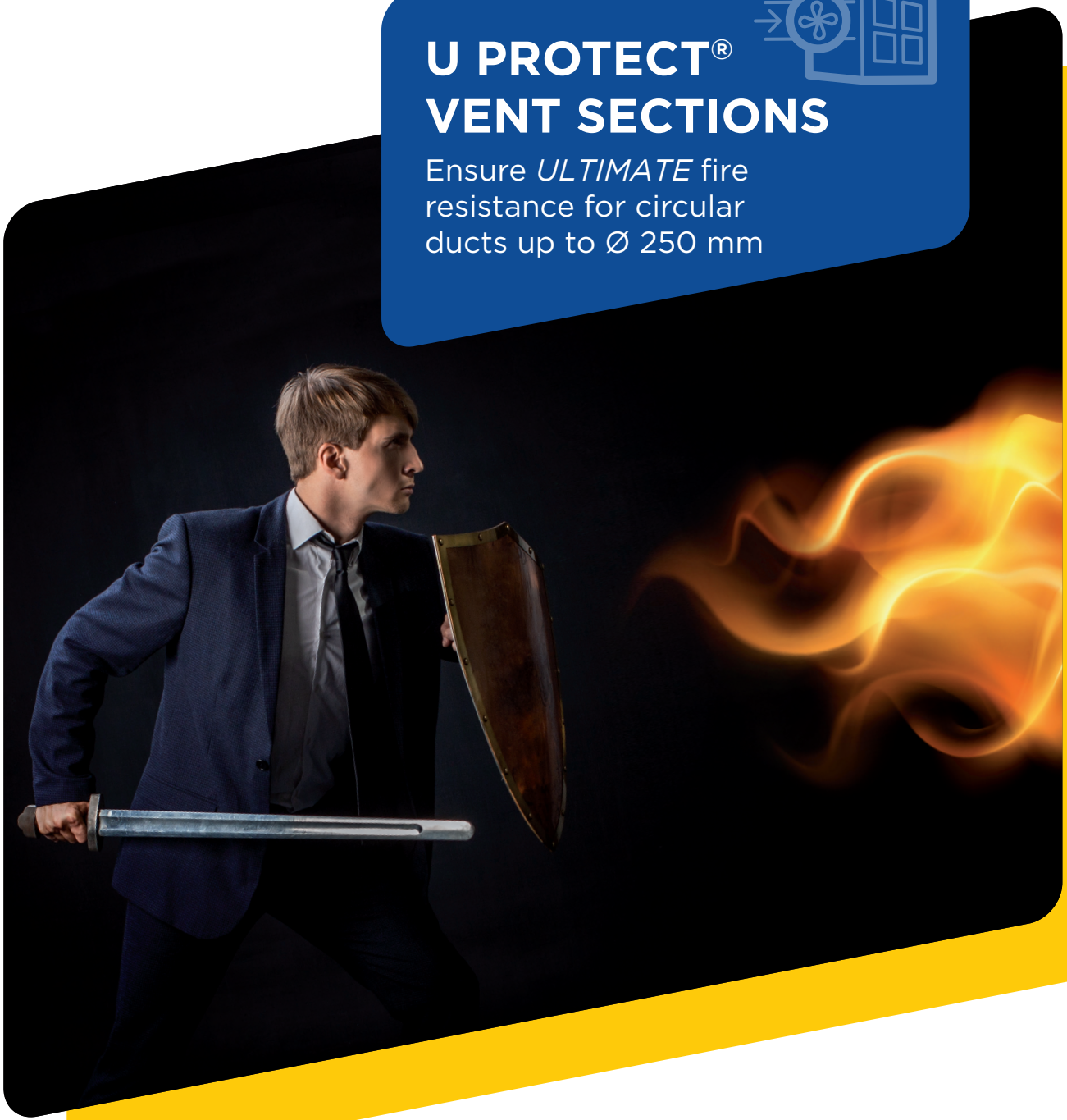
isover
SAINT-GOBAIN

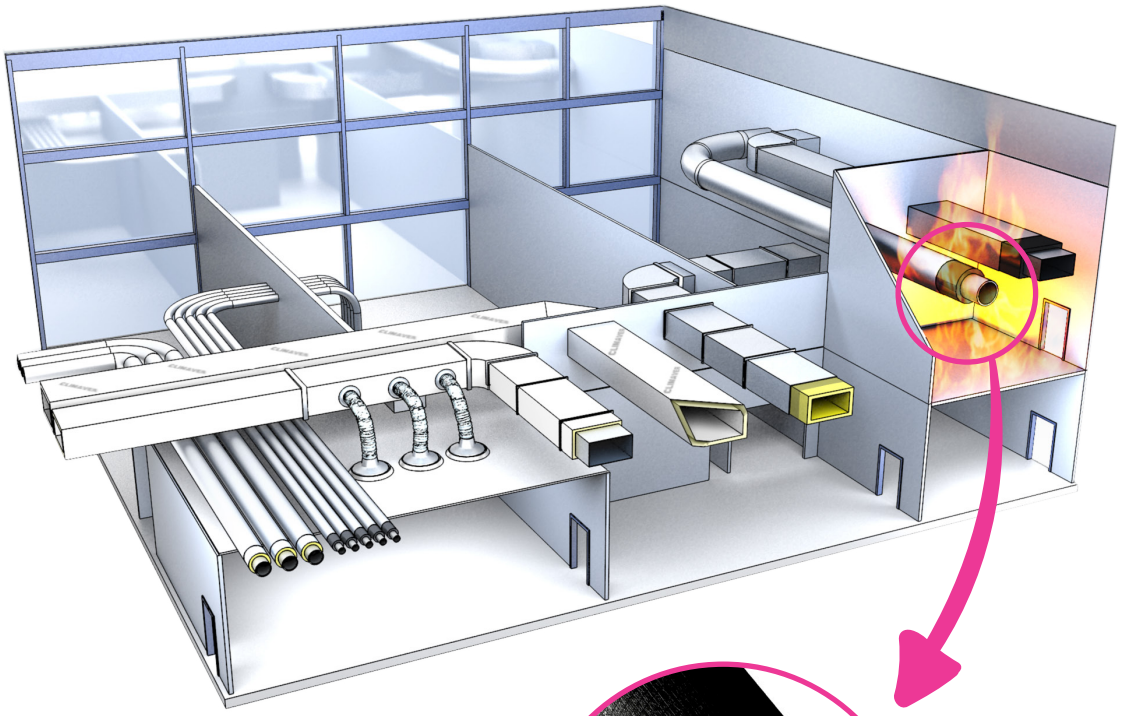
U PROTECT®
VENT SECTIONS

Ensure *ULTIMATE* fire resistance for circular ducts up to Ø 250 mm



SAINT-GOBAIN

Protect
YOUR AIR DUCTS



U PROTECT® VENT SECTIONS

Create high-performance fire resistant ductwork systems

WITH AN EASY-TO-INSTALL INSULATION FOR CIRCULAR DUCTS

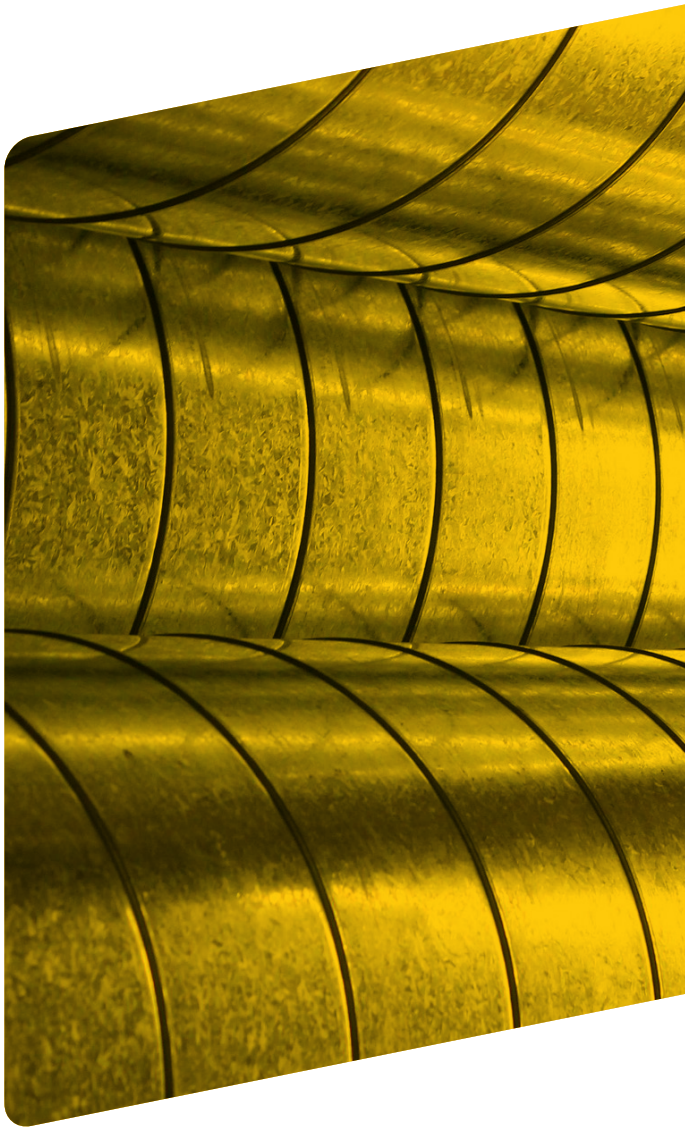
Ductwork is a key part of heating, ventilation, and air conditioning (HVAC) systems and refers to the system of ducts that circulate heated or cooled air throughout a building. The airflows include supply air, return air, and exhaust air. Air ducts are important to ensure an acceptable indoor air quality as well as thermal comfort for the occupants, in both residential or commercial buildings.

Air ducts come in different sizes, shapes, and materials – they can for instance be round (circular) or rectangular. Circular ducts are typically made from galvanized steel (sometimes aluminium or stainless steel).
The proper duct design is critical to maintain optimal air flow in the system and to avoid discomfort, high energy costs, bad air quality, and increased noise levels.

Ductwork has a major impact on the efficiency and comfort level of buildings. In many situations, it must be fire resistant to guarantee fire compartmentation of the building. It is therefore important to choose the right insulation material offering both the desired thermal performance and the required fire protection.

Save money and energy with U Protect® Vent Sections – Your easy-to-install all-inclusive insulation solution for circular ductwork ≤ Ø 250mm.

- **Fire resistance up to 60 minutes**
- **Excellent thermal insulation**
- **Good condensation protection**
- **Improved acoustic comfort**
- **Fast installation**



Add value at
EVERY STEP OF THE PROJECT

AS A CONTRACTOR

- Install easier and faster
- Use the same product for all your insulation needs (thermal, acoustics, fire...)
- Reduce installation time and labour costs
- Work with healthier, lighter materials

AS A SPECIFIER

- Design safe and high-performance ventilation & air-conditioning systems for your customers
- Bring key benefits to your customers
- Address stringent building regulations regarding energy, fire and acoustics

AS A BUILDING OWNER

- Do your bit for the environment, health and safety
- Improve the safety, comfort and wellbeing of the occupants of your property
- Earn points towards Green Building certifications (LEED, BREEAM, WELL,...)
- Significantly reduce operational and maintenance costs

ALL PERFORMANCES INCLUDED

- **Fire safety first**
- **Don’t waste energy**
- **Keep the noise down**
- **Prevent condensation**
- **Go green & healthy**

And what’s more:

Install quickly and easily

Fire
SAFETY FIRST

U PROTECT® VENT SECTIONS can be used for fire resistant air ducts with fire ratings of up to 60 minutes (EI 60).

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® VENT SECTIONS ARE CLASSIFIED EUROCLASS $A2_L$-s1, d0, MEANING:

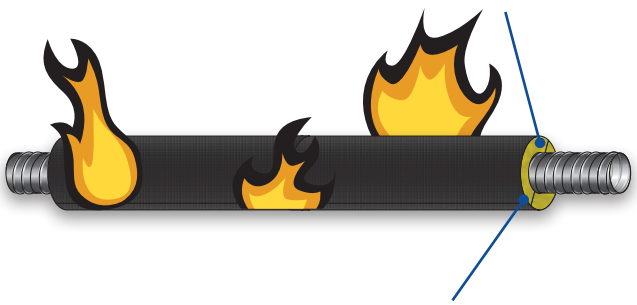
- **They are non-combustible (melting point > 1,000°C).**
- **They do not contribute to the spread of fire.**
- **They will not release smoke.**
- **They will not produce flaming droplets or particles.**
- **They are therefore especially suitable for escape routes or spaces where flashover and spread of smoke present a significant risk.**

PROTECT YOUR DUCTS WITH U PROTECT® VENT 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 ducts pass through a fire-rated wall or floor, the spread of fire and smoke through these openings must be prevented.

All our solutions are tested according to EN 1366-1, which governs the requirements for fire resistant air ducts and penetrations through fire-resistant walls and floors.

50 MM INSULATION THICKNESS => **EI30**



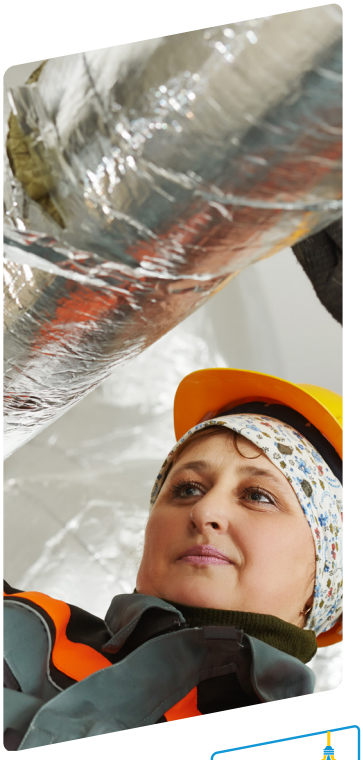
80 MM INSULATION THICKNESS => **EI60**

Don't waste ENERGY

Air-conditioning and ventilation systems are among the most energy-intensive systems in a building. Whilst efficient and well-designed duct systems distribute air properly throughout the building without leakage to keep all rooms at a comfortable temperature, poorly sealed or poorly insulated ducts are likely contributing to higher energy bills.

Insulating your ductwork is an easy option to make your HVAC system more efficient, while reducing your energy bills at the same time.

The comfort in your building is largely influenced by the indoor temperature. A high-performance HVAC system will help control temperature fluctuations. The right insulation of the ducts keeps your building at a more stable temperature and increases the comfort of the occupants.



REDUCE LOSS BY PROPERLY INSULATING YOUR DUCTWORK

To make your duct system as energy efficient as possible, you must take into consideration the thermal performance of your insulation material, potential thermal bridges and the airtightness of the duct system. Insulating your ductwork prevents temperature fluctuation from happening, and thereby creating less work for your HVAC system and reducing your utility bills.

Without proper insulation of the ductwork, much of the energy used to heat or cool the building would be lost.

DID YOU KNOW

Air-conditioning and ventilation account for up to 60% of the overall energy consumption of buildings.

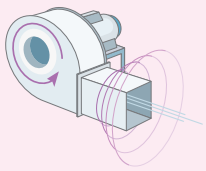
Keep the noise DOWN

Noise is recognised as an environmental pollutant that has a significant impact on our health and wellbeing. In providing acoustic comfort for your building projects, it is important to minimise intrusive or unwanted noise.

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, we're more productive and happier and experience fewer health issues.

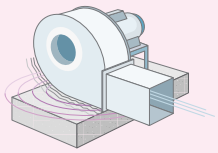
VENTILATION AND AIR-CONDITIONING SYSTEMS CAN BE A REAL SOURCE OF DISTURBANCE

Noise generated by ventilation and air-conditioning systems in buildings can be a real source of annoyance often complained about by the occupants. The sound and vibrations come either from the equipment itself or from the air flow circulating through the system.
Main sources of noise in a ventilation and/or air-conditioning system:



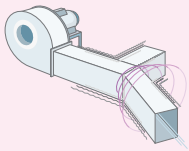
Ventilation/ air-conditioning system

Noise transmission due to the ventilation and/or air-conditioning system itself.



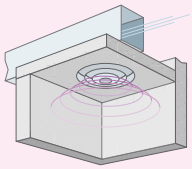
Machinery vibrations

Noise transmission due to the structure on account of vibration.



Air circulation

Generation of noise by the air speed effect.



Grilles and diffusers

Noise transmission via grilles and diffusers.

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

Although high noise levels in buildings should be limited through the right design and installation of ductwork, it is not always possible to avoid deviations or close contact between ducts and other building parts.

Ducts can diffuse noise from moving air and vibrations to the adjacent rooms.

Insulating your ductwork will largely enhance the overall acoustic performance of the ventilation and air-conditioning system and contribute to the comfort and well-being of the building's occupants.

U PROTECT® VENT SECTIONS are the ideal solution for reducing the levels of sound transmission passing through the wall of the duct and also for reducing the structure-borne sound created by the vibration of the ducts.

Prevent
CONDENSATION

Condensation or sweating is a common problem with ventilation and air-conditioning systems: it forms when the water vapour in the air drops out of suspension and condenses into a liquid form. The colder the air inside the duct, the more likely it is that water will condense.

DUCTWORK CONDENSATION CAN BE CAUSED — OR EXACERBATED — BY THE FOLLOWING FACTORS:

- Moisture in the air
- Temperature difference between the air inside the duct and the ambient temperature
- Poor insulation
- Thermal bridges

If left unsolved, it can lead to detrimental problems:

- Leaking ceiling causing structural damage, not to mention cosmetic damage
- Mould growth posing serious hazards to the health
- Water entering your insulation decreasing its ability to insulate

Insulation is a highly effective way to prevent condensation.

With proper duct insulation, moist warm air will not come into contact with the cool air conditioning ductwork. This prevents condensation from forming and therefore avoids the associated issues. If bare sheet metal is the worst case, choosing the right insulation is critical. No gaps must be left between the insulation segments, and joints must be sealed.

U PROTECT® VENT SECTIONS will effectively prevent the temperature from falling below the dew point and allowing condensation to form on the duct surface. The moisture remains in the air and does not form on the duct. Their tear-resistant, reinforced aluminium facing acts as a diffusion barrier. The system includes all the accessories necessary to guarantee condensation-proof insulation.

DID YOU KNOW

Condensation is not limited to cold surfaces: it may occur as soon as there is a difference in temperature and humidity.

Go GREEN & HEALTHY

With climate change being an increasingly important issue and energy becoming a scarcer resource, you'll be keen to do all you can to help protect the planet.

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

- **Save materials & resources:** Our **U PROTECT® VENT SECTIONS** are made of ULTIMATE™ mineral wool, made entirely of natural raw materials and 100% recyclable.
- **Save energy:** Very good thermal resistance and reduced thermal bridges help significantly reduce energy consumption.
- **Reduce CO_2 emissions:** It means also limiting greenhouse gas emissions from your ventilation system. Remember: The best energy is the energy we don't use

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.

WORKING WITH A SAFE MATERIAL

U PROTECT® VENT 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® VENT SECTIONS are easy to handle thanks to being lighter than conventional solutions.

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 CO2-neutral. Once installed, U PROTECT® VENT SECTIONS last the whole lifetime of the building.

EASY INSTALLATION WITH U PROTECT® VENT SECTIONS

Find out how U PROTECT® VENT SECTIONS will help you reduce installation time and save cost.

Save installation
TIME AND COST

Fire rated circular ducts are traditionally insulated using wired net mats. Insulation of small circular ducts is particularly challenging, as one needs to unroll the mats, as well as measure and cut many pieces to the right size. Wrapping the insulation tightly around the ducts, overlapping and securing the seams is not easy in case of small duct diameters.

U PROTECT® VENT SECTIONS will help you save valuable installation time, which directly translates into a reduced total installation cost.

With a weight up to 6 times lower than traditional solutions, they are very easy to handle.

- → **LIGHTWEIGHT**
- → **EASY TO CUT**
- → **FEWER OPERATIONS**
- → **LESS TOOLS & ACCESSORIES NEEDED**
- → **LESS WASTE**

Fewer operations are necessary (no need to unroll, all parts do not have to be measured and cut to size), **U PROTECT® VENT SECTIONS** can be easily cut with a standard insulation knife.

No glue between the joints, nor additional protection against condensation is necessary. As the **U PROTECT® VENT SECTIONS** are delivered with the right dimensions for your ducts, this also means less waste.

Install fire rated ductwork, STEP BY STEP

U PROTECT® VENT SECTIONS can be used for penetrations of flexible or rigid wall constructions (wall thickness ≥ 70 mm) or of rigid floor constructions (floor thickness ≥ 100 mm) with a fire rating up to EI 60.

BASIC REQUIREMENTS FOR THE SYSTEM

CONSTRUCTION

	Thickness	Density
Massive wall	≥ 70 mm	≥ 450 kg/m³
Flexible wall	≥ 70 mm	NA
Massive floor	≥ 100 mm	≥ 575 kg/m³

DUCT DIAMETER

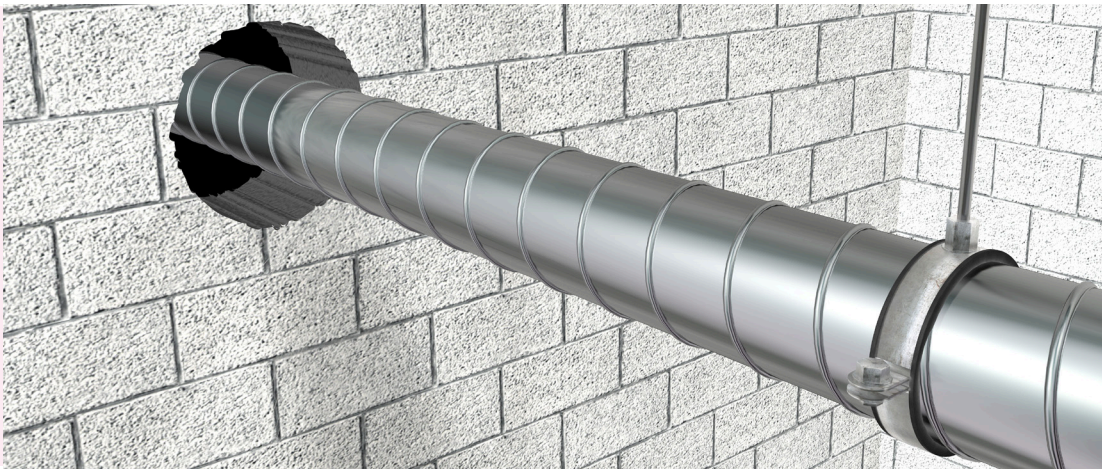
	Steel thickness	Air-tightness
≤ Ø250 mm	≥ 0,4 mm	Class D

INSULATION

Fire rating	Insulation thickness
EI 30 (VE HO I <-> O) S	50 mm
EI 60 (VE HO I <-> O) S	80 mm

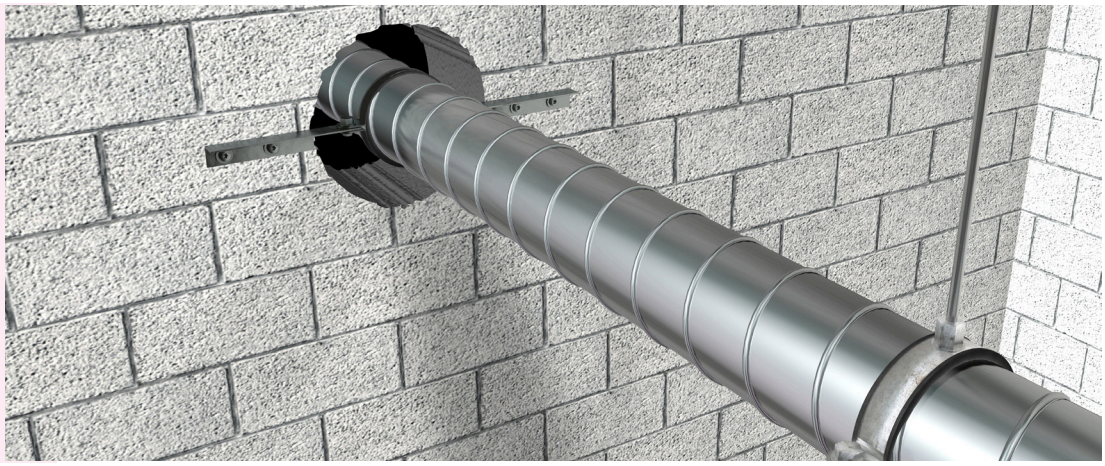
The installation follows the same principle for both horizontal and vertical ducts, whether it is for massive walls, light partitions or massive floors.

STEP 1: POSITION THE DUCT



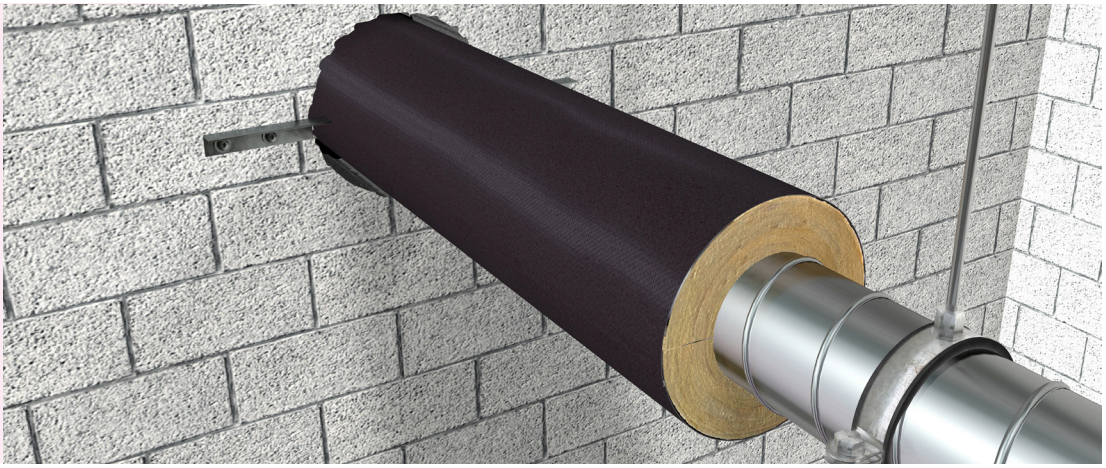
The duct is placed in the centre of the opening in the construction. The opening must be dimensioned so that when the insulation is added, the gap between the insulation and the support construction is < 25 mm. For horizontal ducts, use steel drop rods for the hangers. The tension in the rods should not exceed 9 N/mm². The maximum distance between the hangers should not exceed 1525 mm. For vertical ducts, the distance between supporting constructions should not exceed 5 m.

STEP 2: SECURE THE SUPPORT



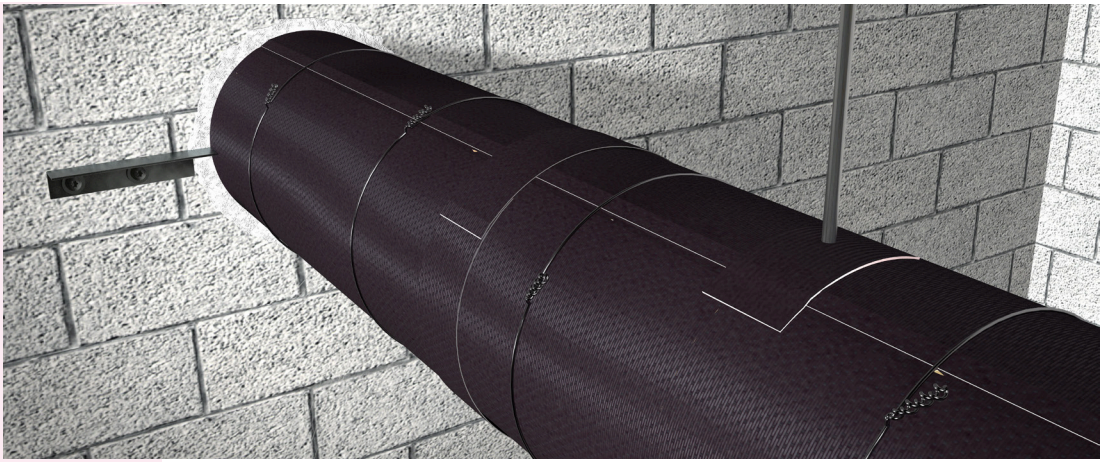
Fix steel L-profiles (dimensions 30 x 30 x 3 mm) to the wall on each side of the penetration or to the top side of the floor penetration. Secure the duct with duct hanger clamps (30 x 3 mm), encircling and attached to the duct.

STEP 3: CLOSE THE PENETRATION



Install the **U PROTECT® VENT SECTION** around the duct. Make a small cut and push it against the L-profile into the opening. The insulation goes through the penetration. Fill the remaining gap fully with standard gypsum plaster. Note that the gap for floors can be also filled with mortar.

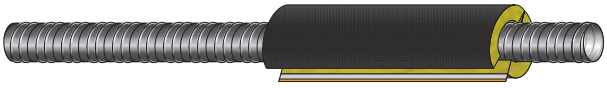
STEP 4: FIX THE INSULATION



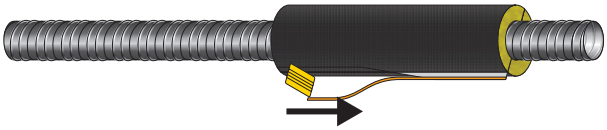
Install the remaining **U PROTECT® VENT SECTIONS** and seal the seams with PROTECT BLACK TAPE. Fix the insulation with 0,7 mm steel binding wire. Max. allowed distance between the binding wires is 250 mm. No need to insulate the hangers.

INSULATE STRAIGHT RUNS WITH U PROTECT® VENT SECTIONS

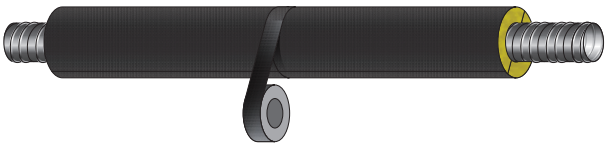
STEP 1: OPEN THE **U PROTECT® VENT SECTION** AND WRAP IT AROUND THE DUCT.



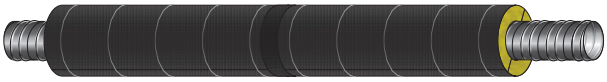
STEP 2: CLOSE THE **U PROTECT® VENT SECTION** WITH TAPELOCK INTEGRATED INTO THE PRODUCT.



STEP 3: SEAL THE SEAMS BETWEEN THE SECTIONS WITH PROTECT BLACK TAPE.

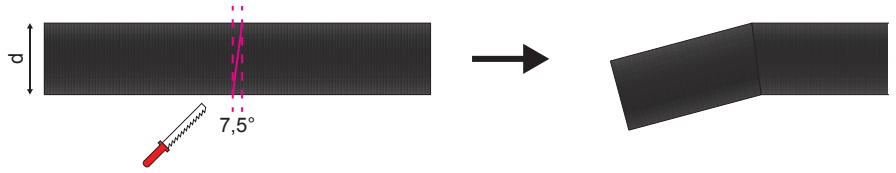


STEP 4: SECURE THE INSTALLATION WITH 0,7 MM STEEL WIRE IN MAX. 250 MM INTERVALS.

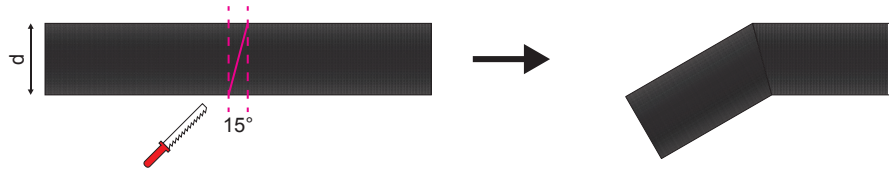


INSULATE ELBOWS WITH U PROTECT® VENT SECTIONS

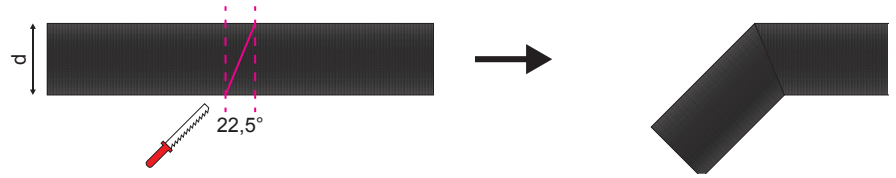
DUCT ELBOW 15°



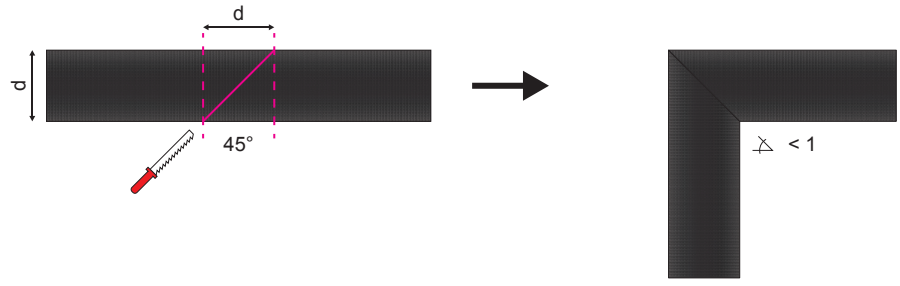
DUCT ELBOW 30°



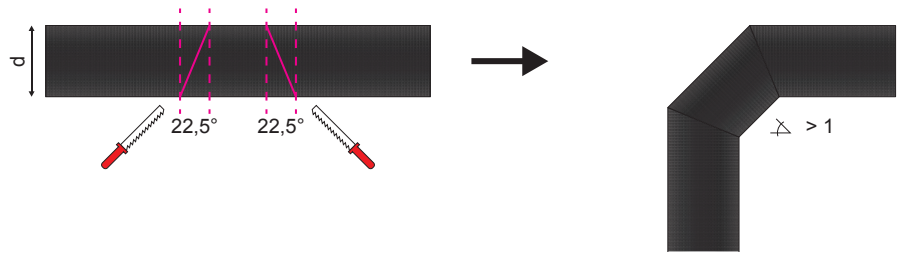
DUCT ELBOW 45°



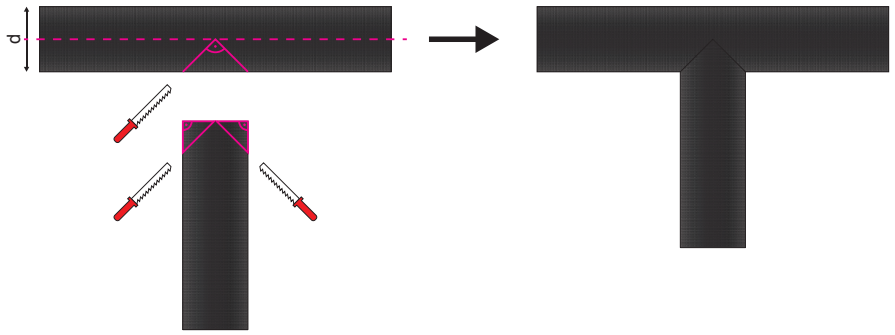
DUCT ELBOW 90°- < 1°



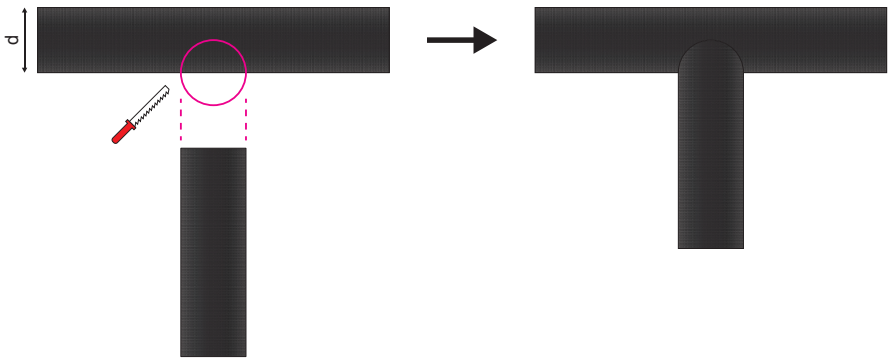
DUCT ELBOW 90°- > 1°



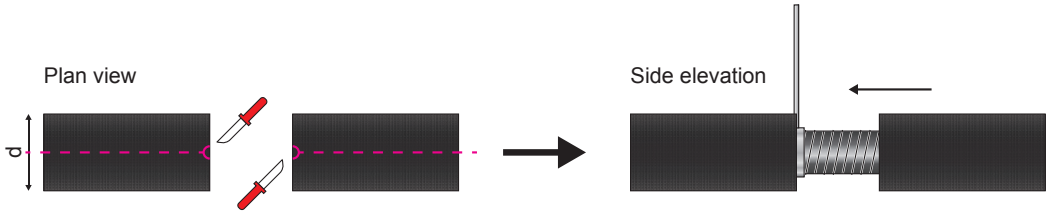
T-JOINT 1



T-JOINT 2

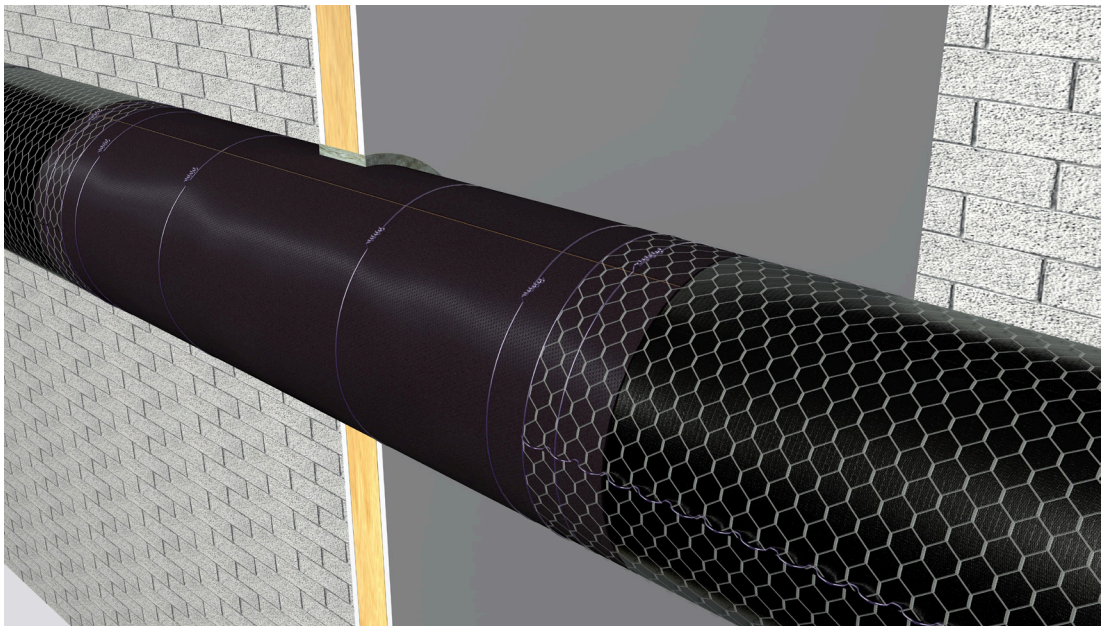


SLOTS

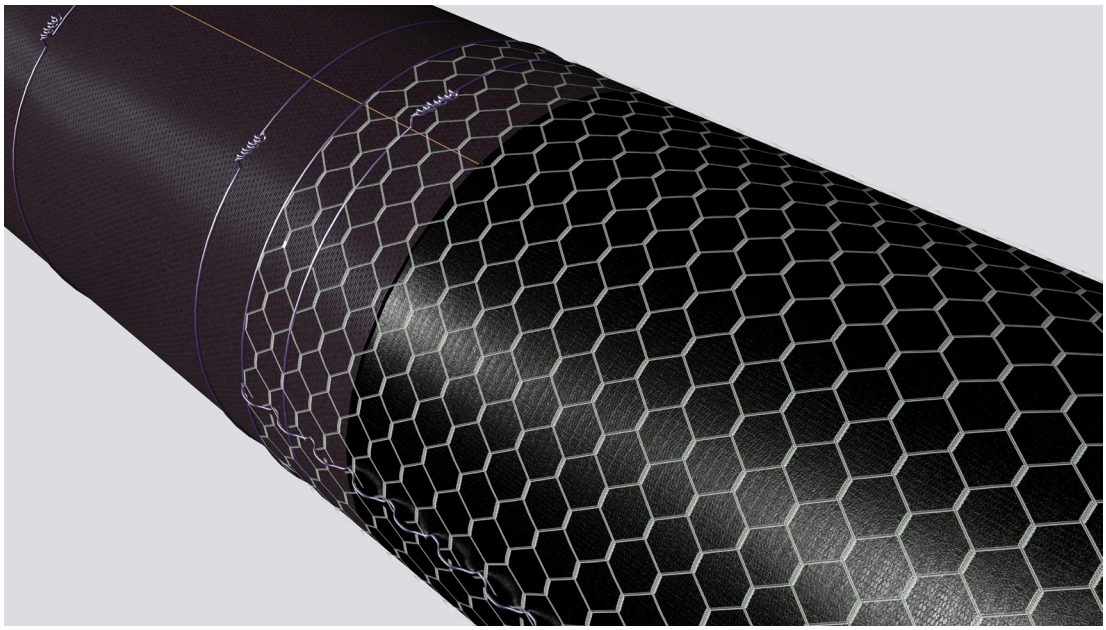


CONNECTING U PROTECT® VENT SECTIONS WITH U PROTECT® WIRED MAT

Remove 100 mm of the insulation from the **U PROTECT® WIRED MAT** and pull the wired mat over the edges of the **U PROTECT® VENT SECTION**.



The wired net overlap should be a minimum of 100 mm in order to guarantee the perfect connection of the **U PROTECT® VENT SECTION** with the **U PROTECT® WIRED MAT**.



To find out more about our HVAC RANGE, discover our general HVAC Insulation Brochure.

WHICH DUCT INSULATION IS RIGHT FOR YOUR PROJECT?

Make your choice from a comprehensive range of U PROTECT® solutions to optimally insulate your ductwork.

AT A GLANCE

Use U PROTECT® VENT SECTIONS for circular ducts with a diameter up to 250 mm.

Duct diameter, nominal (mm)	80	100	125	150	160	180	200	224	250
Thicknesses (mm)	50 (EI30) / 80 (EI60)								
Length (mm)	1200								

PRODUCT CHARACTERISTICS

→ **FIRE REACTION: EUROCLASS EN 13501 A2L-S1, D0**

→ **MELTING POINT: > 1000 °C**

→ **THERMAL PROPERTIES:**

Declared thermal conductivity (EN 14303)						
T [°C]	10	50	100	150	200	300
λ_D [W / (m.K)]	0.032	0.037	0.043	0.052	0.062	0.092

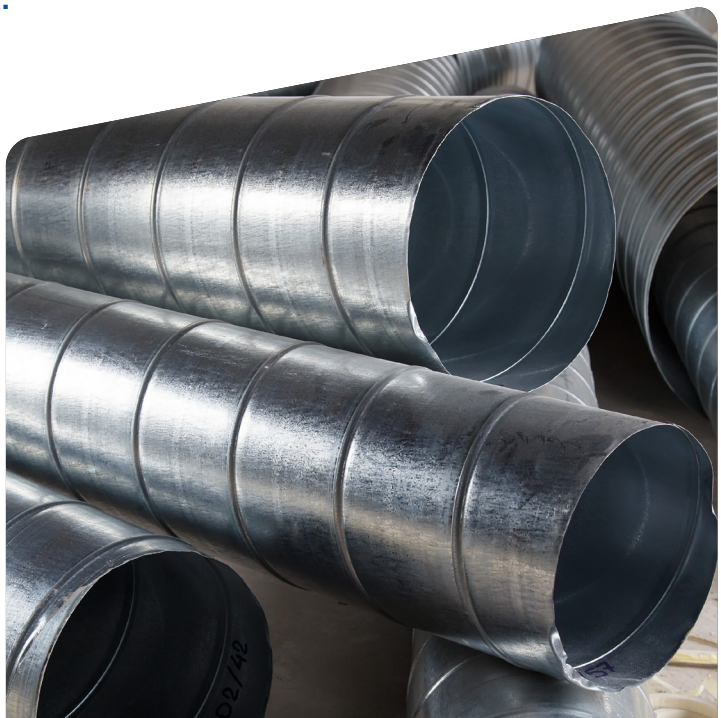
→ **BLACK ALUMINIUM FACING**

→ **CHEMICAL BEHAVIOUR:**

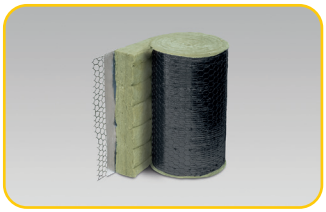
› **Sulfide-free**

› **Silicone-free**

› **Hydrophobic**



Looking for complementary solutions for larger duct diameters or rectangular ducts? Discover our full U PROTECT® range, dedicated to fire protection up to EI 120 for HVAC applications.



U PROTECT® WIRED MAT

U PROTECT® WIRED MATS are a lightweight and highly effective thermal and acoustic insulation solution, suitable for both circular and rectangular ventilation and smoke extraction ducts up to EI 120.

U PROTECT® SLAB

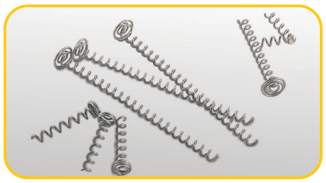
U PROTECT® SLABS provide an easy to install, lightweight and highly effective thermal and acoustic insulation solution for rectangular ventilation and smoke extraction ducts up to EI 120.

U PROTECT® PIPE SECTIONS

U PROTECT® PIPE SECTIONS, the all-in-one solution for pipe insulation, offer a unique combination of low thermal conductivity, optimal fire protection up to EI 120 and excellent acoustic properties, as well as ease of installation.

→ ALL ACCESSORIES FOR AN EFFICIENT FIRE PROTECTION ARE INCLUDED:

ISOVER PROTECT BSK GLUE
Non-combustible, inorganic adhesive based on alkali sodium silicate



ISOVER FIRE PROTECT SCREW
Spiral shaped screw made of galvanized steel

ISOVER FIRE PROTECT BLACK TAPE
Self-adhesive aluminium tape

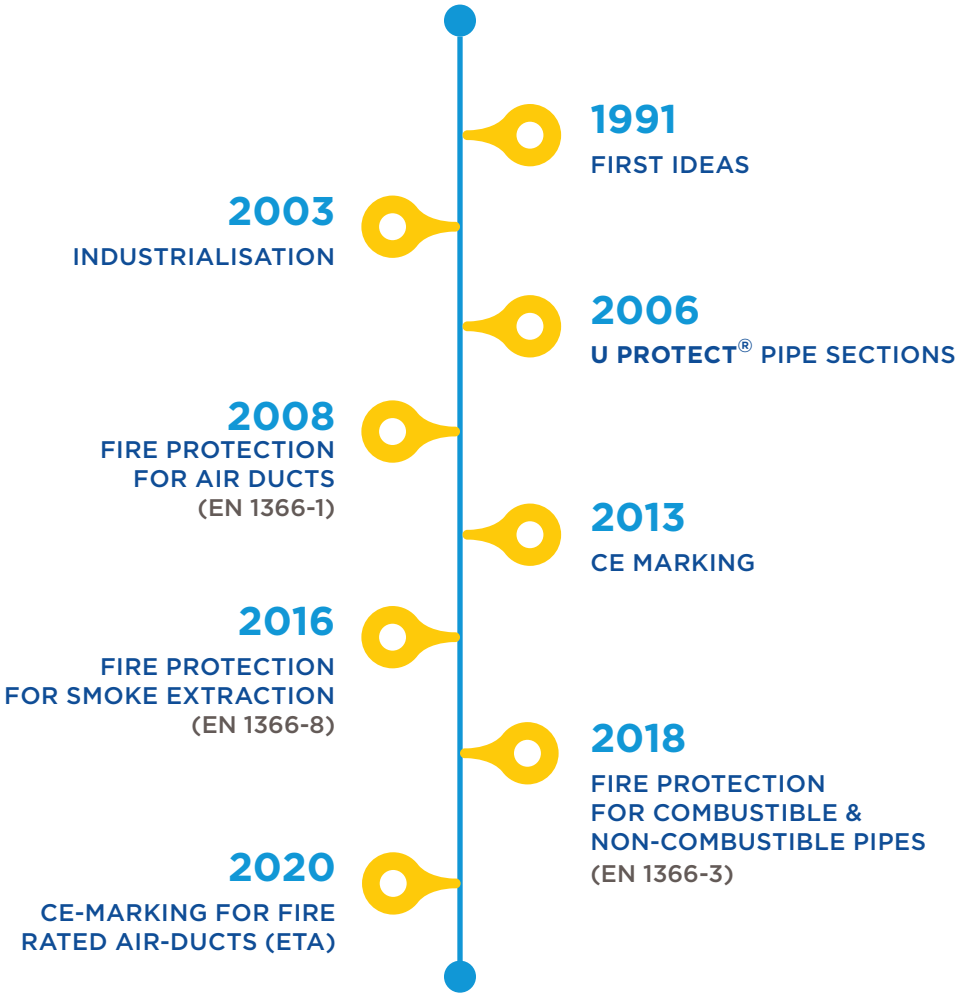
The U PROTECT®
STORY

The origins of ULTIMATE™ go back almost 30 years.

Our challenge was to develop a high performance lightweight mineral wool capable of operating at high temperatures and withstanding fire. 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™ stone 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

Saint-Gobain ISOVER

Tour Saint-Gobain
12 place de l'Iris
92096 La Défense Cedex - France

www.isover-technical-insulation.com

Graphic design : Délicate Essence - www.delicate-essence.fr - 2023