



**ROCKWOOL®**

**FIREPRO®**

**ROCKWOOL  
BEAMCLAD® Systems**

Fire protection solutions for  
structural steel & soffit protection

# ROCKWOOL BEAMCLAD® Systems

## Fire protection solutions for structural steel & soffit protection

As part of the comprehensive FIREPRO® range of fire protection products, ROCKWOOL BEAMCLAD® systems boast a complete 'tool-box' of options, offering contractors simple and economical fire protection solutions to the very real diversity of modern steel constructions.

Proven in service over many years, these versatile dry fix systems have been widely used to combat the extremes of site, mixed trade and climatic conditions.

ROCKWOOL BEAMCLAD® has been assessed and third party approved for use with solid structural steel sections and cellular sections.

### Configuration options

ROCKWOOL BEAMCLAD® boards can be fitted to provide dry joint solutions offering up to 2 hours fire protection, or glued solutions where extended protection up to 4 hours is required.

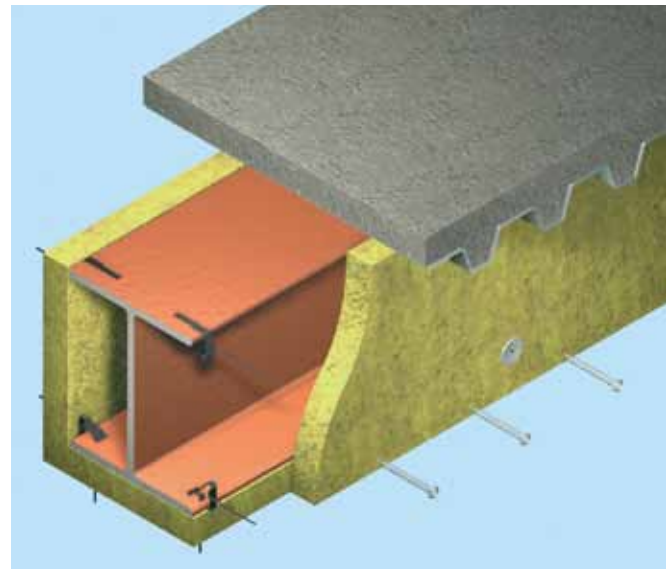
### Project references

Project	Architect
125 Colmore Row, Birmingham	Sidell Gibson Partnership
Scottish Exhibition Conference Centre, Glasgow	Foster and Partners
Eland House, London	EPR Architects
Ocean Terminal, Leith, Edinburgh	Conran and Partners
The Bentall Centre, Kingston, Surrey	Building Design Partnership

### Fire resistances of ROCKWOOL BEAMCLAD® systems

System	Fire resistance (mins)					
	30	60	90	120	180	240
Clip Fixed, dry application, dry board joints	•	•	•	◉		
Glued noggins, dry application, dry board joints	•	•	•	•		
Welded noggins, dry application, dry board joints	•	•	•	•		
Glued noggins, glued application, glued board joints	•	•	•	•	•	•
Welded pins, dry application, glued board joints	•	•	•	•	•	•

◉ for A/V up to 200m<sup>-1</sup>



The unique ROCKWOOL BEAMCLAD® dry fix clip system (International Patent Application No PCT/GB 00/01955)

#### General benefits:

- No maintenance
- Moisture-repellent
- Choice of three finishes
- Easy to repair

#### Dry fix solutions

- Unique clip fix system
- Quick and simple to apply
- Up to 2 hours fire protection
- Dry process, no masked off areas required

#### Glue fix solutions

- Traditional noggin and stud welded pin systems
- Up to 4 hours fire protection
- High resilience



The following NBS Plus clauses include 'ROCKWOOL BEAMCLAD® systems': K11-60, K11-885, K11-890

## Description, performance & properties



### ROCKWOOL BEAMCLAD® P

A plain product with a natural 'green' finish. For concealed areas.



### ROCKWOOL BEAMCLAD® A/F

With Class 'O' reinforced aluminium foil, factory-applied to the outer face. For limited view areas.



### ROCKWOOL BEAMCLAD® T

With a white glass tissue factory-applied to the outer face. For limited view areas.

### Composition & manufacture

ROCKWOOL BEAMCLAD® is manufactured primarily from a melt of volcanic rock and limestone. The molten rock is spun into a wool and immediately impregnated with special resins for handling and shaping. The material is then compressed, cured and formed into boards.

ROCKWOOL BEAMCLAD® boards are sized 2000 x 1200mm, in a range of thicknesses from 25mm up to 60mm.

### Board density

Nominally 167 – 180 kg/m<sup>3</sup>.

### Standards

ROCKWOOL BEAMCLAD® fire protection materials have been assessed to BS 476: Part 21: 1987 for the fire protection of loadbearing steelwork for up to 4 hours protection.

ROCKWOOL BEAMCLAD® Systems are third party approved by the Loss Prevention Council Certification board (LPCB) for performance and quality and are listed in the **Red Book** - certificate no. 022d. Certificates can be accessed online at [www.rockwool.co.uk](http://www.rockwool.co.uk) or [www.redbooklive.com](http://www.redbooklive.com)

### High air flow situations

Unfaced 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.

### Performance & properties

#### Fire performance

Up to 4 hours fire resistance for structural steelwork, assessed at critical temperatures between 350°C and 700°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 both non-combustible and Class O definitions in UK Building Regulations.

#### Moisture

The rock wool fibres of ROCKWOOL BEAMCLAD® boards are randomly oriented, avoiding any tendency to promote capillary action or hygroscopic moisture absorption.

#### Moisture content

0% in air-dried state.

#### Moisture absorption

0.004% by volume at 20°C and 90% relative humidity.

#### Water absorption

Maximum 60 g/m<sup>2</sup> after 24 hour total water immersion testing (i.e. approximately 1.5% by weight for 25mm plain board).

## Construction & installation guidance



ROCKWOOL BEAMCLAD® clip fix clip



Noggins glued between steelwork flanges.



Fixing stud welded pins

A comprehensive range of practical systems is available to meet a variety of site requirements.

### ROCKWOOL BEAMCLAD® dry joint systems

These use either purpose-made clips, glued mineral wool noggins or stud welded pins to secure the insulation to structural steel sections. All board-to-board joints are straight butt joints, without the need for glue. Pigtail screws (minimum twice the insulation thickness, less 5mm) are used to secure the insulation boards to each other and/or to the noggins.

### ROCKWOOL BEAMCLAD® glued joint systems

These use an inorganic and non-toxic glue to bind board-to-board joints and/or to the noggins. Standard flat head nails, twice the thickness of the insulation, are used as initial supports.

## Installation options

### Dry board joint systems

#### Clip fix application

A quick and user-friendly dry joint board system featuring ROCKWOOL®'s push-fit clips.

The spring action of the clip creates a vice-like grip on the steelwork flange. The ROCKWOOL BEAMCLAD® board is impaled on to the clip pins and held in place with spring steel non-return washers. Supplementary pigtail screws fixed through the side boards into the soffit boards complete this system.

The clips are located at max. 600mm centres to top flange and max. 900mm centres to bottom flange, with pigtail screws for board to board joints at 150mm centres.

Combined clip and stud welded pin dry joint system

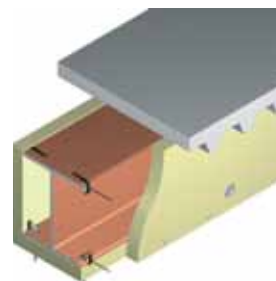
Where it is not possible to clip fix, eg beneath concrete soffits, stud welded pins (at the same fixing centres) are used in lieu of the clip fixing.

A/V limit for 2 hours = 200

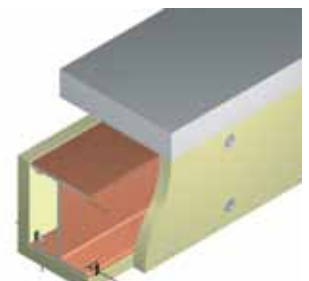
#### Glued noggins application

A fast, easy to apply, dry joint board system where noggins are glued into position between the steelwork flanges using FIREPRO® Glue. Noggins are fixed at 1000mm nominal centres. The ROCKWOOL BEAMCLAD® boards are then retained by means of pigtail screws, fixed at 100mm nominal centres to the noggins and 200mm centres for board-to-board joints.

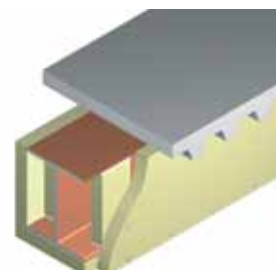
For beam depths over 500mm a Tee-noggin or full depth solid noggin is used to provide the support for the cover boards.



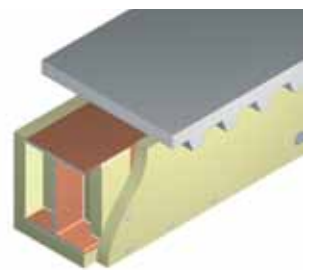
Clip fix dry joint board system  
(up to 2 hours fire protection)



Clip and stud welded pin dry joint system  
(up to 2 hours fire protection)



Glued noggins dry joint board system  
(up to 2 hours fire protection)



Alternative Tee-noggin arrangement  
(up to 2 hours fire protection)

## Installation options

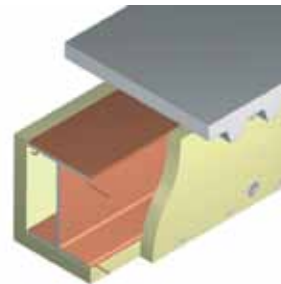
### Stud welded pin application

A dry joint system employing steel welded pins.

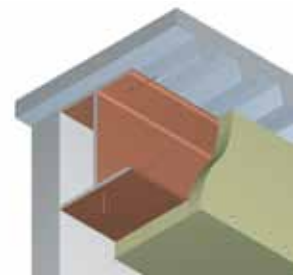
The steelwork is cleaned in the area where the welded pin is to be positioned. The pin is then welded to the steel flange.

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

The stud welded pins are fixed at max. 600mm centres to top flange and max. 900mm centres to bottom flange. The ROCKWOOL BEAMCLAD® board-to-board joints are then secured by means of pigtail screws fixed at nominal 150mm centres.



Stud welded pin dry joint board system (up to 2 hours fire protection)



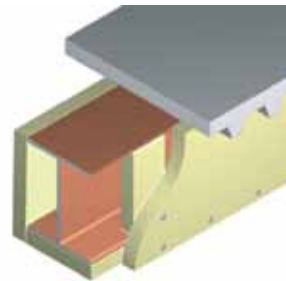
Two-sided protection with stud welded pins (up to 2 hours fire protection)

### Glued board systems

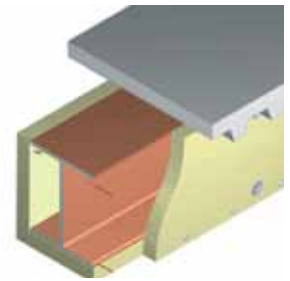
#### Glue-fixed noggins and board-to-board glued joints

ROCKWOOL BEAMCLAD® noggins (at 1000mm nominal centres) are glued between the steelwork flanges, and the ROCKWOOL BEAMCLAD® side boards are glued to the noggins. 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.



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



Stud welded pins and board-to-board glued joints (up to 4 hours fire protection)

#### Stud welded pins and board-to-board glued joints

Pins are stud welded at max. 600mm centres to top flange and max. 900mm centres to bottom flange. All board-to-board joints are glued and nailed.

### Board jointing

#### Butted corner joints

Butted corner joints are made with square edge boards using either a dry joint with pigtail screws as below, or FIREPRO® Glue and nails 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.

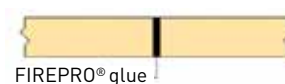
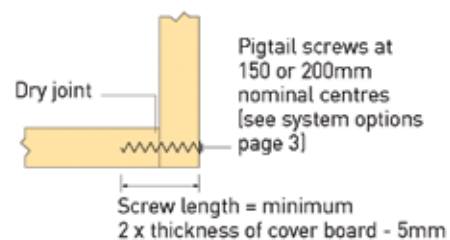
#### Noggins

ROCKWOOL BEAMCLAD® boards can be fixed to noggins, cut from ROCKWOOL BEAMCLAD® offcuts of at least the same thickness as the fascia 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 either pigtail screws or FIREPRO® Glue and nails.

#### Welded steel pins

Boards are impaled onto stud welded pins and secured with nonreturn washers.



# Installation options

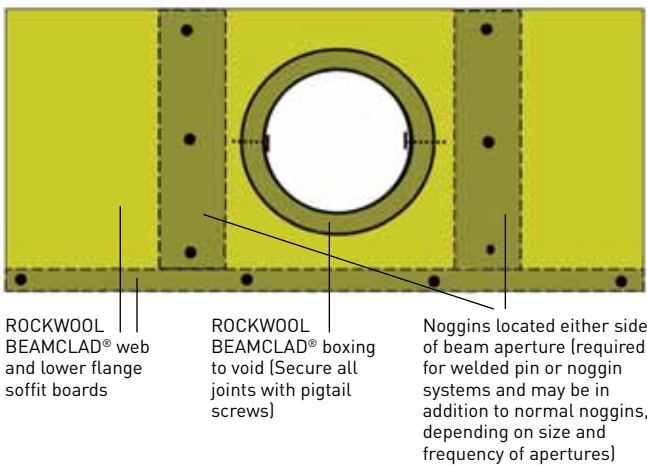
## Cellular

The method for determining the thickness of ROCKWOOL BEAMCLAD® required to protect a cellular or castellated beam:

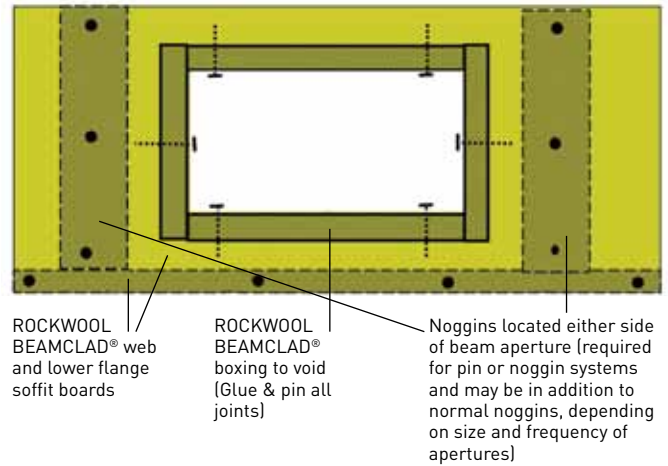
- Calculate the effective section factor using the following equation  
 Section factor ( $m^{-1}$ ) =  $1400 / t$ , where  $t$  = the thickness (mm) of the lower steel web
- Confirm the limiting design temperature of the beam with the manufacturer. In the absence of such information, a conservative 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.

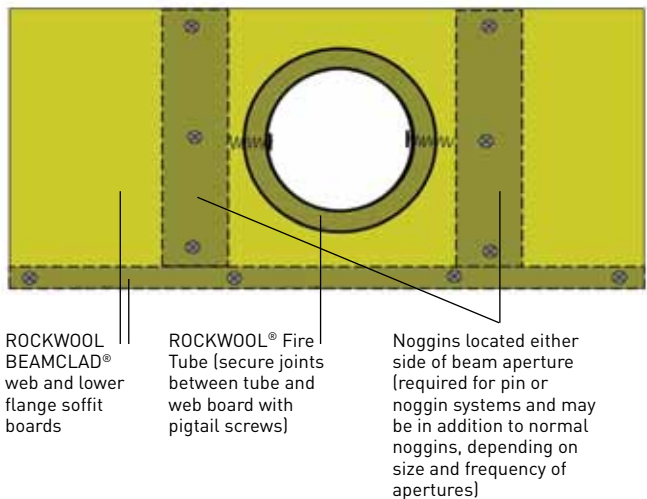
### Beam with circular holes (boxed & profiled protection - glued and pinned joints)



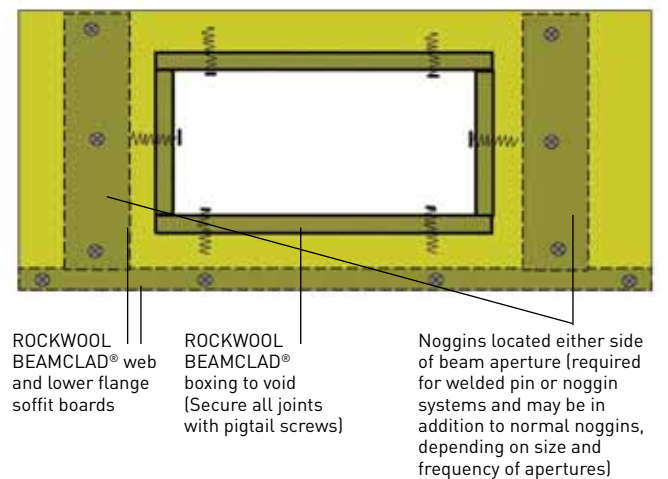
### Beam with square or rectangular holes (boxed & profiled protection - glued and pinned joints)



### Beam with circular holes (boxed protection - dry joints)



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



## Installation options

### Joists & glue

FIREPRO® Glue is an inorganic, non-toxic product with a pH of 11. FIREPRO® Glue is supplied pre-mixed in 17 kg 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 useage 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	45° mitre joint
25	0.09	0.13
30	0.11	0.16
35	0.13	0.19
40	0.15	0.21
50	0.19	0.27
60	0.22	0.33

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 35m<sup>2</sup> of applied board.

### Supply

ROCKWOOL BEAMCLAD® slabs are supplied on pallets, shrink-wrapped in polyethylene, 26 pallets per 40 ft container.

Pigtail screws are available from ROCKWOOL® stockists.

ROCKWOOL BEAMCLAD® clips are available in 2 sizes from ROCKWOOL® in boxes of 1000 – small for 25mm and 30mm, large for 25mm and 40mm.

Washers are available from ROCKWOOL® in boxes of 2000.

Welded pins and sprung steel non-return washers are available from external suppliers.

Fire Tube is also available for circular steel sections.

Fire Duct dry fix ductwork solutions are also available for steel duct protection.

### Typical specification clauses

(to be read in conjunction with System Options on previous page)

- The structural steel is to be fire protected using ROCKWOOL BEAMCLAD® .....<sup>s</sup> system, with a .....<sup>f</sup> facing, to provide .....<sup>h</sup> fire resistance.
- The main fixing system will be one of:
  - ROCKWOOL BEAMCLAD® clip system fixed at max. 600mm centres to top flange, and max. 900mm centres to bottom flange,
  - ROCKWOOL BEAMCLAD® noggin system fixed at 1000mm centres,
  - ROCKWOOL BEAMCLAD® stud welded pin system fixed at max. 600mm centres to top flange, and max. 900mm centres to bottom flange.
- Board-to-board joints should be dry fixed using pigtail screws or glued and nailed in accordance with the data sheet.

<sup>s</sup> insert system type

<sup>f</sup> insert facing option

<sup>h</sup> insert period of fire resistance

### **Health and Safety**

In accordance with REACH health and environment regulations, there are no hazardous classifications associated with ROCKWOOL® mineral wool in respect to physical, health and environmental considerations.

### **More information**

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.

## **Interested?**

For further information, contact the Technical Solutions Team on 0871 222 1780 or email [info@rockwool.co.uk](mailto:info@rockwool.co.uk)

Visit [www.rockwool.co.uk](http://www.rockwool.co.uk) to view our complete range of products and services.

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