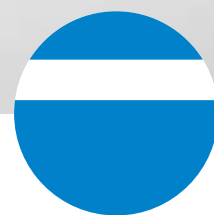


MULTILAYER SYSTEM



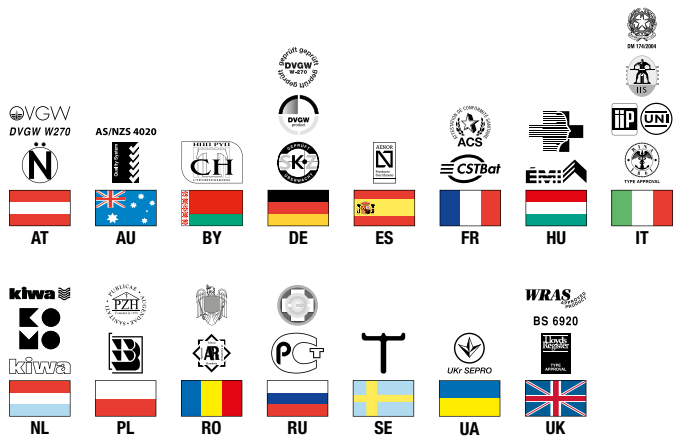
Multilayer pipes for water supply, heating, cooling, refrigerating and industrial systems



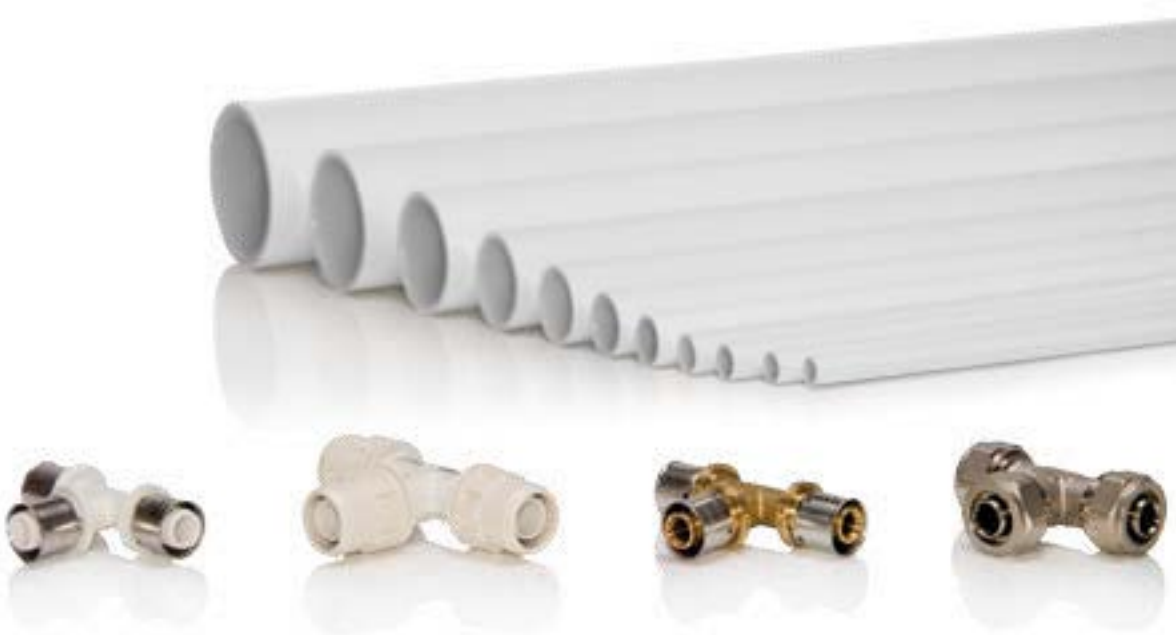
MADE IN ITALY

valsir[®]
QUALITY FOR PLUMBING

An excellent water supply system



Pexal® is composed of multilayer pipes and different types of fittings that are chosen according to the installation technique adopted. There are various applications: from the **distribution of hot and cold drinking water to centralised water supply systems**, from **radiator and fan heating systems** to radiant floor, wall and ceiling **heating and cooling systems**, from **compressed air systems** to **industrial plants**.



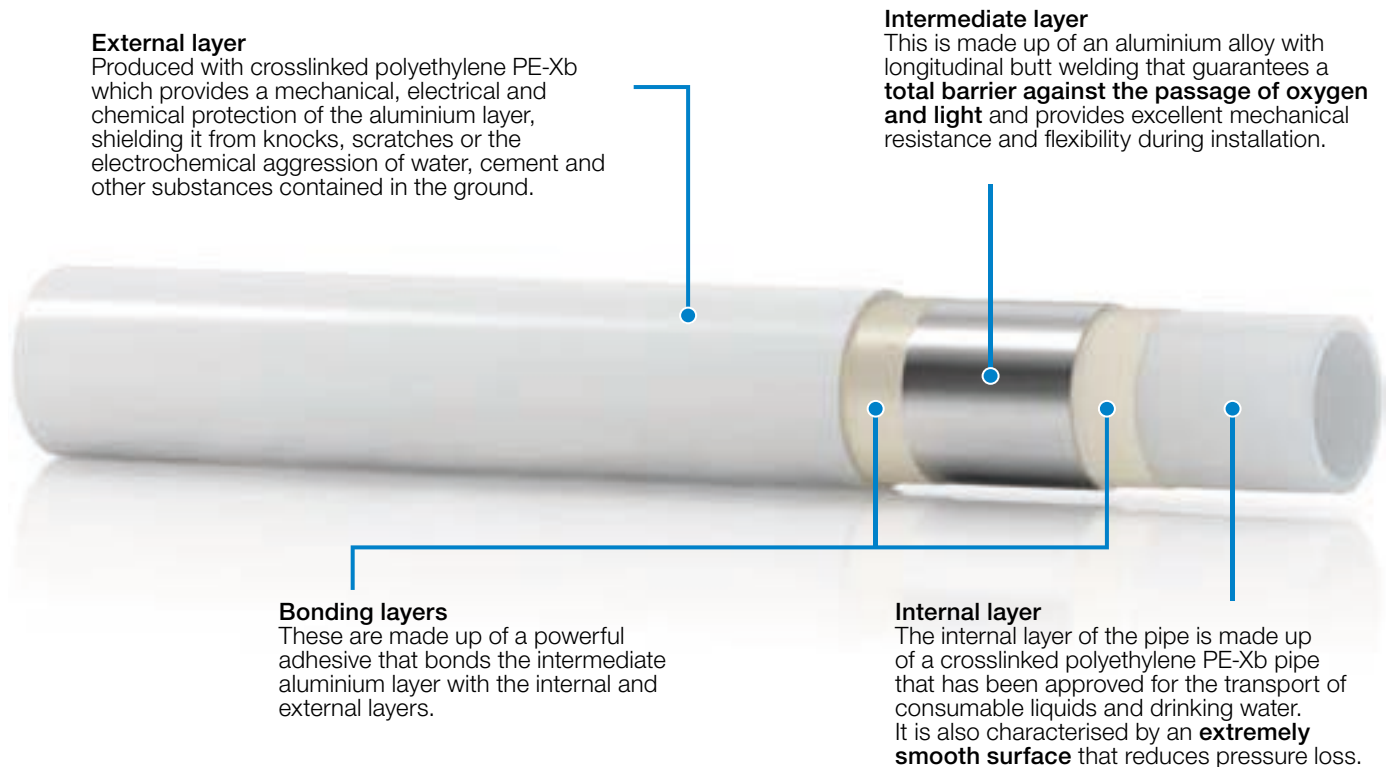
An important trait of Pexal® multilayer pipes is that they combine the advantages of synthetic materials and in particular those of crosslinked polyethylene, such as a high resistance to abrasion, corrosion and chemical agents and a high hygiene standard with those of aluminium, such as an excellent resistance to high temperatures and pressures, dimensional stability, an unequalled oxygen barrier and low thermal expansion.

MADE IN ITALY

THE ADVANTAGES OF SYNTHETIC MATERIALS AND METAL IN ONE PRODUCT

The Pexal® multilayer system unites the qualities of **crosslinked polyethylene PE-Xb with those of aluminium; crosslinked polyethylene PE-Xb guarantees excellent mechanical, chemical and physical properties, and the butt-welded**

aluminium pipe improves mechanical resistance, introducing flexibility and pliancy, qualities that are fundamental for accelerating and simplifying installation operations.



External layer

Produced with crosslinked polyethylene PE-Xb which provides a mechanical, electrical and chemical protection of the aluminium layer, shielding it from knocks, scratches or the electrochemical aggression of water, cement and other substances contained in the ground.

Intermediate layer

This is made up of an aluminium alloy with longitudinal butt welding that guarantees a **total barrier against the passage of oxygen and light** and provides excellent mechanical resistance and flexibility during installation.

Bonding layers

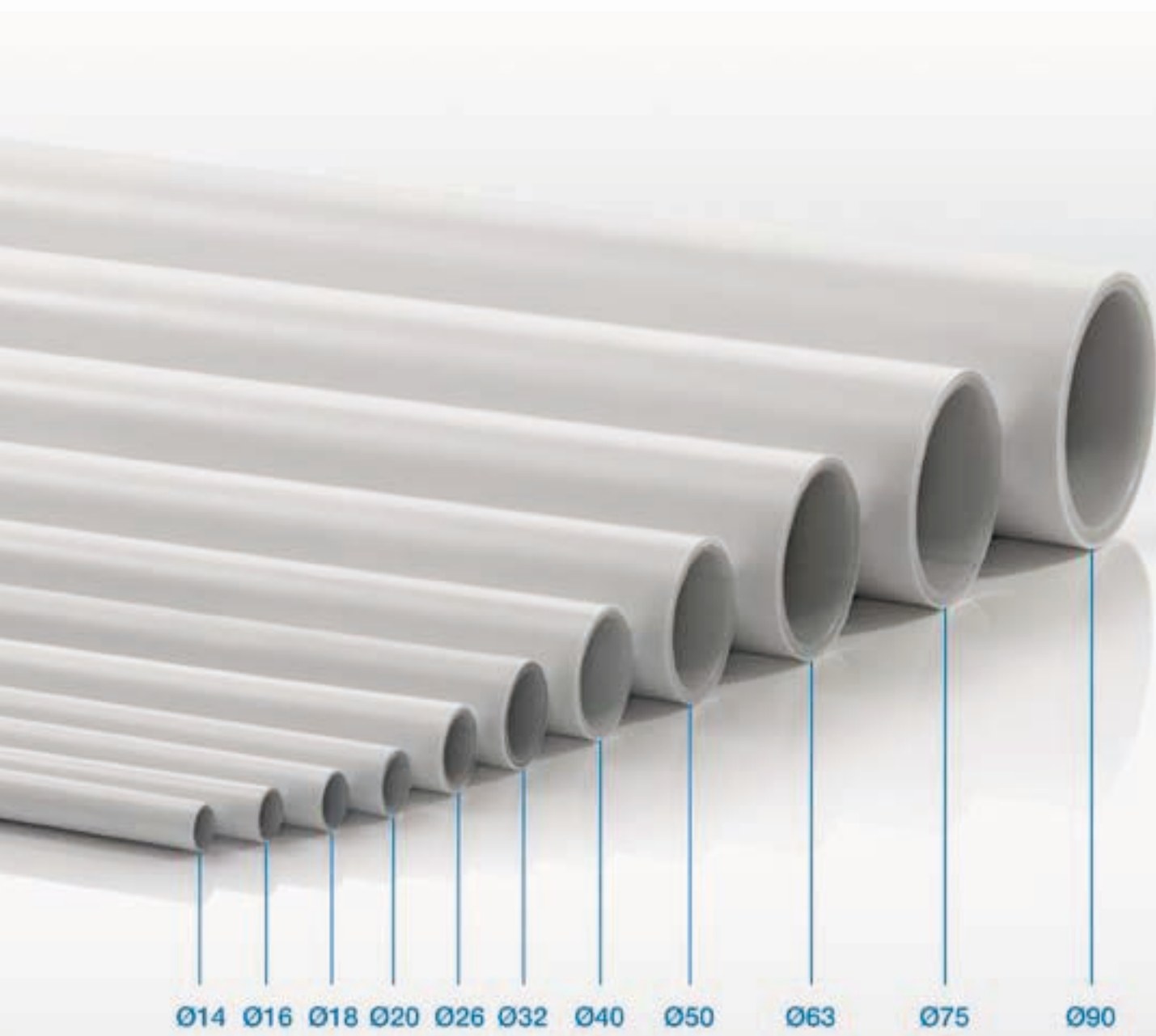
These are made up of a powerful adhesive that bonds the intermediate aluminium layer with the internal and external layers.

Internal layer

The internal layer of the pipe is made up of a crosslinked polyethylene PE-Xb pipe that has been approved for the transport of consumable liquids and drinking water. It is also characterised by an **extremely smooth surface** that reduces pressure loss.

The result is a product made up of different layers of material bonded together that provide **excellent properties that would otherwise not be possible to obtain with a pipe made up of a single material.**

The Pexal® system is manufactured in compliance with European Standard EN ISO 21003 and its characteristics of reliability and quality are guaranteed by the most severe certification bodies that control and verify product performance with meticulous frequency within the manufacturing plants.



Ø14 Ø16 Ø18 Ø20 Ø26 Ø32 Ø40 Ø50 Ø63 Ø75 Ø90

THE ADVANTAGES OF USING A MULTILAYER SYSTEM



The **total resistance to corrosion, to construction materials and the main chemical compounds** allow it to be used in a wide variety of applications, both residential and industrial.



The system has a **guaranteed durability of at least 50 years** in compliance with product standards; in this period the product can be used at **pressures of 10 bar and temperatures as high as 95°C**.



The **extremely smooth internal surface**, as well as preventing the formation of deposits such as lime scale, ensures **reduced pressure loss** also with the passage of time.



The elastic nature of the crosslinked polyethylene allows excellent absorption of vibrations and therefore an **excellent acoustic insulation**.



The combination of crosslinked polyethylene and aluminium guarantees **excellent flexibility when bending** (also when bent manually) and **dimensional stability in the long term**.



The **range of fittings, accessories and relative tools** is **extremely wide** and allows all requirements to be met. The fittings are available **both in metal and in technopolymer** to cover different system applications.

Aluminium

There are different methods for the production of multilayer pipes and they differ mainly in the technology used in forming the aluminium pipe. It can be formed by overlapping, overlapping and welding, or by butt connection and welding.

The latter is the technology chosen by Valsir in that it guarantees a uniform thickness across the entire circumference, greater resistance to pressure and bending, uniform mechanical characteristics, greater adhesion values with the bonding layers and a total barrier to oxygen.





The butt welded aluminium layer acts as a **total barrier against oxygen and light**, which in plastic pipes would otherwise favour algae growth and the corrosion of the metal parts that make up the system.



The system is made up of materials that are completely non-toxic and **is certified for the transport of consumable fluids and drinking water**.



Thermal expansion is approximately 8 times lower than all-plastic pipes and is **similar to the expansion in metal pipes**.



The **pipes** are **extremely light in weight** as compared with metal pipes: weight is 1/3 of a similar copper pipe and is 1/10 of a similar steel pipe.



It is the **ideal solution in areas subject to earthquakes** thanks to the excellent mechanical properties such as flexibility and the capacity to alleviate vibrations.



Wide range of diameters from **De 14 mm to De 90 mm for the Pexal® pipe**, and from **De 14 to De 32 for Mixal®**.



Pexal® and Mixal® are produced with materials that can be completely recycled, which, at the end of their service life can be recovered. The production processes used are energy efficient and are of a low environmental impact; in terms of the environment and conservation of resources, Pexal® and Mixal® are in line with Green Building principles.



Crosslinked polyethylene

The crosslinking process can be performed using different technologies, recognised by International standards and identified as follows: A (peroxides), B (silanes), C (radiation), D (azo-compounds); the method used is indicated together with the abbreviation for the material, thus obtaining PE-Xa, PE-Xb, PE-Xc, PE-Xd.

There is much conflicting information in the market as to which is the best technology; however, it is not the type of crosslinking process that determines the quality of the pipe but the capacity to produce it in compliance with all the relevant quality standards which are applied to all four of the abovementioned crosslinking methods.

AN EXCELLENT MULTILAYER SYSTEM

Time and money saving installations

Thanks to their excellent mechanical characteristics the Valsir multilayer pipes can be bent instead of employing fittings thus obtaining significant advantages from an economical point of view.

Valsir multilayer pipes can be bent by hand with diameters up to 32 mm and mechanically for larger diameters, with bending radii up to 2.5 times the pipe's diameter.

The excellence of Valsir multilayer pipes also lies in the extraordinary dimensional stability and in the low coefficient of thermal expansion: once bent and installed the pipes remain in place over time and thus allow the number of anchor clips to be reduced which, in surface mounting, can be reduced by 40% of the number of clips necessary for plastic pipes in PE-X, PE-RT, PP-R, PB, PVC-C, etc.



Bending diameter 20 mm



Bending diameter 90 mm

Fire resistance

The installation of a system must always be performed in compliance with local and national standards and regulations, observing any fire protection provisions in force that may vary from one country to another.

The most widely used method is that of fitting fire stop collars: devices composed of an intumescent material that in the presence of high temperatures expands thus blocking off the passage of flames, gas and heat through the hole where the pipe is melting.

There is, however, **another technique** that depends greatly on the quality and the performance of the multilayer pipe, certified by specialised institutes which consists of covering the pipe with a special elastomeric insulating sheath.

The multilayer pipes produced by Valsir were **tested by the CSTB Institute** (Department security Structures et Feu) **and the test report No. RA09-0093 was issued** in which **it is stated that the system falls into the M1 fire resistance class** if coated with thermal insulation sheaths specifications.

Legionella and treatments

Pipes are increasingly being treated to reduce the risk of the formation of bacteria that can lead to disease, one of the most lethal being the Legionnaires disease.

There are different types of treatment available; however the most widely used method, generally because it's the most economical, is chlorine super shock and consists of rinsing out the entire system with large doses of chlorine.

Chlorine super shock has extremely negative effects on metal pipes in that it accelerates corrosion; **Valsir multilayer pipes**, however, have a greater resistance to chemical compounds and **can undergo this type of treatment**

for several years without any reduction in performance.

Multilayer pipes, when used together with Pexal Easy® or Bravopress® fittings are therefore the ideal solution of use in hospitals where these treatments are performed at regular intervals throughout the year.



APPLICATIONS

Pexal® and Mixal® multilayer systems are suitable in renovations as well as new buildings such as shopping centres, hospitals, offices, schools, multi-storey residential buildings, and industrial plants.

Thanks to their excellent qualities they can be used in surface mounting for any type of system:

- supply of high and low temperature water to radiators,
- supply of hot and refrigerated water to fans,
- distribution of hot and cold water,
- radiant floor, wall and ceiling heating and cooling systems,
- central heating stations,
- distribution of compressed air,
- laboratories, technical and industrial plants in general.



Radiant system made of multilayer pipe



Water supply system realized with multilayer pipe insulated or with coloured protective conduit