

DuoRock Roofing Boards

Dual density insulation systems for warm flat roofs

DuoRock Roofing Boards offer the optimum combination of thermal, acoustic and firesafe insulation at economic cost to the contractor.

DuoRock Roofing Boards are available either with a plain surface for use under mechanically fastened or ballasted single ply membrane systems, or with a glass tissue facing for use with high performance built up roofing membranes.



Advantages

- large board size
- cantilever performance
- dimensionally stable
- fully tested systems
- firesafe
- suitable for new build and refurbishment

Single ply mechanically fastened membrane systems

- faster to install
- fewer insulation fasteners

Warm ballasted membrane systems

- insulation or membrane fasteners not required

Built-up felt roofing systems

- 3G layer not required

Typical applications of DuoRock (covered in this and other data sheets)

1 Single ply membranes	Product (and data sheet)
Mechanically fastened	DuoRock (plain) Roofing Board
Warm ballasted roof construction	DuoRock (plain) Roofing Board
2 Built-up felt roofing	
Pour & roll	DuoRock (tissue-faced) Roofing Board
Torch-on	DuoRock Torch-On Roofing Board
3 Cut to falls	DuoRock Cut to Falls

Standards, performance and properties

Standards and approvals

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

European Union of Agrément (UEAtc)

DuoRock Roofing Boards have been assessed by the BBA to the UEAtc Technical guidelines MOAT No 50: 1992 'Thermal insulation systems intended for supporting waterproof coverings on flat and sloping roofs'.

DuoRock Roofing Boards have been tested for the effects of mechanical stress and have achieved Classification B, 'Roof only accessible for purpose of maintenance. May be used without any restrictions.'

The Boards have also been assessed for cantilever and free spanning capabilities.

Factory Mutual

DuoRock (Plain) and DuoRock (Tissue faced) roofing boards are Factory Mutual approved for Class 1 insulated steel deck constructions. Approval Report No. J.I. 3010637

Environment

No CFCs, HFCs or HCFCs are used in the manufacture of Rockwool products.

Dimensions

DuoRock Roofing Boards are manufactured in the following sizes:

Tissue-faced board

1800 × 600 mm

Plain board

1800 × 1200 mm and 1800 × 600 mm.

Standard thicknesses range from 50 mm to 150 mm. Greater thicknesses are available to special order.

The dimensions shall meet the requirements of EN 822 for length and width, EN 823 Class T4 for thickness, EN 824 for squareness, EN 1604 for dimensional stability and EN 1608 for tensile strength parallel to faces.

Performance and properties

Strength

DuoRock Roofing Boards are strong enough to bear normal foot traffic associated with installation and routine maintenance inspections of the roofing system.

Dimensional stability

Being made from rock, DuoRock Roofing Boards are dimensionally stable and therefore:

- a do not require any mechanical fasteners to prevent differential thermal expansion
- b do not exert any undesirable stress on the waterproofing membrane.

Fire

Fire not only destroys buildings and causes business interruptions, but can cost lives because of smoke and fumes that hinder rescue and escape.

Insulation materials should be specified not only for their thermal effectiveness, but also to ensure that no toxic fumes are emitted in a fire.

DuoRock Roofing Board offers a significant contribution towards improved fire safety. Under the new European Classification for Construction Products both DuoRock (plain) and DuoRock (tissue-faced) Roofing Board will achieve a likely 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.

Resistance to moisture

DuoRock Roofing Boards are water-repellent and unaffected by the freeze/thaw cycle.

U values

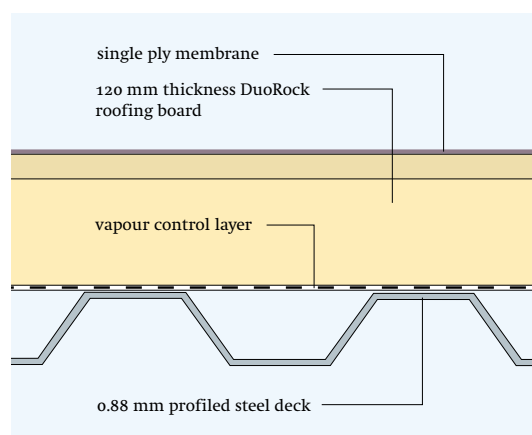
Insulation thicknesses relating to typical roof constructions are provided in the separate U value section of the Rockwool Red Book.

Acoustics

Effective sound insulation is an essential requirement where commercial or industrial operations generate noise levels which are an environmental nuisance and where the exclusion of outside or overhead noise is required for the health or efficiency of building occupants.

DuoRock Roofing Board has been proven to be the ideal material for all applications where noise attenuation or absorption is required.

DuoRock Roofing Board when acoustically tested on a profiled steel deck covered with a single ply membrane achieved a weighted apparent sound reduction index of 36 dB (see illustration below).

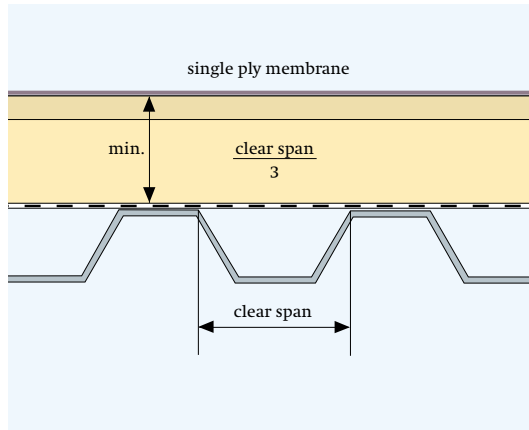


Flat roof detail with DuoRock Roofing Board
Weighted apparent sound reduction index: $R'_w = 36$ dB
(Acoustic Test Report No. 420710 296-1)

Profiled metal deck installations

Free spanning capability

Minimum DuoRock Roofing Board thickness equals the maximum trough width divided by 3.



Crown and trough position

Rockwool DuoRock Roofing Board must be laid with the long edge at right angles to the profiles of the metal deck. Butt joints should occur at the mid-crown position, except where cantilevering is applicable.

Cantilevering

DuoRock Roofing Board of 60 mm or greater thickness may cantilever over a trough, provided that the maximum trough width does not exceed twice the board thickness. For example, 70 mm thick DuoRock Roofing Board may cantilever over a maximum trough width of 140 mm.

Note: For 50 mm thick boards, the maximum trough width is one and a half times the board thickness (i.e. 75 mm).



Applications

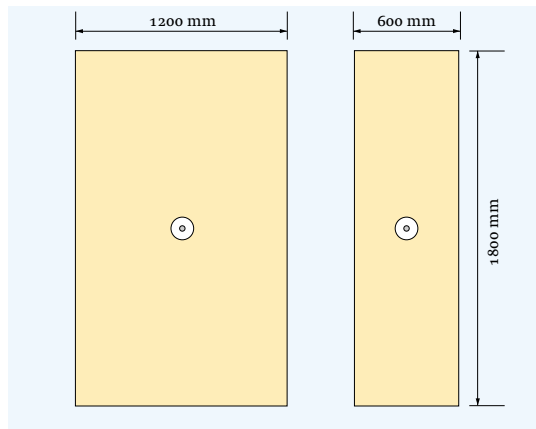
Mechanical fastening of insulation

1 Single ply mechanically fixed systems

Where the complete roofing system is mechanically fastened (for example single ply), Rockwool Limited recommends that a minimum of one mechanical fastener is used per board (or part thereof) to locate and secure the boards during installation.

This recommendation is based on independent wind uplift tests to determine the wind-induced load on mechanically attached DuoRock boards. The tests comply with the boundary conditions specified in the UEAtc Supplementary Guide for the Assessment of Mechanically Fastened Roof Water Proofing.

The tests conclude that for both the field area and the edge region of flat roofs sufficient stability is achieved when using one fastener. For the corner region of flat roofs external suction and internal pressure forces of up to 3.5 kN/m² must be expected. However, it is universal practice in such vulnerable areas to increase the number of membrane fasteners per m², and also to reduce the distance between the rows of fasteners.



Location of mechanical fasteners for securing DuoRock Roofing Board to metal, concrete and timber decks

2 Fully bonded membrane system

Where the membrane is fully bonded to the insulation surface (e.g. with bitumen), the number of mechanical fasteners per board should be determined by windloading calculations conducted by the membrane manufacturer.

Factory Mutual

For Factor Mutual specifications, DuoRock should be fixed in accordance with the specification for Class 1 steel deck constructions and in accordance with F.M. Approved Guide and appropriate F.M. Data sheets. Additionally the insulation boards should be mechanically fixed in accordance with F.M. pre-securement requirements. For further details and guidance please contact Rockwool Ltd.

Additional roof loads

Plant and machinery

Wherever possible, any roof-mounted plant, such as air handling and refrigeration units, should be positioned on independent upstands bearing directly onto the substrate.

Where this is not possible, and the equipment is to be placed directly onto the finished roof, further protection to spread the load on the DuoRock Roofing Board may be required.

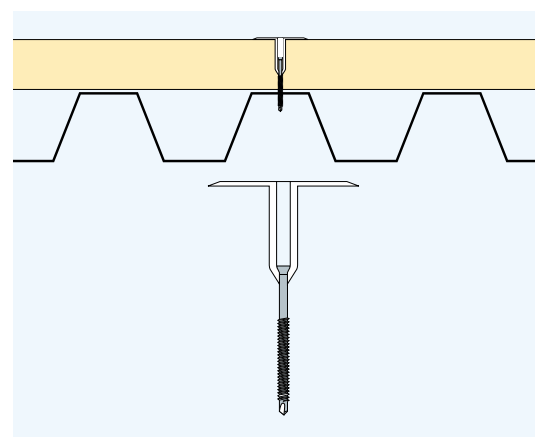
In such cases advice should be sought from the Rockwool Technical Services Department and the membrane manufacturer.

Walkways and access areas

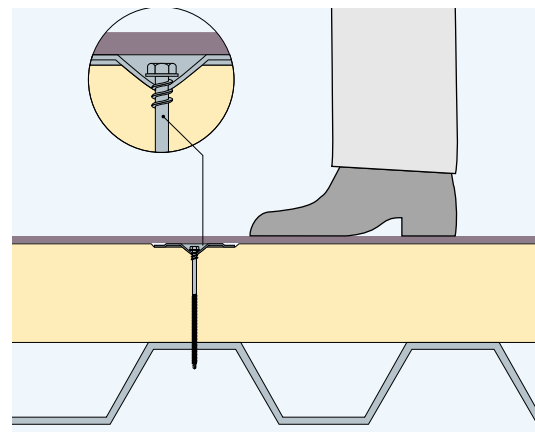
Additional protection to spread the load on DuoRock Roofing Board is also recommended in walkway and access areas. Advice should be sought from the membrane manufacturer on the options available.

Mechanical fastener type

For the mechanical fastening of DuoRock Roofing Boards to metal, concrete or timber decks Rockwool Limited recommends the use of fasteners incorporating either a plastic tube washer or stress plate support thread (see illustrations below).



Plastic tube fastener



Fastener with stress plate support thread



Application of a plastic tube fastener

Typical specification clauses

1 DuoRock (Plain) Roofing Board with mechanically fastened single layer membranes

The roof insulation is to be Rockwool DuoRock (Plain) Roofing Board, as supplied by Rockwool Limited, Pencoed, Bridgend, CF35 6NY.

The board size is to be: 1800 × 1200 mm or 1800 × 600 mm × mm* thick.

The boards are to be laid strictly in accordance with the manufacturer's recommendations, staggered, butt-jointed and mechanically fastened through the vapour control layer to the deck.

The advice of the membrane manufacturer should be sought when specifying all aspects of the vapour control layer, fasteners, waterproof covering and construction of walkways.



2 DuoRock (Plain) Roofing Board within a warm ballasted roof construction (light access)

The roof insulation is to be Rockwool DuoRock (Plain) Roofing Board as supplied by Rockwool Limited, Pencoed, Bridgend, CF35 6NY.

The board size is to be: 1800 × 1200 or 1800 × 600 mm × mm* thick.

The boards are to be loose laid directly onto the vapour control layer, strictly in accordance with manufacturer's recommendations, staggered and butt jointed.

The single ply membrane followed by a fleece filter/cushion layer should be loose laid and installed over the insulation in accordance with the membrane manufacturer's recommendations.

Ballast to be spread evenly to a minimum depth of 50 mm[†] and should consist of 20-40 mm diameter, well rounded, ovoid shaped stones, washed free of sand and fine particles.

Walkway routes, where required, should be established prior to laying the single ply membrane and be formed from 50 mm thick precast concrete paving slabs on purpose made and compatible support pads (Minimum 150 mm diameter). Walkways to be fully supported by a load-spreading layer applied between the insulation and the membrane.

The advice of the membrane manufacturer should be sought when specifying all aspects of the vapour control layer, fasteners, waterproof covering, fleece filter/cushion layer, and construction of walkways.

3 DuoRock (Tissue-Faced) Roofing Board with built-up high performance bituminous membranes

The roof insulation is to be Rockwool DuoRock (Tissue-Faced) Roofing Board as supplied by Rockwool Limited, Pencoed, Bridgend, CF35 6NY.

The board size is to be: 1800 × 600 × mm* thick.

The boards are to be laid strictly in accordance with the manufacturer's recommendations, staggered, butt-jointed and either fully bonded in hot bitumen or mechanically fastened through the vapour control layer to the deck. The membrane must be bonded in accordance with BS 8217: 1994. A ventilating sheet (3G) is not required.

The advice of the membrane manufacturer should be sought when specifying all aspects of the vapour control layer, fasteners, waterproof covering and construction of walkways.

*Insert thickness as appropriate

[†]To be confirmed by calculation conducted by the membrane manufacturer.

Sitework

Installation

General

DuoRock Roofing Boards should be laid with staggered joints wherever possible and tightly butted to avoid gaps. When using plain-faced DuoRock Roofing Boards, ensure that the dense layer is used on the upper side towards the membrane. This is clearly marked on the boards as 'This way up'.

The use of small pieces of insulation board should be avoided.

Care should be taken to clean off all surfaces prior to the laying of insulation boards and membrane.

Appropriate stop battens should be installed to protect open edges of boards.

Day joints must be formed at the conclusion of each section of work to seal exposed edges of insulation boards and prevent damage.

Membrane installation

The membrane should be installed strictly in accordance with the manufacturer's specification and fastening requirements for wind uplift.



Typical application of a single ply membrane over DuoRock (Plain) Roofing Boards

Warm ballasted roof applications

This is applicable for use on new and existing buildings where limited, roof top access is expected. (e.g. light maintenance traffic). The basic roof structure must be capable of supporting the maximum predicted loads with a suitable factor of safety.

Ballast should be laid progressively, working from the area of the roof furthest from the point of access. Care should be taken not to over-stress any area of the roof while distributing the ballast. Load spreading boards should be used when barrowing materials over the insulation and membrane.

In most locations a minimum ballast depth of 50 mm should be applied. Additional ballast may be needed as areas subject to greater wind uplift, such as perimeters. This should be confirmed by the membrane manufacturer. The maximum combined weight of ballast and external loading applied to the insulation board should not exceed 360 kg/m².

Paving slabs may be applied at perimeters, where calculations indicate aggregate will provide insufficient resistance to wind uplift or will be affected by wind scour. The slabs should be raised off the insulation on compatible support pads.

Built-up high performance bituminous membranes

Built-up membranes should not be laid on insulation boards at temperatures below 5° unless special care is exercised.

Water absorption

Rockwool consists of randomly orientated water-repellent fibres. Wetting will therefore only occur in proximity to its surface.

As Rockwool is diffusion open, boards that become wet during installation must be allowed to dry out naturally, prior to the application of the roof membrane.

Vapour control layer

The need for a vapour control layer with DuoRock Roofing Boards should be calculated in accordance with BS 5250: 1989 and with reference to BS 6229: 1982 (Code of Practice For Flat Roofs with Continuously Supported Coverings).

Cutting DuoRock Roofing Board

DuoRock Roofing Board is easy to cut or shape using a sharp knife or panel saw.

Protection of DuoRock Roofing Board during installation

Adequate temporary protection must be provided above the installed DuoRock Roofing Board where any of the following occur: unloading or access points, temporary walkways, stockpiles of roofing materials, waste skips or any other activity that might cause damage to the insulation.

Working platform

Under no circumstances may the finished roof be used as a working platform without adequate protection being provided.

Rockwool Limited recommends that either the main contractor or the roofing contractor operate a 'permit to work' system for any follow-on trades in areas where the roof installation is complete.

Preparation work for refurbishment

Unless the existing roof finish is known to be sound and watertight, and the type and condition of the surface suitable for bonding or mechanical fixing of DuoRock Roofing Board, all previously applied finishes and, if necessary, insulation layers should first of all be removed. It is recommended that the specifier/contractor checks the existing levels to ensure that the falls are correct.

Storage and handling

Rockwool DuoRock Roofing Boards are fully palletised and wrapped in a polythene shroud for protection during transit and for short term protection, if stored outside. For longer term protection the pallets should be stored under a secure waterproofing covering. DuoRock should be stacked no more than 2 pallets high for safety.

Where craning of pallets to roof level is required, the use of a pallet fork attachment is recommended.



Typical pour & roll application over DuoRock (Tissue faced) Roofing Boards.

Right: Ikea distribution centre,
Doncaster. DuoRock (Plain)
Roofing Board, 60,000 m²



Eton Boathouse. DuoRock (Plain)
Roofing Board. 1,200 m²



Right: Extension to factory,
DuoRock (plain) roofing board.



Site advisory service

Rockwool operates a dedicated Site Advisory Service. Rockwool engineers are able to offer advice prior to, during and on completion of the DuoRock Roofing Board installation, to the benefit of the contractor, specifier, client and end user. To take advantage of the Rockwool Site Advisory Service, please specify its use and instruct the contractor to contact the Rockwool Technical Services Department.

Health and safety

A COSHH Data sheet is available from Rockwool's Marketing Services Department.

Current HSE 'CHIP' Regulations and EU Directive 97/69/EC confirm that Rockwool fibres are not classified as a possible carcinogen.

Technical services

Technical advice relating to DuoRock Roofing Board is available from the Rockwool Technical Helpline Services Department on 0871 222 1780.

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 DuoRock. Rockwool Limited does not accept responsibility for the consequences of using DuoRock 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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