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|-------------------|---------------|
| Application type | Thermal |
| Construction type | Pitched roofs |

ROCKWOOL

Rockfall

Warm pitched roofing system for insulation of roof space at rafter level

The Rockfall Warm Pitched Roof Insulation system provides an effective means of insulating the roof space at rafter level, and in a Mansard application allows a flat warm roof to be continued through to the pitched roof area.

The system is adaptable to almost any pitched roof configuration and has been specifically produced for industrial, commercial and domestic projects.



Rockfall System

The Rockwool Rockfall System has been specifically designed for over rafter insulation to pitched roofs. It consists of a high density Rockwool Overlay board fitted over the rafters and a light density Rockwool Underlay board fitted between the rafters. The Rockwool Rockfall system provides an effective means of providing thermal and acoustic insulation for domestic, commercial and industrial buildings.

The characteristics of the underlay board ensure that the correct balanced performance of the system is achieved.

Advantages

- No ventilation required in roof voids or at eaves, ridges etc.
- A breathable and vapour permeable system
- Reduces risk of condensation on roof timbers
- A uniquely fire safe warm pitched roof system
- Habitable loft makes for economic use of heated building space
- Provides an excellent acoustic barrier to external noise pollution

Description, performance and properties

Description

Dimensions

The standard board sizes are as follows:

Rockfall Underlay Board: 1140 × 600mm, available in thicknesses of 100, 120 and 150mm.

Rockfall Overlay Board: 2000 × 600mm, available in thicknesses of 50, 60, 70 and 80.

Rockfall Overlay Boards are also available with full rebated edges.

Rockfall boards – average weights per m²

| Board Thickness (mm) | Rockfall Overlay Board (kg/m ²) | Rockfall Underlay (kg/m ²) |
|----------------------|---|--|
| 50 | 7.90 | – |
| 60 | 9.00 | – |
| 70 | 10.30 | – |
| 80 | 11.60 | – |
| 100 | – | 4.50 |
| 120 | – | 5.40 |
| 150 | – | 6.75 |

Accessories/components

The system relies on the use of standard, 'off the shelf' materials and fixings. Recommended products are shown in the installation and design details and manufacturers are listed under 'Useful contacts' on the back page.

Standards and approvals

Rockwool Rockfall Roofing Boards comply with the requirements of BS EN 13162: 2001 Thermal Insulation products for buildings Factory made mineral wool (MW) products specification.

Performance

Strength

The Rockfall system is capable of resisting the wind and snow loads normally experienced in the United Kingdom. However, the fixing supplier should be consulted for advice (see Page 3 Fixings).

Fire

Rockfall Overlay Boards offer a significant contribution towards improved fire safety. Under the new European Classification for Construction Products Rockfall Overlay and Underlay Boards will achieve a Classification of A1.

If exposed to fire, Rockwool products will not release dense smoke and will withstand temperatures in excess of 1000°C.

The Loss Prevention Council's advice to Insurers is to regard Rockwool insulation as being non-combustible.

Acoustics

The incorporation of a Rockfall system in a roof can provide a noise reduction of 40 dB or more, depending on the actual construction details.

Design considerations

The system is suitable for roof pitches from 15° to the steep pitches associated with Mansard construction. Figures 1, 2 & 3 indicate certain proprietary materials which are integral to the system. Similar and approved materials may be used, but the Rockwool Technical Sales Department should be consulted on the viability of any alternatives specified.

Water vapour and control of condensation

The Rockfall system is vapour permeable and in conjunction with the an approved BBA breather membrane and VCL eliminate the need for ventilation above the insulation.

Guidance on preventing interstitial condensation is given in BRE Digest 369. Condensation risks can be attributed to various sources such as areas of high humidity, purpose/use of the building and the type of external roof covering. Because of such variable factors, it is recommended that an approved vapour control layer (fitted to the 'warm' side of the structure) should be included as an integral part of the roof specification. It should be noted that the risk of interstitial condensation is greater during the initial drying out period of the building.

Breather membranes (BBA approved)

It is important to ensure that the breather membrane specified is suitable for the specific type of construction and has a BBA approval.

Roof ventilation

Note that the system does not require ventilation at eaves or ridge details (illustrated on pages 3 and 4).

Continuity of thermal insulation

Because the roof space beneath the warm pitched roof system is a heated zone, it is very important to ensure the continuity of thermal insulation. If this continuity is broken, the resulting thermal bridge has a disproportionate effect on the heat flow, which may contribute to localised condensation. To avoid such problems, the following points should be addressed:

- The habitable roof void should be completely insulated, including any associated gable walls.
- The insulation boards should be tightly fitted, with no gaps.
- Any gaps around ridges, rooflights or similar penetrations should be filled and sealed.
- Ensure that all fascias and soffits are non-vented. They should preferably be sealed with mastic at abutments with walls.

Structural stability

The Rockfall system is suitable for most roof pitches. It is not, however, designed to add to the structural stability of the roof. Advice should always be sought from a qualified engineer or the truss manufacturer as to the requirements for any additional bracing etc. (see 'Installation and Design details').

It is recommended that the insulation board should not be considered as an alternative to cross bracing and it is recommended that the roof design should be based on the recommendations of the following British Standards: BS 5268: Part 3: 1998, 'Code of practice for trussed rafter construction' and BS 5268: Part 2: 1996, 'Stress design and materials'.

The resistance to wind uplift and likely dead loads depend on factors peculiar to each project, such as roof geometry and geographical location. The effect of wind loading should be calculated in accordance with BS 6399: Part 2: 1997 and for snow loadings, BS 6399: Part 3: 1998.

Construction and installation guidance

Installation of Underlay boards

Installation from above rafters.

On completion of the rafter constructions, timber battens or alternatively renderer's quoin bead, (minimum bearing width 40mm) are clout nailed to both sides of the rafters at a level to suit the depth of Rockfall Underlay (see Figure 1). The underlay is then fitted; it must be tightly butt-jointed between rafters.

Installation from below rafters.

Alternatively, where the ceiling is to be attached directly to the underside of the rafters, Underlay boards may be installed from inside the building. Where the insulation fully fills the rafters, it may be friction fitted. Should the underlay board partly fill the rafters, it must be supported using continuous timber battens or renderer's quoin bead.

Regardless of whether the Underlay has been installed from above or below the rafters, a vapour control layer should be installed on the warm side of the insulation prior to the attachment of the ceiling. Alternatively, this may be accommodated using foil backed plasterboard as the ceiling.

Installation of Overlay boards

Rockfall Overlay Boards are laid across the rafters, starting at the eaves. All boards **must be close-butt**ed and laid with staggered joints. The boards may be cut to length to suit the rafter spacing. A fully rebated Rockfall Board is also available and should be laid as above.

Ensure that the dense layer of the Overlay board is used 'face up'. This side is clearly marked with 'Rockwool. This way up'.

Counter-battens of 50 x 38mm treated softwood, spaced at rafter positions, are mechanically fixed to the rafters using Helifix Insew 600 or SFS IF1 fixings, holding the Overlay board in place. Fixings along counter-battens should be at centres subject to construction type and fixing manufacturer's advice.

A stop batten (similar in thickness to the Overlay board) fixed at the eaves position will assist construction and provide resistance against downward counter-batten loads.

The fascia height must be sufficient to accommodate the level of the roof finish due to the Overlay Board and Counter-battens.

Installation and design details continued

Eaves details

Figure 2 shows a timber stop batten fixed to the foot of the rafters. This provides resistance against the downward counter-batten loads, relieving the fascia board of any horizontally applied load.

A continuous plywood tilting board fixed to the top of the fascia carries the breather membrane over and into the gutter so that it does not sag and allow moisture to collect at the eaves position.

Note that there is no requirement for eaves ventilation in the Rockfall system.

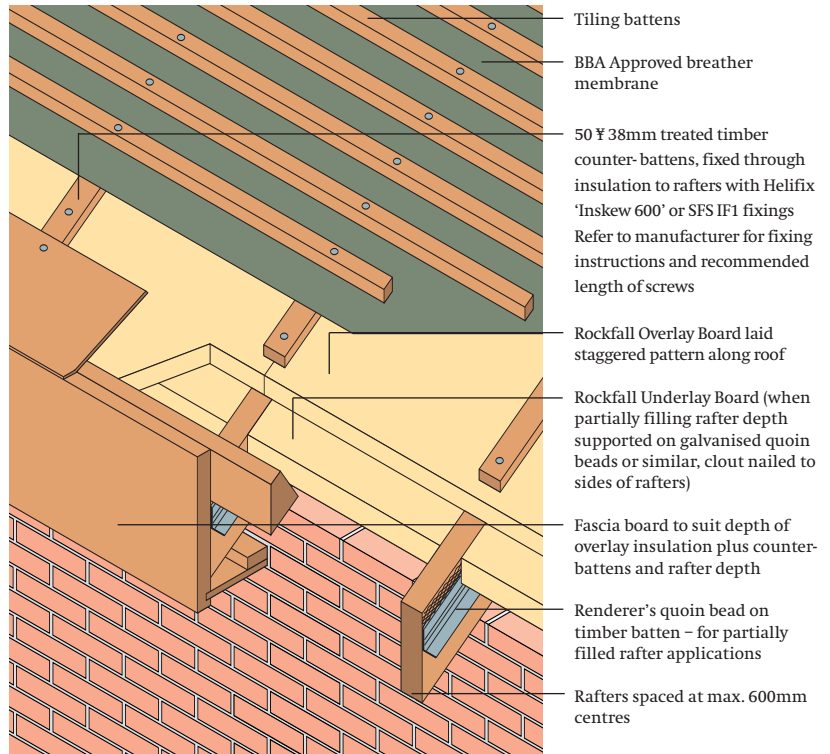


Figure 1 Rockfall Underlay partially filling timber rafter or trussed rafter construction.

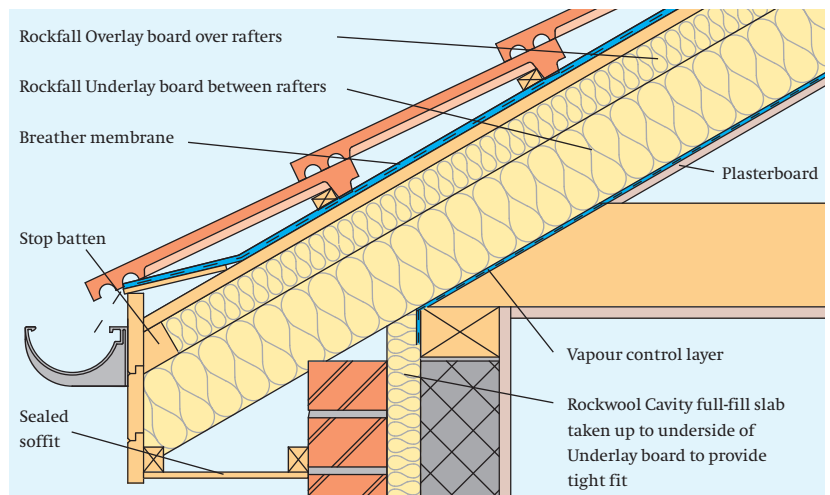


Figure 2 Eaves detail

Typical U values

| Rafter width (x depth of underlay) | | 38mm | | 47mm | |
|--|---|-----------------|------|-----------------|------|
| Rafter spacing (mm) | | 400 | 600 | 400 | 600 |
| Timber bridging | | 9.5% | 6.3% | 11.7% | 7.8% |
| Insulation thickness over rafters (mm) | Insulation thickness between rafters (mm) | U value (W/m²K) | | U value (W/m²K) | |
| 40 | 150 | 0.21 | 0.20 | 0.22 | 0.20 |
| 40 | 200 | 0.17 | 0.16 | 0.18 | 0.16 |
| 50 | 150 | 0.20 | 0.19 | 0.20 | 0.19 |
| 50 | 200 | 0.16 | 0.15 | 0.17 | 0.16 |
| 60 | 200 | 0.15 | 0.15 | 0.16 | 0.15 |
| 70 | 120 | 0.21 | 0.20 | 0.21 | 0.20 |
| 70 | 150 | 0.18 | 0.17 | 0.17 | 0.18 |
| 70 | 200 | 0.15 | 0.14 | 0.15 | 0.15 |
| 80 | 120 | 0.19 | 0.19 | 0.20 | 0.19 |
| 80 | 150 | 0.17 | 0.17 | 0.18 | 0.17 |
| 80 | 220 | 0.13 | 0.13 | 0.13 | 0.13 |

It is recommended that, a vapour control layer is installed beneath the rafter, with joints taped and sealed.

The BBA approved breather membrane is laid across (or under) the counter-battens and lapped (150mm) in accordance with good building practice. Tiling or slating battens are fixed in the normal way.

Mansard roofs

On steeper roof pitches, additional timber stop battens may be required to resist shear forces, as well as additional mechanical fixings.

Fixings

Information and advice on the type and frequency of fixing can be obtained from the relevant manufacturers. For timber rafter or timber deck constructions, Helifix Inskew 600 or SFS IF1 fixings of a suitable length are recommended. In the case of profiled metal decking SFS Stadler will advise as to the correct fixing specification. In either case, the manufacturer's literature should be referred to regarding the minimum penetration depths. (See 'Useful contacts' on back page).

Typical ridge and valley details and for conventional timber roof constructions are shown in figures 3 and 4. The Overlay board should be mitred to make a tight butt joint at the ridge.

Ensure that the breather membrane is continuous at the ridge position (minimum 150mm overlap). Note that the system does not require ventilation at or near the ridge.

Valley details

The detail shows single lap roofing tiles but is applicable also to traditional clay tile or conventional slated roofs.

The Overlay Board should be mitred to make a tight butt joint at the valley position.

The breather membrane should be fitted to ensure a minimum overlap of 150mm at the valley position, to ensure continuity.

Lead valley gutters are an acceptable alternative to preformed valley tiles or slates and should be constructed in accordance with good roofing practice. The lead soakers in such cases should be positioned above the breather membrane.

Specification clause

Rockfall system

Insulation of the rafters is to be Rockwool Rockfall, with*mm Rockfall Overlay Board and*mm* Rockfall Underlay Board as manufactured by Rockwool Limited, Pencoed, Bridgend, CF35 6NY.

Counter-batten fixings are to be at*mm centres.

The system is to be installed in accordance with the manufacturer's detailed recommendations.

Insulation is to be tightly fitted at roof perimeter to ensure continuity between wall and roof insulation systems.

Approved VCL to the underside of the rafter. All insulation joints are to be tight fitting.

*Insert dimensions as appropriate.

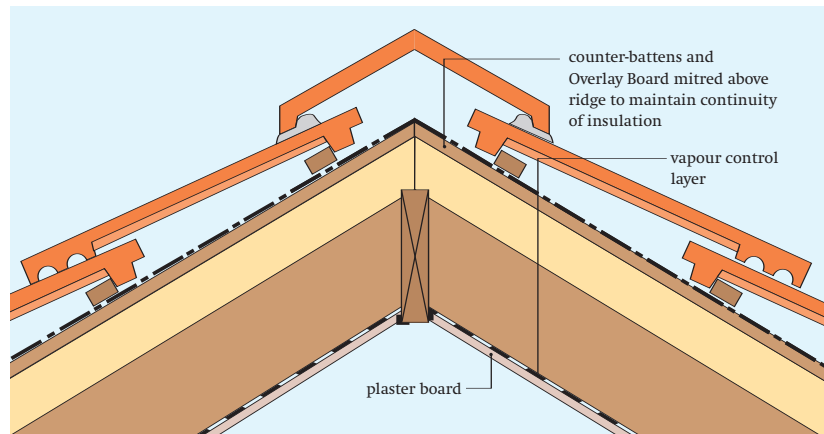


Figure 3 Ridge detail

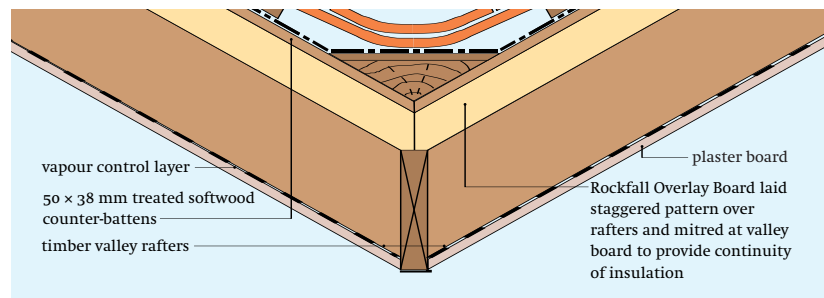


Figure 4 Valley detail

Health and safety

The Rockfall overlay is not a structural board and a safety note should be included on all specifications to prevent foot traffic. Safety precautions should be taken on site in line with good roofing practice and guidance as described in the Health and Safety Guidance note HS/G33 'Safety in Roof Work'.

Current HSE 'CHIP' Regulations and EU directive 97/69/EC confirm the safety of Rockwool mineral wool; Rockwool fibres are not classified as a possible human carcinogen.

The maximum exposure limit for mineral wool is 5mg/m³, 8 hour time-weighted average.

A Material Safety Data Sheet is available from the Rockwool Marketing Services Department to assist in the preparation of risk assessments, as required by the Control of Substances Hazardous to Health Regulations (COSHH).

Environment

Rockwool insulation relies on entrapped air for its thermal properties; air is not a VOC and it does not have Global Warming Potential (GWP) or Ozone Depleting Potential (ODP).



Useful contacts

Recommended fixings and ancillary materials are shown on the drawings or given in the text. The following information on suppliers was correct at the time of going to press:

Helifix Fixings Tel 020 8735 5200
 Helifix Limited Fax 020 8735 5201
 21 Warple Way,
 London W3 0RX

SFS Intec Limited
 153 Kirkstall Road, Tel 0113 2085 500
 Leeds LS4 2AT Fax 0113 2085 539

Rockwool Limited reserves the right to alter or amend the specification of products without notice as our policy is one of constant improvement.

The information contained in this data sheet is believed to be correct at the date of publication. Whilst Rockwool will endeavour to keep its publications up to date, readers will appreciate that between publications there may be pertinent changes in the law, or other developments affecting the accuracy of the information contained in this data sheet.

The above applications do not necessarily represent an exhaustive list of applications for Rockfall. Rockwool Limited does not accept responsibility for the consequences of using Rockfall in applications different from those described above. Expert advice should be sought where such different applications are contemplated, or where the extent of any listed application is in doubt.



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