



# What are the considerations when **choosing an underlay** for Barlinek wooden layered floors?

A floor made of wooden layered floorboards must meet the expectations regarding the quality and comfort of use for many years. Therefore, it is important to select the best underlay that binds the floor to the subfloor.

The underlay should have the following characteristics:

1. Allow for correct installation, in accordance with Barlinek's guidelines.
2. Improve the performance of the floor, both in terms of sound proofing (reduction of foot traffic noise) and thermal comfort (underfloor heating or cooling).
3. Ensure the floor is durable for many years.

Barlinek's recommendations regarding the floor underlay specification depending on the required floor characteristics:

## subfloor / structure requirements



### UNDERFLOOR HEATING, COOLING (R $\lambda$ ,B)

All Barlinek wooden floors can be installed on water or electric underfloor heating systems and underfloor cooling systems. The highest efficiency of the heating / cooling system will be obtained by using under-floor underlays with the lowest possible thermal resistance (R).

The maximum allowable value of thermal resistance R for the **layered floorboard + underlay system** must not exceed:

- For underfloor heating systems:  $R \leq 0,851 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0.15 \text{ m}^2\text{K/W}$ )
- For underfloor cooling systems:  $R \leq 0,624 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0.11 \text{ m}^2\text{K/W}$ )

With the thermal resistance of a **wooden layered floorboard** of  $R = 0,567 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0.1 \text{ m}^2\text{K/W}$ ), it follows that the thermal resistance of the **underlay** for a layered floorboard should not exceed:

- For underfloor heating systems:  $R \leq 0,284 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0,05 \text{ m}^2\text{K/W}$ )
- For underfloor cooling systems:  $R \leq 0,056 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0,01 \text{ m}^2\text{K/W}$ )

The following underlays in Barlinek's offer meet these requirements:

- **FixMat SOUND 2.1SD**
- **EXTREME 1.5**



### UNDERLAY WITHOUT UNDERFLOOR HEATING, COOLING (R $\lambda$ ) THERMAL INSULATION

On unheated floors, we recommend the use of substrates with higher thermal resistance. Underlays whose thermal resistance is  $R \geq 0,284 \text{ } ^\circ\text{Fft}^2\text{h/Btu}$  ( $0,05 \text{ m}^2\text{K/W}$ ) increase the thermal resistance of the layered floorboard + underlay system, which increases the temperature on the floor surface. We recommend using underlays with high thermal resistance above unheated rooms, such as basements, corridors, etc.

The following underlays in Barlinek's offer meet these requirements:

- **EKO under-floor tile**
- **Cork mat**



### **PUNCTUAL CONFORMABILITY (PC)**

Correct installation of the floor requires the underlay to level the minor unevenness of the floor. The higher the value of the PC coefficient, the better the underlay performs its surface levelling function. This parameter also impacts soundproofing (no acoustic bridges). Barlinek recommends that the minimum value for the underlay is  $PC \geq 0,02''$  (0,5mm).

The following underlays in Barlinek's offer meet these requirements:

- **EKO under-floor tile**
- **Cork mat**
- **FixMat SOUND 2.1SD**



### **PROTECTION AGAINST RESIDUAL MOISTURE IN THE SUBSTRATE (SD - WATER VAPOR DIFFUSION RESISTANCE) $SD > 246 \text{ FT (75M)}$**

Barlinek recommends the use of underlay with an integrated moisture barrier. The higher the SD value, the better the floor is protected against moisture. SD value  $> 246 \text{ ft (75m)}$  is recommended.

If you choose an underlay without an integrated moisture barrier, it must be provided as a separate, additional layer.

The following underlays in Barlinek's offer meet these requirements:

- **FixMat SOUND 2.1SD**

# requirements for use



## RESISTANCE TO LOADS INCLUDING DYNAMIC LOAD (DL), COMPRESSIVE CREEP (CC) AND COMPRESSIVE STRENGTH (CS)

It is very important that the underlay is able to withstand various types of loads for many years of use and does not deform or lose its properties. The underlay is subjected to daily loads due to walking, standing furniture, etc.:

- **DL** - dynamic loads due to walking
- **CS** - compressive strength due short-term load
- **CC** - compressive creep due to long-term static load, e.g. furniture placed on the floor

Barlinek recommends the following requirements for underlay depending on the place of their installation:

MINIMUM REQUIREMENT	HIGHER REQUIREMENT **
<b>DL</b> ≥ 25 000 cycles (25 000 times a person stands at the same point of the floor)	<b>DL</b> ≥ 100 000 cycles (100 000 times a person stands at the same point of the floor)
<b>CS</b> ≥ 27,1 psi (150 kPa)	<b>CS</b> ≥ 31,9 psi (220 kPa)
<b>CC</b> ≥ 2,9 psi (20 kPa)	<b>CC</b> ≥ 5,8 psi (40 kPa)
The following underlays in Barlinek's offer meet these requirements: <ul style="list-style-type: none"><li>• <b>EKO under-floor tile</b></li><li>• <b>Cork mat</b></li><li>• <b>FixMat SOUND 2.1SD</b></li><li>• <b>EXTREME 1.5</b></li></ul>	The following underlays in Barlinek's offer meet these requirements: <ul style="list-style-type: none"><li>• <b>FixMat SOUND 2.1SD</b></li><li>• <b>EXTREME 1.5</b></li></ul>

\*\*For floating installation of the Barlinek herringbone floorboards an Optilock, regardless of the place of installation, we recommend an underlay with a minimum DL ≥ 100 000 cycles and CS ≥ 31,9 psi (220 kPa).

Important: 1,45 psi (10 kPa)

# soundproofing requirements



## IMPACT SOUND INSULATION (IS)

An underlay for wooden layered floors should significantly reduce the sound of impact. The noise that results from walking in a room on a higher floor is referred to as the impact sound.

Barlinek recommends the following requirements for underlay depending on the place of their installation:

MINIMUM REQUIREMENT	HIGHER REQUIREMENT **
<b>IS <math>\geq</math> 14 dB</b>	<b>IS <math>\geq</math> 18 dB</b>
The following underlays in Barlinek's offer meet these requirements: <ul style="list-style-type: none"><li>• <b>EKO under-floor tile</b></li><li>• <b>Cork mat</b></li><li>• <b>FixMat SOUND 2.1SD</b></li><li>• <b>EXTREME 1.5</b></li></ul>	The following underlays in Barlinek's offer meet these requirements: <ul style="list-style-type: none"><li>• <b>EKO under-floor tile</b></li><li>• <b>FixMat SOUND 2.1SD</b></li><li>• <b>EXTREME 1.5</b></li></ul>



## REFLECTING WALK SOUND (RWS) REDUCTION

The noise generated in the room as a result of footsteps is referred to as reflecting walk sound. By using suitable underlays, the noise level in the room can be effectively reduced. Unfortunately, the standard test for this parameter is under development and currently there is no valid test method. We know from practice that the higher the underlay density, the greater the noise reduction in the room.

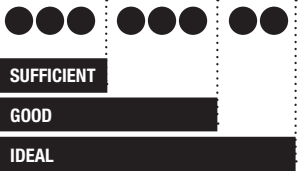
The following underlays in Barlinek's offer meet these requirements:

- **FixMat SOUND 2.1SD**
- **EXTREME 1.5**
- **EKO under-floor tile**

# a comparison of Barlinek underlays

Each underlay offers different properties when used under a wooden floor, so choose the underlay according to your needs.

APPLICATION	FIXMAT SOUND 2.1SD	CORK MAT	WOOD-BASED PANELS (EKO)	EXTREME 1.5
FLOOR SOUNDPROOFING	●●●●●○○○	●●●●○○○○	●●●○○○○○	●●●○○○○○
ROOM SOUNDPROOFING	●●●●●●●○	●●●○○○○○	●○○○○○○○	●●●●●●●○
THERMAL CONDUCTIVITY	●●●●●●●○	●●○○○○○○	○○○○○○○○	●●●●●●●○
VAPOUR BARRIER	●●●●●●●●	○○○○○○○○	○○○○○○○○	●●●●●●●●
LOAD RESISTANCE	●●●●●●●○	●●●●○○○○	●●●○○○○○	●●●●●●●●
SUBFLOOR LEVELLING	●●●○○○○○	●●●○○○○○	●●●●●●●○	●●○○○○○○
THERMAL INSULATION	○○○○○○○○	●●●●○○○○	●●●●●●●○	○○○○○○○○





### FixMat Sound 2.1 SD

By maintaining the appropriate proportions of mat thickness and density, Barlinek has succeeded in designing an ecological product, which optimally meets all the requirements set for the best underlays.

Only this type of underlay guarantees that a floating floor has properties which approximate those of a floor glued to the subfloor.

Recommended for layered wooden or hybrid floors.  
Ecological - up to 90% made from natural ingredients.

### FIXMAT SOUND 2.1SD

- Thickness: 5/64" (2,15 mm)
- Polyurethane-mineral mat, integrated with vapor-barrier foil
- High level of soundproofing and sound absorption with IS ~ 19 [dB]
- SD – with integrated vapour barrier (after bonding with the alu-strap / free in pack) -> 246 ft (75 m)
- Perfect for underfloor heating and cooling systems  
R – thermal resistance – ~ 0,009 [m<sup>2</sup>K / W]
- RTF – Flame-retardant class B<sub>fl</sub>-s1
- IIC rating - 53
- STC rating - 51
- A self-adhesive tape is integrated to help in joining the mat

Packaging: 80.7 ft<sup>2</sup> (7.5 m<sup>2</sup>) – POD007001  
Roll sheet size 24 ft 7" x 39 3/8" (7.5 m x 1 m)



### Extreme 1.5

Professional underlay, environmentally friendly, strong and specially designed for the Barlinek Next Step floor collection in order to protect and improve performance while the floor is in use.

ECO material – eco-non-woven fabric + PU / minerals + PET foil (up to 90% natural ingredients: rapeseed, ricin oil) and mineral fillers, it is ecological, recyclable and can be disposed of with the waste municipal).

Also suitable for other types of Barlinek floors installed in the floating system.

### EXTREME 1.5

- Thickness: 1/16" (1,5 mm)
- Polyurethane-mineral mat
- High level of soundproofing and sound absorption with IS ~ 16 [dB]
- Perfect for underfloor heating and cooling systems  
R – thermal resistance – ~ 0,009 [m<sup>2</sup>K / W]
- RTF – Flame-retardant class B<sub>fl</sub>-s1
- IIC rating - 53
- STC rating - 51

Packaging: 107.6 ft<sup>2</sup> (10 m<sup>2</sup>) – POD007002  
Roll sheet size 32 ft 9" x 39 3/8" (10 m x 1 m)



### Cork mat

Cork mat is perfect for floating floors – an installing method that is easy and convenient and does not require glue. The cork mat is made of natural, compressed cork. It was produced without harmful substances, so it is not only ecological, but also safe for health. Additionally, cork mat has very good acoustic properties. \*\*\* Over time, Barlinek cork mat does not lose its properties and does not crumble, so it will last for years.

\*\*\* It dampens sounds well, mutes the sound of footsteps on the wooden floor.

### CORK MAT

- Thickness: 5/64" (2 mm)
- Made of natural cork
- High level of soundproofing and sound absorption with IS ~ 19 [dB]
- Approved for underfloor heating and cooling systems  
R – thermal resistance – ~ 0,2 [m<sup>2</sup>K / W]
- IIC rating - 74

Packaging: 107.6 ft<sup>2</sup> (10 m<sup>2</sup>) – POD002001  
Roll sheet size 32 ft 9" x 39 3/8" (10 m x 1 m)



### Underfloor Board Eko

The pressure resistant wood flooring underlay board eco made from natural woodfibres.

- High compression resistance of – protects against joint breakages on click systems
- Durable due to robust fibre structure
- Quick and easy to install and handle
- Contributes to a healthy indoor climate

### UNDERFLOOR BOARD EKO

- (different thicknesses – 1/8" (3 mm); 5/32" (4 mm); 13/64" (5,5 mm) ; 9/32" (7 mm) – made of natural wood fiber:
- Perfect thermal insulator (not suitable for underfloor heating)
- Will help with undulations of the subfloor up to ca. 1/8" (3 mm) (depending on the thickness)
- Impact sound reduction - 19 dB
- RTF – Flame-retardant class E<sub>fl</sub>
- Thermal resistance R (m<sup>2</sup>K/W)
- IIC rating - 57
- 1/8" (3,0 mm): 0,043; 5/32" (4,0 mm): 0,057  
13/64" (5,5 mm): 0,071; 9/32" (7,0 mm): 0,1

Packaging:  
100,32 ft<sup>2</sup> (9,32 m<sup>2</sup>)  
grey tile 1/8" (3,0 mm): POD001006

5,24ft<sup>2</sup> (6,99 m<sup>2</sup>)  
grey tile 5/32" (4,0 mm): POD001003  
grey tile 13/64" (5,5 mm): POD001001  
grey tile 9/32" (7,0 mm): POD001002



These guidelines should be considered as recommendations of the manufacturer of wooden layered floors. The requirements for underfloor underlays are developed and published by The European Federation of the Parquet Industry (FEP) in the technical bulletin of February 2022.



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