Lamothe-Abiet, a forerunner in France in the production of enological products, celebrated its 140th anniversary.

140 years of experience and partnership with laboratories, wineries and negociants to provide useful and innovative enological solutions.

This fine legacy gives us greater inspiration to work towards the future, with close attention to our clients’ needs.

Our research and development laboratory, in partnership with several universities and various projects, meets these demands with unique and innovative products.

Our logistics department, along with a highly proficient quality control department, offers an exemplary traceability service which conforms to the highest food safety and environmental standards.

Together, through our special relationships and our established expertise, we have carved our name into modern and future enology.

Guillaume Martineau
General Manager
WEBINARS

Drawing on its enological experience and its presence in the field, our team invites you to take part in our online conferences.

Each conference lasts about 40 minutes and includes a presentation from our experts and time for exchanging experience and for questions.

At any time, you can also watch the recordings on our dedicated YouTube channel, or website at:
https://www.bvnorthamerica.com/webinars

It is free and takes 30 seconds. Join us.

NEWS

Killbact®

Killbact® is a new product that completes the microbiological stabilisation range. It is a specific formulation, created by Lamothe-Abiet, of lysozyme and fungal chitosan.

Killbact® plays a role in microbiological stability and can be used to reduce and control wines’ microbial flora, specifically bacterial (lactic and acetic) and yeast populations. It can help reduce the risk of volatile acidity and volatile phenols (Brett).

Tanins

<table>
<thead>
<tr>
<th>Softan® V</th>
<th>Softan® P</th>
<th>Softan® S</th>
<th>Softan® FT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softan® Vinification</td>
<td>Softan® Power</td>
<td>Softan® Sweetness</td>
<td>Softan® Finition</td>
</tr>
</tbody>
</table>

Enzymes

<table>
<thead>
<tr>
<th>Oenozym® TH</th>
<th>Oenozym® Thiol</th>
</tr>
</thead>
</table>

LAMOTHE-ABIET
Yeasts are at the heart of Lamothe-Abiet’s oenological expertise. Our yeasts are very rigorously selected and developed at the Institute of Vine and Wine Sciences (ISVV) of Bordeaux by our R&D teams which have proven themselves, over time, to be the most talented in the field.

### Strains Excellence®

The strains Excellence® FTH, TXL and STR are references throughout the world for the production of aromatic white and rosé wines.

#### Excellence® FTH
- Intense revelation of volatile thiols
- Citrus notes, fresh aromatic profile
- Lively mouthfeel

#### Excellence® TXL
- Balanced revelation of volatile thiols
- Boxwood, citrus and tropical fruits
- Wines that are complex, fine and round on the palate

#### Excellence® STR
- Strong revelation of fermentary esters
- Stone fruit and tropical fruit notes, aromatic complexity

**Trial conditions:**
- Sauvignon Blanc, 2016
- Pessac Léognan, Bordeaux
- TAV : 14 % vol
- pH = 3,48

**Aromatic index (AI)**

\[
AI = \frac{[\text{thiols}]}{[\text{fermentary esters}]} / \text{perception threshold}
\]

**Total Aromas**

- Volatile Thiols
- Fermentary Esters
### White wine

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>THIOLS</td>
<td>ESTERS</td>
<td>VARIETAL</td>
</tr>
<tr>
<td><strong>FTH</strong></td>
<td>•••</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>TXL</strong></td>
<td>•</td>
<td>•</td>
<td>•••</td>
</tr>
<tr>
<td><strong>STR</strong></td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td><strong>B2</strong></td>
<td>•</td>
<td>•••</td>
<td>•••</td>
</tr>
<tr>
<td><strong>FW</strong></td>
<td>•</td>
<td>•</td>
<td>•••</td>
</tr>
</tbody>
</table>

**Bio-Nature®** non-Saccharomyces strain for grapes bioprotection - - all

### Rosé wine

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>THIOLS</td>
<td>TECHNOLOGICAL</td>
<td>BASIC</td>
</tr>
<tr>
<td><strong>L.A. YEASTS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arom</td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>Cerevisiae</td>
<td>•••</td>
<td>•••</td>
<td>•••</td>
</tr>
<tr>
<td>Bayanus</td>
<td>•••</td>
<td>•••</td>
<td>•••</td>
</tr>
</tbody>
</table>

**EXCELLENCE® YEASTS**

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>THIOLS</td>
<td>ESTERS</td>
<td>VARIETAL</td>
</tr>
<tr>
<td><strong>STR</strong></td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td><strong>FTH</strong></td>
<td>•••</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td><strong>TXL</strong></td>
<td>•</td>
<td>•••</td>
<td>•••</td>
</tr>
</tbody>
</table>

**Bio-Nature®** non-Saccharomyces strain for grapes bioprotection - - all

**L.A. YEASTS**

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>THIOLS</td>
<td>ESTERS</td>
<td>VARIETAL</td>
</tr>
<tr>
<td><strong>Arom</strong></td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
</tbody>
</table>

*It is important to us to showcase the purity of fruit aroma and flavour in all our wines. Due to our cooler climate the white wines generally have abundant, lively natural acidity along with more delicate aromas and flavours. For our Wineglass Bay Sauvignon Blanc I specifically wanted to elevate the varietal aromas and palate texture. Following a recommendation from Blue H2O Filtration, I made the wine as a split ferment: 75% using Excellence® FTH in stainless for the aromatic portion, and 25% in old barrels using Excellence® TXL for the textural portion. In all parcels I used OptiThiols® to increase thiol expression. The result? A wine that displays superior aromatics with strong citrus and tropical aromas, coupled with superb texture and roundness. I couldn’t be happier! *

Claude RADENTI

Winemaker, Freycinet Wines - Tasmania, Australia
Bioprotection involves exercising an early control of the natural flora that is present on the grapes. After harvesting and before yeast addition, this environment is extremely sensitive and is a very risky period for the development of microbial alterations (non-Saccharomyces yeasts such as Brettanomyces, as well as bacteria, which are often the source of faults). As opposed to adding sulphur, which destroys these microorganisms, biological control involves inoculating a slow-fermenting yeast, which occupies the niche and thus naturally prevents the growth of undesirable microorganisms.

Lamothe-Abiet, after extensive research, has selected “Excellence Bio-Nature®, a Metschnikowia pulcherrima, which has the following benefits:

- Control of the microbiological flora from the harvest
- Decrease of the dosage of SO₂ on the grapes
- Reduction of the compounds that combine SO₂
- Increased aromatic complexity of the wine

EXCELLENCE® XR

For over 10 years, Excellence® XR is the go-to yeast for top quality red wines.

Its characteristics allow it to express the best of grapes from the most prestigious terroirs:

- Powerful wines, with structure and volume
- Adapted to high potential alcohols, to naturally concentrated grapes
- Low production of volatile acidity and inhibitory fatty acids
- Ideal for carrying out MLF in co-inoculation: clean and pure aroma profiles
- Great respect for varietal typicity

TO KNOW

Excellence® XR is the first yeast developed by Lamothe-Abiet using a breeding technique.

This is an innovative selection technique based on sexual multiplication between two strains. This process enables genetic information to be exchanged between yeasts with enological value.
“Having tried several yeasts on the market, Excellence® XR has given us complete satisfaction thanks to its technical reliability and its organoleptic results. Its regular fermentation kinetics allows us to extract for longer in a reductive environment. Furthermore, its strong compatibility with MLF, due especially to the fact that it produces few inhibitory substances, greatly facilitates work in the winery. Finally, it allows the wine to perfectly reflect its terroir, while improving its ageing potential and its structure. For us, Excellence® XR has become an essential tool for revealing the typical characters of “Ribera” style wines.”

Esther GOMEZ & Rebeca PALOMO
Enodivinos
Burgos, SPAIN.

**RED WINE**

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FRUITY ELEGANT</td>
<td>FRUITY INTENSE</td>
<td>STRUCTURED</td>
</tr>
<tr>
<td>XR</td>
<td>•••</td>
<td>•</td>
<td>•••</td>
</tr>
<tr>
<td>DS</td>
<td>•••</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>SP</td>
<td>•••</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>FR</td>
<td>•••</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>Bio-Nature®</td>
<td>non-Saccharomyces strain for grapes bioprotection</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>TYPE OF WINE</th>
<th>CHARACTERISTICS OF THE YEAST</th>
<th>VARIETALS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FRUITY ELEGANT</td>
<td>FRUITY INTENSE</td>
<td>STRUCTURED</td>
</tr>
<tr>
<td>BJL</td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>N°5</td>
<td>•••</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>L13</td>
<td>•••</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>RB2</td>
<td>••••</td>
<td>•••</td>
<td>•</td>
</tr>
<tr>
<td>Cerevisiae</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>Bayanus</td>
<td>•</td>
<td>•••</td>
<td>•</td>
</tr>
</tbody>
</table>
Many talk about it, but Lamothe-Abiet was the real pioneer in the technique of co-inoculation over 15 years ago. The strains that we propose are adapted to the current demands for the control of the MLF.

Evaluate the ease of carrying out malolactic fermentation on your wines:

« Château Lagrange is known for the quality of its wines but also for its technical know-how, as well as its on-going partnerships with innovative companies. Thus, we have carried out co-inoculation trials with Lamothe-Abiet since the 2005 vintage.

This remarkable technique went against everything that we learnt in winemaking school. However, the potential was very interesting and we saw certain very strong advantages: better management of malolactic fermentation in barrel and a reduced latent phase between the alcoholic and malolactic fermentations. This phase, which is a "microbiological vacuum", is very sensitive and open to the development of Brettanomyces. Another benefit is a reduction of our carbon footprint since it is no longer necessary to heat the barrel cellar or the tanks for several days and sometimes many weeks.

We approved new trials for the 2006 vintage, before spreading this technique to 56 of our tanks for the 2007 vintage.

Today all 102 tanks of the domain are co-inoculated with the bacteria/yeast duo of Oeno1® / Excellence® XR.

The rate of success is more than satisfying since 95% of our tanks usually finish their malolactic fermentation before racking. The wines have better aromatic precision with very low volatile acidities.

I can attest today that 10 vintages of experience of this technique have given us complete satisfaction and we would no longer consider not using this technique as part of our vinification process. »

Matthieu BORDES
General Manager - Winemaker
CHÂTEAU LAGRANGE, Grand Cru Classé, FRANCE
**Type of inoculation**

<table>
<thead>
<tr>
<th>EARLY CO-INOCULATION</th>
<th>LATE CO-INOCULATION</th>
<th>SEQUENTIAL INOCULATION</th>
<th>CURATIVE INOCULATION</th>
<th>PROTOCOL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Œno 1®</strong></td>
<td></td>
<td></td>
<td></td>
<td>For co-inoculation, add directly without rehydration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>In order to improve the distribution, rehydrate 15 minutes</td>
</tr>
<tr>
<td><strong>Œno 2</strong></td>
<td></td>
<td></td>
<td></td>
<td>12 hours (rehydration + acclimatization) with malolactic activator kit provided</td>
</tr>
</tbody>
</table>

**INOCULATION TIMING**
- 24 - 48 hours after the start of AF
- 1010 Density
- AF completed or running off
- Contact us

**TECHNICAL OBJECTIVES**
- Save time, avoid alterations
- Save time, ensure the traditional process: AF then MLF
- MLF after AF - MLF in barrel
- Sluggish MLF – restarting MLF

If you use Œno1® at the end of AF with 15 minutes rehydration, better to add OptiML® at 30g/hL.

---

**Optimal conditions for malolactic activity**

<table>
<thead>
<tr>
<th></th>
<th>pH*</th>
<th>SO₂ TOTAL*</th>
<th>TEMPERATURE*</th>
<th>ALCOHOL TOLERANCE* (% vol.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Œno 1®</strong></td>
<td>&gt;3,3</td>
<td>&lt;50 mg/L</td>
<td>17 - 24°C</td>
<td>&lt;15</td>
</tr>
<tr>
<td><strong>Œno 2</strong></td>
<td></td>
<td>&lt;60 mg/L</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*these factors are co-dependant

---

**Co-inoculation Excellence® XR-Oeno1®**

Average over 10 vintages of use in the Médoc, France, for 1000 inoculated tanks.
NUTRIENTS

Yeast nutrition and protection are key factors for a successful fermentation. Of course, this gives safe fermentation kinetics but also helps to optimise the production of aromas and to avoid organoleptic faults. In 2016, our nutrition range has been totally reworked and enriched to address both of these objectives.

OPTIESTERS®

Formulation of inactivated yeasts naturally rich in amino acids and ergosterols.

In young wines, fermentary esters make up a large part of the aromatic profile. They promote the perception of fruity and floral aromas, especially in wines which are poor in varietal aromatic precursors. They are only formed by yeasts during the alcoholic fermentation and are optimised by the fermentation conditions: low temperature, low turbidity and the variety of yeast.

Yeast nutrition also plays an important role in defining the profile of the aromatic esters, both in their quality and quantity. Ester formation is closely linked to the yeasts’ nitrogen and lipid metabolism: it can therefore be improved by adding yeast derivatives.

ADVICE FOR USAGE

- Add at the beginning of AF (density -30 points)
- Dosage: 30 g/hL
- Use a strain that has a high yield in esters: Excellence® STR or LA Arom
- AF conditions: T°C of 14 to 16°C - Turbidity 30 to 80 NTU - Anaerobic

Trial conditions:
- Sémillon - South-west, France - 2017
- Addition of 30g/hL of OptiEsters® at 1st third of AF
- ABV : 11,2 % vol
- pH = 3,4

Aromatic index (AI) (fermentary esters) / perception threshold

<table>
<thead>
<tr>
<th>Aromatic Index</th>
<th>Aromatic Index</th>
<th>Aromatic Index</th>
<th>Aromatic Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE (rose)</td>
<td>AI (banana)</td>
<td>AH (pear)</td>
<td>C4C2 (pineapple)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>TOTAL</td>
<td>TOTAL</td>
<td>TOTAL</td>
</tr>
<tr>
<td>20</td>
<td>15</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>+44%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Control | OptiEsters®

Olivier CHAPT
Gensac Enology Laboratory, Cognac region, FRANCE

« Certain negociants in Cognac demand from their suppliers eaux-de-vie with a high potential in fruity and aromatic notes. Therefore, optimising the production of fermentary aromas during the AF is important because it directly determines the quality of the future eaux de vie. As well as looking at recommendations on harvest dates, operations on the grapes and then on fermenting the musts, we carried out a study on different activators.

Trials carried out in 2016 on Ugni blanc from blocks with high yields (120-140hl/ha) showed the positive impact of adding OptiEsters at the beginning of the fermentation. Indeed, in this experiment, the treated modalities gave concentrations of 70 to 120% greater than the control for the aromatic esters analysed (caprate, caprylate and ethyl laurate). These initial results of chromatographic analyses were carried out on wines after double micro-distillation only a few days after the end of the alcoholic fermentation. Then, new chromatographies were carried out on eaux de vie from wines distilled with all the lees from the tank. Compared to the control, the treated batches were preferred. The quantity in higher alcohols was also reduced. Triangular tastings carried out at the laboratory concluded that the wines and eaux de vie produced using OptiEsters® were more intense in aromas and more fruity. »
**TO KNOW**

OptiThiols® helps to increase the aromatic potential after AF by 30 to 50% compared to other products tested.

**ADVICE FOR USAGE**

- Add early on, before AF
- Dosage: 30 g/L
- A suitable fining of musts before addition ensures optimal effectiveness
- A well-adapted nitrogen nutrition of yeasts allows to take advantage of the antioxidant effect of OptiThiols® during aging

**Effects**:
- Increase the potential in thiol aromas during AF
- Limit the browning of musts

**Preservation of volatile thiols over time**

Grenache, Grimaud rosé trial, 2016 - Addition of 30 g/L of OptiThiols® before AF

**Aromatic index (AI)**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>OptiThiols®</th>
</tr>
</thead>
<tbody>
<tr>
<td>3SH (citrics)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3SH (exotic fruits)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>OptiThiols®</th>
</tr>
</thead>
<tbody>
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<td>3SH (citrics)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A3SH (exotic fruits)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**End AF**

+51%

**End AF + 9 months**

+91%

**OptiThiols®**

OptiThiols® (inactivated yeasts naturally rich in reducing compounds) applied to white and rosé musts before the start of AF is an essential tool for making thiol-rich wines. Its success is proven by a very significant increase in aromas (from 30 to 120%). The regularity and repeatability of these results has been shown on many different harvests (variety, terroir).
Optimise the nutrition of your yeast thanks to our online diagnostic tool:

On our website in the tab LA Solutions / Toolbox

On our Oenosolutions mobile app, available on the Appstore and Google Play Store

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**Basic nutrients**

<table>
<thead>
<tr>
<th>AMMONIACAL NITROGEN</th>
<th>THIAMINE</th>
<th>YAN INCREASE mg/L per 20 g/hL added</th>
<th>DOSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfate d’Ammonium (SA)</td>
<td>***</td>
<td>40</td>
<td>10 - 50 + g/hL</td>
</tr>
<tr>
<td>Phosphate d’Ammonium (DAP)</td>
<td>***</td>
<td>40</td>
<td>10 - 50 + g/hL</td>
</tr>
<tr>
<td>Vitaferment® SA</td>
<td>***</td>
<td>40</td>
<td>10 - 50 g/hL</td>
</tr>
<tr>
<td>Vitaferment® PH DAP</td>
<td>***</td>
<td>40</td>
<td>10 - 50 g/hL</td>
</tr>
<tr>
<td>Thiamine</td>
<td>***</td>
<td>0</td>
<td>30 - 60 mg/hL</td>
</tr>
</tbody>
</table>

**MINERAL NITROGEN NUTRITION**
- Used preferentially by the yeast
- Fast consumption
- Fast increase in yeast population

**In case of excess:**
- Induced deficiency
- H₂S production
- Sluggish and/or stuck AF
- Excessive heat production
- Stimulatory effect on nitrogen catabolic repression (NCR)

**ORGANIC NITROGEN NUTRITION**
- Progressive use
- Repression of H₂S production
- Nutrition for yeasts and malolactic bacteria
- Does not cause nitrogen catabolic repression
- Increases the aromatic complexity

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**OPTIFLORE® O**

Optiflore® O’s rich composition in amino acids as well as vitamins, minerals and oligoelements helps to ensure the yeasts’ qualitative nutrition whilst avoiding the risks associated with only using mineral nutrition. Indeed, the yeast extracts allow for more complexity and a more effective fermentation kinetics.

The addition of 10g/L of Optiflore® O provides 5mg/L of nitrogen in amino form, equivalent to an addition of 15mg/L of assimilable nitrogen.
## Complex nutrients

<table>
<thead>
<tr>
<th>N: nutrition</th>
<th>P: protection</th>
<th>S: support element</th>
<th>AR: aromatic revelation</th>
<th>Cellulose Powder</th>
<th>Ammonical Nitrogen</th>
<th>Thiamine</th>
<th>Organic Nitrogen</th>
<th>Vitamins/Minerals</th>
<th>Detoxification</th>
<th>Sterols/Unsaturated Fatty Acids</th>
<th>Aromatic Impact</th>
<th>YAN Increase mg/L per 20 g/hL added</th>
<th>Dosage (g/hL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ØnoStim®</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>OptiEsters®</td>
<td>AR</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
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<td>20 - 40</td>
</tr>
<tr>
<td>OptiThiols®</td>
<td>AR</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>0</td>
<td>20 - 40</td>
</tr>
<tr>
<td>OptiFlore® O</td>
<td>N/P</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>10</td>
<td>20 - 40</td>
</tr>
<tr>
<td>OptiFerm® (Vitactif)</td>
<td>N/P</td>
<td>DAP</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>30</td>
<td>20 - 40</td>
</tr>
<tr>
<td>OptiML® (bacteria)</td>
<td>N/P</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>0</td>
<td>20 - 40</td>
</tr>
<tr>
<td>Actibiol®</td>
<td>N/S</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>0</td>
<td>30 - 60</td>
</tr>
<tr>
<td>Natur'Soft®</td>
<td>P</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>0</td>
<td>20 - 100</td>
</tr>
</tbody>
</table>

## Protection, support and detoxification

<table>
<thead>
<tr>
<th>N: nutrition</th>
<th>P: protection</th>
<th>S: support element</th>
<th>AR: aromatic revelation</th>
<th>Cellulose Powder</th>
<th>Vitamins/Minerals</th>
<th>Detoxification</th>
<th>Sterols/Unsaturated Fatty Acids</th>
<th>Aromatic Revelation</th>
<th>Aromatic Protection</th>
<th>YAN Increase mg/L per 20 g/hL added</th>
<th>Dosage (g/hL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flor’Protect®</td>
<td>P</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td>0</td>
<td>20 - 40</td>
</tr>
<tr>
<td>Granucel</td>
<td>S</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td>0</td>
<td>20 - 80</td>
</tr>
<tr>
<td>Aroma Protect®</td>
<td>P</td>
<td></td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td>0</td>
<td>10 - 40</td>
</tr>
<tr>
<td>Aroma T’N’T</td>
<td>P</td>
<td>AR</td>
<td></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
<td>0</td>
<td>10 - 40</td>
</tr>
</tbody>
</table>
Enzymatic preparation specifically formulated for an early and targeted degradation of red grape skin cell walls.

- **Liberate beneficials phenolics components:**
  - skin tannins
  - anthocyanins thus increasing color intensity and stability
- **Liberate plant polysaccharides:**
  - higher concentration of positive small size polysaccharides (RGII): decrease astringency perception
  - decrease in medium size polysaccharides (PRAG): improve filterability
- **Increase yield of free-run and press wines**

**Liquid enzymatic formulation to accelerate the clarification of musts before alcoholic fermentation.**

Its use also increase juice yields by decreasing and compacting lees. The formulation is active at low (<10°C) and high (<68°C) temperatures, even at low dosages. It is therefore suitable for must flotation as well as thermovinification.

**TO KNOW**

- **Application:** maceration and extraction of red grapes in traditional vinification
- **Purification from Cinnamoyl Esterase activity**

**OENOZYM® CRUSH RED**

Enzymatic preparation specifically formulated for an early and targeted degradation of red grape skin cell walls.

**OENOZYM® CLAR**

Liquid enzymatic formulation to accelerate the clarification of musts before alcoholic fermentation.

Its use also increase juice yields by decreasing and compacting lees. The formulation is active at low (<10°C) and high (<68°C) temperatures, even at low dosages. It is therefore suitable for must flotation as well as thermovinification.

**TO KNOW**

- Very fast depectinisation and flocculation
- Great for flotation
- Rapid decrease in viscosity of musts from heated grapes, for fresh and precise aromatic profiles and early clarification of wines.

<table>
<thead>
<tr>
<th>Enzyme Type</th>
<th>MACERATION</th>
<th>CLARIFICATION</th>
<th>EXTRACTION</th>
<th>TYPE OF WINE</th>
<th>DOSAGE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oenozym® Crush White</td>
<td>L</td>
<td>***</td>
<td>**</td>
<td>***</td>
<td>10-40 mL/ton</td>
<td>Addition on grapes. Extraction of aromatic precursors and polysaccharides. Improve press yield. Improve clarification. Increase dosage to 50 mL/ton if small size berries or lacking of maturity.</td>
</tr>
<tr>
<td>Oenozym® Clar</td>
<td>L</td>
<td>***</td>
<td>***</td>
<td>***</td>
<td>0.5-3 mL/L</td>
<td>Addition at press pan. Static settling. Floation.</td>
</tr>
<tr>
<td>Oenozym® Crush Red</td>
<td>L</td>
<td>***</td>
<td>**</td>
<td>***</td>
<td>10-40 mL/ton</td>
<td>Addition at crush. Extraction of polyphenols and polysaccharides. Improve color stability, filterability and clarity. Increase dosage to 50 mL/ton if small size berries or lacking of maturity.</td>
</tr>
</tbody>
</table>
OENOZYM® THIOLS

★ Oenozym® Thiols is a new pectolytic enzyme preparation from Aspergillus niger, rich in secondary activities and free from cinnamyl-esterase activity.

Oenozym® Thiols used during alcoholic fermentation enhances the liberation of thiol aroma precursors such as 4MSP (boxwood) and 3SH (citrus fruit) and thus indirectly increases conversion by the yeast to A-3SH (tropical fruits).

Added during maturation or a few weeks before bottling Oenozym® Thiols will help to free thiol precursors (4MSP and 3SH) already present in the wine (which, when in precursor state linked to cysteine or glutathione, are non-oxidizable compounds). The conversion to A3SH by the yeast is impossible in this case.

- Liberation of thiol precursors to thiols (increase the % of conversion).
- Depending on the moment when used, possibility to modulate the final aromatic profile of the wines.

TO KNOW

- Oenozym® Thiols helps to increase the thiol aromatic intensity of a wine to increase the lifespan of the aromas.
- Oenozym® Thiols can also be added to wines just before bottling, thus decreasing the risks of losses through oxidation.

Specific Enzymes

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>Type</th>
<th>Activity</th>
<th>DOSAGE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oenozym® Thiols L</td>
<td>Liquid</td>
<td>Revelation of thiol aromas</td>
<td>4-6 mL/L</td>
<td>Check the level of SO₂, stop the enzymatic activity with 20 g/L of bentonite</td>
</tr>
<tr>
<td>Oenozym® FW G</td>
<td>Granulated</td>
<td>Revelation of terpenes</td>
<td>3-6 g/L</td>
<td></td>
</tr>
</tbody>
</table>

* Level of purification FCE < 0,5 CINU/1000 PGNU certified by the latest standard FSSC 22000
The result of rapidly evolving research, the tannins of our range are created in our specialised production unit. The quality of the products and their effectiveness are guaranteed by rigorous selection of the raw materials, and by our knowledge and control of the production process.

The specific microgranulated (MG) and granulated (G) formulation of our instantly soluble tannins means that they can be added directly to grapes, musts or wines. The ideal dispersal which guarantees an immediate, effective, and uniform action with simple mixing or pump-over. Compared to a powdered tannin, the ease of use is greatly improved: less pulverulent, more convenient and time saving.

**PRO TANIN R®**

The effectiveness of Pro Tanin R® is founded on two mechanisms of action:

- **Pro Tanin R®** binds the must proteins that cause an early loss of desirable phenolic compounds.
- **Pro Tanin R®** inhibits laccase, an enzyme that causes drastic and irreversible oxidation in botrytised musts and wines.

### Laboratory benchmark trials:

- Cabernet Sauvignon, Graves, 2016
- TAV: 11.5% vol, pH= 3.52

*Dosage recommended by Botrytest*

Even a small laccase activity in the must can significantly decrease the visual quality of the future wine. Using Pro Tanin R® helps to stop this laccase activity and to conserve the future wine’s colour.

<table>
<thead>
<tr>
<th>COMPOSITION</th>
<th>INHIBITION OF LACCASE ACTIVITY</th>
<th>ANTIOXYDANT ROLE</th>
<th>REACTIVITY WITH PROTEINS, EASE OF FINING</th>
<th>COLOUR STABILISATION</th>
<th>CONTRIBUTION OF ROUNDERNESS</th>
<th>TIMING</th>
<th>APPLICATION</th>
<th>DOSAGE (g/hL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P: powder G: granulated MG: micro-granulated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pro Tanin R®</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MG</td>
<td>Proanthocyanidic tannins</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laccase activity on must (U/ml)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>½ dose Pro Tanin R®</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 dose Pro Tanin R®</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Colour of finished wines**

*Colour stability increase and improved aroma.*

**Vinification Tannins**

- **Softan®** Vinification
  - Catechic tannins bound to vegetal polysaccharides
  - Added 1 day after reception
  - Must and wine
  - Dosage: 10 - 40

- **Tanin gallique à l’alcool**
  - Gallic tannins (Oak gall)
  - Added mechanical harvest:
  - Pre-fermentation maceration, press, fining
  - Must and wine
  - Dosage: 3 - 15

- **Gallo tanin B**
  - Ellagitannins (Chestnut)
  - Must and wine
  - Dosage: 5 - 15
Maturation trial Vinitan® Advance

Positioning and effects of tannins depending on time before bottling:

- **Tan&Sense® Forte**
  - Tension, length, toasted

- **Vinitan® Advance**
  - Pure structure, colour stabilisation

- **Softan® Sweetness**
  - Subtle structure, sweetness, easy-drinking

- **Softan® Power**
  - Subtle structure, colour stabilisation, antioxidant

VINITAN® ADVANCE

**Increase the volume, amplify the structure**

Vinitan Advance® is the result of the latest advances in grape tannin production. It consists of the latest generation of pure grape tannins.

- **Its own grape tannins** have an **excellent reactivity** with the native grape tannins present in the wine.

- It has a significant **effect** on wines slightly lacking in **structure** and in maintaining their **fruity characters** throughout maturation and bottle aging.

- The effects can be quantified for the **reduction of the astringency** of certain wines, showing a reactivity with the originally present tannins.

Measurement of the astringency of a wine after treatment

SPI - salivary protein index, (Sarco laboratory, internal method)

- Maturation, red wine, Pomerol.
- Addition of increasing dosages of Vinitan Advance®.
- Measurement of SPI (salivary protein index), 1 month after addition.
- The SPI is representative of the astringency of the wines. A lower value shows less pronounced astringency.

<table>
<thead>
<tr>
<th>% Reduction of salivary proteins</th>
<th>Experienced Astringency: -35%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>Vinitan® Advance 5g/hL</td>
</tr>
<tr>
<td></td>
<td>Vinitan® Advance 10 g/hL</td>
</tr>
</tbody>
</table>

**Results**

- **Reduction of experienced astringency during tasting.**
- **The volume and structure are increased.**

The results are dependent on the type of wine treated and the dosages. Trials in bottle are recommended.
## Maturation Tannins

<table>
<thead>
<tr>
<th>P : Powder</th>
<th>G : Granulated</th>
<th>MG : Micro-granulated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMPOSITION</strong></td>
<td><strong>COLOUR STABILISATION</strong></td>
<td><strong>CONTROL OF REDOX POTENTIAL</strong></td>
</tr>
<tr>
<td><strong>Vinitan® Advance</strong></td>
<td><strong>MG</strong></td>
<td>Grape proanthocyanidic tannins, unique selection process</td>
</tr>
<tr>
<td><strong>Tan&amp;Sense Volume</strong></td>
<td><strong>MG</strong></td>
<td>Pure ellagitannins of oak</td>
</tr>
<tr>
<td><strong>Tan&amp;Sense Forte</strong></td>
<td><strong>MG</strong></td>
<td>Pure ellagitannins of toasted oak</td>
</tr>
<tr>
<td><strong>Tan’Excellence®</strong></td>
<td><strong>MG</strong></td>
<td>Grape tannins and oak ellagitannins</td>
</tr>
<tr>
<td><strong>Gallo tanin B</strong></td>
<td><strong>P</strong></td>
<td>Ellagitannins (Chestnut)</td>
</tr>
</tbody>
</table>

---

### Softan®

*Structure and softness*

Developed by Lamothe-Abiet according to a unique process, the Softan® range combines tannins that are selected for their effectiveness and finesse, with natural polysaccharides of vegetal origin.

**TO KNOW**

- When added during maturation, Softan® gives significant roundness and structure to wines whilst avoiding the risk of astringency associated with tannin additions.
Trial conditions:
- Thermovinified Grenache, 2016
- Cellier des dauphins, Côtes du Rhône
- ABV: 13.4 % vol., pH = 3.62

Added at the beginning of fermentation, Softan® Vinification is effective in **colour stabilisation**. For greater effectiveness, it is recommended to add Pro Tanin® R in the tank at reception.

**ICM variation between analysis made after MLF and another made 6 months later**

![ICM graph]

**Organoleptic descriptors**

The addition of 30g/Hl of Softan® Vinification one day after reception increases red wines’ organoleptic complexity.

“Grenache is the main variety in our appellation. Each year we face problems with colour stability on our thermovinifications. Since doing a set of trials in 2016 with Softan® Vinification, a catechic tannin, we have noted that the colour lasts longer. As well as this, the taste of the wine improved. Wines treated with Softan® Vinification are rounder on the palate and show more complex aromas. It is now an integral part of our process.”

**Thierry Walet**
Head Winemaker,
Cellier des Dauphins - Côtes-du-rhône, FRANCE

**Softan® range**

<table>
<thead>
<tr>
<th>MG: micro-granulated</th>
<th>COMPOSITION</th>
<th>COLOUR STABILISATION</th>
<th>CONTROL OF REDOX POTENTIAL</th>
<th>CONTRIBUTION TO STRUCTURE</th>
<th>ROUNDESS CONTRIBUTION</th>
<th>PROFIL HARMONISATION</th>
<th>TIMING</th>
<th>APPLICATION</th>
<th>DOSAGE (g/Hl)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softan® Vinification</td>
<td>MG</td>
<td>Catechic tannins bound to vegetal polysaccharides</td>
<td>***</td>
<td>●</td>
<td>⚫</td>
<td>⚫</td>
<td>added 1 day after reception</td>
<td>10 - 40</td>
<td></td>
</tr>
<tr>
<td>Softan® Power</td>
<td>MG</td>
<td>Proanthocyanidic and ellagic tannins bound to vegetal polysaccharides</td>
<td>●</td>
<td>●</td>
<td>***</td>
<td>⚫</td>
<td>running off or during maturation</td>
<td>10 - 40</td>
<td></td>
</tr>
<tr>
<td>Softan® Sweetness</td>
<td>MG</td>
<td>Proanthocyanidic and ellagic tannins (from fresh and toasted oak) bound to vegetal polysaccharides</td>
<td>●</td>
<td>●</td>
<td>***</td>
<td>⚫</td>
<td>during maturation</td>
<td>5 - 20</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - 3</td>
<td></td>
</tr>
<tr>
<td>Softan® Finition</td>
<td>MG</td>
<td>Toasted oak ellagitannins bound to vegetal polysaccharides</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>***</td>
<td>during maturation or as a final touch</td>
<td>5 - 10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 - 3</td>
<td></td>
</tr>
</tbody>
</table>
Must fining, carried out before or during alcoholic fermentation, is an essential step in white and rosé winemaking, as part of a qualitative process aiming for visual and organoleptic purity.

**GREENFINE®**
Based on pea vegetal proteins without allergen*.
The new products from the Greenfine® Range are complex formulations based on pea proteins that specifically fulfill varying objectives:

- **GreenFine® Must**
  Clarifying effect, decrease in oxidised and oxidisable phenolic compounds, and improvement in organoleptic qualities

- **GreenFine® Must L**
  Similar effects to GreenFine® Must, in liquid form

- **GreenFine® Mix**
  Specific treatment of yellow colouring, of oxidation potential, and bitterness

- **GreenFine® XL**
  Complete treatment, combining impact on the colour, organoleptic characters, and on the level of clarification and settling of fine lees

- **GreenFine® Intense**
  Specific treatment of the colour intensity

*Except GreenFine® Must L, stabilised with sulphur dioxide (E220).

**Fining trial on musts with GreenFine® range**
Effects on colour of the different products arised from GreenFine® range on a rosé must.

**Effect of must fining on wines’ aromatic profile:**

**Trial conditions:**
Sauvignon Blanc, Graves, 2016 - Dosage: 50 g/hL

![Graphs showing the effect of must fining on wines' aromatic profile](image)
« With more than 80% of the wines of our region being rosés, we are particularly attentive to consumers’ key expectations, both in terms of how the wine looks and how it tastes.

In 2012, in order to respond to allergen problems, the first trials using GreenFine® Must were carried out with winemakers who were certified organic. We noted a very significant effect on the colour intensity, the decrease in oxidative characteristics on the musts, as well as lees compaction.

GreenFine® Must very quickly became part of our process.

At the same time, the shared experience of our team led us to suggest to Lamothe-Abiet to develop new formulations: GreenFine® XL is extremely effective on press juice, giving cleaner, less tannic and less green juices. In traditional vinification processes, on varieties which give more colour. GreenFine® Mix has also shown itself to be an excellent compromise for fining problematic musts. Today, the range offers an array of very effective tools with very reasonable dosages. They comply with regulatory changes (both European and organic), consumer demands, as well as winemakers’ preference to use ingredients of natural origins. »

Chrystelle GOURRIN
Consultant Winemaker
ICO, Provence, FRANCE

---

<table>
<thead>
<tr>
<th>Specific fining products</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>L.</strong> Liquid</td>
</tr>
<tr>
<td><strong>IMPROVE STRUCTURE</strong></td>
</tr>
<tr>
<td>GreenFine® Must (Pea proteins, liquid formulation)</td>
</tr>
<tr>
<td>GreenFine® Must (Pea proteins)</td>
</tr>
<tr>
<td>GreenFine® Mix (Pea proteins, PVPP)</td>
</tr>
<tr>
<td>GreenFine® XL (Pea proteins, PVPP, calcium bentonite, gelatin)</td>
</tr>
<tr>
<td>GreenFine® Intense (Pea proteins, decoloring activated charcoal, PVPP, calcium bentonite)</td>
</tr>
<tr>
<td>GreenFine® Wine (Pea proteins, gallic tannins)</td>
</tr>
<tr>
<td>GreenFine® Press (Pea protein, calcium bentonite, inactivated yeasts)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COMPLEX FINING PRODUCTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P.</strong> Powder</td>
</tr>
<tr>
<td><strong>IMPROVE STRUCTURE</strong></td>
</tr>
<tr>
<td>Polymix® Natur’ (PVPP, calcium bentonite, inactivated yeasts)</td>
</tr>
<tr>
<td>Polymix® (PVPP, potassium caseinate)</td>
</tr>
<tr>
<td>Naturfine® Prestige (inactivated yeasts, pectolytic enzymes)</td>
</tr>
</tbody>
</table>

* Guidelines only: carry out fining trials to determine the optimal dose for each type of must and wine. Respect the maximum authorized doses according the current regulations.
Unbalanced due to astringency

**medium to high in tannins**
- Gélatine de Russie supérieure: 3-5 cL/hL
- Polymix® Natur': 30-80 g/hL
- Clarfine: 30-60 g/hL

**low in tannins**
- Gélatine de Russie supérieure: 1-2 cL/hL
- Polymix® Natur': 10-30 g/hL
- Geldor: 1,5-4 g/hL

Other causes of imbalance

treat the cause of imbalance
ex: lack of sweetness -> Subli'Sense®, Softan® Sweetness
ex: lack of roundness/volume
> Vinotaste®Pro + works on lees

Excess of polyphenols

**secondary oxidation**
- Polymix® Natur': 40-80 g/hL
- Polymix®: 40-80 g/hL
- Clarfine: 40-80 g/hL
- PVPP: 30-60 g/hL
- Caséimix: 40-80 g/hL
- GreenFine® Press: 40-80 g/hL

**bitterness, astringency**
- Polymix® Natur': 15-30 g/hL
- Polymix®: 15-30 g/hL
- Clarfine: 10-30 g/hL
- GreenFine® Press: 10-40 g/hL

Finishing

High in tannins
- Gélatine spéciale vins fins: 5-10 cL/hL
- Gelfine: 5-10 g/hL
- Ovaline: 5-9 g/hL
- Natur'Fine® Prestige: 10-40 g/hL
- GreenFine® Wine: 10-20 g/hL
- GreenFine® Press: 20-40 g/hL

Medium in tannins
- Geldor: 3-8 cL/hL
- Gélatine spéciale vins fins: 4-8 cL/hL
- Gelfine: 2-4 g/hL
- Ovaline: 3-6 g/hL
- Natur'Fine® Prestige: 5-20 g/hL
- GreenFine® Wine: 5-10 g/hL

Low in tannins
- Geldor: 1,5-4 cL/hL
- Gélatine spéciale vins fins: 2-4 cL/hL

Clearness

- Colle de poisson LA: 0,5-1,5 g/hL
- Gélatine spéciale vins fins: 1-3 cL/hL
- Geldor: 1,5-3 cL/hL
- Natur'Fine® Prestige: 5-10 g/hL
- GreenFine® Wine: 3-5 g/hL

Protein stability:

- Bentosol Protect (granulated)
- Bentosol powder
- Bentosol FT (tangential)
  Dosage to be determined by heat test
### Other fining products

<table>
<thead>
<tr>
<th>Type</th>
<th>Product Name</th>
<th>Application</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASEINS</td>
<td>Caséimix (Potassium caseinate)</td>
<td>Must / press wine</td>
<td>15-80 g/hL</td>
</tr>
<tr>
<td></td>
<td>Caséine soluble</td>
<td>Must / press wine</td>
<td>20-60 g/hL</td>
</tr>
<tr>
<td>PVPP</td>
<td>Clarfine (PVPP, cellulose support)</td>
<td>Must / press wine</td>
<td>10-60 g/hL</td>
</tr>
<tr>
<td>NATURAL BENTONITES</td>
<td>Bentosol Protect (Sodium)</td>
<td>Must / Wine</td>
<td>10-120 g/hL</td>
</tr>
<tr>
<td></td>
<td>Bentosol Poudre (Sodium)</td>
<td>Must / Wine</td>
<td>10-120 g/hL</td>
</tr>
<tr>
<td></td>
<td>Bentosol FT (Compatible with tangential)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GELATINS</td>
<td>Gelflot</td>
<td>Flotation</td>
<td>1-6 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Gélatine Spéciale Vins Fins</td>
<td>Aged wine</td>
<td>2-10 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Geldor®</td>
<td>Young fruity wine / Thermovinification</td>
<td>1-5-6 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Gélatine de Russie Supérieure</td>
<td>Press wine</td>
<td>1-5 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Gelfine®</td>
<td>Aged wine</td>
<td>3-10 g/hL</td>
</tr>
<tr>
<td>OVALBUMINS</td>
<td>Ovaline®</td>
<td>Wine for laying down</td>
<td>1-9 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Albumine d’œuf</td>
<td></td>
<td>5-10 g/hL</td>
</tr>
<tr>
<td>ISINGLASS</td>
<td>Colle de poisson LA</td>
<td>Wine for laying down</td>
<td>1-3 g/hL</td>
</tr>
<tr>
<td>FINING ADJUVANTS</td>
<td>Blankasit Super (Acid silica gel)</td>
<td>Increase the efficacy of protein fining</td>
<td>2-5 cl/hL</td>
</tr>
<tr>
<td></td>
<td>Gel de Silice (Alcaline silica gel)</td>
<td></td>
<td>3 cl/hL</td>
</tr>
</tbody>
</table>

Guidelines only: carry out fining trials to determine the optimal dose for each type of must and wine. Respect the maximum authorized doses according to the current regulations.
Deciding upon a stabilisation strategy as early and holistically as possible helps to increase the effectiveness of oenological treatments, to limit the number of subsequent treatments for the same objective and also to limit organoleptic losses (colour, aromas).

**Between stabilisation and enrobing:** positioning of our gums

Our arabic gums are rigorously selected from Acacia Verek and Acacia Seyal. We process and purify them with great care preserve as much as possible their enrobing and stabilising qualities.

### Arabic gums

<table>
<thead>
<tr>
<th>ACACIA GUMS</th>
<th>STABILISATION</th>
<th>APPLICATION</th>
<th>DOSAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>L : liquid</td>
<td>COLLODAL</td>
<td>COLOUR</td>
<td>ROUNDEDNESS</td>
</tr>
<tr>
<td>MG : Micro-granulated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gomme LA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gomme Standard</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Polygom</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vinogom®</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Excelgom®</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Guidelines only: carry out trials to determine the optimal dose for each type of wine. Respect the maximum authorized doses according the current regulations.
**Tartaric stabilisation**

<table>
<thead>
<tr>
<th>MANNOPROTEINS</th>
<th>Stab K&lt;sup&gt;®&lt;/sup&gt;</th>
<th>L</th>
<th>••</th>
<th>•••</th>
<th>10-20 cL/hL</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC</td>
<td>Vinoprotect&lt;sup&gt;®&lt;/sup&gt;</td>
<td>L</td>
<td>•••</td>
<td></td>
<td>≤ 20 cL/hL</td>
</tr>
<tr>
<td>METATARTARIC ACID</td>
<td>Antitartre 36</td>
<td>P</td>
<td>••</td>
<td></td>
<td>≤ 10 g/hL</td>
</tr>
<tr>
<td></td>
<td>Antitartre 40</td>
<td></td>
<td>•••</td>
<td></td>
<td>10 g/hL</td>
</tr>
<tr>
<td>CREAM OF TARTR</td>
<td>Bitartrate de Potassium</td>
<td>C</td>
<td>•••</td>
<td></td>
<td>4 g/L</td>
</tr>
</tbody>
</table>

**VINOPROTECT<sup>®</sup>**

Cellulose gum for the tartrate stabilisation of white wines.

As well as its incredible efficacy, Vinoprotect<sup>®</sup> also allows you to save preparation time, to reduce the risk of filter clogging and any over- or under-dosage in the final product.

**TO KNOW**

Vinoprotect<sup>®</sup> is a product with a very low viscosity, it is actually a liquid solution which is both easy to use, to mix in the tanks, and well adapted to in-line injection using a dosing pump.

**Preservatives**

<table>
<thead>
<tr>
<th>S&lt;sub&gt;2&lt;/sub&gt;O&lt;sub&gt;3&lt;/sub&gt;</th>
<th>Coeff 2 et 5g</th>
<th>CE</th>
<th>•••</th>
<th></th>
<th>According to objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sulfisol 6%, 10%, 15% et 18%</td>
<td>L</td>
<td>•••</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Guidelines only: carry out trials to determine the optimal dose for each type of wine. Respect the maximum authorized doses according the current regulations.
KillBrett® is made 100% from a high purity chitosan of exclusively of fungal origin.

To eliminate Brettanomyces, KillBrett® is shown to be the easiest solution, most gentle on the wines, against DMDC and physical treatments. KillBrett® chitosan causes the lysis of the cell walls of Brettanomyces and its sedimentation at the bottom of the barrel or tank.

**Microbiological stabilisation**

<table>
<thead>
<tr>
<th>P : powder</th>
<th>STABILISATION</th>
<th>APPLICATION</th>
<th>DOSAGE *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>COLLOIDAL COULEUR</td>
<td>TARTARIC</td>
<td>MICROBIOLOGICAL</td>
</tr>
<tr>
<td>CHITOSANE</td>
<td>Killbrett®</td>
<td>P</td>
<td>⋆⋆⋆</td>
</tr>
<tr>
<td>LYSOZYME</td>
<td>Lacticide</td>
<td>P</td>
<td>⋆⋆⋆</td>
</tr>
<tr>
<td>CHITOSANE AND LYSOZYME</td>
<td>Killbact®</td>
<td>P</td>
<td>⋆⋆⋆</td>
</tr>
<tr>
<td>SORBATE</td>
<td>Sorbasol</td>
<td>P</td>
<td>⋆⋆⋆</td>
</tr>
</tbody>
</table>

**Charbons**

<table>
<thead>
<tr>
<th>P : powder</th>
<th>G : granulated</th>
<th>STABILISATION</th>
<th>APPLICATION</th>
<th>DOSAGE *</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>COLLOIDAL COULEUR</td>
<td>TARTARIC</td>
<td>MICROBIOLOGICAL</td>
</tr>
<tr>
<td>CHARBONS</td>
<td></td>
<td></td>
<td>⋆⋆⋆</td>
<td>+ decontaminating</td>
</tr>
<tr>
<td>Super Ultose TS</td>
<td>G</td>
<td></td>
<td>⋆⋆⋆</td>
<td>+ decoloring</td>
</tr>
</tbody>
</table>

* Guidelines only: carry out trials to determine the optimal dose for each type of wine. Respect the maximum authorized doses according the current regulations.
**SUBLI’SENSE®**

New solution of gum arabic and mannoproteins for organoleptic improvements of your wines.

**Star Subli’Sense®**

- Increases the unctuosity and flavour
- Enrobes the tannins
- Improves the softness and length on the palate

---

**Mannoproteins mix**

<table>
<thead>
<tr>
<th>L : liquid</th>
<th>STABILISATION</th>
<th>APPLICATION</th>
<th>DOSAGE *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subli’Sense®</td>
<td>COLLOIDAL COULEUR</td>
<td>TARTARIC</td>
<td>MICROBIOLOGICAL</td>
</tr>
<tr>
<td>L</td>
<td>+ Flavour</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Guidelines only: carry out trials to determine the optimal dose for each type of wine. Respect the maximum authorized doses according the current regulations.

---

**NEW! DOSAPOMPE**

Dosapompe is an in-line injection system for liquid enological products, specially designed for automated in-line continuous injection. It allows any type of liquid product to be safely added to the wine, even the most viscous, such as gum arabic, cellulose gum, liquid SO₂, RCM, enzymes...

---

**TO KNOW**

**Advantages:**
- Avoids loss of product and premature clogging of filter cartridges.
- Guarantees the hygiene and entire integrity of the product and the wine since the product is injected directly from the container.
- Easy cleaning and in-line disinfection through a completely automated programme.
- Ensures perfect traceability thanks to a management system for batches and volumes.

---

<table>
<thead>
<tr>
<th>Prod. Line</th>
<th>Dosage Rate</th>
<th>Dos. Rate</th>
<th>Max. Pressure PUT ON LINE</th>
<th>Working Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dosapompe 30-06</td>
<td>Up to 3000 bottles/h</td>
<td>Up to 6 litres/h</td>
<td>+/- 3% with calibration</td>
<td>4 bars</td>
</tr>
<tr>
<td>Dosapompe 100-20</td>
<td>Up to 10 000 bottles/h</td>
<td>Up to 20 litres/h</td>
<td>5 to 60°C (resistant to vapour)</td>
<td></td>
</tr>
<tr>
<td>Dosapompe 200-50</td>
<td>Up to 20 000 bottles/h</td>
<td>Up to 50 litres/h</td>
<td>7 bars *</td>
<td></td>
</tr>
</tbody>
</table>

* Compatible with counter-pressure bottling line
Having first released sticks with a thickness of 22mm, Œnoboïs® has been a forerunner in the use of enological oak in thick formats. We continue in this direction with the launch of 18mm Staves. The use of “thick” oak with a longer contact period allows the oak compounds to diffuse progressively, at the same rhythm as with barrel maturation. The compounds in the oak and the wine will polymerise gradually. The aromas last longer over time, and the wine finds a better balance, with greater finesse and elegance.

The packagings for the granular, chips, Œnoboïs® 3D and blocks 18mm products will change over 2018, with different materials and sizes. The change in material will help to improve strength. The sizes will be standardised to 12kg, and an ergonomic handle will improve comfort and ease of use.

### Staves & Blocks Œnoboïs® 18mm

#### ★ Staves Œnoboïs® 18mm

Œnoboïs® 18mm Staves are the result of a two-step toast (Double Toast Process): the first slow toast works evenly on the whole wood mass. The second superficial toast helps to increase aromatic complexity. The resulting profiles are characterised by intense and complex aromas that emphasise the wine’s finesse and length on the palate.

#### ★ Blocks Œnoboïs® 18mm

Œnoboïs® 18mm Blocks are made from Œnoboïs® 18mm Staves. Their small size allows wines with shorter maturation to benefit from a new dimension of organoleptic complexity.

Packaging: Staves in 2x10 units, joined together (both sides). / Blocks in bag of 12kg containing 2 infusion bags of 6kg.

<table>
<thead>
<tr>
<th></th>
<th>Aromatic Profile</th>
<th>Application Timing</th>
<th>Type of Wine</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Highlight the fruit, respect the typicity</td>
<td>Bring roundness and weight</td>
<td>Caramel, smokey notes</td>
<td>Bring finesse, equivalent to barrel</td>
</tr>
<tr>
<td>Staves 1.8 x 5 x 90 cm Blocks 1.8 x 5 x 5 cm French oak</td>
<td>Origin</td>
<td>●●●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Expression</td>
<td></td>
<td>● ●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Absolute</td>
<td></td>
<td>●</td>
<td>●●●</td>
<td></td>
</tr>
</tbody>
</table>

#### Staves & Blocks: levels of toast

**Origin**
The ‘lightest’ toasting profile, highlights the freshness of the fruit and brings intense aromas of coconut and vanilla. On the palate, an increased sweetness and roundness.

**Expression**
The most ‘moderate’ toast, the range of aromas is the broadest and most complex, combining notes of vanilla, caramel, crème brûlée and roasted coffee. On the palate, it brings complexity and length.

**Absolute**
The strongest toast with the most “character”, with intense aromas of roasted coffee, mocha, smokiness, but also fresher notes such as licorice and eucalyptus. On the palate, sensations of freshness and tension round off this very surprising toast!
With over 10 years of experience, Œnobois® offers different concepts for modelling barrel ageing.

**STICKS & ŒNOBOIS® 3D**

🌟 Sticks Œnobois® starting at fermentation: modeling barrel fermentation

The aim is to integrate the oak as best as possible, since the wood/wine exchanges can take place throughout the entire winemaking process. This has two effects on the taste: the aromas are found to be more precise, and the tannic structure is found to be more fine and silky.

Vinification with sticks

«Objectives and benefits of the method: Vinification with sticks is an alternative technique that does not replace barrels. It allows a qualitative, integrated oak character whilst addressing the issues of production costs. Linked to the thickness of the stick, this practice gives roundness, volume, a complex aromatic profile, and participates in a greater colour intensity. It has a great benefit on mid-quality batches with the aim of integrating them into the top wine.»

Antoine MÉDEVILLE, Œnoconseil laboratory, PAUILLAC, FRANCE

🌟 Œnobois® 3D

The cube shaped Œnobois® 3D (with sides of 22mm) are made from Œnobois® sticks. They therefore exactly match the delicate and complex aromatic profiles obtained through the toasting of the sticks. They combine the singular effects of the thickness of the Œnobois® sticks with the ease of use of chips. They help to guide the maturation of wines with precision and finesse.

Packaging: Sticks in 2x18 units, joined together (one side) / 3D in bag of 12kg containing 2 infusion bags of 6kg.

<table>
<thead>
<tr>
<th>AROMATIC PROFILE</th>
<th>APLICATION TIMING</th>
<th>TYPE OF WINE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGHLIGHT THE FRUIT, RESPECT THE TYPICITY</td>
<td>BRING ROUNDEDNESS AND WEIGHT</td>
<td>CARAMEL, SMOKEY NOTES</td>
<td>BRING FINESSE, EQUIVALENT TO BARREL</td>
</tr>
<tr>
<td>Sticks 2,2 x 2,2 x 90 cm</td>
<td>Highlight</td>
<td>⋆⋆⋆</td>
<td>⋆⋆</td>
</tr>
<tr>
<td>Medium 2,2 x 2,2 x 90 cm</td>
<td>Medium</td>
<td>⋆</td>
<td>⋆⋆⋆</td>
</tr>
<tr>
<td>Medium 2,2 x 2,2 x 90 cm</td>
<td>Medium +</td>
<td>⋆</td>
<td>⋆</td>
</tr>
</tbody>
</table>

- **HighLight**: Contact time (varies according to dosage, wine and objective)
- **Medium**: 3D Cubes: 2 to 4 months
- **Medium +**: Sticks: 4 to 8 months

Sticks & 3D: levels of toast

- **HIGHLIGHT**: Accentuate the fruity notes of the wine and support its natural structure.
- **MEDIUM**: Sweet aromatic profile (notes of caramel, vanilla and speculoos) and silkiness on the palate.
- **MEDIUM+**: Contributes to the complexity of persistence of the aromas of top quality wines, with intense notes of roasted almonds and mocha.
**Chips FR & US: Sparks of wood**

Packaging: Bag of 12 kg containing 2 infusion bags of 6 kg.

<table>
<thead>
<tr>
<th>AROMATIC PROFILE</th>
<th>APLICATION TIMING</th>
<th>TYPE OF WINE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGHLIGHT THE FRUIT, RESPECT THE TYPICITY</td>
<td>BRING ROUNDNESS AND WEIGHT</td>
<td>CARAMEL, SMOKY NOTES</td>
<td>BRING FINESSE, EQUIVALENT TO BARREL</td>
</tr>
<tr>
<td>Fresh</td>
<td>•••</td>
<td>⋆</td>
<td>•</td>
</tr>
<tr>
<td>Light</td>
<td>⋆</td>
<td>⋆</td>
<td>●</td>
</tr>
<tr>
<td>Medium</td>
<td>●</td>
<td>●</td>
<td>•</td>
</tr>
<tr>
<td>Medium +</td>
<td>●</td>
<td>•</td>
<td>⋆</td>
</tr>
<tr>
<td>American oak chips</td>
<td>Medium</td>
<td>●</td>
<td>⋆</td>
</tr>
<tr>
<td>Medium +</td>
<td>●</td>
<td>•</td>
<td>⋆</td>
</tr>
<tr>
<td>ŒNOBLEND® chips</td>
<td>Chic</td>
<td>Oaky and spicy</td>
<td>•</td>
</tr>
<tr>
<td>Fun</td>
<td>Gourmand and sweet</td>
<td>•</td>
<td>⋆</td>
</tr>
<tr>
<td>Pure</td>
<td>Natural and fruity</td>
<td>•••</td>
<td>•</td>
</tr>
</tbody>
</table>

**Œnoblend® Chips**

Œnoblend® is a unique and original range of chips created by blending oaks of different origins and different toasts. Developed by a team of aromaticians and enologists, this range makes use of the sensorial pyramid, as described by experts in the field of perfumery and aroma creation. Their profiles are a perfect illustration of the alliance of aromatic precision with modern styles. ŒnoBlend® Pure reveals the fruity profile of wines without adding smokey oak notes; it boosts the volume on the palate and the natural structure of the wine, as well as the length of the end-palate.

**Œnoblend® Chic**

- Oaky and spicy
- Ceder
- Smoky notes
- Fresh ginger
- Fresh spicy
- Milky
- Fresh coconut
- Light vanilla
- Tight tannins
- Fresh wood
- Pâtisserie
- Spicy
- Roasted coffee
- Caramel
- Coconut
- Intense Vanilla
- Round tannins

**Œnoblend® Fun**

- Gourmand and sweet

Optimise your choice of oak for winemaking:

On our Oenosolutions mobile app, available on the Appstore and Google Play Store.
Granulars FR & US: for a full fermentation

Packaging: Bag of 12kg
Granular Oenofresh® and Granular Medium in bag of 12kg containing 2 infusion bags of 6kg

<table>
<thead>
<tr>
<th>AROMATIC PROFILE</th>
<th>APPLICATION TIMING</th>
<th>TYPE OF WINE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HIGHLIGHT THE FRUIT, RESPECT THE TYPICITY</td>
<td>BRING ROUNNEDNESS AND WEIGHT</td>
<td>CARAMEL, SMOKEY NOTES</td>
</tr>
<tr>
<td>Granular French oak</td>
<td>Oenofresh®</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Fresh</td>
<td>***</td>
<td>*</td>
</tr>
<tr>
<td></td>
<td>Light</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Granular American oak</td>
<td>Medium</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td>Granular ŒNOBLEND®</td>
<td>Ferm’Oak</td>
<td>***</td>
<td>*</td>
</tr>
</tbody>
</table>

**Tank inserts**

Sticks Inside: Boost your barrel!

Customise your Sticks Inside:
ŒnoBois® now offers the possibility to custom-make personalised recipes by blending different toasts into the same Stick inside. The goal is to add complexity and individuality to the aromas for each barrel.

The Stick Inside has 9 segments of 30cm joined together by inox binding. Packaging: box of 10 Sticks Inside.

<table>
<thead>
<tr>
<th>AROMATIC PROFILE</th>
<th>TIMING OF APPLICATION</th>
<th>TYPE OF WINE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REVEAL FRUIT, PRESERVE TYPICITY</td>
<td>CONTRIBUTION OF ROUNNEDNESS AND SUBSTANCE</td>
<td>CARAMEL, SMOKEY</td>
</tr>
<tr>
<td>Sticks Inside French oak</td>
<td>Highlight</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Medium +</td>
<td>*</td>
<td>***</td>
</tr>
</tbody>
</table>

* Addition through the bunghole.

**Oak Inside**

Sticks Inside: A ball for your barrel!

Packaging: 450g packet

<table>
<thead>
<tr>
<th>AROMATIC PROFILE</th>
<th>TIMING OF APPLICATION</th>
<th>TYPE OF WINE</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REVEAL FRUIT, PRESERVE TYPICITY</td>
<td>CONTRIBUTION OF ROUNNEDNESS AND SUBSTANCE</td>
<td>CARAMEL, SMOKEY</td>
</tr>
<tr>
<td>Oak Inside Diameter of balls 3 cm French oak</td>
<td>Highlight</td>
<td>***</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Medium</td>
<td>*</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>Medium +</td>
<td>*</td>
<td>***</td>
</tr>
</tbody>
</table>

* Addition through the bunghole.
In 2016, Lamothe-Abiet initiated studies on reducing sulfites. The heart of the project revolved around microbial management during the pre-fermentary stages, which led to the selection of a strain of *Metschnikowia pulcherrima* (Excellence® Bio-Nature). In order to meet certain or absolute limits on sulfites in wines, we have characterised different products from the range which might meet winemakers’ needs. Other studies are currently underway and will expand on these initial recommendations.

Possibilities for substituting SO₂ are shown in the following pictograms, linked to their effects.

### Excellence® Bio-Nature Trial

**Trial conditions:**
- Chenin, Vallée de la Loire, 2017
- ABV 12.8% vol, pH 3.2

**Modalities:**
- Starting must = Starting must, before sulfite or yeast addition
- SO₂⁺ = Sulfite added at 5g/hL on grapes at harvest
- Bio-Nature = 5g/hL d’Excellence® Bio-Nature on grapes at harvest

### Post AF analyses

<table>
<thead>
<tr>
<th></th>
<th>SO₂⁺</th>
<th>Bio-Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free SO₂ (mg/L)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total SO₂ (mg/L)</td>
<td>26</td>
<td>7</td>
</tr>
<tr>
<td>Acetaldehyde - Ethanal (mg/L)</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>Estimation of the TL35* (mg/L) Post AF</td>
<td>104</td>
<td>80</td>
</tr>
</tbody>
</table>

* *quantity of sulfite to add to wine to attain 35mg/L free SO₂*

### Comparative tasting at the end of AF

- **Bioprotection**
- **Control with sulfites**

As well as removing the need to add sulfites to the grapes at harvest, bioprotection with Excellence® Bio-Nature helps to reduce the production of substances that combine SO₂, as well as giving more complex wines.
**Excellence® Bio-Nature**

**Benefits:**
- Control of microbial flora,
- Reduction of compounds that combine SO₂.

**Tanin gallique à l'alcool**

**Benefits:**
- Inhibition of oxidases (tyrosinase, laccase).

**Aroma Protect®**

**Benefits:**
- Consumes dissolved oxygen,
- Reacts with quinones.

**GreenFine®**

**Benefits:**
- Decrease oxidised and oxidisable compounds.

**Excellence® FTH / TXL / STR / B2**

**Benefits:**
- Low production of SO₂ and compounds that combine SO₂.

**Excellence® XR / DS / SP / FR**

**Benefits:**
- Low production of SO₂ and compounds that combine SO₂.

**Tan&Sense® Volume**

**Benefits:**
- Consumes dissolved oxygen,
- Protects grape tannins and anthocyanins.

**Pro Tanin R®**

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**Thiamine**

**Benefits:**
- Decreases yeast production of compounds that combine SO₂.

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Lamothe-Abiet offers its expertise for optimising thiol and fermentary ester aromas. The methods shown have proved themselves around the world.

**Fermentary esters**

<table>
<thead>
<tr>
<th>Optimal turbidity</th>
<th>50 – 100 NTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal AF temperature</td>
<td>14-16°C</td>
</tr>
</tbody>
</table>

**Novoclar® Speed**

Usage: on the grapes as soon as possible

Benefits:
- Fast depectinisation of must in cold clarification or flotation

**GreenFine® Range**

Usage: after pressing

Benefits:
- Clarification of must
- Removal of polyphenols
- Colour management

**Vinozym® FCE G**

Usage: on the grapes as soon as possible

Benefits:
- Depectinise must
- Extract aroma precursors

**OptiThiols®**

Usage: before AF

Benefits:
- Stimulates the synthesis of thiols during AF
- Better preservation of thiols after AF

**GreenFine® Range**

Usage: after pressing

Benefits:
- Clarification of must
- Removal of polyphenols
- Colour management

**TO KNOW**

- The production of fermentary esters depends directly on the strain of yeast used. Certain enzymatic activities specific to the yeast are essential for an optimal revelation of acetate esters and ethyl esters of fatty acids. Excellence® STR was selected for this very reason.

**Volatile thiols**

<table>
<thead>
<tr>
<th>Optimal turbidity</th>
<th>150 – 200 NTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal AF temperature</td>
<td>18°C</td>
</tr>
</tbody>
</table>

**AROMATIC OPTIMISATION**

- The production of fermentary esters depends directly on the strain of yeast used. Certain enzymatic activities specific to the yeast are essential for an optimal revelation of acetate esters and ethyl esters of fatty acids. Excellence® STR was selected for this very reason.
OenoStim®
Usage: in rehydration water for the yeast
Benefits: ✩✩ Optimised fermentation kinetics
✩ Better implantation of selected yeast

Excellence® STR
Usage: yeast addition
Benefits: ✩✩Synthesis of fermentary esters
✩ Good fermentation kinetics

OptiEsters®
Usage: at the end of the first third of AF
Benefits: ✩✩ Stimulate synthesis of fermentary esters during AF

Aroma Protect®
Usage: after AF or during maturation
Benefits: ✩✩ Protection of thiol aromas thanks to high concentration in glutathione

Oenozym® Thiols
Usage: start of AF
Benefits: ✩✩ Reveal aroma precursors of 4MSP, 3SH and A3SH

Optiflore O
Usage: after first third of AF
Benefits: ✩✩ No effect on nitrogen catabolic repression
✩✩ Increased aromatic complexity

OenoStim®
Usage: in rehydration water for the yeast
Benefits: ✩✩ Optimised fermentation kinetics
✩ Better implantation of selected yeast

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Must
AF
During clarification

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1 Production of the base wine

For the alcoholic fermentation of the base wine, and for the secondary fermentation, we have selected 3 yeast strains capable of giving the different wine profiles that may be sought after:

- **Excellence® E2F**: The most hardy yeast, for the objective of aromatic purity: yeast resistant to alcohol, pressure, to hostile environments, produces a good quality of bubbles.
- **Excellence® TXL**: Varietal yeast, for the objective of volume and finesse.
- **Excellence® STR**: The most aromatic yeast, for the objective of aromatic impact.

<table>
<thead>
<tr>
<th>STRAIN</th>
<th>BASE WINE</th>
<th>SECONDARY FERMENTATION</th>
<th>RESTARTING AF</th>
<th>NITROGEN REQUIREMENTS</th>
<th>ALCOHOL TOLERANCE (% Vol.)</th>
<th>VARIETAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2F</td>
<td>•••</td>
<td>•••</td>
<td>•••</td>
<td>Low</td>
<td>&gt;17</td>
<td>all</td>
</tr>
<tr>
<td>TXL</td>
<td>•</td>
<td></td>
<td></td>
<td>High</td>
<td>16</td>
<td>all</td>
</tr>
<tr>
<td>STR</td>
<td>•</td>
<td></td>
<td></td>
<td>Medium</td>
<td>15</td>
<td>all</td>
</tr>
</tbody>
</table>

**Yeast nutrition**

- **OenoStim®**: Used at a rate of 30 g/L in the yeasts’ rehydration water, Oenostim® gives the growth factors (vitamins, minerals) and survival factors (sterols, unsaturated fatty acids) necessary for the increase in the number of viable cells. It ensures the yeasts’ survival under difficult conditions.

- **OptiFlore® O**: Rich in organic nitrogen, Optiflore® O gives a rich nutrition to yeasts throughout the alcoholic fermentation. This can decrease the appearance of reductive aromas and ensures regular fermentations and aromatic purity.

**TO KNOW**

- **Excellence® E2F**: The most hardy yeast, for the objective of aromatic purity: yeast resistant to alcohol, pressure, to hostile environments, produces a good quality of bubbles.
- **Excellence® TXL**: Varietal yeast, for the objective of volume and finesse.
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**Yeast for prise de mousse**

Excellence® E2F prepared with Oenostim®

Protocol available on our website at: [LA Solutions / Protocols](#)

2 Tirage

**TIRAGE LIQUOR**

- **TANIN E2F®**: selection of gallic and ellagic tannins.
  - **Protection role**: natural antioxidant, blocks polyphenol oxidases and improves the effectiveness of SO₂.
  - **Stabilisation role**: causes the precipitation of unstable proteins and protects the organoleptic qualities of wines.
  - **Organoleptic role**: adds elegance and structure to white wines without adding astringency. Protects the organoleptic qualities of the wine.
Mixtures of pure bentonite: Bentosol Protect®

Easily neutralised by proteins, you must therefore first check that the base wine is not too rich in proteins. If it is, it is sometimes advised to increase the adjuvant dosage by 1 to 2 cL/hL.

Mixtures of bentonite-kaolin or bentonite-alginate:

The most popular: thanks to bentonites with low deproteinising potential, these mixtures maintain the finesse and the longevity of the bubbles, whilst having a coagulating effect which aids in the gathering and flocculation of suspended particles. This leads to the formation of a compact deposit in the bottle, which can be easily eliminated during disgorgement. In either case, the addition of a riddling adjuvant during the tirage process guarantees that the subsequent disgorgement will go smoothly.

- Alginate E2F®: in liquid formulation is composed of bentonite and alginate. Dosage: from 7 to 10 cL/hL.
- Bentosol E2F®: liquid bentonite. Dosage: 6 cL/hL.
- Kaolin E2F®: liquid kaolin. Dosage: 2 cL/hL.

Citric acid: adds liveliness and freshness
Solution de bisulfite (bisulfite solution): microbiological and anti-oxidising protection
Acide ascorbique (ascorbic acid) (only to be used with a 10 mg/L minimum of free SO2): Antioxidant effect. Limits premature ageing.
Gomme LA, Polygom®: colloidal stabilisation and/or addition of roundness
Copper sulfate solution: limit reductive tastes
Subli’Sense®: Add roundness, sweetness, flavour and aromatic persistence
Softan® Finition: production of a liquor with a profile adapted to consumer demands: roundness and sweetness.

Two new remuage adjuvants in liquid form have been added to the E2F® range. Bentosol E2F® is formulated from specific bentonites. Its activity is optimised by simultaneously adding Kaolin E2F®, which is formulated from high purity silicates.

These two adjuvants to optimise the clarification and sedimentation of the yeast. The deposit formed is compact and improves the quality of the disgorgement. After remuage, wines are clear, with shine and without residues. The nose remains cleaner and fresher.

Trial conditions:
- Crémant de Loire, 2015
- 12 months on laths, riddling on pupitre

Wines treated with Bentosol E2F® and Kaolin E2F® display less loss during disgorgement than the lead competition product. For a winery that produces 10 000 hL at 400€/hL, the direct saving is estimated to be 24 000 €.
With climate change and consumer preference evolution, wine composition is changing: higher pH, high alcohol content, higher phenolic content and low malic acid acid. These parameters impact strongly lactic acid bacteria development, increasing the risk of stuck malolactic fermentation (MLF) and microbial spoilage. Technics, such as coinoculation, are becoming more and more used to ensure microbial stability and completion of MLF.

Principal factors influencing lactic acid bacteria
MLF problems can arise when pH is low (<3.4), alcohol is high (>14.5%), wine temperature is low (<65°F) or high (>80°F), total SO2 is high (>50 mg/L) and/or free SO2 is high (>10 mg/L). These four parameters (pH, temperature, alcohol and SO2) have a negative synergistic effect, making the completion of MLF difficult when combined.

Compatibility between yeast and bacterial strains is another significant consideration. With minor impact, vineyards sprays, initial malic acid and phenolic content can also be stress factors.

Why doing co-inoculation?
Co-inoculation, practice of inoculating lactic acid bacteria lactic shortly after yeast inoculation has many advantages:

- Secure MLF by giving bacteria a favorable environment with lower alcohol concentration, better nutrient fermentations availability, less medium chain fatty acids (bacteria inhibitors), warmer temperature and better acclimation
- Limit risk of microbial contamination and spoilage by eliminating the microbial vaccum
- Reduce risks of oxidation
- Produce fresh, fruity, clean and less buttery wines with better balance and fuller body
- Save time: blend, stabilize and age wines earlier
- Cost effective: less analysis, less labor, less barrel

What happens when MLF is not controlled?
Uncontrolled MLF is often conducted by spoilage lactic acid bacteria such as Lactobacillus, Pediococcus and wild Oenococcus. It usually generates biogenic amines production, volatile acidity, mousiness and negative off-flavors such as rancid, sour cream, sweat, rotten fruit, and loss of balance and identity. Inoculating with selected bacteria strains reduces the risks of microbial spoilage, ensures completion of MLF and gives better control over wine aromatic profile and mouthfeel.

ABOUT BIOGENIC AMINES...
Biogenic amines are formed via enzymatic decarboxylation of amino acids by lactic acid bacteria, especially Lactobacillus, Pediococcus and Oenococcus strains. Putrescine, cadaverine, histamine and tyramine are the four most common biogenic amines found in wine. They are known for promoting headaches and allergic response and are associated with off-aromas such as metallic, meaty, putrid, and fishy aromas. Currently regulated in Switzerland and Canada, biogenic amines are of increasing interest to the wine industry due to proposed regulatory issues.

Lamothe-Abiet Winemaking Solutions for co-inoculation:
With co-inoculation, it is important to address the concern of possible production of acetic acid by acid bacteria. The yeast/bacteria couple used will have strong impact on limiting the risk of stuck/sluggish MLF and the production of acetic acid. Lamothe-Abiet developed a specific yeast/bacteria couple for co-inoculation: Excellence® XR and Oeno1 for reds, Excellence® TXL and Oeno1 for whites/rosés.

- For reds: Excellence® XR at 20 g/hL. For whites/roses: Excellence® TXL at 20 g/hL.
- 24-48 hours after the beginning of alcoholic fermentation, add 1 g/hL of Oeno1.
- Temperature < 86°F, SO2 on grapes < 8 g/hL, no acid management, less energy use change or oxygen within 12hrs after bacteria inoculation.
Distributed in Australia by

Blue H2O Filtration | BHF Technologies
Unit 1/11-13 Wells Rd, Oakleigh VIC 3166, Australia
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info@blueh2o.com.au

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