

# **STEICO** wood fiber underlayment FAQ

### 1. Will the underlayment help in case of a pipe break? What will happen to the underlayment itself?

Yes, it will help. The underlayment absorbs the moisture of up to 20% of its own weight and will prevent the lower floors from flooding. This will allow avoiding additional repairs and you will save money. The rate of moisture penetration through wood fibers bound together is low. This provides enough time to eliminate the causes and consequences of the leakage. With a relatively small leakage, the wet underlayment will gradually dry without any consequences for the flooring. In case of a large leakage, it is recommended to remove the flooring in the most critical areas and wait for the underlayment to dry naturally. Then the flooring can be reinstalled.

#### 2. Will freezing temperatures negatively affect the underlayment?

No, even such temperatures as  $(-30 \ ^{\circ}C) - (-40 \ ^{\circ}C)$  will not have a negative impact on the underlayment. Moreover, it also works as a heat insulator. Therefore, it can be used in such premises as basements, balconies, attics and other unheated rooms. In cases where the underlayment is to be installed in areas with high moisture, It is recommended to place a waterproofing moisture barrier between the underlayment and the subfloor.

### 3. What is the meaning of a "breathing material"? Is the wood-fiber underlayment a "breathing material"?

Wood fiber products are "breathing materials" that let moisture vapor pass through it. We often use the term "breathes" (i.e. does not allow stagnation and accumulation of moisture) when we talk about clothes made of cotton or shoes such as felt boots. Due to the capability to pass moisture vapor through, i.e. to "breathe", wood-fiber boards almost always remain dry.

Conventionally, "breathing" of material is gas exchange between the external environment and the material itself. Cellulose fibers in wood can retain and give off the moisture of up to 20% of their own weight without losing their heat-insulating properties. If the air in a room becomes too dry, the excess moisture contained in the capillaries of the cellulose fibers will return to the room maintaining a comfortable level of humidity therein. Therefore, it regulates the microclimate in the premises. Inorganic mineral insulators accumulate moisture between the synthetic fibers because they are not capable of absorbing it. Such moisture in the interfiber space usually affects the material thermophysical properties.

In wood fiberboards, excess moisture is both retained by cellulose capillaries and, due to many interconnected open pores between the bound fibers, lets a significant amount of moisture pass through. Vapor condensates mainly in the further layer of the house's heat insulation structure, on the colder side. Good vapor permeability promotes the efficient removal of household moisture through wood fiberboards.

### 4. Is it necessary to install a plastic moisture barrier film underneath a wood fiber underlayment?

A polyethylene film (or "plastic film") usually acts as a vapor barrier to various moisture vapors. When placed under the underlayment, it prevents condensation of water vapor on the lower surface of the underlayment and/or the finished floors. By doing so, it protects from mold and mildew formation underneath the floors and extends the service life and comfort of the floors. An excellent choice to utilize as such a barrier is a 2mm plastic film (available in the US as a 6 MIL film).

During installation the plastic film strips should be laid on a dry and cleaned subfloor. The strips should overlap about 15 - 20 cm (4"-8") and should be secured with a water resistant tape. On the perimeter of the room the plastic should be brought up onto the walls up to the heights of the intended baseboards.

There is NO NEED for a plastic vapor barrier in the following cases:

- On dry subfloors where there is no direct source of moisture or water vapor and in places such as slabs in between floors.
- On wooden floors and subfloors.
- On top of existing finished floors that were time-tested to be moisture free.

The plastic barrier should be used in the following cases:

- When the underlayment is installed on a freshly finished concrete subfloor with residual moisture.
- In basements.
- On the first floors of structures in regions with high groundwater levels.

In damp spaces, It is generally NOT advised to install finished floors (and their components) that are affected by moisture.

The plastic moisture barrier film is only an additional layer in the flooring structure. It **cannot** replace the functions meant for the underlayment, that include: - Extending the lifespan of the floors.

- Create acoustic comfort in the room.
- Level and smooth the subfloor.
- Eliminate unpleasant effects (such as squeaking noises) when walking.

### 5. Why do even thin wood fiberboards exhibit thermal insulating properties?

The remarkable thermal insulating properties of wood fiberboards are mainly due to the fact that the fibers are bound with a natural glue, known as "lignin", and many pores are formed. The air that fills these pores acts as a thermal insulator. Moreover, the wood fibers themselves have a porous structure which both enhances the "thermal insulating" properties of the boards and creates and regulates a comfortable humidity level in the room.

Dozens of technologies are involved to artificially increase the porosity of materials and give them thermal-insulating properties. The porosity index of the original natural wood is

approximately 60%, and that of the wood fiberboard is 85-88%. Wood fibers in these boards are arranged so that the heat flows in the structure not along, but across the fibers. This leads to an increased heat transfer resistance of such boards. These properties allow wood fiberboards to be highly efficient thermal-insulating materials with interconnected open pores. Their heat conductivity coefficient (in an absolutely dry state) is 0.039-0.050 W/m\*K.

### 6. Why do even thin wood-fiber boards exhibit soundproofing properties?

The excellent soundproofing properties of wood fiberboards are provided by many air pores, both in the boards themselves and in the wood fibers. The air in the pores is considered one of the best sound and thermal-insulating materials because it conducts poorly both heat and sound.

Due to their high porosity, soft wood fiberboards are highly efficient soundproof materials. A combination of soundproof and sound-reflective materials is usually used to ensure good sound-proofing of the premises.

# 7. Are synthetic adhesives or other artificial binders used in manufacturing the underlayment?

No. "Lignin" acts as an adhesive (binder) for the boards. Being one of the main wood components, it is already in the wood pulp fed to the production line. It sticks together single fibers in already formed boards in the manufacturing process at high temperatures. After additional treatment, dried boards are cut as required.

Naturally glued wood fibers form a kind of a reinforcing frame providing board strength and preventing them from shrinkage. Unlike mineral fiberboards, soft wood fiberboards are not subject to degradation which ensures their high durability.

### 8. Can the underlayment material be allergic?

Generally, natural wood does not cause allergic reactions. The final product is essentially "pure" fibers glued together by lignin after being subjected to soaking and high-temperature processing. In rare occasions boards can rub against each other during transport causing a small amount of wood dust to form. Like any other powdery substance, it can cause coughing, sneezing, or tearing when in contact with mucous membrane of the nose or eyes. The wood fibers are not perfectly smooth. They have micronotches, chips, etc., and can cause a feeling of discomfort when contacting the skin. Therefore, we recommend putting on a light medical mask or a respirator when opening a package of fiberboards and vacuum excess wood dust.

# 9. LVT manufacturers say there is no need for underlayment for their materials. Why do you recommend it for LVT nonetheless?

Because it is dense and sturdy! The wood fiber underlayment is unique because it combines high compression strength, good heat and sound insulation properties, and the environmental friendliness inherent in natural materials. Such an underlayment perfectly protects the LVT joints from permanent deformation and quick failure common when using "soft" underlayment, such as thin foam padding. Wet leveling of subfloors, instead of leveling them with an underlayment, is always associated with additional material, time, and labor costs subfloors installed by the builder are rarely even. The European Multilayer Modular Floor Association (MMFA) recommends that you always use underlayment for all types of modular floor finishes, including LVT boards.

The density of the recently developed underlayment for LVT (650 kg/m<sup>3</sup>) is 2.5 to 3 times higher than that of a standard coniferous material underlayment. This is exactly what you need to protect your vinyl flooring lock-joints!

The surface structure of such underlayment, for LVT, allows using both adhesive and lock-joint flooring laying methods. The more elastic side of the board allows leveling the uneven subfloor with minimal effort and expense.

### 10. Are underlayment boards prone to decay?

No, wood fiberboards do not decay. They eliminate the conditions for mold growth, and rotten musty odors. Unlike inorganic insulators, they absorb moisture and give it off as the air temperature and humidity changes, without losing their own thermal insulating properties.

The fiberboard humidity is always in equilibrium with the relative humidity in the room. Soft wood fiberboards have many adjacent open pores allowing a significant amount of moisture to pass through. The vapors mainly condensate on the cooler adjacent layer to the board. Thus, the soft wood fiberboard structures almost always remain dry. This property of wood fiberboards prevents the decaying of structural materials.

# **11.** Can underlayment be used as thermal-insulation and/or soundproof material on interior walls of a premises?

Yes. Many of our customers used the underlayment for thermal insulation and soundproofing (see video). Even thin underlayment has all the properties inherent in wood fiberboards including thermal insulation and soundproofing.

Both thick soft wood fiberboards and thinner underlayment have rather high thermal inertia. This term refers to the process when the heat flux temperature decreases as the flux passes from the outer surface of the material to its inner surface. The longer this time is, the longer the room air heats up or cools down. The soft wood fiberboard thermal inertia index is 11-12 hours, while that of mineral wool boards is about 6 hours.

Good thermal-insulating properties of soft wood fiberboards are also due to their very high specific heat capacity (2,100 J/k\*K° versus 880 J/kg\*K° for mineral wool boards and 1,700 J/kg\*K° for foamed plastics). This allows the boards to accumulate heat well.

Due to many pores in the boards and in the wood structure itself, soft wood fiberboards are classified as highly efficient soundproof materials. The combination of hard gypsum boards and fiberboards will significantly reduce the acoustic discomfort in the room.

### 12. What is the best way to cut the underlayment?

You can cut the underlayment with either a sharp or a blunt item. The latter is even more convenient since it results in less wood dust. Just push through with a blunt item or draw a deep groove along the ruler where you want to cut, and then gently break the board along it. You can use a pencil, ruler, ballpoint pen, etc. To bypass pipelines, protrusions, niches, etc.

when laying the underlayment, you may manually break out a small section of the board. It is recommended to save excess material until the underlayment is laid. It can come in handy when leveling a rough floor.

### 13. How much subfloor roughness does the underlayment smooth?

Wood fiber underlayment has a unique capability of leveling floors. Typically, the underlayment thickness corresponds to the size of the defect that it can smooth (These may be protruding subfloor defects, small metal objects or concrete particles remaining after construction). (*See video*). The underlayment trimmings can be used to smooth small potholes, dents, cavities, or chips on the subfloor surface in accordance with the technology described below.

If the defect size is comparable to the underlayment thickness, proceed as follows: carefully cut a through-hole in the board corresponding to the defect size. Install the underlayment board so that the defect falls into the cut hole. Soak the cut section of the board in water (the underlayment material is well resistant to getting wet, so you will have to rub it with your fingers to a slurry of creamy consistency) and mask the defect with the resulting mixture. After drying, this "patch" will be invisible on the underlayment surface.

If the defect size is less than the underlayment thickness, it will completely hide it. If the floor unevenness exceeds the underlayment thickness, either remove them mechanically or choose an underlayment of greater thickness.

The uniqueness of wood fiber underlayment is that it is moderately elastic, thus able to hide the subfloor imperfections. At the same time, it is hard enough to maintain the flooring joints integrity.

### 14. What is the service life of the wood-fiber underlayment?

"At least 20 years" as per manufacturers guidelines. When properly installed and used, the underlayment service life is not less than the service life of the finish floors. In reconstruction of old Finnish wooden houses, aged more than 50 years, the wood fiberboards found in them have completely preserved their appearance and functionality. A soft wood fiberboard based underlayment will both preserve itself well and extend the floor lifespan, be it a laminate or LVT, since it does not deform over time, unlike foamed polymer underlayment.

# 15. There is a wide range of wood fiber underlayment. How to choose the most suitable one?

When choosing an underlayment, first identify the issues you are trying to resolve. The website provides solutions for most scenarios you might encounter. General principles of selection are usually as follows: if the underlayment is for floor leveling, simply choose the one with a thickness compatible to the height of the subfloor defects. If the floor condition is good, even the thinnest wood fiber underlayment will perform well to protect the lock-joints system of your floors. If you want to raise the subfloor level, choose "thick" underlayment of up to 10 mm. There is a wide range of underlayments for a variety of applications: for intense traffic areas, for premises requiring quick and convenient laying of utilities and/or a system of underfloor heating, etc. A specialist will always help you choose the most suitable underlayment type for your specific need.

#### 16. Is the underlayment combustible?

On our website you can watch a video comparing the combusting capacity of various insulation materials. This example shows that, at combustion, the wood surface becomes charred and prevents the spread of combustion to deeper layers for a certain time. You will notice a distinct difference in combustion of other insulation materials made of plastics and minerals. In addition, in case of fire, wood insulation does not emit toxic gases that distinguish it from many other insulation materials.

In general, the building fire safety is not so much determined by the combustibility of the materials used in the construction as by the fire resistance of its structural materials. In other words, fire resistance is characterized by a period of time in which the structure will lose its bearing capacity or integrity. The fire resistance of properly designed building structures of wood fiber materials of any combustibility group can be brought up to class F90 (according to DIN 4102). This means that in case of a fire there is at least a 90 minute window during which people can escape and save their most valuable possessions.