



Uponor

PLUMBING SYSTEMS
RESIDENCE

CASE STUDY

Homeowners, Frustrated by Pinhole Leaks in Copper Plumbing, Find Relief with PEX

Bob and Patti Jones of Tellico Village, an upscale community located just 31 miles southwest of Knoxville, Tenn., were at their wit's end. Over a one-year period, they had called plumbers out three times to repair the pinhole leaks that had formed in the copper piping throughout several areas in their home.

"We were constantly having the drywall repaired every time a leak occurred," said Patti Jones. "As a result, we were desperate to find a permanent fix to this problem because we knew the repairs would continue otherwise."

It turns out many residents of Tellico Village were experiencing recurring problems with pinhole-size leaks in their copper tubing as well. Marty Myers, president of A-1 Plumbing Co., Inc., of Loudon, Tenn., had heard of more than 500 incidents of pinhole leaks over a four-year period.

The problem became so bad that in 2002, a group of retired professionals formed a six-member committee to investigate the source of the problem and to suggest viable alternatives. They issued a statement strongly recommending the use of either crosslinked polyethylene (PEX) or chlorinated polyvinyl chloride (CPVC) instead of copper for future potable plumbing material.

In fact, Tellico Village was not the only community facing this issue. Pinhole leaks in residential plumbing has become a serious problem in towns and suburbs throughout the United States, from California to New York.

"I cannot speak for the rest of the country, but after three years of research, no one in Tellico Village knows for certain what's causing these pinhole leaks," said Myers. "We suspect that it has something to do with a combination of chlorine and high alkalinity. Whatever the cause, it's been a major problem for these homeowners."

In the case of the Jones family, Myers was called in to investigate a permanent piping solution. After a thorough examination of all the alternatives, including CPVC, Myers chose Uponor's Wirsbo AQUAPEX® tubing.

"We were amazed at how quickly it was installed," said Patti Jones. "Also, we liked the fact that the PEX product was less invasive to our house than copper. Because the material is flexible, Marty was able to route the tubing through small holes he cut throughout the house. Copper would have been much more difficult to route, in addition to being messier."

About 90% of the home was re-piped with PEX. The few areas that could



Bob and Patti Jones were fed up with water damage from pinhole leaks in their copper piping and replaced nearly all the plumbing in their home with Wirsbo AQUAPEX® tubing.

not easily be reached — without requiring serious damage to the drywall — were left alone, despite the fact that pinhole leaks could occur at some point in the future in those areas as well.

Neighbors Robert and Susan Brackenridge, on the other hand, did not want to take any chances. They decided to have Myers' team re-pipe their entire 3,500-square-foot home. By the time Myers arrived, the water from the pinhole leaks caused major damage to one section of their ceiling.

"We were very lucky none of our furniture was damaged this time around," said Robert Brackenridge, "yet we feared we wouldn't be so lucky the next time. And we were convinced there would be a next time. We were looking for a permanent fix, that's why we ended up going with PEX tubing."



Uponor PEX tubing is highly durable and resists corrosion from aggressive water and soil conditions that cause pinhole leaks in copper pipe.



The design information in this case study is provided for illustrative purposes only. The actual requirements of similar projects are dependent on regional climatic conditions, project-specific heat loss, owner expectations, applicable building codes, etc. Please contact your Uponor representative for assistance in designing your specific projects.

Summary of Benefits

Reliable

Unlike copper piping, PEX tubing is corrosion resistant, so it avoids the problem of pinhole leaks. It is also an excellent insulator against aggressive soil and unstable water conditions. And PEX tubing has been used successfully around the world for more than 30 years, first in radiant floor heating systems and later for plumbing systems.

Ease of Installation

Because PEX tubing is flexible, the plumber was able to route the tubing through small holes he cut throughout the house. Copper would have been much more difficult to install, in addition to being messier.

Reduced Labor Costs

Replacing piping with copper would typically take seven days for a house the size of the Jones'. But since PEX tubing is so flexible and can bend around corners, they were able to install the tubing in less than five days at a price comparable to copper.

Increased Peace of Mind

The Jones and Brackenridge families wanted a resolution to the pinhole-leaking problem with copper pipe. After installing Uponor PEX tubing in their plumbing systems, they were able to rest easy knowing they would no longer have to deal with water damage.

Project Data

Size of Structure:	4,200 square feet
Tubing Type:	½" and ¾" Wirsbo AQUAPEX
Feet of Tubing:	250 to 300 feet of ½" tubing 350 to 400 feet of ¾" tubing
Fitting Style:	ProPEX® Fitting System



After a thorough investigation of all the alternatives, Marty Myers, president of A-1 Plumbing Co., chose Uponor's Wirsbo AQUAPEX tubing as the permanent solution for replacing leaky copper pipes in Tellico Village.