Growing Pains for Potable-Water PEX

by Martin Holladay

The use of PEX (cross-linked polyethylene) tubing has become common in radiant floor heating systems. Although PEX manufacturers have also been promoting the plastic tubing for domestic hot and cold water pipes, the use of PEX for such potable water pipes is still relatively rare. According to the March 2001 issue of the plumbing magazine *Reeves Journal*, 89.6% of surveyed plumbers said that copper is the piping material they most frequently install for new potable water distribution, versus only 7% who usually install PEX. In some areas of the country, the preference for copper is even stronger. "Close to 98 percent of the pipe we sell for potable water is copper," says Kevin Morrison, outside salesperson at F.W. Webb, a St. Johnsbury, Vt., plumbing wholesaler.

Slow to Change

"Plumbers are by nature a conservative lot," says Bill Johansen, department manager for heating and plumbing at Rehau North America, a PEX manufacturer in Leesburg, Va. "When it comes to new materials, their attitude is, 'Not on my watch.'"

But in regions where aggressive water causes copper corrosion, plumbers have needed less convincing to try PEX. "I prefer using PEX, because there are too many problems here with hot soils and aggressive water," says Gerald Riggs, president of AMPAM Plumbing in Mesa, Ariz. "At first, our plumbers don't like using PEX. They all cry and moan and say they want to quit. But after they finish ten houses, they like it fine. Plumbers always complain. I'm old enough to remember when they complained about using copper instead of galvanized."

Cost and profit. PEX tubing costs about the same as copper, although plumbers who install manifolds with home-run piping, as many PEX manufacturers urge, end up using more tubing than they would copper in a typical house. PEX fittings cost considerably more than copper fittings, although fewer fittings may be required, since PEX tubing is available in lengths up to 500 feet and can form bends without fittings.

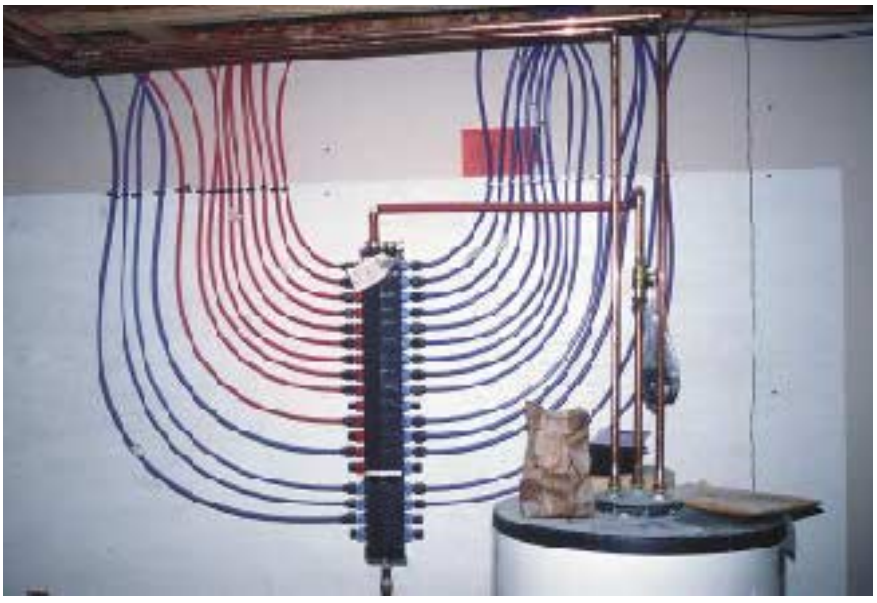
"When it comes to installation time, it's a tossup," says Rob Kennedy, owner of Kennco Plumbing in Santa Clarita, Calif. "I have some guys who can do copper pretty fast. It seems PEX is faster, but then we have to strap it twice as much as copper, and that slows you down." The consensus seems to be that roughing-in a new house with PEX costs about the same as roughing it in with copper. "Saving money is not what we are all about," says Rich McNally, eastern regional sales manager for Watts Heatway, a PEX manufacturer in Springfield, Mo.

PEX Pros and Cons

PEX manufacturers tout several advantages of PEX over copper: simpler and cleaner installation of fittings; elimination of the fire hazard posed by soldering torches; greater resistance to aggressive water and freeze damage; and reduction of the water-hammer effect.

But compared with copper tubing, PEX also has a few disadvantages: It is vulnerable to deterioration when exposed to sunlight for more than 30 to 60 days; it requires more support and tends to sag; and there is no consensus among PEX manufacturers on a single standard for fittings.

Droopy pipes. While horizontal cop-



When using PEX to supply domestic water, most manufacturers recommend connecting each fixture using home-run supply pipes that originate at a central manifold.

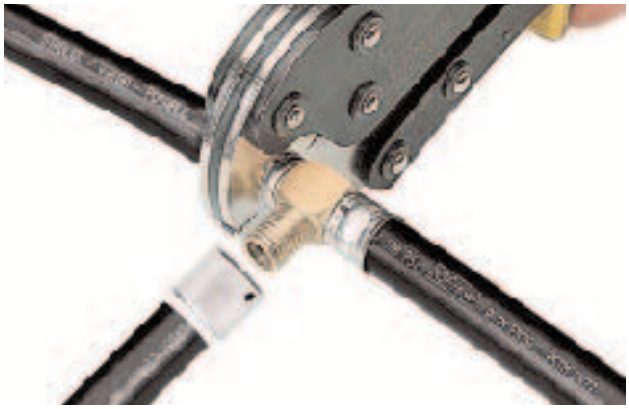
per tubing needs to be supported every 8 feet, most PEX manufacturers recommend hangers at intervals of 30 or 32 inches. Manufacturers emphasize that PEX must also be installed loose enough to permit thermal expansion and contraction. According to Uponor Wirsbo's installation instructions, "Tubing should be allowed to dip between supports."

As an alternative for customers who prefer rigid pipe, PEX manufacturers have developed a new pipe material called PEX-aluminum-PEX, which sandwiches aluminum tubing between inner and outer layers of PEX. Because this PEX-AL-PEX pipe is sold in rigid lengths as well as coils, it can be installed to look as straight as hard copper tubing, even with hangers spaced 8 feet apart. PEX-AL-PEX is available from IPEX, Stadler-Viega, and Vanguard.

No generic fittings. In the U.S. at least five fittings systems are used for PEX potable water tubing: brass insert and copper crimp-ring fittings (used by Qest, Vanguard, and Watts Heatway); press fittings (Stadler-Viega); expander and metal sleeve fittings (Rehau); expander and PEX ring fittings (Uponor Wirsbo); and compression fittings (available from several manufacturers). To confuse the matter further, some manufacturers, including Stadler-Viega, advise using different fitting systems for their hydronic tubing and their potable water tubing. Moreover, most types of PEX-AL-PEX require still another system — fittings with O-rings.

For many plumbers, the diversity of PEX fittings systems is daunting, and some manufacturers agree. "I think that having so many fitting systems hinders us," says Carl Nicolia, general manager for Qest, a PEX manufacturer in Erie, Pa. "It's always easier when you have just one fitting system." In some jurisdictions, the lack of fitting standardization has even slowed code approval for PEX. According to Rehau's Johansen, "Certain code enforcement officials are worried. They say, 'What if there's a leak and the plumber can't get the right fitting in the middle of the night?'"

In response to plumbers' concerns of being held hostage by a single fitting supplier, some PEX manufacturers, especially those promoting crimp fittings, no longer insist that plumbers purchase their fittings from the pipe manufacturer. "We have a lot of plumbers using fittings by others," says McNally from Watts Heatway. "It's not a big deal. We think some of our competitors have fine fittings."



At least five different fittings systems exist for PEX tubing. Stadler-Viega's system (top) uses a special tool to press the PEX tubing between a stainless-steel sleeve and a brass insert fitting, while Uponor Wirsbo's system (bottom) uses an expander tool to change the shape of the PEX tubing before it is inserted onto a brass fitting.

Converging on crimp fittings. The main reason that manufacturers allow plumbers to shop around for crimp fittings is that all crimp fittings must conform to an established standard, ASTM F1807. In fact, there is a growing consensus that the ASTM F1807 crimp fitting will probably prevail as the generic PEX fitting of the future. "Let the end users decide which fittings they prefer," says Dan Chiles, vice president of marketing at Watts Heatway. "It's pretty tough to beat a crimp fitting. They may have more flow restriction than some, and you can't adjust them once they're crimped, but in terms of cost effectiveness and performance they're hard to beat."

Manufacturers of rival fittings systems, of course, are not yet ready to cede the battle to the crimp fitting. They point out that their proprietary fittings also conform to established standards. For example, Uponor Wirsbo's fittings comply with ASTM F1960, while Rehau's fittings comply with ASTM F2080.

Other Stumbling Blocks

In addition to the multitude of proprietary fittings, there are several other hurdles to widespread adoption of PEX for potable water pipes. One is the perception among some homeowners and plumbers that plastic is inferior. "Copper looks like a heavy, solid product," says Chiles. "Unfortunately, PEX looks like a lightweight plastic product, so it has an image problem." Since the widely reported failures of polybutylene plumbing systems in the mid-1990s, many plumbers remain suspicious of all types of plastic pipe, even though PEX is a distinct material that uses a different fitting system from polybutylene.

But PEX's most significant remaining hurdle is the lack of code approval in many jurisdictions. Although it's accepted by all of the major model plumbing codes, several states and cities have not yet adopted the most recent versions of those codes, and local inspectors may balk at the use of PEX.