening than copper
- › Bend radius is 6x the outer diameter
- › Remains free of condensation under most conditions that cause copper tube to sweat and drip

Dimensions

FlowGuard® Bendable CPVC-AL-CPVC Tubing Dimensions

Nominal Tube Size (NTS)	Outside Diameter, in (mm)	Inside Diameter, in (mm)	Wall Thickness, in (mm)			Weight	
	Average	Average	Aluminum	Inner CPVC Layer	Outer CPVC Layer	Pounds per foot Empty	Pounds per foot Water Filled
			Average	Minimum	Minimum		
1/2"	0.625 (15.88)	0.448 (11.38)	0.017 (0.43)	0.025 (0.64)	0.025 (0.64)	0.111	0.192
3/4"	0.875 (22.23)	0.691 (17.55)	0.017 (0.43)	0.028 (0.71)	0.028 (0.71)	0.167	0.341
1"	(28.58)	(23.67)	(0.43)	(0.86)	(0.86)	0.227	0.516

FlowGuard Bendable Insert Fitting Dimensions



Nominal Tube Size (NTS)	Φ "B" in (mm)
1/2"	0.448 ± .004 (11.38 ± 0.10)
3/4"	0.689 ± .004 (17.50 ± 0.10)
1"	(23.62 ± 0.10)



The insert fitting is joined to the pipe using only FlowGuard Gold® One Step Cement that conforms to ASTM F493. Once assembled with the insert fitting, the pipe can be joined using common CTS fittings.



Failure to use the insert fitting may result in fluid under pressure causing separation of pipe layers, which could cause an external leak.

Performance

ASTM F2855 Certification Requirement – Minimum Hydrostatic Sustained Pressure at 180°F (82°C)

Test Condition	Test Duration	Hydrostatic Test Pressure	
		Water Bath	Air Bath
A	6 min	521 psi (3590 kPa)	551 psi (3800 kPa)
		364 psi (2510 kPa)	403 psi (2780 kPa)

Linear Velocity (ft/s)	Volumetric Flow (gal/min)		
	1/2"	3/4"	1"
1	0.49	1.17	2.13
2	0.98	2.34	4.25
3	1.47	3.51	6.38
4	1.97	4.68	8.51
5	2.46	5.84	10.63
6	2.95	7.01	12.76
7	3.44	8.18	14.88
8	3.93	9.35	17.01
9	4.42	10.52	19.14
10	4.91	11.69	21.26

Performance (Continued)

Property	FlowGuard® Bendable CPVC/Al Multilayer Composite Pipe	ASTM
Impact Strength (ft. lbs./in., notched)	10	D256A
Hazen-Williams C Factor	150	–
Coefficient of Linear Expansion in./in. (°F)	2.2 x 10 ⁻⁵	D696
Thermal Conductivity BTU/hr./ft.2/°F/in.	0.86	E1530
Limiting Oxygen Index of CPVC Layers	60%	D2863

FlowGuard Bendable Hanger Spacing

Nominal Tube Size (NTS)	Hanger Spacing
1/2"	5 ft
3/4"	5-1/2 ft
1"	6 ft

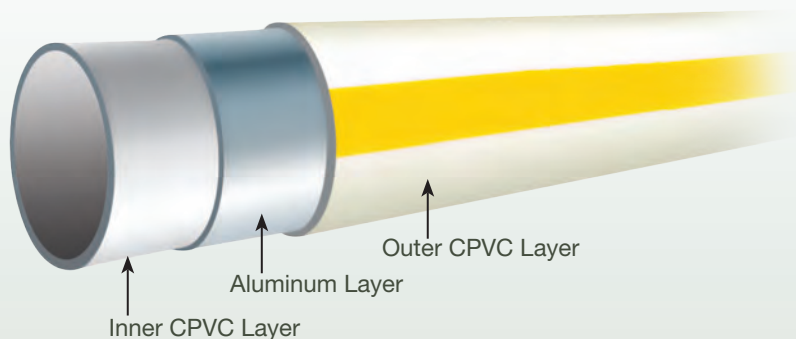
Always visit
www.fcbbuildingsolutions.com
 to view the most up-to-date
 FlowGuard® Bendable
 technical information.

Carrying Capacity and Friction Loss for FlowGuard Bendable Multilayer Composite Pipe

Volumetric Flow (gal/min)	Linear Velocity (ft/s)	Friction Head Loss (ft water /100 ft)	Friction Pressure (psi/100 ft)	Maximum Surge Pressure (psi)	Linear Velocity (ft/s)	Friction Head Loss (ft water /100 ft)	Friction Pressure (psi/100 ft)	Maximum Surge Pressure (psi)	Linear Velocity (ft/s)	Friction Head Loss (ft water /100 ft)	Friction Pressure (psi/100 ft)	Maximum Surge Pressure (psi)	Volumetric Flow (gal/min)
	1/2"				3/4"				1"				
1	2.04	4.89	2.12	54.54	0.86	0.59	0.26	20.44	0.47	0.14	0.06	10.96	1
2	4.07	17.65	7.65	109.07	1.71	2.14	0.93	40.88	0.94	0.50	0.22	21.93	2
3	6.11	37.40	16.21	163.61	2.57	4.54	1.97	61.32	1.41	1.06	0.46	32.89	3
4	8.15	63.72	27.62	218.15	3.42	7.74	3.35	81.76	1.88	1.80	0.78	43.86	4
5	10.18	96.33	41.76	272.68	4.28	11.70	5.07	102.19	2.35	2.73	1.18	54.82	5
7					5.99	21.81	9.46	143.07	3.29	5.09	2.21	76.75	7
10					8.56	42.23	18.31	204.39	4.71	9.85	4.27	109.64	10
12					10.27	59.19	25.66	245.27	5.65	13.80	5.98	131.57	12
14									6.59	18.37	7.96	153.50	14
16									7.53	23.52	10.20	175.43	16
18									8.47	29.25	12.68	197.36	18
20									9.41	35.55	15.41	219.29	20
22									10.35	42.42	18.39	241.22	22

Equivalent Length = 1.0 ft per Insert Fitting

Multilayer construction of FlowGuard® Bendable piping »



FlowGuard® Bendable multilayer composite pipe combines the performance benefits of CPVC with the strength and durability of metal to offer the ultimate piping system.

- ▶ Excellent combination of flexibility and rigidity allows the pipe to be workable yet hold shape.
- ▶ Cost-effective and price-stable alternative to copper tubing.
- ▶ Thermal expansion coefficient closer to metal than other plastics.
- ▶ Installed easily without use of expensive tools or torches.
- ▶ Multilayer composite construction with specially formulated CPVC and superior aluminum alloy provides protection against failures due to corrosion or oxidative degradation by chlorine.



COMING SOON

1-1/4", 1-1/2" and 2" CTS pipe



For additional information including:

- ▶ Product demonstration videos
- ▶ Upcoming technical presentations
- ▶ Upcoming trade show and expo calendar
- ▶ Regional code approvals
- ▶ Lab testing videos
- ▶ Case studies

visit www.fbcbuildingsolutions.com.



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Using a "barcode scanner" application on your Smartphone, scan the QR code and discover FlowGuard® Bendable Multilayer Composite Pipe.

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FlowGuard® Bendable Piping
BlazeMaster® Fire Sprinkler Systems
BlazeMaster® Multipurpose Systems
Corzan® Pipe & Fittings
Corzan® Industrial Systems