

KWD Market Report

PEX, PE-RT and PB

Flexible Pipes for Heating & Plumbing Installations

Worldwide 2017

Dipl.-Ing Jutta Hix, Achim Seydel

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KWD Market Reports

The KWD publishing house issues different market reports of pipes and fittings for heating & plumbing systems. Regularly we offer the following reports:

- KWD Market + Charts "Heating & Plumbing Pipes Europe"
- KWD Market Report "Aluminium Multilayer Pipes Worldwide"
- KWD Market Report "PEX, PE-RT and PB Pipes Worldwide"
- KWD Market Report "Fittings & Pipe Connections Europe"



Thereby the figures are based on two analytical perspectives:

The consumption of pipes quantifies how many million meters of pipes have been sold per country. It does not give any information about where the pipes were produced. For this kind of report we offer our yearly KWD Market + Charts "Heating & Plumbing Pipes Europe".

The present KWD Market Report

In the present KWD Market Report we look at the production volume by pipe material. This shows how many million meters of pipes have been produced per company. This in turn gives no information in which countries the pipes were sold.

The latest KWD Market Report on flexible heating & plumbing pipes was published in 2014. Since then we have seen different trends and developments, regarding both the manufacturers in this industry, and their various pipes and fittings.

We are again presenting a current overview about the main producers - in many cases with estimations about the volumes but in some cases even without concrete information about volumes. Especially in the region Asia / Pacific we did not get trustworthy information. So again we decided just to list the producers and their respective production program in this region.

Our survey is meant to highlight the respective trends and to up-date you on the quantity of produced pipe volumes by the main manufacturers worldwide of flexible heating and plumbing pipes which are made of PE-X, PE-RT and PB. The survey also shows the current situation and gives a trend analysis of the future development of the different pipe materials.

Aluminium multilayer pipes are not subjects of this report.

The Authors

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Trends and insights of the present report

- All pipe materials have increased in the last years again, just as PE-X, PE-RT and PB pipes worldwide, which are the objects of this market analysis exclusively.
- PE-X and PE-RT pipes are worldwide mainly used in heating applications particularly for underfloor heating systems, in some countries for plumbing too.
- PB pipes could consolidate its niche position in heating and plumbing applications in some markets.
- 5-sheet pipe constructions for heating applications are generally accepted now, the former 3-layer version has disappeared nearly complete.
- PE-Xa is retaining the lead which was gained the last years against the PE-Xb and PE-Xc competition. So the producers have increased capacities accordingly, thus no significant investments are to expect in the coming years.
- PE-Xc unreasonably has lost attention but the remaining producers are holding to that pipe type with good reasons.
- PE-Xb is under pressure but hold its ground in some markets like South Europe, Asia or North America and it is still used in aluminum composite pipes. That is why PE-Xb is contending with the increasing requirements for drinking water applications. Appropriate measures could reduce the cost efficiency of the production significant.
- This benefits PE-RT in particular, more and more system sellers add their program with it or even switch to this pipe type. However the delight at it could be tempered because of the on-going shrinking profits.

Conclusion

In addition to the rising production output there is above all the worrying trend to “high quality for small prices”.

The creativity of the product developers again must focus on the pipe joining and fittings – and they do it!

As always, changes at the producers of plastic pipes are to report, both in Europe or North America and in Russia, Middle East or Asia.

Continuing is the system companies’ unabated trend into an own pipe manufacturing – much to the disgust of the left few OEM pipe producers.

Page samples

On the following pages you will find some cutouts and page samples of the KWD Market Report for better understanding the content of this survey.



2 Basic Information on PEX, PE-RT and PB pipes

2.1 Non-metallic pipe materials for heating & plumbing systems

1. The flexible pipes

Category	Type	Version	Application
Crosslinked polyethylene (PE-X)	1. Peroxide cross linking (PE-Xa)	Mono,	Heating, tap water, gas, special applications
	2. Silane cross linking (PE-Xb)	3-layer,	
	3. E-beam cross linking (PE-Xc)	5-layer	
Polyethylene raised temperature (PE-RT)	1. PE-RT (HDPE based)	Mono,	Heating, tap water
	2. PE-RT (MDPE based)	3-layer, 5-layer	
Polybutene (PB-1)		Mono, 3-layer, fibre-reinforced	Heating, tap water

pages sample

2.2 Pipes of cross linked polyethylene (PEX)

Following methods are known to cross link the molecular chains of a polyethylene:

PE-Xa: Use of organic peroxides (Chemical cross linking)

PE-Xb: With Silane compounds (Chemical cross linking)

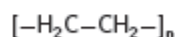
PE-Xc: By electron beam (Physical cross linking)

PE-Xd: With Azo compound, longly not in use (Chemical cross linking)

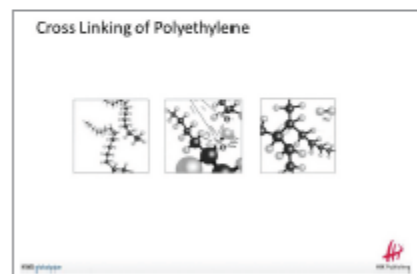
Cross Linking of Polyethylene

Simplified the principle of the molecular linking of polyethylene is describable as follows:

The long molecular chains consist of carbon atoms (C) and hydrogen atoms (H).



By use of special chemicals, i.e. temperature related decomposition of organic peroxides or by using high energy rays, e.g. electron beam, hydrogen atoms can be separated out of the molecular chain, which is generating reactive spots (free radicals) in the chain. Across those reactive spots adjacent chains direct carbon – carbon bonds could be formed what leads to a three dimensional network.



2.3 Brief description of the applied production methods

2.4 Pipes of polyethylene raised temperature (PE-RT)

2.5 Pipes of polybutene (PB)

2.6 Some trends in the European markets

3 Joining Techniques

pages sample

3.1 Basic designs of pipe connections

Press fitting – Radial compression

Compression of the plastic pipe via press sleeves with manufacturer specific press shapes onto fittings with corresponding internal contours, mostly with O-ring seals.

The connectors are commonly equipped with an insertion inspection and unpressed-untight function. Radial compression joints are used for all sizes of PE-X, PE-RT or PB pipes equally.



(a) Roth PPSU fitting with Press Check, Photo: Roth Industries



(b) Geberit Mapress, Photo: Geberit AG

Furthermore the following pipe connections will be described:

- Press fitting – Axial compression / Sliding sleeve
- Push fit fitting
- Welding fitting
- Screw / Compression fitting
- Special Designs

3.2 Joining technics for non-metallic pipes

The table only shows the main types of the commonly used joining techniques, in addition there are a growing number of modifications and special types.

Here you can find "High Tec" products like push fittings for a fast and tool-less installation as well as simple crimp connectors with manual press tools.

Joining techniques for non-metallic pipes in hot water installations

Pipe	Fitting	Fitting material	Assembly tools
PE-Xa	Screw fitting,	Metal: <ul style="list-style-type: none"> ▪ brass ▪ gunmetal ▪ stainless steel Plastics: <ul style="list-style-type: none"> ▪ PPSU ▪ PPSUPVDF 	Necessary for press fittings: Calibration tool, press machine (power driven or manual) and system specific press jaws. For sliding sleeves: Expansion and sliding tool, and for push fits calibration tool.
PE-Xb	Press fitting,		
PE-Xc	Sliding sleeve fitting, Push fitting, Shrink-back fitting (used for PEX pipes only)		

4 Consumption of Heating & Plumbing Pipes in Europe 2013 – 2019

In this chapter you will find an extract from our market report “KWD Market + Charts: Heating & Plumbing Pipes Europe 2016” which is revised on an annual basis. It is the purpose of this report to provide a comprehensive reference book for all important information for this particular market segment. The report analyses plastic pipes from PEX, PE-RT, PP-R and PB, aluminium multilayer pipes and metal pipes from steel/c-steel, copper and stainless steel.

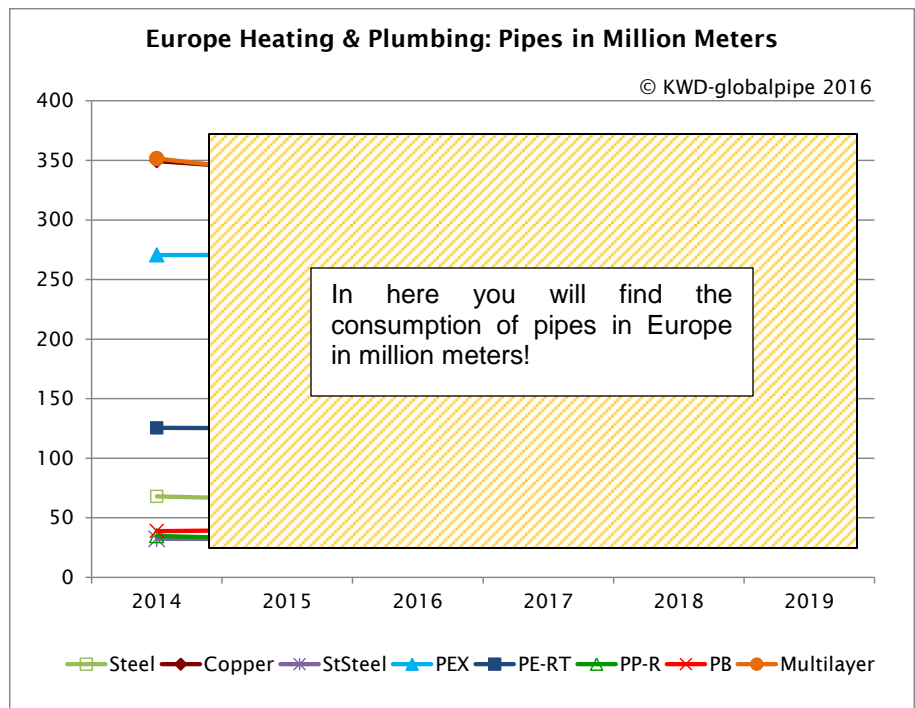
Contents of the KWD Market + Charts “Heating & Plumbing Pipes Europe 2016”

- Introduction and Statistics (Country and Construction Information)
- Market + Charts: Heating & Plumbing Pipes by Countries:
 - Economics Environment / Housing Development
 - Company News of the Heating & Plumbing Sector
 - Consumption of Heating & Plumbing Pipes in the period 2013 – 2019
- European Overview of Heating & Plumbing Pipes
- Listings of Certifications by pipe material and Companies in the Heating & Plumbing Sector

In this report we estimate the consumption of pipes for indoor use, divided into the applications:

- pipes for under floor heating / surface heating and cooling
- pipes for radiator connections
- pipes for hot and cold water installations.

Heating & plumbing pipes are the sum of those three applications.



4.1 Development of pipe consumption in Europe 2013 – 2019

Three charts show the pipe consumption in Europe, Western Europe and Eastern Europe.

4.2 Pipe consumption broken down by applications – Europe

Three circle charts show the the proportion (in percentage terms) of PEX, PE-RT and PB pipes in the different applications.

4.3 Maps indicating the frequency of use of pipe material – Europe

5 PEX, PE-RT and PB pipes - Production Volume

pages sample

5.1 Europe

5.1.1 Austria – Producers and Production Volume

PEX, PE-RT and PB pipe producers in Austria

- KE KELIT, Linz, www.kekelit.com
- Multitherm, Wien, www.multitherm.net
- Universa, Aigen-Vogelhub, www.universa.at

Estimated production volume in million meters

Producer of Pipes	PE-Xa		PE-Xb		PE-Xc		PEX (abc)		PE-RT		PB	
	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016
KE KELIT	In here you will find the production estimates in million meters of pipes!											
Multitherm												
Universa ¹												
Total												
% percentage change												

¹ Universa sold to Herz in 2015

5.1.2 Belgium – Producers and Production Volume

PEX, PE-RT and PB pipe producers in Belgium

- Henco, Herentals, www.henco.be
- Terrendis, Desteldonk, www.terrendis.com
- Vasco, Dilsen, www.vasco.eu

Estimated production volume in million meters

Producer of Pipes	PE-Xa		PE-Xb		PE-Xc		PEX (abc)		PE-RT		PB	
	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016
Henco	In here you will find the production estimates in million meters of pipes!											
Terrendis												
Vasco ¹												
Total												
% percentage change												

¹ PE-RT Production since 2014, PE-Xa Production since 2015

pages sample

5.5 World

5.5.1 World (except Asia/Pacific) – Producers and Production Volume

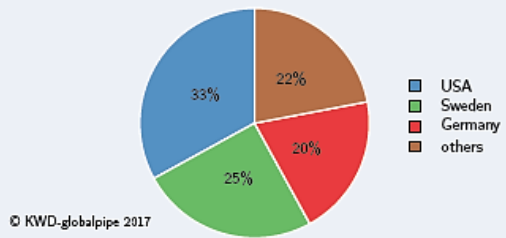
Estimated production volume in million meters

Producer of Pipes	PE-Xa		PE-Xb		PE-Xc		PEX (abc)		PE-RT		PB	
	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016	2013	2016
Europe	In here you will find the production estimates in million meters of pipes!											
Austria												
Belgium												
Switzerland												
Czech Republic												
Germany												
Denmark												
Spain												
Estonia												
Finland												
France												
Great Britain												
Greece												
Hungary												
Ireland												
Italy												
Netherlands												
Poland												
Portugal												
Romania												
Serbia												
Sweden												

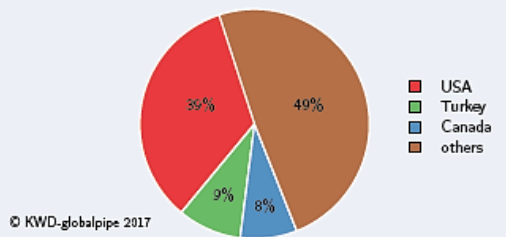
Eastern Europe (except EU)	
Armenia	In here you will find the production estimates in million meters of pipes!
Belarus	
Kazakhstan	
Russia	
Ukraine	

Australia / North America / South America	
Australia	In here you will find the production estimates in million meters of pipes!
Canada	
United States of America	
Argentina	
Brazil	
Chile	

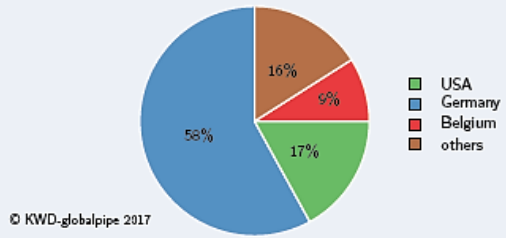
TOP 3 PE-Xa pipe producing countries worldwide (except Asia/Pacific) 2016



TOP 3 PE-Xb pipe producing countries worldwide (except Asia/Pacific) 2016



TOP 3 PE-Xc pipe producing countries worldwide (except Asia/Pacific) 2016



Regions and Countries Worldwide

In this report we are estimating the production volumes of PEX, PE-RT and PB pipes worldwide for the following regions and countries:

EUROPE

Austria	Greece
Belgium	Hungary
Switzerland	Ireland
Czech Republic	Italy
Germany	Netherlands
Denmark	Poland
Estonia	Portugal
Spain	Romania
France	Servia
Great Britain	Sweden

EASTERN EUROPE (Except EU)

Armenia	Russia
Belarus	Ukraine
Kazakhstan	

AUSTRALIA / NORTH AMERICA / SOUTH AMERICA

Australia	Argentina
Canada	Brazil
USA	Chile

MIDDLE EAST / ARABIA / AFRICA

United Arab Emirates	Marocco
Iran	Syria
Israel	South Africa
Jordan	Turkey
Kuwait	

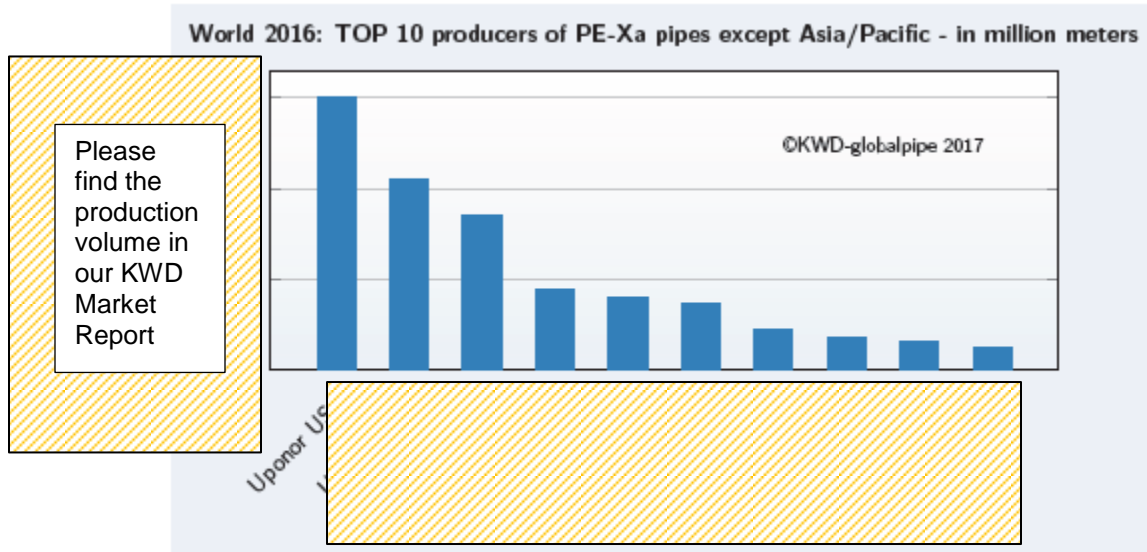
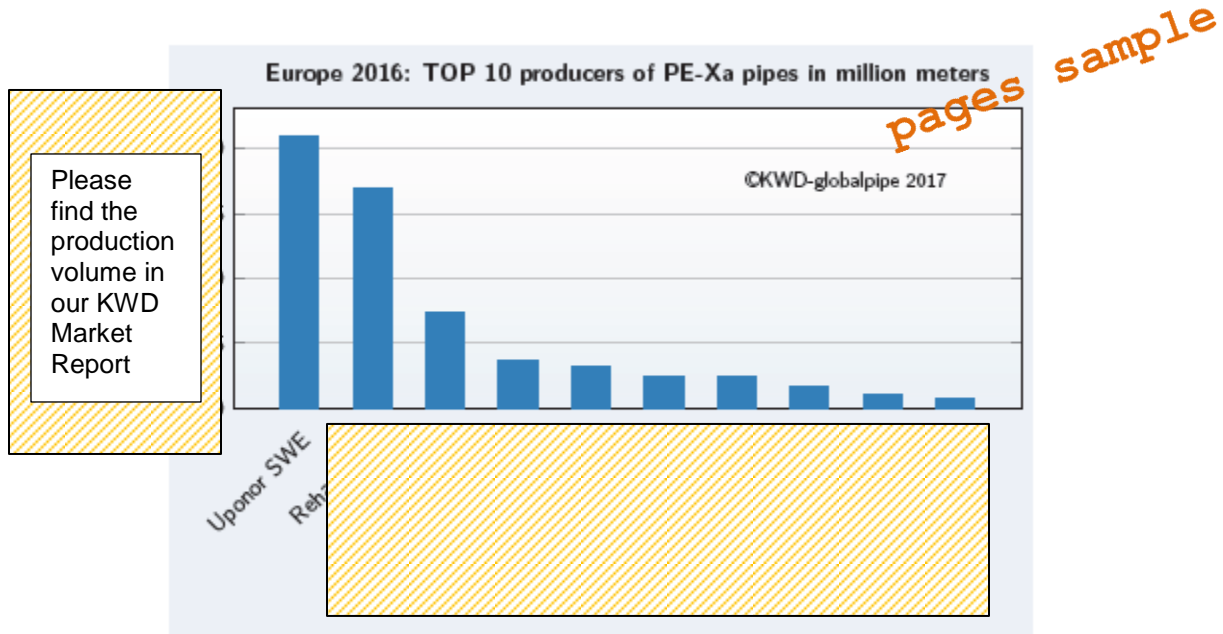
ASIA / PACIFIC

China	Korea, South
India	Thailand
Japan	

Because we could not get authentic information about the production output of pipes in the region Asia / Pacific, please find a list of manufacturers of PEX, PE-RT and/or PB pipes.

6 Producers of PEX, PE-RT and PB Pipes – Ranking

6.1 TOP 10 Producers Europe and worldwide (except Asia/Pacific)



In the report you'll find the charts with the TOP 10 producers (always for EUROPE and WORLD) for the pipe materials:

- PE-Xa
- PE-Xb
- PE-Xc
- PEX (a+b+c)
- PE-RT
- PB

7 Information on Companies and Markets

In this chapter you will find market information on the appropriate companies and markets. These articles have been published in our newsletter KWD-globalpipe during the last three years.

The information covers the following fields:

- 7.1 European company news
- 7.2 American company news
- 7.3 Russian company news
- 7.4 Chinese company news
- 7.5 News on extrusion lines
- 7.6 News on raw material
- 7.7 News on the legal dispute between Uponor and HeatLink /Canada


pages sample

7.1 European company news

7.1.1 Belgium

HENCO decided for PEX
⇒ PEX pipe for Russian underf

HENCO, one of the world
tems decided for a 5 layer




KW
6 t
gra

In Russia HENCO stopped 3
is on the inside of the pipes a
a better quality with PEX/Al

7.5 News on extrusion lines


battenfeld-cincinnati: Most powerful PE-Xa Line demonstrated live in Vienna
⇒ Extrusion line demonstration

For their cost-efficient production, battenfeld-cincinnati demonstrated in Vienna its most powerful PE-Xa extrusion line to 40 customers from Europe and the Near and Middle East.



KWD-globalpipe, 08.06.2015. With an output of up to 150 kg/h, it reaches substantially higher throughput rates than conventional lines or RAM extruders and offers the advantage of an extremely short, low-maintenance cross-linking station. In contrast to other production and cross-linking pro-cesses, the inline process demonstrated on this occasion enables the production of peroxide cross-linked pipes with high cross-linking rates at extremely low cost.


"PE-Xa pipe extrusion is not an easy task, due to the special demands of the material – so we are all the more pleased that we were able to answer our customers' questions during the presentation and afterwards directly next to the line"



7.6 News on raw material

SILON: PE-Xb for heating & plumbing pipes pays off – ask the Golden Questions
⇒ PE-Xb pipes

Silon starts marketing campaign for PE-Xb: „Ask the golden questions – know the counter arguments“ and lists the main applicati




KW
pod
tan

The history of PE-Xb prod
crosslinkable compounds, TA
in many applications, where a



7.7 News on the legal dispute between Uponor and HeatLink /Canada

HeatLink signs Licensing Agreement with Uponor in April 2016
⇒ Patent dispute / License Agreement / PE-Xa pipes

Company to Resume Manufacture and Sale of PEX Pipe, and Resolves Intellectual Property Litigation in Canada and the U.S.



KWD-globalpipe, 12.04.2016. HeatLink Group Inc. today announced that it has signed a technology licensing agreement with Uponor AB that allows the company to resume manufacture and sale of PEX piping and resolves ongoing intellectual property litigation in Canada and the U.S.

The Federal Court of Canada issued a ruling in March 2016 that halted HeatLink and its associat-ed companies from manufacturing and selling PEX piping in Canada based on infringement of Up-onor intellectual property. Following the ruling, the two companies came to a licensing agreement that allows HeatLink to resume its manufacturing and sales operations. The agreement also settles pending litigation in the U.S.

8 Producers – Company Profiles

pages sample

<p>Acome FRANCE - Paris www.acome.fr</p> <p>Company Profile: Acome Département Batiment has maintained its activities since its creation in 1932. The company is the leading French manufacturer of PE-Xc tubes for the building industry. With buildings totaling an area of 115,000 m² encompassing manufacturing, ACOME's industrial facility in Normandy is one of Europe's biggest.</p> <p>Brands: Ecotube (PE-Xc piping system) Europex (PE-Xc piping system) Acome MT (brass press fitting) Aquacome hydrocabled system (including Ecotube and Europex pipes) THERMACOME liquid screed (floor heating + cooling system) VIVRACOME wet underfloor system (including PEX pipes) ECO-THERMACOME underfloor system</p>	<p>Fittings, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ Press fittings, radial <p>Pipes, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ PE-Xc <p>Application / Others:</p> <ul style="list-style-type: none"> ▪ Surface heating and cooling, electrical ▪ Surface heating and cooling, warm water
---	--

9 Certificates

9.1 PEX pipes

pages sample

Accurate Solutions			
INDIA			
Certification	Brand	Product	Holder
SKZ A 605		PE-Xb pipe; FH	Accurate Solutions/IND
Acome			
www.acome.fr / FRANCE			
Certification	Brand	Product	Holder
AENOR 001/006274	Acome	PE-Xc pipe; SA	Acome/FRA
CSTB 14/12-1735*01 Ext	Calo Fluides	PE-Xc piping system; RA, SA	Acome/FRA
CSTB 14/12-1735*V1	Ecotube Europex	PE-Xc piping system; RA, SA	Acome/FRA
CSTB 14/12-1737*V1	Resopex	PE-Xc piping system; RA, SA	Acome/FRA
CSTB 14/13-1922*V1	Distritub	PE-Xc piping system; RA, SA	Acome/FRA
SKZ A 443		PE-Xc pipe; FH	Acome/FRA

9.2 PE-RT pipes

9.3 PB pipes