Perdomini IOC
Vediamo diversamente

IOC sentinel

allergen FREE

vegan

Keeping watch over your wine

LOW SO_2 SOLUTIONS

IOC
Révélons votre différence

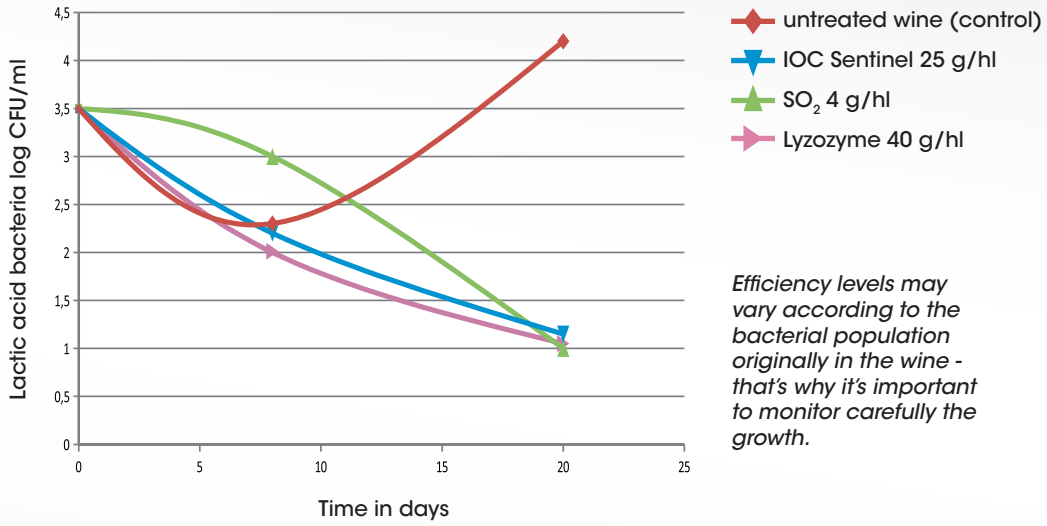
IOC sentinel

The Research and Development work carried out by the *Institute Oenologique de Champagne* has led to the development of a totally new allergen-free and OGM-free solution for bacterial control both pre- and post-malolactic fermentation.

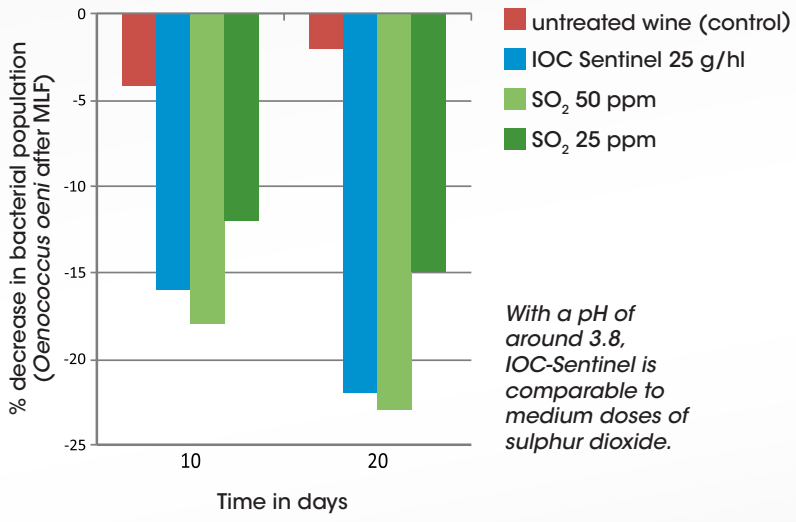
IOC SENTINEL is a new, technologically advanced additive made of 100% natural, non-animal-origin ingredients. Its composition is based on a mixture of polysaccharides derived from chitin.

- IOC sentinel stabilizes red wines after MLF, thus avoiding the onset of the classic infections that can spoil wine.
- IOC sentinel makes it possible to avoid MLF starting when it's not wanted in white and rosé wines.
- IOC sentinel allows the Charmat-method base to be properly preserved, as it keeps SO_2 levels low in order to allow an optimal start to sparkling wine production.
- IOC sentinel is a very useful alternative to the usual products for anyone who wants to work with low doses of sulphur dioxide.
- IOC sentinel helps to reduce the onset of volatile acidity caused by the presence of acetic bacteria.
- IOC sentinel performs a de-clouding/clarifying action.

Impact on the LAB population in a white wine (2014 Chardonnay)



Efficiency levels may vary according to the bacterial population originally in the wine - that's why it's important to monitor carefully the growth.



With a pH of around 3.8, IOC-Sentinel is comparable to medium doses of sulphur dioxide.

Percentage decrease in the LAB population of a red wine with a pH of 3.8, after MLF

IOC sentinel

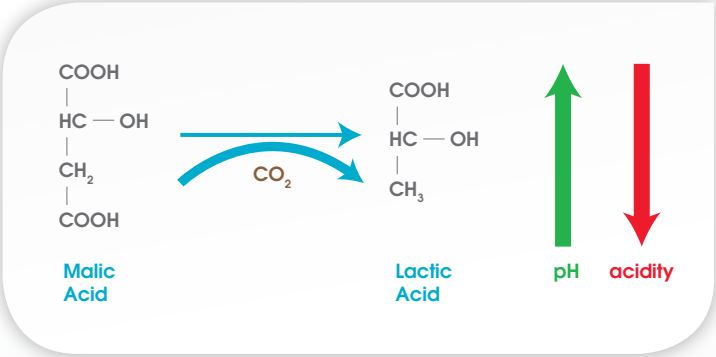
IOC sentinel Keeping bacteria

Bacteria play a highly important role in winemaking, therefore it's crucial to be able to carefully monitor them and act on them in order to achieve the desired results. Microorganisms can be helpful, but in certain circumstances they can be even the opposite and damage the wine!

The current wine market not only requires high-quality wines but demands that the unique features of each wine be repeated exactly from year to year. In this context, it is advisable to use selected strains and products that guarantee an efficient removal and selection of microbes.
If you don't take control of fermentation, how can it be reliable and repeatable?

The lactic acid bacteria found in must and in wine are helpful to the MLF process in some types of wine, but if they develop during certain stages of the winemaking process they can be detrimental.
Lactic acid bacteria usually develop:

- after AF in wines where MLF is not wanted (white wines)
- after MLF in wines that have not been fully stabilized



MLF is a fundamental biological process that occurs in wine either during or after alcoholic fermentation. Malic acid is transformed into lactic acid through decarboxylation, thanks to the work of the lactic acid bacteria. At the same time, there is the formation of other molecules that together produce a significant change in the flavour of the wine (diacetyl, acetoin, volatile esters, etc.).

The major advantage of controlled fermentation is that you can achieve the desired results in the wine without running the risk of being affected by unwanted microbial spoilage such as:

- lactic spoilage caused by lactic acid bacteria, which leads to the formation of lactic acid and acetic acid from the residual sugars;
- acetic spoilage, which is the consequence of the development of acetic bacteria in the wine. These bacteria produce acetaldehyde, acetic acid and ethyl acetate from ethanol;
- bitterness taint, which comes from the decay of glycerin and leads to the formation of acrolein;
- biogenic amines: produced by the decarboxylation of amino acids, these constitute a problem in terms of flavours and aromas, but represent also a health risk.

under control both pre- and po

Spoilage caused by unwanted lactic acid bacteria.

Taken from: Microbiologia Enologica. Edagricole. Ed. Giovanni Sozzi and Rosanna Tofalo, 2014

Type of spoilage	Bacteria involved	Sub-stratum	Metabolite
Sweet-and-sour	*Leuconostoc* *O.oeni*	Glucose Fructose	Mannite Acetic acid
Bitter	Lactobacillus Pedlococcus	Glycerol	Acrolein
Volatile acidity	Lactic bacteria	Tartaric acid	Acetic acid Succinic acid Lactic acid
Ropiness	Pedlococcus *O.oeni*	Glucose	Glucans
Geranium taint	Lactobacillus *O.oeni* Pedlococcus	Sorbic acid	2-ethoxy-hexa-3,5-diene
Mousiness	Lactobacillus *O.oeni*	Ethanol Ornithine Lysine	2-acetyltetrahydropyridine
Production of biogenic amines	*O.oeni* *P.damnosus*	Histidine	Histamine
	L.hilgardii *L.brevis*	Tyrosine	Tyramine

The above mentioned forms of microbial spoilage are generally controlled through the use of SO_2, through cold storage (in some types of wine production) or through the use of lysozyme.

Controlling the post-MLF stage in red wines

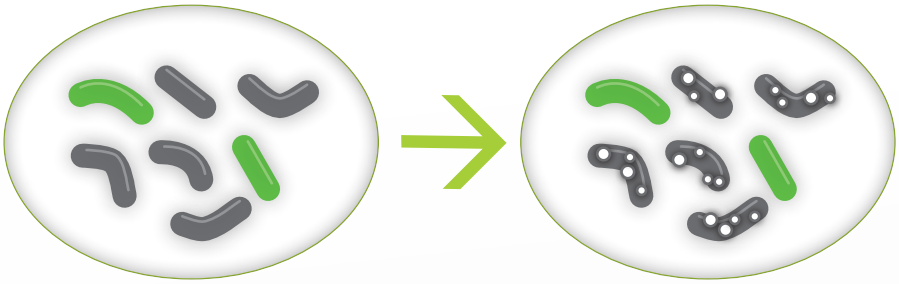
In red wines, MLF is a very important stage in the winemaking process. At the end of MLF, the residual lactic acid bacteria can swiftly become detrimental through the formation of pentose sugars, glycerol and tartaric acid, leading to the classic wine faults as described in Fig. 1. The most common treatment to avoid these problems is the use of SO_2.

Slow or stuck MLF in white and rosé wines

In white and rosé wines, MLF is undesirable in most cases, as it considerably changes the flavour of the product, compromising the goal of freshness. In sparkling wines obtained using the Charmat method, it is vital to keep the base wine intact, as it will be used for the secondary fermentation. If lactic acid bacteria are found in the wine at this stage, it is very risky as they could compromise the integrity of the mass.
The most commonly used treatment to avoid the onset of MLF at this stage is the use of SO_2.
The amount of SO_2 used to provide an anti-microbial effect against lactic acid bacteria and, at the same time, to avoid oxidation phenomena, can be reduced by using lysozyme.

st-malolactic fermentation

How IOC sentinel works



Several studies have confirmed the effect of chitin-derivative molecules on bacteria cells.

Their electrostatic charge allows them to stick to the cell wall; the most visible result can be seen in the bacterial wall.

Observation with an electronic microscope shows that, following treatment, this part does not display a marked separation between sections, but can be seen to be more spread out and weakened.

Moreover, the formation of vacuoles has been observed after contact with these types of substances, which therefore seem to modify the periplasmatic space of the cell and bond with cytoplasm components. The mechanism behind this is still under study.

The result of the strategies and instruments developed by IOC to control oxidation and microbiological contamination during the pre-fermentation, fermentation and fining stages, SENTINEL is a powerful instrument for the reduction of SO_2 concentration.

LOW SO_2 SOLUTIONS

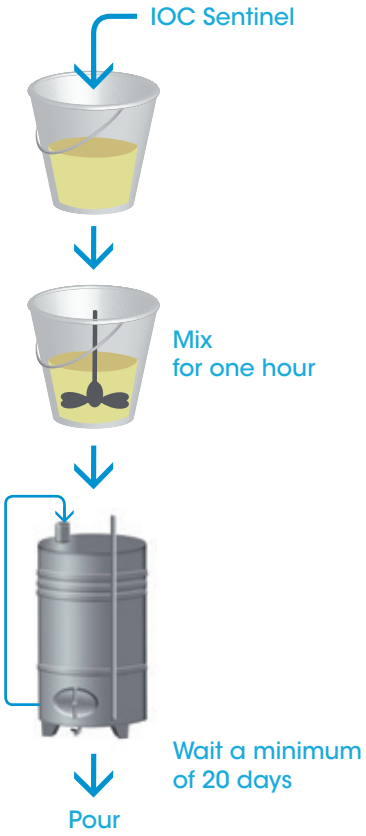
IOC sentinel

IOC *sentinel* in practice

Use 25-60g/hl of IOC Sentinel: to prepare the solution, mix 1 part of product with 5 parts of water or wine and mix until all lumps have dissolved.

Slowly add this suspension to the must/wine being treated and proceed with a pump-over.

Leave the product to act for at least 20 days.



We recommend carefully monitoring the kinetics of the bacterial population by employing a specialist laboratory.

Perdomini-IOC technical and scientific service is available to provide support to customers in assessing the initial characteristics of the wine requiring treatment, establishing the right dosage to use and monitoring the efficacy of the treatment over time by carrying out chemical and microbiological analyses.

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Perdomini IOC
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Perdomini-IOC S.p.A. - 37036 S. Martino B.A. (VR) Italy - Via Salvo D'Acquisto, 2
Tel. +39 045 8788611 r.a. - Fax +39 045 8780322212
www.perdomini-ioc.com / info@perdomini-ioc.com