

Subject:
Isoboard® Cavity Wall Insulation

Certificate holder:
Isofoam (South Africa) (Pty) Ltd

PO Box 1584 DASSENBERG 7350

Isoboard® website: www.isoboard.co.za

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The master copy of this document
appears on the website:
<http://www.agrement.co.za>

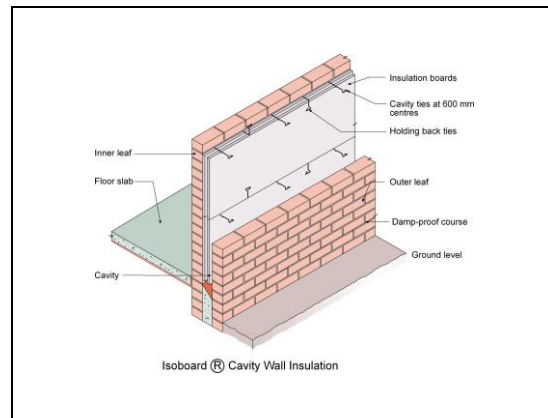
Validity

Users of any Agrément certificate
should check its status: all currently
valid certificates are listed on the
website. In addition, check whether
the certificate is [Active or Inactive](#).

The certificate holder is in
possession of a confirmation
certificate attesting to his/her
status.

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Use

The certificate covers the use of the Isoboard® Cavity Wall
Insulation in the walls of buildings of all occupancy classes and in all
areas of South Africa:

- as a complete or partial cavity fill to reduce the thermal
transmittance of cavity walls with masonry inner and outer
leaves
- when installed by competent contractors in accordance with
the certificate holder's instructions.

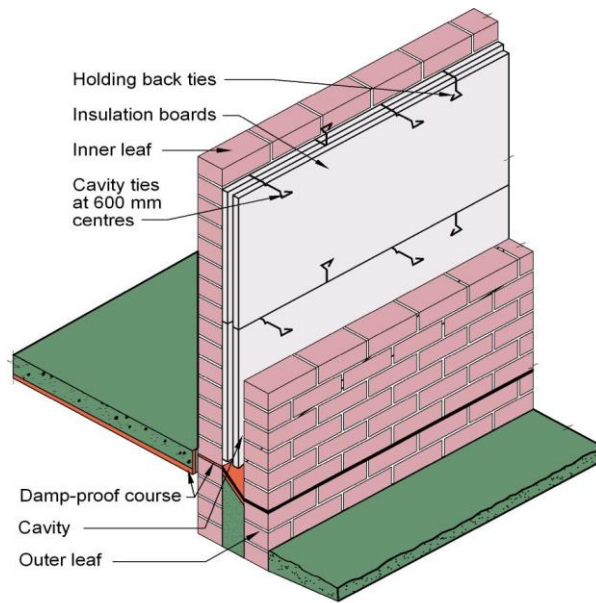
This certificate and Agrément South Africa's assessment apply only
to Isoboard® Cavity Wall Insulation that is manufactured and
installed as described and illustrated in this certificate, and where
the terms and conditions of certification are complied with.

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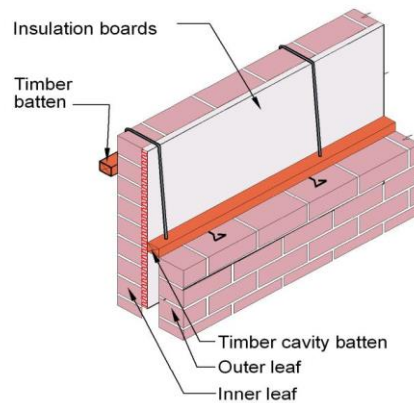
General description

The Isoboard® Cavity Wall Insulation comprises an extruded polystyrene rigid foam board which is:

- white in colour
- 600 mm wide, with a tongue and groove or shiplap edge profile and
- manufactured in thicknesses of 25 mm to 50 mm and supplied in 2 m, 2.4 m or 3 m lengths.



(a) First run of boards



(b) Use of cavity batten

Typical installation details

The product is delivered to site in packs wrapped in uv resistant, translucent plastic sheets.

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PREAMBLE

This **amended** certificate is issued by Agrément South Africa in terms of the **Agrément South Africa's Act no. 11 of 2015**.

The amendments in the above mentioned certificates are highlighted in red in the certificates and pertain mainly to

- a change in blowing agents used in the manufacturing process of the extruded polystyrene
- references to building regulations,
- the accommodation of Building Regulation XA
- editorials have been made to clarify the uses of the products

The original certificate with this subsequent amendment:

- has been granted after a technical appraisal of the performance of the Isoboard® Cavity Wall Insulation for the uses covered by the certificate
- is independent of any patent rights that may or may not subsist in the subject of the certificate,
- does not relieve the building owner or his or her agent from the obligation to obtain the prior approval of the building authority concerned for the use of the subject.

Agrément South Africa considers that the quality and performance of the Isoboard® Cavity Wall Insulation will be satisfactory, provided that the requirements stipulated in this certificate are adhered to. However, Agrément South Africa does not on behalf of itself, or the State, or any of its employees or agents guarantee such quality or performance.

Responsibility for compliance with the requirements of this certificate and the quality of the manufactured product resides with the certificate holder.

No action for damages, or any other claim whatsoever lies against Agrément South Africa, its members, the State or any of its employees should the said components and materials fail to comply with the standard set out in this certificate.

Building authorities or users who are in any doubt about any detail or variation, should contact [Agrément South Africa](#).

The validity of this certificate is amended every three years. The certificate shall remain valid as long as Agrément South Africa is satisfied that:

- the certificate holder complies with the general and specific conditions of certification and the technical requirements stipulated in the certificate
- the performance-in-use of the subject is acceptable
- any changes in building legislation, regulations, relevant standards, or Agrément performance criteria have not invalidated the technical assessment which formed the basis of certification.

Agrément South Africa reserves the right to withdraw the certificate at any time, should reasonable cause exist.

Notices affecting the validity of this certificate will be published in the Government Gazette.

Licensee - any person or company appointed by the certificate holder and registered with Agrément South Africa to manufacture Isoboard® Cavity Wall Insulation in accordance with this certificate and authorised by him to claim compliance with the certificate. It is the certificate holder's responsibility to ensure that the licensee adheres to the requirements of this certificate and manufactures the product in accordance with an approved quality system.

Republic of South Africa.
National Building Regulations,
Government Notice No R. 711,
Government Gazette No 34586,
Pretoria, South Africa,
9 September 2012.

**SANS 17050-1: Conformity
assessment – Supplier's
declaration of conformity
Part 1: General requirements**

**SANS 17050-2: Conformity
assessment – Supplier's
declaration of conformity
Part 2: Supporting
documentation**

Isoboard® cavity wall insulation

Tested and approved fit for
purpose when manufactured and
installed as specified in

CERTIFICATE 2000/276
(Amended October 2018)



PART 1: CONDITIONS OF CERTIFICATION

This certificate covers the use of Isoboard cavity wall insulation when it:

- is manufactured and supplied by
 - the certificate holder or
 - a licensee
- is installed in accordance with [Part 3](#) below, and the certificate holder's Installation Manual
- complies with the Conditions of Certification.

Any changes to the production process or the material formulation or the method of installation could result in various aspects of the performance of this product no longer complying with Agrément criteria.

Any change not authorised by Agrément South Africa in writing prior to its implementation will invalidate this certificate and the certificate can then not be used to demonstrate compliance with National Building Regulations.

Isofoam (South Africa) (Pty) Ltd shall be responsible for the accuracy of the information contained within the Material Data Sheets, Technical Data Sheets and Material Performance Specifications, and all other information pertaining to the supply and installation of Isoboard Cavity Wall Insulation. Isofoam (South Africa) (Pty) Ltd shall submit a COA (Certificate of Analysis) and COC (Certificate of Compliance) in terms of the requirements stipulated in **SANS 17050-1 Suppliers declaration of conformity** when requested by Agrément South Africa in accordance with the documentation requirements of **SANS 17050-2**. Should Isofoam (South Africa) (Pty) Ltd change or substitute any ingredient in the formulation of the product in question, then a notification shall be addressed to Agrément South Africa immediately.

General conditions

Marking

Where possible, the product packaging must be suitably marked with Agrément South Africa's identification logo together with the number of this certification.

Validity

The continued validity of this certificate is subject to a satisfactory review by Agrément South Africa every three years.

Quality monitoring

The certificate holder is required to participate in Agrément South Africa's post-certification quality management system which requires:

- that the certificate holder shall continue to implement and manage the quality system approved by Agrément South Africa in the assessment of Isoboard® Cavity Wall Insulation
- the certificate holder to notify Agrément South Africa within 30 days of any change of address of a factory and any new factories brought into operation by the certificate holder, for the purpose of manufacturing the subject of the certificate
- the certificate holder at any time of commencement of each contract, to provide Agrément South Africa with construction sites or structures on which the subject is to be used, and
- the co-operation of the certificate holder in facilitating post-certification quality monitoring by Agrément South Africa or its authorised agents.

Reappraisal

- must be requested by the certificate holder before making changes to the product
- will be required by Agrément South Africa if there are changes to the National Building Regulations or the Agrément criteria.

This certificate may be withdrawn if the certificate holder or a registered licensee fails to comply with these requirements.

On behalf of the Board of Agrément South Africa

Chairperson

18 October 2018

PART 2: ASSESSMENT

Scope of assessment

The conventional aspects of the construction are subject to the rules of good building practice (typically as described and illustrated in Agrément South Africa's [Supplement to certificates](#) and in the *Home building manual Parts 1, 2 & 3* issued by the National Home Builders Registration Council), and must comply with the National Building Regulations.

This assessment applies to those innovative aspects of using Isoboard cavity wall insulation described in [Part 3](#) of the certificate. It also applies to those conventional aspects of the wall construction which, in the opinion of Agrément South Africa, are influenced by the innovative aspects.

The innovative aspects referred to are:

- the use of insulation board to decrease the thermal transmittance of cavity walls
- the spacing of the wall ties, where necessary to accommodate board widths and wall tie types.

This assessment is based on:

- documentation provided by the applicant
- inspections of the applicant's factory and completed installations
- known behaviour of the materials used in the product
- the certificate holder's quality management system
- work done by British Board of Agrément on similar products.

Assessment

In the opinion of Agreement South Africa, Isoboard® Cavity Wall Insulation is suitable for the uses [specified](#) on page 1, in all regions of South Africa.

The performance in use of Isoboard® Cavity Wall Insulation installations will be such that the Isoboard® Cavity Wall Insulation will satisfy:

- Agrément South Africa's performance criteria and requirements for durability
- the relevant requirements for safety and health prescribed by Agrément South Africa

Agrément South Africa's detailed comments on the various aspects of performance of the insulation are set out in Tables 1 and 2 below. Each aspect of performance was assessed by experts in that field.

Republic of South Africa. *National Building Regulations*, Government Notice No R. 711, Government Gazette No 34586, Pretoria, South Africa, 9 September 2011.

Compliance with National Building Regulations

Where applicable, the performance of the cavity wall insulation relates to the National Building Regulations as set out in Table 1. Any national building regulation not specifically referred to is considered to be outside the scope of this certificate and must be applied by the local authority in the normal manner.

Table 1: Compliance with National Building Regulations

Aspects of performance	Opinion of Agrément South Africa	National Building Regulations satisfied
Materials	Satisfactory. The physical properties of Isoboard® have been determined in accordance with ISO standards	The materials used in the Isoboard® Cavity Wall Insulation are deemed to satisfy the requirements of regulation A13 (1) (a): Administration.

Table 2: Assessment

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
Resistance of insulated walls to water penetration and ground moisture	Satisfactory in properly designed and built walls. Isoboard® Cavity Wall Insulation must not be relied on to prevent the passage of moisture through walling. Cavity widths should be increased such that once the insulation has been installed, the residual cavity complies with cavity width required by the building authority for a particular degree of exposure (refer to Clause 4.5.2.2 of SANS 10400 – K). A reduction in residual cavity width would be acceptable where such a reduction had been the subject of a rational assessment by a competent person.	Isoboard® does not absorb water by capillary action and may therefore be used in situations where it bridges the damp-proof membrane of the inner or outer leaf. However, in the absence of a damp-proof membrane or cavity, where such is normally specified, horizontal and vertical joints between adjacent boards could permit free water to permeate through to the inside face of walls. For this reason also, the use of Isoboard® does not preclude the need to apply an external render coat or other suitable finish should such coat or finish normally be required. Where the outer leaf of a wall is of face brick construction, attention must be paid to the proper filling and finishing of mortar joints as would be the case with all face brick construction.
Behaviour in relation to fire	Satisfactory. Although Isoboard® is a combustible material in terms of SANS 10177: Part V it is unlikely to ignite within the wall cavity.	In order to prevent the movement of hot gases and toxic fumes between defined fire rated compartments cavities must be bricked closed around the perimeters of these compartments [both horizontally and vertically] and at window, door, vent or any other service opening. SANS 10177: Part V, Fire testing of materials, components and elements used in buildings

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
Structural Strength of insulated walls SANS 10164: Part 1, the structural use of masonry: Unreinforced masonry walling	Satisfactory. Isoboard® does not serve a structural function in walls. For structural purposes the width of the cavity is taken as the width of the board and any residual cavity and cavity ties are installed accordingly. Where the width of this cavity exceeds the deemed-to-satisfy rules of National Building Regulations, a rational design is required in terms of SANS 10164- Part 1. SANS 28 Metal ties for cavity walls	Wall ties assessed for use with this system are those complying with the requirements of SANS 28. Some of these ties will prove difficult, in practice to install within the width of the board without damaging the board unduly and possibly affecting the bedding of the ties in the section of wall already erected. For this reason, the spacings recommended in Table 4 of this certificate have been derived assuming that the ties are located along the edges of the board, that is, at 600 mm vertical spacings. However, with adequate care most of the ties covered by SANS 28 can be accommodated in slots cut within the width of the board using a sharp implement Wall tie spacing as required in Table 4 of this certificate does not meet the requirements of the National Home Builders Registration Council mainly because of increased vertical tie centres to accommodate the 600 mm width of Isoboard® cavity insulation. It is, however, assessed that adequate tie densities per square metre have been achieved by reducing horizontal tie centres accordingly.
Durability	Satisfactory. Isoboard® will be durable and effective for the life of the building in which it is installed.	Isoboard® Cavity Wall Insulation is rot proof, offers no food value to vermin and will not support mould or fungal growth.
Thermal performance	Satisfactory. Agrément South Africa recommends that for design purpose a conductivity value of $0,030 \text{ Wm}^{-1}\text{K}^{-1}$ be adopted for South Africa summer and winter conditions,	Isoboard® is effective as a cavity wall insulating material. However, the conductivity of Isoboard® has the potential to increase over a period of years due to the effect of: • migration of gases • absorption of water as a result of: ○ submersion in water ○ water vapour diffusion ○ freeze-thaw cycling. As with similar insulation products of this nature the effectiveness of the insulation is also dependent on the care taken during installation to ensure that boards are not damaged and that gaps between boards and around the perimeters of insulated areas are prevented.

Aspects of performance	Opinion of Agrément South Africa	Explanatory notes
Quality management	The certificate holder's quality management scheme complies with Agrément South Africa's requirements. Properly applied, it will ensure that quality in the manufacture of Isoboard® will be consistently maintained.	Agrément South Africa's requirements are based on SANS 9001: 2000 SANS 9001:2000 Quality management systems-Requirements'

PART 3: TECHNICAL DESCRIPTION

General description

Isoboard® Cavity Wall Insulation is an extruded polystyrene rigid foam board made in various thicknesses and with edge profiles to suit cavity wall insulation applications. Isoboard® Cavity Wall Insulation is installed during the construction of walls by competent contractors and is used as a complete or partial fill board to reduce the thermal transmittance of cavity walls with masonry inner and outer leaves.

In areas of the country where cavity wall construction is a requirement, provision is made for a minimum residual cavity of 50 mm. The Isoboard® is firmly attached to the inside skin of the cavity wall **by means of additional wire ties** and care must be taken that:

- the cavity is clear of mortar droppings
- the cavity ties incorporate effective drips
- damp-proof membranes are installed in accordance with the recommendations of **SANS 10021**.

In areas of the country where cavity wall construction is not required, no residual cavity is necessary.

Manufacture

Isoboard® Cavity Wall Insulation boards are rigid closed cell foam boards manufactured from extruded polystyrene. Boards have a density of between 32 and 36 kg/m³. The blowing agent used in the manufacturing process is a mixture of R134a and R152a HFC's (hydrofluorocarbons).

Boards are extruded in standard thicknesses of 25 to 50 mm and supplied in 2 m, 2,4 m and 3 m lengths. Cavity boards are 600 mm wide with the longitudinal and transverse edges finished in a tongued-and-grooved or shiplap edge profile.

Physical properties

The physical properties of Isoboard® used in the cavity wall installations are set out in Table 3.

Table 3

Property	Standard ⁴	Value
Density (on sample 40 mm thick)	ISO 845: 2006 (en)	43.1 ^{kg} / _{m³}
Compressive strength (on samples 30 and 40 mm thick)	ISO 844: 2006(en)	310 kPa
Water vapour permeability (on samples 30, 40 and 50 mm thick)	ISO 1663: 2007(en)	0,75 ^{ng} / _(Pa.s.m)
Water absorption (on samples 30, 40 and 50 mm thick)	ISO 2896: 2001(en)	0,87 % by volume
Coefficient of linear thermal expansion (on samples 30, 40 and 50 mm thick)	ISO 4897: 1985(en)	0,040 mm/m°C
Dimensional stability (on sample 30, 40 and 50 mm thick)	ISO 2796:2011(en)	Less than 0,86% in all three directions (x,y and z axis)
Thermal conductivity (on sample 40 mm thick)	ISO 8301: 1991(en)	0,028 ^W / _{mK}
* A thermal conductivity design value 0,030 ^W / _{mK} is recommended which allows for long-term ageing (See Table 2)		

ISO 845:2006(en) Cellular plastics and rubbers- Determination of apparent density.

ISO 844: 2006(en) Rigid cellular plastics- Determination of compression properties.

ISO 1663:2007(en) Rigid cellular plastics- Determination of water vapour transmission properties

ISO 2896:2001(en) Rigid cellular plastics- Determination of water absorption

ISO 4897:1985 (en) Cellular plastics - Determination of the coefficient of linear thermal expansion of rigid materials at sub-ambient temperatures

ISO 2796:2011(en) Cellular plastics, rigid – Test for dimensional stability under specified temperature and humidity conditions

ISO 8301:1991(en) Thermal insulation- Determination of steady-state thermal resistance and related properties

Delivery and site storage

The boards are delivered to site in packs wrapped in, translucent plastic sheets.

Care is required during handling to prevent damage to the face of the board and edge profiles.

Isoboard® must be stored flat in covered areas away from direct sunlight. Care must be taken to prevent boards coming into contact with solvents and materials containing volatile organic components which will have adverse effects on the polystyrene.

Boards must not be exposed to naked flame or other heat sources. They should not be stored near materials such as packaging paper, waste and flammable liquids.

Installation

The masonry walls are constructed leading with either the inner or outer leaf. Where a residual cavity is specified it is recommended that the inner leaf be constructed ahead of the outer leaf. Fixing the boards in this way gives enhanced thermal performance.

Boards are fixed to the cavity face of the leading leaf with wire ties which are additional to the specified cavity ties. These additional ties may be either 2 mm diameter L-shaped galvanised wire or standard cavity ties and are installed between the specified cavity ties, as necessary. Boards are held in place during installation while these additional ties are bent against the boards with alternate ties bent up and down to secure the upper and lower edges of boards.

The recommended installation procedure is as follows:

- a section of leading leaf of the wall is built with wall ties in position. The first row of ties is placed with consideration being given to the required height of the first lift of insulation
- excess mortar is removed from the cavity face of the leading leaf and the insulation board is attached firmly to this face with wire ties as described above. The edges of boards below are carefully notched, where necessary, to accommodate the ties
- after the installation of the first row of insulation boards, erection of the leading leaf continues ensuring that the exposed edges of the boards below are kept free of mortar
- after a few rows of insulation board have been placed, the building of the second leaf proceeds ensuring that where a residual cavity is required, the cavity ties and cavity itself are kept clear of mortar droppings
- the leading leaf is progressively added to, insulation board installed and the second leaf added to, as described above, until the full height of the wall has been reached.

The horizontal spacing of the cavity ties must suit the thickness of wall leaves and cavity widths. Ties are installed at vertical spacings of 600 mm and coincide with the horizontal joints of insulation boards. Adjacent to window and door openings, and at control joints where these are provided, the vertical spacing of cavity ties must be reduced to 300 mm. Insulation must be carefully cut to accommodate these ties. Care must be taken during installation of boards not to loosen the cavity ties embedded in mortar joints.

The use of cavity boards and battens helps to keep cavity ties and the exposed top edges of the boards clear of mortar droppings.

Boards may be cut to fit around window or door openings, etc by using a sharp knife or a fine-toothed saw. Cut pieces of board are required to completely fill the spaces for which they were intended with no gaps left in the insulation. These cut pieces must also be well glued in position.

Installation requirements

Brick or block gauges are to be set such that cavity ties occur at 600 mm vertical spacings to coincide with the horizontal joints of the wall insulation.

Cavity ties must be embedded to a depth of at least 50 mm in the mortar joints of each leaf. Single-wire type Z-ties with central dished drips as well as crimped wire ties may not be used.

Acceptable wall tie types for cavity widths not exceeding 75 mm (thickness of Isoboard® plus residual cavity, if present) are:

- butterfly
- modified PWD
- double triangle
- vertical twist

Where cavities exceed 75 mm in width, only vertical twist ties may be used. The material used to make these ties must have a stiffness equivalent to hoop iron (mild steel 20 mm wide and 4 mm thick). In addition to the above requirements, cavity ties must meet the requirements of **SANS 28**.

Table 4 shows the spacing of wall ties for various cavity widths (the rate of ties per square metre of wall is shown in brackets).

Table 4

Horizontal spacing of wall ties (for boards laid horizontally and the tie rate per m ² ())	Width of cavity (width of board and residual cavity, where present)
660 mm (2,5)	50 mm - 75 mm
550 mm (3,0)	75 mm - 100 mm
330 mm (5,0)	100 mm - 150 mm

SANS 10164-1:

The structural use of masonry Part 1: Unreinforced masonry walling

Horizontal spacing of ties with vertical spacing set at 600 mm in order to comply with the tie density requirements of Table 7 of **SANS 10164-1** (Nominal thickness of each leaf 90 mm or more). Additional ties are

required at vertical spacings not exceeding 300 mm, near the sides of openings and at discontinuities in the masonry such as at doors, windows and control joints.

Where boards with shiplap edge profiles are used, boards must be secured against the inner leaf of the wall with the shiplap joint arranged to shed water away from the inner leaf. (See figure1).

Debris and mortar is to be removed from the cavity and mortar is to be removed from the exposed edges of installed boards as work proceeds.

Boards must be tightly interlocked with no gaps occurring at the top and bottom of the wall, at corners and around windows and other openings.

Typical U values ($\text{Wm}^{-2}\text{K}^{-1}$)

Table 5 shows the calculated U values (and Total R-Values in brackets) for cavity walls finished externally with plaster with the cavity filled with different thicknesses of Isoboard® (but with no residual cavity).

Table 5

Wall construction (with no residual cavity, therefore cavity width is width of insulation)	U value ($\text{Wm}^{-2}\text{K}^{-1}$) (Total R-Values (m^2KW^{-1}))		
	30 mm	40 mm	50 mm
110 mm wide stock brick external leaf with plaster finish and with cavity insulation, and 110 mm wide stock brick internal leaf	0,69 (1,45)	0,56 (1,79)	0,48 (2,08)
110 mm wide concrete brick external leaf with plaster finish with cavity insulation, and 110 mm wide stock brick internal leaf	0,63 (1,59)	0,52 (1,92)	0,45 (2,22)
110 mm wide concrete brick external leaf finished with plaster and with cavity insulation, and 110 mm wide concrete brick internal leaf	0,58 (1,72)	0,49 (2,04)	0,42 (2,38)

Tables 5 and 6 -
a thermal conductivity value of $0,030 \text{ Wm}^{-1}\text{K}^{-1}$ has been assumed for Isoboard® [See Table 2 Thermal performance].

Table 6 shows the calculated U values (and Total R-Values in brackets) for fair faced masonry walls incorporating a 50 mm residual cavity and different thicknesses of Isoboard®.

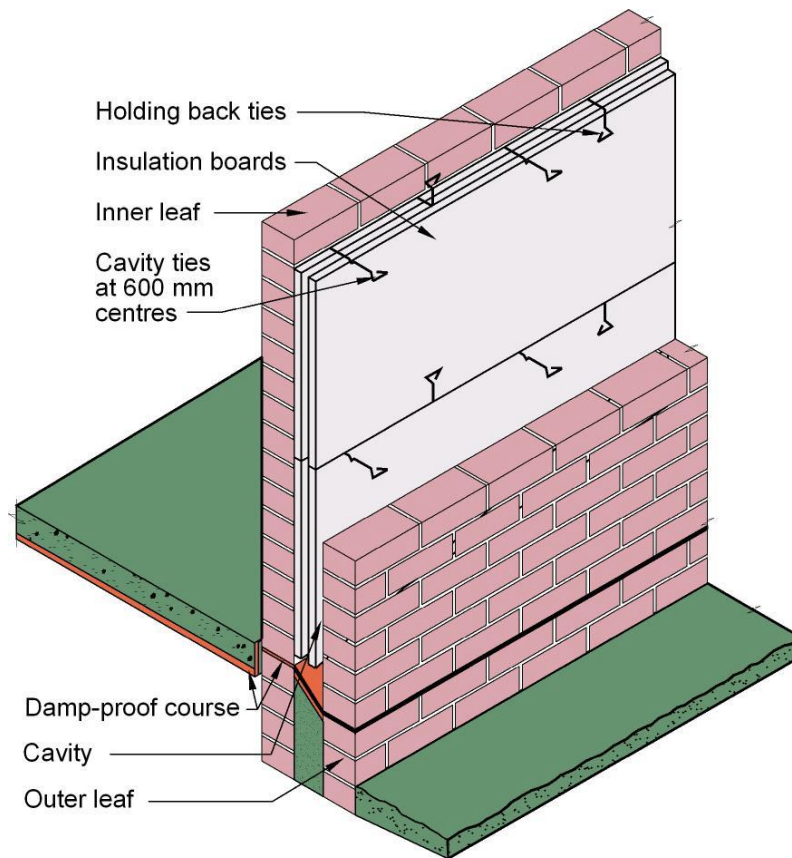
Table 6:

Wall construction (with residual cavity. Therefore, cavity width is width of insulation plus residual cavity)	U value ($\text{Wm}^{-2}\text{K}^{-1}$) (Total R-Values (m^2KW^{-1}))		
	30 mm	40 mm	50 mm
110 mm wide face brick external leaf with 50 mm residual cavity and insulation, and 110 mm wide stock brick internal leaf	0,62 (1,61)	0,52 (1,92)	0,44 (2,27)
110 mm wide concrete brick external leaf with 50 mm residual cavity and insulation, and 110 mm wide stock brick internal leaf	0,57 (1,75)	0,48 (2,08)	0,42 (2,38)
110 mm wide concrete brick external leaf with 50 mm residual cavity and insulation, and 110 mm wide concrete brick internal leaf	0,53 (1,89)	0,45 (2,22)	0,39 (2,56)

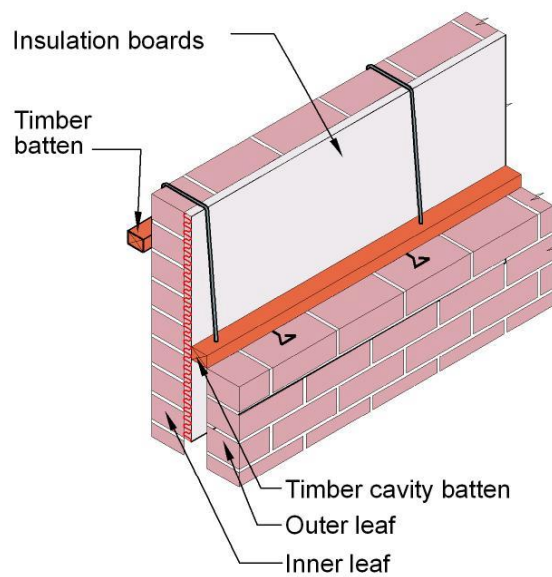
Technical support

Isofoam (South Africa) (Pty) Ltd offers technical support from Isoboard® sales offices in Cape Town, Pretoria, Johannesburg and Durban, and from agrementenquiries@isoboard.com.

This technical support includes *installation manuals* and guidance regarding expected thermal performance and in the selection of the correct thickness of board to use to achieve specific conditions or energy usage inside buildings.



(a) First run of boards



(b) Use of cavity batten

Figure 1

Typical installation details

