

# LAFFORT & YOU

SHARED RESOURCES & EXPERTISE

# TANK TO TROPHY

*The Path to Bottling*



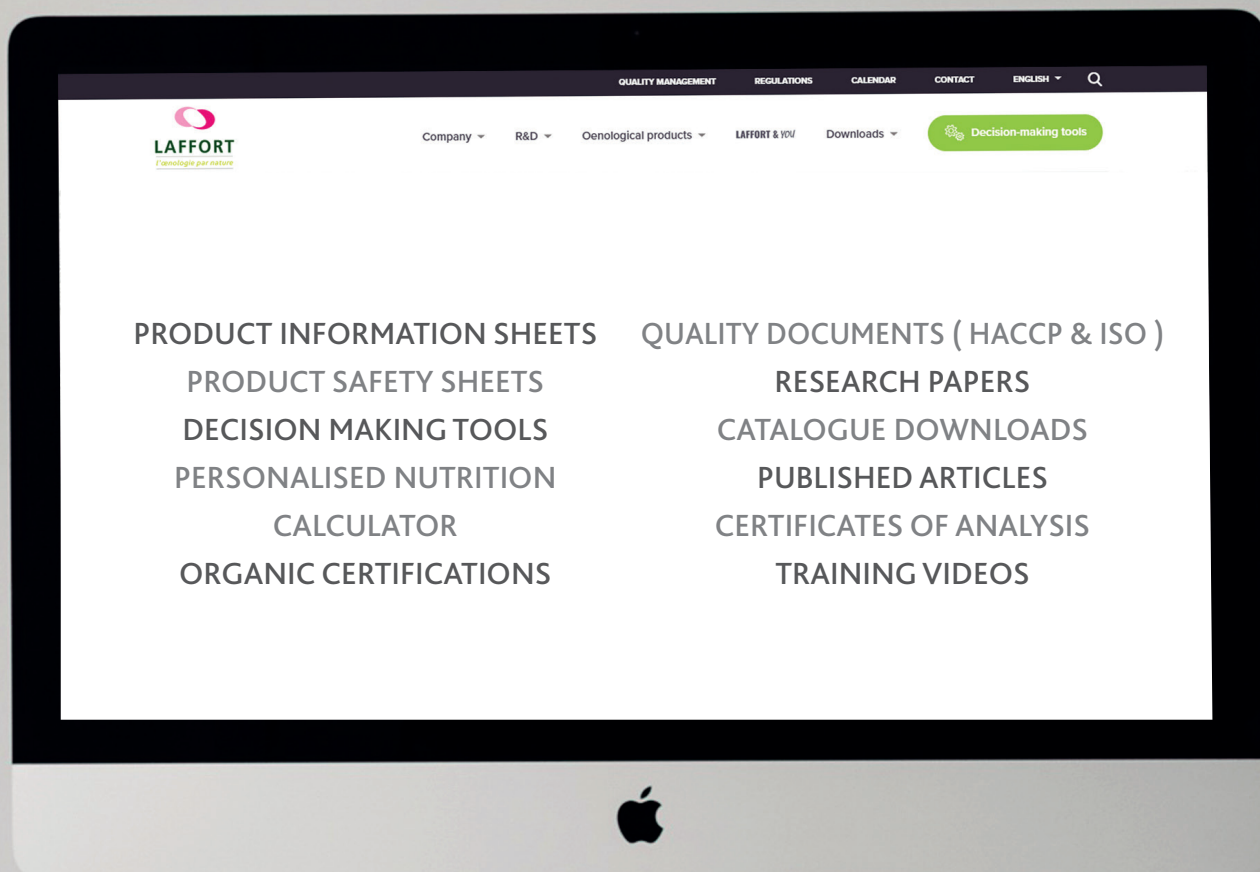
LAFFORT

*l'œnologie par nature*

[www.laffort.com](http://www.laffort.com)

## YOUR ACCESS TO 120 YEARS OF WINEMAKING INNOVATION

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## LAFFORT® PLANT BASED INNOVATIONS

LAFFORT® unrivalled technical resources is delivering the most scientifically advanced oenological solutions from plant derived products.

## VEGAN FRIENDLY & ORGANIC THEY'RE NOT JUST OPTIONS THEY'RE SUPERIOR SOLUTIONS

These symbols are a guide to your LAFFORT® products properties.



*Organic certification bodies have different criteria for certification and products may differ from one certification body to another. Please contact your certifying agent to confirm a products organic certification.*



# PROTECTING YOUR WHITE WINE

## PROTECTING YOUR WHITE WINE - A TRADITIONAL APPROACH

White wines are vulnerable to oxidation and microbial changes post alcoholic fermentation. Microbial and anti-oxidative control of white wines is a first step to getting wines ready for bottling and/or storage.

Threats of oxygen on finished white wines;

- Proliferation of acetic acid bacteria.
- Proliferation of *Brettanomyces bruxellensis*.
- Browning caused by the oxidation of hydroxycinnamic acids and key phenolic acids.
- Oxidation of aroma producing thiols rendering them non volatile.

To prevent the oxidation of these phenolic compounds, an anti-oxidative mechanism needs to be put in place. Typically this is in the form of SO<sub>2</sub> in conjunction with ascorbic acid.

### A word on SO<sub>2</sub> and ascorbic acid

Understanding SO<sub>2</sub> in your white wine is critical to ensuring microbial stability and oxidative control. SO<sub>2</sub> can be found in both free and bound form, with the sum of these two values resulting in the total SO<sub>2</sub> value. In its free form SO<sub>2</sub> has both an antimicrobial and anti-oxidative effect. The amount of free SO<sub>2</sub> is dependant on the pH (Table 1). Essentially;

- Lower pH = More available free SO<sub>2</sub>.
- High the pH = Less available free SO<sub>2</sub>.

Other compounds are able to bind to SO<sub>2</sub> affecting the levels of free SO<sub>2</sub>. This bound SO<sub>2</sub> contributes to the TSO<sub>2</sub> level, but is not available for anti-microbial and anti-oxidative control. Therefore when using less SO<sub>2</sub> in winemaking it is imperative to understand the impact of pH.

Ascorbic acid is an effective oxygen scavenger in the presence of SO<sub>2</sub> in white wines. This should not be used by itself in white wines as it can lead to oxidation via the production of hydrogen peroxide when molecular SO<sub>2</sub> is not present.

Table 1: Percentages of molecular SO<sub>2</sub> to bisulfite (bound SO<sub>2</sub>) at wine pH (Ribéreau-Gayon et al 2006).

| pH   | MOLECULAR SO <sub>2</sub> % | BISULFITE (HSO <sub>3</sub> <sup>-</sup> ) % |
|------|-----------------------------|----------------------------------------------|
| 3.00 | 6.06                        | 94.94                                        |
| 3.10 | 4.88                        | 95.12                                        |
| 3.20 | 3.91                        | 96.09                                        |
| 3.30 | 3.1                         | 96.87                                        |
| 3.40 | 2.51                        | 97.49                                        |
| 3.50 | 2.00                        | 98.00                                        |
| 3.60 | 1.60                        | 98.40                                        |
| 3.70 | 1.27                        | 98.73                                        |
| 3.80 | 1.01                        | 98.99                                        |
| 3.90 | 0.81                        | 99.19                                        |
| 4.00 | 0.64                        | 99.36                                        |

## PROTECTING YOUR WHITE WINE - A LOW SO<sub>2</sub> APPROACH

Several low SO<sub>2</sub> strategies may be used to protect a wine from microbial spoilage. Less SO<sub>2</sub> will go further in the microbial protection of your wine via;

- Lower pH ranges.
- Inoculation of both primary and secondary fermentations (to ensure the best success).
- Additions of tannins providing an antioxidant effect in that they can scavenge oxygen.
- Use of a chitosan/enzyme blend based product.











Chitosan is a non-allergenic polysaccharide, derived from the *Aspergillus spp* for winemaking applications. Chitosan by itself can have an impact cell viability of *B. bruxellensis* and lactic acid bacteria. LAFFORT® has taken the concept of chitosan further and added β-glucanase and pectinase, acting on the colloidal structure of the wine. The combined effect is much greater on cell death than chitosan by itself.





# PROTECTING YOUR WHITE WINE WITH LAFFORT®

|                                | PRODUCT                                                                                                                 | DESCRIPTION                                                                                                                                                                                                                                                  | PACKAGING              |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| A TRADITIONAL APPROACH         | <b>BISULFITE 18</b>                    | <b>Liquid sulphur solution - 18% SO<sub>2</sub>.</b><br>Easy to use with low aromatic profile.                                                                                                                                                               | 6 kg<br>25 kg          |
|                                | <b>POTASSIUM METABISULPHITE (PMS)</b>  | Powdered potassium metabisulphite (PMS) 57% SO <sub>2</sub> .                                                                                                                                                                                                | 1 kg                   |
|                                | <b>OENOSTERYL EFFERVESCENT</b>         | <b>Sulphur tablets for easy barrel application.</b><br>2 g (20 ppm SO <sub>2</sub> /hL; 8,8 ppm SO <sub>2</sub> /225 L; 6,7ppm SO <sub>2</sub> /300 L).<br>5 g (50 ppm SO <sub>2</sub> /hL; 22 ppm SO <sub>2</sub> /225 L; 16,7 ppm SO <sub>2</sub> /300 L). | Box of 42<br>Box of 48 |
|                                | <b>SULPHUR RINGS</b>                  | <b>For sterilising barrels.</b><br>2 and 5 g available.                                                                                                                                                                                                      | Box of 1 kg            |
|                                | <b>ANOXYDE C</b>                     | Pure L- (+) ascorbic acid.                                                                                                                                                                                                                                   | 1 kg                   |
| A LOW SO <sub>2</sub> APPROACH | <b>QUERTANIN®</b>                    | Ellagic Tannin.<br>Protecting wine from oxidation.<br>Eliminates reductive odours.                                                                                                                                                                           | 500 g                  |
|                                | <b>MICROCONTROL®</b>                 | <b>Microbial protection.</b><br>Used in conjunction with SO <sub>2</sub> chitosan, vegetal protein and enzymes for reducing the microbial load, as well as protecting wines against certain unfavourable microorganisms.                                     | 500 g                  |
|                                | <b>BACTICONTROL®</b>                                                                                                    | <b>Inhibits MLF.</b><br>Applied in conjunction with SO <sub>2</sub> . Chitosan, <b>LYSOZYME®</b> and an enzymatic mix of pectinases and β-glucanases.<br>Can be used pre- or post-alcoholic fermentation.                                                    | 500 g                  |
|                                | <b>TANFRESH®</b>                     | <b>Reduces oxidation, adds volume and refreshes the wine before bottling.</b><br>Specifically produced tannins for white and rose wines.                                                                                                                     | 250 g                  |

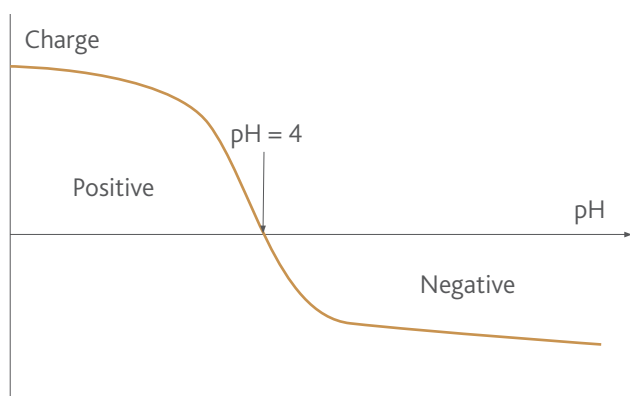
# WHITE WINE PROTEIN STABILISATION

## WHAT IS PROTEIN STABILISATION ?

Proteins in wine are derived primarily from the grape but also from autolysis of yeast post fermentation. Typically, they are found in quantities of 10 – 500 mg/L<sup>1,2,3</sup> in wine and their quantities may be influenced by water stress, method of harvesting, and presence of stalks during pressing. Different grape varieties and viticultural practices will also influence the amount of protein present in the resulting wine. *Not all proteins are heat unstable!* Enzymes used in winemaking as well as mannoproteins are all proteins which do not cause heat instabilities. It is only the heat unstable proteins that will cause haze after the wine is heated. Proteins associated with grape pathogens and chitinases which are grape derived are primarily associated with protein haze in white wines<sup>4</sup>.

## FACTORS THAT EFFECT PROTEIN STABILISATION

Bentonite is normally used to precipitate proteins. Proteins of interest in wine are positively charged at lower pH ranges but at pH 4.0 lose their charge meaning that bentonite becomes less effective at these pH and more is required. Generally speaking, the higher the pH, the more bentonite required to stabilise the wine.



Influence of pH on the dose of bentonite required to protein stabilise a Sauvignon Blanc.

| pH  | Dose of bentonite required to achieve protein stability |
|-----|---------------------------------------------------------|
| 3   | 50                                                      |
| 3.6 | 60                                                      |
| 3.8 | 80                                                      |
| 4   | 100                                                     |

## INCREASED RISK FACTORS FOR PROTEIN INSTABILITY

- Inefficient fining – residual fining agent may leave proteins in suspension. These will bind to bentonite and drop out meaning an overestimation of the bentonite dosage required.
- Bottling filtration quality: a stable wine before bottling that became unstable by retention of protective colloids in case of a clogging filtration.
- Certain additives at bottling i.e. **LYSOZYME®**.
- Poor quality natural corks: possibility of releasing cork tannins.
- Wine storage conditions: wine exposed to heat.
- The maturity level influences the protein concentration - The concentration in thermo-unstable proteins increases during ripening.
- The higher the pH, the more bentonite required to stabilise the wine.

<sup>1, 2, 3, 4</sup> References available upon request.

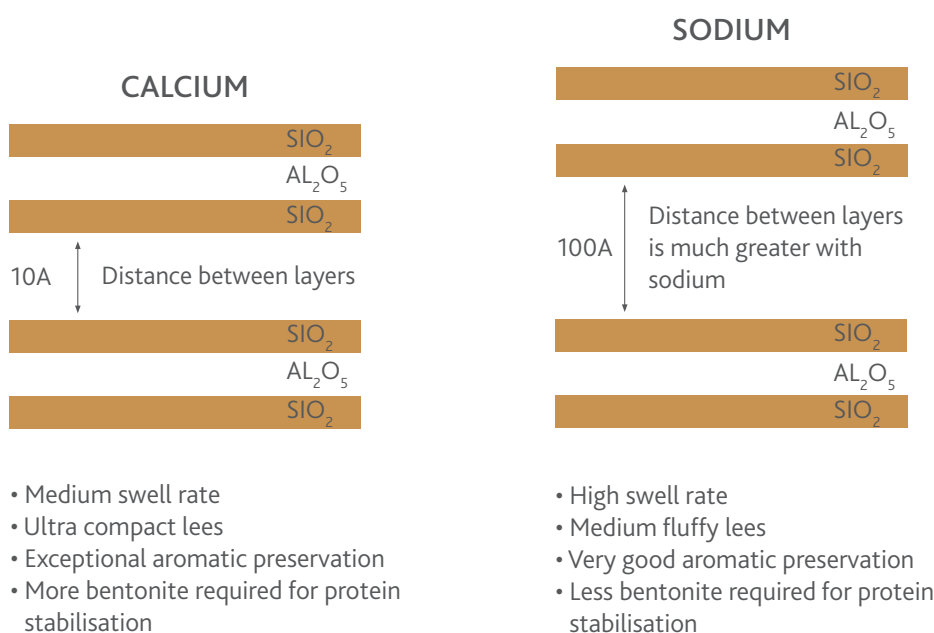


# WHITE WINE PROTEIN STABILISATION

## TYPES OF BENTONITE




### CALCIUM and SODIUM

The primary difference between bentonite's is the space between their respective layers. The reduced space between the layers in the calcium bentonite results in more compact lees but a higher dose (approximately 1.6 x the dosage) is required to capture all the proteins. With sodium bentonite, a lower dosage is required as greater space between the layers captures more proteins but makes the lees settle higher.



## PROTEIN STABILISING YOUR WINE WITH LAFFORT®



| PRODUCT                                                                                                    | DESCRIPTION                                                                                                                                                     | PACKAGING     |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>MICROCOL® ALPHA</b>  | <b>Natural sodium.</b><br>Excellent stabilisation power across wide range of wine pH.                                                                           | 5 kg<br>25 kg |
| <b>MICROCOL® CL</b>     | <b>Calcium.</b><br>Excellent lees compaction.<br>Minimal effect on aroma.<br>Minimal wine loss.<br>Fast preparation time.                                       | 5 kg<br>25 kg |
| <b>MICROCOL® FT</b>     | <b>Calcium sodium.</b><br>Low silica content and dedicated particle size.<br>Excellent all-round parameters and applications.<br><i>« Crossflow friendly ».</i> | 25 kg         |

# FINING YOUR WHITE WINE

## THE SELECTIVITY OF FINING

Each fining agent has a different specificity, and their efficacy and sensorial impact are largely dependent upon the product and the timing of addition (e.g. wine stage fining is much more impactful on the sensory profile than juice or must fining). The product variance is best demonstrated in figure 1, highlighting how each fining agent reacts differently with the compounds in the wines, and how even small dose's can have a large sensory impact.

Which is why; bench trials are the key to success!

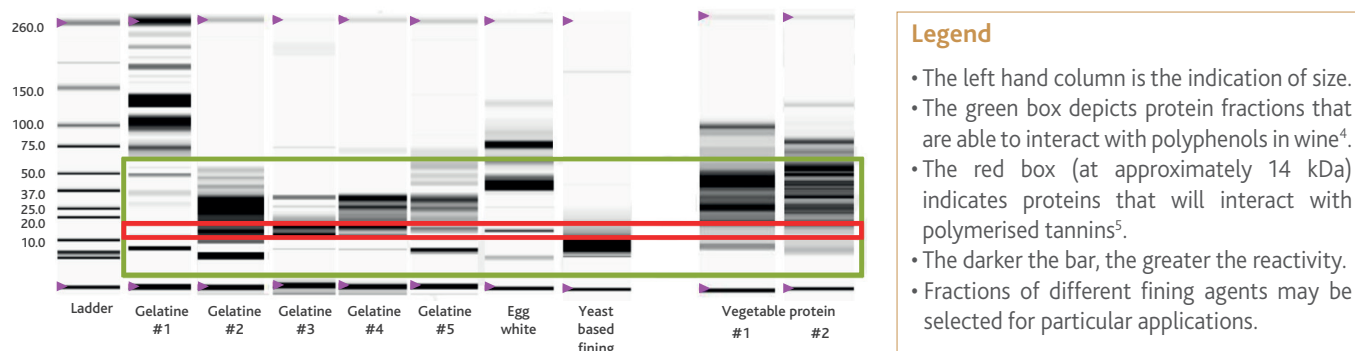
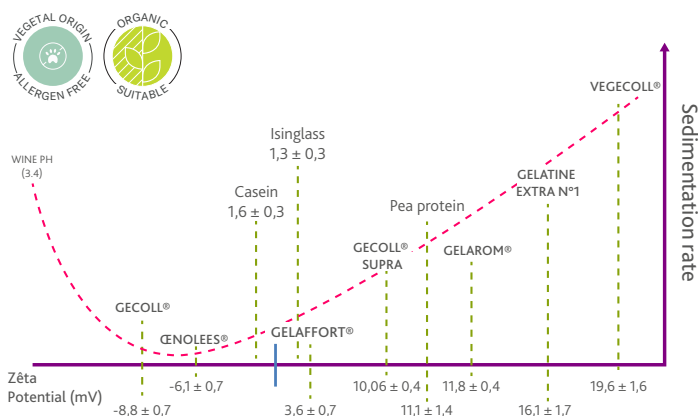


Figure 1: Electrophoresis gel with a range of animal, yeast and vegetable based fining agents which demonstrate the different sizes and quantity of the various protein fractions and importantly which ones will interact with polyphenol compounds in wine.



### VEGECOLL®

Rapid settling broad based organic based fining.



Relation between Zêta potential and sedimentation rate.

Classification of fining agents on a white wine at pH 3.4.

## POLYMUST® RANGE

Specifically formulated multifaceted fining solutions.



### POLYMUST® V

Pea Protein & PVPP.



### POLYMUST® PRESS

Potato protein isolate, Ca bentonite & PVPP.



### POLYMUST® ORG

Pea protein & Ca bentonite.



### POLYMUST® ROSE

Potato protein isolate & PVPP.














<sup>4,5</sup> References available upon request.









# FINISHING YOUR WHITE WINE WITH LAFFORT®

## TOOLS FOR REFINING PHENOLICS

| PRODUCT         | LABELS                                                                                                                                                              | DESCRIPTION                                       | FEATURES                                                                                                                                                                     | PACKAGING       |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| OENOLEES®       |                                                                                    | Yeast peptides & yeast cell walls.                | Yeast cell wall provides light fining similar to egg fining and peptides build mouthfeel. The combined effect of this 2 products complement the natural balance of the wine. | 1 kg            |
| VEGECOLL®       |   | Potato protein isolate.                           | Vegetal protein for the clarification of white wines and the reduction of astringent tannins.                                                                                | 500 g<br>5 kg   |
| POLYMUST® ORG   |   | Calcium bentonite & pea protein.                  | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                                                  | 1 kg            |
| POLYMUST® ROSÉ  |                                                                                    | PVPP & pea protein.                               | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                                                  | 1 kg<br>10 kg   |
| POLYMUST® V     |                                                                                   | PVPP & potato protein isolate.                    | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                                                  | 1 kg<br>10 kg   |
| POLYMUST® PRESS |                                                                                  | PVPP, calcium bentonite & potato protein isolate. | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining. Effective on fining of pinking characters.                       | 1 kg<br>10 kg   |
| POLYMUST® DC    |                                                                                  | PVPP, calcium bentonite & active carbon.          | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                                                  | 1 kg            |
| POLYLACT®       |                                                                                                                                                                     | PVPP & casein.                                    | Preventing and treating oxidation in juice and wine. Effective on reduction of browning characters.                                                                          | 1 kg<br>10 kg   |
| VINICLAR®       |                                                                                  | PVPP.                                             | Average particle size of 25 µm. Optimised for maximum, fast-acting reduction of polyphenols.                                                                                 | 1 kg<br>22.7 kg |
| CASEI PLUS      |                                                                                                                                                                     | Potassium caseinate.                              | A potassium caseinate specifically produced to treat oxidation and browning in must and wines.                                                                               | 1 kg<br>5 kg    |
| ICHTYOCOLLE®    |                                                                                  | Isinglass.                                        | A fish based fining agent which greatly enhances the clarification, brilliance and filterability of wines.                                                                   | 250 g<br>500 g  |

## ENHANCING PALATE WEIGHT & MOUTHFEEL

| PRODUCT      | LABELS                                                                                                                                                                  | DESCRIPTION                  | FEATURES                                                                                                                                                                     | PACKAGING      |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| OENOLEES®    |   | Yeast peptides & cell walls. | Yeast cell wall provides light fining similar to egg fining and peptides build mouthfeel. The combined effect of this 2 products complement the natural balance of the wine. | 1 kg           |
| OENOLEES® MP |                                                                                      | Yeast peptides.              | A totally soluble additive that instantly increases mouthfeel and roundness by increasing the perception of sweetness.                                                       | 1 kg           |
| STABIVIN® SP |                                                                                      | Gum arabic solution.         | A gum arabic solution manufactured from highly purified and selected gums. Participates to wine colloidal structure of the wine.                                             | 5.5kg<br>25 kg |
| MANNOFEEL®   |   | Mannoproteins.               | Extracted from yeast cell walls, highest content of mannoproteins on the market. Contributes to the colloidal stabilisation of the wine and enhances palate weight.          | 1.08 kg        |

# WHITE WINE TARTARIC STABILISATION

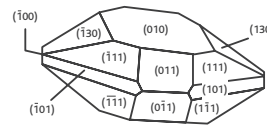


## CMC

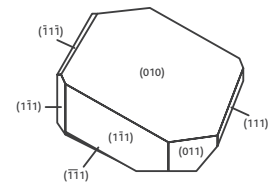
Purified sodium carboxymethylcellulose gum.  
First used in the food industry.  
OIV approval in 2008.

### How does it work?

Changes the shape of the crystal and inhibits microcrystal nucleation growth.




Without additive



With CMC

## TARTARIC STABILISATION WITH LAFFORT®

| CELSTAB®                                                                                                     | SOME FACTS ABOUT CELSTAB®                                                                                                                                                                                                                                                                                                                                        | THE BENEFITS OF USING CELSTAB®                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>5.25 kg<br/>21 kg</p> | <ul style="list-style-type: none"> <li>• OIV approval in 2008.</li> <li>• Used and accepted globally.</li> <li>• FSANZ approval in 2011.</li> <li>• OIV Spec. of 17 to 300 kDa (this governs viscosity).</li> <li>• Must be homogenised well into the wine.</li> <li>• Viscosity designed for thorough homogenisation.</li> <li>• No effect on taste.</li> </ul> | <ul style="list-style-type: none"> <li>• Easy to apply.</li> <li>• Simple 1 mL/L dose rate.</li> <li>• Proven long term stabilisation.</li> <li>• 48 hour stabilisation process.</li> <li>• Eliminates expensive refrigeration costs.</li> <li>• No acid adjustments necessary.</li> <li>• Can be used on sparkling wines.</li> <li>• Can be used on rose wines.</li> <li>• Saves expensive production costs.</li> </ul> |



## MANNOSTAB® LIQUIDE 200

Mannoproteins naturally present in wine stabilise bitartrate salts.



Long term stabilisation.



## POLYTARTRYL®

Metatartaric acid that inhibits the crystallisation of potassium bitartrate salts.



Short term stabilisation.



# FILTRATION



## LET'S BE CLEAR !

There is no correlation between wine turbidity and wine filterability.  
The colloidal load effects the filterability of a wine.

### What is colloidal load?

Unstable colloids are partly composed of anthocyanins in the form of the flavylum (charged +) ion, tannins, polysaccharides (including pectins) and proteins (+).

### How can a high colloidal load have a low NTU?

Haze is represented by the colloidal solutions and particulate suspensions of yeasts, bacteria, crystals, vegetal debris that are visible either microscopically or to the eye. Clarification aims to eliminate wine haze but the colloidal load in the wine may remain depending on treatments. Pectins which have not been degraded can go through a cross flow and re-form upon completion, resulting in a colloidal load that remains the same.

### How can I decrease the colloidal load of my wine?

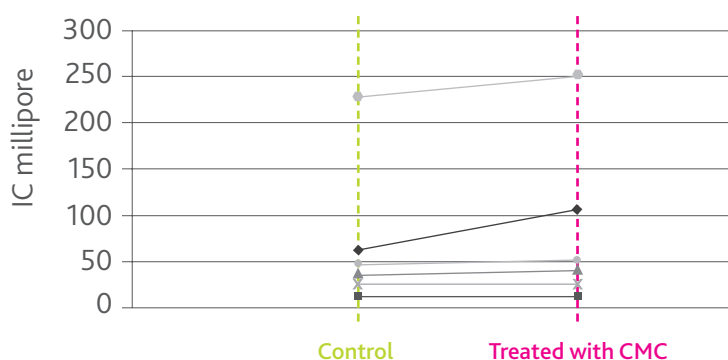
- **ENZYMES:** Action on filterability. Ensures pectin and/or glucan chains breakdown, to improve settling (racking).
- **FINING:** Decreases the colloidal load. Ensures settling of particles in suspension (colloids) present in the wine. The addition of negatively charged bentonite allows for the stabilisation of particularly unstable compounds and makes them precipitate.
- **RACKING:** Physical reduction of the load through lees removal.

Other factors that affect filterability;

- **TEMPERATURE:** The colder the wine the harder it can be to remove colloidal load.
- **DEGASSING:** Reduction of the CO<sub>2</sub> load ensures minimal degradation of the cake during DE filtration.

### Addition of products to the wine...Can this affect filterability/clogging index?

Depending on the nature of the products, CMCs, mouthfeel enhancing products and stabilising polysaccharides may add to the colloidal load of the wine and increase its clogging index. However if the wine's colloidal load is low to start with (through the use of enzymes, fining, bentonite and appropriate temperatures at filtration) the addition of colloidal products such as these should not impact the wine's clogging index (Figure 1).










#### Effect of colloids on filterability.

When wines start with a low clogging index because they have a low colloidal load to start with – they are not impacted with the addition of a colloidal load such as CMC. In this case wines that started with a clogging index below 50 stayed below 50 with the addition of CMC, but wines starting with a clogging index above 50 increased significantly over with the addition of CMC.

If wines are well prepared (CI < 50):  
no effect of colloid addition.



# PROTECTING YOUR RED WINE WITH LAFFORT®

|                                | PRODUCT                                                                                                           | DESCRIPTION                                                                                                                                                                                                                                                                                                                                   | PACKAGING                      |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| A TRADITIONAL APPROACH         | <b>BISULFITE 18</b>              | <b>Liquid sulphur solution - 18% SO<sub>2</sub>.</b><br>Easy to use with low aroma profile.                                                                                                                                                                                                                                                   | 6 kg<br>25 kg                  |
|                                | <b>POTASSIUM METABISULPHATE</b>  | Powdered form.                                                                                                                                                                                                                                                                                                                                | 1 kg<br>25 kg                  |
|                                | <b>OENOSTERYL EFFERVESCENT</b>   | <b>Sulphur tablets for easy barrel application.</b><br>2 g (20 ppm SO <sub>2</sub> /hL; 8,8 ppm SO <sub>2</sub> /225 L; 6,7 ppm SO <sub>2</sub> /300 L).<br>5 g (50 ppm SO <sub>2</sub> /hL; 22 ppm SO <sub>2</sub> /225 L; 16,7 ppm SO <sub>2</sub> /300 L).                                                                                 | Box of 42<br>Box of 48         |
|                                | <b>SULPHUR RINGS</b>            | <b>For sterilising barrels.</b><br>2 and 5 g available.                                                                                                                                                                                                                                                                                       | Box of 1 kg                    |
| A LOW SO <sub>2</sub> APPROACH | <b>QUERTANIN®</b>              | Ellagic Tannin.<br>Protecting wine from oxidation.<br>Eliminates reductive odours.                                                                                                                                                                                                                                                            | 500 g                          |
|                                | <b>BACTICONTROL®</b>                                                                                              | Microbial protection of wines: Chitosan, lysozyme & enzymes for the protection of wines against certain microorganisms and particularly lactic bacteria. Tool for wine vinification in a SO <sub>2</sub> reduction strategy.                                                                                                                  | 500 g                          |
|                                | <b>MICROCONTROL®</b>           | <b>Microbial protection of wines.</b><br>Chitosan, vegetable protein and enzymes for reducing the microbial load, as well as protecting wines against certain unfavourable microorganisms. Used in conjunction with SO <sub>2</sub> .<br>Applied post MLF.                                                                                    | 500 g                          |
|                                | <b>OENOBRETT®</b>              | <b>Control and prevention of <i>Brettanomyces</i> spoilage.</b><br>Chitosan and enzyme based preparation for the significant reduction of <i>Brettanomyces</i> population, spoilage prevention. The chitosan breaks the parietal structure, accentuated by the synergic effect of enzymes that increase the settling of lysed spoilage yeast. | 23 g<br>(barrel dose)<br>250 g |



# RED WINE COLLOIDAL MANAGEMENT

## COLOURING MATTER STABILISATION

**Colouring matter precipitation:** The majority of red wine colouring matter binds during the fermentation process!

However part of the colouring material in red wines is in a colloidal state; therefore not completely bound in the wine and this fraction can potentially precipitate. Wines can appear stable before bottling however instability can be identified via clogging filtration and precipitation of the colouring matter. The precipitation of the colouring matter can be brought on by several factors.

- **Tartaric instability:** unstable tartrates can bind to colouring matter and precipitate.
- **Wine storage conditions:** exposure to cold expedites tartaric instability.
- **Reduction of fining regimes and dosages:** selective fining can expedite precipitation.
- **Early bottling and cellar conditions:** preventing stabilisation of the colouring matter in a natural way.
- **Thermo-vinification and flash pasteurisation:** can extract more unstable compounds.

**Stabilising the colouring matter:**

- **Fining:** facilitates the natural precipitation of the unstable colouring matter.
- **Cold treatment:** speeds up the natural precipitation of the unstable colouring matter.
- **Arabic gum:** stabilisation of the colouring matter short term.
- **Mannoproteins:** stabilisation of the colouring matter long term.

**Testing for colour stability - Cold test:** Stability is estimated by measuring the turbidity before and after cold.

## TARTRATE STABILISATION

**Tartrate precipitations:** At a specific temperature, tartaric acid salts become super-saturated: their concentration is higher than the quantity theoretically soluble. Under cooler conditions this state leads to the formation of crystals. Tartrate instability can be brought on by several factors...

- **Bottling filtration quality:** Wine stable before bottling becoming unstable by retention of protective colloids due to clogging.
- **Colouring matter instability:** Blending with younger vintages.
- **De-acidification:** Treatments before bottling.
- **Wine storage conditions:** Wine exposure to variations in temperature.

**Stabilising the tartrates:**

- **Fining:** Speeds up the natural precipitation of the unstable tartrates.
- **Cold treatment:** Speeds up the natural precipitation of the unstable tartrates.
- **Mannoproteins:** Stabilisation of the colouring matter long term.

**Testing for colour stability - Cold test:** Stability is estimated by measuring the turbidity.



### STABILISING YOUR RED WINE WITH MANNOSTAB® LIQUIDE 200

- Specific mannoprotein (MP40 – Patent n°2726284).
- A natural constituent already present in wines perfectly conserves the quality of the wine.
- Simple dose rate determination.
- Involving no waste materials, no energy or water consumption.











### STABIMAX®









Gum arabic solution, 100% Verek with a very high protection index that is used against cloudiness and sediments of colloidal nature. Specially selected for its ability to be used with products for tartaric stabilization of red wines.

# FINISHING YOUR RED WINE WITH LAFFORT®

## TOOLS FOR BUILDING PALATE WEIGHT

| PRODUCT               | LABELS                                                                                                                                                              | DESCRIPTION                                                         | FEATURES                                                                                                                                                              | PACKAGING       |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| POWERLEES®<br>ROUGE   |                                                                                    | Inactivated yeast & $\beta$ -glucanases enzymes.                    | Yeast cell components simulate lees ageing and soften and fine the wines. Yeast autolysis expedites mouthfeel enhancement.                                            | 1 kg            |
| OENOLEES®<br>MP       |                                                                                    | Yeast peptides.                                                     | A totally soluble peptide that instantly increases mouthfeel and roundness by increasing the perception of sweetness.                                                 | 1 kg            |
| OENOLEES®             |   | Yeast hulls & yeast peptides.                                       | Yeast cell wall provides light fining similar to light egg fining and peptides build mouthfeel making the combined effect compliment the natural balance of the wine. | 1 kg            |
| MANNOFEEL®            |                                                                                    | Mannoproteins.                                                      | Natural present in the wine it balances out astringent characters and builds natural palate weight. Contributes to tartaric stabilisation.                            | 1.08 kg         |
| STABIVIN® SP          |                                                                                    | Gum arabic solution.                                                | A gum arabic solution manufactured from highly purified & selected gums. Participates to wine colloidal structure of the wine.                                        | 5.5 kg<br>25 kg |
| TANIN VR<br>GRAPE®    |                                                                                   | Grape tannin.                                                       | Restores the balance of natural grape tannins. Stabilises colour via formation of tannin-anthocyanin combination.                                                     | 500 g           |
| TAN'COR®<br>GRAND CRU |                                                                                  | Proanthocyanidic tannins rich in catechin, grape & ellagic tannins. | Enhances wine structure and length. Stabilises colour by combining with free anthocyanins especially during micro-oxygenation. Regulates oxiredution phenomena.       | 1 kg            |

## TOOLS FOR REFINING PHENOLICS

| PRODUCT            | LABELS                                                                                                                                                                  | DESCRIPTION                                   | FEATURES                                                                                                                                                  | PACKAGING        |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| OENOLEES®          |   | Yeast peptides & cell walls.                  | Yeast cell wall provides light fining similar to egg fining and peptides build mouthfeel making the combined effect complimentary to balance of the wine. | 1 kg             |
| VEGECOLL®          |   | Potato protein isolate.                       | Vegetal protein for the clarification of white wines and the reduction of astringent tannins.                                                             | 500 g<br>5 kg    |
| POLYMUST®<br>ORG   |   | Ca. bentonite & pea protein.                  | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                               | 1 kg             |
| POLYMUST®<br>V     |                                                                                      | PVPP & potato protein isolate.                | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                               | 1 kg<br>10 kg    |
| POLYMUST®<br>PRESS |                                                                                      | PVPP, Ca. bentonite & potato protein isolate. | Highly selective fining actions with broad applications and rates allowing for minimal risk of over fining.                                               | 1 kg<br>10 kg    |
| GECOLL®<br>SUPRA   |                                                                                                                                                                         | Liquid gelatine.                              | A specialised gelatine that enables it to remove certain colloidal substances and increases the brilliance of wines.                                      | 5.25 kg<br>21 kg |
| GELAROM®           |                                                                                                                                                                         | Liquid gelatine.                              | A specialised gelatine that enables it to remove certain colloidal substances that act as aroma maskers.                                                  |                  |
| GECOLL®            |                                                                                                                                                                         | Cold soluble gelatine (granular).             | A cold soluble gelatine with broad fining parameters, used to enhance clarification and increase the brilliance of wines.                                 | 1 kg             |
| OVOCLARYL®         |                                                                                                                                                                         | Egg albumin.                                  | Egg albumin product specifically produced for oenological application, refining tannic structure and preserving aromatics.                                | 1 kg             |



# FINISHING YOUR RED WINE WITH LAFFORT®

## LAFFORT® OAK TANINS



- The QUERTANIN® range
- Pure oak extracts
- Instant oak impact
- Cost effective oak
- No risk of oak derived spoilage
- Measured oak impact



Oak tannins extracted from **NOBILE®** Oak staves and prepared in a patented Instant Dissolving Process (IDP) for easy to apply precise oak management.



### THE QUERTANIN® RANGE - UNTOASTED



500 g

#### QUERTANIN®

Cooperage quality and fully traceable french oak.

### THE QUERTANIN® RANGE - TOASTS AND BLENDS



500 g

#### QUERTANIN® SWEET

Enhancing the sweetness and length of your wine. An oak influence similar to a french fine grain medium toast barrel.



500 g

#### QUERTANIN® INTENSE

Enhancing the weight, structure and sweetness of your wine. An oak influence similar to a french fine grain, heavy toast barrel.



500 g

#### QUERTANIN® CHOC

Enhancing the richness, body and sweetness of your wine with chocolate and vanilla characters.

### AMERICAN OAK



1 kg

#### QUERPLUS®

Enhances the richness with balanced vanilla and coconut characters. An oak influence similar to an american oak medium toast barrel.

# FINISHING YOUR RED WINE WITH LAFFORT®



## HOW TO USE TANNINS?

All LAFFORT® tannins benefit from the unique formulation Instant Dissolving Process (IDP); a revolutionary process for ease of use! The IDP process enables perfect solubility in wine and thus no preliminary dissolution of the tannins in water is required. Homogenous introduction into the bulk of the must or wine is, however, advised. It is recommended to carry out a systematic pump-over or other homogenising action during the application.

QUERTANIN® is a high quality complex ellagitannin preparation to:

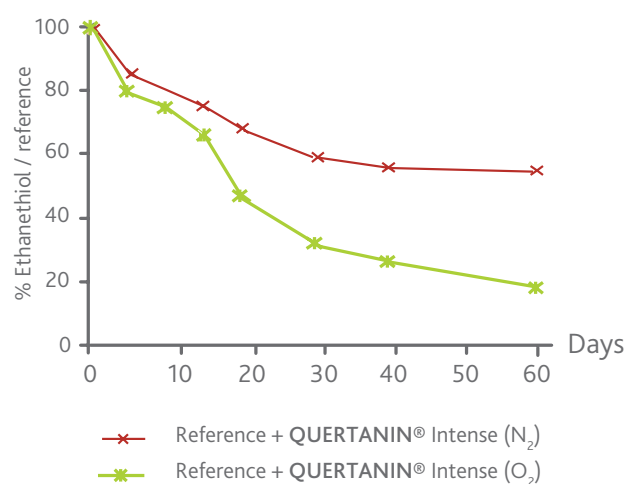
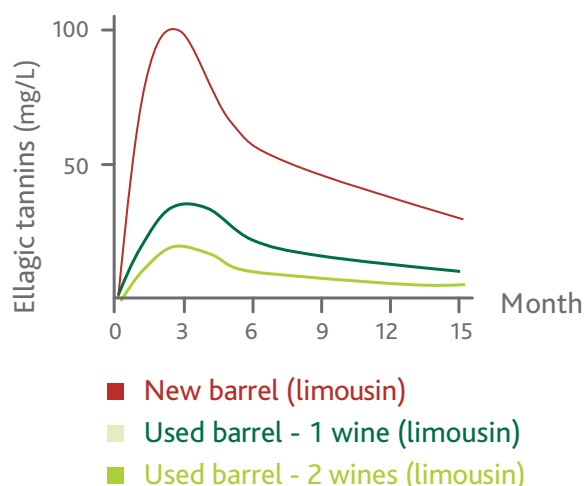
- Enhance wine structure and palate length.
- Protect wine against oxidation (Increase wine's aromatic intensity).
- Eliminate reductive odours.
- Regulate oxidation-reduction phenomena during maturation in barrels or during micro-oxygenation.
- Preserve wine freshness during preparation for bottling.
- Treat wines showing reductive characteristics.
- Create an environment rich in ellagic tannins in used barrels, similar to that of new barrels.

## OENOLOGICAL CONDITIONS

Thanks to the IDP process, QUERTANIN® can be sprinkled directly onto the wine during homogenisation or a pump-over (1 to 10%).

After QUERTANIN® has been added, it is recommended to carry out normal rackings until bottling preparation.

It is recommended to add QUERTANIN® at least two weeks before bottling.



*For white and rosé wines stabilised with CMC (tartaric stabilisation), the addition of tannins towards the end of ageing may affect the colloidal stability; it is recommended to perform a protein stability test again systematically after addition.*

Tannin content extracted from the oak is lower in used barrels. The ellagitannin protective effect is decreased and the wine becomes subject to premature oxidation. Adding QUERTANIN® permits the re-creation of the buffer qualities provided by tannins extracted from new barrels, and protects the wine from oxidation phenomena.

QUERTANIN® permits a significant decrease in reductive characters, such as light mercaptans, guaranteeing improved preservation of aromatic freshness.



# CLEANING ESSENTIALS

## NON CAUSTIC CLEANING

### TANKGARDE

#### Tank cleaner.

- Non-caustic, non-corrosive powdered complex detergent.
- Stainless steel tank cleaner.
- Available in sodium or potassium based powder (20 kg) or sodium based liquid (15 L).

### BIOGARDE

#### Biocide.

- Sanitising stainless steel and similar surfaces.
- Highly active towards microflora such as yeast and bacteria.
- 10 L drums.

### STAINGARDE

#### Stain cleaner.

- Alkaline stain remover.
- A non-caustic short contact all-purpose cleaner for almost any surface, including stainless steel, plastics, concrete, hoses and glass.



## CROSSFLOW CLEANING - DECAPOL® CLEANING RANGE



### DECAPOL® **EXTRA**Life

#### Daily application.

Enzymatic detergent targeting organic residues in crossflow filters and cartridges.



### DECAPOL® **DEEP**Clean

#### Weekly application.

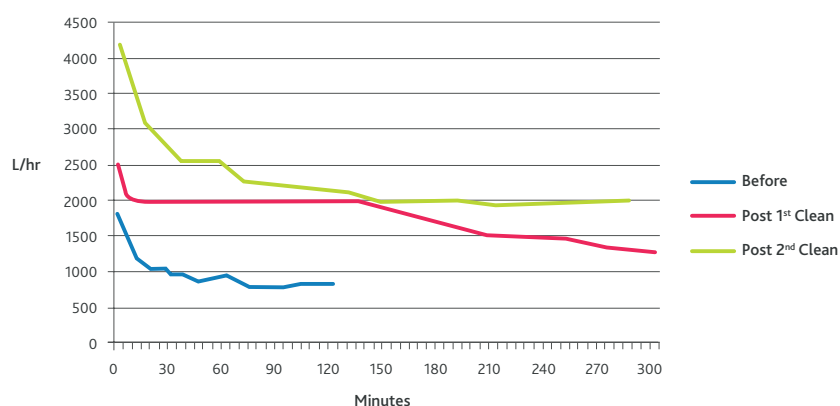
Enzymatic detergent and moderate oxidative power targeting organic residue in crossflow filters.



### DECAPOL® **STONE**Clear

#### Targeted application.

Specific formula for treatment of mineral based clogging (silica, copper, iron etc.) in crossflow filters.

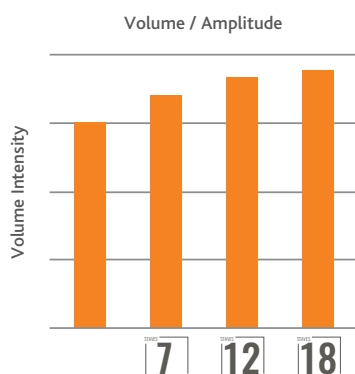


#### Flow rate

Flow rate of a completely blocked Cadalpe C41 Crossflow 4 modules 40 m<sup>2</sup> (Polypropylene membrane) before and after using the **DECAPOL®** regeneration protocol. Talk to your local **LAFFORT®** representative for more information.

# NOBILE® STAVES & BLOCKS

Character and complexity whilst respecting the fruit



Available in **7** / **12** / **18**

- The different thicknesses enable you to influence volume and weight of the mid palate.
- A range of toasting types and oak sources provide a flexible palate of aromatic and structural influences.



NO TOASTED NOTES.  
COMPLIMENTS  
THE FRUIT.  
PERFECT  
FOR WHITES.

**7**



**FRESH**



Provides a light structural lift giving a fresh, fruity finish to wines. Excellent at masking green characteristics.

**18**



**18 - XBASE**



Improves volume and mouthfeel in the wine while remaining fruit driven without obvious toast characters.

**7**



**SENSATION**



A well balanced blend of vanilla nuances and light toasted notes providing a rounded and sweet.

**7**

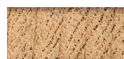


**INTENSE**



Dark toasted bread and chocolate characters coupled with a perfumed aromatic expression. Enhances volume and length of the palate and intensifies dark fruit aromatics.

**7**



**RÉVÉLATION**



Gives a subtle late palate structural lift and enhances complex aromatics. Mimics traditional ageing in french barrels.

**7**



**AMERICAN  
RÉVÉLATION**



Providing a round sweetness to the pallet weight whilst giving of subtle gingerbread and coconut characters to the wine.

**12**



**DULCE**



Roundness & sweetness.  
Dulce de leche & caramel.

**18**



**18 - XTREME**



Expressions of complex floral and roasted coffee aromatics, while enhancing the sweet toast characters with notes of mocha.



HIGH AROMATICS.  
ENHANCES RICHNESS.  
PERFECT FOR REDS.



FINESSE &  
COMPLEXITY  
SIMILAR TO  
BARREL AGEING.

**12**



**ELITE**



Mocha, roasted, toasted notes brings creaminess, and softening to the mouthfeel. Develops aromatic complexity similar to barrel ageing.

**18**



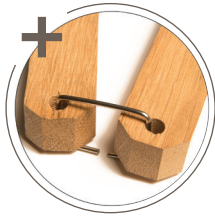
**18 DIVINE**



Extends the fruit to a complex finish (such as the elegance of Burgundy barrels). Giving stunning textural elements and perfumed aromatics.

# BARREL REFRESH

Breathing life and value back into your barrels



## OENOLOGICAL +

- Innovative attachment system for ultra-easy implementation.
- 20 to 100% new oak equivalent (1 Nobile® Barrel Refresh = ± 20% new oak).
- Maximizes the beneficial oxygen from barrels.
- Barrel preservation.

SERIES  
18  
MM



| 8 - XBASE ► Fruity without toasty notes. Adds volume and breadth.

SERIES  
18  
MM



| 8 - XTREME ► Expressions of ripe fruit. Sweetness with mocha notes and roasted coffee.

SERIES  
18  
MM



| 8 - DIVINE ► Brings textural elements. Extends the fruit to a complex length.

SERIES  
7  
MM



RÉVÉLATION ► Exceptional aromatic complexity, providing a subtle toast character on the mid to back pallet.

SERIES  
7  
MM



SENSATION ► Beautiful toasted and baked bread characteristics enhancing the front and mid pallet.

# OAK CHIPS



NOBILE® FRESH  
THERMO TREATED

► Freshness fruit & structure.

**FRESH TT:** Enhances red fruit and masks inherent green characters. Adds a light structural element.



NOBILE® BASE

► Volume without toasted notes.

**BASE:** Add volume to your wine without additional structure. Enhancing freshness without overt oak characters.



NOBILE® SPICE

► Fruit & spicy.

**SPICE:** Reinforces the wines fruit and spice characters and amplifies structure and mouthfeel.



NOBILE® SWEET

► Vanilla & toasted.

**SWEET:** Vanilla notes and enrich those toasted characters throughout the pallet. Adds volume.



NOBILE®  
SWEET VANILLA

► Rich & complex vanilla.

**SWEET VANILLA:** Lush aromatic vanilla, give the wine a rich and moreish palate while adding complexity and volume.



NOBILE® INTENSE

► Volume & toasted almond.

**INTENSE:** A dark toast ideal for enhancing mature dark fruit, perfume and floral characters on the nose and the pallet.



NOBILE®  
AMERICAN BLEND

► Caramel & smokey.

**AMERICAN BLEND:** Increase the sensation of a wines sweetness with subtle vanilla and coconut notes.

# YOUR LAFFORT® TEAM RSA



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**LAFFORT**

*l'œnologie par nature*