Winemaking Tools & Solutions

2023 - 2024

IOC

Révélons votre différence

The IOC, a unique partner

You are already unique, now we'll make you outstanding.

Our strong presence on the ground in all vineyards in France and throughout the world is the keystone of our expertise in wine profile management.

This expertise is being enhanced day after day, through the ongoing connection between œnologists, laboratories and you, who are part and parcel of our learning community.

By helping you to manage time and through rationalisation, we aim to make your work easier. This is why we are constantly seeking formulations that are more effective, more respectful of your wine and easier to use.

Through its experience on the ground and its "Design & Development" laboratory, IOC offers a range of traditional and innovative œnological products for winemaking and aging of still and sparkling wines.

FSSC 22000

IOC is certified FSSC 22000, an internationally recognised standard for food safety.

Usable in Bio and NOP

Winemaking products distributed by IOC for use in EU ORGANIC and/or NOP winemaking in accordance with COMMISSION IMPLEMENTING REGULATION (EU) No. 203/2012 of 8 March 2012, and Commission Implementing Regulation No. 2018/1584 of 22 October 2018 amending Regulation (EC) No. 889/2008 laying down detailed rules for the implementation of Regulation (EC) No. 834/2007 of the Council, and with the NOP Regulation for the USA as regards organic wine. You are responsible for consulting your certifying body to verify compliance with your charter of products bearing this label. This label is a guide and an interpretation, which we hope is as fair as possible, of the regulations in force. Under no circumstances can IOC be held liable for any misinterpretation or for any damage related to the use of a product for winemaking in accordance with ORGANIC or NOP regulations without further verification.

(1) Made from organic matter if available. (2) Exclusively for clarifying. (3) As a filtration agent.

Our news
2022-2023

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Optimising the fermentation

Go to www.ioc.eu.com and discover our dedicated decision-making tool :
which proposes and automatically calculates optimised protocols, tailored to your requirements, product-objectives and choice of yeast.

Challenging conditions

Aggressiveness of the matrix

BASIC CONDITIONS		0
Winemaking without oxygen		+ 1
Potential alcohol content	> 13,5% vol.	+ 1
	> 14,5% vol.	+ 2
Must turbidity < 80 NTU		+ 1
Temperature < 15°C or > 28°C		+ 1
pH < 3,2		+ 1
AF recurrently difficult		2

0 | 1 | 2 | 3 and + ← TOTAL

Nitrogen deficiencies for a yeast with moderate requirements(1)

	POTENTIEL ALCOHOL CONTENT			
Assimilable nitrogen of must	< 12,5% vol.	from 12,5 to 13,5% vol.	from 13,5 to 14,5% vol.	> 14,5% vol.
> 200 mg/L	No nitrogen deficiency		Low deficiency	Moderate deficiency
from 150 to 200 mg/L	No nitrogen deficiency	Low deficiency	Moderate deficiency	High deficiency
from 120 to 150 mg/L	Low deficiency	Moderate deficiency	High deficiency	Extreme deficiency
from 90 to 120 mg/L	High deficiency	High deficiency	Extreme deficiency	Extreme deficiency
< 90 mg/L	Extreme deficiency	Extreme deficiency	Maximum deficiency	Maximum deficiency

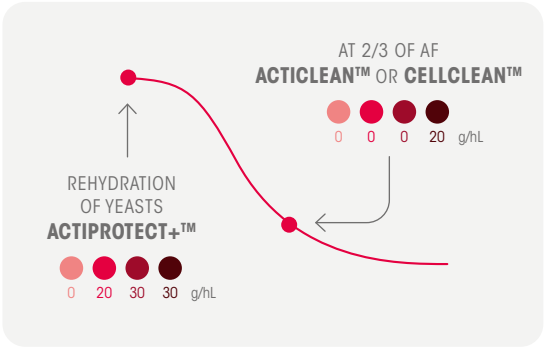
(1) For a yeast with low requirements, reduce deficiency by one level; for a yeast with high requirements, increase by one level.

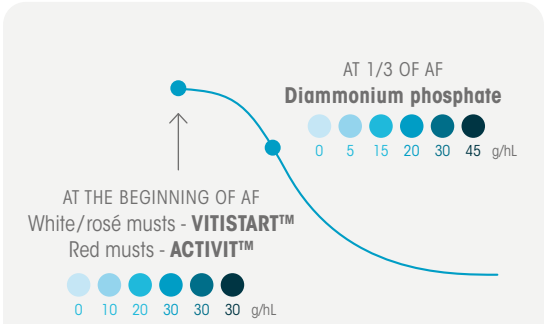
Fermentation strategies tailored to product-objectives

Protection of yeasts and detoxification of must

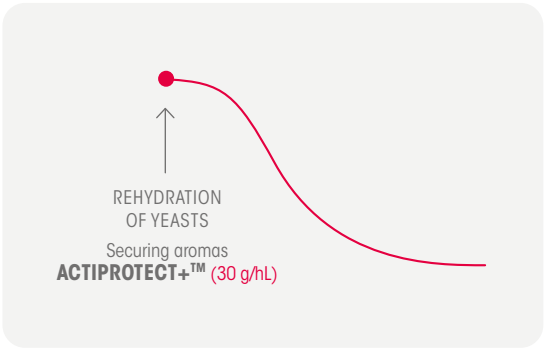
Yeast nutrition

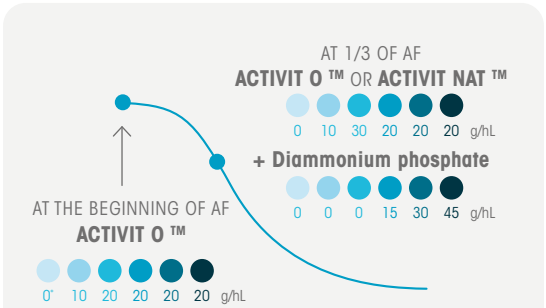
FERMENTATION SAFETY



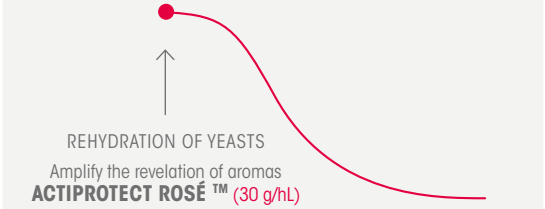


AROMATIC SAFETY

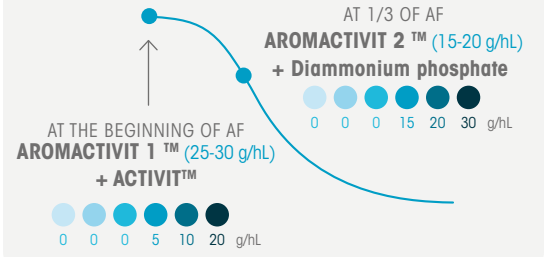




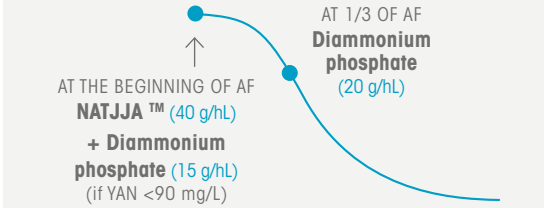
OPTIMISATION OF AROMAS



ENHANCING BIOMASS TO BRING OUT AROMAS



LIMITATION OF OXIDATIVE STRESS, OPTIMIZATION OF YEAST WELLNESS & AROMATIC EXPRESSION



* 5 to 10 g/hL if sulphurous odours develop.

Yeasts rehydration protectants

ACTIPROTECT +™ 1 kg

To prepare yeasts for alcoholic fermentation

Indicative dosage: 20 to 30 g/hL

ACTIPROTECT+™ is a natural product based on inactivated yeasts, extremely rich in sterols that strengthen the yeast's plasma membrane during rehydration.
In this way the yeast is better prepared to deal with the acidity of the must. It is less stressed during inoculation.

Protection: Specific yeast-derived sterols and polyunsaturated fatty acids = strengthening the external membrane and facilitated exchanges (sugars, etc.).

Stimulation: Minerals, vitamins = reactivation of the yeast's internal metabolism.

Impact on wine
→ Secure fermentation, particularly for clarified and/or sugar-rich musts,
→ Shorter lag phase,
→ Promotes the yeast's potential,
→ Reduced production of malodorous compounds and volatile acidity.

A yeast protected from rehydration is an unstressed yeast that will produce fewer compounds that could spoil the wine.

ACTIPROTECT ROSÉ ™ 1 kg

Yeast protector to bring out the aromas of rosé wines

Indicative dosage: 30 g/hL

ACTIPROTECT ROSÉ ™ is a 3rd-generation protector: obtained from a yeast strain selected for its exceptional sterol-producing capacity, autolysed using a dedicated process to concentrate these sterols and combined in an inactivated yeast particularly rich in minerals and vitamins.

This unique composition confers a capacity that was unmatched by second- and first-generation protectors to strengthen the membrane of active yeasts when being rehydrated. More resilient and functional, the plasma membrane optimises must-to-cell exchanges, in particular of thiolated aroma precursors.

The result is that the yeast is able to bring out the entire aromatic potential of the rosé must, in complete safety where fermentation is concerned, even in stress conditions (e.g. enhanced clarification, low temperature, vinification in reducing conditions).

HYDRA PC ™ 1 kg

Indicative dosage: 10 to 40 g/hL

HYDRA PC ™ optimises rehydration of yeasts by strengthening their plasma membrane.
With HYDRA PC ™, yeasts are more resistant to the difficult conditions they encounter when inoculating the Starter (SO_2, alcohol, pH, sugars, etc.).
Strengthening the membrane allows the yeasts to be less stressed during inoculation of the tirage wine and more resistant to the increase in alcohol content and the carbon dioxide gas concentration during bubble-forming.

Media and detoxicants

ACTICLEAN™ 1 kg | 5 kg

Detoxifying inactivated yeasts and cellulose, to prevent stuck fermentations

Indicative dosage: 20 to 60 g/hL

ACTICLEAN™ prevents or limits sluggish and stuck fermentations. It is used in difficult conditions (high alcohol, low turbidity, extreme temperatures), at two-thirds of the AF, to gradually absorb the toxins released into the liquor by stressed yeasts.

CELLCLEAN™ 1 kg | 5 kg | 15 kg

Indicative dosage: 10 to 40 g/hL

Made up of yeast cell-wall fragments, CELLCLEAN™'s high adsorption capacities help remove certain toxic substances that jeopardise the survival of yeasts and lactic bacteria.

BIO YEAST CELL WALLS ™ 1 kg | 5 kg | 15 kg

Yeast cell walls produced from ORGANIC-certified raw materials

Usable in Bio and NOP

Indicative dosage: 20 to 40 g/hL

Featuring adsorption and detoxification capacities inherent to yeast cell walls, BIO YEAST CELL WALLS ™ helps remove certain toxins that cause alcoholic and malolactic fermentations to become stuck.

Optimization of aromatic metabolism

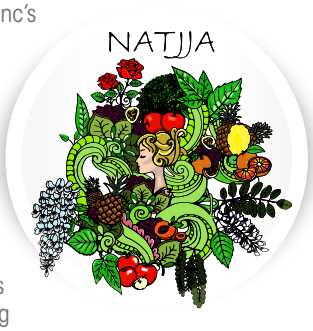
NATJJA™ 1 kg NEW

Improves yeast wellness and optimises its abilities to bring out aromas

Usable in Bio

Indicative dosage: 40 g/hL

An innovative 100% bio-sourced yeast nutrient that's ideal for enhancing and protecting yeast's health and physiological state against oxidative stress. Combining balanced organic nutrition with chitosan and zinc's anti-free radical effect helps bring out aromas and secure alcoholic fermentation.



NATJJA FIZZ ™ 1 kg NEW

Improves yeast wellness for secondary fermentation in closed tanks and optimises yeast's abilities to bring out aromas

Usable in Bio

Indicative dosage: 20 g/hL

Version of NATJJA™ suitable for use in bubble formation. Richer in magnesium and zinc, it provides better resistance to the ethanol and carbon dioxide present during second fermentation, while reducing oxidative stress.

AROMACTIVIT 1&2 ™ 1 kg | 5 kg

Improved biomass to bring out aromas

Usable in Bio

Indicative dosage: 20 to 30 g/hL

The AROMACTIVIT 1&2 ™ protocol is based on the combined action of two specific nutrients, which are added in two stages:

- immediately after yeasting: AROMACTIVIT 1 ™ increases yeast biomass to significantly bring out aromas while avoiding overpopulation or nutritional imbalances.
- at one-third of alcoholic fermentation: AROMACTIVIT 2 ™ redirects metabolic flows toward the biosynthesis of aromas.

So, AROMACTIVIT 1&2 ™ leads to greater expressions of varietal and fermentation aromatic compounds.

Nutrition: Growth factors

100% Organic Nutrients

ACTIVIT NAT ™ 1 kg | 5 kg

100% organic source of bioavailable amino acids and vitamins

Usable in Bio and NOP

Indicative dosage: 20 to 40 g/hL

ACTIVIT NAT ™ is a recommended nutrient to avoid sulphurous odours, facilitate alcoholic fermentation and bring out varietal thiols.

ACTIVIT NAT ™ and ACTIVIT O ™ very effectively prevent the appearance of reductive notes by avoiding yeast overpopulation phenomena.

ACTIVIT O ™ 1kg | 5kg | 15kg

100% organic complete nutrient, rich in thiamin, for high quality fermentation

Usable in Bio

Indicative dosage: 10 to 40 g/hL

ACTIVIT O ™ promotes aromatic expression:
→ fermentative, by directly supplying amino acids as sources of fruity and floral esters,
→ varietal, by avoiding inhibition of fruity thiols being brought out due to excess ammonium salts.

In addition, ACTIVIT O ™ limits production of SO_2, sometimes observed with use of ammonium salts, and improves the effectiveness of sulphiting because it is rich in thiamine, which limits SO_2 combination phenomena.

ACTIVIT SAFE ™ 1kg | 5kg | 15kg NEW

100%-organic, detoxicant nutrient dedicated for the end of fermentation phase

Usable in Bio and NOP

Indicative dosage: 20 to 40 g/hL

Although the best time to incorporate nitrogen nutrient is at one third of the alcoholic fermentation process, or even at the beginning of fermentation, there are occasions when adding at the end of alcoholic fermentation can prove useful, for example when:
→ the initial available nitrogen in the must has been underestimated,
→ alcoholic fermentation is too fast,
→ alcoholic fermentation is slowing down or is sluggish,
→ there are difficult conditions (temperature too low or too high, high level of alcohol).

ACTIVIT SAFE ™ is a nutrient made up of an amine nitrogen-rich yeast autolysate (the form of nitrogen that is best assimilated at this moment of fermentation) and of yeast cell-walls to adsorb inhibitory toxins that have built up during fermentation.

EXTRA PM ™ 1kg

Optimises secondary fermentation in sparkling wine production, preserves aromatic and mouth freshness

Usable in NOP

Indicative dosage: 20 to 50 g/hL

EXTRA PM ™ is a specific fermentation activator for secondary fermentation in sparkling wines production.
This activator:
→ ensures optimal yeast activity during this fermentation,
→ preserves membrane exchange abilities, especially for continuous inoculation,
→ ensures an ideal physiological condition of the yeast, especially in the terminal phase (after 2.5 kg pressure).

Combined nutrients

ACTIVIT™ 1kg | 5kg | 15kg

A complex, nitrogen-rich nutrient to manage deficiencies

Usable in Bio

Indicative dosage: 40 g/hL

ACTIVIT™ contains di-ammonium phosphate, inactivated yeast and thiamine. It therefore provides assimilable nitrogen in aminoacids and ammoniacal form, vitamins and minerals, and ensures uniform development of yeasts when there is a pronounced deficiency.

VITISTART™ 1kg | 5kg | 15kg

Complex nitrogenous nutrient and medium for yeasts

Indicative dosage: 10 to 40 g/hL

A good compromise between a combined nitrogen source and cellulose source, VITISTART™ is particularly wellsuited to the conditions for white and rosé musts (temperatures and/or low turbidity).

Ammonium Salts

Ammonium salts are the nitrogen source most rapidly assimilated by yeasts. They are added preferably during the first 1/3 of the alcoholic fermentation and particularly when nitrogen deficiencies are significant, however not to be added during the yeasts' growth phase (start of AF).

Ammonium salts enable the yeast to perform:
→ biosynthesis of yeast proteins needed for cell multiplication,
→ biosynthesis of membrane proteins essential for sugar transport.

Ammonium salts are assimilated very rapidly by yeasts, which causes a yeast growth spike. This phenomenon can make wines dry and increase sulphurous flavours. If is often preferable to use complex nutrients.

DI-AMMONIUM PHOSPHATE 1 kg | 5 kg | 25 kg

Complete nutrition for a major deficiency

Usable in Bio

Indicative dosage: 10 to 80 g/hL

DI-AMMONIUM PHOSPHATE is an ammoniacal nitrogen supplement for musts poor in assimilable nitrogen. It is used preferably in the first third of the fermentation, when the yeasts are no longer in the growth phase, in cases where the complex or organic nutrient added is insufficient to mitigate the deficiency level. Recommended ammoniacal nitrogen source to limit the production of SO_2 for certain yeasts.

PHOSPHATES COMPLETS ™ 1 kg | 5 kg

Combined ammoniacal nitrogen source

Indicative dosage: 10 to 80 g/hL

Made up of di-ammonium phosphate and ammonium sulphate, PHOSPHATES COMPLETS ™ provide yeasts additional nitrogenous nutrition. To be used for significant deficiencies in the first third of the alcoholic fermentation, in cases where you want to balance additions between phosphate and sulphate.

PHOSPHATES TITRÉS ™ 1 kg | 5 kg

To promote significant yeast biomass

Usable in Bio

Indicative dosage: 5 g/hL

A mixture based on di-ammonium phosphate and thiamine, PHOSPHATES TITRÉS ™ combine a sulphate-free nitrogen source with an essential vitamin for the growth phase. To be used when you want to obtain a high yeast biomass, with a more limited risk of associated sulphurous deviations. The absence of sulphate reduced the possibilities of sulphite production by certain yeasts.
PHOSPHATES TITRÉS ™ are particularly suitable for the bottle/closed tank fermentation phase.

THIAMINE 1 kg | 5 kg

To facilitate yeast growth

Usable in Bio

Indicative dosage: 0,05 g/hL

THIAMINE (vitamin B1) acts on the growth of yeasts, increasing their population and prolonging their activity. It does this by being involved in carbohydrate metabolism at the point where ketonic acids are decarboxylated to aldehydes.

FOSFOVIT™ 1 kg | 15 kg

Helping yeast multiplication in the winemaking process

Usable in Bio

Indicative dosage: 5 to 40 g/hL

With a mixture comprising ammonium phosphate as sole nitrogen source, as well as thiamine, FOSFOVIT™ fosters strong yeast multiplication without the drawbacks associated with the use of ammonium sulphate (a potential source of SO_2 unusable in organic vinification).

		Nitrogen source		Added assimilable nitrogen (mg/L) for 40g/hL added		Ammoniacal nitrogen		Nutrients of yeast origin					Others		
		Organic nitrogen	Mineral nitrogen	Direct calculation	Technical equivalent (kinetic)	Phosphates	Sulphates	Aminoacids	Assimilable peptides	Sterols and lipids	Minerals	Vitamins	Added thiamine	Cellulose	Chitosane
Yeast rehydration	ACTIPROTECT+™			na	na			na	na	★★★	★★ ★★	★★ ★★			
	ACTIPROTECT ROSÉ ™			na	na			na	na	★★★ ★★	★★★	★★ ★★			
	HYDRA PC ™			na	na			na	na	★★★	★★★ ★★	★★ ★★			
Optimizers of sensory metabolism	NATJJA™	★★★ ★★		13,5	35			★★ ★★	★★	★	★★★ ★★	★★ ★★			★★
	NATJJA FIZZ ™	★★★ ★★		13,5	35			★★ ★★	★★	★	★★★ ★★★	★★ ★★			★
	AROMACTIVIT 1 ™	★★★ ★★		38	53			★★ ★★	★★	★	★★ ★★	★★ ★★	★★		
	AROMACTIVIT 2 ™	★★★	★★★			✓		★★★ ★★	★	★	★★ ★★	★★ ★★	★★		
Organic nutrients	ACTIVIT O ™	★★★ ★★		17	45			★★★ ★★	★	★	★★★	★★★	★★★		
	ACTIVIT NAT ™	★★★ ★★		17	45			★★★ ★★	★	★	★★★	★★★			
	ACTIVIT SAFE ™	★★★		8	20			★★★	★	★★	★★	★★			
	EXTRA PM ™	★★ ★★		12	31			★★ ★★	★	★	★★★	★★★			
Mixed nutrients	ACTIVIT™	★★	★★★	52	56	✓		★★			★★	★★	★★		
	VITISTART™	★	★★	46	48	✓	✓	★			★	★★	★★	★★	
Detoxicants	ACTICLEAN™	★		1,5	4			★			★	★★		★★ ★★	
	CELLCLEAN™			na	na			na	na	★	★★	★★			
Simple nutrients (mineral)	FOSFOVIT™		★★★ ★★	84	84	✓							★★★		
	PHOSPHATES COMPLETS ™		★★★ ★★	84	84	✓	✓								
	PHOSPHATES TITRÉS ™		★★ ★★	84	84	✓							★★★ ★★★		

Malolactic Fermentation Activators

NUTRIFLORE FML ™ 1 kg

Optimised nutrient for accelerating malolactic fermentation

Usable in Bio and NOP

Indicative dosage: 20 g/hL

NUTRIFLORE FML ™ provides not just the necessary elements for successful multiplication of bacteria in wine (amino-acids, minerals, vitamins) but also and above all specific peptides which enhance resistance to acidity in wine. NUTRIFLORE FML ™ is particularly effective in wines with low pH (<3.4).

NUTRIFLORE PDC ™ 250 g

Dedicated nutrient for optimising the malolactic starter process

Usable in Bio and NOP

Indicative dosage: 25 g/hL of starter solution (pied de cuve)

NUTRIFLORE PDC ™ activates bacterial enzymatic systems by contributing dedicated nutrients to wine: specific vitamins, minerals and amino-acids, which unquestionably accelerate the starter process.

FAQ

Does nitrogen richness need to be known before seeding ?

To adapt a sustainable and efficient nutrient strategy, it is effectively better to dose Yeast Available Nitrogen (YAN). On the one hand, this allows to avoid stuck fermentations due to deficiencies and, on the other, overdose of nitrogen which would jeopardise the survival of the yeast, the malolactic fermentation and the sensory quality of wines (sulphurous odours).

Why do you recommend two additions of nitrogen ?

Generally speaking, it is more efficient to add nitrogen after the growth phase, at one third of AF. Often, however, people prefer to divide this input between one third and the beginning of AF for the following reasons:

- to avoid a peak of yeast activity and temperature at the third of AF, due to excess of added nitrogen;
- to provide nutrients that are of 100% yeast origin or complex at the beginning of AF to nourish the yeast with the vitamins (especially thiamine) and minerals needed at that time;
- to foster aromatic syntheses through amino nitrogen provided at the beginning of AF.

In all cases, you must avoid adding ammoniacal nitrogen on its own at the beginning of AF.

Do indigenous yeasts have the same needs in nutrients as selected yeasts ?

Yeasts do not all have the same needs in nitrogen. IOC has characterised the nitrogen needs of each of its speciality yeasts, making it possible to sustain nutrient contributions. An indigenous yeast can have very variable, unknown needs, which are difficult to assess. Unforeseeable variability is regularly responsible for stuck AF or sensory deviations, as the winemaker cannot choose the suitable nutrient.

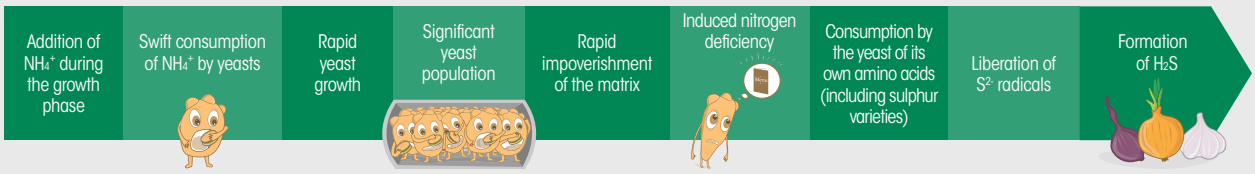
Why not just use nitrogen in the form of ammonium salts ?

A nutrient made up of just ammoniacal nitrogen and thiamine is liable to create yeast overpopulation, jeopardising not just the physiological status of each yeast, but also possibly causing induced deficiency in nitrogen. Complex nutrients ACTIVIT™ and VITISTART™ are made up of a balanced ratio of ammoniacal nitrogen and amino nitrogen.
They also contain micronutrients (vitamins and minerals). All these elements allow to avoid nutritional unbalance which could lead to kinetic and sensory difficulties. 100% organic-based nutrients ACTIVIT O ™ and ACTIVIT NAT ™ go even further in regulating growth and yeast metabolism, in particular by strongly limiting the production of sulphurous odours. Moreover, these foster the release of aromas, in particular of varietal thiols, whereas excessive ammonium could inhibit it.

What form of ammoniacal nitrogen - phosphate or sulphate salt ?

Some yeasts -but not all- would have increased SO_2 production if ammonium sulphate were added.
For this reason, we would tend to recommend diammonium phosphate if an addition of ammoniacal nitrogen is necessary.

Impact of an addition of ammoniacal nitrogen (NH4+) during the yeast growth phase



Œnological Yeasts

Yeast for Bioprotection

IOC GAÏA™ 500 g

Usable in BIO and NOP

Indicative dosage: 7 to 20 g/hL

Natural protection of the vintage during pre-fermentation stages

From the harvest to the tank or the press, the micro-organisms responsible for acetic deviations (such as *Kloeckera apiculata*) can undergo uncontrolled multiplication. The risks are amplified during pre-fermentation macerations, especially if temperatures are excessively high (> 10°C) or for long periods.
To combat these harmful micro-organisms, the Institut Français de la Vigne et du Vin has selected IOC GAIA™, a *Metschnikowia fructicola* yeast with no fermentation power. This yeast occupies the ecological niche, limiting deviations and the risk of a premature start to alcoholic fermentation. So, it is natural that IOC GAÏA™ is emerging as a major tool for limiting pre-fermentation sulphiting.

NEW

Biosanitisation of harvesting equipment

Sprayed on the surfaces of harvesting equipment (including harvesting machine) in contact with grapes to prevent the proliferation of acetic bacteria and apiculate yeasts.

With harvesting machine

Anticipate and protect your grapes at the earliest
To avoid any proliferation of microorganisms from the harvest and during transport to the cellar.

During transport of handpicked

Manage long transport times
Suitable for temperatures >15°C, long transport times, extended waiting times and degraded sanitary conditions.

On the grapes during drying

Limit development of *Botrytis cinerea* during drying process (e.g. amarone)
Reduces the development of rot often observed in the drying chambers.

At the reception of grapes in the cellar

Protect the must for the duration of the pre-fermentation phases
Allows to fight against spoilage micro-organisms or the early start of fermentation.

When filling cold pre-fermentation maceration tanks

Fight against rising volatile acidity with limited fermentation start
Fight against *Hanseniaspora uvarum* with limited fermentation start, allowing for extraction of anthocyanins during skin contact.

In the press

Limit the risks of starting fermentation and reduce SO_2 additions
Limits the development of fermentative yeasts, especially in case of lower SO_2 additions, to allow a good clarification after pressing.

Out of the press of the white juice for sparkling wines (traditional method)

Limit spoilage and control the sensory profile
With global warming (e.g. leading to increase pH), and the desire to limit SO_2 concentrations, an addition of IOC GAÏA™ at the beginning of filling the settling tank helps to reduce yeast or acetic acid bacteria growth, and limits unwanted aromatic development that will harm the elegance and finesse of sparkling wines made in the traditional method.

In the press for white juices or rosé musts

Limit the risk of early start of fermentation and reduce SO_2 additions
Limits the development of fermentative yeasts, especially in case of lower SO_2 additions, to allow a good clarification after pressing.

In maceration of white and rosé lees

To limit the risk of fermentation start and to reduce sulphites
Limits the development of fermentative yeasts, especially in the case of lower sulphiting or too high temperatures, or over long periods of time.

Before yeast inoculation, on must used to produce sparkling wines through the « Asti Spumante » method (Closed tank fermentation starting on must)

Avoid the start of fermentation and the production of ethanal during must warming
During this very specific process, the warming of must (stored at cold temperature) can last up to 72 h, and can cause the development of wild microorganisms source of ethanal. The addition of IOC GAIA™ in the cold must before starting the process can avoid this.

On juice during storage

Protection of juice during storage or transport over extended periods
Maintain the juice in an optimal condition for its use during the year, and to reduce expenses (e.g. refrigeration, filtration) to avoid unwanted fermentation.

IOC CALYPSO ™ 500 g

Bringing out and protecting aromas during cellaring or with cold sediments

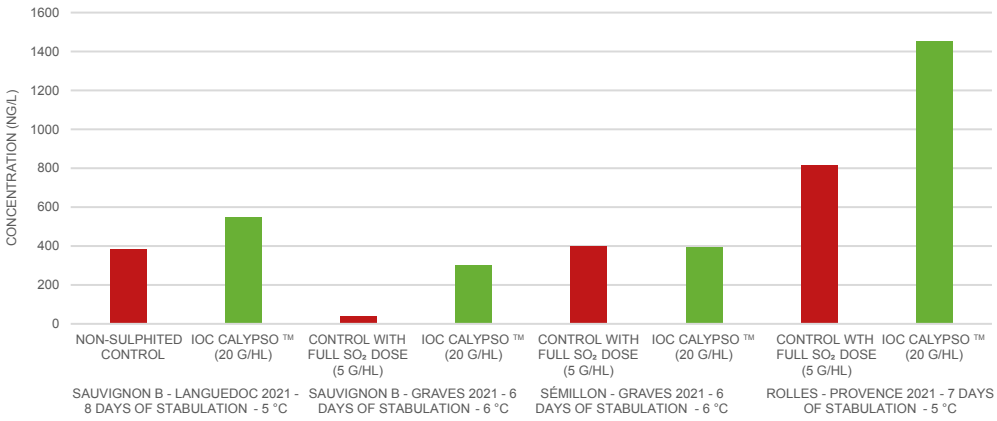
Usable in Bio and NOP

Indicative dosage: 7 to 20 g/hL

Used during cellaring or with cold sediments, IOC CALYPSO ™ is an innovative biocontrol aid specially developed to limit the use of SO_2.
It significantly fosters enzymatic activity, bringing out aroma precursors present in cellaring juices. It also helps protect aromas that have been released and preserves the colour of wines from the effect of oxidation, as well as preventing fermentation processes from being triggered too early.

Content in 3MH for white wines

Experiments carried out on different wineries – results obtained for 3MH acetate (passion fruit) and 4MMP (boxwood) are similar to those noted here for 3MH (citrus).



Yeasts not producing SO_2 - IOC BE ™ Range

Unable to produce SO_2, IOC BE ™ yeasts are the result of innovative yeast selection technology, using crossings assisted by markers. They benefit from the œnological and sensory heritage of high-quality yeasts, profoundly characterised for their aromatic contribution and conditions of use. IOC BE ™ yeasts combine powerful organoleptic enhancement properties with incapacity to produce SO_2.

In addition, most yeasts can release variable quantities of ethanal in wines. In particular, this formation can occur (although not exclusively) in reaction to pre-fermentation additions of sulphites in the must. Since ethanal is the main combining agent of SO_2 in wines, this often leads to having to increase doses to obtain a sufficient concentration of free SO_2, which, at the bottom line, results in much higher overall levels of SO_2. Through their hereditary characteristics, IOC BE ™ yeasts are unable to produce high levels of ethanal, which limits the need for sulphiting operations and thereby optimises efficacy. They rarely produce H_2S and, when they do so, it is in very limited quantity.

Combined with strategies and tools developed by IOC to control oxidation and microbiological contaminations, whether in pre-fermentation, fermentation or aging stages, IOC BE ™ yeasts are a powerful tool to reduce SO_2 concentrations.

IOC BE FRESH ™ 500 g

Controlling sulphite levels, freshness and roundness in concentrated red wines

Usable in BIO and NOP

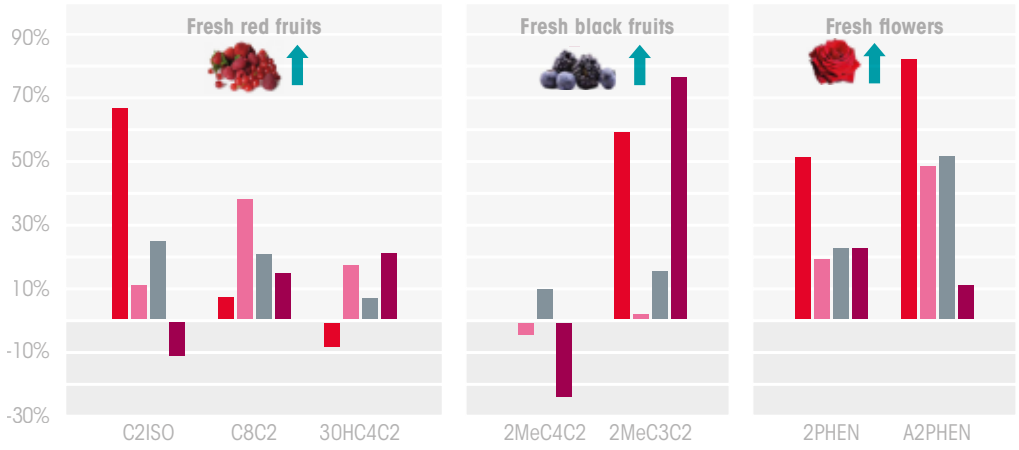
Indicative dosage: 20 g/hL

Selected for bringing out aromas linked to the fresh fruitiness of red wines, this is an exceptional tool for winemaking of ripe harvests and for obtaining healthy, clear red wines that are fresh on the nose and on the palate, while keeping sulphites at their lowest level. Ideal for varieties such as merlot, grenache noir or tempranillo, but also any red harvest marked by overadvanced fruity maturity.

Fresh fruit aromas

Enhanced concentrations obtained with IOC BE FRESH ™ compared with IOC R 9008 ™

- **Merlot 2019** (33)
- **Merlot 2019** (33)
- **Syrah 2019** (30)
- **Merlot 2019** (11)



IOC BE FRUITS ™ 500 g | 10 kg

Controlling sulphite levels for wines rich in fruity esters

Usable in BIO and NOP

Indicative dosage: 20 g/hL

Brings out fruity esters efficiently and securely (red fruits, pineapple and citrus) in white or rosé wines, with precision and intensity, while controlling sulphite concentrations in resulting wines. Ideal for bringing out fruitiness in white wines from chardonnay, airen, semillon, chenin, grenache blanc, marsanne, roussanne, in particular, as well as numerous rosé wines.

IOC BE THIOLS ™ 500 g | 10 kg

The natural tool to obtain rich in thiols wines with low sulphite levels

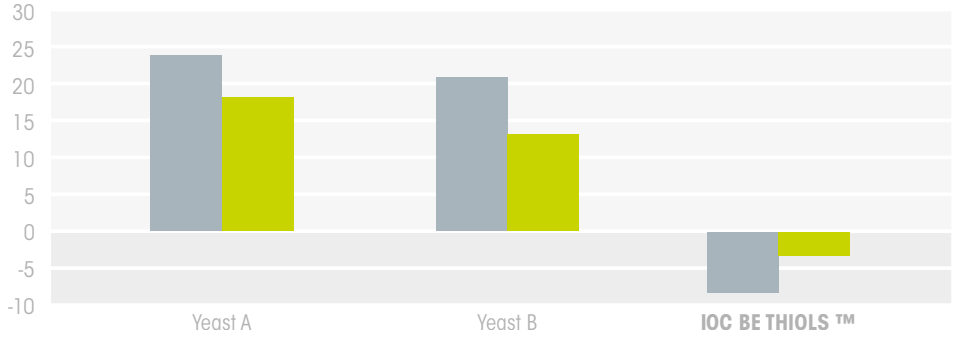
Usable in BIO and NOP

Indicative dosage: 20 g/hL

Selected for its strong expression of preferentially fruity thiols (in particular 3MH), with its aromas of pineapple and exotic fruits. A benchmark for grape varieties rich in thiol precursors such as sauvignon, colombard or verdejo, but also varieties whose fruity complexity can be enriched by the expression of thiols (grenache blanc, chenin, muscat, rolle, rosés from shiraz, grenache, cabernet, merlot, tempranillo...).

Concentrations in total SO_2: differences between wine and must (mg/L)

- **Grenache rosé** (initial sulphiting operation 30 mg/L pH 3.30 TAV 14% vol)
- **Sauvignon blanc** (initial sulphiting operation 50 mg/L pH 3.30 - TAV 12.25% vol)



Yeasts for red wines

IOC PRIMROUGE - R 9001 ™ 500 g | 10 kg

The standard for easy drinking red wines

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Used to obtain rounded, aromatic wines, dominated by red fruits (strawberry, raspberry) and candy. The wines obtained are characterised by better colour, a clean nose, very fruity and a nice roundness.
It is well adapted for gamay, merlot or syrah in carbonic maceration and is ideally suited for red-must, liquid-phase winemaking.

IOC R 9002 ™ 500 g

Spices, black fruits and frame

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Used to make structured, full bodies wines with aging potential. It brings out aromas of spices and black fruits. It improves colour stability. It also shows good tolerance for high alcohol contents.

IOC R 9008 ™ 500 g

Body, ripe fruits, salinity and longevity

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Selected to develop ripe fruit aromas and mouthfeel in structured red wines from high maturity grapes.
In the difficult conditions of musts from hot climate vineyards, it helps to limit the perception of dryness and bitterness, while intensifying minerality, salinity and length.
It reduces the risks of herbaceous aromas and aggressive tannic some on sensitive grape varieties : merlot, cabernet-sauvignon, cabernet franc, carménère, malbec, grenache, etc.

IOC RÉVÉLATION TERROIR ™ 500 g

Finesse, fruitiness and colour

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Selected on pinot noir for its excellent ability to preserve colour. It increases the colour intensity by 5% to 15% in comparison to numerous selected or indigenous yeasts.
Its essential sensory contribution is to bring out varietal fruity aromas (raspberry, gooseberry, blackberry) of many red grape varieties, with a good balance between the freshness of the fruit and its maturity, on finesse and elegance.
IOC REVELATION TERROIR ™ provides very good results in terms of fruity expression with pinot noir, gamay, grenache noir, merlot, carignan and tempranillo.

Yeasts for white and rosé wines

IOC INFINI'TWICE ™ NEW

500 g

Usable in Bio and NOP

Indicative dosage: 20 g/hL

The perfect balance between body and freshness in white wines, without limits

The fruit of knowledge acquired by IOC on the behaviour of mixed yeasts, IOC INFINI'TWICE ™ is a true synergy between IOC TWICE ™ and a yeast with strong fermentation capacities to extend this exceptional yeast's conditions of use in winemaking.
Tests confirm the suitability of IOC INFINI'TWICE ™ for enhancing the fresh aromas of citrus (lemon in particular), peach, apricot and flowers, while balancing initial and mid-palate body with a pleasant final freshness. These characteristics make it suitable not only for chardonnay but other strains as well, such as viognier, grenache, sémillon, vermentino, airen, muscat, etc.).

IOC B 2000 ™ 500 g | 10 kg

Indicative dosage: 20 g/hL

Freshness and aromatic intensity

Facilitates the aromatic fruity expression of white and rosé musts. It is suitable for making fresh, aromatic wines. It is used to obtain different aromatic profiles depending on the fermentation temperature and so combine fermentation and varietal notes harmoniously.
IOC B 2000 ™ is used for winemaking of white wines on which aromatic expression is the target.
It is essential on grape varieties poor in varietal precursors, but also rosés from syrah, grenache, merlot and cabernet.
On rosé wines, IOC B 2000 ™ expresses exotic fruit and citrus aromas.

IOC B 3000 ™ 500 g

Indicative dosage: 20 g/hL

Yellow fruits, flowers and mouthfeel

It brings out the intensity and aromatic complexity of wines, with yellow fruit and flower notes, while also contributing to the mouthfeel and roundness.
Its good fermentation capacity help preventing the risks of reduction compounds appearing. Ideal aging yeast, for making elegant, persistent and rounded wines.

IOC FRESH ROSÉ ™

500 g | 10 kg

Indicative dosage: 20 g/hL

Floral and varietal expression of rosé wines

Used to highlight an aromatic intensity on floral, citrus and spicy notes in rosé wines.
It contributes to reduce aggressive sensations such as acidity, dryness and bitterness.
IOC FRESH ROSÉ ™ is particularly well suited to winemaking of complex, rounded rosé wines, and particularly for full expression of grape varieties such as syrah and cabernet-sauvignon.

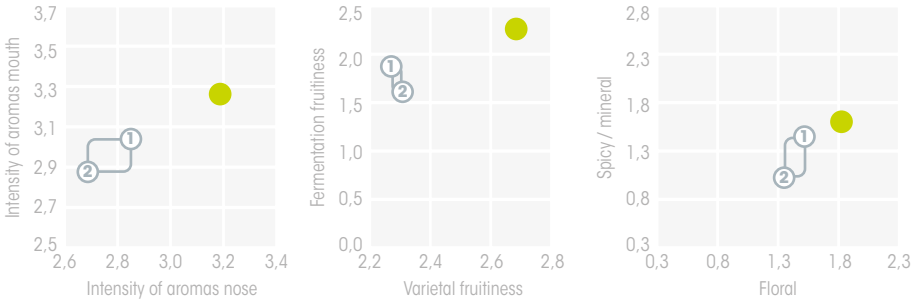
In tasting, this strain mainly produces high aromatic intensity with fruity notes. The aromatic profile shows floral notes which increase the complexity. Globally, the level of preference in early tasting is increased with this strain.

Jean-Christophe Crachereau, Œnological practices and products" Experiments Manager, Gironde Chamber of Agriculture.

Experiments carried out by the Gironde Chamber of Agriculture, on cabernet-sauvignon rosé : more fruity / floral / spicy

● IOC FRESH ROSÉ ™

①② Controls 1 et 2



IOC RÉVÉLATION THIOLS ™ 500 g | 10 kg

Indicative dosage: 20 g/hL

Full expression of fruity thiols

Offers a very good percentage conversion of precursors into varietal thiols and expresses superior aromatic potential compared to many yeasts, with citrus and passion fruit notes, and limited vegetal notes.
This strain is specific to white and rosé wines and will reveal varietal thiols, aromatic compounds responsible for the varietal notes characteristic of numerous grape varieties, such as sauvignon blanc, colombard, picpoul, melon de Bourgogne, muscat, syrah, gamay, pinot noir, cabernet varieties, merlot, tempranillo, negrette, etc.

IOC TWICE ™ 500 g

The perfect balance between mouthfeel and final freshness

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Selected by the IFV de Beaune as the most suitable yeast for making fresh, complex and balanced chardonnay wines. Trials showed its capacity to express fresh aromas of citrus (lemon in particular), peach, apricot and flowers.
IOC TwICE ™ gives unrivaled fullness and roundness on the palate and mid-palate, followed by final freshness.
Its excellent suitability for mutage also makes it ideal for semi-dry wines.

Yeasts for sparkling wines

IOC 18-2007 ™ 500 g | 10 kg

The reference for prise de mousse (bottles fermentation)

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Its excellent adaptation to the most difficult environments makes it possible to obtain the rapid and complete consumption of sugars, while avoiding the production of undesirable secondary compounds.

A strain selected by the IOC from the best strains of the great Champagne vineyards.
Excellent adaptation to the most difficult conditions: low pH, low temperature, high alcohol content.
Good inoculation capacities, complete breakdown of sugars and low nutrient requirements.
It is ideally suited to making wines by the traditional method but can be used in Charmat method.
It is also used to deal with stuck fermentations and in this case requires the preparation of a starter culture.

IOC FIZZ ™ 500 g

For the Charmat method

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Selected for production of sparkling wines using the Charmat method.
Its ability to adapt to difficult conditions enables it to provide fast and complete second fermentation.

IOC FIZZ+ ™ 500 g

Aromatic yeast increasing fruity notes in Charmat method

Usable in Bio and NOP

Indicative dosage: 20 g/hL

Selected to meet the expectations of sparkling wine production using the Charmat method. It has very good fermentation capacities for prise de mousse (second fermentation), but also contributes to the fruity intensity of these wines.

Exceptional Yeasts : the non-conventional

IOC BOREAL ™ 500 g NEW

A breath of fresh air for your wines

Usable in Bio and NOP

Indicative dosage: 25 g/hL

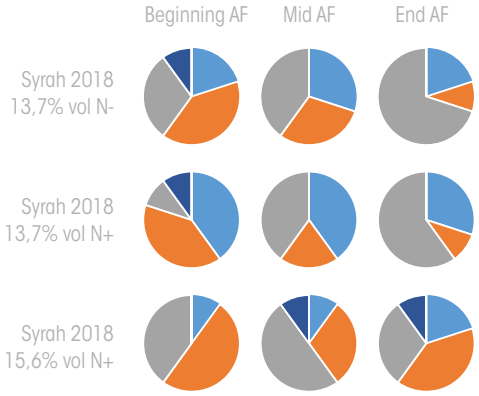
Pre-fermentation *Lachancea thermotolerans* yeast produces L-lactic acid from sugars. It also contributes to the aromatic complexity of the wine.
IOC BOREAL ™ is used in the pre-fermentation phase at least 24 hours before inoculation of *Saccharomyces cerevisiae* yeast chosen for alcoholic fermentation.

IOC DYNAMIX ™ 500 g

Indicative dosage: 20 g/hL

The strength of diversity

In collaboration with Inter Rhône, the observation and study of the behaviour of yeasts in pure cultures and complex combinations on grape musts have led to the development of IOC DYNAMIX ™, a mixture of diversified and complementary yeasts from various vineyards. Allowing several yeasts to be implanted throughout the fermentation process expresses microbial biodiversity, while at the same time avoiding standardisation of wine linked to uncontrolled fermentation defects.
Initially designed for red wines, IOC DYNAMIX ™ is now successfully used on white and rosé must.



Implantation, at 3 stages of fermentation, of yeasts inoculated in mixture during experiments carried out on a single Syrah harvest (2018 vintage), by varying parameters of assimilable nitrogen (N-: moderate nitrogen deficiency - 110 mg/L of YAN; N+: no nitrogen deficiency - > 140 mg/L of YAN) and richness in sugars.

We can observe the variability in the proportions of each yeast in the selected mixed flora, depending on richness in sugars and alcohol level, but also to a lesser extent depending on the level of available assimilable nitrogen. In all cases, however, the selected flora is dominant over potential alteration flora, undetected in the musts.

Y1 Y2 +/or Y4 Y3 Y5

IOC BIO ™ 500 g

Indicative dosage: 20 g/hL

Certified organic yeast, ensuring respect of varieties and terroirs

IOC BIO ™ has been selected to preserve wine typicity. It does not act on one aromatic fraction against of another, and allows the variety to express itself fully, without so-called "technological" aromas. Derived from an exceptional organic production process which meets all the conditions required by European regulations, it allows wide flexibility of use, on all colours of still wines, as well as second fermentation in bottle.

	Type of wine	Character Killer	Alcohol tolerance	Nitrogen requirement	Production of volatile acidity	Production of Glycerol	Production of SO_2	Fermentation speed
CONVENTIONAL SPECIFIC YEASTS								
IOC PRIMROUGE ™		Sensitive	14%	high	very low	high	low	moderate
IOC R 9002 ™		Killer	15%	high	very low	moderate	low	moderate
IOC R 9008 ™		Sensitive	16%	low	low	high	low	fast
IOC RÉV.TERROIR ™		Killer	15%	high	low	moderate	low	moderate
IOC FRESH ROSÉ ™		Killer	16%	moderate	low	low	low to medium	fast
IOC B 2000 ™		Killer	14%	low	very low	low	moderate	fast
IOC RÉV.THIOLS ™		Killer	15%	moderate	low	low	moderate	very fast
IOC B 3000 ™		Sensitive	14%	moderate	low	élevée	low	slow
IOC TWICE ™		Killer	15,5%	high	low to moderate	nd	very low	slow
IOC INFINI'TWICE ™		Killer	15,5%	moderate	low	nd	very low	moderate
IOC 18-2007 ™		Killer	15% min.	low	low	moderate	low	very fast
IOC FIZZ ™		Killer	18%	low	low	moderate	low to medium	fast
IOC FIZZ+ ™		Killer	14% min.	low	low to moderate	moderate	moderate	very fast
NON-SO_2-PRODUCING YEASTS								
IOC BE FRESH ™		Killer	15,5%	high	moderate	nd	almost nil	moderate
IOC BE FRUITS ™		Killer	14%	low	very low	low	almost nil	fast
IOC BE THIOLS ™		Killer	15%	moderate	low	low	almost nil	very fast
NON-CONVENTIONAL ONES								
IOC BOREAL ™		na	10%	moderate	very low	nd	nd	low
IOC DYNAMIX ™		Killer	16%	moderate	low	nd	very low	moderate
IOC BIO ™		Killer	15%	low	low	low	low	fast

Multi-purpose yeasts

These multi-purpose yeasts are suitable for all wine colours and, above all, offer a high and secured level of fermentation, while limiting sensory deviation risks.
They can all be used in BIO and NOP.

Usable in BIO and NOP

Indicative dosage: 20 g/hL

	Application	Tolerance to alcohol	Nitrogen needs	Production of volatile acidity	Production of glycerol	Production of SO_2 and H_2S
IOC 11-1002 ™	Uniformity and safety – neutrality	16%	low	very low	low	low
IOC 11-10002 K ™	Rapid establishment (Killer) and safety - finesse	15,5%	very low	low	low	low
IOC BY ™	Galactose yeast - (ex bayanus) extremely sturdy and with partial demalication	16%	low	low	low	low
IOC HARMONIE ™	552 Davis - Finesse and clarity	15%	moderate	very low	very low	low

Lees Alternatives

Before and during fermentation

GLUTAROM EXTRA ™ 1 kg

Usable in NOP

Indicative dosage: 15 to 30 g/hL

Very high level in reduced glutathione to anticipate preservation of wines with low sulphite levels

GLUTAROM EXTRA ™ is a nutrient resulting from the latest techniques for producing inactivated yeasts with a guaranteed level of reduced glutathione. An addition at the start of fermentation will ensure a higher concentration of GSH in the wine, especially if the yeast nutrition is optimized.
If sulphite levels are low, the positive impact provided by richness in GSH is clear where aromas are concerned, including with red wine. It has also been shown that adding inactivated yeast rich in GSH could be more efficient for aromatic content than adding pure glutathione, most likely because of synergies with the nutritional effect of other yeast substances.

GLUTAROM™ 1 kg

Usable in NOP

Indicative dosage: 15 to 30 g/hL

Early aromatic preservation of white and rosé wines

GLUTAROM™ is made of inactivated yeasts with a guaranteed level of reduced glutathione. Its anti-oxidant properties help GLUTAROM™'s capacities to preserve the fruity aromas of young white or rosé wines and improve conservation of reserve wine; it also increases mouthfeel.

Dedicated yeasts with a guaranteed level in reduced glutathione

Who ?	When ?	Why ?	Glutathione content
GLUTAROM EXTRA ™	Beginning of alcoholic fermentation	Increases richness in glutathione (white, rosé or red) which improves conservation in tanks and bottles, in particular in a low sulfites situation.	★★
GLUTAROM™	Beginning of alcoholic fermentation	Preserves aromas and improves mouthfeel.	★

FULLPROTECT™ 1 kg

Preservation of musts and harvests against oxidation of colour and aromas

Low SO_2 SOLUTIONS — Usable in Bio and NOP — **Indicative dosage:** 30 g/hL

FULLPROTECT™ uses a synergy between a specific inactivated yeast and a selected tannin to protect the colour and aromas of white and rosé wines against oxidation during the pre-fermentation stages:

- the parietal components from inactivated yeast allow the stabilization of colour and aromas, making them less vulnerable to oxidation during the pre-fermentation phase,
- the tannic fraction, selected for its high reactivity to oxygen, limits the primary oxidation of the phenols in the must and reduces the impact of the secondary oxidation mechanisms, responsible for the undesirable evolution of colour and aromas.

FULLPROTECT™ constitutes an additional alternative tool to limit the use of SO_2.

Aging / Refining

SPHÈRE BLANC ™ 1 kg

Richness, roundness and sensory stabilisation in aging of white wines

Usable in Bio and NOP — **Indicative dosage:** 10 to 20 g/hL

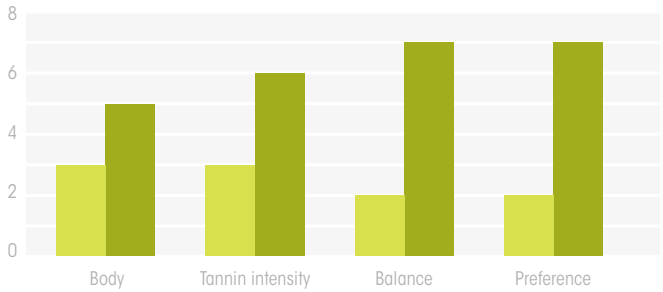
A true selected lees, SPHÈRE BLANC ™ rapidly amplifies perceptions of roundness and richness in white wines. This is particularly useful when the quality of fresh lees is insufficient to allow this type of result, as well as when lees cause contamination or sulphurous odours.
SPHÈRE BLANC ™ brings an essential contribution to long-term stabilisation of taste and aromatic sensations, through interactions between polysaccharides and wine aromas.

SPHÈRE ROUGE ™ 1 kg

Body, structure and length

Usable in Bio and NOP — **Indicative dosage:** 10 to 20 g/hL

A formulation of inactivated yeasts specific to red wines and their phenolic structure, SPHÈRE ROUGE ™ is the fruit of our knowledge of the phenomena of body and roundness.
SPHÈRE ROUGE ™ contributes to mouthfeel while improving the quality of tannin structure and respecting aromas and taste freshness of wines.



Sphère rouge: body and structural balance

Trial with 20 g/hL on cabernet sauvignon, médoc - 9 tasters

Number of tasters giving better classification to wine

SPHÈRE ROUGE ™ — Control

SPHÈRE EXPRESS ™ 1 kg

Body and sweetness for very short aging

Usable in Bio and NOP — **Indicative dosage:** 5 to 20 g/hL

Particularly rich in free manno-proteins, SPHÈRE EXPRESS ™ produces very quick action (1 to 8 weeks) on body, sweetness and length in the mouth of white, rosé or red wines.
It is a sure, qualitative alternative to aging where time is crucial.

Pre-bottling finishing

ULTIMA JUMP ™ 500 g | 1 kg NEW

Preserves and restores aromatic freshness

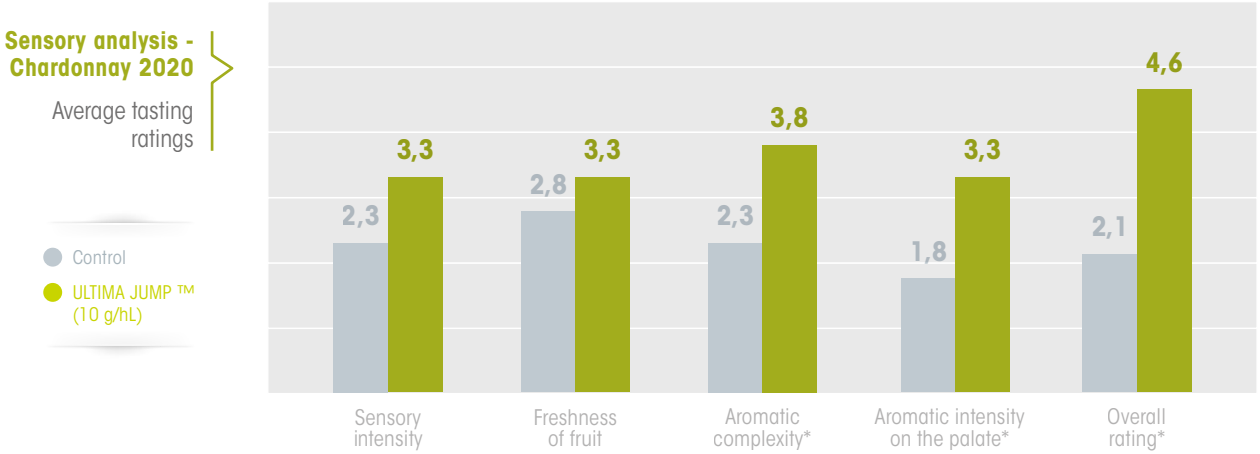
Utilisable en BIO et NOP

Dose d'emploi indicative : 5 à 20 g/hL

ULTIMA JUMP ™ is a 100% soluble preparation based on selected manno-proteins to bring out and restore aromatic freshness in wines
Bonds are formed between aromas and certain yeast cell wall macromolecules (such as manno-proteins), reducing sensitivity during secondary oxidations and hydrolysis during storage in bottles.
Consequently, ULTIMA JUMP ™ provides an alternative and complementary lever for limiting the use of SO_2.
ULTIMA JUMP ™ also improves overall taste balance.

Sensory analysis - Chardonnay 2020

Average tasting ratings



ULTIMA SOFT ™ 500 g | 1 kg

Roundness and aromatic persistance

Usable in BIO and NOP

Indicative dosage: 5 to 25 g/hL

ULTIMA SOFT ™ is a 100% soluble preparation of selected, instant action manno-proteins, that in particular improves the balance of wines and increase length in the mouth and roundness.
ULTIMA SOFT ™ provides better integration of the perceived acidity.

UltiMA : The art of balance

ULTIMA FRESH 500 g | 1 kg

Freshness, sweetness and length in the mouth

Usable in BIO and NOP

Indicative dosage: 5 to 25 g/hL

ULTIMA FRESH ™ is a 100% soluble preparation of selected, instant action manno-proteins, that, among others increases length in the mouth and roundness, while reducing bitterness for optimum balance.
ULTIMA FRESH ™ highlights the freshness of wines.

ULTIMA READY LIFE ™ 1 L | 5 L

Roundness and aromatic persistence

Usable in BIO

Indicative dosage: 20 to 150 mL/hL

ULTIMA READY LIFE ™ is a selected mannoprotein-based solution which in particular enhances integration of perceived acidity.
ULTIMA READY LIFE ™ also improves balance of wine, length in the mouth and roundness.
Some mannoproteins contribute to tartaric stabilisation of wines.
ULTIMA READY LIFE ™ can help bubbles last longer in sparkling wines.

ULTIMA READY EXPRESSION ™ 1 L | 5 L

Length, freshness and decrease of bitserness

Usable in BIO

Indicative dosage: 20 to 150 mL/hL

ULITMA READY EXPRESSION ™ is a selected mannoprotein based solution which highlights aromatic persistance, freshness and crispyness.
It also reduces significantly the feeling of bitterness and astringency.

ULTIMA READY FIZZ ™ 1L | 5L

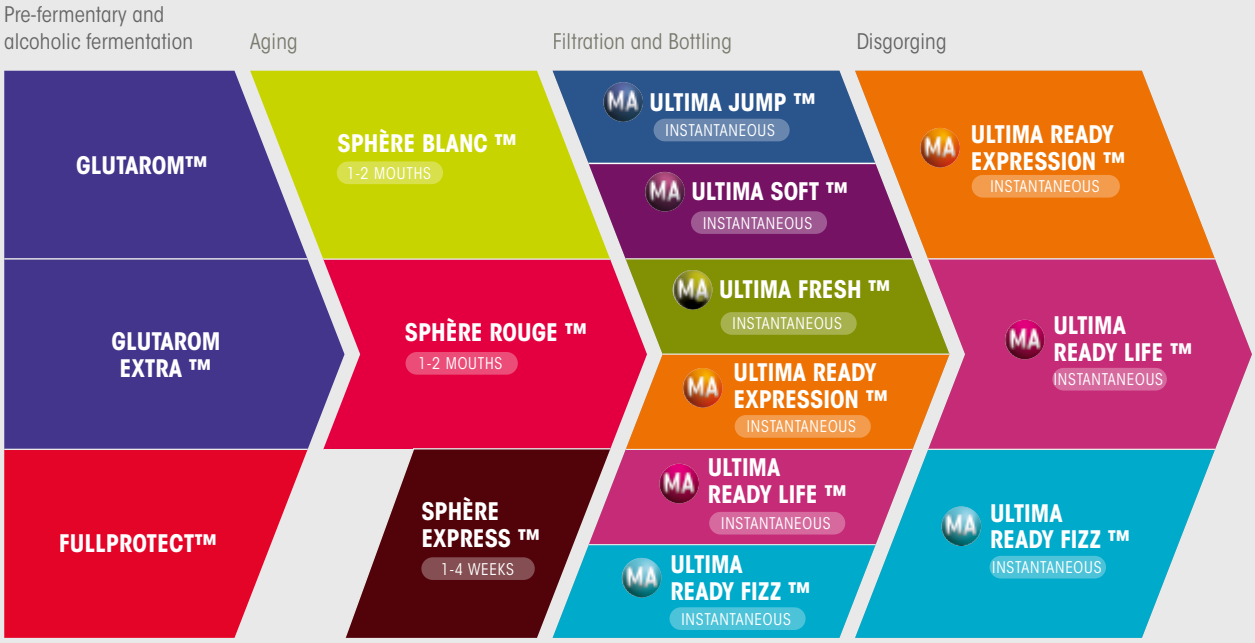
Usable in Bio

Indicative dosage: 50 to 200 mL/hL

Optimisation of the taste perception of sparkling wines made using the Charmat method

ULTIMA READY FIZZ ™ is a solution made with selected manno-proteins which balances out the creamy sensation and perception of freshness linked to the fizziness of wines made using the Charmat method. ULTIMA READY FIZZ ™ contributes to the mouthfeel flavour and long finish of these wines, limiting the aggressive taste of the bubbles and supporting the elegance of the fizz. It fully respects the expression and aromatic purity of wines produced in Charmat method. It can also help to stabilize the foam.

Yeast products : Preferential windows for action



Œnological enzymes

MYZYM

Accelerates, releases & brings out the difference!

IOC's MYZYM™ range is the answer to the winemaker's desire for solutions tailored to their needs.

Based on a study of users' expectations of winemaking enzymes and our vast winemaking experience, we created the MYZYM™ range on criteria of **quality, effectiveness and reliability**.

IOC first analysed and tested a set of raw materials and market formulations before going on to **rigorously select the most efficient materials** in line with market economic realities.

Attentive to facilitating the use of our enzymes, we propose micro-granulated formulations to limit powderiness, or ready-to-use liquid formulations.

MYZYM™ is a complete range offering solutions suitable for all applications and all conditions, tested and approved by the wine sector.

Clarification enzymes

Micro-granulated formulations

MYZYM CLARIF ™ 50 g | 250 g | 1 kg | 10 kg

Must clarification

Usable in BIO and NOP

Indicative dosage: 1 to 3 g/hL

MYZYM CLARIF ™ is a preparation of highly purified synergistic pectolytic enzymes that accelerate must decantation through pectin hydrolysis.

MYZYM ULTRA CLARIF ™ 50 g | 250 g | 1 kg | 10 kg

Must clarification under difficult conditions

Usable in BIO and NOP

Indicative dosage: 1 to 2 g/hL

Thanks to its particularly high endo-polygalacturonase activity, MYZYM ULTRA CLARIF ™ ensures extremely rapid hydrolysis of must pectins. Its activity remains high even in difficult conditions of use (low pH and low temperature).

MYZYM CLEAR ™ 100 g

Clarification of musts and botrytised wines, enhanced filterability

Usable in NOP

Indicative dosage: 1 to 3 g/hL

Optimised clarification: double pectolytic and glucanase activity to reduce polymers from grapes and *Botrytis*. MYZYM CLEAR ™ also triggers excellent sediment settlement and restores the aromatic sharpness of the musts. It is also particularly effective on juices containing large amounts of pulp, including grapes not affected by *Botrytis*.
Last, the yeasts also release glucans during their fermentation. MYZYM CLEAR ™ is also the recommended formulation to improve the filterability and clarification of wines post-fermentation.

Liquid formulations

MYZYM READY CLARIFICATION ™ 500 mL | 1 L | 10 L

Liquid formulation for must clarification under difficult conditions

Usable in BIO and NOP

Indicative dosage: 1 to 2 mL/hL

The very high concentration of pectinase activities allows rapid clarification and a decrease in sediment volume. It also reduces must viscosity while improving filterability of the wine.
Its liquid formulation makes it easy to use.

MYZYM READY EXTREM ™ 1 L | 10 L | 20 kg

Clarification under extreme conditions (cold, hot, highly-loaded juices)

Usable in BIO and NOP

Indicative dosage: 1 to 2 mL/hL

MYZYM READY EXTREM™ is a thermostable formulation that withstands high temperatures (<70°C) and actually takes advantage of them to increase activity. It is used earlier in the process for improved reactivity.
Its activity is also better preserved at the lowest temperatures (<8°C).

MYZYM READY'UP ™ 1 L | 10 L | 20 kg

Clarification in flotation

Usable in BIO and NOP

Indicative dosage: 2 to 3 mL/hL

The success of clarification through particle flotation relies largely on the low viscosity of the must. This can be obtained only through enzymatic hydrolysis of grape pectins.
MYZYM READY'UP ™ is a suspension of synergistic pectolytic enzymes (high pectin-esterase/polygalacturonase ratio) that accelerate the movement of sediment to the surface. Its liquid form makes it easy to use especially in large winemaking structures.

(2) Exclusively for clarifying.

Extraction and maceration enzymes

Enzymatic activities	Effect on must and wine
• Pectinelyase (PL) • Polygalacturonase (PG)	• Degrades pectins of the middle lamella and the primary wall • Promotes the release of tannins and anthocyanins in granular form inside the vacuole
• Glucanase • Hemicellulase	• Promotes the release of tannins bound to the cell wall • Promotes the extraction of aromatic precursors
• Glycosidases	**Hydrolysis of odourless aromatic precursors to odorous volatile substances** • Varietal aroma: key to the wine's aromatic profile and character • Enhances precursors of aromatic grape varieties: releases varietal aromas in varieties such as muscat, riesling, etc.

Micro-granulated formulations

MYZYM EXTRACT ™ 100 g | 250 g | 1 kg

Colour extraction and enhanced structure

Usable in Bio and NOP

Indicative dosage:
2 to 3 g/100 kg
of grapes 2 to 3 g/hL

MYZYM EXTRACT ™ is suitable for wine production from unripe black grapes with low extractability. It increases the yield of free-run juice, and improves colour (more intense and darker purple) and tannic structure.
It also allows a reduction in the frequency and intensity of mechanical actions and the risks of crushing.

MYZYM ULTRA EXTRACT ™ 100 g | 250 g

Colour extraction and enhanced structure under difficult conditions

Usable in Bio and NOP

Indicative dosage:
1 to 2 g/100 kg
of grapes or 1 to 2 g/hL

Thanks to its broad and active spectrum, MYZYM ULTRA EXTRACT ™ is the enzymatic formulation suitable for producing wines from high-potential black grapes. In this type of vintage, it stabilises colour quickly, and concentrates the structure while coating it thanks to the action of polysaccharides derived from hydrolysed pectins.
On less rich grapes, MYZYM ULTRA EXTRACT ™ intensifies colour and significantly increases tannins content, while limiting crushing and mechanical work required to extract them. This improves the free-run juice/press wine ratio, contributing to the overall quality of the wine obtained: more body on the palate, more colour, better structure but less astringency.

MYZYM MPF ™ 100 g | 1 kg

Extraction of colour and aromatic precursors in cold maceration

Usable in Bio and NOP

Indicative dosage:
1 to 3 g/100 kg
of grapes or 1 to 3 g/hL

MYZYM MPF ™ is an enzymatic preparation highly concentrated in pectolytic and secondary activities to compensate for the reduction in enzyme activity due to low temperatures.
For red winemaking, MYZYM MPF ™ promotes the rapid extraction of anthocyanins and aromatic potential when used during maceration.
For white winemaking, MYZYM MPF ™ improves the extraction of aromatic compounds and aromatic precursors in pellicular maceration.

(2) Exclusively for clarifying.

MYZYM WHITE FRUITS ™

100g | 250g | 1kg | 10kg

Usable in NOP

Indicative dosage:
1 to 3 g/100 kg
of grapes or 1 to 3 g/hL

Extraction and enhancement of aromatic precursors in white grapes

MYZYM WHITE FRUITS ™ is a formulation developed for the production of more aromatic white wines.
It allows the extraction of more varietal thiol precursors, which can then be revealed by the appropriate yeast.
MYZYM WHITE FRUITS ™ also makes it possible to obtain wines richer in aromatic terpenes.
MYZYM WHITE FRUITS ™ is used in pellicular maceration of white grapes, or during cold stabulation of juices with grape solids.

MYZYM RED FRUITS ™ 100g | 250g | 1kg

Usable in NOP

Indicative dosage:
1 to 2 g/100 kg
of grapes or 1 to 2 g/hL

Extraction and enhancement of aromatic precursors in red grapes

MYZYM RED FRUITS ™ is a formulation developed for the joint production of richness and fruity aromas from black grapes.
Its propensity to bring out compounds such as beta-damascenone enhances fruity aromas during alcoholic fermentation. MYZYM RED FRUITS ™ is used in traditional or pre-fermentation maceration and can also be used on rosé in the saignée method.

Liquid formulations

MYZYM READY PRESS ™ 1L | 20L

Usable in BIO (2) and NOP

Indicative dosage:
2 to 3 mL/100 kg
of grapes or 2 to 3 mL/hL

Pressing vintages used in making white and rosé wines

MYZYM READY PRESS ™ optimises filling of the press (especially if from a buffer tank) and increases juice yields. It reduces pressing cycles, facilitates the clarification of free-run juices and produces a drier marc.
MYZYM READY PRESS ™ limits phenolic extraction during pressing, increases the extraction of aromatic precursors and controls aromatic profiles.

MYZYM READY SPIRIT ™ 1L | 20L

Usable in BIO (2) and NOP

Indicative dosage:
1 to 3 mL/100 kg
of grapes or 1 to 3 mL/hL

Pressing of grapes used to produce spirits and to clarify juices used in other distilled products (low PME)

MYZYM READY SPIRIT ™ is a pectolytic enzyme preparation specially adapted for pressing vintages used in producing distillation wines and Cognac, in particular.
MYZYM READY SPIRIT ™ has a low pectinemethyl-esterase activity, limiting the release of methanol.
During pressing, it improves juice release and drainage, which increases the volumes of juice during pressing. When used on other products intended for distillation, MYZYM READY SPIRIT ™ accelerates juice clarification through the hydrolysis of soluble pectins.

(2) Exclusively for clarifying.

Stabilization and elevage enzymes

Enzymatic activities	Effect on must and wine
• Glycosidases	**Hydrolysis of odourless aromatic precursors to odorous volatile substances** • Varietal aroma: key to the wine's aromatic profile and character • Enhances precursors of aromatic grape varieties: releases varietal aromas of grape varieties such as muscat, riesling, etc.
• ß-glucanase	• Promotes yeast autolysis: increases the wine's body and richness • Promotes filterability in altered vintage conditions
• Lysozyme	**Inhibits gram-positive bacteria (lactic acid bacteria)** • Prevents lactic taint caused by stuck fermentation • Inhibits malolactic fermentation after alcoholic fermentation, stabilisation after malolactic fermentation before bottling

MYZYM CLEAR ™ 100 g

Wine clarification, enhanced filterability

Usable in NOP

Indicative dosage: 1 to 3 g/hL

The yeasts release glucans during fermentation. So, thanks to the synergy of its pectinase/beta-glucanase activities, MYZYM CLEAR ™ is the recommended formulation to improve wine filterability and clarification post-fermentation.

MYZYM ELEVAGE ™ 100 g

Increased richness and aromas through accelerated yeast autolysis

Usable in NOP

Indicative dosage: 1 to 3 g/hL

Preparation concentrated in beta (1.3 - 1.6) glucanase activity, contributing to the release of the parietal compounds of yeast responsible for fullness and flavours while reducing the duration of ageing on the lees. MYZYM ELEVAGE ™ reduces wine viscosity and helps improve filterability.

MYZYM AROMA ™ 100 g

Brings out varietal aromas from precursors

Usable in NOP

Indicative dosage: 2 to 5 g/hL

MYZYM AROMA ™ creates wines richer in aromatic terpenes, through hydrolysis of their glycosylated precursors to active aromas. These terpenes increase wines' overall fruitiness.

LACTOLYSE™ 500 g

Prevents lactic taint and inhibits malolactic fermentation

Indicative dosage: 10 to 50 g/hL

LACTOLYSE™ (lysozyme) can be used on white or rosé wines to inhibit malolactic fermentation (MLF), or in red wines to delay it (e.g. in the case of carbonic maceration). It also controls microbiological risks:

1. In the case of stuck fermentation, LACTOLYSE™ blocks the development of lactic acid bacteria to prevent lactic taint. Alcoholic fermentation can then be restarted with the preparation of a starter.
2. LACTOLYSE™ is used for prevention, when the winemaking method used is conducive to increased volatile acidity. The addition of lysozyme on marc significantly reduces the final volatile acidity.
3. After MLF, LACTOLYSE™ also reduces bacterial activity and thus the risk of production of biogenic amines, negative sulphur compounds and acetic acid.

(2) Exclusively for clarifying.

Summary

Pre-fermentation operations – Clarification

		MYZYM Clarif ™	MYZYM Ultra Clarif ™	MYZYM Ready Clarification ™	MYZYM Clear ™	MYZYM Ready Extrem ™	MYZYM Ready'Up ™	MYZYM Ready Spirit ™
Wine colour		● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	● ● ●	●
Formulation*		MG	MG	💧	MG	💧	💧	💧
Bio ○ **NOP**		● ○	● ○	● ○	○	● ○	● ○	● ○
Vinification status	Clarification via settling	✓	✓	✓	✓	✓		✓
	Clarification via flotation						✓	
Conditions	Normal	✓						
	Normal to difficult		✓	✓			✓	✓
	Very difficult (*Botrytis*, filterability)				✓	✓		
	Extreme (cold, hot)					✓		
Gain	Juice/sediment ratio	●	● ●	●	● ●	● ●	● ●	●
	Time	● ●	● ●	● ● ●	● ●	● ● ●	● ●	● ●
	Filterability	●	●	●	● ● ●	● ●	●	●
Activities	Primary	Pectinase	Pectinase	Pectinase	Pectinase ß-glucanase	Pectinase	Pectinase	Pectinase
	Secondary					Hemicellulase		
Indicative dosage		1 to 3 g/hL	1 to 2 g/hL	1 to 2 mL/hL	1 to 3 g/hL	1 to 2 mL/hL	2 to 3 mL/hL	1 to 3 mL/hL
Packaging		50 g - 250 g 1 kg - 10 kg 20 kg	50 g - 250 g 1 kg - 10 kg	500 mL 1 L - 10 L	100 g	1 L - 10 L 20 kg	1 L - 10 L 20 kg	1 L

MG : micro granule. 💧 : liquid.

Pre-fermentation operations - Extraction/Maceration

		MYZYM Ready Press ™	MYZYM MPF ™	MYZYM Extract ™	MYZYM Ultra Extract ™	MYZYM Red Fruits ™	MYZYM White Fruits ™
Wine colour		●●	●●	●	●	●●	●●
Formulation*		💧	MG	MG	MG	MG	MG
● Bio ○ NOP		○	○	○	○	○	○
Vinification status	Pressing	✓					
	Skin maceration		✓				✓
	Maceration/ Extraction		✓	✓	✓	✓	✓
Conditions	Normal	✓	✓	✓		✓	✓
	Difficult	✓	✓		✓	✓	
Gain	Juice/sediment ratio	●●	●●	●	●●	●●	●●
	Filterability	●	●	●	●	●	●
	Full-bodiedness / structure		●	●●	●●●	●●●	●●●
	Color		●●●	●	●●●	●	●
	Aromas		●●		●	●●●	●●●
Key activities	Primary	Pectinase	Pectinase	Pectinase	Pectinase	Pectinase Glycosidase (including ara-binofuranosidase)	Pectinase ß-glucosidase
	Secondary	Hemicellulase	Cellulase and hemicellulase	Cellulase and hemicellulase	Cellulase and hemicellulase	Cellulase and hemicellulase	Cellulase and hemicellulase
Indicative dosage		2 to 3 mL/hL	1 to 3 g/hL	2 to 3 g/hL	1 to 2 g/hL	1 to 2 g/hL	1 to 3 g/hL
Packaging		1 L - 20 L	100 g - 1 kg	100 g - 250 g 1 kg - 10 kg	100 g - 250 g	100 g 250 g - 1 kg	100 g - 250 g 1 kg - 10 kg

MG : micro granule. 💧 : liquid.

Post-fermentation operations - Ageing

		MYZYM Élevage ™	MYZYM Aroma ™
Wine colour		● ● ●	●
Formulation		MG	MG
● **Bio** ○ **NOP**		○	○
Gain	Filterability	● ● ●	
	Structure	● ● ●	
	Aromas	●	● ● ●
Activities	Primary	ß-glucanase	ß-glucosidase
Indicative dosage		1 to 3 g/hL	2 to 5 g/hL
Indicative time of activity		2 to 6 weeks	3 to 6 weeks
Packaging		100 g	100 g

MG : micro-granule.

Bacteria

Once considered a secondary phase of winemaking, malolactic fermentation (MLF) has long been left up to chance. Today its impacts and importance, which extend far beyond the simple transformation of malic acid into lactic acid, are known and recognised. It is an essential step in the winemaking and ageing process, determining the rapid availability of wine and the organisation of work in the winery and guaranteeing the quality and personality of the wine.

Choose the most suitable bacteria for your purposes with our online decision support tool:

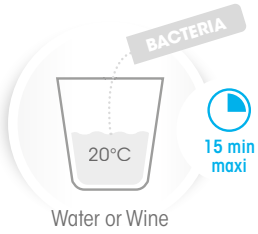
Types of inoculation

The variety of bacterial preparations proposed by IOC meet the technical and economic requirements of each winemaker.

Direct inoculation*

MBR process direct inoculation

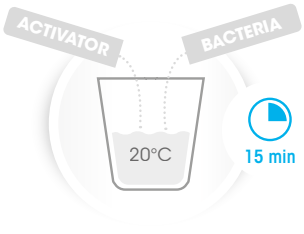
- EXTRAFLORE CO-IN' ™
- EXTRAFLORE COMPLEXITY ™
- EXTRAFLORE PURE FRUIT ™



Inoculation with 1 acclimatisation step

1STEP

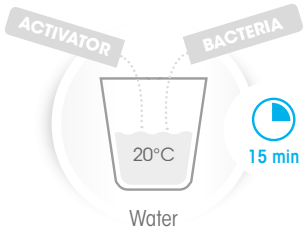
- MAXIFLORE ELITE ™
- MAXIFLORE SATINE ™

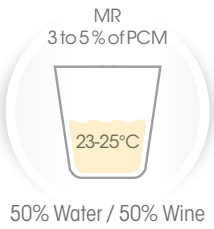


Inoculation with 1 reactivation phase and 1 starter phase

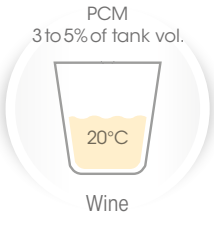
Standard

- INOBACTER™





MALIC = 0



2 / 3 MLF

* Prior resuspension is preferable to ensure good dispersion in the wine, but direct inoculation of the vat is also possible with good homogenisation.

Extraflore™ range

MBR process direct inoculation

- Simplicity: direct inoculation without acclimatisation

EXTRAFLORE CO-IN' ™

Inoculation doses: 25 hL | 250 hL

MBR process direct inoculation — Usable in Bio and NOP

Obtain fruity wines in co-inoculation

EXTRAFLORE CO-IN' ™ is particularly well suited for yeast/bacteria co-inoculation, cases in which its kinetic activity is one of the most effective. In addition, when used in this context, EXTRAFLORE CO-IN' ™ produces a very low diacetyl level (masks buttery/milky flavours) and helps bring out and preserve fruity aromas, particularly esters. It is undoubtedly the best co-inoculation bacterium for fruity wine.

EXTRAFLORE COMPLEXITY ™

Inoculation doses: 2,5 hL | 25 hL | 250 hL

MBR process direct inoculation — Usable in Bio and NOP

Controlling malolactic fermentation and the sensory complexity of wines

Contributing to the spicy, aromatic herb, ripe fruit and fresh buttery notes, EXTRAFLORE COMPLEXITY ™ promotes wine's aromatic complexity while highlighting structure on the palate. It is particularly suitable for white wines with nutty aromas (hazelnut, almond, etc.) and red wines with a high-quality tannic content.
EXTRAFLORE COMPLEXITY ™ is recommended primarily for use just after or at the end of alcoholic fermentation rather than in co-inoculation.

EXTRAFLORE PURE FRUIT ™

Inoculation doses: 25 hL | 100 hL

MBR process direct inoculation — Usable in Bio and NOP

Pure fruity notes and control of malolactic fermentation under difficult conditions

EXTRAFLORE PURE FRUIT ™ is a malolactic bacterium selected for red wine in collaboration with the microbiology laboratory of the CIVC, "Direction Qualité et Développement Durable", for the induction of malolactic fermentation. It is very robust under limiting vinification conditions (high alcohol content, strong acidity or very weak malic acid, low temperatures) so it is suitable for wines of very diverse types and origins.
With its very low diacetyl production and its specific aromatic contribution, EXTRAFLORE PURE FRUIT ™ promotes the purity of wines' fruity profile and contributes to their fullness.

Maxiflore™ range

1-STEP®

- Adaptation as close as possible to the unique characteristics of each wine
- Inoculation after short 24-hour reacclimatisation

MAXIFLORE ELITE ™

Inoculation doses: 25 hL | 100 hL | 500 hL

1-STEP® — Usable in Bio and NOP

Contributes to the structure and balance between ripe fruit and spice notes

On red wines, MAXIFLORE ELITE ™ helps increase the sensation of structure and body on the palate while highlighting the spice and menthol aromas that balance the notes of ripe fruits that it reveals. On white wine, it can strengthen nutty notes.
Combining the effectiveness of 1-Step® acclimatisation with its own resistance to low pH, low temperatures, SO_2 and high alcohol content, MAXIFLORE ELITE ™ is an ally of choice to protect your malolactic fermentations. It is used preferably in early inoculation (at 2/3 of alcoholic fermentation) and in sequential inoculation (after alcoholic fermentation).

MAXIFLORE SATINE ™

Inoculation doses: 25 hL | 100 hL

Reduces astringency and prevents buttery aromas

MAXIFLORE SATINE ™ is the very robust bacterium recommended for the fermentation of wines made from very ripe grapes. Its talents go beyond this, as it is able to produce only a very small amount of diacetyl. This is how MAXIFLORE SATINE ™ preserves the aromatic purity of wines by strongly limiting the preponderance of buttery notes.
In many field trials, MAXIFLORE SATINE ™ has also proved its propensity to reduce astringency and bitterness while contributing to wines' body on the palate.

Progressive reacclimatisation

- The safe reference for acid wines.

INOBACTER™

Inoculation doses : 25 hL | 100 hL | 500 hL | 1 000 hL | 2000 hL

Malolactic fermentation for wines and musts with very low pH

Selected for the quality of its overall performance and for its ability to conduct malolactic fermentation in the most acidic wines.
The INOBACTER™ strain is remarkable for its resistance to low pH and its high malolactic activity. Its use requires preparation of a starter culture.

Clarification
Fining of musts

Pre- and post-fermentation stages

To obtain better oxidative resistance for future wines, acting upstream in the process, after pressing, during the pre-fermentation phase is essential. Oxygen is a fundamental parameter at the source of oxidation processes. A controlled addition in the juices can be beneficial in precipitating unstable phenolic compounds but our experience shows us that this technique leads to wines with less finesse and elegance. Nevertheless, several works show that musts fining limits oxidability and produces fresher and fruitier white and rosé wines.

The process is carried out when juices are clarified, by static settling or nitrogen flotation.

This enables part of the oxidisable compounds, the phenol acids, to be removed and concentration of oxide compounds, quinones to be reduced in musts and wines. These oxidation products cause the yellow/brown colour and are aroma "traps", diminishing the aromatic potential of wines rich in thiols. Fining is not just a process for reducing oxidation substrate levels, ortho-diphenols and catechines, it also reduces turbidity, which makes it possible to direct the aromatic profile of wines. At the same time as this clarification, there is a process of early colloidal stabilisation and preservation of the resultant clarity over time.

Fining brings into play attractive and repulsive forces in line with the electrical charge of molecules. The potential of efficacy for a fining product or its affinity to react with molecules to be removed depends on charge density.

In our R&D department, we study each fining agent using the TurbiscanR apparatus which enables us to monitor the transmission or evolution of the clarity of wine that has undergone a fining process over time.

Bentonites

Native in grapes, proteins in white and rosé wines can, when subject to heat, cause cloudiness in bottles. This protein cloudiness brings about the formation of a haze that is detrimental when marketing wines. Using a clay, bentonite, belonging to the family of Montmorillonites, obviates this risk. Elevage and stirring the lees at the end of alcoholic fermentation reduces protein instability in wines but using bentonite is the only effective treatment against protein haze. Macromolecules consisting of amino acids, proteins are positively charged at the pH of the wine. They will interact with bentonite which, placed in suspension, has negatively-charged particles, to form a cloud. The density of the new particles formed is superior to that of the wine and the particles precipitate: this process of sedimentation produces clarification. Several laboratory tests are used to assess, prior to bottling, the risk of protein haze formation. The most common is the heat test which consists in measuring the difference in turbidity after the wine has been heated to 80°C for 30 minutes. The wine is stable if delta is inferior to 2 NTU.

From a practical point of view, the greater the capacity of a bentonite to swell in water, the more efficient it will be in eliminating proteins. There are various bentonites on the market:

Natural bentonites

- **Sodium bentonite**, the majority exchangeable cation is sodium, which is very reactive and has good capacity for swelling and adsorbing proteins.
- **Calcium bentonite**, the majority exchangeable cation is calcium, which has low capacity for swelling and adsorbing proteins. Nevertheless, it is very efficient for packing down lees.

Activated bentonites

In order to enhance adsorption properties, these bentonites, initially calcium, undergo activation by sodium carbonate or sodium hydroxide, producing activated **calcium-sodium or sodium** bentonites (depending on the proportion of sodium ion), that are very reactive and have a high swelling rate. Their activity is equal or superior to that of sodium bentonites but is not as stable over time.

+ DEPROTEINISING

BENTOSTAB GRANULÉS ™ 1 kg | 5 kg | 25 kg

Activated sodium bentonite, with high deproteinising power

Usable in Bio

Indicative dosage: 20 to 100 g/hL

The fine particle size of BENTOSTAB GRANULÉS ™ gives it optimum swelling capacity in water and good ability to remove particles. Given its high deproteinising power, BENTOSTAB GRANULÉS ™ is efficient at low dosages. Its granulated form ensures that it is very easy-to-use. BENTOSTAB GRANULÉS ™ has been selected for its capacity to preserve the organoleptic and sensory characteristics of musts and wines.

BENTOSTAB POUDRE ™ 1 kg | 5 kg | 25 kg

Activated sodium bentonite, with high deproteinising power

Usable in Bio

Indicative dosage: 20 to 100 g/hL

In powder-form, this bentonite has similar characteristics to BENTOSTAB GRANULÉS ™.

INOBENT™ 1 kg | 25 kg

Clarifying, activated calcium-sodium bentonite, with low deproteinising power

Usable in Bio

Indicative dosage: 20 to 100 g/hL

A good flocculating agent which facilitates lees sedimentation at the end of alcoholic fermentation. It has low deproteinising power, does not remove elements required for a second alcoholic fermentation and helps towards better bubbling. INOBENT™ contributes towards removing unstable colouring material and is ideal for early release of red wines.

BENTONITE L100 ™ 10 L | 1 000 L

Solution of activated sodium bentonite, 10% concentrated, for clarification. Deproteinising action

Usable in Bio

Indicative dosage: 20 to 100 g/hL

Its liquid form makes it easy-to-use.

+ CLARIFYING

INOBENT NAT ™ 25 kg

Inactivated, natural sodium-calcium bentonite, dedicated to clarification of musts and wines

Usable in Bio and NOP

Indicative dosage: 20 to 100 g/hL

Comes in granulated form for highly efficient dispersion. INOBENT NAT ™ has excellent properties for clarifying and ensuring that lees settles properly. INOBENT NAT ™ interacts with proteins for optimum colloidal stabilisation in white and rosé wines.

Flotation

GEL'UP™ 15 kg

A porcine gelatin (Bloom degree: 80-100) hot-soluble for clarifying must by flotation

Usable in Bio and NOP

Indicative dosage: 3 to 15 g/hL

Made up of slightly degraded proteins, GEL'UP™ is a gelatin with a high molecular weight and average surface charge density. It ensures compact sedimentation and excellent clarification.

BENT'UP™ 15 kg

Activated sodium bentonite, powder formulation specific for flotation

Usable in Bio

Indicative dosage: 10 to 20 g/hL

A selected bentonite, BENT'UP™ has excellent capacities for improving clarification of musts and brings about excellent cap compacting of sediments, for a good level of juice when settling or racking musts.
Removes thermosensitive proteins. It is strongly recommended if carbons are used, and takes up all "black" particles in suspension.

Qi UP XC ™ 1 kg | 15 kg

Clarification and oxydative protection of musts during flotation

Usable in Bio

Indicative dosage: 2 to 10 g/hL

Unique and innovative, QI UP XC ™ is a fining agent for flotation made up of chitosan. Due to its high charge density (superior to that of gelatine), Qi UP XC ™ is an extremely efficient product for clarifying musts. Its swift action and affinity for oxidisable and oxidised polyphenols is remarkable for all types of must flotation. Qi UP XC ™ helps preserve all organoleptic qualities of musts and enhances the fruity freshness of wines.

Qi UP XC ™ MES 10L

Liquid solution of QI UP XC ™ with 10% concentration, a fining aid for flotation

Usable in Bio

Indicative dosage: 2 to 10 cL/hL

A solution of chitosan placed in colloidal suspension in tartaric acid. Its liquid form makes it easy-to-use.

Antioxidant treatment

CASEINATE DE POTASSIUM 1 kg | 5 kg | 20 kg

Usable in Bio

Indicative dosage: 10 to 80 g/hL

POTASSIUM CASEINATE is a preventive treatment for all forms of oxidation and maderisation of white and rosé wines. As a by-product of skimmed milk, it has particular affinity for oxidised polyphenols which are responsible for the brown colour.

PVPP POUDRE 1 kg | 19,96 kg

Indicative dosage: 10 to 70 g/hL

Polyvinylpolypyrrolidone, commonly known as PVPP, is an organic synthetic polymer. It is used for fining musts of white or rosé wines and provides a treatment for oxidative haze. PVPP POUDRE selectively removes oxidisable and oxidised phenolic compounds. At an organoleptic level, there is a reduction in bitterness and astringency in some tannins which helps improve the sensory and taste profile of wines.

PVPP GRANULÉS 1 kg | 19,96 kg

Indicative dosage: 10 to 70 g/hL

Formulated with cellulose, PVPP GRANULÉS has a great affinity for polyphenols. Less powdery, its granulated form makes it very easy-to-use.

TRAP'METALS™ 1 kg

Indicative dosage: 20 to 80 g/hL

Reduction of metal content in musts and wines

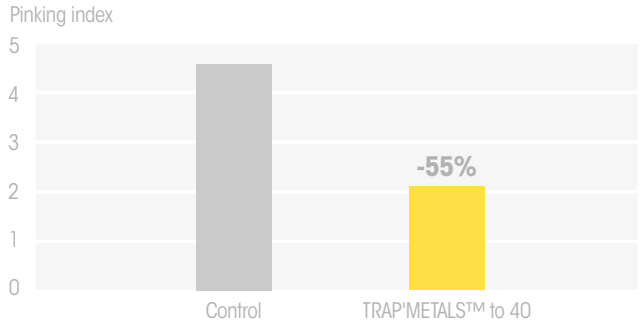
Complex formulation combining PVI/PVP, yeast cell wall and chitosan, TRAP'METALS™ limits oxidation reactions by eliminating copper and iron which are catalysts of oxidation. By trapping iron in wines, it limits the risk of ferric haze. It can be used on musts during the settling process to reduce levels of copper which disrupts alcoholic fermentations and impairs thiols.
TRAP'METALS™ is efficient in reducing the sensitivity of white wines to pinking.

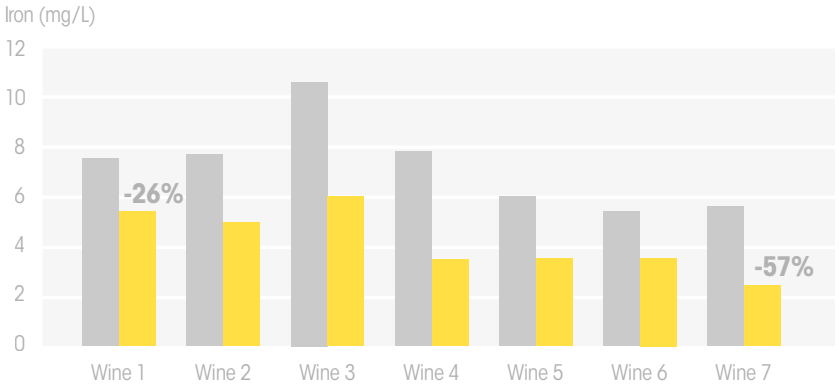
Sensibility of wines to pinking

Preventive treatment of an Alto Adige Yellow Muscat wine from Italy

Pinking of white wines or "oxidative pinking" is characterised by the tendency of white wine to take on pink-grey tones. White wines rich in polyphenols and controlled oxidation are root causes of this phenomenon.

The "pinking index" test makes it possible to evaluate the wine's sensitivity early on. TRAP'METALS™ at 40 g/hL makes it possible to reduce such sensitivity by 50%.





Trapping iron in grenache rosé wines

Curative treatment of a Grenache rosé wine (Languedoc Roussillon 2019)

TRAP'METALS™ reduces iron concentration in wines by 25 to 50%. Rosé wines are highly clarified, and have an attractive pale pink colour. They are clearer and fruitier, and the metallic end note on the palate has disappeared.

T0
Ap. TRAP'METALS™ 60 g/hL

FRESHPROTECT™ 1 kg | 5 kg | 20 kg

Indicative dosage: 20 to 100 g/hL

Preventive and curative treatment of oxidative haze, decrease of bitterness and herbaceous notes

A non-allergenic, complex preparation combining bentonite, PVPP, cellulose and arabic gum. Beyond its antioxidant action, FRESHPROTECT™ permits to reduce the level of protein instability in musts while preserving the organoleptic qualities of the must or wine.

COLORPROTECT V ™

1 kg | 5 kg | 15 kg

Indicative dosage: 20 to 80 g/hL

Limits the phenomenon of juice browning and reduces the sensitivity of wines to pinking

The synergic effect of bentonite, PVPP and pea protein reduces the level of oxidisable and oxidised phenolic compounds of musts while softens bitterness. COLORPROTECT V ™ reduces the level of protein instability in musts. Can be used in flotation.

Fining in must in a Chardonnay cuvée (base wine):
Left: COLORPROTECT V ™ 30 g/hL
Right: Fining agent A 30 g/hL

COLORPROTECT V MES ™ 10L

Indicative dosage: 20 to 80 cL/hL

Liquid solution of COLORPROTECT V ™ with 10% concentration, for preventive and curative treatment of oxidation

Solution of bentonite, PVPP and pea protein. Its liquid form makes it easy-to-use.

POLYOXYL™ 1 kg | 5 kg | 20 kg

Indicative dosage: 20 to 70 g/hL

Clarification and deproteinization, reduction of herbaceous and bitter sensations

Non-allergenic preparation combining bentonite and PVPP. POLYOXYL™ enhances the taste profile of wines, for harvests affected by botrytis or mildew, or delicate pressings (high-pressure pressings, "taille"...).

POLYOXYL L 100 ™ 10 L | 1 000 L

Indicative dosage: 20 to 70 cL/hL

Liquid solution of POLYOXYL™ with 10% concentration, for cleaning musts from affected harvests

The liquid solution of bentonite and PVPP makes it easy-to-use.

BENTOLACT S ™ 1 kg | 5 kg | 25 kg

Indicative dosage: 40 to 200 g/hL

High clarifying power combined with anti-oxidant properties

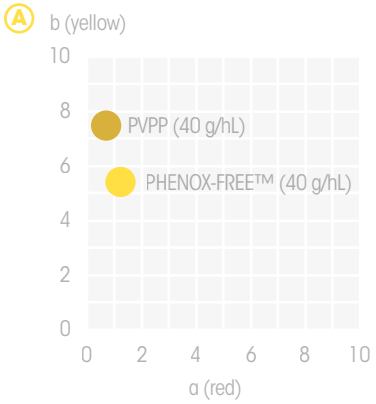
Formulation made-up from selected bentonite and potassium caseinate. BENTOLACT S ™ prevents oxidation phenomena by reducing oxidised polyphenol concentration, responsible for brown haze in musts and wines.

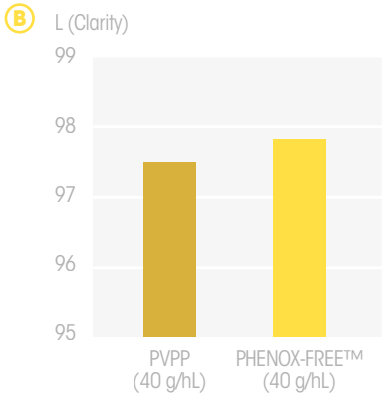
PHENOX-FREE™ 1 kg | 15 kg NEW

Indicative dosage: 20 to 60 g/hL

Fights oxidation of white and rosé musts, corrects colour, bitterness and dryness

PHENOX-FREE™ allows a reduction in PVPP use thanks to its mixed formulation based on specific inactive yeasts and PVPP. Used in preventive treatment on white and rosé musts, it improves colour, taste perception (less bitterness and dryness on the palate, contributes to roundness) and preserves oxidation aromas.





A Colour coordinates a* and b* (corrected) of bottled wines
Grenache rosé - Provence 2020

B L* clarity of bottled wines
Grenache rosé - Provence 2020

Trials conducted during 2020 and 2021 harvest in several regions (Provence, Bordeaux, Gard and Roussillon): the colour characteristics (L*, a*, b*) are at least similar and often better than those in the method treated with PVPP.

New societal and regulatory trends mean that certain fining substances, produced using synthetic chemistry, allergens and/or of animal origin are today decried and withdrawn from the winemaking process. As producers of œnological substances, we have to think about and come up with innovative alternative solutions. This reflection led to the study of new finings, of vegetal origin, that could be integrated into "VEGAN" winemaking processes.

INOFINE V ™ 1kg | 5kg | 15kg

Usable in Bio (1) and NoP

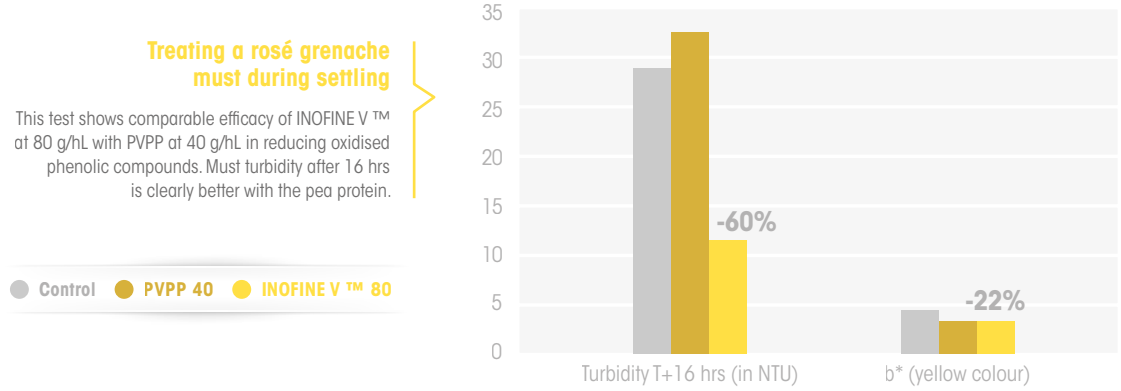
Indicative dosage: 10 to 50 g/hL

An allergen-free vegetal protein, designed to fight oxidation of musts and wines

INOFINE V ™ is a pea protein specifically selected for its high reactivity with oxidised and oxidisable phenolic compounds. Its efficacy in flocculating with suspended materials makes it a highly efficient fining agent when it comes to reducing turbidity in musts. It makes it possible to fine-tune the organoleptic qualities of must by reducing the sensation of bitterness and vegetal or herbaceous notes generated by oxidative haze ("phenolic" aromatic profile of musts).
Can be used in flotation.

Treating a rosé grenache must during settling

This test shows comparable efficacy of INOFINE V ™ at 80 g/hL with PVPP at 40 g/hL in reducing oxidised phenolic compounds. Must turbidity after 16 hrs is clearly better with the pea protein.



INOFINE V MES ™ 10L | 22kg | 1 000kg

Usable in Bio (1)

Indicative dosage: 10 to 50 cL/hL

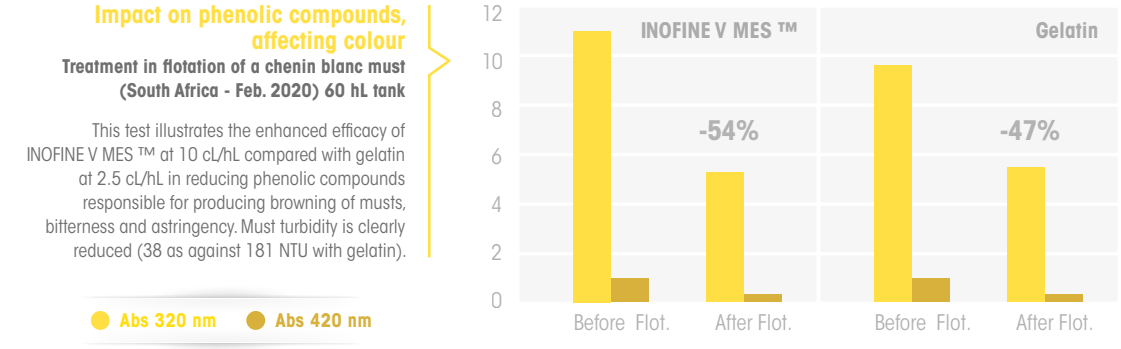
Liquid solution of INOFINE V ™ with 10% concentration, designed to fight oxidation phenomena in musts and wines

Pea protein solution placed in colloidal suspension in tartaric acid. Its liquid form makes it easy-to-use. Usable for flotation.

Impact on phenolic compounds, affecting colour

Treatment in flotation of a chenin blanc must (South Africa - Feb. 2020) 60 hL tank

This test illustrates the enhanced efficacy of INOFINE V MES ™ at 10 cL/hL compared with gelatin at 2.5 cL/hL in reducing phenolic compounds responsible for producing browning of musts, bitterness and astringency. Must turbidity is clearly reduced (38 as against 181 NTU with gelatin).



(1) Made from organic matter if available.

The Qi range

Since 2009, our R&D department has been developing new fining agent of fungal origin, using chitosan coming from the *"Aspergillus Niger"* fungus. This source, as well as more recently *"Agaricus Bisporus"*, are today the only two authorized in oenology. This is a natural polymer of the polysaccharide family, such as cellulose or starch. Chitosan used for fining applications, with maximum authorized dosage of 100 g/hL, has a chemical configuration, a degree of acetylation and a molecular weight **different to that used for anti-microbiological purposes**.

Chitosan has interesting fining properties for phenol acids, precursors of quinones. In addition to its chelating property where iron and copper are concerned (metals of transition and catalysts of oxidation), it reacts chemically with free radicals to trap and neutralise them (A.Castro Marin et al.2019).

2012

Preventive and curative action against oxidation

Pea protein, Bentonite, Chitosan

2018

Clarification and protection against must oxidation during flotation

Chitosan, Tartaric acid

2019

Improved colour and flavour

Pea protein, Tartaric acid, Chitosan

2020

Trapping metals in wine

PVI-PVP, Chitosan, Yeast cell walls

2022

QI SMOKE ™

Correction of smoky flavours

Chitosan, Charcoal

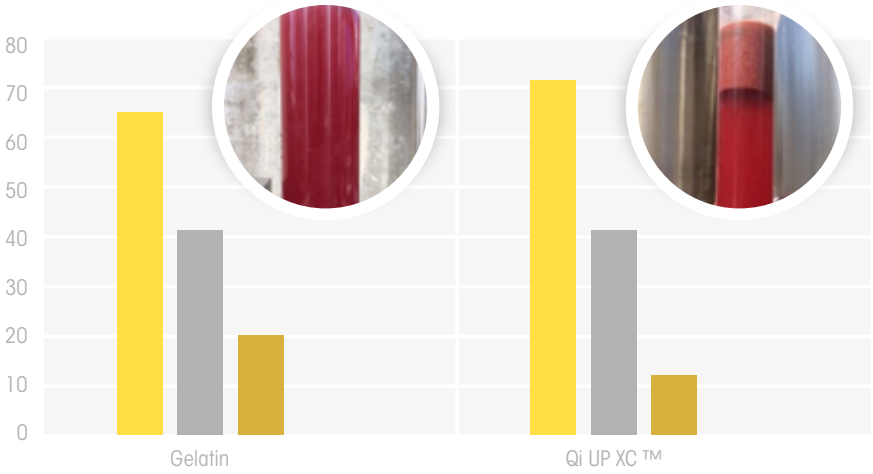
Qi UP XC ™ 1kg | 15kg

Usable in Bio

Indicative dosage: 2 to 10 g/hL

Clarification and oxydative protection of musts during flotation

Unique and innovative, QI UP XC ™ is a fining agent for flotation made up of chitosan. Due to its high charge density (superior to that of gelatine), Qi UP XC ™ is an extremely efficient product for clarifying musts. Its swift action and affinity for oxidisable and oxidised polyphenols is remarkable for all types of must flotation. Qi UP XC ™ helps preserve all organoleptic qualities of musts and enhances the fruity freshness of wines.



Evolution of chromatic index after flotation

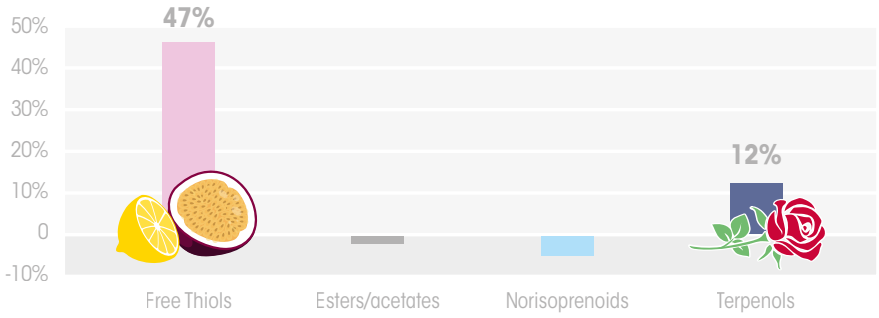
Treatment in flotation of a Cinsault rosé must (Languedoc - Sep. 2018) 250 hL tank

This test illustrates the excellent efficacy of the formulated chitin by-product, Qi UP XC ™ at 5 g/hL compared to gelatin at 10 g/hL in reducing the value of the yellow component b* by approximately 35%. Qi UP XC ™ interacts with oxidisable polyphenols preventing oxidation and consequently browning of the must.

L* a* b*

Preservation and aromatic optimisation

Qi UP XC ™ optimises the aromatic profile of rosé wine, with more than 40% in free thiols against the control treated with pea protein. In tasting, the wine treated with Qi UP XC ™ is seen as fresher, with intense citric notes. The control is seen as having heavier aromas and notes of overripe wild strawberries.



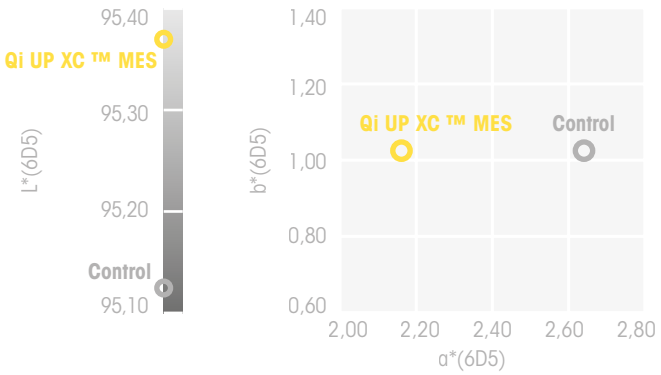
Qi UP XC ™ MES 10L

Usable in Bio

Indicative dosage: 2 to 10 cL/hL

Liquid solution of QI UP XC ™ with 10% concentration, a fining aid for flotation

A solution of chitosan placed in colloidal suspension in tartaric acid. Its liquid form makes it easy-to-use.



Treatment in flotation of a Cinsault rosé must (Languedoc - Sep. 2019) 250 hL tank

This test shows the excellent efficacy of Qi UP XC ™ at 10 cL/hL compared with pea protein at 20 cL/hL in reducing the value of the red component a* at the end of AF, by approximately 10%.

Qi FINE ™ 1kg | 15kg

Usable in Bio(1)

Indicative dosage: 10 to 50 g/hL

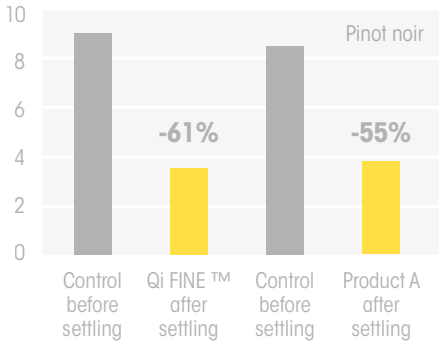
A preventive and curative way to enhance colours and taste sensations

The synergy of chitosan with pea protein, specifically selected, makes it possible to act over a wide spectrum. Its reactivity with phenol acids helps correct the brown colour of musts, reduce bitterness and astringency, as well as reduce the "phenolic" taste sensation of certain tannins. Usable in flotation and for fining finished wines, it improves filterability and colloidal stability.

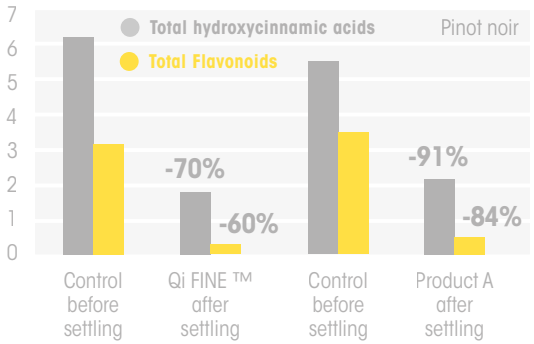
Fining in must of a pinot noir cuvée

Qi FINE ™ 30 g/hL | Fining agent A 30 g/hL

Impact on phenolic compounds, affecting colour (total Abs 320 & 420 nm)



The evolution of flavonoids and hydroxycinnamic acids after flotation (Astringency, bitterness and yellow colour)



Treatment during settling of a must of pinot noir cuvée (South Africa - Feb. 2020) 60 hL tank

This test illustrates the enhanced efficacy of Qi FINE ™ at 30 g/hL compared to the competitor's product A in reducing phenolic compounds which cause browning of musts, bitterness and astringency. Must turbidity is also reduced (29 as against 45 NTU with product A).

Qi FINE ™ MES 10kg

Usable in Bio(1)

Indicative dosage: 10 to 50 cL/hL

10%-concentrated liquid solution of QI FINE ™, for treating musts to enhance colours and taste sensations

Solution of chitosan and pea protein placed in colloidal suspension in tartaric acid. Its liquid form makes it easy-to-use.

Qi No[Ox] ™ 1kg | 5kg | 15kg

Usable in Bio(1)

Indicative dosage: 20 to 80 cL/hL

Reducing colour development and oxidation-linked defects

A complex preparation made up of chitosan, pea protein and selected, ultra-filtering bentonite. Used on must, Qi No[Ox]™ softens organoleptic defects by eliminating bitterness and oxidative notes, while preserving sensory and taste properties. In finished wines, it efficiently struggle against oxidative excesses. It provides renewed freshness and revives the colour of oxidised wines.

(1) From organic substances if available.

Riddling aids

INOCLAIR 2 ™ Powder : 1 kg | Liquid : 1 L | 10L

Indicative dosage: 3 to 4 g/hL or 7 to 9 cL/hL

Reduces riddling time when using the traditional method

Particularly well-suited for automatic riddling, thus time-saving. It can also be used in manual riddling. Compatible with all types of yeasts, it forms a non-stick sediment that slides easily. INOCLAIR 2 ™ also comes in liquid form for ease-of-use.

CLARIFIANT BK ™ 1 kg

Indicative dosage: 4,8 g/hL

Respects bubble strenght and finesse

CLARIFIANT BK ™ facilitates sedimentation of yeasts into a compact deposit. It is made up of low-power deproteinising bentonite and kaolin for a non-stick sediment. This selection has been made to respect the behaviour and finesse of bubbles.

CLARIFIANT NAT ™ 10L NEW

Usable in Bio and NOP

Indicative dosage: 8 to 10 cL/hL

Riddling adjuvant for traditional winemaking methods according to ORGANIC and NOP standards

CLARIFIANT NAT ™ is made of non-activated bentonite. It is an adjuvant with a good adsorption capacity and compacts well—thanks to the absence of bentonite activation—resulting in a smaller volume of sediment than most other adjuvants.

CLARIFIANT S ™ 1 L | 5L | 10L

Usable in Bio

Indicative dosage: 8 cL/hL

Facilitates riddling when using the traditional method

Combined with PHOSPHATES MAZURE ™, CLARIFIANT S ™ is IOC's benchmark riddling aid. Robust and multi-purpose, CLARIFIANT S ™ is suitable for all types of wine and various riddling methods. It perfectly respects the profile of base wines.

CLARIFIANT XL ™ 1 L | 5L | 10L

Indicative dosage: 7 to 8 cL/hL

Optimizes riddling when using the traditional method

CLARIFIANT XL ™ is an optimised riddling aid, made up of a pure bentonite and a silicate producing excellent compaction of the sediment. This combination provides a high level of clarification and sedimentation which is particularly efficient in the case of difficult riddlings. No other co-adjuvant is required for the riddling operation.
CLARIFIANT XL ™ provides a compact, non-stick and easy-to-remove sediment. Wine clarity is enhanced, making it perfectly bright after riddling.

PHOSPHATES MAZURE ™ 1 L | 5L | 10L

Indicative dosage: 2 to 3 cL/hL

A co-adjuvant of CLARIFIANT S™ which facilitates riddling when using the traditional method

Co-adjuvants fostering cohesion and elimination of sediments formed during the second fermentation in bottle, thereby facilitating automatic or traditional riddling methods. They enhance the action of CLARIFIANT S ™.

Clarification "Vegan friendly"

By settling

INOFINE V ™
(pea protein)
Available in liquid form

COLORPROTECT V ™
(Bentonite PVPP and pea protein)
Protects oxidation-sensitive musts
Prevents atypical ageing of white wines
Reduces browning in oxidised wines
Significantly reduces pinking
Available in liquid form

Qi FINE ™
(chitosan/pea protein)
Alternative to gelatin
Adsorbs oxidised phenolic compounds
Corrects bitterness and astringency

By flotation

INOFINE V ™
(Pea protein)
Alternative to gelatin
Available in liquid form

Qi UP XC ™
(Chitosan)
Optimizes aromatic freshness.
Alternative to gelatin
Available in liquid formulation

OPTIONAL

BENT'UP™
(Bentonite)
Eliminates protein fractions and particles in suspension
To be used in combination with Qi UP XC ™ or INOFINE V ™ in difficult conditions

OPTIONAL

COLORPROTECT V ™
(Bentonite PVPP and pea protein)
Reduces browning in oxidised wines
Available in liquid form
To be used in combination with a flotation agent

Fining of wines

Fining and refining wines: post-fermentation and aging stages

Fining is also carried out on wines for previously-mentioned purposes. It helps racking and enhances filterability, and can allow a cost optimization when preparing wines for bottling. Over and above improving clarity, as well as physico-chemical and microbiological stability, fining has many applications, including refining to achieve a given product target:

- marketing a wine that is stable at a colloidal level,
- fulfilling customer tastes by offering a wine with no excessive bitterness or astringency. More generally speaking, fining enhances taste and sensory characteristics.

Choosing the fining agent should be carried out on a case-by-case basis, as a single fining cannot be suitable across the board, since each wine reacts differently. The choice and dosage calculation will always require laboratory trials.

"Alternative" solutions

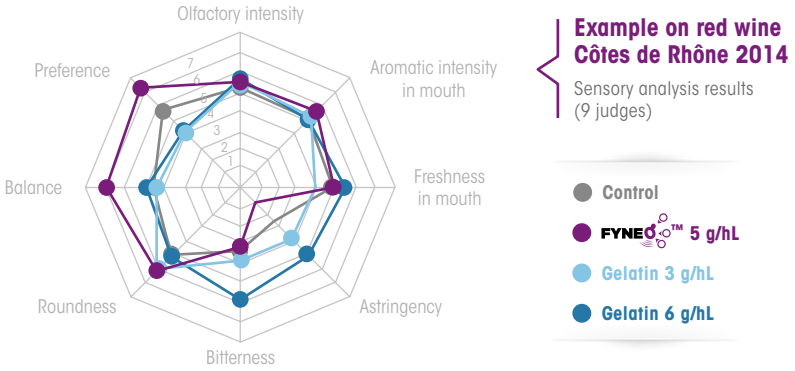
FYNEO™ 500g | 1kg | 10kg

Usable in BIO (EU) and NOP

Indicative dosage: 5 to 30 g/hL

An innovative and respectful alternative process for fining of white, rosé and red wines

Granulated yeast protein extract: contains no substance tested as an allergen in line with European Directive 2007/68/CE.
The life of a wine is closely linked to life of yeast. Today, yeast extends its benefits to the process of refining and fining wines, using an agent that is both deeply innovative and respectful of a natural and healthy oenology.
FYNEO™, a yeast protein extract, is the outcome of several years of research, in collaboration with Richard Marchal (Laboratory of Œnology and Applied Chemistry – University of Reims Champagne-Ardenne), both in terms of application and production processes. Extracted proteins have high concentration and significant molecular weight (>15 KDa) which give excellent fining properties.
FYNEO™ is a top-grade clarifier fostering rapid sedimentation.
FYNEO™ refines wines by eliminating harsh and bitter end notes, while preserving aromatic quality.
FYNEO™ comes in granulated form to facilitate dispersion.



Gelatin-based

INOCOLLE™ 1 L | 5 L | 10 L | 22 kg | 1 000 L

A porcine gelatin solution, with 10% concentration, designed for fining red and white wines

Indicative dosage: 3 to 10 cL/hL

A very pure and partially hydrolysed gelatin (approximately 15° Bloom). A benchmark fining agent to stabilise the colloidal state of wines, of all colours, and provide brightness and clarity. As a refining fining agent, it respects structural and aromatic potential of wines.
When fining white wines, it is recommended to use in combination with SOLUTION TC ™ (a chestnut tannin solution) or GELOCOLLE™ to avoid overfining.
Usable in flotation.

COLFINE™ POUDRE 1 kg | 25 kg

A porcine gelatin designed for fining red wines

Indicative dosage: 2,5 to 10 g/hL

A hydrolysed gelatin for fining young and tannic red wines, as well as press wines to refine polyphenolic structure. It enhances the organoleptic potential of press wines by removing tannins that cause astringency.

COLFINE™ LIQUIDE 23 kg

A porcine gelatin solution, with 30% concentration, designed for fining red wines

Indicative dosage: 3 to 10 cL/hL

Its liquid form makes it easy-to-use.

Fish-based / Isinglass fining products

CRISTALLINE™ LIQUIDE 1 L | 5 L | 10 L | 21 kg

A liquid fish-based fining agent, with 1% concentration, containing citric acid to facilitate dissolution and stabilized by potassium bisulphite

Indicative dosage: 3 to 10 cL/hL

Its liquid form makes it easy-to-use.

CRISTALLINE™ PLUS 100 g | 1 kg

A fish-based fining agent for fining white and rosé wines

Indicative dosage: 1,5 to 3 g/hL

Mixture of highly pure fish-based fining agent and citric acid, stabilized with potassium metabisulphite.

CRISTALLINE™ SUPRA 100 g | 1 kg

Purity and facility for quality fining

Indicative dosage: 1,5 to 3 g/hL

Its extremely high degree of purity gives it superior refining quality, providing brightness and suppleness to white and rosé wines. A pre-hydrolysed and lyophilised isinglass fining powder (for faster dispersion in wine). CRISTALLINE™ SUPRA dissolves much more quickly than traditional fish finings which require longer preparation times (contains citric acid).

FISHANGEL™ 1 kg

Clearness, brightness and aromatic clearness on the palate

Usable in Bio

Indicative dosage: 2 to 4 g/hL

A mixture of gelatine and fish fining agent, designed for fining white and rosé wines. Through their combined synergetic action, the two fining agents fasten clarification and clarity of wines, also producing brightness and a well-defined aromatic note on the palate. When fining white wines, use is recommended in combination with SOLUTION TC ™ (a chestnut tannin solution) or GELOCOLLE™ to avoid overfining.

FISHANGEL™ MES 1 L | 10 L

Liquid solution of FISHANGEL™, designed for fining white and rosé wines

Usable in Bio

Indicative dosage: 8 to 12,5 cL/hL

A solution based on gelatin and isinglass. Its liquid form makes it easy-to-use.

Egg albumin-based

TRADICOLLE™ 1 kg

Reduces excessive polyphenolic fractions and refines structure

Indicative dosage: 5 to 15 g/hL

A fining agent featuring all the advantages of fresh egg albumin for reducing excess polyphenolic fractions in red wines. It refines structure while preserving aromatic qualities and respecting the typicality of the wine.

Other finings

GELOCOLLE™ 1 L | 5 L | 10 L | 25 kg | 1 200 kg

Facilitates flocculation, accelerates sedimentation

Usable in Bio and NOP

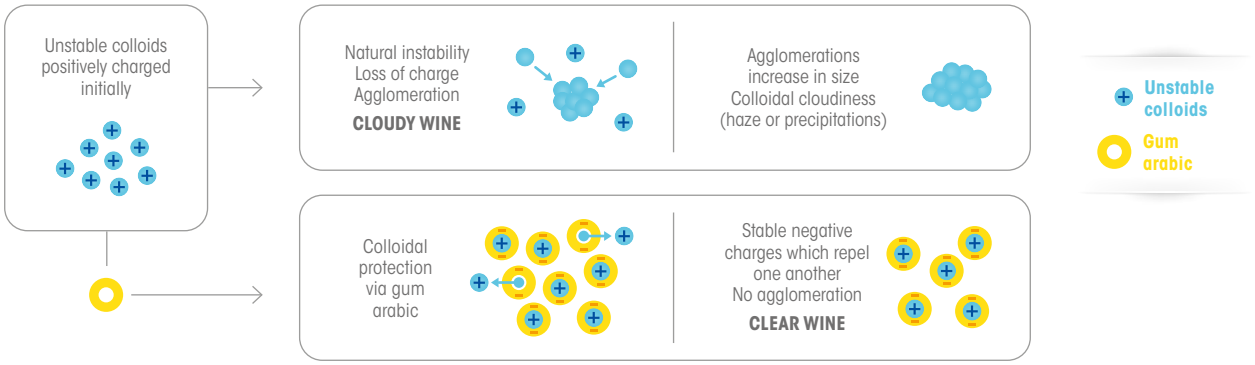
Indicative dosage: 2 to 10 cL/hL

Silica gel solution, concentrated at 30%. Adjuvant to optimise fining, it reacts with proteins to forms flakes. The new high-density particles formed in this way carry away the suspended solids responsible for turbidity.

Stabilization

Colloidal Stabilization

When the wine is ready for bottling, a last tasting is always necessary. Arabic gum, natural product from Acacia tree, is used as a stabilizing product against colloidal instability. It improves aromatic and tasting profile of the wine, roundness and mouthfeel, together with a significant loss of atringency. It can also reduce the risk of copper and ferric haze formation.



As a protective colloid, it counters precipitation of particles in suspension and must be used on wines prior to bottling i.e. wines on which fining has been carried out, wines that are stabilized and clear.

Gum arabic is added the day before final filtration prior to bottling or after the filtration stage using an extremely accurate metering pump. In line with UE regulation 2019/934, gum dosage is limited to 30 g/hL.

Gum arabic dosage depends on the instability of the colouring material measured after fining and roughing-down filtration. In order to measure instability, a 48-hour test of resistance to cold at 4°C is recommended.

Colouring material stability test

- Measure turbidity of the initial sample (NTU before cold status).
- If turbidity is > 2 NTU filter 30 mL using a 0.65-µm membrane.
- Place the 30 mL (filtered or not) in a bottle and leave for 48 hours at + 4°C.
- At the end of the cold status, shake the bottle and, after 15 mins. at ambient temperature, measure turbidity (NTU after cold status).

△ NTU = NTU after cold status - NTU before cold status

Adding protective gum arabic is beneficial for wines with instability levels inferior to 30 delta NTU.

< 5 NTU	Stable	
5-10 NTU	Very slight instability	
10-20 NTU	Average instability	
20-50 NTU	Usual instability	
> 50 NTU	Strong instability	

Stabilizing / protective arabic gums

INOGUM™ 300 1 L | 5 L | 22 kg | 1 100 kg

Protective power against colloidal instability

Usable in Bio

Indicative dosage: 4 to 10 cL/hL

A liquid solution of arabic gum, selected and purified, from Verek acacia. It is efficient for stabilizing colouring material and limiting metallic haze. It also enhances the inhibiting power of metatartaric acid against tartaric precipitations.

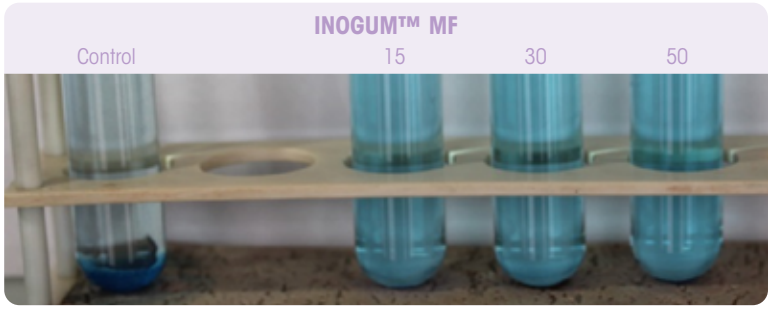
INOGUM™ MF 1 L | 10 L | 25 kg

Protection against colloidal instability compatible with microfiltration

Usable in Bio

Indicative dosage: 4 to 15 cL/hL

An arabic gum liquid solution, selected and purified, from Verek acacia with the same properties as INOGUM™ 300. Its specific production process means that the gum does not affect the filterability index of wines, with recommended dosages.



Efficacy of INOGUM™ MF with regard to stability of colouring material in model solution, at 15, 30 and 50 g/hL. Tubes to be read after 3 days

At 7 cL/hL, INOGUM™ MF (equivalent at 15g/hL of gum arabic) is efficient where colouring material stability is concerned. There is no precipitation or deposit at the bottom of the tube.

GOMME ARABIQUE SD 1 L

A selected liquid solution to protect sparkling wines

Usable in Bio

Indicative dosage: 4 cL/100 bottles

An arabic gum liquid solution from Verek acacia, purified and filtrated. The solution inhibits aggregation of unstable colloids responsible for cloudiness and deposits after disgorging sparkling wines. Selected for its tensioactive properties, it boosts bubble stabilisation and enhances inhibition of METATARTARIC ACID with regard to tartaric precipitations.

FLASHGUM™ 1 kg | 25 kg

Efficient protection against colloidal instability with instantaneous disolvation

Low SO_2 Solutions

Indicative dosage: 5 to 30 g/hL

Arabic gum in powder formulation from Verek acacia. Easy-to-use and recommended for production of wines without SO_2.

Coating arabic gums

FLASHGUM™ R 1 kg | 25 kg

Heightens roundness and sweetness in wines and reduces astringency

Usable in Bio and NOP

Indicative dosage: 5 to 30 g/hL

Rich in natural polysaccharides, it softens the harshness and dryness resulting from certain tannins and leaves a sensation of body, roundness and smoothness on the palate. As a protective colloid, it stabilises phenolic compounds and limits the risk of colloidal precipitation.

FLASHGUM™ R LIQUIDE

1 L | 5 L | 22 kg | 1 100 kg

Low SO_2 SOLUTIONS

Usable in Bio

Indicative dosage: 4 to 12 cL/hL

Efficacy and ease-of-use

A liquid formulation of arabic gum from Seyal acacia. It provides roundness, sweetness and softens astringency, while stabilizing phenolic compounds. It is recommended for low SO_2 wines production.

FLASHGUM™ R MF 1 L | 10 L | 25 kg | 1 100 kg

Usable in Bio

Indicative dosage: 2 to 10 cL/hL

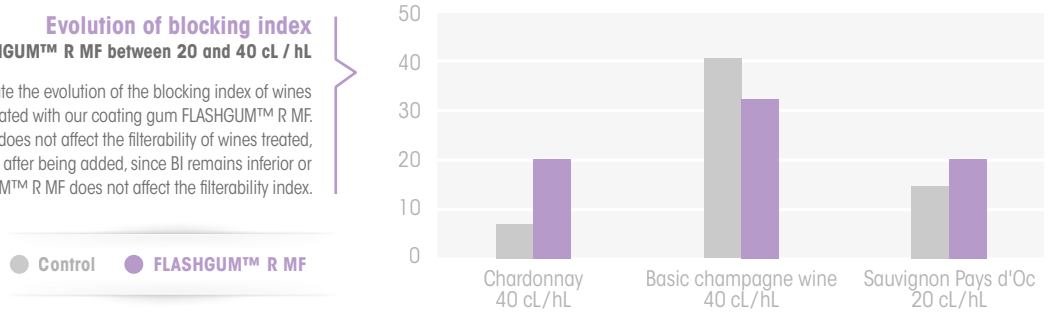
Provides full-bodiedness, stability and filterability in wine

A micro-filtered arabic gum in liquid solution, from Seyal acacia. With the same sensory properties as FLASHGUM™ R, it improves suppleness in red wines by enclosing tannins. This arabic gum liquid may be added just prior to bottling without impairing blocking index.

Evolution of blocking index

Treating wines with FLASHGUM™ R MF between 20 and 40 cL / hL

These results illustrate the evolution of the blocking index of wines after being treated with our coating gum FLASHGUM™ R MF. Adding the product does not affect the filterability of wines treated, which remains good after being added, since BI remains inferior or equal to 30. FLASHGUM™ R MF does not affect the filterability index.



Mixed arabic gums

GOMME ARABIQUE 300 22 kg | 1 100 kg

Indicative dosage: 10 to 40 cL/hL

For ease-of-preparation when bottling wines

A mixed liquid arabic gum solution from Verek and Seyal acacia. A highly efficient protective agent for colloidal precipitations. Simplifies the work of users since it also enhances sensory and taste characteristics.

Tartrate and calcium stabilization

The challenge is to anticipate the formation tartrate or calcium crystals. Whether subtractive or inhibitory, treatment methods must be determined in line with the required length of protection and adapted to the commercialisation circuit.

METATARTARIC ACID 1 kg

Usable in Bio

Indicative dosage: 10 g/hL

METATARTARIC ACID prevents the risks of tartrate precipitations. It acts as a crystallisation inhibitor against potassium bitartrate salts and prevents tartrate crystallisation. With a high esterification index, 40/42, it must be added to wine 48 hours prior to final filtration on bottling. Unstable over time, it hydrolyses rapidly depending on temperature.

MICRONISED CREAM OF TARTAR

1 kg | 5 kg | 25 kg

Usable in BIO and NOP

Indicative dosage: 100 to 400 g/hL

Cream of tartar or potassium bitartrate (KHT) stabilises wine against any tartrate precipitations, by super-saturation at 0°C. Added to wine during the physical contact process, acting as a crystallisation "seed" that triggers the formation of crystals, with KHT consequently precipitating until the wine is finally stable.

CALCIUM TARTRATE 25 kg

Indicative dosage: 100 to 200 g/hL

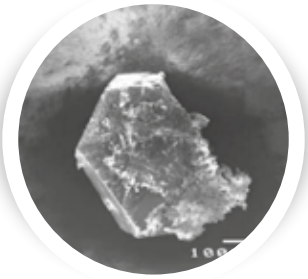
Micronised calcium tartrate induce preferential precipitation of natural CALCIUM TARTRATE in wine, producing significant reduction in excess Ca 2+ ion levels and bringing about a drop in total acidity. CALCIUM TARTRATE is only slightly soluble, ten times less than potassium bitartrate, and it therefore precipitates easily and rapidly. High levels of calcium in wines may lead to treatment of musts or wines using calcium bentonite or calcium carbonate during de-acidification. The risk of crystalline and tartrate deposits in bottles is real in concentrations superior to 60 mg/L in red wines and 80 mg/L in white wines.

DUOSTAB™ 25 kg

Indicative dosage: 200 to 400 g/hL

DUOSTAB™ can be used in a single step to trigger precipitation of the two salts KHT and $CaCO_3$, responsible for the formation of crystals in bottles or racking in the traditional method. It allows salts to crystallise by super-saturation at 0°C.

Risk determination of calcium crystals formation in wine



Cold stabilization at -4°C or contact at 0°C seeding with 300 to 400 g/hL of THK

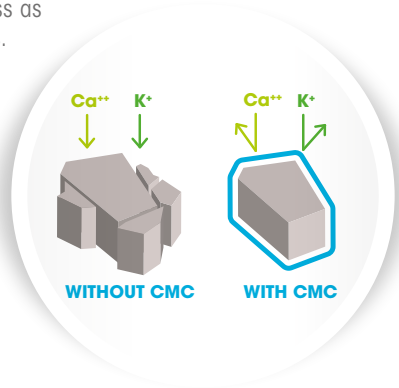
Fast filtration → **Initial calcium dosage if content > 70 mg/L**

Contact at 0°C continuous steering seeding with 200 g/hL of TCA (max dose rate 200 g/hL)

Fast filtration → **Final calcium dosage**

Cellulose Gum

Cellulose gum or carboxymethylcellulose (CMC) has been authorized since August 2009 in wines. The product derives from cellulose, of vegetal origin (wood) and is widely used in agribusiness as a thickening agent. In wines, it is designed for stabilising against potassium bitartrate salts. Unlike metatartaric acid, it is stable over time and its action is well-known as being efficient for a minimum of four years. Highly soluble in wine, CMC can inhibit the formation of tartrate microcrystals by acting as a colloidal protector and preventing growth and consequently precipitations of tartrate salts.



Adding CMC to red wines is not recommended, since it interacts with the phenolic compounds and causes cloudiness. If used in white wine, this must be perfectly stable from a protein point of view. A prior heat test is recommended to check stability. Using CMC is incompatible with a wine that has been previously treated with lysozyme.

It is recommended to add CMC 48 hours before final filtration at the bottling stage to avoid risks of blocking filtration cartridges.

Maximum authorized legal dose is 200 mg/L (OIV-OENO 617-2019 resolution).

INOSTAB™ G 1 kg | 5 kg

LOW SO_2 SOLUTIONS

Indicative dosage: 2 to 10 g/hL

A highly-purified powder formulation of cellulose gum in microgranular form for enhanced dispersion and dissolution

Check that the product is perfectly dispersed throughout the tank.

INOSTAB™ MES 1 L | 5 L | 10 L | 21 kg | 1 000 L

Indicative dosage: 8 to 20 cL/hL

A CMC solution, with 5% concentration and stabilized using potassium bisulphite, for treating tartaric acid salt precipitations

Its liquid form makes it easy-to-use. Since cellulose gum is a viscous liquid, check that the product is perfectly dispersed throughout the tank.

Correctors Specific Treatments

Organoleptic correctors

For correcting colours and bad tastes

Exclusively of vegetal origin (generally wood), œnological carbons clearly have a carbon rather than a crystalline structure, with variable levels of porosity. These "active" carbons undergo a physical activation stage (temperature) or a chemical one (phosphoric acid), which increase their adsorption capacity (molecules to be eliminated in the wine or must are trapped on the surface of the carbon's pores).

This trapping method is not selective, and so the carbon will adsorb molecules of various types. Carbons can be macroporous with highly open porous structures, or "decolourising", microporous with less open porous structures, commonly called "decontaminant or deodorising". A decolourising carbon requires a slight deodorising action and vice-versa.

It is important to choose carbons properly, depending on the problem to be treated, to respect the 48-hour contact time in order to avoid the phenomenon of salting-out and stir during contact time to boost interaction between liquid and solid phases. Indicative carbon dosages go from 20 to 60 g/hL. It is recommended to carry out prior laboratory tests to fine-tune dosage. Rack or filter the treated wine rapidly.

Using carbons is subject to regulations, so check with current legislation. OIV's code of œnological practices specifies the use of carbons in œnology for precisely targeted purposes and the maximum authorized legal dose is 100 g/hL.

Bleaching carbons

+ DECOLORIZING

ACTICARBONE ENO ™ 15kg

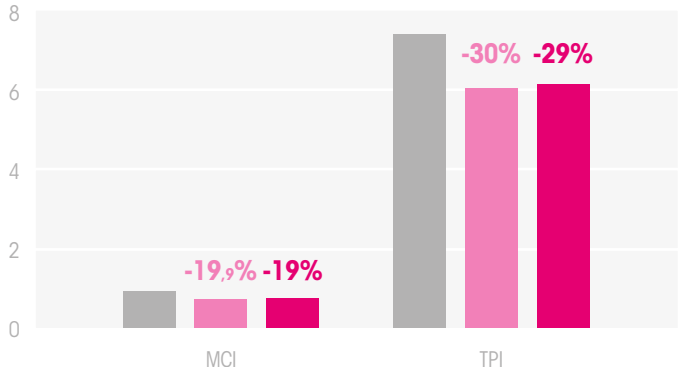
Strong decolouring power and respects sensory characteristics

A powder formulation, CARBION ENO ™ is an activated plant-based black suitable for the treatment of must and stained white wines. It eliminates the phenolic compounds responsible for oxidation defects and corrects excessive yellowish orange tints. This charcoal can be used in flotation. Combine with BENT'UP™ to remove suspended solids.

CARBION ENO-H ™ 1kg

Decolorizing power, easy-to-use

Activated plant-based black, with a high level of humidity for easier handling and reduced powderiness.



Evolution of MCI and TPI after treatment with humidified and granulated carbon

These results show a decolourising action similar to CARBION ENO-H ™ at 30 g/hL against a competitor's granulated carbon at 50 g/hL , on an oxidised white wine. The results follow the main trend for eliminating polyphenols.

Control · CARBION GR 50 · CARBION ENO-H ™ 30

CARBION™ GRANULÉS 1kg | 15kg

Easier handling, enhanced sedimentation speed

Granulated formulation, CARBION™ GRANULÉS is an active vegetal-based black. Its granulated form made for easier handling, limits dust emissions and enables very fast sedimentation.

CARBION™ 5kg

Decolorizing, respects sensory characteristics

Powder formulation, CARBION™ is an active vegetal-based black, ideal for decolorizing stained white musts and wines.

- DECOLORIZING

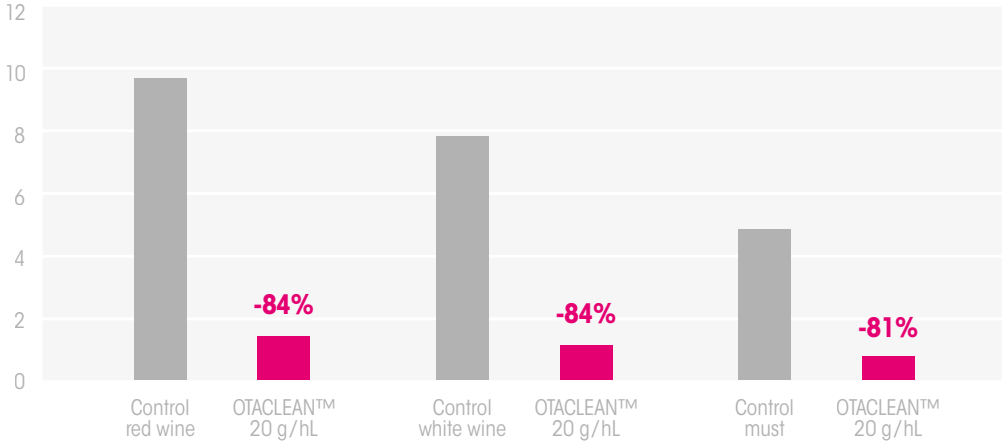
Decontaminant carbons

Œnological carbons are allowed on musts, musts in fermentation and in white wines to reduce the presence of Ochratoxine A. They are also used to correct organoleptic characteristics of wines from grapes affected by oidium and/or contaminated by *Botrytis*.

OTACLEAN 1 kg

Adsorption of Ochratoxin A, respect of organoleptic qualities

With its powder formulation, OTACLEAN™ is an active, vegetal-based black, specially selected for its excellent adsorptive properties for Ochratoxine A. OTACLEAN™ acts without stripping the wine, respects organoleptic qualities and slightly reduces colour intensity.



Ochratoxine content (µg/L)

On must or in wine, a treatment of 20 g/hL of OTACLEAN™ reduces Ochratoxin A concentration by over 80%. Maximum content of Ochratoxin A in wines to be marketed is 2 µg/L.

FLAVOCLEAN™ 1 kg

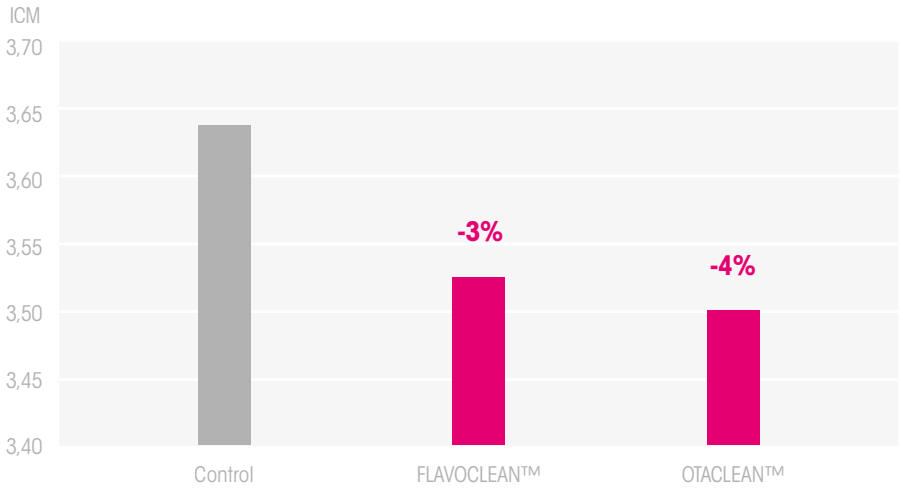
IOC's historical benchmark for remedying bad tastes

With its powder formulation, FLAVOCLEAN™ is an activated, vegetal-based black featuring excellent adsorptive properties for fighting musty-earthy notes (geosmine). FLAVOCLEAN™ is slightly decolourising in red wines and preserves fruity aromatic qualities.

Geosmine – Perception threshold: 40 ng/L (damp earth, beetroot).

Reduced MCI after treating with carbon

OTACLEAN™ and FLAVOCLEAN™ carbons (new formulation), with a 40 g/hL dose do not affect the colour intensity of red wines treated.



To combat smoky flavours

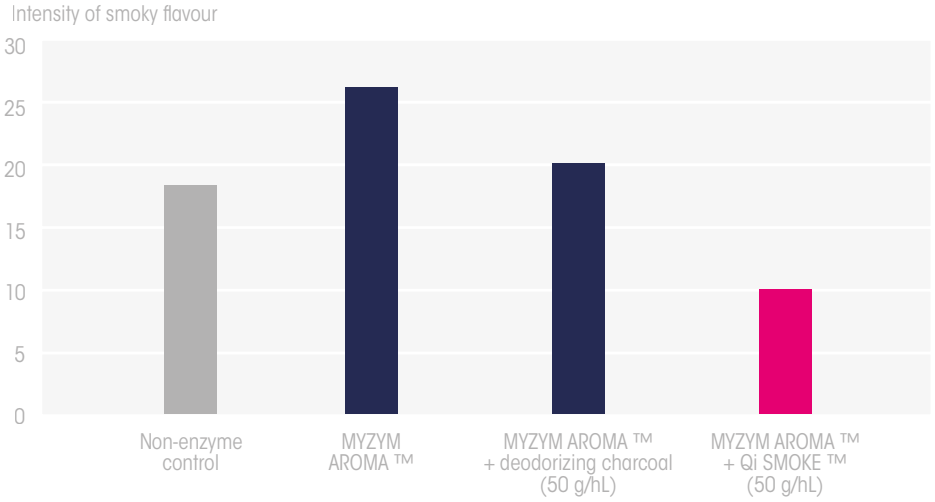
Qi SMOKE ™ 1 kg NEW

Corrects smoky flavours, preserves fruity aromas

Usable in Bio

Indicative dosage: 20 to 60 g/hL

A high-quality chitosan and charcoal formula, Qi SMOKE ™ was specially developed to correct smoky flavours occurring in wines from grape harvests impacts by clouds of smoke. Qi SMOKE ™ has a selective character with respect to the molecules often responsible for these odours (cresol/guaiacol compounds). It preserves the wine's aromatic signature better than pure charcoal.



Average sensory analysis on five trials
Smoke-tainted wines, Australia 2019

Reduction in the intensity of the smoky flavour through synergistic selective adsorption of Qi SMOKE ™ compared with other non-specific formulations.

Fighting against reduction

Reductive notes are a recurrent problem in œnology and are often difficult to eliminate. They are described in terms of rotten egg, cabbage, rubber, alliaceous odours etc. To fight against these reductive notes, we offer several categories of products depending on the degree of reduction noted.

NETAROM™ 1 kg

To eliminate slight reductive notes

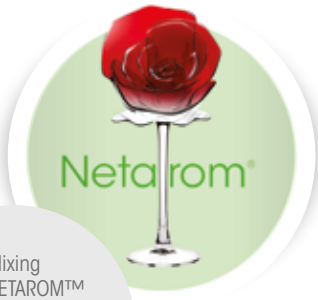
Usable in Bio (1) and NOP

Indicative dosage: 20 to 40 g/hL

Compounds responsible for "rotten egg" notes respond to the general formula: R-SH.

NETAROM™ is a preparation based on inactivated yeasts which decreases reductive notes via 2 mechanisms:
→ Copper in wine is trapped by NETAROM™ and malodorous R-SH thiols become attached to it and sediment. Everything is then eliminated during racking.
→ To a lesser extent, R-SH compounds are bound to the sulphurous groups in NETAROM™ by direct oxidation.

In this way, brief contact with NETAROM™ adsorbs the various sulphurous substances responsible for reductive aromas, while adding to roundness and body.



Mixing both NETAROM™ products can give better results than using one product or the other on its own.

NETAROM EXTRA ™ 1 kg

To eliminate intense reductive aromas

Usable in Bio (1)

Indicative dosage: 5 to 30 g/hL

NETAROM EXTRA ™ is used in cases of intense reduction, involving heavy sulphur compounds (mercaptan thiols). NETAROM EXTRA ™ has the advantage of being active in wines with significant reductive faults and where NETAROM™ risks being less efficient. It also has the advantage of adding to roundness and body, while preserving sensory characteristics, unlike when using copper which dries and produces a metallic sensation on the back palate.

SOLUTION 700 ™ 1 L | 10L

Copper sulphate solution stabilized to eliminate certain sulphurous odours

Indicative dosage: 1 to 4 cL/hL

SOLUTION 700 ™ eliminates bad tastes and reductive odour produced by light sulphur compounds with a sulphur function (SH).
Its liquid form makes it easy-to-use. Stabilized with citric acid and potassium bisulphite.
The copper content of the treated sample must be below or equal to 1 mg/L.

REDUCIT™ 1 L

Solution of cupric citrate stabilized to eliminate certain sulphurous odours in EU Organic winemaking

Usable in Bio

Indicative dosage: 2 to 8 cL/hL

REDUCIT™ eliminates bad tastes and reductive odour produced by light sulphurous compounds with a sulphur function (SH).
It is authorized to produce wine from organic agriculture.
Its liquid form makes it easy-to-use. Stabilized with potassium bisulphite and citric acid.

REDOXYL™ 5L | 10L

Copper sulphate solution stabilized to eliminate certain sulphurous odours

Indicative dosage: 3 to 8 mL/hL

REDOXYL™ eliminates bad tastes and reductive odour produced by light sulphurous compounds with a sulphur function (SH). Its liquid form makes it easy-to-use. Stabilized with potassium bisulphite and citric acid.

To delay or inhibit malolactic fermentation

FUMARIC ACID 1 kg NEW

Treatment to inhibit or delay malolactic fermentation

Indicative dosage: 30 to 60 g/hL

FUMARIC ACID acts as a powerful malolactic fermentation inhibitor. It has a bactericidal effect against lactic acid bacteria. Thus, it helps preserve wine acidity and allows reductions in sulphur dioxide doses.

Acidity correctors

Acidity is an essential characteristic of wine, at both organoleptic and analytical levels. It affects wine in many ways. It reduces microbial development and acts on the antiseptic power of sulphur dioxide by increasing its activity. It helps bring out colour intensity in red wines, contributes to colloidal stability and regulates any precipitations.

Acidification may be preventive by assessing its harvest date, controlling changes in the soil, regulating the vigour of the vine but also by using œnological practices using "malic-acid reducing or acidification yeasts".

Curative approaches such as membrane techniques (reverse osmosis or electrodialysis) also make it possible to correct notions of total acidity and pH in wines. The possible use of one of the three acids mentioned below is an authorized practice, albeit subject to the use of a register and he need to be declared to the DGCCRF.

Acidification

Acidification is allowed on must and must in fermentation with a maximum legal dose of 1.5 g/L expressed in tartaric acid in a single operation. It may also be carried out with finished wines, in several operations, within the legal limit of 2.5 g/L expressed as tartaric acid. Consult current legislation.

L+ TARTARIC ACID 1 kg | 5 kg | 25 kg

Only L(+) TARTARIC ACID, naturally present in grapes, is a strong diacid. It is the most efficient acid for modifying pH. Using it on must, in alcoholic fermentation, is recommended for enhanced integration and complexity on the palate.
From an organoleptic point of view, it may produce harshness and dryness in the mouth if used in a strong dose on finished wines.

D&L MALIC ACID 5 kg | 25 kg

Naturally present in grapes, MALIC ACID has a good effect on total acidity. The L form of this acid is consumed by lactic bacteria during malolactic fermentation.
From an organoleptic point of view, it may produce a sensation of freshness or greenness depending on dosage. Best in white or rosé wines.

OENO LACTIC ACID 1 L | 10 L | 25 kg

LACTIC ACID is a monoacid which is efficient for correcting total acidity but has little effect on pH. From an organoleptic point of view, it may produce a sensation of mild acidity and full-bodiedness.

CITRIC ACID 1 kg | 5 kg | 25 kg

CITRIC ACID is allowed in wines, up to 1 g/L. It has little effect on pH, but a significant impact from a taste angle. It complexes iron and limits risks of ferric haze.

Deacidification

POTASSIUM BICARBONATE 1 kg | 25 kg

POTASSIUM BICARBONATE enables deacidification of musts and wines. Two phenomena explain this:
- The formation of insoluble salts with tartaric acid in the form of THK,
- The phenomenon of potassium super-saturation.

In theory, adding 1 g/L of POTASSIUM BICARBONATE reduces acidity by 0.49 g/L of H_2SO_4. However, under the effect of pH and other salt precipitations, the reality is quite different. In practice you have to add 160 to 170 g/hL to reduce total acidity at 1 g/L expressed as sulphuric acid.

CALCIUM CARBONATE 1 kg | 5 kg | 25 kg

CALCIUM CARBONATE is used to deacidification musts and wines. It causes precipitation of tartaric acid as an insoluble salt, calcium tartrate. In practice you have to add 50 g/hL of CALCIUM CARBONATE to de-acidify wine at 0.5 g/L expressed as sulphuric acid.

Other acids

ASCORBIC ACID 1 kg | 25 kg

ASCORBIC ACID is a powerful antioxidant. It protects wine from the influence of oxygen in the air. Used on the harvest as a protection against oxidation, it enhances the antioxidant action of SO_2.
In white and rosé wines, ascorbic acid limits browning of phenolic compounds by fixing dissolved oxygen.
ASCORBIC ACID prevents "oxidative shock" occurring in sparkling wines, vinified using the traditional method, when disgorging.
It is also used during the bottling of still wines.
To be used always in conjunction with SO_2.

Sulphurous products

AMMONIUM BISULFITE 150 g/L 1L | 5L | 10L

15% SO_2 solution used on must during harvest.
It can be used in the must reception tank (as an antiseptic) or when loading a tank, during pressing for its anti-oxidant, antioxygen and antiseptic action.

Indicative dosage:
0,5 to 7 cL/hL

POTASSIUM BISULFITE 150 g/L 1L | 5L | 10L

Usable in Bio

15% SO_2 solution used in various circumstances: can be used on must for the same reasons as ammonium bisulphite, but also on clear wines:
→ to block the development of lactic acid bacteria,
→ to protect the wine against microbial attacks after malolactic fermentation,
→ after bubble formation via the expedition liqueur, to prevent early oxidation.

Indicative dosage:
0,5 to 7 cL/hL

SULFIVIN™ A (50/100/150/180/200/225/400)

Solutions of ammonium bisulphite concentrated respectively at 50, 100, 150, 180, 200, 225 and 400 g/L SO_2.

SULFIVIN™ K (50/80/100/150/180)

Usable in Bio

Solutions of potassium bisulphite concentrated respectively at 50, 80, 100, 150 and 180 g/L de SO_2.

POTASSIUM METABISULFITE 1 kg | 25 kg

Usable in Bio

It is used on fresh harvests (harvesting machine, press), on musts and wines.
It contains 52 to 55% of its weight in SO_2.

INODOSE™ (2/5) 42 or 48 tablets in a box

Usable in Bio

Effervescent tablets prepared on a base of potassium metabisulphite. They release 2 g or 5 g of SO_2 per tablet into musts, wines or liqueurs. They simplify the sulphiting operation, particularly for wines matured under wood, and allow gradual uniform release of the required dose of SO_2.

INODOSE™ GRANULÉS Pre-doses bags: 50 g | 100 g | 400 g released

Usable in Bio

They come in the form of small, white, solid, odourless granules (1 to 2 mm). They release a precise dose of simplifying the sulphiting operation.
They are used for sulphiting trucks and musts coming out of the press, when stabilising wines at the end of fermentation or when readjusting SO_2.

The granulated formula has many advantages:
→ easy to disperse: granules mixed in easily,
→ better protection of musts and wines: effervescent granules providing good distribution of SO_2,
→ easy to use: release a precise dose of SO_2.

To test it is to adopt it !

SULFITAGE K60 ™ 1 L | 5 L | 10 L

Solution of potassium bisulphite titrated at 60 g/L de SO_2.

Usable in Bio

Indicative dosage:
1 to 12 cL/hL

SULFIDÉGORGEMENT™ 1 L | 5 L | 10 L

Solution based on potassium bisulphite, specially designed for disgorging, titrated at 180 g/L SO_2.

Usable in Bio

Indicative dosage:
1 to 2,5 cL/100 bottles

SULFITAMINE C ™ 250 mL | 500 mL | 1 L

Solution based on ascorbic acid and sulphurous solution.
SULFITAMINE C ™ has strong reducing power.
It prevents enzymatic and non-enzymatic oxidation of wine.
Overall, it improves the taste qualities of the wine by giving it freshness and fruitiness.

Indicative dosage:
3 to 5 cL/100 bottles

SULFITANIN™ 1 L | 5 L | 10 L

Solution of ammonium bisulphite at 100 g/L pure SO_2 and Tara tannin. The presence of tannin adds to the antiseptic and anti-oxidant actions. SULFITANIN™ is used essentially when sulphiting musts.

Indicative dosage:
5 to 10 cL/100 bottles

Tannins

Adding tannins is an immemorial pratice, but which, after having fallen into oblivion, is now back on track of vinification, from alcoholic fermentation to bottling. In œnology, the experimental data concerning this practice is very minimal. In order to understand how tannins are used, a knowledge of their properties and œnological interests is, however, essential.

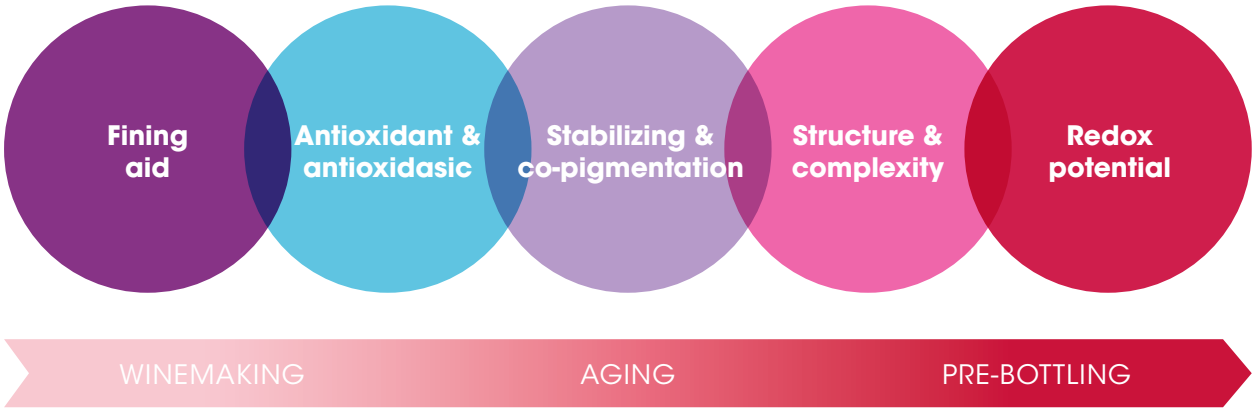
Exogenous œnological tannins are polyphenols. Extracted from vegetal sources, variable by nature, they come from various botanical varieties such as the gall nuts, wood (chestnut, oak, mimosa, exotic woods, and quebracho) and grapes (tannins from seeds and skins). They belong to three major families:

- Ellagic tannins or "Ellagitannins" and gallic tannins or "Gallotannins" which belong to the hydrolysable class of tannins. In the presence of an acid or heat, they lead to the formation of ellagic or gallic acid.
- Proanthocyanidin tannins which belong to the class of condensed tannins.

Their œnological properties depend on their configuration or chemical structure. Thus, the choice of this œnological tool is determined by the targeted purpose, the nature of the must or wine to be treated and the moment it is added. Using œnological tannins modifies the sensory and taste characteristics of wines and has many functions:

- contributing to structure,
- antioxidasic and antioxidant (consumes O_2),
- stabilizing colour (limits the oxidative deterioration of anthocyanins) – promotes co-pigmentation,
- eliminating reduction tastes,
- fining aid since tannins interact with proteins and the resultant complex precipitates.

Botanical origin synonymous with œnological characteristics



Fining aid – Affinity with proteins

TANIN TC ™ 1 kg | 5 kg | 25 kg

Wine ageing and stability

Usable in BIO and NOP

Indicative dosage: 5 to 8 g/hL

An ellagic tannin extracted from chestnut, TANIN TC ™ has good capacity to react with proteins to form tannin-protein complexes that precipitate. It is one the tannins which most consumes and traps oxygen and consequently helps slow down the ageing process of wine, while at the same time limiting ethanal.
May be used on sparkling wines to facilitate fining.

SOLUTION TC ™ 1 L | 5 L | 10 L

Wine ageing and clarity

Usable in BIO

Indicative dosage: 4 to 6 cL/hL

A liquid formulation of ellagic tannins extracted from chestnut with 15% concentration and silica gel, stabilized SO_2. SOLUTION TC ™ has the same properties as the powder formulation. Its liquid form makes it easy-to-use.

Limiting anti-oxidasic & anti-oxidant activity

ESSENTIAL ANTIOXIDANT ™

1 kg | 5 kg | 25 kg

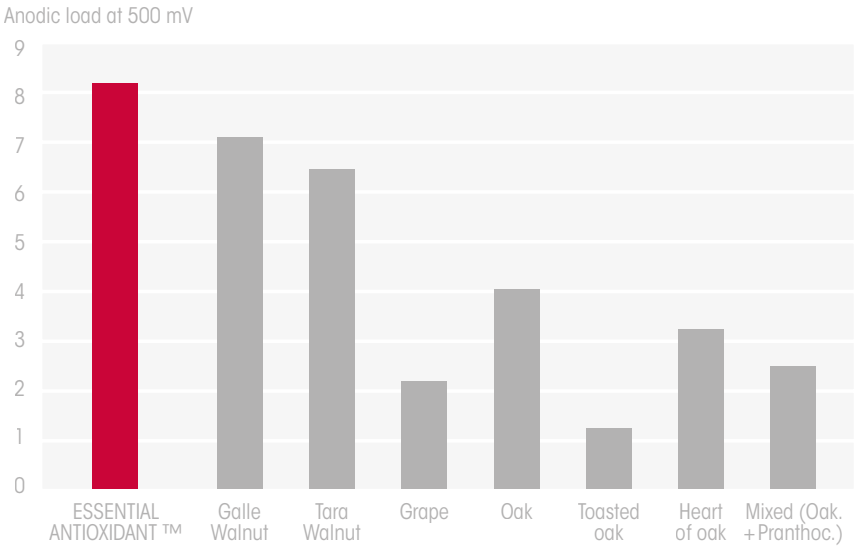
LOW SO_2 SOLUTIONS

Usable in BIO and NOP

Indicative dosage: 1 to 10 g/hL

Must and wine protection against oxidation

A gallic tannin extracted from gall nut, ESSENTIAL ANTIOXIDANT ™ has one of the best antioxidant potentials on the market. Limits SO_2 additions.



Antioxidant properties of tannins

The results illustrate the antioxidant capacity of polyphenols, extracted from various botanical origins. ESSENTIAL ANTIOXIDANT ™ proves to be the most antioxidant tannin with an anodic charge close to 8 µC. It is the most easily oxidisable and consequently the most reactive to oxidations in wines.

Grape and toasted oak tannins have a lower antioxidant capacity.

Its tannic richness makes it an extremely pure tannin. It has very little effect on taste characteristics of musts and wines and does not produce any astringency or bitterness at recommended dosages. It is ideal for winemaking of white and rosé wines. It inhibits the enzymatic activities of laccase and tyrosinase, responsible for oxidising musts from harvests affected by *Botrytis*. The tannin is developed in partnership with INRAE.

TANIN CRISTALLIN ™ 1 kg | 5 kg | 12,5 kg

Wine structure and stability over time

Usable in BIO and NOP

Indicative dosage: 3 to 5 g/hL

A gallic tannin extracted from tara nut, TANIN CRISTALLIN ™ protects against oxidases resulting from *Botrytis cinerea* and eliminates protein hazes by precipitating excess proteins in musts. To avoid any bitter sensation in the finished wine, early usage on musts is recommended. Facilitates clarification.
May be used on sparkling wines, at harvest or tirage to improve preservation.

MANN BOUQUET B19 ™ 1 kg

Preservation of fruity aromas and fullness on the palate

Usable in NOP

Indicative dosage: 10 to 40 g/hL

An innovative œnological tool, this formulation combines yeasts rich in manno-proteins and glutathione with proanthocyanidin tannins, extracted from mimosa black acacia. The synergy of these substances, in alcoholic fermentation, enhances protection of white juices against oxidation, while preserving and intensifying the aromatic potential of wines and freshness. It boosts the sensation of body and roundness on the palate.

Limiting oxidative spoilage of anthocyanins Sustainably protecting and stabilizing colour

TANIN SR ™ 1 kg | 5 kg | 15 kg

Protects and stabilises the colouring matter

Usable in BIO and NOP

Indicative dosage: 15 to 40 g/hL

A proanthocyanidin tannin, 100% extracted from quebracho wood, TANIN SR ™ efficiently reduces the activity of polyphenoloxidases (laccase and tyrosinase). In red wines, early use in the pre-fermentation phase protects against oxidative spoilage of anthocyanins and fosters sustainable stability of colouring material.

TANIN SR TERROIR ™ 1 kg | 5 kg | 25 kg

Sustainably stabilises colour, adds structure

Usable in BIO and NOP

Indicative dosage: 10 to 30 g/hL

TANIN SR TERROIR ™ is a mixed tannin, specifically formulated to combine the effects of proanthocyanidin tannins (grape seeds and quebracho) and hydrolysable tannins. In addition to preserving colour, it enhances the structure of wines by acting on the body.

SOLUTION SR TERROIR ™ 1 L

Stabilises colour, reduces reductive aromas

Indicative dosage: 5 to 30 cL/hL

A liquid formulation of proanthocyanidin and ellagic tannins at 10% and copper sulphate (0.2%). It corrects polyphenolic deficiency and treats moderate reduction odours in wines. Its liquid form makes it easy-to-use.

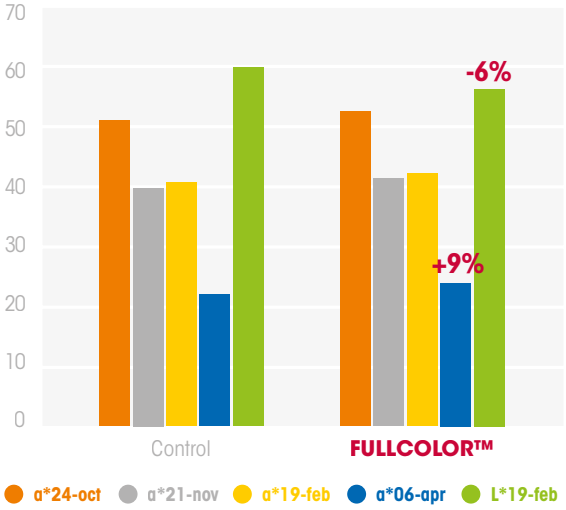
FULLCOLOR™ 1 kg | 10 kg

Improves colour intensity and flavour characteristics

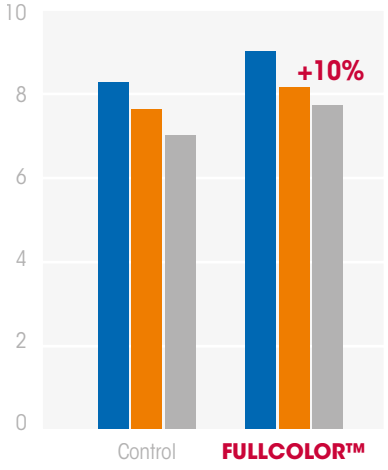
Indicative dosage: 20 to 60 g/hL

An innovative œnological tool combining ellagic and proanthocynidin tannins, extracted from chestnut and mimosa, as well as yeast polysaccharides. The synergy of these substances, in alcoholic fermentation, enhances protection and stabilisation of the colouring material. It helps enhance the structure of wines, reduce astringency and intensify the mouthfeel.

Evolution of a* & L* chromatic indices



Evolution of CMI



Impact of FULLCOLOR™ on improving colouring intensity

Colouring intensity and the value of a* (red colour) illustrate the 9% gain in colour by adding FULLCOLOR™ at 40 g/hL in wine from harvests that are thermotreated and fermented in liquid phase. L* (Clarity) is reduced with FULLCOLOR™ and wines are consequently darker.

VOLUTAN™ MES

Proposing a service to put into solution: 500 mL | 1 L | 5 L

Indicative dosage: 1 to 4 cL/hL

Balance and longevity

A proanthocyanidin tannin, 100% extract of grape (skins and seeds). As a result of its chemical configuration (OH alcohol function at carbon cycle level), VOLUTAN™ is very reactive and fosters formation of bonds [grape tannins - anthocyanins]. It is an efficient œnological tool for providing sustainable stability to colouring material in red wines and correcting structural deficiencies. Early use at the run-off stage is recommended for good integration and complexity.
Its liquid form with 36% concentration makes it easy-to-use.

ESSENTIAL PEP ™ 500 g

Protects colour and strengthens structure

Indicative dosage: 5 to 30 g/hL

ESSENTIAL PEP ™ is a tannin made up of 100% proanthocyanidin, combining the properties of grape and mimosa black acacia tannins. Protects the colour of wines like a pure grape tannin and helps enhance structure.

ESSENTIAL PEL ™ 500 g

Improves phenolic potential and resistance to ageing

Indicative dosage: 5 to 30 g/hL

ESSENTIAL PEL ™ is a composed tannin combining proanthocyanidin and gallic tannin properties, extracted from skin of white grapes, mimosa black acacia and tara walnut. Enhances ageing in barrels. It is a high molecular weight tannin. Good anti-oxidant capacity.

Restoring freshness and hiding vegetal notes

ESSENTIAL PASSION ™ 500 g

Respects the fruity intensity of wines

Usable in BIO and NOP

Indicative dosage: 1 to 15 g/hL

ESSENTIAL PASSION ™ is a proanthocyanidin tannin extracted from wild cherry wood. It restores freshness to wines, bringing out fruity, varietal aromas. Early use, from free run to aging stage, will enable the phenolic potential to develop rapidly and foster effective structuring power.

ESSENTIAL FREE VEG ™ 500 g

Reduces astringent end notes and decreases the expression of plant notes

Usable in BIO and NOP

Indicative dosage: 1 to 15 g/hL

ESSENTIAL FREE VEG ™ is a proanthocyanidin tannin extracted from mimosa black acacia. In wines produced from unripe grapes, it helps to hide vegetal notes.

Preserve sensory and taste characteristics

Extracted from oak, ellagitannins have the property of influencing the redox potential of wines. Adding them, in aging or just before bottling, helps open up the wine's bouquet and its aromatic purity by correcting organoleptic deficiencies associated with reduction (notes of cabbage, damp cellars, floorcloths) or oxidation (notes of ethanal, odour of fresh apples). With its specific aromatic character, each formulation contributes to complexity, mouthfeel and brings a sensation of smoother tannins.

ESSENTIAL OAK SWEET ™ 500 g

Volume, complexity and balance of wines aged in barrels or tanks

Usable in BIO and NOP

Indicative dosage: 0,5 to 10 g/hL

ESSENTIAL OAK SWEET ™ is an ellagic tannin which combines the effects of three tannins from oak, each extracted and purified using a dedicated process. It enhances complexity on the palate and strengthens body to provide length.

ESSENTIAL OAK BARREL ™ 500 g

Aromatic complexity and intensity of wines aged in barrels or tanks

Usable in BIO and NOP

Indicative dosage: 0,5 to 10 g/hL

ESSENTIAL OAK BARREL ™ is an ellagic tannin which combines the effects of two tannins from oak. It enhances aromatic complexity on the palate, as well as strengthening structure and balance in wines. In red wines, it optimises depth of colour.

ESSENTIAL OAK STRONG ™ 250 g

Structure and persistence on the palate of wines aged in barrels or tanks

Usable in BIO and NOP

Indicative dosage: 0,5 to 10 g/hL

ESSENTIAL OAK STRONG ™ is an ellagic tannin which combines the effects of three tannins extracted from heart of oak. It helps the structure of wines to be reinforced, densifies the matrix and intensifies length.

PRIVILÈGE BLEU ™

250 g

Usable in Bio and NOP

Indicative dosage: 0,5 to 5 g/hL

Smoothness and complexity of wines

PRIVILEGE BLEU ™ is an ellagic tannin extracted from American white oak. It brings a sensation of smoothness and full-bodiedness, and helps to bring out the aromatic complexity of wines.

PRIVILÈGE NOIR ™

250 g

Usable in Bio and NOP

Indicative dosage: 0,5 to 5 g/hL

Full body and aromatic balance of wines

PRIVILEGE NOIR ™ is a composed tannin, which combines the properties of an ellagic tannin extracted from oak and a proanthocyanidin tannin extracted from wild cherry tree. It strengthens the structure of wines, contributes to fullness and aromatic balance by intensifying notes of red and black fruits.

Œnological tannins for sparkling wines

INOTAN B ™ POUDRE 1 kg

Usable in Bio and NOP

Indicative dosage: 3 to 5 g/hL

Structure and longevity

INOTAN B ™ is a 100% quebracho-extracted proanthocyanidin tannin. Used after malolactic fermentation, it enhances the structure of whites and rosés and helps to obtain richer wines.

INOTAN B ™ LIQUIDE 1 L | 5L | 10L

Indicative dosage: 3 to 5 cL/hL

Stability and structure for wine elevage

Its liquid form makes it easy-to-use.

SOLUTION ST ™ 1 L | 5L | 10L

Indicative dosage: 2 to 4 cL/hL

Preserves sensory qualities and prevents reductive aromas

A liquid solution of gallic tannins at 10% and copper sulphate (0.5%), stabilized with SO_2. Dedicated to tirage for white wines before second fermentation in bottle, it adds structure. The presence of copper sulphate prevents moderate reductive odours from appearing. Its liquid form makes it easy-to-use.

TANIN CAS ™ 1 kg

Usable in Bio and NOP

Indicative dosage: 1 à 4 g/100 bottles

Openness and balance of wines

TANIN CAS ™ is a 100% oak-extracted ellagic tannin. Used for disgorging in dosage liqueurs, it enhances the texture and sensory characteristics of wines as well as their balance. For this tannin, a service to put in solution is proposed (1L). Its liquid form with 36% concentration makes it easy-to-use.

Wood in œnology

The Feelwood™ range

IOC has decided to develop a new range of wood-based by-products called "FEELWOOD™", combining expertise and reproducibility. We propose innovative œnological tools that respect the fruity notes of your wines.

We chose an exclusive partnership with a single supplier to ensure the transformation of oak wood for œnology and provide us with a product of constant quality, in line with our customers' requirements.

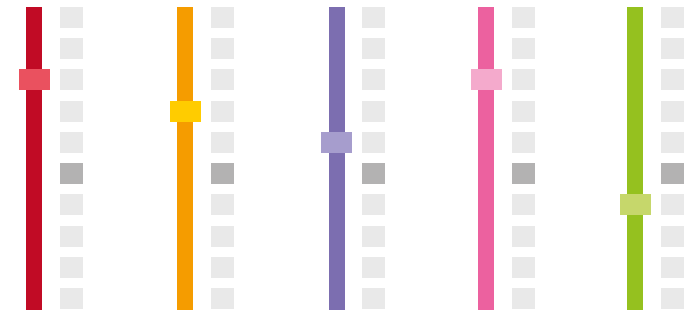
The pieces of wood selected for our products come exclusively from species of French oak, ***Quercus Petrae***, and American white oak, ***Quercus Alba***. These oaks are then stored in the open air for a minimum of 18 months. During this ageing process, many physical and chemical reactions occur which will define the œnological and aromatic potential of each product, as well as richness in ellagitannins.

The wood is then left either in its natural state, or charred by "core convection", a moderate heat system enabling dedicated extraction of ellagitannins. These provide wine with structure, body, freshness and subtle aromatic notes. Each piece of wood receives the same heat treatment (intensity and surface), ensuring a uniform and reproducible product.

FEELWOOD™ was born of expertise and the art of blending - part and part of our philosophy. Our aim is to bring you a defined aromatic profile, respectful and complex, in harmonious line with the natural, fruity aromas of your wines. Each product corresponds to a recipe, a blend of various heat levels, to offer you a woody aromatic profile that meets your targeted product profile.

The spirit of wood bears its fruit

Using Feelwood in aging to vary taste sensations and adjust the fruity aromatic profile of your wines



A recipe that comes in several grain sizes (chips, blocks & staves) for you to choose according to the time you have for your aging.

Chips
≈ 10 x 5 x 1 mm

Blocks
≈ 50 x 30 x 10 mm

Staves
≈ 910 x 50 x 12 mm - weight : 320 g
contact surface : 0,11 m²/stave

Vinification - Fermentation

SWEET & FRESH ™

Bag: 10 kg containing 2 infusion nets

Unheated - 100% fresh wood

Fruity freshness and structure

Usable in Bio and NoP

Indicative dosage: 0,5 to 3 g/L

BALANCE & STRUCTURE ™

Bag: 10 kg containing 2 infusion nets

Unheated - light & medium heat

Structure, discreetly woody to mask the plant notes of unripe grapes

Usable in Bio and NoP

Indicative dosage: 0,5 to 3 g/L

Aging

FRUIT & SOFT ™

Bag: 10 kg containing 2 infusion nets

Light & medium heat

Respecting fruit, sweetness, discreet vanilla

Usable in Bio and NoP

Indicative dosage: 0,5 to 3 g/L

FULL & COMPLEX ™

Chips & blocks: 10 kg bag containing two 5 kg infusion nets
Staves: bulk bag of 25 units

Extra long medium and strong heat

Sweetness, amplitude and complex woody character, fine vanilla and toasted

Usable in Bio and NoP

Indicative dosage:
0,5 to 5 g/L
1 to 3 stave(s)/hL

RICH & SUBTLE ™

Chips: 10 kg bag containing two 5 kg infusion nets
Staves: bulk bag of 25 units

Medium and strong heat

Sweetness, complex woody character, notes of mocha, caramel. Adds freshness on ripe matrix

Usable in Bio and NoP

Indicative dosage:
0,5 to 5 g/L
1 to 3 stave(s)/hL

CHOC & TOASTED ™

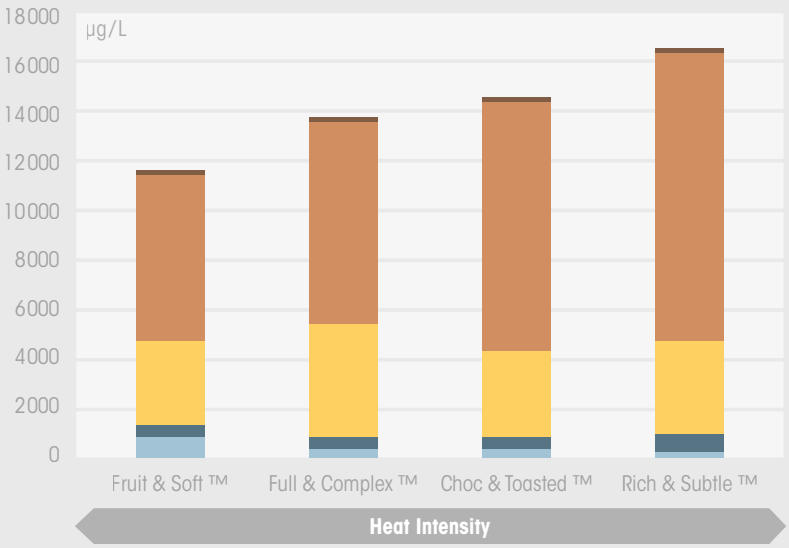
Bag: 10 kg containing 2 infusion nets

Medium and strong heat

Complex woody character, notes of chocolate, grilled, sweetening power

Usable in Bio and NOP

Indicative dosage: 0,5 à 5 g/L



Effect of charring on woody aromatic substances

Red Bordeaux 2016 - 4 g/L
6 weeks of contact time

Long & strong charring intensity for complexing woody aromas and enhancing body sweetness (aldehydes). Light to medium heat respects the fruity characteristics of wines and confers discreetly woody notes.

- **Enols** (caramel, strawberry jam, liquorice, grilled notes)
- **Furfural** (sweet almond, toasted bread, caramel)
- **Adhehydes Phenols** (pastry, biscuit, vanilla)
- **Phenols** (clove, spices, smoky)
- **Lactones** (coconut)

VIVACITY & MINERAL ™

Staves: bulk bag of 25 units

Light and extra long medium heat

Minerality & freshness

Usable in Bio and NOP

Indicative dosage: 1 to 2 stave(s)/hL

MATURE & SILKY ™

Staves: bulk bag of 25 units

Medium and strong heat

Complexity, notes of ripe fruits, discreetly woody

Usable in Bio and NOP

Indicative dosage: 1 to 2 stave(s)/hL

The use of pieces of oak wood is regulated. Make sure you respect the regulations in force in your wine-growing region.

RCGM

SUCRAISIN™ ENRICHMENT RCGM 1 000 L

Rectified Concentrated Grape Must (RCGM) is made from grape juice with all 'non-sugar' components removed. It is perfectly neutral. It preserves the organoleptic qualities of the base wine and causes no differences in terms of taste compared to traditional chaptalisation with dry sugar.
SUCRAISIN™ is simple to use; in liquid form, it can be pumped and mixes instantaneously.

The reliable, simple and effective solution for enriching musts:

→ delivery by tanker,
→ unloaded by pumping,
→ tank storage,
→ added by pumping while pumping over,
→ mixes rapidly in the tank,
→ saves time, labour and energy, because it does not have to be melted.

SUCRAISIN™ LIQUOR RCGM 10 L | 20 L | 1 000 L

Legislation authorises the use of corrected concentrated must as a sugar supply in the preparation, tirage or expedition of liqueurs. SUCRAISIN™ is quick and easy to use and guarantees a homogeneous result.

Advantages of SUCRAISIN™

→ saves time, labour and energy, because it does not have to be melted,
→ liquor very uniform from one disgorgement to another; using RCGM eliminates problems associated with storing conventional liquors,
→ RCGM preserves the qualities of the disgorged wine and contributes only the sugar component,
→ practical to handle,
→ product not requiring additional filtration,
→ impurity-free product of known concentration,
→ can be dosed near to transport by very rapid combination with the disgorged wine.

SUCRAISIN™ for making tirage or transport liquors is also available in ORGANIC form.

Winemaking products distributed by IOC for use in EU ORGANIC and/or NOP winemaking in accordance with COMMISSION IMPLEMENTING REGULATION (EU) No. 203/2012 of 8 March 2012, and Commission Implementing Regulation No. 2018/1584 of 22 October 2018 amending Regulation (EC) No. 889/2008 laying down detailed rules for the implementation of Regulation (EC) No. 834/2007 of the Council, and with the NOP Regulation for the USA as regards organic wine. You are responsible for consulting your certifying body to verify compliance with your charter of products bearing this label. This label is a guide and an interpretation, which we hope is as fair as possible, of the regulations in force. Under no circumstances can IOC be held liable for any misinterpretation or for any damage related to the use of a product for winemaking in accordance with ORGANIC or NOP regulations without further verification.

(1) Made from organic matter if available. (2) Exclusively for clarifying. (3) As a filtration agent.

Notes

The addresses of our various sites in France

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89800 CHABLIS
Tel. +33 6 81 05 89 03

4 bis rond point de Marloux
71640 MELLECEY
Tel. +33 3 85 45 08 70

7 rue Aristide Briand
21700 NUITS-SAINT-GEORGES
Tel. +33 3 80 61 02 09

Champagne-Ardenne

Faubourg de Champagne
10110 BAR-SUR-SEINE
Tel. +33 3 25 29 90 22

9 rue du Commerce
51350 CORMONTREUIL
Tel. +33 3 26 82 33 00

ZI de Mardeuil - BP 25
51201 EPERNAY CEDEX
- Switchboard/Shop:
  Tel. +33 3 26 51 96 00
- Prestations:
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ZAE Les Tannes Basses
34800 CLERMONT-L'HERAULT
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ZA Grange Blanche
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Graphic conception: Agence epoke, Vitré - 2211R01

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