Construction type — Structural Steelwork

Rockwool supports FIRAS accredited installers

BeamClad™ Systems (previously Conlit 150)

Fire protection solutions for structural steel and soffit protection

As part of the comprehensive Firepro range of fire protection products, the BeamClad systems embody a complete 'tool-box' of options to offer 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 Rockwool systems have been widely used to combat the extremes of site, mixed trade and climatic conditions.

Configuration options

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.

Advantages

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

Fire resistances of BeamClad systems

System	Fire resistance (mins) 30	60	90	120	180	240
Dry fix clips	•	•	•	⊙		
Dry fix glued noggings	•	•	•	•		
Dry fix stud welded pins	•	•	•	•		
Glued nogging fix	•	•	•	•	•	•
Glued stud welded pin fix	•	•	•	•	•	•

⊙ for Hp/A up to 158m^{-1}

The unique Rockwool BeamClad (previously named Conlit 150) dry fix clip system (International Patent Application No PCT/GB 00/01955)

Project references

Project	Architect
1 125 Colmore Row, Birmingham	Sidell Gibson Partnership
2 Scottish Exhibition Conference Centre, Glasgow	Foster and Partners
3 Eland House, London	EPR Architects
4 Ocean Terminal, Leith, Edinburgh	Conran and Partners
5 The Bentall Centre, Kingston, Surrey	Building Design Partnership

NBS Plus

The following NBS Plus clauses include BeamClad systems: K11 890

BeamClad P
A plain product with a natural 'green' finish.

For concealed areas.

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

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

Product options

Composition and manufacture

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.

BeamClad boards are sized 2000 × 1200mm, in a range of thicknesses from 25mm up to 110mm.

Board density
Nominally 165 kg/m^3.

For high impact protection systems for beams and columns please refer to ColumnClad data sheet.

Standards

Rockwool BeamClad fire protection materials have been assessed to BS 476: Part 21: 1987 for the fire protection of loadbearing steel beams and columns for up to 4 hours protection, based on tests carried out to BS 476: Part 8: 1972 and BS 476: Part 21: 1987.

High air flow situations
Unfaced 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 and properties

Fire performance
Up to 4 hours fire resistance for structural steelwork, assessed at 550°C failure criteria. The unfaced, foil and tissue faced products achieve Euro Class A1 (reaction to fire).

Moisture
The rock wool fibres of 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 grammes/m^2 after 24 hour total water immersion testing (i.e. approximately 1.5% by weight for 25mm plain board).

Fixing options

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

BeamClad dry joint systems
These use either purpose-made clips, glued mineral wool noggings 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.

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.

BeamClad clip fix clip

Noggings glued between steelwork flanges

Fixing stud welded pins

Installation options

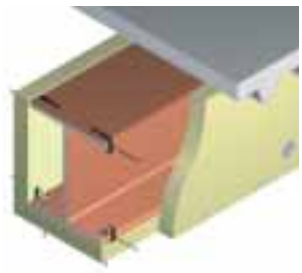
1 Clip fix dry joint board system
A quick and user-friendly dry joint board system featuring Rockwool's clip fix clips.

The spring action of the clip creates a vice-like grip on the steelwork flange. The 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.

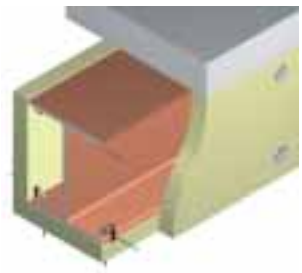
Clip fix clips are fixed at max. 600mm centres to **top** flange, max. 900mm centres to **bottom** flange, and pigtail screws at 150mm centres.

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.

Hp/A limit for 2 hours = 158



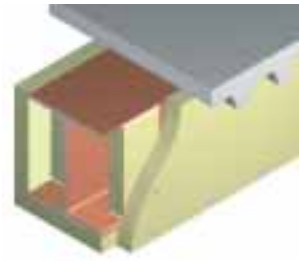
1 Clip fix dry joint board system (up to 2 hours fire protection)



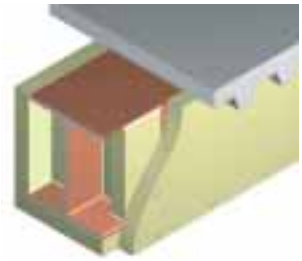
1 Clip and stud welded pin dry joint system (up to 2 hours fire protection)

2 Glued noggings dry joint board system
An easy-to-apply and fast dry joint board system where noggings are glued into position between the steelwork flanges using Firepro Glue (previously Conlit Glue). Noggings are fixed at 1000mm nominal centres. The BeamClad boards are then retained by means of pigtail screws, fixed at 100mm nominal centres to the noggings and 200mm centres for board-to-board joints.

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



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



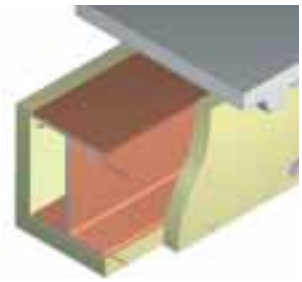
2 Alternative Tee-nogging arrangement (up to 2 hours fire protection)

3 Stud welded pin dry joint board system
A dry joint system employing steel welded pins.

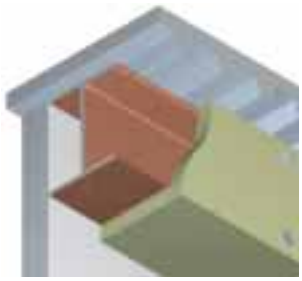
The steelwork is cleaned in the area where the welded pin is to be positioned. The pin is then welded to the steel flange.

The 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 BeamClad board-to-board joints are then secured by means of pigtail screws fixed at nominal 150mm centres.



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



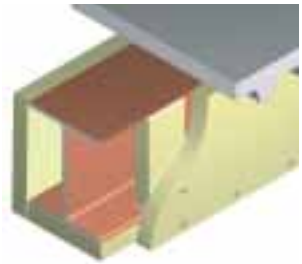
3 Two-sided protection with stud welded pins (up to 2 hours fire protection)

4 Glued board systems
Glue-fixed noggings and board-to-board glued joints

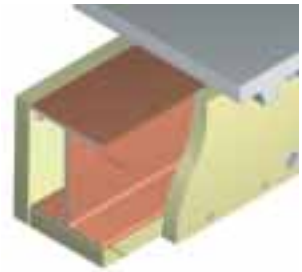
BeamClad noggings (at 1000mm nominal centres) are glued between the steelwork flanges, and the BeamClad side boards are glued to the noggings. The BeamClad side boards are also glued at all vertical joints and horizontal board-to-board joints.

Round head nails (length ≥ 2 × thickness of board) are fixed through the side boards into the noggings (min 2) and soffit boards (nominally 400mm centres) to consolidate the glued joints.

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.



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

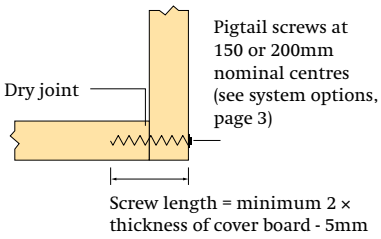


4 Stud welded pins and board-to-board glued joints (up to 4 hours fire protection)

Board jointing

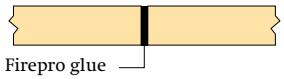
Butted corner joints

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.

Noggings

BeamClad boards can be fixed to noggings, cut from BeamClad offcuts of at least the same thickness as the board.

The edges of the noggings 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 secured to stud welded pins with non-return washers.

Joints and 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 page 3).

The coverage rate of Firepro Glue is approximately 35 m2 of applied board per 17 kg tub.

Health and Safety

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/m^3, 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).

Supply

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

Pigtail screws are available from Rockwool stockists.

Clip fix 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 Cutlas Fasteners Ltd. tel: 01942 712387, or Taylor Stud Welding Systems Ltd. tel: 01942 452132

References

This is one of a series of Data Sheets covering the complete range of Rockwool products in the Firepro fire protection range, available from Marketing Services Department.

ColumnClad is also available where high impact column protection is required.

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 page 3)

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:
  a) BeamClad clip system fixed at max. 600mm centres to **top** flange, and max. 900mm centres to **bottom** flange,
  b) BeamClad nogging system fixed at 1000mm centres,
  c) BeamClad stud welded pin system fixed at max. 600mm centres to **top** flange, and max. 900mm centres to **bottom** flange.

3 Board-to-board joints should be dry fixed using pigtail screws or glued and nailed in accordance with the data sheet.

[s] insert system type
[f] insert facing option
[h] insert period of fire resistance

Technical Helpline

For technical advice call the Rockwool Technical Helpline on 0871 222 1780.

ROCKWOOL
FIRESAFE INSULATION

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