

Lactic acid bacteria  
selected from nature

**V22™**  
*Lactobacillus plantarum*

**MBR™ process**  
direct inoculation

## APPLICATION

During the alcoholic fermentation, a natural selection of different lactic acid bacteria progressively happens. *Oenococcus oeni* is the most resistant specie to extreme low pH wine conditions. Above pH 3.5, species of *Lactobacillus* and *Pediococcus* can thrive.

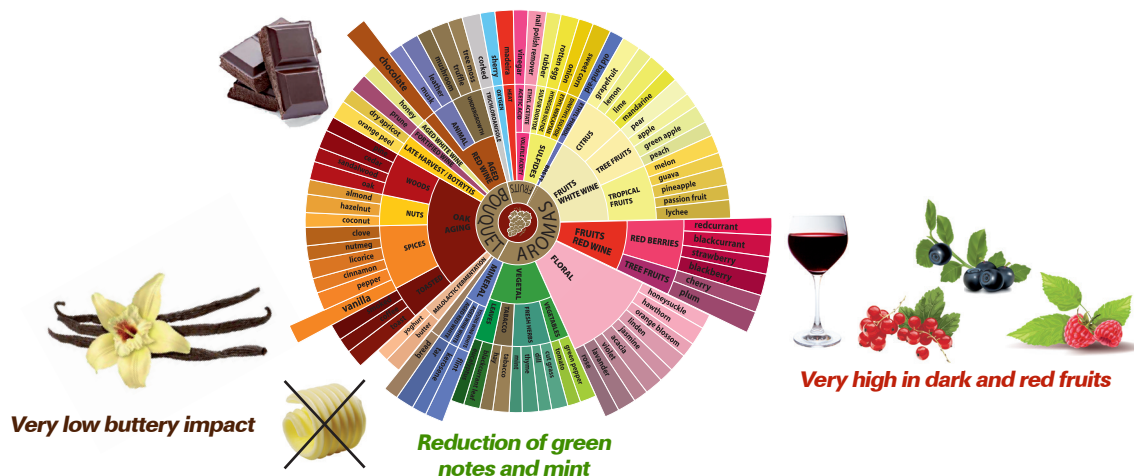
V22™ *Lactobacillus plantarum* strain was selected by Università Cattolica del Sacro Cuore of Piacenza during a screening among lactic acid bacteria for their capacity to degrade Ochratoxin A in wine. **V22™ *Lactobacillus plantarum* is best suited to grow, to implant well and to ensure Malolactic Fermentation in musts or red wines with pH > 3.5.** In view of climate change and with the trend to harvest higher maturity grapes that result in higher pH and alcohol wines, V22™ *Lactobacillus plantarum* is able to predominate, secure MLF and microbiological stability under these conditions. As facultative hetero-fermentative lactic acid bacteria, V22™ *Lactobacillus plantarum* ferments glucose and fructose (main sugars in grapes and musts) to lactic acid only. **The metabolism of V22™ *Lactobacillus plantarum* will not contribute to any increase in volatile acidity deriving from hexose sugars.** This particular property will promote V22™ *Lactobacillus plantarum* use in co-inoculation or early inoculation while strengthening its ability to dominate the media under high alcohol and pH conditions. V22™ *Lactobacillus plantarum* is a reliable starter culture for controlled malolactic fermentations with a proven positive impact on the wine aroma profile, since the strain possesses a wide range of enzymes interesting for winemaking.

## OENOLOGICAL AND MICROBIOLOGICAL PROPERTIES

- pH tolerance > 3.5 (sensitive to low pH)
- Alcohol tolerance : up to 15,5 % vol.
- SO<sub>2</sub> tolerance : up to 50 mg/L total SO<sub>2</sub>
- T° tolerance : > 17°C (64°F)
- High nutrition demand : The addition of nutrient is highly recommended to assure a successful fermentation (could be sensitive to high polyphenol concentration)
- MLF Kinetic : Slow
- Low volatile acidity production
- No production of biogenic amines
- Co-inoculation highly recommended
- Facultative hetero-fermentative (does not produce acetic acid out of glucose and fructose)
- Potential to degrade Ochratoxin post MLF

## ORGANOLEPTICAL PROPERTIES

Beyond bio-deacidification, V22™ *Lactobacillus plantarum* is a true winemaking agent, which contributes to the sensory complexity and the quality of wine as follows :



This sensory contribution can be further supported by the combination with an appropriate selected yeast strain and timing of ML bacteria inoculation.



The MBR™ form of lactic acid bacteria represents a Lallemand specific process that subjects the lactic acid bacteria cells to various biophysical stresses, making them better able to withstand the rigors of direct addition to wine. The conditioned MBR™ lactic acid bacteria that survive are robust and possess the ability to conduct reliable malolactic fermentation (MLF).



Alcohol-tolerant malolactic strains for the maturation of wines with average or high pH.



# INSTRUCTIONS FOR USE

**Direct inoculation is possible. For best distribution, we recommend the following :**

## **CO-INOCULATION (SIMULTANEOUS ALCOHOLIC FERMENTATION)**

### **1/ Yeast addition**

Rehydrate the selected dry yeast according to the instructions. Preferably in presence of a rehydration nutrient and inoculate the must.

### **2/ Bacteria addition**

Depending on the SO<sub>2</sub> addition at crush :

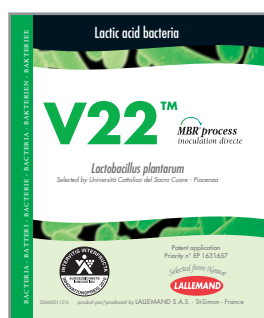
- Sulfitage < 5 g/hL : wait for 24 hours
- Sulfitage 5-8 g/hL : wait for 48 hours
- Rehydrate the packet of freeze-dried lactic acid bacteria in 20 times its weight of clean chlorine free water at 20°C for a maximum of 15 minutes.
- Add the suspension to the must/wine to be fermented.
- Assure a good distribution.
- Carefully monitor must temperature, which must be below 30 °C at lactic acid bacteria inoculation (alcohol < 5%vol) and below 27 °C when the level of 10 % of alcohol is reached.
- Complex nutrients addition at 1/3rd of alcoholic fermentation is recommended.
- Monitor malic acid and volatile acidity.
- If MLF takes place during AF and an unusual increase in volatile acidity is observed add Lysozyme™ (150-200 mg/L).
- Top the wine after alcoholic fermentation (AF).
- Otherwise rack and stabilize after MLF.

## **SEQUENTIAL INOCULATION (POST-ALCOHOLIC FERMENTATION)**

- Rehydrate the packet of freeze-dried lactic acid bacteria in 20 times its weight of clean chlorine free water at 20°C for a maximum of 15 minutes.
- Add the suspension directly to the wine towards the end of the alcoholic fermentation, then stir gently to evenly distribute the lactic acid bacteria and minimize the oxygen pickup.
- Monitor malic acid.
- Stabilize wine once malolactic fermentation (MLF) is finished.

### **Recommended temperature range :**

- White wine / rosé wine : from 16 to 20°C.
- Red wine : from 17 to 25° C.
- If limiting conditions (high alcohol > 14.5 vol, or low pH < 3.1, or high SO<sub>2</sub> > 45 ppm) : from 18 to 22° C.
- Check malolactic fermentation activity (malic acid degradation) every 2 to 4 days.
- Under more difficult conditions, add a specific bacteria nutrient.



## **PACKAGING AND STORAGE**

- Product in powder form obtained by lyophilisation.
- Dose for 25 hL (660 US gal.)
- Once opened, lactic acid bacteria sachet must be used immediately.
- This product can be stored for 18 months at 4°C/39°F and 36 months at -18°C/0°F in original sealed packaging.
- Sealed packets can be delivered and stored for 3 weeks at ambient temperature (<25°C/77°F) without significant loss of viability.

*The information herein is true and accurate to the best of our knowledge however this data sheet is not to be considered as a guarantee expressed or implied or as a condition of sale of this product.*

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DISTRIBUTOR