

# LOSS OF AROMAS AND FRESHNESS IN YOUR WINE?

## Premature ageing in wine

### WHAT ARE THE NEGATIVE EFFECTS?

Premature or not, ageing is caused by oxidation. It is through a redox reaction catalyzed by transition metals ( $\text{Cu}^+$  and  $\text{Fe}^{2+}$ ) that oxygen is converted into highly reactive radicals, capable of oxidizing a number of organic compounds.

In white wines, oxidation causes browning, pinking, development of bitterness, loss of varietal and fresh aroma and appearance of heavy notes of honey and beeswax. In red wines, premature ageing is characterized by development of prune and stewed fruit flavours, together with a flattened palate and an increase of brown/orange hues. In short, premature ageing makes all wines similar, with loss of varietal identity and terroir.

### HOW TO EXTEND WINE FRESHNESS AND SHELF LIFE

Enartis has developed a program dedicated to the extension of a wine's shelf life. This program helps winemakers preserve freshness when wines are stored for a prolonged period of time.

The Enartis SLI strategy includes several products that can be used throughout the winemaking process and during storage that have a series of capabilities to:

- 1 Reduce the content of catechins (precursors to oxidation)
- 2 Remove metals (catalyzers of oxidation)
- 3 Control redox potential (decreasing the risk of oxidation)
- 4 Control oxidation

In a market increasingly dominated by large retailers that demand just-in-time production strategies, where large blends of wines are bottled over many months and where climatic changes are causing increases in pH and reduction of acidity, the danger of producing wine with short longevity or sensitive to alterations caused by oxidation like premature ageing and pinking, is becoming a major concern.

### Check the solubilisation of oxygen

Avoiding exposure to air, preventing the solubilisation of oxygen in wine is the first step to prevent oxidation. In addition to inerting with gas, there is the possibility of doing some sort of chemical inertisation. Ascorbic acid, tannins and yeast hulls are extremely quick in consuming oxygen before oxidation starts with wine compounds

### Eliminate oxidation catalysts metals

Iron and copper are the real catalysts responsible for the oxidation of wine. Oxygen per se is a weak oxidiser which, however, due to iron and copper, can be converted into hydrogen peroxide, hydroxyl radical and other free radicals capable of rapidly oxidising any organic compound present in the wine. The copolymers of polyvinylimidazole and polyvinylpyrrolidone (PVI/PVP) and activated chitosan are capable of absorbing these pro-oxidant metals and limiting the oxidation process.

### Reduce the content of catechins and hydroxycinnamic acids

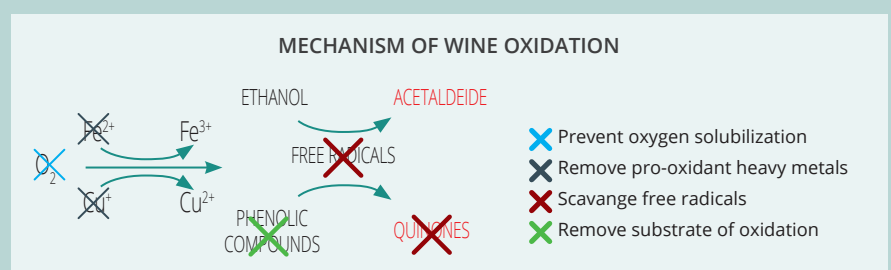
Catechins and hydroxycinnamic acids are among the first compounds in the wine to oxidise. Thanks to the action of free radicals from these phenolic compounds, quinones form responsible for the darkening and the qualitative decay of the wine. Removing them thanks to the adsorbing action of PVPP, activated chitosan and PVI/PVP means increasing the wine's resistance to oxidation.

### Block free radicals

Free radicals are rapid, powerful and non-specific oxidants, capable of oxidising any organic compound present in wine: aromatic compounds, polyphenolic substances, alcohols, etc. The tannins are very effective in capturing the radicals and limiting their effects and for this action they can be a valid alternative to the use of sulphur dioxide.

### Check the redox potential

During refining, the redox potential of wine tends to increase and with it the typical characteristics of aging. Tannins, ascorbic acid and yeast hulls are valid tools to stabilise the oxidation-reductive state and prolong the life of wine.

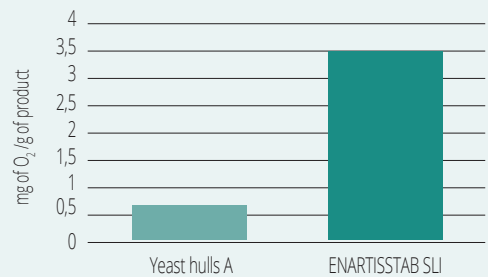


# ENARTIS SHELF LIFE IMPROVEMENT PROGRAM

## ENARTISSTAB SLI

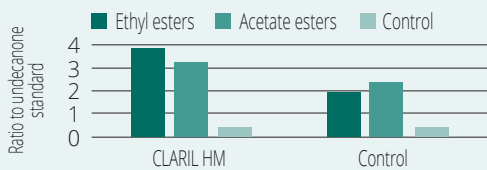
“Active” lees that maintain a low redox potential, eliminate active oxygen and remove oxidized and oxidizable polyphenols during wine storage.

### OXYGEN CONSUMPTION CAPACITY



ENARTISSTAB SLI consumes dissolved oxygen thus preventing the oxidation of wine compounds

### AROMATIC CONTENT AFTER ONE MONTH AGEING IN STRESSFUL CONDITION



CLARIL HM increases wine aroma resistance to oxidation over-time

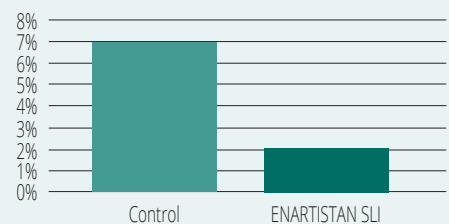
## CLARIL HM

This clarifying agent takes advantage of the synergistic actions of chitosan and of PVI/PVP to reduce the concentration of the compounds involved in the process of oxidation and to prevent the increase of acetaldehyde.

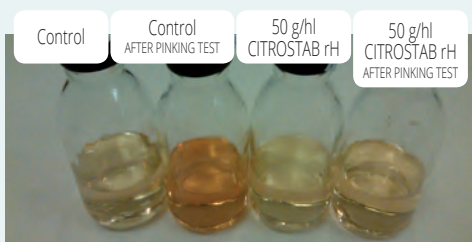
## ENARTISTAN SLI

Untoasted American oak tannin that for its ability in scavenging oxygen and metals and in maintaining a low redox potential, can be used as an alternative to SO<sub>2</sub>.

### INCREASE % OF YELLOW HINT (Abs 420nm) Wine with no SO<sub>2</sub> and 5 ppm Fe Measurement 6 days after 2 racks-off



ENARTISTAN SLI minimizes browning



CITROSTAB rH helps to prevent pinking

## CITROSTAB rH

Pre-bottling coadjunct where each component reacts in synergy with the others in a calibrated way to block oxidation that could occur due to oxygen absorption during bottling and to prevent pinking.

**enartis**

Inspiring innovation.

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