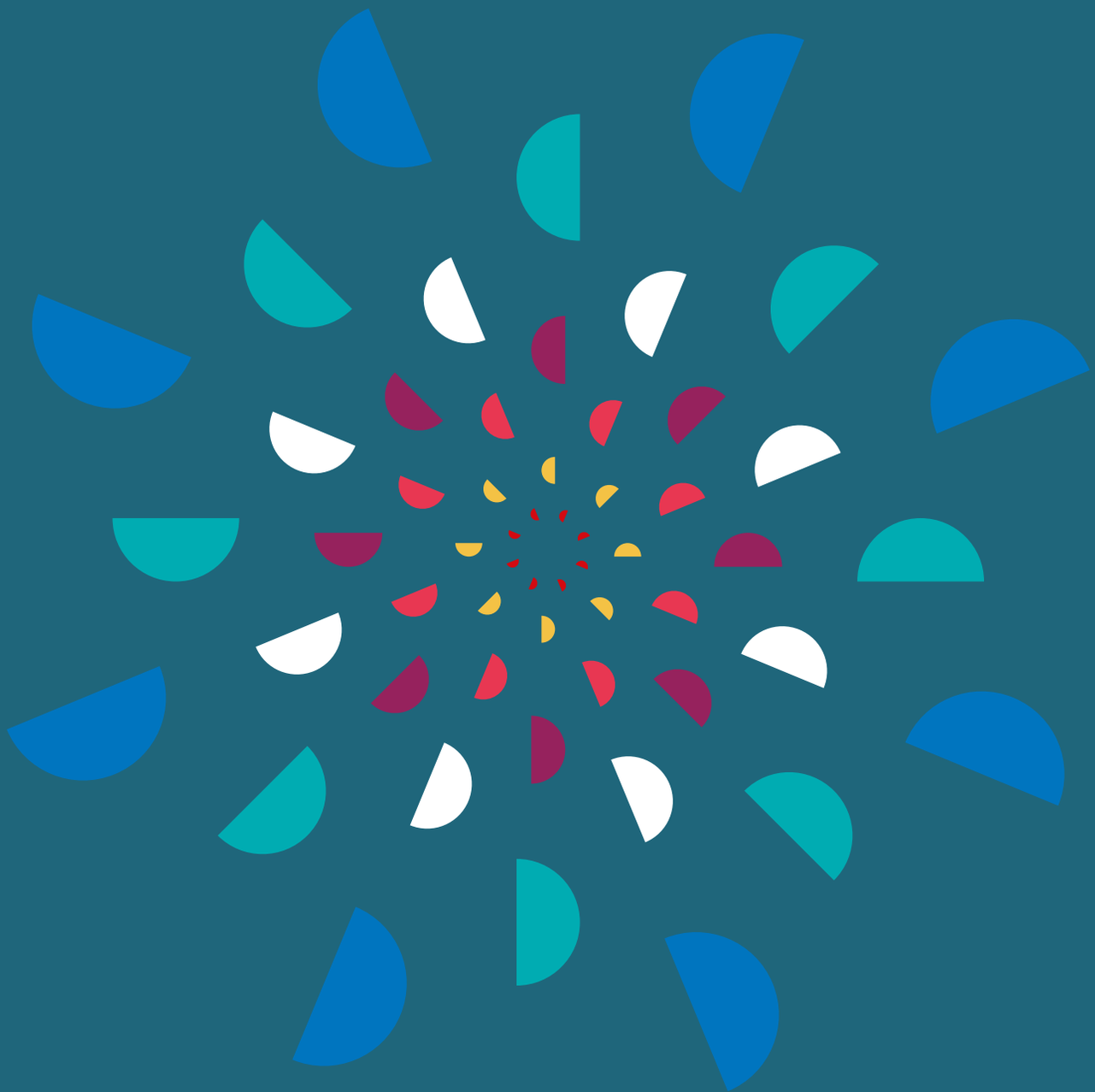
enartis

Inspiring innovation.



CATALOG

enartis

Inspiring innovation.

04 ENZYMES

08 YEAST NEW 13. EnartisFerm Q RHO

16 YEAST NUTRIENTS

20 POLYSACCHARIDES

24 TANNINS

31 OAK ALTERNATIVES

36 MALOLACTIC FERMENTATION

40 FINING AGENTS

45 STABILIZING AGENTS NEW 50. EnartisStab MICRO ZERO

52 SULFITING AGENTS

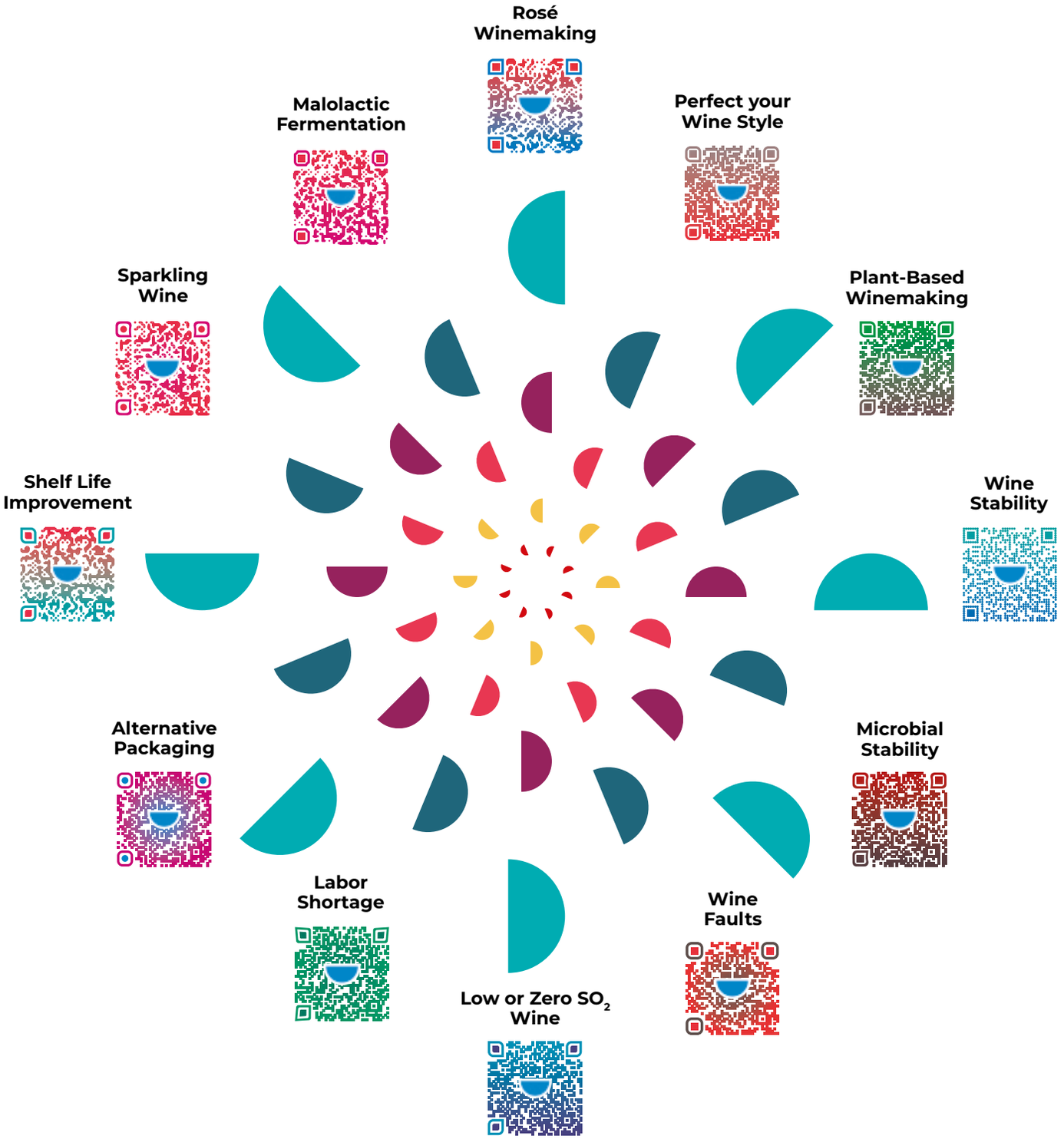
54 GREAT LITTLE HELPERS

56 TIPS & TRICKS

59 INDEX

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. EnartisZym Range comprises a series of enzymatic preparations formulated to obtain the maximum effectiveness when used in classic and newer applications.

enartis

Inspiring innovation.

MUST CLARIFICATION

EnartisZym RS

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

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

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

Packaging: *1 kg*

MACERATION OF WHITE AND ROSÉ GRAPES

EnartisZym AROM MP

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

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

Dosage: *20-40 g/ton*

Packaging: *250 g - 1 kg*

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

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

MACERATION OF RED AND ROSÉ GRAPES

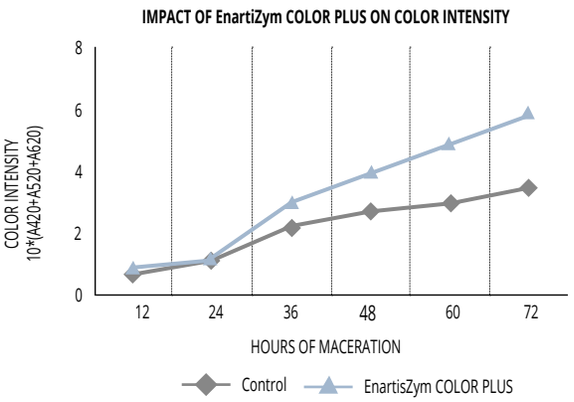
EnartisZym COLOR PLUS

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

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

Dosage: *20-40 g/ton*

Packaging: *250 g - 1 kg*



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

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

Louwritz Louw, South Africa

OTHER APPLICATIONS

EnartisZym EZFILTER

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

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

Dosage: *2-4 mL/hL*

Packaging: *1 kg*

"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 (OR), USA

EnartisZym RIVELA

- Granulated enzymatic preparation for maximizing aroma expression.
- Glycosidase activities, pectolytic and hemicellulase secondary activities.
- Used in white grapes maceration leads to higher yield of juice and good extraction of aroma precursors enhancing varietal aroma, such as terpens and norisoprenoids.
- It also helps to improve wine clarification.

Application: *expression of varietal aroma*

Dosage: *10-30 g/ton in maceration; 3-4 g/hL in juice/wine*

Packaging: *100 g*

EnartisZym CHARACTERISTICS

	Clarification/ Cold Settling	Clarification of Difficult Juices	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 RIVELA	♦♦			♦♦					♦♦♦		♦		Granules	1-4 g/hL	0.1 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.

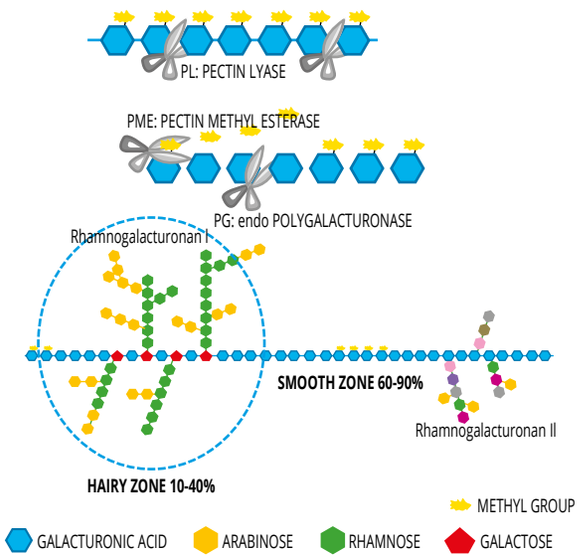


Figure 1: Representation of main pectolytic activities on pectin chains.

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 require no preservatives. Liquid enzymes are convenient to use and dose. They require cold storage and have a shorter shelf life due to possible microbiological contamination after opening.

HOW LONG WILL POWDERED/GRANULAR ENZYMES REMAIN ACTIVE AFTER REHYDRATION?
Rehydrated powdered/granular enzymes should not be kept in liquid form for more than a few hours at room temperature.

HOW DOES TEMPERATURE AFFECT ENZYMATIC ACTIVITIES?
Most enzymes are denatured at temperatures above 60°C and inactivated at temperatures below 5°C. Optimum temperature for enological enzymes is around 40°C.

DOES SO_2 AFFECT ENZYME ACTIVITY?
Even with an addition of 2000 ppm of SO_2, the enzymatic activity of EnartisZym RS, for example, is not affected (Figure 2). Using SO_2 and enzymes is fine, however timing is important. Add enzymes after SO_2 has adequately dispersed or vice versa. Do not add SO_2 and enzymes at the same time.

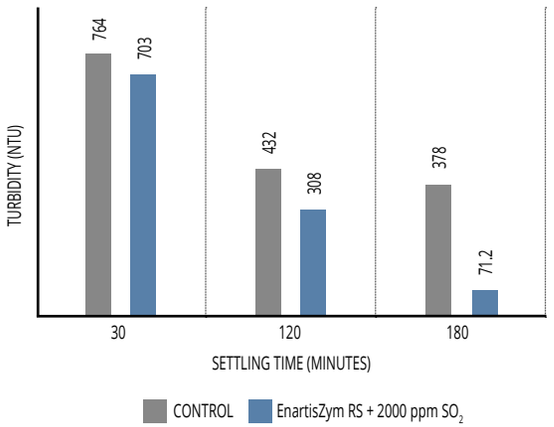


Figure 2: Impact of SO_2 addition on EnartisZym RS effect.

HOW DO TANNIN OR BENTONITE ADDITIONS INTERFERE WITH ENZYME ACTIVITY?
As shown, the addition of bentonite or tannin does not have a significant effect on the clarification capacity of EnartisZym RS (Figure 3). We recommend waiting 30 minutes after the complete homogenization of the enzyme before adding tannin or bentonite.

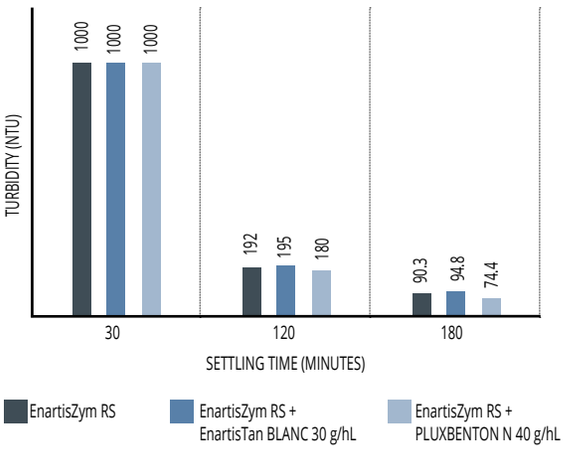


Figure 3: Impact of tannin and bentonite addition on EnartisZym RS effect.

HOW DO I DECIDE WHAT DOSAGE OF ENZYME TO USE?
Dosage is related to the desired effect, contact time, temperature and inhibiting factors. Cold temperatures, short contact times and alcohol presence can be compensated by applying a higher dosage rate.

YEAST

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

NEW

13. EnartisFerm Q RHO

enartis

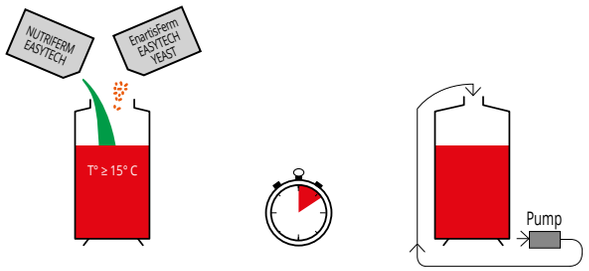
Inspiring innovation.

EASYTECH YEAST APPLICATION

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



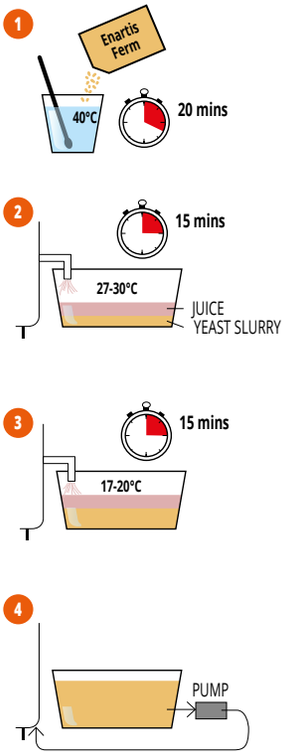
Sprinkle EnartisFerm Easytech yeast strain onto juice surface

Wait 10-15 minutes

Homogenize with a pump-over

Enartis Easytech range is also suitable for traditional yeast rehydration.

PROTOCOL FOR YEAST REHYDRATATION



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

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

Repeat (2) until the temperature difference between the tank and yeast slurry is below 10°C.

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

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

WHITE AND ROSÉ WINE FERMENTATION

EnartisFerm Q4

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

Application: *thiolic varieties*

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm AROMA WHITE

- Moderate speed fermenter.
- Medium/high nutrient requirements.
- Low VA, H_2S and SO_2 production.
- Expresses thiols (ß-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*

Packaging: *0.5 kg*

EnartisFerm VINTAGE WHITE

- Moderate speed fermenter.
- Low nutrient requirements.
- Low VA, H_2S and SO_2 production.
- Releases large quantities of polysaccharides.
- Forms lightly-compacted lees reducing the number of *bâtonnage* and pump-overs needed for *sur lie* effect.
- Preserves varietal fruit, produces delicate wines with round and complex mouthfeel.

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

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

EnartisFerm ES181

- Fast fermenter.
- Low nutrient requirements.
- Low VA, H_2S and SO_2 production.
- Expresses thiols (ß-lyase activity).
- Produce white and tropical fruit aromas, increasing the aromatic complexity without overshadowing the primary aromas.
- Excellent for fermentations at low temperatures and in hyper-reductive conditions.

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

I have been using EnartisFerm ES181 for more than 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 ES123

- Medium speed fermenter.
- Medium/high nutrients requirements.
- Low VA, H_2S and SO_2 production.
- 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*

Packaging: *0.5 kg*

EnartisFerm Q9

- Fast fermenter.
- Medium/high nutrient requirements.
- Low VA, SO_2 and H_2S production.
- Expresses thiols (ß-lyase activity).
- Fermentation at low temperature favors mineral notes (flint, gunpowder, smoke, roasted coffee).
- Fermentation at high temperature produces high amounts of esters and acetates.

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm Q CITRUS

- Fast fermenter.
- Medium nutrient requirements.
- Low VA and H_2S production.
- Expresses terpenes and norisoprenoids (ß-glucosidase activity).
- Produces complex wines with intense zesty, citrus notes (grapefruit), tropical fruit (guava, passion fruit, pineapple) and flowers (jasmine, lime blossom).

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm Q CITRUS gave my wines incredible aromatics and massive sensory expression. We frequently perceive distinct notes of pineapple, orange and guava. EnartisFerm Q CITRUS reminds me of landing in Hawaii! **Lucas Meeker, Winemaker at The Meeker Vineyards - California, USA**

(Talking about EnartisFerm Q CITRUS). Extremely efficient yeast ensuring constant fermentation at cool 12°C temperatures. One of the few types of yeast that are aptly named as it produces wines that are full and well balanced with aromas of lemon- and orange peel along with citrus. Well suited to Chenin blanc and Colombard and on wines where extremely low residual sugars are required. Since starting to use it 5 years ago we have placed increasing orders in subsequent vintages!

Rianco van Rooyen, Winemaker at Robertson Winery - South Africa

RED WINE FERMENTATION

EnartisFerm ES454

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm ES488

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm Q5

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm Q7

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm RED FRUIT

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm VINTAGE RED

Easytech CERTIFIED BY ENARTIS

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

EnartisFerm WS

ZINFANDEL ISOLATE FROM WILLIAMS SELYEM WINERY, CALIFORNIA

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg - 10 kg*

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

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

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

Technical Strains

EnartisFerm ES U42

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm EZFERM 44

- Fast speed fermenter.
- *Saccahromyces cerevisiae* and *bayanus*.
- Wide fermentation temperature range (12-34°C).
- Alcohol tolerant (up to 17.5%).
- Fructophilic.
- Low nutrient requirements.
- Low VA, H_2S and SO_2 production.
- Ideal to prevent or restart sluggish/stuck fermentations.

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm BIO

- *Saccharomyces cerevisiae* selected for the vinification of white, red and rosé wines.
- Certified organic according to European Regulation [Reg. (EC) N° 834/2007 and Reg. (EC) N° 889/2008] and it does not contain E491 sorbitan monostearate.
- Expresses terroir and varietal character with clean aromas.

Application: *white, red and rosé wine fermentation*

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

EnartisFerm SB

- Fast fermenter.
- Short lag phase.
- Wide fermentation temperature range (15-30°C).
- Low nutrient requirements.
- Produces clean wines.
- Excellent for processing large volumes even with poor control of fermentation conditions.

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg – 10 kg*

EnartisFerm PERLAGE

- Fast fermenter.
- Alcohol tolerant (up to 17%), resistant to SO_2 and low pH.
- Wide range of fermentation temperatures (10-30°C).
- Low nutrient requirements.
- Low VA, H_2S and SO_2 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*

Packaging: *0.5 kg - 10 kg*

EnartisFerm PERLAGE FRUITY

- Fast fermenter.
- Low VA, H_2S and SO_2 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*

Packaging: *0.5 kg*

NON-*Saccharomyces cerevisiae* YEAST

NEW

EnartisFerm Q RHO

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

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

Dosage: *20-40 g/hL*

Packaging: *0.5 kg*

ENARTIS YEAST CHARACTERISTICS

	Temperature	LAG phase	Fermentation speed	Alcohol tolerance	Killer factor	Compatibility with MLF	Nitrogen needs	Oxygen needs	Aromatic features	White	Red	Rosé	Sparkling
EnartisFerm AROMA WHITE *S. cerevisiae*	15-24°C	Short	Medium	15%	Killer	Neutral	Medium-High	Medium	F - V	♦		♦	
EnartisFerm BIO *S. cerevisiae*	15-28°c	Medium	Medium	15%	Neutral	Neutral	Medium	Low	N	♦	♦	♦	
EnartisFerm ES123 *S. cerevisiae + S. bayanus*	15-25°C	Short	Medium	15%	Killer	Low	High	Medium	F	♦			♦
EnartisFerm ES181 *S. cerevisiae*	10-20°C	Medium	High	16,5%	Killer	Low	Low	Medium-Low	F - V	♦		♦	♦
EnartisFerm ES454 *S. cerevisiae*	15-30°C	Short	Medium	16%	Killer	High	Medium	Medium	V		♦		
EnartisFerm ES488 *S. cerevisiae*	15-28°C	Short	Medium-Slow	16%	Killer	High	High	High	F - V		♦		
EnartisFerm ES U42 *S. uvarum + S. bayanus*	8-28°C	Medium	Medium	15%	Neutral	Good	Low	Medium-Low	F	♦	♦	♦	
EnartisFerm EZFERM 44 *S. cerevisiae*	15-30°C	Short	Medium	17,5%	Neutral	Neutral	Low	Low	N	♦	♦	♦	
EnartisFerm Q CITRUS *S. cerevisiae*	10-20°C	Short	High	15%	Neutral	Low	Medium	Medium	F - V	♦		♦	
EnartisFerm Q4 *S. cerevisiae*	14-18°C	Medium	Medium	15%	Killer	Neutral	Medium	Medium	V	♦		♦	
EnartisFerm Q5 *S. cerevisiae*	15-32°C	Medium	Medium	16%	Neutral	Good	Medium	High	F - V		♦		
EnartisFerm Q7 *S. cerevisiae*	16-30°C	Medium	Medium	16,5%	Neutral	Neutral	Medium	Medium	F		♦		
EnartisFerm Q9 *S. cerevisiae*	14-20°C	Short	High	14.5%	Neutral	Neutral	Medium	Medium	F - V	♦		♦	
EnartisFerm Q RHO *S. uvarum*	8-28°C	Medium	Medium-High	13%	Neutral	Low	Low	Low	F	♦	♦	♦	
EnartisFerm RED FRUIT *S. cerevisiae*	14-34°C	Short	High	16%	Killer	Neutral	High	High	F		♦	♦	
EnartisFerm PERLAGE *S. cerevisiae*	10-30°C	Short	High	17%	Killer	Low	Low	Low	V	♦		♦	♦
EnartisFerm SB *S. bayanus*	15-30°C	Short	High	15%	Neutral	Low	Low	Low	V	♦	♦	♦	♦
EnartisFerm VINTAGE RED *S. cerevisiae*	15-32°C	Short	Medium	16%	Killer	High	Medium	Medium	V		♦		
EnartisFerm VINTAGE WHITE *S. bayanus*	14-24°C	Short	Medium	15,5%	Killer	Good	Medium	Medium	V	♦			
EnartisFerm WS *S. cerevisiae*	16-30°C	Medium	Medium-High	18%	Neutral	Neutral	Low	Low	V	♦		♦	

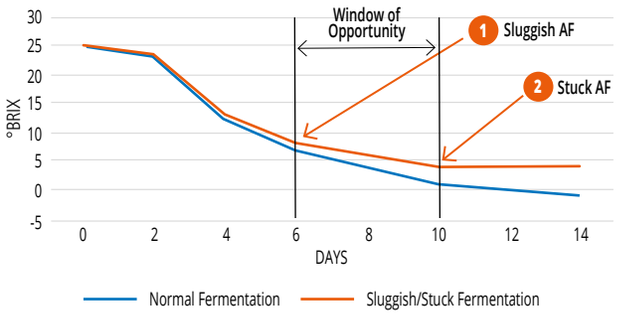
K: killer factor; N: neutral; S: sensitive

WHAT IS A YEAST "KILLER" FACTOR?

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

PROTOCOLS TO RESTART AND COMPLETE SLUGGISH OR STUCK FERMENTATIONS

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



PROTOCOL 1 : Sluggish Fermentation

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

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

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

PROTOCOL 2 : Stuck Fermentation

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

STEP 1: Prepare starter
Tip: Use a sanitized tank able to hold the entire volume of stuck wine.
- Take 2.5 % of stuck wine.
- Add the same amount of water (2.5% of total volume).
- Add 10 g/hL of NUTRIFERM ULTRA (calculated on the volume of stuck wine).
- Adjust sugar level to 50 g/L (5° Brix).
- Maintain temperature at 20-23°C.

STEP 2: Yeast rehydration
Rehydrate 30 g/hL (calculated on the volume of stuck wine) of EnartisFerm EZFERM 44 in 10 times its weight of chlorine-free water at 40°C and wait 20 minutes.

STEP 3: Acclimate yeast and start fermentation
- Add rehydrated yeast to STEP 1 and monitor °Brix and temperature.
- At 1/2 °Brix depletion, add 20% of stuck wine + 5 g/hL of NUTRIFERM 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.

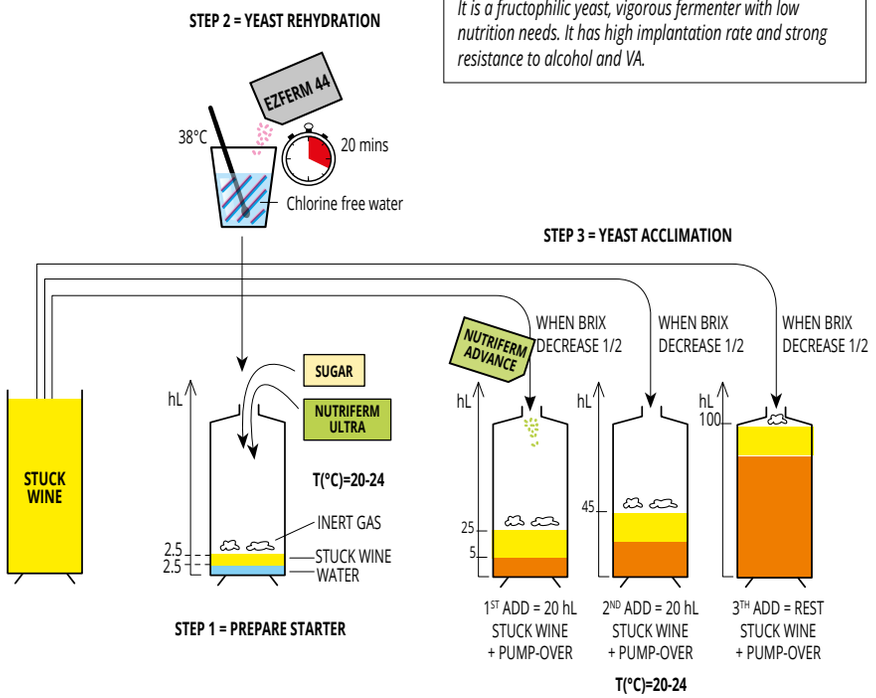
3- PRODUCT NEEDS FOR 100 hL:

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

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

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

Why using EnartisFerm EZFERM 44?
It is a fructophilic yeast, vigorous fermenter with low nutrition needs. It has high implantation rate and strong resistance to alcohol and VA.



YEAST NUTRIENTS

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

enartis

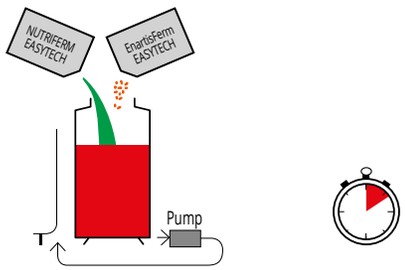
Inspiring innovation.

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:

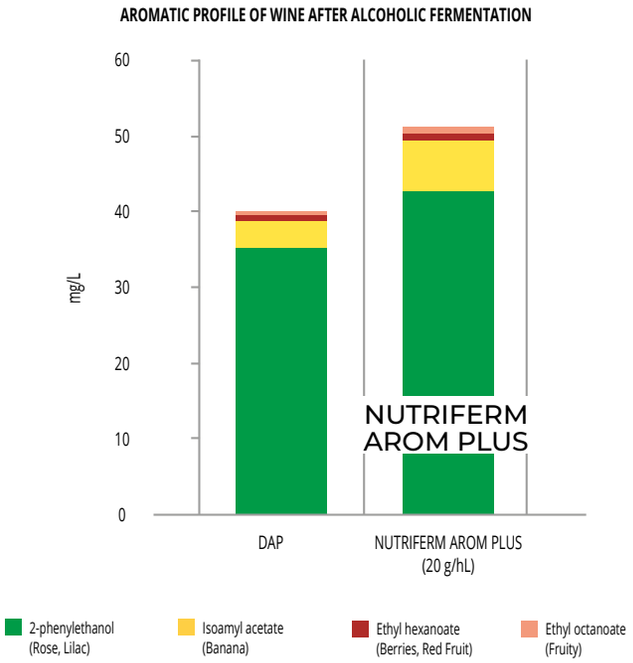
- **NUTRIFERM ULTRA**
- **NUTRIFERM AROM PLUS**

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



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

Enartis Easytech range is also suitable for traditional yeast inoculations.



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

NUTRIFERM ULTRA

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

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

Dosage: *10-30 g/hL*

Packaging: *1 kg - 10 kg*

NUTRIFERM AROM PLUS

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

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

Dosage: *15-30 g/hL*

Packaging: *1 kg - 10 kg*

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

NUTRIFERM AROM

- Autolyzed yeast rich in free amino acids and survival factors and thiamine hydrochloride (vitamin B1).
- The high content of selected amino acids are used by yeast as precursors of aromatic compounds to increase intensity, freshness and complexity.

Application: *fermentation aromas improvement*

Dosage: *20-30 g/hL*

Packaging: *1 kg - 10 kg*

I have been using Enartis nutrients almost exclusively for 6 years, and my copper sulfate purchases have dropped significantly, as well as my restart products.
Lucas Meeker, The Meeker Vineyard - Virginia, USA

NUTRIFERM ENERGY

- Autolyzed yeast with high content of free amino acids and thiamine (vitamin B1).
- Shortens lag phase, prevents formation of H_2S and acetic acid.
- Vital in initial phases of yeast multiplication.

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

Dosage: *10-30 g/hL*

Packaging: *1 kg - 10 kg*

> *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_2S.

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

Dosage: *30-50 g/hL*

Packaging: *1 kg - 10 kg*

> *I am very happy with NUTRIFERM SPECIAL. We inoculated six red wine tanks just this moming 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 Schönbom, 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_2S 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*

Packaging: *1 kg - 10 kg*

NUTRIFERM NO STOP

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

Application: *prevent and treat stuck fermentations*

Dosage: *20-40 g/hL*

Packaging: *1 kg - 10 kg*

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
NUTRIFERM AROM PLUS Easytech CERTIFIED BY ENARTIS	Supply of precursors for the synthesis of fermentation aromas	♦♦♦♦♦♦		♦♦♦♦♦♦	♦♦♦	♦♦♦	♦♦♦		♦♦♦♦	Yeast inoculation	15-30 g/hL
NUTRIFERM ULTRA Easytech CERTIFIED BY ENARTIS	Reinforce fermentation capacity of yeast	♦♦♦♦♦♦		♦♦♦♦	♦♦♦♦	♦♦♦	♦♦♦♦		♦♦♦♦	Yeast inoculation	10-30 g/hL
NUTRIFERM ENERGY	Reinforce fermentation capacity of yeast	♦♦♦♦		♦♦♦	♦♦♦♦	♦♦♦	♦♦♦♦		♦♦♦♦	Yeast inoculation	10-30 g/hL
NUTRIFERM SPECIAL	Balanced and complete nutrition	♦♦	♦♦♦	♦	♦♦	♦♦	♦♦		♦♦♦	Yeast inoculation	30-50 g/hL
NUTRIFERM AROM	Supply of precursors for the synthesis of fermentation aromas	♦♦♦♦		♦♦♦♦♦	♦♦♦	♦♦♦	♦♦♦		♦♦♦♦	Yeast inoculation	20-30 g/hL
NUTRIFERM ADVANCE	Help for a complete and clean fermentation		♦♦♦			♦♦♦	♦♦♦			1/3 sugar depletion	20-40 g/hL
NUTRIFERM NO STOP	Prevention and treatment of stuck fermentation			♦	♦♦♦♦♦♦	♦♦	♦♦♦		♦♦♦♦♦♦	Second half of fermentation and in case of sluggish or stuck fermentation	20-40 g/hL

THE IMPORTANCE OF BALANCED NUTRITION FOR YEAST HEALTH

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

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

ENARTIS NUTRIENTS RECOMMENDATION FOR A BALANCED NUTRITION

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

POLYSACCHARIDES

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

Packaging: *1 kg*

EnartisPro UNO is a vital component of building a wine and keeping it fresh. By adding EnartisPro UNO, it helps to build the mouthfeel, keep the color young and vibrant. We have also found that EnartisPro UNO helps to keep the cultivar expression much longer. **Pieter-Niel Rossouw, Head Winemaker at Darling Cellars - South Africa**

EnartisPro BLANCO

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

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

Dosage: *10-30 g/hL*

Packaging: *1 kg*

EnartisPro TINTO

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

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

Dosage: *15-40 g/hL*

Packaging: *1 kg*

EnartisPro R

- Pure inactivated yeast.
- Improves the fermentation strength of yeast.
- Increases softness and volume due to the release of significant quantities of mannoproteins and polysaccharides.
- Promotes wine stability.

Application: *enhance volume; soften astringency; improve color stability*

Dosage: *20-40 g/hL*

Packaging: *1 kg - 10 kg*

EnartisPro FT

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

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

Dosage: *30-50 g/hL*

Packaging: *1 kg*

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**

EnartisPro Q

- Bioprotector based on pre-activated chitosan and inactivated yeast with high detoxifying and adsorbent activity.
- Helps to control unwanted microbial flora when used in fermentation.
- Reduces sulfide defects, volatile phenols, VA and off-flavor production.

Application: *microbial control during alcoholic fermentation; low SO_2 vinification*

Dosage: *10-30 g/hL*

Packaging: *2.5 kg*

POLYSACCHARIDES FOR THE MATURATION STAGE

SURLÌ ONE

- Enzymatically treated inactivated yeast.
- Enhances natural sensation of volume and roundness, builds-up mid-palate and improves wine length.
- Improves aromatic complexity and longevity.
- Contributes to protein, tartrate and polyphenol stabilization.
- Mimics lees ageing, with the security of microbial stability.

Application: *sur lie ageing; improve overall wine quality and stability*

Dosage: *20-50 g/hL*

Packaging: *2.5 kg*

SURLÌ ONE was a game changer for my 2015 Merlot. It improved the mouthfeel, filled-up the mid-palate, and increased the overall perception of roundness and length of the wine.
Bénédicte Rhyne, Winemaker at Kuhlman Cellars - Canada

SURLÌ ELEVAGE

- Inactivated yeast rich in free mannoproteins.
- Improves aromatic cleanliness while preserving original fruit characteristics.
- Improves wine balance, roundness, volume sensation and length. Balances and softens astringency.

Application: *sur lie ageing; 24-48 hours contact time; improve wine mouthfeel and stability*

Dosage: *5-30 g/hL*

Packaging: *1 kg*

SURLÌ 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*

Packaging: *1 kg*

SURLÌ VELVET

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

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

Dosage: *0.5-10 g/hL*

Packaging: *0.5 kg*

HOW TO CHOOSE THE 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 ELEVAGE, 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	Anti-ageing effect
Fermentation	**EnartisPro R**	*Inactivated yeast*	*Softness*	♦	♦	♦♦	♦♦	♦
	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 FT	*Inactivated yeast* *PVI-PVP*	*Enhance thiol production* *Softness and mouthfeel* *Anti-ageing*	♦♦♦♦	♦♦♦	♦♦	♦♦♦	♦♦♦
	EnartisPro Q	*Yeast hulls* *Activated chitosan*	*Biocontrol and detoxification*	♦♦	♦♦	♦♦	♦♦♦	♦
Maturation	**SURLÌ ONE**	*Inactivated yeast enzymatically treated*	*Mouthfeel and antioxidant protection*	♦♦	♦	♦♦♦	♦♦♦	♦♦
	SURLÌ ELEVAGE	*Inactivated yeast*	*Softness and mouthfeel*	♦♦	♦	♦♦♦♦	♦♦♦♦	♦
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.

enartis

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*

Packaging: *1 kg*

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 ß-glucosidase activity.

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

Dosage: *2-15 g/hL*

Packaging: *1 kg*

RED VINIFICATION

EnartisTan COLOR

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

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

Dosage: *100-400 g/ton*

Packaging: *1 kg*

EnartisTan FERMCOLOR

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

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

Dosage: *200-400 g/ton*

Packaging: *1 kg*

> *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 ß-glucosidase activity.

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

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

Packaging: *1 kg*

EnartisTan ROUGE

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

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

Dosage: *100-400 g/ton*

Packaging: *1 kg - 15 kg*

EnartisTan V

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

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

Dosage: *10-30 g/hL*

Packaging: *1 kg*

EnartisTan XC

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

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

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

Packaging: *1 kg - 15 kg*

TECHNICAL TANNINS

EnartisTan BLANC

- Microgranulated gallic tannin.
- High antioxidant activity and antimicrobial activity, it strengthens the protective action of SO_2.
- Protects wine from browning, "light-struck" defects and oxidation.

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

Dosage: *4-10 g/hL*

Packaging: *1 kg - 12.5 kg*

EnartisTan E

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

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

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

Packaging: *1 kg*

HIDEKI

- Microgranulated tannin made of molecular fractions obtained through the selection and purification of gallic, ellagic and condensed tannins that are the most effective in terms of antioxidant and antimicrobial activity.
- To be used during wine preparation for bottling as a natural and allergen-free replacement for SO_2 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_2, antioxidant protection of wine; prevention of the growth of unwanted microorganisms*

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

Packaging: *1 kg*

EnartisTan MAX NATURE

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

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

Dosage: *3-15 g/hL*

Packaging: *1 kg*

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_2 and improves wine shelf life.

Application: *antioxidant protection; improve the shelf life of wine; treat reduction; natural and allergen free alternative to SO_2*

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

Packaging: *0.5 kg*

OAK TANNINS

EnartisTan CŒUR DE CHÊNE

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

Application: *finishing; extend the life of barrels*

Dosage: *3-10 g/hL*

Packaging: *0.5 kg*

EnartisTan DC

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

Application: *finishing; extend the life of barrels*

Dosage: *0.5-15 g/hL*

Packaging: *0.5 kg*

EnartisTan ELEVAGE

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

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

Dosage: *2-15 g/hL*

Packaging: *1 kg*

EnartisTan 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*

Packaging: *1 kg*

EnartisTan NAPA

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

Application: *finishing; increase aroma complexity and structure*

Dosage: *3-15 g/hL*

Packaging: *0.5 kg - 1 kg*

EnartisTan SUPEROAK

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

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

Dosage: *5-20 g/hL*

Packaging: *1 kg*

EnartisTan TOF

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

Application: *finishing; extend the life of barrels*

Dosage: *1-15 g/hL*

Packaging: *0.5 kg*

EnartisTan VNL

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

Application: *finishing; extend the life of barrels*

Dosage: *1-15 g/hL*

Packaging: *0.5 kg*

GRAPE TANNINS

EnartisTan ELEGANCE

- Condensed tannins largely extracted from white grape skins.
- Increases antioxidant protection when used in white and rosé wines during fermentation and maturation.
- Imrpoves aromatic freshness and enhaces 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 during fermentation; 3-10 g/hL in wine*

Packaging: *1 kg*

EnartisTan FF

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

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

Dosage: *0.5-10 g/hL*

Packaging: *1 kg*

EnartisTan FT

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

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

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

Packaging: *1 kg*

EnartisTan 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*

Packaging: *0.5 kg - 1 kg*

EnartisTan TFT

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

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

Dosage: *0.5-20 g/hL*

Packaging: *1 kg*

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

Packaging: *1 kg*

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*

Packaging: *1 kg*

EnartisTan UNICO RANGE

EnartisTan UNICO #1

- 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*

Packaging: *250 g*

EnartisTan UNICO #2

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

Application: *finishing; enhance wine fruity aroma*

Dosage: *1-15 g/hL*

Packaging: *250 g*

EnartisTan UNICO #3

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

Application: *increase aromatic freshness and complexity*

Dosage: *1-10 g/hL*

Packaging: *250 g*

	Color stabilization	Antioxidant effect	Increase of aromatic cleanliness	Protein removal	Structure	Astrigency	Softness	Aroma
FERMENTATION TANNINS								
EnartisTan AROM	●●	●●●●●	●●	●●	●●	●●	●●	●●●●
EnartisTan CIT	●●●	●●●●	●●	●●●	●●	●●	●●	●●●●●
EnartisTan COLOR	●●●●	●●●●	●●	●●●●	●●	●●	●●●	●●●●
EnartisTan FERMCOLOR	●●●●	●●●●	●●●	●●●●	●●●●	●●	●●●	●●●●
EnartisTan RF	●●●	●●	●●	●●●●	●●●	●●	●●●	●●●●●
EnartisTan ROUGE	●●●	●●●●	●●●	●●●●	●●●	●●●	●●	●●
EnartisTan V	●●●●●	●●	●●	●●●	●●●●●	●●●●	●●	●●●
EnartisTan XC	●●●●	●●	●●	●●●●	●●	●●●	●●●	●
TECHNICAL TANNINS								
EnartisTan BLANC	●	●●●●●	●	●	●●	●●	●	●
EnartisTan E	●●●●●	●●	●●	●●●	●●●●●	●●●●	●●	●●●
HIDEKI	●●	●●●●●	●●●●	●●●●	●●	●	●●●●	●
EnartisTan MAX NATURE	●●●	●●	●●●●	●●	●	●	●●●●●	●
EnartisTan SLI	●●	●●●●●	●●●●	●●●	●●	●	●●●●	●●●●
OAK TANNINS								
EnartisTan CŒUR DE CHÊNE	●●	●●	●●	●	●●	●●	●●●	●●●●
EnartisTan DC	●●	●●●	●●	●	●●●	●	●●●●	●●●●●
EnartisTan ELEVAGE	●●	●●●	●●●	●●●●	●●●	●●●	●●	●●●
EnartisTan EXTRA	●●	●	●●	●	●●	●	●●●●	●●●●●
EnartisTan NAPA	●●	●●●	●●	●	●●●	●	●●●●	●●●●●
EnartisTan SUPEROAK	●●●	●●●	●●●	●●●●	●●	●	●●	●●
EnartisTan TOF	●●	●●●	●●●	●	●●●●	●●	●●●	●●●●
EnartisTan VNL	●●	●●●	●●●	●	●●●●	●●	●●●	●●●●
GRAPE TANNINS								
EnartisTan ELEGANCE	●●●●	●●●●	●●●	●●●●	●●	●	●●●●	●●●
EnartisTan FF	●	●●●	●●	●●●	●●	●	●●●●	●●●●
EnartisTan FT	●●●●	●●●●	●●●	●●●●	●●●	●●●	●●	●●●
EnartisTan SKIN	●●●●	●●●	●●	●●●	●●	●●	●●	●●●●
EnartisTan TFT	●●	●●	●●	●●●	●●	●	●●●●	●●●●
EnartisTan UVA	●●●●	●●●	●●	●●●●	●●●	●●●●	●●	●●●●●
EnartisTan UVASPEED	●●●●	●	●	●	●●	●	●●●●●	●●●●
UNICO TANNINS								
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. Flavonoids 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.

A LITTLE BIT ABOUT COLOR IN WINE...

The initial color of red wine is mainly due to anthocyanins, extracted from grapes during the winemaking process. In their cationic form, anthocyanins are highly reactive with any nucleophile. In the presence of SO_2 and H_2O, this reaction can lead to color loss. Stabilization of wine pigments can occur via co-pigmentation or condensation.

Co-pigmentation is the enhancement of color due to formation of complexes between anthocyanins and cofactors such as flavonols, hydroxycinnamates and/or colloids via a weak electrostatic bond. The desirable feature of a co-factor is its planarity, which allows the stacking of anthocyanins, thus keeping them stable and soluble. Co-pigmentation has hyperchromic and bathochromic effects, which initially lead to higher intensity and darker colored wines. These molecules, important in young red wines, are considered "semi-stable" pigments.

Condensation leads to more stable pigments. They can be formed via direct bonds between anthocyanins and tannins or in oxidative environments via acetaldehyde bridges.

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_2 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 proteasic 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.

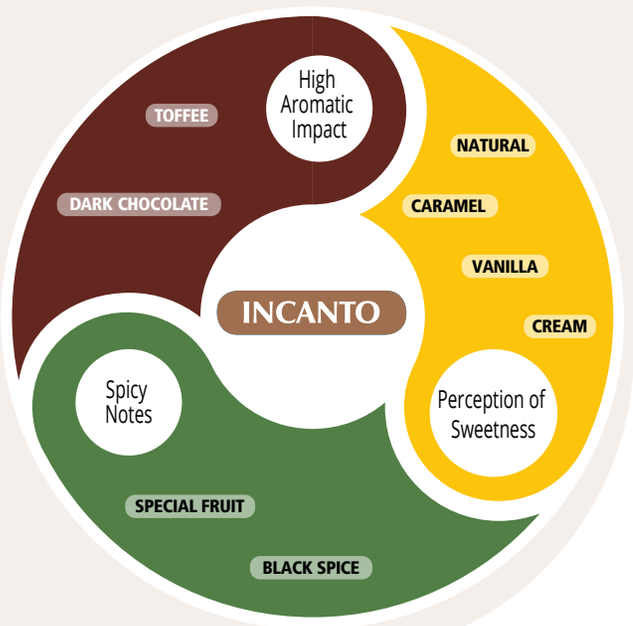
enartis

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. The INCANTO alternatives are available as

INCANTO CHIPS
Size: 2-4 mm
Dosage: 1-4 g/L white wines; 1-6 g/L red wines
Contact time: minimum of 4 weeks
Packaging: 10 kg



INCANTO 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*

INCANTO CREAM

Composition: *French oak, medium-toasted.*

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

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

Available form: *chips*

INCANTO VANILLA

Composition: *American oak, medium-toasted.*

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

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

Available form: *chips*

INCANTO CARAMEL

Composition: *French oak, medium-toasted.*

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

Taste: *increases smoothness and sweetness.*

Available form: *chips*

INCANTO 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*

INCANTO BLACK SPICE

Composition: *French oak, heavy toasted.*

Aroma: *licorice, spices.*

Taste: *increases smoothness and structure.*

Available form: *chips*

INCANTO TOFFEE

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

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

Taste: *very smooth, sweet and complex.*

Available form: *chips*

INCANTO DARK CHOCOLATE

Composition: *French oak, medium plus toast.*

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

Taste: *increases volume, structure and tannins.*

Available form: *chips*

	INCANTO RANGE	OAK	TOAST	AROMATIC IMPACT	MOUTHFEEL
	INCANTO CARAMEL	FR	Medium	Caramel, toasted hezelnut, butter	Sweetness, smooth
	INCANTO NATURAL	FR	Untoasted	Fruit, fresh, vanilla, coconut	Sweetness, structure, smooth
	INCANTO VANILLA	US	Medium	Vanilla, coconut, bourbon, butter	Soft, volume, fresh
	INCANTO CREAM	FR	Medium	Custard, coconut, cappuccino, dried fruit	Sweetness, soft, volume
	INCANTO SPECIAL FRUIT	FR	Medium	Spice, chocolate, fruit, complexity	Smooth, structure, volume
	INCANTO BLACK SPICE	FR	Heavy	Black pepper, licorice, spices	Smooth, sweetness, structure
	INCANTO TOFFEE	FR	Medium-plus	Cafe 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

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

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

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

Packaging: *2.5 kg - 10 kg*

INCANTO NC 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 for red must*

Packaging: *2.5 kg - 10 kg*

INCANTO NC CHERRY

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

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

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

Packaging: *2.5 kg - 10 kg*

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

INCANTO NC DARK CHOCOLATE

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

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

Dosage: *10-50 g/hL*

Packaging: *2.5 kg*

> *I have been using the INCANTO NC range on all red wine fermentation tanks since 2009. Sometimes with oak chips and other times with tannin. INCANTO is, for me, a perfect balance between a tannin and an oak powder. I believe it contributes greatly to mouthfeel, colour intensity and stabilityr.*
> **Alicia Rechner, Winemaker - 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_2), 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_2 at filling to protect wine against oxidation.
- Taste after three weeks of soaking.

MALOLACTIC FERMENTATION

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

enartis

Inspiring innovation.

ML BACTERIA

How to choose ML bacteria strains

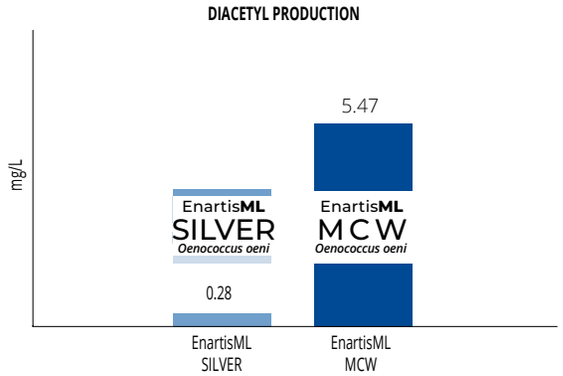
Each strain of bacteria performs best within specific environmental parameters. When selecting the appropriate ML bacteria strain, it is important to consider the relative stress conditions of the wine such as pH, SO_2 and alcohol content. ML bacteria can be selected for their effects on wine aroma and mouthfeel. Our bacteria range does not produce biogenic amines.

EnartisML 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*

Packaging: *package designed for volumes 2.5 hL, 25 hL, 250 hL*



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

EnartisML UNO

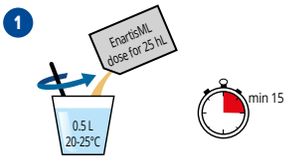
- Freeze-dried form for direct addition after rehydration.
- Provides a quick start and complete malolactic fermentation.
- Production of wines with better sensory attributes (fruity and varietal notes).

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

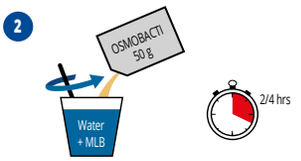
Packaging: *package designed for volumes 2.5 hL, 25 hL, 250 hL*

PROTOCOL FOR ML BACTERIA PREPARATION AND INOCULATION

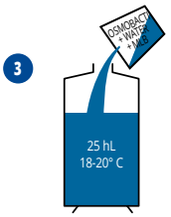
DIRECT ADDITION, 25 hL



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



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.



Stir the suspension gently and add to wine during pump-over or mixing.

EnartisML SILVER

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

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

Packaging: *package designed for 25 hL*

ML NUTRIENTS AND ACTIVATORS

NUTRIFERM ML

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

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

Dosage: *20-30 g/hL*

Packaging: *1 kg*

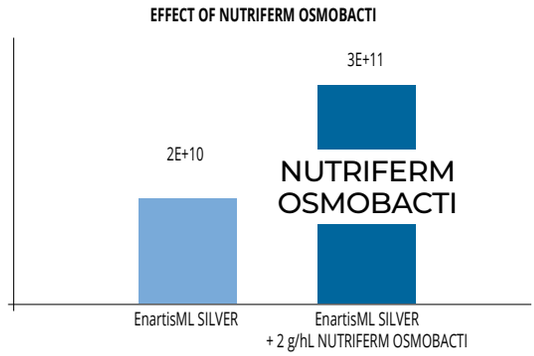
NUTRIFERM OSMOBACTI

- 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 for each 25 hL dose of bacteria*

Packaging: *100 g*



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 enzymes improve wine microbial stability, aroma complexity, mouthfeel and color stabilization. They also reduce the total acidity of wine and bentonite and SO_2 additions due to their ability to break down proteins and degrade acetaldehyde.

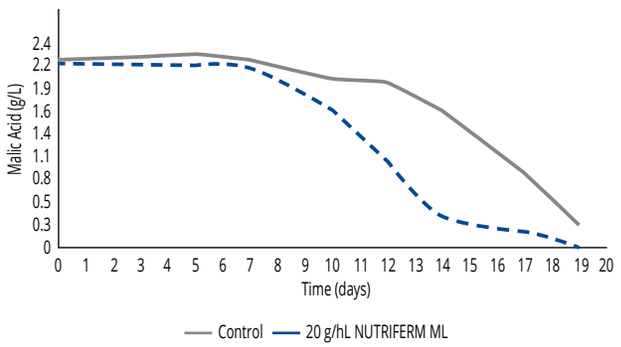
WHAT ARE THE PRINCIPAL FACTORS INFLUENCING THE DEVELOPMENT OF LACTIC ACID BACTERIA (LAB)?
At certain levels, factors such as pH, temperature, alcohol and SO_2 (free and total) can have a negative synergistic effect when combined, making the completion of MLF difficult. Additionally, vineyard sprays, 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_2 >30 mg/L and/or free SO_2 > 10 mg/L.

WHAT HAPPENS IF WINE HAS A LOW CONCENTRATION OF MALIC ACID?
Wines with a malic acid content below 1.0g/L have higher difficulties starting MLF because there is not enough "food" for the ML bacteria to grow and produce the necessary enzymes to degrade malic acid. 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 *Brettanomyces* sp., as well as the production of undesirable compounds. Volatile acidity, excess of diacetyl, acrolein (bitter), and ropiness are the most common negative sensory characters expected in spontaneous MLF by wild LAB. Spoilage LAB also produce metabolites which are toxic to human health such as ethyl carbamate and biogenic amines (BA). Inoculation with selected *Oenococcus oeni* ensures a rapid onset of MLF and better control over the production of aromas and wine mouthfeel. Enartis bacteria are safe in avoiding BA production.

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

HOW TO MANAGE A SUCCESSFUL SEQUENTIAL FERMENTATION IN UNFAVORABLE BACTERIA CONDITIONS
In difficult conditions, it is recommended to add an activator developed to promote the growth of bacteria with necessary nutritional requirements to ensure the total completion of MLF. **NUTRIFERM ML** addition is advised to shorten the length of MLF. It is also useful in cases of stuck MLF as it promotes restart.



DOES THE YEAST STRAIN USED FOR ALCOHOLIC FERMENTATION AFFECT MLF?
Yes. Some yeast strains can negatively impact lactic acid bacteria development by producing toxins and SO_2. 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_2 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** under controlled conditions. 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_2 can bind diacetyl, thus reducing its content in wine, and co-inoculation practices also can lead to less diacetyl content due to the reductive conditions.

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

The successful restart of a stuck ML fermentation depends upon three critical factors:
1. Diagnosis of the fermentation arrest causes.
2. Appropriate wine treatment.
3. Proper acclimation of ML bacteria.

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

2. TREAT STUCK WINE BEFORE RESTART - 24 HOURS PRIOR TO ML BACTERIA PREPARATION
- Adjust pH and alcohol.
- Remove spoilage microbes with EnartisStab MICRO M (5 g/hL).
- Absorb toxins with 20 g/hL NUTRIFERM CONTROL.
- Rack off lees 24 hours after treatment.

3. PREPARE AND ACCLIMATE ML BACTERIA
- Rehydrate 4x25 hL pack of EnartisML SILVER in chlorine-free water at 20-25°C and wait 15 minutes.
- 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 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.

enartis

Inspiring innovation.

PLANT-BASED PROTEINS

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

PLANTIS AF

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

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

Dosage: *10-30 g/hL*

Packaging: *20 kg*

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

PLANTIS AF-L

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

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

Dosage: *20-80 mL/hL*

Packaging: *20 kg*

PLANTIS AF-P

- Pure potato protein stabilized with SO_2.
- Removes catechins and small molecular weight polyphenols responsible for oxidation and astringency.

Application: *vegan; prevent and treat oxidation; reduce astringency*

Dosage: *10-30 g/hL in must; 5-20 g/hL in wine*

Packaging: *1 kg - 12.5 kg*

PLANTIS AF-Q

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

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

Dosage: *5-30 g/hL*

Packaging: *1 kg - 10 kg*

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 oxidable 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 wine oxidized or sensitive to oxidation; reduce astringency and dryness; elimination of unstable color*

Dosage: *4-10 g/hL*

Packaging: *1 kg*

COMBISTAB AF

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

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

Dosage: *10-50 g/hL*

Packaging: *1 kg - 10 kg*

CLARIL AF

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

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

Dosage: *50-150 g/hL in must; 30-80 g/hL in wine*

Packaging: *1 kg - 10 kg*

CLARIL QY

- Allergen-free preparation made of yeast derivative and activated chitosan.
- Effective in improving wine clarification and sensory characteristics.
- Improves balance, persistence and reduce astringency and bitterness perception without affecting the structure of the wine.
- In red wines, removes unstable color while respecting wine's color intensity.

Application: *allergen-free; vegan; clarification; reduce astringency and bitterness; elimination of unstable color*

Dosage: *5-40 g/hL*

Packaging: *1 kg*

CLARIL ZR

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

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

Dosage: *20-40 g/hL*

Packaging: *2.5 kg - 10 kg*

CLARIL ZW

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

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

Dosage: *20-80 g/hL*

Packaging: *2.5 kg - 10 kg*

GELATIN

GOLDENCLAR INSTANT

- Granulated food-grade gelatin.
- High molecular weight, very low hydrolysis and very high charge density. It can quickly be dissolved in room temperature water.
- Improves clarity and filterability.
- Reduces astringency and softens mouthfeel without affecting structure.

Application: *clarification; reduce bitterness and astringency; soften mouthfeel; aged red wines*

Dosage: *2-10 g/hL*

Packaging: *1 kg*

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*

Packaging: *20 kg*

PLUXCOMPACT

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

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

Dosage: *10-200 g/hL*

Packaging: *20 kg*

SIL FLOC

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

Application: *clarification*

Dosage: *25-100 mL/hL*

Packaging: *25 kg*

CORRECTIVE FINING AGENTS

ENOBLACK PF

- Activated carbon in a damp form.
- High decolorizing and removing ochratoxin (OTA) capacity.
- Easy to use: reduction spread of carbon dust in the atmosphere due to its presence of controlled mositure.

Application: *decolorizing must and white wine; treat oxidation; reduce ochratoxin A*

Dosage: *20-100 g/hL*

Packaging: *15 kg*

ENOBLACK PERLAGE

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

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

Dosage: *5-100 g/hL*

Packaging: *1 kg - 15 kg*

FENOL FREE

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

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

Dosage: *20-40 g/hL*

Packaging: *10 kg*

REVELAROM

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

Application: *prevent and treat reductive characters*

Dosage: *5-20 g/hL*

Packaging: *1 kg*

CLARIL SMK

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

Application: *aromatic cleanliness in musts and wines*

Dosage: *25-110 g/hL*

Packaging: *1 kg - 10 kg*

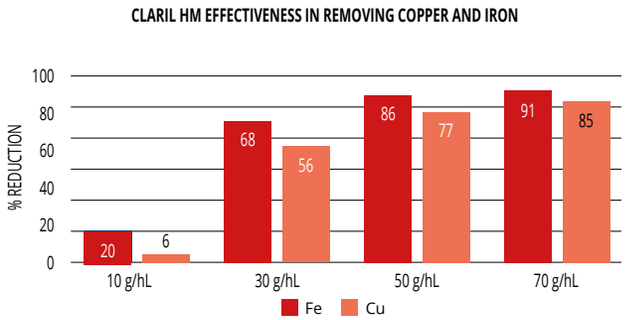
CLARIL HM

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

Application: *prolong wine shelf life; prevent oxidation*

Dosage: *30-50 g/hL*

Packaging: *2.5 kg*



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**

KNOW MORE ABOUT FINING

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

HOW DOES FINING WORK?
Each fining agent has specific properties and reacts with various wine molecules depending on its origin, density of charge, molecular weight and chemical properties. Fining is based on two main principles:
- Flocculation: molecular interactions based on charge, chemical bonds, absorption or adsorption of compounds and formation of flocculates.
- Sedimentation: since the flocculates formed are not soluble and heavier than wine/juice, they settle.

WHAT ARE THE MAIN FACTORS THAT INFLUENCE FINING EFFECTIVENESS?
Product preparation and addition, temperature, pH, wine redox potential and previous fining treatments are factors that can influence the effectiveness of fining.

HOW TO CHOOSE THE RIGHT FINING AGENT
Set up a bench trial with different fining agents and dosages.

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

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

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

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

HOW CAN UNSTABLE COLOR BE REMOVED WITHOUT AFFECTING THE COLOR INTENSITY?
To ensure color stability in red and rosé wines with high color intensity, the unstable color can be removed with fining. **CLARIL ZR** and **PLANTIS PQ** is the best plant-based fining agent to remove unstable colloids and color compounds, preserving the color intensity of wine.

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

STABILIZING AGENTS

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

NEW

50. EnartisStab MICRO ZERO

enartis

Inspiring innovation.

TARTARIC STABILIZATION ZENITH RANGE

ZENITH UNO

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

Application: *tartrate stability*

Dosage: *100 mL/hL*

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

ZENITH COLOR

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

Application: *tartrate stability; color stability*

Dosage: *200 mL/hL*

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

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

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

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**

KNOW MORE ABOUT ZENITH

WHAT IS POTASSIUM POLYSPARTATE?

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

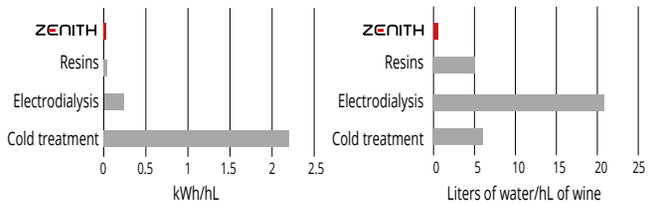
WHY USE ZENITH?

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

ZENITH IS

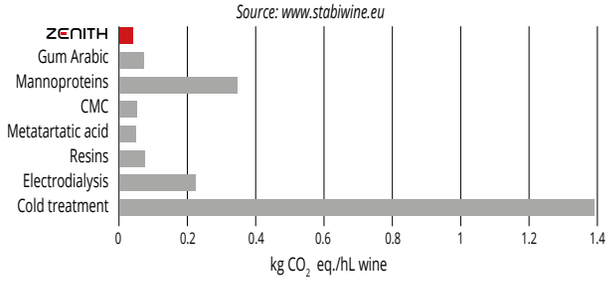
- INNOVATION
  An ambitious challenge and six years of passionate research in collaboration with public and private European institutions, universities and major players in the winemaking industry to develop a cutting-edge product.
- PERFORMANCE
  The most effective tartaric and color stabilizer overtime, under all conditions and temperature stress. Maximum filterability up to 0.45µm.
- QUALITY
  Respects organoleptic aspects of wine.
- COST-EFFECTIVENESS
  Easy-to-use, eliminates wine loss during stabilization and dramatically cuts energy and water consumption while reducing labor and ancillary costs. Up to 80% saving in energy and water consumption.
- SUSTAINABILITY
  An eco-friendly product that guarantees 90% reduction of CO_2 emissions for greater environmental sustainability. ZENITH loves the planet!

UP TO 80% SAVINGS IN ENERGY AND WATER CONSUMPTION

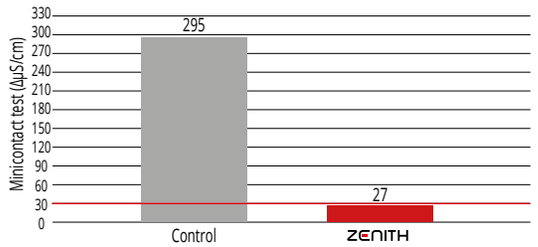


90% REDUCTION ON CO_2 EMISSIONS

Source: www.stabiwine.eu



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_2 not emitted into the atmosphere

Millions of liters of water saved

CRISTALIZATION AIDS

ENOCRISTAL Ca

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

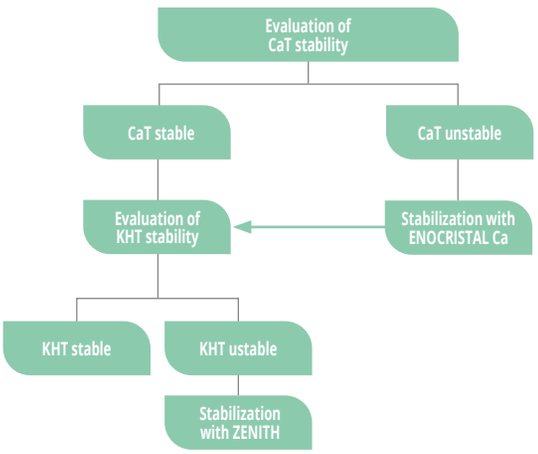
Applications: *wine calcium tartrate stabilization*

Dosage: *50 g/hL*

Packaging: *5 kg - 25 kg*

CALCIUM TARTRATE STABILITY

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



ENOCRISTAL SUPERATTIVO

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

Application: *accelerate and improve cold stabilization*

Dosage: *30-40 g/hL*

Packaging: *15 kg*

GUM ARABIC

AROMAGUM

- Gum Arabic solution.
- Stabilizes wine aromas, intensifies fruit aroma perception and maintains freshness over time after bottling.
- When used 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*

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

MAXIGUM

- Liquid solution of Verek Gum Arabic.
- Extremly effective in preventing the precipitation of color compunds due to its high molecular weight and high branched structure.
- Increase structure and mouthfeel and reduce astringency.
- It can be added following microfiltration beacuse contains sulphur dioxide allows microbial stability.

Application: *color stabilization; increase structure and mouthfeel*

Dosage: *20-100 mL/hL*

Packaging: *10 kg - 20 kg - 200 kg - 1000 kg*

MAXIGUM F

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

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

Dosage: *50-100 g/hL*

Packaging: *20 kg*

MAXIGUM PLUS

- Solution of gum Arabic obtained 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: *tartrate stabilization; reduce astringency; soften mouthfeel*

Dosage: *50-100 g/hL*

Packaging: *20 kg*

CITROGUM

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

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

Dosage: *50-200 mL/hL*

Packaging: *10 kg - 20 kg*

CITROGUM DRY

- Granulated form of CITROGUM.
- Free of impurities and easy to dissolve in water or wine without forming lumps.
- The applications of CITROGUM DRY are the same as those of CITROGUM.

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

Dosage: *10-100 g/hL*

Packaging: *15 kg*

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

OTHER TARTRATE STABILIZING AGENTS

AMT PLUS QUALITY

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

Application: *tartrate stabilization*

Dosage: *10 g/hL*

Packaging: *1 kg*

SHELF LIFE IMPROVEMENT

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

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

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

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

CITROSTAB rH

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

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

Dosage: *10-50 g/hL*

Packaging: *1 kg*

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

EnartisStab SLI

- Inactivated yeast, PVPP and untoasted tannins.
- Prevents degradation and oxidation of wine aroma during storage.
- High capacity for consuming 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*

Packaging: *2.5 kg*

MICROBIAL STABILIZATION

EnartisStab MICRO

- Pure, activated chitosan from *Aspergillus niger*.
- Allergen-free, vegan alternative to lysozyme and SO_2 for antimicrobial properties.
- Removes spoilage organisms through fining.
- Recommended after fermentation in low turbidity wines.
- Interacts with a wide spectrum of microorganisms, reduces their activity and growth and precipitates them.
- Reduces sulfide defects and volatile phenols.
- Improves clarification and filterability.

Application: *reduce Brett contamination; reduce unwanted microorganisms*

Dosage: *3-20 g/hL*

Packaging: *0.5 kg*

EnartisStab MICRO M

- Preparation of pre-activated chitosan from *Aspergillus niger* and inactivated yeast.
- Allergen-free, vegan alternative to lysozyme and SO_2 for antimicrobial properties.
- Designed for treatment of grapes, juice or must.
- Interacts with a wide spectrum of microorganisms, reduces their activity and growth and precipitates them.
- Reduces sulfide defects, volatile phenols, VA and off-flavor production.
- Improves clarification and filterability.

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

Dosage: *5-40 g/hL*

Packaging: *1 kg*

> *Starting from a no-SO_2 trial, using EnartisStab MICRO M has now become a part of my winemaking protocol on all of my red wines. It not only helps me to control spoilage organisms proactively, but also helps to reduce my SO_2 addition with a better protection than SO_2 on its own.* **Matthieu Finot, Winemaker at King Family Vineyards - Virginia, USA**

NEW

EnartisStab MICRO ZERO

- Preparation of fumaric acid, chitosan and mixture of gallic, ellagic and condensed tannins.
- Effectively controls malolactic fermentation, preventing the growth of lactic bacteria and undesirable yeasts very commonly found during wine preservation.
- Provides antioxidant protection, reducing SO_2 addition post-fermentation.

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

Dosis: *20-60 g/hL*

Envases: *2,5 kg - 10 kg*

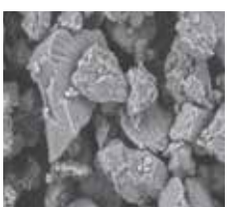
WHAT IS CHITOSAN?

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^{3+} groups) that interfere with the negatively-charged residues of macromolecules on the microorganism's cell wall surface.

WHY IS ENARTIS' CHITOSAN MORE EFFICIENT?

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

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



Standard chitosan

Enartis activated chitosan

APPLICATION OF EnartisStab MICRO AND EnartisStab MICRO M

WIDE SPECTRUM ANTIMICROBIAL AT ANY TIME

EnartisStab MICRO & EnartisStab MICRO M are used:

- To control a wide spectrum of microbes: *Acetobacter, Lactobacillus, Pediococcus, Oenococcus, Brettanomyces, Zygosaccharomyces* and some other non-*Saccharomyces* yeast (Figure 1).
- As a treatment to remove/reduce high populations of microbes. Dosage: 10-20 g/hL followed by racking
- As a preventive measure to eliminate small populations before they become spoilage. Dosage: 3-4 g/hL
- As an alternative to SO_2 for microbial control.

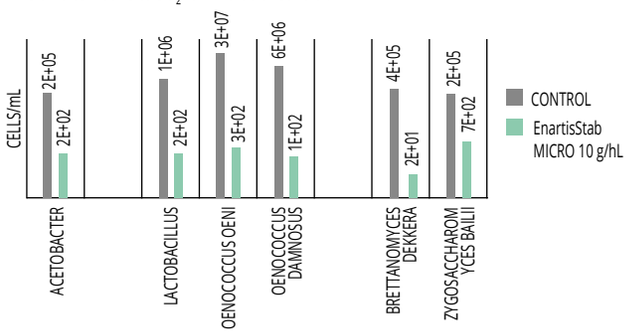


Figure 1: EnartisStab MICRO can reduce populations of the main spoilage microorganisms present in wines.

PREVENT VA PRODUCTION DURING COLD SOAK AND GRAPE TRANSPORT

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

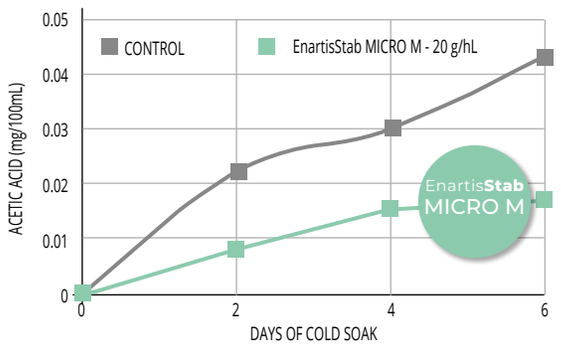


Figure 2: The addition of EnartisStab MICRO M on grapes controls VA production during cold soak.

REDUCE VOLATILE PHENOLS

After fining with EnartisStab MICRO, wines appear cleaner, fresher and often fruitier. EnartisStab MICRO can reduce volatile phenols (Figure 3), treat "reduction" issues and remove other off-flavors. Dosage: 2-15 g/hL

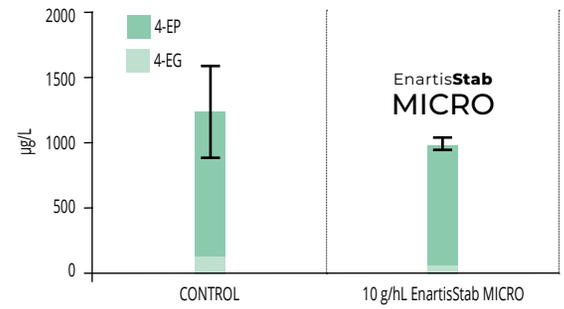


Figure 3: EnartisStab MICRO can reduce volatile phenols (4-EP/4-EG) concentration in wine. Results from 15 wines.

CONTROL MLF

AN ALLERGEN-FREE ALTERNATIVE

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

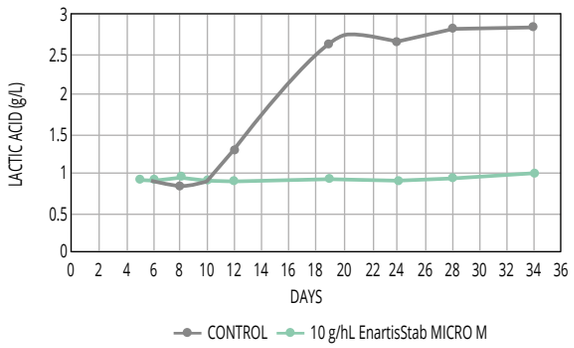


Figure 4: Difference of microbiological coverage between low SO_2 protection versus the addition of 10 g/hL EnartisStab MICRO M in a wine with a high pH (3.9). Treatment of wine with 10^{12} CFU/mL of selected highly resistant bacteria adapted to the medium.

LIMIT STUCK FERMENTATIONS

PROMOTE CLEAN AND COMPLETE FERMENTATIONS

EnartisStab MICRO M:

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

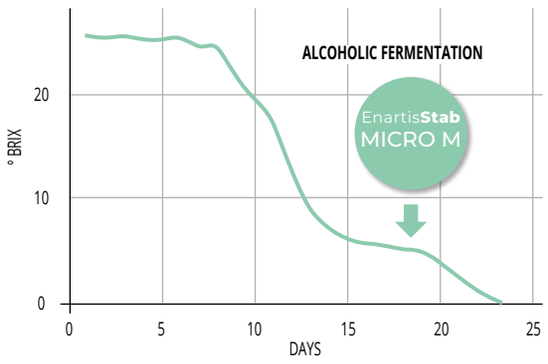


Figure 5: The addition of EnartisStab MICRO M to a sluggish fermentation helps complete fermentation.

SULFITING AGENTS

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

enartis

Inspiring innovation.

AST

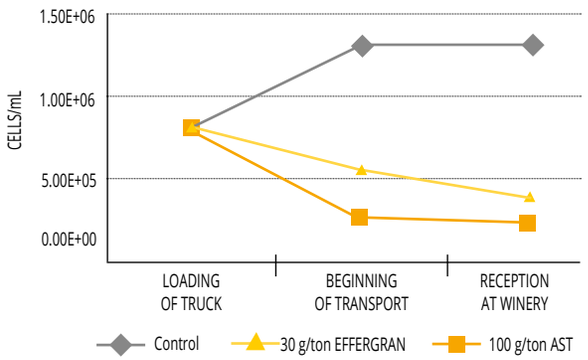
- Potassium metabisulfite, L-ascorbic acid and gallic tannin.
- Strong antioxidant and antimicrobial actions. When used on grapes, AST acts as an antibacterial and antioxidant.

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

Dosage: *100-200 g/ton of grapes; 15-20 g/hL in juice; 10 g/hL of AST provide approx. 28 ppm SO_2 and 30 ppm ascorbic acid*

Packaging: *1 kg*

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

AST MC

- Potassium metabisulfite and L-ascorbic acid.
- Excellent antioxidant that prevents must oxidation and limits laccase activity.
- Perserves and enhances the varietal aromatic potential of grapes.

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

Dosage: *100-200 g/ton of grapes; 15-20 g/hL in juice; 10 g/hL of AST provide approx. 39 ppm SO_2*

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_2 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_2, minimizing oxidation during transport from vineyard to winery.

Application: *sulfiting wines, grapes and juices; homogeneous release of SO_2*

Dosage: *125 g packet of EFFERGRAN (50 g of SO_2) for gondolas; of 4-5 tons or 25 hL of wine; 250 g packet of EFFERGRAN (100 g of SO_2) for gondolas; of 8-10 tons or 50 hL of wine; each bag of EFFERGRAN DOSE 5 releases 5 grams of SO_2; each bag of EFFERBARRIQUE releases 2 grams of SO_2*

Packaging: *EFFERGRAN: 125 g - 250 g - 1 kg; EFFERGRAN DOSE 5: box of 25 packets; EFFERBARRIQUE: box of 40 packets*

WINY

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

Application: *sulfiting grapes, juices and wines*

Dosage: *1 g of WINY develops approx. 0.56 g of SO_2*

Packaging: *1 kg - 25 kg*

POTASSIUM METABISULFITE ADDITION GUIDELINES

	SO_2 addition (mg/L)	g/hL	g/barrel
WINY	**5**	0.9	2
	10	1.8	4
	30	5.4	12
	50	8.9	20
	60	10.7	24

ZOLFO DISCHI

- Sulfur disks for wooden cask and barrel disinfection.
- Produced from pure sulfur using a special procedure that results in an even and regular combustion of sulfur, while avoiding dripping and hydrogen sulfide formation.

Application: *wooden cask and barrel disinfection*

Dosage: *each disc provides approx. 12 g of SO_2*

Packaging: *1 kg*

GREAT LITTLE HELPERS

enartis

Inspiring innovation.

ANTIFLOR

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

Application: *prevent surface "film" yeast spoilage*

Packaging: *three sizes available: 1 tablet per demijohn (ANTIFLOR DAMIGIANE); 1 or 2 tablets per container from 200L to 5000L (ANTIFLOR FUST); 1 or 2 tablets per tank over 5000 L (ANTIFLOR VASCHE)*

ENOPLASTICO SPECIAL

- ENOPLASTICO SPECIAL (bung-putty) is a stiff, odorless and waterproof paste.
- Contains ultra-pure oily substances and adhesive powders.
- Suitable for sealing vat doors, ensuring a perfect seal thanks to its pasty texture.

Packaging: *0.5 kg*

TIPS & TRICKS

Inspiring innovation.

CRAFTING WINE NATURALLY

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

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

Perfecting Mouthfeel

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

Perfecting Aroma

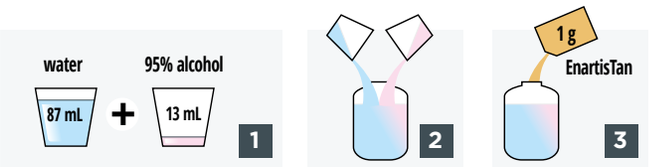
Depending on their origin, tannins can heighten specific wine aroma features such as fruit, oak and spice notes. A tannin extracted from grape skin, for example, can be used to enhance the fruitiness in a wine with an overwhelming oaky character. At the opposite end of the spectrum, an oak tannin can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

Correcting or Preventing Defects

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

How to choose the Enartis tannins?

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



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

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

How to choose SURLÌ Products?

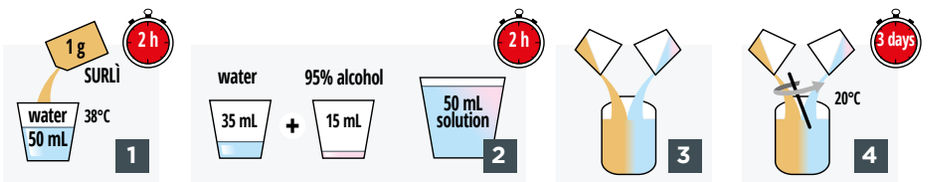
To determine which SURLÌ to use and the appropriate dosage, we recommend doing the following lab bench trial:

1. Rehydrate 1 gram of SURLÌ in 50 mL of water at 38°C for 2 hours.

2. Meanwhile, prepare a 50 mL solution with 15 mL 95% alcohol and 35 mL water.

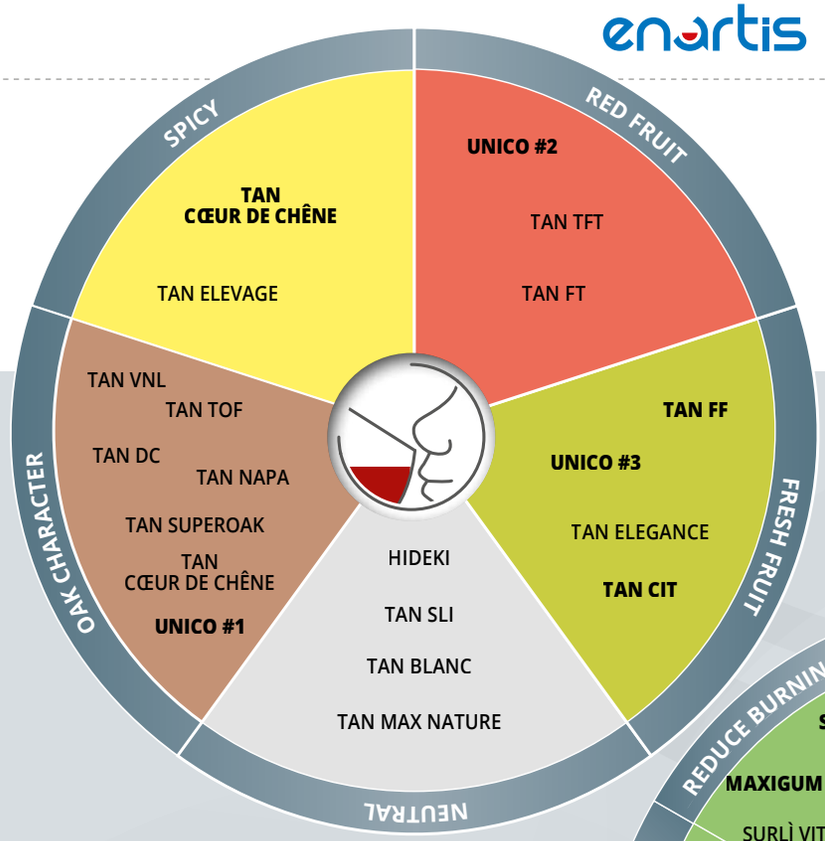
3. After 2 hours, add the 50 mL alcohol solution to the suspension and let cool at room temperature with periodic mixing.

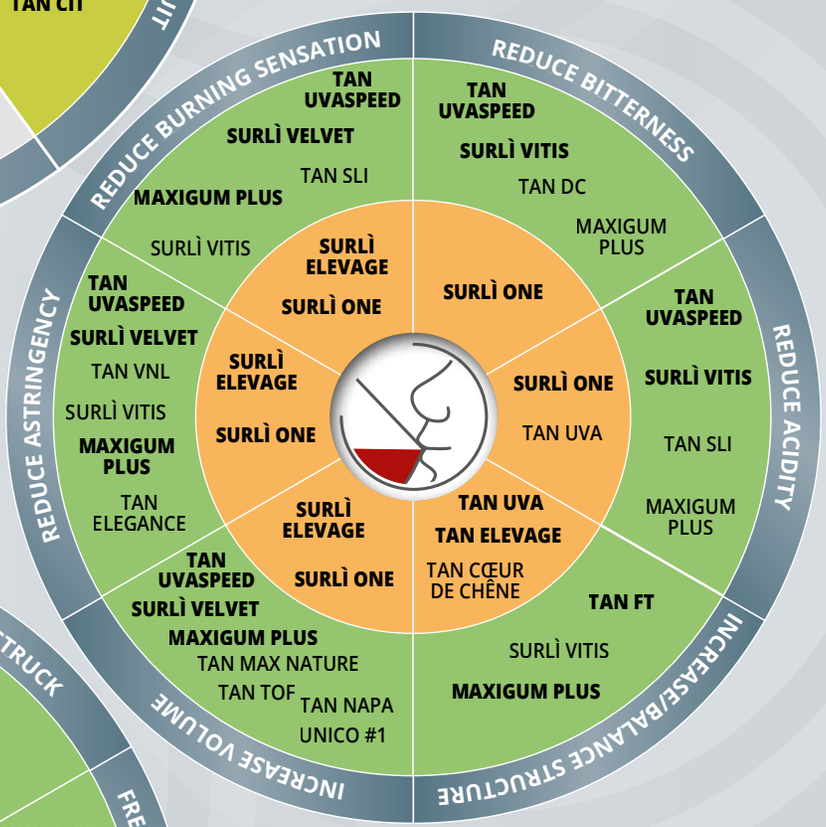
4. The final solution must be kept at a temperature of at least 20°C and mixed two or three times daily for at least three days.

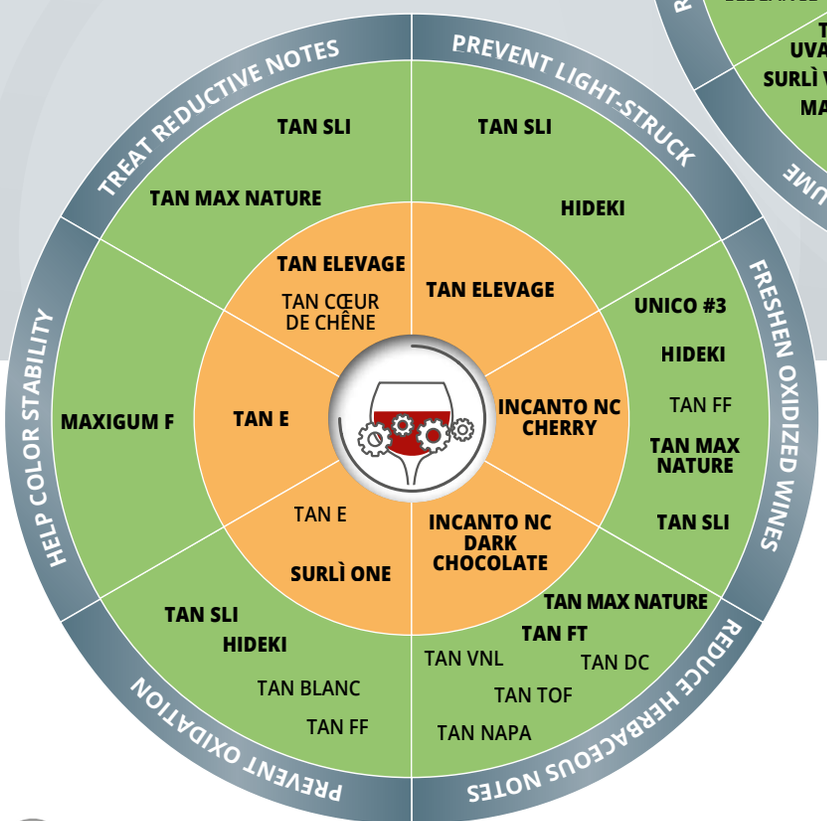


The solution is now ready to add directly to wine being treated, knowing that 1 mL in 100 mL of wine corresponds to a dose of 10 grams of SURLÌ per 100 L.

! N.B.: SURLÌ 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

+ INTENSITY/EFFECTIVE

PAGE	PRODUCT
EMZYMES	
5	EnartisZym AROM MP
5	EnartisZym COLOR PLUS
6	EnartisZym EZFILTER
6	EnartisZym RIVELA
5	EnartisZym RS
YEAST	
9	EnartisFerm AROMA WHITE
12	EnartisFerm BIO
12	EnartisFerm ES U42
10	EnartisFerm ES123
10	EnartisFerm ES181
11	EnartisFerm ES454
11	EnartisFerm ES488
12	EnartisFerm EZFERM 44
13	EnartisFerm PERLAGE
13	EnartisFerm PERLAGE FRUITY
10	EnartisFerm Q CITRUS
13	EnartisFerm Q RHO **NEW**
9	EnartisFerm Q4
11	EnartisFerm Q5
11	EnartisFerm Q7
10	EnartisFerm Q9
11	EnartisFerm RED FRUIT
13	EnartisFerm SB
11	EnartisFerm VINTAGE RED
10	EnartisFerm VINTAGE WHITE
12	EnartisFerm WS
YEAST NUTRIENTS	
18	NUTRIFERM ADVANCE
17	NUTRIFERM AROM
17	NUTRIFERM AROM PLUS
18	NUTRIFERM ENERGY
18	NUTRIFERM NO STOP
18	NUTRIFERM SPECIAL
17	NUTRIFERM ULTRA
POLYSACCHARIDES	
21	EnartisPro BLANCO
21	EnartisPro FT
22	EnartisPro Q
21	EnartisPro R
21	EnartisPro TINTO
21	EnartisPro UNO
22	SURLÌ ELEVAGE
22	SURLÌ ONE
22	SURLÌ VELVET
22	SURLÌ VITIS
TANNINS	
25	EnartisTan AROM
26	EnartisTan BLANC
25	EnartisTan CIT
26	EnartisTan CŒUR DE CHÊNE
25	EnartisTan COLOR
26	EnartisTan DC
26	EnartisTan E
27	EnartisTan ELEGANCE
27	EnartisTan ELEVAGE
27	EnartisTan EXTRA
25	EnartisTan FERMCOLOR
27	EnartisTan FF
27	EnartisTan FT
26	EnartisTan MAX NATURE
27	EnartisTan NAPA
25	EnartisTan RF
25	EnartisTan ROUGE
28	EnartisTan SKIN
26	EnartisTan SLI
27	EnartisTan SUPEROAK
28	EnartisTan TFT
27	EnartisTan TOF
28	EnartisTan UNICO #1
28	EnartisTan UNICO #2
28	EnartisTan UNICO #3
28	EnartisTan UVA
28	EnartisTan UVASPEED
25	EnartisTan V
27	EnartisTan VNL
26	EnartisTan XC
26	HIDEKI
OAK ALTERNATIVES	
32	INCANTO BLACK SPICE
32	INCANTO CREAM
32	INCANTO CARAMEL
32	INCANTO DARK CHOCOLATE
32	INCANTO NATURAL
34	INCANTO NC CHERRY
34	INCANTO NC DARK CHOCOLATE
34	INCANTO NC RED
34	INCANTO NC WHITE
32	INCANTO SPECIAL FRUIT
32	INCANTO TOFFEE
32	INCANTO VANILLA
MALOLACTIC FERMENTATION	
37	EnartisML MCW
37	EnartisML SILVER
37	EnartisML UNO
38	NUTRIFERM ML
38	NUTRIFERM OSMOBACTI
FINING AGENTS	
41	CLARIL AF
43	CLARIL HM
42	CLARIL QY
43	CLARIL SMK
42	CLARIL ZR
42	CLARIL ZW
41	COMBISTAB AF
43	ENOBLACK PERLAGE
43	ENOBLACK PF
43	FENOL FREE
42	GOLDENCLAR INSTANT
41	PLANTIS AF
41	PLANTIS AF-L
41	PLANTIS AF-P
41	PLANTIS AF-Q
41	PLANTIS PQ
42	PLUXBENTON N
42	PLUXCOMPACT
43	REVELAROM
42	SIL FLOC
STABILIZING AGENTS	
48	AROMAGUM
49	AMT PLUS QUALITY
49	CITROGUM
49	CITROGUM DRY
49	CITROSTAB rH
50	EnartisStab MICRO
50	EnartisStab MICRO M
50	EnartisStab MICRO ZERO **NEW**
50	EnartisStab SLI
48	ENOCRISTAL Ca
48	ENOCRISTAL SUPERATTIVO
48	MAXIGUM
48	MAXIGUM F
48	MAXIGUM PLUS
46	ZENITH COLOR
46	ZENITH UNO
SULFITING AGENTS	
53	AST
53	AST MC
53	EFFERGRAN/EFFERGRAN DOSE 5/ EFFERBARRIQUE
53	WINY
53	ZOLFO DISCHI
GREAT LITTLE HELPERS	
55	ANTIFLOR
55	ENOPLASTICO SPECIAL

NOTE

NOTE

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.

www.enartis.com