

# about cork



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## the 21st century's natural, flexible, sustainable material



### natural and light

a vegetal tissue, that weighs just 0.16 grams per cubic centimetre.

### elastic and compressible

it can be compressed to around half its thickness without losing any flexibility, and recovers its shape and volume as soon as it is released. It is the only solid which, when compressed on one side, does not increase in volume on another; and as a result of its elasticity it is able to adapt, for example, to variations in temperature and pressure without suffering alterations.

### thermal and acoustic insulator

cork has low conductivity to heat, noise and vibration. This is because the gaseous components contained in cork are enclosed in small impermeable compartments, isolated from each other by a moisture-resistant substance.

### cork

It is from the cork oak - *Quercus Suber L.* - that one of nature's most extraordinary products is harvested: Cork.

Cork is the outer bark of the cork oak tree, which grows mainly in the Mediterranean region. The bark is a vegetal tissue composed of an agglomeration of cells filled with a gaseous mixture similar to air and lined with alternating layers of cellulose and suberin.

The cork oak tree has a life span of 250-350 years. It takes each cork oak 25 years before it can be harvested for the first time. This cork is known as virgin and has a hard and irregular structure. After the virgin cork has been stripped (first harvest), a new layer of cork begins to grow. The first of these layers, harvested after 9 years, is called secondary cork; cork harvested after this second stripping is known by the Portuguese word: *amadia*.

In a context of increasing concern for the environment, it is important to stress that cork is the only tree whose bark can regenerate after each harvest - leaving the tree unharmed. A typical cork oak produces several hundred kilograms of cork at each harvesting and will survive for many generations. Stripped off in sections from 2/3 of the tree, the bark grows back completely, taking on a smoother texture after each harvest. A cork oak tree can be safely harvested up to 20 times during its life cycle.

After being stripped, the cork planks rest for 6 months in the factory's yard, a period in which they stabilize. The preparation of cork for industrial use starts with a boiling operation. This time, in a factory area, the cork is boiled in steel closed and filtered tanks, in order to remove organic objects embedded in the pores and enable the cork to reach the ideal moisture content for processing. The cork is then sorted into various thicknesses, which are, in turn, sorted into different qualities, a segmentation to determine the suitability of the cork for different applications.

### sustainable

Portugal, which produces more than 50% of the world's cork, has been particularly careful to safeguard this valuable resource. New plantations of cork oak trees are planted each year to ensure the level of cork production is maintained. The cork oak is protected by law since the 13th century and in 2011 was nominated the Portuguese national tree, thus ensuring that this species cannot be felled or removed without a special government authorization.

The regular extraction of cork is a fundamental contribution to the environmental, economic and social sustainability of the rural areas where the cork oak is found. Its value is based not only on the products extracted from the tree but also on the agricultural, forest and hunting activities that revolve around the cultivation of the cork oak. It is the basis of an ecosystem unique in the world, where abundant fauna and flora coexist with animal and cereal farming. From a social perspective, this activity allows for the creation and maintenance of a significant volume of employment in rural areas, thus combating social desertification.

Regular stripping of the cork oak also strengthens another of its surprising features: its ability to absorb carbon dioxide. A stripped cork oak absorbs, on average, five times more CO<sub>2</sub>. It is estimated that every year cork oak forests retain up to 14 million tonnes of carbon dioxide, a sizeable contribution for reducing greenhouse gas emissions, the main cause of climate change.

Investing consistently in innovation and state-of-the-art technological processes, Amorim's worldwide leadership is of the utmost importance for the ecosystem it is based upon, in what can be considered a thoroughly sustainable industry.



### highly abrasion resistant

cork is extremely resistant to abrasion and has a high friction coefficient. Thanks to its honeycomb structure, its resistance to impact or friction is greater than that of other hard surfaces.

### hypoallergenic

because cork does not absorb dust, it helps protect against allergies and does not pose a risk to asthma sufferers. It also has an unchangeable constitution that guarantees efficiency.

### applications

Due to its remarkable properties cork has been an important material since ancient times. Today, it is used for cork stoppers, floor and wall coverings, as well as insulation and cork composites.

As the result of a significant investment in R&D and innovation, cork is currently used in high-tech applications, including the transportation industry and in the construction of dams and airports. The aerospace sector has been selecting cork.

#### CORK STOPPERS

An iconic product in the cork industry, cork stoppers are divided into several categories according to different sizes and formats, in order to adapt to the wide variety of bottles and spirits for which they are intended. The composition and main manufacturing process vary from natural cork stoppers, obtained by punching a one-piece cork strip, to agglomerated stoppers, manufactured by individual moulding or by extrusion from granulated cork.

The cork stopper has unique innate qualities, which interact beneficially with wine. It contributes to developing its character, gives it authenticity and brings it value.

#### FLOOR & WALL COVERINGS

By combining the most recent technology with traditional production methods, cork is incorporated into sophisticated wall and floor coverings in a wide range of textures and colours. These products are a unique blend of high technical performance, design and comfort.

Thanks to the innate properties of cork, these solutions offer clear advantages in terms of acoustic and thermal insulation (providing energy savings) and flexibility, targeting both residential and commercial market segments.

#### AGGLOMERATES & COMPOSITES

##### Expanded Insulation Cork

This is a natural, durable and recyclable product. It is sourced from "falca", a unique type of cork from the upper branches periodically pruned from the cork oak, which is ground into small granules.

These granules, placed into an autoclave and exposed to superheated steam at 350°-370° C undergo an expansion process and exude their own resin (suberin); the particles are self-bonded without artificial additives to the cork granules.

It is produced in different grades and densities - the ideal solution for thermal, acoustic and anti-vibration insulation - to be applied in floors, interior partition walls and other specific applications.

##### Composite Cork

Composite cork is made from granulated cork bound together using different binding agents or incorporating other components such as rubber, carbon fiber, plastic, asphalt, cement, gypsum, casein, resins, glues and thus obtaining a great diversity of products.

In construction, the product range offers solutions from housing to major public works, such as underlayment for final flooring, to expansion joints. In the transportation industry, providing highest standards core structures for panels and flooring in high speed trains, coaches and metro. Footwear, fashion, contemporary design objects are other industries where cork composites are being used.

##### Granulated Cork

There are, however, many other applications in which granulated cork can be used alone: in agriculture, construction, environmental protection, energy and in several industrial applications in such areas as electronic, chemical and engineering applications, among others. Available in various grain sizes, its density (or mass density) can range from 40 to more than 100 kg/m<sup>3</sup>.



## CORK IS

above all, a material that is one hundred per cent natural, recyclable and reusable, essential qualities in a more environmentally friendly and sustainable society.

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