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Agrément Certificate
01/3812
Product Sheet 2

JABLITE FLAT ROOF INSULATION ROOFBOARDS

FLAT ROOF BOARD

This Agrément Certificate Product Sheet⁽¹⁾ relates to Flat Roof Board, expanded polystyrene (EPS) boards in EPS 100E and EPS 150E grades, with the option of a foil-facing factory-bonded to one or both sides, available in both uniform and tapered boards, for use as insulation in warm flat roofs with limited access. For balconies and terraces subject to regular pedestrian traffic, the EPS 150E grade must be used. The products are used in conjunction with a vapour control layer and a waterproof roof covering, on suitably designed concrete, timber or metal structural decks.

(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

Thermal performance — the products can be used to improve the thermal performance of a roof. The EPS core material has a declared thermal conductivity (λ_D)* of 0.036 W·m⁻¹·K⁻¹ for EPS 100E and 0.035 W·m⁻¹·K⁻¹ for EPS 150E (see section 6).

Condensation risk — the products can contribute to limiting the risk of condensation (see section 7).

Strength and stability — when installed on suitable substrates using appropriate fixing methods, the products can adequately transfer maintenance traffic loads and wind loads to the roof deck (see section 8).

Behaviour in relation to fire — the fire rating of any roof containing the products will depend on the type of deck and the nature of the roof waterproof covering (see section 9).

Durability — the products, when used as thermal insulation in the roof system described in this Certificate, will have a life at least as long as that of a roof waterproofing covering (see section 11).

The BBA has awarded this 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

John Albon — Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

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Originally certificated on 28 March 2001

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, Flat Roof Board, if installed, used and maintained in accordance with this Certificate, can 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 products can contribute to satisfying this Requirement. See section 8 of this Certificate.
Requirement: B4(2)	External fire spread
Comment:	Roofs incorporating the products can satisfy this Requirement. See sections 9.2 to 9.4 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The products can contribute to satisfying this Requirement. See sections 7.1 and 7.3 of this Certificate.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The products can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation: 7	Materials and workmanship
Comment:	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation: 26	Minimum energy performance requirements for new buildings
Regulation: 26A	Fabric energy efficiency rates for new dwellings (applicable in England only)
Regulation: 26A	Primary energy consumption rates for new buildings (applicable in Wales only)
Regulation: 26B	Fabric performance values for new dwellings (applicable in Wales only)
Comment:	The products can contribute to satisfying these Regulations. See section 6 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Durability, workmanship and fitness of materials
Comment:	The products are acceptable. See sections 10, 11 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards applicable to construction
Standard: 1.1	Structure
Comment:	The products can contribute to satisfying this Standard, with reference to clauses 1.1.1 ⁽¹⁾⁽²⁾ , 1.1.2 ⁽¹⁾⁽²⁾ , and 1.1.3 ⁽¹⁾⁽²⁾ . See section 8 of this Certificate.
Standard: 2.8	Spread from neighbouring buildings
Comment:	Roofs incorporating the products can satisfy this Standard, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See sections 9.2 to 9.4 of this Certificate.
Standard: 3.15	Condensation
Comment:	The products can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.3 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ , 3.15.5 ⁽¹⁾⁽²⁾ , and 3.15.6 ⁽¹⁾⁽²⁾ . See sections 7.1 and 7.4 of this Certificate.
Standard: 6.1(b)	Carbon dioxide emissions
Standard: 6.2	Building insulation envelope
Comment:	The products can contribute to satisfying these Standards, with reference to clauses, or parts of 6.1.1 ⁽¹⁾⁽²⁾ , 6.1.2 ⁽¹⁾⁽²⁾ , 6.1.3 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾ , 6.2.8 ⁽¹⁾⁽²⁾ to 6.2.11 ⁽¹⁾⁽²⁾ , 6.2.12 ⁽²⁾ and 6.2.13 ⁽¹⁾⁽²⁾ of these Standards. See section 6 of this Certificate.
Standard: 7.1(a)(b)	Statement of sustainability
Comment:	The products can contribute to satisfying 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 products can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾⁽²⁾ [Aspect 1 ⁽¹⁾⁽²⁾]. See section 6 of this Certificate.
Regulation: 12	Building standards applicable to conversions
Comment:	All comments given for the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012

Regulation: 23	Fitness of materials and workmanship
Comment:	The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation: 29	Condensation
Comment:	The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
Regulation: 30	Stability
Comment:	The products can contribute to satisfying this Regulation. See section 8 of this Certificate.
Regulation: 36(b)	External fire spread
Comment:	Roofs incorporating the products can satisfy this Regulation. See sections 9.2 to 9.4 of this Certificate.
Regulation: 39(a)(i)	Conservation measures
Comment:	The products can contribute to satisfying this Regulation. See section 6 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: 3 *Delivery and site handling* (3.4) of this Certificate.

Additional Information

NHBC Standards 2014

NHBC accepts the use of Flat Roof Board, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 7.1 *Flat roofs and balconies*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products, in accordance with harmonised European Standard BS EN 13163 : 2012. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Flat Roof Board consists of expanded polystyrene (EPS) board, with the option of a foil facing factory-bonded to one or both sides.

1.2 Flat Roof Board with a foil-facing factory-bonded on the upper side is designated PF1; and Flat Roof Board with a foil-facing factory-bonded to both sides is designated PF2.

1.3 The product is available as EPS 100E or EPS 150E grades, containing a flame-retardant additive giving a Class E* Reaction to Fire Classification to BS EN 13501-1 : 2007.

1.4 The boards are available in flat or tapered form, with plain edges, with the characteristics given in Table 1.

Characteristic	Dimension (mm)	
	Flat board	Tapered board
Length	1200	1200 600
Width	900, 1200, 2400	900, 1200 900
Thickness	20 to 600 in 5 increments	20 to 600 in 5 increments

1.5 Physical properties of the EPS component are given in Table 2.

	EPS 100E	EPS 150E
Nominal density (kg·m ⁻³)	20	25
Minimum compressive strength at 10% compression (kN·m ⁻²)*	100	150
Water vapour resistivity (MN·s·g ⁻¹ ·m ⁻¹)	200	238

2 Manufacture

2.1 Jablite insulation products are manufactured from EPS. The material comprises expandable beads of polystyrene pre-foamed and fused together in a steam-heated mould under pressure. This produces a block of material. After cutting to size, the material may be optionally faced with foil to suit its application.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Jablite Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and/or BS EN ISO 14001 : 2004 by British Standards Institute (Certificates FM/01 260 and EMS/559414).

3 Delivery and site handling

3.1 The products are delivered wrapped in polythene. Each pack shows the manufacturer's name, grade, type marking, and the BBA logo incorporating the number of this Certificate.

3.2 The products must be protected from prolonged exposure to sunlight and should be stored under cover or protected with opaque light-coloured polythene sheeting.

3.3 The products must be stored fully supported and flat on a firm, level, dry base, protected from the weather and raised above damp surfaces. The products must be discarded if damaged, and if accidentally allowed to become wet, they must either be replaced or allowed to dry fully before application of the waterproof layer.

3.4 The products must not be exposed to open flame or other ignition sources. Care must be taken to avoid contact with solvents and materials containing organic components.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Flat Roof Board.

Design Considerations

4 Use

4.1 Flat Roof Board is for use as a thermal insulation layer in warm flat roofs with limited access, comprising suitably designed concrete, timber or metal structural decks in conjunction with suitable waterproofing systems. For specific application of both grades EPS 100E and EPS 150E and their strength and stability see sections 4.6 and 8 of this Certificate.

4.2 Flat Roof Board is available with an optional foil layer factory-bonded to one or both sides of the EPS, and is suitable for use with single ply waterproofing membranes.

4.3 Flat roof decks should be designed in accordance with the relevant Clauses of BS 8217 : 2005, BS 8218 : 1998, BS 6229 : 2003 and, where appropriate, *NHBC Standards 2013*, Chapter 7.1.

4.4 Roofs should incorporate an effective vapour control layer (VCL) below the insulation boards.

4.5 The products are for use with the following waterproofing specifications:

- single-ply membranes, which are the subject of a current Agrément Certificate, laid in accordance with the requirements of that Certificate, and the manufacturer's recommendations
- other waterproofing systems, including liquid-applied waterproofing, which are the subject of a current Agrément Certificate, laid in accordance with, and within the limitations imposed by, that Certificate.

4.6 Both grades EPS 100E and EPS 150E may be used in warm flat roofs with limited access. Limited access roofs are defined for the purpose of this Certificate as those roofs subject only to pedestrian traffic for maintenance of the roof covering and cleaning of gutters, etc. Where traffic in excess of this is envisaged, ie balconies and terraces, EPS 150E grade insulation must be used and additional protection provided to the waterproofing membrane. See section 8.1 of this Certificate.

4.7 Flat roofs are defined for the purpose of this Certificate as those roofs having a minimum finished fall between 1:80 and 1:6.


4.8 For design purposes on flat roofs, twice the minimum finished fall should be assumed, unless a detailed analysis of the roof is available, including overall and local deflection, direction of falls, etc.

4.9 Tapered boards may be used, where appropriate, to achieve the minimum finished falls required. Any existing irregularities in the roof should be overcome before a tapered system is laid.

5 Practicability of installation

The products are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

6 Thermal performance

 6.1 Calculations of the thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2007 and BRE Report BR 443 : 2006, using the declared thermal conductivity (λ_p)* of 0.036 W·m⁻¹·K⁻¹ for EPS 100E and 0.035 W·m⁻¹·K⁻¹ for EPS 150E, for the EPS foam component of the boards.

6.2 The U value of a completed roof will depend on the insulation thickness, number and type of fixings, the insulating value of the roof deck substrate and its internal finish. Calculated U values for example constructions are given in Table 3.

Table 3 Example U values — Flat roofs using Flat Roof Board

U Value required (W·m ⁻² ·K ⁻¹)	Flat Roof Board insulation thickness (mm)					
	Fully bonded to timber deck ⁽¹⁾		Fully bonded to concrete deck ⁽²⁾		Fully bonded to metal deck ⁽³⁾	
	EPS 100	EPS 150	EPS 100	EPS 150	EPS 100	EPS 150
0.13	250	245	260	255	255	250
0.16	200	195	215	205	215	205
0.18	180	175	190	185	185	180
0.20	160	155	170	165	165	160
0.25	125	120	135	130	130	130

(1) Single-ply membrane, foil-facing factory-bonded to Flat Roof Board, VCL, 18 mm plywood deck $\lambda = 0.17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, 150 mm cavity between timber joists (11.7%) $0.16 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$, 12.5 mm plasterboard $\lambda = 0.21 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

(2) Single-ply membrane, foil-facing factory-bonded to Flat Roof Board, VCL, 150 mm concrete deck $\lambda = 1.701 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

(3) Single-ply membrane, foil-facing factory-bonded to Flat Roof Board, VCL, profiled metal deck with unsealed lapped joints, 50 mm cavity below metal deck $0.16 \text{ m}^2\cdot\text{K}\cdot\text{W}^{-1}$, 12.5 mm plasterboard $\lambda = 0.21 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

Junctions



6.3 Care must be taken in the overall design and construction of junctions with other elements and openings to minimise thermal bridges and air infiltration. Detailed guidance can be found in the documents supporting the national Building Regulations.

7 Condensation risk

Interstitial condensation



7.1 Roofs will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with the relevant parts of BS 5250 : 2011, Annexes D and H. Further guidance may be obtained from BRE Report BR 262 : 2002.

7.2 For the purposes of assessing the risk of interstitial condensation, the insulation core vapour resistivity may be taken as $200 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ for EPS 100E and $238 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\cdot\text{m}^{-1}$ for EPS 150E, and a resistance value of $1000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ maximum for each of the foil-facings (if applied).

Surface condensation



7.3 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.35 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point and the junctions with other elements are designed in accordance with section 6.3 of this Certificate.



7.4 Roofs will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point. Guidance may be obtained from BS 5250 : 2011, Annexes D and H. Further guidance may be obtained from BRE Report BR 262 : 2002.

8 Strength and stability



8.1 The EPS 100E grade of the product has adequate resistance to the loads associated with light maintenance traffic on single-ply roofs and minimal pedestrian traffic on protected single-ply roofs. If there is a likelihood of more severe traffic, eg balconies and terraces, the EPS 150E grade must be used.

8.2 When bitumen bonded, adhesion between the insulation board component and VCL, and between the boards and overlay, is adequate to resist the effects of wind suction and thermal cycling likely to be experienced under normal conditions. Metal deck profiles should give a bonding area of at least 33% of the total projected surface area. In areas where high wind speeds can be expected, mechanical fixing should be considered, and the advice of the Certificate holder should be sought as to the method of fixing. Reference should be made to BS EN 1991-1-4 : 2005 where a calculation is required for a specific building project.

9 Behaviour in relation to fire

9.1 The EPS boards contain a flame-retardant additive giving a Class E* Reaction to Fire Classification to BS EN 13501-1 : 2007. The fire rating of any roof containing the boards will depend on the type and nature of deck, and on the roof waterproof covering.



9.2 The designation of the roof covering must meet or satisfy the requirements of the national Building Regulations, thus:

England and Wales — Section 10 of Approved Document B volume 1, and Section 14 of Approved Document B volume 2. Notional designations of some common roof coverings are given in Appendix A, Table A5, of the Approved Documents.

Scotland — Mandatory Standards 2.8, clause 2.8.1⁽²⁾; Annex 2.C⁽¹⁾, and Annex 2.F⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Regulation 36(b). If, on flat roofs, the waterproof covering is protected by one of the surface finishes defined in Table 5.6 of Technical Booklet E, the roof is deemed to be of designation AA (National class) or B_{ROOF}(t4) (European Class).

9.3 Single-ply roof waterproofing membranes covered by an Agrément Certificate will contribute to meeting or satisfying the requirements of the national Building Regulations and Standards with regard to designation.

9.4 The designation of other specifications for example, when used on combustible substrates, should be confirmed by:

England and Wales — Test or assessment in accordance with Clause 6 of Appendix A of Approved Document B volumes 1 and 2.

Scotland — Test to conform to Annex 2.C⁽¹⁾ and 2.F⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Test or assessment by a UKAS accredited laboratory, or an independent consultant with appropriate experience.

10 Maintenance

No maintenance of the insulation component layer will be required provided the roof waterproof covering remains intact.

11 Durability



The products are rot-resistant and durable and will have a life at least as long as the roof waterproof covering. When the waterproof covering is renewed at a later date, the insulation will remain suitable for continued use, provided it is undamaged by replacement of the waterproof covering.

12 Reuse and recyclability

Jablite expanded polystyrene (EPS) insulation is fully recyclable.

Installation

13 General

13.1 Flat Roof Board must be installed in accordance with the Certificate holder's instructions and BS 6229 : 2003, or the relevant BBA Certificate, depending on the waterproofing to be applied. Bitumen and cold adhesive bonding may be augmented by mechanical fixing where appropriate.

13.2 The deck surface to which the VCL is to be applied must be level, clean, dry, sound, and free from dust, grease and other defects which may prevent adhesion. All deck joints should be taped and the deck coated in primer where necessary. If necessary a levelling screed can be applied to concrete decks.

13.3 For refurbishment work the existing weatherproofing should be stripped back to the structure and any defects made good. In some circumstances it may be acceptable to retain the existing weatherproofing by removing loose chippings and cutting and sealing any blisters to provide a sound surface. However, the advice of the Certificate holder should be sought.

13.4 A suitable VCL should be loose-laid on the deck, or bonded to a suitably primed deck, depending on the specified installation method. The membrane should be turned up at all perimeters and upstands and care taken to ensure integrity at all joints, upstands and roof penetrations.

13.5 Insulation boards are laid with their edges tightly butted. Uniform thickness boards should be laid with staggered joints. Tapered boards should be laid in accordance with the Certificate holder's layout drawing provided. For detail work, boards can be handled and cut easily.

13.6 To prevent condensation, the insulation boards should be applied only when the ambient temperature is above 5°C.

13.7 Boards must be kept dry at all times, and those accidentally wetted must be replaced or allowed to dry fully before application of the waterproof layer.

13.8 It is important to seal any exposed edges of the expanded polystyrene, for example, at roof vents and upstands, with waterproofing in accordance with the roof waterproofing membrane manufacturer's instructions.

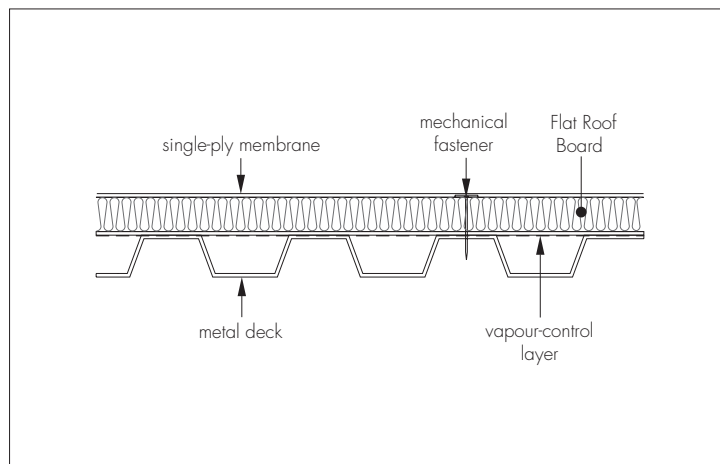
13.9 Where mechanical fixings are required, the fixing rate and pattern should be predetermined in accordance with the engineer's instructions and the relevant clauses of BS EN 1991-1-4 : 2005.

13.10 On tall buildings or in areas subject to high wind loads, additional mechanical fixings at the ratio per board specified by the Certificate holder and the roof waterproofing membrane manufacturer's instructions may be required.

14 Procedure

14.1 The products must be installed in accordance with the Certificate holder's instructions and the relevant requirements of the single-ply roof waterproofing membrane manufacturer (see Figure 1). See also section 13 of this Product Sheet.

Figure 1 Single-ply roof waterproofing system



Timber decks (eg tongue-and-groove boards, plywood)

14.2 A 0.25 mm thick polythene VCL should be laid, with 150 mm sealed laps. It is to be nailed, loose-laid or bonded to the deck, depending on the specified membrane and roof waterproofing system, and turned up at all perimeters and upstands.

14.3 Insulation boards are butted together with staggered joints, or for tapered boards as described in section 15.11. Where a PVC membrane without an integral fleece backing, is specified, a foil-faced board should be used to prevent plasticiser migration to the EPS.

14.4 The VCL is turned down over the boards at perimeters and upstands.

14.5 One of the following waterproof membranes is applied in accordance with the manufacturer's instructions:

- Single ply membrane – of types PVC, EPDM, or TPO.
- Other waterproof covering, including liquid-applied waterproofing, which is the subject of a current Agrément Certificate, laid in accordance with, and within the limitations imposed by, that Certificate.

Concrete and concrete screeded decks

14.6 Installation proceeds as described in sections 14.2 to 14.5 of this Certificate.

Profiled metal deck

14.7 Installation proceeds as described in sections 14.2 and 14.3 with boards laid with the long axis at right angles to the deck corrugations. Board ends are cut as necessary so that they are fully supported on the crown of the profile. Boards should not exceed the maximum spans given in Table 4.

Table 4 Minimum Flat Roof Board thickness on corrugated metal deck

	Maximum span between corrugations (mm)			
	105	110	120	135
Flat Roof Board Minimum thickness (mm)	45	50	60	75

14.8 Installation proceeds as described in sections 14.4 and 14.5 of this Certificate.

Tapered insulation boards (all deck and board types)

14.9 Pre-cut insulation boards tapered to required falls are pre-labelled to the requirements of the specific building by the Certificate holder's roof layout drawing.

14.10 To provide a uniform fall it is essential that the deck is even and true. Any features such as hollows, backfalls, depressions, must be rectified prior to laying the boards.

14.11 Insulation boards are laid sequentially in accordance with the position code number on the roof layout drawing. Laying for the roof should commence at points or instructions indicated on the layout drawing. To avoid error, it is advisable to temporarily position each board prior to bonding.

14.12 Installation of tapered insulation boards is otherwise as described in sections 14.1 to 14.8 of this Certificate.

15 Tests

Tests were carried out on Flat Roof Board to determine maintenance of properties and included checks on:

- dimensional stability
- resistance to wind uplift
- bowing under a thermal gradient
- behaviour under concentrated loads in the middle of a free span.
- resistance to peel
- dimensional stability (-20°C to +80°C)
- behaviour under distributed load and elevated temperature

16 Investigations

16.1 An examination was made of data relating to:

- flatness
- length, width and thickness
- water vapour resistance/resistivity
- compressive strength at 10% compression.
- squareness
- density
- quality of facing bond

16.2 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 : 2011 *Code of practice for control of condensation in buildings*

BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*

BS 8217 : 2005 *Reinforced bitumen membranes for roofing — Code of practice*

BS 8218 : 1998 *Code of practice for mastic asphalt roofing*

BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*

BS EN 13163 : 2012 *Thermal insulation products for buildings — Factory made expanded polystyrene (EPS) products — Specification*

BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*

BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BS EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*

BRE Report (BR 262 : 2002) *Thermal insulation: avoiding risks*

BRE Report (BR 443 : 2006) *Conventions for U-value calculations*

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.