1 PRODUCT DESCRIPTION

- The BARBI PERT-I EVOH (Anti-oxygen barrier) pipes are manufactured with PERT-I according to the norm UNE-EN_ISO 22391-2.
- The BARBI PERT-I EVOH pipes are composed of a latest generation ethylene and octane copolymer that provides long-term hydrostatic resistance.
- The EVOH anti-oxygen barrier is a thin wall of ethyl-vinyl-alcohol copolymer that avoids the oxygen diffusion through the pipe, eliminating the problem of oxygen addition to the water flow and the corrosion of metallic elements that it may cause, extending the lifetime of the entire installation
- The BARBI PERT-I EVOH are specially recommended for low-temperature underfloor heating installations.

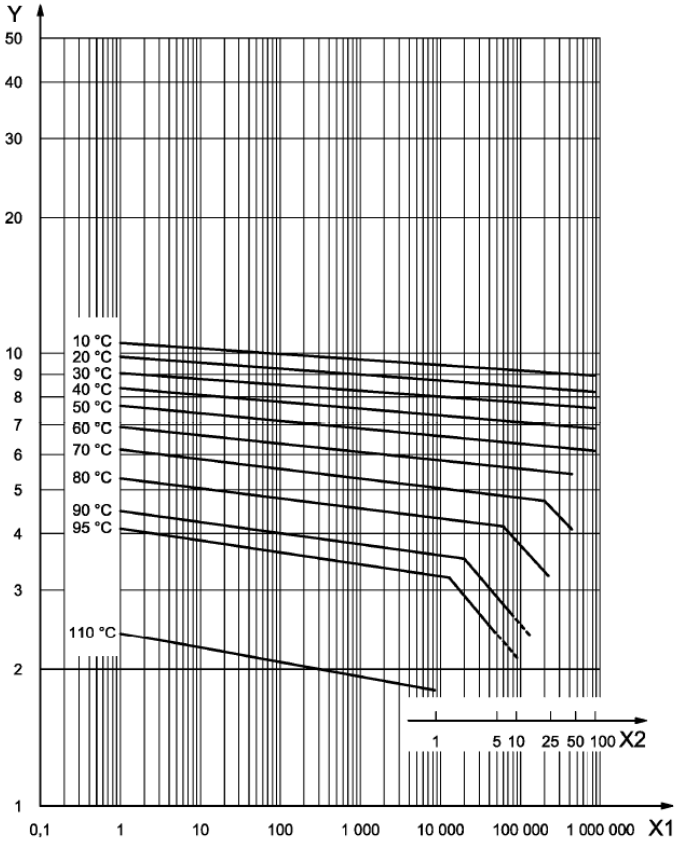
2 TEHNICAL SPECIFICATION

- Resistance to corrosion. BARBI pipes can't be attacked by most chemical substances (acid, base, anti-freeze, etc.) and are resistant to every kind of corrosion.
- Low roughness coefficient, what reduces the pressure drop, obtaining cost savings in fluid pumping.
- Low heat conductivity coefficient. Their low heat conductivity coefficient allows saving energy through the reduction of heat loss.
- High flexibility, what makes this kind of pipes especially suitable for underfloor heating, where the pipes have to be frequently bended.

Property	Rate
Density	0'941 g/cm^3
Linear dilatation	0'19 m/m ºC
Max. Work Temperature	95ºC – 203ºF – 368'15ºK
Max. Temperature (Tmal)	110ºC – 230ºF – 383'15ºK
Max. Pressure (95ºC-203ºK-368'15ºK)	4 bar
Thermal conductivity	0'40W/m K
Bend radius	5 x DN

3 OPERATING CONDITIONS

The expected resistance of the PERT-I pipes is shown in the next table:



X1: Time until fracture expressed in hours
X2: Time until fracture expressed in years
Y: Tangential stress expressed in mega Pascals

4 DIMENSIONS AND PRESENTATION

There is a relationship between the maximum design pressure of the BARBI pipe for a certain application class and the pipe series. The PERT-I EVOH pipe has the following dimensional characteristics:

Outer diameter	Series	Wall thickness	Inner diameter
16	4	1.8	12.4
17	3.8	2.0	13.0
20	5	1.9	16.2

Design Pressure				
Diameter	Class 1	Class 2	Class 4	Class 5
16×1.8	8	6	8	6
16×2.0	8	6	8	6
17×2.0	8	6	8	6
20×1.9	6	4	6	4

Product Presentation	
Dimension	Roll (m)
16×1.8	240m/500m
16×2.0	240m/500m
17×2.0	500m
20×1'9	400m

5 APPLICATION

The main application of the BARBI PERT-I pipe is underfloor heating (Class 4), due to the excellent properties of the anti-oxygen barrier. Additionally, they are applicable to Classes 1, 2 and 5.

The application classes, according to the norm UNE-EN-ISO 22391 are shown in the following table:

Class	DT - Design Temperature (ºC)	Time at DT (years)	Tmax (ºC)	Time at Tmax (years)	Tmal (ºC)	Time at Tmal (hours)	Application
1	60	49	80	1	95	100	Hot water supply (60ºC)
2	70	49	80	1	95	100	Hot water supply (70ºC)
4	20 Followed by 40 Followed by 60	2,5 Followed by 20 Followed by 25	70	2,5	100	100	Underfloor heating and low temperature heaters
5	20 Followed by 60 Followed by 80	14 Followed by 25 Followed by 10	90	1	100	100	High temperature heaters

Note:
Blansol recommends the use of the PERT-I pipes exclusively for low temperature underfloor heating applications.

6 LABELLING

All pipes are labelled with permanent ink on every meter, showing the following message:

- BARBI – Commercial Brand
- AENOR 001/506 – Contract number
- Suelo radiante – underfloor heating
- UNE-EN-ISO 22.391 - Reference norm for pipes production and certification in Europe
- PERT-I
- Diameter x thickness (mm)
- (CON BARRERA ANTIOXÍGENO) - (with oxygen barrier)
- Application class and design pressure
- Made in Spain - pipe manufactured in Spain
- Lot (manufacturing date)
- Length

7 ADVANTAGES OF THE BARBI PERT-I EVOH

- Simplicity of installation. No welding or machining operations are necessary. The associated fittings provide simplicity and savings to the system.
- Flexibility. The PERT-I pipes show great flexibility. The can be cold bended easily without special tools, what saves fittings and installation time.
- Anti-oxygen barrier. Due to the external layer of EVOH, the PERT-I EVOH pipes avoid both the corrosion of the metal components of the installation and the formation of mud that can clog the lock shield valves in underfloor heating installations.

- Resistance to frost. BARBI pipes don't burst for water freezing inside. The pipe, due to its flexibility, would simply expand.
- Resistance to high pressure. BARBI pipes, due to the manufacturing process, are more resistant to high pressure, exceeding by more than 35% the ones manufactured using other crosslinking methods
- Low heat conductivity coefficient. Their low heat conductivity coefficient (0'40W/mºC) allows saving energy through the reduction of heat loss as well as the frequent water condensation on copper pipes.
- Resistance to corrosion. BARBI pipes can't be attacked by most chemical substances (acid, base, anti-freeze, etc.) and are resistant to every kind of corrosion.
- Higher flow. Due to their smooth Surface, BARBI pipes show smaller pressure loss than metal ones. With them, it's achieved higher flow with the same inner diameter.
- Lack of lime and other materials deposits. Also due to their extremely smooth surface, lime deposits, so frequent in metal pipes, are avoided. BARBI pipes ensure that the original flow will be upheld forever.
- No electricity conductive. BARBI pipes don't generate any kind of galvanic corrosion.
- Lightness. BARBI pipes are 4 times lighter than copper pipes in equivalent diameters, what makes them easy to handle and transport.
- Suitable for drinking water. BARBI pipes don´t modify the organoleptic properties of water.
- They don´t convey noise. Due to they are manufactured with polyethylene and its flexibility, it is achieved low transmission of acoustic waves, even at high water flow speed (up to 2'5 m/sg), compared with metal pipes.
- Thermal memory effect. BARBI pipes regain their original shape when it's applied hot air, what allows to correct installation mistakes and to carry out repairs more easily.
- Narrow bending radius. Their largest bending radius is 10 times the external diameter when bent manually and 5 times using the outer foil pipes BARBI.

8 REGULATIONS AND CERTIFICATION

The BARBI PERT-I EVOH is certified by AENOR according to the norm UNE-EN-ISO 22391

The BARBI PERT-I EVOH is a part of the certificate of underfloor heating, issued by AENOR, according to the norm UNE-EN-1264

9 RECOMMENDATIONS

Keep the pipe in its original package. Avoid the exposure to direct sun, what may damage the product.

Avoid contact with hard and cutting-edged materials that may damage the product during its transport and installation.

Cut the pipe with suitable scissors making sure that the cut is clean.

Never use a direct flame to bend the pipe.

Use plastic material to fix the pipe (clips, etc.). Using metal materials (such as wire) may damage the product.

After installing the pipe, it is mandatory to carry out a pressure test, as it is indicated in the norm UNE-ENV 12108.