

Differences between PEX-a and PEX-b

Contrary to the popular belief A or B are not grades of PEX. These letters are only used to identify the manufacturing process and have nothing to do with quality or performance ratings of the end product, except as explained further below.

PEX- A Tubing is produced using a peroxide method. During the manufacturing process, free radicals are created when high-density polyethylene also known as (HDPE) polymer is melted and cross-links between molecules occur at temperatures that exceed the decomposition temperature of the polymer.

Therefore the cross-linking structure is a surface cross-linking, meaning that the molecular chains are formed on the same layer of macro molecule and few chains are formed between layers.

Due to lower surface hardness, the stress will be concentrated in the gap between layers, which is a weakness point during the long-term use of the pipe.

As a result:

PEX- A has a lower density

Lower bursting pressure and lower burst hoop stress than PEX-B

Possible residual or leaching chemicals from manufacturing process

Easy scratchable surface due to lower surface hardness

Kinks can be repaired with a heat gun

No coil memory

Variation in wall thickness

Lower bending radius

Highest cross degree of cross-linking

Highest flexibility (softness)

PEX A has a low oxidation induction time (OIT) and a bad thermal oxidative aging property and more susceptible to crack formation.

PEX-B Tubing is produced using a silane method or “Moisture Cure” method of cross-linking, where links between the molecules of the high-density polyethylene (HDPE) polymer are formed after the extrusion process using a catalyst and by exposing PEX tubing to water (steam bath).

This cross-linking is a three-dimensional cross-linking structure and the molecular chain is not hierarchical.

As a result:

PEX-B

Has a lower cross-linking ratio than PEX-A

Lowest dimensional tolerances

Highest chlorine and oxidative resistance

Highest bursting pressure

Less flexible than PEX-A

Noticeable coil memory

Kinks can only be repaired by joining using coupling

PEX-A is the most flexible of all PEX tubing types, one important downside to this type is high rate of chemical leaching, which is much higher than PEX-B.

PEX-B is a clear winner in terms of price vs. PEX-A.

PEX-B also has a higher bursting pressure than PEX-A and a similar or better resistance to oxidation which is a very important factor for plumbing installations.

The major downside of PEX-B is its’ stiffness and coil memory (tendency to return to the original shape of coil). In conclusion **PEX-B** offers a more attractive combination of better health safety and higher durability.