

THERMANO
FLOOR
INSTALLATION
MANUAL

APPLICATION

THERMANO FLOOR is a versatile thermal insulation system

Its parameters make it perfect for thermal insulation of both standard and heated floorings.

The multi-layer cladding has the top layer made of aluminium, which is why **THERMANO FLOOR** works as an energy barrier and returns the heat generated by floor heating, directing it to the building interior.

Thermal insulation boards may be applied in various floorings, both on the ground and intermediate ones, in residential, industrial and rural construction.

The product is also perfectly suited for insulating terraces and balconies, both new and modernised buildings.

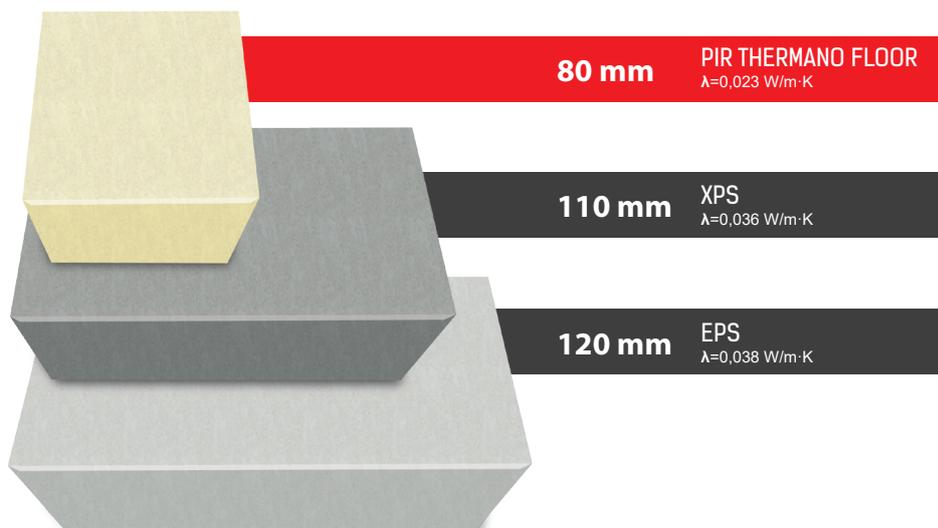


ADVANTAGES OF THERMANO FLOOR IN INSULATING FLOORINGS AND TERRACES

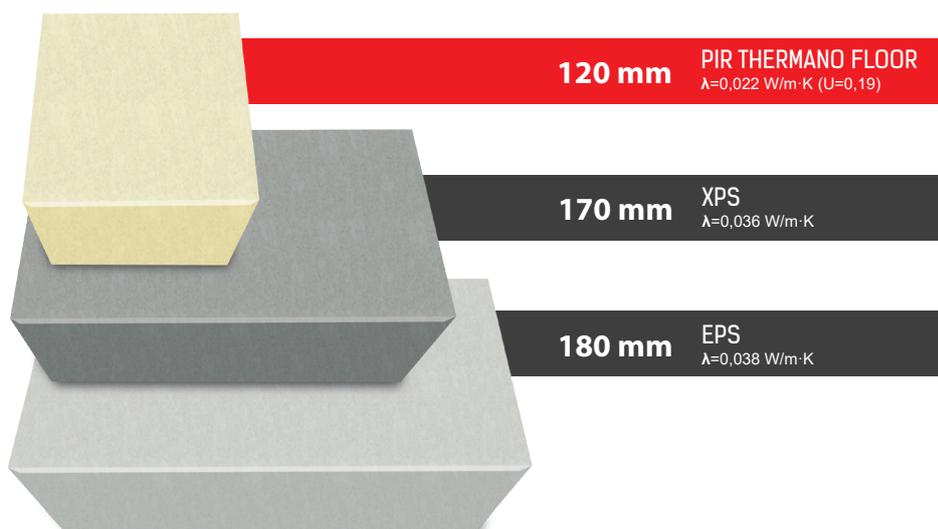
The highest energy efficiency

THERMANO FLOOR has the lowest heat conductivity coefficient $\lambda = 0,022$ (W/m·K) among thermal insulation materials, which is reflected in the best insulation parameters at a comparable material thickness.

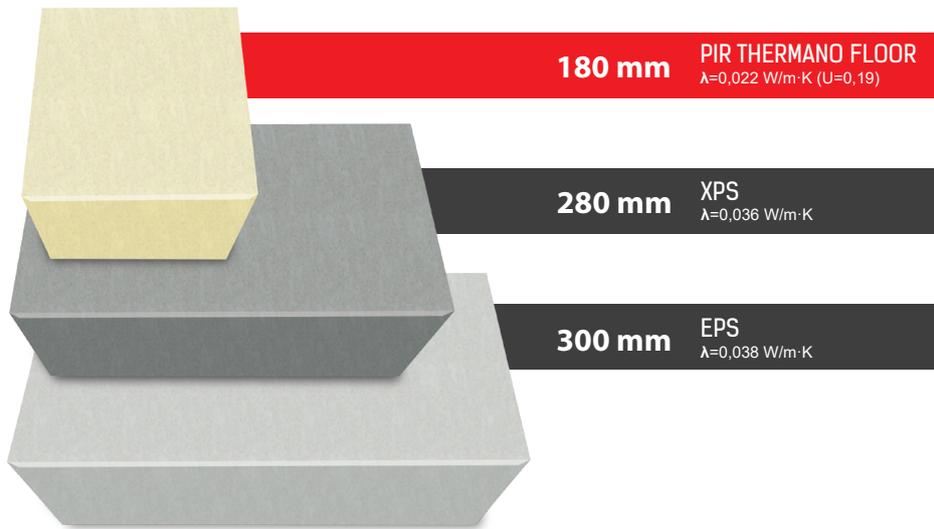
Thicknesses of thermal insulators for floorings laid on the ground



1. Standard according to the requirements of the Ministry of Infrastructure and Development of 1.01.2014
 $U \leq 0,30$ W/m²·K



2. Energy saving home according to NF 40 - **$U \leq 0,20$ W/m²·K**



3. Standard for a passive home according to NF 15 - **$U \leq 0,12 \text{ W/m}^2 \cdot \text{K}$**



4. **THERMANO FLOOR** thicknesses for intermediate floors

Thermal insulation parameters of THERMANO FLOOR boards

	d [mm] board thickness	U [W/m²K] insulation coefficient	R [W/m²·K] heat resistance
λ = 0,023 W/mK	20	1,18	0,85
	30	0,77	1,30
	40	0,59	1,70
	50	0,47	2,15
	80	0,29	3,45
λ = 0,022 W/mK	100	0,22	4,50
	120	0,18	5,45

* Minimum single order 300 m²

ADVANTAGES OF THERMANO FLOOR IN INSULATING FLOORINGS AND TERRACES



Super- insulation means no thermal bridges

THERMANO FLOOR boards with a TOP or MASTER lock eliminate formation of gaps in thermal insulation: there is no thermal bridge phenomenon causing heat loss through the flooring.



Super-insulation means high strain resistance – 150 kPa (15 tonnes/m²)

The strain resistance is almost double compared to EPS polyester, which means:

- a solid flooring for many generations – risk of cracks in concrete floor are minimised
- no risk of ready floor caving in (it may occur if a heavy floor finished with parquet or solid planks is insulated with polystyrene)
- even, stable and solid substrate, perfect for heated floorings.



Super-insulation means higher heating efficiency

By returning heat, the aluminium cladding increases the efficiency of floor heating. This gives savings in energy that is necessary to obtain comfortable interior temperature.



Super-insulation means no moist

As **THERMANO FLOOR** is an insulation material with a very low water absorbability (<2%) it protects the flooring against water vapour condensation in the form of moist in the barrier. The moist has an influence on the life of the flooring.

Resistant to flooding – if the flooring is flooded due to, e.g. a malfunction of water floor heating, water or sewerage installation, **THERMANO FLOOR** is not subject to damage, and technical parameters of flooring insulation remain the same.

Low water absorbability guarantees no problems with fungi and mould growth in thermal insulation material – healthy air at home!



Super-insulation means easy assembly

- light and resistant material
- easy to cut
- it is possible to walk on **THERMANO FLOOR** during its laying
- various sizes – boards available in the following dimensions: 1200 x 600 mm and 1200 x 2400 mm.



ECOLOGY

THERMANO PIR is a modern, eco-friendly and safe material with exceptional thermal insulation properties.

Multifactorial, standardised LCA (Life Cycle Assessment) analyses have shown, that PIR foams are a material with the lowest environmental costs counted from production stage through routine use to final liquidation, among building thermal insulators.

They have the lowest ADP – Abiotic Depletion Potential and the highest modification possibilities by using ecological renewable materials (plants).

They are completely free from ODP (Ozone Depletion Potential) compounds.

They are recyclable and mostly reusable. The material does not contain any elements, additives or fibres that might cause throat, eye or skin irritation

photo: Nicholas A. Tonelli

THERMANO FLOOR

TECHNICAL INFORMATION

MATERIAL

THERMANO FLOOR is a hard, polyisocyanurate (PIR) thermal insulation board, 100% freon free (does not contain CFC and HCFC).



PIR is manufactured as a result of liquid ingredient foaming reaction (mainly organic ingredients from polyol and isocyanate groups) with an addition of an active foaming agent. This compound is continuously fed between two linings that limit the foamed volume.

Thermal insulation properties are optimised by the right selection of organic ingredients, indispensable chemical additives and fully ecological foamer.

These processes lead to creation of small cell structure with over 90 % of closed cells filled with gas of very low heat conductivity.

Such structure gives very good resistance parameters and exceptional thermal insulation properties of the material - a much better one in comparison with mineral wool and Styrofoam.

Technical parameters

according to PN-EN 13165 standard

- Thermal conductivity coefficient
 $\lambda_D = 0,022$ [W/mK] to $d > 90$ mm,
 $0,023$ [W/mK] to $d \leq 90$ mm,
taking ageing into account
- Bulk density: **30 kg/m³**
- Compressive stress **150 kPa**
(at 10% deformation)
- Absorbability $\leq 2\%$
- Tensile strength **TR70**
- Water vapour resistance:
 $\mu = 50-100$
- Euro fire class **E**
- Multilayer, gas-tight cladding with
an addition of aluminium

- Total width:
1200 mm (modular width: **1200 mm** (BASIC lock - straight edge), **1185 mm** (for TOP lock - overlapping))
- Total length:
600 mm (modular length: **600 mm** - BASIC, **585 mm** - TOP, **590 mm** - MASTER)
2400 mm (modular length: **2400 mm** - BASIC, **2385 mm** - TOP, **2390 mm** - MASTER)
- Non-standard lengths: **2400 - max 5000 mm**
- Boards of length up to **5000 mm** may be produced at a special request
- Available board thicknesses:
20, 30, 40, 50, 80, 100, 120 mm

THERMANO FLOOR

TECHNICAL INFORMATION

Guidelines for application

1. Preparation of the substrate

The **THERMANO FLOOR** boards are put on a supporting substrate covered with vapour insulation layers. The base should be even and dry, and all debris from building works (e.g. screws, nails, metal fillings) should be removed prior to mounting.

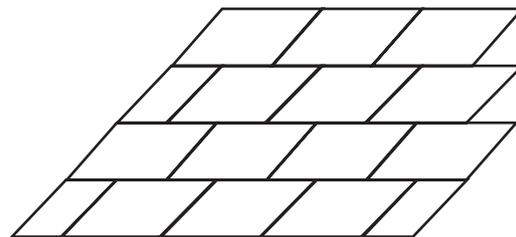
3. Laying THERMANO FLOOR boards

Depending on project requirements, **THERMANO FLOOR** boards are laid directly on the concrete layer, vapour insulation or waterproofing layer.

THERMANO FLOOR boards may be placed in single or double layers. In both cases stick to the staggering system to avoid having the edges of boards in the same places in both layers. The boards should be placed as shown in the drawing.

2. Cutting the boards

Depending on the roof shape and how complicated it is, **THERMANO FLOOR** boards may be cut by commonly available tools, such as jigsaws, wood and metal saws, sharp knives, etc.



Lay the boards very carefully avoiding gaps in the thermal insulation layer. Any possible glitches may be filled with low pressure polyurethane foam.

CAUTION!

While making thermal insulation for a flooring where concrete mixture is fed from a slab trolley or concrete mixing vehicle, **THERMANO FLOOR** boards should be laid successively with concrete laying. Moving heavy equipment on Thermano is inadmissible.

We suggest making an expansion joint of 10 mm width around posts and walls.



REMEMBER!

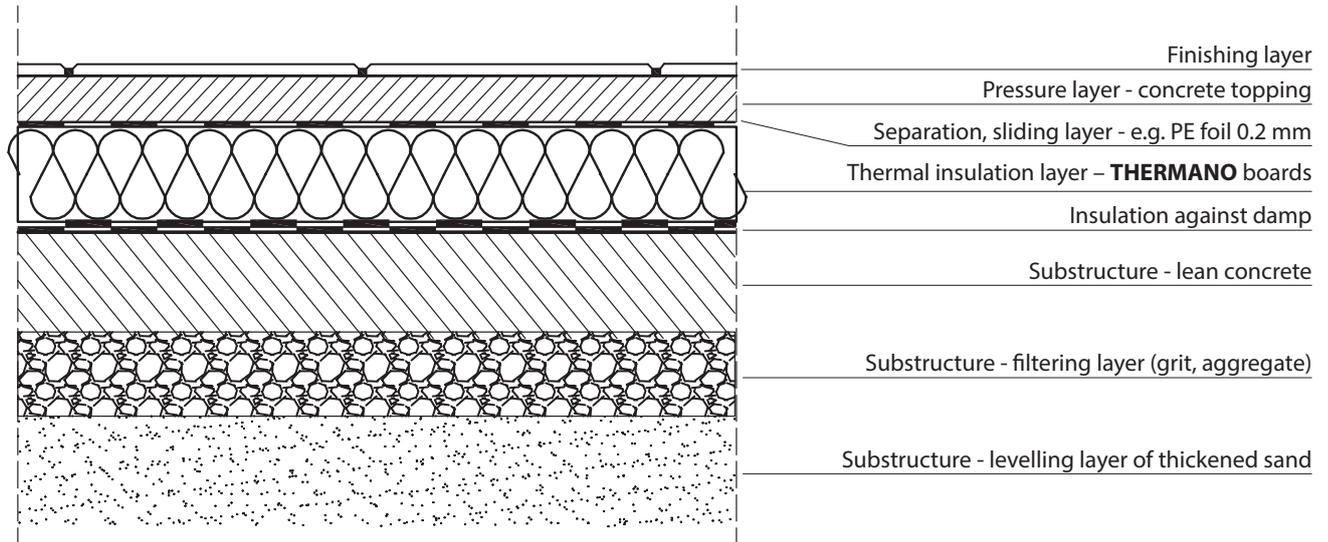
THERMANO FLOOR boards are transported in packaging secured by foil, with an additional Styrofoam base to prevent direct contact with the ground.

Once unpacked, the boards must be stored under cover, without being exposed to excessive sunlight.

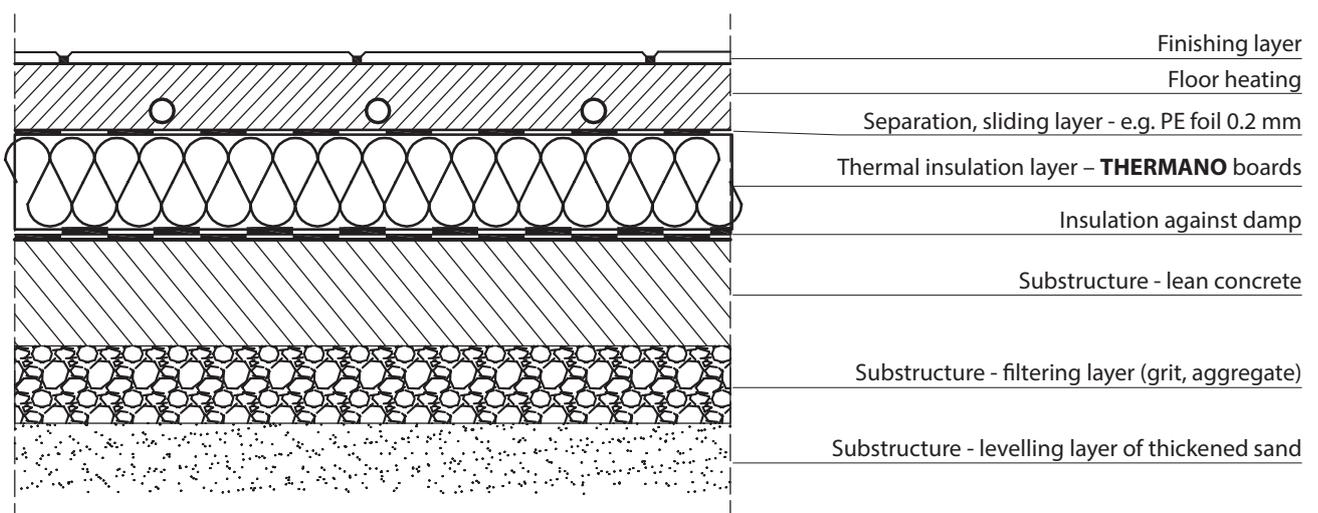
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ASSEMBLY DETAILS OF THERMANO FLOOR INSULATION ON FLOORINGS

Flooring in single and multi-family housing:



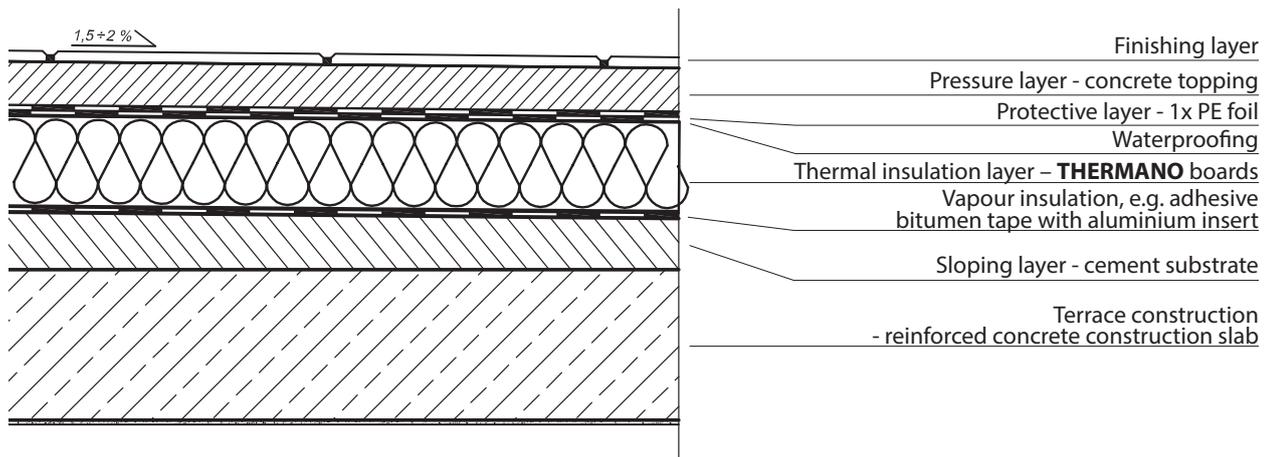
Flooring in single and multi-family housing with floor heating:



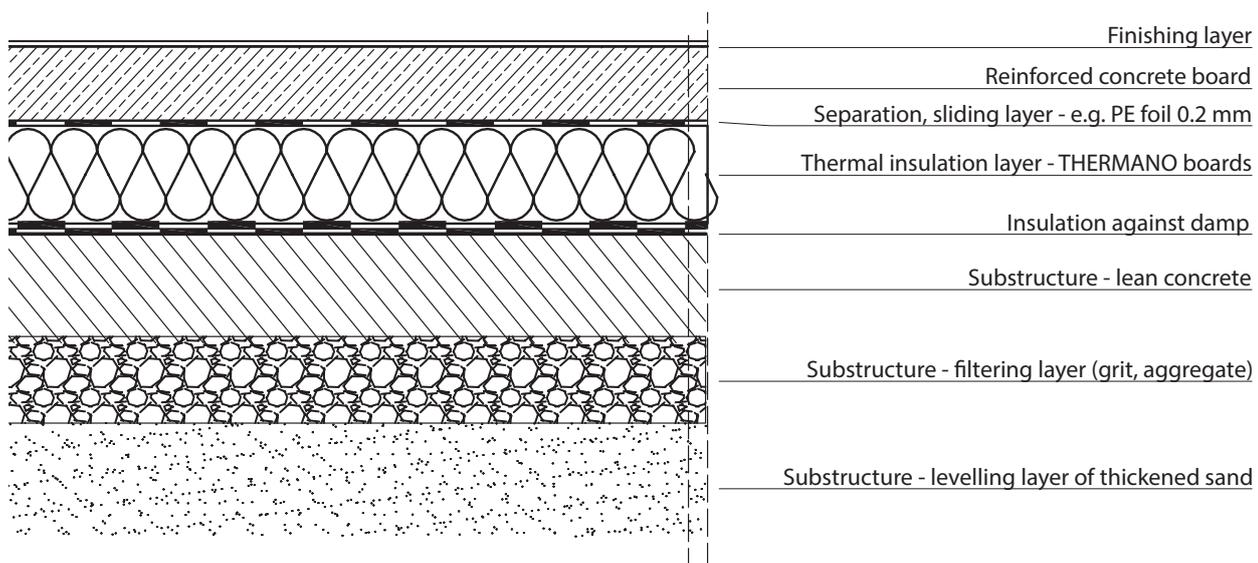
While making floor heating on **THERMANO FLOOR** take special care and seal board joints and expansion joints at walls and around posts with aluminium tape.

ASSEMBLY DETAILS OF THERMANO FLOOR INSULATION ON FLOORINGS

Flooring on a terrace or balcony over a heated interior:

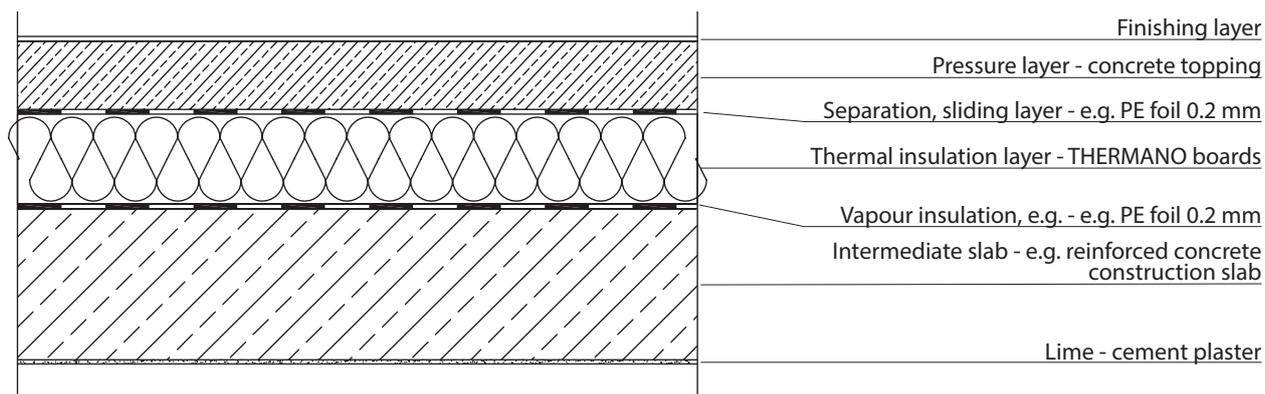


Industrial flooring (cold stores, freezers):



ASSEMBLY DETAILS OF THERMANO FLOOR INSULATION ON FLOORINGS

Intermediate flooring:



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