



# Uponor

RADIANT HEATING,  
PLUMBING AND  
FIRE SAFETY SYSTEMS

FACT SHEET

## PEX-a Tubing — Why It's Better

Currently, three methods for producing crosslinked polyethylene (PEX) tubing exist.

- Engel or peroxide method (PEX-a)
- Silane method (PEX-b)
- E-beam (electron beam) or radiation method (PEX-c)

All three processes generate tubing that is crosslinked to varying degrees, and are acceptable for potable water distribution applications according to ASTM F876 and F877 standards.

### Engel Method (PEX-a)

Uponor manufactures Engel-method PEX-a tubing. The PEX tubing industry considers this tubing superior because the crosslinking is done during the manufacturing process when polyethylene is in its amorphous state (above the crystalline melting point). Because of this, the degree of crosslinking reaches around 85%, resulting in a more uniform product with no weak links in the molecular chain.

### Silane Method (PEX-b)

PEX-b tubing is crosslinked after the extrusion process by placing the tubing in a hot water bath or steam sauna. The degree of crosslinking for PEX-b is typically around 65 to 70%. This method is not as evenly crosslinked as the PEX-a method, nor does it have the same degree of thermal memory, which allows kinked tubing to be reshaped with the use of a heat gun.

### E-beam Method (PEX-c)

PEX-c uses an electron beam to change the molecular structure of the tubing (i.e., crosslink) after the extrusion process. The PEX-c method requires multiple passes

under the beam to reach a 70 to 75% degree of crosslinking. Side effects of this process are discoloration due to oxidation (from natural white to yellow, unless other pigment is added), and a slightly stiffer product.

### PEX-a Distinctions

The properties in PEX-a tubing make it the most flexible PEX on the market. This allows the tubing the tightest bend radius available — as little as 3½" for ½" tubing. Its flexibility also greatly reduces the instance of kinked tubing.

However, if there is the rare occurrence of kinked tubing, that's okay, because PEX-a tubing has thermal memory. This allows the repair of kinked tubing with a simple shot of heat from a heat gun. The shape memory of PEX-a tubing offers the unique opportunity for fitting connections. Shape memory allows PEX-a tubing to expand and then shrink back to normal size, creating strong, durable and reliable fitting connections.

And finally, PEX-a tubing offers the greatest resistance to crack propagation (how a crack grows)

### Features and Benefits

- Most flexible
- Smallest bend radius
- Least likely to kink
- Thermal memory
- Shape memory
- Highest degree of crosslinking
- Greater resistance to crack propagation

over PEX-b and PEX-c tubing. This means if a crack occurs in PEX-a tubing, it is least likely to grow over time and cause leaks or damage.

### Uponor Tubing

With more than 40 years of service — longer than any other PEX manufacturer in North America — Uponor is the leader in PEX tubing for radiant heating, plumbing and fire safety systems. More than 15 billion feet of Uponor PEX tubing is in service around the world. With that kind of history, you can count on Uponor PEX to offer the highest-quality tubing for all your application needs.

**Uponor, Inc.**  
5925 148th Street West  
Apple Valley, MN 55124 USA  
Tel: 800.321.4739  
Fax: 952.891.2008  
[www.uponorpro.com](http://www.uponorpro.com)

**Uponor Ltd.**  
2000 Argenta Rd., Plaza 1, Ste. 200  
Mississauga, ON L5N 1W1 CANADA  
Tel: 888.994.7726  
Fax: 800.638.9517  
[www.uponorpro.com](http://www.uponorpro.com)

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