RAINSCREEN CLADDING SOLUTIONS

Non-combustible insulation combined with an ‘open state’ cavity barrier to provide compliant solutions for buildings above 18m
Rainscreen Duo Slab

Advantages

- Non-combustible - Complies with UK Building Regulations on buildings above 18m
- High resistance to wind and rain during construction
- Fewer fixings required for installation compared to standard stone wool slabs
- Robust front face resists damage and over-driving of fixings

Description

RAINSCREEN DUO SLAB® is a dual density slab comprising a robust outer surface (designed to withstand the rigours imposed on site), and a resilient inner face (designed to accommodate the substrate to which it is being applied).

The robust outer surface offers improved weather resistance and a more clearly defined cavity width, whilst the resilient inner surface accommodates itself to irregularities in the surface of the substrate, thus maximising thermal performance.

The slabs will knit together when tightly butt jointed so that any extraneous heat loss caused by gaps is eliminated.

This also prevents water transmission through the insulation layer and is proven over 25 years in traditional masonry wall construction.

The slab is designed for use in conditions of severe climatic exposure. Because of its unique dual density construction, the product requires fewer fixings, thus providing a cost-effective solution in overcladding applications.

Standards and approvals

ROCKWOOL RAINSCREEN DUO SLAB® has been examined by the British Board of Agrément (BBA) and granted Certificate 17/5402 for use in Ventilated Rainscreen Cladding Systems on both domestic and non-domestic buildings.

RAINSCREEN DUO SLAB® satisfies the requirements of BS EN 13162: 2012 – ’Thermal insulation products for buildings – Factory made mineral wool (MW) products – specification’.

SP Firestop VRB
ROCKWOOL RAINSCREEN CLADDING SOLUTIONS

Dimensions

RAINSCREEN DUO SLAB® satisfies Standard size of 1200 x 600 mm and is available in standard thicknesses from 50 to 180mm. For all other thicknesses please contact ROCKWOOL.

Performance

Fire
Rated A1 when tested to EN 13501-1 classification using test data from reaction to fire test.

Wind resistance
RAINSCREEN DUO SLAB® fixed as indicated in Figure 1 has successfully undergone wind resistance testing by the Building Research Establishment. Wind loading fatigue tests were used to simulate the performance of the slabs when fully exposed and subjected to fluctuating wind loads during the construction stages of buildings. The tests simulated and exceeded the maximum UK basic wind speed of 56 m/s as defined by BS CP3: Chapter 5: Part 2: 1972. Test report BRE GI2801

Water resistance
ROCKWOOL stone wool repels liquid water due to its fibre orientation and the presence of water repellent additives.

Acoustical performance
The slabs can significantly improve the acoustic performance of the external building structure. Condensation control Vapour resistivity = 5.9 MNs/gm. The slabs, therefore reduce the risk of condensation, allowing natural drying out of the structure. See typical relative humidity / temperature graph above right.

Interface/dewpoint temperatures

<table>
<thead>
<tr>
<th>Temperature (°C)</th>
<th>Interface Temperature</th>
<th>Dewpoint Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td></td>
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<tr>
<td>18</td>
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</table>

Notes for Construction 1:
- Tables based on pointloss scenarios where only rainscreen brackets bridge the thermal insulation layer.
- A thermal bridging allowance of 0.1 W/m2K has been added to the wall U-value (e.g. a calculated U-value of 0.25 will be increased to 0.35 W/m2K) to allow for predicted bridging. (Based on data supplied by the BRE using a 5 mm thick thermal break pad and brackets at 600 mm x 600 mm fixing matrix).

Notes for Construction 2:
- U-values shown have been calculated with a thermal bridging allowance which has been determined using a 3-Dimensional analysis in accordance with BR443. The systems modelled included 8mm ROCKPANEL Rockclad and FastFrame rainscreen Brackets.

U-values - RAINSCREEN DUO SLAB® Ventilated Rainscreens

**Construction 1:**
- RAINSCREEN DUO SLAB® between Metal Bracket System on 150 mm Reinforced Concrete or dense block wall. Internal finishes: (a) plaster (b) plasterboard on dabs

**Construction 2:**
- RAINSCREEN DUO SLAB® on 150mm deep metal studs at 600mm centres with 140mm ROCKWOOL FLEXI® installed within the frame.

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>ROCKWOOL FLEXI® thickness (mm)</th>
<th>U-Values W/m²K</th>
</tr>
</thead>
<tbody>
<tr>
<td>75</td>
<td>140</td>
<td>0.25</td>
</tr>
<tr>
<td>100</td>
<td>140</td>
<td>0.22</td>
</tr>
<tr>
<td>125</td>
<td>140</td>
<td>0.20</td>
</tr>
<tr>
<td>150</td>
<td>140</td>
<td>0.18</td>
</tr>
<tr>
<td>180</td>
<td>140</td>
<td>0.17</td>
</tr>
</tbody>
</table>

**Table 1:**

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>Internal finish</th>
<th>U-Values W/m²K</th>
<th>b U-Values W/m²K</th>
</tr>
</thead>
<tbody>
<tr>
<td>125</td>
<td>a</td>
<td>0.35</td>
<td>0.34</td>
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<tr>
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<td>a</td>
<td>0.32</td>
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<tr>
<td>175</td>
<td>b</td>
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<td>200</td>
<td>b</td>
<td>0.26</td>
<td>0.26</td>
</tr>
<tr>
<td>275</td>
<td>b</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>325</td>
<td>b</td>
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</tbody>
</table>

ROCKWOOL recommend all U-value calculations for rainscreen application be verified by the cladding manufacturer utilising 3D thermal modelling software.

Figure 1
Typical fixing pattern with 3 fixings per square metre
Construction 3:
RAINSCREEN DUO SLAB® between timber rails on 150 mm Dense Concrete or dense block wall. Internal finishes:
(a) plaster-Lambda 0.180 W/m/k (b) Plasterboard on slabs

Typical specification
The rainscreen insulation is to be RAINSCREEN DUO SLAB® specified thickness, as manufactured by ROCKWOOL Limited, Pencoed, Bridgend CF 35 6ny, secured to the substrate with metal and polypropylene fixings in accordance with RAINSCREEN DUO SLAB® Data sheet.

Horizontal joints should be staggered and all joints tight butted.

The Slabs should be fixed with the robust (patterned) surface facing outwards.

<table>
<thead>
<tr>
<th>Thickness (mm)</th>
<th>a U-Values W/m²K</th>
<th>b U-Values W/m²K</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.35</td>
<td>0.34</td>
</tr>
<tr>
<td>125</td>
<td>0.29</td>
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<tr>
<td>225</td>
<td>0.17</td>
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</tbody>
</table>

Installation

Work on site
RAINSCREEN DUO SLAB® are light and easy to cut to any shape with a sharp knife. They are shrink wrapped in polyethylene and supplied on pallets that are shrouded with a waterproof hood suitable for outside storage. Once installed, due to their robust outer facing surface, the slabs can be left unprotected for an extended period of time prior to fixing the rainscreen cladding.

Workability
Light and easy to handle, the slabs are easy to cut to shape or size with a sharp knife, to suit the cladding system.

Rainscreen cladding – Metal rail systems
To obtain the optimum performance of the system, the Slabs should be applied with the patterned side facing outwards (see Figure 4). The resilient inner layer will accommodate surface irregularities (see Figure 3).

Close butt the slabs at all vertical and horizontal joints.

Stagger the horizontal joints of the insulation in accordance with good fixing practice.

Fix using a combination of metal and polypropylene fixings in accordance with the detail shown in Figure 1. Fixings should have a minimum head diameter of 70 mm.

RAINSCREEN DUO SLAB® should be cut and tightly fitted around wall brackets where these occur. See ‘Construction 1’ on the back page for typical U-values relating to this construction.

Suitable Fixing Manufacturers
Ejot: 01977 687040
Fischer: 01491 827900
Hilti: 0800 886100
ITW Construction Products Ltd.: 01592 771132

Rainscreen cladding – Timber rail application
The Slabs should be tightly fitted between the treated timber rails prior to the installation of the external cladding boards and mechanically fixed as shown in Figure 2. Provision should be made for a minimum 25 mm ventilated air space behind the cladding boards.

All horizontal joints should be closely butted to optimise the insulation performance.

See ‘Construction 3’ on the back page for typical U-values relating to this construction.

Figure 2
Typical fixing pattern between treated timber cladding rails

Figure 3
Dual density

Figure 4
Textured outer face of slab
SP FIRESTOP VRB®

Description
The SP Firestop VRB combines non-combustible ROCKWOOL insulation with intumescent material to create an effective fire and smoke cavity barrier.

The product is supplied with an appropriate number of fixing brackets and pigtail screws.

Standard & approvals
- (Volume 1) & Item 15 (Volume 2), and diagram 33.
- Scotland—Handbook Section 2
- Northern Ireland—Technical Booklet E
- Republic of Ireland—Technical Guidance Document B

Application
SP Firestop VRB has been developed for use as an ‘Open-State’ cavity barrier that has been designed for drained and ventilated façade systems.

The Firestop will ensure that moisture is allowed to drain from within the façade system whilst maintaining adequate airflow. In the event of a fire the Firestop will react to create an effective smoke and fire seal.

SP Firestop VRB has been designed to maintain air gaps of up to 25mm (60 minutes integrity & insulation) and 35mm (30 minutes integrity & insulation).

The Firestop fully complies with market requirements and has been tested in conjunction with ROCKWOOL Rainscreen Duo-Slab to the latest ASFP TGD 19 guidance document; Fire resistance tests for ‘Open-State’ cavity barriers.

Advantages
- Fully tested to ASFP TGD 19: “Fire Resistance Test for ‘Open-State’ cavity barriers used in the external envelope or fabric of buildings”
- Up to 60 minutes fire integrity and insulation
- Satisfies NHBC and CWCT guidance for ventilation gaps at fire barrier locations
- Weather resistant
- Easy site storage and handling
- Combined with Rockwool Rainscreen Duo-Slab it simplifies the design of high rise buildings above 18m

Performance
Application covers the installation of ROCKWOOL SP Firestop VRB in conjunction with ROCKWOOL Rainscreen Duo Slab (as an interrupted layer).

It must be ensured that ROCKWOOL SP Firestop VRB is at least 25mm wider than the ROCKWOOL Rainscreen Duo Slab layer.

Dimensions

<table>
<thead>
<tr>
<th>Width (mm)</th>
<th>Total Cavity Width (mm)</th>
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</thead>
<tbody>
<tr>
<td>75</td>
<td>100</td>
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<tr>
<td>100</td>
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<tr>
<td>225</td>
<td>250</td>
</tr>
<tr>
<td>250</td>
<td>275</td>
</tr>
</tbody>
</table>

*These are typical examples of available widths, other sizes are available

Installation
The product is supplied ready to install with two galvanised steel fixing brackets and 4 x pigtail screws per metre length.

The brackets should be mechanically and securely fixed to the wall at a maximum of 500mm centres using non-combustible fixings.

The product should be impaled mid-barrier depth by the fixing brackets, with the brackets penetrating the barrier to approximately three quarters of the width of the product. Imperfections of up to 10mm can be filled with ROCKWOOL Acoustic Intumescent Mastic. Adjacent lengths should be tightly butt jointed together.

For cut lengths a minimum of two fixing brackets should be used. It is important to ensure that the barrier is pushed back to be fully in contact with the supporting wall.

The SP Firestop VRB requires the installation of 4 x 65mm pigtail screws (supplied) impaled through the outer intumescent side of the product at a maximum of 250mm centres.
Key Performance Criteria Summary

- The barrier width must be a minimum of 25mm greater than the insulation thickness
- To achieve a 60 minute fire performance the open cavity (between the cavity barrier and the cladding panel) must be a maximum of 25mm
- A 30 minute performance can be achieved with a maximum open cavity width of up to 35mm

Ancillaries

SP Fixing Brackets

ROCKWOOL SP Firestop VRB Fixing Brackets are required for installation. The brackets are supplied at a rate of two per metre length of Firestop VRB. Brackets will be packaged in a separate cardboard box which will be located within the main SP Firestop VRB box packaging.

The brackets are designed to be easily re-profiled by hand on site. The SP Fixing Bracket should be cut on site as necessary to allow at least 75% penetration of the SP Firestop VRB.

Pigtail Screws

Pigtail screws are required to fix the intumescent Strip once the Firestop is in position. 65mm pigtail screws will be supplied at rate of four per metre length of Firestop VRB and will be packaged with the SP Firestop Brackets.

Care should be taken to ensure that the pigtail screws protrude the Firestop by a maximum of 25mm.

IMPORTANT: The SP Firestop VRB should only be used with substrates capable of providing at least the same level of fire resistance as the barrier itself.

Sustainability

As an environmentally conscious company, ROCKWOOL promotes the sustainable production and use of insulation and is committed to a continuous process of environmental improvement. All ROCKWOOL products provide outstanding thermal protection as well as four added benefits:

- Fire resistance
- Acoustic comfort
- Sustainable materials
- Durability

Health & Safety

The safety of ROCKWOOL stone wool is confirmed by current UK and Republic of Ireland health & safety regulations and EU directive 97/69/EC: ROCKWOOL fibres are not classified as a possible human carcinogen.

A Material Safety Data Sheet is available and can be downloaded from www.rockwool.co.uk to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

Environment

Made from a renewable and plentiful naturally occurring resource, ROCKWOOL insulation saves fuel costs and energy in use and relies on trapped air for its thermal properties.

ROCKWOOL insulation does not contain (and has never contained) gases that have ozone depletion potential (ODP) or global warming potential (GWP).

ROCKWOOL is approximately 97% recyclable. For waste ROCKWOOL material that may be generated during installation or at end of life, we are happy to discuss the individual requirements of contractors and users considering returning these materials to our factory for recycling.

Interested?

For further information, contact the Technical Solutions Team on 01656 868490 or email technical.solutions@rockwool.co.uk

Visit www.rockwool.co.uk to view our complete range of products and services.

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