HOMEOWNER REPAIR GUIDE

# PLASTIC WATER LINES

With the sharp rise in the cost of copper (as well as the reluctance many homeowners have to solder copper pipe), there has been growing interest in plastic pipe as an alternative for water and drain lines. Plastic pipe made from PVC (polyvinyl chloride) has been permitted for DWV (drain-waste-vent) pipe for many years, but only in recent years have communities allowed plastic (PEX or CPVC) water supply lines to be installed in residential buildings.




*CPVC water supply lines*

| TYPES OF PLASTIC WATER LINE | |
|---|---|
| **PEX** | Cross-linked polyethylene; sometimes colored red for hot and blue for cold. |
| **CPVC** | Chlorinated polyvinyl chloride; usually beige-colored, to distinguish it from PVC. |
| **Polybutylene (PB)** | Neither of these materials should be confused with polybutylene, a grey plastic tubing that came out in the early 1980's and then fell from usage because it frequently failed under moderate pressure with heat. |

## PERMITS AND GROUNDING

Changing the water line will generally require a plumbing permit.

### ELECTRICAL GROUNDING

Since the original metal piping is part of the grounding circuit of the electrical system in many older homes, **if you change to plastic water lines, many cities (including Cleveland Heights) require that the installer have an electrician certify in writing that there are adequate ground connections to provide safety.**

## WATER PRESSURE

Another consideration when installing plastic water lines is water pressure. Many homes have a **pressure regulator** mounted on the house side of the line, usually just above the water meter, to control water pressure from the street water line. High pressure can be damaging to plumbing fixtures and piping, so a regulator is needed to keep the pressure at a desirable level. In Cleveland Heights, the city water department owns the meter, but the homeowner owns the pressure regulator and is responsible for maintaining it.



*Pressure regulator*

### PRESSURE SETTING

It is suggested that, with plastic piping, the pressure be set between 55 and 75 PSI (pounds-per-square-inch) so that the pressure will not blow out the pipe at the fittings. Ohio Plumbing Code also requires that a **thermal expansion tank** be installed on the cold water pipe just over the water heater whenever a regulator is present.

## IS IT SAFE FOR DRINKING WATER?



*PEX tubing cutter*

When people think about the petrochemicals and solvents that are used for the manufacturing and installation of plastic pipe, they may worry about possible contamination of their drinking water. The National Sanitation Foundation (www.nsf.org) tests U.S.-manufactured pipe for any chemicals that could get into potable water; pipe printed with the NSF certification has no trace chemicals, will resist scaling and deposit build-up when used with both hard and soft water, and will not rust.

## CPVC



*Self-clamping brass fitting*

CPVC is frequently chosen to repair an existing galvanized iron water line because, unlike copper, plastic is inexpensive and will not corrode when in contact with old iron pipe *(dielectric effect)*. However, CPVC does not work well with high-pressure water flow and doesn't handle cold well. In addition, repairs using CPVC can be challenging in an occupied house. Most connections are made by applying a solvent primer and then a plastic cement; a 24-hour curing period is required for the adhesive to set properly. Self-clamping brass fittings are faster – allowing you to turn on the water immediately – but you'll pay considerably more for that convenience.

### LET THE JOINTS CURE

All too often, people start using a repaired system long before the curing period is up, weakening the joints. Eventually the weakened joints let go and flood the house.

## PEX

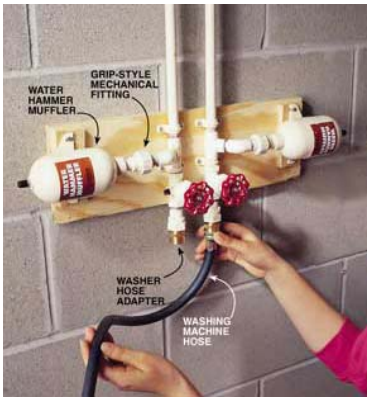


*PEX crimp tool, tubing and fittings*

PEX tubing can be used in radiant heating systems, as well as plumbing systems. It is gaining in popularity due to its relative ease of installation, flexibility and durability. There are several grades of PEX, and the "A" and "B" grades will not burst if the line freezes. Because the tubing bends readily, fewer elbows are needed in many situations, and it can be "fished" into existing walls almost as easily as Romex™ wiring. The connecting fittings are brass and require some specialty tools: one to "swage" or "chamfer" (open up) the end of the tubing, and another to "crimp" (clamp) a ring onto the tube once the fitting is slipped into it. While material costs for a PEX plumbing job are higher than a job with glued CPVC, no cement, chemicals or solvents are used in making the connections, and the lines can be used immediately after assembly is completed.

## INSTALLING ANY PLASTIC LINE

No matter which type of plastic tubing you choose, the lines should be secured to a wall stud or joist with support clamps every 24 to 36 inches to minimize sagging and damage from movement. Install an air trap on any new line where a supply line branches off to a fixture (to prevent water hammer), and a shutoff valve on each supply line.




*Water hammer mufflers and grip-style fittings at a washer hookup*

Home Repair Resource center

Home Repair Resource Center empowers homeowners to maintain their homes for sustainable and diverse communities.

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