ISOLAIR MULTI

- **Roof Sarking Board**
- **Internal Wall Insulation Board with Plaster**
- **External Wall Insulation Board with Render**
- **External Wall Insulation Board behind a Ventilated Façade**

Isolair Multi Characteristics

Produced According to EN 13171

Isolair Multi water resistant, but breathable, wood fibre thermal insulation panels are a very versatile product. They are plaster baseboards so can be used on either the inside or the outside of walls where they can be plastered or rendered directly. They can also be used as external wall insulation where they are protected with ventilated cladding or a brick wall finish. In addition, they can be used as sarking boards above the roof rafters to externally insulate the roof and to significantly reduce thermal bridging through the rafters because the entire roof envelope is insulated. Isolair Multi is ideal for insulating solid or cavity masonry walls, as well as timber frame walls and roofs.

Isolair Multi's high density ensures very good acoustic insulation values and so reduces airborne noise e.g. traffic or airplane noise, travelling through the roof or external walls. Wood fibre is the densest, and has the highest thermal capacity (c = 2,100 J/kgK), of all insulation materials which means that it adds thermal mass to the building and so protects the interior living space from overheating. It does this by storing the solar gain heat from the sun for as much as 10-12 hours when it will then be released as temperatures drop, whereas other insulation materials can only provide 5-8 hours lag time. This is particularly important in timber and metal framed buildings and in contemporary buildings which have a lot of south and west-facing glazing which all tend to overheat in the summer. Roofs also benefit especially when the attic space is to be used as living accommodation as they do not have high thermal mass. Likewise, the internal heat during the winter will be stored during the day and will then be released at night-time as the building cools.

Isolair Multi boards have a favourable Vapour Diffusion Factor so they are designed to be used in diffusion-open or breathable constructions. This ability hinders the accumulation of interstitial condensation, thereby protecting the structure of the building by keeping it dry and preventing mould growth, wet rot and dry rot. This is particularly important in older, historic or heritage buildings with solid walls where the breathability of the structure is critical. The building fabric is safeguarded against high moisture content so the long-term health of the building is catered for – unlike most conventional insulation systems. A dry building is a warm building.

Isolair Multi

Thickness (mm)	Weight (kg / m²)	Overall Board Size (cm)	Coverage Area (cm)	Number of Boards	M² per Pallet - Coverage	KG per Pallet	Edge Profile
30	6.0	188 x 61	186 x 59	74	81.21	509	Tongue & Groove
35*	7.0	188 x 61	186 x 59	64	70.23	514	Tongue & Groove
40	6.6	188 x 61	186 x 59	56	61.45	424	Tongue & Groove
52	8.6	188 x 61	186 x 59	40	43.89	394	Tongue & Groove
60	9.9	188 x 61	186 x 59	36	39.50	409	Tongue & Groove
80	13.2	188 x 61	186 x 59	28	30.72	424	Tongue & Groove
100	14.5	188 x 61	186 x 59	22	24.14	366	Tongue & Groove
120	17.4	188 x 61	186 x 59	18	19.75	359	Tongue & Groove
140*	20.3	188 x 61	186 x 59	16	17.55	372	Tongue & Groove
160*	23.2	188 x 61	186 x 59	14	15.36	372	Tongue & Groove
180*	26.1	188 x 61	186 x 59	12	13.16	359	Tongue & Groove
200*	29.0	188 x 61	186 x 59	10	10.97	333	Tongue & Groove

*** Available in full pallets only and allow up to 4 weeks for delivery**

Technical Details	Isolair Multi 30-35mm	Isolair Multi 40-80mm	Isolair Multi 100 – 200mm
Density (kg / m³)	200	165	145
Declared Thermal Conductivity λ D (W/mK)	0.044	0.043	0.041
Vapour Diffusion Factor μ	3	4	3
Specific Heat Capacity - C (J/kgK)	2100	2100	2100
Tensile Strength Perpendicular to Face of Board (kPa)	30	10	10
Compressive Stress at 10% Compressive Deformation (kPa)	200	100	100
Reaction to Fire Classification (EN 13501-1)	Class E	Class E	Class E

Various Applications

Roof Insulation Panels

Isolair Multi insulation softboards can be installed directly above the rafters and the flexible, breathable Pavaflex wood fibre or Pavatextil P recycled cotton insulation can be fitted between the rafters to meet desired U-values and significantly reduce thermal bridging through the junctions. This greatly helps towards meeting Building Regulation requirements, especially when Y-values for thermal bridging are taken into account. Isolair Multi wood fibre boards also enhance airborne and impact sound insulation within the building. The CE-marked Isolair Multi guarantees an ecological, breathable and durable structure, which will protect the property for many decades.

The Isolair Multi wood fibre sarking board can be left exposed on roofs for up to 3 months without compromising the integrity of the thermal insulation product, ensuring a dry building for the construction work to continue. Isolair Multi can be used on both new build and renovation projects. It is not necessary to use a breather membrane over Isolair Multi although we do recommend it. If the ADB breather membrane is not used, all square cut or exposed Isolair Multi board edges, penetrations, ridges, valleys and corners must be primed and sealed with Pavatex Primer and Pavatape 75 / 150. An airtightness membrane or airtight taped OSB board should be placed internally under the roof.

Typical Construction from Top Down on Pitched Roof:

- Tiles or Slates etc
- Horizontal Tile Battens
- Vertical Counter-battens for ventilation – 38mm minimum x 50mm (HxW)
- 30 to 200mm Isolair Multi T&G Wood Fibre board screwed to rafters below. Isolair Multi can be left exposed for up to 3 months (if square cut edges are primed and taped) or if preferred it can be covered with the Pavatex ADB Breather Membrane.
- Pavaflex or Pavatextil P flexible insulation fully filled in between rafters
- **Optional Plaster Finish:** Isolair Multi T&G Boards screwed to underside of rafters for more insulation and this can be plastered directly with Baumit lime plaster, if required.
- **Optional Plasterboard Finish:** OSB with taped joints for airtightness **OR** Pavatex DB 3.5 airtightness membrane under rafters.
- Battens to make Services Void, if required, and Plasterboard or Fermacell finishing board

On roof pitches ≥18°, there is no need to tape over tongue and groove joints, as these will be weathertight.
On roof pitches ≥10° and <18°, a bead of Pavatex System Glue must be applied onto the upper face of each tongue before it is inserted into the next board.
On roof pitches ≥5° and <10°, the complete roof surface must be covered with a sealed breather membrane.
Do NOT use Isolair Multi on roofs with pitches of less than 5°.

Installation

Isolair Multi panels should be fixed directly above the rafters in a landscape formation with the tongue facing upwards towards the apex. The cut-off piece at the end of one row should be used as the first piece on the next row so that the joints are in a brickwork formation. This will increase the structural strength. The Isolair Multi boards are initially fixed to the rafters using 1 or 2 specialist screw fixings per board.

The Isolair Multi panels can then be protected with the Pavatex ADB Breather Membrane if desired, or if a membrane is not used, all non-T&G junctions such as at the ridge, valleys, penetrations and perimeters, must be primed and taped with Pavatex Primer and aluminium butyl Pavatape 75 or 150 to prevent rain ingress. 38mm min. high vertical counter-battens are then fixed securely over the Isolair Multi panels to provide ventilation. Structural fixings are used to secure these counter-battens and the insulation into the rafters below according to advice given – usually 6 fixings per m2. If required, fix horizontal tile battens and secure the roof tiles etc to these. When working on the roof, only walk above the rafters, rather than between the rafters.

Cutting and Storing the Wood Fibre Softboards

The wood fibre panels can be cut with normal timber cutting tools e.g. an electric circular saw or a jigsaw using Pavatex jigsaw blades. It is recommended to use suction equipment to minimise dust. If a hole or gap occurs in the wood fibre due to a construction error, ensure that it is filled in with small pieces of wood fibres and apply a reinforcing mesh patch at least 200 mm larger than the damaged area. Keep the boards dry when in storage and protect the edges from damage. Do not stack any more than 4 pallets on top of each other.

External Wall Insulation with Ventilated Cladding – Masonry or Timber Frame Walls

Isolair Multi can also be used in timber frame, CLT or masonry constructions as an external wall sarking board which can then be finished with a ventilated cladding façade or ventilated brick wall.

On **timber frame structures**, these panels provide water resistance as well as excellent vapour permeability, keeping the building structure dry and therefore safe. Isolair Multi cannot be fixed below the Damp Proof Course level so XPS waterproof insulation should be used in this area. An airtightness membrane or racking board incorporating an airtightness detail (e.g. OSB board taped at joints) should be inserted on the internal side of the timber frame.

If Isolair Multi is being used as a sarking board behind ventilated cladding on a **masonry wall**, the wall must be dry and reasonably flat so that the T&G insulation slots well together. If the existing render has broken away in parts or is in poor condition it needs to be removed first. Also, if the existing render has a high cement content it is recommended to remove it first because it is not very vapour-open. There must be no gaps between the Isolair Multi and the wall at the perimeter edges because cold air will just bypass the insulation, so some site mix can be used to seal the boards to the walls around all openings.

Fixing into Timber Frame and Masonry Constructions

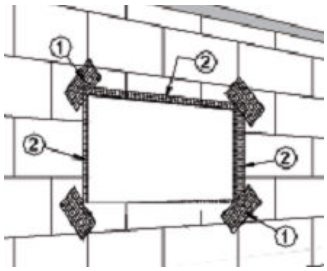
Please seek our advice regarding suitable fixings for the required application. On timber frame structures, fixings are inserted through the vertical counter batten, the Isolair Multi board and into the timber structure so that it is anchored into the timber by at least 40mm. Generally 7 fixings are required per m². On masonry walls, fixings are typically embedded by at least 35mm, depending on the substrate, and again there are generally 7 fixings per m².

External Wall Insulation with Render Finish – Masonry or Timber Frame Walls

The Isolair Multi wood fibre boards are mounted onto masonry walls which must be dry and reasonably flat so that the T&G insulation boards join together neatly. If the walls have undulations of about 8mm or more, then they should first be levelled out with a lime parge coat or else some site mix can be used to seal the boards to the walls around all openings to prevent thermal bypass. If the existing render has broken away in parts or is in poor condition, it needs to be removed. The same applies if the existing render has a high cement content which is not very vapour-open, as this will trap water within the wall and it will not be able to easily evaporate to the outside. Bare walls can be rendered firstly with a breathable lime render, if desired, but it is not necessary. These Isolair Multi render base boards can also be fitted to timber frame or CLT structures.

Installation: Fix the base rails at a minimum of 30 cm above finished ground level. XPS waterproof insulation should be fitted in the plinth area below this base rail and extending down as far as possible below finished ground level. This prevents the wood fibre boards from getting permanently moistened, as a result of sitting in puddles. The XPS insulation is bonded to masonry walls with Baumit MC55 W Lime Render at 5mm thickness.

The Isolair Multi insulation boards are installed in a horizontal and brick-work formation with the vertical joints staggered by a minimum of 30 cm so there are no cross joints. The horizontal tongues must face upright towards the roof so that rain will not sit in the grooves. Isolair Multi is secured to the wall with specialist insulation fixings with a plastic washer – usually 9 fixings per board into masonry or 3 fixings per stud into timber frame. The wood fibre boards at all openings, corners and penetrations should be sealed to the building with ISO-BLOCO expanding foam tape or some site mix to ensure a weathertight joint. The wood fibre insulation boards can be left exposed for up to 90 days but they must be allowed to dry before they are rendered.



The board joints should not align with the corners of the windows or doors as it will weaken the strength of the Isolair Multi system. Fix a reinforcing mesh strip diagonally into some base coat render at the corners and all around the window and door openings – see the drawing. The door and window reveals must be insulated too with 19 or 40 mm thick reveal boards. For best results these should be bonded to the window or door reveals using the lime render base coat, Baumit MC55 W, by applying this to the back of the reveal board with a trowel. There must be a weathertight fit around these thermal weak points so alternatively seal the perimeter edge of the reveal boards to the structure with ISO-BLOCO expanding foam tape.

Rendering: The wood fibre and plinth boards are rendered with Baumit MC55 W lime base coat at a depth of 6 - 9mm. A reinforcing mesh is embedded into the base coat and there is a choice of top-coat renders that can be used. A self-coloured silicate render called Baumit SilikonTop is very popular because it is highly water-repellent but vapour permeable, so very resilient. The base coat must be primed first before applying SilikonTop. Alternatively, a lime mineral render can be used called Baumit SEP, which will require painting with a silicate-based paint. A primer is not required with SEP topcoat. Any of the plinth boards that will be below finished ground level must be sealed with Baumit DS 26 Flex mixed with water to a paintable consistency and applied in 2 coats over the topcoat.

Cutting and Storing the Wood Fibre Softboards

The wood fibre panels can be cut with normal timber cutting tools e.g. an electric circular saw or a jigsaw using Pavatex jigsaw blades. It is recommended to use suction equipment to minimise dust. If a hole or gap occurs in the wood fibre due to a construction error, ensure that it is filled in with small pieces of wood fibres and apply a reinforcing mesh patch at least 200 mm larger than the damaged area. Keep the boards dry when in storage and protect the edges from damage. Do not stack any more than 4 pallets on top of each other.

Internal Wall Insulation with Plaster Finish – Solid Masonry or Timber Frame Walls

Isolair Multi wood fibre is the optimal ecological insulation for the inside of external walls, due to its dense, fibrous structure and very effective vapour-open, hygroscopic and capillary active properties. This prevents the formation of damaging moisture in the structure. Isolair Multi insulation board can be plastered directly with vapour-open lime plaster which is alkaline which inhibits mould growth.

Isolair Multi insulation boards can absorb moisture from inside the room and then release it either back into the room or out through the walls to create an ambient relative humidity level, without any detrimental effects to the integrity of the insulation boards. This avoids condensation, mould growth and humidity in buildings and creates a very pleasant, comfortable interior climate. Interstitial condensation will not get trapped in the structure which can cause untold damage.

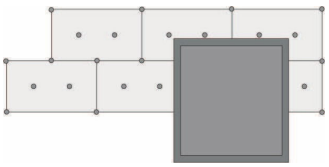
In particular, this product plays an important role in the maintenance and repair of older and historic buildings, where the external appearance must be preserved and so cannot be externally insulated. Heritage and period buildings are usually constructed from vapour-open materials such as stone, brick, timber frame, cob or wattle and daub with lime or earth mortar in the joints, and lime plaster, render or paint on the walls. All of these materials are breathable and so allow moisture to pass through them and then this moisture evaporates either externally or internally. This keeps the building dry because externally the heat from the sun and the wind will dry out the building fabric and internally the moisture will evaporate as a result of ventilation from air circulating around the building which comes in through the windows, doors, chimneys and roof eaves. It is critical to observe the breathability of these older buildings by using breathable insulation, plaster and paint so that interstitial condensation will be hindered.

When insulating solid masonry walls internally it is not recommended to achieve a U-Value of less than 0.4 W/m²K as this will negatively affect the speed of drying in the solid wall. If a single leaf solid wall is over-insulated internally the wall then becomes colder (as a result of less heat from inside the building getting through the insulation) and this increases the risk of interstitial moisture building up in the wall.

Application

Isolair Multi panels must be mounted onto dry, flat, even walls. If the masonry surface is bare or uneven, the walls must first be plastered and levelled with a breathable lime plaster, because cold air gaps internally between the wall and the wood fibre will cause interstitial condensation. Any cement-based plaster or oil-based paints on the walls must be removed before the walls are levelled with lime plaster. If applying onto solid or uneven walls, please seek our advice for the optimum application method. The Isolair Multi boards are bonded to the plastered or level wall using a lime bonding coat called Baumit RK70 at 5mm thickness. Airtightness will be provided by the lime levelling coat and lime bonding coat. Airtightness tape must also be used at junctions between the window and door frames and the wall. Begin fitting Isolair Multi boards in the bottom corner of the wall, with a straight edge butted tightly up to the adjacent wall. The panels must be fitted as tightly as possible to each other so that they only have the smallest possible gaps between them. The second row should begin with the cut-off piece from the previous row so that the boards form a brickwork pattern. The vertical joints must be staggered by a minimum of 200 mm so as not to weaken the strength of the system.

The wall in the intermediate floor space should also be lime-plastered and insulated with Isolair Multi, if possible. If there is not enough space for Isolair Multi then insert 50mm thick Pavaflex flexible insulation in the cavity instead to prevent cold-bridging. If the floor joists are embedded into the wall, firstly prime and tape around these junctions to provide airtightness.



The boards should not align with the corners of the windows or doors as it will weaken the strength of the Isolair Multi system – see the drawing. The door and window reveals must be insulated too to prevent cold bridging. There must be an airtight fit between the window or door frame and the reveal so prime and tape this junction before the Isolair Multi system is installed.

Fixing into Masonry or Timber Frame Construction

Ejot H3 plastic insulation hammer-in fixings are used to secure the Isolair Multi boards to solid masonry walls. They must be anchored into the masonry substrate by at least 35 mm excluding the plaster layer. If the walls consist of crumbly or rubble masonry use Ejot STR-U fixings and embed them by 35-65 mm excluding the plaster. As a general rule, use 3 fixings per board in addition to the bonding layer. The fixings are optimally placed at 100 mm from the edge of the board. Use Ejot STR-H fixings with a 60mm diameter plastic washer to secure Isolair Multi boards into timber or sheet steel. They must be anchored into the timber / metal frame by at least 40 mm.

Baumit Lime Plaster

It is essential to use capillary conductive lime plaster with Isolair Multi boards. Please consult Acara Concepts for advice on applying the two-coat Baumit lime plaster and mesh system. A traditional, slightly coarse lime finish or a smooth modern finish are both available to suit any interior design. Isolair Multi can also be finished with plasterboard – please consult us for advice.

ACARA CONCEPTS

Acara Concepts Ltd
Killossery
Kilsallaghan
Co. Dublin K67 E7N3, Ireland
Tel UK: 020 7998 1690
Tel IRL: +353 (0)1 8409 286
info@acaraconcepts.com

www.acaraconcepts.com