

PLASTICS PIPE INSTITUTE - HIGH TEMPERATURE DIVISION

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THE FACTS ON CROSS-LINKED POLYETHYLENE (PEX) PIPE SYSTEMS

Cross-linked polyethylene (PEX) pipe features a three-dimensional molecular bond created within the structure of the plastic. Through chemical/physical reactions, manufacturers structurally modify the polyethylene chains, significantly improving performance on properties like high-temperature strength, and chemical, abrasion and stress-crack resistance. The resulting flexible pipe has greater impact and tensile strengths, improved creep resistance, and performs extremely well at high temperatures and pressures.

#### **Corrosion resistant**

PEX pipe will not pit or stress corrode. Corrosion, as an electrolytic process, requires the presence of electrically conductive materials – primarily lead, iron, steel and copper. PEX is a dielectric material, a non-conductor, and does not corrode like metal pipes.

#### **Scaling resistant**

PEX pipe's smooth interior walls and chemical properties make it resistant to mineral buildup when used with either hard or soft water. No water treatment or special additives are needed to prevent scaling or corrosion. End users enjoy years of consistent flow and water pressure.

#### **Quiet**

PEX pipe minimizes noise. Research shows PEX pipe is significantly quieter than copper pipe, thanks to its flexibility and ability to absorb pressure surges.

#### **Safe drinking water**

PEX pipe is certified by third-party testing agencies, such as NSF and CSA to be safe for drinking water. It's the smartest choice for the long-term safety, security and reliability of this resource.

#### **Convenient installation**

Flexible PEX pipe can be used in a variety of applications and is installed without the use of solders, flames or chemicals. PEX pipes can be combined with remote manifolds to reduce the amount of piping and fittings, speed installation and balance pressure throughout the system. Home run installations with central manifolds can be used to reduce pressure drops and maximize fast delivery of hot water, reducing wasted water.

**Sizes**

PEX pipes are available in a wide range of sizes, from 1/8-inch up to 2 inches. PEX typically can be installed in place of rigid pipes on a size-for-size basis because of its smooth wall, flexibility and the elimination of most elbows.

**Low thermal conductivity**

PEX pipe minimizes heat transmissions through the pipe wall, compared to metal pipes. It is resistant to freeze damage and condensation, unlike metal pipes.

**Certification**

PEX pipes and fittings systems must meet the very strict performance requirements of ASTM F876 and ASTM F877, respectively. Consumer confidence and satisfaction is driven by PEX pipe's performance, safety and quality control standards – all of which are documented by independent, third-party listing agencies.

**Warranty**

All PEX pipe manufacturers offer warranties on their pipes and fittings systems, providing builders and consumers with unparalleled confidence. Contact the manufacturer for full warranty details.

**Standards for PEX pipe systems**

- ASTM International F 876, *Standard Specification for Crosslinked Polyethylene (PEX) Tubing*
- ASTM F 877, *Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot-and Cold-Water Distribution Systems*
- CSA International B137.5, *Crosslinked Polyethylene Tubing Systems for Pressure Applications*

Note: All standards cover only outside diameter-controlled CTS-sized pipe of 1/8-inch to 6-inch diameter, having SDR 9, and operating at temperatures up to 180°F.

**For more information**

Visit the Plastics Pipe Institute (PPI) at [www.plasticpipe.org](http://www.plasticpipe.org) or call 202-462-9607. Log on to the Plumbing and Heating applications page for a full listing of PEX pipe manufacturers. Click on the publications page for Technical Notes and Technical Reports related to PEX pipe. Specifically request:

- Crosslinked Polyethylene (PEX) Tubing (TN-17/2001)
- Erosion Study on Brass Insert Fittings Used in PEX Piping Systems (TN-26/2002)
- Differences Between PEX and PB Piping Systems for Potable Water Applications (TN-31/2004)
- PPI Listing of Hydrostatic Design Basis (HDB), Strength Design Basis (SDB), Pressure Design Basis (PDB) and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe (TR-4/2004).