



Uponor

WATER FOR LIFE.
PLUMBING FOR A LIFETIME.

Uponor PEX — Simple,
Safe and Reliable for
More Than Three Decades

The World's First, Best and Most Widely Used PEX Systems

Uponor: The PEX Pioneer

Uponor (formerly Wirsbo) first introduced the world to crosslinked polyethylene tubing (PEX) for potable water plumbing systems in the early 1970s. Today, Uponor PEX is the fastest-growing choice for residential and commercial plumbing systems, thanks to its powerful, inherent advantages over metallic and rigid-plastic piping:

Uponor PEX is the clean, green and healthy alternative — no solder, no torches, no fluxes or solvents. All connections are done with engineered fittings that, when properly installed, are leak-resistant and will last the life of the system.

Uponor PEX is lightweight and flexible, requiring substantially fewer fittings than copper or rigid-plastic systems, so it installs more easily and efficiently.

Uponor PEX is quiet, with no pipe noise or water hammer. Uponor PEX also features low thermal transfer, so it is virtually sweat-free in most environments.

Uponor PEX is durable. The superior makeup of our PEX makes it resistant to freezing and to aggressive water and soils — the kinds of problems that cause metal systems to fail prematurely.

Uponor PEX is trouble-free and backed by a 25-year warranty when installed by an Uponor-trained plumbing professional.

With Uponor PEX, your customers will experience a safe, clean and quiet water system, and you can forget about callbacks.

35 Years of Proven Reliability

Before others began producing PEX, Uponor had thousands of feet working trouble-free in real-world installations. These successful, real-life installations led Uponor to become the first PEX manufacturer to offer a 25-year warranty.

In the two decades since Uponor brought PEX to North America, more than two billion feet of Uponor PEX have been installed on this continent. Worldwide, that in-service figure for Uponor PEX stands at more than 12 billion feet. That's enough tubing to go to the moon and back... twice!

Fully certified: Uponor PEX is certified to ASTM F876 and F877, the rigorous industry-consensus standards for crosslinked polyethylene tubing. For a static hot and cold plumbing system found in a typical North American home, laboratory life projections are over a hundred years. That is so far off the scale, that the test results became meaningless for indicating any longer life.

Hot-water recirculation: Uponor PEX can also meet the needs of continuous hot-water recirculation applications up to 140°F. (For user safety, Uponor suggests that the temperature of such a system be no more than 120°F, in keeping with the recommendations of water heater manufacturers, or even lower if a local code dictates it.)

High-temperatures, high pressures: Able to meet a wide variety of residential and commercial applications, Uponor PEX carries three standard-grade hydrostatic ratings from the Plastic Piping Institute (PPI) — 200°F at 80 psi, 180°F at 100 psi, and 73.4°F at 160 psi.

Fire-rated: Uponor is the only PEX manufacturer with fire-resistant construction listings that comply with ASTM E119 and ANSI/UL 263.

When you build for a lifetime, build with Uponor PEX.



Uponor PEX tubing includes Wirsbo AQUAPEX® tubing, Wirsbo AQUAPEX plus tubing and Wirsbo hePEX™ plus tubing.

35 Years of Rigorous Testing...and Testing and Testing and Testing

No one knows more about PEX than Uponor, which acquired Wirsbo in 1988. That's because no one has spent more time and money pushing PEX to the limits of its endurance in the laboratory. Uponor PEX is the most thoroughly tested PEX tubing in the world.

Past: In 1973, Wirsbo submitted PEX tubing samples to an independent laboratory. For three decades, these samples underwent continuous hydrostatic tests at extreme temperatures and pressures — up to 203°F and 239 pounds per square inch. Not a single piece of Uponor PEX had experienced any breakdown or failure.

Present: All raw materials undergo rigorous testing prior to their use in the Uponor PEX manufacturing process. This testing is performed using some of the most sophisticated technology available. By knowing the exact chemical makeup of all components, Uponor can better control the production process and assure its customers the industry's highest and most consistent quality.

Uponor controls all levels of manufacturing from raw materials to finished product. This rigorous control is the only way to guarantee product quality. It represents a significant difference between Uponor and most other PEX manufacturers — especially PEX-b manufacturers that bring together different components in premixed form from different suppliers. How then can they guarantee the quality of the product?

Future: Uponor's heavy investment in testing goes beyond the factory floor. Tubing inevitably encounters rough conditions during and after its installation. Besides aggressive water and soil chemistry, there is a wide variety of mechanical forces that trigger bend cracks, fitting corrosion, pressure surges, and hot-cold cycling. Uponor's Water Accelerated Life Tester for Environmental Resistance ("WALTER") equipment explores the long-term strength of Uponor PEX tubing as it pertains to real-life conditions. That way, we make sure it can handle the toughest conditions in the field.



Designed, installed and operated properly, Uponor PEX systems will last as long as the structures they inhabit.

Not all PEX is Created Equal

PEX-a: The Original and Still the Leader

In 1968, Dr. Thomas Engel developed a revolutionary method to chemically crosslink polyethylene, a breakthrough in plastics technology that yielded a tougher, more durable and longer-lasting material. Shortly afterward, our company became the first to adapt Engel's method to create PEX-a tubing for piping applications.

Greater flexibility: The PEX-a crosslinking process consists of carbon-to-carbon bonds that are extremely strong. Also, unlike PEX-b manufacturers, Uponor crosslinks its tubing in a clear, molten state. This hot process creates a more flexible and elastic tube with lower internal stress, which allows tighter bending radiuses than cold-formed PEX-b. As a result, PEX-a is easier to handle and install, especially in small spaces.

Kinks — no big deal with PEX-a:

Kinking of PEX tubing on the job site is an everyday mishap, but it's a non-issue for PEX-a. Our hot crosslinking method makes PEX-a more difficult to kink than PEX-b or even PEX-c. PEX-a also has thermal memory. Thus, when incidental kinks do occur, they are easily repaired with a heat gun (if conducted as recommended by Uponor), with no reduction in the designed service life of the tubing. Uponor PEX is engineered to withstand kinks — it will not burst.

Kinks — a big deal with PEX-b:

PEX-b, on the other hand, can't handle the stress. Its kinks must be cut out and replaced with a repair coupling, as recommended by those who make this product. Failure to do so runs the risk of serious leaks. All those mandatory repairs waste extra time and money.

Uponor PEX — a stronger and more reliable system that is also more cost-effective to install.



Unique Processes on Custom-made Equipment

Uponor PEX is made with proprietary extrusion techniques on specialized equipment that Uponor builds itself to its own specifications. Custom-made extruders are essential, thanks to the high molecular weight of the polyethylene used in our crosslinking process.

Unlike most PEX-b manufacturers, Uponor does not use a pre-mixed resin supplied by a third-party supplier. Instead, Uponor formulates its own tubing from high-density, high-purity polyethylene. This cornerstone of the manufacturing process contains absolutely no plasticizers or regrind, which can degrade the quality of the final product. Nor does Uponor rely upon other premixed compounds. Every component is bought and tested separately, and then carefully mixed under Uponor's direct control according to highly stringent

specifications and Six Sigma methods of production.

Uponor control systems are the most advanced among PEX manufacturers worldwide. All aspects of the production process are meticulously recorded each step of the way, and the data is stored in the company's multi-terabyte server. This careful documentation gives Uponor the ability to trace back every single foot of PEX tubing it is producing.

Uponor's production process is simply second to none in the PEX industry today. What's more, Uponor continues to modify and improve its technologies to create the highest performing PEX product for its customers.

Only high-performance manufacturing can deliver a high-performance product.



Kinks in Uponor PEX are easily repaired with a heat gun.



Uponor PEX: Unsurpassed in Real-world Conditions

As the world's first PEX tubing system supplier — and the first company to manufacture PEX in North America — Uponor has always led the industry in PEX-related code and standards development. For example, in the mid-1980s, Uponor initiated the development of industry consensus standards ASTM F876 and F877.

Over the years, the company has worked with other manufacturers and industry experts in refining these standards. Today, as the undisputed leader of the PEX segment, Uponor remains the industry's most active and visible developer of PEX-related standards and codes.

What about chlorine? In recent years, ASTM F876 and ASTM F877 have been refined to incorporate benchmarks for chlorine resistance. Under certain conditions, a high concentration of chlorine can contribute to the oxidation of plastics. This, in turn, can affect service life. The upgraded ASTM standards provide an additional level of assurance that PEX tubing manufactured to these standards

can withstand the potential oxidative effects of heavily chlorinated water.

Ensuring performance: Uponor leads the industry in testing PEX in all kinds of real-world environments. It is well known that water quality varies tremendously across North America. Uponor has undertaken exhaustive testing in all kinds of conditions and environments to ensure superior performance of Uponor PEX tubing — not just in chlorinated water, but also water that is high in fluorides, bromines, alkalines, and other chemical substances — and at various pH levels. All of these factors can impact the service life of plastics.

Beyond chemical threats: In the real world, PEX tubing is subjected to rough handling during installation. It is routinely scratched, kinked, stretched and crushed. No other PEX manufacturer comes close to matching Uponor's history of testing its product under these very real, everyday conditions. And no other even approaches Uponor's track record of actual service in the field.



With more than two billion feet of PEX tubing installed in North America and more than 12 billion feet worldwide, the field performance and toughness of Uponor PEX—a tubing remains unsurpassed.

Why Uponor PEX?

Because Uponor Delivers the Complete Package

Builders and their plumbing and heating subcontractors have come to rely on Uponor PEX for the health, comfort and safety benefits its products bring to their customers. To assure the immediate and long-term success of every installation, Uponor backs its customers with a host of products, services and support activities:

Uponor offers the most comprehensive product offering, with tubing and fitting sizes from ¼" to 1½" and an array of labor-saving accessories, components and tools—all readily available through its nationwide

network of wholesaler-distributors. Included are several mechanical fitting systems to meet specific local requirements and needs.

Uponor invests in research and development, constantly looking for new, cutting-edge technologies and time-saving ancillary products that will boost performance, efficiency and ease of installation.

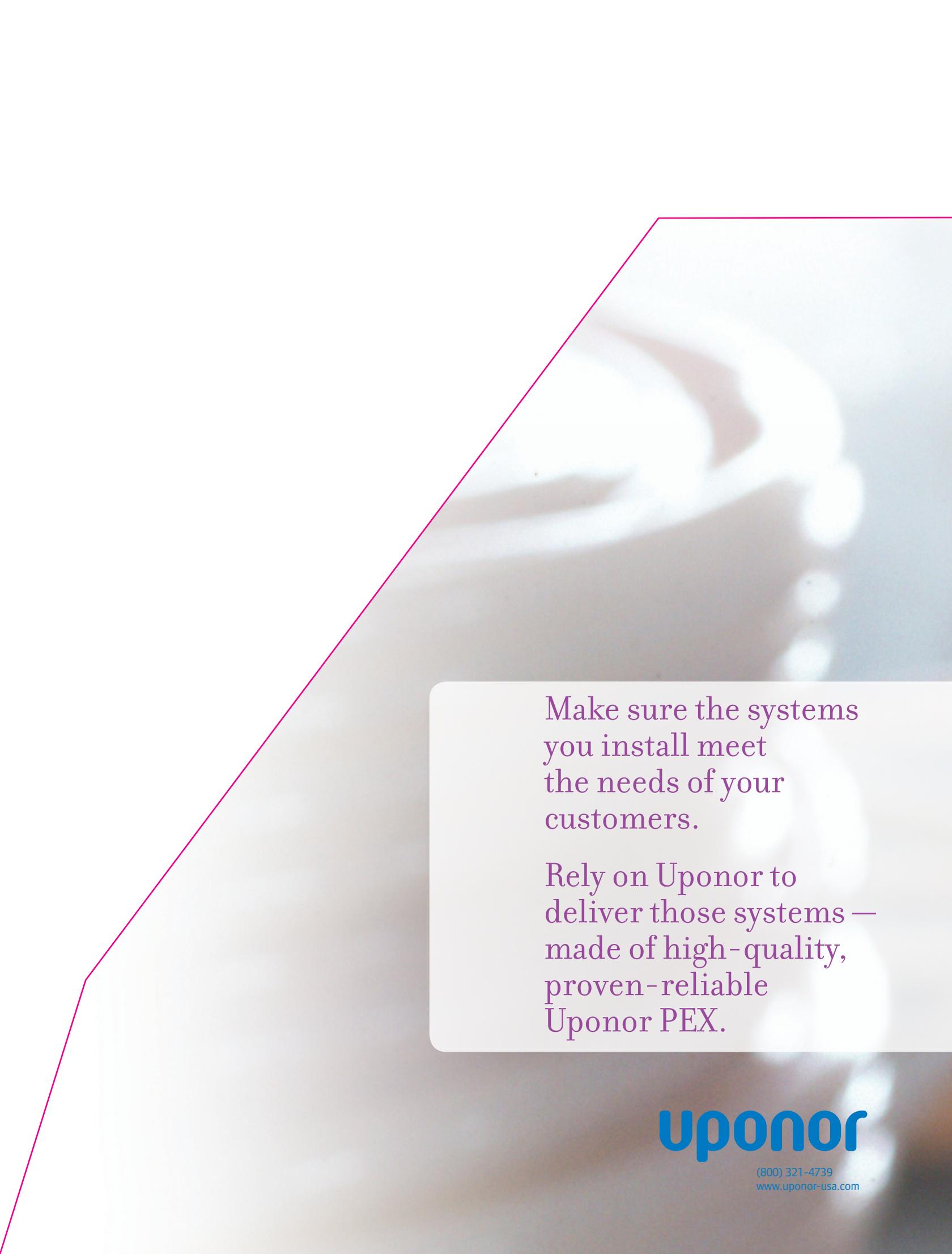
Uponor invests in education, having provided hands-on product, design and installation instruction to thousands of professionals for more than a decade.

Uponor offers an extensive network of sales, service and technical-support personnel, strategically placed throughout North America.

Uponor will help you design your systems, with typical boiler piping details, circulator sizing, mixing arrangements, SDR pipe sizing, equipment location and control strategy offerings.

Uponor technically supports its products with scheduled job site visits, startups by factory personnel, shop drawings, literature and technical documentation.





Make sure the systems
you install meet
the needs of your
customers.

Rely on Uponor to
deliver those systems —
made of high-quality,
proven-reliable
Uponor PEX.

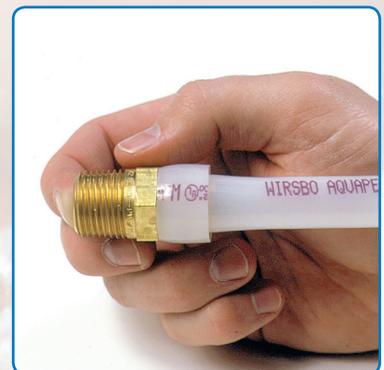
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The top 10 Reasons to use Uponor PEX

1. Uponor PEX is clean, healthy and safe: no solder, flux, glues or solvents to worry about
2. Uponor PEX has a 25-year warranty on plumbing systems and a 30-year warranty on radiant heating systems when installed by an Uponor-trained installer
3. Uponor PEX has a long history of proven performance:
 - a. More than 12 billion feet in service worldwide
 - b. Thirty-five years of successful service in demanding applications
4. Uponor PEX offers the top fitting systems on the market:
 - a. Visual system eliminates guesswork
 - b. A connection that is even stronger than the tubing
 - c. Millions of fittings in service with virtually no callbacks
5. Uponor PEX offers total system quality:
 - a. Process control of tubing from start to finish
 - b. Industry's most extensive testing (internal and external)
6. Uponor PEX offers outstanding performance characteristics:
 - a. Lightweight
 - b. Quiet: no water-hammer worries
 - c. Highly freeze-resistant
 - d. Low thermal transfer: virtually sweat-free
 - e. Thermal memory allows for easy repairs of kinked tubing
 - f. Corrosion-resistance
7. Uponor PEX is a complete plumbing system:
 - a. Sizes range from 3/8" to 2"
 - b. Engineered plastic (EP) and brass fittings
 - c. EP and copper manifolds
 - d. Many tool and fitting options
8. Uponor PEX is simple and quick to install, saving time and money
9. Uponor continually provides innovative new products and applications.
10. Uponor offers the industry's leading support package: sales, marketing, technical, codes and training.

For information about Uponor PEX products, visit our website at www.uponor-usa.com.



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