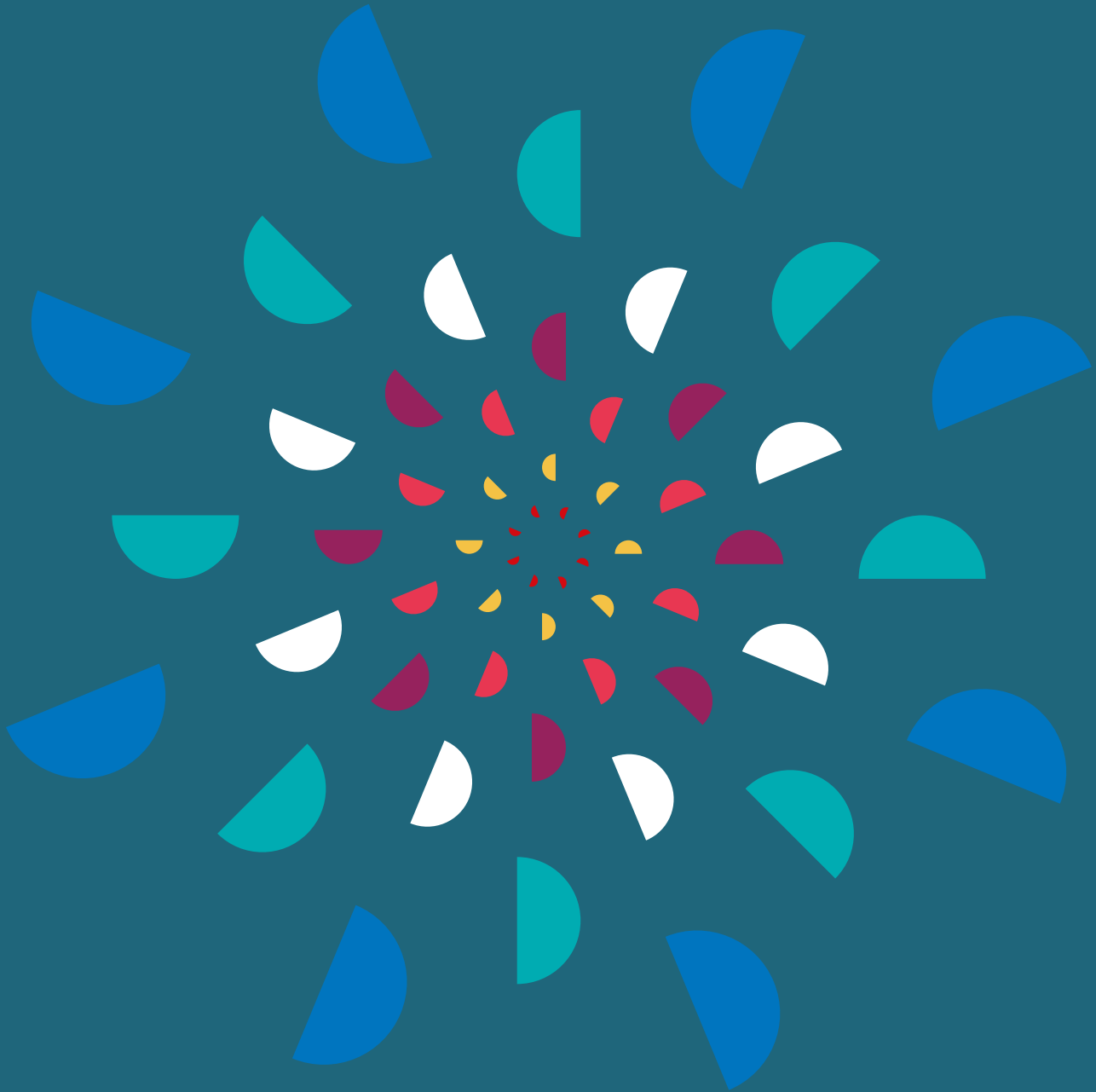


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HANDBOOK  
2024

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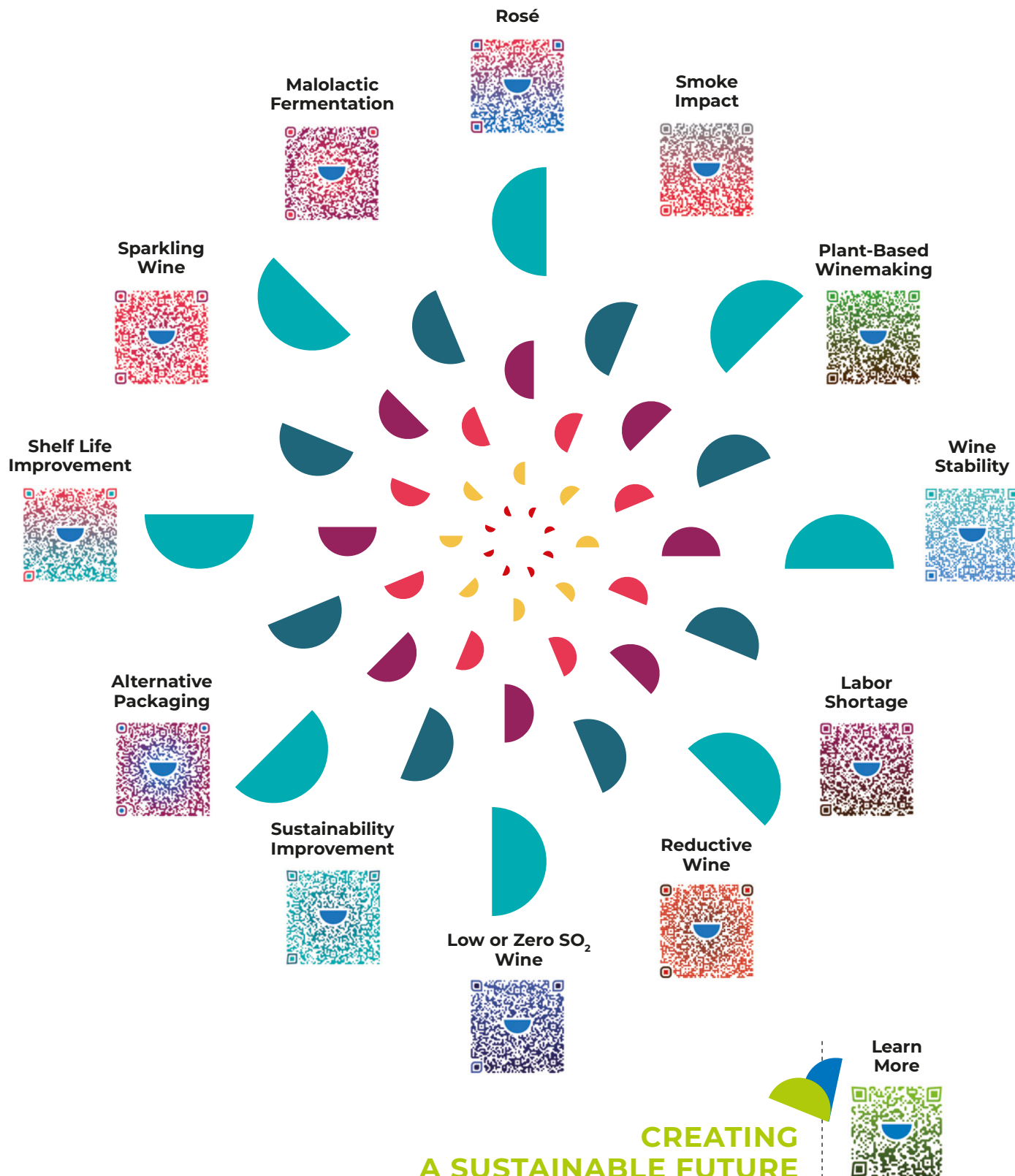


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# ENARTIS' STRATEGIES AND SOLUTIONS

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.



# ENZYMES

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



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## MUST CLARIFICATION

### EnartisZym RS

FASTEST  
CLARIFICATION

- Liquid pectolytic enzyme preparation, rich in cellulosic and hemicellulosic 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 (38-113 mL/1,000 gal) in must, 2-5 mL/hL (75-190 mL/1,000 gal) in wine

1 kg (Item #35-160-0001)

## 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 cellulosic, hemicellulosic 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

0.25 kg (Item #35-130-0250)

1 kg (Item #35-130-1001)

HEAT STABILITY TEST AT END OF ALCOHOLIC FERMENTATION ( $\Delta$ NTU) (Wine considered stable when $\Delta$ NTU<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.

## MACERATION OF RED AND ROSÉ GRAPES

### EnartisZym COLOR PLUS

ENHANCE  
COLOR

- Micro-granulated enzyme preparation developed to accelerate and increase phenolic compounds extraction and improve color stability.
- Rich in cellulosic and hemicellulosic 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

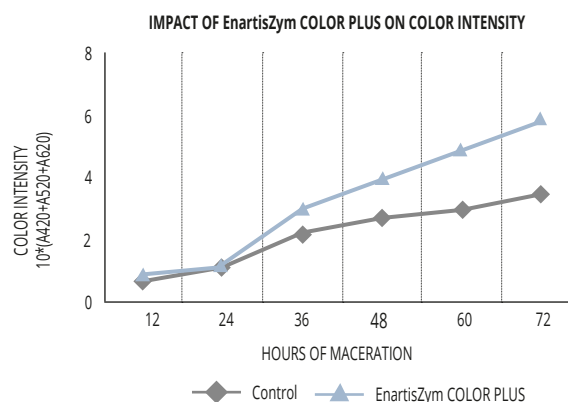
**Dosage:** 20-40 g/ton

0.25 kg

(Item #35-141-0250)

1 kg

(Item #35-141-0001)



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



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

Louwritz Louw, South Africa

## OTHER APPLICATIONS

### EnartisZym EZFILTER

FAST  
FILTERABILITY

- 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 (75-150 mL/1,000 gal)

**1 kg** (Item #35-177-0001)

**10 kg** (Item #35-177-0020)



We've filtered hundreds of thousands of gallons of cider over the years and there is no question that ciders treated with both a pectinase and a glucanase filter more easily than those that are not. If the dosing and timing is right, we've literally seen a 40-50-60% increase in filtration speeds. EnartisZym EZFILTER alone worked just as well as what we've seen from separate pectinase and glucanase enzyme treatments.

**Allan Whetstone, Cascade Wine Services - Oregon, USA**



My initial impressions of EnartisZym EZFILTER from Enartis are very promising. Cider is notorious for being difficult to filter. I am trying to turn over 8,500 gallons of cider in a 25 day period (fermentation to bottle ready cider) with one assistant and two plate and frame filters. One dose with EnartisZym EZFILTER pre-fermentation and we were able to move from 8 microns to .4 microns with great efficiency in a short amount of time.

**Justin Paolicelli, Production Manager at Three Brothers Wineries - New York, USA**

## EnartisZym CHARACTERISTICS

	Clarification/ Cold Settling	Clarification of Difficult Juice	Clarification by Flotation	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
EnartisZym COLOR PLUS					●●●	●●●	●●●	●●			●●		Microgranules	20-40 g/ton	0.25 kg   1 kg
EnartisZym EZFILTER										●●●	●●●	●●●	Liquid	1-4 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.

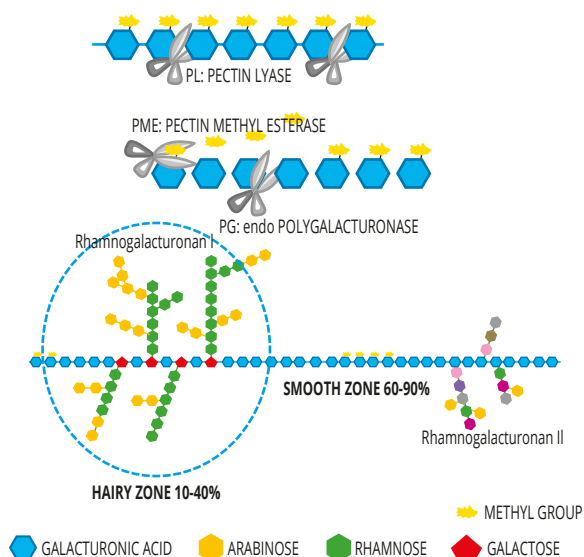


Figure 1: Representation of main pectolytic activities on pectin chains.

### 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 do not require preservatives. Liquid enzymes are convenient to use and dose, but 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.

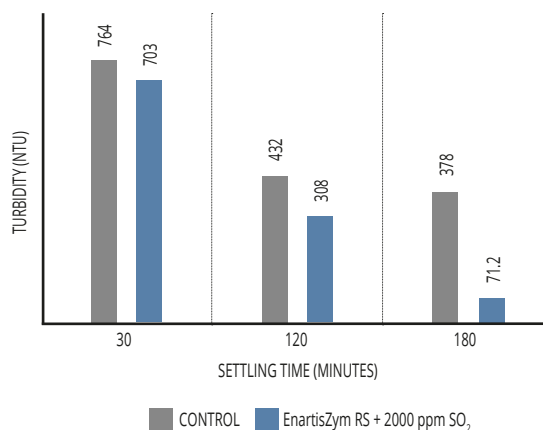


Figure 2: Impact of SO<sub>2</sub> addition on EnartisZym RS effect.

### 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.

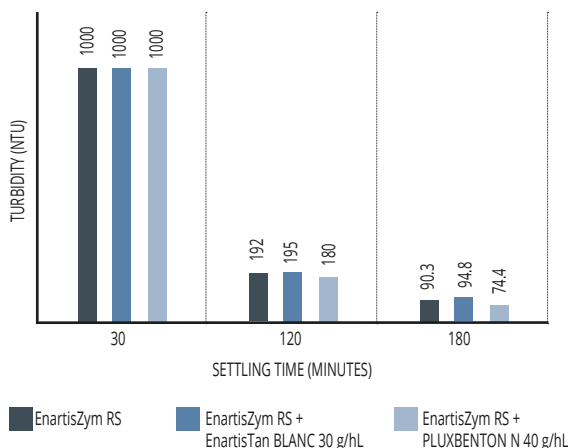


Figure 3: Impact of tannin and bentonite addition on EnartisZym RS effect.

### 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 quality wine. The knowledge and understanding of microbial characteristics, in addition to the practical experience gained over many years, has allowed Enartis to understand the needs of the market and suggest the application of each yeast to achieve the best quality wine, meeting winemakers' expectations.



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Inspiring innovation.



## ENARTIS CALIFORNIA PREMIUM VINEYARDS COLLECTION

Continuing the tradition of isolating, characterizing and preserving indigenous microflora from selected vineyards, Enartis USA provides the industry with selected microbiological cultures either as exclusive, proprietary cultures or as commercial strains, available in active dry form.



### EnartisFerm WS: MORE THAN 30 YEARS OF EXCELLENCE

With more than 30 years of history, EnartisFerm WS is a cult yeast, highly appreciated around the world for many varieties and wine styles.

### EnartisFerm D20: FAST SUCCESS FOR OBVIOUS QUALITY STRAIN

In 2013, Daniel Daou approached Enartis to isolate a yeast resistant to high fermentation temperatures and leading to stable color and balanced tannins. The isolation started with Cabernet Sauvignon grapes coming from the top block on DAOU Mountain in Paso Robles, in the Adelaida Appellation. In 2015, after many trials and selections of isolates, EnartisFerm D20 in active dry form was produced and its success is already recognized around the world.

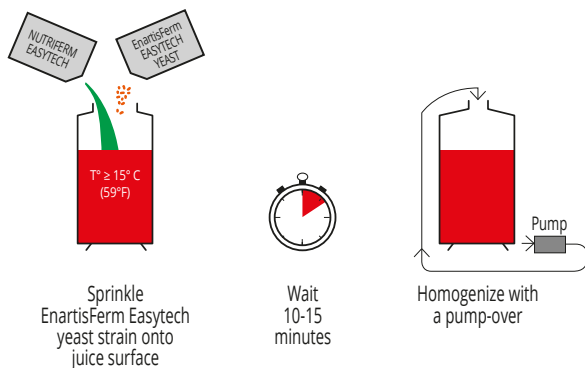
## EASYTECH YEAST APPLICATION

**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. The 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 **three yeasts** that have been selected to ensure optimal fermentation performance in juices with temperatures above 15°C:



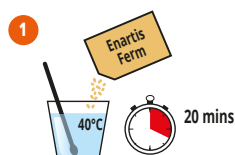
- EnartisFerm WS
- EnartisFerm AROMA WHITE
- EnartisFerm VINTAGE RED

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

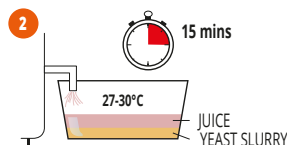


Enartis Easytech range is also suitable for traditional yeast rehydration.

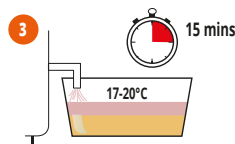
## PROTOCOL FOR YEAST REHYDRATION



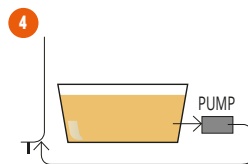
Rehydrate 20-40 g/hL of active dry yeast in 10 times its weight of chlorine-free water at 35-40°C (95-104°F). Stir gently to break up any clumps. Wait 20-30 minutes.



Slowly add some juice/must to yeast suspension to drop temperature: temperature drop should not be more than 10°C (18°F). 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°C (18°F).



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

- Moderate speed fermenter.
- High nutrient requirements.
- Enhances vegetal characteristics of thiolic varieties (mainly 4-MMP).
- Homozygote strain 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.
- Expresses the varietal aroma and enhances the notes of box tree, gooseberries, tomato leaf, citrus and blackcurrant associated with 4-MMP.

**Application:** thiolic varieties; grassy style Sauvignon Blanc

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-075-0500)

### EnartisFerm AROMA WHITE easy tech

- Moderate speed fermenter.
- Medium/high nutrient requirements.
- Expresses thiols ( $\beta$ -lyase activity).
- Fermentation at 14-16°C favors fresh citrus and mineral notes; 17-20°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 (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-110-0500)  
10 kg (Item #45-110-0010)

### EnartisFerm VINTAGE WHITE

- Moderate speed fermenter.
- Low nutrient requirements.
- 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 (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-115-0500)  
10 kg (Item #45-115-0010)



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 pallet. Although fermentation takes place at a moderate speed it is well worth the wait! **Craig Christians, Winemaker at Rustenberg Wines - Stellenbosch, South Africa**



I have been using EnartisFerm ES181 for more than 10 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 - South Africa**

### EnartisFerm ES181

- Fast fermenter.
- Low nutrient requirements.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Expresses thiols ( $\beta$ -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 (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-120-0500)  
10 kg (Item #45-120-0010)

### EnartisFerm ES123

- Medium speed fermenter.
- Medium/high nutrients requirements.
- Produces fresh and long-lasting aromas of green apple, pear, flowers and citrus fruits.
- Excellent for neutral and aromatic varietals.

**Application:** fresh and easy-to-drink wines; fruity white wines obtained from neutral grapes; ester and acetate production; fresh sparkling wines; sweet wines

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-105-0500)  
10 kg (Item #45-105-0010)

## 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 (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-047-0500)

## 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 (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-302-0500)

10 kg (Item #45-302-0010)



## EnartisFerm ES FLORAL

- Blend of *S. cerevisiae* and *S. bayanus*.
- Moderate speed fermenter.
- Medium nutrient requirements.
- Produces intense fresh aromas of peach, pear, apricot, white flowers, violet and roses.

**Application:** fruity and floral aromas; ester and acetate production

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

0.5 kg (Item #45-160-0500)

## RED WINE FERMENTATION

### EnartisFerm ES454

- Moderate speed fermenter.
- Medium nutrient requirements.
- Low VA, SO<sub>2</sub> and H<sub>2</sub>S production.
- 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:** 200-400 g/ton

0.5 kg (Item #45-170-0500)

10 kg (Item #45-170-0010)

### EnartisFerm ES488

- Moderate speed fermenter.
- High nutrient requirements.
- Low VA, SO<sub>2</sub> and H<sub>2</sub>S production.
- 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:** 200-400 g/ton

0.5 kg (Item #45-185-0500)

10 kg (Item #45-185-0010)

### EnartisFerm Q5

- Moderate speed fermenter.
- Medium nutrient requirements.
- High production of glycerol.
- Expresses terpenes and norisoprenoids (β-glycosylase activity).
- Produces intense red fruit (strawberry, raspberry, black cherry) and floral notes with soft structure.

**Application:** varietal expression; esters production; extended barrel ageing

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

0.5 kg (Item #45-301-0500)

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

0.5 kg (Item #45-054-0500)

## 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:** 200-400 g/ton

0.5 kg (Item #45-140-0500)

10 kg (Item #45-140-0010)

## 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:** 200-400 g/ton

0.5 kg (Item #45-125-0500)

10 kg (Item #45-125-0010)

## EnartisFerm D20



HEAT TOLERANT

CABERNET SAUVIGNON  
ISOLATE FROM DAOU  
VINEYARDS & WINERY, CALIFORNIA

- Moderate speed fermenter.
- High alcohol tolerant (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.

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

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

0.5 kg (Item #45-060-0500)

10 kg (Item #45-060-0010)



EnartisFerm D20 has improved the mouthfeel of our wines while delivering a more balanced wine that had increased phenolics.  
**Daniel Daou, Co-Proprietor & Winemaker of Daou Vineyards & Winery - California, USA**



## 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 varieties; high °Brix grapes; restart stuck fermentations; direct inoculation

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

0.5 kg (Item #45-053-0500)

10 kg (Item #45-052-0010)



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



- EnartisFerm Q ET is a multipurpose yeast that does not require rehydration.
- Direct inoculation (**Easytech**) saves time and labor and facilitates yeast preparation, but above all, it reduces the risk of mistakes that can compromise a good fermentation process.
- EnartisFerm Q ET is a varietal strain, good fermenter in a wide temperature range that is well suited to the fermentation of quality white, red and rosé wines.

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

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

**10 kg** (Item #45-520-0010)

### 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 (1.7-3.4 lb/1,000 gal)

**0.5 kg** (Item #45-175-0500)

**10 kg** (Item #45-175-0010)

### EnartisFerm PERLAGE

- Fast fermenter.
- Alcohol tolerant (up to 17%), resistant to SO<sub>2</sub> and low pH.
- Wide range of fermentation temperatures (10-30°C).
- Low nutrient requirements.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Produces clean, elegant, delicate and complex wines with round and balanced mouthfeel.

**Application:** high quality sparkling base wines; traditional method; Charmat method; white and rosé wines

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

**0.5 kg** (Item #45-180-0500)

### EnartisFerm PERLAGE FRUITY

- Fast fermenter.
- Low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Produce clean, "modern" style base wines with intense fresh fruit aromas.
- Releases high quantity of mannoproteins during *sur lie* ageing.
- Improves mouthfeel, *perlage* quality and color stability of red and rosé sparkling wines.

**Application:** high quality sparkling base wines; traditional method; Charmat method; white and rosé wines

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

**0.5 kg** (Item #45-181-0500)

## NON-*Saccharomyces cerevisiae* YEAST

### 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 (1.7-3.4 lb/1,000 gal)

**0.5 kg** (Item #45-077-0500)

### EnartisFerm Q TAU FD

- Freeze-dried strain of *Torulaspora delbrueckii*.
- Slow fermenter.
- Low nutrient requirements.
- Very low VA, H<sub>2</sub>S and SO<sub>2</sub> production.
- Produces ciders with high levels of esters and terpenes for increased aromatic intensity and complexity.
- Can be used as a single yeast in the fermentation of ciders up to 12% alcohol or in sequential inoculation with *Saccharomyces* strains.

**Application:** fruity wines; wine produced from dried grapes; base wine for sparkling; reduce volatile acidity

**Dosage:** 20-30 g/hL (1.7-2.5 lb/1,000 gal)

**0.5 kg** (Item #45-210-0500)

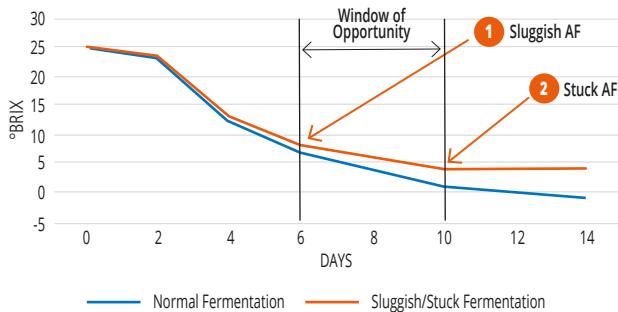
# ENARTIS YEAST CHARACTERISTICS

	Varietal expression	Thiol expression	Ester and Acetate Production	High aromatic Impact	Young whites	Aged whites	Rosés	Young reds	Reserve reds	Late harvest	Sparkling base wines	Stuck fermentations
EnartisFerm AROMA WHITE	•	•	•	•	•	•	•					
EnartisFerm D20	•		•	•		•		•	•			
EnartisFerm ES123			•		•		•					
EnartisFerm ES181	•	•	•		•	•	•				•	
EnartisFerm ES454	•								•			
EnartisFerm ES488	•	•					•	•	•			
EnartisFerm ES FLORAL	•		•	•	•		•					
EnartisFerm EZFERM 44	•									•		•
EnartisFerm PERLAGE	•				•	•	•				•	
EnartisFerm Q4	•	•		•	•		•					
EnartisFerm Q5	•		•						•			
EnartisFerm Q7	•							•	•			
EnartisFerm Q9	•	•	•	•	•	•	•					
EnartisFerm Q CITRUS	•				•		•					
EnartisFerm Q ET	•				•	•	•	•	•	•		
EnartisFerm Q RHO			•	•	•		•	•		•		
EnartisFerm Q TAU FD			•	•	•	•	•	•	•			
EnartisFerm RED FRUIT	•		•	•			•	•				
EnartisFerm VINTAGE RED	•								•			
EnartisFerm VINTAGE WHITE	•				•	•	•					
EnartisFerm WS	•						•	•	•		•	•



## PROTOCOLS TO RESTART AND COMPLETE SLUGGISH OR STUCK FERMENTATIONS

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



### PROTOCOL 1 : Sluggish Fermentation

The moment a fermentation becomes sluggish, seize the 'window of opportunity'. Quick intervention may help restore yeast vitality and avoid a full restart later.

1. Maintain temperature >20°C (68°F).
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 ( $\Delta^\circ\text{Brix}/\text{day}$ ) 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 no longer viable. It is 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 (68-73°F).

#### 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 (104°F) 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 ADVANCE (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 pesticide residues which may inhibit fermentation.

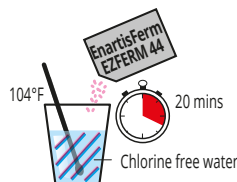
#### Why use NUTRIFERM ULTRA?

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

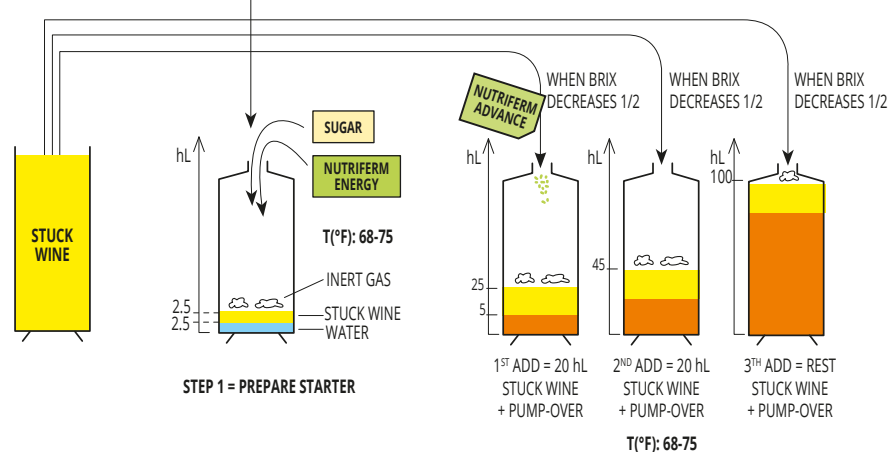
#### Why use EnartisFerm EZFERM 44?

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

#### STEP 2 = YEAST REHYDRATION



#### STEP 3 = YEAST ACCLIMATION



#### 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 ADVANCE	1

# YEAST NUTRIENTS

Understanding the nutritional requirements of yeast is fundamental in order to accomplish a successful fermentation and prevent 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.



**enartis**

Inspiring innovation.



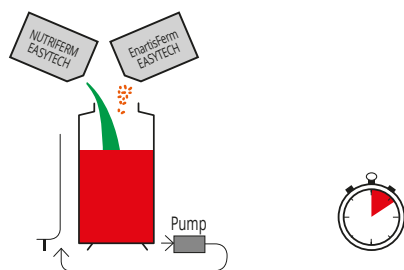
## EASYTECH NUTRIENTS

**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

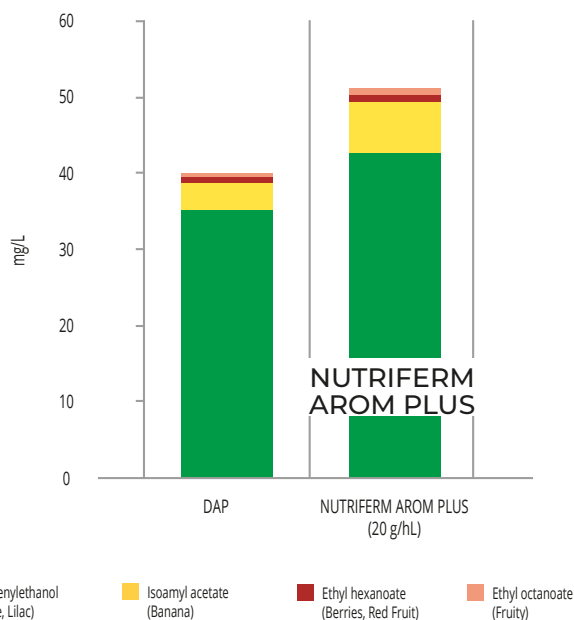
Easytech **nutrients** are micro-granulated, meaning they are less powdery and safer to use. They are also easier to dissolve directly in must without creating clumps and provide immediately available nutrients for yeasts due to the high solubility rate.



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

Enartis Easytech range is also suitable for traditional yeast inoculations.

AROMATIC PROFILE OF WINE AFTER ALCOHOLIC FERMENTATION



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

## 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 (0.8-2.4 lb/1,000 gal)

1 kg (Item #35-217-0001)  
10 kg (Item #35-217-0010)

## NUTRIFERM AROM PLUS

**Easy tech**  
CERTIFIED BY ENARTIS

IMPROVE  
AROMATICS

- 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 (1.3-2.4 lb/1,000 gal)

1 kg (Item #35-211-0001)  
10 kg (Item #35-211-0010)



NUTRIFERM AROM PLUS is far and away the best performing complex yeast nutrition on the market! When added during rehydration of the yeast, it ensures a complete and steady fermentation, assisting yeast in fermentation to produce a complex flavor profile in any wine style. **Rianco van Rooyen, Winemaker at Robertson Winery - South Africa**



We've used Enartis nutrients almost exclusively for over a decade - at least 400 ferments. Stuck ferms, restarts, and copper fining are rarities for us. While NUTRIFERM ENERGY and ADVANCE are the backbone of our nutrient protocols, we are increasingly impressed by phenolic impact of NUTRIFERM AROM PLUS and the end-of-ferment benefits of No Stop. We rely on the consistency that the NUTRIFERM line provides for our wines and those of our clients. **Lucas Meeker, Winemaker at The Meeker Vineyard - California, USA**

## 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 (0.8-2.4 lb/1,000 gal)

1 kg (Item #35-200-0001)  
10 kg (Item #35-200-0010)



I've been using NUTRIFERM ENERGY on red wines at yeast inoculation. It's a very reliable nutrient that allows smooth and clean fermentations without challenges. NUTRIFERM ENERGY respects the aromatic profile of the fruit. **Alberto Bianchi, Winemaker at Newton Vineyards - California, USA**



## 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 (2.4-4.2 lb/1,000 gal)

10 kg (Item #35-225-0010)



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, South Africa**



## NUTRIFERM ADVANCE

- Complex nutrient containing ammonium phosphate (DAP), inactivated yeast and cellulose.
- Prevents irregular kinetics while maintaining efficient sugar transport.
- Improves yeast alcohol tolerance, prevents H<sub>2</sub>S formation and detoxifies must.

**Application:** nutrient correction at 1/3 sugar depletion; prevention of off-flavors and stuck or sluggish fermentations

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

1 kg (Item #35-215-0001)  
10 kg (Item #35-215-0010)

## NUTRIFERM NO STOP

DON'T GET STUCK!

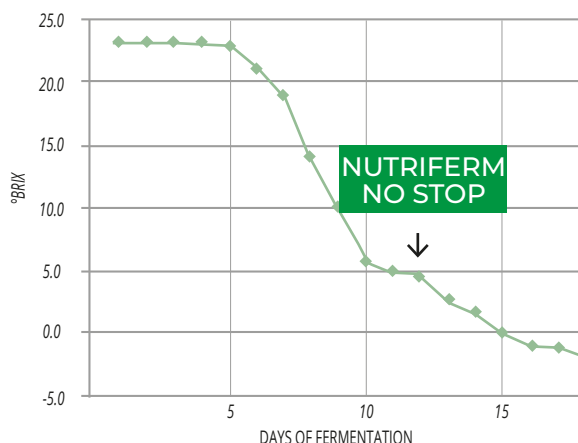
- Inactivated yeast, autolyzed yeast, thiamine hydrochloride (vitamin B1).
- Helps maintain yeast membrane integrity, prevents and corrects fermentation anomalies.

**Application:** prevent and treat stuck fermentations

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

1 kg (Item #35-212-0001)  
10 kg (Item #35-212-0010)

EFFECT OF NUTRIFERM NO STOP ON FERMENTATION KINETICS



The addition of NUTRIFERM NO STOP helped complete fermentation. In addition to having a detoxifying effect, NUTRIFERM NO STOP provides essential elements for yeast to stay resistant, active and complete fermentation.

## NUTRIFERM CONTROL

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

**Application:** detoxifies must; helps restart the fermentation

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal) during primary and sluggish/stuck fermentation; 5-20 g/hL (0.4-1.7 lb/1,000 gal) during sparkling second fermentation

25 kg (Item #30-024-0020)

## 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 ADVANCE</b>	Help for a complete and clean fermentation		★★★			★★★	★★★			1/3 sugar depletion	20-40 g/hL
<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

## KNOW MORE ABOUT YEAST NUTRITION

Appropriate, balanced nutrition is an essential factor in managing the overall health and success of fermentations. Without proper nutrition introduced at the right stage of their growth cycle, yeasts can face stress and produce undesirable characteristics. Stuck or sluggish fermentations are also hazards of poor yeast nutrition.

### WHAT NITROGEN FORMS ARE NATURALLY PRESENT IN GRAPES?

Grapes provide nitrogen in the form of proteins, peptides, alpha amino acids and ammonium ions.

### YEAST NEEDS FOR BALANCED NUTRITION

The quantity and quality of nitrogenous substances and other elements/compounds play an essential role in yeast metabolism, fermentation kinetics and the organoleptic profile of wine:

- Nitrogen (ammonium and amino acids) is required for yeast growth, structural protein synthesis, cell wall components, enzyme synthesis and sugar transport and aroma production.
- Vitamins have a role in cell growth, fermentation activity and nitrogen metabolism.
- Minerals impact yeast fermentative metabolism.
- Sterols and unsaturated fatty acids help yeast survive and resist stress.

### WHICH OTHER FACTORS SHOULD BE CONSIDERED REGARDING YEAST NUTRITION?

- Temperature: An increase in temperature stimulates yeast growth and fermentation rate, thereby requiring increased levels of nitrogen.
- Turbidity: In whites and rosés, juice clarification eliminates some nutrients, sterols and fatty acids essential for yeast survival. If the turbidity after clarification is below 80 NTU, add 30 g/hL of NUTRIFERM NO STOP.
- Fruit affected by mold requires more amino acids and vitamins than healthy fruit.
- Yeast strains: Each yeast strain has specific nutritional requirements.

### MY WINE IS AROUND 5°BRIX AND I MISSED THE 1/3 SUGAR DEPLETION NUTRIENT ADDITION, WHICH NUTRIENT CAN I ADD?

Nitrogen uptake is inhibited as soon as alcohol becomes a stress. At this point during fermentation, the addition of NUTRIFERM NO STOP will improve yeast resistance and help maintain an active sugar transport system.

### WHY USE NUTRIFERM NO STOP?

- Restores cell membrane
- Increases yeast viability
- Eliminates toxins such as short-chain fatty acids
- Restores sugar consumption
- Provides physical support to keep yeast in suspension

### 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 ADVANCE</b>	Maintains the vital activity of yeast until complete sugar depletion and detoxifies the juice.
<b>NUTRIFERM NO STOP</b>	Rich in survival factors that regenerate 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 SURLì, polysaccharides preparations for fermentation and wine maturation.



**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 (0.8-3.4 lb/1,000 gal)

**1 kg (Item #35-921-0001)**



*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 (0.8-2.4 lb/1,000 gal)

**1 kg (Item #35-410-0001)**

### EnartisPro AROM

- Inactivated yeast rich in mannoproteins.
- 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 (1.7-3.4 lb/1,000 gal)

**1 kg (Item #35-400-0001)**

### EnartisPro TINTO

SENSORY  
OPTIMIZATION

- 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 (1.25-3.4 lb/1000 gal)

**1 kg (Item #35-415-0001)**  
**10 kg (Item #35-415-0010)**

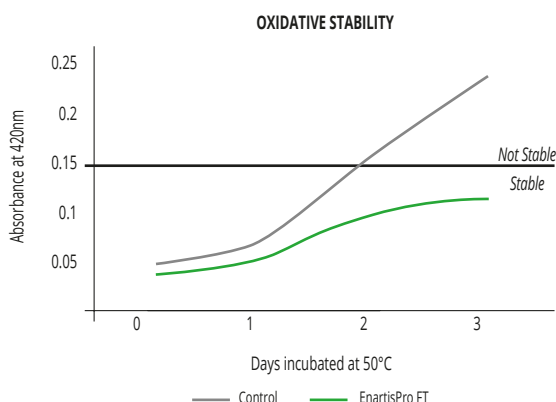
## EnartisPro FT

- 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 (2.4-4.2 lb/1,000 gal)

**1 kg (Item #35-416-0001)**



## 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 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 THE MATURATION STAGE

### SURLI KPA

- Inactivated yeast adjuvant rich in mannoproteins and potassium polyaspartate (KPA).
- Preserves acidity and organoleptic quality.
- KPA prevents the precipitation of tartaric acid in the potassium salt form, and thus helps to maintain natural acidity and improve the sensations of freshness and minerality.
- Inactivated yeast quickly release the mannoproteins contained in cell walls.

**Application:** helps to preserve the natural acidity of the wine; increases the perception of volume and softness; increases aromatic persistence; increases the shelf life of wine

**Dosage:** 10-40 g/hL (0.8-3.4 lb/1,000 gal)

**2.5 kg (Item #35-470-0002)**

## PRE-BOTTLING

### SURLI VITIS

- White grape skin tannins and plant polysaccharides.
- Enhances softness, volume, structure and perceived sweetness along with the reduction of bitter sensations and acidity.
- When used at the recommended dosage, it is filterable and can be added to wine just before microfiltration for improving organoleptic quality and stability.
- Increases the antioxidant properties of wine.

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

**Dosage:** 2-20 g/hL (0.2-1.6 lb/1,000 gal)

**1 kg (Item #35-445-0001)**

### SURLI 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 (0.04-0.8 lb/1,000 gal)

**0.5 kg (Item #35-455-0500)**

## HOW TO CHOOSE THE PROPER SURLÌ

In order to determine which SURLÌ to use and the appropriate dosage, it is possible to use the following rapid taste test. Rehydrate 1 gram of SURLÌ in 50 mL of water at 38°C for 2 hours. Meanwhile, prepare 50 mL of solution with 13 mL alcohol 95% and 37 mL water. At the completion of the 2 hours, add the 50 mL of solution to the suspension and let it cool at room temperature with periodic mixing. 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 VITIS and 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.

		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	●●●●	●●●	●●	●●●
Maturation	SURLÌ KPA	Inactivated yeast Potassium polyaspartate (KPA)	Mouthfeel and preservation of natural acidity	●●	●	●●●	●●●
Pre-Bottling	SURLÌ VITIS	Grape skin tannin Plant polysaccharides	Mouthfeel and aroma enhancement	●●	●●●	●●●	●●●
	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.



Inspiring innovation.



## WHITE & ROSÉ VINIFICATION

### EnartisTan AROM

- Ellagic tannin, inactivated yeast and gallic tannin.
- Highly reactive tannin with grape proteins, strong antioxidant effect, inhibits oxidative enzymes (laccase) and facilitates clarification.
- Effective for thiol preservation and reduction of herbaceous aromas in unripe grapes.

**Application:** antioxidant protection; enhances fruity and thiols aromas; improves protein and aromas stabilization

**Dosage:** 2-20 g/hL (0.17-1.7 lb/1,000 gal)

**1 kg (Item #35-500-0001)**

### EnartisTan CIT

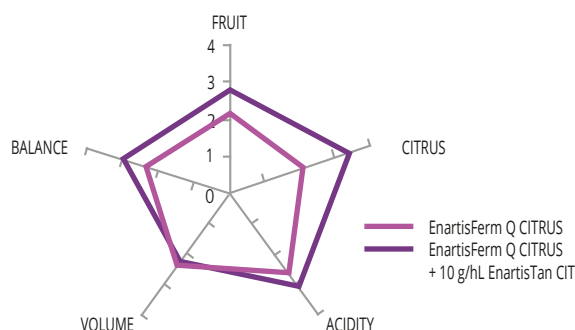
- Blend of gallic tannins and condensed tannins extracted from exotic wood species.
- Production process at cold temperature to preserve aromatic precursors from wood.
- Enhances floral, citrus and fresh fruity notes.
- Enhance varietal expression by combining it with yeasts with high  $\beta$ -glucosidase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

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

**Dosage:** 2-15 g/hL (0.17-1.3 lb/1,000 gal)

**1 kg (Item #35-306-0001)**

SENSORY IMPACT OF EnartisTan CIT ADDED AT 1/3 OF FERMENTATION



## RED VINIFICATION

### 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

**1 kg (Item #35-304-0001)**  
**10 kg (Item #35-304-0010)**



We have been using EnartisTan FERMCOLOR and ROUGE as sacrificial tannins pre and post flash détente. We saw an impressive impact on color stability, mid-palate and wine structure, especially on our Bordeaux varietals and Zinfandels. **Megan McCollough, Winemaker at Hahn Family Wines - California, USA**



### 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 with 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

**1 kg (Item #35-385-0001)**

### EnartisTan ROUGE

- Micro-granulated 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

**1 kg (Item #35-305-0001)**  
**15 kg (Item #35-305-0015)**

### 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 (0.8-2.5 lb/1,000 gal)

**1 kg (Item #35-311-0001)**

## 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 (0.4-1.3 lb/1,000 gal) in rosé juice

1 kg (Item #35-919-0001)

## TECHNICAL TANNINS

### EnartisTan ANTIBOTRYTIS

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

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

**Dosage:** 3-20 g/hL (0.25-1.7 lb/1,000 gal)

1 kg (Item #35-386-0001)  
10 kg (Item #35-386-0010)

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

### EnartisTan BLANC

- Micro-granulated gallic tannin.
- High antioxidant activity and antimicrobial activity, it strengthens the protective action of SO<sub>2</sub>.
- Protects wine from browning, "light-struck" defects and oxidation.

**Application:** fining; antioxidant protection; prevention of light-struck

**Dosage:** 4-10 g/hL (0.33-0.8 lb/1,000 gal)

1 kg (Item #35-310-0001)  
12.5 kg (Item #35-310-0012)

## EnartisTan E

- Micro-granulated 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 (0.25-1.3 lb/1,000 gal) during micro-oxygenation

1 kg (Item #35-312-0001)  
5 kg (Item #35-312-0005)

## HIDEKI

DECREASE  
SO<sub>2</sub> USE

- Micro-granulated 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 (0.08-0.25 lb/1,000 gal) as an antioxidant; 5-10 g/hL (0.4-0.8 lb/1,000 gal) as microbiostatic

1 kg (Item #35-931-0001)

## 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 (0.25-1.3 lb/1,000 gal)

1 kg (Item #35-320-0001)  
10 kg (Item #35-320-0010)

## 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 (0.04-0.17 lb/1,000 gal) as antioxidant; 2-15 g/hL (0.17-1.3 lb/1,000 gal) to improve the sensory

**0.5 kg (Item #35-308-0500)**

## 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 (0.25-0.8 lb/1,000 gal)

**1 kg (Item #35-330-0001)**

### 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 (0.04-1.3 lb/1,000 gal)

**0.5 kg (Item #35-361-0500)**

### 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 (0.17-1.3 lb/1,000 gal)

**1 kg (Item #35-340-0001)**

## EnartisTan EXTRA

- Tannin extracted from pure oak.
- Contributes to elegant vanilla, caramel, cocoa and toasted oak notes.
- Rapidly improves mouthfeel balance and aromatic complexity.

**Application:** finishing; enhance oak notes and complexity

**Dosage:** 3-15 g/hL (0.25-1.3 lb/1,000 gal)

**1 kg (Item #35-335-0001)**

## 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 (0.25-1.3 lb/1,000 gal)

**1 kg (Item #35-307-0001)**

## 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 (0.08-1.3 lb/1,000 gal)

**0.5 kg (Item #35-313-0500)**

## 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 (0.08-1.3 lb/1,000 gal)

**0.5 kg (Item #35-314-0500)**

## EnartisTan MEL

- Liquid preparation of ellagic tannin extracted from French oak.
- Designed to be used during wine maturation to prevent reduction and protect wine from oxidation.
- In barrel-aged wines, it helps to enhance oak profile (caramel, coconut, coffee and cocoa).
- The liquid form makes it easy-to-use.

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

**Dosage:** 1-30 mL/hL (38-1,100 mL/1,000 gal)

**1 kg (Item #35-363-0001)**

## GRAPE TANNINS

### EnartisTan ELEGANCE

- Condensed tannins largely extracted from white grape skins.
- Increases antioxidant protection when used in white and rosé wines during fermentation and maturation.
- Improves aromatic freshness and enhances fruit aromas.
- Increases wine structure, softness and balance without imparting astringency or dryness.

**Application:** antioxidant protection; increase structure and fruit notes; softness and balance

**Dosage:** 10-15 g/hL (0.8-1.3 lb/1,000 gal) during fermentation; 3-10 g/hL (0.25-0.8 lb/1,000 gal) in wine

**1 kg (Item #35-350-0001)**

### 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 (0.04-0.8 lb/1,000 gal)

**1 kg (Item #35-362-0001)**

### 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 (0.25-0.8 lb/1,000 gal) in wine

**1 kg (Item #35-345-0001)**

## EnartisTan SKIN

- High molecular weight condensed tannins obtained from fresh white grape skins.
- Improves aromatic cleanliness, enhances fruitiness and brightness.
- Builds mid palate, improves mouthfeel, structure and complexity.
- Contributes to color stability.

**Application:** antioxidant protection; increase structure and fruit notes

**Dosage:** 3-20 g/hL (0.25-1.7 lb/1,000 gal)

**1 kg (Item #35-360-0001)**

## 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 (0.04-1.7 lb/1,000 gal)

**1 kg (Item #35-371-0001)**



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 Stellenbosch Hills - South Africa**

## EnartisTan UVA

- High molecular weight condensed tannin extracted from white grape seeds.
- Promotes color stability by condensation with anthocyanins.
- Enhances fruit aromas, balances astringency and improves structure, mouthfeel and complexity.
- Improves protein stabilization in white and rosé wines.

**Application:** color stabilization by condensation; increase structure and fruit notes

**Dosage:** 1-10 g/hL (0.08-0.8 lb/1,000 gal)

**1 kg (Item #35-355-0001)**

## EnartisTan UVASPEED

- Condensed tannins extracted from unfermented white grape skins.
- Provides intense fruit notes, freshens wines, increases wine structure and softness.

**Application:** decrease astringent and bitter sensations; increase softness and structure

**Dosage:** 3-20 g/hL (0.25-1.7 lb/1,000 gal)

**1 kg (Item #35-365-0001)**

## EnartisTan UNICO RANGE

### EnartisTan UNICO #1

ELEGANCE &  
STRUCTURE

- Ellagic oak tannin.
- Intense and delicate vanilla, chocolate and toasted oak aromas.
- Contributes to volume and structure of wine.

**Application:** finishing; enhance aroma complexity

**Dosage:** 1-15 g/hL (0.08-1.2 lb/1,000 gal)

**0.25 kg (Item #35-380-0250)**

### EnartisTan UNICO #2

BRIGHT,  
RED FRUIT

- 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 (0.08-1.2 lb/1,000 gal)

**0.25 kg (Item #35-375-0250)**

### EnartisTan UNICO #3

ENHANCE  
FRESHNESS

- 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 (0.08-0.8 lb/1,000 gal)

**0.25 kg (Item #35-395-0250)**

	Color stabilization	Antioxidant effect	Increase of aromatic cleanliness	Protein removal	Structure	Astringency	Softness	Aroma
<b>FERMENTATION TANNINS</b>								
EnartisTan AROM	●●	●●●●●●	●●	●●	●●	●●	●●	●●●●
EnartisTan CIT	●●●	●●●●	●●	●●●	●●	●●	●●	●●●●●
EnartisTan FERMCOLOR	●●●●	●●●●	●●●	●●●●	●●●●	●●	●●●	●●●●
EnartisTan RF	●●●	●●	●●	●●●●	●●●	●●	●●●	●●●●●
EnartisTan ROUGE	●●●	●●●●	●●●	●●●●	●●●	●●●	●●	●●
EnartisTan V	●●●●●●	●●	●●	●●●	●●●●●●	●●●●	●●	●●●
EnartisTan XC	●●●●	●●	●●	●●●●	●●	●●●	●●●	●
<b>TECHNICAL TANNINS</b>								
EnartisTan ANTIBOTRYTIS	●	●●●●●●	●●	●●	●●	●●	●	●
EnartisTan BLANC	●	●●●●●●	●	●	●●	●●	●	●
EnartisTan E	●●●●●●	●●	●●	●●●	●●●●●●	●●●●	●●	●●●
HIDEKI	●●	●●●●●●	●●●●	●●●●	●●	●	●●●●	●
EnartisTan MAX NATURE	●●●	●●	●●●●	●●	●	●	●●●●●	●
EnartisTan SLI	●●	●●●●●●	●●●●	●●●	●●	●	●●●●	●●●●
<b>OAK TANNINS</b>								
EnartisTan CŒUR DE CHÊNE	●●	●●	●●	●	●●	●●	●●●	●●●●
EnartisTan DC	●●	●●●	●●	●	●●●	●	●●●●	●●●●●
EnartisTan ELEVAGE	●●	●●●	●●●	●●●●	●●●	●●●	●●	●●●
EnartisTan EXTRA	●●	●	●●	●	●●	●	●●●●	●●●●●
EnartisTan MEL	●●	●●●	●●	●	●●●	●	●●●●	●●●●●
EnartisTan NAPA	●●	●●●	●●	●	●●●	●	●●●●	●●●●●
EnartisTan TOF	●●	●●●	●●●	●	●●●●	●●	●●●	●●●●
EnartisTan VNL	●●	●●●	●●●	●	●●●●	●●	●●●	●●●●
<b>GRAPE TANNINS</b>								
EnartisTan ELEGANCE	●●●●	●●●●	●●●	●●●●	●●	●	●●●●	●●●
EnartisTan FF	●	●●●	●●	●●●	●●	●	●●●●	●●●●
EnartisTan FT	●●●●	●●●●	●●●	●●●●	●●●	●●●	●●	●●●
EnartisTan SKIN	●●●●	●●●	●●	●●●	●●	●●	●●	●●●●
EnartisTan TFT	●●	●●	●●	●●●	●●	●	●●●●	●●●●
EnartisTan UVA	●●●●	●●●	●●	●●●●	●●●	●●●●	●●	●●●●●
EnartisTan UVASPEED	●●●●	●	●	●	●●	●	●●●●●	●●●●
<b>UNICO TANNINS</b>								
EnartisTan UNICO #1	●●	●●	●●	●	●●●●	●	●●●●	●●●●●●●
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 FERMCOLOR
	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
		Condensation & co-pigmentation: 200 g/ton EnartisPro TINTO or INCANTO NC range
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.	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.

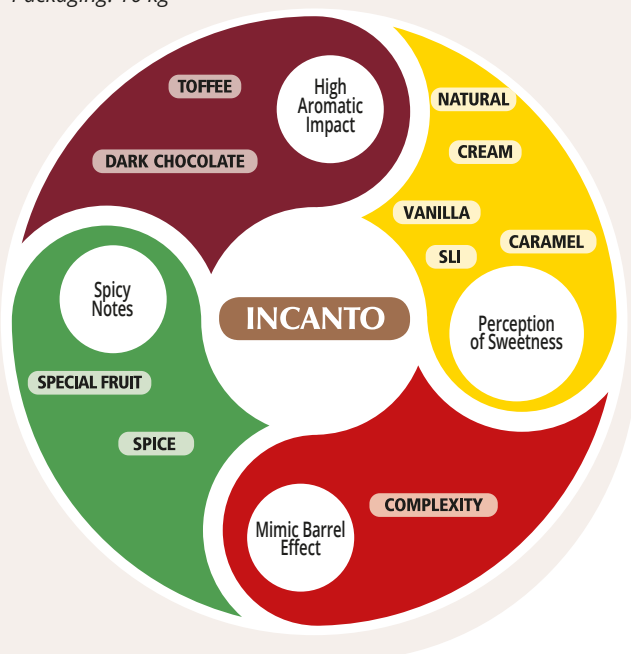
### INCANTO CHIPS

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 NATURAL

**Composition:** French oak, untoasted.

**Aroma:** enhances fruit, vanilla, coconut, cedar and freshness. Preserves aromatic characteristics of wine.

**Taste:** increases wine structure, volume and smoothness, and improves balance and finesse.

**Available form:** chips

10 kg (Item #35-922-0010)

### 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

10 kg (Item #35-920-0010)

### 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

10 kg (Item #35-925-0010)

### 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

10 kg (Item #35-919-0010)

### INCANTO SLI

- American oak, untoasted.
- Enhances varietal characteristics and increases freshness and longevity of aromas.
- Increases volume, softness and structure without increasing tannic sensations.
- Increases ageing potential.

10 kg (Item #35-927-0010)

### INCANTO SPECIAL FRUIT

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

**Aroma:** spicy, black pepper, caramel, licorice, vanilla, coconut notes. Enhances freshness, fruitiness and complexity.

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

**Available form:** chips

10 kg (Item #35-923-0010)

### INCANTO SPICE

- French and American oak, various toast levels.
- Spicy aromas - cloves, black pepper, licorice, cocoa, coffee made complex by notes of Bourbon, fruit, dried fruit and coconut.
- Increases softness and structure.

10 kg (Item #35-926-0010)

### 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

10 kg (Item #35-924-0010)

## 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

10 kg (Item #35-921-0010)

## INCANTO COMPLEXITY

• French oak, heavy toast.

• Coffee and toast made complex by sweeter aromas of vanilla, coconut and caramel.

• Increases structure, softness and sweetness perception.

10 kg (Item #35-928-0010)

INCANTO RANGE	OAK	TOAST	AROMATIC IMPACT	MOUTHFEEL
INCANTO SLI	US	Untoasted	Fresh, neutral	Volume, soft, structure
INCANTO NATURAL	FR	Untoasted	Fruit, fresh, vanilla, coconut	Sweetness, structure, smooth
INCANTO VANILLA	US	Light-medium	Vanilla, coconut, bourbon, butter	Soft, volume, fresh
INCANTO CREAM	FR	Medium	Custard, coconut, cappuccino, dried fruit	Sweetness, soft, volume
INCANTO CARAMEL	FR	Medium	Caramel, toasted hazelnut, butter	Sweetness, smooth
INCANTO SPECIAL FRUIT	FR	Medium Plus	Spice, chocolate, fruit, complexity	Smooth, structure, volume
INCANTO SPICE	FR, US	Various	Black pepper, licorice, complexity	Structure, soft
INCANTO COMPLEXITY	FR	Heavy	Coffee, caramel, vanilla, coconut, complexity	Structure, smooth, sweet
INCANTO TOFFEE	FR	Medium Plus	Caffè macchiato, toasted bread, hazelnut	Smooth, sweet, complex
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.

INCANTO NC  
WHITE

INCANTO NC  
CHERRY

INCANTO NC

INCANTO NC  
RED

INCANTO NC  
DARK CHOCOLATE

## INCANTO NC



- Inactivated yeast, oak tannin and condensed tannin extracted from exotic wood.
- Mimics the effect of medium-toasted oak powder.
- Enhances oak aromas and aromatic complexity, increases roundness, structure and balance.
- Improves color stability.

**Application:** medium-toasted oak; color stability; complexity; volume and structure

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

2.5 kg (Item #35-916-0002)  
10 kg (Item #35-916-0010)

## 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:** 5-50 g/hL (0.4-4.2 lb/1,000 gal)

2.5 kg (Item #35-918-0002)  
10 kg (Item #35-918-0010)

## INCANTO NC RED

- Oak tannin and inactivated yeast.
- Mimics the effect of medium-plus toasted oak powder.
- Decreases green aromas of unripe grapes, prevents reduction and increases structure, volume and sweetness.
- Increases color stability.

**Application:** medium-plus toasted oak; reduce herbaceous notes; complexity; increase volume and structure

**Dosage:** 10-50 g/hL (0.8-4.2 lb/1,000 gal) for red must

2.5 kg (Item #35-917-0002)  
10 kg (Item #35-917-0010)

## 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:** 5-50 g/hL (0.4-4.2 lb/1,000 gal)

2.5 kg (Item #35-913-0002)  
10 kg (Item #35-913-0010)



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 (0.8-4.2 lb/1,000 gal)

2.5 kg (Item #35-914-0002)  
10 kg (Item #35-914-0010)



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, color intensity and stability.

Alicia Rechner, Winemaker at  
Backsberg Estate Cellars - Paarl,  
South Africa



## 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 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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Inspiring innovation.

## 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. The Enartis bacteria range does not produce biogenic amines.

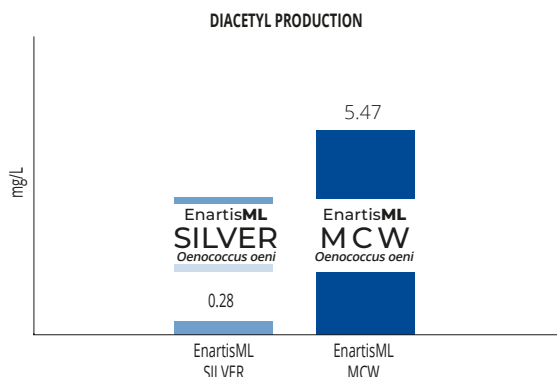
### EnartisML MCW

- Freeze-dried form for direct addition after rehydration.
- Isolated from Sonoma County, California.
- Resistant to extreme conditions such as high alcohol and low pH.
- Produces high diacetyl and contributes to creamy, "buttery" characters in wine.

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

**Package designed for:**

2.5 hL (66 gal) (Item #30-031-0003)  
25 hL (660 gal) (Item #30-031-0025)  
250 hL (6,600 gal) (Item #30-031-0250)



EnartisML MCW produces high amounts of diacetyl which contributes to buttery, creamy notes in wine.

### 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

**Package designed for:**

2.5 hL (66 gal) (Item #35-505-0000)  
25 hL (660 gal) (Item #35-505-0025)  
250 hL (6,600 gal) (Item #35-505-0250)  
1,000 hL (26,400 gal) (Item #35-505-1000)

## 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 (68-77°F). Stir gently and wait 15 minutes.
- Add NUTRIFERM OSMOBACTI to the EnartisML bacteria slurry in order to improve survival rate and activate EnartisML bacteria. Stir gently and let stand for 4 hours at 18-20°C (64.5-68°F).
- Stir the suspension gently and add to wine during pump-over or mixing.

### EnartisML UNO

- Freeze-dried form for direct addition after rehydration.
- Provides a quick start and complete malolactic fermentation.
- Production of wines with improved sensory attributes (fruity and varietal notes).

**Application:** sequential inoculation; co-inoculation; respect wine aroma

**Package designed for:**

2.5 hL (66 gal) (Item #35-501-0002)  
25 hL (660 gal) (Item #35-501-0025)  
250 hL (6,600 gal) (Item #35-501-0250)

ENARTIS STRAINS	EnartisML MCW	EnartisML SILVER	EnartisML UNO
SPECIES	<i>Oenococcus oeni</i>		
pH TOLERANCE	>3.1	>3.2	>3.3
TOTAL SO <sub>2</sub> RESISTANCE (mg/L)	<40	<50	<40
FREE SO <sub>2</sub> RESISTANCE (mg/L)	<10	<10	<10
ALCOHOL TOLERANCE (%v/v)	>15	>15	<15
CONVERSION SPEED	Moderate	High	High
AROMATIC CHARACTERISTICS	Buttery, "Sweet"	Fruity, Floral	Fruity, Varietal

## ML NUTRIENTS

### NUTRIFERM ML

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

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

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

**1 kg (Item #35-510-0001)**

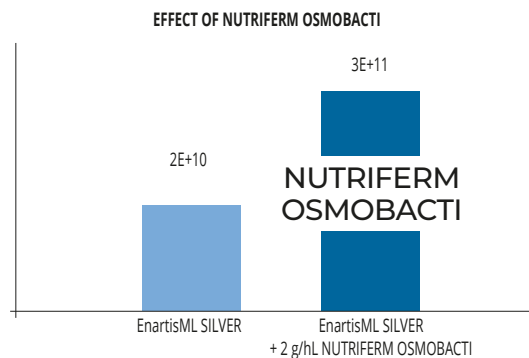
### NUTRIFERM OSMOBACTI

- Activator and regulator of osmotic pressure specific for ML bacteria: autolyzed yeast, cellulose, L-malic acid, and bi-ammonium phosphate.
- Improves survival rate of ML bacteria during rehydration and resistance in difficult wine conditions.
- Activates ML bacteria, allowing a faster start and completion of malolactic fermentation.

**Application:** nutrient during rehydration; difficult conditions; increase the survival rate; accelerates the start of MLF

**Dosage:** 50 g per 25 hL (660 gal) dose of bacteria

**100 g (Item #35-511-0100)**



NUTRIFERM OSMOBACTI used during rehydration of ML bacteria increases the cell division and survival rate of the ML bacteria.



## 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 improve wine microbial stability, aroma complexity, mouthfeel, and color stabilization. They also reduce total acidity 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 1.0 g/L face greater difficulties starting MLF because there is not enough "food" for the ML bacteria to grow and produce the necessary enzymes to degrade malic acid. The addition of **NUTRIFERM OSMOBACTI** helps start MLF by activating bacteria's enzymes and improving conditions (higher pH and malic acid concentration) to increase the survival rate.

### WHAT ARE THE RISKS OF SPONTANEOUS MLF?

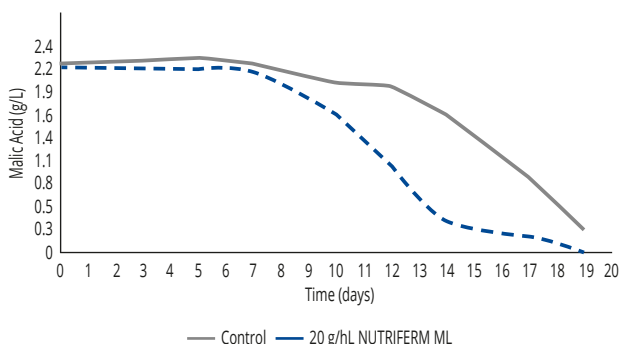
Uncontrolled, spontaneous MLF may increase the risk of spoilage organisms such as *Brettanomyces* sp., as well as the production of undesirable compounds. Volatile acidity, excess of diacetyl, acrolein (bitter), and ropiness are the most common negative sensory characters expected in spontaneous MLF 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 the wine due to the negative sensory impact. 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. **EnartisML MCW** is the bacteria with the highest capacity to produce diacetyl, followed by **EnartisML UNO** and **EnartisML SILVER**. 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 in-house or outside laboratories 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 (68-77°F) and wait 15 minutes.
- Add 200 g of **NUTRIFERM OSMOBACTI** to the suspension and wait 2-4 hours.
- Prepare 50 L of wine + 50 L water + 1 kg **NUTRIFERM ML** and rehydrated 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.



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## PLANT-BASED PROTEINS

Plant proteins, free of genetically modified organisms and allergenic proteins, are suitable for vegetarian and vegan beverage production. Often used to correct oxidation, browning, and bitterness, plant proteins have excellent clarifying and stabilizing properties.

### PLANTIS AF-Q

- Allergen-free preparation made of pea protein and activated chitosan.
- Activated chitosan and hydrolyzed pea protein work synergistically to increase flocculant efficacy in improving clarification.
- 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:** flotation; prevent and treat oxidation and pinking; reduce bitterness and astringency

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

1 kg (Item #35-759-0001)  
10 kg (Item #35-759-0010)

### PLANTIS PQ

- Vegan friendly fining agent made of potato protein and activated chitosan.
- Effective in improving wine clarification, filterability and aromatic cleanliness.
- Improves wine resistance to oxidation by removing oxidized and oxidizable compounds.
- In red wines, removes unstable color while respecting wine's color intensity.
- Increases aromatic cleanliness and reduces the perception of astringency and dryness.

**Application:** wine clarification; treatment of oxidized wine or wine sensitive to oxidation; reduce astringency and dryness; elimination of unstable color

**Dosage:** 4-10 g/hL (0.3-0.8 lb/1,000 gal)

1 kg (Item #35-764-0001)

### CLARIL AF

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

**Application:** prevent and treat oxidation and pinking; remove bitterness; improves protein stability

**Dosage:** 30-150 g/hL (2.4-12.6 lb/1,000 gal)

1 kg (Item #35-666-0001)  
10 kg (Item #35-666-0010)

### 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:** clarification of red wine intended to be tartrate stabilized with ZENITH; elimination of unstable color

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

2.5 kg (Item #35-663-0002)  
10 kg (Item #35-663-0010)

### 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:** clarification of white and rosé wine intended to be tartrate stabilized with ZENITH; protein and colloid stability

**Dosage:** 20-80 g/hL (1.7-6.7 lb/1,000 gal)

2.5 kg (Item #35-664-0002)  
10 kg (Item #35-664-0010)

PROTEIN  
STABILITY

## GELATIN

### HYDROCLAR 30

- 30% liquid solution of food grade gelatin. Medium hydrolyzed gelatin.
- Good for clarification.
- Reduces dryness and astringency at the middle-end of the palate.

**Application:** flotation; clarification; reduce astringency; reduce dryness

**Dosage:** 10-60 mL/hL (0.4-2.3 L/1,000 gal)

1 L (Item #35-610-0001)  
20 kg (Item #35-610-0025)

### HYDROCLAR 45

- 45% liquid solution of food grade gelatin. Extremely hydrolyzed gelatin and low charge density.
- Powerful effect on removing undesirable polyphenols and harsh tannins.

**Application:** reduce excessive astringency; reduce dryness; pressed wines

**Dosage:** 7-40 mL/hL (0.27-1.5 L/1,000 gal)

5 kg (Item #35-615-0005)  
20 kg (Item #35-615-0025)

## INORGANIC FINING AGENTS

### PLUXBENTON N

- Granular sodium bentonite.
- Excellent protein removal and good clarification properties.
- Reduces riboflavin, the molecule responsible for "light-struck" defect in white wines.

**Application:** protein stabilization; clarification; prevent "light-struck" defect

**Dosage:** 20-200 g/hL (1.7-16.7 lb/1,000 gal)

20 kg (Item #35-685-0020)

### 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 (0.8-16.7 lb/1,000 gal)

1 kg (Item #35-680-0001)

20 kg (Item #35-680-0020)

### BENTOLIT SUPER

- Powdered calcium bentonite sodium activated.
- Excellent clarification with good protein removal.

**Application:** dilute in 20 times its weight of cold water. Allow to swell 12-24 hours. Stir constantly during addition.

**Dosage:** 20-200 g/hL (1.7-17 lb/1,000 gal)

25 kg (Item #35-675-0025)

HOW TO CHOOSE BETWEEN ENARTIS BENTONITES	
FUNCTION	ENARTIS PRODUCT
LEES COMPACTION	PLUXCOMPACT > BENTOLIT SUPER > PLUXBENTON N
PROTEIN REMOVAL	PLUXBENTON N > PLUXCOMPACT ≥ BENTOLIT SUPER

### SIL FLOC

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

**Application:** clarification

**Dosage:** 25-100 mL/hL (1-3.8 L/1,000 gal)

25 kg (Item #35-690-0025)

## CORRECTIVE FINING AGENTS

### ENOBLOCK PERLAGE

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

**Application:** discoloration of juice and wine; treat oxidation; color adjustment in rosé wine

**Dosage:** 5-100 g/hL (0.4-8.3 lb/1,000 gal)

1 kg (Item #35-701-0001)

15 kg (Item #35-701-0015)



### FENOL FREE

- 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 (1.7-3.4 lb/1,000 gal)

1 kg (Item #35-705-0001)

10 kg (Item #35-705-0010)

### 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 (2.1-9.2 lb/1,000 gal)

1 kg (Item #35-674-0001)

10 kg (Item #35-674-0010)

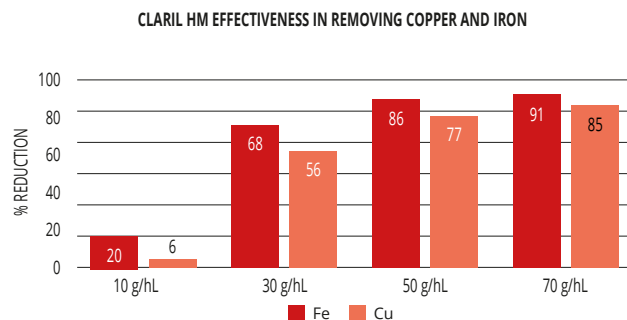
## CLARIL HM

- 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 (2.5-4.2 lb/1,000 gal)

**2.5 kg (Item #35-661-0001)**



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.



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 - South Africa**

## PROTOCLAR

- Pure potassium caseinate containing over 90% protein.
- Prevents and treats oxidation, browning and pinking.
- Reduces bitterness.
- Removes off-flavors.

**Recommendations:** treat oxidation; remove browning; reduce astringency; reduce off-flavors

**Application:** dissolve in 20 times its weight of cold water. Stir constantly during addition

**Dosage:** 20-100 g/hL (1.7-8.3 lb/1,000 gal)

**20 kg (Item #35-645-0025)**

## 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
CLARIFICATION	GELATIN - EGG ALBUMEN	CLARIL ZR - CLARIL ZW - PLANTIS PQ - PLANTIS AF-Q
REDUCE ASTRINGENCY	GELATIN - EGG ALBUMEN	PLANTIS PQ
REDUCE BITTERNESS	ISINGLASS - PVPP - CASEINATE	CLARIL 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 ANIMAL-DERIVED 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-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 and PLANTIS PQ are the best plant-based fining agents 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 or PLANTIS PQ to achieve successful flotation. The synergistic action between the hydrolyzed plant protein and chitosan improves floccules formation efficacy, thanks to the increased 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.



**enartis**

Inspiring innovation.

## TARTARIC STABILIZATION ZENITH RANGE

### ZENITH UNO

BEST  
KHT  
STABILIZER

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

**Application:** tartrate stability

**Dosage:** 100 mL/hL (3.8 L/1,000 gal)

5 kg (Item #35-792-0005)  
20 kg (Item #35-792-0020)  
1000 kg (Item #35-792-1000)



*There have been very few products that I have looked forward to as much as the ZENITH line. Cold stability can be very expensive, time intensive and inexact. Both ZENITH UNO and ZENITH COLOR offer cost-effective alternatives to traditional cold stabilization methods.* **Matthew Iaconis, Winemaker at Brick & Mortar Wines - California, USA**

### ZENITH COLOR

BEST  
KHT & COLOR  
STABILIZER

- Solution of Potassium polyaspartate and Arabic Gum from Acacia Verek.
- 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 (7.6 L/1,000 gal)

5 kg (Item #35-793-0005)  
20 kg (Item #35-793-0020)  
1000 kg (Item #35-793-1000)



*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 - South Africa**

### ZENITH PERLAGE

- Solution of potassium polyaspartate (KPA) and mannoproteins.
- Specifically designed to prevent potassium bitartrate precipitation in sparkling wine and improve *perlage* stability.
- Does not modify wine sensory characteristics or filterability, even at low temperatures.
- Environmentally sustainable, practical, easy-to-use and respectful of wine quality.

**Application:** tartrate stability; perlage stability; sparkling wine

**Dosage:** 100 mL/hL (3.8 L/1,000 gal)

5 kg (Item #35-791-0005)  
20 kg (Item #35-791-0020)



*The ZENITH line has dramatically improved process and quality for my wines. The sustainability gains alone should be reason enough to seriously consider replacing dated methods of stabilization. We're no longer spending months putting considerable amounts of energy and labor into the chilling and seeding of our tanks. With ZENITH, there's no pH shift either; the wine's finished right after the addition. Any winery serious about the environment and costs should consider this product.*

**Karl Weichold, Estate Winemaker at Stoller Wine Group - Oregon, USA**

## KNOW MORE ABOUT ZENITH

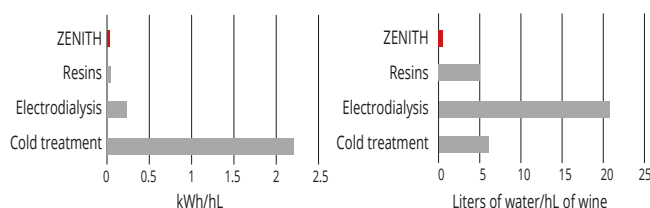
### WHAT IS POTASSIUM POLYSPARTATE?

Potassium polyaspartate (KPA) is a polyamino acid produced from L-aspartic acid, an amino acid present in grapes. Enartis has used its expertise in wine stabilization 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?

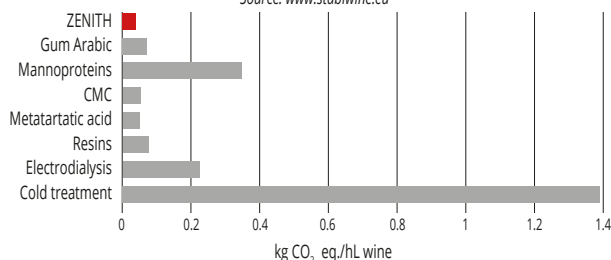
The revolution in colloid stabilization for all wines and all levels of instability! Suitable for all wineries currently using cold stabilization that want to reduce production costs and increase their sustainability standards, while simultaneously achieving ultimate stability. Enartis, the market leader 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.

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



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

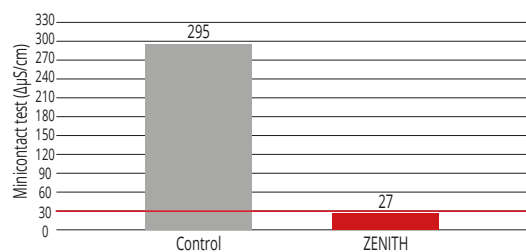
Source: [www.stabiwine.eu](http://www.stabiwine.eu)



### 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!

#### THE BEST STABILIZATION PERFORMANCE UP TO 300 ΔµS 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



## CARBOXYMETHYL CELLULOSE

### What is Carboxymethyl Cellulose (CMC)?

CMC is a cellulose derivative characterized by its polymerization and substitution degrees, parameters which affect viscosity and solubility. Due to its negative charge at wine pH, CMC interacts with the electropositive surfaces of crystals, thus inhibiting their growth and precipitation. CMC flattens the crystal surface, which becomes unable to grow.

### How CMC works?

CMC interferes with potassium bitartrate crystal nucleation and growth, hence inhibiting their precipitation. CMC, negatively charged at wine pH, competes with bitartrate ions by attracting  $K^+$  ions, thus inhibiting the formation of crystals and tartrate precipitation.

### Interactions between CMC and proteins

CMC can crosslink with proteins in wine, leading to haze formation. Consequently, wines must be protein and colloid stable before any CMC additions. Lysozyme is a protein and will generate a haze if present with CMC.

### What about CMC in red wines?

CMC can react with color compounds and result in color precipitation. To use CMC in red wines, it is important to stabilize color compounds by using MAXIGUM F in combination with CMC.

## 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 physical stabilization treatments such as cold stabilization and electrodialysis (lower energy costs and processing times).

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

**Dosage:** 25-100 mL/hL (0.95-3.8 L/1,000 gal)

**20 kg (Item #35-794-0025)**



Since 2012, I have used EnartisStab CELLOGUM LV20 as one of my preferred tartrate stabilizing additives on all my white and rosé wines. Using EnartisStab CELLOGUM LV20 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 (0.45µm) at bottling. What I love about EnartisStab CELLOGUM LV20 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 stabilize wine with costly physical stabilization treatments such as cold stabilization and/or electrodialysis, I can now use EnartisStab CELLOGUM LV20. It is a great product to use and I will recommend it to any winemaker bottling white and/or rosé wines.

**Anton Swarts, Senior Winemaker at Spier Wine Farm - Ellenbosch, South Africa**

## GUM ARABIC

Gum Arabic, extracted from Acacia Vereke or Acacia Seyal, is widely used in food, beverages and pharmaceutical industries to assist the formation and stabilization of emulsions and for the encapsulation of flavors. The major applications for gum Arabic in winemaking are to stabilize wine against tartrate precipitation, stabilize young red wines against color pigment precipitation and to improve mouthfeel.

In keeping with its philosophy of meeting different winemaking needs with appropriate products, Enartis has developed a complete range of gum Arabic preparations to meet all winemaking needs.



## AROMAGUM

- Gum Arabic solution.
- Stabilizes wine aromas, intensifies fruit aroma perception and maintains freshness over time.
- At recommended dosages, it has a limited blocking effect on filtration membranes and can be added to wine before microfiltration.

**Application:** stabilize wine aromas, reduce astringency

**Dosage:** 50-100 mL/hL (1.9-3.8 L/1,000 gal)

**20 kg (Item #35-720-0025)**

## CITROGUM

- Solution of gum Arabic 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 (1.9-7.6 L/1,000 gal)

**1 L (Item #35-725-0001)**  
**20 kg (Item #35-725-0025)**  
**200 kg (Item #35-725-0200)**  
**1,000 kg (Item #35-725-1000)**

## CITROGUM PLUS

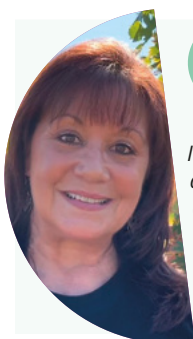
- Solution of gum Arabic from Acacia Seyal and yeast mannoproteins.
- Prevents precipitation of colloids, pigments and tartrates.
- Reduces bitterness and astringency, increases sweetness, softness and volume.
- Highly filterable.

**Application:** tartrate stability; reduce astringency perception; increase sweetness; soften mouthfeel; improve foaming capacity; white, rosé, red and sparkling wines

**Dosage:** 100-300 mL/hL (3.8-11.3 L/1,000 gal)

**20 kg (Item #35-728-0025)**

IMPROVE MOUTHFEEL



**CITROGUM PLUS** is my go-to product when I need to improve palate weight and mouthfeel of a wine before bottling. It builds the mid-palate beautifully and offers a hint of perceived sweetness leaving a luscious and succulent finish! **Tami McKay, Winemaker at Ray's Station Winery & VWE Vintage Wine Estates - California, USA**

## MAXIGUM F

- Gum Arabic solution 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; increase structure and mouthfeel; microfilterable

**Dosage:** 50-100 mL/hL (1.9-3.8 L/1,000 gal)

**20 kg (Item #35-737-0020)**

## MAXIGUM PLUS

- Solution of gum Arabic from Acacia Verek and mannoproteins.
- Highly effective in preventing color compound precipitation in red and rosé wines ready for bottling.
- The mannoproteins reinforce gum stabilization effect and, due to their interaction with aromatic and polyphenolic compounds, soften astringency, reduce dryness and improve aroma complexity.
- The gum Arabic undergoes a special filtration treatment which makes it microfilterable.

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

**Dosage:** 50-100 mL/hL (1.9-3.8 L/1,000 gal)

**20 kg (Item #35-738-0020)**

	GUM ARABIC SEYAL		GUM ARABIC VEREK	
	CITROGUM	CITROGUM PLUS	MAXIGUM F	MAXIGUM PLUS
Tartaric Stability	●●	●●	0	●
Color Stability	0	●	●●●●	●●●●
Filterability	●●●●	●●●●	●●●●	●●●●
Sensory Effect	●●● + Volume	●●●● + Volume + Softness - Bitterness	●●● + Structure	●●●● + Volume + Softness - Astringency

## SHELF LIFE IMPROVEMENT

Enartis has developed a program dedicated to the improvement of wine shelf life to help 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.

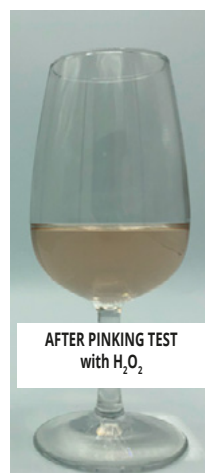
## CITROSTAB rH

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

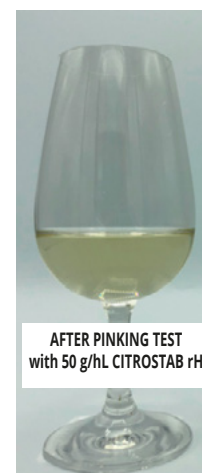
**Application:** bottling; prevent oxidation; prevent pinking; stabilize redox potential; wine shelf life improvement

**Dosage:** 10-50 g/hL (0.8-4.2 lb/1,000 gal)

**1 kg (Item #35-760-0001)**



AFTER PINKING TEST  
with H<sub>2</sub>O<sub>2</sub>



AFTER PINKING TEST  
with 50 g/hL CITROSTAB rH

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

## EnartisStab SLI

- Inactivated yeast, PVPP and untoasted tannins.
- Prevents degradation and oxidation of wine aroma during storage.
- High capacity to consume dissolved oxygen, lowers wine redox potential and protects from oxidation and browning.
- Extends wine shelf life.

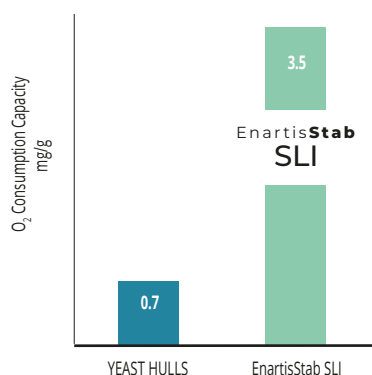
**Application:** antioxidant; prevent browning and pinking; stabilize wine redox potential

**Dosage:** 20-40 g/hL (1.7-3.4 lb/1,000 gal)

**2.5 kg (Item #35-763-0001)**



Control (left) and EnartisStab SLI (right) in Chardonnay. Picture six months after shelf ageing. Control is oxidized and brown. EnartisStab SLI protected wine and kept it fresh, vibrant and young.



EnartisStab SLI, selected for its affinity with O<sub>2</sub>, consumes more dissolved O<sub>2</sub> than any other yeast hulls.

## MICROBIAL STABILIZATION

### EnartisStab MICRO M

BEST  
MICROBIAL  
COVERAGE

- Preparation of pre-activated chitosan from *Aspergillus niger* and inactivated yeast.
- Allergen-free, vegan alternative to lysozyme and SO<sub>2</sub> for antimicrobial properties.
- Designed for treatment of grapes, must, and wine.
- Interacts with a wide spectrum of microorganisms, reduces their activity and growth, and precipitates them.
- Protects wine from oxidation and inhibits oxidative enzymatic activity in compromised grapes.
- Reduces sulfide defects, volatile phenols, VA and off-flavor production.
- Improves clarification and filterability.

**Application:** reduce unwanted microorganisms; must and wine

**Dosage:** 5-40 g/hL (0.4-3.4 lb/1,000 gal)

**1 kg (Item #35-762-0001)**

**10 kg (Item #35-762-0010)**

Starting from a no-SO<sub>2</sub> 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 SO<sub>2</sub> addition with a better protection than SO<sub>2</sub> on its own. **Mathieu Finot, Winemaker at King Family Vineyards - Virginia, USA**

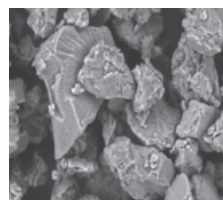
### WHAT IS CHITOSAN?

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 (NH<sup>3+</sup> groups) that interfere with the negatively-charged residues of macromolecules on the microorganism's cell wall surface.

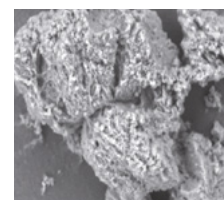
### WHY IS ENARTIS' CHITOSAN MORE EFFICIENT?

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. EnartisStab MICRO M reacts faster and at lower concentrations than standard chitosan available on the market.

This product can prevent the spoilage of contaminated wines, has side activities which improve clarity and filterability, and removes 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.
- As a treatment to remove/reduce high populations of microbes.  
Dosage: 10-20 g/hL followed by racking
- As a preventative measure to eliminate small populations before they become spoilage.  
Dosage: 3-4 g/hL
- As an alternative to  $\text{SO}_2$  for microbial control.

### 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 1).

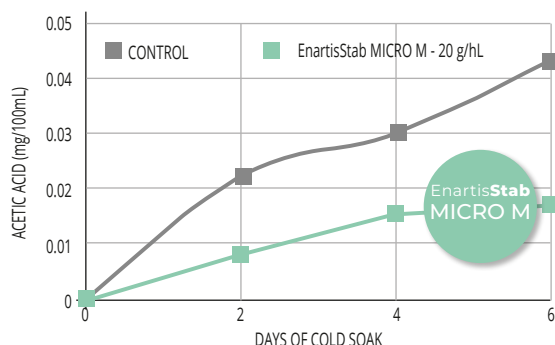


Figure 1: The addition of EnartisStab MICRO M on grapes controls VA production during cold soak.

### REDUCE VOLATILE PHENOLS

After fining with EnartisStab MICRO M, wines appear cleaner, fresher and often fruitier. EnartisStab MICRO M can reduce volatile phenols, treat reduction issues and remove other off-flavors. Dosage: 2-15 g/hL

### CONTROL MLF

#### AN ALLERGEN-FREE ALTERNATIVE

EnartisStab MICRO M is a allergen-free and vegan-friendly fining agent that can prevent, delay, or stop MLF. It can control *Oenococcus Oeni* development in any condition. This bioregulators' antimicrobial activity is not influenced by wine pH, unlike sulfur dioxide (Figure 2).

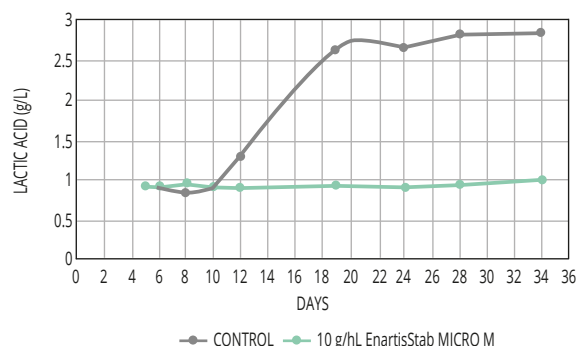


Figure 2: Difference of microbiological coverage between low  $\text{SO}_2$  protection versus the addition of 10 g/hL EnartisStab MICRO M in a wine with a high pH (3.9). Treatment of wine with  $10^{12}$  CFU/mL of selected highly resistant bacteria adapted to the medium.

### LIMIT STUCK FERMENTATIONS

#### PROMOTE CLEAN AND COMPLETE FERMENTATIONS

EnartisStab MICRO M:

- Improves fermentation kinetics and ensures its completion by removing spoilage microbes that inhibit yeast (Figure 3). Dosage: 10 g/hL
- Improves the start of native fermentations by reducing microbial competition. Dosage: 5 g/hL
- Does not impact fermentation kinetics of *Saccharomyces cerevisiae*.

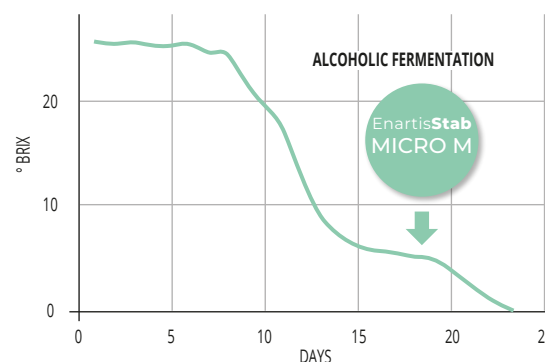
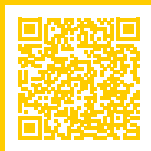


Figure 3: The addition of EnartisStab MICRO M to a sluggish fermentation helps complete fermentation.

## 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. 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

EARLY PROTECTION

- 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

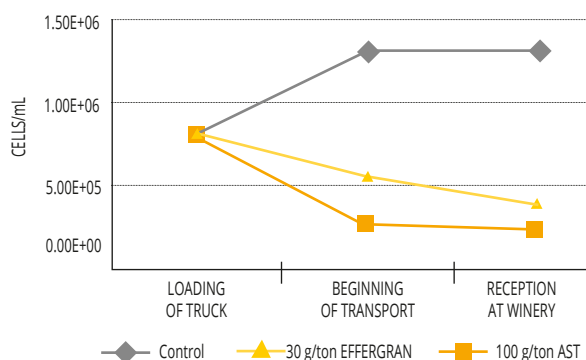
**Dosage:** 100-200 g/ton of grapes

15-20 g/hL (1.2-1.7 lb/1,000 gal) in juice

10 g/hL (0.8 lb/1,000 gal) of AST contains approximately 28 ppm SO<sub>2</sub> and 30 ppm ascorbic acid

**1 kg (Item #35-825-0001)**

ANTIMICROBIAL ACTION OF EFFERGRAN AND AST EFFECT IN GRAPES AND MUST



Wonderful product with regards to getting some good protection out in the vineyards, the tractor drivers throw it onto the trailers as soon as the machine offloads. Juice keeps its green colour for very long period due to good protection against oxygen. What I have noticed is how well the ascorbic acid first binds the oxygen then after that the sulphur binds. I gather info from my analyses once the juice arrives in the cellar. I use a drum filter (oxidative) to filter my lees and even then the juice is still green with minimal browning.

**Philip Viljoen, Winemaker at Bon Courage Cellar - Robertson, South Africa**

## 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 contains approximately 0.56 g of SO<sub>2</sub>

**1 kg (Item #35-820-0001)**

**25 kg (Item #35-820-0025)**

### CALCULATION FOR ADDITION OF WINY

$$\frac{(\text{ppm Total SO}_2 \text{ desired}) \times (\text{Liters of Wine})}{(0.56 \times 1,000)} = \text{grams WINY to add}$$

### POTASSIUM METABISULFITE ADDITION GUIDELINES

WINY	SO <sub>2</sub> addition (mg/L)	g/hL	g/barrel	g/1,000 gal	lbs/1,000 gal
	5	0.9	2	33	0.07
	10	1.8	4	65	0.14
	30	5.4	12	196	0.43
	50	8.9	20	326	0.72
	60	10.7	24	392	0.86
EFFERGRAN / EFFERBARRIQUE	SO <sub>2</sub> addition (mg/L)	g/hL	g/barrel	g/1,000 gal	lbs/1,000 gal
	5	1.25	2.7	46	0.10
	10	2.4	5.4	93	0.21
	30	7.1	16.1	278	0.63
	50	11.9	26.8	463	1.04
	60	14.3	32.1	556	1.25

### EFFERGRAN/EFFERGRAN DOSE 5/ EFFERBARRIQUE

- Effervescent, granulated potassium metabisulfite designed to be added directly to wine and grapes.
- Quick dissolution on the surface of the liquid, ensuring antioxidant effect where needed.
- Homogenous and rapid distribution of the released SO<sub>2</sub> without requiring pump-overs in tank volumes of up to 50,000 liters.
- 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.

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

**Dosage:** 1 package of EFFERBARRIQUE releases 2 g of SO<sub>2</sub>  
1 package of EFFERGRAN DOSE 5 releases 5 g of SO<sub>2</sub>

**EFFERBARRIQUE (40 packs) (Item #35-800-0000)**

**EFFERGRAN DOSE 5 (25 packs) (Item #35-805-0000)**

**EFFERGRAN 125 g (Item #35-810-0000)**

**EFFERGRAN 250 g (Item #35-815-0000)**

**EFFERGRAN 1 kg (Item #35-810-0001)**

### CALCULATION FOR ADDITION OF EFFERGRAN/EFFERBARRIQUE

$$\frac{(\text{ppm Total SO}_2 \text{ desired}) \times (\text{Liters of Wine})}{(0.42 \times 1,000)} = \text{grams EFFERGRAN to add}$$

# WINEMAKING BASICS





### ASCORBIC ACID POWDER, Food Grade

1 kg (Item #30-014-1001)

### CITRIC ACID, Food Grade

1 kg (Item #30-036-1000)  
25 kg (Item #30-036-0025)  
50 lb (Item #30-036-0050)

### DISACIDIFICANTE BIANCONEVE

- Blend of potassium bicarbonate and neutral potassium tartrate.
- Reduces acidity of overly acidic wines making them smoother and more pleasant

1 kg (Item #35-391-0001)  
25 kg (Item #35-391-0025)

### DIAMMONIUM PHOSPHATE (DAP)

5 kg (Item #30-015-5000)  
25 kg (Item #30-025-0025)  
50 lb (Item #30-015-0055)

Please inquire for pricing.

### ENOCRISTAL SUPERATTIVO

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

1 kg (Item #35-715-0001)

### L-MALIC ACID, Food Grade

25 kg (Item #30-136-0025)

### D,L-MALIC ACID POWDER, Food Grade

1 kg (Item #30-137-0001)  
50 lb (Item #30-037-0050)

### POTASSIUM BITARTRATE, Food Grade

25 kg (Item #30-130-0050)

### TARTARIC ACID, Food Grade

1 kg (Item #30-038-1000)  
25 kg (Item #30-038-0025)

Please inquire for pricing.

### WINY - Potassium Metabisulfite

1 kg (Item #35-820-0001)  
25 kg (Item #35-820-0025)  
500 g (Item #35-820-0500)

### PVPP

- Pure polyvinylpolypyrrolidone.
- Highly effective in removing oxidized and oxidizable polyphenols, browning compounds and off-flavors.
- Prevents and treats oxidation, prevents pinkening and reduces bitterness.

1 kg (Item #35-655-0001)  
20 kg (Item #35-655-0020)

# TIPS & TRICKS



Inspiring innovation.

## PREPARING LAB BENCH TRIALS

Bench trials are essential to determine proper dosing and the efficiency of a treatment (addition of fining agents, tannins or polysaccharides). To set-up bench trials, follow these steps:

- Prepare 1% (1 g in 100 mL), 2% (2 g in 100 mL) or 5% (5 g in 100 mL) treatment solutions of the product to be tested:
  - For fining agents: prepare solution in water as recommended in the technical data sheet.
  - For tannins: prepare solution in neutral alcohol-water solution (~ 13%).
  - For polysaccharides, prepare solution in warm water, let rehydrate for two hours and allow to cool down before use.
  - For liquid products: use solution as it is or dilute if necessary.
- Label each sample bottle. Keep one untreated sample as a control.
- Fill samples with wine up to 80% of final volume, leaving space for the addition.
- Add the treatment solution. Refer to the tables to the right.
- Mix immediately after addition, top each bottle with wine and mix again.
- For fining agents: store in refrigerator for settling (usually 1-2 days). Let come to room temperature before evaluating.
- For tannins, polysaccharides and gum Arabic, wines can be tasted immediately after addition.

## Product Density

PRODUCT	AVERAGE DENSITY (kg/dm <sup>3</sup> )
AROMAGUM	1.100
EnartisStab CELLOGUM LV20	1.100
CITROGUM	1.100
CITROGUM PLUS	1.100
HYDROCLAR 45	1.160
MAXIGUM F	1.100
MAXIGUM PLUS	1.100
SIL FLOC	1.210
EnartisZym EZFILTER	1.190
EnartisTan MEL	1.190
EnartisZym QUICK	1.170
EnartisZym RS	1.080
ZENITH COLOR	1.120
ZENITH PERLAGE	1.050
ZENITH UNO	1.050

## ADDITIONS WITH 1% SOLUTION

wine sample (mL)	50	100	125	375	750
rate (g/hL)					
5	0.3	0.5	0.6	1.9	3.8
7	0.4	0.7	0.9	2.6	5.3
15	0.8	1.5	1.9	5.6	11.3
20	1.0	2.0	2.5	7.5	15.0

## ADDITIONS WITH 2% SOLUTION

wine sample (mL)	50	100	125	375	750
rate (g/hL)					
25	0.6	1.3	1.6	4.7	9.4
30	0.8	1.5	1.9	5.6	11.3
40	1.0	2.0	2.5	7.5	15.0
50	1.3	2.5	3.1	9.4	18.8

## Conversion Charts

### TEMPERATURE CONVERSIONS

$C^{\circ} \text{ to } F^{\circ} = (C^{\circ} \times 9/5) + 32$	$F^{\circ}$	0	32	40	50	60	70	80	90	100	110	120
$F^{\circ} \text{ to } C^{\circ} = (F^{\circ} - 32) \times (5/9)$	$C^{\circ}$	-18	0	4	10	16	21	27	32	38	44	49

### WEIGHT EQUIVALENTS

1.0 kg	1,000 g	2.2 lbs
1.0 g	1,000 mg	
1.0 mg	1,000 µg	
1 lb	454 g	16 oz
1 oz	28.35 g	
1 ton	2,000 lbs	907 kg

### VOLUME EQUIVALENTS

1 mL	1,000 µL
1 oz	29.6 mL
1 L	1,000 mL
1 hL	100 L
25 hL	660 gals
1 gal	3.78 L
	128 oz

### WEIGHT/VOLUME EQUIVALENTS

1 lb/1,000 gal	0.12 g/L
	120 ppm
	12 g/hL
1 g/hL	37.8 g/1,000 gal
	0.084 lb/1,000 gal

### VOLUME/VOLUME EQUIVALENTS

1 mL/L	100 mL/hL
	3780 mL/1,000 gal
	3.78 L/1,000 gal

## 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 enhance specific wine aromas 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.



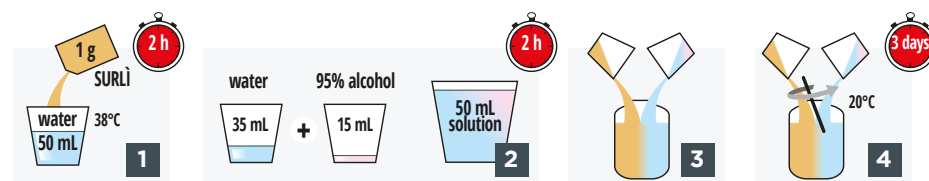
This solution can be used for rapid sensory tests: 1 mL of this solution in 100 mL of wine is equivalent to 10 g/hL of EnartisTan.

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

### How to choose SURLÌ Products?

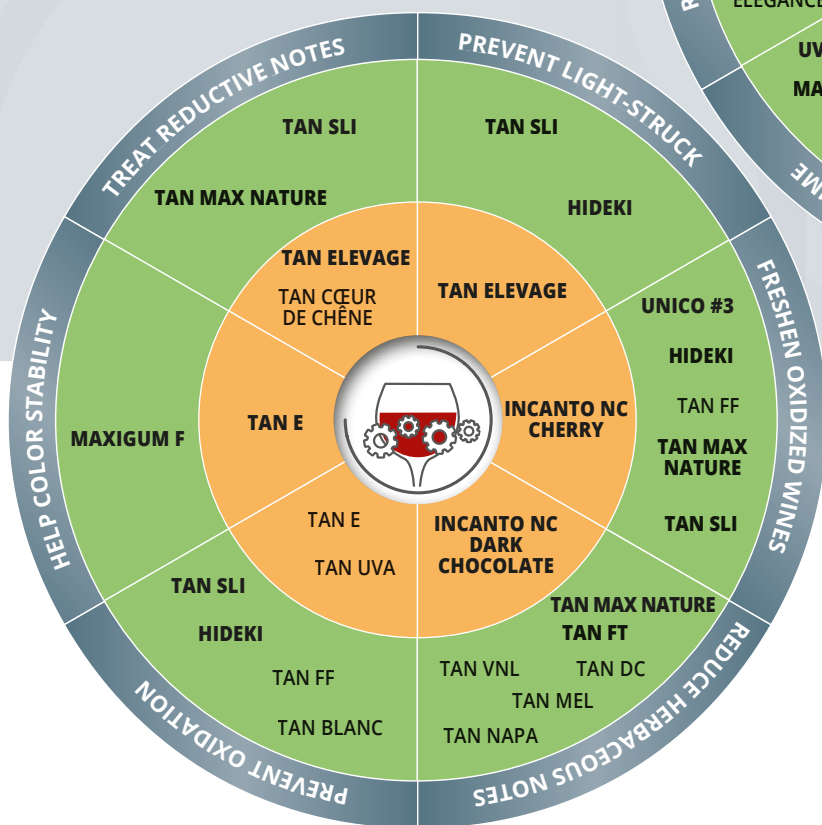
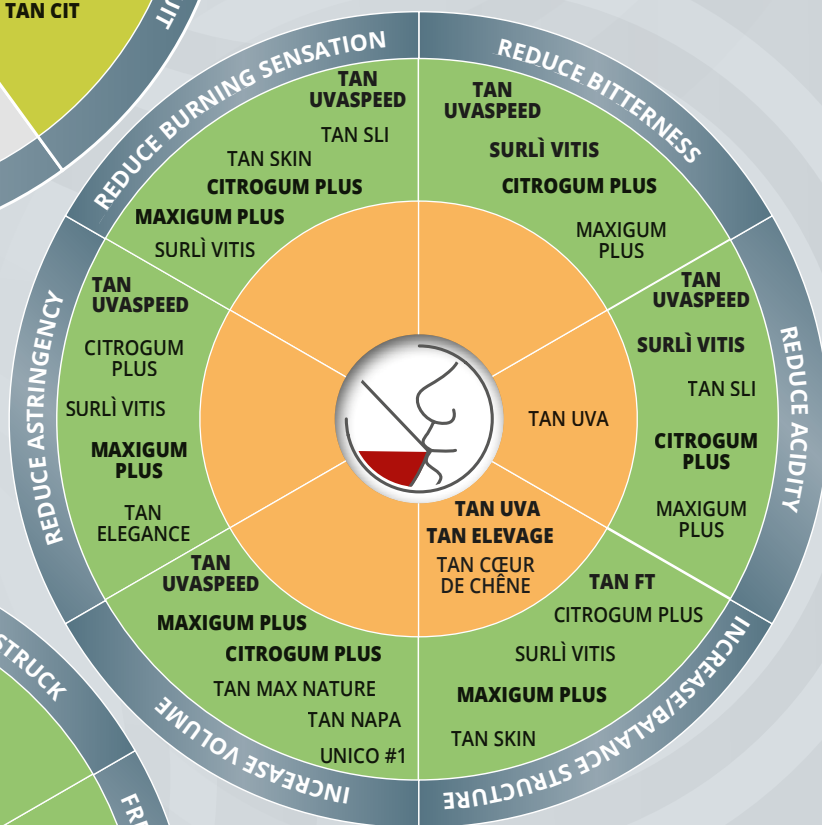
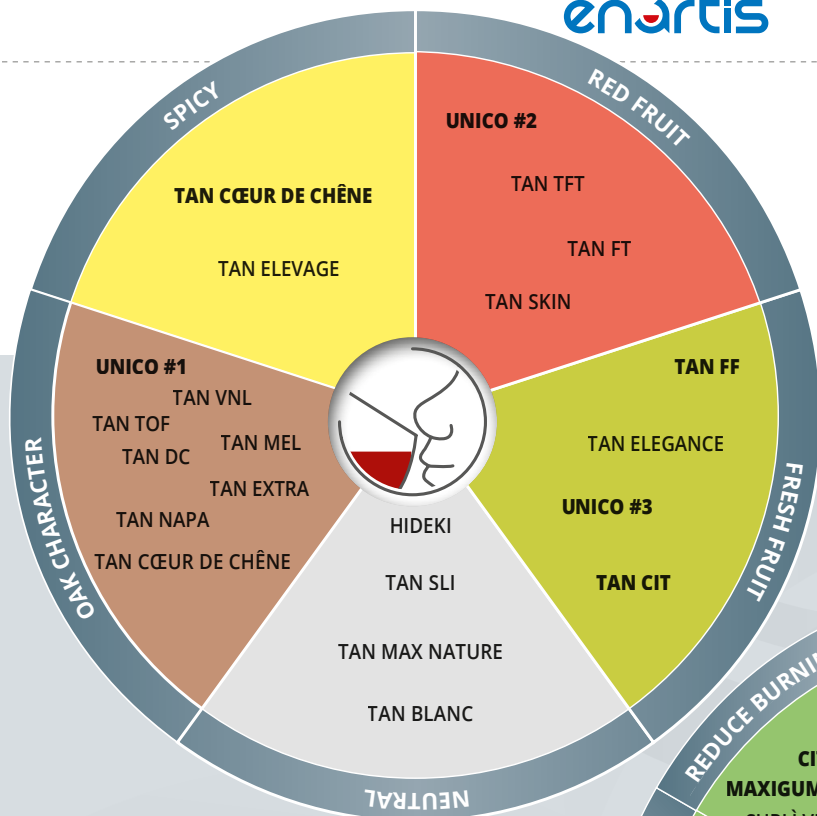
To determine which SURLÌ to use and the appropriate dosage, we recommend doing the following lab bench trial:

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 range 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

+ INTENSE/EFFECTIVE

## PAGE PRODUCT

### EMZYMES

5	EnartisZym AROM MP
5	EnartisZym COLOR PLUS
6	EnartisZym EZFILTER
5	EnartisZym RS

### YEAST

10	EnartisFerm AROMA WHITE
12	EnartisFerm D20
10	EnartisFerm ES123
10	EnartisFerm ES181
11	EnartisFerm ES454
11	EnartisFerm ES488
11	EnartisFerm ES FLORAL
13	EnartisFerm EZFERM 44
13	EnartisFerm PERLAGE
13	EnartisFerm PERLAGE FRUITY
11	EnartisFerm Q CITRUS
13	EnartisFerm Q ET
13	EnartisFerm Q RHO
13	EnartisFerm Q TAU FD
10	EnartisFerm Q4
11	EnartisFerm Q5
11	EnartisFerm Q7
11	EnartisFerm Q9
12	EnartisFerm RED FRUIT
12	EnartisFerm VINTAGE RED
10	EnartisFerm VINTAGE WHITE
12	EnartisFerm WS

### YEAST NUTRIENTS

18	NUTRIFERM ADVANCE
17	NUTRIFERM AROM PLUS
18	NUTRIFERM CONTROL
18	NUTRIFERM ENERGY
18	NUTRIFERM NO STOP
18	NUTRIFERM SPECIAL
17	NUTRIFERM ULTRA

### POLYSACCHARIDES

21	EnartisPro AROM
21	EnartisPro BLANCO
22	EnartisPro FT
21	EnartisPro TINTO
21	EnartisPro UNO
22	SURLÌ KPA
22	SURLÌ VELVET
22	SURLÌ VITIS

### TANNINS

26	EnartisTan ANTIBOTRYTIS
25	EnartisTan AROM
26	EnartisTan BLANC

## PAGE PRODUCT

25	EnartisTan CIT
27	EnartisTan CŒUR DE CHÊNE
27	EnartisTan DC
26	EnartisTan E
28	EnartisTan ELEGANCE
27	EnartisTan ELEVAGE
27	EnartisTan EXTRA
25	EnartisTan FERMCOLOR
28	EnartisTan FF
28	EnartisTan FT
26	EnartisTan MAX NATURE
28	EnartisTan MEL
27	EnartisTan NAPA
25	EnartisTan RF
25	EnartisTan ROUGE
28	EnartisTan SKIN
27	EnartisTan SLI
28	EnartisTan TFT
27	EnartisTan TOF
29	EnartisTan UNICO #1
29	EnartisTan UNICO #2
29	EnartisTan UNICO #3
28	EnartisTan UVA
28	EnartisTan UVASPEED
25	EnartisTan V
27	EnartisTan VNL
26	EnartisTan XC
26	HIDEKI

### OAK ALTERNATIVES

33	INCANTO CREAM
33	INCANTO CAMEL
34	INCANTO COMPLEXITY
34	INCANTO DARK CHOCOLATE
33	INCANTO NATURAL
35	INCANTO NC
35	INCANTO NC CHERRY
35	INCANTO NC DARK CHOCOLATE
35	INCANTO NC RED
35	INCANTO NC WHITE
33	INCANTO SLI
33	INCANTO SPECIAL FRUIT
33	INCANTO SPICE
33	INCANTO TOFFEE
33	INCANTO VANILLA

### MALOLACTIC FERMENTATION

38	EnartisML MCW
38	EnartisML SILVER
38	EnartisML UNO
39	NUTRIFERM ML

## PAGE PRODUCT

39	NUTRIFERM OSMOBACTI
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### FINING AGENTS

43	BENTOLIT SUPER
42	CLARIL AF
44	CLARIL HM
43	CLARIL SMK
42	CLARIL ZR
42	CLARIL ZW
43	ENOBLOCK PERLAGE
43	FENOL FREE
42	HYDROCLAR 30
42	HYDROCLAR 45
42	PLANTIS AF-Q
42	PLANTIS PQ
43	PLUXBENTON N
43	PLUXCOMPACT
44	PROTOCLAR
43	SIL FLOC

### STABILIZING AGENTS

48	AROMAGUM
48	CITROGUM
48	CITROGUM PLUS
49	CITROSTAB rH
48	EnartisStab CELLOGUM LV20
50	EnartisStab MICRO M
50	EnartisStab SLI
49	MAXIGUM F
49	MAXIGUM PLUS
46	ZENITH COLOR
46	ZENITH PERLAGE
46	ZENITH UNO

### SULFITING AGENTS

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53	EFFERGRAN/EFFERGRAN DOSE 5/ EFFERBARRIQUE
53	WINY

### WINEMAKING CHEMICALS

55	ASCORBIC ACID POWDER
55	CITRIC ACID
55	DIAMMONIUM PHOSPHATE (DAP)
55	D,L-MALIC ACID POWDER
55	DISACIDIFICANTE BIANCONEVE
55	ENOCRISTAL SUPERATTIVO
55	L-MALIC ACID
55	POTASSIUM BITARTRATE
55	PVPP
55	TARTARIC ACID
55	WINY - POTASSIUM METABISULFITE

# HOURS OF OPERATION

MONDAY-FRIDAY 8:30 AM TO 5:00 PM



## PRICING

Enartis USA makes every attempt to keep our pricing stable, but as our suppliers' prices change, we must pass along changes, whether an increase or decrease. Prices vary slightly every year; this catalog is a guideline to pricing. If you require confirmed prices for your purchase, please contact the supply department at our Windsor branch: 707 838 6312.



## RETURNS & ORDER CANCELLATIONS

All returns must be authorized; call 707 838 6312 and ask for a Merchandise Return Authorization (MRA) number. Include the MRA number with your shipment. Returns must be made within 30 days of receipt and are subject to a 10% restocking charge. All temperature sensitive products sales are final and do not qualify for returns.

Special order items are available according to demand. Orders of these products are considered to be final.

Any cancellation or modification of a pending order will result in a charge up to the full dollar amount of the order.

## TEMPERATURE AND BACTERIA VIABILITY

Don't worry! If ice packs melted during shipment or the container arrived warm, a few days out of the freezer at temperatures below 25°C (77°F) will not spoil the product or affect bacteria viability.

However, we always advise our customers to select the most expeditious shipping means possible and to store bacteria in the freezer at -18°C (0°F) upon arrival.



## DAMAGED SHIPMENTS

Items damaged in shipping should be reported to the carrier immediately. Containers and packing material must be kept for inspection.



## TERMS

Shipping charges and sales tax (as required) are additional. Due to manufacturers' changes, our prices may change without prior notice.

Terms for payment are 30 days net. A service charge of 2% (minimum \$ 5.00) will be added to any outstanding balance after 30 days.

For international orders, please call or fax for details of shipment and payment.





## CREATING A SUSTAINABLE FUTURE

The integration of sustainability in our commercial and production activities allows us to promote operational efficiency, provide the best solutions for customers and support communities.



**We used FSC paper  
to print this catalog.**

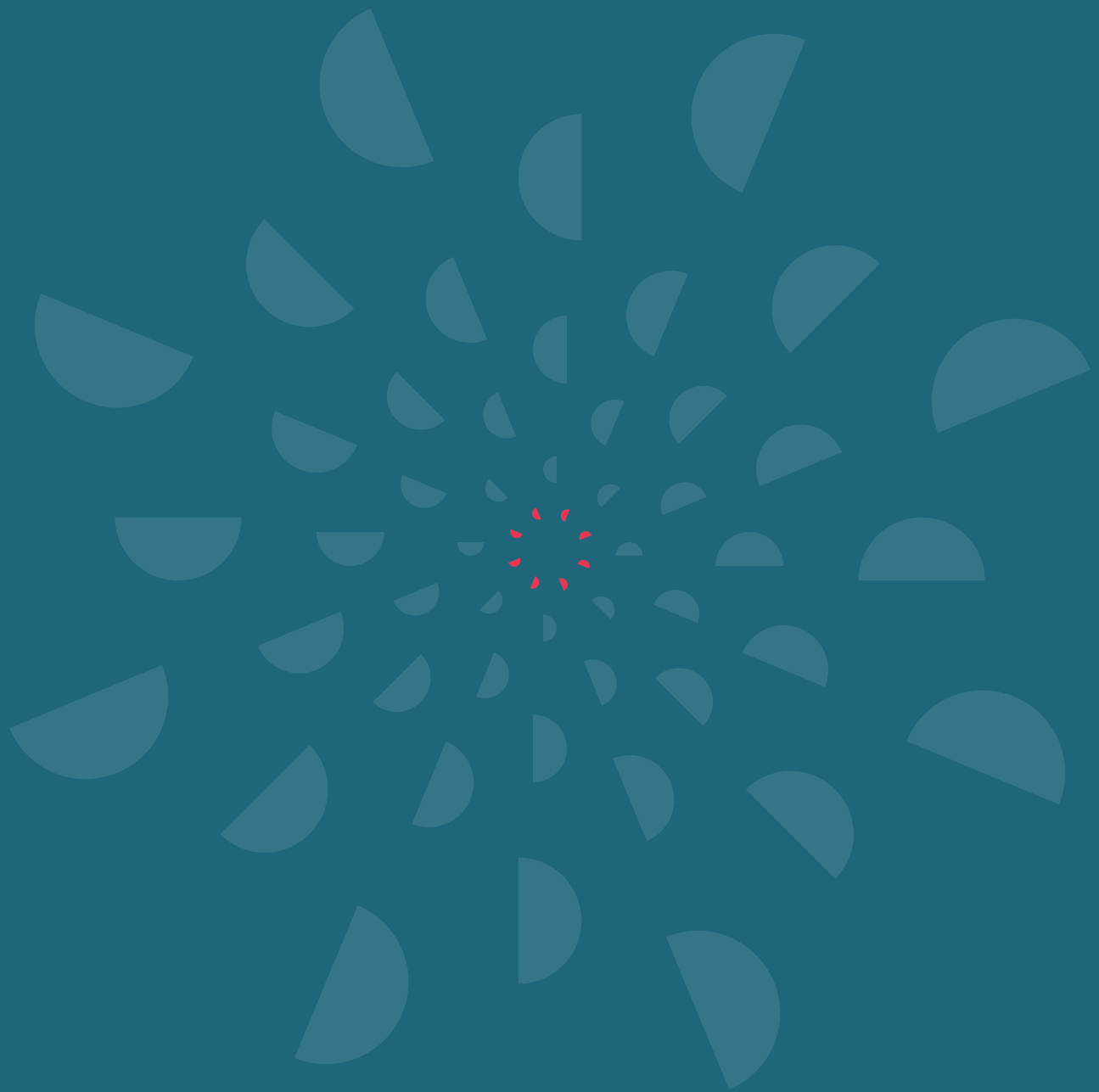
*What does it mean?*

The Forest Stewardship Council® (FSC) is an independent, not for profit, non-government organization established to support environmentally appropriate, socially beneficial, and economically viable management of the world's forests.

FSC's vision is that the world's forests meet the social, ecological, and economic rights and needs of the present generation without compromising those of future generations.

**ENARTIS  
LOVES  
THE PLANET.**





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