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Agrément Certificate

91/2638

Product Sheet 2

CATNIC LINTELS

CATNIC EXTERNAL SOLID WALL LINTELS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Catnic External Solid 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

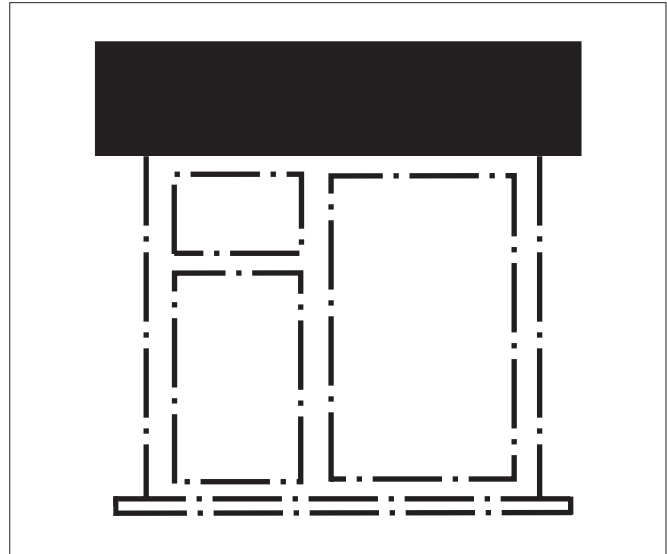
Practicability of installation — the lintels are designed to be installed by a competent general builder, or a contractor, experienced with this type of product (see sections 4 and 12).

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

Structural performance — the lintels provide support to vertical loads from walls, floors and roofs, or combinations of these, 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 Accredited 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

Brian Chamberlain
Head of Approvals — Engineering

Greg Cooper
Chief Executive

Date of First issue: 23 November 2009

Originally certificated on 28 March 1991

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, Catnic External Solid 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)

Requirement: A1	Loading
Comment:	The lintels have sufficient strength and stiffness provided they are correctly installed and design loads are in accordance with sections 6.1 to 6.3 of this Certificate.
Requirement: B3(1)	Internal fire spread (structure)
Comment:	When protected the lintels will have the periods of fire resistance as given in section 7.1 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	When used in external cavity wall constructions as shown in the appropriate figures referred to in section 7 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.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The lintels will have the thermal properties described in sections 8.1 to 8.3 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The lintels are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The lintels can contribute to a construction satisfying this Regulation. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 1.1(a)(b)	Structure
Comment:	The lintels have sufficient strength and stiffness provided they are correctly installed and the design loads are in accordance with sections 6.1 to 6.3 of this Certificate.
Standard: 2.3	Structural protection
Comment:	The lintels are non-combustible and therefore meet the requirements of this Standard, with reference to clause 2.3.2 ⁽¹⁾⁽²⁾ . When protected the lintels will have the periods of fire resistance as given in section 7.1 of this Certificate.
Standard: 3.15	Condensation
Comment:	When used in external cavity wall constructions as shown in the appropriate figures referred to in section 7 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 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 9.1 and 9.2 of this Certificate.
Standard: 6.2	Building insulation envelope
Comment:	The lintels will have the thermal properties described in sections 8.1 to 8.3 of this Certificate, with reference to clauses 6.2.3 ⁽¹⁾ 6.2.4 ⁽²⁾ , 6.2.10 ⁽¹⁾ and 6.2.11 ⁽²⁾ .
Regulation: 12	Building standards – conversions
Comment:	All comments given for these products under Regulation 9, 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) 2000 (as amended)

Regulation: B2	Fitness of materials and workmanship
Comment:	The lintels are acceptable. See section 11.1 and the <i>Installation</i> part of this Certificate.
Regulation: C5	Condensation
Comment:	When used in external wall constructions, interstitial 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.
Regulation: D1	Stability
Comment:	The lintels have sufficient strength and stiffness provided they are correctly installed and the design loads are in accordance with sections 6.1 to 6.3 of this Certificate.
Regulation: E4	Internal fire spread – Structure
Comment:	When protected the lintels will have the periods of fire resistance as given in section 7.1 of this Certificate.
Regulation: F2	Conservation measures
Comment:	The lintels will have the thermal properties described in sections 8.1 to 8.3 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: 2 *Delivery and site handling* (2.4).

Non-regulatory Information

NHBC Standards 2008

NHBC accepts the use of Catnic External Solid 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 External Solid Wall Lintels, a range of pressed steel lintels.

The lintels are for use in masonry external cavity walls. They provide support to vertical loads from walls, floors and roofs, or combinations of these, above door or window openings in domestic dwellings and garages (see section 6 of this Certificate).

Technical Specification

1 Description


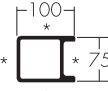
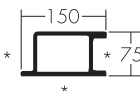

1.1 Catnic External Solid Wall Lintels are fabricated from one of the material specifications as detailed in Table 1. They are available in the profiles shown in Table 2. The lintels incorporate perforations on the appropriate faces to provide a key for plastering.

Table 1 Lintel specification

Material	Manufacturing Standard	Grade	Coating type
Hot-dipped galvanized steel ⁽¹⁾	BS EN 10346	DX51D	Z275
		DX51D	Z600
		S250GD	Z600
Stainless steel (304 S15)	BS EN 10088-2	1.4301	–

(1) Minimum yield stress 250 N·mm⁻².

Table 2 Lintels for external solid masonry walls

Lintel profiles	Lintel type ⁽¹⁾	Sheet thickness (mm)			Manufactured length (mm)	Clear span (mm)	Minimum end bearing (mm)	Working load (UDL) (tonnes)	Installation detail Figure No
		Base	Back	Front					
 143 (CN5) 2 courses 219(CN6) 3 courses	CN5E	1.6	1.6	1.6	600–2100	300–1800	150	2.0	2
	CN5A	2.0	2.0	2.0	600–2700	300–2400	150	2.0	
	CN6A	2.0	2.0	2.0	2250–2700	1950–2400	150	3.0	
	CN6B	2.5	2.5	2.5	2850–3750	2550–3450	150	3.0	
	CN6C	3.2	3.2	3.2	3900–4575	3600–4275	150	3.0	
	CN56E	1.6	1.6	1.6	600–2100	300–1800	150	2.0	
CN56A	2.0	2.0	2.0	600–2700	300–2400	150	2.0		
CN66A	2.0	2.0	2.0	2250–2700	1950–2400	150	3.0		
CN66B	2.5	2.5	2.5	2850–3750	2550–3450	150	3.0		
CN66C	3.2	3.2	3.2	3900–4575	3600–4275	150	3.0		
 CN52E	CN52E	1.6	1.6	1.6	750–1500	450–1200	150	1.4	2
 CN46E	CN46E	1.6	1.6	1.6	750–1500	450–1200	150	1.4	3
 143 (CN71) 2 courses 219(CN81) 3 courses	CN71E	1.6	1.6	1.6	750–1500	450–1200	150	2.1	1
	CN71F	1.6	1.6	2.0	1650–2100	1350–1800	150	2.5	
	CN71A	1.6	2.0	2.0	600–2700	300–2400	150	2.0	
	CN81A	1.6	2.0	2.0	2250–2700	1950–2400	150	3.0	
	CN81B	2.0	2.5	2.5	2850–3750	2550–3450	150	3.0	
	CN81C	2.0	3.2	3.2	3900–4575	3900–4275	150	3.0	

*Plaster key

(1) The Certificate holder can give details of lintel type references and availability.

1.2 Galvanized or stainless steel coil is slit, perforated if necessary, straightened and cut to length to provide blanks from which the lintel's components are formed by press braking or roll forming. The components are assembled by spot welding or press joining to form the completed lintel.

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
- weld quality
- thickness
- quality of the resin coating.

1.5 Types CN71 and CN81 incorporate polystyrene insulation.

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 External Solid Wall Lintels.

Design Considerations

3 General

Catnic External Solid Wall Lintels are satisfactory for use in external cavity walls of brickwork and/or blockwork to provide support to wall, roof or floor loads (or a combination of these), above 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.

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

4.3 The galvanized epoxy powder or galvanized polyester coated steel lintels obviate the need for a separate damp-proof tray at the lintel position.

4.4 The lintels have provision for curtain track fixing clips providing adequate support and ease of installation.

4.5 Where relevant, the perforated steel lintel soffit faces and insulated surfaces provide a suitable substrate for plastering.

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.

6 Structural performance



6.1 Types CN5, CN6, CN46, CN52, CN56, CN66, CN71 and CN81 have adequate strength and stiffness to sustain the uniformly distributed working loads given in Table 2, subject to the following conditions:

- the defined sizes of masonry unit and clear spans are not exceeded
- with types CN71 and CN81 not more than half the total load on the lintel is supported at the outer leaf position
- the specified loads in Table 2 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 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 2.

6.2 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⁽¹⁾ and Annexes⁽¹⁾ 1.A, 1.B, 1.D and 1.E

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet D.

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

7 Behaviour in relation to fire



7.1 The construction details shown in Figures 1 to 3 have been assessed as capable of satisfying the national Building Regulations in situations where a one-hour fire resistance is required.

7.2 Where any other form of wall construction incorporating Catnic 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.

Figure 1 Indicative installation details for lintels types CN71 and CN81

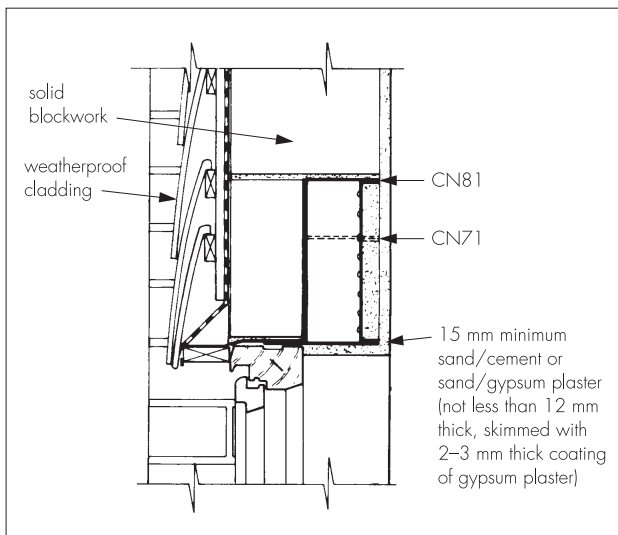


Figure 2 Indicative installation details for lintels types CN52, CN5 and CN6

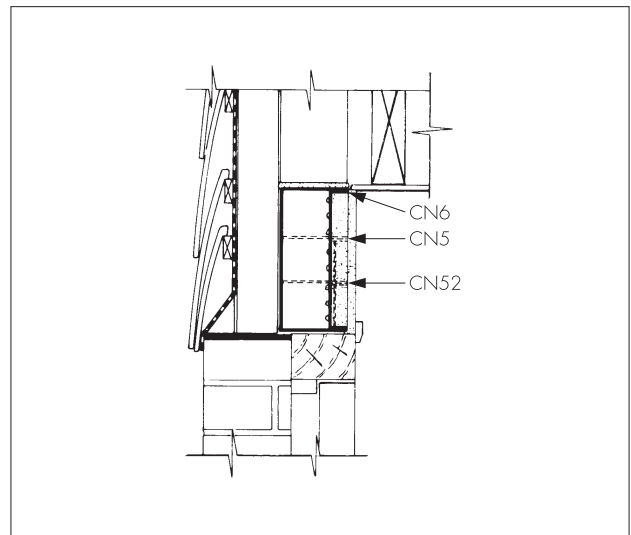
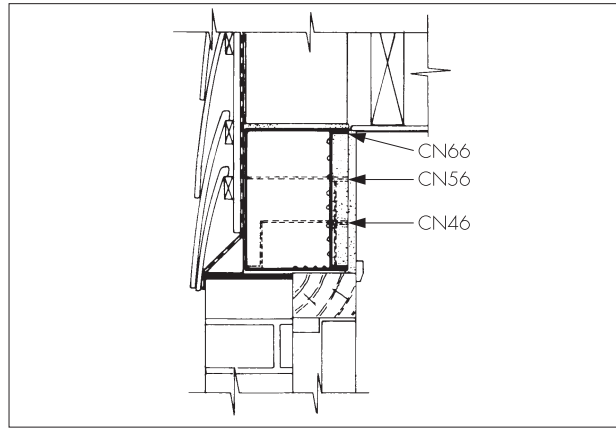


Figure 3 Indicative installation details for lintels types CN46, CN56 and CN66



Note: To suit normal Scottish practice, frames must be set so that the outer face does not project beyond the line of the inner face of the outer leaf of the cavity wall.

8 Thermal performance



8.1 Care must be taken in the design and construction of opening head junctions to maintain insulation and air barrier continuity. Assessments of insulation effectiveness should include the following properties:

- steel thickness: ≤ 3.2 mm (see Tables 2 to 4)
- thermal conductivity of steel: $60 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$
- maximum effective thermal conductivity of perforated steel: $30 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$
- thermal conductivity of $0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the EPS in lintels with integral insulation.

New buildings

8.2 Opening head junctions incorporating the products will be acceptable if, when modelled in accordance with BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*, their ψ values do not exceed:

- $0.3 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for other lintel types
- $0.5 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for lintels with perforated base plates.

Existing buildings

8.3 Opening head junctions incorporating the products in extensions or conversions, can adequately limit heat loss when they comply with Table 3, or section 8.2.

Table 3 Hygrothermal issues for each of three different lintel types

Element	Lintel design		
	Perforated base plate	solid base plate	No base plate
Lintel material maximum thickness (mm) ⁽¹⁾	3.2	3.2	3.2
Maximum $\lambda_{\text{eff}} 30 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ ⁽²⁾	yes	no	no
Some insulation in lintel ⁽²⁾⁽³⁾	yes	yes	yes
Lintels fully insulated ⁽¹⁾	no	no	yes
Window/door frame overlap of min 30 mm ⁽²⁾	yes	yes	yes
Soffit insulation depending on type of wall insulation used ($\text{m}^2\cdot\text{K}\cdot\text{W}^{-1}$):			
cavity wall insulation ⁽²⁾⁽³⁾	no	0.34	no
insulated dry lining ⁽²⁾⁽³⁾	0.34	0.34	0.34
external wall insulation ⁽¹⁾⁽²⁾	0.5	0.5	0.5
	—	0.6	—

(1) *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002.

(2) *Accredited Construction Details* CLG 2007.

(3) *Technical Guide Accredited Construction Details (Scotland)*, SBSA 2008.

9 Condensation risk



9.1 To limit the risk of condensation it is essential that thermal insulation and vapour check continuity is effectively achieved during installation.

9.2 The risk of surface condensation for a construction product should be established by numerical modelling in accordance with BRE Information Paper IP 1/06. 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).

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 perform for the lifetime of the building provided they are installed in accordance with this Certificate and conditions affecting the corrosion protection of the lintels are observed.

11.2 The durability of the lintels will not be impaired by contact with mortar admixtures.

11.3 External solid single-leaf walls incorporating the lintels must be protected by a suitable weathertight facing, eg a ventilated cladding.

11.4 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 are installed.

Installation

12 General

12.1 Typical installation details are shown in Figures 1 to 3. The lintels must be installed with at least the minimum end bearing dimensions given in Table 2 and be fully bedded on bricklaying mortar.

12.2 Operations likely to damage the protective coatings or impair the strength of the lintels (for example, cutting, welding or drilling) must not be undertaken.

Technical Investigations

13 Tests

Tests were carried out to establish:

- load-deflection characteristics
- fire resistance of selected lintel profiles to BS 476-1 : 1953 and BS 476-8 : 1972
- the quality of the spot welding and its effect on the galvanizing
- thickness and quality of galvanizing and epoxy and polyester resin coatings
- resistance to damage of the epoxy and polyester resin coatings.

14 Investigations

14.1 Calculations were undertaken, and examined in conjunction with the results of the load-deflection tests referred to in section 13 (bullet point 1), to establish structural performance.

14.2 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.

14.3 Assessments were undertaken to determine:

- heat loss through junctions
- risk of condensation.

14.4 Existing data were used to make an assessment of behaviour in fire and practicability of installation.

14.5 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.

14.6 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.

14.7 Tests were carried out on lintels types CN52E, CN46, CN52, CN56E, CN71E and CN71F to establish load-deflection characteristics.

14.8 Calculations were undertaken on lintels types CN52E, CN46, CN52, CN56E, CN71E and CN71F and examined in conjunction with the results of the load-deflection tests referred to above, to establish structural performance.

14.9 Suitability of the corrosion resistance of the stainless steel.

14.10 Regular factory inspections have been carried out to ensure that quality is being maintained.

Bibliography

BS 476-1 : 1953 *Fire tests on building materials and structures — Fire tests on building materials and structures*

BS 476-8 : 1972 *Fire tests on building materials and structures — Test methods and criteria for the fire resistance of elements of building construction*

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*

Conditions of Certification

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.