

IG Lintels

The Keystone Group

Avondale Road

Cwmbran

Gwent NP44 1XY

Tel: 01633 486486 Fax: 01633 486465

e-mail: info@igltd.co.uk

website: www.igltd.co.uk



Agrément Certificate

13/5020

Product Sheet 1

IG LINTELS

IG HI-THERM LINTELS

This Agrément Certificate Product Sheet⁽¹⁾ relates to IG Hi-Therm Lintels, a galvanized steel and glass-reinforced polymer (GRP) lintel for use in external masonry walls to provide support to walls, floors and roofs above window or door openings.

(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

Structural performance — the product is suitable for use in walls with lintel lengths between 600 mm and 3600 mm (see section 6).

Behaviour in relation to fire — in a conventional brick/block construction, the product can have a fire resistance not exceeding one-hour (see section 7).

Thermal performance — where the product is used around opening head junctions, it can adequately limit heat loss (see section 8).

Condensation risk — where the product is used around opening heads, the risk of local surface condensation will be acceptable (see section 9).

Durability — the product will have a working life commensurate with that of the building in which it is installed (see section 12).

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 they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

B C Chamberlain

Claire

Date of First issue: 3 September 2013

Brian Chamberlain

Claire Curtis-Thomas

Head of Approvals — Engineering

Chief Executive

Certificate amended 2 September 2014 to include alteration to width and weight of lintels for all spans.

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.

British Board of Agrément

Bucknalls Lane

Watford

Herts WD25 9BA

©2013

tel: 01923 665300

fax: 01923 665301

e-mail: customerservices@bba.star.co.uk

website: www.bbacerts.co.uk

Regulations

In the opinion of the BBA, IG Hi-Therm Lintels, 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:	A1	Loading
Comment:		The product is acceptable for use as set out in sections 6.1 to 6.7 of this Certificate.
Requirement:	B3(1)	Internal fire spread (structure)
Comment:		The product can be incorporated in a construction satisfying this Requirement. See sections 7.1 and 7.2 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		When used in external masonry cavity walls, the product will not adversely affect the ability of the wall to satisfy the stated requirements, provided correct construction details are adopted. See sections 9.1 to 9.3 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product can contribute to satisfying this Requirement. See sections 9.1 to 9.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Regulation 7		Materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	26	CO₂ emission rates for new buildings
Regulation	26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation	26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:		Heads of openings in external walls incorporating the product can adequately limit heat loss and the risk of condensation. See sections 8.1 and 8.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The product is acceptable. See sections 11, 12 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product is acceptable, with reference to clauses 1.1.1 ⁽¹⁾⁽²⁾ and 1.1.2 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.7 of this Certificate.
Standard:	2.3	Structural protection
Comment:		The product can be incorporated in a construction satisfying this Standard, with reference to clauses 2.3.1 ⁽¹⁾⁽²⁾ and 2.3.3 ⁽¹⁾⁽²⁾ and Appendices 2B ⁽¹⁾ and 2D ⁽²⁾ . See sections 7.1 and 7.2 of this Certificate.
Standard:	3.15	Condensation
Comment:		When incorporated in an external masonry cavity wall, the product can satisfy this standard with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See sections 9.2 and 9.3 of this Certificate.
Standard:	6.1	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		Heads of openings in external walls incorporating the product can limit heat loss and the risk of condensation with reference to clauses 6.1.2 ⁽¹⁾ , 6.1.6 ⁽¹⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽²⁾ , 6.2.10 ⁽¹⁾ and 6.2.11 ⁽²⁾ . See sections 8.1 and 8.2 of this Certificate.
Standard:	7.1(a)(b)	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. See section 8 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for these products 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)	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The product can contribute to satisfying this Regulation. See sections 9.1 to 9.3 of this Certificate.
Regulation:	30	Stability
Comment:		The product is acceptable as set out in sections 6.1 to 6.7 of this Certificate.

Regulation:	35	Internal fire spread — structure
Comment:		The product can be incorporated in a construction satisfying this Regulation. See sections 7.1 and 7.2 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40	Target carbon dioxide Emissions Rate
Comment:		Heads of openings in external masonry cavity walls incorporating the product can limit heat loss and the risk of condensation. See sections 8.1 and 8.2 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: 14 *Installation — General* (14.2) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of IG Hi-Therm Lintels, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

Technical Specification

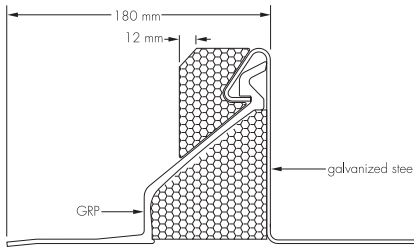
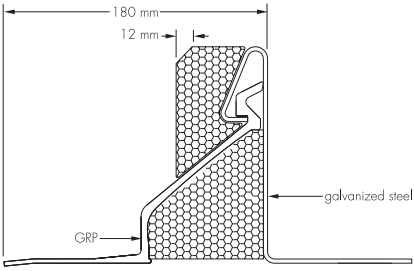
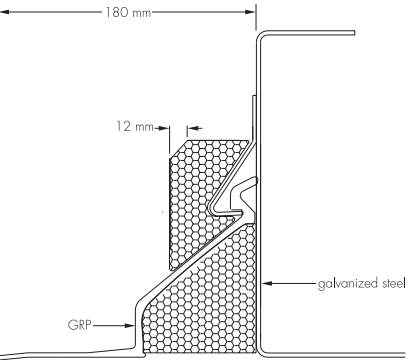
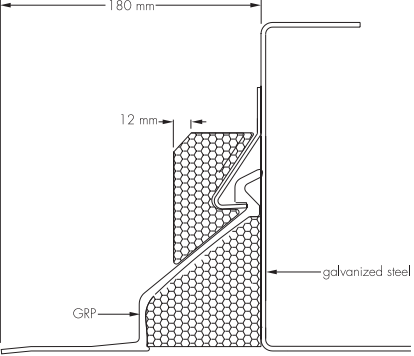
1 Description

1.1 The Hi-Therm lintel is manufactured from three components:

- An inner profile of galvanised steel to BS EN 10346 : 2009 with 600 $\text{gm}\cdot\text{s}^{-1}\cdot\text{m}^{-2}$ of zinc coating (300 $\text{g}\cdot\text{m}\cdot\text{s}^{-1}\cdot\text{m}^{-2}$ per face)
- An external profile of pultruded glass-reinforced polymer (GRP) to one specification
- Cavity and top piece insulation inserts made from expanded polystyrene to a defined density and declared thermal conductivity value ($\lambda_{90/90}$ value).

1.2 The lintels are manufactured in a span range of 600 mm to 3600 mm, (in increments of 150 mm) for cavity widths between 90 mm and 110 mm, and are available in four lintel profiles as shown in Table 1.

Table 1 Lintel range

Clear span range (mm)	Lintel profile	Profile description and dimensions (in mm)	
600-1500		<i>Steel profile</i> Lipped 'L' shape	<i>GRP profile</i>
		Height: 144 Width: 98 Thickness: 2.5	Height: 126 Width: 180 Flange width: 102 Total weight lintel (kg·m ⁻¹): 8.74
1650-2100		<i>Steel profile</i> Lipped 'L' shape	<i>GRP profile</i>
		Height: 144 Width: 98 Thickness: 2.9	Height: 126 Width: 180 Flange width: 102 Total weight lintel (kg·m ⁻¹): 9.72
2250-3000		<i>Steel profile</i> 'C' shape (with mid height lip to receive GRP profile)	<i>GRP profile</i>
		Height: 226 Width: 100 Flange width: 65 Top: 65 Bottom: 100 Thickness; 2.9	Height: 126 Width: 180 Flange width: 102 Total weight lintel (kg·m ⁻¹): 13.63
3150-3600		<i>Steel profile</i> 'C' shape (with mid height lip to receive GRP profile)	<i>GRP profile</i>
		Height: 226 Width: 100 Flange width: 65 Top: 65 Bottom: 100 Thickness; 3.2	Height: 126 Width: 180 Flange width: 102 Total weight lintel (kg·m ⁻¹): 14.55

2 Manufacture

2.1 The elements of the lintel range are manufactured from galvanized steel coil, which is rolled and formed in the factory, a GRP profile and EPS insulation insert and top piece, both of which are bought in items and attached to the galvanised steel section of the lintel as part of the production process.

2.2 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.

2.3 The management system of IG Lintels has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by BSI EMEA (Certificates FM 523686 and EMS 553955 respectively).

3 Delivery and site handling

3.1 The lintels are delivered to site in bundles, each carrying a label bearing the manufacturer's name. The BBA identification mark incorporating the number of this Certificate is marked on each lintel.

3.2 Reasonable care must be taken during unloading, stacking and storage to avoid damage to the lintels. Lintels that have suffered deformation or major damage to the protective coatings must not be used. Minor damage to the galvanised steel profile can be repaired by using the same anti-corrosive paint used for treating cut edges, or zinc-rich paint. If any damage has occurred to the GRP profile or EPS top piece the lintel must not be used.

3.3 The lintels must be stored off the ground in such a manner as to avoid the risk of either mechanical damage or contamination by corrosive substances.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the IG Hi-Therm Lintels.


Design Considerations


4 General

4.1 The IG Hi-Therm Lintels are satisfactory for use in external masonry walls of brickwork or blockwork to provide support to walls, floors or roofs loads, above door or window openings.

4.2 It is important for designers, planners, contractors and/or installers to ensure that the installation of the lintels is in accordance with the Certificate holder's instructions and the information given in this Certificate.

4.3 As with any form of cavity wall construction, where buildings need to comply with *NHBC Standards 2014*, specifiers should observe the requirements of these Standards.

 4.4 In England and Wales, for full fill, retro-fill and partial fill cavity insulation (eg with a 50 mm partial fill and 50 mm cavity, as shown in Figure 2), the omission of cavity tray is acceptable for exposure categories up to 'severe'. Above exposure category 'severe' a cavity tray over the lintel must be provided and installed in accordance with BS EN 845-2 : 2003.


 4.5 In Scotland and Northern Ireland a separate cavity tray must be used. In exposure category 'very severe' the following applies:

- in Scotland, all lintels should have a dpc built into the inner leaf
- in Scotland, Northern Ireland and areas of 'very severe' exposure to driving rain the upstand part of the damp-proof protection should be returned into the inner leaf of masonry.

5 Practicability of installation

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

6 Structural performance

 6.1 IG Hi-Therm Lintels have adequate strength and stiffness to sustain the maximum design loads given in Table 2 subject to the following conditions:

- The defined cavity width, size of standard masonry units and clear span are not exceeded
- The specified loads given relate to simply-supported lintels laterally and torsionally unrestrained. Therefore, there are no requirements for composite action with, or restraint by, adjacent elements of construction
- Where part of the loading is applied as concentrated loads, each concentrated load must be supported over a length of lintel of not less than 200 mm. In such cases, the total applied loading must not produce bending moments, shear forces or reactions greater than those produced by the uniformly distributed loads specified in Table 1
- The applied concentrated loads are assumed to act centrally on the galvanized steel profile only. No concentrated load is to be applied to the GRP profile.

6.2 Total design loads for different spans (clear opening) are shown in Table 2. The loads have been derived from tests supported by calculations and a deflection limit of span/325. The table also take account of long-term loading (creep)⁽¹⁾ and loss of strength⁽²⁾ effects of the GRP profile.

(1) Creep testing based on BS EN ISO 899-2 : 2003

(2) Heat ageing (100 day) and water exposure (2 hour boil) and cross breaking strength test to BS 2782-10 method 1005 : 1977, EN 63 : 1977.

Table 2 Hi-Therm Lintels Maximum Design Load/Span Table

Characteristic	Clear span			
	600-1500	1650-2100	2250-3000	3150-3600
Overall height of lintel (mm)	144	144	226	226
Thickness of steel component (mm)	2.5	2.9	2.9	3.2
Total load on lintel (in kN) at ratio 3:1	20	21	27	27
Total load on lintel (in kN) at ratio 19:1	17	17	20	20

6.3 The following limitations apply:

- the load ratio between the inner and outer flanges should be a minimum of 3:1 and not exceed 19:1
- end support bearing length should be a minimum of 150 mm
- the maximum shear force in the GRP part of the lintel should not exceed 17 kN.

6.4 In addition to the requirements specifically referred to in this Certificate, structures of brickwork or blockwork in which the lintel is incorporated must be designed and constructed in accordance with BS EN 1996-1-1/2 : 2005 and BS EN 1996-1-2 : 2006 or BS 5628-1/3 : 2005 and the following technical specifications of the national Building Regulations as appropriate:

England and Wales — Approved Document A1/2, Part C, Section 1

Scotland — Section 1, Small Building Guide

Northern Ireland — Technical Booklet D *Structure*, Section 3.

6.5 The load-span data shown in Table 2 is valid only for the maximum design loads and the lintel clear spans given. For other loading conditions, or spans outside this range, the Certificate holder should be consulted for more advice.

6.6 To avoid excessive eccentricities of loading, the lintel must only be used with standard masonry units and cavity widths of 90 mm to 110 mm.

6.7 Guidance for the assessment of loads on lintels in masonry is given in BS EN 845-2 : 2003.

7 Behaviour in relation to fire



7.1 When used in conventional brick/block construction, the lintel may be regarded as having a fire resistance in relation to the national Building Regulations of 'one hour' and of 'medium' duration (Scotland).

7.2 The product is partly combustible. Therefore, where fire resistance is an important consideration, the product should only be used in cavity walls with a fire-resistance requirement not exceeding one hour⁽¹⁾.

(1) Tested in fire conditions based on method set out in BS EN 1363-1 : 1999 with the lintel protected by 12.5 mm plasterboard and skim coat, data available from Certificate holder

7.3 Where any other form of wall construction (as defined in section 7.1) incorporating IG Hi-Therm Lintels is subject to fire resistance requirements, an appropriate assessment or test must be carried out by a United Kingdom Accreditation Service (UKAS) accredited laboratory for the test concerned.

8 Thermal performance



8.1 Typical example construction details containing the range of IG Hi-Therm lintels, based on the construction details shown in Figure 1 were analysed numerically to determine their likely hygrothermal performance.

8.2 Opening head soffits will adequately limit excessive heat loss and allow use of the following psi values in carbon emission rate calculations to SAP and SBEM (see Table 3). Detailed guidance in this respect and on limiting heat loss by air infiltration can be found in the documents referred to in section 9.2.

Table 3 Typical psi values for Hi-Therm Lintels

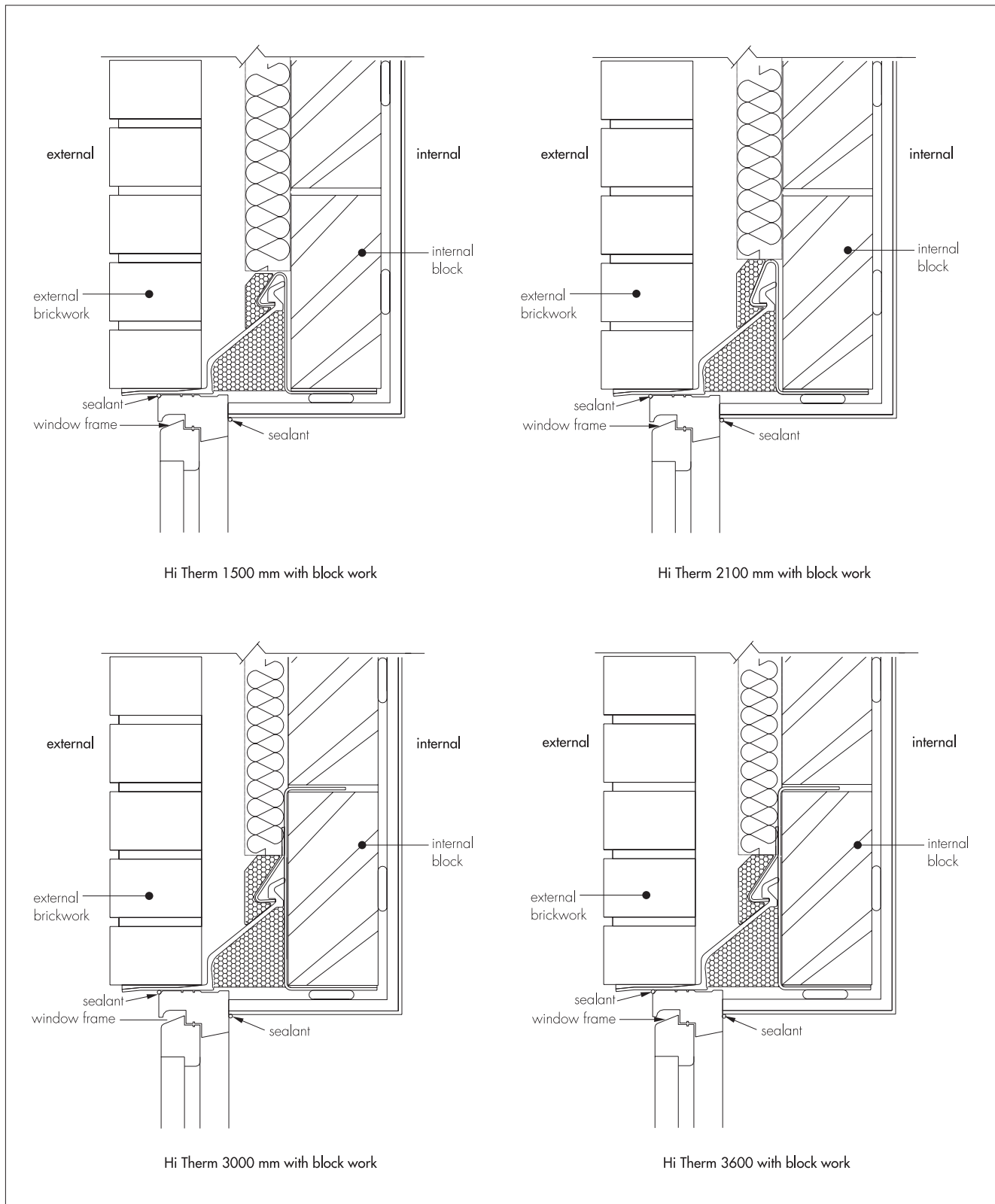
Hi-Therm lintel length up to (mm)	Wall U-value (W·m ⁻² ·K ⁻¹)	PSI Value ψ (W·m ⁻² ·K ⁻¹) (partial fill cavity) ⁽¹⁾	PSI Value ψ (W·m ⁻² ·K ⁻¹) (full fill cavity) ⁽²⁾	Construction detail
1500	0.242	0.058	0.058	Door/window setback at least 30 mm into the cavity, sealed at the front and back against the external wall and the internal surface of the reveal is covered by 12 mm thickness of plasterboard on 15 mm plaster dabs or material with equivalent thermal resistance
2100	0.242	0.063	0.064	
3000	0.242	0.069	0.069	
3600	0.242	0.069	0.069	

(1) Based on 50 mm Insulation, $\lambda = 0.022 \text{ W·m}^{-1}·\text{K}^{-1}$

(2) Based on 100 mm Insulation, $\lambda = 0.033 \text{ W·m}^{-1}·\text{K}^{-1}$

8.3 For other junction details, the linear thermal transmittance and temperature factor should be calculated following the guidance in BR 497 : 2007 *Conventions for Calculating Linear Thermal Transmittance and Temperature Factors*.

Figure 1 Opening head details for psi values in Table 3



9 Condensation risk

Surface condensation



9.1 Opening head soffits in external walls with a minimum door/window set-back of 30 mm into the cavity will achieve a minimum temperature factor in excess of 0.75. Therefore, this construction will adequately limit the risk of surface condensation in buildings of all humidity classes except 'Special Buildings', eg buildings such as laundries, breweries, swimming pools as defined in BS 5250 : 2002, Table B.5. The surface condensation risk of other constructions should be established by numerical modelling in accordance with BRE Information Paper IP 1/06 using a thermal conductivity value of $0.4 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the GRP and $50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the galvanised steel profiles of the lintels.



9.2 Further guidance on limiting the risk of surface condensation can be found in:

England and Wales — *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002 or Accredited Construction Details (version 1.0)

Scotland — Accredited Construction Details (Scotland)

Northern Ireland — Accredited Construction Details (version 1.0).

Interstitial condensation

9.3 Under normal domestic conditions, the level of interstitial condensation associated with the product will be low and the risk of any resultant damage minimal.

10 Corrosion protection

The galvanised steel profiles of the lintels have adequate protection against corrosion providing:

- the protective zinc is undamaged or minor changes repaired mortar complies with the requirements of BS EN 845-2 : 2003.
- sands from marine sources used in mortars are washed in fresh water to reduce the sodium chloride content to a value of less than 0.1% by weight of dry material
- all cut edges of the lintel are painted with an approved, anti-corrosion exterior paint.

11 Maintenance



There are no special maintenance requirements for the GRP profile. However, any exposed edges may be coated to improve appearance and to provide additional protection. The toe of the galvanised steel profile of the lintel should not be exposed in normal service conditions but if it is may be painted to improve appearance using finishes compatible with the zinc coating. Exposure of the toe will, though, affect the fire resistance performance. The Certificate holder should be consulted for suitable coatings.

12 Durability



Providing IG Hi-Therm Lintels are designed and installed in accordance with this Certificate, they should have a working life commensurate with that of the building in which it is installed subject to the following conditions:

- the lintels are installed and used in accordance with the temperature and humidity conditions described in section 9 of this Certificate
- the galvanized steel profile of the lintel is protected as described in section 10.

13 Reuse and recyclability

The steel component of the product is readily recyclable.

Installation

14 General

14.1 Typical installation details of IG Hi-Therm Lintels are shown in Figure 2.

14.2 The products can generally be lifted and handled, except for the longer span lintels, by a single operative. Protective gloves should be worn when handling the product.

14.3 Lintels must be installed with at least 150 mm end bearing, and be fully bedded on bricklaying mortar.

14.4 The inner and outer leaves supported by the lintels must be raised together to avoid excessive eccentricity of loading.

14.5 Weepholes should be provided in the outer leaf above the lintel to drain moisture from the cavity. A minimum of two weepholes should be provided per lintel. For fair-faced masonry, weepholes should be provided at centres not greater than 450 mm.

14.6 Stop ends (outside the scope of this Certificate) should be provided to cavity trays and lintels.

14.7 Mortar joints in exposed masonry should be weatherstruck in severe or very severe exposure zones.

14.8 Precautions must be taken to prevent mortar dropping through the cavity onto the lintel and obstructing the weep holes.

Technical Investigations

The following is a summary of the technical investigations carried out on the IG Hi-Therm Lintels for use in external or internal cavity walls.

15 Tests

Tests were undertaken to establish:

- Heat age (100 day) to BBA approved method
- Water exposure (2 hour boil) to BBA approved method
- Cross breaking strength to BS 2782-10 method 1005 : 1977, EN 63 : 1977
- Creep testing (GRP) based on BS EN ISO 899-2 : 2003

16 Investigations

An examination was made of data relating to:

- calculations, to confirm the results of tests on structural performance, including long-term loading effects.
- calculations were undertaken to IP 1/06 to establish minimum temperature factors and the psi values of constructions incorporating the product.
- ad-hoc fire test report based on BS EN 1363-1 ; 1999
- durability and practicability of installation.
- material specification and the manufacturing process and associated quality control procedures

Bibliography

BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*

BS 1363-1 : 1999 *Fire resistance tests — General requirements*

BS 2782-10 : Method 1005 : 1977, EN 63 : 1977 *Methods of testing plastics — Glass reinforced plastics Determination of flexural properties — Three point method*

BS 5589 : 1989 *Code of practice for preservation of timber*

BS 5628-1 : 2005 *Code of practice for the use of masonry — Part 1: Structural use of unreinforced masonry*

BS 5628-3 : 2005 *Code of practice for the use of masonry — Materials and components, design and workmanship*

BS 5977-1 : 1981 *Lintels. Method for assessment of load*

BS EN 845-2 : 2003 *Specification for ancillary components for masonry — Lintels*

BS EN 1363-1 ; 1999 *Fire resistance tests — General requirements*

BS EN 1996-1-1 Eurocode 6 *Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 1996-1-2 Eurocode 6 *Design of masonry structures — General rules. Structural fire design*

BS EN 1996-1-3 Eurocode 6 *Design of masonry structures — General rules for reinforced and unreinforced masonry structures*

BS EN 10346 : 2009 *Continuously hot-dip coated steel flat products — Technical delivery conditions*

BS EN ISO 899-2 : 2003 *Plastic — Determination of creep behaviour — Flexural creep by three-point loading*

17 Conditions

17.1 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.

17.2 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.

17.3 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.

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

17.5 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.

17.6 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.