J.V

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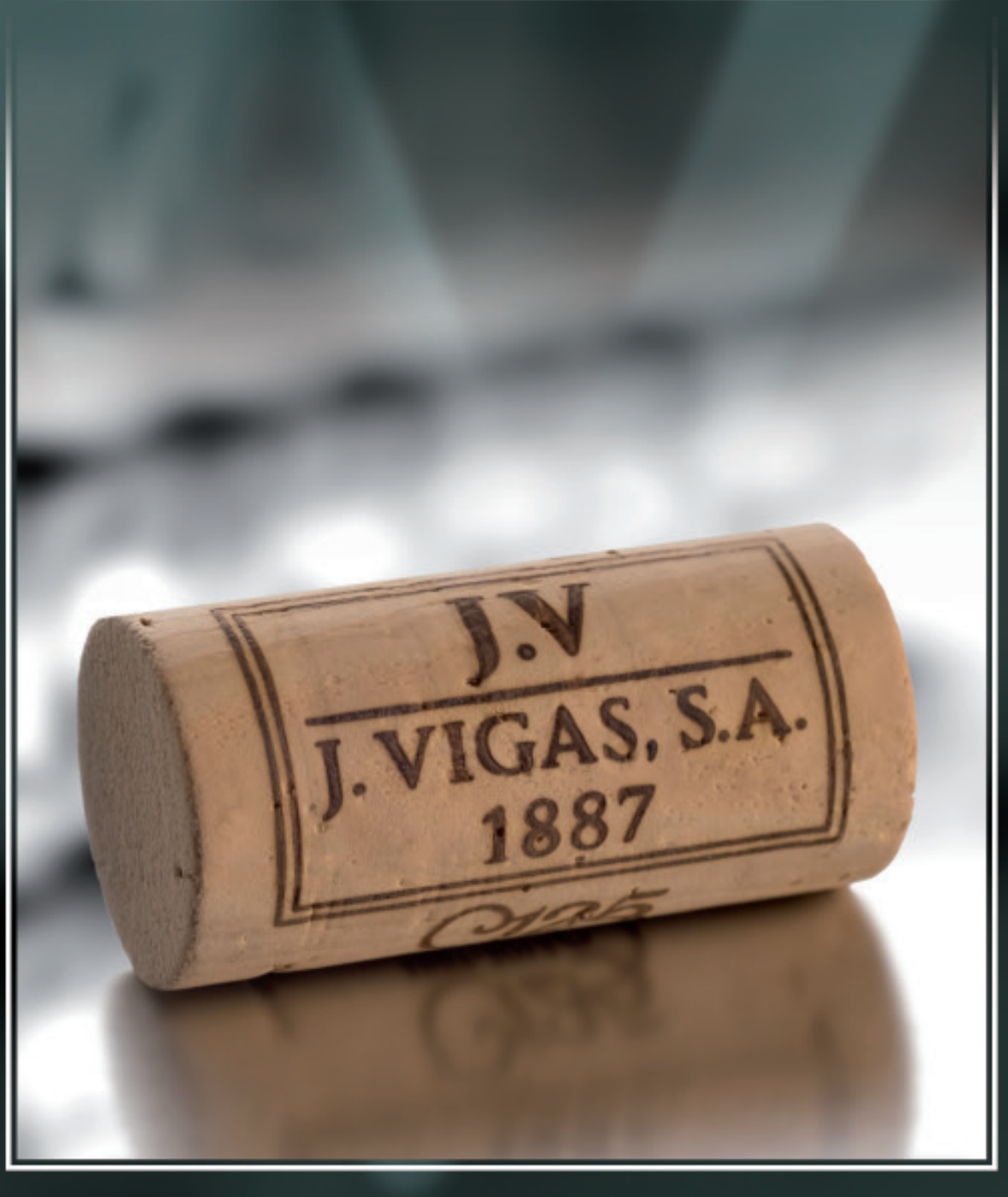
1887

Sensory aspects



Sensory aspects

One of the aspects that currently concern the most in wineries is a wine where unwanted flavours and/or smells appear, specially the fungal or mouldy.

Traditionally this defect has been exclusively associated with the cork and as a consequence, has been called "**cork tain**", although to be right, it should be called **contamination by chloroanisols**. Scientific studies have shown that this deviation is due to the presence of certain chemical compounds, **chlorophenols** and **chloroanisols**, mainly **2,4,6-tricloroanisol (TCA)** and this substance could proceed from other sources like wood, the cellars own atmosphere, the establishment or even the wine itself. So it has been found as an example, **TCA** in bottle wine with plastic stoppers or before bottling, wood, etc.

The taste and smell of mildew of humidity in the wine is consequence of the presence of microorganisms in the environment (filamentous fungi specially) that upon contact with a number of highly toxic pesticides (**halophenols**, **chlorophenols** specially) develop a biochemical reaction of defence (bio nutrition) producing non-toxic **haloanisols** (including **TCA**).

It has now been fully proved that natural filamentous fungi synthesize only when **chloroanisols** form contact with **chlorophenols**. Due to its high toxicity, when filamentous fungi get in touch with **chlorophenols**, try by all means inactivation, because otherwise they could die or suffer serious damage affecting their physiology.

Note that the **chlorophenols** are not naturally created substances, but have been artificially produced by men as there are not many microorganisms that might degrade them and that´s why they persist in nature for long periods of time. The **chlorophenols** and specially **pentachlorophenol (PCP)**, were used vastly by farmers in the 50´s and still today can traces be found in the environment.

The direct consequence of the use of these products, cause that nowadays the **chlorophenols** could be the origin of flavour and/or smell problems, non-wanted in a wine due to its many sources of contamination.

- Cork oak trees could have been treated with these products or could the cork itself due to its high absorbent power, pollute itself when in contact with wood or other treated materials with **chlorophenols**.
- In some cellars the contamination source has been found in pallets or barrels, as its wood could have been treated with these compounds or it could have even absorbed them from the wine. If **chlorophenols** are present in the wine, when it is placed in barrels, it could transfer them and when placing a new to mature, it could transfer them back into the new wine. In some cases the pollution source could have come from dry materials used in cellars like **bentonite**, filtration sands or filters.
- Another pollution source is the cardboard boxes as they could have been treated with these compounds or they could have absorbed them from a polluted environment. There have been cases, where painted walls containing **chlorophenol** in wineries, have rapidly degraded and polluted due to the humidity.

The **haloanisols** are polluters to be considered, since they can ruin the organoleptic characteristics of a wine.

- Produce unpleasant fungal or mouldy odours.
- They have a very low threshold of olfactory perception.
- They are very volatile, able to be transmitted through the air and easily to adhere and contaminate wood (cork), but also other materials like plastic polymers, silicones, cardboard and paper, gums, resins, etc.

Given the above, it can be concluded that the true origin of the wine´s contamination through **chlorophenols**, it is an environmental pollution problem and has nothing to do with the use of defective cork stoppers. On many occasions, the cork only acts as the pollution´s transmitter vehicle.

We have to start thinking that when we find a **TCA** contaminated wine if it has been in contact with a cork plug, could be that the prime contamination was the wine and not the cork. Also, even though traditionally the **chloroanisols** have been blamed as the main wine contaminating agents responsible of the unpleasant fungi odours and flavours, more and more evidence, proves that there are other contaminating compounds like **bromoanisols** (**2,4,6-tribromoanisol (TBA)**) or **pyrazines** (**2-methoxy-3,5-pyrazinedimethyl**).

The problem´s real source is not the presence of fungus growing on cork or wood, otherwise the high environmental pollution of **chlorophenols** and **bromophenols** which are transformed by microorganisms into **anisols**. In summary, cork stoppers still are the best option to seal any kind of wine bottles with and these are the recommendations to follow:

- The wineries themselves perform periodic analysis to determine that its facilities are free of **chloroanisols** and **chlorophenols**.
- The wineries should require the manufacturers of elements in contact with the wine to be certificated, specifying that are exempt of these compounds. Also that whenever the introduction of new materials in a cellar, these should have been certified.

The only suggestion we make to the sector, is that the best prevention would be to follow the recommendations laid down by **SYSTECODE**, since it's the first accreditation system for companies of the cork sector, developed by the **European Confederation of Cork (CELIEGE)**. Who aims at wineries reaching high quality standards which should minimize the contamination possibilities by **chloroanisols**

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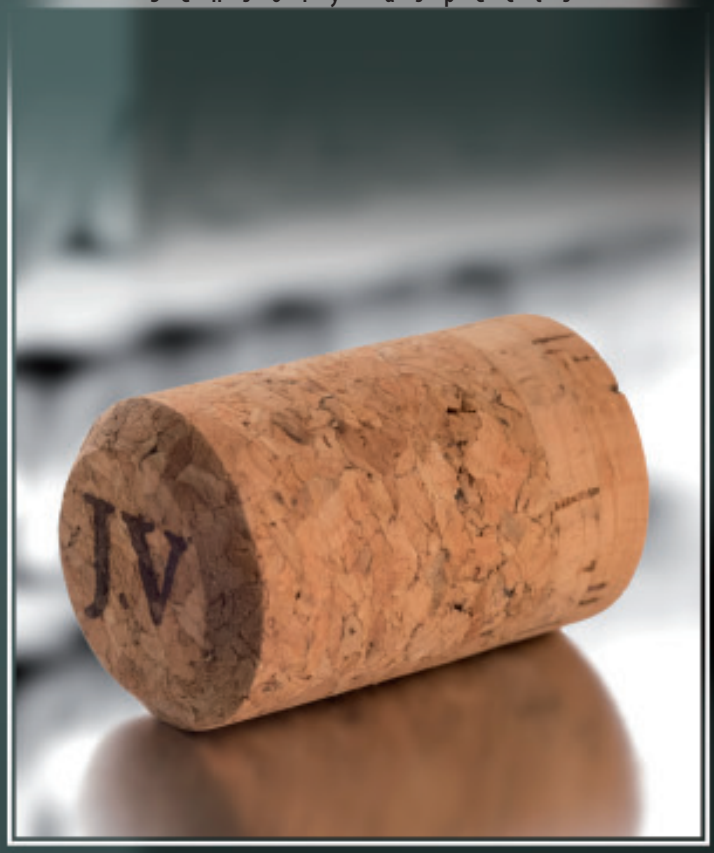

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