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Agrément Certificate

91/2638

Product Sheet 6

## CATNIC LINTELS

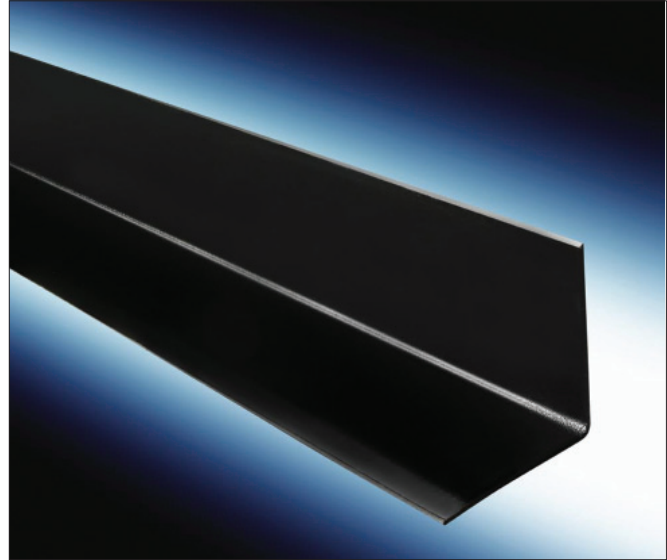
### CATNIC CN ANGLE LINTEL RANGE OF LINTELS

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Catnic CN Angle Lintel Range of Cavity Wall Lintels.

#### AGRÉMENT 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

**Practicability of installation** — the lintels are designed to be installed by a competent general builder, or a contractor, experienced with this type of product (see sections 4 and 12).

**Corrosion protection** — the lintels should have adequate protection against corrosion (see section 5).

**Structural performance** — the lintels provide support to facing brickwork above door or window openings (see section 6).

**Hygrothermal performance** — heat loss and risk of condensation at opening head junctions will be acceptable when the products are incorporated into suitably designed construction details (see sections 8 and 9).

**Durability** — the lintels will have adequate durability (see section 11).

The BBA has awarded this Agrément Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 23 November 2009

A handwritten signature in black ink, appearing to read 'B Chamberlain'.

Brian Chamberlain

Head of Approvals — Engineering

A handwritten signature in black ink, appearing to read 'G Cooper'.

Greg Cooper

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](http://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, Catnic CN Angle Lintel Range of Cavity Wall Lintels if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



## The Building Regulations 2000 (as amended) (England and Wales)

<b>Requirement:</b> A1	<b>Loading</b>
<b>Comment:</b>	The lintels have sufficient strength and stiffness provided they are correctly installed and design loads are in accordance with sections 6.1 to 6.6 of this Certificate.
<b>Requirement:</b> B3(1)	<b>Internal fire spread (structure)</b>
<b>Comment:</b>	See section 7 of this Certificate.
<b>Requirement:</b> L1(a)(i)	<b>Conservation of fuel and power</b>
<b>Comment:</b>	The lintels will have the thermal properties described in section 8.2 of this Certificate.
<b>Requirement:</b> Regulation 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The lintels are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

<b>Regulation:</b> 8(1)	<b>Fitness and durability of materials and workmanship</b>
<b>Comment:</b>	The lintels can contribute to a construction satisfying this Regulation. See section 11.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9	<b>Building standards – construction</b>
<b>Standard:</b> 1.1(a)(b)	<b>Structure</b>
<b>Comment:</b>	The lintels have sufficient strength and stiffness provided they are correctly installed and the design loads are in accordance with sections 6.1 to 6.6 of this Certificate.
<b>Standard:</b> 2.3	<b>Structural protection</b>
<b>Comment:</b>	The lintels are non-combustible and therefore meet the requirements of this Standard, with reference to clause 2.3.2 <sup>(1)(2)</sup> . See section 7 of this Certificate.
<b>Standard:</b> 3.10	<b>Precipitation</b>
<b>Comment:</b>	When used in external wall constructions and relied on to restrict the passage of moisture from rain or snow, the lintels will be satisfactory provided they are correctly specified and installed, with reference to clauses 3.10.1 <sup>(1)(2)</sup> , 3.10.3 <sup>(1)(2)</sup> and 3.10.5 <sup>(1)(2)</sup> .
<b>Standard:</b> 3.15	<b>Condensation</b>
<b>Comment:</b>	When used in external cavity wall constructions as shown in Figures 1 and 2 of this Certificate, interstitial or surface condensation will only occur in the lintel area under extreme conditions of temperature and humidity. Therefore, when correctly specified and installed, the lintels will be satisfactory, with reference to clauses 3.15.1 <sup>(1)</sup> , 3.15.3 <sup>(1)</sup> and 3.15.4 <sup>(1)</sup> . See sections 9.1 and 9.2 of this Certificate.
<b>Standard:</b> 6.2	<b>Building insulation envelope</b>
<b>Comment:</b>	The lintels will have the thermal properties described in section 8.2 of this Certificate, with reference to clause 6.2.4 <sup>(1)(2)</sup> .
<b>Regulation:</b> 12	<b>Building standards – conversions</b>
<b>Comment:</b>	All comments given for these products under Regulation 9, also apply to this Regulation with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2000 (as amended)

<b>Regulation:</b> B2	<b>Fitness of materials and workmanship</b>
<b>Comment:</b>	The lintels are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> C4	<b>Resistance to ground moisture and weather</b>
<b>Comment:</b>	When used in external wall constructions and relied on to restrict the passage of moisture from rain or snow, the lintels will be satisfactory provided they are correctly specified and installed.
<b>Regulation:</b> C5	<b>Condensation</b>
<b>Comment:</b>	When used in external cavity wall constructions as shown in Figures 1 and 2 of this Certificate, interstitial or surface condensation will only occur in the lintel area under extreme conditions of temperature and humidity. Therefore, when correctly specified and installed, the lintels will be satisfactory. See sections 9.1 and 9.2 of this Certificate.
<b>Regulation:</b> D1	<b>Stability</b>
<b>Comment:</b>	The lintels have sufficient strength and stiffness provided they are correctly installed and the design loads are in accordance with sections 6.1 to 6.6 of this Certificate.
<b>Regulation:</b> E4	<b>Internal fire spread – Structure</b>
<b>Comment:</b>	See section 7 of this Certificate.
<b>Regulations:</b> F2(a)(i) F3 (2)	<b>Conservation measures Target carbon dioxide Emissions Rate</b>
<b>Comment:</b>	The lintels have the thermal properties described in section 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 obligation under these Regulations.

See sections: 2 *Delivery and site handling* (2.4) and 4 *Practicability of installation*.

# Non-regulatory Information

## NHBC Standards 2008

NHBC accepts the use of Catnic CN Angle Lintel Range of Cavity Wall Lintels, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 – D9 *Lintels*.

## General

This Certificate relates to the Catnic CN Angle Lintel Range of Cavity Wall Lintels, a range of lintels for standard load conditions (rainscreen cladding masonry support) in external masonry within a cavity wall construction.

They provide support to facing brickwork above door or window openings. The lintels do not bridge the cavity of external cavity walls.

## Technical Specification

### 1 Description

1.1 The Catnic CN Angle Lintel Range of Cavity Wall Lintels is fabricated from the material specifications as detailed in Table 1. The lintels are available in five types: CN94A, CN94C, CN95C, CN96C and CN97C with overall heights of 88 mm, 91 mm, 131 mm, 167 mm and 215 mm respectively.

Table 1 Lintel specification

Material	Manufacturing Standard	Grade	Coating type
Hot-dipped galvanized steel	BS EN 10346	DX51D DX51D	Z275 Z600
Stainless steel (304 S15)	BS EN 10088-2	1.4301	—

1.2 Galvanized or stainless steel coil is slit, straightened and cut to length to provide blanks from which the lintel's components are formed by press braking or roll forming.

1.3 The lintels are further protected against corrosion by an epoxy or polyester resin coating, heat cured to all external surfaces and cut edges of galvanized steel lintels to a minimum thickness of 0.025 mm.

1.4 Quality control checks include:

#### *incoming steel*

- chemical composition
- dimensional tolerance
- mechanical properties
- thickness
- quality of galvanizing.

#### *during manufacture*

- dimensions
- thickness
- quality of the resin coating.

1.5 The lintels are available in black polyester powdered coating to all external surfaces for protection against corrosion.

### 2 Delivery and site handling

2.1 The lintels are delivered singly or in bundles carrying a label bearing the manufacturer's name.

2.2 Reasonable care must be taken during unloading, stacking and storage to avoid damaging the protective coating. Lintels that have suffered deformation or major damage to the protective coating must not be used; minor damage to the coating must be repaired by using compatible epoxy or polyester resin coatings.

2.3 The lintels must be stored off the ground to avoid the risk of either mechanical damage or contamination by corrosive substances.

2.4 When lifting or carrying, consideration must be given to the size and weight of the product (see the Certificate holder's brochure).

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Catnic CN Angle Lintel Range of Cavity Wall Lintels.

### Design Considerations

#### 3 General

Catnic CN Angle Lintel Range of Cavity Wall Lintels are satisfactory for use to support external masonry within a cavity wall construction, to support facing brickwork over window or door openings.

#### 4 Practicability of installation

4.1 The lintels are designed to be installed by a competent general builder, or a contractor, experienced with this type of product. The lintels are installed easily by methods commonly used in building practice but the lintels must be propped and laterally restrained during construction and the masonry curing process, and care must be taken when removing the support. These operations must follow the manufacturer's instructions (see section 12).

4.2 The lintels are lighter than conventional concrete lintels and can be positioned by one or two operatives.

4.3 The use of stopends and weepholes to the lintels should be incorporated as recommended in BS 5628-3 : 2005.

#### 5 Corrosion protection

The lintels have adequate protection against corrosion subject to the following conditions:

- the protective zinc, epoxy or polyester resin coating is undamaged
- mortar must comply with the requirements of BS 5628-3 : 2005
- timber door or window frames in contact with the lintels may be treated with boron compounds or organic solvent type preservatives. The composition and application of any such treatment must be in accordance with BS 5589 : 1989. The risks of corrosion associated with other forms of preservative treatment and with treatment with inorganic flame retardant salts are described in BRE Digest 301 : 1985 *Corrosion of metals by wood*
- structural timber in contact with timber-frame lintels may be preservative treated in accordance with BS 5268-5 : 1989. Where copper/chrome/arsenic preservative is used it is essential to allow sufficient time for complete fixation of the preservative (about seven days) and to ensure that the timber is subsequently re-dried after fixation.

#### 6 Structural performance



6.1 The lintels have adequate strength and stiffness to sustain the uniformly distributed working loads given in Table 2, provided the defined cavity widths, size of masonry unit and clear spans are not exceeded.

Table 2 Angle lintels

Lintel type	Steel thickness (mm)	Weight (kg·m <sup>-1</sup> )	Overall height (mm)	Manufactured length (mm)		Clear span (mm)		Minimum end bearing (mm)	Safe working load (kN)
				Minimum	Maximum	Minimum	Maximum		
CN94A	2.0	2.7	88	750	1350	450	1050	150	8
CN94C	3.1	4.4	91	900	1500	600	1200	150	5
CN95C	3.1	5.4	131	1650	2100	1350	1800	150	7
CN96C	3.1	6.3	167	2250	2400	1950	2100	150	10
CN97C	3.1	7.5	215	2550	2700	2250	2400	150	15

6.2 The outer leaf lintels must be used in conjunction with correctly designed, specified and installed inner leaf lintels.

6.3 In cavity wall construction, the wall ties used to connect the inner and outer leaves are used to restrain rotation of the lintel. It is essential that the correct number of wall ties are used.

6.4 During design, the load transfer from the outer leaf must be considered.

6.5 In addition to the requirements specifically referred to in this Certificate, structures of brickwork or blockwork, in which the lintels are incorporated, must be designed and constructed to comply with the following technical specifications, as appropriate:

- BS 5628-1 : 2005 and BS 5628-3 : 2005

- the national Building Regulations:

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

**Scotland** — Small Buildings Structural Guide referred to under Mandatory Standard 1.1<sup>(1)</sup> and Annexes<sup>(1)</sup> 1.A, 1.B, 1.D and 1.E

(1) Technical Handbook (Domestic).

**Northern Ireland** — Technical Booklet D.

6.6 Guidance for the assessment of loads on lintels in masonry is given in BS 5977-1 : 1981.

## 7 Behaviour in relation to fire



Where any form of wall construction 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 for the test concerned.

## 8 Thermal performance

8.1 The lintels are available with solid base plates. A thermal conductivity of  $50 \text{ Wm}^{-1}\text{K}^{-1}$  can be taken for the lintel. Calculations of the thermal transmittance (U value) of a specific wall construction should be carried out in accordance with BS EN ISO 6946 : 1997 and BRE report (BR 443 : 2006) *Conventions for U-value calculations*. The U value of a typical wall construction will depend on the insulating value of the wall and its finish.



8.2 Thermal bridging around opening heads will be acceptable and meet the national and Building Regulation requirements, in situations where designs incorporating the lintels comply with the relevant provisions of *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002; additional guidance can be found in Accredited Construction Details CLG 2007 and BR report (BR 262 : 2002) *Thermal insulation : avoiding risks*:

- windows to be set back into cavity by at least 30 mm (see Figure 1)
- windows to be sealed at front and back of the frame
- external head soffits to walls incorporating external wall insulation to be lined with insulation having a minimum thermal resistance of  $0.5 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$
- internal head soffits incorporating lintels with solid base plates and internal wall or cavity wall insulation, to be lined with insulation having a minimum thermal resistance of  $0.34 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$ :

**England and Wales** — Approved Document L1A, paragraphs 51 and 52; and Approved Document L2A, paragraphs 68 and 69

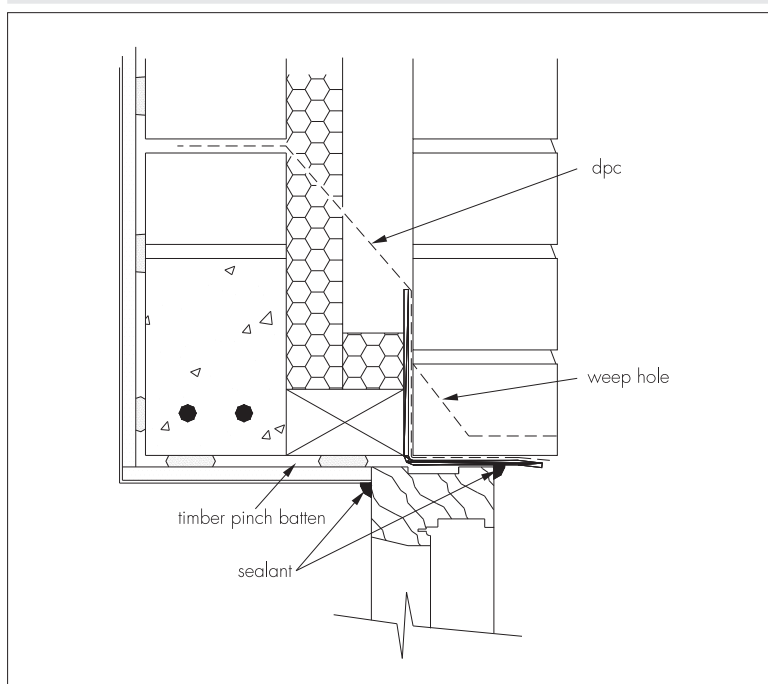
**Scotland** — Mandatory Standard 6.2<sup>(1)(2)</sup>

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

**Northern Ireland** — Technical Booklet F1, paragraphs 2.43, 2.44 and 3.14; and Technical Booklet F2, paragraphs 2.54, 2.55, 3.18, 3.19 and 3.2.

Figure 1 Typical installation



8.3 For constructions not covered under section 8.2, an assessment can be carried out by computer simulation in accordance with BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*.

8.4 Where lintels are used in other details, an assessment or an appropriate test should be carried out to determine the thermal performance of the detail proposed.

## 9 Condensation risk

9.1 When used in a cavity wall construction the lintel does not bridge the cavity. Under normal domestic conditions, the level of interstitial condensation associated with the lintels installed in accordance with section 12.2 or 12.3 will be low and the risk of any resultant damage minimal.

9.2 Consideration must be given to the overall design to minimise the risk of surface and interstitial condensation and the recommendations of BS 5250 : 2002 should be followed.

## 10 Maintenance

Maintenance is not required, but the exposed toe of the lintel (except for internal wall lintels) may be painted to improve appearance, using finishes compatible with epoxy or polyester resin coating.

## 11 Durability

11.1 The lintels will have adequate durability provided they are installed and used within the correct temperature and humidity conditions (see also section 9 of this Certificate) and conditions affecting the corrosion protection of the lintels must be observed.

11.2 The durability of the lintels will not be impaired by contact with conventional cavity insulation material or mortar admixtures.

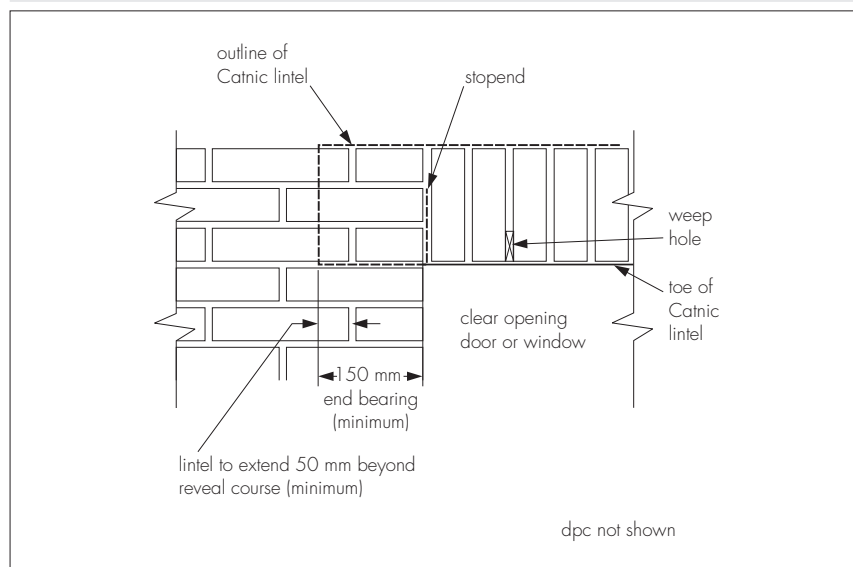
11.3 Buildings located in exposed conditions, such as those in coastal areas and those above three storeys, are at greater risk of suffering water ingress. In these situations, it is recommended that separate damp-proof courses and stopends are installed.

# Installation

## 12 General

12.1 Typical installation details of the Catnic CN Angle Lintel Range of Cavity Wall Lintels are shown in Figures 1 and 2. The lintels must be installed with at least the minimum end bearing dimensions given in Table 2 and illustrated in Figure 2, and be fully bedded on bricklaying mortar.

Figure 2 Detail showing minimum end bearing, stopends and weep holes



12.2 It is important for the lintels to be propped and laterally restrained during construction and removed carefully after the masonry has fully cured in accordance with the manufacturer's instructions. Horizontal timber spreaders should be used to avoid distorting the lintel, and props fitted at approximately 1200 mm centres. A pinch batten should be fitted at the heel of the lintel to minimise any rotation. The manufacturer's instructions should be sought in connection with this process.

12.3 The lintels must be used in conjunction with a masonry construction designed and installed in accordance with section 6 of this Certificate. The outer leaves supported by the lintels must be raised with the inner leaf together to avoid excessive eccentricity of loading. It is essential that the correct number and type of wall ties are used.

12.4 Weepholes must be provided in the outer leaf above the lintel to allow moisture to drain. A minimum of two weepholes must be provided per lintel. For fair-faced masonry, weepholes should be provided at centres not greater than 450 mm. The use of stop ends to the lintels should also be applied as recommended in BS 5628-3 : 2005, particularly in areas of severe exposure and where full fill cavity insulation is specified.

12.5 To comply with NHBC requirements in Scotland, Northern Ireland and areas of severe exposure, as defined in BRE Report *Thermal insulation : avoiding risks, Second edition*, separate damp-proof protection shall be provided over cavity wall lintels and stopends to the lintel and cavity tray are required under all exposure conditions.

12.6 The durability assessment assumes that water does not collect on the lintel, therefore weepholes should be kept clear of slurry or debris.

12.7 Operations likely to damage the protective coatings or impair the strength of the lintels (for example, cutting, welding or drilling) must not be undertaken. Cleaning of any excess mortar must be carried out with a soft material to avoid damaging the coating.

## Technical Investigations

### 13 Tests

Tests were carried out to establish the load–deflection characteristics of the lintels.

### 14 Investigations

14.1 The following investigations were made:

- calculations were undertaken, and examined in conjunction with the results of the load–deflection tests referred to in section 13, to establish structural performance
- existing information relating to the suitability of the corrosion protection was examined, including results of long-term exposure tests on galvanized steel carried out by the British Steel Corporation<sup>(1)</sup>

(1) Now Corus (UK) Ltd.

- a re-examination was made of the data and investigations on which the previous Certificate was based. The conclusions drawn from the original data remain valid.

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

## Bibliography

BS 5250 : 2002 *Code of practice for control of condensation in buildings*

BS 5268-5 : 1989 *Structural use of timber — Code of practice for the preservative treatment of structural timber*

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

BS 5628-1 : 2005 *Code of practice for the use of masonry — 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 10088-2 : 2005 *Stainless steels — Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

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

BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

## 15 Conditions

15.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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 and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

15.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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 In granting this Certificate, the BBA is not responsible for:

- 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
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

15.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.