

Door Insulation

with ROCKWOOL Core Solutions



Why choose ROCKWOOL stone wool?

Stone wool is a leading industry standard when it comes to insulation for fire and acoustic steel doors. With fire resilient and sound insulating properties built-in to its smart fibre structure, it's the perfect material for integrating into doors as a barrier to flames, smoke and unwanted noise.

ROCKWOOL stone wool is a top solution for the door manufacturing industry when it comes to premium insulation. Our cores harness the power of stone, one of the world's most abundant natural resources, to engineer insulation with properties that create high-performance doors.

We call these the **7 Strengths of Stone**¹

- **Fire resilience**
- **Aesthetics**
- **Thermal properties**
- **Water properties**
- **Acoustic capabilities**
- **Circularity**
- **Robustness**

- The performance of our stone wool does not deteriorate over time. It can be used throughout the lifetime of a construction, while improving the durability and reliability of your end-product.
- ROCKWOOL stone wool retains dimensional stability and thickness over time, never sagging or shrinking. It's also flexible and can be precision cut in order to fit into tight spaces between steel door layers – essential when ensuring a perfect fit and avoiding any air gaps in the final construction.²

For all these reasons and more, door manufacturers throughout Europe and beyond choose ROCKWOOL Core Solutions to integrate quality stone wool into their fire and acoustic doors.

Who we are

ROCKWOOL Core Solutions combines a knowledgeable team of experts and innovative insulation technology into one comprehensive service package.

Everything we do is encompassed by a simple philosophy: **The Power of &**³

When our stone wool solutions are built-in to your products and systems, you get the best of the 7 Strengths of Stone. With The Power of &, the knowledge, advice, experience and all-round qualities of ROCKWOOL Core Solutions experts also comes to the forefront, transforming your products and end-results.

When we work with door manufacturers to create fire resistant and acoustically-sound steel doors, we can customise the insulation we provide to the precise dimensions and performances you need.

We do this by partnering with you, gaining a thorough understanding and appreciation of both your overall business and your:

- **Products**
- **Production facilities**
- **Market needs**

Our aim is to build a partnership, producing insulation products that are manufactured based on your needs and specifications while complementing your existing processes. Our team will also test the insulation we have created for you, in order to ensure that it is ready to be added to your products as the core material.

We will work with you to create fire and acoustic doors that reach the highest possible standards.



Helping you with the challenges you face

At ROCKWOOL Core Solutions we are well aware of the challenges you face, the trends you need to keep up with and the drivers of change that shape your operations.

That is why we are here to help you navigate these hurdles – and succeed in your goals.

Sustainability

Only 20-30% of construction and demolition waste is recycled, contributing to a high amount of waste that companies often need to reduce.⁴ The materials that you use need to be central to the circular economy and be re-used and repurposed long after they are needed – reducing your business's own environmental footprint.

Core Solutions can integrate stone wool products that are fully recyclable, allowing the material to be reused once again, as part of that circular economy.⁵



Health and Safety

The indoor environments that we live and work in have a direct impact on our wellbeing. Our comfort in these spaces is influenced by a number of factors, including noise levels.⁶ For example, increased noise has been found to be associated with higher blood pressure, sleep disturbance, obesity, stress levels and lower productivity.⁷

Our stone wool insulation is excellent at reducing noise and absorbing sound, and can greatly enhance indoor comfort when integrated into steel doors.

At the same time, stone wool also helps secure the safety of occupants from fire hazards, thanks to its extremely robust fire-resistant properties. A key component in fire resilient buildings, it acts to prevent and slow the spread of flames and smoke.

This creates an all-round protective solution, leading to safer, healthier and quieter indoor environments.

Standards

Fire compartmentation plays a pivotal role in EU Fire Safety regulations. Your doors need to be tested according to the EU's Construction Products Regulation's standards of fire resistance and reaction (EN-16034) – reaching a level of performance that means they can be safely installed in a building.⁸

The stone wool fibres in ROCKWOOL insulation are not only Euroclass A1 classified for fire resistance, but also comply with European REACH regulations. This means they do not contain flame retardants and blowing agents, having no negative impact on an indoor environment.⁹

Providing effective fire performance

ROCKWOOL stone wool insulation is **A1 Classified** under the European Reaction to Fire classification system (Euroclass).

The **EN 13501-1** standard tests for:

- Ignitability
- Flame spread
- Heat release
- Smoke production
- Risk of producing flaming droplets and particles

Here's how our stone wool insulation achieves the highest possible standard.



Non-combustible & safe stone wool solutions

STOPS ▪ Flames ▪ Smoke ▪ Toxic Gas	REDUCES ▪ Heat radiation to an ambient temperature.
RESISTANCE ▪ 15 – 240 minutes	

Non-combustibility

ROCKWOOL insulation is extremely resilient to fire. It can withstand temperatures of over 1000 °C, without melting or deteriorating.¹⁰ These non-combustible qualities allow our insulation cores to contain fire and prevent its spread – vital when installing effective fire doors.

In addition, when our insulation interacts with fire, it does not contribute to the emission of significant quantities of toxic smoke – something that accounts for over half of fire fatalities and injuries.¹¹ It is also not dependant on flame retardants to provide fire protection either, simply harnessing the natural non-combustible properties of stone wool.¹²



Fire resistance

Fires today can take less than five minutes to spread, moving from ignition to flashover with rapid speed.¹³ ROCKWOOL insulation is designed to cope with this danger and slow the spread of flames – buying occupants precious time to escape.

Given that our products are produced in the same conditions in which rocks are formed within a volcano, you can be assured of their fire resilience.¹⁴

Our insulation remains stable when faced with extremely high temperatures and will not deteriorate when it is needed most by those in a building.

Robustness

ROCKWOOL insulation is designed to last the entire lifetime of a door application, and retains its original shape and structure designed at the point of manufacture.

Our products are resistant to mould, permeable to vapour but also moisture resistant, repelling it when insulation becomes damp or wet – after a leak has occurred, for example.

Thermal resistance

Our stone wool is highly flexible, working as a buffer against temperature fluctuations and keeping them at a steady level.¹⁵ It does this using tiny pockets of air, trapped within the stone wool, which reduces both airflow and heat flow.¹⁶

By reducing this, our products maintain their shape and density, performing at their peak levels throughout the lifetime of the door's use.

To illustrate this, we tested the thermal properties of our products after 55 years of use. The change? None whatsoever. The study found that ROCKWOOL insulation delivered consistent insulation performance from day one.¹⁷

Providing effective acoustic performance

Our acoustic door insulation is attuned to how sound is transmitted between surfaces, and can play a significant role in the overall acoustic performance of a construction.

Using a combination of absorption and reduction in vibration and reverberations, our stone wool cores provide optimal performances for acoustic doors.

Here's how we achieve the highest possible standard.



Acoustic capabilities

ROCKWOOL stone wool is high density, making it extremely resistant to airflow that carries sound.¹⁸ When integrated into an acoustic door, our cores can reduce noise and echoes heard throughout a building – perfect for commercial, industrial and residential constructions.

Our insulation does this by trapping sound waves and dampening vibrations¹⁹ – either from neighbouring spaces or from the noisiest nearby infrastructure, including road and air traffic. This helps to aid the concentration, productivity and well-being of those living and working there.

Reducing noise travel

Noise that can be heard externally from road traffic can cause sleep disturbance and stress – resulting in around 1.6 million years of healthy life being lost for building occupants.²⁰ This can be crucial in medical settings, where patients need a comfortable living environment to aid their recovery.

ROCKWOOL insulation has been tested to ensure that noise travel is reduced, in order to achieve comfort for those living and working in buildings. In lab conditions our insulation was found to block half of the noise coming from other rooms nearby, compared to standard insulation products.²¹



Absorbing, not reflecting sound

Fibres within the stone wool structure of our insulation absorb sound, rather than reflecting it, leading to much improved acoustics in a building.

By absorbing the sound waves, this reduces the time for which they reverberate and cause noise, ensuring that the sound dies down quicker. This lowers the impact that nuisance noise has on occupants, and the noise levels that they can hear through an acoustic door.²²

Not only are acoustics improved, but the overall health and wellbeing of tenants and workers too.²³

How do we work with you?

What also sets us apart is how ROCKWOOL Core Solutions partners with you to create effective products that harness the 7 Strengths of Stone and The Power of &.

Here's how we will work with you every step of the way.

Partnership

We want to become champions of your brand – and an extension of your team.

We will immerse ourselves in your business and processes, collaborating with you, consulting about our products, and deriving the best possible solution for integration into your solutions.

Our dedicated team will work with you to learn about:

- The door performances you require (Fire, Thermal and Acoustic)
- Technical specifications – including dimensions and accessories
- Integration processes – and how we can assist in making stone wool core integration as smooth and efficient as possible

You will be able to approach us as you would a colleague or team member. We listen to what you need and deliver solutions that will help us achieve better results together.

This initial consultation phase will allow us to understand what we need to provide you with, moving forward.

Added value

We have an extensive external and internal network of expertise, which allows us to make recommendations about the optimal insulation solution for your doors. Our team has in-depth knowledge of local markets, including the building regulations that need to be adhered to and the typical door products that are sold.

At ROCKWOOL Core Solutions we also leverage our international presence to provide you with a service that can:

- Advise on the best way to integrate stone wool into your doors
- Provide a 360° perspective on making our partnership successful
- Implement a just-in-time delivery schedule to fit in with your production

When we present our recommendations to you, a free exchange of ideas is exactly what we promote. We can present and educate on what we recommend, based on what you require from our product – ensuring that we meet your needs today, tomorrow and in the future.

Sustainability

We understand that meeting green standards is increasingly important for businesses, in order to comply with local and international regulations and targets. That's why circularity is at the heart of the products and service we provide.

Our stone wool products are recyclable and can be repurposed again and again to make new products, without reducing in fire or acoustic performance.²⁴ ROCKWOOL stone wool does not contain any greenhouse or ozone-depleting gases, such as CFCs, HCFCs or CO₂.

In addition, the open structure, which only has air in-between the smart fibres, means that ROCKWOOL insulation avoids particulate matter being released in the atmosphere – unlike standard insulation. The amount that is saved by using our product is the equivalent of taking 50 million cars off the road.²⁵



Innovation

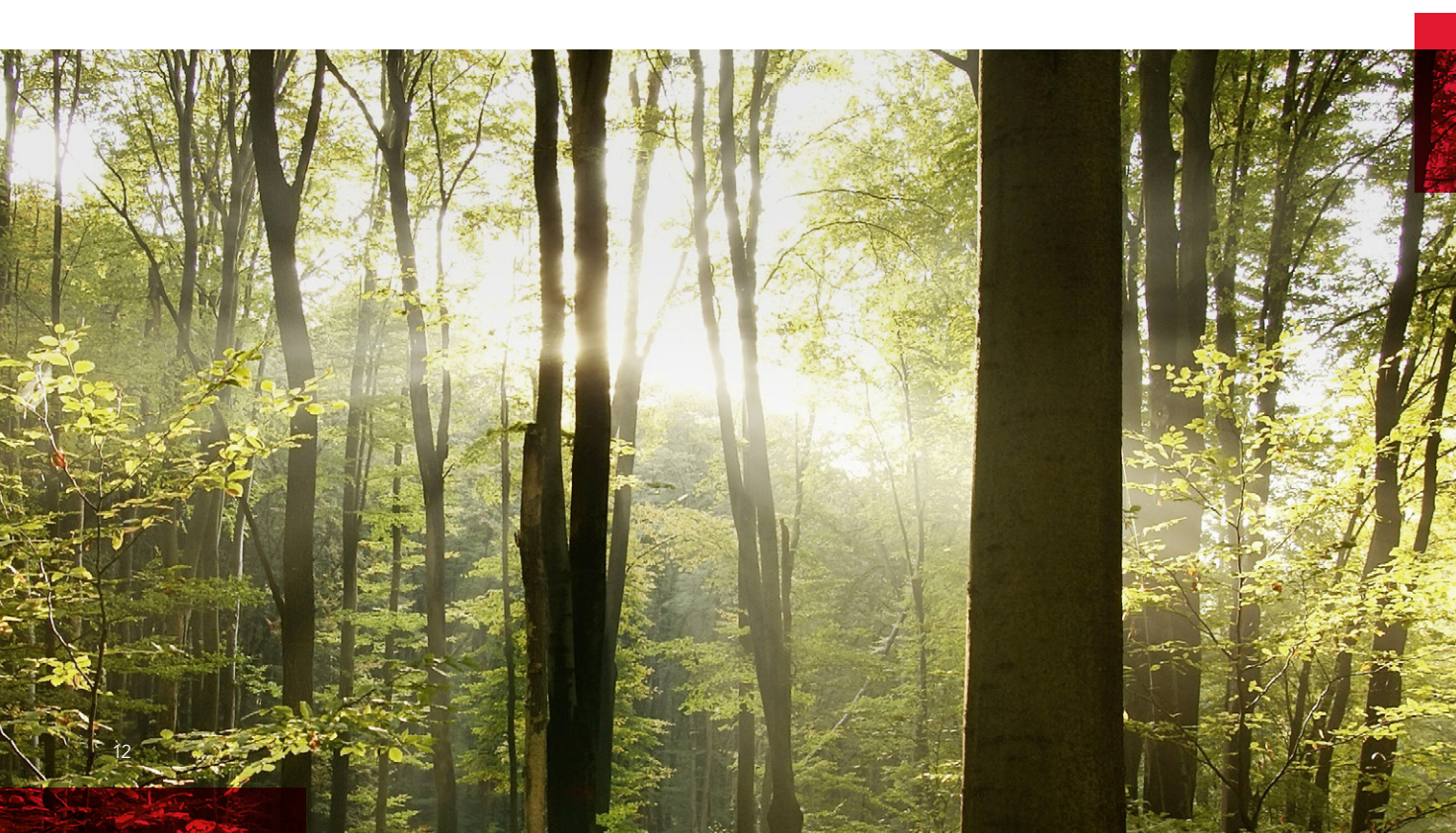
When we produce stone wool tailored for your business, we use our extensive technical and design expertise to create a customised product.

Using the dimensions and performances that you specify, our innovative engineering process can create tailored dimensions – for example, thickness tolerances that can reach +/- 0.5mm – ensuring an accurate cut for your doors.

This process can also be applied to adding locks to fire and acoustic doors too. Our automated equipment can cut space for locks at production-level speed. This removes the need to manually do this as part of your process – saving precious time for your business.

Whatever insulation product we supply, you can identify it as part of your production line, as a unique barcode will be applied to every product we create.

It's these innovations that can help shape your commercial future and ensure high-performing solutions for your fire and acoustic doors.



Support

We will work with you every step of the way, particularly when testing, to ensure our insulation meets the standards your products and customers demand.

After your stone wool insulation cores have been produced, we test them thoroughly on-site, to secure maximum performance when integrated into your doors. This in-house testing helps ensure a high level of quality before it even leaves our production facility.

Once integrated into your doors, you can also choose to test your product with third party standardisation professionals at their official testing facility. We support you here too, attending the test sessions and helping you understand the outcomes – and what they mean for your products.

There are various laboratory tests you can choose to evaluate the performance of your doors, in accordance with European standards for technical performance characteristics of fire resistance and smoke control (EN-16034).

Examples include:

- Infrared imaging of the door, and checking how temperature affects its efficiency
- Temperature curves to determine performance in real-life conditions
- Benchmarks against performance when faced with high external temperatures

Once your product has been tested, produced and delivered to the market, our support does not stop there. We believe in the value of knowledge. Our team will work with your teams to provide ongoing aftercare support, to help build future innovations.

How our products can help meet environmental goals

Our insulation and processes can support you and your customers in meeting and surpassing environmental regulations and standards.

ROCKWOOL insulation contributes to the circular economy and can be recycled time and time again to make new products, when the building no longer needs that insulation.²⁶ All our customised core insulation is Environmental Product Declaration (EPD) certified with a clear and transparent life cycle.

We know that reducing the carbon footprint of buildings is something you will often be tasked with when manufacturing fire and acoustic doors – particularly when constructions across the world account for 30% of the world's energy demands and CO2 emissions.²⁷

When stone wool is integrated into any building element, its insulating properties introduce improved thermal performances. This can benefit the energy efficiency of the whole building, resulting in reduced energy consumption and associated greenhouse gases. It can also be used as a contribution to residential, commercial or industrial buildings attaining 'Green Building' certifications (LEED, BREEAM, HQE etc).



Core Solutions

Frequently used applications

Our insulation is used across a variety of door applications – anywhere where people and assets need to be protected from the dangers of fire and the challenges of excess noise.



Commercial

Our insulation can be used in doors installed in commercial buildings, including office blocks and government facilities. Stone wool core material can be integrated into fire doors used to protect office workers and assets, as well as acoustic doors for confidential meeting rooms.

Industrial

Fire door insulation can be applied to doors in industrial settings, where the risks of fire due to equipment or hazardous materials may be greater. Stone wool can protect workers and machinery, by preventing the spread of fire and toxic smoke.



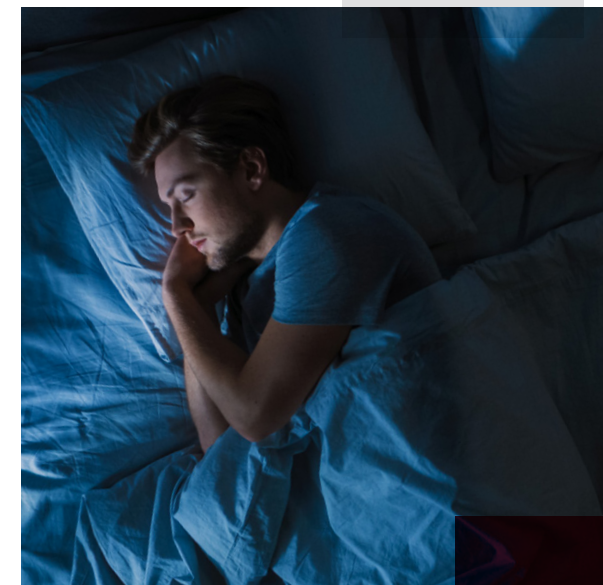
Education

Reduced noise in school environments can aid the concentration of children studying – and improve their performance by 3 to 6%.²⁸ Stone wool insulation in acoustic doors helps promote a quieter environment for learning, while also protecting against fire hazards at the same time.



Medical

In hospital environments, noise control is crucial for patient health. Unwanted sounds can increase heart rate and blood pressure, potentially harming recovery.²⁹ The sound-absorbing qualities of stone wool can promote a reduction in noise.



Residential

In tower blocks and flats, noise between dwellings can disturb people's sleep and cause annoyance among tenants – negatively impacting their wellbeing.³⁰ Fires are also a substantial hazard, particularly if flammable facades are a factor. ROCKWOOL insulation in fire doors can prevent flames from spreading, contain fire and allow people time to escape – being the difference between having a fire in a building, or a building that is on fire.



Entertainment

Buildings such as cinemas and theatres require effective fire and acoustic doors in order to maintain the levels of safety and comfort that audiences demand. ROCKWOOL stone wool can achieve both when integrated.

Footnotes

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7. WHO Regional Office for Europe, Environmental Noise Guidelines for the European Region (2018)
8. Modern Building Alliance – EU Fire Safety Guide
9. Salthammer Formaldehyde study (2019); examples of indoor air quality labels.
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11. Centre for Fire and Hazard Science, University of Lancashire, "Assessment of the fire toxicity of building insulation materials"; Communities and Local Government, Fire Statistics United Kingdom 2007.
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16. 'Thermal Properties' – ROCKWOOL Group website
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19. 'ROCKWOOL stone wool insulation benefits' – ROCKWOOL Group website
20. Department for Environmental Food and Rural Affairs, "Noise Policy Statement for England" (2010), p. 7.
21. Z Lab Srl, Test Report N.064-2014-IAP Source link 1; Z Lab Srl Test Report N.066-2013-IAP David Howard and James Angus, "Acoustics and Psychoacoustics," Focal Press, Oxford (2000).
22. Acoustic Factsheet – ROCKWOOL Group
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25. ROCKWOOL Group, Sustainability Report 2018, p.18.
26. ROCKWOOL Group, Sustainability Report 2019, p. 17.
27. Global Alliance for Buildings and Construction, 2018 Global Status Report, p. 43.
28. BPIE; "Building 4 People:" (2018), p. 3.
29. UK Department of Health and Social Care, Specialist Services, Health Technical Memo 08-01: Acoustics.
30. Department for Environmental Food and Rural Affairs, "Noise Policy Statement for England" (2010), p. 7.

Customer testimonial

"The stone wool that ROCKWOOL Core Solutions supply for fire rated doors and gates is most impressive. In addition, the possibility of ordering sheets of certain size and thickness (with an accuracy of 1mm) provides a huge benefit in terms of accelerating the production process."

Wojciech Szaciłowski
R&D Manager, ASSA ABLOY Mercor Doors



Why choose ROCKWOOL Core Solutions?

"When you partner with ROCKWOOL Core Solutions, you get a comprehensive package that will help you deliver cost-effective and efficient products, while streamlining the effectiveness of your manufacturing process for prefabricated building elements. By creating a strong working partnership that aims to champion your brand and become an extension of your own team, we can deliver more for you."

Francois Torrebruno
European Business Director, ROCKWOOL Core Solutions

ROCKWOOL Core Solutions is part of the ROCKWOOL Group and offers advanced tailor-made stone wool products to be integrated into finished systems.

At the ROCKWOOL Group, we are committed to enriching the lives of everyone who experiences our product solutions. Our expertise is perfectly suited to tackle many of today's biggest sustainability and development challenges, from energy consumption and noise pollution to fire resilience, water scarcity and flooding. Our product range reflects the diversity of the world's needs, while supporting our stakeholders in reducing their own carbon footprint.

Stone wool is a versatile material and forms the basis of all our businesses. With more than 11,000 passionate colleagues in 39 countries, we are the world leader in stone wool solutions, from building insulation to acoustic ceilings, external cladding systems to horticultural solutions, engineered fibres for industrial use to insulation for the process industry and marine and offshore.

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