

KWD Market Report

Fittings and Pipe Connections

for Heating & Plumbing Systems

Situation and Trends
Europe 2021

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Consumption of Fittings in Europe and Detailed Listing of Fittings as Excel files.

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I would like to take this opportunity to thank all those

who have supported us even in times of the Corona Pandemic. Usually, we mainly use the industry fairs to get information for our studies. This time many things were different and so we asked a lot especially by email and phone and received answers from various home offices from patient people. We would like to thank them very much for this!

At this point, I would also like to thank our team, who have implemented the many changes and new ideas without complaint. It is fun to work with you!

Jutta Hix and Achim Seydel in February 2021

1 Fittings and Pipe Connections Europe 2021

Report on situation and trends

Once again, this report aims to provide an overview of the developments, trends and changes since our last report in 2016 on the market situation and trends for fittings and pipe connections in Europe. An updated list of the main European suppliers of pipe joining products complements the report.

In the past four years, a large number of new or even improved connector designs have been introduced in Europe, but without abandoning the established and proven types. Even if special designs are gaining ground, it remains to be said that the almost old-fashioned radial press fitting can be regarded as the industry standard worldwide. Metal or plastic has become less of a question of dogma when it comes to the choice of material; much more, intelligent solutions for the respective areas of application are being sought, often as composite designs in metal and plastic.

In light of the stream of innovations it is increasingly difficult even for experts to keep track of things. Which fitting made of which material is best suited for which type of pipe and application? What is the difference between the joining techniques available and which are the most important suppliers?

A special focus of the new report is on the developments to both: product development and quantitative use of the most important fitting types in the most important European markets, as well as the possible development of the connector materials and material combinations.

2 Terms and Definitions

The term „fitting“ originates in the English language and has several meanings, for example accessories, connections, fastening fixtures or clamp.

In this context fittings can be described as „accessories or parts for pipelines“ or even more commonly used „parts for pipe systems“ and „pipe connections“

➡ In this chapter of the KWD Fitting Report the different terms will be explained.

3 The Development of Fittings – a brief look back

For many years, the world of fittings and connection technology was overseeable. For heating and sanitary installations almost exclusively steel and copper pipes were used and these pipes were connected by mainly manual welding or soldering.

For directional changes in the pipe system, threaded fittings were used for steel pipes and soldering fittings were used for copper pipes. With the introduction of alternative pipe materials to the market beginning in the 1960s, new jointing techniques adapted to the specific properties of these pipes were often required. For example, in supply piping systems, the increasingly used plastic pipes, such as PVC or PE were plugged or even welded. For special applications that required detachable connections, clamp connectors made of metal were already available.

The modern time in pipe jointing technology began in the 70s and 80s with the increasing use of plastic pipes in hot water applications.



➔ In this chapter of the KWD Fitting Report the development of the different types of connections are presented in the following subchapters:

3.1 Sliding Sleeve - Axial Compression

3.2 Press Fitting - Radial Compression

3.3 Push Fitting

3.4 Welding Fitting

3.5 Fitting Developments outside Europe

3.6 Latest Fitting Developments

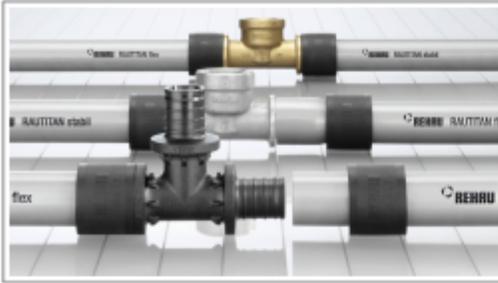
3.6.1 New Developments of Installation Systems

3.6.2 New Developments of Fittings

Page sample chapter 3:

3 The Development of Fittings – a brief look back

3.1 Sliding Sleeve - Axial Compression



The major success of Basque pipe and fitting manufacturer Blansol's „Barbi“ sliding sleeve connections with its simple manual compression tool in Spain and France led to intensified development activities of many pipe system suppliers in their quest for new proprietary connecting technologies.

Logically already in 1986, German pipe manufacturer Rehau applied for a patent for a sliding sleeve connection for PE-X pipes under the name of „Two-piece metallic compression joint“ and developed the necessary professional installation tools for axial compression as well.

(Foto: Rehau)

3.2 Press Fitting - Radial Compression



Interestingly though, these compression techniques, regardless if radial or axial, had been known since a long time and described for numerous applications. However, manufacturers at that time deserve credit for having adapted those techniques to the properties of their respective pipe systems in order to simplify assembly and ensure longtime operating safety. After the era of permanently attached compression joints had begun things were happening fast. A stream of designs and modifications of the two basic technologies for all pipe types and dimensions with manual but foremost electrically driven compression tools emerged. There were only minor differences between the systems, mostly only in the press shape. This led to a variety of proprietary crimping jaws. To the occasional frustration of processors, manufacturers of installation accessories and tools embraced the new and promising business.

(Foto: Uponor)

Fortunately, it has in the meantime been possible to achieve a certain standardization of press jaws and press profiles, which makes it possible to process different press systems with one tool set.

Additional innovations followed in the new century with the market introduction of new plastic pipe materials like PPSU or PVDF for fitting bodies instead of the commonly used brass alloys.

In recent years, other special forms of radial press fittings have been developed: Viega has developed a fitting with a radial compression, and Geberit a fitting with a lateral compression.

The brilliant idea of one supplier to let an insufficiently pressed fitting leak during the - hopefully conducted- pressure test encouraged many press fitting manufacturers to adapt their fitting designs, sometimes rather involuntarily. The so called „Piesel“ fitting was born. Meanwhile, "whistling" press fittings are also offered, if the system test is carried out with compressed air.

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4 Basic Designs of Pipe Connections

In our daily life, different basic variants of fittings and pipe connections have become established.

We divide these into:

Mecanical Pipe Connections

- Compression and Screw Fittings
- Press Fittings
- Push Fittings

Integrally-Joined Connections

- Welded Connections for Plastic Pipes

Special Designs

➡ In the KWD Fitting Report all basic fittings and pipe connections are described according to the following structure:

- Description of the fitting
- Applications
- Pipe types for which the fitting can be used
- Design
- Operating principle
- Fitting materials
- Installation
- Pros and Cons
- Some examples with photos and description of the fitting

Page sample please see next page.

Page sample chapter 4:

4 Basic Designs of Pipe Connections

4 Basic Designs of Pipe Connections

4.1 Mechanical Pipe Connections

4.1.1 Compression and Screw Fittings

A long standing proven connecting method in a variety of different versions for many pipe types and applications.

Applications	Widely used connections, for example...
Pipe types	Versions for many PE, PE-X, PP, P, soft, stainless steel
Design	Composed of fitting, ring seals, clamp, soft sealing clamp
Operating principle	The lock nut goes on or through the clamp. Profiling of pressure or multiple elastic
Fitting materials	<ul style="list-style-type: none"> ▪ Brass alloys, ▪ Red brass ▪ Stainless steel ▪ Plastic materials <ul style="list-style-type: none"> – Polysulfide – Polyvinyl – Polyamide – Polypropylene
Installation	Cut pipe properly and clamping ring pull lock nut tight to the tightening with an Allen wrench

4 Basic Designs of Pipe Connections

Pros and Cons

<ul style="list-style-type: none"> + For many pipe types, dimensions and applications available + Detachable + Simple installation without automatic tools or blaze 	<ul style="list-style-type: none"> -- Depending of version, time consuming installation -- Tightening torques often according to experience -- Variety of types available makes correct selection difficult -- Restricted use for difficult to access areas
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Some examples of Compression and Screw Fittings

Uponor Euroconus Fitting



Rifeng F1



Sanha Purafit: Screw Fittings from lead-free CuSi

SANHA produces the screw fittings of the series PURAFIT® from the premium material lead-free silicon bronze CuSi. This copper alloy is optimally adapted for the use in drinking water systems as it fulfills the strict legal requirements of the Drinking Water Directive. Sanha Purafit fittings can be used for drinking water, heating, flammable gases, rainwater, solar systems, fire extinguishing systems, sprinkler systems (wet), inert gases and cooling water pipes.



Sanha Purafit 3090



Sanha Purafit 3280



Sanha Purafit 3301

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5 Analysis of used Fittings by Connection Type

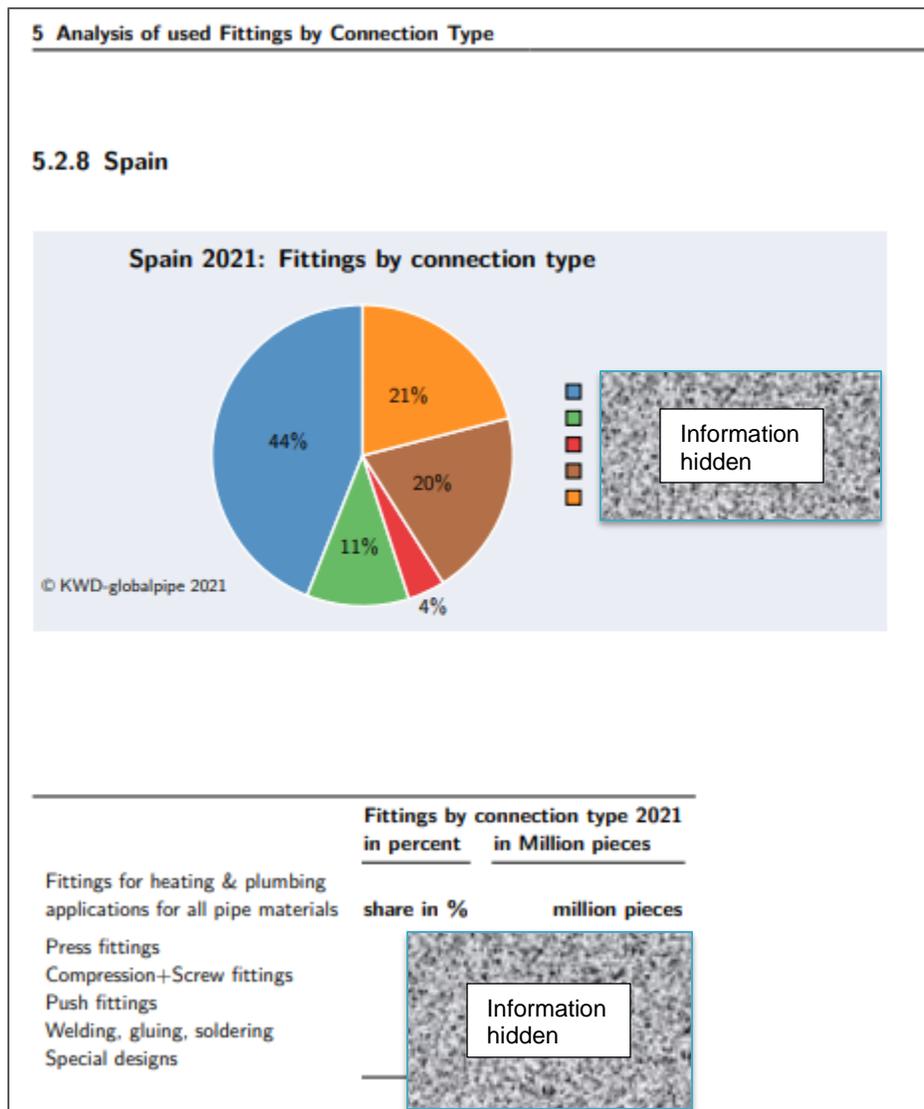
We are repeatedly asked to show which fitting quantities per fitting type are used in the market. Unfortunately, there is no statistical basis for such an analysis on the market.

So, as in 2016, we have decided to do a survey. Here we asked various market participants what they thought is the percentage of each fitting type used in their home market.

➔ So in this chapter of the KWD Fitting Report we the results of the survey and we comment on the result compared to the 2016 survey.

The Fittings by connection type are available for the countries:
 Austria / Belgium and Netherlands / Czech Republic / Germany
 Great Britain / Italy / Poland / Spain / Scandinavia

Page sample chapter 5:



6 Consumption of Fittings by Pipe Material

Chapter 6 is the heart of the study. Here we show our estimate of how many fittings in million pieces were consumed in Europe in 2018 - 2022. This presentation is available for the 19 countries of the Euroconstruct study, divided into the various application areas such as underfloor or surface heating, radiator connection and sanitary installation. For the calculation of the fitting quantities, we use the consumption of pipes in the building services that we have collected.

Since many years the KWD publishing house is analyzing the consumption of pipes for heating & plumbing installations in Europe. These data are collected in million meters per pipe material. In order to estimate the market size for fittings the use of conversion factors "meters of pipes to number of fittings" has proven reliable.

These empirical factors are based on average numbers of fittings needed for underfloor/surface heating & cooling, radiator connections and hot & cold water installations in relation to the different pipe materials.

In general, there is not much difference in material-specific installation methods across countries. However, a variety of special product types exist due to certain local preferences in terms of convenience and price levels. Therefore, these conversion procedures provide only guidelines which nonetheless often times can help to make a judgement in terms of proportions.

In chapter 6.2 you can find the table with the conversion factors from consumed pipes to consumed fittings.

The consumption of fittings is available for the EC19 countries:

Austria	Finland	Norway
Belgium	Grance	Poland
Switzerland	Great Britain	Portugal
Czech Republic	Hungary	Slovakia
Germany	Ireland	Sweden
Denmark	Ttaly	
Spain	Netherlands	Europe (Total EC19)

Presentation of the consumption quantities of fittings in tables and graphs

➡ In the tables that follow on the next pages, we have grouped certain pipe materials together, since the same installation conditions apply to them:

Metal pipes:	copper, steel and stainless steel pipes
PP-R pipes:	PP-R, PP-RCT and corresponding pipe materials
Flexible pipes:	pipes made of PEX (a,b and c), PE-RT and PB
Alu-Multilayer pipes:	pipes made of PEX or PE-RT in inner and outer layers with an aluminum foil in the middle (marked "alml pipes" in the graphic)



The consumption of fittings is also available as excel file

Page sample chapter 6 (four pages for each country):

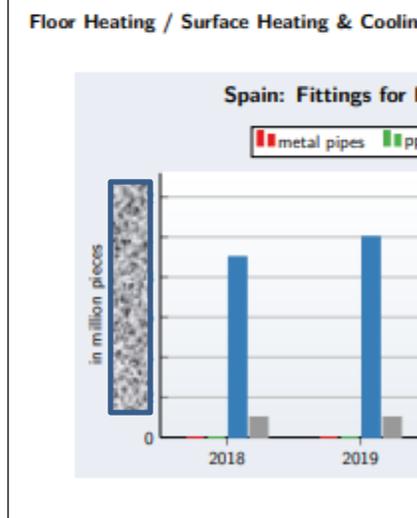
6 Consumption of Fittings by Pipe Material

6.3.7 Consumption of Fittings - Spain

Floor Heating / Surface Heating & Cooling - Spain

Fittings for	2018	2019	+/-	2020	+/-	2021	+/-	2022	+/-
			Previous Year		Previous Year		Previous Year		Previous Year
metal pipes ¹	Information hidden								
PP-R pipes									
flexible pipes ²									
Alu-Multilayer pipes ³									
Total									

¹ Carbon steel/steel, copper + stainless steel
² PEX, PE-RT + PB pipes
³ PEX or PE-RT/Al/...

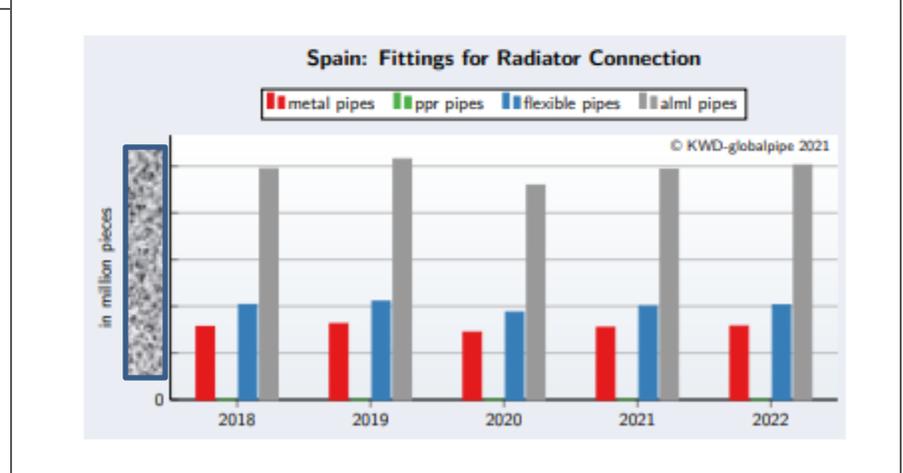


6 Consumption of Fittings by Pipe Material

Radiator Connection - Spain

Fittings for	2018	2019	+/-	2020	+/-	2021	+/-	2022	+/-
			Previous Year		Previous Year		Previous Year		Previous Year
metal pipes ¹	Information hidden								
PP-R pipes									
flexible pipes ²									
Alu-Multilayer pipes ³									
Total									

¹ Carbon steel/steel, copper + stainless steel
² PEX, PE-RT + PB pipes
³ PEX or PE-RT/Al/...

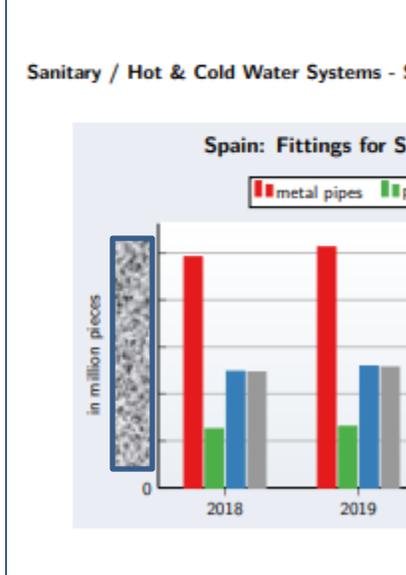


6 Consumption of Fittings by Pipe Material

Sanitary / Hot & Cold Water Systems - Spain

Fittings for	2018	2019	+/- Previous Year	2020	+/- Previous Year	2021	+/- Previous Year	2022	+/- Previous Year
metal pipes ¹	Information hidden								
PP-R pipes									
flexible pipes ²									
Alu-Multilayer pipes ³									
Total									

¹Carbon steel/steel, copper + stainless steel
² PEX, PE-RT + PB pipes
³ PEX or PE-RT/Al/...

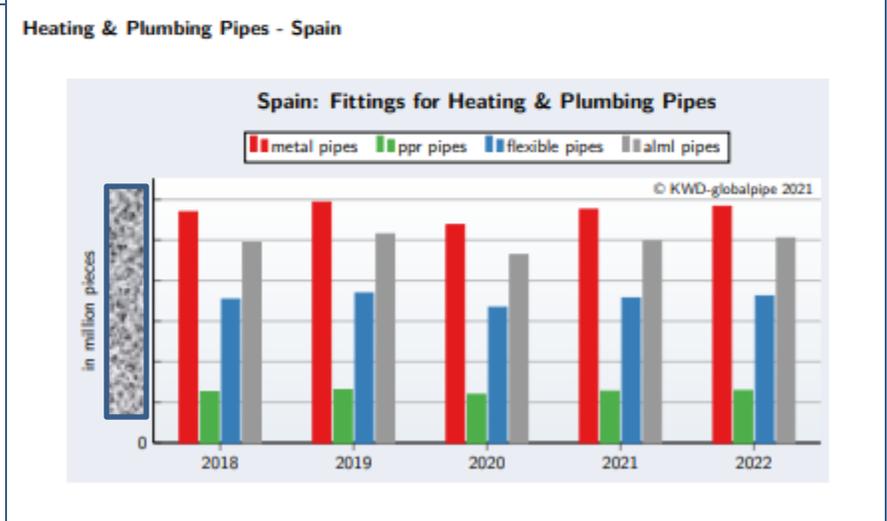


6 Consumption of Fittings by Pipe Material

Heating & Plumbing Pipes - Spain

Fittings for	2018	2019	+/- Previous Year	2020	+/- Previous Year	2021	+/- Previous Year	2022	+/- Previous Year
metal pipes ¹	Information hidden								
PP-R pipes									
flexible pipes ²									
Alu-Multilayer pipes ³									
Total									

¹Carbon steel/steel, copper + stainless steel
² PEX, PE-RT + PB pipes
³ PEX or PE-RT/Al/...



7 News on Fittings and Pipe Connections

Since the 70s KWD has been engaged in pipes and fittings inside buildings. As a publisher we have seen and reported on the development of PEX and multilayer composite pipes as well as press fittings and plug-in fittings. We weekly report about this in our newsletter KWD-globalpipe.

➡ In the present KWD Fitting Report, we list all the reports back to January 2019 that contain interesting information about fittings such as new products, advancements, applications and certifications.

7.1 Fitting News published in KWD-globalpipe in 2021

- GEBERIT novelty 2021: New innovative supply system FlowFit
- Tiemme: "NF" certification for AL-COBRAPEX multilayer pressing system
- Plastica Alfa: New Repair Coupling extending BluLine Plus compression fitting range
- Ferro Plast: Manufacturer of PVC and PE pipes and fittings for more than 50 years
- Wavin's Tigris K5/M5: Pressure test with air reduces risk of Legionella+water damage
- ...

7.2 Fitting News published in KWD-globalpipe in 2020

- PCC: New press fitting COPPER AQUAGAS V three-part male union
- Pegler Yorkshire: Benefits of heat-free jointing methods
- KAN-therm UltraLine PE-RT/Al and PE-Xc piping system are DVGW and KIWA certified
- General Fittings: The all in one mixing unit TRITONE has been patented
- KE KELIT: STEELOX – the world's first flexible stainless-steel piping system
- LK Systems now presents a new PushFit-range AX for both LK PE-X and LK PAL
- ROTHENBERGER showed new products for cutting+joining pipes at #innovationweek
- ...

7.3 Fitting News published in KWD-globalpipe in 2019

- John Guest: Innovative PolarClean tube-in-tube technology for cold beverages
- VIEGA: Raxofix press connectors celebrate 10th anniversary
- Rubinetteria Bresciane Bonomi got CSTB certification for multilayer piping system
- Jentro: New launched clamp-fitting for PEX and PE pipes is now available
- Nupi: New NIRON CLIMA ALL-PRO pre-insulated PP-RCT piping system
- NORMA Group: New FGR pipe coupling withstands extremely high temperatures
- FRABO: The family is growing – New copper and bronze M profile
- Smartweld presented its flexible Smartweld Green PP-RCT piping system at ISH
- Uponor S-Press PPSU Fittings now also available in XL sizes up to 75mm
- REHAU presents new RAUTITAN RX+ fittings – lead-free drinking water installation
- ...

8 Detailed listing of Fittings in Europe 2021

This list includes fittings for underfloor/surface heating&cooling systems, radiator connections, sanitary installations as well as gas installations. The list is a summary of fittings from European fitting manufacturers. We do not claim completeness and correctness.

➡ This list shows all the fittings from European Fitting Manufacturer that we could find in publicly available lists. The fittings were cataloged according to the following key points:

- Company / Country
- Brand
- Fitting material / for pipes made of
- Diameters

Also the fittings are listed by the following connection type:

- 8.1 Press Fitting – radial
- 8.2 Press Fitting – axial (sliding sleeve)
- 8.3 Push Fittings / tool-less
- 8.4 Compression and Screw Fittings
- 8.5 Welding, Gluing or Soldering Fittings
- 8.6 Special Design Fittings

X

This list is also available as excel file.

Page sample chapter 8:

8 Detailed listing of Fittings in Europe 2021

8 Detailed listing of Fittings in Europe 2021

8.1 Press Fittings - radial

Company	Brand	Fitting material	Press shape	for pipes made of	diameters
Acome	FRA	ACOME MT	Brass	ACz	PEX, PB, PE-RT 12 - 25
AIS Concept (OEM)	ESP	AIS MM PPSU	PPSU with st steel sleeve	U, H, TH, RFz, U	Multilayer 16 - 50
AIS Concept (OEM)	ESP	AIS MM BRASS COLOR	Brass with st steel sleeve	U, H, TH, RFz	Multilayer 16 - 32
AIS Concept (OEM)	ESP	AIS BD BRASS COLOR	Brass with st steel sleeve	U, TH	Multilayer 40 - 75
AIS Concept (OEM)	ESP	AIS INOX M1	St Steel		Multilayer 63 - 110
AIS Concept (OEM)	ESP	AIS TRMLP BRASS COLOR	Brass with st steel sleeve	U	Multilayer 16 - 32
AIS Concept (OEM)	ESP	AIS PEX BRASS COLOR	Brass with st steel sleeve	U	Multilayer 16 - 32
APE	ITA	AP Series	Brass with st steel sleeve	B, H, TH, U	Multilayer 16 - 63
APE	ITA	AP Series Gas	Brass with st steel sleeve	TH	Multilayer 16 - 32
APE	ITA	APL Series	Brass with st steel sleeve	H, TH, U	Multilayer 16 - 32
aquatechnik	ITA	universal	PPSU	H, TH, F, B, U/C	Multilayer 16 - 32
aquatechnik	ITA	press-fitting metal	Brass	H, TH, U	Multilayer 16 - 63
Brass Form	GRC	Press Form	Brass with st steel sleeve	TH, H, U	Multilayer, PE-Xc, Cuemart 16 - 32

9 Company profiles alphabetical

➔ In this chapter company profiles to European producers and distributors of fittings can be found.

Page sample chapter 9:

9 Company profiles alphabetical	
<p>aquatherm GmbH GERMANY - Attendorn www.aquatherm.de</p> <p>Company Profile: Aquatherm GmbH is a family business which was founded in 1973. Today aquatherm is a global player and is present in 75 countries. The company is market leader in various sectors and a innovative medium seized company which can compete with the large ones. One principle of aquatherm is to protect the environment in all stages of their production.</p>	<p>Fittings, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ Sliding sleeves / press fittings, axial ▪ Welding, gluing or electrofusions fittings <p>Pipes, Distributor of:</p> <ul style="list-style-type: none"> ▪ PE-Xc / Al / ... ▪ PP-R / Al / ... <p>Pipes, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ PB ▪ PE-RT ▪ Pipes / PP-R composite fibre ▪ PP-R ▪ PP-R Stabi (Al) <p>Application / Others:</p> <ul style="list-style-type: none"> ▪ Surface heating and cooling components ▪ Surface heating and cooling, warm water
<p>BAMPI S.p.A. ITALY - Lonato (BS) www.bampi.it</p> <p>Company Profile: Since 1977 Bampi SpA has been present in the hidro-thermo-sanitary field succesfully. Today Bampi SpA has a wide range of articles for sewage, floor heating and cooling, water distribution, suitable for most of technical requirements of installation.</p>	<p>Fittings, Distributor of:</p> <ul style="list-style-type: none"> ▪ Compression screw fittings ▪ Press fittings, radial <p>Fittings, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ Welding, gluing or electrofusions fittings <p>Pipes, Distributor of:</p> <ul style="list-style-type: none"> ▪ PE-Xb / Al / ... ▪ PE-Xc / Al / ... <p>Pipes, Manufacturer of:</p> <ul style="list-style-type: none"> ▪ PP-R <p>Application / Others:</p> <ul style="list-style-type: none"> ▪ Surface heating and cooling, warm water



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KWD Market Report "PEX, PE-RT and PB worldwide 2017" Flexible Pipes for Heating&Plumbing Installations, 376 pages in English language digital version per download, all tables and charts as Excel file	1.180,- <input type="checkbox"/>	960,- <input type="checkbox"/>

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