



WHITE PAPER

Choose the Right PEX for Your Next Commercial Piping Project

Choose the right PEX for your next commercial piping project ... and move onto the next job.

In the past few years, engineers and contractors have increasingly chosen PEX over copper and CPVC in commercial projects. This can be attributed to the many benefits of using an affordable, flexible and time tested PEX material. However, the type of fitting method and quality of tubing can have a big impact on your bottom line.

About PEX Tubing

PEX is a high-density polyethylene material that has undergone a crosslinking process which enables it to withstand additional temperatures and pressures while reducing its likelihood of developing stress cracks. Not all PEX is created equal which is why PEX tubing is required to list its performance characteristics along the tubing print line, which is known as PEX designation coding. For example, Viega PureFlow PEX tubing maintains an industry leading "5306" rating, which means it is capable of withstanding continuous recirculation at up to 140 degrees Fahrenheit while also withstanding up to six months of UV exposure. As a specifier or installer, it is important to select PEX tubing with the best chlorine and UV resistance to avoid future callbacks due to degradation.



PEX typically comes in SDR-9 dimensional ratio meaning the wall thickness is 1/9 of the outer diameter, thicker than copper, which allows for higher design velocities and a reduced likelihood of biofilm development. One of PEX's most apparent advantages is its flexibility. This allows for the reduction of fittings behind walls, keeping costs down, saving installation time and reducing the chance for additional leak points. Bends can be as small as five times the outer diameter of the pipe when using approved bend supports.

Types of Fittings



Joining PEX is accomplished with a variety of fitting options, from commodity-based crimp options to unique, proprietary connection methods that are part of a comprehensive system.

Crimp fittings utilize a copper ring to secure PEX tubing to fittings. They can be used on both polymer and metallic fittings and generally

are less expensive and simple in concept, and therefore don't require much training. However, it can be difficult to correctly position a crimp ring leading to an improper seal. Also, there is no visual indication of a successful crimp which requires the installer to confirm its success with the use of a go/no-go gauge.

Clamp fittings follow a similar method to crimp using a stainless steel band to secure pipe to fitting. It is an inexpensive and simple concept that doesn't require much training. However, the connection is strongest when initially made, and as time passes, the pipe will test the strength of the clamp ring. The manufacturer's frequency for recalibrating the installation tool can vary and can lead to improper connections being made without the installer's knowledge.

Press fittings are constructed utilizing a factory-assembled stainless steel sleeve on either a polymer or metallic body. Viega's PureFlow press fittings provide a number of benefits which include Smart Connect technology that identifies an unpressed connection to avoid dry fit issues. The visual indicators allow the installer to confirm that the PEX has been inserted to a proper depth. Using either the hand tool or power tools allows users to make connections in seven seconds or less with the ability to conduct immediate pressure testing.

Cold expansion fittings require a separate expansion ring to be installed on PEX tubing. An expansion tool then opens the tubing and ring wide enough to fit around either a polymer or metallic fitting. This method requires time for the tubing to contract and that contraction time is affected by install temperatures, which delays the ability to make the next connection, as well as the time the installer must wait prior to performing a pressure test on the system.

Push-fit fittings typically use a grip ring to trap PEX tubing in the fitting once it is inserted. When done properly, connections can be fast and easy to install. Some push-fit fittings can accommodate multiple materials. Unfortunately, push-fit fittings are often quite expensive and commonly thought of as a temporary fix.

Time Savings Means Cost Savings

The Viega PureFlow system allows for successful connections to be made in seven seconds or less, no matter what size pipe is being used. Cold expansion times on the other hand can be similar on the smaller diameter, but require up to seven minutes on large diameter PEX. Cold expansion also has a minimum wait time before it is able to be pressure tested (that is subject to the surrounding temperature), whereas Viega's press system offers immediate pressure testing.

The Numbers by Example

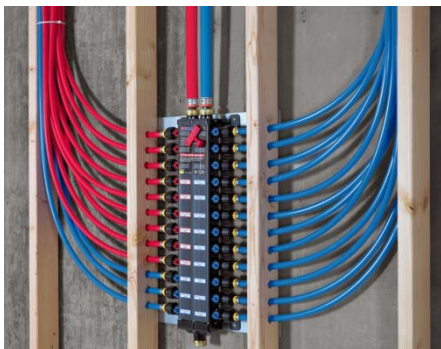
Consider the following commercial job for a recent New York Hotel project consisting of 585 fittings. The connection time required for cold expansion fittings would have resulted in more than eight hours of additional labor plus contraction time before pressure testing versus the Viega PureFlow system. At a conservative \$50 per hour labor rate, the results equal more than \$400 of additional expense on this one job, plus with Viega, there is the opportunity to move on and start the next job sooner.



Better PEX for a Better Build

Viega PureFlow PEX is a combination of strength and quality and carries the highest possible chlorine and UV resistance ratings according to industry standards. While some manufacturers will tout that PEX-a is superior compared to PEX-b, that is a myth. PEX-a is merely a nomenclature that refers to the manufacturing style of the product. All PEX must adhere to the performance requirements of ASTM F876. PureFlow PEX has been engineered to combine flexibility similar to PEX-a with the greater strength characteristics of PEX-b. For example, burst pressures for PureFlow and PEX-b exceed PEX-a by almost 10 percent at 73 degrees Fahrenheit. Additionally, Viega PureFlow PEX carries a six-month UV resistance rating, whereas PEX-a typically only carries a three-month UV resistance rating.

Eliminate Multiple Connection Methods



The combination of Viega ProPress with the PureFlow system enables installers to do a complete installation with one tool platform. Viega offers a variety of transition fittings to seamlessly transition from copper to PEX. Hanger spacing can be kept consistent using Viega's pipe support trays. With system matched tools and jaws, one tool can be used to install all of the ProPress System, from 1/2" to 4", and all of the PureFlow system, from 3/8" to 2", just by switching out the jaws. When compared to Viega, other systems that involve incorporating multiple connection styles require additional

tools, and potentially even hot work, to install a full hybrid system for commercial property. The Viega consistency of connection enables installers to learn one system and decrease variability.

Repairs Made Easy

Retrofits and repairs can present many challenges with tight spaces or old systems. A wide range of Viega adapters and transition fittings, along with the compact tools to access them, provide a perfect opportunity for repairing and upgrading a plumbing system with Viega's PureFlow System. With Viega, the damaged section can be simply cut out and a coupling can be pressed, either wet or dry, and the installer can move on.



No Weather Hindrance

Reliability and consistency of the fitting, regardless of fluctuations in the weather, are other important considerations. While cold expansion installations will vary greatly due to temperature, Viega PureFlow Press fittings are consistent every time and always completed in less than seven seconds. The same large diameter cold expansion fitting may take up to seven minutes, and if it is a cold weather day, the time will increase significantly, meaning valuable productivity and profitability on the job is lost.

Get the Support You Need

Viega offers a knowledgeable support team to provide consultation with plumbing design, product compatibility and technical support for commercial PEX projects.

The Results Are In

When considering your next commercial specification or installation, choose a system with a superior design, performance and installation efficiency.

About the Author:

Will Dutcher is a mechanical engineer with nearly five years of experience in product development. He has been a Product Engineer with Viega LLC since 2016 and holds a Bachelor of Science degree in Mechanical Engineering from The State University of New York at Buffalo (UB).

The Viega Group, with a tradition of innovation for more than 115 years, has more than 4,000 employees worldwide and is among the leading manufacturers of pipe fitting installation technology. Known for its quality, Viega manufactures all of its PureFlow PEX and PureFlow Press polymer fittings in the USA. Through vertical integration, Viega controls the manufacturing process from resin production to quality control of finished product in-house. Every ManaBloc system is 100-percent factory tested and PureFlow Press fittings are completely factory assembled so installers can rely on a consistent and reliable product. For more information, visit viega.us.