

QUALITY FACTORS

Wood and wine: working together

Ever since the invention of the barrel, wine and wood have had a long-lasting love affair. Who can taste a fine Médoc or white Burgundy without noticing its hints of smoky vanilla mixed with the fruity aromas of the grapes? It is a perfect marriage, a symbiosis that results in undeniable enjoyment. Yet making this subtle union a successful one is far from simple.

From the vine to the glass, wine goes through three successive stages: first, vinification, then maturing, and finally, ageing in the bottle. Wood usually comes into play during the second stage, and sometimes the first. During vinification, the sugar-rich juice from the pressed grapes begins to ferment due to the action of micro-organisms, namely yeasts. During this process, which takes about one to two weeks, the sugar is converted to alcohol, leading to a massive release of

carbonic gas and an increase in temperature. When almost all of the sugar has been converted, fermentation ceases.

USING WOOD IN WINEMAKING

In earlier times, vinification was always carried out in wooden containers. Today, most winemakers prefer stainless steel tanks, which are easier to use and maintain. There are nonetheless many exceptions: the *méthode bourguignonne*, for example,

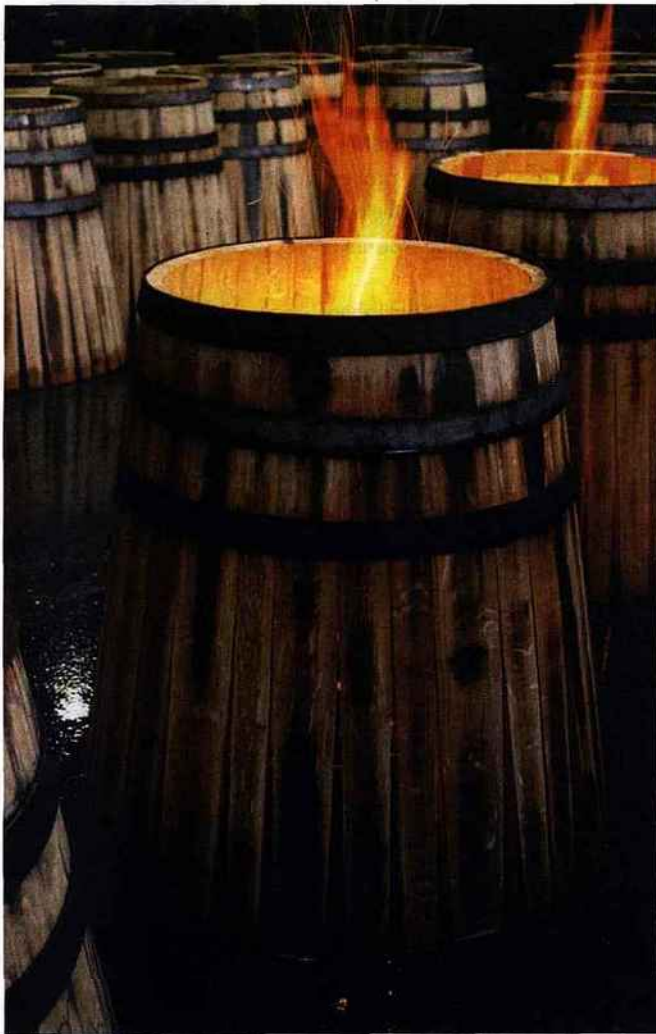
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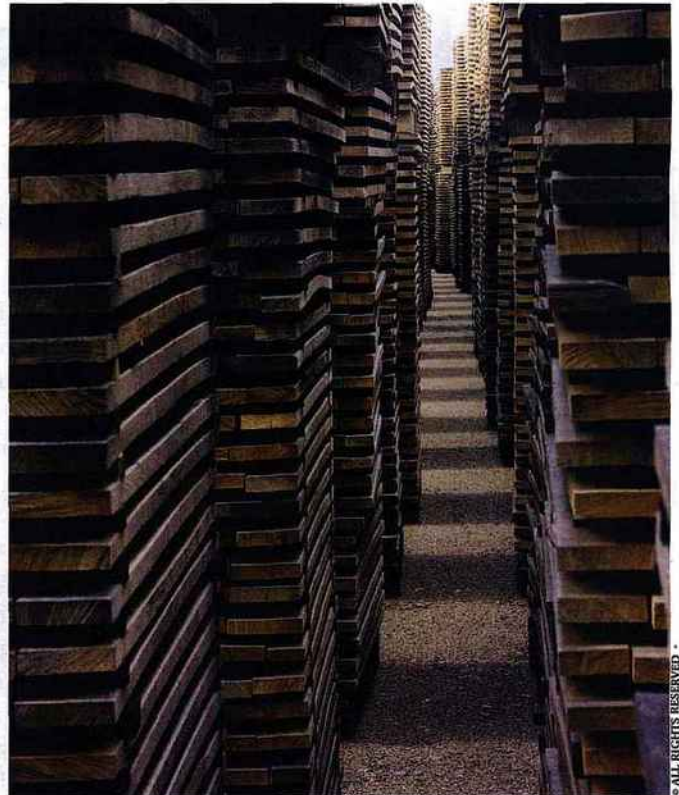
involves producing white wines in wooden barrels with the aim of achieving a very unique end product.

After vinification comes the maturing and refining process. At this stage, the still cloudy wine starts to develop its flavour characteristics and to become clearer and more stable. During this process, which can last from several months to several years, wood can play a fundamental role. We will return to this later.

Finally, the wine is transferred to bottles, where it will age in an oxygen-free environment. According to its characteristics and its quality, over the years it will develop an increasingly complex bouquet. The fruity or floral aromas of young wines, acquired during the maturing process, blend together and give way to others more reminiscent of undergrowth, musk, toast or leather.



WOOD INFLUENCES A WINE'S COLOUR, STRUCTURE AND BOUQUET



OAK HAS THE BEST QUALITIES FOR MATURING WINE


It is as the wine matures that the magical symbiosis between wine and wood occurs, so this is the stage that we will examine more closely.

Logic tells us that if a wine spends time in wood, it will extract certain woody flavours. However, it is not quite so simple. Wood has an effect that is more complex (it does not only yield its aromas) and more mysterious. For simplicity's sake, it could be said that wood influences a wine's colour, structure and bouquet. The wood itself is responsible for this, of course, as well as oxygen, which is constantly present during maturation, via the wood.

COLOUR, STRUCTURE AND TASTE

Grapes contain certain chemical constituents that occur naturally in wine. Of these, the most important are tannins, which are responsible, among other things, for the wine's structure, and anthocyanins, which give it its colour. A young red wine contains a lot of anthocyanins in their free state. They are

THE LONG JOURNEY FROM OAK TO CASK



The barrel is the trusty companion of many wines made around the world. It is one of the oldest inventions in winemaking, and yet, remains mysterious to many of us. We asked Georges Milcan, the sales director of the Saury cooperage, to tell us about his industry, which is still a largely French speciality, and it is a government monopoly.

SYLVAIN PATARD: *What are the different stages in barrel-making? How much time does the process take?*

GEORGES MILCAN: There are ten main steps involved in making wine barrels:

- 1) Buying and felling the oak trees
- 2) Receiving the logs
- 3) Splitting the logs and cutting the shook (the pieces the barrel will be made from)
- 4) Stocking and drying the shook in the open air for between 24 and 36 months
- 5) Preparing the staves by cutting them to the proper length and then bevelling and planing them so they are slightly curved on the outside and hollowed on the inside
- 6) Raising the barrel, known as the mise en rose, involving assembling the staves inside a metal hoop
- 7) Heating the staves to bend them into a barrel shape
- 8) Charring or 'toasting' the wood to develop its aromatic properties
- 9) Trimming the ends of the staves, assembling the base and planing
- 10) The final hooping, finishing touches and marking the cask with the company seal.

At least 30 months are required from the felling of the oak to the completion of a barrel ready for delivery. Some casks are dried for a longer period, up to 36 months, in which case the entire process can take almost four years.

SP: *What are the most suitable types of wood for wine barrels?*

GM: Oak has the best qualities for maturing wine. It is a wood that is resistant, bendable and watertight. In France, wine barrels are made from sessile oaks or pedunculate oaks of the Quercus genus. This type of oak must be split during stave production in order to ensure its watertightness. The best oak is the sessile oak from the centre of France, where the timber forests are grown in rather poor siliceous clay soil, giving rise to low annual growth and a tight-grained wood.

SP: *Does Saury have a speciality or exclusive product?*

GM: For a long time, the Saury cooperage has produced high-quality barrels by working with a mixture of wood from the finest forests and choosing staves for the fineness of their grain. This exacting selection of only the finest grained wood allows us not only to deliver excellent quality, but also to develop organoleptic characteristics that are reproducible and consistent over the years. We have three grades: Premium, with an ultra-fine grain; Classic, with a very fine grain; and Aromatic, with a fine grain. In the last two years, we have also produced 100 examples (50 of which were



for the French market) of a singular barrel that we call 'L'écrin' (the jewel case). It is made of a mixture of wood harvested from the best forests, after which the staves are air-dried for more than 36 months and then individually selected for their ultra-fine grain. The wood then undergoes our new 'Lumière' toasting. Because apart from our insistence on tight-grained wood, Saury has also developed toasting processes that allow us to offer a wide range of casks suitable for different grape varieties and vineyards, as well as to meet the requirements of the oenologists we work with. For example, beyond the classic practices, we have developed 'immersion', which involves bending the staves in water, and 'Lumière' toasting, based on extremely long and penetrating toasting.

But one cannot discuss barrel-making without mentioning supply sources. The future of our industry depends on supply management. Saury has a 100 % integrated supply chain, thanks to the group's stavemakers, which today form the largest production centres of quality French oak staves. In order to guarantee our production methods, we have also put in place standards that include using wood that is 100 % PEFC-certified (Programme for the Endorsement of Forest Certification); we meet the ISO 9001 quality management standard; use the HACCP approach (Hazard Analysis and Critical Control Points); hold Veritas certification on how we source and dry our staves; and use integrated analysis of contaminants in our COFRAC-certified laboratory (COFRAC is the French Accreditation Committee). In addition, more than 85 % of our wood is purchased as standing timber, allowing us upstream and downstream traceability of all of our products.

SP: Outside of France, what are the biggest export markets for a cooperage such as Saury?

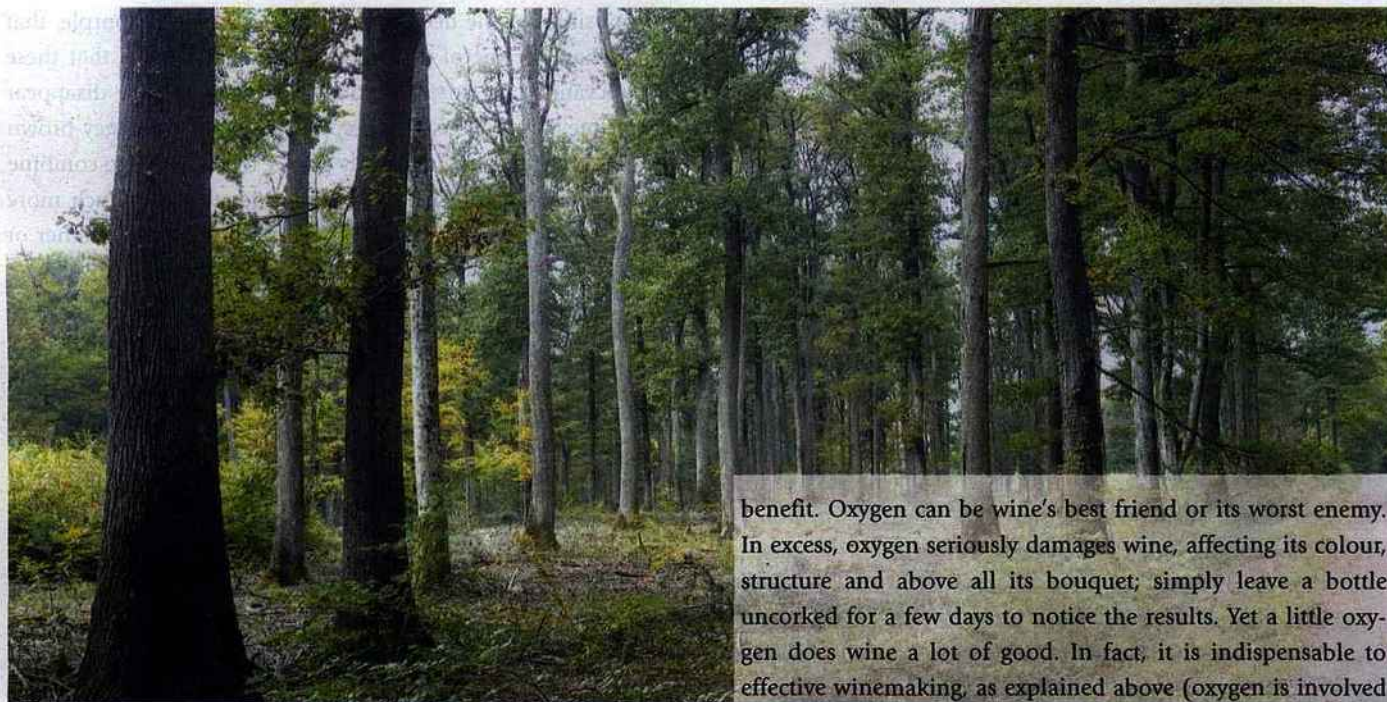
GM: We export 85 % of our production to over 30 countries. Our main customers are in the United States (25 %), Spain (10 %), Australia and New Zealand (10 %), Italy (7.5 %), Chile (5 %) and Argentina (4 %).

responsible for the deep red colour, bordering on purple, that is so characteristic of young wines. The problem is that these anthocyanins are unstable and have a tendency to disappear over time. Their decrease is responsible for the orangey-brown tints in old wines, and their only chance of survival is to combine with tannins to form complex molecules that are much more stable. This phenomenon occurs naturally in wine, whether or not it is in contact with wood. However, wood does seem to facilitate the process of condensation (also known as polymerisation). Like grapes, wood is of vegetal origin and itself contains tannins and anthocyanins that participate in the molecular combinations and enrich the process.

Because wood liberates tannins in the wine, it also modifies its structure. One might think that it reinforces the structure, but in fact, it is more complex. While it does release new tannins in the wine, these then combine with other molecules which, if maturation is well managed, contribute to an overall polishing effect that smoothes out the tannins. As for the heaviest of these molecules, they precipitate to the bottom of the barrel. In this way, the wine loses its impurities and particulates and becomes



LIKE GRAPES, WOOD IS OF VEGETAL ORIGIN AND CONTAINS TANNINS



AT LEAST 30 MONTHS ARE REQUIRED FROM THE FELLING OF THE OAK TO THE COMPLETION OF A BARREL

more refined. The objective is reached when the tannins of the wine and the wood have completely blended together. The result is a significant decrease in the astringency and bitterness of the wine.

THE BOUQUET

A wine's bouquet is possibly its most mysterious aspect. We know that every aroma corresponds to precise molecules. In grapes, these substances are essentially located in the skin and are incredibly diverse. Among the aromas contributed by maturing wine in wood, we can distinguish between those contained in the oak itself, and those developed when the barrel is 'charred' or 'toasted'. To the former category belong lactones, which add hints of coconut, fresh oak and sap; and to the latter belong various substances such as vanillin (aroma of vanilla), eugenol (aroma of spicy carnation) or ethylphenol and guaiacol, which are responsible for a charred aroma.

As can be seen, maturing wine in wood plays a not insignificant role on the final outcome. But this should not be taken to mean that wood is the only thing involved in this process. Throughout maturation, oxygen has an important influence: an influence that wooden barrels seem to channel, to a wine's

benefit. Oxygen can be wine's best friend or its worst enemy. In excess, oxygen seriously damages wine, affecting its colour, structure and above all its bouquet; simply leave a bottle uncorked for a few days to notice the results. Yet a little oxygen does wine a lot of good. In fact, it is indispensable to effective winemaking, as explained above (oxygen is involved in the modification of the colour, the polymerisation of the tannins and the precipitation of complex molecules).

CONTROLLED OXYGENATION

During its time in a wooden barrel, wine is in constant contact with a little oxygen. In order to limit this, the winemaker regularly carries out 'topping up', which involves adding wine to the barrel to replace loss via evaporation through the wood. Racking also brings the wine into contact with oxygen. This is the process of separating wine from the sediment, or lees, at the bottom of the barrel by transferring the wine to another barrel. Wine is racked four times a year. In total almost 30 cubic centimetres of oxygen per litre of wine are accumulated during the course of the winemaking process.

The length of maturation and refinement of the wine depends according to the region, the type of wine and the vintage. Generally it takes between one and two years, but this decision is left to the judgement of the winemaker. Not every wine benefits from spending time in wood. Only those destined to become wines to lay down and which have sound fundamental qualities really get the most out of wood. There is no point in putting a light, fruity, drinkable wine in a wooden barrel. It will lose its charm without gaining in quality. Equally, if wood is used in badly controlled winemaking conditions, for example, using barrels that are too old or in bad condition, the wine can end up with a taste of mould, mouth-parching tannins or an unpleasant bitterness. Essentially, a vintage wine cannot be created simply by putting it in wood!

Gilbert & Gaillard