

## POLYBUTYLENE

### THE ACCEPTED POSITION

#### What is Polybutylene?

Polybutylene (BP) is a form of plastic resin that was used extensively in the manufacture of water supply piping from 1978 until 1995. Due to the low cost of the material and ease of installation, polybutylene piping systems were viewed as “the pipe of the future” and were used as a substitute for traditional copper piping. It is most commonly found in residential construction and was heavy through the 1980’s and early-to-mid 90’s. The piping systems were used for underground water mains and as interior water distribution piping. Industry experts believe it was installed in at least 6 million homes, and some experts indicate it may have been used in as many as 10 million homes. Most probably, the piping was installed in about one in every four or five homes built during the years in which the pipe was manufactured.

#### How to Tell If You Have Poly B

**EXTERIOR** - Polybutylene underground water mains are usually blue, but may be gray or black (do not confuse black poly with polyethelene pipe). It is usually 1/2" or 1" in diameter, and it may be found entering your home through the basement wall or floor, concrete slab or coming up through your crawlspace; frequently it enters the home near the water heater. Your main shutoff valve is attached to the end of the water main. Also, you should check at the water meter that is located at the street, near the city water main. It is wise to check at both ends of the pipe because we have found cases where copper pipe enters the home, and poly pipe is at the water meter. Obviously, both pipes were used and connected somewhere underground.

**INTERIOR** - Polybutylene used inside your home can be found near the water heater, running across the ceiling in unfinished basements, and coming out of the walls to feed sinks and toilets. In some regions of the country, plumbers used copper “stub outs” where the pipe exits a wall to feed a fixture, so seeing copper here does not mean that you do not have poly. Typical failures are first noted in connectors which should be changed from plastic to metal. This includes **plastic clamps, elbows, tees** and **connectors**.

#### Will the Pipes Fail?

While scientific evidence is scarce, it is believed that oxidants in the public water supplies, such as chlorine, react with the polybutylene piping and **fittings** causing them to scale and flake and become brittle. Micro-fractures result, and the basic structural integrity of the system is reduced. Thus, the system becomes weak and may fail without warning causing damage to the building structure and personal property. It is believed that other factors may also contribute to the failure of polybutylene systems, such as improper installation, but it is virtually impossible to detect

## NEW RESEARCH

Recent alarming media coverage has whipped many realtors and homeowners into a state of panic. The **Canadian Association of Home Inspectors**, the **Home Builders' Association** and the **New Home Warranty Program**, among other organizations, have all investigated and researched this issue. PB appears to be an excellent plumbing system with a relatively low incident rate of failures, most of which have been attributed to poor workmanship or improper choice of materials. There have been very few documented cases of PB failures in Canada, and most authoritative sources indicate that the problems lie with the plastic "acetal" fittings, very few of which are encountered in Canada.

In Alberta, Canada, officials report the problem rate at less than a fraction of 1% of all installations. **In fact, only two cases have been cited, and both of these were reportedly due to poor workmanship.** Plastic pipe problems are like a "tempest in a teapot" said the president of the Alberta New Home Warranty Program. *"The rate of incidents is insignificant - and our experience with it has been zero."*

Various legal people and trades people, who stand to profit the most and have a vested interest in retrofitting your plumbing system, have indicated that the pipes are failing at a "significant rate". Some use the excuse of high temperatures, the presence of chlorine or other chemicals in the water, sustained pressure, damage, or failure of the pipe due to its age. **HOWEVER**, the above comments can be applied to ALL types of pipe used and approved today. Whether you have galvanized, PEX, copper, CPVC or polybutylene piping, **LEAKS ARE INEVITABLE.** Poly B simply degrades quicker than the rest of the pipes on the approved piping list.

A typical scare tactic often found on the internet: *"Failures can range in severity - but once you find one leak you can be assured you will soon have more. With polybutylene it is not a question of **IF** you will have a failure but a question of **WHEN** you will have a failure."*

## HOW MUCH SHOULD WE BELIEVE?

Most fear mongers refer to various lawsuits against Poly B manufacturers. Some details have been simply deleted from the dialogue or have very little to do with what is happening in Canada.

For instance, the vast majority of lawsuits are in the USA and only appear to include systems that have "Poly B piping **AND** acetal (plastic) fittings". Plastic fittings are no longer used. Nor are aluminium crimp rings. In Canada, where copper fittings and copper crimp rings are primarily used, there have been very few documented occurrences. Other problems came as a result of some plumbers having some old brass fittings and using them as Poly B fittings ... a fatal mismatch.

Some websites cite high temperatures as a major cause of failure. Geographically, the prime area for many of the class action lawsuits is in the Southern United States. Poly B pipe was run through extremely hot attics, a practice not common in Canada (our attics tend to freeze in winter). Running hot water continuously, such as in a loop circulation system, is not recommended either.

And finally, water systems older than 15 years are automatically excluded from the class action settlements. Realizing that the courts have only made the manufacturers responsible for the last 15 years, leaves many homeowners with polybutylene fearful that their systems could fail at any time.

When we think of copper and galvanized piping we like to think that they will last a good 50 years without major issues. We often see galvanized piping still doing its job, even though it is 50 to 100 years old. There is just no empirical data available that can give any real confidence to reduce the fears of polybutylene pipe.

## WHAT SHOULD HOME INSPECTORS SAY?

Due to all the negative publicity regarding Poly B piping, many homeowners and perspective homeowners are aware of the concerns and we would be remiss if we fail to mention it in our reports. The most daunting publicity appears to be a result of various class action lawsuits in the USA. Insurers, lawyers, plumbers and many home inspectors in Canada, have a tendency to follow events in “sue-friendly USA”, without really examining who is initiating these lawsuits, who is involved and why. As home inspectors, we are caught in the middle of conflicting opinions. In Canada, there are likely over 750,000 homes built using Poly B piping. How many failures have we had? Since 1980, probably less than twenty five, and almost all of the documented claims have been traced back to improper installation.

### EXAMPLES OF WHAT IS BEING SAID?

#### **Poly B is present:**

- but “could be a concern, sometime in the future, but currently it is ok and should just be monitored”;
- but “there are metal fittings instead of plastic so it is probably ok”;
- so “run, because it will leak”;
- so “go ahead and buy, but ask for a \$7 to \$8,000 retrofit reduction”;
- but “the home is not insurable” or “will have extra levies on their insurance”;
- but “a major retrofitting of the entire system” will be required.

Many US and Canadian Home Inspection franchises follow-up their comments with a carefully-worded, pre-typed, butt-covering disclaimer that says “*due to ongoing concerns, many of which are not visible, a professional tradesperson or qualified contractor, should be retained prior to purchase, or soon afterward, to examine the piping and/or the connections, and make corrections as soon as possible*”. The US Home Inspection franchises have a tendency to overkill their narratives as most lawsuits are initiated in the States.

The majority of Canadian “Standards of Practice” say that home inspectors have to identify the existence of Poly B by describing it... but how much do we have to say about it? If we say too much, and start quoting unreliable and undocumented sources and statistics, we can “kill a deal” or plant unreasonable fear into the minds of potential buyers. If we downplay the concern, and a leak appears, then we may be visiting courtroom ourselves.

**Is Poly B a problem? Maybe. But, probably not... at least not in Canada at this time.**

### LIMITATIONS FOR USE:

- Do not use plastic piping in a continuously circulating hot water plumbing loop
- Do not use where water temperatures could exceed 180 degrees F
- Do not use in an application where the plastic pipe will be exposed to direct sunlight
- Do not allow pipe to be left exposed to direct sunlight for more than 30 days during or before construction
- Do not use acetal (plastic) fittings - use copper
- Water heater connections should be made with metal (copper) connectors at least 18" long
- Pipe must be kept at least 6 inches from hot water tank or furnace flue pipes
- Polybutylene piping is not suitable for swimming pool piping systems, or where more than 2 ppm of chlorine (free residual) will be routinely encountered.