

AQUA *SILENT*

PVC sound - absorbing
soil system



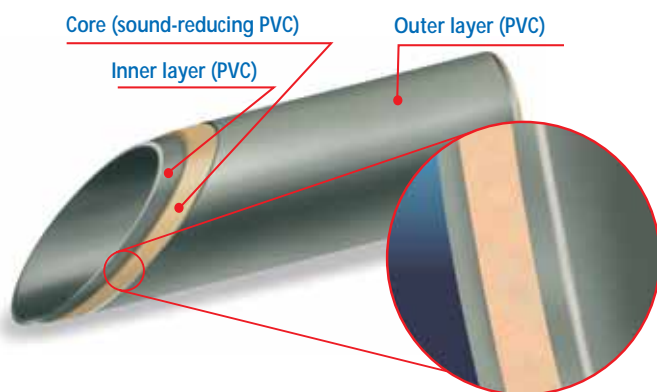
PIPELIFE 

What is AquaSilent?

Production description

AquaSilent is a system of pipes and accessories that is specially designed to reduce the noise that accompanies the evacuation of wastewater and rainwater, and also decrease the sounds that often occur when substances travel through sanitary pipes. With its innovative three-layer PVC structure, AquaSilent is the latest technological innovation in sound insulation systems.

Two layers protect the inner core layer from external factors. This core traps the sounds that occur in the pipes, and notably reduces noise in the pipe system.



Fields of application

AquaSilent is designed for the evacuation of wastewater and rainwater at low and high temperatures in down pipe sections as well as general drainage connections in buildings that place great importance on a noise-free environment for residents.

Noise and Comfort

What is noise?

We usually refer to noise as any sound that bothers us, either because of its intensity or persistence. Noise caused by constant knocking or percussion – like drums – is what we find most irritating. Long-term exposure to this type of noise can cause deafness or stress in humans and, for this reason, it is very important to minimise the impact between materials.

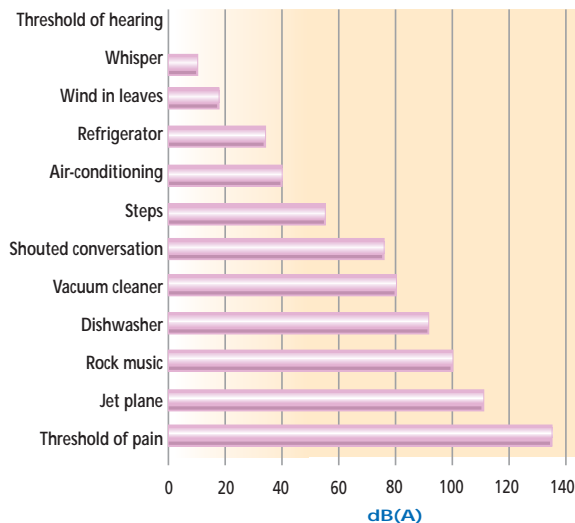
How is noise measured?

The most appropriate way of measuring noise is by sound intensity, which is expressed in decibels (dB(A)). This is a subjective measurement adapted to human hearing, and means that an increase of 3 dB(A) in a particular noise represents twice the power of the noise emission.

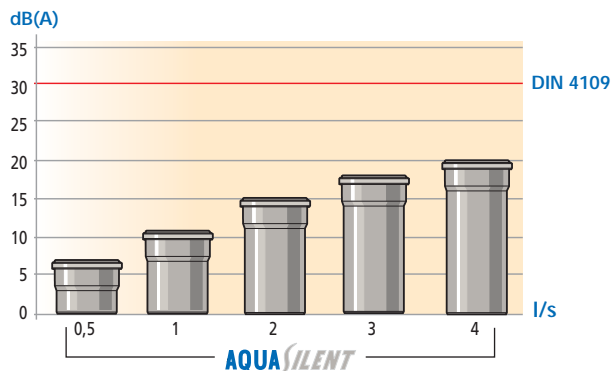
How does AquaSilent work?

Basic construction regulations recommend that noise should not exceed 25 dB(A) in a transmission between adjoining rooms. AquaSilent products guarantee a noise level that is well below this limit, as is shown by tests carried out at the Fraunhofer Institute for Construction Physics in Germany (see table).

COMMON NOISES AND THEIR INTENSITY IN DECIBELS

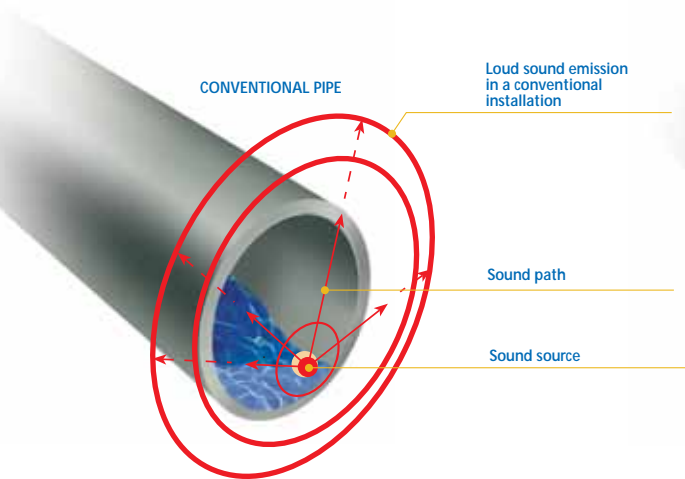


DEGREE OF SOUND ABSORPTION



How is noise transmitted?

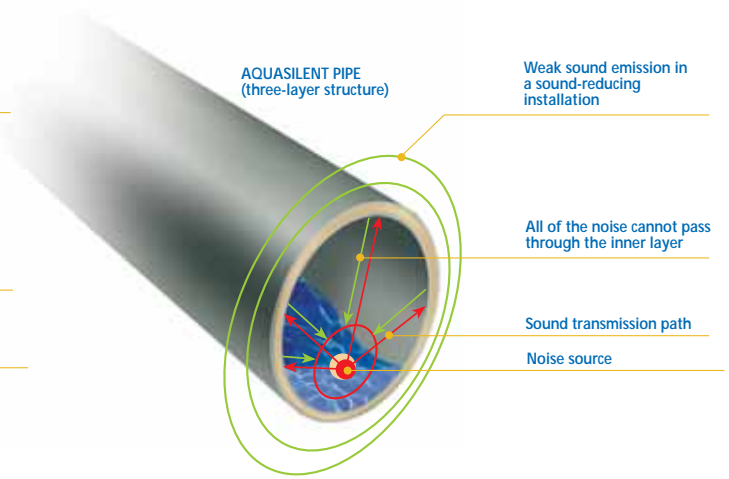
Noise is transmitted by the vibration of a material, which can be a solid, liquid or gas (such as air). The resistance offered by a material to noise depends on its density, and in turn determines the speed of the sound wave. When the medium changes – for example, a sound moves from water to air – part of the energy is absorbed, part is reflected (it bounces) and the rest is transmitted (passed on to the other medium).



How can noise be avoided?

We can use these basic characteristics to make noise transmission more difficult by preventing the wave from passing (making the wave “bounce”) or by scattering its energy (by damping it).

The AquaSilent three-layer structure for pipes is a solution that combines these characteristics in an optimal manner. The special physical properties of the core material enhance the absorption of the sound wave’s energy and also keep more of the sound inside the pipe. These characteristics – along with the fact that it is more difficult for noise to pass through a multi-layer structure – reduce the transmission of noise outside the installation when it is correctly designed and assembled.



Advantages of this System

- It is totally compatible with all other traditional products in accordance with current UNE-EN 1329 and UNE-EN 1453 regulations.
- Its seal coupling system absorbs normal expansion in installations.
- It is easy, quick and clean to assemble since no adhesive is required.
- It is made of PVC, and its components can be glued just like traditional products.
- Useful life of 50 years.
- Allows discharges of up to 95°C.
- Allows cutting and bevelling processes like any common PVC pipe.
- Fire-resistant: in the event of a fire, the system is self-extinguishing (it does not continue to burn once the flame is removed). It does not drip, so that there is no risk that the fire will spread to lower floors.
- The PVC used in the manufacture of the pipes and accessories is a chemically inert material.



Regulations and Certifications

The AquaSilent range of sound-absorbing products has been developed to ensure complete customer satisfaction, and meets all the following regulations:

- UNE-EN 1329 and UNE-EN 1453 regulations: rated diameters, tolerances and lengths of mouths and male ends.
- UNE-EN 1277: “Plastic piping systems. Methods for testing the tightness of joints with elastomer seal”.
- Basic construction regulations: Sound conditions and Technical Construction Code.
- DIN 4109 regulations: “Sound insulation in buildings: requirements and testing”

AQUASILENT products provide maximum benefits for customers. They have been subjected by PIPELIFE to the most demanding quality tests, as is demonstrated by the following certifications.

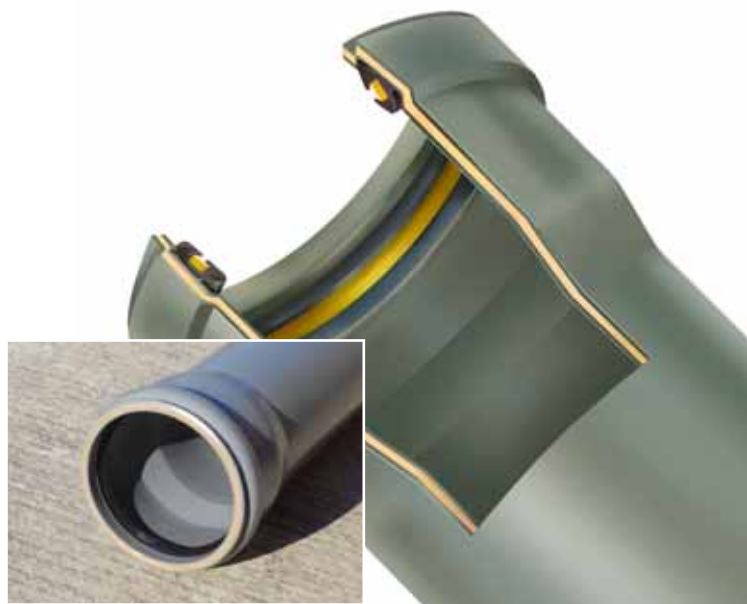


Coupling process with seal

Elastic mouth seals make it easy to couple the different AquaSilent products. No adhesive is required, just a neutral lubricant to aid insertion. The result is a firm connection between the pipe sections and/or accessories.

Even small evacuation sections can be coupled to the down pipe without any special elements, making it possible to use any type of traditional PVC sanitary fitting.

To make assembly as simple as possible, the AquaSilent range of products has a special marking system to ensure that all coupling processes are carried out correctly.



Use of marking for coupling

Pipe-accessory or pipe-pipe coupling:

- 1 Insert the pipe up to the mouth mark, which is the blue line that circles the pipe at the male end.
- 2 Pull out the previously inserted pipe until the mouth mark is approximately 10 mm from the crown of the component into which it is being inserted.

Accessory-pipe or accessory-accessory coupling:

- 3 Insert the accessory up to the mounting mark, which is the series of graduated lines that indicate the angle at which it can be mounted.
- 4 To determine the mounting angle, a reference point is needed as a guide. The accessory mouth has an angle mark for this purpose, which makes it easier to orient the accessory.
- 5 Once the accessory has been put in place and correctly oriented, carefully pull it out until the assembly mark is approximately 10 mm from the crown of the component in which it is being inserted.



Cutting and bevelling

When installation components are joined together, the length of a pipe may have to be shortened. Only pipes can be cut safely, never accessories. If you need to shorten a pipe, bevel the edges of the male parts to match the factory bevel as much as possible using the following procedure:



Cut the pipe perpendicular to the axis. Grip it firmly and preferably with a suitable tool; a fine-tooth angle saw or any other appropriate tool can be used for this task.



After cutting it is essential to smooth all rough edges inside and outside. Be careful not to cut yourself on the rough edges.

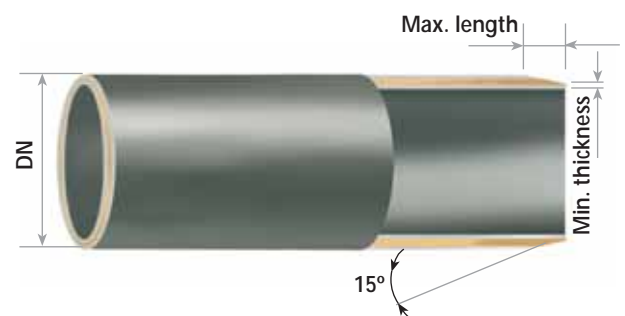


An appropriate tool is required for bevelling (a bevelling or chamfering machine) to give the pipe a 15° slant at the coupling end.

BEVEL DIMENSIONS FOR AQUASILENT ACCORDING TO ENV 13801

DN	110	125	160
Min. thickness	1.8	1.9	2.1
Max. length	13	14	15

Data in millimetres



AQUA SILENT

The three-layer pipe structure

Outer layer

This is the pipe's protective layer that prevents possible damage from external factors such as impact or the action of chemical agents. It also reinforces the pipe's rigidity.

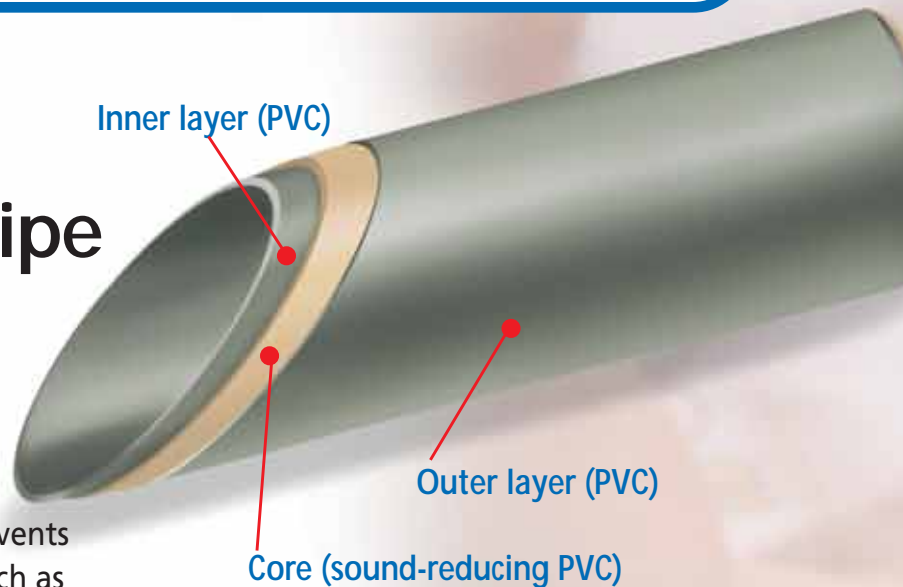
Core

This layer is the most important part of AquaSilent pipes. It is made of high-density, mineralised PVC.

Thanks to its physical properties, it provides most of the sound insulation and reduces the transmission of vibrations in the installation.

Inner layer

This is a completely smooth surface to prevent the formation of scale and to aid evacuation. It is made of PVC that withstands high temperatures and chemical agents.



Technical Data

AquaSilent products use mineralised PVC with different mineral fillers, depending on component conditions.

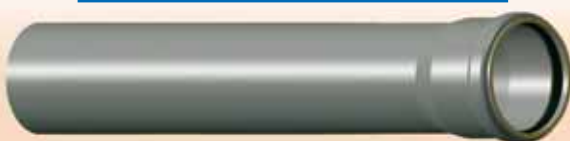
The pipes and accessories have a factory-fitted lip seal to absorb expansion and contraction from changes in temperature and thereby minimise failures in installations.

MECHANICAL PROPERTIES

Resistance to hot water	According to UNE-EN 1055 standard
	Unlimited resistance time to intermittent discharges of up to 95°C.
Resistance to abrasion	According to DIN 53754 standard

Physical characteristics	Value	Unit
Elasticity	3.600	MPa
Tensile strength	36	MPa
Rigid impact resistance	31	Nm
Vicat point	81,5	°C
Linear expansion coefficient	0,8 * 10 ⁻⁴	°C ⁻¹

Range of pipes



110,125 and 160 mm diameters

Install silence, build quality

Accessories

AquaSilent accessories help to reduce noise in installations due to their special acoustic properties.

They are made of high-density mineralised PVC similar to the core material used in AquaSilent pipes.

A special formula provides sound-reduction for all installation components, and prevents "sound leaks". This is why AquaSilent installations are quieter.

Bends and branches are also designed with a reinforcement rib at the mouth to increase rigidity and prevent possible damage due to temporary increases in stress in the coupling zone.



Range of accessories



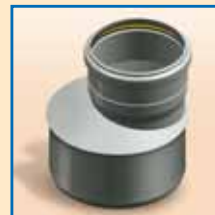
Bends



Branches



Double branches



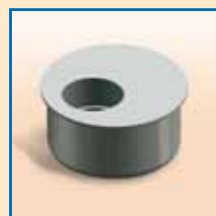
Eccentric reduction



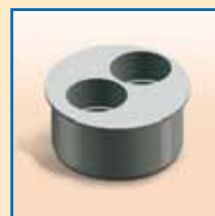
Blind plugs



Couplings



Single reducing plugs



Double reducing plugs



Inspection couplings

The system

Installation is written under Isophonic clips, Progressive couplings, Secondary ventilation with valves and Silent sections

Ventilation valves

They reduce the need for ventilation material and prevent bad odours from seeping out of the system.

Primary ventilation

A duct that extends from the down pipe above the last storey to the roof (above the inhabitable rooms) and is used to evacuate the installation air.

Isophonic clips

They reduce the transmission of noise and vibrations, and also support the weight of the system.

Progressive couplings

They increase the effective capacity of down pipes and reduce the level of noise produced by the system.

Secondary ventilation with valves

Secondary ventilation is mandatory in buildings of more than 5 storeys and helps evacuate air from the system; pressure balancing at the base is achieved with valves.

Firebreak couplings

An effective way to impede the spread of fire between floors or between rooms on the same floor.

Silent sections

They reduce the force of water and the vibrations caused by its impact, as well as notably reduce noise and increase the safety of the system.

Visible drainage lines in inhabited zones

Although these parts are not down pipes, they are also considered parts of the system.





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