

KNAUFINSULATION

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ROCKSILK® RAINSCREEN SYSTEMS
Design Guide

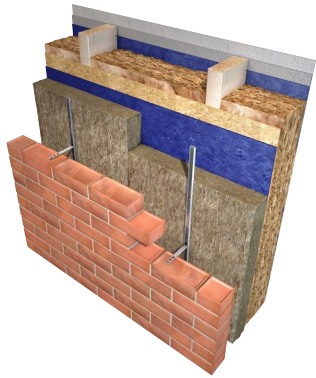
Build on us.

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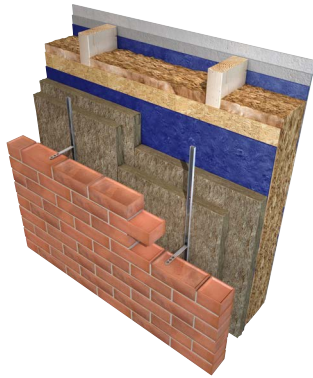
Introduction

This guide sets out the key principles and standards to ensure that construction of RocksilK® RainScreen Cavity Systems are of the highest quality, while real, on-site performance is maximised using the most efficient design.

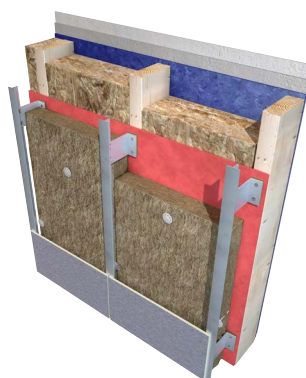




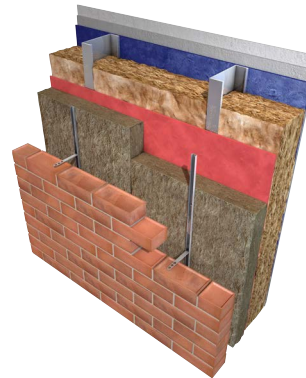
Timber frame - single layer



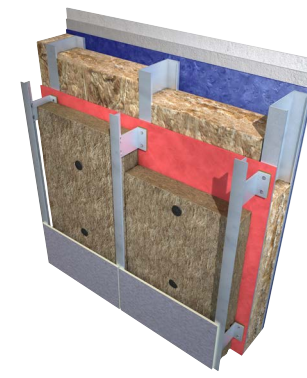
Timber frame - double layer



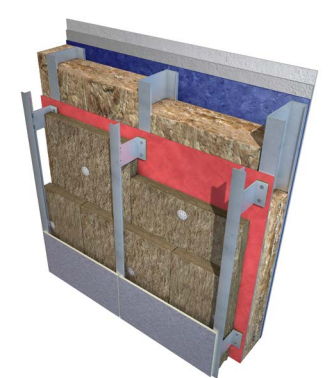
Timber frame with cladding



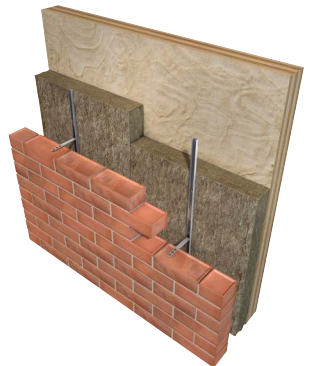
Steel frame with masonry



Steel frame with cladding



Steel frame - double layer



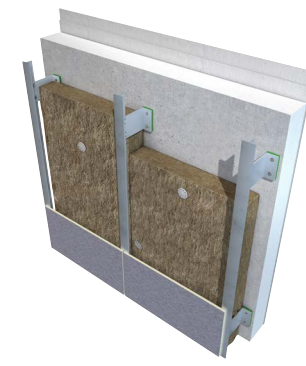
Cross laminated timber with masonry



Cross laminated timber with cladding



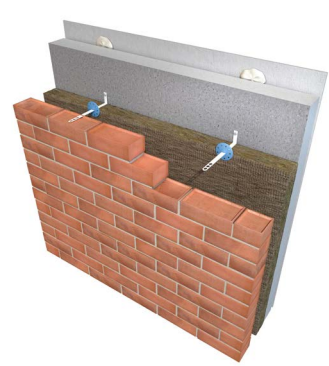
Cross laminated timber with double layer



Reinforced concrete with cladding



Reinforced concrete with masonry

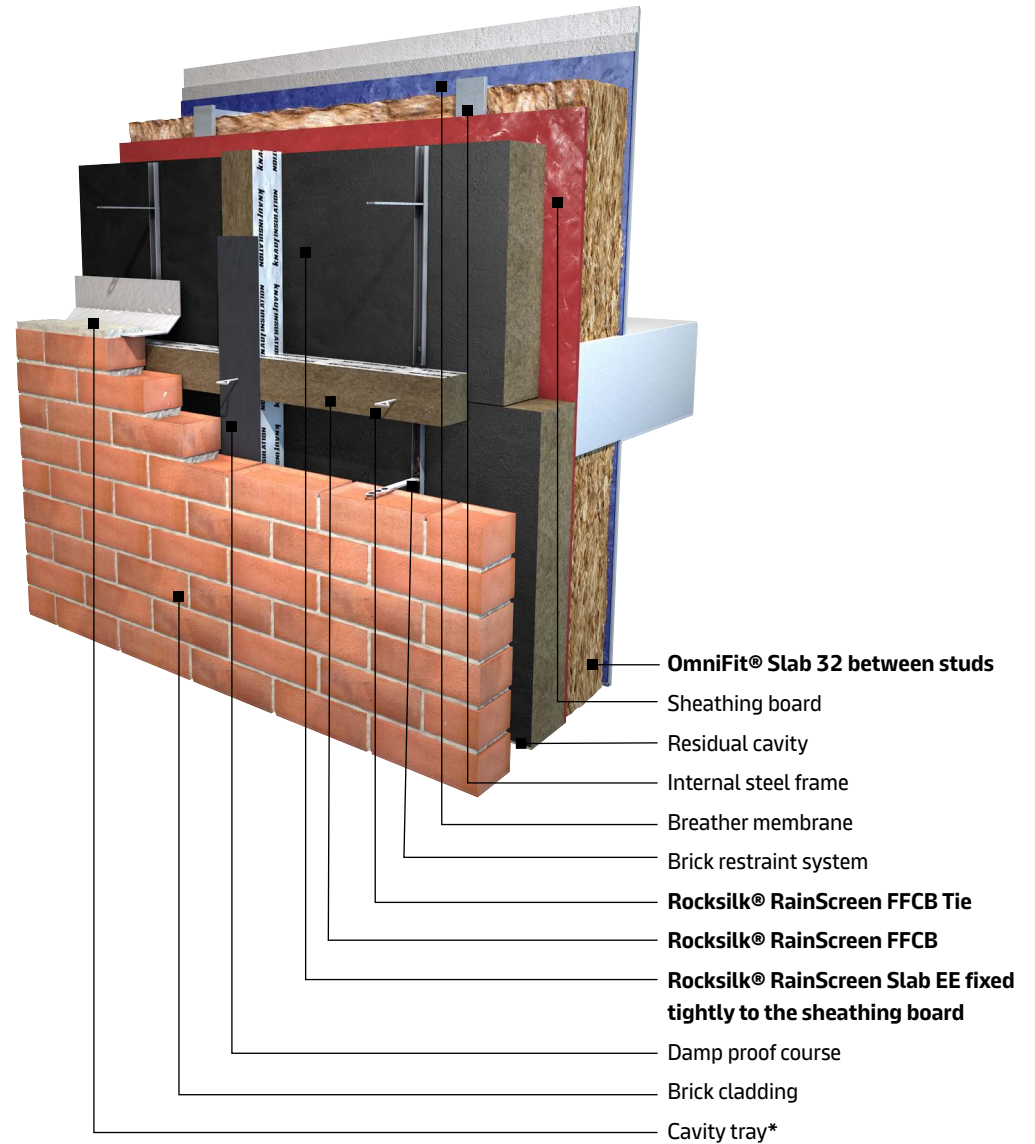
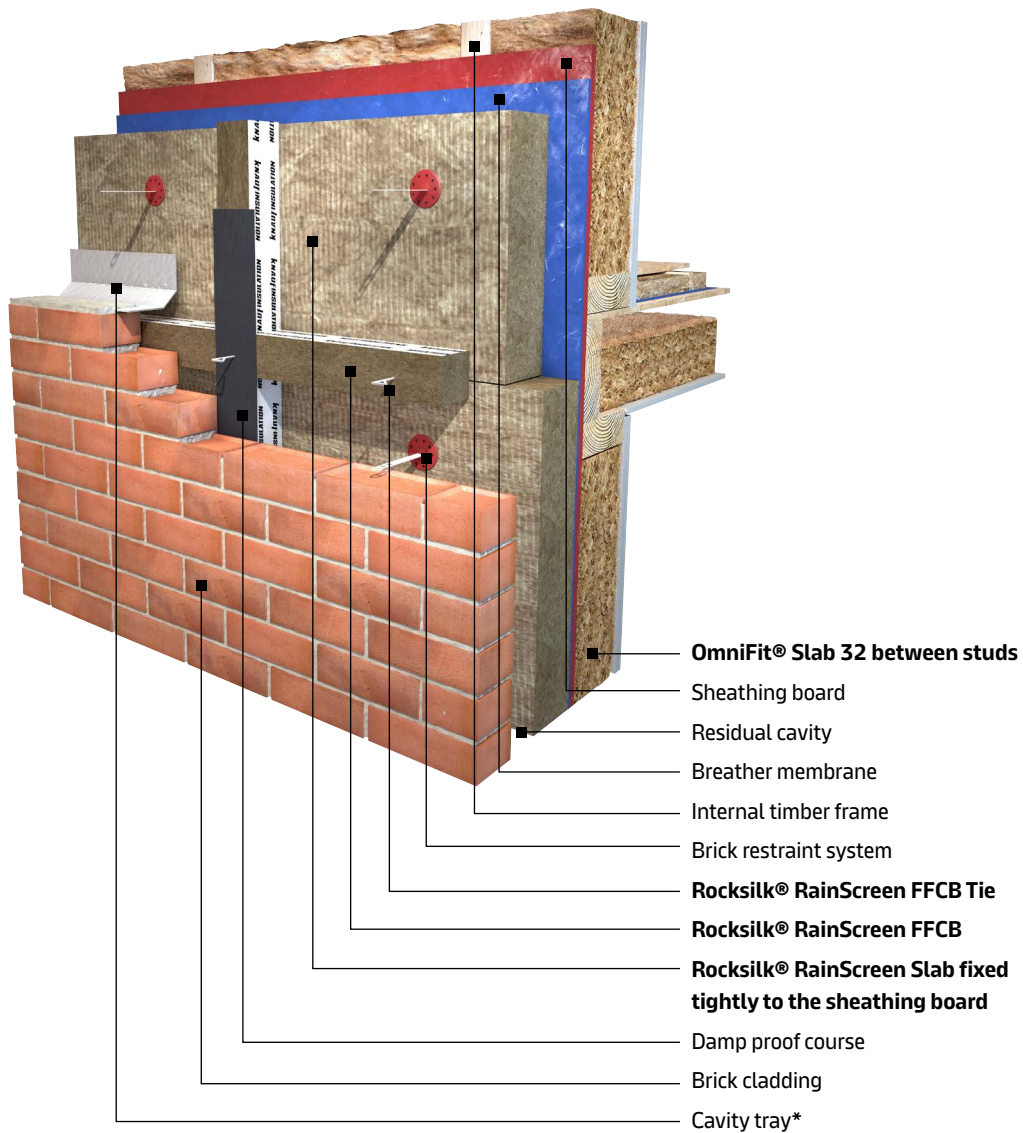


Masonry and masonry

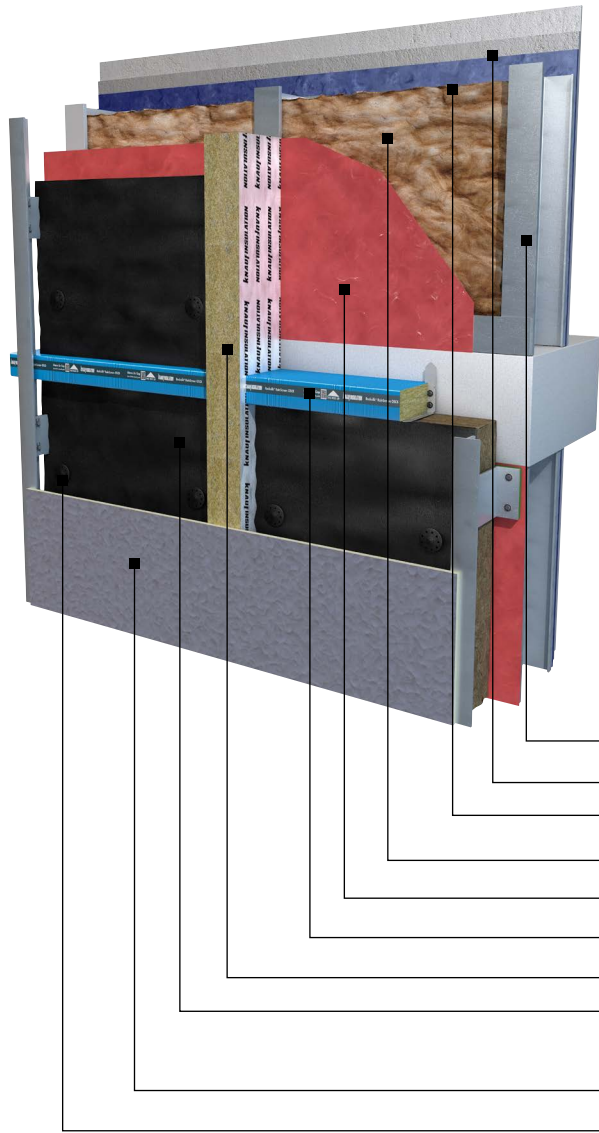
Agrément Certificate from the BBA does not include build-ups using RocksilK® RainScreen Slab EE.

TIMBER FRAME

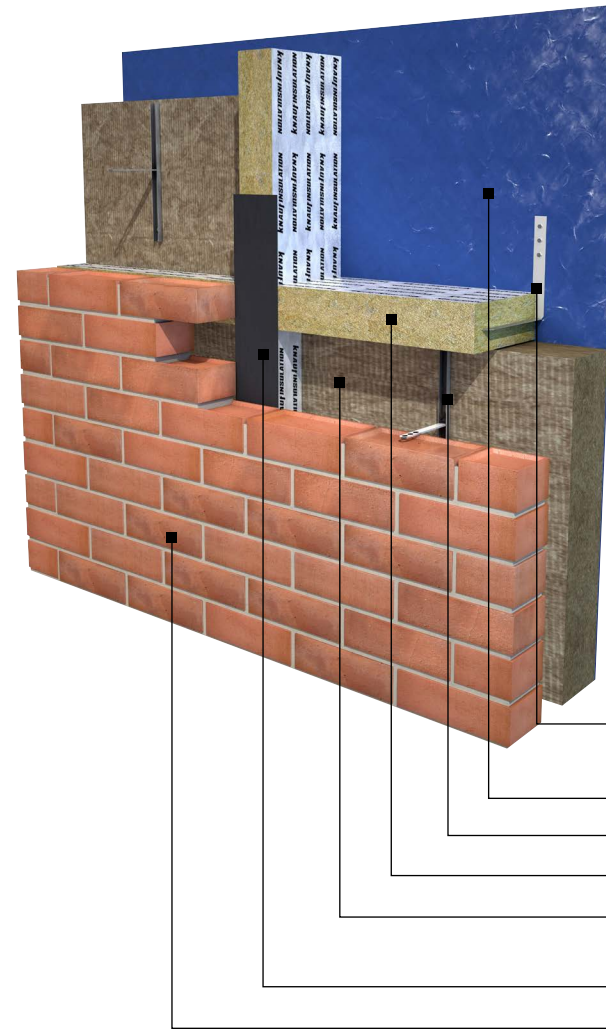
STEEL FRAME



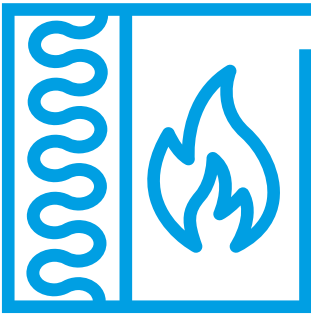
*Cavity trays should be placed above the horizontal Rocksilk® RainScreen FFCB. Ideally this would be a self supporting cavity that does not need fitting back to the inner leaf to ensure continuity of the Rocksilk® RainScreen Slab.



- Internal steel frame
- Two layers of plasterboard
- Breather membrane
- OmniFit® Slab 32**
- Sheathing board
- Rocksilk® RainScreen OSCB**
- Rocksilk® RainScreen FireStop Slab**
- Rocksilk® RainScreen Slab EE fixed tightly to the sheathing board**
- External cladding
- Rocksilk® RainScreen Fixings



- Rocksilk® RainScreen FireStop Slab Fixing Brackets**
- Breather membrane
- Brick restraint system
- Rocksilk® RainScreen FireStop Slab**
- Rocksilk® RainScreen Slab fixed tightly to the sheathing board**
- Damp proof course
- Brick cladding



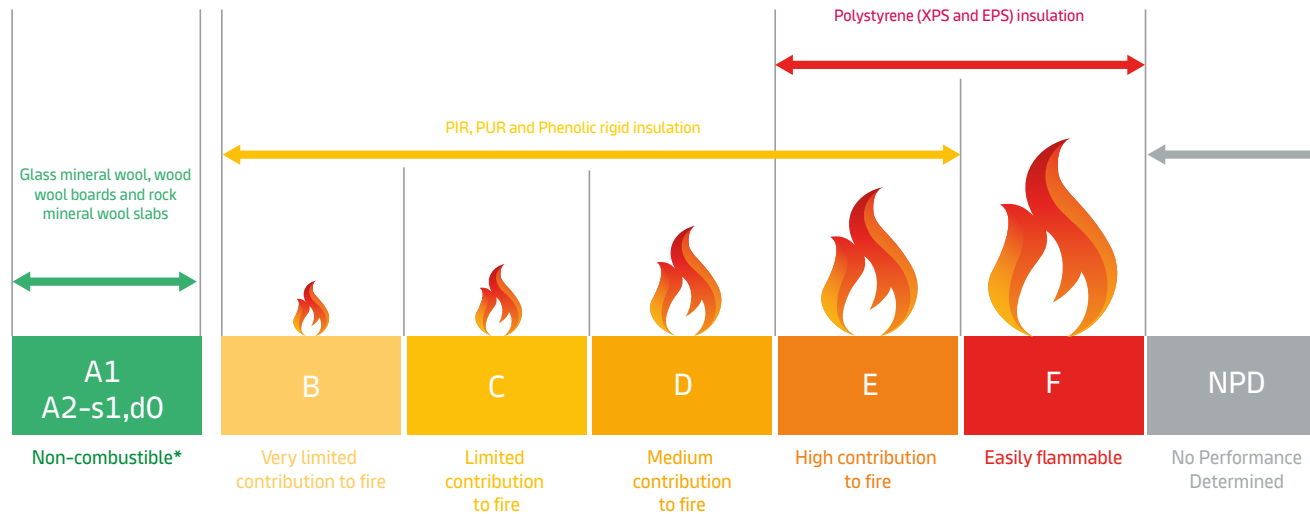
FIRE SAFETY

RocksilK® RainScreen Slabs are non-combustible, A1 or A2-s1,d0 reaction to fire classification in accordance with BS EN 13501.

The product therefore complies with the 2022 amendments to the Building Regulations 2010 and Approved Document B: Fire safety Volume 2 - Buildings other than dwelling houses which limits materials used on relevant buildings to achieve non-combustible class A1 or A2-s1,d0, when tested in accordance with BS EN 13501-1.

Table 12.1 has been extended to cover the use of combustible materials in the external walls of all residential buildings between 11m and 18m in height. The only exception is in cavity walls or external walls where a full-scale fire test to BS 8414-1 or BS 8414-2 has been successfully conducted.

In Scotland, Section 2 of the Scottish Technical Handbook puts a restriction on the type of insulation used on buildings over 11m, which must be non-combustible A1 or A2-s1,d0 on buildings which contain a dwelling, a building used as a place of recreation, a hospital, a care building, sheltered housing or a shared multi-occupancy residential building.



*As set out in changes to the Building Regulations 2010 which bans the use of combustible materials, limiting the use of materials to those that achieve A1 or A2-s1,d0 on buildings in scope of the ban (as defined in regulation 7(4))

Notes: Other classifications of smoke and flaming droplets within A2 are classed as limited combustibility (Not shown here as no insulant falls in that category).
Flames are illustrative only.

NPD = No Performance Determined. In this instance no performance is declared and information regarding reaction to fire performance is unknown.
Illustration for guidance only. It is crucial to check the actual Euroclass reaction to fire classification of a product before use.

Designing and building using non-combustible products offers the greatest confidence in a buildings fire safety. This is because
“Under conditions of a fully developed fire, these [A1 and A2-s1,d0] products will not significantly contribute to the fire load and fire growth.”
 - British Standard BS EN 13501: Fire classification of construction products and building elements.

Performance benefits - RocksilK® RainScreen Slabs

COMPONENTS AFFECTED BY APPROVED DOCUMENT B UPDATE

European classification A1 or A2-s1,d0 non-combustible

OmniFit® Slab 32 between steel studs

Sheathing board

Fixing bracket

Support rail

RocksilK® RainScreen Slab / RocksilK® RainScreen Slab EE

RocksilK® RainScreen Black Plastic Washer

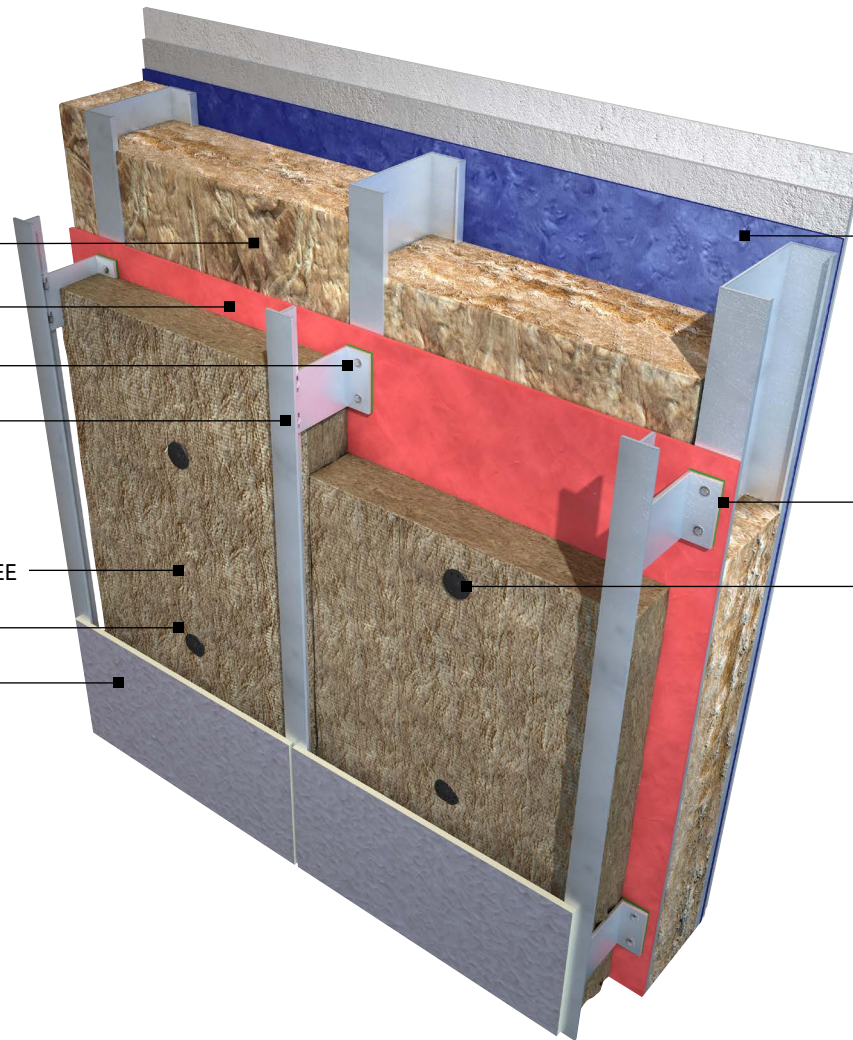
Rainscreen cladding panel

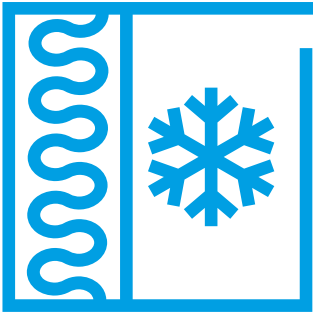
Exclusions

Vapour control layer

Gaskets / Seals

RocksilK® RainScreen Black Plastic Washer



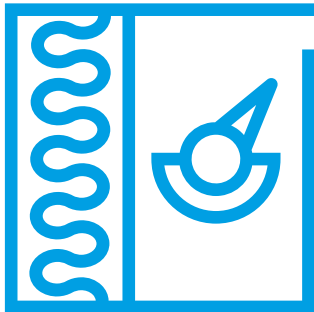


THERMAL PERFORMANCE

RocksilK® RainScreen Slabs are fully CE marked and have a declared thermal conductivity of 0.034W/mK in accordance with BS EN 13162.

The degree of thermal bridging in a rainscreen cladding system significantly influences the U-value, as a result standard methods cannot be used, therefore a complex analysis is required.

Please consult our Technical Services Team for U-value Calculations on 01744 766 666.

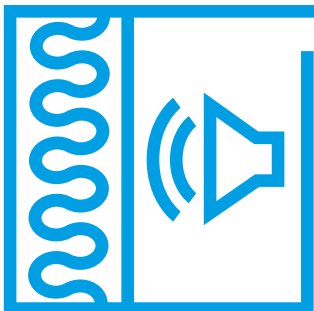


WIND LOADING

RocksilK® RainScreen Slabs have been tested by BRE to BRE digest 346 The assessment of wind loads – Part 7: Wind speeds for serviceability and fatigue assessments, withstanding the applied dynamic wind loading at a maximum design pressure of -3600Pa, or 76m/s as calculated to BS EN 1991 without showing signs of damage or distress, maintaining its structural integrity.

The test was designed to focus the integrity of the insulation slab by fixing into the studs of the light steel framed wall structure that formed the substrate.

For fixing patterns and methodology when installing RocksilK® RainScreen Slabs to defined wind load requirements into differing substrates, please refer to fixing manufacturers and/or manufacturers of substrates to ensure adequate performance is achieved.



ACOUSTIC PERFORMANCE

Acoustic performance is becoming an increasingly important consideration when designing a building due to the increase in urbanisation and, as such, the rise in noise levels around populated areas.

RocksilK® RainScreen Slabs have excellent sound absorbance properties, which contribute towards the acoustic performance of the structure onto which it is mounted.

As sound waves hit the insulation, a fraction of them are reflected, transmitted or absorbed. The random orientation of the fibres in RocksilK® RainScreen Slabs allows for a greater number of sound waves to be absorbed, converting part of the energy into heat energy and transmitting part through the fibres, because the sound waves cannot travel using a direct path from surface to surface.

Achieving high levels of acoustic performance is key to delivering a building in which the occupants can enjoy a comfortable environment, whether that be for working, living or enjoying leisure activities.

The effects of noise are many, its intensity depends on the volume of sound. Noise can cause fatigue, irritation, loss of efficiency and permanent damage to hearing with vulnerable adults and children the most susceptible to its effects.



Standards and certification

RocksilK® RainScreen Slabs* have an Agrément certificate by the BBA under the following certificates for thicknesses from 50mm to 250mm:

- > 19/5609 PS1 for use in rainscreen façade systems on new and existing timber, steel frame, reinforced concrete, masonry walls and cross laminated timber.
- > 19/5609 PS2 for use in new and existing partially filled steel frame, timber frame walls or cross laminated timber with a masonry façade.
- > 19/5609 PS3 for use as partial-fill insulation on new external masonry or reinforced concrete cavity walls.

The certification offers contractors and specifiers confidence that RocksilK® RainScreen Slabs are fit for intended use and will have a life equivalent to that of the wall structure in which they are incorporated, provided that they are stored and installed correctly.

RocksilK® RainScreen Slabs are approved to be used in situations where they bridge the DPCs of the inner and outer leaf.

RocksilK® RainScreen Slabs have a product declaration made in conformity with the requirements of BS EN 13162 and are manufactured in accordance with ISO 50001 Energy Management Systems, ISO 14001 Environmental Management Systems, ISO 45001 Occupational Health and Safety Management Systems and ISO 9001 Quality Management Systems.

All of our mineral wool is made of non-classified fibres and is certified by EUCEB. EUCEB (European Certification Board of Mineral Wool Products - www.euceb.org) is a voluntary initiative by the mineral wool industry. It is an independent certification authority that guarantees that products are made of fibres which comply with the exoneration criteria for carcinogenicity (Note Q) of the Regulation (EC) 1272/2008.

Sustainability

RocksilK® RainScreen Slabs are manufactured with ECOSE® Technology, our unique plant-based binder. It is low-carbon and generates low-VOCs, so it can be used to create better buildings - for occupiers, for installers and for the planet.

ECOSE® provides the proven sustainability performance the industry needs, backed up by extensive testing and certification.

ECOSE® is just one small element of our product proposition, but it makes a big difference.

All our unfaced rock mineral wool products made with ECOSE® Technology have been awarded the Declare 'Red List Free' label. The Declare label is a third-party accreditation and is similar to a food nutrition label but for building products; it is a straightforward ingredient list and allows product transparency disclosure because it identifies where a product comes from and what it is made of. Declare 'Red List Free' certifies that there is no harmful chemical from the red list in these products.

Our rock mineral wool is manufactured using around 35% recycled content (recycled material mostly from the steel industry along with customer production waste).

RocksilK® RainScreen Slabs contain no ozone-depleting substances or greenhouse gases. The overall environmental performance of our products is reported in their EPDs (Environmental Product Declarations), in accordance to ISO 14025, ISO 21930, EN 15804 +A2.

EPDs are available to download on our website for relevant products.

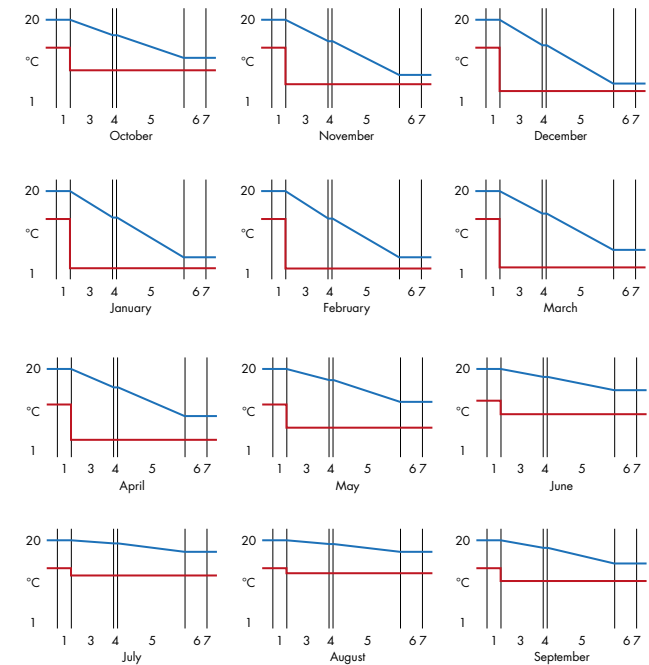
We have received the BES6001 'Very Good' rating for our three manufacturing plants, which proves that our products are made with constituent materials that are responsibly sourced.

CCPI Assessed

RocksilK® RainScreen Slabs carry the CCPI mark, helping to provide assurance to product users that the product information for these products is clear, accurate, accessible, up-to-date and unambiguous. The CCPI is playing a pivotal role in driving up standards in product information as the construction industry adapts to a new and improved building safety regime.

*Agrément Certificate from the BBA does not include RocksilK® RainScreen Slab EE.

Temperature and dewpoint profiles



Temperature — Dewpoint profiles —

Description: Rsi, Plasterboard 2 x 15mm, Vapour control layer, OmniFit® Slab 35/LSF, Cement bonded particle board, RocksilK® RainScreen Slab, Cavity Ventilation, Rainscreen Cladding, Rse



Performance benefits - RocksilK® RainScreen Slabs

Real performance

Glass and rock mineral wool are easier to install correctly than other insulants, such as rigid boards, because they adapt to any slight imperfections in the substrate and knit together, eliminating any air gaps. Mineral wool is engineered to adapt to any imperfections, and any settlement/movement over time, so it maintains close contact and preserves thermal performance for the life of the building.

Evidence shows the absence of air gaps is crucial to achieving real performance in the relevant application. Any insulation material that doesn't deliver 'as-built' thermal performance is failing in its primary purpose, and therefore presents an unnecessary risk as the construction industry seeks to close the performance gap.

Workability

RocksilK® RainScreen Slabs have been designed for ease of handling and compatibility with a wide range of cladding systems. The design of the product provides flexibility whilst allowing for minor imperfections in the surface of the substrate, yet maintaining the required rigidity that allows for minimal fixings.

Interstitial condensation

RocksilK® RainScreen Slabs can aid with the prevention of interstitial condensation due to its low vapour resistivity. Our Technical Services Team can provide condensation analyses for various construction types in accordance with BS 5250:2011 +A1:2016 and BS EN ISO 13788:2012.

Moisture

RocksilK® RainScreen Slabs are manufactured with a water-repellent additive meaning they will not transmit water to the external wall structure. The physical and chemical characteristics of the fibres are unaltered by wetting. Therefore, the thermal properties of RocksilK® RainScreen Slabs are not affected by exposure to moisture and the product will perform as expected once dry and undamaged.

Handling & Storage

RocksilK® RainScreen Slabs should be stored properly and handled in such a way as to ensure that the product remains clean and undamaged. The shrink-wrapped pallets used for the supply of RocksilK® RainScreen Slabs are designed for short-term protection only. For longer term protection on site, the products should either be stored indoors or under cover and off the ground. RocksilK® RainScreen Slabs should not be left permanently exposed to the elements.

If the main hood is removed or damaged, the remaining packs should be kept under cover indoors or protected from the elements by a weatherproof cover. In coastal locations where weather is more extreme and bird damage is more common, use additional covering or store indoors. The products must be protected from prolonged exposure to sunlight, and stored dry and flat.

RocksilK® RainScreen Slabs are light and easy to handle; care should be exercised to avoid crushing their edges or corners. If damaged, the products should be discarded. Damaged, contaminated or wet products must not be used.

During construction exposed areas of slabs should always be covered at the end of a day's work or in heavy rain. Polyethylene covers should be used to provide protection and prevent work from becoming saturated.



Weather resistance - Rocksilk® RainScreen Slabs

Rocksilk® RainScreen Slabs are produced using a water repellent additive to improve its ability to resist water uptake.

Coupled with a fibre matrix that promotes the run off of water, this ensures that the slab will resist moisture ingress whilst maintaining its vapour permeability.

Should Rocksilk® RainScreen Slabs be exposed to very high levels of moisture or wetting it will dry out; the rate of drying is dependent on ventilation, air movement and temperature difference. In a ventilated construction such as rainscreen cladding, the rate of drying will be high in winter because there will be a relatively steep thermal gradient from inside to out and in summer because of natural convection and ventilation through the rainscreen system.

The physical characteristics of the fibres are unaltered by wetting. Therefore, the thermal properties of Rocksilk® RainScreen Slabs are not affected by exposure to moisture and the product will perform as expected once it has dried out.

Exposure to the elements

Rocksilk® RainScreen Slab should be covered up with the cladding as work proceeds on the basis of an advancing front. However, due to variances in climate, season, orientation and geographical location it is not possible to state a definitive timescale to exposure.

Rocksilk® RainScreen Slab EE is manufactured with a specially designed water repellent black tissue face that provides additional protection to the insulation during construction.

Use Below DPCs

Rocksilk® RainScreen Slab does not absorb water by capillary action and may therefore be used in situations where it bridges the dpc's of the inner and outer leaf as referenced within it's agrément certificate by the BBA.

Warranty providers may have their own policy on this so please consult the relevant warranty provider before commencing work.

Residual Cavity Widths

The residual cavity width between the outer leaf/cladding and the insulation is determined by the system designer based on system and site specific requirements. The following are considered to be minimum vales:

- 50mm masonry outer leaf and open rainscreen
- 38mm baffled or labyrinth rainscreen
- 25mm closed rainscreen



Perforated panels and breather membranes

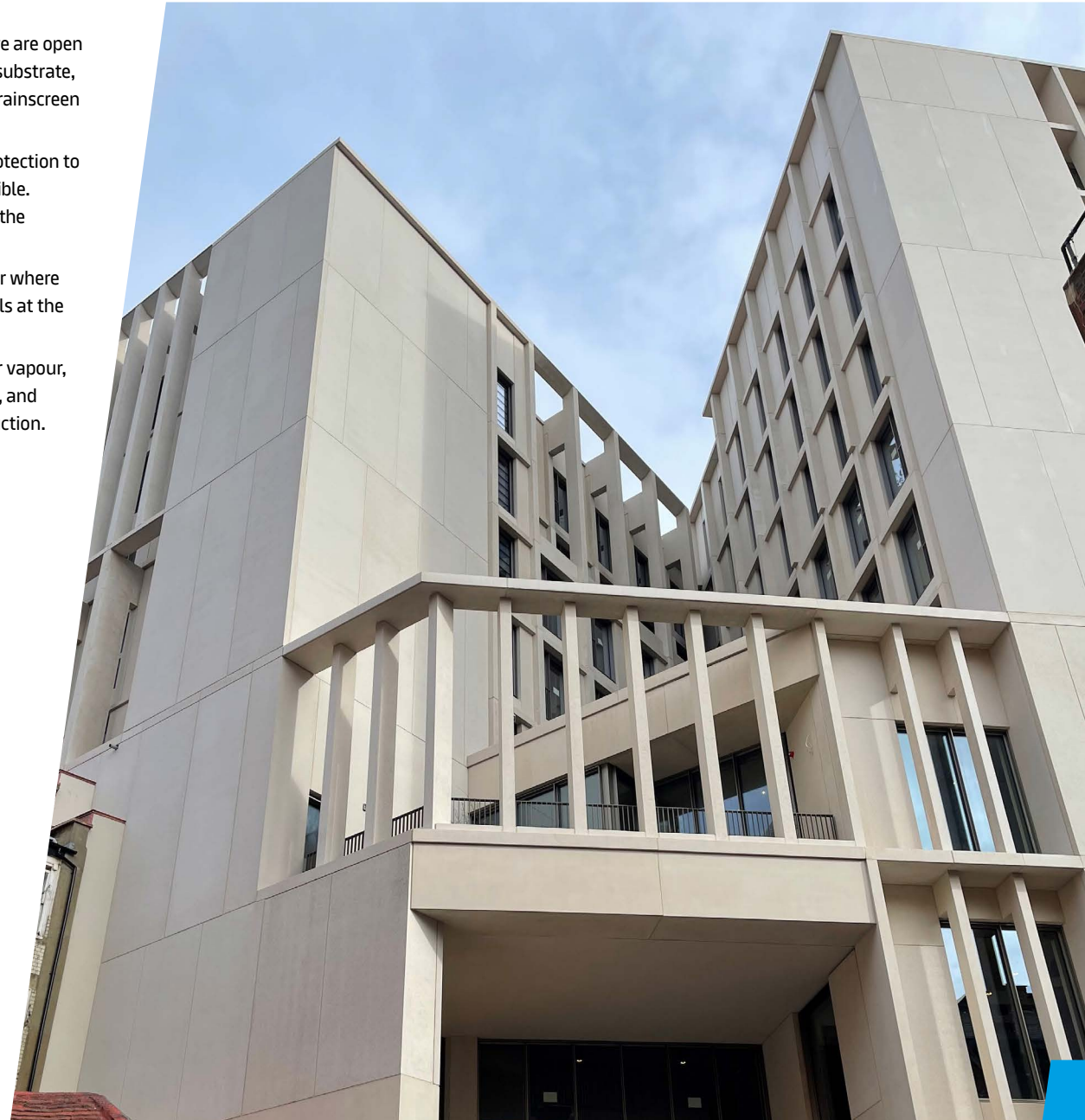
Rocksilk® RainScreen Slab EE may be used behind perforated rainscreen panels and where there are open joints in the cladding. Since Rocksilk® RainScreen Slab EE is installed directly to the sheathing substrate, it forms a part of the wall structure and therefore any cladding must still act as a weather tight rainscreen system, shielding the wall from direct wind and rain.

Rocksilk® RainScreen Slab EE has a water repellent black tissue face that provides exposure protection to the insulation during construction and provides an aesthetic solution where the insulation is visible.

Rocksilk® RainScreen Fixings are black stainless steel and plastic fixings designed to compliment the aesthetics of Rocksilk® RainScreen Slab EE when used in such applications.

If you are considering specifying Rocksilk® RainScreen Slab EE for use with perforated panels, or where there are open joints in the cladding, please contact our Technical Services Team using the details at the bottom of the page or at knaufinsulation.co.uk/contact-tst.

A breather membrane is a layer within the construction that allows the passage of air and water vapour, but is resistant to the passage of liquid water. A breather membrane is often installed in front of, and installed to, the sheathing board to protect the superstructure from moisture ingress on construction.



What are cavity barriers?

According to Approved Document B, a **“cavity fire barrier”** is a construction, other than a smoke curtain, provided to close a concealed space against penetration of smoke or flame, or restrict the movement of smoke or flame within such a space.

“Cavity fire barriers” create a complete seal between different areas of a building and, without them, fire and smoke can spread up to ten times faster.

Cavity barriers help to ‘compartmentalise’ a building, particularly in party walls or between floors in blocks of flats or multi-occupancy buildings.

Requirements

Building Regulations Requirement

The Building Regulations 2018 (England) and The Building (Wales) Regulations 2019 extended the definition of an external wall to clarify that this now includes **“any decorative or other finish applied to an external wall.”**

Cavity barriers are covered by functional requirement in;

- > England and Wales; Approved Document B requirement B3(4) of the Building Regulations
- > Scotland; Building Standards Technical Handbook (2.4.1)
- > Northern Ireland; Technical Booklet E (4.36)
- > Republic of Ireland; Technical Guidance Document B (3)

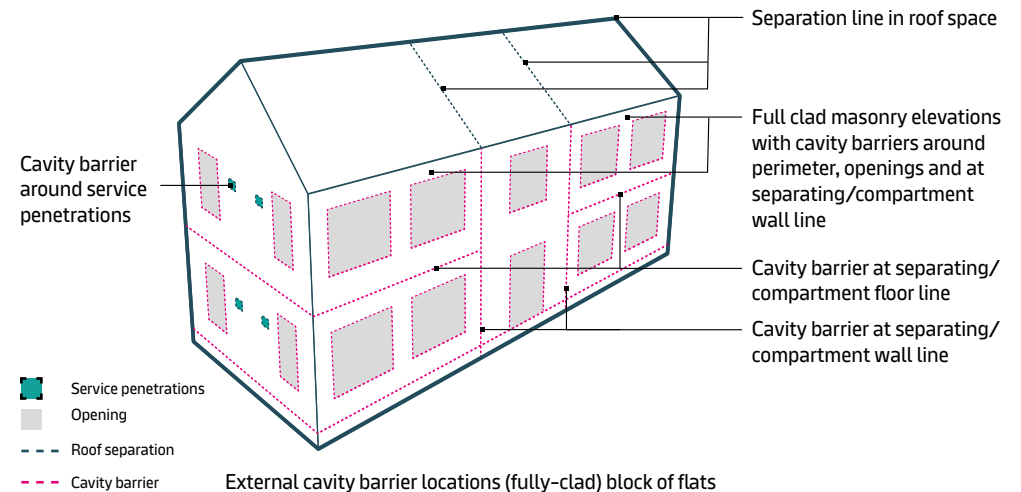
In each case, the designer should consult the latest or applicable version of the above documents in order to determine the correct placement and minimum performance requirement stipulated in the relevant region.

NHBC Warranty Requirements

Cavity barriers in external masonry walls shall be provided:

- > at the edges of cavities, including around openings e.g. windows and doors;
- > where the cavity abuts compartment walls and floors;
- > where to break up extensive cavities which could act as a route for fire spread.

Cavity barriers need to achieve a minimum of 30 minutes fire resistance (E30 and I15).



Rocksilk® RainScreen FFCB

Rocksilk® RainScreen FFCB is a patented cavity barrier made from rock mineral wool, that is designed to be face-fixed to Rocksilk® RainScreen Slab as the masonry façade is constructed. It is part of a system with Rocksilk® RainScreen Slabs that provide fire resistance for up to 90 minutes integrity and insulation (EI90). It is non-combustible with the best possible Euroclass A1 reaction to fire classification, and is manufactured using our unique bio-based binder, ECOSE® Technology.

Use with Rocksilk® RainScreen Slabs

Rocksilk® RainScreen FFCB has been tested solely and in conjunction with Rocksilk® RainScreen Slab and Rocksilk® RainScreen Slab EE. In this system the Rocksilk® RainScreen Slabs form a part of the cavity barrier system and so the Rocksilk® RainScreen FFCB can not be used with any other type of form of sheathing insulation.

Components

The components of the tested system supplied by Knauf Insulation comprises of the Rocksilk® RainScreen FFCB, the Rocksilk® RainScreen FFCB Tie and the suitable variant of Rocksilk® RainScreen Slab. The components need to be installed in a specific way for the system to achieve the specified performance.

Rocksilk® RainScreen Slabs - are normally installed prior to the outer leaf being constructed and the cavity barrier being installed. A good installation of the Rocksilk® RainScreen Slabs is necessary for the system performance, critically important is that the slab is held securely to and in full contact with the inner leaf by the brick restraint channels and / or by separate insulation fixings as per our installation guides.

Rocksilk® RainScreen FFCB - should be installed at the positions specified by the architect or designer, normally coincident with the horizontal and vertical compartments. The barriers are installed with gentle compression by the masonry outer leaf and held in position by the Rocksilk® RainScreen FFCB Support fixing. The masonry outer leaf forms the rigid construction that the Rocksilk® RainScreen FFCB bears upon.

Rocksilk® RainScreen FFCB Ties - are supplied in the box with the cavity barrier. They should be installed such that they are pushed through the barrier to the sheathing board and rest on the outer leaf. This mechanical fixing further helps to hold the barrier in position whilst the next courses of masonry outer leaf are built up. For vertical applications the Rocksilk® RainScreen FFCB Support Fixings can be used to temporarily hold the Rocksilk® RainScreen FFCB in place and the position of the fixing then adjusted to the brickwork courses.

Additional components as specified by designers and not supplied by Knauf Insulation

Cavity Trays - Rocksilk® RainScreen FFCB does not negate the need for cavity trays. These should be installed immediately above the horizontal Rocksilk® RainScreen FFCB to stop moisture pooling on the top of the foil face. Ideally self-supporting trays which do not require to be supported on the inner leaf.

DPCs - A Damp Proof Course should be installed between the outer leaf of masonry and the vertical barrier.

Brick tie channels - Brick tie channels should not run behind the Rocksilk® RainScreen FFCB, as a neat seal between the barrier and Rocksilk® RainScreen Slabs is critical to achieve the stated periods of fire resistance. It is also imperative to ensure than other ancillary items situated around the slab edge areas do not penetrate the barrier.

Standards and certification

Rocksilk® RainScreen FFCB has been tested in accordance with EN 1366-4, using guidance from TR31.

Rocksilk® RainScreen FFCB has been classified to EN 13501-2 by UL International (UK) Ltd under certificate number 4790643767 which can be summarised in the table below:

Table of Performance

Residual Cavity Width (mm)	Orientation	Classification		Rocksilk® RainScreen Slab thickness (mm)	Rocksilk® RainScreen FFCB depth (mm)
		Integrity (E)	Insulation (I)		
Max. 50	Vertical & Horizontal	60	30	Min. 50	Min. 100
Max. 50	Vertical & Horizontal	60	60	50	Min. 100
Max. 110	Vertical & Horizontal	90	90	Min. 100	Min. 200

Moisture Resistance

The physical and chemical characteristics of the fibres are unaltered by wetting. Therefore, the thermal properties of Rocksilk® RainScreen FFCB are not affected by exposure to moisture and the product will perform as expected once dry and undamaged.

Cavity trays

Rocksilk® RainScreen FFCB does not act as a cavity tray. Cavity trays should be installed above the barriers in the course of brickwork, directly above the barriers so that moisture does not accumulate on the top of the barrier. Ideally, a self-supporting cavity tray should be used that does not interfere with the Rocksilk® RainScreen Slabs during installation.

Masonry supports

Rocksilk® RainScreen FFCB has been tested for use with masonry support brackets using a 100mm and 150mm deep barrier. 100mm deep Rocksilk® RainScreen FFCB achieves 15 minutes insulation and 30 minutes integrity against a timber / steel frame or a masonry / concrete inner leaf, while 150mm deep Rocksilk® RainScreen FFCB achieves 30 minutes insulation and 30 minutes integrity.

Rocksilk® RainScreen OSCB

Rocksilk® RainScreen OSCBs are horizontal cavity barriers manufactured from rock mineral wool, shrink wrapped with a reactive intumescent strip, for use in ventilated cavities up to 450mm. They form part of a tested system with Rocksilk® RainScreen Slabs which provides fire resistance for up to 120 minutes integrity and 120 minutes insulation (EI120).

Application

Rocksilk® RainScreen OSCBs are used as horizontal open state cavity barriers in buildings with ventilated cavities. Rocksilk® RainScreen OSCBs contain a reactive intumescent strip which allows ventilation and drainage in a rainscreen cavity. The strip will expand in the event of a fire to fully seal the cavity providing fire resistance, preventing passage of smoke and flames.

Rocksilk® RainScreen OSCBs are also recommended for use against a steel, timber, masonry or reinforced concrete inner leaf where the construction has a ventilated cavity.

Rocksilk® RainScreen OSCBs should be partnered with Rocksilk® RainScreen FireStop Slab which is installed vertically, and Rocksilk® RainScreen Slab or Rocksilk® RainScreen Slab EE for a complete rainscreen cavity system.

Use with Rocksilk® RainScreen Slabs

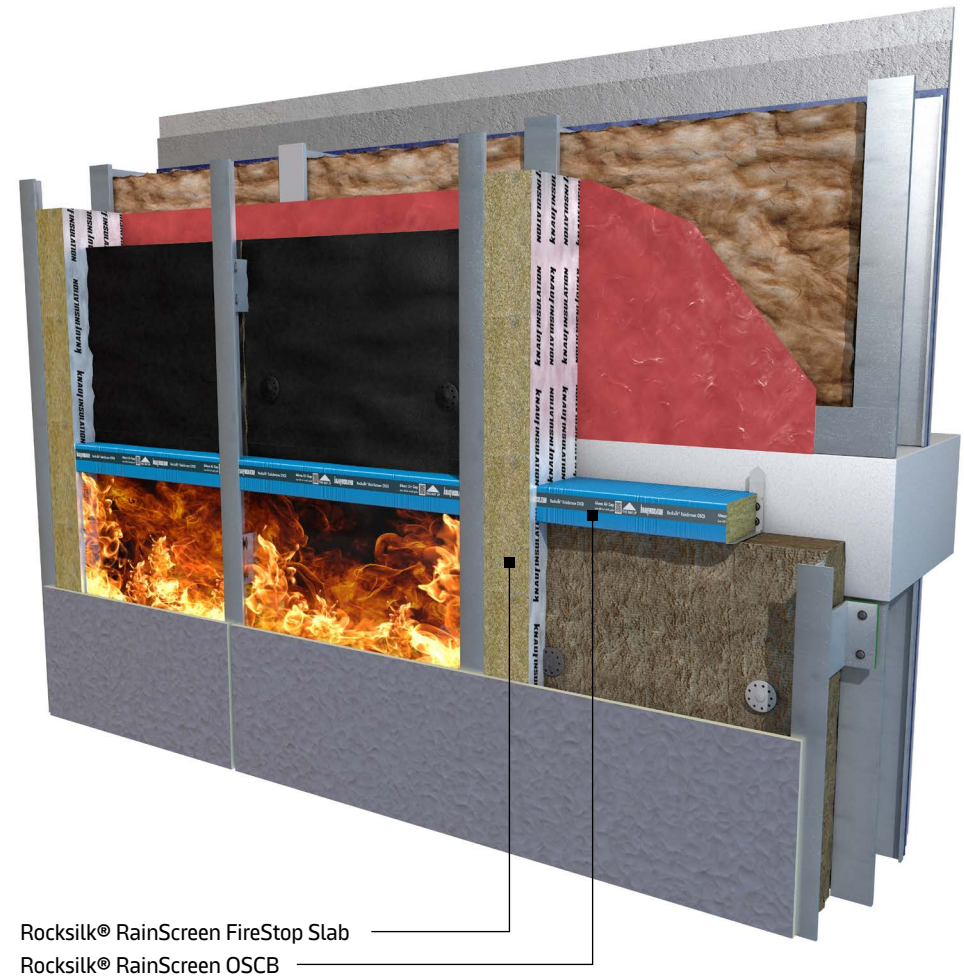
Rocksilk® RainScreen OSCBs have been tested solely and in conjunction with Rocksilk® RainScreen Slabs, and therefore Rocksilk® RainScreen OSCBs cannot be used with any other type of sheathing insulation.

Standards and Certification

Rocksilk® RainScreen OSCBs have been specifically tested and assessed when used in conjunction with Rocksilk® RainScreen Slabs, therefore should only be used where Rocksilk® RainScreen Slabs are used as the sheathing insulation in the residual cavity. Rocksilk® RainScreen OSCBs have been tested to “ASFP Technical Guidance Document 19: Fire Resistance Test For Open State Cavity Barriers Used In The Envelope Or Fabric Of Buildings” and have been assessed by KIWA Fire Safety (KFS) under KFS Report PAR/24872/01. Rocksilk® RainScreen OSCBs are third party certified by IFC Certification Ltd (KIWA) under certificate number IFCC1939.

Table of performance

Product	Cavity widths (mm)	Fire performance (mins)	
		Integrity (E)	Insulation (I)
Rocksilk® RainScreen OSCB25	100-450	90	90
Rocksilk® RainScreen OSCB25 Plus	100-450	120	120
Rocksilk® RainScreen OSCB44	100-450	120	90



Rocksilk® RainScreen FireStop Slab

Rocksilk® RainScreen FireStop Slab is a cavity barrier manufactured from rock mineral wool, suitable for use as a vertical cavity barrier in buildings with a ventilated cavity, and vertically and horizontally in buildings with masonry façades.

It is part of a tested system with Rocksilk® RainScreen Slabs that provides fire resistance for up to 180 minutes integrity and 45 minutes insulation (E180 I45).

Application

Rocksilk® RainScreen FireStop Slab is used as vertical open state cavity barriers in buildings with ventilated cavities or as a horizontal and vertical cavity barrier in closed state cavities to provide fire resistance between compartments, floor levels and cavity openings such as windows or doors. It is suitable for use in partially filled masonry cavities where the inner leaf is concrete/masonry/steel or timber frame.

Rocksilk® RainScreen FireStop Slab is recommended for use against a steel, timber, masonry inner or reinforced concrete inner leaf where the construction has a ventilated cavity. Rocksilk® RainScreen FireStop Slab should be partnered with Rocksilk® RainScreen OSCBs which are installed horizontally, and Rocksilk® RainScreen Slabs for a complete rainscreen cavity system for open state cavities.

Rocksilk® RainScreen FireStop Slab should be partnered with Rocksilk® RainScreen Slab or Rocksilk® RainScreen Slab EE for a complete rainscreen cavity system for closed state cavities.

Use with Rocksilk® RainScreen Slabs

Rocksilk® RainScreen FireStop Slab has been tested solely and in conjunction with Rocksilk® RainScreen Slabs, and so Rocksilk® RainScreen FireStop Slab cannot be used with any other type of sheathing insulation.

Standards and Certification

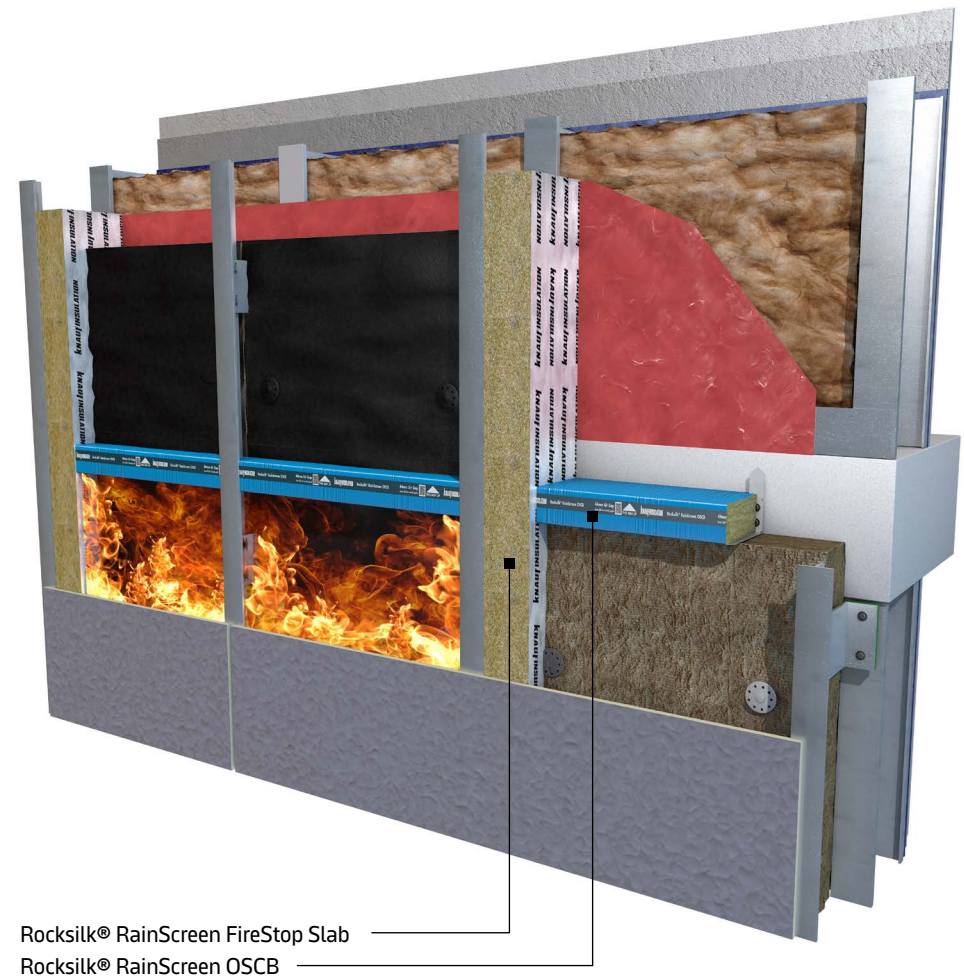
Rocksilk® RainScreen FireStop Slab has been specifically tested and assessed when used in conjunction with Rocksilk® RainScreen Slabs, therefore should only be used where Rocksilk® RainScreen Slabs are used as the sheathing insulation in the residual cavity. Rocksilk® RainScreen FireStop Slab has been tested to BS EN 1366-4 and is third party certified by IFC Certification Ltd (KIWA) under certificate number IFCC 1940.

Table of performance

	Substrates	Cavity widths (mm)	Fire performance (mins)	
			Integrity (E)	Insulation (I)
Vertical	CP Board	50-450mm	120	45
	Masonry	50-300mm	180	45
Horizontal	CP Board	50-450mm	120	45
	Masonry	50-300mm	180	45

Cavity Trays

Rocksilk® RainScreen FireStop Slab does not act as a cavity tray. Cavity trays should be installed above the barriers in the course of brickwork, directly above the barriers so that moisture does not accumulate on the top of the barrier.



Rocksilk® RainScreen Fixings

Rocksilk® RainScreen Fixings are designed for installing Rocksilk® RainScreen Slab and Rocksilk® RainScreen Slab EE onto steel or timber framed constructions.

The black plastic and metal washers are designed to match the colour of the facing on Rocksilk® RainScreen Slab EE.

Rocksilk® RainScreen Slab EE Tape

Rocksilk® RainScreen Slab EE is manufactured with a special water repellent black tissue face that is designed to provide protection to the insulation from the elements during construction. To further protect the slabs, Rocksilk® RainScreen Slab EE Tape can be used to seal slab joints, or where the slabs meet other construction elements.

This provides another layer of defence against water ingress during and after construction.



Insulation thickness (mm)	Thickness plus sheathing board (mm)	Screw length (mm)	Centre washer	Perimeter washer
50mm	62	110	Stainless steel	Polypropylene
60mm	72	110	Stainless steel	Polypropylene
70mm	82	110	Stainless steel	Polypropylene
75mm	87	110	Stainless steel	Polypropylene
80mm	92	130	Stainless steel	Polypropylene
90mm	102	130	Stainless steel	Polypropylene
100mm	112	150	Stainless steel	Polypropylene
110mm	122	150	Stainless steel	Polypropylene
120mm	132	180	Stainless steel	Polypropylene
125mm	137	180	Stainless steel	Polypropylene
130mm	142	180	Stainless steel	Polypropylene
140mm	152	180	Stainless steel	Polypropylene
150mm	162	225	Stainless steel	Polypropylene
155mm	167	225	Stainless steel	Polypropylene
160mm	172	225	Stainless steel	Polypropylene
165mm	177	225	Stainless steel	Polypropylene
170mm	182	225	Stainless steel	Polypropylene
180mm	192	225	Stainless steel	Polypropylene
190mm	202	225	Stainless steel	Polypropylene
200mm	212	275	Stainless steel	Polypropylene
210mm	222	275	Stainless steel	Polypropylene
220mm	232	275	Stainless steel	Polypropylene
230mm	242	275	Stainless steel	Polypropylene
240mm	252	275	Stainless steel	Polypropylene
250mm	262	330	Stainless steel	Polypropylene
260mm	272	330	Stainless steel	Polypropylene
270mm	282	330	Stainless steel	Polypropylene
280mm	292	330	Stainless steel	Polypropylene
290mm	302	330	Stainless steel	Polypropylene

U-value calculations

We offer free three dimensional (3D) finite element heat loss calculations to comply with Building Regulations.

The software gives us the ability to calculate two and three dimensional heat flows through construction elements, resulting in exact thickness recommendations in order to meet specific U-value requirements.

The calculations are carried out in accordance with building regulations, using a finite element analysis computer program, which is fully compatible with BS EN ISO 10211:2017 - *Thermal bridging in building construction - heat flows and surface temperatures Part 1*.

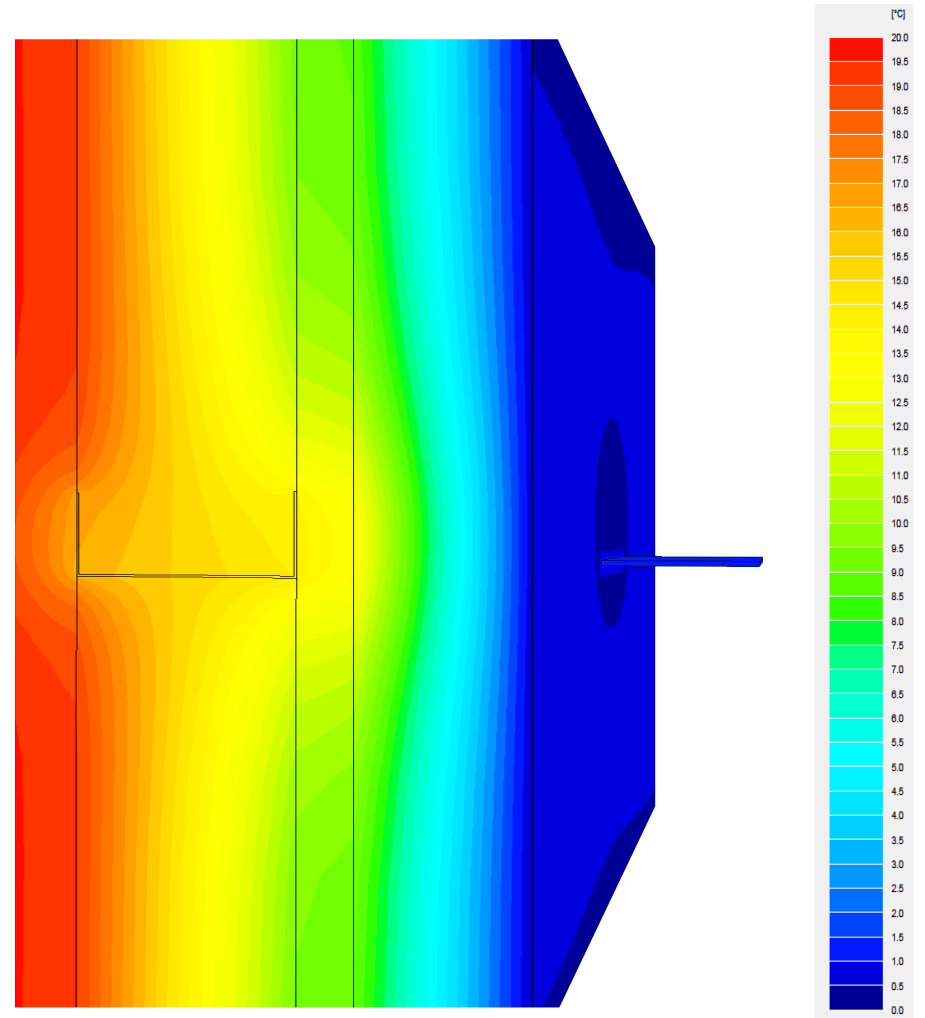
U-value Calculations using 3D modelling software

There are several options for calculating U-values in rainscreen applications. If these are only marginally inaccurate, it can have a significant effect on the overall U-value of a wall and therefore the thermal performance of an overall building. The most accurate method of calculating U-values is using a 3D calculation as offered by our Technical Services Team.

BR443 Conventions for U-value Calculations (section 4.9.5) make specific mention to the correct calculation of U-values for rainscreen cladding systems. Designers should take care and consider the best approach in each situation to ensure that as-built performance is optimised by using a suitable method. Fixing point loss corrections for brackets and rails or top hats are unique to each through wall build-up and should take into account calculations to allow for both point (CHI) and Linear (Psi) thermal losses where applicable by calculating to BS EN 10211. Our Technical Services Team can provide calculations to BS EN 10211 and help to ensure that due diligence has been taken when calculating U-values in rainscreen cladding systems.

For any U-value Calculations for alternative construction build-ups, please contact our Technical Services Team on 01744 766 666.

For written U-value Calculations, please email details of your full through construction build-up to technical.uk@knaufinsulation.com and we will respond accordingly to meet your requirements.



Our online U-value calculator can assist with giving you indicative U-value calculations for a range of applications and build-ups. With the functionality to build your own or start by looking at typical solutions, we can provide you with recommended products and build-ups to meet your requirements. Our calculator follows the methodology of BRE calculations, in accordance with BS EN ISO 6946 and conventions given in BR443.

<https://tools.knaufinsulation.com/en-GB/tools/u-value-insulation-calculator>

Mechanical damage

If mineral wool insulation is subject to mechanical damage, where the overall physical dimensions of the product are changed, then the thermal performance of the product may be altered. If the product thickness is reduced then the thermal resistance will be reduced proportionally to the reduction in thickness.

If the product is damaged at edges and corners so that the slabs are no longer able to be tightly butted up to each other (with all joints closed), then the thermal performance of the system will be affected due to increased heat loss in these areas. This sort of physical damage could occur due to exposure to very high winds and resulting suction forces or transportation of debris, water jetting or high water flow rates typically from a gutter or an unintended drainage point. This sort of physical alteration could occur in all thermal insulation products under such conditions.

It is good practice to examine the insulation prior to the installation of the rainscreen cladding, particularly if any product has been left exposed. This can be done by inspection in order to ensure that no damage has occurred in the time between the installation of the insulation and the weatherproof cladding. After extreme weather events, it is recommended that all materials making up the system should be inspected.

Experienced installers

There is no formal British or European test method demonstrating a particular class of weather resistance of a rainscreen product. It is therefore valid for the installer to refer to his own experience of installing products in conjunction with the system manufacturer's recommended build sequence for the system under construction or consideration. A suitable way forward is to check the physical condition of the insulation immediately prior to the installation of the rainscreen cladding and undertake any necessary repairs.

Packaging

Individual packs of Rocksilk® RainScreen Slab are compression-packed together to form a durable, weatherproof, recyclable unit that eliminates the need for internal storage and allows ease of transportation and delivery. Once the pallet is split, the packs should be stored off the ground and under cover to protect them from the elements.



School of Digital Arts (SODA), Manchester Metropolitan University

Entering a building is usually the only way to find out what takes place inside. But that's not the case with the Manchester Metropolitan University's new School of Digital Arts (SODA). It acts as a giant canvas to illuminate digital content produced by students, thanks to an LED rainscreen façade on its northern face.

The five-storey, 5,200m² SODA building is adjacent to the Manchester School of Art and will provide space for a digital innovation and User Experience (UX) lab, film studios, green screens, edit suites, sound, music and production studios; alongside a screening room and gallery space.

Like all rainscreen façade projects, the SODA building needed insulation to meet the required thermal, fire safety and acoustic performance, but the LED façade added complexity to the specification. The chosen rainscreen panels were perforated with small holes to allow the lights to shine through – but this also meant the insulation could be seen from certain angles, so the insulation needed to look aesthetically pleasing too.

During the design process, architects Feilden Clegg Bradley Studios had specified Knauf Insulation's Rocksilk® RainScreen Slab for the project. It is non-combustible with a Euroclass A1 reaction to fire classification, so complies with building regulations that ban combustible insulation on certain buildings over 18m tall in England and Wales.

Rocksilk® RainScreen Slab also has a thermal conductivity of 0.034 W/mK so could meet the U-value of 0.19 Wm²K. And thanks to its sound absorption characteristics, critical for low mass rainscreen structures, it will help create a quieter space for the students.

PRODUCT USED

Rocksilk® RainScreen Slab

PROJECT

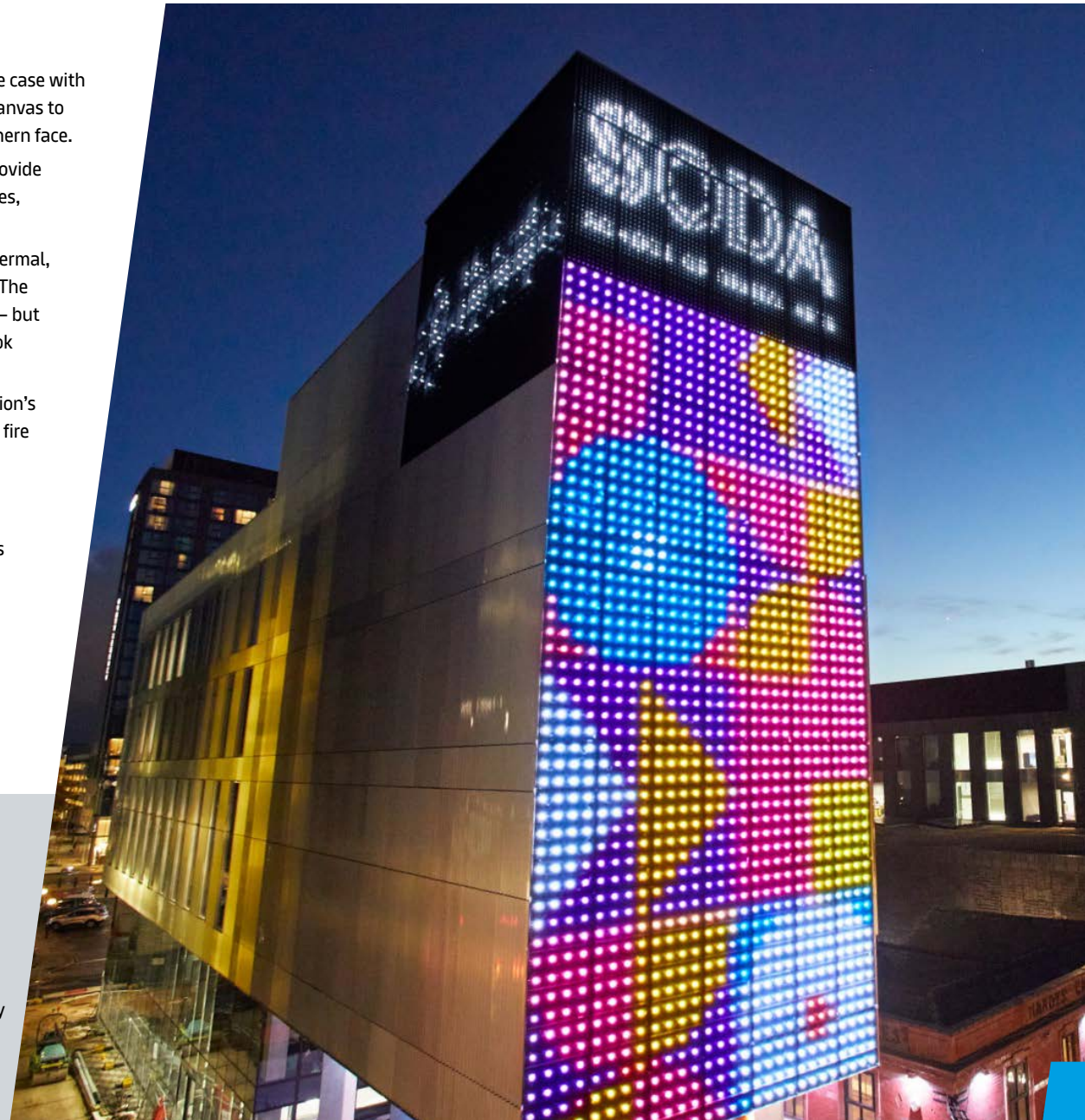
School of Digital Arts

CLIENT

Manchester Metropolitan University

MAIN CONTRACTOR

Kier Construction



School of Digital Arts (SODA), Manchester Metropolitan University

The principal contractor Kier Construction had tasked specialist façade contractors Maple Sunscreening with determining the required thickness and aesthetics. So they contacted Knauf Insulation to discuss the best solution.

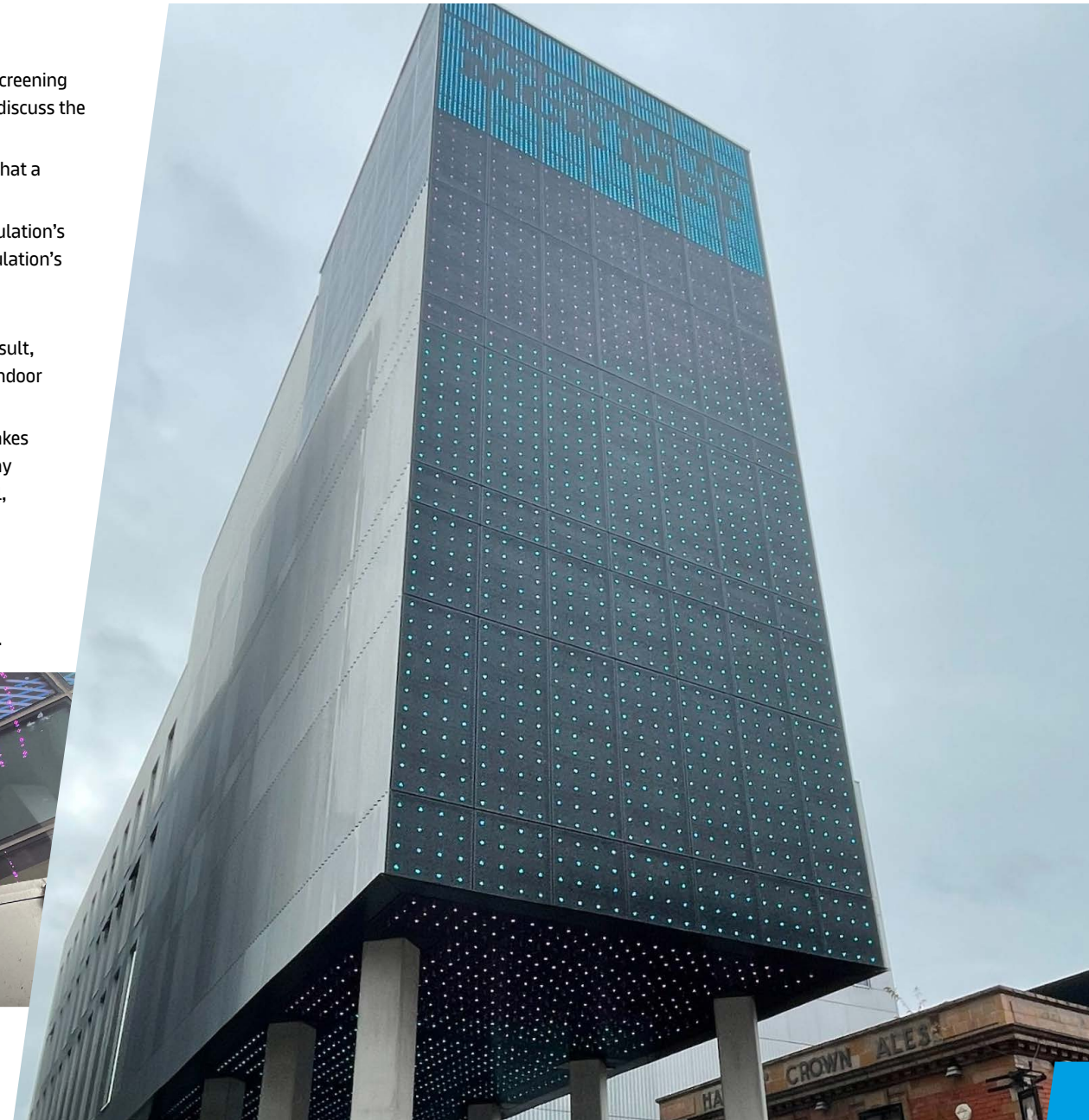
Knauf Insulation's Technical Services Team undertook 3D U-value calculations and confirmed that a 150mm slab should be used for the project.

What's more, Rocksilk® RainScreen Slab is manufactured with ECOSE® Technology, Knauf Insulation's unique bio-based binder that contains no added formaldehyde or phenol. This gives Knauf Insulation's mineral wool its unique brown colour, so the insulation won't stand out behind the perforated rainscreen panels.

It also makes it soft to touch, easy to handle and generates low levels of dust and VOCs. As a result, products made with ECOSE® Technology have been awarded the Eurofins Gold Certificate for Indoor Air Comfort.

Rocksilk® RainScreen Slab is designed to be easy to install correctly. Slabs are robust which makes them easy to manoeuvre into place. Once in position, they butt tightly together and adapt to any imperfections in the substrate. This prevents unintended air gaps that can compromise thermal, fire safety or acoustic performance.

Using Rocksilk® RainScreen Slab was the optimal solution for the SODA building providing both the high thermal, fire safety and acoustic performance demanded of modern buildings. And thanks to its unique brown colour, the mineral wool insulation won't be a distraction, instead acting as the perfect backdrop for the dazzling LED light displays created by the students.



Oak Cancer Centre, Royal Marsden Hospital

The Oak Cancer Centre at The Royal Marsden's Sutton site is a state-of-the-art research and treatment facility, designed to bring the hospital's 400-strong research team and its clinical care facility together under one roof.

Specialist brickwork contractors, Lesterose Builders, were appointed by main contractor ISG to design and build the 2,800m² masonry façade. As a result, they were responsible for ensuring the façade complied with the relevant thermal and fire safety regulations.

The time and cost challenge

The architect's specification named a rock mineral wool product, but when Sam O'Keefe, Commercial Manager at Lesterose Builders, tried to place the order, there were two problems. He explained: **"The first issue was availability – there was an eight to ten week lead time due to materials shortages. And the second issue was cost. We discovered the original insulation manufacturer had two planned price increases, and the extended lead time and phased delivery schedule meant that the Oak Cancer Centre project would be hit by both."**

These two issues would not only delay the build, but would push it significantly over budget. So Lesterose Builders needed another insulation solution.

PRODUCT USED

Rocksilk® RainScreen Slab

PROJECT

Oak Cancer Centre

CLIENT

Royal Marsden Hospital

MAIN CONTRACTOR

ISG Ltd



Oak Cancer Centre, Royal Marsden Hospital case study

Meeting the specification

Lesterose Builders turned to Knauf Insulation, a fellow member of the Association of Brickwork Contractors (ABC). Knauf Insulation's sales team looked at the specification and was able to offer an equivalent – 200mm Rocksilk® RainScreen Slab.

Rocksilk® RainScreen Slab is a rock mineral wool insulation product with a thermal conductivity of just 0.034W/mK, which meant it would meet the U-value of 0.21W/m²K. It is also non-combustible with Euroclass A1 reaction to fire classification, which means it will not contribute to the development or spread of fire should it occur. It is British Board of Agrément (BBA) certified for masonry façades at any height as well as for the broadest range of build-ups of any rainscreen solution on the market.

This meant Rocksilk® RainScreen Slab was suitable for use in the Oak Cancer Centre because it complies with building regulations that ban the use of combustible materials in the walls of relevant buildings over 18m tall. In addition to fire safety and thermal performance, Rocksilk® RainScreen Slab offers excellent sound reduction characteristics.

Crucially, Knauf Insulation was able to meet both the schedule and cost parameters for the project.

“Once we had confirmation that Knauf Insulation could match the specification and deliver to the planned timescales and budget, it was then a case of getting the architect's approval. This went extremely smoothly. We just made a technical submittal with the datasheets and environmental product declaration (EPD) and Rocksilk® RainScreen Slab was approved for use without any queries.”

Ease of installation

The seven-full loads of insulation were purchased through Parker Building Supplies. These were delivered to the site in eight phases in line with the schedule of works.

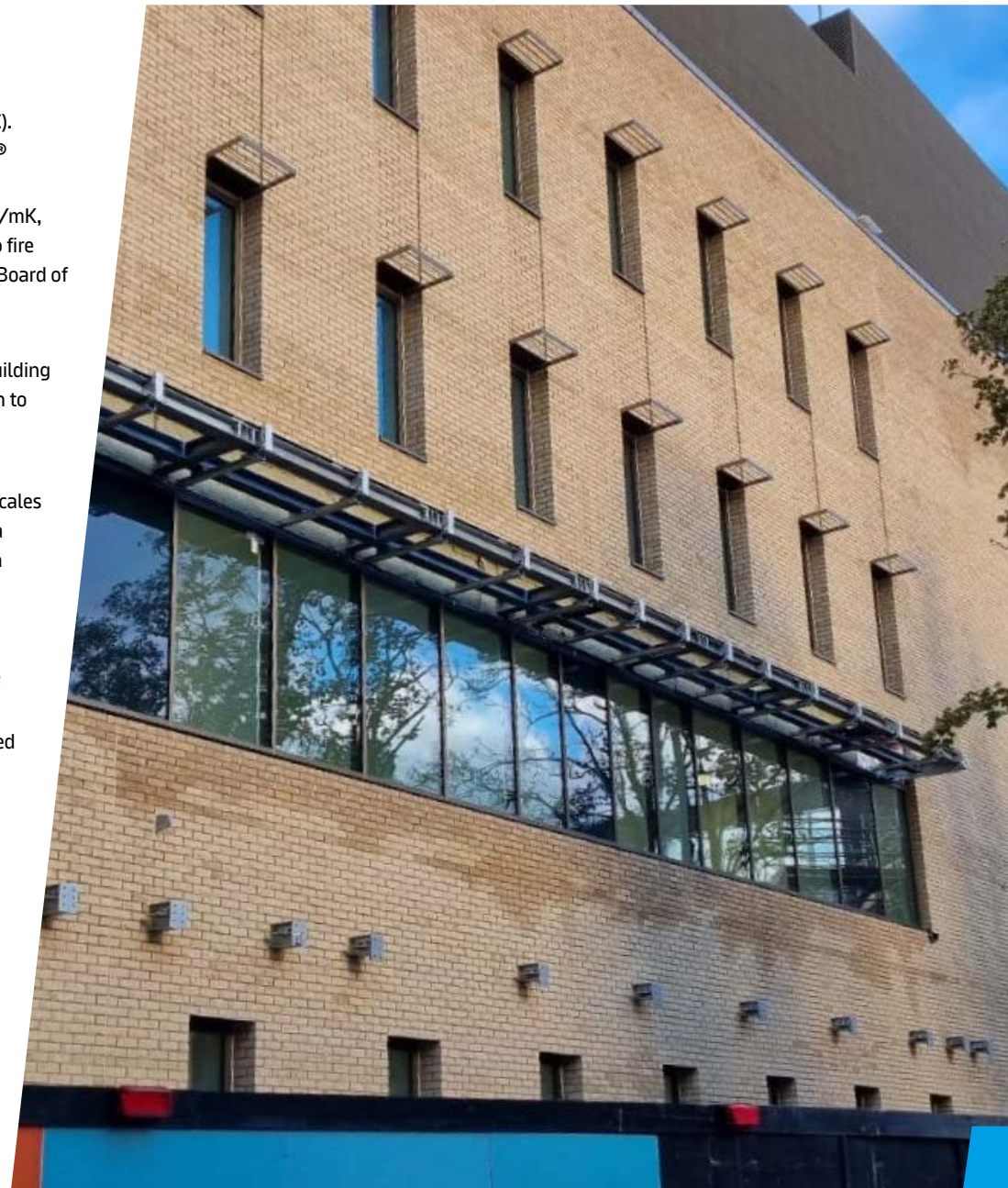
The product is designed to be easy to install correctly. Superior robustness and durability mean it can be manoeuvred easily into place. And unlike some competitor products, it can be installed with either face of the slab against the substrate, speeding up installation and preventing incorrect installation.

Furthermore, the natural flexibility of rock mineral wool means it adapts to minor imperfections in the substrate, while slabs knit together when tightly butted, eliminating air leakage that could reduce thermal and acoustic performance.

Rocksilk® RainScreen Slab is also manufactured with ECOSE® Technology, Knauf Insulation's unique bio-based binder that contains no added formaldehyde or phenol. It is made from natural raw materials that are rapidly renewable, and is 70% less energy-intensive to manufacture than traditional binders, so it is more environmentally friendly.

Products made with ECOSE® Technology generate low levels of dust and VOCs (volatile organic compounds) and have been awarded Eurofins Indoor Air Comfort (Gold) certification.

Construction work is known for its challenges, particularly around budgets and schedules – but thanks to Knauf Insulation's Rocksilk® RainScreen Slab, Lesterose Builders was able to overcome both these issues and meet the required specification factors for the Oak Cancer Centre.



Contacts

Specification Team

[Click here to find out more](#)

Technical Services Team

01744 766 666

technical.uk@knaufinsulation.com

For more information please [click here](#)

Knauf Insulation Ltd's (KI Ltd) design liability is strictly limited to the manufacture of its mineral wool insulation products listed in this guide in accordance with the attached documentation. KI Ltd does not warrant nor accept any liability for the design, overall health and safety or functionality of any interfaces within the building between its stand-alone section and any other sections or interfaces.

KI Ltd manufactures a construction product for use in a variety of applications and end uses. It has no responsibility for the installation of those products, nor does it have any knowledge of, or control over, the overall construction or design of the system or building, including which other products and components are being incorporated and, for example, the layout of the floors, walls, partitions, ceilings and windows in the building.

It is therefore incumbent upon the Principal Designer and/or the Principal Contractor, as appointed by the Client in relation to each project to consider all the interfaces and satisfy itself that all such interfaces are properly designed to enable the proper integration of the various components, materials and products into the final construction and design of the building.

KI Ltd will provide further information or documentation upon request but, in the light of the above, reliance upon such information is conditional upon appropriate independent advice being taken from other contractors and designers (or any other third party) involved in the project to understand the overarching architectural design and the integration of Knauf Insulation's products therein.



Knauf Insulation Ltd

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