Q&A

YEAST PRODUCTS

Through original research and sponsoring multiple PhD theses over two decades, LAFFORT® has created a range of specialty winemaking products rich in naturally occurring compounds derived from yeast cells.

1. Which yeast products can I use during fermentation?

Yeast products are used during fermentation to facilitate fermentation, promote gentle fining action, improve sensory attributes, and contribute beneficial antioxidants to preserve aromatics. Yeast products developed for fermentation generally have insoluble yeast fractions, which will settle out over time.

OENOLEES® and **POWERLEES® ROUGE** are excellent for red wines, rich in insoluble yeast cell wall constituents that provide a gentle fining, add perception of sweetness, and detoxify the wine to help ensure a healthy alcoholic fermentation. **POWERLEES® ROUGE** also contains β-glucanase, to help promote yeast autolysis and produce wines with better sweetness and mouthfeel earlier.

FRESHAROM® is rich in glutathione, an antioxidant, to help protect fermentation esters in white and rosé wines from oxidation during aging and in the bottle. **FRESHAROM®** is added at the second nutrient addition, around one-third of fermentation completion, and will also contribute to sweetness and mouthfeel.

YEAST PRODUCT APPLICATIONS

OBJECTIVE	GRAPE OR MUST TYPE	YEAST PRODUCT	DOSAGE	ADDITION TIMING	NOTE
Provide antioxidant post fermentation.	White & Rosé	**FRESHAROM®**	200 - 300 ppm	First one-third of alcoholic fermentation	Correct any nitrogen deficency prior to addition.
Improve aging potential.	White & Rosé	**FRESHAROM®**	200 - 300 ppm	First one-third of alcoholic fermentation	Correct any nitrogen deficency prior to addition.
Gentle fining activity.	White, Rosé & Red	**OENOLEES®**	200 - 400 ppm	Alcoholic fermentation Aging Final correction	Requires at least 4-6 weeks settling prior to bottling.
Increase mouthfeel, gives a perception of sweetness, and increases fruit aromas.	White, Rosé & Red	**OENOLEES®**	200 - 400 ppm	Alcoholic fermentation Aging Final correction	Requires at least 4-6 weeks settling prior to bottling.
Increase mouthfeel, gives a perception of sweetness, increases fruit aromas.	Red	**POWERLEES® ROUGE**	150 - 400 ppm	Alcoholic fermentation Aging Final correction	Requires at least 4-6 weeks settling prior to bottling.
Make wines more approachable with reduced aging.	Red	**POWERLEES® ROUGE**	150 - 400 ppm	Alcoholic fermentation Aging Final correction	Requires at least 4-6 weeks settling prior to bottling.
Add roundness on palate. Fills in texture gaps.	White, Rosé & Red	**MANNOFEEL®**	25 - 150 mL/hL	Aging Final correction	Add to wine at least 48hrs prior to bottling.
Contribute sweetness sensation.	White, Rosé & Red	**AUTOLEES®**	100 - 300 ppm	Aging Final correction	Add prior to cellar filtration.
Reduce phenolic, green and astingent characters.	Red	**AUTOLEES®**	100 - 300 ppm	Aging Final correction	Add prior to cellar filtration.

2. Do yeast products contribute to YAN during fermentation or aging?

Healthy fermentations require certain levels of assimilable nitrogen to thrive and yeast will use any available food source when those needs are not met. The best way to ensure you are maximizing the benefits of these products is to manage your YAN with proper yeast nutrition using DAP, **THIAZOTE® PH**, **NUTRISTART®** and **NUTRISTART® ORG**. Yeast products are considered supplemental to the nutrition program for your fermentation and do facilitate fermentation.
While small amounts of nitrogen may be present post fermentation, yeast products will not contribute to YAN during aging or cause unwanted microbial growth.

3. Is there an easy way to measure the concentration of glutathione?

Glutathione is a tripeptide made of three amino acids: cysteine, glutamate, and glycine naturally found in grapes which act as a powerful antioxidant. **LAFFORT®**'s **FRESHAROM®** is an inactivated yeast rich with glutathione precursors (*cysteine, N-acetyl cysteine*) that are assimilated and metabolically converted to glutathione. This is released into the wine to preserve freshness and inhibit browning and other oxidative characteristics.
There are relatively quick over-the-counter products available for testing glutathione in the human body, however, for the most reliable results in wine it is recommended to use Ultra High-Performance Liquid Chromatography techniques. ETS Labs in St Helena can perform Glutathione tests, and **LAFFORT®** performs this test and much more at the **EXCELL** Laboratory in Bordeaux, France.

4. What sensory impact can I expect?

FRESHAROM® acts as an antioxidant, protecting the youthful fruit and fermentation aromas and flavors from oxidation in white and rosé wines. Additionally, **FRESHAROM®** can enhance the sweetness perception and build more mouthfeel in the wine.
POWERLEES® ROUGE and **OENOLEES®** are both equipped to reduce astringency and improve aging, although **POWERLEES® ROUGE** has the added benefit of a β-glucanase enzyme to aid autolysis for early-to-market wines. Typical sensory changes can include softening of astringency, improved mouthfeel and mid-palate weight, increased perception of sweetness, reducing green character, improved fruitiness, and freshness as well as aromatic intensity.
MANNOFEEL® and **AUTOLEES®** are two other yeast products in the **LAFFORT®** line-up that are rich in mannoproteins for tartrate stability and offer multiple benefits of mouthfeel and sensory improvement. These products are fully soluble and are typically used during aging and before bottling.

5. Can yeast products help me reduce SO_2 levels?

SO_2 is the Dr. Jekyll and Mr. Hyde of winemaking. It is essential as an anti-microbial agent and as an antioxidant, it is also reviled by the natural wine movement, toxic in extreme doses, an allergen, and tastes disagreeable at high levels. Yeast-derived products can certainly aid in reducing SO_2 but will not completely replace it.
Reducing the need for SO_2 can be accomplished with yeast products that contribute to natural yeast-derived glutathione levels such as **FRESHAROM®**. Glutathione is a powerful antioxidant, substantially more than SO_2. The decrease in need for SO_2 will show during the aging period as the glutathione protects the wine.
Contact your **LAFFORT®** representative for reduced SO_2 winemaking products and protocols, and see page 145-147.

6. How quickly do yeast products react, and how close to bottling can they be added?

Yeast products are divided neatly into those that are 100% soluble and those that are not, depending on the parts of the yeast cell that are used.
Fermentation products that contain yeast cell walls are not fully soluble, including **FRESHAROM®**, **OENOLEES®**, **POWERLEES® ROUGE**, and **POWERLEES® LIFE**.
FRESHAROM® is only used during fermentation, its properties are dependent on the action of yeast on a succession of precursors, and its effects are found through the life of the wine. These reactions happen during fermentation, and the insoluble components are removed by racking.
POWERLEES® ROUGE and **OENOLEES®** offer light fining and sensory improvement within a couple days and can also benefit sur-lie aging over several weeks. They can be added during fermentation and always take some weeks to settle out of wine before racking: it is recommended to add these products at least several weeks before bottling.
MANNOFEEL® and **AUTOLEES®** are fully soluble extracts of yeast cell walls, formulated to react quickly and can be added to the wine right up to the week before bottling.

7. Will Yeast Products interfere with filtration?

For products containing inactivated yeast and yeast cell walls such as **POWERLEES® ROUGE**, **OENOLEES®**, and **FRESHAROM®**, it is recommended to rack off before filtering. Specially formulated products containing mannoproteins, such as **MANNOFEEL®**, generally will not interfere with filtration and may be added post cellar filtration. With **AUTOLEES®**, there is a risk of increasing the clogging index in reaction with other wine colloids, and it is recommended to add **AUTOLEES®** before prefiltration bottling. Always check with your **LAFFORT®** technical representative to confirm the timing of your addition.

8. Are there differences between inactivated yeasts, yeast cell walls, yeast derivatives, and yeast products?

Yes! Yeast-derived products are made of the different parts of the yeast cell, including the entire inactivated cell, the cell wall, and the cell interior. Each product has a unique function for winemaking. For each yeast derived product, there is a different blend of the yeast fractions. These blends are developed through extensive research and trials.

- 'Inactivated yeasts' are where the yeast cell is intact, but not active. This part is used in nutrition, detoxification, and glutathione products.
- 'Yeast autolysates' are the intracellular contents (cytoplasm) used for nutrition, detoxification, and glutathione products.
- 'Yeast cell walls' (a.k.a. yeast hulls) contain sterols, long chain fatty acids, polysaccharides, and mannoproteins. Yeast cell walls may be used intact for detoxification, such as **OENOCELL®** and **BI-ACTIV®** or may be extracted to obtain the soluble fractions which help with mouthfeel, sweetness, and detoxification.

9. What are mannoproteins?

Mannoproteins are a group of proteins found in yeast cell walls linked by β-glucan chains. Mannoproteins were first studied in winemaking for their ability to stabilize tartrates without seeding or refrigeration. They have also been found to provide many beneficial winemaking properties including building mouthfeel. **MANNOFEEL®** and **AUTOLEES®** are two mannoprotein based products from **LAFFORT®** that in addition to tartrate stability also offer sensory improvement through increased freshness, perception of sweetness, and volume. The best way to experience these attributes is to perform bench trials and see the changes for yourself. Ask your **LAFFORT®** Technical Representative for more information on bench trials or acquiring samples.

10. Why are yeast products sometimes blended with enzymes or chitosan?

LAFFORT® offers **MICROCONTROL®**, a combination of yeast derivatives and chitosan. Chitosan has been shown to be effective at disrupting the cell membrane in many microbes, especially *Brettanomyces*, essentially controlling spoilage. The combined effect of yeast products with chitosan can offer gentle fining action to improve microbial control as well as clarity and filterability. **POWERLEES® ROUGE** contains β-glucanase, an enzyme that aids in yeast autolysis, and in combination with yeast products will help improve filterability and build mouthfeel.

STORAGE AND PREPARATION

PRODUCT	STORAGE TEMPERATURE AND PLACE	SHELF LIFE UNOPENED AND OPENED	PREPARATION
FRESHAROM®	Dry area, moderate temperature.	3 years unopened, use quickly once opened.	Add directly to wine.
OENOLEES®	Dry area, moderate temperature.	3 years unopened, once opened use within 1 month.	Mix in 5 - 10 x volume of water.
POWERLEES® ROUGE	Dry area, moderate temperature.	3 years unopened, use quickly once opened.	Mix in 5 - 10 x volume of water.
MANNOFEEL®	Dry area, moderate temperature.	2 years unopened, once opened store in refrigerator and use within 3 months.	Add directly to wine.
AUTOLEES®	Dry area, moderate temperature.	2 years unopened, once opened keep well sealed and use within 1 month.	Mix in 5 - 10 x volume of water.