

CORK AND TECHNOLOGY  
THE PURSUIT OF PERFECTION

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AMORIM  
CORK

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Sustainable by nature



# CORK AND TECHNOLOGY: THE PURSUIT OF PERFECTION

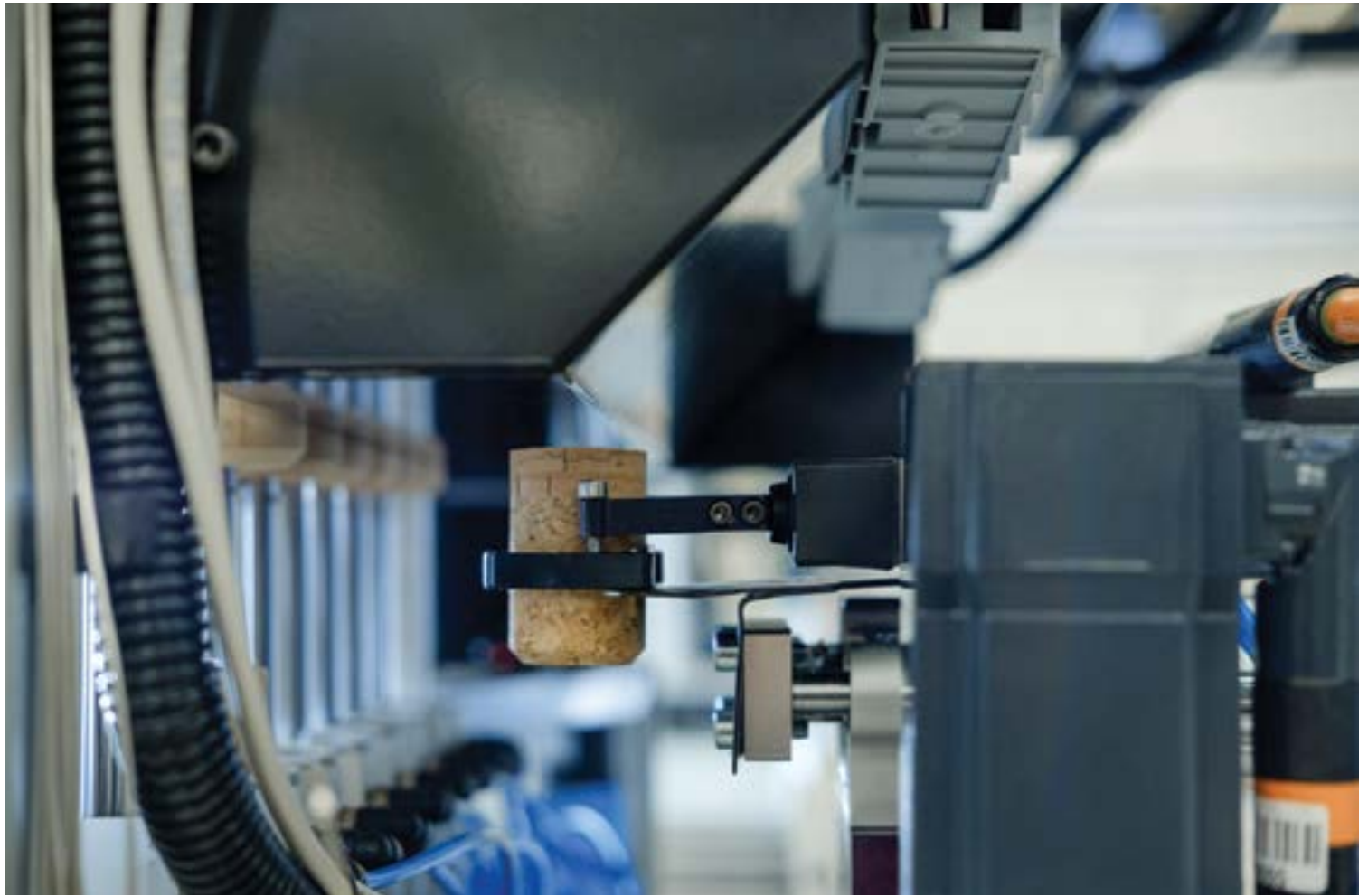
There is nothing more powerful, incredible,  
perfectly designed and engineered to protect  
and enhance wine than cork.

Inside the bottle, cork and wine interact through a relationship that guarantees that the wine develops well over time. But despite cork's natural ability to support and sublimate wine as it evolves, more than 150 years of experience and evolution show that we can always go further and do better.

This is why, driven by our ambition to do better and deep respect for the planet, we have developed groundbreaking technological solutions for cork stoppers that combine performance and sustainability.

In this way, we improve, in perfect balance, what nature has crafted so flawlessly.

A robust and consistent investment in R&D + Innovation has borne fruit over the years. Starting from nature, and by developing and applying the most advanced technologies, we create the best cork stoppers in the world to guarantee the perfect evolution and ageing of wines, ensuring that they achieve the purest and most revealing expression of their qualities.



## **AMORIM CORK REDEFINES THE FUTURE OF THE WINE INDUSTRY WITH THE WORLD'S MOST INNOVATIVE, ENVIRONMENTALLY FRIENDLY, AND EFFICIENT ANTI-TCA TECHNOLOGIES.**

These proprietary anti-TCA technologies cover all stages of the production process, from bark to bottle, and are suited to different product segments. Combining preventive, curative, and quality control strategies, we maximize the natural features of cork.

The current technologies of eliminating TCA in cork stoppers are based on good manufacturing practices, cleaning methods and sorting cork stoppers individually. By implementing these three strategies, we ensure that by combining the natural power of cork and the best technology available, efficiently and sustainably, each wine can become the best version of itself.

# STRATEGIES

## PREVENTIVE

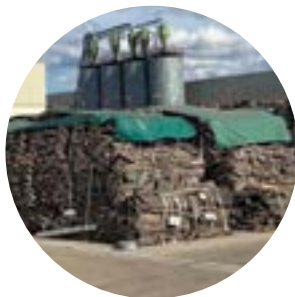
- Raw material traceability
- Better storage conditions
- Elimination of possible contamination focus

## CURATIVE

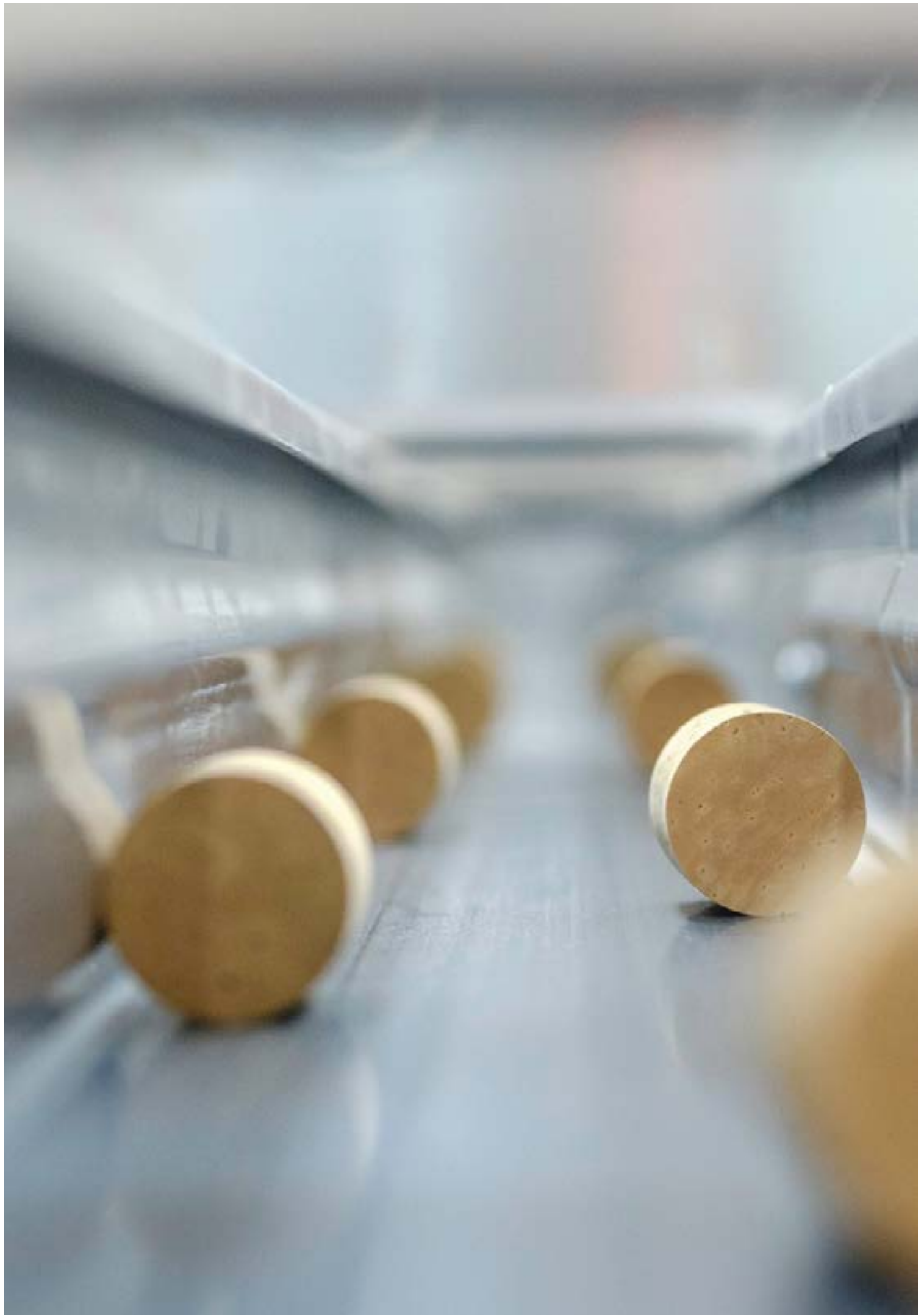
- Cutting-edge technologies to eliminate TOA and other volatile compounds

## QUALITY CONTROL

28 Gas-chromatography equipments  
= 52.360 analyzed samples per month



**WE MAXIMIZE  
THE NATURAL FEATURES OF CORK**



# A TASTE FOR INNOVATION

A good cork stopper is one whose presence is barely noticeable. Despite its extraordinary importance, unrivalled performance, and naturalness, a cork stopper should be almost imperceptible.

Thanks to technology, we have managed to perfect an inherently superior solution – cork – to create an outstanding oenological product, adding layers of consistency and reliability, maximizing physical-mechanical performance, ensuring bottle-to-bottle homogeneity, and contributing to a better expression of the wine's complexity and quality.



# NATURAL CORK STOPPERS



Naturity® is Amorim Cork's state-of-the-art patented technology for removing TCA and 150 other volatile compounds that can cause sensory deviations. Developed by Amorim Cork's R&D + Innovation department in partnership with the School of Science and Technology at NOVA University Lisbon.

It is a process that uses thermal desorption to guarantee that the cork stopper does not retain any unwanted compounds that could compromise the integrity of the wine or its evolution in the bottle, while preserving its physical-mechanical properties intact.

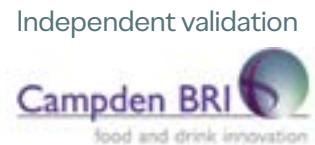
Naturity® is externally validated by Campden & BRI in the UK and guarantees a 99% reliability for a released TCA content equal or less to 0,5 ng/L, the equivalent of one drop of water in 800 Olympic swimming pools.

## How Naturity® works

Thanks to an optimized process, without chemicals, that combines pressure, temperature, purified water, and time, Naturity® separates TCA molecules from cork's cellular structure, keeping the crucial features of this unique material intact and its remarkable performance, essential to the protection and evolution of the wine, untouched.

Naturity® is based on the principles of thermal desorption, involving increased temperature to enhance the volatilization of contaminants from the cork material, which is facilitated by vacuum. The desorption process optimizes the temperature to eliminate TCA and other haloanisoles without affecting the natural cork structure.

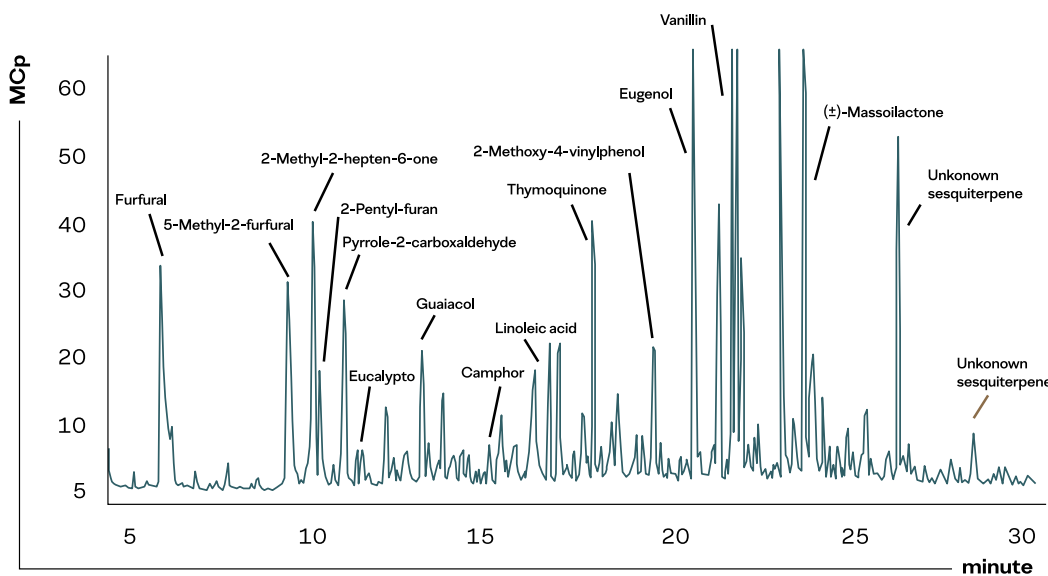
LOT	CORKS PRIOR TO NATURETY®		CORKS AFTER NATURETY®		
	N° OF CORKS	% ND	NATURETY® EQUIP N°	N° OF CORKS	% ND
A	200	98.0%	13	203	99.0%
B	200	97.0%	14	228	100%
C	206	98.1%	9	180	100%
D	189	98.4%	17	190	100%
E	216	97.2%	3	206	100%
F	224	96.9%	10	265	100%
G	210	98.6%	11	237	100%
H	219	98.2%	12	238	100%
<b>TOTAL</b>	<b>1664</b>	<b>97.8%</b>		<b>1747</b>	<b>99.9%</b>



The independent external validation of **Naturity®** which extracts volatile compounds by thermal desorption under variable pressure, guarantees 99% reliability for a releasable TCA content equal to or less than the quantification limit of 0.5 ng/L\*, in addition to the elimination of more than 150 volatile compounds.

\* Analysis performed in accordance to ISO 20752. For more detail, please confirm the product technical datasheet.

### Elimination of TCA and more than other 150 volatile compounds.



### WHY IS THIS IMPORTANT, ESPECIALLY FOR AGE-WORTHY WINES?

Because by eliminating contamination by TCA and other volatile compounds, we guarantee that the cork remains with its best characteristics intact, contributing positively to the evolution of the wine throughout its ageing in the bottle, helping it to mature.

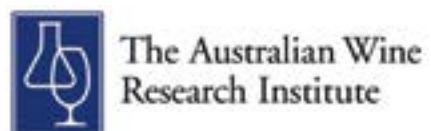


# NDtech<sup>®</sup> by Amorim

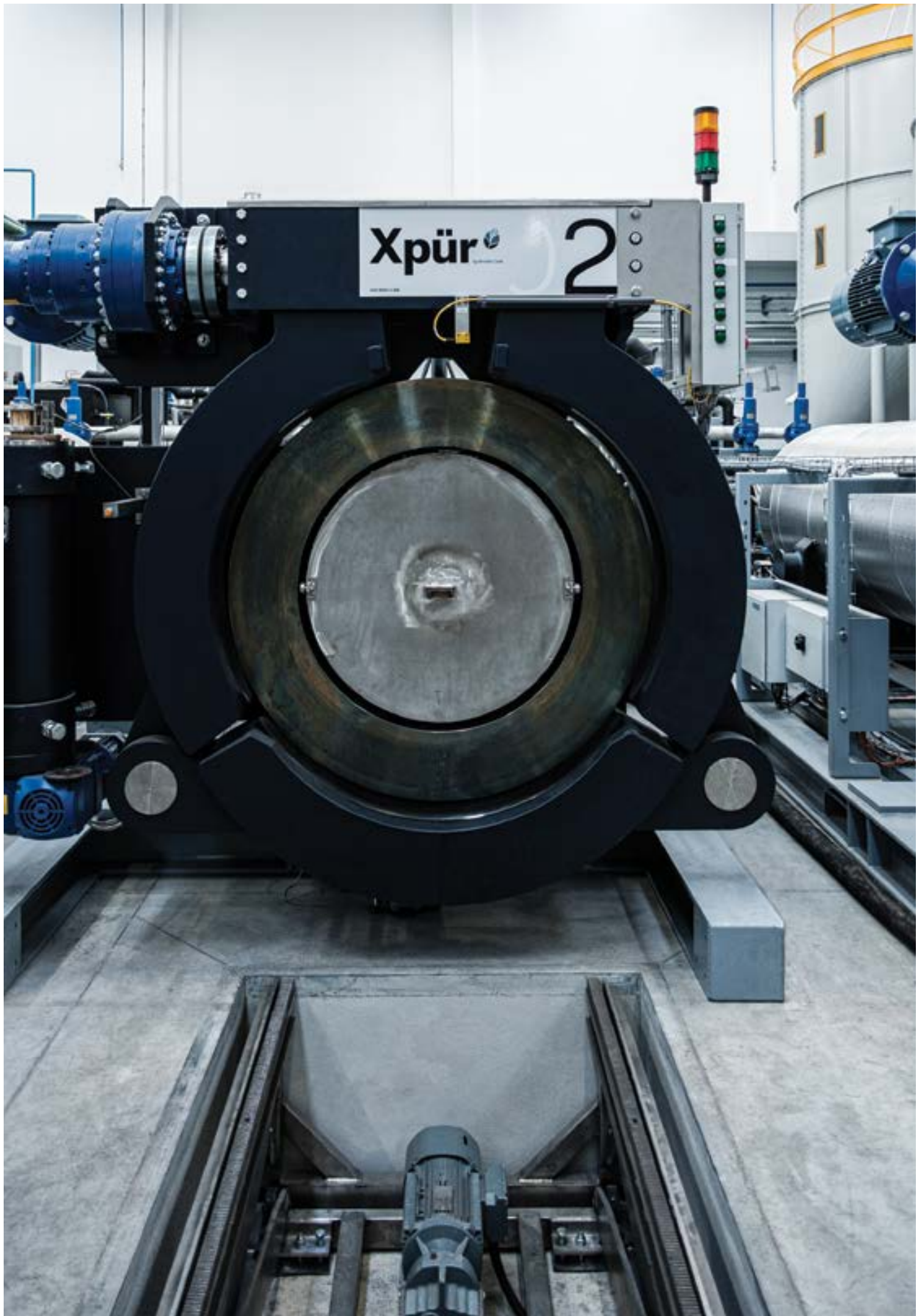
## The industry's most advanced individually screening technology

Adding another layer of reliability to our stoppers, NDtech<sup>®</sup> is the industry's most advanced screening technology, using a fast gas-chromatography process that individually analyzes every cork stopper for TCA content, and then separates the corks with a releasable TCA content above 0.5 ng/L. The general technical principle for cork analysis consists in the placement of a cork stopper inside a small hermetic chamber. The cork stopper is then heated, which induces vaporization of TCA from the cork; then a neutral gas is blown into the chamber and the sample is sent to the chromatography detector. Through this automated non-destructive process, we are able to deliver the world's first natural cork with a non-detectable\* TCA performance.

## Independent validation



\* 2, 4, 6 – Trichloroanisol (TCA) – Releasable TCA content of 99% at or below the 0.5 ng/L quantification limit and 1% ≤ 1.0 ng/l, performed in accordance to ISO 20752.



# TECHNICAL CORK STOPPERS

Xpür® is the greenest and highly effective anti-TCA CO<sub>2</sub> supercritical technology for micro-granulated stoppers, removing any sensorial deviation molecule that might exist in cork granules without compromising cork’s natural characteristics. After this process, at a molecular level, cork’s unique features remain intact.



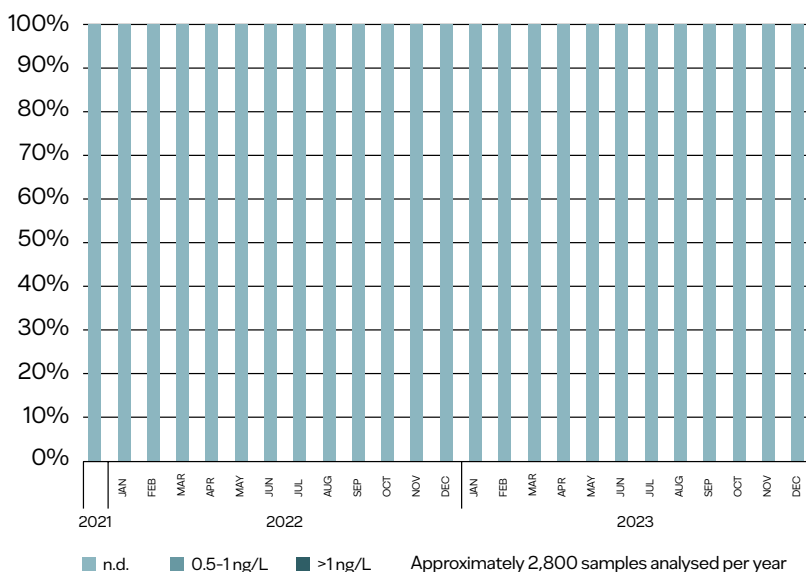
For our technical stoppers, made from micro-granulated cork, we have developed Xpür® technology.

Xpür® is a CO<sub>2</sub> supercritical technology that has been used in various industries for instance to decaffeinate coffee. At Amorim Cork, we have recently integrated and optimized this technology into our production processes. Because we will always do everything within our reach to ensure that our products are the best solution for wine, and good for the planet too, we have streamlined conventional CO<sub>2</sub> supercritical methods, making them more efficient, shortening the production cycle 4 hours, and reducing energy and CO<sub>2</sub> consumption. Xpür® technology uses 75 per cent less energy than conventional methods and only one tenth of the CO<sub>2</sub>.

### Inside Xpür®

CO<sub>2</sub> Supercritical fluid is a special state of matter, which exists at a 32°C of temperature and 73 bars of pressure approximately. In its supercritical phase, CO<sub>2</sub> is neither liquid nor gaseous, but combines the properties of both states. Its “gaseous” properties give CO<sub>2</sub> a very high diffusion capacity through cork, while its “liquid” behaviour provides a very high extraction power toward some volatile molecules (e.g. volatile and malodorous compounds of cork, including TCA). By adjusting the pressure/temperature conditions it is possible to optimize the extraction of TCA from cork by CO<sub>2</sub> while preserving its mechanical properties. In addition, over 150 other molecules besides TCA are also removed.

### Individual TCA values on Xpür® stoppers



### Compared to conventional technology

- 4 HOURS IN THE PRODUCTION CYCLE
- 75 % ENERGY CONSUMPTION
- ONLY 10% OF THE CO<sub>2</sub> CONSUMPTION

Xpür® removes TCA and other halonisoles (TeCA, PCA and TBA), but also hundreds of volatile and semi-volatile molecules, including phenolic compounds that exist in cork granules.

# MAXIMISING THE OENOLOGICAL PERFORMANCE OF CORK THROUGH TECHNOLOGY

We can guarantee that our cork stoppers offer maximum consistency and oenological reliability, keeping the qualities and personality of each wine intact.

Thanks to the incorporation of advanced technologies throughout the production process, we can guarantee that our cork stoppers offer maximum consistency and oenological reliability, keeping the qualities and personality of each wine intact.

From cork harvesting to expedition, the verticalization of the process allows a more controlled access to better raw materials and stock management throughout the value chain.

We use artificial intelligence and other exclusive technological tools to guarantee the physical-mechanical performance of our stoppers: **electronic sorting and x-ray inspection to prevent physical defects and a sealing verification system for an individual screening of the sealing capacity of each stopper.**

In its pure state, cork is a wondrous solution. Technology only perfects what nature has created, unveiling the essence of cork, and expanding its possibilities. In a bottle sealed with cork, in the perfect balance between nature and technology, wine can finally become what it was born to be.

**Fully protected and free to reveal itself.**



**Electronic sorting**  
Application of artificial intelligence to identify physical defects.



**X-Ray inspection**  
Application of artificial intelligence to prevent physical defects.



**SVE ( Sealing Verification System)**  
An individual screening technology that ensures the sealing capacity of each natural cork stopper.



# AMORIM CORK



Amorim Distribuição

Amorim Champcork  
Amorim TopSeries  
UI DS  
UI Equipar  
UI Lamas

Amorim Champcork  
Amorim Distribuição  
Amorim TopSeries  
UI Equipar  
UI Portocork

Please always check the most up-to-date version, as the manufacturer reserves the right to make changes to the product and/or technology without prior notice.

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