

British Gypsum

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Agrément Certificate
93/2935
Product Sheet 1

FIRE PROTECTION SYSTEMS

GLASROC F FIRECASE

This Agrément Certificate Product Sheet⁽¹⁾ relates to Glasroc F FIRECASE, a non-combustible glassfibre-reinforced gypsum board, for use as part of a frameless encasement system providing up to two hours' fire protection to structural steel sections.

(1) Hereinafter referred to as 'Certificate'.

CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Performance in relation to fire — the product may be used to protect structural steel where 30 minutes' to 120 minutes' fire resistance is required (see section 6).

Strength — the product has satisfactory resistance to impacts and loads associated with normal use (see section 7).

Durability — provided it is used in accordance with this Certificate, the product will have a life equal to that of the building in which it is installed (see section 9).

The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe
Head of Approvals — Materials

Claire Curtis-Thomas
Chief Executive

Date of First issue: 10 April 2014

Originally certificated on 21 September 1993

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Glasroc F FIRECASE, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: B2(1)(2)	Internal fire spread (linings)
Comment:	The product is unrestricted by this Requirement. See section 6 of this Certificate.
Requirement: B3(1)(2)(3)(4)	Internal fire spread (structure)
Comment:	The product will contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Durability, workmanship and fitness of materials
Comment:	The product can contribute to a construction satisfying this Regulation. See sections 8 and 9 and the <i>Installation</i> part of this Certificate
Regulation: 9	Building standards applicable to construction
Standard: 2.1	Compartmentation
Standard: 2.2	Separation
Standard: 2.4	Cavities
Standard: 2.5	Internal linings
Comment:	The product is non-combustible and is unrestricted by these Standards, with reference to clauses 2.1.13 ⁽²⁾ , 2.2.4 ⁽²⁾ , 2.2.5 ⁽¹⁾⁽²⁾ , 2.2.7 ⁽¹⁾ , 2.2.8 ⁽¹⁾ , 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.3 ⁽²⁾ , 2.4.4 ⁽¹⁾⁽²⁾ , 2.4.6 ⁽²⁾ , 2.4.7 ⁽¹⁾ , 2.4.9 ⁽²⁾ and 2.5.1 ⁽¹⁾⁽²⁾ respectively. See section 6 of this Certificate.
Comment:	The product can contribute to walls and ceilings satisfying the requirements of these Standards for fire resistance, with reference to clauses 2.1.2 ⁽²⁾ , 2.1.5 ⁽²⁾ , 2.1.9 ⁽²⁾ to 2.1.14 ⁽²⁾ , 2.1.16 ⁽²⁾ , 2.2.1 ⁽¹⁾ , 2.2.2 ⁽¹⁾⁽²⁾ , 2.2.3 ⁽¹⁾⁽²⁾ , 2.2.4 ⁽¹⁾⁽²⁾ , 2.2.5 ⁽¹⁾⁽²⁾ , 2.2.6 ⁽¹⁾ , 2.2.7 ⁽¹⁾⁽²⁾ , 2.2.8 ⁽¹⁾ , 2.2.10 ⁽¹⁾ , 2.4.2 ⁽¹⁾⁽²⁾ , 2.4.3 ⁽¹⁾ , 2.4.4 ⁽¹⁾⁽²⁾ , 2.4.5 ⁽²⁾ and 2.4.9 ⁽²⁾ . See section 6 of this Certificate.
Standard: 7.1(a)	Statement of sustainability
Comment:	The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for these systems under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23 (a)(i)(iii)(b)(i)	Fitness of materials and workmanship
Comment:	The product is acceptable. See section 9 and the <i>Installation</i> part of this Certificate.
Regulation: 34(a)(b)	Internal fire spread – linings
Comment:	The product is unrestricted by this Regulation. See section 6 of this Certificate.
Regulation: 35(1)	Internal fire spread – structure
Comment:	The product will contribute to satisfying the requirements of this Regulation. See section 6 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 1 *Description* (1.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Glasroc F FIRECASE, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 8.2. *Walls and Ceiling finishes*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard BS EN 15283-1 : 2008. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Glasroc F FIRECASE board is a non-combustible glassfibre-reinforced gypsum board, for use as part of a frameless encasement system for structural steel sections, providing up to two hours' fire protection.

1.2 The boards are square-edged with a smooth surface on the face side. A range of board sizes is available, and typical board dimensions and weights are given in Table 1.

Table 1 Board dimensions and weights

Characteristic (unit)	Board thickness (mm)			
	15	20	25	30
Board width (mm)	1200	1200	1200	1200
Board length (mm)	2400	2000	2000	2000
Board density (kg·m ⁻³)	850	850	850	850
Weight per unit area (kg·m ⁻²)	12.75	17.00	21.25	25.50
Total board weight (kg)	36.72	40.80	51.00	61.20

1.3 Ancillary items for use with the product, but outside the scope of this Certificate, are:

- Gypframe FEA 1 steel angle — 25 mm by 25 mm, 0.5 mm thick and 2900 mm long
- Glasroc F FIRECASE screws — 40 mm, 50 mm, 58 mm and 70 mm long
- Paslode galvanized staples — 50 mm long
- Gyproc Joint Cement
- Gyproc Joint Filler
- Thistle Multi-Finish plaster (or paint).

1.4 Glasroc F FIRECASE may be finished using Gyproc Joint Cement, Gyproc Joint Filler, Thistle Multi-Finish plaster, and Gyproc Metal Angle Bead.

1.5 Glasroc F FIRECASE board consists of a core of gypsum, paper fibre and glassfibre, incorporating a tissue of glassfibre immediately below the surface of the board.

2 Manufacture

2.1 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.2 The management system of British Gypsum Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by BSI Management (Certificate number FM 52358).

3 Delivery and site handling

3.1 The product is delivered to site in stacks wrapped in polythene on wooden pallets. The product name, shift details, date of manufacture and thickness of board are printed on the underside of the boards and on a label.

3.2 The product should be stored flat on a dry, level surface, preferably inside a building and protected from damp and weather. The boards should be stacked, smooth faces together, not exceeding 1 m in height. Information on handling and storage practices is detailed in British Gypsum's *White Book*.

3.3 Dry materials, such as jointing materials, must be stored in a cool, dry place and protected from moisture. Metal components must be stored in dry conditions.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Glasroc F FIRECASE.

4 General

4.1 Glasroc F FIRECASE is satisfactory for use as part of a frameless encasement system for steel columns, beams and joists on three or four sides, providing up to two hours' fire resistance.

4.2 The product may be used for structural steel I-sections with a section factor A/V (H_p/A) of up to 260 m^{-1} , calculated on the basis of three- or four-sided protection with flange widths $\leq 325 \text{ mm}$ and web depths $\leq 686 \text{ mm}$.

4.3 When Glasroc F FIRECASE is used to provide four-sided protection to columns (see Figure 1), boards are fixed to each other. When it is used for three-sided protection of columns and beams, either steel angles (see Figure 2) or Glasroc F FIRECASE soldiers (see Figure 3) may be used.

Figure 1 Four-sided column protection

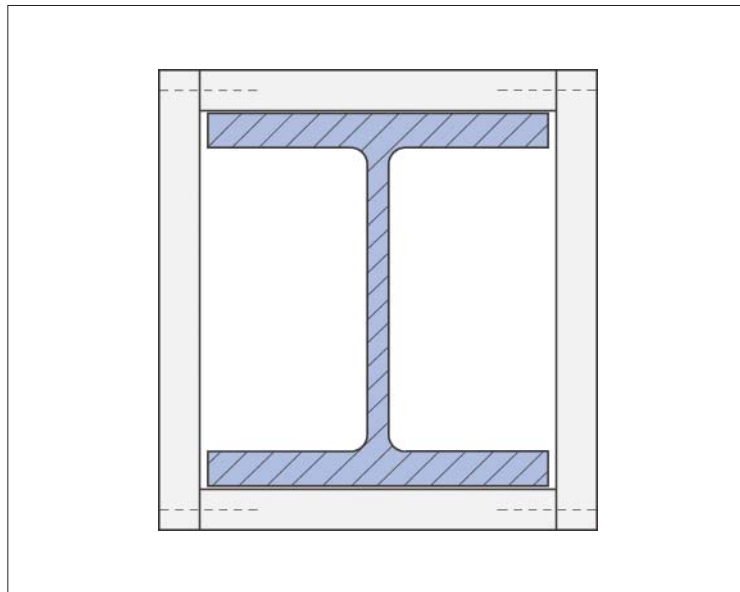


Figure 2 Three-sided beam protection incorporating steel angles

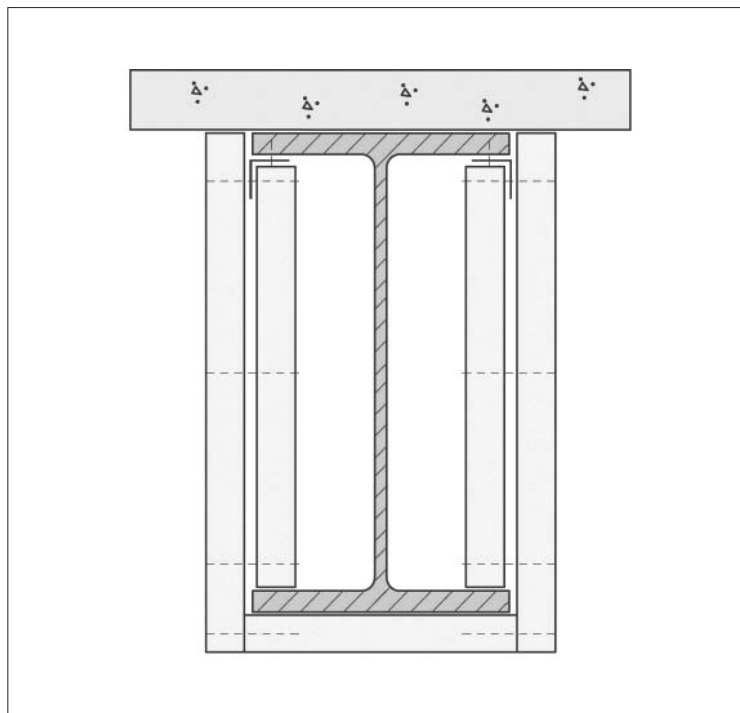
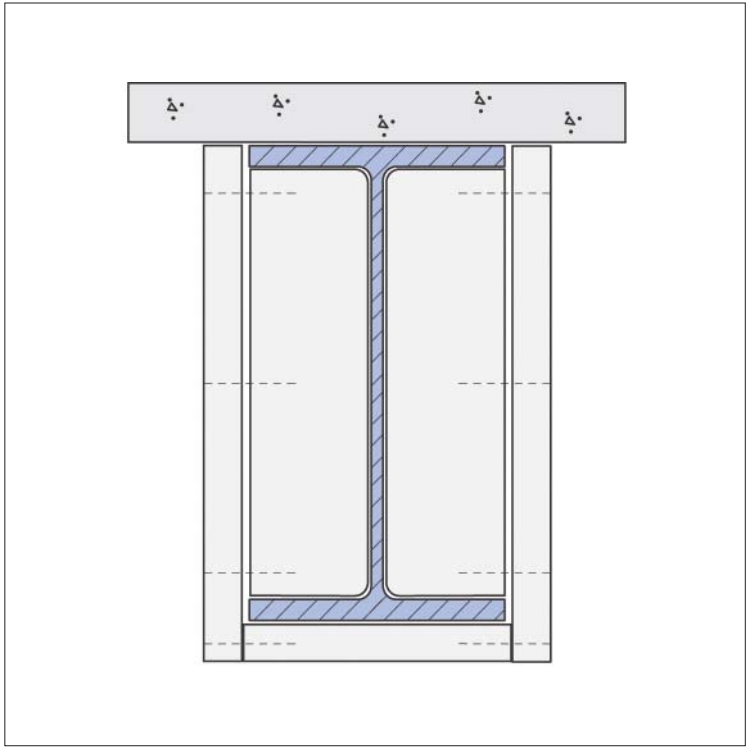


Figure 3 Three-sided beam protection incorporating soldiers




4.4 When installed, Glasroc F FIRECASE can be jointed and finished in the same manner as conventional plasterboard, using Gyproc Joint Cement and Thistle Multi-Finish plaster (or paint), respectively.

5 Practicability of installation

This product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Performance in relation to fire

 6.1 The product is classed as non-combustible and has a reaction to fire Euroclassification of A1 as defined in BS EN 13501-1 : 2002.

6.2 The product is therefore defined as non-combustible in the following national Building Regulations:

England and Wales — Approved Document B Appendix A, Tables A6 and A8

Scotland — Table to Annex 2C⁽¹⁾ or 2E⁽²⁾ of Regulation 9

(1) Technical Handbook (Domestic)

(2) Technical Handbook (Non-Domestic)

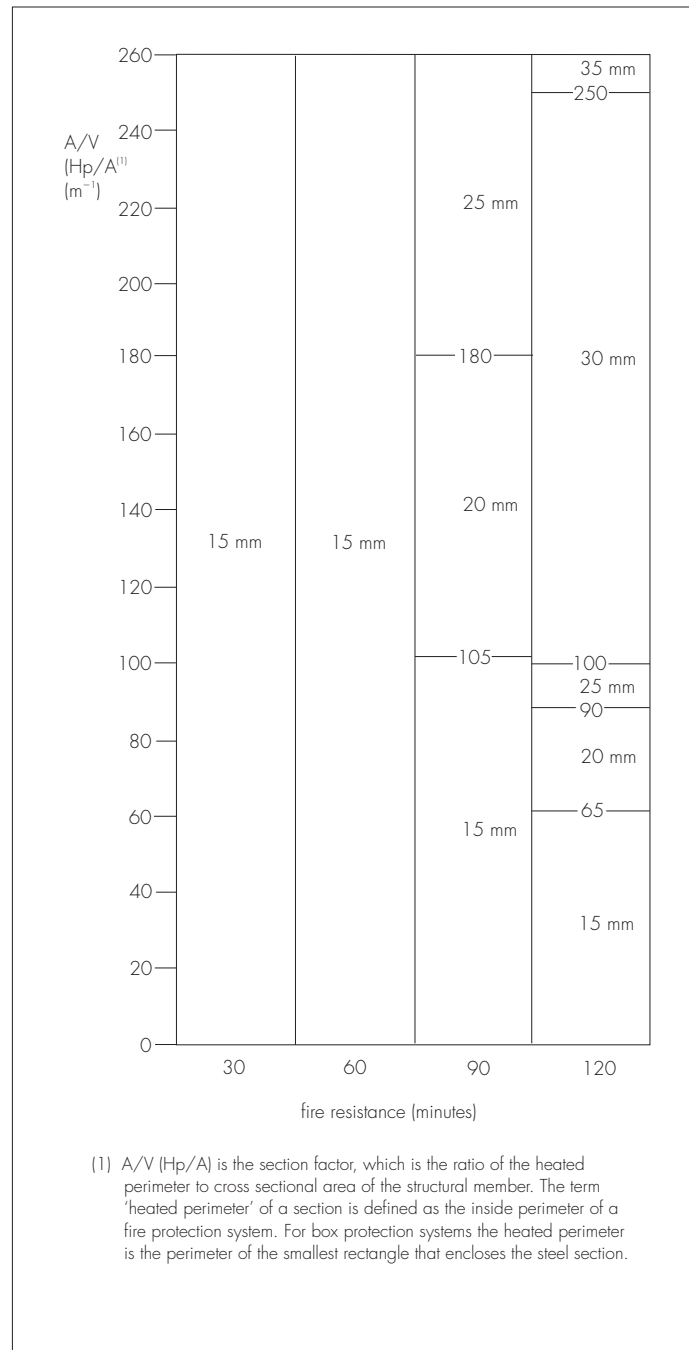
Northern Ireland — Technical Booklet E, Section 2, paragraph 2.7 and Section 6, paragraph 6.5.

Fire protection to structural steel

6.3 The product may be used to protect structural steel where 30 minutes' to 120 minutes' fire resistance is required. The amount of resistance provided is dependent on the thickness of the board and the size of the structural member being protected.

6.4 An appraisal of the product's fire resistance carried out in accordance with FTSG Resolution 82/PFPF Guide gave the cladding selection chart given in Figure 4.

Figure 4 Cladding selection chart at 550°C



6.5 The appraisal is only valid for:

- I- and H-shaped sections
- a maximum fire duration of 120 minutes
- a maximum section factor A/V (H_p/A) of 260 m^{-1} .
- a maximum section depth of 686 mm
- a maximum section width of 325 mm
- board thicknesses of 15 mm to 35 mm (30 mm and 35 mm thicknesses can be fixed in two layers, ie 15 mm + 15 mm and 15 mm + 20 mm respectively).

6.6 For protection thicknesses greater than 25 mm, mild steel supports must be provided. For two hours' protection, a mild steel angle board must be provided. Soldiers can only be used for board thicknesses not greater than 25 mm and for periods of fire resistance up to 90 minutes.

6.7 For castellated sections an additional 23% board thickness is required.

7 Strength

The product has satisfactory resistance to impact and loads associated with use.

8 Maintenance



The product is not subject to any routine maintenance; however, any damaged boards must be replaced.

9 Durability



Provided the product is used in accordance with this Certificate and the Certificate holder's instructions, it will have a life equal to that of the building in which it is installed.

10 Reuse and recyclability

Glass-reinforced gypsum products can be recycled under the British Gypsum Plasterboard Recycling Scheme.

Installation

11 General

11.1 Glasroc F FIRECASE must be installed strictly in accordance with the Certificate holder's instructions and this Certificate.

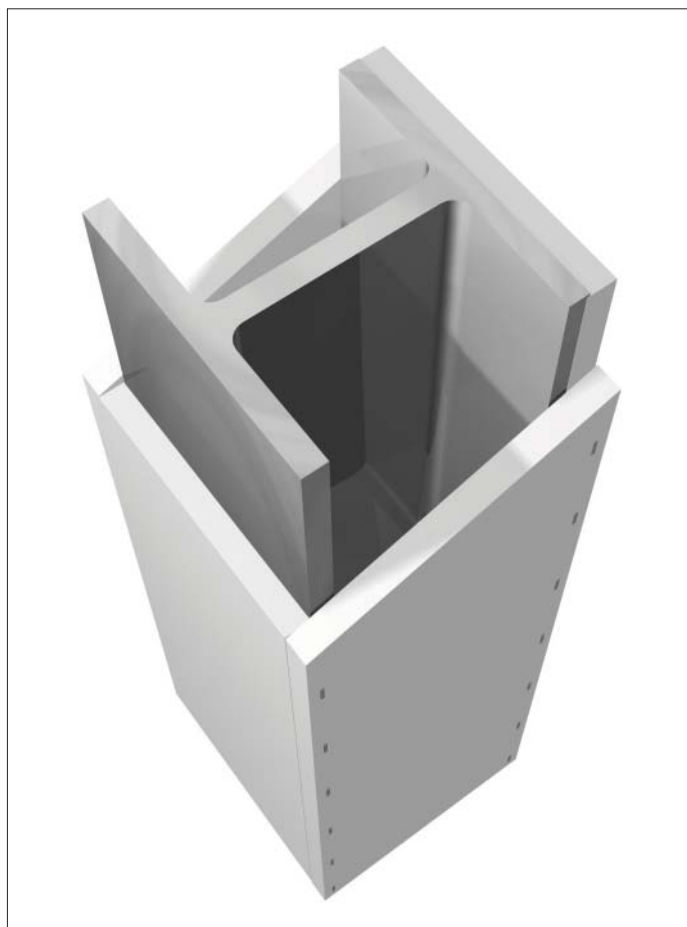
11.2 Where wall linings or partitions are to abut the product, suitable provision for fixings should be made.

12 Procedure

Four-sided protection to steel columns (see Figure 5)

12.1 For single-layer lining, cladding begins at the base of the column. A half-length board is cut to the width of the section, and two full-length boards are cut to the depth of the section plus twice the thickness of the board. The boards are fixed around the column, and abutting boards are screw-fixed or stapled at 150 mm centres. Another half-length board is cut to the width of the column and fixed to the opposite flange, and two full-length boards are cut to the width of the section and fixed. Cladding continues in this way, progressing up the column with full-length boards, and the installation is completed using cut boards.

Figure 5 Four-sided column protection



12.2 Where a double-layer lining is to be used, the first layer is fixed as a single-layer lining and the second layer applied over, staggering the joints by a minimum of 300 mm.

12.3 For a single-layer lining, continuous lengths of Gypframe FEA 1 steel angle are fixed to both sides of the upper flange of the beam by shot firing at 600 mm centres. The down stand of the steel angle should be in line with the toe of the top flange of the beam.

Three-sided protection to steel beams — incorporating steel angles (see Figures 6 and 7)

12.4 Two fascia boards are cut to the depth of the fascia plus the thickness of the soffit board, and fixed to the steel angles at 150 mm centres. A half-length soffit board is fixed between the two fascia boards. Boards are jointed by fixing to 60 mm wide backing strips cut from Glasroc F FIRECASE, which are fixed to ensure a half-lap on each fascia board. Cladding continues in this manner with full-length boards, and the installation is completed using cut boards.

12.5 When lining with a double layer, the first layer is fixed as for a single layer with the exception of the backing strips, which are not required. The second layer is fixed to the first, with the joints staggered by a minimum of 300 mm.

Figure 6 Three-sided beam protection incorporating steel angles

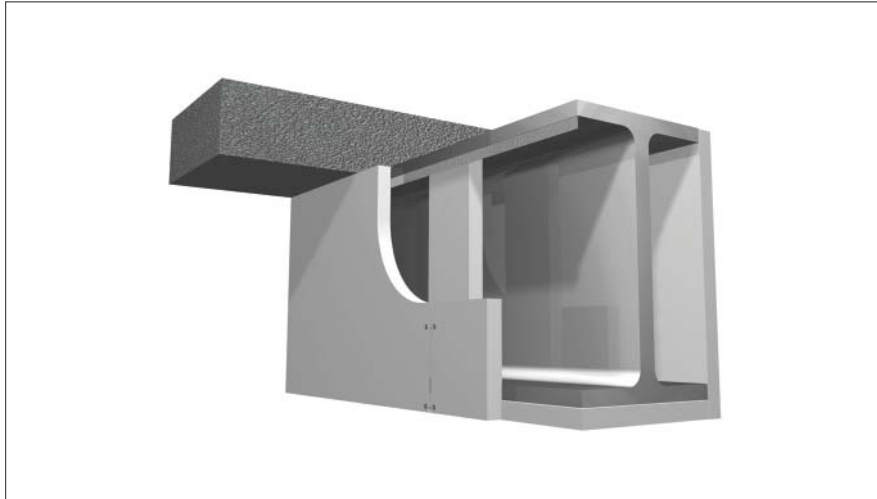
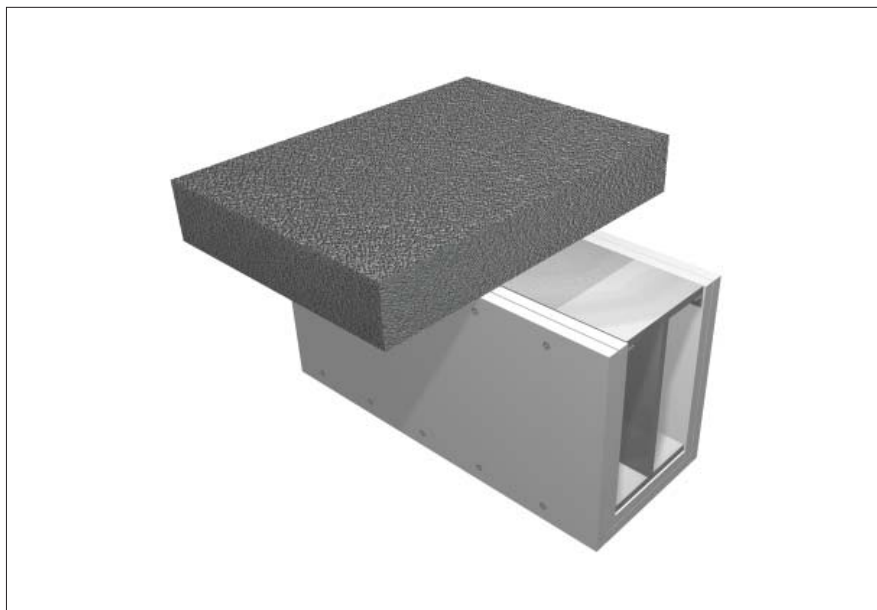


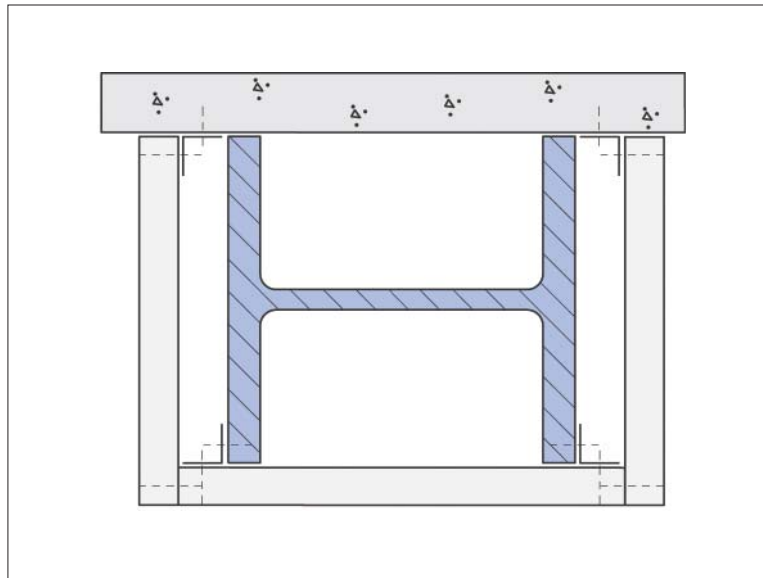
Figure 7 Double-layer three-sided beam protection incorporating steel angles



Three-sided protection to steel columns — incorporating steel angles (see Figure 8)

12.6 The procedure for encasing columns is the same as for beams (see sections 12.3. and 12.4) except that backing strips are not required. Where the flanges of the column are at right-angles to the wall, additional steel angles are required.

Figure 8 Three-sided column protection incorporating steel angles



Three-sided protection to steel beams — incorporating Glasroc F FIRECASE soldiers

12.7 Glasroc F FIRECASE soldiers are cut to fit neatly within the I-section. The soldiers are fitted between the flanges on opposite sides of the beam, at maximum 1200 mm centres. A full-length fascia board is cut to the depth of the section plus the thickness of the soffit board, and screw-fixed to the soldiers at 150 mm centres. The same procedure is used to fit the other fascia board. At fascia board joints two soldiers are fitted side by side, each soldier finishing flush with the board end. A half-length soffit board is cut to the width of the section and fixed between abutting fascia boards. Boarding continues with full-length boards, and the installation is completed using cut boards.

Three-sided protection to steel columns — incorporating Glasroc F FIRECASE soldiers

12.8 The procedure for lining columns is the same as that for lining beams. Screw fixings to abutting boards should be at 150 mm centres.

Technical Investigations

13 Tests

Tests were carried out on Glasroc F FIRECASE and the results assessed to determine:

- dimensional accuracy
- effect of humidity
- flexural strength
- impact resistance
- water absorption.

14 Investigations

14.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and compositions of materials used.

14.2 Visits were made to sites in progress to determine the practicability and methods of installation.

14.3 A survey of users was conducted to establish performance in use.

14.4 An assessment was made of data relating to fire performance.

Bibliography

BS EN 13501-1 : 2002 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN 15283-1 : 2008 *Gypsum boards with fibrous reinforcement — Definitions, requirements and test methods — Gypsum boards with mat reinforcement*

BS EN ISO 9001 : 2008 *Quality managements systems — Requirements*

15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

15.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

15.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

15.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

15.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.