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## Pe-X pipes Technical Data Sheet

### Pe-Xa pipe with Evoh barrier

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## PE-X PIPE

## PE-Xa pipes with EVOH barrier



### DESCRIPTION

The Pe-Xa pipe (polyethylene cross-linked with the peroxide method) of the TB00.30 series can be used for the distribution of domestic hot and cold water, radiator heating systems, radiant panel heating and cooling systems, air systems compressed air, chemical or petroleum-based transport systems.









TB00.30 pipes are extruded with an external anti-oxygen barrier in EVOH, in accordance with DIN 4726, thanks to which the modest amount of oxygen that permeates from the outside towards the inside of the pipe becomes completely negligible.

The pipes used for drinking water do not need the oxygen barrier.

### ADVANTAGES

- High flexibility: easy to install (especially in radiant panel systems)
- Resistant to -100 °C and for short periods to + 110 °C
- Thermal memory: if the pipe has been bent it can return to its original shape when heated (> 133 °C)
- Chemical resistance: resistant to cracking phenomena and multiple chemical agents
- Resistant to crack propagation
- Resistant to abrasion
- Low pressure drop and no risk of sediment deposition
- Excellent electrical insulation properties

## FIELDS OF APPLICATION

APPLICATIONS		T. of the system
	drinking water	-20°C/+95°C
	hot sanitary water	-20°C/+95°C
	cooling	-20°C/+95°C
	conditioning	-20°C/+95°C
	radiators	-20°C/+95°C
	floor heating	-20°C/+95°C
	irrigation	-20°C/+95°C
	compressed air	-20°C/+95°C

## COMPOSITION



### LAYER COMPOSITION

Inner layer in Pe-Xa, cross-linked polyethylene

Glue

EVOH barrier

## CROSS-LINKED POLYETHYLENE (PE-X)

Polyethylene is a thermoplastic polymeric material composed of numerous long molecules that, even at moderately high temperatures (still below the melting point), begins to have a significant degree of fluidity. With the crosslinking process, the polyethylene molecules bind together to form a more complex three-dimensional structure: the chemical crosslinking reaction transforms the product from thermoplastic to thermosetting. The material undergoes a structural modification that improves its characteristics such as abrasion, chemical resistance and mechanical resistance over time. The performance of the material is significantly increased.

There are different technologies to obtain the crosslinking of polyethylene.

In the case of Pe-Xa, the inner layer of the pipe is cross-linked with the peroxide method. The extrusion takes place at temperatures below 160-170 °C to prevent the peroxides mixed with polyethylene from prematurely starting cross-linking which occurs later by passing the extruded tube in a vertical infrared oven with temperatures of 220-230 °C.

The peroxide cross-linking technology process thus offers high mechanical performance of the Pe-Xa pipe. The quality of the pipe does not depend on the crosslinking method, but on its ability to pass the physical and mechanical tests defined by the regulations.

## EVOH BARRIER

All heating and cooling systems are subject to the entry of oxygen through threaded fittings, boiler, pumps and gas-permeable materials.

Oxygen can enter the systems in such quantities that, in combination with other factors, it can cause corrosive effects.

The oxygen penetration barrier used in General Fittings Pe-Xa pipes reduces the amount of oxygen below the limits required by DIN 4726 (0.32 mg O<sub>2</sub> / m<sup>2</sup> - from 40 °C or 2 / m<sup>2</sup> from 80 °C)

## TECHNICAL DATA

Properties	Value	Test method
Fields of application	Class 1,2,3,5	EN ISO 15875
Degree of crosslinking	≥70%	EN ISO 10147
Density	0,935 g/cm <sup>3</sup>	ISO 1183, method D
Coefficient of thermal expansion	1,8 · 10 <sup>-4</sup> K <sup>-1</sup>	DIN 52328
Thermal conductivity	<0,4 W/m K	DIN 52612
Elongation to break	>400%	ISO 6259
Tensile strength	25 MPa	ISO 6259
Roughness factor	0.0005	

## TERMS OF SERVICE

Pe-Xa pipes for drinking water are tested and approved to withstand a pressure of 10 bar at 90 °C. Pe-Xa pipes for underfloor heating systems can withstand a pressure of 6 bar at 70 °C with peaks at 95 °C for over 50 years.

Below are the behavioral requirements for piping systems according to the UNI 15875 standard.

Class	TD (°C)	T at TD (YEARS)	T max (°C)	T at T max (YEARS)	T mal (°C)	Time at T mal (hours)	Typical Field of application
Cold water	20	50					Sanitary cold water
1a	60	49	80	1	95	100	sanitary hot water (60°C)
2a	70	49	80	1	95	100	Sanitary hot water (70°C)
4b	20	2.5	70	2.5	100		underfloor heating and low temperature radiators
4b	40	20	70	2.5	100		underfloor heating and low temperature radiators
4b	60	25	70	2.5	100		underfloor heating and low temperature radiators
5b	20	14	90	1	100		heating with high temperature radiators
5b	60	25	90	1	100		heating with high temperature radiators
5b	80	10	90	1	100		heating with high temperature radiators

## CAUTIONS

Some prescriptions are necessary to guarantee the durability and functionality of Pe-X pipes:

- 1 )Store the pipes in the appropriate packaging and in covered and dry places, avoiding their direct exposure to sunrays
  - 2) Avoid that the pipes to get in contact with sharp objects and take care during transport and installation
  - 3) Avoid the formation of ice inside the pipes and packaging, because the expansion due to the change of state could cause them to break.
  - 4) Avoid that the pipes come into contact in any way with open flames or other heat sources, which could cause even partial melting.
- Avoid contact with chemical solvents or paints that can damage the pipes.



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