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Agrément Certificate

16/5357

Product Sheet 1

CELOTEX INSULATION

CELOTEX PIR PLASTERBOARD THERMAL LAMINATES

This Agrément Certificate Product Sheet⁽¹⁾ relates to Celotex PIR Plasterboard Thermal Laminates, comprising rigid polyisocyanurate (PIR) foam boards bonded to plasterboard, for use as insulating dry lining for internal wall applications in existing domestic and non-domestic buildings.

(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 insulation component of the products has a declared thermal conductivity (λ_D) of $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for Celotex PL4000, and $0.021 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for Celotex GD5000 (see section 6).

Condensation risk — the products can contribute to limiting the risk of surface condensation; however, the risk of interstitial condensation should be assessed for each case (see section 7).

Behaviour in relation to fire — the products have a reaction to fire classification of Class B-s1, d0 to BS EN 13501-1 : 2007 (see section 8).

Durability — the products are durable, rot proof, and sufficiently stable to remain effective for the life of the building (see section 14).



The BBA has awarded this Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of First issue: 15 September 2016

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

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

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

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Regulations

In the opinion of the BBA, Celotex PIR Plasterboard Thermal Laminates, 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:	B2(1)	Internal fire spread (linings)
Comment:		The products are unrestricted under this Requirement. See section 8.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The products 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 products can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The products can contribute to satisfying this Regulation. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	2.5	Internal linings
Comment:		The products are unrestricted by this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See section 8.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The products can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . 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 products can contribute to satisfying these Standards, with reference to clauses, or parts of, 6.1.4 ⁽²⁾ , 6.1.6 ⁽¹⁾ , 6.2.1 ⁽¹⁾⁽²⁾ , 6.2.3 ⁽¹⁾ , 6.2.4 ⁽²⁾ , 6.2.5 ⁽²⁾ , 6.2.9 ⁽¹⁾ , 6.2.10 ⁽¹⁾ , 6.2.11 ⁽¹⁾ and 6.2.12 ⁽²⁾ . See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The products can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and, therefore, will contribute to a construction meeting a bronze level of sustainability as defined in this Standard. See section 6.1 of this Certificate.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for the products under Regulation 9, Standards 1 to 6, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).



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

Regulation:	23	Fitness of materials and workmanship
Comment:		The products are acceptable. See section 14 and the <i>Installation</i> part of this Certificate.
Regulation:	29	Condensation
Comment:		The products can contribute to satisfying this Regulation. See section 7.1 of this Certificate.
Regulation:	34	Internal fire spread — Linings
Comment:		The products are unrestricted by this Regulation. See section 8.1 of this Certificate.
Regulation:	39(a)(i)	Conservation measures
Comment:		The products are acceptable. See section 6 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 sections: 3 *Delivery and site handling* (3.3) and 15 *General* (15.5 and 15.8) of this Certificate.

Additional Information

NHBC Standards 2016

NHBC accepts the use of Celotex PIR Plasterboard Thermal Laminates, provided the bonded plasterboard facing is a minimum of 12.5 mm thick, with the products mechanically fixed back to the structure, and they are installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls* and 9.2 *Wall and ceiling finishes*.

CE marking

The Certificate holder has taken the responsibility of CE marking the products in accordance with harmonised European Standard BS EN 13950 : 2014. An asterisk (*) appearing in this Certificate indicates that data shown is given in the manufacturer's Declaration of Performance.

Technical Specification

1 Description

1.1 Celotex PIR Plasterboard Thermal Laminates consist of PIR insulation⁽¹⁾ with composite foil/kraft paper-facings, bonded to plasterboard⁽²⁾ as listed in Table 1.

(1) Manufactured to comply with BS EN 13165 : 2012.

(2) Manufactured to comply with BS EN 520 : 2004.

Table 1 Product summary

Product	Board size (mm)	Plasterboard thickness ⁽¹⁾ (mm)	PIR insulation thickness (mm)	Board facings	Fixing method
Celotex PL4000	1200 x 2400	12.5	15 to 80	Composite foil/kraft paper-facing both sides (inner facing unprinted and bonded to plasterboard, outer facing printed)	Direct bonding (adhesive) or mechanical fixing
Celotex GD5000			25 to 80		

(1) 12.5 mm is the standard plasterboard thickness supplied laminated to the insulation; however, 9.5 mm thickness plasterboard can be supplied upon request. The Certificate holder should be contacted for further details.

1.2 Ancillary items for use with the products, which are outside the scope of this Certificate, include:

- gypsum-based dry lining adhesive compound (plaster dabs) to BS EN 14496 : 2005
- metal component furring systems to BS EN 14195 : 2005
- mechanical fasteners including dry wall screws, plasterboard nails and nailable plugs to BS EN 14566 : 2008
- metal edge and corner beads to BS EN 14353 : 2007
- jointing materials including scrim tape and jointing compound to BS EN 13963 : 2005
- softwood timber battens.

2 Manufacture

2.1 The insulation component of Celotex PL4000 and Celotex GD5000 is manufactured by a lamination process whereby the board is formed between a composite foil/kraft paper-facing that is adhered in a continuous laminator, where the ‘adhesive’ is a mixture of two primary chemicals, polyol and MDI. An added blowing agent causes the adhesive to expand into foam that sets, which is then cut to its finished board size. The board is bonded to plasterboard.

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 Celotex has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 and BS EN ISO 14001 : 2004 by SGS UK Ltd (Certificates GB91/504 and GB11/83526 respectively).

3 Delivery and site handling

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

3.2 The boards must be protected from prolonged exposure to sunlight and moisture and should be stored inside, under cover and protected with opaque polythene sheeting. The boards should be stacked flat and raised above ground level, and not in contact with ground moisture.

3.3 Care must be taken when handling the boards to avoid crushing the edges or corners. The boards must not be exposed to open flame or other ignition sources, or solvents or other chemicals. If damaged, the products should be discarded.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Celotex PIR Plasterboard Thermal Laminates.

Design Considerations

4 Use

4.1 Celotex PIR Plasterboard Thermal Laminates are satisfactory for use as an insulating dry lining for solid or cavity masonry walls of existing domestic and non-domestic buildings. Celotex PL4000 and Celotex GD5000 have composite foil/kraft paper-facings allowing them to be installed either by direct bonding to the wall using plaster adhesive dabs, or by being mechanically fixed either directly to the wall or onto timber battens or metal furring systems (see the *Installation* part of this Certificate). The boards should be installed in accordance with the Certificate holder's instructions.

4.2 The boards may be installed on masonry construction including clay and calcium silicate bricks, concrete blocks, and natural and reconstituted stone blocks. It is essential that such walls are constructed having regard to the local wind-driven rain index.

4.3 The products are not intended to offer resistance to rain penetration; walls, therefore, must already be rain resistant and show no signs of water ingress, rain penetration or damp from ground moisture.

4.4 It is essential that the boards are butted as close as possible to minimise any gaps between them (see section 16 of this Certificate).

4.5 Services which penetrate the dry lining, eg light switches and power outlets, should be kept to a minimum to limit damage to vapour checks. All perimeters of the board, around service penetrations, openings, junctions and around the perimeter of suspended timber floors must be sealed with a suitable sealant.

4.6 It is essential that proper care and attention is given to maintaining the integrity/continuity of the insulation and facings.

4.7 With installations that form a void of 20 mm or more (ie timber batten or metal furring systems), services can be incorporated behind the dry lining, making the chasing of the wall unnecessary. Where the services have a greater depth than the void, the wall should be chased rather than the insulation. Suitable isolation methods, such as conduit or capping, must be used to ensure cables do not come into contact with the insulation.

4.8 The installation of the products requires careful detailing around doors and windows to achieve a satisfactory surface for finishing. In addition, every attempt should be made to minimise the risk of thermal bridging at reveals and where heavy separating walls are attached to the external wall. Thinner boards should be selected from the Celotex PIR Plasterboard Thermal Laminates range to suit site-specific door and window reveal conditions. All work must be designed to accommodate the thickness of the dry lining, particularly at reveals, heads, sills and in relation to ceiling height. Where the dimensions of fixtures are critical (eg bathrooms), these should be checked before installation.

4.9 If present, mould or fungal growth should be treated prior to the application of the products.

5 Practicability of installation

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

6 Thermal performance



6.1 Calculations of thermal transmittance (U value) of a specific construction using insulated dry lining should be carried out in accordance with BS EN ISO 6946 : 2007, BRE Report BR 443 : 2006 and BRE Digest 465 : 2002 , using the declared thermal conductivity* (λ_D value) for the insulation component as shown in Table 2, a design value of $0.19 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the plasterboard, and aged emissivity (ϵ_D) (to BS EN 15976 : 2011) of 0.9 for the printed composite foil/kraft paper-facing.

Table 2 Thermal conductivities for the PIR insulation

Product	Declared thermal conductivity* (λ_D) ($\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)
Celotex PL4000	0.022
Celotex GD5000	0.021

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

Table 3 Example U values — Solid brickwork wall⁽¹⁾

Target U value ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)	Celotex PL4000 and GD5000 Thickness of insulation ⁽²⁾ (mm), as dry lining			
	Direct bond (plaster dabs) ⁽³⁾		Mechanical fixing direct to wall ⁽⁴⁾	
	GD5000	PL4000	GD5000	PL4000
0.26	70	70	70	75
0.30	60	60	60	65

(1) 215 mm thick existing solid brickwork wall ($0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ thermal conductivity).

(2) Thickness of insulation specified excludes plasterboard thickness of 12.5 mm.

(3) Direct bonding with 15 mm plaster adhesive dabs (15 mm air cavity). Boards adhesively fixed in addition to 0.69 fully-penetrating steel fixings ($50 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) per square metre with a cross-sectional area of 18.2 mm^2 (minimum of two nailable fixings, at midpoint of the board, 25 mm from board edge).

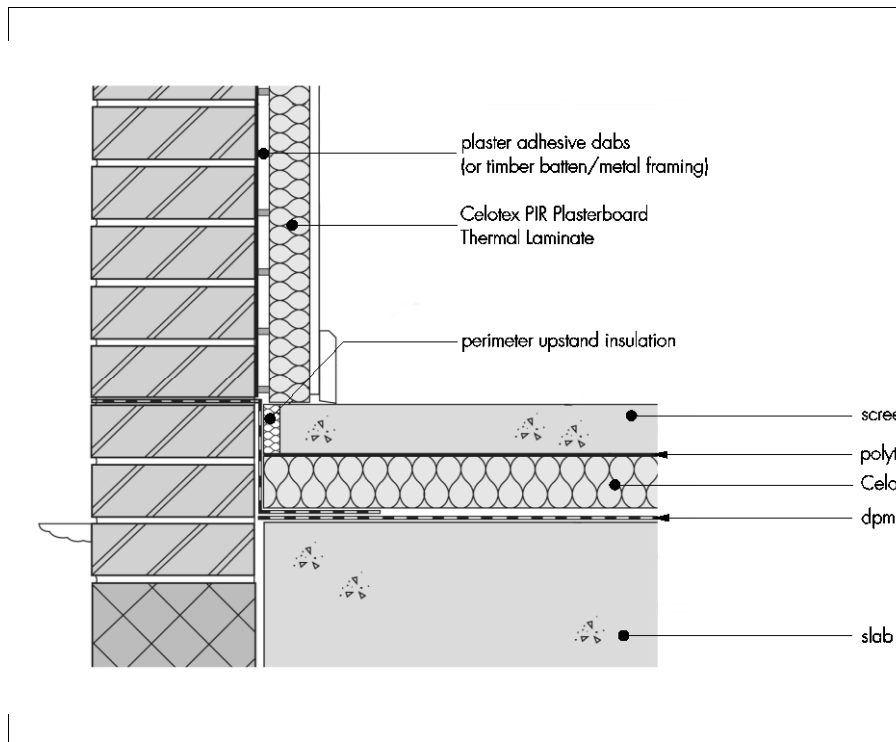
(4) Mechanical fixing direct to wall using 4.16 fully penetrating stainless steel fixings ($17 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$) per square metre with a cross-sectional area of 9 mm^2 (stainless steel fixings at 300 mm centres from the vertical and horizontal board edges, with a minimum of 12 fixings per board).

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. An example of an acceptable junction detail is shown in Figure 1.

Figure 1 Junction between the wall and the floor



7 Condensation risk

Interstitial condensation



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

7.2 The risk of summer condensation on the foil component must be considered for solid masonry walls orientated from ESE through south to WSW, in accordance with BRE Report 262 : 2002, section 3.10.

7.3 For each construction, a condensation risk analysis should be carried out in accordance with BS EN ISO 13788 : 2012 and BS 5250 : 2011, using the values for each component given in Table 4.

Table 4 Water vapour transmission factors

Material	Water vapour resistance ($MN \cdot s \cdot g^{-1}$)	Water vapour resistivity ($MN \cdot s \cdot g^{-1} \cdot m^{-1}$)
Plasterboard	—	50
PIR foam insulation	—	300
Composite foil/kraft paper-facing	1000	—

7.4 Where calculations to Annex D of BS 5250 : 2011 indicate a risk of persistent condensation, a site-specific dynamic analysis to BS EN 15026 : 2007 should be considered.

7.5 Provided all joints between the products are sealed (see section 4.4 and the *Installation* part of this Certificate) in accordance with the Certificate holder's instructions, the products can offer significant resistance to water vapour transmission.

Surface condensation



7.6 Walls incorporating the products 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 6.3 of this Certificate.



7.7 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. Guidance may be obtained from BS 5250 : 2011, Annex G, and BRE Report BR 262 : 2002.

8 Behaviour in relation to fire



8.1 The boards have a reaction to fire classification* of Class B-s1, d0 to BS EN 13501-1 : 2007 and are therefore unrestricted with respect to surface spread of flame under the national Building Regulations.

8.2 When properly installed, the insulation will be contained between the wall and internal lining board until one is compromised. Therefore, the insulation will not contribute to the development of a fire or present a smoke or toxic hazard as the fire develops.

9 Proximity of flues and appliances

When the products are installed in close proximity to certain flue pipes and/or heat-producing appliances, the relevant provisions of the national Building Regulations should be met:

England and Wales — Approved Document J

Scotland — Mandatory Standard 3.19, clauses 3.19.1⁽¹⁾⁽²⁾ to 3.19.4⁽¹⁾⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet L, sections 1 to 5.

10 Materials in contact — wiring installations

10.1 As with any form of insulation, de-rating of electrical cables should be considered where the insulation restricts the air cooling of cables.

10.2 Electrical cables likely to come into contact with the insulation component of the thermal liner are required to be protected by a suitable conduit or PVC-U trunking. The installation of electrical services must be carried out in accordance with BS 7671 : 2008.

11 Infestation

Use of the products does not in itself promote infestation. The creation of voids within the structure, for example gaps between the wall lining and the products, 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.

12 Wall-mounted fittings

The recommendations of the Certificate holder must be followed. Any object fixed to the wall, other than lightweight items, are outside the scope of this certificate.

13 Maintenance

If the products are damaged during use, they can be readily removed and replaced.

14 Durability



The durability of the products is satisfactory. Provided the products are fixed to a satisfactory stable and durable substrate, they will have a life equal to the building in which they are installed. Under normal conditions of occupancy they are unlikely to suffer damage, but if damage does occur, repairs are easily carried out.

Installation

15 General

15.1 A qualified plumber is required to make alterations to heating systems. A qualified electrician must be used to make good the electrical wirings and services.

15.2 The building should be examined for the following:

- suitability of substrate
- detailing around windows and doors
- position and numbers of electrical sockets and switches
- wall fittings and fixtures – including coving and skirting
- areas where flexible sealants must be used
- ventilation plates.

15.3 Before starting to fit the products, the position of all main service cable and pipe runs must be clearly marked on the walls to avoid damage. All plaster coving, skirting board and laminate floor angle beads must be removed.

15.4 Before fixing the products, sufficient time must be allowed for damp-proofing treatments, where applied, to dry out (for information see BS 6576 : 2005 for dry-lining in conjunction with a chemical damp-proof course application).

15.5 Care must be taken when exposing electrical cables (see section 10).

15.6 All insulated dry lining installations require careful planning and setting out. Installation should start from an internal corner or a window or door reveal, and vertical chalk guidelines should be marked on the wall at 1200 mm centres to indicate the positioning of the boards. Installation should be in accordance with BS 8212 : 1995, good dry lining practice and the Certificate holder's instructions. Typical installation methods are shown in Figures 2 and 3.

15.7 Additional consideration should also be given for the fixing of such features as cupboards and radiators.

15.8 The boards can be cut using a fine-toothed saw. Appropriate Personal Protective Equipment (PPE) must be used when cutting the boards, and cutting should be done in a ventilated space, outside or in an area with dust extraction.

15.9 To avoid thermal bridging, the boards should be used to line window reveals. Thinner boards from the Celotex PIR Plasterboard Thermal Laminates range are available to suit door and window reveal conditions. Suitable provisions will also need to be adopted at junctions and other details such as separating floors. Further guidance can be obtained from BRE Report BR 262 : 2002. See Figure 4.

Figure 2 Direct bonding to wall



Figure 3 Mechanically fixed to timber battens or metal furrings



Figure 4 Window reveal installation



16 Procedure

Celotex PL4000 and Celotex GD5000 — direct bonding using plaster adhesive dabs

16.1 A continuous bed of adhesive should be applied around the perimeter of the wall as well as around any services or other openings. This is especially important when considering the airtightness of the building. All conduits and piping should be installed prior to commencement of all works. The insulating backing of the laminates should not be removed to accommodate services.

16.2 Adhesive dabs should be applied in three rows with each dab approximately 75 by 250 mm in dimension. Intermediate dabs at ceiling level should be applied and individual dabs should not bridge boards. The adhesive dabs should cover at least 20% of the board area.

16.3 The board should be cut approximately 15 mm short of the floor to ceiling height and positioned with the bottom edge resting on packing strips. The boards are tapped into position with a straight-edge, and alignment checked with the chalk guidelines.

16.4 Once positioned, the board should be lifted to the ceiling edge using a floor lifter and supported until the adhesive has set. Once set, a minimum of two nailable fixings should be applied at the mid-point of the board and approximately 25 mm from the board edge. Nailable plugs should penetrate the background through the dab by at least 40 mm.

16.5 Other boards should be installed closely butted together using the same technique.

Celotex PL4000 and Celotex GD5000 — mechanically fixed to timber battens or metal furrings

16.6 Using suitable mechanical fixings, treated softwood timber battens (minimum 25 mm thick by 47 mm wide) or proprietary metal furrings are installed vertically at a maximum of 600 mm centres, along with horizontal battens at the top and bottom of the installation area. Additional lengths of timber batten or metal furring should be installed to coincide with horizontal board joints and around services, doors and windows. The framing must provide a minimum of 20 mm bearing to each system at joints and be of sufficient depth to accommodate the fixings for the system. Metal furring systems can also be bonded to the wall in accordance with the manufacturer's recommendations, and the same preparation and setting out procedure should be used. The adhesive dabs (approximately 75 by 200 mm) should be applied at centres suitable for the products, typically from 450 to 600 mm.

16.7 The board should be cut approximately 15 mm short of the floor to ceiling height and positioned with the bottom edge resting on packing strips. The boards are placed onto the timber or metal frame, and alignment checked with the position of the timber batten or metal furring and chalk guidelines on the floor and ceiling.

16.8 Once positioned, the board should be lifted to the ceiling edge using a floor lifter and supported with additional packing at the base of the board. The board is fixed to the timber battens or metal frame using appropriate dry wall screws. Fixings should be installed at 300 mm centres across the horizontal and vertical elements of the frame.

16.9 Other boards should be installed closely butted together using the same technique.

Celotex PL4000 and Celotex GD5000 — mechanically fixed direct to wall

16.10 The board should be cut approximately 15 mm short of the floor to ceiling height and positioned with the bottom edge resting on packing strips. The boards are placed into position, and alignment checked with the chalk guidelines on the floor and ceiling.

16.11 Once positioned, the board should be lifted to the ceiling edge using a floor lifter and supported with additional packing at the base of the board. The board should be fixed to the wall using suitable stainless steel mechanical fixings at 300 mm centres from the vertical and horizontal board edges with a minimum of 12 fixings per board.

16.12 Other boards should be installed closely butted together using the same technique.

17 Finishing

17.1 Jointing and finishing of the plasterboard lining are carried out in the appropriate manner in accordance BS EN 13914-2 : 2005, applying plasterer's tape to all joints. A finishing skim coat of 2 mm of plaster should be applied to complete the installation.

17.2 Any gaps between the ceiling and the wall must be filled.

Technical Investigations

18 Tests

Results of tests were assessed to determine:

- flatness
- offset of the insulation over the plasterboard
- adhesion/cohesion of the insulating material
- soft body impact resistance
- hard body impact resistance.

19 Investigations

19.1 An examination of data was made to analyse:

- thermal conductivity
- squareness
- water vapour transmission
- density
- flatness
- dimensional accuracy
- dimensional stability at specific temperatures and humidity
- reaction to fire.

19.2 A condensation risk analysis was carried out.

19.3 A series of U value calculations were carried out.

19.4 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

- BS 5250 : 2011 *Code of practice for control of condensation in buildings*
- BS 6576 : 2005 *Code of practice for diagnosis of rising damp in walls of buildings and installation of chemical damp-proof courses*
- BS 7671 : 2008 *Requirements for Electrical Installations — IET Wiring Regulations*
- BS 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*
- BS EN 520 : 2004 *Gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 13165 : 2012 *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PU) products — Specification*
- BS EN 13501-1 : 2007 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 13914-2 : 2005 *Design, preparation and application of external rendering and internal plastering — Design considerations and essential principles for internal plastering*
- BS EN 13950 : 2014 *Gypsum plasterboard thermal/acoustic insulation composite panels — Definitions, requirements and test methods*
- BS EN 13963 : 2005 *Jointing materials for gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 14195 : 2005 *Metal framing components for gypsum plasterboard systems — Definitions, requirements and test methods*
- BS EN 14353 : 2007 *Metal beads and feature profiles for use with gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 14496 : 2005 *Gypsum based adhesives for thermal/acoustic insulation composite panels and plasterboards — Definitions, requirements and test methods*
- BS EN 14566 : 2008 *Mechanical fasteners for gypsum plasterboard systems — Definitions, requirements and test methods*
- BS EN 15026 : 2007 *Hygrothermal performance of building components and building elements — Assessment of moisture transfer by numerical simulation*
- BS EN 15976 : 2011 *Flexible sheets for waterproofing — Determination of emissivity*
- BS EN ISO 6946 : 2007 *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*
- BS EN ISO 9001 : 2008 *Quality management systems — Requirements*
- BS EN ISO 13788 : 2012 *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*
- BS EN ISO 14001 : 2004 *Environmental Management systems — Requirements with guidance for use*
- BRE Digest 465: 2002 *U values for light steel-frame construction*
- BRE Report BR 262 : 2002 *Thermal insulation: avoiding risks*
- BRE Report BR 443 : 2006 *Conventions for U-value calculations*

20 Conditions

20.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

20.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

20.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

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

20.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- 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.

20.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.