



INSTALLATION INSTRUCTIONS

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1. DESCRIPTION

Aluthermo[®], Your partner in energy saving

Aluthermo[®], the thin-layer reflective insulation system, has been used for many years both for new buildings and in renovation.

This flexible complex, consisting of several layers of aluminium, contains dry air enclosed in its inner films. The result is efficient energy-saving.

Its exceptional adaptability makes it very easy to install. Aluthermo[®] can therefore be used in almost every imaginable field of thermal insulation.

Its durability has been perfected by proven leading-edge technology, so that season after season, Aluthermo[®] is the new standard in comfort.

Description of Aluthermo[®]

Aluthermo[®] is an insulating system that works by reflection. It consists of two layers separated by a honeycomb structure of air bubbles sealed in a fireproofed (fire retardant) polyethylene film, which in turn is covered on both sides by a 30-micron thick pure aluminium foil that has been polished and treated against oxidation.

The various elements of Aluthermo[®] are assembled by thermal welding over the entire surface. The obtained complex is semi-rigid.

The air enclosed inside the bubble films is dry and stable. Any condensation is therefore prevented within the temperature ranges recommended for each thickness of Aluthermo[®].

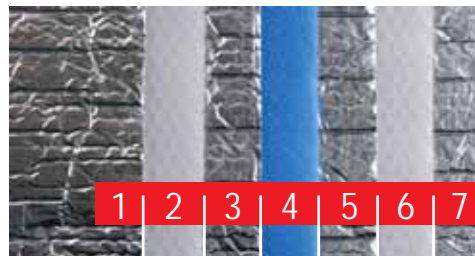
A+D 99% pure aluminium foil, 30 microns thick

B+C Fire-retardant polyethylene film containing bubbles of dry and stable air

Aluthermo[®]



Aluthermo Quattro[®]



Description of Aluthermo Quattro[®]

Aluthermo Quattro[®] is the first thin, multi-reflector, multi-layer insulation system with all its surfaces fully thermally welded together.

Aluthermo Quattro[®] consists of two 30-micron thick outer layers of polished and anti oxidation-treated pure aluminium, separated by two honeycombed layers of air bubbles enclosed inside a fire-retardant polyethylene film, together with two extra layers of pure aluminium foil and a fire-retardant and water-repellent polyethylene foam.

Aluthermo Quattro[®] therefore provides an almost impenetrable barrier against infrared radiation in both summer and winter. For easier installation, Aluthermo Quattro[®] is thermally welded over its entire surface, like all other Aluthermo[®] insulation systems.

The obtained complex is semi-rigid and consists of the following successive layers:

1. A layer of pure aluminium foil, 30 microns thick, treated against oxidation
2. A layer of dry air bubbles enclosed in fire-retardant polyethylene
3. A layer of pure aluminium foil treated against oxidation
4. A fire-retardant and water-repellent polyethylene foam
5. A layer of pure aluminium foil treated against oxidation
6. A layer of dry air bubbles enclosed in fire-retardant polyethylene
7. A layer of pure aluminium foil, 30 microns thick, treated against oxidation

2. TECHNICAL CHARACTERISTICS

Technical Characteristics	Aluthermo Quattro	Aluthermo 21 mm	Aluthermo 14 mm	Aluthermo 7 mm
Thickness	+/- 10 mm	21 mm	14 mm	7 mm
Bubble diameter	10 mm	30 mm	18 mm	10 mm
Bubble height	4 mm	12 mm	8 mm	4 mm
Polyethylene film thickness	150 µm	200 µm	200 µm	150 µm
Number of aluminium films	4	2	2	2
Thickness of polyethylene foam	3 mm	-	-	-
Thickness of outer polyethylene film	30 µm	30 µm	30 µm	30 µm
Dimensions of roll	1,20 x 25 m	1,25 x 25 m	1,25 x 25 m	1,25 x 25 m
Area per roll	30,00 m ²	31,25 m ²	31,25 m ²	31,25 m ²
Weight	± 750 g/m ²	± 620 g/m ²	± 550 g/m ²	± 550 g/m ²
Permissible load with 10 % deformation	543 kg/m ²	-	-	250 kg/m ²
Permissible load with 20 % deformation	1232 kg/m ²	-	-	-
Bursting resistance	2423 kg/m ²	-	-	1000 kg/m ²
Equivalent thermal resistance	*	**	**	**
Acoustic attenuation	Rrose = 34,3 dB(A) Rroute = 28,3 dB(A)	Rrose = 27 dB(A) Rroute = 24 dB(A)	-	-
Impact noise attenuation	ΔL _w = 22 dB	-	-	ΔL _w = 26 dB
Operating temperatures	-40Yà 80Yc	-40Yà 80Yc	-40Yà 80Yc	-40Yà 80Yc

* See study by University of Aix-la-Chapelle

** See study by University of Liège

Fully waterproof, non-rotting

Fire protection class M1 – A1 according to Ghent University report No. 11869A and 8744A

Non-allergic and non-toxic - Guaranteed 10 years - Non-sagging

No condensation within the normal temperature range

Dry air bubbles with no possibility of contact with the outside air

3. APPLICATIONS

	Aluthermo Quattro	Aluthermo 21 mm	Aluthermo 14 mm	Aluthermo 7 mm
Roof from outside	●	●		
Roof from inside, cold climate	●	●		
Roof from inside, moderate climate	●	●	●	
Cladding	●	●	●	
Interior walls	●	●	●	●
Exterior walls	●	●	●	●
Under screed with/without floor heating	●			●
Under floorboards or raised “floating” wooden floor	●			●
Industrial buildings	●	●	●	●
Supplementary insulation by vapour barrier	●	●	●	●

Other application(s): please contact Aluthermo S.A.

4. INSTALLATION METHODS

4.1. GENERAL

4.1.1. WATERPROOFING AND AIRTIGHTNESS

To reduce convection losses to a minimum, it is absolutely essential for the insulation to form a closed system that is sealed to the air outside the building.

This criterion is easily satisfied with Aluthermo®.

Aluthermo® is laid over the full surface of the construction. The edges of the successive strips of Aluthermo® are overlapped over a width of 5 to 10 cm and sealed by means of Aluthermo aluminium adhesive tape, with a width of 75 to 100 mm depending on the application.

Since the Aluthermo® insulation is thermally welded over its entire surface, it can be cut at any point.

A normal cutter is sufficient for cutting the insulation.

ALUTHERMO® ADHESIVE

Aluthermo®	Recommended width of Aluthermo® adhesive tape
Aluthermo Quattro	100 mm
Aluthermo® 21 MM	100 mm
Aluthermo® 14 MM	100 mm
Aluthermo® 7 MM	Minimum 75 mm

The 50 µm thickness of aluminium on this special adhesive tape also guarantees optimal reflection at the cutting points.

To guarantee perfect adhesion, the surfaces must be free of dust and moisture, and after applying the adhesive, the bonded area must be wiped with a dry cloth.

4.1.2. PRESERVING THE AIR GAP

Um To bring out the full insulating potential of Aluthermo® in protecting against energy exchange by radiation, we recommend that you preserve an air gap of at least 2 cm on both sides of the Aluthermo®. To maximise the soundproofing effect, Aluthermo must be stretched out tight to prevent any point of contact with adjacent surfaces.

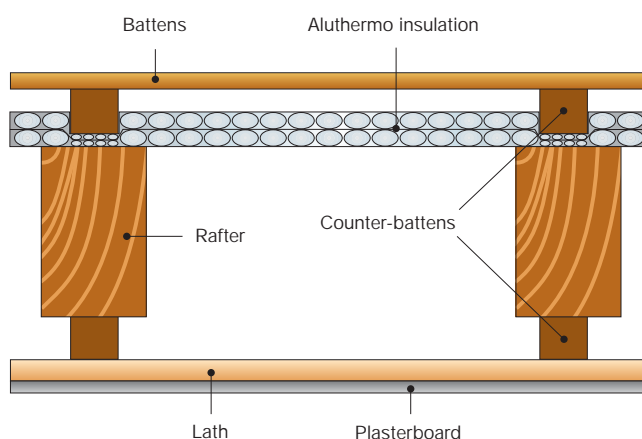
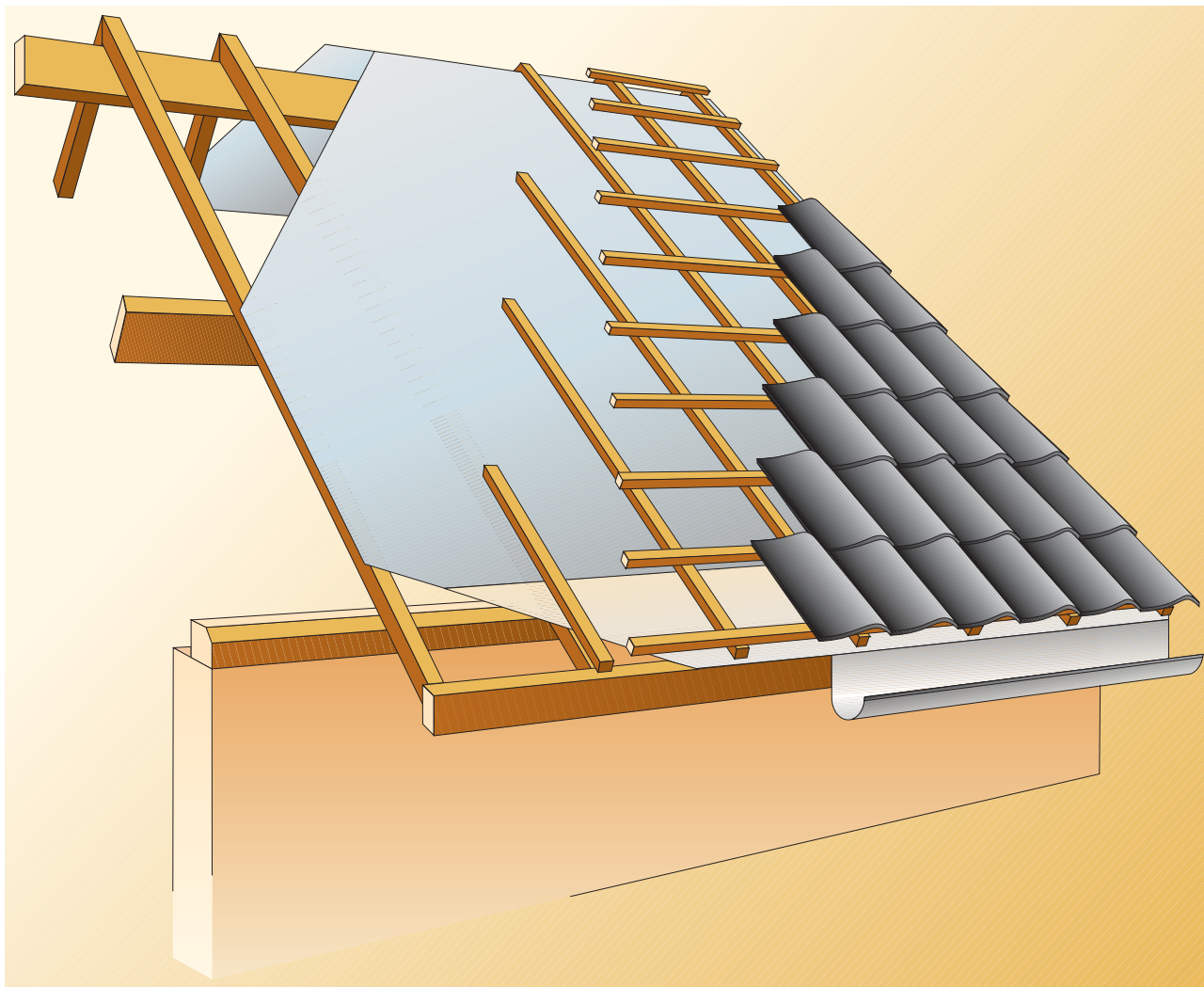
4.1.3. CRUSHING

In response to the problem of crushing of the insulation material by roof battens, for example over the rafters, purlins etc., Aluthermo® prevents thermal bridging by ensuring compensation between the timber and the honeycombed air bubbles.

4.2. INSTALLATION AS ROOF INSULATION

4.2.1. ROOF INSULATION FROM EXTERIOR

4.2.1.1. GENERAL PRINCIPLES



In the case of insulation from the outside, Aluthermo® is unrolled horizontally over the rafters, starting at the bottom of the roof, and is provisionally fastened to the rafters by means of 20 mm long staples.

When laying the next strips, ensure a “tile-effect” overlap of 10 cm. Cover this overlap with 100 mm wide aluminium adhesive tape supplied by our company.

The spacing between rafters must not exceed 60 cm, and the Aluthermo® strips must be stretched out tight.

The battens must then be installed as follows:

- Firstly, counter-battens measuring a minimum of 24 mm thick by 4 to 5 cm wide must be fastened on top of the rafters, vertically in relation to the eaves, using twisted nails with a minimum length of 60 mm or screws.
- Secondly, lay the battens for attaching the roofing (tiles, slates etc.) parallel to the eaves and fix them to the counter-battens.
- If decking is required in order to attach the roofing material (zinc, certain types of slate etc.), the wooden boards must be fixed parallel to the eaves above the counter-battens.

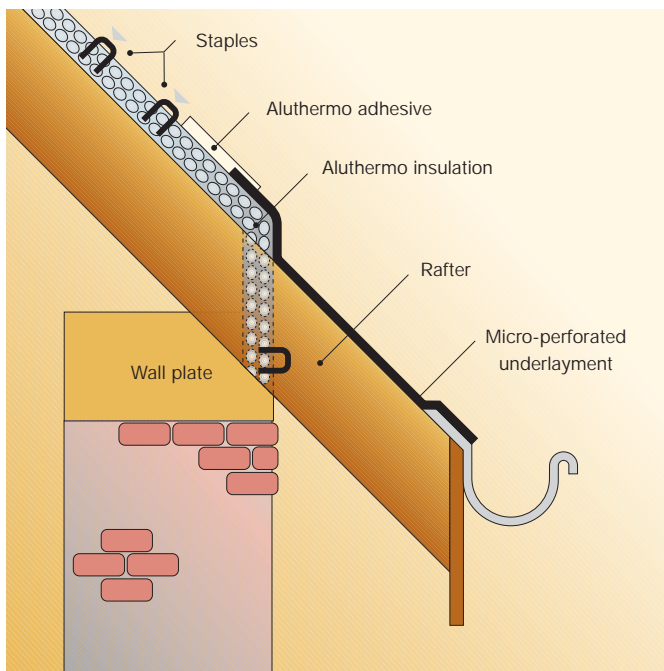
This method of installation guarantees a minimum air gap of 2 cm between the roofing and the Aluthermo® insulation, thereby assisting infrared reflection by Aluthermo® and ensuring ample ventilation. We also recommend the installation of roof vents.

Since Aluthermo® is waterproof and airtight, there is no need for a roof lining or vapour barrier.

Make sure that the frame is perfectly dry before installing Aluthermo®.

4.2.1.2. Installation at the base of the roof

To prevent air from the outside passing underneath the Aluthermo® insulation at the base of the roof, the Aluthermo® insulation must be positioned correctly.



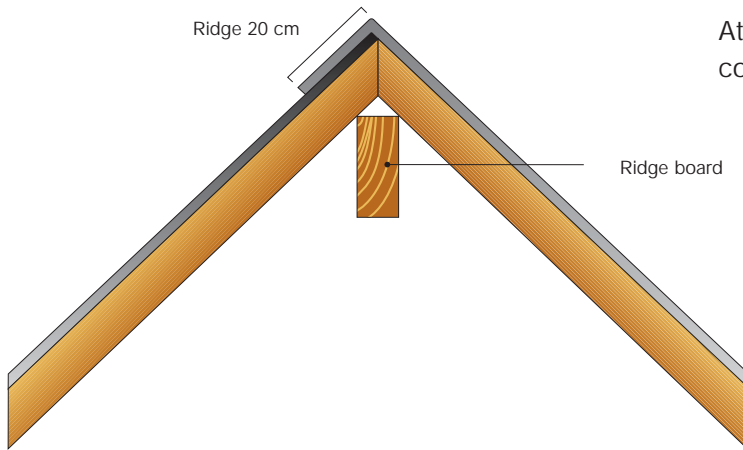
Unroll the first sheet of Aluthermo® parallel to the eaves. The bottom edge of the Aluthermo® must overhang the wall plate by a sufficient length to enable it to be fixed to the wall plate. Stretch out the Aluthermo® and fix it temporarily to the rafters with staples.

Then fold the bottom edge of the Aluthermo® down on to the wall plate, after making an incision if necessary, and fix it to the wall plate with staples.

Seal the entire assembly with aluminium adhesive tape to ensure that it is airtight.

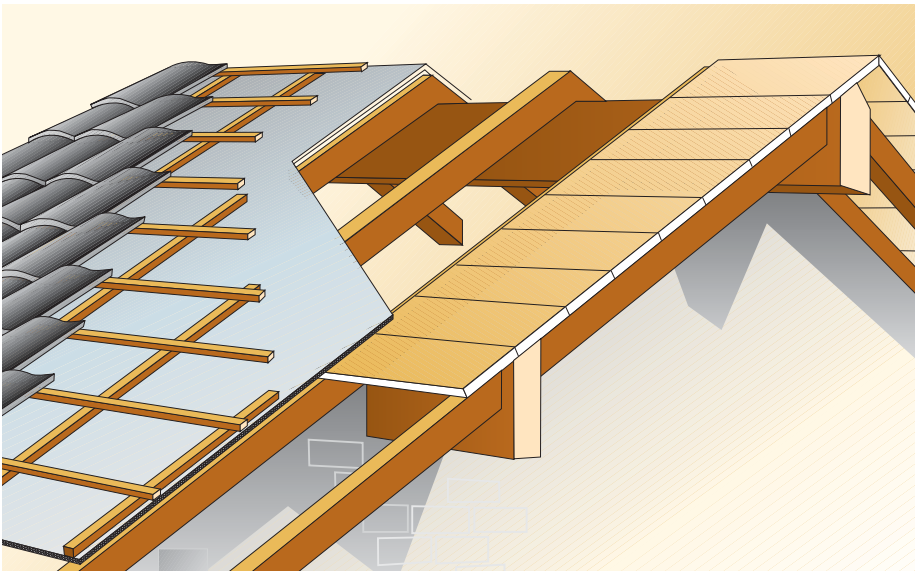
Then finish the roof insulation down to the gutter using a conventional roof lining fastened to the Aluthermo® insulation with the aid of the special aluminium adhesive tape.

4.2.1.3. Installation at the ridge



At the roof ridge, the Aluthermo® sheet must cover the two sides by at least 20 cm.

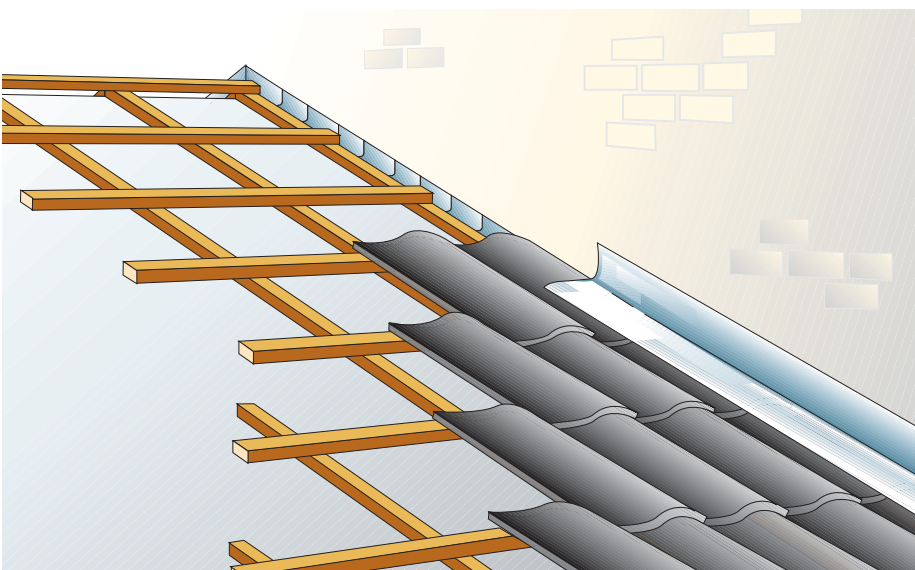
4.2.1.4. Installation on the gable



Provisionally staple the Aluthermo® insulation to the last rafter.

Fix a lath (counter-batten) to the gable to ensure a perfect air seal.

4.2.1.5. Joining to a side wall

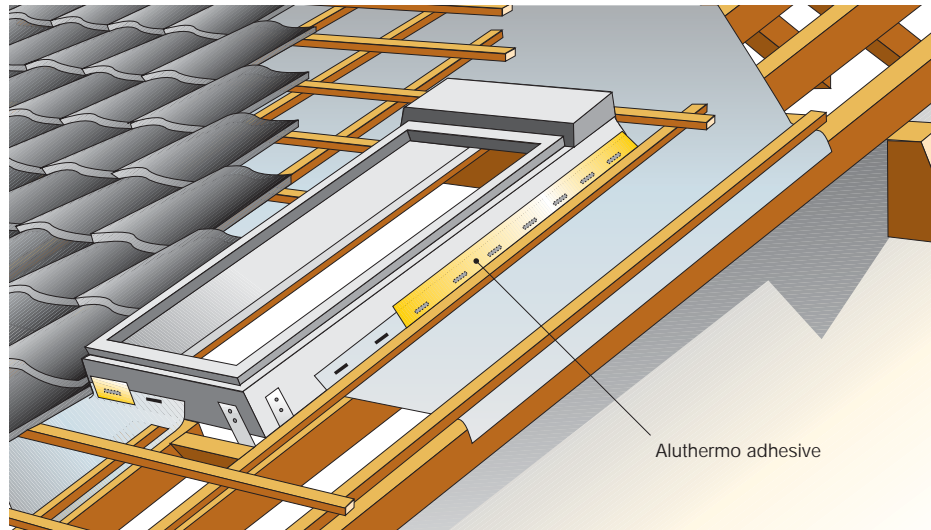


Position Aluthermo so that it can be folded up by about 5 cm. Staple Aluthermo® to the first rafter and press it against the wall by means of counter-battens.

4.2.1.6. Roof window

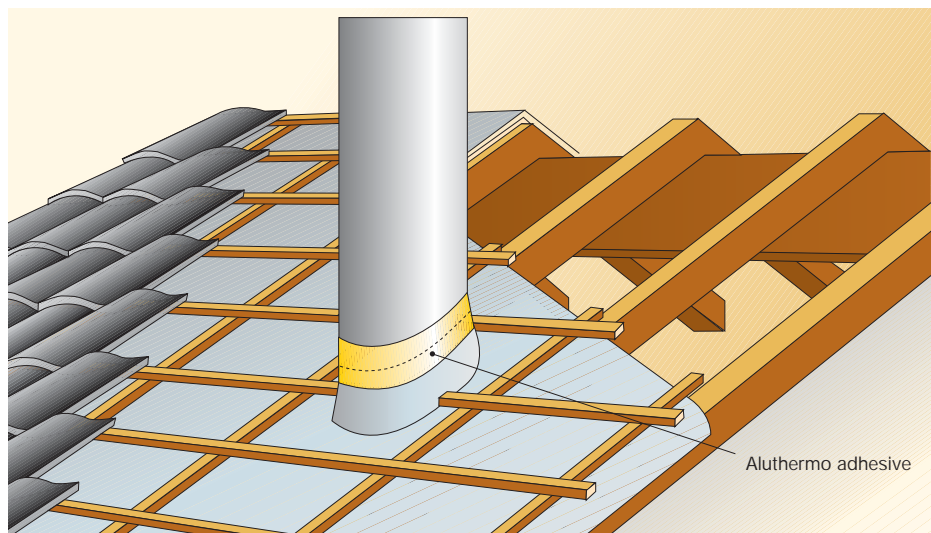
Follow the advice of the window manufacturer.

Draw the outline location of the window on the Aluthermo® and then cut the Aluthermo® along the 2 diagonals. Fold back the Aluthermo® and install the window. Fasten the Aluthermo® to the wooden frame, folding it up to a distance of 5 cm from the top edge of the frame. Cut off the excess insulation. Fasten the edges and corners with the special aluminium adhesive tape.



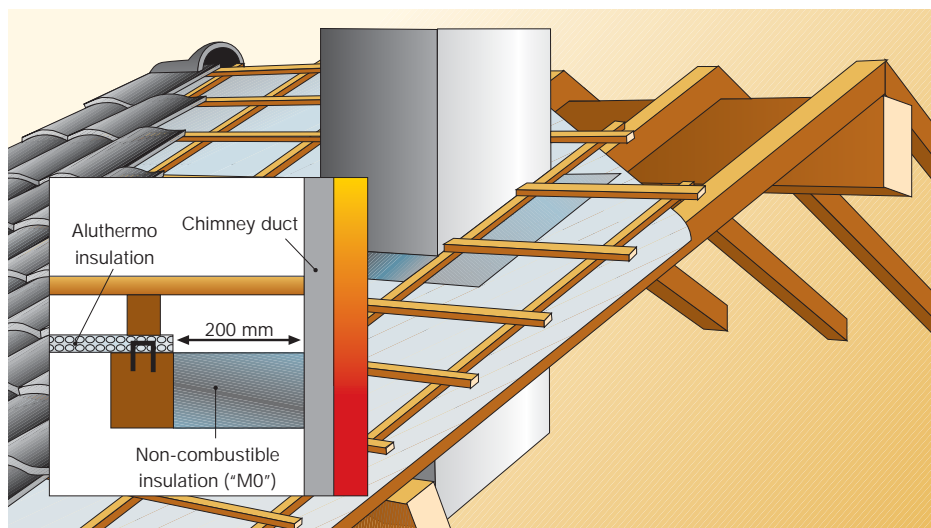
4.2.1.7. Joins at vents, aerials etc.

Draw the location of the opening on the Aluthermo® and cut the Aluthermo® along the 2 diagonals. Fold back the Aluthermo® and bond the edges with aluminium adhesive after installation.

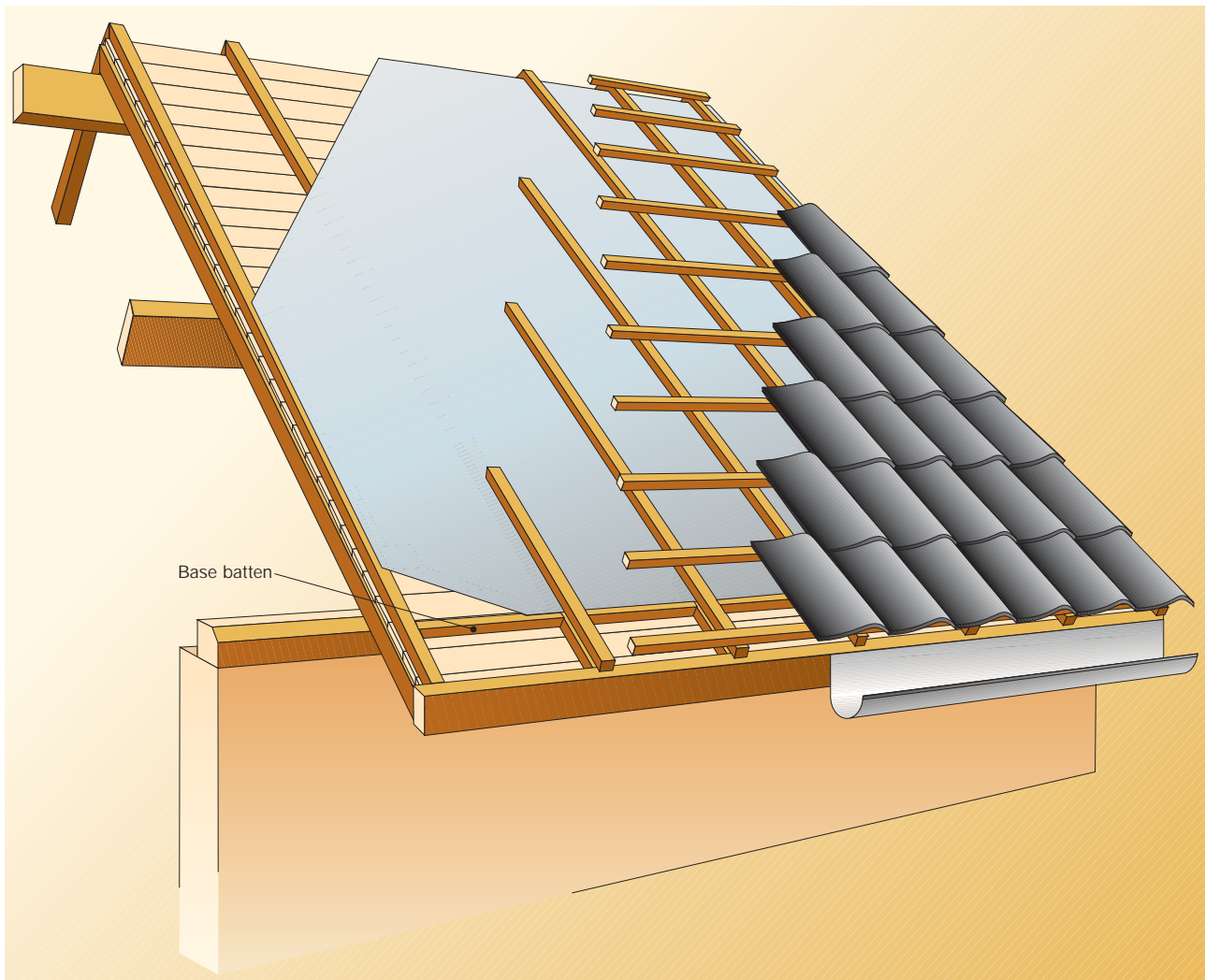


4.2.1.8. Chimney join

If the exterior temperature of the chimney exceeds or attains 90°C, the Aluthermo® insulation must not be laid any closer than 20 cm to the chimney. The remaining distance can be filled with a non-combustible insulating material (French category "M0").



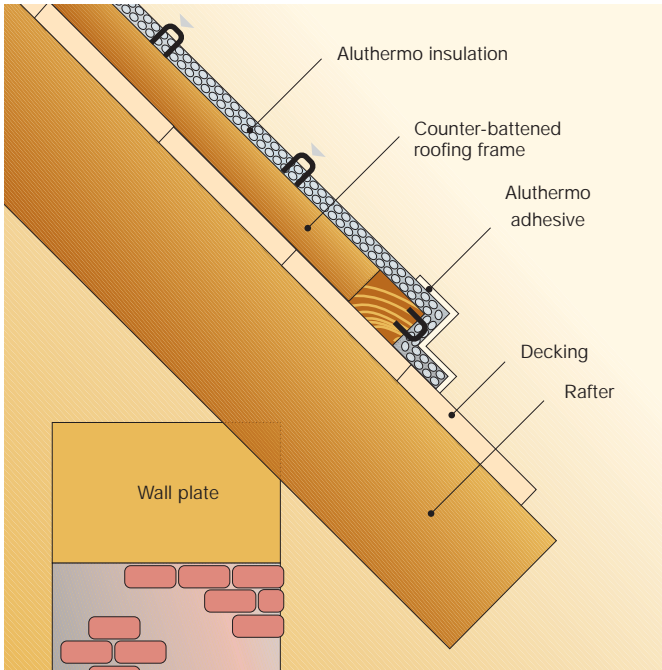
4.2.2. ROOF INSULATION FROM EXTERIOR WITH LATH DECK AS PART OF EXPOSED BEAM INTERIOR DESIGN



Construct a batten frame on top of the lath decking to establish an air gap between the Aluthermo® and the decking.

This frame is formed by criss-cross battening:

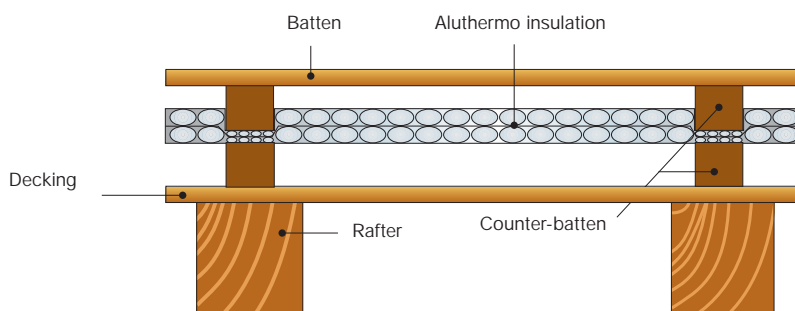
Start at the bottom of the surface to be insulated. At this level, parallel to the eaves, fasten a base batten having the same height as will be used for the vertical counter battens. Then nail the counter-battens, measuring a minimum of 30 mm high by 50 mm wide, through the decking into the rafters.



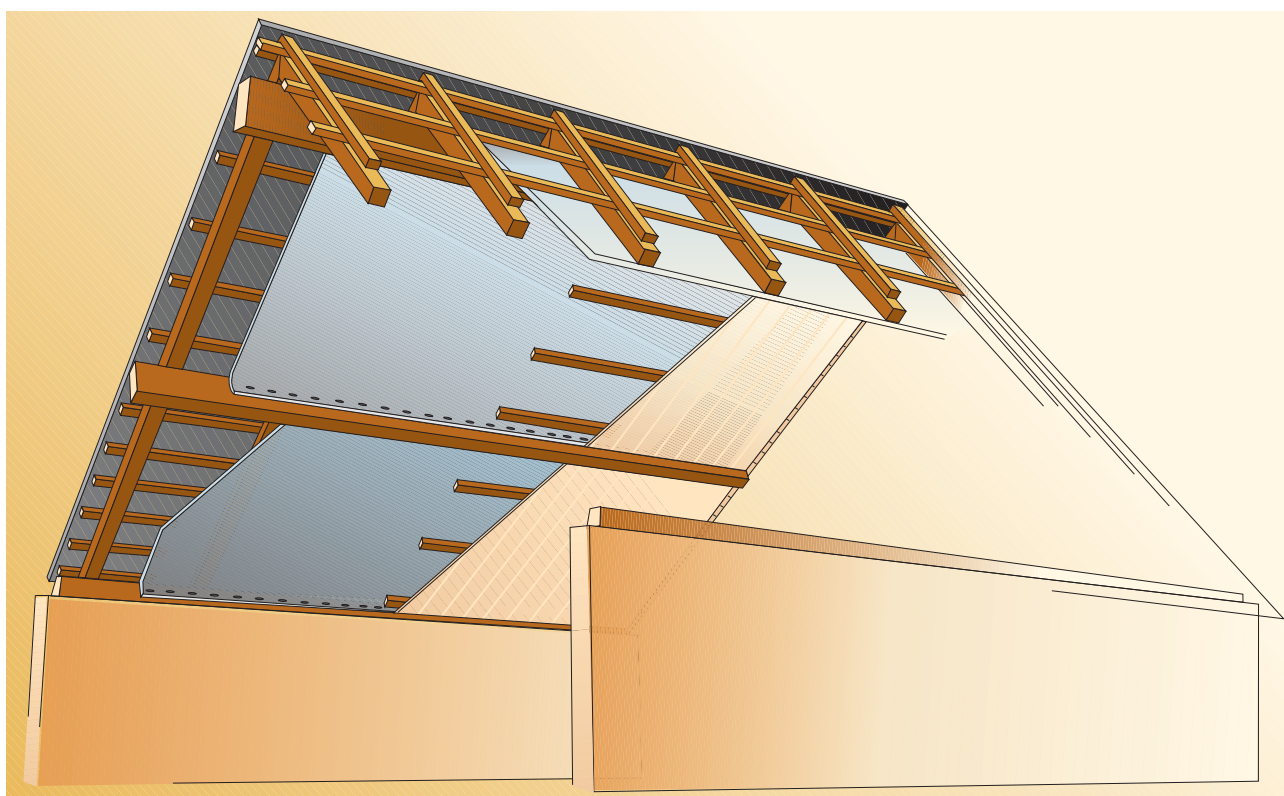
Unroll the Aluthermo® insulation horizontally, parallel to the eaves, over these vertical counter-battens. Staple the bottom edge of the Aluthermo® to the vertical side of the base batten, with a spacing of 5 cm between staples. Seal this joint with aluminium adhesive tape.

Lay the other strips of Aluthermo® insulation as described in the General Principles, overlapping each strip by 10 cm in "tile effect". Cover each overlap with the aluminium adhesive tape.

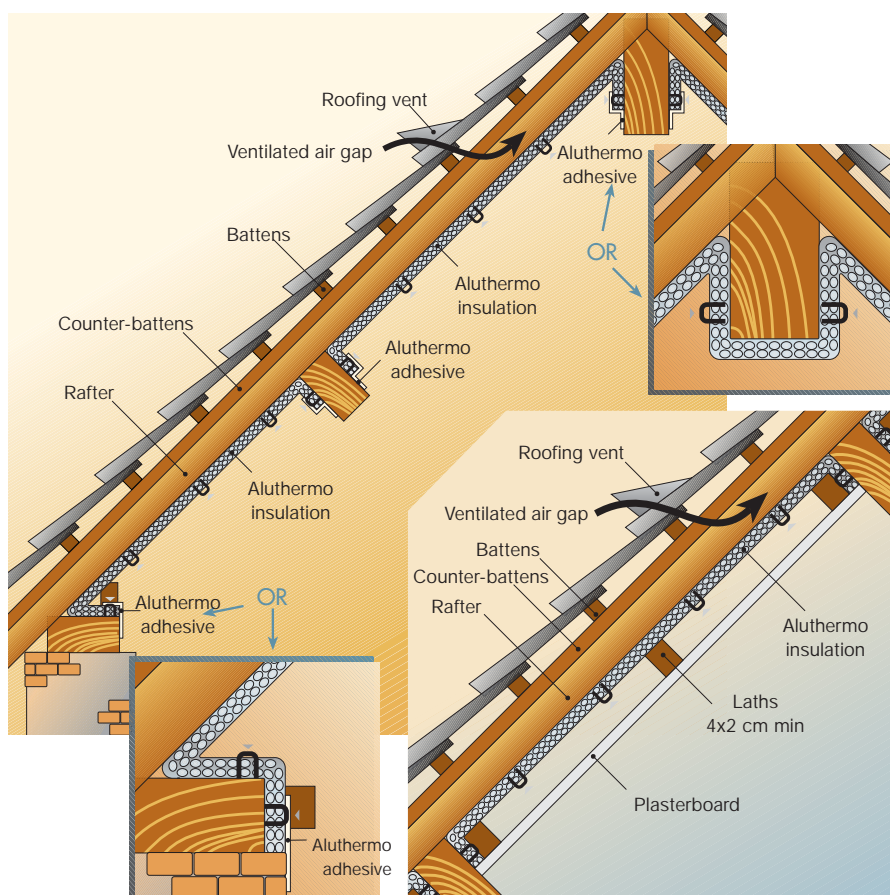
Now fasten a second level of vertical counter-battens to the existing frame base, followed finally by the horizontal battens for attaching the roofing.



4.2.3. ROOF INSULATION FROM INTERIOR



The first sheet of Aluthermo® must be unrolled parallel to the ridge and fastened to the ridge board, with a 5 cm turn-down. Then stretch out the Aluthermo® correctly and staple it to the purlins and rafters, with a maximum spacing of 20 cm between staples.



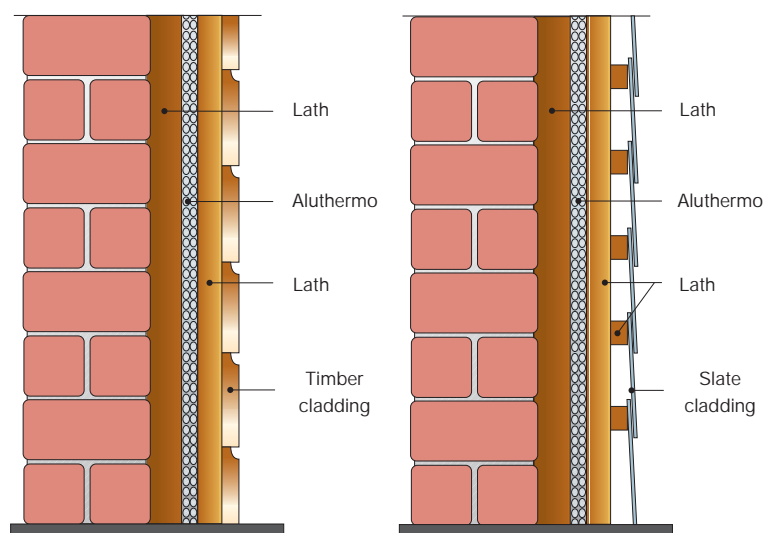
Position the next sheets of Aluthermo® with a minimum overlap of 5 cm to the previous sheet. Seal these overlaps with the special aluminium adhesive tape supplied by Aluthermo®.

Fasten the bottom edge of the last strip of Aluthermo® to the wall plate by means of staples spaced at 5 cm intervals.

Then fasten the laths for the final finish (wood panelling, plasterboard etc.) to the rafters. These laths will press the Aluthermo® against the purlins.

4.3. INSTALLATION ON WALLS, CEILINGS, AND FLOORS

4.3.1. INSTALLATION ON EXTERIOR WALLS AND CLADDING



Fasten a framework of laths measuring 30 cm thick by 5 cm wide to the wall to be insulated. Unroll the Aluthermo® insulation horizontally over this framework, forming an overlap of at least 5 cm between successive strips.

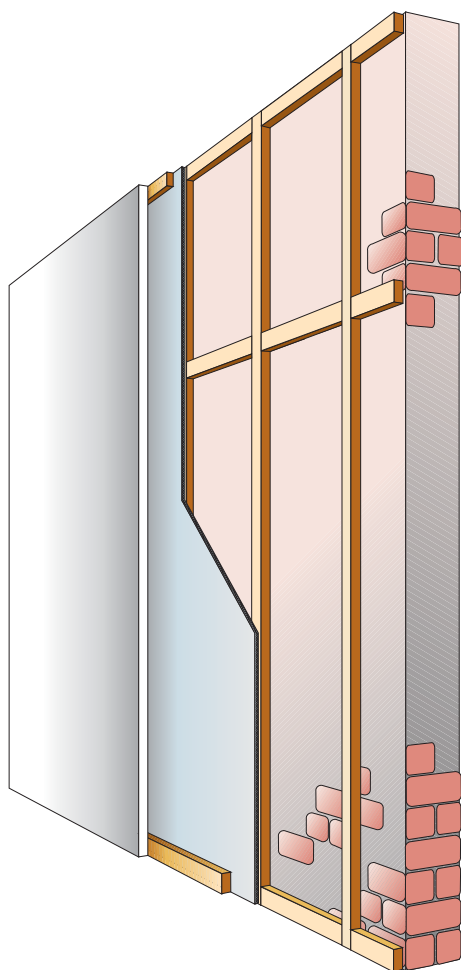
Seal the overlaps and joins with the special aluminium adhesive tape supplied by Aluthermo.

Provisionally fasten the Aluthermo® insulation by stapling it to this wooden framework. The vertical laths of the framework must be spaced at approximately 60 cm. The perimeter laths must be positioned flush with the horizontal and vertical limits of the surface to be insulated. This framework establishes a stable air gap between the Aluthermo® insulation and the insulated wall.

Then fasten the counter-laths to the framework for the final metal or timber cladding.

If the cladding is in slate, fasten the laths for the slate cladding to the counter-laths.

4.3.2. INTERIOR WALL INSULATION



Aluthermo® can be unrolled and installed horizontally or vertically, ensuring a minimum overlap of 5 cm between strips, on a framework of laths measuring 30 mm thick by 50 mm wide previously fixed to the wall to be insulated.

Seal the overlaps and joins with the special aluminium adhesive tape supplied by Aluthermo®.

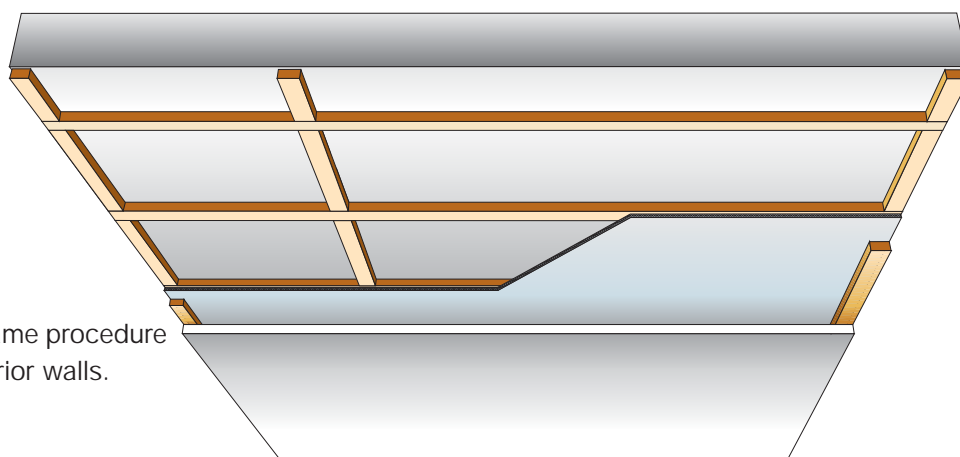
Provisionally fasten the Aluthermo® insulation by stapling it to this wooden framework.

The vertical laths of the framework must be spaced at approximately 60 cm. The perimeter laths must be positioned flush with the horizontal and vertical limits of the surface to be insulated.

This framework thereby establishes a stable air gap between the Aluthermo® insulation and the insulated wall.

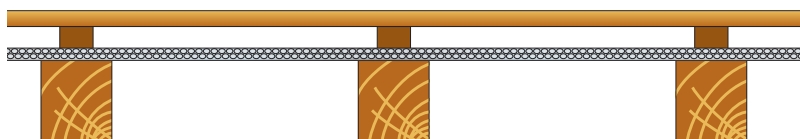
Then fasten the counter-laths to the framework for the interior finish (plasterboard, wood panelling etc.).

4.3.3. CONCRETE CEILING INSULATION



Use the same procedure as for interior walls.

4.3.4. INSTALLATION UNDER WOOD OR PARTICLE BOARD FLOOR



Unroll and staple the Aluthermo® insulation to the timber framework, sealing the overlaps with the aluminium adhesive tape supplied by Aluthermo®.

Then screw laths measuring a minimum of 3 cm thick by 5 cm wide to the wooden floor beams.

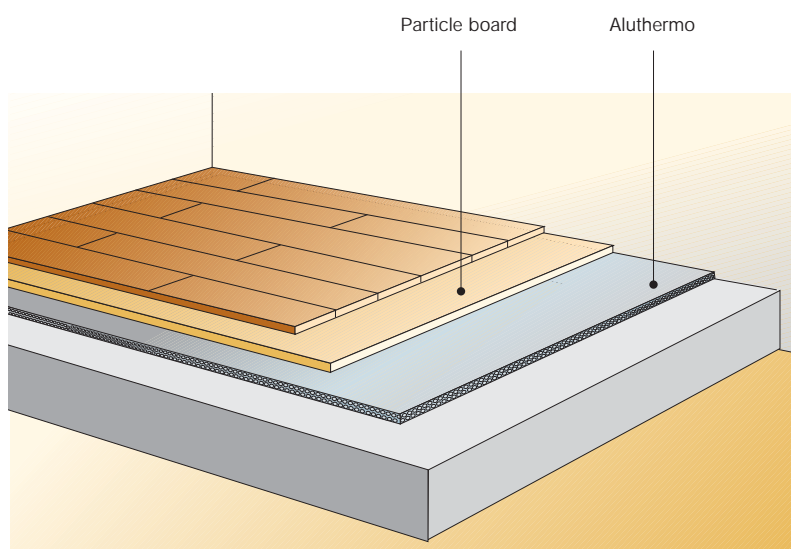
Fasten the wood or particle board flooring to these laths.

If the wood floor is laid on concrete slab instead of on a timber framework, the insulation must be laid out and stapled to laths spaced at a maximum of 60 cm, previously fixed to the concrete, sealing the overlaps between successive strips with the aluminium adhesive tape supplied by Aluthermo®.

Then screw laths measuring a minimum 3 cm thick by 5 cm wide to the base laths.

The wood or particle board floor can then be fixed to these top laths.

4.3.5. INSULATION UNDER FLOATING FLOOR



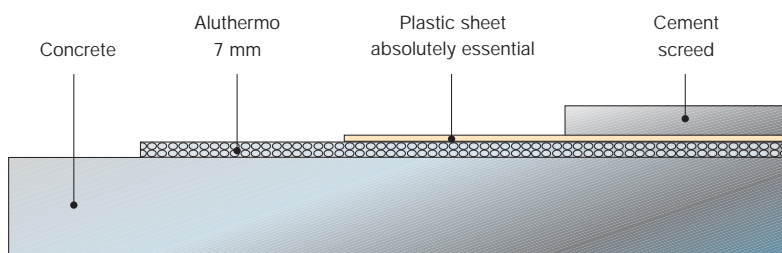
Make sure that the structural floor is clean and smooth. If necessary, install a layer of plastic foam before laying the Aluthermo®.

Spread out the Aluthermo® without folding it up along the adjacent walls.

Do not overlap the different strips of Aluthermo® but lay them edge to edge, sealing the joins with the aluminium adhesive tape supplied by Aluthermo®.

Then install a layer of particle board before fitting the floating floor.

4.3.6. INSULATION UNDER SCREED



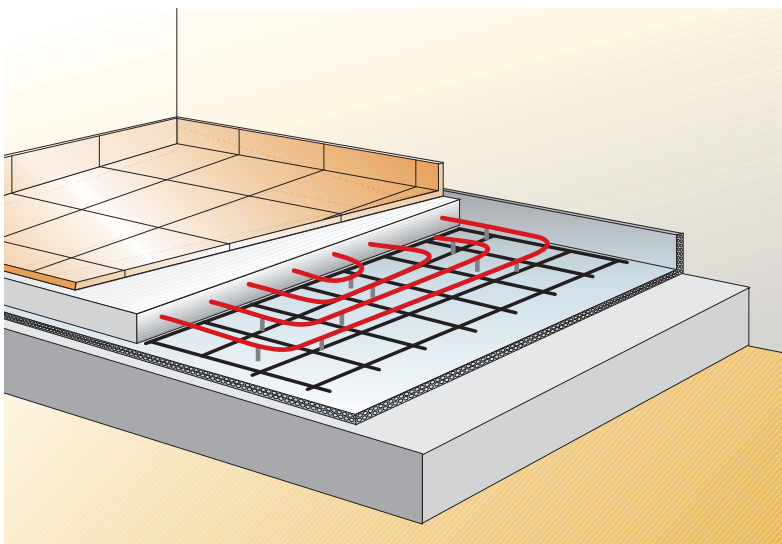
Make sure that the structural floor is clean and smooth. If necessary, install a layer of plastic foam before laying the Aluthermo®.

Spread out the Aluthermo®, folding it up along the adjacent walls.

Do not overlap the different strips of Aluthermo® but lay them edge to edge, sealing the joints with the aluminium adhesive tape supplied by Aluthermo®.

A plastic sheet must, as an absolute necessity, be laid above the Aluthermo® before installing the mesh and laying the screed.

4.3.7. INSTALLATION WITH UNDER-FLOOR HEATING



Make sure that the structural floor is clean and smooth. If necessary, install a layer of plastic foam before laying the Aluthermo®.

Spread out the Aluthermo®, folding it up along the adjacent walls.

Do not overlap the different strips of Aluthermo® but lay them edge to edge, sealing the joints with the aluminium adhesive tape supplied by Aluthermo®.

A plastic sheet (shown hatched in the diagram) must be laid above the Aluthermo® before installing the hot water pipes joined to the mesh, in accordance with the manufacturer's specifications.

Then lay the screed.

This list of applications is not exhaustive.

For example, Aluthermo® is also used in several industrial applications.

For these applications and for any additional questions, our technical sales team will be glad to help.

Please do not hesitate to contact us.



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