ISOVER TECHNICAL INSULATION

Energy efficient insulation for industrial applications

isover.co.uk/TI

ISOVER SAINT-GOBAIN

ISOVER TECH –
the right solution for any industry application

SAINT-GOBAIN & ISOVER:
Benefit from an exceptional professional network

SAINT-GOBAIN synergies

For more than three centuries, Saint-Gobain has applied its technological expertise and knowledge of markets to supply products that reflect its customers' and partners' needs.

SAINT-GOBAIN today is one of the world's top one hundred leading industrial corporations, working constantly on developing new markets, innovations and added value.

With its presence in more than 64 countries, Saint-Gobain provides a unique worldwide supply network.

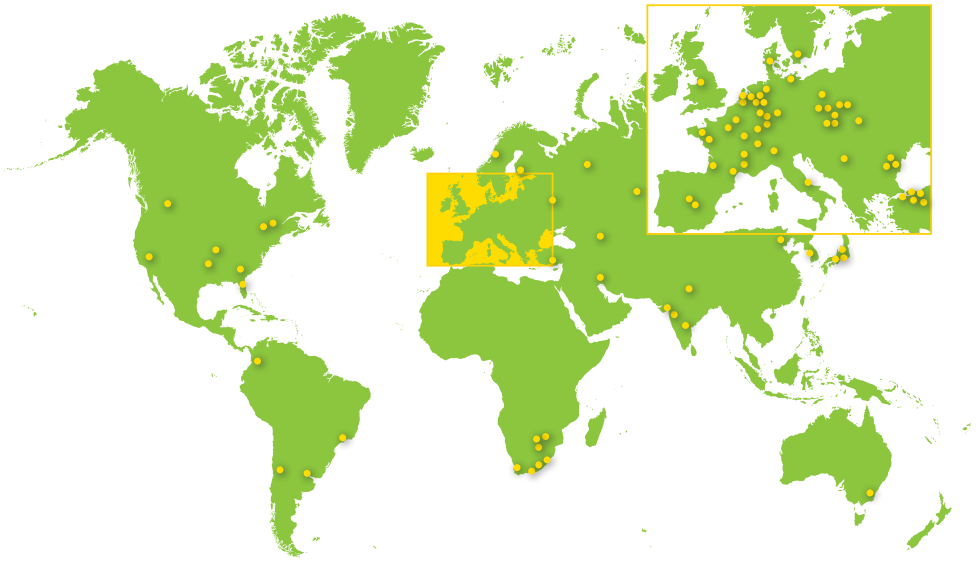
By using the synergies within the various activities, Saint-Gobain drives innovation and takes the market lead to deliver the most innovative and tailored customer solution.

ISOVER Technical Insulation

The ongoing rise in energy prices as well as environmental concerns have underlined the urgent need to reduce energy losses and CO_2 emissions. Energy efficiency solutions are therefore at the core of the Saint-Gobain and ISOVER strategy as the world's leading insulation company.

In Technical Insulation, ISOVER is offering sustainable insulation solutions for thermal, fire and sound protection specially designed for HVAC, Industry, Marine, Offshore and OEM applications.

With a dedicated central competence team, local technical insulation experts and worldwide industrial presence – ISOVER is your partner to answer any of your customers and projects demands.



The right solutions – adapted to your needs

ISOVER understands the demands and specifics of industry related insulation projects. Our Experts will work closely with you to identify the right solutions to bring value added to your customers at any stage of the project.

For planners and designers:
With our long-term competence, services and tools together with an industry-adapted and certified product portfolio, we help you to plan and optimise the design of insulation systems in terms of costs and efficiency.

For end-users and plant operators:
Isover TECH insulation solutions are sustainably fulfilling your demands of process safety and personal protection. We also help you to cut costs by reducing heat loss and CO_2 emissions improving the energy efficiency of the plant.

For installers and contractors:
We provide you with high-performing, cost-efficient and easy-to-use insulation solutions that you can trust – whether it's for quick maintenance, demanding turnaround or new projects locally or with international scope.

For technical insulation distributors:
Isover TECH insulation solutions are satisfying high-quality demands of your customers and are optimised to reduce transport, storage space, costs and energy to improve service time and reduce capital costs.

The right solutions – for all industry insulation requirements

Excellent thermal insulation

Optimal sound insulation

Effective fire protection

Corrosion Protection

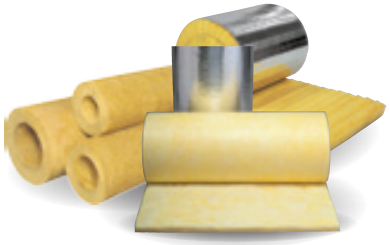
Isover offers insulation solutions for thermal, fire, sound and corrosion protection for any industrial application whether if in power generation, oil and gas or process industry. From cryogenic tanks to process pipelines and vessels to high-temperature boilers or special equipments – Isover solutions provide you with a safe, comfortable and sustainable answer to your project's specific needs.

ISOVER TECH –
the right solution for any industry application

The right solutions – ISOVER mineral wool for all temperatures

ISOVER TECH offers you the widest product range optimised for all process temperatures from cryogenic, standard, medium to high temperatures up to 700°C. Take the best advantage of each mineral wool type that best fits each application demand. Benefit from a wide selection of product forms adapted to the application.

Cryogenic temperature insulation	Standard temperature, sound insulation	High temperature, efficient / mechanical insulation
- 200°C	250°C 400°C	≥ 700°C
CRYOLENE	TECH Glass wool	U TECH ULTIMATE / TECH Stone wool

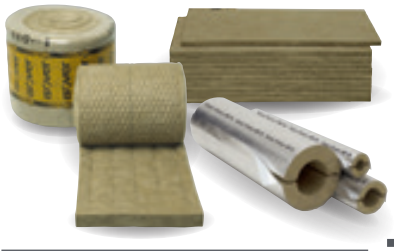


ISOVER CRYOLENE and TECH Glass wool products

The right solutions for cryogenic and standard temperatures as well as acoustic insulation: light, flexible and resilient.

- Excellent thermal insulation
- Optimal acoustic performance
- Unique lightness
- Maximum flexibility

+

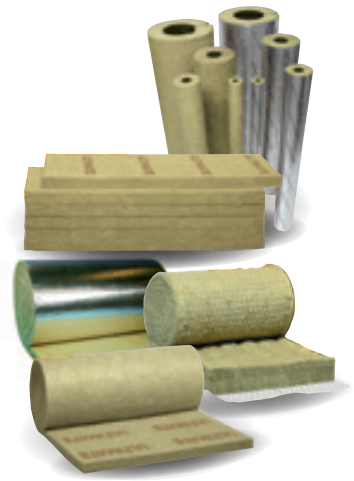


ISOVER TECH Stone wool products

The right solutions for medium to high temperatures and mechanical demands for high compressive strength: robust, economic and proven.

- High compressive strengths
- Maximum service temperature
- Effective fire protection
- Cost effective solutions

=



ISOVER U TECH ULTIMATE products

The right solutions for high performance in higher temperatures combining advantages of glass wool and stone wool: efficient, light and space saving.

- **Save up to 25% on energy costs***
- **Up to 30% thinner than traditional solutions**
- **Up to 48% lighter than traditional stone wool**

*Based on the calculation of heat loss reduction on a 273mm diameter horizontal internal steam pipe at a temperature of 550°C using the same thickness of Ultimate™ vs stone wool wired mat.

- Excellent thermal insulation
- Thin solutions
- Unique lightness
- Maximum flexibility
- Effective fire protection
- Optimal acoustic performance
- Maximum service temperature
- Cost effective solutions

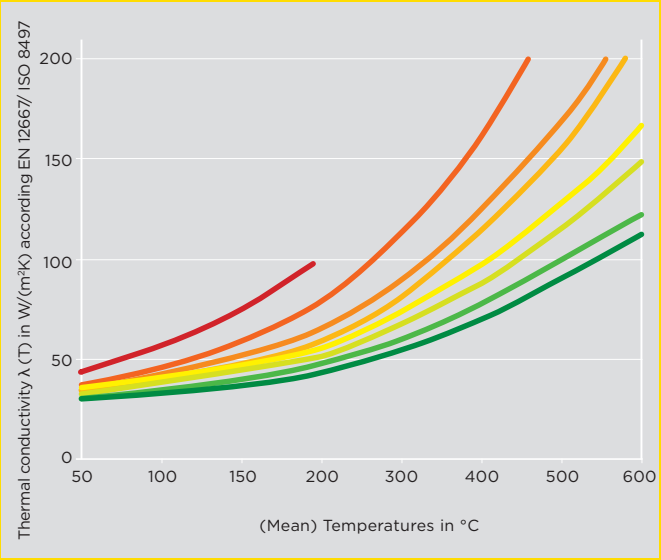
The right solutions – eco-designed sustainable performance

ISOVER is commited to sustainability and eco-design – not only of its TECH product range for higher efficiency (especially in higher temperatures) but also for the environmental, health and safety aspects of its materials and own production processes.

Thermal efficiency class

ISOVER TECH products are achieving best thermal performances and are named and classified according to their thermal efficiency potential and service temperature recommendation. The right choice of the most suitable thermal insulation product in industry applications has never been made easier.

8. extra plus 7. extra	best for process temperatures up to 700°C
6. premium plus 5. premium	best for process temperatures up to 600°C
4. standard plus 3. standard	best for process temperatures up to 400°C
2. classic plus 1. classic	best for process temperatures up to 250°C



ISOVER TECH –
the reference for sustainability that pays off

The reference for sustainability that pays off, ISOVER offers insulation solutions that help to protect the climate and environment in a sustainable way. During the last 25 years ISOVER has produced about 1.5 billion m^2 of insulation material. That is equivalent to a reduction of about 300 million tons of CO_2-emisions. For more than 135 years of technical insulation competence, ISOVER consistantly works to improve not only the thermal performance of its insulation products but also the ressources necessary to manufacture them.

Therefore the positive balance of energy and emissions of ISOVER materials is often achieved in industry applications within a in a few days and pays off afterwards, continuously – due to the inorganic material basis for the whole life-time of the installation. ISOVER mineral wool is inert, biosoluble, EUCEB and RAL certified.

ISOVER TECH –
the reference for sustainable production processes

About 1 m^3 of raw materials is converted by ISOVER up to ca. 150 m^3 mineral wool. ISOVER insulation products in general are saving up to 250 times the energy needed during production.

Over the last 20 years ISOVER has reduced the energy consumption by ~20% and water consumption by ~30% in its glass wool plants.

More than 75% of the production waste is recycled. Up to 80% of recycled glass is used for glass wool production.

Most ISOVER plants are accredited to ISO 9001 and ISO 14001.

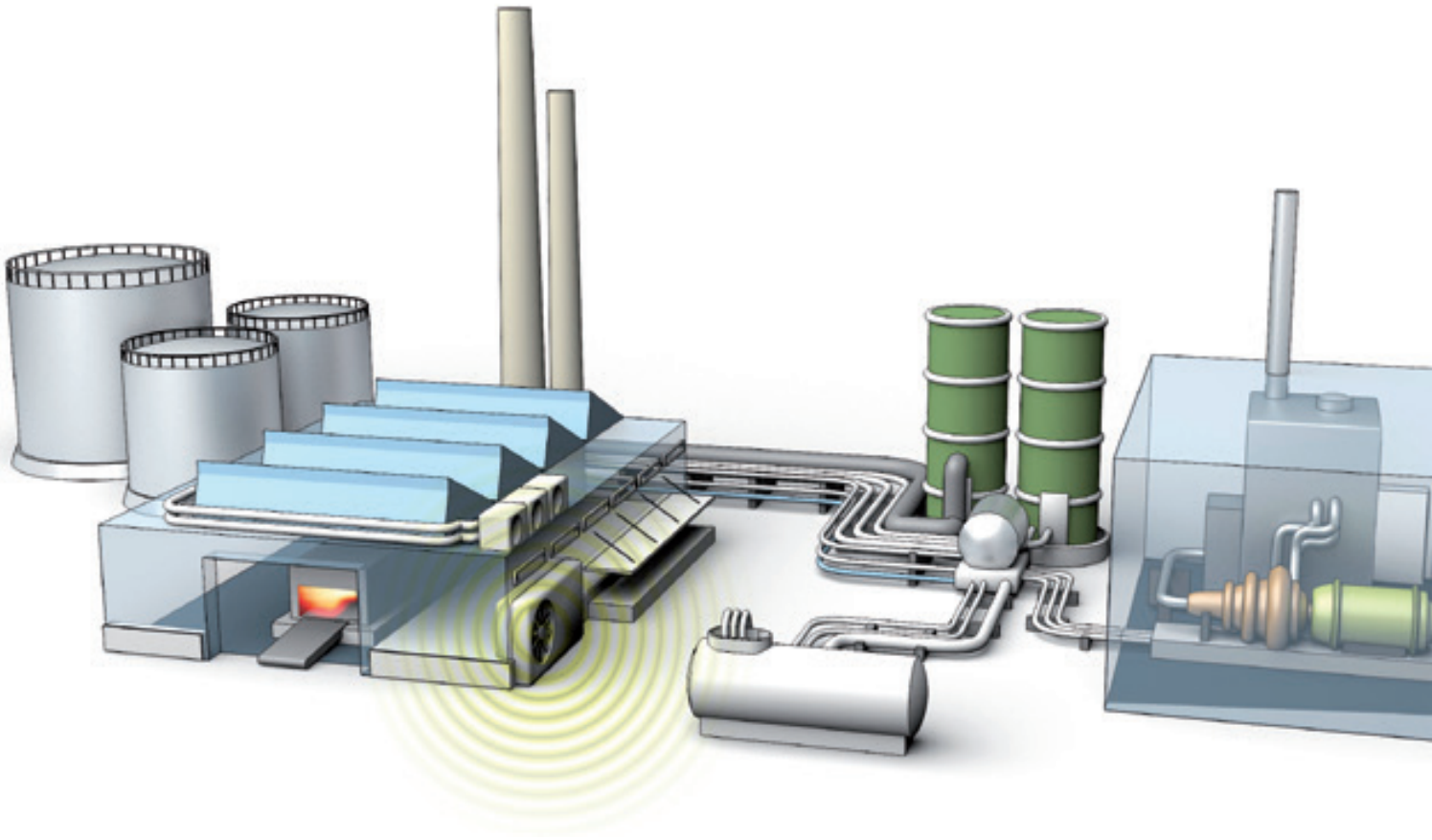
ISOVER TECH –
the right solution for any industry application

ISOVER TECH product range –
for any industry application

The insulation of industrial process plants and equipment places high demands on the system designer, installer and the insulation supplier.

Isover has worked closely with industrial process designers, operators and contractors to develop a range of industry solutions that meet any insulation requirement:

- Providing a choice of products that meet demands for flexibility and ease of installation,
- Are able to cope with the daily stresses of expansion and contraction, vibration and fluctuating temperature,
- On tanks, vessels, pipes and other process equipments in power generation, oil and gas, chemical and other processing industry.



Pipework

Pipework systems designed to transport liquids and gases are an integral part of any industrial process. Pipe insulation is essential to ensure process and media stability, reduce heat loss and energy costs, provide personnel and corrosion protection.

ISOVER TECH pipe solutions are the perfect choice to address all of these requirements – providing thermal, sound insulation and fire protection within a single product. They are ideal for a full scope of temperature ranges, from small to big pipe sizes.

Storage tanks

Storage tanks in industry are as variable in size, shape and media temperature as the processes they support. However, they all need effective insulation that meets the requirements in terms of maintaining temperatures stability and satisfying all safety requirements, such as protecting personnel from hot or cold surfaces.

ISOVER therefore offers a wide choice of efficient and flexible TECH solutions for the insulation of tank walls and roofs, whether they require support structures or not.

Process equipment

In addition to the main industrial process components there are many other elements of process equipment that are particularly challenging in terms of thermal and acoustic insulation as well as from an installation point of view.

Heat exchangers, small vessels and turbines are just some examples of the areas for which the ISOVER TECH range is able to provide standard, flexible and multi-purpose insulation products, as well as customized solutions to meet individual customer needs.

Exhaust ducts and stacks

Insulation of flue gas or exhaust duct systems is vital to a plant's energy and process flow management. Thermal insulation is key to reduce heat loss and protecting personnel. Even more important is the control of flue gas temperature to prevent condensation and corrosion. High flow speeds, pressures and turbulence are a prime cause of noise requiring efficient sound insulation.

Isover's flexible and space saving TECH range provides the all-in-one solution, offering a range of different performance and temperature levels for rectangular and circular or uneven structures.

Boilers, heaters and vessels

Boilers, heaters, vessels and industrial ovens place very high demands on insulation systems operating at high temperatures. While personnel protection is usually considered in thermal specifications, economic and sustainable design to improve efficiency, reducing energy consumption and CO_2 emissions often still needs to be adapted.

ISOVER supplies flexible, light and efficient TECH range products that are usable up to 700 °C optimising heat loss with less thickness required when considering space constraints.

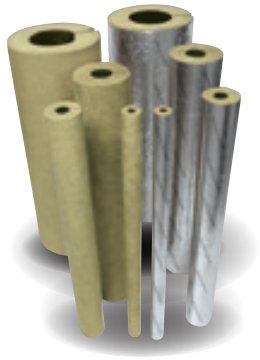
ISOVER TECH –
complete industry product range

Isover TECH products not only provide high levels of thermal performance for economic and environmental purposes, they are designed to operate at a range of temperatures up to 700°C (MST), provide excellent acoustics to help controlling plant noise, and improve safety for plant personnel. They are light and easy to handle, and are particularly beneficial where access is difficult and space limited.

ISOVER TECH product range – insulation solutions for pipework

1. Insulation with ISOVER TECH pipe sections

Isover offers a range of TECH Pipe Sections in glass wool, stone wool and ULTIMATE to adapt to different temperatures and needs of industry pipe insulation. ISOVER TECH Pipe Sections can normally all be used without support structures and have a beneficial length of 1,200 mm for fast and efficient installation.
Please refer to local standards and insulation specifications for detailed installation guidelines.



ISOVER TECH Pipe Sections	in glass wool	in stone wool	in ULTIMATE
Key Features	light	robust	high performance at low weight
Max. Thermal Use	up to 500°C	up to 650°C	up to 660°C
Max. Efficiency Class	4. Standard plus	4. Standard plus	4. Standard plus
Key Products	TECH Pipe Section MT 4.0 / MT 4.2	TECH Pipe Section MT 4.1	U TECH Pipe Section MT 4.0

2. ISOVER TECH insulation solutions for large diameter pipes

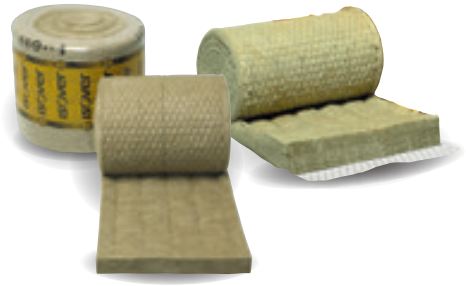
Flexible insulation with support structures

The standard method used for flexible insulation of large diameter process pipes irrespective of the pipe diameter is usually the installation of wired mats.

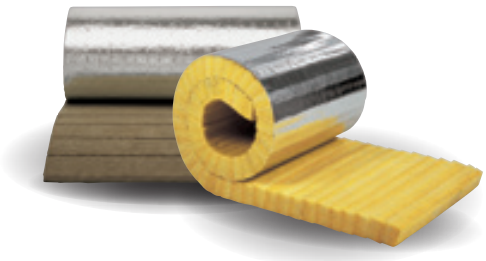
ISOVER offers a range of standard stone wool wired mats of different densities and thermal performances.

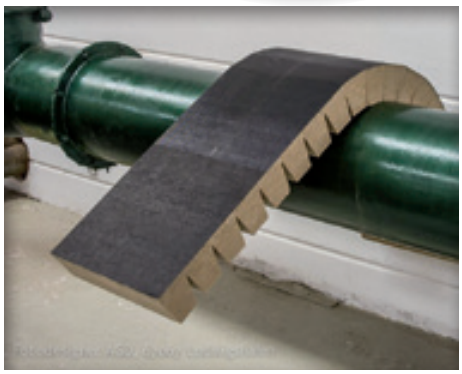
ISOVER U TECH Wired mats in ULTIMATE are the energy efficient alternative to standard wired mats.

Both are stitched with stainless or galvanised wire on galvanised or stainless wire mesh and can be joined and sealed by wire, hooks or rings.



(U) TECH Wired Mats	in stone wool	in ULTIMATE
Key Features	flexible and proven	high performance at low weight
Max. Thermal Use	up to 680°C	up to 700°C
Max. Efficiency Class	6. Premium plus	8. extra plus
Key Products	TECH Wired Mat MT 3.0/3.1, MT 4.0/4.1 MT 5.0/5.1, HT 6.1	U TECH Wired Mat MT 4.0, MT 5.0, MT 6.0





Flexible insulation without support structures

Isover offers two flexible pipe insulation alternatives that do not require installation with support structures due to their exceptional compressive strength:

Compression-resistant Lamella Mats in glass and stone wool can be used irrespective of the pipe diameter.

ULTIMATE Pipe Section Mats (PSM) are high-performance V-grooved slabs adopted to the pipe diameter and are delivered flat-packed to save transport costs and space.

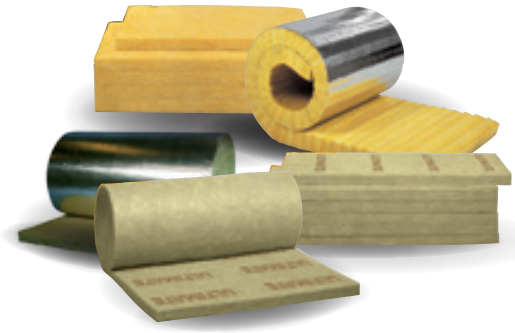
(U) TECH	Compression resistant Lamella Mats	ULTIMATE Pipe Section Mats (PSM)
Key Features	flexible, compressive strength ≥ 10KPa	high performance at low weight
Max. Thermal Use	up to 620 C	up to 700°C
Max. Efficiency Class	2. Classic plus	7. Extra
Key Products	TECH Lamella Mat 2.0, MT 2.1	U TECH PSM MT 7.0 G1

ISOVER TECH –
complete industry product range

ISOVER TECH product range – insulation solutions for storage tanks

Insulation of tank walls

For fast and efficient insulation of tank walls ISOVER has created a wide range of light and flexible but also mechanically-improved solutions in form of TECH rolls, crimped rolls, lamella mats and slabs.

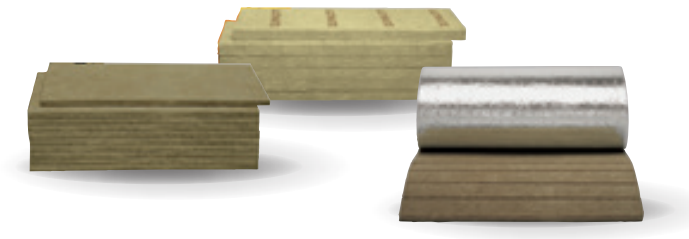


(U) TECH	TECH Lamella Mats in glass wool	TECH Slabs in glass wool	U TECH Rolls in ULTIMATE	U TECH Slabs in ULTIMATE
Key Features	high mechanical strength and flexibility combined	robust, fast to use	robust	light, efficient and easy to handle
Max. Thermal Use	up to 400°C	up to 400°C	up to 460°C	up to 440°C
Max. Efficiency Class	2. Classic plus	3. Standard	4. Standard plus	3. Standard
Key Products	TECH Lamella Mat 2.0,	TECH Slab 2.0, 3.0	U TECH Roll 2.0, MT 4.0	U TECH Slab 2.0, MT 3.0/3.1

Insulation of tank roofs and higher temperature surfaces

For applications with high demands in terms of temperature resistance and compressive strength such as in tank roof constructions, ISOVER provides high-density TECH slabs and the thermal-efficient range of medium to high-temperature U TECH slabs in ULTIMATE quality.

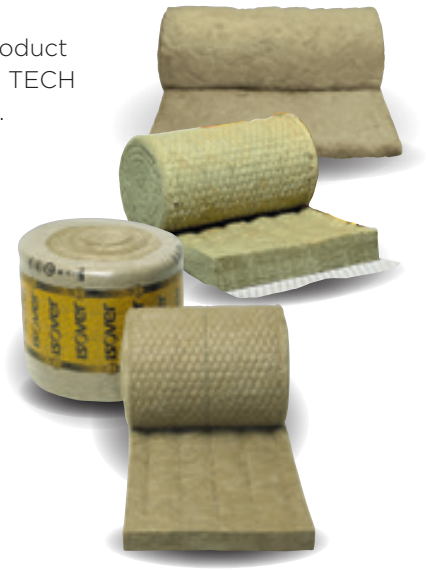
(U) TECH	TECH Lamella Mats in stone wool	TECH Lamella Mats in glass wool	ISOVER U TECH Slabs in ULTIMATE
Key Features	flexible, compressive strength ≥ 10KPa	robust, high compressive strength slabs	light, thermal efficient alternative
Max. Thermal Use	up to 620°C	up to 700°C	up to 700°C
Max. Efficiency Class	2. Classic plus	6. Premium plus	8. Extra plus
Key Products	TECH Lamella Mat MT 2.1	TECH Slab MT 4.0, 4.1, 5.0, 5.1	U TECH Slab MT 6.0, HT 8.0



ISOVER TECH product range – insulation solutions for boilers, exhaust ducts and stacks

Higher temperature equipment such as boilers and vessels have their own demands with regard to insulation design. Especially with regard to maximum service temperature limits, thermal insulation performance but also resistance to thermal shock shocks, flexibility, chemical and many more.

To answer these demands, ISOVER has designed the flexible TECH Wired Mat product range in stone wool and for more efficiency and light weight constructions the U TECH Wired Mat product family. Additionally TECH Loose Wool fills any gap remaining.



(U) TECH	TECH Wired Mats in stone wool	U TECH Wired Mats in ULTIMATE	TECH Loose Wool in stone wool
Key Features	flexible and long-term proven	high thermal performance, light and space saving	flexible, with low or no binder
Max. Thermal Use	up to 680 °C	up to 700°C	up to 700°C
Max. Efficiency Class	6. Premium plus	8. Extra plus	-
Key Products	TECH Wired Mat MT 3.0/3.1, MT 4.0/4.1, MT 5.0/5.1, HT 6.1	U TECH Wired Mat MT 4.0, MT 5.0, MT 6.0, and HT 8.0	TECH Loose Wool HT, TECH Loose Wool EX

ISOVER TECH –
complete industry product range

ISOVER TECH product range – insulation solutions for special industry applications

1. ISOVER CRYOLENE – insulation for cryogenic tanks

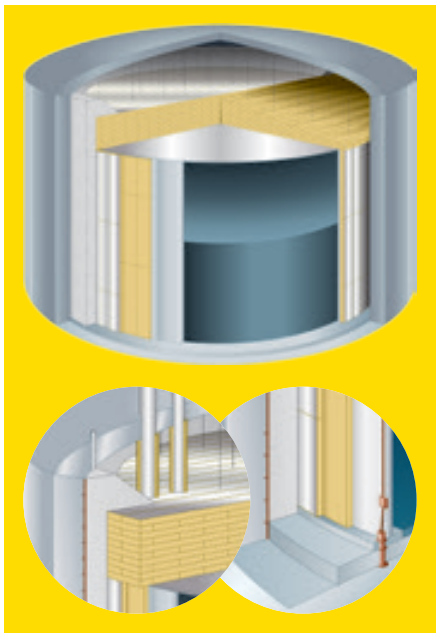
Design specifications for storage tanks holding cryogenic fluid (such as liquefied natural gas (LNG), liquid oxygen or nitrogen for chemical or combustion processes) are not only highly demanding in terms of construction, but also in terms of the insulation systems used. With the tank volume expanding and contracting depending on the level of liquid inside, the insulation must offer high levels of both compressibility and resilience.

To meet this requirement, ISOVER has developed the unique CRYOLENE solution for the insulation of cryogenic tank walls and roofs.

CRYOLENE products are highly resilient mineral wool rolls designed to retain their long term fibre elasticity at temperatures ranging from -170°C to +120°C. Different solutions have been developed for tank shells and suspended deck insulation. The product's extended length means that CRYOLENE solutions are easy and fast to install, with reduced thermal bridging. Different facings, such as reinforced glass tissue or reinforced aluminium foil, give CRYOLENE products high tensile strength.

The properties and performance of CRYOLENE have been extensively tested by external laboratories, and the products are well-proven through decades of successful use worldwide in chemical and LNG applications.

CRYOLENE	Type 681	Type 682	Type 684
Suspended decks	✓	-	-
Tank shells	-	✓	-
Pipe connections	-	-	✓



isover SAINT-GOBAIN

2. ISOVER “QN” – insulation solutions in Nuclear Quality

ISOVER TECH “QN” – solutions for nuclear applications

The demands on the quality of installed products is exceptionally high in nuclear power plants especially in the nuclear area. Isover has a long track record and experience in supplying special, high-quality insulation products for this sensitive areas for all key players in the nuclear sector. ISOVER products which are “QN”-marked are designed to meet these nuclear quality criteria.

Specialised ISOVER range for nuclear components:

- Long, resilient fibres and no shot in insulation leading to long-term consistent thermal performance also under mechanical stress (vibrations), no loss of thickness over time and low maintenance demand
- Low or no organic content and use of stainless quality for wire mesh on mats avoiding any risk of corrosion under insulation, smoke or emissions after first heating-up
- Low weight combined with high energy efficiency, acoustic and fire protection performance in one product, ensures better lifetime performance and easier and therefore riskfree installation

Products: TECH Loose Wool QN
TECH Telisol 5.0 QN.

3. ISOVER “EX” – insulation solutions for explosion risk areas

ISOVER “EX” – solutions for air separation, liquid oxygen and explosion risk areas

Isover offers a special “EX”-marked range of products that can be applied in air separation units, cold boxes and storage of liquid oxygene due to the low organic content requirements.

These products fulfill the demands of standards such as AGI 118 or so called Linde-quality and are available either as loose wool or mechanically bonded wired mats.

Products: TECH Loose Wool EX,
TECH Wired Mat MT 5.0 EX

ISOVER TECH – application-based performances

ISOVER TECH European product range – for improved energy efficiency in industry

ISOVER TECH stands for the new CE-marked and harmonised European product range for industry insulation with guaranteed technical excellence and high performance.

An evolution in industry insulation – with the TECH product range ISOVER moves away from the traditional specification method in industry of indicating weight only but focuses on performance based values instead.

Consequently, each product of the ISOVER TECH range will highlight energy efficiency and sustainability classification together with the operating temperature designation. Additional indication of product form, facings and special applications will make the choice and differentiation between products easier and help in choosing the right material with the right properties.

ISOVER TECH European naming structure for industry products

Example: U TECH Wired Mat MT 6 .0 Alu1 X-X EX

1 2 3 4 5 6 7 8

1 Material indication for ULTIMATE only
quality mark for high performance in higher temperatures

2 TECH – ISOVER product group
indicating one product range specially designed for all industry applications

3 Product form
product supplied as: Wired Mats, Industry Rolls, Crimped Rolls, Lamella Mats, Pipe Sections, Industry Slabs, Loose Wool

4 Operating temperature range
indicating thermal use

CRYOLENE	for cryogenic temperatures
Tech	for standard temperatures up to 400°C
Tech MT	for medium-high temperatures up to 700°C
Tech HT	for high temperatures ≥ 700°C

5 Thermal efficiency class (see page 5)
indicating thermal performance of the product at various temperatures

6 Product version
indicating different characteristics of products within same thermal efficiency class

7 Facing type
indicating product with additional facing

Alu1, Alu2	alu-foil facing, product classified non-combustible A1, A2-s1,d0
V1, V2	veil/tissue facing of neutral or black colour
X, X-X	Wired Mat stitched with stainless wire , Wired Mat stitched with stainless wire and wire mesh

8 Special applications

QN	indicating special quality for nuclear applications
EX	indicating special quality for explosion risk areas e.g. handling of liquid oxygene and requiring insulation with less than 0.5% total organic content (AGI-Q 118).

Thermal Insulation in industry – less is more

Thermal insulation is required for safety and security, to reduce heat loss and to increase sustainability of processes. ISOVER offers the right solutions for all these requirements. There are a number of key reasons for thermal insulation of industry equipment and processes:

Personnel protection

- To protect personnel from contact injuries and skin burns when working close to hot pipe and equipment surfaces e.g. maximum surface temperature requiring 60°C.

Process security

- To maintain temperature limits in industrial processes for transported or stored liquid or gaseous media.
- To prevent corrosion due to high humidity levels or temperatures below dew point.
- To prevent pipework and equipment from freezing in low ambient temperatures.

Reduction of heat loss costs

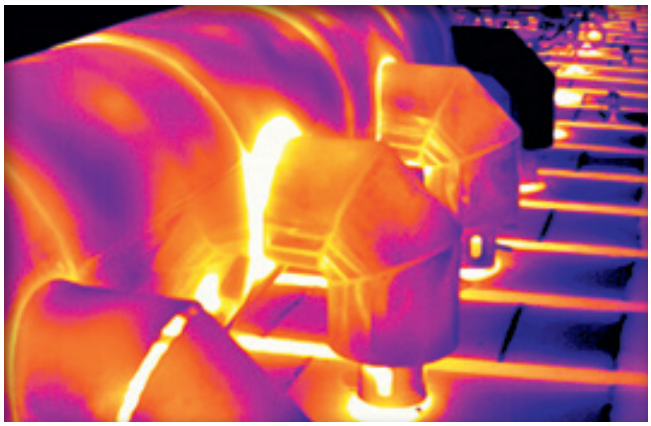
- To reduce heat loss or gain and therefore reduce the amount of energy needed to maintain process equilibrium and save cost (heat loss costs can be easily calculated on the basis of ISO 12241 and industry standards such as VDI 2055 with ISOVER thermal calculation software TechCalc 2.0).
- Optimizing the initial insulation will reduce installation costs and provide maximum energy savings throughout the lifetime of the installation.

Reduction of environmental impacts

- To optimise insulation efficiency will maximise the potential for CO_2-saving (and reduce costs for CO_2 emission certificates), as well as provide a buffer against future rising energy costs.
- To use innovative insulation materials, such as ULTIMATE, and new insulation systems, such as low emissivity cladding systems, will help to maximise potential energy savings and improve environmental protection on industrial equipment.

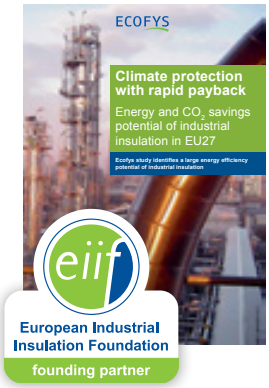
Improved sustainability through thermal performance

- The ISOVER TECH product range is designed to give optimum thermal conductivity for each application and temperature. The thermal conductivity of the insulation is measured over a large temperature scale in accordance with EN 12667 for flat products and ISO EN 8497 for pipe sections.
- The thermal performance of ISOVER products is assured by tight quality control, both internally and externally. We ask BBA, Exova and BSI to conduct external audits as third party accreditations. Since 2013, all ISOVER technical insulation products in Europe are CE marked according to the EN 14303 standard for mineral wool insulation.



ISOVER TECH – application-based performances

Energy efficiency – industry insulation untapped potential



ISOVER identified together with EIIF and the Ecofys study a tremendous energy savings potential of industry insulation in Europe of more than 620 PJ. As a consequence, 15 coal-fired power plants of 500 MW could be switched off, if uninsulated areas would be insulated and insufficient or damaged insulation be replaced.

Industrial insulation is a Best Available Technique, which could help EU28's industry to reduce its total energy consumption by 4%. And usually the payback of the insulation investment is less than 2 years, sometimes even less than 1 year.

All this is stated in the Ecofys Study: "Climate protection with rapid payback" initiated by the European Industrial Insulation Foundation (EIIF), of which ISOVER is a founding member.

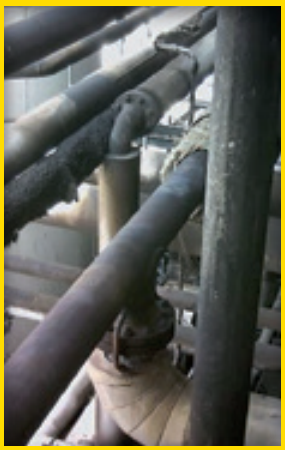
Where does the huge insulation potential come from?

Thermal Insulation specifications follow today often only personal protection (minimum hot surface temperature) requirements or outdated static heat loss restrictions.

Compared to building regulation insulation thicknesses in industry are equal or lower while temperature differences are unequally higher.

Huge potentials also exist in current industry plants and maintainance. Parts of the equipment are uninsulated, damaged and not replaced.

Insulation thickness tables are outdated following still energy price levels of the last decades.

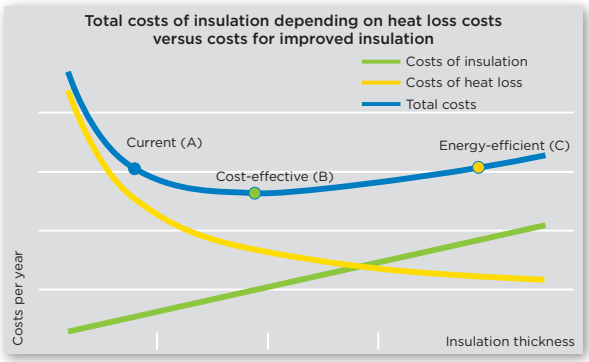


How can insulation design be changed?

Insulation is still seen as a cost rather than an investment. And often the current practice is not even at a cost-effective optimum not to mention a sustainable, energy-efficient level.

By applying standards like ISO 12241 and VDI 2055, economic insulation thicknesses can easily be calculated.

Current costs of heat loss cover about 75% of total investment/maintenance of insulation required.



Energy efficiency – ISOVER tools and services

How ISOVER can help you to identify insulation potentials?

ISOVER has long-term proven expertise in industrial insulation and provides thermal audits, calculation tools and high-performing innovative products to seize the enormous saving potentials.

ISOVER TIPCHECK – thermal audits in industry plants

ISOVER has certified engineers able to perform Thermal Insulation performance Checks (TIPCHECK) identifying with thermography and calculations saving potentials in industrial plants following the EiiF Standard.

Together with the customer we identify an action and priority plan and can calculate not only energy savings but also payback and amortisation times.

ISOVER TechCalc 2.0 – thermal calculations mobile, fast and more advanced

The professional tool for all thermal calculations in technical insulation – now also mobile, faster and even more advanced!

Calculating heat loss, surface temperature, required insulation thickness, economic insulation design was never easier. TechCalc 2.0 with a new interface guides you in 5 easy steps towards clear, precise and results conformed to standard.

It works with open databases to give you full flexibility on use of different insulation materials and products but always according to principles of ISO 12241, ISO 23993, VDI 2055 standards and guidelines. Available already in 8 languages and 10 country versions with locally adapted data it is the perfect tool for planners, designers, contractors and all persons involved in thermal insulation design.

For more information and 30 days free licence please visit **www.isover-technical-insulation.com**

ISOVER EcoTech – optimising Total Cost of Ownership (TCO) design

With ISOVER EcoTech our industry insulation experts are able to build a customer's plant according to energy efficient insulation design.

By using plant's specific input different insulation designs can be compared optimising total cost of ownership, showing financial payback and amortisation times.

ISOVER EcoTech helps planners, designers, contractors to upgrade insulation design to reach cost efficient and sustainable insulation standards by reducing heat loss showing clear financial benefits.

ISOVER TECH –
application-based performances

Energy efficiency –
U TECH high performance in higher temperatures

For medium to higher temperatures (up to 700°C), ULTIMATE the latest innovation in mineral wool from ISOVER provides unique advantages – especially when energy efficiency of insulation design should be increased, with insulation space and weight restrictions.

ULTIMATE TECH:
- Save up to 25% on Energy costs*
- 48% lighter and easier to use
- 30% thinner than traditional stone wool solutions

By perfectly combining the advantages of glass and stone wool in one product, ULTIMATE answers to the need of higher energy efficiency by maintaining proven insulation practises.

Without shot in the product, elastic, long and light fibres ULTIMATE TECH can be compressed and once installed keeping the insulation properties and thickness over time – even when exposed to vibrations, thermal shocks and other industry-typical conditions.

ULTIMATE has now been used for more than 10 years and proven in practise in numerous reference projects in power generation, oil and gas, process industry applications.

*Based on the calculation of heat loss reduction on a 273mm diameter horizontal internal steam pipe at a temperature of 400°C using the same thickness of ULTIMATE™ vs stone wool wired mat.

isover.co.uk/TI

ISOVER SAINT-GOBAIN

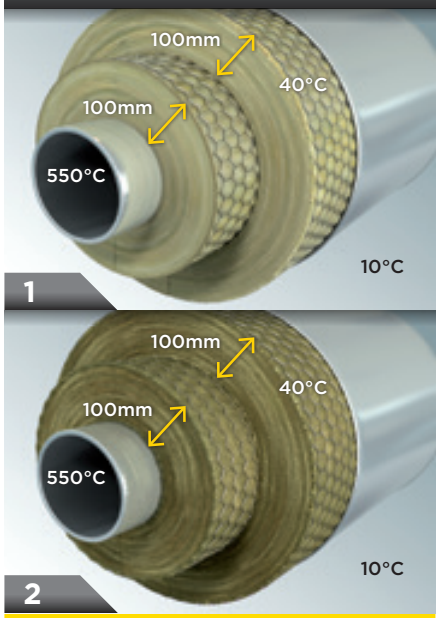
Energy efficiency –
U TECH – more efficient, thinner, lighter

Calculation examples:

- **Energy saving**

U TECH –
energy saving the easy way

Energy cost and CO2 savings: 29%



Calculation data:
- Steam pipe, vertical indoor, diameter 273mm
- Temperature 550°C
- Ambient temperature 10°C
- Calculation software: TechCalc 2.0

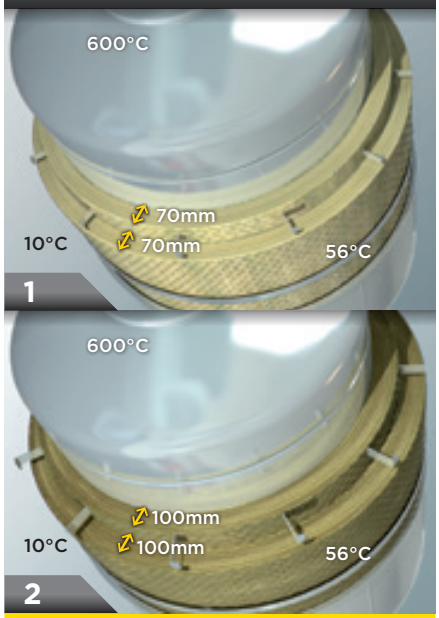
Thermal insulation:
1) U TECH Wired Mat MT 7.0, 80kg/m³
200mm insulation thickness
Heat loss: 264W/lm
Insulation surface temperature: 40°C

2) Mineral wool Wired Mat, 80kg/m³
(VDI 2055 1.2 1b)
200 mm thickness
Heat loss: 372W/lm
Insulation surface temperature: 40°C

- **Thickness reduction**

U TECH –
the thinner the better

Thickness reduction: 30%



Calculation data:
- Boiler wall
- Temperature 600°C
- Ambient temperature 10°C
- Calculation software: TechCalc 2.0

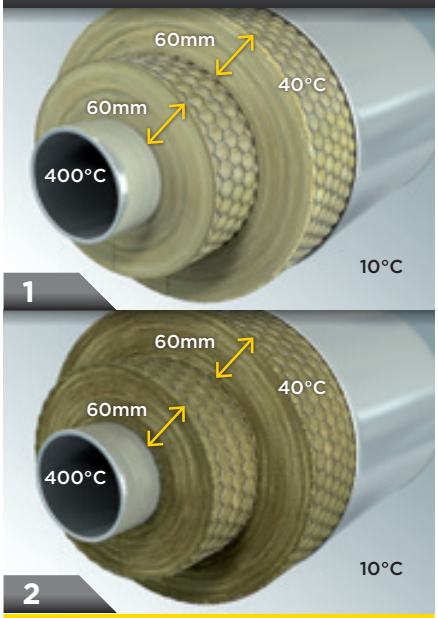
Thermal insulation:
1) U TECH Wired Mat MT 7.0, 80kg/m³
140mm insulation thickness
Heat loss: 321W/lm
Insulation surface temperature: 56°C

2) Mineral wool Wired Mat, 80kg/m³
(VDI 2055 1.2 1b)
200mm thickness
Heat loss: 321W/lm
Insulation surface temperature: 56°C

- **Weight reduction**

U TECH –
the light alternative

Weight reduction: 50%
Energy cost & CO2 savings: 16%



Calculation data:
- Steam pipe, vertical indoor, diameter 356mm
- Temperature 400°C
- Ambient temperature 10°C
- Calculation software: TechCalc 2.0

Thermal insulation:
1) U TECH Wired Mat MT 4.0, 40kg/m³
120mm insulation thickness
Heat loss: 300W/lm
Insulation surface temperature: 47°C

2) Mineral wool Wired Mat, 80kg/m³
(VDI 2055 1.2 1b)
120mm thickness
Heat loss: 356W/lm
Insulation surface temperature: 51°C

ISOVER TECH – application-based performances

ISOVER TECH – corrosion protection included

Humidity and corrosion protection

Highly alloyed austenitic steels (alloys of chrome, nickel and molybdenum) are predisposed to tensile stress corrosion (stress corrosion cracking), caused mainly by water soluble ions, such as chlorides. As temperature increases, so does the risk of stress corrosion cracking. All ISOVER industrial TECH products are therefore low in chlorides.

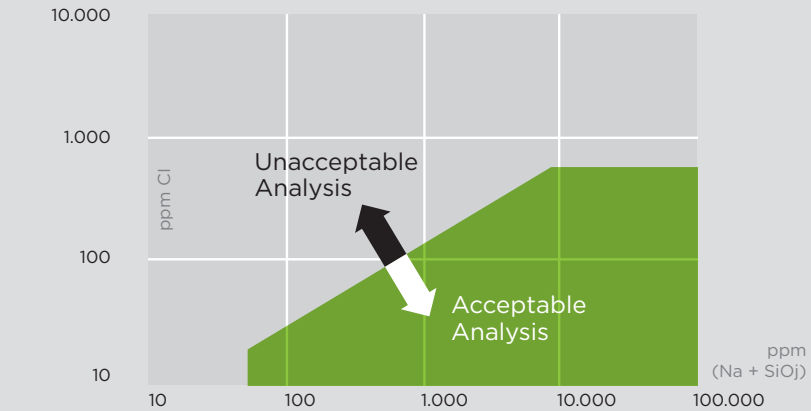
How can insulation design be changed?

Moisture and water repellence

Low chloride insulation products are the basis for preventing corrosion under insulation (CUI), especially where higher temperature surfaces are involved. In addition, all ISOVER industrial insulation products for external use are hydrophobic and non-hygroscopic, thus limiting potential water absorption. The open cell structure allows products to dry out quickly, should they become wet, without loss of their mechanical or insulating properties.

Hydrophobic performance is tested and measured according to AGI-Q 132, which allows for water absorption of less than 1 kg/m² after 24 hours. Nevertheless mineral wool products should always be stored inside and in dry conditions, in order to maintain their performance and low chloride content. When used for outdoor applications or on cold surfaces, metal sheet jacketing or equivalent vapour barriers should always be used.

Acceptable analysis of water-leachable ions in mineral wool according Karnes diagram



Standards and guidelines

There are different standards to define the limits for water-leachable ions in insulation products

- ASTM C 795, for instance, concerns the water-leachable content of chloride ions, sodium and silicate.
- The so-called Karnes diagram defines an acceptable area which is identified as not supporting stress corrosion.
  All ISOVER TECH products fall within the acceptable area.
- AS-Quality (AGI-Q 132): even more demanding is the AGI-Q 132 which sets the maximum content of chloride ions at 10 ppm or 10 mg per 1 kg of insulation material.
  Insulation materials which satisfy this standard are certified for AS-Quality.
  Austenitic (AS) is a term which describes a particular type of crystalline steel structure. ISOVER has certified critical TECH products for high-temperature usage as AS-Quality - giving additional safety to highly demanding constructions.

ISOVER TECH – silence is golden

Acoustic performance

Many industrial installations work at high pressure, with fast moving media and often turbulence, all of which can cause high noise levels.

Acoustic insulation in this field therefore has two main objectives:

- To protect the hearing of personnel working close by and
- Particularly in urban areas, to reduce ambient sound in the local environment.

Isover offers a wide range of mineral wool solutions for optimal acoustic insulation.

Isover mineral wool solutions are characterised by high longitudinal air-flow resistance (up to >100 kPa·s/m^2) and uniform porosity (93-99%), resulting in high sound attenuation levels.

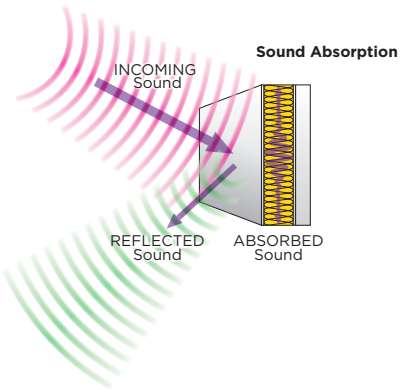
Their outstanding performance is a direct result of their elastic properties and low modulus of elasticity, which gives Isover mineral wool solutions a low dynamic toughness, and makes them superior to other insulants, such as plastic foams.

Sound absorption

Isover mineral wool products offer excellent acoustic absorption, absorbing up to 95% of sound energy at certain frequencies.

The sound absorption or attenuation properties of Isover products (characterised by an absorbtion coefficient α) are listed in relevant technical datasheets.

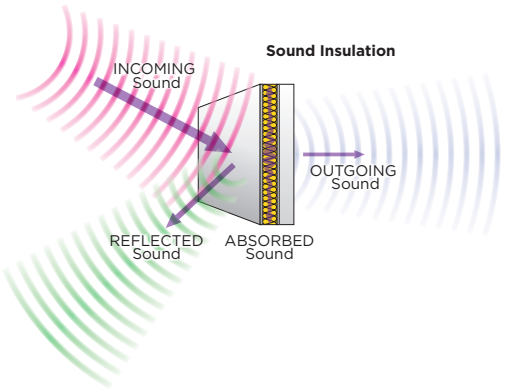
With ULTIMATE U Tech, these high α values can be achieved at up to 50% less insulation weight than with traditional stone wool constructions, especially at higher temperatures, as found for instance in exhaust gas and desulphurisation equipment. Special facings, such as black glass tissue or glass fabric, are also available on request for applications requiring even higher acoustic absorption and mechanical stability demands.



Sound reduction

In noisy working areas, sound reducing techniques can be used to supplement sound absorption. Sound reducing constructions using the mass-spring-mass principle, or sound capsules, can be particularly useful in reducing noise emissions from industrial processes into the ambient environment, especially in urban areas.

Isover mineral wool with high longitudinal air flow resistance values, high elasticity and high α sound absorbing values can reduce sound emissions in these constructions significantly. With the Isover U Tech range, significant weight savings up to 50% can also be achieved, compared to traditional stone wool constructions, the same for TECH glass wool solutions at lower temperatures.



ISOVER TECH – application-based performances

ISOVER TECH – giving fire no chance

Fire Protection

The risk of fire in industrial environments is much higher than in buildings and other applications, particularly when working with welding and grinding equipment in high temperature environments containing flammable and /or explosive media.

In order to protect personnel and equipment it is important that all steps are taken to shield possible fire sources and prevent fires from starting.

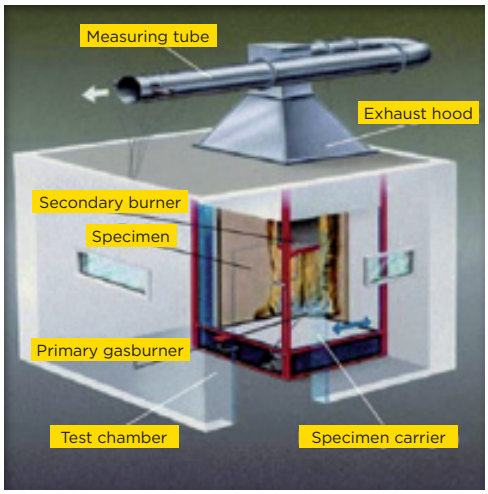
Passive fire protection using non-combustible materials is the best way to eliminate these risks from the beginning or prevent fire from spreading. That is why all ISOVER industrial insulation products offer outstanding fire safety properties.

Best-in-class

ISOVER industrial insulation solutions offer “best-in-class” fire safety properties. They are non-combustible and classified in Euroclass A1 or A2, – the very top classification for fire performance.

ISOVER insulation materials will not ignite, so there is no risk of fire caused by flying sparks from welding and grinding work carried out close to the insulation. In addition, ISOVER insulation materials generate practically no smoke and toxic gases, which is critically important for your employees, and for fire brigade personnel, should the worst come to the worst and a fire occur.

With ISOVER TECH industry insulation solutions, you can feel safe in the knowledge that you will never be exposed to harmful gases from the insulation materials – and that you have done everything you can do to protect your plant – and your business.



Single-Burning-Item (SBI-) oven for the determination of reaction to fire class according EN 13501-1.

ISOVER TECH – long-term proven in practice

ISOVER references

ISOVER has more than 135 years of local experience in manufacturing insulation for industry applications and participated in major projects worldwide. Sharing knowledge with our customers and partners, we have developed optimised solutions that combine technical performance with practicality and reliability.

ISOVER takes the responsibility towards all customers seriously, ensuring quality products through internal and external quality control and certification. Coupled with just in time delivery so our products are there when you need them. Below are some examples of our recent industry references. If you have specific demands or want to learn more about Isover's industry offer please contact us or visit the international technical insulation website: **www.isover-technical-insulation.com**

Rotterdam harbour, Netherlands

GKM GrossKraftwerk (coal-fired power plant) Mannheim , Germany

Kogas plant, Korea

Smurfit Kappa Kraftliner Mill, Sweden

Chemical Park Leverkusen, Germany

Cement plant Tarragona, Spain

SAINT-GOBAIN

Isover

Whitehouse Industrial Estate,
Runcorn, Cheshire WA7 3DP

Customer Service

Tel: 0800 032 2555
isovercustomerservice@saint-gobain.com

Technical Advice Centre

Tel: 0115 945 1143
techinsulation@saint-gobain.com

isover.co.uk

Published date: April 2018
Document reference: IS-IND-UK10-1801