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Agrément Certificate

23/6997

Product Sheet 2 Issue 1

UNILIN THIN-R INSULATION

UNILIN THIN-R TIMBER FRAME BOARD (XT/TF)

This Agrément Certificate Product Sheet⁽¹⁾ relates to Unilin Thin-R Timber Frame Board (XT/TF), comprising a rigid polyisocyanurate (PIR) foam board with a composite foil facing on both sides, for use as insulation between studding, or as insulated lining or sheathing, on new and existing conventional timber frame walls with a masonry outer leaf, in domestic and non-domestic buildings, with height restrictions in some cases.

(1) Hereinafter referred to as 'Certificate'.

The assessment includes

Product factors:

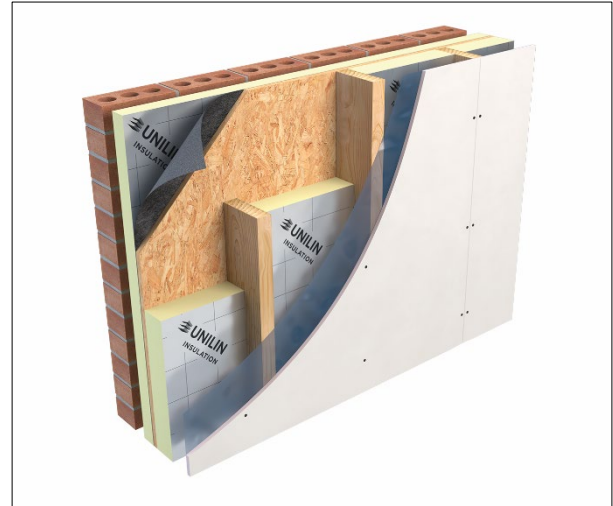
- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review



KEY FACTORS ASSESSED

- Section 1. Mechanical resistance and stability
- Section 2. Safety in case of fire
- Section 3. Hygiene, health and the environment
- Section 4. Safety and accessibility in use
- Section 5. Protection against noise
- Section 6. Energy economy and heat retention
- Section 7. Sustainable use of natural resources
- Section 8. Durability

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 issue: 17 September 2024

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation.

The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).

Readers MUST check that this is the latest issue of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

The Certificate should be read in full as it may be misleading to read clauses in isolation.

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

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SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that Unilin Thin-R Timber Frame Board (XT/TF), if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales) (as amended)

Requirement: B3(4)	Internal fire spread (structure)
Comment:	The product can contribute to satisfying this Requirement. See section 2 of this Certificate.
Requirement: B4(1)	External fire spread
Comment:	The product is restricted by this Requirement in some cases. See section 2 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The product can contribute to satisfying this Requirement. See section 3 of this Certificate.
Requirement: L1(a)(i)	Conservation of fuel and power
Comment:	The product can contribute to satisfying this Requirement; however, compensating fabric measures may be required. See section 6 of this Certificate.
Regulation: 7(1)	Materials and workmanship
Comment:	The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation: 7(2)	Materials and workmanship
Comment:	The product is restricted by this Regulation. See section 2 of this Certificate.
Regulation: 25B	Nearly zero-energy requirements for new buildings
Regulation: 26	CO₂ emission rates for new buildings
Regulation: 26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation: 26A	Primary energy rates for new buildings (applicable to Wales only)
Regulation: 26B	Fabric performance values for new dwellings (applicable to Wales only)
Regulation: 26C	Target primary energy rates for new buildings (applicable to England only)
Regulation: 26C	Energy efficiency rating (applicable to Wales only)
Comment:	The product can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)	Fitness and durability of materials and workmanship
Comment:	The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation: 8(3)	Fitness and durability of materials and workmanship
Comment:	The product is restricted by this Regulation. See section 2 of this Certificate.

Regulation:	9	Building standards – construction
Standard:	2.4	Cavities
Comment:		The product can contribute to satisfying this Standard, with reference to clause 2.4.2 ⁽¹⁾⁽²⁾ , and is restricted by this Standard, with reference to clauses 2.4.4 ⁽¹⁾ and 2.4.6 ⁽²⁾ . See section 2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard in some cases, with reference to clauses 2.6.5 ⁽¹⁾ and 2.6.6 ⁽²⁾ . See section 2 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See section 3 of this Certificate.
Standard:	6.1(b)(c)	Energy demand
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 6.1.1 ⁽¹⁾ and 6.1.2 ⁽²⁾ ; however, compensating fabric/service measures may be required. See section 6 of this Certificate.
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.6 ⁽¹⁾ , 6.2.7 ⁽¹⁾⁽²⁾ , 6.2.8 ⁽¹⁾⁽²⁾ , 6.2.9 ⁽¹⁾⁽²⁾ , 6.2.10 ⁽¹⁾⁽²⁾ , 6.2.11 ⁽¹⁾⁽²⁾ and 6.2.12 ⁽¹⁾ ; however, compensating fabric measures may be required. See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The product 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 product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾ , 7.1.6 ⁽¹⁾⁽²⁾ , 7.1.7 ⁽¹⁾ , 7.1.9 ⁽²⁾ and 7.1.10 ⁽²⁾ . See section 6 of this Certificate.
Regulation:	12	Building standards – conversion
Comment:		All comments given to the product under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾ and Schedule 6 ⁽¹⁾ .
		(1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	23(1)(a)(i)	Fitness of materials and workmanship
Comment:	(iii)(b)(i)(ii)	The product is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	23(2)	Fitness of materials and workmanship
Comment:		The product is restricted by this Regulation. See section 2 of this Certificate.
Regulation:	29	Condensation
Comment:		The product can contribute to satisfying this Regulation. See section 3 of this Certificate.
Regulation:	35(4)	Internal fire spread – structure
Comment:		The product can contribute to satisfying this Regulation. See section 2 of this Certificate.

Regulation:	36(a)	External fire spread
Comment:		The product is restricted by this Regulation in some cases. See section 2 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Comment:		The product can contribute to satisfying this Regulation; however, compensating fabric measures may be required. See section 6 of this Certificate.
Regulation:	40(2)	Target carbon dioxide emission rate
Regulation:	43(1)(2)	Renovation of thermal elements
Regulation:	43B	Nearly zero-energy requirements for new buildings
Comment:		The product can contribute to satisfying these Regulations; however, compensating fabric/service measures may be required. See section 6 of this Certificate.

Additional Information

NHBC Standards 2024

In the opinion of the BBA, Unilin Thin-R Timber Frame Board (XT/TF), if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 6.2 *External timber framed walls*.

Fulfilment of Requirements

The BBA has judged Unilin Thin-R Timber Frame Board (XT/TF) to be satisfactory for use as described in this Certificate. The product has been assessed as insulation between studding, or as insulated lining or sheathing for use on new and existing conventional timber frame walls with a masonry outer leaf, in domestic and non-domestic buildings, with height restrictions in some cases.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the product under assessment. Unilin Thin-R Timber Frame Board (XT/TF) comprises rigid polyisocyanurate (PIR) foam boards, faced on both sides with a composite foil facing.

The product has the nominal characteristics given in Table 1.

<i>Table 1 Nominal characteristics</i>	
Characteristic	Value
Length (mm)	2400
Width (mm)	1200
Thickness (mm)	25 to 150
Edge profile	Square

Applications

The product is intended for use as insulation in the following applications, on new and existing domestic and non-domestic buildings:

- between the inner leaf studs of conventional timber-frame cavity walls with a clear cavity and a masonry outer skin
- as insulated lining or sheathing over walls of conventional timber-frame buildings with a clear cavity and a masonry outer skin.

Product assessment – key factors

The product was assessed for the following key factors, and the outcome of the assessments is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Not applicable.

2 Safety in case of fire

Data were assessed for the following characteristics.

2.1 Reaction to fire

2.1.1 The product was tested for reaction to fire and the classification is given in Table 2.

Table 2 Reaction to fire classification⁽¹⁾

Product assessed	Assessment method	Requirement	Result
Unilin Thin-R Timber Frame Board (XT/TF)	BS EN 13501-1 : 2018	Value achieved	E

(1) Crepim Report DO-20-2090\A-R1, dated 5 August 2020. Copies of the report are available from the Certificate holder.

2.1.2 On the basis of data assessed, the product will be restricted in use under the documents supporting the national Building Regulations, in some cases.

2.1.3 In England, the product must not be used on residential buildings with a storey 11 m or more in height or on other buildings with a storey 18 m or more in height.

2.1.4 In Wales and Northern Ireland, the product must not be used on buildings with a storey 18 m or more in height.

2.1.5 In Scotland, the product must not be used on buildings that have a storey 11 m or more in height, or within 1 m of a relevant boundary.

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

2.2 Resistance to fire

2.2.1 The product must be contained by a fire-resistant lining board manufactured in accordance with BS EN 520 : 2004, with joints fully sealed and supported by timber studs or battens.

2.2.2 Where the product is incorporated in a wall construction where fire resistance is required by the documents supporting the national Building Regulations, the fire resistance must be confirmed by a suitably experienced and competent individual.

3 Hygiene, health and the environment

Data were assessed for the following characteristics.

3.1 Water vapour permeability

3.1.1 The product components were tested for water vapour resistivity/resistance and the results are given in Table 3.

Table 3 Water vapour resistivity/resistance

Product assessed	Assessment method	Requirement	Result
PIR insulation core	BS EN 12086 : 1997	Value achieved	1363 MN·s·g ⁻¹ ·m ⁻¹
Composite foil facing			1926 MN·s·g ⁻¹

3.1.2 For the purposes of assessing the risk of condensation, the water vapour resistivity/resistance values may be taken as stated in Table 3.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Data were assessed for the following characteristics.

6.1 Thermal conductivity

The product was tested for thermal conductivity and the result is given in Table 4.

Table 4 Thermal conductivity

Product assessed	Assessment method	Requirement	Result
Unilin Thin-R Timber Frame Board (XT/TF)	BS EN 13165 : 2012	Declared value (λ_D)	0.022 W·m ⁻¹ ·K ⁻¹

6.2 Thermal performance

The foil facing was tested for emissivity and the result is given in Table 5.

Table 5 Emissivity

Product assessed	Assessment method	Requirement	Result
Composite foil facing	BS EN 16012 : 2012	Declared value	0.05

6.3 Conservation of fuel and power

6.3.1 The U value of completed wall construction will depend on the insulation thickness, number and type of fixings, the insulating value of the substrate, and its internal finish. Example U values are given in Tables 6 to 8.

Table 6 U values — timber frame wall with Unilin Thin-R (XT/TF) between studs⁽¹⁾

Target U value ($W \cdot m^{-2} \cdot K^{-1}$)	Unilin Thin-R (XT/TF) thickness (mm)
0.13	— ⁽³⁾
0.15	— ⁽³⁾
0.17	— ⁽³⁾
0.18	— ⁽³⁾
0.21	150 ⁽²⁾
0.26	100
0.28	80
0.30	80

(1) Wall construction — 102.5 mm thick external brickwork ($\lambda = 0.77 W \cdot m^{-1} \cdot K^{-1}$); 50 mm clear cavity; breather membrane; 11 mm OSB sheathing board ($\lambda = 0.13 W \cdot m^{-1} \cdot K^{-1}$); 140 mm thick timber frame bridging at 600 mm centres (15%, $\lambda = 0.13 W \cdot m^{-1} \cdot K^{-1}$) with variable thickness of Unilin Thin-R (XT/TF); AVCL; and 15 mm plasterboard ($\lambda = 0.25 W \cdot m^{-1} \cdot K^{-1}$).

(2) 150 mm thick timber frame used.

(3) See section 6.3.3.

Table 7 U values — insulated timber frame wall with Unilin Thin-R (XT/TF) as internal lining⁽¹⁾

Target U value ($W \cdot m^{-2} \cdot K^{-1}$)	Unilin Thin-R (XT/TF) thickness (mm)
0.13	100
0.15	80
0.17	50
0.18	40
0.21	25
0.26	25
0.28	25
0.30	— ⁽²⁾

(1) Wall construction — 102.5 mm thick external brickwork ($\lambda = 0.77 W \cdot m^{-1} \cdot K^{-1}$); 50 mm clear cavity; breather membrane; 11 mm OSB sheathing board ($\lambda = 0.13 W \cdot m^{-1} \cdot K^{-1}$); 140 mm thick timber frame bridging at 600 mm centres (15%, $\lambda = 0.13 W \cdot m^{-1} \cdot K^{-1}$) fully filled with mineral wool insulation ($\lambda = 0.040 W \cdot m^{-1} \cdot K^{-1}$); variable thickness of Unilin Thin-R (XT/TF) as internal lining, where applicable; AVCL; additional 25 mm airspace bridged by timber battens where Unilin Thin-R (XT/TF) is used as internal lining (11.8 %, $\lambda = 0.13 W \cdot m^{-1} \cdot K^{-1}$); and 15 mm plasterboard ($\lambda = 0.25 W \cdot m^{-1} \cdot K^{-1}$).

(2) Wall construction achieves the design U value without the use of Unilin Thin-R (XT/TF) as internal lining.

Table 8 U values – insulated timber frame wall with Unilin Thin-R (XT/TF) as external sheathing⁽¹⁾

Target U value (W·m ⁻² ·K ⁻¹)	Unilin Thin-R (XT/TF) thickness (mm)
0.13	80
0.15	60
0.17	40
0.18	40
0.21	25
0.26	25
0.28	25
0.30	— ⁽²⁾

- (1) Wall construction — 102.5 mm thick external brickwork ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$); 50 mm low e cavity; variable thickness of Unilin Thin-R (XT/TF) as external sheathing, where applicable; breather membrane; 11 mm OSB sheathing board ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$); 140 mm thick timber frame bridging at 600 mm centres (15%, $\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) fully filled with mineral wool insulation ($\lambda = 0.040 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$); AVCL; and 15 mm plasterboard ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$).
- (2) Wall construction achieves the design U value without the use of Unilin Thin-R (XT/TF) as external sheathing.

6.3.2 On the basis of data assessed, the product can contribute towards a construction satisfying the national Building Regulations in respect of energy economy and heat retention.

6.3.3 For improved energy or carbon savings, designers must consider appropriate compensating fabric/service measures.

7 Sustainable use of natural resources

Not applicable.

8 Durability

8.1 The potential mechanisms for degradation and the known performance characteristics of the materials in the product were assessed.

8.2 Specific test data were assessed as given in Table 9.

Table 9 Dimensional stability

Product assessed	Assessment method	Requirement	Result
Unilin Thin-R Timber	BS EN 1604 : 2013	Length and width $\leq 1 \%$ change	Pass
Frame Board (XT/TF)	(70°C and 90% RH for 48 hours)	Thickness $\leq 4 \%$ change	

8.3 Service life

Under normal service conditions the product will have a life equivalent to the building in which it is incorporated, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 The design process was assessed by the BBA and the following requirements apply in order to satisfy the performance assessed in this Certificate.

9.1.2 Masonry and timber framed wall constructions must be designed and constructed in accordance with the relevant recommendations of:

- BS 5250 : 2021
- BS 8000-3 : 2020
- BS EN 351-1 : 2023
- BS EN 845-1 : 2013
- BS EN 1995-1-1 : 2004 and its UK National Annex
- BS EN 1996-1-1 : 2005 and its UK National Annex
- BS EN 1996-1-2 : 2005 and its UK National Annex
- BS EN 1996-2 : 2006 and its UK National Annex
- BS EN 1996-3 : 2006 and its UK National Annex.

9.1.3 As with other forms of wall insulation, where buildings need to comply with the *NHBC Standards 2024*, specifiers must observe the requirements of that document.

9.1.4 Timber frame wall ties with insulation-retaining fixings and, if required, any additional ties to BS EN 845-1 : 2013, must be used for structural stability in accordance with BS EN 1996-1-1 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006, and their UK National Annexes.

9.1.5 This application requires an air and vapour control layer (AVCL) behind the internal fire-resistant lining board, which must be a minimum thickness of 0.125 mm (500 gauge) polyethylene.

9.1.6 Care must be taken in the overall design and construction of walls incorporating the product to ensure the provision of appropriate:

- cavity trays and damp-proof courses (DPC)
- cavity barriers and fire dampers
- resistance to the ingress of precipitation, moisture and dangerous gases from the ground
- resistance to sound transmission when flanking separating walls and floors.

9.1.7 It is essential that external masonry cavity walls are designed and constructed to incorporate the precautions in this Certificate to prevent moisture penetration.

9.1.8 Window and door opening reveals should be constructed incorporating a cavity barrier/closer/DPC, as required.

9.1.9 Services which penetrate the dry lining (eg light switches or power outlets) must be kept to a minimum to limit damage to the AVCL. In addition, to preserve the fire resistance of the wall, any penetrations should be enclosed in a suitably tested proprietary fire-rated system.

9.1.10 As with other insulation products, it may be necessary in some cases to de-rate electrical cables buried in insulation. BS 7671 : 2018 recommends that where wiring is completely surrounded by insulation it may need to be de-rated to as low as half its free air-current-carrying capacity. Guidance should be sought from a qualified electrician.

9.1.11 The detailed provisions given in the documents supporting the national Building Regulations for when the product is installed in close proximity to certain flue pipes and/or heat-producing appliances must be followed.

9.1.12 Calculations of the thermal transmittance (U value) of a wall must be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2019

9.1.13 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.

Interstitial condensation

9.1.14 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2021.

9.1.15 If the product is to be used in the external wall of rooms expected to have high humidity, care must be taken to provide adequate permanent ventilation to avoid possible problems from the formation of interstitial condensation.

Surface condensation

9.1.16 In England and Wales, walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed $0.7 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in section 9.1.13 of this Certificate.

9.1.17 For buildings in Scotland, wall constructions will be acceptable when the thermal transmittance (U value) does not exceed $1.2 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$ at any point, and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2021. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 9.1.13 of this Certificate.

Buildings up to 18 m high (see also section 2 of this Certificate)

9.1.18 The residual cavity width to be maintained during construction is 50 mm. This may reduce to 25 mm in isolated areas due to individual construction features (a minimum of 50 mm residual cavity width is required by the NHBC⁽¹⁾). This may be achieved by designing a cavity width which takes into account the dimensional tolerances of the components which make up the wall (by reference to the British Standards relating to the bricks, blocks and boards, or by using the data from the respective manufacturers). Allowances may need to be made for the quality of building operatives and the degree of site supervision or control available. The limitations in respect of exposure of the proposed building as set out in Table 10 must also be observed.

(1) The NHBC requirement for a residual cavity width is increased to 75 mm in areas of very severe exposure where the outer leaf is fair-faced masonry.

Table 10 Maximum allowable exposure index $E^{(1)}$

Construction	Maximum allowable exposure index $E^{(1)}$
All external masonry walls protected by: rendering (to BS EN 13914-1 : 2016), tile hanging, slate hanging, or timber, plastic or metal weatherboarding or cladding	No restriction
One or more external masonry walls constructed from facing clay brickwork or natural stone, the porosity of which exceeds 20% by volume. Mortar joints must be flush pointed or weatherstruck	100
One or more external masonry walls constructed from calcium silicate bricks, concrete blocks, reconstituted stone, or natural stone, the porosity of which is less than 20% by volume, or any material with raked mortar joints	88

(1) To BS 5618 : 1985.

9.1.19 From ground level, the maximum height of continuous cavity walls must not exceed 12 m; above 12 m, the maximum height of continuous cavity walls must not exceed 7 m. In both cases, breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside.

9.1.20 An external render coat or other suitable finish should be applied in locations where such application would be normal practice; care should be taken to ensure that the residual cavity is not bridged by mortar.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A of this Certificate.

Insulated sheathing

9.2.3 Installation must not be carried out until the moisture content of the timber-frame is less than 20% by mass.

9.2.4 The timber frame must be constructed ahead of the outer leaf, as the boards are fastened to the cavity face of the frame. It is essential that the spacing of wall ties/clips allows one long edge of each board to be secured at a minimum of two points.

9.2.5 Vertical joints in the boards must be staggered and all joints tightly butted. Where protrusions occur in the cavity, the boards should be carefully cut to fit.

9.2.6 If installation of the boards is terminated below the highest level of the wall, the top edge of the insulation must be protected by a cavity tray and alternate perpendicular joints of the masonry outer leaf raked out to provide adequate drainage of water from the tray.

9.2.7 In all situations, it is particularly important to ensure during installation that:

- installation is carried out to the highest level on each wall, or the top edge of the insulation is protected by a cavity tray
- cavity trays are used with appropriate stop ends and weepholes at lintel level
- cavity battens and/or boards are used during construction to prevent bridging by mortar droppings
- wall ties are installed correctly and are thoroughly clean
- excess mortar is cleaned from the cavity face of the leading leaf and any debris removed from the cavity
- mortar droppings are cleaned from the exposed edges of installed boards
- insulation boards are properly installed and butt jointed
- the DPC at ground level does not project into the cavity as it can form a trap for mortar bridging
- raked or recessed mortar joints are avoided in very severe exposure areas.

9.3 Workmanship

Practicability of installation was assessed by the BBA on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the product must be carried out by a competent general builder, or a contractor, experienced with this type of product.

9.4 Maintenance and repair

As the product is confined within the wall cavity and has suitable durability, maintenance is not required.

10 **Manufacture**

10.1 The production processes for the product have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and product testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review 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.

11 Delivery and site handling

11.1 The Certificate holder stated that the products are delivered to site in polythene-wrapped packs on pallets. Each pack of boards contains a label with the manufacturer's name, product name and characteristics, board dimensions, year of manufacture, batch code and the BBA logo incorporating the number of this Certificate.

11.2 Delivery and site handling must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The products must be protected from prolonged exposure to sunlight, and stored dry, flat and raised above ground level (to avoid contact with ground moisture). Where possible, packs should be stored inside. If stored outside, they should be under cover, or protected with opaque polythene sheeting.

11.2.2 The products must not be exposed to open flame or other ignition sources, or to solvents or other chemicals.

Supporting information in this Annex is relevant to the product but has not formed part of the material assessed for the 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.

CE marking

The Certificate holder has taken the responsibility of CE marking the product, in accordance with harmonised European Standard EN 13165 : 2012.

Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015, BS EN ISO 14001 : 2015 and BS ISO 45001 : 2018 by BRE (Certificates 718 QMS, 718 EMS and 718 HS respectively).

Additional information on installation

Between studs

A.1 Unilin Thin-R Timber Frame Board (XT/TF) should be cut to fit tightly between the timber studding and positioned against the inner face of sheathing board. Any gaps should be filled with expanding insulation foam. The insulation is held in place by nails or timber battens to the warm side of the insulation.

A.2 An AVCL is installed on the warm side of the insulation with lapped and sealed joints over the timber stud face.

A.3 The void created by space between the inner surface of the product and the dry lining can be utilised as an insulated service duct.

Over studs (as insulated dry lining)

A.4 Insulation, rigid or flexible, should be cut to fit snugly between the timber studding.

A.5 The full depth of the stud should be filled with insulation.

A.6 The product is temporarily fixed to the inner face of the timber studding, ensuring that the insulation makes contact or overlaps with ceiling and floor insulation.

A.7 The boards are butted tightly against each other to prevent gaps and taped.

A.8 The line of the timber studs is marked on the product to allow fixing of plasterboard.

A.9 The insulation is sealed at all service penetrations.

A.10 An AVCL is installed, and plasterboard is fixed over the product and secured with conventional nails or screws of the appropriate length and finished as normal.

Unilin lining and service void

A.11 The procedure starts in the same manner as for the over studs application (see sections A.4 to A.9).

A.12 The counter battens should be fixed through the insulation to the timber studding, along the top and bottom of each board and around all openings (eg doors and windows).

A.13 Plasterboard is fixed to counter battens and secured with conventional nails or screws of the appropriate length and finished as normal.

Insulated sheathing

A.14 The procedure starts in the same manner as stated for the over studs application (see sections A.4 and A.5).

A.15 The product is fixed outside the breather membrane on the external surface and temporarily fixed with large-headed clout nails.

A.16 The boards are closely butted, and joints are staggered.

A.17 The outer face of the product must not be taped.

A.18 Brick tie channels are fixed to the timber frame via a screw through the product. Brick ties securing the external leaf are then fixed to the tie channels.

A.19 Internal finishes are applied as normal.

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Conditions

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