

R996T-5

5-layer PEX-b pipes with intermediate anti-oxygen barrier



Radiant Systems Energy Management

Datasheet
1130EN 02/2024

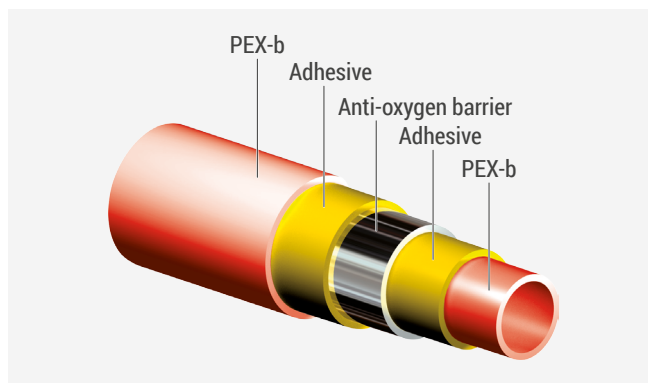


R996T-5 pipes in PEX-b (polyethylene crosslinked with the silane method - crosslinking degree > 65 %) can be used for the water distribution into heating and/or cooling systems. R996T-5 pipes are extruded, in compliance with EN ISO 21003 Standards, with an intermediate (within the thickness of the pipe) anti-oxygen barrier in EVOH, to avoid any type of damage on site and therefore the modest oxygen quantity that permeates from outside towards the inside of the pipe, becomes quite negligible.

➤ Versions and product codes

Pipe rolls

PRODUCT CODE	SIZE [mm]	PACK [m]	PIPE COLOR
R996TY527	16 x 2	100 m	Red
R996TY518		200 m	
R996TY519		240 m	
R996TY564		600 m	
R996TY554	17 x 2	100 m	Red
R996TY533		240 m	
R996TY552		600 m	
R996TY549		100 m	
R996TY520	18 x 2	240 m	Red
R996TY550		500 m	
R996TY521	20 x 2	100 m	Red
R996TY522		240 m	
R996TY553		400 m	



Technical data

- Application classes (EN ISO 21003-1): 4, 5
- Not suitable for the transport of domestic water
- Density at 23 °C: > 0,942 g/cm³
- Thermal expansion coefficient: (1,9 x 10⁻⁴)/K
- Thermal conductivity: 0,46 W/(m K)
- Breaking load: > 20 MPa
- Breaking elongation: 350 %
- Elasticity module at 23 °C: 670 MPa
- Permeability to oxygen (lO₂): according to ISO 17455 and DIN4726

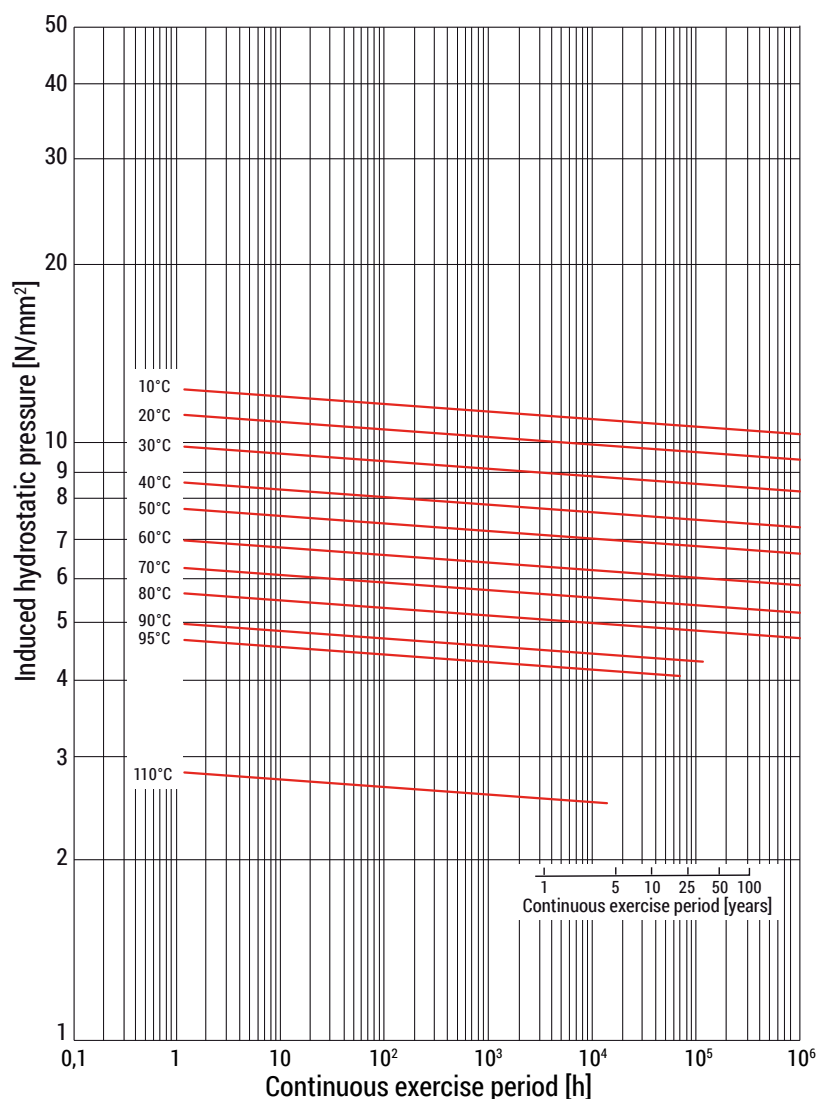
NOTE. R996T-5 pipes in PEX-b comply with EN ISO 21003 Standard, which defines the physical and dimensional features, and are verified following EN ISO 21003 Standard, that allow evaluation of the resistance to the combined pressure and temperature stress, with reference to the relevant regression curves.

For each application classes, maximum usage pressure can be evinced from the table below:

SIZE	CLASS 4	CLASS 5
16 x 2,0	10 bar	8 bar
17 x 2,0	10 bar	8 bar
18 x 2,0	10 bar	8 bar
20 x 2,0	8 bar	6 bar

- All pipes are suitable for carrying water for a period of 50 years at a temperature of 20 °C and an operating pressure of 10 bar.
- All heating systems shall use as transfer fluid only water or treated water.

Resistance to combined pressure and temperature stress with respect to regression curves



Series of pipes (S)

$$S = \frac{d - s}{2 \cdot s}$$

Standard Dimension Ratio (SDR)

$$SDR = 2 \cdot S + 1 = \frac{d}{s}$$

s: pipe nominal thickness
d: pipe nominal diameter

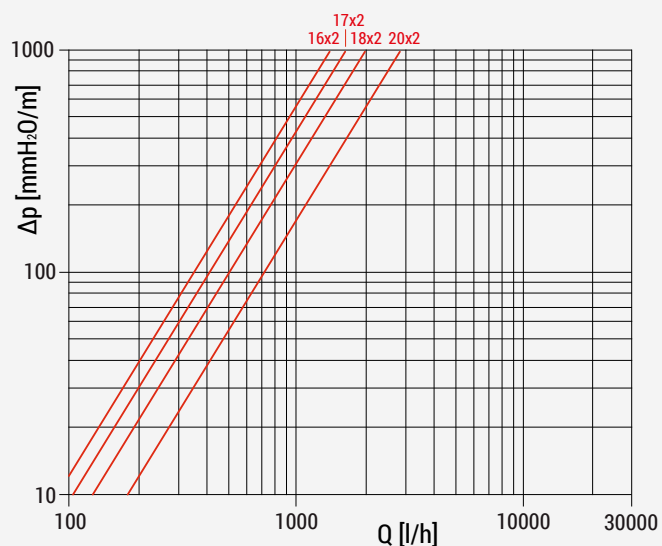
Regression curve

$$a = p \cdot \frac{d - s}{2 \cdot s}$$

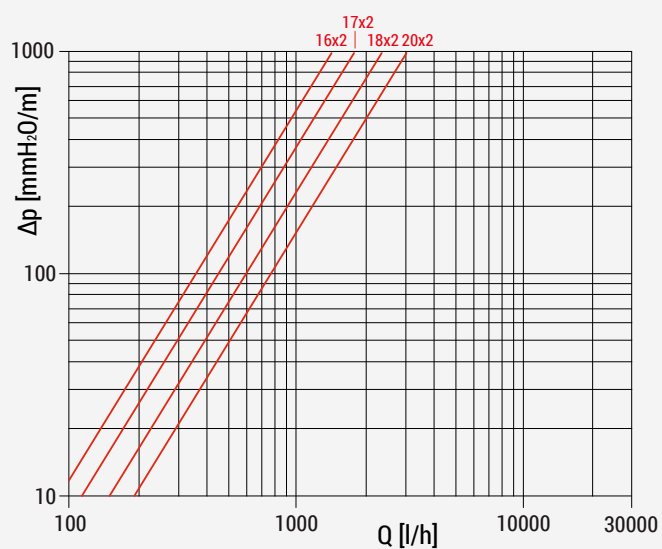
a: hydrostatic stress
p: induced hydrostatic pressure

➤ Loss of pressure

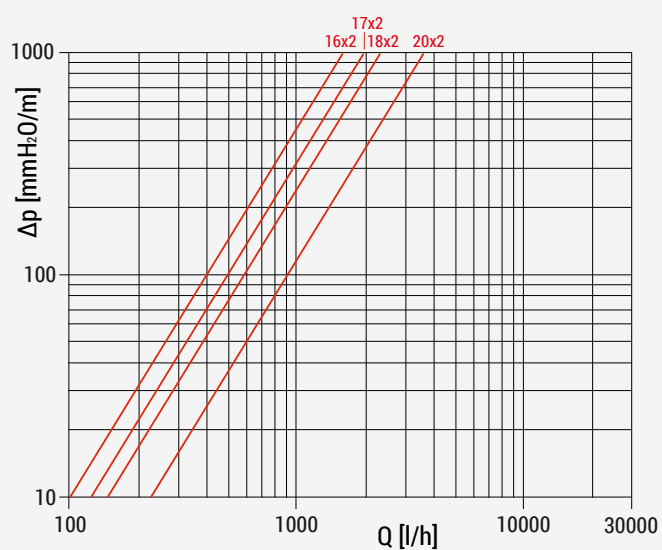
TEMPERATURE = 10 °C



TEMPERATURE = 50 °C



TEMPERATURE = 80 °C



► Pipe laying

For the laying operations of PEX-b pipes, it is necessary to follow some simple practical rules concerning the choice of the fittings, the respect of the minimum radius of curvature and the protection from the sun rays and from possible fortuitous damages.

- The connection to distribution manifolds and to the system terminals shall be made by means of Giacomini's adaptors for synthetic pipes.
- In order to make a correct connection, it is essential to cut off the pipes with tools that can make a clean cut without deburring and perpendicular to its axis.
- During the pipe laying operations, it is necessary making curvatures with a minimum radius equal to five times the external diameter of the pipe itself. After the pipe laying, it is opportune making a pressure test of the system, in order to underline immediately possible fluid losses.
- In case of radiant panel systems, the laying of the pipe covering shall occur with care, by paying attention not to scratch the pipes with spatulas or crush them in the passages with wheel barrow.
- The pipes must not remain exposed for long time to the sun radiations or to fluorescent lamps. Keep the coils that are not used in the suitable boxes, to avoid that the ultraviolet rays will alter the chemical and physical features.
- In case of radiant panel systems, it is good to lay over the pipes a foundation of 3 cm at least, to avoid cracks due to thermal expansion.
- While crossing possible expansion joints, it is important to protect the pipe with a protecting covering in order to avoid excessive mechanical stress.

► Precautions

The use of R996T-5 pipes requires the observance of some prescriptions, needed to guarantee the life time and the functional character.

- Store the pipes in the appropriate packaging, by avoiding their direct exposition to sun rays, and in covered and dry places to prevent damages to the boxes caused by the humidity.
- Prevent the pipes from coming into contact with sharp bodies able to scratch and trigger carving phenomenon – pay particular care during the installation and transport phases.
- Prevent icing inside the pipes and in the packaging, because the expansions due to the state change could cause cracking.
- Prevent the pipe from coming into contact with open flames or other heat sources, that could provoke melting, even partial.
- If a fixing to electrically welded networks is needed, use plastic material instead of metallic bands, to avoid damages to the pipes.
- Prevent the contact with chemical solvents or paints that can damage the pipes.

► Warranty

The guarantee is not valid in the following cases:

- 1) if the working conditions are different from those prescribed;
- 2) if the pipes are used to distribute fluids, that are not compatible with the material;
- 3) if the installation instructions are not scrupulously followed
- 4) if at the installation time, during the laying phase or at the pressure testing of the system, the pipe shows visually perceivable defects caused by accidental factors;
- 5) if the pipe is installed by using components not produced by Giacomini S.p.A., or in any case different from the permitted ones.

➤ Classification of working conditions (EN ISO 21003-1)

The performance specifications for pipe-based systems complying with EN ISO 21003-1 are specified for a project with a 50-year operational life.

RANGE OF APPLICATION	WORKING TEMPERATURE T_D [°C]	DURATION OF T_D [years]	MAX WORKING TEMPERATURE T_{MAX} [°C]	DURATION OF T_{MAX} [years]	FAILURE TEMPERATURE T_{MAL} [°C]	DURATION OF T_{MAL} [h]
CLASS 4 Floor heating and low-temperature systems	20	2,5	70	2,5	100	100
	+	+				
	40	20				
	+	+				
CLASS 5 Radiator heating and high-temperature systems	60	25	90	1	100	100
	+	+				
	60	25				
	+	+				
	80	10				

- Working temperature (T_D): working temperature provided for the range of application, expressed in °C.
- Max. working temperature (T_{MAX}): the working temperature highest value, allowed only for a short period of time.
- Failure temperature (T_{MAL}): the highest temperature possible when control systems fail (the time allowed for this value is 100 h over 50 years of uninterrupted operation).

➤ Product specifications

R996T-5

PEX-b pipes with EVOH intermediate anti-oxygen barrier. Application classes (EN 21003): 4, 5 (radiant floor heating and low temperature systems and radiator heating and high-temperature systems). Not suitable for the transport of domestic water. High flexibility for a quick and easy installation and a consistent reduction of tensions, even after the completion of the laying operations. Red pipe colour. Density at 23 °C: > 0,942 g/cm³. Thermal conductivity: 0,46 W/m K. Thermal expansion coefficient: (1,9 x 10⁻⁴)/K. Breaking load: > 20 MPa. Breaking elongation: 350 %. Permeability to oxygen I(O₂): according to ISO 17455 and DIN4726

⚠ Safety Warning. Installation, commissioning and periodical maintenance of the product must be carried out by qualified operators in compliance with national regulations and/or local standards. A qualified installer must take all required measures, including use of Individual Protection Devices, for his and others' safety. An improper installation may damage people, animals or objects towards which Giacomini S.p.A. may not be held liable.

♻ Package Disposal. Carton boxes: paper recycling. Plastic bags and bubble wrap: plastic recycling.

ℹ Additional information. For more information, go to giacomini.com or contact our technical assistance service. This document provides only general indications. Giacomini S.p.A. may change at any time, without notice and for technical or commercial reasons, the items included herewith. The information included in this technical sheet do not exempt the user from strictly complying with the rules and good practice standards in force.

♻ Product Disposal. Do not dispose of product as municipal waste at the end of its life cycle. Dispose of product at a special recycling platform managed by local authorities or at retailers providing this type of service.