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Agrément Certificate  
**04/4151**  
Product Sheet 4

## EUROCLAD ROOF SYSTEMS

## EUROCLAD VIEO ROOF SYSTEMS

### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Euroclad Vieo Roof Systems, for use in residential and non-residential buildings such as schools, hospitals, industrial, commercial, retail and leisure applications.

#### 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

**Structural performance** — if installed in accordance with this Certificate, roofs constructed using the systems will remain structurally stable and deflections will not be excessive under normal service conditions (see section 6).

**Weathertightness** — when installed in accordance with this Certificate, roofs constructed using the systems will resist the passage of rain and wind-driven snow (see section 7).

**Thermal insulation** — roofs constructed using the systems can contribute to enabling a building to meet the requirements of the national Building Regulations (see section 8).

**Condensation risk** — the likelihood of condensation forming under normal service conditions is negligible (see section 9).

**Durability** — durability depends on the location, environment and coatings used (see section 14).

The BBA has awarded this Agrément Certificate to the company named above for the systems described herein. These systems 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: 6 March 2012

Brian Chamberlain

Head of Approvals — Engineering

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, Euroclad Vieo Roof Systems, 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 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)

<b>Requirement:</b> A1	<b>Loading</b>
<b>Comment:</b>	The systems will have sufficient strength and stiffness to sustain and transmit the design loads. See section 6.1 of this Certificate.
<b>Requirement:</b> B4(1)	<b>External fire spread</b>
<b>Comment:</b>	The external surface of the sheets may be regarded as having a notional 'AA' designation as defined in BS 476-3 : 2004, therefore constructions incorporating the systems are not subject to a minimum distance from a boundary. See section 11 of this Certificate.
<b>Requirement:</b> C2(b)	<b>Resistance to moisture</b>
<b>Comment:</b>	When subjected to the maximum design load given in this Certificate, the systems will resist the passage of moisture to the inside of the building. See sections 7.1 and 7.2 of this Certificate.
<b>Requirement:</b> C2(c)	<b>Resistance to moisture</b>
<b>Comment:</b>	The systems will have a minimal risk of surface condensation or of damage due to interstitial condensation. See sections 9.1 to 9.4 of this Certificate.
<b>Requirement:</b> L1(a)(i)	<b>Conservation of fuel and power</b>
<b>Comment:</b>	The systems can contribute to meeting the requirements of this Regulation. See sections 8.1 to 8.4 and 10.1 to 10.3 of this Certificate.
<b>Requirement:</b> Regulation 7	<b>Materials and workmanship</b>
<b>Comment:</b>	The systems are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.



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

<b>Regulation:</b> 8(1)(2)	<b>Fitness and durability of materials and workmanship</b>
<b>Comment:</b>	The use of the systems satisfies the requirements of this Regulation. See sections 13.1 to 13.3 and 14 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 systems have sufficient strength and stiffness to transmit the design load, with reference to clause 1.1.1 <sup>(1)(2)</sup> . See section 6.1 of this Certificate.
<b>Standard:</b> 2.8	<b>Spread from neighbouring buildings</b>
<b>Comment:</b>	The sheets have a 'low vulnerability' classification and satisfy this Standard, with reference to clause 2.8.1 <sup>(1)(2)</sup> . See section 11 of this Certificate.
<b>Standard:</b> 3.10	<b>Precipitation</b>
<b>Comment:</b>	When subjected to the maximum design load given in this Certificate, the systems will resist the passage of moisture to the inside of the building, with reference to clause 3.10.1 <sup>(1)(2)</sup> . See sections 7.1 and 7.2 of this Certificate.
<b>Standard:</b> 3.15	<b>Condensation</b>
<b>Comment:</b>	The systems will have a minimal risk of surface condensation or of damage due to interstitial condensation, with reference to clauses 3.15.1 <sup>(1)</sup> , 3.15.2 <sup>(1)</sup> , 3.15.3 <sup>(1)</sup> and 3.15.4 <sup>(1)</sup> . See sections 9.1 to 9.4 of this Certificate.
<b>Standard:</b> 6.1(b)	<b>Carbon dioxide emissions</b>
<b>Standard:</b> 6.2	<b>Building insulation envelope</b>
<b>Comment:</b>	The systems can contribute to fully or partially satisfying clauses 6.1.1 <sup>(1)</sup> , 6.1.2 <sup>(1)(2)</sup> , 6.1.3 <sup>(2)</sup> , 6.1.6 <sup>(1)</sup> , 6.2.1 <sup>(1)(2)</sup> , 6.2.3 <sup>(1)</sup> , 6.2.4 <sup>(2)</sup> and 6.2.5 <sup>(1)(2)</sup> . See sections 8.1 to 8.4, 10.1, 10.2 and 10.4 of this Certificate.
<b>Standard:</b> 7.1(a)	<b>Statement of sustainability</b>
<b>Comment:</b>	The systems 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. (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 systems are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
<b>Regulation:</b> B3(2)	<b>Suitability of certain materials</b>
<b>Comment:</b>	The systems are acceptable. See sections 13.1 to 13.3 of this Certificate.
<b>Regulation:</b> C4	<b>Resistance to ground moisture and weather</b>
<b>Comment:</b>	When subjected to the maximum design load given in this Certificate, the systems will resist the passage of moisture to the inside of the building. See section 6.1 of this Certificate.

Regulation:	C5	Condensation
Comment:		The risk of harmful effects on the building due to interstitial condensation within the systems will be minimal. See sections 9.1 to 9.4 of this Certificate.
Regulation:	D1	Stability
Comment:		The systems have sufficient strength and stiffness to sustain and transmit the design loads. See section 6.1 of this Certificate.
Regulation:	E5	External fire spread
Comment:		The external surfaces of the sheets may be regarded as having a notional 'AA' designation as defined by BS 476-3 : 2004, and therefore constructions incorporating the systems are not subject to a minimum distance from a boundary. See section 11 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Comment:		The systems can contribute to meeting the requirements of this Regulation. See sections 8.1 to 8.4, 10.1, 10.2 and 10.5 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 sections: 3 *Delivery and site handling* (3.4 and 3.5) of this Certificate.

## Additional Information

### NHBC Standards 2011

NHBC accepts the use of Euroclad Vieo Roof Systems, when installed and used in accordance with this Certificate, in relation to *NHBC Standards, Part 7 Roofs, Chapter 7.2 Pitched roofs*.

## Technical Specification

### 1 Description

1.1 Euroclad Vieo Roof Systems may be used as cold roofs or insulated warm roofs over timber decking (minimum 18 mm ply or 22 mm tongue-and-groove timber boarding to BS 6229 : 2003 and BS 8103-1 : 1996). The system may also be used as an insulated warm roof over suitable profiled steel decking of minimum thickness 0.7 mm. The Vieo sheets may also be fixed as a weather covering to the outer skin of Structural Insulated Panels, provided they have a minimum thickness of 11 mm OSB/3 board. The systems are suitable for applications where access is required for maintenance and repair only.

1.2 The systems comprise profiled interlocking aluminium or steel sheets (see Figure 1) incorporating over laps on one side and under laps on the adjacent side for joining one panel to the next. The unseamed upstanding joint is located over stainless steel clips fixed to the timber decking or RocBar support rails. The sheets are then secured by the mechanical folding of the interlocking laps over the clips. The sheets are then secured by the mechanical folding of the interlocking laps over the clips. Steel sheet materials should be joined by a Stage 1 seam and aluminium sheets should be joined by a Stage 2 seam (see Figure 2). Slab insulation, vapour control layers and breather membranes may be installed beneath the sheets in a warm roof or insulated system.

Figure 1 Euroclad Vieo Roof Systems — sheet profile

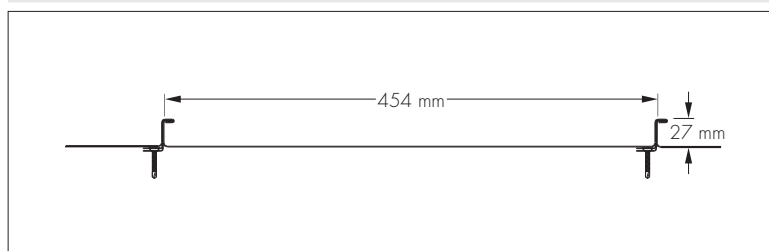
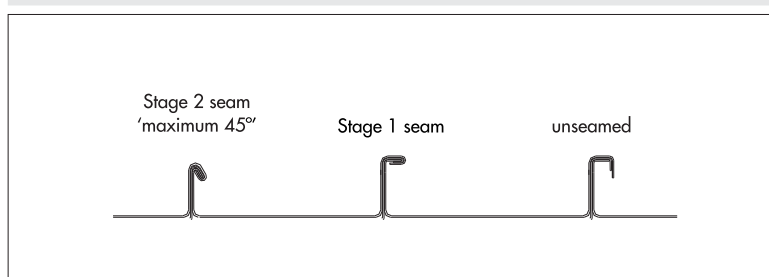


Figure 2 Euroclad Vieo Roof Systems — Sheet seaming options



### 1.3 The systems comprise:

- Vieo sheets — nominal overall width of 454 mm and standard lengths up to 20 m, profiled from 0.7 mm thick steel sheet rolled from Corus Colorcoat<sup>(1)</sup> HPS 200 Ultra, Prisma or LG material or 0.9 mm thick aluminium alloy sheet to EN AW 3105 in mill finish or with the colour coatings of:
  - Euramax ARS or PVF2, as covered by BBA Certificate 93/2922
  - Hydrocoat PVF2, as covered by BBA Certificate 93/2918
  - Alcoa Reynolux PVF2, Duragloss 5000, Polyamide or Polyester as covered by BBA Certificate 87/1964.Other coated aluminium materials<sup>(2)</sup>, and longer sheets<sup>(3)</sup> are available to order but are outside the scope of this Certificate

(1) The Colorcoat finishes are produced by Corus UK Limited and are covered by BBA Certificate 91/2717.

(2) Whilst the decorative life of these materials is outside the scope of this Certificate, the aluminium substrate would be expected to have an equivalent life to mill finish sheets. For more information, the Certificate Holder's advice should be sought.

(3) Sheets up to 40 metres in length can be produced but special allowance for handling and thermal movement must be made and agreed with the Certificate holder prior to installation.

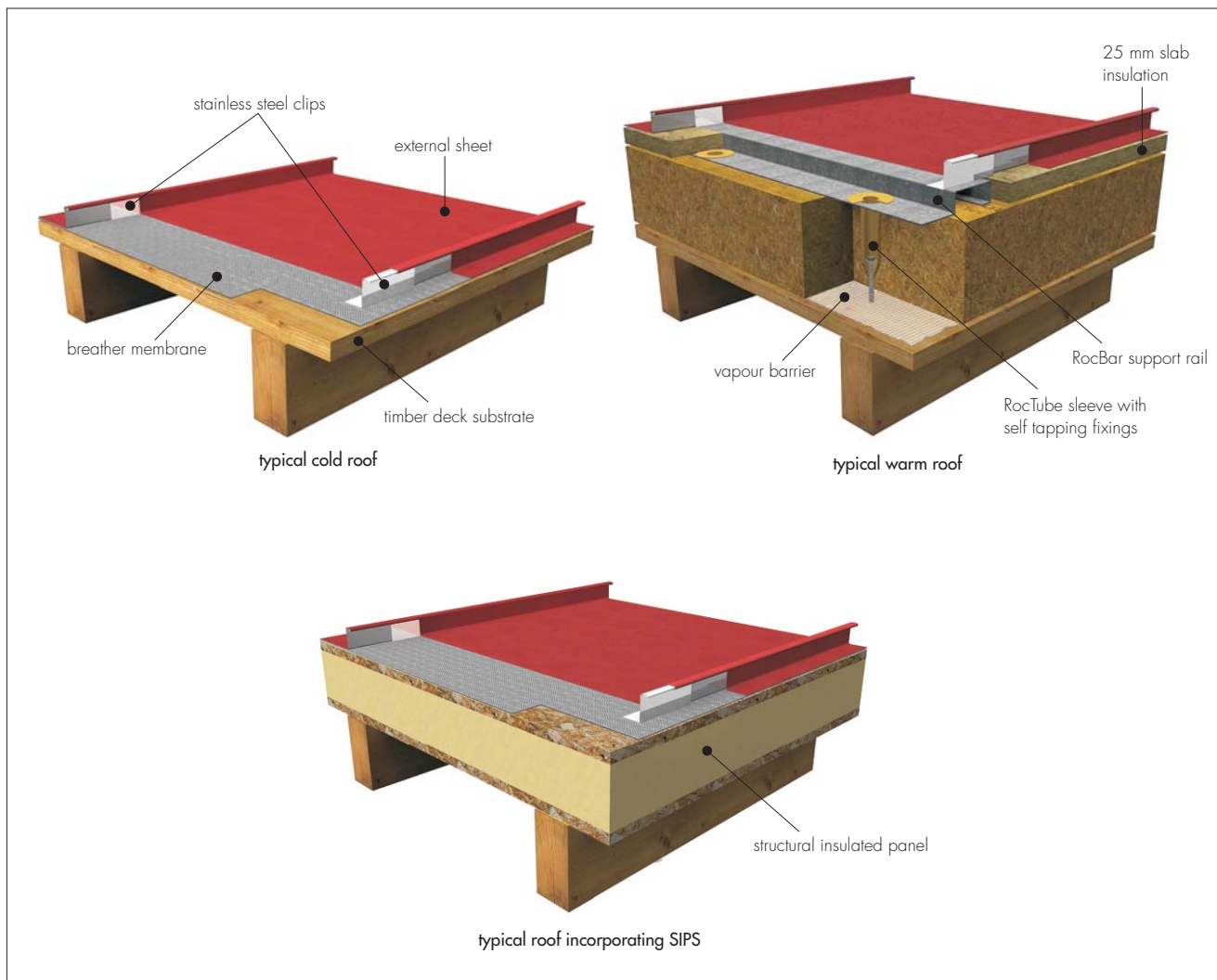
- Euroclad Vieo sliding stainless steel clips — for direct fixing of sheets to the timber decking in cold roof constructions or to RocBar support rails in warm roof constructions. The clips are secured to the deck or RocBar using 2 No Vieo clip screws (FD1 4.2 x 25 mm stainless steel screws).
- Euroclad RocBar support rails — 25 mm high manufactured from two sections of 0.7 mm HPS Ultra or LG coated steel, factory folded and nested to be supplied to site as one section
- Euroclad RocSlab dual density mineral wool insulation with a  $\lambda_{90/90}$  value of 0.037 W·m<sup>-1</sup>·K<sup>-1</sup> — in thicknesses of 120 mm, 155 mm, 180 mm and 215 mm and with a  $\lambda_{90/90}$  value of 0.034 W·m<sup>-1</sup>·K<sup>-1</sup> in 25 mm<sup>(1)</sup> thickness.

(1) For use between Euroclad RocBar support rails.

- Euroclad RocTube — sleeves with self-tapping fixings (for use in conjunction with Euroclad RocBar support rails), available in four lengths for through-fixing of 120 mm, 155 mm, 180 mm or 215 mm RocSlab insulation to the timber deck in warm roof constructions. The fixing method obviates the need for conventional spacers normally employed in warm roof systems
- Euroclad vapour control layer:
- Euroclad Elite VCL with a minimum 500 MN·s·g<sup>-1</sup> vapour resistance
- Euroclad Elite HH VCL (for use in buildings of humidity class 5), with a minimum 30 000 MN·s·g<sup>-1</sup> vapour resistance
- Euroclad Elite and Elite HH vapour control layer sealing tape, 50 mm wide
- breather membrane — Euroclad Elite Roof Breather Membrane, BBA-approved for roofing applications
- ancillary items including flashings, sealants and fillers (outside the scope of this Certificate)
- seaming tools and turn up/down tools — motorised and manual hand seaming and turn up/down tools, supplied by the Certificate holder (outside the scope of this Certificate).

1.4 Typical roof constructions, showing the individual components in situ, are shown in Figure 3.

Figure 3 Euroclad Vieo Roof Systems — typical constructions



1.5 The deckings on which Euroclad Vieo Roof Systems are mounted are outside the scope of this Certificate.

## 2 Manufacture

2.1 Steel or aluminium is rolled to produce profiled sheets to the required length. The sheets may be factory made or rolled onsite using specialist mobile equipment.

2.2 To ensure product quality is consistently maintained to the required specification, the BBA has:

- agreed with the Certificate holder/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 non-conformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis as part of a surveillance process to ensure that standards are maintained and that the product or system remains as Certificated.

## 3 Delivery and site handling

3.1 The sheets are normally delivered to site in bundles of up to 20 and in pre-specified lengths according to the dimensions of the roof on which they are to be installed. Delivery is normally by lorry and unloading carried out by crane or fork lift. A lifting beam with slings should be used for sheets greater than 6 m long. The site must have adequate access and a suitable surface for mobile plant equipment.

3.2 During transit, the sheets must be suitably restrained to prevent abrasion and their edges and corners protected against damage.

3.3 The sheets should be stored on a firm, dry base, with a slight slope to allow drainage, on bearers with a maximum spacing of 900 mm, away from the possibility of damage, and suitably protected. They should be stored as close as possible to the building where they are to be installed.

3.4 The sheets should be handled in accordance with the Manual Handling Operations Regulations 1992. The sheets should be lifted from the stack rather than dragged across it.

3.5 When being moved by hand, the sheets should be turned and carried on their edge. Appropriate personal protective equipment should be used.

3.6 Where possible, the sheets should be lifted manually onto the roof individually and this can normally be achieved with sheets up to 6 m in length. Longer sheets may require lifting by mechanical means. If a hoist is required, only suitable slings or ropes should be used, not chains. Care should be taken to avoid distortion through excessive bending.

3.7 The load bearing capacity of the roof structure should be considered where packs and sheets are laid on the roof in preparation for installation. They must be restrained from sliding down the slope or being moved by wind forces. Sheets should be oriented in the direction in which they will be installed.

3.8 The durability of the roof system will depend on component items being undamaged before or during installation. Ancillary items such as vapour control layers, breather membranes and insulation should therefore be handled and stored with care to avoid damage by, eg puncturing or prolonged exposure to UV light.

3.9 RocSlab insulation is delivered on pallets protected by polyethylene wrapping. For long term protection these must be stored indoors or under waterproof protection.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Euroclad Vieo Roof Systems.

### Design Considerations

#### 4 General

4.1 Euroclad Vieo Roof Systems are suitable for use in residential buildings as a protective/decorative covering over sloping roofs incorporating a continuous timber deck with a minimum finished pitch of 1° and curved installations with a minimum self-curve radius of 20 metres where access is available for maintenance and repair only.

4.2 The supporting roof must be able to take the full dead, imposed, wind and any racking loads on its own. The roofing sheets do not contribute in this respect.

4.3 End laps are not normally necessary as the roofing sheets are manufactured in continuous lengths running from eaves to ridge. End laps may only be used on roofs with a pitch greater than 5°. The performance of end lap details is outside the scope of this Certificate.

4.4 On warm roofs, the tubular fixings are supplemented with a standard eaves support angle detail (60 mm by 60 mm, 1.2 mm thick galvanized steel) which also supports the insulation slab prior to fixing.

4.5 Ridge and eaves details must allow sufficient clearance for thermal expansion and contraction of the roof sheets.

4.6 If architectural features are required on the roof, such as through fittings or rooflights, special care and attention is necessary to ensure that, in common with all metal roofs, these features have been correctly detailed and fitted. Such items are outside the scope of this Certificate. Further guidance should be sought from the Certificate holder.

#### 5 Practicability of installation

The systems are designed to be installed by a competent general builder, or a roofing contractor, experienced with this type of system.

#### 6 Structural performance



6.1 The systems have adequate strength and stiffness to sustain the loads specified in Table 1.

Table 1 Maximum design wind loads for Euroclad Vieo Roof Systems<sup>(1)(2)</sup>

Maximum Vieo clip/RocBar spacing (mm) <sup>(3)</sup>	Maximum permissible negative (wind) load (kN.m <sup>-2</sup> )
1260	1.5
660	2
300	4

(1) The values given are design loads for uniformly distributed loads (ie ultimate resistance divided by a load factor of 1.5).

(2) Negative deflection limit = span/90.

(3) Based on clip spacings, it must be confirmed that the proposed specification is adequate to resist the design loads (see section 6.3).

General notes:

- The data has been prepared in accordance with BS 5427-1 : 1996, based on test data from CERAM Building Technology.
- The self-weight of the Euroclad Vieo sheets has been taken into account in preparing the data.
- For single spans, excessive loads or spans, different deflection criteria, different factors of safety and different metals, advice should be sought from the Certificate holder.

6.2 Maximum positive (snow) loads that may be resisted will depend on the supporting structure (deck) onto which the roof is installed. The design and performance of this is outside the scope of this Certificate. The RocSlab insulation has sufficient strength and stiffness to transmit normal snow loads that are likely to occur within the UK to the supporting deck. For exceptionally high snow loads (in excess of  $6 \text{ kN}\cdot\text{m}^{-2}$ ) please contact the Certificate holder for further advice.

6.3 When evaluating the design loads, the wind loads must be calculated in accordance with the recommendations of BS EN 1991-1-4 : 2005, and the imposed snow loads must be determined in accordance with the recommendations of BS EN 1991-1-3 : 2003.

6.4 The sheets are capable of withstanding impacts associated with normal handling, installation and service.

6.5 The substrate and roof structure onto which the Vieo system is attached must be sufficiently strong to resist all dead and imposed loads, The design of this is outside the scope of this Certificate.

## 7 Weathertightness



7.1 When installed in accordance with the Certificate holder's instructions, the systems are weathertight when used on roofs with a minimum finished pitch of  $1^\circ$  and within exposure conditions related to recommended maximum design wind pressures.

7.2 The weathertightness of the systems will not be adversely affected by normal service deflections.

## 8 Thermal insulation



8.1 The thermal performance of each building incorporating the roof systems must be evaluated in accordance with the relevant Building Regulations, and is the responsibility of the overall designer of the building.

8.2 Thermal transmittance (U values) for example constructions are given in Table 2. These values have been calculated with RocBar spacer centres of 660 mm and RocTube fixings at 200 mm centres using a  $\lambda_{90/90}$  value for the main insulation slab of  $0.037 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$  and for the top (25 mm) slab  $0.034 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ . The values are applicable to constructions over both timber and steel decks.

Table 2 U values of Vieo warm roof constructions<sup>(1)</sup>

System height (mm)	RocTube height (mm)	Insulation thickness (mm)	U value ( $\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ )
145	120	120 + 25	0.25
180	155	155 + 25	0.20
205	180	180 + 25	0.18
240	215	215 + 25	0.15

8.3 The roof system contributes to a construction meeting the requirements of the national Building Regulations.

8.4 The effect of thermal bridging at the junctions between the system and other building elements such as walls, and around openings such as rooflights, must be minimised. The performance of the junction will be dependent on building elements not covered by this Certificate and a suitable assessment of all junction details should be carried out (see *Additional Information* section).

## 9 Condensation risk



9.1 In common with all metal roof constructions, there is a risk of condensation; this can arise as either interstitial condensation within the roof construction or surface condensation at thermal bridges.

9.2 The temperature at which surface condensation will occur on the internal surfaces of the roof is dependent on the internal relative humidity and the internal and external temperatures. The risk of surface condensation and mould growth for a particular construction should be assessed in accordance with BS EN ISO 13788 : 2002. Additional guidance in connection with this can be found in BS 5250 : 2002.

9.3 When used as a warm roof, the risk of damage due to interstitial condensation will be minimal.

9.4 When used as a cold roof covering, the installed breather membrane protects substrates from condensate which may form on the back of the panel. Measures should be taken to minimise water vapour reaching the substrate by incorporating a vapour control layer (VCL) in the roof construction, providing an adequate seal around ceiling/wall joints and/or ventilating the void under the substrate as appropriate for the construction.

## 10 Air permeability



10.1 The airtightness of the systems is reliant on the careful sealing of the VCL. In addition to sealing at all joints, the VCL must be suitably sealed at the perimeter and all penetrations. Details of sealing at all laps, eaves, ridges, hips, valleys and penetrations must be in accordance with the Certificate holder's instructions.

10.2 The airtightness of the building will also be dependent on the performance of the other building elements. Provided these also incorporate appropriate design details and building techniques, air infiltration through the building fabric should be minimal and the building reasonably airtight.



10.3 Completed buildings in England and Wales are subject to pre-completion testing for airtightness in accordance with the requirements of Approved Documents L1A and L2A, section 20B.



10.4 Completed buildings in Scotland are only subject to pre-completion airtightness testing if the target air permeability of the proposed building is less than  $10 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2}$ , or if the figure is between  $10 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2}$  and  $15 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2}$  and the designer does not wish to use the  $15 \text{ m}^3 \cdot \text{h}^{-1} \cdot \text{m}^{-2}$  default figure in the proposed building, in accordance with Mandatory Standard 6.2, clauses 6.2.5<sup>(1)</sup> and 6.2.6<sup>(2)</sup>.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



10.5 In Northern Ireland, completed buildings are subjected to pre-completion testing for airtightness in accordance with the requirements of Technical Booklets F1, sections 2.46 to 2.54, and F2, sections 2.57 to 2.61.

## 11 Performance in relation to fire



The sheets have a notional 'AA' designation as defined by BS 476-3 : 2004 (or 'low vulnerability' in Scotland) provided the insulation installed has a 'non-combustible' classification when tested in accordance with BS 476-4 : 1970.

## 12 Acoustic performance

12.1 Test data to BS EN ISO 140-3 : 1995 and BS EN ISO 717-1 : 1997 indicate the sound reduction indices given in Table 3.

*Table 3 Sound reduction indices*

System	Sound reduction index (dB)
Vieo 180 mm on 18 mm OSB deck	46 (-2, -7)
Vieo 240 mm on 18 mm OSB deck	46 (-1, -7)

12.2 Tests to determine Rain Generated Impact Sound Transmission of roofing systems in accordance with ISO 140-18 : 2006 indicate the sound intensity levels given in Table 4.

*Table 4 Sound intensity level generated by artificial rainfall*

System	LiA ( $\text{dB} \cdot \text{m}^{-2}$ ) <sup>(1)</sup>
Vieo 180 mm on 18 mm OSB deck	45.9
Vieo cold roof on 18 mm OSB deck	65.3

(1) The sound pressure levels corrected for background noise are converted into sound intensity levels by the Laboratory to give the above LiA value.

## 13 Maintenance and Repair



13.1 The systems should be inspected regularly to check for accidental damage to the roof sheets and their coatings, to ensure that rainware is present and in good order, that flashings are secure and pans are in place and secure, and also for any build-up of dirt and debris. Damage must be repaired and accumulated dirt and debris removed. The frequency of inspections will depend on the environment and use of the building.

13.2 In industrial and coastal areas it may be necessary to clean the installation periodically by hosing with water and a neutral detergent to restore its appearance and to remove corrosive deposits.

13.3 Damaged sheets can be removed and replaced. The Certificate holder should be contacted for details.

## 14 Durability



14.1 The durability of the sheets will depend upon the coating material, the immediate environment, aspect faced and use.

14.2 When used in the context of this Certificate, uncoated roofing sheets will have the minimum service life given in section 14.10.

14.3 Maintenance painting may be necessary to restore the appearance of coated sheets or to extend their design life, and should be considered at the intervals given in Table 5.



*Table 5 Service life*

Sheet material	Minimum service life (years) <sup>(1)</sup>	
	Rural/suburban	Industrial/coastal
Corus Colorcoat <sup>(2)</sup> HPS 200 Ultra	25	20
Corus Colorcoat <sup>(2)</sup> Prisma	30	15
Corus Colorcoat <sup>(2)</sup> LG	25 (CD1 colours) 15 (CD2 colours)	20 (CD1 colours) 10 <sup>(6)</sup> (CD2 colours)
Euramax PVF2 <sup>(3)</sup>	20	15 <sup>(7)</sup>
Euramax ARS <sup>(3)</sup>	20	15
Hydrocoat PVF2 <sup>(4)</sup>	20	15
Alcoa Reynolux Duragloss 5000 <sup>(5)</sup>	15	10

(1) Minimum service life is that when first maintenance painting is required.

(2) The Colorcoat finishes are produced by Corus UK Limited and are covered by BBA Certificate 91/2717.

(3) Euramax ARS- and PVF2-Coated Aluminium Alloy Coil and Sheet are covered by BBA Certificate 93/2922, Third issue.

(4) Hydrocoat PVF2-coated Aluminium Alloy Coil and Sheet is covered by BBA Certificate No 93/2918, Third issue.

(5) Alcoa Reynolux Duragloss 5000 coated Aluminium Alloy Coil and Sheet covered by BBA Certificate 87/1964.

(6) Prisma or LG (CD2 colours) coated steel in industrial / coastal locations will not satisfy the durability requirements of the NHBC Standards 2011. Alternative coatings should be used in these circumstances.

(7) This value is not given in BBA Certificate 93/2922 but has been individually assessed.

14.4 For coated sheets, if the building has an exposed eaves detail and is in an aggressive environment, or if there are corrosive conditions inside, a more durable specification of the reverse-side coating should be used. Details can be obtained from the Certificate holder.

14.5 A planned maintenance cycle (see section 13) should be introduced if an extended design life is required. The Certificate holder can recommend a suitable system for maintenance painting.

14.6 Colour changes will be slight and uniform on any one elevation.

14.7 Stucco-finished uncoated aluminium sheets must not come into contact with the materials listed:

*in any conditions*

- ungalvanized mild steel
- copper and its alloys (including the run-off from copper roofs)
- timber treated with fire retardants
- mortar
- alkali-bearing materials

*in damp conditions*

- timber preserved with copper compounds
- other metals (ie bimetallic contact)

*in coastal environments*

- lead
- stainless steel

*in industrial environments*

- lead.

14.8 Where compatibility problems are likely to occur, barriers such as paints, tapes or pads, appropriate to the materials and environment, should be incorporated.

14.9 Under normal exposure conditions, aluminium sheets do not need painting for corrosion resistance but, if desired, can be painted using conventional techniques for the materials.

14.10 Roofing constructed with uncoated stucco-finished aluminium sheets will have a minimum service life of 40 years in rural and suburban environments and a minimum of 25 years in more aggressive areas, eg severe industrial or coastal environments.

## 15 Re-use and recyclability

The systems comprise aluminium and steel sheets which can be readily recycled. The RocSlab insulation component may also be recycled.

## 16 General

16.1 Installation of the Euroclad Vieo Roof Systems is carried out by experienced roofing contractors in accordance with the Certificate holder's instructions. Guidance can be provided by the Certificate holder for contractors who are unfamiliar with the systems.

16.2 The decking to which the Euroclad Vieo Roofing Systems are to be fixed should be structurally sound and constructed in accordance with the requirements of the relevant building regulations and national standards.

16.3 The sheets install to a nominal cover width of 454 mm with a tolerance of  $\pm 4$  mm.

16.4 As with all long strip roofing systems, a natural deflection in the pan may occur. The panel will have a tendency to follow the substructure and the surface on which it is installed.

## 17 Procedure

17.1 Timber decking over suitable structure or SIPS will be fitted by others prior to installation.

17.2 Roof dimensions are checked against the drawings, and for squareness. The ridge, eaves and verge dimensions are similarly checked.

17.3 Swarf or debris is removed from the decking before being covered by the VCL sheets or breather membrane, if required. The VCL or breather membrane is laid in the same direction as the decking and is made continuous by lapping all joints by a minimum of 50 mm and sealing with 50 mm wide VCL sealing tape, centrally along the side lap joint. The VCL or breather membrane sheets should be continuous over ridges/hips and sealed to penetration/abutments. Where a breather membrane is used it should be detailed to drain to the gutter. Where a VCL is used it should be detailed to provide continuity with abutting details and constructions which are providing vapour control or air tightness.

17.4 In the case of warm roof construction, the eaves support angle and insulation are laid to the roof and secured using RocBar with RocTube fixings at 200 mm centres. Each slab should be secured by a run of RocBar fixings. Slabs should be secured with RocBar progressively, as they are laid, working from the eaves line up. This is to avoid overloading the first tier of fixings and/or support angle with the combined loads of successive slabs and installer traffic.

17.5 The first panel is installed with the overlap rib in line with the roof edge. Clips are fitted to the supporting structure or RocBar using two Vieo clip screws per clip and the upstand of the panel closed with the seaming tools. The verge closure is lapped over the panel edge and fixed to the supporting structure using fixings at maximum 450 mm centres or to each RocBar.

17.6 The securing clips are pushed over the underlap rib on the opposite side of the panel and secured to the decking or RocBar using two Vieo clip screws per clip.

17.7 The overlap of the next panel is inserted over the underlap of the first panel and the pan of the panel laid flat on the decking or supporting insulation. Seaming tools are then rolled along the underlap/overlap, folding the two together with the underlying clips and locking the sheets in place.

17.8 Subsequent sheets are laid in a similar manner.

17.9 Once the penultimate panel has been installed, the end panel can be fitted to suit the roof edge, and verge detail completed.

17.10 To ensure good weathertightness and efficient rainwater run-off, all components such as edge details and sealants should be used in accordance with the Certificate holder's specifications and manufacturer's instructions.

17.11 A turn up/turn down tool is used to bend the pan of the profile upwards at the ridge and downwards at the eaves.

### 18 Tests

Tests were carried out on the systems to establish:

- resistance to dead and imposed (snow) loading
- resistance to wind loading
- behaviour of fixings and profile under static and cyclic loading
- resistance to impact
- behaviour under concentrated loads.
- acoustic performance.

### 19 Investigations

19.1 The Certificate holder's technical literature was examined for any inconsistencies and general content.

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

19.3 An assessment was made of:

- fire resistance
- practicability of installation
- condensation risk and thermal transmittance
- weathertightness of fixed cladding and details
- acoustic performance.

19.4 Existing information, relating to the durability of the systems, performance in fire and compatibility of materials in contact, has been examined.

19.5 A visit was made to a site to assess the practicability of installation.

## Additional information

Three-dimensional thermal modelling has been carried out by the Certificate holder to establish Psi values and f factors for a number of standard construction details. These performances are outside the scope of this Certificate. Further details are available from the Certificate holder.

## Bibliography

- BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*
- BS 476-4 : 1970 *Fire tests on building materials and structures — Non-combustibility test for materials*
- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 5427-1 : 1996 *Code of practice for the use of profiled sheet for roof and wall claddings on buildings — Design*
- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 8103-1 : 1995 *Structural design of low-rise buildings — Code of practice for stability, site investigation, foundations and ground floor slabs for housing*
- BS EN 1991-1-4 : 2005 *Eurocode 1 : Actions on structures — General actions — Wind actions*
- BS EN 1993-1-1 : 2005 *Eurocode 3 : Design of steel structures — General rules and rules for buildings*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BS EN ISO 13788 : 2002 *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*
- BS EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*
- ISO 140-3 : 1995 *Acoustics — Measurement of sound insulation in buildings and of building elements — Laboratory measurement of airborne sound insulation of building elements*
- ISO 140-18 : 2006 *Acoustics — Measurement of sound insulation in buildings and of building elements — Laboratory measurement of sound generated by rainfall on building elements*

## 20 Conditions

20.1 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.

20.2 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.

20.3 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.

20.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

20.5 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
- individual 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.

20.6 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.