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Agrément Certificate

19/5609

Product Sheet 2

KNAUF INSULATION

ROCKSILK RAINSCREEN SLAB FOR USE IN TIMBER OR STEEL FRAME CONSTRUCTIONS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Rocksilk⁽²⁾ RainScreen Slab for use in Timber or Steel Frame Constructions, a mineral wool insulation slab for use as thermal insulation on new and existing conventional timber- or steel-frame walls in domestic and non-domestic buildings with a masonry outer leaf.

(1) Hereinafter referred to as 'Certificate'.

(2) Rocksilk is a registered trademark.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Thermal performance — the product has a declared thermal conductivity value (λ_D) of $0.034 \text{ W} \cdot \text{m}^{-1} \cdot \text{K}^{-1}$ (see section 6).

Condensation — the product can contribute to limiting the risk of condensation (see section 7).

Behaviour in relation to fire — the product is classified as Class A1 in accordance with BS EN 13501-1 : 2007 (see section 8).

Durability — the product will have a life equivalent to that of the wall structure in which it is incorporated (see section 11).



The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Second issue: 11 June 2021

Originally certificated on 28 May 2019

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, Rocksilk RainScreen Slab for use in Timber or Steel Frame Constructions, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	B3(4)	Internal fire spread (structure)
Comment:	The product is unrestricted by this Requirement. See section 8.1 of this Certificate.	
Requirement:	B4(1)	External fire spread
Comment:	The product is unrestricted by this Requirement. See section 8.1 of this Certificate.	
Requirement:	C2(c)	Resistance to moisture
Comment:	The product can contribute to satisfying this Requirement. See sections 7.1, 7.2 and 7.4 of this Certificate.	
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:	The product can contribute to satisfying this Requirement. See sections 6.1 and 6.2 of this Certificate.	
Regulation:	7(1)	Materials and workmanship
Comment:	The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.	
Regulation:	7(2)	Materials and workmanship
Comment:	The product is unrestricted by this Regulation. See section 8.1 of this Certificate.	
Regulation:	26	CO₂ emission rates for new buildings
Regulation:	26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation:	26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:	The product can contribute to satisfying these Regulations. See sections 6.1 and 6.2 of this Certificate.	



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:	The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.	
Regulation:	9	Building standards applicable to construction
Standard:	2.4	Cavities
Standard:	2.6	Spread to neighbouring buildings
Comment:	The product is unrestricted by these Standards, with reference to clauses 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.4 ⁽¹⁾ , 2.4.6 ⁽²⁾ , 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See section 8.1 of this Certificate.	
Standard:	3.15	Condensation
Comment:	The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See sections 7.1, 7.2 and 7.5 of this Certificate.	
Standard:	6.1(b)	Carbon dioxide emissions
Comment:	The product can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.2 ⁽²⁾ , 6.1.3 ⁽¹⁾ , 6.1.4 ⁽¹⁾ , 6.1.6 ⁽¹⁾⁽²⁾ and 6.1.8 ⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.	
Standard:	6.2	Building insulation envelope

Comment:		The product can contribute to satisfying this Standard, with reference to clauses, or parts of, 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽¹⁾⁽²⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾⁽²⁾ [Aspect 1 ⁽¹⁾⁽²⁾]. See section 6.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		Comments in relation to the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .
		(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The product can contribute to satisfying this Regulation. See sections 7.1 and 7.2 of this Certificate.
Regulation:	35(4)	Internal fire spread - structure
Comment:		The product is unrestricted by this Regulation. See section 8.1 of this Certificate.
Regulation:	36(a)	External fire spread - structure
Comment:		The product is unrestricted by this Regulation. See section 8.1 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Comment:		The product can contribute to satisfying this Regulation. See sections 6.1 and 6.2 of this Certificate.
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		The product can contribute to satisfying this Regulation. See sections 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.3) of this Certificate.

Additional Information

NHBC Standards 2021

In the opinion of the BBA, subject to a 50 mm minimum residual cavity being maintained, NHBC accepts the use of Rocksilk RainScreen Slab for use in Timber or Steel Frame Constructions, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.1 *External masonry walls*, 6.2 *External timber framed walls* and 6.10 *Light steel framed walls and floors*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 13162 : 2012.

Technical Specification

1 Description

1.1 Rocksilk RainScreen Slab for use in Timber or Steel Frame Constructions comprises slabs of rigid rock mineral wool (MW) treated with a water-repellent additive. The slabs have the nominal characteristics shown in Table 1.

Table 1 Nominal characteristics

Length (mm)	1200
Width (mm)	600
Thickness (mm) ⁽¹⁾⁽²⁾	50, 75, 100, 120, 150, 180, 200, 210 and 250
Edge profile	Square

(1) Other slab thicknesses within the above range are available on request

(2) Higher thicknesses can be achieved by double layering.

1.2 Ancillary items for use with the product, but outside the scope of the Certificate:

- insulation fasteners/fixings
- sheathing and lining board
- breather membranes
- vapour control layer (VCL).

2 Manufacture

2.1 The slabs are manufactured from molten rock which is spun into rock mineral wool. A thermosetting binder is added, and the material is collected in the form of a blanket which is folded back (upon itself) to give the required product density. The blanket is then cured in a heated oven to form the required product, which is cut, trimmed and packaged.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Knauf Insulation Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 by TÜV NORD Certification (Certificates 44 100 190742-021 and 44 104 190742-021 respectively).

3 Delivery and site handling

3.1 Slabs are delivered to site compression-wrapped in polythene. Each pack carries a label bearing the Certificate holder's name, product description and the BBA logo incorporating the number of this Certificate.

3.2 The slabs should be stored clear of the ground, on a clean, level surface, and preferably under cover to protect them from prolonged exposure to moisture or mechanical damage.

3.3 Dust masks, gloves and long-sleeved clothing should be worn when cutting and handling the slabs.

3.4 Damaged, contaminated or wet slabs must not be used.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Rocksilk RainScreen Slab for use in Timber or Steel Frame Constructions.

Design Considerations

4 Use

4.1 Rocksilk RainScreen Slab for use in Timber or Steel Frame Constructions is effective in reducing the U value (thermal transmittance) of external walls of timber-frame or steel-frame buildings with a masonry outer leaf (where masonry includes clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks). The product is for use in new and existing domestic and non-domestic buildings. It is essential that such walls are designed and constructed to incorporate the normal precautions against moisture ingress, including the use of a breather membrane over the timber sheathing in framing board applications.

4.2 As with other forms of cavity wall insulation, where buildings need to comply with *NHBC Standards*, specifiers should observe the requirements of that document.

4.3 Buildings subject to the national Building Regulations should be designed and constructed in accordance with the relevant recommendations of:

- BS 8000-3 : 2001
- BS EN 351-1 : 2007
- BS EN 845-1 : 2013
- BS EN 1993-1-2 : 2005 and its UK National Annex
- BS EN 1993-1-3 : 2006 and its UK National Annex
- BS EN 1995-1-1 : 2004 and its UK National Annex
- BS EN 1996-1-1 : 2005 and its UK National Annex
- BS EN 1996-1-2 : 2005 and its UK National Annex
- BS EN 1996-2 : 2006 and its UK National Annex
- BS EN 1996-3 : 2006 and its UK National Annex.

4.4 New buildings not subject to these Regulations should also be built in accordance with the Standards given in section 4.3 of this Certificate.

4.5 Wall ties and fixings to BS EN 845-1 : 2013 should be used for structural stability in accordance with BS EN 1996-1-1 : 2005 and BS EN 1996-2 : 2006.

4.6 Services which penetrate the dry lining (eg light switches and power outlets) must be kept to a minimum to limit damage to vapour checks. In addition, to preserve the fire resistance of the wall, any penetrations should be enclosed in plasterboard, stone mineral wool or a suitably tested proprietary fire-rated system.

4.7 For timber frame constructions, installation must not be carried out until the moisture content of the frame is less than 20%.

4.8 This application requires a VCL behind the internal finish, which should be a minimum thickness of 0.125 mm (500 gauge) polyethylene, or plasterboard backed with a vapour control membrane or similar.

4.9 Care must be taken in the overall design and construction of walls incorporating the product to ensure the provision of appropriate:

- cavity trays and damp-proof courses (dpc)
- cavity barriers and fire dampers
- resistance to the ingress of precipitation, moisture and dangerous gases from the ground
- resistance to sound transmission when flanking separating walls and floors.

4.10 The use of cavity battens or boards is strongly recommended to prevent thermal bridging by mortar droppings.

Buildings up to and including 25 metres high

4.11 The residual cavity width to be maintained during construction is 50 mm. This may reduce to 25 mm in isolated areas due to individual construction features (a minimum of 50 mm residual cavity width is required by the NHBC). This may be achieved by designing a cavity width which takes into account the dimensional tolerances of the components which make up the wall (by reference to the British Standards relating to the bricks, blocks and slabs), or by using the data from the respective manufacturers. Allowances may need to be made for the quality of building operatives and the degree of site supervision or control available, and for the limitations in respect of exposure of the proposed building (as set out in Table 2).

Table 2 Maximum allowable total exposure index of different constructions

Construction	Maximum allowable exposure index $E^{(1)}$
All external masonry walls protected by: rendering (to BS EN 13914-1 : 2016); tile/slate hanging; or timber, plastic or metal weatherboarding or cladding	No restriction
One or more external masonry walls constructed from facing clay brickwork or natural stone (the porosity of which exceeds 20% by volume). Mortar joints must be flush-pointed or weatherstruck	100
One or more external masonry walls constructed from calcium silicate bricks, concrete blocks, reconstituted stone or natural stone (the porosity of which is less than 20% by volume), or any material with raked mortar joints	88

(1) To BS 5618 : 1985.

4.12 From ground level, the maximum height of continuous cavity walls must not exceed 12 metres; above 12 metres, the maximum height of continuous cavity walls must not exceed 7 metres. In both cases, breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside.

4.13 An external render coat or other suitable finish should be applied in locations where such application would be normal practice; care should be taken to ensure that the residual cavity is not bridged by mortar.

Buildings over 25 metres in height

4.14 The width of the residual clear cavity to be achieved is a minimum of 50 mm, and the following additional requirements apply:

- the specifier must take extra care when detailing to ensure that the introduction of the insulation does not affect the weather resistance of the wall. Above average site supervision is recommended during installation of the product
- where, for structural reasons, the cavity width is reduced (eg by the intrusion of ring beams), a minimum residual cavity width of 25 mm must be maintained and extra care must be taken with fixings and weatherproofing (eg the inclusion of cavity trays with weepholes).

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Thermal performance



6.1 Calculations of the thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2017, BRE Report BR 443 : 2019, BRE Digest 465 and BS EN ISO 10211 : 2017 using the insulation's declared thermal conductivity value (λ_D) of 0.034 W·m⁻¹·K⁻¹.

6.2 The U value of a completed wall construction will depend on the insulation thickness, number and type of fixings, the insulating value of the substrate and its internal finish. Calculated U values for example constructions are given in Tables 3 and 4.

Table 3 Example U values – timber frame⁽¹⁾⁽²⁾

U value (W·m ⁻² ·K ⁻¹)	Insulation thickness installed against the sheathing board – no insulation in the 140 mm timber frame (mm) ⁽³⁾	Insulation thickness installed against the sheathing board – fully-filled with insulation in the 140 mm timber frame (mm) ⁽⁴⁾
0.18	180	75
0.19	150	50
0.25	120	50
0.26	120	50
0.27	100	50
0.28	100	(5)
0.30	100	(5)
0.35	75	(5)

- (1) Construction, external to internal:
102.5 mm brick ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 50 mm clear cavity, Rocksilk RainScreen Slab, breather membrane, 9 mm timber OSB (oriented strand board) sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 140 mm timber frame (15% fraction) ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), VCL and 15 mm plasterboard ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (2) Calculations based upon 4.4 per m² stainless steel cavity wall ties ($\lambda = 17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) with a 6.6 mm² cross-sectional area.
- (3) With a 15% timber frame fraction.
- (4) Insulation ($\lambda = 0.035 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), with a 15% timber frame fraction ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (5) Achieves the U value with no additional insulation.

Table 4 Example U values – steel frame system⁽¹⁾⁽²⁾

U value (W·m ⁻² ·K ⁻¹)	Insulation thickness installed against the sheathing board – with a clear 90 mm steel frame (mm) ⁽³⁾	Insulation thickness installed against the sheathing board – with a fully filled 90 mm steel frame (mm) ⁽⁴⁾
0.18	180	120
0.19	150	100
0.25	120	75
0.26	120	75
0.27	100	50
0.28	100	50
0.30	100	50
0.35	75	50

- (1) Construction, external to internal:
102.5 mm brick ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 50 mm clear cavity, Rocksilk RainScreen Slab, breather membrane, 9 mm timber OSB (oriented strand board) sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), 90 mm light-steel-frame system (0.2% fraction), VCL and 15 mm plasterboard ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (2) Calculations based upon 4.4 per m² stainless steel cavity wall ties ($\lambda = 17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) with a 6.6 mm² cross-sectional area.
- (3) With a 0.2% steel frame fraction.
- (4) Insulation ($\lambda = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$), with a 0.2% steel- frame fraction.

Junctions

6.3 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

7 Condensation

Interstitial condensation



7.1 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G.

7.2 The water vapour resistance factor (μ) of the insulation may be taken as 1.

7.3 A Vapour Control Layer (VCL) should be used in all constructions, should the condensation risk analysis show this is necessary.

Surface condensation



7.4 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in section 6.3 of this Certificate.



7.5 In Scotland, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2011, Annex G. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.3 of this Certificate.

8 Behaviour in relation to fire



8.1 The product is classified⁽¹⁾ as Class A1 in accordance with BS EN 13501-1 : 2007, and is not subject to any restriction on building height or proximity to boundaries.

(1) Exova Warringtonfire. Report No 355031, 28 July 2015. Copies can be obtained from the Certificate holder.

8.2 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity closers and barriers, fire stopping of service penetrations and combustibility limitations for other materials and components used in the overall wall construction.

9 Water resistance

9.1 Constructions incorporating the product and built in accordance with the Standards listed in section 4.3, will resist the transfer of precipitation to the inner leaf and satisfy the requirements of the national Building Regulations.

9.2 In all situations, it is particularly important to ensure during installation that:

- wall ties are installed correctly and are thoroughly clean
- excess mortar is cleaned from the cavity face of the brick leaf and any debris removed from the cavity
- mortar droppings are cleaned from the exposed edges of installed slabs
- insulation slabs are properly installed and butt-jointed
- installation is carried out to the highest level on each wall, or the top edge of the insulation is protected by a cavity tray
- at lintel level, a cavity tray, stop ends and weep holes are provided
- cavity battens and/or boards are used during construction to prevent bridging by mortar droppings
- dpc at ground level does not project into the cavity as it can form a trap for mortar bridging
- raked or recessed mortar joints are avoided in very severe exposure areas.

10 Maintenance

Once installed, the product does not require any regular maintenance and has suitable durability (see section 11), provided the masonry outer leaf is maintained in a weathertight condition.

11 Durability



The product is unaffected by the normal conditions in a wall and is durable, rot proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building.

12 General

12.1 Installation of the product should be in accordance with the Certificate holder's instructions, current good building practice and this Certificate.

12.2 The product can be cut using a fine-serrated saw or sharp knife but care must be taken to prevent damage, particularly to edges.

12.3 Cavity barriers should be provided at the junctions of the external wall and roof space as required by the documents supporting the national Building Regulations.

12.4 It is important to ensure a tight fit between slabs. Trimming must be accurate, to achieve close-butt joints and continuity of insulation.

12.5 The slabs are fixed against the external face of the sheathing board in conjunction with the masonry outer leaf.

13 Procedure

13.1 The product is installed with either face in continuous intimate contact with the building substrate (see Figures 1 and 2).

Figure 1 *Lightweight steel frame application*

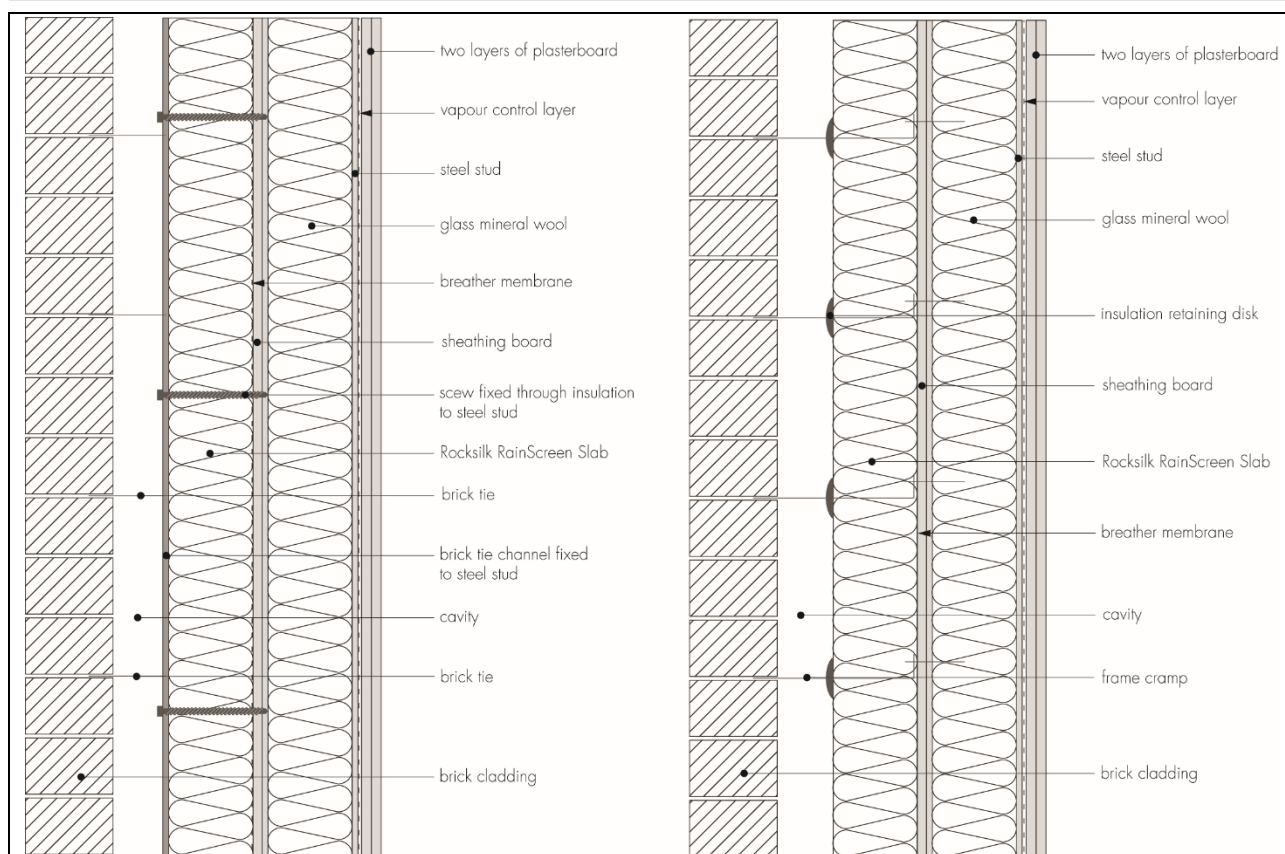
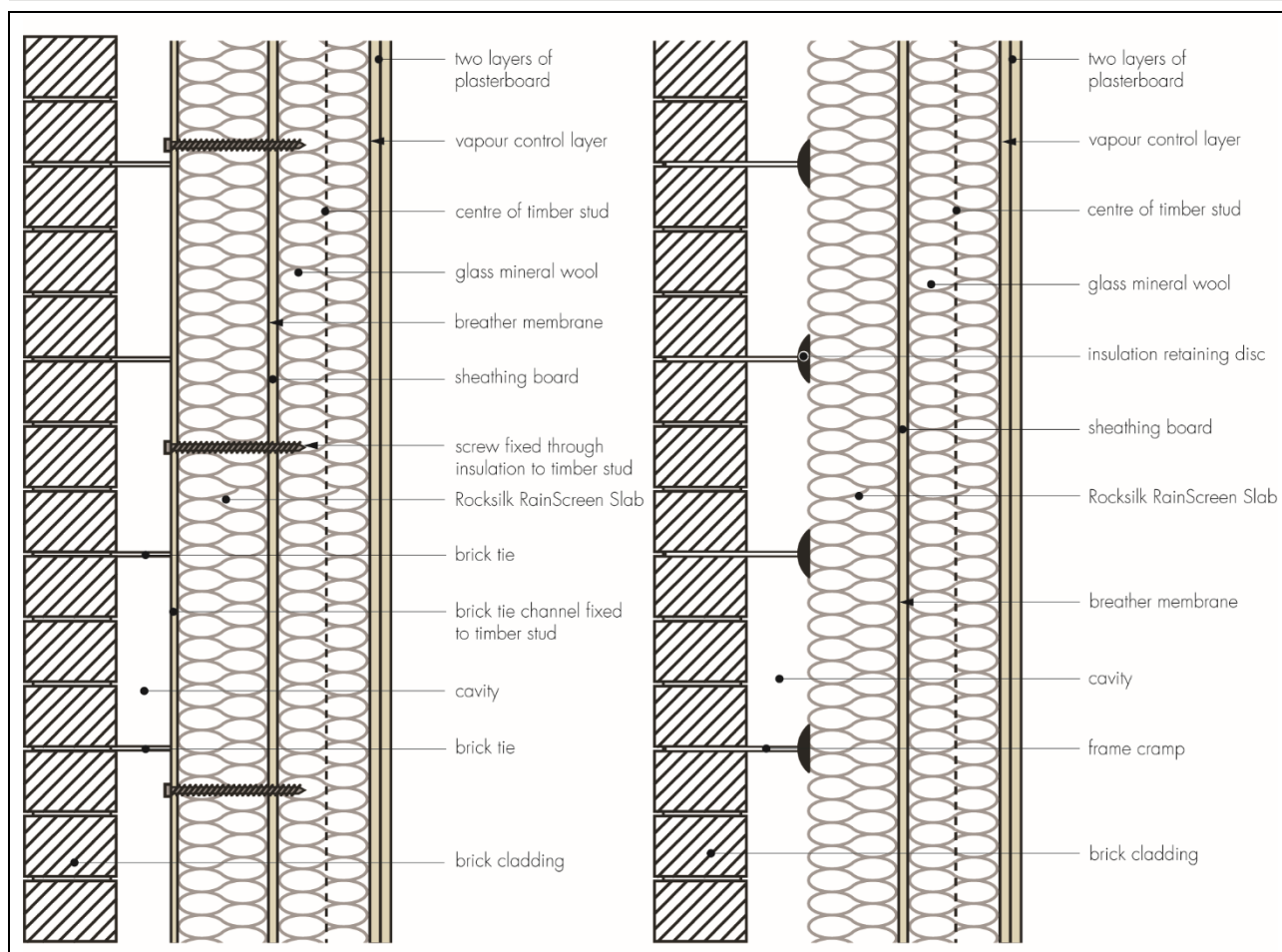


Figure 2 Timber frame application



13.2 The slabs are installed such that joints are staggered by 100 to 150 mm.

13.3 Full slabs must be used in corners. Additional fixings must be used to ensure slab is fixed firmly to the structure.

13.4 Areas that cannot accept a full slab must use a slab section, which is fixed at 600 mm intervals in the centre.

13.5 The slab sections must be cut to be oversized by 5 mm, and compression fitted to ensure a tight fit.

13.6 Fixings to be used depend on the building substrate. Fixing manufacturers should be consulted for guidance. A minimum fixing head diameter of 70 mm must be used.

13.7 The lower edge of the first run of slabs may be positioned below dpc level to provide some edge insulation for the floor. When using brick tie channels, polypropylene fixings are used along stud lines to retain slabs against the sheathing board prior to installing rails.

13.8 The slabs must be cut to fit tightly around window details and additional fixings used at the slab edges. Additional fixings and brick tie channels must be fixed into the detail border studs or secondary studs.

13.9 The slabs should be cut carefully to fit around service penetrations. A tight fit ensures maximum thermal efficiency. Consideration should be made to ensure appropriate fire stopping measures are used around penetrations, especially plastic.

Double layering

Retaining discs

13.10 The wall ties should be fixed into the studs at a maximum of 455 mm horizontal centres. The first layer of insulation should be installed in portrait orientation with the edges of the slabs on the steel or timber studs. These slabs

should be fixed through the centre into the sheathing board and a stainless steel washer used. The second layer of slabs should also be installed in portrait orientation with the slabs fixed in position using the wall ties and retaining discs.

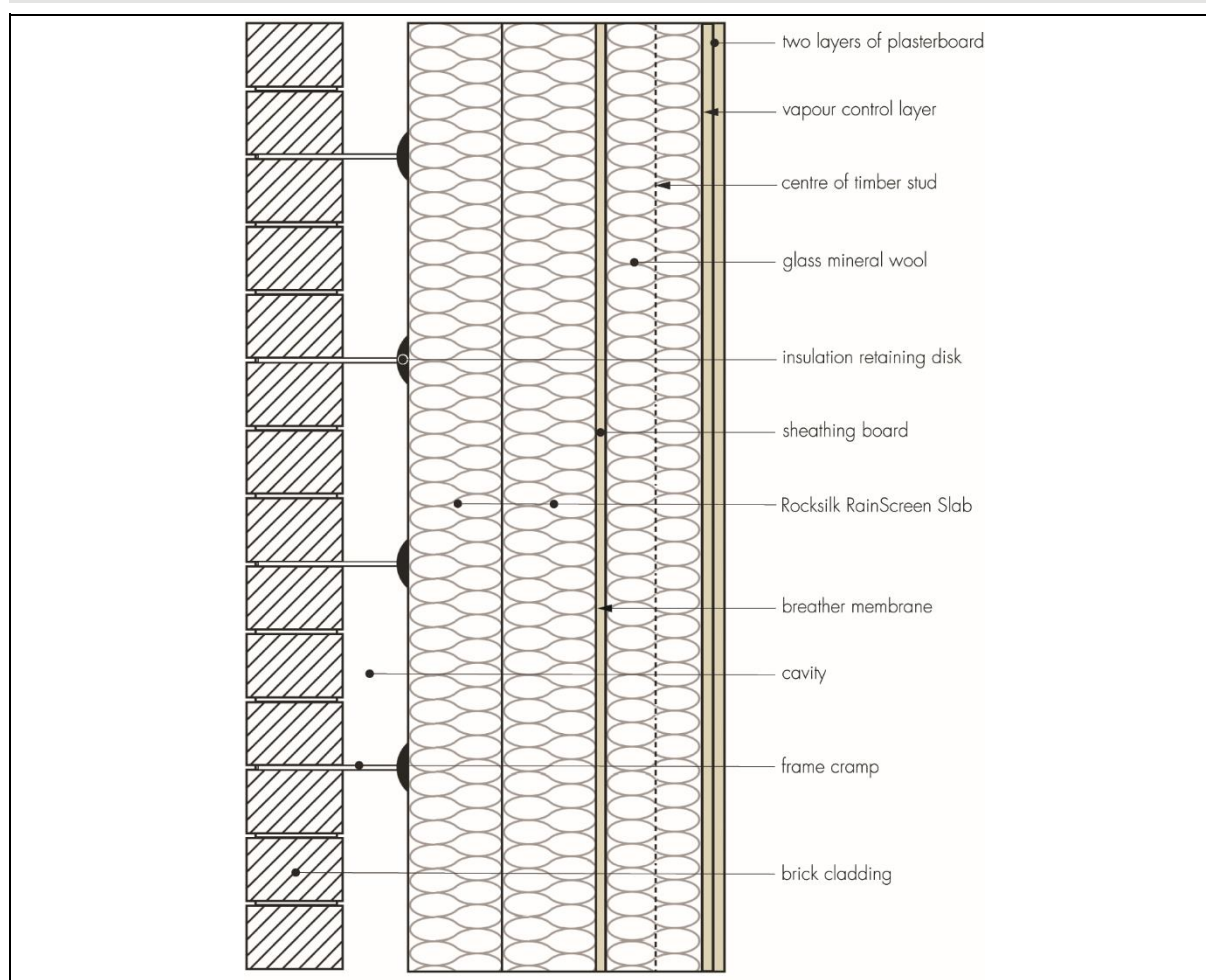
Brick tie channels

13.11 The first layer of the insulation should be installed in landscape orientation with the edges of the slabs staggered (minimum of 100 mm) from the stud lines. The first two rows of these slabs should be fixed to the sheathing board and a stainless steel washer used. The second layer of insulation should also be installed in landscape orientation, staggered (minimum of 100 mm) from the first layer and from the stud lines. The first two rows also require fixing back to the sheathing board utilizing a stainless steel washer. The brick tie channels can then be installed fixed back to the studs, ensuring that each full slab is secured by a minimum of two channels. Additional layers of insulation can be installed, continuing in a landscape orientation slotted behind the brick tie channels. If the total thickness of insulation is ≥ 180 mm then the fixings must use compression sleeves.

13.12 Slabs should be cut slightly (maximum 5 mm) oversize and can be compression-fitted into place, ensuring a tight fit between slabs and wall brackets where these occur.

13.13 The Certificate holder's guidance should be sought on detailed installation methods for specific projects.

Figure 3 Double layer



Mortar droppings

13.14 After each section of the leading leaf is built, excess mortar should be removed from the cavity face and mortar droppings cleaned from exposed edges of the installed slab, before installation of the next run of slabs. Use of a cavity board or a cavity batten will protect the installed slab edges and help to keep the cavity clean as the following leaf is built.

14 Tests

Results of tests were assessed to determine:

- reaction to fire
- thermal conductivity
- dimensional stability
- short term water absorption
- slab dimensions.

15 Investigations

15.1 Existing data on durability and properties in relation to fire were evaluated.

15.2 A calculation was undertaken to confirm the declared thermal conductivity value (λ_D).

15.3 A series of U value calculations was carried out.

15.4 A condensation risk analysis was carried out.

15.5 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used.

Bibliography

BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*

BS 5618 : 1985 *Code of practice for Thermal insulation of cavity walls (with masonry or concrete inner and outer leaves) by filling with urea-formaldehyde (UF) foam systems.*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 351-1 : 2007 *Durability of wood and wood-based products — Preservative-treated solid wood — Classification of preservative penetration and retention*

BS EN 845-1 : 2013 + A1 : 2016 *Specification for ancillary components for masonry — Wall ties, tension straps, hangers and brackets*

BS EN 1993-1-2 : 2005 *Eurocode 3 — Design of steel structures — General rules — Structural fire design*

NA to BS EN 1993-1-2 : 2005 UK National Annex to *Eurocode 3 — Design of steel structures — General rules — Structural fire design*

BS EN 1993-1-3 : 2006 *Eurocode 3 — Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

UK NA to BS EN 1993-1-3 : 2006 UK National Annex to *Eurocode 3 — Design of steel structures — General rules — Supplementary rules for cold-formed members and sheeting*

BS EN 1995-1-1 : 2004 *Eurocode 5 — Design of timber structures — General — Common rules and rules for buildings*

UK NA to BS EN 1995-1-1 : 2004 UK National Annex to *Eurocode 5 — Design of timber structures — General - Common rules and rules for buildings*

BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6: Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

NA to BS EN 1996-1-1 : 2005 + A1 : 2012 UK National Annex to *Eurocode 6 – Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 1996-1-2 : 2005 *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*

NA to BS EN 1996-1-2 : 2005 UK National Annex to *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*

BS EN 1996-2 : 2006 *Eurocode 6: Design of masonry structures — Design considerations, selection of materials and execution of masonry*

NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN 1996-3 : 2006 *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

NA + A1 : 2014 to BS EN 1996-3 : 2006 UK National Annex to *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*

BS EN 13162 : 2012 + A1 : 2015 *Thermal insulation products for buildings – Factory made mineral wool (MW) products — Specification*

BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN ISO 6946 : 2017 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

BS EN ISO 10211 : 2017 *Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*

BS EN 13914-1 : 2016 *Design, preparation and application of external rendering and internal plastering — External rendering*

BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*

BRE Report BR 443 : 2019 *Conventions for U-value calculations*

BRE Digest 465 : 2002 *U-Values for light steel-frame construction*

16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

16.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

16.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

16.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

16.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.