

# GEBRIK INSULATING BRICK CLADDING SYSTEM

## GENERAL

External wall cladding to be Gebrik Insulating Brick System supplied by: -

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Aquarian Cladding Systems Ltd is the sole distributor of Gebrik for England, Scotland and Wales in accordance with a Distribution Agreement established with Isosystems AG

Gebrik Insulating Brick System is manufactured by: -

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B-4770 Schoppen/Amel  
Belgium

Tel: 00 32 80 348000 Fax: 00 32 80 348009  
Email: [info@gebrik.be](mailto:info@gebrik.be)  
Website: [www.gebrik.be](http://www.gebrik.be)

Gebrik Insulating Brick System is covered by the following certification: -

BBA Agrément Certificate No 07/4403 - dated 19<sup>th</sup> January 2007

CWCT Standard Test Methods for building envelopes, 2005, for:

- Watertightness – static pressure
- Watertightness – dynamic pressure
- Wind resistance – serviceability & safety
- Impact resistance (BS 8200)

## Brief Introduction

Gebrik was invented and patented in Belgium in 1982 and approx 2,000,000 m<sup>2</sup> of the system has been supplied during the past 25 years throughout Europe to clad in excess of 40,000 different buildings, whether for refurbishment or new-build. The system was first used in the UK by Barnsley Metropolitan Council in the early nineties and over 40,000m<sup>2</sup> has been supplied into the UK since 2002.

As an off-site manufactured panellised system, Gebrik Insulating Brick System is recognised as a Modern Method of Construction (MMC). Clients using Gebrik should therefore benefit from government funding where MMC is required.

## Description

The principle of the Gebrik Insulating Brick Cladding System is to directly fix panels and corners to a solid substrate to create a natural brick appearance which insulates and protects the building from water penetration. The system can be applied to buildings constructed of masonry, timber or steel frame and used as a lightweight cladding system on new buildings or to refurbish and protect existing buildings.

Gebrik Insulating Brick System comprises of frost resistant 18mm clay brick slips cast in polyurethane insulation, in either stretcher or stack-bond format (with typically 10mm joints) to form composite panels. There is a range of in excess of 300 standard brick finishes - samples and details of which are available upon request. Alternatively, non-standard brick finishes can be developed subject to quantity and agreement with the manufacturer. Generally, the brick tiles are extruded, rather than cut brick slips from whole bricks.

## Key Components

1. Standard panels – Stretcher Bond (Type P, SP, SP1, SP1.5), Stack Bond (Type RP, RP+) or Gecaro (Type RP)
2. Factory produced corner units – External Corner (Type HE), Window Corner (Type FE), Soffit Corner (Type ST), Stack Bond Corner (Type RE). Dimensions are expressed as no of bricks per return eg HE 1/1.5 = External Corner one brick x one and half bricks, ie 215 x 327.5mm
3. Site applied corner units – PU Corners (Type PUE) and External Pistol Returns (Type ER) and Slips (Type R). Dimensions of PU corners are expressed in mm to suit required lengths, eh PUE85/200 = 85mm x 200mm and used instead of HE0.5/1.
4. Fixing screws, plugs, collars & washers – Galv or Stainless Steel 4.6 – 4.9mm Ø screws with 11mm Ø conical headed TORX T30 heads to suit masonry and Galv or Stainless Steel 6mm Ø screws with 11mm Ø conical headed TORX T30 heads to suit sheathing board. Masonry screws supplied with polyamide plugs colour coded to suit substrate.
5. Foam chamber filler – Gebrik one component, expanding polyurethane foam.
6. Loose brick slips for maintaining stretcher bond
7. Aluminium Starter rail.
8. Factory batched 3 component adhesive for application of loose brick slips.
9. Cement based glue for application of loose brick slips and returns.

## Standard Range of Finishes

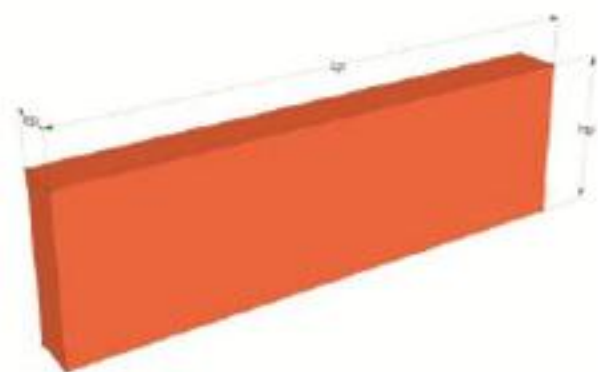
The standard range of finishes is currently >300 and supplied by a number of different European clay brick and tile manufacturers. The range is regularly reviewed and the system can include any clay tile provided they can be supplied in accordance with the performance specification as determined by Isosystems (a copy is available upon request).

## Dimensions

Table 1

Dimensions of the panels and brick slips							
Element code	Nominal dimensions of the brick slips		Thickness of the brick slips	Element format	Thickness of the element	Thickness of the insulation foam	
Tolerances	-2mm / +1mm For each dimension		± 1mm	Le : ±1,5mm He : ±1mm	±2mm		
	Lb	Hb	Tb	Le	He		
Format 5	240	x 52	15 to 20	139 1	x 714	60	> 40
Format 6	240	x 65/66.4	15 to 20	139 1	x 714	60	> 40
Format 61	240	x 65/66.4	15 to 20	137 5	x 688	60	> 40
Format 8	240	x 89,1	15 to 20	139 1	x 714	60	> 40
Format 13	240	x 130	15 to 20	139 1	x 714	60	> 40
Format UK	215	x 65	15 to 20	135 0	x 675	60	> 40
Format WF	215	x 50	15 to 20	135 0	x 675	60	> 40
Format GC	265	x 127.5	15 to 20	137 5	x 688	60	> 40

Lb = length of brick slip; Hb = height of brick slip; Tb = thickness of brick slip; Le = length of element; He = height of element



Dimensions and tolerances on the length, the height and the thickness of the clay brick slips are indicated in Table 1 subject to the panel type

If slips are too long they are systematically rejected as being too large for inclusion within the moulds.

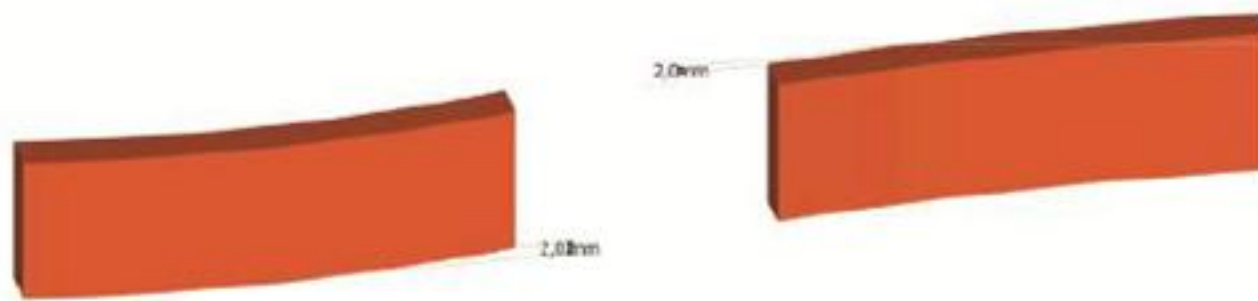
If slips are too short i.e. the nominal dimension is lower than the nominal dimension minus 2 mm, it may still be accepted if the following conditions are met

simultaneously:

- the measured dimension is no less than 4 mm of the nominal dimension
- the number of affected slips is no greater than 10% of the total number of brick slips per panel.

In this event, a request for exemption will be addressed to the customer. With its request, a panel sample can be prepared so that the customer can examine it and evaluate the aesthetical impact of the defect.

### Flatness of the clay brick slips



The acceptable tolerance is of a curve or torsion no greater than 2mm.

### Weight

The standard panels weigh between 27 and 30kg, depending mainly on the type of brick slips used.

### Colour and general appearance of the clay brick slips

The colour and general appearance of the clay brick slips are examined on the basis of an indicative sample. Sample panels representing each variation are displayed by ISOSYSTEMS, at their factory in Schoppen. Small samples can be supplied on request.

Variations of colour, texture and firing are typical characteristics of natural materials, particularly as a result of the manufacturing process of clay brick slips, therefore colour consistency and the general appearance between different firing batches within the same brick finish cannot be guaranteed.

The tables below give the colors (*table 2*) and general appearance (*table 3*) available for the panels.

Table 2

General colour ranges available			
White	Yellow	Red	Grey
Cream	Salmon	Old red	Black
Rosy	Brown	Violet	

Table 3

Texture and firing pattern				
Texture			Firing pattern	
Smooth	Smooth + sanded	Hand- moulded	Shaded	Engobed
Grained	Grained + sanded		Flamed	Glazed
Heavy	Heavy			
grained	grained+sanded			

Once brick slips have arrived at the production facility, quality control is carried out on the basis of a batch of reference brick slips.

Control on the whole of the panel takes place at the end of manufacturing.

If the overall colour is within close parameters to that of the sample, the colour and general appearance is accepted. If the appearance is beyond the quality control parameters, the customer will be notified immediately accompanied by a sample carried out with the slips in question.

### Fixings

18no fixing positions are cast within the panel during manufacture and are evenly distributed across the panel, located in joints between brick slips. The appropriate type and number of fixings used should be subject to the building exposure and condition and type of substrate. Fixings are galvanized or stainless steel with 4.6mm to 4.9mm diameter screws and 11mm diameter conical headed TORX30 heads. Fixings are supplied with appropriate polyamide plugs, colour coded to suit the substrate and are available in lengths of 100mm, 120mm, 140mm, 160mm, 180mm, 200mm and 220mm (supplied boxed in 100s).

### Approx Fixing Guide:

The number of fixings for standard panels depends on the height of the building (h) and the wind pressure (W) on the finished assembly as calculated by a professional Engineer. For guidance purposes,

If  $h > 10$  metres and  $W < 2.3 \text{ KNm}^2$  use 9no fixings (3 rows of 3)

If  $h > 10$  &  $< 18$  metres and  $W < 2.565 \text{ KNm}^2$  use 12no fixings (4 rows of 3 or 3 rows of 4)

If  $h > 18$  &  $< 50$  metres and  $W < 2.831 \text{ KNm}^2$  use 16no fixings (4 rows of 4)

NB All fixings must be supplied by Isosystems in accordance with BBA certification

### Thermal Performance

Gebrik is manufactured using PUR foam with pentane as the blowing agent. Consequently the system is CFC and HCFC free and meets the credit POL1 relating to the GWP of blowing agents for insulation, in accordance with BREEAM.

U value (thermal transmittance) calculations should be carried out in accordance with BS EN ISO 6946:1997 and BRE report (BR443:2006) 'Conventions for U-value Calculations'.

Gebrik will contribute significantly to the thermal performance of a wall and up to 60mm of additional insulation can be applied to either the panels or the substrate prior to application to further reduce the total U value of the complete wall.

For calculation purposes:

- the thermal conductivity ( $\lambda$  value) of PUR foam can be taken as 0.029 W/mK
- the thermal conductivity ( $\lambda$  value) of clay brick slips can be taken as 0.500 W/mK
  
- the thermal resistance (R value) of 42mm PUR foam can be taken as 1.448  $\text{m}^2\text{K/W}$
- the thermal resistance (R value) of 18mm brick slips can be taken as 0.036  $\text{m}^2\text{K/W}$
  
- the density of PUR foam can be taken as 40 $\text{kg/m}^3$
- the density of clay brick slips can be taken as 1800 $\text{kg/m}^3$

### Moisture Penetration

Gebrik has been tested and assessed to ensure that the system is proven to resist the passage of moisture. Channels are formed into the perimeter of Gebrik panels and corners during manufacture so that a chamber is created when components abut. The chamber is filled with a single component Gebrik polyurethane foam applied using a Gebrik PU Pistol. Gebrik PU

Plugs are supplied to ensure the foam expands within the chamber. Where panels are cut on site, the chamber must be created manually by cutting a channel using the Gebrik PU Cutter. Any excess PU foam can be removed from the face of the brickwork using Gebrik PU Cleaner

The system components 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.

For calculation purposes:

- the water vapour resistance factor ( $\mu$  value) can be taken as 39 (measured at 23°C/0% RH internal and 23°C/50% RH external)

### **Movement Joints**

The use of movement joints should typically follow the substrate and not exceed the following:

Vertical movement joints are located at maximum 15m intervals

Horizontal movement joints are located at maximum 8m intervals

### **Durability**

As a result of maximum accelerated ageing tests, including thermal cycling and freeze/thaw tests, Gebrik is durable and should remain effective for a minimum of 30 years. Regular maintenance and checks on joints and any penetrations, such as downpipes, is recommended to maintain its durability.

### **Handling and Storage**

Gebrik is supplied shrinkwrapped and palletised on non returnable Standard (720x1330mm) and Euro pallets (800x1200mm). The maximum number of panels per pallet is 28no and maximum weight per pallet is 850kg. Deliveries to site are stacked flat on curtain-sided articulated vehicles, unless otherwise agreed and should be off-loaded and transported on site by fork-lift or carried vertically and handled with care to avoid damage.

The storage area should be flat and stacks of panels should not exceed 28no high. The storage area should be cordoned off to protect from impact damage and kept dry, protected from precipitation, direct sunlight and ground water. Brick slips and returns, 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.

### **Labelling and marking**

#### *Panels*

All panels are marked on the edge with the following information:

- ISOSYSTEMS
- Technical approvals incl the number of the certificate
- Date and hour of production (at the end of the production cycle)

#### *Pallets*

Each pallet contains a label including the following information:

- Complete coordinates of ISOSYSTEMS
- Various technical approvals and numbers of the certificates
- Type of packed product

- Date of packing
- Type of insulation foam
- Brand (batch of production of the brick slips)
- Customer name, order number, site reference, site address
- Quantity of items on the pallet

The rear of the label provides a brief guide to the installation of the panels.

### Installation

Gebrik should be installed in accordance with the Installation Manual, a copy of which is available from Aquarian Cladding Systems upon request. The system can only be applied by fully trained specialist cladding contractors and a list of contractors is regularly reviewed, updated and available upon request. Failure to use an approved installer may affect product warranties.

### Pointing

It is necessary to point Gebrik to conceal the fixings and panel abutments, maintaining a traditional brickwork appearance. Once the PU foam has been applied, the system should not be pointed within 7-10 days to allow the foam to fully cure. Pointing can be applied manually off a float or mechanically using a pump. It is recommended that the mortar mix is 3 : 1 where 2 parts by volume are dredged river sand & 1 part 2mm fine sand: 1 part cement. If a pumped mortar is used, eg Easipoint or Gunpoint, the specification should be Class 6 in accordance with BS EN 998-2 (or traditional class ii designation), ie 2:1:9 where 2 parts cement: 1 part lime: 9 parts sand.

### Insurance

Gebrik is supplied with a 10 year insurance-backed warranty provided the system is installed by an approved specialist contractor. Details are available upon request.

Gebrik is accepted by NHBC for cover under their New Home Warranty Scheme, provided the system is used in accordance with BBA certificate no 07/4403 and/or the CWCT report.

Gebrik is accepted by Zurich Insurance for cover under their New Home Warranty Scheme when used in accordance with BBA certificate no 07/4403 and/or the CWCT report.

### Building Regulations Conformance

Gebrik Insulating Brick System meets or contributes to meeting the following relevant UK Building Regulation requirements:

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

- Requirement B4(1) External Fire Spread – the panels are classified as Class 0
- Requirement C2(b)(c) Resistance to moisture
- Requirement L1(a)(i) Conservation of fuel and power
- Regulation 7 Materials and workmanship

#### The Building (Scotland) Regulations 2004

- Regulation 8 Fitness and durability of materials and workmanship
- Regulation 8(1) Fitness and durability of materials and workmanship
- Regulation 9 Building standards
- *Standard 2.4* Cavities – 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 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

<i>Standard 2.6</i>	Annex 2.A <sup>(1)</sup> [(1)Technical Handbook (Domestic) and (2) Technical Handbook (Non-Domestic)] <i>Spread to neighbouring building</i> –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> , 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> , 2.6.6 <sup>(2)</sup> . (See Properties in Relation to Fire)
<i>Standard 2.7</i>	<i>Spread on external walls</i> – 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> ) (See Properties in Relation to Fire)
<i>Standard 3.10</i>	<i>Precipitation</i> – walls insulated with the system will contribute to a construction satisfying clause 3.10.1 <sup>(1)(2)</sup> of this Standard
<i>Standard 3.15</i>	<i>Condensation</i> – 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
<i>Standard 6.2</i>	<i>Buildings insulation envelope</i> – 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.

### Properties in Relation to Fire

The Gebrik system has been tested in accordance with EN13501-1:2007+A1:2009 to produce a classification of reaction to fire performance and has been classified as follows:

B	-	in relation to its fire behaviour
s1	-	in relation to its smoke production
d0	-	in relation to its flaming droplets/particles

Gebrik Insulating Brick System is classified as Class ‘O’ 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:

<i>England and Wales</i> –	Approved Document B, paragraphs 13.5 and 13.7 (see Diagram 40)
<i>Scotland</i> –	Mandatory Standard 2.6 <sup>(1)(2)</sup> , Annexes 2c and 2e. (1) Technical Handbook (Domestic) (2) Technical Handbook (Non-Domestic)

The system has been tested in accordance with BS8414-1:2002 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.

The documents listed above 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 given 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 18m above the ground level

*Scotland – Domestic use*

- For buildings more than one metre from a boundary and up to 18m 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 an 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 m<sup>2</sup>, at least 1.5m 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 18m above ground level, the system is acceptable, provided the appropriate guidance given in clause 2.7.1<sup>(2)</sup> can be met.

A full statement on the fire performance of Gebrik is available from Aquarian Cladding Systems upon request.



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