2018 Fermentation Handbook
Scott Labs Canada
So, be honest, did you take notice of the exclusive Canadian content in last year’s handbook? We certainly hope you found year one of the Canadian handbook useful and more reflective of our Canadian industry.

As we put the finishing touches on this years handbook, it will be opportune time to flip the switch from looking back, to looking forward.

The second celebration of 2019 will occur when we open the doors to our brand new national head office and warehouse in Niagara on the Lake, ON. Slated for late February 2019 completion, our new 25,000sq ft. facility will replace our current Pickering location, and serve as the home for our Canadian operations. The new building will afford us many operational advantages, and will provide our team with new tools to dramatically improve our internal operations, thus making us more responsive and better equipped to meet the increased demands of our growing industry.

But before we get to 2019, we must acknowledge work anniversaries for two gentlemen that have played an integral part in the growth of not only our company, but our Canadian wine industry.

The information in this booklet is, to the best of our knowledge, true and accurate. The data and information, however, are not to be considered as a guarantee, expressed or implied, or as a condition of sale of our products. Furthermore, it is understood by both buyer and vendor that wine is a natural product. Circumstances such as fruit qualities and cellar conditions are natural references that come from our friends south of the border.

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But before we get to 2019, we must acknowledge work anniversaries for two gentlemen that have played an integral part of our company’s continued success. This year Tony D’Souza, from our Pickering office celebrates 25 years, and Matthias Boss, our Ontario wine representative, celebrates 10 years with Scott Labs. Thank you both for your day to day dedication to the Scott family, and to your craft.

About the Cover:

This year, we are honored to have one of our longest-standing USA customers join in the fun — Jordan Winery from Healdsburg, California.

We chose to depict the many faces of the winemaking process with whimsical illustrations, and asked Jordan to quantify each of these from their real-life harvest experiences. We had a ball working with them, and they realized some things in the process (most notably, a reliance on caffeine during harvest).

Wishing you a wonderful summer, and a successful harvest,

Steve, Jenny, Tony, Pierre, Ken, Alan, Matthias, Wayne, Kevin, Krista, Morelle

Welcome
Suppliers

Lallemand

www.lallemandwine.com

Beginning in the 1920's, Lallemand supplied fresh baker's yeast for the local market in Quebec, Canada. In 1974, over 50 years later, Lallemand was looking for new opportunities at the same time that Scott Laboratories was looking for a partner to produce dry forms of wine yeast from strains in Scott's library. After some discussion, Lallemand agreed to try. Two strains were produced that first year. This relationship is now in its 45th vintage. Scott currently offers nearly one hundred Lallemand products including yeast, yeast derivatives, bacteria and nutrients.

From this modest introduction in 1974, Lallemand has evolved into a world leader in the development of products for winemakers. Lallemand's focus has always been "value added." Its team of researchers in Toulouse, France emphasize fermentation research. Their solutions to winemaking problems are both cutting edge and practical. The "Fermaid" and "Go-Ferm" product families are illustrations of this. At Lallemand's Montreal facilities the emphasis is on new strain development, production procedures and fundamental research. Scientific papers and ongoing collaborations also link Lallemand with entomological institutions on five continents. Taken together, they reflect Lallemand's commitment to the wine industry, here and around the world.

Anchor

www.newworldvino.com

Anchor Yeast began in 1923 when Daniel Mills and Sons started the first yeast factory in Cape Town, South Africa. Yeast is now produced in an ISO 9001:2008 certified plant near Durban. They produce wine yeast, baker's yeast, distilled whiskey and whiskey yeast sold throughout the world.

The Anchor yeast strains can be divided into natural isolates and hybrid strains. The hybrid strains include isolates hybridized by nature and isolates hybridized by Anchor. Hybridization is a natural process involving the sexual life cycle of Saccharomyces cerevisiae and S. cerevisiae boulardii. The process is natural and the strains are not genetically modified. The results are yeast hybrids chosen with the best characteristics from both parents. This is a scientific vs. traditional approach that Anchor feels gives the winemaker a competitive edge. Anchor Yeast positions itself as the leading New World wine yeast producer, placing a premium on the ideas and innovation required to make successful New World wines.

LANXESS

www.velcorin.com

LANXESS is a leader in specialty chemicals and operates in all important global markets. Though its components were originally part of the Bayer Group, it is now a wholly independent entity. Lanxess develops, manufactures and sells a wide range of products including specialty chemicals such as Velcorin®. Scott Laboratories Inc. began offering Velcorin from Lanxess for United States winemakers beginning in 1988 and for Canadian winemakers in 2013.

IOC

www.ioc-av.com

In 2010 we developed a new alliance with the Institut Oenologique de Champagne (IOC) in Epernay, France. This relationship allowed us to expand and improve the range of specialty fining agents in our portfolio. The origins of the IOC can be traced back to the founding of a of the Entrepôt Général de champagne in 1890. In 1905 a laboratory (which became the IOC) was established to carry out the work of yeast selection and preparation. Over the years these product lines expanded together with the territory covered. Although the IOC has maintained its roots in Champagne (with locations in Epernay, Bar-sur-Seine and Corrèze), it also has locations in Chablis, Nuits St. Georges, the Côtes Chalonnaise and in the Côtes du Rhône near Châteauneuf-du-Pape. The IOC offers yeast and a variety of wine processing products for still and sparkling wines.

Oenobrands

www.oenobrands.com

Though Oenobrands is relatively new to the Scott portfolio, it comes with a distinguished pedigree. Supported by its world renowned parent companies (DSM Food Specialties and Anchor BioTechnologies), Oenobrands is commissioned to provide winemakers with innovative and scientifically sound solutions to real life issues.

With a highly qualified team from new and old world wine regions, Oenobrands seeks to take the best from both. 'Thinking outside the box' is encouraged. The results are revolutionary products from brands such as DSM, Rapilaide and Claristar.

AiRD Innovations in Chemistry

Located in Moss Vale, New South Wales, Australia, AiRD Innovations in Chemistry grew up near the vineyards. Founded over two decades ago, AiRD specializes in hygiene maintenance for the food and beverage industry. Early on the founder Barry Astley-Turner saw the need for products that would keep the food and beverage processing facilities clean and safe. AiRD's top priority is maintaining the safety and quality of food and beverage products. AiRD's range of products are designed to provide solutions to real world hygiene problems.

Erbsloeh

www.erbsloeh.com

While Scott Labs has offered the portfolio of Erbsloeh bentonite since the early 2000's, in 2017 we are proud to extend our offering of the Erbsloeh brand to include their full line of winemaking products. One of the most trusted names in the industry, which has roots in Giesenheim, Germany, this family owned operation has used its strategic position in bentonite to develop a portfolio of yeast, nutrients, enzymes and fining agents for wine, beer, juice and distillate production. A progressive group, in 2003 Erbsloeh added the La Littorale brand, which its roots deep in Languedoc's winemaking region.

Garbellotto

www.garbellotto.com

A family owned cooparage operating in the Northern Italy town of Conegliano, Garbellotto has crafted a reputation for their large format vats and casks. Their recent developments, including the Garbellotto Bottecicale, Garbellotto Experience and their N.I.R Lave analysis program illustrates the family has found a balance between the demands of today's winemaker, and the Garbellotto craftsmanship that has been the foundation of their success since 1775.

Cooperages 1912

www.cooperages1912.com

Since 1912, the Boswell family have been a fixture in the oak industry. Cooperages 1912 represents their premium oak barrel division in North America, offering American, French and Eastern European oak options. The portfolio of both World Cooperage and T.W. Boswell barrel programs is extremely diverse, offering something for every wine, and every winemaker.

Arboi

www.arboi.com

Located in the southwest corner of France, Arbois was a pioneer in the oak chips industry, originating back in 1997. With a portfolio of chips differing in size and toasts levels, Arbois has been represented in Canada by Scott Labs since 2000. Arbois is a AAACP and ISO recognized company.

New Offerings

A small sample of some of the new products available are listed below

Premium Yeast

Fermixn 49P Page 19
Fermixn P96 Page 19
Fermixn T528 Page 19

Nutrients

Stymul Chardonay™ Page 40
Stymul Sauvignon Blanc™ Page 40

Tannins

FT Rouge Soft - New Size: 5kg Page 54

Enzymes

Scotzyme KS Plus Page 69
Trenolin Bouquet Page 71
Trenolin Filtro Page 71
Trenolin Frío Page 71
Trenolin Maíz Page 72
Trenolin Rouge Page 72

Stability

Blancobert Page 97
Ultarbant Page 98

Filtration

Cellflus® Page 101
Trub ex Neu Page 101
Variflux® Page 101

Fining Agents

Pure-Lees Longevity Plus™ Page 110
Premium Yeast

Yeast has been an important part of our portfolio ever since our predecessor company (Berkeley Yeast Laboratory) was founded in 1933. Our first commercial yeast offerings consisted of strains given to us from the collection of the University of California College of Agriculture at Berkeley. The college had safeguarded them throughout the dark years of Prohibition. In each of the 85 subsequent harvests, we have learned and evolved. We are uniquely positioned to assist winemakers in meeting new challenges and opportunities.

Basics

Each harvest presents new and different variables. Even if grapes are sourced from the same vineyard each year, the fruit will arrive with different sugar, nitrogen and acidity levels. Each harvest presents new and different variables. Even if grapes are sourced from the same vineyard each year, the fruit will arrive with different sugar, nitrogen and acidity levels. Before using any yeast strain, consider the factors that are outlined below.

Brix

What is the Brix of the juice? The yeast strain chosen should be able to tolerate the alcohol produced from this Brix level. (See yeast strain selection charts on pages 8-13.)

Yeast strain selection charts on pages 8–13.)

Proper yeast rehydration is one of the most important steps to help ensure a strong and healthy fermentation. Normal inoculation for wine active dried yeast is 2 lb/1000 gal (25 g/L). When added properly, a 2 lb/1000 gal (25 g/L) addition of wine active dried yeast results in an initial cell concentration of 3-4 million viable cells per milliliter of must/juice. Under favorable conditions, the initial cell population may increase up to 100-150 million viable cells per milliliter of must/juice before growth stops and alcoholic fermentation begins. This biomass increase is critical for healthy fermentations. When harvesting grapes at high maturity levels, increased inoculation rates are recommended. When using higher ratios, be sure to maintain a ratio of 1 part yeast to 1.25 parts must/juice.

YSEO

YSEO is a unique and innovative process for yeast developed by Lallemand. The benefits compared with the same strain prepared not using the YSEO process are:

1. Reduced potential for VA
2. Optimized fermentation
3. Better adaptation to stressful conditions
4. Reduced lag phase
5. Increased inoculation rates

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Usage

1. Suspend 2.5 lb/1000 gal (30 g/L) of Go-Ferm or Go-Ferm Protect Evolution to 20 times its weight of clean, chlorine-free, 45°C (113°F) water. (For example: 2.5 lb rehydration nutrient x 20 = 50 ÷ 8.33 lb/gal water = 6 gal water.) The water temperature is important for mixing of the rehydration nutrient. [Due to the unique nature of GoFerm and GoFerm Protect Evolution, they will not go into solution completely.] This is due to the fatty acid and sterol content. Please see page 40 for information on yeast rehydration nutrients.

Important: If not using a yeast rehydration nutrient, water must be considered.

2. After yeast rehydration nutrient solution has dropped to 40°C (104°F), add 2 lb/1000 gal (25 g/L) of active dried yeast. Stir gently to break up any clumps. Let suspension stand for 20 minutes, then stir gently again. Live yeast populations decline when allowed to stand for more than 30 minutes.

Note: Foaming is not an indicator of yeast viability.

Visit www.scottlab.com for a video animation of this protocol.
### White & Rosé Wine Yeast Strains

<table>
<thead>
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<th>Recommended</th>
<th>Sensitive</th>
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### Yeast Strain Type

- **Highly Recommended**
- **Recommended**
- **Sensitive**
- **Avail.**

### Temp. Range (°C)

- **Min.**
- **Max.**

### Fermentation Speed

- **Fast**
- **Mod.**
- **Slow**

### MLF Compatibility

- **Very Good**
- **Good**
- **Bad**

### Alcohol Tolerance

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### Relative Nitrogen Needs

- **Low**
- **High**

### Sensory Effect

- **Esters**
- **EVC Enhanced Varietal Character**
- **M Mouthfeel**
- **Ntrl Neutral**

### MLF Compatibility

- **Very Good**
- **Good**
- **Bad**

### Page 14

- **S. cerevisiae cerevisiae**
- **S. cerevisiae bayanus**
- **Yeast hybrid**
- **Yeast blend**
- **Albariño**
- **Chardonnay**
- **Chenin Blanc**
- **Gewürztraminer**
- **Muscat**
- **Pinot Blanc**
- **Pinot Gris**
- **Riesling**
- **Sauvignon Blanc**
- **Viognier**
- **Rosé**
- **Rhone Whites**
- **Aromatic Whites**
- **Late Harvest**
- **Sparkling Base**
- **Restart Stuck**

### Page 28

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### Red Wine Yeast Strains

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**Notes:**
1. The alcohol tolerance column indicates performance possibilities in good circumstances and conditions. Alcohol tolerance may vary at circumstances and conditions.
2. Relative nitrogen needs refer to how much nitrogen one strain requires relative to the other strains on this chart.
3. Temperature column indicates general performance possibilities. It is not a substitute for wearing a yeast. Yeast may be stressed or die at temperatures. Yeast tolerance is required. Keep in mind that yeast ability is lowered within the given range. Yeast tolerance may vary at alcohol and other antagonistic conditions.

Temperature should be measured directly under the cap in red must/wine. When working with high sugar fermentations, lower temperatures are recommended. Good cap management is required to assure homogeneous temperatures in red wine fermentations. Increasing dosage of yeast may help prevent a sluggish or stuck fermentation.

Important Notes:

This chart is only useful as a quick reference guide. For more information on select yeast strains, please refer to the yeast section of this handbook.

Please see pages 116–118 for more information on yeast choices for hybrid and non-vinifera grapes.

**Premium Yeast**

**Premium Yeast**
## Red Wine Yeast Strains (continued from page 11)

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### Yeast Strain Characteristics

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### Sensory Effect

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**Important Notes**

- This chart is only useful as a quick reference guide. For more information on selected yeast strains, please refer to the yeast section of this handbook.
- Please see pages 11–18 for more information on yeast choices for hybrid and non-vinifera grapes.
Premium Yeast Strains

3001
- **S. cerevisiae • cerevisiae**
- pinot noir
- isolated and studied from the prestigious Côte de Nuits terroir in Burgundy during a three-year research project by Laboratory Burgundia Denologie in Beaune, France. The goal of this selection program was to find a dominant natural yeast strain from a traditional "cold soak" that would elaborate intense, complex and balanced Pinot Noir varietal character. The 3001 strain stood out from other strains. Wines made with 3001 are noted for fruit and varietal characteristics that are both elegant and complex.
- Moderate nitrogen demand. Benefits from proper nutrition and aeration, especially when the potential alcohol exceeds 13% (v/v).
- tolerant to standard SO2 additions and low temperatures (12°C/54°F) for a steady and reliable alcoholic fermentation following cold soak. Têtières SV3001 is recommended for cold soak protocols for intense Pinot Noir wines with aging potential.

382W3
- **S. cerevisiae • cerevisiae**
- pinot gris, gewürztraminer, riesling, viognier, rhône whites, aromatic whites
- isolated during a five-year study by the INRA (National Agricultural Research Institute) in Alsace, France.
- due to its fermentation kinetics, especially in high potential alcohol juices, a balanced nutrient strategy and good fermentation practices should be followed.
- Têtières 382W3™ contributes an overall well-balanced mouthfeel with floral and fruity aromas.
- allows for the release of bound terpenes in aromatic varieties due to the beta-gluco oxidase activity.

718
- **S. cerevisiae • cerevisiae**
- pinot gris, ruländer, riesling, rosé, fruit forward reds
- known for fermenting fruity rosé wines and semi-sweet whites because it causes production of long-lived aromas that result from the synthesis of relatively stable esters and higher alcohols.
- Softens high acid musts by partially metabolizing malic acid.
- Sensitive to oxidative factors and may have difficulty competing with wild microflora. Careful hydraphy with Go-Ferm® or Go-Ferm Protect Evolution® and early inoculation will help Lalvin 718™ dominate in competitive conditions.

Alchemy I
- **S. cerevisiae • cerevisiae**
- blend
- sauvignon blanc, chardonnay, chénin blanc, riesling, pinot gris, rhône whites, aromatic whites
- scientifically formulated blend of wine yeast strains developed in collaboration with the Australian Wine Research Institute (AWRI) in South Australia.
- the ratio of the yeast in the blend has been formulated to provide an optimal aromatic profile. Alchemy I enhances esters (fruity, floral) and volatile thiols (boxwood, passion fruit, grapefruit and guava aromas).
- Alchemy I is a strong aroma producer with fast fermentation kinetics.
- it is low foaming and has low to medium nitrogen requirements.
- barrel fermentation is not recommended and temperature control is advised.

Alchemy II
- **S. cerevisiae • cerevisiae**
- blend
- albariño, sauvignon blanc, chénin blanc, rhône whites
- scientifically formulated blend of wine yeast strains developed in collaboration with the AWRI in South Australia for optimal aromatic profile.
- Alchemy II enhances mostly volatile thiols such as: boxwood, passion fruit, grapefruit and guava aromas.
- it is highly recommended for cool tank fermentations of sauvignon blanc (New Zealand, South African or Chilean style).
- under difficult conditions (pH<3.2, turbidity under 80 NTO, low YAN, temperatures below 15°C(59°F), Alchemy II can be stressed and produce VA.
- fast fermentation kinetics mean temperature management is crucial.
- it is a low SO2 producer with medium nitrogen requirements.

Alchemy III
- **S. cerevisiae • cerevisiae**
- blend
- cabernet sauvignon, malbec, zinfandel, tempranillo, grenache, petit verdot, structured reds
- scientifically formulated blend of wine yeast strains developed in collaboration with the AWRI in South Australia.
- Alchemy III is a very high producer of 2-phenylethanol (rose), 2-phenylethyl acetate (floral and fruity), ß-ionone (raspberry) and acetate esters (fruity and candy). It produces complex wines with good structure and body and is suitable for all red varieties.
- Alchemy III has a minimum temperature tolerance of 16°C(61°F) and an alcohol tolerance of up to 15.5% (v/v). It is a strong fermenter with medium nitrogen needs, minimal SO2 production and glycerol production of 8-11g/L.

Alchemy IV
- **S. cerevisiae • cerevisiae**
- blend
- pinot noir, syrah, cabernet franc, sangiovese, fruit forward reds
- scientifically formulated blend of wine yeast strains developed in collaboration with the AWRI in South Australia.
- formulated for the production of intense red fruit characters such as cherry, red currant, raspberry and pomegranate. High producer of ester esters, especially ethyl hexanoate (fruits), which contributes to the longevity of the fruit aromas.
- this yeast blend has a significant production of total esters and terpenes, while also diminishing the effect of methoxypyrazines.
- produces smooth, round wines with heightened aroma intensity.
- Alchemy IV has a minimum temperature tolerance of 16°C(61°F) and an alcohol tolerance of up to 15.5% (v/v). It is a strong fermenter with medium nitrogen needs, minimal SO2 production and glycerol production of 8-11g/L.

Assmanshausen (AMH)
- **S. cerevisiae • uvarozeni**
- pinot noir, zinfandel, riesling, petit sirah, gewürztraminer
- originated from the Geisenheim Research Institute in Germany.

Alchemy I
- **S. cerevisiae • cerevisiae**
- blend
- sauvignon blanc, chardonnay, chénin blanc, riesling, pinot gris, rhône whites, aromatic whites
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- Alchemy I enhances esters (fruity, floral) and volatile thiols (boxwood, passion fruit, grapefruit and guava aromas).
- Alchemy I is a strong aroma producer with fast fermentation kinetics.
- it is low foaming and has low to medium nitrogen requirements.
- barrel fermentation is not recommended and temperature control is advised.

Alchemy II
- **S. cerevisiae • cerevisiae**
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- this yeast blend has a significant production of total esters and terpenes, while also diminishing the effect of methoxypyrazines.
- produces smooth, round wines with heightened aroma intensity.
- Alchemy IV has a minimum temperature tolerance of 16°C(61°F) and an alcohol tolerance of up to 15.5% (v/v). It is a strong fermenter with medium nitrogen needs, minimal SO2 production and glycerol production of 8-11g/L.

BAI
- **S. cerevisiae • cerevisiae**
- blend
- riesling, viognier, sauvignon blanc, pinot blanc, gewürztraminer, rosé, muscat, rhône whites, aromatic whites
- selected in 1997 near the Estación Vitivinícola de Barrada in Portugal.
- promotes clean aromatic characteristics and intensifies mouthfeel and lingering flavors in white or sparkling base wines.

BAX
- **S. cerevisiae • cerevisiae**
- blend
- merlot, cabernet sauvignon, zinfandel, syrah, petit verdot, structured reds
- selected from the Pasteur Institute strain collection in Paris, France.
- UltraBAX® is a vigorous fermenter. Alcohol tolerance can be up to 16% (v/v).
- optimizes color and structure with soft tannin extraction and increased mouthfeel. Does not generate a lot of heat during fermentation.
### BM 45

**S. cerevisiae • cerevisiae**

Sangiovese, Cabernet Sauvignon, Grenache, Zinfandel, Chardonnay, Syrah, Structured Reds

Isolated in the early 1990s in collaboration with the Consorzio del Vino Brunello di Montalcino and the University of Siena in Italy. Produces high levels of polyphenolic reactive polysaccharides, resulting in wines with increased mouthfeel and improved color stability. Has high nitrogen requirements and can produce H2S under poor nutrient conditions.

In Italian red varieties, Lalvin BM45™ has sensory descriptors that include fruit jam, rose and cherry liqueurs, sweet spice, licorice, cedar and earthy elements.

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### BRL 97

**S. cerevisiae • cerevisiae**

Pinot Noir, Zinfandel, Barbera, Merlot, Malbec, Petit Verdot

Isolated at the University of Torino in Italy from a Nebbiolo fermentation. Fast starter and a moderate speed fermenter, demonstrating good MLF compatibility and high alcohol tolerance. Helps retain both the color and the varietal character in grapes sensitive to colour loss. Lalvin BRL97™ may be blended with wines fermented with RA17, RC221 or W2 to enhance complexity.

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### BM 4X4

**S. cerevisiae • blend**

Sangiovese, Cabernet Sauvignon, Grenache, Zinfandel, Chardonnay, Structured Reds

Lalvin BM 4X4™ is a blend of BM45 and a complementary strain chosen by Lafayem to provide all the advantages of BM45 with even greater reliability under difficult conditions. Positive interaction between strains means a more dependable fermentation together with increased aromatic intensity, colour intensity and length of finish.

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### BRG

**S. cerevisiae • cerevisiae**

Chardonnay, Pinot Noir

Isolated in Burgundy at the IUVV (Institut Universitaire de la Vigne et du Vin) laboratory in Dijon, France. Reference strain for Burgundian winemakers. A fast fermenter with a high nutrient requirement. Alcohol tolerance can be up to 15% (v/v).

Levulin BRG™ was isolated for its ability to contribute significant amounts of polysaccharides during fermentation which enhance mouthfeel and body. Sensory notes include increased mineral aroma with a whole new level of freshness.

<table>
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### B. cereus • cereus

**Cross Evolution**

Chardonnay, Gewürztraminer, Pinot Blanc, Riesling, Sauvignon Blanc, Rosé, Rhône Whites, Muscat, Albariño, Aromatic Whites

Hybrid yeast from a unique breeding program of the Institute for Wine Biotechnology at the University of Stellenbosch in South Africa.

Ideal for aromatic white and rosé wines with high alcohol potential (15% v/v) and low fermentation temperatures (14°C/57°F). This strain has reasonably low nitrogen requirements. Cross Evolution™ contributes an increased mouthfeel component resulting in a more aromatic and balanced wine.

Chardonnay wines have shown increased fresh fruit and floral aromas.

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### CSM

**S. cerevisiae • cerevisiae**

Cabernet Sauvignon, Cabernet Franc, Merlot, Petit Verdot

Selected by the Institut Français de la Vigne et du Vin (IFV, former Institut du Vin et des Vins de Bordeaux / CIVB) in France in cooperation with Conseil Interprofessionnel du Vin de Bordeaux (CIVB Bordeaux). Enorme CSM™ can ferment up to 14% (v/v) and benefits from balanced nutrient additions.

Wines fermented with CSM have shown intense aromatic profiles of berries, spice and licorice. It has been known to reduce vegetal aroma. CSM adds complexity with a balanced, round mouthfeel and promotes malolactic fermentation.

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### CY 3079

**S. cerevisiae • cerevisiae**

Chardonnay, Pinot Blanc

Isolated by the Bureau Interprofessionnel des Vins de Bourgogne (BIVB) in France.

It is a steady, slow fermenter even at cooler temperatures (15°C/59°F). Lalvin Bourgignon CY3079™ demonstrates good alcohol tolerance and low production of VA and H2S when properly fed.

Highly recommended for barrel-fermented and sur lie aged Chardonnay.

Autolyses quickly at the end of fermentation. It is reported to enhance aromas such as fresh butter, honey, flowers and pineapple.

<table>
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### ICV D21

**S. cerevisiae • cerevisiae**

Merlot, Syrah, Zinfandel, Cabernet Sauvignon, Chardonnay, Structured Reds

Isolated from one of the best Languedoc terroirs during a special regional program run by the Institut Coopératif du Vin’s (ICV) Natural Micro-Flora Observatory and Conservatory in France.

Noted for its good fermentation performance. Produces very few sulfite compounds during fermentation.

Selected for fermenting red wines with stable colour, intense fore-mouth volume, mid-palate tannin structure and fresh aftertaste.

Lalvin ICV D21™ can also be used with very ripe white grapes that are barrel fermented to develop fresh fruit aromas, volume and perceived acidity. In highly clarified juices, maintain fermentation temperatures greater than 16°C(61°F) and supplement with proper nutrition.

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<th>Code</th>
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<th>Price/kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>33-15088</td>
<td>500g</td>
<td>$90.50</td>
</tr>
<tr>
<td>33-15089</td>
<td>10kg</td>
<td>$73.80</td>
</tr>
</tbody>
</table>

### ICV D47

**S. cerevisiae • cerevisiae**

Chardonnay, Rosé, Rhône Whites

Lalvin ICV D47™ is an isolate from Suze-la-Roussie in the Côtes du Rhône in France. It was selected for the production of full-bodied, barrel-fermented Chardonnay and other white varieties.

Fermentations are characterized by a short lag phase followed by a regular fermentation. Will tolerate a fermentation temperature range of 15-20°C(59-68°F).

It is a high polysaccharide producer and wines made with it are known for their accentuated fruit and volume.

Excellent results are obtained for barrel-fermented Chardonnay, especially when blended with wines made with Lalvin ICV D21.

<table>
<thead>
<tr>
<th>Code</th>
<th>Size</th>
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<tr>
<td>33-15061</td>
<td>10kg</td>
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</tr>
</tbody>
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**Premium Yeast**

33-15100    500g    $171.60/kg
33-15210    500g    $79.80/kg
33-15208    10kg    $83.60/kg
33-15115    500g    $132.40/kg
33-15061    500g    $98.50/kg
33-15078    10kg    $73.80/kg
33-15090    500g    $132.40/kg
33-15072    500g    $98.50/kg
33-15088    10kg    $73.80/kg
33-15089    500g    $90.50/kg
33-15056    500g    $98.50/kg
33-15057    10kg    $73.80/kg
33-15056B   10kg    $73.70/kg
33-15057B   500g    $79.80/kg
33-15061B   500g    $83.60/kg
33-15115B   500g    $132.40/kg
33-15062    500g    $98.50/kg
33-15078B   10kg    $73.80/kg
33-15120    500g    $117.60/kg
33-15086    10kg    $73.80/kg
33-15086B   10kg    $73.80/kg
33-15090B   10kg    $83.60/kg
33-15120B   10kg    $83.60/kg
33-15061B   500g    $83.60/kg
33-15078B   10kg    $73.80/kg
**ICV D80**

*S. cerevisiae • cerevisiae*

Cabernet Sauvignon, Merlot, Syrah, Zinfandel, Petite Sirah, Structured Reds

Isolated by the ICV in 1992 from the Côte Rôtie area of the Rhône Valley in France for its ability to ferment musts high in sugar and polyphenols.

Given proper nutrition, Lalvin ICV D80® is a rapid starter with moderate fermentation rates. It has been known to have an alcohol tolerance of up to 16% (v/v) when the fermentation is aerated and the temperature is maintained below 28°C (82°F).

On the palate it creates high fore-mouth volume, big mid-palate mouthfeel, an intense, fine-grain tannin sensation and a long lactic licorice finish.

Selected for its ability to bring out differentiated varietal aromas by reinforcing the rich concentrated flavours found in varieties such as Zinfandel and Syrah.

33-15081  500g  $98.50/kg

33-15081  10kg  $73.70/kg

**EC1118 (Prise De Mousse)**

*S. cerevisiae • bovusyns*

Sparkling Base

Selected by the Institut Oenologique de Champagne (IOC) in Epernay, France. Reference strain for sparkling wine.

It is the original, steady low foamer, and is popular for barrel fermentations. It is an excellent choice for secondary fermentations of sparkling wine.

Ferments well at low temperatures and flocculates with compact lees.

Under low nutrient conditions, Lalvin EC1118™ can produce high amounts of SO2 (up to 50 ppm) and, as a result, may inhibit malolactic fermentation.

33-15082  500g  $75.30/kg

33-15083  10kg  $56.40/kg

**ICV D254**

*S. cerevisiae • cerevisiae*

Cabernet Sauvignon, Syrah, Zinfandel, Sangiovese, Chardonnay, Petit Verdot, Malbec, Rhône Whites

Isolated by the ICV from a Rhône Valley Syrah fermentation.

It has been known to have an alcohol tolerance of up to 16% (v/v) when the fermentation is aerated and the temperature is maintained below 28°C (82°F).

In red wines, Lalvin ICV D254® develops ripe fruit, jam and cedar aromas together with mild spiciness. On the palate it contributes high foremouth volume, big mid-palate mouthfeel and intense fruit concentration.

When used for white wines (particularly Chardonnary), sensory descriptors include butterscotch, hazelnut and almond aromas.

33-15036  500g  $98.50/kg

33-15037  10kg  $73.70/kg

**DV10**

*S. cerevisiae • bovusyns*

Chardonnay, Sparkling Base, Gewürztraminer, Pinot Gris, Late Harvest, Pinot Blanc, Restart Stuck Fermentations

Selected in Epernay, France.

Strong fermentation kinetics. Recognized for low foaming, low VA production and very low H2S and SO2 production.

Lalvin DV10™ is well known for clean fermentations that respect varietal character while avoiding bitter sensory contributions associated with other more one-dimensional ‘workhorse’ strains such as PM.

Can be used to restart stuck fermentations and has been known to ferment up to 17% (v/v) alcohol.

33-15041  500g  $98.50/kg

33-15047  10kg  $73.70/kg
16% (v/v). IONYSWF has very high nitrogen requirements and a balanced nutrient protocol is essential. Maintaining a temperature range of 26–28°C (79–82°F) optimizes glycerol production (up to 15 g/l) and may decrease alcohol production between 0.4–0.8%. IONYSWF has a moderate fermentation speed with a long, but steady stationary phase.

Why is IONYSWF producing more total acidity?

Acidifying effects of IONYSWF

Acid Preservation

Control yeast

IONYS WF

Syrah 2013

Merlot, Cabernet Sauvignon, Merlot, Petit Sirah, Pinot Noir, Pinot Gris,

Albariño, Rhône Whites, Fruit Forward Reds, Aromatic Whites

Selected by the ICV in Montpellier, France, among numerous killer strains isolated and studied by Pierre Barbe at INRA.

When fermented at low temperatures (16°C/61°F) with proper nutrition, it is a strong floral ester producer, especially in neutral or high-yield varieties.

Among the high ester production strains, Latin VI16™ is the most tolerant of difficult fermentation conditions such as extreme temperatures, high alcohol (18% v/v) and low turbidity.

Fermenters well under stressed conditions and is useful in restarting stuck fermentations, especially when relative fruitless decades remain high.

Acid Preservation

Kingston Hall, South Africa.

Selected in Saint-Emilion, France, by the IFV (formerly ITV) Bordeaux in collaboration with the INRA Montpellier.

Vitilux M™ has steady fermentation kinetics and a high alcohol tolerance (15% v/v). It benefits from a balanced nutrient strategy, especially in low nutrient musts with high potential alcohol.

Characterized by aromas of strawberry jam, caramel and spice. Enhances colour intensity and tannin structure.

This yeast is particularly recommended for grapes with high maturity and long aging potential.

Why is IONYSWF producing more total acidity?

Acidifying effects of IONYSWF

Acid Preservation

Control yeast

IONYS WF

Syrah 2013

Merlot, Cabernet Sauvignon, Merlot, Petit Sirrah, Pinot Noir, Pinot Gris,

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Why is IONYSWF producing more total acidity?
Oenoferm X-Thiol **PREMIUM**
S. cerevisiae • hybrid
Rehydration: Rehydration in a 10x solution that is a 1:1 blend of juice and water. Ideal rehydration temperature is between 37-42°C (98-107°F). Stir slowly and allow the slurry to swell for 20 minutes. Ensure maximum temperature variance of 8°C (46°F) between rehydration solution and must before dosing.
Storage: Store in a cool, dry place. Use immediately once opened.
Dosage & Application: Please see bottom of this page.

Dosage
- For red wines: 8 g/L + 500 mL/L of juice or water
- For white wines: 8 g/L + 1000 mL/L of juice or water

**ALL Oenoferm PRODUCTS**
All Erbsloeh strains are propagated by using the F3 process — thus increasing the yeasts ability to withstand the rigours of fermentation.

**Dosage & Application**
Rehydrates in a 10x solution that is a 1:1 blend of juice and water. Ideal rehydration temperature is between 37-42°C (98-107°F). Stir slowly and allow the slurry to swell for 20 minutes. Ensure maximum temperature variance of 8°C (46°F) between rehydration solution and must before dosing.

**Storage**
Store in a cool, dry place. Use immediately once opened.

**ICV Opale**
S. cerevisiae • cerevisiae
Rehydration: Lalvin ICV Opale™ has excellent fermentation qualities with a short lag phase and medium nitrogen requirements.

**Dosage & Application**
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**ICV Opale**
S. cerevisiae • cerevisiae
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Rhône 2226

S. cerevisiae • cerevisiae
Merlot, Zinfandel, Sangiovese, Barbera, Cabernet Franc, Petite Sirah, Structured Reds
Isolated from a vineyard in the Côtes du Rhône in France. Lalvin Rhône 2226™ is alcohol tolerant up to 16-17% (v/v) and is recommended for high Brix reds. Characterized by aromas of black cherry, berry and cherry cola in red wines. Can be used to restart stuck or sluggish fermentations.

RP15

S. cerevisiae • cerevisiae
Syrah, Zinfandel, Merlot, Cabernet Sauvignon, Cabernet Franc, Petit Sirah, Malbec, Petit Verdot, Structured Reds
Isolated from spontaneous Riesplke Syrah fermentations in California. Enchrom RP15™ is a moderate speed fermenter and has been known to be tolerant up to 17% (v/v) alcohol. Used in concentrated reds for a rich, lush, balanced mouthfeel. Characterized by red fruit and mineral notes. Has a low to moderate nitrogen demand, benefits from careful rehydration with Go-Ferm or Go-Ferm Protect Evolution.

Steinberger (DGI 228)

S. cerevisiae • cerevisiae
Rosé, Viognier, Chardonnay, Syrah, Rhône Whites
Isolated from the Côtes du Rhône region in France in collaboration with the research center of Inter Rhône. Lalvin Rhône 4600™ has a short lag phase, low nutrient demand and can ferment efficiently at low temperatures (13.5°C/56°F). Produces high levels of polysaccharides which contribute intense mouthfeel and volume. Complex aromatic notes and elevated ester production such as tropical (pineapple) and fresh fruit (apple, pear, strawberry) make this strain an ideal choice for rosé wines and Rhône-style whites. Useful for blending.

R-HST

S. cerevisiae • cerevisiae
Rosé, Gewürztraminer, Muscat, Albariño, Rhône Whites, Aromatic Whites
Selected from Resiling trials conducted in the Heiligenstein region of Austria. Tolerates fermentation temperatures as low as 10°C(50°F) and can ferment efficiently at low alcohol levels (13.5°C/56°F). Lalvin R-HST™ has a short lag phase and generation time, even at cold alcohol levels up to 15% (v/v). In very cold fermentations, allows the fermentation temperatures as low as 10°C(50°F) and even at cold alcohol levels up to 15% (v/v). Lalvin R-HST™ has a short lag phase and generation time, even at cold alcohol levels up to 15% (v/v).

SVG

S. cerevisiae • cerevisiae
Sauvignon Blanc, Pinot Gris, Resiling, Rhône Whites
Selected in the Loire region of France as a result of an IFV (formerly ITV) collaboration with Lallemand. Notable for its ability to enhance typical Sauvignon Blanc varietal characters (especially from cooler regions) and still maintain good fermentation kinetics. Wines fermented with SVG are described as having more intensity and a balance of mineral, citrus and spicy notes.

Syrah

S. cerevisiae • cerevisiae
Syrah, Merlot, Malbec, Petit Sirah, Petit Verdot, Structured Reds
Enchrom Syrah™ is a Côtes du Rhône isolate from France. Best sensory results are achieved when a proper nutrition strategy is followed. Alcohol tolerant up to 16% (v/v) with low production of H2S and SO2. High glycerol producer and offers good mouthfeel and stable colour extraction. Typical aromas include violets, raspberries, cassis, strawberries and black pepper.

T73

S. cerevisiae • bayanus
Merlot, Zinfandel, Sangiovese, Tempranillo, Fruit Forward Reds
Isolated from La Universidad de Valencia in Spain in collaboration with his researchers. Lalvin T73™ is a moderate speed fermenter with relatively low nitrogen requirements and good alcohol tolerance (up to 16% v/v). Recognized for its ability to enhance the natural aromas and flavours in red wines produced in hot climates. Its high ester production helps such wines “open up”. Enhances mouthfeel through the elevated production of glycerol. Useful for blending with wines made with Rhône 2056.

VIN 13

S. cerevisiae • hybrid
Sauvignon Blanc, Chénin Blanc, Chardonnay, Rosé, Gewürztraminer, Muscat, Albariño, Rhône Whites, Aromatic Whites, Restart Stuck Fermentations
Product of the yeast hybridization program of the Institute for Wine Biotechnology at the University of Stellenbosch in South Africa. Aromatic as well as cold tolerant (10-15°C/50–59°F), VIN 13 also has high alcohol tolerance (16.5% v/v) and low nitrogen requirements (qualities obtained by hybridizing S. bayanus and S. cerevisiae strains). It is a good choice for restarting stuck white fermentations, especially when fructose levels remain high. VIN 13 is a very good thiol releaser (guava, passion fruit and grapefruit) and outstanding ester producer. On tank-fermented Chardonnay it promotes pineapple and banana flavors, while on Resiling, Gewürztraminer and Vinifruit it accentuates floral notes. The combination of fermentation kinetics and sensory contributions make this strain very suitable for cold-fermented aromatic whites that are fermented to dryness. Do not over inoculate.

VIN 2000

S. cerevisiae • hybrid
Chénin Blanc, Chardonnay, Sauvignon Blanc, Viognier, Albariño
Product of the yeast hybridization program of the Institute for Wine Biotechnology at the University of Stellenbosch in South Africa. Moderate speed fermenter with very low SO2 production and low foaming. Cold tolerant (12°C/55°F) and alcohol tolerant to 15.5% (v/v). VIN 2000 is suitable for barrel fermentation. Recommended for the production of rich and ripe style Chénin Blanc (fresh pineapple and citrus aromas), oaked Chardonnay (citrus aromas) and Sauvignon Blanc (passion fruit, guava and tropical aromas).

VitiFerm™ Alba Fria

S. cerevisiae • cerevisiae
Sauvignon Blanc, Semillon, Viognier
VitiFerm™ Alba Fria has been carefully selected from a complete organic habitat. Alba Fria is 100% organic from the selection to production. (EU and USDA certified) Notable for its steady fermentation, is a strain with low nutrient demand that is tolerant up to 15% (ABV). With low SO2 production, this Alba Fria performs best between 16–18°C (61–64°F). Alba Fria wines are known for promoting varietal and terroir characteristics.

Dosage & Application
Due to its organic production process, the rehydration process of VitiFerm™ Alba Fria is fundamentally different than other oenological yeasts. A 50/50 blend of juice and water is required for rehydration. Stir well during addition, with solution temperature between 25-30°C (77-86°F).

Storage
Stored in a cool, dry place (max 20°C/68°F). Use immediately once opened.

NEW VitiFerm™ Espirit

S. cerevisiae
Pinot Gris, Riesling, Sparkling
VitiFerm® Espirit was carefully selected for the secondary production of sparkling wine production. Its sensorial properties are also ideal for the crafting of crisp and juicy summer wines. Espirit is 100% organic from its selection to its production. Wines made with Espirit have been known to produce fresh citrus and lime characteristics. With low nutrient demand, Espirit exhibits excellent riddling properties and is known as a fast flocculating strain.

Dosage & Application
Due to its organic production process, the rehydration process of VitiFerm™ Espirit is fundamentally different than other oenological yeasts. A 50/50 blend of juice and water is required for rehydration. Stir well during addition, with solution temperature between 28-30°C (82–86°F).

Storage
Store in a cool, dry place (max 20°C/68°F). Use immediately once opened.
NEW VitiFerm Sauvage

S. cerevisiae • cerevisiae

Secchomyces condidi

Sauv Blanc, Reisling, Cab Sav, Merlot

VitiFerm Sauvage is a wild pure fermentation yeast that has been carefully selected from a complete organic habitat in Hermannus, South Africa. Known to produce wines that emphasize their local terroir, Sauvage is a low nutrient, low SO2 with a high alcohol tolerance (15% V/V).

Very MLF friendly.

Dosage & Application

Due to its organic production process, the rehydration process of VitiFerm™ Sauvage is fundamentally different than other oenological yeasts. A 50/50 blend of juice and water is required for rehydration. Stir well during addition, with solution temperature between 28-30°C (82-86°F).

Storage

Store in a cool, dry place (max 20°C/68°F). Use immediately once opened.

33-15347 500g $100.00/kg

VitiFerm Pinot Alba

S. cerevisiae • cerevisiae

Chardonnay, Pinot Blanc, Pinot Gris

Selected from a complete organic habitat; Pinot Alba is 100% organic from the selection to production. (EU and USDA certified)

VitiFerm Pinot Alba is a moderate fermenter that has low nitrogen demands and is alcohol tolerant up to 15% (v/v). Pinot Alba will promote an environment conducive to malolactic fermentation.

Wines display a batonnage characteristic due to the quick release of polysaccharides. Notes of yellow fruit and increased creaminess are common with Pinot Alba as well.

Dosage & Application

Due to its organic production process, the rehydration process of VitiFerm™ Pinot Alba is fundamentally different from other oenological yeasts. A 50/50 blend of juice and water is required for rehydration. Stir well during addition, with solution temperature between 25-30°C (77-86°F).

Storage

Stored in a cool, dry place (max 20°C/68°F). Use immediately once opened.

33-13440 500g $96.00/kg

VitiFerm Rubino Extra

S. cerevisiae • cerevisiae

Cabernet Sauvignon, Cabernet Franc

VitiFerm Rubino Extra is the first yeast strain in the world (Secchomyces cerevisiae, DSMZ 27009) which has been carefully selected from a complete organic habitat.

VitiFerm™ Rubino Extra is 100% organic from the selection to production. (EU and USDA certified)

A low SO2 producer, this strain has a high alcohol tolerance to 17% (v/v). Pinot Alba will promote an environment conducive to malolactic fermentation.

Is a moderate fermenter that has low nitrogen demands and is alcohol tolerant up to 15% (v/v). Pinot Alba will promote an environment conducive to malolactic fermentation.

Tempranillo, Barbera, Sangiovese, Zinfandel, Petite Sirah, Fruit Forward Reds

Selected by Centro de Investigaciones Agrarias (CIDA) in Logroño, Spain.

Has a short lag phase and a steady fermentation rate with low VA production. With properly integrated nutrition, Usafem® VRB® can have an alcohol tolerance up to 17% (v/v) over a wide temperature range.

This Rioja region selection helps create exceptional flavor complexity while softening tannins and improving mid-palate mouthfeel. Enhances varietal characteristics and ester production. Has good compatibility with malolactic fermentation.

Its flavor attributes are often described as ripe fruit, jam, hazelnut and dried plums.

33-15101 500g $98.50/kg

W15

S. cerevisiae • cerevisiae

Gewürztraminer, Reisling, Pinot Gris, Pinot Noir, Syrah, Rosé, Aromatic Whites, Rhône Whites

Isolated in 1991 at the Swiss Federal Research Station in Wädenswil, Switzerland.

Its low heat generation during fermentation helps winemakers minimize the potential for temperature spikes and possible H3S problems. Produces higher levels of glycerol and succinic acid, especially when fermented between 15–20°C (59–68°F), which helps add complexity to the mid-palate.

In white wines, Lallevin W15™ helps retain bright fruit characters while optimizing mouthfeel and balance. It also performs well with both Pinot Noir and cooler climate Syrahs.

33-15091 500g $98.50/kg
33-15091b 1kg $74.00/kg

Encapsulated Yeasts

Encapsulated yeasts are algaline beads (a natural polysaccharide extracted from seaweed) containing Secchomyces yeast cells. Encapsulation allows substrates and metabolites to diffuse easily throughout the beads without releasing yeast cells into the must/juice or wine.

Once encapsulated, the beads are partially dehydrated in a fluidized bead column and are stored at 4°C (40°F) until ready for use. The dry beads average 2 mm in diameter.

Several encapsulated yeast products are available. Each has a unique winemaking application.

ProElif

Double encapsulated yeast for secondary fermentation in sparkling wine production.

ProElif is an encapsulated yeast product developed by Proinov for secondary fermentations. The yeast cells are double encapsulated in an alginate bead. The beads can be directly inoculated into the bottle (eliminating the need to prepare a starter culture). This helps ensure control of the number of cells per bottle. Upon fermentation completion, the beads have a greater density than the wine and will quickly drop to the neck of the bottle when inverted. The beads accumulate more tightly than traditional riddling, therefore less wine is lost during disgorging. Traditional freezing and disgorging methods are used to finish the process. The use of ProElif results in a fresh sparkling wine.

If greater yeast character is desired, you may make changes to the base wine with this in mind. For example, ProElif has been used with Opit/WHITE treated base wine with good results.

For ProElif to be successful, the base wine should fall within these parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol</td>
<td>≤ 11.0% (v/v)</td>
</tr>
<tr>
<td>Free SO2</td>
<td>≤ 15 mg/l</td>
</tr>
<tr>
<td>pH</td>
<td>≥ 3.0</td>
</tr>
<tr>
<td>Free Ascorbate</td>
<td>≥ 100 mg/l</td>
</tr>
<tr>
<td>Nitrogen</td>
<td>Temperatures</td>
</tr>
<tr>
<td></td>
<td>12°C (54°F)</td>
</tr>
</tbody>
</table>

The base wine must be stable to avoid agglomeration of the beads which could cause subsequent difficulty during disgorging. All of these parameters act in synergy with one another. It is critical to manage them together. If one parameter is over the limit, try to compensate with the others or ferment at a higher temperature.

Recommended Dosage

133-200 g/hL  1.0–1.5 g/750 mL bottle

Note: 1 g of ProElif beads = 4–6 million active cells/mL.

Usage

Please contact us for full usage instructions.

Storage

Dated expiration. Store at 4°C (40°F). Do not freeze. Once opened use immediately. For more detailed information, technical data sheets are available on our website www.scottlabsltd.com.

ProDessert

Double encapsulated yeast for premium dessert wine fermentation

33-15150 1kg $297.00/kg

ProMalic

Encapsulated yeast for naturally lowering juice acidity

Due to a short shelf life, ProMalic is available by special order only. If interested, please contact us to order. All orders MUST be placed by July 13, 2018.

33-15152 1kg $180

ProMalic, ProElif and ProDessert are special order items and require up to 4 weeks for delivery.

ProMesh Bags

For use with ProDessert, ProRestart and ProMalic.

Barrel Bags

For ProDessert use 2 bags/barrel containing 109 g/bag. One kilogram of beads will treat 260 gallons, or 4 barrels.

For ProRestart use 2 bags/barrel containing 82 g/bag. One kilogram of beads will treat 360 gallons, or 6 barrels.

Tank Bags

Use up to 5 kg (11 lb per bag).

ProMalic Barrel bag  33-15158

ProMalic Tank bag  33-15159

ProRestart

Encapsulated yeast to restart sluggish or stuck fermentations

33-15154 1kg $269.00/kg

For more info on all encapsulated yeast, please visit our website of www.scottlabsltd.com.
Non-Saccharomyces Yeast Strains

**Biodiva**
Toulouquen del debrouixki
Chardonnay, Syrah, Pinot Noir, Late Harvest

The Toulouquen del debrouixki isolate Biodiva was initially sold in North American in a kit (LavetTD) in which it was partnered with a specific S. cerevisiae strain. Based upon market feedback, the Biodiva isolate is now available by itself. Winemakers can match it with a compatible S. cerevisiae strain of their choosing for both red and white wines. The result is that winemakers can now mimic the best of wild fermentations in a controlled setting. Biodiva is very tolerant to osmotic shock, making it well adapted for fermenting late harvest and cold wine.

S. cerevisiae strains compatible with Biodiva are: 43, BDIX, ICY 0254, KC132, Rhône 2056, QA23 and VR8.

Biodiva MUST be used in conjunction with an S. cerevisiae strain. Following an inoculation of a Biodiva (Toulouquen del debrouixki) with an inoculation of an appropriate S. cerevisiae lead to an increase in ester levels while helping to promote a complete and clear fermentation. Resulting wines commonly have more intense aromas, mouthfeel and complexity.

**Usage**

Before inoculation, make sure molecular SO2 level is under 0.2 mg/L and turbidity is <80 NTU. Inoculate at 25°C/77°F. Rehydration of Biodiva is at 30°C(86°F). After 15 minutes, stir gently. Slowly combine an equal amount of juice into rehydration solution to avoid cold shock. Total rehydration time should not exceed 45 minutes. After 1.5–3.5 hours drop add selected S. cerevisiae with standard yeast rehydration protocol. Please visit our website for full usage instructions.

**Storage**

Store for up to 24 months at 4°C(39°F). Use immediately once opened.

33-16085 250g $161.00/kg

**Gaia MF98.3**

*Metschnikowia fructicola*

For managing spoilage risks during cold soak of reds.

Pre fermentation cold soaks are used to improve color and aromatics in all red varieties. Vincent Gerbeaux of the Institut Français de la Vigne et du Vin (IFV) in Burgundy selected *Metschnikowia* FV Gaia MF98.3 from over 500 non-Saccharomyces isolates for use during cold soak applications, in particular on Pinot Noir. This strain is found on grape microflora and is non-fermentative but it does have the balance of aromas. It has been found to enhance fruity characters and aromatic expression. The presence of *Gaia MF98.3* during cold soak helps limit Klebsiella opsulato- gen and acetic acid production. *Klebsiella opsulato* growth and acetic acid production. *Klebsiella opsulato* (Hanseniopsinospora umbrina) is known to be a high producer of acetic acid and ethyl acetate. Early inoculation allows for good improvement of *Gaia MF98.3* which can help control undesirable flora during cold soak. It is able to multiply and multiply rapidly helping it to prevail over spoilage microorganisms. Use of *Gaia MF98.3* needs to be followed by a S. cerevisiae strain to complete alcoholic fermentation. If the temperature of your cold soak is 10°C(50°F) or lower you may cold soak for up to 5 days before adding your Saccharomyces yeast. If the temperature of your cold soak is higher than 10°C(50°F) inoculation of your Saccharomyces yeast should be done at 2 days. *Gaia MF98.3* is able to grow in low pH and high sugar musts as well as being able to tolerate an initial SO2 addition up to 50ppm.

**Usage**

Rehydration of *Gaia MF98.3* is done at 30°C(86°F) and does not require a rehydration nutrient. Inoculate at 25°C/77°F (250/1000g/packet). After 15 minutes, stir gently. Slowly combine an equal amount of juice into rehydration solution to avoid cold shock. Total rehydration time should not exceed 45 minutes. After cold soak, add selected Saccharomyces cerevisiae with standard yeast rehydration protocol. Use of Gaia needs to be followed by a strain to complete alcoholic fermentation.

**Storage**

Store for up to 24 months at 4°C(39°F). Use immediately once opened.

33-15220A 500g $196.00/kg NEW SIZE!

**Exotics SPH Ø**

S. cerevisiae and S. paradoxus hybrid
Chardonnay, Viognier, Chenin Blanc, Syrah, Merlot, Tempranillo, Grenache

**Author**

Exotics SPH is a product of the yeast hybridization program of The Institute for Wine Biotechnology at the University of Stellenbosch in South Africa. It is a hybrid between S. cerevisiae and S. paradoxus. S. paradoxus is the closest relative to S. cerevisiae and can be found on grapes. This hybrid inherited the aromatic capa-

ties of both its parents, thereby expanding the aromatic potential and complexity from what S. cerevisiae strains have to offer.

White wines produced using this yeast are described as having exotic aromas and flavours, as well as good mouthfeel. It enhances guava, passion fruit, tropical and stone fruit aromas and flavours. Exotics SPH is cold sensitive and ferments at a steady rate in barrels. The optimum temperature range for whites is 18–20°C(64–68°F).

Red wines produced using this yeast, particularly Syrah and Merlot, have shown aromas of cherry, floral, cocoa and strawberries. They are also described as full-bodied, well-balanced, complex and intense. Optimum temperature range for reds is 18–28°C(64–83°F).

**Exotics SPH has been found to produce elevated levels of glycerol (9–13 g/L), which can potentially lead to lower alcohol conversions in high sugar musts. It has an alcohol tolerance up to 15.5% (v/v) with medium nitrogen requirements. It has low VA and SO2 production. It can also partially degrade malic acid and is known to facilitate and enhance malolactic fermentation.**

**Esthetics SPH**

This yeast could be used as a hybrid strain and can fully ferment through primary fermentation, up to 15.5% (v/v).

**Usage**

See rehydration protocol on page 7 for more information.

**Storage**


33-16085 250g $161.00/kg

**QTL Yeast Strains**

**QTL Process**

The Quantitative Trait Loci (QTL) technique is a quantitative genetics process used to identify genes by their character traits and location on an organism’s genome. QTL has been used to identify properties and attributes for individual enological yeast strains. When a desired trait is identified on a strain’s genome, that strain can then be naturally crossed with a chosen enological strain known for its fermentation properties. The desired trait is transferred to the chosen strain by natural breeding.

Are these yeast GMO?

No. The resulting yeast are all from natural breeding.

Do these strains produce H2S or SO2?

These optimized strains do not produce H2S or SO2, but common musts are not sterile and other organisms present may produce these byproducts.

Do OKAY®, Sensy™, Be Fruits and Be Thiols consume SO2 during alcoholic fermentation?

SO2 is usually consumed by Saccharomyces yeast through the sulfate pathway metabolism. The specific metabolism of these strains is such that they utilize SO2 directly to synthesise two essential amino acids containing sulfur, thus avoiding the release of H2S.

How does the low acetaldehyde production of these yeasts affect your SO2 additions?

The low acetaldehyde production reduces the consumption of free SO2, which may allow for lower total SO2 additions.

**IOC Be Fruits**

S. cerevisiae • cerevisiae

Albarino, Rosé

Selected by the INRA for very low to no SO2 or H2S production. Produces ethyl and acetic fruity esters (strawberry, pineapple, citrus notes) in white and rosé wines without spoiling varietal aromas. The pure expression of the fruit is emphasized by the yeast’s ability to reduce acetaldehyde formation, while limiting sulfite production. Fermal D is recommended for nutrition.

**IOC Be Fruits** has a short lag phase, low nutrient demand with a moderate fermentation rate, alcohol tolerance up to 14.5% (v/v) and a temperature tolerance of 12–18°C(54–64°F).

In aromatic white wines, Sensy is known for promoting intense aromatic esters with balanced mouthfeel and freshness. It is malolactic bacteria friendly.

33-15180 500g $101.80/kg

**ICV Be Fruits**

S. cerevisiae • cerevisiae

Albarino, Rosé

Recommended for fresh aromatic wines with fruit intensity. Very good compatibility with malolactic fermentation.

33-15126 500g $98.50/kg

33-15125B 10kg $73.40/kg

**QTL Yeast Strains**

**QTL Process**

The Quantitative Trait Loci (QTL) technique is a quantitative genetics process used to identify genes by their character traits and location on an organism’s genome. QTL has been used to identify properties and attributes for individual enological yeast strains. When a desired trait is identified on a strain’s genome, that strain can then be naturally crossed with a chosen enological strain known for its fermentation properties. The desired trait is transferred to the chosen strain by natural breeding.

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Quick Guide to Rosé

*Color loss and oxidation can be especially problematic in rosé winemaking. These concerns can be managed with proper technique and product selection.*

- The use of FT Blanc Soft and Optimum White as antioxidants can help preserve color and aromas.
- The use of gentle enzymes (Scottzyme Chitin-Free or Color Pro, Lalzyme Cuvee Blanc or Rapidase Expression Aroma) can help speed up the release of color and aroma compounds.
- Gentle pressing is required to avoid astringency and release of bitter phenolics.
- Choose a yeast that is a thiol or ester converter (MB3, W15, Coris Evolution, Be Fruits, QA23, NT116 or VNI3), depending on the style desired.
- Good nutrition is also critical for a strong, complete fermentation. Using Go-Ferm Protect Evolution and Fermaid O will provide the yeast with organic nutrition and some of the amino acid precursors for fruity, aromatic compounds.
- Temperature during fermentation is best kept between 16°-20°C (60°-68°F), which helps facilitate ester production.
- An ML strain with little diacetyl production can help maximize bright, fruity notes. Co-inoculation of yeast and bacteria also helps preserve color and aromas.

Vi-A-Dry Yeast Strains

**CEG (Epernay II)**

- *S. cerevisiae* • *S. cerevisiae*
- White
- Isolated by the Geisenheim Research Institute in Germany.
- Notable for its ability to deliver slow, steady and clean fermentations. Optimal fermentation temperatures range from 15-25°C (59-77°F).
- CEG fermentations often stick under stressed conditions (low temperatures, low nutrient content, etc.), leaving a residual sugar. This makes CEG advantageous for use in semi-dry white wines.

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<th>Weight</th>
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<td>$51.60/kg</td>
</tr>
<tr>
<td>33-15053</td>
<td>10kg</td>
<td>$35.50/kg</td>
</tr>
</tbody>
</table>

**Montrachet (DAVIS 522)**

- *S. cerevisiae* • *S. cerevisiae*
- White
- Selected from the Pasteur Institute strain collection in Paris, France by UC Davis researchers.
- With proper nutrition, it has moderate fermentation kinetics at 10-20°C (50-85°F) with low VA and SO2 formation.
- This strain is sensitive to the killer factor, alcohol levels above 13% (v/v) and over-clarified musts (turbidity <5 NTU).
- Considered neutral in sensory contribution.

<table>
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<th>Product Code</th>
<th>Weight</th>
<th>Price/kg</th>
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</thead>
<tbody>
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<td>500g</td>
<td>$46.70/kg</td>
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<tr>
<td>33-15045B</td>
<td>10kg</td>
<td>$35.00/kg</td>
</tr>
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</table>

Article

Understanding and Optimizing Thiol Production

**Volatile Thiols**

Volatile thiols are organosulfur based compounds that contribute the characteristic tropical flavors to Chardonnay, Colombard, Gewürztraminer, Grenache Blanc, Pinot Gris, Pinot Blanc, Riesling and Semillon. These compounds are most noticeable in Savignon Blanc. They can also be found in red cultivars such as Cabernet Sauvignon, Merlot and Syrah. Thiols compounds are not well understood. They are present as non- aromatic precursors in the grape skin. The resulting positive aromatic compounds range from grassy and boxwood, to grapefruit, passion fruit, white peaches, gooseberries, guava and aracica flowers. Blackcurrant dominates in red wines. The compounds that contribute to these aromas are 3-methacrylamino-1 (3MAH); its acetate form, 3-methacrylamidocaceta (3MMA) and 4-mercapto-4-methylpentan-2-one (4-MMMP). The sensory thresholds for these compounds are extremely low at 60ppt, 4ppt and 0.8ppt respectively. Their production can be enhanced through viticultural practices and optimized via the winemaking process.

**Grape Growing**

Viticultural management of fertilizer, defoliation and water can impact the level of precursors present in cysteine and glutathione bound forms. The use of LaVigne Aroma can help increase the level of these compounds. LaVigne Aroma is a foliar spray used at 5% season and again 10-12 days later. It has been shown to enhance the reduced glutathione (GSH) levels of grapes and resulting wine which helps protect these desirable compounds.

**Harvest and Transportation**

The thiol precursors are located in the grape skin, therefore skin contact is highly beneficial. Cool harvesting and gentle extraction with enzymes are helpful. Protection from oxidation is essential. Focusing on SO2 and skin contact management is important. Lalzyme Cuvee Blanc, Scottzyme Chitin-Free and Rapidase Revelation Aroma are good for gentle extraction. Do not allow direct contact with SO2, which can deactivate the enzymes.

**Grape Handling and Pressing**

Controlled oxygenation of the juice has a positive impact on the concentration of volatile thiols. Protection from direct oxidation by appropriate juice handling and SO2 management is essential. Since precursors are located in the skins, optimized pressure during pressing can influence the concentration of the precursors released. Pressing must be managed carefully to minimize rough phenolic sensations or extraction of too much potassium. Protection from oxidation can be improved with the use of tannins (FT Blanc, FT Blanc Soft or FT Blanc Citrus), Optimum White and Inoside SO2 Granules.

**Juice Settling/Racking to Fermentation Tank**

A fast settling while protecting from oxidation is essential. A turbidity/solids goal of ~80 NTU’s will optimize fruit flavor. Some cultivars have more heat unstable proteins than others. Sauvignon Blanc is one such cultur. It is advisable to add bentonite at this stage to minimize the need for a large addition in the wine phase. Consider an addition of Bentostab of ~1g/gallon.

**Fermentation—The Magic Begins!**

Yeast strain, temperature and nutrition management are all important when optimizing and retaining thiols are the goal. These choices will help drive wine style. Varietal thiols are taken up by the yeast in the cysteine or glutathione bound precursor forms. It is thought that all ecological yeast have the same capacity for thiol uptake. Due to the genetic diversity among wine yeast strains, their ability to release the bounds thiols differ. Wine yeast strains with thiolase/glycosidase enzymatic activity can cleave the carbon-sulfur bond, releasing the thiol compound from its conjugated form. It is thought that the wine yeast take up the precursors during their growth phase. They release, or convert (3MAH to 3MMA) and release the now odorous molecule during the yeast stationary phase when the major fermentation peak passes, or about 15% sugar depletion. Thiol revealing and converting S.cerevisiae strains include Alchemy I and II, Be Thios, Elixir, NT116, QA23, R2, Rhône 2056 and Vin3.

**Contrary to common belief, fermenting at warmer temperatures will enhance the aromatic potential of wine. Studies conducted at 13°C vs. 20°C (55°F vs. 68°F) favored 20°C (68°F) for 3MMA and 3MHA production.**

**Nutrient Influence**

As mentioned, the thiol precursors are bound to cysteine and glutathione. When ammonia (DAP) is used, amino acid uptake is inhibited and the aromatic potential is left untouched. Since the yeast are taking up the thiol precursors during their growth phase and can be inhibited by ammonia, avoid using DAP. The use of nutrients without ammonia salts has been shown to increase the amount of 3MMA and 3MHA and leads to a reduction of negative sulfur compounds. For thiol optimization, use Go-Ferm Protect Evolution during the yeast rehydration phase, Stimula Sauvignon Blanc at 2-3°Brix drop and Fermaid O at 15% sugar depletion.

**Ageing and Bottling**

Since the volatile thiols are extremely sensitive to oxidation, protection is the key! Rack your wine from the heavy lees, keep your wine topped, and treated with SO2. Pure-Less Longevity Plus can be applied at the onset (or ending stages) of Malolactic fermentation for oxidation protection. Using copper sulfate to remove HS is not advised as the copper reacts with and removes the thiols, diminishing desirable aromatics. It despite using good fermentation practices sulfides still are present, conduct bench trials with Reduless, Bentolact S and FT Blanc.
Protocol
Recommended Method to Restart Stuck Fermentations

When restarting a sluggish or stuck fermentation, it is essential to address yeast biomass buildup together with the low nutrient levels. Appropriate yeast rehydration nutrients such as Go-Ferm and Go-Ferm Protect Evolution are useful tools. Both are rich in micronutrients and survival factors. When added to the rehydration water, these factors promote increased biomass of the selected yeast strain. Consequently, the selected yeast can acclimate more easily to the often hostile environments (including high alcohol and low temperature) associated with stuck fermentations.

When stuck wines include high residual sugar levels, an addition of a complex nutrient to the stuck wine is also recommended. In addition, spoilage organisms like Lactobacillus and Oenococcus are often present in stuck fermentations. These microorganisms can compete for nutrients and release metabolites that inhibit yeast metabolism. Adding lysozyme to the stuck wine prior to restarting the fermentation may help control such unwanted bacteria and provide an improved environment for the restart to take place (see page 81).

Adding Reskue™ (see page 43 for Reskue product description) to the stuck wine prior to restarting the fermentation may also help reduce accumulated toxins and improve chances for a successful restart.

For Wines Stuck at >3°Brix

Steps 1-8

Build-up for Stuck Wine

1. Add 40 g/L (3.3 lb/1000 gal) of Reskue 24–48 hours prior to restarting.
2. After 24–48 hours, rack off from the Reskue.
3. Add a complex yeast nutrient (FermAid A, FermAid K or FermAid O) directly to the tank of stuck wine at a rate of 0.5–1.0 lb/1000 gal (6–12 g/L). Many winemakers also add lysozyme at this time to reduce potential bacterial problems (see page 85).
4. In another clean container mix equal volumes of stuck wine and water. Generally, this would total 2% of the total wine volume. (Example: For 1000 gal stuck wine, use 10 gal water + 10 gal wine.) This container will be the “Mother Restart Tank”.
5. Calculate the amount of Go-Ferm or Go-Ferm Protect Evolution at the recommended rate. Dissolve this yeast rehydration nutrient in 20 times its weight of clean, chlorine free, 43°C (110°F) water. (Example: 5 lb Go-Ferm x 20 = 100 lb, divided by 8.33 lb/gal water = 12 gal water needed.) Mix the solution and cool to 40°C (104°F).
6. Select a yeast strain that is both alcohol tolerant and a vigorous fermenter such as 43, BC (Bayanus), K1 (V1116), Fermivin Champion or Vin 13. Calculate the amount of yeast required for the total volume of stuck wine at 3–4 lb/1000 gal (36–60 g/L). When the rehydration nutrient/water solution temperature has cooled to 40°C (104°F), slowly (over 5 minutes) add yeast. Stir gently to mix and avoid clumping. Let this yeast suspension stand for 15–20 minutes.
7. Check the temperature of the yeast suspension. There should not be more than 10°C (18°F) difference between the yeast suspension and the diluted wine in the Mother Restart Tank. If there is too great a temperature difference, aeration may be required. Cold temperatures may shock the yeast cells.
8. When the yeast suspension is properly rehydrated and proper consideration has been given to temperature differences, add the yeast to the Mother Restart Tank and wait 20–30 minutes.

Steps 9-12

Inoculation of Stuck Wine

9. Add 10% of stuck wine to the Mother Restart Tank and wait 20–30 minutes. (Example: For 1000 gal stuck wine, add 100 gal wine.)
10. Add 20% of stuck wine to the Mother Restart Tank and wait 20–30 minutes. (Example: For 1000 gal stuck wine, add 200 gal wine.)
11. Let stand while immediately preparing the nutrient/yeast mixture and proceed to Step 6.
12. Add any remaining wine to the Mother Restart Tank and wait 20–30 minutes.

For Wines Stuck at <1°Brix

Follow this restart protocol, except in Step 3 eliminate the yeast nutrient addition to 0.5 lb/1000 gal (6 g/L). For Wines Stuck at 1-2°Brix

Follow this restart protocol, except in Step 3 reduce the complex yeast nutrient addition to 0.5 lb/1000 gal (6 g/L).

For Wines Stuck at <1°Brix

Follow this restart protocol, except in Step 3 eliminate the addition of a complex yeast nutrient.

Heroes of Restart

When faced with the challenge of restarting a stuck fermentation, it’s important to turn to a yeast strain that’s up for the task. Selecting a strong, vigorous fermenter with good alcohol tolerance is of key importance. When it comes to a successful restart, strains like 43, 43 RESTART, Fermivin Champion, K1 (V1116), Vin 13, BC and DV10 can truly save the day!
Protocol
Recommended Method to Restart a Stuck Fermentation Using Uvaferm 43 RESTART

For 1000 gals of stuck wine
Prepare the Stuck Wine
1. Depending on analysis, address any potential spoilage organisms with SO2 and/or lysozyme additions.
2. Add 1.5kg (3.3lbs) Reskue and mix tank.
3. Allow the tank to settle for 48 hours then rack off the settled lees.

Prepare the “Pied-de-cuve” (starter)
1. Prepare the “Pied-de-cuve”:
   a. 40 gallons water
   b. 50 gallons post Reskue treated wine
   c. 0.3kg (2/3 lb) Fermaid O
   d. Adjust Brx to 5°.

Yeast Rehydration
1. Yeast Rehydration
2. Add 2kgs (4.4lbs) of Go Ferm Protect Evolution in 10 gallons of water at 43°C (110°F).
3. Cool solution to 40°C (104°F) and add 1.5kgs (3.3 lbs) of Uvaferm 43 RESTART.
4. Wait 20 minutes and slowly add rehydrated yeast to the “Pied-de-cuve.”

Incorporation of the “Pied-de-cuve”
1. Incorporation of the “Pied-de-cuve”:
   a. Allow “Pied-de-cuve” to drop to 0° Brx and transfer immediately to the full volume of Reskue treated wine.
   b. Add 1.5kgs (3.3lbs) of Fermaid O.
   c. Mix tank to homogenize.

How Much YAN is Needed?
The range of YAN in grapes is enormous. It can vary from year to year and from vineyard to vineyard. As a general rule, YAN of 150 to 200mg/L should be considered as the minimum to complete a standard fermentation to 13% ethanol (v/v). If the natural levels are lower than this, the must/juice should be considered to be nitrogen deficient. Addition of a YAN containing nutrient is recommended.

In addition, nutrient management also requires consideration of the following factors:
- Initial sugar content
- Quality and quantity of the nitrogen initially present and supplemented (organic versus inorganic).

Vitamins and Minerals
These work as essential enzymatic co-factors and growth regulators, preparing the yeast for optimal activity.

Temperature
An increase in temperature stimulates the growth of yeast and fermentation rate, thereby requiring increased levels of nitrogen.

Turbidity
When juice is over-clarified, many nutritional factors for yeast are removed, making it necessary to supplement with complete and balanced nutrients.

The yeast strain selected for the fermentation is also a consideration.

Oxygen
When adding more oxygen to the must/juice, nitrogen is captured faster and more is needed when compared to fermentations taking place under anaerobic conditions (white wine).

Nutrients
Classic wine yeasts strains of Saccharomyces cerevisiae perform best when their specific needs are considered. In addition to issues like temperature and turbidity, nutritional factors are critical. If requirements are met, yeast can thrive and perform at their peak while converting must/juice into wine.

Nitrogen is an important part of yeast nutrition and has a significant impact on the fermentation outcome. YAN (yeast assimilable nitrogen) content in must/juice directly influences fermentation speed. It impacts the yeast biomass at the beginning of fermentation, as well as the sugar transport kinetics during fermentation.

Note, it is normal for must/juice to be nitrogen depleted at the end of the yeast growth phase even though the majority of the sugar remains to be fermented. This results in a decrease in both protein synthesis and sugar transport activity. An addition of YAN at the end of the growth phase reactivates protein synthesis and the sugar transport speed which corresponds to an increased fermentation rate.

Basics
Grapes provide nitrogen in the form of proteins, peptides, alpha amino acids and ammonium ions. Yeast assimilable nitrogen (YAN) is composed of alpha amino acids (assimilable organic nitrogen), ammonium ions (inorganic nitrogen), and specific peptides. When determining the YAN in must/juice, it is critical to take all the nitrogen contributions into account. Healthy fermentations contain a balance of yeast assimilable nitrogen from both sources. Low levels of YAN can put undue stress on yeast cells and significantly hinder their performance. In some cases, yeast may create unpleasant flavours and/or aromas or even stop fermenting.
Choosing the Correct Yeast Nutrient

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<th>Yeast Nutrient YAN Contribution</th>
<th>Nutrient</th>
<th>Dose 25 g/L. (2 lb /1000 gal)</th>
<th>Dose 30 g/L. (2.5 lb /1000 gal)</th>
<th>YAN Source</th>
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</thead>
<tbody>
<tr>
<td>DAP</td>
<td>50 mg/L</td>
<td>63 mg/L</td>
<td>Inorganic nitrogen</td>
<td></td>
</tr>
<tr>
<td>Fermaid A</td>
<td>30 mg/L</td>
<td>36 mg/L</td>
<td>Inorganic (from DAP) and organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Fermaid K</td>
<td>25 mg/L</td>
<td>30 mg/L</td>
<td>Inorganic (from DAP) and organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Fermaid O</td>
<td>10 mg/L</td>
<td>12 mg/L</td>
<td>Organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Go-Ferm</td>
<td>11 mg/L</td>
<td>13.2 mg/L</td>
<td>Organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Go-Ferm Protect Evolution</td>
<td>7.5 mg/L</td>
<td>10 mg/L</td>
<td>Organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Nutrient V8 End</td>
<td>7 mg/L</td>
<td>8.5 mg/L</td>
<td>Organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
<tr>
<td>Phosphate Titres</td>
<td>50 mg/L*</td>
<td>63 mg/L*</td>
<td>Inorganic nitrogen</td>
<td></td>
</tr>
<tr>
<td>SIY 33 (Fermaid 2133)</td>
<td>8 mg/L</td>
<td>10 mg/L</td>
<td>Organic nitrogen from autolyzed yeast</td>
<td></td>
</tr>
</tbody>
</table>

*This dosage exceeds the legal limit of thiamin.

The Role of Nitrogen Source on Wine Quality

Using nitrogen to stimulate the fermentation rate has been a common practice for a long time. More recently, the quality of nitrogen has been linked with positive aromatic development. Aromatics can be elevated through the use of an organic nitrogen source in the form of amino acids from autolyzed yeast. These amino acids are a complex nitrogen source and are taken up by the yeast in a preferential, sequential, and controlled manner. They undergo a series of enzyme-mediated reactions to ultimately form flavor notes (fruity and floral notes).

When a fermentation is supplemented with ammonia in the form of DAP (Diammonium phosphate), it is utilized very quickly leading to accelerated fermentation and heat build-up. When ammonia is present, the yeast prefers the ammonia to the amino acids, thereby leaving behind the aromatic potential. The chart below shows the increase in positive aromatic compounds when using Fermaid O. There is also a decrease in the production of heavy honey-like notes by Phenylethyl acetate.

Ester Formation with Organic Nutrition

Choosing the correct yeast for fermentation is crucial—this is why yeast nutrition is so important. Here are two different sources of nitrogen (DAP and Fermaid O).

Thiol concentration in Sauvignon Blanc (Gers, France 2004) with DAP addition

The aromatic potential of the wine can also be manipulated by managing the solids content. In a fairly clarified juice, the esters are greater. With this new information, some newer yeast strains now have a recommended turbidity goal. Aiming for an initial fermentation turbidity of 80 NTUs (~20 NTUs) helps stimulate the yeast, resulting in a more aromatic wine. This pattern seems to be true, regardless of the yeast strain being used.

When a fermentation is supplemented with amino acids from autolyzed yeast and/or ammonia in the form of DAP, we want to ensure that it has the desired effect. Although there are several nutrient strategies that may simply get the job done and ferment a juice to dryness, the quality, and type of nitrogen are key to maximizing the aromatic potential of a wine.
Yeast strains have varying nutritional demands. We have studied the individual strains in our portfolio and have classified them in general terms as low, medium or high nitrogen requiring strains. These classifications may be found on the charts on pages 8–13. Further to this point, as the sugar level in any must increases, the nitrogen requirement of the chosen yeast will also rise. Thus when assessing the nitrogen requirement of any fermentations you must consider the general nitrogen requirement of the inoculating yeast and the specific sugar level present in the must.

Given a must/juice at 250g/L (25°Brix) initial sugar, a low nitrogen requiring yeast would need 150ppm, a medium 200ppm and a high 250ppm of nitrogen to consume this level of fermentable sugar.

To calculate the actual needs of your chosen strain, the following calculation can be applied:

For Low N requiring strains
Sugar (g/L) x 0.75

For Medium N requiring strains
Sugar (g/L) x 0.90

For High N requiring strains
Sugar (g/L) x 1.25

Note: Remember to consider other essential nutritional needs of the yeast when doing additions.

Nutrient Notes and Strategy

Yeast strains have varying nutritional demands. We have studied and classified them in general terms as low, medium or high nitrogen requiring strains. These classifications may be found on the charts on pages 8–13. Further to this point, as the sugar level in any must increases, the nitrogen requirement of the chosen yeast will also rise. Thus when assessing the nitrogen requirement of any fermentations you must consider the general nitrogen requirement of the inoculating yeast and the specific sugar level present in the must.

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For Low N requiring strains
Sugar (g/L) x 0.75

For Medium N requiring strains
Sugar (g/L) x 0.90

For High N requiring strains
Sugar (g/L) x 1.25

Note: Remember to consider other essential nutritional needs of the yeast when doing additions.

Conversion Note: 1° Brix = 10 g/L sugar.

Factors beyond the yeast's genetic needs that should be considered include initial fermentable sugar, temperature of fermentation, pH, pre-fermentation process decisions, grape quality and general hygiene of the facility. These variables will influence how much YAN is required to complete a dry fermentation with minimal sensory deviations.

The YAN is influenced in the following ways:

**Yeast Protection and Nutrition**

**Recommended Addition Rates**

**Must/Juice YAN**

<table>
<thead>
<tr>
<th>Step 1</th>
<th>Yeast Rehydration*</th>
<th>Step 2</th>
<th>Fermentation Nutrition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;100 mg/L</td>
<td>Go-Ferm 30 g/L (2.5 lb/1000 gal)**</td>
<td>Fermaid O</td>
<td>10–20 g/L (0.8–1.7 lb/1000 gal)</td>
</tr>
<tr>
<td></td>
<td>or Go-Ferm Protect Evolution 30 g/L (2.5 lb/1000 gal)**</td>
<td>Fermaid A</td>
<td>10–20 g/L (0.8–1.7 lb/1000 gal)</td>
</tr>
<tr>
<td>100–250 mg/L</td>
<td>Go-Ferm 30 g/L (2.5 lb/1000 gal)**</td>
<td>Fermaid O</td>
<td>10–20 g/L (0.8–1.7 lb/1000 gal)</td>
</tr>
<tr>
<td></td>
<td>or Go-Ferm Protect Evolution 30 g/L (2.5 lb/1000 gal)**</td>
<td>Fermaid A</td>
<td>10–25 g/L (0.8–2 lb/1000 gal)</td>
</tr>
<tr>
<td>&lt;125 mg/L</td>
<td>Go-Ferm Protect Evolution 30 g/L (2.5 lb/1000 gal)**</td>
<td>Fermaid A</td>
<td>10–25 g/L (0.8–2 lb/1000 gal)</td>
</tr>
</tbody>
</table>

Note: Allowing the initial YAN in the must/juice is only one piece of the puzzle. Other factors are critical as well. Do not forget to consider the balance and availability of nitrogen, microsrients and microprotectors, relative nitrogen needs of the selected yeast strain, SO2, temperature, fruit condition, oxygen, and the variety of other factors which can impact yeast health and a successful fermentation.

**Go-Ferm**

Yeast rehydration nutrient, OMI listed

Go-Ferm® is a natural yeast rehydration nutrient containing a balance of vitamins and minerals. It was developed to enhance fermentation kinetics and to help avoid fermentation problems. By suspending Go-Ferm in the rehydration water before adding the selected active dried yeast culture, the yeast soak up the valuable bio-available micronutrients as they rehydrate. Infusing yeast with these critical nutrients arms them against ethanolic toxicity and optimizes nutrient availability, protecting and stimulating the yeast culture.

**Recommended Dosage**

30 g/L 2.5 lb/1000 gal

Note: This recommendation is based on a yeast inoculum of 2 lb/1000 gallons (25 g/L). If using more or less yeast, respect the ratio of 1 part yeast to 1.25 Go-Ferm® Protect Evolution.

**Usage**

1. Mix Go-Ferm Protect Evolution in 20 times its weight in clean 43°C(110°F) water. For every 1 kg (2.2 lb) Go-Ferm Protect Evolution, use approximately 5 gallons (20L) of water.
2. Let the mixture cool to 40°C(104°F) then add the selected active dried yeast.
3. Let stand for 20 minutes.
4. Slowly (over 5 minutes) add equal amounts of must/juice to be fermented to the yeast slurry. Do not allow more than 10°C(18°F) difference. Atemperate as necessary (see page 17 for more details).

Note: Due to the unique nature of Go-Ferm Protect Evolution, it will not go into solution completely. This is due to the fatty acid and sterol content and is to be expected.

**Storage**

Dated expiration. Store in a cool and dry environment at 18°C(65°F).

Once opened, keep tightly sealed and dry.

35-15070E 2.5 kg $185.00/kg

**Go-Ferm Protect Evolution**

Yeast rehydration nutrient for challenging conditions, OMI listed

Go-Ferm Protect Evolution® is the latest generation of natural yeast rehydration nutrients with improved sterol content (quality and quantity) together with microprotectors which help to increase yeast cell viability and vitality. This third generation formulation improves yeast stress tolerance and enhances fermentation security (especially in difficult conditions) and helps with aromatics.

Difficult conditions may include overripe fruit, marginal fruit quality (poorly developed fruit, botritis, molds, high bacteria count), insecticide or fungicide residue, low nutrient levels, or over-clarified juice. It is especially useful in white and rosé fermentations when oxygen additions are difficult. The enhanced sterol content can replace the second oxygen addition recommended at ¾ sugar depletion.

Go-Ferm Protect Evolution provides a combination of protective and nutritive benefits for optimal fermentation and sensory results.

**Recommended Dosage**

30 g/L 2.5 lb/1000 gal

Note: This recommendation is based on a yeast inoculum of 2 lb/1000 gallons (25 g/L). If using more or less yeast, respect the ratio of 1 part yeast to 1.25 Go-Ferm Protect Evolution.

**Usage**

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Note: Due to the unique nature of Go-Ferm Protect Evolution, it will not go into solution completely. This is due to the fatty acid and sterol content and is to be expected.

**Storage**

Dated expiration. Store in a cool and dry environment at 18°C(65°F).

Once opened, keep tightly sealed and dry.

35-15070D 2.5 kg $320.20/kg

35-15071T 10 kg $298.80/kg

Rehydration Nutrients for Cell Protection and Stimulation

This is the first stage of your nutrient strategy. Yeast rehydration nutrients provide natural microsrients (vitamins and minerals) to the yeast during the yeast rehydration phase.

If these microsrients were added directly to the must/juice, competitive microorganisms would use a significant amount of them and others would be chelated by polyphenols or inactivated by SO2. By adding these bio-available nutrients at the rehydration stage yeast cells benefit most directly. Cell viability and vitality are enhanced, resulting in fermentations that finish stronger, with reduced chances of sensory deviations.

Never use nutrients containing ammonia salts, such as DAP, during yeast rehydration—they are toxic to the yeast.

**Go-Ferm**

Yeast rehydration nutrient, OMI listed

Go-Ferm® is a natural yeast rehydration nutrient containing a balance of vitamins and minerals. It was developed to enhance fermentation kinetics and to help avoid fermentation problems. By suspending Go-Ferm in the rehydration water before adding the selected active dried yeast culture, the yeast soak up the valuable bio-available micronutrients as they rehydrate. Infusing yeast with these critical nutrients arms them against ethanolic toxicity and optimizes nutrient availability, protecting and stimulating the yeast culture.

**Recommended Dosage**

30 g/L 2.5 lb/1000 gal

Note: This recommendation is based on a yeast inoculum of 2 lb/1000 gallons (25 g/L). If using more or less yeast, respect the ratio of 1 part yeast to 1.25 Go-Ferm® Protect Evolution.

**Usage**

1. Mix Go-Ferm in 20 times its weight in clean 43°C(110°F) water. For every 1 kg (2.2 lb) Go-Ferm Protect Evolution, use approximately 5 gallons (20L) of water.
2. Let the mixture cool to 40°C(104°F) then add the selected active dried yeast.
3. Let stand for 20 minutes.
4. Slowly (over 5 minutes) add equal amounts of must/juice to be fermented to the yeast slurry. Do not allow more than 10°C(18°F) difference. Atemperate as necessary (see page 7 for more details).

Note: Due to the unique nature of Go-Ferm Protect Evolution, it will not go into solution completely. This is due to the fatty acid and sterol content and is to be expected.

**Storage**

Dated expiration. Store in a cool and dry environment at 18°C(65°F).

Once opened, keep tightly sealed and dry.

35-15070E 2.5 kg $185.00/kg

35-15070D 2.5 kg $320.20/kg

35-15071T 10 kg $298.80/kg
Fermentation Nutrients for Yeast Nutrition and Fermentation Security

Yeast nutrition refers to the utilization of essential food sources for anaerobic and catalytic reactions which ultimately ensure the growth and survival of the cell. Fermentation nutrition is therefore considered a vital part of a controlled fermentation strategy. Nitrogen is an extremely important yeast nutrient. The cells use nitrogen for growth, protein and enzyme synthesis, and sugar transport. Yeast nutrition, however, is more than nitrogen. Yeast cells also require a balanced supply of minerals (magnesium, zinc, etc.), vitamins, lipids and oxygen. Tailor your fermentation regime for optimal yeast reproduction, sugar transport and aromatic expression.

Organic nitrogen source

Diammonium Phosphate (DAP)

DAP is an inorganic nitrogen source that should be used in conjunction with complex nutrients to ensure a complete nutritional strategy is followed. DAP is used to supply in nitrogen deficient environments.

Recommended Dosage

30-150 g/L  1 kg  $20.75/kg
30-150 g/L  25 kg  $14.10/kg

USE OF ALL Fermaid PRODUCTS

In order to avoid CO2 release and overflowing of fermentation vessels, all Fermaid products should be mixed with room temperature water before adding to an active fermentation. The amount of water used is not critical. Simply add enough water to make a slurry.

Storage

Dated expiration. Store in a cool and dry environment at 18°C (65°F). Once opened, keep tightly sealed and dry.

Note: Due to high nutrient requirements, some yeast strains may benefit from additional nutritional supplementation (see yeast reference chart on pages 8–13).

Fermaid® K (Kosher) is very similar to Fermaid K except that it is certificed as Kosher for Passover.

Recommended Dosage

25 g/L  10 kg  $20.95/kg

Fermaid A

Complex yeast nutrient

Fermaid® A is a complex yeast nutrient blend of inactivated yeast, organic nitrogen (alpha amino nitrogen) and diaminomorpholinophosphonate (DAP). There are no supplemented vitamins or minerals. The nitrogen blend in Fermaid A is aimed at encouraging a balanced rate of fermentation. An addition elevates the yeast’s intracellular amino reserve, reducing the chances of a stuck or sluggish fermentation. The available YAN in the yeast directly impacts the fermentation rate and the formation of flavour-active volatile compounds. For best results, Fermaid A should be used in conjunction with an appropriate yeast rehydration nutrient (Go-Ferm or Go-Ferm Protect Evolution). This will ensure proper nutrition of the selected yeast from rehydration through completed fermentation.

Recommended Dosage

10-30 g/L  0.8-2.4 lb/1000 gal
35-15025  10 kg  $20.75/kg

Fermaid K

Complex yeast nutrient

Fermaid® K is a yeast nutrient that contains a blend of inactivated yeast, free amino acids (organic nitrogen derived from inactivated yeast), sterols, unsaturated fatty acids, key nutrients (magnesium, sulfur, calcium, niacin, manganese, and other trace minerals) and ammonium salts (DAP). The unsaturated fatty acids and sterols that Fermaid K provides are important survival factors needed to maintain alcohol resistance and permease (sugar uptake) activity. The nitrogen from the alpha amino acids contained in Fermaid K utilised much more efficiently than from the ammonium salts. The cell wall fractions in Fermaid K absorb short and medium chain fatty acids that are toxic to the yeast. They also provide nucleation sites to help keep the yeast in suspension. For best results, Fermaid K should be used in conjunction with an appropriate yeast rehydration nutrient (such as Go-Ferm or Go-Ferm Protect Evolution) to assure proper nutrition of selected yeast from rehydration through completed fermentation.

Recommended Dosage

25 g/L  10 kg  $20.75/kg
35-15025  10 kg  $14.10/kg

Fermaid O

Organic yeast nutrient; OMRI listed

Fermaid® O is a blend of highly specific fractions from inactivated yeast that are rich in assimilable amino acids (organic nitrogen). Organic nitrogen is known to be a highly effective nutrient source (especially when compared to inorganic nitrogen) consistently resulting in lower peak fermentation temperatures, lower levels of negative sulfur compounds and cleaner fermentation kinetics. Organic nitrogen use has been correlated with positive aromatic expression (thios and esters). Fermaid O does not contain any DAP or supplemented microingredients. For optimal results, Fermaid O should be used in conjunction with an appropriate yeast rehydration nutrient (Go-Ferm or Go-Ferm Protect Evolution) to assure proper microingredient nutrition of selected yeast from rehydration through completed fermentation.

Recommended Dosage

40 g/L  3.3 lb/1000 gal
35-15025  2.5 kg  $47.80/kg
35-15025  10 kg  $45.90/kg

NEW! Stimula Chardonnay

These new 100% yeast autolysates are formulated to supply the optimal levels of specific amino acids and sterols, along with the natural vitamins and minerals. These naturally derived nutrients are involved in the optimization of the aromatic metabolism of the yeast. They are used at specific times in the winemaking process to promote the uptake and revelation of aromatic thiols (Stimula Sauvignon Blanc), or for the production of volatile esters (Stimula Chardonnay).

Recommended Dosage

40 g/L  3.3 lb/1000 gal

Usage

Mix Stimula Chardonnay in 10 times its weight in clean, chlorine free water or juice and add to the fermentation at 2–3 brix drop. It is essential that this timing of addition is respected. Stimula Sauvignon is not fully soluble so it will not fully dissolve. Stir to maintain suspension before and during addition.

Storage

Dated expiration. Store in a dry environment at 18°C (65°F). Once opened, use immediately.

Gain in % with Stimula Chardonnay addition:

<table>
<thead>
<tr>
<th>Yeast A</th>
<th>Yeast B</th>
<th>Fermaid A</th>
<th>Fermaid K</th>
</tr>
</thead>
<tbody>
<tr>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>20%</td>
<td>20%</td>
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<tr>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Yeast Stimulants for Optimizing Aromatics

The Stimula range provides you with the most innovative nutrients within the Lallemand portfolio. These yeast autolysates are truly unique. Instead of being used for nourishing the yeast and optimizing cell growth and fermentation rate, they are stimulating the yeast by increasing their ability to produce desirable aromatic compounds. These new 100% yeast autolysates are formulated to supply the optimal levels of specific amino acids and sterols, along with the natural vitamins and minerals. These naturally derived nutrients are involved in the optimization of the aromatic metabolism of the yeast. They are used at specific times in the winemaking process to promote the uptake and revelation of aromatic thiols (Stimula Sauvignon Blanc), or for the production of volatile esters (Stimula Chardonnay).

Recommended Dosage

40 g/L  3.3 lb/1000 gal

Usage

Mix Stimula Chardonnay in 10 times its weight in clean, chlorine free water or juice and add to the fermentation at 2–3 brix drop. It is essential that this timing of addition is respected. Stimula Sauvignon is not fully soluble so it will not fully dissolve. Stir to maintain suspension before and during addition.

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</tr>
<tr>
<td>20%</td>
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<tr>
<td>30%</td>
<td>30%</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>
**FermControl™ BIO**

Organic yeast nutrient

FermControl™ BIO is one pouch solution for a complete nutrition and supplementation of yeast during alcoholic fermentation. It is a special nutrition supplement based on organic yeast derivatives for the support of yeast metabolism. FermControl™ BIO contains organic nitrogen which has been correlated with positive aromatics in wine. Addition of other fermentation additives for example glutathione preparation, DAP are not of tangible benefit when using FermControl BIO during the fermentation process.

**Recommended Dosage**

**Addition #1**: 15-20g/hL 1-2 days after yeast inoculation

**Addition #2**: 15-20g/hL 2/3 way through fermentation (< 8 Brix)

**Usage**

Dissolve the recommended dose of FermControl™ BIO in water or wine at approx. 20°C (68°F). Stir until you get a homogenous suspension without any solids. Per above, the addition of FermControl™ is to be carried out at two stages during the fermentation. To ensure optimum performance of FermControl™ BIO the minimum recommended YAN is 140. If YAN is insufficient, please adjust with max 20–30g/L of DAP, added simultaneously with Addition #1.

**Storage**

Dated Expiration. Store in cool and dry environment (max 20°C/68°F). Once opened, use all contents within maximum 7 days. 37-13460 1kg $79.80/kg

**Nutrient Vit End**

Inactivated yeast for compromised fruit and/or treating sluggish and stuck fermentations; OMRI listed

Nutrient Vit End™ is a specific inactivated yeast with bio-adsorptive properties for binding short and medium chain fatty acids and fungi-sates. Saturated fatty acids are produced under stressful conditions, these fatty acids can interfere with membrane sugar transport proteins. Use of Reskue™ helps improve these toxic conditions allowing for an easier finish of alcoholic fermentation.

**Recommended Dosage**

**Must/juice**: 15–20g/hL 1–2 days after yeast inoculation

**Juice situations**: (alongside a complex yeast nutrient) or at ⅓ sugar depletion. Phosphate Titres contains 1% thiamin.

**Recommended Dosage**

**Phosphate Titres**

DAP and thiamin blend for optimized fermentations

Phosphate Titres is a blend of diammonium phosphate (DAP) and thiamin (vitamin B1) for nutrient supplementation of deficient must/juice. Wine yeast requires a supply of thiamin for cell growth. Phosphate Titres can help ensure regular yeast multiplication and sugar utilization. Add at the start of alcoholic fermentation in low YAN must/juice situations (alongside a complex yeast nutrient) or at ⅓ sugar depletion. Phosphate Titres contains 1% thiamin.

**Recommended Dosage**

6 g/hL 0.5 lb/1000 gal

**Usage**

Suspend Phosphate Titres in cold water and mix well before adding to must/juice.

**Storage**

Dated expiration. Store in a cool and dry environment below 25°C (77°F). Once opened, keep tightly sealed and dry.

38-12090 1kg $13.40/kg

**Reskue**

Specific inactivated yeast for treating stuck fermentations

Reskue™ is a chosen wine yeast that has been inactivated and treated with a specific autolysis process to create cell wall fractions with very high bio-adsorptive properties for saturated short and medium chain fatty acids. It was designed for use when restarting stuck fermentations. Saturated fatty acids can be created by yeast during stressful fermentation conditions. These fatty acids can interfere with membrane sugar transport proteins. Use of Reskue™ helps improve these toxic conditions allowing for an easier finish of alcoholic fermentation.

**Recommended Dosage**

40 g/hL 3.3 lb/1000 gal

**Usage**

Suspend Reskue in 10 times its weight of clean 30–37°C (86–98°F) water and mix. Wait 20 minutes then add to stuck or sluggish fermentation. For stuck fermentations, allow Reskue to settle for 48 hours then rack off and reincubate with a restart yeast.

**Storage**

Dated expiration. Store in a cool and dry environment at 18°C (65°F). Once opened, keep tightly sealed and dry.

36-15299 1kg $49.00/kg

**SIY 33 (Fermaid 2133)**

Autolyzed yeast

SIY 33™ (Fermaid 2133) is a pure, autolyzed, spray dried yeast. It provides natural alpha amino nitrogen, B vitamins and yeast hulls. SIY 33 (Fermaid 2133) will help supplement the alpha amino nitrogen component of YAN. Add at ⅔ sugar depletion when inorganic nitrogen is NOT desired. Unlike Fermaid A and K, SIY 33 (Fermaid 2133) does not contain added ammonia salts (DAP) or supplemented micronutrients.

35-15031 12.5kg $17.40/kg

**SIY Cell Hulls**

Yeast hulls for difficult fermentation conditions

SIY Cell Hulls™ (yeast ghosts or skeletons) are a preparation of the insoluble fraction of whole yeast cells (i.e. cell walls). Yeast hulls are highly beneficial in oxygen deficient juice and wine as they contribute sterols and unsaturated fatty acids. For severe conditions, such as botrytised musts, high sugar musts, over-fined musts or warm cellar conditions, Nutrient Vit End and Reskue are recommended. Racking will remove yeast hulls and may necessitate a second addition.

35-15069 10kg $35.10/kg

**SIY 33 (Fermaid 2133) • SIY Cell Hulls**

Recommended Dosage

25 g/hL 2 lb/1000 gal

**Usage**

In order to avoid CO2 release and overflowing of fermentation vessels, SIY 33 (Fermaid 2133) or SIY Cell Hulls should be mixed with room temperature water before adding to an active fermentation. The amount of water used is not critical. Simply add enough water to make a slurry.

**Storage**

Dated expiration. Store in a cool and dry environment at 18°C (65°F). Once opened, keep tightly sealed and dry.

**Vitaferm Ultra F3**

Complex micronutrient

Red, White, Rosé

Vitaferm® Ultra F3 is a complex multi-nutrient that delivers the essential nutrition for a secure fermentation. The F3 nutrient process assures an optimal and complete fermentation with trace elements and vitamins at the right moment. Containing diammonium phosphate and thiamin, Vitaferm Ultra has been shown to deliver wines with increased aromatic profile and reduced SO2 demand.

**Recommended Dosage**

30–40 g/hL at fermentation onset

**Usage**

Suspend Vitaferm® Ultra F3 in must or water and add to the must.

**Storage**

Keep in dry and light-protected environment. Re-seal opened packaging.

31-15280 10kg $31.90/kg
Choosing the Right Natural Yeast Derivative Nutrient

Natural Yeast Derivative Nutrients

Natural yeast derivative nutrients are highly specialized inactivated strains of enological yeast. These yeast strains are grown in a controlled environment and harvested at the end of their growth phase. At this stage the yeast have produced a range of enologically attractive polysaccharides that are more reactive compared to the polysaccharides that are released during the yeast autolysis phase.

Our inactivated yeasts are derived from the biomass of whole yeast cells and have been treated to suppress their fermentative capacity. Each of our natural yeast derivative nutrients can be differentiated by the strains of yeast used, the level of refinement of the yeast cells, their polysaccharide contribution, as well as the presence of specific fractions such as glutathione. These enological tools contribute certain fermentative advantages together with significant wine quality improvement. Used alone, however, they should not be viewed as a substitute for the complete range of fermentation nutrition products listed elsewhere in this Handbook.

ICV Booster Blanc

ICV Booster Blanc® was developed from an ICV yeast strain specific for whites and rosés. This yeast derivative nutrient is produced by the inactivation of yeast cells and through this process soluble fractions of the cells walls are made readily available.

When added to juice, Booster Blanc participates in the colloidal stabilization of the wine resulting in smooth mid-palate intensity and increased fresh varietal fruit aromas. Interactions take place that diminish bitterness, vegetal and chemical perceptions. Booster Blanc helps to maintain freshness and aroma stability in wines that go through a pump-over or tank mixing. This product is partially soluble. Stir to maintain suspension before and during addition.

Recommended Dosage 30 g/L 2.5 lb/1000 gal

Usage Mix Booster Blanc in 10 times its weight in must or water. Booster Blanc can be added directly to the crusher or later during a pump-over. Stir to maintain suspension before and during addition.

Storage Dated expiration. Store in a cool and dry environment at 18°C (65°F). Once opened, keep tightly sealed and dry.

ICV Booster Rouge

ICV Booster Rouge® is a yeast derivative nutrient originating from a specific wine yeast isolated and selected by the ICV. The yeast macromolecules in Booster Rouge interact with red wine polyphenols, resulting in a positive influence on the colloidal balance of the final wine. When used in red must sourced from hot climates, Booster Rouge wines are perceived as having higher fore-mouth volume and smoother mid-palate tannin structure as well as fresher aromatic sensations. Booster Rouge complements short maceration times in premium reds fermented with ICV GRE resulting in mid-palate intensity and fresh varietal aromas. Perceptions of aggressive and drying tannic sensations are minimized due to the high molecular weight polysaccharides that are released. In ultra-premium reds from balanced and mature grapes, Booster Rouge shows good synergy with ICV D254 and ICV D17. Booster Rouge can also be added during the latter part of the alcoholic fermentation to contribute tannin intensity and alcohol integration.

Recommended Dosage 30 g/L 2.5 lb/1000 gal

Usage Mix Booster Rouge in 10 times its weight in must or water. Booster Rouge can be added directly to the crusher or later during a pump-over. Stir to maintain suspension before and during addition.

Storage Dated expiration. Store in a cool and dry environment at 18°C (65°F). Once opened, keep tightly sealed and dry.
Opti-MUM Red

For increased roundness in red wines
Opti-MUM Red™ is a part of the newest generation of yeast derived nutrients. Opti-MUM Red is sourced from a specific known wine yeast that is naturally high in polysaccharides. Adding Opti-MUM Red at the beginning of fermentation increases the availability of polysaccharides at a time when polyphenols are being released and diffused. This maximizes the formation of polysaccharol polysaccharide chains. Using Opti-MUM Red results in red wines that are more intense in colour, have more rounded mouthfeel, and a decreased perception of astringency.

Recommended Dosage
20–40 g/hL     1.7–3.4 lb/1000 gal

Usage
Mix Opti-MUM Red in 10 times its weight in water or juice. If adding early, add during a pump-over or during tank mixings. This product is partially soluble. Stir to maintain suspension before and during addition.

Storage
Dated expiration. Store in a cool, dry environment at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15078    2.5kg    $51.45/kg

Opti-RED

For round and smooth tannin reds; OMRI listed
Opti-RED™ is a unique inactivated yeast derivative nutrient. It is the product of a specific blending process which results in a high level of polyphenol reactive high molecular weight cell wall polysaccharides. Opti-RED may be used either at the beginning or towards the end of red wine fermentations. Using Opti-RED in the must releases polysaccharides. These polysaccharides are then available to complex with polyphenols as soon as they are released and diffused. This early complexing results in red wines with more intense colour and better tannin extraction.

Recommended Dosage
30 g/hL     2.5 lb/1000 gal

Usage
Mix Opti-RED in 10 times its weight in must or water. If adding early in fermentation, distribute into the tank as it is filling or during a pump-over. Opti-RED can also be added directly to the crusher. If adding later, add during a pump-over or during tank mixings. This product is partially soluble. Stir to maintain suspension before and during addition.

Storage
Dated expiration. Store at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15073    2.5kg    $40.85/kg

What Differentiates Yeast Derivative Products?
Yeast derivatives are any products derived from yeast biomass. These derivatives include whole inactivated yeast, autolysates, yeast cell walls, yeast extracts and specific yeast fractions. A strain is chosen for particular characteristics and then cultured under specific conditions depending on the desired product.

• Inactivation by the heat of physical-chemical treatment at the end of the growth phase to stop its metabolism and enzyme activity
• Exposure to specific physical-chemical conditions, then centrifuged to separate the soluble yeast extract from the insoluble cell walls
• Treatment by OIV process for production of yeast extract that limits hydrolysis and maintains the intracellular proteins in their high molecular weight form
• Extraction of mannoproteins through specific process used on cell walls prior to purification

Opti-MUM White

For optimizing aromatic intensity and longevity; OMRI listed
Opti-MUM White™ is a yeast derivative nutrient which is produced using a new process that increases the glutathione bio-availability and the level of available polysaccharides. Glutathione is a natural antioxidant that has been shown to protect against browning, enhance the fruity nature of aromatic wines and minimize undesirable aroma compounds. Opti-MUM White should be used early in the fermentation process (after settling). This helps protect juice from oxidation. When used at this point it also has a positive impact on volatile thiol preservation. This natural yeast derivative nutrient favors aromatic intensity, stabilization and longevity in whites and rosés. In order to achieve the maximum antioxidant protection Opti-MUM White should be used with a complete nutritional program.

Recommended Dosage
20–40 g/hL     1.7–3.4 lb/1000 gal

Usage
Mix Opti-MUM White in 10 times its weight in water or juice. Add to the juice after settling or directly to the tank at the onset of fermentation. This product is partially soluble. Stir to maintain suspension before and during addition.

Storage
Dated expiration. Store in a cool and dry environment at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15078    2.5kg    $51.45/kg

Opti-WHITE

Protects fresh aromas; OMRI listed
Lallemand introduced this natural yeast derivative nutrient for use in white and rosé wine production after an extensive research program. Opti-WHITE® is prepared using a specific production process that results in a yeast derivative rich in polysaccharides and high in anti-oxidant peptides (glutathiones). These glutathione peptides work synergistically with SO₂ allowing the winemaker to potentially lower their SO₂ dosage. When added to the juice at the onset of fermentation, Opti-WHITE enhances smoothness, helps avoid browning from oxidation and protects fresh aromas during aging. Opti-WHITE may also be added in the last stages of alcoholic fermentation to help bring out profile variations often associated with lees aging.

Recommended Dosage
25–50 g/hL     2–4 lb/1000 gal

Usage
Mix Opti-WHITE in 10 times its weight in juice or water. Add to the juice after settling or directly to the barrel or tank prior to the onset of fermentation. If adding during the later stages of alcoholic fermentation, add during a tank mixing for proper homogenization. This product is partially soluble. Stir to maintain suspension before and during addition.

Storage
Dated expiration. Store in a cool and dry environment at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15074    2.5kg    $40.85/kg

Opti-WHITE® is a unique inactivated yeast derivative nutrient. It is the result of a specific process that increases the glutathione bio-availability and the level of available polysaccharides. Glutathione is a natural antioxidant that has been shown to protect against browning, enhance the fruity nature of aromatic wines and minimize undesirable aroma compounds. Opti-WHITE should be used early in the fermentation process (after settling). This helps protect juice from oxidation. When used at this point it also has a positive impact on volatile thiol preservation. This natural yeast derivative nutrient favors aromatic intensity, stabilization and longevity in whites and rosés. In order to achieve the maximum antioxidant protection Opti-WHITE should be used with a complete nutritional program.

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Mix Opti-WHITE in 10 times its weight in juice or water. Add to the juice after settling or directly to the barrel or tank prior to the onset of fermentation. If adding during the later stages of alcoholic fermentation, add during a tank mixing for proper homogenization. This product is partially soluble. Stir to maintain suspension before and during addition.

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25–50 g/hL     2–4 lb/1000 gal

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Mix Opti-WHITE in 10 times its weight in juice or water. Add to the juice after settling or directly to the barrel or tank prior to the onset of fermentation. If adding during the later stages of alcoholic fermentation, add during a tank mixing for proper homogenization. This product is partially soluble. Stir to maintain suspension before and during addition.

Storage
Dated expiration. Store in a cool and dry environment at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15074    2.5kg    $40.85/kg
My wine is at 8°B and I missed the addition of nutrients at this point of fermentation. The purpose of a nitrogen addition at this point of fermentation is to rebalance with organic nitrogen, vitamins and minerals can produce healthier fermentations, better aromatics and lower levels of undesirable compounds.

I checked my YAN and added DAP accordingly. Why do I still have off-aromas and/or stuck fermentations? Both inorganic (DAP) and organic nitrogen occur naturally in grape must. Each type of nitrogen has a distinct role and impact on an optimal fermentation. White yeast may show an affinity for inorganic nitrogen, adding only DAP is not what is best for the yeast. A diet balanced with organic nitrogen, vitamins and minerals can improve the health of the yeast, increase nutrient availability and help stabilise colour by condensing with anthocyanins to create polymeric pigments.

Unfortunately, nature does not always provide ideal conditions for polymeric pigment development in the vineyard or for polymeric pigment formation during winemaking. The following tools are likely to be used from the vineyard through winemaking to enhance the polymeric structure of wines.

**Vineyards**

- LalVigne™ Mature (or LM) is an all-natural foliar spray that can be used in the vineyard to enhance the polymeric structure of the finished wine.

**Maceration Enzymes**

- All or ‘green’ solids.

**Crushing/Pressing**

As the crusher or pressor for whites and rosé, enological tannins can be added to Vitis vinifera grapes if the grapes are known to be lacking in tannin, have a weak mid-palate or contain wild rot. The addition of FT Rouge or FT Rouge Soft at the beginning of fermentation also helps preserve the structure of young white tannins so they can combine with anthocyanins for optimal colour stability.

When dealing with hybrid grapes, studies from Cornell University have shown that the presence of ‘arthrographenosis related proteins’ cling tightly to grape tannins and resist releasing them into the wine. These proteins also bind with enological tannins, rendering them less effective in the fermentor. In this case, the winemaker is probably better off concentrating on cellaring and finishing tannin additions after the wine has been separated from the grape solids.

**Soft Soak**

- Although there is a debate about the effectiveness of cold soaking prior to fermentation, many winemakers are firmly committed to the practice. They feel that with the early extraction of colour and tannin, they end up with better structure and faster stabilisation of colour. One negative aspect of a cold soak is the potential for unwanted microorganisms to infect the must. To avoid this, there is Gaia, Gaia is Metylchelinulose, a non-fermentable yeast that is added to the must at the onset of the cold soak. It quickly populates the must and prevents wild yeast, such as Aloxeno opiosulidu, from growing and producing VA.

**Phenolic compounds**

- Phenolic compounds are responsible for or have a significant influence upon wine colour, taste and mouthfeel. Phenolic content in grapes is determined by grape cultivar, climatic conditions, and vineyard and winemaking practices. The polymerization of grape phenolics provides tannins. These tannins promote desirable textural and astringent properties, mid-palate texture and help stabilise colour by condensing with anthocyanins to create polymeric pigments.

**Maceration**

- Interestingly, many phenomena that take place in the vineyard and in the fermenter. In this case, the winemaker is probably better off concentrating on cellaring and finishing tannin additions after the wine has been separated from the grape solids.

**Coarse Soak**

- As for red grapes, enological tannins derived from grapes (Uva Tann or Uva Tann Soft) or quebracho (FT ColorMax) can help build mouthfeel and add texture security.

**Cold Soak**

- As for red grapes, enological tannins derived from grapes (Uva Tann or Uva Tann Soft) or quebracho (FT ColorMax) can help build mouthfeel and add texture security.

**Coarse Soak**

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**Cold Soak**

- As for red grapes, enological tannins derived from grapes (Uva Tann or Uva Tann Soft) or quebracho (FT ColorMax) can help build mouthfeel and add texture security.
Winemaking tannins come from a variety of sources. These include oak (both American and European, toasted and untoasted), chestnut, grapes (both skins and seeds), exotic woods (such as tara and quebracho) and gall nuts. Though all tannins provide some degree of anti-oxidative protection, each is also quite distinctive. The selection, processing and blending are all critical when developing commercial tannins for use in wine. The descriptors often used to characterize tannin types are inadequate to the task. Words such as elagic (meaning oak or chestnut wood) or proanthocyanidins (meaning from grapes and some exotic woods) are very broad. The producer of winemaking tannins needs to understand and quantify the potential of specific raw materials adequately to the task. Words such as elagic (meaning oak or chestnut wood) or proanthocyanidins (meaning from grapes and some exotic woods) are very broad. The producer of winemaking tannins needs to understand and quantify the potential of specific raw materials.

**A Fermentation Tannin Primer**

<table>
<thead>
<tr>
<th>Name</th>
<th>Composition</th>
<th>Properties</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT Blanc</td>
<td>Gallatinin (Oak gall nut)</td>
<td>• Reactive with proteins</td>
<td>White, Rosé, cider and fruit wine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complexes with oxidizable molecules, preventing browning.</td>
<td>• Improve clarification and structure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Minimize volatile sulfur compounds</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Inhibit laccase (botrytised grapes)</td>
</tr>
<tr>
<td>FT Blanc Soft</td>
<td>Gallatinin (Oak gall nut)</td>
<td>• Reactive with proteins</td>
<td>White, Rosé, cider and fruit wine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Complexes with oxidizable molecules, preventing browning.</td>
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<td></td>
<td>• Inhibit laccase (botrytised grapes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Enhance mouthfeel</td>
</tr>
<tr>
<td>FT Blanc Citrus</td>
<td>Tannin from citrus wood and gall</td>
<td>• Protects must and wine from wine oxidation</td>
<td>White, Rosé, cider</td>
</tr>
<tr>
<td></td>
<td>tannin</td>
<td></td>
<td>Used in combination with yeast strains with 4-galloyl compound, will allow for the development of enhanced and intense aromas such as lemon, grapefruit, apple, and white flowers</td>
</tr>
<tr>
<td>FT ColorMax</td>
<td>Specially processed catechin tannin</td>
<td>• Promotes colour stability</td>
<td>Red and fruit wine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Goes easily into solution</td>
<td>• Intended for use in tandem with FT Rouge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Helps stabilise colour</td>
</tr>
<tr>
<td>FT Rouge</td>
<td>Proanthocyanidins + Ellagic tannin</td>
<td>• Highly reactive with proteins</td>
<td>Red and fruit wine</td>
</tr>
<tr>
<td></td>
<td>(oak and chestnut hardwood)</td>
<td>• Promotes colour stability</td>
<td>• Help stabilise colour, enhance structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Enhances structure and aging potential</td>
<td>• Inhibit laccase (botrytised grapes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Strong antioxidant</td>
<td>• Protect anthocyanins from oxidation</td>
</tr>
<tr>
<td>FT Rouge Soft</td>
<td>Proanthocyanidins + Ellagic tannin</td>
<td>• Reactive with proteins</td>
<td>Red and fruit wine</td>
</tr>
<tr>
<td></td>
<td>(oak)</td>
<td>• Promotes colour stability</td>
<td>• Help stabilise colour, enhance structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Enhances structure and aging potential</td>
<td>• Inhibit laccase (botrytised grapes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Antioxidant</td>
<td>• Protect anthocyanins from oxidation</td>
</tr>
<tr>
<td>FT Rouge Berry</td>
<td>Tannin from red berry fruit</td>
<td>• Promotes colour stability</td>
<td>Red and Rosé</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prevents oxidation of primary aromas</td>
<td>• Red berry characters</td>
</tr>
<tr>
<td>Uva’Tan</td>
<td>Proanthocyanidins (from grape skins and seeds)</td>
<td>• Reactive with proteins</td>
<td>Red, White and Rosé wine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• May compensate for poor tannin structure from grapes</td>
<td>• Help stabilise colour, enhance structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Promotes colour stability</td>
<td>• Enhances structure and aging potential</td>
</tr>
<tr>
<td>Uva’Tan Soft</td>
<td>Proanthocyanidins (solely from white grape skins)</td>
<td>• Reactive with proteins</td>
<td>Red, White and Rosé wine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Promotes colour stability</td>
<td>• Help stabilise colour, enhance structure.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Provides softness</td>
<td>• Enhances structure while reducing potential astringency</td>
</tr>
<tr>
<td>Vi’Tannin Multi-Extra</td>
<td>Proanthocyanidins (from red grape skins)</td>
<td>• Promotes colour stability</td>
<td>Red wines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improves texture of wine</td>
<td>• Enhances colour intensity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Enhances aging potential</td>
</tr>
</tbody>
</table>

**Basics**

**Fermentation Tannins**

Tannins are used in wines from all winemaking areas. Fermentation tannins can be used for very specific reasons, such as on Botrytis infected grapes. Tannins can be used to enhance mouthfeel, relative astringency and increasing round-tasting remains the key. There is no substitute if we wish to understand and quantify the potential of specific raw materials.

**Collaring and Finishing Tannins**

Collaring and finishing tannins are helpful tools when fine-tuning a wine. Some winemakers are looking for more mid-palate structure and aging potential while others are looking for an influence from oak. Bench trials are a valuable tool when deciding which tannin works best.

**OTT Tannins**

OTT (Over The Top) Tannins are bold finishing tannins developed to provide a final, stylistic touch to wines.

**LUXE Tannins**

The LUXE tannins are ultra-premium finishing tannins designed to bring out elegance, complexity and balance in premier wines.

**Vintage to Vintage Variation**

From year to year we all recognize changes both large and small in the vintages. A growing season can feel very similar to previous ones and yet produce conditions and fruit that are very different from prior harvests. Some of these differences are immediately apparent and others sneak up on us. It is important to be mindful of these possibilities and prepare.

What has actually changed may include weather conditions, vineyard care, fruit ripeness, juice chemistry, microbial load, etc. It is important to realize that vintage differences may be seen immediately or reveal themselves as our wines age. Processing decisions can make significant changes in the final wine. To help reduce any issues, it is important to test your fruit, make processing decisions based on obtaining the best juice and wine possible in an efficient manner. A good, clean fermentation may require processing decisions based on obtaining the best juice and wine possible in an efficient manner. To help reduce any issues, it is important to test your fruit, make processing decisions based on obtaining the best juice and wine possible in an efficient manner. A good, clean fermentation may require processing decisions based on obtaining the best juice and wine possible in an efficient manner.
### Choosing the Right Tannins

**Fermentation Tannins**

Fermentation tannins are valuable fermentation tools. The goal is to bring out the best that the grapes have to offer, beginning from the moment they enter the winery.

**FT Blanc**

Protection from oxidation

White, Rosé, Red, Fruit, Cider

Scott'Tan™ FT Blanc tannin is a white gall nut tannin specifically formulated for use on grapes with mold or rot (e.g. Botrytis). It helps protect juice from browning by acting as an antioxidant and inhibiting laccase activity. On sound grapes FT Blanc is an effective antioxidant when used with SO2. In protein rich varieties, such as Sauvignon Blanc, FT Blanc can help remove proteins. In some wines it will also contribute notes of minerality.

<table>
<thead>
<tr>
<th>Recommended Dosage</th>
<th>Usage</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-12300 1kg $47.65/kg</td>
<td>FT Blanc can help remove proteins. In some wines it will also contribute notes of minerality.</td>
<td>Once opened, keep tightly sealed and dry.</td>
</tr>
</tbody>
</table>

**FT Blanc Soft**

Protection from oxidation and mouthfeel enhancement for white wine

White, Rosé, Red, Fruit, Cider, Mead

Scott'Tan™ FT Blanc Soft is similar to FT Blanc in application but its superior ability to stabilize colour. Its special formulation goes into solution more easily than conventional fermentation tannin products. It is intended for use in conjunction with FT Rouge or FT Rouge Soft.

<table>
<thead>
<tr>
<th>Recommended Dosage</th>
<th>Usage</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-12302 1kg $84.15/kg</td>
<td>To benefit from the sensory aromatic precursors produced from the tannin, FT Blanc Citrus should be added during alcoholic fermentation, within 24–48 hours after yeast inoculation. Dissolve in ten times its weight in water or must and add during a punch-down or pump-over.</td>
<td>Once opened, keep tightly sealed and dry.</td>
</tr>
</tbody>
</table>

**FT ColorMax**

Protection of colour stability

Red, Fruit

Scott’Tan™ FT ColorMax is a natural catechin product developed for its superior ability to stabilize colour. Its special formulation goes into solution more easily than conventional fermentation tannin products. It is intended for use in conjunction with FT Rouge or FT Rouge Soft. Wines made with FT ColorMax tend to have a softer palate than those made with FT Rouge alone.

<table>
<thead>
<tr>
<th>Recommended Dosage</th>
<th>Usage</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>38-12302 1kg $81.90/kg</td>
<td>FT ColorMax has a longer shelf life than FT Rouge and FT Rouge Soft.</td>
<td>Once opened, keep tightly sealed and dry.</td>
</tr>
</tbody>
</table>

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### Fermentation Tannins

<table>
<thead>
<tr>
<th>Tannin</th>
<th>Fermentation</th>
<th>Fene/Cellaring</th>
<th>Cellaring</th>
<th>Fermenting</th>
<th>LUZE</th>
<th>OTT</th>
</tr>
</thead>
<tbody>
<tr>
<td>FT Blanc</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FT Blanc Soft</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FT Blanc Citrus</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FT Rouge</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FT Rouge Soft</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Vanillin Oak</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>FT ColorMax</td>
<td>Red</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

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**FT Blanc**

- Tannins
- Rapid integration
- Enhances aging potential
- Protects grapes from rot
- Enhances aging potential
- Perception of sweetness
- Lowers perception of alcohol
- Rapid integration
- Protects grapes from rot
- Enhances aging potential
- Perception of sweetness
- Lowers perception of alcohol
- Rapid integration

**FT Blanc Soft**

- Tannins
- Rapid integration
- Enhances aging potential
- Perception of sweetness
- Lowers perception of alcohol
- Rapid integration

**FT ColorMax**

- Tannins
- Rapid integration
- Enhances aging potential
- Perception of sweetness
- Lowers perception of alcohol
- Rapid integration

---

### Recommendation

**Highly Recommended**

- FT Blanc
- FT Blanc Soft
- FT ColorMax

**Recommended**

- FT Blanc Citrus
FT Rouge

Promotion of colour, body and fruit
Red, Fruit
Scott Tan™ FT Rouge is a proprietary tannin which is a blend of highly reactive tannins derived from exotic woods and chestnut. The addition of FT Rouge at the beginning of red wine fermentation helps preserve the grapes’ natural tannins so they can combine with anthocyanins to create optimal colour stability.

Usage
- FT Rouge can be added at any point during fermentation.
- Yeast derivative nutrients (e.g. Opti-Red) can be added 6–8 hours later.
- Please see FAQs on page 60 for more information.

Mix well together Add to tank Gradually sprinkle

SO₂ Enzymes Tannins

Add SO₂ and mix well prior to adding enzymes. Tannins can be added 6–8 hours later. Please see FAQs on page 60 for more information.

Storage
- Dated expiration. Unopened, the shelf-life is 5 years at 18°C (65°F).
- Once opened, keep tightly sealed and dry.

FT Rouge Berry

Promotion of red berry notes
Rosè, Red, Hybrids
Scott Tan™ FT Rouge Berry is a mixture of condensed tannins extracted from wood of red berry fruit. The use of FT Rouge Berry in combination with yeast strains with a marked Beta-galactosidase activity such as 71B, ICV GE, NT 116, and RN16 4600, allows for the development of enhanced red berry characters. The resulting wines may present intense aromas of cherry, strawberry, and blueberry, which complement varietal aromas produced during fermentation.

Usage
- Add FT Rouge Berry at the first pump-over or punch-down, or 24–48 hours after yeast inoculation. Dissolve in ten times its weight in water before adding.

Storage
- Dated expiration. Unopened, store in a cool, dry, well-ventilated area.
- Once opened, carefully reseal and use in the same harvest year.

FT Rouge Soft + FT Rouge Soft

Recommended Dosage
Red Vinifera Must
200–500 ppm 2–15 g/L 0.17–1.2 lbs/1000 gal
Red Non-Vinifera Must
300–500 ppm 30–60 g/L 2.5–5.0 lbs/1000 gal
White Must
200–500 ppm 2–15 g/L 0.17–1.2 lbs/1000 gal

Usage
- Gradually sprinkle FT Rouge or FT Rouge Soft directly on grapes at the crusher or add to the must during a pump-over to obtain good homogenization. If subsequent additions of FT Rouge or FT Rouge Soft are desired, this can be done in increments of 50 ppm (63 ppm) during pump-overs. An addition of FT Rouge or FT Rouge Soft is made post-fermentation, we recommend waiting 3–6 weeks after the tannin addition before racking, fining, filtering or bottling.

Storage
- Dated expiration. Unopened, the shelf-life is 5 years at 18°C (65°F).
- Once opened, keep tightly sealed and dry.

FT Rouge + FT Rouge Soft

Recommended Dosage
Rosè Must
20–150 ppm 2–15 g/L 0.17–1.2 lbs/1000 gal
Red Must
50–200 ppm 5–20 g/L 0.42–1.6 lbs/1000 gal

Usage
- Add FT Rouge Berry at the first pump-over or punch-down, or 24–48 hours after yeast inoculation. Dissolve in ten times its weight in water before adding.

Storage
- Dated expiration. Unopened, store in a cool, dry, well-ventilated area.
- Once opened, carefully reseal and use in the same harvest year.

Uva Tan + Uva Tan Soft

Recommended Dosage
Red Must
50–400 ppm 5–40 g/L 0.42–3.3 lbs/1000 gal
White Wine
50–150 ppm 5–15 g/L 0.42–1.2 lbs/1000 gal
Rosè Wine
50–200 ppm 5–20 g/L 0.42–1.6 lbs/1000 gal
Red Wine
50–300 ppm 5–30 g/L 0.42–2.5 lbs/1000 gal

Usage
- Sprinkle Uva Tan or Uva Tan Soft evenly on the must/juice at the crusher or into the wine during a transfer or racking. Following organoleptic evaluations, two to three further additions can be made subsequent to racking. Final additions can be made up to three weeks before bottling, though six weeks are recommended for a more complete polymerization, settling and optimal filtration.

Storage
- Dated expiration. Unopened, the shelf-life is 5 years at 18°C (65°F).
- Once opened, keep tightly sealed and dry.

ViniTannin Multi-Extra

Red grape skin tannin to increase & improve colour
Red must, Wine
ViniTanin™ Multi-Extra is a highly-purified tannin preparation derived from high quality red grape skins. ViniTanin™ Multi extra can be used for 4 applications: during cold soak, fermentation, after pressing-off and for refinement before bottling. It helps to optimize colour concentration and stabilization of colour pigments (anthocyanin chains) in the juice or wine stage. ViniTanin™ Multi extra also improves colour intensity and the texture of the wines without adding any bitterness or harsh astrignents and improves the aging potential of the wine.

Usage
- Variety
- Pre-treatment
- Cold soak
- Fermentation
- Pressing-off
- Pre-bottling

It is not recommended to exceed a total dosage rate for all applications of 15g/L.

Application
- Dissolve 100g of ViniTanin™ Multi Extra in 1L of liquid (9% water, 1% wine) at a temperature of 40–50°C (104–122°F). Add the suspension with 10 g/L of Tartaric acid and stir well. Follow this by adding the suspension homogeneously into the juice or mash. It is very important to add the ViniTanin™ Multi Extra always before adding SO₂. For optimal results, we recommend to apply ViniTanin™ Multi extra as early as possible in the pre-sulfur stage, minimum 1 days before adding any SO₂. This will lead to stable colours, anthocyanin chains and the best possible integration of the product into the wine’s own molecular structure. If used just prior to bottling, please do not perform the final filtration for at least 10 days.

Storage
- Dated expiration. Unopened, the shelf-life is approximately 2 years at room temperature (25–30°C/77–86°F). Protect against light and humidity. Once opened, use within 1 month.

37-13323 1kg $173.00/kg 37-13325A 1kg $127.00/kg
Cellaring Tannins

Cellaring tannins are used to enhance mid-palate structure and aging potential. They can also enhance aroma complexity. Bench trials are required to determine the best tannin for a particular wine or style.

Complex

Tannin structure enhancement

Scott ‘Tan™ Complex is a proprietary cellaring and finishing product. It is a blend of proanthocyanidic (exotic woods) and ellagic (oak) tannins. It enhances structure, aids colour stabilization and provides antioxidant protection. It is less reactive and more polymerized than some other tannins, thus it integrates well and provides balance. It is particularly useful in wines with up-front fruit or where smooth tannin structure is lacking.

Recommended Dosage

Prior to Barrel Aiming
Red Wine
50–300 ppm 5–30 g/hL 0.42–2.5 lb/1000 gal

Prior to Bottling (3–6 weeks)
30-100 ppm 3-10 g/hL 0.25–1.6 lb/1000 gal

Note: Complex is best used prior to barrel aging. This encourages tannin integration in the wine over time. It may also dramatically improve a red wine when added prior to bottling. At this stage, Estate should be added at least six weeks before bottling to allow reaction and polymerization. Successful additions can be made closer to bottling, but this may result in less throughput during filtration.

Usage

During transfer or racking add Complex into the wine. Mix well to assure homogeneity. Following organoleptic evaluations, 2–3 further additions can be made subsequent to rackings. First additions should be made at least 3–6 weeks before bottling to allow for polymerization and settling.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Recommended Dosage

Prior to Barrell Aiming: Red Wine
50–300 ppm 5–30 g/hL 0.42–2.5 lb/1000 gal

Prior to Bottling (3–6 days) or During Rackings
50–100 ppm 5–10 g/hL 0.42–0.83 lb/1000 gal

Note: Estate is best used prior to barrel aging. This encourages tannin integration in the wine over time. It may also dramatically improve a red wine when added prior to bottling. At this stage, Estate should be added at least six weeks before bottling to allow reaction and polymerization. Successful additions can be made closer to bottling, but this may result in less throughput during filtration.

Usage

During transfer or racking add Estate into the wine. Mix well to assure homogeneity. Following organoleptic evaluations, 2–3 further additions can be made subsequent to rackings. First additions should be made at least 3–6 weeks before bottling to allow for polymerization and settling.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Once open, keep tightly sealed and dry.

38-12310 1kg $115.00/kg

Scott ‘Tan™ Estate can help compensate for lack of tannins in finished wine without the “gritty” associated with barrel. It enhances mid-palate, complexity and balance while providing a measure of antioxidant protection. Fruit characters can be enhanced. Estate is especially recommended when using older, tannin-depleted barrels.

Finishing Tannins

Finishing tannins can enhance complexity in wines prior to bottling. Bench trials are required to determine the best tannin for a particular wine or style.

Riche

French oak character and perception of sweetness

Scott ‘Tan™ Riche is a cellaring and finishing tannin notable for enhancing complexity. Derived from 100% toasted French oak, Riche imparts hints of coconut and vanilla together with a perception of sweetness. It can contribute the final touch to your wine.

Recommended Dosage

White/Rosé Wine
30–70 ppm 3–7 g/hL 0.25–0.58 lb/1000 gal

Red Wine
30–150 ppm 3–15 g/hL 0.25–1.25 lb/1000 gal

Usage

Dissolve Riche in about 10 times its weight of warm water (35–40°C/95–104°F) then add it to the wine and mix well. Good homogenization is important. Final additions should be made at least 3 weeks prior to bottling. After additions, proceed with normal racking.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Once open, keep tightly sealed and dry.

38-12322 500g $259.50/kg

Refresh

French oak character for neutral barrel cellaring

Scott ‘Tan™ Refresh is a proprietary tannin extracted from 100% French oak. It will contribute wood nuance without smoky or toasty characters and is especially useful when old or neutral barrels are used during aging. This finishing/cellaring tannin is a strong antioxidant protection. Fruit characters can be enhanced. Refresh improves structure, aids color stabilization and provides balance. It is especially useful in wines with up-front fruit or where smooth tannin structure is lacking.

Recommended Dosage

Finishing Tannins

Finishing tannins can enhance complexity in wines prior to bottling. Bench trials are required to determine the best tannin for a particular wine or style.

Riche

French oak character and perception of sweetness

Scott ‘Tan™ Riche is a cellaring and finishing tannin notable for enhancing complexity. Derived from 100% toasted French oak, Riche imparts hints of coconut and vanilla together with a perception of sweetness. It can contribute the final touch to your wine.

Recommended Dosage

White/Rosé Wine
30–70 ppm 3–7 g/hL 0.25–0.58 lb/1000 gal

Red Wine
30–150 ppm 3–15 g/hL 0.25–1.25 lb/1000 gal

Usage

Dissolve Riche in about 10 times its weight of warm water (35–40°C/95–104°F) then add it to the wine and mix well. Good homogenization is important. Final additions should be made at least 3 weeks prior to bottling. After additions, proceed with normal racking.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Once open, keep tightly sealed and dry.

38-12322 500g $259.50/kg

Scott ‘Tan™ Riche Extra was specifically developed from 100% American oak. This proprietary tannin contributes nuances similar to Riche but with heightened perception of vanillin oak character. It works well in conjunction with low doses of other tannins (e.g., Complex, Estate, FT Blanc). Riche Extra can help smooth a wine’s finish.

Recommended Dosage

White Wine
50–100 ppm 5–10 g/hL 0.42–0.83 lb/1000 gal

Red Wine
50–200 ppm 5–20 g/hL 0.42–1.6 lb/1000 gal

Usage

Dissolve Riche Extra in about 10 times its weight of warm water (35–40°C/95–104°F) then add it to the wine and mix well. Good homogenization is important. Final additions should be made at least 3 weeks prior to bottling. After additions, proceed with normal racking.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Once open, keep tightly sealed and dry.

38-12324 500g $382.00/kg

Finishing Kit

Finishing agents can be valuable tools for perfecting a wine. We now offer finishing kits with liquid tannins and stability agents for ease of trials. These touches can help you achieve specific goals for any given wine.

Please remember that bench trials are a very important step to determine the right fit for any of these products. Finding the correct product to work with the matrix of your wine, as well as the correct dosages, might take several trials.

Finishing aids have been found to help with:

• masking pyrazines/greenness
• maximizing fruit
• boosting/increasing mid-palate
• increasing aromatic intensity
• increasing body
• help minimize impact of Brettanomyces
• brighten acid
• impart oaky character
• increase perception of sweetness

Please feel free to contact Scott Laboratories for any additional guidance on conducting bench trials, or for any other product recommendations.

Note: Tannin kits are prepared liquids for ease of use in bench trials. All tannin kits are shelf-stable, but with heightened perception of vanillin oak character. It works well in conjunction with low doses of other tannins (e.g., Complex, Estate, FT Blanc). Riche Extra can help smooth a wine’s finish.

Scott ‘Tan™ Riche Extra was specifically developed from 100% American oak. This proprietary tannin contributes nuances similar to Riche but with heightened perception of vanillin oak character. It works well in conjunction with low doses of other tannins (e.g., Complex, Estate, FT Blanc). Riche Extra can help smooth a wine’s finish.

Recommended Dosage

White Wine
50–100 ppm 5–10 g/hL 0.42–0.83 lb/1000 gal

Red Wine
50–200 ppm 5–20 g/hL 0.42–1.6 lb/1000 gal

Usage

Dissolve Riche Extra in about 10 times its weight of warm water (35–40°C/95–104°F) then add it to the wine and mix well. Good homogenization is important. Final additions should be made at least 3 weeks prior to bottling. After additions, proceed with normal racking.

Storage

Dated expiration. Unopened, the shelf-life is 5 years at 18°C(65°F).

Once open, keep tightly sealed and dry.

38-12324 500g $382.00/kg

Testimonial

Tannin Riche is a great tool for winemakers in need of smoothing out rough tannins in their wines. I use it when I need a little extra sweetness to help round out my Chardonnary. It is also useful on the colder red wines that have a rough edge to them. I find that Tannin Riche helps integrate the complex matrix of tannins to round out the finish of the wine.

I also like to use Tannin Riche on wines that don’t have much barrel character, but with heightened perception of vanillin oak character. It works well in conjunction with low doses of other tannins (e.g., Complex, Estate, FT Blanc). Riche Extra can help smooth a wine’s finish.

In the right ratio it also enhances the perception of the fruit qualities of the wine while inhibiting the less desirable oregano aromas. All in all, a great product.

Mark Coon: Winemaker
Min Goat Vineyards
Lancaster, CA

Riche Extra

Smooth vanillin American oak qualities

Red, White

Scott ‘Tan™ Riche Extra was specifically developed from 100% American oak. This proprietary tannin contributes nuances similar to Riche but with heightened perception of vanillin oak character. It works well in conjunction with low doses of other tannins (e.g., Complex, Estate, FT Blanc). Riche Extra can help smooth a wine’s finish.
**ViniTannin SR**

Red grape skin tannin
Red must, red wine

ViniTannin™ SR is a highly-purified tannin preparation derived from red grape skins. It optimizes the stabilization of the colour pigments (anthocyanin chains) at the juice and wine stage. ViniTannin™ SR also improves the texture of the wines without adding any bitterness or harsh astrignent qualities, while improving the aging potential of the wine.

**Usage**

<table>
<thead>
<tr>
<th>Format</th>
<th>No. of</th>
<th>Cabernet, Merlot, Malbec</th>
<th>Tempranillo, Syrah, Grenache</th>
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</thead>
<tbody>
<tr>
<td>Juice (cold soak)</td>
<td>2-5 g/100L</td>
<td>5-10/100g</td>
<td>5-10/100g</td>
</tr>
<tr>
<td>Fermentation</td>
<td>2-5 g/100L</td>
<td>5-10/100g</td>
<td>10-15/100g</td>
</tr>
<tr>
<td>Before bottling</td>
<td>1-2 g/L</td>
<td>3-5 g/L</td>
<td>3-5 g/L</td>
</tr>
</tbody>
</table>

If not recommended to exceed a total dose rate for all applications of 15 g/hL

**Storage**

Once opened, keep tightly sealed and dry. Dated expiration. Unopened the shelf-life is 4 years at 18°C (65°F).

**ViniTannin W**

White grape skin tannin for fermentation and finishing
White must, white wine

ViniTannin™ W is a highly-purified tannin preparation derived from white grape skins that can be used for during fermentation and for refinement prior to bottling. It improves complexity, optimizes the residual potential of the juice and therefore, the aromatic stability. ViniTannin™ W also improves the texture of the wines without adding any bitterness or harsh astrignent qualities and improves the aging potential of the wine. ViniTannin™ W helps also to prevent early aging in wines without addition of SO₂.

**Usage**

<table>
<thead>
<tr>
<th>Variety</th>
<th>Chardonnay, Pinot Noir, Pinot Gris</th>
<th>Sauvignon Blanc, Riesling</th>
<th>Chenin Blanc, Vouvrier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fermentation</td>
<td>1-3 g/L</td>
<td>0.5-1 g/L</td>
<td>Not recommended</td>
</tr>
<tr>
<td>White Must</td>
<td>0.5-1 g/L</td>
<td>Not recommended</td>
<td>0.5-1 g/L</td>
</tr>
</tbody>
</table>

If not recommended to exceed a total dose rate for all applications of 10 g/hL

**Storage**

Once opened, keep tightly sealed and dry. Dated expiration. Unopened the shelf-life is 4 years at 18°C (65°F).

**LUXE tannins**

The LUXE tannins are ultra-premium finishing tannins designed to bring out elegance, complexity and balance in premier wines. They have been highly refined and carefully extracted so additions may be made as late as 48 hours prior to bottling.

**Onyx**

French oak for adding complexity and integrating flavours
Red, Rosé

Scott'Tan Onyx is derived from French oak. It was designed for use in red and rose wines to bring out the berry and sweet red fruit notes. Onyx is known for maintaining varietal characteristics while adding complexity and minimizing greenness. It helps soften and integrate flavours.

**Recommended Dosage**

10–100 ppm 1-10 g/L 0.08–0.83 lb/1000 gal

**Usage**

Dissolve Onyx in about 10 times its weight of warm water 35-40°C (95-104°F) until fully dissolved. Add to wine gradually during a transfer or pumpover. Good homogenization is important. Additions should be made at least 48 hours prior to bottling.

**Storage**

Dated expiration. Unopened the shelf-life is 4 years at 18°C (65°F). Once opened, keep tightly sealed and dry.

**Radiance**

Tannin blend for highlighting fresh fruit
White, Red, Rosé

Scott'Tan Radiance is a blend of tannins for use in white, red and rosé wines. It will help unmask and refine the aromas and flavours of your fresh fruit. Radiance will help promote balance and mouthfeel while maintaining acidity. It is known for revealing fresh fruit, vanilla, coconut and caramel.

**Recommended Dosage**

10–100 ppm 1-10 g/L 0.08–0.83 lb/1000 gal

**Usage**

Dissolve Radiance in about 10 times its weight of warm water 35-40°C (95-104°F) until fully dissolved. Add to wine gradually during a transfer or pumpover. Good homogenization is important. Additions should be made at least 48 hours prior to bottling.

**Storage**

Dated expiration. Unopened the shelf-life is 4 years at 18°C (65°F). Once opened, keep tightly sealed and dry.

**LUXE Tannin Kit**

The LUXE tannins are ultra-premium finishing tannins designed to bring out elegance, complexity and balance in premier wines. They have been highly refined and carefully extracted so additions may be made as late as 48 hours prior to bottling. Our LUXE liquid tannin kits include samples of each tannin in the range: Radiance, Onyx, and Royal. These kits are a great tool to make final touches to your wine.

Pipette sold separately.

38-13395 250 g $740.00/kg

**OTT Tannins**

OTT (Over The Top) Tannins are bold finishing tannins developed to provide a final stylistic touch to wines.

**Bold**

Vatinn oak character and perception of sweetness
White, Red, Rosé

Scott'Tan BOLD was developed to provide an amplified final touch to your wine. Wood, caramel and vanilla notes are highlighted on the nose and in the mouth of wines adjusted with BOLD. These wines also exhibit a pronounced oaky aroma. BOLD can increase the perception of sweetness, while also altering the tannin profile to reduce the perception of alcohol in reds.

**Recommended Dosage**

Red, White and Rosé Wine 30-150 ppm 0.25-1.2 lb/1000 gal

**Usage**

Gradually add Scott'Tan BOLD into the wine during a transfer or blending, mixing well to achieve homogeneity. After additions with BOLD, we recommend continuing racking as normal. Final additions should be made at least three weeks prior to bottling.

**Storage**

Dated expiration. Unopened the shelf-life is 4 years at 18°C (65°F). Once opened, keep tightly sealed and dry.

38-13260 500 g $158.00/kg

**Finesses**

Adds perception of sweetness while reducing perception of alcohol
White, Red, Rosé

Scott'Tan™ FINESSE was developed as a stylistically New World finishing tannin, but with an eye on organoleptic balance. This proprietary tannin has been shown to lower the perception of alcohol and hotness in reds and as well as perceived biting acidity in whites. Aromatically, it can exhibit tropical notes in Chardonnay and red fruit in Cabernet Sauvignon. FINESSE will also heighten the perception of oak and sweetness.

**Recommended Dosage**

Red, White and Rosé Wine 30-150 ppm 3-15 g/L 0.25-1.2 lb/1000 gal

**Usage**

Gradually add Scott'Tan FINESSE into the wine during a transfer or blending, mixing well to achieve homogeneity. After additions with FINESSE, we recommend continuing racking as normal. Final additions should be made at least three weeks prior to bottling.

**Storage**

Dated expiration. Unopened, the shelf-life is 4 years at 18°C (65°F). Once opened, keep tightly sealed and dry.

38-13265 500 g $159.00/kg

**Micropipettes for bench trials**

38-12384B 20-200 µL Micropipette $26.00

38-12387B 100-1000 µL Micropipette $22.00

38-12389B 250-2500 µL Micropipette $159.00

38-12391B 1000-10000 µL Micropipette $159.00

38-12395B 5-100 µL Micropipette tips (96 tips) $159.00

38-12397B 100-1500 µL Micropipette tips (96 tips) $26.00

38-12396B 200-1000 µL Micropipette tips (96 tips) $159.00

38-12394B 500-5000 µL Micropipette tips (96 tips) $159.00

38-12393B 1000-5000 µL Micropipette tips (96 tips) $26.00

38-12392B 1000-10000 µL Micropipette tips (96 tips) $26.00

38-12390B 5000-10000 µL Micropipette tips (96 tips) $26.00
When is the best time to add fermentation tannins? How do I add them?
Tannins are best added early in the winemaking process. In red wine, an addition during the fermentation stage integrates tannin into the wine and offers the greatest opportunity for colour stability and increased mid-palate structure. They can be added at the crusher or to the tank during the first pumpover, depending on the grape quality (rotten vs. sound). Additional tannin can be added with each pumpover. If adding to a white wine, add directly to the grapes at the crusher or to the tank during a tank mixing.

I am using tannin and enzymes. Will SO2 interfere with my additions?
Using all three products together is fine, but timing is important! High SO2 content can inhibit enzymatic activity. Do not add SO2 and enzymes at the same time. It is okay to add enzymes after the SO2 is adequately dispersed OR to add SO2 after the enzymes are adequately dispersed. Follow with a tannin addition six to eight hours later. When enzymes are not being used, add SO2 first, allow to disperse, then follow with the tannin addition.

When should I use tannins on my “premium” red grapes?
Tannins can be used to protect the colour and phenolic structure of your wines. For the easiest and most efficient integration of tannins, add FT Rouge, FT Rouge Soft, or FT Rouge Berry at the crusher. If needed, an addition during the fermentation stage integrates tannin into the wine and offers the greatest opportunity for colour stability. For improved softness, Uva’T an (tannins from grape skins and seeds) and Uva’T an Soft (tannins from white grape skins only) are comprised of 100% grape tannin. All other tannins are sourced from a combination of grapes, exotic woods, oak or chestnut.

Will LUXE tannins differ from Scott’Tan finishing tannins?
The raw materials used are only from heart wood sourced from the best botanical species and geographical areas, chosen for their desired properties. The processing was specifically designed to create tannins that can be rapidly complexed into your wine.

How are the LUXE tannins different from Scott’Tan finishing tannins?
The raw materials used are only from heart wood sourced from the best botanical species and geographical areas, chosen for their desired properties. The processing was specifically designed to create tannins that can be rapidly complexed into your wine.

What if I only want to use pure grape tannin in my wine?
Uva’T an (tannins from grape skins and seeds) and Uva’T an Soft (tannins from white grape skins only) are comprised of 100% grape tannin. All other tannins are sourced from a combination of grapes, exotic woods, oak or chestnut.

How are the LUXE tannins different from the Cellaring, Finishing and OTT tannins?
LUXE tannins are unique in that they can be added as late as 48 hours prior to bottling. See page 57 for more information.

What if I did not add enough tannin during the primary fermentation?
If more tannin structure and flavour are desired post-fermentation, make additions with Complex, Estate or Refresh. Addition is best before barrel aging when tannins can be incorporated into the wine and when oxidation and polymerization are slow. Refresh, Rich, Riche Extra, Bold and Finese are the best tannins to use prior to bottling (3-6 weeks) when a bit of oak influence is desired. Any of these tannins can be used throughout winemaking, depending on the desired effect. Bench trials are required to determine the best tannin for a particular wine or style.

Will adding tannins inhibit barrel aging?
Tannins protect wine from oxidation during barrel aging. The wood tannins extracted from a new barrel protect the wine from over-oxidation during the slow process needed for tannin polymerization and wine development. When using old barrels, indigenous tannin may have been completely leached out. A small tannin addition of 5-10 g/L of Estate or Refresh will act as an antioxidant and help protect the wine. Attaining a good phenolic profile will slow the maturation process and still protect the wine.

Tannins can help remove undesirable astringency or bitterness? Yes. Over-oxidation is caused by an imbalance of tannin molecules or by insufficiently bound tannin complexes. By adding a more refined, highly polymerized tannin to the wine, the imbalance can be corrected and the perception of astringency or bitterness reduced. This frequently improves the perception of fruit.

What if I want to use pure grape tannin in my wine?
Uva’T an (tannins from grape skins and seeds) and Uva’T an Soft (tannins from white grape skins only) are comprised of 100% grape tannin. All other tannins are sourced from a combination of grapes, exotic woods, oak or chestnut.
Garbellotto Botticella

A 1000L round cask, the Botticella provides the winemaker with the convenience of a larger cask with the refining speed of a barrel. Crafted from French oak, the Botticella is available in various toasting levels, including: light, medium, medium plus & strong. The staves are arched using direct flame and using a DTS® (Digital Toasting System) procedure wherein the toasting temperature is controlled throughout the entire process.

Garbellotto Experience

Dual fermenting/aging oak vessel

A dual purpose, fermentation and aging vessel, the Experience is crafted from French oak and has a 1000L capacity. With a surface area similar to a 1000L tonneau, the Experience has been designed with a fully sealable lid, made from 316 stainless steel, with handles to open and a central opening of 160mm for top ups during aging. During fermentation this top can be completely removed for more practical processing, with a total opening of 1200mm. The Experience was designed to provide flexibility within the cellar, and is stackable, whether empty or full, and can be moved easily with a forklift.

225L Oak Barrels

Garbellotto

Garbellotto NIR Barrels With NIR (Near Infra-Red) technology, every stave is analyzed under infra-red light, and its structure and aromatic features allow Garbellotto to segregate each stave to the appropriate NIR barrel options, thus providing NIR barrels with the ultimate in consistency.

225L NIR barrels (Structure, Sweet, Spice or Equilibrium) $1050.00

World Cooperage

Traditional Series

225L American Oak $545.00

225L French Oak $1110.00

225L French American Hybrid $675.00

Garbellotto

Garbellotto is a family owned and operated cooperage with its roots in the Veneto region of Italy, in the town of Conegliano. Founded in 1775, Garbellotto has positioned itself as the market leader in the production of large format casks and vats.
Enzymes

Enzymes are natural protein catalysts that facilitate and increase the rate of chemical reactions. Enological enzymes are used to accelerate natural reactions that would otherwise occur slowly in wine. Enzyme use can promote fruit and spice attributes while reducing sulfur off-odours and undesirable herbaceous and mineral characteristics. (D. Delteil, 2003, Personal Communication). For most enzymes, the addition to grapes as soon as possible helps with extraction of aroma precursors, reduces maceration time and helps increase juice yield.

Basics
Enzymes are a useful tool to optimize the potential of your fruit. They perform best when remembering a few basics:

Timing
In general, enzymes should be added as early as possible on crushed grapes, juice or must to provide your fermentation with the natural components of the grapes. Enzymes that contain beta-glucosidase (Lallzyme Beta, Scottzyme BG, and Rapidase Revelation Aroma) are inhibited by sugars and should not be used prior to fermentation. Beta, BG, and Revelation Aroma are useful in releasing flavour and aroma compounds. Scottzyme KS is used after pressing to enhance clarification and filterability in wine.

Tannins
Wait 6–8 hours after enzyme additions before adding tannins.

Bentonite
Bentonite will bind with enzymes and inactivate them, so the timing of additions is important. It is best to use bentonite after the enzyme activity has completed. If adding enzymes after using bentonite, make sure to rack wine off of the bentonite prior to adding enzymes.

Conditions
High alcohol, low temperature, high SO₂, fining agent additions and the amount of movement in a tank can inhibit enzyme action. If conditions are not optimal for the enzymes, extra time may be required for the enzyme activity to be completed before proceeding with other additions.

SO₂
Enzyme activity is inhibited by SO₂. In high concentrations (around 200 ppm) SO₂ will denature and inactivate the enzymes. SO₂ can be added after an enzyme addition has been adequately dispersed or vice versa, but do not add SO₂ and enzymes at the same time.

Choosing the Right Enzymes

<table>
<thead>
<tr>
<th>Enzymes</th>
<th>Grape</th>
<th>Sulphite</th>
<th>Salty</th>
<th>Performance</th>
<th>Economy</th>
<th>Cleanliness</th>
<th>Thermo Stable</th>
<th>pH Range</th>
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<tbody>
<tr>
<td>Lallzymes</td>
<td>Red</td>
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<td>Scottzymes</td>
<td>Whites and Rosé</td>
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<tr>
<td>Rapidase</td>
<td>Fruit, Cider and Mead</td>
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<tr>
<td>Erbsloeh</td>
<td>Hybrids and non-vinifera</td>
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<td></td>
<td>Aroma enhancement for aromatic white wines</td>
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<td></td>
<td>Macerating enzyme for fruit forward reds</td>
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<td>Macerating enzyme for premium reds</td>
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<td></td>
<td>Release of surital aromas in whites</td>
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<td></td>
<td>Hard-to-press grapes (e.g. Concord, Muscat, Thompson)</td>
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<td>Improved pressability</td>
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<td>Never use BEFORE pressing</td>
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<td>Enhanced settling</td>
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<td>Improved clarification</td>
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<td>Reduced solids</td>
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<td>Improved filterability</td>
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<td>Improved permeate in crossflow</td>
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<td>Use on botrytised wines</td>
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<td>Contains beta-glucanase</td>
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<td>Works at must as low as 5°C/41°F</td>
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<td>Thermo stable up to 75°C/167°F</td>
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</table>
Lallzyme

Lallemand Lallzymes have been an established tool for North American winemakers for two decades. Lallemand has used its worldwide network to develop enzymes for vitic and winemaking applications. Lallzymes are the result of in-depth analysis and testing at technical institutes and wineries on five continents. All Lallzymes are granular and most are sourced from Aspergillus niger fermentations (not sourced from genetically modified organisms). MMX is sourced from a non-GMO Trichoderma harzianum fermentation.

**Beta**

Aroma enhancement for white and rosé wines

Lallzyme Beta™ is a blend of pectinase and beta-glucosidase for use in white wines with high levels of bound tannins such as Gewürztraminer, Viognier and Muscat. The sequential actions of side activities cleave aroma precursors and enhance the varietal character of aromatic wines. The larger the reserve of aromatic precursors in the wine, the greater the effect of the enzyme treatment. Lallzyme Beta has been formulated so that it will not lead to an over-expression of aromas. The glucosidase activity is inhibited by sugars. The wine should have less than 0.5% residual sugar for full enzyme activity. Bench trials are highly recommended before using.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Usage</th>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–20 g/ton</td>
<td>Not recommended</td>
<td>Not recommended</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

Usage

Dissolve Lallzyme Beta in 10 times its weight in water, gently stir and allow to sit for a few minutes. Then add to the crushed grapes at the beginning of maceration or the onset of cold soak.

**Storage**

Dated expiration. Store dry enzyme at 25°C(77°F). Once rehydrated, use within a few hours.

**EX**

Macerating enzyme for early to release reds

Lallzyme EX™ is a blend of pectinase and hemicellulase side activities formulated to improve colour stability and enhance mouthfeel in red wines. Specific side activities contribute to the macerating action on the grape cell wall. This allows the progressive liberation of polyphenols and tannin bound polysaccharides. When using this enzyme, juice extraction from red grape skins is significantly increased and the filterability of the wine is improved. Lallzyme EX has been formulated to provide a gentle maceration, even in low-maturity grapes.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>15–30 g/ton</td>
<td>Not recommended</td>
<td>Not recommended</td>
</tr>
</tbody>
</table>

Usage

Dissolve Lallzyme EX in 10 times its weight in water, gently stir and allow to sit for a few minutes. Then add to the crushed grapes at the beginning of maceration or the onset of cold soak.

**Storage**

Dated expiration. Store dry enzyme at 25°C(77°F). Once rehydrated, use within a few hours.

**EX-V**

Macerating enzyme for premium reds

Lallzyme EX-V™ is a pectinase with cellulase and hemicellulase side activities for red wines intended for aging. It has a specific action on both grape cell walls and cell membranes. This action allows for a rapid release of anthocyanins and a more efficient release of tannins leading to stable anthocyanin-tannin bonding. The end result of this bonding is a more structured wine with deep, stable colour. Aromatic profile analysis indicates that Lallzyme EX-V increases the release of aromatic compounds while respecting the varietal characteristics of the grapes.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>90–20 g/ton</td>
<td>Not recommended</td>
<td>Not recommended</td>
</tr>
</tbody>
</table>

Usage

Dissolve Lallzyme EX-V in 10 times its weight in water, gently stir and allow to sit for a few minutes. Then add to the crushed grapes at the beginning of maceration or the onset of cold soak.

**Storage**

Dated expiration. Store dry enzyme at 25°C(77°F). Once rehydrated, use within a few hours.

**MMX**

Enzyme to improve filterability of Botrytised infected wines

Lallzyme MMX™ is a beta-glucanase and pectinase blend. Due to the synergistic activities of the glucanase and pectinase blend, Lallzyme MMX improves the filterability of botrytised wines. This enzyme blend was developed by Lallemand to improve the short maceration of wine on lees.

Lallzyme MMX contains beta-glucanase activities derived from Trichoderma harzianum.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not recommended</td>
<td>Not recommended</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

Usage

Dissolve Lallzyme MMX in 10 times its weight in water, gently stir, allow to sit for a few minutes and then add to the wine.

**Storage**

Dated expiration. Store dry enzyme at 25°C(77°F). Once rehydrated use within a few hours.

**Scottzyme**

Scottzyme are the product of natural Aspergillus niger fermentations (not sourced from genetically modified organisms). All Scottzymes® except BG are liquids. Scottzymes are available at 50–60 kg/1000 gal. One kg of Scottzymes equals 890 ml while 25 kg tones are 22.25 liters. The 25 kg tones are Kosher (but not Kosher for Passover). The 1 kg bottles are not Kosher.

To accurately dose liquid Scottzymes, first calculate the dosage then dilute to a 10% solution (w/v). All Scottzymes are non-GMO.

**BG**

Aroma releasing enzyme for white, red and fruit wines

Scottzyme® BG is a powdered pectinase with beta-glucosidase side activity for the release of bound tannins. It is generally used in white wines, but may also be used in red and fruit wines for the release of aroma and flavor compounds. Scottzyme BG should be used only in wine, not must or juice. Scottzyme BG should only be used at the end of fermentation. The glucosidase activity is inhibited by sugars. The wine should have less than 0.5% residual sugar for proper enzyme activity. Bench trials are highly recommended before using.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not recommended</td>
<td>Not recommended</td>
<td>Recommended</td>
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</tbody>
</table>

Usage

Powdered enzymes tend to scatter across water or wine. It is best to add just enough cool (25°C(70-77°F)) water to Scottzyme BG to create a paste. Then add more cool water to dissolve the enzyme completely. It is now ready to be added to the wine. Make sure you have gentle motion in the tank to disperse Scottzyme BG. Use only on wine because the glucosidase activity is inhibited by sugar.

**Storage**

Store at room temperature for 1-2 years. Once opened, keep tightly sealed and dry. Once hydrated, use within a few hours.

**Cinn-Free**

Used in white must for release of varietal aromas

Scottzyme® Cinn-Free is a purified pectinase with very low cinnamaldehyde esterase activity which helps reduce the formation of vinyl phenols. It is used in white must for the release of varietal aromas and aromatic precursors. In addition to releasing desirable pectin-trapped aromas, Scottzyme Cinn-Free aids in pressability, yield, settling, clarification and filtration. It is recommended for aromatic varieties like Sauvignon Blanc, Viognier, Pinot Gris, Gewürztraminer, Riesling and Vignoles. It can also be used in varieties like Chardonnay to bring out the full aromatic potential of the grape.

**Recommended Dosage**

<table>
<thead>
<tr>
<th>Crushed Grapes</th>
<th>Juice</th>
<th>Wine</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-30 mL/tote</td>
<td>1.3-1.6 mL/L</td>
<td>Recommended</td>
</tr>
</tbody>
</table>

Usage

Dilute Scottzyme Cinn-Free to approximately a 10% solution in cool water. Sprinkle over the grapes before pressing or add to juice before the start of alcoholic fermentation. Best used before fermentation.

**Protocol Timing of Additions: SO₂, Enzymes and Tannins**

<table>
<thead>
<tr>
<th>Enzymes</th>
<th>Tannins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mix well together</td>
<td>Add to tank</td>
</tr>
<tr>
<td>Gradually sprinkle</td>
<td></td>
</tr>
</tbody>
</table>

Add SO₂ and mix well prior to adding enzymes. Tannins can be added 6-8 hours later. Please see FAQs on page 60 for more information. Yeast derivative nutrients (e.g. Opti-Red) can be added at any point during fermentation.
**Color Pro**

Macerating enzyme for aged and early-to-market reds, whites.

Scottzyme® Color Pro is a specialty pectinase with protease side-activities. These side-activities are important for helping break down the cell walls of red grapes to gently extract more anthocyanins, polymeric phenols and tannins. This gentle extraction creates wines that are rounder in mouthfeel and bigger in structure, with improved color stability. Wines made with Color Pro tend to have increased tannins, improved clarity and reduced herbaceous or “veggie” character. Lower doses of Color Pro are recommended for red varietals that are underripe, low in anthocyanins or high in seed tannins. For “big” reds from ripe fruit with mature seeds, higher doses of Color Pro are recommended.

Color Pro is also used in white winemaking for settling and clarifying juice. The improved clarification helps lead to more compact lees, less fine, cleaner fermentation and easier filtration.

**Recommended Dosage**

**Usage**

- **Crushed Grapes**
  - Best used before fermentation
  - 60–100 mL/ton
  - 200–300 mL/1000 gal
- **Wine**
  - Best used before fermentation
  - 5.3–7.9 mL/hL
  - 6.6–9.2 mL/hL

**Choosing Color Pro or Color X?**

It is important to know your grapes. Scottzymes will have little effect on overall color if your grapes are deficient in compounds contributing to color (anthocyanins, tannins, co-factors, etc.). Color X and Color Pro both facilitate the extraction and stabilization of compounds already in the grapes. If the grapes lack some of the pieces of this complex puzzle, the color effect due to the Scottzymes may be negligible. Trials, however, have shown changes in mouthfeel and structure even when color change has been minimal.

**Color X**

Macerating enzyme for heavier, more extracted reds.

Scottzyme® Color X is a unique pectinase with cellulase side-activities. These side-activities help release anthocyanins, polymeric phenols and tannins. In trials we have found the tannin extraction is coarser with Color X than with Color Pro. We therefore recommend using Color X when heavier tannic extraction is desired for longer aging. The color response of Color X is similar to Color Pro.

**Recommended Dosage**

**Usage**

- **Crushed Grapes**
  - Best used before fermentation
  - 60–100 mL/ton
  - 200–300 mL/1000 gal
- **Wine**
  - Best used before fermentation
  - 5.3–7.9 mL/hL
  - 6.6–9.2 mL/hL

**Color X**

Blend of enzymes for enhanced settling and filtration.

Scottzyme® Color X is a blend of enzymes designed to create a special formulation for difficult to settle or hard-to-filter juices or wines. Scottzyme KS is most effective when used early in processing. It should not, however, be used before pressing of either red or white grapes. It is never too late to use Scottzyme KS. Customers have reported very favorable results when used to solve “nightmare” filtrations before bottling.

**Recommended Dosage**

**Usage**

- **Crushed Grapes**
  - Not recommended
  - Juice
  - Wine
- **Wine**
  - Not recommended
  - 3.7–7.9 mL/hL
  - 200–300 mL/1000 gal

**Warning**

Never use Scottzyme KS before pressing or on the juice. It contains our most aggressive enzyme activity and may result in over clarification of juice.

**KS Plus**

Enzyme blend for enhanced clarification and filtration of difficult lots.

Scottzyme® Color X is a powerful new enzyme created for use in wine that will not clarify. It has higher enzyme activities for the most difficult tasks. Scottzyme KS Plus should be used on finished wine only during settling or to help with filtration issues before bottling.

**Recommended Dosage**

**Usage**

- **Crushed Grapes**
  - Juice
  - Wine
- **Wine**
  - 4 mL/hL

**Warning**

Never use Scottzyme KS Plus before pressing or on the juice. It contains our most aggressive enzyme activity and may result in over clarification of juice.

**KS Plus**

Enzyme blend for enhanced clarification and filtration of difficult lots.

Scottzyme® KS Plus is a powerful new enzyme created for use in wine that will not clarify. It has higher enzyme activities for the most difficult tasks. Scottzyme KS Plus should be used on finished wine only during settling or to help with filtration issues before bottling.

**Recommended Dosage**

**Usage**

- **Crushed Grapes**
  - Juice
  - Wine
- **Wine**
  - Not recommended
  - Not recommended
  - 4 mL/hL

**Warning**

Never use Scottzyme KS Plus before pressing or on the juice. It contains our most aggressive enzyme activity and may result in over clarification of juice.

**Expert Tip**

From Our Filtration Specialist

A powerful enzyme such as Scottzyme KS Plus has a great fringe benefit in that it can unclog crossflow and cartridge filters. This is especially useful after filtering colloidal or dynamic wines, or specific varietals with naturally higher pectin levels that tend to struggle on filtration day (assuming pre-filtration was done properly and within the recommended 24-hour time limit, and a 20 psi differential has not been exceeded). This enzyme treatment is done after filtration but before the alkaline cleaning cycle. The enzyme should always be used before a hot water or steam sanitization so the solids are not baked in. The use of the KS Plus will then enable a more successful cleaning.
**Enzymes**

**PecSL**

Enzyme for white and fruit for pressability, settling and clarification

Scottzyme® PecSL is a highly concentrated pectinase blend designed specifically for winemaking.

It is used on crushed grapes for easier pressing and higher yields and in juice for improved settling, clarification and filtration. It is also useful for berries, pome and stone fruits. When adding to fruit, it is sometimes beneficial to use in conjunction with Scottzyme HC.

**Recommended Dosage**

**Crushed Grapes**

- Juice: 10–20 mL/ton
- 1–3 mL/L
- 1.3–1.6 mL/L
- 40–50 mL/1000 gal
- 50–60 mL/1000 gal

**Usage**

Dilute Scottzyme PecSL to approximately a 10% solution and gently, allow to sit for a few minutes. Then add to the juice right after pressing. Not recommended for use on crushed grapes or wine.

**Storage**


**Performance**

Enzyme for clarification of juice

Scottzyme Performance is a concentrated pectinase for the rapid clarification and settling of juice. Performance’s high activity allows for quick turnover while improving filterability.

**Recommended Dosage**

- Crushed Grapes
  - Not recommended
  - Juice
  - 6–10°C (43–50°F): 4 g/L
  - 10–12°C (50–54°F): 2 g/L
  - 12°C (54°F): 1 g/L
- Wine
  - Not recommended
- Juice
  - Setting times less than 6 hours above 10°C (50°F): 3 g/L
  - 11 g/1000 gal

**Storage**

Dated expiration. Store refrigerated at 4–8°C (40–45°F).

**Rapidiase**

**Clear Extreme**

Hard to settle Hybrid and American grapes

- Hybrid and American grapes may be difficult to clarify due to unique grape characteristics and the cool climate conditions for processing. Rapidiase Clear Extreme can be used after pressing to help preserve aromatic freshness, reduce viscosity, improve juice clarity, help compact lees and speed up clarification even in difficult conditions (low temperature, low pH, hard to settle varieties). Rapidiase Clear Extreme will remain active from 6–50°C (43–122°F).

**Recommended dosage (dependent on temperature):**

**Crushed Grapes**

- Not recommended

**Usage**

Sprinkle over the grapes/fruit before pressing or add to the juice before the start of alcoholic fermentation.

**Recommended Dosage**

- Juice: 40–16156
  - 1kg: $53.50/kg
- 100g: $280.00/kg

**Erbsloeh**

**NEW Trenolin Bouquet PLUS**

- Highly active pectinase with early aroma-releasing effect
- **Trenolin® BouquetPLUS** is a depsidase-free, aroma-releasing special enzyme.
- The newly developed β-glucosidase activity can be used in mash, in must, during malolactic fermentation and in wine. Due to the sugar tolerant β-glucosidase activity, **Trenolin® BouquetPLUS** can be applied before alcoholic fermentation to release aroma precursors. Useful in all white wine varieties. Bouquet PLUS has the ability to release various terpenes and aromatic compounds from grapes.

**Recommended Dosage**

- Milk from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool place. Reseal opened packaging tightly and use quickly.

**NEW Trenolin Filtro DF**

- Enzyme for clarification & filtration — depsidase-free
- **Trenolin® Filtro DF** is a liquid, depsidase-free enzyme for clarification and filtration with a broad activity spectrum.
- Ideally suited for must and young wines from mashes/crushed grapes with increased contents of mucilaginous substances and the colloids. Filtro DF breaks down practically all mucilaginous substances in must and young wines. Thus filtration difficulties related to these substances can be mitigated. Trenolin® Filtro DF is a purified enzyme preparation which is therefore free from disturbing depsidase and oxidase side activities, thus ensuring the freshness of the varietal character is enhanced.

**Recommended Dosage**

- Must from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool and dry place. Reseal opened packaging tightly and use quickly.

**Trenolin FastFlow DF**

- A liquid multi-pectinase formulation targeting the breakdown of the branch points for more effective pectin hydrolysis in grape juice.
- Grape pectin is rich in arabinogalactan-II side chains, and for this reason grape pectins are very difficult to break down, often times resulting in a larger portion of branched pectin residues remaining in the must, juice and wine. FastFlow rids pectin of its water binding capacity and thus viscosity is reduced. Application at low temperatures is possible and increased filtration rates in red and white wines are realized.

**Recommended Dosage**

- **White Varieties**
  - Grapes 6–10 ml/hL
- **Red Varieties**
  - Juice 4–8 ml/hL
  - Wine 3–6 ml/hL

**Usage**

Dilute Trenolin® FastFlow DF in a small amount of water and add preferably to the mash or the grape must. Mix well to assure good distribution.

**Storage**

Store in a cool environment. Use and reseal tightly.

**NEW Trenolin Filtro DF**

- Enzyme for clarification — depsidase-free
- **Trenolin® Filtro DF** is a liquid, depsidase-free enzyme for clarification and filtration with a broad activity spectrum.
- Ideally suited for must and young wines from mashes/crushed grapes with increased contents of mucilaginous substances and the colloids. Filtro DF breaks down practically all mucilaginous substances in must and young wines. Thus filtration difficulties related to these substances can be mitigated. Trenolin® Filtro DF is a purified enzyme preparation which is therefore free from disturbing depsidase and oxidase side activities, thus ensuring the freshness of the varietal character is enhanced.

**Recommended Dosage**

- Must from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool place. Reseal opened packaging tightly and use quickly.

**Trenolin® BouquetPLUS**

- Highly active pectinase with early aroma-releasing effect
- **Trenolin® BouquetPLUS** is a depsidase-free, aroma-releasing special enzyme.
- The newly developed β-glucosidase activity can be used in mash, in must, during malolactic fermentation and in wine. Due to the sugar tolerant β-glucosidase activity, **Trenolin® BouquetPLUS** can be applied before alcoholic fermentation to release aroma precursors. Useful in all white wine varieties. Bouquet PLUS has the ability to release various terpenes and aromatic compounds from grapes.

**Recommended Dosage**

- Milk from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool and dry place. Reseal opened packaging tightly and use quickly.

**Trenolin® Filtro DF**

- Enzyme for clarification & filtration — depsidase-free
- **Trenolin® Filtro DF** is a liquid, depsidase-free enzyme for clarification and filtration with a broad activity spectrum.
- Ideally suited for must and young wines from mashes/crushed grapes with increased contents of mucilaginous substances and the colloids. Filtro DF breaks down practically all mucilaginous substances in must and young wines. Thus filtration difficulties related to these substances can be mitigated. Trenolin® Filtro DF is a purified enzyme preparation which is therefore free from disturbing depsidase and oxidase side activities, thus ensuring the freshness of the varietal character is enhanced.

**Recommended Dosage**

- Must from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool place. Reseal opened packaging tightly and use quickly.

**Trenolin® BouquetPLUS**

- Highly active pectinase with early aroma-releasing effect
- **Trenolin® BouquetPLUS** is a depsidase-free, aroma-releasing special enzyme.
- The newly developed β-glucosidase activity can be used in mash, in must, during malolactic fermentation and in wine. Due to the sugar tolerant β-glucosidase activity, **Trenolin® BouquetPLUS** can be applied before alcoholic fermentation to release aroma precursors. Useful in all white wine varieties. Bouquet PLUS has the ability to release various terpenes and aromatic compounds from grapes.

**Recommended Dosage**

- Milk from infested grapes 10–15 ml/hL
- Filtration problems in young wine 15–20 ml/hL

**Usage**

The temperature for treatment should not drop below 10°C. The warmer the wine, the better the efficiency of the enzyme. For better distribution, the respective enzyme dosage per vessel should be pre-diluted with some of wine. Afterwards add and mix with the total quantity to treat.

**Storage**

Store in a cool and dry place. Reseal opened packaging tightly and use quickly.
Enzymes

**Trenolin Mash DF**

Enzyme for white musts

Trenolin® Mash DF is a particularly highly active liquid enzyme complex for MashZeration in white musts/crushed grapes. The Mash-Zeration, the enzymatically accelerated "steeping/leaching" of the crushed grapes, reduces the rest periods on the mash, thus increases and promotes the varietal typicity, the free juice run-off and reduces the risk of microbiological infections. The product is free from undesired depsidase activity.

**Recommended Dosage**

The dose rate is 1–4 mL/100 kg white mash.

**Usage**

The activity of Trenolin® Mash DF depends on dosage, temperature and contact time. The temperature for treatment should be above 10°C, ideally at 15°C. The higher the temperature, the more active the enzyme.

For addition the enzyme is diluted in water, then added to the crushed grapes/mash and constant stirring.

The contact time of the enzyme should at least come up to 2–6 hours. Longer contact times are advantageous and can be reached by an early addition already to the grapes during transport.

**Storage**

Store in a cool and dry place. Riesel opened packaging tightly and use quickly.

31-15088 1 kg $352.95/kg

**Trenolin Rouge DF**

For full-bodied, robust, intense red wine

Trenolin® Rouge DF is a liquid, depsidase-free red wine enzyme for the treatment of musts/crushed grapes from red grapes. Ideally suited for Verification of intensely red, full bodied, robust red wines rich in tannins. The resulting red wines are compact, stable and of intensive colour. Trenolin® Rouge DF releases almost all the colour matter of the grape. At the same time, it extracts tannins which give the finished wine its typical full bodied character. Yield increase estimates can range between 5–15%.

**Recommended Dosage**

Dosage on skins after destemming and crushing 8–10 ml/hL. Use quickly. Store in a cool and dry place. Reseal opened packaging tightly and use quickly.

31-15084 1 kg $145.80/kg

**Trenolin Super Plus**

Is a highly active liquid pectinase that provides for a quick pectin degradation. Pressing time is reduced and press capacity increased. A quick and compact sedimentation of lees is achieved in the juice and subsequent filtration steps are improved. Due to a purification process, undesired side activities are eliminated, and freshness and varietal characteristics of the grape are preserved.

**Recommended Dosage**

Grapes Juice Wine

8 ml/hL 3 ml/hL 5 ml/hL

**Usage**

Ideal treatment temperature is 15°C (59°F), but Trenolin Super function as low as 12°C (54°F). The higher the temperature, the more active the enzyme. Add to small amount of juice/wine and mix thoroughly before adding into the vessel. Stir thoroughly. Minimum contact time is 3hr and longer contact time is advantageous.

**Storage**

Store in a cool environment. Use and reseal tightly.

31-15085 1 kg $198.50/kg

**Trenolin T-Stab DF**

Thermostable pectinolytic enzyme complex for an accelerated maceration

An innovative, thermostable pectinolytic enzyme for the accelerated maceration of red grape musts in the course of mash warming between 65–75°C (149–167°F). T-Stab reduces microbiological risks due to shorter necessary contact times and the improved extraction of pigments and soft tannins. T-Stab DF is free from undesired depsidase activity.

**Dosage and Application**

Trenolin® T-Stab DF is added in diluted form, best directly continuously into the grape mill or the grape tub. During mash warming in the spiral heater, the enzyme already starts to react. Under the reaction conditions present during mash warming at 65–75°C (149–167°F), the dosage depends in the main only on the contact time.

**Recommended Dosage**

2–5 mL/100 kg of grapes

Dilute and add continuously into the mash.

**Storage**

Store in a cool and dry place. Riesel opened packaging tightly and use quickly.

31-15090 1 kg $298.95/kg

**Frequently Asked Questions**

**What is the best way to add liquid enzymes?**

Even distribution is important. First calculate the dosage then dilute Scottzyme to approximately a 10% solution (v/v) in cool water. Sprinkle the solution over the crushed grapes/fruits or during a pump-over before fermentation. If adding to juice or wine, gently mix a 10% solution into the tank for even dispersion.

**How do I add powdered or granular enzymes?**

Granular enzymes need to be dissolved in 10 times their weight in water, gently stirred and allowed to sit for a few minutes. They are then ready to be added to juice or wine. Powdered enzymes tend to scatter across water or wine. It is best to add just enough cool 25–25°C (70–77°F) water to the enzyme to create a paste. Then add more cool water to dissolve the enzyme completely. It is now ready to be added to the tank. Make sure you have gentle motion in the tank to disperse the enzyme or use a dosing pump.

**How long will powdered/granular enzymes remain active after rehydration?**

Powdered or granular enzymes should not be kept in liquid form for more than a few hours at room temperature. The liquid solution of these enzymes may be kept a few days at 4°C (39°F) in water acidified with tartaric acid to pH 3.5 with 50 mg/l or 100 mg/l SO2.

**Are enzymes deactivated by SO2?**

Yes, enzymes are inhibited by SO2. Deactivation occurs around 200 ppm. Do not add SO2 and enzymes together. It is okay to add enzymes after the SO2 is adequately dispersed or to add the SO2 after the enzymes are adequately dispersed.

**I have already added bentonite. Can I still use enzymes?**

You may still use enzymes but not until the wine has been racked off the bentonite. Bentonite inactivates enzymes. It is best to use bentonite after the enzyme treatment is complete.

**When should I add Scottzyme Color Pro, Scottzyme Color X, Lallzyme EX or Lallzyme EX-V?**

Add at the crusher or the fermenter as soon as possible. Anthocyanins are water-soluble and are released as the grapes are crushed. Most of a red wine’s color potential is achieved very early.

**Why should I use Scottzyme Color Pro or whites?**

Scottzyme Color Pro improves settling, bring and clarity of white wines.

**When should I choose Lallzyme EX or Lallzyme EX-V?**

Lallzyme EX-V is formulated for premium, aged reds.

**What should I do if the optimal time to add enzymes has passed?**

Low temperatures, alcohol and SO2 all inhibit enzyme activity, but the enzymes will still work. This is why recommended enzyme dosage levels for wine are higher than for juice. Reaction time will also increase when conditions are not optimal.

I have problems settling and clarifying my late harvest white wines. When should I treat with Scottzyme KS?

It is best to add Scottzyme KS after pressing and before fermentation. If added later, you will need a higher dose and a longer reaction time in the wine. If you know you have problems with a specific white wine, add Scottzyme KS to the juice tank. Preventative use is more effective and quicker.

**Warning:** Do not use Scottzyme KS before pressing. Never use Scottzyme KS on red grapes or must.
Malolactic fermentation (MLF) not only converts malic acid to lactic acid, but also has a direct impact on wine quality. Uncontrolled spontaneous malolactic fermentations or wild lactic acid bacteria can result in diminished varietal and fruit flavours, reduced esters, masked aromas and off-characters. The importance of choosing a selected strain has increased due to evolving winemaking preferences (e.g. higher pH levels, lower SO2, higher alcohol, etc.), as well as concerns such as biogenic amines. The use of selected malolactic strains can contribute positively to wines while minimizing risks.

**Basics**

It is very important to know the status of the wine prior to inoculating with malolactic bacteria. Analyze the wine for pH, SO2, VA, residual sugar, malic acid and alcohol level. Creating an optimal environment for malolactic bacteria includes:

- **Temperature**
  - Between 20–25°C (68–77°F).

- **Alcohol Level**
  - Below 13% (v/v).

- **pH**
  - Above 3.4.

- **SO2**
  - Free SO2 below 10 ppm, total SO2 below 25 ppm.

- **Volatile Acidity (VA)**
  - If the pH is high, other bacteria strains may already be growing and causing an elevated VA. The wine should be monitored for unwanted bacteria.

**Nutritional Status**

Was a complete yeast nutrient used during primary fermentation?

Was a high nutrient demanding yeast strain used for primary fermentation? Good nutrition is important for malolactic bacteria. Malolactic nutrients such as Acti-ML, Opti-Malo Blanc, Opti-Malo Plus, and ML Red Boost will help with the growth and survival of specific malolactic bacteria.

**Yeast Strain**

Choose a yeast strain which is compatible with the selected malolactic bacteria. See MLF Compatibility in the yeast charts on pages 8–13.

**Malic Acid**

Measure malic acid levels. Wine conditions are difficult for bacteria if the malic level is < 0.5 g/L or > 7.0 g/L.

**ML Culture Growth Conditions**

![Typical fermentation kinetics](chart)

- **Note**: When selecting a bacteria culture, take note that limiting conditions have a compounding inhibitory effect. For example, if low pH is combined with high SO2, conditions in a wine will be more antagonistic to the bacteria than low pH alone.

**Choosing the Right Malolactic Bacteria**

- **Highly Recommended**
- **Recommended**

**Nutrients**

<table>
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<tr>
<th>Product</th>
<th>Used for Difficult Red MLF's</th>
<th>Nutrient for Difficult Red MLF's</th>
<th>Nutrient for Difficult White MLF's</th>
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<td>ML Red Boost</td>
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</tbody>
</table>

- **Freeze-Dried Direct Inoculation (MBR)**
- **Effervescent Direct Inoculation**
- **Co-Inoculation**
- **1-Step Nutrients**

**Favorable Conditions**

- **pH**
  - Alcohol
  - Temperature
  - Total SO2 (mg/L)
  - Alcohol (% v/v)

- **Note**: The limits shown are individually stressful. In combination, stresses are increased. Other aspects such as nutrition also be critical.
**Malolactic Bacteria**

Since wine environments can be hostile, direct inoculation starter cultures must be conditioned to this environment during their production. The direct inoculation process was developed to prepare the cell membrane in advance for these difficult conditions. The result is highly active cultures which are ready for easy and quick inoculation of wine. Proper nutrition can help enhance performance, especially in a harsh environment. All Lallemand direct inoculation strains are produced with the MBR® process. The MBR form of malolactic bacteria represents a Lallemand acclimation process that stresses the bacteria, enabling it to withstand the rigours of direct inoculation. The conditioned MBR bacteria can conduct a more reliable ML.

None of our commercial ML strains contain the decarboxylase enzymes known to produce biogenic amines.

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**freeze-Dried Direct inoculation cultures**

**ICV Elies 1**

- **O. oeni** adapted to high alcohol; contributes to tannin mouthfeel intensity
- **Red**
- Lavalin MBR. ICV Elies™ was isolated by the Institut Coopératif du Vin (ICV) from a spontaneous malolactic fermentation for use in warm region red wines with high alcohol (15.5% v/v) and high pH.
- Performs well when pH is above 3.4, temperatures are 18-25°C (64-77°F) and total SO2 levels are < 50 ppm.
- Contributes to the mouthfeel of the finished wines by enhancing the perception of overall tannin mouthfeel intensity while avoiding green and vegetative characters.
- 35-15055 25L $146.20
- 35-15056 250L $400.60

**MBR 31**

- **O. oeni** adapted to low temperature and low pH; enhances polyphenolic content and fruit character
- **White, Red, Fruit**
- Enolform MBR™ was selected by the IFV (formerly ITV) from a spontaneous fermentation. It shows good fermentation activity and provides a positive sensory contribution.
- This strain is pH tolerant to 3.2, total SO2 to 50 ppm, temperature down to 14°C(57°F) and alcohol to 15.5% v/v.
- Alpha is a dominant strain and shows good resistance to botrycides.
- It is often described as enhancing mouthfeel and complexity while reducing perceptions of green and vegetative characters.
- 35-15059 2.5L $20.50
- 35-15060 25L $60.90
- 35-15060A 250L $878.95

**Beta**

- **O. oeni** adapted to high SO2, positive aroma impact
- **White, Red**
- Enolform Beta™ was isolated in the Abruzzi wine region of Italy.
- This strain is pH tolerant to 3.2, total SO2 to 60 ppm, temperature down to 14°C(57°F) and alcohol to 15.5% v/v.
- Alpha is a dominant strain and shows good resistance to botrycides.
- It is often described as enhancing mouthfeel and complexity while reducing perceptions of green and vegetative characters.
- 35-15059 2.5L $20.50
- 35-15060 25L $60.90
- 35-15060A 250L $878.95

**O-MEGA**

- **O. oeni** adapted to high alcohol and cooler cellar temperatures
- **White, Red**
- Selected in the south of France by the Institut Français de la Vigne et du Vin (IFV) in Burgundy for its ability to complete MLF in a wide range of applications.
- O-MEGA™ can perform in cool temperatures (down to 14°C/57°F) and higher alcohols (up to 16% v/v) with very low VA production.
- Due to its late degradation of citric acid, only very low levels of diacetyl are produced. This makes it suitable for fruit-forward wines.
- Using this bacteria in reds helps stabilize colour because of the slow degradation of acetaldehyde. Also noted to do well in cool climate Pinot Noirs.
- 35-15068B 25L $157.70
- 35-15060C 250L $861.60

**PN4**

- **O. oeni** adapted to difficult conditions of pH, alcohol and SO2
- **Red, White**
- MBR PN4™ was isolated from a spontaneous malolactic fermentation in a Pinot Noir by the Institute of San Michele in the Trentino region of Italy.
- This strain has been known to perform under difficult conditions such as low pH (3.0) and high alcohol (up to 16% v/v).
- Temperature tolerant to 14°C(57°F) and tolerant to total SO2 levels up to 60 ppm.
- Known for its fast fermentation kinetics.
- For Chardonnay, PN4 is one of the highest diacetyl producers with resulting wines that tend to be creamy and buttery with a full, round mouthfeel. When used in sequential inoculation, more diacetyl is produced. Using PN4 on reds leads to more structured and spicy wines.
- PN4 can also increase the perception of fruitiness in reds which can mitigate unripe characters.
- 35-15064 25L $150.90
- 35-15064A 250L $800.80

**VP41**

- **O. oeni** adapted to high SO2 and high alcohol; enhances complexity and mouthfeel
- **Red, White**
- Lavalin MBR VP41™ was isolated in Italy during an extensive European Union collaboration.
- Performs well at a pH above 3.1 and a total SO2 level of 50-60 ppm.
- At temperatures below 16°C(61°F) it is a slow starter but can complete fermentation.
- Chosen for its strong implantation, steady fermentation, high alcohol tolerance (up to 16% v/v), enhanced mouthfeel and wine structure. An excellent strain for retarding stuck a malolactic fermentation.
- See page 87.
- Both red and white wines fermented with VP41 have increased richness and complexity.
- 35-15063 2.5L $20.50
- 35-15061 25L $144.20
- 35-15062 250L $800.80
- 35-15038 1000L $758.10

**Malotabs**

- **O. oeni** in tablet form for barrel addition to fresh and fruit driven wines
- **White, Red**
- Malotabs™ are a new easy-to-use form of malolactic bacteria designed by Lallemand for direct addition into barrels. Malotabs™ dissolve immediately and ensure dispersion throughout the barrel. They were designed for sequential inoculations to complement fresh and fruit driven red and white wines.
- Malotabs™ are produced from a known strain developed for good implantation, moderate to fast kinetics, low VA and diacetyl production. Malotabs™ are effective in wines with pH above 3.2, high alcohol (up to 16% v/v), total SO2 below 60 mg/L, temperature down to 16°C(61°F). Red and white wines fermented with Malotabs™ show increased fruit, mouthfeel, balance and structure.

**Usage**

Malotabs™ come in packages of 5 tablets per box. Once opened, tablets should be used immediately. Unused tablets may be resealed and stored in their original packaging until ready for use. They should be stored under the same conditions as other Lallemand malolactic cultures.

35-15041 2.5L (5/box) $185.80
Malolactic Bacteria

1-Step Cultures

1-Step® cultures are improved versions of an old concept. The purpose is to provide winemakers with a product that combines the economy and activity of standard strains with a degree of the convenience associated with the direct inoculation strains. In lieu of direct inoculation or prolonged build-up, a simple 18-24 hour acclimatization step is required using a culture of Oenococcus oeni and an activator (included in the kit). 1-Step cultures are a good choice when efficiency and cost management are essential. The 1-Step cultures can also be used to restart a stuck or sluggish MLF. None of our commercial ML strains contain the decarboxylase enzymes known to produce biogenic amines.

1-Step Alpha

O. oeni adapted to high alcohol; enhances mouthfeel
White, Red

1-Step® Alpha (same strain as Enform Alpha) was selected by the IFV (Institut du Vin de Champagne) in France for a spontaneous malolactic fermentation. It shows good fermentation activity.

The 1-Step Alpha starter kit combines a highly effective malolactic starter culture with an activator to induce malolactic fermentation in an 18-24 hour acclimatization procedure. Known strain that has proven effective at alcohol levels up to 15.5% (v/v), pH above 3.2, total SO2 up to 50 ppm, and temperature down to 14°C(57°F).

1-Step VP41

O. oeni adapted to high SO2 and high alcohol; enhances complexity and mouthfeel
Red, White

The 1-Step® VP41 (same strain as Lalvin MB4 VP41) starter kit combines a highly effective malolactic starter culture with an activator to induce malolactic fermentation in an 18-24 hour build-up procedure. Known strain that has proven effective at high alcohol levels (up to 16% v/v), pH above 3.1, total SO2 up to 60 ppm, and temperature down to 16°C(61°F).

35-15038  100mL  $238.00
35-15035A  500mL  $472.00
35-15035  1000mL  $2004.00

Standard ML Freeze Dried Build-Up Cultures

When using these standard cultures, strict adherence to the 7-10 day build-up protocol must be followed. Please contact us for more information when using these products.

IB (Inobacter)

O. oeni adapted for sparkling wines; neutral sensory effect
Sparkling, White, Red

The IOC IB™ malolactic strain was isolated by the Comité Interprofessions du Vin de Champagne (CIVC) in France. Strain of choice for many sparkling wine producers when malolactic fermentation is desired. Contributes a neutral sensory effect, especially in lower pH wines.

35-15042  25L  $87.60

MT01

O. oeni with low volatile acidity and diacetyl production; neutral sensory effect
Sparkling, White, Red

Lalvin MT01™ was isolated and selected in Epernay, France. Characterized by very low VA and diacetyl production resulting from a lack of citrate permease activity.

35-15045  25L  $75.20

Malolactic Bacteria Nutrition

Even under ideal conditions, Oenococcus oeni malolactic bacteria grow slowly. The nutrient needs of the yeast chosen for primary fermentation affect nutrients available for malolactic bacteria. Highly mature grapes tend to have lower nutrient levels. Indigenous microflora utilize the same nutrients. Highly clarified wines are often stripped of nutrients. All of these factors contribute to the need for sufficient nutrition for O. oeni. A small yeast population with little autolysis or a yeast strain that does not fully autolyze may not provide the needed nutrient release. O. oeni have complex nutrient needs and wine is often a poor source of these nutrients. Malolactic bacteria require sugar (fructose, glucose), organic acids (malic, citric, pyruvic), organic nitrogen (amino acids, peptides), vitamins (B group, pantothenic acid) and trace minerals (Mn, Mg, K, Na). The unfavorable conditions of wine can make malolactic fermentation very difficult. Temperature, pH, alcohol, SO2, polyphenols, medium chain fatty acids and nutritional levels all affect malolactic bacteria growth and activity. Low temperatures can inhibit malolactic bacteria. High temperatures (above 77°F) and high levels of alcohol or SO2 can kill malolactic bacteria. Stuck or sluggish malolactic fermentations may be caused by difficult conditions in the wine or by the malolactic bacteria not being able to multiply and reach the minimum population required for malolactic fermentation. Malolactic bacteria nutrients help create a better environment in the wine. Used properly, they help the selected bacteria get a faster start, increase survival rates and lower the risk of problems from undesirable bacteria (biogenic amines, VA, off-flavours and aromas, etc.).

Acti-ML

Bacteria rehydration nutrient
Acti-ML® is a bacteria nutrient used during rehydration of the direct addition and standard malolactic bacteria strains. It was developed by the Lallemand bacteria R&D team led by Dr. Sibylle Krieger-Weber. Acti-ML is a specific blend of inactive yeasts rich in amino acids, mineral cofactors and vitamins. These inactive yeasts are mixed with celloulose to provide more surface area to help keep bacteria in suspension. Acti-ML can help strengthen the development of bacteria growth under difficult conditions.

Recommended Dosage
20 g/HL 50 g/60 gal 1.7 lb/1000 gal

Usage
Mix Acti-ML into 5 times its weight in 20°C(68°F) chlorine-free water. Add bacteria, then wait 15 minutes before adding the suspension to the wine.

Storage
Dated expiration. Store at 18°C(65°F). Once opened, keep tightly sealed and dry.

Co-Inoculation

Beta Co-Inoc

O. oeni for use in co-inoculation
White, Red

Specifically selected by Lallemand for reliable performance in co-inoculation of wines with pH > 3.2. Not recommended for use in a sequential MLF.

Beta Co-Inoc, is added to the juice/must 24–48 hours after yeast inoculation and before alcohol reaches 5% (v/v). Recommended temperature at inoculation is between 18-25°C(64-77°F) and recommended ongoing temperatures are between 15-28°C(59-82°F). Total SO2 at crusher should not exceed 80 ppm.

Wines that are co-inoculated result in more fruit-forward wines as diacetyl is consumed by the yeast and bacteria. Note: in co-inoculation, the health and success of the primary fermentation are keys to success. Factors such as pH, turbidity, temperature and nutrition must be considered. If the primary fermentation is sluggish or stuck, it may be necessary to add lysozyme.

Factors such as pH, turbidity, temperature and nutrition must be considered. Note: In co-inoculation, the health and success of the primary fermentation are keys to success. Factors such as pH, turbidity, temperature and nutrition must be considered. If the primary fermentation is sluggish or stuck, it may be necessary to add lysozyme.

Testimonial

I have had the opportunity to try different ways to carry out malolactic fermentation, both spontaneously with native cultures and by inoculating with a selected culture. When I heard about co-inoculation, I was eager to give Beta Co-Inoc a try. I was so impressed with the results. The process finished in more detail at .

Juan Pedro Arrellón, Winemaking Consultant
Baja California, Mexico

Protocol: Adding Acti-ML to Wine

Add Acti-ML to the chlorine-free rehydration water prior to adding the bacteria.
ML Red Boost
Malolactic nutrient for difficult Red fermentations; OMRI listed
Specific polyphenolics in red wines from high maturity grapes have an inhibitory effect on malolactic fermentations. To address this challenge, Lallemand has formulated ML Red Boost. This malolactic bacterium nutrient is formulated from specific inactivated yeast fractions which enhance the bacteria’s resistance to high polyphenol levels. In addition, the availability of certain peptides and polysaccharides in ML Red Boost favor the health of the bacteria and can be effective in reducing the duration of the MLF.

Recommended Dosage
20 g/hL  50 g/60 gal  1.7 lb/1000 gal

Usage
Suspend in small amount of water or wine and then add directly to the wine 24 hours before adding the malolactic bacteria.

Storage
Dated expiration. Store at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15072C  1kg  $46.15/kg

Opti’Malo Blanc
Malolactic nutrient for difficult White and Rosé fermentations; OMRI listed
Malolactic fermentation in Chardonnay wines can often be the last to finish. Lallemand researched this issue by looking at different peptide formulations, which resulted in the development of Opti’Malo Blanc™. Opti’Malo Blanc™ is a unique malolactic nutrient specifically formulated for white and rosé wines. Formulated from a blend of selected inactivated yeasts, Opti’Malo Blanc™ helps compensate for amino nitrogen and peptide deficiencies. The bioavailability of certain peptides stimulates the growth of selected bacteria and shortens the duration of MLF, especially under difficult white winemaking conditions.

Recommended Dosage
20 g/hL  50 g/60 gal  1.7 lb/1000 gal

Usage
Suspend in small amount of water or wine and then add directly to the wine just before adding the malolactic bacteria.

Storage
Dated expiration. Store at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15072B  1kg  $46.15/kg

Opti’Malo Plus
Complete malolactic nutrient
Opti’Malo Plus™ is a nutrient developed by Lallemand specifically for MLF. It is a blend of inactive yeasts rich in amino acids, mineral cofactors, vitamins, cell wall polysaccharides and cellulose. The cellulose provides surface area to help keep the bacteria in suspension and to help adsorb toxic compounds that may be present at the end of primary fermentation.

Recommended Dosage
20 g/hL  50 g/60 gal  1.7 lb/1000 gal

Usage
Suspend in a small amount of water or wine and add directly to the wine just before adding the malolactic bacteria. It should not be added to the rehydration water.

Storage
Dated expiration. Store at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15072  1kg  $46.15/kg

NEW! Protocol
Recommended Method to Restart a Stuck Malolactic Fermentation

Prepare the Stuck Wine

1. Add 30 g/hL (2.5 lb/1000 gal) of Reskue™ prior to restarting. Suspend Reskue™ in 10 times its weight in warm water 30–37°C(86–98°F). Wait 20 minutes then add to stuck wine.
2. Allow the tank to settle for 48 hours then rack off the settled lees.
3. Adjust the temperature of the Reskue treated wine to 18–22°C(64–72°F).

Malolactic Activator Addition

1. Add 20 g/hL (1.7 lb/1000 gal) of ML Red Boost to the Reskue treated wine. When restarting a stuck MLF, ML Red Boost is used for white, red, and rosé wines.
2. Mix gently and wait 24 hours before bacteria addition.

Malolactic Bacteria Addition

1. Add a double dose of VP41 direct inoculation culture (Example: for 1000 gallons, add 3 x 25hL (660 gal) packets).
2. Check for MLF activity by analyzing L-malic degradation every 2–4 days.

Protocol
Adding Opti’Malo Plus, Opti’Malo Blanc, or ML Red Boost to Wine

Step 1
Add ML Red Boost
Step 2
Mix gently
Step 3
Check for MLF activity

Malolactic Bacteria Addition

1. Add Opti’Malo Plus or Opti’Malo Blanc to the wine just before adding the bacteria. Add ML Red Boost 24 hours prior to adding the bacteria.

Add Reskue™ to the wine just before adding the bacteria. Add ML Red Boost 24 hours prior to adding the bacteria.

Step 1
Add Reskue
Step 2
Rack off lees
Step 3
Add temperature to 18-22°C(64-72°F)

Prepare the Stuck Wine

1. Add 30 g/hL (2.5 lb/1000 gal) of Reskue™ prior to restarting.
2. Suspend in 10 times its weight in warm water 30–37°C(86–98°F). Wait 20 minutes then add to stuck wine.
3. Allow the tank to settle for 48 hours then rack off the settled lees.
4. Adjust the temperature of the Reskue treated wine to 18–22°C(64–72°F).
Malolactic Bacteria


ture constraints as well as malic acid concentration. We ship bacteria overnight with ice packs. If, despite our best efforts, the ice pack has melted and the container is not cold to the touch when your bacteria arrive, do not be alarmed. Lallemand’s proprietary manufacturing process means its bacteria is stable. Sealed packets can be delivered and stored for a few weeks at ambient temperature (<25°C/77°F) without significant loss of viability. Place the bacteria in the freezer (18°C/0°F is preferred but up to 4°C/40°F is acceptable) and store until you need it.

I would like to have less diacetyl in my white wines. Which strain should I choose?

High inoculation levels of neutral strains, like O- MEGA® and VP41, will help control excessive diacetyl production. Co-inoculate by adding bacteria one day after yeast addition (if the pH is under 3.5). The diacetyl will be consumed by the yeast and bacteria. Leaving wine on the lees will also reduce diacetyl levels, as does conducting the MLF at warmer temperatures (24°C/75°F compared to 17°C/63°F).

Can I use citric acid to acidulate my wine for increased diacetyl formation?

We do not recommend that you use citric acid for acidification before MLF is finished. It can promote acetic acid in addition to diacetyl formation during malolactic fermentation. If increased diacetyl is the goal, choose a bacteria strain that is a known diacetyl producer such as Belta or PN4.

Why is my malolactic fermentation not finishing?

Check the wine parameters (free and total SO₂, alcohol, pH, VA, malic acid and temperature) to determine if there is an obvious reason the fermentation is not completing. Pesticide and fungicide residue, juice concentrates and preservatives in juice or wine can also inhibit malolactic bacteria, as can a lack of essential nutrients. A restart may be necessary. A restart protocol for stuck or sluggish malolactic fermentations is on our website (www.scottlabdtd.com).

Does the yeast strain used for primary fermentation affect the malolactic fermentation?

Yes. Some yeast strains are harder for malolactic fermentation than others. Yeast strains differ in nutrient demand, production of SO₂ and rate of autolysis which has a resulting effect on the bacteria. Like alcoholic fermentation options we have rehydration nutrients (Opti'Malo, Opti'Malo Blanc and ML Red Boost). These nutrients can assist with the general nutritional needs of the bacteria (Opti'Malo Plus) or to overcome specific challenges that the bacteria may encounter (Opti'Malo Blanc or ML Red Boost). Opti'Malo Blanc was developed to overcome the nutritional deficiencies and growth difficulties which often present themselves in white wines. ML Red Boost was developed for challenging red wines which were harvested at high maturity levels where the level of polyphenolic compounds can pose challenges for the bacteria.

I have tried everything to get my wine through MLF but nothing is working. What should I do?

Sometimes MLF might not be possible in certain wines. Our laborato - ry can perform a Stuck & Sluggish ML Package to determine whether MLF is even possible on that wine. Contact Scott Labs Canada for more information.

What is the difference between direct inoculation, 1-Step and standard build-up cultures?

Direct inoculation cultures are acclimatized by Lallemand to withstand the rigors of direct inoculation. The 1-Step cultures are an improved version of an old concept. A simple 18-24 hour acclimatization step provides the winemaker with an option when efficiency and cost management are essential. The standard strains are generally used in sparkling winemaking due to the low pH. The procedure for building up the standard cultures is more elaborate than the other types of cultures but offers an alternative when conditions are difficult for MLF.

I’m thinking of trying co-inoculation. Which bacteria strain should I use?

Beta Co-Inoc was developed by Lallemand for use in co-inoculation. Due to the slow lag phase, there is less risk of malolactic fermentation finishing before primary. Therefore, there is also less risk of VA production and the result is a timely completion of both fermentations.

If I am doing a co-inoculation, which bacteria nutrient do I need? When should I add it, and how much should I add?

As long as you have a good nutrient strategy and add complex nu - trients for your primary fermentation, additional ML nutrients aren’t always necessary. If wine conditions are very difficult: low pH (<3.2), high alcohol (>15.5% v/v), high SO₂ (>45 mg/L total or 5 mg/L free SO₂), and MLF has not started at the end of alcoholic fermentation (increase in lactic acid >2 g/L). ML nutrient additions are recom - mended: 20 g/L of ML Red Boost for structured red wines or 20 g/L of Opti’ML Blanc for white wines.

Can I use half a sachet of bacteria now and save the other half to use later?

No. Once the sachet of bacteria is opened it must be used immedi - ately. Exposure to oxygen and excess moisture can be detrimental to the survival of the bacteria.

My bacteria arrived and the ice pack has melted. How can I be confident that my malolactic culture is in good shape?

We ship bacteria overnight with ice packs. If, despite our best efforts, the ice pack has melted and the container is not cold to the touch when your bacteria arrive, do not be alarmed. Lallemand’s proprietary manufacturing process means its bacteria is stable. Sealed packets can be delivered and stored for a few weeks at ambient temperature (<25°C/77°F) without significant loss of viability. Place the bacteria in the freezer (18°C/0°F is preferred but up to 4°C/40°F is acceptable) and store until you need it.

Frequently Asked Questions

How does the SO₂ need to be measured when choosing the correct strain of bacteria?

SO₂ can be bound to acetaldehyde. Bacteria can break that bond and liberate free SO₂, making their environment more challenging.

How do I choose the correct nutrient for malolactic fermentations?

Like alcoholic fermentation options we have rehydration nutrients (Opti’ML) and fermentation/conversion nutrients (Opti’Malo Plus, Opti’Malo Blanc and ML Red Boost). These nutrients can assist with the general nutritional needs of the bacteria (Opti’Malo Plus) or to overcome specific challenges that the bacteria may encounter (Opti’Malo Blanc or ML Red Boost). Opti’Malo Blanc was developed to overcome the nutritional deficiencies and growth difficulties which often present themselves in white wines. ML Red Boost was developed for challenging red wines which were harvested at high maturity levels where the level of polyphenolic compounds can pose challenges for the bacteria.

An important part of the process of making wine is controlling microbes to encourage a desirable fermentation. Practices such as adding yeast and ML starter cultures, regular sulfite dioxide additions, acidification, winery hygiene, and filtration are all common ways in which microbial control is applied during winemaking. Though many wine spoilage problems can be prevented with good winemaking prac - tices, there are still circumstances that require extra microbial control. This section describes some of the tools that Scott Laboratories offers to prevent, inhibit or eliminate unwanted microorganisms.

Microbial Control Agents

Basics

Removal
Microorganisms are physically removed from the wine. Removal stra - tegies include filtration, centrifugation and some types of fining when followed by racking.

Inhibition
Microbe replication is stopped or slowed, but organisms are not necessarily killed. Microbes may start to grow and multiply once the inhibitory pressure is removed. Inhibition strategies include acidifica - tion to lower pH and use of sulfite dioxide at non-lethal concentrations.

 Destruction
Microorganisms are killed and will not survive to replicate. Destruc - tion strategies include Velcorin® treatment, No Brett Inside® or Bacti - less® additions, use of lysozyme (especially at pH >4.0) and addition of alcohol (as in the case of fortified wines).
Choosing the Right Microbial Control Agent

<table>
<thead>
<tr>
<th>Highly Recommended</th>
<th>Lysozyme</th>
<th>SO₂</th>
<th>Chitosan</th>
<th>Chitin Glucan</th>
<th>DMDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyso-Easy</td>
<td>Lysovin</td>
<td>Pendu-Granules</td>
<td>Pendu-Tablets</td>
<td>Lyso-Easy</td>
<td>Lysovin</td>
</tr>
</tbody>
</table>
| &nbsp;&n...
Microbial Control Agents

Sulfur Dioxide
Wine quality can be preserved with sulfur dioxide. Sulfur dioxide is used in wine for its antioxidant and anti-microbial properties. The effectiveness of sulfur dioxide as an anti-microbial agent is dependent upon pH, as well as the presence of other SO₂ binding compounds. As pH increases, the portion of sulfur dioxide that is active against microorganisms decreases. Therefore, increases in pH require the addition of more sulfur dioxide to maintain adequate anti-microbial activity. Inodose Granules and Tablets are an easy and effective way to add sulfur dioxide to grapes, juice or wine.

Inodose Granules
Effervescent sulfur dioxide granules
Inodose Granules are small, effervescent granules made of potassium metabisulfite and potassium bicarbonate. As they dissolve into wine or must the granules release a precise dose of SO₂. Inodose Granules come in pre-measured packs. A pack of Inodose Granules 100, for example, will release 100 grams of pure SO₂. Inodose Granules are perfect for SO₂ additions to incoming must, juice and wines prior to clarification and racking. The potassium bicarbonate fraction in these granules has little or no affect on pH.

Storage
Store in a dry, well-ventilated environment at temperatures below 25°C (77°F). Once the blister pack has been opened, the tablet should be used immediately.

Inodose Tablets
Effervescent sulfur dioxide tablets
Inodose Tablets are a blend of potassium metabisulfite and potassium bicarbonate. They are packaged in 2 g and 5 g dosage levels. As they dissolve into must or wine, the tablets release a precise dose of SO₂. The effervescent action of the bicarbonate provides mixing in barrels (therefore dosage), can be affected if the granules absorb any moisture.

Storage
Store in a dry, well-ventilated environment at temperatures below 25°C (77°F). Use whole packet quickly once opened, as potency will decrease after opening.

Inodose Granules + Tablets

Frequently Asked Questions
Can I use a partial bag of Inodose granules?
No, use the entire packet for a single dose of SO₂. The formulation (therefore dosage), can be affected if the granules absorb any moisture.

Can I break the Inodose tablets in half to deliver a smaller dose?
No, do not break the tablets for smaller dose additions. The combination of potassium metabisulfite and potassium bicarbonate may be evenly distributed in the tablet. The tablets are available in two sizes to help give dosing choices.

I added a 5 g granule sachet of SO₂ to my 60 gallon barrel. Does this mean I have 22 ppm of free SO₂?
You have 22 ppm total SO₂. The amount of free depends on pH, residual sugar, solids, etc.

Bactiless
Acetic acid and lactic acid bacteria control
Bactiless™ is a 100% natural, non-allergenic source of chitin-glucan from a non-GMO strain of Aspergillus niger. Bactiless helps protect wine from acetic acid and lactic acid spoilage bacteria, reducing the production of acetic acid and biogenic amines. Bactiless can be used to drastically reduce bacteria populations and to help prevent bacteria growth in wines, especially after malolactic fermentation. It offers an interesting alternative to lysisyme treatment and/or significant amounts of SO₂. The effectiveness of Bactiless can be enhanced with SO₂ but it does not replace the use of SO₂ since it does not have antioxidant or antifungal properties. Bactiless can help inhibit malolactic fermentation when it is not desired. In wines where malolactic fermentation is desired, Bactiless should not be used until after MALF is complete. Bactiless is shown to be effective against a broad spectrum of wine bacteria, but does not affect yeast populations.

Recommended dosage
200–500 ppm  20–50 g/hL  1.67–4.16 lb/gal

Usage
Suspend Bactiless in 5–10 times its weight in cool water or wine (Bactiless is insoluble, so it will not go into solution). Use Bactiless to mix the wine for 10 days and then conduct a clean racking. If malolactic fermentation is desired, Bactiless should not be added until after MALF is complete.

To determine the effectiveness, a period of 20–30 days post-racking should be respected before microbial analysis. This is irrespective of the method used; traditional plating, microscopic observations or RT-PCR.

Storage
Dated expiration. Store in a dry environment below 25°C (77°F).

Bactiless Efficacy Trials as conducted by ETS Laboratories, St. Helena, California.

Trial results are the average of three replicates in cells/mL.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>Bactiless 20 g/hL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetic acid bacteria</td>
<td>2,033,333</td>
<td>2,033</td>
</tr>
<tr>
<td>Lactococcus brevis group</td>
<td>35,733</td>
<td>1,030</td>
</tr>
<tr>
<td>Lactococcus plantarum group</td>
<td>199,333</td>
<td>4,867</td>
</tr>
<tr>
<td>Lactococcus kahrei</td>
<td>313</td>
<td>73</td>
</tr>
<tr>
<td>Oenococcus oeni</td>
<td>1,733,333</td>
<td>46,667</td>
</tr>
<tr>
<td>Pediococcus species</td>
<td>100,033</td>
<td>2,700</td>
</tr>
</tbody>
</table>

Bactiless is a commercial preparation of Chitosan that was introduced by Lallemand and is distributed exclusively in the North American market by St. Louis laboratories. Bactiless specifically targets Brettanomyces cells. The active ingredient, Chitosan, works in two ways. The Chitosan cells. The active ingredient, Chitosan, works in two ways. The Chitosan component, Chitosan, works in two ways. The Chitosan ingredient, Chitosan, works in two ways.

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Brettanomyces is a spoilage yeast that can produce 4-ethylphenol, 4-ethylguaiacol, and other undesirable sensory attributes. Brettanomyces has been known to live off of ethanol and/or cellobiose from toasted barrels as its sole carbon source. These factors can make Brettanomyces difficult to control in winery environments. In this application, Velcorin can be used either in the cellar or at the time of bottling.

To control spoilage yeast such as Brettanomyces (especially in unfiltered or moderately filtered wines), Brettanomyces is a spoilage yeast that can produce 4-ethylphenol, 4-ethylguaiacol, and other undesirable sensory attributes. Brettanomyces has been known to live off of ethanol and/or cellobiose from toasted barrels as its sole carbon source. These factors can make Brettanomyces difficult to control in winery environments. In this application, Velcorin can be used either in the cellar or at the time of bottling.

To decrease the amount of sulfur dioxide used in wines. Sulfur dioxide used in combination with Velcorin has been shown to speedier sulfur dioxide equilibration and less bottle-shock. They are difficult to control in winery environments. In this application, Velcorin can be used either in the cellar or at the time of bottling.

To help prevent refermentation in finished wines. Wines containing residual sugar are susceptible to fermentation in the bottle which can lead to haze, off-odours, off-flavours and effervescence. Adding Velcorin to wine during bottling can help prevent refermentation. Also, Velcorin can be used to replace or decrease the amount of sorbate which is sometimes used in wines containing residual sugar.

To control spoilage yeast such as Brettanomyces (especially in unfiltered or moderately filtered wines). Brettanomyces is a spoilage yeast that can produce 4-ethylphenol, 4-ethylguaiacol, and other undesirable sensory attributes. Brettanomyces has been known to live off of ethanol and/or cellobiose from toasted barrels as its sole carbon source. These factors can make Brettanomyces difficult to control in winery environments. In this application, Velcorin can be used either in the cellar or at the time of bottling.

To decrease the amount of sulfur dioxide used in wines. Sulfur dioxide used in combination with Velcorin has been shown to speedier sulfur dioxide equilibration and less bottle-shock. They are therefore palatable sooner and can be released earlier.

Conditions of Use
Velcorin must be used with an approved dosing system. Scott Laboratories will only sell Velcorin to those using a LANXESS approved dosing machine. Velcorin is a chemical and must be handled with respect. Therefore, all Velcorin handlers must undergo annual safety training (provided at no charge by Scott Labs Canada). The current cost of a Velcorin dosing machine starts at approximately U.S. $74,000.

Mobile Velcorin Dosing Available through Viniserve Technical Services
Region Ontario, Quebec, Nova Scotia, New Brunswick, PEI
Contact Matteo Meglioli
800-666-3425

Frequently Asked Questions
How does Velcorin work?
Velcorin controls microorganisms by entering the cell and inactivating some of the key enzymes required for cell function.

Why do I have to use an approved dosing system?
Due to the unique physical properties of Velcorin and to help assure safe handling, LANXESS Corp. requires the use of an approved dosing machine. There are now several companies that offer a mobile Velcorin-dosing service. Please refer to www.scottlabsltd.com for a complete list of these companies.

What factors determine Velcorin effectiveness?
The effectiveness of Velcorin depends on microbial type, microbial load and other factors. At low doses, Velcorin is very effective against yeast. At greater doses Velcorin is also effective against bacteria and certain fungi. Pretreatment of wine must reduce the microbial load to less than 500 microorganisms/mL. Velcorin is not a substitute for good sanitation practices.

Do I have to list Velcorin as an ingredient on the label?
No labeling is required in the United States or Canada.

Is Velcorin-treated wine approved in countries other than the U.S. and Canada?
Velcorin approval is product and country specific. For a current list of countries that allow Velcorin-treated wine, please contact Scott Laboratories.
Cleaning

Benefits of AiRD Products
- Significant water savings since no citric rinse is required.
- Specially formulated products for the wine industry.
- Innovative BUILT FORMULA for more effective cleaning.
- Effective at low doses over wide temperature ranges.
- Non-dusting product.
- No chlorine, other halogens, phosphates, silicates or fillers.
- Does not require hazardous shipping.
- Safer and less environmental impact than bulk chemical cleaners.

Choosing the Correct Winery Hygiene Product

<table>
<thead>
<tr>
<th>Cleaning Agents</th>
<th>Recommended Dosage</th>
<th>Recommended Usage</th>
<th>Contact Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleanskin</td>
<td>1–4% w/v</td>
<td>Cleaning</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Cleanskin-K</td>
<td>1–4% w/v</td>
<td>Cleaning</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Destainex-LF</td>
<td>0.5–1.5% w/v</td>
<td>Cleaning</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Destainex-K</td>
<td>0.5–2% w/v</td>
<td>Cleaning</td>
<td>20 minutes</td>
</tr>
</tbody>
</table>

Water Savings with AiRD Products

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
<th>Water Used*</th>
<th>AiRD Process</th>
<th>Water Used*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rinse</td>
<td></td>
<td>100 gallons</td>
<td>AiRD Product</td>
<td>100 gallons</td>
</tr>
<tr>
<td>Cautic</td>
<td></td>
<td>200 gallons</td>
<td></td>
<td>200 gallons</td>
</tr>
<tr>
<td>Long Rinse</td>
<td></td>
<td>200 gallons</td>
<td>Short Rinse</td>
<td>100 gallons</td>
</tr>
<tr>
<td>Clinc</td>
<td></td>
<td>200 gallons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rinse</td>
<td></td>
<td>100 gallons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL 800 gallons
TOTAL 400 gallons

Due to its unique formulation, AiRD products can result in up to 50% water savings.*

Storage
- Store in a dry, odor free environment between 10–20°C (50–68°F) away from sunlight.

*Not including potential reuse of AiRD solutions. Actual water savings may be greater.

All Cleaning Agents

<table>
<thead>
<tr>
<th>Dosage Rates</th>
<th>0.5% w/v</th>
<th>1% w/v</th>
<th>1.5% w/v</th>
<th>2% w/v</th>
<th>4% w/v</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>0.5–4% w/v</td>
<td>0.5–4% w/v</td>
<td>0.5–1.5% w/v</td>
<td>0.5–2% w/v</td>
<td>0.5–2.0% w/v</td>
</tr>
<tr>
<td>Temp (°C)</td>
<td>68–140°F</td>
<td>68–140°F</td>
<td>68–140°F</td>
<td>68–140°F</td>
<td>68–140°F</td>
</tr>
<tr>
<td>pH (%)</td>
<td>~11.3</td>
<td>11.3</td>
<td>10.5–10.9</td>
<td>10.8</td>
<td>10.65</td>
</tr>
<tr>
<td>Remotes tartrates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remotes colour</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microbial neutralizing</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>General purpose cleaning</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Barel cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellar/Tasting Glassware</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dosage and Water Temperature
- Dosage: 0.5–4% w/v
- Water temperature: 68–140°F

Dosage Rates
- 0.5% w/v: $7.90/kg
- 1% w/v: $8.55/kg
- 1.5% w/v: $8.65/kg
- 2% w/v: $8.80/kg
- 4% w/v: $9.50/kg

Recommended Usage
- Cleaning is most effective when soft or treated warm water is used.
- Destainex-LF rather than Destainex if used in an application where low foam is desired. Prepare appropriate volume of potable hot water 40–60°C (104–140°F) and accurately measure the correct weight of your Destainex product. Slowly add the powder into the water mixing until a consistent solution is obtained. Initially the prepared solution will appear milky, but will soon clarify. Once the solution has clarified it is ready for use. Destainex products can be used manually, or with an automated CIP system.
- Contact time is based on water temperature and quality, amount of Destainex product used and turbulence of contact. Conduct trials to determine contact time. Average contact time is 20 minutes.
- Storage: Store in a dry, odor free environment between 10–20°C (50–68°F) away from sunlight.

Cleaning Agents

Cleanskin
- Multi-purpose cleaner and tartrate remover
- Tanks and Equipment

Cleanskin-K
- Multi-purpose cleaner, tartrate remover and neutralizing agent
- Removes colour
- Removes protein
- Removes organic and inorganic soils
- Effective at low doses over wide temperature ranges
- BUILT FORMULA

Destainex
- Multi-purpose oxidizing cleaner for organic soils and molds
- Destainex-LF (Low Foaming)
- Low Foaming version of Destainex

Dosage:
- Destainex: 0.5–1.5% w/v
- Destainex-LF: 0.5–2% w/v

Product Description
- Destainex products are proprietary sodium percarbonate based cleaning agents with microbial neutralizing abilities. These highly effective formulations can be used at low levels to remove wine color, protein stains, mild, mold, and biofilms from wine contact surfaces such as stainless steel, galvanized metals, concrete, polyethylene (low and high density), polypropylene, plastics, flexible hoses, glass and powder-coated surfaces.
- Destainex products can be used in both automated (CIP) and manual systems. The sodium percarbonate in Destainex products are complemented with proprietary surfactants and chelation agents, water conditioning materials and rinse aids for bright, clean and spot free neutral surface.

Dosage Rates
- 0.5–1.5% w/v: Destainex
- 0.5–2% w/v: Destainex-LF

Usage
- Usage: Cleaning is most effective when soft or treated warm water is used. Prepare appropriate volume of potable hot water 40–60°C (104–140°F) and accurately measure the correct weight of your Destainex product. Slowly add the powder into the water mixing until a consistent solution is obtained. Initially the prepared solution will appear milky, but will soon clarify. Once the solution has clarified it is ready for use. Destainex products can be used manually, or with an automated CIP system.
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Water Temperature
- Water temperature: 40–60°C (104–140°F)

Contact Time
- Contact time: 20 minutes

Rinse (g/L)
- Clean Winery Hygiene Product
- Destainex products can be used manually, or with an automated CIP system.
- Contact time is based on water temperature and quality, amount of Destainex product used and turbulence of contact. Average contact time is 20 minutes.
- Storage: Store in a dry, odor free environment between 10–20°C (50–68°F) away from sunlight.

All Cleaning Agents

Dosage Rates
- 0.5% w/v: 0.5 g/100 mL
- 1% w/v: 1 g/100 mL
- 1.5% w/v: 1.5 g/100 mL
- 2% w/v: 2 g/100 mL
- 4% w/v: 4 g/100 mL

Water Temperature
- Water temperature: 40–60°C (104–140°F)
Cleaning away from sunlight.
Store in a dry, odor free environment between 10–20°C(50–68°F)

Storage

40–60°C(104–140°F)
Prepare appropriate volume in correct temperature water:
0.5–2% w/v (See chart)
Recommended Dosage

Oak Restorer-Hot Water (HW)  (See chart)
Oak cleaner and refresher
Recommended Dosage
0.5-2% w/v (See chart)
Usage
Prepare appropriate volume in correct temperature water:
40–60°C(104–140°F)
Storage
Store in a dry, odor free environment between 10–20°C(50–68°F)
away from sunlight.
86-55130  5kg $8.45/kg

Oak Restorer-Cold Water (CW)  (See chart)
Oak cleaner and refresher
Recommended Dosage
0.5-2% w/v (See chart)
Usage
Prepare appropriate volume in correct temperature water:
away from sunlight.
86-55131  5kg $8.45/kg

Wineglass  (See chart)
Cleaner for cellar and tasting room glassware
Wineglass is a liquid detergent for wine tasting room and cellar glassware with high-quality rinsing properties. Wineglass is safe to use either manually or in a dishwasher.
Storage
Store in a dry, odor free environment between 10–20°C(50–68°F)
away from sunlight.
86-55150  5kg $8.20/kg

Frequently Asked Questions

Why is water quality important?
Water comprises 96–99% of cleaning and sanitation solutions. The chemical and microbiological impurities in water can drastically alter the effectiveness of a cleaner or a sanitizer, and the outcome of your process.

Why is water hardness important?
Hard water (water that has a high mineral content) can leave mineral deposits on the surface of equipment which can cause film formation and staining and provide a surface for biofilm development. Hard water also interferes with the ability of a cleaning agent to do its job. The minerals react with bulk caustic and carbonate cleaners to produce the film which leaves less chemical available for cleaning.

What are the main types of soils in the winery?
Soil is the presence of a material in the wrong area. It can be visible or invisible. Winery soils can be generally categorized as organic, inorganic or combination. Winery soils can be grape-based and include sugars, acids, salts, color pigments, tannins, and proteins. They can also be process based, originating from wine additives, microbial activity, water quality or residual cleaning agents.

How do I determine the type of soil that I have?
Initial rinsing with warm water will tell you if the soil is generally water soluble (examples are sugars and tartrate crystals). If the soil does not rinse freely with warm water, likely candidates are proteins, tannins, polyphenolics or baked on residues that could have been removed with warm water when fresh. In general, these soils are acid based. This is why alkaline-based agents are used for cleaning.

What if I do not have demineralized water for the final rinse stage?
It is important that the final water rinse does not recontaminate your sanitized equipment. Use of a 0.2 micron cartridge filter should be used for the final rinse of previously sanitized equipment.

How do I prepare the equipment for cleaning?
It depends on the equipment. Generally, a warm water rinse <40°C (104°F) as soon as the equipment has been emptied will stop stains from drying onto the surface, which can make removal much more difficult.

What if I cannot get the water to the recommended temperature?
Follow the W.A.T.C.H. formula and compensate for lack of temperature or time by increasing the other parameters (water, action, time, concentration and heat).

How much water do I need to use?
You would generally use approximately 10% of the equipment volume when cleaning manually. Depending on the stage of the process this water can be re-used (final rinse water can be used as the initial rinse water in a neighboring piece of equipment).
Do I need to sanitize after cleaning with AIKD products?
After thorough cleaning the equipment is ready for the sanitation phase. All cleaners having antimicrobial abilities but sanitation is not their primary function. After cleaning, all equipment should be process ready, whether a sanitation step is required is process dependent. If unsure always conduct a sanitation step after cleaning.

The goal of stability is to retain clarity and sensory quality in the finished wine. In enology, we can separate stability into three distinct areas:

- Microbiological Stability
- Chemical Stability
- Macromolecular Stability

Assessing stability can sometimes be challenging; however, there are many tools available to help determine and alleviate risk. In order to obtain microbiological stability, we need to reduce the potential for microbial contamination, microbial growth, and the production of microbial metabolites (e.g. 4-ethyl phenols).

Macromolecular (or physical) instabilities can be problematic and unsightly. This type of instability is the result of interactions between grape proteins, grape polysaccharides and polyphenolics, and can lead to hazes in the finished wine.

Chemical instabilities can be caused by metal ions, tartrate, or polyphenolic precipitation. Until recently, we have had limited tools to deal with such issues. In the last several years, however, significant progress has been made with regard to stability products. We are pleased to now offer a range of options to assist with potassium tartrate stabilization (mannoproteins), and polyphenolic precipitation (gum arabics).

Stability
Choosing the Right Stabilizing Aid

<table>
<thead>
<tr>
<th>Gum Arabic</th>
<th>Mannoprotein</th>
<th>Gum Arabic/Mannoprotein Blends</th>
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<th>Bentonite</th>
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<td>Flavogum R Liquide</td>
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<td>Use with pall crossflow</td>
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### Claristar

**Use with Pall Crossflow**

Natural liquid mannoprotein preparation for tartrate stabilization

**White, Rosé, Red**

Claristar is a specially liquid mannoprotein product from Oeno-brands to aid in the natural stabilization of wines. It is the result of a patented extraction and separation technique that isolates the fraction of mannoproteins from *S. cerevisiae* with the highest Tartrate Stability Index (TSI). When added to wine, Claristar inhibits the nucleation and growth of potassium tartrate crystals. In addition to improved stability, the sensory balance of red, white and rosé wines is enhanced by the positive effect of the mannoproteins. Users note improved aromatics as well as smoothness on the palate.

Claristar has been available in Europe since 2007. Sold as a liquid, its highly purified mannoproteins are 100% soluble in wine. It can be added directly and homogenizes easily. Thanks to Claristar’s enhanced potassium tartrate stabilization properties, wine can be treated immediately prior to bottling.

**Recommended Dosage**

Common dosages are 80–100 mL/hL (3.8–4.6 L/1000 gal) for white and rosé wines and 70–90 mL/hL (2.7–3.46 L/1000 gal) for red wines.

To ensure efficacy of a Claristar addition for stability of any particular wine, bench trials MUST be run with laboratory analysis and verification. The amount of Claristar required will be unique to each wine. Its effectiveness is dependent upon a wine’s individual characteristics (e.g. protective colloid levels, pH, alcohol, etc.) in addition to a user’s chosen stability criteria. The wine submitted for bench trials MUST be the final blend. Claristar should be the final addition to any wine prior to filtration and bottling. Please contact Scott Labs Canada for more information regarding the bench trial requirement.

**Usage**

Claristar can be considered for use in white, rosé, and red wines that meet the below criteria:

- Are the final blend
- Have never been pH adjusted with calcium carbonate
- Are confirmed protein stable
- Are under 16% alcohol by volume

Claristar should never be added to a wine prior to cake/OE/Earth/Velo filtration, or cellulose pads. It can be added prior to crossflow and sterile cartridge filtration.

**Storage**

Dated expiration. Store in a cool, dry environment at under 10°C (50°F). Once opened, use within 15 days. Can be frozen once.

### Claristar Screen

This analysis will help determine if your wine meets the Claristar Use Guidelines and thus a good candidate for Claristar use.

**Volume needed: two 750 mL samples**

**Confirmation of Claristar Dosage**

Drops in Temperature Saturation (TSAT) values have traditionally been used as a predictive evaluation for tartrate stability. In the case of Claristar the change in the TSAT curves themselves, between control and treated wines, are compared. While TSAT values may not drop drastically, the reduced variance in curves before and after addition, signals improved stability. This relates to the rate of precipitation of crystals and the corresponding rate of dissolving crystals moving the two toward equilibrium. It is also indicative of colloidal stability in red wines.

**Flashgum R Liquide**

Gum arabic for colloidal protection

**Red, White, Rosé, Cider, Mead**

Flashgum R Liquide is a 25% gum arabic derived from *Acacia seyal*. This preparation offers both colloidal protection and the perception of sweet and soft characters on the palate. Gum arabic products can help reduce the risk of colloidal deposits in the bottle in wines bottled without filtration. Natural polysaccharides reduce astringency and increase feelings of volume and fullness in the mouth. Flashgum R Liquide can provide colour protection in rosé and fruit wines.

**Recommended Dosage**

400–1200 ppm 40–200 mL/L 1.5–4.5 L/1000 gal*

*bench trials recommended

**Usage**

Flashgum R Liquide should be the last commercial product added to the wine. It is best to do inline additions 24–72 hours prior to the final pre-membrane and membrane filtrations. Filterability trials prior to membrane filtration are recommended. If using on wine that is not going to be filtered, add Flashgum R Liquide just prior to bottling.

**Storage**

Dated expiration. Store in a dry, odour-free environment at or below 25°C (77°F).

**Inogum 300**

Gum arabic for colloidal stabilization

**White, Rosé, Red, Fruit, Cider, Mead**

Inogum 300 is a clear, 25% solution of purified liquid gum arabic derived from *Acacia verek*. Gum arabic products help reduce the risk of colloidal deposits collecting in the bottle in wines bottled without filtration. Its colloidal protection helps prevent precipitation of unstable colour while preserving flavour and structure.

**Recommended Dosage**

400–700 ppm 40–70 mL/L 1.5–2.65 L/1000 gal*

*bench trials recommended

**Usage**

Inogum 300 should be the last commercial product added to a wine. Ideally it should be added to wine using a dosing pump. If the wine is to be filtered it is recommended that the additions be done 24–72 hours prior to the membrane filtration and that filterability trials be conducted. If the wine is not to be filtered Inogum 300 may be used immediately prior to bottling.

**Storage**

Dated expiration. Store in a dry, well-ventilated environment at temperatures less than 25°C (77°F).

**Inogum 300**

Gum arabic for colloidal stabilization

**White, Rosé, Red, Fruit, Cider, Mead**

Inogum 300 is a clear, 25% solution of purified liquid gum arabic derived from *Acacia verek*. Gum arabic products help reduce the risk of colloidal deposits collecting in the bottle in wines bottled without filtration. Its colloidal protection helps prevent precipitation of unstable colour while preserving flavour and structure.

**Recommended Dosage**

400–700 ppm 40–70 mL/L 1.5–2.65 L/1000 gal*

*bench trials recommended

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Inogum 300 should be the last commercial product added to a wine. Ideally it should be added to wine using a dosing pump. If the wine is to be filtered it is recommended that the additions be done 24–72 hours prior to the membrane filtration and that filterability trials be conducted. If the wine is not to be filtered Inogum 300 may be used immediately prior to bottling.

**Storage**

Dated expiration. Store in a dry, well-ventilated environment at temperatures less than 25°C (77°F).

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400–700 ppm 40–70 mL/L 1.5–2.65 L/1000 gal*

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**Usage**

Inogum 300 should be the last commercial product added to a wine. Ideally it should be added to wine using a dosing pump. If the wine is to be filtered it is recommended that the additions be done 24–72 hours prior to the membrane filtration and that filterability trials be conducted. If the wine is not to be filtered Inogum 300 may be used immediately prior to bottling.

**Storage**

Dated expiration. Store in a dry, well-ventilated environment at temperatures less than 25°C (77°F).
Inostab MES **|** Carboxymethylcellulose (CMC) **White, Rosé**
INOSTAB MES is a highly purified cellulose gum solubilized at 5% in water. INOSTAB MES delays the formation of tartaric salts (both potassium and calcium) in wine under the principle of stopping the crystal growth by “coating” their surface.
**Recommended Dosage** 0.8-2 mL/L of wine
**Usage** Dilute in 2x its volume of wine, then add to vessel. Mix well. In some cases, INOSTAB MES can create a loss of filterability of wine. It’s recommended to make trials to determine if INOSTAB MES must be added before or after filtration. Used on red or rosé wine, INOSTAB MES can cause a loss of colour by precipitation, especially at low temperature. White wine is to be treated must be protein stable.
**Storage** Store in odourless and dry premises between the temperature of 5° and 25°C. Once opened, the product must be used rapidly and cannot be conserved.
31-15070 1L $11.90/L

UltiMA Fresh **|** Carboxymethylcellulose (CMC) **White, Red**
UltiMA Fresh is a proprietary blend of specific mannoproteins together with gum arabic. It has been shown to have a volume enhancing effect on red and white wines, while also reducing perceptions of bitterness and acidity. Bench trials are highly recommended and allow the winemaker to fine tune the use of UltiMA Fresh for optimal results. It is a fully soluble product. If the wine is not to be filtered, it may be used immediately prior to bottling. Gum arabic and mannoproteins both have some stabilizing effects on wine, though the addition of this product is not a replacement for good winemaking practice and thorough analysis.
31-12705 1L $39.00/kg

UltiMA Soft **|** Carboxymethylcellulose (CMC) **White, Red**
UltiMA Soft is a unique blend of mannoproteins and gum arabic. On white wines UltiMA Soft can soften, enhance body, add to length and lower astringency. On red wines, it helps maintain fruity aromas while helping to round out the mid-palate. If the wine is not to be filtered, this fully soluble product can be added immediately prior to bottling. Bench trials are recommended. Gum arabic and mannoproteins both have some stabilizing effects on wine, though the addition of this product is not a replacement for good winemaking practice and thorough analysis.
31-12707 1L $142.70/kg

Bentonite Aktivit **|** Sodium-calcium Bentonite
Granulated pure calcium-sodium bentonite that performs over a large surface area. Aktivit will ensure protein stabilization and aid in clarification where pure calcium bentonite is ineffective.
**Recommended Dosage** 70-150 g/hL
Benchtrial recommended to determine exact dose rate required.
**Application** Prior to application, check prepared suspension for off-smell. Stir slowly into an approx. 3-5x of water under constant stirring. Allow to swell and settle for at minimum of 4-6 hours, for best results wait 12 hours. Pour off supernatant and liquify the prepared slurry with some of the beverage to treat. Then add the suspension to the vessel and mix thoroughly to provide for even distribution.
**Storage** Bentonites are highly adsorbent, and must be protected from foreign smells and moisture. Store in a dry and well-ventilated place free from foreign odours. Ressel opened packages immediately and tightly (airtight).
31-15020 20kg $33.50/kg

NewBenton UF **|** Sodium-calcium Bentonite
For use with Pall Densifine XL Crossflow System
Bentonite UF is a highly pure and particularly effective powder calcium-sodium Bentonite for the stabilization of beverages during crossflow filtration. Due to the fineness of the bentonite and the absence of particles > 100 µm this bentonite does not cause any abrasive wear to crossflow membranes. Owing to the defined particle-size distribution it is exceptionally suitable for direct dosing into hollow fibre membranes. In this way, clarification and stabilisation need only one process step. Purify and high protein adsorbency reduce the dosage as against conventional bentonites.
**Recommended Dosage** 100-200 g/hL of grape must
**Application** Prior to application, check prepared suspension for off-smell. Stir slowly into an approx. 3-5x of water under constant stirring. Allow to swell and settle for at minimum of 4-6 hours, for best results wait 12 hours. Pour off supernatant and liquify the prepared slurry with some of the beverage to treat. Then add the suspension to the vessel and mix thoroughly to provide for even distribution.
**Storage** Bentonites are highly adsorbent, and must be protected from foreign smells and moisture. Store in a dry and well-ventilated place free from foreign odours. Ressel opened packages immediately and tightly (airtight).
31-15027 20kg $4.90/kg

MostRein **|** Bentonite & Activated Charcoal granulate
MostRein® PORE-TEC is the bentonite-activated carbon granulate for the preventive, careful treatment of mash/crushed grapes and must/ grape juice from white and red grapes and thus for the making of clean aroma wines from damaged grapes. It eliminates residues of spraying agents and other disturbing and undesirable substances, prevents off- taste and off-smell and fermentation disturbances.
**Recommended Dosage** 150-250 g/hL
**Application** Prior to application, check prepared suspension for off-smell. Stir slowly into an approx. 3-5x of water under constant stirring. Allow to swell and settle for at minimum of 4-6 hours, for best results wait 12 hours. Pour off supernatant and liquify the prepared slurry with some of the beverage to treat. Then add the suspension to the vessel and mix thoroughly to provide for even distribution.
**Storage** Bentonites are highly adsorbent, and must be protected from foreign smells and moisture. Store in a dry and well-ventilated place free from foreign odours. Ressel opened packages immediately and tightly (airtight).
31-15040 20kg $5.50/kg
**Stability**

**NaCalit**

Sodium-Calcium Bentonite

NaCalit PORE-TEC is the granulated Na-Ca bentonite that is specifically targeted to problematic stability instances where superior flotation, absorption and clarification is required.

**Recommended Dosage**

50-150 g/100 liters

Beneficial recommended to determine exact dose rate required.

**Application**

Prior to application, check prepared suspension for off-swell. Stir slowly into an approx. 3-5x of water under constant stirring. Allow to swell and settle for at minimum of 4-6 hours, for best results wait 12 hours. Pour off supernatant and liquefy the prepared slurry with some of the beverage to treat. Then add the suspension to the vessel and mix thoroughly to provide for even distribution.

**Storage**

Bentonites are highly adsorbent, and must be protected from foreign smells and moisture.

Store in a dry and well-ventilated place free from foreign odours. Ressal opened packages immediately and tightly (airtight).

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<thead>
<tr>
<th>Code</th>
<th>Weight</th>
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**Seporet**

Bentonite specifically targeted for must/juice

SeporeT PORE-TEC is the granulated bentonite specially for must/grape juice to achieve clean fermentation. Aids in a clean fermentation and a careful, mild protein stabilisation.

**Recommended Dosage**

100-200 g/L

Beneficial recommended to determine exact dose rate required.

**Application**

Prior to application, check prepared suspension for off-swell. Stir slowly into an approx. 3-5x of water under constant stirring. Allow to swell and settle for at minimum of 4-6 hours, for best results wait 12 hours. Pour off supernatant and liquefy the prepared slurry with some of the beverage to treat. Then add the suspension to the vessel and mix thoroughly to provide for even distribution.

**Storage**

Bentonites are highly adsorbent, and must be protected from foreign smells and moisture.

Store in a dry and well-ventilated place free from foreign odours. Ressal opened packages immediately and tightly (airtight).

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**NEW UltraBent Pore-Tec UF**

CA-NA Bentonite for use with Pall Oenofine XL Crossflow System

UltraBent PORE-TEC UF was specially developed for protein stabilisation in connection with PALL Oenofine XL Crossflow System crossflow microfiltration systems. UltraBent is a granulated calcium-sodium bentonite, which due to the fineness of the bentonite and the absence of particles > 100 nm this bentonite product does not cause any abrasive wear to crossflow membranes. Owing to the defined particle-size distribution it is excellently suitable, after pre-swelling, for direct dosing into hollow fibre membranes. In this way, clarification and stabilisation need only one process step. Purity and high protein adsorbency reduce the dosage as against conventional bentonites.

**Recommended Dosage**

Wine, juice 25-200 g/L

**Usage**

Prior to application, check prepared suspension for off-swell.

Stir UltraBent PORE-TEC UF slowly into a 5-10 fold of water, ensuring constant stirring. After a rest period of 30-60 minutes, the suspension is again thoroughly mixed and then allowed to swell for a minimum of 4-8 hours. Pour off supernatant, stir the bentonite suspension once again, then add to the wine or juice. The use of warm water facilitates handling and reduces the swelling time.

**Storage**

UltraBent PORE-TEC UF is a highly effective adsorbent, and must be protected from foreign smells and moisture.

Store in a dry and well-ventilated place free from foreign odours. Ressal opened packages immediately.

**Non Pall XFlow Units**

UltraBent PORE-TEC UF is used in connection with the PALL Oenofine XL Crossflow System. For direct application on alternative systems, please contact Scott labs or your local filter/manufacturer.

**Tartarate Stabilization by Inhibition**

Claristar is a mannanprotein derived from wine yeast. It does not change the charge of your wine. It will not remove KHT. It will inhibit nucleation and crystal growth while increasing the solubility of the KHT in your wine. No final blending, acid adjustments or concentration additions should be done after a Claristar addition. It is important to note that adding a mannanprotein to a protein unstable wine may only further exacerbate the protein instability. For more information on Claristar and the stability of your wine, see pages 94-95.

CMC is a well known synthesized chemical for food products. It is a cationic cellulose obtained by alkaline carboxymethylation. It works on crystals by defacing them and restricting further growth. Generally the crystals are flattened. CMC should only be used in white wines. It may precipitate colour in red and rose wines. If a wine is protein unstable, CMC may increase this instability and cause a haze. CMC should never be used in wines that have been treated with l-histamine as it will cause a protein precipitation haze. Bench trials should always be done for colour loss and filterability.

Tartarate stabilizers such as Claristar or CMC are utilized just prior to bottling on protein stable wines.

Prior to adding Claristar or CMC the following should be adhered to:

- Confirm protein stability using a hot bath and turbidity meter.
- Claristar or CMC should be added 48 hours prior to bottling so it has enough time to “seat itself” in the wine.

Before adding Claristar or CMC, wine should be filtered through 1-2 micron depth filter media. The finer this filtration, the more crystal nuclei will be removed.

**Collodial Stabilization**

Gum arabic products act as colloid stabilizers by using electrical charge attraction and repulsion. Gum arabic is only effective in conditions of very low to no tartaric instability. They are often more effective at colloid stabilization by complexing with tannins and polyphenols.

When adding gum arabic the following should be considered:

- These products should be added 24-72 hours prior to bottling.
- Always check filterability after adding these products.

Gum arabic should not be added to your wine immediately prior to filtration as it may clog membrane filters. Adding right before a crossflow filtration can also place undue pressure on the elements and cause long term damage.

**Tartaric acid**

**Claristar**

Claristar is a mannanprotein derived from wine yeast. It does not change the charge of your wine. It will not remove KHT. It will inhibit nucleation and crystal growth while increasing the solubility of the KHT in your wine. No final blending, acid adjustments or concentration additions should be done after a Claristar addition. It is important to note that adding a mannanprotein to a protein unstable wine may only further exacerbate the protein instability. For more information on Claristar and the stability of your wine, see pages 94-95.

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**Fining**

Fining agents can be used on wine to deal with a variety of issues but it is important that treatments are done at the proper time. Fining can help enhance a wine’s clarity as well as improve filterability. See the fining product chart on page 104 for products and applications. In general, it is recommended that fining take place 6-9 weeks prior to bottling.

**Filteration**

The cleaner your wine is before filtration, the more cost effective that filtration will be. Limited contact and settling time for fining agents may result in incomplete effect and higher clogging during filtration. More clogging leads to higher filtration and labour costs.

**Finishing and Fine Tuning Wines**

The best time to make final adjustments to a wine is 6-9 weeks prior to bottling. This can include blending as well as tannin additions for fine tuning aroma, fruit or mouthfeel.

**Heat and Cold Stabilization Pre-Bottling**

Once a wine is blended, clarified and/or adjusted, it is often protein stabilized with bentonite and tartarate stabilized by one of several methods. It is recommended to heat (protein) stabilize prior to cold (tartrate) stabilization as bentonite additions may alter tartrate stabilility. It is important to use a bentonite that has good protein removal capacity. Sodium based bentonites have better protein removal capacity that calcium based bentonites, while calcium based bentonites compact less. Better sometimes a blend of the two can produce the best results.

**Bench trials**

Bench trials for stability and compaction can save time and money.

**Bentonite**

Bentonite is an effective adsorption tool that is also indiscriminate between desired and undesired proteins. Strategies can be employed to mitigate large bentonite additions. Small additions (2 g/L) of FT Blanc help form tannin protein complexes (which can reduce instability). Colloidal silica, such as Gelocolle, works on high molecular weight proteins into tannin-protein complexes. Colloidal silica works on low molecular weight proteins. Colloidal silica/Gelocolle can be used to reduce total bentonite requirements. Bentonites should be added first, then Gelocolle. Bench trials should be run to determine correct additions.

Performing a rough filtration prior to heat stabilization (whether the wine was fined or not), will help create a cleaner product to stabilize. For rough filtration we recommend using a 1-3 micron range depth filter media.

**Stabilization by Removal**

Traditional tartarate stabilization involves removal of the unstable crystals and their precursors. The common methods used are celloidin chilling, electroendosmosis and ion exchange. Cold stabilization chills the wine to near freezing to lower the solubility of tartaric acid. Ideally micro-pulverized KHT (cream of tartar) is added to provide nucleation sites for crystal formation. Once the tartrate crystals have formed, the wine is racked and/or cold filtered. Cold stabilization often results in lower titratable acidity and may alter pH.

Electrodialysis machines pass wine through charged membranes that substitute stable ions for those that could cause instability such as K+ and H+T-. This process lowers titratable acidity and may alter pH. Ion exchange machines use resin to substitute more stable ions (usually Na+) for the potassium in the wine. Both of these processes require special equipment and a great deal of water that results in salty effluent.
Filtration

Lenticular media

With a massive amount of surface area packed into a tight footprint, lenticular media take the place of filter sheets. Instead of a large plate and frame style assembly, the media is tightly arranged in a vertical format for optimum dirt holding capacity. The media can also be quickly and easily regenerated to cut down on filtration time. A large selection of grades are available in both 12” and 16” diameter.

Available sizes

- 12” (3.1m2) & 16” (6m2)

Available grades

- EK, Eum, Um, 2Um, 2.5Um, 3Um, 7Um

Cartridge

Whether you want the highest level of microbial retention, or a selective finish, we offer a wide range of grades. Cartridges can be used for small or large batches depending on the housing they are used with.

With the correct grade, water purification can also be achieved.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K800</td>
<td>K900</td>
</tr>
<tr>
<td>T1500</td>
<td></td>
</tr>
</tbody>
</table>

Filtration equipment

See page 124 for a full list of our filtration equipment from sheet filter assemblies to completely automated, crossflow filtration systems.

NEW! Celluluxx®

Cellulose based filter aids

Celluluxx® products are filter aids from cellulose, available in various degrees of fineness. Cellulose is a vegetable product, is 100% organic substance, thus fully biodegradable and therefore best suited for soil cultivation.

Usage

Celluluxx®-filter celluloses can be used for many application cases and filtration processes. For instance, filtration of sediments on the chamber filter press, filtration of juice concentrate on rotary vacuum drum filters, or clarifying filtration on horizontal screen filters. Practical trials are recommended to optimize filter aid application.

Regarding all Celluluxx®-types, it is possible to perform precoat with water, equally with wine, sparkling wine or grape must/grape juice (filtration of “süssreserve”= unfermented grape juice or partly fermented grape must for sweetening), according to usual working practice.

Disposal

Celluluxx® is entirely biodegradable, and thus filter cakes can be disposed of ecologically.

Storage

Store Celluluxx® filter aids in a well-ventilated, dry place, protected from foreign smells and moisture. Reseal opened packagings immediately and tightly.

Grades carried by Scott Labs Canada

F25, F45, F75, F30, F50

Call for pricing

NEW! Varioluxx®

Filter aid blend consisting of both Perlite and Cellulose

Varioluxx® products combine the specific properties of perlites and cellulose and thus improve filtration results.

Usage

See the product technical data sheet at www.scottlds.com.

Disposal

Varioluxx® consists of mineral and biological/organic components. The products are free from kieserit (diatomaceous earth). Dispose of in accordance with current local, provincial or federal regulations.

Storage

Varioluxx® filter aids must be protected from foreign odours and moisture. Opened packagings must be resealed immediately after taking out product.

Grades carried by Scott Labs Canada

Varioluxx®

Call for pricing

NEW! Trub Ex Neu®

Cellulose product used as pressing aid for processing lees

Trub-ex Neu is a cellulose product which can be used as a pressing aid for mashes with weak structure or for the processing of lees/deposits (especially for small amounts). Trub-ex Neu is a very voluminous and structure-giving cellulose with long fibres. It has a high liquid absorbing capacity and a good pressability. Liquids can be sucked up first and then released by pressing. Sediment particles are retained thereby by the fibrous structure of the cellulose and a good degree of clarification is obtained.

Recommended Dosage

Dependent on the liquid portion of the press mash or of the lees to be processed, 1–3 kg Trub-ex Neu/100 kg mash or 100 L lees/deposits are applied. The fibres are picked from the bale and should then be swelled in liquid. Allow a swelling time of about 2 minutes. Preswelling is advisable, since by preswelling, mixing-in and distribution of the fibres is facilitated. If this is not possible, the fibres can also be added directly to the mash, or stirred into the lees/sediments.

Usage

Trub-ex Neu as pressing aid

Through the voluminous and long fibres of Trub-ex Neu a drainage in the press cake is obtained and thus the cake structure is improved.

This is of particular importance for fruits with a weak structure of solid matter, with problematic grape mashes and stored fruits, all of which are very difficult to press. By Trub-ex Neu application pressing time is reduced, yield and clarification degree are increased.

Trub-ex Neu for lees processing

Trub-ex Neu is added to the lees/deposits. The fibres absorb the liquid and thus bind the sediment particles. This mixture can subsequently be pressed out easily and a well clarified product is obtained. Trub-ex Neu is particularly suitable for the processing of deacidification lees and lees from clearing of the must/grape juice. By clarification an extraction of undesirable taste-giving agents is prevented.

Storage

Protect against the influences of odour and humidity. Reseal opened packaging units immediately.

Disposal

Trub-ex Neu is completely biodegradable (100% biomass). In dependence on the processed material, the product can be disposed of, or composted in an environmentally friendly manner.

31-15255 10kg $9.25/kg
Frequently Asked Questions

What grade filter media should I use?

Filtration is primarily used in winemaking to achieve two goals: to attain an acceptable level of clarity and to improve microbial stability. Consider these goals when selecting your porosity (by micron rating).

The following porosity ranges can be considered a guideline:

- \( > 5 \mu \text{ = rough} \)
- \( 1 \mu - 5 \mu \text{ = polish} \)
- \( < 1 \mu \text{ = sanitizing} \)

If the final goal is to filter through a sterile membrane before bottling, one must consider preparation through a rough, polishing and sanitizing grade filter prior to sterile filtration. Depending on the initial state of the wine (clarity and type of solids in suspension), filtration steps can be added or removed to enhance efficiency. In general, selecting media grades from each category will achieve your primary goals of clarity and improved microbial stability.

How much wine can I filter through a 0.45 micron membrane cartridge filter before having to replace it?

The membrane will last as long as it continues to let wine through, while also passing regular integrity testing. The point in which membranes will clog is dependent upon the preparation of the wine (pre-filtration or fining), as well as the constituents of the wine (colloids and gums, for example). Regeneration using forward flushes of warm water (120-125°F/49-57°C), as well as chemical regeneration, can help to increase the longevity and throughput of membranes (or any filter media). Filter regeneration is always more effective when performed before filters are entirely clogged.

What are the effects of fining agents, such as activated carbon and bentonite, on filtration?

Fining agents can be very useful. Some products, however, can also lead to the premature clogging of your depth and surface filter media. For example, a relatively small amount of fining can immediately clog depth media. Also, products like bentonite and carbon can disable hollow fiber crossflow filters by jamming capillaries. Clean backwashing after full settling can help prevent these issues and will help optimize efficiency of filtration.

My wine filtered easily through my EK filters, but when I started bottling the next week, the wine immediately clogged my membrane. Why?

Depth filtration (sheets, lenticular, DE, etc.) can manage large colloidal proteins much more effectively and help prepare the wine for membrane (surface) filtration. The assistance of depth filtration is optimally effective if done within a 24 hour window of membrane filtration. For example, if done within this time frame, the colloidal material in the filtrate begins to regroup and can cause surface clogging on your membrane. If you must wait longer than 24 hours, you can alternatively repeat the filtration through the same grade depth filtration media before filtering through the membrane. You may also consider the use of enzymes to mitigate other clogging factors (i.e. pectins and glucans), as well as submitting samples to your laboratory for analysis to help determine strategies to proceed.

Be sure to check our video series, Drops of Knowledge. We are pleased to present detailed videos on set-up and usage for sheet filters, lenticular filter and cartridge filters. Visit www.scottlab.com and click on the Resources section.

Fining Agents

Fining can be used on juice or wine to deal with a variety of issues. These include enhancement of stability and clarity, improved filterability and removal of undesirable characters and components. Fining can also unmask hidden flavors and aromas and reduce the risk of microbial spoilage. Some fining agents are single function while others can perform multiple tasks. Sometimes a combination of products is required to resolve a single problem.

Bench trials are always recommended prior to product use. Samples of fining agents for bench trials are available on request. Dosage for all fining agents for whatever purpose should be determined by such trials. Protocols should be carefully observed for bench trials and cellar additions should be prepared and used the same way. Refer to page 125 to calculate formulas.

Visit our website at www.scottlab.com for specific product bench trial data sheets. Remember that the extent of fining can make a difference as to a wine’s body, aroma, flavor and color. It can also impact the amount of filtration that will be necessary.

Notes:

- Always prepare fining agents in water (not wine or diluted wine).
- Addition by pumping using the Venturi effect is a very efficient way of dispersal. A Mazzei injector is a particularly effective tool for this purpose (see page 713 for more information). Closed circulation after addition is also beneficial. Consult the manufacturer’s recommendation prior to use.
- Though most fining agents react rapidly when contact is made, varying tank sizes and addition methods mean that it is always prudent to give products time to work.

Recommended minimum and maximum contact time for some of the most common filtering products are shown as below.

<table>
<thead>
<tr>
<th>Product</th>
<th>Estimated Minimum Contact Time</th>
<th>Estimated Maximum Contact Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bentonat 5</td>
<td>7 days</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Benfotab</td>
<td>7 days</td>
<td>3 weeks</td>
</tr>
<tr>
<td>Casinate de potassium</td>
<td>2 days</td>
<td>15 days</td>
</tr>
<tr>
<td>Colle Perle, Inocolle, Inocolle Extra NF</td>
<td>7 days</td>
<td>3 weeks</td>
</tr>
<tr>
<td>Cristalline Plus</td>
<td>2 weeks</td>
<td>4 weeks</td>
</tr>
<tr>
<td>Freshproduct</td>
<td>7 days</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Polysacal</td>
<td>10 days</td>
<td>3 weeks</td>
</tr>
<tr>
<td>Polysol</td>
<td>7 days</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Redinex</td>
<td>3 days</td>
<td>5 days</td>
</tr>
<tr>
<td>Sparkolloid, Hid and Cold Mix</td>
<td>2–7 days</td>
<td>2 weeks</td>
</tr>
</tbody>
</table>

*A taller tank requires longer contact time. Above times are estimates only. Contact times may vary depending upon the wine matrix, as well as the size and shape of container being used.*

Basics

Types of Fining

**Clarification and Improve Filterability**

Fining to clarify and improve filterability may involve the use of reactive substances and/or settling agents to eliminate undesirable substances. It can also be used to complement and potentially reduce the need for mechanical clarification by centrifugation or filtration.

**Improvement of Aroma and Flavors**

Fining to improve aroma and flavors may involve issues like removing bitterness, reducing perceived oxidation and eliminating “moldy” or sulfur off-odors.
Choosing the Right Fining Agent

Granulol – GE/FA/BI 105

Activated Carbon Pellets
Granulol GE — for absorption of undesired off-taste and off-roma.
Granulol FA — elimination of reddish off-colours due to browning.
Granulol BI — reduction of tannins and polyphenols and elimination of brownish colour.

Dosage
GE 10–60 g/HL
FA 10–30 g/HL
BI 10–50 g/HL

Application
Add directly to the must, wine, juice or to other beverages. The pellets immediately disintegrate after addition to the beverage. Stir intensively for several minutes. Afterwards stir again 2 or 3 times in short intervals. Full absorption will occur within one day. The activated carbon deposit should then be separated as soon as possible. Bench trials are highly recommended to ensure proper dose rates are achieved.

Storage
Protect from foreign odours and humidity. Reseal opened packaging immediately and tightly.

Caséinate de Potassium
Formulated for the preventative treatment of must prone to oxidation; helps prevent formation of undesirable off-characters
White, Rosé, Fruit, Cider

Recommended Dosage: Bench trials recommended
Juice 500–1000 ppm 50–100 g/HL 4.2–8.4 lb/1000 gal
Wine 200–2000 ppm 20–100 g/HL 1.7–8.4 lb/1000 gal
Usage
Mix the Caséinate de potassium in approximately 10 times its weight of cold water. Allow the solution to stand for about 4 hours. Stir to remove any lumps. For juice, add the Caséinate de potassium solution before settling or at the start of alcoholic fermentation. For wine, add the Caséinate de potassium solution gradually during pumping over or via firing connection. Mix vigorously after adding the Caséinate de potassium solution. Minimum contact time is 2 days, maximum is 15 days.

Storage
Dated expiration. Store in a dry, odour-free environment below 25°C (77°F). Once hydrated, Caséinate de potassium will not keep for more than 48 hours.

Bentolact S 105

Formulated for the preventative treatment of must prone to oxidation; helps prevent formation of undesirable off-characters
White, Rosé, Fruit

Bentolact S is a proprietary IOC blend of soluble casein and bentonite. It is most effective when used early (e.g., during cold settling of juice). Bentolact S can help reduce bitterness associated with heavy press fractions or moldy grapes. The negative charge of bentonite attracts materials which can contribute to off-odours and haze. At the same time the casein will help remove phenolic compounds associated with bitterness and oxidation. Higher dosages may be used for poor quality materials which can contribute to off-odours and haze. The third application is Clear Up's ability to increase the inner surface in heavily pre-clarified musts, thereby reducing wine gravity in sugar-rich juices.

Recommended Dosage: Bench Trials Recommended
Application Dosage
Juice
To absorb off-flavours and odour effects 10–30 g/hL
Sluggish or stuck fermentations 30–40 g/hL
To absorb off-flavours and odour effects 10–30 g/hL
To increase the inner surface 10–20 g/hL

Usage
Can be applied to all musts and young wines. For all applications, it is important to ensure that Clear up BIO is well suspended and well distributed. Dilute in 10L of wine/juice for every 1kg of Clear Up used. Minimum contact time is 1–2 hours, and a maximum contact time should not exceed 24 hours.

Storage
Store in a cool and dry place. Open containers must be consumed immediately.

30-13445 1kg $35.80/kg
**Fining Agents**

**Degustis**  
Fining agent based on silicate materials  
Red, White, Rosé

Degustis is a compound on the basis of interlaced special silicium dioxide and integrated montmorillonite factors from the mineral extract of bentonite.  
A granulated product that is easy to suspend. Degustis is useful in correcting and reducing harsh tannins in young wines. It is also known to minimize a wine’s sensitivity to oxidation.

**Recommended Dosage**  
For minor corrections, 5-10 g/hL.  
For preventive treatment of atypical, 10 g/hL.

**Usage**  
Dilute in 5x quantity of water. Allow to swell for 4-6 hours, preferably overnight. Stir again immediately before dosing and mix thoroughly while adding it to the wine. Filtration can be performed after a few hours, or after 2-3 days at the latest.

**Storage**  
Protect odours and foreign odours. Reseal tightly after opening. 

**Erbigel BIO**  
Organic Gelatin  
White, Rose, Fruit

Erbigel Bio is a certified organic food-grade gelatin for the treatment of grape must, juice, wine and other beverages. Erbigel Bio is a 100 % organic gelatin that supports grapes must flotation and can be applied in combination with silica sol for clarification/fining. At the same time, the organic gelatin product reduces tannins and polyphenols and thus, optimal stabilization against colloidal haze is obtained.

**Recommended Dosage**  
Bench trial highly recommended

**Usage**  
Dilute in water at 5L cold water per required 1kg in organic gelatin. Ensuring constant stirring, the gelatin is thoroughly mixed with the water. Allow to swell for approximately 20 minutes. Subsequently, 4–5 parts of hot water and stir intensively until the gelatin is dissolved. Use up the dissolved gelatin as quickly as possible.

**Storage**  
Protect from foreign odours and humidity. Reseal tightly after opening.  

**Freshprotect**  
PVP/P blend for treatment of oxygen sensitive juice and wine  
White, Rosé, Fruit

Freshprotect is a proprietary IOC blend of polyvinylpyrrolidone (PVP), bentonite and water gum. It was specifically formulated to help minimize problems associated with the oxidation of polyphenols including colour, bitterness and herbaceousness in oxygen sensitive juice. These characteristics are significantly mitigated with the use of Freshprotect. PVP is intended as a processing aid. Wines made with it must be racked or filtered afterwards. Freshprotect has also been known to help correct sensory off-aromas.

**Recommended Dosage**  
Bench trial recommended

**Usage**  
200-1000 ppm  
20-100 g/hL  
1.7-8.3 lb/1000 gal

**Gelocolle**  
Sila gel for improved settling  
Red, White, Rosé, Fruit, Cider

Gelocolle is an aqueous solution of suspended silica commonly used in conjunction with gelatins, isinglass and other organic fining agents. It helps compact lees and reduces the risk of overfiltering. It is also useful for hard-to-filter wines where it helps chelate proteins and other compounds.

**Recommended Dosage**  
Bench trial recommended

**Usage**  
Gelocolle should be added directly into the wine 1 hour after filtering with organic fining agents. Mix thoroughly.

**Storage**  
Dated expiration. Store in a dry well-ventilated environment between 10-20°C(50-68°F). Gelocolle solids at temperatures of less than 0°C(32°F). This process is irreversible. Once opened, use immediately.

**Erbigel Flot**  
Gelatin for flotation  
Red, White, Rosé

Erbigel Flot is a special gelatin with a high capacity for flocculation and binding of phenols during flotation. The acidic factor and the bloom value provide a quick binding of phenols and an immediate flocculation. It is highly efficient even in circumstances with increased phenol content and glucans from botrytis.

**Dosage**  
5-15 g/hL

**Usage**  
Pour approximately 5L cold water into a vessel for every 5kg of Erbigel Flot required. Subsequently add the gelatin slowly while stirring intensively and allow a rest period of approximately 20 minutes to swell. Afterwards, mix with 4–5 parts hot water and stir intensively while adding it to the gelatin filtration can be performed after a few hours, or after 2-3 days at the latest.

**Storage**  
Protect from foreign odours and humidity. Reseal tightly after opening.

**Freshprotect**

**Recommended Dosage**  
Bench trial recommended

**Usage**  
325-500 ppm  
12-48 g/hL  
1.0-0.4 lb/1000 gal

**Hot Mix Sparkkoloid NF**  
For superior clarification of wine  
White, Red, Rosé, Fruit, Cider, Mead

Hot Mix Sparkkoloid NF is specially formulated to clarify wine without impacting aroma, body or flavour. It can be used after bentonite or carbon fining to help compact lees. Hot Mix Sparkkoloid NF can be helpful in removing haze left by other fining agents and enhances filterability.

**Recommended Dosage**  
Bench trial recommended

**Usage**  
30-150 ppm  
0.1-0.05 lb/1000 gal

**Gelocolle**

**Recommended Dosage**  
Bench trial recommended

**Usage**  
For preventive treatment of atypical, 10 g/hL.  
For minor corrections, 5-10 g/hL.
Incolle Extra NL

Gelatin to enhance the bouquet of finished wines or for the treatment of moldy mud

Usage
- For Whites/Rosés, Ciders or Light Coloured Fruit Wines, - for Normal cloudiness 100 mL/hL of wine for more than 30 days
- For Oxydized Juice

Storage
- Dated expiration. Store in a dry, well-ventilated environment below 25°C (77°F).
- 38-12075 1L $9.10/L

Incolle Extra N1

Gelatin for gentle fining of structured red wines

Usage
- For Whites/Rosés, Ciders or Light Coloured Fruit Wines.
- 25-75 mL/hL of wine for normal cloudiness

Storage
- Dated expiration. Store in a dry, well-ventilated environment below 25°C (77°F).
- 38-12060 1kg $25.90/kg

Klar Sol 30

Alkaline Silica Gel

Usage
- For Oxidized Juice

Storage
- Dated expiration. Store in a dry, well-ventilated environment below 25°C (77°F).
- 38-12095 1kg $17.65/kg

Kupzit

Copper citrate preparation for the treatment of sulphide off odours

Usage
- For Oxidized Juice

Storage
- Dated expiration. Store in a dry, well-ventilated environment below 25°C (77°F).
- 38-12010 1kg $49.40/kg

Polycel

PVPV and casein for treatment of oxidized must or wine or for preventative treatment of browning and picking

Usage
- For Preventative Treatment of Waste

Storage
- Dated expiration. Store in a dry, well-ventilated environment below 25°C (77°F).
- 38-12095 1kg $76.50/kg
Reduless

Reduces sulfur off- aromas
Red, White, Rosé, Cider
Reduless is a proprietary fining product from Lallemand for the reduction of sulfur off aromas such as H2S and dimethyl sulfide. Its formulation includes bentonite together with other natural elements which are rich in copper. Reduless can naturally enhance roundness while treating sulfur problems. It has also been shown to reduce phenol related defects. It is particularly useful with sulfur prone varieties (e.g. Syrah, Sauvignon Blanc, Carignane, Pinot Noir; Chardonnay).

Recommended Dosage
100-150 ppm     10–15 g/hL     0.8–1.2 lb/1000 gal

Usage
Mix Reduless in 10 times its weight in water. Add immediately to the tank. If prepared in advance, re-suspend the product prior to its addition to the tank. Gently mix and rack off or filter after 72 hours. The maximum potential copper contribution when used according to the recommendation is 0.02 ppm.

Storage
Store at room temperature, away from direct sunlight and strong odours. It can be stored for up to 4 years from production date.

Vinpur Special®

Milk casein-compound
Vinpur Special® is characterized by and renowned for the gentle and selective fining effect of milk casein. Vinpur Special® was developed by a special process, thus creating a macro-porous, easy to wet and highly efficient milk casein compound which does not lead to a change in the usual parameters of wine analysis, but which brings about a significant improvement in colour, clarity, smell and taste. Vinpur Special® does not require additional filter aids.

Dosage and Application
Added prior to bottling at dose rate of 5–60 g/hL. Benchtrials to determine required dosage at recommended. dependent on pretests and aim of treatment. If necessary, a higher dosage can be employed without the risk of overfining. Wines should be treated after racking. Add the amount of Vinpur Special® which has been determined by pretests directly to the vessel under constant stirring. It is not necessary to prepare a slurry first. Stir intensively for 20–30 minutes so that Vinpur Special® is thoroughly distributed. Allow to settle for 2–3 hours. Stir again intensively for 20–30 minutes. Let settle overnight.

Storage
Store in a cool, dry environment and away from foreign odours and humidity. Reseal opened packaging immediately.

Non-Allergenic Fining Agents

Global wine markets continue to seek ways to remove animal-derived and potentially allergenic enological products from their production process. Scott Labs is in the process of introducing a new generation of highly effective, “label friendly” fining agents. Two of these are available to trial or purchase for harvest 2018. Both products contain a blend of chitosan and chitin-glucan and at the time of this publication are listed under 27 CFR 24.250. They are awaiting a change in status from the TTB.

Qi

For removal of oxidized phenolics. Can be used as an alternative to casein.

Qi’Up

A flotation aid. Can be used as an alternative to gelatin.

Maximal O2 Consumption Capacity

<table>
<thead>
<tr>
<th></th>
<th>Maximal O2 Consumption Capacity (mg O2/gram A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Pure-Lees Longevity</td>
<td></td>
</tr>
</tbody>
</table>

Preservation of Thiols

<table>
<thead>
<tr>
<th></th>
<th>Preservation of Thiols (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chardonay</td>
<td>Pure-Lees Longevity</td>
</tr>
</tbody>
</table>

Note: Pure-Lees Longevity Plus cannot be used as an SO2 substitute but it can help reduce SO2 required.
Frequently Asked Questions

Are all gelatin products the same?
No, today’s gelatin products offer a wide range of options. The gelatins we offer are derived from porcine by-products. They are refined, purified and then separated into specific fractions by capillary electrophoresis. Positively charged and colloidal in nature, gelatins require tannins for agglomeration and precipitation. Gelatins can be used to change wine structure or to enhance aroma and flavour. Timing of gelatin additions is critical to achieve the best results. Removing immature tannins and anthocyanins too early can upset the future balance and structure of the wine.

What is the best way to add fining agents?
There are several ways to add fining agents. Add the fining agent to the tank while mixing with a Guth agitator, dosing into a recirculation pump setup with a stand-alone dosing machine or with a Mazzei injector.

What is the best way to add enzymes?
If you want to compact the lees. Which product is best?
Run bench trials with Hot Mix Sparkolloid NF, Cristalline Plus (isinglass) or gelatin.

What are some of the other benefits of fining with gelatin?
Firing with gelatin has been shown to significantly lower yeast and bacterial populations such as Brettanomyces and Acetobacter (Murat and Dumeau, 2003). Clarifying can also help increase the filterability of wines.

What is isinglass?
When should I use it?
Isglass (Cristalline Plus) is used especially for applications with white and rosé wines. Made from the swim bladders of fish, this fining agent is proven to enhance clarity and brilliance even in wines made from botrytised grapes.

Which fining agents react with lysozyme?
Gelatin, potassium caseinate and pectinase do not affect lysozyme activity. In fact, pectinase treatment will help maintain lysozyme activity by breaking down phenolic compounds that can bind lysozyme.

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Gelatin, potassium caseinate and pectinase do not affect lysozyme activity. In fact, pectinase treatment will help maintain lysozyme activity by breaking down phenolic compounds that can bind lysozyme.

What is the best way to add fining agents?
There are several ways to add fining agents. Add the fining agent to the tank while mixing with a Guth agitator, dosing into a recirculation pump setup with a stand-alone dosing machine or with a Mazzei injector.

What is isinglass?
When should I use it?
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Traditional Method
Primary Fermentation

Yeasts
18-2007, DV10, EC1118, BA11, Lalvin C, NT 116, QA23, VIN 13

Your primary fermentation yeast should be chosen for its ability to fer- ment rapidly and to completion. Juice used for the base wine should be pressed gently and fermented at lower temperatures 17-18°C (62-64°F). 18-2007, DV10 and EC1118 are traditional sparkling base wine strains. BA11, Lalvin C, NT 136, QA23 and VIN 13 are strains that have also been used for base wines.

NUTRITION
It is important to have a clean quick primary fermentation. Good nutrition is essential. Good nutrition will aid in a complete yeast nutrient such as Fermaid A, K or O. A problematic primary fermentation can lead to a difficult secondary fermentation and sensory characters and possibly a stuck or sluggish fermentation. These factors can

Secondary Fermentation
Yeasts
18-2007, DV10, EC1118, Lalvin C, QA23

18-2007, DV10, EC1118 are the traditional yeasts used for secondary fermentation. It is important to choose a strain that is reliable and will finish rapidly.

Nutrition
GoFerm ProGef Evolution is an important part of secondary fer- menation nutrition. The use of GoFerm during rehydration helps prepare the wine for more effective conditions in the base wine (low pH, alcohol, low nutrient levels). The base wine should also have more complete nutrient added such as Fermaid O or Phosphates Titrates. GoFerm and Fermaid O descriptions and pricing are on pages 39, 41.

Phosphate Titrates
DAP and Tilmade_balance. See description and pricing on page 41.

Clariﬁcation/Riddling
Clarifcation S

Liquid preparation of Sodium Bentonite specially selected for riddling
Clarifcation S is a liquid preparation of sodium bentonite that can be used for both manual and automatic riddling. Clarifcation S helps create a compact sediment in the bottle that can move easily down into the neck during the riddling process. Clarifcation S has a gentle mode of ac-

Phosphates Mazure
Co-adjuvant for riddling assistance
Phosphates Mazure is a bentonite based liquid co-adjuvant. It is used in conjunction with Clarifcation S. The Phosphates Mazure adds “weight” to the Clarifcation S allowing an intact sediment to be formed in the neck of the bottle making classical and manual riddling easier.

Recommended Dosage
200 ppm 20 mL/L 757 mL/1000 gal

Usage
Shake the bottle well before use. No additional product preparation is required. Clarifcation S can be added directly to the wine after the yeast and sugar have been added. The tank must be continually mixed during the bottling operation in order to remain homogenous.

Storage
Dated expiration. Store in a dark, dry environment at a temperature between 5-25°C (41-77°F). Once opened, use immediately.

Phosphates Mazure

38-12065
5L $19.80/L

Liqueur (Dosage)
Flashgum R

Gum arabic for stability and perceived sweetness and softness on the palate.

Usage

38-12065
5L $19.80/L

Storage
Dated expiration. Store in a dark, dry environment at a temperature between 5-25°C (41-77°F). Once opened, use immediately.

Clarifcation XL

Liquid preparation of bentonite and sili cate for riddling

Clarifcation XL is a liquid adjuvant consisting of a pure bentonite (select- ed for its uniformity) and a silicate that can be used for both manual and automatic riddling. The combination of these components gives a high degree of clarification and sedimentation. No other additives are required for riddling operations. Clarifcation XL provides compact deposits that are non-adherent and easy to remove.

Recommended Dosage
Whites
600–800 ppm 60–80 mL/L 2.6–3.0 L/1000 gal

Red or Rosé
800–1000 ppm 80–100 mL/L 3.0–3.8 L/1000 gal

Usage
Shake the bottle well before use. No additional product preparation is required. Clarifcation XL can be added directly to the wine after the yeast and sugar have been added. The tank must be continually mixed during the bottling operation in order to remain homogenous.

Storage
Dated expiration. Store in a dark, dry environment at a temperature between 5-25°C (41-77°F). Once opened, use immediately.

Call for pricing

Non-Traditional Method

ProElif®

Double encapsulated yeast for secondary fermentation in sparkling wine production
ProElif® is an encapsulated yeast product developed by Proeno for secondary fermentations. The yeast cells are double encapsulated in an alginate bead. The beads can be directly inoculated into the bottle (eliminating the need to prepare a starter culture). This helps ensure control of the number of cells per bottle. Upon fermentation comple-
tion, the beads have a greater density than the wine and will quickly drop to the neck of the bottle when inverted. The beads accumulate more tightly than traditional riddling, therefore less wine is lost during disgorging. Traditional freezing and disgorging methods are used to finish the process. The use of ProElif results in a fresh sparkling wine. If greater yeast character is desired, you may make changes to the base wine with this in mind. For example, ProElif has been used with Opti-WHITE treated base wine with good results.

For ProElif to be successful, the base wine should fall within these parameters:

Alcohol

5.0% (v/v)

Calcium

≤ 15 mg/L

Free SO2

≤ 15 mg/L

Protein Stability

Stable

pH

3.0

Tartrate Stability

Stable

Free Assimilable

≤ 100 mg/L

Fermentation

≥ 12°C (54°F)

Nitrogen

required. Phosphates Mazure can be added directly to the wine after shaking. No additional product preparation is required. Clarifcation S has a greater density than the wine and will quickly drop to the neck of the bottle when inverted. The beads accumulate more tightly than traditional riddling, therefore less wine is lost during disgorging. All of these parameters act in synergy with one another. It is critical to manage them together. If one parameter is over the limit, try to compensate with the others or ferment at a higher temperature.

Recommended Dosage
133–200 g/L 1.0–1.5 g/L 750 mL bottle

Note: 1 g of ProElif beads = 4–6 million active cells/mL.

Usage
Please contact us for full usage instructions.

Storage
Dated expiration. Store at 4°C (40°F). Do not freeze. Once opened use immediately. For more detailed information, technical data sheets are available on our website www.scottlabsltd.com.

33-15570
1kg $258.00/kg

33-15570
1kg $258.00/kg

For more information on Sparkling wine production and specific products, please visit our website at www.scottlabsltd.com.

Packaging
We offer a full range of champagne corks and wirehoods for sparkling wine production. Please contact us for more information.

We are excited to be releasing our inaugural Sparkling Handbook later this year. Please contact Kristen—kcooper@scottlabsltd.com to get on the mailing list.
Due to challenging weather conditions and, to a lesser extent, disease pressure, much of North America east of the Rockies is planted with either French-American hybrids (e.g., Maréchal Foch, Chambourcin, Seyval, Traminette) or native American varieties (e.g., Norton, Muscadine, Niagara).

With one or two exceptions, native American varieties tend to have very strong fruit flavors and aromas compared to European cultivars. This is especially true of Muscadine and Labrusca varieties. The combination of the strong fruit and high acid in many varieties creates wines that are often balanced by residual sugar. Of the native varieties, Norton is the most successful in producing a dry wine with flavors and aromas which come close to those of Vitis vinifera.

French-American hybrid varieties are crosses between Vitis vinifera and one or more American varieties. As breeding hybrid grapes involves multiple generations of these crosses, it is possible to create cultivars that have aromas and flavors that are more or less reminiscent of their European ancestors, and the overt fruitiness from the American side can be muted to a greater or lesser degree. Cultural methods in the vineyard can affect this fruit expression, as can the degree of ripeness at harvest. The expression of fruit characteristics can also be influenced by the strain of yeast used to ferment the wine. Yeast can enhance or mute flavors and aromas. Some yeast strains contain genes that can convert flavorless precursors into aromatic elements, while others produce enzymes that cleave glycosidic bonds and release aromatic terpenes into the wine. Yeast can also produce high levels of polysaccharides which can increase mouthfeel, balance harshness and acidity (within reason) and add to the colloidal stability of the wine.

In the last few years, new strains of yeast have shown promise with hybrids and native American varieties. Some of these are listed on the following charts.
**Hybrid Red Yeast Strains**

<table>
<thead>
<tr>
<th>Yeast Strain Type</th>
<th>Highly Recommended</th>
<th>Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. cerevisiae cerevisiae</td>
<td>☑️</td>
<td>☑️</td>
</tr>
<tr>
<td>S. cerevisiae bayanus</td>
<td>☑️</td>
<td>☑️</td>
</tr>
</tbody>
</table>

A hybrid yeast strain

A blend of yeast strains

- Black Spanish
- Chambourcin
- Crimson Pearl
- Frontenac
- Merlotul Foch
- Marquette
- Noiret
- Norton
- Petite Pearl
- St. Croix

- Enhances berry fruit
- Diminishes vegetal characters
- Increases mid-palate balance
- Enhances complexity
- Enhances mouthfeel
- High producer of polysaccharides
- Promotes color stability
- Reduces malic acid content

**MLF Compatibility**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Average</th>
<th>Very Good</th>
<th>Good</th>
<th>Bad</th>
<th>Average</th>
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<th>Bad</th>
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<th>Average</th>
<th>Very Good</th>
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<tr>
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<td>10-12°C</td>
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<td>Very Good</td>
<td>Good</td>
<td>Bad</td>
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<tr>
<td>Above 12°C</td>
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<td>Average</td>
<td>Good</td>
<td>Bad</td>
<td>Average</td>
<td>Average</td>
<td>Very Good</td>
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<td>Average</td>
<td>Average</td>
<td>Very Good</td>
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<td>Bad</td>
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</tbody>
</table>

**Hybrid and Non-Vinifera Products**

### Clear Extreme

Enzyme for hard to settle Hybrid and American grapes

Hybrid and American grape varieties may be difficult to clarify due to unique grape characteristics and the cool climate conditions for processing. Rapidase Clear Extreme can be used after pressing to help preserve aroma freshness, reduce viscosity, improve juice clarity, help compact lees and speed up clarification even in difficult conditions (low temperature, low pH, hard to settle varieties). Rapidase Clear Extreme will remain active from 6-50°C (43-122°F).

**Recommended dosage (dependent on temperature):**

- 6-10°C (43-50°F): 4 g/L; 152 g/1000 gal
- 10-12°C (50-54°F): 2 g/L; 76 g/1000 gal
- Above 12°C (54°F): 1 g/L; 38 g/1000 gal

**Usage**

Dissolve Rapidase Clear Extreme in 10 times its weight in water, stir gently, allow to sit for a few minutes. Then add to the juice right after pressing.

**Storage**

Dated expiration. Store refrigerated at 4–8°C (40–45°F).

**Recommended dosage:**

- 6-10°C (43-50°F): 4 g/L; 152 g/1000 gal
- Above 10°C (50°F): 3 g/L; 114 g/1000 gal

### Lalvin C

Yeast for use in cool climate wines high in malic acid, cider, fruit wines, restarting stuck fermentations, and secondary fermentation in sparkling wines. Lalvin C has the ability to partially degrade malic acid (up to 45%).

A strain selected from the collection of the Pasteur Institute, Paris. Originally isolated from a French wine region, Lalvin C has been used in winemaking since the early 1960’s.

**Technical Information**

- **Fermentation Temperature:** 15-30°C (59-86°F) ideal
- **Lag phase:** Very short
- **Nitrogen needs:** Low
- **SO₂ production:** Low
- **Fermentation speed:** Moderate
- **Vigor:** High
- **Alcohol tolerance:** 17% (v/v)
- **Volatile acidity:** Very low
- **Competitive factor:** Sensitive
- **Sensory contribution:** Neutral

### Scottzyme KS + KS Plus

Enzyme blends for enhanced settling and filtration.

**Testimonial**

Peter Bell, Winemaker
Fox Run Vineyards

Although I work primarily with vinifera, I make one wine from the native Concord grape. It has historically given me all kinds of trouble with filtration. This year I decided to treat it with the enzyme Scottzyme KS Plus. The wine sailed through all filtrations. This is definitely the way to go!

33-15119  500g  $280.00/kg
Choosing the Right Product for Specialty Wines

### Yeast

<table>
<thead>
<tr>
<th>Yeast</th>
<th>Fruit</th>
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<tbody>
<tr>
<td>P11</td>
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<tr>
<td>ICV 047</td>
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</tr>
<tr>
<td>DV10</td>
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<td>18</td>
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</tr>
<tr>
<td>ECT18</td>
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<td>18</td>
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</tr>
<tr>
<td>K1 (VIT16)</td>
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<td>20</td>
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<tr>
<td>Laken E</td>
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<td>20</td>
<td></td>
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<tr>
<td>M2</td>
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<td>20</td>
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<tr>
<td>OKAY</td>
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<tr>
<td>QA23</td>
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<tr>
<td>R2</td>
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<td>23</td>
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<tr>
<td>Sensy</td>
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<td>VIN 13</td>
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<tr>
<td>V75</td>
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</table>

### Tannins

**Tannins**

Tannins give wine its characteristic structure and can contribute to its longevity. Some types of fruit contain very little natural tannin, which can make producing a well-balanced wine difficult. Enological tannins can be added to enhance flavour, aroma characteristics and complexity. They may also reduce the risk of oxidation and help stabilize wine color. Try FT Blanc Soft to give a perception of sweetness without adding sugar. Add FT Rouge or FT Rouge Soft to help enhance complexity and stabilize wine color. Addition of FT Rouge Berry will allow for the development of enhanced red berry character. FT Blanc Citrus will allow for the development of enhanced aromatic characters. The use of Radiance will help promote balance and mouthfeel, while maintaining acidity. It is also known for revealing fresh fruit, vanilla, coconut and caramel.

### Fining Agents

**Fining Agents**

Typically, fining agents are used to enhance clarity in fruit wine and mead. Fining agents can also help with settling, stability and oxidation. Before adding any fining agent to your wine, be sure to run a laboratory bench trial to determine the correct dosage. To remove excess astrinacy or to enhance wine bouquet, try the geltinis Colle Perle or Inobiolo. Bentolact S can remove excess protein, improve stability and reduce bitterness. Try Hot Mix Sparkolloid NF to gently clarify and brighten the wine. Add Cristalline Plus (congella) to brighten and clarify both red and white wine. Caselaite de potassium (casseta) can treat oxidation and help prevent further browning. Redulles is naturally rich in copper and may help decrease sulfur and phenol related defects.

### Sulfur Dioxide

Sulfur dioxide is used to inhibit the growth of microorganisms and to help reduce the risk of oxidation. Inosose SO2 Granules and Tablets are easy to use and are already measured into specific doses for your convenience. See page 47 for dosing information.

### Yeast Derivative Nutrients

<table>
<thead>
<tr>
<th>Yeast Derivative Nutrients</th>
<th>Fruit</th>
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### Malolactic Bacteria

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<td>MBR 31</td>
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### Enzymes

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<tr>
<td>KS Plus</td>
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### Nutrients

<table>
<thead>
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<th>Nutrients</th>
<th>Fruit</th>
<th>Mead</th>
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<tbody>
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<td>Formol A</td>
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<tr>
<td>Formol K</td>
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<td>Formol O</td>
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<tr>
<td>Go-Ferm</td>
<td>39</td>
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<tr>
<td>Go-Ferm/Protect Evolution</td>
<td>39</td>
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</tbody>
</table>
BentoTEST®
Rapid determination of the bentonite requirements for wine and juice. Proteins which may cause cloudiness in the finished beverage are determined by means of the BentoTEST®. The BentoTEST® allows the user to determine if bentonite is required, and at what dose rate, to ensure protein stability. The test kit provides the user with reagent solutions, where 1 reagent pouch is used per BentoTEST. The ease of use, rapid response and visual assessment make the BentoTEST® a valuable tool for any winemaker.

75-34100 $249.00

Erbslöh EasyKrista Test
Application kit for the evaluation of crystal stability in wine. The Erbslöh EasyKrista Test offers the possibility to determine the potassium hydrogen tartrate saturation temperature and the calcium tartrate saturation temperature of a wine. In addition, the readiness of a wine to crystallize can be assessed by means of the mini contact process.
The EasyKrista Test consists of:
EasyKrista Test — conductivity meter with measuring cells for temperature and conductivity
• Kali-Contact
• Calci-Contact
• Calibration solution
• Cleaning solution
• Measuring spoon
• 60 mL beaker with lid

31-15075 $349.00

Other Offerings
Vacuum Pressure Gauges
ML Test Kits
pH Meter
Berecrometer
Ebulliometer
Catochromsren
RD80
So, apparatus
Hydrometers

Please contact Ken Yee at kyee@scottlabsltd.com for more information.

Lab + Test Kits

Equipment
Crush Pad Equipment & Design
Grape receiving and processing equipment has finally come of age. The quality-oriented winery now looks upon this part of winemaking as the first opportunity to preserve and improve what has arrived from the vineyard.
Employing the right equipment is essential to this, and innovative technology makes it easy to achieve. The correct layout of equipment can also influence the quality. Quiet, easy-to-use machinery, positioned for optimal access by the operator, makes the work pleasant and rewarding.
We are available to suggest modular or fixed crushpad designs to provide gentle grape handling and timely and efficient production. Flexibility of use and easy cleaning and maintenance are key.
For wineries of small and medium capacity, the modular design of our equipment allows you to quickly reconfigure the layout to suit your changing needs, as well as clean and store the machines when harvest is over. We have many layout designs which may already apply to your conditions, or we can create a customized layout for your needs.
Packaging
Corks, Wirehoods & Screwcaps
Scott Laboratories is the senior North American vendor of cork closures and can trace its involvement in cork back to the 1970s.

The Scott Difference
- The only independent and fully North American-owned member of the Cork Quality Council. We do not have ownership ties with any cork suppliers. This allows us to protect customer interests first and not supplier interest.
- Founding member of the Cork Quality Council
- First firm in the world to complete bulk-by-bulk SPME testing of entire cork inventory
- First firm in North America to bag corks under SO2
- First moisture controlled cork warehouse with ozone protection
- SPME testing in both the USA and Portugal using third party ISO certified analysis
- Sustainably harvested cork

Crossflow Filtration
Instead of doing multiple filtrations with different grades of media, crossflow filtration offers the power filtering in a single step. Keeping solids in suspension the machine is able to run for longer durations of time than would have fouled a traditional depth media filter. Ideal for preparing wine, cider, and mead for absolute pre-bottle filtration.

PLUMA Selective Depth Media Filtration
New from Velo Acciai is the PLUMA which offers the power of crossflow technology along with the flexibility of depth media. Using specially designed depth media the system can be loaded with multiple grades for selective retention. Operating at lower pressure the process is designed depth media the system can be loaded with multiple grades.

LEES-STOP High Solids Lees Recovery System
Also new from Velo Acciai is the LEES-STOP filtration system capable of processing juice and wine lees with up to 45% incoming solids. Utilizing the power of crossflow technology along with large diameter, sintered stainless elements the system can recover very high quality of processing juice and wine lees with up to 45% incoming solids.

Sparkling Beer & Cider
- Stock or custom corks for beer and cider
- Stock or custom wirehoods

Screwcaps
- 6 stock colours

For a complete list and more information about our corks, wirehoods and screwcaps, please visit our website at www.scottlabsbto.com.
**Product Storage and Stability Guidelines**

<table>
<thead>
<tr>
<th>Product</th>
<th>Recommended Storage (once opened)</th>
<th>Optimal Storage Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Dry Yeast</td>
<td>Use immediately</td>
<td>20°C (68°F)</td>
</tr>
<tr>
<td>Bactiogel</td>
<td>Dry, odour-free environment</td>
<td>Below 25°C (77°F)</td>
</tr>
<tr>
<td>Bactiogel S</td>
<td>Dry: Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Bodis</td>
<td>Use immediately</td>
<td>4°C (39°F)</td>
</tr>
<tr>
<td>Casaminoate de potassium</td>
<td>Dry: Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Clarister</td>
<td>Use immediately</td>
<td>10°C (50°F)</td>
</tr>
<tr>
<td>Cleaning Products (ARD)</td>
<td>Dry, odour-free environment away from sunlight.</td>
<td>10–20°C (50–68°F)</td>
</tr>
<tr>
<td>Cola Perle</td>
<td>Tightly sealed</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Cristaline Plus</td>
<td>Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Exotis SPH</td>
<td>Use immediately</td>
<td>5–10°C (41–50°F)</td>
</tr>
<tr>
<td>Freshprotect</td>
<td>Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Gaia</td>
<td>Use immediately</td>
<td>4°C (39°F)</td>
</tr>
<tr>
<td>Gelocele</td>
<td>Use immediately</td>
<td>10–20°C (50–68°F)</td>
</tr>
<tr>
<td>Gum Arabic</td>
<td>Tightly sealed</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Ino-colle</td>
<td>Tightly sealed</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Ino-colle Extra NE</td>
<td>Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Inosol Granules &amp; Tablets</td>
<td>Use immediately</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Inosum</td>
<td>Use immediately</td>
<td>4°C (39°F)</td>
</tr>
<tr>
<td>Lalzymes</td>
<td>Dry: General Storage; Rehydrated: use within a few hours</td>
<td>18°C (65°F)</td>
</tr>
<tr>
<td>Lyco-Ezy</td>
<td>Use immediately</td>
<td>Short term: @ 4°C (39°F); Long term: @ 18°C (65°F)</td>
</tr>
<tr>
<td>Lysovin</td>
<td>Dry: General Storage; Once opened; use immediately.</td>
<td>18°C (65°F)</td>
</tr>
<tr>
<td>Malolactic Bacteria</td>
<td>Use immediately</td>
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<tr>
<td>Mannoproteins</td>
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<tr>
<td>No Brett Inside</td>
<td>Dry, odour-free environment</td>
<td>Below 25°C (77°F)</td>
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<tr>
<td>Polycol</td>
<td>Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>Polycol</td>
<td>Tightly sealed; dry</td>
<td>25°C (77°F)</td>
</tr>
<tr>
<td>ProfDessert</td>
<td>Use immediately</td>
<td>4°C (39°F)</td>
</tr>
<tr>
<td>Profreshart</td>
<td>Use immediately</td>
<td>4°C (39°F)</td>
</tr>
<tr>
<td>Pure Leve Longevity Plus</td>
<td>Tightly sealed; dry</td>
<td>Below 25°C (77°F)</td>
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<tr>
<td>Rapidase Enzymes</td>
<td>Tightly sealed; refrigerate</td>
<td></td>
</tr>
<tr>
<td>Scottzyme</td>
<td>Liquid: Tightly sealed; refrigerate Dry: Tightly sealed; dry environment</td>
<td>1–2 years: Store liquid forms: @ 4°C (39°F); Store dry forms: @ 18–24°C (65–77°F)</td>
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<tr>
<td>Sparkolight NF (Hot &amp; Cold Mix)</td>
<td>Tightly sealed; dry</td>
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<tr>
<td>Tannin</td>
<td>Tightly sealed; dry</td>
<td>18°C (65°F)</td>
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<tr>
<td>Velcorin</td>
<td>Not recommended</td>
<td>20–30°C (68–86°F)</td>
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<tr>
<td>Yeast Nutrients, Yeast Derivative</td>
<td>Nutrients, ML Nutrients</td>
<td></td>
</tr>
</tbody>
</table>

**Canada Order Form 2018**

To Submit Orders to Scott Laboratories Ltd. (Canada)

Call Scott Laboratories Ltd. at 905-839-9463
Fax Scott Laboratories Ltd. at 905-839-0738
Mail Scott Laboratories Ltd. at 950 Brock Rd. South, Unit 1, Pickering, Ontario L1W 2A1
E-Mail info@scottlabsltd.com
Order online www.scottlabsltd.com (find under RESOURCES tab)

Please Print Clearly

Please Note

- All pricing for sale within Canada is FOB Pickering.
- For large orders, please call for a price quotation and order early to ensure product availability.
- We accept Visa, Mastercard and American Express.
- Credit application available online at www.scottlabsltd.com.

Company Name
Contact Name
Bill to Address
Ship to Address
Telephone Number
Purchase Order Number
Credit Card Number
Name on Card

Return Policy

Return Policy for Fermentation and Filtration Products
We offer credits if products are returned within 15 days of shipment. Please call Scott Labs Canada prior to return for authorization.

Once we receive your returned items, we will issue a credit to your account. Please note that we are not responsible for perishable items that have not been stored properly by the customer. If you are returning items for any reason, the following conditions apply:

- Sealed units must be unopened and undamaged upon return.
- Goods that have been marked or labeled will not be accepted and no credit will be issued.
- Damage claims must be reported within 5 working days of receipt of your order.
- Original packing must be retained for shipping company inspection of shipping damage claims.
- Sorry, but we do not accept returns on malolactic bacteria.
- A 20% restocking fee will be applied to all returns.
- Customer to pay return freight costs.

Note: To avoid problems, all packages should be opened immediately upon receipt and contents should be checked against the packing slip.

Scott Labs Canada should be informed immediately of any discrepancies.

**Number of Pages Faxed**

Company Name
Customer Number
Contact Name
Customer Signature
Bill to Address
E-Mail Address
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**Malolactic bacteria, encapsulated yeast, Ionys WF, Biodiva, Gaia and Claristar all have greater temperature sensitivity and will be processed with expedited shipping.**

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<thead>
<tr>
<th>Page</th>
<th>Product #</th>
<th>Product</th>
<th>Size</th>
<th># of Packages</th>
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<th>Ship Date</th>
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<td>33-15156</td>
<td>D21 (ICV) 10kg</td>
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<td>33-15084</td>
<td>8-FIST</td>
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<td>$19.50/kg</td>
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<td>33-15077</td>
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<tr>
<td>33-15082</td>
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<td>33-15094</td>
<td>SVG</td>
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### Yeast nutrients: natural yeast derivative nutrients

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### Enzymes

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**Cleaning Agents**

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