



UNDERLAYMENTS



## ➤ Cork, shaping the future through sustainability

Cork comes from the bark of the cork oak tree (*Quercus Suber* L). It is a plant tissue, 100% natural, which covers the trunk and branches.

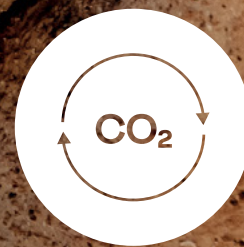
One cubic centimeter of cork contains about 40 million cells. Cork is known as “nature’s foam” due to its alveolar structure.

Cork is sustainably harvested by specialized professionals without damaging the trunk. The cork oak tree re-grows the outer bark layer and is harvested once ever 9 years over the course of its lifetime, which is about 200 years. Cork is a natural material which is both renewable and recyclable.

### **Cork, a natural CO<sub>2</sub> retainer**

Cork oak forests are important natural carbon sinks. They make a key contribution to the air we breathe because they capture CO<sub>2</sub> and it is estimated that for every ton of cork produced, cork oak forests can sequester up to 73 tons of CO<sub>2</sub>.

**1 ton of cork**  
produced



**Up to 73 tons of CO<sub>2</sub>\***  
sequestered by the  
cork oak forest

\* Source: [https://www.apcor.pt/wp-content/uploads/2015/10/Brochura\\_Ambiente\\_\\_EN.pdf](https://www.apcor.pt/wp-content/uploads/2015/10/Brochura_Ambiente__EN.pdf)

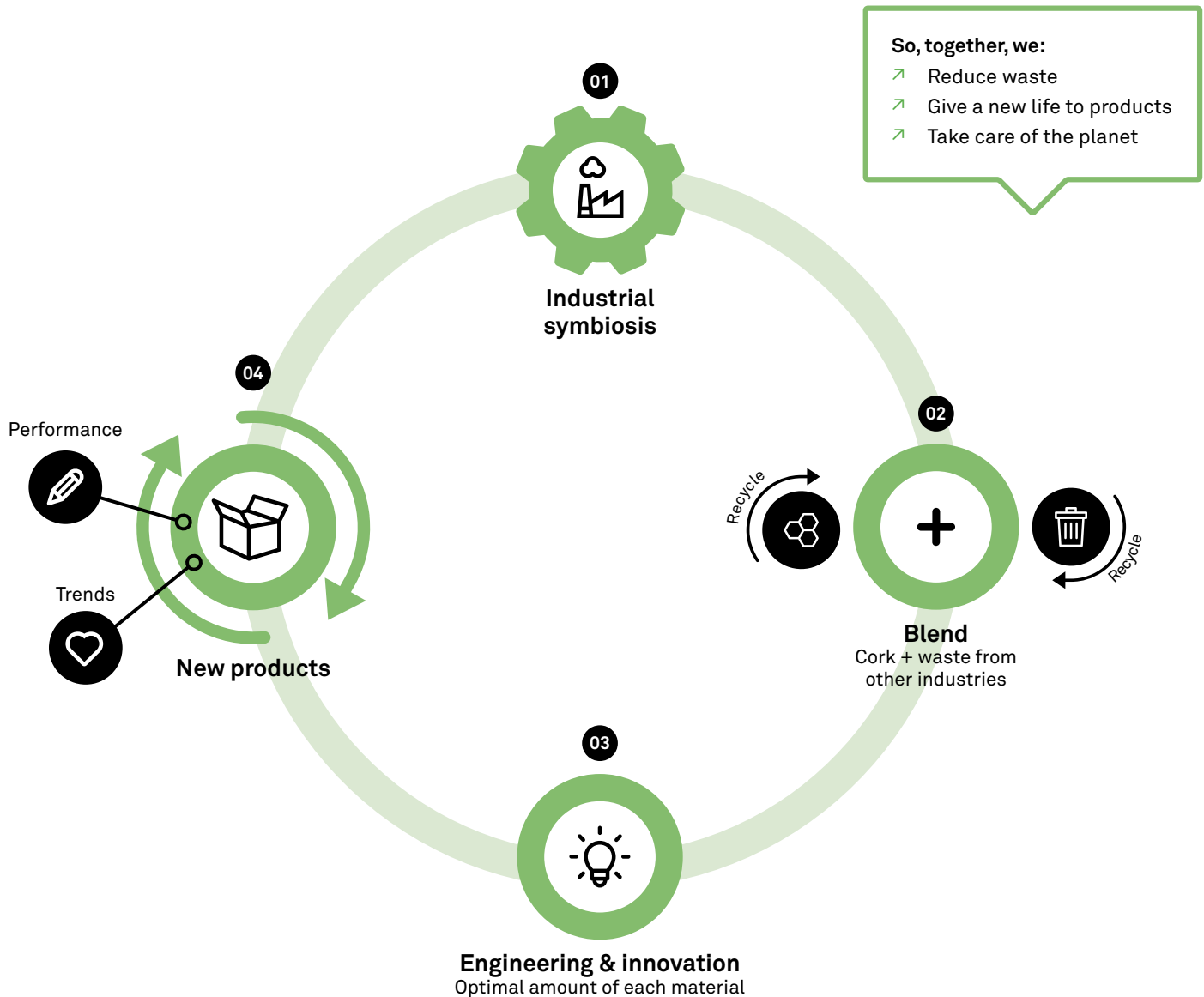


# We have always been circular.

Amorim Cork Solutions - a Corticeira Amorim company - was founded in 1963 to add value to cork not used in the cork stoppers industry and to cork stoppers at the end of their life.

Since then, in the framework of our innovation culture, we have discovered and identified other materials from other industries (industrial symbiosis) to blend with cork and leverage its attributes.

For this purpose, we use different materials from the footwear, automotive and packaging industries. We give a new life to materials that otherwise would be wasted.





## Underlayments

# Sustainable and recycled accessories for flooring systems

Cork is a common denominator in the production of our accessories and supporting materials for floorings, such as, underlayment. When applied under a floor, an underlayment provides more comfort, protection and longevity to the final floor, guaranteeing even greater energy efficiency and acoustic insulation.

Underlayment may consist only of cork agglomerate or contain other recycled materials, such as Rubber, PU and EVA foams. Compared to synthetic materials, cork is the right choice when looking for a solution that guarantees performance but is also sustainable from an environmental point of view.

Our underlayments are a great solution for new construction applications and for renovations of existing spaces.

TYPE OF FLOOR	RECOMMENDED UNDERLAYMENT	MAIN FEATURE
LVT / SPC	<b>Unique</b>	<ul style="list-style-type: none"> <li>➤ <b>Vinyl</b></li> <li>➤ Helps to protect LVT flooring from damage to the click-system joints.</li> <li>➤ Maximize the service level of the joining system connecting the laminate boards.</li> <li>➤ Anti-slip with long-term physical properties, excellent load absorption capacity and also for heated floors.</li> </ul>
	<b>Protection</b>	<ul style="list-style-type: none"> <li>➤ <b>Shelter</b></li> <li>➤ 100% cork, 100% natural. Ecological, sustainable and recyclable.</li> <li>➤ Designed for protection of the click of LVT floors, for impact, noise and thermal insulation.</li> </ul>
	<b>Protection Vapor Barrier</b>	<ul style="list-style-type: none"> <li>➤ 2 in 1 solution: Pre-attached vapor barrier for moisture protection.</li> <li>➤ Recommended for floating installations.</li> </ul>
	<b>Cycle Vapor Barrier</b>	<ul style="list-style-type: none"> <li>➤ 2 in 1 solution: Pre-attached vapor barrier for moisture protection.</li> <li>➤ Anti-slip underlayment</li> </ul>
Wood   HDF	<b>Nature</b>	<ul style="list-style-type: none"> <li>➤ <b>Green</b></li> <li>➤ 100% cork, 100% natural. Ecological, sustainable and recyclable.</li> <li>➤ High durability anti-slip underlayment. Suitable for heated floors.</li> </ul>
	<b>Nature Vapor Barrier</b>	<ul style="list-style-type: none"> <li>➤ 2 in 1 solution: Pre-attached vapor barrier for moisture protection.</li> <li>➤ Recommended for floating installations.</li> </ul>
	<b>Plus</b>	<ul style="list-style-type: none"> <li>➤ <b>Acoustic</b></li> <li>➤ The most versatile underlayment with high durability and good performance.</li> <li>➤ Excellent acoustic performance and load absorption capacity.</li> <li>➤ Suitable for heated floors. Anti-slip.</li> </ul>
	<b>Plus Vapor Barrier</b>	<ul style="list-style-type: none"> <li>➤ 2 in 1 solution: Pre-attached vapor barrier for moisture protection.</li> <li>➤ Recommended for floating installations.</li> </ul>
	<b>One</b>	<ul style="list-style-type: none"> <li>➤ <b>Support</b></li> <li>➤ Competitive acoustic and moisture protection solution.</li> <li>➤ Absorbs sub-floor irregularities.</li> <li>➤ Suitable for heated floors.</li> <li>➤ Designed in accordance with circular economy concepts.</li> </ul>
Ceramic/ natural stone	<b>Pure Natural</b>	<ul style="list-style-type: none"> <li>➤ <b>Compensation</b></li> <li>➤ Excellent compensating ability on uneven surfaces and made to prevent crack suppression on ceramic.</li> <li>➤ Projected for high thermal insulation.</li> <li>➤ Natural underlay with the best VOC's performance (volatile organic compounds).</li> </ul>
	<b>LC+</b>	<ul style="list-style-type: none"> <li>➤ <b>Compensation</b></li> <li>➤ Excellent compensating ability on uneven surfaces and made to prevent crack suppression on ceramic.</li> <li>➤ Provides cushioning underfoot as well as reducing sound transmission and impact sound, such as footsteps.</li> <li>➤ Anti-slip underlayment with excellent load absorption capacity. Suitable for heated floors.</li> </ul>



## NATURE AND NATURE VAPOR BARRIER\*



Density	160–280 kg/m <sup>3</sup> 10-18 lb/ft <sup>3</sup>
Tensile Strength	≥ 200 kPa   ≥ 400 kPa ≥29   ≥ 58 Psi
Thickness	2 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	19 dB
Radiated walking sound (RWS)	66 sone
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.039 m <sup>2</sup> .K/W 0.0069 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 1.3 mm   > 0.051 in
Compressive Strength (CS)	200 kPa   ≥ 29 Psi
Compressive Creep (CC)	> 100 kPa   > 15 Psi
Dynamic Load (DL)	≥ 100 000 cycles
<b>Vapor Barrier *</b>	
Water Vapor Resistance (SD)	75 m
Class	Class I (< 0.1 perm)

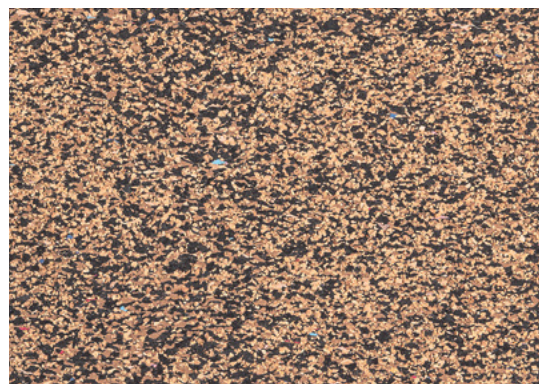


\* With vapor barrier

## PLUS AND PLUS VAPOR BARRIER\*



Density	250–300 kg/m <sup>3</sup> 15-18 lb/ft <sup>3</sup>
Tensile Strength	≥ 200 kPa   ≥ 400 kPa* ≥ 29 Psi   ≥ 58 Psi
Thickness	2 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	20 dB
Radiated walking sound (RWS)	-
Reduction Impact Insulation Class (ΔIIC)	20 dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.031 (m <sup>2</sup> .K/W) 0.0054 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 1.3 mm   >0.051in
Compressive Strength (CS)	> 300kPa   > 43 Psi
Compressive Creep (CC)	> 90kPa   > 13kPa
Dynamic Load (DL)	≥ 10 000cycles
<b>Vapor Barrier *</b>	
Water Vapor Resistance (SD)	75 m



\* With vapor barrier



The **Cork Inside** seal guarantees that this product contains, in its cork formulation, a high content of natural and recyclable material with unique technical properties.

**Cork Inside** formulations combine cork with other materials and are developed and rigorously tested by Amorim Cork Solutions' innovation and engineering teams. **Cork Inside** responds to stringent requirements and guarantees the performance required for its application.

## ONE VAPOR BARRIER\*



<b>Density</b>	200-320 kg/m <sup>3</sup> 12- 19 lb/ft <sup>3</sup>
<b>Tensile Strength</b>	≥ 1400 kPa   ≥ 203 Psi
<b>Thickness</b>	1.8 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	16 dB
Radiated walking sound (RWS)	-
Impact Insulation Class (IIC)	76dB
Reduction Impact Insulation Class (ΔIIC)	21dB
Sound Transmission Class (STC)	76dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.036 m <sup>2</sup> .K/W 0.0063 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	> 0.7   >1.2 mm* > 0.028   0.048 in
Compressive Strength (CS)	> 150 kPa   > 22 Psi
Compressive Creep (CC)	> 35 kPa   5 Psi
Dynamic Load (DL)	≥ 100 000cycles
<b>Vapor Barrier</b>	
Water Vapor Resistance (SD)	75 m



## LC+



<b>Density</b>	560-650 kg/m <sup>3</sup> 34-40 lb/ft <sup>3</sup>
<b>Tensile Strength</b>	>500 kPa   >73 Psi
<b>Thickness</b>	2 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	19 dB
Radiated walking sound (RWS)	-
Impact Insulation Class (IIC)	44 dB
Reduction Impact Insulation Class (ΔIIC)	20 dB
Sound Transmission Class (STC)	
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.016 (m <sup>2</sup> .K/W) 0,0028 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 1.7 mm   > 0.067 in
Compressive Strength (CS)	≥ 200 kPa   > 29 Psi
Compressive Creep (CC)	> 140 kPa   > 20 Psi
Dynamic Load (DL)	≥ 100 000cycles



## PURE NATURAL



Density	140-190 kg/m <sup>3</sup> 9-12 lb/ft <sup>3</sup>
Tensile Strength	> 200 kPa > 29 Psi
Thickness	6 mm
<b>Acoustic Performance</b>	
Impact Insulation Class (IIC) Reduction	77 dB
Impact Insulation Class (ΔIIC)	22 dB
Radiated walking sound (RWS)	-
Sound Transmission Class (STC)	71 dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0,195 m <sup>2</sup> .K/W 0,0852 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 2.5 mm   > 0.098 in
Compressive Strength (CS)	150 kPa   ≥ 22 Psi
Compressive Creep (CC)	-
Dynamic Load (DL)	-
<b>Vapor Barrier *</b>	
Water Vapor Resistance (SD)	NA

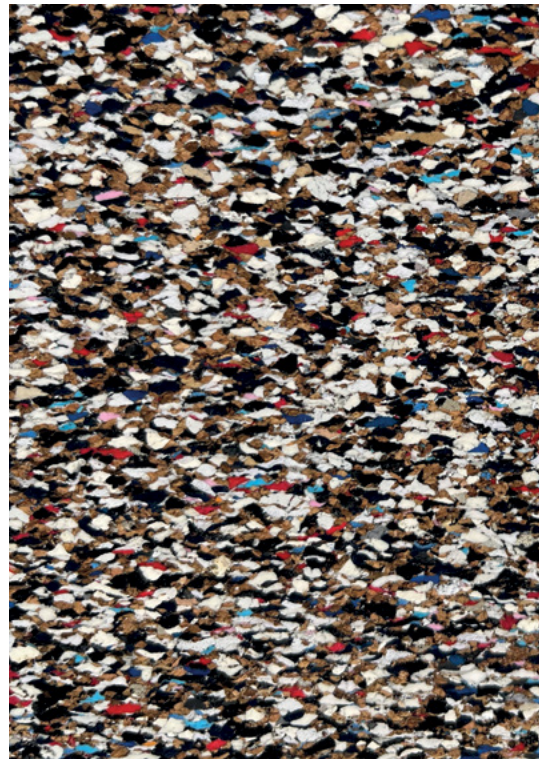
Exclusive USA



## UNIQUE



Density	550-650 kg/m <sup>3</sup> 33-40 lb/ft <sup>3</sup>
Tensile Strength	>500 kPa   >73 Psi
Thickness	1.6 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	18 dB
Radiated walking sound (RWS)	70 sone
Reduction Impact Insulation Class (ΔIIC)	22 dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.015 (m <sup>2</sup> .K/W) 0,0026 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 1 mm   > 0.039 in
Compressive Strength (CS)	≥ 400 kPa   > 58 Psi
Compressive Creep (CC)	> 140 kPa   > 20 Psi
Dynamic Load (DL)	≥ 100 000cycles



## PROTECTION AND PROTECTION VAPOR BARRIER\*



<b>Density</b>	250–350 kg/m <sup>3</sup> 15-21 lb/ft <sup>3</sup>
<b>Tensile Strength</b>	≥ 500 kPa   ≥ 550 kPa* ≥ 73 Psi   ≥ 80 Psi
<b>Thickness</b>	1.1 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	16 dB
Radiated walking sound (RWS)	-
Reduction Impact Insulation Class (ΔIIC)	20dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0,0217 m <sup>2</sup> .K/W 0,0038 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	< 0.5 mm < 0,019in
Compressive Strength (CS)	> 400 kPa   > 58 Psi
Compressive Creep (CC)	> 50 kPa   > 7 Psi
Dynamic Load (DL)	≥ 100 000cycles
<b>Vapor Barrier *</b>	
Water Vapor Resistance (SD)	75 m



\* With vapor barrier

## CYCLE



<b>Density</b>	320–430 kg/m <sup>3</sup> 19-26 lb/ft <sup>3</sup>
<b>Tensile Strength</b>	>250 kPa   >36 Psi
<b>Thickness</b>	1.8 mm
<b>Acoustic Performance</b>	
Impact Sound (IS) <sup>1</sup>	17 dB
Radiated walking sound (RWS)	-
Impact Insulation Class (IIC)	44 dB
Reduction Impact Insulation Class (ΔIIC)	17 dB
Sound Transmission Class (STC)	62 dB
<b>Thermal Performance</b>	
Thermal Resistance (TR)	0.024 (m <sup>2</sup> .K/W) 0,0042 ft <sup>2</sup> .°F/Btu
<b>Floor Durability</b>	
Punctual Conformability (PC)	≥ 0,5 mm   > 0.020 in
Compressive Strength (CS)	≥ 400 kPa   > 58 Psi
Compressive Creep (CC)	> 50 kPa   > 7,25 Psi
Dynamic Load (DL)	≥ 100 000cycles
<b>Vapor Barrier *</b>	
Water Vapor Resistance (SD)	75 m



\* Recommended for floating installations

<sup>1</sup> Tested under a laminate floor

<sup>2</sup> Tested under a LVT floor

<sup>3</sup> Tested under a wood floor

<sup>4</sup> Tested under a ceramic floor

The data provided in this brochure refers to typical figures. This information is not intended to be used as a purchasing specification and does not imply suitability for use in any specific application. Failure to select the proper product may result in either product damage or personal injury. Please contact Amorim Cork Solutions regarding recommendations for specific applications. Amorim Cork Solutions expressly disclaims all warranties, including any implied warranties of merchantability or of fitness for any particular purpose. Amorim Cork Solutions shall not be liable for any indirect, special, incidental, consequential or punitive damages as a result of using the information listed in this brochure, any of its material specification sheets, its products or any future use or re-use of them by any person or entity. For contractual purposes, please request our Product Specifications Sheet (PDA). Product images are for illustrative purposes only.



# Long-term durability cork vs foam underlayments

Installing a cork underlayment is the best option to ensure your floors' durability while improving buildings' comfort and efficiency.

This layer of material, applied between the concrete (or the previous flooring, in case of renovation work) and the final flooring, is essential to ensure the durability of the floor over time, and to prove this, we run the following tests:

### Test #01 - Dynamic Load Test (DL)\*

The dynamic load test is a laboratory test that simulates the pressure exerted on the floor by foot traffic, trolleys and office chairs with casters, among others.

To be effective, the underlayment must be able to withstand this pressure without losing its absorption characteristics.

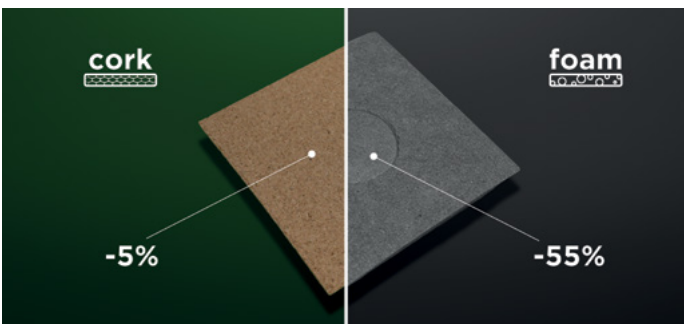
To assess the material performance, we submitted a sample of cork, and another composed entirely of foam, both 10 mm thick, to 100 000 cycles at 75 KPa pressure.

### Test #02 - Compressive Creep Test (CC)\*\*

The creep test determines the weight that can be placed on a given floor over time, using as reference a period of 10 years. We are talking about furniture weight, for example.

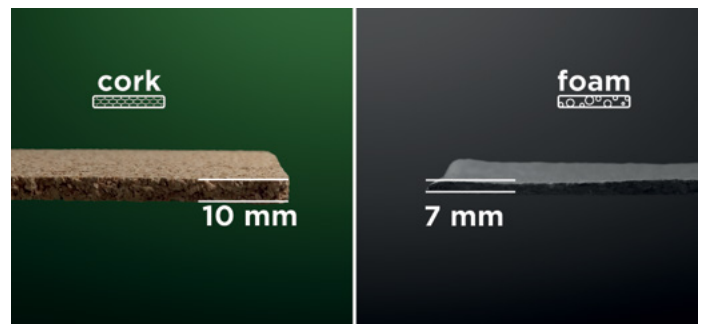
This means that, as it is compressed over the years, cork maintains its thickness and, consequently, the performance of the system where it is applied, whereas with foams (PE, XPS, or PP), whenever pressure results in cell breakage, the underlayment loses density and effectiveness.

#### DYNAMIC LOAD TEST (DL)\*



**Result: cork proved to be more resilient, with just 5% thickness loss after 100,000 charge cycles.**

#### COMPRESSIVE CREEP (CC)\*\*



**Result: cork delivers superior performance and shows almost the same thickness after being compressed. Less than 10% of thickness loss.**

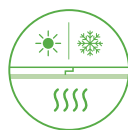
#### TECHNICAL PROPERTIES



Reduction of impact noise



Reduction of footfall noise



Thermal resistance



Compensates for uneven floor



Protection from damage from falling objects



Resistance to diffusion of water vapor



Load resistance



Antislip

\*tested by a certified laboratory

\*\*test made at i.Cork Factory press (not in accordance with creep standard)



# AMORIM CORK SOLUTIONS



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