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Agrément Certificate

07/4444

Product Sheet 10

QUINN THERM

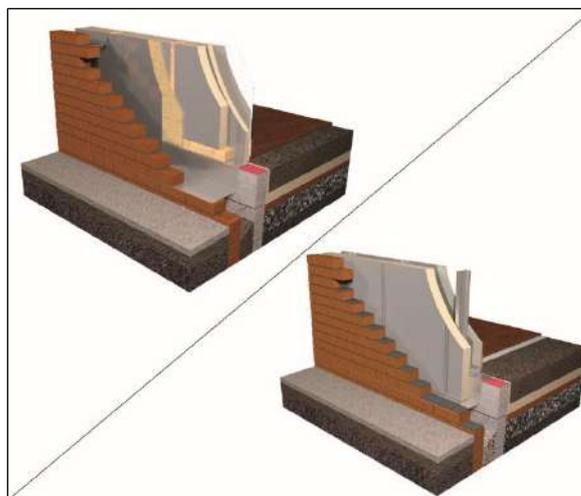
QUINN THERM QW-STFI STEEL / TIMBER FRAME INSULATION

This Agrément Certificate Product Sheet⁽¹⁾ relates to Quinn Therm QW-STFI Steel/Timber Frame Insulation, a foil-faced rigid polyisocyanurate (PIR) foam board for external cavity walls of conventional timber and steel frame dwellings with a masonry outer leaf, with height restrictions in some cases. The product may be installed between studding, used with an insulated dry lining system or as insulated sheathing, or used as part of a system incorporating any combination of these options.

(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 product has a declared thermal conductivity (λ_D) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (see section 6).

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

Behaviour in relation to fire — the product has a reaction to fire classification of Class E to BS EN 13501-1 : 2007 and its use is restricted by the national Building Regulations. Walls incorporating the product have been tested EN 1365-1 : 2012 (see section 8).

Water resistance — the product will resist water transfer across the cavity (see section 10).

Durability — the product is durable, rot proof and sufficiently stable to remain effective as insulation for the life of the building in which it is incorporated (see section 14).



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 First issue: 27 April 2020

Hardy Giesler
Chief Executive Officer

The BBA is a UKAS accredited certification body – Number 113.

*The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk
Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.*

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

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Regulations

In the opinion of the BBA, Quinn Therm QW-STFI Steel/Timber Frame Insulation, 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 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:	B3(2)(4)	Internal fire spread (structure)
Comment:		The product is restricted by this Requirement. See sections 8.1, 8.3, 8.6 and 8.7 of this Certificate.
Requirement:	B4(1)	External fire spread
Comment:		The product is restricted in some cases by this Requirement. See sections 8.1 and 8.2 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The product can contribute to satisfying this Requirement. See section 10.1.
Requirement:	C2(c)	Resistance to moisture
Comment:		The product can contribute to satisfying this Requirement. See sections 7.1 and 7.6 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The product can contribute to satisfying this Requirement. See sections 6.1 and 6.2 of this Certificate.
Regulation:	7(1)	Materials and workmanship
Comment:		The product is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	7(2)	Materials and workmanship
Comment:		The product is restricted by this Regulation. See sections 8.1 and 8.3 of this Certificate.
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 consumption rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:		The product can contribute to satisfying these Regulations, although compensating fabric/service measures may be required. See sections 6.1 and 6.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.1	Compartmentation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 2.2.1 ⁽¹⁾ , 2.2.2 ⁽¹⁾ , 2.2.3 ⁽¹⁾ , 2.2.4 ⁽¹⁾ , 2.5 ⁽¹⁾ , 2.2.6 ⁽¹⁾ , 2.2.7 ⁽¹⁾ and 2.2.8 ⁽¹⁾ . See sections 8.1, 8.6 and 8.7 of this Certificate.
Standard:	2.4	Cavities
Comment:		Use of the product is restricted by this Standard, with reference to clauses 2.4.2 ⁽¹⁾ and 2.4.4 ⁽¹⁾ . See section 8.1 of this Certificate.

Standard:	2.6	Spread to neighbouring buildings
Comment:		The product is restricted by this Standard, with reference to clauses 2.6.1 ⁽¹⁾ and 2.6.5 ⁽¹⁾ 2.6.5 ⁽¹⁾ . See sections 8.1, 8.4 and 8.6 to 8.7 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾ and 3.10.3 ⁽¹⁾ . See section 10.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 7.1 and 7.7 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to satisfying these Standards, with reference to clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾ , 6.2.3 ⁽¹⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ and 6.2.11 ⁽¹⁾ . See sections 6.1 and 6.2 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⁾ [Aspects 1 ⁽¹⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾ [Aspects 1 ⁽¹⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾ [Aspect 1 ⁽¹⁾]. See section 6.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for 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).



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

Regulation:	23	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The product can contribute to satisfying this Regulation. See section 10.1 of this Certificate.
Regulation:	29	Condensation
Comment:		The product can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	35(2)(4)	Internal fire spread — Structure
Comment:		The product is restricted by this Regulation. See sections 8.1, 8.2, 8.6 and 8.7 of this Certificate.
Regulation:	36(a)	External fire spread
Comment:		The product is restricted by this Regulation. See sections 8.1 and 8.2 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:		The product can contribute to satisfying these Regulations. See sections 6.1 and 6.2 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* (3.4) of this Certificate.

Additional Information

NHBC Standards 2020

In the opinion of the BBA, Quinn Therm QW-STFI Steel /Timber Frame Insulation, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapters 6.2 *External timber framed walls* and 6.10 *Light steel framed walls and floors*.

CE marking

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

Technical Specification

1 Description

1.1 Quinn Therm QW-STFI Steel/Timber Frame Insulation comprises rigid polyisocyanurate (PIR) foam boards with foil-facings, with the nominal characteristics given in Table 1.

Table 1 Nominal characteristics

Product	Facings	Board size (mm)	Thickness range (mm)	Edge profile
Quinn Therm QW-STFI Steel /Timber Frame Insulation	Composite foil-facing both sides (one face with printed logo)	1200 x 2400	20 to 200 ⁽¹⁾	square edge

(1) Available in 5 mm increments.

1.2 Additional items for use with the product, but outside the scope of this Certificate, include:

- Quinn Therm QL Insulated Dry Lining Composite Board — BBA Certificate number 07/4444 (Product Sheet 1)
- Mineral wool insulation in accordance with BS EN 13162 : 2012.

2 Manufacture

2.1 Quinn Therm QW-STFI Steel/Timber Frame Insulation is manufactured by blending together the different components in a continuous foaming process aided by a blowing agent and then sandwiching between two aluminium foil-facings. After formation, the boards are left to cure and cut to size.

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 being operated by the manufacturer are being maintained.

2.3 The management system of Quinn Therm Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by Certification Europe (Certificate 2500/262).

3 Delivery and site handling

3.1 The product is delivered to site in polythene-wrapped packs. Each pack contains a label bearing the Certificate holder’s name, board dimensions and the BBA logo incorporating the number of this Certificate.

3.2 The product must be protected from prolonged exposure to sunlight and should be 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.

3.3 Care should be taken to avoid crushing the edges or corners. If damaged, the product should be discarded.

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

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Quinn Therm QW-STFI Steel/Timber Frame Insulation.

Design Considerations

4 Use

4.1 Quinn Therm QW-STFI Steel/Timber Frame Insulation is satisfactory for use as insulation fixed between the studding (either with or without an insulated dry lining system), as an insulated sheathing facing the cavity, or as part of a system incorporating any combination of these options (see Table 2 for different steel and timber frame systems). The insulation is effective in reducing the thermal transmittance (U value) of external walls of conventional timber or steel frame dwellings. Height restrictions apply for some applications (see section 8 of this Certificate). It is essential that walls are designed and constructed to incorporate the precautions in this Certificate to prevent moisture penetration, including the requirement for a vapour control layer (VCL) on the warm side of the insulation and a breather membrane over the timber sheathing in conventional timber frame dwellings.

Table 2 Systems

Timber stud frame (Figure 1) ⁽¹⁾⁽³⁾⁽⁴⁾				Steel stud frame (Figure 2) ⁽¹⁾⁽³⁾⁽⁴⁾	
System 1	System 2	System 3	System 4	System 5	System 6
QW-STFI between timber studs	QW-STFI between timber studs, with QL-Kraft Insulated Dry Lining Composite Board ⁽²⁾ on internal side of timber frame	QW-STFI as external sheathing over timber frame, with full-fill mineral wool insulation between timber studs	QW-STFI between timber studs, and as external sheathing over timber frame	QW-STFI as external sheathing over steel frame	QW-STFI as external sheathing over steel frame, with full-fill mineral wool insulation between steel studs

(1) See Figures 1 and 2 (section 15 Installation) for Installation diagrams

(2) Quinn Therm QL-Kraft Insulated Dry Lining Composite Board — BBA Certificate number 07/4444 (Product Sheet 1)

(3) See Table 4 for insulation thicknesses required to meet example U values

(4) See Table 5 for system construction details

4.2 Buildings subject to the national Building Regulations should be designed by a suitably experienced and competent individual and constructed in accordance with the relevant recommendations of:

- BS EN 1993-1-2 : 2005, BS EN 1995-1-1 : 2004, BS EN 1996-1-1 : 2005, BS EN 1996-1-2 : 2005, BS EN 1996-2 : 2006 and BS EN 1996-3 : 2006, and their respective UK National Annexes
- BS EN 351-1 : 2007.

4.3 New buildings not subject to the national building Regulations should also be built in accordance with the Standards given in section 4.2 of this Certificate.

4.4 Wall ties and fixings to BS EN 845-1 : 2013 should be used for structural stability in accordance with BS EN 1995-1-1 : 2004, BS EN 1996-1-1 : 2005 and BS EN 1996-2 : 2006.

4.5 Services which penetrate the dry lining (eg light switches or power outlets) must be kept to a minimum to limit damage to vapour checks. In addition, to preserve the fire resistance of the wall, any penetrations should be enclosed in plasterboard, stone mineral wool or a suitably tested proprietary fire-rated product.

4.6 The product requires the use of a VCL behind the internal finish (see section 7.3).

4.7 For timber frame constructions, installation must not be carried out until the moisture content of the frame is less than 20%.

4.8 When used as insulated sheathing, the product will not contribute to the structural performance of the timber or steel frame.

4.9 For optimum thermal performance, boards with printed foil-facings must be installed with the correct orientation (see section 15.4).

4.10 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's)
- 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.

4.11 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). 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 slabs), or by using the data from the respective manufacturers. Allowances may need to be made for the quality of the building operatives and the degree of site supervision or control available, or the limitations in respect of exposure of the proposed buildings as set out in Table 3 which must also be observed.

Table 3 Maximum allowable total exposure factors of different constructions

Construction	Maximum allowable exposure factor $E^{(1)}$
All external masonry walls protected by: rendering (to BS EN 13914-1 : 2016), tile/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 weather struck	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.

4.12 From ground level, the maximum height of continuous cavity walls must not exceed 12 m. Breaks should be in the form of continuous horizontal cavity trays and weepholes discharging to the outside.

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

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor experienced with this type of product.

6 Thermal performance



6.1 Calculations of the thermal transmittance (U value) should be carried out in accordance with BS EN ISO 6946 : 2017 and BRE Report BR 443 : 2006, using the following values:

- PIR insulation core — declared thermal conductivity (λ_D) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$
- Composite foil-facings both sides, printed one side only: unprinted facing — aged emissivity to BS EN 16012 : 2012 of 0.06

6.2 The U value of a completed wall will depend on the selected insulation thickness, the insulating value of the external substrate masonry and the internal wall finish. Calculated U values for example constructions are given in Table 4.

Table 4 Example U values — new-build timber-frame and steel-frame with external masonry cavity wall⁽¹⁾

Target U value ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)	Insulation thickness ⁽¹⁾ (mm)					
	Timber stud frame				Metal stud frame	
	System 1	System 2	System 3	System 4	System 5	System 6
	QW-STFI between timber studs ⁽²⁾	QW-STFI between timber studs ⁽²⁾ , with QL-Kraft Insulated Dry Lining Composite Board on internal side of timber frame ⁽⁴⁾	QW-STFI as external sheathing ⁽⁵⁾ over timber frame, with full-fill mineral wool insulation ⁽⁷⁾ between timber studs ⁽²⁾	QW-STFI between timber studs ⁽²⁾ , and as external sheathing ⁽⁵⁾ over timber frame	QW-STFI as external sheathing ⁽⁵⁾ over steel frame ⁽³⁾	QW-STFI as external sheathing ⁽⁵⁾ over steel frame, with full-fill mineral wool insulation ⁽⁸⁾ between steel studs ⁽³⁾
0.18	—	110 + 25	30	105 + 25	100	75
0.19	—	100 + 25	20	105 + 20	95	70
0.25	95	95 ⁽⁶⁾	⁽⁹⁾	90	65	40
0.26	85	85 ⁽⁶⁾	⁽⁹⁾	85	60	35
0.27	80	80 ⁽⁶⁾	⁽⁹⁾	80	55	30
0.28	75	75 ⁽⁶⁾	⁽⁹⁾	75	55	30
0.30	70	70 ⁽⁶⁾	⁽⁹⁾	70	50	20
0.35	50	50 ⁽⁶⁾	⁽⁹⁾	50	35	20

(1) For system construction details, see Table 3.

(2) 144 mm deep timber frame. 15% bridged. Steel ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) wall ties at 3.7 fixings per square metre with a cross-sectional area of 18 mm^2 .

(3) 100 mm deep steel frame. 0.3% bridged. Stainless steel ($\lambda = 17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) screws for the wall tie fixings channels at 3.7 fixings per square metre with a cross-sectional area of 23.8 mm^2 (screw diameter of 5.5 mm).

(4) Fixings for QL insulated dry-lining boards assumed to be 11 fully penetrating steel ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) fixings per square metre (150 mm centres) with a cross-sectional area of 13.2 mm^2 (screw diameter of 4.1 mm).

(5) Fixings for sheathing boards assumed to be 5.6 fully penetrating steel ($\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) fixings per square metre (300 mm centres) with a cross-sectional area of 9.6 mm^2 (screw diameter of 3.5 mm).

(6) Quinn Therm QL Insulated Dry Lining Composite Board not required.

(7) Full fill mineral wool, $\lambda_D = 0.035 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

(8) Full fill mineral wool, $\lambda_D = 0.038 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$.

(9) Quinn Therm QW-STFI Steel/Timber Frame Insulation not required.

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 Walls will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2011, Annexes D and G, and the relevant guidance.

7.2 The foil-facings have a water vapour resistance of $1000 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}$ and the insulation core has a water vapour resistivity of $300 \text{ MN}\cdot\text{s}\cdot\text{g}^{-1}\text{m}^{-1}$ and therefore will provide significant resistance to water vapour transmission.

7.3 The product requires the use of a VCL with a minimum S_d value of 50 m, behind the internal finish.

7.4 When used as insulated sheathing, the joints between the boards must not be taped.

7.5 If the product is to be used in the external walls 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 in the internal wall leaf.

Surface condensation



7.6 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 section 6.3 of this Certificate.



7.7 For buildings in Scotland, walls 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, and the junctions with other elements are designed in accordance with the guidance referred to in BS 5250 : 2011, Annex G. Further guidance may be obtained from BRE Report BR 262 : 2002 and section 6.3 of this Certificate.

8 Behaviour in relation to fire



8.1 The product is not classified as 'non-combustible' or of 'limited combustibility' and the product has a reaction to fire classification of Class E in accordance with BS EN 13501-1 : 2007 ⁽¹⁾.

(1) Applus laboratories, 19/20398-1649 Part 2 M2, 27 January 2020 . Copies may be obtained from the Certificate holder.



8.2 In England, Wales and Northern Ireland, the product may be used without boundary restrictions , but should not be used as an insulating sheathing on buildings with a storey 18 m or more above ground level.



8.3 In England and Wales, the product may not be used between the studs or as part of a dry lining system on buildings that have a storey at least 18 m above ground level and which contain: one or more dwellings, an institution, a room for residential purposes (excluding any room in a hostel, hotel or boarding house), student accommodation, care homes, sheltered housing, hospitals or dormitories in boarding schools.



8.4 In Scotland, the product is not classified as 'non-combustible'. The product should not be used as an insulated sheathing 1 m or less from a boundary or in a building with a storey more than 11 m above the ground.

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



8.6 A fire resistance test was carried out in accordance with EN 1365-1 : 2012 on a loadbearing, timber stud wall system. An independent assessment⁽¹⁾ considered the likely fire resistance of timber stud systems 1 to 4 (see Table 4 of this Certificate) as if they had been tested to EN 1365-1 : 2012. The main points of the assessment highlighted that:

- timber stud systems 1 to 4 are suitable for applications where a fire resistance of up to 30 minutes is required against the loadbearing capacity, integrity and insulation criteria of EN 1365-1 : 2012 (for fire exposure from the inside, when subject to a total imposed load of 60 kN, ie 10 kN load per timber stud⁽²⁾)
- openings for doors and windows should be framed out and any exposed timber covered with at least one layer of plasterboard (see also section 4.5).

(1) Efectis UK/Ireland Ltd. Assessment Report EUI-19-000044. Copies may be obtained from the Certificate holder.

(2) Relates only to walls with a masonry outer leaf. Other weather-resistant claddings should be demonstrated by an appropriate test or assessment in accordance with the documents supporting the national Building Regulations.

8.7 A fire resistance test was carried out in accordance with EN 1365-1 : 2012 on a loadbearing, steel stud wall system. An independent assessment⁽¹⁾ considered the likely fire resistance of steel stud systems 5 and 6 (see Table 4 of this Certificate) as if they had been tested to EN 1365-1 : 2012. The main points of the assessment highlighted that:

- steel stud systems 5 and 6 are suitable for applications where a fire resistance of up to 60 minutes is required against the loadbearing capacity, integrity and insulation criteria of EN 1365-1 : 2012 (for fire exposure from the inside, when subject to a total imposed load of 60 kN, ie 10 kN load per steel stud⁽²⁾)
- openings for doors and windows should be framed out and any exposed steel covered with at least two layers of fire-rated plasterboard (see also section 4.5).

(1) Efectis UK/Ireland Ltd. Assessment Report EUI-19-000044. Copies may be obtained from the Certificate holder.

(2) Relates only to walls with a masonry outer leaf. Other weather-resistant claddings should be demonstrated by an appropriate test or assessment in accordance with the documents supporting the national Building Regulations.

Table 5 System construction details

Component	Description	Timber stud frame				Steel stud frame	
		System 1	System 2	System 3	System 4	System 5	System 6
		QW-STFI between timber studs	QW-STFI between timber studs, with QL-Kraft Insulated Dry Lining Composite Board on internal side of timber frame	QW-STFI as external sheathing over timber frame, with full-fill mineral wool insulation between timber studs	QW-STFI between timber studs, and as external sheathing over timber frame	QW-STFI as external sheathing over steel frame	QW-STFI as external sheathing over steel frame, with full-fill mineral wool insulation between steel studs
Gyproc Fireline plasterboard	12.5 mm ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)	—	—	—	—	yes 2 layers	yes 2 layers
Gyproc Wallboard Plasterboard	12.5 mm ($\lambda = 0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)	yes	incorporated within Quinn Therm QL	yes	yes	—	—
QL-Kraft Insulated Dry Lining Composite Board (integrated plasterboard)	Minimum 25 mm insulation, with 12.5 mm plasterboard	—	yes	—	—	—	—
Vapour control layer	500-gauge polythene	yes	yes	yes	Yes	yes	Yes
Timber frame	144 mm x 44 mm timber studs at maximum 600 mm centres, with cross noggins at 1200 mm centres, staggered by 600 mm between bays ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ 15 % default fraction)	yes	yes	yes	yes	—	—
Steel frame	100 mm x 40 mm x 1.5 mm steel studs at 600 mm centres. ($\lambda = 0.50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ 0.3 % default fraction)	—	—	—	—	yes	yes
QW-STFI Steel /Timber Frame Insulation	Minimum 50 mm between studs, secured by battens	yes	yes	—	yes	—	—
Mineral wool insulation	Full fill between 140 mm timber studs	—	—	yes	—	—	—
Mineral wool insulation	Full fill between 100 mm steel studs	—	—	—	—	—	yes
Structural sheathing	11 mm OSB ($\lambda = 0.13 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)	yes	yes	yes	yes	—	—
Breather membrane		yes	yes	yes	yes	—	—
QW-STFI Steel /Timber Frame Insulation	As a sheathing board	—	—	yes	yes	yes	yes
Clear cavity	50 mm	yes	yes	yes	yes	yes	yes
Brick	102.5 mm ($\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)	yes	yes	yes	yes	yes	yes

- Plasterboard: Systems 1, 3, 4, 5 and 6 – 50 mm by 3.5 mm drywall screws at nominal 150 mm centres
- QL Insulated Plasterboard: System 2 – 75 mm by 4.1 mm drywall screws at nominal 150 mm centres, to a fixing depth of 40 mm
- OSB: Systems 1, 2, 3, and 4 – 25 mm by 3.5 mm cross-head screws at nominal 600 mm centres
- Insulation sheathing on timber frame: Systems 3 and 4 – 3.5 mm cross head screws at nominal 300 mm centres to a fixing depth of 40 mm into the timber studs, with clips on wall ties (minimum of three wall ties per square metre)
- Insulation sheathing on steel frame: Systems 5 and 6 – 5.5 mm stainless steel screws for the wall tie fixing channels at 3.7 fixings per square metre with a cross sectional area of 23.8 mm²
- Systems 1, 2, 3, and 4 wall ties – timber-frame ties should be used in line with the fixing manufacturer's instructions. Typical values: $\lambda = 50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$, cross-section 18 mm² and 3.7 fixings per m²

9 Proximity of flues and appliances

When installing the product in close proximity to certain flue pipes and/or heat-producing appliances, the following provisions to the national Building Regulations are applicable:

England and Wales — Approved Document J, sections 1 to 4

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾ to 3.19.9⁽¹⁾

(1) Technical Handbook (Domestic).

Northern Ireland — Technical Booklet L, sections 1 to 6.

10 Water resistance



10.1 Constructions incorporating the product as insulated sheathing and built in accordance with the Standards listed in section 4.2, will resist the transfer of precipitation to the inner leaf and satisfy the requirements of the national Building Regulations.

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

- wall ties are installed correctly and are thoroughly clean
- excess mortar is cleaned from the cavity face of the brick 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
- installation is carried out to the highest level on each wall, or the top edge of the insulation is protected by a cavity tray
- at lintel level, a cavity tray, stop ends and weep holes are provided
- cavity battens and/or boards are used during construction to prevent bridging by mortar droppings
- 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.

11 De-rating of electrical cables

As with other insulation products, it may be necessary in some cases to de-rate electrical cables buried in insulation. In BS 7671 : 2008, it is recommended 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.

12 Infestation

Use of the product does not in itself promote infestation. The creation of voids within the structure, ie gaps between the wall lining and the boards, may provide habitation for insects or vermin in areas already infested. Care should be taken to ensure, wherever possible, that all voids are sealed, as any infestation may be difficult to eradicate. There is no food value in the materials used.

13 Maintenance

As the product is confined behind the wall lining and has suitable durability (see section 14), maintenance is not required.

14 Durability



The product is unaffected by the normal conditions in a wall and is durable, rot proof, water resistant and sufficiently stable to remain effective as insulation for the life of the building in which it is incorporated.

15 General

15.1 Installation must be in accordance with this Certificate and the Certificate holder's instructions.

15.2 The product may be installed in walls of conventional timber and steel frame dwellings. It may be installed between timber studing (used with or without an insulated dry lining system) or as insulated sheathing, or as part of a system incorporating any combination of these options. Typical installation details are shown in Figures 1 and 2.

15.3 The product is light to handle and can be cut easily using a fine-toothed saw, but care must be taken in handling to prevent damage, particularly at the edges. Damaged boards should not be used; small areas of damaged faces may be repaired with self-adhesive aluminium foil-tape.

15.4 The insulation boards have printed logos to the foil-facing, on one side only. To ensure optimum thermal performance, the boards must be installed with the unprinted foil-face always facing the cavity side.

Figure 1 Typical installation details – Timber frame

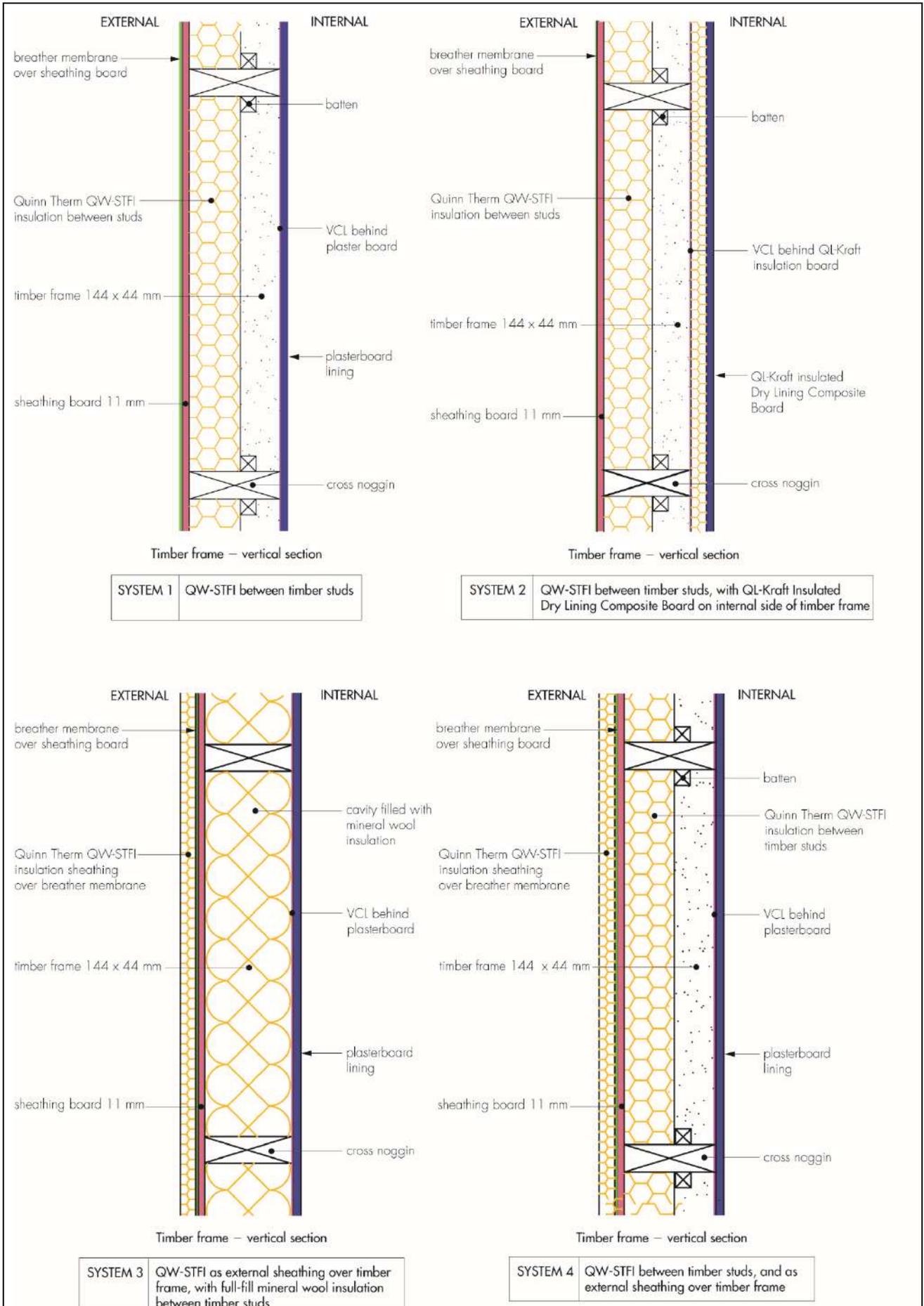
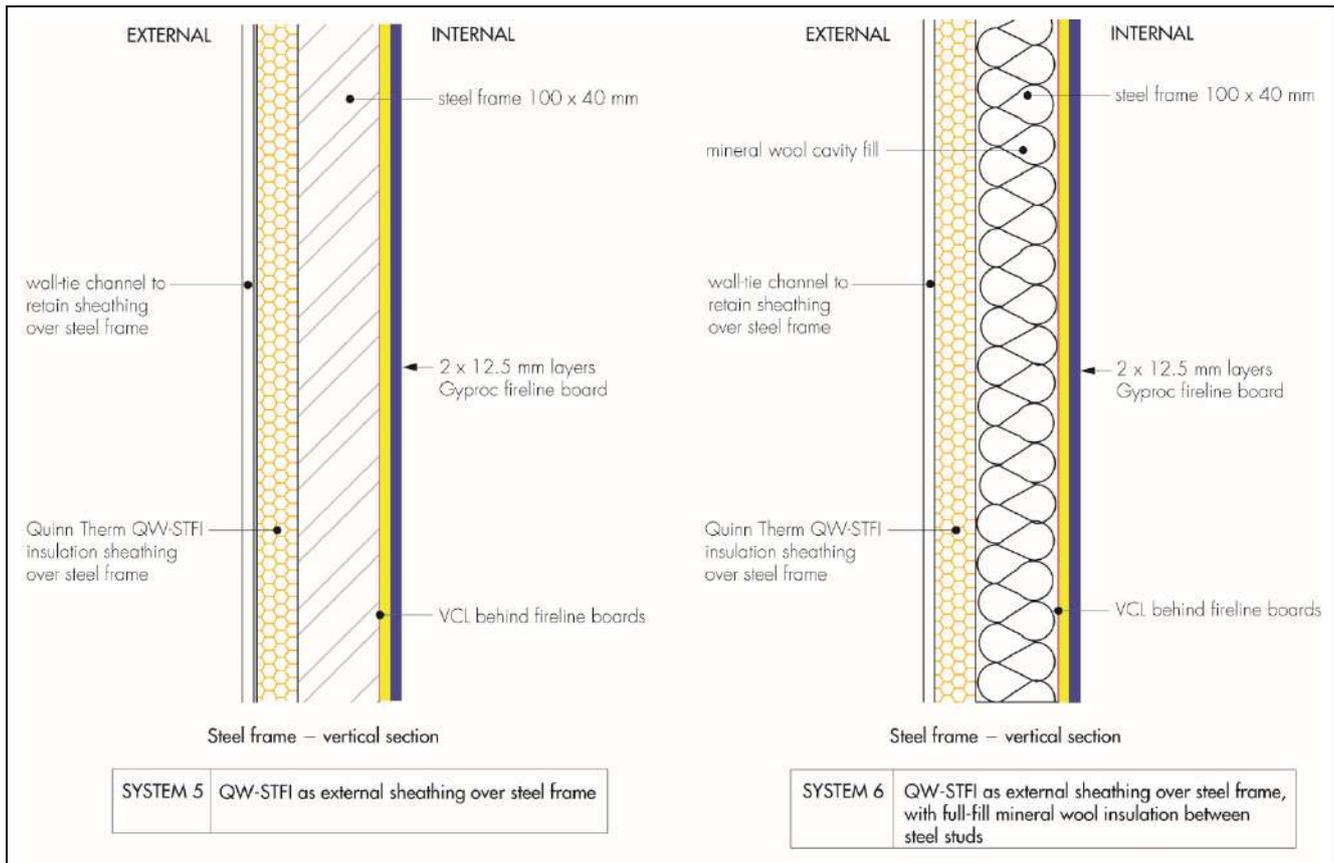


Figure 2 Typical installation details – Steel frame



16 Procedure

Between the timber studs

16.1 The product should be cut to fit tightly between the timber studding and positioned against the inner face of the sheathing board. Any gaps along the edges should be filled with expanding polyurethane insulation foam. The insulation board should be held tightly in place by timber battens to the warm side of the insulation.

16.2 The cavity created by the space between the product and the dry lining can be utilised as an insulated service void.

16.3 A sealed polyethylene VCL with a minimum thickness of 0.125 mm (500 gauge) with lapped and sealed joints is placed over the timber stud face before applying the internal finish.

Dry lining

16.4 The Quinn Therm QL Insulated Dry Lining Composite Boards should be butted tightly against each other over the timber studs in order to prevent gaps. To satisfy the requirements of NHBC Standards, a VCL should be placed on the warm side of the wall insulation system. Any service penetrations should be tightly sealed with expanding polyurethane foam, flexible sealant or other proprietary product.

16.5 The insulated dry lining boards are secured with conventional nails or drywall screws at nominal 150 mm centres and finished in accordance with conventional good practice.

Sheathing

16.6 The insulation boards should be installed on the outside of any timber sheathing board, closely butted with joints staggered and restrained using galvanized clout nails or screws at 300 mm centres around the board perimeters, and at 400 mm centres for intermediate timbers within the board area.

16.7 It is essential that the nails or screws locate the timber studs and not just the timber sheathing board.

16.8 The use of self-adhesive foil-tape over the joints, between the insulation boards, is not recommended.

16.9 Wall ties securing the external masonry leaf are fixed through the insulation board and timber sheathing board into the timber studs, whilst the insulation is retained in position by the plastic retaining-discs on the wall ties.

Technical Investigations

17 Tests

Results of tests were assessed to determine:

- thermal conductivity
- compressive stress at 10% deformation
- dimensional stability
- water vapour resistance
- diffusion tight property of facings
- reaction to fire
- resistance to fire for the timber frame applications
- resistance to fire for the steel frame applications.

18 Investigations

18.1 Existing data on durability and properties in relation to fire were evaluated.

18.2 A calculation was undertaken to confirm the declared thermal conductivity (λ_D).

18.3 A series of U value calculations was carried out.

18.4 A series of condensation risk analysis calculations was carried out.

18.5 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of the materials used

Bibliography

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19 Conditions

19.1 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.

19.2 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.

19.3 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.

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

19.5 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.

19.6 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.