

ENARTIS NEWS

TAKING THE RISK OUT OF MALOLACTIC FERMENTATION

*Malolactic fermentation (MLF) is the transformation of malic acid into lactic acid by lactic bacteria, particularly *Oenococcus oeni*. Wines that go through MLF become microbiologically stable as malic acid is consumed and can no longer be used by other microorganisms that can alter the wine. Additionally, these wines are softer since lactic acid contributes less acidity. MLF also produces organoleptic changes that result in greater aromatic complexity and stabilization of wine color.*

RISKS OF A SPONTANEOUS MLF

Due to climate change wine pH is on the rise, helping the development of a greater diversity of microorganisms whose metabolism and influence on wine quality is not completely understood yet. As well as being a risk to wine quality, the development of these microorganisms also poses risks to consumer health, for example, the production of biogenic amines whose toxicity is amplified by the presence of alcohol.

In this context, controlling MLF with selected strains of *Oenococcus oeni* provides technological security and assists winemakers by helping to control the timing of malic acid degradation and assures the production of a healthy, quality wine. By preventing the production of biogenic amines and off-flavors, the winemaker is assured of complexity, aroma and taste.

ENARTIS BACTERIA

Enartis strains are provided in a freeze-dried and pre-adapted form for wine. They have been selected and characterized to carry out MLF in a controlled and safe way. Each strain has different ideal conditions of growth. For this reason, the success of MLF depends on wine parameters and the choice of the most suitable strain, as well as the correct handling of the product and the addition of nutrients to favor the survival of the bacteria in a hostile environment such as wine.

NUTRIENTS FOR ML BACTERIA

Nutrition can be the key to a successful MLF, helping the domination of the selected strain over the wild population and providing necessary elements for a regular and complete MLF.

Nutriferml ML is to be added to wine that will go through MLF. It provides all the nutritional factors that are necessary for a safe and complete malolactic fermentation. It's particularly recommended to promote malolactic fermentation in difficult wines.

PROTOCOLS FOR THE USE OF ENARTISML BACTERIA

Enartis has developed three protocols for the use of malolactic bacteria to be adopted according to fermentation conditions: normal, difficult and very difficult.

EnartisML strain technical features

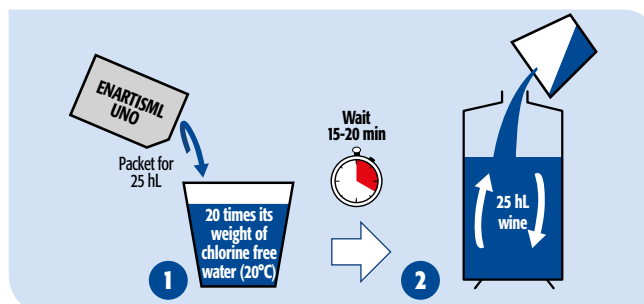
	EnartisML UNO	EnartisML MCW	EnartisML SILVER
Species	<i>Oenococcus oeni</i>	<i>Oenococcus oeni</i>	<i>Oenococcus oeni</i>
pH tolerance	> 3.3	> 3.1	> 3.1
Resistance to free SO ₂ (ppm)	< 10	< 10	< 10
Resistance to total SO ₂ (ppm)	< 40	< 40	< 45
Alcohol tolerance (% v/v)	< 15	> 15	> 15
Fermentation speed	High	Moderate / high	High
Sensory characteristics	Maintains color intensity; respects varietal aroma and olfactory cleanliness.	Butterscotch, sweet aroma. Creamy palate	Clean, floral, fruity and complex aromas; respects color; improves structure, volume and aromatic intensity

NORMAL CONDITIONS, standard inoculation

pH	3.4 - 3.6
Temperature	18-22°C
Free SO ₂ (mg/L)	< 5
Alcohol (%)	11-13

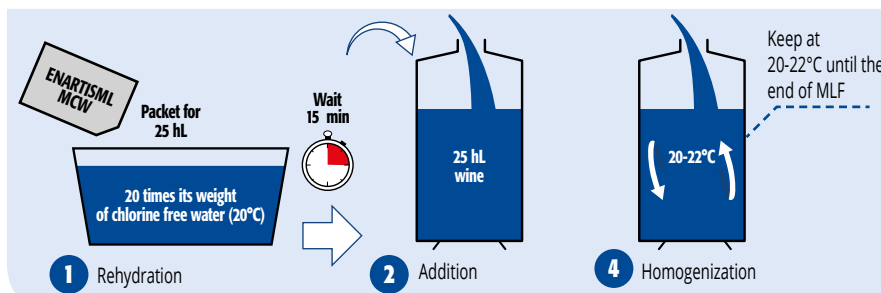
Freeze-dried bacteria

- Rehydration preserves a larger number of viable cells.
- Under normal conditions, it is possible to simply rehydrate the bacteria and inoculate the wine without necessarily using nutrients or adopting an acclimatation procedure.



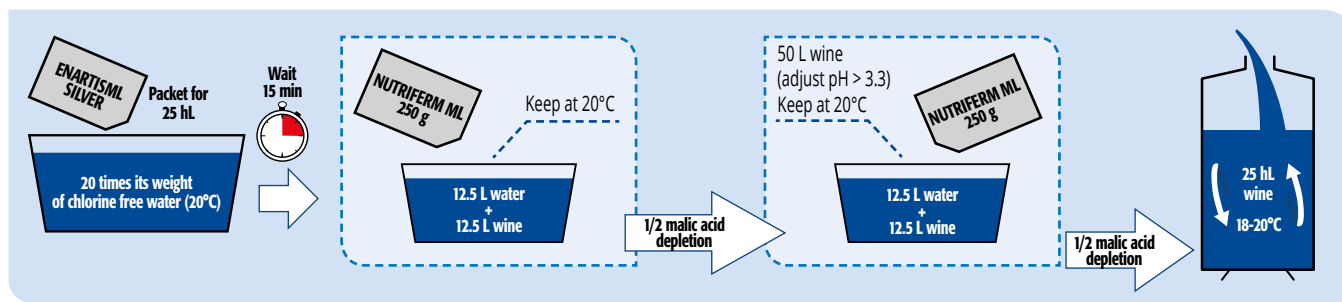
DIFFICULT CONDITIONS, standard inoculation

pH	3.2-3.4
Temperature	16-18 °C
Free SO ₂ (mg/L)	5-10
Alcohol (%)	13-15



VERY DIFFICULT CONDITIONS, standard inoculation

pH	3.0-3.2
Temperature	14-18 °C
Free SO ₂ (mg/L)	10-12
Alcohol (%)	15-15.5



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