

ENZYMES

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



enartis

Inspiring innovation.

MUST CLARIFICATION

EnartisZym RS



- Liquid pectolytic enzyme preparation, rich in cellulosic and hemicellulosic side activities.
- Break down “hairy zone” of pectins and hemicelluloses.
- Intense clarification and fast depectinization.

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

Dosage: 1-3 mL/hL (38-113 mL/1,000 gal) in must, 2-5 mL/hL (75-190 mL/1,000 gal) in wine

1 kg (Item #35-160-0001)

MACERATION OF WHITE AND ROSÉ GRAPES

EnartisZym AROM MP

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

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

Dosage: 20-40 g/ton

0.25 kg (Item #35-130-0250)
1 kg (Item #35-130-1001)

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

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

MACERATION OF RED AND ROSÉ GRAPES

EnartisZym COLOR PLUS

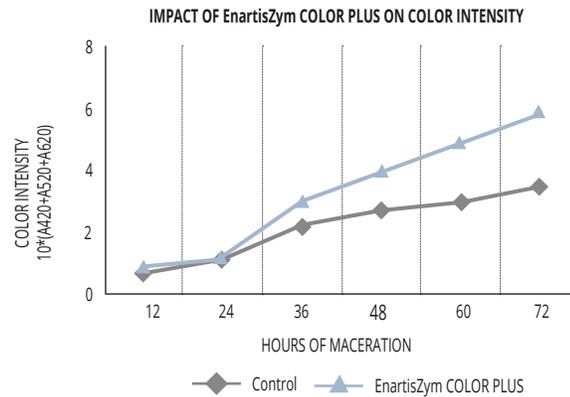


- Micro-granulated enzyme preparation developed to accelerate and increase phenolic compounds extraction and improve color stability.
- Rich in cellulosic and hemicellulosic side activities.
- Hydrolyzes proteins and reduce precipitation of tannins and pigments.
- Improves color stability and intensity.

Application: extraction and stabilization of color from red grapes

Dosage: 20-40 g/ton

0.25 kg (Item #35-141-0250)
1 kg (Item #35-141-0001)



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

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

Louwritz Louw, South Africa

OTHER APPLICATIONS

EnartisZym EZFILTER



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

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

Dosage: 2-4 mL/hL (75-150 mL/1,000 gal)

- 1 kg (Item #35-177-0001)
- 10 kg (Item #35-177-0020)



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

Allan Whetstone, Cascade Wine Services - Oregon, USA



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

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

EnartisZym CHARACTERISTICS

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

ABOUT ENOLOGICAL ENZYMES

WHY USE ENOLOGICAL ENZYMES?

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

WHAT ARE ENZYMES EXTRACTED FROM?

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

WHY SO MANY PECTOLYTIC ENZYMES?

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

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

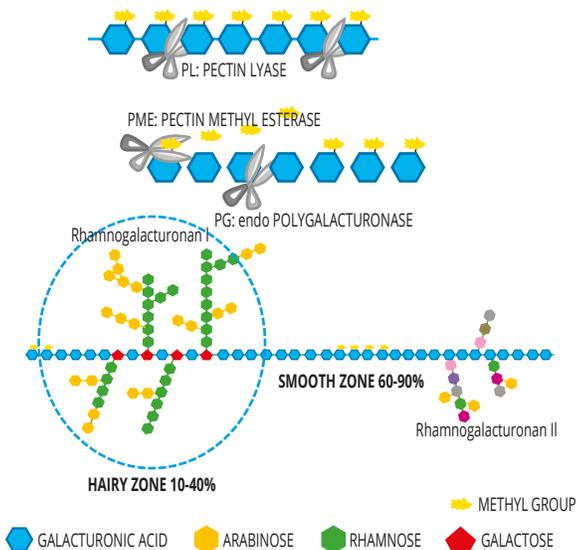


Figure 1: Representation of main pectolytic activities on pectin chains.

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

Powdered enzymes are easy to store, have a long shelf life with limited risk of contamination and do not require preservatives. Liquid enzymes are convenient to use and dose, but require cold storage and have a shorter shelf life due to possible microbiological contamination after opening.

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

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

HOW DOES TEMPERATURE AFFECT ENZYMATIC ACTIVITIES?

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

DOES SO₂ AFFECT ENZYME ACTIVITY?

Even with an addition of 2000 ppm of SO₂, the enzymatic activity of EnartisZym RS, for example, is not affected (Figure 2). Using SO₂ and enzymes is fine, however timing is important. Add enzymes after SO₂ has adequately dispersed or vice versa. Do not add SO₂ and enzymes at the same time.

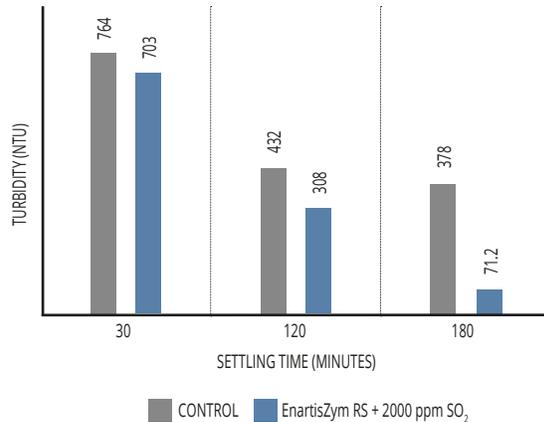


Figure 2: Impact of SO₂ addition on EnartisZym RS effect.

HOW DO TANNIN OR BENTONITE ADDITIONS INTERFERE WITH ENZYME ACTIVITY?

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

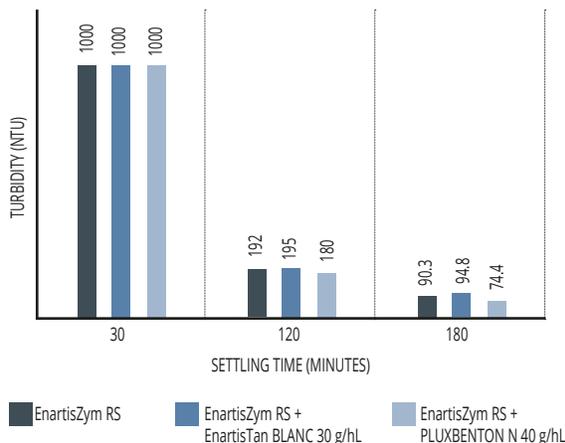


Figure 3: Impact of tannin and bentonite addition on EnartisZym RS effect.

HOW DO I DECIDE WHAT DOSAGE OF ENZYME TO USE?

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