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**Agrément  
Certificate  
No 07/4403**

Amendment 11th June 2008

Designated by Government  
to issue  
European Technical  
Approvals

## GEBRIK EXTERNAL WALL INSULATION SYSTEM

Système d'isolation pour murs extérieurs  
Wärmedämmung für Außenwand

## Product



• THIS CERTIFICATE OF CONFIRMATION RELATES TO THE GEBRIK EXTERNAL INSULATION SYSTEM.

• The system comprises polyurethane insulation panels incorporating clay brick slips. The panels are screw fixed to the outside of external walls of masonry, dense or no-fines concrete construction and are suitable for new or existing buildings.

• The system is suitable for masonry walls up to and including 30 m in height and concrete walls up to 65 m in height.

## Regulations

### 1 The Building Regulations 2000 (as amended) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the aspects of performance to be used by the BBA in assessing the compliance of external wall insulation with the Building Regulations. In the opinion of the BBA, the Gebrik External Wall Insulation System, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: **B4(1)**

External fire spread

Comment:

Data obtained by the BBA show that the panels are classified as Class 0 and therefore meet this Requirement. See sections 9.1 to 9.4 of this Certificate.

Requirement: **C2(b)(c)**

Resistance to moisture

Comment:

Tests indicate that walls insulated with the system will meet this Requirement. See sections 12, 13.1 and 13.2 of this Certificate.

Requirement: **L1(a)(i)**

Conservation of fuel and power

Comment:

External walls can contribute to a building meeting this Requirement. See sections 11.2 to 11.5 of this Certificate.

Requirement: **Regulation 7**

Materials and workmanship

Comment:

The system is acceptable. See section 15.1 of this Certificate.

continued

• Application and maintenance must be carried out strictly in accordance with the Design Data and Installation parts of this Certificate and the marketing company's instructions by operatives trained and approved by Isosystems AG.

• The system is manufactured by the Certificate holder and marketed in the UK by:

Aquarian Cladding Systems Ltd,  
Lower Ground Floor,  
14 Marine Parade, Clevedon,  
North Somerset BS21 7QS.  
Tel: 01275 543812  
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info@aquariancladding.co.uk  
fax:  
www.aquariancladding.co.uk

Confirmation of a Belgian  
Agrément ATG 04/2625 issued  
by UBAtc to Isosystems SA.

## 2 The Building (Scotland) Regulations 2004



In the opinion of the BBA, the Gebrik External Wall Insulation System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Mandatory Standards as listed below.

Regulation:	8	Fitness and durability of materials and workmanship
Regulation:	8(1)	Fitness and durability of materials and workmanship
Comment:		The system can contribute to a construction satisfying this Regulation. See section 15.1 of this Certificate.
Regulation:	9	Building standards – construction
Standard:	2.4	Cavities
Comment:		Cavities within the system must comply with this Standard, with reference to clause 2.4.2 <sup>(1)(2)</sup> . See sections 9.1 to 9.4 of this Certificate.
Standard:	2.6	Spread to neighbouring building
Comment:		The system has a 'low risk' surface classification. The system incorporates insulation which would not be classed as 'non-combustible'. Completed walls would therefore be regarded as unprotected areas as defined in clause 2.6.2 <sup>(1)(2)</sup> and 2.6.4 <sup>(1)(2)</sup> of this Standard. Other relevant clauses are 2.6.1 <sup>(1)(2)</sup> , 2.6.3 <sup>(1)(2)</sup> , 2.6.5 <sup>(1)</sup> and 2.6.6 <sup>(2)</sup> . See sections 9.1 to 9.4 of this Certificate.
Standard:	2.7	Spread on external walls
Comment:		The system incorporates insulation which would not be classed as 'non-combustible' and, therefore, should not be used on walls one metre or less from a boundary [clauses 2.7.1 <sup>(1)(2)</sup> and 2.7.2 <sup>(2)</sup> ] but see sections 9.1 to 9.4 of this Certificate.
Standard:	3.10	Precipitation
Comment:		Walls insulated with the system will contribute to a construction satisfying clause 3.10.1 <sup>(1)(2)</sup> of this Standard. See section 12 of this Certificate.
Standard:	3.15	Condensation
Comment:		Walls insulated with the system will satisfy the requirements of clauses 3.15.1 <sup>(1)</sup> , 3.15.3 <sup>(1)</sup> and 3.15.4 <sup>(1)</sup> of this Standard. See sections 12, 13.1 and 13.2 of this Certificate.
Standard:	6.2	Buildings insulation envelope
Comment:		The system will enable, or contribute to enabling, a wall to meet clauses 6.2.0 <sup>(1)(2)</sup> , 6.2.4 <sup>(1)(2)</sup> and 6.2.5 <sup>(2)</sup> of this Standard. See sections 11.6 and 11.7 of this Certificate.
		(1) Technical Handbook (Domestic).
		(2) Technical Handbook (Non-Domestic).

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



In the opinion of the BBA, the Gebrik External Wall Insulation System, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The system is acceptable. See section 15.1 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Walls insulated with the system will satisfy the requirements of this Regulation. See sections 13.1 and 13.2 of this Certificate.
Regulation:	C5	Condensation
Comment:		Walls insulated with the system will satisfy this Regulation. See section 12 of this Certificate.
Regulation:	E5	External fire spread
Comment:		The system has a Class 0 surface and can satisfy this Regulation. See sections 9.1 to 9.4 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Comment:		External walls can contribute to a building meeting the requirements of the Regulation. See sections 11.2 to 11.5 of this Certificate.

## 4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 6 Delivery and site storage (6.2 and 6.3), 18 Procedure (18.12).

# Technical Specification

## 5 Description

5.1 The Gebrik External Wall Insulation System provides an insulating decorative cladding for external masonry walls up to 30 m in height and concrete walls up to 65 m in height.

5.2 The panels are fabricated in the factory by expanding polyurethane foam in a mould, lined

with natural clay brick slips in the bottom and kraft paper (100 gm<sup>-2</sup>) in the top (see Tables 1 and 2 and Figures 1, 2 and 3). Corner panels are factory-formed by cutting normal panels and gluing with a two-component adhesive. The types available are HE (house corners), FE (window corners), ST (lintel corners) and RE (stack bonded corners) (see Figure 3).

Table 1 Gebrik panel characteristics

Panel type	Panel size <sup>(1)</sup> (mm)		Thickness (mm)		Code	Brick slip <sup>(2)</sup>			Masonry bond
	Length	Height	PU (min)	Panel		Length (mm)	Width (mm)	Thickness (mm)	
Gebrik 5	1391.5	714.5	40	60	BA/CE/RB	240	52.0	17	stretcher
Gebrik 6	1391.5	714.5	40	60	BA/CE/SR	240	66.4	17	stretcher and stack
Gebrik 61	1375.0	687.5	40	60	BA/CE/SR	240	66.4	17	stretcher and stack
Gebrik 61 plus	1375.0	687.5	60	80	BA/CE/SR	240	66.4	17	stretcher and stack
Gebrik 8	1391.5	714.5	40	60	BA	240	89.1	17	stretcher
Gebrik 13	1391.5	714.5	40	60	BA/SR	240	130.0	17	stretcher
Gebrik UK	1350.0	675.0	40	60	BA/CE/SR	215	65.0	17	stretcher and stack
Gecaro	1375.0	687.5	40	60	SR	265	127.5	17	stack

(1) With a tolerance of ± 0.2%.

(2) The descriptions and code explanations are given in Table 2.

Table 2 Brick slip details

Supplier	Type <sup>(1)(2)</sup>	Description	Supplier	Type <sup>(1)(2)</sup>	Description	
Briqueterie BAR CRTC	BA 10-20	smooth/shaded/yellow	Ströher GmbH	SR 41-20	grained/sanded/flamed/yellow	
	BA 11-20	smooth/flamed/yellow		SR 40-40	grained/sanded/shaded/salmon colour	
	BA 10-40	smooth/shaded/salmon colour		SR 41-40	grained/sanded/flamed/salmon colour	
	BA 11-40	smooth/flamed/salmon colour		SR 40-60	grained/sanded/shaded/red	
	BA 10-60	smooth/shaded/red		SR 41-60	grained/sanded/flamed/red	
	BA 11-60	smooth/flamed/red		SR 41-80	grained/sanded/flamed/brown	
	BA 60-10	heavy grained/shaded/cream colour		SR 40-91	grained/sanded/shaded/grey	
	BA 61-60	heavy grained/flamed/red		Celina (Klinkerwerk Küsters)	CE 10-20	smooth/shaded/yellow
	BA 70-20	hand moulded/shaded/yellow			CE 11-20	smooth/flamed/yellow
	BA 71-20	hand moulded/flamed/yellow			CE 10-60	smooth/shaded/red
BA 70-40	hand moulded/shaded/salmon colour	CE 11-60	smooth/flamed/red			
Ströher GmbH	BA 71-50	hand moulded/flamed/old-red	CE 70-20	hand moulded/shaded/yellow		
	BA 71-60	hand moulded/flamed/red	CE 71-26	hand moulded/flamed/yellow-red		
	SR 10-10	smooth/shaded/cream colour	CE 70-60	hand moulded/shaded/red		
	SR 10-20	smooth/shaded/yellow	CE 71-60	hand moulded/flamed/red		
	SR 10-40	smooth/shaded/salmon colour	Röben Tonbaustoffe GmbH	RB 10-00	smooth/shaded/white	
	SR 10-60	smooth/shaded/red		RB 30-10	grained/shaded/cream colour	
	SR 10-80	smooth/shaded/brown		RB 60-00	heavy grained/shaded/white	
	SR 10-91	smooth/shaded/grey		RB 60-10	heavy grained/shaded/cream colour	
	SR 10-90	smooth/shaded/black				
	SR 32-00	grained/engobed/white				
SR 30-10	grained/shaded/cream colour					
SR 30-60	grained/shaded/red					
SR 40-00	grained/sanded/shaded/white					

(1) Sizes are given in Table 1.

(2) Code BA refers to slips produced by Briqueterie BAR CRTC in France, Code SR by Ströher GmbH in Germany, Code RB by Röben Tonbaustoffe GmbH in Germany and Code CE by Celina (Klinkerwerk Küsters) in Germany.

Figure 1 Typical Gebrik panel (all dimensions in mm)

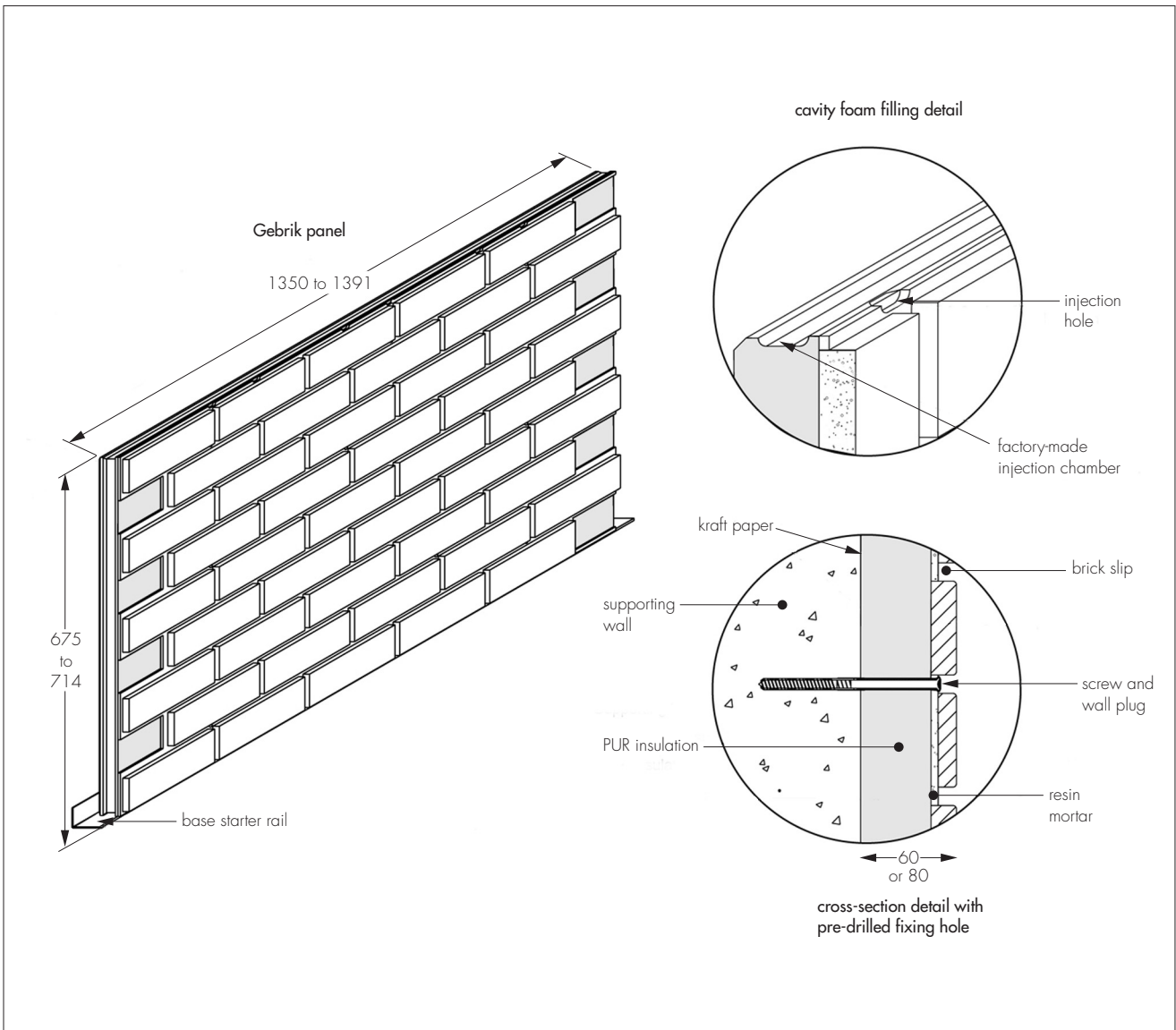


Figure 2 Range of Gebrik panels (all dimensions in mm)

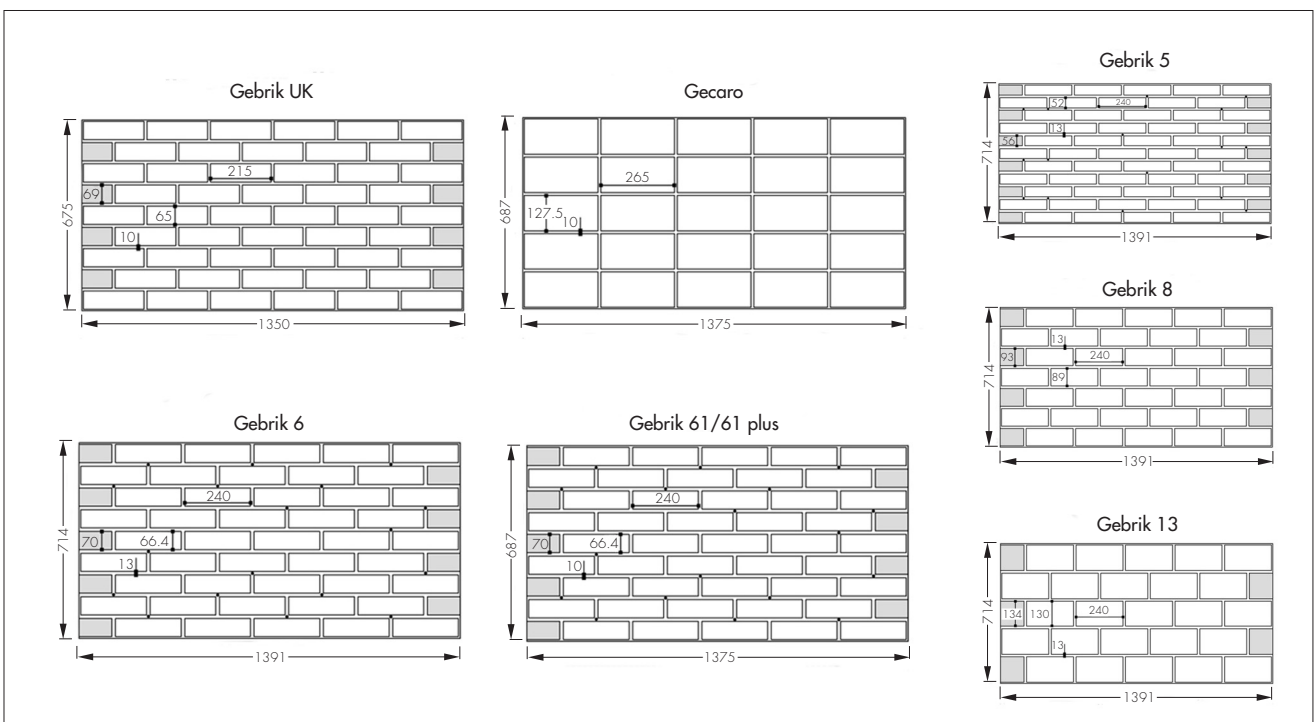
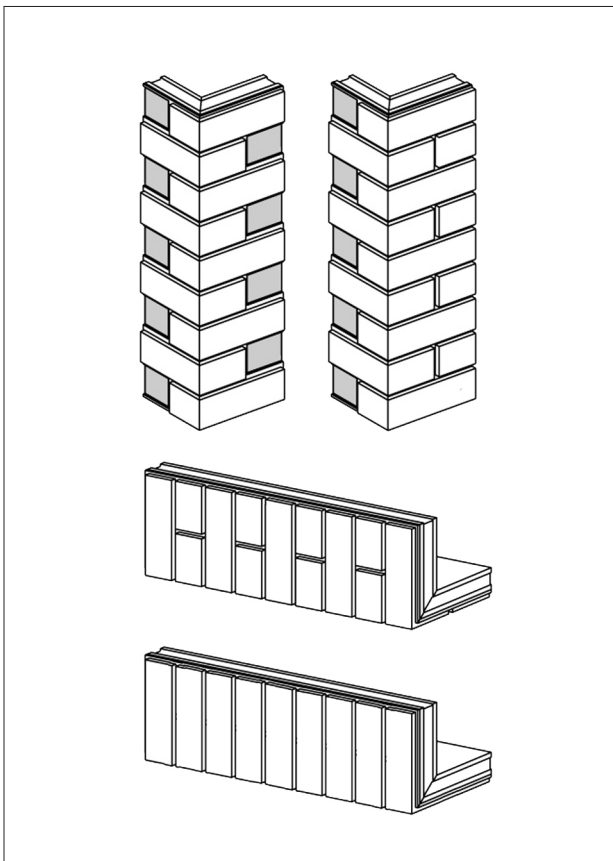




Figure 3 Corner panels



5.3 Ancillary components supplied by the Certificate holder must be used with the system and include:

- fixings – galvanized or stainless steel, 4.6 mm to 4.9 mm diameter screws with 11 mm diameter conical headed TORX T30 heads (EJOT types SDP and SDF and Fischer type WS L-G. Type SDP is for use in cellular concrete substrates to a minimum depth of 110 mm and types SDF and WS L-G for other substrates to minimum depth of 70 mm). Fixing holes and reinforcement are positioned into the panel during manufacture and are evenly distributed over the surface of the panel
- plugs – coloured polyamide plugs<sup>(1)</sup>, 8 mm in diameter, available in lengths of 100 mm, 120 mm, 140 mm, 160 mm, 180 mm, 200 mm and 220 mm; available boxed in 100s
- mortar – Gebrik MF and MRX or Gebrik MR and MEX jointing mortar available in 25 kg bags for mixing with 4.5 litres or 4 litres of water respectively<sup>(2)</sup>
- adhesive – either Gebrik three-component, polyurethane-based adhesive for site-applied slips or Gebrik two-component, polyurethane-based adhesive for corner brick slips
- loose brick slips – for detail work and packed to suit
- joint filler – Gebrik one-component, polyurethane foam for use between panels
- starter rail, trims and beading profiles – aluminium rail delivered loose

- seal – pre-formed Compriband gasket used to seal panels to other elements
  - general sealant – ATG silicone sealant in 300 ml cartridges
  - expansion joint sealant – available in 300 ml cartridges.
- (1) Colour coded depending on the substrate.
  - (2) The use of the systems with traditional pointing mortar has not been assessed by the BBA and is outside the scope of this Certificate.

5.4 The panels are placed on a starter rail and secured with wall plugs and screw fixings. Expanding foam is injected into the void between panel edges (see Figure 1) and brick slips are then bonded over the vertical joints. Pointing of beds and perpend takes place not less than one week later using the supplied pointing mortar.

## 6 Delivery and site storage

6.1 Panels are delivered to site stacked flat on pallets with a polythene hood placed over. Corner types HE, FE, ST and RE, reveal, head and sill panels are also delivered on hooded panels.

6.2 Stacks of panels should not exceed 28 high and should be protected from precipitation, direct sunlight, ground water and impact damage.

6.3 Panels should be carried vertically and handled with care to avoid damage. Containers of adhesive, mortars, sealants and expanding foam should be stored in dry conditions and protected from frost and excessive heat. Fixings, trims and rails should be protected from damp.

6.4 Each panel carries a label bearing details of current product approvals, including the BBA identification mark incorporating the number of this Certificate and the production date.

## Design Data

### 7 General

7.1 The Gebrik External Wall Insulation System is effective in reducing the thermal transmittance (U value) of the walls of new and existing buildings. It is essential that the detailing techniques specified in this Certificate are carried out to a high standard if the ingress of water into the insulation is to be avoided and the full thermal benefit obtained from treatment with the system.

7.2 The system will improve the weather resistance of a wall itself and provide a new decorative finish. However, it may be installed only where other routes for moisture penetration have been dealt with separately. The system can be used to overcome condensation associated with the internal wall surface.

7.3 Existing buildings subject to the national Building Regulations should be suitable when

assessed in accordance with the preliminary work detailed in section 16 of this Certificate.

7.4 New buildings subject to the national Building Regulations should be constructed in accordance with the relevant recommendations of BS 5628-3 : 2005. In particular Clause 5 *Exclusion of water*, of the Code of Practice should be followed in that the designer should select a construction appropriate to the local wind-driven rain index, paying due regard to the design detailing, workmanship and materials to be used.

7.5 Other new buildings, not subject to any of the previous requirements, should also be built in accordance with BS 5628-3 : 2005.

## 8 Strength and stability

8.1 The panels have adequate resistance to impact and abrasion where walls are exposed and have some protection, eg walls of private dwellings and walls of communal dwellings above ground-floor level. Where the system may be exposed to severe impact, eg mechanical or malicious, precautions may be required to reduce the risk of damage. Further information may be obtained from BRE Current Paper CP 6 : 81 *Assessment of External Walls : Hard Body Impact Resistance*.

8.2 Dynamic wind suction tests confirm that the system can withstand wind loads up to  $4 \text{ kNm}^{-2}$  when installed in accordance with the manufacturer's instruction and the installation sections of this Certificate.

8.3 The wind suction forces to be resisted on any particular site calculated in accordance with BS 6399-2 : 1997 including any required safety factor, should be less than  $2.4 \text{ kNm}^{-2}$ .

8.4 A minimum of nine fixings are required for each standard panel. Indicative fixing pull-out values for a range of substrates are given in Table 3. The values include a safety factor of 5 on the characteristic breaking value for a minimum embedment depth of the fixing screw. On-site pull-out tests should be conducted for other substrates.

Table 3 Design pull-out values per fixing (factor of safety = 5)

Substrate	Pull out (N)	Embedment depth (mm)
Concrete	240	70
Brickwork	230	70
AAC block	200	110

## 9 Properties in relation to fire



9.1 The external surface of the system is classified as Class 0 or 'low risk' as defined in the documents supporting the national Building Regulations. The system, therefore, may be used in accordance with the provisions of:

### England and Wales

Approved Document B, paragraphs 13.5 and 13.7 (see Diagram 40).

### Scotland

Mandatory Standard 2.6<sup>(1)(2)</sup>, Annexes 2c and 2e.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

### Northern Ireland

Technical Booklet E, paragraph 4.3 (see also Diagram 4.1).

9.2 The system incorporating 80 mm Gebrik panels, installed with 30 mm of PIR insulation was tested without fire barriers in accordance with BS 8414-1 : 2002 and when classified in accordance with Annex A of BRE report (BR 135 : 2003) *Fire Performance of External Insulation For Walls of Multi-Storey Buildings* has been shown to have met the performance criteria.

9.3 The documents listed in section 9.1 give full details of permissible heights and boundary conditions of domestic and non-domestic buildings and the relevant guidance with regard to external wall claddings, the information given below is for guidance purposes:

### England and Wales

- for buildings one metre or more from a boundary, the system is acceptable
- for buildings less than one metre from a boundary, the system is acceptable provided the wall meets the requirements in Tables A1 and A2, from both sides
- the system is acceptable, subject to the conditions above, for use on a building which has a floor up to or over 18 m above the ground level.

### Scotland — Domestic use

For buildings more than one metre from a boundary and up to 18 m above ground level, the system is acceptable. The system is not classified as non-combustible, therefore calculation for unprotected areas apply<sup>(1)</sup>.

- (1) Combustible cladding need not be included in the calculation for unprotected area where the combustible cladding is attached to the structure of the building and the external wall contains no openings other than the small openings described in clause 2.6.2(b); [2.6.2(b) — an area of not more than  $0.1 \text{ m}^2$ , at least 1.5 m from any other unprotected area on the same wall]; and the wall behind the cladding has the appropriate fire resistance duration from the inside.

### Scotland — Non-Domestic use

For buildings more than one metre from a boundary and up to and over 18 m above ground level, the system is acceptable, the appropriate guidance given in clause 2.7.1<sup>(2)</sup> can be met (see section 9.2).

- (2) Technical Handbook (Non-Domestic).

## Northern Ireland

- for buildings one metre or more from a boundary, the system is acceptable
- for buildings less than one metre from a boundary, the system is acceptable provided the wall meets the fire resistance requirements in Tables 3.1 and 3.2, from both sides
- the system is acceptable, subject to the conditions above, for use on a building which has a storey the floor of which is 18 m above ground level. For a building which has a storey the floor of which is 18 m or more above the ground level, there is an additional condition that the insulation component must be a material of limited combustibility.

9.4 Any incidental cavities created within the system, such as those formed between the external wall insulation and the substrate, must have the appropriate fire stopping in accordance with the relevant clauses or section of:

### England and Wales

Approved Document B, Section 10

### Scotland

Mandatory Standards 2.4, 2.6 and 2.7, clauses 2.4.2<sup>(1)(2)</sup>, 2.6.1<sup>(1)(2)</sup> to 2.6.5<sup>(1)(2)</sup>, 2.6.6<sup>(2)</sup>, 2.6.7<sup>(2)</sup>, 2.7.1<sup>(1)(2)</sup> and 2.7.2<sup>(2)</sup> respectively and Annex 2.A<sup>(1)</sup>.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

### Northern Ireland

Technical Booklet E, Section 3, paragraphs 3.35 to 3.39 and Section 4.

## 10 Proximity of flues

When the system is installed in close proximity to certain flue pipes 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<sup>(1)(2)</sup> to 3.19.4<sup>(1)(2)</sup>.

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

### Northern Ireland

Technical Booklet L.

## 11 Thermal performance

11.1 Calculations of the thermal transmittance (U value) of specific wall constructions should be carried out in accordance with BS EN ISO 6946 : 1997 and BRE report (BR 443 : 2006)

*Conventions for U-value calculations*, using the declared insulation thermal conductivity of 0.029 Wm<sup>-1</sup>K<sup>-1</sup>. The U value of a typical wall construction will depend on the insulating value of the wall and its finish. The thermal resistance of the

panel (neglecting the thermal resistance of the brick slips, pointing mortar or the effect of thermal bridging caused by the mechanical fixings) may be taken as shown in Table 4.

Table 4 Panel thermal resistance

Minimum insulation thickness (mm)	R (m <sup>2</sup> KW <sup>-1</sup> )
40	1.35
60	2.05



11.2 Subject to the selection of an appropriate insulation thickness and construction, walls can improve on the U value of 0.35 Wm<sup>-2</sup>K<sup>-1</sup> as specified for the 'notional' building in Table R1 of Appendix R of *The Government's Standard Assessment Procedure for Energy Rating of Dwellings* (SAP 2005) or the Simplified Building Energy Model (SBEM)<sup>(1)</sup>, see Table 1. The product can therefore contribute to enabling a building to meet the Target Emission Rate 'average' improvements of 20% (dwellings) and 23 to 28% (buildings other than dwellings):

### England and Wales

As specified in Approved Documents L1A and L2A

### Northern Ireland

As specified in Technical Booklets F1 and F2

(1) Published by the Department for Communities and Local Government on its website: [www.communities.gov.uk](http://www.communities.gov.uk)

11.3 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between the wall and 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

### Northern Ireland

Accredited Construction Details (version 1.0).

11.4 Compliance with the guidance referred to in section 11.3 will allow the use of the default psi values from Table 3 of BRE Information Paper IP 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).

11.5 When installed on walls of existing buildings, the product can meet, or contribute to meet, the relevant requirements of the following guidance documents:

### England and Wales

As specified in Approved Documents L1B, section 2 and L2B, section 3

## Northern Ireland

As specified in Technical Booklets F1 and F2, section 3



11.6 Subject to the selection of an appropriate insulation thickness and wall construction, the product can satisfy the Elemental target U value of  $0.30 \text{ Wm}^{-2}\text{K}^{-1}$  specified in Table 1 to clause 6.2.1 of the Technical Handbooks.

11.7 The product can maintain, or contribute to maintaining, continuity of thermal insulation at junctions between wall and other building elements. Guidance in BRE report (BR 262: 2002) *Thermal insulation: avoiding risks* is acceptable.

11.8 The system can be installed onto additional insulation (for example EPS or XPS cavity wall insulation that is the subject of a current Agrément Certificate) up to a maximum thickness of 60 mm. Care must be taken to ensure the appropriate minimum fixing embedment depth is maintained.

11.9 Where the insulation has not been continued into window or door reveals due to a lack of clearance there will be a risk of cold bridging at these points. Where door and window frames are to be replaced it is recommended that their size be adjusted to permit the reveals to be insulated.

11.10 Depending on constructional details, cold bridging can also occur at the eaves and at ground-floor level, and care should be taken to minimise this, eg roof or loft insulation should continue over the wall head, ensuring that ventilation openings are not obstructed.

## 12 Moisture penetration



The assessment has shown that the system will resist the passage of moisture.

## 13 Risk of interstitial condensation



13.1 The relevant components of the system have a water vapour resistance such that, under the conditions likely to be found in dwellings in the United Kingdom, interstitial condensation should not occur within the insulation.

13.2 If the system is to be used on the external walls of rooms expected to have continuous high humidities, additional measures may need to be taken to avoid possible problems from the formation of interstitial condensation in the wall.

13.3 The resistance to water vapour diffusion of the insulation was measured at  $23^{\circ}\text{C}/0\% \text{ RH}$  internal and  $23^{\circ}/50\% \text{ RH}$  external (see Table 5).

Table 5 Resistance to water vapour

Thickness of insulation (mm)	Water vapour resistance factor $\mu$
60	39
80	55

## 14 Maintenance

14.1 Regular checks should be made on the installed system, particularly at joints, to ensure that ingress of water does not occur. Necessary repairs should be effected immediately.

14.2 Damaged areas must be repaired using the appropriate Gebrik components and the procedures detailed in the Gebrik installation instructions.

## 15 Durability



15.1 The results of accelerated ageing tests, including thermal cycling and freeze/thaw tests, indicate that the system is durable. It should remain effective for at least 30 years, provided any damage to the surface is repaired immediately, and regular maintenance is undertaken including checks on joints in the system and on any penetrations through the system such as those caused by external plumbing fittings to identify leakage of rainwater into the system, enabling steps to be taken to correct the defects.

15.2 The finish may become discoloured in time, the rate depending on the initial colour, the degree of exposure and atmospheric pollution, as well as the design and detailing of the wall. In common with traditional masonry finishes, discoloration by algae and lichens may occur in particularly wet areas. The appearance can be restored, although the advice of the Certificate holder should be sought.

## Installation

### 16 Preliminary work

16.1 Substrates for the Gebrik External Wall Insulation System should be of sound masonry or dense concrete construction. Any loose material should be removed and any repairs effected.

16.2 The Certificate holder, or other suitably qualified person, should make an assessment and recommendation on the type and number of fixings required to withstand the mass of the panels and the building's expected wind load (see Table 3). This should include on-site tests to establish the expected pull-out resistance. A minimum safety factor of 5 should be applied.

16.3 Provision should be made for features such as external plumbing, window/door sills and reveals, to accommodate the repositioning of the finished face of the wall.



16.4 The position of cables, supports and electrical wiring should be considered to ensure the surface is accessible and sufficiently even.

16.5 Areas of unevenness more than 5 mm deep and covering more than 20% of the area of a panel should be filled with dubbing render to ensure adequate support to the panel. Care should also be taken to ensure a flat and uniform appearance to the finished façade.

16.6 Internal wet work, eg screeding or plastering, should be completed and allowed to dry prior to application of the panels.

## 17 Approved installers

Application of the system, within the context of this Certificate, is carried out by approved installers, an approved installer being a firm which:

- is employing operatives who have been trained and approved by the Certificate holder to install the system and who have been issued with appropriate training cards by the Certificate holder
- has undertaken to comply with the Certificate holder's application procedure, which contains the requirement for each application team to include at least one member with a training card.

## 18 Procedure

### General

18.1 Application is carried out in accordance with the Certificate holder's instructions.

18.2 Panels should not be applied to wet walls or in temperatures below 5°C. Pointing should not take place at temperatures above 30°C.

### Starter rail

18.3 An aluminium angle starter rail is positioned 20 mm to 30 mm above the ground. A double strip of sealant, or a single strip of expanding foam is applied to the back of the angle face that is screwed to the wall. A similar seal is applied to the upper surface of the angle before the panel is positioned, starting from the corner of a wall.

### Fixing panels

18.4 A factory-formed corner unit is placed vertically on the starter rail. Three 8 mm pilot holes are drilled through each side of the unit at the preformed fixing points in the resin mortar.

18.5 The appropriate wall plug is inserted into the hole as shown in Figure 1. It is essential that the wall plugs and screws are evenly spaced and achieve an appropriate minimum embedment depth in a sound substrate. This may require the use of longer fixings if they have to bridge voids, render or other layers which may not provide adequate anchorage.

18.6 Care should be taken not to damage the resin mortar by overtightening the screws.

18.7 Full panels are fixed in a similar manner through at least nine of the preformed fixing points in the resin mortar. An additional nine fixing points are preformed in the resin mortar of each panel so that where wind loading and/or site pull-out tests indicate a greater fixing rate is required additional fixings can be applied (see section 8).

18.8 Care should be taken to ensure that panels fully abut each other and brick courses align neatly. To seal the joints between panels the recessed edge profile in the foam is filled with expanding foam, as panels are placed, or later through the provided injection holes (see Figure 1).

18.9 Subsequent rows of panels can be break-, or stack-bonded, taking care to keep the foam rebate free from debris and maintain a flat and true appearance to the façade.

### Expansion joints

18.10 Vertical expansion joints should be provided at intervals not exceeding 15 m. Horizontal expansion joints should be provided at intervals not exceeding 7 m.

### Bridging slips

18.11 At vertical joints between panels every other brick course requires the application of a brick slip using Gebrik, three-part, polyurethane adhesive. It is essential that the manufacturer's instructions are followed carefully. Panels with stack bonded slips do not require the application of these loose slips.

18.12 The insulation surface on the panel and on the brick slip must be clean, dry and grease free. The adhesive is prepared and spread over the lower half of the slip, which is then placed at an angle against the recess on the panel and pressed in, spreading the adhesive upwards and over the whole area of the slip. A 3 kg adhesive mix should be sufficient for about 20 to 25 slips.

18.13 To prevent slipping before the adhesive has set the brick slips should be supported by two or three nails. The open time for the adhesive is nominally 20 minutes but can be considerably less in warm or dry weather.

### Detail work

18.14 Panels can be cut on-site using a diamond bladed, portable cutter. To allow cut edges to be sealed against adjacent panels a recessed profile is created using the Gebrik hand-routing tool. Alternate brick slips are removed from cut vertical edges using the portable cutter and prising the slip away from the foam with a flat tool.

18.15 Placing and sealing of the panel then proceeds as for full panels ensuring a minimum of

six fixings or pro-rata with full panel area, whichever is greater.

18.16 Units at opening reveals, sills and heads are fixed in the same way as a wall corner unit.

18.17 Where a panel or unit is to abut a window, door frame, rail/trim or similar element, a pre-formed gasket and either, a double strip of sealant, or a single strip of expanding foam is first applied to the surface to which the foam component of the panel is to abut.

### Pointing

18.18 Gebrik pointing mortar is applied in accordance with instructions and not less than one week after the panels have been installed. Pointing should not be carried out in direct sunlight.

## Technical Investigations

The following is a summary of the technical investigations carried out on the Gebrik External Wall Insulation System.

### 19 Tests

19.1 Tests were carried out by UBAtc to determine:

- for the foam:
  - thermal conductivity
  - characterisation tests
  - water absorption
  - water vapour permeability
  - tensile strength
  - shear strength
  - dimensional stability with humidity
  - dimensional stability with temperature
- for the brick slips:
  - frost resistance
  - efflorescence
  - water absorption.
- for the composite panel:
  - adhesion
  - effect of heat/spray and freeze thaw
  - resistance to hard and soft body impact damage

- watertightness of joints
- resistance to wind pull-off

- for the fixings:
  - withdrawal strength.

19.2 An examination was made of data relating to:

- fire propagation to BS 476-6 : 1989
- surface spread of flame tests to BS 476-7 : 1997.

### 20 Investigations

20.1 The technical data in Belgian Agrément ATG 04/2625 was evaluated in the context of UK construction practice, standards and statutory Building Regulations. Additional data relating to approvals granted in France and Germany were also examined.

20.2 Visits were made to sites to examine the practicability of installation and effectiveness of detailing techniques.

20.3 Visits were made to existing sites, up to 20 years old, to examine the effect of weathering.

20.4 An assessment of the risk of interstitial condensation was undertaken.

## Bibliography

BS 476-6 : 1989 *Fire tests on building materials and structures — Method of test for fire propagation for products*

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 5628-3 : 2005 *Code of practice for the use of masonry — Materials and components, design and workmanship*

BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*

BS 8414-1 : 2002 *Fire performance of external cladding systems — Test methods for non-loadbearing external cladding systems applied to the face of a building*

## Conditions of Certification

### 21 Conditions

21.1 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.

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

21.3 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
- remain covered by a valid Belgian Agrément; and
- are reviewed by the BBA as and when it considers appropriate.

21.4 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 or 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.

21.5 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 or in the future; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any present or future 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.



In the opinion of the British Board of Agrément, the Gebrik External Wall Insulation System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 07/4403 is accordingly awarded to Isosystems AG.

On behalf of the British Board of Agrément

Date of issue: 19th January 2007

Chief Executive

*\*Amendment issued 11th June 2008 to change name and contact details of UK Marketing Company.*

