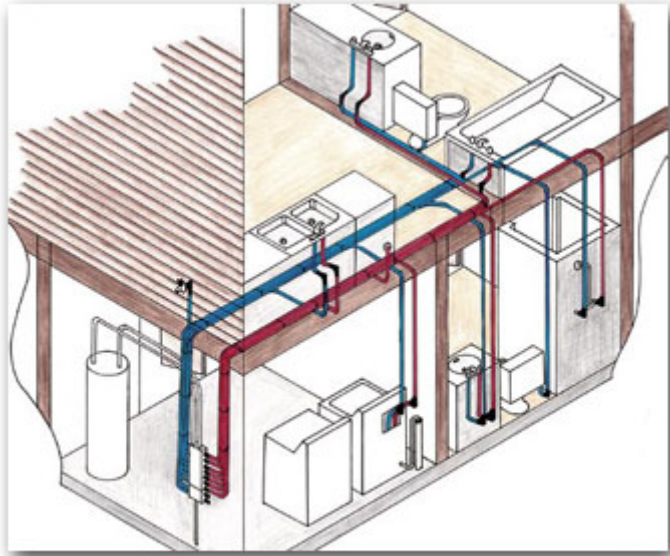


Copper Prices Put Plastic Water Piping on the Rise



Cross-linked polyethylene water supply piping.
Image courtesy of Vanguard Piping Systems.

Plastic water piping, plumbing manifolds and stainless steel tubing for gas distribution are among innovative products on the [PATH](#) (Partnership for Advancing Technology in Housing) Technology Inventory that builders can consider to help deal with ongoing increases in copper product prices, according to Shawn Martin, director of applied technology for the [NAHB Research Center](#).

In a recent interview, NAHB economist Michael Carliner told [Dow Jones Newswires](#) that the use of plastic plumbing is on the rise following substantial increases in the cost of copper. While most waste pipes carrying water away from sink drains and toilets are now made of plastic, Carliner said that copper maintains a small lead in water distribution, but that could soon change, especially since the transition to plastic is an easy one for home builders to make.

Sharp increases in the cost of copper have boosted home prices by roughly \$500 in just the last six months, Carliner said. There is no good substitute currently available for copper electrical wiring, he added, which accounts for almost half of the copper that goes into a typical home. About 40% of the copper in a home is used for pipes and plumbing fixtures.

With prices of many building products continuing to rise and little relief on the immediate horizon, Martin said that the Research Center has created a new [Web site](#) for [ToolBase.org](#) to provide builders with the latest information on how to keep costs under control without sacrificing quality or performance.

In addition to copper, the site provides alternatives for lumber, insulation and cement, with links to further areas of interest. Accompanying each item on the list from PATH is information on installation, initial and operating costs, a cost-benefit analysis, field evaluations and code acceptance.

Alternatives for copper suggested by PATH include:

- **Cross-linked polyethylene (PEX) water supply piping.** A flexible, plastic pipe created using polymer technology, PEX doesn't corrode or develop pinhole leaks, is chlorine- and scale-resistant and can use fewer fittings than rigid plastic and metallic pipe. Made of a material that has superior high-temperature and long-term pressure capabilities, the piping is approved for potable hot- and cold-water plumbing systems as well as hydronic heating systems in all plumbing and mechanical codes across the U.S. and Canada.

PEX tubing is lightweight and can withstand operating temperatures of up to 200 degrees Fahrenheit. Its flexibility allows it to go around corners and obstructions, it ranges in size from 1/4 to 2 inches, and a variety of joining methods are available, depending on the manufacturer. Brass, copper, bronze, stainless steel and plastic fittings can be used with PEX pipe. In addition to residential plumbing systems, PEX can be used in other applications, such as radiant floor heating systems, underground municipal water service pipe, snow and ice melt systems, turf conditioning and fire suppression systems.



Aluminum plastic composite water piping.

Photo: ToolBase Tech Inventory

- **Aluminum plastic composite water piping.** This multipurpose pressure piping can be used for hot and cold water distribution indoors and outdoors, and it is also well-suited for under-the-floor heating and snowmelt systems. Made of aluminum tube that is laminated to interior and exterior layers of plastic, the piping is lightweight, flexible, strong and corrosion resistant.

The piping can withstand temperatures of up to 210 degrees Fahrenheit and operate at pressures ranging from 90 to 300 pounds per square inch (psi). It is available in diameters of between 3/8 and 1 inch and can be easily bent or formed by hand. Brass fittings, tees, elbows and couplings are available. It can also be used for air conditioning systems, geothermal heat pumps and compressed air distribution.



Corrugated stainless steel tubing.

- **Corrugated stainless steel tubing (CSTT).** A promising alternative to traditional threaded black-iron gas piping for residential, commercial and industrial applications, CCST consists of a continuous, flexible, stainless steel pipe with an exterior PVC covering. The piping is produced in coils that are air-tested for leaks. Its light weight, flexibility and need for fewer connections and fittings can make it easier to install than traditional threaded black-iron piping, adding up to substantial labor savings for installers and cost savings for builders. Since 1989, more than 150 million feet has been installed and its use has increased rapidly in recent years.

The piping is most often installed in a central manifold — or “parallel” — configuration, with “home run” lines that extend to gas appliances. Flexible gas piping is lightweight and requires fewer connections than traditional gas piping because it can be bent easily and routed around obstacles. The multiport manifold allows for the system to be expanded easily for room additions or additional appliances. CSTT can be safer than traditional piping because connections and joints behind the wall that are common in black iron pipe are essentially eliminated. In addition, builders and installers have noted a reduction in employee injuries because its installation does not require heavy equipment.

- **CPVC (Chlorinated Polyvinyl Chloride) water supply piping.** CPVC is a rigid, plastic pipe made from modified PVC resin that is similar to the plastic piping commonly used for pressure, irrigation and DWV applications, but it is engineered for use with higher temperatures. It doesn't corrode or develop pinhole leaks, is chlorine-resistant and assembles easily using solvent-cemented fittings. CPVC has superior high-temperature and long-term pressure capabilities; the piping is approved for potable hot- and cold-water plumbing systems in all plumbing and mechanical codes across the U.S. and Canada.

Copper tube sized or CTS CPVC piping is light-weight and can withstand 400 psi at room temperature and 100 psi at 180 degrees Fahrenheit and ranges in size from 1/4 to 2 inches. CPVC pipe is also available in Schedule 40, Schedule 80 and SDR (Standard Dimension Ratio) dimensions in larger sizes for industrial applications. CPVC fittings are easily attached using solvent cement, and the piping can be easily cut using a range of simple, inexpensive tools. In addition to residential plumbing systems, CPVC systems are available for use in fire suppression (sprinkler) systems.

- **Plumbing manifolds.** Gaining acceptance in the home building industry as a new method for residential water distribution, manifold plumbing systems are control centers for hot and cold water that



CPVC piping in action.

Photo courtesy of Noveon, Inc.

feed flexible PEX supply lines to individual fixtures. Used with plastic piping, manifolds can offer installation-related cost advantages over conventional rigid pipe plumbing systems in some applications. If designed properly, they can also deliver hot water to fixtures faster than a conventional truck and branch layout.

Separated manifold chambers or separate manifolds can serve hot and cold water lines. The cold water manifold is fed from the main water supply line and the hot water manifold is fed from the water header. Water pressure in manifolds is maintained by the incoming service line. A water line dedicated to each fixture emanates from a port in the manifold. The manifolds can be centrally located at the water service line entry point, or in larger homes or apartment buildings, mini-manifolds can service remote fixture groups.

Manifold systems can accept all common supply line sizes, down to 3/8-inch. Typically, a parallel supply line layout or a hybrid version will be used with a manifold, so fewer fittings are required, and there is less of a drop in pressure in the lines.

For more information, visit www.toolbase.org.