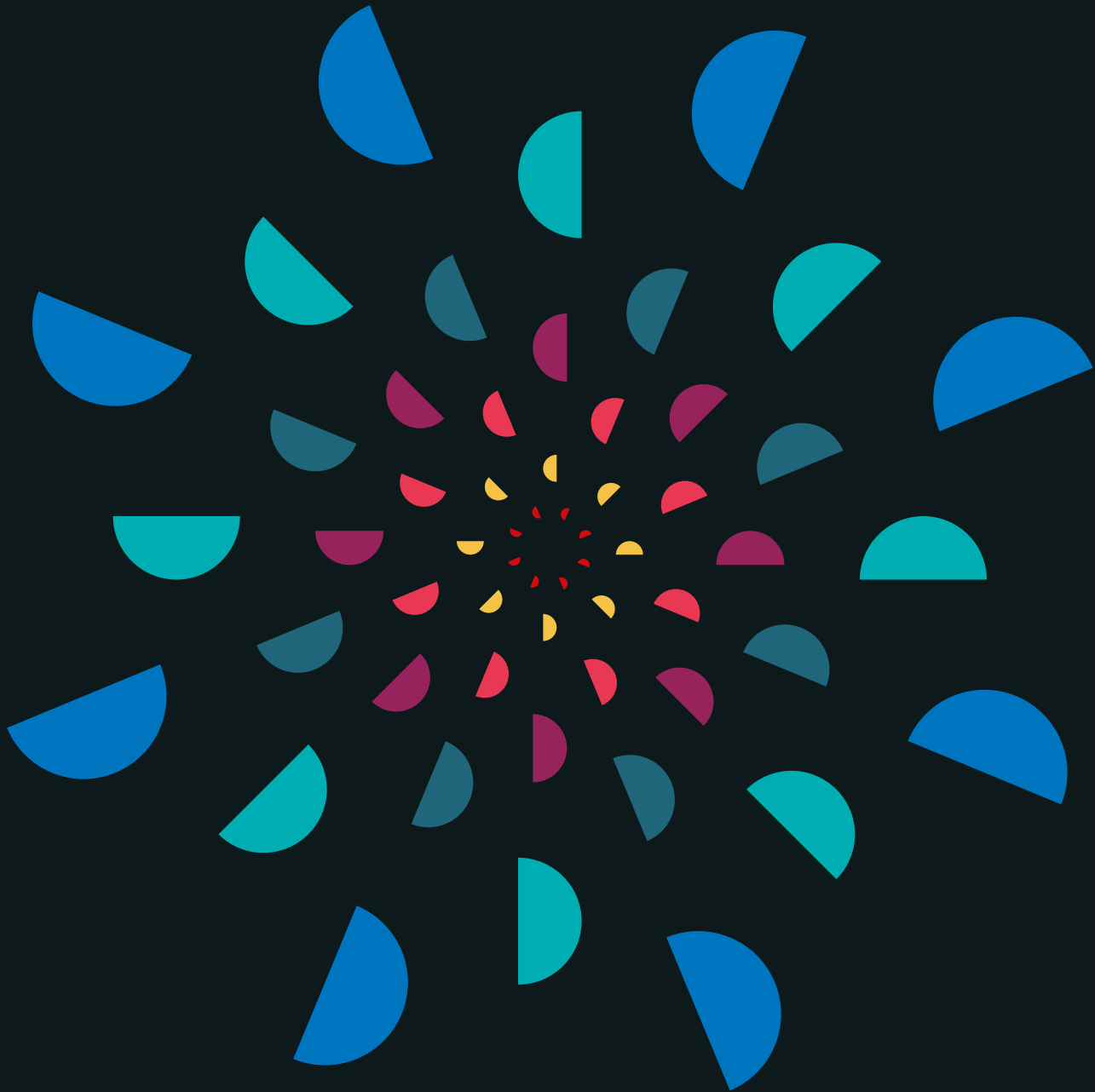


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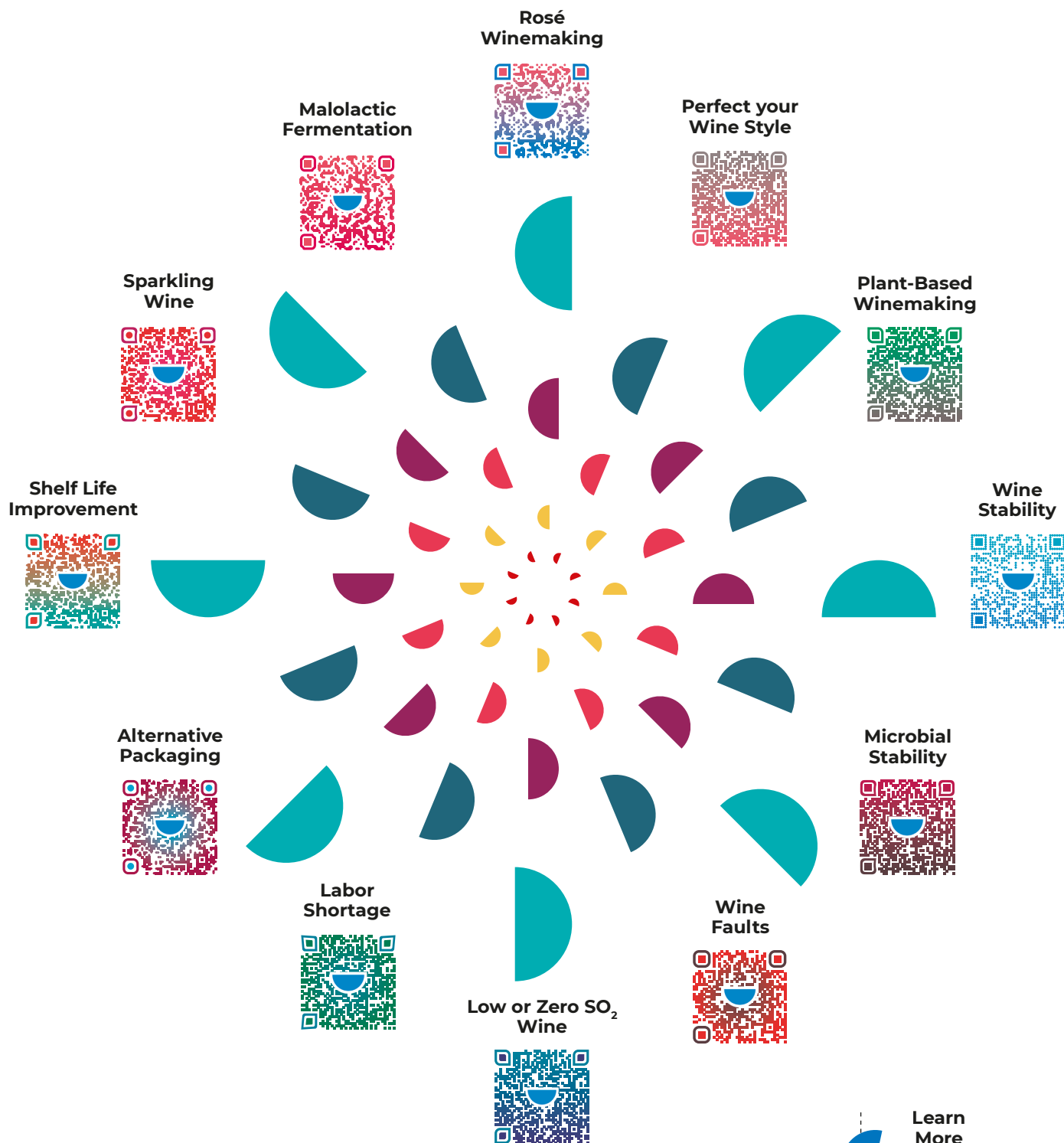
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# ENARTIS' STRATEGIES AND SOLUTIONS

Enartis highlights some of the most important topics in the wine industry. Depending on the oenological objective, these QR codes will provide technical information for different styles of wine production and how to prevent, manage and treat the most common situations that may arise.



**CREATING  
A SUSTAINABLE FUTURE**

**Learn  
More**



# ENZYMES

Enartis developed the EnartisZym Range through the combination of knowledge about individual enzymatic activities and practical experience in the winery. EnartisZym Range comprises a series of enzymatic preparations formulated to obtain the maximum effectiveness when used in classic and newer applications.



## 05. EnartisZym EXTRA



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## MUST CLARIFICATION

### EnartisZym RS

- Liquid pectolytic enzyme preparation, rich in cellulasic and hemicellulasic side activities.
- Break down "hairy zone" of pectins and hemicelluloses.
- Intense clarification and fast depectinization.

**Application:** settling of difficult-to-clarify musts; varieties rich in pectins; improve wine clarification and filterability; flotation

**Dosage:** 1-3 mL/hL in must, 2-5 mL/hL in wine

**Packaging:** 1 kg

## MACERATION OF WHITE AND ROSÉ GRAPES

### EnartisZym AROM MP

- Micro-granulated pectolytic enzyme preparation developed to increase aromatic compounds extraction, press yield and improve juice clarification.
- Rich in cellulasic, hemicellulasic and proteasic side activities.
- Contributes to protein stability thus reducing bentonite additions.

**Application:** maceration of white grapes; production of fruity white wines; improved protein stability

**Dosage:** 20-40 g/ton

**Packaging:** 250 g - 1 kg

HEAT STABILITY TEST AT END OF ALCOHOLIC FERMENTATION (ΔNTU) (Wine considered stable when ΔNTU<2)	SAUVIGNON BLANC	PINOT GRIS
Control	11	3.7
40 g/hL PLUXBENTON N	5.3	2.1
80 g/hL PLUXBENTON N	0.27 (stable)	0 (stable)
2 g/hL EnartisZym AROM MP + 40 g/hL PLUXBENTON N	0 (stable)	0 (stable)

The use of EnartisZym AROM MP during fermentation improves protein stability and reduces the amount of bentonite needed to stabilize wine.

NEW

### EnartisZym EXTRA

- Liquid pectolytic enzyme preparation with cellulasic and hemicellulasic side activities.
- Increase aromatic precursors extraction, press yield and improves juice clarification.
- Shortens contact time with considerable savings in cooling when applied during cryomaceration.

**Application:** maceration of white grapes

**Dosage:** 20-60 mL/ton

**Packaging:** 1 kg - 25 kg



We have used EnartisZym COLOR enzyme with great success on our red grapes for colour extraction and clarification. **Alecia Boshoff**, Cellar Master at Piekenierskloof Wines - Citrusdal

## MACERATION OF RED AND ROSÉ GRAPES

### EnartisZym COLOR L

- Liquid pectolytic enzyme preparation developed for the maceration of red grapes.
- Accelerates and intensifies the extraction of polyphenolic substances.
- Improves press yield, wine filterability and often color intensity.
- Recommended for a faster extraction of color and tannins from unripe or moldy grapes.

**Application:** rosé wines; young and medium aged reds; optimal color extraction in case of short maceration

**Dosage:** 20-40 mL/ton

**Packaging:** 25 kg (liquid form)

### EnartisZym COLOR PLUS

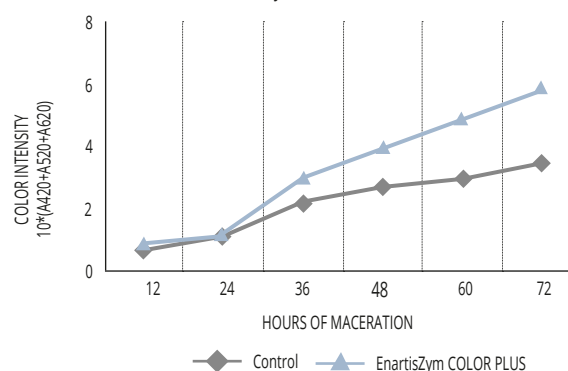
- Micro-granulated enzyme preparation developed to accelerate and increase phenolic compounds extraction and improve color stability.
- Rich in cellulasic and hemicellulasic side activities.
- Hydrolyzes proteins and reduce precipitation of tannins and pigments.
- Improves color stability and intensity.

**Application:** extraction and stabilization of color from red grapes

**Dosage:** 20-40 g/ton

**Packaging:** 250 g - 1 kg

IMPACT OF EnartisZym COLOR PLUS ON COLOR INTENSITY



EnartisZym COLOR PLUS increased color extraction speed, color intensity and stability.



*I use EnartisZym COLOR PLUS for better colour extraction during maceration of red wines on the skins. We add it during crushing. I found that wines treated with this product had better colour stability over time during aging. Colour intensity in red wines are also better when using EnartisZym COLOR PLUS vs a control.*

**Louwritz Louw, South Africa**

## OTHER APPLICATIONS

### EnartisZym EZFILTER

- Liquid enzymatic preparation with primary pectolytic and betaglucanase activities and secondary rhamnosidase and hemicellulase activities.
- Improves clarification and filterability of must and wine due to its ability to hydrolyze pectins and polysaccharides from grapes and polysaccharides produced by microorganisms, such as glucans.
- Can be used also to accelerate the release of mannoproteins both in fermentation and during maturation on lees.

**Application:** improve filterability and clarification of wines from botrytis infected grapes; accelerate mannoprotein extraction; improve wine stability

**Dosage:** 2-4 mL/hL

**Packaging:** 1 kg

## EnartisZym CHARACTERISTICS

	Clarification/ Cold Settling	Clarification of Difficult Juices	Clarification by Floitation	Maceration of White Grapes	Rosé Wine Production	Maceration of Red Grapes	Color Stability	Flash Détente/ Thermovinification	Aromatic Enhancement	Yeast Lysis	Improve Filtration	Botrytis	Form	Dosage	Package Size
EnartisZym RS	●●●	●●●	●●●		●●●						●●	●	Liquid	1-5 mL/hL	1 kg
EnartisZym AROM MP	●			●●●	●●●	●●	●●	●	●●		●●		Microgranules	20-40 g/ton	0.25 kg   1 kg
EnartisZym COLOR L					●●	●●●	●●				●●		Liquid	20-40 mL/ton	25 kg
EnartisZym COLOR PLUS					●●●	●●●	●●●	●●			●●		Microgranules	20-40 g/ton	0.25 kg   1 kg
EnartisZym EXTRA	●●			●●●	●						●		Liquid	20-60 mL/hL	0.25 kg   25 kg
EnartisZym EZFILTER										●●●	●●●	●●●	Liquid	2-4 mL/hL	1 kg

## ABOUT ENOLOGICAL ENZYMES

### WHY USE ENOLOGICAL ENZYMES?

Enzymes are essential for improving press yield, clarification, flotation, wine filterability, aroma and polyphenol extraction, as well as enhancing aromatic expression, improving mouthfeel, contributing to protein stability and helping to stabilize color.

### WHAT ARE ENZYMES EXTRACTED FROM?

Enological enzymes are produced by diverse species of fungi such as *Aspergillus*, *Rhizopus* and *Trichoderma*, except for lysozyme which is extracted from egg whites.

### WHY SO MANY PECTOLYTIC ENZYMES?

Pectolytic enzymes include enzymes (Figure 1) that break down homogalacturonan chains and enzymes that break down other pectin components such as rhamnogalacturonans I, II and their side chains. The balance between these pectolytic activities impacts the performance of the enzyme preparation.

- Pectin lyase (PL) randomly separates the pectin chain and releases midsize polymers. This activity promotes a fast depectinization and fast reduction of viscosity.
- Polygalacturonase (PG) separates galacturonic acids only when they are not esterified.
- Pectin methyl esterase (PME) de-esterifies galacturonic acid, allowing PG to perform.
- Rhamnogalacturonase, arabinanase and galactanase break down "branched pectins," commonly referred to as the "hairy zone." These activities are especially important to improve settling or filtration of difficult juices.

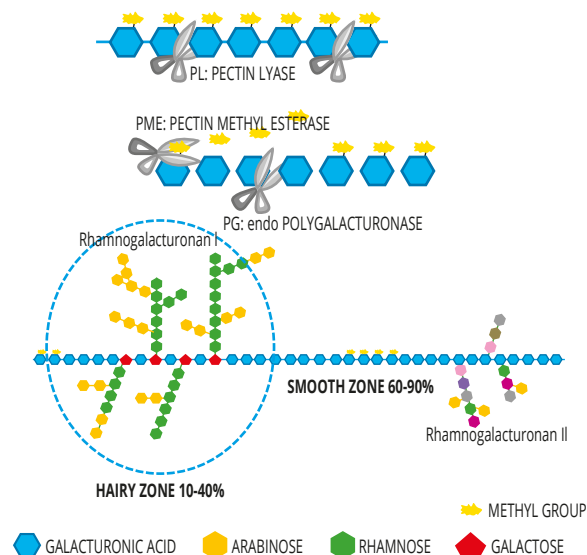


Figure 1: Representation of main pectolytic activities on pectin chains.

### WHAT ARE THE DIFFERENCES BETWEEN POWDERED AND LIQUID FORMS OF ENZYMES?

Powdered enzymes are easy to store, have a long shelf life with limited risk of contamination and require no preservatives. Liquid enzymes are convenient to use and dose. They require cold storage and have a shorter shelf life due to possible microbiological contamination after opening.

### HOW LONG WILL POWDERED/GRANULAR ENZYMES REMAIN ACTIVE AFTER REHYDRATION?

Rehydrated powdered/granular enzymes should not be kept in liquid form for more than a few hours at room temperature.

### HOW DOES TEMPERATURE AFFECT ENZYMATIC ACTIVITIES?

Most enzymes are denatured at temperatures above 60°C and inactivated at temperatures below 5°C. Optimum temperature for enological enzymes is around 40°C.

### DOES SO<sub>2</sub> AFFECT ENZYME ACTIVITY?

Even with an addition of 2000 ppm of SO<sub>2</sub>, the enzymatic activity of EnartisZym RS, for example, is not affected (Figure 2). Using SO<sub>2</sub> and enzymes is fine, however timing is important. Add enzymes after SO<sub>2</sub> has adequately dispersed or vice versa. Do not add SO<sub>2</sub> and enzymes at the same time.

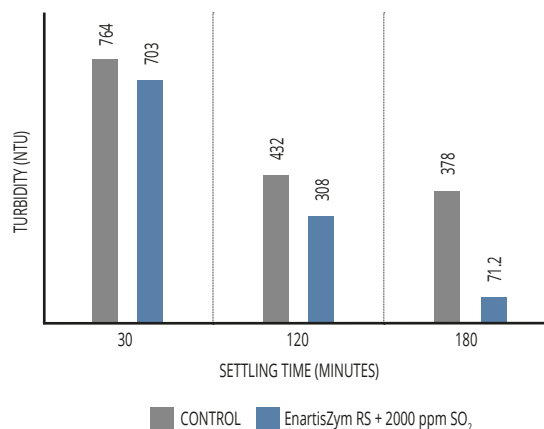


Figure 2: Impact of SO<sub>2</sub> addition on EnartisZym RS effect.

### HOW DO TANNIN OR BENTONITE ADDITIONS INTERFERE WITH ENZYME ACTIVITY?

As shown, the addition of bentonite or tannin does not have a significant effect on the clarification capacity of EnartisZym RS (Figure 3). We recommend waiting 30 minutes after the complete homogenization of the enzyme before adding tannin or bentonite.

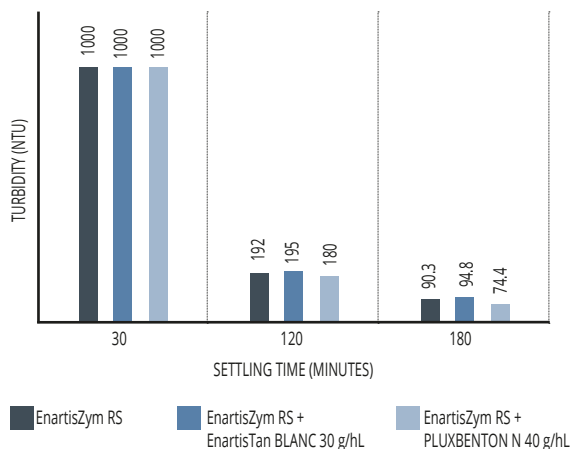


Figure 3: Impact of tannin and bentonite addition on EnartisZym RS effect.

### HOW DO I DECIDE WHAT DOSAGE OF ENZYME TO USE?

Dosage is related to the desired effect, contact time, temperature and inhibiting factors. Cold temperatures, short contact times and alcohol presence can be compensated by applying a higher dosage rate.

# YEAST

One of the most important requirements a yeast must possess is the ability to ensure a healthy and complete fermentation, as this is the first step to create a quality wine. The knowledge and understanding of microbial characteristics, in addition to the practical experience gained over many years, has allowed us to understand the needs of the market and to suggest the application of each yeast to achieve the best quality wine, meeting winemakers' expectations.



**10. EnartisFerm Q9**  
**13. EnartisFerm Q RHO**

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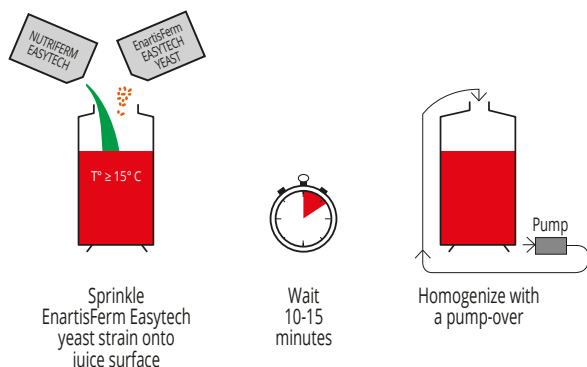
## EASYTECH YEAST APPLICATION

**No rehydration required!** Easytech is a certified range of Enartis yeasts and nutrients that can be added directly to juice rather than requiring typical rehydration and acclimatization steps. This innovative range simplifies cellar operations and reduces the risk of making mistakes at inoculation, saving wineries time and money. Enartis Easytech range was developed to make winery operations **more sustainable** by reducing resources needed to adequately prepare inoculations, including equipment, energy, water, and staff. The use of Easytech nutrients in the application of these yeasts maximizes their adaptation under stress conditions. Enartis offers the following **four yeasts** that have been selected to ensure optimal fermentation performance in juices with temperatures above 15°C:

**Easy tech**  
CERTIFIED BY ENARTIS

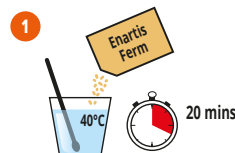
- EnartisFerm WS
- EnartisFerm AROMA WHITE
- EnartisFerm Q ET
- EnartisFerm VINTAGE RED

Simply sprinkle the product in before a pump-over or punch down:

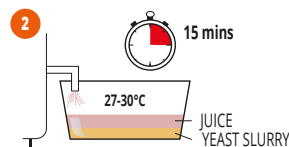


Enartis Easytech range is also suitable for traditional yeast rehydration.

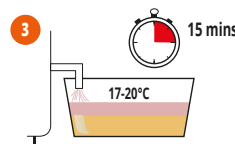
## PROTOCOL FOR YEAST REHYDRATION



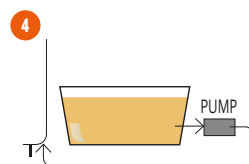
Rehydrate 20-40 g/hL of active dry yeast in 10 times its weight of chlorine-free water at  $35-40^\circ\text{C}$ . Stir gently to break up any clumps. Wait 20-30 minutes.



Slowly add some juice/must to yeast suspension to drop temperature: temperature drop should not be more than  $10^\circ\text{C}$ . This helps yeast acclimate to cool temperature of the juice and avoid cold shock. Let stand for 15 minutes.



Repeat (2) until the temperature difference between the tank and yeast slurry is below  $10^\circ\text{C}$ .



Add yeast slurry to the bottom of the fermentation vessel and mix the tank.

This protocol applies to all EnartisFerm yeast strains in Active Dry Yeast (ADY) form, with the exception of EnartisFerm ES U42 and EnartisFerm Q RHO.

## WHITE AND ROSÉ WINE FERMENTATION

### EnartisFerm Q4

- Enhances vegetal characteristics of thiolic varieties.
- Ideal for grassy style Sauvignon Blanc.
- The main feature of this strain is that it's a homozygote for the complete, long version of the IRC7 gene. This gene codifies the synthesis of a  $\beta$ -lyase enzyme, uniquely involved in the liberation of thiols (mainly 4-MMP) bound to cysteine.
- When used for the fermentation of thiolic varieties, EnartisFerm Q4 expresses the varietal aroma and specifically enhances the notes of box tree, tomato leaf and blackcurrant associated with 4-MMP.

**Application:** thiolic varieties

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 - 10 kg

### EnartisFerm AROMA WHITE

**Easy tech**  
CERTIFIED BY ENARTIS

- Moderate speed fermenter.
- Medium/high nutrient requirements.
- Low VA,  $\text{H}_2\text{S}$  and  $\text{SO}_2$  production.
- Expresses thiols ( $\beta$ -lyase activity).
- Fermentation at  $14-16^\circ\text{C}$  favors fresh citrus and mineral notes;  $17-20^\circ\text{C}$  favors tropical and sweet white fruit aromas.
- Low producer of riboflavin: reduced risk of light-struck defect.

**Application:** thiol production; ester and acetate production; direct inoculation

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

## EnartisFerm VINTAGE WHITE

- Moderate speed fermenter.
- Low nutrient requirements.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Releases large quantities of polysaccharides.
- Forms lightly-compacted lees reducing the number of *bâtonnage* and pump-overs needed for *sur lie* effect.
- Preserves varietal fruit, produces delicate wines with round and complex mouthfeel.

**Application:** varietal expression; barrel fermentation; lees ageing; large volume on the palate

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg



We trialed EnartisFerm VINTAGE WHITE on our Unwooded Chardonnay and Grenache Blanc during our 2020 harvest. We were delighted by the resulting wines. The yeast lived up to its promise of increased varietal aromas and increased weight on the palate. Although fermentation takes place at a moderate speed it is well worth the wait! **Craig Christians, Winemaker at Rustenberg Wines - Stellenbosch**

## EnartisFerm ES181

- Fast fermenter.
- Low nutrient requirements.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Expresses thiols (β-lyase activity).
- Produce white and tropical fruit aromas, increasing the aromatic complexity without overshadowing the primary aromas.
- Excellent for fermentations at low temperatures and in hyper-reductive conditions.

**Application:** intense aromas; thiol production; varietal expression; ester and acetate production

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg



I have been using EnartisFerm ES181 for more than 15 years. Without fail it has been a reliable companion helping me produce quality white wines my clients have become accustomed to. **Henri Swiegers, Production Manager - Winemaker at Badsberg Wine Cellar - Rawsonville**



I have been using EnartisFerm ES181 yeast for several vintages on our Sauvignon Blanc. This product does exactly as advertised and I can successfully ferment at low temperatures. EnartisFerm ES181 gives a rounder mouthfeel to wine and you also get much more expressive fruit aromas on the nose. **Morné Mc Gear, Winemaker at Mulderbosch Vineyards - Stellenbosch**

## NEW EnartisFerm Q9

- Fast fermenter.
- Medium/high nutrient requirements.
- Low VA, SO<sub>2</sub> and H<sub>2</sub>S production.
- Expresses thiols (β-lyase activity).
- Fermentation at low temperature favors mineral notes (flint, gunpowder, smoke, roasted coffee).
- Fermentation at high temperature produces high amounts of esters and acetates.

**Application:** thiol production (minerality); varietal expression; ester and acetate production; intense aromas

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

## EnartisFerm Q CITRUS

- Fast fermenter.
- Medium nutrient requirements.
- Low VA and H<sub>2</sub>S production.
- Expresses terpenes and norisoprenoids (β-glucosidase activity).
- Produces complex wines with intense zesty, citrus notes (grapefruit), tropical fruit (guava, passion fruit, pineapple) and flowers (jasmine, lime blossom).


**Application:** varietal expression; fresh and citrus aromas; thiol production; ester and acetate production

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg



(Talking about EnartisFerm Q CITRUS). Extremely efficient yeast ensuring constant fermentation at cool 12°C temperatures. One of the few types of yeast that are aptly named as it produces wines that are full and well balanced with aromas of lemon- and orange peel along with citrus. Well suited to Chenin blanc and Colombard and on wines where extremely low residual sugars are required. Since starting to use it years ago we have placed increasing orders in subsequent vintages! This is yeast is key element in my winemaking. **Rianco van Rooyen, Winemaker at Robertson Winery - Robertson**



I am so impressed with EnartisFerm Q CITRUS since using it on my Sauvignon Blanc for the first time, three years ago. Besides the strong aromatics of orange peel, guava and other tropical flavours, it also contributes to a fuller mouthfeel especially with some extended lees contact. An honest and easy fermenter at temperatures between 12-16 degrees Celsius. When looked after, you will never have sluggish fermentations and always ferments dry.

**Lukas Wentzel, Winemaker at Groote Post Winery - Darling**



The EnartisFerm D20 has improved the mouthfeel of our wines while delivering a more balanced wine that had increased phenolics.

**Daniel Daou, Co-Proprietor and Winemaker of Daou Vineyards & Winery - California, USA**

## EnartisFerm TOP ESSENCE

- Moderate speed fermenter.
- Medium nutrient requirements.
- Increased aromatic complexity with notes of pineapple, passion fruit and grapefruit.
- Excellent for enhancing aromas in grapes lacking in primary aromas.

**Application:** young and easy-to-drink white and rosé wines

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

## RED WINE FERMENTATION

### EnartisFerm D20

CABERNET SAUVIGNON ISOLATE FROM DAOU VINEYARDS & WINERY, CALIFORNIA



- High speed fermenter.
- High alcohol tolerance (up to 17%) and resistant to high temperatures (up to 38°C).
- Medium nutrient requirements.
- Produces powerful, complex and structured wines with long ageing potential.
- Excellent for fermentations without temperature control and energy saving.

**Application:** high °Brix grapes; varietal expression; high temperature fermentation; white, rosé and red wines; fruity aromas; ester and acetate production

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

### EnartisFerm ES454

- Moderate speed fermenter.
- Medium nutrient requirements.
- Produces elegant, complex, varietal wines with spicy and red fruit aromas and balanced structure.
- Excellent for terroir expression and high-quality grapes.

**Application:** varietal expression; esters production; medium to long ageing; premium red wines; intense and stable color; structure and roundness

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

### EnartisFerm ES488

- Moderate speed fermenter.
- High nutrient requirements.
- Expresses thiols (β-lyase activity).
- Produces floral, spicy and black berry aromas.
- Reduces herbaceous notes in unripe grapes.

**Application:** thiol production; reduce herbaceous note; unripe grapes; medium to long ageing

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

### EnartisFerm Q7

- Alcohol tolerant (up to 16.5%).
- Medium nutrient requirements.
- High production of fresh fruit, plum, dark cherry, ripe berry and spicy aromas.
- Excellent to refresh the overripe and jammy fruit notes.

**Application:** hot climate area; freshen overripe grapes; high °Brix grapes; medium-long ageing

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

### EnartisFerm RED FRUIT

- Fast fermenter.
- High nutrient requirements.
- Expresses terpenes and norisoprenoids ( $\beta$ -glucosidase activity).
- Produces intense red fruit and floral aromas.

**Application:** rosé wines; fruity, young or moderately aged red wines; esters production

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

### EnartisFerm VINTAGE RED

- Medium nutrient requirements.
- Wide fermentation temperature range (18-35°C).
- High production of glycerol and mannoproteins.
- Produces elegant, complex wines with ripe red fruit and spicy aromas and round, full-bodied mouthfeel.

**Application:** varietal expression; medium to long ageing; premium red wines; oak ageing; structure and roundness; direct inoculation

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

### EnartisFerm WS

ZINFANDEL ISOLATE FROM WILLIAMS SELYEM WINERY, CALIFORNIA

- Fast fermenter.
- High alcohol tolerance (up to 18%).
- Low nutrients requirements.
- Produces elegant, clean, fresh, fruity and spicy wines with round and smooth mouthfeel.

**Application:** wide spectrum of red varietals; high °Brix grapes; restart stuck fermentations; direct inoculation

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg



I love the fruity and clean aromas that EnartisFerm WS gives to the wine. **Heather Perkin, Associate Winemaker at Elk Cove Vineyards - Oregon, USA**



I use EnartisFerm WS on my late harvest wines; it ferments up to 18% alcohol with no problem. **Ken Wright, Winemaker at Ken Wright Cellar - Oregon, USA**



In 2017, I used EnartisFerm WS on our 2017 Zinfandel and 25% of our Cabernet Sauvignon to produce intense color, rich mouthfeel and balanced tannin structure and was very happy with the results. **David Bradley, Owner/Winemaker of Vindemia Vineyards - California, USA**



## TECHNICAL STRAINS

### EnartisFerm Q ET

- Multipurpose yeast that does not require rehydration.
- Varietal strain with a good capacity to ferment in a wide temperature range.
- Its direct application saves time and labor and facilitates yeast preparation, but above all it reduces the risk of mistakes that can compromise a good fermentation process.

**Application:** white, red and rose wines; direct inoculation

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

### EnartisFerm ES U42

- Blend of a cryophilic strain *Saccharomyces uvarum* and a strain of *Saccharomyces cerevisiae* ex ph. r. *bayanus*.
- In fermentations at low temperatures, it finds the ideal conditions to express its enological qualities: low yield sugar/alcohol, high glycerol, low volatile acidity, high  $\beta$ -phenyl alcohol (rose and spicy aromas).
- Preserves juice acidity producing malic and succinic acids.

**Application:** white, red and rosé wines; low temperature fermentations; late harvest

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

### EnartisFerm EZFERM 44

- Fast speed fermenter.
- *Saccharomyces cerevisiae* and *bayanus*.
- Wide fermentation temperature range (12-34°C).
- Alcohol tolerant (up to 17.5%).
- Fructophilic.
- Low nutrient requirements.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Ideal to prevent or restart sluggish/stuck fermentations.

**Application:** *restart stuck fermentations; hot climate grapes and drought areas*

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

### EnartisFerm SC

- Fast fermenter.
- Produces wines with clean, fresh and intense varietal aromas.

**Application:** *white, red and rosé wine; varietal expression*

**Dosage:** 20-40 g/hL

**Packaging:** 10 kg

### EnartisFerm TOP 15

- Fast fermenter.
- Wide fermentation temperature range (10-30°C).
- Alcohol tolerance (up to 17.5%).
- Low nutrient requirements.
- Produce wines with very clean aromas that express the varietal characteristics of the grape.
- Resistant to pressure, which makes it ideal for sparkling wine production.

**Application:** *white, red and rosé wines; sparkling wine; varietal expression; high °Brix*

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg - 10 kg

## NON-*Saccharomyces cerevisiae* YEAST

NEW

### EnartisFerm Q RHO

- *Saccharomyces uvarum* strain.
- Low temperature tolerance.
- Preserves and increases total acidity.
- Low alcohol yield.
- Low production of volatile acidity.
- Produces high amounts of glycerol and phenylethanol (rose aroma).

**Application:** *white, red and rosé wines for blending or wine adjustments; increase acidity; reduce sugar/alcohol yield; increase aroma complexity and softness*

**Dosage:** 20-40 g/hL

**Packaging:** 0.5 kg

## ENARTIS YEAST CHARACTERISTICS

	Temperature	LAG phase	Fermentation speed	Alcohol tolerance	Killer factor	Compatibility with MLF	Nitrogen needs	Oxygen needs	Aromatic features	White	Red	Rosé	Sparkling
<b>EnartisFerm AROMA WHITE</b> <i>S. cerevisiae</i>	15-24°C	Short	Medium	15%	Killer	Neutral	Medium-High	Medium	F - V	●		●	
<b>EnartisFerm D20</b> <i>S. cerevisiae</i>	18-38°C	Short	High	17%	Neutral	Neutral	Medium	Medium	F		●	●	
<b>EnartisFerm ES181</b> <i>S. cerevisiae</i>	10-20°C	Medium	High	16,5%	Killer	Low	Low	Medium-Low	F - V	●		●	●
<b>EnartisFerm ES454</b> <i>S. cerevisiae</i>	15-30°C	Short	Medium	16%	Killer	High	Medium	Medium	V		●		
<b>EnartisFerm ES488</b> <i>S. cerevisiae</i>	15-28°C	Short	Medium-Slow	16%	Killer	High	High	High	F - V		●		
<b>EnartisFerm ES U42</b> <i>S. uvarum + S. bayanus</i>	8-28°C	Medium	Medium	15%	Neutral	Good	Low	Medium-Low	F	●	●	●	
<b>EnartisFerm EZFERM 44</b> <i>S. cerevisiae</i>	15-30°C	Short	Medium	17,5%	Neutral	Neutral	Low	Low	N	●	●	●	
<b>EnartisFerm Q CITRUS</b> <i>S. cerevisiae</i>	10-20°C	Short	High	15%	Neutral	Low	Medium	Medium	F - V	●		●	
<b>EnartisFerm Q ET</b> <i>S. cerevisiae</i>	15-30°C	Short	Medium	16%	Neutral	Good	Medium	Low	V	●	●	●	
<b>EnartisFerm Q4</b> <i>S. cerevisiae</i>	14-18°C	Medium	Medium	15%	Killer	Neutral	Medium	Medium	V	●		●	
<b>EnartisFerm Q7</b> <i>S. cerevisiae</i>	16-30°C	Medium	Medium	16,5%	Neutral	Neutral	Medium	Medium	F		●		
<b>EnartisFerm Q9</b> <i>S. cerevisiae</i>	14-20°C	Short	High	14,5%	Neutral	Neutral	Medium	Medium	F - V	●		●	
<b>EnartisFerm Q RHO</b> <i>S. uvarum</i>	8-28°C	Medium	Medium-High	13%	Neutral	Low	Low	Low	F	●	●	●	
<b>EnartisFerm RED FRUIT</b> <i>S. cerevisiae</i>	14-34°C	Short	High	16%	Killer	Neutral	High	High	F		●	●	
<b>EnartisFerm SC</b> <i>S. cerevisiae</i>	18-32°C	Short	High	13%	Neutral	Good	Medium	Medium	V	●	●	●	
<b>EnartisFerm TOP 15</b> <i>S. bayanus</i>	10-30°C	Short	High	17%	Killer	Neutral	Low	Low	V	●	●	●	●
<b>EnartisFerm TOP ESSENCE</b> <i>S. cerevisiae</i>	15-25°C	Short	Medium	15%	Killer	Low	Medium	Medium	F	●		●	
<b>EnartisFerm VINTAGE RED</b> <i>S. cerevisiae</i>	15-32°C	Short	Medium	16%	Killer	High	Medium	Medium	V		●		
<b>EnartisFerm VINTAGE WHITE</b> <i>S. bayanus</i>	14-24°C	Short	Medium	15,5%	Killer	Good	Medium	Medium	V	●			
<b>EnartisFerm WS</b> <i>S. cerevisiae</i>	16-30°C	Medium	Medium-High	18%	Neutral	Neutral	Low	Low	V	●		●	

K: killer factor; N: neutral; S: sensitive

### WHAT IS A YEAST "KILLER" FACTOR?

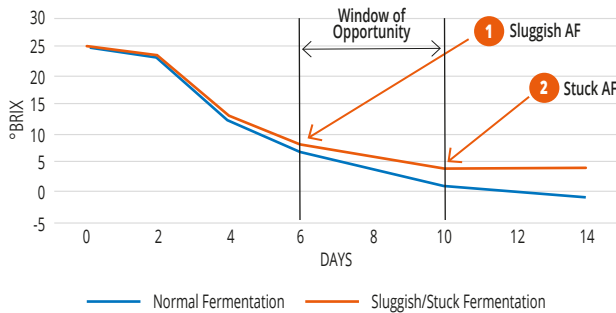
Killer yeast contain a toxin in their cell wall structure that allows them to kill toxin-sensitive yeast cells. Most killer strains of *S. cerevisiae* have good fermentation kinetics and a greater chance of dominating the fermentation. Yeast strains can be killer, sensitive to killer factor or have a neutral reaction to this factor. A killer yeast will inhibit the development of most indigenous yeast and yeast sensitive to killer factor.

# YEAST/VARIETAL RECOMMENDATIONS

VARIETAL	EnartisFerm AROMA WHITE	EnartisFerm D20	EnartisFerm ES181	EnartisFerm ES454	EnartisFerm ES488	EnartisFerm TOP ESSENCE	EnartisFerm ES U42	EnartisFerm EZFERM 44	EnartisFerm SC	EnartisFerm Q4	EnartisFerm TOP 15	EnartisFerm Q7	EnartisFerm Q9	EnartisFerm Q CITRUS	EnartisFerm Q ET	EnartisFerm Q RHO	EnartisFerm RED FRUIT	EnartisFerm VINTAGE RED	EnartisFerm VINTAGE WHITE	EnartisFerm WS
BARBERA				▲	▲		▲					▲			▲	▲				
CABERNET FRANC		▲			▲		▲					▲			▲			▲		
CABERNET SAUVIGNON		▲		▲	▲		▲	▲				▲			▲			▲		▲
CARIGNAN		▲					▲										▲			▲
CINSAULT				▲	▲		▲										▲			
GRENACHE		▲			▲		▲										▲			▲
MALBEC		▲		▲	▲		▲					▲			▲		▲	▲		
MERLOT		▲		▲	▲		▲	▲				▲			▲			▲		▲
MOURVEDRE		▲		▲	▲		▲					▲					▲			▲
PETIT SYRAH / DURIF		▲			▲		▲					▲						▲		
PETIT VERDOT		▲		▲			▲					▲								▲
PINOTAGE		▲		▲			▲									▲				
PINOT NOIR				▲			▲													▲
RUBY CABERNET					▲												▲			
SANGIOVESE					▲		▲								▲	▲	▲			
SYRAH/SHIRAZ		▲		▲	▲		▲					▲			▲		▲	▲		▲
TANNAT		▲		▲			▲										▲			
TEMPRANILLO		▲			▲		▲								▲	▲				
TINTA BAROCCA		▲		▲								▲					▲	▲		▲
TOURIGA		▲			▲							▲					▲	▲		▲
CHARDONNAY	▲						▲						▲	▲	▲					
CHENIN BLANC	▲		▲				▲			▲			▲	▲					▲	
CLARETTE BLANCHE			▲			▲														
COLOMBAR			▲							▲				▲						
GEWÜRZTRAMINER	▲		▲				▲			▲				▲		▲				
MARSANNE	▲						▲								▲				▲	
MUSCAT	▲		▲				▲							▲	▲	▲				
NOUVELLE			▲							▲				▲					▲	
PINOT GRIS	▲						▲						▲			▲			▲	
RIESLING	▲		▲				▲			▲				▲					▲	
ROUSANNE	▲						▲								▲					
SAUVIGNON BLANC	▲		▲				▲			▲			▲	▲						
SEMILLON	▲						▲			▲			▲		▲				▲	
UGNI BLANC			▲			▲			▲						▲					
VIIGNIER	▲		▲				▲							▲						

## PROTOCOLS TO RESTART AND COMPLETE SLUGGISH OR STUCK FERMENTATIONS

The successful restart of a sluggish or stuck fermentation depends on the accurate diagnosis and fast intervention with the correct treatment.



### PROTOCOL 1 : Sluggish Fermentation

The moment a fermentation becomes sluggish seize a 'window of opportunity': a quick intervention may help restore yeasts vitality and avoid a full restart later

1. Maintain temperature >20°C.
2. Press off skins or rack off lees (recommended).
3. Treat must or juice with 10-15 g/hL of EnartisStab MICRO M. Keep EnartisStab MICRO M in suspension for 30-60 minutes by mixing the must.
4. Rack off lees 24 hours after treatment (recommended).
5. Treat with 30 g/hL of NUTRIFERM NO STOP.
6. Track fermentation rate ( $\Delta^\circ\text{Brix/day}$ ) and volatile acidity for the next few days.
7. If fermentation rate increases, monitor until desired dryness is achieved.

In some circumstances, low viability and difficult conditions can prevent a sluggish fermentation from completing. In this scenario, proceed to Protocol 2.

### PROTOCOL 2 : Stuck Fermentation

The yeast population is not viable anymore: it will be necessary to acclimatize and add a new population of yeast to the wine.

#### STEP 1: Prepare starter

Tip: Use a sanitized tank able to hold the entire volume of stuck wine.

- Take 2.5 % of stuck wine.
- Add the same amount of water (2.5% of total volume).
- Add 10 g/hL of NUTRIFERM ULTRA (calculated on the volume of stuck wine).
- Adjust sugar level to 50 g/L (5° Brix).
- Maintain temperature at 20-23°C.

#### STEP 2: Yeast rehydration

Rehydrate 30 g/hL (calculated on the volume of stuck wine) of EnartisFerm EZFERM 44 in 10 times its weight of chlorine-free water at 40°C and wait 20 minutes.

#### STEP 3: Acclimate yeast and start fermentation

- Add rehydrated yeast to STEP 1 and monitor °Brix and temperature.
- At 1/2 °Brix depletion, add 20% of stuck wine + 5 g/hL of NUTRIFERM SPECIAL (calculated on volume of stuck wine).
- At 1/2 °Brix depletion, add another 20% of stuck wine.
- At 1/2 °Brix depletion, add the remaining stuck wine.

#### Why use NUTRIFERM NO STOP?

NUTRIFERM NO STOP acts as a protector by improving yeast membrane integrity. Additionally, it eliminates medium chain fatty acids and pesticides residues which may inhibit fermentation.

#### Why use NUTRIFERM ULTRA?

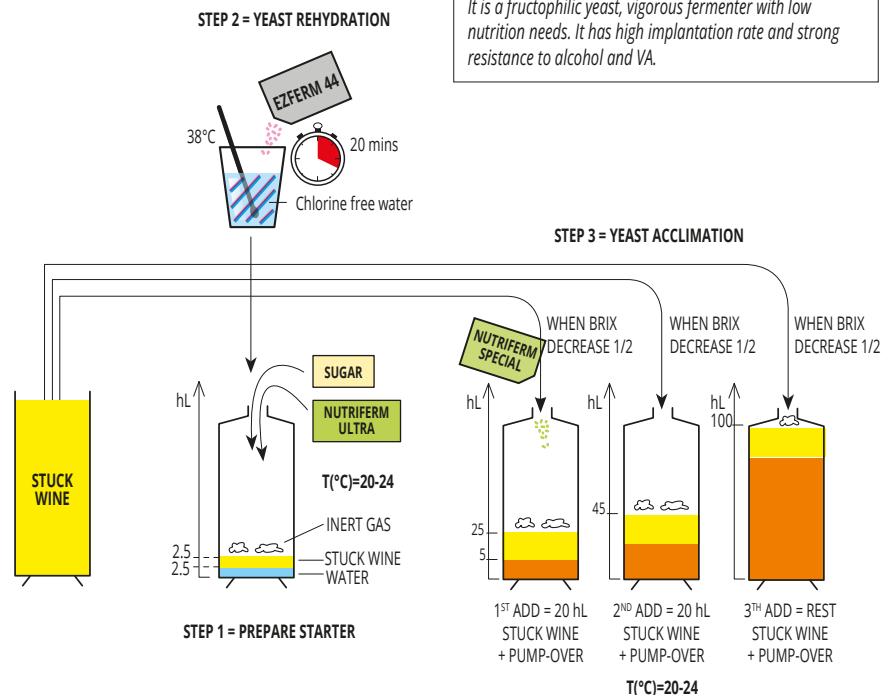
Nutrient content in stuck wine cannot support yeast growth. Complex yeast nutrients improves yeast activity and facilitates their acclimation to difficult wine conditions. NUTRIFERM ULTRA provides essential elements for yeast development.

#### Why using EnartisFerm EZFERM 44?

It is a fructophilic yeast, vigorous fermenter with low nutrition needs. It has high implantation rate and strong resistance to alcohol and VA.

#### 3- PRODUCT NEEDS FOR 100 hL:

WINEMAKING PRODUCT	QUANTITY (kg)
EnartisStab MICRO M	1.5
NUTRIFERM NO STOP	3
EnartisFerm EZFERM 44	3
NUTRIFERM ULTRA	1
NUTRIFERM SPECIAL	1



# YEAST NUTRIENTS

Understanding the nutritional requirements for yeast is fundamental in accomplishing a successful fermentation and preventing stuck fermentations. Managing nutrient requirements not only allows for regular and complete fermentations but enhances sensory quality. Enartis has a wide range of nutrients which provide solutions for many different conditions and purposes.



## 20. NUTRIFERM CONTROL



Inspiring innovation.

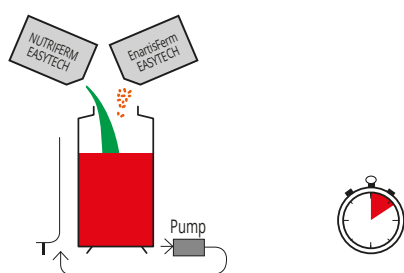
## EASYTECH NUTRIENTS

**No prior dissolution required!** Easytech is a certified range of Enartis yeasts and nutrients that can be added directly to juice rather than requiring typical rehydration steps. This innovative range simplifies and minimize cellar operations, saving wineries time, labor, and money. Enartis offers two fermentation activators:

**Easy tech**  
CERTIFIED BY ENARTIS

- NUTRIFERM ULTRA
- NUTRIFERM AROM PLUS

Easytech **nutrients** are micro-granulated, meaning they are less powdery and safer to use. They are also easier to dissolve directly in must, without creating clumps, and provide immediately available nutrients for yeasts, thanks to the high solubility rate.



Just one operation! Sprinkle Easytech yeasts and Easytech nutrients onto juice surface, wait 10-15 minutes, then homogenize with a pump-over.

Enartis Easytech range is also suitable for traditional yeast inoculations.

## NUTRIFERM ULTRA

**Easy tech**  
CERTIFIED BY ENARTIS

- Autolyzed yeast with an elevated content of easily assimilable amino acids and thiamine (vitamin B1).
- Provides all nutritional factors necessary to improve yeast viability and ensure successful fermentations without defects, flawless both in the mouth and nose.
- Granulated nutrient formulated to be added directly to juice without prior dissolving (**Easytech**).

**Application:** promotes a regular and complete fermentation; enhance the varietal expressions

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg - 10 kg

## NUTRIFERM AROM PLUS

**Easy tech**  
CERTIFIED BY ENARTIS

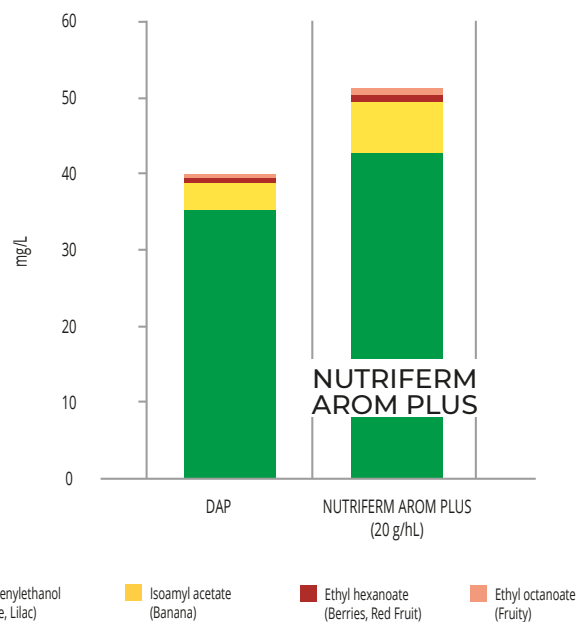
- Autolyzed yeast with an elevated content of free amino acids and survival factors and thiamine (vitamin B1).
- Elevated content of selected amino acids used by yeast as precursors of aromatic compounds to strongly increase intensity, freshness and complexity.
- Provides survival factors to improve yeast viability and ensure successful fermentations.
- Granulated nutrient formulated to be added directly to juice without prior dissolving (**Easytech**).

**Application:** ensure optimal yeast growth; enhance secondary aroma production

**Dosage:** 15-30 g/hL

**Packaging:** 1 kg - 10 kg

AROMATIC PROFILE OF WINE AFTER ALCOHOLIC FERMENTATION



NUTRIFERM AROM PLUS increases the production and content of aromatic compounds in wine.



**NUTRIFERM AROM PLUS** is far and away the best performing complex yeast nutrition in the market! Added whilst rehydration of the yeast takes place it ensures a complete and steady fermentation, assisting the yeast in fermentation to produce a complex flavor profile in any wine style.

**Rianco van Rooyen, Winemaker at Robertson Winery - Robertson**

## NUTRIFERM ENERGY

- Autolyzed yeast with high content of free amino acids and thiamine (vitamin B1).
- Shortens lag phase, prevents formation of H<sub>2</sub>S and acetic acid.
- Vital in initial phases of yeast multiplication.

**Application:** promotes a regular and complete fermentation; enhance the varietal expressions

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg - 10 kg

## NUTRIFERM SPECIAL

- Complex nutrient containing ammonium phosphate (DAP), inactivated yeast and thiamine (vitamin B1).
- Facilitates fermentation and prevents stuck fermentations.
- Prevents production of H<sub>2</sub>S.

**Application:** musts with low YAN; nutrient correction at yeast inoculation or 1/3 sugar depletion

**Dosage:** 30-50 g/hL

**Packaging:** 1 kg - 10 kg



I am very happy with NUTRIFERM SPECIAL. We inoculated six red wine tanks just this morning together with NUTRIFERM SPECIAL. It is so easy to work with, and works with any yeast! Fermentation starts quickly when using this product. I can definitely recommend it to other winemakers. **Hanlie Schönborn, Assistant Winemaker at Napier Winery - Wellington**



## NUTRIFERM VIT

- Ammonium sulfate, diammonium phosphate and thiamine.
- Provides immediately available nitrogen to the yeast, thus ensuring steady fermentation.

**Application:** yeast basic nitrogen nutrition

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg - 20 kg

## NUTRIFERM VIT FLO

- Diammonium phosphate and thiamine.
- Improves the environment for yeast to grow and propagate, avoiding sluggish or difficult fermentation.

**Application:** yeast basic nitrogen nutrition

**Dosage:** 10-30 g/hL

**Packaging:** 20 kg

## NUTRIFERM NO STOP

- Inactivated yeast, autolyzed yeast, thiamine hydrochloride (vitamin B1).
- Helps maintain yeast membrane integrity, prevents and corrects fermentation anomalies.

**Application:** prevent and treat stuck fermentations

**Dosage:** 20-40 g/hL

**Packaging:** 1 kg - 10 kg

## NUTRIFERM GRADUAL RELEASE

- Innovative nutrient composed of DAP, gallic tannin and untoasted oak tannins.
- Specific packaging that controls the release of its content during fermentation. Due to the particular permeability of the bag, yeast nutrients are gradually released into fermenting must. Release begins at end of yeast growth phase and continues for up to 8 days.
- Ensures complete fermentation, prevents H<sub>2</sub>S production, prevents stuck or sluggish fermentation and improves aromatic cleanliness.
- Facilitates nutrition management by limiting cellar operations.

**Application:** yeast nutrition and prevention of the reductive character; second fermentation in pressure tanks (Charmat method); barrel and tank fermentation

**Dosage:** 5 kg bag for 250-500 hL

**Packaging:** 5 kg



Very satisfied with how our Sauvignon Blanc 2022 came out in the end. A perfect combination of EnartisFerm Q4, NUTRIFERM X, NUTRIFERM AROM PLUS and NUTRIFERM BIANCO at the right times. The flavours play around in your mouth like a kid on a merry go round. **André Scriven, Senior Winemaker at Rooiberg Winery - Robertson**



## NUTRIFERM BIANCO

- Specific nutrient for white and rosé must composed of diammonium phosphate, condensed tannins, inactivated yeast and thiamine.
- Formulated for a single addition during alcoholic fermentation.
- Stimulates yeast growth and metabolism promoting a regular and complete fermentation, preventing off-flavors.
- Provides antioxidant protection and improves wine stability due to tannin component.

**Application:** yeast nutrition and stability improvement during white and rosé juice fermentation

**Dosage:** 30-50 g/hL

**Packaging:** 10 kg

## NUTRIFERM WM

- Specific nutrient for red and rosé must composed of diammonium phosphate, condensed and hydrolyzable tannins, inactivated yeast and thiamine.
- Formulated for a single addition during alcoholic fermentation.
- Promotes a complete and regular fermentation.
- Enhances overall quality: mouthfeel, aroma and wine structure.
- Improves color stability.

**Application:** yeast nutrition and color stability improvement during red and rosé juice fermentation

**Dosage:** 30 g/hL rosé wine; 50 g/hL red wine

**Packaging:** 10 kg



NUTRIFERM WM is a well balanced fermentation nutrient consisting of yeast nutrient polysaccharides and important tannins that makes it very easy to add during fermentation by adding only one product. The components are very well thought out to contribute to quality, It helps to create mouthfeel, keeping the aromas fresh and support good structure. The biggest contribution is the stabilization of the color for long periods. It also helps with the ageing potential of the wine. **Pieter-Niel Rossouw, Head Winemaker at Darling Cellars - Darling**

## NUTRIFERM X

- Nutrient specifically developed to enhance thiol expression.
- Stimulates yeast metabolism to release thiol precursors.
- Produces highly aromatic wines with intense notes of tropical and citrus fruits.

**Application:** increase thiol expression

**Dosage:** 50 mL/hL

**Packaging:** 5 kg

NEW

## NUTRIFERM CONTROL

- Inactivated yeast.
- Removes toxins and promotes clean and complete fermentations.
- Prevents sluggish and stuck fermentations.
- Reduces the risk of sulfur compound formation and assures aromatic cleanliness.

**Application:** detoxification of must; helps restart the fermentation

**Dosage:** 20-40 g/hL (during primary and sluggish/stuck fermentation); 5-20 g/hL (during sparkling second fermentation)

**Packaging:** 1 kg

## ENARTIS NUTRIENTS AND FERMENTATION AIDS MAIN FEATURES

	Application	Nitrogen from Aminoacids	Inorganic nitrogen	Aromatic precursors	Sterols & fatty acids	Minerals	Vitamins	Tannins	Adsorptive effect	Timing of addition	Recommended dosage
<b>NUTRIFERM AROM PLUS</b> <small>Easu tech</small> <small>CERTIFIED BY ENARTIS</small>	Supply of precursors for the synthesis of fermentation aromas	●●●●●●		●●●●●●	●●●	●●●	●●●		●●●●	Yeast inoculation	15-30 g/hL
<b>NUTRIFERM ULTRA</b> <small>Easu tech</small> <small>CERTIFIED BY ENARTIS</small>	Reinforce fermentation capacity of yeast	●●●●●●		●●●●	●●●●	●●●	●●●●		●●●●	Yeast inoculation	10-30 g/hL
<b>NUTRIFERM ENERGY</b>	Reinforce fermentation capacity of yeast	●●●●		●●●	●●●●	●●●	●●●●		●●●●	Yeast inoculation	10-30 g/hL
<b>NUTRIFERM SPECIAL</b>	Balanced and complete nutrition	●●	●●●	●	●●	●●	●●		●●●	Yeast inoculation	30-50 g/hL
<b>NUTRIFERM BIANCO</b>	Complete yeast nutrition, juice protection and stabilization	●	●●	●	●●	●	●●	●	●●	Yeast inoculation	30-50 g/hL
<b>NUTRIFERM WM</b>	Complete yeast nutrition, juice protection and red color stabilization	●	●	●	●	●	●	●●	●	Yeast inoculation	30-50 g/hL
<b>NUTRIFERM X</b>	Basic nitrogen nutrition and thiol expression		●	●●●●●●			●			Yeast inoculation follow addition instructions	50 mL/hL
<b>NUTRIFERM VIT</b>	Basic nitrogen nutrition		●●●●●●				●			Yeast inoculation or 24 hrs after organic nitrogen addition	10-30 g/hL
<b>NUTRIFERM VIT FLO</b>	Basic nitrogen nutrition		●●●●●●				●			Yeast inoculation or 24 hrs after organic nitrogen addition	10-30 g/hL
<b>NUTRIFERM GRADUAL RELEASE</b>	Complete and clean fermentations		●●●●●					●		Before filling the fermentation tank	5 kg bag
<b>NUTRIFERM NO STOP</b>	Prevention and treatment of stuck fermentation			●	●●●●●●	●●	●●●		●●●●●●	Second half of fermentation and in case of sluggish or stuck fermentation	20-40 g/hL
<b>NUTRIFERM CONTROL</b>	Detoxifies the juice				●●●	●	●		●●●●●●	Second half of fermentation and in case of sluggish or stuck fermentation	5-40 g/hL

### THE IMPORTANCE OF BALANCED NUTRITION FOR YEAST HEALTH

Balanced nutrition is essential for optimal status and biomass production. Nitrogen availability, regardless of the origin (amino acids or ammonia), will affect fermentation performance as well as the production of secondary metabolites and aromatic compounds during fermentation.

- **Amino acids** are assimilated by the yeast without consuming a large amount of energy. Yeast can store them for later or use to synthesize proteins, enzymes and other amino acids.
- **Ammonia** requires a large amount of time and energy (long transformation process) to synthesize proteins and enzymes.

### ENARTIS NUTRIENTS RECOMMENDATION FOR A BALANCED NUTRITION

<b>NUTRIFERM AROM PLUS</b>	Rich in aromatic amino acids precursors to promote the synthesis of esters.
<b>NUTRIFERM ULTRA</b>	Rich in essential amino acids to ensure optimal yeast growth.
<b>NUTRIFERM SPECIAL</b>	Maintains the vital activity of yeast until complete sugar depletion.
<b>NUTRIFERM NO STOP</b>	Rich in survival factors regenerating the cell membrane. Detoxifies the juice. Prevent or treat sluggish and/or stuck fermentations.

## POLYSACCHARIDES

Every day, more is known about the contribution made by polysaccharides to the stability and quality of wine. Many winemakers have adopted techniques such as pre-fermentation cold maceration, the use of macerating enzymes and sur lie ageing, to enhance the content of polysaccharides and help make wines with better sensory characteristics and stability. Unfortunately, factors such as time constraints, lack of tank space or off-aromas in the lees can make these practices impossible. For those who cannot make use of the polysaccharides naturally contained in their own lees and grapes, Enartis offers EnartisPro and SURLI, polysaccharides preparations for fermentation and wine maturation.



NEW

23. EnartisPro TINTO  
23. EnartisPro AROM

**enartis**

Inspiring innovation.

## POLYSACCHARIDES FOR THE FERMENTATION STAGE

### EnartisPro UNO

- Inactivated yeast rich in immediately soluble mannoproteins.
- Improves aroma persistence, color stability and wine shelf life.
- Softens astringency, balances bitterness and increases roundness.

**Application:** red, white and rosé juice; improve wine overall quality and stability

**Dosage:** 10-40 g/hL

**Packaging:** 1 kg



EnartisPro UNO is a vital component of building a wine and keeping it fresh. By adding EnartisPro UNO, it helps to build the mouthfeel, keep the color young and vibrant. We have also found that EnartisPro UNO helps to keep the cultivar expression much longer.

**Pieter-Niel Rossouw, Head Winemaker at Darling Cellars - South Africa**

### EnartisPro BLANCO

- Inactivated yeast with high content of immediately soluble mannoproteins and sulfur amino acids with antioxidant activity.
- Enhances production of exotic fruit and thiol aromas. Produces fresher, more intense and lasting aromas.
- Softens astringency and balances bitterness.
- Improves color, protein and tartrate stability.

**Application:** enhance volume; increase aromatic freshness and complexity; reduce herbaceous aromas; improve wine overall stability

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg

NEW

### EnartisPro TINTO

- Inactivated yeast rich in immediately soluble mannoproteins and ellagic and grape seed tannins.
- Specifically designed to favor anthocyanin/tannin condensation during fermentation, it increases color intensity and stability.
- Promotes bright and clean aromas, builds-up mid-palate, softens astringency and balances mouthfeel.
- The best choice for color stabilization and sensory optimization of wine.

**Application:** color stability; fruit aromas; softness; improved balance and complexity

**Dosage:** 15-40 g/hL

**Packaging:** 1 kg - 10 kg



Initial results using EnartisPro TINTO with regards to colour and structure are promising and have had a good impact on our reds. Regular analysis will be done over time to evaluate long term development.

**Pieter Carstens, Head Winemaker at Leeuwenkuil Family Vineyards - Paarl**

NEW

### EnartisPro AROM

- Inactivated yeast rich in mannoprotein.
- Produces fresher and more intense aromatic profiles.
- Increases clean aromatic notes due of the adsorption of off-aroma compounds.
- Increases volume, softness and fullness.

**Application:** white and rosé juice; antioxidant; enhanced roundness and volume; improves wine stability; reduce herbaceous aromas

**Dosage:** 20-40 g/hL

**Packaging:** 1 kg - 20 kg

### EnartisPro FT

- Insoluble copolymers of polyvinylimidazole and polyvinylpyrrolidone (PVI/PVP), inactivated yeast with high content of soluble mannoproteins and thiolic group-containing peptides with antioxidant properties.
- Removes metals and limits the damaging effects of copper and iron responsible for wine oxidation.
- Enhances production of exotic fruit and thiols aromas. Produces fresher, more intense and lasting aromas.
- Softens astringency and balances bitterness.
- Improves wine resistance to oxidation.

**Application:** enhance thiols; antioxidant protection; extension of wine shelf life; increase aromatic intensity and stability

**Dosage:** 30-50 g/hL

**Packaging:** 1 kg - 10 kg

### What is PVI-PVP?

PVI-PVP is an adsorbent co-polymer (polyvinylimidazole and polyvinylpyrrolidone) capable of removing heavy metals in wine such as copper (Cu), iron (Fe) and aluminum (Al). Also, PVI-PVP has the ability to bind with phenolic compounds, the substrates of oxidative reactions. Wines treated with PVI-PVP are fresher, more aromatic, more balanced, have a lower oxidation potential and improved shelf life.



EnartisPro FT has been a revelation in ensuring wines that are aromatic with a full mouthfeel. In conjunction with EnartisFerm Q CITRUS, EnartisPro FT allows for the assured production of high quality aromatic white wines. A combination that is extremely effective on Sauvignon Blanc, Chenin Blanc and Colombard.

**Rianco Van Rooyen, Senior Winemaker at Robertson Winery - South Africa**

## POLYSACCHARIDES FOR SECOND FERMENTATION STAGE

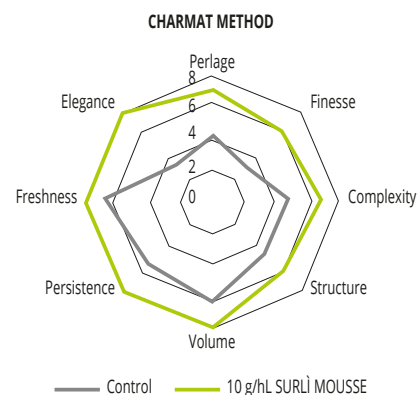
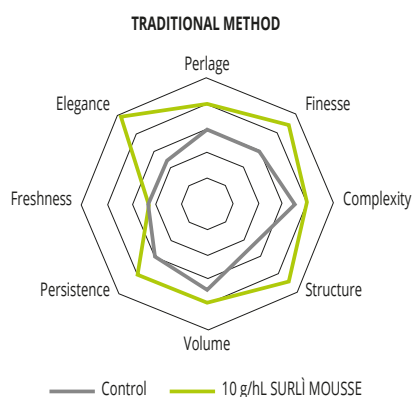
### SURLÌ MOUSSE

- Inactivated yeast rich in mannoproteins.
- Improves foaming capacity, bubble persistence and quality of sparkling wines.
- Enhances natural sensation of volume and roundness, improves balance and aromatic complexity.

**Application:** improve foaming properties; improve sensory quality; Charmat method; traditional method; white, rosé and red sparkling wines

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg



SURLÌ MOUSSE sensory improvement: traditional method vs Charmat method.

## POLYSACCHARIDES FOR THE MATURATION STAGE

### SURLÌ VELVET

- Completely soluble yeast mannoproteins.
- Enhances aromatic complexity and intensity, increases volume and roundness and reduces the sensation of astringency.
- Improves colloidal structure and stability of wine.

**Application:** improve overall wine quality and stability prior to bottling

**Dosage:** 0.5-10 g/hL

**Packaging:** 0.5 kg

## HOW TO CHOOSE THE CORRECT SURLÌ

See page 55.

		Composition	Main effect	Antiox protection	Aroma enhancement	Mouthfeel improvement	Softness improvement
Fermentation	EnartisPro UNO	Inactivated yeast	Softness and mouthfeel	●	●	●●●	●●●
	EnartisPro BLANCO	Inactivated yeast	Enhance thiol production Softness and mouthfeel	●●●	●●●	●●●	●●●
	EnartisPro TINTO	Inactivated yeast Grape seed tannins Ellagic tannins	Softness and mouthfeel Color stabilization	●●	●●	●●●●	●●●
	EnartisPro AROM	Inactivated yeast	Aromatic freshness	●●●	●●	●●	●●
	EnartisPro FT	Inactivated yeast PVI-PVP	Enhance thiol production Softness and mouthfeel Anti-ageing	●●●●	●●●	●●	●●●
	SURLÌ MOUSSE	Inactivated yeast	Improves foaming capacity in sparkling wines Softness and mouthfeel	●	●●	●●●	●●●
Pre-Bottling	SURLÌ VELVET	Mannoproteins	Softness and mouthfeel Improve overall stability	●	●	●●●●	●●●●

# TANNINS

Many wines benefit from the addition of tannins, provided that the treatment is carried out at the most appropriate time. Since the different origins and properties of tannin can produce substantially different results, care must be taken to select the best tannin for each winemaking application. In conjunction with the foremost research centers, Enartis has studied exogenous tannins and their effects for many years. These studies have enabled Enartis to select and produce a comprehensive range of the highest quality tannins for winemaking.



**enartis**

Inspiring innovation.

## WHITE & ROSÉ VINIFICATION

### EnartisTan CIT

- Blend of gallic tannins and condensed tannins extracted from exotic wood species.
- Production process at cold temperature to preserve aromatic precursors from wood.
- Enhances floral, citrus and fresh fruity notes.
- Enhance varietal expression by combining it with yeasts with high  $\beta$ -glucosidase activity.

**Application:** enhancement of floral and fruit aroma; improve protein stability; increase antioxidant protection

**Dosage:** 2-15 g/hL

**Packaging:** 1 kg

## RED VINIFICATION

### EnartisTan COLOR

- Condensed tannin from grape seeds and exotic wood species, inactivated yeast, ellagic tannin and gallic tannin.
- Protects anthocyanins and aromatic compounds from oxidation.
- Highly reactive in condensing with anthocyanins to form stable and soluble color pigments with vibrant hue.
- Promotes production of spicy and dark fruit aromas.

**Application:** antioxidant protection; long-term color stabilization; enhancement of thiols

**Dosage:** 50-200 g/ton

**Packaging:** 1 kg

### EnartisTan FERMCOLOR

- Blend of condensed tannins extracted from exotic wood species and ellagic tannins from chestnut trees and tara.
- High antioxidant activity, protects color and aromatic compounds from oxidation and contributes to color stabilization.
- Enhances aromatic complexity, softens structure, and improves length and ageing potential.

**Application:** antioxidant protection; color stabilization; reds intended for ageing

**Dosage:** 200-400 g/ton

**Packaging:** 1 kg

### EnartisTan FP

- Blend of condensed and ellagic tannins.
- Promote protein and color stabilization in red and rosé grapes through interaction with natural grape tannins.
- Indicated as a fining agent in combination with protein fining agents.
- Favors the removal of oxidative enzymes (laccase).

**Application:** "sacrificial" tannin; antioxidant protection; color stabilization

**Dosage:** 150-400 g/ton

**Packaging:** 15 kg

### EnartisTan RF

- Blend of condensed tannins extracted from exotic wood species.
- Production process at cold temperature to preserve aromatic precursors from wood.
- Provides aromatic precursors responsible for berry, red fruit and floral notes in wine.
- Improves color stability.
- Enhances varietal expression by combining it with yeasts high  $\beta$ -glucosidase activity.

**Application:** wines with increased fruit aromas; color stabilization; red and rosé wines

**Dosage:** 20-150 g/ton in rosé wine; 20-300 g/ton in red wine

**Packaging:** 1 kg

### EnartisTan ROUGE

- Microgranulated blend of condensed tannin extracted from exotic wood species, chestnut tannin and tara tannin.
- Intense antioxidant and antioxidasic activities, inhibits laccase, PPO and protects color and aromatic compounds from oxidation.
- Favors the formation of stable color compounds.
- Reinforces wine structure and improves wine balance.

**Application:** "sacrificial" tannin; antioxidant protection; color stabilization

**Dosage:** 100-400 g/ton

**Packaging:** 1 kg - 15 kg



We love to use the Enartis fining tannin range in combination with SURLI VELVET to find the perfect harmony in our wines prior to bottling. Enartis' expert advice and attention to customer satisfaction is exemplary. We regard the Enartis South Africa team as part of the family here at Kaapzicht.

**Kayleigh Hattingh, Assistant Winemaker at Kaapzicht Wines Estate - Stellenbosch**

### EnartisTan V

- Condensed tannin extracted from unfermented white grape seeds.
- Highly reactive, it specifically condenses with free anthocyanins to protect them from oxidation and promote long-lasting color stability.
- Promotes the elimination of grape proteins and improves the protein stability of white and rosé wines.
- Reduce the action of oxidase enzymes (tyrosinase and laccase) and the chemical oxidation of wine.
- Enhance fruity notes.

**Application:** long-term color stability; thermovinification; phenolic unripe grapes

**Dosage:** 10-30 g/hL

**Packaging:** 1 kg

## EnartisTan XC

- Low molecular weight monocatechins and condensed tannins extracted from exotic wood species and untoasted oak.
- Due to its high reactivity, it promotes co-pigmentation and increases color stability in young red and rosé wines.

**Application:** color stabilization through co-pigmentation; young to medium aged red wines; rosé

**Dosage:** 100-400 g/ton on red grapes; 5-15 g/hL in rosé juice

**Packaging:** 1 kg - 15 kg

## TECHNICAL TANNINS

### EnartisTan ANTIBOTRYTIS

- Mixture of gallic tannins and ellagic chestnut tannin.
- Intense antioxidant, antiradical and antioxidasic properties, protects color and aromatic compounds from oxidation with a long lasting effect.
- Protects from oxidation, limits oxidasic enzyme activities and strengthens the protective action of SO<sub>2</sub>.

**Application:** moldy grapes; antioxidant protection of aromatic and color compounds

**Dosage:** 3-20 g/hL in juice; 2-10 g/hL in wine

**Packaging:** 1 kg - 10 kg

PRODUCT	DOSAGE	REDUCTION OF OXIDASIC ENZYME ACTIVITY
SO <sub>2</sub>	50 ppm	25%
	75 ppm	62%
ANTIBOTRYTIS	20 g/hL	60%

### EnartisTan E

- Microgranulated condensed tannin mainly monocatechins obtained by purification from an unfermented white grape seed extract.
- Highly reactive, specifically condenses free anthocyanins to promote a long-lasting color.
- One of our best tannins for color stabilization, particularly efficient during macro-oxygenation to condense anthocyanins via acetaldehyde bridges.
- Increases wine structure, aromatic complexity and prevents premature oxidation.

**Application:** color stabilization by condensation; micro-oxygenation; enhance body and structure

**Dosage:** 50-200 g/ton during maceration; 3-15 g/hL during micro-oxygenation

**Packaging:** 1 kg

### EnartisTan SLI

- Tannin extracted from untoasted American oak at low temperature.
- Extraordinary capability to scavenge oxygen and radicals, chelate metals and reduce wine redox potential.
- Binds to mercaptans and eliminates other sulfur off-aromas.
- Protects from oxidation, strengthens action of SO<sub>2</sub> and improves wine shelf life.

**Application:** antioxidant protection; improve the shelf life of wine; treat reduction; natural and allergen free alternative to SO<sub>2</sub>

**Dosage:** 0.5-2 g/hL as antioxidant; 2-15 g/hL to improve the sensory

**Packaging:** 0.5 kg

### HIDEKI

- Microgranulated tannin made of molecular fractions obtained through the selection and purification of gallic, ellagic and condensed tannins that are the most effective in terms of antioxidant and antimicrobial activity.
- To be used during wine preparation for bottling as a natural and allergen-free replacement for SO<sub>2</sub> to protect wine from oxidation and to prevent spoilage by unwanted microorganisms.
- The combination of different tannins, in terms of composition and structure that are microbiostatic in nature against various pathogens, makes HIDEKI a suitable tool over a wide range of pH values.

**Application:** natural and allergen free alternative to SO<sub>2</sub>; antioxidant protection of wine; prevention of the growth of unwanted microorganisms

**Dosage:** 1-3 g/hL as an antioxidant; 5-10 g/hL as microbiostatic

**Packaging:** 1 kg



The wine scene is changing every day. Consumers are looking for different wine styles and packaging. Softer wines, healthier, more "green" footprint. We use the HIDEKI tannin on all our 2lt BIB and de-alcolized wines. The big challenge with these packaging and wine styles, is keeping the wines fresh and stable. We have found that the protection HIDEKI provides to these wines, are outstanding. Our sulphur levels stay stable for much longer and the wines also stay fresher for much longer. Due to this, we have also started to use the HIDEKI on all our other bottled wines. Truly a product adding value to our wines. **Pieter-Niel Rossouw, Head Winemaker at Darling Cellars - Darling**



HIDEKI is a revolutionary tannin that works synergistically with sulphur dioxide and has a positive contribution to our end product. We trust that the microbiostatic activity ensures a better shelf life of our products. **Shawn Thomson, Chief Production Manager at Du Toitskloof Wines - Rawsonville**

## EnartisTan MAX NATURE

- Condensed tannin extracted from exotic wood species.
- Removes reductive characters, masks herbaceous notes and increases aromatic cleanliness and complexity.
- Increases roundness and builds mid palate.

**Application:** remove reductive and herbaceous notes; increase fruit and floral characters

**Dosage:** 3-15 g/hL

**Packaging:** 1 kg - 10 kg

## OAK TANNINS

### EnartisTan CŒUR DE CHÊNE

- Ellagic tannin extracted from toasted oak.
- Extends barrel life and boosts oak characters in neutral barrels.
- Contributes to elegant and delicate aromas of vanilla, caramel and spices.
- Balances mouthfeel and improves length, softness and oak integration.
- Control and prevention of reductive aromas.

**Application:** finishing; extend the life of barrels

**Dosage:** 3-10 g/hL

**Packaging:** 0.5 kg

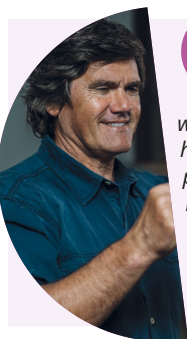
### EnartisTan DC

- Tannin extracted from French oak.
- Boosts heavy-toasted oak characters in neutral barrels.
- Enhances dark chocolate, roasted coffee and spice aromas, as well as structure and softness found in barrel-aged wines.
- Softens astringency and increases wine length and complexity.

**Application:** finishing; extend the life of barrels

**Dosage:** 0.5-15 g/hL

**Packaging:** 1 kg



It has been very constructive to work with Lida and her team at Enartis. We have had excellent service and support. New products and the willingness to experiment has greatly benefited our products.

**Alvi van der Merwe, Cellar Master  
at Alvi's Drift - Worcester**

## EnartisTan ELEVAGE

- Tannin extracted from seasoned French oak.
- Binds with mercaptans and eliminates sulfur off-aromas.
- Contributes to elegant vanilla, caramel and licorice notes.

**Application:** increase structure; prevent and treat reductive characters

**Dosage:** 2-15 g/hL

**Packaging:** 1 kg

## EnartisTan NAPA

- Tannin extracted from American oak.
- Extends barrel life and boosts oak aromas in neutral barrels.
- Enhances aromas of vanilla, caramel, coconut, coffee and cocoa.
- Increases wine structure and "sweetness" and balances astringency.

**Application:** finishing; increase aroma complexity and structure

**Dosage:** 3-15 g/hL

**Packaging:** 1 kg



I have been using EnartisTan NAPA in winemaking here at Neethlingshof for more than 10 years. This is the perfect product to finish and polish quality red wines. EnartisTan NAPA provides the perfect balance in terms of sweet fruit notes, combined with structured oak tannins. I will continue to use it across all our red wines.

**De Wet Viljoen,  
Winemaker / Estate Manager at  
Neethlingshof - Stellenbosch**

## EnartisTan SUPEROAK

- Blend of oak tannins and condensed tannins.
- When used during the early stages of aging of red and rosé wines or during micro-oxygenation, it helps color stabilization.
- Improves aromatic cleanliness of wine that have been aged in barrels and freshen light red and white wines.

**Application:** maturation phase; stabilize color; increase volume and complexity

**Dosage:** 5-20 g/hL

**Packaging:** 1 kg

## EnartisTan TOF

- Tannin extracted from medium-plus toasted French oak.
- Increases antioxidant protection and improves wine ageing potential.
- Enhances the aromatic notes of oak (coffee, caramel) when used in barrel-aged wines.
- Provides structure and helps to soften astringent and bitter sensations.

**Application:** finishing; extend the life of barrels

**Dosage:** 1-15 g/hL

**Packaging:** 0.5 kg

## EnartisTan VNL

- Tannin extracted from medium-toasted French oak.
- Increases antioxidant protection, improves wine stability and ageing potential.
- Enhances the aromatic notes of oak (vanilla, custard, coconut) when used in barrel-aged wines.
- Provides structure and helps to soften astringent and bitter sensations.

**Application:** finishing; extend the life of barrels

**Dosage:** 1-15 g/hL

**Packaging:** 0.5 kg

## GRAPE TANNINS

### EnartisTan FF

- Blend of condensed tannins extracted from exotic wood species and fresh white grape skins.
- Production process at cold temperature to preserve aromatic precursors from wood.
- Good antioxidant capacity.
- Freshens wine aromas, reduces overripe fruit notes, increase wine softness and wine length.

**Application:** freshen wine aroma; increase antioxidant protection; white and rosé wines

**Dosage:** 0.5-10 g/hL

**Packaging:** 1 kg

### EnartisTan FT

- Condensed tannin extracted from exotic wood species, grape seeds tannin and chestnut tannin.
- Protects anthocyanins from oxidation and improves color stability.
- Reduces herbaceous notes, enhances fruit characters and freshens aromas.
- Improves structure and length without imparting astringency.

**Application:** color stabilization in red and rosé wines; increase structure and fruit notes

**Dosage:** 100-200 g/ton during maceration; 3-10 g/hL in wine

**Packaging:** 1 kg

## EnartisTan TFT

- Blend of condensed tannins extracted from exotic wood species and fresh white grape skins.
- Provides intense red fruit aromas, reduces overripe fruit notes and increases softness, structure and wine length.

**Application:** enhances red fruit notes; increase softness; red and rosé wines

**Dosage:** 0.5-20 g/hL

**Packaging:** 1 kg



*I believe in the concept of continuous improvement and thanks to Enartis vast range of finishing tannins. We always manage to improve our wines from great to excellent.*  
**James Ochse, Winemaker at KVV - Paarl**

## EnartisTan UNICO RANGE

### EnartisTan UNICO #2

- Condensed tannin extracted from exotic wood species.
- Significantly enhances red fruit aromas such as cherry, fresh berries and black currant.
- Increases softness, structure and "sweetness".

**Application:** finishing; enhance wine fruity aroma

**Dosage:** 1-15 g/hL

**Packaging:** 250 g

### EnartisTan UNICO #3

- Blend of hydrolyzable and condensed tannins extracted from exotic wood species.
- Freshens wine aroma, enhances citrus, botanical and floral notes.
- Excellent for treating wines with slightly oxidized and overripe aromas.

**Application:** increase aromatic freshness and complexity

**Dosage:** 1-10 g/hL

**Packaging:** 250 g

	Color stabilization	Antioxidant effect	Increase of aromatic cleanliness	Protein removal	Structure	Astringency	Softness	Aroma
<b>FERMENTATION TANNINS</b>								
EnartisTan CIT	▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲	▲▲	▲▲	▲▲▲▲▲
EnartisTan COLOR	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲
EnartisTan FERMCOLOR	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲
EnartisTan FP	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲
EnartisTan RF	▲▲▲	▲▲	▲▲	▲▲▲▲	▲▲▲	▲▲	▲▲▲	▲▲▲▲▲
EnartisTan ROUGE	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲
EnartisTan V	▲▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲▲	▲▲▲▲	▲▲	▲▲▲
EnartisTan XC	▲▲▲▲	▲▲	▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲	▲
<b>TECHNICAL TANNINS</b>								
EnartisTan ANTIBOTRYTIS	▲	▲▲▲▲▲	▲▲	▲▲	▲▲	▲▲	▲	▲
EnartisTan E	▲▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲▲	▲▲▲▲	▲▲	▲▲▲
HIDEKI	▲▲	▲▲▲▲▲	▲▲▲▲	▲▲▲▲	▲▲	▲	▲▲▲▲	▲
EnartisTan MAX NATURE	▲▲▲	▲▲	▲▲▲▲	▲▲	▲	▲	▲▲▲▲▲	▲
EnartisTan SLI	▲▲	▲▲▲▲▲	▲▲▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲
<b>OAK TANNINS</b>								
EnartisTan CŒUR DE CHÊNE	▲▲	▲▲	▲▲	▲	▲▲	▲▲	▲▲▲	▲▲▲▲
EnartisTan DC	▲▲	▲▲▲	▲▲	▲	▲▲▲	▲	▲▲▲▲	▲▲▲▲▲
EnartisTan ELEVAGE	▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲▲
EnartisTan NAPA	▲▲	▲▲▲	▲▲	▲	▲▲▲	▲	▲▲▲▲	▲▲▲▲▲
EnartisTan SUPEROAK	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲	▲▲	▲▲
EnartisTan TOF	▲▲	▲▲▲	▲▲▲	▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲
EnartisTan VNL	▲▲	▲▲▲	▲▲▲	▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲
<b>GRAPE TANNINS</b>								
EnartisTan FF	▲	▲▲▲	▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲
EnartisTan FT	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲▲
EnartisTan TFT	▲▲	▲▲	▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲
<b>UNICO TANNINS</b>								
EnartisTan UNICO #2	▲▲▲	▲▲▲	▲▲	▲▲	▲▲▲▲	▲	▲▲▲▲	▲▲▲▲▲▲
EnartisTan UNICO #3	▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲▲▲

## KNOW MORE ABOUT POLYPHENOLS IN WINEMAKING

### DIFFERENT CATEGORIES OF POLYPHENOLS:

#### Grape polyphenols:

- **Non-flavonoids:** The major non-flavonoid phenolic compounds in grapes are hydroxycinnamates. They are the preferred substrate for polyphenol oxidase and usually the first compounds involved in the oxidation of grape juice.
- **Flavanoids:** One of the major classes of phenolic compounds in grapes. They are localized in skins and seeds. Flavanoids include three main groups: tannins, flavonols and anthocyanins.
  - The tannin group contains complex combinations of catechins (also Flavan-3-ols) found in grape seeds and skins, correctly described as condensed tannins.
  - Anthocyanins are mostly found in grape skins and are the main source of color pigments in red wine.
  - Flavonols: found in grape skins, they are known as co-factors for the color-enhancing phenomenon known as co-pigmentation.

**Hydrolyzable tannins:** Derived from wood, they are oligomeric forms of gallic acid and can be specified as gallotannins or ellagitannins whether they are constituted of gallic acid or ellagic acid moieties.

### COLOR STABILIZATION IN RED WINES

Enartis continually develops color stabilization strategies and technology to achieve stability during maceration. Color stability has to be managed as soon as possible, starting in the vineyard. Most red grape varieties have more anthocyanins than tannins, which can lead to color stability issues.

WINEMAKING STAGE	REACTIONS	ENARTIS PRODUCTS
HARVEST	Prevent oxidation of color/phenolic compounds with antioxidant protection.	100-150 g/ton of AST
COLD SOAK	"Sacrificial" tannins reinforce SO <sub>2</sub> antioxidant effect and eliminate proteins that would react with grape polyphenols, thus protecting grape tannins.	150-200 g/ton, EnartisTan ROUGE or EnartisTan FERMOCOLOR
	Maceration enzymes improve grape skin tannin extraction, favoring anthocyanin/tannin reactions and stabilizing color pigments. The protease activity decreases protein capacity to precipitate grape tannins.	30 g/ton of EnartisZym COLOR PLUS
YEAST INOCULATION	At the first stage of alcoholic fermentation, anthocyanins are extracted much faster than tannins. To encourage the stabilization of anthocyanins via co-pigmentation and condensation, increase the concentration of grape tannin and use mannoproteins.	Co-pigmentation: 100 g/ton of EnartisTan XC
		Condensation: 100 g/ton of EnartisTan V
AFTER AF, BEFORE MLF	At this stage, short macro-oxygenation encourages the formation of stable color compounds produced by condensation between free anthocyanins and tannins through acetaldehyde bridges.	Condensation & co-pigmentation: 200 g/ton EnartisPro TINTO or INCANTO NC range
		10 g/hL EnartisTan E

### WHAT DOES A SACRIFICIAL TANNIN DO?

When grapes are crushed, proteins are released, bound to tannins and precipitated. The first tannins released in wine and lost by precipitating with proteins are skin tannins, the most interesting tannins for future wine structure and mouthfeel. "Sacrificial" tannins are added to crushed grapes in order to bind with grape proteins and precipitate instead of freshly extracted skin tannins.

### WHY IS CO-PIGMENTATION IMPORTANT?

Co-pigmentation protects pigments from oxidation during the early stages of winemaking and limits color loss. Furthermore, it improves anthocyanins solubilization in hydroalcoholic environment.

### CAN I USE TANNINS IN WHITE MUSTS AND WINES?

In white musts, the addition of tannin prevents the formation of off-odors, improves clarification and antioxidant protection, inhibits laccase produced by *Botrytis*. Tannins can be used in white wines to improve their structure, softness and antioxidant protection.

## OAK ALTERNATIVES

If properly dosed, the use of oak alternatives improves wine aroma and taste in a way that makes it pleasing to the international and “new” consumers market. Enartis offers a diverse portfolio of oak chips and soluble alternatives to meet all wine needs and expectations. With INCANTO oak alternatives, winemakers have ultimate control over their oak program and can create a unique signature for their brand or label.



**enartis**

Inspiring innovation.

## INCANTO: OUR RANGE OF OAK ALTERNATIVES

Produced from selected wood of French and American oak, INCANTO woods are toasted using a unique and original process that employs a progressive heating scheme which results in a deep and homogenous toast. The INCANTO alternatives are available as

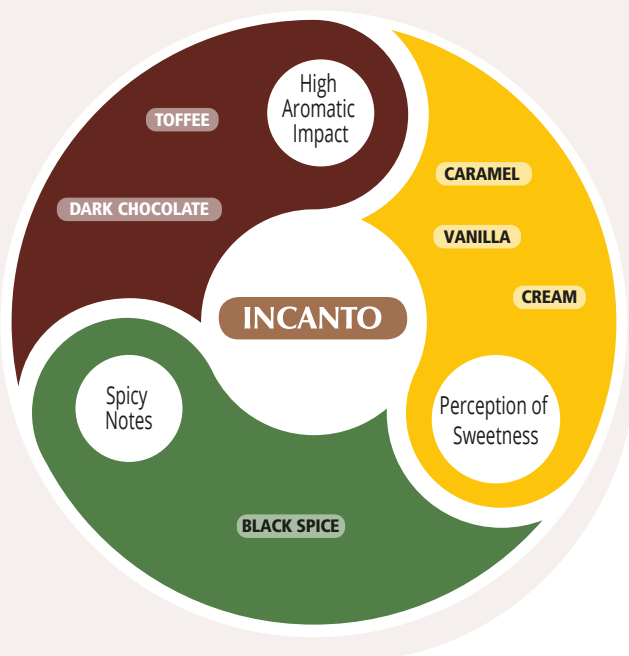
### INCANTO CHIPS

Size: 2-4 mm

Dosage: 1-4 g/L white wines; 1-6 g/L red wines

Contact time: minimum of 4 weeks

Packaging: 10 kg



### INCANTO CREAM

**Composition:** French oak, medium-toasted.

**Aroma:** vanilla, coconut, butter, cappuccino, licorice.

**Taste:** increases smoothness, volume and sweetness without imparting excessive tannins.

**Available form:** chips

### INCANTO VANILLA

**Composition:** American oak, medium-toasted.

**Aroma:** vanilla, coconut, Bourbon, honey, tropical fruit, hazelnut, toasted almond, butter.

**Taste:** increases smoothness, volume and freshness without imparting excessive tannins.

**Available form:** chips

### INCANTO CARAMEL

**Composition:** French oak, medium-toasted.

**Aroma:** caramel, cappuccino, toasted sugar, butter, almond, toasted hazelnut, vanilla, light spice.

**Taste:** increases smoothness and sweetness.

**Available form:** chips

### INCANTO BLACK SPICE

**Composition:** French oak, heavy toasted.

**Aroma:** licorice, spices.

**Taste:** increases smoothness and structure.

**Available form:** chips

### INCANTO TOFFEE

**Composition:** French oak, medium-plus toast.

**Aroma:** café macchiato, toasted bread, toasted almond, hazelnut, vanilla, apricot.

**Taste:** very smooth, sweet and complex.

**Available form:** chips







### INCANTO DARK CHOCOLATE

**Composition:** French oak, medium plus toast.

**Aroma:** dark chocolate, cocoa, black coffee, toasted almond, toasted hazelnut, licorice.

**Taste:** increases volume, structure and tannins.

**Available form:** chips

INCANTO RANGE	OAK	TOAST	AROMATIC IMPACT	MOUTHFEEL
 INCANTO VANILLA	US	Medium	Vanilla, coconut, bourbon, butter	Soft, volume, fresh
 INCANTO CARAMEL	FR	Medium	Caramel, toasted hazelnut, butter	Sweetness, smooth
 INCANTO CREAM	FR	Medium	Custard, coconut, cappuccino, dried fruit	Sweetness, soft, volume
 INCANTO BLACK SPICE	FR	Heavy	Black pepper, licorice, spices	Smooth, sweetness, structure
 INCANTO TOFFEE	FR	Medium-plus	Cafe macchiato, toasted bread, hazelnut	Smooth, sweetness, structure
 INCANTO DARK CHOCOLATE	FR	Heavy	Cocoa, black coffee, toasted almond, licorice	Volume, soft

## INCANTO NC: THE ALTERNATIVES TO OAK ALTERNATIVES

### Why INCANTO NC?

The INCANTO NC products are completely soluble formulations containing just the active molecules that make oak powder application during fermentation interesting:

- Tannins for antioxidant protection, color stabilization and enhancement of the structure.
- Polysaccharides, that increase volume sensations, soften wine tannins, stabilize color and indirectly protect aromas from oxidation.
- Aromatic substances, derived from wood and toasting, that bring aromatic complexity to the final wine.

### Application of INCANTO NC:

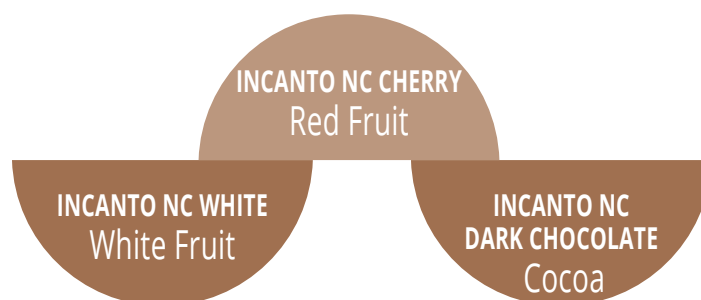
- increase aromatic complexity
- highlight fruit and floral notes
- prevent reduction during fermentation
- minimize herbaceous notes in underripe grapes
- improve color stabilization
- increase volume and structure


### Why use the INCANTO NC range?


INCANTO NC products provide the efficacy of oak powder while offering some advantages:

- precise dosages
- consistent quality
- no burnt or green wood notes
- no solids that can damage the mechanical parts of harvest machinery or render cleaning difficult
- no antimicrobial contamination
- ease of use for the winery staff
- zero loss of color by solids absorption
- low dosage

Since INCANTO NC products only contain the active molecules that can be extracted from wood, dosages are 10 times smaller than the usual oak powder ones. This makes the work of winery staff easier and reduces wastage.



 We used the INCANTO wood chips. The chips came in a very user-friendly polyethylene infusion bag, that fitted well into our tanks and protected our press liner from damage. We used them on a block that had slight green flavors and the chips disguised it very well. This is a very good product.

**Sjaak Nelson, Winemaker at Jordan Wine Estate - Stellenbosch** 

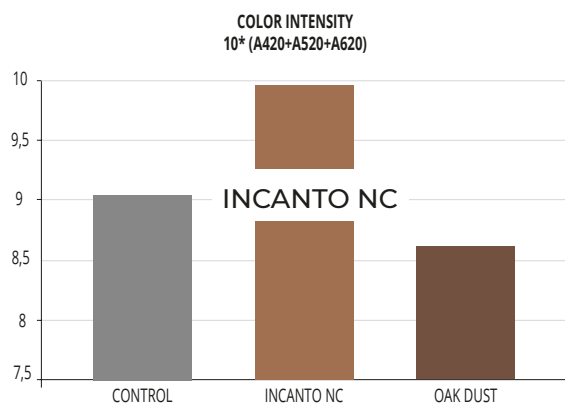
## INCANTO NC WHITE

- Inactivated yeast, oak tannin and condensed tannin extracted from exotic wood and gallic tannin.
- Mimics the effect of untoasted oak powder.
- Protects juice from oxidation and prevents the appearance of reductive odors. Additionally, it provides light floral and vanilla notes, increases fresh fruit aromas and enhances softness and volume.

**Application:** untoasted oak; increase fruit aroma; reduce green notes; increase volume and structure

**Dosage:** 5-30 g/hL for white must; 10-50 g/hL for rosé and red must

**Packaging:** 2.5 kg - 10 kg



INCANTO NC range during fermentation improves color intensity and stability.

## INCANTO NC CHERRY

- Inactivated yeast, oak tannin, and condensed tannin extracted from exotic wood.
- Mimics the effects of oak powder.
- Promotes color stabilization, prevents oxidation, enhances fresh red fruit notes and increases wine volume, structure and length.

**Application:** fruity and spicy aromas; color stability; antioxidant; complexity; increase volume and structure; freshen overripe fruit

**Dosage:** 5-15 g/hL for rosé must; 10-50 g/hL for red must

**Packaging:** 2.5 kg - 10 kg



We have been using INCANTO NC CHERRY for several years now and apart from adding structure, we appreciate the contribution to fruit purity. When used in larger scale wineries, there is a cost saving benefit too, with no disposal of product later, as with other oak alternatives.

**Chris Kelly, Winemaker - Escapades - Stellenbosch**



## INCANTO NC DARK CHOCOLATE

- Oak tannin and inactivated yeast.
- Mimics the effect of French oak, heavy-toast oak powder.
- Enhances toasted oak aromas and aromatic complexity, increases volume, structure and balance. Masks herbaceous notes from unripe grapes
- Improves color stability.

**Application:** heavy-toasted oak; reduce herbaceous notes; color stability; complexity; volume and structure

**Dosage:** 10-50 g/hL for red must

**Packaging:** 2.5 kg



I have been using the INCANTO NC range on all red wine fermentation tanks since 2009. Sometimes with oak chips and other times with tannin. INCANTO is, for me, a perfect balance between a tannin and an oak powder. I believe it contributes greatly to mouthfeel, colour intensity and stability.

**Alicia Rechner, Winemaker - Backsberg Family Wines - Franschoek**



## KNOW MORE ABOUT OAK AGEING

### WHAT DOES OAK BARREL AGEING DO TO MY WINE?

There are two main reactions that happen during oak ageing: the extraction of oak compounds and oxygen diffusion. During oak ageing, wine aroma complexity increases, color stability is enhanced, astringency is reduced, and overall structure becomes softer.

### WHY THERE IS SO MUCH VARIATION IN OAK AROMAS?

There are many causes of variation and many of them interact to form a wide array of potential aroma profiles.

- Source of the oak: oak species, geographic origin, growing conditions and age can strongly affect wood structure and composition.
- Staves position on a trunk has been shown to influence its aroma composition.
- Staves seasoning and drying: Kiln drying or air drying, time, humidity...
- Cooperage processes add a considerable layer of variability.

### WHAT IS THE EFFECT OF TOASTING?

Toasting oak during barrel processing modifies the structure and chemical properties of wood. Increasing temperature and length of toasting will:

- Reduce oak lactone content that contributes to "fresh oak" and coconut aromas.
- Increase "vanilla", "caramel-like" and "roasted coffee" aromas associated with vanillin, furfural, 4-methylfurfural and maltol. At heavy toast levels these compounds decrease and are replaced by "spicy" (eugenol, isoeugenol, 4-methylguaiacol) and "smoky" characters (4-methylguaiacol, guaiacol, 2-methylphenol).

### WHY USE BARREL ALTERNATIVES?

- Cost is the most common reason of using barrel alternatives. Using barrel alternatives reduces 'oak' investment (at least 10 times lower), cellar work, storage space and microbiological risks.
- Timing can be reduced. Contact time: 4 weeks for Enartis INCANTO Chips.
- Consistent and qualitative product for enological expectations and requirements.

### HOW TO FIND THE RIGHT OAK ALTERNATIVE?

Define the targeted wine profile, the time available for ageing and the budget. Enartis offers trial kits containing small bags of oak chips to soak in wine for 3 weeks to run bench trials to help find the right product or blend for you.

### WHAT ABOUT STORAGE AND REUSE OF OAK ALTERNATIVES?

Oak alternatives should be treated with care and stored in a clean, dry warehouse in its original packaging. Reuse is not recommended: the extraction and result will be different and risk microbial contamination.

## Oak Chip Trials

### A WIDE RANGE OF OAK ALTERNATIVES

The extraction of oak compounds (oak aromas, polyphenols, polysaccharides,...) as well as the sensory impact on wine depends on many variables including the physiochemical characteristics of wine (pH, alcohol, titratable acidity, volatile acidity and SO<sub>2</sub>), wine buffer capacity, storage temperature, contact time, etc.

When deciding which oak chips to use, we always recommend setting up trials. This way, winemakers can base their oak derivatives decision on accurate data and tasting.

#### Trial Set-Up:

- Use a 1.5 L wine bag or 750 ml bottle.
- Weigh the selected oak chips (dosages recommended for trials = 2-5 g/L).
- Add chips to bag or bottle.
- Write the date, wine lot, oak chips name and dosage on the label. Also prepare a control sample, without oak chips.
- Fill bag/bottle with wine. Be cautious of the oxygen input during filling and head space. We suggest an addition of 5 ppm SO<sub>2</sub> at filling to protect wine against oxidation.
- Taste after three weeks of soaking.

# MALOLACTIC FERMENTATION

Malolactic fermentation is often considered the simple process of converting malic acid into lactic acid by bacteria of the species *Oenococcus oeni*. In fact, using the right strain, malolactic fermentation represents the last opportunity to reduce herbaceous notes, enhance fruit aroma, increase aromatic complexity and improve the balance and structure of wine. Enartis offers a range of bacteria and nutrients suitable for ensuring successful fermentation even in the most difficult conditions.



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## ML BACTERIA

### How to choose ML bacteria strains

Each strain of bacteria performs best within specific environmental parameters. When selecting the appropriate ML bacteria strain, it is important to consider the relative stress conditions of the wine such as pH, SO<sub>2</sub> and alcohol content. ML bacteria can be selected for their effects on wine aroma and mouthfeel. Our bacteria range does not produce biogenic amines.

### EnartisML SILVER

- Freeze-dried form for direct addition after rehydration.
- Fast and complete malolactic fermentation even under difficult conditions such as high alcohol and high polyphenol content.
- Respects aromatic characteristics of wine and contributes to fruity and floral notes.

**Application:** sequential inoculation; co-inoculation; very difficult conditions; increase fruitiness

**Packaging:** package designed for 25 hL

## ML NUTRIENTS AND ACTIVATORS

### NUTRIFERM ML

- Nutrient specific for ML bacteria: amino acids, vitamins, polysaccharides, cellulose, and co-factors.
- Stimulates bacterial growth, ensures domination of inoculated strain over natural flora, improves cell division and reduces the length of malolactic fermentation.

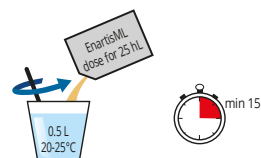
**Application:** nutrition for malolactic bacteria; prevent stuck/sluggish MLF; difficult conditions; increase MLF speed

**Dosage:** 20-30 g/hL

**Packaging:** 1 kg

## PROTOCOL FOR ML BACTERIA PREPARATION AND INOCULATION

### DIRECT ADDITION, 25 hL



Rehydrate 25 hL package of EnartisML bacteria in 500 mL of chlorine-free water at 20-25°C. Stir gently and wait 15 minutes.

## KNOW MORE ABOUT MALOLACTIC BACTERIA

### MALOLACTIC FERMENTATION BENEFITS

The main role of lactic acid bacteria (LAB) in wine is to conduct malolactic fermentation (MLF): the conversion of malic acid to lactic acid. Additionally, LAB enzymes improve wine microbial stability, aroma complexity, mouthfeel and color stabilization. They also reduce the total acidity of wine and bentonite and SO<sub>2</sub> additions due to their ability to break down proteins and degrade acetaldehyde.

### WHAT ARE THE PRINCIPAL FACTORS INFLUENCING THE DEVELOPMENT OF LACTIC ACID BACTERIA (LAB)?

At certain levels, factors such as pH, temperature, alcohol and SO<sub>2</sub> (free and total) can have a negative synergistic effect when combined, making the completion of MLF difficult. Additionally, vineyard sprays, initial malic acid content, yeast strain used for alcoholic fermentation and wine polyphenol content can be stress factors. Problems can arise when 3.8 > pH < 3.2, alcohol > 14.5%, malic acid < 1 g/L, wine temperature < 18°C or > 27°C, total SO<sub>2</sub> > 30 mg/L and/or free SO<sub>2</sub> > 10 mg/L.

### WHAT HAPPENS IF WINE HAS A LOW CONCENTRATION OF MALIC ACID?

Wines with a malic acid content below 1.0g/L have higher difficulties starting MLF because there is not enough "food" for the ML bacteria to grow and produce the necessary enzymes to degrade malic acid.

### WHAT ARE THE RISKS OF SPONTANEOUS MLF?

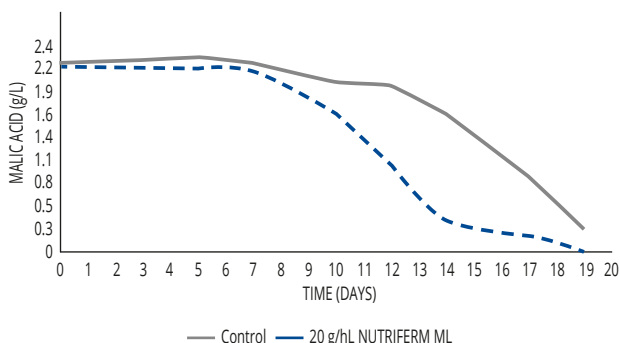
Uncontrolled, spontaneous MLF may increase the risk of spoilage organisms such *Brettanomyces* sp., as well as the production of undesirable compounds. Volatile acidity, excess of diacetyl, acrolein (bitter), and ropiness are the most common negative sensory characters expected in spontaneous MLF by wild LAB. Spoilage LAB also produce metabolites which are toxic to human health such as ethyl carbamate and biogenic amines (BA). Inoculation with selected *Oenococcus oeni* ensures a rapid onset of MLF and better control over the production of aromas and wine mouthfeel. Enartis bacteria are safe in avoiding BA production.

### WHAT ARE BIOGENIC AMINES?

BA are a group of compounds primarily formed by LAB via decarboxylation of amino acids, mostly during ageing. The most common found in wine are putrescine, cadaverine, tyramine and histamine. Known as a human health threat, BA causes headaches and allergy issues which are enhanced by the alcohol content in wine. Also, they produce irreversible damage to wine due to the total loss of aroma. Their formation can be prevented by inhibiting indigenous lactic acid bacteria and other spoilage microbes with **EnartisStab MICRO M** and then treat the wine with selected LAB.

### HOW TO MANAGE A SUCCESSFUL SEQUENTIAL FERMENTATION IN UNFAVORABLE BACTERIA CONDITIONS

In difficult conditions, it is recommended to add an activator developed to promote the growth of bacteria with necessary nutritional requirements to ensure the total completion of MLF. **NUTRIFERM ML** addition is advised to shorten the length of MLF. It is also useful in cases of stuck MLF as it promotes restart.



### DOES THE YEAST STRAIN USED FOR ALCOHOLIC FERMENTATION AFFECT MLF?

Yes. Some yeast strains can negatively impact lactic acid bacteria development by producing toxins and SO<sub>2</sub>. All Enartis bacteria have been validated for sequential fermentation and co-inoculation, and none are affected by Enartis yeast strains.

### WHEN TO PERFORM CO-INOCULATION

Co-inoculation is the best strategy to shorten MLF duration and obtain a microbiologically stable wine. It is strongly recommended when sequential MLF is compromised by high alcohol content or pH > 3.8 or cellar temperatures are low. The selected bacteria are added 24-48 hours after yeast inoculation or SO<sub>2</sub> addition, taking advantage of alcoholic fermentation conditions: better temperature and nutrition, acclimatizing slowly with the increase of ethanol content. Wines subjected to co-inoculation are fruitier and have a lower diacetyl content, as diacetyl is suppressed by the sugar content during this phase.

### HOW TO MONITOR MLF

The most common way to monitor MLF is by tracking malic acid degradation. MLF is considered complete when malic acid is below 200 mg/L.

### ABOUT THE PRODUCTION OF DIACETYL

Diacetyl is a compound characterized by buttery notes produced by yeast, but mainly it is LAB during MLF that modulate its final concentration. LAB are responsible for its biosynthesis through citric acid metabolism. Selected bacteria along with the entire winemaking process impacts the production of diacetyl. A slower MLF speed (with low inoculation rate and/or low temperature) and slightly oxidative environment will increase diacetyl production, while yeast lees contact will break down diacetyl. Furthermore, SO<sub>2</sub> can bind diacetyl, thus reducing its content in wine, and co-inoculation practices also can lead to less diacetyl content due to the reductive conditions.

## RESTART AND/OR COMPLETE A STUCK ML FERMENTATION - 100 hL

The successful restart of a stuck ML fermentation depends upon three critical factors:

1. Diagnosis of the fermentation arrest causes.
2. Appropriate wine treatment.
3. Proper acclimation of ML bacteria.

### 1. DIAGNOSIS

Use an in-house or outside laboratory to determine the cause(s) of the problem(s) and the degree of fermentation completion.

### 2. TREAT STUCK WINE BEFORE RESTART - 24 HOURS PRIOR TO ML BACTERIA PREPARATION

- Adjust pH and alcohol.
- Remove spoilage microbes with EnartisStab MICRO M (5 g/hL).
- Absorb toxins with 20 g/hL NUTRIFERM CONTROL.
- Rack off lees 24 hours after treatment.

### 3. PREPARE AND ACCLIMATE ML BACTERIA

- Rehydrate 4x25 hL pack of EnartisML SILVER in chlorine-free water at 20-25°C and wait 15 minutes.
- Prepare 50 L of wine + 50 L water + 1 kg NUTRIFERM ML and ML bacteria.
- At ½ of malic acid depletion, add 200 L of wine to the bacteria culture + 1 kg NUTRIFERM ML.
- At ½ malic acid depletion, add the ML bacteria culture to the remaining wine volume.

# FINING AGENTS

Fining agents can be used for many purposes in winemaking including clarification, filterability improvement, prevention of haze and sediment formation, organoleptic profile and wine color improvement, and removal of undesirable elements from wine.



NEW

- 42. CLARIL AF
- 42. COMBISTAB AF
- 43. CLARIL SMK

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## PLANT-BASED PROTEINS

Enartis has developed a line of fining agents free from animal proteins, suitable for vegetarian and vegan wines.

### PLANTIS AF

- Allergen-free, pure plant protein.
- Removes catechins and short chain-length polyphenols responsible for oxidation.
- Helps preserve young color, increases aromatic cleanliness, reduces bitterness and increases wine longevity.

**Application:** allergen-free; vegan; flotation; prevent and treat oxidation and pinking; reduce bitterness

**Dosage:** 10-30 g/hL

**Packaging:** 20 kg



*PLANTIS AF exceeded my expectations! It had an amazing effect on our wine's overall appearance and palate. The colour of the white wine improved and it has an amazing fining effect on impurities. I will definitely recommend this product to other winemakers in the industry. At Boland Cellar we are more than happy with Enartis service and business ethics - it is excellent.* **Monique de Villiers, Winemaker at Boland Kelder - Paarl**

### PLANTIS AF-L

- Pure pea protein in liquid solution.
- Improves juice and wine clarity whilst producing small volume of lees.
- Increases wine resistance to oxidation by removing iron and catechins.
- The liquid form makes it suitable for easy application and for addition with dosing pumps.

**Application:** vegan; flotation; prevent and treat oxidation and pinking; reduce bitterness

**Dosage:** 20-80 mL/hL

**Packaging:** 20 kg



*PLANTIS AF-L is my flotation product of choice due to its suitability for the production of vegan and organic wines. The liquid form makes dosing very convenient. It saves time and eliminates mistakes. The use of PLANTIS AF-L resulted in clean and vibrant white wines.* **Maria Gant, Winemaker at Bosman Family Vineyards-Schoon Cellar - Wellington**



*We wanted to say thanks for the great service and friendly staff. We are very happy with all your products from yeast to stabilization. You have a great team indeed! Looking forward to many years of business to come!* **Nicholas Husselman, Winemaker at Koelenhof - Stellenbosch**

### PLANTIS AF-Q

- Allergen-free preparation made of pea protein and activated chitosan.
- Activated chitosan and hydrolyzed vegetable protein work synergistically to increase flocculant efficacy in improving clarity.
- Assures clarification while forming small, compact lees, especially when used during flotation.
- Improves juice and wine resistance to oxidation by removing pro-oxidant metals and low molecular weight polyphenols.
- Helps preserve young color, increases aromatic cleanliness and freshness, reduces bitterness and astringency, and increases wine longevity.

**Application:** allergen-free; vegan; flotation; prevent and treat oxidation and pinking; reduce bitterness and astringency

**Dosage:** 5-30 g/hL

**Packaging:** 1 kg - 10 kg



*After an experiment in the 2023 harvest, we decided to try PLANTIS AF-Q on commercial level with exceptional results. The product is soluble, and the combination of vegetable protein and chitosan definitely increases flocculant capacity. There was an improvement in juice clarity and compaction, which lead to better juice recovery and easier racking. The product saves us time in the cellar as we can add it almost immediately. PLANTIS AF-Q allowed us to produce a juice with better colour and recovery. In a cellar where consistent quality is key, we strive to use products that maintain or improve our current quality standards.* **Kobus Gerber (Winemaker) and Jenna Higgins (Assistant Winemaker) Durbanville Hills Winery - Durbanville**

## CLARIL ZR

- Vegan fining agent made from plant protein, chitosan and bentonite.
- Designed for the clarification of red wines meant to be tartrate stabilized with colloid addition of ZENITH.
- Removes unstable color compounds, improves wine clarification and filterability and reduces sulfur off-flavors.

**Application:** allergen-free; vegan; clarification of red wine intended to be tartrate stabilized with ZENITH; elimination of unstable color

**Dosage:** 20-40 g/hL

**Packaging:** 2.5 kg - 10 kg

## CLARIL ZW

- Vegan fining agent made from plant protein, chitosan and sodium activated bentonite.
- Designed for the clarification of white and rosé wines that are meant to be tartrate stabilized with colloid addition (ZENITH and CMC).
- Effective in improving protein stability and eliminating unstable colloids that can affect wine clarification and filterability.

**Application:** allergen-free; vegan; clarification of white and rosé wine intended to be tartrate stabilized with ZENITH; protein and colloid stability

**Dosage:** 20-80 g/hL

**Packaging:** 2.5 kg - 10 kg

NEW

## COMBISTAB AF

- PVPP and plant protein.
- Prevents and treats oxidation and pinking.
- Reduces bitterness.

**Application:** allergen-free; vegan; prevent and treat oxidation and pinking; reduce bitterness

**Dosage:** 10-50 g/hL

**Packaging:** 1 kg - 10 kg

NEW

## CLARIL AF

- Bentonite, PVPP and plant protein.
- Prevents and treats oxidation, prevents pinking and reduces bitterness.
- Improves protein stability and clarification.

**Application:** allergen-free; vegan; prevent and treat oxidation and pinking; remove bitterness; improves protein stability

**Dosage:** 30-150 g/hL

**Packaging:** 1 kg - 10 kg

## ANIMAL FINING AGENTS

### CLARIL SP

- Bentonite, PVPP and potassium caseinate.
- Recommended for the prevention and correction of the oxidative phenomena associated with phenolic components of must and wine.
- Improves clarity and reduces bitterness.

**Application:** clarification; prevent and treat oxidation and pinking; prolong wine shelf life

**Dosage:** 20-150 g/hL in juice; 20-80 g/hL in wine

**Packaging:** 10 kg

### NEOCLAR AF

- Bentonite, gelatin and activated carbon.
- Ensures fast clarification with minimal volume of lees.
- Improves organoleptic cleanliness of wine, reduces herbaceous characters and contributes to protein stability.

**Application:** clarification; pressed juice; elimination of off-flavors and herbaceous note

**Dosage:** 100-150 g/hL in juice; 40-100 g/hL in wine

**Packaging:** 25 kg



NEOCLAR AF has had an incredible impact on the quality of my press juices. It gives me the ability to have a higher fraction of A grade juices and therefore maximize profits on our white wines. **Albertus Louw, Cellar Master at Perdeberg Group - Paarl**

## INORGANIC FINING AGENTS

### PLUXCOMPACT

- Granulated calcium bentonite sodium activated.
- Generates compact lees.

**Application:** protein stabilization; removal of unstable color; clarification; prevent "light-struck" defect

**Dosage:** 10-200 g/hL

**Packaging:** 20 kg

### SIL FLOC

- Pure silicon dioxide in solution.
- Enhances clarification properties of protein fining agents.

**Application:** clarification

**Dosage:** 25-100 mL/hL

**Packaging:** 25 kg - 1000 kg



We used SIL FLOC, a liquid silica product, with great success on our juice for better clarification and no filtration problems. **Alecia Boshoff, Cellar Master at Piekenierskloof Wines - Citrusdal**

## CORRECTIVE FINING AGENTS

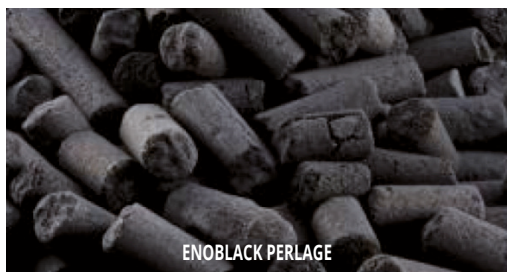
### ENOBLOCK PERLAGE

- Vegetal activated carbon in pellet form (dust-free).
- High decolorizing capacity.
- Removes ochratoxin A (OTA).

**Application:** discoloration of juices and wines; cure of oxidation; color adjustment in rosé wine

**Dosage:** 5-120 g/hL

**Packaging:** 1 kg - 15 kg



ENOBLOCK PERLAGE

NEW

### CLARIL SMK

- Activated carbon, pea protein and chitosan.
- Removes aroma defects in musts and wines: volatile phenols, smoke taint, geosmin, molds and other defects of microbiological origin.
- Restores aromatic cleanliness, fruity character and freshness.
- Low impact on color and phenolic content, even at high addition rates.

**Application:** aromatic cleanliness in musts and wines

**Dosage:** 25-110 g/hL

**Packaging:** 1 kg - 10 kg

### FENOL FREE

- Enological activated carbon in powder form.
- Deodorizing, high affinity with volatile phenols related to *Brettanomyces* and smoke taint.
- Negligible effect on wine color.

**Application:** treatment for wines contaminated with *Brettanomyces* or smoke taint; deodorizing

**Dosage:** 20-40 g/hL

**Packaging:** 10 kg

### REVELAROM

- Granulated fining mixture containing copper.
- Correction and prevention of sulfides or reductive characters.
- Eliminates off-aroma and flavors produced by mercaptanes and  $H_2S$ .
- Removes chelates formed between copper and sulfur compounds.
- Enhances the fruity aromatic component masked by reductive notes.

**Application:** prevent and treat reductive characters

**Dosage:** 5-20 g/hL

**Packaging:** 1 kg

### CLARIL HM

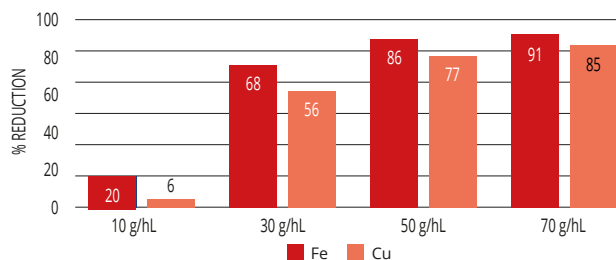
- Co-polymer of PVI/PVP (polyvinylimidazole/polyvinylpyrrolidone) and pre-activated chitosan.
- Adsorbs heavy metals (Cu, Fe, Al) and removes hydroxycinnamic acids and low molecular weight catechins.
- Prevents oxidation, browning and oxidation of aromas.

**Application:** prolong wine shelf life; prevent oxidation

**Dosage:** 30-50 g/hL

**Packaging:** 2.5 kg - 10 kg

CLARIL HM EFFECTIVENESS IN REMOVING COPPER AND IRON



CLARIL HM effectively reduces wine copper and iron content, preventing oxidation and haze. The combination of PVI/PVP and chitosan helps to increase its action on iron removal.

## KNOW MORE ABOUT FINING

### WHY FINING?

Fining agents can be used for many purposes in winemaking including clarification, filterability improvement, prevention of haze and sediment formation, organoleptic profile and wine color improvement, and removal of undesirable elements from wine.

### HOW DOES FINING WORK?

Each fining agent has specific properties and reacts with various wine molecules depending on its origin, density of charge, molecular weight and chemical properties. Fining is based on two main principles:

- Flocculation: molecular interactions based on charge, chemical bonds, absorption or adsorption of compounds and formation of flocculates.
- Sedimentation: since the flocculates formed are not soluble and heavier than wine/ juice, they settle.

### WHAT ARE THE MAIN FACTORS THAT INFLUENCE FINING EFFECTIVENESS?

Product preparation and addition, temperature, pH, wine redox potential and previous fining treatments are factors that can influence the effectiveness of fining.

### HOW TO CHOOSE THE RIGHT FINING AGENT

Set up a bench trial with different fining agents and dosages.

EFFECT	TRADITIONAL FINING AGENT	PLANT-BASED FINING AGENT
TREAT OXIDIZED COLOR	CASEINATE - PVPP - CARBON	PLANTIS AF-Q - PLANTIS AF - COMBISTAB AF
CLARIFICATION	GELATIN - EGG ALBUMEN	CLARIL ZR - CLARIL ZW - CLARIL AF - PLANTIS AF-Q
REDUCE ASTRINGENCY	GELATIN - EGG ALBUMEN	CLARIL ZR - PLANTIS AF-Q
REDUCE BITTERNESS	ISINGLASS - PVPP - CASEINATE	CLARIL AF - COMBISTAB AF
TREAT OFF-FLAVORS	CASEINATE - CARBON	CLARIL ZR - CLARIL SMK

### PLANTIS: A NEW RANGE FOR ALLERGEN-FREE AND PLANT-BASED WINES

#### CAN PLANT-BASED FINING AGENTS BE AS EFFECTIVE AS ANIMAL PROTEIN-BASED FINING AGENTS?

Enartis has developed a range of plant-based adjuvants, based on pea and potato proteins, which allow the replacement of animal proteins such as gelatin, casein, and egg albumin. They achieve comparable results while adhering to labeling standards and consumer demands that are becoming stricter around the world.

#### The benefits of using plant based fining agents:

- Fast clarification, reduce the suspended solids, and eliminate unwanted compounds that can alter the quality of the wine.
- Reduce oxidized or easily oxidizable polyphenols that cause darkening of color, dull appearance, and bitter flavors.
- Efficiency in reducing oxidized color (OD 420nm), primarily with pea protein-based products (**PLANTIS AF**, **PLANTIS AF-Q**).
- Decrease the concentration of heavy metals involved in oxidation reactions. **PLANTIS AF-Q** is especially effective in removing iron.
- Improve sensory quality through cleanliness and aromatic freshness, plus greater preservation of youthful and brilliant colors with less oxidized tones.

#### HOW CAN UNSTABLE COLOR BE REMOVED WITHOUT AFFECTING THE COLOR INTENSITY?

To ensure color stability in red and rosé wines with high color intensity, the unstable color can be removed with fining. **CLARIL ZR** is the best plant-based fining agent to remove unstable colloids and color compounds, preserving the color intensity of wine.

#### Superior flotation performance with the PLANTIS AF range:

After standard pectinase enzyme treatment (with EnartisZym EZFILTER or EnartisZym RS), use **PLANTIS AF-Q** to achieve successful flotation. The synergistic action between the hydrolyzed plant protein and chitosan improves efficacy of the formation of floccules by increasing charge density. This aids in forming a denser and more compact cap, with excellent clarification of juice.

## STABILIZING AGENTS

In today's wine market, it is crucial for wines to be visually appealing to consumers: any haze or precipitate is unacceptable and can damage brand reputation. The appropriate use of stabilizing agents ensures the production of wines that maintain their sensory characteristics up to the time of their consumption.



46. ZENITH WHITE NF  
48. MAXIGUM F  
50. EnartisStab MICRO ZERO

**enartis**

Inspiring innovation.

## TARTARIC STABILIZATION ZENITH RANGE

### ZENITH UNO

- Potassium polyaspartate solution.
- Strongly effective for tartrate stabilization in white and rosé wines.
- Completely filterable.
- Long-lasting stabilizing effect.
- Environment sustainable, practical, easy-to-use and respectful of wine quality.

**Application:** tartrate stability

**Dosage:** 100 mL/hL

**Packaging:** 5 kg - 20 kg - 1000 kg

### ZENITH COLOR

- Potassium polyaspartate and Arabic Gum from Acacia Verek solution.
- Strongly effective for tartrate and color stabilization in red and rosé wines with minimal impact on the filterability index of wine.
- Long-lasting stabilizing effect.
- Environmentally sustainable, practical, easy-to-use and respectful of wine quality.
- Increase roundness, wine length and volume.

**Application:** tartrate stability; color stability

**Dosage:** 200 mL/hL

**Packaging:** 5 kg - 20 kg - 1000 kg



ZENITH UNO / ZENITH COLOR has made life much easier for us at Lutzville Vineyards. We have been using ZENITH UNO and COLOR on different wine styles for several years. The results are excellent when it comes to cold stability and colour stability. It is also very cost effective to use. I can definitely recommend these excellent products. ZENITH is bulletproof! As a winemaker it gives great peace of mind and helps to prepare wines in a much shorter lead time to deliver a stable final product! **Christo Basson, Winemaker at Lutzville Vineyards - Lutzville**



We have been using ZENITH COLOR for a few years now and have done away with the traditional cold stabilization on the red wines. It is cost and time effective. **Jean du Plessis, Winemaker at Roodezandt Cellar - Robertson**



ZENITH COLOR fits in with our vision of sustainability at Perdeberg. It allows me quick and cost effective stabilization of my red wines without compromising on quality. It also gives us quicker route to market. **Albertus Louw, Cellar Master at Perdeberg Group - Paarl**

NEW

### ZENITH WHITE NF

- Carboxymethyl cellulose, potassium polyaspartate and gum Arabic solution.
- Strongly effective for potassium bitartrate stabilization in white and rosé wines.
- Completely filterable.
- Long-lasting stabilizing effect.
- Environmentally sustainable, practical, easy-to-use and respectful of wine quality.
- Excellent solution for extremely unstable wines that are bottled soon after harvest.

**Application:** tartrate stability young wines with high instability

**Dosage:** 150 mL/hL

**Packaging:** 20 kg



I have used ZENITH as one of my preferred tartrate stabilising additives on all my white and rose wines since 2019. Using ZENITH in the cellar makes my life easy, just add the required dosage to the tank and agitate. It is a very cost-effective product saving me time and money, with the benefit of no blocking of filters during final filtration (0.45um) at bottling. What I love about ZENITH is that I can use it on very young wines, early in the vintage for early market release, due to its higher value of tartrate loading. Where I usually had to tartrate stabilise wine with costly physical stabilisation treatments such as cold stabilisation and/or electrodialysis I can now use ZENITH. It is a great product to use and I will recommend it to any winemaker bottling white and/or rose wines. **Anton Swarts, Cape Wine Master at Spier Wine Farm, Stellenbosch - South Africa**

## KNOW MORE ABOUT ZENITH

### WHAT IS POTASSIUM POLYSPARTATE?

Potassium polyaspartate (KPA) is a polyamino acid produced from L-aspartic acid, an amino acid present in grapes. Enartis has used its expertise in stabilization products to create a revolutionary range of products that harnesses the synergy and power of potassium polyaspartate and colloids for both tartaric and color stabilization.

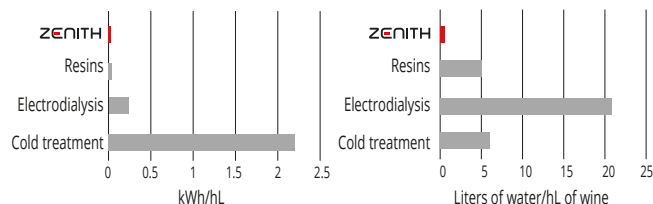
### WHY USE ZENITH?

The revolution in colloid stabilization for all wines and all levels of instability! Suitable for all wineries currently using cold stabilization for their wines that want to reduce production costs and increase their sustainability standards, while simultaneously achieving ultimate stability. Enartis, the market leader in stabilization products, provides a cutting-edge, cost-effective and eco-friendly product range allowing you to switch off your cooling system and dramatically reduce production costs and gas emissions, while maintaining the organoleptic aspects of your wine and ensuring the best color and tartaric stabilization over time and under temperature stress.

### ZENITH IS

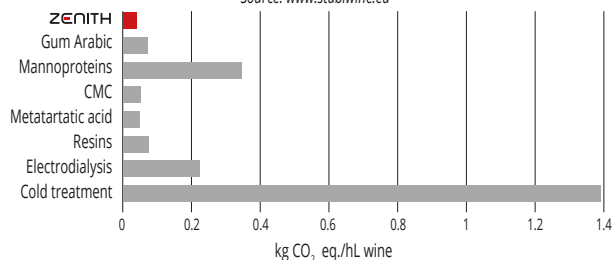
- **INNOVATION**  
An ambitious challenge and six years of passionate research in collaboration with public and private European institutions, universities and major players in the winemaking industry to develop a cutting-edge product.
- **PERFORMANCE**  
The most effective tartaric and color stabilizer overtime, under all conditions and temperature stress. Maximum filterability up to 0.45µm.
- **QUALITY**  
Respects organoleptic aspects of wine.
- **COST-EFFECTIVENESS**  
Easy-to-use, eliminates wine loss during stabilization and dramatically cuts energy and water consumption while reducing labor and ancillary costs. Up to 80% saving in energy and water consumption.
- **SUSTAINABILITY**  
An eco-friendly product that guarantees 90% reduction of CO<sub>2</sub> emissions for greater environmental sustainability. ZENITH loves the planet!

#### UP TO 80% SAVINGS IN ENERGY AND WATER CONSUMPTION

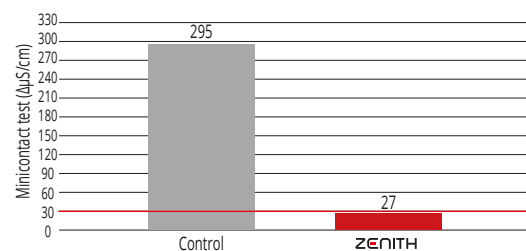


#### 90% REDUCTION ON CO<sub>2</sub> EMISSIONS

Source: [www.stabiwine.eu](http://www.stabiwine.eu)



#### THE BEST STABILIZATION PERFORMANCE UP TO 300 ΔpS OVER TIME AND UNDER TEMPERATURE STRESS



Millions of hL of wine stabilized with ZENITH

Thousands of tons of CO<sub>2</sub> not emitted into the atmosphere

Millions of liters of water saved

## CRISTALIZATION AIDS

### ENOCRISTAL Ca

- Micronized calcium tartrate.
- Helps formation of calcium tartrate crystal, promoting a high quality calcium stabilization process.

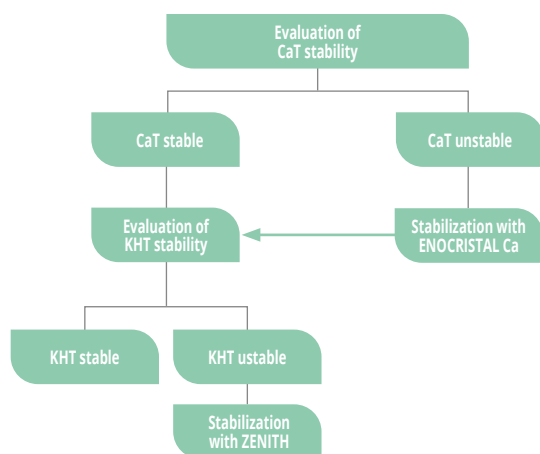
**Applications:** wine calcium tartrate stabilization

**Dosage:** 50 g/hL

**Packaging:** 5 kg - 25 kg

### CALCIUM TARTRATE STABILITY

The precipitation of calcium tartrate is an increasingly frequent phenomenon due to the increase of  $\text{Ca}^{2+}$  in must and the rise in pH due to climate change. Enartis' has developed a reliable method to predict the instability level of calcium tartrate and a strategy for its proper management. **ENOCRISTAL Ca** speeds the formation of calcium tartrate crystals, promoting their precipitation and reducing the final calcium concentration in wine. It requires 7-10 days of contact time without the need to chill the tank, saving energy and decreasing costs for wineries.



### ENOCRISTAL SUPERATTIVO

- Blend of neutral and acidic potassium tartrates and filtering aids.
- Rapid crystallizer for cold stabilization of tartrates.
- Accelerates potassium bitartrate crystals formation and precipitation in wines during cold treatment, without affecting wine pH.

**Application:** accelerate and improve cold stabilization

**Dosage:** 30-40 g/hL

**Packaging:** 15 kg

## GUM ARABIC

### CITROGUM

- Solution of gum Arabic extracted from Acacia Seyal with low calcium content and high hydrolysis.
- Prevents precipitation of colloids, pigments and tartrates.
- Improves wine balance and organoleptic features.
- Enhances aroma, reduces bitterness and astringency perception and increases softness and body.
- The most filterable gum on the market: No filter membrane clogging effect.

**Application:** tartrate stabilization; reduce astringency; soften mouthfeel

**Dosage:** 50-200 mL/hL

**Packaging:** 10 kg - 20 kg - 1000 kg

### NEW MAXIGUM F

- Gum Arabic solution obtained from Acacia Verek.
- Highly effective in preventing color compound precipitation in red and rosé wines ready for bottling.
- The gum Arabic undergoes a special filtration treatment which makes it microfilterable.

**Application:** color stability; soften mouthfeel; reduce astringency perception

**Dosage:** 50-100 g/hL

**Packaging:** 20 kg

	GUM ARABIC SEYAL	GUM ARABIC VEREK
	CITROGUM	MAXIGUM F
Tartaric Stability	●●	0
Color Stability	0	●●●●
Filterability	●●●●	●●●
Sensory Effect	●●● + Volume	●●● + Structure

## OTHER TARTRATE STABILIZING AGENTS

### AMT PLUS QUALITY

- Pure metatartaric acid produced by Enartis from food grade L-tartaric acid.
- Prevents the growth of potassium bitartrate and calcium tartrate crystals, making the wine stable against tartrate precipitation.
- Its high esterification rate (from 38 to 41) allows a long-lasting protecting effect and reduces cold stabilization processes when refrigeration capacity is not available or not cost effective.

**Application:** tartrate stabilization

**Dosage:** 10 g/hL

**Packaging:** 1 kg

### EnartisStab CELLOGUM LV20

- Solution of carboxymethyl cellulose (CMC) with low viscosity and high concentration.
- Stabilizes against tartrate precipitation long-term. Inhibits the formation, growth and precipitation of potassium bitartrate crystals.
- Low impact on wine filterability.
- Alternative to the use of physical stabilization treatments such as cold stabilization and electro dialysis (less energy costs and processing times).

**Application:** tartrate stabilization; white, rosé and sparkling wines

**Dosage:** 25-100 mL/hL

**Packaging:** 20 kg

## SHELF LIFE IMPROVEMENT

Enartis has developed a program dedicated to the improvement of wine shelf life that helps to prevent premature ageing when wine is stored for a prolonged period of time before or after bottling.

### What is premature ageing?

Mainly caused by oxidation, premature ageing in wine, is characterized by browning, pinking, loss of varietal and fresh aromas and loss of complexity, balance, identity and terroir.

### What is pinking?

Pinking is when white or rosé wines turn pink after bottling. Pinking, caused by phenolic instability, may occur in conjunction with rapid exposure to air during bottling. Certain varieties, and especially wines made under reductive winemaking techniques, are prone to these alterations, and in most cases these changes are not reversible.

### What is redox potential?

Redox reactions involve the transfer of electrons from a reductant to an oxidant. Redox potential refers to the tendency to gain or yield electrons of a specific atom, molecule or solution. Wine redox potential is impacted by its composition (phenolic compounds, metals compounds, ethanol, pH...), its "life story," the presence of microorganisms and lees ageing. During ageing, the redox potential of wine tends to increase, which facilitates and increases the risk of oxidation. Stabilizing redox potential is an essential key to 'slow down' oxidation reactions and preserve young, vibrant, fresh and stable wine over time.

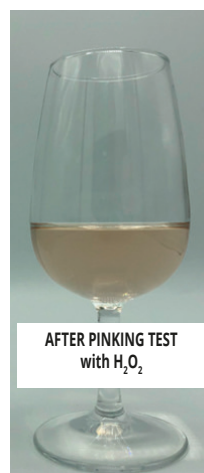
### CITROSTAB rH

- Citric acid, ascorbic acid, potassium metabisulfite and gallic tannins.
- Balanced formulation to stabilize wine redox potential and prevent post-bottling oxidation reactions.
- Protects bottled wine from oxidation alteration: pinking, and atypical ageing.

**Application:** bottling; prevent oxidation; prevent pinking; stabilize redox potential; wine shelf life improvement

**Dosage:** 10-50 g/hL

**Packaging:** 1 kg



50 g/hL CITROSTAB rH prevents the appearance of pinking even in hyper-oxidative conditions.

## MICROBIAL STABILIZATION

### EnartisStab MICRO M

- Preparation of pre-activated chitosan from *Aspergillus niger* and purified yeast hulls.
- Allergen-free, vegan alternative to lysozyme and  $\text{SO}_2$  for antimicrobial properties.
- Designed for treatment of grapes, juice or must.
- Interacts with a wide spectrum of microorganisms, reduces their activity and growth and precipitates them.
- Reduces sulfide defects, volatile phenols, VA and off-flavor production.
- Improves clarification and filterability.

**Application:** reduce unwanted microorganisms; must and cloudy wines

**Dosage:** 5-40 g/hL

**Packaging:** 1 kg

NEW

### EnartisStab MICRO ZERO

- Preparation of fumaric acid, chitosan and mixture of gallic, ellagic and condensed tannins.
- Effectively controls malolactic fermentation, preventing the growth of lactic bacteria and undesirable yeasts very commonly found during wine preservation.
- Provides antioxidant protection, reducing  $\text{SO}_2$  addition post-fermentation.

**Application:** inhibition and prevention of MLF; control of undesirable microorganisms; antioxidant protection

**Dosage:** 20-60 g/hL

**Packaging:** 2,5 kg - 10 kg

### ANTIFLOR

- Allyl isothiocyanate (mustard essence), supported by food-grade paraffin.
- Prevents the growth of "film" forming yeast on the surface of not fully topped tanks and barrels.

**Application:** prevent surface "film" yeast spoilage

**Packaging:** 1 box containing 45 tablets for tanks larger than 50 hL

### SORBOSOL K

- Potassium sorbate, potassium metabisulfite and L-ascorbic acid.
- Prevents oxidation and controls the growth of yeast that may cause the fermentation of wine containing residual sugar.

**Application:** antimicrobial protection; antioxidant protection prevents the risk of refermentation; pre-bottling; bulk wine storage

**Dosage:** 20-40 g/hL

**Packaging:** 1 kg



Starting from a no- $\text{SO}_2$  trial, using EnartisStab MICRO M has now become a part of my winemaking protocol on all of my red wines. It not only helps me to control spoilage organisms proactively, but also helps to reduce my  $\text{SO}_2$  addition with a better protection than  $\text{SO}_2$  on its own. **Matthieu Finot, Winemaker at King Family Vineyards - Virginia, USA**



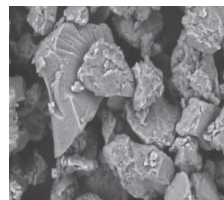
#### WHAT IS CHITOSAN?

Produced from the partial de-acetylation of Chitin (from *Aspergillus niger*), chitosan is a cationic polysaccharide that interacts with a wide spectrum of microorganisms, alters their cell wall permeability, inhibits cell growth and leads to cell death. The antimicrobial activity of chitosan is attributed to its positive charges ( $\text{NH}_3^+$  groups) that interfere with the negatively-charged residues of macromolecules on the microorganism's cell wall surface.

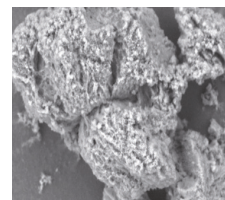
#### WHY IS ENARTIS' CHITOSAN MORE EFFICIENT?

It's pre-activated. Enartis developed a pre-activation process which increases the molecular charge, solubility and contact surface of chitosan. Pre-activated chitosan is very effective in eliminating potentially harmful microorganisms such as *Brettanomyces*, *Oenococcus*, *Pediococcus*, *Acetobacter*, *Lactobacillus*, *Zygosaccharomyces*, *Schizosaccharomyces* and some other non-*Saccharomyces* yeast. Pre-activated chitosan-based products, EnartisStab MICRO M reacts faster and at lower concentrations than standard chitosan available on the market.

These products can thus prevent the spoilage of contaminated wines, and have side activities which improve clarity and filterability, and remove some of the unwanted aromas caused by microbial activity.



Standard chitosan



Enartis activated chitosan

## APPLICATION OF EnartisStab MICRO M

### WIDE SPECTRUM ANTIMICROBIAL AT ANY TIME

EnartisStab MICRO M is used:

- To control a wide spectrum of microbes: *Acetobacter*, *Lactobacillus*, *Pediococcus*, *Oenococcus*, *Brettanomyces*, *Zygosaccharomyces* and some other non-*Saccharomyces* yeast (Figure 1).
- As a treatment to remove/reduce high populations of microbes.  
Dosage: 10-20 g/hL followed by racking
- As a preventive measure to eliminate small populations before they become spoilage.  
Dosage: 5 g/hL
- As an alternative to  $SO_2$  for microbial control.

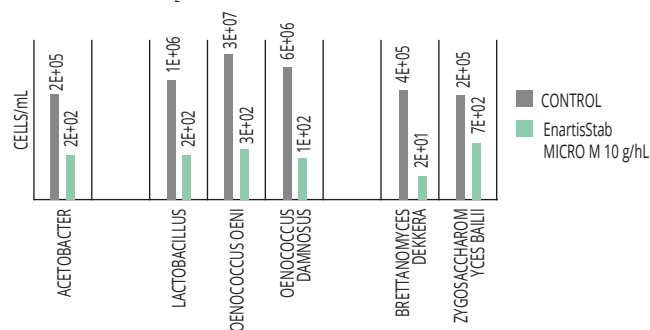


Figure 1: EnartisStab MICRO M can reduce populations of the main spoilage microorganisms present in wines.

### PREVENT VA PRODUCTION DURING COLD SOAK AND GRAPE TRANSPORT

EnartisStab MICRO M on grapes, during crushing, in the juice pan, or in must reduces wild non-*Saccharomyces* yeast and bacteria populations, thus limiting VA production during the first stages of the winemaking process (Figure 2). Dosage: 20 g/hL

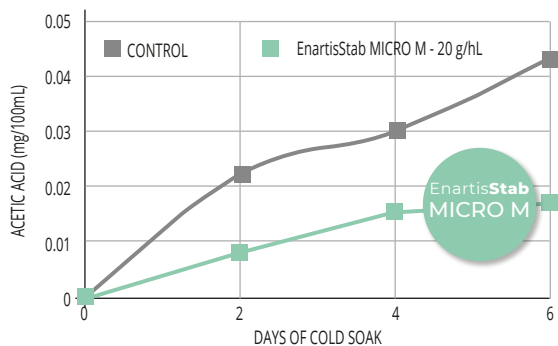


Figure 2: The addition of EnartisStab MICRO M on grapes controls VA production during cold soak.

### REDUCE VOLATILE PHENOLS

After fining with EnartisStab MICRO M, wines appear cleaner, fresher and often fruitier. EnartisStab MICRO M can reduce volatile phenols (Figure 3), treat "reduction" issues and remove other off-flavors.

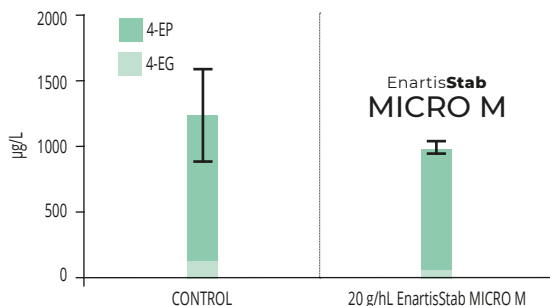


Figure 3: EnartisStab MICRO M can reduce volatile phenols (4-EP/4-EG) concentration in wine. Results from 15 wines.

### CONTROL MLF

#### AN ALLERGEN-FREE ALTERNATIVE

EnartisStab MICRO M is an allergen-free and vegan-friendly fining agents that can prevent, delay, or stop MLF. They can control *Oenococcus Oeni* development in any condition. These bioregulators' antimicrobial activity is not influenced by wine pH, unlike sulfur dioxide (Figure 4).

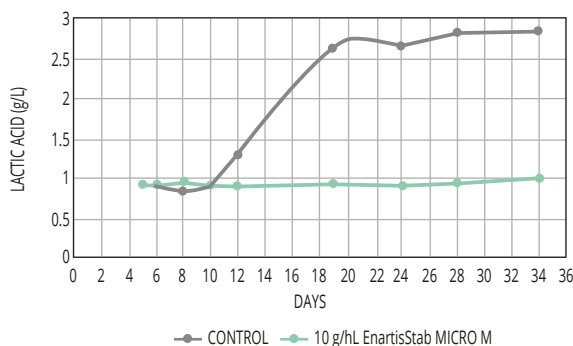


Figure 4: Difference of microbiological coverage between low  $SO_2$  protection versus the addition of 10 g/hL EnartisStab MICRO M in a wine with a high pH (3.9). Treatment of wine with  $10^{12}$  CFU/mL of selected highly resistant bacteria adapted to the medium.

### LIMIT STUCK FERMENTATIONS

#### PROMOTE CLEAN AND COMPLETE FERMENTATIONS

EnartisStab MICRO M:

- Improves fermentation kinetics and ensures completion by removing spoilage microbes that inhibit yeast (Figure 5). Dosage: 10 g/hL
- Improves the onset of native fermentations by reducing microbial competition. Dosage: 5 g/hL
- Does not impact fermentation kinetics of *Saccharomyces cerevisiae*

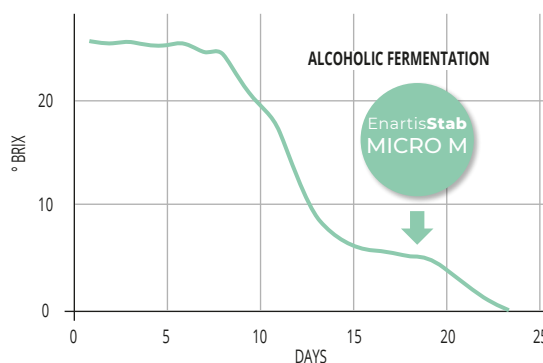
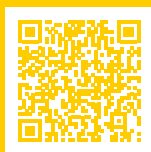


Figure 5: The addition of EnartisStab MICRO M to a sluggish fermentation helps complete fermentation.

## SULFITING AGENTS

Enartis is proud to offer the highest purity potassium metabisulfite on the market: WINY. Potassium metabisulfite (KMBS) is one of the most widely used additives in winemaking. When used in winemaking, WINY can scavenge oxygen radicals responsible for oxidation, bind with oxidation byproducts such as acetaldehyde, inhibit oxidasic enzymes thus preventing browning, and reduce spoilage by inhibiting the growth of many microorganisms detrimental to wine.



**enartis**

Inspiring innovation.

## AST

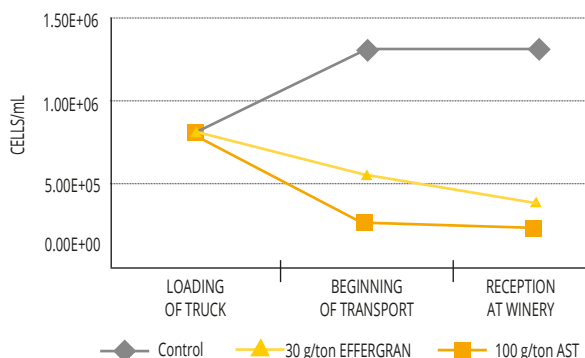
- Potassium metabisulfite, L-ascorbic acid and gallic tannin.
- Strong antioxidant and antimicrobial actions. When used on grapes, AST acts as an antibacterial and antioxidant.

**Application:** anti-oxidant protection of grapes and juices; aromatic grapes; must for base wine for sparkling wines; prevention of atypical ageing

**Dosage:** 100-200 g/ton of grapes; 15-20 g/hL in juice; 10 g/hL of AST provide approx. 28 ppm SO<sub>2</sub> and 30 ppm ascorbic acid

**Packaging:** 1 kg

ANTIMICROBIAL ACTION OF EFFERGRAN AND AST EFFECT IN GRAPES AND MUST



## EFFERGRAN/EFFERGRAN DOSE 5

- Effervescent, granulated potassium metabisulfite.
- Strong antioxidant and antimicrobial effect.
- Homogeneous and rapid distribution of SO<sub>2</sub> without requiring pump-overs in tank volumes of up to 50,000 liters.
- When added to the bottom of picking bins, it ensures a rapid release of SO<sub>2</sub>, minimizing oxidation during transport from vineyard to winery.
- Individually packaged for single use in barrels or small vessels.

**Application:** sulfiting wines, grapes and juices; homogeneous SO<sub>2</sub> release

**Dosage:** 250 g packet of EFFERGRAN (100 g of SO<sub>2</sub>) for bins of 8-10 tons or 50 hL of wine; each bag of EFFERGRAN DOSE 5 releases 5 grams of SO<sub>2</sub>

**Packaging:** EFFERGRAN: 250 g; EFFERGRAN DOSE 5: box of 25 packets

## WINY

- Pure and high quality potassium metabisulfite.
- Low odor (less irritation), easy to dissolve, low clumping formulation.
- Scavenges oxygen and oxidation byproducts.
- Prevents juice browning by inhibiting oxidasic enzymes.
- Wide spectrum antimicrobial.

**Application:** sulfiting grapes, juices and wines

**Dosage:** 1 g of WINY develops approx. 0.56 g of SO<sub>2</sub>

**Packaging:** 1 kg - 25 kg

POTASSIUM METABISULFITE ADDITION GUIDELINES

	SO <sub>2</sub> addition (mg/L)	g/hL	g/barrel
WINY	5	0.9	2
	10	1.8	4
	30	5.4	12
	50	8.9	20
	60	10.7	24

## SOLFOSOL M

- Aqueous solution of potassium bisulfite.
- Enables sulfur dioxide to easily and safely be added during all winemaking processes, from harvest to bottling.
- SO<sub>2</sub> concentration: 150 g/L (15% w/v).

**Application:** sulfiting grapes, juices and wines

**Dosage:** 10 mL/hL of SOLFOSOL M add approx. 15 ppm of SO<sub>2</sub>

**Packaging:** 20 kg

## NEOSOLFOSOL C

- Aqueous solution of ammonium bisulfite.
- Enables both sulfur dioxide and ammonia nitrogen to easily and safely be added to must.
- SO<sub>2</sub> concentration: 630 g/L (63% w/v). NH<sub>4</sub> concentration of 177 g/L (17.7% w/v).

**Application:** sulfiting grapes and juices

**Dosage:** 6-20 mL/hL in must or 60-200 mL/ton of grape; 10 mL/hL of NEOSOLFOSOL C add approx. 63 ppm of SO<sub>2</sub> and 18 ppm of YAN

**Packaging:** 20 kg - 1300 kg

# TIPS & TRICKS

## CRAFTING WINE NATURALLY

Sometimes Mother Nature provides grapes that are, shall we say, challenging in terms of producing the kind of wine you want to deliver to the eager wine lover. Other times the market may ask for something completely unexpected and you are then faced with a market demand that was not exactly planned for.

So, what can you do? Well, tannins and polysaccharides are strategic tools that can allow for wine polishing with increased wine quality.

### Perfecting Mouthfeel

Common opinion is that adding a tannin means increasing wine astringency. Nothing could be more wrong. Tannin additions can help to balance the taste of wine by minimizing alcoholic sensation or increasing the perception of structure and volume. Similarly, this can be done with polysaccharides.

### Perfecting Aroma

Depending on their origin, tannins can heighten specific wine aroma features such as fruit, oak and spice notes. A tannin extracted from grape skin, for example, can be used to enhance the fruitiness in a wine with an overwhelming oaky character. At the opposite end of the spectrum, an oak tannin can perfect the under-oaked character of a wine that must be bottled before the ideal maturation period in barrel is completed.

### Correcting or Preventing Defects

Tannins and polysaccharides can prevent and treat defects that diminish overall wine quality. For this application, they are often more effective and more respectful of wine quality and less labor intensive than traditional, corrective tools.

### How to choose the Enartis tannins?

When deciding which EnartisTan to use and at what dosage, it is important to understand the organoleptic and technical characteristics of each tannin and perform preliminary tasting trials. A simple and rapid method consists of dissolving 1 g of EnartisTan in a solution made with 87 mL water and 13 mL 95% alcohol.



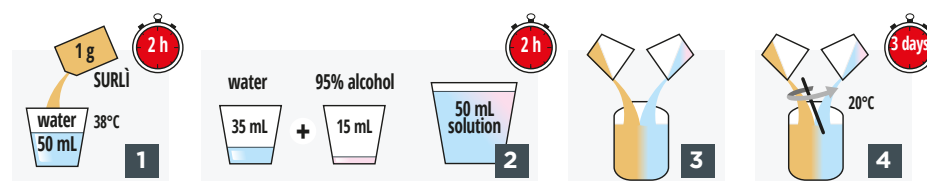
This solution can be used for rapid sensory tests: 1 mL of this solution in 100 mL of wine is equivalent to 10 g/hL of EnartisTan.

! Tannin solution prepared as above can be used for four months when stored below 25°C.

### How to choose SURLÌ Products?

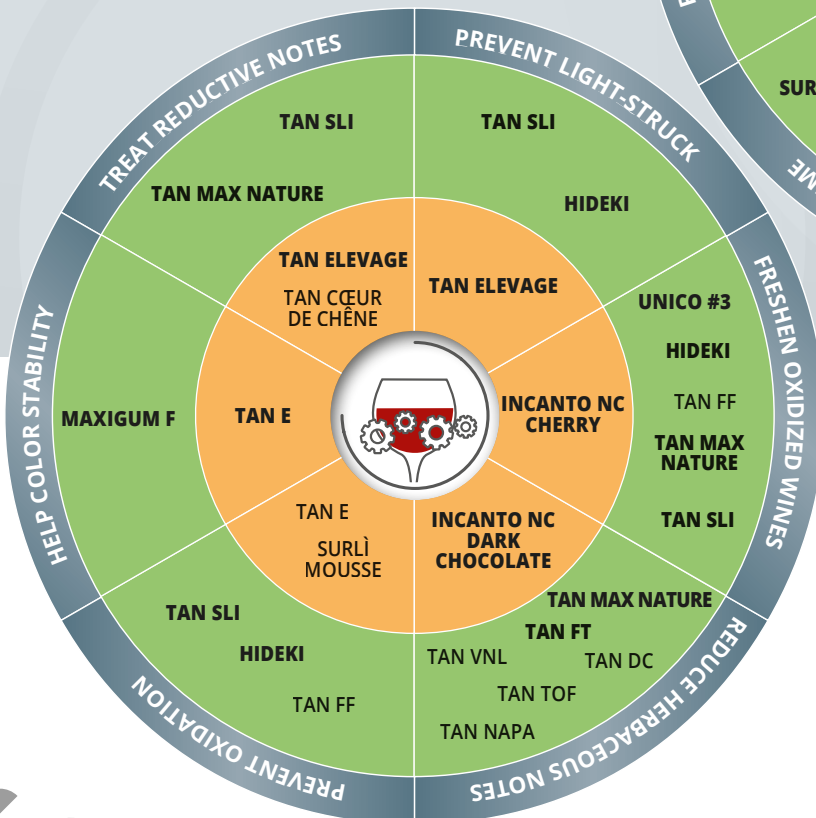
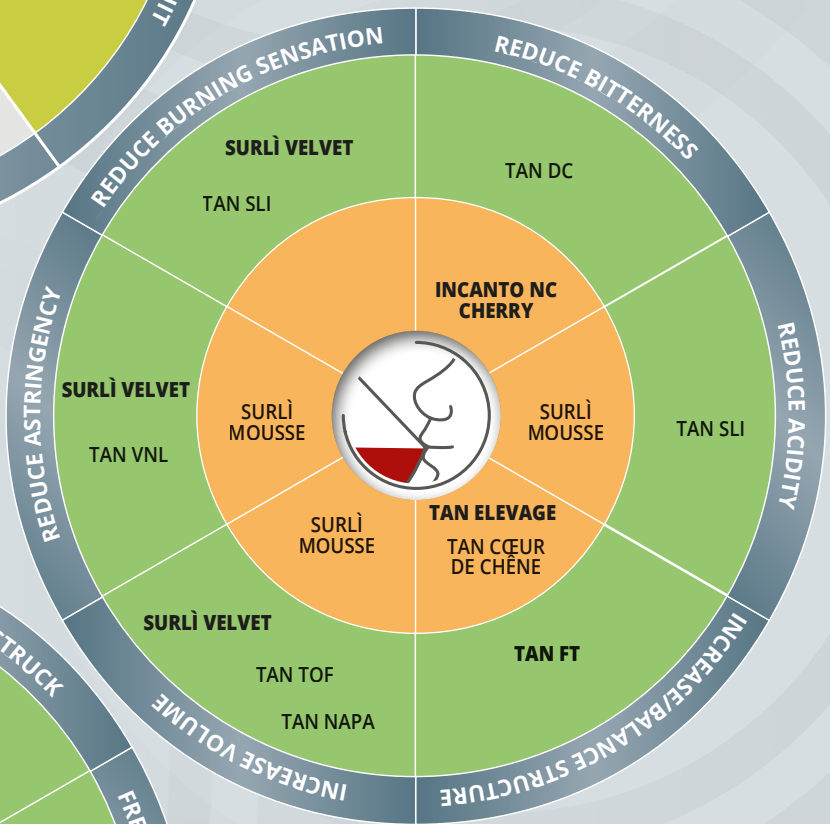
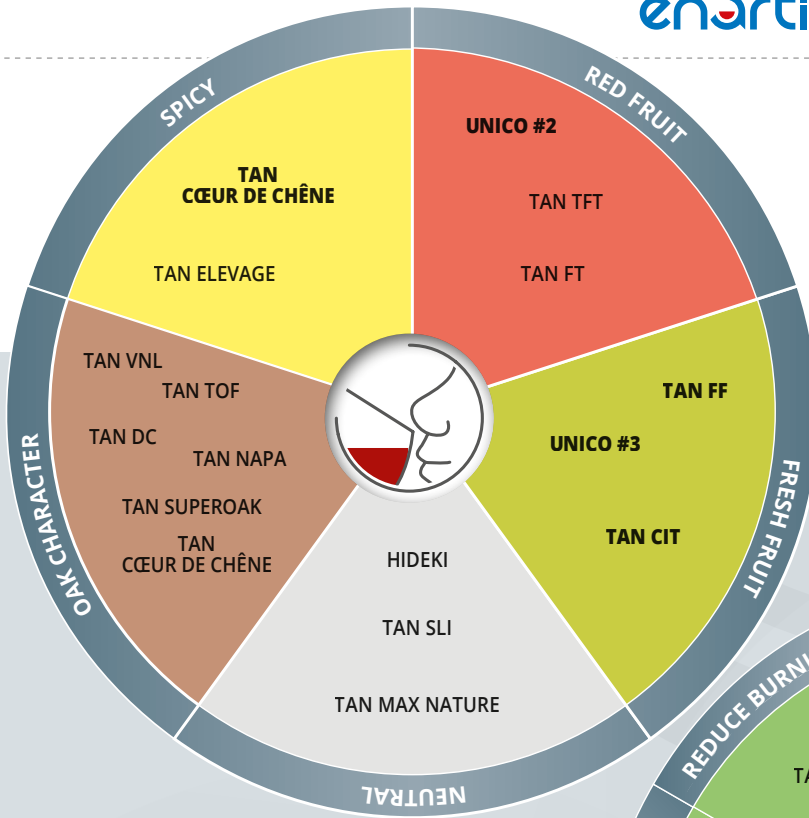
To determine which SURLÌ to use and the appropriate dosage, we recommend doing the following lab bench trial:

1. Rehydrate 1 gram of SURLÌ in 50 mL of water at 38°C for 2 hours.
2. Meanwhile, prepare a 50 mL solution with 15 mL 95% alcohol and 35 mL water.
3. After 2 hours, add the 50 mL alcohol solution to the suspension and let cool at room temperature with periodic mixing.
4. The final solution must be kept at a temperature of at least 20°C and mixed two or three times daily for at least three days.



The solution is now ready to add directly to wine being treated, knowing that 1 mL in 100 mL of wine corresponds to a dose of 10 grams of SURLÌ per 100 L.

! N.B.: SURLÌ VELVET can simply be dissolved in a water solution containing 13% alcohol (1 g of SURLÌ in 100 mL of water solution) and can be used immediately.



LEGEND

Maturation Anytime from maturation to bottling



Perfecting aroma



Perfecting mouthfeel



Correcting or preventing defects

+ INTENSITY/EFFECTIVE

PAGE	PRODUCT
<b>EMZYMES</b>	
5	EnartisZym AROM MP
5	EnartisZym COLOR L
5	EnartisZym COLOR PLUS
5	EnartisZym EXTRA <b>NEW</b>
6	EnartisZym EZFILTER
5	EnartisZym RS
<b>YEAST</b>	
9	EnartisFerm AROMA WHITE
11	EnartisFerm D20
12	EnartisFerm ES U42
10	EnartisFerm ES181
11	EnartisFerm ES454
11	EnartisFerm ES488
13	EnartisFerm EZFERM 44
12	EnartisFerm Q ET
10	EnartisFerm Q CITRUS
13	EnartisFerm Q RHO <b>NEW</b>
9	EnartisFerm Q4
11	EnartisFerm Q7
10	EnartisFerm Q9 <b>NEW</b>
12	EnartisFerm RED FRUIT
13	EnartisFerm SC
13	EnartisFerm TOP 15
11	EnartisFerm TOP ESSENCE
12	EnartisFerm VINTAGE RED
10	EnartisFerm VINTAGE WHITE
12	EnartisFerm WS
<b>YEAST NUTRIENTS</b>	
18	NUTRIFERM AROM PLUS
19	NUTRIFERM BIANCO
20	NUTRIFERM CONTROL <b>NEW</b>
18	NUTRIFERM ENERGY
19	NUTRIFERM GRADUAL RELEASE
19	NUTRIFERM NO STOP
19	NUTRIFERM SPECIAL
19	NUTRIFERM VIT
19	NUTRIFERM VIT FLO
18	NUTRIFERM ULTRA
20	NUTRIFERM WM
20	NUTRIFERM X
<b>POLYSACCHARIDES</b>	
23	EnartisPro AROM <b>NEW</b>
23	EnartisPro BLANCO

PAGE	PRODUCT
23	EnartisPro FT
23	EnartisPro TINTO <b>NEW</b>
23	EnartisPro UNO
24	SURLÌ MOUSSE
24	SURLÌ VELVET
<b>TANNINS</b>	
27	EnartisTan ANTIBOTRYTIS
28	EnartisTan CŒUR DE CHÊNE
26	EnartisTan CIT
26	EnartisTan COLOR
28	EnartisTan DC
27	EnartisTan E
28	EnartisTan ELEVAGE
26	EnartisTan FERMCOLOR
29	EnartisTan FF
26	EnartisTan FP
29	EnartisTan FT
28	EnartisTan MAX NATURE
28	EnartisTan NAPA
26	EnartisTan RF
26	EnartisTan ROUGE
27	EnartisTan SLI
28	EnartisTan SUPEROAK
29	EnartisTan TOF
29	EnartisTan TFT
29	EnartisTan UNICO #2
29	EnartisTan UNICO #3
27	EnartisTan XC
26	EnartisTan V
29	EnartisTan VNL
27	HIDEKI
<b>OAK ALTERNATIVES</b>	
33	INCANTO CREAM
33	INCANTO CAMEL
33	INCANTO BLACK SPICE
33	INCANTO DARK CHOCOLATE
35	INCANTO NC CHERRY
35	INCANTO NC DARK CHOCOLATE
35	INCANTO NC WHITE
33	INCANTO TOFFEE
33	INCANTO VANILLA
<b>MALOLACTIC FERMENTATION</b>	
38	EnartisML SILVER
38	NUTRIFERM ML

PAGE	PRODUCT
<b>FINING AGENTS</b>	
42	CLARIL AF <b>NEW</b>
43	CLARIL HM
43	CLARIL SMK <b>NEW</b>
42	CLARIL ZR
42	CLARIL ZW
42	CLARIL SP
42	COMBISTAB AF <b>NEW</b>
43	ENOBLOCK PERLAGE
43	FENOL FREE
42	NEOCLAR AF
41	PLANTIS AF
41	PLANTIS AF-L
41	PLANTIS AF-Q
42	PLUXCOMPACT
43	REVELAROM
42	SIL FLOC
<b>STABILIZING AGENTS</b>	
49	AMT PLUS QUALITY
50	ANTIFLOR
48	CITROGUM
49	CITROSTAB rH
49	EnartisStab CELLOGUM LV20
50	EnartisStab MICRO M
50	EnartisStab MICRO ZERO <b>NEW</b>
48	ENOCRISTAL Ca
48	ENOCRISTAL SUPERATTIVO
48	MAXIGUM F <b>NEW</b>
50	SORBOSOL K
46	ZENITH COLOR
46	ZENITH UNO
46	ZENITH WHITE NF <b>NEW</b>
<b>SULFITING AGENTS</b>	
53	AST
53	EFFERGRAN/EFFERGRAN DOSE 5
53	WINY
53	SOLFOSOL M
53	NEOSOLFOSOL C



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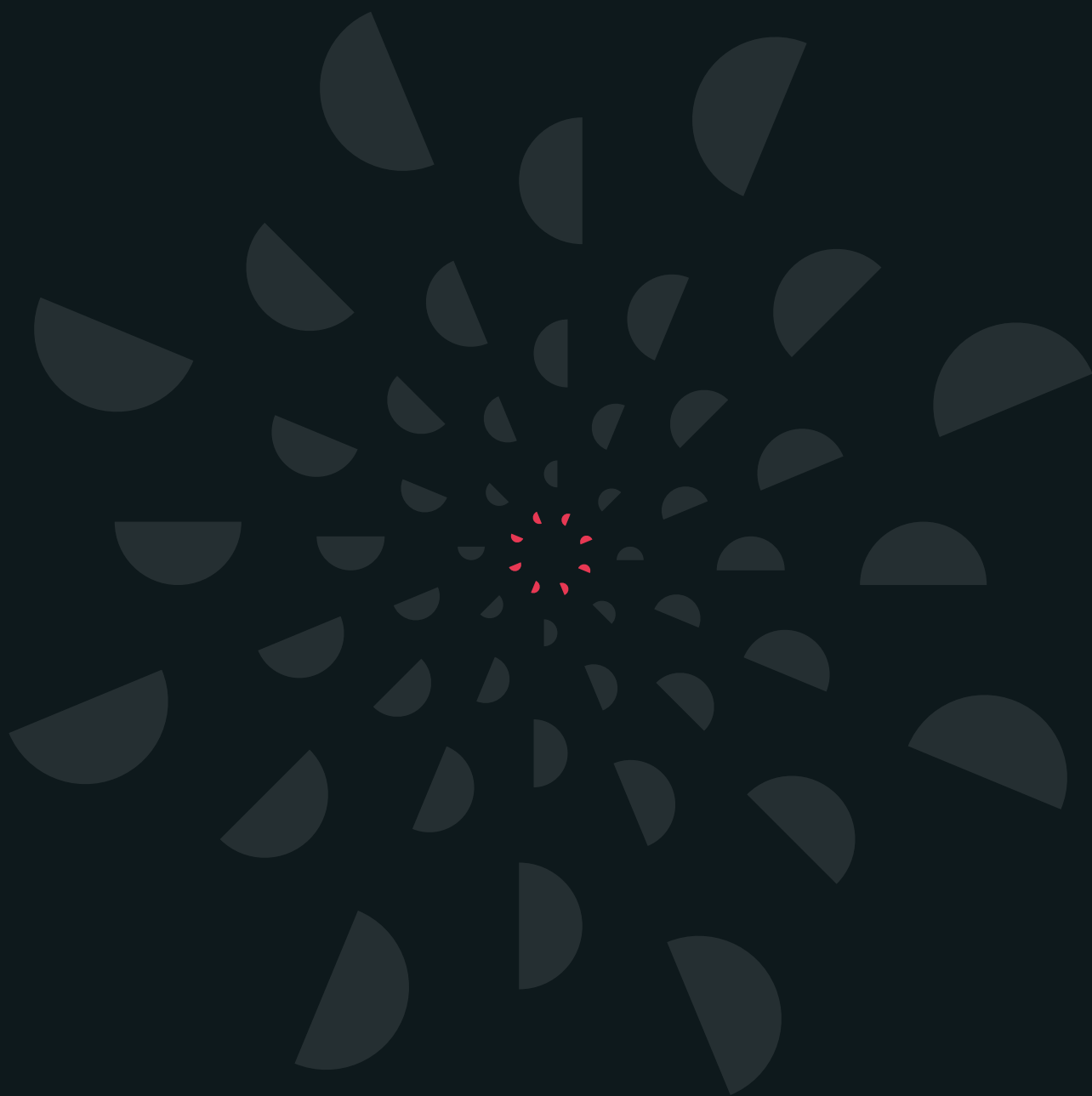
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