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Agrément Certificate
13/5016
Product Sheet 4

BRITISH GYPSUM INTERNAL WALL INSULATION SYSTEMS

DRILYNER RF INSULATED DRY LINING SYSTEM

This Agrément Certificate Product Sheet⁽¹⁾ relates to the Drilyner RF Insulated Dry Lining System, comprising Gyproc ThermaLine SUPER and Gyproc ThermaLine PIR insulated plasterboards, for use as an internal insulated dry lining system to external masonry walls in new and existing domestic and non-domestic buildings. The system is installed using blobs of Gyproc Sealant and supplementary mechanical fixings.

(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 system has declared thermal conductivities (λ_D) of $0.021 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ or $0.020 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for ThermaLine SUPER (depending on insulation thickness) and $0.022 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for ThermaLine PIR (see section 6).

Condensation risk — the system 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 system has a reaction to fire classification of B-s1, d0 to BS EN 13501-1 : 2007 (see section 8).

Durability — the system is 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 system described herein. This system 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

Claire Curtis-Thomas

Date of Third issue: 27 July 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 9 July 2013

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 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, the DriLyner RF Insulated Dry Lining System, 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 system is unrestricted under this Requirement. See section 8.1 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The system 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 system can contribute to satisfying this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The system is acceptable. See section 14 and the <i>Installation</i> part 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 system can contribute to satisfying these Regulations, but compensating fabric and/or services measures may need to be taken. 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 system is acceptable. 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 system is unrestricted under this Standard, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See section 8.1 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system 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 system can contribute to satisfying clauses, or parts of, 6.1.1 ⁽¹⁾ , 6.1.2 ⁽¹⁾ , 6.1.3 ⁽¹⁾ , 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⁾ , 6.2.11 ⁽¹⁾ and 6.2.12 ⁽²⁾ of these Standards. See section 6 of this Certificate.
Standard:	7.1(a)(b)	Statement of sustainability
Comment:		The system 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 system can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾], 7.1.6 ⁽¹⁾⁽²⁾ [Aspects 1 ⁽¹⁾⁽²⁾ and 2 ⁽¹⁾] and 7.1.7 ⁽¹⁾⁽²⁾ [Aspect 1 ⁽¹⁾⁽²⁾]. See section 6 of this Certificate.

Regulation:	12	Building standards applicable to conversions
Comment:	Comments in relation to the system 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 system is acceptable. See section 14 and the <i>Installation</i> part of this Certificate.	
Regulation:	29	Condensation
Comment:	The system can contribute to satisfying this Regulation. See section 7.1 of this Certificate.	
Regulation:	34	Internal fire spread — linings
Comment:	The system is unrestricted under this Regulation. See section 8.1 of this Certificate.	
Regulation:	39(a)(i)	Conservation measures
Regulation:	40(2)	Target carbon dioxide emission rate
Comment:	The system can contribute to a building satisfying these Regulations. 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: 1 *Description* (1.4), 3 *Delivery and site handling* (3.3) and 16 *General* (16.8) of this Certificate.

Additional Information

NHBC Standards 2017

NHBC accepts the use of the DriLynr RF Insulated Dry Lining System, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapter 9.2 *Wall and ceiling finishes*.

CE marking

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

Technical Specification

1 Description

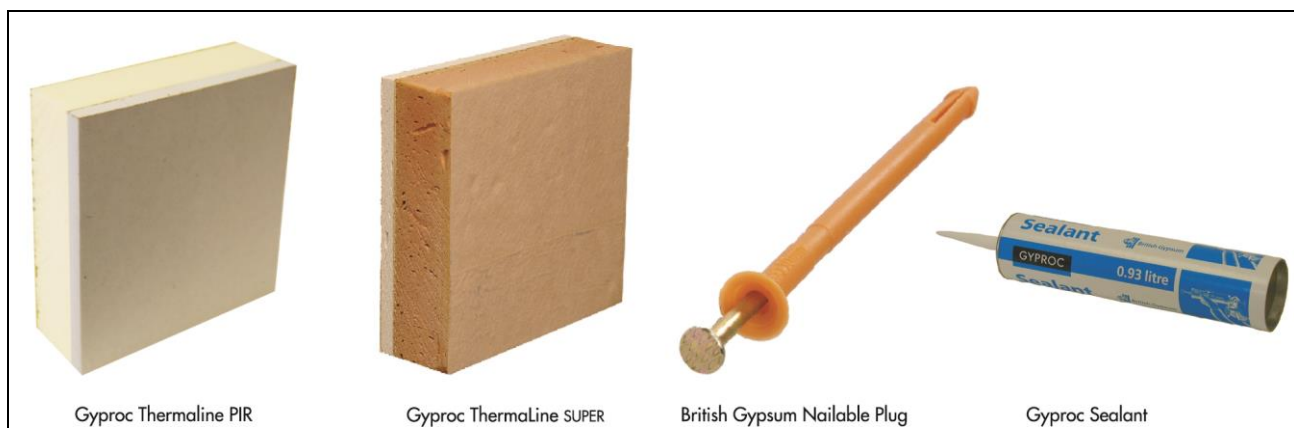
1.1 The DriLynr RF Insulated Dry Lining System consists of Gyproc ThermaLine SUPER insulated plasterboard and Gyproc ThermaLine PIR insulated plasterboard bonded directly to flat solid and cavity walls (including pre-plastered walls) using blobs of Gyproc Sealant and fixed with supplementary British Gypsum Nailable Plugs (see Figure 1).

1.2 Gyproc ThermaLine SUPER comprises Gyproc WallBoard plasterboard⁽¹⁾ and phenolic⁽²⁾ insulation with a composite-foil-facing on its front surface and glassfibre-tissue-facing on its reverse.

1.3 Gyproc ThermaLine PIR insulated plasterboard comprises Gyproc WallBoard plasterboard⁽¹⁾, and polyisocyanurate (PIR)⁽³⁾ insulation with a Walki DT AL 120 foil-facing on its front surface and Walki DT AL 120 facing on its reverse.

- (1) Manufactured to comply with the requirements of BS EN 520 : 2004.
- (2) Manufactured to comply with the requirements of BS EN 13166 : 2012.
- (3) Manufactured to comply with the requirements of BS EN 13165 : 2012.

Figure 1 DriLyner RF — system components



1.4 The boards are available with the nominal characteristics shown in Table 1.

Table 1 Nominal characteristics of Gyproc ThermaLine SUPER and Gyproc ThermaLine PIR

Characteristic (unit)	Gyproc ThermaLine SUPER	Gyproc ThermaLine PIR
Length (mm)	2400	2400
Width (mm)	1200	1200
Insulation thickness (mm)	40 to 80	25 to 80
Nominal density of insulation (kg·m ⁻³)	35	> 27
Thickness of plasterboard (mm)	9.5	12.5
Edge profile of the insulated dry lining	Tapered edge	Tapered edge
Minimum compressive strength for the insulation at 10% compression (kPa)	100	140

1.5 Gyproc Dri-Wall Sealant is available in 0.38l and 0.93l cartridges. British Gypsum Nailable Plugs are available in various lengths.

1.6 Ancillary items, which are outside the scope of this Certificate, include:

- Gyproc ThermaLine insulated plasterboard for window reveals
- British Gypsum joint tape and jointing compound or plaster for skim coat.

2 Manufacture

2.1 Gyproc WallBoards are factory bonded to the chosen insulation. The Gypframe metal components are manufactured using conventional techniques to controlled specifications.

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 the Certificate holder has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008, BS EN ISO 14001 : 2004 and BS OHSAS 18001 : 2007 by BSI (Certificates FM550533, EMS 543324 and OHS 550586 respectively).

3 Delivery and site handling

3.1 The boards are delivered to site shrink-wrapped in polythene on pallets. Each board has the manufacturing code printed on the surface and each pack carries a label with the product description, manual handling advice and manufacturer's name. Gyproc Sealant is delivered to site in cartridges (0.38 l and 0.93 l)

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 to avoid 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 the DriLyner RF Insulated Dry Lining System.

Design Considerations

4 Use

4.1 The DriLyner RF Insulated Dry Lining System is satisfactory for use as an insulating dry lining system for solid or cavity pre-plastered masonry walls of new and existing domestic and non-domestic buildings. The system is installed using blobs of Gyproc Sealant and supplementary mechanical fixings (see section 17). It should be installed in accordance with the Certificate holder's instructions.

4.2 The system 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 taking account of the local wind-driven rain index.

4.3 Walls should be designed and constructed in accordance with the relevant recommendations of:

- 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 8000-3 : 2001.

4.4 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.

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

4.6 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.

4.7 De-rating of any electrical cables in areas where the system restricts the flow of air should be considered.

4.8 With installations that form a void of 20 mm or more, 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.

4.9 The installation of the system 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. New work must be designed to accommodate the thickness of the dry lining, particularly at reveals, heads and sills and in relation to ceiling height. Where the dimensions of fixtures are critical (eg bathrooms), they should be checked before installation.

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

5 Practicability of installation

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

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 given in Table 3 and a default value of $0.25 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ for the 9.5 mm (SUPER) and 12.5 mm (PIR) plasterboard.

Table 2 Thermal conductivities for the insulation at different thicknesses

Plasterboard	Overall thickness* (mm)	Thickness (t) of insulation (mm)	λ_D value* ($\text{W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$)
ThermaLine SUPER	50	$25 < t < 44$	0.021
	60, 70, 80, 90	$t \geq 45$	0.020
ThermaLine PIR	38, 53, 63, 78, and 93	25 to 80	0.022

6.2 The U value of a completed wall construction will depend on the insulation type and thickness, number and type of fixings, the insulating value of the substrate masonry and its finishes. Example U values in Table 4 indicate that the product can achieve design values as low as $0.25 \text{ W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$. For improved thermal/carbon emissions performance, the designer should consider additional fabric and/or services measures.

Table 3 Example U values for walls

Target U value for lining to walls ⁽¹⁾ ($\text{W}\cdot\text{m}^{-2}\cdot\text{K}^{-1}$)	ThermaLine SUPER thickness requirement ⁽¹⁾ (mm)		ThermaLine PIR thickness requirement ⁽¹⁾ (mm)	
	215 mm brickwork $\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (retrofit)	200 mm dense blockwork $\lambda = 1.75 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (new build)	215 mm brickwork $\lambda = 0.77 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (retrofit)	200 mm dense blockwork $\lambda = 1.75 \text{ W}\cdot\text{m}^{-1}\cdot\text{K}^{-1}$ (new build)
0.18	— ⁽²⁾	— ⁽²⁾	— ⁽²⁾	— ⁽²⁾
0.19	— ⁽²⁾	— ⁽²⁾	— ⁽²⁾	— ⁽²⁾
0.25	90	90	93	93
0.26	80	90	93	93
0.30	70	70	78	78
0.35	60	60	78	78

(1) Product installed directly to the substrate using Gyproc Sealant and 0.7 supplementary steel nailable plugs per square metre with a cross-sectional area of 19.63 mm^2 .

(2) See section 6.2.



6.3 Care must be taken in the overall design and the 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 incorporating the system 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, oriented from ESE through south to WSW, in accordance with BRE Report BR 262 : 2002, section 3.10.

7.3 A condensation risk analysis of the specific construction should be undertaken to BS EN ISO 13788 : 2012 using the water vapour transmission values for each component given in Table 4 of this Certificate.

Table 4 Water vapour transmission values

Material	Thickness (mm)	Water vapour resistance (MN·s·g ⁻¹)	Water vapour resistivity (MN·s·g ⁻¹ ·m ⁻¹)
Glass tissue	0.37	3.4	—
Phenolic foam	40 to 80	—	439
Aluminium foil	0.26	111	—
PIR	25 to 80	—	300
Facing	—	4000	—

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 system are sealed (see section 4.5 and the *Installation* part of this Certificate) in accordance with the Certificate holder's instructions, the system can offer a significant resistance to water vapour transmission.

Surface condensation



7.6 Walls incorporating the system will adequately limit the risk of surface condensation when the thermal transmittance (U value) does not exceed 0.7 W·m⁻²·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 W·m⁻²·K⁻¹ at any point. Guidance may be obtained from Annex G of BS 5250 : 2011 and BRE Report BR 262 : 2002.

8 Behaviour in relation to fire



8.1 The system has a reaction to fire classification* of B-s1, d0 to BS EN 13501-1 : 2007 and is 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 system is installed in close proximity to certain flue pipes and/or heat-producing appliances, the relevant provisions of the national Buildings Regulations should be met:

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.

10 Materials in contact — wiring installations

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

10.2 Electrical cables that are 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 system does not in itself promote infestation. The creation of voids within the structure, for example gaps between the wall lining and the system, 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 objects fixed to the wall, other than lightweight items, are outside the scope of this Certificate.

13 Maintenance

If the system is damaged during use, it can be readily removed and replaced.

14 Durability



Provided the system is fixed to a satisfactory stable and durable wall, the system will have a life equal to the building in which it is installed. Under normal conditions of occupancy it is unlikely to suffer damage, but if damage does occur, the system can be repaired or replaced.

15 Reuse and recyclability

Gyproc WallBoard and Gyproc ThermaLine laminates can be recycled using the British Gypsum Plasterboard Recycling Scheme (PRS). Gyprframe metal components are widely recycled.

Installation

16 General

16.1 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.

16.2 The dwelling 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.

16.3 Before starting to fit the system, 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 bead must be removed.

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

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

16.6 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.

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

16.8 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.

16.9 Boards are cut to fit around windows, doors and air bricks. Care must be taken when trimming the insulation of the Gyproc ThermaLine SUPER plasterboard to ensure the foil is not damaged. It is essential that cut pieces completely fill the spaces for which they are intended and are adequately secured.

17 Procedure

17.1 For existing walls, the wall surface is prepared to a smooth finish. Wallpaper, skirting, picture rails, gloss paint and projecting window boards should all be removed.

17.2 Walls are marked at 1200 mm centres to indicate board positioning. Gyproc Sealant is gun-applied to the wall or back of the board in blobs at 300 mm centres.

17.3 Boards are positioned against the sealant, with the bottom edge resting on plasterboard packing strips. Boards are tapped into position, lifted tight to the ceiling using a foot-filler and supported until the sealant hardens. Further boards are installed, lightly butted together, to complete the lining. Typical installation methods are shown in Figures 2 and 3.

Figure 2 DriLyner RF construction details

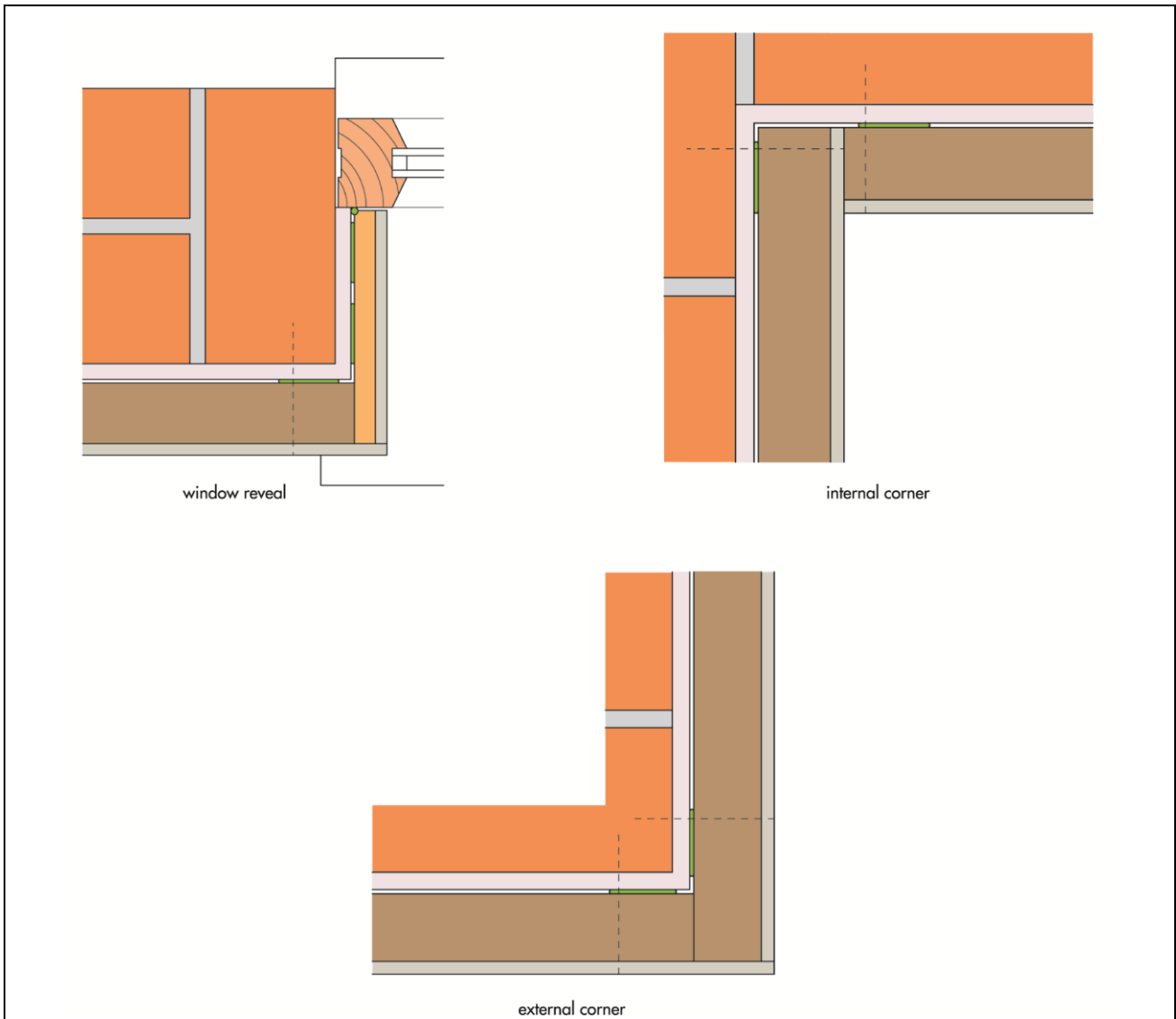


Figure 3 DriLyner RF installation details



17.4 When the Gyproc Sealant is set, this should be complemented by the addition of two British Gypsum Nailable Plugs per board (with a minimum 25 mm penetration into the masonry wall), positioned at mid-height either side of the board and in the tapered edges so they are covered by the finishing processes.

17.5 To avoid thermal bridging, the system should be used to line window reveals; suitable provisions will also need to be made at junctions and other details such as separating floors. Further guidance can be obtained from BRE Report BR 262 : 2002.

Finishing

17.6 Jointing and finishing of the plasterboard lining is carried out in the appropriate manner, applying plasterers' joint tape to all joints and a thin coat of plaster.

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

Technical Investigations

18 Tests

Tests were carried out to determine:

DriLyner RF Insulated Dry Lining System:

- hard body impact
- bond strength
- characterisation (Gyproc Sealant)

Gyproc ThermaLine SUPER:

- inter-laminate bond strength
- dimensional accuracy

Gyproc ThermaLine PIR:

- inter-laminate bond strength
- dimensional accuracy
- bond strength.

19 Investigations

19.1 An assessment was made of results of test data to BS EN 13166 : 2012 relating to:

- vapour resistance
- declared thermal conductivity (λ_D)
- thermal performance and condensation risk analysis carried out.

19.2 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

- 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*
- BS 5250 : 2011 + A1 : 2016 *Code of practice for control of condensation in buildings*
- BS 6576 : 2005 + A1 : 2012 *Code of practice for diagnosis of rising damp in walls of buildings and installation of chemical damp-proof courses*
- BS 7671 : 2008 + A3 : 2015 *Requirements for electrical installations — IET Wiring Regulations — Seventeenth edition*
- BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*
- BS 8212 : 1995 *Code of practice for dry lining and partitioning using gypsum plasterboard*
- BS EN 520 : 2004 + A1 : 2009 *Gypsum plasterboards — Definitions, requirements and test methods*
- BS EN 1996-1-1 : 2005 + A1 : 2012 *Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
- NA to BS EN 1996-1-1 : 2005 + A1 : 2012 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules for reinforced and unreinforced masonry structures*
- BS EN 1996-1-2 : 2005 *Eurocode 6 — Design of masonry structures — General rules — Structural fire design*
- NA to BS EN 1996-1-2 : 2005 *UK National Annex to Eurocode 6 — Design of masonry structures — General rules — Structural fire design*
- BS EN 1996-2 : 2006 *Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- NA to BS EN 1996-2 : 2006 *UK National Annex to Eurocode 6 — Design of masonry structures — Design considerations, selection of materials and execution of masonry*
- BS EN 1996-3 : 2006 *Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*
- NA to BS EN 1996-3 : 2006 *UK National Annex to Eurocode 6 — Design of masonry structures — Simplified calculation methods for unreinforced masonry structures*
- BS EN 13165 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made rigid polyurethane foam (PU) products — Specification*
- BS EN 13166 : 2012 + A2 : 2016 *Thermal insulation products for buildings — Factory made phenolic foam (PF) products — Specification*
- BS EN 13501-1 : 2007 + A1 : 2009 *Fire classification of construction products and building elements — Classification using test data from reaction to fire tests*
- BS EN 13950 : 2014 *Gypsum plasterboard thermal/acoustic insulation composite panels — 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 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 14001 : 2004 *Environmental management systems — Requirements with guidance for use*
- BS OHSAS 18001 : 2007 *Occupational health and safety management systems*
- 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*

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.