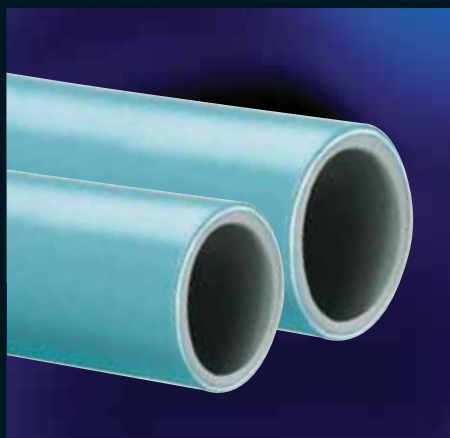


Composite Water Service Tubing



Q-Line®

M U N I C I P A L S Y S T E M S

**THE PERFORMANCE OF PLASTIC
WITH THE STRENGTH OF METAL**

20mm and 25mm
3/4" and 1"

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We Build Tough Products for Tough Environments®



IPEX



IPEX Q-Line® WATER SERVICE TUBING

Advanced water service technology that outperforms traditional tubing

Introducing Q-Line – a unique composite, water service tubing that combines the advantages of both metal and plastic, while eliminating their drawbacks. Now available from IPEX, the world's leading technical innovator in thermoplastic piping systems.

Manufactured by IPEX to AWWA C903-02, Q-Line is the only water service tubing in North America that delivers the strength of metal, the flexibility of soft copper and the durability of thermoplastic. What's more, because it eliminates the shortcomings of traditional piping materials, Q-Line is superior to them all.

ENGINEERED COMPOSITE CONSTRUCTION

A composite pipe constructed of flexible aluminum tubing permanently bonded between inner and outer layers of raised temperature polyethylene (PE-RT), Q-Line's unique structure offers optimum strength and toughness in a lightweight, easily handled and installed water service tubing.

SUPERIOR TO TRADITIONAL PIPE

Unlike copper, Q-Line's non-corroding thermoplastic layers resist the most aggressive water conditions and hot-soil environments. Q-Line won't leach copper or other metallic ions, so the quality of drinking water is assured and service life is longer.

POTABLE WATER CERTIFIED

Q-Line carries third-party ASTM F1282 and CSA B137.9 certification, as well as NSF-PW potable water certification, and meets all North American plumbing codes for water supply up to and inside the building.

**Q-Line
Water Service Tubing**

**AWWA C903
ASTM F1282
CSA B137.9
NSF-PW
UPC
IPC**

**200 psi at 73°F (23°C)
100 psi at 180°F (82°C)**

PE-RT

Aluminum

PE-RT



STRONG AND LIGHTWEIGHT

Q-Line has been fully tested and approved for continuous operating pressures of 200 psi at 73°F (23°C) and 100 psi at 180°F (82°C). These high pressure and temperature ratings ensure water service line integrity under the toughest operating conditions, and protect against any back-up of hot water from the building into the water supply system.

However, Q-Line's engineered composite structure is extremely lightweight. In fact, a 100-foot (30.5 m) coil of 3/4" (25 mm) Q-Line water service tubing weighs just 12 lbs (6 kg), about 1/4 the weight of copper.

HIGH FLOW RATES

With larger inside diameters than CTS polyethylene piping and a super-smooth interior wall that does not permit build-up of calcium or other minerals, Q-Line offers the best flow rates in the industry. The typical C value for designing with copper is C=90-100. And unlike metallic pipe, with a Hazen-Williams flow coefficient of C=150, Q-Line will not corrode or allow build-up inside the tube which can increase friction losses.

HANDLES LIKE COPPER

Simply roll Q-Line tubing down the trench and it stays where it's laid (unlike plain polyethylene). You can make goosenecks and bends easily just as you would with copper, and Q-Line keeps its shape.

Q-Line comes conveniently packaged in long coils from 100 up to 1,000 feet (30.5 to 305 m) – so you can say goodbye to the hassles of small 66-foot (20 m) coils of copper, and reduce wastage.

EXCELLENT CORROSION RESISTANCE, LONG SERVICE LIFE

Q-Line's tough inner and outer polyethylene layers resist most acids, salt solutions and alkalis found in aggressive water and soil environments. Q-Line also carries tough NSF CL-TD chlorine resistance certification. Bury Q-Line directly in the ground or encase it in concrete – without the need for protective sleeving. And because Q-Line is not susceptible to corrosion and pitting, it provides longer service life than metallic water service tubing.

BUILT-IN PERMEATION BARRIER

Permeation is a real issue with small diameter water service tubing. Unlike plastic water service tubing which is susceptible to permeation by a variety of chemicals, Q-Line's built-in aluminum core creates a permeation barrier against ground source contaminants. In fact, Q-Line composite water service tubing has been successfully tested against the most aggressive contaminants, like termiticides. A Q-Line system is sealed for good.

INCREASED ELECTRICAL SAFETY, REDUCED GALVANIC CORROSION

Municipal staff are seriously injured every year due to electric shock from metallic piping systems. Unlike metallic pipe, Q-Line will not conduct stray electrical current. So the chance of electrical shock is greatly reduced. A separate grounding plate or rod must be installed according to AWWA recommendations. And because Q-Line won't conduct stray current, it reduces corrosion of metallic components within the distribution system.

ZERO SCRAP VALUE

Because Q-Line's metallic core is permanently locked between layers of polyethylene, it has zero scrap metal value. So unlike copper and other valuable metals which are continually disappearing due to theft, Q-Line is more likely to stay on the job site where it's needed.



Q-Line can also be ordered in code-compliant purple for reclaimed water applications. It comes imprinted with the message, "CAUTION: RECLAIMED WATER, DO NOT DRINK".

Flow Rate U.S. gpm	3/4"		1"	
	Head Loss psi/100 ft.	Velocity fps	Head Loss psi/100 ft.	Velocity fps
1.0	.1	.7	0.0	0.4
2.0	.5	1.3	0.2	0.8
3.0	1.0	2.0	0.4	1.3
4.0	1.8	2.6	0.6	1.7
5.0	2.7	3.3	0.9	2.1
6.0	3.8	4.0	1.3	2.5
7.0	5.0	4.6	1.7	3.0
8.0	6.4	5.3	2.2	3.4
9.0	8.0	5.9	2.7	3.8
10.0	9.7	6.6	3.3	4.2
11.0	11.6	7.2	3.9	4.6
12.0	13.6	7.9	4.6	5.0
13.0	15.7	8.5	5.3	5.5
14.0	18.0	9.2	6.1	5.9
15.0	20.5	9.9	6.9	6.3
16.0	23.1	10.5	7.8	6.7
17.0	25.8	11.2	8.7	7.1
18.0	28.7	11.8	9.7	7.6
19.0	31.7	12.5	10.7	8.0
20.0	34.9	13.2	11.8	8.4
21.0	38.2	13.8	12.9	8.9
22.0	41.7	14.5	14.1	9.2
23.0	45.2	15.1	15.3	9.7
24.0	-	-	16.5	10.1
25.0	-	-	17.8	10.5
26.0	-	-	19.2	11.0
27.0	-	-	20.6	11.4
28.0	-	-	22.0	11.8
29.0	-	-	23.5	12.2
30.0	-	-	25.0	12.7

Flow Rate l/s	20mm		25mm	
	Head Loss kPa/100m	Velocity m/s	Head Loss kPa/100m	Velocity m/s
0.1	7.2	0.3	2.4	0.2
0.2	26.1	0.6	8.8	0.4
0.3	55.3	1.0	18.7	0.6
0.4	94.2	1.3	31.8	0.8
0.5	142.4	1.6	48.1	1.0
0.6	199.6	1.9	97.4	1.2
0.7	265.5	2.2	89.7	1.4
0.8	340.0	2.6	114.8	1.6
0.9	422.9	2.9	142.8	1.8
1.0	514.0	3.2	173.6	2.0
1.1	613.3	3.5	207.1	2.2
1.2	720.5	3.8	243.3	2.5
1.3	835.7	4.1	282.2	2.7
1.4	958.6	4.5	323.7	2.9
1.5	1089.2	4.8	367.8	3.1
1.6	1227.5	5.1	414.5	3.3
1.7	1373.4	5.4	463.8	3.5
1.8	1526.8	5.7	515.5	3.7
1.9	1687.5	6.1	569.8	3.9
2.0	855.7	6.4	626.6	4.1

APPLICABLE CODES

Q-Line water service tubing is manufactured to AWWA C903, ASTM F1282 and CSA B137.9, and meets NSF-PW potable water requirements as well as the requirements of the following national codes:

- National Plumbing Code of Canada
- Uniform Plumbing Code
- International Plumbing Code
- International Residential Code
- National Standard Plumbing Code
- SBCCI Standard Plumbing Code

	Nominal Size	Average I.D.	Average O.D.	Min. Wall Thickness	Weight	Volume	Min. Bending Radius
Dimensions inches	3/4	.79	.98	.10	12.4 lbs./100ft.	.025 U.S. gal./ft.	5.0
	1	.98	1.26	.14	21.0 lbs./100ft.	.040 U.S. gal./ft.	6.3
Dimensions mm	20	20	25	2.5	18.4 kg/100m	.314 l/m	125
	25	25	32	3.5	31.2 kg/100m	.500 l/m	160

LONG-TERM PRESSURE RATINGS

200 psi @ 73°F (23°C), 100 psi @ 180°F (82°C).

SURGE PRESSURES

With a long term pressure rating of 200 psi that includes a 2:1 safety factor, Q-Line easily handles pressure increases created by surges in a water service application.

The following table shows surge pressures created in Q-Line water service tubing for an instantaneous change in velocity of 1 foot per second (fps). For changes in velocity greater than 1 fps, multiply the surge pressure by the change in velocity (e.g., for a change in velocity of 3 fps, multiply the value shown in the table by 3).

PIPE DIAMETER		SURGE PRESSURE	
Pipe Size inches	Pipe Size mm	psi	kPa
3/4	20	26.5	184.3
1	25	25.0	173.8



National Sanitation Foundation Standard 14



CSA B137.9



ASTM F1282



INSTALLING Q-LINE WATER SERVICE TUBING

When unrolled down the trench, Q-Line stays where it's laid and does not recoil. Q-Line's flexibility allows goosenecks, bends and changes in shape to be made easily by hand, and thanks to its aluminum core, Q-Line tubing keeps its position.

When laying out Q-Line coils:

1. Stand the coil upright.
2. Hold down the leading end, toward you.
3. Roll out the coil.



Q-Line pipe cuts easily with simple handheld pipe cutters. And it requires no special bedding materials or procedures. As with any buried piping installation, normal precautions should be taken, such as the removal of large rocks from around the pipe.

BRASS WATER SERVICE FITTINGS



A wide range of municipal red brass fittings conforming to AWWA C800 is available to connect Q-Line water service tubing to curb valves, corporation valves, couplers and adapter fittings. Contact Cambridge Brass, Mueller, A.Y. McDonald or Ford Meter Box for more information.

INSTALLATION

1. Cut the Q-Line tubing to the correct length using the handheld cutter supplied.
2. Remove the nut and split ring from the fitting and slide them over the tubing.
3. Using the IPEX beveling tool, prepare the tubing to receive the insert by beveling the inside of the tubing, rotating the tool fully several times.
4. Fully insert the fitting into the tubing.
5. Slide the split ring and nut up, then tighten the nut, according to the fitting manufacturer's instructions.

Note: No additional metal inserts are required as with PE or PEX tubing.



PHILMAC® 3G™ COMPRESSION FITTINGS



Philmac 3G compression fittings are manufactured from an advanced high performance polypropylene, are corrosion resistant and possess the strength and durability of a design life of fifty years or more.

Engineered with a unique mechanical turn and lock design, no pipe preparation is needed and no force is required to push the pipe past the seal. With 3G, Philmac has created a common platform of fittings for all PE pipe applications in North America including residential and cottage country water service.

3G is available in two preassembled fittings - CTSOD and ID Series for all sizes, as well as easy-to-use adaptor kits that can convert these fittings for IPSOD, copper and composite pipe applications. (include product shots that are on front cover of 3G brochure)

Complete this card and fax it back to us at (905) 403-1124.

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Company _____

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State/Province _____

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Company classification:

- Architect/Design Firm
- Builder/Developer
- Operator/Plant Maintenance
- Contractor
- Distributor/Wholesaler
- Engineering Firm
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Product interests:

- PVC Pressure Systems
- PVC Sewer Systems
- Irrigation Systems
- Piping Systems for Water and Waste Water Treatment Plants
- Sewage Force Mains
- Service Pipe and Compression Fittings

I would like:

- PVC Pressure System Design
- PVC Sewer System Design
- Surge Pressures in PVC
- Installation Guide
- Longevity of PVC
- Hydraulics of PVC Pipe
- How PVC compares to other materials

I would also like to know about other IPEX products:

- Plumbing and mechanical piping systems
- Electrical or telecommunications piping systems
- Irrigation piping systems
- Industrial piping systems
- Hydronic radiant heating systems
- PE electrofusion systems - gas and water

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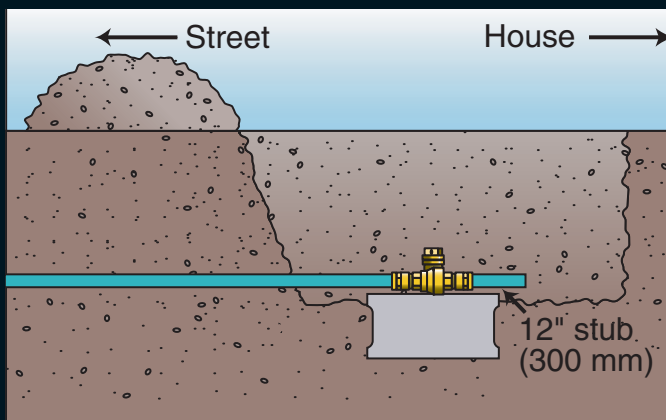


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HELPFUL INSTALLATION TIPS

Prior to backfilling, it is a recommended practice to provide support for curb valves by placing a wooden or concrete block beneath the curb-valve/box assembly. If the building connection is not being made immediately, install a small 1-foot stub of Q-Line beyond the stop on the building side. These measures will support the stop and allow for valve operation prior to final hookup.



If Q-Line water service tubing is used to blow off the distribution watermain during construction, temporarily extend the tubing beyond the stop and above grade. By directing water and air away from the curb-stop trench, backfill materials remain undisturbed making it easier to determine if the curb stop is seated properly.

THAWING Q-LINE TUBING

Traditional steaming equipment can be used to successfully thaw frozen Q-Line water service tubing. However, care must be taken to avoid long-term direct exposure of the tubing to steam, as this can cause damage to the plastic layers.

Recommended alternative thawing methods include hot water injection, electric blankets or heating cables. Do not use an open flame or a direct electric current to thaw Q-Line water service tubing.

LOCATING Q-LINE

Like other nonmetallic pipes, Q-Line can be located using a standard tracer wire installed at the same time as the water service line.

SALES AND CUSTOMER SERVICE

Canadian Customers call

Toll free: (866) 473-9462

U.S. Customers call

Toll free: (800) 463-9572

www.ipexinc.com

About IPEX

IPEX is a leading supplier of thermoplastic piping systems. We provide our customers with one of the world's largest and most comprehensive product lines. All IPEX products are backed by over 50 years of experience. With state-of-the-art manufacturing facilities and distribution centers across North America, the IPEX name is synonymous with quality and performance.

Our products and systems have been designed for a broad range of customers and markets. Contact us for information on:

- Municipal pressure and gravity piping systems
- PE Electrofusion systems for gas and water
- Plumbing and mechanical piping systems
- Industrial process piping systems
- Electrical systems
- Telecommunications and utility piping systems
- Irrigation systems
- Radiant heating systems
- Industrial, plumbing and electrical cements
- PVC, CPVC, PP, ABS, PEX, FR-PVDF and PE pipe and fittings (1/4" to 48")

WARRANTY: All of the Company's Products are guaranteed against defects resulting from faulty workmanship or materials. The Company will replace, free of charge, including shipping charges for the replacement Products, any Products which are found to be defective in workmanship or material, provided that the following conditions are met:

a) the Company is promptly notified in writing of such defect immediately upon discovery of same, and the defective Product is promptly returned to the Company;

b) the defect is not due, without limitation, to faulty installation, misalignment of Products, vibration, ordinary wear and tear, corrosion, erosion, U.V. degradation, incompatible lubricants, pastes and thread sealants, unusual pressure surges or pulsation, water hammer, temperature shocking, or fouling; and

c) the Products have not been altered or modified after leaving the Company's premises.

The warranty period can be specifically limited for certain Products as stated in writing in the Company's literature.

The Company will not allow claims for labor, materials and/or other expenses required to replace the defective Product, or to repair any damage resulting from the use thereof. The Company disclaims any responsibility for the Purchaser's calculations, product drawings or engineering design specifications. The Company's liability is limited to the purchase price applicable to the product.

It is agreed and understood that the Company's liability in respect to the sale is strictly limited to the replacement of Products as hereinbefore specified and that the Company shall not, in any event, be liable for any damages whether for the loss of use or business interruption or any other claim for incidental, consequential, special or punitive damages. There is no warranty, condition or representation of any nature whatsoever, expressed or implied, by statute or otherwise, except as herein contained, and the Company disclaims any implied warranties of merchantability and/or fitness of its Products for a special purpose.

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