DRAINS, TRAPS, & VENTS

Because the drain system works by gravity and not by water pressure, all of the pipes in the drain system must be angled at least slightly to keep the waste water flowing toward the main sewer line. As you might expect, water flows more slowly through nearly horizontal pipes than it does through the vertical ones. For this reason, the horizontal parts of your drain lines will build up deposits of grease and soap residue faster than the vertical parts. This buildup can eventually impair or block your drain line.

Traps are a U-shaped assembly of drain pipe located below or molded inside each fixture. Because the trap forces water flowing through the drain to run uphill briefly, it can only do so when more water is pushing it along from higher up the line. As soon as the fixture has drained and no more waste water is pushing water out of the trap, a portion stays behind, blocking the pipe so that sewer gas can't seep up the drain line and into your house. Rooftop vents let air into the drain-waste-vent system. This helps waste water flow freely into the sewer line. Sometimes apparent drain problems turn out to be vent problems.
Plumbing Basics: Types of Pipe

**PIPES AND FITTINGS:**

A. **Cast Iron**: used for main drain-waste-vent; very strong, but heavy and difficult to cut. Make repairs or replacements using PVC plastic (if allowed by code) or hubless cast iron and banded couplings.

B. **Copper**: best for water supply; smooth and corrosion resistant; join with lead-free solder.

C. **Chromed Copper Tubing and Shut-off Valves**: exposed water supply applications; join with compression fittings.

D. **Traps**: chromed brass or plastic; choose a style and diameter to fit application; join with compression fittings.

E. **ABS**: rigid plastic for drain-waste-vent; strong, but light and easy to cut. Join with solvent glue. Restricted in some areas.

F. **Banded Couplings**: adjustable stainless steel and neoprene bands join hubless cast iron or iron to plastic.

G. **PVC**: rigid plastic for drain-waste-vent; highly resistant to damage from heat or chemicals; superior to ABS; join with solvent glue.

H. **Solvent Glue and Primer**: joins rigid plastic pipe; use a solvent glue specific to the type of plastic you are joining.

I. **PB (Polybutylene) Flexible Plastic**: bendable hot and cold water supply; restricted by code in some areas; join with plastic grip fittings.

- Note: many newer homes also have PEX plastic pipe (shown to the right) which is joined with metal grip fittings and bands using a special tool.