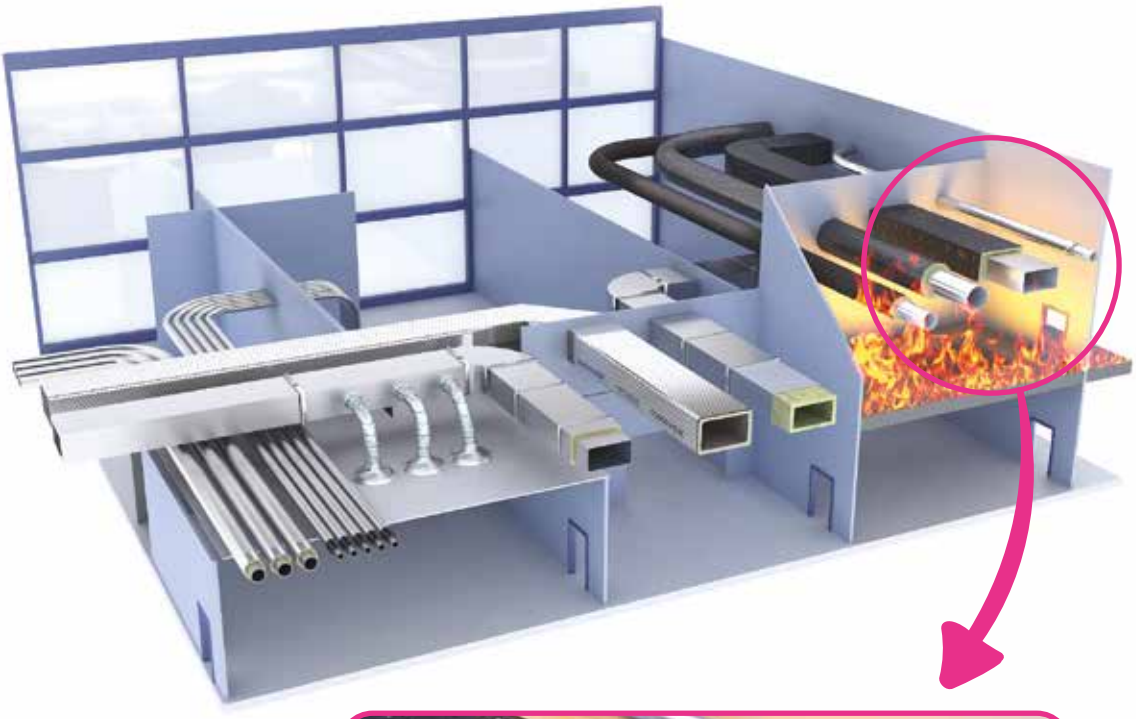
isover
SAINT-GOBAIN

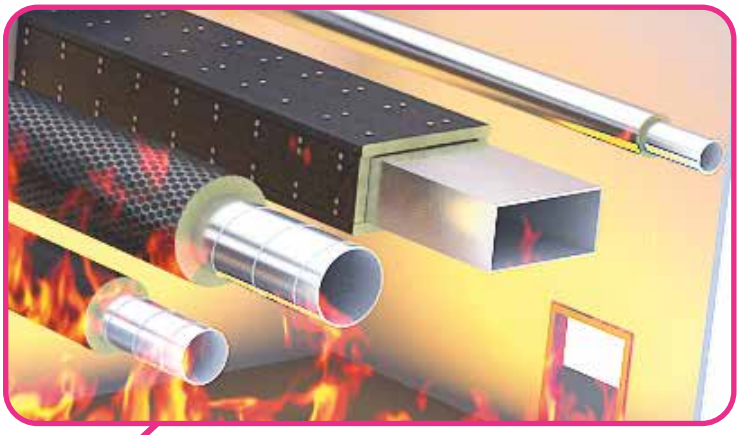
# U PROTECT®

Fire protection of air ducts

SAINT-GOBAIN

# Inside
# YOUR HVAC SYSTEM





## FIRE RATED HVAC APPLICATIONS

# It’s a comfortable feeling when
# YOUR SAFETY IS IN THE BEST HANDS

## It’s a comfortable feeling when your safety is in the best hands.

Fire protection has increasingly become the focus of architects, designers and builders. At the same time, the growing use of air ducts and smoke extraction systems constantly involves new challenges with respect to safety.

Where reliability is crucial, ULTIMATE™ comes into play: the new, highperformance technology by Isover, the world market leader for insulation products. ULTIMATE™ combines all the advantages of conventional products used for fire, thermal and acoustic insulation. On top, it offers significant resource savings (by cost reduction, faster installation) and substantial weight savings thanks to its outstanding insulation efficiency. This is complete confidence in ultimate safety.

## Do not worry: fire safety without compromise.

There’s nothing more vital for us than the air we breathe. We have a high demand for fresh air, both in our living and office rooms. It is essential that we have the highest Indoor Air Quality (IAQ) or comfort in all types of building. Today, this air is supplied via sophisticated ventilation systems and air ducts. These need to be protected against fire since life safety is of paramount importance.

Reliable and long-lasting fire protection is therefore crucial and has top priority when planning and installing these systems. Isover is your ideal partner for fire protection applications that need to meet the highest demands. We know: safety is based on reliability.

**Excellent temperature stability combined with outstanding thermal resistance at high temperatures – thanks to ULTIMATE’s outstanding thermal conductivity values.**

# Add value at
# EVERY STEP OF THE PROJECT

**Choose U PROTECT® and add value across the entire life of your projects.**

### AS A BUILDING OWNER

- Protect the occupants and your building in the event of a fire
- Offer your customers thermal and acoustic comfort
- Be assured that your HVAC system is working efficiently

### AS A SPECIFIER

- Address the most stringent fire regulations
- Implement effective passive fire protection
- Design safe and high-performance HVAC systems for your customers

### AS A CONTRACTOR

- Offer your customers a best-in-class fire insulation solution
- Use the same product for all your insulation needs (thermal, acoustics, fire...)
- Secure fire penetrations without changing the material
- Work with lighter products, install easier and faster
- Reduce installation time and costs, optimise your logistics

# The new standard
# FOR TOP PERFORMANCE

**The big insulation innovation from Isover comes with a unique high-performance profile: it combines top level fire resistance, easy handling and low weight. The all-in-one solution to meet your demands.**

› **Fire safety first: U PROTECT®** solutions are non-combustible, meaning they will not spread fire, develop smoke or produce flaming droplets.

› **Get Greener:** With climate change being an increasingly important issue, insulating your HVAC system with **U PROTECT®** offers many environmental benefits throughout the entire lifecycle of your buildings: from energy savings and reduced $CO_2$ emissions to water savings and recyclability.

› **Save on your energy bill:** An HVAC system is only as efficient as the insulation of its duct- and pipework. **U PROTECT®** offers optimal thermal insulation, with less weight and thickness compared to traditional stone wool products.

› **Heat and cool where and when you need it:** A well-balanced thermal environment is essential to guarantee that the occupants of your buildings will feel comfortable. **U PROTECT®** solutions provide low thermal conductivity which helps keep pipes and ducts at the desired temperature.

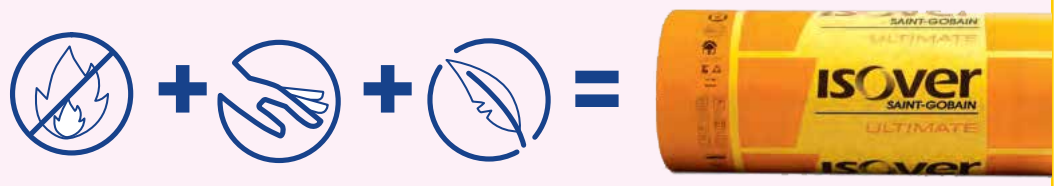
› **Keep the noise down:** Insulating your HVAC system with **U PROTECT®** will largely enhance the overall acoustic performance of the system and contribute to the comfort and well-being of the building's occupants.

› **Go for safer and healthier materials:** All **U PROTECT®** products offer safe and comfortable installation thanks to being up to 50% lighter than traditional stone wool solutions. They are RAL- and EUCEB-certified and fulfil the low-emission requirements for green-labelled buildings.

› **Design HVAC systems for more usable space:** Our **U PROTECT®** range offers great design flexibility where clearances are limited and space is narrow. With its exceptional thermal performances in all insulation thicknesses, it reduces heat loss or gain over a wide range of temperatures.

› **Increase your on-site productivity:** At a time when skilled manpower is becoming a scarce resource, our **U PROTECT®** solutions offer comfortable handling and faster installation, as the weight is up to 50% lower than traditional stone wool.

## THE FORMULA FOR EFFICIENT INSULATION OF VENTILATION AND SMOKE EXTRACTION DUCTS:




## ALL STRENGTHS. ONE PRODUCT. PERFECTLY COMBINED BY ISOVER .

**Fire protection**
**U PROTECT®** meets the highest standard for fire protection, ranging from top rated performance in reaction to fire to excellent fire resistance up to EI120. Each **U PROTECT®** product comes with the full innovative power of Isover.

**Comfortable installation**
Ultralight and adaptable, **U PROTECT®** makes cutting, bending or filling faster and more efficient than ever. But with **U PROTECT®** you are not only on the safe side of handling: the low package weight and gripfriendly touch also meet the most stringent standards for safety and health at the living and working places.

**Lightness**
**U PROTECT®** combines peak performance in fire protection and therm-acoustic insulation with an extremely light weight. Up to 65 % lighter than conventional thermal, acoustic and fire insulation products, **U PROTECT®** sets totally new standards.

# Perfectly safe and secure
# WITH U PROTECT® PROTECT ON DUTY

**Good news about safety.**

U PROTECT® contributes to superior fire resistance and excellent thermal stability even at high service temperatures up to 620°C. And this is not mere lip service: U PROTECT® scores best in the Euroclass system (classification A1) and has been certified to comply with EN 1366.
With U PROTECT® solutions this is comfortable safety that you can build on.

Safety is based on reliability. For this reason, **U PROTECT®** is your ideal partner for effective fire protection applications that need to meet the highest demands. Excellent material stability combined with outstanding thermal resistance at high temperatures: **U PROTECT®** is a top performer with respect to fire protection and thermal insulation, certified amongst others as fulfilling EN 1366 and EN 13501. Only a material that effortlessly masters its tasks can also optimally fulfil individual requirements.

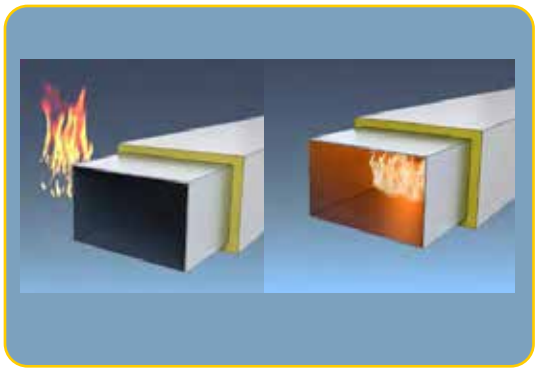
And this is what the **U PROTECT®** product range offers: customized solutions to meet your needs. We thus put you ahead of the game.

## FITTING IN WITH YOUR NEEDS.

The full performance spectrum of fire protection: **U PROTECT® complies with fire resistance classification from 15 to 120minutes (EI15-EI120).**

Whether circular or rectangular ducts:
**solutions are available.**

Whether vertical or horizontal ducts:
**optimum protection in every direction.**



Whether the fire location is fire inside (Type B) or outside (Type A):
**U PROTECT® provides the ideal solution.**

# Unheard-of advantages
# FOR YOUR WORKERS AND FOR YOU

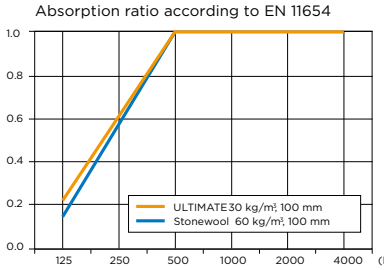
**Work more efficiently: thanks to ULTIMATE™ sound insulation.**

The standards to be met by acoustic insulation are becoming more and more stringent.

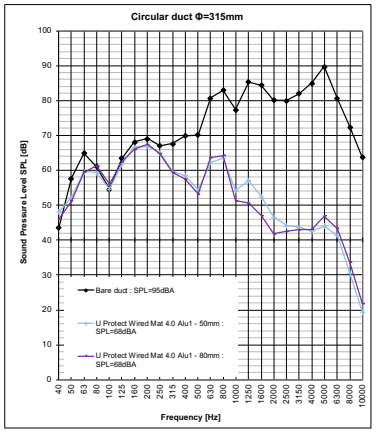
But **U PROTECT®** will help you make that decisive leap forward to state of the art. Due to its improved property profile, **U PROTECT®** reduces sound up to 50 % better than competitive products and thus clearly outclasses conventional solutions. As soon as sound waves penetrate this innovative material, their acoustic energy is drastically reduced by the frictionin the mineral wool structure.

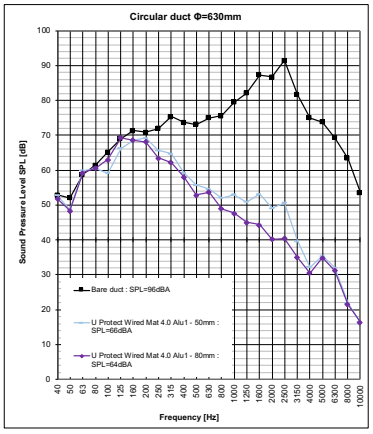
At the same time, the resonant frequency of the sound waves drops below the audible range. In brief: it gets quiet. And compared to stonewool, **U PROTECT®** achieves this sound reduction at only half the weight.

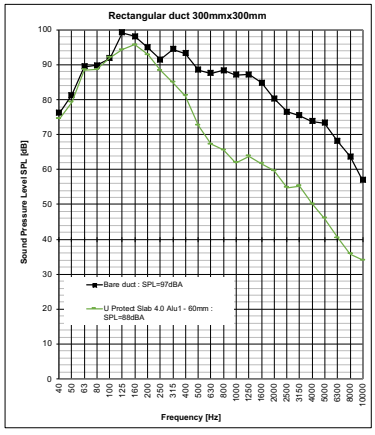
| Air flow resistance (EN 29053) kPa·s/m² | |
|---|---|
| **ULTIMATE™** | **Stonewool** |
| **24-30 (kg/m³): ≥ 15** | 30-50 (kg/m³): ≥ 5 |
| **40-50 (kg/m³): ≥ 30** | 70 (kg/m³): ≥ 18 |
| **60-70 (kg/m³): ≥ 48** | 100 (kg/m³): ≥ 25 |
| **80-100 (kg/m³): ≥ 70** | 120 (kg/m³): ≥ 35 |

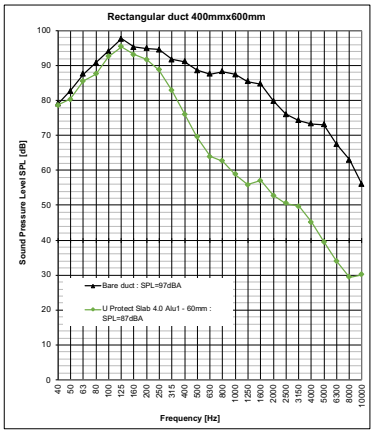



The measurements with **U PROTECT® Slab 4.0 Alu1** and **U PROTECT® Wired Mat 4.0 Alu1** are carried out according to standard ISO 15665 by accredited laboratory.



# Insulation that pays off
# RIGHT FROM THE START

Insulation with **U PROTECT**® pays off even before the ventilation system is put into operation. Thanks to compressed packaging, the logistics – including intermediate storage on site – can be managed without any problems, even for larger projects.

And the installation is not only done faster but also at drastically reduced material cost: no need for expensive prefabrication, no glue needed for joint protection, no edge break, but higher insulation efficiency achieved with extremly low thicknesses.
**U PROTECT**® thus pays off with every single work step.

## THE MATERIAL THAT EVERYONE PROFITS FROM: ULTIMATE™ PROTECT

**Ultralight, never above 8,25 kg/m² and extremely adaptable: ULTIMATE™ ensures more freedom in the planning phase, less logistical effort and better working conditions. And once in place, you will soon profit from the new energy efficiency – day by day.**

| ULTIMATE™ Protect features | Your advantages |
|---|---|
| Lightest solution in the market | Favourable working conditions |
| Flexible and time-saving | Shorter installation time, less waste |
| Easy to transport | Faster installation |
| Innovative, high-performance product for simple solutions | Time and material savings (one layer instead of two, no glue between joints) |

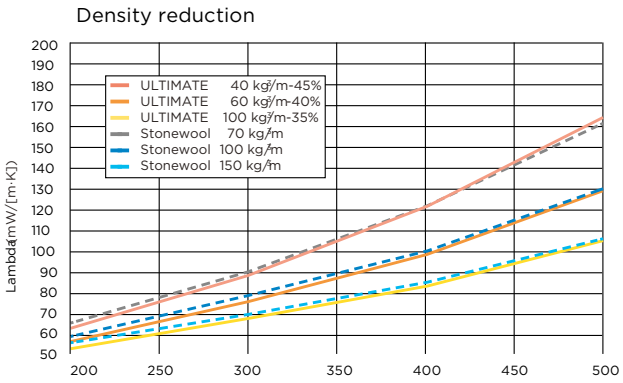
# Adding efficiency
# TO INSULATION

Energy losses are rapidly becoming a most critical cost factor for the economic viability of buildings. The ULTIMATE™ answer to this problem: add efficiency to insulation. Thanks to its exceptionally good thermal conductivity or lambda values, ULTIMATE™ produces a stronger insulation effect with up to 45 % less material than other conventional insulation products. ULTIMATE™ is able to achieve these excellent lambda values, because it has been converted 100 % from the basic raw material into efficient insulation and is completely free of shot (unfiberised material). This pays off with increased insulation efficiency – improving your environment.

## SUPERIOR COMFORT THANKS TO ULTIMATE

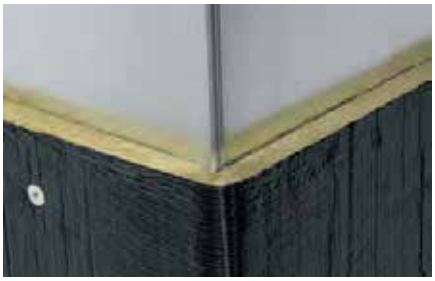
Effective thermal insulation is indispensable for an advanced HVAC system. At the same time, concentrated work is only possible in an agreeable, well-balanced work climate. ULTIMATE™ is able to create such an environment – better than conventional insulation products.

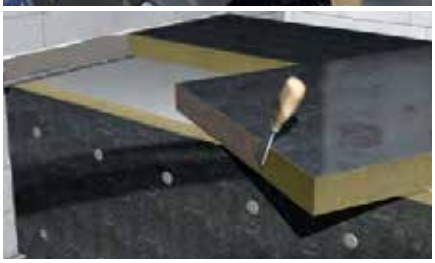
Even at 10°C, ULTIMATE™'s thermal conductivity difference amounts to as much as 25 % compared to products designed for the same application. And the higher the operation temperature, the greater the performance lead. Comfortable conditions for more safety and concentration at work. Quite simple with ULTIMATE™




## GET YOUR INSULATION INTO SHAPE THE SMART WAY

ULTIMATE™ perfectly adapts to all conditions on site such as uneven surface structures.
It thus smoothes the way to a new era of cost effectiveness: save yourself the time consuming work of encasing or the cost of expensive prefabrication.
And since the pliable fiber structure of ULTIMATE™ prevents it from breaking, installation can be done with next to no waste: offcuts optimally fill niches and holes.





**Easy cutting**
**Flexible shaping**
**Robust and stable**
**No edge breaks**
**Even off-cuts can be used**
**Virtually waste-free**
**Free of shot**
**Not harmful to health**
**Extremely easy to handle and install**
**EUCEB, RAL and BLAUER ENGEL**

ULTIMATE™ meets the EU criteria for the quality label «Products made of Mineral Wool».

## INCREASE WORKABILITY. DECREASE WEIGHT

ULTIMATE™ is by up to 65 % lighter than conventional products for this application and thus makes light work of installation.
It remains below the permissible weight of 15-25 kg per package stipulated by national working conditions regulations. ULTIMATE™: minimum weight, maximum performance.

## FAST, EASY, COMFORTABLE: PROGRESSIVE INSULATION WITH ULTIMATE™

ULTIMATE™ does a more efficient job of installation. Even in the most difficult corners. And especially in awkward installation situations does ULTIMATE™ play its trump cards: unique lightness and excellent pliability. ULTIMATE™ quite flexibly adapts to your individual needs.

# Compact insulation for MAXIMUM LOGISTIC EFFICIENCY

Logistical benefits thanks to the highly flexible fiber structure: ULTIMATE‘s extreme compressi bility saves you 60 % of total freight mileage, reduces the cost of intermediate storage and allows easy transportation on site even to the most difficultly accessible spaces.


## Important facts about weight, safety and health at work.

**Protects against fire. And from back injuries.**
Unrivalled low weight and a handy package size: these features make ULTIMATE™ ideally suited for the manual handling of loads in keeping with the requirements of the EU Agency for Safety and Health at Work. According to Council Directive 90/269/EEC, the criteria for the correct lifting, holding and putting down are as follows:

**ULTIMATE™ solutions are never above 8,25 kg/m²**

**The risk of back injury increases if the load is:**
- Too heavy: a weight of 20-25 kg is heavy to lift for most people.
- Too large: it is not possible to follow the basic rules for lifting and carrying.
- Difficult to grasp, unbalanced or unstable: the object may slip and cause an accident.
- In addition, loads with sharp edges or made of dangerous materials may injure your workers.

**You should use the following lifting technique:**
- Put your feet around the load, with your body over it (if this is not feasible, try to move your body as close as possible to the load).
- Keep the load as close to the body as possible.
- Use the muscles of your legs when lifting.
- Straighten your back.
- Pull the load up as close as possible to your body.
- Lift and carry the load with your arms straight down.
- Avoid twisting and bending your back.

# Fire Performance in Ducts
# WITH U PROTECT®

The fire resistance of ventilation and smoke extraction ducts is tested according to EN 1366. These test procedures are already referenced as or will be the Europe-wide reference. Fire in ventilation systems can cause tremendous problems because in a duct the fire can spread from the point of origin. This is why it is of vital importance to develop safe and reliable solutions. The applicable standard (EN 1366) describes a number of scenarios that we can find in a real fire situation.

The ULTIMATE™ product range **U PROTECT®** has been tested to meet the requirements of all possible scenarios. We can subdivide the scenarios by fire location, duct orientation and duct shape.

| Fire location | Explanation |
|---|---|
| Fire inside the duct, i | Duct opening or failure allows the fire to enter the duct. The fire must be prevented from spreading to adjacent rooms and flats. |
| Fire outside the duct, o | The fire must be prevented from entering the duct, especially when the ventilation system continues to run during a fire. |
| Smoke extraction | Duct system is used together with fan extraction. Purpose is to remove smoke and hot gases from an area where a fire has been developed. |

| Duct orientation | |
|---|---|
| Horizontal, ho | Ducts normally serving in one level (floor) of a building. |
| Vertical, ve | Ducts serving between levels (floors). |

| Duct shape | |
|---|---|
| Rectangular | Rectangular shape of the metal duct. |
| Circular | Circular shape of the metal duct. |

It is, of course, possible to develop a system that covers all cases with one solution. When offering only one solution, you will always have to proceed from the worst case scenario.

**To offer optimum design, four questions need to be answered:**

1. **Which duct shape is required? Rectangular or circular?**
2. **Which fire resistance performance is required: EI15, 30, 60, 90 or 120?**
3. **Where is the fire located: inside, outside, both or smoke extraction?**
4. **In which direction do the ducts run: horizontally, vertically or in both directions?**

The tables below show the insulation thicknesses required for rectangular and circular ducts.

## RECTANGULAR DUCT WITH U PROTECT® SLAB

| Insulation thickness (mm) | | | | | | |
|---|---|---|---|---|---|---|
| Fire location | Resistance to Fire, EI (ve-ho i ↔ o) S | | | | | Duct Orientation |
| | EI15* | EI30 | EI60 | EI90 | EI120 | |
| Inside, i & Outside,o | 40 | 50 | 70 | 80 | 90 | Vertical, ve & Horizontal, ho |

For smoke extraction - EI120 (ve-ho i↔ o) S 500 multi

## CIRCULAR DUCT WITH U PROTECT® WIRED MAT

| Insulation thickness (mm) | | | | | | |
|---|---|---|---|---|---|---|
| Fire location | Resistance to Fire, EI (ve-ho i ↔ o) S | | | | | Duct Orientation |
| | EI15* | EI30 | EI60 | EI90 | EI120 | |
| Inside, i & Outside,o | 40 | 40 | 80 | - | 120 | Vertical, ve & Horizontal, ho |

For smoke extraction - EI120 (ve-ho i↔ o) S 1000 multi

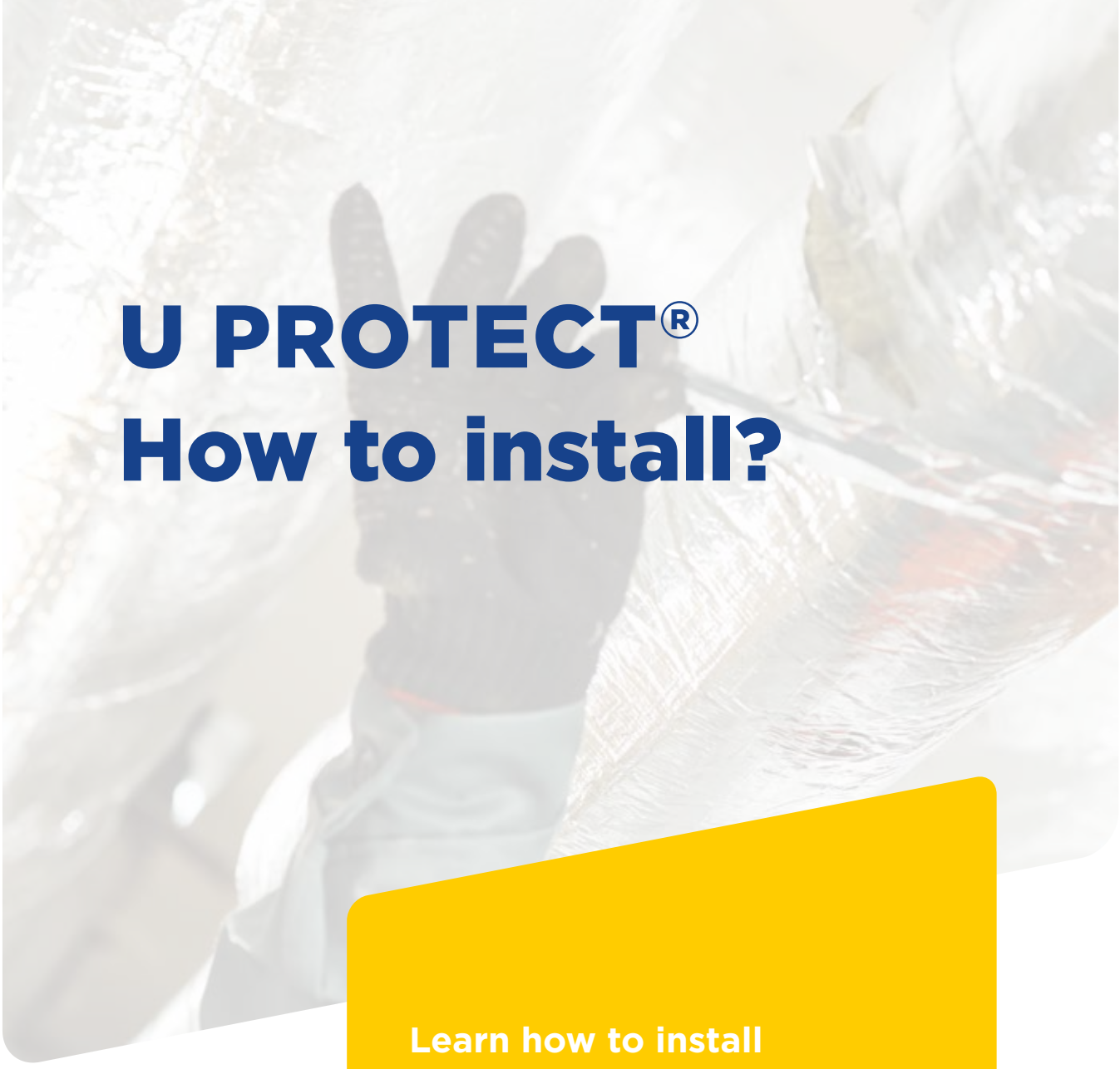
## CIRCULAR DUCT WITH U PROTECT® VENT SECTION

| Insulation thickness (mm) | | | |
|---|---|---|---|
| Fire location | Resistance to Fire, EI (ve-ho i ↔ o) S | | Duct Orientation |
| | EI30 | EI60 | |
| Inside, i & Outside,o | 50 | 80 | Vertical, ve & Horizontal, ho |

Ducts penetrating a rigid or flexible supporting construction.

Based on European Technical Assessment issued in accordance with Regulation (EU) 305/2011, on the basis of European Assessment Document EAD 350142-00-1106. The insulation thicknesses to ensure fire resistance up to EI120 for ventilation and smoke extraction ducts are tested and certified with **U PROTECT® Slab 4.0 Alu1, U PROTECT® Wired Mat 4.0 Alu1** and **U PROTECT®Vent Section Alu2.**
* EI15, based on Fire Technical Assessments by accredited laboratory for rectangular and circular steel ventilation duct systems insulated with **U PROTECT® Slab 4.0** and **U PROTECT® Wired Mat 4.0**.

**For further information please contact our Isover sales offices.**



# U PROTECT®
# How to install?

**Learn how to install**
**U PROTECT®,**
**easily and step by step.**

# Rectangular DUCTS

**Under EN 1366, the maximum duct size is 1250 x 1000 mm and the maximum duct length is 1250 mm.**

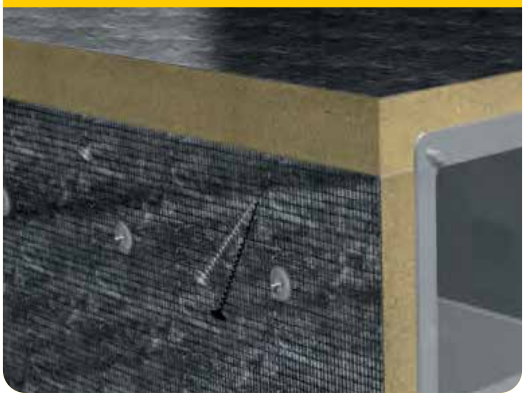
## INSTALLATION GUIDELINES

The insulation of ventilation and smoke extraction ducts can be easily and efficiently accomplished with **U PROTECT®** products. Fire insulation requires a high level of accuracy and expert workmanship. In order to achieve greatest possible security, it is important to follow the guidelines stated in ETAs for mounting the ducts, installing the insulation and producing penetrations in walls and floors. The installation guidelines for insulation is the same for both fire resistance and smoke extraction solution. In case of smoke extraction additional reinforcement profiles must be installed on the duct and through penetrations. In addition to these guidelines, it is necessary to follow the instructions given by the duct manufacturers.

Installation principle for horizontal rectangular ducts

Welded pins with washers are used to fix the insulation to the duct. Standard threaded rods and load-bearing U-profiles are used as hangers for the duct. The hangers are placed inside the insulation and the rods do not need to be protected with insulation material. One pair of hangers is needed at every duct joint. If the threaded rod M10 is used, no further control is needed. When using smaller dimensions, a weight calculation is needed. The acceptable tensions are 9 N/mm$^2$ for EI30 and EI60, 6 N/mm$^2$ for EI90 and EI120.

**Principle of fixing the insulation**



Insulation is fixed to the duct with welded pins with washers. Corner joints are secured with Isover FireProtect Screws. Screw length must be 2 x the insulation thickness. The pins are fixed with a maximum center distance (c) of 260 mm and not more than 80 mm from the slab edges or duct flanges. The slab on the top side is installed without any pins. Pins have a diameter of ≥ 2.7 mm and the washers of ≥ 30 mm. All joints are secured by pressing the slabs together (no additional glue needed).

**Cutting for insulating a duct joint**

At duct flanges, the slabs need to be cut to fit the duct as tightly as possible. There is no thickness increase or double layer necessary on flanges.

EI15* - For insulation thicknesses ≤ 50 mm, a layer of 30 mm collar with width 120 mm must be added on top of the insulation at the duct joints to cover the flanges. (* Based on Fire Technical Assessment by accredited laboratory for ventilation ducts with U PROTECT® Slab 4.0.)

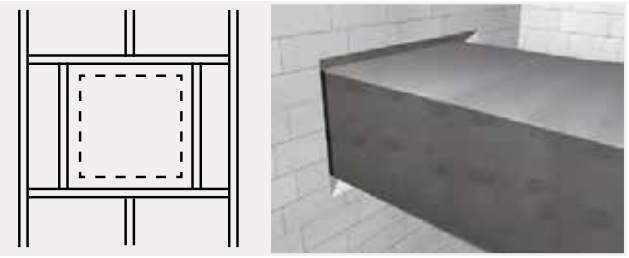
| | Dimensions | Horizontal Top - slab | Horizontal Bottom - slab | Vertical - slab |
|---|---|---|---|---|
| **Pins/Washers** | 2.7 / 30 mm | Not needed | c ≤ 260 | c ≤ 260 distance from edge 80 mm |
| **Screw** | 2 x insulation thickness | | | c ≤ 260 |

c, the maximum center distance

## WALL / FLOOR PENETRATION

**(Based on European Technical Assessment issued in accordance with Regulation (EU) 305/2011, on the basis of European Assessment Document EAD 350142-00-1106)**

Insulated ducts sometimes need to penetrate walls or floors. The light-weight partition wall is often bending in case of fire and still the penetration must be secured. The solution of how to accomplish this is part of the **U PROTECT®** system. The design is kept simple and easy to install. The same principle is used for both horizontal and vertical ducts as well as for masonry and light-weight partitions. The installation is done in 6 steps.



### › STEP 1: POSITIONING

The duct is placed in the opening of the construction. The distance between duct wall and opening has to be ≤ 50 mm. The duct should have an internal stiffener (support rod) placed where the duct passes the construction. One stiffener required for the installations of ventilation ducts of EI60 and above.
Note that internal stiffener is not needed in EI30 installations for ventilation ducts.
For light-weight partition walls: the wall opening should be reinforced with a metal frame using same or similar profile as use for wall studs. Frame is installed on all four sides.

### › STEP 2: INSULATION OF THE PENETRATION

Fill the space between duct and construction with the insulation slab. It should be compressed to completely fill the opening.

### › STEP 3: SEALING

Seal the joint with Isover Protect BSF to prevent leakage. This must be done on both sides of the construction. Use a spatula to apply a layer of ~ 2 mm thickness. Note that Isover Protect BSF is only needed in EI120 installations.

## › STEP 4: REINFORCING THE DUCT

Frame the duct by fixing an L-profile (30 x 30 x 3 mm) around it. The L-profile is fixed to the duct with steel rivets (3,2 x 10 mm) of c ≤ 100 mm. The top and bottom profiles are fixed to the construction with two wall anchors each. The profiles need to be installed on both sides of the construction in horizontal installation. In case of vertical installation profiles are only needed on the upper side of the floor.

## › STEP 5: DUCT INSULATION

Install the insulation slabs so that they abut the construction. The slabs must be cut with excessive width so that they exert some pressure. To avoid leakage caused by elongation of the steel, the first slabs need to be glued to the construction using Isover Protect BSK (thickness ~ 2 mm). Use Isover Protect Black Tape to cover the edges and joints of U PROTECT® Slab 4.0 Alu1..

## › STEP 6: COMPLETION

Use Isover Protect Black Tape to cover the edges and joints of U PROTECT® Slab 4.0 Alu1.. All joints are secured by pressing the slabs together (no additional glue needed).

# Circular
# DUCTS

## Under EN 1366, the maximum duct size is Ø 1000 mm and the maximum duct length is 3000 mm.

**Installation principle for horizontal circular ducts**

The joints of the insulation mats are secured with either clamping rings, C-shaped hooks or stitched together with steel thread with the wired net attached to itself. Standard threaded rods and suspension brackets are use as hangers for the duct. The hangers are placed inside the insulation and the rods do not need to be protected with insulation material. The maximum distance between the hangers is 1500 mm. If the threaded rod M10 is used no further control is needed. When using smaller dimensions, a weight calculation is needed. The acceptable tensions are 9 N/mm$^2$ for EI30 and EI60, 6 N/mm$^2$ for EI90 and EI120.

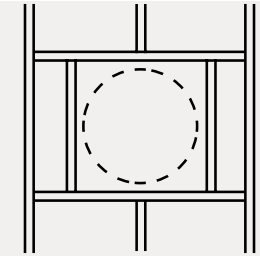
**The insulation mat easily wraps around duct joints and brackets without any off-cuts**

In the case of both vertical and horizontal installations, the insulation mats do not need to be fixed with pins and washers. All joints are secured by pressing the mats together (no additional glue needed). Thanks to its flexibility, there is no need to cut insulation at duct joints

## WALL / FLOOR PENETRATION

**(Based on European Technical Assessment issued in accordance with Regulation (EU) 305/2011, on the basis of European Assessment Document EAD 350142-00-1106)**

Insulated ducts sometimes need to penetrate walls or floors. The solution of how to accomplish this is part of the **U PROTECT®** system. The design is kept simple and easy to install.
The same principle is used for both horizontal and vertical ducts as well as for with masonry and light-weight partition walls. The installation is done in 5 steps which are the same principles as for the rectangular duct.



### › STEP 1: POSITIONING

The duct is installed in the opening of the construction. The distance between duct and opening has to be ≤ 50 mm (ventilation: 20 mm below EI120 and 50 mm for EI120, smoke extraction: 45 mm for EI120).. For light-weight partition walls: the wall opening should be reinforced with a metal frame using same or similar profile as use for wall studs. Frame is installed on all four sides.

### › STEP 2: INSULATION OF THE PENETRATION

Fill the space between duct and construction with the insulation mat removed from wire. It should be compressed to completely fill the opening.

### › STEP 3: SEALING

Seal the joint with Isover  Protect BSF to prevent leakage. This must be done on both sides of the construction. Use a spatula to apply a layer of ~ 2 mm thickness. Note that Isover Protect BSF is only needed in EI120 installations.

### › STEP 4: REINFORCING THE DUCT

A suspension bracket (30 x 2 mm) is screwed to the duct (c ≤ 150 mm) on each side of the construction. Longer L-profiles (30 x 30 x 3 mm) are fixed above and below the bracket with one rivet each (3,2 x 10 mm) and whereas short. L-profiles (30 x 30 x 3 mm) are fixed with nuts and bolts (M8) to the bracket eye. Fixation to the construction is done with wall anchors. The profiles need to be installed on both sides of the cconstruction. Longer L-profiles for walls and floors are only needed for EI120 installations. Note that angle brackets could be used in EI30 installations for ventilation ducts on the upper side of floor where suspension brackets and short L-profiles are used in EI60 and EI90 installations.

### › STEP 5: DUCT INSULATION

Install the wired mats so that they abut the construction. To avoid leakage caused by elongation of the steel, the wired mat needs to be glued to the construction using Isover Protect BSK (thickness ~ 2 mm).

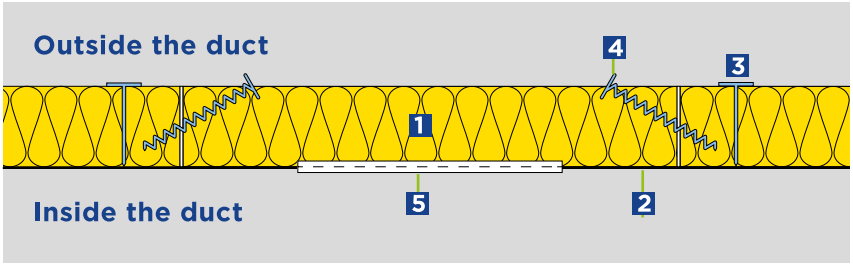
# Details

**The installation of a ventilation system in a building is complex. A system is normally passing through the whole building. The duct system must be adapted to the building, as well allowing inspection and maintenance with maintaining level of fire safety.**

## INSPECTION HATCH

**(Based on Fire Technical Assessment by accredited laboratory)**

In the case when a nonfire rated inspection hatch is installed to the duct it's important to have a fire safe solution that can be easily removed and installed again (see picture). The opening is limited to a size of 290x420 mm, in case of bigger hatches, it is recommended to use a fire rated one.




1. U PROTECT®
2. Duct
3. Welding pin
4. FireProtect screw
5. Inspection Hatch

# Your product
# COMPASS

**Isover has a complete solution for metal ventilation and smoke extraction ducts, based on a streamlined portfolio of standard products. The clear-cut assortment offers advantages for storage and transportation – but also for on site installation where mix-ups can effectively be avoided.**

Within the scope of European Technical Assessment issued in accordance with Regulation (EU) 305/2011, on the basis of European Assessment Document EAD 350142-00-1106.


### U PROTECT® SLAB 4.0 ALU1

- Slab: 1200 x 600 mm
- Facing: Black aluminium

### U PROTECT® WIRED MAT 4.0 ALU1

- Wired Mat: L x 600 - 1200 mm
- Facing: Black aluminium.

### U PROTECT® VENT SECTION ALU2

- Section: 1200 x up to ∅ 250 mm
- Facing: Black aluminium

Within the scope of Fire Technical Assessments by accredited laboratory


## U PROTECT® SLAB 4.0

- Slab: 1200 x 600 mm
- Facing: None


## U PROTECT® SLAB 4.0 V1

- Slab: 1200 x 600 mm
- Facing: Glass tissue

## U PROTECT® WIRED MAT 4.0

- Wired Mat: L x 600 - 1200 mm
- Facing: None

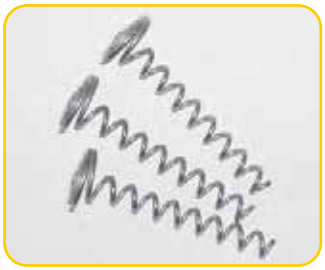
## U PROTECT® WIRED MAT 4.0 V1

- Wired Mat: L x 600 - 1200 mm
- Facing: Glass tissue

## → ALL ACCESSORIES FOR AN EFFICIENT FIRE PROTECTION ARE INCLUDED:

### ISOVER PROTECT BSF
Solvent-free and pH- neutral, white, aqueous intumescent dispersion

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



### ISOVER FIREPROTECT SCREW
Spiral shaped screw made of stainless steel.

### ISOVER PROTECT BLACK TAPE
Self-adhesive aluminum tape

# ULTIMATE Protect:
# FIRE RATED DUCT INSULATION

## DIMENSIONS AND FACINGS

| U PROTECT® Slab 4.0 | | |
|---|---|---|
| Thicknesses (mm) | Length (mm) | Width (mm) |
| 30 | 1,2 | 600 |
| 40 | | |
| 50 | | |
| 60 | | |
| 70 | | |
| 80 | | |
| 90 | | |
| 100 | | |
| **Facing** | Black Aluminium Glass Tissue (non-woven) | |

| U PROTECT® Wired Mat 4.0 | | |
|---|---|---|
| Thicknesses (mm) | Length (mm) | Width (mm) |
| 30 | 10,0 | 600 - 1200 |
| 40 | 7,5 | |
| 50 | 6,0 | |
| 60 | 5,0 | |
| 70 | 4,3 | |
| 75 | 4,0 | |
| 80 | 3,7 | |
| 90 | 3,3 | |
| 100 | 3,0 | |
| 120 | 2,5 | |
| **Facing** | Black Aluminium Glass Tissue (non-woven) | |

| U PROTECT® Vent Section | | |
|---|---|---|
| Thicknesses (mm) | Length (mm) | Diameter (mm) |
| 50, 80 | 1,2 | 80 |
| | | 100 |
| | | 125 |
| | | 150 |
| | | 160 |
| | | 180 |
| | | 200 |
| | | 224 |
| | | 250 |
| **Facing** | Black Aluminium | |

Please contact the local Isover team for specific requirements and installation details.

## PERFORMANCES

| | | | U PROTECT® Slab 4.0 | U PROTECT® Wired Mat 4.0 | U PROTECT® Vent Section |
|---|---|---|---|---|---|
| Fire Reaction | Euroclass EN 13501 | | A1 | | A2L-s1, d0 |
| Thermal Properties | Declared Thermal Conductivity in W/m.K (EN 12667, EN ISO 13787) | 10°C | 0,031 | | 0,032 |
| | | 50°C | 0,035 | | 0,037 |
| | | 100°C | 0,040 | | 0,043 |
| | | 150°C | 0,047 | | 0,052 |
| | | 200°C | 0,054 | | 0,062 |
| | | 300°C | 0,072 | | 0,092 |
| | | 400°C | 0,096 | | - |

Products are CE marked according to EN 14303

# 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.**

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