GIACOTHERM®

Cross link polyethylene pipe
for heating and cooling systems

GIACOMINI

Complete systems for heating, cooling and sanitary distribution

GIACOMINI s.p.a.•28017 S.Maurizio d'Opaglio (Novara)•Tel. 0322-923111•Fax 0322-96256•Telex 200035•www.giacomini.com

Cross link polyethyilene pipe

Use

The high density GIACOTHERM pipe allows pressurized hot and cold water to be distributed for both heating and cooling systems by radiant panels, with Giacostar system using hydraulic outlets, or with cast iron, aluminium and steel radiators .

Distribution of water with PE-X pipe is a modern tecnique with many advantages compared to traditional distribution using iron or copper pipe.
Using this material provides a number of benefits such as easy and quick installation with obvious money saving, lack of soldering or mechanical connections which, over a period of time may cause leakages, and high durability of the material, which is not subject to scale and chemical phenomenons.

Technical features

Giacotherm pipe with PN 10 rating, is produced to UNI 9338 and DIN 16893 Standards, and technically verified as prescribed by the UNI 9349, DIN 16892 Standards and by the W531.
The process of chemical cross-linking by electronic bombardment, with its mechanical, chemical and thermal features, ensures high quality and reliability.
High quality production guarantees long life and reliable under extreme conditions.
GIACOTHERM pipe is also available with anti-oxygen barrier,ensuring the modest quantity of oxygen permeating from the outside towards the inside of the pipe is negligible, eliminating corrosion risks of the iron components of the system.

Cross link polyethylene pipe

Commercial features

GIACOTHERM pipe is available in rolls of 100 mt. when used with outer sleeve, and rolls of 100 mt. and 240 mt. when used without sleeve.
Pipe rolls are contained in cartons for ease of stocking and to ensure protection from sun rays and possible damage during transportation

Article	diameter of pipe mm	diameter of sleeve black color	length
R995	16 x 2,2 mm	30 x 25 mm	50 m
	18 x 2 mm	30 x 25 mm	50 m
R996	20 x 2 mm with anti-oxygen barrier	-	100 m
	20 x 2 mm	-	240 m
	20 x 2 mm	-	100 m
	18 x 2 mm with anti-oxygen barrier	-	240 m
	18 x 2 mm	-	240 m
	18 x 2 mm	-	100 m

Working conditions

Cross link GIACOTHERM pipe is included in the regression curve established by the UNI Standard 9338.
Based on those curves, the following table is printed, stating the years of durability following temperature and working pressure.
The data refers to continuous working conditions, for lower pressure and temperature, durability increases.

Working temperature	Max. working pressure	Durability in continuous working conditions
up to 60°C	10 bar	50 years
from 60°C to 80°C	6 bar	50 years
from 80°C to 95°C	6 bar	10 years

Cross link polyethyilene pipe

Technical data

Range	-100°C +100°C	Elasticity at 23°C	1070 N/mm²
Max working temperature	95°C	Resilience	no break
Softening temperature	130°C	Coefficient of linear expansion at 20°C	1.4 E-4 1/K
Density	0.946 g/cm³	at 100°C	2.0 E-4 1/K
Cross link degree	> 65%	Thermal conductivity of pipe	0.35 w/mK
Tracting resistance at 23°C	20-25 N/mm²	Linear dispersion of pipe with sleeve in air	0.22 w/mK
Break lengthening at 23°C	300-500 %		

Guarantee

Before being launched into the market, the PE-X pipe produced by Giacomini is subjected to continuous tests in order to guarantee high quality.
The production cycle checks the chemical-physical features, dimensional and hydraulic controls, identifying all possible defects, which could, over a period of time create malfunctioning or fluid leakages.
GIACOTHERM pipes are covered by a company guarantee up to 2.000.000.000 lire for perspective damages caused to persons or things if it is established as pipe defects.
The guarantee is not applicable under the following conditions:

1. If working conditions are different than those prescribed
2. If the pipe is used in systems where the fluid is not compatible with the material
3. If the installation instructions are not strictly followed
4. If the pipe presents defects when installed, due to incidental factors easily recognizable at the time of installation or when the system is submitted to pressure test
5. If the pipe is installed with components which are not manufactured by Giacomini, or different from those recommended.

Cross link polyethylene pipe

GIACOTHERM pipe ensures that heating and cooling systems, using radiant panels and radiators, can be installed easily and efficiently.

When installing it is necessary to follow the simple instructions referring to the connections of the pipes with the correct adaptors, bending the pipes, protection from sun rays, and possible damage to the pipe or the protective sleeve by cracking.

Connection to the manifolds and elbows must be made using the Giacomini R179 adaptors or the correct size to suit the pipe.

To carry out the correct connection it is important to ensure that the pipe is cut precisely and perpendicularly to its axis using Giacomini cutting tool R990.

Position the pipe in a way to have a radius 5 times more than the external diameter of the pipe when set at 90°, and 5,5 times when the bend is set at 180°.

When making a bend of less than 90°, it is necessary to use a support bracket to avoid strangling the pipe, or alternatively heat the pipe using the correct tool.

Tight bends will cause the pipe to flatten and lead to a reduction of the flow, without altering the mechanical features of the pipe.
The initial conditions can be restored by applying heat, using the correct tool.

Installation

Cross link polyethyilene pipe

Installation

When heating the pipe in preparation for bending the temperature must not exceed 120°C, and we recommend the use of an electric dryer, or immerse in hot water.

Do not heat the pipe with a naked flame, or any other heating source having high temperature, as it will cause the pipe to melt.

Following installation of the pipe, it is recommended that the system be pressure tested to ensure there are no leaks.

Following the pressure test, for pipes with sleeve, they must be protected by covering them with concrete, to avoid cracking the pipe and movement of the installation.

When installing a system with radiant panels, the concrete screed must be applied carefully in order to avoid flattening or cutting the pipe.

Ensure the pipe remains in the cartons, avoid exposure to ultra violet rays, etc. as this is capable of altering the chemical-physical features of the pipe.

When the pipe is installed without the protective sleeving, it must be covered by a screed of at least 3 cm to avoid fissures due to expansion of the pipe.

The thermal expansion of the pipe with sleeve, can be counterbalanced by ensuring that the connection pipe has gentle curves and does not run in straight lines, thus allowing expansion and contraction to take place.

Cross link polyethylene pipe

GIACOTHERM as with all cross link pipes, requires certain precautions in order to guarantee durability and operation.

Main rules are:

1 Keep the pipe in its packing avoiding direct exposure to the sun.

2 Store the pipe in protected and dry places, to avoid humidity damaging the packaging.

3 Avoid the pipe coming into contact with sharp objects, paying particular attention during transportation and installation.

4 Always use the correct cutting tool Giacomini R990 and cut perpendicular to the pipe axis.

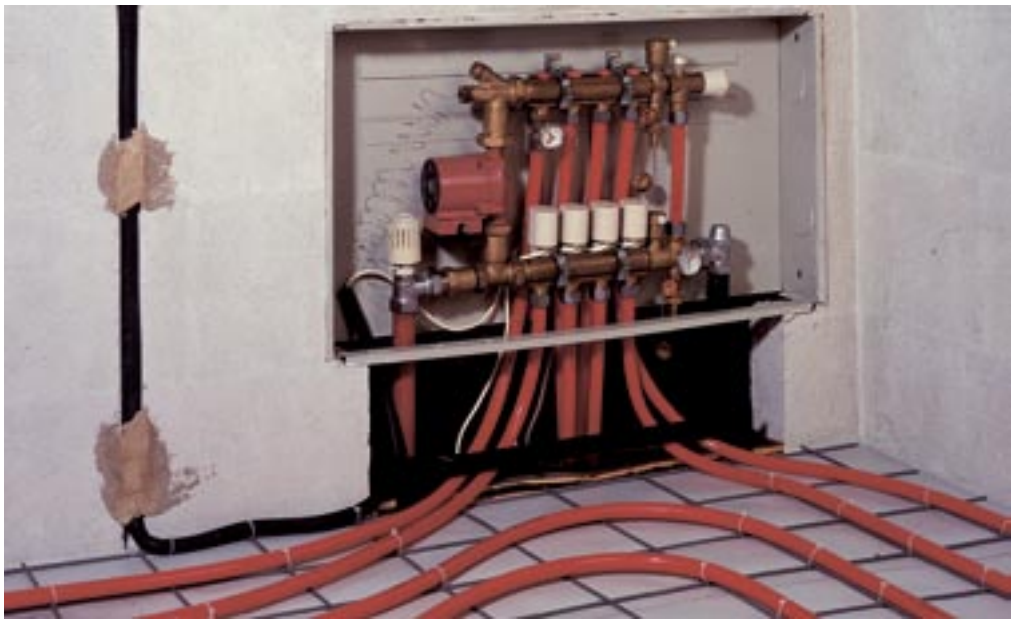
5 Protect the pipe from freezing, as the expansion caused by a phase change could damage the pipe or break it.

6 Do not allow the pipe to come into contact with naked flames.

7 Ensure plastic retaining clips are used to secure the pipe to the base framework. Do not use metal clips.

8 Avoid the contact of the pipe with products containing solvents.

Cautions



Cross link polyethyilene pipe

In the diagrams you will find the GIACOTHERM loss of pressure graphs for the different diameters.

1 = pipe 20 x 2
2 = pipe 18 x 2
3 = pipe 16 x 2,2

Loss of pressure