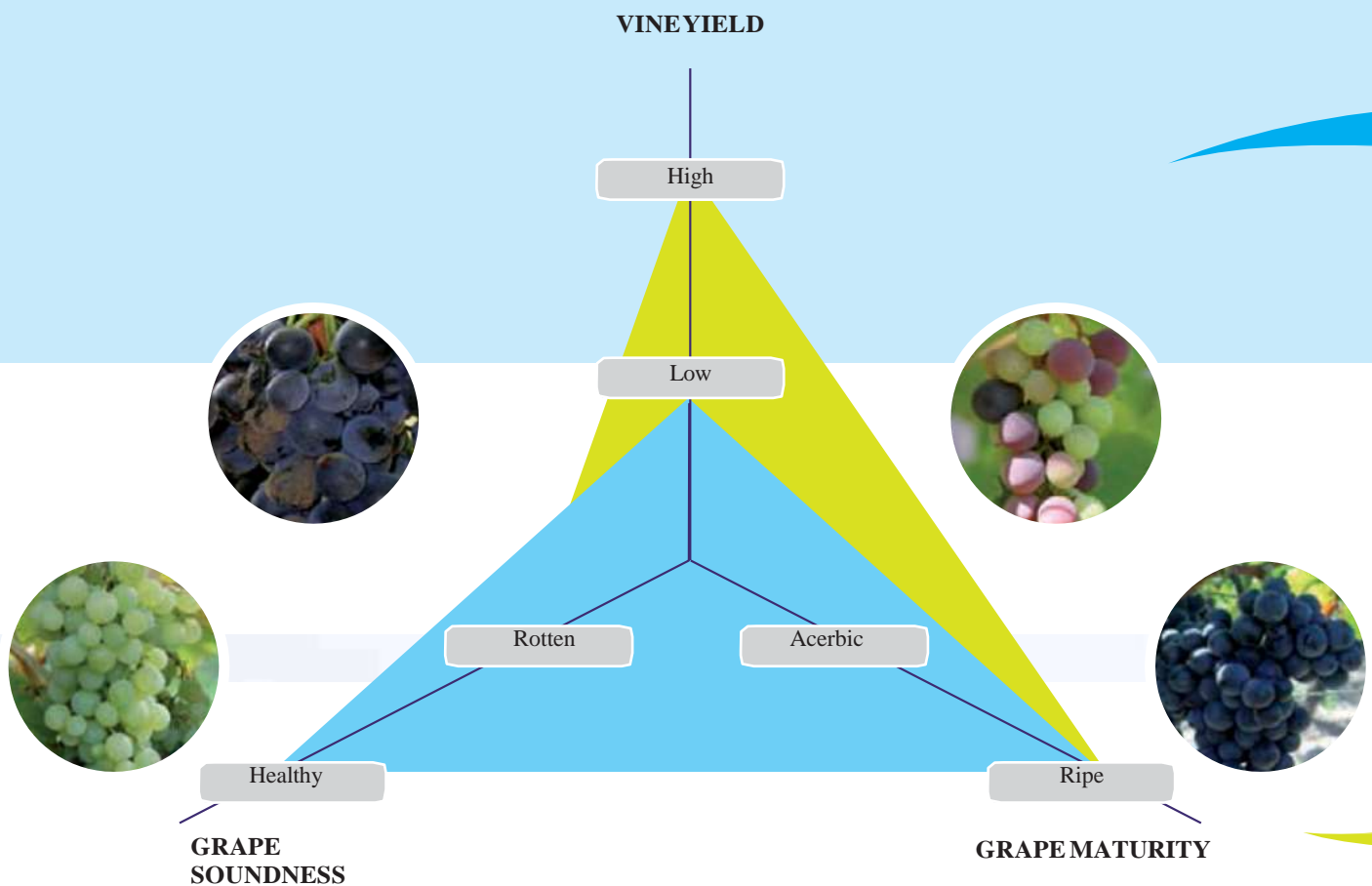




Dessine-moi un vin

Dessine-moi un vin

From the grape to the bottle, we support you in designing your wines.



Founded in 1943, OENOFRANCE offers 70 years of know-how and expertise in oenology. OENOFRANCE works to meet specific and reasoned oenological objectives and itineraries. Through its network of laboratories in France and abroad, OENOFRANCE accompanies you in drawing up the history of your wine.



IMPORTANT POINTS IN CASE OF LOW YIELDS WITH HEALTHY AND RIPE GRAPES

- Favour long fermentations and working matter for red harvests
- Optimise the work of maturing on lees. Conserve and protect the potential of wine. Provide appropriate care for microbiology
-

IMPORTANT POINTS IN CASE OF HIGH YIELDS WITH RIPE AND PARTIALLY ROTTEN GRAPES

- 
- Control acidity
 - Controlled alcoholic fermentation (nutrition/choice of yeast) Early correction of wine from the end of alcoholic fermentation
 - Provide appropriate care for microbiology
 -





Yeasts

Nutrients

Yeast products

Fining products for musts

Enzymes

Bacteria

Tannins

Oak wood for oenology

Fining products for wine

Organic product range

Stabilisers

Acidity correctors

Preservatives Specific

treatments

Oenological products for base
and sparkling wines

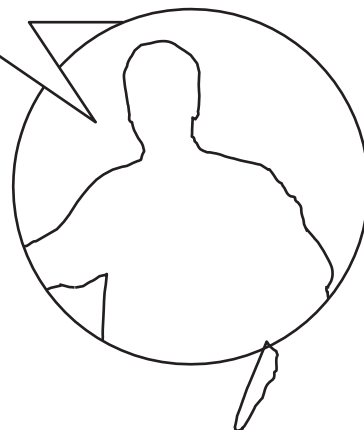
	6
	13
	18
	23
	27
	35
	39
	44
	46
	51
	52
	60
	62
	64
	66



Microselection at the estate

A custom designed yeast for my production?

We invite you to discover
microselection at the estate
by our consulting oenologists.



Certain vine growers want to use the yeasts found in their vineyards, while preserving the quality of their wines and limiting the risk of fermentation accidents.

OENOFrance provides the service that meets this expectation by proposing MICROSELECTION.

OENOFrance accompanies vine growers wishing to set up microselection, enabling them to have available their own yeast.

This microselection at the estate allows the vine grower to:

- select yeasts at the estate which are the most suited for revealing the personalities of their wines , learn to better
- understand biodiversity of their terroirs,
- exploit to the fullest the potential of this biodiversity by controlling fermentation risks.

Microselection at the estate is carried out over three years:

1



Presentation of Microselection and definition of customised services*

First of all, before the microselection implementation contract at the estate is signed, OENOFrance undertakes to:

- guarantee the confidentiality of information and the originality of the yeast strains selected, define with the estate the operating conditions of the strains,
- produce the strain or strains every year for the estate in liquid or dry form in accordance with organic production guidelines.

During the three years that the microselection lasts, OENOFrance manages all analyses and provides human resources needed for monitoring trials in wineries.

* the estate decides to continue microselection at the end of each step.



Microselection at the estate

First year

2



Biodiversity study at the estate*

OENOFrance identifies the potentially interesting parcels with the vine-grower. These parcels are vinified as the Estate traditionally does so.

During the vinification process, samples are taken and sent to the laboratory to:

- identify the yeast species found in the samples (*Saccharomyces* or others), study the genetic
- diversity of the most representative yeast strains,
- verify the originality of the strains in comparison with selected and marketed yeasts found in the strain library,
- carry out microvinifications with the most representative strains.

At the end of this first year, three to six deemed interesting strains are selected.

Second year

3



Technical evaluation of dominant and original yeasts*

This second step involves carrying out minivinifications at the estate with previously selected yeast strains. To do so, OENOFrance provides the vine grower with all necessary equipment including:

- Small tanks (50 or 100 liters), Preselected
- strains in liquid yeast form,
- Technical support to carry out minivinifications properly.
-

4



Organoleptic evaluation of dominant and original yeasts *

At the end of this second year, the most interesting for the vine grower yeast starts are validated in terms of minivinification and organoleptic profile.

Third year

This third year involves validating on a tank level the selected yeasts (1 to 3). Trials in wineries are thus conducted.

The yeast strain or strains are added to the vine-grower's collection. OENOFrance can keep these strains in its laboratory.



Added to SOFRALAB and CIRM collection (at the initiative of the estate) of the yeast finally selected*



Selected yeast in liquid or dry form is made available

At the end of this three-year period, the microselection process is over: the vine grower now has available its own selected yeast from his/her estate.

LA PERSANE

LA PERSANE est une levure originale issue du croisement entre *Saccharomyces cerevisiae* galactose - et *Saccharomyces uvarum*. Conçue et sélectionnée par OENOFRANCE, LA PERSANE est une levure très intéressante sur le plan aromatique. Au cours de la fermentation, LA PERSANE produit en effet en quantité importante des composés aromatiques qui développent des notes de fruits, de miel, de fleurs diverses. LA PERSANE est très bien adaptée à la vinification de cépages riches en terpènes. Elle est également très intéressante pour développer la complexité aromatique de cépages blancs tels que le chardonnay, le melon de Bourgogne, la marsanne etc.

PACKAGING: 500 g



LA FRUITÉE

LA FRUITÉE is a *S. cerevisiae* yeast selected for making aromatic white and rosé wines. LA FRUITÉE is particularly known for its capacity for producing fermentative esters with yellow and white flesh fruit and flower aromas. Wines made with LA FRUITÉE are recommended for making wines derived from neutral or aromatic vine varieties.

PACKAGING: 500 g



LA MARQUISE

LA MARQUISE is a *S. cerevisiae galactose* – yeast selected for its capacity to make elegant and balanced sparkling wine in due respect with the typicity of the vine variety. LA MARQUISE multiplies well and enables a very good control of alcoholic fermentation even under difficult conditions that can be encountered when making sparkling wines (low temperature, very clarified musts, pressure). As such, this can also be used on still wines under extreme conditions and is suited to all sparkling wine making techniques: traditional, ancestral or Charmat method.

PACKAGING: 500 g



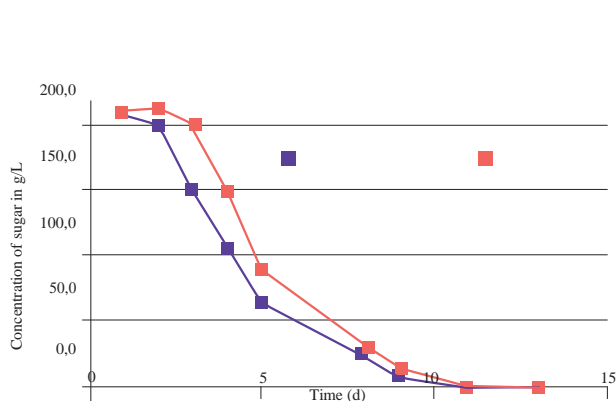
Fermentation and multiplication test carried out with LA MARQUISE on Chardonnay champagne must

Due to its good multiplication activity during the first days following yeasting, LA MARQUISE starts alcoholic fermentation quickly.

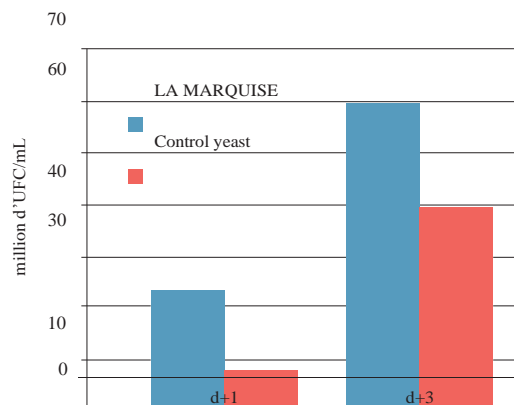
Analyses of base must

Parameter	Degree	pH	Total acidity	Acetic acid	SO ₂ L	SO ₂ T	Malic acid
Unit	% vol		g/L H ₂ SO ₄	g/L	mg/L	mg/L	g/L
Uncertainty		0,05	5%	0.04 g/L	5 mg/L	14 mg/L	21.4 %
Valeur	12,5	3	6.15	<0.03	8	41	5.9

Comparison of alcoholic fermentation of LA MARQUISE and a control yeast



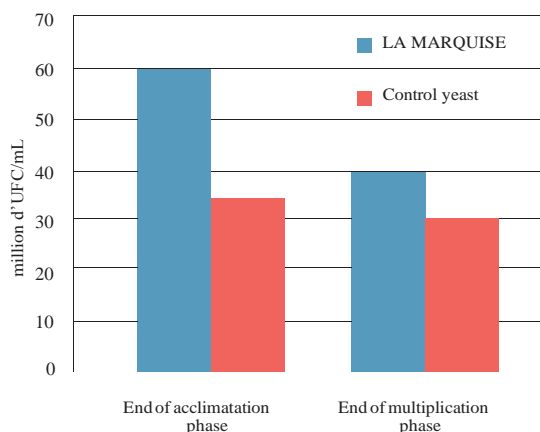
Comparison of LA MARQUISE multiplication and a control yeast on the 3 first days following yeasting



Manufacturing of a devatting yeast starter with LA MARQUISE

Base wine analyses:

	Degree	Glu-fruct	pH	SO ₂ Total	SO ₂ Libre	Total acidity	Volatile acidity	Malic
Unité	% vol	g/L		mg/L	mg/L	g/L H ₂ SO ₃	g/L H ₂ SO ₃	g/L
Incertitude	11,05	0,2	3,1	41	8	4,65	0,26	0,4



Comparison of La Marquise multiplication and a control yeast during the manufacturing of a devatting yeast starter



OENOFRANCE originals

L'ÉLÉGANTE

A Burgundy selection, L'ÉLÉGANTE is a *Saccharomyces cerevisiae* derived from terroirs renowned for its fine white wines (Meursault 1er Cru). L'ÉLÉGANTE expresses with intensity and complexity by associating fruity notes (yellow-flesh fruit, citrus fruit), floral (white flowers, honey) and mineral (silex) notes. The mouth-feel of these wines demonstrates an excellent balance leaning toward an elegant freshness, volume and persistency. We recommend L'ÉLÉGANTE for making high quality white wine combining aromatic and taste finesse with good ageing potential.

PACKAGING: 500 g



L'AUTHENTIQUE

L'AUTHENTIQUE is a natural yeast selected in Burgundy (*Saccharomyces cerevisiae*) in the exceptional terroir of Côte de Nuits. In addition to its good fermentation qualities with high alcohol degree tolerance (15% vol.), L'AUTHENTIQUE is a remarkable yeast based on its organoleptic qualities which contributes to making high quality red wines. L'AUTHENTIQUE combines a quality aromatic complexity while developing silky and well blended tannins. We recommend L'AUTHENTIQUE for making wines with good expressions of terroir with long ageing potential.

PACKAGING: 500 g




LA RAFFINÉE

LA RAFFINÉE is a *S. cerevisiae* yeast selected for its potential for making fruity and complex, for maturing or not, red wine. LA RAFFINÉE reduces vegetal notes of rich in methoxypyrazine vine varieties. It is thus particularly recommended Merlot, Cabernet Franc, and Cabernet Sauvignon vine varieties, and more generally for grapes harvested with low to average grape maturity.

PACKAGING: 500 g



OENOFRANCE originals

NAME	RECOMMENDED FOR	AROMATIC EXPRESSION	PACKAGING	AF KINETICS	OPTIMUM TEMPERATURE	NITROGEN REQUIREMENTS	RESISTANCE TO ALCOHOL	PRODUCTION OF SO ₂	PRODUCTION OF VOLATILE ACIDITY
La Persane  <i>S.cerevisiae galactose - x S. uvarum</i>	Used for making white and rosé wines with elegant, fruity and floral nuances	Production of fermentation aromas	500 g	Fast	12 à 20°C	Average	14%	Average	Low
La Fruitee  <i>S. cerevisiae</i>	Used for making aromatic white and rosé wines with white and yellow flesh fresh fruits profile	Production of fermentation aromas	500 g	Very fast	10 à 16°C	Average to high	15%	Average	Average
L'Elegante 	Used for making white wines to be aged with an elegant and complex aromatic profile	Aromatic finesse - Production of fermentation aromas	500 g	Average	12 à 20°C	High	13%	Low	Low
La Marquise  <i>S. cerevisiae galactose -</i>	Used for making fine and elegant sparkling or still wine under difficult conditions	Aromatic finesse - in due respect with the typicality of the vine varieties	500 g	Fast	10 à 30°C	Low	15,50%	Low	Low
L'Authentique  <i>S. cerevisiae</i>	Used for making red wines to be aged to be used for maturing, with a full-bodied and silky structure	Reveals varietal aromas	500 g	Fast	18 à 32°C	Average	15%	Low	Low
La Raffinee  <i>S. cerevisiae</i>	Used for making complex and fruity red wines with reduced vegetal notes	Production of fermentation aromas - reveals vegetal notes	500g	Average	15 à 28°C	High	16%	Average	Low



Levuline product range

NAME		RECOMMENDED FOR	AROMATIC EXPRESSIO N	PAC K- AGIN	AF KINETIC S	OP- TIMU M TEM-	NITROGE N REQUIR- MENTS	RESIST - ENCE TO ALCO-	PRODU C- TION OF SO ₂	PRODU C- TION OF VOLATI
Levuline® CER		Starter yeast very resistant to alcohol in red, rosé and white wine making	Neutral	500 g	Fast	10-30°C	Low	15%	Low	Low to Average
Levuline® CHP		Fermentation safety and aromatic finesse for making sparkling wine	Varietal aromas	500 g	Fast	10-30°C	Low	15,5%	Low	Low
Levuline® FB		Fermentation reinitiating with remarkable fermentative qualities allowing for effective implanting by dominating indigenous flora	Neutral	500 g	Fast	15-30°C	Low	18%	Low	Low
Levuline® Killer		Starter yeast with remarkable fermentative qualities allowing for effective implanting by dominating indigenous flora	Neutral	500 g / 10 kg	Fast	15-30°C	Low	15%	Low	Low to Average
Levuline B201 Yseo®		Elegant white wines with floral and fruity aromas	Esters (exotic fruits, citrus fruits and floral) Terpenes	500 g	Normal	15-25°C	Low but strong need for survival factors	14,5%	Low	Low
Levuline® ALS		Highlights aromatic expression of white vine varieties	Thiols (especially 4MMP) Terpenes	500 g	Fast	15-25°C	Low but strong need for survival factor	17%	N/A	Average to heavy
Levuline® Arpège		Young and expressive white and rosé wines with amylic type aromas	Fermentative amylic and fruity aromas	500 g	Normal	13-30°C	Low	14,5%	Low	Low to Average
Levuline C19 Yseo®		Excellent fermentative qualities with a real aptitude to reveal varietal aromas for making fruity white and rosé wines	Mineral terpenes	500 g	Fast	15-28°C	Low to Average	15%	N/A	Low
Levuline® Synergie		Association of two yeast strains whose synergy guarantees fermentation safety and reveals aromas in white and rosé wines	Thiols Mineral terpenes	500 g	Fast	18-30°C	Low to Average	15%	N/A	Low to Average
Levuline® Sewa		For making sweet and liqueur wines produced from late harvests with strong aromatic potential	Terpenes	500 g	Slow Average	15-25°C	Heavy and strong need to survival factors	16,5%	N/A	Low
Levuline BRG Yseo®		Remarkable fermentative, aromatic and gustatory qualities, perfectly adapted to great red and white wines to be aged while providing roundness	Varietal aromas	500 g	Fast	18-35°C	Heavy	15%	N/A	Low
Levuline® Lumai		Used for making intense and complex red wines and fruity and persistent white wines	Varietal aromas (β-damasce-none)	500 g	Normal	18-30°C	Low	15,5%	Low	Low
Levuline® Symbiose		<i>Torulaspora delbruecki</i> to inoculate in sequential manner for high quality white wines with great complexity	Varietal aromas	500 g	Normal	18-30°C	Low	15,5%	Low	Low
Levuline® Primeur		Used for a making fruit primeur type wines	Fermentative aromas (amylic, red berries)	500 g	Fast	15-30°C	Average	15,5%	Low	Low
Levuline® Nov'eline		Used for making red wines which are both young and expressive with fruity and amylic aromas	Fermentative aromas (amylic, red berries)	500 g	Fast	15-30°C	Heavy	15%	Faible	Low to Average
Levuline® C2C		Reveals typicality of the terroir for red wines rich in aromatic expression and colour	Varietal aromas	500 g	Slow Average	15-25°C	Heavy and strong need for survival factors	16,5%	N/A	Low
Levuline Ribera Yseo®		Contributes to developing roundness, fruitiness and structure to red wines coming from rich in sugar harvests	Varietal aromas	500 g	Fast	18-34°C	Strong	14,5%	Low	Low
Levuline Gala Yseo®		Excellent fermentative qualities for making red wine with intense fruit aromas	Esters (red berries)	500 g	Fast	18-35°C	Average to heavy	15%	Low	Low to Average



Recommended for the production of white wine



Recommended for the production of rosé wine



Recommended for the production of red wine



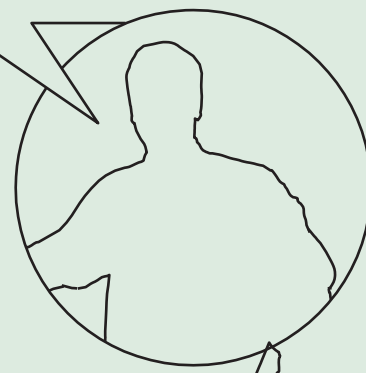
Recommended for the production of sparkling

Fermentation kinetics: Slow - Normal - Fast
Nitrogen requirement: Low - Average - Heavy
Production of SO₂: Absence - Very low - low - Average
Production of volatile acidity: Low - Average - Heavy
 N/A : data not available

N.B.: These different parameters were measured based on an identical synthetic must. This gelose based artificial nutrient medium simulates an easily fermentescible grape must. (necessary nutritional elements, adjusted pH, etc..)

Are there nutrients to promote the production of aromas in my wines?

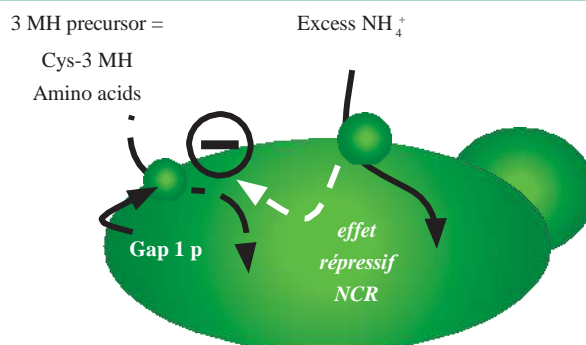
Vivactiv Arôme



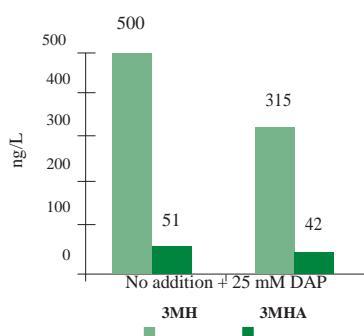
Yeasts prefer using ammonium as a nitrogen source when it is available in the medium to the detriment of amino acids. Excess ammonium provokes a catabolic repression of the yeast's synthetic carriers of amino acids. This results in limiting the entry of amino acids in the interior of the yeast. Cysteiny-type thiol precursors are generally blocked and thus can not be transformed into aromatic thiols.

The effect of excess ammonium in the beginning of fermentation on revealing 3-mercaptohexanol

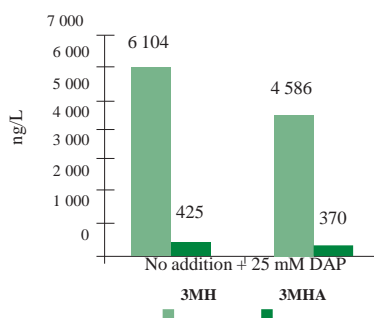
Gap 1 p = transporter protein of Cys-3 MH NCR
= Nitrogen Catabolic Repression



Sauvignon Blanc Languedoc must 2004



Sauvignon Blanc Gers must 2006



Source: Subileau M. et al., 2008



Ideal yeast/nutrient combination for promoting revelation of thiols:

LA FRUITÉE + VIVACTIV ARÔME



VIVACTIV ARÔME

VIVACTIV ARÔME is a nutrient made up of yeast derivatives which enables providing rich nutrition in amino acids to yeasts, which is ideal for the production of fermentative aromas and for revealing varietal aromas during alcoholic fermentation. Based on its composition VIVACTIV ARÔME likewise enables alcoholic fermentation under good conditions and produces clear and quality wines.

PACKAGING: 1 kg

APPLICATION RATE: 20 to 40 g/hL



VIVACTIV BIO



VIVACTIV BIO is a certified organic nutrient used for yeasts and lactic bacteria. VIVACTIV BIO is a preparation of specific inactive yeasts which is the result of inactivation of yeasts derived from organic farming. VIVACTIV BIO is an organic nutrient complement particularly indicated for managing the alcoholic and malolactic fermentation of organic wines.

PACKAGING: 1 kg

APPLICATION RATE: 20 to 40 g/hL



VIVACTIV PREMIER

VIVACTIV PREMIER is a nutrient formulated based on thiamine and autolysates of yeasts rich in vitamins, amino acids and survival factors. Yeasts are capable of optimising their metabolism (multiplication, growth, protection against inhibitors) while ensuring alcoholic fermentation without any deviations, even under difficult conditions.

PACKAGING: 1 kg and 10 kg

APPLICATION RATE: 20 to 40 g/hL



VIVACTIV CONTRÔLE

VIVACTIV CONTRÔLE is a nutrient formulated based on thiamine and autolysates of yeasts and yeast cell walls. Based on its nutritive and detoxifying action, it provides fast and quality end of fermentations. It is recommended for using during AF to prevent sluggish AF and fermentation stops.

PACKAGING: 1 kg and 10 kg

APPLICATION RATE: 20 to 40 g/hL



VIVACTIC PERFORMANCE

VIVACTIV PERFORMANCE is a complex nutrient made up of thiamine, DAP and yeast derivatives. This product formulation, rich in nitrogen, amino acids and vitamins enables to effectively initiate AF while guaranteeing very good quality organoleptic qualities.

PACKAGING: 1 kg and 10 kg

APPLICATION RATE: 20 to 40 g/hL

VIVACTIV MALO

VIVACTIV MALO is a nutrient made up of yeast derivatives and support elements. It provides the necessary amino acids for carrying out malolactic fermentation to selected lactic bacteria .

PACKAGING: 1 kg and 5 kg

APPLICATION RATE: 20 to 30 g/hL



NAME	POSITIONING	AVAILABLE NITROGEN for an addition of 20 g/hL			AVAILABL E NITROGEN	THIAMINE	SURVIVA L FACTOR
		FROM INACTIVATE D YEASTS	MINERAL	TOTAL			
VIVACTIV ARÔME	Nutrient for optimisation of aromas	8 mg/L		8 mg/L	●		●
VIVACTIV PREMIER	Nutrient for carrying out and controlling quality AF	7 mg/L		7 mg/L	●	●	●
VIVACTIV PERFORMANCE	Complex nutrient for initiating AF	2,5 mg/L	23 mg/L without sulphates	25,5 mg/L	●●	●	●
VIVACTIV CONTRÔLE	Complex nutrient for controlling end of AF	6 mg/L		6 mg/L	●	●	●●
VIVACTIV BIO	Certified organic nutrient for initiating AF and MLF	6 mg/L		6 mg/L	●		●●
VIVACTIV MALO	Nutrient for initiating MLF	ND		ND	●		●
ECORCES DE LEVURES	Detoxifying agent used to optimise fermentations						●●●●
ACTIVATEURS	Nutrient used to initiate AF		42 mg/L	42 mg/L	●●●	●	
PHOSPHATE DIAMMONIQUE	Mineral nitrogen - growth factor for yeasts		42 mg/L	42 mg/L	●●●		
SULFATE D'AMMONIUM	Mineral nitrogen - growth factor for yeasts		42 mg/L	42 mg/L	●●●		
THIAMINE	Multiplication factor for yeasts					●●●	

ND: Not determined



- Opt for VIVACTIV ARÔME for a thiol profile objective in order to not inhibit revealing varietal aromas at the beginning of alcoholic fermentation.
In the case of severe deficiencies, it is recommended to increase average recommended dose of VIVACTIV ARÔME at yeasting and mid AF to provide a sufficient concentration of available nitrogen to the yeast.
If the nitrogen requirement for the yeast is too great, we would direct you to complex nutrients at yeasting and mid AF.
- For a fermentation profile objective, we recommend using VIVACTIV ARÔME at yeasting under easy to moderate conditions (warning level < 4).
Under more difficult conditions, we would direct nutrition toward a complex nutrient at yeasting and at mid AF.
Even if 100% specific nutrient is ideal for this profile, complex nutrients contribute positively to the aromatic profile of wines.

carence faible 1	besoin azote faible 1
carence moyenne 2	besoin azote moyen 2
carence importante 3	besoin azote important 3

example: a yeast with high nitrogen requirements used on moderately deficient musts results in a warning level of $3 + 2 = 5$

White and rosé wines

PRODUITS		LA FRUITÉE	LA PERSANE	LA MARQUISE	L'ÉLÉGANTE
AROMATIC POSITIONING		Fermentation	Fermentation	Finesse / Elegance	Finesse / Elegance
Must characteristics / quantity of nitrogen	Timing of addition / nitrogen requirement	High	Moderate	Low	High
Carence faible N ass 140 - 180 mg/L	At yeasting	VIVACTIV ARÔME	VIVACTIV ARÔME	VIVACTIV PREMIER	VIVACTIV PREMIER
	Mid AF	VIVACTIV CONTRÔLE			VIVACTIV CONTRÔLE
Carence moyenne N ass 80 - 140 mg/L	At yeasting	VIVACTIV PERFORMANCE	VIVACTIV PERFORMANCE	VIVACTIV PERFORMANCE	VIVACTIV PERFORMANCE
	Mid AF	VIVACTIV CONTRÔLE	VIVACTIV CONTRÔLE		VIVACTIV CONTRÔLE
Carence importante N ass < 80 mg/L	At yeasting	VIVACTIV PERFORMANCE*	VIVACTIV PERFORMANCE*	VIVACTIV PERFORMANCE	VIVACTIV PERFORMANCE*
	Mid AF	VIVACTIV CONTRÔLE*	VIVACTIV CONTRÔLE*	VIVACTIV CONTRÔLE	VIVACTIV CONTRÔLE*

Recommended dose: 20 g/hL

* increase average recommended doses

Red wines

PRODUCTS		L'AUTHENTIQUE	LA RAFFINÉE
Objective	Timing of addition / resistance to alcohol	15%	16%
Aromatic clearness / limitation of sulphur compounds	At yeasting or mid-AF	VIVACTIV PREMIER	VIVACTIV PREMIER
Ensure ends of fermentations under difficult conditions (TAP > 15,5%, IPT high)	At yeasting	VIVACTIV PREMIER	
	At mid-AF	VIVACTIV CONTRÔLE	VIVACTIV CONTRÔLE

Recommended dose: 20 g/hL

Musts are rarely deficient in red wine making. The interest of yeast nutrition lies particularly in the process of securing the ends of alcoholic fermentation and/or in view of aromatic clarity.

Helper and Genesis product range

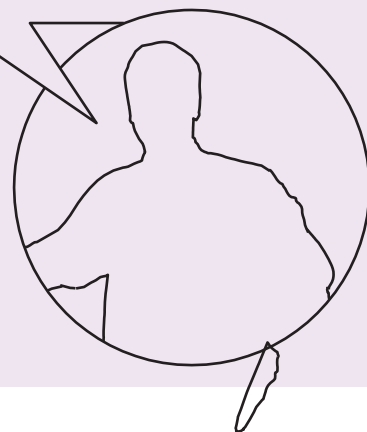
AVAILABLE NITROGEN for an addition of 20 g/hL							
NAME	FROM INACTIVATED YEASTS	MINERAL	TOTAL	AVAILABLE NITROGEN	THIAMINE	SURVIVAL FACTOR	MULTIPLICATION SUPPORTS
GENESIS NATIVE						●●●	
HELPER 100% ORIGIN	8 mg/L		8 mg/L	●		●●	
HELPER	3 mg/L	17 mg/L without sulphates	20 mg/L	●●	●	●●	●
HELPER 60	1,5 mg/L	29 mg/L without sulphates	30,5 mg/L	●●	●	●	●
MILIEU TOTAL	traces	17 mg/L without sulphates	17 mg/L	●●	●	●●●	



Phylia product range

How to optimise and manage maturing on lees?

Phylia LF



OENOFRANCE has a long experience and knowledge of yeast derivatives and their usage in wine. This know-how goes back to the 1980's with the work carried out in cooperation with Professor Michel Feuillat from the University of Bourgogne and the development of the first partial yeast autolysate. In effect, Professor Feuillat highlighted the interest of maturing on lees for colloidal stability and for the organoleptic richness of Burgundy wines.

With the wealth of knowledge accumulated since this period, OENOFRANCE has continued to develop 100% derived from yeast products to respond to various problems encountered by wine makers.

The specific yeast product range currently includes 5 products:

PHYLIA CYS
PHYLIA AR
PHYLIA LF
PHYLIA EPL
PHYLIA EXEL

Maturing can quickly become a problem when wine lees are not qualitative (lack of grape maturity, deficient sanitary conditions, reducing tendency, etc.). Without lees, maturing is not possible. With this result, OENOFRANCE developed an alternative to natural wine lees: PHYLIA LF.

PHYLIA LF was formulated to have similar properties to natural wine lees:

- Capacity to buffer redox potential of wines (limit oxidations and/or wine reduction during maturing), Capacity to limit
- oxidability of wines during maturing,
- Capacity to release parietal polysaccharides in wines which will play a role in coating tannins Capacity to eliminate
- reduction notes on wines.

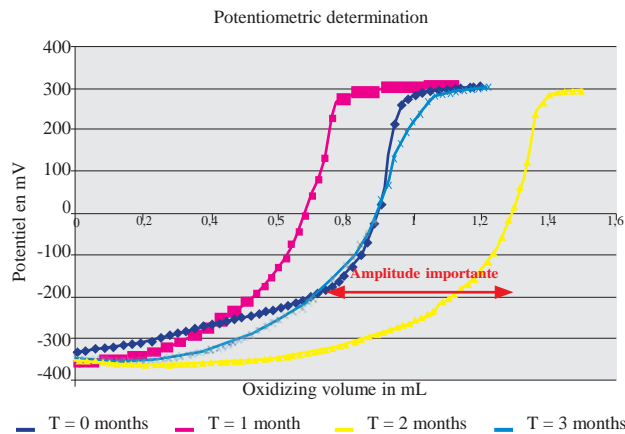


OF

Phylia product range

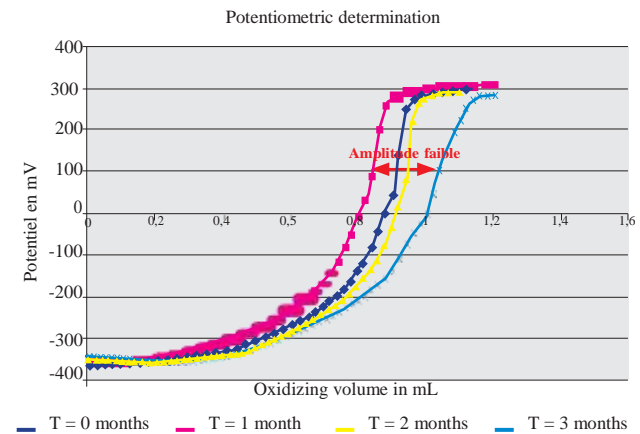


Red control wine:



We note a significant range on the oxidation reduction curves based on a 3-month follow-up

Trial red wine with 25 g/hL de PHYLIA LF:



We note a low range on the oxidation reduction curves based on a 3-month follow-up

■ The capacity of the product to buffer the redox potential of wines has been highlighted by trials involving the monitoring the redox potential of a control red wine (on natural lees) compared to a trial red wine (elimination of natural lees and replaced by 25 g/hL of PHYLIA LF). Monitoring was carried out over 3 months.

■ The buffer capacity of PHYLIA LF is higher than natural lees which enables the wine maker to secure the maturing on lees while limiting heavy oxidation or heavy reductions.

In terms of the capacity of the product to limit the oxidability of wines along with measuring redox potential, we monitored over 3 months the susceptibility to limit oxidation of wines of a control red wine matured on natural lees compared to a trial red wine whose lees have been replaced by 25 g/hL of PHYLIA LF.

Determination method of oxidation susceptibility :

This corresponds to the percent change of yellow colour:

$$\% = \frac{D2 - D1}{D2} \times 100$$

D1: measurement of DO_{420} 12 hours after adding a defined quantity of water.

D2: measurement of DO_{420} 12 hours after adding a defined quantity of hydrogen peroxide.

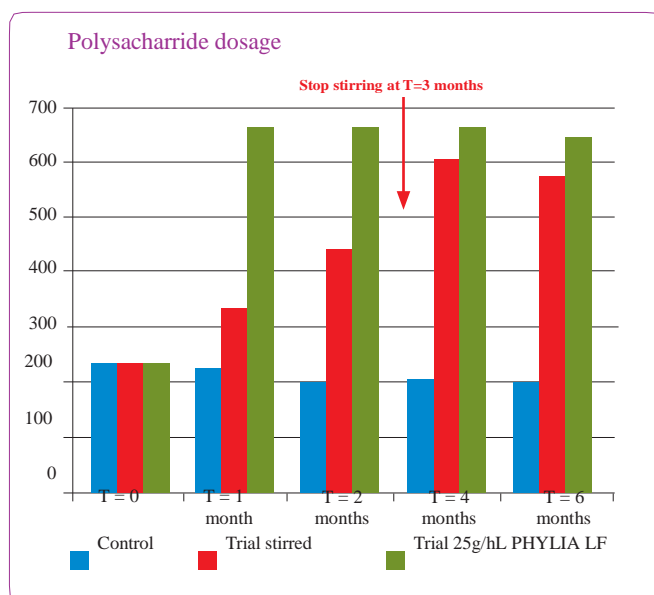
Qualitative measurement: if the value is positive, the wine is oxidisable, if it's negative, the wine is resistant to oxidation.

	T=0	T=30 days	T=60 days	T=90 days
Control	- 3.8	+ 3.3	+ 4.7	+ 7.1
25 g/hL PHYLIA LF	- 0.9	- 25.4	- 15.9	- 19.0

This table shows oxidation susceptibility found on two modalities T=0, T=1 month, T=2 months and T=3 months.

■ It can be noted that PHYLIA LF significantly improves the capacity of wine to resist against oxidation. In effect, the beginning sensitivity to oxidation can be seen at the end of 1 month (positive value) on the control red wine while the red wine treated with PHYLIA LF resists over 3 months (negative value). PHYLIA LF is thus more effective than natural lees for preventing the risk of oxidation of wine. This is therefore a very interesting tool when dealing with vine varieties which are sensitive to oxidation, such as Grenache.

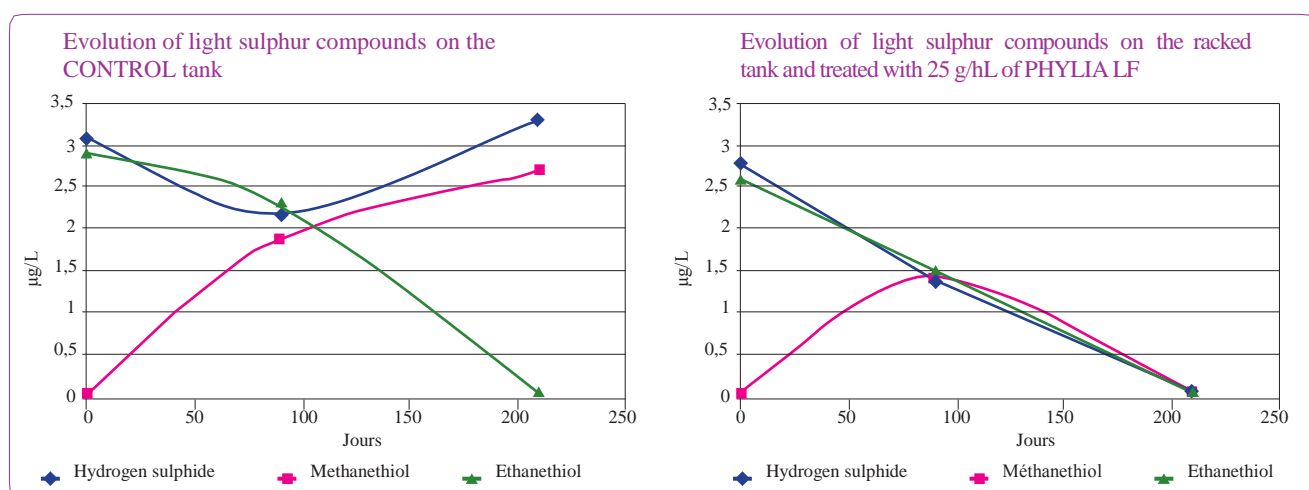
Phylia product range



Concerning the capacity of PHYLIA LF to release polysaccharides, we followed the release of polysaccharides in the medium on 3 methods for 6 months: one method on natural lees without stirring one method on natural lees with stirring (carried out over the first 3 months of the trial) and one method with the natural lees replaced by 25 g/hL of PHYLIA LF with stirring.

This experiment reveals several items:

- Firstly, we note the interest of stirring natural lees on the release, in the medium, of parietal polysaccharides. As such, we note that the control red wine with no stirring has a constant polysaccharide level, 200 mg/L, while this same red wine in the presence of natural lees with stirring has a steady increase of polysaccharide concentration during the entire stirring process (from 200 mg/L the level increases to 600 mg/L between the beginning of the trial and the end of stirring). The polysaccharide concentration level of this wine stops to increase when stirring stops (a 600 mg/L level is maintained after 4 months).
- Secondly, we can note that the input of PHYLIA LF combined with stirring provides a very fast release of polysaccharides contained in the product. In effect, at the end of 1 month, the red wine treated with PHYLIA LF has a polysaccharide level equivalent to maturing on natural lees + stirring 3 months. PHYLIA LF thus enables obtaining the effect of maturing on lees much more quickly. This is a very interesting characteristic for wine-makers wishing to decrease the ageing time of their wines.
- Finally, concerning the capacity of the product to eliminate the reduced notes on wines, we have set up a comparative trial on red wine from a very reduced Pousard vine variety. To do so, we measured light sulphur compounds (H_2S , CH_3SH and $\text{CH}_3\text{CH}_2\text{SH}$) for approximately 200 days on a control red wine matured on natural lees compared to this same red wine from which we have removed the lees and added 25 g/hL of PHYLIA LF.



- On the control wine, we note that a high concentration of hydrogen sulphide remains and tends to increase after 200 days. At the same time, we can note that the concentration of methanethiol continues to increase over time. These two compounds are very much over their perception thresholds (1 µg/L) and generate an established and persistent reducer character on wine.
- On the contrary, wine treated with PHYLIA LF shows a steady reduction of the 3 molecules measured. These molecules disappear completely after 200 days. This contributes to obtaining fruity wine with no olfactory defects.
- These trials show that PHYLIA LF can completely replace the natural lees of a wine. In addition, we note that of all the properties analyzed, PHYLIA LF performs better than natural lees. This product thus constitutes a very interesting solution when wine makers are faced with deviant lees on their wine.

Phylia product range

PHYLIA LF

PHYLIA LF is a preparation made of yeast hulls rich in mannoproteins and polysaccharides. PHYLIA LF regulates the reduction and oxidation steps the wine undergoes during the maturing process. The wine is thus protected from reducing derivatives (at the origin of the mercaptan content) or oxidative (possibly leading to ethanal). Above and beyond natural and protected maturing, PHYLIA LF is a qualitative tool for correcting reduction or oxidation.

PACKAGING: 500 g

APPLICATION RATE: 10 to 30 g/hL

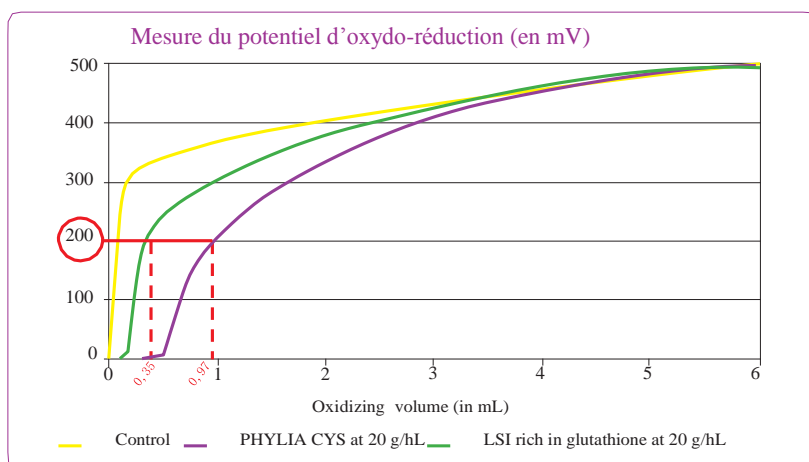


PHYLIA CYS

PHYLIA CYS is an association of specific inactive yeasts (rich in amino acids in small reducing peptides) and selected microcrystallin cellulose. Due to its high antioxidant capacity, when added before the start of alcoholic fermentation, PHYLIA CYS effectively protects aromas against oxidation. PHYLIA CYS likewise prevents the premature ageing of white and rosé wines. Their aromatic evolution is slower and the freshness is preserved.

PACKAGING: 1 kg

APPLICATION RATE: 15 to 35 g/hL



PHYLIA EXEL

PHYLIA EXEL is the result of a partial autolysis procedure enabling obtaining polysaccharides (mannoproteins) and proteins. PHYLIA EXEL interacts strongly with the wine matrix thus reducing the harshness of tannins and decreasing the acidity for white and rosé wines. Used at the finishing stage of wine, PHYLIA EXEL quickly develops volume and fatty mouthfeel (less than 1 week compared to maturing on lees several months). PHYLIA EXEL likewise contributes to gaining complexity, freshness and fruity aromatic expression in the wine.

PACKAGING: 500 g

APPLICATION RATE: 5 to 30 g/hL



Phylia product range

PHYLIA EPL

PHYLIA EPL is the fruit of many years of research focused on fining musts and wine using exclusively yeast based proteins. PHYLIA EPL is based on an innovative industrial process which enables the extraction, concentration and storage of these indigenous yeast proteins. PHYLIA EPL is used for fining musts as well as white, red and rosé wines. PHYLIA EPL eliminates tannins which cause bitterness thus creating a fining and maturing procedure duly respectful of wines. Lastly, and due to its origin, PHYLIA EPL is an “Allergen Free” fining product, and is thus not concerned with the labeling of its allergens.

PACKAGING: 500 g

APPLICATION RATE: 5 to 30 g/hL



PHYLIA AR

PHYLIA AR is a yeast product rich in amino acids and reducer peptides. Used early on in the beginning of the wine-making process, PHYLIA AR is an efficient tool for protecting the aromatic compounds and the color of white and rosé wines. PHYLIA AR reinforces the natural resistance of musts from oxidation.

PACKAGING: 10 kg

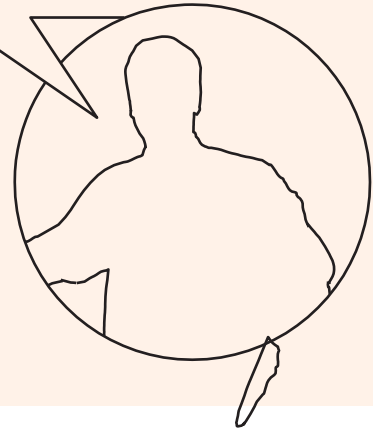
APPLICATION RATE: 15 to 30 g/hL

The Genesis product range

PRODUITS	DOSES	CONDITIONNEMENT	MOMENT D'UTILISATION	CARACTÉRISTIQUES
GENESIS FRESH	25 to 35 g/hL	1 kg	On must before yeasting	GENESIS FRESH is used on white and rosé musts before yeasting. GENESIS FRESH is made up of LSI rich in glutathione which enables preserving the aromatic compounds of wine while limiting their premature evolution
GENESIS PRIME	10 to 40 g/hL	500 g	On wine after alcoholic fermentation	GENESIS PRIME is used on white, rosé or red wines. GENESIS PRIME is composed of yeast cell walls rich in parietal polysaccharides which provide roundness to tannins and increased volume to wine during the maturing process
GENESIS LIFT	5 to 15 g/hL on whites and rosés 5 to 40 g/hL on reds	500 g	On wine before bottling and before last filtration	GENESIS LIFT is used on white, rosé or red wines. GENESIS LIFT is composed of partial yeast autolysate which corrects wines before bottling while providing roundness to the structure and increased suppleness to the tannins

How to manage oxidation of my rosé wines?

Vinificateur SR-3D



VINIFICATEUR SR-3D

VINIFICATEUR SR-3D is a specific winemaking device for rosé wines and is used for must depigmentation, deproteinisation and decontamination. It associates PVPP, several specific montmorillonites and detoxifying charcoal.

PACKAGING: 1 and 5 kg

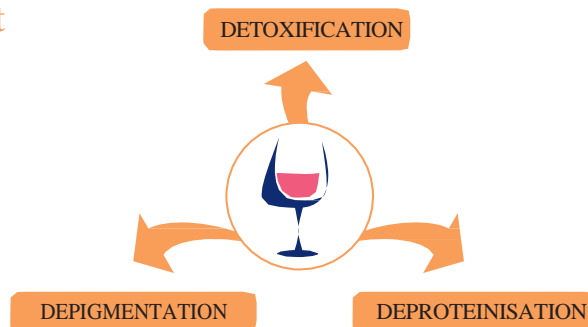
APPLICATION RATE: 50 to 70 g/hL

The VINIFICATEUR SR-3D provides:

- A clear stabilisation of colour,
- Refined taste on musts while conserving fermentation aromas,
- Obtaining desired colour of maceration juice in due respect taste qualities.



3-dimensional effect



The winemakers

Trials carried out on a rosé wine from Provence

Comparative trials VINIFICATEUR SR / SR-3D:

	CONTROL	SR 70 g/hL	SR 3D 70 g/hL
DO₄₂₀	0.220	0.194	0.159
DO₅₂₀	0.217	0.162	0.121
% decrease of DO₄₂₀		11.8	27.7
% decrease of DO₅₂₀		25.3	44.2
Colouring intensity	0.437	0.356	0.28

Trials carried out on rosé from Provence must

Comparative trials VINIFICATEUR SR / SR-3D:

	DO ₄₂₀	DO ₅₂₀	% DECREASE OF DO ₄₂₀	% DECREASE OF DO ₅₂₀	COLORING INTENSITY
Control	0.834	0.959			1.793
SR 60 g/hL	0.583	0.639	30.1	33.4	1.222
SR 3D 70 g/hL	0.452	0.44	45.8	54.1	0.892

- VINIFICATEUR SR-3D has a greater impact on colour than VINIFICATEUR SR It is also as effective on wine as on musts
- Very positive feedback from users

Rosé centre 2007 trials

Impact on aromatic compounds (control/trial) :

	CONTROL	TRIAL	AROMATIC DESCRIPTOR
Linalol (mg/L)	14	17	Rose, floral, orange flowers
3-Methylbutan-1-ol (mg/L)	319	263	Frangipane
2-Phenylethanol (mg/L)	0,1	0,1	Rose
Isoamyl acetate (mg/L)	17,3	19,2	English sweets
Damascenone (ng/L)	2960	3031	Pineapple, rosé
b-ionone (ng/L)	57	55	Violet

Visual aspect of wines (control/trial):



A 60 g/hL treatment of VINIFICATEUR SR-3D has almost no effect on the aromatic compounds of the following families:

TERPEN

SUPERIOR
ALCOHOLS

ESTER
S

NORISOPRENOIDES

The winemakers



VINIFICATEUR SR

VINIFICATEUR SR is specifically formulated to maintain the color of rosé wines, while respecting their organoleptic qualities. It is also used as a prevention agent against the 'pinking' of white wines.

PACKAGING: 1, 5 and 15 kg

APPLICATION RATE: 40 to 100 g/hL



VINIFICATEUR SR NATUREO

VINIFICATEUR SR NATUREO is a complex mixture of bentonites, pea proteins and caseine. It eliminates polyphenols responsible for yellowing and prevents «pinking» phenomena. VINIFICATEUR SR NATUREO combines better color stability over time and selectively adsorbs unstable proteins. The organoleptic qualities of rosé wines are preserved.

PACKAGING: 5 kg

APPLICATION RATE: 40 to 100 g/hL

FORMULE 1-CF

FORMULE 1-CF (Casein Free) prevents and treats the oxidation of casein free musts and wine. Made from PVPP and cellulose, using a unique coating and agglomeration techniques: granulation has a more even flow and is more homogeneous with fewer fine particles. The aggregates form more spaces and thus offer a larger physical adsorption surface area. This contributes to decreasing application rates. FORMULE 1-CF, in micro granules, can be used directly without any prior preparation.

PACKAGING: 1 and 5 kg

APPLICATION RATE: 50 to 70 g/hL



VINIFICATEUR N

Composed of thiamine and bentonite, VINIFICATEUR N prevents both protein instability as well as coloring instability.

PACKAGING: 5 kg

APPLICATION RATE: 30 to 150 g/hL



VINIFICATEUR C

By associating caseine and bentonite, VINIFICATEUR C prevents and treats protein instability in white and rosé wine.

PACKAGING: 5 kg

APPLICATION RATE: 30 to 100 g/hL



VINIFICATEUR ALPHA

VINIFICATEUR ALPHA improves fermentescibility of very clarified juice and prevents protein instability. This wine-making product is made up of bentonite and microcrystalline cellulose.

PACKAGING: 500 g

APPLICATION RATE: 30 to 60 g/hL



OENOCLAR

OENOCLAR is a preparation additive for musts and wine which associates gelatin, PVPP and fish fining agents. It is ideal for fining white and rosé musts derived from botrytized grapes, harvests done by machine, and musts from pruning or pressing rich in polyphenols. OENOCLAR is likewise very efficient by floating.

PACKAGING: 5, 10 and 20 L

APPLICATION RATE: 5 to 20 cL/hL

CASEINE SOLUBLE

This product is made from caseine and protein and treats and prevents the oxidation of musts and white wines. Its action against yellowing and maderization is curative, but the action may also be preventive.

PACKAGING: 1, 5 and 25 kg

APPLICATION RATE: 50 to 150 g/hL

ALTOCASE

ALTOCASE is an alternative to caseine for treating and preventing oxidation. ALTOCASE contains no allergen compounds and can be used like caseine and has the same properties.

PACKAGING: 1, 2, 5 and 15 kg

APPLICATION RATE: 20 to 100 g/hL

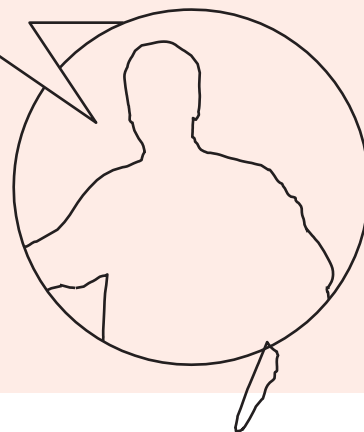


Macération pelliculaire

How to improve **pressing yield and the quality of my juices?**

Lysis **Intense**

and skin maceration on Sauvignon blanc



LYSIS INTENSE

LYSIS INTENSE is a special pectinase preparation with secondary protease and cellulase activities. It is adapted to skin maceration and likewise improves clarification and facilitates pressing.

PACKAGING: 100 g

APPLICATION RATE: 2 to 4 g/hL



- Skin maceration amplifies the extraction of aromatic compounds and aroma precursors, but also nitrogen compounds which promotes alcoholic fermentation or ensures the ageing of wine.

This technique extracts neutral polysaccharides which have a direct impact on wine structure (increases sensation of volume).

The usage of enzymes during skin maceration can be an important asset for extracting more positive compounds while limiting the extraction of negative compounds such as phenolic compounds, responsible for bitterness.

- **LYSIS INTENSE**, is adapted to this application and was formulated to respond to the constraints of skin maceration. These specific activities allow a controlled degradation of the skin's cellulose walls which weaken the grape berries, thus facilitating juice extraction.



Results:

Skin maceration must be carried out on a healthy harvest.

Sauvignon Blanc at 12°C is treated with LYSIS INTENSE at 2 g for a 100 kg harvest.

- The LYSIS INTENSE action is translated by an increase in run off and press juices on the enzymed part compared to the control samples (Figure n°1), along with a decrease in marc weight after pressing (Figure n°2).

Yield after pressing

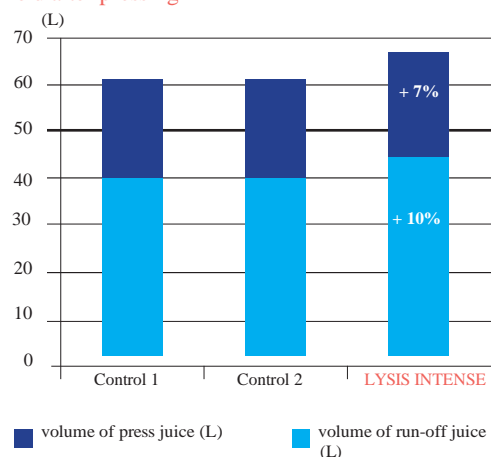


Figure n°1 Increase in yields of run-off and press juice from the enzymed procedure compared to controls.

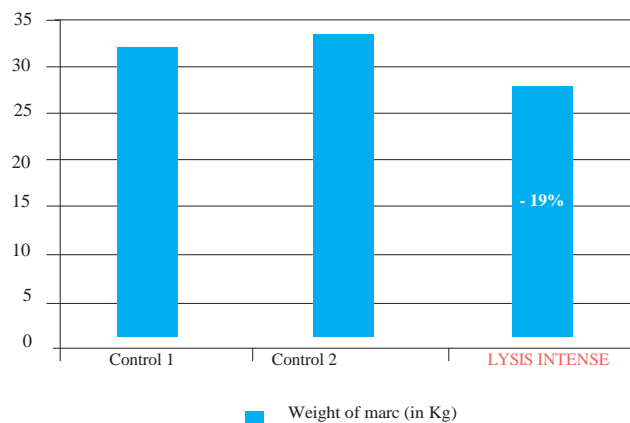


Figure n°2 Weight of marc obtained after pressing.

- The input of LYSIS INTENSE enables obtaining a much more significant volume of must with an equivalent pressing compared to traditional skin maceration with no added enzymes.
- The chemical analysis of musts after pressing (Table 1) shows few differences, except optical density measures
- The procedure with added enzymes does not have more phenolic compounds (DO_{280}) than control musts, which confirms the controlled extraction allowed by LYSIS INTENSE. On the other hand, differences observed for DO_{320} and DO_{420} , the latter which provides information on the quinone content of musts, phenolic compound oxidation products and the former on the yellow shade of musts.
- The procedure with added enzymes shows a lower DO_{320} thus a lesser concentration of quinones. This is a positive point since quinones are free radical vectors involved in oxidative phenomena. This decrease may be the result of limiting must oxidation due to releasing more antioxidant nitrogen compounds, such as the naturally occurring glutathione found in grapes.
- The DO_{420} is higher in the procedure with added enzymes, which results in an increased release of flavanoid-type chemical compounds, responsible for the yellow colour of wines.

	CONTROL 1	CONTROL 2	LYSIS INTENSE
TAV in % V/V	12	11,9	12
Total acidity in g/L H_2SO_4	4,1	4,1	4,2
Volatile acidity in g/L H_2SO_4	0,01	0,01	0,01
pH	3,35	3,35	3,35
Malic acid in g/L	4,1	4,1	3,9
Available nitrogen in mg/L	157	140	157
Sugars in g/L	202	200	202
DO_{280}	5,95	6,06	6,14
DO_{320}	4,99	4,92	4,24
DO_{420}	0,097	0,143	0,223

Table 1: Chemical analyses of musts after pressing

Skin maceration

The pectinase enzyme activities of LYSIS INTENSE play an important role in decreasing must viscosity and also on their clarification. Indeed, skin maceration increases the release of pectins in musts making them particularly viscous and charged with vegetal particles (substantial turbidity).

Using LYSIS INTENSE during skin maceration saves a lot of time since the must obtained has been subjected to depectinisation during the maceration process followed by a clarification following pressing. (Tableau n°2).

In case of traditional skin maceration, with no addition of enzymes, a clarification enzyme must be used after pressing in order to settle the musts obtained. In practice, this clarification is oftentimes difficult and requires larger doses of enzymes.

	CONTROL 1	CONTROL 2	LYSIS INTENSE
Turbidity (in NTU)	434	493	15

Tableau n°2 Turbidité du surnageant des tubes juste après la fin de la macération et avant l'ajout de l'enzyme de clarification sur les témoins.

Les trois modalités montrent des cinétiques fermentaires équivalentes.

L'analyse chimique des vins obtenus après fermentation alcoolique (Tableau n°3), révèle que la plupart des paramètres mesurés ne montrent pas de différences notables. Cela confirme les observations sur mûr : le volume de jus supplémentaire obtenu sur la modalité enzymée ne se fait pas au détriment de la qualité, bien au contraire.

	CONTROL 1	CONTROL 2	LYSIS INTENSE
Alcohol strength in % V/V	12,24	12,2	12,3
Total acidity in g/L H_2SO_4	4,8	4,8	4,9
Volatile acidity in g/L H_2SO_4	0,5	0,43	0,39
pH	3,37	3,33	3,34
Malic acid in g/L	3,2	3,3	3,2
Free SO_2 in mg/L	35	35	31
Total SO_2 in mg/L	141	124	128
DO₂₈₀	5,98	5,88	5,73
DO₃₂₀	1,95	1,9	1,93
DO₄₂₀	0,082	0,097	0,106

Tableau n°3: Chemical analyses of wine after alcoholic fermentation.

Dosage of volatile thiols

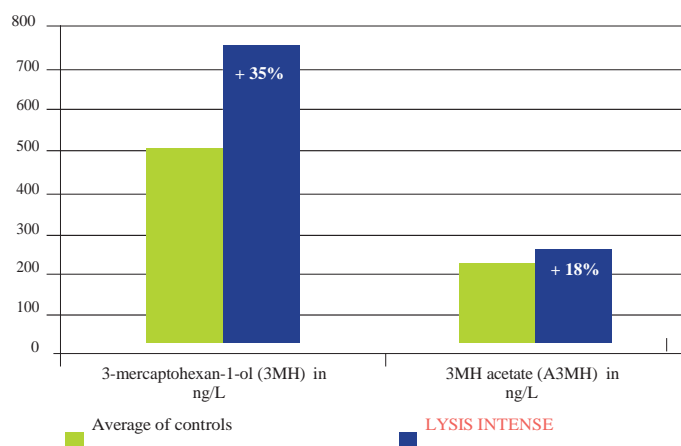


Figure 3: Dosage of volatile thiols on finished wine – Perception threshold of volatile thiols: 60 ng/L for 3MH, 4 ng/L for A3MH.

The analysis of the concentration of volatile thiols of wine shows the interest of using LYSIS INTENSE for facilitating the extraction of aromatic precursors (Figure 3).

As such, wine derived from the procedure with added enzymes shows a concentration of 3-mercaptohexan-1-ol (3MH) 35% higher than the average of concentrations obtained from control wines. There is an increase of +18% for 3-mercaptohexan-1-ol acetate (A3MH).

3MH and A3MH provide exotic fruit, citrus or floral notes. The overall result of wine derived from enzyme maceration is longer, more volume and less vegetal notes than the control wines.

CONCLUSION :

It would clearly appear that LYSIS INTENSE is an interesting tool to be used for the skin maceration of white vine varieties, on a economic level (higher yield of juice) and on a technical level (limits the production of phenolic compounds, increases the releasing of aromatic compounds and compounds having a positive impact on wine).



LYSIS ULTRA

LYSIS ULTRA is made up of very concentrated liquid enzymes in pectinase activity and in secondary cellulase and hemicellulase-type activities. This enzyme enables quickly lowering the viscosity and the turbidity of musts and works at low temperatures ($<10^{\circ}\text{C}$) and at low pH levels (from 2.8). LYSIS ULTRA can be used on difficult to clarify white musts, presenting a thick skin and low maturity. LYSIS ULTRA is likewise recommended for flotation.

PACKAGING: 100 mL

APPLICATION RATE: 0,3 to 1 mL/hL



LYSIS ALLEGRO

LYSIS ALLEGRO is a microgranular enzyme preparation made up of pectinases and specific secondary activities. LYSIS ALLEGRO is used for the clarification and settling of white and rosé musts. It is a very efficient and multi-faceted enzyme.

PACKAGING: 100 g

APPLICATION RATE: 1 to 4 g/hL



LYSIS GRENAT

Organic red wine winemaking. LYSIS GRENAT is a pectolytic enzyme preparation in microgranular form. This enzyme develops the color and fruity aromas. LYSIS GRENAT is used for red wine winemaking and is particularly suited to making organic wine.

PACKAGING: 100 g

APPLICATION RATE: 1 to 4 g/hL



LYSIS UC

LYSIS UC is very concentrated in pectinase activity and reacts quickly and improves lees settling. It is also used in flotation.

PACKAGING: 50, 100 g and 1 kg

APPLICATION RATE: 0.3 to 1 g/hL and 0.5 to 2 g/hL in flotation



LYSIS ACTIV 60



LYSIS ACTIV 60 is a liquid enzymatic preparation for the clarification and settling of musts with solid matter derived from thermo-treatment or difficult to clarify vine varieties.

PACKAGING: 1, 10 and 20 L

APPLICATION RATE: 2 to 5 mL/hL

LYSIS ELITE



Due to its secondary cellulose, hemicellulase and glucanase activities this liquid pectinase preparation, LYSIS ELITE facilitates clarification and settling of difficult juices coming from thick-skinned grape varieties or from intense pressing.

PACKAGING: 100 mL and 1 L

APPLICATION RATE: 3 to 4 mL/hL



LYSIS IMPACT



LYSIS IMPACT is a liquid preparation which improves the clarification and filterability of press wine and juices resulting from thermovinification. It is also used in flotation. This preparation has substantial secondary cellulase and galactanase activities.

PACKAGING: 120 mL and 1 L

APPLICATION RATE: 2 to 4 mL/hL



LYSIS SPÉCIAL ROSÉ

LYSIS SPECIAL R is a liquid enzymatic preparation used for clarifying and settling rosé juices. Due to its broad range of adapted enzymatic activities, it optimises the settling of difficult to clarify rosé juices. LYSIS SPECIAL R provides fast and quality clarification of musts at settling, an improved compacting of deposits in addition to facilitated filtration of rosé wines.

PACKAGING: 100 mL and 1 L

APPLICATION RATE: 3 to 4 mL/hL



LYSIS ESSENTIA

LYSIS ESSENTIA reveals aromatic fractions naturally found in musts. These musts, made up of terpenes combined with glucosides, rendering them sensory-wise inactive. Secondary enzyme activities associated with pectolytic activities promote the break down of pectins, thus the release of aromas.

PACKAGING: 100 g

APPLICATION RATE: 2 to 4 g/hL



LYSIS MPC

Hot pre-fermentation maceration requires the use of pectinase, as the heat has denatured the grape enzymes. LYSIS MPC facilitates the clarification of musts and wines treated by hot pre-fermentation maceration and improves the yield after pressing.

PACKAGING: 100 g and 1 kg

APPLICATION RATE: 2 to 4 g/hL



LYSIS FLASH D

LYSIS FLASH D is a liquid enzymatic preparation with high pectolytic activity to be used for the depectinization of musts produced from Flash Release. These musts are reputed for being difficult to clarify and make low juice yield after pressing. LYSIS FLASH D can significantly improve this yield.

PACKAGING: 1, 10 and 20 L

APPLICATION RATE: 2 to 5 mL/hL



LYSIS FILTRAB



LYSIS FILTRAB is a specific liquid enzymatic preparation for the clarification and filtration of musts and wines. This enzyme regenerates filtration membranes quickly with no risk of alteration.

PACKAGING: 1 and 10 L

APPLICATION RATE: 3 to 5 mL/hL

LYSIS COULEUR



Pectinase activities are necessary to extract color, like the high level cellulase and hemicellulase activities. This is the case with LYSIS COULEUR. These activities are completed by proteolytic activities which stabilize color.

PACKAGING: 100 g and 1 kg

APPLICATION RATE: 1.5 to 4 g/hL for rosé; 2 to 5 g/100 kg for red

LYSIS FIRST



LYSIS FIRST improves extraction and color stability. This is used for wines naturally rich in tannins since its secondary activities provide roundness while reducing astringency and harshness of tannins.

PACKAGING: 100 g

APPLICATION RATE: 1 to 5 g/hL

LYSIS ELEVAGE



LYSIS ELEVAGE is active on polysaccharides, namely β -glucanes contained in wine produced from botrytized grapes. It improves the filterability of these wines and likewise facilitates the glucane hydrolysis of yeast walls during ageing on lees.

PACKAGING: 100 g

APPLICATION RATE: 2 to 4 g/hL



NAME	FUNCTION	FORM	DOSES	CONTACT TIME
LYSIS ACTIV 60	Clarification and settling	L	2 to 5 mL/hL	4 to 8 hours
LYSIS ALLEGRO	Clarification and settling of white and rosé musts. Versatile and very effective	P	1 to 4 g/hL	2 to 8 hours
LYSIS COULEUR	Color extraction and stabilization	P	1,5 to 4 g/hL in rosé 2 to 5 g/100 kg in red	During alcoholic fermentation
LYSIS ELEVAGE	Matured on lees, botritysed harvest	P	2 to 4 g/hL	3 to 7 days 2 to 4 weeks with lees
LYSIS ELITE	Settling, clarification of difficult musts, flotation	L	3 to 4 mL/hL	6 to 12 hours
LYSIS ESSENTIA	Release of linked terpenes	P	2 to 4 g/hL	1 to 3 weeks
LYSIS FILTRAB	Improves filterability of musts and wines, clean ultrafiltration membranes	L	3 to 5 mL/hL	1 to 2 weeks on wine
LYSIS FIRST	Extraction of colour and roundness	P	1 to 5 g/hL	During alcoholic fermentation
LYSIS FLASH D	improves clarification and filterability of musts and wines with flash release and thermovinification	L	2 to 5 mL/hL	At least 10 minutes
LYSIS GREMAT	Clarification or reds	P	2 to 5 g/hL	2 to 12 hours
LYSIS IMPACT	Clarification and filterability of white and rosé press musts. Flotation	L	2 to 4 mL/hL on musts	1 to 2 hours on musts 2 to 3 days on wine
LYSIS INTENSE	Skin maceration facilitates pressing	P	2 to 4 g/hL	12 to 18 hours
LYSIS MPC	Hot pre-fermentation maceration	P	2 to 4 g/hL	During alcoholic fermentation
LYSIS SPECIAL R	Settling and clarification of rosés	L	3 to 4 mL/hL	Approximately 4 hours
LYSIS UC	Settling and clarification, very concentrated flotation	P	0,3 to 2 g/hL	4 to 8 hours
LYSIS ULTRA	Settling, clarification, flotation of difficult musts	L	0,3 to 1 mL/hL	2 to 8 hours

L = liquid

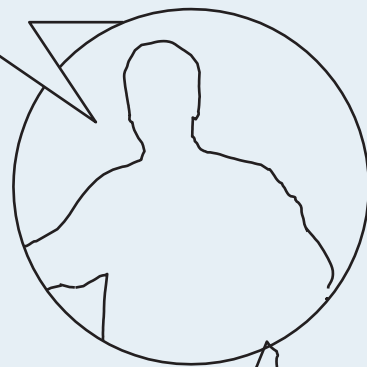
P = powder



how to choose the most adapted to my wine bacteria

The Malo tool

A prescription tool for well-managed MLF



NAME	DOSES	TYPE	ALCOHOL	pH	SO ₂ T / SO ₂ L	OPTIMUM TEMPERATURE RANGE*	END AF	CO-INOCULATION	RED WINE PROFILE	PRODUCTION OF DIACETYL
FML EXPERTISE C	100 hL	Starter cultur	< 14%	> 2,9	< 70 mg/L / < 10 mg/L	> 18°C and < 25°C				Very low
FML EXPERTISE S	2,5 hL / 25 hL / 250 hL	Direct pitching	< 14,5%	> 3,3	< 50 mg/L / < 10 mg/L	> 18°C			Fruity / spicy	Very low
FML EXPERTISE E	25 hL / 250 hL	One step	< 15,5%	> 3	< 60 mg/L / < 10 mg/L	> 14°C	●●●●	●●●●	Structure	Average to high

* Low temperatures (see table) fosters the implantation of selected bacteria in wine. This is even more so with wine under difficult conditions. important

On the other hand, the metabolism of bacteria is fostered by higher temperatures which is why at the onset of MLF, the temperature can be increased but not exceeding 26°C for a sequential inoculation or 30°C for a co-inoculation.

To simplify the choice of lactic bacteria based on the vintage and the problems encountered with different wines, OENOFRANCE has developed a **tool for setting specifications** or sequential inoculation (after AF).

This tool is in the form of an interactive table (Alcohol, SO₂, AF profile...) on which the consultant oenologists and the wine makers insert the characteristic data of the wines. Depending on the different information provided and depending on the year profile advice is given: a bacteria and a nutrient. As such, malolactic fermentation can be managed owing to specifications and reasoned use.

Several physicochemical factors limit the development of bacteria: low pH, high alcohol degree, a rate of free SO₂ or high total, a rate of malic acid under 1 g/L or above 6 g/L. Alcoholic fermentation conditions also influence on MLF. In effect, yeast like bacteria use amino acids as a source of nitrogen. Under certain conditions (heavy growth, high nitrogen requirements), yeasts can deplete nutrients in the medium, thus leaving not very conducive for their development. In the event of stress during AF the yeasts can also produce C6 and C8 fatty acids which are toxic inhibitors for lactic bacteria. For this reason, it is important to take nitrogen requirements for the yeast used for alcoholic fermentation into consideration and the AF conditions in order to choose the bacteria inoculation protocol.

This setting specifications tool is easily accessible on the **OENOFRANCE public archives web site** (www.oenoFrance.com). In certain extreme cases, a traditional bacteria usage is not recommended. The MALO tool advises contacting an OENOFRANCE consultant oenologist to set up a specific protocol, adapted to the situation.

www.oenoFrance.com

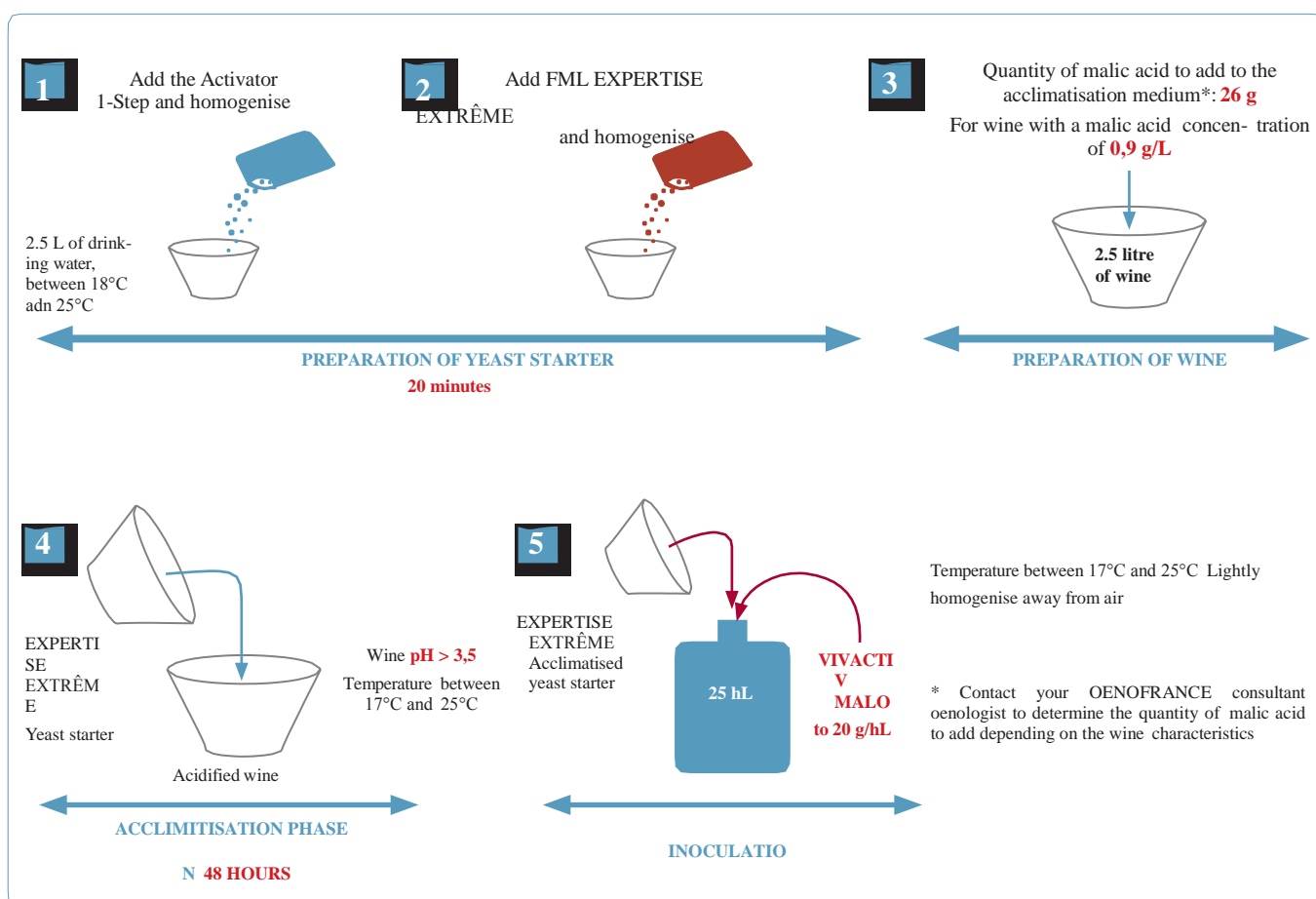


Example of an extreme situation:

Red wine with a malic acid concentration under 1 g/hL

When bacteria implement a metabolic pathway, it's always for a particular reason: production of constituent elements of the cell, energy production, detoxification, etc. When the malic acid level is very low, the benefit for the bacteria isn't great enough and malolactic fermentation has not started.

To resolve the situation, a specific protocol needs to be implemented which involves a small starter culture with bacteria in a One Step form and add a quantity of this starter culture to initiate MLF.



Example of an extreme situation:

A very sulphited Northern white wine: Total SO₂ at 100 mg/L:

FML EXPERTISE C is the bacteria which is the best adapted to white wines with low pH levels. It also resists the best to SO₂. Nevertheless, a concentration of 100 mg/L of total SO₂ does not enable applying the traditional protocol. After rehydration, it is recommended to go through 3 or 4 acclimatisation phases instead of 2 in order for the bacteria to adapt little by little to SO₂.

FML EXPERTISE C

FML EXPERTISE C is a *Oenococcus oeni* bacteria used for inoculating white wines with low pH level- and average degree of alcohol. This is an ideal bacteria for carrying out malolactic fermentation on base wine to be used for bottle fermentation. The implementation protocol of FML EXPERTISE C includes an acclimatisation in several phases before inoculating the wine.



FML EXPERTISE S

FML EXPERTISE S is an *Oenococcus oeni* bacteria for direct inoculations derived from an IFV in Beaune selection programme carried out on red wines from different regions in France. It has been selected for its capability of producing fruity and spicy red wines and for its fermentation performances on average alcoholic strength wine.



FML EXPERTISE EXTRÊME

FML EXPERTISE EXTRÊME is a malolactic seeding kit which includes one bacteria and nutrients. A water/wine mixture is acclimated for approximately 20 hours prior to usage. The bacteria metabolizes the nutrients in this water and as such is in full activity during the seeding process. FML EXPERTISE EXTRÊME resists low pH levels as well as to high alcohol levels.



ATOUT MALO NATIVE

ATOUT MALO NATIVE provides nutrients necessary for the development of lactic bacteria. This product facilitates and accelerates malolactic fermentation. ATOUT MALO NATIVE can also be used for wine facing difficulties starting fermentation despite having a non-limiting pH and SO₂ contents.

ATOUT MALO MBR

ATOUT MALO MBR associates different inactive yeasts rich in amino nitrogen or parietal polysaccharides with cellulose. This product responds to bacteria complex nutrient needs while fostering malolactic fermentation.



Reasoned addition of tannins

How to successfully make a modern red wine derived from thermovinification?

The Oenotannin product range



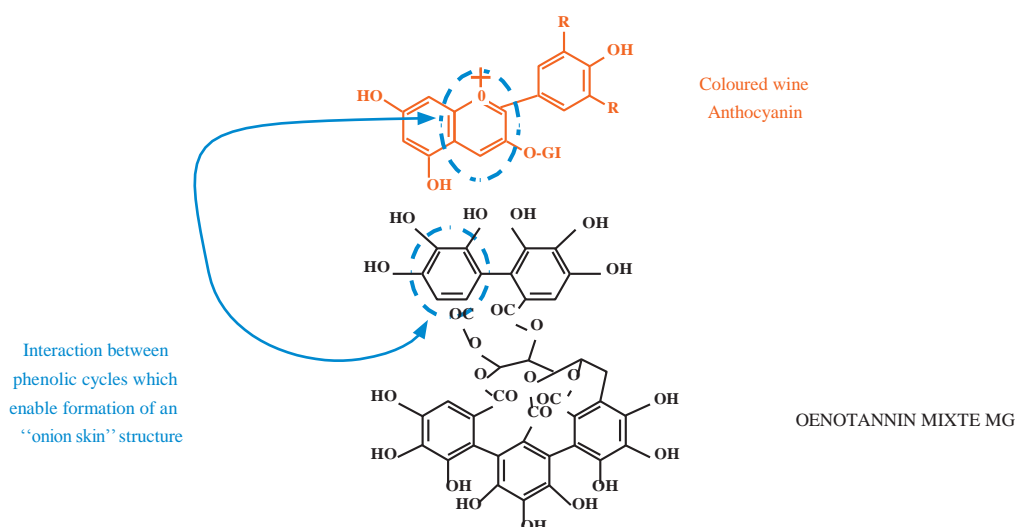
Oftentimes this type of wine has a deep colour, but unstable over time and sometimes with a somewhat rustic tannic structure. The problem of stabilizing colour and the problem of improving wine structure should be taken into account. Next, during the winemaking process it must be taken into account that there may be the presence of solid matter which may bond with tannins which are too reactive.

There are two steps to follow:

1st step

Use a tannin which will protect color from oxidative destruction although perhaps not definitively. As we are in the presence of solid matter we can not directly use tannins which will definitively stabilise color without the risk of losing a part due to the re-embedding on the solid matter. We use a tannin with a good capacity to form weak co-pigmentation bonds (formation of onion skin compound between anthocyanins and the tannin), but sufficient to protect colour. We choose OENOTANNIN MIXTE MG which has the additional interest of being not costly.

Co-pigmentation principle and “onion skin” compound formation

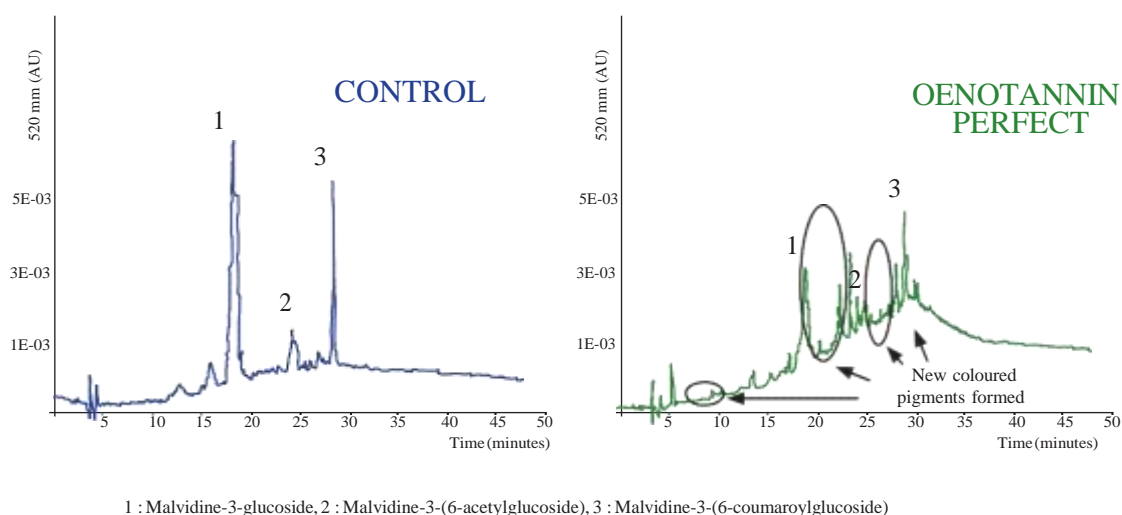


Reasoned addition of tannins

2nd step

At the end of devatting, when solid matter is separated from liquid matter, a so-called OENOTANNIN PERFECT tannin is used to definitively stabilise colour. In effect, this tannin is derived from grape seeds and is characterised by its low molecular weight making it very reactive with regard to polyphenols of which anthocyanins. It is a preferred tannin for colour stabilization and also for initiating the polymerisation of wine tannins. We have shown in the chart below that using OENOTANNIN PERFECT on an anthocyanin model solution produces new colouring pigments which correspond to anthocyanin-tannin covalent bonds. These bonds are definitive and provide a sustainable stabilization of the colour. OENOTANNIN PERFECT also reacts with naturally occurring tannins in the wine to polymerise them and render them less reactive thus more supple from an organoleptic point of view.

HPLC analysis of an anthocyanin model solution (malvidine compound) 2 months after the addition of 10 g/hL of OENOTANNIN PERFECT



This concrete example demonstrates OENOFrance oenologists' know-how and managing of their products while likewise demonstrating that after thorough analysis of the situation, they can find a solution to every problem. Feel free to contact us and we can offer you a custom made solution.



Reasoned addition of tannins

OENOTANNIN VB 105

OENOTANNIN VB 105 is an oak tannin which is used as a wine maturing accessory. This product fosters slow oxidation while conserving tannins and other wine compounds. It likewise contributes to the stabilising of the wine colouring matter and structure.

PACKAGING: 500 g

APPLICATION RATE: 2 to 20 g/hL



OENOTANNIN MIXTE MG

This extract is purified with micro-granule chestnut tannins and is used during wine making. It is very reactive with proteins and has an antioxidant role. Added to the must and the wine prior to fining, OENOTANNIN MIXTE MG improves the fining process while avoiding the thinning of the wine.

PACKAGING: 1,5 and 12,5 kg

APPLICATION RATE: 5 to 40 g for 100 kg of harvest, or 5 to 15 g/hL during fining



OENOTANNIN VB TOUCH

This pure oak tannin is derived using an innovative production process and is used during wine making while providing volume to the wine while reinforcing its aromatic potential.

PACKAGING: 500 g

APPLICATION RATE: 0,5 to 30 g/hL



Reasoned addition of tannins

OENOTANNIN INITIAL

OENOTANNIN INITIAL is a grape seed tannin extract. During the winemaking process, it compensates tannin deficiency by bringing structure and remarkable volume. Used in the beginning of wine maturing, it removes herbaceous notes, green tannins and provides suppleness.

PACKAGING: 500 g

APPLICATION RATE: 5 to 20 g/hL



OENOTANNIN VELVET

OENOTANNIN VELVET is a grape seed extract which is made up of proanthocyanidines derived from an average degree of polymerization. When introduced during or at the end of the maturing process it reinforces the wine structure and its wine ageing potential. OENOTANNIN VELVET participates rapidly with the stabilizing of color.

PACKAGING: 500 g

APPLICATION RATE: 5 to 20 g/hL

OENOTANNIN PERFECT

OENOTANNIN PERFECT is a grape seed extract made up of tannins with a low degree of polymerization, which is very reactive to wine tannins. This responsiveness enables initiating polymerizations in wine and stabilizes color in the long term. Its strong anti-radical activity limits oxidation and protects color.

PACKAGING: 500 g

APPLICATION RATE: 5 to 20 g/hL

OENOTANNIN OENOGAL

5 or 10 g/hL of pure alcohol gall-nut tannin added before gelatin, this fining additive promotes devatting and helps eliminate excess proteins. OENOTANNIN OENOGAL also has anti-oxidant and anti-laccase properties are put to use when used on adverse harvests.

PACKAGING: 1 kg

APPLICATION RATE: 2 to 20 g/hL



Reasoned addition of tannins

OENOFrance has always been close to its customers and the specific problems they encounter. It is for this reason that OENOFrance is the only oenological products company to market pure botanical origin tannins. OENOFrance studied the chemical properties of different available tannins over several years. Based on this study, OENOFrance demonstrated that each tannin taken individually (in terms of botanical origin) provides specific features particular to wine (resistance to oxidation, colour protection, wine structuring, reinforced redox potential, etc.). OENOFrance thus decided to develop a complete botanical origin tannin product range in order that each tannin responds in an optimal manner to different problems winemakers may encounter.

There are many problems which can be resolved by using the right tannin at the right time. It is therefore important to understand the problem and the related constraints to choose the OENOFrance tannin product range to solve the corresponding problem.

The below tables provides the properties of every OENOFrance product range tannin and their corresponding timing of usage.

DESIRED RESULTS	TYPE OF WINE	RECOMMENDATION	OENOTANNIN	RECOMMENDED DOSES	APPLICATION
Preserves natural polyphenols of wine	Reds	Alcoholic fermentation	MIXTE chestnut	10-30 g/hL	Precipitates proteins Protects against oxidation
		Winemaking	INITIAL grape seeds	10-30 g/hL	
		Maturing	VB105 oak	5-30 g/hL	
Balances the natural phenolic potential of wine	Reds	Winemaking	INITIAL grape seeds	5-40 g/hL	Compensates tannin deficiency
		Draining, beginning of maturing	PERFECT grape seeds	5-20 g/hL	
		Maturing	VELVET grape seeds	5-40 g/hL	
Stabilises the color	Reds	Draining, beginning of maturing	PERFECT Grape seeds	5-20 g/hL	Initiates tannin-anthocyanin condensation
		Maturing	VELVET Grape seeds	5-40 g/hL	Finalises tannin-anthocyanin condensation
Structures, softens or erases	Reds	Winemaking	INITIAL Grape seeds	5-40 g/hL	Provides structure and eliminates green tannins
		Draining, beginning of maturing	PERFECT grape seeds	5-20 g/hL	Reinforces ageing potential and initiates polymerisation of tannins
		Maturing	VELVET Grape seeds	5-40 g/hL	Provides structure and volume
			VB105 oak	5-30 g/hL	Reinforces tannic potential
			VB TOUCH oak	5-30 g/hL	Harmony between structure and volume
Control of oxidation	All wines	Botrysid or altered harvests	OENOGAL gall nut	5-20 g/hL	Fast consumption of oxygen
	Red musts	Winemaking	MIXTE chestnut	5-30 g/hL	Fast consumption of oxygen
	All wines	Draining, beginning of maturing	PERFECT grape seeds	1-20 g/hL	Fast consumption of oxygen and protects over time
		Maturing	VB105 oak	1-30 g/hL	Fast consumption of oxygen
Clarify	White Rosé Red	Add just before fining	MIXTE chestnut	5-15 g/hL	Avoid overfining , accelerates the fining process



OENOQUERCUS BF

OENOQUERCUS BF is made from non toasted wood. It does not bring toasted notes, but rather highlights floral and fruity notes, especially in red wine. In addition, it provides wine with wood polysaccharides which brings volume and sweetness.

**OENOQUERCUS FR**

OENOQUERCUS FR is made from French oak which was subjected to medium and medium plus toasting. It is structured and also provides the wine with toasted notes.

**OENOQUERCUS DUO**

OENOQUERCUS DUO combines the very complementary qualities of American and French oak. Toasting is medium. This formulation emphasizes the aromas of the wine, provides volume and structure due to the presence of French oak, but also toasted aromatic notes, coconut and mocha notes from American oak.



DOMINO US ET FR

DOMINO US and DOMINO FR: the domino form provides great aromatic complexity and represents an alternative to maturing in barrels. DOMINO FR structures wines while DOMINO US provides aromatic notes of mocha, coconut, vanilla, etc.

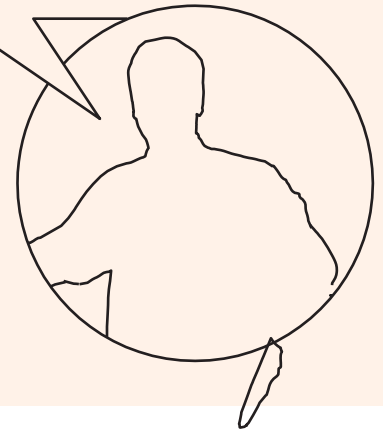
Product range is made up of chips and dominos derived from French and American oak. This includes three different chips and two types of dominos:

	COMPOSITION	TOASTING	DOSES	CONTACT TIME
OENOQUERCUS BF	Fresh wood	0	0,5 to 10 g/L	4 to 8 weeks
OENOQUERCUS FR	French oak	Medium and medium plus		
OENOQUERCUS DUO	50% American oak + 50% French oak	Medium		
DOMINO FR	French oak	Medium		8 to 12 weeks
DOMINO US	American oak	Medium		



What yeast products to accompany my wine from the grape to the bottle ?

Phylia Epl

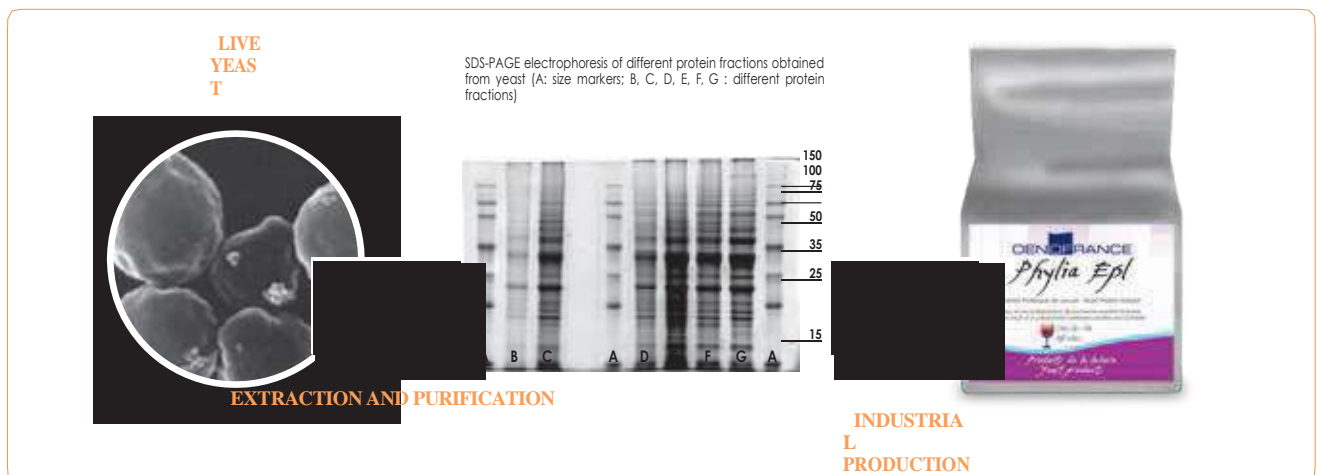


Background

Developed in collaboration with the Hochschule Geisenheim University (Germany), and the Lesaffre company, PHYLIA EPL is the result of several years of research focused on fining musts and wines using yeast proteins.

Production process

The production of PHYLIA EPL lies in managing yeast treatment and purifying compounds obtained in view of retaining solely the sought after proteins.



Characteristics

PHYLIA EPL is a revolutionary yeast protein extract based on its origin and its production process

- In effect, the constituent proteins of PHYLIA EPL come exclusively from yeasts used in oenology (*Saccharomyces cerevisiae*). They can also be qualified as «native wine proteins».
- PHYLIA EPL is based on an innovative industrial process which ensures the extraction, concentration and the conservation of proteins derived from yeast, selected for their heavy molecular weight protein richness.
- PHYLIA EPL is a completely soluble yeast protein extract. As this fining product is «Allergen Free» it is not concerned by allergen labeling



PHYLIA EPL is based on an industrial procedure enabling the conservation of native proteins derived from yeast. Only proteins with high molecular weight (>14 kDa) are able to ensure quality fining of wines.

SDS-PAGE electrophoresis profile of PHYLIA EPL with a size marker scale

EPL: Yeast protein extract PHYLIA EPL

M: size in kD Markers

Its properties

Above and beyond being used for clarification, PHYLIA EPL is unique in enhancing the taste profile of wine.

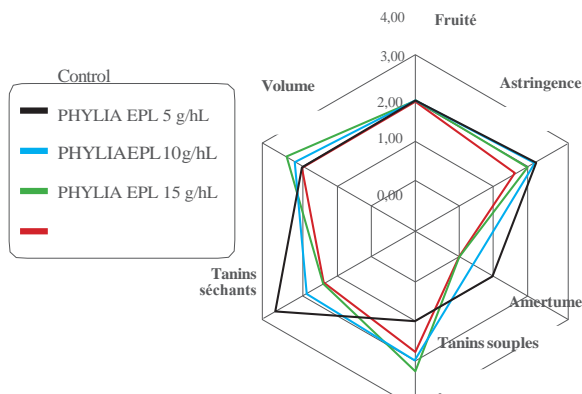
This innovative yeast product:

- Removes drying tannins Reduces astringency Reduces bitterness

PHYLIA EPL, is an original and quality alternative to traditional protein fining agents which enables the refining of white, red and rosé wines.

Impact of PHYLIA EPL on the taste profile of wines.

Trials on different doses on red Syrah wine.



To fully benefit from PHYLIA EPL, it is recommended to carry out preliminary trial tests using different dosage levels.

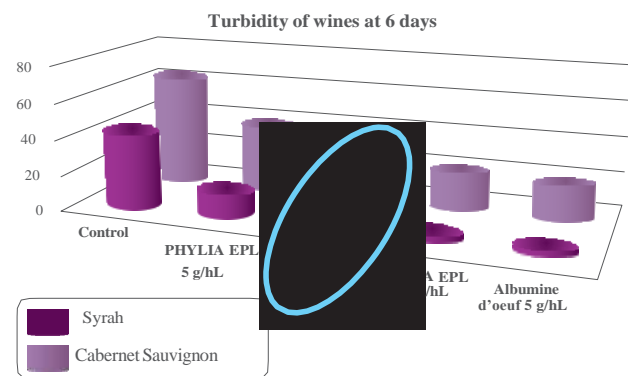
As such, the wine-maker can select, based on taste, the treatment dose level the most adapted to his/her wine.

Ses applications

- PHYLIA EPL est destiné préférentiellement aux vins haut de gamme, blancs, rouges et rosés, type premium à super premium.
- Positionné sur les vins rouges, il gomme l'astringence trop marquée, assouplit les tanins et concourt à l'amélioration du volume en bouche.
- Sur les vins blancs et rosés, PHYLIA EPL élimine en particulier les tanins responsables de l'amertume et participe d'une façon générale à l'amélioration du profil gustatif.

Impact of PHYLIA EPL on the clarification of wines.

Trial on red wine at different doses and comparison to egg albumen



PHYLIA EPL provides an optimal organoleptic impact using a dose of 10 g/hL, combined with a fining performance similar to egg albumen, which is the traditional fining agent for great red wines.

Its implementation

- Determine the optimum application rate of PHYLIA EPL by setting up a preliminary test trial for wine: an under vacuum sample and the protocol for use available upon request
- Disperse PHYLIA EPL into 10 times its weight of water (cold)
- Incorporate into wine then homogenize well. Best if used with a fining connection such as Venturi
- On white and rosé wines, it is possible to add an ellagic-chestnut type tannin beforehand to activate the fining process: that being for each dose of PHYLIA EPL, a corresponding half dose of OENOTANNIN MIXTE. It is to be noted that silica gel is not effective on the fining process of PHYLIA EPL.

To conclude

PHYLIA EPL, is:

- The leading yeast protein extract 100 % yeast proteins
- Non-allergenic

- 100 % soluble
- Used for the very respectful fining of wines

FINING IN ITS MOST ORIGINAL FORM!



Fining products for wines

PHYLIA EPL

PHYLIA EPL is the fruit of many years of research focused on fining musts and wine using exclusively yeast based proteins. PHYLIA EPL is based on an innovative industrial process which enables the extraction, concentration and storage of these indigenous yeast proteins. PHYLIA EPL is used for fining musts as well as white, red and rosé wines. PHYLIA EPL eliminates tannins which cause bitterness thus creating a fining and maturing procedure duly respectful of wines. Lastly, and due to its origin, PHYLIA EPL is an “Allergen Free” fining product, and is thus not concerned with the labeling of its allergens.

PACKAGING: 500 g

APPLICATION RATE: 5 to 30 g/hL



ADAGI'O

ADAGI'O is a pure and pasteurized liquid egg white preparation, used for the clarification of red wines matured in barrels or for those wines rich in polyphenols. 1 Kg of ADAGI'O corresponds to 32 egg whites.

PACKAGING: 1 L

APPLICATION RATE: 3 to 5 cL/hL

ADAGI'O BIO

ADAGI'O BIO is a certified organic pure egg white powder. ADAGI'O BIO has the same technical properties of ADAGI'O. Particular attention is paid to keeping all the natural qualities of egg whites when making ADAGI'O BIO. ADAGI'O BIO is recommended for the fining and clarification of organic red wines.

PACKAGING: 1 kg

APPLICATION RATE: 5 to 10 g/hL



OVICOLLE

OVICOLLE is a traditional fining agent for great red wine and is made up of pasteurised egg albumen in powder form. OVICOLLE softens wines rich in tannins.

PACKAGING: 1 kg

APPLICATION RATE: 5 to 10 g/hL

Fining products for wine

AFFIMENTO

AFFIMENTO has been formulated from specific gelatin for fining and clarifying red wine as with Adagi'o. This product works gently and removes astringency and is the "Allergen Free" alternative to ADAGI'O.

PACKAGING: 1 and 5 L

APPLICATION RATE: 5 to 15 cL/hL

COLLE DE POISSON OF

COLLE DE POISSON OF is a specific clarifying agent for white wine and is made up of high molecular weight. This product provides unparalleled brilliance combined with very good organoleptic results.

PACKAGING: 1 and 5 L

APPLICATION RATE: 100 to 200 L/hL

GÉLATINE N

GÉLATINE N preserves the tannic structure of red wines. It uses less tannins than COLLE H for precipitating and enables a gentle gumming of the tannic structure. 80% of these proteins have a molecular weight of over 80 000 daltons. Very efficient for clarifying associated with OENOGEL 30 silica gel, it is also recommended for devatting musts by flotation.

PACKAGING: 1, 5, 10 and 20 L

APPLICATION RATE: 5 to 10 cL/hL

COLLE H

More hydrolyzed than GÉLATINE N, with proteins with a molecular weight ranging between 50 000 and 75 000 da, COLLE H eliminates tannins with astringent properties.

PACKAGING: 1 L; 5 L; 20 L (1000 liter container packages available upon request) **APPLICATION RATE:** 2 to 5 cL/hL



Fining products for wine

IS 15

IS 15 is a cold soluble gelatin, with 80% of the proteins contained with a molecular weight of 15 000 daltons. It is very reactive to tannins with bitter and astringent properties. IS 15 is used for wines rich in this type of tannin.

PACKAGING: 1 kg

APPLICATION RATE: 6 to 12 g/hL

OVIGEL

OVIGEL, associates egg white and gelatin and clarifies and stabilizes medium structured young red wine. OVIGEL removes bitterness due to certain tannins.

PACKAGING: 1 kg

APPLICATION RATE: 5 to 10 g/hL

COLLOGEL

COLLOGEL, made up of little hydrolyzed gelatin and fish collagen, is used for clarifying white and rosé wines. Its proteins are involved in forming insoluble complexes thus ensuring a rapid and efficient fining, with no risk over overfining while preserving the organoleptic properties of wine.

PACKAGING: 1, 5 and 10 L

APPLICATION RATE: 3 to 10 cL/hL

GÉLATINE F

GÉLATINE F, little hydrolyzed, is well adapted to new devatting by floatation of musts procedures. This product uses the low rate of polyphenols of the juice which enables a complete and rapid flocculation after compressing the musts.

PACKAGING: 1 kg

APPLICATION RATE: 6 to 12 cL/hL

OENOGEL 30

OENOGEL 30 is made up of silica sol. This product is added before the gelatin of fish fining agents and improves the compacting of lees, speeds up the clarification and avoids overfining. Contrary to tannins, this does not harden white wine.

PACKAGING: 1, 5, 10 and 20 L

APPLICATION RATE: 3 to 10 cL/hL



The Organic product range

Consumers are currently increasingly concerned with the quality of the products they consume. This is also true in the vine and wine sector. The demand for organic wine has increased and the percentage of vine growers who produce organic wine increases substantially year by year.



OENOFRANCE wants to contribute to the growth of organic wine through its delivery of services and is oenological products.

To do so, a real BIO approach has been undertaken: Green Care Alliance.

OENOFRANCE with its consulting oenologists partake in this approach by accompanying organic grape winemakers. Today, in view of recent European regulations on organic wine production, this specific accompaniment has been reinforced with:

- An expert technical assistance for making wines in accordance with European organic regulations (EU regulations 834/2007, 889/2008, 203/2012), American NOP regulations (National Organic Program)
- A large selection of OENOFRANCE oenological products in accordance with European and American organic regulations Ecocert certified oenological
- product range (VIVACTIV BIO, ADAGI'O BIO and KORDOFAN BIO).



The list of products authorised by organic winemaking regulations (EU organic wine regulation, NOP (USA), DEMETER) is available on our web site at www.oenofrance.com

VIVACTIV BIO

VIVACTIV BIO is a certified organic nutrient used for yeasts and lactic bacteria. VIVACTIV BIO is a preparation of specific inactive yeasts which is the result of inactivation of yeasts derived from organic farming. VIVACTIV BIO is an organic nutrient complement particularly indicated for managing the alcoholic and malolactic fermentation of organic wines.

PACKAGING: 1 kg

APPLICATION RATE: 20 to 40 g/hL



ADAGI'O BIO

ADAGI'O BIO is a certified organic pure egg white powder. ADAGI'O BIO has the same technical properties of ADAGI'O. Particular attention is paid to keeping all the natural qualities of egg whites when making ADAGI'O BIO. ADAGI'O BIO is recommended for the fining and clarification of organic red wines.

PACKAGING: 1 kg

APPLICATION RATE: 5 to 10 g/hL



KORDOFAN BIO is a certified organic natural gum arabic in powder form made from acacia verreaux (or acacia Senegal). The harvest and manufacturing conditions for KORDOFAN BIO make for a extremely pure gum and very efficient for the colloidal stabilization of organic red wines.

PACKAGING: 1 kg

APPLICATION RATE: 10 to 50 g/hL



Protein stabilisation

BENTONITE S

BENTONITE S comes from very pure montmorillonite deposits. These sodium bentonites can be used at lower doses than standard bentonites, thus limiting organoleptic incidents.

PACKAGING: 1, 5 and 25 kg

APPLICATION RATE: 20 to 80 g/hL

PERFORMA

Selected among the purest natural bentonites used by the pharmaceutical and cosmetology sectors, PERFORMA develops a very high adsorption surface area. This property considerably reduces the application rate and thus limits organoleptic incidents.

PACKAGING: 1 and 5 kg

APPLICATION RATE: 10 to 30 g/hL

OPTIMA

OPTIMA was formulated to respond to stabilization requirements for white and rosé wines. Made up of bentonite and PVPP, OPTIMA adsorbs unstable proteins, effectively removes bitterness while preserving the intense coloring of rosé wines and helps soften the tannins of red wines while improving filterability.

PACKAGING: 1 kg

APPLICATION RATE: 5 to 20 g/hL

CRISTADOLCINE EF

CRISTADOLCINE EF is used for eliminating proteins and for clarifying white and rosé wines while associating 3 different bentonites. CRISTADOLCINE EF severely limits the volume of lees. 30 to 60 g/hL is in general enough for eliminating the total amount of unstable proteins.

PACKAGING: 1 and 5 kg

APPLICATION RATE: 30 to 100 g/hL

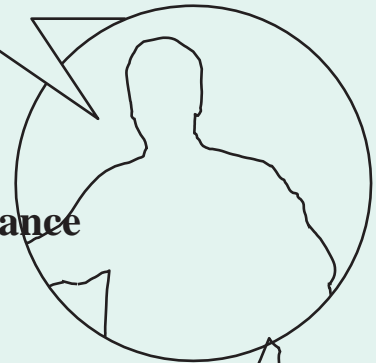


La stabilisation tartrique

How to secure
the tartaric stabilization
of my white and rosé wines with regard to potassium?

Kyocell

Cellulose gum or natural origin in compliance
with the Oenological Codex

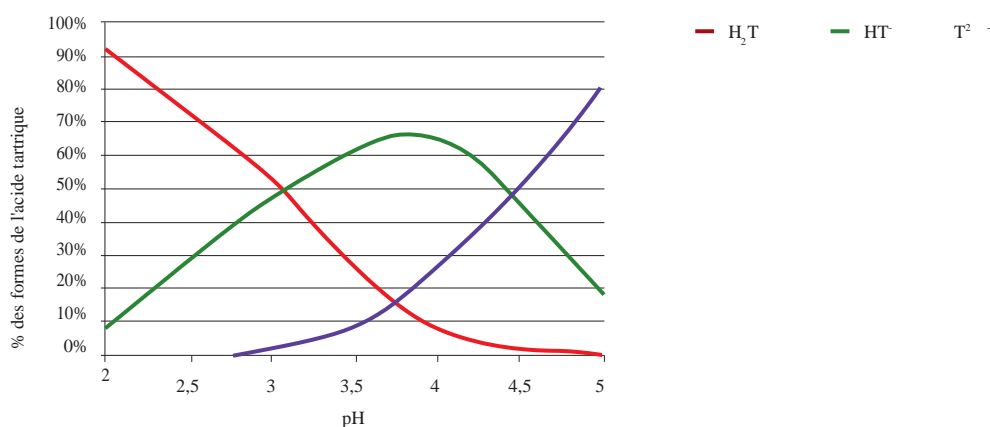


Tartaric acid is vine acid! It is produced in large quantities and is the principle natural source of this acid. Potassium is the other commonly found element in grapes. It has a very important physiological role for vines by participating in grape maturation. Consequently, it represents the core of minerals found in musts and wines. This production of tartaric acid and the presence of large quantities of potassium bring on the appearance of crystals in wine.

In solutions, tartaric acid can be found in different balanced forms. As such, tartaric acid, which is a diacid chemically speaking, can exist in three distinct forms: tartaric acid (H_2T), bitartrate ion (HT^-) and tartrate ion (T^{2-}). The balances can be written as follows:



These balances are regulated by the pH levels in solutions and according to the wine pH level the distribution of different forms of tartaric acid varies.



The pH of wine (generally can vary between 2.9 and 4), the predominant is bitartrate ion since it represents between 40 and 65% of total present tartaric acid. It clearly appears that the T^{2-} tartrate form is increasingly found with rising pH levels, reaching nearly one-third of tartaric acid of wine.

It is these two forms of tartaric acid which are responsible for the instability of wine by crystallising in the form of potassium bitartrate (KHT) and calcium tartrate (CaT). These crystals appear in the wine since it is a hydro-alcoholic solution when musts are purely an aqueous solution.

Tartaric stabilization



Every solution, whether aqueous or hydro-alcoholic, has an «acceptance» limit of a chemical species. This value is called the solubility of a species in one or another solution. In this context, we shall speak of S_{KHT} and S_{CaT} . In accordance of this value, two cases are possible.

Example of KHT :

■ $[\text{HT}^-] \times [\text{K}^+] < S_{\text{KH}} \Rightarrow$ le KHT is totally soluble

■ $[\text{HT}^-] \times [\text{K}^+] > S_{\text{KH}} \Rightarrow$ le KHT crystallises

Several factors influence this crystallisation phenomenon.

■ Lowering temperature or alcohol level decreases the value 5-fold All other factor

■ which increase concentrations of K^+ or HT^-

As such, increasing the alcohol level during alcoholic fermentation reduces the solubility of KHT and CaT and increasing the pH level increases the concentrations of bitartrate and tartrate, just as a press wine is richer in K^+ than a free running wine or that a cuvée of Champagne is one level less rich. All these factors have an influence as they increase the product of the concentrations and as such create a greater chance of being above the solubility of SKHT et SCaT and thus lead to the crystallisation of KHT and of CaT.

Concerning CaT, the probability of surpassing SCaT is less than for KHT because if the risk exists it is lesser than for KHT. On the other hand, since wine is not simply a hydro-alcoholic solution, since it contains numerous colloids, the situation is a bit more complex. These so-called protectors ensure having concentrations above SKHT without KHT crystallising. The wine is then said to be oversaturated. Nevertheless this oversaturation phenomenon is not indefinite and at a given moment KHT crystallises anyway.

This is why we have different options to stabilise wine with regard to tartaric salts: Eliminate excess salt 5-

■ fold (chilling with or without inoculating potassium bitartrate)

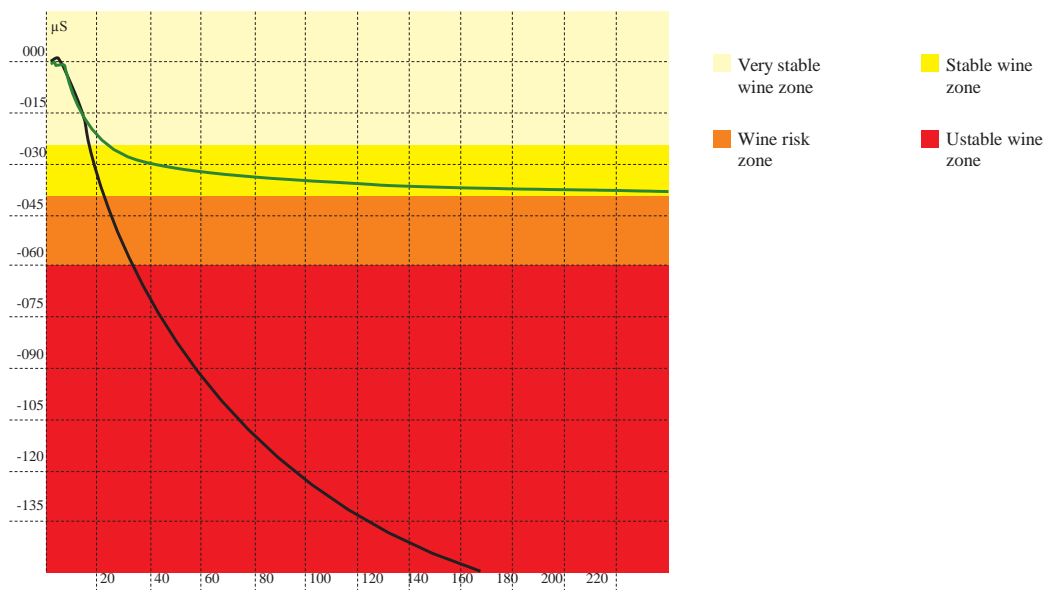
■ Enlarge the field of oversaturation of wine with KHT by adding colloidal protectors (metatartaric, KYOCELL)

The choice of using one or another of the methods will depend on the type of wine to stabilise, its composition and equipment available.

Each method has its advantages and its disadvantages:

LChlling can be applied to all wines but this will cause pH levels to decrease and will consume more energy. The use of meta- tartaric will enable stabilising rapid production wines but on the term long its hydrolysis makes it less efficient. Finally, KYOCELL enables stabilising white and rosé still and/or base wines (if the colour is stable), but can not be used on red wines.

In any case, verifying the efficiency of the treatment is crucial either by using a chill test which may block since it lasts 5 days and is carried out at -4°C or by using a minicontact test which we carry out with CHECKSTAB. This enables determining the KHT stability status of the wine within a few minutes.



Tartaric stabilisation

KYOCELL

KYOCELL is a cellulose gum (E466) used for stabilizing wine with regard to potassium bi- tartrate. KYOCELL is made from cellulose extracted from wood. Its main characteristics, viscosity, degree of polymerization and degree of substitution, are particularly adapted to oenology. KYOCELL can be found in granulate and liquid form.

PACKAGING: 1 kg/ 5, 20 and 1000 L

APPLICATION RATE: 4 to 10 g/hL/ 8 to 20 cL/hL



BITARTRYL

This metatartaric acid is manufactured under the control of Oenofrance, in order to obtain a constant quality product. Efficient against tartaric precipitations, its very low reversibility rate provides long lasting results.

PACKAGING: 500 g and 1 kg

APPLICATION RATE: 10 g/hL

STABILISANT OF

By associating gum arabic using metatartaric acid, STABILISANT OF prevents colloidal troubles and the bitartrate deposits in wine. The mixture of these two active substances is ready to use.

PACKAGING: 500 g and 1 kg

APPLICATION RATE: 10 to 15 g/hL

BITARTRATE DE POTASSIUM

BITARTRATE DE POTASSIUM (E 336), still referred to as cream of tartar or potassium tartaric acid is used during the cold treatment of wine. Used at doses of 400 g/hL, it serves as the seed for the crystallization of tartaric acid salts. Crystallization is thus faster and more thorough.

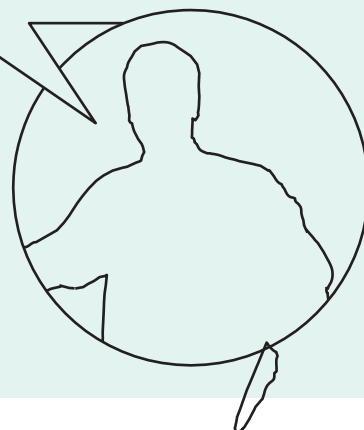
PACKAGING: 5 and 25 kg

APPLICATION RATE: 50 to 200 g/hL



What arabic gum to use to improve wine roundness without harming filtration?

Gomme SR



What determines the quality of an arabic gum? The chemical composition:

Arabic gum is a complex and ramified polysaccharide. It is made up of arabinogalactan regions bonded to a protein chain (cf. schéma 1). This structure is organized in two parts in space: a hydrophilic complex made up of polysaccharides and a hydrophobic complex made up by the protein part (cf. schéma 2).

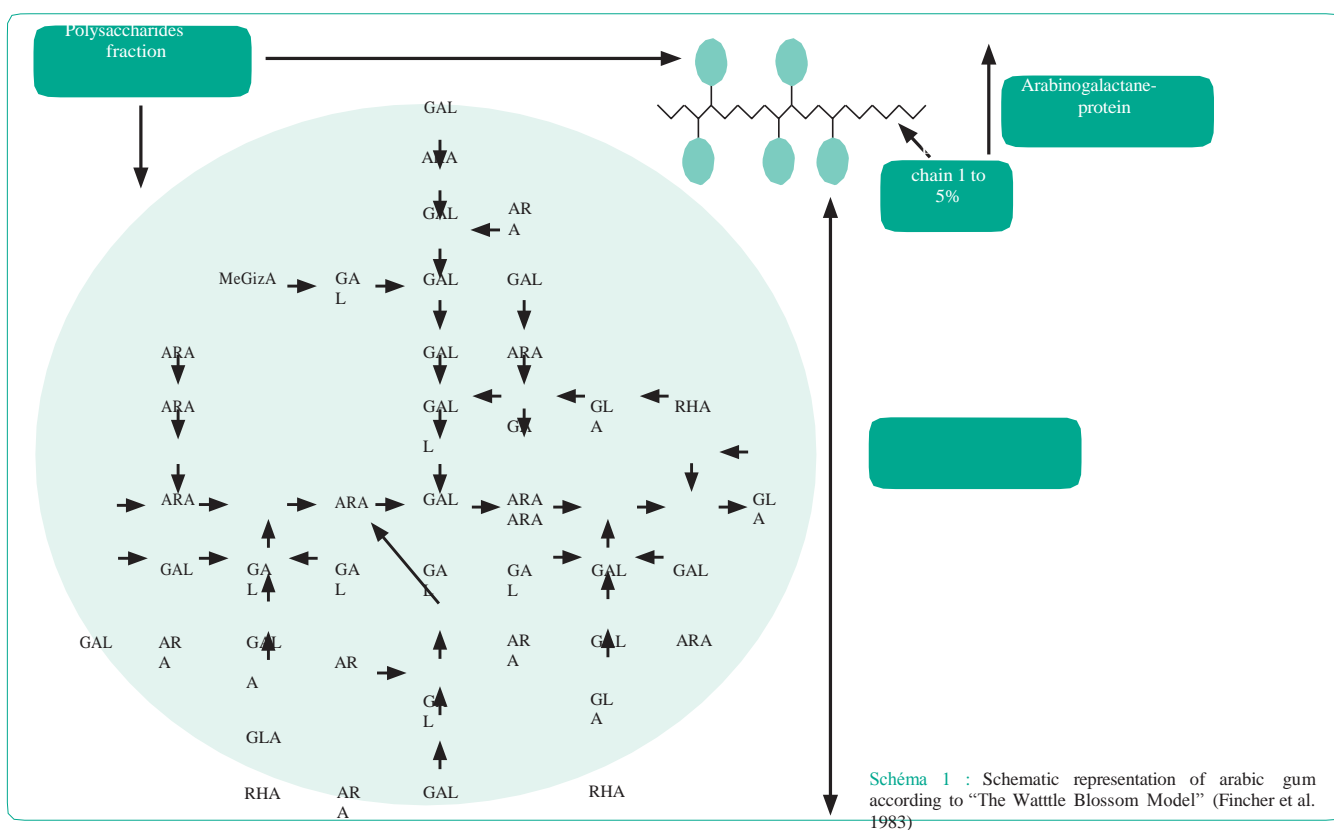
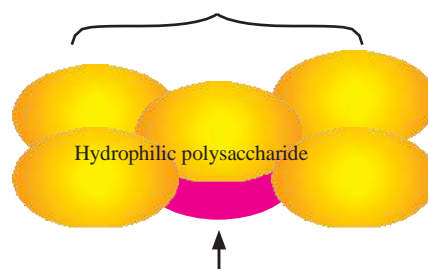


Schéma 2 : Three dimensional representation of arabic gum according to Randal et al.



Hydrophobic peptide

Colloidal stabilisation

There are still a couple of points to deal with concerning the structure and the properties of arabic gum, but it would appear that the protein part is very important in stabilising wine colour. The protein content of gums varies. Gums derived from Acacia Verek are richer in protein which give them **excellent stabilisation capacity**. Its characteristic nitrogen level is included between 0.25% and 0.4% (m/m) while the characteristic nitrogen level of gum derived from Acacia Seyal is between 0.10% and 0.2% (m/m).

As such, KORDOFAN, derived from Acacia Verek, is a very pure and good quality arabic gum. It enables efficiently and sustainably stabilising the colour of all red and rosé wines.

A presentation of the arabic gum product range:

The quality of liquid arabic gum likewise comes from precautions taken during the manufacturing process. The solution must be as light and as clear as possible so as not to affect the wine characteristics and disturb the filtration procedure steps. GOMME SR was especially designed for making rosé wines in view of stabilising colour and improving wine roundness. A specific ultrafiltration step makes this gum particularly light and clear. In addition to its intrinsic properties and these characteristics, this gum does not have an impact on filtration.

Interest of GOMME SR for improving roundness of rosé wines:

Impact of GOMME SR on filtration

	CLOGGING INDEX
Control (rosé wine vintage 2007)	4
GOMME SR 10 cL/hL	2
GOMME SR 25 cL/hL	2
GOMME SR 40 cL/hL	6

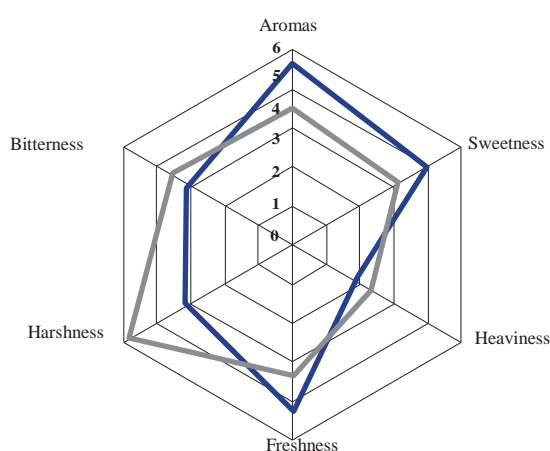
Ultrafiltered GOMME SR has no impact on clogging index*

* non clogging wine: Clogging index < 15

Tasting compared to a rosé from Provence with the same wine with 40 cL/hL of GOMME SR added:

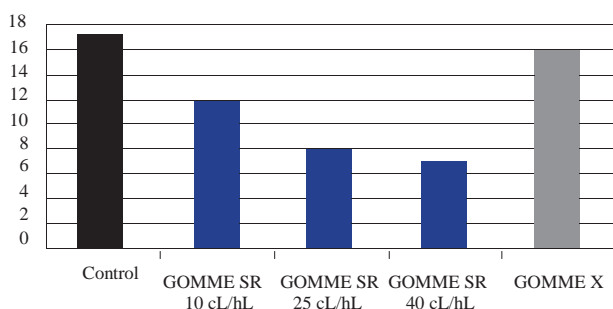
- More aromas and freshness
- Increased sweetness
- Moins de dureté

— Control — Control + GOMME SR 40



Dosage impact: Impact of GOMME SR on the tasting of a rosé from Provence

Sum of ranks



GOMME X does not have a significant impact on tasting. GOMME SR at 40 cL/hL is the preferred gum of the jury (smallest sum rank).

Colloidal stabilisation

ARABINA

Arabina is an acacia seyal liquid arabic gum made up of stable macromolecules, which counter-act the formation of cloudiness in wine. ARABINA reduces the risk of precipitation of the colouring matter in red and rosé wines, the risk of potassium bitartrate and the risk of iron casse.

ARABINA ensures secure bottling of wine presenting a moderate risk of precipitation.

PACKAGING: 1, 5, 10 and 20 L

APPLICATION RATE: 5 and 10 cL/hL

KORDOFAN

KORDOFAN is a liquid arabic gum obtained from Acacia Verek. Its name, KORDOFAN, refers to a region in Africa reputed for the purity of its arabic gums. This colloidal protector counteracts the appearance of cloudiness and colloidal type deposits in wine. Based on its provenance and its quality KORDOFAN has remarkable stabilising properties for all types of wine.

PACKAGING: 1, 5, 10, 20 and 120 L, 1000 L tanks available upon request

APPLICATION RATE: 2,5 to 5 cL/hL

KORDOFAN BIO



KORDOFAN BIO is a certified organic natural gum arabic in powder from made from acacia verek (or acacia Senegal). The harvest and manufacturing conditions for KORDOFAN BIO make for a extremely pure gum and very efficient for the colloidal stabilization of organic red wines.

PACKAGING: 1 kg

APPLICATION RATE: 10 to 50 g/hL

Colloidal stabilisation

GOMME SR

GOMME SR is a gum arabic in ultra-filtered liquid form to be introduced just prior to bottling without the risk of clogging. Used to stabilize wine with regard to precipitation and cloudiness, this gum demonstrates that it likewise removes harshness and provides a bit of sweetness.

PACKAGING: 5 and 20 L, 1000 L tank available upon request **APPLICATION RATE:**
10 to 40 cL/hL

INSTANT GUM

INSTANT GUM is a powder arabic gum which is obtained from Acacia Verek. Immediately soluble, its implementation is facilitated while providing no SO₂, contrary to liquid gums. INSTANT GUM stabilises all types of wine presenting a risk of bottle precipitation.

PACKAGING: 1 kg

APPLICATION RATE: 10 to 20 g/hL

STABICOLOR

STABICOLOR is a complex stabilisation product made up of Acacia Verek arabic gum and citric acid. As such, STABICOLOR protects red wines against physico chemical problems: iron, copper and protein casse and colouring matter deposits.

PACKAGING: 1 kg

APPLICATION RATE: 10 to 20 g/hL

COMMERCIAL NAME	WINE POSITIONING	CONCENTRATION (g/L)	DENSITY	ORIGIN	IMPACT ON COLOR STABILITY	IMPACT ON ROUNDNESS	IMPACT ON TARTARIC STABILITY AND IRON CASSE
ARABINA	All wines	290	1100	Seyal	●	●	●
KORDOFAN	All wines	290	1100	Verek	●●●	●	●
KORDOFAN BIO	Organic wines			Verek	●●●	●	●
INSTANT GUM	All wines			Verek	●●●	●	●
GOMME SR	All wines	200	1100	Seyal	●	●●	●
STABICOLOR	All wines			Verek + citric acid	●●		●●





Acidity correctors

ACIDE TARTRIQUE

ACIDE TARTRIQUE is an acidifying agent for musts and wine. It is also used to reach cement tanks. Acidification is only authorized in certain viticulture areas in the European Union. In theory, 100 g/hL of Acide tartrique increases acidity, expressed in H_2SO_4 , for 0.65 g/L. In practice, the variable yield is lower.

PACKAGING: 1 and 5 kg

APPLICATION RATE: on musts or grapes: 150 g/hL (maximum legal level); on wine: 250 g/hL (maximum legal level)

ACIDE D-L MALIQUE

Within the European Union, the addition of ACIDE D-L MACTIQUE for acidifying musts and wines is authorized since 1 August 2009. This practice is regulated in accordance with the viticulture regions; the users are required to keep registers.

PACKAGING: 1, 5 and 25 kg

APPLICATION RATE: on musts or grapes: 1.3 g/L (maximum legal level); for wine: 2.3 g/L (maximum legal level)

ACIDE LACTIQUE

Within the European Union, the addition of ACIDE LACTIQUE for acidifying musts and wines is authorized since 1 August 2009. This practice is regulated in accordance with the viticulture regions.

PACKAGING: 5 and 25 kg

APPLICATION RATE: on musts or grapes: 1.8 g/L (maximum legal level); for wine: 3 g/L (maximum legal level)

ACIDE CITRIQUE

ACIDE CITRIQUE prevents iron casse in white and rosé wines not requiring treatment with potassium ferrocyanide. As such, ACIDE CITRIQUE helps in the formation of a soluble complex between citrate anion and ferric iron.

PACKAGING: 1, 5 and 25 kg

APPLICATION RATE: on wine: 1 g/L (maximum legal level)

Les correcteurs d'acidités

DESACID

Deacidification using the « double salt » method is interesting when the content of malic acid is superior to the level of tartaric acid. This eliminates malic acid in the form of double salt in a proportion based on the content of tartaric acid in the wine. This operation must be carried out using specific products such as DESACID, made up of light precipitates of calcium carbonate.

PACKAGING: 5 and 20 kg

APPLICATION RATE: in accordance with desired deacidification (see technical data sheet)

BICARBONATE DE POTASSIUM

As a deacidifying agent, BICARBONATE DE POTASSIUM precipitates insoluble salt. Deacidification is not authorized in all viticulture regions.

PACKAGING: 1 and 5 kg

APPLICATION RATE: 1 g/L (maximum legal level)

CARBONATE DE CALCIUM

As a de-acidifying agent, CARBONATE DE CALCIUM with tartaric acid, precipitates insoluble salt. Deacidification is not authorized in all viticulture regions.

PACKAGING: 1 and 25 kg

APPLICATION RATE: in accordance with desired deacidification (see technical data sheet)



MÉTABISULFITE DE POTASSIUM

The antiseptic, antioxidase and antioxidant properties of MÉTABISULFITE DE POTASSIUM enable the sulphiting of musts and wine. This product releases 52 to 55% of its weight in SO_2 .

PACKAGING: 1 and 25 kg

APPLICATION RATE: based on the desired dose of SO_2 (see technical data sheet)

ÉQUATION G

Used for sulphur additions of musts and wine, the effervescent granules of potassium metabisulphite, EQUATION 2G or 5G provide respectively 2 or 5 g of pure SO_2 .

PACKAGING: EQUATION 2G, 40 sachets; EQUATION 5G, 25 sachets

APPLICATION RATE: based on the desired dose of SO_2 (see technical data sheet)

BISULFITE DE POTASSIUM

Used for sulphiting musts and wine, these solutions may contain 70, 80, 100, 150 and 180 grams of SO_2/L in the form of Bisulfite de potassium (chemical formula KHSO_3).

PACKAGING: 1 L, 5 L, 10 L et 20 L (1000 L containers available upon request). **APPLICATION RATE:**

based on the desired dose of SO_2 (see technical data sheet)



BISULFITE D'AMMONIUM

BISULFITE D'AMMONIUM provides not only SO_2 to the musts or the harvest but also ammoniacal nitrogen which is necessary for the successful execution of fermentation. 3 categories are available within the Oenofrance product range, which provide respectively 100, 150 or 400 g/L of SO_2 in the form of ammonium bisulphite (NH_4HSO_3).

PACKAGING: 1 L, 5 L, 10 L and 20 L. (1000 L containers available upon request). **APPLICATION**

RATE: based on the desired dose of SO_2 (see technical data sheet)

PASTEURIL/PASTEURIL FLASH

More stable than SO_2 , PASTEURIL contains potassium anhydrosulphite and ellagic tannins. Upon contact to wine, it releases SO_2 . Tannins avoid releasing this SO_2 in the atmosphere, and work in synergy against micro-organisms. This powerful preservative avoids all injections and secondary fermentations. PASTEURIL is likewise available in the form of a so-called PASTEURIL FLASH effervescent granules. This form improves the spreading of the product in the tank.

PACKAGING: 500 g

APPLICATION RATE: 5 to 20 g/hL

SORBYL

SORBYL (Potassium sorbate) is an antifungal compound which blocks the development of alcoholic and mycoderma yeasts. This is always used in the presence of free SO_2 .

PACKAGING: 500 g and 1 kg

APPLICATION RATE: 20 to 25 g/hL





Specific treatments

POLYEX PVPP

POLYEX PVPP is a quality PVPP supplied by BASF (expert in the beverage industry). This PVPP adsorbs phenolic compounds likely to oxidize and polymerize.

PACKAGING: 1, 5 and 20 kg

APPLICATION RATE: 20 to 80 g/hL

DELICARBONE GRAINS

These active carbons are used to detach musts and white wine. They are both plant origin and in compliance with food use. The first is in granule form and the second in powder form.

PACKAGING: 1 and 5 kg

APPLICATION RATE: 100 g/hL (maximum legal level)

CHARBON GOTA

This mesoporous carbon is very efficient in eliminating mycotoxins like Ochratoxine A, or for lowering contents of geosmine which gives an earthy or mushroom flavor.

PACKAGING: 2,5 and 10 kg

APPLICATION RATE: 20 to 40 g/hL

Specific treatments

MERCAPTOL

MERCAPTOL treats reduction. This solution, stabilized with copper sulphate, eliminates reduction due to the presence of hydrogen sulphide or volatile thiols. Copper sulphides formed precipitate and must be then eliminated from wine.

PACKAGING: 1 and 5 L

APPLICATION RATE: 0,3 to 1,5 cL/hL

ACIDE ASCORBIQUE

ACIDE ASCORBIQUE limits the effects of enzymatic oxidation. Used on harvests or white musts, before bottling, it completes the action of SO₂ thus enabling the reduction of the doses. It improves the conservation of fruitiness and the freshness of wine.

PACKAGING: 250 g, 500 g, 1 kg and 25 kg

APPLICATION RATE: 5 to 15 g/hL

REDOXINE

Containing ascorbic and citric acid, Redoxine protects wine against all oxidative phenomenon in addition to preventing ferric casse. REDOXINE refreshes wine.

PACKAGING: 20 g/hL APPLICATION

RATE: 500 g and 1 kg

Oenological products for base and sparkling wines

BOLTANE CERCLE AND COLVITE CERCLE

BOLTANE CERCLE and COLVITE CERCLE are two complementary products, specially reviewed for fining base wines to be used for second fermentation. BOLTANE CERCLE is made up of ellagic tannins and is a fining additive very well adapted to using COLVITE CERCLE, a fining agent obtained from very little hydrolyzed gelatin.

PACKAGING: 1 L, 5 L, 10 L and 20 L. 1000 L container packages available upon request. APPLICATION

RATE: 4 to 10 cL/hL

ACTIVATEUR BOLAND

ACTIVATEUR BOLAND was developed for second fermentation. It provides nutrients and growth factors necessary for yeasts to multiply in a difficult medium. Ammoniacal nitrogen in the form of diammonical phosphate has the advantage of not affecting the pH level of the wine.

PACKAGING: 1 kg

APPLICATION RATE: 10 g/hL

COLLE 2

Tirage agent, COLLE 2, proposed in powder and liquid form, combines in one single product the qualities of each additive it contains: a bentonite with specific properties and a particular potassium alginate. The exceptional stirring speed and the remarkable limpidity of wine with COLLE 2 make for an additive particularly well adapted for automated stirring.

PACKAGING: 1 L, 5 L, 10 L and 20 L

APPLICATION RATE: 6 to 10 cL/hL

ARGITIRAGE

Made from the purest montmorillonites for traditional stirring done on a rack, ARGITIRAGE is a simple and easy to use tirage additive. It is available in powder and liquid form.

PACKAGING: 1 kg powder package - 1 L and 10 L containers APPLICATION

RATE: 6 to 8 cL/hL



Oenological products for base and sparkling wines

BOLTANE TIRAGE

BOLTANE TIRAGE is an ellagic tannin preparation specially formulated for sparkling wine bottling (tirage). Associated with tirage additives, it facilitates stirring and improves settling of deposits in the bottle.

PACKAGING: 1 kg powder package - 1, 5, 10 and 20 L containers

APPLICATION RATE: 6 to 8 cL/hL

BOLTANE TIRAGE EXPORT

BOLTANE TIRAGE EXPORT is an ellagic tannin preparation, which improves setting time and provides for a more elastic deposit in the bottle. It is an essential complement for tirage additives.

PACKAGING: 1 L and 20 L

APPLICATION RATE: 1 to 1,5 cL/hL

MERCAPTOL BOLAND

MERCAPTOL BOLAND is copper sulfate based solution which when introduced at sparkling wine bottling (tirage) prevents and removes the reducing flavor.

PACKAGING: 1 L; 5 L and 10 L

APPLICATION RATE: 0,5 to 2 cL/hL

OENOFRANCE



79, av. A.A. Thévenet - CS 11031
51530 MAGENTA - FRANCE
Phone: + 33 3 26 51 29 30 - Fax: + 33 3 26 51 87 60

by  **SOFRALAB**
the oenological company
www.sofralab.com

www.oenofrance.com