

Insulated Prefabricated Building Elements

with ROCKWOOL Core Solutions



Why choose ROCKWOOL stone wool?

Stone wool is a leading industry standard for insulation that provides fire resilience, energy efficiency and acoustic properties within prefabricated building elements.

The unique fibre technology behind ROCKWOOL stone wool ensures strong thermal and mechanical performance, maintaining the same compression strength without compromise.

We supply best-in-class solutions for premium insulation within prefabricated building components – including both 2D elements and 3D modular systems. 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 results.

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



Fire resilience



Aesthetics



Thermal properties



Water properties



Acoustic capabilities



Circularity



Robustness

- Our stone wool does not deteriorate over time. It lasts the lifetime of a construction, improving the durability and reliability of your elements.²
- It retains dimensional stability and thickness, never sagging or shrinking.
- ROCKWOOL stone wool is flexible with bespoke thicknesses and sizes to suit your needs. It is also fully recyclable, increasing efficiency, boosting circularity and reducing waste.

Who we are

ROCKWOOL Core Solutions combines a knowledgeable team of experts with innovative insulation technology to create a comprehensive service package.

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

Our stone wool solutions for your prefabricated building elements include all the properties of the 7 Strengths of Stone. Even more than that, however, we work with Original Equipment Manufacturers (OEMs) directly to provide knowledge, advice and experience to improve your products.

To do this effectively, we build a partnership, connecting you with our local experts who gain an in-depth understanding of your:

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

This helps us deliver bespoke insulation suited to your requirements, whether you are producing 2D insulated elements or 3D modular systems.

By building this partnership at a local level, while drawing on our vast array of global knowledge, we can assist with expansion or specialist solutions, utilising all available resources of the full international ROCKWOOL Group.

Our business development team will be happy to provide you with further steps for growth, while we continue to supply you with custom stone wool solutions at the highest level of quality.



Helping you with the challenges you face

The prefabricated building market is expected to grow at a Compound Annual Growth Rate (CAGR) of more than eight percent, between 2019 and 2025.⁴ This is underpinned by a rise in infrastructure development, together with the lower costs and faster times associated with creating prefabricated buildings.

While this is positive news for the industry, there are still various challenges facing OEMs in both the 2D element and 3D modular system markets.

Prefabricated Building Market Flow

2D ELEMENTS			3D MODULES
WALLS	FLOORS	ROOFS	
Insulated open or closed panels without finished linings (eg. SIPs).	Insulated floor panels without finishes.	Insulated open or closed panels without finished linings.	Insulated modules without finished linings.
Insulated closed panels finished on one side (either internally or externally).	Insulated floor panels finished on one side (either upper or lower side).	Insulated closed panels finished on one side (either internally or externally).	Insulated modules with finished linings on one side (either internally or externally).
Insulated closed panels fully finished internally and externally, with integration of services (ie. with electrical and mechanical services, windows and doors).	Insulated floor panels fully finished on the upper and lower sides, with integration of services (ie. with electrical and mechanical services).	Insulated closed panels fully finished internally and externally, with integration of services (ie. with electrical and mechanical services, and windows).	Modules fully finished on all sides, with integrated services (ie. with electrical and mechanical services, windows and doors).

Insulated 2D Prefabricated Elements

- Detailed designs required at an early stage – reducing the flexibility and ability to change the design as manufacturing progresses.
- Unique shapes and sizes require tailored insulation specific to the manufacturing process.
- Offsite construction can occur away from development sites in big cities, so there's a need for local, cost-effective and sustainable suppliers.

3D Modular Systems

- Face stereotypes around monotony and uniformity of buildings.
- Large upfront investments are required to develop a factory.
- Modular construction is sometimes carried out in distant offsite locations – which may not be sustainable.
- Local regulations require compliance with different standards of fire protection, depending on the use of 3D modular systems.

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. We leverage our expert qualities by providing a true partnership, added value, sustainability, innovation and support – bringing solutions that help you navigate these hurdles and achieve your goals successfully.



Fire Safety

Fire resilience is one of the most important aspects of any construction – increasing the safety of building occupants by reducing the chance of flame and toxic smoke spread. According to estimates, around 5,000 people each year are killed in Europe as a result of building fires.⁵

Prefabricated buildings must meet both European and national fire safety standards. In some constructions, fibre reinforced composites (FRCs) – popular due to their strength-to-weight ratio – can be a liability when it comes to fire performance.⁶

Resilience under fire

ROCKWOOL stone wool insulation is **A1 Classified** under the European Reaction to Fire classification system (Euroclass) – the EU's common standard for assessing building materials related to fire safety.

This is the highest ranking available of the seven classifications from A1 to F, awarded based on testing that covers:

- Ignitability
- Flame spread
- Heat release
- Smoke production
- Producing flaming droplets/particles

ROCKWOOL insulation is **non-combustible** and can withstand temperatures of more than 1000°C, without melting.

Our stone wool does not emit toxic smoke and is designed to slow the spread of flames – allowing more time for building occupants to escape, should a fire break out.

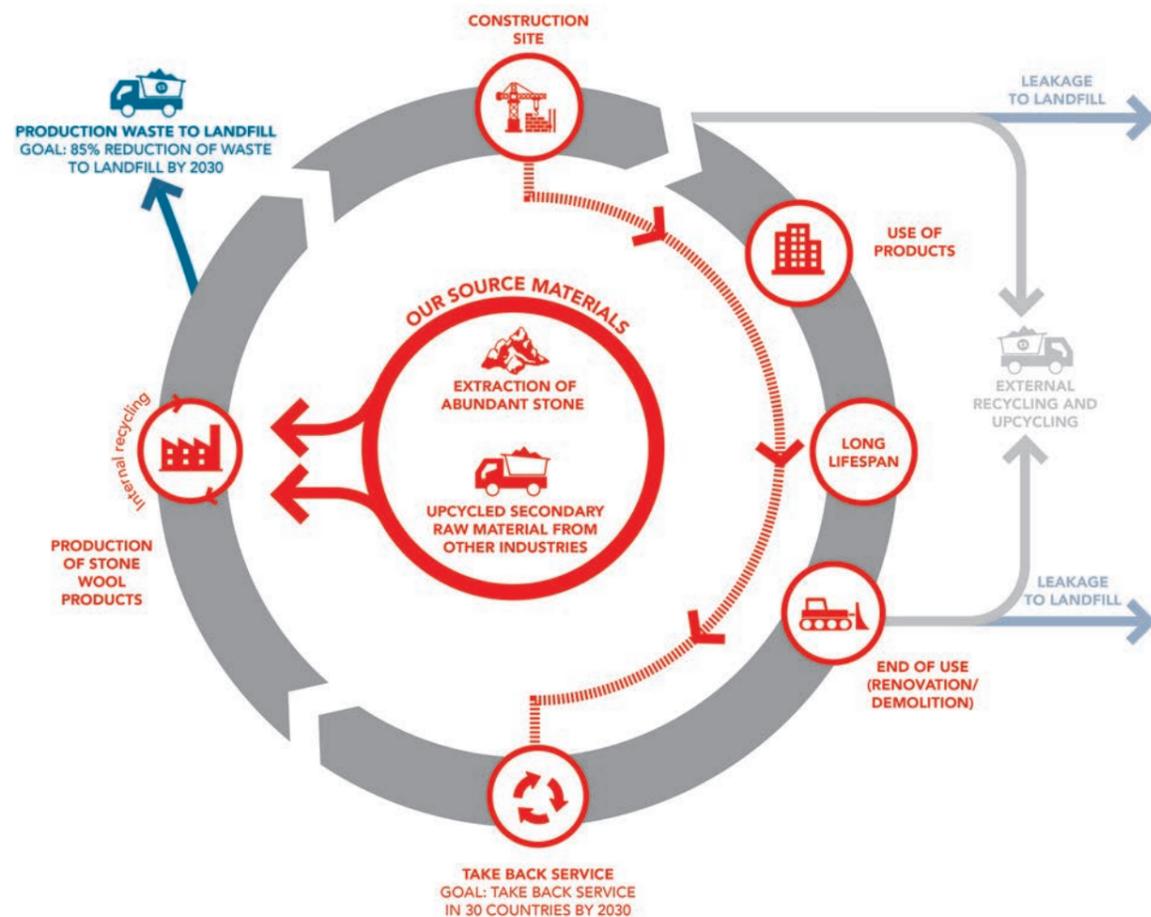


Sustainability

The building industry is **responsible for one third of the world's total waste**.⁷ Processes during the development of prefabricated buildings can have a significant environmental impact, from the extraction of building materials to transportation, manufacturing and deconstruction.

Increasingly, modern buildings must offer a sustainable solution – both during their initial development, and once the finished construction is in place.

Environmental excellence



ROCKWOOL stone wool is a highly sustainable insulation material, made from one of the most abundant raw materials on the planet.⁸ Our solutions are backed by environmental product declarations (EPDs) and can help prefabricated buildings conform to sustainable building schemes, including:⁹

- Haute Qualité Environnementale (**HQE**)
- Building Research Establishment Environmental Assessment Method (**BREEAM**)
- Leadership in Energy and Environmental Design (**LEED**) and other Green Building certifications

Our bespoke service also reduces waste by ensuring the insulation that is integrated into your products is of the correct dimensions and thickness.

When integrated in prefabricated and modular building components, the thermal regulating properties of stone wool also improve the energy efficiency of the final construction. This helps reduce the amount of energy used by those living and working in these structures.

Circularity is also at the heart of everything we do. We work closely with prefabricated building manufacturers to offer recycling services as well, ensuring products that are no longer in use are returned to the circular economy, to create new solutions.

Process Optimisation

Manufacturing 2D prefabricated building elements or full 3D modular systems requires many steps, with the potential for stalling at various points. This can slow production and cost businesses precious time and money – resulting in higher prices for end-line customers.

Importing insulation and materials from overseas introduces fresh challenges as well, due to importing regulations and associated costs. This can have an additional impact on sustainability and environmental concerns, as can offsite construction, where 2D elements are transported large distances to the final site.

Efficiency and innovation

Our local experts know and understand your business needs, and can help cut down the costs and time spent importing from abroad, as well as sourcing material and gaining guidance from further afield.

Our local focus, with a global reach, enables us to speed up the process – getting the right solutions for your products to your offsite construction facility in good time.

The Core Solutions team works directly with OEMs to help meet strict timelines and ensure that correct material volumes arrive on time. We offer customer service and supply chain communication throughout the working partnership too, to keep you informed of progress and allow time to adapt when necessary.





Market Threats

As a relatively young sector, the 3D prefabricated building market encounters further challenges related to:

- **Costs** – Such as a lack of site availability at reasonable prices, with large up-front investments required for developing factories.
- **Design** – Detailed design at early stages is required, reducing flexibility during construction. Stereotypes also remain around monotonous, uniform and identikit modular building designs.
- **Warranties** – There is still a big question around warranties for prefabricated buildings, and achieving Buildoffsite Property Assurance Scheme (BOPAS) accreditation – ensuring they conform to offsite construction regulations.¹⁰

Finding the right solution for you

For optimum effectiveness, we provide recommendations of stone wool insulation dimensions and design based on your manufacturing process. For example, if there is machine optimisation, our team of local experts can advise you on robust and dimensional insulation solutions. We will also look to help you improve cost-efficiencies, finding more sustainable solutions with lower transport costs and time.

As part of our partnership with you, we will collaborate on process optimisation, application testing, packaging and certification – to provide you with a bespoke and successful solution. This can help your 2D and 3D modular constructions work towards achieving BOPA accreditation.

How do we work with you?

Core Solutions partners with you to create effective products that harness both the **7 Strengths of Stone** and **The Power of &**.

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 insulation, and deriving the best possible outcome for integration into your solutions.

Our dedicated team will learn:

- How you manufacture prefabricated building elements
- The equipment you use
- How your production line operates
- The specific dimensions and performance levels you need

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 offer an extensive external and internal network of expertise, which allows us to make recommendations about the optimal insulation solution for your prefabricated building elements. Our team has in-depth knowledge of local markets, providing solutions from local factories to help with any importing challenges.

At ROCKWOOL Core Solutions, we have a global team behind us – and use our international presence and knowledge to provide you with:

- Advice on the best way to integrate stone wool into your prefabricated building elements
- A 360° perspective on making our partnership successful
- A just-in-time delivery schedule to fit in with your production

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 prefabricated building elements.

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.

These innovations can help shape your commercial future and ensure high-performing solutions for the finished prefabricated buildings.

Support

We will work with you every step of the way, particularly during 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 products. This in-house testing helps ensure a high level of quality before it even leaves our production facility.

Once integrated into your prefabricated buildings, 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.



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 a construction no longer requires that insulation.¹¹ 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 important within the creation of prefabricated buildings – especially as constructions across the world account for around 30 percent of the world's energy demands and CO2 emissions.¹²

When stone wool is integrated into any building element, its insulating properties introduce improved thermal performances. This can benefit the energy efficiency of prefabricated building elements, and 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).

Footnotes

1. <https://www.rockwoolgroup.com/why-stone-wool/>
2. FIW, Durability Project Mineral Wool (2016), p. 29, Chapter 7 "Conclusions and Outlook."
3. https://www.rockwoolgroup.com/siteassets/rw-cs/j2538_rw_cs_brochure_v9.1.pdf
4. <https://www.businesswire.com/news/home/20200414005851/en/Global-Prefabricated-Building-Market-Study-2020-2025-Featuring-Profiles-of-Key-Players-Algeco-Scotsman-ATCO-Bouygues-Construction-and-Red-Sea-Housing---Research-AndMarkets.com>
5. <https://www.modernbuildingalliance.eu/EU-fire-safety-guide>
6. <https://www.sciencedirect.com/science/article/abs/pii/S1359836819336960>
7. https://www.rockwoolgroup.com/siteassets/rw-cs/rw_cs_sandwich_panel_brochure_v5.1-en.pdf
8. <https://www.rockwoolgroup.com/why-stone-wool/circularity/>
9. <https://www.environdec.com/>
10. <https://www.bopas.org/>
11. ROCKWOOL Group, Sustainability Report 2019, p. 17.
12. Global Alliance for Buildings and Construction, 2018 Global Status Report, p. 43.



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 is offering 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 & offshore.

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