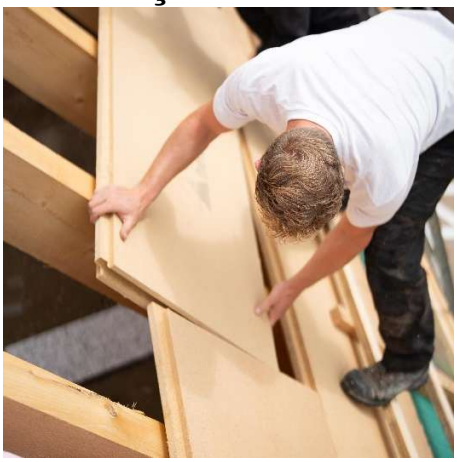
NATURHELD 140/180/220

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



Naturheld 140/180/220 Characteristics

Produced According to EN 13171

- Versatility: Naturheld 140/180/220 Wood Fibre Insulation boards can be used in various applications:

- **Wall insulation:** Suitable for both interior and exterior applications, either as a plaster / render carrier board or as part of an external insulation system finished with ventilated cladding or brick. Effective for insulating both solid and cavity masonry walls, as well as timber or metal-framed structures.
- **Roof insulation:** When used as sarking boards above roof rafters, they help insulate the roof, reduce thermal bridging and increase overall energy efficiency. Thay also add considerable thermal mass and acoustic insulation to the roof space.

- Moisture Management: The boards are designed to be used in diffusion-open or breathable constructions. They allow for the movement of moisture vapour through the structure, greatly reducing the risk of interstitial condensation, which could lead to structural damage like mould, wet rot or dry rot. This is especially crucial in older, solid-walled buildings, where moisture accumulation can be a major problem. 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.

- Thermal Insulation & High Thermal Mass: Naturheld boards provide excellent thermal performance, and due to their high density and high thermal capacity, they also add thermal mass to the building. This feature greatly helps to regulate temperatures within a building, keeping interiors cooler in summer and warmer in winter. This is especially beneficial in buildings with a lot of glazing or those with timber and metal frame structures, where overheating is often a concern.

- Acoustic Insulation: With their high density and fibrous structure, Naturheld boards provide excellent sound insulation, helping to reduce external airborne noise, such as traffic or aircraft noise as well as rainfall noise hitting the roof.

- Sustainability & Durability: Being made from wood fibre, Naturheld boards are a renewable, environmentally-friendly product. They also provide long-term protection against moisture-related issues, safeguarding the structure of the building and improving its lifespan.

Thickness (mm)	Weight (kg / m²)	Overall Board Size (cm)	Coverage Area (cm)	Number of Boards	M² per Pallet - Coverage	KG per Pallet	Edge Profile
Naturheld 220							
22	4.8	255 x 61.5	253 x 59.5	104	156.56	783	Tongue & Groove
35	7.7	255 x 61.5	252.8 x 59.3	64	95.94	764	Tongue & Groove
Naturheld 180							
40	7.2	188 x 61.5	185.8 x 59.3	56	61.70	469	Tongue & Groove
60	10.8	188 x 61.5	185.6 x 59.1	38	41.68	475	Tongue & Groove
Naturheld 140							
60	8.4	188 x 61.5	185.6 x 59.1	38	41.68	375	Tongue & Groove
80	11.2	188 x 61.5	185.6 x 59.1	28	30.71	369	Tongue & Groove
100	14.0	188 x 61.5	185.6 x 59.1	22	24.13	363	Tongue & Groove
120	16.8	188 x 61.5	185.6 x 59.1	18	19.74	357	Tongue & Groove
140	19.6	188 x 61.5	185.6 x 59.1	16	17.55	369	Tongue & Groove
160	22.4	188 x 61.5	185.6 x 59.1	14	15.36	369	Tongue & Groove
180	25.2	188 x 61.5	185.6 x 59.1	12	13.16	357	Tongue & Groove
200*	28.0	188 x 61.5	185.6 x 59.1	10	10.97	332	Tongue & Groove

*** Allow longer lead times**

Technical Details	Naturheld 220 22-35mm	Naturheld 180 40-60mm	Naturheld 140 60-200mm
Density (kg / m³)	220	180	140
Declared Thermal Conductivity λ D (W/mK)	0.047	0.043	0.041
Vapour Diffusion Factor μ	5	3	3
Specific Heat Capacity - C (J/kgK)	2100	2100	2100
Tensile Strength Perpendicular to Face of Board (kPa)	≥ 50	≥ 30	≥ 20
Compressive Stress at 10% Compression (kPa)	≥ 200	≥ 150	≥ 100
Reaction to Fire Classification (EN 13501-1)	Class E	Class E	Class E

Various Applications

Roof Insulation Panels

Naturheld 140/180/220 insulation softboards can be installed directly above the rafters and the flexible, breathable **Naturheld Flex** wood fibre 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 considered. Naturheld 140/180/220 wood fibre boards also enhance airborne and impact sound insulation within the building. These CE-marked Naturheld boards guarantee an ecological, breathable and durable structure, which will protect the property for many decades.

The Naturheld 140/180/220 wood fibre sarking boards can be left exposed on roofs for up to 4 weeks without compromising the integrity of the thermal insulation product, ensuring a dry building for the construction work to continue. These insulation boards can be used on both new build and renovation projects. It is not necessary to use a breather membrane over Naturheld 140/180/220 although we do strongly recommend it. If the **Ampack Ampatop Protecta plus Breather Membrane** is not used, all square-cut or exposed Naturheld board edges, penetrations, ridges, valleys and corners must be primed and sealed with **Ampacoll Primax Solvent-free Primer** and **Ampacoll XT Tape**. **Ampatex Eco 5 Airtightness Membrane** or taped, airtight OSB board must be placed internally under the insulation.

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)
- 22 to 220mm Naturheld 140/180/220 T&G Wood Fibre board screwed to rafters below. Naturheld 140/180/220 can be left exposed for 4 weeks (if square-cut edges are primed and taped) or if preferred, it can be covered with the **Ampack Ampatop Protecta plus Breather Membrane**. This can then be left exposed for up to 3 months if well-sealed.
- **Naturheld Flex** insulation fully filled between rafters
- **Optional Plaster Finish:** Naturheld 140/180/220 T&G Boards screwed to underside of rafters for added insulation, and this can be plastered directly with Baumit lime plaster, if required.
- **Optional Plasterboard Finish:** OSB with taped joints for airtightness **OR Ampatex Eco 5 Airtightness Membrane** under rafters.
- Battens to make Services Void, if required, and Plasterboard or Fermacell finishing board

On roof pitches ≥15°, there is no need to tape over tongue and groove joints, as these will be weathertight.
On roof pitches ≥10° and <15°, a bead of **Ampacoll RA 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 Naturheld 140/180/220 on roofs with pitches of less than 5°.

Installation

Naturheld 140/180/220 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 Naturheld 140/180/220 boards are initially fixed to the rafters using 1 or 2 specialist screw fixings per board.

The Naturheld 140/180/220 panels can then be protected with the **Ampack Ampatop Protecta plus Breather Membrane,** which is strongly recommended. 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 **Ampacoll Primax Primer** and **Ampacoll XT Tape** to prevent rain ingress. 38mm min. high vertical counter-battens are then fixed securely over the Naturheld 140/180/220 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 6/7 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 jigsaw. 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 3 pallets on top of each other.

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

Naturheld 140/180/220 can also be used in timber frame 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. Naturheld 140/180/220 cannot be fixed below the Damp Proof Course level so XPS waterproof insulation must be used in this plinth area. The **Ampatex Eco 5 Airtightness Membrane,** or a 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 Naturheld 140/180/220 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. The Naturheld 140/180/220 boards are bonded to the masonry wall using a 5mm thick bond of **Baumit MC55 W lime render** so that cold air will not bypass the insulation at the perimeter edges.

Fixing into Timber Frame and Masonry Constructions

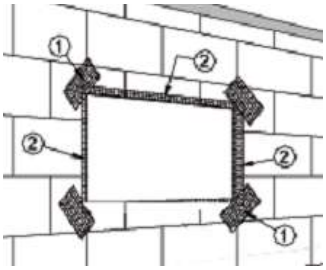
Please seek our advice regarding suitable fixings for the required application. On timber frame structures, fixings are inserted through the vertical counter-batten, the Naturheld 140/180/220 board and into the timber structure so that it is anchored into the timber by at least 40mm. Generally, 7 fixings are required per m². On masonry walls, fixings are typically embedded by at least 35mm (excluding the render), 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 **Naturheld 140/180** wood fibre boards are mounted onto **masonry walls** which must be dry and reasonably flat so that the T&G insulation boards join neatly together. If the walls have undulations of about 8mm or more, then they should first be levelled out with a lime parge coat. 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, because this will trap water within the wall which will struggle to evaporate to the outside. The wood fibre boards should be bonded to the masonry wall using a 5mm layer of **Baumit MC55 W lime render,** trowelled over the complete back surface of each board, to prevent thermal bypass. If using Naturheld 140 and render on **timber frame stud walls**, 80mm min. thickness must be used. There is no minimum thickness for Naturheld 180.

Installation: Fix the base rails at a minimum of 30cm 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 due to sitting in puddles. The XPS insulation is bonded to masonry walls with **Baumit MC55 W Lime Render** at 5mm thickness.

The Naturheld 140/180 insulation boards are installed in a horizontal and brick-work formation with the vertical joints staggered by a minimum of 25cm so there are no cross joints. The horizontal tongues must face upright towards the roof so that rain will not sit in the grooves. Naturheld 140/180 boards are 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 **Baumit Joint Sealing Expanding Foam Tape** or some **Baumit MC55 W render** to ensure a weathertight joint. The wood fibre insulation boards can be left exposed for up to 4 weeks, 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 Naturheld 140/180 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 22 or 35 mm thick reveal boards. For best results, these should be bonded to the window or door reveals using **Baumit MC55 W lime render**, 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 **Baumit Joint Sealing 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. 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 jigsaw. 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 3 pallets on top of each other.

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

Naturheld 140/180/220 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 within the structure. Naturheld 140/180/220 insulation boards can be plastered directly with vapour-open lime plaster which is alkaline, so inhibits mould growth.

Naturheld 140/180/220 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 should not get trapped in the structure which can cause untold damage.

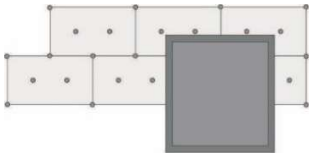
This product particularly plays an important role in the maintenance and repair of older and historic buildings, where the external appearance must be preserved and so cannot be externally insulated. Heritage and traditional buildings are usually constructed from vapour-open materials such as stone, 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. These materials are all breathable so allow moisture to pass through them and then this moisture evaporates away 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 away thanks to ventilation from air circulating around the building due to leaky 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 and mould 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

Naturheld 140/180/220 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 Naturheld 140/180/220 boards are bonded to the plastered 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. Begin fitting the Naturheld boards in the bottom corner of the wall, with a straight edge butted 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 25cm so as not to weaken the strength of the system (60cm spacing for 22mm board).

The wall in the intermediate floor space should also be lime-plastered and insulated with Naturheld 140/180/220, if possible. If there is not enough space for Naturheld boards, then insert 50mm thick **Naturheld Flex** 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 Naturheld 140/180/220 system – see the drawing. The door and window reveals must be insulated too to prevent cold bridging.

Fixing into Masonry or Timber Frame Construction

Rawlplug R-TFIX-8M hammer-in fixings are used to secure the Naturheld 140/180/220 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 **Rawlplug R-TFIX-8S** screw-in 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 **Rawlplug R-PTX 6** fixings with a 60mm diameter plastic washer to secure Naturheld 140/180/220 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 Naturheld 140/180/220 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. Naturheld 140/180/220 can also be finished with plasterboard – please consult us for advice.

ACARA CONCEPTS

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

Produit Biosourcé

Promoting Sustainable Forest Management
PEFC
PEFC/04-31-1223
www.pefc.org

www.acaraconcepts.com