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**Agrément Certificate**

**02/3917**

Product Sheet 2

## TILEFORM ROOFING SHEETS

### PROFILE 49

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Profile 49, an aggregate-coated tile preformed from steel coated with zinc or aluminium-zinc alloy, for use on conventional timber or steel pitched roof structures with a minimum pitch of 10°.

(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

**Weathertightness** — the product, used with a suitable underlay, has satisfactory resistance to the passage of rain and snow (see section 6).

**Strength and stability** — the product has satisfactory resistance to the effects of wind loading likely to be met in service (see section 7).

**Properties in relation to fire** — the product can achieve an AA classification to BS 476-3 : 2004 and be unrestricted in terms of proximity to a boundary, however restrictions may apply to completed roof assemblies, depending on the other materials/components used and the overall construction (see section 9).

**Durability** — under normal conditions the product will have a service life in excess of 30 years (see section 11).



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 Second issue: 4 March 2021

Originally certificated on 2 August 2002

Hardy Giesler  
Chief Executive Officer

*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 MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

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

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## Regulations

In the opinion of the BBA, Profile 49, 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)

<b>Requirement:</b> A1 Comment:	<b>Loading</b> The product can contribute to satisfying this Requirement. See section 7 of this Certificate.
<b>Requirement:</b> B4(1) Comment:	<b>External fire spread</b> The product is restricted by this Requirement. See sections 9.3 and 9.4 of this Certificate.
<b>Requirement:</b> B3(2) Comment:	<b>Internal fire spread (structure)</b> The product may be restricted by this Requirement. See section 9.3 of this Certificate.
<b>Requirement:</b> B4(2) Comment:	<b>External fire spread</b> The product can be unrestricted by this Requirement. See sections 9.1, 9.2 and 9.7 of this Certificate.
<b>Requirement:</b> C2(b) Comment:	<b>Resistance to moisture</b> The product can contribute to satisfying this Requirement. See section 6 of this Certificate.
<b>Regulation:</b> 7(1) Comment:	<b>Materials and workmanship</b> The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 7(2) Comment:	<b>Materials and workmanship</b> The product is restricted by this Requirement. See sections 9.3 and 9.4 of this Certificate.



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

<b>Regulation:</b> 8(1)(2) Comment:	<b>Durability, workmanship and fitness of materials</b> The product is acceptable. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> 9 Standard: 1.1(a)(b) Comment:	<b>Building standards applicable to construction</b> Structure The product can contribute to a construction satisfying this Standard. See section 7 of this Certificate.
Standard: 2.1 Standard: 2.2 Comment:	Compartmentation Separation The product may be restricted by these Standards, with reference to clauses 2.1.15 <sup>(2)</sup> and 2.2.10 <sup>(1)</sup> . See sections 9.1, 9.2 and 9.7 of this Certificate.
Standard: 2.6 Comment:	Spread to neighbouring buildings The product is restricted by this Standard with reference to clauses 2.6.4 <sup>(1)(2)</sup> , 2.6.5 <sup>(1)</sup> and 2.6.6 <sup>(2)</sup> . See sections 9.3, 9.5 and 9.6 of this Certificate.

Standard:	2.7	Spread on external walls
Comment:		The product is restricted by this Standard with reference to clause 2.7.1 <sup>(1)(2)</sup> . See sections 9.3, 9.5 and 9.6 of this Certificate.
Standard:	2.8	Spread from neighbouring buildings
Comment:		The product can be restricted by this Standard, with reference to clause 2.8.1 <sup>(1)(2)</sup> . See sections 9.1 and 9.2 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 <sup>(1)(2)</sup> and 3.10.8 <sup>(1)(2)</sup> . See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
<b>Regulation:</b>	<b>12</b>	<b>Building standards applicable to conversions</b>
Comment:		Comments made in relation to the product under Regulation 9, Standards 1 to 6 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) 2012 (as amended)

<b>Regulation:</b>	<b>23(a)(i)(iii)(b)(i)</b>	<b>Fitness of materials and workmanship</b>
Comment:		The product is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b>	<b>28(b)</b>	<b>Resistance to moisture and weather</b>
Comment:		The product can contribute to satisfying the requirements of this Regulation. See section 6 of this Certificate.
<b>Regulation</b>	<b>30</b>	<b>Stability</b>
Comment:		The product can contribute to satisfying this Regulation. See section 7 of this Certificate.
<b>Regulation:</b>	<b>35(2)</b>	<b>Internal fire spread – Structure</b>
Comment:		The product may be restricted by this Regulation. See sections 9.1, 9.2 and 9.7 of this Certificate.
<b>Regulation</b>	<b>36(a)</b>	<b>External fire spread</b>
Comment:		The product is restricted by this Regulation. See sections 9.3 and 9.4 of this Certificate.
<b>Regulation:</b>	<b>36(b)</b>	<b>External fire spread</b>
Comment:		The product can be unrestricted by this Regulation. See sections 9.1 and 9.2 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: **1 Description (1.2) and 3 Delivery and site handling (3.1 and 3.2)** of this Certificate.

## Additional Information

### NHBC Standards 2021

In the opinion of the BBA, Profile 49, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards, Part 7 Roofs, Chapter 7.2 Pitched roofs*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 14782 : 2006.

## Technical Specification

### 1 Description

1.1 Profile 49 is pressed from 0.45 or 0.9 mm thick aluminium-zinc coated (AZ150) steel or galvanized (Z275) steel sheet (both to BS EN 10346 : 2015), to a shape simulating the appearance of conventional tiles or slates (see Figure 1). Z275 tiles have a polyester coating ( $\geq 10 \mu\text{m}$ ) on the reverse side, AZ150 tiles are uncoated on the reverse side. The top face of the tiles is coated with a mineral-filled acrylic followed by stone granules and a clear acrylic glaze (see Figure 2).

Figure 1 Profile 49 tiles and nailing points

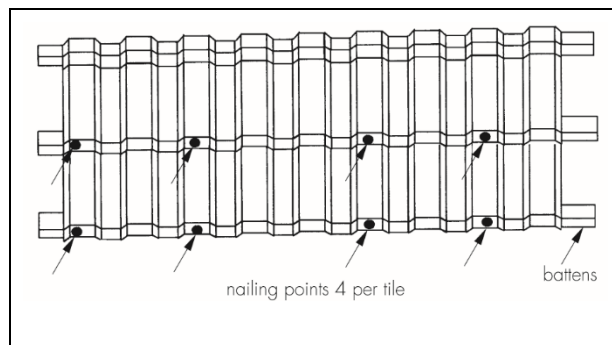
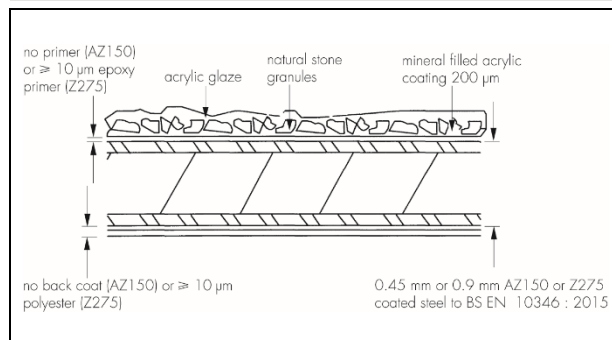


Figure 2 Section through Profile 49 tile (not to scale)



1.2 The product has the dimensions given in Table 1.

*Table 1 Dimensions*

	Tile thickness (mm)	
	0.45	0.90
Length of tile (mm)	1420	1420
Cover length (mm)	1315	1315
Width of tile (mm)	400	400
Cover width	365	363
Upstand (mm)	19	19
Side lap (mm)	105	105
Weight of tile (kg)	3.4	5.5
Weight of tiled roof (kg·m <sup>-2</sup> )	7.1	11.3
Coverage per tile (m <sup>2</sup> )	0.48	0.48

1.3 The product is supplied in the following colours:

- Titanium Grey
- Rustic Terracotta
- Bramble Brown
- Tartan Green
- Rustic Brown
- Moss Green
- Brindle Red.

1.4 Ancillary items available in standard 1.25 m lengths to the same coating specification as the main product, and which are included in this Certificate, are:

- ridge caps
- eaves soffits and fascia flashings
- parapet flashings
- standard eaves flashings
- apron flashings
- verge flashings
- soffit and fascia flashings
- standard bargeboards
- valleys.

1.5 Guillotines and tile-bending machines are available from the Certificate holder.

1.6 Other accessories include:

- flat-headed fixing nails — 50 mm long by 2.6 mm diameter, galvanized, annular grooved with an acrylic/bitumen coating
- touch-up kit — acrylic base coat and coloured granules for surface repairs.

1.7 Other accessories available but outside the scope of this Certificate include:

- special flashings (to order)
- roof ventilation
- gas vent ridge terminals.

## 2 Manufacture

2.1 Steel coils are unrolled, slit, guillotined and pressed into the finished profile. The pressed blanks are coated on the weather side with a pigmented acrylic base incorporating a fungicide followed by coloured stone granules and a clear acrylic glaze coat. After coating the tiles are oven-cured.

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.

### 3 Delivery and site handling

3.1 Tiles are packed in bundles of 20 with cardboard separators, then shrink-wrapped onto pallets with 300 tiles per pallet for the 0.45 mm thick product, giving a total weight of approximately 900 kg, and 250 tiles per pallet for the 0.9 mm thick product, giving a total weight of approximately 1200 kg.

3.2 On site, the pallets should be stored on a firm, dry base away from the possibility of damage, covered to prevent water ingress, and as close as possible to the building where they are to be installed. Pallets of tiles may not be stacked more than two units high.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Profile 49.

### Design Considerations

#### 4 Use

4.1 Profile 49 is satisfactory for use, in conjunction with a suitable underlay material, as a weatherproof and decorative covering on a conventional timber or steel pitched structure with a minimum pitch of 10°.

4.2 On roof constructions with pitches from 10 to 12°, the product should only be installed on simple structures, ie without features such as hips, valleys, rooflights or skew roofs.

4.3 To prevent electro-chemical corrosion, direct contact with copper or its alloys should be avoided, and copper roofs should not drain onto the installation.

#### 5 Practicability of installation

The product is designed to be installed by a competent roofing contractor.

#### 6 Weathertightness



The product, used with a suitable roof tile underlay, has satisfactory resistance to the passage of rain and snow.

#### 7 Strength and stability



7.1 The product has satisfactory resistance to the effects of wind loads likely to be met in service. For use in situations where the roof location and local environment could result in high wind loading on the product, the number and position of the fixings should be checked by a suitably qualified and experienced individual.

7.2 The product weighs considerably less than conventional roofing tiles or slates and the roof substructure must be securely attached to the structure of the building to prevent wind uplift under adverse conditions.

## 8 Resistance to damage

8.1 The product will not be deformed by normal maintenance traffic.

8.2 The tiles can be deformed by impact. The 0.9 mm thick product is more resistant to impact damage than the 0.45 mm thick version, and should be used in situations where greater resistance is required, eg in areas subject to vandalism. Damaged products can be replaced but care must be taken to avoid damage to adjacent tiles.

## 9 Properties in relation to fire

Roof pitches  $\leq 70$  degrees



9.1 In the opinion of the BBA when tested, a construction incorporating the product can achieve the classification shown in Table 2 and is therefore unrestricted in terms of proximity to a boundary. See also section 9.2 of this Certificate.

Table 2 Resistance to external fire exposure

Classification	Method	Construction	Report reference
S.AA <sup>(1)</sup>	BS 476-3 : 2004 and PD 476-3 : 2012	0.45 mm Steel (all colours)	Warrington Fire 19822L-Rev.2
B <sub>ROOF(t4)</sub> <sup>(1)</sup>	BS EN 13501-5 : 2016	0.45 mm Steel (all colours)	Warrington Fire 19822L-Rev.2

(1) Vent 3 Classic breathable roof tile underly on 38 mm by 38 mm timber battens

9.2 This classification may not be achieved by other constructions and can also be affected by other components of the roof, eg insulation materials, substrates/ decking and membranes. These constructions should therefore be evaluated by reference to the requirements of the documents supporting the relevant national Building Regulations and any consequent restrictions imposed by those documents, on a case by case basis. In the absence of a rating, these constructions should not be used within 20 metres of a boundary (24 metres in Scotland).

Roof pitches  $>70^\circ$

9.3 The Certificate holder has not declared a reaction to fire classification for the product to BS EN 13501-1 : 2018.



9.4 In England, Wales and Northern Ireland, the product may be used on buildings with no storey 18 m or more above the ground and 1 metre or more from a boundary, additional limitations apply on Assembly and recreation buildings. With minor exceptions, the product should be included in the calculations of unprotected area.



9.5 In Scotland, the product may be used on buildings more than 1 m from a boundary. With minor exceptions, the product should be included in calculations of unprotected area.

9.6 In Scotland, the product should not be used on any building with a storey more than 11 m above the ground, or on any entertainment or assembly building with a total storey area more than 500 m<sup>2</sup>, or on any hospital or residential care building with a total storey area more than 200 m<sup>2</sup>.

All roofs



9.7 Where the products are to be carried over compartment walls, designers must ensure that the roof/wall junction detail provides sufficient resistance to fire penetrating into the neighbouring compartment.

9.8 Designers should refer to the relevant national Building Regulations and guidance for detailed conditions of use, particularly in respect of requirements for substrate fire performance, cavity barriers, service penetrations and combustibility limitations for other materials and components used in the overall construction.

## 10 Maintenance



10.1 For maintenance work roof ladders or crawling boards should be used, but care is still required to prevent damage. It is recommended that soft-soled shoes are worn.

10.2 Small areas where the coating has been damaged should be re-coated using the touch-up kit.

## 11 Durability



11.1 The organic and metallic coatings will protect the steel substrate against corrosion and will give the product a life in excess of 30 years.

11.2 Localised maintenance treatment may be necessary within 30 years to restore the appearance where chippings may have been lost or the coating eroded.

## 12 Reuse and recyclability

The product contains steel, which can be recycled.

## Installation

### 13 General

13.1 The standard of installation of Profile 49 should comply with the requirements of BS 8000-6 : 2013.

13.2 The tiles can be installed at all temperatures likely to be encountered in roofing works. However, at temperatures below  $-10^{\circ}\text{C}$  extra care is required, particularly when driving nails and cutting and bending tiles.

13.3 The roof construction must be adequate to resist the loadings detailed in BS EN 1991-1-1 : 2002 and BS EN 1991-1-4 : 2005, and their UK National Annexes. The roof construction should be in accordance with the relevant requirements of BS 5534-1 : 2014.

13.4 The minimum batten sizes permitted depend on the rafter spacing, as detailed in Table 2.

Rafter/truss spacing (mm)	Minimum batten size (mm)
450	38 x 25
600	50 x 25
900	50 x 50
1200	50 x 50
1500	75 x 50

13.5 The roof space and batten space must be adequately ventilated in accordance with BS 5250 : 2011.

13.6 Where timber boarding is laid on the rafters, a timber counter batten should be installed in accordance with BS 5534-1 : 2014.

13.7 Underlay must be to BS 8747 : 2007 Annex B, Type 1F or 5U, or be covered by a BBA Certificate and installed in accordance with that Certificate.



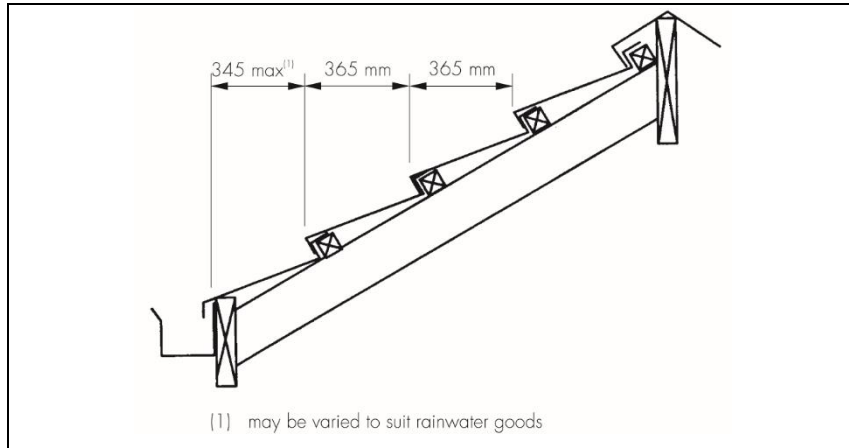
## 14 Procedure

14.1 Rafters must be securely tied to the building structure with, for example, galvanized steel straps complying with BS EN 1996-1-1 : 2005, BS EN 1991-2 : 2006 or PD 6697 : 2010.

14.2 Where the rafters/trusses are spaced at 900, 1200 or 1500 mm centres, polypropylene or nylon tape is nailed to the rafters to support the underlay.

14.3 Battens are secured over the underlay and roof trusses and fixed at the spacings given in Figure 3. The fixings used to secure the battens to the rafters must be adequate to resist predicted wind loads.

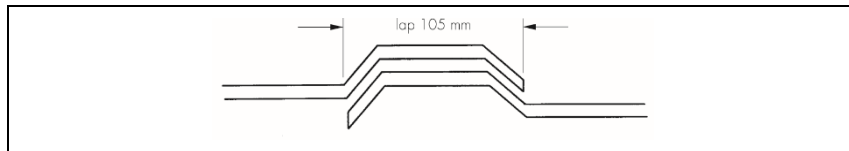
*Figure 3 Spacing details*



14.4 The tiles have a downturned lower edge and an upturned upper edge for interlocking purposes (see Figure 3).

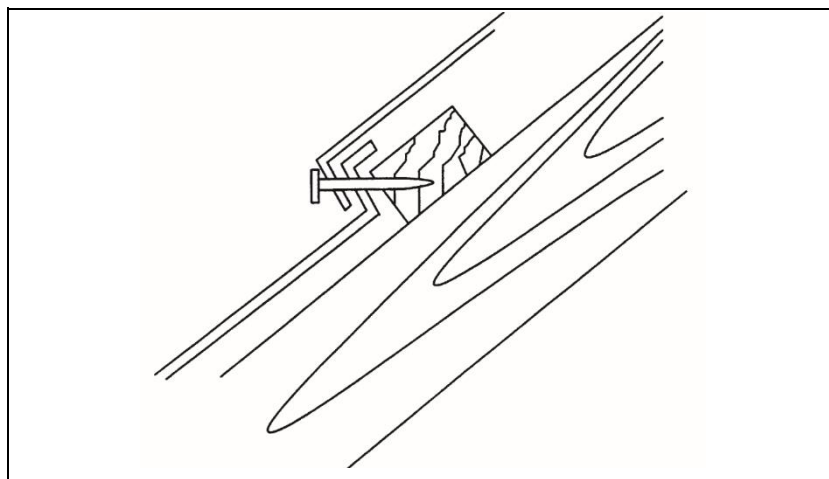
14.5 Adjacent tiles are overlapped with side laps of 105 mm (see Figure 4). The tiles should always be laid broken bond.

*Figure 4 Overlap details*



14.6 Tiles are laid onto the battens with the upper and lower edges interlocking. Fixing is by nailing through the nosing adjacent to the battens on the upper and lower interlocking edges using four 50 mm long by 2.6 mm diameter Tileform nails per tile into the battens (see Figures 1 and 5).

*Figure 5 Fixing details*



14.7 Tiles are preferably cut and formed with a guillotine and a tile-bending machine, but small quantities may be cut with tin snips or sheet metal cutters, and bent by hand.

14.8 The accessories are cut, formed and installed as necessary to complete the installation.

## Technical Investigations

### 15 Tests

Tests were carried out and the results assessed to determine:

- resistance to bending
- resistance to impact
- resistance to chipping
- resistance to water exposure
- resistance to salt spray
- resistance to artificial weathering.

### 16 Investigations

16.1 An assessment was made of data in relation to:

- resistance to rain penetration
- life of fixings
- fire performance.

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.

16.3 A visit was made to a site in progress to assess the practicability of installation and ease of repair.

## Bibliography

- BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*
- BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*
- BS 5534 : 2014 + A2 : 2018 *Slating and tiling for pitched roofs and vertical cladding — Code of practice*
- BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and claddings*
- BS 8747 : 2007 *Reinforced bitumen membranes (RBMs) for roofing — Guide to selection and specification*
- BS EN 1991-1-1 : 2002 *Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads for buildings*
- NA to BS EN 1991-1-1 : 2002 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Densities, self-weight, imposed loads on buildings*
- BS EN 1991-1-4 : 2005 + A1 : 2010 *Eurocode 1 — Actions on structures — General actions — Wind actions*
- NA to BS EN 1991-1-4 : 2005 + A1 : 2010 *UK National Annex to Eurocode 1 — Actions on structures — General actions — Wind actions*
- BS EN 1996-1-1 : 2005 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
- NA to BS EN 1996-1-1 : 2005 + A1 : 2012 *UK National Annex to Eurocode 6. Design of masonry structures. General rules for reinforced and unreinforced masonry structures*
- BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6. Design of masonry structures. Design considerations, selection of materials and execution of masonry*
- BS EN 10346 : 2015 *Continuously hot-dip coated steel flat products — Technical delivery conditions*
- BS EN 13501-5 : 2016 *Fire classification of construction products and building elements — Part 5: Classification using data from external fire exposure to roofs tests*
- BS EN 14782 : 2006 *Self-supporting metal sheet for roofing, external cladding and internal lining. Product specification and requirements*
- PD 6697 : 2019 *Recommendations for the design of masonry structures to BS EN 1991-1-1 and BS EN 1996-2*
- PD 476-3 : 2012 *Classification rules for the end-use application of test results arising from BS 476-3, "Classification and method of test for external fire exposure of roofs"*

## Conditions of Certification

### 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.

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