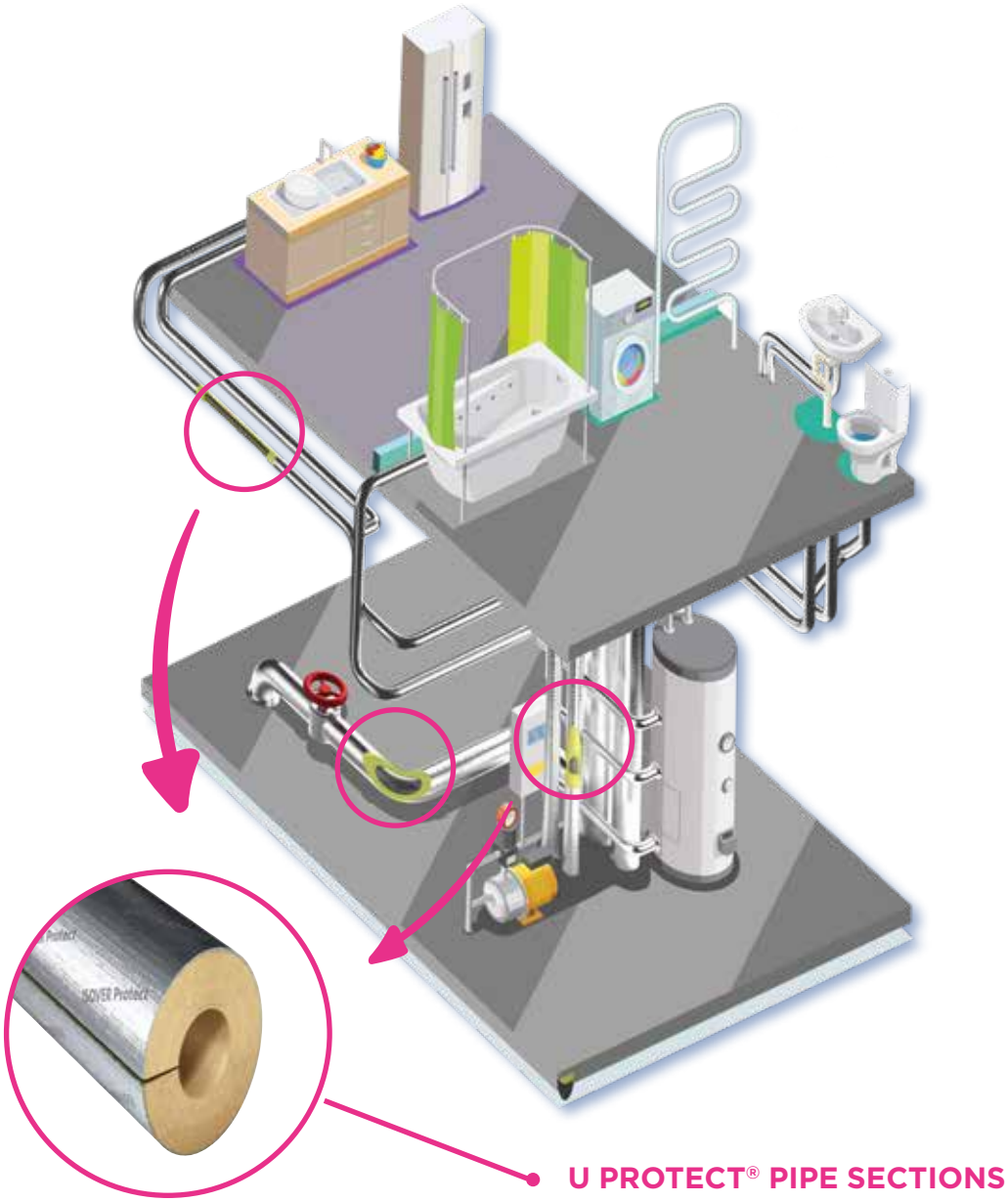
isover
SAINT-GOBAIN

U PROTECT®
PIPE SECTIONS

Sustainable all-inclusive
pipe insulation

SAINT-GOBAIN

Around
YOUR PIPEWORK



Obtain a high-performance pipework system

WITH AN ALL-INCLUSIVE SOLUTION FOR PIPE INSULATION

Pipework is part of any heating or sanitary system in buildings where fluids must be conveyed.
A heating system consists of a boiler, radiators and the pipework that connects them. Sanitary pipework is used to supply hot and cold water to toilets, sinks, baths, showers, dishwashers, washing machines, etc. and to carry waste water out of the building to the sewage system.

The pipe system comprises many different components, including pipes of different diameters, supports, gaskets, flanges, bolts, valves, strainers, connexions and expansion joints. They are used to control the pressure, flow rate and temperature of the conveyed fluid.

Traditionally, domestic pipework was manufactured from metals such as cast iron, copper and lead; however, modern designs predominantly use plastics or composites such as PVC, high-density polyethylene, polypropylene, aluminium composites and so on.

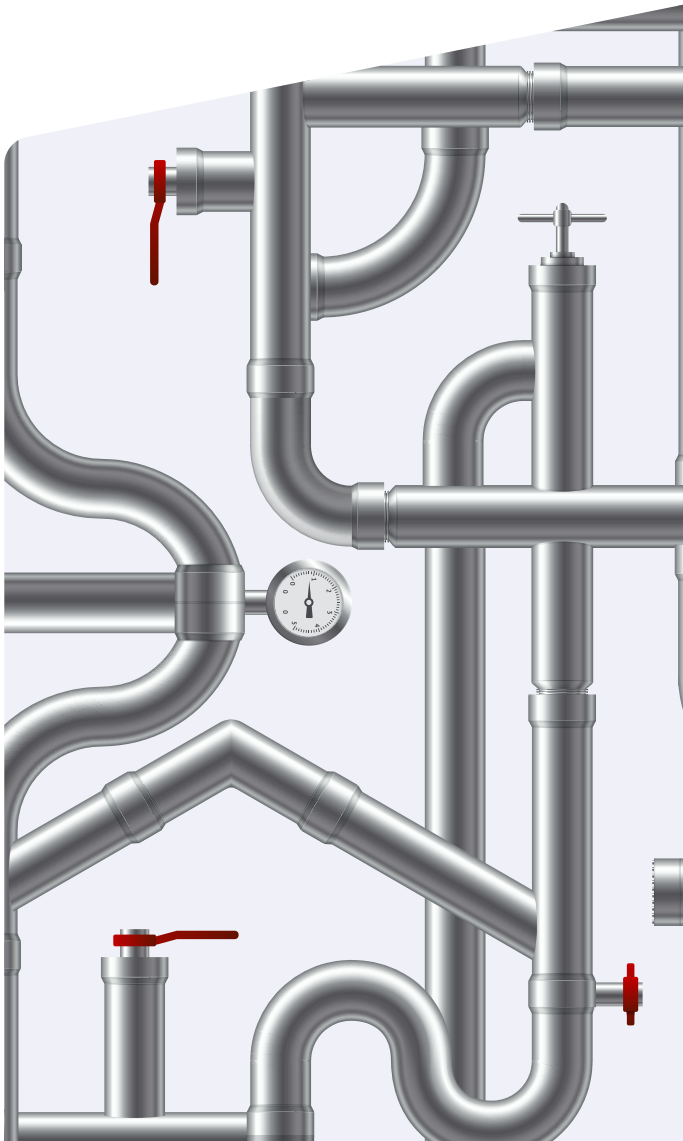
Your pipework has a major impact on the efficiency and comfort level of your building, and pipe insulation will optimise it in several

Choose U Protect® Pipe Sections – your all-in-one solution for pipe insulation

U Protect® Pipe Sections offer you a unique solution to:

- **Increase the energy efficiency** of your building
- **Provide thermal** and **acoustic comfort**
- **Protect** your building and its occupants **from fire and smoke**

Made from ULTIMATE™, our exclusive light stone wool, U PROTECT® PIPE SECTIONS offer a unique combination of low thermal conductivity, optimal fire protection and excellent acoustic properties, as well as ease of installation.



Add value at
EVERY STEP OF THE PROJECT

Invest in this exceptional pipe insulation solution to add value over the entire life of the project.

AS A BUILDING OWNER

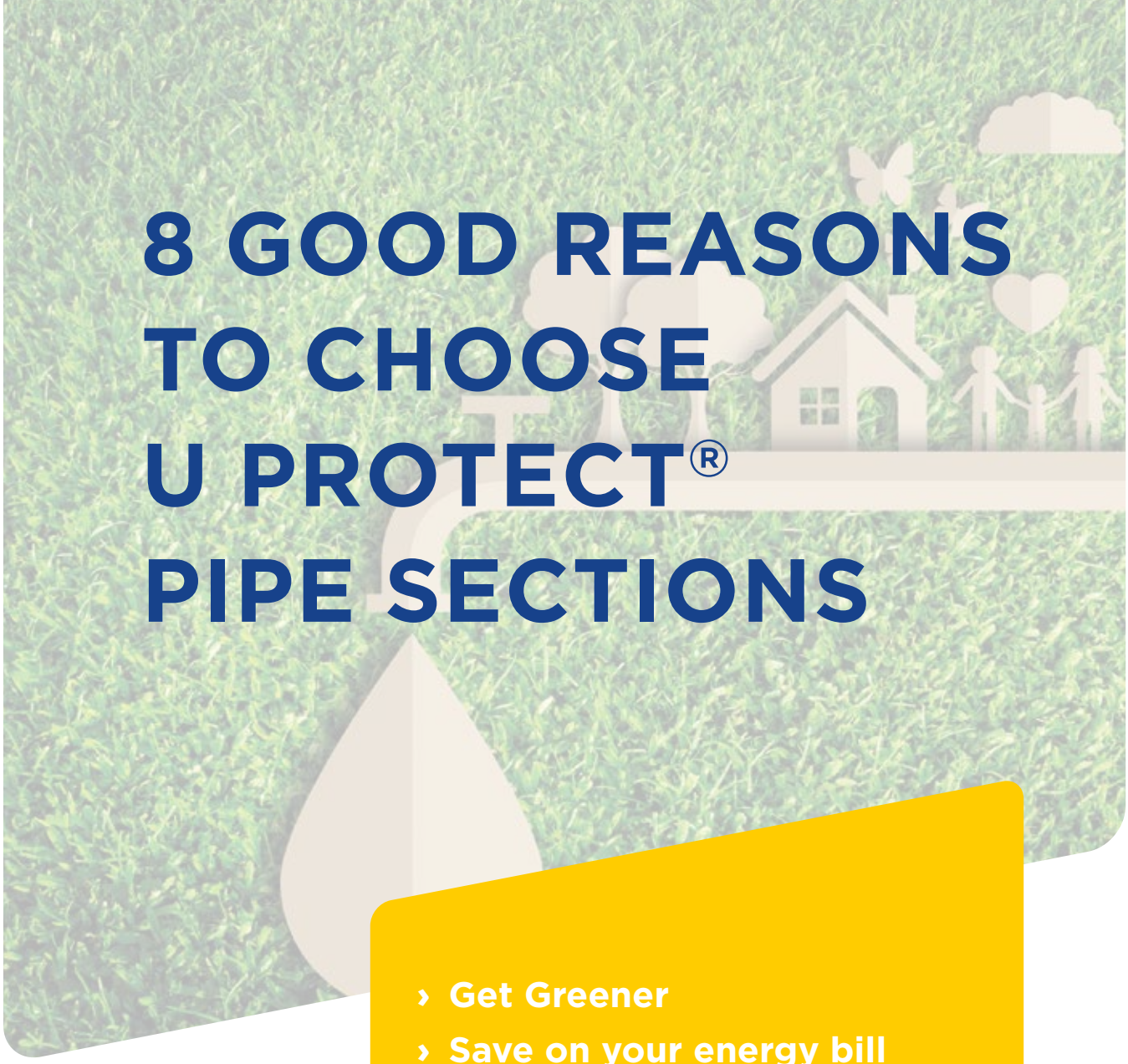
› Help the environment by using less energy and water
› Improve the safety, well-being and comfort of the occupants of your property
› Reduce energy bills and maintenance costs

AS A SPECIFIER

› Design high-performance pipe systems for your projects
› Bring key benefits to your customers
› Address stringent building regulations regarding energy, fire and acoustics
› Optimise your projects through space-saving designs

AS A CONTRACTOR

› Install more easily
› Use the same product for all your pipe insulation
› Reduce installation time and labour costs
› Work with healthier, lighter materials



8 GOOD REASONS TO CHOOSE U PROTECT® PIPE SECTIONS

- Get Greener
- Save on your energy bill
- Heat where and when you need it
- Fire safety first
- Keep the noise down
- Go for safer and healthier materials
- Design pipework for more usable space
- Increase your on-site productivity

Get GREENER

With climate change being an increasingly important issue and energy and water becoming more precious resources, you'll be keen to do all you can to help protect the planet.

Insulating pipes with **U PROTECT® PIPE SECTIONS** offers many environmental benefits, throughout the entire lifecycle of your projects:

SAVE MATERIALS & RESOURCES

Our **U PROTECT® PIPE SECTIONS** are made of ULTIMATE™ stone wool, made entirely of natural raw materials and 100% recyclable.

SAVE ENERGY AND REDUCE CO_2 EMISSIONS

Less energy is needed for heating and warm water as better-insulated pipes reduce heat loss. At the same time, reducing heat loss also prevents unwanted heating of the building from the pipes and therefore reduces the need for cooling systems.

SAVE WATER

Less water is wasted, as insulated pipes keep hot water hot and cold water cold – meaning less water runs unnecessarily while waiting for the water to achieve the desired temperature.

DID YOU KNOW

Over its lifetime, a typical ISOVER insulation product can save up to 300 times the energy consumed during its production, transport and disposal, as well as being CO_2-neutral. Once installed, U Protect® Pipe Sections last the whole lifetime of the building.

Save on your ENERGY BILL

A heating system is only as efficient as the insulation of its pipework. Without the appropriate insulation, energy efficiency goes up in smoke.

In addition to choosing an energy-efficient hot water system, you can save energy by reducing the loss of heat from the water network.
Heat loss takes place from or to a pipe carrying hotter or colder fluid than the ambient temperature.
Insulating water pipes saves money on energy costs by preventing hot water pipes from losing their heat to the surrounding air as the water travels from the hot water system to the water outlet.
Insulating the hot water pipes leading out of the water heater, for example, can reduce heat loss and lower the costs of heating the water by allowing a reduction in the temperature setting of the water heater.

Save thousands on heating bills by insulating your pipework.

A well designed pipe system with proper insulation can offer significant water and energy savings.
The cost of the insulation with **U PROTECT® PIPE SECTIONS** is less than the savings made on energy in just one year.

SCENARIO

A three-storey block of flats in northern Europe that uses electric heating; **1.68 km** of pipes; **4,800** operating hours per year; price of energy **0.18 /kW·h.**

Assumption: **30% of heat losses are recovered for heating the building.**

NO INSULATION

€~72,000
Cost for heating & hot water / year

U PROTECT® PIPE SECTION 20 MM

€~61,000
Savings / year (compared with no insulation)

€~11,000
Cost for heating & hot water / year

0.47
Payback (no. of years)

U PROTECT® PIPE SECTION 60 MM

€~66,000
Savings / year (compared with no insulation)

€~6,000
Cost for heating & hot water / year

0.55
Payback (no. of years)

Heat where
AND WHEN YOU NEED IT

A well-balanced thermal environment is essential to guarantee that the occupants of your buildings will feel comfortable.

Concentration, manual dexterity and the likelihood of accidents can be influenced by excessively high or low temperatures. The ambient temperature and relative humidity in any space need to be adapted to what its occupants are doing and what they are wearing, in order to ensure comfort.

Ensuring a building is neither too hot nor too cold helps make it a more pleasant environment for its users. Most people will feel comfortable at a room temperature of between 19 and 25°C.

Insulating pipes helps provide the ideal indoor temperature all year round, ensuring that generated heat goes where it is actually wanted.

It also offers a more convenient use of water for building occupants, as water stays hot when required to stay hot and cold when required cold. This means less running of taps in anticipation of a cold drink or a hot shower, saving time, water, and money.

In addition, maintaining pipes at the right temperature reduces the risk of contamination by legionella bacteria, which are commonly present in water. The bacteria multiply at temperatures of between 20 and 45°C in the presence of nutrients.

Example 1: Keeping cold water cold longer (e.g. 35 mm copper pipe)

How long will it take for stagnant cold water with a temperature of 5°C to reach 19°C, when the ambient temperature is 21°C?

Uninsulated → 2 hours
Insulated with **U PROTECT® PIPE SECTION** 20 mm → 11 hours and 20 minutes
Insulated with **U PROTECT® PIPE SECTION** 50 mm → 17 hours and 20 minutes

Example 2: Keeping hot water warm longer (e.g. 35 mm copper pipe)

How long will it take for stagnant hot water with a temperature of 55°C to reach 21°C, when the ambient temperature is 20°C?

Uninsulated → 2 hours and 20 minutes
Insulated with **U PROTECT® PIPE SECTION** 20 mm → 14 hours and 25 minutes
Insulated with **U PROTECT® PIPE SECTION** 50 mm → 22 hours and 45 minutes

DID YOU KNOW

Imagining that heat lost from the pipes will stay in the building anyway and contribute to heating is as wrong as imagining that leaving lights on will heat the room. In fact, hot water pipes are often in corridors or shafts, meaning that most of heat losses will be in the wrong places.

Fire
SAFETY FIRST

The consequences of fire breaking out and spreading are of serious concern for building occupants everywhere.

The choice of materials can significantly affect the spread of fire and its rate of development, even though the materials themselves are unlikely to be the first things that catch fire.

Materials can be classified in terms of their reaction to fire, i.e. their potential contribution to flashover. Flashover is the spontaneous ignition of hot smoke and gases, which can lead to a fire spreading uncontrollably.

U PROTECT® PIPE SECTIONS are classified Euroclass A2L-s1, d0, meaning:

- They are non-combustible (melting point > 1,000°C).
- They do not contribute to the spread of fire.
- They will not release smoke.
- They will not produce flaming droplets or particles.

They are therefore especially suitable for escape routes or spaces where flashover and spread of smoke present a significant risk.

Fire protection for combustible and non-combustible pipework

In addition to being certified for non-combustible steel, stainless steel and copper pipes, U PROTECT® PIPE SECTIONS have also been successfully tested with combustible pipes made of PE, PVC or aluminium composites.

PROTECT YOUR PIPES AND PIPE PENETRATIONS WITH U PROTECT® PIPE SECTIONS

The escalation of a fire within a building can be restricted by sub-dividing the building into fire compartments, separated from one another by fire-resistant walls and/or floors. The aims are to prevent the rapid spread of heat, fire and smoke, to allow people to evacuate the building and the fire brigade to intervene and to reduce the likelihood of fires getting out of control.

Where pipes pass through a fire-rated wall or floor, the spread of fire and smoke through these openings must be prevented. These openings, known as penetrations, represent potential channels through which fire and smoke could spread and must be protected to guarantee the overall fire rating of the construction.

All our solutions are tested according to EN 1366-3, which governs the sealing requirements of penetrations through fire-resistant walls and floors.

U Protect® Pipe Sections can be used for pipe penetrations with fire ratings of up to 120 minutes (EI 120).

With **U PROTECT® PIPE SECTIONS**, the insulation of EI 90 to EI 120 pipe penetrations is simple and quick:

- The pipe sections are conveniently installed **through the penetrations.**
- Penetration sealing can be **local or continuous.**
- **No need to change your insulation product.**
- Joints between two sections **can be positioned anywhere.**

DID YOU KNOW

A penetration is an opening in a wall or floor, for the purpose of accommodating the passage of mechanical, utilities or structural elements. Proper sealing is required to keep the openings fire- and smoke-proof and also to avoid sound propagation.

U PROTECT® PIPE SECTIONS ARE SUITABLE FOR SOLID FLOORS, SOLID WALLS AND LIGHT PARTITION WALLS.

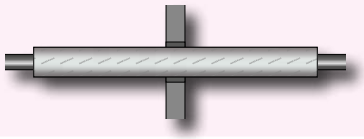
DID YOU KNOW

Fire and smoke must never be allowed to spread from room to room via the pipework.

INSULATION CONFIGURATIONS:

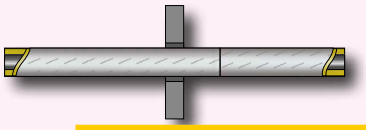
In the large majority of insulation cases, **U PROTECT® PIPE SECTIONS** are **sustained** through the floor or through the wall penetrated by the pipe, whether continued or local.

Local sustained (LS)



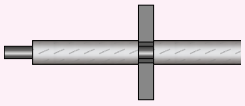
Local insulation means the pipe is **insulated only locally**, around the penetration. The minimum insulation length in this case is 600/1,200 mm.

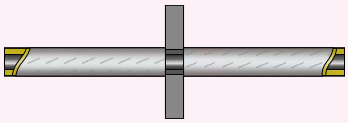
Continuous insulation means the pipe is **entirely insulated throughout** the whole pipe network. This may be required for thermal and/or acoustic purposes.



Continuous sustained (CS)

Local interrupted (LI)

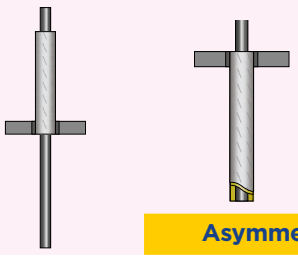




Continuous interrupted (CI)

In a few insulation cases, **U PROTECT® PIPE SECTIONS** may be installed only up to the floor or wall penetration, being **interrupted** instead of going through the penetration.

For solid floors, in specific insulation cases, it may suffice to apply **insulation asymmetrically**, i.e. insulate only from one side. The minimum insulation length in this case is 1,200 mm.



Asymmetrical

CHOOSE THE RIGHT U PROTECT® PIPE SECTION SOLUTION, ACCORDING TO THE REQUIRED FIRE RATING.

Depending on the materials, thicknesses and diameters of your pipes, the following tables will help you determine which **U PROTECT® PIPE SECTION** solution is right for you (thickness, insulation configuration and minimum distance required between insulated pipes).

EI 120 PIPE PENETRATIONS FOR COMBUSTIBLE AND NON-COMBUSTIBLE PIPEWORK

Fire rating	Pipe orientation	Pipe material	Pipe diameter (mm)	Pipe thickness (mm)	Insulation thickness (mm)	Insulation configurations	Minimum distance between pipes (mm)
EI 120	Vertical (solid floors)	Copper, cast iron, steel and stainless steel	≥8-40	≥1	20-100	LS	100
			≥40-108	≥1.2	20-100	LS	100
			≥108-219	≥2.5	30-120	LS	100
			≥28-40	≥1	20	CS.LS	0
			≥40-89	≥2	20-100	CS.LS	0
			≥8-42	≥1	≥20	CS	100
			≥42-89	≥1.2	≥20	CS	100
			≥89-108	≥2	≥20	CS	100
			≥108-219	≥2.5	≥30	CS	100
			40-42	≥1.5	≥20	CS - asymmetrical	100
			≥42-89	≥1.5	≥100	CS - asymmetrical	100
			40-42	≥1.5	20-100	LS - asymmetrical	100
			≥42-89	≥1.5	100	LS - asymmetrical	100
			≥40-89	≥1.2	≥20	CI	100
			≥40-89	≥1.2	20	LI	100
		PE Group	≥16-75	≥1.8	20-100	CS.LS	100
			≥75-90	≥1.9	20-100	CS.LS	100
			≥90-110	≥2.2	20-100	CS.LS	100
			90	2.2	20	CS.LS - asymmetrical	100
			110	2.7	20	CS.LS	0
		PVC Group	≥16-110	≥1.8	20-100	CS.LS	100
			110	2.2	20	CS.LS	0
			90	2.2	20	CS.LS - asymmetrical	100
		Aluminium composite group	≥14-20	2	20-100	CS.LS	100
			≥20-75	≥2-4.7	20-100	CS.LS	100
			≥75-110	≥4.7-10	20-100	CS.LS	100
			75	4.7	20	CS.LS	0
			26	3	20	CS.LS - asymmetrical	0
	Horizontal (solid walls & light partition walls)	Copper, cast iron, steel and stainless steel	≥28-42	≥1	≥20	CS	100
			≥42-89	≥1.2	≥20	CS	100
			≥28-42	≥1	20-50	LS	100
			≥42-89	≥1.2	20	LS	100
			≥40-89	≥2	30	LS	100
			≥40-89	≥2	≥30	CS	100
		PE Group	50	1.8	50	CS.LS	100
			63	1.8	60	CS.LS	100
			90	2.2	20	CS.LS	100
			110	2.7	80	CS.LS	100
			50	1.8	50	CS.LS	0
			63	1.8	60	CS.LS	0
		PVC Group	16	≥1.2	20-100	CS.LS	100
			50	1.8	50	CS.LS	0
			63	1.8	60	CS.LS	0
		Aluminium composite group	≥14-18	2	20-100	CS.LS	100
			≥18-75	≥2-4.7	20-100	CS.LS	100
			≥75-110	≥4.7-10	20-100	CS.LS	100
			40	6	50-60	CS.LS	0
			50-63	4-4.5	20	CS.LS	0

*CS - continuous sustained ; LS - local sustained ; CI - continous interrupted ; LI - local interrupted

EI 90 PIPE PENETRATIONS FOR COMBUSTIBLE AND NON-COMBUSTIBLE PIPEWORK

Fire rating	Pipe orientation	Pipe material	Pipe diameter (mm)	Pipe thickness (mm)	Insulation thickness (mm)	Insulation configurations*	Minimum distance between pipes (mm)
EI 90	Vertical (solid floors)	Copper, cast iron, steel and stainless steel	≥8-28	≥1	20-100	LS	100
			≥40-89	≥1.2	20-100	LS	100
			≥89-108	≥2	20-100	LS	100
			≥108-219	≥2.5	30-120	LS	100
			≥40-89	≥1.5	20	CS.LS	0
			≥40-89	≥2	20-50	CS.LS	0
			≥89-108	≥2	30	CS.LS	0
			≥8-40	≥1	≥20	CS	100
			≥40-89	≥1.2	≥20	CS	100
			≥89-108	≥2	≥20	CS	100
			≥108-219	≥2.5	≥30	CS	100
			40-89	≥2	30-120	LS	100
			89-219	≥2	30	LS	100
			40-89	≥2	≥30	CS	100
			89-219	≥2	≥30	CS	100
		PE Group	≥16-75	≥1.8	20-100	CS.LS	100
			≥75-90	≥1.9	20-100	CS.LS	100
			≥90-110	≥2.2	20-100	CS.LS	100
			110	2.7	20	CS.LS	0
			90	2.2	20	CS.LS - asymmetrical	100
		PVC Group	≥16-110	≥1.8	20-100	CS.LS	100
			110	2.2	20	CS.LS	0
		Aluminium composite group	≥14-20	2	20-100	CS.LS	100
			≥20-75	≥2-4.7	20-100	CS.LS	100
			≥75-110	≥4.7-10	20-100	CS.LS	100
			75	4.7	20	CS.LS	0
			26	3	20	CS.LS - asymmetrical	0
	Horizontal (solid walls & light partition walls)	Copper, cast iron, steel and stainless steel	≥28-40	≥1	20-60	LS	100
			≥40-89	≥2	20-100	LS	100
			≥89-108	≥2	30-50	LS	100
			≥108-219	≥2.5	50	LS	100
			≥28-89	≥1	≥20	CS	100
			≥89-108	≥2	≥30	CS	100
			≥108-219	≥2.5	≥50	CS	100
			≥40-89	≥1.5	20-30	CS.LS	0
			≥40-108	≥2.5	20-50	CS.LS	0
			≥89-108	≥2.5	30-50	CS.LS	0
			≥108-219	≥2.5	50	CS.LS	0
			40-219	≥2	30	LS	100
			40-219	≥2	≥30	CS	100
			40-89	≥2	20	LI	100
			40-89	≥2	≥20	CI	100
			40-89	≥2	20	CS.LS - asymmetrical	100
		PE Group	50	1.8	50	CS.LS	100
			63	1.8	60	CS.LS	100
			90	2.2	20	CS.LS	100
			110	2.7	80	CS.LS	100
			50	1.8	50	CS.LS	0
			63	1.8	60	CS.LS	0
		PVC Group	≥16-50	≥1.2	20-100	CS.LS	100
			≥50-110	≥1.8	20	CS.LS	100
			≥16-110	≥1.2	≥20	CS	100
			50	1.8	60	CS.LS	0
			63	1.8	50	CS.LS	0
		Aluminium composite group	≥14-18	2	20-100	CS.LS	100
			≥18-75	≥2-4.7	20-100	CS.LS	100
			≥75-110	≥4.7-10	20-100	CS.LS	100
			4	6	50-60	CS.LS	0
			50-63	4-4.5	20	CS.LS	0

*CS - continuous sustained ; LS - local sustained ; CI - continous interrupted ; LI - local interrupted

For further details, please refer to the classification reports for non-combustible pipes[1] and for combustible pipes[2] available on our website.

[1] PCA10437A
[2] PCA10524A

Keep the noise DOWN

Noise is recognised as an environmental nuisance that has a significant impact on our health and well-being. In providing acoustic comfort for your building project (home and workspace), it's important to minimise intrusive or unwanted noise.

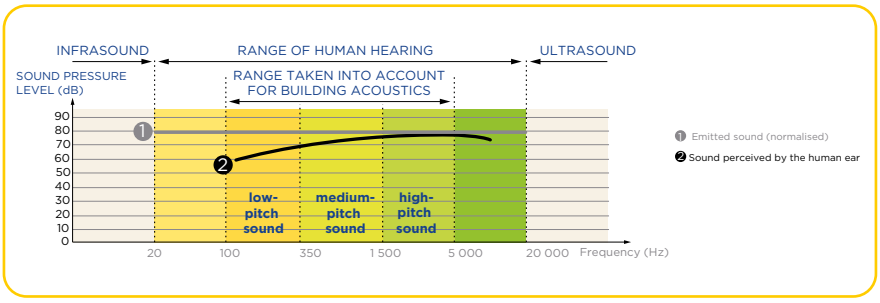
Research has shown that a well-designed acoustic environment helps improve concentration and enable better communication, as well as reducing stress and sleeplessness. It also contributes to a sense of security and privacy.
When we are acoustically comfortable – when unwanted noise is blocked and we can clearly hear the sounds we actually want to hear – we're more productive and happier and experience fewer health issues.

UNDERSTANDING SOUND AND NOISE

A sound is an auditory sensation produced by a variation of the air pressure that propagates in all ambient environments (water, air, gas, concrete, wood, glass ...), except a vacuum. This sensation is perceived by our ears and the information is transmitted to the brain where it is analysed.
A sound is characterised by its **frequency**, its sound **pressure level** and its **duration**.

What is frequency?

The **frequency** of a sound is the number of pressure variations per second and is expressed in hertz (Hz). A frequency of 1 Hz refers to one wave cycle per second, while 20 Hz refers to 20 per second. The number of pressure variations gives a sound its distinctive tone: a low frequency produces a low-pitch sound; a high frequency will give a high-pitch sound.
The audio spectrum is the frequency range that is audible to humans.

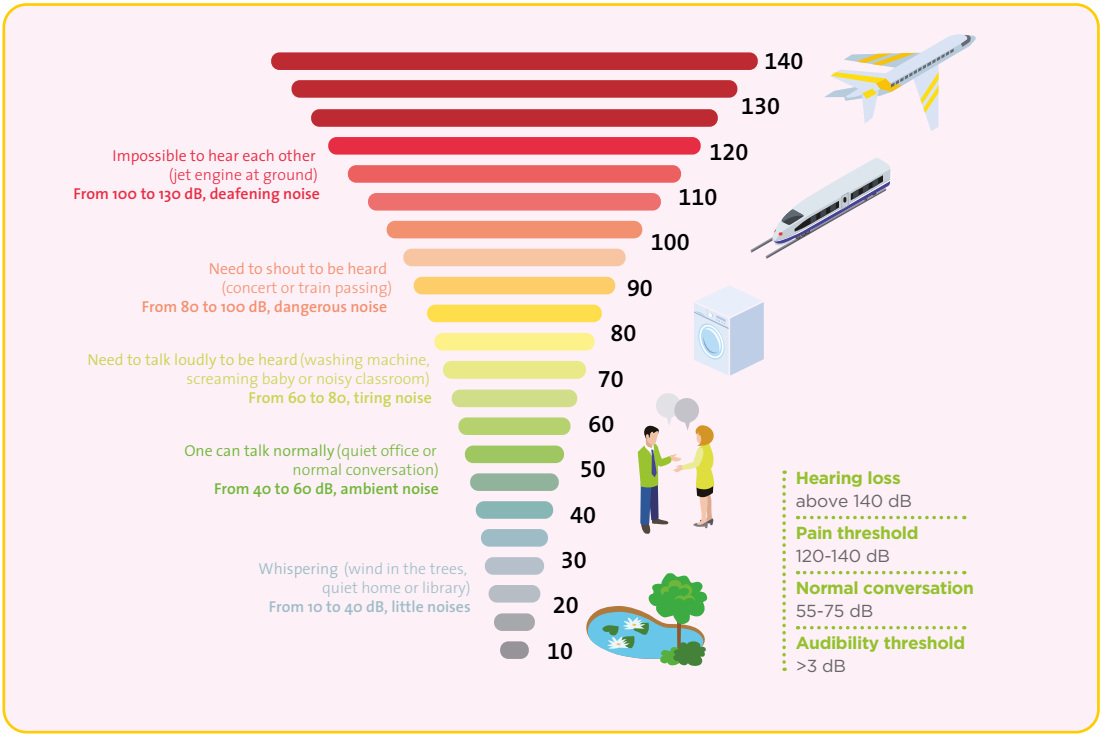


This generally spans from 20 to 20,000 Hz.

What is sound pressure?

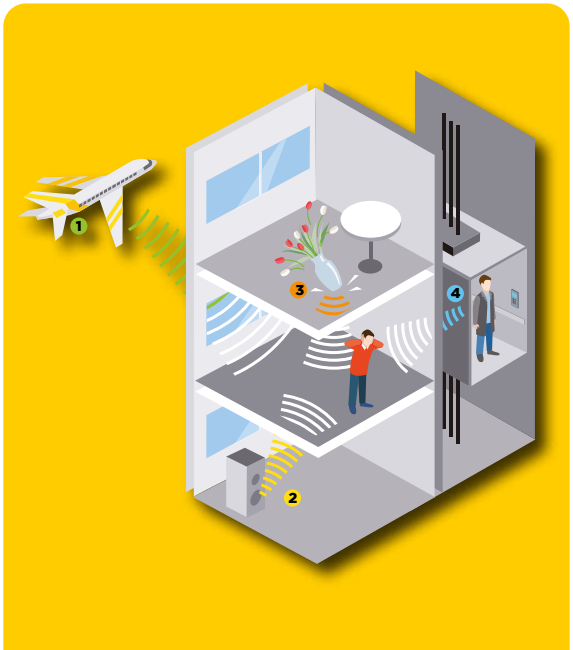
The **sound pressure level** terms the amplitude of a sound. A weak amplitude produces a quiet sound, a large amplitude a loud sound. The scale of sound pressure is expressed in decibels (dB).

NOISE LEVEL SCALE



Sources of noise in buildings

A sound in a building can come from outside (road, rail or air traffic, voice in the street), equipment present in the building, neighbours or ourselves.



There are four noise sources in the building acoustics domain:

1. Airborne noise from external sources: road, rail or aircraft noise, voices in the street, etc.
2. Airborne noise from internal sources: conversations, Hi-Fi, television, etc.
3. Impact noise: movements of people or furniture, falling objects, etc.
4. Equipment noise: lifts, valves, ventilation fans, pipes, etc.

WATER PIPES CAN BE A REAL SOURCE OF DISTURBANCE

Noise generated by sanitary installations in buildings can be a real source of annoyance often complained about by the occupants of multi-family homes or hotels.

The sound comes from water and air turbulence, particularly the effect of water flow on pipe walls, and is transmitted from the pipe to the structure via the mounting brackets.

The pipework areas where acoustic management is most critical are:

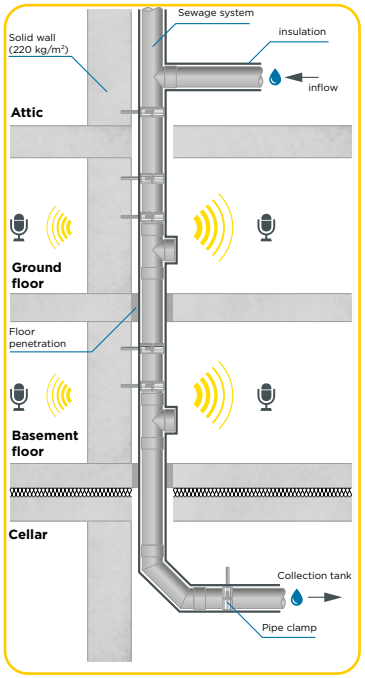
- **Where pipework needs to make deviations to avoid structural elements**.
- **Where pipework bends from vertical to horizontal.**

Where does the noise come from?

Hearing the sound of running water in a building pipeline does not necessarily indicate a problem or defect, but can be a "normal" plumbing system sound.

Depending on the pipe material and whether or not the pipes are encapsulated with gypsum board, the sound of running water, e.g. when a shower is running or when a toilet is flushed, can be annoying to varying degrees.

The noise of running water may be amplified and transmitted through some building areas when water is running through pipes that are mounted in direct contact with each other, with supporting structures or with floor or wall partition materials.



DID YOU KNOW

Sound insulation reduces the transmission of sound from one room to another through the building's structure, whereas sound absorption helps to reduce or control sound propagation within a room by means of absorbent materials.

For pipework, the focus is on sound insulation, as sound sources are inside the pipe (impact, fluid flow) and noise is transmitted to the outside.

CREATE ACOUSTIC COMFORT FOR YOUR CUSTOMERS WITH U PROTECT® PIPE SECTIONS

Although high noise levels in buildings should be limited through the right design and installation of pipe systems, it is not always possible to avoid piping deviations or close contact between pipes and other building parts.
Insulating your pipework will largely enhance the overall acoustic performance of the pipe system and contribute to the comfort and well-being of the building's occupants. **U PROTECT® PIPE SECTIONS** are the ideal solution to reduce the sound transmission levels in the pipes.

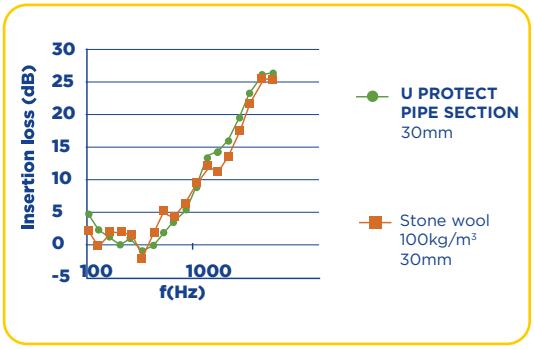
To choose the right solution, the following variables should be considered:

- **The material of the pipework**
- **The pipe diameter**
- **The insulation material**
- **The thickness of the insulation**
- **The facing on the insulation (even though the impact is limited)**

Higher elasticity and lower density ensure optimal soundproofing.

Research into the noise behaviour of drinking-water and waste-water pipes in floor and wall penetrations with different pipe insulation solutions shows that elastically supported insulation materials such as **U PROTECT® PIPE SECTIONS** are optimally suited for structure-borne insulation.

The sound-attenuating properties of materials (expressed in dB) vary with frequency. As a result, they are measured over a range of frequencies that is representative of the building section to be insulated, generally between 100 and 5,000 Hz (the human ear is most sensitive in the 2,000 - 5,000 Hz frequency range).



A unique value (expressed in dBA) is used to describe the weighted acoustic improvement over the whole range of frequencies measured, taking into account the non-linear sensitivity of human hearing. **U PROTECT® PIPE SECTIONS** offer a global improvement of 14 dB(A).
They perform even better at higher frequencies, where the impact on acoustic comfort is most significant.
Their lower bulk density offers better soundproofing than classic stone wool.

DID YOU KNOW

To be perceivable, any acoustic improvement must be greater than 3 dB; any difference between two sound insulation systems of less than 3 dB will not be audible.

Reducing the sound pressure level by 10 dB corresponds to a perceived halving of the noise level.

Go for safer
AND HEALTHIER MATERIALS

The health and safety of our customers is our top priority – not only for the building's occupants but also during the installation of our products.

ENSURING INDOOR AIR COMFORT

Indoor air comfort is a key element in the design and planning of any new building or renovation project. The first step in controlling indoor air pollution is removing or minimising emissions of primary and secondary pollutants at source.

U PROTECT® PIPE SECTIONS fulfil the low-emission requirements for green-labelled buildings.

WORKING WITH A SAFE MATERIAL

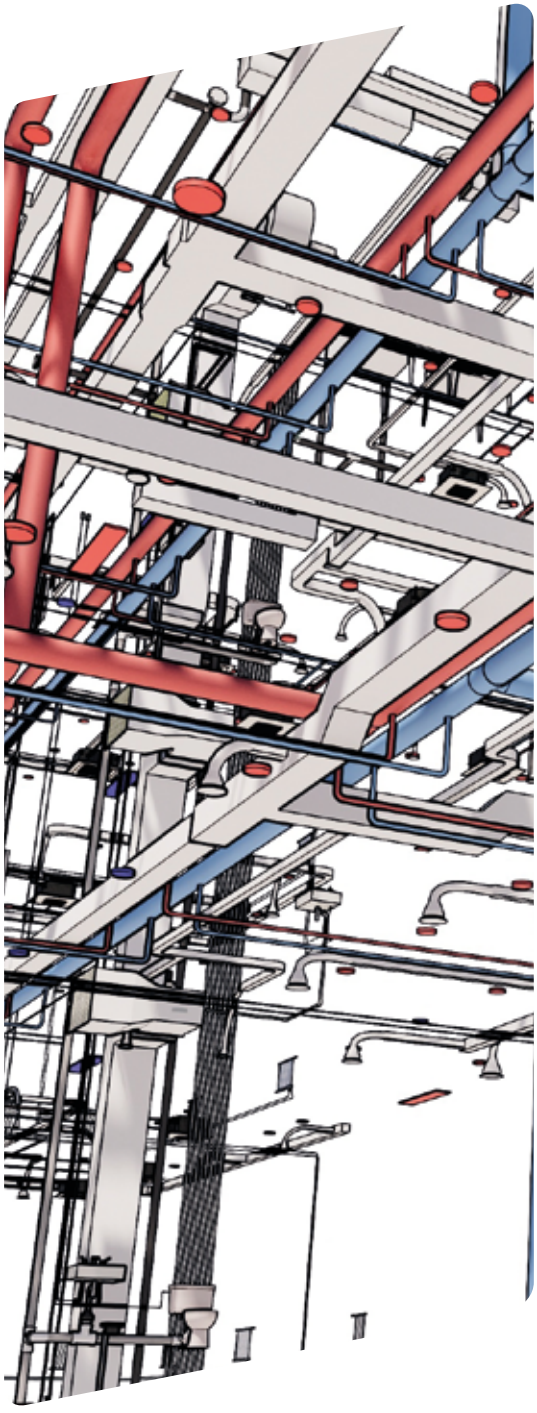
U Protect® Pipe Sections ensure safe and comfortable installation.

Our RAL- and EUCEB-certified ULTIMATE™ fibres are bio-soluble and exonerated from any classifications on carcinogenic, mutagenic or toxic-for-reproduction criteria.

U PROTECT® PIPE SECTIONS are easy to handle thanks to being up to 50% lighter than traditional stone wool pipe sections.

Design pipework
FOR MORE USABLE SPACE

You want to configure your pipework systems to fit your building design, rather than design spaces around the pipework. Space-usage considerations are a challenge for designers, as usable space contributes both to the building's value and its comfort.



Pipework should be routed taking into account the requirements for safe access for operation, inspection and maintenance.

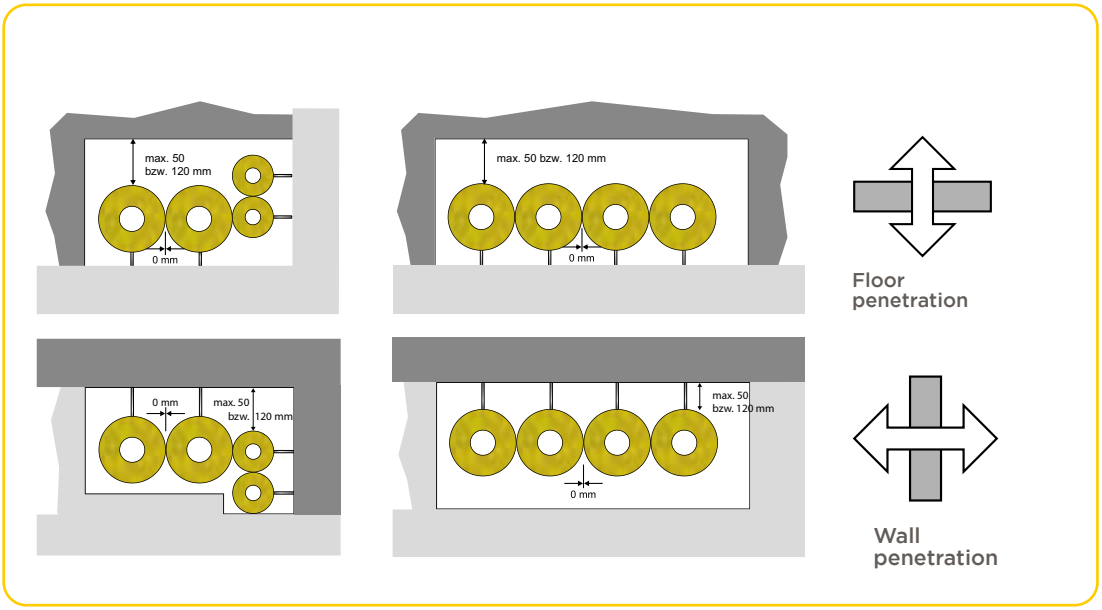
U PROTECT® PIPE SECTIONS offer greater design flexibility where clearances are limited and space is short in installation areas and ducts:

- **U PROTECT® PIPE SECTIONS** offer exceptional thermal insulation in all insulation thicknesses. It is therefore possible to achieve the required heat loss reduction levels for a wide range of temperatures, in all circumstances, even with reduced, space-saving thicknesses.
- **U PROTECT® PIPE SECTIONS** can be installed in compact units and grouped together, which simplifies support design and takes up less space in ducting and rooms.

DID YOU KNOW

When designing pipework, care should be taken to ensure a minimum clearance around pipes, to allow for installation of the insulation. Otherwise, pipes already installed may need to be modified before they can be insulated.

U PROTECT® PIPE SECTIONS CAN BE USED WHEN THE DISTANCE BETWEEN THE INSULATED PIPES IS SMALL.



U PROTECT® PIPE SECTIONS can be safely installed with zero clearance, meaning that the pipe insulation of neighbouring pipes may come into contact and may also touch floor and wall openings. Various configurations are possible.

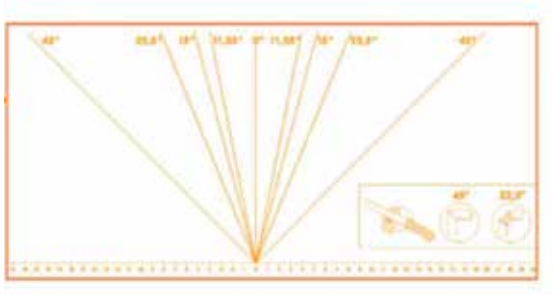
Increase your
ON-SITE PRODUCTIVITY

At a time when skilled manpower is becoming a scarce and increasingly expensive resource, it is important to simplify installation, increase on-site productivity and reduce installation times.

Given that material changes during the works are time-consuming and a source of error in supply and construction, **U PROTECT® PIPE SECTIONS** provide an all-in-one solution offering numerous installation benefits:

- **No need to change materials**, as a single product is suitable for both standard pipe insulation and fire penetration points.
- **Comfortable handling and installation**, as the **weight is up to 50% lower** than traditional stone wool.
- **Increased site productivity** with an **optimised length of 1.2 m** per section.
- **Reduced installation times** thanks to **superior rigidity** and an **improved self-adhesive fingerlift tape.**
- **Easy product identification** thanks to **high-quality coloured printing** on all sides of the box.

In addition, several smart packaging features were specifically designed to make the product even more easy to use:



Bends and pipe fittings can be made quickly and easily using the practical angle-cutting guide on the new box.

WHICH PIPE INSULATION IS RIGHT FOR YOUR PROJECT?

Make your choice from a comprehensive range of U PROTECT® PIPE SECTIONS and complementary solutions, trusted by customers around the world.

A comprehensive range
TO MEET ALL YOUR NEEDS

U PROTECT® PIPE SECTIONS are available in a wide range of thicknesses.
For specific requests, contact your local ISOVER sales team.

Length (mm)	Thickness (mm)	Pipe inside diameter (mm)																					
		15	18	22	28	35	42	48	54	57	60	64	70	76	89	102	108	114	133	140	159	168	219	273
1200	20	x	x	x	x	x	x	x	x	x	x	x	x	x	x									
	25	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x						
	30	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
	40	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	50	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	60			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	70					x	x				x	x	x	x	x	x	x	x	x	x	x	x	x	x
	80							x	x	x	x	x		x	x	x	x	x	x	x	x	x	x	x
	100													x	x	x	x	x	x	x	x	x	x	x
	120													x				x		x	x	x	x	

- Non-combustible, Euro class A2l, s1-d0
- Melting point > 1,000°C
- Maximum service temperature: 620°C
- Thermal conductivity at 10°C: 0.032 W/(m•K), at 50°C: 0.037 W/(m•K)
- Tested according to EN1366-3 for pipe penetrations

COMPLEMENTARY SOLUTIONS

INSULATE COMPLEX PIPEWORK WITH U PROTECT ROLL 3.1 ALU1

If you need to insulate complex pipework routing or very large pipes, **U PROTECT® ROLL 3.1 ALU1** will help you save time and optimise your site productivity.

U PROTECT® ROLL 3.1 ALU1 is a flexible roll of felt for thermal insulation and fire protection, with an insulation thickness of 30 mm, suitable for any pipe diameter. It can be wrapped quickly and easily around even complicated pipework.

Weighing 75% less than traditional materials, **U PROTECT® ROLL 3.1 ALU1** is easy to handle.

- Non-combustible, Euro class A1
- Melting point > 1,000°C
- Maximum service temperature: 400°C
- Thermal conductivity at 10°C: 0.032 W/(m•K), at 50°C: 0.037 W/(m•K)
- Dimensions: 30 x 1,200 x 8,500 mm
- Tested according to EN1366-3 for pipe penetrations

INSULATE YOUR COLD PIPES EFFICIENTLY WITH CLOSED-CELL INSULATION FROM KAIMANN

The surfaces of air-conditioning, refrigeration and cold-water pipework are generally at a lower temperature than the surrounding air. This temperature difference causes moisture condensation on the external surfaces of the pipes.

Moreover, if the residual water inside the pipes is exposed to negative temperatures, it will begin to freeze and expand, exerting enough pressure on the pipe to cause longitudinal cracking or break the pipe's couplings.

The cost of corrosion under insulation (CUI), water piping that freezes, and the associated potential operational disruption can be significant. Corrosion processes under thermal or sound insulation are among the hidden and therefore particularly critical damage processes.

Insulation is a highly effective way to avoid such problems.

Choose **Kaiflex** from our sister company Kaimann to protect your cold water pipes and prevent the surface temperature of the pipes falling below the dew point and risking condensation forming and damage. Thanks to its low thermal conductivity, high water vapour diffusion resistance and its closed-cell structure, **Kaiflex** will not allow water to compromise the material properties and performance. Even if the surface of the pipe insulation is damaged, the vapor barrier and therefore the condensation protection remain intact.

U PROTECT® PIPE SECTIONS from ISOVER can also be used for cold water and air-conditioning pipework. The tear-resistant, reinforced aluminium facing acts as a diffusion barrier, preventing water vapour to enter the insulated pipe system. The insulation prevents the temperature from falling below the dew point and allowing condensation to form on the pipe surface. The moisture remains in the air and does not form on the pipe, potentially damaging both the pipe itself and the structures around it.

www.kaimann.com

What our customers ARE SAYING

The Humboldt Forum (Berlin, Germany)

To be completed in 2020, behind the reconstructed facades of the Berlin Palace, the Humboldt Forum will be a radiant landmark in the capital's cultural offerings. An impressive new building with more than 30,000 m² of usable space. And almost as impressive as the building itself is the 45,000 metre-long pipework installed to heat and cool the building.

The contractor **IIC Industrie Isolierung Chemnitz GmbH** chose to use **U PROTECT® PIPE SECTIONS** to make sure the job could be completed to high specifications and to tight deadlines. The all-in-one nature of the product allowed for continuous, fire-safe insulation even through floor and wall penetrations.

© SHF

A FLEXIBLE AND FAST SOLUTION

The Humboldt Forum was, of course, an extraordinary project in terms of size alone, with many trades working in parallel. What all the installation situations had in common was the very limited space available. With pipes to be installed in small spaces including under floors and in suspended ceilings, flexibility was vital. On the one hand, we needed a system that could be adapted very precisely to the geometry of the pipes. On the other hand, the work had to be as simple as possible in order to keep to the tight schedule.

What also immensely simplified the work was the low weight of the pipe sections. In comparison with conventional stone wool products, they weigh around 50 percent less. With around 45,000 linear metres of pipes to be insulated, this is a tangible physical advantage.

What's more, it simply makes a difference whether you have to set aside the sectional insulation for each penetration and take a separate product or whether you can 'work through' it with a non-combustible system. The length of the pipe section is also important in this context, because instead of the usual 1 m sections, **U PROTECT® PIPE SECTIONS** are 1.20 m long, which means that 20 percent more pipe can be insulated with each operation.

Danyel Schlennstedt, Project manager at IIC Industrie Isolierung Chemnitz GmbH

DUKA SpA (Bressanone, Italy)

Italian shower specialist DUKA SpA chose **U PROTECT® PIPE SECTIONS** to insulate the pipes at its new head office in Bressanone, Italy. A huge building - 45,000 m² in surface area and 19 metres high. Beginning in late 2017, 26,000 linear meters of pipes were installed to tight deadlines.

The installer, the distributor, and the Italian ISOVER team working closely together, the choice fell on **U PROTECT® PIPE SECTIONS** for their excellent technical characteristics and high performance.

"INSTALLATION IS EASIER AND FASTER"

I started using **U PROTECT® PIPE SECTIONS** many years ago. The pipes are of good quality and there is less waste material. Installation is easier and faster. For this project, it was again very simple and clean. ULTIMATE™ is high-quality mineral wool that is easy to cut and use, as well as being lightweight. Thanks to all this, the installation times were significantly reduced.

Marco Bonetti, General Manager at Bonetti Raffaele S.r.l.

"A QUALITY PRODUCT AND EXCELLENT SUPPORT"

U PROTECT® PIPE SECTIONS are frequently specified in projects and are well-known as a high-quality product. I personally always advise my customers to use ULTIMATE™ solutions as I know they are reliable and offer high-performance all-in-one insulation. What's more, I always get very professional technical support from the ISOVER team.

Pierluigi Santoro, General Manager at Isolservice SAS

DID YOU KNOW

26,000 metres of ISOVER pipes were installed during this project – that's the equivalent of the length of 260 football pitches!

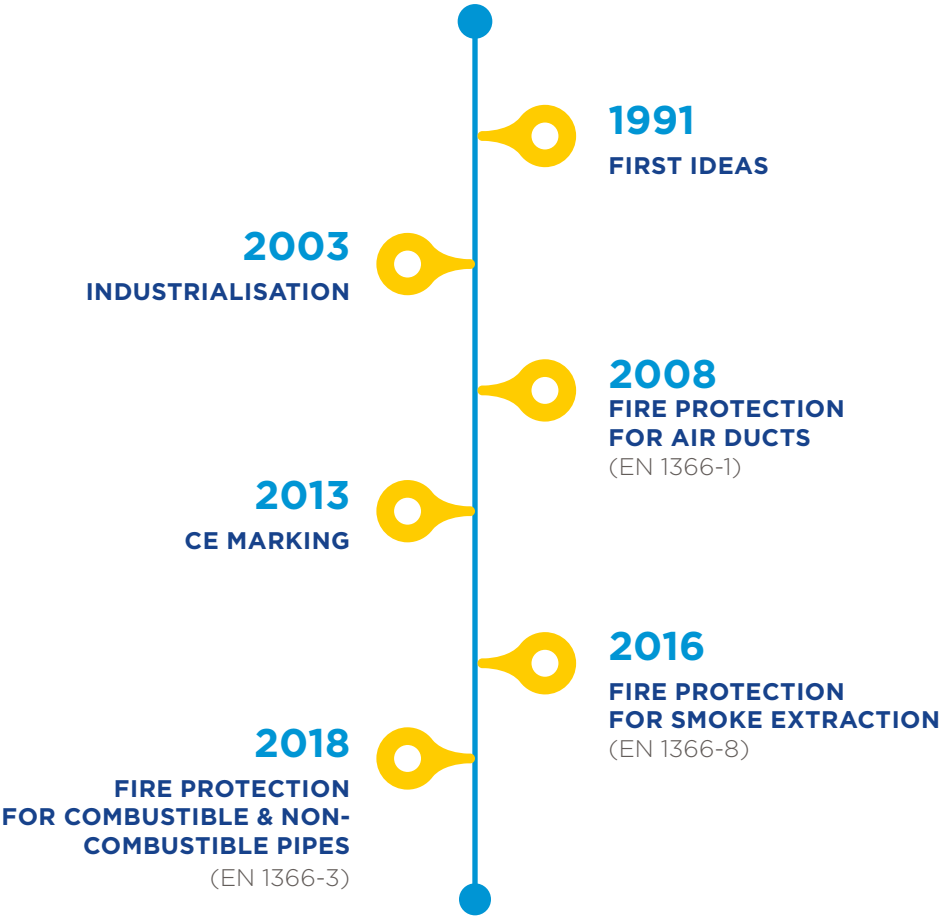
The ULTIMATE™ STORY

The origins of ULTIMATE™ go back almost 30 years.

Our challenge was to develop a high performance lightweight mineral wool capable to operate at high temperatures. Many years of Research & Development involving a new patented raw material composition and production tool enabled this extensive conversion of our manufacturing process to ULTIMATE™ mineral wool.

With ULTIMATE™, our customers benefit from a unique combination of product properties, from fire protection, excellent thermal insulation and sound insulation to lightweight and compressibility, so far non-existent in any other single insulation material.

To address the increasingly stringent requirements of the markets and to continue to offer our customers state-of-the-art solutions, we constantly strive to improve our manufacturing techniques.



ABOUT US

Discover the Saint-Gobain Group, and read more about Saint-Gobain Technical Insulation, the world leading supplier of sustainable insulation solutions.

MAKING THE WORLD A BETTER HOME

Saint-Gobain designs, manufactures and distributes solutions for the construction, mobility, healthcare and other industrial application markets. Developed through a continuous innovation process, they provide wellbeing, performance and safety while addressing the challenges of sustainable construction, resource efficiency and the fight against climate change.

This strategy of responsible growth is guided by the Saint-Gobain purpose, “MAKING THE WORLD A BETTER HOME”, which responds to the shared ambition of the women and men in the Group to act every day to make the world a more beautiful and sustainable place to live in.

SAINT-GOBAIN

Aligned with this commitment, Saint-Gobain Technical Insulation has been delivering sustainable insulation solutions to customers since 1937. Across all technical markets - from Marine to Industry, HVAC, automotive and household appliances - and with a worldwide presence deployed locally, we support our customers at every step of the project, from design to installation. This means customising our approach based on specific needs. This means adding value through high levels of comfort, health, safety and performance. This also means helping limit environmental impact of each project, while managing costs.

With expertise in an array of insulation materials, we are constantly pushing the limits of our solutions. These unwavering R&D efforts also enable us to reduce the carbon footprint of each product, whether through high levels of recycled content, recyclability or lower energy consumption.

Drawing on a unique combination of global resources, local deployment and multi-material expertise, Saint-Gobain Technical Insulation strives to always be more efficient and responsible. Together with our customers, we are making this an everyday reality.

Saint-Gobain Technical Insulation

PUSHING THE LIMITS OF SUSTAINABILITY TOGETHER.

SAINT-GOBAIN

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