

## Kingspan Insulation Limited

Pembridge  
Leominster  
Herefordshire HR6 9LA  
Tel: 01544 388601 Fax: 01544 388888  
website: www.insulation.kingspan.com



Agrément Certificate  
**08/4590**  
Product Sheet 1

## KINGSPAN INSULATION

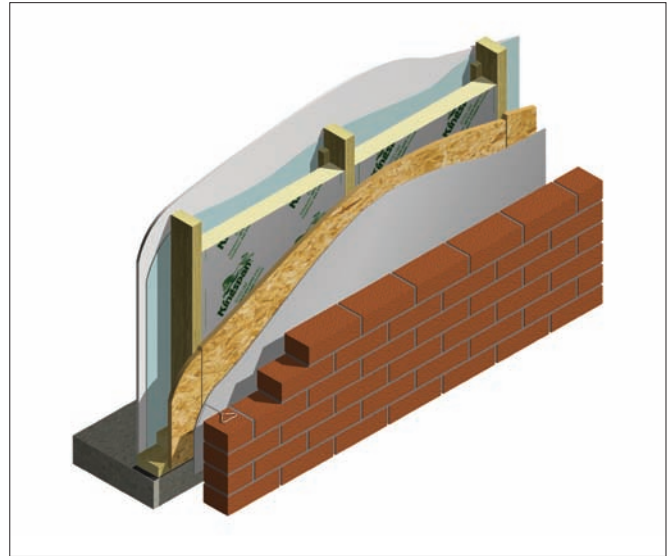
### KINGSPAN TW55 THERMAWALL FRAMING BOARD INSULATION

#### PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Kingspan TW55 Thermawall Framing Board Insulation, a rigid polyisocyanurate insulation for use between studding and/or as insulated sheathing over timber or steel-frame buildings.

#### 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

**Thermal performance** — the product can contribute to enabling a building to achieve the Target carbon emission rate. The thermal conductivity ( $\lambda_{90/90}$  value) of the product is declared by the manufacturer to be  $0.022 \text{ Wm}^{-1}\text{K}^{-1}$  (see section 5).

**Condensation risk** — the product can contribute to minimising the risk of condensation (see section 6).

**Behaviour in relation to fire** — walls incorporating the product have been tested to BS 476-21 : 1987 and BS 476-22 : 1987 (see section 7).

**Durability** — the product is durable and sufficiently stable to remain effective as an insulation for the life of the building (see section 12).

The BBA has awarded this Agrément 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

Chris Hunt  
Head of Approvals — Physics

Greg Cooper  
Chief Executive

Date of First issue: 3 October 2008

*Certificate amended on 6 October 2009 with changes made to Table 1 and sections 5.1 and 7.1.*

*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.*

British Board of Agrément  
Bucknalls Lane  
Garston, Watford  
Herts WD25 9BA

©2008

tel: 01923 665300  
fax: 01923 665301  
e-mail: [mail@bba.star.co.uk](mailto:mail@bba.star.co.uk)  
website: [www.bbacerts.co.uk](http://www.bbacerts.co.uk)

In the opinion of the BBA, Kingspan TW55 Thermawall Framing Board Insulation 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 Building Regulations 2000 (as amended) (England and Wales)

Requirement:	<b>B3(4)</b>	Internal fire spread (structure)
Comment:		Walls incorporating the product can meet this Requirement. See sections 7.1, 7.2, 7.4 and 7.5 of this Certificate.
Requirement:	<b>C2(a)(b)(c)</b>	Resistance to moisture
Comment:		Walls incorporating the product can meet this Requirement. See sections 6.1 and 6.3 of this Certificate. In addition the product may be used where it bridges the dpc in either leaf. See sections 9.1 and 9.2 of this Certificate.
Requirement:	<b>L1(a)(i)</b>	Conservation of fuel and power
Comment:		Walls incorporating the product can contribute to a building meeting this Requirement. See sections 5.4 to 5.7 of this Certificate.
Requirement:	<b>Regulation 7</b>	Materials and workmanship
Comment:		The product is an acceptable material. See section 12 and the <i>Installation</i> part of this Certificate.



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

Regulation:	<b>8(1)(2)</b>	<b>Fitness and durability of materials and workmanship</b>
Comment:		The use of the product satisfies the requirements of this Regulation. See sections 11 and 12 and the <i>Installation</i> part of this Certificate.
Regulation:	<b>9</b>	<b>Building standards – construction</b>
Standard:	<b>2.4</b>	Cavities
Comment:		A wall containing the product must comply with this Standard, with reference to clauses 2.4.1 <sup>(1)(2)</sup> and 2.4.2 <sup>(1)(2)</sup> . See sections 7.1 and 7.3 to 7.5 of this Certificate.
Standard:	<b>3.4</b>	Moisture from the ground
Comment:		The product does not absorb water by capillary action and, therefore, may be used where it bridges the dpc of either leaf, with reference to clause 3.4.5 <sup>(1)(2)</sup> to this Standard. See sections 9.1 and 9.2 of this Certificate.
Standard:	<b>3.10</b>	Precipitation
Comment:		Walls incorporating the product can satisfy this Standard, with reference to clause 3.10.3 <sup>(1)(2)</sup> provided they comply with section 9.2 of this Certificate.
Standard:	<b>3.15</b>	Condensation
Comment:		The product can contribute to satisfying this Standard, with reference to clauses 3.15.1 <sup>(1)</sup> , 3.15.3 <sup>(1)</sup> and 3.15.4 <sup>(1)</sup> . See sections 6.2 and 6.3 of this Certificate.
Standard:	<b>6.1(b)</b>	Carbon dioxide emissions
Standard:	<b>6.2</b>	Building insulation envelope
Comment:		The product can contribute to satisfying clauses, or parts of, 6.1.2 <sup>(1)</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)(2)</sup> , 6.2.4 <sup>(2)</sup> , 6.2.6 <sup>(1)</sup> , 6.2.7 <sup>(2)</sup> , 6.2.12 <sup>(1)(2)</sup> and 6.2.13 <sup>(1)</sup> of these Standards. See sections 5.4 to 5.7 of this Certificate. (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	<b>B2</b>	Fitness of materials and workmanship
Comment:		The product is an acceptable material. See section 12 and the <i>Installation</i> part of this Certificate.
Regulation:	<b>B3(2)</b>	Suitability of certain materials
Comment:		The product does not normally require maintenance. See section 11 of this Certificate.
Regulation:	<b>C4(a)(b)</b>	Resistance to ground moisture and weather
Comment:		Walls incorporating the product can satisfy this Regulation. See section 9.2 of this Certificate. In addition the product may be used where it bridges the dpc in either leaf. See section 9.1 of this Certificate.
Regulation:	<b>C5</b>	Condensation
Comment:		A wall incorporating the product can satisfy this Regulation. See section 6.3 of this Certificate.
Regulation:	<b>E4(1)</b>	Internal fire spread – Structure
Comment:		Walls incorporating the product can satisfy this Regulation. See sections 7.1, 7.2, 7.4 and 7.5 of this Certificate.
Regulation:	<b>F2(a)(i)</b>	Conservation measures
Comment:		Walls incorporating the product can contribute to satisfying this Regulation. See section 5.4 to 5.7 of this Certificate.

## Construction (Design and Management) Regulations 2007

## Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: *2 Delivery and site handling (2.5).*

# Non-regulatory Information

## NHBC Standards 2008

NHBC accepts the use of Kingspan TW55 Thermawall Framing Board Insulation, when installed and used in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.2 *External timber framed walls*.

## Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA, Kingspan TW55 Thermawall Framing Board Insulation, when installed and used in accordance with this Certificate, can satisfy the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-sections *External walls – timber frame*, *External walls – thermal insulation*.

## General

This Certificate relates to Kingspan TW55 Thermawall Framing Board Insulation for use between studding and/or as insulated sheathing over timber or steel-frame buildings with a weather-resistant cladding, and a ventilated and drained cavity between the cladding and the frame.

## Technical Specification

### 1 Description

1.1 Kingspan TW55 Thermawall Framing Board Insulation is a rigid polyisocyanurate foam (PIR) board, faced on both sides with an aluminium foil/kraft/foil tri-laminate.

1.2 The boards are either fixed between the studding or as a sheathing facing the cavity.

1.3 The boards are available with the nominal properties:

length (mm) <sup>(1)</sup>	2400
width (mm) <sup>(1)</sup>	1200
thickness (mm) <sup>(1)</sup>	20–120
core density (kgm <sup>-3</sup> )	32
edge detail	plain
compressive strength (kPa)	>140
water vapour resistance (MNsg <sup>-1</sup> )	>100.

(1) Other dimensions are available on request.

### 2 Delivery and site handling

2.1 Boards are delivered to site in shrink-wrapped polythene packs. Each pack bears the manufacturer's trade name and the BBA identification mark incorporating the number of this Certificate.

2.2 Packs should be stored off the ground on a clean, level surface under cover to protect them from moisture and mechanical damage.

2.3 Boards should ideally be stored indoors, however, covered packs stored outdoors should be sloped to ensure rainwater does not collect on the top. Snow and hail deposits must be removed as soon as possible.

2.4 Boards should not be stored in direct sunlight or in areas subjected to elevated temperatures.

2.5 Care must be exercised in handling individual boards to avoid crushing the edges or corners.

2.6 Boards must not be exposed to open flame or other ignition sources.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Kingspan TW55 Thermawall Framing Board Insulation.

## Design Considerations

### 3 General

3.1 Kingspan TW55 Thermawall Framing Board Insulation is effective in reducing the U value (thermal transmittance) of external walls of timber- or steel-frame buildings. It is essential that such walls are designed and constructed to incorporate the normal precautions against moisture ingress. This would include the application of a suitable breather membrane where appropriate.

3.2 New buildings subject to the national Building Regulations should be designed in accordance with the relevant recommendations of BS 5268-2 : 2002 and BS 5268-6.1 : 1996 or BS 5950-8 : 2003.

3.3 Where the construction incorporates a masonry outer leaf (this includes masonry units and natural stone blocks) which should be in accordance with BS 5628-3 : 2005, the designed residual cavity width should be 50 mm and at no point less than 35 mm wide<sup>(1)</sup>.

3.4 Other claddings should be in accordance with BS 8200 : 1995.

3.5 Installation must not be carried out until the moisture content of the timber frame is less than 20%.

(1) A residual cavity nominally 50 mm wide will be required by the NHBC where normal standards of tolerance and workmanship are adopted.

## 4 Practicability of installation

The product can be installed easily by operatives experienced with this type of product.

## 5 Thermal performance

5.1 Calculations of the thermal transmittance (U value) of specific external wall constructions should be carried out in accordance with BS EN ISO 6946 : 1997 and BRE<sup>(1)</sup> report (BR 443 : 2006) *Conventions for U-value calculations*, using the declared thermal conductivity ( $\lambda_{90/90}$  value) of the boards, may be taken as  $0.022 \text{ Wm}^{-1}\text{K}^{-1}$ .

(1) Building Research Establishment.

5.2 The foil face has an emissivity value of 0.06.

5.3 The U value of a typical construction will depend on the cavity width and the insulating value of the internal block leaf and finish and the board thickness. Example U values are given in Table 1.

Table 1 Wall U values<sup>(1)</sup>

Insulation thickness (mm)	Between studs <sup>(2)</sup> ( $\text{Wm}^{-2}\text{K}^{-1}$ )	Between studs and sheathing <sup>(3)</sup> ( $\text{Wm}^{-2}\text{K}^{-1}$ )	Sheathing ( $\text{Wm}^{-2}\text{K}^{-1}$ )	Steel frame <sup>(4)</sup>
60	0.39	0.16	0.28	0.30
80	0.32	0.14	0.22	0.24
100	0.28	0.13	0.19	0.19
120	0.24	0.11	0.16	0.17

(1) All constructions include: 102.5 mm brick leaf ( $\lambda = 0.77 \text{ Wm}^{-1}\text{K}^{-1}$  — Table 3.1 of CIBSE Guide A : 2006 *Environmental design*), 50 mm unventilated air cavity ( $R = 0.133 \text{ m}^2\text{KW}^{-1}$  — calculated to BS EN ISO 6946 : 1997), 12 mm plywood ( $\lambda = 0.17 \text{ Wm}^{-1}\text{K}^{-1}$  — BS EN 12524 : 2000) and 9.5 mm plasterboard ( $\lambda = 0.25 \text{ Wm}^{-1}\text{K}^{-1}$  — BS EN 12524 : 2000).

(2) Stud depth is equal to insulation depth plus 20 mm. Percentage area of stud = 15% (BR 443 : 2006).

(3) Stud depth and insulation depth is 90 mm. Percentage area of stud = 15% (BR 443 : 2006).

(4) Steel 'C' section 150 mm deep with air cavity. Percentage area 'C' section 10%.

5.4 The product can achieve the following design U values:



### England and Wales and Northern Ireland

- $0.35 \text{ Wm}^{-2}\text{K}^{-1}$  required for 'notional' dwellings in SAP 2005 and buildings other than dwellings in SBEM (see also section 5.5)
- $0.35 \text{ Wm}^{-2}\text{K}^{-1}$  limit average specified in Approved Documents L1A (Table 2) and L2A (Table 4), and Technical Booklets F1 (Table 2.2) and F2 (Table 2.4) (see also section 5.5)
- $0.70 \text{ Wm}^{-2}\text{K}^{-1}$  limit for an individual element specified in Approved Documents L1A (Table 2) and L2A (Table 4), Technical Booklets F1 (Table 2.2) and F2 (Table 2.4).

### Scotland

- $0.20 \text{ Wm}^{-2}\text{K}^{-1}$  required for the 'simplified approach – solid fuel package 6' 'notional' dwelling in Mandatory Standard 6.1, clause 6.1.6<sup>(1)</sup>
- $0.25 \text{ Wm}^{-2}\text{K}^{-1}$  required for 'notional' dwellings in SAP 2005 (for Scotland) and the 'simplified approach – packages 1 to 5' in Mandatory Standard 6.1, clause 6.1.6<sup>(1)</sup>
- $0.30 \text{ Wm}^{-2}\text{K}^{-1}$  limit average specified in Mandatory Standard 6.2, clause 6.2.1<sup>(1)(2)</sup>
- $0.70 \text{ Wm}^{-2}\text{K}^{-1}$  limit for an individual element specified in Mandatory Standard 6.2, clause 6.2.1<sup>(1)(2)</sup>.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

5.5 Where a proposed wall U value is not better than (or is greater than in Scotland) the relevant 'notional' value specified in section 5.4, additional energy saving measures will be required in the building envelope and/or services to achieve the required overall carbon dioxide emission rate reduction of about 20% in dwellings (18% to 25% in Scotland) and 23% to 28% in buildings other than dwellings.

5.6 The product can maintain or contribute to maintaining continuity of thermal insulation at junctions between the external wall and the other building elements. Guidance in this respect, and on limiting heat loss by air infiltration, can be found in:

**England and Wales** — *Limiting thermal bridging and air leakage: Robust construction details for dwellings and similar buildings* TSO 2002 or Accredited Construction Details (version 1.0).

**Scotland** — Accredited Construction Details (Scotland).

**Northern Ireland** — Accredited Construction Details (version 1.0).

5.7 Compliance with the guidance referred to in section 5.6 will allow the use of the default psi values from Table 3 of BRE Information Paper 1/06 *Assessing the effects of thermal bridging at junctions and around openings* and Table K1 of *The Government's Standard Assessment Procedure for Energy Rating of Dwellings* (SAP 2005), in Target Emission Rate calculations to SAP 2005 or the Simplified Building Energy Model (SBEM).

## 6 Condensation risk

### Surface condensation



6.1 Walls will limit the risk of surface condensation adequately when the thermal transmittance (U value) does not exceed  $0.7 \text{ Wm}^{-2}\text{K}^{-1}$  at any point, and the junctions with other elements are designed in accordance with section 5.4.



6.2 Walls will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed  $1.2 \text{ Wm}^{-2}\text{K}^{-1}$  at any point. Guidance may be obtained from Section 8 of BS 5250 : 2002 and BRE report (BR 262 : 2002) *Thermal insulation: avoiding risks*.

### Interstitial condensation



6.3 Walls incorporating the product will adequately limit the risk of interstitial condensation when they are designed and constructed in accordance with BS 5250 : 2002 (Section 8 and Annex D).

6.4 The product will provide a significant resistance to water vapour transmission. Joints between boards will facilitate the passage of water vapour under normal conditions of temperature and humidity.

6.5 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 ventilation to avoid possible problems from the formation of interstitial condensation in the internal wall leaf.

## 7 Behaviour in relation to fire



7.1 The following fire tests have been undertaken, where the source of the fire was from inside the building:

- (a) a 112 mm thick wall assembly, comprising six 89 mm by 38 mm softwood studs at nominal 600 mm centres with an outer face of 10 mm thick oriented strand board (OSB) nailed to the studs. Nominal 60 mm thick TW55 Thermawall panels fitted between studs and held in place by 25 mm square battens nailed to the studs. The exposed surface had nominal 12.5 mm thick, Type 1 plasterboard nailed to the studs. A single timber stud of the same dimension as the vertical studs was fixed across the head and the base of the assembly. A loadbearing capacity, integrity and insulation rating of 36 minutes was achieved, tested in accordance with BS 476-21 : 1987, Clause 8.
- (b) a 124 mm thick wall assembly, comprising six steel studs at nominal 600 mm centres, braced by cross member steel plate, clad on its exposed face with a single layer of 12.5 mm fireline board. TW55 Thermawall nominally 35 mm thick were fitted to the unexposed surface of the studs. A loadbearing capacity, integrity and insulation rating of 36 minutes was achieved, tested in accordance with BS 476-21 : 1987, Clause 8.
- (c) an identical fire test on a similar assembly to that described in section 7.1(a) with two layers of board, nominally 12.5 mm thick on the exposed face. The first layer of board was a fire-resistant plasterboard and the second layer standard plasterboard. A loadbearing capacity, integrity and insulation rating of 73 minutes was achieved, tested in accordance with BS 476-21 : 1987, Clause 8.
- (d) a 170 mm thick wall assembly, comprising six Metsec 100 M12 studs at nominal 600 mm spacing, clad on its exposed face with 12.5 mm plasterboard and a single layer of 12.5 mm Gyproc fireline board. TW55 thermawall nominally 45 mm thick was fitted to the unexposed surface of the studs. A non loadbearing capacity, integrity and insulation rating of 67 minutes was achieved, tested in accordance with BS 476-22 : 1987, Clause 5.



7.2 The product has a Class 1 rating surface spread of flame when tested to BS 476-7 : 1997.



7.3 The product is combustible but it may be used in a wall, on or less than one metre from a relevant boundary, where no storey is at a height of more than 18 metres above ground.



7.4 The constructions detailed in section 7.1 will meet the requirements for a minimum period of fire resistance of 30 minutes and 60 minutes respectively in accordance with:

**England and Wales** — Approved Document B, Table A2

**Scotland** — Mandatory Standard, Table 2B

**Northern Ireland** — Technical Booklet E, Table 3.2.

7.5 Cavity barriers must be provided to comply with:

**England and Wales** — Approved Document B, Section 6

**Scotland** — Mandatory Standard 2.4, clauses 2.4.1<sup>(1)(2)</sup>, 2.4.2<sup>(1)(2)</sup>, 2.4.7<sup>(1)</sup> and 2.4.9<sup>(2)</sup>

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

**Northern Ireland** — Technical Booklet E, paragraphs 3.35 to 3.38.

7.6 When installing the product as an insulating sheathing to either steel studs or timber frames the rigid insulation sheathing can provide a suitable substrate for attachment of the cavity barrier. For guidance on installation please refer to the cavity barrier manufacturer or Certificate holder.

## 8 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 acceptable:

**England and Wales** — Approved Document J

**Scotland** — Mandatory Standard 3.19

**Northern Ireland** — Technical Booklet L.

## 9 Weathertightness



9.1 Constructions incorporating the product and built in accordance with sections 3.3 and 3.4 will resist the transfer of precipitation to the inner leaf and satisfy the national Building Regulations:

**England and Wales** — Requirement C2(a)(b)(c)

**Scotland** — Mandatory Standard 3.10, clause 3.10.3<sup>(1)(2)</sup>

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

**Northern Ireland** — Regulation C4(a)(b).

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

- wall ties and fixings 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
- 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 weepholes, must be provided.

## 10 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 suggested 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.

## 11 Maintenance



As the product is confined behind the wall lining and it has suitable durability (see section 12), maintenance is not required.

## 12 Durability



The boards will have a life equivalent to that of the wall structure in which they are incorporated.

# Installation

## 13 General

13.1 Installation of Kingspan TW55 Thermawall Framing Board Insulation must be in accordance with the relevant Clauses of BS 5268-2 : 2002 and the Certificate holder's instructions.

13.2 The boards are light to handle, and cut easily but care must be taken to prevent damage, particularly at edges.

13.3 Damaged boards should not be used, small areas of damaged faces may be repaired with self-adhesive aluminium foil tape.

13.4 Where a plasterboard lining is used it should be of the vapour check type or a separate polythene vapour control layer can be introduced. A vapour control layer may not be required in all applications and reference should be made to BS 5250 : 2002.

13.5 The insulation may be installed between or over the studs of steel-frame constructions. Guidance should be sought from the Certificate holder.

13.6 Boards should be tight fitting against the structure. Gaps should be filled with an expanding Urethane sealant.

## Between studs

13.7 Boards should be fitted so that their edges are flush with the outer faces of the studs and bottom and top plates and restrained by nailed battens. Alternative restraint may be affected by metal fixing clips.

## Timber-frame sheathing (over stud installation)

13.8 The boards should be fixed to the external surface of the timber-frame structure (outside of any OSB or plywood sheathing) and restrained using temporary fixing in the form of large-headed galvanized clout nails, prior to being tied into the brickwork with an appropriate timber-frame wall tie. Ensure that the boards are tightly butted and that any requirements of the timber-frame manufacturer are met.

13.9 The outer leaf of brickwork may be constructed in the conventional manner using appropriate wall ties to restrain the two wall skins together. The ties should be inserted whilst constructing the outer leaf ensuring a slight offset is achieved, sloping the tie downwards towards the outer leaf.

## Steel frame

13.10 Similarly fixed as for timber-frame, the boards should be restrained to the outside of the steel-frame construction ensuring vertical board joints coincide with a vertical member. Fixings should be in accordance with the steel-frame manufacturer's recommendations.

13.11 Advice should also be sought from the appropriate steel-frame manufacturer for recommendations of a suitable wall tie specification.

# Technical Investigations

The following is a summary of the technical investigations carried out on Kingspan TW55 Thermawall Framing Board Insulation.

## 14 Investigations

An examination was made of data relating to:

- dimensional accuracy
- thermal conductivity (fresh and aged)
- effect of wall ties.
- bending strength
- fire resistance
- dimensional stability with temperature
- water vapour resistance

## 15 Other investigations

15.1 An assessment of the thermal and hygrothermal properties of the two types of application of Kingspan TW55 Thermawall Framing Board Insulation was made including condensation risk calculations.

15.2 Assessments of the structural adequacy, durability and behaviour in fire of the two applications were made.

# Additional Information

The management systems of Kingspan Insulation Limited have been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2000 by BSI Quality Assurance (Certificate No FM 10697).

# Bibliography

- BS 476-7 : 1997 *Fire tests on building materials and structures — Method of test to determine the classification of the surface spread of flame of products*
- BS 476-21 : 1987 *Fire tests on building materials and structures — Methods for determination of the fire resistance of loadbearing elements of construction*
- BS 476-22 : 1987 *Fire tests on building materials and structures — Methods for determination of the fire resistance of non-loadbearing elements of construction*
- BS 5250 : 2002 *Code of practice for control of condensation in buildings*
- BS 5268-2 : 2002 *Structural use of timber — Code of practice for permissible stress design, materials and workmanship*
- BS 5268-6.1 : 1996 *Structural use of timber — Code of practice for timber frame walls — Dwellings not exceeding four storeys*
- BS 5628-3 : 2005 *Code of practice for the use of masonry — Materials and components, design and workmanship*
- BS 5950-8 : 2003 *Structural use of steelwork in building — Code of practice for fire resistant design*
- BS 7671 : 2008 *Requirements for electrical installations. IEE Wiring Regulations. Seventeenth Edition*
- BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*
- BS EN ISO 6946 : 1997 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 9001 : 2000 *Quality management systems — Requirements*
- BS EN 12524 : 2000 *Building materials and products — Hygrothermal properties — Tabulated design values*

## 16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- 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.

16.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant 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.

16.4 In granting this Certificate, the BBA is not responsible for:

- 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 the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

16.5 Any information relating to the manufacture, supply, installation, use and maintenance 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 and maintained. It does not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date 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. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the manufacture, supply, installation, use and maintenance of this product/system.