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# NRT INSIDE

Flooring



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## Reinventing flooring technology

Noise reduction  
and walking comfort



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AMORIM CORK COMPOSITES



# Cork, an exceptional raw material

Cork is the outer bark of the cork oak tree (*Quercus suber* L.), the 100% natural plant tissue covering the trunk and branches.

It consists of a honeycomb-like structure of microscopic cells filled with an air-like gas and coated mainly with suberin and lignin. One cubic centimeter of cork contains about 40 million cells.

Cork is also known as "nature's foam" due to its alveolar cellular structure. It has a closed-cell structure making it lightweight, airtight and watertight, resistant to acids, fuels and oils, and impervious to rot.

It is sustainably harvested by specialized professionals without damaging the trunk, thus enabling the tree to grow another layer of outer bark that, in time, will be re-harvested. Over the course of the cork oak tree's life, that lasts 200 years on average, the cork may be harvested around 17 times. This means that cork is not only a natural raw material, it is also renewable and recyclable.



Cork cell microscopic view.

Excellent thermal insulator



Walking & thermal comfort



Good resilience, excellent compressibility and recovery



Hypoallergenic



Easy to maintain



Noise reduction



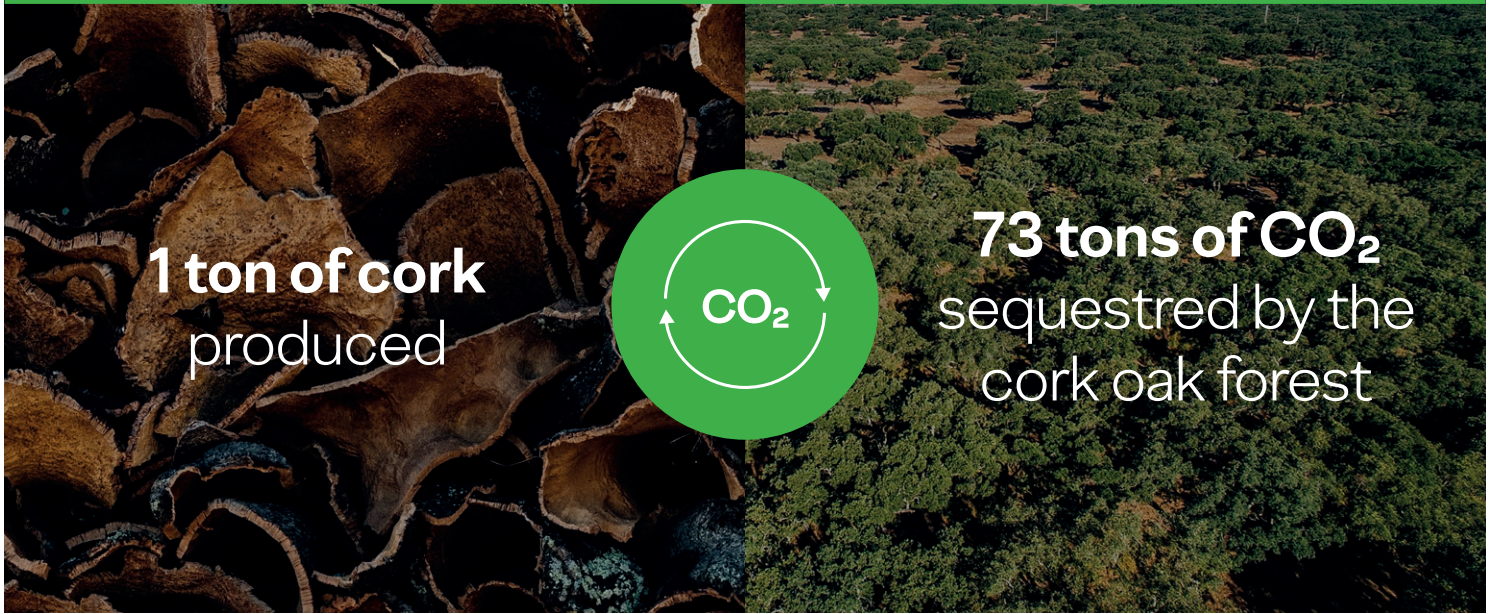
100% natural, reusable and recyclable



Freedom of design







## The commitment to create a positive impact on the planet

**Cork is 100% natural, reusable and recyclable, which, from an environmental, social or economic perspective, makes it one of the world's most versatile materials.**

Cork oak forests, known in Portugal as “montados”, support a unique and fragile ecology, and are a habitat for rare or endangered species. They are part of one of the world's 36 ecosystems that make the biggest contribution to biodiversity conservation – on a par with the Amazon, African savannah or Borneo. The cork oak forest offers ideal conditions for survival for 200 animal species and 135 plant species.

The cork oak forests protect against soil erosion and consequent desertification. They are a barrier against forest fires, due to cork's low combustibility, and play an important role in regulating the hydrological cycle. They also make a fundamental contribution to the air that we breathe, because they capture CO<sub>2</sub>, which would otherwise be released into the atmosphere.

### Combating Climate Change

The cork oak tree is a slow-growing species, which plays an important role in capturing CO<sub>2</sub>, which is stored in its roots, leaves, trunk and bark (cork) throughout its life. Studies indicate that for each ton of cork produced, the cork oak forest can sequester up to 73 tons of CO<sub>2</sub>, thus making a vital contribution to combatting climate change \*. Cork products maintain this storage capacity throughout their entire life cycle, which makes it possible to reduce the carbon footprint of various cork-based products.

### Positive impact on the carbon balance

Considering the cork oak forest's carbon sink effect, made possible by the cork industry, survey results demonstrate that annual carbon sequestration can be 17 times the greenhouse gas emissions of Corticeira Amorim's entire value chain \*. In other words, at a time when carbon neutrality is one of society's biggest challenges to guarantee preservation of Planet Earth, Corticeira Amorim is developing an activity that has a positive impact on climate regulation, promoting much higher carbon sequestration levels than its CO<sub>2</sub> emissions.

\* Source: Instituto Superior de Agronomia (ISA), 2016 (<http://uaonline.ua.pt/pub/detail.asp?lg=pt&c=45245>)

# Full experience in the flooring industry

**Amorim Cork Composites is able to supply all the components of the floor, except the floor itself!**

Our experience has led to the development of unique technical components for flooring industry – Noise Reduction Technology (NRT).

Amorim Cork Composites is able to produce sheets, panels or rolls to be used as: top layer, inlay and pre-attached.

Amorim Cork Composites tries to be aware of consumer trends and seeks to correspond to the expectations of markets and flooring manufacturers. We continue to work closely with our partners and clients, in order to meet their industrial and innovation needs. We have a vision based on innovation, uniqueness and technology.

## Double Belt Press

With the Double Belt Press (DBP) technology, we are able to produce high-density rolls with a maximum width of 2080 mm.

We have the capability to supply products specifically designed for the customer's process.





# NRT Noise Reduction Technology

Innovative solutions fulfilling the market requirements.



## NRT top layer

High density and printable layer that allows freedom of design and walking, cushioning and thermal comfort with reduced thickness.



## NRT inlay

Layer placed underneath a paper, a vinyl or a veneer-facing layer that allows energy dissipation in perfect balance with the right indentation acceptance criteria.



## NRT pre-attached underlayment

Attached layer that acts like the traditional underlayment, preventing the transmission of mechanical energy through the slab (improving impact noise reduction), with high durability.



# Top layer NRT 94 with negative carbon balance

Amorim Cork Composites commissioned an independent Carbon Footprint and Life Cycle Assessment study, that aimed to identify the environmental impact of Top Layer NRT 94. The study, which assessed the impacts of forestry management, transport of raw materials and production, concluded that Top Layer NRT 94 has a negative carbon balance, when considering the carbon sequestration of the cork oak forest and CO<sub>2</sub> emissions from the industrial process<sup>(1)</sup>.



## NRT 94 · NRT top layer



	Units	
Density <sup>(2)</sup>	kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	450–550 (28–33.4)
Compressibility at 0.7MPa <sup>(2)</sup>	%	< 20
Recovery at 0.7MPa <sup>(2)</sup>	%	> 70
Tensile Strength <sup>(2)</sup>	kPa (psi)	> 1400 (203)
Availability	-	Rolls & Sheets
Width (minimum - maximum)	mm (in)	100–2100 (3.9–82.7)
Length (minimum - maximum)	mm (in)	sheets: 600–3000 (23.62–118.11) rolls: 600 (23.62) - equivalent to Ø1200 (47.24)
Thickness (minimum - maximum)	mm (in)	0.8–8 (0.03–0.3)
Finish	-	GR180

(2) Test method ISO 7322



## NRT 96 · NRT inlay

	Units	
Density <sup>(2)</sup>	kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	450–550 (28–33.4)
Compressibility at 0.7MPa <sup>(2)</sup>	%	< 20
Recovery at 0.7MPa <sup>(2)</sup>	%	> 70
Tensile Strength <sup>(2)</sup>	kPa (psi)	> 1400 (203)
Availability	-	Rolls & Sheets
Width (minimum - maximum)	mm (in)	100–2100 (3.9–82.7)
Length (minimum - maximum)	mm (in)	sheets: 600–3000 (23.62–118.11) rolls: 600 (23.62) - equivalent to Ø1200 (47.24)
Thickness (minimum - maximum)	mm (in)	0.8–8 (0.03–0.3)
Finish	-	GR180

(2) Test method ISO 7322



(1) Further information available at [www.amorimcorkcomposites.com](http://www.amorimcorkcomposites.com)



## NRT 49 · NRT pre-attached underlayment <sup>(3)</sup>

	Units	
Density <sup>(2)</sup>	kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	200–270 (12.5–16.9)
Compressibility at 0.7MPa <sup>(2)</sup>	%	15–35
Recovery at 0.7MPa <sup>(2)</sup>	%	≥ 70
Tensile Strength <sup>(2)</sup>	kPa (psi)	≥ 200 (29)
Availability	-	Rolls & Sheets
Width (minimum - maximum)	mm (in)	100–1250 (3.9–49.2)
Length (minimum - maximum)	mm (in)	sheets: 600–3000 (23.62–118.11) rolls: 600 (23.62) - equivalent Ø1000 (47.24)
Thickness (minimum - maximum)	mm (in)	0.8–8 (0.03–0.3)
Finish	-	NA

(2) Test method ISO 7322



## NRT 45 · NRT pre-attached underlayment <sup>(3)</sup>

	Units	
Density <sup>(2)</sup>	kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	150–210 (9.4–13.1)
Compressibility at 0.7MPa <sup>(2)</sup>	%	30–50
Recovery at 0.7MPa <sup>(2)</sup>	%	≥ 70
Tensile Strength <sup>(2)</sup>	kPa (psi)	≥ 300 (43.5)
Availability	-	Rolls & Sheets
Width (minimum - maximum)	mm (in)	100–1250 (3.9–49.2)
Length (minimum - maximum)	mm (in)	sheets: 600–3000 (23.62–118.11) rolls: 600 (23.62) - equivalent Ø1000 (47.24)
Thickness (minimum - maximum)	mm (in)	0.8–8 (0.03–0.3)
Finish	-	NA

(2) Test method ISO 7322



This NRT 45 pre-attached underlayment has a laminated kraft paper carrier.

## NRT 62 · NRT pre-attached underlayment <sup>(3)</sup>

	Units	
Density <sup>(2)</sup>	kg/m <sup>3</sup> (lb/ft <sup>3</sup> )	360–450 (22.5–28.1)
Compressibility at 0.7MPa <sup>(2)</sup>	%	10–30
Recovery at 0.7MPa <sup>(2)</sup>	%	> 70
Tensile Strength <sup>(2)</sup>	kPa (psi)	> 600 (87)
Availability	-	Rolls & Sheets
Width (minimum - maximum)	mm (in)	100–2100 (3.9–82.7)
Length (minimum - maximum)	mm (in)	sheets: 600–3000 (23.62–118.11) rolls: 600 (23.62) - equivalent to Ø1200 (47.24)
Thickness (minimum - maximum)	mm (in)	0.8–8 (0.03–0.3)
Finish	-	Calibrated 1 side

(2) Test method ISO 7322



This NRT 62 pre-attached underlayment has a laminated PP carrier.

(3) A laminated carrier is available to add to the backing, improving the client production process efficiency (it will increase the speed of the line), the product tensile strength and the final floor value proposition. Two options are available: paper (as a sustainable solution) and PE/PP (for a water resistant solution). The addition of a laminated kraft paper to the NRT 45 with a 0,9 mm thickness, for example, will increase 1Mpa of tensile strength.

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