

FIREPRO[®] **BEAMCLAD[®]** **Systems**

Fire protection solutions for structural steel & soffit protection



FIREPRO® BEAMCLAD® Systems

ROCKWOOL BEAMCLAD® systems provide a 'tool-box' of options and have been assessed based on fire test data carried out to ENV 13381-4:2002 and EN 13381-4:2013 and in accordance with ASFP Yellow Book, Fire Protection for Structural Steel in Buildings, 5th Edition.

They offer contractors simple and economical fire protection solutions to the very real diversity of modern steel constructions.



Advantages

- Up to 4 hours fire resistance
- *Fire rated timber floor applications
- Moisture repellent
- Quick and simple to apply
- No maintenance

Description

ROCKWOOL BEAMCLAD® is manufactured using high performing, non-combustible stone wool insulation. Available in a plain, foil or tissue faced finish, BEAMCLAD® can provide up to 4 hours fire protection to structural steel.

ROCKWOOL BEAMCLAD® boards are sized 2000 x 1200mm, in a range of thicknesses from 25mm up to 50mm (as standard).

Applications

FIREPRO® BEAMCLAD® Systems have been specially designed to provide fire protection to structural steel for periods of up to 4 hours. BEAMCLAD® Systems provide a flexible range of fixing solutions for all applications, these include:

- Complete glued system
- Welded pins/glued joint system
- Welded pins/dry joint system

FIREPRO® BEAMCLAD® can also be used to provide fire protection to timber floor systems for periods of up to 90mins* with a complete dry fixed system.

High air flow applications

Un-faced ROCKWOOL BEAMCLAD® Systems have been evaluated for use in return air plenums, by the Institute of Occupational Medicine to World Health Organisation test standards and for use in subways, for train speeds up to 150 km per hour.

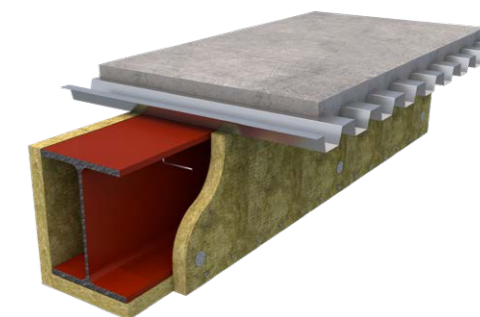


Figure 1
FIREPRO® BEAMCLAD® Systems

*For further information on fire rated timber floor applications please contact ROCKWOOL Technical Support.

Performance

Fire performance

BEAMCLAD® Systems provide up to 4 hours fire resistance for structural steelwork, assessed at critical temperatures between 350°C and 800°C, including the default temperatures of 550°C (columns) and 620°C (beams). Un-faced, aluminium-foil and glass tissue faced product options comply with non-combustible definitions as referenced in UK Building Regulations.

Table 1
Fire performance of BEAMCLAD® Systems

System	Fire resistance (mins)					
	30	60	90	120	180	240
Glued noggins, glued application, glued board joints	✓	✓	✓	✓	✓	✓
Welded pins, glued board joints	✓	✓	✓	✓	✓	✓
Welded pin, dry board joints	✓	✓	✓	✓	✓	

Technical information

Standards and approvals

ROCKWOOL BEAMCLAD® fire protection materials have been assessed to ENV 13381-4:2002 & EN 13881-4:2013 for the fire protection of loadbearing steelwork for up to 4 hours protection.

ROCKWOOL BEAMCLAD® achieves a reaction to fire classification of A1 as defined in BS EN 13501:1.

This product has been authorised for use in LUL surface and sub-surface premises when installed in accordance with this datasheet - please refer to the LUL Approved Product Register website www.LU-apr.co.uk for specific details.

Product information

Property	Description
Length	2000mm
Width	1200mm
Thickness	25 – 100mm*
Density	167 – 180kg/m ³
Reaction to Fire	Euroclass A1
Fire Resistance	Up to 4 hours

* Single board thickness

Installation

FIREPRO® BEAMCLAD® Systems provide a flexible range of fixing options to meet a variety of site requirements. BEAMCLAD® Systems can be broken down into two main types:

1) ROCKWOOL BEAMCLAD® dry joint systems

These use stud welded pins to secure the insulation to all structural steel sections. All board-to-board joints are straight butt joints, without the need for glue.

2) ROCKWOOL BEAMCLAD® glued joint systems

These use an inorganic and non-toxic glue to bind board-to-board joints and/or to the noggins. Galvanised nails of at least 2.5mm for nails shorter than 100mm and at least 4mm for 100mm nails or longer. Nails twice the thickness of insulation, are used to hold the joints together whilst the glue cures. Alternatively, pigtail screws can be used instead of galvanised nails. Pigtail screws should be minimum 2 x thickness of cover board -5mm.

Installation option 1: Dry board joint systems

Stud welded pin application

A dry joint system employing steel welded pins. The system is installed using 2.7mm diameter stud-welded pins.

The steelwork is cleaned in the area where the welded pin is to be positioned. The pin is then welded to the steel flange.

The ROCKWOOL BEAMCLAD® board is then impaled on to the stud welded pins and held in place with 28mm diameter spring steel non-return washers.

The stud welded pins are fixed at max. 320mm centres to top flange and to bottom flange.



Figure 2 - Stud welded pin dry joint board system (Up to 3 hours fire protection)



Figure 3- Two-sided protection with stud welded pins (Up to 3 hours fire protection)

Installation option 2: Glue joint systems

Glue-fixed noggins and board-to-board glued joints

ROCKWOOL BEAMCLAD® noggins (at 1000mm nominal centres) are glued between the steelwork flanges, and the ROCKWOOL BEAMCLAD® side boards are glued to the noggins, ensuring transverse board joints are coincident with the noggins. The ROCKWOOL BEAMCLAD® side boards are also glued at all vertical joints and horizontal board-to-board joints.

Round head nails (length $\geq 2 \times$ thickness of board) are fixed through the side boards into the noggins (min 2) and soffit boards (at 400mm nominal centres) to consolidate the glued joints.

Stud welded pins and board-to-board glued joints

Pins are stud welded at max. 320mm centres to top flange and to bottom flange. All board-to-board joints are glued and nailed.



Figure 4 - Glue-fixed noggins and board-to-board glued joints (Up to 4 hours fire protection)



Figure 5 - Stud welded pins and board-to-board glued joints (Up to 4 hours fire protection)

FIREPRO® Glue – Coverage rates for glued joint systems

FIREPRO® Glue is an inorganic, non-toxic product with a pH of 11. FIREPRO® Glue is supplied pre-mixed in 17kg tubs. A variety of joint types can be used (see previous page).

Coverage rate will depend on the linear length of the joints, width of joint (board thickness) and joint depth. Assuming total, effective usage of the glue on site, the following table provides an approximate weight (kg) of glue per linear metre of joint, based on a glue depth of 1mm.

ROCKWOOL BEAMCLAD® thickness (mm)	Square butt joint
25	0.09
30	0.11
35	0.13
40	0.15
50	0.19
60	0.22

Important:

Care should be taken when using FIREPRO® Glue with foil faced BEAMCLAD® as the alkalinity of the glue is very high and can react with the foil. Avoid any contact between the glue and the foil layer, if contact occurs remove the glue immediately with a damp cloth.

In practice, a degree of wastage would be expected and as such, it would be prudent to make an allowance for this when placing an order. As a very approximate guide, the coverage rate of a 17kg tub of FIREPRO® Glue would be 35m² of applied board.

Board jointing options

Butted corner joints: Butted corner joints are made with square edge boards using either a dry joint, or FIREPRO® Glue and nails/pigtail screws at 400mm centres.

Axial joints: All axial joints are made with square butt edges, without nails. Glue is only required for glued board systems. For Foil faced products, joints can be finished with Class 'O' foil tape.

Noggins: ROCKWOOL BEAMCLAD® boards can be fixed to noggins, cut from ROCKWOOL BEAMCLAD® offcuts of at least the same thickness as the facia and soffit boards.

The edges of the noggins are glued where they contact the steelwork, then, once the glue has set firmly, the cover boards are fixed in position with FIREPRO® Glue and nails/pigtail screws.

Welded steel pins: Boards are impaled onto stud welded pins and secured with non-return washers.

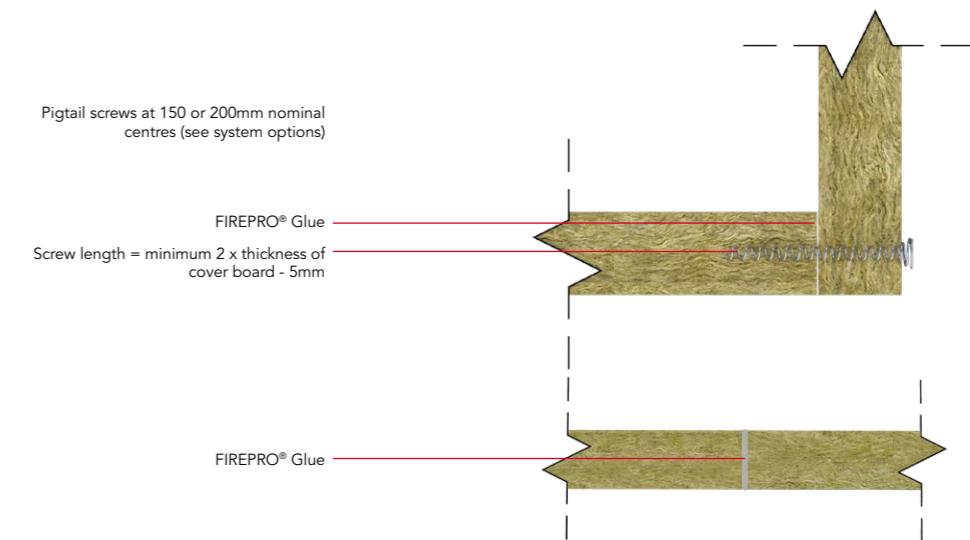


Figure 6

Cellular beams

Thickness calculation method

The method for determining the thickness of ROCKWOOL BEAMCLAD® required to protect a cellular or castellated beam shall be determined as the highest value derived from the following:

- The section factor of the I section above the opening
- The section factor of the I section below the opening
- Calculate the effective section factor using the following equation:
 - Section factor (m-1) = 1400 / t, where t = the thickness (mm) of the lower steel web
- Confirm the limiting design temperature of the beam with the manufacturer. In the absence of such information, a conservative fail temperature of 450°C can be used.
- Using the calculated section factor and protection period required, determine the thickness of ROCKWOOL BEAMCLAD® for a solid beam from the appropriate fire protection table for the limiting design temperature (or 450°C) and the fixing system being considered.
- Multiply this thickness by 1.20 to obtain the ROCKWOOL BEAMCLAD® thickness for the cellular or castellated beam.

Installation options – cellular beams

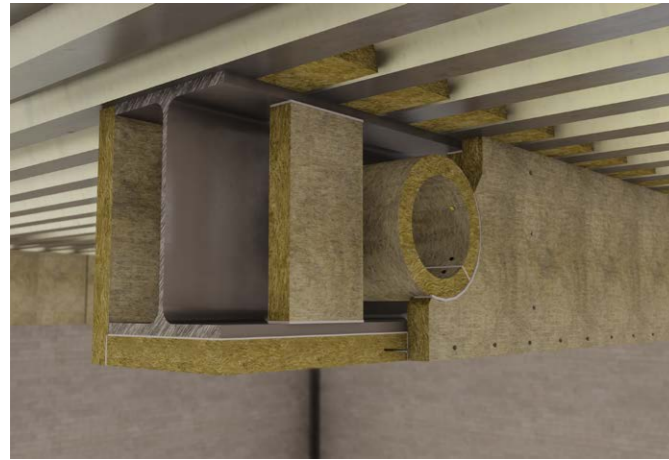


Figure 7 - Beam with circular holes
(boxed protection - glued and pinned joints)

Figure 8 - Beam with square or rectangular holes
(boxed protection - glued and pinned joints)



Figure 9 - Beam with circular holes
(boxed protection - dry joints)

Figure 10 - Beam with square or rectangular holes
(boxed protection - dry joints)

FIREPRO® BEAMCLAD® System Ancillaries

- Pigtail screws are available from ROCKWOOL stockists.
- Welded pins and sprung steel non-return washers are available from external suppliers.
- Fire Duct /Ductrock ductwork solutions are also available for steel duct protection.

Specification clauses

(To be read in conjunction with System Options on previous pages)

1. The structural steel is to be fire protected using ROCKWOOL BEAMCLAD®.....^s system, with a.....^f facing, to provide.....^h fire resistance.
2. The main fixing system will be one of:
 - ROCKWOOL BEAMCLAD® noggin system and glued joints fixed at 1000mm centres.
 - ROCKWOOL BEAMCLAD® stud welded pin system fixed at max. 320mm centres to top flange, and to bottom flange.
3. Board-to-board joints can be dry fixed or glued and nailed/pigtail screwed in accordance with the data sheet.

^s insert system type

^f insert facing option

^h insert period of fire resistance

NBS specification clauses

FIREPRO® BEAMCLAD® Systems are associated with the following NBS specification clauses:

K11 Rigid sheet flooring/sheathing/decking/sarking/linings/casings

- 885 Fire protection board
- 890 Board

Disclaimers

This product should only be utilised for applications as outlined in the relevant ROCKWOOL product datasheet and in accordance with the relevant ROCKWOOL Fire Resistance Testing. Additionally, the product must be installed in accordance with the current ROCKWOOL guidelines. For further information please visit www.rockwool.co.uk or contact our Technical Solutions Team on 01656 868490.




Supporting information

For further information relating to any aspect of the FIREPRO range, please refer to the applicable ROCKWOOL standard details at www.rockwool.co.uk or contact the ROCKWOOL technical solution team on 01656 868490 or technical.solutions@rockwool.co.uk.

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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The ROCKWOOL Trademark

ROCKWOOL® - our trademark

The ROCKWOOL trademark was initially registered in Denmark as a logo mark back in 1936. In 1937, it was accompanied with a word mark registration; a registration which is now extended to more than 60 countries around the world.

The ROCKWOOL trademark is one of the largest assets in the ROCKWOOL Group, and thus well protected and defended by us throughout the world.

If you require permission to use the ROCKWOOL logo for your business, advertising or promotion. You must apply for a Trade Mark Usage Agreement. To apply, write to: marketcom@rockwool.com.

Trademarks

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- ROCKCLOSE®
- RAINSCREEN DUO SLAB®
- HARDROCK®
- ROCKFLOOR®
- FLEXI®
- BEAMCLAD®
- FIREPRO®

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April 2020

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