



hot**water**solutions

[www.heliroma.pt](http://www.heliroma.pt)

**HR**  
HELIROMA®



hot**water**solutions

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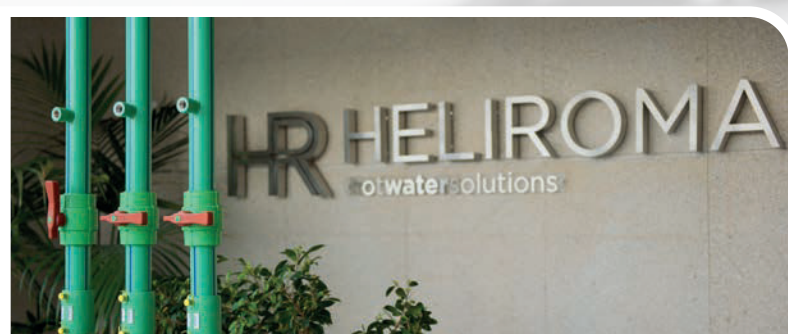
PIPES  
FITTINGS

### TECHNICAL INFORMATION

HANDLING AND APPLICATION

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PIPES  
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FOUNDED IN 1996,  
HELIROMA PLÁSTICOS  
S.A. IS LOCATED IN THE  
INDUSTRIAL AREA OF  
ALBERGARIA-A-VELHA,  
PORTUGAL.

AT THE BEGINNING OF ITS ACTIVITY, THE COMPANY FOCUSED ON THE PRODUCTION OF HIGH AND LOW DENSITY POLYETHYLENE PIPES FOR THE CIVIL CONSTRUCTION AND AGRICULTURAL MARKETS.

With the evolution of the market, increase of competition and the company's solid position on the market, **HELIROMA** expanded its range of products, providing the market with more solutions and focusing on a market segment with higher demands for quality and avant-garde technologies; the company also invested in the production of pipe systems for hot/cold water and heating. This change encouraged the increase in highly qualified human resources and the outcome of product quality, making the company a reference in several countries of the European Union, especially in the Iberian Peninsula, as manufacturing of PP-R pipes and PP-R fittings.

Today, **HELIROMA** is the leading Iberian manufacturer and the company which offers the widest range of products and the largest pipe diameter and fittings in PP-R (currently Ø400mm).

Currently, **HELIROMA** is one of the few European manufacturers which produces the PP-R pipe with fiberglass compound (ROMAFASER), also known as the third generation pipe. This characteristic has allowed the company to conquer a very significant portion of the European market and to produce these pipes for many of the world known manufacturers.

Additionally, **HELIROMA** manufactures crosslinked Polyethylene pipes (PE-Xa) with and without oxygen barriers, being also one of the few Iberian manufacturers of multilayer pipes (PE-RT – Aluminium – PE-RT).

The quality of **HELIROMA's** products and services has been certified in several European countries, which have distinguished the company's excellence with their certifications: CERTIF (Portugal), AENOR (Spain), CSTB (France), DVGW and SKZ (Germany) Bulgarcontrol (Bulgaria), among others.





The recognition of the quality of **HELIROMA** products by these certifying entities has contributed to achieve company success in an increasingly competitive and demanding market such as the plumbing market. This recognition and the excellent performance of the **HELIROMA** community have greatly contributed to the company's success, which has been translated into continuous growth since 2003.

Every year, **HELIROMA** participates in the most important exhibitions of the sector, both in Europe and in the Middle East in order to promote and present the company, its products and services to a greater number of professionals. Currently, HELIROMA exports to 30 countries where it is physically present. **HELIROMA** invests strongly in the areas of quality, worker training, as well in the certification of the company and its products. These objectives have been achieved with integrated quality, environmental, health and security systems at work, assured by AENoR and IQNET certification.

All pipes and fittings manufactured at **HELIROMA** are under Inspection Plans and Production Tests, guaranteeing product conformity. In order to reinforce results obtained at the **HELIROMA** laboratory, tests are carried out in accredited and internationally recognised laboratories.

Today, the company is organising itself to promote its products and services to a challenging new public – design, supervisory and architecture offices, as well.



## mission

Offer **quality products** and **excellent services** to its clients, **bringing added value**, comfort and soundness to the final consumer.

## vision

To become a **unique reference** on the **national** and **international** markets, consolidating **long-lasting relationships** with clients, suppliers and collaborators.

## values

respect, development and people training  
**professionalism**  
ethics  
**responsibility**  
excellent client service  
**credibility and safety**  
profitability  
**sustainability**



THE QUALITY  
IMPROVEMENT  
OF HELIROMA  
PRODUCTS  
DEPENDS  
FUNDAMENTALLY  
ON QUALITY  
CONTROL



## hotwatersolutions

**HELIROMA S.A.** has implemented a Quality Control System, in compliance with ISO 9001, with the purpose of demonstrating its ability to continuously and consistently manufacture a product which attends client needs and simultaneously meets clients' internal and/or legal applicable regulatory requirements.

The systematic approach to Heliroma activities, our process based organization, as well as the definition of objectives and goals of continuous improvement are some of the relevant outcomes of the application of these procedures.

The quality improvement of Heliroma products depends fundamentally on quality control. The manufacturing process can be observed using laboratory analysis and/or on-line collection of the product specification values under manufacture.

**FOR PURPOSES OF LABORATORY ANALYSIS, SAMPLES OF THE DIFFERENT PRODUCTS ARE COLLECTED PERIODICALLY AND MEASURED IN THE LABORATORY.**

To measure the specifications of the products, we also use tools which collect, store and treat the information and provide data to the operator about the variability of the specifications.



## QUALITY CONTROL OF HELIROMA PRODUCTS IS CARRIED OUT IN THREE PHASES:

### 1<sup>ST</sup> INSPECTION UPON RECEPTION OF RAW MATERIALS AND CONSUMABLES

All raw materials received undergo inspection control (Reception Inspection Control – P.I.E.R.), previously defined and according to regulatory requirements.

All raw materials are properly identified with regards to their compliance status.

### 2<sup>ND</sup> PRODUCT INSPECTION (DURING MANUFACTURING PROCESS)

In compliance with the requirements imposed by standards and certifying entities, Heliroma implemented the Manufacturing.

Inspection Plans - P.I.E.P., which workers are duly informed of, so as to avoid failures during their practical application. Periodically, the dimensions and status of the pipes and presentation of fittings are measured and registered on the computer system in order to obtain online data for the statistical control of the process.

### 3<sup>RD</sup> LABORATORY INSPECTION

After Manufacturing Inspection approval, all pipe and fitting systems are submitted to a number of specific tests for each product. For this phase, a number of Laboratory Inspection and Test plans (P.I.E.L.) were designed, based on regulatory requirements and other requirements defined by certifying entities.

All equipments used for the approval of our products comply with a calibration plan, guaranteeing the accuracy of the final measuring results.





HR HELIROMA ROMAKLIMA AENOR CC 001/691 opaco (PP-R 80 / PP-R 80)





HEL IRL IMA UNE-53960 EX PE-RT /  
KL IMA UNE-53960 EX PE-RT / AL



**THE BEST  
SOLUTION FOR**

for adverse conditions

**RANGE OF PRODUCTS**

- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX

**Technical INFORMATION**

- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX
- 00 XXXX

**MULTILAYER**

# HELIKLIMA PERT-AL-PERT



ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
P-PERTAL16	16x2,0	100/1600	
P-PERTAL18	18x2,0	100/1400	
P-PERTAL20	20x2,0	100/1400	
P-PERTAL25	25x2,5	50/700	
P-PERTAL32	32x3,0	50/700	
P-PERTAL16B	16x2,0		4/200
P-PERTAL18B	18x2,0		4/160
P-PERTAL20B	20x2,0		4/160
P-PERTAL25B	25x2,5		4/100
P-PERTAL32B	32x3,0		4/80
P-PERTAL40B	40x4,0		5/75
P-PERTAL50B	50x4,5		5/50
P-PERTAL63B	63x6,0		5/25
PERTAL75B	75x7,5		5/15
PERTAL90B	90x8,5		5/10
PERTAL110B	110x10,0		5/5

## SOCKET



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
K200016	16x16	45	360
K200018	18x18	30	240
K200020	20x20	30	240
K200025	25x25	20	160
K200032	32x32	10	80
K200040	40x40	1	-
K200050	50x50	1	-
K200063	63x63	1	-
K200075	75x75	1	-
K200075*	75x75	1	-
K200090*	90x90	1	-
K2000110*	110x110	1	-



## REDUCER



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
K238018	18x16	37	296
K238020	20x16	37	296
K238021	20x18	30	240
K238025	25x16	20	160
K238027	25x18	20	160
K238026	25x20	20	160
K238032	32x20	12	96
K238033	32x25	12	96
K238042	40x25	1	-
K238043	40x32	1	-
K238053	50x32	1	-
K238054	50x40	1	-
K238064	63x40	1	-
K238065	63x50	1	-
K238076	75x63	1	-

## FEMALE THREADED ADAPTOR



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
K234016	16x1/2"	40	320
K234018	18x1/2"	35	280
K234019	18x3/4"	30	240
K234020	20x1/2"	35	280
K234021	20x3/4"	30	240
K234026	25x1/2"	20	160
K234025	25x3/4"	20	160
K234027	25x1"	12	96
K234033	32x3/4"	12	96
K234032	32x1"	12	96
K234040	40x1 1/4"	1	-
K234050	50x1 1/2"	1	-
K234051	50x1 1/4"	1	-
K234063	63x2"	1	-
K234075	75x2 1/2"	1	-
K234075*	75x2 1/2"	1	-
K234090*	90x3"	1	-
K2340110*	110x4"	1	-

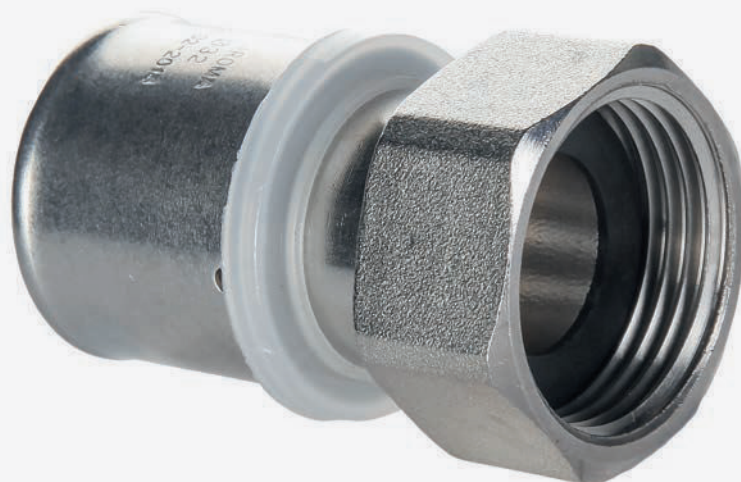
## MALE THREADED ADAPTOR



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
K325016	16x1/2"	50	400
K325018	18x1/2"	40	320
K325019	18x3/4"	35	280
K325020	20x1/2"	40	320
K325021	20x3/4"	35	280
K325026	25x1/2"	20	160
K325025	25x3/4"	18	144
K325027	25x1"	16	128
K325033	32x3/4"	10	80
K325032	32x1"	8	64
K325040	40x11/4"	1	-
K325050	50x11/2"	1	-
K325063	63x2"	1	-
K325075	75x21/2"	1	-
K325075*	75x21/2"	1	-
K325090*	90x3"	1	-
K3250110*	110x4"	1	-

## FEMALE THREADED ADAPTOR WHIT CRAZY NUT



**i** ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
K234016-L	16x1/2"	48	384
K234018-L	18x1/2"	40	320
K234020-L	20x1/2"	40	320
K234021-L	20x3/4"	30	240
K234025-L	25x3/4"	18	144
K234032-L	32x1"	14	112



## ELBOW 90°

ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
K206016	16x16	32	256
K206018	18x18	22	176
K206020	20x20	22	176
K206025	25x25	11	88
K206032	32x32	6	48
K206040	40x40	1	-
K206050	50x50	1	-
K206063	63x63	1	-
K206075	75x75	1	-
K206075*	75x75	1	-
K206090*	90x90	1	-
K2060110*	110x110	1	-

## FEMALE THREADED ELBOW



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
K208016	16x1/2"	30	240
K208017	16x3/4"	18	144
K208018	18x3/4"	22	176
K208019	18x1/2"	20	160
K208020	20x1/2"	22	176
K208021	20x3/4"	20	160
K208025	25x3/4"	15	120
K208026	25x1/2"	10	80
K208027	25x1"	8	64
K208033	32x3/4"	8	64
K208032	32x1"	8	64
K208042	40x1 1/2"	1	-
K208041	40x1 1/4"	1	-
K208040	40x1"	1	-
K208051	50x1 1/2"	1	-
K208050	50x1"	1	-
K208063	63x2"	1	-
K208075	75x2 1/2"	1	-
K208075*	75x2 1/2"	1	-
K208090*	90x3"	1	-
K2080110*	110x4"	1	-

## MALE THREADED ELBOW



ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
K209016	16x1/2"	25	200
K209018	18x1/2"	20	160
K209020	20x1/2"	20	160
K209025	20x3/4"	12	96
K209026	25x3/4"	12	96
K209032	32x1"	8	64
K209075*	75x21/2"	1	-
K209090*	90x3"	1	-

## WALL PLATE FEMALE THREADED ELBOW



**i** ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
K212016	16x1/2"	14	112
K212018	18x1/2"	12	96
K212020	20x1/2"	12	96
K212025	25x3/4"	10	80



## TEE

ADICIONAL INFORMATION [PAGE 00](#)

REFERENCE	DN	ROLL	PIPE
K230016	16x16x16	20	160
K230018	18x18x18	14	112
K230020	20x20x20	14	112
K230025	25x25x25	8	64
K230032	32x32x32	4	32
K230040	40x40x40	1	
K230050	50x50x50	1	
K230063	63x63x63	1	
K230075	75x75x75	1	
K230075*	75x75x75	1	
K230090*	90x90x90	1	
K2300110*	110x110x110	1	

## REDUCE TEE



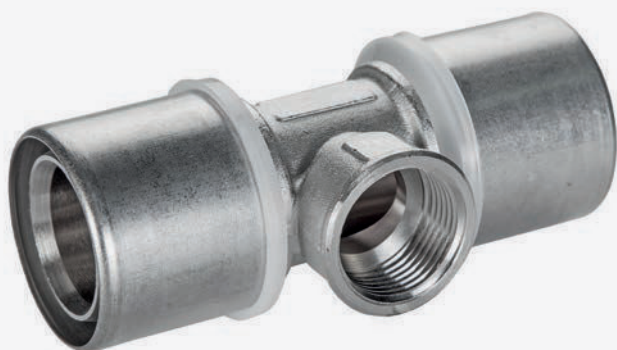
**i** ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	BOX	
		SMALL	LARGE
K231014	18x16x16	20	160
K231016	16x25x16	10	80
K231015	18x16x18	18	144
K231017	20x16x16	20	160
K231020	20x16x20	18	144
K231019	20x18x20	14	112
K231029	25x16x20	10	80
K231034	25x18x25	8	64
K231023	25x20x16	10	80
K231038	25x25x18	7	56
K231035	32x25x25	5	40
K231028	25x25x20	7	56
K231018	16x20x16	18	144
K231024	25x16x16	10	80
K231039	25x16x18	10	80

MORE REFERENCES 

REFERENCE	DN	BOX	
		SMALL	LARGE
K231021	20x20x16	18	144
K231022	20x25x20	7	56
K231027	25x20x20	10	80
K231025	25x16x25	10	80
K231026	25x20x25	8	64
K231031	25x32x25	7	56
K231030	32x16x32	8	64
K231037	32x18x32	5	40
K231032	32x20x32	5	40
K231033	32x25x32	5	40
K231042	40x25x40	1	-
K231043	40x32x40	1	-
K231053	50x32x50	1	-
K231055	50x40x50	1	-
K231064	63x40x63	1	-
K231065	63x50x63	1	-
K231076	75x63x75	1	-

## FEMALE THREADED TEE

ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL	PIPE
K232016	16x1/2"x16	16	128
K232018	18x1/2"x18	15	120
K232020	20x1/2"x20	15	120
K232025	25x3/4"x25	5	40
K232026	25x1/2"x25	10	80
K232032	32x1"x32	4	32
K232041	40x11/4"x40	1	-
K232040	40x1"x40	1	-
K232051	50x11/2"x50	1	-
K232050	50x1"x50	1	-
K232065	63x2"x63	1	-
K232063	63x1"x63	1	-
K232064	63x21/2"x63"	1	-
K232075	75x21/2"x75	1	-
K232075*	75x21/2"x75	1	-
K232090*	90x3"x90	1	-
K2320110*	110x4"x110	1	-

## MALE THREADED TEE



REFERENCE	DN	BOX	
		SMALL	LARGE
<b>K233016</b>	16x1/2"x16	16	128
<b>K233018</b>	18x1/2"x18	12	96
<b>K233020</b>	20x1/2"x20	12	96
<b>K233025</b>	25x3/4"x25	5	40
<b>K233026</b>	25x1/2"x25	5	40
<b>K233032</b>	32x1"x32	4	32

## STOP VALVE



REFERENCE	DN	BOX	
		SMALL	LARGE
<b>K244016</b>	16	5	40
<b>K244018</b>	18	10	80
<b>K244020</b>	20	5	40
<b>K244025</b>	25	5	40
<b>K244032</b>	32	4	40

## DISTRIBUTOR



REFERENCE	DN	BOX	
		SMALL	LARGE
<b>K2520201616</b>	25x20x20x16	3	24
<b>K2520161616</b>	25x20x16x16	3	24

## PRESS HEAD U

REFERENCE	DN
MORD/RF-16 PEX	1
MORD/RF-20 PEX	1
MORD/RF-25 PEX	1
MORD/RF-32 PEX	1
MORD-16 MK	1
MORD-18 MK	1
MORD-20 MK	1
MORD-25 MK	1
MORD-32 MK	1
MORD-40 MK	1
MORD-50 MK	1
MORD-63 MK	1
MORD-75 MK	1

KLIMAPRESS press profile - U | PE-X press profile - RF



## CALIBRATOR

REFERENCE	DN	UNIT
CALIBRAES-S32	16/20/25/32	1
CALIBRAES-S63	40/50/63	1
CALIBRAES-S75	75	1





## PRESS MACHINE



REFERENCE	UNIT
PRESS-ELECT POWER PRESS E BASIC	1
PRESS-ELECT.ACC POWER PRESS ACC BASIC	1
PRESS-BAT.ACC AKKU PRESS ACC BASIC	1

## SHEAR



REFERENCE	DN	UNIT
KC35	16/35	1



HELIROMA UNE-53960 EX PE-RT /  
HELIROMA UNE-53960 EX PE-RT / AL



**TECHNICAL  
INFORMATION**

RANGE OF PRODUCTS	
00	XXXX
00	XXXX
00	XXXX
00	XXXX

Technical INFORMATION	
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX

## PROPERTIES OF THE RAW MATERIAL

The MULTILAYER PE-RT / AL / PE-RT pipes are part of a new generation of pipes where the advantages of metallic and plastic tubes converge, minimizing the inconveniences of both. This pipe is made up of five layers which are distributed in the following manner:

- 1st PE-RT type II layer
- 2nd Adhesive layer
- 3rd Overlapping aluminium sheet with longitudinal weld by ultrasound
- 4th Adhesive layer
- 5th PE-RT type II layer

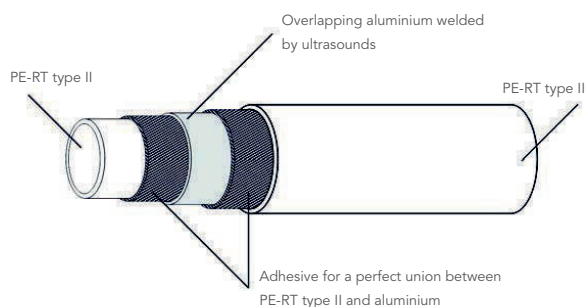
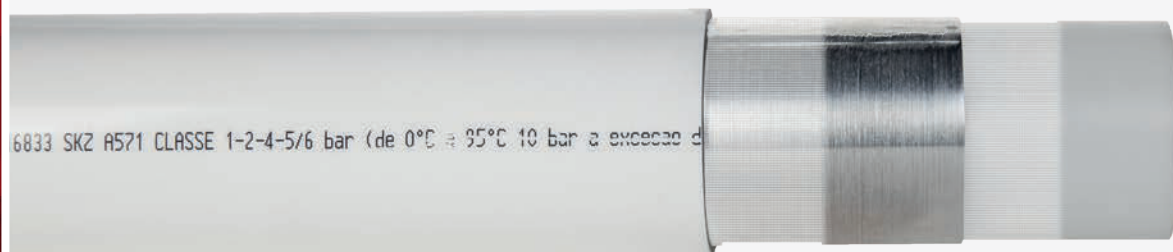
PE-RT type II (polyethylene resistant to temperature) is a polyethylene resin with a unique molecular structure with a main ethylene chain and controlled ramifications which provide high hydrostatic strength in the long term. Through overlapping aluminium welding, a wider connection is created, which increases the safety index. Ultrasound welding does not require significant thickness of the aluminium to form a blade.

Therefore, the thickness of the used aluminium does not make the pipe harder, making post-production handling very easy.

MULTILAYER PE-RT / AL / PE-RT pipes are produced with an optimized aluminium blade thickness, so that stability is maintained when bending. In this way, the assembly of the pipe is easier as it does not require a lot of strength to bend and can be done manually.

The aluminium blade confers a very important characteristic to the pipe: the ability to resist to expansion. As the polyethylene and aluminium pipes are fixed, pipe expansion is reduced as the aluminium expansion factor is low. The performance of the HELIKLIMA pipe corresponds approximately to that of a metal pipe.

Given that the inner and outer layers of the pipe are made of PE-RT, we obtain a pipe which is temperature resistant and has reduced roughness, guaranteeing that no sediments accumulate, hence preventing formation of calcareous.



WORK CAPACITY	CLASS
Maximum temperature during short periods	110°C
Minimum temperature	-40°C
Minimum assembly temperature	-10°C
Burst pressure	80bar
Thermal conductivity	0,40W/m°C
Pipe roughness	0,0004 mm
Expansion coefficient	0,025 m/m°C

## SUPPLY SYSTEMS

APPLICATIONS	MAXIMUM WORKING PRESSURE (bar)	OPERATING TEMP. (C°)	APPROVED
Potable water	10	0 - 70 <sup>1)</sup>	x
Heating water (closed circuit systems)	10	0 - 80 <sup>2) 3)</sup>	x
Salt water	10	0 - 70	x
Ultrapure water (except pharmaceutical water)	10	0 - 40	x
Rainwater with a pH value of >6.0	10	0 - 40	x
Extinguishing water	10	0 - 70	x
Chilled water with antifreeze agent	10	0 - 70 <sup>5)</sup>	x
Compressed air (oil purity class 0-3) <sup>4)</sup>	10	0 - 70	x
Inert gases (eg nitrogen)	10	0 - 40	x

<sup>1)</sup> Malfunction temperature in accordance with BS EN 806-2: Tmal = 95 °C, total 100 h over the course of the service life

<sup>2)</sup> Malfunction temperature in accordance with ISO 10508:2006: Tmal = 100°C, total 100 h over the course of the service life

<sup>3)</sup> Only use approved inhibitors

<sup>4)</sup> Only use approved antifreeze agents

<sup>5)</sup> Oil purity class in accordance with ISO 8573-1:2010E



## PIPE CHARACTERISTICS

DIMENSION (mm)	THICKNESS (mm)	INNER DIAMETER (mm)	FLOW LIMIT (l/h)	FLOW LIMIT (l/s)	BAR WEIGHT (kg/m)	SERIES
16x2,0	2.0	12	814	0.226	0.108	3.5
18x2,0	2.0	14	1108	0.308	0.12	4.0
20x2,0	2.0	16	1447	0.402	0.142	4.5
25x2,5	2.5	20	2261	0.628	0.202	4.5
32x3,0	3.0	26	3821	1.061	0.32	4.8
40x4,0	4.0	32	5788	1.608	0.52	4.5
50x4,5	4.5	41	9501	2.639	0.76	5.1
63x6	6.0	57	14701	4.084	1.26	4.8
75x7,5	7.5	60	20347	5.652	1.75	4.5
90x8,5	8.5	73	30120	8.367	2.556	4.8
110x10	10.0	90	45781	12.717	3.625	5

## ADVANTAGES OF THE SYSTEM

	LOW ROUGHNESS		DOES NOT TRANSMIT NOISE
	CORROSION RESISTANT		ARE NOT AFFECTED BY WATER PH
	INSIGNIFICANT THERMAL EXPANSION		PLEASANT AESTHETICS FOR EXTERIOR APPLICATION
	100% ANTI-DIFFUSION OF OXYGEN		ENORMOUS FLEXIBILITY
	GOOD AGEING PERFORMANCE		HIGH CHEMICAL RESISTANCE
	SUPPLIED IN COILS OR BARS		HIGH RESISTANCE TO WORK STRAIN
	EXCELLENT BURST RESISTANCE IN THE LONG TERM		PURENESS AND NONTOXIC
	STABLE FORM AFTER MOULDING AND/OR BENDING		PREVENTS FORMATION OF CALCAREOUS
	SIMPLE AND FAST INSTALLATION		

The performance requirements for multilayer piping systems conforming to ISO 21003 are specified for four different application classes as shown in Table 1. For any application, the selection of the applicable class conforming to Table 1 shall be agreed by the parties concerned. Each application class shall be combined with a design pressure, pD, of 4 bar, 6 bar, 8 bar or 10 bar, as applicable (1 bar = 0,1 MPa).

Application Class	Design Temperature $T_D$ (°C)	Time <sup>b</sup> at $T_D$ (years)	$T_{max}$ (°C)	Time at $T_{max}$ (years)	$T_{mal}$ (°C)	Time at $T_{mal}$ (h)	Typical field of application
1 <sup>a</sup>	60	49	80	1	1	100	Hot water supply (60 °C)
2 <sup>a</sup>	70	49	80	1	1	100	Hot water supply (70 °C)
4 <sup>b</sup>	20 plus cumulative	2,5	70	125	2.5	100	Underfloor heating and low-temperature radiators
	40 plus cumulative	20					
	60	25					
5 <sup>b</sup>	20 plus cumulative	14	90	90	1	100	High-temperature radiators
	60 plus cumulative	25					
	80	10					

a) A country may select either class 1 or class 2 in conformity with its national regulations.

b) Where more than one design temperature for time and associated temperature appears for any class, they should be aggregated.

"Plus cumulative" in the table implies a temperature profile of the mentioned temperature over time (e.g. the design temperature profile for 50 years for class 5 is 20 °C for 14 years followed by 60 °C for 25 years, 80 °C for 10 years, 90 °C for 1 year and 100 °C for 100 h).

**Note:** For values of  $T_D$ ,  $T_{max}$  and  $T_{mal}$  in excess of those in the table, this International Standard does not apply.

All systems which satisfy the conditions specified in Table 1 shall also be suitable for conveyance of cold water for a period of 50 years at a temperature of 20 °C and a design pressure of 10 bar.

## MARKING AND CERTIFICATION

The pipes defined in this experimental standard should be marked legibly and at a minimum of one meter intervals with the following information:

DESCRIPTION	MARKED SYMBOL
Reference standard	According to the certifier
Name of manufacturer and/or trademark	HELIROMA / HELIKLIMA
Nominal rim diameter and thickness of the nominal wall	Ex: 16x2,0
Pipe dimensional class	PE-RT/AL/PE-RT
Material	PP-R + Fiberglass
Class application combined with work pressure	Field of application and pressure
Manufacturer's information	Order of pressure and time

PRODUCT	DOCUMENT NO	CERTIFYING ENTITY
HELIKLIMA	001/004949	AENOR
	A571	SKZ



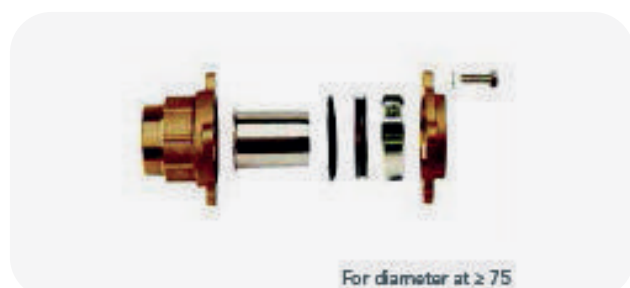
## KLIMAPRESS FITTINGS

The body of the fitting is made of brass treated with special nickel in order to guarantee a greater resistance in terms of corrosion and oxidation.

The stainless steel ring is pre-assembled on the body of the fitting and has an orifice which allows you to verify if the pipe has been completely inserted.

The clamping between the ring and the body of the fitting provides protection against possible wear and tear of the 'O' rings. After assembly, the connection can support loads of torsion forces without any leak occurring.

To achieve total security of the installation, the use of HELIKLIMA fittings and tools is recommended, as any change to the dimensions and/or characteristics of these elements may alter the result of the connections.



The fitting is made up of two brass parts: an 'O' ring in EPDM, a catch for the 'O' ring, a compression ring and a stainless steel interior, which confers greater robustness to the pipe/fitting transition area.

The mechanical clamp is guaranteed through 4 metal screws which connect the fitting body to the respective pipe.



# THERMAL EXPANSION AND DISTANCE BETWEEN FIXING POINTS

Due to the temperature in a hot water installation, the pipe is subjected to the expansion/contraction phenomena, depending on the length of the pipe and temperature differences. Throughout the installation, to compensate the expansion, certain points have to be taken into account.

## APPLICATION OF CLAMPS

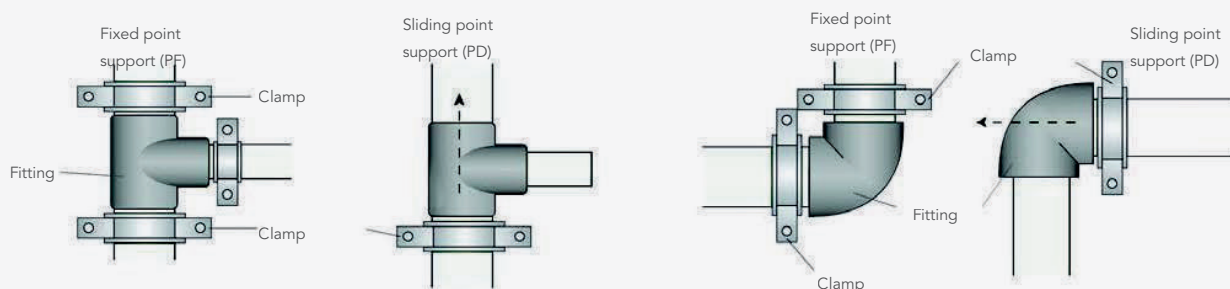
The HELIKLIMA pipe can be fixed to structural elements of the building by means of fixture points and sliding points.

**FIXED POINT (P.F.):** a fixed point it is impossible for the pipe to move.

**SLIDING POINT (S.P.):** a sliding point is when the only function of a point is to support or guide the pipe, allowing it to move.

Coefficient of expansion:  $\alpha = 0,025 \text{ mm}/(\text{m}^\circ\text{C})$   
Specific constant of the pipe:  $C = 30$

EXPANSION IN MM/M OF PIPE ACCORDING TO THERMAL AMPLITUDE			
THERMAL INTERVAL (°C)	EXPANSION PER METER (mm)	THERMAL INTERVAL (°C)	EXPANSION PER METER (mm)
10	0.25	60	1.5
20	0.5	70	1.75
30	0.75	80	2
40	1	90	2.25
50	1.25	100	2.5



The location of the P.F. depends on the location of the pipe expansion absorption devices. The distance between the P.D. depends on the temperature of the fluid. The higher the work temperature, the greater the expansion will be. The pipe support

clamps are only considered P.F. when they are changing direction, opposing the expansion or contraction movement of the pipe. When they do not limit the expansion or the contraction of the longitudinal direction, we consider it to be a P.D.

PIPE FIXTURE DISTANCES		MINIMUM PIPE LENGTH BETWEEN FITTINGS	
DIMENSION	MINIMUM DISTANCE L (m)	DIMENSION	PIPE LENGTH (mm)
16x2,0	1.2	16x2,0	minimum 160
20x2,0	1.3	20x2,0	minimum 160
25x2,5	1.5	25x2,5	minimum 170
32x3,0	1.6	32x3,0	minimum 170
40x4.0	1.7	40x4.0	-
50x4.5	2	50x4.5	-
63x6.0	2.2	63x6.0	-
75x7.5	2.4	75x7.5	-
90x8.5	2.4	90x8.5	-
110x10	2.4	110x10	-

## CURVATURE

The HELIKLIMA pipe in the 16, 20 and 25 dimensions can easily be bent manually using the inner spring or corresponding exterior spring or using a bending machine.

### HAND BENDING

Separate the pipe manually at a distance of approximately 40 cm and bend to the desired radius.

### HAND BENDING WITH THE USE OF THE INSIDE SPRING

Calibrate the tube and place the spring in the inside until it comes out a few centimetres. When making the bend, the spring should not mark the exterior of the pipe.

### HAND BENDING WITH THE USE OF THE EXTERIOR SPRING

Insert the exterior spring through the pipe until it reaches the desired point. Once placed at the bending point, bend the pipe manually, considering the minimum curvature radius listed in the table below:

MINIMUM BENDING RADIUS IN MM (ACCORDING TO TOOL)			
PIPE DIMENSION (mm)	RADIUS OF THE MANUAL	RADIUS OF THE CURVATURE WITH	RADIUS OF THE CURVATURE WITH
16	5x Rim Diameter	4x Rim Diameter	60
20	5x Rim Diameter	4x Rim Diameter	105
25	5x Rim Diameter	4x Rim Diameter	105

For the 32 diameter, the use of joints is recommended for changes in directions or bending machine should be used.

### BENDING WITH THE BENDING MACHINE

Using the bending machine, the HELIKLIMA pipe can be bent with a high level of precision.



HELIROMA UNE-53960 EX PE-RT / AL



**TECHNICAL  
INFORMATION**

RANGE OF PRODUCTS	
00	XXXX
00	XXXX
00	XXXX
00	XXXX

Technical INFORMATION	
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX
00	XXXX

## TÍTULO??



### 1) CUT THE PIPE

Use appropriate scissors for plastic or pipe-cutters and cut in a right angle.

### 2) CALIBRATE THE PIPE

#### DIAMETERS 16-25MM

Use a calibrator to calibrate the inside of the pipe so that you observe a circular chamfer with at least 2mm depth. To facilitate the work, you may use the calibrator tool to adapt a power drill (the maximum number of rotations should not exceed 450rpm to avoid damage inside the pipe as a result of overheating).

#### DIAMETERS 32- 63MM

Create a circular chamfer at a depth of at least 2.5mm in the inside of the pipe with the assistance of a calibrator. Verify visually if there is a uniform circular chamfer at the end of the pipe.

### 3) ASSEMBLY OF THE KLIMAPRESS FITTINGS

#### FOR DIAMETERS AT $\leq 75$ – PRESS FITTINGS

Lubricate the kernel of the fitting with an appropriate lubricator, inserting the pipe in the fitting until the top (plastic catch). The correct insertion should be visually verified through the orifice of the fitting.

Open the jaw head and adjust to the compression ring until reaching the fitting's catch. Close the jaw head and compress with the machine until hearing the audible alert of the retreat of the piston.

Very important note: To guarantee that all crimping has been correctly done, it is mandatory that the compression process be completed. This means that when starting the process, the cycle should be completed, without any interruption until the audible alarm indicates that the piston has been released.

#### FOR DIAMETERS AT $\geq 75$ – MECHANICAL CLAMPING FITTINGS

Check all the elements which make up the fittings. Place the brass flange, then the brass nickel ring, the catch and the 'O' ring on the end of the exterior of the pipe. Insert the aluminium core inside the pipe. Join the brass flanges and tighten the respective metal screws.



## TÍTULO??

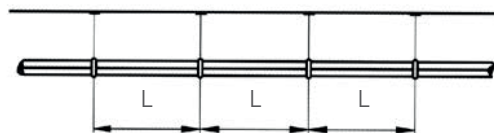
All pipes have to be installed in such a way that allows them to expand. Pipe expansion between two fixed points can be compensated with an expansion bend or by changing its direction (absorption arm).



### FIXING THE PIPE

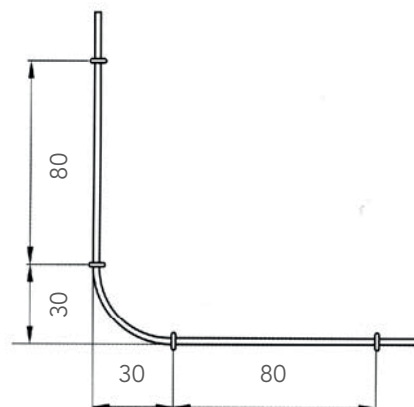
#### On the ceiling

If the HELIKLIMA pipe is fixed to the ceiling with clamps, it is not necessary to use any other type of support structure. The distance between fixing points according to pipe dimension will vary between 1.20 and 2.40m.



#### On the ground

If the HELIKLIMA pipe is fixed on the ground, a minimum distance of 80 cm between the fixing points should be taken into account. Before and after a curve, the pipe should be fixed at a distance of 30 cm. If the pipe crosses walls or ceilings, make sure it does not pass through areas with square corners which might cut or damage the pipe.



#### Note:

Built-in installations: in this situation the fittings must be very well isolated in a way that the contact with concrete or other elements is prevented, avoiding a possible reaction in the future.





HELIROMA®



## THE BEST SOLUTION FOR

useful and practical  
functionality  
in various uses

### RANGE OF PRODUCTS

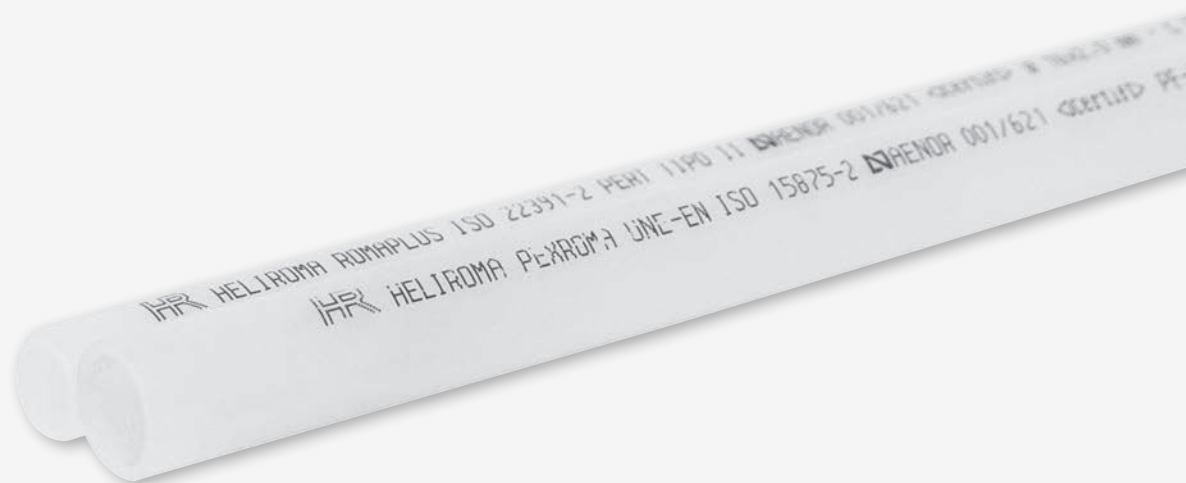
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### Technical INFORMATION

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PE-XA / PE-RT

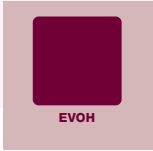
## PE-Xa



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL	PIPE
P-011016-XA	16x1,8	100	
P-011016-XA	16x2,0	100	
P-011020-XA	20x1,9	100	
P-011020-XA	20x2,0	100	
P-011025-XA	25x2,3	50	
P-011032-XA	32x2,9	50	
P-011016-XAB4	16x1,8		4/200
P-011020-XAB4	20x1,9		4/160
P-011025-XAB4	25x2,3		4/100
P-011032-XAB4	32x2,9		4/80

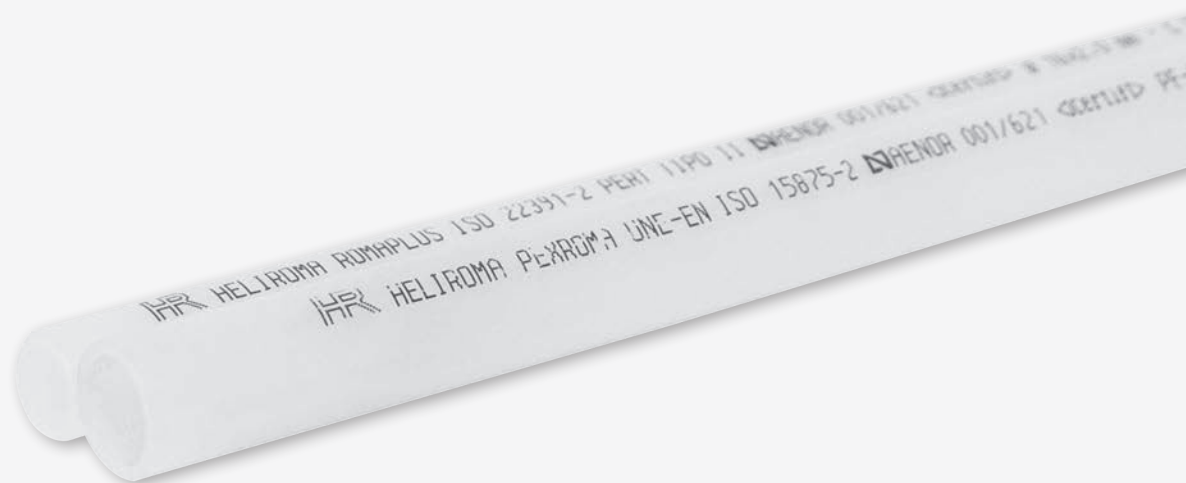
PE-Xa EVOH



ADICIONAL INFORMATION PAGE 00

REFERENCE	DN	ROLL
P-011016-XAEVAL	16x1,8	240/500
P-011020-XAEVAL	20x1,9	500

## PE-RT

WITH  
OXYGENADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL
P-001016-RT	16x2,0	100
P-001020-RT	20x2,0	100
P-001025-RT	25x2,3	50
P-011032-RT	32x2,9	50

PE-RT EVOH



ADICIONAL INFORMATION **PAGE 00**

REFERENCE	DN	ROLL
P-011016-RTB	16x1,8	240/500
P-011020-RTB	20x1,9	240/500



HELIROMA®



# TECHNICAL INFORMATION

RANGE OF PRODUCTS	
00	XXXX
00	XXXX
00	XXXX
00	XXXX

Technical INFORMATION	
00	XXXX
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PE-XA / PE-RT

## PE-X SYSTEM

The Heliroma PE-X pipes with and without barriers were projected for residential and industrial use. They do not suffer any type of corrosion and do not allow any calcareous sediment to

accumulate. These pipes are recommended for hot and cold sanitary waters, heating and radiating floors.

### PROPERTIES OF POLETHYLENE FOR PE-X PIPES

PROPERTIES	VALUE	TEST METHOD	UNIT
PHYSICAL			
Density	0.954	ISO 1183	g/cm <sup>3</sup>
Melt flow rate (MFR) (190°C/21.6kg)	2.0	ISO 1133	g/10 min
MECHANICAL			
Modular tension (23°C, v=1mm/min, drying agent)	1100	ISO 527-1, -2	MPa
Tensile stress at Yield (23°C, v=50mm/min)	27	ISO 527-1, -2	MPa
Tensile strain at Yield (23°C, v=50mm/min)	9	ISO 527-1, -2	%
HARDNESS			
Shore hardness (Shore D (3 sec))	65	ISO 868	
Ball indentation hardness (H 132/30)	52	ISO 2039-1	MPa
THERMAL			
VICAT Temperature		ISO 306	
(VST/A/50 K/h (10 N))	132		°C
(VST/B/50 K/h (50 N))	80		°C
Temperature Fluidity	134	ISO 3146	°C
Thermal conductivity	0.35		W/m°C
Expansion coefficient	1,4x10 <sup>-4</sup>		m/m°C
Linear coefficient 20°C/100°C	2,05x10 <sup>-4</sup>		m/m°C
Softening temperature	133		°C
Work temperature	- 10 a 95		°C
Specific heat	2.3		KJ/Kg °C

The PE-X pipes are manufactured with high density polyethylene. Crosslinking is a process which changes the chemical structure in such a way that the polymer chains are connected to each other in order to form a tridimensional network through chemical unions. The resulting structure makes fusion or the dissolution of the polymer impossible, unless its structure is previously destroyed. Therefore, it is possible to determine the level of transversal union by measuring the gelling percentage. The pipes do not react to additives derived from cement and absorb the thermal expansion avoiding the appearance of cracks in the pipes or in the concrete.



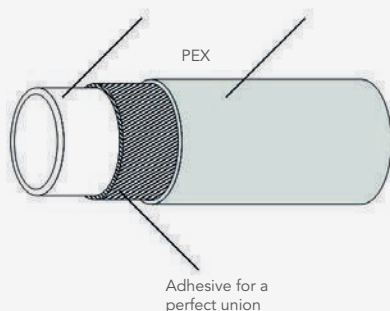
## MECHANICAL CHARACTERISTICS

CHARACTERISTICS	REQUIREMENT	TESTING PARAMETERS				TEST METHOD
		HYDROSTATIC STRESS (tangential) MPa	TEST TEMPERATURE °C	TEST TIME h	NUMBER OF TEST TUBES	
Resistance to internal pressure	No faults during the test period	12	20	1	3	ISO 1167-1 and ISO 1167-2
		4.8	95	1	3	
		4.7	95	22	3	
		4.6	95	165	3	
		4.4	95	1000	3	

## PHYSICAL-CHEMICAL CHARACTERISTICS

CHARACTERISTICS	REQUIREMENT	TESTING PARAMETERS		TEST METHOD	
		PARAMETERS	VALUE		
Longitudinal retraction	3%	Temperature		120° C	UNE EN ISO 2505
		Test time for:	$e_n \leq 8\text{mm}$	1h	
			$8\text{mm} < e_n \leq 16\text{mm}$	2h	
			$e_n > 16\text{mm}$	4h	
		Number of test tubes		3	
Thermal stability through hydrostatic pressure test	No faults during test	Type of test			ISO 1167-1 and ISO 1167-2
		Hydrostatic stress		Water and air 2,5 MPa	
		Test temperature		110°C	
		Test duration		8760h	
		Number of test tubes		1	
Crosslinked by:					
Peroxide	≥70%	ISO 10147			
Silane	≥65%				
Radiation	≥60%				
Azo	≥60%				

## PROPERTIES OF THE ANTI-DIFFUSION OXYGEN BARRIER (EVOH)



The barrier is comprised of a thin film of copolymer of ethylene and polyvinyl alcohol resins (EVOH). This resin is characterized by its unparalleled barrier properties to gases, odour and taste, as well as its excellent chemical resistance to solvents, products derived from petroleum and vegetable oils.

In hot water pipe applications in closed circuits, with the temperature increase, the pipes' inter-molecular spaces tend to be greater than the oxygen molecule.

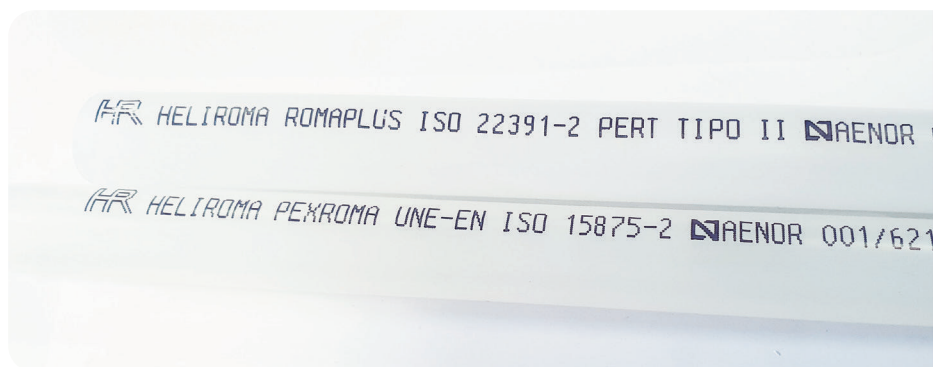
The oxygen molecules penetrate through the pipe's wall creating permanent oxygenation of the water and the consequent continued oxidation of the metal parts of the installation (valves, metal fittings, etc) reducing their durability by generating material losses and oxidation deposits which can obstruct the pipelines.

The anti-diffusion of Oxygen barrier (EVOH) seals oxygen access and therefore increases the durability of the installation.

## MARKING AND CERTIFICATION

DESCRIPTION	MARKED SYMBOL
Standard number	ISO 15875
Manufacturer's name and/or trademark	Name or code
Nominal rim diameter and thickness of nominal wall	ex.: 16x2,2
Pipe dimension class	ex.: A
Material	PE-Xa
Application class combined with work pressure	Field of application and pressure
Manufacturer information	Production Order and date

PRODUCT	DOCUMENT NO	ENTITY
PEXROMA	TPM-025/2010	CERTIF
	001/005216	AENOR



### INSTALLATION TEST

The pipe system should be slowly filled with water in order to avoid creating air bubbles and air should be purged from the system at the highest point. The system pressure test must be performed to guarantee that the system is sealed.

## ADVANTAGES OF THE SYSTEM WITH PIPES PE-XA

	DESIGNED TO WORK AT HIGH TEMPERATURES AND PRESSURES.		DO NOT REACT TO WATER WITH LOW PH
	HAMMERING DAMAGE IS REDUCED WHEN COMPARED WITH METAL PIPES		SILENT SYSTEM
	RESISTS THE WEAR AND TEAR CAUSED BY WATER		NOT AFFECTED BY CORROSION
	MANUFACTURED IN ROLLS ALLOWING EASY TRANSPORT		SIMPLE AND EASY INSTALLATION
	SEVERAL CERTIFICATIONS ISSUED BY INTERNATIONAL ENTITIES		FLEXIBLE

### CROSSLINK LEVEL BETWEEN PE-Xa Vs PE-Xb

PE-X TYPE	POLYETHYLENE CROSSLINKING TYPE	MINIMUM CROSSLINK LEVEL EN ISO 15875
PE-Xa	Peroxide	70%
PE-Xb	Silane	65%

## PIPE CHARACTERISTICS

DIMENSION (mm)	THICKNESS (mm)	INTERIOR DIAMETER (mm)	FLOW LIMIT (l/h)	FLOW LIMIT (l/s)	SERIES
12x2,0	2	8	362	0.1	2.5
16x1,8	1.8	12.4	869	0.241	4
16x2,0	2	12	814	0.226	3.5
16x2,2	2.2	11.6	761	0.211	3.2
20x1,9	1.9	16.2	1483	0.412	5
20x2,0	2	16	1447	0.402	4.5
20x2,8	2.8	14.4	1172	0.326	3.2
25x2,3	2.3	20.4	2352	0.653	5
25x3,5	3.5	18	1831	0.509	3.2
32x2,9	2.9	26.2	3880	1.078	5
32x4,4	4.4	23.2	3042	0.845	3.2

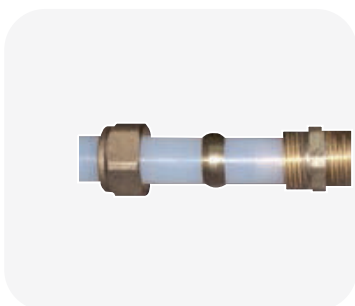
## ASSEMBLY TECHNIQUE



SCAN TO SEE  
INSTRUCTION VIDEO

**1)** The pipe should be cut with an appropriate scissors.

The blade should be positioned as perpendicular as possible to the pipe to be cut. The pipe should not present shavings.



**2)** In the mechanical fittings (ROMAFIT), the different elements should be installed in the following order on the pipe:

- Pressure nut
- Compression washer
- Adapter to the end of the catch



**3)** With the Press fittings (ROMAPRESS – RF), the pipe should be inserted in the press fitting until the end of the pipe and then press with specific tool as shown in the image. In this case, the isolating ring is used to check if the pipe is correctly introduced in the fitting.

## RECOMMENDATIONS FOR THE APPROPRIATED USE OF THE SYSTEM

### STORAGE

The HELIROMA PE-X pipes are supplied in a bar or coil, packed in a plastic sleeve and cardboard boxes. Avoid exposing the pipes to sunlight (UV rays) or chemical compounds which can jeopardize the integrity of the system.

### BENDING THE PIPES

The PE-X HELIROMA can be bent without the use of any type of equipment. However, to obtain small bends, a reinforcement of the bend should be used.

### BENDING THE PIPE

In the event that the pipe is bent during installation, it can be slightly heated with a hot air device so that the thermal memory is activated and the pipe recovers its original shape. Note that for this procedure, a flame should not be used as the uncontrolled temperature applied can compromise the integrity of the pipe.

### SUPPORT AND INSTALLATION OF PIPES

The application of pipes with a corrugated sleeve when installing distribution manifolds facilitates its substitution in case of repair. However, the contour of the curves should be reduced to the maximum and with a high radius of curvature for easy substitution.



## INSTALLATION OF BUILT-IN PIPES

### PIPES APPLIED WITH PROTECTIVE SLEEVES

Usually, the protective sleeve (e.g. corrugated sleeve) is used in embedded pipes with a diameter smaller or equal to 25mm when collectors in accessible boxes are used. This installation is easy and allows the pipe to be replaced without having to break a wall and/or floor. To remove the pipe, you only need to unlock the collector pipe and remove it through the water outlet. The pipe will be removed without difficulties and a new pipe can immediately be inserted.

To facilitate the work of removing or inserting a pipe in an embedded corrugated pipe in the wall, it is recommended that the curve bends have a minimum radius equal to eight times the diameter of the PE-X tube to be introduced. You should also avoid introducing cement between the pipe and the protective sleeve. In these cases, it is not necessary to consider the thermal expansion; you only need to fix the pipes to the ends of the walls or floor, for example, on the end of a collector and on the joint of the fixing base of the other.

### PIPES APPLIED WITHOUT A PROTECTIVE SLEEVE

Pipes can easily be embedded in pavements or walls because the expansion forces or contractions are minor when compared with metal pipes and do not originate any type of crack as a result of expansions.

#### 1) Thick Walls

Apply cement paste of rapid curing on the changes of direction (Joints and Tees) at each 50 cm along the pipeline. Afterwards, fill with normal cement paste. This paste should be as thick or thicker than the pipe diameter.

#### 2) Thin Walls

Apply strong cement past of rapid curing on the changes of direction (Joints and Tees) at each 50 cm along the pipeline. Afterwards, fill with strong cement paste.

When installing, place the pipe in order to avoid possible perforations. In the case of the application of pipes on the exterior of the wall, rail support should be used to keep its shape.



## PE-RT SYSTEM

The PE-RT raw material (polyethylene resistant to temperature) type II is a polyethylene resin with a unique molecular structure which provides excellent burst resisting properties to the pipe, combined with excellent hydrostatic resistance. The PE-RT type II used is a special material of high thermal resistance, in accordance with standard ISO 22391.

### PROPERTIES OF POLETHYLENE FOR PE-X PIPES

PROPERTIES	NOMINAL VALUE	TEST METHOD
PHYSICAL		
Density	0.941 g/cm <sup>3</sup>	ISO 1183
MFI		
190°C/2.16kg	0.55 g/10'	ISO 1133
190°C/5.0kg	1.9 g/10'	ISO 1133
MECHANICAL		
Modular tension (2.0mm)	645MPa	ISO 527-2
Tensile strength (2.0mm)	20.3MPa	ISO 527-2/50
Elongation strain (2.0mm)	14%	ISO 527-2/50
IMPACT		
Izod method with notch	23.0 KJ/m <sup>2</sup>	ISO 180
HARDNESS		
Shore Hardness	61	ISO 868
THERMAL		
Vicat temperature	125°C	ISO 306
Thermal conductivity (60°C)	0.40 W/m/K	DIN 52612

### MECHANICAL CHARACTERISTICS

CHARACTERISTICS	REQUIREMENT	TESTING PARAMETERS				TEST METHOD
		HYDROSTATIC STRESS (tangential) MPa	TEST TEMPERATURE °C	TEST TIME h	NUMBER OF TEST TUBES	
Resistance to internal pressure	No faults during the test period	10.8	20	1	3	ISO 1167-1 and ISO 1167-2
		3.9	95	22	3	
		3.7	95	165	3	
		3.6	95	1000	3	

### PHYSICAL-CHEMICAL CHARACTERISTICS

CHARACTERISTICS	REQUIREMENT	TESTING PARAMETERS		TEST METHOD
		PARAMETERS	VALUE	
Elongation strain	≤2%	Temperature	110°C	ISO 2505
		Duration of test	1h	
		$e_n \leq 8\text{mm}$	2h	
		$8\text{mm} < e_n \leq 8\text{mm}$	4h	
Thermal stability	No faults during testing	Hydrostatic Strain	2,3 MPa	ISO 1167-1 and ISO 1167-2
		Test Temperature	110°C	
		Test time	8760h	
Fluidity index	30% maximum of difference from raw material	Mass	5Kg	ISO 1133-1
		Test Temperature	190°C	
		Test Time	10 min	

## MARKING AND CERTIFICATION

DESCRIPTION	MARKED SYMBOL
Compliance identification	ISO 22391
Trademark and manufacturer	HR ROMAPLUS
Nominal Diameter and Thickness	Eg: 32x4.4
Pipe dimensional class	Eg: A
Material	PE-RT Type II
Pipe Application class combined with work pressure	Application field and pressure
Product information	Production order and Date

MAPLUS ISO 22391-2 PERT TIPO II AENOR  
 ROMA UNE-EN ISO 15875-2 AENOR 001/621



## PIPE CHARACTERISTICS

DIMENSION (mm)	THICKNESS (mm)	INTERIOR DIAMETER (mm)	FLOW LIMIT (l/h)	FLOW LIMIT (l/s)	SERIES
12x2,0	2	8	362	0.1	2.5
16x1,8	1.8	12.4	869	0.241	4
16x2,0	2	12	814	0.226	3.5
16x2,2	2.2	11.6	761	0.211	3.2
20x1,9	1.9	16.2	1483	0.412	5
20x2,0	2	16	1447	0.402	4.5
20x2,8	2.8	14.4	1172	0.326	3.2
25x2,3	2.3	20.4	2352	0.653	5
25x3,5	3.5	18	1831	0.509	3.2
32x2,9	2.9	26.2	3880	1.078	5

[illegible]

Certified DE

# PE-XA / PE-RT







# hotwatersolutions

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