

2019 | 2020  
PRODUCT CATALOG



enartis

Inspiring innovation.



Inspiring innovation.

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## ABOUT ENARTIS

Launched in 2003, Enartis has established itself as a global market leader for winemaking products and technical support. Part of the Esseco Group, a fourth generation, family-owned company, that has provided innovation and industry leadership by developing key products for inorganic chemistry and oenology for nearly a century. We believe innovation is a discipline, not a cliché.

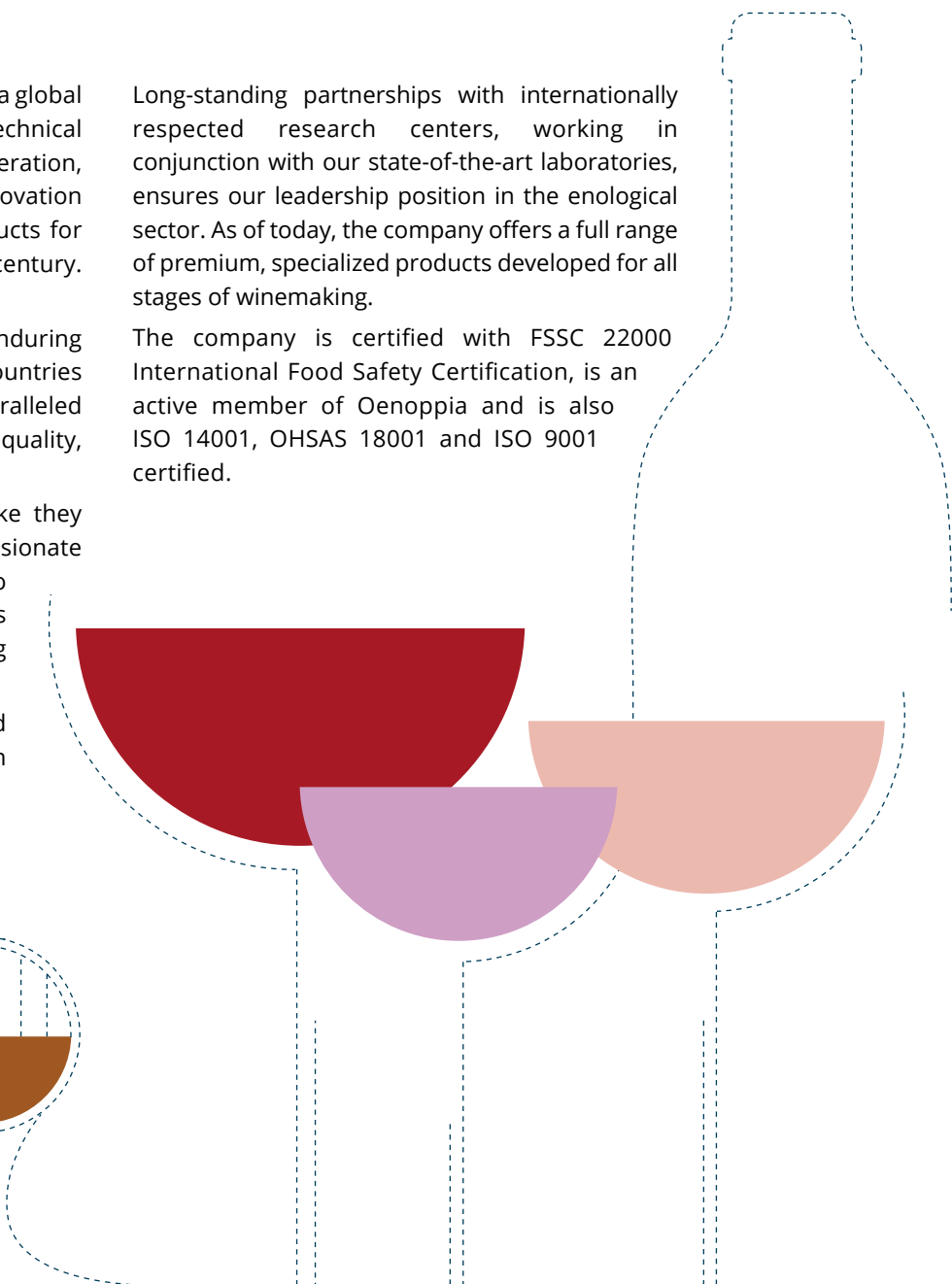
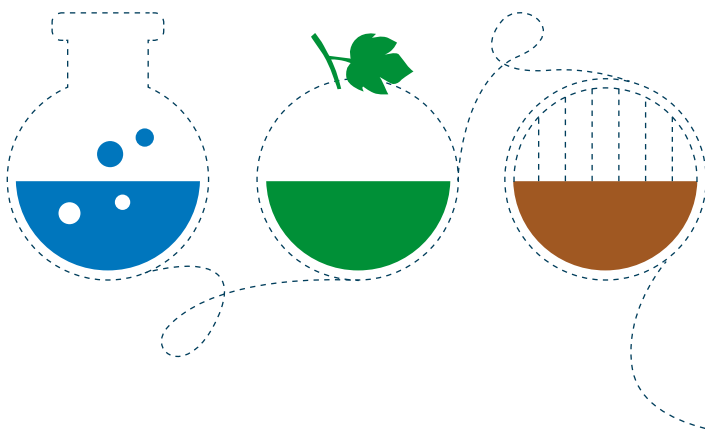
The Enartis brand is proud to have developed enduring relationships with over 10,000 producers in 50 countries to provide wineries and winemakers with unparalleled innovation and expertise to improve not only wine quality, but winery efficiencies.

Truly great companies treat their employees like they treat their customers. At Enartis, our team of passionate and engaged professionals are dedicated to working with winemakers on five continents to share their enological and winemaking expertise.

Enartis invests over 2 million euros in research and development every year, leading the industry with innovative products and technical support.

Long-standing partnerships with internationally respected research centers, working in conjunction with our state-of-the-art laboratories, ensures our leadership position in the enological sector. As of today, the company offers a full range of premium, specialized products developed for all stages of winemaking.

The company is certified with FSSC 22000 International Food Safety Certification, is an active member of Oenoppia and is also ISO 14001, OHSAS 18001 and ISO 9001 certified.



*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.*

## **ENZYMES**

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## Must Clarification

### EnartisZym RS

EnartisZym RS (Rapid Settling) was created to resolve fining problems in musts that are notoriously difficult to clarify, such as Muscat, Sauvignon Blanc and Verdejo. It has strong pectolytic and hemicellulase activities. In fact, this liquid enzyme has a very intense clarification action that takes place in a short amount of time. It can also be used to clarify musts that are particularly rich in pectins resulting from mechanical grape processing and high temperatures during harvest. In difficult-to-clarify wines, EnartisZym RS improves their clarification and filterability.

**Application:** settling of difficult-to-clarify musts; improve wine clarification and filterability.

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

**Packaging:** 1 kg

## Maceration of White Grapes

### EnartisZym Arom MP

Micro-granulated enzymatic preparation for maceration of white grapes. Its secondary activities, hemicellulases and proteases, break cell walls and membranes localized in the skin. This not only causes the solubilization of aromatic precursors contained in the vacuole, but also those bound to solid cell structures. Wines treated with EnartisZym Arom MP have an aromatic profile characterized by intense fruit aromas with complexity and persistence. Moreover, the protease activity contributes to protein stabilization 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

## Maceration of Red Grapes

### EnartisZym Color

Pectolytic enzyme with side activities specifically developed for the maceration of red grapes. It accelerates and intensifies the extraction of polyphenolic substances (anthocyanins and tannins in particular) contained in grape skins. Wines produced using EnartisZym Color are therefore richer in phenolic substances, more intense on the nose and more structured on the palate. EnartisZym Color also improves press yield, wine filterability and often color intensity. Recommended for a faster extraction of color and tannins from unripe or moldy grapes.

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

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

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

### EnartisZym Color Plus

Micro-granulated enzyme for maceration of red grapes. EnartisZym Color Plus is effective in the extraction and mainly in the stabilization of color compounds. Its secondary activities, cellulase and hemicellulase, degrade cell walls, thus accelerating and increasing the solubility of anthocyanins and tannins associated with cellular structures. The protease activity degrades proteins and decreases their ability to precipitate tannins and pigments. EnartisZym Color Plus results in wines with a bigger structure and with intense and stable color.

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

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

**Packaging:** 250 g

	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	Improve Filtration	Form	Dosage	Package Size
RS	▲▲▲	▲▲▲	▲▲		▲▲				▲▲	Liquid	1-3 mL/hL	1 kg
Arom MP	▲			▲▲▲					▲	Powder	20-40 g/ton	250 g - 1 kg
Color						▲▲▲	▲▲		▲▲	Liquid	20-40 mL/ton	25 kg
Color Plus					▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	Powder	20-40 g/ton	250 g

## KNOW MORE ABOUT ENOLOGICAL ENZYMES

### WHY USE ENOLOGICAL ENZYMES?

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

### WHAT ARE ENZYMES EXTRACTED FROM?

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

### WHY SO MANY PECTOLYTIC ENZYMES?

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

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

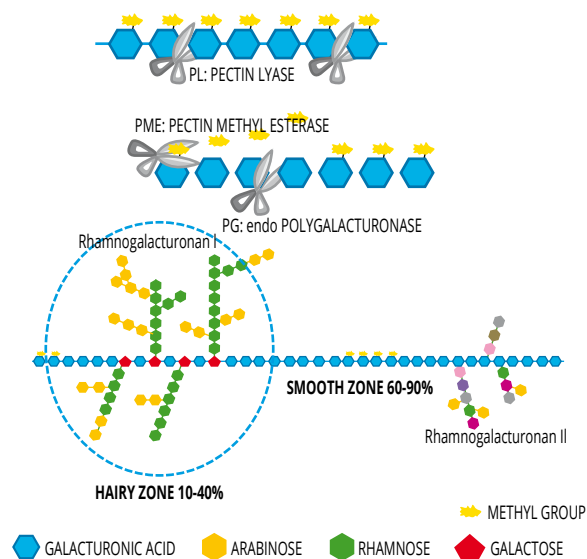


Figure 1: Representation of main pectolytic activities on pectin chains.

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

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

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

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

### HOW DOES TEMPERATURE AFFECT ENZYMATIC ACTIVITIES?

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

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

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

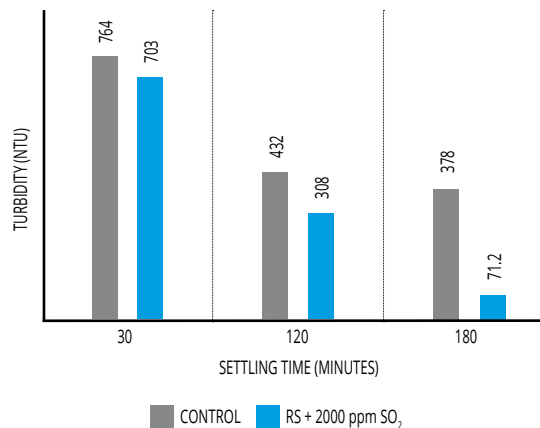


Figure 2: Impact of SO<sub>2</sub> addition on EnartisZym RS effectivity

### 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.

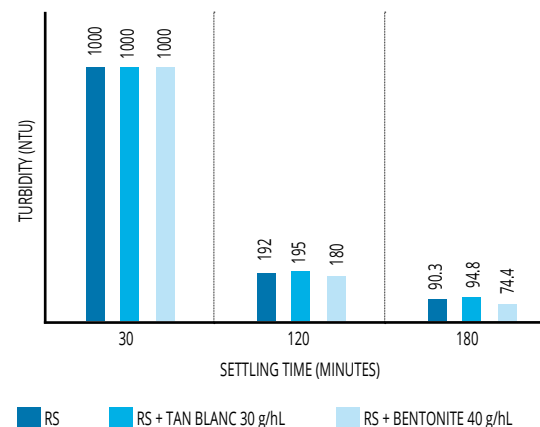


Figure 3: Impact of tannin and bentonite addition on EnartisZym RS effectivity

### 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.

*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.*

## **YEAST NUTRIENTS**

**enartis**





*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 Oranje River Cellar - South Africa**

### Nutriferm Arom Plus

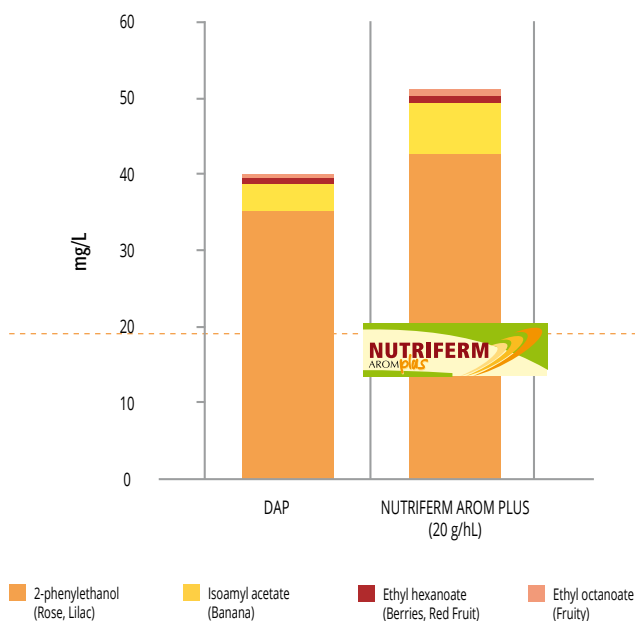
Nutrient and biological fermentation regulator comprised of autolyzed yeast with an elevated content of free amino acids and thiamine. Nutriferm Arom Plus supplements mainly branched chain amino acids that yeast can use to produce esters and other aromatically active compounds. When it is used in combination with a yeast that has the metabolic pathways necessary to exploit this amino acidic content, Nutriferm Arom Plus significantly increases the aromatic intensity and complexity of the wine. It also provides survival factors that help with yeast viability and thus ensures successful fermentations.

**Application:** enhance secondary aroma production.

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

**Packaging:** 1 kg - 10 kg

AROMATIC PROFILE OF WINE AFTER ALCOHOLIC FERMENTATION



*Nutriferm Arom Plus increases the production and content of aromatic compounds in wine.*

### Nutriferm Energy

Nutriferm Energy provides amino acids, trace elements and mineral salts naturally contained in yeast cells. The addition of nutrients and vitamins are vital in the exponential phase of yeast multiplication, when external elements such as alcohol, sulfur dioxide and lack of oxygen have not yet intervened to modify yeast metabolism and its ability to select nutrients. Nutriferm Energy is recommended during the preparation of the starter culture and at yeast inoculation. Because of its nutritional and energetic contributions, it shortens lag phase, prevents the formation of hydrogen sulfide and acetic acid, and increases production of glycerol and polysaccharides.

**Application:** complete nutrition for yeast; prevention of stuck or sluggish fermentations.

**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 inorganic nitrogen, thiamine and inactivated yeast. Designed to facilitate primary fermentation and to prevent stuck fermentations due to biochemical causes. Providing suitable amounts of YAN, vitamins and mineral salts, it ensures that the yeast will produce a pleasant aroma as well as negligible levels of hydrogen sulfide and other unwanted characteristics.

**Application:** musts with low YAN; very clean musts.

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

**Packaging:** 1 kg - 10 kg

### Nutriferm Vit

Containing ammonium sulfate, diammonium phosphate, thiamine, Nutriferm Vit, supplies immediately available nitrogen to the yeast hence guaranteeing a stable fermentation.

**Application:** yeast basic nitrogen nutrition.

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

**Packaging:** 1 kg - 20 kg

### Nutriferm No Stop

Inactivated yeast rich in sterols and long-chain fatty acids. Used at mid-fermentation, it helps maintain yeast membrane integrity and therefore prevents and correct fermentation anomalies. In case of stuck fermentation, its addition can help the fermentation restart without the need for another yeast inoculation.

**Application:** prevent and treat stuck fermentations.

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

**Packaging:** 1 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 Gradual Release

This blend of DAP and tannin is contained in a special bag that gradually releases its content during fermentation. Nutriferm Gradual Release is to be added before the filling of the fermentation tank but it will start to release its content only at the end of the exponential growth phase of the yeast. By using Nutriferm Gradual Release, the second addition of nutrient is not necessary and its formulation guarantees a complete fermentation and the prevention of reductive characters. Also recommended for the fermentation in pressure tank.

**Application:** yeast nutrition and prevention of the reductive character; second fermentation in pressure tank.

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

**Packaging:** 5 kg

### Nutriferm Bianco

Dedicated to the wineries that struggle in managing the addition of multiple products during fermentation. Nutriferm Bianco is a complete nutrient for yeast and an excellent stabilizer for white and rosé juice. Its composition based on ammonium salts, inactivated yeast and thiamine offers all the essential elements for yeast metabolism while the tannin component helps juice antioxidant protection and protein stability.

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

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

**Packaging:** 10 kg

### Nutriferm WM

Dedicated to the wineries that struggle in managing the addition of multiple products during red and rosé vinification. Nutriferm WM is a complete nutrient for yeast and an excellent stabilizer for wine color. Its composition based on ammonium salts, inactivated yeast and thiamine offers all the essential elements for yeast metabolism while the tannin and polysaccharide component helps to create long-term stable color compounds and improve overall wine quality.

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

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

**Packaging:** 10 kg

### EnartisGreen Nutriente



Fermentation aid made of organic yeast hulls certified organic in accordance with European Regulation [Reg. (EC) N° 834/2007 and Reg. (EC) N° 889/2008]. It helps yeast metabolism providing physical support to the fermenting cells, helping CO<sub>2</sub> liberation and absorbing toxic compounds present in the juice or produced during the fermentation.

**Application:** fermentation aid.

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

**Packaging:** 1 kg

## ENARTIS NUTRIENTS AND FERMENTATION AIDS MAIN FEATURES

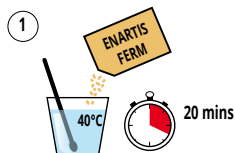
	NUTRIFERM AROM PLUS	NUTRIFERM ENERGY	NUTRIFERM SPECIAL	NUTRIFERM BIANCO	NUTRIFERM WM	NUTRIFERM VT	NUTRIFERM GRADUAL RELEASE	ENARTISGREEN NUTRIENTE	NUTRIFERM NO STOP
APPLICATION	Supply of precursors for the synthesis of fermentation aromas	Reinforce fermentation capacity of yeast	Balanced and complete nutrition	Complete yeast nutrition, juice protection and stabilization	Complete yeast nutrition, juice protection and red color stabilization	Basic nitrogen nutrition	Complete and clean fermentations	Detoxification of must	Prevention and treatment of stuck fermentation
NITROGEN FROM AMINOACIDS	●●●●●●	●●●●	●●	●	●				
INORGANIC NITROGEN			●●●	●●	●	●●●●●●	●●●●		
AROMATIC PRECURSORS	●●●●●●	●●●	●	●	●				●
STEROLS & FATTY ACIDS	●●●	●●●●	●●	●●	●			●●●	●●●●●●
MINERALS	●●●	●●●	●●	●	●				●●
VITAMINS	●●●	●●●●	●●	●●	●	●			●●●
TANNINS				●	●●		●		
SULFATE	NO	NO	NO	NO	NO	YES	NO	NO	NO
ADSORPTIVE EFFECT	●●●●	●●●●	●●●	●●	●			●●●●●●	●●●●●●
TIMING OF ADDITION	Yeast inoculation	Yeast inoculation	Yeast inoculation	Yeast inoculation	Yeast inoculation	Yeast inoculation or starting from 24 hrs after organic nitrogen addition	Before filling the fermentation tank	Any time during fermentation and in case of sluggish or stuck fermentation	Second half of fermentation and in case of sluggish or stuck fermentation
RECOMMENDED DOSAGE	15-30 g/hL	10-30 g/hL	30-50 g/hL	30-50 g/hL	30-50 g/hL	10-30 g/hL	20 g/hL	10-40 g/hL	20-40 g/hL
MAXIMUM LEGAL DOSAGE (EU REGULATION)	40 g/hL	40 g/hL	60 g/hL	60 g/hL	60 g/hL	30 g/hL	110 g/hL	40 g/hL	q.s.
SUITABILITY FOR ORGANIC WINE (EU REGULATION)	YES	YES	YES	YES	YES	NO	YES	Organic certified	YES

*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.*

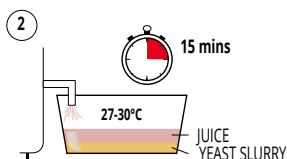
**YEAST**

**enartis**

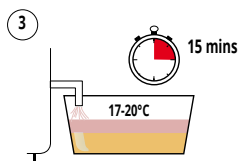
## PROTOCOL FOR YEAST REHYDRATION



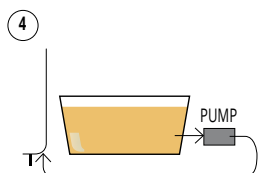
Rehydrate 20-40 g/hL of active dry yeast in 10 times its weight of chlorine-free water at 35-40°C. Stir gently to break up any clumps. Wait 20-30 minutes.



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.

## White Wine Fermentation

### EnartisFerm Aroma White

Yeast strain that preserves varietal characters and produces fermentation aromas. When fermented at temperatures between 15-17°C, it enhances citrus and mineral notes. At higher temperatures (18-21°C), it produces intense aromas of white and tropical fruit. Due to its  $\beta$ -lyase activity, it is recommended for the fermentation of thiol-producing varieties such as Sauvignon Blanc, Chenin and Colombard.

**Application:** *fruity white wines obtained from neutral grapes and thiol-producing varieties.*

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

**Packaging:** 0.5 kg

### EnartisFerm ES181

Good fermenter at low temperatures and in reductive winemaking conditions, EnartisFerm ES181 is recommended for the production of varietal wines fermented in stainless steel tanks. When properly fed, it produces fermentation aromas that increase the aromatic complexity without overshadowing the primary aromas. It also contains intense  $\beta$ -lyase activity, therefore it is recommended for the fermentation of thiolic varieties such as Sauvignon Blanc, Semillon, Verdejo etc.

**Application:** *fermentation at low temperatures; reductive fermentation; varietal white wines; Sauvignon Blanc.*

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

**Packaging:** 0.5 kg – 10 kg

## EnartisFerm Q Citrus

Yeast strain selected for the production of white wines characterized by intense aromatic expression. EnartisFerm Q Citrus expresses the fruit and floral aromas of grape terpenes, norisoprenoids and thiols. At the same time, it intensifies the varietal character by producing zesty and complex notes of citrus (grapefruit), tropical fruit (guava, passion fruit, pineapple) and flowers (jasmine, lime blossom).

**Application:** varietal expression; improves aromatic expression of wine from neutral grapes.

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

**Packaging:** 0.5 kg



*EnartisFerm Q Citrus gave my wines incredible aromatics and massive sensory expression. We frequently perceive distinct notes of pineapple, orange and guava. Enartis Ferm 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 4 years ago we have placed increasing orders in subsequent vintages!*  
**Rianco van Rooyen, Winemaker at Oranje River Cellar - South Africa**

## EnartisFerm Top Essence

Yeast with good fermentation properties. It is suitable for the production of young white wines from grapes low in primary aromas in order to enhance the aromatic expression of pineapple, passion fruit, banana, grapefruit, etc.

**Application:** young and easy-to-drink wines.

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

**Packaging:** 0.5 kg

*Ek wou bietjie wegbreek van die industrie-gedomineerde giste, wat oor die laaste paar jaar nie juis in ons kelder beindruk het nie. Ek het Top Essence op my Sauvignon Blanc en Chenin Blanc gebruik en ongelooflike resultate gekry. Beste vrugtdrukking in jare en dit trek deur na die palet. Ek het dit selfs in van my vate gebruik en die resultate was beter as verwag. In 2019 sal ek moeilik iets anders as Top Essence op die wit kultivars gebruik.*  
**Hardus van Heerden, Winemaker at Welbedacht - South Africa**

## EnartisFerm Vintage White

Increases varietal aromas and releases large quantities of polysaccharides during the *sur lie* stage. Its tendency to form lightly compacted lees reduces the number of *bâtonnage* and pump-overs. Because of its moderate fermentation speed, it is advised for barrel fermentation.

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

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

**Packaging:** 0.5 kg

## Red Wine Fermentation



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

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

## EnartisFerm D20

EnartisFerm D20 was isolated by Enartis from the top Cabernet Sauvignon block on DAOU Mountain in the Adelaida Appellation of Paso Robles. Besides its ability of extracting high quantities of polyphenols, promoting rich, dense and stable color and enhancing dark fruit and spicy aroma, EnartisFerm D20 was selected because of its capability of fermenting at high temperatures. This makes it suitable for the production of high concentrated red wine and for fermentation with low or no temperature control.

**Application:** red wine with high ageing potential; Bordeaux varieties; high temperature fermentation.

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

**Packaging:** 0.5 kg

## EnartisFerm ES488

Wines produced with this strain are both powerful on the nose and palate and suitable for ageing in oak. EnartisFerm ES488 produces intense black fruit and spicy aromas that are evident during the first stages following fermentation and remain persistent. Given its high extraction capacity, it results in wines with great structure and color. It also helps mask herbaceous notes in unripe grapes.

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

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

**Packaging:** 0.5 kg – 10 kg

## EnartisFerm Q7

Alcohol tolerant strain (up to 17%) which heightens fresh fruit notes such as blackberry, plum and spices. It is recommended for fermenting grapes produced in hot climates or in vintages affected by drought. In these conditions, EnartisFerm Q7 ensures stable and complete fermentations and revitalizes the aromas by masking overripe 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

One of the most loved strains of the EnartisFerm range! It produces very intense aromas of fruit and violets along with elevated quantities of glycerol and polysaccharides. The resulting wines are round on the palate and have good color and aroma.

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

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

**Packaging:** 0.5 kg – 10 kg

## EnartisFerm ES454

Yeast for the production of red wines destined for ageing. It gives the best results when fermenting ripe and high-quality grapes. It produces unique wines characterized by elegant, ripe fruit and spicy aromas and smooth mouthfeel.

**Application:** varietal expression; medium to long ageing; grand red wines.

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

**Packaging:** 0.5 kg



## EnartisFerm Vintage Red

Moderate fermenter, capable of fermenting in a wide range of temperatures (18-35°C), EnartisFerm Vintage Red is known for its ability of producing soft and structured wines. It is also suitable for the production of wines made from slightly unripe grapes. Aromatically respectful of varietal characteristics, after the initial phase in which the wine appears closed and austere on the nose, with ageing it opens up and shows notes of ripe fruit and spices.

**Application:** varietal expression; medium to long ageing; grand red wines; oak ageing.

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

**Packaging:** 0.5 kg – 10 kg

## EnartisFerm WS

Isolated from late harvest Zinfandel from Williams Selyem Winery, EnartisFerm WS is considered one of the most robust California yeast strains. It is well suited for a wide spectrum of red and white varieties and is recommended for fermentation of high °Brix juice and to restart stuck fermentations. EnartisFerm WS respects varietal and *terroir* characters and boosts fruit and spice expression, while contributing to both excellent complexity and structure enhancement with soft tannin extraction. It is particularly recommended for the production of high alcohol wines destined for medium- to long-term ageing.

**Application:** wide spectrum of red and white varieties, particularly Pinot Noir, Shiraz and Pinotage; high °Brix grapes; restart stuck fermentations.

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

**Packaging:** 0.5 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 Bio

*Saccharomyces cerevisiae* selected for the vinification of white, red and rosé wines that express the *terroir* and the varietal character with clean aromas. EnartisFerm Bio does not contain E491 sorbitan monostearate and is certified organic in accordance with European Regulation [Reg. (EC) N° 834/2007 and Reg. (EC) N° 889/2008].

**Application:** white, red and rosé wine fermentation.

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

**Packaging:** 0.5 kg

### EnartisFerm EZFerm 44

EnartisFerm EZFerm improved! This strain combines high alcohol tolerance (17.5%), strong fermentation kinetics and minimal nutritional needs with a strong affinity for fructose metabolism. EnartisFerm EZFerm 44 is the recommended yeast for solving problems of sluggish and stuck fermentations.

**Application:** restarting sluggish and stuck fermentations.

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

**Packaging:** 0.5 kg

### EnartisFerm SB

It produces wines with a clean and intense varietal character and ensures regular and complete fermentation. Recommended for the fermentation of big volumes.

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

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

**Packaging:** 10 kg

### EnartisFerm SC

Versatile strain that can be used in the fermentation of white, red and rosé wines. It allows the production of wines with clean, fresh, intense varietal aroma.

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

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

**Packaging:** 10 kg

### EnartisFerm Top 15

A vigorous strain with high alcohol tolerance (17%), able to ferment at low temperatures. It can be used in the vinification of white, red and rosé wines as well as in the production of sparkling wine fermented in bottles and stainless-steel tanks. It produces wines with very clean aromas that express the characteristics of the grape.

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

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

**Packaging:** 0.5 kg – 10 kg



## ENARTIS YEAST CHARACTERISTICS

	TEMPERATURE	LAG PHASE	FERMENTATION SPEED	ALCOHOL TOLERANCE	KILLER FACTOR	COMPATIBILITY WITH IMLF	NITROGEN NEEDS	OXYGEN NEEDS	AROMATIC FEATURES	WHITE	RED	ROSE	BUBBLES
<b>Aroma White</b> <i>S. cerevisiae</i>	15-24°C	Medium	Medium	15%	Killer	Neutral	High	Medium	F - V	●			
<b>Bio</b> <i>S. cerevisiae</i>	15-28°C	Medium	Medium	14%	Neutral	Neutral	Medium	Low	N	●	●	●	
<b>D20</b> <i>S. cerevisiae</i>	18-38°C	Short	High	17%	Neutral	Neutral	Medium	Medium	F		●	●	
<b>ES181</b> <i>S. cerevisiae</i>	10-20°C	Short	High	16,5%	Killer	Low	Low	Medium-Low	F - V	●		●	●
<b>ES454</b> <i>S. cerevisiae</i>	18-30°C	Short	Medium	16%	Sensitive	High	Medium	Medium	V		●		
<b>ES488</b> <i>S. cerevisiae</i>	15-28°C	Short	Medium-slow	16%	Killer	High	High	High	F - V		●		
<b>EZferm 44</b> <i>S. bayanus</i>	15-30°C	Short	Medium	17,5%	Neutral	Neutral	Low	Low	N	●	●	●	
<b>Q Citrus</b> <i>S. cerevisiae</i>	10-20°C	Short	High	15%	Neutral	Low	Medium	Medium	F	●		●	
<b>Q7</b> <i>S. cerevisiae</i>	16-30°C	Medium	Medium-slow	16,5%	Neutral	Neutral	Medium	Medium	F		●		
<b>Red Fruit</b> <i>S. cerevisiae</i>	14-34°C	Short	High	16%	Killer	Neutral	High	High	F		●	●	
<b>SB</b> <i>S. bayanus</i>	18-32°C	Medium	High	15%	Neutral	Low	Low	Low	V	●	●	●	●
<b>SC</b> <i>S. cerevisiae</i>	15-30°C	Short	High	13%	Neutral	Good	Medium	Medium	V	●	●	●	
<b>Top 15</b> <i>S. bayanus</i>	10-28°C	Short	High	17%	Killer	Neutral	Low	Low	V	●	●	●	●
<b>Top Essence</b> <i>S. cerevisiae</i>	15-25°C	Short	Medium	15%	Killer	Low	Medium	Medium	F	●			
<b>Vintage Red</b> <i>S. cerevisiae</i>	18-32°C	Short	Medium	16%	Neutral	High	Medium	Medium-High	V		●		
<b>Vintage White</b> <i>S. bayanus</i>	14-24°C	Short	Medium	15,5%	Killer	Good	High	Medium-High	V	●			
<b>WS</b> <i>S. cerevisiae</i>	16-30°C	Medium	Medium-High	18%	Neutral	Neutral	Low	Low	V	●		●	

F = fermentation aroma

V = varietal

N = Neutral



## RESTART AND/OR COMPLETE A STUCK FERMENTATION

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

- > Diagnose the causes of fermentation arrest.
- > Appropriate wine treatment.
- > Proper acclimation of the yeast.

### 1- TREAT THE STUCK WINE BEFORE THE RESTART - 24 HOURS PRIOR TO YEAST PREPARATION

1. Press off skins or rack of lees.
2. Remove spoilage microbes with EnartisStab Micro M at 15 g/hL
3. Rack off lees 24 hours after treatment and add Nutriferm No Stop at 20 g/hL.

### 2- PREPARE AND ACCLIMATE THE YEAST

#### 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 Energy (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 EZ FERM 44 in 10 times its weight of chlorine-free water at 40°C and wait 20 minutes.

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

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

### 3- PRODUCT NEEDS FOR 100 hL:

WINEMAKING PRODUCT	QUANTITY (kg)
Stab Micro M	1.5
Nutrifer No Stop	2
EnartisFerm EZFerm 44	3
Nutrifer Energy	1
Nutrifer Special	0.5

#### Why use Nutriferm No Stop?

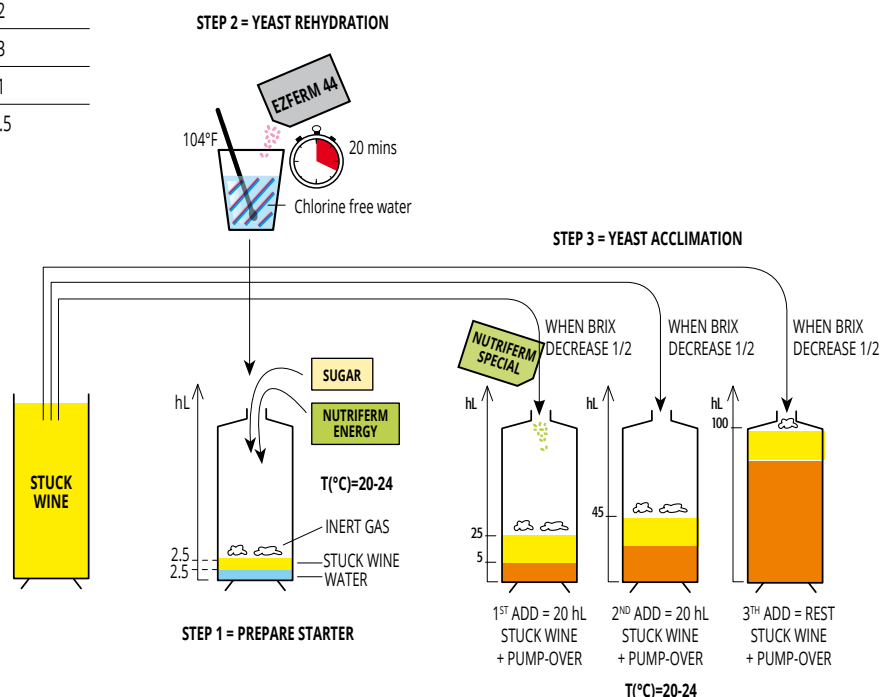
*Nutrifer No Stop acts as a protector by improving yeast membrane integrity. Additionally, it eliminates medium chain fatty acids and pesticides residues which may inhibit fermentation.*

#### Why use Nutriferm Energy?

*Nutrient content in stuck wine cannot support yeast growth. Complex yeast nutrients improves yeast activity and facilitates their acclimation to hostile wine conditions. Nutriferm Energy 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.*



*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.*

## **TANNINS**

**enartis**

## White Vinification

### EnartisTan Arom

EnartisTan Arom is a blend of tannins and autolyzed yeast specifically formulated for the treatment of white and rosé juice. The tannins, consisting of hydrolyzable, high molecular weight tannins, are particularly reactive with grape proteins that affect protein stability in finished wines. The inactivated yeast provides amino acids with antioxidant activity that are an important source of thiol precursors.

**Application:** antioxidant protection; protein stabilization; thiols; fruity wines.

**Dosage:** 2-20 g/hL

**Packaging:** 1 kg

### EnartisTan Citrus

A blend of gallic and condensed tannins extracted from lemon wood. The low temperatures used during the extraction process of the condensed tannin preserve aromatic precursors in the wood that enhances the fruit and floral notes of the resulting wines. These characters are especially evident when paired with high  $\beta$ -glycosidase activity yeast (EnartisFerm Top Essence, Aroma White, Vintage White, ES181 and Q Citrus).

**Application:** enhancement of floral and fruit aroma.

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

**Packaging:** 1 kg

## Red Vinification

### EnartisTan Color

Blend of tannins and inactivated yeast. When added at the crusher, EnartisTan Color provides immediate antioxidant protection to anthocyanin and aromatic molecules. The grape seed tannins in the blend ensure the condensation of the anthocyanin fraction to form stable color pigments responsible for vibrant and young color. The addition of EnartisTan Color stimulates yeast to produce thiols thus enhancing spicy and black fruit aromas.

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

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

**Packaging:** 1 kg

### EnartisTan Fermcolor

EnartisTan Fermcolor is a blend of alcohol extracted condensed and hydrolyzable tannins. It combines a high antioxidant efficacy with excellent organoleptic quality. Used immediately on crushed grapes, it protects anthocyanins from oxidation and contributes to their stabilization. For its intense soft taste, it is recommended in the production of red wines intended for ageing and quality wines with a delicate structure.

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

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

**Packaging:** 1 kg

### EnartisTan FP

EnartisTan FP is a mixture of condensed and ellagic tannins. When added to red grapes, it acts in synergy with natural grape tannins to protect anthocyanins from oxidation while favoring the formation of stable color compounds. The ellagic tannin fraction ensures a good reaction with must proteins and helps the removal of oxidative enzymes (laccase). It is recommended for additions at the crusher or during cold soak for a more complete anti-oxidant effect with  $\text{SO}_2$ .

**Application:** "sacrificial" tannin; anti-oxidant protection; color stabilization.

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

**Packaging:** 15 kg

### EnartisTan Red Fruit

A blend of condensed tannins, many extracted from the wood of red fruit trees. These proanthocyanidinic tannins enrich wine with aromatic precursors that are responsible for notes of berries and red fruit. During primary fermentation, these precursors can be liberated by yeast strains (EnartisFerm Red Fruit, ES488 and ES454) with an intense  $\beta$ -glycosidase activity. Because of their liberation, the wine is enriched with fruit forward aromas that integrate the varietal aromas and those produced during fermentation.

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

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

**Packaging:** 1 kg

### EnartisTan Rouge

Micro granulated blend of gallic, ellagic and condensed tannins. When added at grape reception, during cold soak or in the first stage of maceration, it protects color and aromatic compounds from oxidation thus increasing wine color and aroma potential. Additionally, EnartisTan Rouge reinforces the structure of the wine and imparts balance. Recommended in case of moldy grapes.

**Application:** "sacrificial" tannin; anti-oxidant protection; color stabilization.

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

**Packaging:** 1 kg – 15 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 V

EnartisTan V (Vinification) is a highly reactive, condensed tannin specifically designed for the color stabilization of red wines during fermentation. It is extracted with water from non-fermented white grape seeds that contain a high concentration of low molecular weight catechins. It quickly reacts and condenses with free anthocyanins thus leading to long-lasting color stability.

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

**Dosage:** 100-300 g/ton

**Packaging:** 1 kg

## EnartisTan XC

EnartisTan XC is a tannin rich in monocatechins developed to increase color stability in young red and rosé wines. It is extremely effective in creating co-pigments with must-free anthocyanins. The color complexes formed this way are more resistant to oxidation, more soluble in must/wine and available for condensation reactions with grape tannins.

**Application:** color stabilization through copigmentation; young to medium aged red wines; rosé.

**Dosage:** 200-400 g/ton on red grapes; 2-15 g/hL in rosé juice

**Packaging:** 1 kg

## Technical Tannins

### EnartisTan Antibotrytis

Composed of highly reactive tannins that limit oxidation and the activity of oxidative enzymes. In case of grapes affected by *Botrytis cinerea*, EnartisTan Antibotrytis reduces the action of the oxidase (laccase) produced by the parasitic fungus. In case of cold-soak, EnartisTan Antibotrytis prevents loss of quality due to the oxidation of anthocyanins, the molecules responsible for the color of red grapes, and aromatic compounds. In the treatment of healthy grapes, EnartisTan Antibotrytis has an antioxidant effect that is synergistic with SO<sub>2</sub>.

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

**Dosage:** 50-200 g/ton on grapes; 3-20 g/hL in juice; 2-10 g/hL in wine

**Packaging:** 1 kg – 10 kg

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

## EnartisTan Blanc

Micro-granulated gallic tannin with high antioxidant activity. It can be added to the wine to enhance SO<sub>2</sub> antioxidant and antimicrobial activity. Sensory neutral and very effective even at low doses, EnartisTan Blanc does not affect wine aroma. In white wines, it prevents the reductive characters caused by exposure to ultraviolet (light-struck defect).

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

**Dosage:** 4-10 g/hL

**Packaging:** 1 kg – 12.5 kg

## EnartisTan E

Condensed tannin mainly consisting of monocatechins obtained by purification from an unfermented white grape seed extract. Very effective for the stabilization of coloring matter, its use is recommended in the early stages of the alcoholic fermentation and during the micro-oxygenation phase that precedes the malolactic fermentation.

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

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

**Packaging:** 1 kg

## EnartisTan Microfruit

EnartisTan Microfruit is a formulation of condensed and hydrolyzable tannins specifically developed to be used in conjunction with the micro-oxygenation of red wines. EnartisTan Microfruit, along with the synergistic action of oxygen, contributes to color stabilization, enhances aromas of fresh red fruit, increases the softness and sweetness of wine, and reduces bitterness and vegetal characters. It is particularly suitable during micro-oxygenation, but it can be added for the same reasons post-fermentation up until one month prior to bottling, any time wine comes in contact with oxygen (racking, filtration, refrigeration...).

**Application:** micro-oxygenation of red and rosé wines.

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

**Packaging:** 1 kg

## EnartisTan SLI

EnartisTan SLI is produced from untoasted American oak with a unique process that avoids the use of high temperature. It displays an extraordinary capability of scavenging oxygen and radicals, chelating metals and slightly reducing wine redox potential. For its characteristics, EnartisTan SLI can be used in synergy or as an alternative to SO<sub>2</sub> to protect wine from oxidation and to improve its shelf life.

**Application:** antioxidant protection; improve the shelf life of wine; treat reduction.

**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

A blend of ellagic tannins extracted from the same oak used for barrels, seasoned at length in open air, and then toasted. EnartisTan Cœur de Chêne can be used to prolong the life span of barrels. It contributes hints of vanilla and spice to wine and produces a soft and well-balanced tannin structure.

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

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

**Packaging:** 0.5 kg – 1 kg

### EnartisTan Dark Chocolate

Tannin obtained from French oak with extended seasoning and medium-heavy toast. EnartisTan Dark Chocolate enhances sensory characteristics such as chocolate and spice aromas, structure and softness found in barrel-aged wines. EnartisTan Dark Chocolate also helps integrate tannin and aromatic components of used barrels.

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

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

**Packaging:** 0.5 kg

### EnartisTan Élevage

EnartisTan Élevage is extracted from lightly toasted French oak. It is very effective in treating and preventing the formation of reductive aroma. For this reason, it is well-suited for the treatment of wines on lees. It can also be used to increase structure and aromatic complexity, imparting elegant vanilla, caramel and licorice notes.

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

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

**Packaging:** 1 kg

### EnartisTan Napa

Tannin extracted from toasted American oak. When added during white and red wine maturation, EnartisTan Napa enhances aromas of caramel, coconut, coffee and cocoa, and increases wine structure and sweetness. EnartisTan Napa also has a good antioxidant effect and can be added to used barrels to reintegrate their original content of tannin and improve their impact on color stability. In some cases, it can reduce wine bitterness and astringency.

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

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

**Packaging:** 0.5 kg – 1 kg

### EnartisTan Rich

EnartisTan Rich is a mixture of condensed and oak tannins. In red wines, it protects against oxidation, helps stabilize color and contributes to sensory quality by enriching the bouquet with pleasant aromatic notes of oak and increasing structure. In white wines, it improves sensory characteristics and contributes to protein stabilization and clarification.

**Application:** enhance structure of light wines; color stabilization.

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

**Packaging:** 1 kg

### EnartisTan Superoak

EnartisTan Superoak is a tannin specifically designed for addition during maturation. Its balanced blend of oak and condensed tannins makes it well-suited to improve color stabilization of red wines and can be used during micro-oxygenation. The sensory profile is characterized by distinct sensations of volume and softness as well as light aromas of toasted oak. EnartisTan Superoak is effective in releasing aromas of wines that have been aged in barrels and to freshen light red and white wines.

**Application:** stabilize color; increase volume and complexity.

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

**Packaging:** 1 kg

### EnartisTan Toffee

Ellagic tannins extracted from medium/heavy-toasted French oak. Enhances butterscotch and toffee aromas, improves structure and length.

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

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

**Packaging:** 0.5 kg

### EnartisTan Vanilla

Extracted from medium-toasted French oak, EnartisTan Vanilla increases vanilla, custard and coconut aromas and improves wine structure and sweetness. Very good antioxidant activity.

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

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

**Packaging:** 0.5 kg

## Grape Tannins

### EnartisTan Uva

A proanthocyanidinic extract obtained from mature white grape seeds. Its addition to must or wine immediately after primary fermentation facilitates an earlier formation of long-term stable pigments. In white wines, its ability to eliminate unstable proteins can reduce the quantity of bentonite necessary to achieve stability. Moreover, its addition enhances fruit aromas and improves structure, mouthfeel and complexity of white, red and rosé wines.

**Application:** color stabilization; increase structure and fruit notes.

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

**Packaging:** 0.5 kg - 1 kg

### EnartisTan Fresh Fruit

Blend of tannins extracted from lemon wood and white grape skins. EnartisTan Fresh Fruit has excellent antioxidant capacity. To be used during ageing or pre-bottling of white and rosé wines to freshen aroma, reduce overripe fruit notes, impart softness and protect from oxidation.

**Application:** freshen wine aroma; increase antioxidant protection.

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

**Packaging:** 1 kg

### EnartisTan Fruitan

A blend of condensed tannins, mainly extracted from fresh, physiologically ripe, white grape seeds. These proanthocyanidinic tannins interact with anthocyanins (the molecules responsible for color in red wines), binding and protecting them from oxidation. The use of EnartisTan Fruitan during primary fermentation, or immediately thereafter, allows for better development and retention of color over time. When used in both red and white wine, it helps eliminate herbaceousness, enhance fruit characters and freshen aromas.

**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 Total Fruity

Blend of tannins extracted from wood of red fruit trees and fresh white grape skins. To be used during ageing or pre-bottling of red and rosé wines to improve aromatic freshness, fruit aroma, structure, softness and antioxidant protection.

**Application:** freshen wine aromas; increase antioxidant protection.

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

**Packaging:** 1 kg

## Unico line

*The Unico tannins are a unique line of tannins that were developed solely by Enartis and have no close matches in the market. Although the Unico tannins are quite different from each other, they all have tremendous impacts on wine sensory profiles. The unique production process, proprietary to Enartis, makes it possible to obtain tannins with enhanced characteristics beyond those of typical enological tannins: intense and distinct aromas, high content of tannin, high content of polysaccharides making them soft and sweet on the palate. Because of their intrinsic intensity, the addition rates are lower compared to normal enological tannins.*

### EnartisTan Unico #2

Condensed tannin extracted from the wood of red fruit trees. EnartisTan Unico #2 will significantly increase wine's fresh red fruit character enhancing notes of cherry, black currant, plum and berries in general. It also results in wines with softness, structure and sweetness and reduces the sensation of harshness. It has been proven effective on red, rosé and white wines.

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

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

**Packaging:** 250 g

### EnartisTan Unico #3

EnartisTan Unico #3 is a blend of condensed and hydrolyzable tannins. As a result of the unique production process and the distinctive origin of its components, Unico #3 is able to freshen wine aroma by enhancing citrus and floral notes. Unico #3 is particularly suitable for treating wines with slight oxidized and overripe aromas.

**Application:** increase aromatic freshness.

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

**Packaging:** 250 g

	COLOR STABILIZATION	ANTIOXIDANT EFFECT	INCREASE OF AROMATIC CLEANLINESS	PROTEIN REMOVAL	STRUCTURE	ASTRIGENCY	SOFTNESS	AROMA	AROMA DESCRIPTION
<b>FERMENTATION TANNINS</b>									
Arom	▲▲	▲▲▲▲▲	▲▲	▲▲	▲▲	▲▲	▲▲	▲▲▲▲	Pineapple, passion fruit, grapefruit
Citrus	▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲	▲▲	▲▲	▲▲▲▲▲	Citrus, white flower
Color	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲	Blackcurrant, spices
Fermcolor	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲	Wood, cherry
FP	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	Wood, spices
Red Fruit	▲▲▲	▲▲	▲▲	▲▲▲▲	▲▲▲	▲▲	▲▲▲	▲▲▲▲▲	Strawberry, plum, cherry
Rouge	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲	Wood, spices
V	▲▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲	Grapes, stonefruit
XC	▲▲▲▲	▲▲	▲▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲	▲	Wood
<b>TECHNICAL TANNINS</b>									
Antibotrytis	▲	▲▲▲▲▲	▲▲	▲▲	▲▲	▲▲	▲	▲	Elderflower, wood
Blanc	▲	▲▲▲▲▲	▲	▲	▲▲	▲▲	▲	▲	Elderflower
E	▲▲▲▲▲	▲▲	▲▲	▲▲▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲▲	Stonefruit, grape
Microfruit	▲▲▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲▲	▲▲▲▲	Red fruit, grapes, wood
SLI	▲▲	▲▲▲▲▲	▲▲▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲	Wood, coconut, vanilla
<b>OAK TANNINS</b>									
Cœur de Chêne	▲▲	▲▲	▲▲	▲	▲▲	▲▲	▲▲▲	▲▲▲▲	Vanilla, caramel, spices
Dark Chocolate	▲▲	▲▲▲	▲▲	▲	▲▲▲	▲	▲▲▲▲	▲▲▲▲▲	Cocoa, toasted hazelnut, vanilla
Élevage	▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲▲	Caramel, licorice, vanilla
Napa	▲▲	▲▲▲	▲▲	▲	▲▲▲	▲	▲▲▲▲	▲▲▲▲▲	Coconut, caramel, coffee, cocoa
Rich	▲▲▲	▲▲	▲▲▲	▲▲	▲▲	▲▲	▲	▲▲	Toasted wood, coffee, spices
Superoak	▲▲▲	▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲	▲▲	▲▲	Vanilla, caramel, hay
Toffee	▲▲	▲▲▲	▲▲▲	▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲	Coffee, caramel, toast
Vanilla	▲▲	▲▲▲	▲▲▲	▲	▲▲▲▲	▲▲	▲▲▲	▲▲▲▲	Vanilla, coconut, cream
<b>GRAPE TANNINS</b>									
Uva	▲▲▲▲	▲▲▲	▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲	▲▲▲▲▲	White fruit
Fresh Fruit	▲	▲▲▲	▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲	Lemon, citrus, mint, fresh fruit
Fruitan	▲▲▲▲	▲▲▲▲	▲▲▲	▲▲▲▲	▲▲▲	▲▲▲	▲▲	▲▲▲	Red fruit, spices
Total Fruity	▲▲	▲▲	▲▲	▲▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲	Strawberry, plum, cherry, berries
<b>UNICO TANNINS</b>									
Unico #2	▲▲▲	▲▲▲	▲▲	▲▲	▲▲▲▲	▲	▲▲▲▲	▲▲▲▲▲▲	Red fruit, wild berries, cherry
Unico #3	▲	▲▲▲▲	▲▲▲▲	▲▲	▲▲	▲	▲▲▲▲	▲▲▲▲▲▲	Flower, lemon, mint



## KNOW MORE ABOUT POLYPHENOLS IN WINEMAKING

### DIFFERENT CATEGORIES OF POLYPHENOLS

#### Grape polyphenols:

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

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

### COLOR STABILIZATION IN RED WINES

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

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

### 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<sub>2</sub> and H<sub>2</sub>O, this reaction can lead to color loss. Stabilization of wine pigments can occur via co-pigmentation, condensation or cycloaddition.

**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.

**Cycloaddition** involves yeast metabolites and can lead to the most stable form of pigments. It consists of a cycloaddition between flavylum ions and compounds with polymerized double bonds.

### 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.



*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 lies ageing, to enhance the content of polysaccharides and help make wines with better sensory characteristics and stability. Unfortunately, factors such as time constraints, lack of tank space or off-aromas in the lees can make these practices impossible. For those who cannot make use of the polysaccharides naturally contained in their own lees and grapes, Enartis offers EnartisPro and Surli, polysaccharides preparations for fermentation and wine maturation.*

## **POLYSACCHARIDES**

**enartis**

## Polysaccharides for the Fermentation Stage

### EnartisPro R

A pure inactivated yeast. When used during the fermentation of white and red grapes, it contributes large quantities of mannoproteins that help improve the sensation of volume. In the case of red wines, it also softens astringency and improves color stability.

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

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

**Packaging:** 1 kg – 10 kg

### EnartisPro Uno

Fermentation adjuvant containing yeast hulls rich in readily-soluble mannoproteins. When added at inoculation, the mannoproteins quickly bond with anthocyanins and aromatic molecules protecting them from oxidation and precipitation. The addition of EnartisPro Uno produces wines that are more stable, with young, intense and fresh color, greater aromatic persistence, and larger volume and softness in the mouth.

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

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

**Packaging:** 1 kg

### EnartisPro Blanco

Fermentation adjuvant made of inactivated yeast rich in readily soluble mannoproteins and sulfur amino acids with antioxidant activity. When added at inoculation, mannoproteins quickly bond with anthocyanins and aromatic molecules protecting them from oxidation and precipitation. The addition of EnartisPro Blanco produces wines that are more stable and with young, intense and fresh color. The addition of sulfur amino acids stimulates the production of thiols by specific yeast strains such as EnartisFerm Aroma White, ES181 and ES488.

**Application:** enhance volume; increase fruity and spicy aroma; improve wine overall stability.

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

**Packaging:** 1 kg

### EnartisPro XP

It is a blend of PVI-PVP and inactivated yeast rich in immediately available mannoproteins. Due to its high capability in binding metals, it reduces the activity of oxidases (tyrosinase and laccase) by blocking copper. Consequently, wine is richer in aromatic compounds, presents a fresher color and is more resistant to oxidation and ageing. EnartisPro XP is recommended for the protection of aromas and aromatic precursors of non-thiolic varieties allowing for the full expression of the varietal characteristics.

**Application:** enhance aroma; antioxidant protection; extension of wine shelf life.

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

**Packaging:** 1 kg

### EnartisPro FT

EnartisPro FT (Free Thiols) is a blend of PVI-PVP and inactivated yeast rich in immediately available mannoproteins and sulfur-containing amino acids. Because of its high capacity for removing metals, it reduces the activity of oxidases (tyrosinase and laccase) by blocking copper. Consequently, wine is richer in aromatic compounds, presents a fresher color and is more resistant to oxidation and ageing. It is recommended in the vinification of thiolic varieties which protects the varietal aroma and promotes the synthesis of new thiols.

**Application:** enhance thiols; antioxidant protection; extension of wine shelf life.

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

**Packaging:** 1 kg

## Polysaccharides for the Maturation Stage

### Surli Natural

Selected inactivated yeast to be used as a substitute for natural fine lees. In just 6 weeks of treatment, Surli Natural releases high amounts of polysaccharides that, in addition to improving the colloid stability, increase wine aromatic persistence, softness and sensation of volume.

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

**Doses:** 20-50 g/hL

**Packaging:** 2.5 kg

### Surli Velvet

Yeast mannoproteins complex designed to increase aromatic intensity and improve stabilization in wine. Surli Velvet increases the colloidal structure and enhances sensory characteristics including aromatic complexity, volume, and reduced astringency.

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

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

**Packaging:** 0.5 kg

## How to choose the correct Surli

In order to determine which Surli to use and the appropriate dosage, it is possible to use the following rapid taste test. Rehydrate 1 gram of Surli 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 Surli per 100 L.

N.B.: Surli Velvet can easily be dissolved in a water solution containing 13% alcohol (1 g of Surli in 100 mL of water solution) and can be used immediately (see page 47).

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.

		Composition	Main effect	Antiox protection	Aroma enhacement	Mouthfeel improvement	Softness improvement	Anti-ageing effect
Fermentation	EnartisPro Bianco	Inactivated yeast	Enhance thiol production Softness and mouthfeel	▲▲▲	▲▲▲	▲▲▲	▲▲▲	▲▲
	EnartisPro FT	Inactivated yeast PVI-PVP	Enhance thiol production Softness and mouthfeel Anti-ageing	▲▲▲▲	▲▲▲	▲▲	▲▲▲	▲▲▲
	EnartisPro R	Inactivated yeast	Softness	▲	▲	▲▲	▲▲	▲
	EnartisPro Uno	Yeast cell walls	Softness and mouthfeel	▲	▲	▲▲▲	▲▲▲	▲
	EnartisPro XP	Inactivated yeast PVI-PVP	Softness and mouthfeel Anti-ageing	▲▲▲▲	▲	▲▲	▲▲▲	▲▲▲
Maturation	Surli Natural	Inactivated yeast	Mouthfeel and antioxidant protection	▲▲	▲	▲▲▲	▲▲▲	▲▲
	Surli Velvet	Mannoproteins	Improve overall stability Softness and mouthfeel	▲	▲	▲▲▲▲	▲▲▲▲	

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

## **MALOLACTIC BACTERIA**

**enartis**

## EnartisML Silver

Selected strain of *Oenococcus oeni*, EnartisML Silver assures the progress of malolactic fermentation under very difficult conditions due to high alcohol and polyphenol content, low pH. It enhances the aromatic fruitiness and complexity and respects the color intensity of red wines. Alcohol tolerance > 15%; pH tolerance > 3.1.

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

**Packaging:** package designed for 25 hL

## Nutriferm ML

Nutriferm ML is a nutrient specific for malolactic bacteria. Increasing nutrients in wine stimulates the growth of bacteria at inoculation and improves cell division. Nutriferm ML provides polysaccharides, amino acids, co-factors and vitamins. The cellulose contained in the preparation acts as a support for bacteria cells and absorbs compounds that may inhibit cell growth. The combined effect of Nutriferm ML's components ensures the domination of the inoculated strain over natural flora and dramatically reduces the length of malolactic fermentation. It's particularly recommended to promote malolactic fermentation in difficult wines.

**Application:** nutrition for malolactic bacteria.

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

**Packaging:** 1 kg



*I've been using Enartis as a supplier for a little over two years, with Helana being my contact person. It is always a pleasure doing business with Enartis and contacting Helana. The service is excellent and she understands the urgency for deliveries during harvest time. She will make an effort to speed up deliveries and will always inform me when delivery will take place. She will always do her best to accommodate our requests. I will continue ordering from Enartis, they have great quality products, excellence knowledge and fantastic personnel. Keep up the good work!*

**Surina Burger, Quality Management System Consultant at De Wet Cellar - South Africa**

## KNOW MORE ABOUT ML BACTERIA

### WHAT ARE THE PRINCIPAL FACTORS INFLUENCING THE DEVELOPMENT OF MALOLACTIC BACTERIA?

pH, temperature, alcohol and SO<sub>2</sub> (Free and Total) have a negative synergistic effect, making the completion of MLF difficult when combined. 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 pH is low (<3.4), alcohol is high (>14.5%), wine temperature is low (<18°C) or high (>30°C), total SO<sub>2</sub> is high (>30 mg/L) and/or free SO<sub>2</sub> is high (>10 mg/L).

### HOW TO CHOOSE WHICH ML BACTERIA STRAIN TO USE

Each strain of bacteria performs best within specific environmental parameters. It is very important to know wine characteristics prior to inoculating with *Oenococcus oeni*.

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

Yes. Some yeast strains can inhibit malolactic bacteria development. Additionally, yeast strains differ in nutrient demand, SO<sub>2</sub> production and rate of autolysis which has an effect on the bacteria.

### WHAT ARE THE RISKS OF A SPONTANEOUS MLF?

Uncontrolled, spontaneous MLF can result in masked aromas and production of off-characters such as yogurt, rancid, sweat, burnt matches or even rotten fruit. Another undesirable consequence of spontaneous growth is the production of biogenic amines (associated with off-aromas and regulated by some countries). Inoculating with selected *Oenococcus oeni* ensures a rapid onset of MLF and better control over the production of aromas and wine mouthfeel.

### WHAT NUTRIENTS DO ML BACTERIA NEED?

As with any microorganisms, *Oenococcus oeni* need specific nutrients and growth factors to develop healthy cells and conduct and complete the malolactic conversion. Bacteria require the presence of several amino acids, peptides, vitamins and minerals. Nutriferm ML is a nutrient designed to meet *Oenococcus oeni* needs.

### WHAT ABOUT OXYGEN AND LAB?

Molecular oxygen stimulates the growth of some malolactic bacteria, behaving as a growth factor just as in the case of yeast. However, if too much oxygen is applied, acetic acid may be produced.

### 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 30 mg/100 mL.

### WHAT ABOUT THE PRODUCTION OF DIACETYL?

Produced by malolactic bacteria, this compound has a nice, characteristic buttery note at low concentrations and can become buttered popcorn and rancid taint at high concentration (> 4 mg/L).

Diacetyl is formed from pyruvate, which comes from acid and sugar catabolism.

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 in an irreversible way, thus reducing its content in wine.

### CAN I SAVE SOME OF THE BACTERIA TO USE LATER?

No. Once the packet of bacteria is open, it must be used immediately. Exposure to oxygen and excess moisture can be detrimental to the survival of the bacteria.

*If properly dosed, the use of oak alternatives allows to improve 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, ministaves 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.*

## **OAK ALTERNATIVES**

**enartis**

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

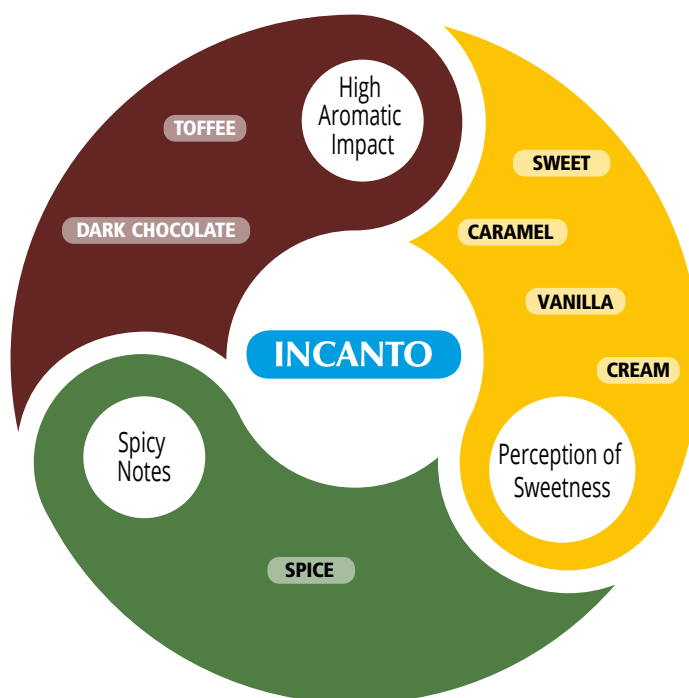
#### MINISTAVES

Size: 25 cm x 2.7-5 cm x 0.9 cm

Dosage: 1-5 g/hL of ministaves

Contact time: minimum of 3 months, optimal at 4 months

Packaging: 10 kg



#### Incanto Cream

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

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

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

**Available form:** chips

#### Incanto Sweet

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

**Aroma:** panna cotta, vanilla, coconut.

**Taste:** increases sweetness, smoothness and volume.

**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 Spice

**Composition:** French and American oak, various toast levels.

**Aroma:** very complex and intense spice aroma.

**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 – ministaves

#### 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 – ministaves



## 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 of interest:

- 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 can offer 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

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

INCANTO NC WHITE  
White Fruit

INCANTO NC  
Vanilla

INCANTO NC RED  
Toasted Nuts

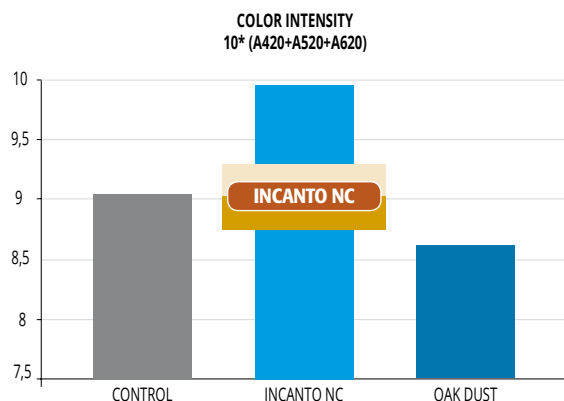
### Incanto NC White

Incanto NC White is composed of oak and acacia tannins and yeast derivative. It can be used during wine fermentation to mimic the effect of untoasted oak powder or chips. Incanto NC White protects juice from oxidation and prevents the appearance of reductive odors. Additionally, it provides light notes of flower and vanilla, increases the flavor of fresh fruit 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:** 10 kg



Incanto NC during fermentation improves color intensity and stability.

### Incanto NC

Soluble powder, superior to typical oak alternatives for the fermentation of white and red grapes. It can be used to mimic the effect of medium-toasted oak powder. Incanto NC enhances oak aromas and aromatic complexity, increases roundness, structure and balance and helps color stability.

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

**Dosage:** 20-50 g/hL for red must; 5-30 g/hL for white juice

**Packaging:** 10 kg

### Incanto NC Red

Soluble mixture of toasted oak tannin and yeast derivative that can be used to mimic the effect of medium-plus toasted oak powder or chips. Incanto NC Red decreases green aromas of unripe grapes, prevents reduction and increases color stability. Its use provides notes of toasted oak and increases structure, volume and the sensation of sweetness.

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

**Dosage:** 20-50 g/hL for red must

**Packaging:** 10 kg

## 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: 4-6 months for the Enartis Incanto Barrel Boost and ministaves and 4 weeks for Enartis Incanto Chips.
- Consistent and qualitative product for enological expectations and requirements.

### HOW TO FIND THE RIGHT OAK ALTERNATIVE?

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

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

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

## Oak Chip Trials

### A WIDE RANGE OF OAK ALTERNATIVES

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

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

#### Trial Set-Up:

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

*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.*

## **FINING AGENTS**

**enartis**

## Vegan friendly fining agents

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

### Plantis AF

A pure, allergen-free pea protein. Plantis AF allows juice and wine clarification while producing a small volume of lees. It reduces wine sensitiveness to oxidation by removing iron, catechins and short chain-length polyphenols. Recommended for flotation.

**Application:** allergen-free; vegan; 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-Q

Preparation made of pea protein and activated chitosan. It assures a nice clarification while forming small, compact lees, especially when used in flotation. At the same time, it improves juice and wine resistance to oxidation by removing pro-oxidant metals and low molecular weight polyphenols.

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

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

**Packaging:** 1 kg - 10 kg

### Combistab AF

A complex containing PVPP, pea protein and silica. It is highly effective in the prevention and treatment of oxidation, pinking and the reduction of bitterness. Suitable for both wine and juice clarification. It can be used as an allergen-free alternative to potassium caseinate.

**Application:** allergen-free; vegan; prevent and treat oxidation and pinking; reduce bitterness; alternative to potassium caseinate.

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

**Packaging:** 10 kg

### Protomix AF

Complex containing bentonite, PVPP, pea protein and cellulose. Protomix AF is designed to clarify musts while simultaneously removing oxidizing and oxidizable polyphenolic substances along with proteins responsible for wine instability. It can also be used during alcoholic fermentation to detoxify must and enhance the metabolic activity of yeast.

**Application:** allergen-free; vegan; juice and wine clarification; prevent and treat oxidation.

**Dosage:** 50-100 g/hL in juice and during fermentation

30-100 g/hL in wine

**Packaging:** 10 kg

## Gelatin

### EnartisGreen Gelatina



Pure hot soluble gelatin, certified organic in accordance with European Regulation [Reg. (EC) N° 834/2007 and Reg. (EC) N° 889/2008]. It has a great cleaning capacity while respecting wine structure. Recommended for high-quality wine and juice clarification.

**Application:** clarification.

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

**Packaging:** 1 kg

## Other fining proteins

### Blancoll

Pure, powder egg albumin for softening and refining the structure of red wines. It eliminates excessive astringency by flocculating a wide spectrum of tannin fractions. Blancoll is particularly recommended for its quality activity: it rounds off structure without causing imbalance and maintains the aroma and original features of wines.

**Application:** clarification of high-quality red wines; clarification of structured white wines.

**Dosage:** 5-10 g/hL

**Packaging:** 1 kg

## Blends containing animal proteins

### Claril SP

Claril SP is a complex clarifying agent consisting of bentonite, PVPP, potassium caseinate and silica. It is recommended for the prevention and correction of the oxidative phenomena associated with phenolic components of must and wine. Wines treated with Claril SP have more intense, elegant aromas and longer shelf life. Claril SP can also be used to increase clarity and reduce bitterness.

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

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

**Packaging:** 10 kg



*We started using Claril SP while experimenting with hyper-oxidation several vintages ago. Since then, Claril SP has become an SOP for all our hyper-oxidized juices. Up front it helps with settling, lees compaction, and of course color, but in the long run we are making consistently cleaner and better tasting wines that require less work in the finishing stages.*

**Samantha C. Taylor, Assistant Winemaker at Hope Family Wines - California, USA**

### Neoclar AF

A blend of bentonite, gelatin and activated carbon, it can be used to treat white, rosé and red wines as well as juice. Neoclar AF ensures fast and thorough clarification with a minimal volume of lees. The combination of several organic clarifiers improves the organoleptic features of wine, while the bentonite ensures proper protein stability. It gives red wines remarkable stability without affecting color. Particularly effective in reducing herbaceous characters, it also improves filterability.

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

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

**Packaging:** 25 kg

### Protomix G

Fining agent for musts, Protomix G clarifies and at the same time reduces the content of proteins and phenols responsible for wine chemical-physical and sensory instability. Made of bentonite, casein and cellulose, Protomix G is suitable for use even during alcoholic fermentation when, besides improving clarification, it detoxifies and provides physical support to the yeast.

**Application:** clarification and stabilization of must.

**Dosage:** 50-150 g/hL

**Packaging:** 15 kg

## Inorganic fining agents

### Pluxcompact

A bentonite obtained by a special procedure. Its activation rate is designed to obtain a bentonite that combines excellent fining and protein removal properties with a limited volume of lees. In red wine, it is recommended to eliminate unstable color compounds and, together with a high Bloom gelatin for fining before cross-flow filtration.

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

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

**Packaging:** 20 kg

### Sil Floc

A stable pure silicon dioxide in aqueous solution. Sil Floc contains homogeneous, negatively-charged particles of silicon dioxide. The ultra-fine size offers a large contact surface and consequently acts as a counter-fining agent with protein fining agents. Solution pH 9.0-9.5.

**Application:** clarification.

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

**Packaging:** 25 kg

## Corrective fining agents

### Fenol Free

This activated carbon is extremely effective in the correction of wines which present evident defects caused by *Brettanomyces/Dekkera*. Minimal additions are proven to significantly reduce volatile phenols, resulting in an overall improved wine aroma without affecting color. Also effective in removing compounds related to smoke taint.

**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, to be used for correcting and preventing appearance of sulfides or reductive characters. When used to treat sulfides, it immediately eliminates off aromas and flavors produced by mercaptans and  $H_2S$  thus allowing fruit elements to emerge. Because of its components, Revelarom allows the removal of the chelates formed between copper and sulfur compounds, thus preventing the reappearance of reductive notes coming from the hydrolysis of these complexes.

**Application:** prevent and treat reductive characters.

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

**Packaging:** 1 kg

### Stabyl Met

Copolymer of vinylimidazole and vinylpyrrolidone (PVI-PVP), silica. It prevents oxidation, browning, pinking and formation of haze by removing pro-oxidant metals like iron and copper, and hydroxycinnamic acids and catechins, the main substrate of oxidation.

**Application:** remove heavy metals; prolong wine shelf life; prevent oxidation.

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

**Packaging:** 2.5 kg – 10 kg

### Claril HM

This fining agent benefits from the synergistic actions of activated chitosan and polyvinylimidazole/polyvinylpyrrolidone (PVI-PVP) to reduce the concentration of iron, copper, hydroxycinnamic acids and catechins, which are key players in the process of oxidation. Therefore, treatment with Claril HM allows the production of wines with a longer shelf life, more intense and persistent aroma and fresher color.

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

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

**Packaging:** 10 kg



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**

	ALLERGEN FREE	ALLOWED FOR ORGANIC WINE (REGULATION (EU) 2018/1584)	VEGAN FRIENDLY	KOSHER FOR PASSOVER CERTIFIED
Blancoll	eggs	✓	eggs	
Claril HM	✓		✓	
Claril SP	milk	✓	milk	
Combistab AF	✓		✓	
Fenol Free	✓	✓	✓	✓
EnartisGreen Gelatina	✓	CERTIFIED	meat	
Hydroclar 30	SO <sub>2</sub>	✓	meat	
Hydroclar 45	SO <sub>2</sub>	✓	meat	
Neoclar AF	✓	✓	meat	
Plantis AF	✓	✓	✓	
Plantis AF-Q	✓	✓	✓	
Pluxcompact	✓	✓	✓	
Protomix AF	✓		✓	
Protomix G	milk	✓	milk	
Revelarom	✓	✓	meat	
Sil Flocc	✓	✓	✓	
Stabyl Met	✓		✓	

*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.*

## **STABILIZING AGENTS**

**enartis**



## Refrigeration Agents

### Enocrisal Superattivo

Rapid crystallizer for cold stabilization of tartrates, Enocrisal Superattivo is a balanced mixture containing neutral and acid potassium tartrates and filtering aids, which accelerates potassium bitartrate crystals formation and precipitation in wines during cold treatment, without affecting wine pH.

**Application:** *accelerate and improve cold stabilization.*

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

**Packaging:** 15 kg

## Gum Arabic

### Citrogum

Citrogum® is a clear, almost colorless Gum Arabic preparation with a low calcium content. Citrogum is recommended for the treatment of wines ready for bottling. It integrates the colloidal content of wine, improving its balance, organoleptic features and stability, mainly tartaric. It enhances aroma, reduces bitterness and astringency, and increases softness and body. Citrogum's low membrane blocking capacity (it's the most filterable gum in the market!), purity and microbial stability ensure that it can be added with confidence at any stage during preparation for bottling. The sulfur dioxide in the preparation gives the product a long shelf life and enables direct addition to wine even after microfiltration without any risk of microbial contamination.

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

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

**Packaging:** 10 kg – 25 kg

## Tartrate stabilizing agents

### AMT Plus

Pure metatartaric acid produced by Enartis from food grade L-tartaric acid. When added to wine, AMT Plus Quality 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. This means that cold stabilization processes can be reduced when refrigeration capacity is not available or not cost effective.

**Application:** *tartrate stabilization.*

**Dosage:** 10 g/hL

**Packaging:** 1 kg

### EnartisStab Cellogum LV20

Aqueous solution containing 20% low viscosity sodium carboxymethyl cellulose (CMC). To be used in a finished wine to inhibit the formation and growth of potassium bitartrate crystals which could precipitate after bottling. EnartisStab Cellogum LV20 has a long-lasting effect and can completely eliminate the use of physical stabilization treatments such as cold stabilization and electrodialysis. This significantly reduces energy costs and processing times. Because of its low viscosity, EnartisStab Cellogum LV20 has a low impact on wine filterability and this makes it the ideal solution to be used when CMC is added before microfiltration.

**Application:** *tartrate stabilization.*

**Dosage:** 25-50 mL/hL

**Packaging:** 25 kg – 1000 kg

### Zenith Uno

Solution of A-5D K/SD potassium polyaspartate (KPA) and sulfur dioxide. Zenith® Uno is an effective, rapid and easy-to-use tool for potassium bitartrate stabilization in wine. It is able to assure a long-lasting stability also in wine with a high level of tartaric instability. For this reason, Zenith Uno can easily replace cold stabilization and other physical treatments. Moreover, it does not impact wine sensory quality and filterability. The liquid form allows for simple and fast use.

**Application:** *tartrate stability.*

**Dosage:** 100 mL/hL

**Packaging:** 5 kg – 20 kg – 1000 kg

## Zenith Color

Solution of A-5D K/SD potassium polyaspartate (KPA), Gum Arabic Verek and sulfur dioxide. Zenith® Color is an effective, rapid and easy-to-use tool for potassium bitartrate and color stabilization of red and rosé wines. It assures no changes in quality or characteristics of wine with full color and tartaric stabilization in a single addition. Zenith Color does not significantly modify wine filterability and can be added before microfiltration.

**Application:** tartrate stability; color stability.

**Dosage:** 200 mL/hL

**Packaging:** 5 kg – 20 kg – 1000 kg

## Microbial stabilization

### EnartisStab Micro M

EnartisStab Micro M is a special preparation of activated chitosan designed for the treatment of cloudy wines, where the content of solids can limit the antimicrobial effect of the pure chitosan. EnartisStab Micro M is effective in reducing a large number of spoilage yeast and bacteria that contaminate must and wine. It can also be used as a non-allergenic alternative to lysozyme for the control of malolactic bacteria.

**Application:** reduce unwanted microorganisms; must and cloudy wines; non-allergenic; alternative to lysozyme.

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

**Packaging:** 1 kg

Starting from a no-SO<sub>2</sub> trial, using EnartisStab Micro M has now become a part of my winemaking protocol on all of my red wines. It not only helps me to control spoilage organisms proactively, but also helps to reduce my SO<sub>2</sub> addition with a better protection than SO<sub>2</sub> on its own.

**Matthieu Finot, Winemaker at King Family Vineyards - Virginia, USA**

### Antiflor

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

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

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

## Multi-purpose stabilizing agents

### Citrostab rH

Pre-bottling coadjunct with a balanced formulation made of ascorbic acid, citric acid, potassium metabisulfite and tannin. It is recommended to protect bottled wine from undergoing alteration caused by oxidation: pinking, iron haze, premature and atypical ageing. Each component in the blend reacts in synergy with the others in a calibrated way to block any oxidation that could occur due to oxygen absorption during bottling. Citrostab rH can be used also during bulk wine storage every time it undergoes an operation that causes oxygen absorption.

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

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

**Packaging:** 1 kg

### EnartisStab SLI

Special blend of yeast derivative, PVPP and untoasted oak tannin, EnartisStab SLI prevents the degradation and oxidation of wine aromas during storage. It is recommended for the protection of wines that have already been clarified, filtered and eventually stabilized and that by consequence, are very sensitive to oxidation. EnartisStab SLI will protect wine from oxidation by providing solids capable of consuming accumulated oxygen while lowering the redox potential.

**Application:** antioxidant protection; prevention of pinking; removal of catechins; decrease redox potential.

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

**Packaging:** 2.5 kg

### Sorbosol K

Preparation containing potassium sorbate, potassium metabisulfite and L-ascorbic acid. It can be used at the pre-bottling stage or during bulk wine storage to prevent oxidation and to control the growth of yeast that may cause the fermentation of wine containing residual sugar.

**Application:** antimicrobial protection; antioxidant protection; pre-bottling.

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

**Packaging:** 1 kg

## KNOW MORE ABOUT ZENITH

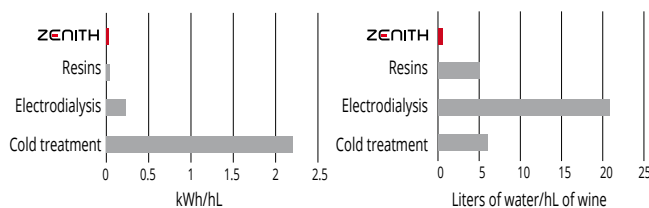
### WHAT IS POTASSIUM POLYSPARTATE?

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?

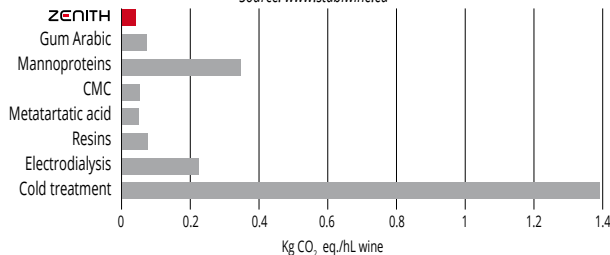
The revolution in colloid stabilization for all wines and all levels of instability! Suitable for all wineries currently using cold stabilization for their wines that want to reduce production costs and increase their sustainability standards, while simultaneously achieving ultimate stability. Enartis,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

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



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

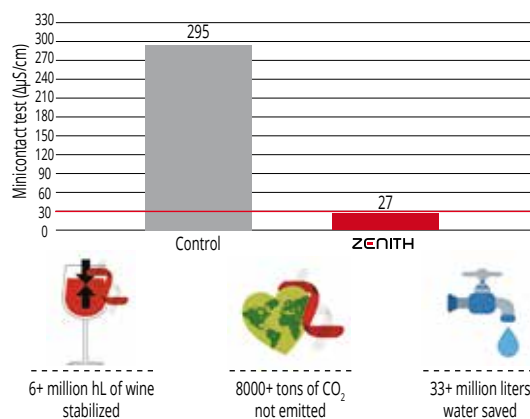
Source: [www.stabiwine.eu](http://www.stabiwine.eu)



### ZENITH IS

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

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



## KNOW MORE ABOUT CHITOSAN

### WHAT IS CHITOSAN AND HOW DOES IT WORK?

Chitosan is a fining agent with an antimicrobial effect made by the de-acetylation of chitin, a polysaccharide extracted from *Aspergillus niger*.

Chitosan (+ charge) works by the mechanism of attracting wine microbes (- charge). Chitosan then alters the microbe's cell membrane permeability which causes the cell to die and flocculate.

### WHY IS ENARTIS CHITOSAN DIFFERENT?

Enartis chitosan is activated with a unique process that allows it to increase its positive charge and to expand its surface. The activation process enhances the efficacy of chitosan by speeding up and enlarging its antimicrobial effect.

Enartis chitosan products – EnartisStab Micro and EnartisStab Micro M – effects against a large number of microbes like *Brettanomyces*, *Acetobacter*, *Pediococcus*, *Lactobacillus* and *Oenococcus*.

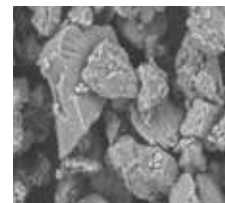
These products can thus prevent the spoilage of contaminated wines, and have side activities which improve clarity and filterability, and remove some of the unwanted aromas caused by microbial activity.

Contact an Enartis Representative to find out more about EnartisStab Micro and EnartisStab Micro M, and how these products can be applied for your specific needs.

### ACTIVATED CHITOSAN HAS A WIDER SURFACE FOR CAPTURING MICROORGANISM



Enartis activated chitosan



Standard 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

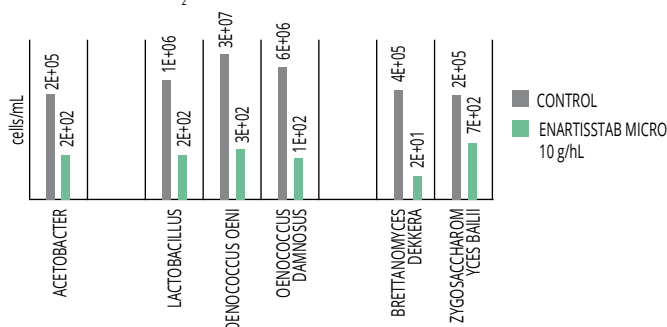


Figure 1: EnartisStab Micro can reduce populations of the main spoilage microorganisms present in wines.

### 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 stage of the winemaking process (Figure 2). Dosage: 20 g/hL

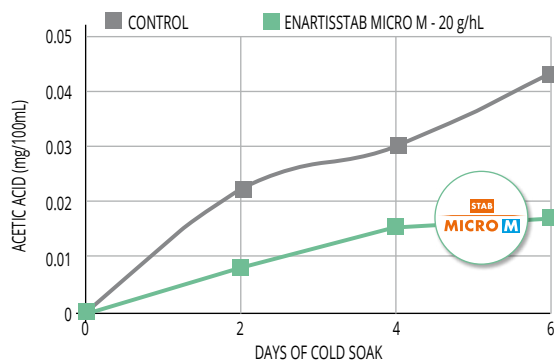


Figure 2: The addition of EnartisStab Micro M on grapes controls VA production during cold soaking.

### REDUCE VOLATILE PHENOLS

After fining with EnartisStab Micro and EnartisStab Micro M, 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

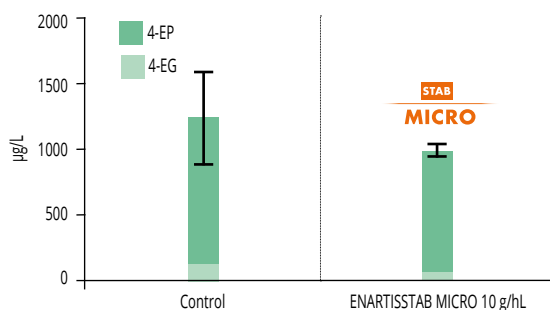


Figure 3: EnartisStab Micro and EnartisStab Micro M can reduce volatile phenols (4-EP/4-EG) concentration in wine - results from 15 wines.

### CONTROL MLF

#### ALLERGEN-FREE ALTERNATIVE TO LYSOZYME

EnartisStab Micro and EnartisStab Micro M can eliminate *Oenococcus* and prevent, delay or stop MLF (Figure 4). Alternatives to lysozyme, these products have some additional advantages: no impact on protein stability, no interference with colloid stability and no significant impact on color (Figure 5). Dosage: 10 g/hL to prevent MLF; 20 g/hL to stop MLF

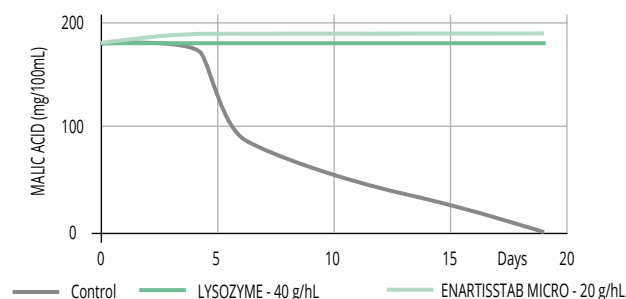


Figure 4: EnartisStab Micro and EnartisStab Micro M are efficient at controlling malolactic fermentation.

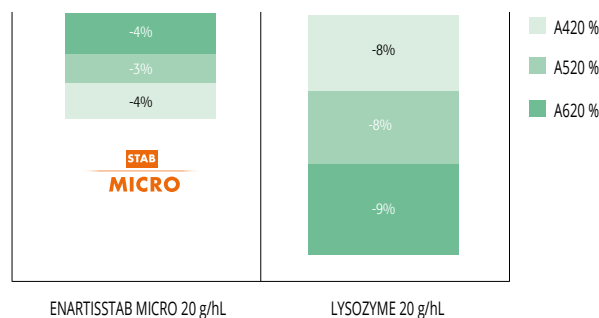


Figure 5: EnartisStab Micro has no significant impact on color.

### 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 6). Dosage: 10 g/hL
- Improves the start native fermentations by reducing microbial competition. Dosage: 5 g/hL
- Does not impact fermentation kinetics of *Saccharomyces*

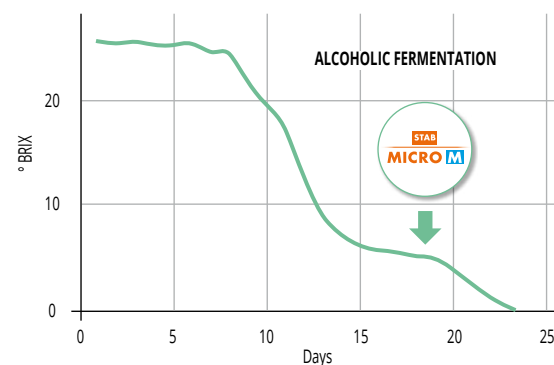


Figure 6: The addition of EnartisStab Micro M to a sluggish fermentation helps complete fermentation.

*For its antioxidant, antioxidasic and antiseptic effects, sulfur dioxide is considered the wine preservative par excellence. SO<sub>2</sub> comes in various forms: gas, solution, powder, effervescent granules and, depending on the application, one form might be preferred over another. Depending on the annual consumption, the preparation of the cellar staff and the moment of use of the sulfur dioxide, one form may be preferable to the others.*

## **SULFITING AGENTS**

**enartis**

## AST

Contains potassium metabisulfite, ascorbic acid and hydrolyzable tannin in carefully balanced amounts to maximize antioxidant and antimicrobial action. When used on grapes, AST provides the antibacterial and antioxidizing protection delivered by sulfur dioxide, while limiting macerating action. It is suitable for the treatment of grapes intended for sparkling wine base, white grapes rich in phenolic substances and for grapes that have been machine harvested. When used in the treatment of must derived from grapes rich in aromatic precursors, it assists in the production of wines with intense varietal aromas. AST is very effective in preventing atypical ageing off-flavors.

**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  $\text{SO}_2$

**Packaging:** 1 kg

## Effergran/Effergran Dose 5

Effervescent, granulated potassium metabisulfite designed to be added directly to wine and grapes. When added to wine, it rapidly dissolves on the surface of the liquid, ensuring that its antioxidant effect is maintained where it is needed. Subsequently, it ensures homogenous and rapid distribution of the released  $\text{SO}_2$  without requiring pump-overs in tank volumes of up to 50,000 liters. When added to the bottom of picking bins, it ensures a rapid release of  $\text{SO}_2$ , minimizing oxidation during transport from vineyard to winery.

**Application:** sulfiting wines, grapes and juices; homogeneous release of  $\text{SO}_2$ .

**Dosage:** 250 g packet of Effergran (100 g of  $\text{SO}_2$ ) for bins; of 8-10 tons or 50 hL of wine; each bag of Effergran; Dose 5 releases 5 grams of  $\text{SO}_2$

**Packaging:** Effergran: 250 g; Effergran Dose 5: box of 25 packets

## Winy

The highest quality potassium metabisulfite in the market. Thanks to Enartis' production expertise, Winy is virtually odorless, does not form rocks and has a concentration of metabisulfite superior to 99%.

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

**Dosage:** 1 g of Winy develops approx. 0.56 g of  $\text{SO}_2$

**Packaging:** 1 kg – 25 kg

## Solfosol M

Aqueous solution of potassium bisulfite. Sulfiting agent that enables sulfur dioxide to easily and safely be added during all winemaking processes, from harvest to bottling.  $\text{SO}_2$  concentration: 150 g/L (15% w/v).

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

**Dosage:** 10 mL/hL of Solfosol M add approx. 15 ppm of  $\text{SO}_2$

**Packaging:** 25 kg

## Neosolfosol C

Aqueous solution of ammonium bisulfite. It enables both sulfur dioxide and ammonia nitrogen to easily and safely be added to must.  $\text{SO}_2$  concentration: 630 g/L (63% w/v).  $\text{NH}_4$  concentration of 177 g/L (17.7% w/v).

**Application:** sulfiting grapes and juices.

**Dosage:** 6-20 mL/hL in must or 60-200 mL/ton of grape; 10 mL/hL of Neosolfosol C add approx. 63 ppm of  $\text{SO}_2$  and 18 ppm of YAN

**Packaging:** 25 kg – 1300 kg

# PERFECTING WINES NATURALLY

## Crafting wine is an art

### Perfecting taste

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 the wine by minimising the 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.

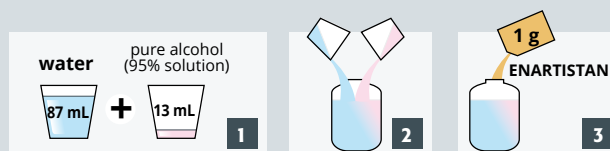
### Solving or preventing defects

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 labour intensive than the more traditional curative tools.

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.

### How to choose the Enartis tannins?

When deciding on 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 Enartis Tan in a solution made with 87 mL of water and 13 mL of pure alcohol of 95%.



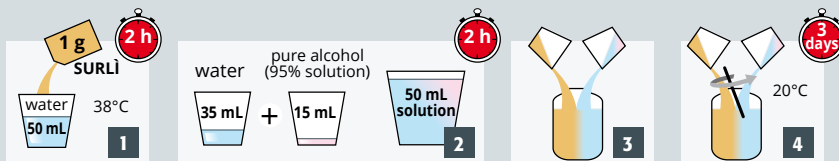
This solution can be used for rapid taste tests knowing that 1 mL of this solution in 100 mL of wine is the equivalent dosage of 10 g of EnartisTan per 100 L.

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

### How to choose the correct Surli product?

To determine which Surli to use and the appropriate dosage, it is necessary to use the following rapid taste test.

1. Rehydrate 1 gram of Surli in 50 mL of water at 38°C for 2 hours.
2. Meanwhile, prepare a 50 mL solution with 15 mL alcohol 95% and 35 mL water.
3. After 2 hours, add the 50 mL alcohol solution to the suspension and let it 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 Surli per 100 L.

! Surli solution prepared as above can be used for 1-2 months when stored in the refrigerator at 4°C.



# PERFECTING WINES NATURALLY

## Legend

- Early maturation
- Anytime from early maturation to bottling



Perfecting  
aroma



Perfecting  
taste



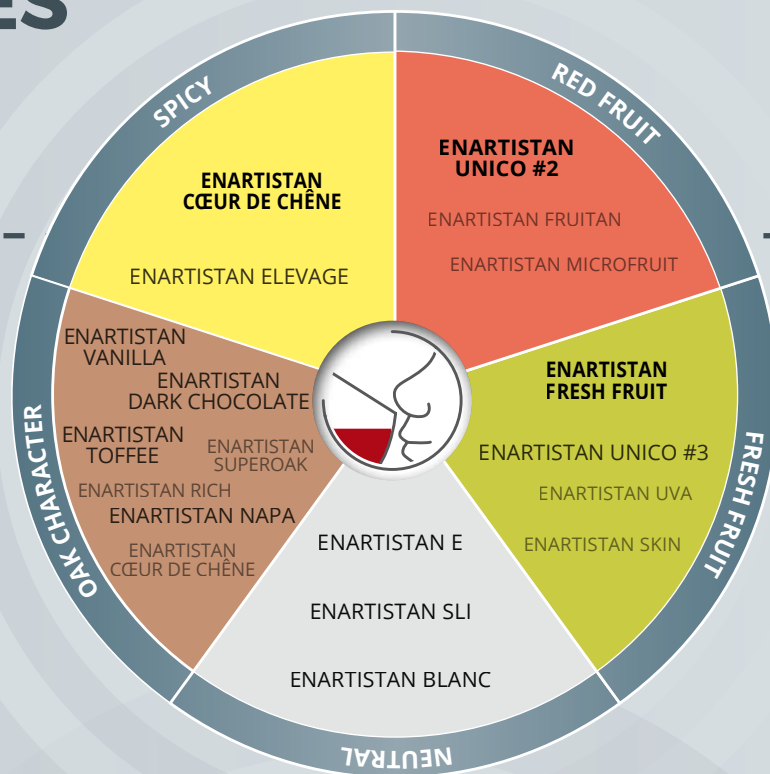
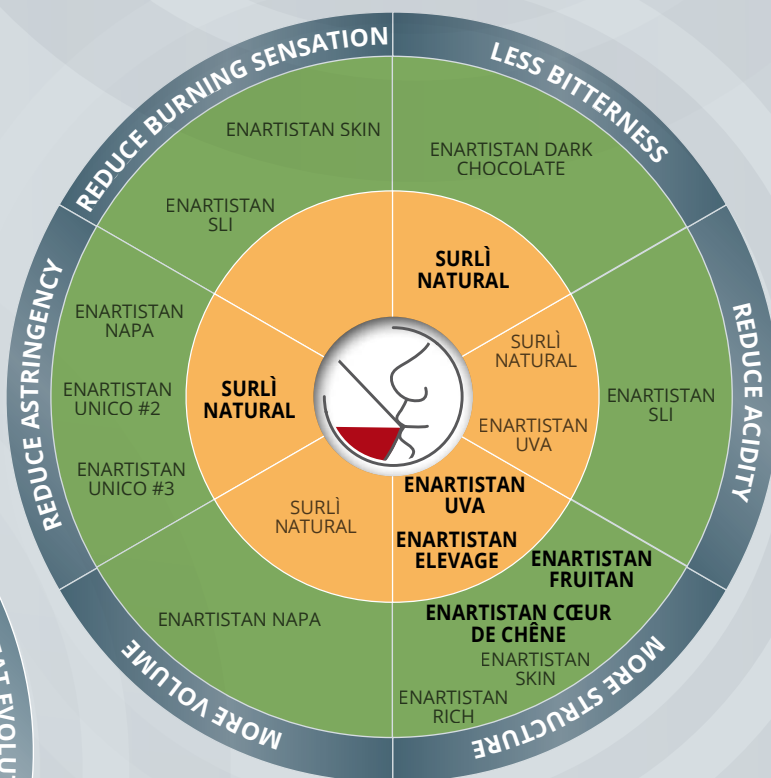
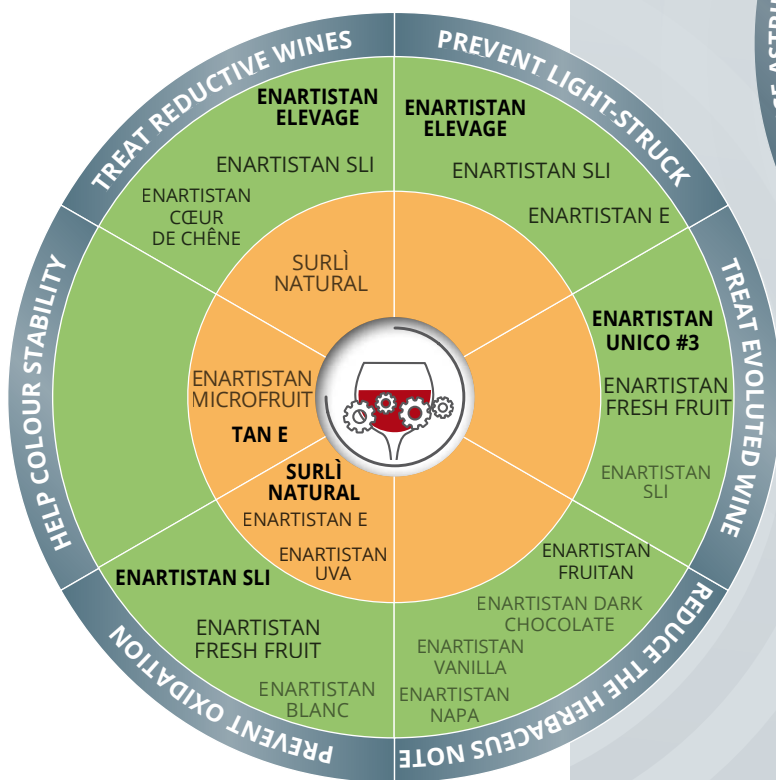
Solving or preventing  
defects

++++ INTENSE/EFFECTIVE

+++ INTENSE/EFFECTIVE

++ INTENSE/EFFECTIVE

+ INTENSE/EFFECTIVE





## NOTES

## CONTACT DETAILS

### GENERAL MANAGER

Lida Malandra  
Tel 082 656 3685  
lida.malandra@enartis.co.za

### SALES MANAGER

Jaco Cockrell  
Tel 083 321 9752  
jaco@enartis.co.za

### SALES REPRESENTATIVE

Antoinette van Zyl  
Tel 082 926 1613  
antoinette@enartis.co.za

### SALES REPRESENTATIVE

Gemma Grobbelaar  
Tel 084 646 0037  
gemma.grobbelaar@enartis.co.za

### STABILISATION LABORATORY

Pati-Joh Abrahams  
laboratory@enartis.co.za

### OFFICE/ORDERS

Lana van Wyk  
Tel 021 870 1181  
sales@enartis.co.za



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**ENARTIS SOUTH AFRICA (PTY) LTD**

10 Distillery St 7646 Dal Josaphat, Paarl | Phone: +27 21 870 1181 | [sales@enartis.co.za](mailto:sales@enartis.co.za)