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POLYBUTYLENE FACT SHEET

You have contacted us with questions about the polybutylene plumbing system. The following information is provided to answer the most commonly asked questions about such systems.

1. WHAT IS POLYBUTYLENE (PB) TUBING PIPE AND TUBING? Polybutylene (PB) is a flexible plastic piping material, typically gray or black in color, used in an estimated six to ten million hot and cold water plumbing systems in residential site built and manufactured housing between the late 1970's and 1996. It was not used in drain, waste, and vent applications. All of the model plumbing codes, used for adopting either local or state plumbing codes in most areas of the country, included PB at one time or another as an approved material for use in residential construction. In addition, PB was included as an approved material in the HUD regulations pertaining to manufactured housing. The product was listed by NSF International as meeting an ASTM standard relating to performance (D3309) and as meeting ANSI/NSF 61, the health effects standard. PB also underwent long term hydrostatic testing for a Plastic Pipe Institute (PPI) design basis listing.

Polybutylene, normally blue or black in color, also was used in the water service market for yard service lines and laterals connecting main lines to the water meter.

2. WHY WAS POLYBUTYLENE WIDELY USED? Advantages of PB included flexibility, freeze damage resistance, corrosion resistance, efficiency of installation, lightweight for ease of handling, and low or nonexistent water hammer. Also, in a number of locations, local water conditions had an adverse effect on copper (pin holing, etc.) and PB was the material of choice. In addition, PB systems were preferred by many plumbing contractors, based in part on excellent experiences with field performance of properly installed systems. There are many thousands of PB systems which are properly operating and free of problems.

3. WHAT THEN IS THE PERCEIVED PROBLEM? PB used in residential housing (both site built and manufactured) originally was joined using a crimp tool on metal fittings (brass or copper). In the late 1970's, a plastic fitting (normally gray in color with the marking Ac) molded from [poly]acetal resin, became popular as an alternative to the metal fittings. (Plastic fittings and plumbing parts black in color are not made from acetal.) Unfortunately, for a variety of reasons, those polybutylene systems with plastic fittings began to experience a widespread number of failures in certain geographic areas. The sale of plastic fittings molded from acetal (the gray fittings) was discontinued in the site built market by late 1988 and in the manufactured housing market by late 1990. Typically, failures occurred within five to eight years after installation and involved breakage of the fittings but were often reported as PB pipe leaks. Press reports

compounded the problem by referring to “polybutylene plumbing systems” leaving the impression that polybutylene was a problem. However, the number of failures or repairs required in polybutylene systems with metal fittings or with manifolds (systems in which individual PB lines run from a central location to the fixtures) was (and continues to be) comparable to those of plumbing systems of other materials. Many PB systems with fittings made from acetal resin also continue to operate satisfactorily and without leaks.

There were allegations that PB "falls apart" in water containing chlorine, even at "tap water levels." That is an incorrect statement. Shell Chemical Company, the producer of PB, spent over three million dollars on a state of the art testing facility to determine the effects of free chlorine on PB tubing. Tests conducted at that facility indicated that, at free chlorine concentrations of 2.0 parts per million (ppm), 25% hot water flowing usage in a twenty four period (higher than typical), PB pipes had an extrapolated test life of over fifty years, assuming good installation and extrusion. At concentrations of 1.0 ppm, extrapolated test life was 140 years. The American Water Works Association (an association for municipal water utilities) states that water utilities in the U.S. normally have free chlorine levels below 1.0 ppm. Even if treatment levels at the water treatment facilities are higher, the numbers within a home are typically at lower levels.

Under the various standards applicable to the manufacture of PB, quality control measures mandated by the standards were used to keep product not meeting the standards from being released for sale.

4. WHAT ABOUT THIS CLASS ACTION ON PB? As a result of the problems with plastic fittings molded from acetal, there were a number of lawsuits filed against the suppliers of the resin or base material from which PB and the plastic fittings were made as well as the manufacturer's of both fittings and tubing. Hoechst Celanese and E.I. DuPont were the suppliers of the acetal resin from which the plastic fittings were molded; for most of the period, Shell Chemical Company was the supplier of the PB resin from which the tubing was extruded. After several years of litigation, national class action settlements were reached. With the goal of bringing finality to the litigation, the *Cox* settlement covered polybutylene plumbing systems with both metal and plastic fittings made from acetal as well as PB yard service lines installed between January 1, 1978 and July 1, 1995. Dwellings covered include all common types of construction: single family (site built); modular, condominium units, duplex, triplex, quadruplex or townhouse, manufactured homes, apartment buildings and commercial or public structures.

Under the class action, subject to certain eligibility requirements, homeowners (including new purchasers of dwellings) with the covered systems receive remedies, to include potential replumbs and/or reimbursement for out of pocket expenses, in the event that the system has an eligible leak (typically behind the wall leaks). There are time limits from date of installation involved, but they can run from 10 to 16 years (or up to 5/1/2009) from date of installation depending upon the dwelling type and system involved. Under the class action settlement, this program would be the property owner's exclusive remedy against installers, wholesalers, manufacturers, and resin suppliers for the covered systems.

The above is merely a general summary of the provisions of the national class action settlement and to obtain specific information concerning the class action remedies and eligibility and details on claims procedures, contact the Consumer Plumbing Recovery Center (CPRC), P.O. Box 869006, Plano, TX 75086-9006, Telephone: 1-800-876-4698.

In addition, under a separate national class action settlement reached by Dupont, *Spencer*, homeowners, even if they are not eligible under *Cox* (described above), may be eligible to recover ten percent of the cost of replacing any PB plumbing system that has acetal insert fittings for a period of fifteen years from the date of original installation. For details on this remedy, contact the Spencer Class Facility, P.O. Box 81448, Atlanta, GA 30366, Telephone: 1-800-490-6997.

5. IS POLYBUTYLENE STILL BEING SOLD? Shell Chemical Company was the only U.S. based producer of polybutylene resin. In January 1996, Shell announced that it would discontinue the sale of PB resin for use in the U.S. pipe market. That announcement was prompted by business economic considerations, to include the ongoing costs of its legal involvement. Shell reiterated at the time its belief that "properly manufactured and installed pipe from our polybutylene pipe grade resins is an excellent plumbing product. We consider ourselves to be victims of the U.S. litigation system." As a result of the Shell announcement, polybutylene manufacturers in the United States have now switched to other flexible piping products, which can be used also for repairs, if necessary, in PB systems. Shell continued to sell PB resin for use in pipe applications in non-U.S. markets.

6. SO IF I PURCHASE A HOME WITH A PB PLUMBING SYSTEM, WHAT DOES THIS ALL MEAN? It means first that you should determine what kind of PB plumbing system the home has. The four common systems are; PB with metal insert fittings; PB with plastic gray fittings made from acetal resin; PB with manifolds (normally metal): and PB with the MANABLOC manifold system. If you have the first two types of systems, and they were installed between January 1, 1978 and July 31, 1995, you as a purchaser may continue to have rights under the national class action settlement, as discussed above. For example, if the home has a PB system with metal insert fittings, you may be eligible to file a claim for up to sixteen (16) years after the date of installation or January 31, 2009, whichever is earlier, in the event that there are leaks in the future. On any systems covered by the national class action settlements, the only future remedy available is through the settlements. Vanguard offers no independent remedy.

In manifold or MANABLOC systems, individual distribution lines run directly from a single location to each of the fixtures or water outlets in the system. One of the reasons for the development of this type of system in the mid 1980's was to eliminate or diminish the number of connections which needed to be made behind the wall since behind the wall leaks are more difficult to detect and more expensive to fix. The MANABLOC system was developed by Vanguard and offered advantages such as more balanced water flow, faster delivery of hot water with accompanying water savings, and the ability to turn off single distribution lines without turning off the water to the entire system.

If you have the last two types of systems or any other system not covered by the national class action settlement, Vanguard Plastics, Inc. at this time continues to process warranty claims, subject to the terms and conditions of those warranties, in the event of failures due to manufacturing defects. Those warranties typically are not limited to original homeowners and normally were for ten years from the date of installation on the Vanguard components in the system (for example, Vanguard polybutylene and Vanguard MANABLOCs). If you have a warranty claim, you will need to contact Vanguard and typically submit any failed product for determination as to whether the failure was due to a manufacturing defect. As with any mechanical system, failures may occur for a variety of reasons (installation, operating the system outside the normal parameters of use, etc.) and the Vanguard warranties, as most manufacturers' warranties on their products, are limited only to manufacturing defects. The warranty remedy normally is payment for repairs and any consequential property damage caused by the failure or leak.

7. WOULDN'T ANOTHER MATERIAL BE BETTER? Every plumbing material has its advantages and disadvantages. Certain parts of Florida and California, for example, have failures in copper systems in less than four years. Older copper systems were joined with solders containing lead. Newspaper reports as to insurance claims after long hard freezes in the "sunbelt" states discuss millions of dollars worth of property damage payments due to frozen burst metal pipes. Builders and plumbers selected PB (or other materials) as appropriate materials in their locales based upon their experience and knowledge of the area. As with the evaluation of most building items (roofs, siding, furnaces, water heaters, windows, etc.), information regarding a specific house and the performance of a specific system is more reliable than generalized rhetoric from newspaper reports.

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