

Keystone Lintels Ltd

Ballyreagh Industrial Estate
Cookstown
Tyrone BT80 9DG

Tel: 028 8676 2184 Fax: 028 8676 1011

e-mail: info@keystonelintels.co.uk

website: www.keystonelintels.com



Agrément Certificate

18/5499

Product Sheet 1

KEYSTONE LINTELS

KEYSTONE HI-THERM+ LINTELS

This Agrément Certificate Product Sheet⁽¹⁾ relates to Keystone Hi-therm+⁽²⁾ Lintels, galvanized steel and polymer lintels 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'.

(2) Hi-therm+ is a registered trademark.

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 openings between 600 and 3900 mm (see section 6).

Behaviour in relation to fire — in a conventional brick/block construction, the product can have a fire resistance up to one hour (see section 7)

Thermal performance — junctions incorporating the product can adequately limit heat loss (see section 8).

Condensation Risk — the risk of local surface condensation can be acceptable in junctions incorporating the product (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 it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 20 August 2018

Paul Valentine
Technical Excellence Director

Claire Curtis-Thomas
Chief Executive

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. Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

British Board of Agrément

Bucknalls Lane
Watford
Herts WD25 9BA

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tel: 01923 665300
clientservices@bbacerts.co.uk
www.bbacerts.co.uk

Regulations

In the opinion of the BBA, Keystone Hi-therm+ Lintels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying 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 can contribute to satisfying this Requirement as set out in sections 6 of this Certificate.
Requirement:	B3(1)	Internal fire spread (structure)
Comment:		The product can be incorporated in a construction satisfying this Requirement. See section 7.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product will not adversely affect the ability of the wall to satisfy the stated requirements. See sections 9.1 and 9.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		Junctions incorporating the product can adequately limit heat loss. See section 8 of this Certificate.
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:	26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:		Junctions incorporating the product can adequately limit heat loss. See section 8.1 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Durability, workmanship and fitness of materials
Comment:		This product is acceptable. See section 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 section 6 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 section 7.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product will not adversely affect the ability of the wall to 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 9.1 and 9.3 of this Certificate.

Standard:	6.1	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		Junctions 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⁾ , 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽²⁾ . See sections 8, 9.1 and 9.3 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. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾ [Aspects 1 ⁽¹⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾⁽²⁾], 7.1.7 ⁽¹⁾ [Aspect 1 ⁽¹⁾], 7.1.9 [Aspect 1 ⁽²⁾] and 7.1.10 Aspect 1 ⁽²⁾]. See section 8.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for product 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 (as amended)

Regulation:	23(a)(i)	Fitness of materials and workmanship
Comment:	(ii)(iii)(b)	The product is acceptable. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	30	Stability
Comment:		The product is acceptable as set out in section 6 of this Certificate.
Regulation:	35	Internal fire spread — structure
Comment:		The product can be incorporated in a construction satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	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 and 9.3 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See sections: 3 *Delivery and site handling* (3.4) and the *Installation* part of this Certificate.

Additional Information

NHBC Standards 2018

In the opinion of the BBA, Keystone Hi-therm+ Lintels, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 845-2 : 2013. An asterisk (*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

Technical Specification

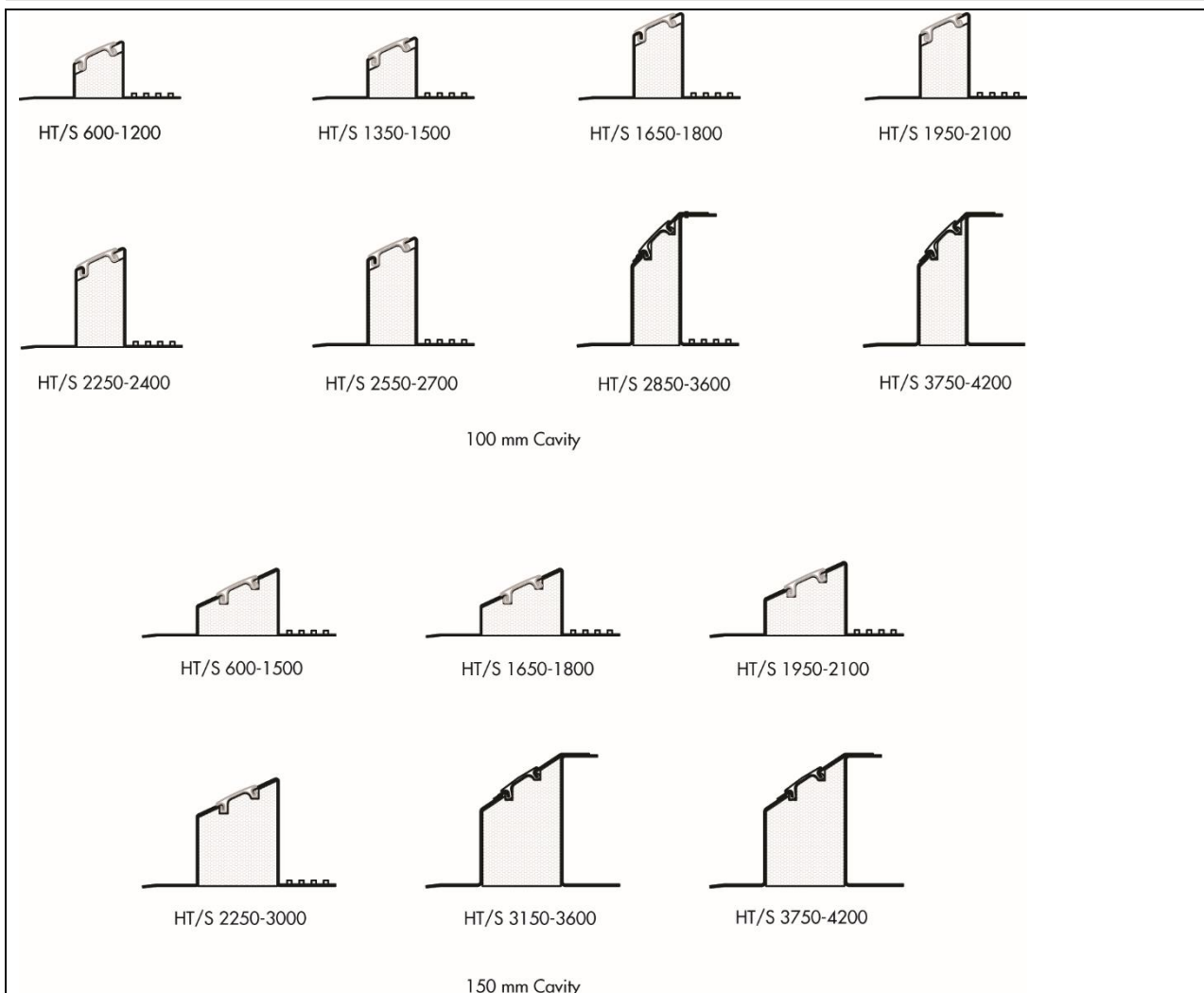
1 Description

1 Keystone Hi-therm+ Lintels are thermally-broken lintels manufactured from four components:

- inner and outer profiles of galvanized steel to BS EN 10346 : 2015 with 600 g·m⁻² of zinc coating (300 g·m⁻² per face)
- cavity insulation inserts made from expanded polystyrene to a defined density and declared thermal conductivity value ($\lambda_{90/90}$ value)
- a uPVC spacer to join the inner and outer steel profiles
- a galvanized steel tab, attached to the soffit of the inner and outer steel profiles. The steel has 600 g·m⁻² of zinc coating (300 g·m⁻² per face)

1.2 The lintels are manufactured in a range of lengths from 600 mm to 4200 mm in 150 mm increments, for cavity widths from 90 mm to 105 mm (HT/S 100), and from 150 mm to 165 mm (HT/S 150). The lintel profiles available for each span are shown in Figure 1.

Figure 1 Typical cross section of HTS 100 and HTS 150 lintels



1.3 Other items or components which may be used with the product, but which are outside the scope of this Certificate, are:

- brick or block masonry units, to BS EN 771-1 to 6
- bricklaying mortar, to BS EN 998-2 : 2016
- gypsum plasterboard to BS EN 520 : 2004.

Details of suitable products/specifications may be obtained from the Certificate holder.

2 Manufacture

2.1 The galvanized steel coils are cut and folded to the correct profile. Perforations in the lintel soffit are pressed to provide a key for the mortar bed. The EPS insert and plastic spacer, both of which are bought-in items, are then attached to the steel profiles; the galvanized steel tab is attached to the soffit of the inner and outer leaf to complete 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 systems of The Keystone Group have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and/or BS EN ISO 14001 : 2015 by BSI EMEA (Certificate FM 21541 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 logo incorporating the number of this Certificate is marked on each label.

3.2 Reasonable care must be taken during unloading, stacking and storage to avoid damage to the lintels. Lintels which have suffered deformation or damage to the protective galvanized coating must not be used. Minor damage to the galvanized steel profile can be repaired by using the same anti-corrosive paint used for treating cut edges, or zinc-rich paint.

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.

3.4 The lintels may be handled by site personnel or mechanical lifting devices – care must be taken to ensure any forks, slings or chains do not damage the protective coating.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Keystone Hi-therm+ Lintels.

Design Considerations

4 General

4.1 Keystone 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 A cavity tray over the lintel must be provided and installed in accordance with BS 8215 : 1991 and *NHBC Standards*, Chapter 6.1, *External Masonry Walls*. The installation must incorporate appropriate weep-holes and stop-ends to direct moisture out of the cavity.

4.4 In Scotland, all lintels should have a damp proof course (dpc) built into the inner leaf.

4.5 In Scotland and Northern Ireland, or where exposure to driving rain is 'very severe', 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 Keystone Hi-therm Lintels have adequate strength and stiffness to sustain the maximum design loads given in Tables 1 and 2 subject to the following conditions:

- the defined cavity width and size of standard masonry units is not exceeded, and a minimum of 150 mm bearing is provided at each end
- 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 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 total uniformly distributed loads specified in Tables 1 and 2
- the applied loads are assumed to act centrally on the galvanized steel profile. Design of the wall and opening details, together with appropriate workmanship on site, must ensure that eccentric loading on the galvanized steel profile is avoided.

6.2 Total design loads (Safe Working Load - SWL) for the lintel range are shown in Tables 1 and 2. The loads have been derived from tests according to BS EN 846-9 : 2016, supported by calculations, and relate to a maximum allowable deflection of span/325.

Table 1 Load-span data for HT/S 100 lintels

Characteristic	Lintel length (mm)							
	600-1200	1350-1500	1650-1800	1950-2100	2250-2400	2550-2700	2850-3600	3750-4500
Overall height of lintel (mm)	100	107	150	150	175	190	234	234
Thickness of steel component (outer/inner leaf) (mm)	1.6	2.0	2.0	2.0/2.5	2/2.5	2.5	2.9	3.2
Mass (kg.m ⁻¹)	6.05	7.5	8.77	9.85	10.78	12.31	18.13	19.66
Total SWL at 3:1 distribution (kN)	12	16	19	21	23	27	27	27
Total SWL at 19:1 distribution (kN)	10	13	16	17	18	22	20	22

Table 2 Load-span data for HT/S 150 lintels

Characteristic	Lintel length (mm)					
	600-1500	1650-1800	1950-2100	2250-3000	3150-3600	3750-4200
Overall height of lintel (mm)	118	118	130	190	234	234
Thickness of steel component (outer/inner leaf) (mm)	2	2/2.5	2.5	2.5/2.9	2.9	3.2
Mass (kg·m ⁻¹)	8.41	9.52	10.72	14.06	19	20.56
Total SWL at 3:1 distribution (kN)	16	22	21	27	27	27
Total SWL at 19:1 distribution (kN)	13	18	17	22	20	22

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

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 : 2005 and BS EN 1996-1-2 : 2005 or BS EN 1996-3 : 2006 and their UK National Annexes, PD 6697 : 2010 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 Tables 1 and 2 is valid only for the maximum design loads and the lintel lengths given. For other loading conditions, or spans outside this range, the Certificate holder should be consulted for advice.

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

6.7 Guidance for the assessment of loads on lintels in masonry is given in BS EN 845-2 : 2013. It is the responsibility of the designer to ensure that the applied loads do not exceed the safe working loads given in Tables 1 and 2.

7 Behaviour in relation to fire



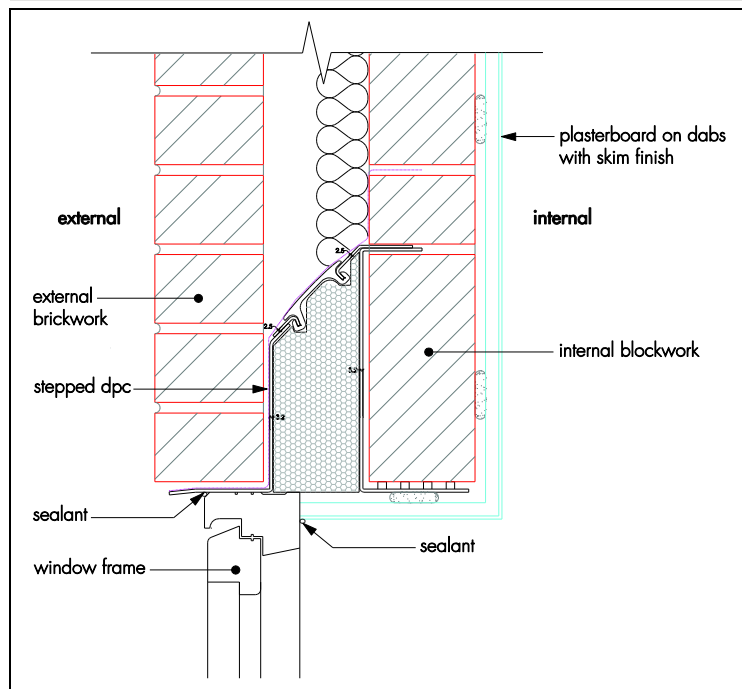
7.1 When used in conventional brick/block construction and with protection provided by gypsum boards and plaster, the construction may be regarded as having a fire resistance in relation to the national Building Regulations of 'one hour'⁽¹⁾ (England, Wales and Northern Ireland) and of 'medium'⁽¹⁾ duration (Scotland). Construction should be in accordance with the requirements of BS EN 1996-1-2 : 2005.

(1) Tested in fire conditions based on the method set out in BS EN 1363-1 : 2012, with the lintel protected by 12.5 mm plasterboard and skim coat (data available from Certificate holder, test report 380220, 09 August 2017).

7.2 The steel profile is non-combustible but contains components which are combustible (EPS and uPVC).

7.3 Where any other form of wall construction (other than shown in Figure 2) incorporating the 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 (accredited for the test concerned).

Figure 2 Wall construction incorporating Hi-therm+ Lintels as tested for resistance to fire



8 Thermal performance



8.1 Typical junctions incorporating the lintels, based on the construction details shown in Figure 2, were analysed numerically to determine their likely thermal performance. Junctions in Table 3 can adequately limit excessive heat loss and the psi values shown may be used in SAP and sBEM calculations.

Table 3 Junction linear thermal transmittance (Ψ) values ($W \cdot m^{-1} \cdot K^{-1}$)

Lintel	Junction construction	
	Figure 2 ⁽¹⁾	Accredited Construction Detail ⁽²⁾
HT/S+ 100 (spans 3750-4200 mm)	0.084 ⁽³⁾⁽⁴⁾	0.30 ⁽²⁾
HT/S+ 150 (spans 3750-4200 mm)	0.108 ⁽⁴⁾⁽⁵⁾	
HT/S+ 100 (spans 600-1200 mm)	0.065 ⁽⁶⁾	

(1) 102.5 mm brickwork ($\lambda = 0.77 W \cdot m^{-1} \cdot K^{-1}$), cavity/insulation, 100 mm blockwork, 15 mm plaster dabs/cavity ($R = 0.18 m^2 \cdot K \cdot W^{-1}$) and 12.5 mm plasterboard ($\lambda = 0.21 W \cdot m^{-1} \cdot K^{-1}$).

(2) The Accredited Construction Detail (see section 9.2 of this Certificate) psi value may be used for junctions with lintel (steel gauge ≤ 3.2 mm) where there is a 30 mm overlap of the window frame over the cavity.

(3) 50 mm vented cavity and 40 mm PIR insulation ($\lambda = 0.023 W \cdot m^{-1} \cdot K^{-1}$ and $\epsilon = 0.05$), blockwork ($\lambda = 0.162 W \cdot m^{-1} \cdot K^{-1}$), 50 mm window frame overlapping the cavity by 30 mm.

(4) Note, this psi value will not be exceeded for lesser lintel gauges/heights.

(5) 50 mm vented cavity and 115 mm PIR insulation ($\lambda = 0.023 W \cdot m^{-1} \cdot K^{-1}$), blockwork ($\lambda = 0.162 W \cdot m^{-1} \cdot K^{-1}$), 50 mm window frame overlapping the cavity by 30mm.

(6) 90 mm cavity fully filled with mineral wool insulation ($\lambda = 0.038 W \cdot m^{-1} \cdot K^{-1}$), AAC blockwork ($\lambda = 0.162 W \cdot m^{-1} \cdot K^{-1}$), cavity insulation chamfered to fit the lintel profile, 70 mm window frame which overlaps the cavity by 30 mm.

8.2 For junction constructions not described in Table 3, the linear thermal transmittance and temperature factor can be calculated following the guidance in BR 497 : 2007, or a 'conservative default' psi value of $1.0 W \cdot m^{-1} \cdot K^{-1}$ may be used. The Certificate holder can provide a detailed Ψ value calculation if required.

9 Condensation risk



9.1 Constructions described in section 8.1 will achieve a surface temperature factor, f_{Rsi} , in excess of 0.75 with a plasterboard on dabs finish and 30 mm window/door frame setback over the cavity and should adequately limit the risk of surface condensation in dwellings, as defined in BRE Information Paper IP1/06. The surface condensation risk of other constructions should be established by numerical modelling in accordance with BRE Information Paper IP 1/06.

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).



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 galvanized steel profiles of the lintels have adequate protection against corrosion, providing:

- the protective zinc is undamaged or minor blemishes are repaired
- mortar complies with the requirements of BS EN 845-2 : 2016.
- 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

The external toe of the galvanized steel profile of the lintel should not be exposed in normal service conditions but, if it is, it may be painted to improve its appearance using finishes compatible with the zinc coating. The Certificate holder should be consulted for details of suitable coatings.

12 Durability



Providing the lintels are designed and installed in accordance with this Certificate, they should have a working life commensurate with that of the building in which they are 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 product contains steel, EPS and uPVC, which can be recycled.

Installation

14 General

14.1 Typical installation details of the lintels are shown in Figure 2.

14.2 Except for the longer span lintels, the lintels can generally be lifted and handled 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 must be fully bedded on bricklaying mortar.

14.4 The inner and outer leaves of bricks or blocks 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

15 Tests

Tests were undertaken to establish:

- the flexural and shear strength of the lintel in accordance with BS EN 846-9 : 2016
- the resistance of the lintel to load under fire conditions to BS EN 1363-1 : 2012.

16 Investigations

16.1 An examination was made of data relating to:

- the thermal performance and declared $\lambda_{90/90}$ value
- minimum temperature factors and Ψ values for typical constructions incorporating the product in accordance with BRE Information Paper IP 1/06
- practicability of installation and durability.

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

Bibliography

- BS 8215 : 1991 *Design and installation of damp-proof courses in masonry construction*
- BS EN 520 : 2004 + A1 : 2016 *Gypsum plasterboards – Definitions, requirements and test methods*
- BS EN 771-1 to 6 *Specifications for masonry units (Volumes 1 to 6)*
- BS EN 845-2 : 2016 *Specification for ancillary components for masonry — Part 2: Lintels*
- BS EN 846-9 : 2016 *Methods of test for ancillary components for masonry — Part 9: Determination of flexural resistance and shear resistance of lintels*
- BS EN 998-2 : 2016 *Specification for mortar for masonry — Part 2: Masonry mortar*
- BS EN 1363-1 : 2012 *Fire resistance tests — General requirements*
- BS EN 1996-1-1 : 2005 *Eurocode 6 — Design on masonry structures — General rules for reinforced and unreinforced masonry*
- BS EN 1996-1-2 : 2005 *Eurocode 6 — Design on masonry structures — General rules — Structural fire design*
- BS EN 1996-3 : 2006 *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*
- BS EN 10346 : 2015 *Continuously hot-dip coated steel flat products for cold forming — Technical delivery conditions*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BS EN ISO 14001 : 2004 *Environmental management systems — Requirements with guidance for use*
- BS EN ISO 10211 : 2013 *Thermal bridges in building construction — Heat flows and surface temperature — Detailed calculations*
- BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*
- BR 497 : 2007 *Conventions for Calculating Linear Thermal Transmittance and Temperature Factors*
- PD 6697 : 2010 *Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2*

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 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.