E-book

Materials vs Performance

The advantages of cork in an underlay and the impact on its performance
We are often asked if it is necessary to use another product underneath flooring. The answer is every floor needs an underlay.

An underlay can really make a significant difference to a flooring system, so we think it’s a MUST-have solution. The underlay plays a crucial role in the final floor solution providing not only stability which will increase the longevity of the floor, but also adds extra comfort for living.

**Advantages**

**Levelling out uneven areas**
The use of Amorim underlays are critical to a successful installation. One of its main advantages is removing any minor deviations of the subfloor.

**Protection of joining system**
Amorim underlays are engineered to prevent damage to the tongue and groove system in case of static loads. The higher the compressive strength parameter, the better the protection of the joining system. This underlay capability also prevents the formation and expansion of cracks.

**Impact sound insulation**
Cork is considered by many floor specialists as one of the best materials for reducing impact sound. To reduce the noise heard in rooms below caused by floor traffic, Amorim has developed a range of underlays that are designed to deliver the best acoustic performance for each type of flooring available on the market.

**Reflected walking sound insulation**
The noise generated inside a room by floor traffic can drive anyone crazy, especially in high-traffic rooms. Surfaces that incorporate cork underlays have high sound absorption, reducing considerably the percentage of perceived noise.

**Thermal insulation**
The best way to insulate any space from temperature variation is to install an Amorim underlay. Cork has excellent thermal properties, and its ability to maintain constant temperatures makes cork-based underlays great materials to be used to achieve high thermal resistance values. The higher the value, the better the insulation.

**Protection against substrate moisture**
Mineral substrates can result in residual moisture, which can damage floor surfaces. To address this, Amorim recommends installing a water vapour barrier that can prevent vapour diffusion.
Materials used in manufacturing underlays

Today, there are many options when it comes to choose the right material for underlays.

From natural substances such as cork to recycled rubber, PE foams (non-cross linked/cross linked), PP foams, XPS, PUR, PUM, etc., selecting the proper material will give your floor more longevity.

Here is a brief comparison of the performance of different materials used as underlay solutions.

<table>
<thead>
<tr>
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<th>CORK</th>
<th>PUR</th>
<th>PE Foam</th>
<th>Recycled Rubber</th>
<th>XPS</th>
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* In a long term period.
** Cork has a higher thermal inertia when compared to others. This feature allows to have an efficient flooring system when installed for example in heating systems.
Why cork?

Cork is a 100% natural material that has a honeycomb-like structure of microscopic cells filled with an air-like gas and coated mainly with suberin and lignin. One cubic centimetre of cork contains about 40 million cells. It has a closed-cell structure, making it lightweight, airtight and watertight.

Cork is an amazingly versatile material and, when combined with many other composites, it delivers great benefits in all flooring installations.

The improvements in acoustic and thermal insulation are enormous, but that’s not all! Mixing cork with other composites also increases floor longevity because of increased compressibility of the material and its ability to recover. As a result, the floor has extra protection when subjected to loads.

Please see the table below to explore the benefits of adding cork to other materials.

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<thead>
<tr>
<th></th>
<th>CORK</th>
<th>CORK + RUBBER</th>
<th>CORK + LD EVA</th>
<th>CORK + HD EVA</th>
<th>CORK + PUR</th>
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</thead>
<tbody>
<tr>
<td><strong>Impact Sound Reduction</strong></td>
<td>26 dB Tested under wood floor</td>
<td>19 dB Tested under laminate floor</td>
<td>18 dB Tested under laminate floor</td>
<td>21 dB Tested under resilient floor (LVT)</td>
<td>19 dB Tested under wood floor</td>
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<td><strong>Thermal Comfort (m².ºC/W)</strong></td>
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**Features**

**Acoustics**

The capacity of an underlay to reduce impact sound is one of its most desirable features. Thanks to its sound-dampening properties, cork helps to reduce the sound of footfalls in rooms and hallways, as well as other ambient noises, making it a great addition to underlay composition. It’s important to be aware that impact sound insulation is always measured for the entire floor system and not only for the underlay alone.

**Thermal insulation**

In contrast to impact sound, thermal insulation is the capacity of the material to resist cold or heat. By increasing the thickness of the underlay, the thermal resistance also increases. Cork acts as a natural insulation in spaces where underlays are installed because of its ability to maintain the temperature inside a room.

**Levelling the floor**

Choosing the appropriate levelling solution is essential to sub-floor preparation. A level subfloor is a basic requirement for almost any type of floor covering. Any discrepancies of less than 2 mm are levelled easily with the right underlay. Underlays composed of cork and rubber, for example, accommodate small grains of screed, creating a flat surface for laying the floor covering.

**Ability to support loads**

Over its service life, flooring is subjected to all types of loads! These include those generated by heavy furniture, floor traffic, the use of office chairs, castors and dining room chairs, as well as the weight of the flooring itself. As a result, the underlay must be able to withstand regular loads of short duration without changing the floor properties.

Also, in order to maximize the service life of the joining system, it is important that the underlay does not yield too much or become deformed when a load is imposed. A combination of, for example, cork and HD EVA will give the joining system the ability to support these loads.

Another feature provided by an underlay is the capacity to absorb extreme force for short durations, such as when objects are dropped. An underlay composed of cork and PUR, for example, acts as an absorbent material to prevent surface damage.
Why Amorim Cork Composites?

Amorim Cork Composites combines decades of experience with cutting-edge technology. We are proud to say that ACC has developed a wide range of underlays to satisfy all market needs.

ACC underlays are extremely versatile, allowing them to be used with many types of flooring. Made from a variety of raw materials, Amorim underlays fulfill all technical requirements of the floor industry from A to Z.

We can proudly say that there’s an Amorim underlay for every floor.

Amorim Cork Composites - your specialist in the flooring accessories industry.
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