THE ART OF
CORK

AMORIM
CORK

AN AGE-OLD RAW MATERIAL

Cyprus 3rd century BC

Cork stopper in an ancient amphora
A fossil fragment over 10 million years old, discovered in the basin of the River Tagus, proves the ancient presence of the cork oak in Portugal. There are scholars who believe that this tree, with unique characteristics, has existed for much longer, dating back over 60 million years.

The rough bark of the cork oak, the cork, which gives the tree extraordinary resistance, is the reason for the preservation of the cork oak in the Mediterranean basin over the centuries, even through the ice age, over 25 million years ago, unlike the fate that befell other less resistant species.

So far, there have been many finds proving that cork was used by settlements in the Western Mediterranean thousands of years ago. There are traces showing the beginning of cork’s use by the peoples of ancient Egypt as a nautical tool, in fishing or in other domestic applications. In Roman times, cork was used as covering for the roofs and ceilings of dwellings, as a seal for amphorae used to carry liquids and in footwear accessories, such as insoles.

In France, amphorae from the 3rd century BC were found, still full of wine, which is considered to be well-preserved.

There are records such as these all over the world, proving the age-old utilisation of cork, making this natural raw material one of the most ancient products continually used by Humanity.

“IF WE KNEW WHAT 60 MILLION YEARS REPRESENT, THEN WE WOULD UNDERSTAND HOW LONG THE CORK OAK, GIVEN THE NAME QUERCUS SUBER L. BY LINNAEUS, HAS BEEN AROUND.”

Carlos Oliveira Santos
in Clusters, United by Nature.

Capuchos Convent (16th century).
All the monks’ cells and living quarters are finished with cork.

A pair of soles discovered by the archaeologist, Flinders Petrie, considered the “father of Egyptian archaeology”, dating from the Roman period (395 BC to 30 BC), around 14.5 cm long.

Greece 5th century BC.
The use of cork at a pre-industrial level dates back to the late 17th century, with the production of stoppers for wine, especially the wines from the famous Champagne region in the north of France. It is believed that in the same way that sparkling wines favoured the use of cork, it also had a determining role in the success of this famous wine.

The strong impetus given to the use of cork as a wine sealant came from the monk, Pierre Pérignon, who, faced with the problem of preserving his wine, found in cork the ideal solution to ensure a good seal for the wine, prepared at the time in his abbey at Hautvillers.

Having paved the way, industrialisation was the next logical step. In the beginning, corks were produced from “parallelepiped cork boards”, which measured the final length of the corks that were to be produced. By manually making a circular cut with a knife, the board was transformed into the so-called “imitation” corks. (fig. Page 5)

At the beginning of the 20th century, the “Garlopa” appeared. This was the first industrial cork-producing machine. The parallelepiped cork board was placed in a clamp which, upon applying light pressure, activated a worm screw which in turn rotated the board against a blade, producing totally cylindrical corks.
CORK AND SUSTAINABILITY
Apart from benefiting from a gift of nature - transforming a 100% natural raw material, extracted cyclically from the trees without damaging them, promoting the economic and social sustainability of areas at risk of desertification, providing products of high added value that maintain the characteristics that are unique and intrinsic to cork, in an integrated manufacturing process which generates practically no waste - the Amorim Group has guided its business by the adoption and reinforcement of sustainable development practices.

The activity of the Amorim Group, world leader in the cork industry, is determinant to the viability of millions of cork oaks spread throughout the Mediterranean basin.

“IT’S NEITHER GOLD NOR BLACK BUT THE CORK OAK IS ONE OF OUR NATIONAL TREASURES. SYMBOL OF PORTUGAL’S LEADERSHIP, IT IS FUNDAMENTAL TO AN ACTIVITY PRAISED FOR ITS SUSTAINABILITY.”

in The Chemistry of Cork, National Geographic
One of the various characteristics that distinguish the cork oak from other trees is its capacity to regenerate naturally after each harvesting operation. A cork oak has an average life span of between 170 and 200 years. During this time it can be harvested between 15 and 18 times.
CORK HARVESTING

The first harvest only takes place after 25 years, when the trunk of the tree has reached a perimeter of 70 cm.

The cork removed in this first harvest is called “virgin cork”; nine years later, “reproduction cork” is harvested. After these two harvests, “amadia cork”, with a regular structure and with the characteristics and quality suitable for the production of cork stoppers, is harvested every nine years.
CHARACTERISTICS OF CORK

100% natural, renewable and recyclable, cork is a unique raw material, with truly exceptional characteristics.

The secret to its performance lies in its cellular structure. The inside of cork is made up of a hive of small cells of suberin, a complex acid, filled with a gaseous mixture almost identical to air.

ITS LIGHTNESS AND CHEMICAL INERTIA MAKE CORK AN IDEAL SEALANT FOR WINES.

Chemical composition of cork:
suberin (45%) - main component of the cell walls, responsible for the elasticity of cork;
lignin (27%) - insulating compound;
polysaccharides (12%) - components of the cell walls which help define the texture of the cork;
tannins (6%) - polyphenolic compounds, responsible for the colour;
ceroids (5%) - hydrophobic compounds which assure the waterproof nature of cork.

Natural cork cells.
Cultivation of cork oak forests has a positive impact on carbon fixing, contributing to the mitigation of the emission of greenhouse gases, the main cause of climate change.

It is estimated that the cork oak forests worldwide make it possible to retain 10 million tonnes of CO$_2$ per year.

The carbon fixed by the cork oaks is stored in the cork and remains there throughout the entire lifetime of the product.

Cork stoppers and coverings: carbon footprint leadership proven by independent studies

Study carried out by PricewaterhouseCoopers and by Ecobilan (in conformity with ISO 14020 and 14044 standards) on the lifecycle of cork stoppers versus aluminium screw caps and plastic stoppers.

CO$_2$ emissions of the sealants studied, taking into account the carbon sequestration associated with cork oak forests.

Source: pwc. (PricewaterhouseCoopers) and Ecobilan
At the base of a recognised world biodiversity hotspot – unique in Europe – cork oak forests have a high level of plant diversity and are the habitat for over 160 species of birds, 37 mammal species and 24 species of reptile and amphibian, contributing to the survival of many native animal species.
A unique natural landscape, this ecosystem includes various species of ants, bees, butterflies and reptiles, as well as the Iberian lynx. The cork oak forest is also home to a great variety of birds, some of which are endangered species, such as the black vulture, black stork or imperial eagle.
FIGHTING DESERTIFICATION

The cork oak plays a fundamental role in the fight against desertification in that it contributes to the fixing of the soil and organic material, reducing erosion and increasing water retention. The role of cork oak forests as a barrier to the advance of deserts in North African countries, such as Algeria, is also significant.

From the point of view of social desertification, the cultivation of cork allows for the creation and maintenance of a significant volume of jobs in particularly disadvantaged areas.

According to the WWF, over 100,000 people throughout the Mediterranean basin depend directly and indirectly on the production of cork and on cork oak forests.
Natural cork keeps all the good things inside.

Co®
CORK STOPPERS ARE PART OF THE ESSENCE OF WINE. PROVIDING AUTHENTICITY, ENHANCING TRADITION, PRESERVING THE ENVIRONMENT AND STRENGTHENING AROMAS
“Everyone should visit the cork oak forests, to awaken the senses and absorb the surrounding environment. Then, every time you take a cork from a bottle, the rhythmic sound of cork harvesting or the melody of a bird will always echo in your mind.”

Paul Morrison
BBC producer, United Kingdom
(Cork - forest in a bottle)

WINE AND CORK ARE PRODUCTS OF NATURE AND OF THE HISTORY OF MANKIND

“I believe that cork is the most perfect material for correctly sealing bottles of wine. I have always been interested in the way nature has given us, through the cork from the cork oaks, such a noble and reliable product...

...The flexibility and waterproof properties of stoppers made from cork from the cork oak allow these to adapt perfectly to the necks of the bottles and, at the same time, seal them completely, so that none of the sensory qualities of the wine are lost before reaching the glass”.

Alfonso Larrain Santa Maria
Chairman of Concha y Toro
THE CORK STOPPER AND WINE

WINE AND CORK HAVE A CENTURIES-OLD CONNECTION. IT IS ONE OF THE FEW CASES WHERE A NATURAL RAW MATERIAL HAS CONSISTENTLY MAINTAINED ITS MARKET LEADERSHIP.

With unique physical and chemical properties, the traditional and inimitable cork stopper ensures irreprehensible technical efficiency, being the only sealant that assures, in addition to correct sealing, that the wine continues to evolve after bottling, developing in all its splendour.

The secret to its performance lies in its cellular structure. The inside of a cork consists of a small hive of small cells of suberin, a complex acid, filled with an air-like gas. On average, every cubic centimetre of cork contains 40 million cells with one single cork stopper having around 800 million cells.

This cellular structure makes cork very easy to compress (cork can be compressed to up to half of its size without losing any flexibility), with elastic memory, lightness and chemical inertia, characteristics which make it the ideal sealant for any kind of wine.

The diverse portfolio of the Amorim Group cork stoppers and its own distribution network give it an unequalled position in the supply of the ideal cork stopper for any wine segment.
NATURAL CORK STOPPERS

The sealant of choice, natural cork stoppers ensure a perfect seal and perform a determining role in the correct evolution of wine, permitting it to mature perfectly. Recommended for reserve wines and wines which need to age in the bottle, natural cork stoppers respond to the expectations of the best wine producers in the world and the most sophisticated connoisseurs.

A 100% natural product, perfected by recourse to cutting edge technology, it guarantees that the aging of wine takes place in the best conditions.

“The natural cork stopper was another of the heroes of the event, given that less than 1% of the 600 bottles opened showed TCA tainting.”

Robert Parket at Wine Future
CHAMPAGNE CORK STOPPERS

Champagne cork stoppers, for wines that combine high pressure with delicacy, have evolved since the bygone days of D. Pérignon, finding their definitive form in the combination of an agglomerate cork body and two natural cork discs at one of the ends, the one in contact with the wine.

“The cork oak forest in the Mediterranean region is one of the richest in the world in biological terms and the trees are not cut down to produce cork. If we increase people’s awareness of something as simple and as small as the cork stopper, they will begin to reflect on other environmental themes. Harvesting cork oaks in a sustainable manner preserves jobs and discourages the utilisation of alternatives based on fossil fuels.”

Allen Hershkowitz
Scientist, Natural Resources Defence Council, USA

“Cork is produced by and for the well-being of a significant community in Europe. As human beings, we are obliged to assure the subsistence and the continuity of life in these communities whenever and wherever possible, especially in the case of a self-sustaining product.”

Lord David Puttnam
Cinema producer and politician, United Kingdom
Natural, recyclable, biodegradable and ecological, Acquamark® corks are taken from nature and subjected to a production process rich in technology, giving them superior technical performance in fundamental aspects such as wine sealing and conservation.

The name comes from the innovative aqueous-base finishing, where the cork extracts are fixed to the walls of the stoppers and the lenticels are filled.
Product of a new generation of specialised cork stoppers, the Neutrocork® is a specialised stopper developed with cutting edge technology and at an extremely competitive price.

Recommended for wines with some complexity and a short consumption time, the main characteristic is the great structural stability, which arises from the composition: cork granules of a uniform size.
SPECIALISED CORKS

TWIN TOP® CORKS

Based on the technology for production of champagne corks, the Twin Top® is a specialised cork stopper developed in response to the highest demands of wine producers and which maintains all of the beneficial qualities of the cork stopper in terms of sustainability. Ideal for fruity wines and recommended for wines that do not require long aging in the bottle. Twin Top® corks consist of a natural cork disc on both ends and a body of agglomerated cork. They can be used on the same bottling lines as natural corks.
A UNIVERSE OF UNIQUE CAPPED CORK STOPPERS
WITH EXCLUSIVE AND DIFFERENTIATED SOLUTIONS

Top Series® is an exclusive capped natural cork stopper available for four distinct market segments and recommended for the most prestigious spirits.

Allying design and the superior technical and environmental performance of natural cork, Top Series® has a wide range of solutions, made up of hundreds of different products with the performance guarantee and the same advantages in terms of sustainability as natural cork, in a wide variety of materials, based on state-of-the-art production technology.

The Prestige range has a base in natural cork and is complemented with innovative, luxury materials, in daring shapes and designed according to current design trends.

Materials such as ceramics, wood and metal make up the Elegance range, which is differentiating and distinctive.

The Premium capped corks can be personalised with logos, shapes and materials.

The cork stoppers of the Classic Value segment are designed according to the specifications of each customer, adapting colours and shapes.
CORK COVERING

EXCELLENCE IN FLOORING

The Amorim Group has been operating in the coverings market for over 40 years, developing unique solutions for floors and walls from the raw material, cork. Combining the most recent technology with traditional production methods, the group is recognised worldwide for its pioneering of high quality, state-of-the-art coverings, developed in perfect harmony with nature.

Under the Wicanders® name, a premium coverings brand of the Amorim Group, a new flooring philosophy recently appeared, with an infinite range of textures and colours as well as elegance and sophistication, with all of the qualities of cork. The brand’s various product lines - Corkcomfort, Woodcomfort, Vinylcomfort, Linocomfort and Parquet - whose names identify the appearance of the flooring, all have a cork base, a differentiating element that gives them their superior performance.
In 2007, the Amorim Group in partnership with BASF launched a new generation of cork coverings with an innovative eco-binder technology, Acrodur® - a water-based binder, which significantly reduces the level of emissions and provides excellent thermal performance.

**GREEN INDUSTRY & GREEN PRODUCTS**

The natural properties of cork make it an excellent sound insulator, reducing noise which can disturb moments of relaxation and sharing.

**EXCELLENT SOUND INSULATOR**

Cork’s notable heat insulation inspires tranquil, comfortable environments, guaranteeing energy saving. The heat insulation properties of cork coverings permit a reduction in heating costs.

**A WARM RESORT**

A study of the Corkcomfort product line, carried out by the Valência Biomechanical Institute, shows its effective biomechanical performance as well as the positive influence this type of flooring has on a balanced posture for the human body.

Wicanders® coverings are soft enough to reduce the impact on joints and on the back and stable enough to reduce fatigue.

2000 m² of Wicanders® Corkcomfort flooring was laid in Gaudi’s Sagrada Família Cathedral, a Landmark in Barcelona and one of the most visited monuments in the world.
A GIFT FROM NATURE

Cork is a gift from nature and one of the most complete materials for creating safe, comfortable and cosy ambiences. The Comfort collections, developed in line with current trends and using cutting edge technology, offer innovative covering solutions of admirable quality.

OUTSTANDING DESIGNS FOR A PERFECT CHOICE

Magnificent visual effects, available in a wide variety of textures, colours and finishes, creating the most varied and surprising of ambiences. Classic or avant-garde, elegant or trendy, Wicanders® coverings offer total creative liberty in personalised decoration.

FEEL FREE TO LIVE YOUR SPACE

Its non-slip and scratch resistant properties make Wicanders® the ideal solution for a full life.

MAKE YOUR LIFE EASIER

Quick and easy to install, the Comfort collections transform the ambience without interfering with daily routines. The easy and practical maintenance of this flooring makes it the ideal solution for a relaxing life and everyday safety.
In 1963, the Amorim Group successfully began the process of vertical integration of the cork industry, with the initial objective of making use of 70 per cent of the waste generated from the manufacture of cork stoppers. Since then, the waste has been transformed into granules and these into valuable agglomerates, pure and compound, from which it became possible to produce a set of new applications in/with cork.
CONSTRUCTION

UNDERFLOORING
Marketed under the AcoustiCORK® brand, cork underflooring is designed to be applied directly under the final covering, whether this is a ceramic, wood, floating, carpet or linoleum solution. It can also be used under screed and in floor heating systems.

The AcoustiCORK® underflooring range has high performance products for the reduction of noise and unlimited durability, maintaining the same performance throughout the useful life of the product.

MAJOR PUBLIC WORKS
Cork plays an important role in the large infrastructure sector, such as bridges, aqueducts and airports, where it is necessary to ensure that the thermal variations do not affect the stability of the concrete. Agglomerated cork joints are used in countries with large temperature variations, giving concrete the capacity to accompany contraction and dilation over time.
SEALING

Cork and rubber joints, marketed under the TechSeal® brand, were developed for application in engines. Designed to satisfy the requirements of various applications, they are applied in joints for valves, oil pans or water deposits, providing a solution to the distortion problem. In the Amorim Group this range of products is developed in close alignment with the environmental use standards, in products where it is necessary to guarantee contact with engine and gear oils and diesel or biodiesel fuels.

The field of application of cork and rubber joints extends to the energy distribution and manufacturing industry, where Amorim T&D solutions are ideal for maintaining performance, even when subject to extreme temperatures of hot and cold. These cork and rubber joints, given their capacity to adapt perfectly to the material to be sealed, also have the advantage of correcting any manufacturing imperfections.

Potential applications of Amorim T&D solutions in the energy transformation and distribution industry:

1. Tank cap/flange
2. Manometers
3. Valves
4. Radiators
5. Junction box
6. LV insulators
7. HV Insulators
8. Expansion chamber
9. Anti-vibration supports
10. Moulded rubber parts
The Amorim Group is an important technological partner at world level and has supplied cork modules for the aerospace industry since the 1980s.

Given the unique characteristics of cork composites and the excellent weight versus technical performance ratio it shows, the insulating materials for thermal shields, marketed under the TPS (Thermal Protection Systems) brand, play an important role in the successful launching and operation of all space vehicles, manned or unmanned.
We are now seeing a “renaissance” in cork, a new perception of its potential and progressive incorporation of this natural resource into a wide range of design products, with great success in the footwear industry, seen in the number of well-known designers using cork in their footwear collections.

In the Amorim Group, the agglomerates for the footwear industry are marketed under the Footcork® brand. In addition to their aesthetic component, these products have excellent technical properties, ensuring comfort while walking.
The CorkNature brand, developed according to current design trends, is a differentiating proposal for products in the home and office consumer goods sector.

Home decoration articles are marketed under the CorkNature brand. These include individual and table settings and various visual communication products for offices, arising from a focus on the contemporary, in the aesthetic and design sphere and at a functional level.
Design

From the simplest and most utilitarian objects to the most sophisticated fashion and decoration accessories, cork is often found in jewellery, furniture, articles of decoration and clothing. The combination of cork with new materials, adding innovative design concepts, makes it a differentiating option.

The Amorim Group, with the objective of raising the profile of cork, has entered into partnerships with designers, architects and various artists.

The new “Alma Gémea (soul mate)” collection combines cork with ceramics, providing an innovative proposal, for the home consumer goods sector.

“Onion Pinch” at Experimenta Design 09 by Caterina Tiazzoldi & Eduardo Benamor Duarte
The Amorim Group produces cork composites for application on wooden panels, solutions which show excellent heat and sound insulation performance. These solutions may be used in the home (floors, roofs, doors or windows) or means of transport (buses, planes, trains, lorries or boats). The growing interest in the raw material, cork, and the potential arising from combining it with other materials to form new composites, has been seen in the development of new businesses and in the appearance of new applications. In a world increasingly concerned with the environment and with the noxious effects of industry, cork appears as a prime substitute for synthetic materials in applications ranging from sport and leisure to construction, energy and aeronautics, among many others.
The Amorim Group is focused on the production of insulating materials from natural raw materials such as cork and coconut fibre, developing and producing heat and sound insulation solutions in expanded agglomerated cork, in re-granulates and sheets/rolls of coconut fibre, materials with excellent technical performance and that are environmentally friendly.

Expanded agglomerated cork is widely considered to be a sophisticated and technologically advanced material, which is a 100% natural and renewable product.
In construction, this product – whose durability is unlimited and which does not lose its characteristics – is used in roofs, walls (double or exterior) and more recently as a finishing solution for exterior façades, which has triggered major architectural interest.

It is an example of innovation and good practices in sustainable development, for the aesthetic differentiation it provides to projects and the fact that it fits perfectly with the sustainable construction concept.

The characteristics of expanded cork agglomerate - 100% natural, good mechanical properties, long duration and recyclable - currently make it the best option in insulation terms.

SUSTAINABLE CONSTRUCTION WITH NATURAL, RENEWABLE AND RECYCLABLE INSULATION... CORK.
A pillar of the Amorim Group’s strategic development, RD&I aggregates knowledge, formalises processes and promotes the design of new products and business areas, maintaining its leadership in all segments of its business.

The Amorim Group, while maintaining its focus on the current applications of cork, which will continue to be the basis of the industry, constantly reflects on the immense potential for cork applications, which will increase
“FOR A MATERIAL USED SINCE ANTIQUITY, THE CHAMELEON-LIKE VERSATILITY OF CORK NEVER CEASES TO AMAZE. ITS CAPACITY FOR RENEWAL AND ADAPTATION TO NEW TECHNOLOGICAL DEMANDS WILL CONTINUE TO MAKE IT THE OTHER PORTUGUESE.”

in The Chemistry of Cork, National Geographic March 2009

the market for the current applications and, also, guarantee the development of new solutions from this natural raw material.

The Amorim Group is a member of the consortium which is beginning the project of genome sequencing of the cork oak, called Genosuber, and as such it will play an active role in this process of learning about the genetic heritage of the cork oak, which is hoped will widen the cork utilisation spectrum.
The Cork Stopper Recycling Programme was developed with the objective of promoting the recycling of natural cork stoppers, in Portugal and around the world, simultaneously alerting people to the advantages associated with the recycling of cork products. The Amorim Group, which operates in over 100 countries, ensures recycling programmes are pursued in a number of countries.

Green Cork – developed in Portugal in partnership with Quercus. This project aims not only to recycle used corks for incorporation into new products but also to finance the “Criar bosques (creating woods)” programme, which provides for the planting of trees which make up the native Portuguese forests, including the cork oak.

ReCORK – developed in the USA in partnership with Sole. Just as in Portugal, the corks are taken to the recycling points by consumers and the cork from the recycling is later incorporated into Sole footwear;

Similar recycling programmes exist in France, Italy, South Africa and the United Kingdom.
GIVING BACK A PRODUCT OF UNDENIABLE VIRTUES TO NATURE IS AT THE BASIS OF THE AMORIM GROUP CORK STOPPER RECYCLING PROGRAMME.

Ground and treated, the cork stoppers are then used for other purposes, such as coverings, insulation, memo boards, Olympic kayaks, aerospace applications or designer pieces.

Main partners:

American Airlines; Biological; Continente; Culinary Institute of America; Dolce Vita; Gallo; Georges Duboeuf; Groupe Laurent Perrier; Laithwaites; Valdobbiadene Municipality; Quercus; Rilegno; San Francisco Dept. of the Environment; Savno; Sole; Spier Wines.
All over the world, cork oak forests occupy an area of around 2.3 million hectares, distributed over the Mediterranean region with Atlantic influence, the south of Europe and the north of Africa, from where around 340,000 tonnes are harvested annually.

Portugal has over 33% of the world area, corresponding to over 730 thousand hectares, representing around 23% of national forest.
It is estimated that around 4 million hectares of land are covered by vineyards, spread mainly over the south of Europe, eastern Asia and the whole of the American continent. Its geographic distribution thus coincides largely with the cork oak forests. Vineyard and cork oak cultivation are concentrated along the same latitude, cohabitating the land from the north to the south, and they have been inseparable from the beginning of agriculture.

In Man’s co-existence with Nature, cork and wine are an integral part of a natural and sustainable heritage.

The Amorim Group has borne witness to this relationship between cork and wine, since 1870, perpetuating the values of authenticity and respect for the products, in perfect harmony with nature.
The preparation and processing of cork shows the close link between Man and the land where he was born, his patience and care in treating the tree and the conscientious use of resources. The Amorim Group, maintaining respect for quality and seeking to satisfy the requests of the modern cork market, produces a very varied range of products that respond to the most diverse requests and needs of its customers and markets. The Group processes 30% of total worldwide production. Whatever your needs as regards our business area, contact us and find out how we can solve your problem.