

INTRODUCTION TO KNAUF INSULATION



**For high performance, safe and
comfortable building environments.**



Thermal



Fire



Acoustic



Sustainability



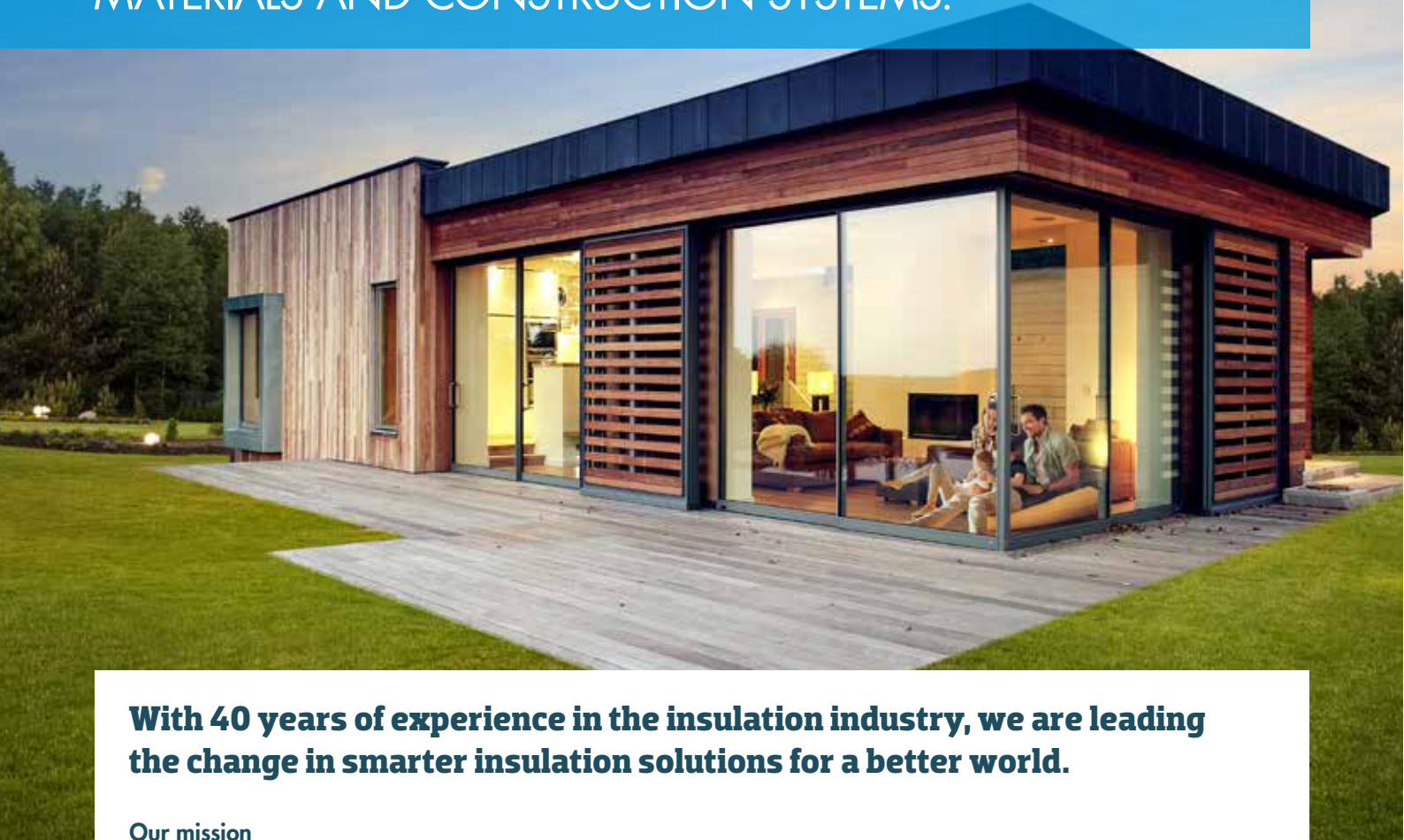
Moisture resistance

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WE ARE PART OF THE KNAUF GROUP, A FAMILY-OWNED MULTI-NATIONAL MANUFACTURER OF BUILDING MATERIALS AND CONSTRUCTION SYSTEMS.



With 40 years of experience in the insulation industry, we are leading the change in smarter insulation solutions for a better world.

Our mission

“Our mission is to **challenge** conventional thinking and **create** innovative insulation solutions that shape the way we live and build in the future, with **care** for the people who make them, the people who use them and the world we all depend on.”

challenge.

We challenge ourselves, regulators and our industry to develop new concepts and new ways of thinking about insulation and buildings;

create.

We create innovative solutions that change the way we work and set new standards of quality, performance and sustainability;

care.

We care about what really matters: our people, our customers, our communities and ultimately, our planet.

Our vision

“Our vision is to lead the change in smarter insulation solutions for a better world. Our aspiration is to be the world’s most trusted insulation partner providing high performing and smart insulation solutions and services for a better world.”



*2016 figures

Knauf Group



Knauf Insulation

*2017 figures

€6.5bn
turnover*



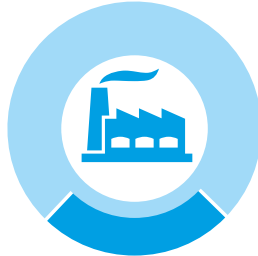
€1.7 bn
turnover*

+27,500
employees worldwide



+5,500
employees worldwide

150
plants & offices



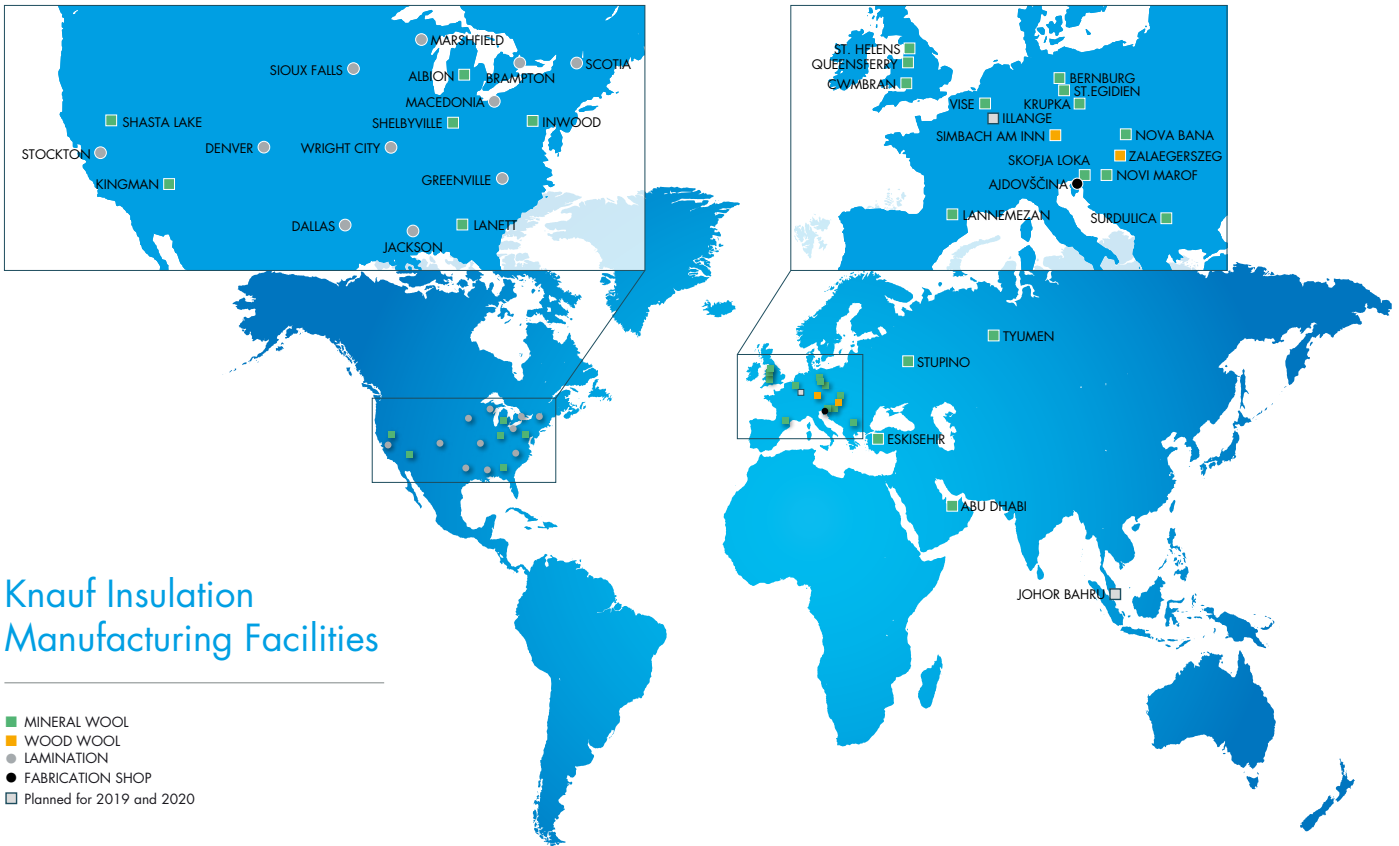
38
plants & offices

+86
countries



+35
countries

KNAUFINSULATION



Knauf Insulation Manufacturing Facilities

- MINERAL WOOL
- WOOD WOOL
- LAMINATION
- FABRICATION SHOP
- Planned for 2019 and 2020



WE OFFER THE BEST INSULATION SOLUTION FOR EACH SECTOR.



At Knauf Insulation, we are committed to helping our customers meet the increasing demand for energy efficiency and sustainability in homes, non-residential buildings and industrial applications.

As the only manufacturer of both Glass and Rock Mineral Wool, we are uniquely placed to provide the best insulation solution for each application. We offer a wide range of insulation solutions for all applications in commercial and residential buildings, for both new build and refurbishment projects, in addition to solutions for HVAC, industrial applications and fire protection, green roofs and bespoke applications.

Insulation solutions for building applications

We offer a wide range of high performance, non-combustible insulation solutions for new build and refurbishment of both residential and non-residential buildings. Our extensive product range is designed to provide solutions for all types of roofs, walls and floors, in addition to specialist fire protection applications.



View our range of case studies on our website:

www.knaufinsulation.co.uk/media/case-studies





Insulation solutions for green roof, landscaping and horticultural applications

We have a range of green roof, landscaping and horticultural solutions. Our Urbanscape® Green Roof System is an innovative, lightweight easy to install system and is the world's first green roof system with a Life Cycle Assessment (LCA) and Environmental Product Declaration (EPD).



Insulation solutions for technical applications

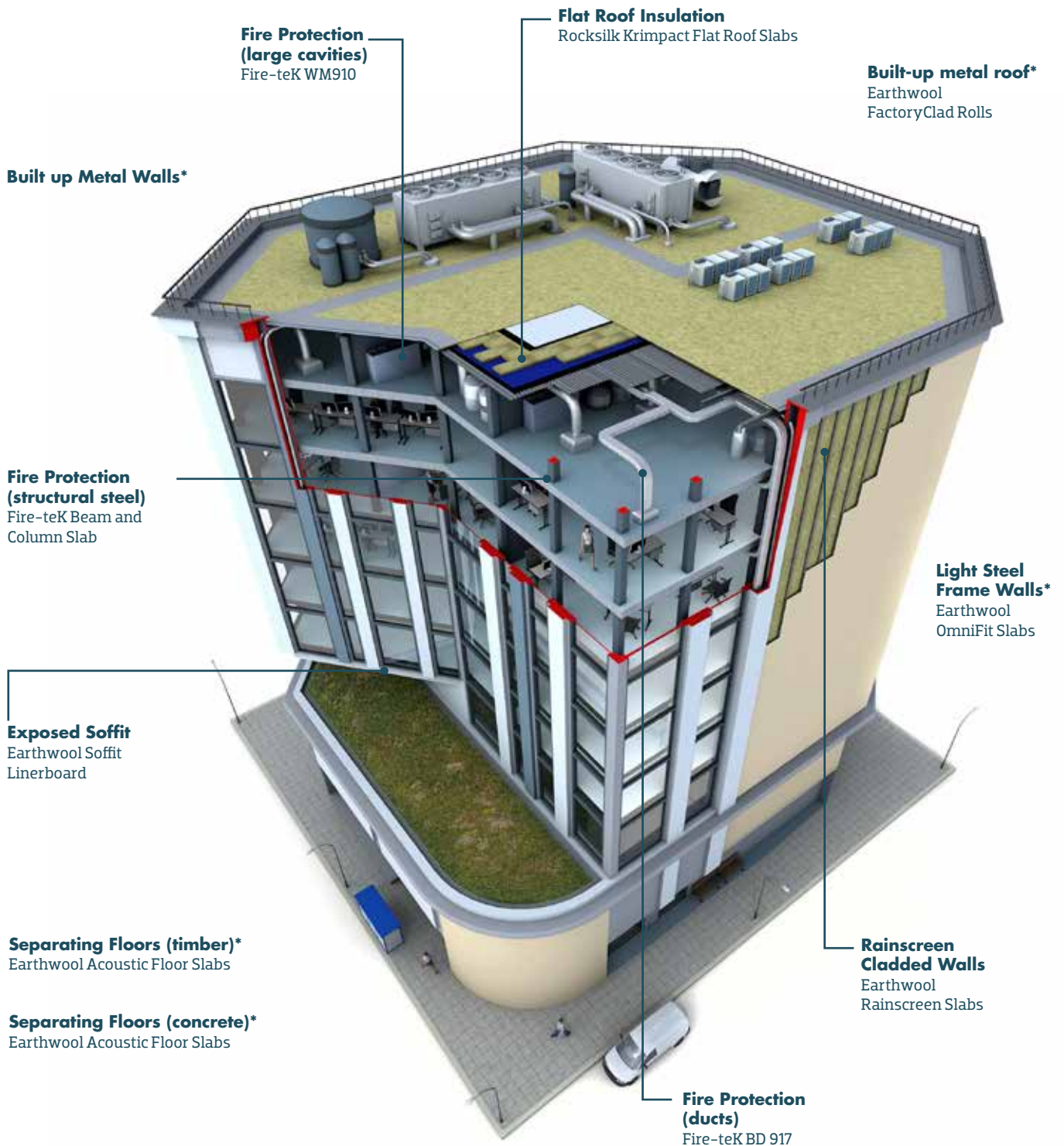
Our Technical Solutions comprise of a range of high performance insulation solutions developed specifically for the insulation requirements of HVAC systems and industrial plants. Our range covers solutions for insulating heating systems, piping and air conditioning ducts, insulating industrial plant and power stations, and for passive fire protection.



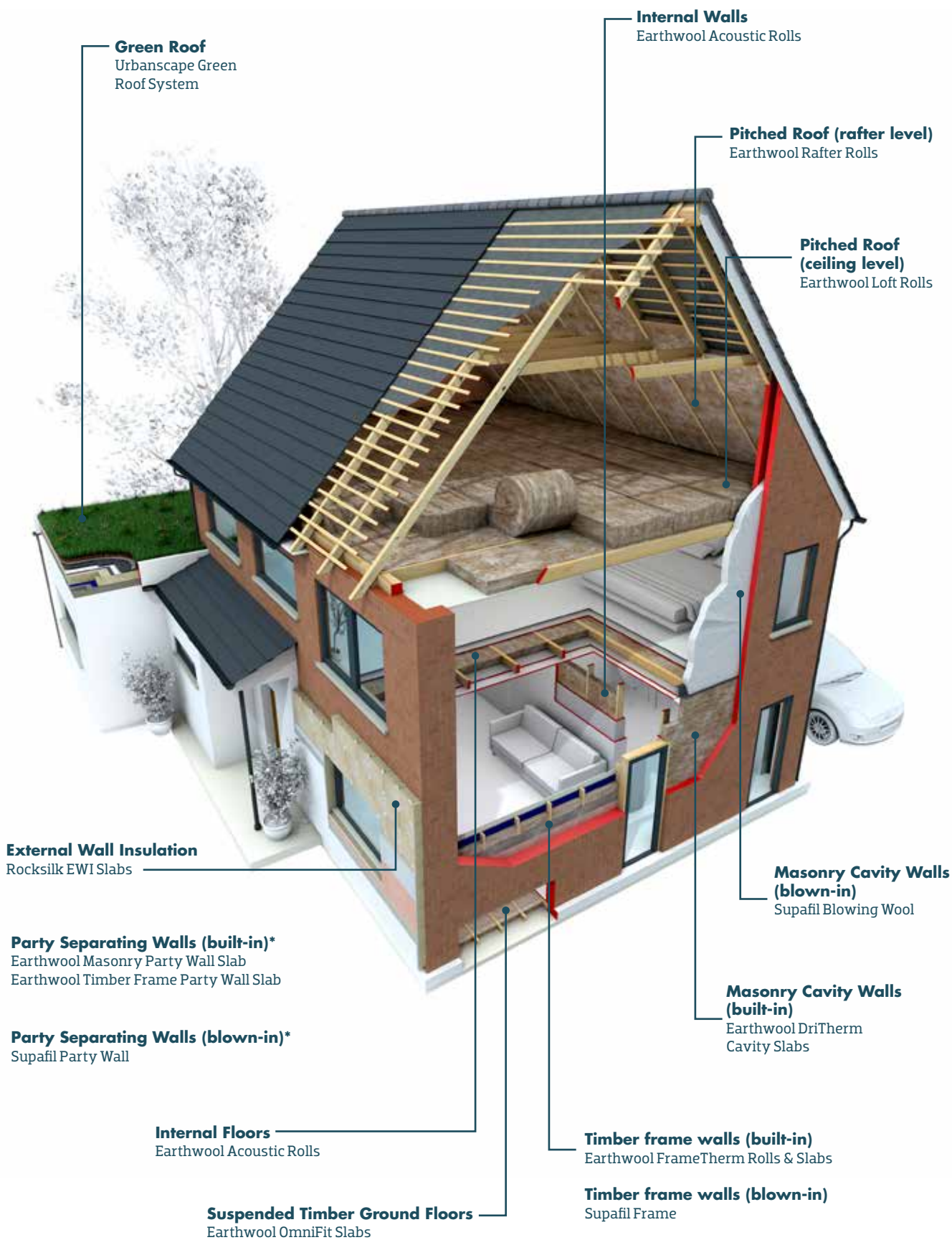
Insulation solutions for bespoke applications

Knauf Insulation is recognised as one of the insulation leaders in the industry, owing to the fact that we offer unique insulation solutions that can be entirely tailor-made according to the needs of our customers and in line with their production processes.

A RANGE OF HIGH PERFORMANCE PRODUCTS FOR EVERY APPLICATION



*Not pictured



*Not pictured

OUR MINERAL WOOL INSULATION SOLUTIONS PLAY A MAJOR ROLE IN PROVIDING THERMAL, FIRE SAFETY, ACOUSTIC PERFORMANCE AND COMFORT WITHIN THE BUILT ENVIRONMENT.



THERMAL

The energy saving properties and thermal performance of insulation keep buildings warm in winter and cool in summer.

The bigger the temperature difference between the inside and outside of a building, the faster the building will lose heat in winter and gain heat in summer.

Our mineral wool insulation solutions help maintain a stable inside temperature by slowing heat transfer by convection, conduction and radiation.

By insulating a property properly, energy can be saved either from the heating system when heating a cold building, or from the air conditioning system when cooling a warm building.



FIRE SAFETY

The fire performance of our insulation gives it its ability to provide passive fire protection.

Buildings must be designed and constructed to minimise the risk of fire and its spread should it occur, as well as to maximise the structure's stability and the ability of occupants to escape unharmed.

As well as acting as a barrier to the fire, should it occur, our non-combustible mineral wool insulation solutions will not add to its development stages, minimising its overall effect and consequences.



It is widely known that buildings account for 40% of worldwide carbon emissions, and increasing their energy efficiency is still a priority for governments as they try to combat climate change. Whilst the primary role of insulation is to provide thermal performance, choosing the right insulation will also determine a building's acoustic and fire safety properties as well as the level of comfort it provides for its users. Our mineral wool insulation solutions provide a **unique combination of performance**.



ACOUSTIC

The acoustic performance of insulation can help create an improved internal environment for building occupants.

Protection from noise contributes towards the 'quality of life' afforded by dwellings, and a healthy, productive and attractive environment in offices, hospitals, schools and other non-domestic buildings.

Our mineral wool insulation solutions provide high levels of sound absorption and noise reduction, in new build or within existing buildings through retrofit, to provide improved sound insulation and acoustic comfort.



COMFORT

Insulation can help create dry, comfortable indoor environments and buildings and have a major impact on the health and wellbeing of their users.

By preventing air leaks, uncontrolled condensation and possible mould spores, mildew or microbial organic compounds, a well-insulated, airtight building envelope also contributes to the health of a building — particularly if combined with efficient installation of the solutions and a controlled ventilation system.

Our mineral wool insulation solutions provide all of the above benefits, but more importantly, thanks to our ECOSE® Technology, they contribute to high levels of indoor air quality and were the world's first products to be awarded the Eurofins Gold Certificate for Indoor Air Comfort.



WE ARE THE BEST CHOICE WHEN IT COMES TO PERFORMANCE



GLASS MINERAL WOOL



There is a broad spectrum of insulation materials available on the market, with an equally broad variance in form, performance, sustainability, cost-effectiveness and availability.

All our mineral wool products meet the highest specifications and have demonstrated excellent rounded performance in the most demanding projects, including those built to the Passivhaus standard.

Glass Mineral Wool

Our high performance Glass Mineral Wool insulation solutions contain up to 80% high quality recycled materials, to which is added sand, limestone and soda ash before being melted in a furnace. The molten glass is spun to form millions of fine strands of wool. We use our proprietary and revolutionary bio-based binder, ECOSE® Technology, to bind the mineral wool together to form a mat of material which is then cured in order to form the final product. The density of the product determines whether the insulation is a lightweight quilt supplied in rolls, a flexible slab or a rigid slab, and its thermal insulation value.

Our high performance Blowing Wool is an un-bonded, virgin fibrous glass blowing insulation, which is produced in the same way as the Glass Mineral Wool, however, it is produced as a loose-fill product to be blown into cavity walls, partitions, timber frame walls and ceilings.

Rock Mineral Wool

Our Rock Mineral Wool insulation solutions are mainly made from volcanic rock, typically basalt and/or dolomite. An increasing proportion is now recycled material from slag, a waste product from blast furnaces. The raw materials are melted and then spun into fine strands of wool. A binder is used to bind the wool together to form a mat of insulation, which is then cut into slabs or wired mattresses. Most of our Rock Mineral Wool products use our ECOSE® Technology.



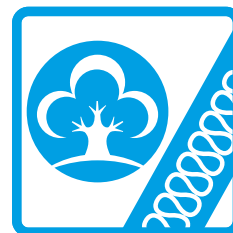
Thermal



Fire



Acoustic



Sustainability



Moisture resistance



BLOWING WOOL



ROCK MINERAL WOOL

	Glass Mineral Wool	Blowing Wool	Rock Mineral Wool	
Features	Naturally non-combustible	✓	✓	
	Compression packed to limit transport & warehouse requirements	✓	✓	
	Strand type	Long strands giving high levels of tear strength	Loose to allow blown installation	Short strands giving high levels of compressive strength
	Available in slabs	✓		✓
	Available in rolls	✓		✓ (i)
	Available loose for blown installation		✓	
	Available in wired mattresses			✓
	Available with a variety of facings	✓		✓
Applications	Residential buildings	✓	✓	✓
	Commercial buildings	✓	✓	✓
	New build	✓	✓	✓
	Refurbishment	✓	✓	✓
	Fire Protection			✓

(i) Fire-teK Wired Mattress only

WE PROVIDE NON-COMBUSTIBLE INSULATION SOLUTIONS FOR SAFER BUILDINGS



Reaction to Fire and Fire Resistance are two different, but very important considerations when it comes to designing a building.

Our non-combustible mineral wool insulation solutions offer the best performance when it comes to both Reaction to Fire and Fire Resistance, enabling building designers and specifiers to develop effective and robust fire safety strategies when they design new buildings.

REACTION TO FIRE - How quickly will the fire develop?

The measurement of how a material or system will contribute to the fire development and spread, particularly in the very early stages of a fire when evacuation is crucial.

All insulation materials are given a Euroclass Reaction to Fire Classification in accordance with BS EN 13501: Fire Classification of construction products and building elements, helping specifiers to understand how much 'fuel' will be added to the building as well as how a material will contribute to the development stages of a fire when evacuation is crucial.

Testing is carried out to determine the performance of materials in terms of fire behaviour, smoke production and flaming droplets, giving a range of classification possibilities as shown over the page.

The vast majority of our products are non-combustible and achieve the highest possible Euroclass A1 Reaction to Fire Classification rating.

By choosing non-combustible insulation materials, building designers and specifiers can design out the risk of fire within the building fabric from the start. Using non-combustible materials minimises the risk that the building fabric will contribute to the development of the fire or contribute to fire spread.

FIRE RESISTANCE - How long can the construction withstand the fire?

The measurement of the ability of a material or system to resist, and ideally prevent, the passage of fire from one distinct area to another.

Building regulations require certain elements such as partitions, separating walls, ceilings and beam and column constructions to provide specified amounts of fire resistance.

Fire protection classifications are normally reported in terms of a period of fire resistance, for example 30, 60 or 90 minutes. These classifications relate to what is known as the integrity (E), thermal insulation (I) and load-bearing capacity (R) of building elements. Simply, this means how elements — either in combination or individually — stop a fire spreading, how they restrict temperature rise and how the elements' load-bearing capacity is maintained.

A range of our solutions have been tested for use in a variety of fire-resistant applications, providing fire resistance periods ranging from 30 to 240 minutes to assist the design of safe buildings.

Our non-combustible fire-resistant solutions help inhibit fire spread, maintain structural integrity and limit the spread of fire and smoke from one area to another, providing safe buildings for occupants, and added peace of mind for specifiers.

“Euroclass A1 products will not contribute in any stage of the fire including the fully developed fire.”

British Standard BS EN 13501: Fire classification of construction products and building elements

“ The drive for improved energy efficiency has introduced large quantities of combustible materials into the built environment by way of structure, cladding and insulation. The protection of this material very often demands encapsulation by better performing materials (such as plasterboard), to a precision that may be difficult to achieve on-site or whose capability may reduce during the life-span of the building.

Non-combustible materials are known to be very forgiving of other key fire relevant challenges such as poor-quality workmanship, structural abuse and wear and tear over time. ”

Fire Protection Association

(Cladding Approvals: A review and investigation of potential shortcomings of the BS 8414 standard for the approval of cladding systems such as those commonly used on tall buildings)



Enquire about our Reaction to Fire CPD!
www.knaufinsulation.co.uk



Our non-combustible insulation solutions minimise the risk of fire and its spread should it occur, as well as maximise the structure’s stability and the ability of occupants to escape unharmed.

TYPICAL INSULATION PRODUCT EUROCLASS REACTION TO FIRE CLASSIFICATIONS

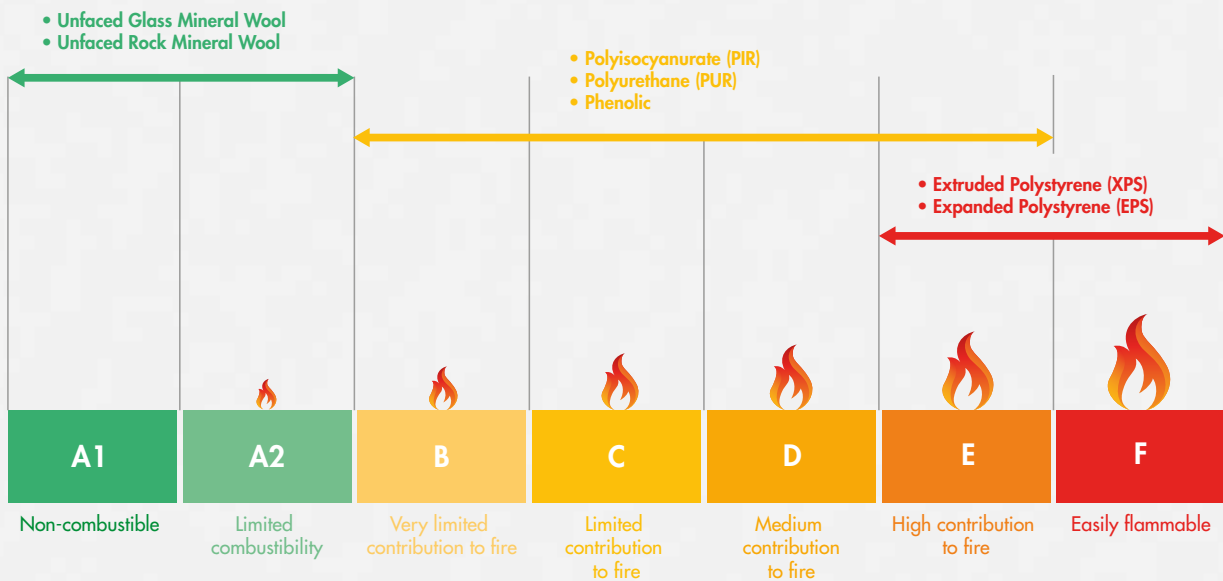
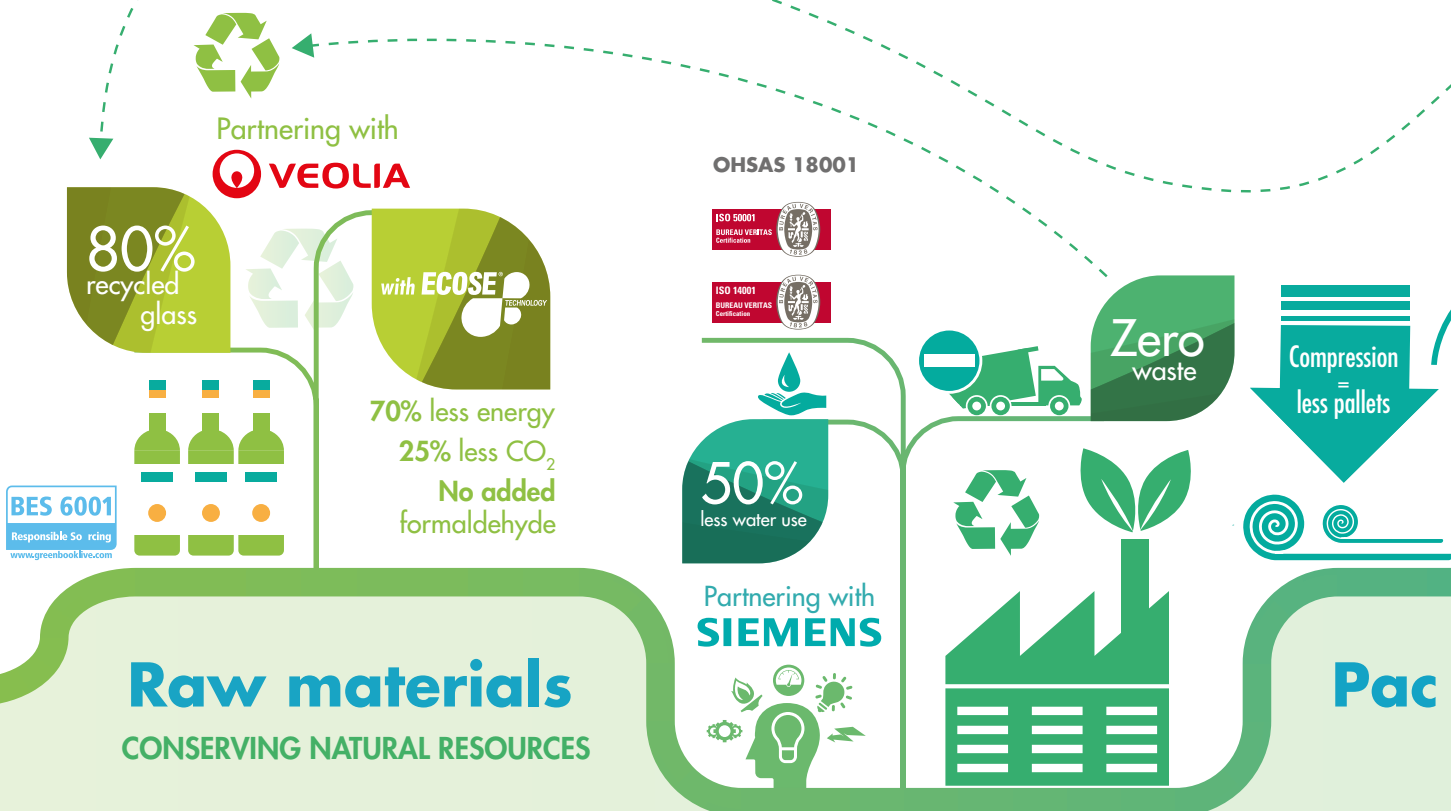


Illustration for guidance only. It is crucial to check the actual Euroclass Reaction to Fire Classification of a product before use.

WE CARE FOR THE PEOPLE WHO MAKE OUR PRODUCTS,
THE PEOPLE WHO USE THEM AND THE WORLD WE ALL
DEPEND ON.



Manufacturing

REDUCING THE ENVIRONMENTAL
IMPACT OF OUR OWN PROCESSES

Our Glass Mineral Wool insulation solutions contain up to 80% of recycled materials. By maximising the amount of recycled glass cullet in the manufacture of our products, we minimise our need for mineral raw materials.

Our revolutionary bio-based binder, ECOSE® Technology avoids the use of petrochemicals. It is 70% less energy intensive than traditional binders, reducing energy consumption and CO₂ emissions at our manufacturing facilities.

Our work to ensure safe and legal operations in our supply chain has enabled us to achieve certification to the Building Research Establishment's responsible sourcing standard BES 6001.

Partnering with Siemens, we are unlocking efficiency opportunities to reduce our carbon footprint, saving the equivalent annual energy usage of almost 800 homes.

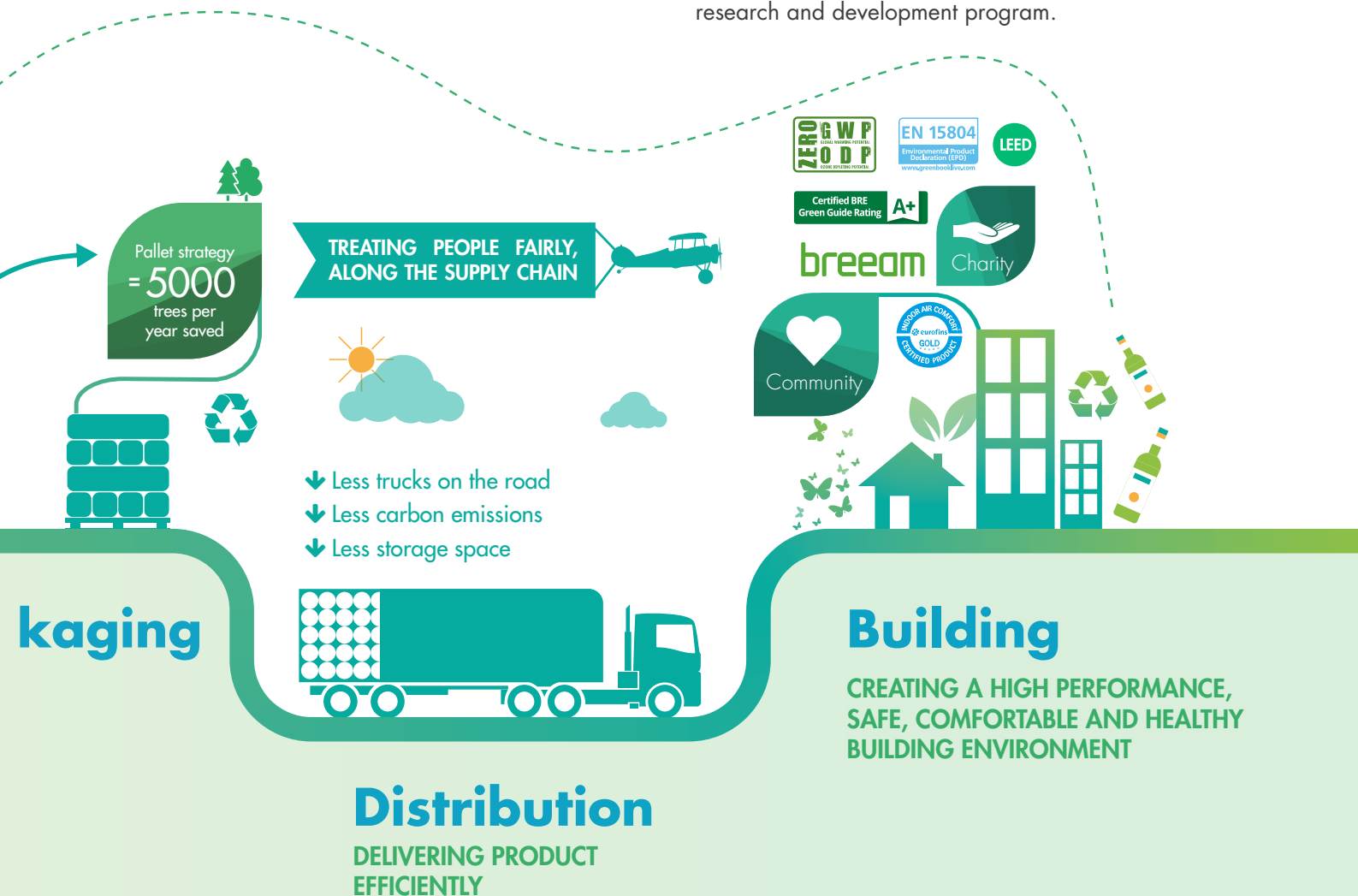
Our commitment to fair and safe working practices in our own facilities is embedded in our code of conduct, and reflected in the OHSAS 18001 certification covering all our production sites.

All our facilities are also certified to ISO 14001 and ISO 50001 standards.

We avoid waste and prevent pollution; we segregate factory waste to maximise recycling and to meet our expectation of sending zero waste to landfill from our UK plants.

As the market leader and a non-stop innovator, quality excellence and sustainability are at the heart of everything we do; whilst we have a strong focus on the thermal, fire and acoustic performance of our products, our pursuit of sustainability has much wider horizons.

Whilst we are dedicated to supplying sustainable high performance insulation solutions for enhanced energy efficiency in buildings, we also continually strive for improvements in our manufacturing and supply chain operations to improve quality and minimise our impact on the environment. All Knauf Insulation production locations have state-of-the-art manufacturing equipment and meet the highest quality standards, supported by an ongoing research and development program.



Distribution

DELIVERING PRODUCT EFFICIENTLY

Building

CREATING A HIGH PERFORMANCE, SAFE, COMFORTABLE AND HEALTHY BUILDING ENVIRONMENT

Our industry-leading compression-packaging technology allows us to load more product onto each truck that leaves our factories. This means less packaging, fewer vehicles on our roads, so less CO₂ emissions. It also means less storage space required for our customers.

We have recently been trimming the weight of the pallets we use in the UK, cutting around 2kg per pallet, equating to a total saving of around 5,000 trees/year.

Our products release very low levels of volatile substances which affect indoor air quality, attested by their certification to Eurofins Gold Certificate for Indoor Air Comfort.

The overall environmental performance of our products is reported in Environmental Product Declarations. They are available for all our products, verified by an independent third-party and comply with the European standard EN 15804. They are also registered with the Europe-wide ECO-Platform.

Our Glass Mineral Wool and Blowing Wool products are also registered in the BRE's UK-specific Certified Environmental Profiles scheme. The majority of our products, both Glass and Rock Mineral Wool, are rated A+ in the BRE Green Guide.

OUR HIGHLY SUSTAINABLE BIO-BASED BINDER TECHNOLOGY WITH PROVEN PERFORMANCE

ECOSE® Technology is our revolutionary sustainable bio-based binder* used in the manufacture of all of our Glass Mineral Wool products, and the majority of our Rock Mineral Wool products. Invented nearly 10 years ago, it is not only unique, but very much central to our sustainability strategy.

THE BEST CHOICE - 5 KEY BENEFITS

A NATURAL BINDER: ECOSE® Technology contains no added phenol or formaldehyde. Natural raw materials replace the chemicals used in traditional binders.

LOWER EMBODIED ENERGY: Products manufactured using ECOSE® Technology are 70% less energy-intensive when compared to mineral wool products made using traditional formaldehyde-based binders, reducing the ecological footprint.

PROVEN DURABILITY: The exceptional strength of our bio-based binder makes products manufactured with ECOSE® Technology highly durable.

OPTIMUM INDOOR AIR COMFORT: Based on natural raw materials, products manufactured with ECOSE® Technology have the best possible Eurofins Gold Certificate for Indoor Air Comfort, contributing to a high level of indoor air quality.

EASY HANDLING: Softer texture to the touch and easier to handle compared to products made with chemical-based binder.

*A binder is used in the manufacture of Glass and Rock Mineral Wool products to bind insulation strands together.



HOW DO YOU KNOW IT'S MANUFACTURED USING ECOSE TECHNOLOGY?

Products manufactured using ECOSE® Technology have a natural brown colour so you can see, as well as feel the difference.



ALL OUR CURED GLASS MINERAL WOOL AND MOST OF OUR ROCK MINERAL WOOL INSULATION SOLUTIONS ARE MADE USING ECOSE® TECHNOLOGY.

with **ECOSE**[®]
TECHNOLOGY



FOR MORE INFORMATION, WATCH OUR VIDEO AT
WWW.KNAUFINSULATION.CO.UK

70% less
Energy Intensive

No added phenol
or formaldehyde



TAKING THE NEXT STEP IN OUR SUSTAINABILITY JOURNEY IN PARTNERSHIP WITH VEOLIA



Recycled glass cullet from
Veolia's glass recycling facility

FOR MORE INFORMATION, WATCH OUR VIDEO AT
WWW.KNAUFINSULATION.CO.UK

Our high performance Glass Mineral Wool insulation solutions contain up to 80% recycled content, most of which is glass cullet from Veolia's glass recycling facility next to our manufacturing plant in St. Helens, Merseyside, UK.

In 2017, we entered into a long term contract with leading resource management company, Veolia, to create a state-of-the-art facility. Now operating to its full capacity, the facility gives yearly a new lease of life to over 60,000 tonnes of used glass bottles and jars collected from households, as it cleans, separates and refines them into high purity raw materials to be used in the manufacturing of our high performance, energy-saving insulation solutions.

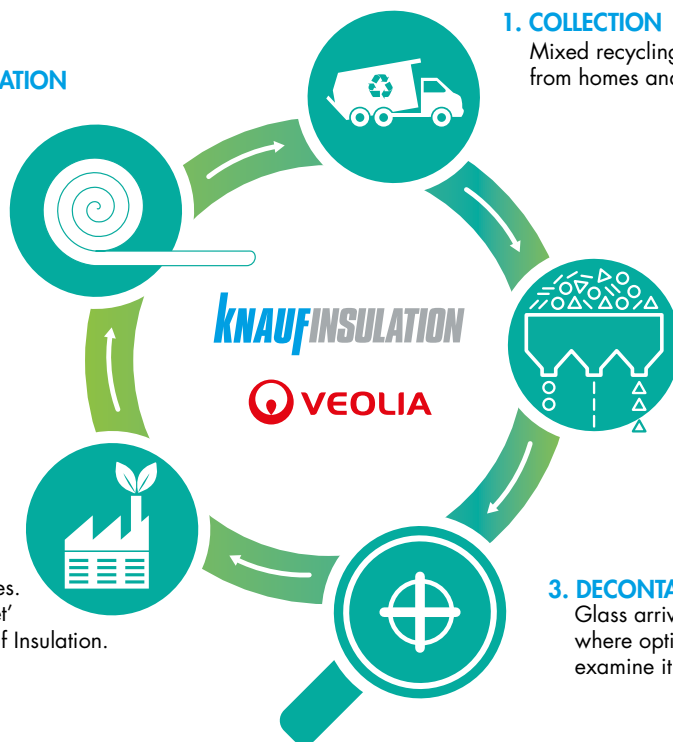
Veolia's world-first facility uses the latest technology to sort and separate glass at a micro-level with exceptional accuracy, delivering an ultra-pure glass cullet to ensure the highest possible quality of insulation. The machinery includes vibrating screens for size sorting, magnets to extract ferrous materials and eddy current separators for non-ferrous materials.

5. HIGH PERFORMANCE INSULATION

This glass cullet is melted in a furnace and processed into high performance Glass Mineral Wool insulation.

4. FURNACE-READY CULLET

Fine particles (around 5%) are sent to the aggregate industry which replaces the need for virgin raw materials from quarries. 95% of glass is turned into 'cullet' and sent to us next door at Knauf Insulation.



1. COLLECTION

Mixed recycling is collected from homes and offices.

2. SEPARATION

Trucks take it to Veolia's Material Recovery Facility where the glass is separated out.

3. DECONTAMINATION

Glass arrives at Veolia's glass recycling plant where optical sorters and smart x-ray machines examine it for micro-contamination.

THE PARTNERSHIP WITH VEOLIA BRINGS MANY BENEFITS

It has **reduced waste** going to landfill and over

60,000 tonnes

of **used glass bottles and jars** will be given a new lease of life each year



We have secured our glass supply and are able to maintain the **recycled materials content** in the manufacture of our **Glass Mineral Wool** insulation solutions **up to**

80%

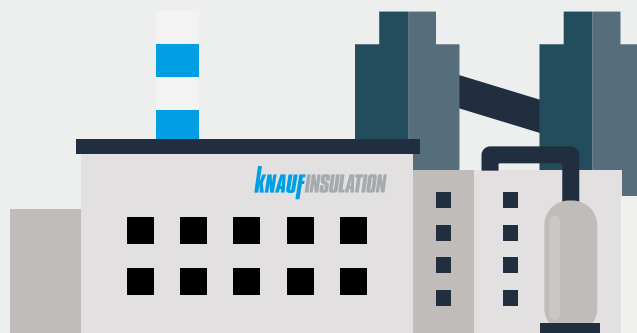
The **partnership** has provided a

closed loop solution

and a significant investment in the mainstream **circular economy**

We have substantially **reduced carbon emissions** from homes and the proximity of the **new facility will save** approximately

375,000 miles of road journeys



WE PROVIDE EXPERT ADVICE AND SUPPORT TO OUR CUSTOMERS

At Knauf Insulation, we aim to support our customers to ensure our products are specified, procured and installed with the highest quality standards. Our dedicated Sales, Technical, Specification and Customer Service teams are here to provide the best advice to our customers and specifiers.

Technical Support Team

We offer unparalleled expert advice on all our products and solutions through our in-house Technical Support Team.

With over 40 years insulation experience, our Technical Support Team provide free, expert advice for builders merchants, distributors, stockists, architects and any other customers involved in the construction industry and the wider specification community.

Our technical support help desk is staffed from 8.00am to 5.00pm Monday to Thursday and 8.00am - 4.00pm Friday by experienced insulation experts, ready to provide advice on regulations, products and energy performance.

As well as technical advice, our Technical Support Team can provide U-value calculations, NBS clauses and 3D Heat Loss/U-value Calculations.

Alternatively, you can email technical.uk@knaufinsulation.com

We will normally respond to emails within 24 hours.

Marketing Support

We provide a fast turnaround on sample and literature requests, eliminating delays with planning and client approval of material, so that projects begin on time.

All our collaterals are also available on our website at www.knaufinsulation.co.uk/technical-support/downloads

Specifications Documentations and Tools

Building Information Modelling (BIM)

Since the early days, we have been leading the way when it comes to BIM. Our BIM experts across Europe and the US worked on several BIM standards across Northern Europe especially where BIM has now established a European Standard. We were the first insulation manufacturer in the world to make our product data open and available to all our customers in all BIM formats (IFC, COBie etc.). Our BIM objects are not only easily accessible and user-friendly; they are also packed with reliable, comprehensive data, such as DOP, EPDs and CE marking. They are available on our website at <https://www.knaufinsulation.co.uk/technical-support/building-information-modelling-bim>

Insulation CAD Details and NBS Specification Clauses

All our CAD details are available on our website in .DWG format and fully compatible with AutoCAD. You will need a version of AutoCAD or a .DWG viewer installed on your computer to view or use these files. They are available on our website at <https://www.knaufinsulation.co.uk/technical-support/nbs-cad>

Other certifications and accreditations

We are recognised in the UK by numerous certification and accreditation.

BBA certifications

The British Board of Agreement offers third party certification for the use of building products and systems in critical applications. We have a number of products certified, and are always seeking to increase our portfolio - www.knaufinsulation.co.uk/downloads/bba-certificates

Continuing Professional Development (CPD)

Our range of CPDs provide an essential service to architects and specifiers, helping them keep up to date with innovations in a rapidly changing and evermore challenging environment - www.knaufinsulation.co.uk/technical-support/cpd

Technical Support Team

technical.uk@knaufinsulation.com

Marketing team

info.uk@knaufinsulation.com

Literature

www.knaufinsulation.co.uk/technical-support/downloads

01744 766 666

KNAUFINSULATION

CONTACTS

Customer Service (sales)

01744 766 766

sales.uk@knaufinsulation.com

Technical Support Team

01744 766 666

technical.uk@knaufinsulation.com

Literature

08700 666 660

info.uk@knaufinsulation.com



Knauf Insulation Ltd PO Box 10, Stafford Road, St.Helens, Merseyside, WA10 3NS. UK

For more information please visit www.knaufinsulation.co.uk

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challenge.
create.
care.