



PORTFOLIO

**The science of
choosing the right
stopper**

2

Winemakers take extreme care in every stage of the winemaking process.

The choice of the right stopper is their final, decisive choice, determined in function of the wine's characteristics and ageing profile and the gains delivered by the stopper in terms of fruity and floral aromas, sensorial homogeneity and neutrality.

This is a question of science, powered by Amorim's unrivalled expertise, delivering consistent and predictable performance and non-detectable TCA across its product range.

Cork stoppers with different OTRs, that enhance wine flavours and shelf-life.

Amorim Cork is the industry's most technologically advanced company.

We have the sector's most diversified stopper portfolio, which offers an unrivalled level of safety across the entire product range.



The science of stoppers – bringing out the full flavour of the wine

The stopper is the ultimate guardian of the wine, generating a complex interaction that lasts many months, often years. The wine will evolve and mature in function of the stopper's characteristics – in particular its oxygen ingress.

Natural whole corks are the gold standard for fine wines, because without them the wines simply won't taste the same.

Choosing the wrong stopper can have detrimental consequences, for example causing wine oxidation and excessive reduction.

A cork stopper can fine-tune and influence the texture and aroma of the wine in terms of oxygen ingress, aromas and phenolic compounds.

OXYGEN

May impact positively the formation of the wine bouquet, corresponding to the formation of reductive substances and the harmonization of grape, fermentation and ageing aromas.

AROMA

Cork preserves the fruity, floral and toasty notes.

NON-VOLATILE COMPOUNDS

Polyphenols (tannins) of cork can contribute to the colour stability, roundedness, elegance and softness.

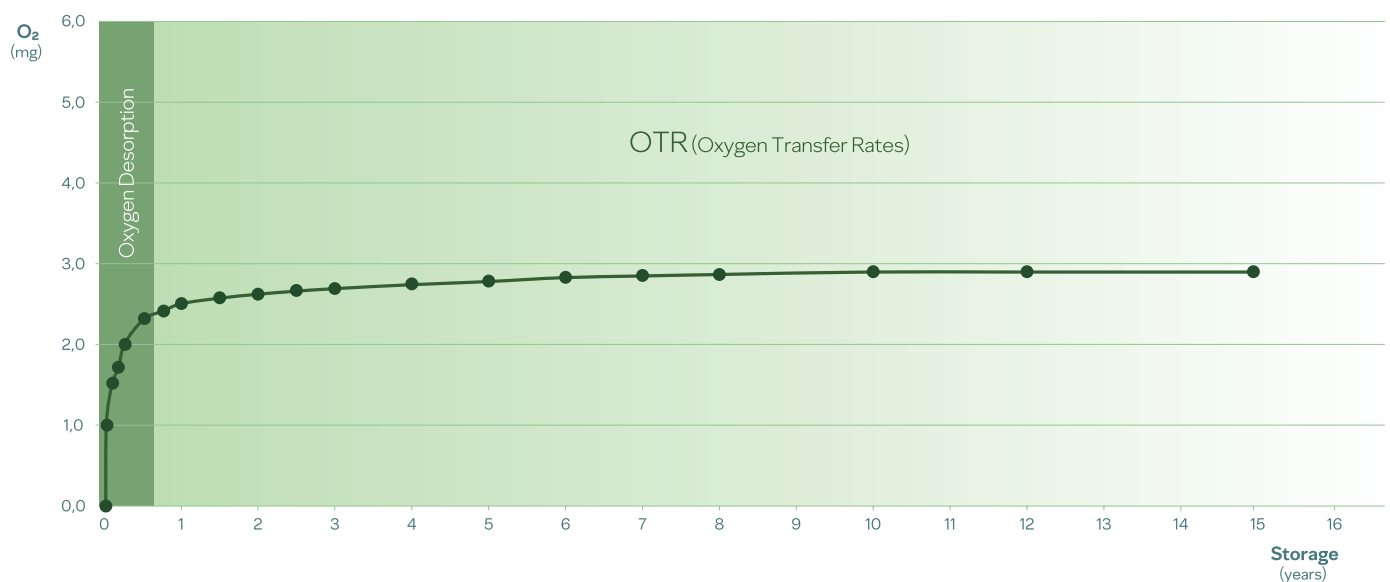
Oxygen ingress

Amorim Cork has been pioneering advanced research into the oxygen transfer rate (OTR) since 2005. No other cork producer has so much scientific data, covering such a long period of time.

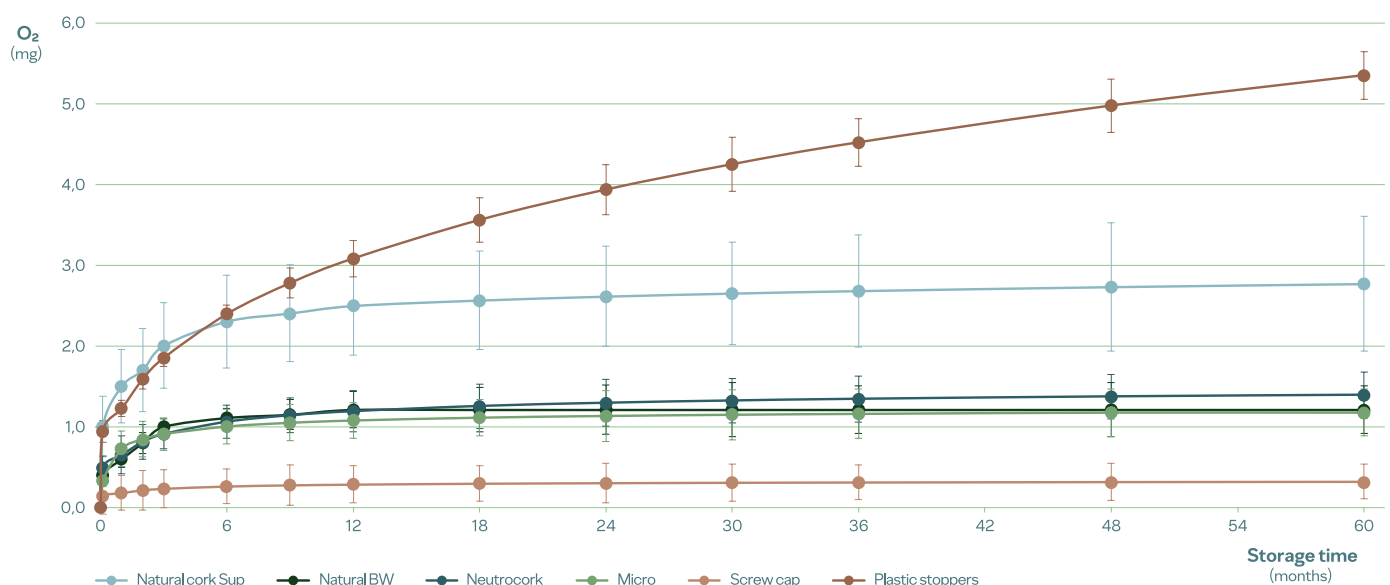
The winemaker needs to know the exact OTR - whether for a technical stopper or natural stopper.

A cork stopper delivers micro levels of oxygen ingress over time from the air impregnated within its microscopic cells. This is complemented by desorption of the oxygen from the air captured inside the bottle at the time of bottling. Cork stoppers effectively offer an airtight seal, meaning that any ingress of oxygen from the outside air, through the stopper, is completely residual.

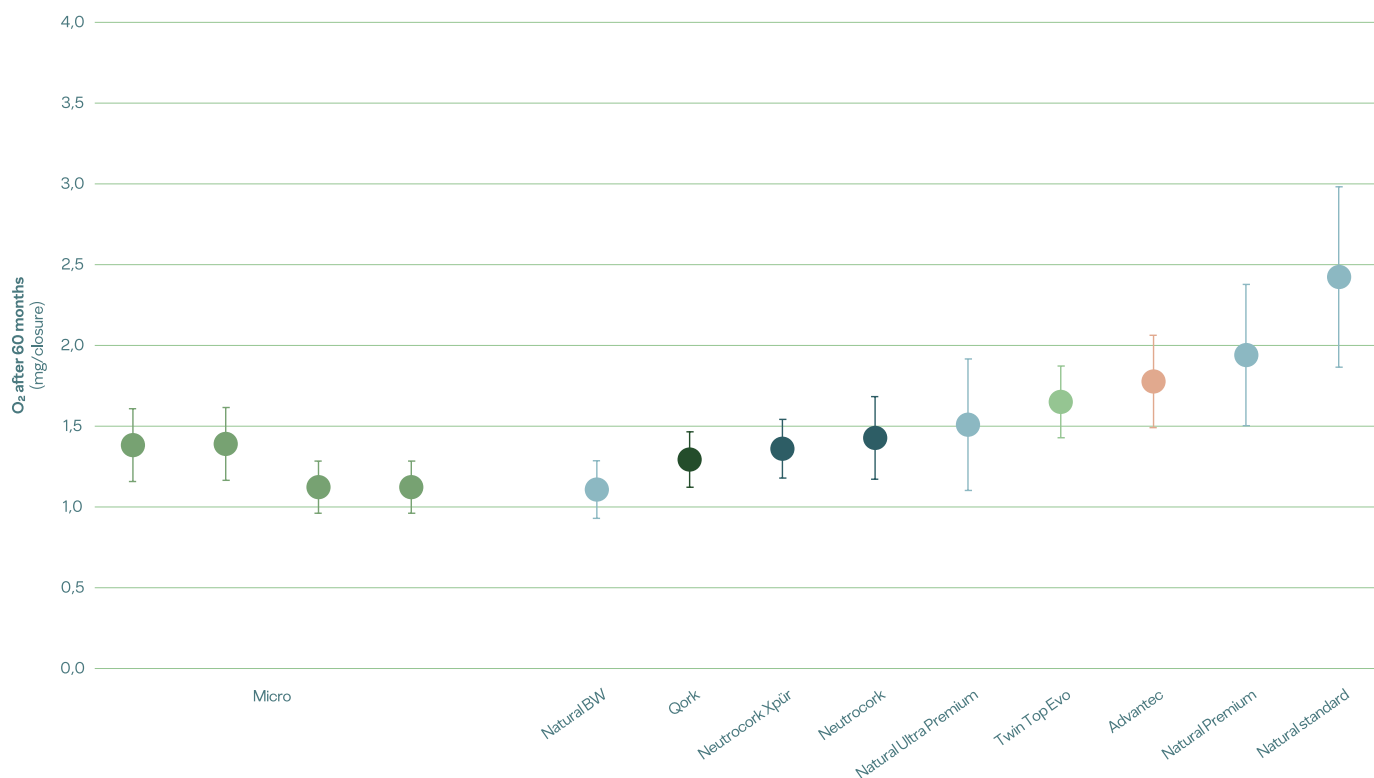
Note: The results indicated in the following three graphs are based on colorimetry data, the only peer-reviewed methodology that reflects real world wine ageing conditions.



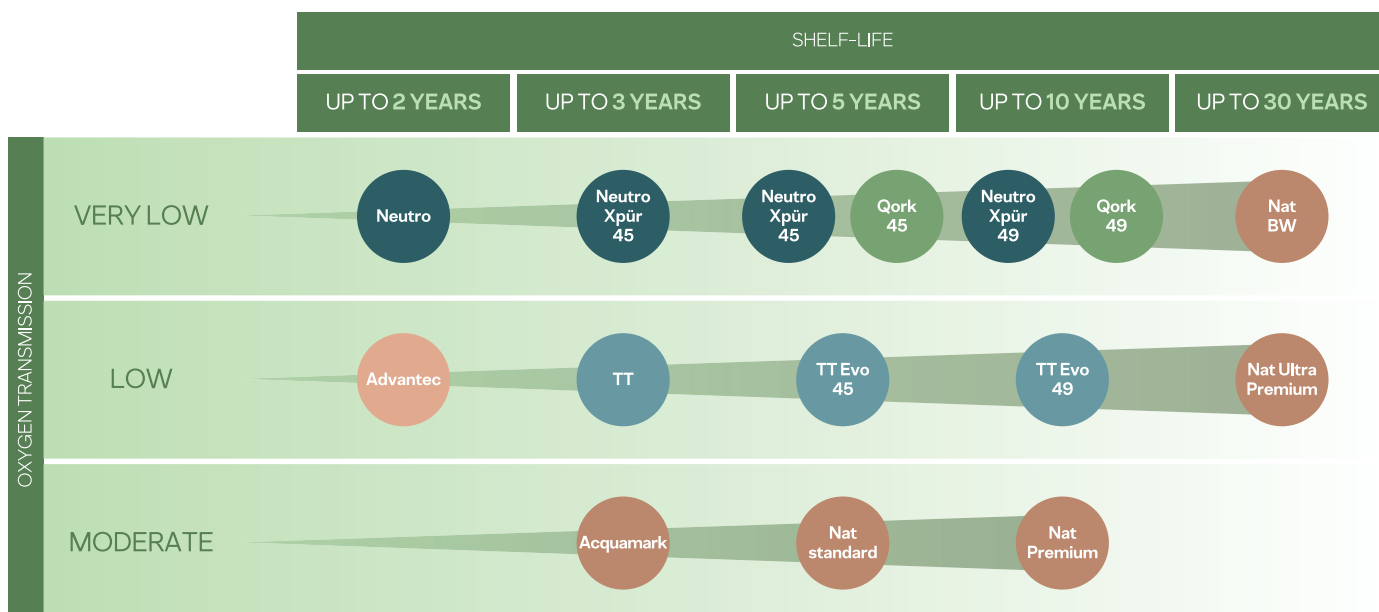
Each closure provides different amounts of oxygen to bottled wines over time.



Oxygen ingress of different cork stoppers over 5 years of storage.



The final choice of the stopper must be made in function of the desired level of OTR and expected shelf-life.



Understanding the stopper's impact on winemaking

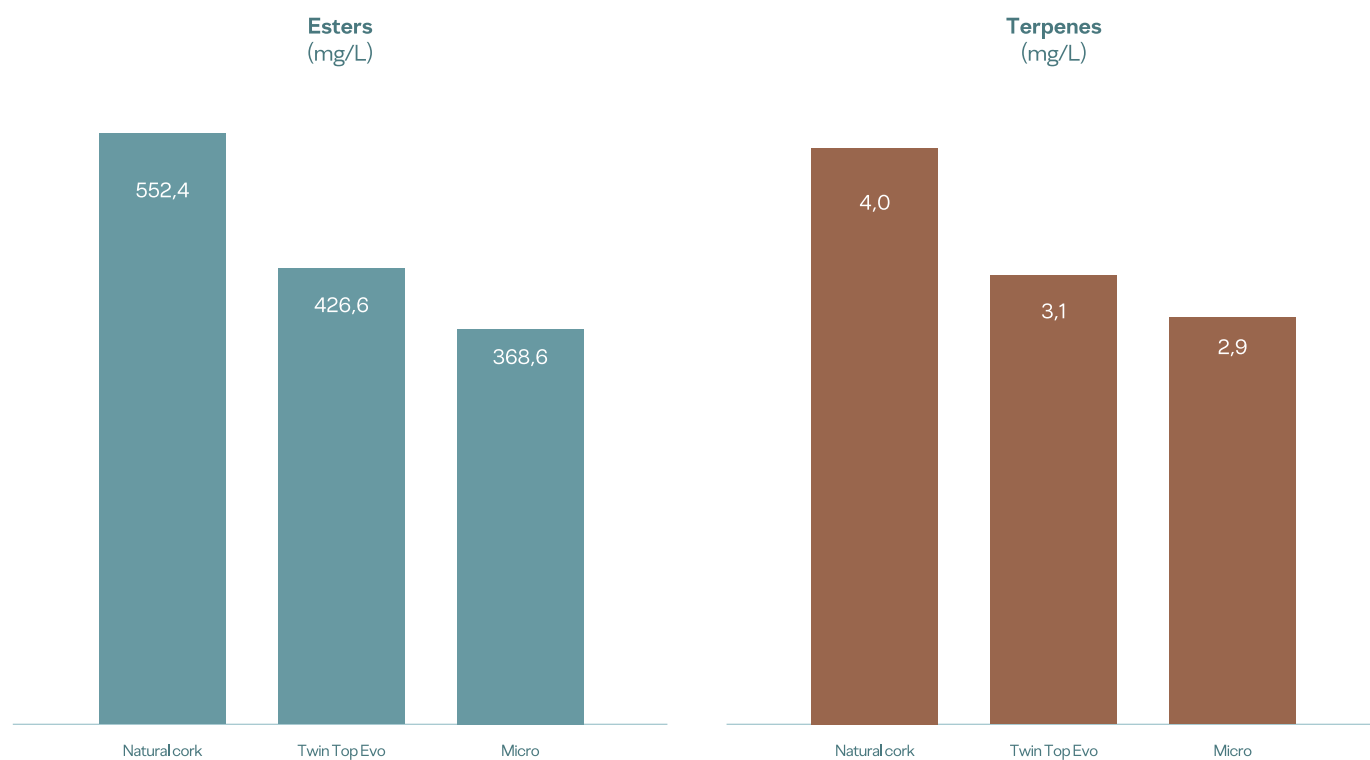
Expert tasting panels have validated that natural cork maximises the fruit concentration of wine and provides a more complex and rounder mouthfeel. This is influenced in part by phenolic compounds, which are ubiquitous in natural products and also found in wooden barrels and natural cork stoppers. They positively influence the ageing process of the wine. In particular, they shape the colour and the organoleptic profile and also have antioxidant, anti-carcinogenic and anti-inflammatory properties. The phenolic compounds found in cork stoppers are particularly important for red wines.

Only a natural cork stopper is able to deliver the highest concentration of fruity and floral aromas.

For example, for age-worthy red, that has a high ageing potential, a natural whole cork stopper is the best choice. By contrast, for certain faster-rotation wines, technical corks may help preserve aromatic freshness, in line with the winemaker's preferences.



CONCENTRATION OF ESTERS (FRUITY AROMAS) AND TERPENES (FLORAL AROMAS)
ON A RED WINE SEALED WITH DIFFERENT CORK STOPPERS DURING 36 MONTHS OF STORAGE



EXPERT TASTING PANEL SCORING

Age-worthy red	Natural cork	Twin Top Evo	Micro	N	Statistical differences
8 months	28	27	24	48	No
24 months	32	26	24	48	Yes
36 months	33	22	22	48	Yes

Higher value = higher perceived quality

White wines also required a diversified portfolio of closures

EXPERT TASTING PANEL EVALUATIONS AFTER 24 MONTHS IN BOTTLE

	Micro	Twin Top Evo	Natural cork
Light white	<div><ul style="list-style-type: none">· High aromatic intensity· Fresh tropical fruit, grapefruit· Reduced· Light bitterness</div>	<div><ul style="list-style-type: none">· High aromatic intensity· Light ripe tropical fruits· Creamy· Round palate</div>	<div><ul style="list-style-type: none">· Medium aromatic intensity· Ripe tropical fruits· Waxy, honey· Round and complex palate</div>
Medium rotation white	<div><ul style="list-style-type: none">· Fresh but inexpressive· Fruity with vegetal & woody· Reduced· Light metallic</div>	<div><ul style="list-style-type: none">· Fresh and expressive· Fruity (apricot), brioche· Balanced and elegant· Round palate</div>	<div><ul style="list-style-type: none">· Expressive· Ripe fruits· Buttery & honey· Round and complex palate</div>
Age-worthy white	<div><ul style="list-style-type: none">· Fresh but less exuberant· Straightforward fruitiness· Mineral with light reduction· Rich & voluminous</div>	<div><ul style="list-style-type: none">· Fresh and exuberant· Juicy, almond and pear· Balanced and creamy· Round and rich palate</div>	<div><ul style="list-style-type: none">· Expressive· Soft fruit with toasted scents· Silky & creamy· Fresh rich voluminous white</div>

Note: the green shaded area indicates the preferred choice of stopper for each type of white wine, expressed by the Tasting Panel.

CHECKLIST

Optimising wine styles through closure selection

		WINE AGEING POTENTIAL			
Cork		Low	Medium	Medium/High	High
		Approx. 3 years	Approx. 5 years	Approx. 10 years	Approx. 30 years
Very Low O ₂	Natural BW	●	●	●	●
	Xpür/Qork	●	●	● (49 mm)	
	Neutrocork	●			
Low O ₂	Natural Ultra Premium		●	●	●
	Twin Top Evo	●	●	● (49 mm)	
	Twin Top	●			
Moderate O ₂	Natural Premium		●	●	
	Natural standard	●	●		
	Acquamark	●			

TECHNOLOGY

Delivering non-detectable TCA

Amorim offers ground-breaking innovation and safety performance, an excellent sustainability record and science-driven performance and consistency: NDtech®, Naturity®, Xpür®, SVE, Super ROSA.

We have the world's largest network of winery testing and validation, including hundreds of wineries who work with us to push forward the frontiers of winemaking knowledge.

Amorim's investment in R&D+I, which towers above our competitors, uses innovation to leverage cork's astounding natural properties.

One of the prime concerns has been the safety of cork stoppers, eliminating detectable TCA, while catering to different price points, delivering gains in terms of sensorial homogeneity and neutrality and preserving vital characteristics of oxygen ingress and phenolic compounds.

NDtech®

High precision individual screening technology for natural corks, launched in 2016, following a €12 million investment. NDtech Sparkling for two-disc sparkling stoppers launched in 2019. The technology has been further enhanced by Naturity®. 200 million NDtech stoppers sold to date.



Xpür®

Xpür® is an innovative, 21st Century supercritical fluid technology used for micro cork stoppers, which allows for a robust and deeper cleansing of cork's cellular structure, delivering non-detectable TCA performance and eliminating other volatile substances. Validated by Campden BRI lab at 100%.



Naturity®

An entirely natural process applied to an entirely natural product. Delivers premium value with superior neutrality, maximising the performance of natural cork stoppers. Naturity® removes TCA and 150 other volatile non-structural compounds.



KEY MESSAGES

No single stopper is suited **for all wines**

Choosing the right stopper is a question of rigorous science

Amorim has **the world's most comprehensive range of stoppers**

We cover **all winemakers' needs** and have detailed research to help them make the right choice of stopper

Amorim's portfolio has **non-detectable TCA products** with consistent and predictable levels of OTR

