

SCOTT LABS CANADA

2019 FERMENTATION HANDBOOK

CELEBRATING 50 YEARS IN CANADA!



WELCOME CANADA

Where were you 50 years ago?

If you were Robert Scott, you were in Ontario, finalizing a land agreement in Pickering, Ontario and getting ready to incorporate Scott Laboratories Limited, your new business venture north of the border.

Today, as Scott Labs celebrates 50 years in Canada, we are taking time to reminisce about the past decades, and not only how we have changed as a company, but how our industry has blossomed. Yet while looking back and seeing the positive changes makes us all feel good, what is most important for Scott Labs, and for our industry, is looking forward, and asking ourselves how we individually, and as an industry, get better and improve on every aspect of our business.

It is this desire to constantly improve our operations, and our service to you, that led to the decision to relocate Scott Labs Canada from its 49 year home in Pickering to our new National head office in Niagara on the Lake. The year long construction project is finally behind us and our doors are now open at 1 Westwood Ct.

Our growth in recent years has made delivering the service levels both you and we expect very challenging, however this new facility, and specifically the 22,000 sq ft of warehouse canvas is going to provide many logistical advantages for all of you, no matter what province you call home. So for this reason, we provide an open invitation to all our customers to come by and say hello whenever you are next in the Niagara region.

Lastly, the company is not the only one celebrating a milestone anniversary, as Jenny Selim, "the voice" at the other end of the phone, recently celebrated her 30 year anniversary with our company!! 30 years!! Thank you, merci Jenny for being such a tremendous part of our company's success!

Happy summer everyone!

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VENDOR NOTICE

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 infinitely variable. It is the responsibility of the buyer to adapt the use of our products to such circumstances. There is no substitute for good winemaking practices or ongoing vigilance.

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 46th 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 enological institutions on five continents. Taken together, they reflect Lallemand's commitment to the wine industry, here and around the world.

Anchor

www.newworldwinemaker.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, distilling yeast 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 cerevisiae* and *S. cerevisiae bayanus*. 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.eu.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 the Entrepôt Général de la 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 their 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 Cormontreuil), 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, Rapidase and Claristar.



AiRD Innovations in Chemistry

www.airdchemistry.com

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 to offer customers safer and more effective alternatives to caustics for cleaning stainless steel and other surfaces.

The ingredients in AiRD products combine traceability with high quality assurance. It is our belief that a clean cellar is a key to maintaining wine quality. We are happy to bring you products that accomplish this in a safer, more convenient, and more environmentally sound fashion.

2B Ferm Control

www.2bfermcontrol.com

Founded in 2003, 2B Ferm Control offers winemakers a portfolio of yeast, tannin and fining agents that are all certified organic. The careful selection of organic certified ingredients is at the core of the 2B Ferm Control advantage. This independent manufacturer, which has been represented in Canada by Scott Labs since 2012, has grown significantly since its inception and today is represented globally by carefully selected distribution partners.

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 Geisenheim, 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 wine-making region.

Garbellotto

www.garbellotto.com

A family owned cooperage operating in the Northern Italy town of Conegliano, Garbellotto has crafted a reputation for their large format vats and casks. Their recent develops, including the Garbellotto Botticella, Garbellotto Experience and their N.I.R stave 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 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 TW Boswell barrel programs is extremely diverse, offering something for every wine, and every winemaker.

Arobois

www.arobois.com

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

Amcor STELVIN

www.amcor.com/stevin

Amcor is a global leader in developing and producing high-quality, responsible packaging for a variety of food, beverage, pharmaceutical, medical-device, home and personal-care and other products. Their Montreal produced Stelvin wine closures are the industry standard in quality control and design opportunities.

WHAT'S NEW

E-Commerce

Our website, scottlabsltd.com now offers a full e-commerce solution that provides you with another option for how to order from us. When you log-in, you will also have access to your recent order history, account statement and of course will all the lot tracking documentation you require.

Contact Kristen at kcooper@scottlabsltd.com for your specific account login credentials!

Stelvin

We are excited to be able to add another global "best in class" supplier to our portfolio. Now whether you are in BC, Nova Scotia or anywhere in between you will have access to the full listing of Stelvin closures. Plus we will always ensure we have inventory of stock closers and VQA caps available to meet your last minute needs.

Our New Home!

In early June we the long wait to move into our new Niagara on the Lake home finally was over. This new 25,000sqft facility is now the head office of Scott Labs Canada, taking over from the Pickering location which served us well for our first 49 years. The new building comes complete with enough warehouse for us to ship all products from this central location, includes a much larger yeast fridge, a new hop freezer for our craft brewing customers, a humidity controlled barrel room, sensory lab for winemaker trials and tastings, and a super convenient cash and carry warehouse for those winemakers that prefer to drop by and pick up their goods in person!

Our new address is:

1 Westwood Court, Niagara on the Lake, ON L0S1J0

Units of Measure

For as long as we can remember, we have always priced and invoiced all our products by the KG. However, effective immediately, we have changed our processes and are now processing orders and invoices by the package size. What that means for you is that in the pages ahead the pricing you will see will be for the package size and not the KG price as in years passed. But most importantly it requires you to adjust how you are placing your orders — it is very important that you are ordering the number of packages you require for a particular item, and not the total KG. If you have any questions — please call the office.

New Products

PREMIUM YEAST

Flavia™	Page 31
Persy™	Page 33
Tango Malbec™	Page 25

MALOLACTIC BACTERIA

Silka™	Page 82
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THE OAK LAB

Thermic	Page 64
Fire	Page 65
Convection	Page 65

New Product Sizes

NUTRIENTS

Go-Ferm Protect Evolution	10kg	Page 44
Opti-RED	10kg	Page 51
Opti-WHITE	10kg	Page 51
Stimula Chardonnay	10kg	Page 45
Stimula Sauvignon Blanc	10kg	Page 45

PREMIUM YEAST

Yeast is the foundation of our company, and has been since its founding in 1933 as the Berkeley Yeast Laboratory. Our first commercial yeast offerings consisted of strains protected by the University of California, Berkeley, during prohibition and delivered to then graduate student and founder, Julius Fessler. Strains were provided on slant and wet up until the 1960's, when we began to deliver vials as WADY (Wine Active Dry Yeast). After some years of working with the largest brewer in the U.S. to dry our strains, we eventually found our long-term partner in 1974, Lallemand. They began to not only dry strains for us, but also isolate and develop new strains. Since our partnership with Lallemand, we have seen an explosion in choice, and characterization, as well as strain strength, purity, and reliability. A near century of strain cultivation makes Scott Labs and our yeast partners uniquely positioned to assist winemakers in matching strains to their 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.

It is very important to know the status of the must/juice prior to inoculating with yeast. Analyze the fruit for Brix, pH, TA, and nitrogen 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.*)

PH AND SO₂

The effectiveness of SO₂ is directly related to the pH. SO₂ additions should never be standardized. They must ALWAYS be adjusted according to the pH and conditions of the fruit. Additional SO₂ may be necessary if the fruit is overripe, underripe, or compromised.

YAN

What is the YAN (Yeast Assimilable Nitrogen) of the juice? The correct nutrient additions can be decided once the YAN and Brix have been determined. The nutrient needs of the specific yeast strain being used must be considered.

TEMPERATURE

What will the fermentation temperature be? Choose a yeast strain that fits within the determined temperature range. Do not stress your yeast by keeping it at the lowest or highest end of its temperature tolerance range.

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:

- Reduced lag phase
- Better adaptation to stressful conditions
- Optimized fermentation
- Reduced potential



PROTOCOL

Easy Steps for Optimal Yeast Rehydration



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/hL). When added properly, a 2 lb/1000 gal (25 g/hL) 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 rates, be sure to maintain a ratio of 1 part yeast to 1.25 parts yeast rehydration nutrient. Careful rehydration, atemperation and inoculation are all important to help prevent sluggish or stuck fermentations.

USAGE

1. Suspend 2.5 lb/1000 gal (30 g/hL) of Go-Ferm or Go-Ferm Protect Evolution in 20 times its weight of clean, chlorine free, 43°C(110°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 44 for information on yeast rehydration nutrients.

Important: If not using a yeast rehydration nutrient, water temperature should begin at 40°C(104°F) to avoid harming the yeast.

2. Once the temperature of the yeast rehydration nutrient solution has dropped to 40°C(104°F), add 2 lb/1000 gal (25 g/hL)* 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.

3. Slowly (over a period of 5 minutes) combine an equal amount of the must/juice to be fermented with the yeast suspension. This will help the yeast adjust to the cooler temperature of the must/juice and will help avoid cold shock caused by a rapid temperature drop exceeding 10°C(18°F). This atemperation step may need repeating for very low temperature must/juice. Each atemperation step should last about 15–20 minutes. For every 10°C(18°F) temperature difference between the must/juice and the yeast slurry, an atemperation step must be performed. For example, for a must/juice temperature of 20°C(68°F) and yeast slurry temperature of 40°C(104°F), two atemperation steps are required.
4. Add the yeast slurry to the bottom of the fermentation vessel just as you begin filling the vessel with must/juice. This is especially important for large tanks with long filling times or when inoculating with strains that are sensitive to the competitive factor (refer to pages 8–13). This will allow the yeast a head start over indigenous organisms. For direct inoculation post rehydration, ensure you mix the yeast slurry into the must for the best results.

Note: Copies of "Easy Steps for Optimal Yeast Rehydration" may be downloaded in Spanish, French and English from our website: www.scottslabsltd.com.

**The yeast dosage can vary depending on the initial Brix, manufacturer's recommendations and the sanitary state of the grapes or winery.*

White & Rosé Wine Yeast Strains

	○ Yeast Strain Type	Highly Recommended	Recommended	M Mouthfeel	Est Esters	EVC Enhanced Varietal Character	Mod Moderate	Ntr Neutral	Snstv Sensitive	Avg Average	Page	18-2007	43/43 RESTART	58W3	71B	Alchemy I	Alchemy II	Assmannshausen (AMH)	BA11	Be Fruits	BM45	BM 4x4	BRG	Cross Evolution	CW5	CY3079	ICV D21	ICV D47	ICV D254	DV10	EC1118
<i>S. cerevisiae cerevisiae</i>	○	○	○							14	14																				
<i>S. cerevisiae bayanus</i>	○	○								14	14																				
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			●																												
Alcohol Tolerance ¹	15%	18%+	14%	14%	15.5%	15.5%	15%	16%	14%	14%	15%	15%	15%	15%	15%	15%	15%	15%	15%	16%	14%	16%	17%	18%							
Relative Nitrogen ²	Low	Low	Med	Low	Med	Med	Low	High	Low	High	High	Med	Low	Low	High	Med	Low	High	Med	Low	Med	Low	Med	Low	Low	Low					
Temp. Range (°C) ³	10–32	13–35	12–25	15–29	13–16	13–16	20–30	10–25	12–20	18–28	18–28	18–31	15–20	14–28	15–17	16–18	15–20	12–28	10–35	10–30											
Fermentation Speed	Fast	Fast	Mod	Mod	Fast	Fast	Slow	Mod	Med-Fast	Mod	Mod	Mod	Mod	Mod	Fast	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Fast	Fast							
Competitive Factor	Yes	Yes	Yes	Snstv	Yes	Yes	Snstv	Snstv	Yes	Yes	Yes	Ntr	Yes	Yes	Snstv	Yes	Yes	Ntr	Yes	Yes	Ntr	Yes	Yes								
Sensory Effect	Ntr	Ntr	EVC Est M	Est	EVC Est	EVC Est	EVC	Est M	EVC Est	EVC M	EVC M	EVC	EVC M	EVC	Est	EVC M	EVC M	EVC M	EVC M	EVC M	EVC M	Ntr	Ntr								
MLF Compatibility	Good	Good	Avg	Very Good	Good	Good	Very Good	Below Avg	Good	Below Avg	Below Avg	Avg	Avg	Avg	Good	Avg	Good	Avg	Good	Very Good	Good	Avg									

	Elixir	Exotics Mosaic	Fermivin 3C	Fermivin 4F9	Fermivin TS28	ICV GRE	K1 (V116)	M83	NT 116	Oenoferm Bouquet	Oenoferm Freddo	Oenoferm InterDry	Oenoferm Pinotype	Oenoferm Riesling	Oenoferm X-Thiol	Oenoferm X-Treme	ICV OKAY	ICV Opale 2.0	QA23	R2
Avg	Average	Page	18	30	18	18	19	19	20	20	21	22	22	22	22	22	32	32	23	23
<i>S. cerevisiae cerevisiae</i>			○		○	○	○	○		○		○	○	○		○	○			
<i>S. cerevisiae bayanus</i>				○						○								○	○	○
Yeast hybrid	○	○							○						○	○	○			○
Yeast blend																				
Albariño			●	●	●	●	●			●								●		
Chardonnay	●	●	●	●	●	●				●		●	●	●		●	●	●	●	●
Chenin Blanc	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●				
Gewürztraminer										●	●	●	●					●	●	●
Muscat										●	●	●	●							
Pinot Blanc									●	●	●	●	●		●		●		●	
Pinot Gris	●								●	●	●	●	●		●		●			●
Pinot Noir												●								
Riesling							●			●	●	●	●	●	●	●	●	●	●	●
Sauvignon Blanc	●					●	●			●	●	●	●	●	●	●	●	●	●	●
Viognier	●	●	●							●	●					●	●	●	●	●
Rosé	●					●	●		●	●	●	●				●	●	●	●	
Rhone Whites	●	●	●			●	●											●		
Aromatic Whites	●					●	●			●								●	●	
Late Harvest								●				●							●	
Sparkling Base									●		●					●	●	●	●	
Restart Stuck									●			●				●				
Alcohol Tolerance ¹	15%	15.5%	14%	15.5%	14.5%	15%	18%	15.5%	15.5%	15%	15%	13%	14%	13%	15%	17%	16%	14%	16%	16%
Relative Nitrogen ²	Med	Med	Med	Med	Med	High	Low	Med	Med	High	Low	Med	High	High	Low	Low	Low	Med	Low	High
Temp. Range (°C) ³	14–25	18–28	16–22	14–20	15–22	15–28	10–35	17–28	13–28	16–20	13–17	18–22	18–28	17–22	13–22	10–17	12–30	15–30	15–32	5–32
Fermentation Speed	Slow	Mod	Slow	Fast	Mod	Mod	Fast	Mod	Fast	Mod	Mod	Slow	Mod	Mod	Fast	Fast	Mod	Mod	Fast	Mod
Competitive Factor	Snstv	Yes	Yes	Yes	Yes	Yes	Yes	Ntrl	Yes	Ntrl	Yes	Ntrl	Ntrl	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sensory Effect	EVC Est	EVC Est	EVC M	EVC Est M	EVC M	EVC M	Est	EVC	Est	Est	Est	EVC	Est, High Glycerol	Est	Thiols Est	Est	EVC Est	EVC	Est	
MLF Compatibility	Avg	Very Good	Good	—	—	Good	Poor	Avg	Good	Avg	Below Avg	Avg	Very Good	Avg	Avg	Below Avg	Very Good	Good	Very Good	Good

White & Rosé Wine Yeast Strains (continued from pages 8-9)

	Rhône 4600	R-HST	Sensy	Steinberger (DGI 228)	SVG	VIN 13	VIN 2000	VitiFerm Esprit	VitiFerm Alba Fria	VitiFerm Pinot Alba	VitiFerm Sauvage	W15
Page	24	24	33	24	24	25	26	26	26	26	27	27
<i>S. cerevisiae cerevisiae</i>	○	○	○	○	○			○	○	○		○
<i>S. cerevisiae bayanus</i>												
Yeast hybrid					○	○						
Yeast blend												
Wild yeast										○		
Albariño						○						
Chardonnay	○					○	○			○	○	
Chenin Blanc						○	○		○			
Gewürztraminer		○		○					○			○
Muscat						○						
Pinot Blanc			○							○	○	
Pinot Gris	○			○	○				○	○	○	
Pinot Noir												
Riesling		○		○	○			○		○	○	
Sauvignon Blanc	○	○	○		○	○	○		○			
Viognier	○	○				○			○		○	
Rosé	○	○	○		○	○	○					○
Rhone Whites	○	○			○	○	○					○
Aromatic Whites	○					○						○
Late Harvest		○				○		○				
Sparkling Base					○		○					
Restart Stuck						○		○				
Alcohol Tolerance ¹	15%	15%	14.5%	13%	15%	16.5%	15.5%	15%	15%	15%	15%	16%
Relative Nitrogen ²	Low	Med	Low	Med	Med	Low	Low	Low	Low	Low	Low	High
Temp. Range (°C) ³	13–22	10–30	12–18	15–25	16–26	12–16	13–16	16–18	16–18	18–20	18–20	10–27
Fermentation Speed	Mod	Mod	Mod	Slow	Mod	Fast	Mod	Mod	Mod	Mod	Mod	Mod
Competitive Factor	Yes	Yes	Yes	Snstv	Yes	Yes	Yes	Yes	Yes	Snstv	Yes	Yes
Sensory Effect	Est	Ntrl M	EVC M	Ntrl	EVC	EVC Est	EVC Est	EVC	EVC	Mouthfeel	EVC	EVC M
MLF Compatibility	Good	Avg	Very Good	Avg	Good	Good	Good	Below Avg	Very Good	Very Good	Very Good	Very Good

¹ The alcohol tolerance column indicates performance possibilities in good circumstances and conditions. Alcohol tolerance may vary as circumstances and conditions vary.

² Relative nitrogen needs refer to how much nitrogen one strain requires relative to the other strains on this chart.

See article on pg 43.

³ The temperature column indicates general performance possibilities. It is not a substitute for sound winemaking. Yeast may be stressed or die if temperatures are sustained at extremes of their tolerance. Keep in mind that a yeast's ability to ferment within the given range also depends on 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 ensure homogenous 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 selected yeast strains, please refer to the yeast section of this handbook.

Please see pages 115–117 for more information on yeast choices for hybrid and non-vinifera grapes.

Red Wine Yeast Strains

	18-2007	43	43 RESTART	3001	71B	Alchemy III	Alchemy IV	Assmannshausen (AMH)	BDX	BM45	BM4X4	BRG	BRL97	CLOS	CSM	CVRP	ICV D21
Avg	14	14	14	14	14	15	15	15	16	16	16	16	16	16	16	17	17
Page	14	14	14	14	14	15	15	15	16	16	16	16	16	16	16	17	17
<i>S. cerevisiae cerevisiae</i>				○	○			○	○	○		○	○	○	○	○	○
<i>S. cerevisiae bayanus</i>	○	○	○														
Yeast hybrid																	
Yeast blend				○	○					○							
Barbera									○	○	○		○		○		○
Cabernet Franc							●			○			○		●	●	●
Cabernet Sauvignon	●					●			●	●	●		●		●	●	●
Grenache					●	●				●	●		●	●			●
Malbec	●				●					●	●		●		●	●	●
Merlot									●	●	●		●		●	●	●
Petite Sirah							●			●				●		●	
Pinot Noir	●			●		●	●	●		●		●		●	●		
Petit Verdot						●				●				●	●	●	●
Sangiovese		●				●				●	●						●
Syrah	●	●				●			●			●	●	●	●		●
Tempranillo						●				●				●		●	●
Zinfandel	●					●		●		●	●	●		●	●		●
Fruit Forward Reds					●		●										
Structured Reds						●			●	●	●			●			●
Restart Stuck		●	●														
Alcohol Tolerance ¹	15%	18%+	18%+	15%	14%	15.5%	15.5%	15%	16%	15%	15%	15%	16%	17%	14%	16%	16%
Relative Nitrogen ²	Low	Low	Low	Med	Low	Med	Med	Low	Med	High	High	Med	Med	Med	High	Med	Med
Temp. Range (°C) ³	10–32	13–35	13–35	12–32	15–29	16–28	16–28	20–30	18–30	18–28	18–28	18–31	17–29	14–32	15–32	18–30	16–28
Fermentation Speed	Fast	Fast	Fast	Mod	Mod	Fast	Fast	Slow	Mod	Mod	Mod	Mod	Mod	Fast	Mod	Mod	Mod
Competitive Factor	Yes	Yes	Yes	Yes	Snstv	Yes	Yes	Snstv	Snstv	Yes	Yes	Ntrtl	Yes	Yes	Yes	Yes	Yes
Sensory Effect	Ntrtl	Ntrtl	Ntrtl	EVC	Est	EVC	EVC	EVC	EVC M	EVC M	EVC M	EVC M	EVC	EVC M	EVC M	EVC M	EVC M
MLF Compatibility	Good	Good	Good	Avg	Very Good	Good	Good	Very Good	Avg	Below Avg	Below Avg	Avg	Avg	Very Good	Avg	Very Good	Avg

Red Wine Yeast Strains

(continued from page 11)

	Yeast Strain Type	ICV D80	ICV D254	Exotics Mosaic	Fermivin A33	Fermivin MT48	Fermivin PF6	ICV GRE	IonyWF	L2226	MT	NT50	NT112	NT116	NT202	Oenoferm Pino Type	OKAY	Persy
Page	Avg	17	18	30	19	19	19	19	20	24	21	21	21	21	22	32	33	
<i>S. cerevisiae cerevisiae</i>	○	○		○	○	○	○	○	○	○	○				○	○		
<i>S. cerevisiae bayanus</i>																		
Yeast hybrid			○									○	○	○	○	○	○	
Barbera	●	●						●		●								
Cabernet Franc	●	●		●				●		●	●	●	●	●	●	●	●	
Cabernet Sauvignon	●	●		●				●	●	●	●	●	●	●	●	●	●	
Grenache	●	●	●		●			●		●			●					
Malbec	●			●					●						●			
Merlot	●	●	●	●	●			●	●	●	●	●	●	●	●	●	●	
Petite Sirah	●								●	●					●	●	●	●
Pinot Noir								●	●						●	●	●	●
Petit Verdot		●	●	●	●	●			●	●			●					
Sangiovese		●			●			●	●	●			●					
Syrah	●	●	●					●	●						●	●	●	●
Tempranillo	●	●	●		●			●	●			●	●					●
Zinfandel	●	●								●			●	●		●		
Fruit Forward Reds			●		●		●		●			●						
Structured Reds	●			●							●				●			
Restart Stuck									●						●			
Alcohol Tolerance ¹	16%	16%	15.5%	15.5%	15%	14%	15%	16%	17%	15%	15.5%	16%	15.5%	15%	14%	16%	16%	16%
Relative Nitrogen ²	High	Med	Med	High	Low	Med	High	High	High	Med	Med	Med	Med	Med	Med	High	Low	Low
Temp. Range (°C) ³	15–28	12–28	18–28	22–30	20–30	12–24	15–28	25–28	15–28	15–32	14–28	24–28	13–28	20–28	18–28	12–30	15–28	
Fermentation Speed	Mod	Mod	Mod	Fast	Mod	Mod	Mod	Mod	Mod	Fast	Mod	Fast	Fast	Fast	Fast	Mod	Mod	Mod
Competitive Factor	Yes	Ntrl	Yes	Ntrl	Ntrl	Ntrl	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Ntrl	Yes	Yes
Sensory Effect	EVC M	EVC M	EVC M	EVC	M	EVC	EVC M	M	EVC M	EVC M	EVC Est	EVC	EVC	EVC Est	Est, High Glycerol	Est	EVC M	
MLF Compatibility	Avg	Very Good	Very Good	Very Good	Good	Good	Good	Good	Good	Below Avg	Avg	Good	Below Avg	Good	Very Good	Very Good	Very Good	Very Good

○	Yeast Strain Type
●	Highly Recommended
◊	Recommended
M	Mouthfeel
Est	Esters
EVC	Enhanced Varietal Character
Mod	Moderate
Ntrl	Neutral
Snstv	Sensitive
Avg	Average
Page	

	RA17	RC212	Rhône 2056	Rhône 4600	RP15	Syrah	Tango Malbec	VitiFerm Rubino Extra	W15
<i>S. cerevisiae cerevisiae</i>	○	○	○	○	○	○	○	○	○
<i>S. cerevisiae bayanus</i>									
Yeast hybrid									
Barbera			●						
Cabernet Franc	●				●			●	
Cabernet Sauvignon	●	●			●			●	
Grenache	●	●	●	●		●			
Malbec					●		●		●
Merlot			●		●	●	●	●	●
Petite Sirah					●	●	●		
Pinot Noir	●	●						●	
Petit Verdot					●	●			
Sangiovese			●			●			
Syrah			●	●	●	●	●	●	●
Tempranillo			●				●		
Zinfandel			●		●				
Fruit Forward Reds	●		●						
Structured Reds					●	●			
Restart Stuck									
Alcohol Tolerance ¹	15%	16%	16%	15%	17%	16%	15.5%	17%+	16%
Relative Nitrogen ²	High	Med	Med	Low	Med	Med	Med	Low	High
Temp. Range (°C) ³	16–29	20–28	15–28	13–22	20–30	15–32	15–28	16–32	10–27
Fermentation Speed	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Fast	Mod
Competitive Factor	Snstv	Ntrl	Yes	Yes	Yes	Yes	Ntrl	Yes	Yes
Sensory Effect	EVC	EVC	Est	Est	EVC	EVC	EVC	EVC M	
MLF Compatibility	Below Avg	Good	Good	Good	Avg	Avg	Good	Very Good	Very Good

1 The alcohol tolerance column indicates performance possibilities in good circumstances and conditions. Alcohol tolerance may vary as circumstances and conditions vary.

2 Relative nitrogen needs refer to how much nitrogen one strain requires relative to the other strains on this chart.

See article on page 43.

3 The temperature column indicates general performance possibilities. It is not a substitute for sound winemaking. Yeast may be stressed or die if temperatures are sustained at extremes of their tolerance. Keep in mind that a yeast's ability to ferment within the given range also depends on 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 ensure homogenous 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 selected yeast strains, please refer to the yeast section of this handbook.

Please see pages 115–117 for more information on yeast choices for hybrid and non-vinifera grapes.

14 PREMIUM YEAST STRAINS

18-2007

S. cerevisiae • bayanus

Sparkling Base, Chardonnay, Pinot Noir, Sauvignon Blanc, Viognier, Rosé, Cabernet Sauvignon, Malbec, Syrah

Isolated by the Institut Oenologique de Champagne (IOC) in Epernay.

Well adapted to low pH, low temperature and alcohol up to 15% (v/v).

Good glycerol producer, low VA, SO₂ and foam producer. Good implantation, complete breakdown of sugars and low nutrient requirements.

It is ideally suited to make sparkling base wines and for secondary fermentations by the Traditional Method and the Charmat Method.

38-12527 500g \$47.25

43

S. cerevisiae • bayanus

Restart Stuck Fermentations, Zinfandel, Sangiovese, Syrah, Late Harvest

Isolated by Lallemand in collaboration with the research center of Inter Rhône in France.

Notable for its powerful ability to restart stuck or sluggish fermentations. Has been known to ferment up to 18% (v/v) and has low relative nitrogen needs.

Uvaferm 43® gives high-quality sensory results in high Brix red fermentations and helps maintain colour, red fruit and cherry characteristics.

33-15083 500g \$49.25

33-15083B 10kg \$738.00

43 RESTART

S. cerevisiae • bayanus

Restart Stuck Fermentations, Late Harvest

Isolated by Lallemand in collaboration with Inter Rhône in France.

Uvaferm 43 RESTART™ is the result of an innovative preacclimation process developed by Lallemand and approved by the Inter Rhône Laboratory using Uvaferm 43. 43 RESTART's resistance to the stressful conditions of stuck fermentations has been naturally increased.

This process includes the addition of micronutrients, sterols and polyunsaturated fatty acids to strengthen the yeast cell membranes. The yeast cells are more robust, acclimate quicker and have a lower mortality rate after inoculation.

43 RESTART is sensory neutral and has been known to ferment up to 18% (v/v). It is a low SO₂ and H₂S producer with relatively low nitrogen demand. 43 RESTART is malolactic bacteria compatible.

For best results use the 43 RESTART protocol including Reskue and Fermaid O. Restarts can be done in a few efficient steps. See page 34.

33-15083R 500g \$63.75

58W3

S. cerevisiae • cerevisiae

Pinot Gris, Gewürztraminer, Riesling, Viognier, Rhone 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.

Vitilevure 58W3™ 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-glucosidase activity. This enhances classic varietal characteristics.

33-15108 500g \$66.20

33-15108B 10kg \$836.00

Terpenes in the free form give floral or citrus notes to wine, but they are mainly in a bound, non-odiferous form.

71B

S. cerevisiae • cerevisiae

Pinot Gris, Riesling, Grenache, Rosé, Fruit Forward Reds

Isolated and selected by the INRA in Narbonne, France.

Known for fermenting fruity rosé wines and semi-sweet whites because it produces 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 competitive factors and may have difficulty competing with wild microflora. Careful rehydration with Go-Ferm® or Go-Ferm Protect Evolution® and early inoculation will help Lalvin 71B® dominate in competitive conditions.

33-15054 500g \$37.65

33-15054B 10kg \$564.00

3001

S. cerevisiae • cerevisiae

Pinot Noir

Isolated, studied and selected from the prestigious Côte de Nuits terroir in Burgundy during a three-year research project by Laboratory Burgundia Oenologie 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 characters 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.

Vitilevure 3001® is recommended for cold soak protocols for intense Pinot Noir wines with aging potential.

33-15033 500g \$66.20

Alchemy I

S. cerevisiae • blend

Sauvignon Blanc, Chardonnay, Chenin 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.

33-16071 1kg \$108.00/kg

Alchemy II

S. cerevisiae • blend

Albariño, Sauvignon Blanc, Chenin 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 volatile thiols such as: boxwood, passion fruit, grapefruit, kiwi fruit 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 NTU, low YAN, temperatures below 15°C(59°F), Alchemy II can be stressed and will produce VA.

Fast fermentation kinetics mean temperature management is crucial. It is a low SO₂ producer with medium nitrogen requirements.

33-16072 1kg \$108.00/kg

Alchemy III

S. 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), β-ionone (raspberry) and acetate esters (fruity and candy). It produces complex wines with good structure and body and is suitable for all red varietals.

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.

33-16073 1kg \$108.00/kg

Alchemy IV

S. 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 ethyl esters, especially ethyl hexanoate (fruity), 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 8–11 g/L.

33-16074 1kg \$108.00/kg

Assmanshausen (AMH)

S. cerevisiae • *kudriavzevii*

Pinot Noir, Zinfandel, Riesling, Petite Sirah, Gewürztraminer

Originated from the Geisenheim Research Institute in Germany.

Enoferm AMH™ has a long lag phase with a slow to medium fermentation rate. A well-managed nutrient program during rehydration and fermentation is essential.

Enhances spicy (clove, nutmeg) and fruit flavours and aromas while adding overall complexity.

Fermentation potential is enhanced with AMH if the culture is allowed to develop in about 10% of the total must volume for eight hours prior to final inoculation.

33-15067 500g \$66.20

BA11

S. cerevisiae • *cerevisiae*

Riesling, Viognier, Sauvignon Blanc, Pinot Blanc, Gewürztraminer, Rosé, Muscat, Rhône Whites, Aromatic Whites

Selected in 1997 near the Estação Vitivinícola de Barraida in Portugal.

Promotes clean aromatic characteristics and intensifies mouthfeel and lingering flavours in white or sparkling base wines.

Lalvin BA11™ can encourage the fresh aromas of tropical fruit, cream, vanilla and spice in relatively neutral white grape varieties.

33-15088 500g \$49.25

BDX *S. cerevisiae • cerevisiae*

Merlot, Cabernet Sauvignon, Zinfandel, Syrah, Petit Verdot, Structured Reds

Selected from the Institut Pasteur strain collection in Paris, France. Uvaferm BDX™ is a vigorous fermenter. Alcohol tolerance can be up to 16% (v/v).

Optimizes colour and structure with soft tannin extraction and increased mouthfeel. Does not generate a lot of heat during fermentation.

33-15096 500g \$49.25

BM45 *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 polyphenol reactive polysaccharides, resulting in wines with increased mouthfeel and improved colour stability.

Has high nitrogen requirements and can produce H₂S under poor nutrient conditions.

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

33-15037 500g \$49.25

33-15037B 10kg \$738.00

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 Lallemand 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.

33-15100 500g \$58.80

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).

Levuline BRG™ was isolated for its ability to contribute significant amounts of polysaccharides during fermentation which enhance mouthfeel and body.

Sensory notes include increased minerality in whites such as Chardonnay and spice characters in reds like Pinot Noir.

33-15112 500g \$58.80

33-15112B 10kg \$836.00

BRL97 *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 colour and the varietal character in grapes sensitive to colour loss.

Lalvin BRL97™ may be blended with wines fermented with RA17®, RC212® or W15™ to enhance complexity.

33-15072 500g \$49.80

33-15072B 10kg \$753.00

CLOS *S. cerevisiae • cerevisiae*

Syrah, Grenache, Tempranillo, Zinfandel, Petite Sirah, Barbera, Petit Verdot, Structured Reds, Malbec

Isolated by the University of Rovira i Virgili in Spain from the Priorat region.

Notable for its high alcohol tolerance (up to 17% v/v) with a very good implantation rate in difficult conditions. Ferments over a wide range of temperatures (14–32°C/58–90°F).

Lalvin CLOS® was selected for its ability to enhance aromatic complexity, structure and mouthfeel. Good compatibility with malolactic bacteria.

33-15120 500g \$58.80

33-15120B 10kg \$836.00

Cross Evolution *S. cerevisiae • hybrid*

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/58°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.

33-15115 500g \$66.20

CSM *S. cerevisiae • cerevisiae*

Cabernet Sauvignon, Cabernet Franc, Merlot, Petit Verdot

Selected by the Institut Français de la Vigne et du Vin (IFV, formerly ITV) Bordeaux in France in cooperation with Conseil Interprofessionnel du Vin de Bordeaux (CIVB-Bordeaux).

Enoferm 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 aromas. CSM adds complexity with a balanced, round mouthfeel and promotes malolactic fermentation.

33-15090 500g \$66.20

33-15090B 10kg \$836.00

CVRP *S. cerevisiae • cerevisiae*

Cabernet Franc, Cabernet Sauvignon, Merlot, Petite Sirah, Tempranillo

Selected from the Lallemand yeast collection. CVRP is one of the highest polysaccharide producers in their collection.

CVRP is a moderate rate fermenter with medium nitrogen demands. This strain is tolerant to 16% (v/v) and can ferment from 18–30°C (64–86°F).

Wines made from CVRP are characterized by enhanced mouthfeel, roundness, soft tannins and elevated varietal character. Ideal for big reds.

Good compatibility with malolactic bacteria.

33-15208 10kg \$590.00

CVW5 *S. cerevisiae • bayanus*

Chardonnay, Chenin Blanc, Pinot Gris, Rosé, Sparkling Base, Albariño, Muscat, Aromatic Whites

Selected from the Lallemand yeast collection, CVW5 is a daughter strain of Lalvin EC1118.

Works well under low temperatures and low turbidity. Very high ester producer and has the lowest nitrogen demand in the Lallemand yeast collection. CVW5 produces low levels of VA and SO₂.

Strong fermenter even under difficult conditions.

May also be used for making sparkling wine and fruit wines.

33-15210A 500g \$39.90

33-15210 10kg \$590.00

Fruity and floral compounds produced during the fermentation process. Concentration can be influenced by strain choice, solids management, temperature and nutrient regime.

CY3079 *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 BourgoblanCY3079® demonstrates good alcohol tolerance and low production of VA and H₂S when properly fed.

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

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

33-15061 500g \$49.25

33-15078 10kg \$738.00

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 sulfide 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.

33-15086 500g \$49.25

33-15086B 10kg \$738.00

ICV D47 *S. cerevisiae • cerevisiae*

Chardonnay, Rosé, Rhône Whites

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

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.

33-15056 500g \$49.25

33-15056B 10kg \$738.00

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 lasting 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 \$49.25

33-15081B 10kg \$738.00

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 Chardonnay), sensory descriptors include butterscotch, hazelnut and almond aromas.

33-15036 500g \$49.25

33-15075 10kg \$738.00

DV10 *S. cerevisiae • bayanus*

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 \$49.25

33-15076 10kg \$738.00

EC1118 (Prise De Mousse) *S. cerevisiae • bayanus*

Sparkling Base

Selected by the 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.

33-15062 500g \$37.65

33-15063 10kg \$564.00

Elixir *S. cerevisiae • hybrid*

Sauvignon Blanc, Chardonnay, Viognier, Rosé, Rhône Whites, Aromatic Whites

Product of the yeast hybridization program of the Institute for Wine Biotechnology at the University of Stellenbosch in South Africa.

Good implantation in clarified juice and requires good nutrition and proper temperature control. Elixir has moderate nitrogen requirements and should ferment between 14–25°C(57–77°F) for a slow and steady fermentation. It is a low SO₂, H₂S and VA producer with alcohol tolerance to 15% (v/v).

Vitilevure Elixir™ expresses terpenes, norisoprenoids and thiols (e.g. in Sauvignon Blanc) adding complexity to aromatic varieties.

33-15079 500g \$66.20

Fermivin 3C *S. cerevisiae • cerevisiae*

Chardonnay, Viognier, Chenin Blanc, Chardonnay

Fermivin 3C was selected by Oenobrands.

Fermivin 3C is a moderate fermenter, low foaming with optimum fermentation temperatures of 16–22°C (61–71°F), alcohol tolerance up to 14% (v/v), and a low VA and H₂S producer. Recommended for barrel fermentation and sur lie aging.

Reveals citrus notes from norisoprenoids specific to the Chardonnay varietal. Releases mannoproteins during fermentation and aging. Known for finesse and aromatic complexity.

33-17015 500g \$45.20

Fermivin 4F9 *S. cerevisiae • bayanus*

Chardonnay, Chenin Blanc, Sauvignon Blanc, Rhône Whites, Aromatic Whites, Rosé

Fermivin 4F9 was selected by the IFV (formerly ITV) in the Loire Valley.

Fermivin 4F9 produces white and rosé wines with intense, exotic fruit (guava, passion fruit) and floral aromas. Releases large quantities of polysaccharides, enhancing body and volume.

A fast fermenter with a moderate nutrient requirement, alcohol tolerance of 15.5% (v/v) and optimum fermentation temperature of 14–20°C (57–68°F). A low SO₂ and H₂S producer.

33-17033 500g \$45.20

Fermivin A33

S. cerevisiae • cerevisiae

Cabernet Franc, Cabernet Sauvignon, Malbec, Merlot, Petit Verdot, Structured Reds

Fermivin A33 was specifically selected for Cabernet Franc by the University of Chile.

Fermivin A33 is a low foaming yeast with a short lag phase, alcohol tolerance up to 15.5% (v/v), a good resistance to SO₂ and a low VA and H₂S producer.

Known for creating wines with good phenolic structure and aging potential which makes it a good choice for oak aging. Enhances varietal character and aromas of blackcurrant, dark chocolate and fresh tobacco.

33-17030 500g \$45.20

Fermivin MT48

S. cerevisiae • cerevisiae

Merlot, Sangiovese, Grenache, Tempranillo, Petit Verdot, Fruit Forward Reds

Fermivin MT48 was selected in Bordeaux as an ideal yeast strain for Merlot by the IFV (formerly ITV) France in collaboration with CIVB-Bordeaux.

Fermivin MT48 has a short to medium lag phase, rapid and steady kinetics and naturally low volatile acid production. Mouthfeel is enhanced by high glycerol production.

While enhancing aromatic notes of cherry, raspberry, blackberry, plum and spices in Bordeaux varieties, Fermivin MT48 also produces excellent results in Sangiovese, Grenache and Tempranillo.

33-17004 500g \$45.20

Fermivin PF6

S. cerevisiae • cerevisiae

Pinot Noir, Fruit Forward Reds

Fermivin PF6 was selected by Oenobrands.

Produces round, elegant wines with bright fruit and spice character.

Fermivin PF6 is known to produce balanced wines with enhanced color intensity and lower levels of astringency.

Fermivin PF6 ferments well at low temperatures and is therefore suitable for cold soaks. Optimal fermentation temperature of 12–24°C (54–75°F), moderate nutrient needs and an alcohol tolerance of 14% (v/v).

33-17025 500g \$45.20

Fermivin TS28

S. cerevisiae • cerevisiae

Sauvignon Blanc, Albariño, Aromatic Whites

Fermivin TS28 was selected by the IFV (formerly ITV) in the Loire Valley.

The β-lyase activity of Fermivin TS28 optimizes the release of thiol precursors, such as boxwood, gooseberry, and mineral (stone, flint). Produces crisp, aromatic white wines with balanced mouthfeel.

Optimal fermentation temperature of 15–22°C (59–72°F), moderate nutrient needs and an alcohol tolerance of 14.5% (v/v).

33-17036 500g \$45.20

Thiols are released during alcoholic fermentation due to the β-lyase enzyme activity of specific strains of wine yeast.

ICV GRE

S. cerevisiae • cerevisiae

Cabernet Franc, Grenache, Cabernet Sauvignon, Merlot, Syrah, Chenin Blanc, Riesling, Rosé, Rhône Whites, Fruit Forward Reds

Selected in the Cornas area of the Rhône Valley in France in 1992.

A rapid starter, it can ferment up to 15% (v/v) alcohol with low volatile acidity.

In reds, it does well with fresh Rhône style wines with up-front fruit. With short skin contact (three to five days), Lalvin ICV GRE™ minimizes the risks of vegetal and undesirable sulfur components.

In fruit-focused whites, such as Chenin Blanc, Riesling and Rhône whites, ICV GRE fermentations result in stable, fresh fruit characteristics such as melon and apricot while improving fore-mouth impact.

33-15085 500g \$49.25

33-15085B 10kg \$738.00

IONYS_{WF} *S. cerevisiae • cerevisiae*

Acid Preservation

Malbec, Petite Sirah, Sangiovese, Syrah, Tempranillo, Cabernet Sauvignon, Merlot, Petit Verdot

IONYS_{WF}™ is the result of a multi-year research project between Lallemand and INRA Montpellier.

Selected for its ability to significantly retain must/juice acidity during fermentation, IONYS_{WF} is recommended for fermenting reds from warmer climates with high pH and high potential alcohol. The acidification 'power' of IONYS_{WF} may result in a total acidity difference of 0.4–1.4 g/L tartaric acid and a pH decrease of between 0.04–0.2.

Low producer of VA, SO₂ and H₂S, with an alcohol tolerance of up to 16% (v/v). IONYS_{WF} has very high nitrogen requirements and a balanced nutrient protocol is essential. Maintaining a temperature range of 25–28°C (77–82°F) optimizes glycerol production (up to 15 g/L) and may decrease alcohol production between 0.4–0.8% (v/v). IONYS_{WF} has a moderate fermentation speed with a long, but steady stationary phase.

With proper nutrition and temperature control, wines made with IONYS_{WF} are characterized as having fresh fruit and mineral characters and fine-grain tannins.

Storage

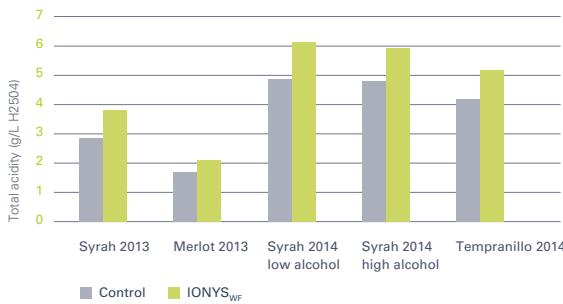
Store at 4°C (39°F). Use immediately once opened.

Note: IONYS_{WF} is an innovative yeast selection and is protected by an International Patent pending; No WO2015/11411. Propagation of IONYS_{WF} is an infringement of this Patent.

33-15123 500g \$68.00

Why is IONYS_{WF} producing more total acidity?

The IONYS_{WF} yeast selection strategy used a form of "adaptive evolution," which adapts yeast to higher osmotic pressure conditions. The goal was to select a yeast that converts less sugar to ethanol, and more to other by-products such as glycerol, succinic and malic acids. The result is adapted cells that have the ability to naturally internalize potassium and by doing so, lower its content in the must/juice and avoid precipitation with tartaric acid. Higher glycerol and organic acid production (not acetic acid) contribute to wines with higher acidity perception, balance, and overall freshness.

Acidifying effects of IONYS_{WF}**K1 (V1116)** *S. cerevisiae • cerevisiae*

Restart Stuck Fermentations, Sauvignon Blanc, Chenin Blanc, Sparkling Base

Selected by the ICV in Montpellier, France, among numerous killer strains isolated and studied by Pierre Barre 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, Lalvin V1116™ is the most tolerant of difficult fermentation conditions such as extreme temperatures, high alcohol (18% v/v) and low turbidity.

Ferments well under stressed conditions and is useful in restarting stuck fermentations, especially when relative fructose levels remain high.

33-15059 500g \$29.25

33-15060 10kg \$352.00

Lalvin C *S. cerevisiae • bayanus*

For use in cool climate wines high in malic acid, cider, fruit wines, restarting stuck fermentations, and secondary fermentation in sparkling wines.

For full product description, please see page 118.

33-15119 500g \$49.25

M2 *S. cerevisiae • cerevisiae*

Chardonnay, Sauvignon Blanc, Cabernet Sauvignon, Syrah, Rosé, Albariño, Rhône Whites, Fruit Forward Reds, Aromatic Whites

Isolated in Stellenbosch, South Africa.

Enoferm M2™ is a medium-rate fermenter and needs a high level of balanced nutrients for a strong fermentation. Requires some temperature control for white wine production.

Neutral to low ester-producing strain.

It can be distinguished by its expression of citrus and blossom notes and for accentuating volume in the mouth.

33-15109 500g \$60.50

M83 *S. cerevisiae • cerevisiae*

Rosé

Selected by the Laboratoire Aubanelle in the Bandol appellation of Provence.

Vitilevure M83 is particularly well adapted for rosé winemaking in warmer regions. It has good implantation capacity, strong fermentation kinetics, moderate nutrient demands and an alcohol tolerance up to 15.5% (v/v). It is a low producer of VA and SO₂ during fermentation.

Produces round and balanced rosés with enhanced fresh fruit aromas. M83 increases colour stability in rosé as a result of its polysaccharide production.

33-15121 500g \$58.80

MT*S. cerevisiae • cerevisiae*

Merlot, Cabernet Sauvignon, Petit Verdot, Structured Reds

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

Vitilevure MT™ 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.

33-15099 500g \$51.50

NT 50 *S. cerevisiae • hybrid*

Shiraz (Syrah), Pinot Noir, Merlot, Cabernet Sauvignon, Cabernet Franc, Grenache, Petit Sirah, Fruit Forward Reds

Product of the yeast hybridization program of Infruitec-Nietvoorbij, the wine and vine institute of the Agricultural Research Council in Stellenbosch, South Africa.

Very robust strain for the production of aromatic red wines. Temperature control (not higher than 28°C/83°F) is advised. Has medium nitrogen requirements.

NT 50 produces well-rounded red wines with structured tannins and good colour stability. Useful for New World styles of Syrah and Cabernet Sauvignon.

Enhances berry notes in Pinot Noir and Grenache and floral notes in Syrah and Merlot.

33-16027 1kg \$101.00/kg

NT 112 *S. cerevisiae • hybrid*

Cabernet Sauvignon, Cabernet Franc, Merlot, Zinfandel, Shiraz (Syrah), Petite Sirah

Product of the yeast selection program of Infruitec-Nietvoorbij, the wine and vine institute of the Agricultural Research Council in Stellenbosch, South Africa.

Alcohol tolerant up to 16% (v/v) with a low nitrogen requirement and a short lag phase. Can produce SO₂ under stressed conditions of high alcohol (>14% v/v) or low temperatures (20°C/68°F).

NT 112 is recommended for red wines with a firm tannic structure and enhances blackcurrant, berry and spice flavours.

33-16022 1kg \$101.00/kg

NT 116 *S. cerevisiae • hybrid*

Shiraz (Syrah), Cabernet Sauvignon, Merlot, Petite Sirah, Pinot Gris, Pinot Blanc, Chenin Blanc, Sparkling Base, Albariño, Aromatic Whites

Product of the yeast hybridization program of Infruitec-Nietvoorbij, the wine and vine institute of the Agricultural Research Council in Stellenbosch, South Africa.

It is alcohol tolerant up to 15.5% (v/v), cold tolerant (12°C/54°F) and has a medium nitrogen requirement.

NT 116 has a dual application in winemaking. Its fermentation kinetics make it very suitable for full-bodied, high-maturity red wines destined for oak aging. Its high ability to convert volatile thiols and high ester production at low temperatures makes it similarly suitable for the production of New World style aromatic white and rosé wines. It specifically enhances the zesty (citrus) aromas in whites.

33-16026 1kg \$101.00/kg

NT 202 *S. cerevisiae • hybrid*

Cabernet Sauvignon, Pinot Noir, Merlot, Malbec, Structured Reds

Product of the yeast hybridization program of Infruitec-Nietvoorbij, the wine and vine institute of the Agricultural Research Council in Stellenbosch, South Africa.

It is alcohol tolerant up to 15% (v/v) and low foaming. Fermentation temperature should be monitored to control the speed. Not suitable for cold soaking.

NT 202 is an aromatic red wine yeast that promotes blackcurrant, blackberry and plum-like flavours.

This strain has a stimulatory effect on malolactic fermentation and good fructose utilization.

33-16032 1kg \$101.00/kg

Oenoferm Bouquet *S. cerevisiae • cerevisiae*

Riesling, Gewürztraminer, Muscat

Oenoferm Bouquet is a high ester producer from Erbsloeh, propagated using their F3 process, to strengthen the yeast for the rigors of alcoholic fermentation.

Offers a controlled, slow ferment, with optimal fermentation temperature range of between 16–20°C (61–68°F). Bouquet has high nitrogen demands, and can ferment up to 15% (v/v).

White wines fermented with Bouquet have been known to exhibit exotic fruit and sweet flower fragrances.

Dosage & Application, Storage Please see next page.

31-15304 500g \$37.75

31-15304B 15kg \$885.00

Oenoferm Freddo

S. cerevisiae • bayanus

Riesling, Sauv. Blanc, Chardonnay, Pinot Gris, Rosé

Specifically selected strain for the inoculation of cold grape-must (even as low as 10°C/50°F) and for its aroma preserving capabilities.

Wines produced with Freddo are known to promote the following aromatics: citrus, grapefruit, apple and peach.

A fast fermenter with low nitrogen requirements, the recommended temp. range is between 13–17°C (55–62°F). Freddo is tolerant up to 15% (v/v).

Freddo has been known to inhibit malolactic fermentation.

Dosage & Application, Storage Please see bottom of this page.

31-15305	500g	\$40.75
31-15305B	15kg	\$915.00

Oenoferm InterDry

S. cerevisiae • cerevisiae

Riesling, Gewürztraminer, Muscat

Well suited for stopping fermentation to preserve residual sugar, InterDry is a strain that has been propagated by Ersbloeh using their F3 process.

Known to promote spicy aromatics in ripe fruit, InterDry ferments up to 13% (v/v) during its traditional slow fermentation process.

Keep temperature between 18–22°C (64–72°F) and ensure proper nutrition for this strain with moderate nitrogen demand.

Dosage & Application, Storage Please see bottom of this page.

31-15306	500g	\$38.55
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Oenoferm PinoType

S. cerevisiae • cerevisiae

Chardonnay, Pinot Noir, Pinot Gris, Pinot Blanc

Suitable for all Pinot vine varieties, is a moderate fermenter that settles quickly after fermentation, and this is suitable for early bottling.

PinoType ferments up to 15% (v/v) and is conducive to malolactic fermentation. An ester promoter, this strain also produces higher levels of glycerol.

PinoType is very suitable for sur lies aging.

Dosage & Application, Storage Please see bottom of this page.

31-15309	500g	\$40.88
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Oenoferm Riesling

S. cerevisiae • cerevisiae

Riesling

Oenoferm® Riesling was specially selected for the fermentation of Riesling musts. A cooled fermentation at temperatures between 17–19°C (62–65°F) promotes the development of fruity, white fleshed peach aromas. In the fermentation range between 19–22°C (65–72°F), exotic aromas develop.

Ideal for fruity-light Riesling wines with typical varietal profile, the strain is alcohol tolerant up to 13% (v/v).

Oenoferm Riesling exhibits moderate fermentation speed.

Dosage & Application, Storage Please see bottom of this page.

31-15310	500g	\$40.88
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Oenoferm X-Thiol

S. cerevisiae • hybrid

Riesling, Sauvignon Blanc, Riesling, Rosé

A fast fermenting hybrid strain, marrying a strong bayanus strain to an aromatic, thiol producing cerevisiae, this hybrid can deliver exotic aromatics.

Managing fermentation temp will alter style, with <15°C (59°F) delivering a traditional cool climate style, while between 18–22°C (64–72°F) the wine is likely to exhibit more fruity, thiol aromatics.

X-Thiol has alcohol tolerance to 15% (v/v), has low nitrogen demand, and produces low SO₂. Wines made with X-thiol have been noted to display notes of passion fruit and black currant.

Dosage & Application, Storage Please see bottom of this page.

31-15316	500g	\$49.48
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Oenoferm X-Treme

S. cerevisiae • hybrid

Riesling, Sauv. Blanc, Chardonnay, Pinot Gris, Pinot Blanc

A hybrid of two different *saccharomyces cerevisiae* yeast — this strain has been known to promote notes of minerality, along with fruity, floral and spicy components. Aromatics have shown to be long lasting, both on the nose, and the palate.

X-Treme has a very high fermentation capacity (17% v/v) and performs very well in cool temperatures (10–17°C/50–62°F).

A fast fermenter with low nitrogen demand and produces low SO₂. X-Treme does not promote malolactic fermentation.

Dosage & Application, Storage Please see bottom of this page.

31-15317	500g	\$48.70
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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

Rehydrate 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.

QA23 *S. cerevisiae • bayanus*

Chardonnay, Sauvignon Blanc, Gewürztraminer, Pinot Blanc, Albariño, Muscat, Aromatic Whites

Selected in Portugal by the University of Trás-os-Montes and Alto Douro (UTAD) in cooperation with the Viticultural Commission of the Vinho Verde region.

Lalvin QA23™ has low nutrient and oxygen requirements. It has been known to ferment juice at low temperatures (15°C/59°F) to dryness.

Excellent thiol converter making it a complementary yeast for developing varietal Sauvignon Blanc passion fruit character.

Produces large amounts of the enzyme **beta-glucosidase** during growth which allows for the release of bound terpenes in aromatic varieties.

A significant amount of aroma and flavor compounds are bound up in a non-volatile, flavorless form. β -glucosidases aid in their revelation.

33-15040 500g \$66.20

33-15040B 10kg \$837.00

R2 *S. cerevisiae • bayanus*

Riesling, Sauvignon Blanc, Gewürztraminer, Late Harvest, Aromatic Whites

Isolated in the Sauternes region of Bordeaux, France, by Brian Croser of South Australia.

Has excellent cold temperature properties and has been known to ferment in conditions as low as 5°C(41°F). Tends to produce VA without proper nutrition.

Lalvin R2™ helps produce intense, direct fruit style whites by liberating fruity and floral aromas. In addition, varietal characters are enhanced by the enzymatic release of aroma precursors.

33-15055 500g \$49.25

RA17 *S. cerevisiae • cerevisiae*

Pinot Noir, Grenache, Fruit Forward Reds

Lalvin RA17® is a BIVB strain that was selected from the Burgundy region of France.

Proper nutrition is recommended to avoid the formation of H₂S, especially in low nutrient musts.

Enhances cherry and fruit aromas. Wines made with RA17 may be blended with wines fermented with RC212, W15 or BRL97 to give more complexity and fuller structure.

33-15034 500g \$49.25

RBS 133 *S. cerevisiae • cerevisiae*

Sangiovese, Rosé, Zinfandel, Fruit Forward Reds

Selected in collaboration with the Università degli Studi di Padova in Italy to enhance the quality and uniqueness of the wines from the Raboso del Piave grape variety.

Reduces sensation of acidity and astringency in red wines under difficult conditions such as high acidity.

Wines produced using this yeast are described as having delicate fruity aromas such as cherry, blackberry, plum and ripe fruits. Floral characters such as wild violet, as well as spice and vanilla have also been noted.

Lalvin RBS 133™ has an optimum synergy with malolactic fermentation.

33-15122 500g \$51.50

RC212 *S. cerevisiae • cerevisiae*

Pinot Noir, Grenache, Cabernet Sauvignon, Rosé

Selected from fermentations in Burgundy, France, by the BIVB.

Timely nutrient additions are recommended to avoid potential H₂S production, particularly in low nutrient musts.

Known for its ability to generate ripe berry, bright fruit and spicy characteristics and to consistently produce Pinot Noir with good tannin structure.

Lalvin Bourgorouge RC212® wines may be blended with wines fermented with RA17®, AMH™, W15™ or BRL97™ to achieve more complexity.

33-15039 500g \$49.25

33-15039B 10kg \$740.00

Rhône 2056 *S. cerevisiae • cerevisiae*

Syrah, Grenache, Barbera, Zinfandel, Red French Hybrids, Fruit Forward Reds

Isolated in the northern Côtes du Rhône and selected by the IFV (formerly ITV) from over 1500 strains for its ability to maintain and enhance varietal fruit aromas and flavors.

Low producer of SO₂ and VA over a wide temperature range and can tolerate alcohol up to 16% (v/v). Has relatively high nutrient requirements.

Expresses varietal character, retains good color and is excellent for fruit forward styles.

33-15064 500g \$49.25

33-15064B 10kg \$740.00

Rhône 2226 (formerly L2226) *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.

33-15058 500g \$49.25

33-15058B 10kg \$740.00

Rhône 4600 *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.

33-15102 500g \$49.25

Polysaccharides are a macromolecule in wine that can originate from grapes or fungi (*botrytis* and yeast). They can positively impact stability (color, protein and tartrate), body and aroma longevity.

R-HST *S. cerevisiae • cerevisiae*

Riesling, Gewürztraminer, Sauvignon Blanc, Viognier, Rhône Whites, Aromatic Whites

Selected from Riesling trials conducted in the Heiligenstein region of Austria.

Tolerates fermentation temperatures as low as 10°C(50°F) and alcohol levels up to 15% (v/v). In very cold fermentations, allows the temperature to increase toward the end for a clean finish.

Lalvin R-HST® has a short lag phase and generation time, even at cold temperatures. This allows it to dominate and persist over spoilage yeast such as *Kloeckera apiculata*, where other *S. cerevisiae* might have difficulty.

Retains fresh varietal character while contributing structure and mouthfeel. It can produce crisp, premium white wines suitable for aging.

33-15084 500g \$49.25

RP15 *S. cerevisiae • cerevisiae*

Syrah, Zinfandel, Merlot, Cabernet Sauvignon, Cabernet Franc, Petite Sirah, Malbec, Petit Verdot, Structured Reds

Isolated from spontaneous Rockpile Syrah fermentations in California.

Enoferm 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.

33-15117 500g \$58.80

Steinberger (DGI 228) *S. cerevisiae • cerevisiae*

Riesling, Pinot Gris, Gewürztraminer

Slow, cool fermenter with low foam production.

Has a reasonable alcohol tolerance (up to 13% v/v) with high SO₂ tolerance.

The beta-glucosidase activity of Steinberger contributes elegant aromas, especially in aromatic white wines.

33-15082 500g \$49.25

33-15082B 10kg \$738.00

SVG *S. cerevisiae • cerevisiae*

Sauvignon Blanc, Pinot Gris, Riesling, 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.

33-15094 500g \$49.25

Syrah  *S. cerevisiae • cerevisiae*

Syrah, Merlot, Mourvedre, Petite Sirah, Petit Verdot, Structured Reds

Enoferm 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.

33-15095 500g \$49.25

Tango Malbec

The Story of a New Yeast Isolate

Lalvin Tango Malbec™ was isolated by the National Institute of Agricultural Technology in La Consulta, Uco Valley, Mendoza, Argentina. This strain was chosen from a number of options with the goal of finding a yeast to reveal the best of Malbec's traits.

Malbec is grown all over the world, with plantings totaling over 250,000 acres. Approximately 30% of that is planted in Argentina. Flavor descriptors for Malbec can depend on the growing climate, with the cooler Patagonia region revealing more black cherry and raspberry notes, and the warmer Mendoza area showing predominantly dark and black fruit characters.

When Lallemand embarks upon isolating a new strain of yeast, many criteria are considered. This includes fermentation kinetics, the aroma and flavor profiles, and mouthfeel and structure components. Before a new strain is produced on a commercial scale, it is put through numerous trials and tastings. The strain's ability to withstand the production process is of key importance.

Tango Malbec was trialed at several wineries in the Mendoza region by winemakers in production settings. The trials included comparisons with spontaneous fermentations, as well as known yeast strains. These wines were then tasted by panels consisting of winemakers and researchers alike. In all the tastings, the Tango Malbec was preferred over the control. The overwhelmingly positive results from the trials lead to Tango Malbec's selection for commercial production.

Wines fermented with fruit from cooler climates reveal more black cherry and raspberry notes, with warmer climate fruit tending toward violet, blackberry, raspberry, dark plum and anise nuances. Tango Malbec produces wines with velvety, full structure.



Three vineyards from one Argentine winery reflect the differences in altitude, temperature and yield. Note fruit aromatic intensity always improved and negative characteristics diminished.

NEW! Tango Malbec YSEC

S. cerevisiae • cerevisiae

Malbec, Syrah, Tempranillo, Merlot, Petite Sirah

Lalvin Tango Malbec™ was isolated by the National Institute of Agricultural Technology in La Consulta, Uco Valley, Mendoza, Argentina.

Tango Malbec is a moderate speed fermenter with medium nitrogen requirements and an alcohol tolerance up to 15.5% (v/v). It is a low H₂S and SO₂ producer and malolactic friendly.

It is known for its respect of varietal character and intense color.

Tango Malbec produces full bodied red wines with aromatic complexity including violet, black cherry, blackberry, raspberry, dark plum and anise. Its polyphenolic impact creates wines with good structure and balance.

33-15136 500g \$55.00

T73

S. cerevisiae • bayanus

Merlot, Zinfandel, Sangiovese, Tempranillo, Fruit Forward Reds

Isolated by La Universidad de Valencia of Spain in collaboration with Lallemand.

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.

33-15049 500g \$49.88

VIN 13

S. cerevisiae • hybrid

Sauvignon Blanc, Chenin 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. 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 Riesling, Gewürztraminer and Viognier 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.

33-16013 1kg \$104.00

33-16013B 10kg \$936.00

Thiols in their free form give tropical and/or citrus aromas and flavors to wine, however, they must be revealed by the yeast from their bound non-odiferous form.

VIN 2000 *S. cerevisiae* • hybrid

Chenin 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 Chenin Blanc (fresh pineapple and citrus aromas), oaked Chardonnay (citrus aromas) and Sauvignon Blanc (passion fruit, guava and tropical aromas).

33-16015 1kg \$104.00

VitiFerm™ Alba Fria  *S. cerevisiae* • *cerevisiae*

Sauvignon Blanc, Semillion, 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.

37-13425 500g \$49.75

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 crispy 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.

37-13473 500g \$56.00

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)

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 battonage 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 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.

37-13480 500g \$49.75

VitiFerm™ Rubino Extra  *S. cerevisiae* • *cerevisiae*

Cabernet Sauvignon, Cabernet Franc

VitiFerm™ Rubino Extra is the first yeast strain in the world (Species *Saccharomyces 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), is a very fast fermenting strain with low nitrogen demands.

Rubino Extra is a useful strain for restarting stuck fermentations, and will produce wines that promote varietal and terroir characteristics.

Usage

Due to the organic production, the rehydration process of VitiFerm™ Rubino Extra must be executed in juice and NOT water. The recommended dosage of yeast should be added to the juice in a factor of 1:1 (ie. 500g yeast to 5 litres of juice). Stir thoroughly during addition and ensure a juice temperature of between 20–30°C (68–86°F).

Storage

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

37-13435 500g \$49.75

VitiFerm Sauvage

Saccharomyces candida

Sauv Blanc, Riesling, Cab Sav, Merlot

Vitiferm Sauvage is a wild pure fermentation yeast that has been carefully selected from a complete organic habitat in Hermanus, 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.

37-13477 500g \$56.00

VRB

S. cerevisiae • cerevisiae

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, Uvaferm VRB® can have an alcohol tolerance of 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 \$51.50

W15

S. cerevisiae • cerevisiae

Gewürztraminer, Riesling, 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 H₂S 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, Lalvin W15™ helps retain bright fruit characters while optimizing mouthfeel and balance. It also performs well with both Pinot Noir and cooler climate Syrah.

33-15091 500g \$49.25
33-15091B 10kg \$740.00

A by-product of alcoholic fermentation that can give sweetness and/or fullness to wines.

ENCAPSULATED YEASTS

Encapsulated yeast are alginate beads (a natural polysaccharide extracted from seaweed) containing 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 Proenol 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 Opti-WHITE treated base wine with good results.

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

Alcohol	≤ 11.5% (v/v)	Calcium	≤ 80 mg/L
Free SO ₂	≤ 15 mg/L	Protein Stability	= stable
pH	≥ 3.0	Tartrate Stability	= stable
YAN	≥ 100 mg/L	Fermentation	> 12°C(54°F) Temperature

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.scottlабsltd.com.

33-15570 1kg \$258.00

ProDessert

Double encapsulated yeast for premium dessert wine fermentation

33-15150 1kg \$TBD

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 12, 2019.

33-15572 1kg \$TBD

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

ProRestart

Encapsulated yeast to restart sluggish or stuck fermentations

33-15154 1kg \$269.00

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).

ProMesh Barrel bag 33-15158

ProMesh Tank bag 33-15159

For more info on all encapsulated yeast, please visit our website at www.scottlабsltd.com.



INDUSTRY INSIGHT

Winemaker's Toolbox

Working with Selected Non-Saccharomyces Yeast Strains

by Gordon Specht

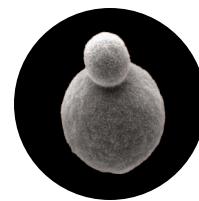
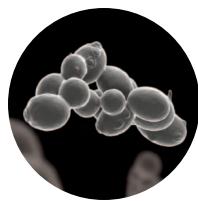
Area Manager, North America, Lallemand

Non-Saccharomyces, a colloquial term used in the wine community, refers to roughly 20 other than *Saccharomyces* yeast genera found in the vineyard and cellar. Their unpredictable nature to produce ethyl acetate or other negative off-characters justified their negative reputation as spoilage organisms. However, some of the non-*Saccharomyces* yeast have been looked at more closely for their potential positive contributions during the pre-fermentative and early fermentation stages. Their ability to impact the microbial soup early on as well as their potential to contribute complexity and more positive descriptors such as increased mouthfeel and aromatics has generated a lot of interest in the winemaking community.

Winemakers who would like to utilize the oenological qualities of non-*Saccharomyces* yeasts had to rely on the spontaneous development of wild yeasts, with the inherent risks of unreliable fermentations and uncontrollable sensory deviations. Fortunately, this is no longer the case. Through industry research into the yeast production processes, winemakers can now utilize non-*Saccharomyces* yeasts in the must, which have a survival rate throughout the first phase of fermentation comparable to that commonly obtained with *Saccharomyces* yeasts. The diversity of non-*Saccharomyces* now available to winemakers in commercial active dried form include *Torulaspora delbrueckii*, *Metschnikowia pulcherrima*, *Metschnikowia fructicola*, and *Lachancea thermotolerans*. When inoculated into the right juice matrix, they can help to avoid certain wine faults or reveal the aromatic potential of varietal aromas. All of Lallemand's commercially available non-*Saccharomyces* were isolated and selected from vineyards or winery cellars.

In general, non-*Saccharomyces* yeasts are not strong fermenters and tend to be easily overwhelmed once *Saccharomyces* begin to actively ferment. A sequential inoculation strategy of first adding a non-*Saccharomyces* followed by a selected *Saccharomyces* is the normal practice for some styles of wine. The biological control contribution of the non-*Saccharomyces* yeast in conjunction with the security of the *S. cerevisiae* enables winemakers to impact the sensory qualities and complexity of their wine while ensuring a reliable and complete fermentation. The impact of the non-*Saccharomyces* on the final wine can be great, but it is dependent on respecting several factors. Different non-*Saccharomyces* yeast strains will behave differently making selecting the right strain for the winemaking application very important. In order for the yeast to do its job well, attention must be paid to an individual strain's chemical and biological tolerances to pH, nutritional needs, temperature and SO₂. Inoculation rate and allowing the proper length of treatment time before the *Saccharomyces* takes over, will also help to get the most out of a selected non-*Saccharomyces* yeast strain. Finally, be aware of special handling instructions for commercial active dried non-*Saccharomyces* as they are not as tolerant to higher storage and rehydration temperatures as the *Saccharomyces* active dried yeast.

After the advent of pure starter cultures, the renewed interest in non-*Saccharomyces* yeasts takes into account the reality of the interactions between microorganisms and their impact on wine quality. Although non-*Saccharomyces* are still relatively under-represented in their commercial availability, there is continued investment in their research and development for different winemaking applications. As we continue to face new winemaking challenges, Lallemand continues to expand the diversity of winemaking tools available to maximize wine quality.

*Metschnikowia pulcherrima**Metschnikowia fructicola**Saccharomyces cerevisiae*

Electron micrograph of different non-Saccharomyces yeast cell wall surfaces may help to explain some of the different impacts these different strains have on a wine.

NON-SACCHAROMYCES YEAST STRAINS

Biodiva (LAURENKO)

Torulaspora delbrueckii

Chardonnay, Syrah, Pinot Noir, Late Harvest

The *Torulaspora delbrueckii* isolate Biodiva was initially sold in North American in a kit (Level²TD) 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 icewine.

S. cerevisiae strains compatible with Biodiva are 43, BDX, ICV D254, RC212, Rhône 2056, QA23 and VRB.

Biodiva MUST be used in conjunction with an *S. cerevisiae* strain.

Following an inoculation of Biodiva (*Torulaspora delbrueckii*) with an inoculation of an appropriate *S. cerevisiae* leads to an increase in ester levels while helping to promote a complete and clean 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 2 lb/1000 gal (25 g/hL). 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° Brix 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.

Note: The optimum temperature for Biodiva is >16°C(61°F). If the must/juice is under 16°C(61°F) it could result in a long lag phase, slow growth of the yeast, and other problems.

33-15220	125g	\$26.56
33-15220A	500g	\$100.50



Andrew Januik,
Winemaker
Januik Winery
Woodinville, WA

“I began using Biodiva in 2016 while making wine in South Africa and very quickly was drawn to its effect on fermentations. During the 2016 vintage in Washington, I only used Biodiva on a few experimental lots and was once again very happy with the results. In fact, the few lots of wine on which it was used became some of our favorite from the vintage and almost all ended up in our highest end wines. Over the two vintages since, Biodiva has become an integral part of our fermentation routine being used on a high proportion of our wines. Starting the fermentations with Biodiva gives a beautiful, full mouthfeel that shows elegance that remains with aging. In addition, it seems to bring out very bright and expressive aromatics.”

NEW NAME! Exotics Mosaic (Z)

S. cerevisiae and *S. paradoxus* hybrid

Chardonnay, Viognier, Chenin Blanc, Syrah, Merlot, Tempranillo, Grenache

Anchor Exotics Mosaic (formerly Anchor Exotics) 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 capabilities 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 Mosaic 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 Mosaic 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.

Exotics Mosaic is 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

Store in a cool, dry place 5–15°C(41–59°F). Use immediately once opened.

33-16085 250g \$40.25

NEW! Flavia

Metschnikowia pulcherrima

Aromatic Whites, Rosé

Flavia™ is a pure culture of *Metschnikowia pulcherrima* selected by the Universidad de Santiago de Chile (USACH) for its ability to produce aroma and flavor revealing enzymes (α -arabinofuranosidase). This enzymatic action is the first step in the liberation of bound, non-oiferous varietal aroma compounds. These compounds are subsequently revealed due to the β -glucosidase activity of compatible *Saccharomyces cerevisiae* strains. Flavia will enhance the aroma and flavor profiles of wines optimizing varietal characteristics while bringing freshness and volume in the mouth. Using Flavia can optimize the aromatic potential of your grapes.

Usage

Prior to inoculation ensure that the SO_2 is <15ppm. Flavia is used at a rate of 2 lb/1000 gal (25 g/hL). Add Flavia to ten times its weight of 30°C(86°F), chlorine free water, then stir gently. After 15 minutes, stir gently again. Slowly combine juice with the rehydration slurry to drop the temperature by 10°C(18°F). This is essential so you do not shock the yeast. This step may be repeated until you are within 10°C(18°F) of the inoculation temperature. Total rehydration should not exceed 45 minutes.

Inoculate with a compatible *Saccharomyces cerevisiae* strain 24 hours after adding Flavia, even if there has been no change in °Brix. Suggested compatible strains include those displaying β -glucosidase activity, including QA23™, Elixir™, Cross Evolution®, ICV D47™. For rosé wines, VRB®, RBS 133™, ICV GRE™ or Rhône 4600® good options.

If YAN is low, we recommend using Go-Ferm Protect Evolution® during the rehydration phase.

Storage

Store in a cool, dry environment below 11°C(52°F). Use immediately once opened.

33-15105D 500g \$125.00

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* IFV 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 help with 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 *Kloeckera apiculata* growth and acetic acid production. *Kloeckera apiculata* (*Hanseniaspora uvarum*) is known to be a high producer of acetic acid and ethyl acetate.

Early inoculation allows for good implantation of Gaia MF98.3 which can help control undesirable microflora during cold soak. It is able to implant 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 SO_2 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 2 lb/1000 gal (25 g/hL). 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 to complete alcoholic fermentation.

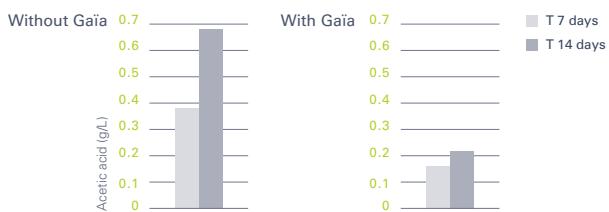
Storage

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

33-15127A 500g \$127.50

M. fructicola (Gaia™): biocontrol of volatile acidity

Production of acetic acid in must inoculated with *Kloeckera apiculata* with or without Gaia™ (sugars 230 g/L, pH 3.2, no SO_2 , pasteurization)—(SD: 0.05 g/L).



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 by known pathways, but commonly musts are not sterile and other organisms present may produce these by-products.

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 synthesize 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*

Albariño, Rosé

Selected by the INRA for very low to no SO₂ or H₂S production.

Produces ethyl and acetate 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. Fermaid O is recommended for nutrition.

IOC Be Fruits™ has a short lag phase, low nutrient requirements, an alcohol tolerance of 14% (v/v) and low VA production. Optimal conditions for fruity ester expression are must/juice that is clarified (80 NTU ± 20) and fermentation temperatures between 12–15°C(54–59°F).

38-12542 500g \$48.50

IOC Be Thiols

S. cerevisiae • *cerevisiae*

Sauvignon Blanc, Riesling, Gewürztraminer, Rosé

Selected by the INRA for very low to no SO₂ or H₂S production.

Reveals fruity thiols (citrus and exotic fruits) in white and rosé wines. Enhances 3-MH potential (grapefruit, passion fruit) without excessive plant-based notes. The purity of the fruity expression is heightened by this strain's inability to produce negative sulfur compounds that can mask aromas. Fermaid O is recommended for nutrition.

IOC Be Thiols™ is a fast fermenter with a short lag phase, moderate nitrogen requirements, and an alcohol tolerance of 15% (v/v). Optimal conditions for expressing fruity thiols are must/juice that is clarified (80 NTU ± 20), pH > 3.2, and fermentation temperatures between 15–18°C(59–64°F).

38-125-45 500g \$48.50

ICV OKAY

S. cerevisiae • hybrid

Petit Syrah, Rosé, Syrah, Viognier

Selected in collaboration with the INRA, SupAgro Montpellier, the ICV and Lallemand for very low to no SO₂ or H₂S production.

Lalvin ICV OKAY® has a very short lag phase, low nutrient requirements with steady fermentation kinetics and an alcohol tolerance up to 16% (v/v). It is a low foamer with very low acetaldehyde production.

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

33-15125 500g \$49.25

33-15125B 10kg \$740.00

ICV Opale 2.0

S. cerevisiae • *cerevisiae*

Chardonnay, Sauvignon Blanc, Rosé, Rhône Whites

ICV Opale 2.0 is a yeast selection from the ICV.

It has been shown to enhance varietal character and aromatics in warm weather and/or high Brix grapes that might otherwise produce neutral wines. Particular benefits have been seen in Chardonnay.

Lalvin ICV Opale 2.0™ has excellent fermentation qualities with a short lag phase and medium nitrogen requirements.

ICV Opale 2.0 produces low levels of H₂S, SO₂ and acetaldehyde.

33-15114 500g \$49.25

NEW! Persy™*S. cerevisiae • cerevisiae*

Rhône reds, Pinot Noir, Tempranillo or other varietals susceptible to hydrogen sulfide production

Selected in collaboration with INRA, SupAgro Montpellier and Lallemant, this QTL strain was developed for use in red wines produced from varietals naturally susceptible to H₂S.

Using good fermentation practices Lalvin Persy™ is tolerant to 16% v/v ethanol, has low relative nitrogen requirements, a moderate-fast fermentation rate, a preferred temperature range of 59–82°F, low production of negative sensory compounds (H₂S, VA, acetaldehyde) and is compatible with malolactic bacteria.

Red wines fermented with Persy™ have a balanced mouthfeel with fruit forward persistent aromas and flavors optimizing varietal expression.

33-15137 500g \$55.00

Sensy*S. cerevisiae • hybrid*

Rosé, Sauvignon Blanc, Pinot Blanc

Selected in collaboration with the INRA, SupAgro Montpellier, the ICV and Lallemand for very low to no SO₂ or H₂S production.

Lalvin Sensy™ 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.

33-15130 500g \$50.90

VI-A-DRY YEAST STRAINS**CEG (Epernay II)***S. cerevisiae • 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 some residual sugar. This makes CEG advantageous for use in semi-dry white wines.

33-15047	500g	\$26.20
33-15053	10kg	\$366.00

Montrachet (DAVIS 522)*S. cerevisiae • 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 10–29°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 <50 NTU).

Considered neutral in sensory contribution.

33-15045	500g	\$24.50
33-15045B	10kg	\$350.00

Rosé: Best Practices

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 Cinn-Free or Color Pro, Lallzyme Cuvée 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 (M83, W15, Cross Evolution, Be Fruits, QA23, NT116, Rhône 4600 or VIN13), 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.



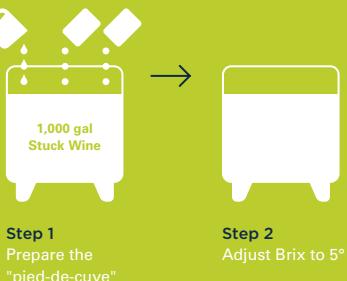
PROTOCOL

Recommended Method to Restart a Stuck Fermentation Using Uvaferm 43 RESTART

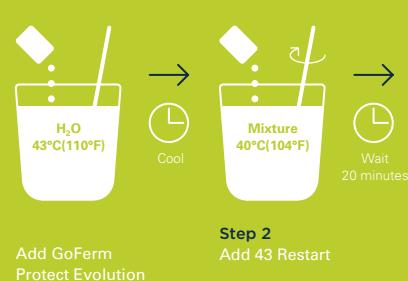
Prepare the Stuck Wine



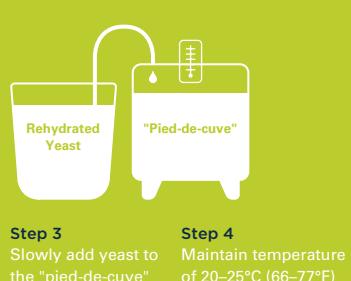
Prepare the "Pied-de-cuve" (starter)



Yeast Rehydration



"Pied-de-cuve"



Incorporation of the "Pied-de-cuve"



For 1000 gals of stuck wine

Prepare the Stuck Wine

- Depending on analysis, address any potential spoilage organisms with SO₂ and/or lysozyme additions
- Add 1.5kg (3.3lb) Reskue and mix tank.
- Allow the tank to settle for 48 hours then rack off the settled lees.
- Adjust the temperature of the Reskue treated wine to 20–25°C(68–77°F).

Yeast Rehydration

- Add 2kgs (4.4 lbs) of Go-Ferm Protect Evolution in 10 gallons of water at 43°C (110°F).
- Cool solution to 40°C (104°F) and add 1.5kgs (3.3 lbs) of Uvaferm 43 RESTART.
- Wait 20 minutes and slowly add rehydrated yeast to the "Pied-de-cuve".
- Maintain temperature of 20–25°C (68–77°F).

Prepare the "Pied-de-cuve" (starter)

- Prepare the following:
 - 40 gallons water
 - 50 gallons post Reskue treated wine
 - 0.3kg (2/3 lb) Fermaid O
- Adjust Brix to 5°.

Incorporation of the "Pied-de-cuve"

- Allow "Pied-de-cuve" to drop to 0° Brix and transfer immediately to the full volume of Reskue treated wine.
- Add 1.5kg (3.3lbs) of Fermaid O.
- Mix tank to homogenize.

Quick Troubleshooting Guide for Alcoholic Fermentations

There are many factors that can influence the success of a fermentation. If a fermentation becomes sluggish or you suspect it might be stuck, it is wise to assess the complete picture of the wine before jumping into a full restart. Sometimes a simple adjustment can be enough to get a fermentation back on track. If a restart is necessary, having all the details will help you determine the best approach.

The yeast might need additional nutrients

For a fermentation to be happy and healthy, it is essential that the yeast have enough nutrients. Even when starting with high nutrient levels, additional nutrients are almost always needed by 1/3 of the way through the fermentation. If you're at the tail end of the fermentation with just a small amount of sugar left, an addition of Reskue or Nutrient Vit End can be beneficial.

There may not be enough healthy yeast to get the job done

If you didn't properly rehydrate your yeast or inoculate at the appropriate dose rate, it is possible that you don't have a good population of healthy yeast. In this case, a re-inoculation might be necessary.

There might be other microbial populations you need to address

Check your Volatile Acidity (VA). A VA greater than 0.6g/L can be challenging for the yeast and anything higher can become inhibitory to fermentation. A high VA can be a sign of microbial issues that you'll want to address with products like Lysovin (lysozyme) or Bactiless before attempting a restart. If the VA is over 0.8g/L you will need to remove it before attempting a restart.

The temperature of the wine might be causing trouble

Each yeast strain has an optimal temperature range for fermentation. Anything outside of this range can cause stress for the yeast. If your temperature is too low, try warming the wine. If the temperature is too high, or if it spiked very high at any point it's possible that the yeast are no longer viable and a re-inoculation will be necessary.

The alcohol may have gotten too high for your selected yeast strain

Certain yeast strains can tolerate more alcohol than others so if you've exceeded the tolerance level of your selected strain, you may need to re-inoculate with something that has a higher tolerance. Based on your starting Brix, you should always select a strain that will be able to handle the potential alcohol level.

The juice/wine might be too clean

If your juice is really clean, there may not be enough turbidity to keep the yeast in suspension. An addition of Inocel, Nutrient Vit End or Reskue may help in addition to stirring.

The wine might need a detox

Sometimes there are toxins present that can impede the success of fermentation. Reskue can be extremely beneficial for detoxification. If possible, Reskue should be added and racked after 48 hours. If you are unable to rack, adding Reskue and leaving it in the wine can still be advantageous.

Restarting Stuck Fermentations

There are now a few different protocols for restarting stuck fermentations. We have included the longer traditional restart, the more rapid protocol with 43 RESTART and the encapsulated yeast procedure. Choosing the correct protocol is dependent on the wine and time constraints. *Contact Scott Labs for more guidance.*

💡 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, K1 (V1116), Vin 13 and DV10 can truly save the day!



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 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. 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 90).

Adding Reskue™ (see page 48 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/hL (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/hL). Many winemakers also add lysozyme at this time to reduce potential bacteria problems (see page 90).
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 of 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 3–5 lb/1000 gal (36–60 g/hL). 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, atemperation 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.)
- 11a, 11b, 11c. Repeat step 10.
12. Add any remaining wine to the Mother Restart Tank.

For Wines Stuck at 1–2°Brix

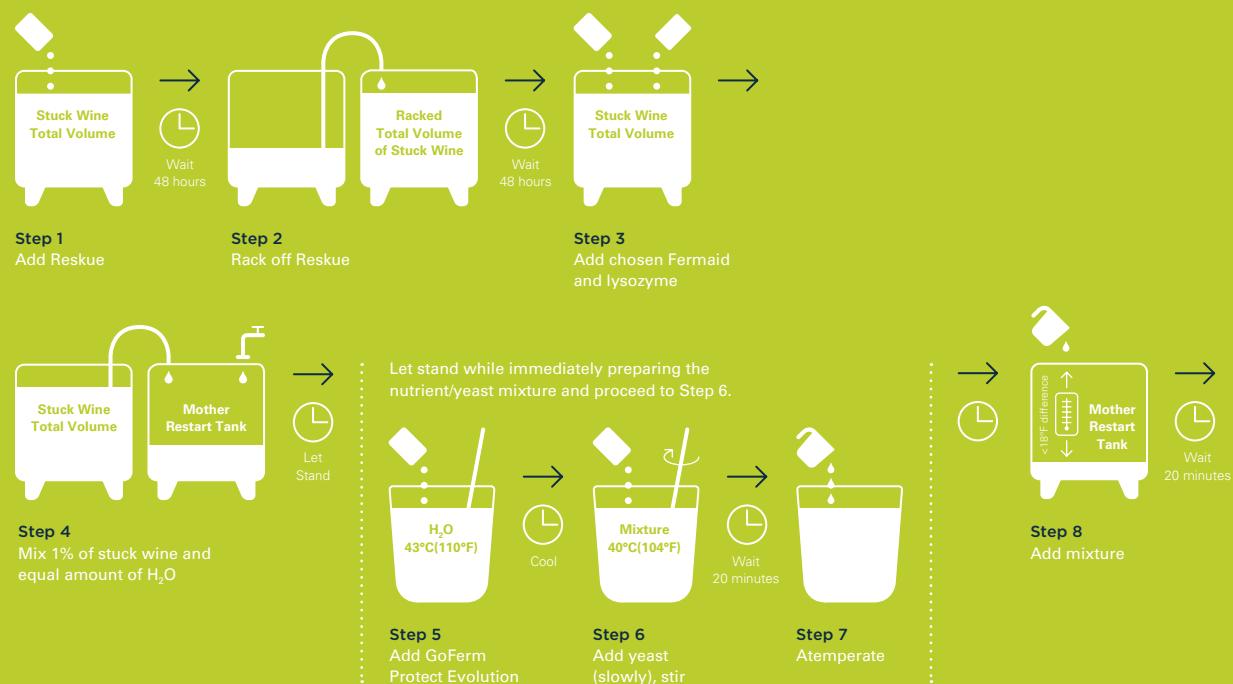
Follow this restart protocol, except in Step 3 reduce the complex yeast nutrient addition to 0.5 lb/1000 gal (6 g/hL).

For Wines Stuck at <1°Brix

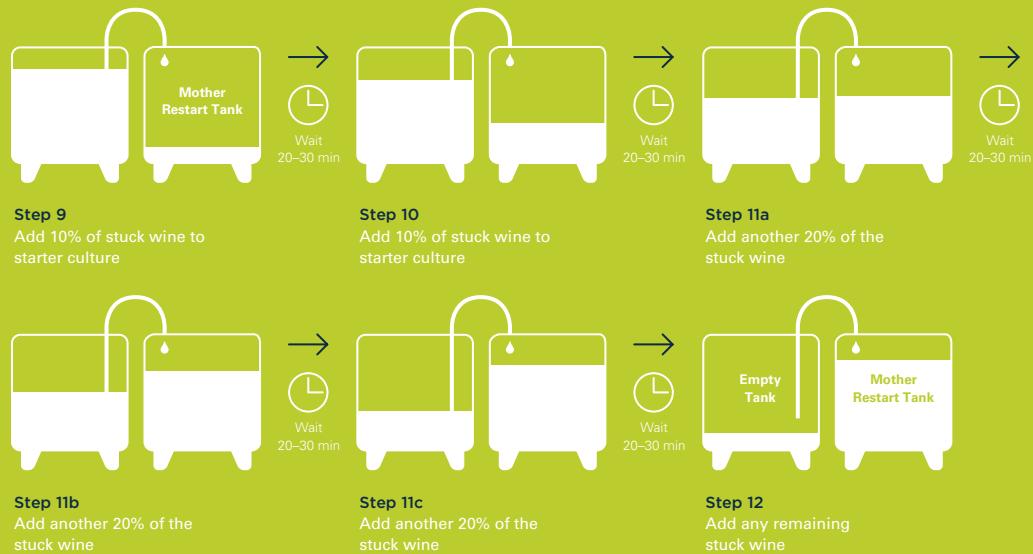
Follow this restart protocol, except in Step 3 eliminate the addition of a complex yeast nutrient.

For Wines Stuck at >3°Brix

Build-up for Stuck Wine



Inoculation of Stuck Wine



▶ Visit www.scottlабsltd.com for a video animation of this protocol.



ARTICLE

Sauvignon Blanc—A Tale of Two Styles

Sauvignon Blanc is a versatile variety and can be made in many different styles including mineral, thiol and fruit driven. The drivers of minerality are still under investigation, however, wines made in the tropical/thiolic, or the fruit driven/ester styles, are well-documented. Wines made in the tropical style display characters of tropical fruit, including aromas of passionfruit and guava, citrus notes of grapefruit and green notes reminiscent of gooseberry and boxtree. The more fruit and ester driven wines are characterized by citrus, floral and white and yellow fruits. Processing equipment, viticultural choices and oenological tools help to produce wines in the desired style.

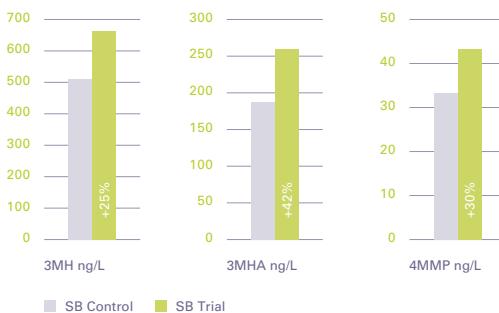
Tropical/Thiol Style

Volatile thiols found in the skins of the grape are ultimately responsible for the tropical characteristics. These sulfur based volatile aroma compounds have traditionally been referred to as 4-mercaptop-4-methylpentan-2-one (4MMP), 3-mercaptophexan-1-ol (3MH) as well as its ester form of 3-mercaptophexylacetate (3MHA). The volatile thiols are in a non-odorous form in the grape and due to the enzymatic action of the yeast in the early stages of fermentation, are released and converted into the volatile forms that we recognize. 4MMP imparts box tree and passion fruit like aromas, and 3MHA and 3MH imparts passionfruit, grapefruit, gooseberry and guava type aromas to the wine. Depending on viticultural practices, location and climate, the amounts of these compounds will vary.

Thiol	Perception Threshold	Aroma	Precursor in Grapes
4MMP	0.8 ng/L	Blackcurrant, Gooseberry, Box tree	cys-4MMP
3MH	60 ng/L	Grapefruit, Passion fruit, Guava	cys-3MH
3MHA	4 ng/L	Passion fruit, Gooseberry, Box tree, Guava	No cys-3MHA found

Research has shown that the amount of the compounds released during fermentation depends on the strain of wine yeast, its enzymatic activity and environmental conditions. Conditions positively impacting volatile thiol revelation include monitoring NTU's, fermentation temperature and nutrient management. It has been shown that ergosterol, vitamins, minerals and key amino acids have positive impacts on thiol production, whereas ammonia (DAP) and exposure to oxygen are detrimental.

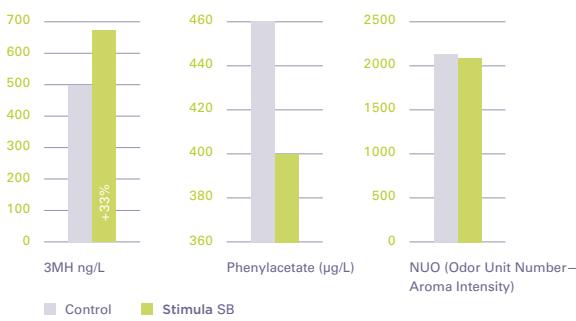
Revealing and stabilizing these aromatic compounds is key to maximizing the tropical and thiol fruit aromas and flavors in the resulting wine. Stimula Sauvignon Blanc is an autolyzed yeast nutrient, rich in key vitamins and minerals known to impact volatile aroma compounds. Added at the beginning of the alcoholic fermentation (after 2–3 °Brix drop) this nutrient has significant impact on thiol compounds including 4MMP, 3MH and 3MHA as can be seen in the results of a trial done in 2018 with Alchemy II.

2018 Stimula Sauvignon Blanc Trials**Yeast strain: Alchemy II**

- The impact on 3 thiols of Stimula Sauvignon shows a significant increase in the 3 compounds
- The ratio thiols/esters is 50% higher on the Stimula SB wine
- In terms of profile the control wine has more fermentative aroma and is floral oriented, whereas the Stimula SB wine is more citrus and herbaceous/green thiols oriented

Fruit Driven/Ester Style

Esters are a class of volatile compounds that are responsible for general "fruity" aromas in wines. Esters are a fermentative aroma, produced throughout the fermentation. Ester production is generally split into two phases with the majority of the compounds produced from $\frac{1}{2}$ of the way through fermentation until the end. To optimize ester production, it is necessary to have key amino acids present eg. phenylalanine. Although having amino acids is essential, choosing a yeast strain with the ability to produce esters, managing lipid levels (turbidity) and temperature are key.

Stimula Sauvignon Blanc Trials**Fumé Blanc**

- No 4MMP was found in this wine
- A massive impact of Stimula Sauvignon on 3MH; +33%
- Global aroma intensity is similar but explained by the higher amount of phenylacetate (floral/rose) in the control
- The difference in the Thiols/Esters ratio (28% higher for Stimula treatment)
- There is a difference in terms of sensory profile between the wines: thiolic perception for Stimula treatment, floral for the control

NUTRIENTS

For decades, nitrogen was the main focus when it came to wine yeast nutrition and fermentation security. Nitrogen is required by the cells for many purposes, including cell growth and sugar uptake. Supplementation of nitrogen was traditionally in the form of DAP (inorganic nitrogen source). As research progressed we came to understand that nitrogen in this form, although efficient, was depleted prematurely due to fast accumulation, hot ferments leading to fermentations that began fast but finished slow. This profile was not favorable. Research provided answers in the form of organic nitrogen (autolyzed yeast), and the importance of the quality of nitrogen provided to the yeast.

Although nitrogen remains very important, it is not the only answer. More recently, the focus has shifted toward providing the yeast with what they need, when they need it, and in a non-competitive environment. This holistic approach has ensured the nitrogen needs are taken care of, but also and more importantly, the vitamin, mineral and sterol needs of the cells. By advancing the research and dedicating resources, we now understand not only yeast nutritional needs, but how they are directly linked to fermentation dynamics and the role they play in the yeast's aromatic metabolism. This generation of products can be used to drive wine style while also securing fermentation.

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 flavors and/or aromas or even stop fermenting.

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

The higher the initial concentration, the more YAN required.

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).

FRUIT QUALITY

The sanitary status of the grapes, grape chemistry, as well as pre-fermentation winemaking practices also directly influence the YAN.

Yeast Nutrient YAN Contribution

Nutrient	Dose 25 g/hL (2 lb/1000 gal)	Dose 30 g/hL (2.5 lb/1000 gal)	YAN Source
DAP	50 mgN/L	63 mgN/L	Inorganic nitrogen
Fermaid K	25 mgN/L	30 mgN/L	Inorganic nitrogen (from DAP) and organic nitrogen from autolyzed yeast
Fermaid 0	10 mgN/L	12 mgN/L	Organic nitrogen from autolyzed yeast
FermControl™ BIO	11 mgN/L	13.2 mgN/L	Organic nitrogen from autolyzed yeast
Go-Ferm	7.5 mgN/L	10 mgN/L	Organic nitrogen from autolyzed yeast
Go-Ferm Protect Evolution	7.5 mgN/L	10 mgN/L	Organic nitrogen from autolyzed yeast
Nutrient Vit End	7 mgN/L	8.5 mgN/L	Organic nitrogen from autolyzed yeast
Phosphate Titres	50 mgN/L*	63 mgN/L*	Inorganic nitrogen
SIY 33 (Fermaid 2133)	8 mgN/L	10 mgN/L	Organic nitrogen from autolyzed yeast

**This dosage exceeds the legal limit of thiamin.*

Choosing the Correct Yeast Nutrient

Highly Recommended



ARTICLE

Nutrient Notes and Strategy

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.

Factors beyond the yeast strain'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:

pH

At pH 3 only 70% of ammonia can be utilized compared with >90% at pH 4. This can modify the handling of acidic whites or high pH reds.

Temperature

The warmer the temperature of the ferment, the more nitrogen is required as the cells are growing and metabolizing faster.

Oxygen availability

Yeast available O₂ results in faster nitrogen capture, therefore more YAN is required.

Nitrogen source

Nitrogen from amino acids is a more efficient form of nitrogen for cell metabolism and aromatic production than ammonia (DAP) or glutamate.

Vitamin and mineral deficiency

Vitamins and minerals can be consumed very quickly (in less than 3 hours) by the native flora, binding of must components (organic acids and polyphenolic compounds) or by the deactivation of thiamin by S0₂ additions in excess of 50ppm. Such deficiencies will negate the benefits of ample YAN and are a critical consideration in nutrition management.

Due to the complex interactions of the yeast, grapes and winemaking parameters (some of which are mentioned above), specific YAN recommendations are not available for each strain. Using the general recommendations in the chart on the following page we can compensate for many of the variables.

Remember to use rehydration nutrients for protection and stimulation of yeast cells and fermentation supplements for cell nourishment. These are also important steps.



FERMENTATION MANAGEMENT A Focus on Nutrition

In order to conduct a healthy and a complete fermentation, yeast require more than just nitrogen. In fact the survival factors, mineral and vitamin co-factors are essential. If limited and/or imbalanced, the yeast will struggle to complete the fermentation and the resulting wine may be slow, sluggish or stuck and the production of negative sensory compounds may be obvious.

To calculate your additions based on sugar, yeast strain requirements and your fermentation goals follow the outline below.

1. To tailor a fermentation plan to your needs firstly calculate the theoretical nitrogen requirements based on two factors: sugar to be fermented and the yeast strain requirements.

Sugar	Yeast Strain Nitrogen Requirements		
Brix	Low	Medium	High
20	150	180	250
22	165	200	275
24	180	220	300
26	195	240	325
28	210	260	350
30	225	280	375

2. Calculate the supplemented nitrogen required:
 - Theoretical Nitrogen required (table 1) – Juice/Must YAN = SUPPLEMENTED YAN
3. Determine fermentation goal:
 - Fermentation security
 - Fermentation security and optimization of thiols
 - Fermentation security and optimization of ester
4. Once YAN supplementation and fermentation goal has been determined then follow one of the three protocols outlined below.
 - The nitrogen required to secure the fermentation is supplied by the Fermaid family of complex yeast nutrients, the Go-Ferm Protect evolution is an autolyzed yeast naturally providing the essential survival factors and vitamins to balance the nitrogen uptake and act as fermentation security co-factors. The goal of the Stimula range is to provide nitrogen and naturally occurring vitamins and minerals to assist with the yeasts' aromatic metabolism. To optimize the yeasts' performance all components are required and solely focusing on nitrogen management is no longer appropriate for a healthy fermentation.

YAN Required to Supplement	At Yeast Rehydration Phase	At 2-3 Brix Sugar Drop	At ½ Sugar Drop
50 ppm	30 g/hL (2.5 lb/1000 gal)	No addition	30 g/hL (2.5 lb/1000 gal) Fermaid O
100 ppm	Go-Ferm Protect Evolution	20 g/hL (1.7 lb/1000 gal) Fermaid O	20 g/hL (1.7 lb/1000 gal) Fermaid O + 12.5 g/hL (1.0 lb/1000 gal) Fermaid K
150 ppm		40 g/hL (3.3 lb/1000 gal) Fermaid O	30 g/hL (2.5 lb/1000 gal) Fermaid A

YAN Required to Supplement	At Yeast Rehydration Phase	At 2-3 Brix Sugar Drop	At ½ Sugar Drop
50 ppm	30 g/hL (2.5 lb/1000 gal)		10 g/hL (0.8 lb/1000 gal) Fermaid O
100 ppm	Go-Ferm Protect Evolution	40 g/hL (3.3 lb/1000 gal) Stimula Sauvignon Blanc	20 g/hL (1.7 lb/1000 gal) Fermaid O
150 ppm			40 g/hL (3.3 lb/1000 gal) Fermaid O

YAN Required to Supplement	At Yeast Rehydration Phase	At 2-3 Brix Sugar Drop	At ½ Sugar Drop
50 ppm	30 g/hL (2.5 lb/1000 gal)	No addition	
100 ppm	Go-Ferm Protect Evolution	20 g/hL (1.7 lb/1000 gal) Fermaid O	40 g/hL (3.3 lb/1000 gal) Stimula Chardonnay
150 ppm		40 g/hL (3.3 lb/1000 gal) Fermaid O	



ARTICLE

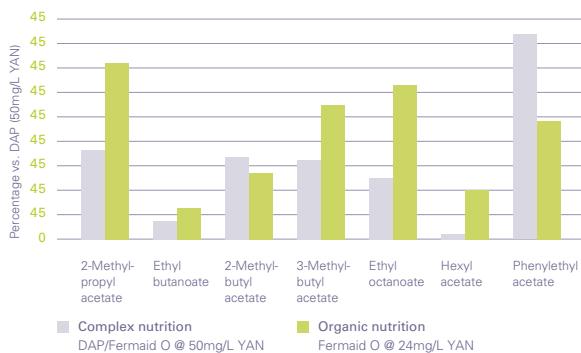
The Role of Nitrogen Source on Wine Quality

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 esters (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

Chardonnay from Yalumba Winery in Australia fermented with two different sources of nitrogen (DAP and Fermaid O).

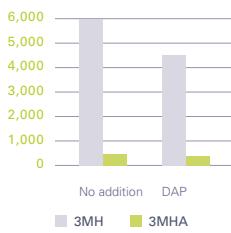


The timing of nutrient additions is also an important factor. If nitrogen is added too late in the fermentation, then the cells' ability to assimilate it is reduced. Esters (both acetate and ethyl forms) are produced throughout the fermentation in a biphasic manner. The beginning of the second phase commences when the yeast enters into the stationary phase (this correlates to approximately $\frac{1}{2}$ sugar depletion). It is during this second phase that the majority of the esters are produced. The concentration and specific ester produced is highly dependent upon the precursors (amino acids), the enzymatic ability of the yeast (based on its genetic background), as well as winemaking decisions (e.g. temperature of fermentation, management of solids, etc.).

The second group of aromatic compounds that can be positively influenced by nutrition are polyfunctional thiols. Unlike the esters, the thiol potential is determined during the early phases of the fermentation, when the cells are still growing (from 2–3°Brix drop to $\frac{1}{2}$ sugar depletion). However, similar to the esters, the yeast's enzymatic ability plays a role in revealing these compounds – from the non-aromatic, to the tropical and citrus notes.

Thiol Formation with DAP

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.

REHYDRATION NUTRIENTS FOR CELL PROTECTION AND STIMULATION

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

If these micronutrients 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 bioavailable 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 OMRI

Yeast rehydration nutrient; OMRI 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 bioavailable micronutrients as they rehydrate. Infusing yeast with these critical nutrients arms them against ethanol toxicity and optimizes nutrient availability, protecting and stimulating the yeast culture.

Recommended Dosage

30 g/hL 2.5 lb/1000 gal

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

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, use approximately 5 gallons (20 L) 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, it will not go into solution completely. This is due to the fatty acid and sterol content.

Storage

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

35-15070 2.5kg \$82.00

35-15071 10kg \$301.00

Go-Ferm Protect Evolution OMRI

Yeast rehydration nutrient for challenging conditions; OMRI listed

Go-Ferm Protect Evolution® is the latest generation of natural yeast rehydration nutrients with improved sterol content (quality and quantity) together with micronutrients 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, *Botrytis*, 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 ½ sugar depletion.

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

Recommended Dosage

30 g/hL 2.5 lb/1000 gal

Note: This recommendation is based on a yeast inoculum of 2 lb/1000 gallons (25 g/hL). 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 (20 L) 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 2.5kg \$97.25

35-15071F 10kg \$364.00

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).

Stimula Chardonnay

Stimulates volatile ester production in aromatic whites and rosés

Stimula Chardonnay™ is added at the end of the yeast growth phase (this equates to approximately $\frac{1}{3}$ sugar depletion). At this time the yeast is not utilizing the amino acids as a nitrogen source for growth, but they are using them along with the naturally occurring riboflavin, biotin, vitamin B6 complexes, sterols, manganese and zinc to produce esters. These desirable compounds are recognized as being fruity and floral in nature. By using Stimula Chardonnay you are optimizing the aromatic potential of your whites and rosé wines.

Recommended Dosage

40 g/hL 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 $\frac{1}{3}$ sugar depletion. It is essential that this timing of addition is respected. Stimula Chardonnay is not fully soluble so it will not fully dissolve. Stir to maintain suspension before and during addition.

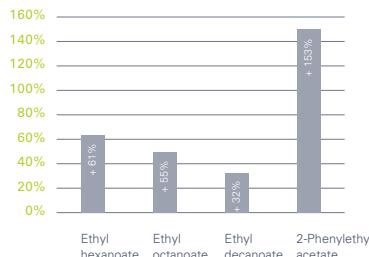
Storage

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

35-15110 1kg \$57.70

35-15110B 10kg \$545.00

Gain in % with Stimula Chardonnay addition



Comparative trial on a Chardonnay wine 2016 (Languedoc, France) DAP vs. Stimula Chardonnay both added at 40 g/hL at the first 1/3 of alcoholic fermentation. The bars represent the gain in % for each compound using Stimula Chardonnay™ vs. DAP (values are above the perception threshold).

Stimula Sauvignon Blanc

Stimulates volatile thiol production in aromatic whites and rosés

Stimula Sauvignon Blanc™ is added at the beginning of the fermentation (this equates to approximately 2–3 °Brix drop). This 100% autolytic yeast product is particularly rich in calcium pantothenate, thiamin, vitamin B6 complexes, folic acid, manganese and zinc in order to optimize the uptake of the 4-MMP and 3-MH precursors and their bioconversion into volatile thiols. Thiols can be found in Sauvignon Blanc, Chardonnay, Riesling, Semillon, as well as Syrah, Grenache and Cabernet Sauvignon amongst others. These desirable compounds are recognized due to their tropical (passionfruit, guava) and citrus (grapefruit) flavors as well as blackcurrant and gooseberry. By using Stimula Sauvignon Blanc you are revealing the aromatic potential of your grapes.

Recommended Dosage

40 g/hL 3.3 lb/1000 gal

Usage

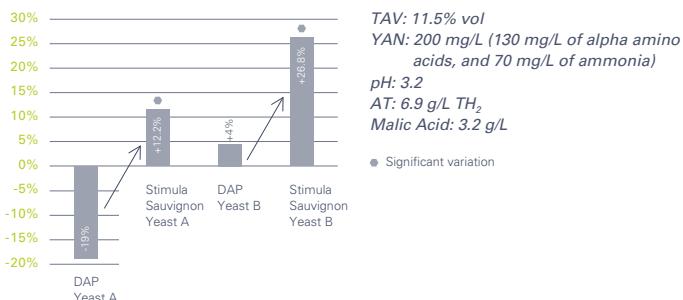
Mix Stimula Sauvignon in 10 times its weight in clean, chlorine free water or juice and add to the fermentation at 2–3 °Brix drop. It is essential that this timing of addition is respected. Stimula Sauvignon is not fully soluble so it will not fully dissolve. Stir to maintain suspension before and during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

Storage

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

35-15112	1kg	\$57.70
35-15112B	10kg	\$545.00

4MMP Production Variation vs. Control in %



Comparative trial on a Sauvignon Blanc wine 2016 (Gers, France) DAP vs. Stimula Sauvignon Blanc™ both added at 40 g/hL at the beginning of alcoholic fermentation vs. Control without any addition. Bars represent the variation in % of 4MMP measured in comparison to a control without addition (represented by the x-axis o).



Fernando Farías Córdova,

Winemaker

Cava Córdova

Ensenada, Baja California,

México

“Last harvest I did a trial using Stimula Chardonnay on Valle de Guadalupe (Mexico) Chardonnay.

We had the same juice in two barrels, one with the product and one without, in the same temperature conditions. The fermentation rate went slightly faster in the trial barrel and the aromatics were considerably higher giving it a more floral profile and increasing the fruit aromas.

I highly recommend the usage of Stimula Chardonnay for adding complexity and increasing the aromatic potential of wines.”

Esters or Thiols?

How to select which Stimula product to use

Despite their names, the Stimula products can be used on varietals other than just Chardonnay or Sauvignon Blanc. Which product to use depends on whether you're looking to enhance esters or thiols.

Wine Esters

Esters contribute sweet-fruity aromas and flavors in white, rosés and red wines. It is the synergy of esters that contribute to overall complexity of wine aroma. Latest research has shown that ester production is biphasic and the majority of esters are produced from 1/2 fermentation until the end. These fermentation derived compounds can be split into two major groups: acetate esters and ethyl esters e.g. phenylethyl acetate (rose) and ethyl butanoate (red berry). Although yeast vary in their ability to produce esters (*see chart on pages 8–13*), the amount produced will be influenced by nutrient composition and fermentation conditions. Ergosterol, vitamins and specific amino acids all support higher ester production and that is why we specifically suggest using Stimula Chardonnay in all varietals where you want to enhance fruity and floral notes.

Thiols

Volatile thiols are the sulfur based compounds that contribute tropical notes reminiscent of passionfruit, guava and grapefruit in white wines. Although Sauvignon blanc is the poster child for thiols we know that the bound precursors have been found in the skin of many other white cultivars like Chardonnay, Colombard, Gewurtztraminer, Grenache blanc, Pinot gris, Pinot blanc and Semillon. Interestingly, the blackcurrant bud flavor found in red wines like Cabernet Sauvignon, Merlot and Syrah are also due to the presence of thiols. These compounds are released from their bound form due to yeasts enzymatic activity, and their impact is determined very early in the fermentation process. Both processing and winemaking decisions impact their revelation. Using Stimula Sauvignon blanc is any thiolic varietal early can help to optimize the thiolic potential of that cultivar.

FERMENTATION NUTRIENTS FOR YEAST NUTRITION AND FERMENTATION SECURITY

Yeast nutrition refers to the utilization of essential food sources for anabolic and catabolic 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.

Diammonium Phosphate (DAP) 🔥

Inorganic nitrogen source

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 supplement in nitrogen deficient environments.

30-15053D	1kg	\$8.95
30-15015	22.7kg	\$172.52

Fermaid K

Complex yeast nutrient

Fermaid® K is a complex yeast nutrient that contains a blend of inactivated yeast, alpha amino acids (organic nitrogen derived from inactivated yeast), sterols, unsaturated fatty acids, key nutrients (magnesium sulfate, thiamin, folic acid, niacin, calcium pantothenate) 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 is utilized much more efficiently than from the ammonia 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 ensure proper nutrition of selected yeast from rehydration through completed fermentation.

Recommended Dosage

25 g/hL 2 lb/1000 gal

35-15029	2.5kg	\$52.38
35-15028	10kg	\$143.00

Fermaid K (Kosher)

Kosher certified complex yeast nutrient

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

Recommended Dosage

25 g/hL 2 lb/1000 gal

35-15030 10kg \$214.00

Fermaid O

Organic yeast nutrient; OMRI listed

Fermaid® O is a blend of highly specific fractions from inactivated yeast that are rich in alpha amino acids (organic nitrogen). Organic nitrogen is known to be a highly effective nutrient source (especially when compared to DAP) 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 (thiols and esters). Fermaid O does not contain any DAP or supplemented micronutrients. For optimal results, Fermaid O should be used in conjunction with an appropriate yeast rehydration nutrient (Go-Ferm or Go-Ferm Protect Evolution) to ensure proper micronutrient nutrition of selected yeast from rehydration through completed fermentation.

Recommended Dosage

40 g/hL 3.3 lb/1000 gal

35-15032 2.5kg \$120.75

35-15032B 10kg \$463.50

USE OF ALL Fermaid PRODUCTS

Usage

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 nutrient supplementation (see yeast reference chart on pages 8–13).

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/hL 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.

35-13460 1kg \$80.60

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 fungicides. Saturated fatty acids are produced under stressful conditions resulting in a modification of the yeasts sugar transport capacity. When used during fermentation Nutrient Vit End can bind toxins and help minimize the risk of sluggish or stuck fermentations. It can also be used to detoxify the wine for restarting a sluggish or stuck fermentation.

Recommended Dosage

Must/Juice 30 g/hL 2.5 lb/1000 gal

Sluggish or Stuck Wine 40 g/hL 3.3 lb/1000 gal

Usage

Suspend Nutrient Vit End in water, juice or wine and mix well before adding to must/juice. If using for a stuck or sluggish fermentation, allow to settle and rack off prior to restart.

Storage

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

35-15076 2.5kg \$81.50

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 $\frac{1}{3}$ 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 \$13.85

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 formulated 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 reinoculate 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.

35-15099 1kg \$49.00



Reskue has unique lumps and bumps! This increased surface area allows for greater adsorption of toxins.

SEM photo provided by Lallemand.
Research collaboration with Professor Aude Vernhet
at SupAgro Montpellier.

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 $\frac{1}{3}$ sugar depletion when inorganic nitrogen is NOT desired. Unlike Fermaid K, SIY 33 (Fermaid 2133) does not contain added ammonia salts (DAP) or supplemented micronutrients.

35-15031 12.5kg \$235.00

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 20kg \$890.00

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.

Choosing the Right Natural Yeast Derivative Nutrient

- Highly Recommended
- Recommended

50 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

Increases smooth mid-palate intensity and fresh fruit in whites and rosés

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 balance 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 MLF. If used at the beginning of the primary fermentation, it can be helpful in lowering the production of off-sulfur compounds (notably in botrytised grapes). It can be added toward the end of fermentation to help reveal muted aromatics. To help decrease the perception of woody aromas, add before placing in new barrels. Booster Blanc greatly complements premium whites or rosés that are fermented with ICV D21 and ICV GRE.

Recommended Dosage

30 g/hL 2.5 lb/1000 gal

Note: Dosage should be increased when grapes are affected by more than 15% rot or when there is an absence of oxygen during fermentation.

Usage

Mix Booster Blanc in 10 times its weight in water or juice. Booster Blanc is only 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.

35-15081 2.5kg \$118.75

ICV Booster Rouge

For greater and smoother tannin structure in reds

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 tannic 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 D21. Booster Rouge may also be added during the latter part of the alcoholic fermentation to contribute tannin intensity and alcohol integration.

Recommended Dosage

30 g/hL 2.5 lb/1000 gal

Usage

Mix Booster Rouge in 10 times its weight in must or water. Booster Rouge is only partially soluble. 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.

35-15080 2.5kg \$118.75

ICV Noblesse OMRI

Contributes to balance and softness on the finish; OMRI listed

ICV Noblesse® is a yeast derivative nutrient for use in red and white winemaking which adds a perception of sweetness to balanced wines. The production process used for Noblesse inactivates sulfite-reductase potential, greatly limiting sulfur off-odours. Wines made using Noblesse exhibit a more intense perception of ripe fruit together with an overall roundness and softness on the finish. There is also decreased tannic intensity on the mid-palate. Noblesse can help reduce undesirable aggressive characters or sensations of dryness due to the release of low molecular weight polysaccharides. It can also help reduce the burning sensations common in higher alcohol wines and in wines made from botrytised grapes. Although immediate results are possible, full integration may take three to five months.

Recommended Dosage

30 g/hL 2.5 lb/1000 gal

Usage

Mix Noblesse in 10 times its weight in water or must/juice. Add during a pump-over or tank mixing. 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.

35-15077 2.5kg \$103.38

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 polyphenol-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 and mix. 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 in a cool, dry environment at 18°C(65°F). Once opened, keep tightly sealed and dry.

35-15078 2.5kg \$130.00

OptiMUM White

For optimizing aromatic intensity and longevity; OMRI listed

OptiMUM White® is a yeast derivative nutrient which is produced using a new process that increases the glutathione bioavailability 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. OptiMUM White should be added 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 OptiMUM White should be used with a complete nutritional program.

Recommended Dosage

20–40 g/hL 1.7–3.4 lb/1000 gal

Usage

Mix OptiMUM 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.

35-15079 2.5kg \$130.00

Opti-RED

For rounded and smooth tannin reds; OMRI listed

Opti-RED® is a unique inactivated yeast derivative nutrient. It is the product of a specific refining 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 integration. Using Opti-RED in the latter part of alcoholic fermentation allows the winemaker to shape harsh polyphenolics into smoother, more approachable tannins.

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 \$103.50

35-15073B 10kg \$394.00

Opti-WHITE

Protects fresh aromas; OMRI listed

Opti-WHITE is prepared using a specific production process that results in a yeast derivative rich in polysaccharides and high in antioxidant peptides (glutathione). These glutathione peptides work synergistically with SO₂, allowing the winemaker to potentially lower their SO₂ dosage whereas the polysaccharides enhance smoothness. 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. When Opti-WHITE is added in the last stages of alcoholic fermentation, it helps bring out flavour profiles often associated with lees aging.

Recommended Dosage

25–50 g/hL 2–4 lb/1000 gal

*Use 50 g/hL for maximum antioxidative properties

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 \$103.50

35-15074B 10kg \$394.00

REDStyle KÄLLEMÅND

Increases extraction of juice and improves structure

REDStyle™ is a unique blend of inactivated yeast derivative nutrients blended with a pectinase enzyme. It is used during the maceration of red grapes to increase the extraction of juice and to improve structure. It can enhance colour stability and increase tannin intensity. REDStyle™ can be used on low maturity or botrytised grapes or musts to shorten maceration times, increase colour stability and build structure. It can also help mask unripe (green) characters.

Recommended Dosage

227 g/ton 0.5 lb/ton

Usage

Mix REDStyle in 10 times its weight in must or water. Use during maceration. Add into the tank as it is filling or during a pump-over. REDStyle can also be added directly to the crusher. This product is partially soluble. Stir and 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.

35-15085 2.5kg \$121.50

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.

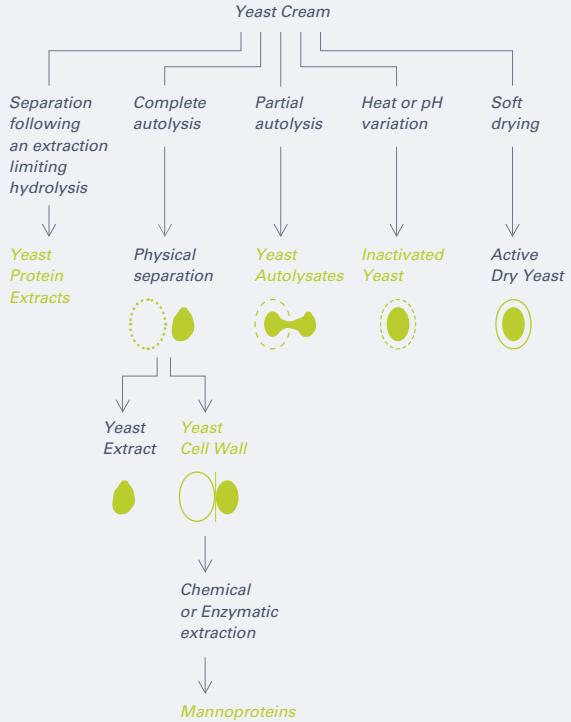
The yeast biomass may be treated in the following ways depending on the required end product:

- 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

Yeast Derivatives... What Are We Talking About?

General Definition

● Authorized and defined by OIV



FAQ

FREQUENTLY ASKED QUESTIONS

My wine is at 8°B and I missed the addition of nutrients at ½ sugar depletion. Should I add Fermaid K at this point?

The purpose of a nitrogen addition at this point of fermentation is for re-synthesis of the sugar transport system in the yeast cell so that fermentation can continue to completion. Ammonia uptake is inhibited above 10% alcohol. New research has shown that amino acids may be used even at this late stage. A small addition of Fermaid O or Nutrient Vit End will help as long as you add within 48 hours of missing your window. This really is a case-by-case scenario.

Every harvest I add 2 lb/1000 gal of a complete yeast nutrient ½ of the way through fermentation. Is that what is recommended?

A 2 lb/1000 gal addition at ½ of the way through fermentation may suffice, however, this depends on the specific conditions of each fermentation. We have added new resources this year (*page 42*) to help you tailor your nutrient program.

Some suppliers say their nutrients contain a lot more nitrogen than Fermaid K and Go-Ferm. Why?

Other suppliers may be calculating total nitrogen versus the amount of nitrogen that can be utilized by the yeast. Not all sources of nitrogen are available to the growing yeast cells. That is why Lallemand prefers to list the yeast assimilable nitrogen (YAN) for each product so the winemaker can plan a balanced nutrition strategy.

Can I use Fermaid K in my yeast rehydration water instead of Go-Ferm?

No, using nutrients that contain ammonia salts during the rehydration phase can be toxic to the yeast.

What is the difference between Go-Ferm and Go-Ferm Protect Evolution?

Go-Ferm Protect Evolution was specifically formulated by Lallemand and the INRA in France after a multi-year study of problem fermentations. In addition to the nutrients that Go-Ferm supplies, Go-Ferm Protect Evolution contains higher levels of unsaturated fatty acids and sterols for improved membrane integrity. In known difficult conditions such as high Brix juices or excessively clarified juice, Go-Ferm Protect Evolution is the best solution. In musts without such difficult conditions, Go-Ferm is a perfect choice.

Why don't my Go-Ferm and Go-Ferm Protect Evolution go into solution?

This is a good thing! Due to their high content of sterols and fatty acids, they will not go completely into solution.

What is the difference between SIY 33 and Fermaid O?

SIY 33 was originally developed to provide a complex nutrient base from inactivated whole yeast cells. Fermaid O differs as it is comprised of specially selected fractions from enological yeast providing a consistent amino acid base. Fermaid O takes into account the latest research surrounding the efficient use of organic nitrogen by yeast which is based on fermentation security and aromatic optimization.

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. While 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 produce healthier fermentations, better aromatics and lower levels of undesirable compounds.

I am noticing sulfur off-odours during fermentation — what should I do?

First, assess your nutrient regime. If it is early enough in the fermentation, consider increasing your nutrient additions. Organic nutrients such as Fermaid O and Nutrient Vit End can go a long way in improving aromatics. If you are past the point where additional complex nutrients are recommended, run a bench trial with Noblesse and Reduless.

As fermentation progresses, I have noticed an increased perception of 'hotness' on the finish of my wine. Are there any products that can help with this?

Try an addition of Booster Blanc, Noblesse, or Opti-Red, depending on the wine.

My whites and rosés tend to lose their aromatic freshness quickly. What can I do to preserve the aromatics?

Inactivated yeast derivative products like OptiMUM White or Opti-WHITE can help retain aromatic intensity and longevity.

Why do some nutrients not increase my YAN?

All yeast derived nutrients will have some nitrogen to contribute to a fermentation, but different autolyzed yeast products are used for different reasons. For example, to prepare the cells for fermentation we focus on vitamins, minerals, sterols, and unsaturated fatty acids during the rehydration phase. To promote aromatics (esters and thiols) we stimulate the cells by providing more than nitrogen. The YAN contribution is only mentioned if the goal of the product is fermentation security.

TANNINS

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 ellagic (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 and then apply this knowledge. Tools such as GC/MS (gas chromatography/mass spectrometry), reverse phase HPLC (high performance liquid chromatography) and TLC (thin layer chromatography) analysis are common in this process.

Raw materials need to be tasted in different concentrations in different wines. Even if laboratory tools are useful for understanding products, tasting remains the key. There is no substitute if we wish to understand issues such as mouthfeel, relative astringency and increasing roundness. In particular, the way the polysaccharides linked with tannins contribute to the overall impact on the palate.

These are the elements that went into the development of the Scott'Tan™ product range. It was an elaborate program. We believe you will appreciate the results.

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, or on fruit where the resulting wines from certain vineyards lack tannins and structure. Fermentation tannins are also used routinely by some wineries to enhance mouthfeel and stabilize colour.

CELLARING AND FINISHING TANNINS

Cellaring 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 (OverTheTop) 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.

A Fermentation Tannin Primer

Name	Composition	Properties	Uses
FT Blanc	Gallotannin (Oak gall nut)	<ul style="list-style-type: none"> Reactive with proteins Complexes with oxidizable molecules, preventing browning. 	White, Rosé, cider and fruit wine <ul style="list-style-type: none"> Improve clarification and structure Minimize volatile sulfur compounds Inhibit laccase (botrytised grapes)
FT Blanc Soft	Gallotannin (Oak gall nut)	<ul style="list-style-type: none"> Reactive with proteins Complexes with oxidizable molecules, preventing browning. Provides softness 	White, Rosé, cider and fruit wine <ul style="list-style-type: none"> Improve clarification and structure Minimize volatile sulfur compounds Inhibit laccase (botrytised grapes) Enhance mouthfeel.
FT Blanc Citrus	Tannin from citrus wood and gallotannin	<ul style="list-style-type: none"> Protects must and wine from wine oxidation 	White, Rosé, cider Used in combination with yeast strains with β -glycosidase activity, will allow for the development of enhanced and intense aromas such as lemon, grapefruit, apple, and white flowers
FT ColorMax	Specially processed catechin tannin	<ul style="list-style-type: none"> Promotes color stability Goes easily into solution 	Red and fruit wine <ul style="list-style-type: none"> Intended for use in tandem with FT Rouge. Helps stabilize color.
FT Rouge	Proanthocyanidins + Ellagic tannin (oak and chestnut hardwood)	<ul style="list-style-type: none"> Highly reactive with proteins Promotes color stability Enhances structure and aging potential Strong antioxidant 	Red and fruit wine <ul style="list-style-type: none"> Help stabilize color, enhance structure. Inhibit laccase (botrytised grapes) and protect anthocyanins from oxidation.
FT Rouge Soft	Proanthocyanidins + Ellagic tannin (oak)	<ul style="list-style-type: none"> Reactive with proteins Promotes color stability Enhances structure and aging potential Antioxidant 	Red and fruit wine <ul style="list-style-type: none"> Help stabilize color, enhance structure. Inhibit laccase (botrytised grapes) and protect anthocyanins from oxidation.
FT Rouge Berry	Tannin from red berry fruit	<ul style="list-style-type: none"> Promotes color stability Prevents oxidation of primary aromas 	Red and Rosé <ul style="list-style-type: none"> Red berry characters
Uva'Tan	Proanthocyanidins (from grape skins and seeds)	<ul style="list-style-type: none"> Reactive with proteins May compensate for poor tannin structure from grapes Promotes color stability 	Red, White and Rosé wine <ul style="list-style-type: none"> Help stabilize color Enhances structure and aging potential
Uva'Tan Soft	Proanthocyanidins (solely from white grape skins)	<ul style="list-style-type: none"> Reactive with proteins Promotes color stability Provides softness 	Red, White and Rosé wine <ul style="list-style-type: none"> Help stabilize color Enhances structure while reducing potential astringency
ViniTannin Multi-Extra	Proanthocyanidins (from red grape skins)	<ul style="list-style-type: none"> Promotes colour stability Improves texture of wine 	Red wines <ul style="list-style-type: none"> Enhances colour intensity Enhances aging potential

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 wine ages. 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 nutrition, particularly in high Brix conditions. Enzymes and tannins can help reduce issues with mold and greenness. Early action is always the best for mitigating problems and possible lingering effects.

Choosing the Right Tannins

	Fermentation						Ferm/Cellar			Cellaring			Finishing			LUXE		OTT									
	FT Blanc	FT Blanc Soft	FT Blanc Citrus	FT ColorMax	FT Rouge	FT Rouge Soft	FT Rouge Berry	Uva'Tan	Uva'Tan Soft	ViniTannin Multi-Extra	Complex	Estate	Refresh	Riche	Riche Extra	ViniTannin SR	ViniTannin W	Onyx	Radiance	Royal	Bold	Finesse					
Page	57	57	57	57	58	58	58	59	59	59	60	60	60	61	61	61	61	62	62	62	62	62					
Reds	◊	◊		◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊	◊					
Whites and Rosé	◊	◊	◊			◊		◊	◊					◊	◊	◊	◊	◊	◊	◊	◊	◊	◊				
Fruit, Cider and Mead	◊	◊	◊		◊	◊														◊							
Promotion of colour, body and fruit				◊	◊	◊	◊	◊	◊	◊																	
Protection from oxidation for white wine	◊	◊	◊																								
Mouthfeel enhancement for white wine		◊	◊																	◊							
Grape tannin								◊	◊	◊									◊	◊							
Enhances structure	◊	◊	◊		◊	◊	◊	◊	◊	◊				◊	◊	◊	◊	◊	◊	◊	◊		◊				
Enhances mid-palate volume								◊				◊	◊														
Enhances aromatic potential			◊					◊													◊	◊					
Stabilizes colour		◊	◊	◊	◊	◊	◊				◊								◊								
Enhances fruit		◊						◊												◊	◊						
French oak character															◊	◊			◊					◊	◊		
American oak character																◊						◊	◊	◊	◊		
Vanillin oak character															◊	◊					◊	◊	◊	◊	◊		
Protects grapes from rot	◊	◊	◊		◊	◊	◊																				
Enhances aging potential	◊	◊		◊	◊	◊	◊	◊	◊	◊				◊	◊	◊	◊			◊							
Perception of sweetness																			◊	◊				◊	◊		
Lowers perception of alcohol																		◊	◊				◊	◊			
Rapid integration																			◊	◊	◊						

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. Fermentation tannins can be used for very specific reasons, such as *Botrytis* infected grapes, or on fruit where the resulting wines from certain vineyards lack tannins and structure. Fermentation tannins are also used routinely by some wineries to enhance mouthfeel and stabilize color.

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.

38-12300 1kg \$48.90

FT Blanc Soft

Oxidation protection 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 wines made with it are also characterized by softness and improved mouthfeel. White and rosé wines made with FT Blanc Soft have enhanced texture with a perception of sweetness on the palate. Even relatively small dosages can contribute to minerality in wines. Similar improvements can be seen in fruit and mead wines.

38-12301 1kg \$63.50

38-12301B 5kg \$308.00

FT Blanc + FT Blanc Soft

Recommended Dosage

White/Rosé Juice

50–150 ppm 5–15 g/hL 0.42–1.2 lb/1000 gal

Red Wine

50–300 ppm 5–30 g/hL 0.42–2.5 lb/1000 gal

Fruit, Cider, Mead

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

White/Rosé Wine*

50–300 ppm 5–30 g/hL 0.42–2.5 lb/1000 gal

*A small addition of 2.5–5.0 g/hL may help mask the perception of bitterness in a finished wine

Usage

Add FT Blanc or FT Blanc Soft by sprinkling directly on the grapes at the crusher or by adding to the juice or the wine during a tank mixing. Good homogenization is important. If an addition of FT Blanc or FT Blanc 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 Blanc Citrus

White, Rosé, Cider

Scott'Tan™ FT Blanc Citrus is a mixture of condensed tannins extracted from citrus wood and gallic tannins. The use of FT Blanc Citrus during the course of alcoholic fermentation, and in combination with yeast strains with a marked beta-glycosidase activity (such as Alchemy II, 71B, VIN 2000, NT 116, Rhône 4600, VIN 13, QA23 and 58W3), allows for the development of enhanced aromatic potential. The resulting wines may present more intense aromas of lemon, grapefruit, apple and white flowers, which complement varietal aromas and those produced during fermentation. Scott'Tan FT Blanc Citrus also protects the must and wine from oxidation.

Recommended Dosage

White, Cider

20–150 ppm 2–15 g/hL 0.17–1.2 lb/1000 gal

Rosé Must

50–150 ppm 5–15 g/hL 0.42–1.2 lb/1000 gal

Usage

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 juice and add during a pump-over.

Storage

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

38-12302A 1kg \$84.15

38-12302 5kg \$409.50

FT ColorMax

Promotion 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.

Recommended Dosage

Red Must

100–300 ppm 10–30 g/hL 0.8–2.5 lb/1000 gal

Usage

Add FT ColorMax at $\frac{1}{3}$ sugar depletion. If a cold soak has been done, add FT ColorMax during the first pump-over.

Storage

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

38-12303 1kg \$60.90

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. Mouthfeel is also enhanced. FT Rouge provides antioxidative protection and may inhibit oxidative enzymes (such as laccase) associated with browning.

38-12305 1kg \$36.45
38-12305A 5kg \$176.00

FT Rouge Soft ●

Promotion of colour, body and fruit
Red, Fruit

Scott'Tan™ FT Rouge Soft is a proprietary tannin specifically formulated for its gentle impact. It is particularly suitable for Pinot Noir and early-to-release wines. FT Rouge Soft is reactive with natural grape proteins and thus helps promote optimal colour and colour stability while enhancing structure. Mouthfeel and roundness are improved while the potential for bitter characters is reduced.

FT Rouge Soft provides antioxidative protection.

38-12306 1kg \$42.10
38-12306A 5kg \$201.50

FT Rouge + FT Rouge Soft

Recommended Dosage

Red Vinifera Must

200–500 ppm 20–50 g/hL 1.6–4.0 lb/1000 gal

Red Non-Vinifera Must

300–600 ppm 30–60 g/hL 2.5–5.0 lb/1000 gal

Fruit

200–500 ppm 20–50 g/hL 1.6–4.0 lb/1000 gal

Usage

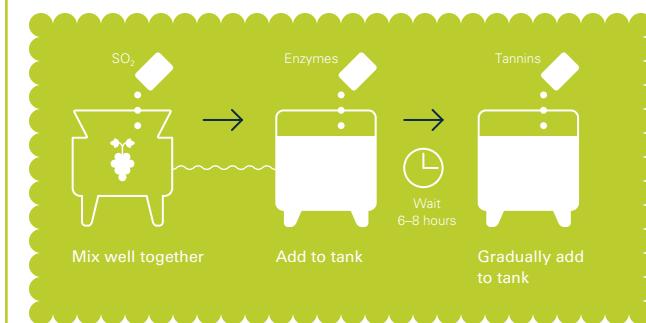
Gradually pour FT Rouge or FT Rouge Soft directly on grapes at the crusher or add to the must during a pump-over to obtain good homogenization. If subsequent additions of FT Rouge or FT Rouge Soft are desired, this can be done in increments of 0.5 lb/1000 gal (~60 ppm) during pump-overs. If an addition 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.

PROTOCOL

Timing of Additions: SO₂, Enzymes and Tannins



Add SO₂ and mix well prior to adding enzymes. Tannins can be added 6–8 hours later. Please see FAQs on page 63 for more information. Yeast derivative nutrients (e.g. Opti-Red) can be added at any point during fermentation.

FT Rouge Berry ●

Promotion of red berry notes
Rosé, 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-glycosidase activity such as 71B, ICV GRE, NT 116, and Rhône 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.

FT Rouge Berry can also promote the stabilization of colour and prevent oxidation of the primary aromas.

Recommended Dosage

Rosé Must

20–150 ppm 2–15 g/hL 0.17–1.2 lbs/1000 gal

Red Must

50–200 ppm 5–20 g/hL 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.

38-12307 1kg \$93.15
38-12307B 5kg \$457.00

FERMENTATION/CELLARING TANNINS

Natural grape tannins derived from skins and/or seeds can be used either as fermentation or cellaring tannins. When used as a cellaring tannin, bench trials are recommended.

Uva'Tan ⚪

Grape seed and skin tannin for fermentation and cellaring
Red Must, White, Rosé, Red

Scott'Tan™ Uva'Tan is composed entirely of grape tannins (seeds and skins). It is high in polyphenols and low in astringency. Uva'Tan can be used both during fermentation and later during cellaring and finishing. For fermentations, Uva'Tan is particularly useful when natural grape tannin levels are deficient. Post-fermentation it can be used to stabilize colour, enhance structure and provide antioxidant protection. Used prior to barreling it can improve integration of tannins in wines. It is recommended that Uva'Tan additions be made well in advance of bottling (six weeks at least) for better integration. Additions closer to bottling will still have a beneficial effect but filtration throughput will likely be reduced.

38-12350 500g \$184.25

Uva'Tan Soft ⚪

White grape skin tannin for fermentation and cellaring
Red Must, White, Rosé, Red

Scott'Tan™ Uva'Tan Soft is made entirely from white grape skin tannins. They are extracted directly from fresh grapes after pressing to avoid the oxidation of the polyphenols. These highly reactive tannins are characterized by very low astringency. Like Uva'Tan, Uva'Tan Soft can be used in fermentations as well as in cellaring and finishing. During fermentations Uva'Tan Soft can be useful when the grapes' natural tannins are insufficient and softness is a concern. Post-fermentation it can be used to stabilize colour, soften structure and provide antioxidant protection. Used prior to barreling it can improve integration of tannins. Additions of Uva'Tan Soft should be made well in advance of bottling (six weeks at least). Additions closer to bottling may still have a beneficial effect but filtration throughput will likely be reduced. At low dosages, Uva'Tan Soft will optimize the aging potential of white and rosé wines.

38-12355 500g \$199.00

Uva'Tan + Uva'Tan Soft

Recommended Dosage

Red Must	50–400 ppm	5–40 g/hL	0.42–3.3 lb/1000 gal
White Wine	50–150 ppm	5–15 g/hL	0.42–1.2 lb/1000 gal
Rosé Wine	50–200 ppm	5–20 g/hL	0.42–1.6 lb/1000 gal
Red Wine	50–300 ppm	5–30 g/hL	0.42–2.5 lb/1000 gal

Usage

Pour 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 rackings. 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, Red wine

ViniTannin™ Multi extra is a highly-purified tannin preparation derived from high quality red grape skins. ViniTannin™ 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. ViniTannin™ Multi extra also improves colour intensity and the texture of the wines without adding any bitterness or harsh astringent flavours and improves the aging potential of the wine.

Usage

Variety	Pinot Noir, Pinotage	Cabernet, Merlot, Malbec	Tempranillo, Syrah, Grenache
Cold soak	20–30g/100kg	10–20g/100kg	10–20g/100kg
Fermentation	20–30g/100kg	10–20g/100kg	10–20g/100kg
Pressing-off	20–30g/100kg	10–20g/100kg	10–20g/100kg
Pre-bottling	10–20g/hL	5–10g/hL	50–10g/hL

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

Application

Dissolve 100g of ViniTannin™ Multi Extra in 1L of liquid (% water, ½ wine) at a temperature of 40–50°C (104–122°F). Acidify the suspension with 10 g/L of Tartaric acid and stir well. Follow this by adding the suspension homogenously into the juice or mash. It is very important to add the ViniTannin™ Multi Extra always before adding SO₂. For optimal results, we recommend to apply ViniTannin™ Multi extra as early as possible in the pre-sulphur 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.

37-13325 1kg \$177.00

37-13325A 5kg \$805.00

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

Red

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 Aging 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 0.25–0.83 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, Complex 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 ensure homogeneity. Following organoleptic evaluations, 2–3 further additions can be made subsequent to final 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 opened, keep tightly sealed and dry.

38-12310 1kg \$55.50

Estate ⚡

Mid-palate volume

White, Rosé, Red

Scott'Tan™ Estate can help compensate for lack of tannins in finished wine without the “dryness” associated with barrels. 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.

Recommended Dosage

Prior to Barrel Aging Red Wine

50–300 ppm 5–30 g/hL 0.42–2.5 lb/1000 gal

Prior to Bottling (3–6 weeks) 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 ensure 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 opened, keep tightly sealed and dry.

38-12315 1kg \$137.10

Refresh ⚡

French oak character for neutral barrel cellaring

White, Rosé, Red

Scott'Tan™ Refresh is a proprietary tannin extracted from 100% French oak. It will contribute wood nuance without smoky or toasted characters and is especially useful when old or neutral barrels are used during aging. This finishing/cellar tannin is a strong antioxidant. It will help preserve colour and can increase the complexity of the wine's finish.

Recommended Dosage

30–200 ppm 3–20 g/hL 0.25–1.6 lb/1000 gal

Usage

Gradually add Refresh to the wine during a transfer or during racking. After the addition of Refresh, it is recommended to proceed with normal rackings until fining. In young wines kept in tanks, Refresh should be added immediately after malolactic fermentation. If malolactic fermentation is not desired, add at the end of alcoholic fermentation.

Storage

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

Once opened, keep tightly sealed and dry.

38-12320 500g \$119.50

FINISHING TANNINS

Finishing tannins are helpful tools when fine-tuning a wine. They can enhance complexity or provide an influence from oak 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

White, Rosé, Red

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. 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 opened, keep tightly sealed and dry.

38-12322 500g \$132.50

Riche Extra 🔥

Smooth vanilla 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.

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 opened, keep tightly sealed and dry.

38-12324 500g \$194.00

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 astringent flavours, while improving the aging potential of the wine.

Usage

Variety	Pinot Noir, Pinotages	Cabernet, Merlot, Malbec	Tempranillo, Syrah, Grenache
Juice (cold soak)	2–5g/100kg	5–10g/100kg	5–10g/100kg
Fermentation	2–5g/100kg	5–10g/100kg	10–15g/100kg
Before bottling	1–2g/hL	3–5g/hL	3–5g/hL

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

37-13350 1kg \$298.00

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 redox potential of the juice and therefore, the aromatic stability.

ViniTannin™ W also improves the texture of the wines without adding any bitterness or harsh astringent flavours and improves the aging potential of the wine. **ViniTannin™ W** helps also to prevent early aging in wines without addition of SO₂.

Usage

Variety	Chardonnay, Pinot Blanc, Pinot Gris	Sauvignon Blanc, Riesling	Chenin Blanc, Viognier
Fermentation	1–3g/hL	0.5–1 g/hL	1–2g/hL
White Must	0.5–1 g/hL	Not recommended	0.5–1g/hL

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

37-13340 1kg \$197.00

ViniTannin SR + ViniTannin W

Usage

Dissolve 10g of **ViniTannin™ SR** / **ViniTannin™ W** in 250ml of wine or water at a temperature of 35–40°C (95–104°F). Acidify 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 **ViniTannin™ SR** / **ViniTannin™ W** always before adding SO₂. It is necessary to wait at least 15 minutes before adding SO₂.

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.

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.

38-12385 250g \$188.50

Radiance 🔥

Tannin blend for highlighting fresh fruit
White, Red, Rosé, Cider

Scott'Tan Radiance is a blend of tannins for use in white, red and rosé wines as well as in ciders. 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.

38-12387 250g \$188.50

Royal 🔥

American oak for structure and balance
White, Red

Scott'Tan Royal is derived from American oak. It may be used in red and white wines to add structure, balance and length on the palate. Royal is a good complement for wines aged with American oak. It is known to bring out hints of cocoa, chocolate, coffee and butterscotch. Royal has also been known to help mitigate the off-aromas and flavours of *Brettanomyces*.

38-12389 250g \$188.50

ALL Luxe Tannins

Recommended Dosage

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

Usage

Dissolve product 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 pump-over. 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.

OTT TANNINS

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

Bold 🔥

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

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 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 3–15 g/hL 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.

38-12360 500g \$259.00

Finesse 🔥

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

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/hL 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.

38-12365 500g \$264.50

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 enzyme 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.

Can I use tannins on white juice and wine?

Yes, a tannin addition in white juice may be beneficial to remove off-aromas, to improve clarification, to inhibit laccase activity from Botrytis or rot, or to serve as an antioxidant. We recommend using either Uva'Tan, Uva'Tan Soft, FT Blanc, FT Blanc Citrus or FT Blanc Soft. Tannins can also be added later to wine to improve mid-palate structure or softness.

Why 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 of Uva'Tan, Uva'Tan Soft or Estate prior to aging can help reinforce phenolic balance. During long maturation in barrels, Estate will help prevent excessive oxidation that can result in loss of structure and freshness. For improved SO₂ management add small amounts of Estate (5–7.5 g/hL) during each racking.

Will tannin additions increase colour in low-colour grape varieties?

Tannins do not add colour to the must of low colour grapes. Recent research indicates that early addition of tannins such as FT Rouge allows them to bind up available proteins. This preserves the grapes' own natural tannins, making them available to bind with the grapes' anthocyanins and thereby providing increased colour stability.

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, Riche, Riche Extra, Bold and Finesse 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/hL 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.

Can tannins help remove undesirable astringency or bitterness?

Yes. Over-astringency 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 only want to use pure grape tannin in my wine?

Uva'Tan (tannins from grape skins and seeds) and Uva'Tan 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 62 for more information.*

LUXE Tannins

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.

Is the extraction process the same for Scott'Tan finishing tannins and the LUXE tannins?

Both the finishing tannins and LUXE tannins are extracted with water and/or alcohol. The LUXE tannins are extracted at low temperature which makes them easily soluble in a wine matrix. The concentration process is also done at low temperature which lowers the risk of tannin polymerization and oxidation.

Will LUXE tannins precipitate in my wine?

The risk of precipitation is extremely low due to the extraction process. The low temperature extraction reduces the concentration of high molecular weight compounds which are less soluble in a wine matrix.

Will LUXE tannins cause filtration problems?

These tannins have undergone extensive R&D research under various conditions. No filtration problems were found 48 hours after LUXE tannin addition. It is not recommended to filter less than 48 hours after addition.

OAK ALTERNATIVES

NEW! THE OAK LAB

The role of oak in winemaking dates back centuries, and can impact the color, texture, and structure of a wine. There are several ways to achieve the desired impact that oak brings. French, American, and European oak barrels are commonly used throughout winemaking to achieve this goal. More recently, there have been advances in using alternative oak products in place of barrels. In addition to the space, cost, and labor savings that alternatives can provide, the wide range of toasts and formats provide winemakers with flexible tools to achieve their goals. Using our oak infusion products alone, or in conjunction with our full range of ScottTan™ tannins, enables winemakers the freedom to craft wines with a desired goal. *Please visit theoaklab.com for more information.*

Explore The Oak Lab's entire range of products:

- Thermic
- Fire
- Convection

THERMIC

The Oak Lab™ Thermic range of products undergoes a unique, breakthrough heating process, resulting in a level of accuracy and consistency different than traditional oak infusion products that are toasted, baked, or electrically radiated. Because the Thermic process is combustion-free, we're able to create a wide spectrum of consistently accurate flavor profiles with extremely high doses of oak flavor compounds, all free of smoke taint.

A touchstone of the entire Thermic line is its impact on the weight, length, and complexity of a wine. The selection of toast profiles offer a nuanced range of flavor and mouthfeel tools. Trials are recommended to discover the best toast profile number, or blend of numbers, for your particular wine and goals.

The Toast Profiles

Toast Profile #	Essence	Mouthfeel
1	Clean, bright, sweet	Fresh and light, addition of length
2	Nutty, toasty, toffee	Rounding, boost of mid-palate
3	Vanilla, dark fruits, complexity	Texture, weighty, unctuous
4	Warm, rich, spice	Full, viscous, rich
5	Espresso, smoked meat, complexity	Balanced, rich, round

Fan Pack

Fan packs are added to tanks during the fermentation and aging process. Fan packs are bound by food grade nylon zip ties to allow for easy installation and removal. Available in toast profiles 1–5.

Size	20 — 36" x 1" x 3/8"
Surface area	20 sq. ft.
Dosage rate	3–8 per 1000
Contact time	1–18 months
Wood variety	<i>Quercus alba</i>

\$117.00

Cube Bag

Cube bags are added to tanks during the flashing, fermentation and aging process. Cubes are added to tanks in sewn, food grade polyethylene infusion bags. Available in toast profiles 1–5.

Package Size	20 lb. bag
Cube Size	1" x 1" x 7/8" ea.
Surface area	34 sq. ft.
Dosage rate	2–8 bags per 1000 gallons
Contact time	1–9 months
Wood variety	<i>Quercus alba</i>

\$260.00

Bung Sleeve Insert

Bung sleeves are added during the fermentation and aging process and are added to barrels directly through the bung hole. Each sleeve is made of 20 sections of oak in food grade polyethylene netting and fastened to the barrel bung with a #304 stainless steel eyelet. Available in toast profiles 1–5.

Size	20 — 9" x 1" x 3/8"
Surface area	5.5 sq. ft.
Dosage rate	1 per 60 gallons
Contact time	3–12 months
Wood variety	<i>Quercus alba</i>

\$104.00

FIRE

Using natural oak fire, The Oak Lab™ Fire range of artisanal products employs skilled artisan methods to slowly fire toast all oak by hand, closely imitating the impact of a traditional barrel.

The Toast Profiles

Toast Profile #	Essence	Mouthfeel
Medium	Coconut, vanilla, medium oak Character	Adds strong round tannins, important structure, and volume
Medium Plus	Vanilla, spice, smoke, strong oak character, light butterscotch, torrefaction	Increased volume and length, smooth tannins, balance

Fan Pack

Fan packs are added to tanks during the fermentation and aging process. Fan packs are bound by food grade nylon zip ties to allow for easy installation and removal. Available in toast profiles Medium and Medium Plus.

Size 20 – 36" x 1" x 3/8"

Surface area 20 sq. ft.

Dosage rate 3–8 per 1000

Contact time 4–18 months

Wood variety *Quercus petrea*

\$130.00

Stave Segment Bag

Segment bags are added to tanks during the flashing, fermentation and aging process. Segments are added to tanks in sewn, food grade polyethylene infusion bags. Available in toast profiles Medium and Medium Plus.

Package Size 15 lb. bag

Cube Size 2" x 2" x 3/8" ea.

Dosage rate 2–8 bags per 1000 gallons

Contact time 4–9 months

Wood variety *Quercus petrea*

\$260.00

Bung Sleeve Insert

Bung sleeves are added directly through the barrel bung hole during the fermentation and aging process. Each sleeve is made of 20 sections of oak in food grade polyethylene netting and fastened to the barrel bung with a #304 stainless steel eyelet. Available in toast profiles Medium and Medium Plus.

Size 15 – 9" x 1" x 3/8"

Surface area 5.5 sq. ft.

Dosage rate 1 per 60 gallons

Contact time 4–12 months

Wood variety *Quercus petrea*

\$117.00

CONVECTION

The Oak Lab™ Convection line uses long-cycle convection oven toasting, yielding a uniform toast throughout the oak and resulting in a multitude of aromas and increased mouthfeel.

The Toast Profiles

Toast Profile #	Essence	Mouthfeel
DR11	Coconut, vanilla, medium oak character	Adds soft tannins, increases volume
MR29	Vanilla, spice, medium oak character, butterscotch, smoke	Increased volume and balance

Fan Pack

Fan packs are added to tanks during the fermentation and aging process. Fan packs are bound by food grade nylon zip ties to allow for easy installation and removal. Available in toast profiles DR11 and MR29.

Size 20 – 36" x 1" x 3/8"

Surface area 20 sq. ft.

Dosage rate 3–8 per 1000 gallons

Contact time 4–18 months

Wood variety *Quercus petrea*

\$117.00

Stave Segment Bag

Segment bags are added to tanks during the flashing, fermentation and aging process. Segments are added to tanks in sewn, food grade polyethylene infusion bags. Available in toast profiles DR11 and MR29.

Package Size 15 lb. bag

Cube Size 2" x 2" x 3/8" ea.

Dosage rate 2–8 bags per 1000 gallons

Contact time 4–9 months

Wood variety *Quercus petrea*

\$234.00

Bung Sleeve Insert

Bung sleeves are added directly through the barrel bung hole during the fermentation and aging process. Each sleeve is made of 20 sections of oak in food grade polyethylene netting and fastened to the barrel bung with a #304 stainless steel eyelet. Available in toast profiles DR11 and MR 29.

Size 15 – 9" x 1" x 3/8"

Surface area 5.5 sq. ft.

Dosage rate 1 per 60 gallons

Contact time 4–12 months

Wood variety *Quercus petrea*

\$104.00

OAK

OAK CHIPS

Arobois French Oak Chips

Arobois French oak chips have been a staple in our portfolio since 2000.

With a minimum 18 months of open air seasoning, Arobois oak chips are a great tool during either the winemaking or aging processes.

Product*		Chip size**	Size	Price
36-15511	Arobois Light toast	XS	25kg	\$258.75
36-15513	Arobois Light toast	Medium	25kg	\$258.75
36-15521	Arobois Medium toast	XS	25kg	\$258.75
36-15523	Arobois Medium toast	Medium	25kg	\$258.75
36-15533	Arobois Heavy toast	Medium	25kg	\$258.75
36-15502	Arobois Untoasted	Medium	25kg	\$233.75
30-15053R	Winemaster Light toast	Medium	1kg	\$15.50/kg
30-15053Q	Winemaster Heavy toast	Medium	1kg	\$15.50/kg
36-15500	Oak Chips Bag			\$5.60/bg

* Chip toast = aromatic complexity

** Chip size = extraction speed

Oak Passion

Oak Passion was born from a union of three globally recognized brands, resulting in unique proprietary blends, and delivering a diverse range of results to the winemaker.

Item #	Name	Size	Origin	Toast Level	Price
41-13441	Darkan Blend	1kg	FO	Med	\$13.00
41-13441B	Darkan Blend	10kg*	FO	Med	\$89.00
41-13442	Darkan Blend	1kg	FO	Med+	\$13.00
41-13442B	Darkan Blend	10kg*	FO	Med+	\$89.00
41-13443	Darkan Blend	1kg	FO	Untoasted	\$12.50
41-13443B	Darkan Blend	5kg	FO	Untoasted	\$44.00
41-13451	Oak Acacia	10kg*	FO	—	\$106.00
41-13436	Ice Spice	1kg	FO	—	\$22.50
41-13437	Ice Mocha	1kg	FO	—	\$22.50
41-13422	Grand Reserve Vanilla	1kg	FO/AO blend	—	\$18.80
41-13423	Grand Reserve Mocha	1kg	FO/AO blend	—	\$18.80
41-13424	Grand Reserve Spice	1kg	FO/AO blend	—	\$18.80
41-13431	Minnesota Oak Intense	1kg	AO	—	\$16.40
41-13432	Minnesota Oak Medium	1kg	AO	—	\$16.40

* 10kg bag consists of 2 x 5kg infusion bags

LARGER FORMAT OAK VESSELS

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.

Garbellotto Experience



Dual fermenting/ageing 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 500L tonneaux, 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.

1000L

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.

Standard Accessories

- Small wooden door
- S/S valve fixed to the door (choice of attachments and sizes)
- S/S wine-tasting spoon fixed to the centre of front end
- Silicone stopper for upper hole

Optional Accessories

- Stainless steel AISI 304 Front Door
- Stainless steel AISI 304 Discharging unit

1000L

Oak Vats



Regarded as the global leader in large format oak vessels, Garbellotto produces conical trunk vats ranging in size from 10hL to 200hL. The convenient stainless steel features, along with the micro-oxygenation & anti-oxidising benefits of the wood make these large format vessels useful during the fermentation, refining and storage phases.

Conical Trunk Vats

Standard 1000-20,000L

On request up to 150,000L larger formats

OAK BARRELS



	Garbellotto	World Cooperage	TW Boswell
American Oak		◆	◆
French Oak	◆	◆	◆
Option to select French region	◆		
Hybrid (French/American/European)		◆	◆
228L format	◆		
500L format	◆		
Profile Toasting		◆	
Cool Climate Series			◆
Branding option	◆	◆	◆
Water bent option		◆	◆
36 month seasoning option		◆	◆

Ordering deadline

Garbellotto May 10
 TW Boswell July 1
 World Cooperage July 1

225L OAK BARRELS

Garbellotto



225L French Oak
 (Allier, Nevers, Limousin or Vosges)
 \$1010.00

225L Acacia
 \$945.00

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)
 \$1060.00

World Cooperage



Traditional Series

225L American Oak

\$552.00

225L French Oak

\$1190.00

225L French American Hybrid

\$695.00

TW Boswell

TW|BOSWELL

The American Oak Collection

\$630.00

Special Reserve*

\$695.00

Silver

Elegant and subtle expression of American oak, the Silver barrel is all about the fruit — clean, soft and refined with light structure.

Soleil

Surrounding the fruit with rich, toasted oak flavors, this barrel highlights confectionary notes and a soft mouthfeel.

Legacy

Designed to impart a subtle old-world nuance, our American oak Legacy barrel complements your finest wines, while maintaining a proper balance of oak and fruit.

* Special Reserve barrels feature extra fine grain and 36 month seasoning.

TWB — COOL CLIMATE SERIES

All Cool Climate barrels are 36-month seasoning and extra fine grain.

Aromatic Fruit

Utilizing an extended water bend this method heightens complexity and marries well with elegant and aromatic fruit.

Bright Fruit

This barrel highlights the purity of bright fruit and keeps the focus exactly where you want it to be.

Dark Fruit

Using a long, low temperature toast, this barrel offers balance and added dimension.

Minerality

This barrel uses an extended water bending method and a specific toast to accentuate fruit, acidity and minerality. Pairs especially well with structure-driven white and light red varietals.

\$1325.00

Order deadline for all WC and TWB barrels in July 1.

Prices are in CAD, and are FOB Niagara Falls or Penticton

For our complete offering of oak vessels, please visit our website, www.scottlabsltd.com or contact the office.

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-odors and undesirable herbaceous and mineral characteristics. 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 flavor and aroma compounds. Scottzyme KS is used after pressing to enhance clarification and filterability in wine.

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.

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.

LIQUID AND GRANULAR/POWDERED

The enzymes are granular/powdered or liquid. The liquid enzymes are marked with the symbol . The granular/powdered enzymes are marked with the symbol .

ADDRESSING THE ISSUE OF SMOKE TAINT

With an increase in wildfires over recent years, smoke exposure is a major concern for many winemakers. Smoke is an aerosol of small solid particles and/or liquid droplets which carry organic compounds. The particles derived will vary depending on fuel source. The aromas from the smoke affected grapes may not be obvious in the berries. Over the course of the fermentation and during the subsequent aging process the non-odiferous, non-volatile compounds can be hydrolyzed leaving a negative impact on the sensory profiles of the wine, as well as the mouthfeel. There are still questions as to whether there is varietal sensitivity, an impact on the vine physiology in subsequent years, and how to translate the available analysis. The research is advancing, but there are still many unknowns. Our trials at Scott Laboratories are ongoing, in addition to a continuous collaboration with our partners and researchers in California, Washington and Australia.

Choosing the Right Enzymes

- Highly Recommended
- Recommended

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 specific 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 terpenes 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

Crushed Grapes	Juice
Not recommended	Not recommended

Wine

5–10 g/hL 190–379 g/1000 gal

Usage

Dissolve Lallzyme Beta in 10 times its weight in water, gently stir and allow to sit for a few minutes. Then add to wine. For use in wine only since the betaglucosidase activity is inhibited by glucose levels in juice.

Storage

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

35-16011 100g \$56.52

Cuvée Blanc

Macerating enzyme for white grapes

Lallzyme Cuvée Blanc™ was developed by Lallemand for use on white grapes during skin contact prior to pressing. It is a very specific blend of pectinases with glycosidase side activity. Lallzyme Cuvée Blanc™ is used to enhance aromatic complexity, provide gentle juice extraction and fast clarification after pressing.

Recommended Dosage

Crushed Grapes	Juice	Wine
20 g/ton	Not recommended	Not recommended

Usage

Dissolve Lallzyme Cuvée Blanc in 10 times its weight in water, gently stir and allow to sit for a few minutes. Then add to the grapes.

Storage

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

35-16013 100g \$47.74

EX

Macerating enzyme for light to medium-bodied reds

Lallzyme EX™ is a blend of pectinase and hemicellulase specially 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

Crushed Grapes	Juice	Wine
15–30 g/ton	Not recommended	Not recommended

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.

35-16012 100g \$32.50

EX-V

Macerating enzyme for medium to full-bodied 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 grape.

Recommended Dosage

Crushed Grapes	Juice	Wine
10–20 g/ton	Not recommended	Not recommended

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.

35-16025 100g \$32.50

MMX

Enzyme to improve filterability of *Botrytis* 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

Crushed Grapes Juice

Not recommended Not recommended

Wine

1–3 g/hL 40–114 g/1000 gal

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.

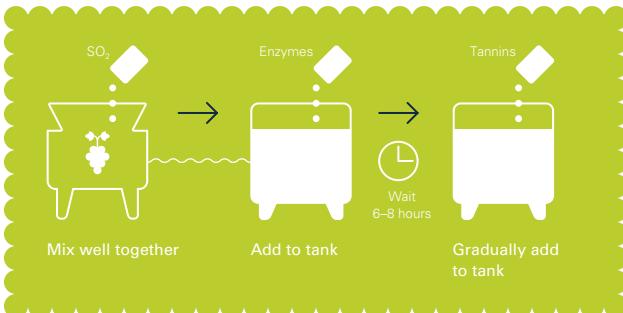
Storage

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

35-16020 100g \$48.50

PROTOCOL

Timing of Additions: SO₂, Enzymes and Tannins



Add SO₂ and mix well prior to adding enzymes. Tannins can be added 6–8 hours later. Yeast derivative nutrients (e.g. Opti-Red) can be added at any point during fermentation.

RAPIDASE

Clear Extreme

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 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). Rapidase Clear Extreme will remain active from 6–50°C(43–122°F).

Recommended dosage (dependent on temperature):

Crushed Grapes

Not recommended

Juice

6–10°C(43–50°F) 4 g/hL 152 g/1000gal

10–12°C(50–54°F) 2 g/hL 76 g/1000gal

Above 12°C(54°F) 1 g/hL 38 g/1000gal

Wine

Not recommended

Settling times less than 6 hours above 10°C (50°F):

3 g/hL 114 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. Not recommended for use on crushed grapes or wine.

Storage

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

40-16325 100g \$34.00

SCOTTZYME

Scottzymes are the product of natural *Aspergillus niger* fermentations (not sourced from genetically modified organisms). All Scottzymes® except BG are liquids. Scottzymes are offered in 1 kg bottles and 25 kg totes. One kg of Scottzymes equals 890 mL while 25 kg totes are 22.25 liters. To accurately dose liquid Scottzymes, first calculate the dosage then dilute to a 10% solution (v/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 terpenes. It is generally used in white wines, but may also be used in red and fruit wines for the release of aroma and flavour 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

Crushed Grapes	Juice	Wine
Not recommended	Not recommended	3–5 g/hL (114–190 g/1000 gal)

Usage

Powdered enzymes tend to scatter across water or wine. It is best to add just enough cool 21–25°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.

40-16176 1kg \$280.50

Cinn-Free 🔥 🍇

Used in white must for release of varietal aromas

Scottzyme® Cinn-Free is a purified pectinase with very low cinnamyl 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

Crushed Grapes	Juice	Wine
15–30 mL/ton	1.3–1.6 mL/hL	Best used before
	50–60 mL/1000 gal	fermentation

Usage

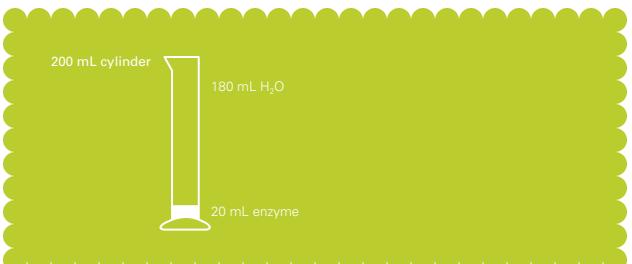
Dilute Scottzyme Cinn-Free to approximately a 10% solution in cool water. Pour over the grapes before pressing or add to juice before the start of alcoholic fermentation. Best used before fermentation.

40-16175 1kg \$81.95

40-16165 25kg \$1530.00



PROTOCOL
How to Make a 10% Solution



If using a dose of 20 mL/ton, mix 20 mL of liquid enzyme with approximately 180 mL of water.

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 colour 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 varieties 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 fining, cleaner fermentation and easier filtration.

Reds

Recommended Dosage

Crushed Grapes	Juice	Wine
60–100 mL/ton	Best used before	Best used before
	fermentation	fermentation

Usage

Dilute Scottzyme Color Pro to approximately a 10% solution in cool water. Pour the solution over the crushed grapes or add during a pump-over before alcoholic fermentation. If adding to wine, gently mix a 10% solution into the tank for even dispersion. Best used before fermentation.

Whites

Recommended Dosage

Crushed Grapes	Juice	Wine
15–30 mL/ton	2–4 mL/hL	2.6–5.3 mL/hL
	75–150 mL/1000 gal	100–200 mL/1000 gal

Usage

Pour a 10% solution over crushed grapes or add to juice before the start of alcoholic fermentation.

40-16172 1kg \$68.75

40-16162 25kg \$1437.50

Color X 🔥🟡🟢

Macerating enzyme for heavier, more extracted reds

Scottzyme® Color X is a unique pectinase with cellulase side-activities. These activities help release anthocyanins, polymeric phenols and tannins. In trials we have found the tannic 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 colour response of Color X is similar to Color Pro.

Recommended Dosage

Crushed Grapes	Juice	Wine
60–100 mL/ton	Best used before fermentation	Best used before fermentation

Usage

Dilute Scottzyme Color X to approximately a 10% solution in cool water.

Pour the solution over the crushed grapes or add during a pump-over before alcoholic fermentation. Best used before fermentation.

40-16173	1kg	\$68.75
40-16163	25kg	\$1437.50

Choosing Color Pro or Color X?

It is important to know your grapes. Scottzymes will have little effect on overall colour if your grapes are deficient in compounds contributing to colour (anthocyanins, tannins, cofactors, 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 colour effect due to the Scottzymes may be negligible. Trials, however, have shown changes in mouthfeel and structure even when colour change has been minimal.

HC 🔥🟡🟢

Fruit, Concords

Scottzyme® HC is a pectinase and hemicellulase blend designed to increase yield, reduce solids and improve filtration. It is a strong enzyme useful for hard-to-press or slimy grapes (such as Concords) and for pome (apple or pear) or stone (pitted) fruits.

It is best used in conjunction with Scottzyme Pec5L.

Recommended Dosage

Crushed Fruit	Juice	Wine
60–100 mL/ton	5.3–7.9 mL/hL	6.6–9.2 mL/hL

200–300 mL/1000 gal 250–350 mL/1000 gal

Usage

Dilute Scottzyme HC to approximately a 10% solution in cool water.

Pour the solution over the crushed fruit or add during a tank mixing before alcoholic fermentation. If adding to wine, gently mix a 10% solution into the tank for even dispersion.

40-16171	1kg	\$68.75
40-16161	25kg	\$1437.50

KS 🔥🟡🟢

Blend of enzymes for enhanced settling and filtration

Scottzyme® KS is a blend of enzymes developed 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.

Reds

Recommended Dosage

Crushed Grapes	Juice	Wine
Not recommended	Not recommended	5.3–7.9 mL/hL 200–300 mL/1000 gal

Usage

Dilute Scottzyme KS to approximately a 10% solution in cool water. Add to the wine after pressing during a tank mixing. Do not use prior to pressing.

Whites

Recommended Dosage

Crushed Grapes	Juice	Wine
Not recommended	2.6–4.0 mL/hL 100–150 mL/1000 gal	5.3–7.9 mL/hL 200–300 mL/1000 gal

Usage

Dilute Scottzyme KS to approximately a 10% solution in cool water. Add to the juice after pressing or to the wine after alcoholic fermentation during a tank mixing. Do not use prior to pressing.

Warning

Never use Scottzyme KS before pressing (e.g. at the crusher for whites, or before or during red fermentation). Scottzyme KS has very aggressive enzymatic activities that will break down skins and create too many fine solids. After pressing, these activities will help with settling and the breakdown of sticky solids (even *Botrytis*). The goal is to make the juice or wine more manageable.

40-16174	1kg	\$68.75
40-16164	25kg	\$1437.50

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

Fruit	Juice	Wine
Not recommended	Not recommended	4 mL/hL 150 mL/1000 gal

Usage

Dilute Scottzyme KS Plus to approximately a 10% solution in cool water. Add to the wine after alcoholic fermentation during a tank mixing.

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.

40-16177	1kg	\$88.50
40-16167	25kg	\$1800.00



Image at left:

Scottzyme KS Plus trial shown four days post enzyme addition, settling at room temperature.

From left to right:

- Control: 120 NTU
- Enzyme A: 46.1 NTU
- KS Plus: 20.8 NTU

Pec5L 🔥 🍇

Enzyme for white and fruit for pressability, settling and clarification

Scottzyme® Pec5L is a highly concentrated pectinase blend developed and formulated 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	Wine
10–20 mL/ton	1.0–1.3 mL/hL	1.3–1.6 mL/hL

40–50 mL/1000 gal 50–60 mL/1000 gal

Usage

Dilute Scottzyme Pec5L to approximately a 10% solution in cool water. Pour over the grapes/fruit before pressing or add to the juice before the start of alcoholic fermentation.

40-16170	1kg	\$57.50
40-16160	25kg	\$1200.00

ALL Scottzymes (EXCEPT BG)

Storage

Store at 4°C(40°F) for 1–2 years. Keep tightly sealed and refrigerated once opened.

Note: The 25 kg totes are Kosher (but not Kosher for Passover). The 1 kg bottles are not Kosher.

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 colloidally dramatic wines, or specific varietals with naturally higher pectin levels that tend to struggle on filtration day (assuming prefiltration 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.

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 -glycosidase activity can be used in mash, in must, during malolactic fermentation and in wine. Due to the sugar tolerant β -glycosidase 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

mL/100 L or 100 kg mash

Mash	7–10 mL/hL
During fermentation	5–10 mL/hL
Must	7–10 mL/hL
Wine	10–15 mL/hL

Usage

Dilute the appropriate quantity of enzyme per tank with a little liquid to achieve better and more even distribution. Allow for contact time of at least 1 hour. Effectiveness depends on the added amount, temperature and reaction time. The treatment temperature should exceed 12°C and preferably be above 15°C. The higher the temperature, the more effective the enzyme. The natural upper limit is 55°C.

Storage

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

31-15082 1kg \$203.50

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.

31-15081 1kg \$203.50

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 wine. 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.

31-15087 1kg \$199.50

Trenolin Frio DF

Enzyme for clarification — depsidase-free

Trenolin® Frio DF is a liquid, highly active special enzyme for a quick, effective pectin degradation in mash and must in the course of cold maceration and cold clarification at temperatures as low as 5°C.

Recommended Dosage

Improvement of pressability: pectin hydrolysis in the mash

Temperature	Dosage mL/100kg	Reaction time
10°C	2–4 mL	1–2 hours
8°C	3–6 mL	2–3 hours
5°C	5–10 mL	4–6 hours

Acceleration of must clarification: pectin degradation in the must

Temperature	Dosage mL/100kg	Reaction time
10°C	1–3 mL	2 hours
8°C	3–5 mL	3 hours
5°C	5–8 mL	4 hours

Storage

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

31-15080 1kg \$269.00

Trenolin Mash DF

Usage

Trenolin® Mash DF is a particularly highly active liquid enzyme complex for MashZeration in white mashes/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. Reseal opened packaging tightly and use quickly.

31-15088 1kg \$357.00

Trenolin Rouge DF

Usage

Trenolin® Rouge DF is a liquid, depsidase-free red wine enzyme for the treatment of mashes/crushed grapes from red grapes. Ideally suited for Vinification 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 colouring 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 5–8%.

Recommended Dosage

Fermentation on skins after destemming and crushing	8–10 ml/hL
Thermovinification after recooling (~ 20°C)	6–8 ml/hL
Thermovinification after recooling (~ 50°C)	3–5 ml/hL

Usage

Trenolin® Rouge DF is equally suited for red wine-making in barrique casks.

The contact time of the enzyme depends on the individual case and should at minimum be 1 hour.

Longer contact times are advantageous. When temperatures fall below 15°C, dosages and contact times must be considerably increased. For instance, at a temperature of 12°C, dosage and contact time should be doubled.

Storage

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

31-15084 1kg \$145.80

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 characters 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 functions 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 1hr and longer contact time is advantageous.

Storage

Store in a cool environment. Use and reseal tightly.

31-15085 1kg \$98.50

Trenolin T-Stab DF

Thermostable pectolytic enzyme complex for an accelerated maceration

An innovative, thermostable pectinolytic enzyme for the accelerated maceration of red grape mashes 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 undesirable 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 or tubular 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

Usage

Dilute and add continuously into the mash.

Storage

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

31-15090 1kg \$298.95



FREQUENTLY ASKED QUESTIONS

What is the best way to add liquid enzymes?

Even distribution is important. First calculate the dosage then dilute Scottzymes to approximately a 10% solution (v/v) in cool water. Pour the solution over the crushed grapes/fruit 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 21–25°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?

Rehydrated powdered/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 of 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 on whites?

Scottzyme Color Pro improves settling, fining and filterability of white wines.

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

Lallzyme EX is recommended for fruit forward red or rosé wines. 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.

I have enzymes left from last year. Are they still OK to use?

Leftover liquid Scottzymes should be tightly sealed and stored in a refrigerated environment. Granular enzymes should be kept in a dry, cool environment. If the dry enzymes get moisture in them, they should be thrown out. If kept properly, liquid enzymes should be good for at least one year with only a small activity loss. Granular enzymes will be good for several years.

I had *Botrytis* on my grapes this harvest and I want to use a beta-glucanase enzyme. Do you carry a beta-glucanase enzyme?

Yes, Lallzyme MMX is a blend of beta-glucanase and pectinase. It is currently listed in 27 CFR 24.250.

How long should I leave the enzyme on white grapes before pressing?

In general, waiting 2–12 hours before pressing should be enough time for the enzyme to work.

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 enzyme 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.

MALOLACTIC BACTERIA

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 flavors, 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

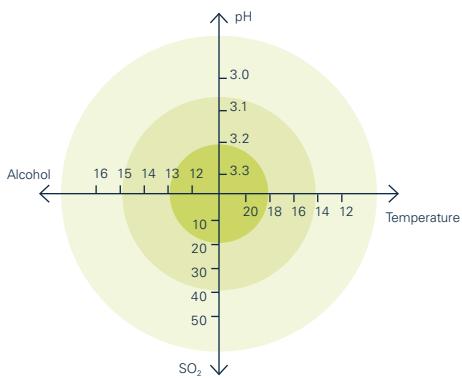
Choose a yeast strain which is compatible with the selected malolactic bacteria. See *MLF Compatibility in the yeast charts on pages 8–13*.

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

Conditions



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

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

Page	Freeze-Dried Direct Inoculation (MBR)										Malotabs	Beta Co-Inoc	1-Step Alpha	1-Step VP41	Acti-ML	Opti'Malo Plus	Opti'Malo Blanc	ML Red Boost	Nutrients
	Alpha	Beta	ICV Erios 1	MBR 31	O-MEGA	PN4	Silka	VP41	Effervescent Direct Inoculation Cultures	Co-Inoculation									
	81	81	81	81	81	82	82	82	83	83									
Reds	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧
Whites and Rosé	💧	💧		💧	💧	💧			💧	💧	💧	💧	💧	💧	💧	💧	💧	💧	💧
Fruit, Cider and Mead	💧			💧		💧								💧		💧	💧	💧	💧
Higher alcohol tolerance	💧		💧		💧	💧	💧									💧	💧		
Lower pH tolerance				💧		💧		💧											
Higher SO ₂ tolerance		💧			💧	💧	💧												
Lower temperature tolerance	💧			💧	💧														
Low nutrient demand	💧				💧				💧	💧						💧	💧		
Medium nutrient demand			💧	💧				💧											
High nutrient demand		💧								💧									
Higher diacetyl production	💧	💧	💧			💧										💧			
Impact on mouthfeel fullness	💧		💧		💧			💧		💧						💧	💧		
Impact on mouthfeel structure	💧		💧					💧		💧						💧	💧		
Impact on fruitiness	💧	💧	💧	💧	💧											💧			
Restart stuck or sluggish MLF				💧					💧							💧	💧		💧
Bacteria rehydration nutrient																	💧		
Nutrient for difficult red MLF's																			💧
Nutrient for difficult white MLF's																			💧
General ML Nutrient																			
OMRI listed																			
Alcohol (% v/v)	<15.5	<15.0	<15.5	<14.0	<16.0	<16.0	<16.0	<16.0	<16.0	<15.0	<15.5	<16.0							
pH	>3.2	>3.2	>3.4	>3.1	>3.1	>3.1	>3.1	>3.3	>3.1	>3.1	>3.2	>3.2	>3.1	>3.1	>3.2	>3.2	>3.1		
Total SO ₂ (mg/L)	<50	<60	<50	<45	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	<60	
Temperature °C(°F)	>14° (57°)	>14° (57°)	>18° (64°)	>13° (55°)	>14° (57°)	>14° (57°)	>15° (59°)	>16° (61°)	>16° (61°)	>14° (57°)	>14° (57°)	>16° (61°)	>16° (61°)	>16° (61°)	>14° (57°)	>14° (57°)	>16° (61°)	>16° (61°)	
Typical fermentation kinetics	Start	Fast	Slow	Mod	Slow	Fast	Mod	Mod	Mod	Mod	Mod	Slow	Fast	Mod	Mod	Slow	Fast	Mod	
	Finish	Slow	Fast	Mod	Fast	Fast	Fast	Mod	Mod	Mod	Mod	Fast	Slow	Mod	Mod	Slow	Slow	Mod	

FREEZE-DRIED DIRECT INOCULATION CULTURES

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 MLF.

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

Alpha

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

Enoferm Alpha™ 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	2.5hL	\$20.75
35-15060	25hL	\$162.50
35-15060A	250hL	\$887.80

Beta

O. oeni adapted to high SO₂; positive aroma impact
White, Red

Enoferm 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% (v/v).

The name Beta comes from its capacity to increase levels of beta-damascenone and beta-ionone which are compounds that contribute floral notes, particularly in Merlot. In trials, winemakers have found pronounced fruity and berry notes in Cabernet Sauvignon and Merlot, when compared to the control. Beta can also be found to enhance diacetyl in white wines when used in a sequential fermentation.

Beta benefits from the addition of a malolactic nutrient.

35-15058	2.5hL	\$20.75
35-15058A	25hL	\$162.50
35-15058B	250hL	\$887.80

ICV Elios 1

O. oeni adapted to high alcohol; contributes to tannin mouthfeel intensity

Red

Lalvin MBR ICV Elios 1® 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 wine by enhancing the perception of overall tannin mouthfeel intensity while avoiding green and vegetative characters.

35-15055	25hL	\$147.70
35-15056	250hL	\$808.60

MBR 31

O. oeni adapted to low temperature and low pH; enhances polyphenolic content and fruit character

White, Red, Fruit, Cider

Lalvin MBR 31® was selected by the IFV for use in red and white wines.

Performs well even under stressful conditions such as low pH (3.1) and low temperature, though not below 13°C(55°F). It is alcohol tolerant to 14.0% (v/v) and total SO₂ to 45 ppm.

Known for its positive sensory characteristics. In reds, it may increase berry fruit flavours and mouthfeel. In whites, it is known for light buttery flavour, respect for fruit, increased body and length of finish.

It is sometimes slow to start, but finishes quickly.

35-15053	2.5hL	\$20.75
35-15049	25hL	\$147.70
35-15054	250hL	\$808.60

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 cold climate Pinot Noirs.

35-15060B	25hL	\$159.30
35-15060C	250hL	\$870.40

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 (3.1) 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 25hL \$162.90
35-15064A 250hL \$808.60

NEW! SILKA 

O. oeni adapted to high alcohol; enhances mouthfeel and oak integration
Red

Latvin Silka™ was isolated in Rioja, Spain and selected by the ICVV during an extensive research program.

This strain is alcohol tolerant to 16% v/v, pH tolerant down to 3.3 and temperatures down to 15°C(59°F).

Kinetics are regular and nutrient demand is moderate, so Silka would benefit from an addition of ML Red Boost.

Silka is recognized for its positive impact on mouthfeel, softening of astringency and bitterness and well-suited for wines aged in contact with oak.

35-15057 25hL \$162.90

VP41 

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

Latvin 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 restarting stuck a malolactic fermentation.

See page 87.

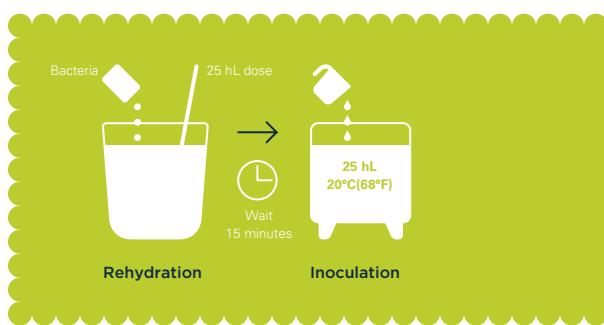
Both red and white wines fermented with VP41 have increased richness and complexity.

35-15063 2.5hL \$20.75
35-15061 25hL \$147.70
35-15062 250hL \$808.60
35-15038 1000hL \$1768.10

Storage info for Malolactic Bacteria

Short term (<18 months) @ 4°C(40°F)

Long term (>18 months) @ -18°C(0°F)

PROTOCOL**Adding Direct Inoculation Cultures to Wine**

Direct inoculation cultures can be added directly to wine. Allow the packet to come to room temperature before use. For enhanced dispersion, rehydrate in 20 times its weight in 20°C(68°F) chlorine-free water for 15 minutes and then add directly to the wine. The 25 hL dose is rehydrated in 500 mL of water.



Victor Palencia,
Owner/Winemaker
Palencia Wine Co.
Walla Walla, WA

"VP41 has been my favorite ML strain for over 10 years now. Its durable nature and effectiveness on our diverse portfolio of wines have given this strain our in-house ML crown. Effective in both our production and limited high-tier products, we are confident in its ability to deliver consistent and clean malolactic fermentations. It has a strong ability to get the job done, while still being gentle enough to allow the fruit nature, texture and mouthfeel of our wines to show. The relatively low VA production from this strain during the MLF process is always an added bonus."

EFFERVESCENT DIRECT INOCULATION CULTURES

Malotabs LALLEMAND

O. oeni in tablet form for barrel addition to fresh and fruit driven wines
White, Red

Malotabs™ are an 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 2.5hL (5/box) \$185.80

CO-INOCULATION

Beta Co-Inoc LALLEMAND

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. This is especially important if the pH is over 3.5. Beta Co-Inoc is not recommended for wines with alcohol potential >15% (v/v).

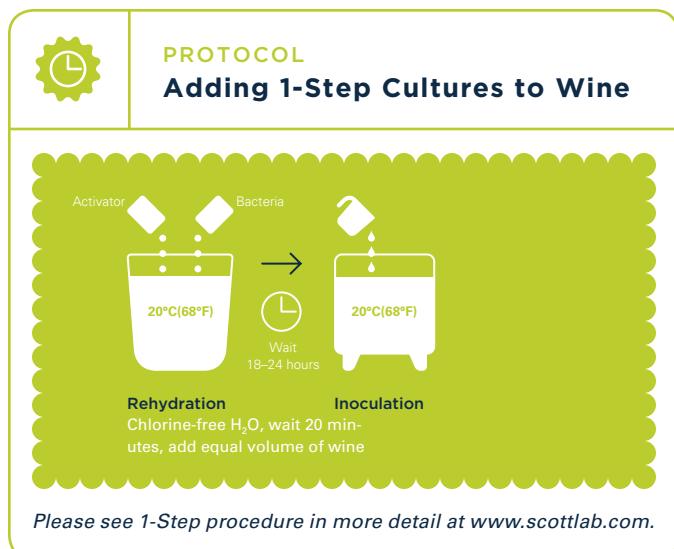
35-15058C 25hL \$144.95

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 kits). 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.



Please see 1-Step procedure in more detail at www.scottlab.com.

1-Step Alpha LALLEMAND

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

1-Step® Alpha (same strain as Enoferm Alpha) was selected by the IFV in France from 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).

35-15035C	25hL	\$133.30
35-15035B	100hL	\$238.40
35-15035A	500hL	\$1441.60
35-15035	1000hL	\$2024.00

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 MBR 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).

35-15036	100hL	\$238.40
35-15037	500hL	\$1120.60
35-15038	1000hL	\$1785.80

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 Interprofessionnel 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	25hL	\$88.70
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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	25hL	\$76.10
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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 (25°C/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 cellulose 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
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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.

35-15090	1kg	\$47.10
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ML Red Boost LALLEMAND OMRI

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 bacteria 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.

35-15072C 1kg \$47.10

Opti'Malo Blanc LALLEMAND OMRI

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.

35-15072B 1kg \$47.10

Opti'Malo Plus LALLEMAND

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

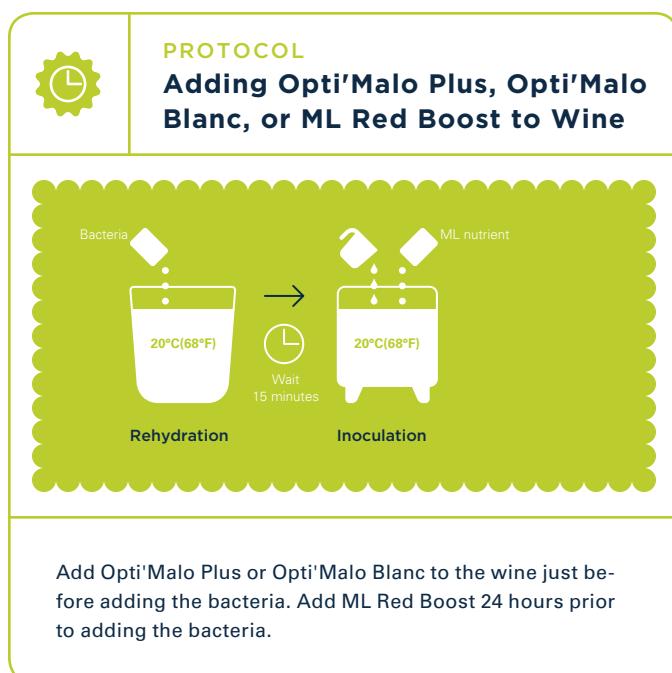
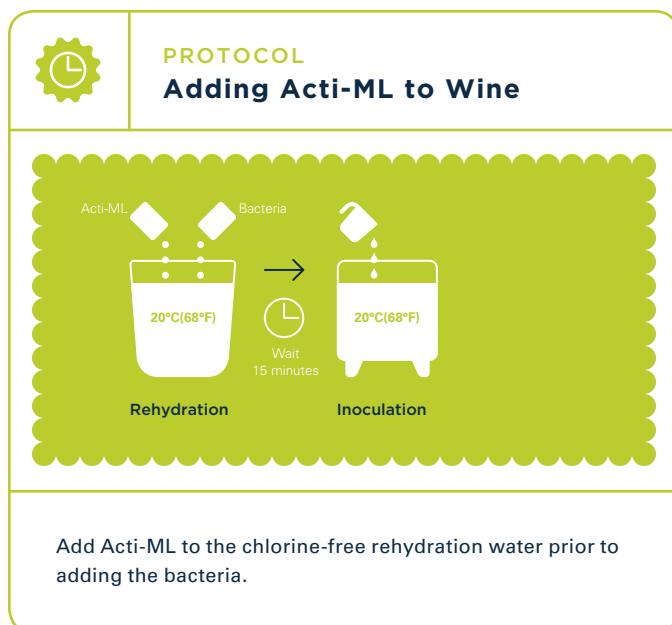
Suspend in a small amount of water or wine and add directly to the wine just before adding the malolactic bacteria. It should not be added to the rehydration water.

35-15072 1kg \$47.10

ALL Malolactic Bacteria Nutrition

Storage

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



Quick Troubleshooting Guide for Malolactic Fermentations

There are many factors that can influence the success of a malolactic fermentation. Before jumping into a full restart, it's a good idea to assess each of these factors. Sometimes a small adjustment is all that's needed to help a fermentation complete successfully.



The temperature of the wine might be too low

Try warming the tank or barrels; 20°C(68°F) is optimal. A malolactic fermentation will progress much slower at cooler temperatures.



The wine might be lacking nutrients

Try adding an ML specific nutrient like Opti'Malo Plus, ML Red Boost or Opti'Malo Blanc (*dosage and usage information on page 85*).



The wine might need a detox

If you've already done a nutrient addition, the bacteria should have what it needs. Sometimes though, toxins can be present that impede the success of an MLF. Reskue™, a specific inactivated yeast for treating stuck fermentations, can be extremely beneficial for detoxification. Reskue should be added and racked after 48 hours (*dosage and usage information on page 48*).



The wine chemistry might be challenging or inhibitory to the bacteria

It is essential that you check your pH, alcohol, and free and total SO₂ to see if one of these factors might be inhibiting the fermentation. Winemakers are often surprised by the amount of SO₂ in a wine when they've added little, or even none. SO₂ can come from several sources, including yeast during the alcoholic fermentation, vineyards, old barrels or erroneous cellar additions. Total SO₂ is just as important to check, as bacteria has an affinity for acetaldehyde and can break the bond between the SO₂ and acetaldehyde, liberating free SO₂ and inhibiting the ML fermentation. If any of your chemistry is challenging, make sure you've inoculated with a strain that can handle it. If your wine chemistry pushes the limits of all the strains, consider sending your wine into our lab for a Stuck & Sluggish ML analysis package (*details on page 87*).



There may not be enough healthy *Oenococcus* to get the job done

If you did not inoculate with *Oenococcus*, there may not be enough of a healthy population present to complete the ML fermentation. Consider inoculating with a known strain that is appropriately suited to handle the chemistry of your wine. If you've already inoculated and the wine is pretty clean (low turbidity), it's possible that the bacteria are struggling to stay in suspension. Try stirring your tanks or barrels more frequently.



You might just need to give it more time

A malolactic fermentation can be a great test of patience, taking weeks or sometimes months to complete. It's nearly impossible to determine if your ML fermentation is complete through sensory analysis alone. Getting the malic level analyzed gives you an important piece of information (most labs consider a level of 0.1 g/L malic acid to be dry). If you started with high levels of malic acid (>7.0 g/L), conditions can become difficult for bacteria as the subsequent lactic acid increases.

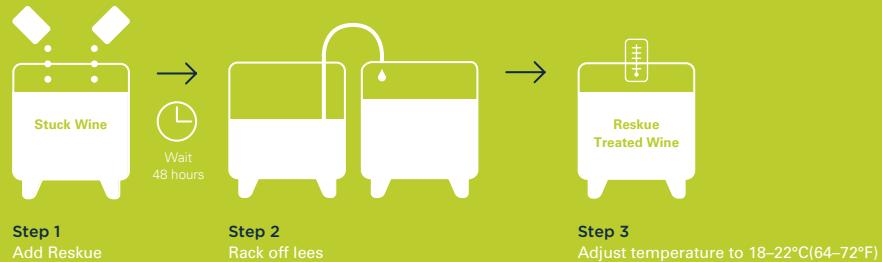
Giving attention to one of these factors can often be all it takes to ensure success, but if the fermentation continues to struggle, sometimes a full restart is necessary. *Our full restart protocol is available on page 87.*



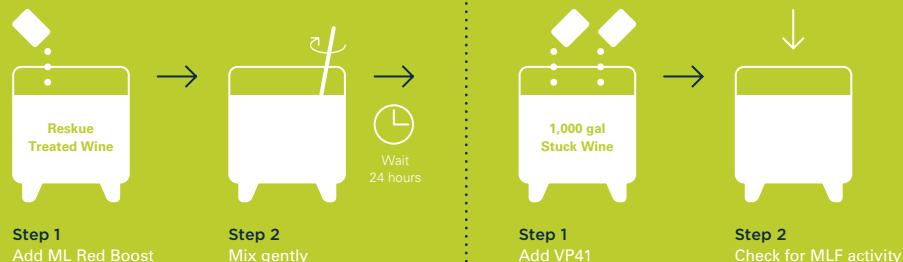
PROTOCOL

Recommended Method to Restart a Stuck Malolactic Fermentation

Prepare the Stuck Wine



Malolactic Activator Addition



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.

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 immediately. 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.

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-incubate 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° 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 Beta 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.

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. *Please refer to the yeast charts on pages 8–13.*

Does my bacteria need nutrients?

Unfortunately, there is no easy answer. There are no analytical tools to determine nutrient deficiencies for bacteria. Bacteria need amino acids (not ammonium salts), peptides, vitamins and minerals to complete a successful MLF. Each strain of bacteria, like yeast, has specific requirements. We are happy to help you make a decision that is suitable for your particular wine style.

How do I choose the correct strain of bacteria for my wine?

Each strain of bacteria performs best within specific environmental parameters. Consider free and total SO₂ levels, pH, alcohol, temperature constraints as well as malic acid concentration.

Why 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 (Acti-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.

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 laboratory 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 nutrients 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 <0.2 g/L), ML nutrient additions are recommended: 20 g/hL of ML Red Boost for structured red wines or 20 g/hL Opti'ML Blanc for white wines.

MICROBIAL CONTROL AGENTS

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 sulfur 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 practices, 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.

Basics

REMOVAL

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

INHIBITION

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

DESTRUCTION

Microorganisms are killed and will not survive to replicate. Destruction strategies include Velcorin® treatment, No Brett Inside® or Bactiless® 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

Highly Recommended
Recommended

	Page	Lyso-Easy	Lysovin	SO ₂ Inodore Granules	Inodore Tablets	Chitosan	Chitin-Glucan	DMDC	Velcorin
	90	90	91	91	91	92	92	93	
Reds		●	●	●	●	●	●		●
Whites and Rosé		●	●	●	●	●	●		●
Fruit, Cider and Mead		●	●	●	●	●	●		●
Protection from indigenous yeast				●	●				
Control gram positive bacteria (LAB)		●	●	●	●		●		
Control gram negative bacteria (<i>Acetobacter</i>)				●	●		●		
Inhibit oxidation of grapes and juice				●	●				
Control spoilage yeast (<i>Brettanomyces</i>)				●	●	●			●
Protection during stuck and sluggish fermentations		●	●	○	○				
Delay MLF		●	●						
Helps prevent refermentation in bottle				●	●				●
Chitosan						●			
Chitin Glucan							●		

LYSOZYME

Lysozyme is a naturally occurring enzyme which can be used in wine to control lactic acid bacteria (LAB) including *Oenococcus* spp., *Pediococcus* spp. and *Lactobacillus* spp. *Oenococcus oeni* is favorably associated with malolactic fermentation (MLF) but can also produce volatile acidity (VA) under certain conditions. *Pediococcus* and *Lactobacillus* are usually considered spoilage organisms.

Lysozyme is a natural product isolated from egg whites and has been used for many years as a biopreservative in the processing and storage of hard cheese.

The enzymatic activity of lysozyme can degrade the cell walls of gram-positive bacteria (including LAB) but not gram-negative bacteria (*Acetobacter*) or yeast. Lysozyme's effectiveness depends on the type of bacteria and the number of cells present.

It is important to note that lysozyme requires a minimum seven day contact time to allow the enzyme to work.

Lyso-Easy CALLEMAND Pending Approval in Canada

Lactic acid bacteria inhibitor—ready-to-use lysozyme solution

Lyso-Easy is a ready-to-use solution of 22% lysozyme. One mL of Lyso-Easy contains 0.22 g granular lysozyme.

Usage

No preparation is needed. Once opened, it should be used immediately.

Storage

Dated expiration. Store tightly sealed at ambient temperature.

Lysovin bioseutica Pending Approval in Canada

Lactic acid bacteria inhibitor—granular lysozyme

Lysovin is a powdered lysozyme that needs to be properly rehydrated.

Usage

Rehydrate Lysovin in 5–10 times its weight in warm water. Stir gently for 1 minute and avoid foaming. Allow to soak for 45 minutes. Repeat until the solution is a clear, colourless liquid.

Storage

Store in dry form for 5–10 years at 18°C(65°F). Once rehydrated, Lysovin should be used immediately.

Recommended Dosage

Lysozyme Applications	Red	White/ Rosé	Lyso-Easy		Lysovin			Timing of Addition
Inhibit Growth of LAB in Must and Juice To inhibit spoilage characters due to uncontrolled microbial growth. This is especially important in high pH conditions or with grapes containing rot.	●	●	91 mL/hL	3.4 mL/gal	200 ppm	20 g/hL	0.75 g/gal	Add prior to fermentation
Protection During Stuck and Sluggish Fermentations To encourage yeast growth in the absence of SO ₂ while reducing the risk of VA production by lactic acid bacteria.	●	●	114–182 mL/hL	4.3–6.8 mL/gal	250–400 ppm	25–40 g/hL	0.94–1.50 g/gal	Add at first signs of a stuck fermentation
Delay MLF/Post-MLF Stabilization To protect wine without the negative effects of SO ₂ , to allow for maceration or aging, to allow for implantation of selected bacteria, or to increase efficiency of Phase I micro-oxygenation.	Delay	●	46–91 mL/hL	1.7–3.4 mL/gal	100–200 ppm	10–20 g/hL	0.38–0.75 g/gal	Add at juice stage or immediately after alcoholic fermentation
Inhibit MLF when Blending Partial and Complete ML Wines	Stabilize	●	114–228 mL/hL	4.3–8.6 mL/gal	250–500 ppm	25–50 g/hL	0.94–1.90 g/gal	Add immediately after MLF completion
		●	136–227 mL/hL	5–8.6 mL/gal	300–500 ppm	30–50 g/hL	1.10–1.90 g/gal	Add during blending

1 mL of Lyso-Easy contains 0.22 g granular lysozyme.

Warning: In the case of low color potential grapes such as Pinot Noir, lysozyme products should never be added prior to completion of alcoholic fermentation. If spoilage yeasts such as *Brettanomyces* are suspected, SO₂ addition should not be delayed. Lysozyme is only effective against gram-positive bacteria and has no effect on yeast or gram-negative bacteria.

SULFUR DIOXIDE

Wine quality can be preserved with sulfur dioxide. Sulfur dioxide is used in wine for its antioxidant and antimicrobial properties. The effectiveness of sulfur dioxide as an antimicrobial 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 antimicrobial activity. Inodose Granules and Tablets are an easy and effective way to add sulfur dioxide to grapes, juice or wine.

FAQ

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 not 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 added. The amount of free depends on pH, residual sugar, solids, etc.

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 to wines prior to clarification and fining. The potassium bicarbonate fraction in these granules has little or no effect on pH.

38-12055	2gm (40/box)	\$27.80
38-12060	5gm (25/box)	\$20.80
38-12066	100gm	\$15.35
38-12067	400gm	\$41.90

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 or small tanks while reducing time and labour needed for stirring. The easy-to-use tablet form helps prevent overdose problems associated with traditional forms of SO₂ additions. Sealed strip packages keep unused tablets fresh for optimal potency. The potassium bicarbonate fraction in these tablets has little or no effect on pH.

38-12068 2gm (42/box) \$22.00

38-12069 5gm (48/box) \$28.95

Inodose Granules + Tablets

Usage

Various applications include:

- In gondolas or picking bins to inhibit oxidation of grapes and juice, especially from *Botrytis* or mold.
- During transport of must or juice.
- To inhibit indigenous yeast and bacteria.
- In tanks before fermentation and directly into barrels after malolactic fermentation.
- To make SO₂ additions to barrels.

Inodose Granules and Tablets Conversion Chart—

PPM of Total Sulfur Dioxide

SO ₂ Dose	1 Liter	1 Gallon	60 Gallons	100 Gallons	1000 Gallons
2 g	2,000	529	9	5	0.5
5 g	5,000	1,321	22	13	1.3
100 g	100,000	26,420	440	264	26.4
400 g	400,000	105,680	1,761	1,057	106

Note: The SO₂ products contribute 2g or 5g of pure SO₂ when added to the wine. Because they are blends of KMBS and potassium bicarbonate, the tablets and granules actually weigh more than what they contribute in SO₂.

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.

Potassium Metabisulfite

Potassium metabisulfite can be used throughout the winemaking process from pressing, to must, to finished wine.

30-15053 1kg \$7.55

30-15019 25kg \$153.75

Tartaric Acid

Tartaric acid, found naturally in must or wine, is used in a variety of cases:

- Increasing the acidity of must coming from overripe grapes with a lack of natural acidity
- Increasing the total acidity of wines after MLF and increasing aging potential.

30-15053F 1kg \$15.60

30-15005 25kg \$296.25

Bactiless LALLEMAND

Pending Approval in Canada

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 lysozyme 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 MLF 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//1000 gal
45–113 g/60 gallon barrel

Usage

Suspend Bactiless in 5–10 times its weight in cool water or wine (Bactiless is insoluble, so it will not go into solution). Bactiless should be mixed to obtain a homogenous addition. Leave Bactiless in contact with the wine for 10 days and then conduct a clean racking. If malolactic fermentation is desired, Bactiless should not be added until after MLF is complete.

To determine the effectiveness, a period of 20–30 days post-racking should be respected before microbial analysis. This is regardless of 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.

Treatment	Control	Bactiless 20 g/hL
Acetic acid bacteria	2,033,333	54,800
<i>Lactobacillus brevis</i> group	35,733	1,030
<i>Lactobacillus plantarum</i> group	99,333	4,867
<i>Lactobacillus kunkeei</i>	313	73
<i>Oenococcus oeni</i>	1,733,333	46,667
<i>Pediococcus</i> species	100,033	2,700

No Brett Inside LALLEMAND

Pending Approval in Canada

Brettanomyces spp. control agent

No Brett Inside® is a commercial preparation of Chitosan that was introduced by Lallemand and is distributed exclusively in the North American market by Scott Laboratories.

No Brett Inside specifically targets *Brettanomyces* cells. The active ingredient, Chitosan, works in two ways. The *Brettanomyces* cells are adsorbed onto the chitosan and settle out of the wine. In addition to the physical effect there is a biological effect which results in cell death. This double action of No Brett Inside will help to control contaminating populations helping to preserve wine quality.* However, it cannot decrease any sensory contribution already produced by *Brettanomyces*.

*No Brett Inside should be added post-ML.

Recommended Dosage

40–80 ppm 4–8 g/hL 0.33–0.67 lb/1000 gal
9–18 g/60 gallon barrel

Usage

Suspend No Brett Inside in 5 times its weight in cool water (No Brett Inside is insoluble, so it will not go into solution). No Brett Inside can be added during a pumpover or tank/barrel mixings to ensure a homogenous addition. Leave the No Brett Inside in contact with the wine for 10 days and then conduct a clean racking.

To determine the effectiveness of your addition, 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.

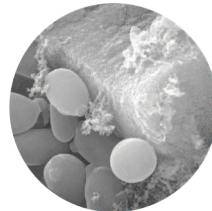
Storage

Dated expiration. Store in a dry, odour-free environment below 25°C(77°F).



Before

Scanning Electron Micrograph x 20,000 magnification *Brettanomyces* cells prior to being treated with No Brett Inside.



After

Scanning Electron Micrograph x 20,000 magnification *Brettanomyces* cells treated with 4 g/hL of No Brett Inside. Image shows *Brettanomyces* cells attached to the surface of the Chitosan.

Images courtesy of Biljana Petrova and Dr. Charles G. Edwards, Washington State University, Pullman, WA

Velcorin LANXESS

Yeast inhibitor; microbial control agent

Velcorin® is the trade name for dimethyldicarbonate (DMDC), a microbial control agent produced by LANXESS. Since 1988, Velcorin has been used in the United States in wine, low-alcohol wine, non-alcoholic wine, and cider, as well as juice, juice sparklers, sports drinks and ready-to-drink teas. Since 2013, Velcorin is also approved for use in wine made in Canada. Velcorin is very effective at low dosages against a broad range of yeast, bacteria and molds. Unlike other chemical preservatives, Velcorin is non-persistent and does not affect wine taste, bouquet or colour. In addition, Velcorin can remain active for several hours (depending on hydrolysis rate) thereby helping to eliminate contamination from sources such as bottles, closures and filling equipment.

Usage

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 achieve microbial stability at lower overall sulfur dioxide levels. Velcorin does not provide antioxidant protection.

To reduce warehouse holding time in early-to-market wines.

Velcorin can be used to decrease the amount of sulfur dioxide and/or decrease the required degree of filtration. These wines undergo 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. \$75,000.

30-18050 3kg \$565.00



Before



After

FAQ

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 ensure 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. Pre-treatment 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.

MOBILE VELCORIN DOSING AVAILABLE THROUGH

Viniserve Technical Services

Region Ontario, Quebec, Nova Scotia, New Brunswick, PEI

Contact Matteo Meglioli

800-666-3425

CHEMICAL

30-15053J	Ascorbic Acid	500g	\$18.00
30-15006	Calcium Carbonate	22.7kg	160.00
30-15053G	Citric Acid	1kg	\$9.70
30-15004	Citric Acid	25kg	\$141.25
30-15053D	Diammonium Phosphate (DAP)	1kg	\$8.95
30-15015	Diammonium Phosphate (DAP)	25kg	\$172.50
30-15053M	Malic Acid	1kg	\$8.60
30-15008	Malic Acid	25kg	\$197.50
30-15026	Metacreamor 	1kg	\$21.20
30-15030A	Potassium Bicarbonate	22.7kg	\$192.95
30-15053N	Potassium Bitartrate	1kg	\$14.60
30-15030	Potassium Bitartrate	25kg	\$327.50
30-15053B	Potassium Sorbate	1kg	\$14.15
30-15017	Potassium Sorbate	22.7kg	\$233.80
30-15053P	PVPP	1kg	\$38.50
41-13203	PVPP Pills	1kg	\$42.50
30-15053F	Tartaric Acid	1kg	\$15.60
30-15005	Tartaric Acid	25kg	\$265.00
30-15053	Potassium MetaBisulfite (KMS)	1kg	\$7.55
30-15019	Potassium MetaBisulfite (KMS)	25kg	\$153.75

Neoanticid

Special lime for double-salt deacidification

A specially selected lime for double-salt deacidification, Neoanticid is composed of precipitated, chemically pure calcium carbonate (E170). Useful in the Double-salt deacidification of must/grape juice and young wine to reduce malic acid and tartaric acid at the same time.

Recommended Dosage

To remove 1 % or 1 g/L of acid, 67 g of Neoanticid is required per hL of beverage to be deacidified.

Usage

The total Neoanticid quantity needed is mixed with some must/wine and the resulting paste is added to the vessel, vat, barrel or tank as first component. Only then the determined partial quantity of must or wine to be treated is allowed to run in. To determine the amount of Neoanticid required and the partial quantities of must or wine, the Neoanticid deacidification table or the "Oenothek" deacidification calculator can be used. After stirring briefly (5–15 minutes), the precipitated sediment can be separated by filtration (best by kieselguhr filter, without kieselguhr dosage). Afterwards, mix the residual partial quantity with the deacidified portion.

Storage

Protect from odour and humidity. Opened packaging must be resealed immediately and tightly.

31-15005 25kg \$326.25

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.

Water Savings with AiRD Products

Classic Method	Water Used*	vs.	AiRD Process	Water Used*
Rinse	100 gallons		Rinse	100 gallons
Caustic	200 gallons		AiRD Product	200 gallons
Long Rinse	200 gallons		Short Rinse	100 gallons
Citric	200 gallons			
Rinse	100 gallons			
TOTAL	800 gallons			
			TOTAL	400 gallons

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

The chart shows a common SOP for a 2,000 gallon tank cleaning.

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

Choosing the Correct Winery Hygiene Product

	Cleaning Agents				
	Cleanskin-K	Destainex-LF	Oak Restorer	Oak Restorer-HW	Wineglass
Page	96	96	96	96	96
Dosage	1.0-4.0% w/v	0.5-1.5% w/v	1.0-2.0% w/v	0.5-2.0% w/v	
Water temperature for use	68-140°F 20-60°C	104-140°F 40-60°C	68-89°F 20-30°C	104-140°F 40-60°C	
pH (1% solution)	~11.3	~10.8	~10.65	~9.6	
Removes tartrates	●	○	●	●	
Removes colour	○	●	●	●	
Microbial neutralizing	○	●	●	●	
General purpose cleaning	○	●			
Barrel cleaning			●	●	
Cellar/Tasting Glassware					●

CLEANING AGENTS

Cleanskin ∞_{AIRD}

Multi-purpose cleaner and tartrate remover
Tanks and Equipment

Cleanskin is a 100% active, water soluble, multi-purpose cleaning product for use in the winery. This carbonate formulation uses the power of oxygen to effectively clean stainless steel and associated materials. Cleanskin can be used in tanks, presses, destemmers, juice channels and more to remove tartrate crystals. Secondly, it is effective at removing wine colour, protein and organic soils. In addition to the potassium carbonate, Cleanskin also contains proprietary percarbonates, chelation and sequestering aids, polysurfactants and a rinse aid, to leave your surfaces bright, clean, neutral and spot free.

86-55110 5kg \$36.00

Cleanskin-K ∞_{AIRD}

Multi-purpose cleaner and tartrate remover
Tanks and Equipment

Cleanskin-K is a 100% active, water soluble, multi-purpose potassium-based cleaning product for use in the winery. This carbonate formulation uses the power of oxygen to effectively clean stainless steel and associated materials. Cleanskin-K can be used in tanks, presses, destemmers, juice channels and more to remove tartrate crystals. Secondly, it is effective at removing wine color, protein and organic soils. In addition to the potassium carbonate, Cleanskin-K also contains proprietary percarbonates, chelation and sequestering aids, polysurfactants and a rinse aid, to leave your surfaces bright, clean, neutral and spot free.

Recommended Dosage

1.0-4.0% w/v (See chart)

86-55111 5kg \$41.50

Destainex ∞_{AIRD}

Multi-purpose oxidizing cleaner for organic soils and molds
Winery Surfaces, Tanks, Lines, Equipment

86-55120 5kg \$39.75

Destainex-LF (Low Foaming) ∞_{AIRD}

Multi-purpose oxidizing cleaner for organic soils and molds
Bottling systems, winery surfaces, lines, equipment and difficult to rinse systems

Destainex-LF is a proprietary sodium percarbonate based cleaning agents with microbial neutralizing abilities. This highly effective formulation can be used at low levels to remove wine color, protein stains, mold, mildew, 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-LF is complemented with proprietary surfactants and chelation agents, water conditioning materials and rinse aids for a bright, clean and spot free neutral surface.

Recommended Dosage

0.5-1.5% w/v (See chart)

86-55121 5kg \$39.75

Oak Restorer ∞_{AIRD}

Oak cleaner and refresher

Oak Restorer products are proprietary cleaners formulated for use on oak surfaces. These products were developed on behalf of winery clients in Australia. These buffered carbonate blends also contain bicarbonates and surfactants to effectively remove tartrate build-up, color, tannin and protein residues, thereby extending the working life of barrels, puncheons, redwood tanks and staves. Oak Restorers are single process cleaning agents requiring only a water rinse. No subsequent neutralization is required. Oak Restorers leave your wooden surfaces refreshed, odorless and pH neutral.

Usage

Prepare appropriate volume with correct temperature water.

For Oak Restorer 20-30°C(68-86°F)

For Oak Restorer-HW 40-60°C(104-140°F)

Oak Restorer	86-55131	5kg	\$42.25
Oak Restorer-HW	86-55130	5kg	\$42.25

Wineglass ∞_{AIRD}

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 \$42.00

Cleanskin, Cleanskin-K, Destinex, Destainex-LF, Oak Restorer

Recommended Dosage

Consult the chart on page 95 for water temperature requirements of each product. Cleaning is most effective when soft or treated water is used.

Prepare appropriate volume of potable water (typically 10% of vessel volume you are cleaning), accurately measuring the correct weight of the product. Slowly add the powder into the water, mixing until a consistent solution is obtained. Initially the prepared solution will appear milky, but will clarify. Once the solution has clarified it is ready for use. Products can be used manually or with automated CIP systems. Contact time is based on water temperature and quality, amount of product used and turbulence of contact.

ALL AiRD Agents

Dosage Rates

0.5% w/v	0.5 g/100mL	5 g/L	19 g/gal	0.67 oz/gal
1% w/v	1 g/100mL	10 g/L	38 g/gal	1.34 oz/gal
1.5% w/v	1.5 g/100mL	15 g/L	57 g/gal	2.0 oz/gal
2% w/v	2 g/100mL	20 g/L	76 g/gal	2.68 oz/gal
4% w/v	4 g/100mL	40 g/L	151 g/gal	5.36 oz/gal

Storage

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

STABILITY

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).

Microbial stability can be achieved by either physical or chemical means. For microbial stability options, please review our Microbial Control, Cleaning and Filtration sections.

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).

Choosing the Right Stabilizing Aid

- Highly Recommended
- Recommended

	Gum Arabic			Gum Arabic/ Mannoprotein Blends		CMC	Bentonite							
	Flashgum R Liquide	Inogum 300	Metagum	Ultima Soft	Ultima Fresh	Inostab	Aktivit	Blancobent	CA-Granulate	Fennobent	MostRein	Nacalit	Sepritol	Ultrabent
Page	98	98	98	99	99	98	99	99	100	100	100	100	100	101
Reds	●	●	●	●	●		●		●	●	●	●	●	●
Whites and Rosé	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Promote stability	●	●		○	○									
Diminish bitterness	●	●		●	●									
Diminish harsh tannins and astringency				○										
Add perception of sweetness and softness	●			●										
Colloidal stability	●	●												
Tartrate (KHT) stability						●								
Aromatic stability				○										
Contains Metatarsic acid			●											
Low settling volume									●					
Co-fermentation possible										●				
Contains activated carbon											●			
Listed as 27 CFR 24.250				●	●							●		

98 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 40–120 mL/hL 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).

38-12035 1L \$12.45

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/hL 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).

38-12070 1L \$15.50

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. Wine 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.

38-12740 10L \$119.00

Metagum

Metatarsitic acid and gum Arabic
White, Rosé, Red

A blend of highly esterified metatarsitic acid and gum Arabic, Metagum aids in the prevention of crystal precipitation. It increases crystal stability, even at higher storage temperatures, improves organoleptic properties and can improve colour stability in red and rose wines.

Recommended Dosage

10 g/hL

Bench trial recommended to determine exact dose rate required.

Usage

Dilute in 20x wine under constant stirring. Allow to settle for several minutes and then stir again to achieve complete dissolution. Add to the wine and mix thoroughly. Dose Metagum at least 2–3 days before bottling, ensuring that wine is stirred again immediately before bottle filling.

Storage

MetaGum® is hygroscopic and has to be protected from moisture, also from air moisture. Reseal opened packaging immediately, seal tightly and use within a short time.

31-15073 1kg \$32.40

UltiMA Fresh

Mannoprotein/gum arabic with positive impact on stability and perceived volume
White, Red

UltiMA Fresh is a proprietary blend of specific mannoproteins together with gum arabics. 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 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.

38-12275 1kg \$144.45

UltiMA Soft

Mannoprotein/gum arabic with positive impact on stability and perceived softness and volume
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.

38-12270 1kg \$146.60

UltiMA Fresh + UltiMA Soft

Recommended Dosage

150–300 ppm 15–30 g/hL 1.2–2.4 lb/1000 gal*

*Bench trials recommended

Usage

Add UltiMA Fresh or UltiMA Soft by mixing with 10 times its weight in water. UltiMA Fresh or UltiMA Soft should be the last commercial product added to the wine. Ideally it should be added to the wine using a dosing pump. If the wine is to be filtered, it is recommended that the addition be done 24–72 hours before the membrane filtration and that filterability trials be conducted prior to filtration.

Storage

Dated expiration. Store in a dry, well-ventilated environment with temperatures less than 25°C(77°F).

BENTONITE

Aktivit

Calcium-sodium 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 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. Reseal opened packages immediately and tightly (airtight).

31-15020 20kg \$70.00

Blancobent UF

Na-Ca Bentonite for use with Pall Oenofine XL Crossflow System

Blancobent UF is a highly pure and particularly effective powder sodium-calcium bentonite for the stabilisation 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 excellently suitable 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

Fruit juice 35–75 g/100 L

Wine 20–200 g/100 L

Usage

Prior to application, check prepared suspension for off-smell.

Slowly stir Blancobent UF into a 8–12x of water under constant stirring. Allow a rest period of 30-60 minutes, then stir again thoroughly. After that, let the bentonite swell for 8–12 hours. Pour off supernatant and add the prepared bentonite suspension to the juice under thorough mixing to provide for even distribution. The use of warm water facilitates handling.

Storage

Blancobent 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. Reseal opened packaging immediately.

Non Pall XFlow Units

Blancobent UF is used in connection with the PALL Oenofine XL Crossflow System. For direct application on alternative systems, please contact Scott Labs or your xflow manufacturer.

31-15028 25kg \$112.50

100 CA-Granulate

Bentonite specifically targeted for must/juice

31-15003 20kg \$68.00

Fermobent

Must bentonite for co-fermentation

Provides an early and lasting protein stabilization during alcoholic fermentation. FermoBent also removes fermentation inhibiting substances. Due to its low iron solubility, FermoBent can remain in the fermenting vessel which enables an improved CO₂ release during fermentation. Save time and rack off together with the gross lees.

Recommended Dosage

100–200 g/hL of grape must

Application

Prior to application, check prepared suspension for off-smell. Mix well. Dilute in 5x water and allow to swell. Allow to settle for 4–6 hours. Add to the must and mix thoroughly to provide for even distribution. At end of fermentation a separation of the deposit is unnecessary, since the bentonite deposit is separated together with the yeast.

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. Reseal opened packages immediately and tightly (airtight).

31-15027 20kg \$98.00

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 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. Reseal opened packages immediately and tightly (airtight).

31-15040 20kg \$106.00

NaCalit

Sodium-Calcium Bentonite

NaCalit PORE-TEC is the granulated Na-Ca bentonite that is specifically targeted to problematic stability instances where superior flocculation, absorption and clarification is required.

Recommended Dosage

50–150 g/100 litres

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 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. Reseal opened packages immediately and tightly (airtight).

31-15021 20kg \$93.00

Seaporit

Bentonite specifically targeted for must/juice

Seaporit 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/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 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. Reseal opened packages immediately and tightly (airtight).

31-15025 20kg \$96.00

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 µm 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/hL

Usage

Prior to application, check prepared suspension for off-smell.

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.

Reseal opened packaging 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 xflow manufacturer.

31-15030 20kg \$127.00

Spotlight on Canned Wines

- The canned wine sector has grown 43% since 2017.
- Though still a small portion of the overall industry sales, canned wine is currently one of the fastest growing segments, accounting for \$45 million in sales.

Considerations when prepping wine for canning:

- As with any style of wine, controlling dissolved oxygen is important. It becomes even more crucial with canned beverages. As container size decreases, the exposure per unit volume of wine to oxygen increases. Generally, it is recommended that wines be packaged <1ppm dissolved oxygen. It should be noted that can sizes range, generally, between 187mL–375mL. As such, greater care should be taken to limit the uptake of dissolved oxygen.
- Proper yeast choice is also important. Using a strain such as Lalvin ICV OKAY, which produces neither SO₂ nor acetaldehyde, will limit SO₂ binding.
- During aging, the usage of Inodose SO₂ products to adjust Free SO₂ (pH dependant), and proper wine handling can help ensure low levels of dissolved oxygen. Pure-Lees Longevity Plus (@40g/hL) can absorb up to 1.7 mg/L of dissolved oxygen.
- Using a cellaring tannin such as Scott'Tan Complex can provide structure and antioxidant protection.
- Velcorin™ (DMDC) is a powerful tool to prevent refermentation in wines containing residual sugar, and can be used to make SO₂ additions more effective.

Contact Scott Laboratories for more information and to learn how our products and services can help achieve your alternate packaging goals.



ARTICLE

Preparing Wine for Bottling

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 107 for products and applications. In general, it is recommended that fining take place 6–9 weeks prior to bottling.

Filtration

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 labor 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 tartrate stabilized by one of several methods. It is recommended to heat (protein) stabilize prior to cold (tartrate) stabilization as bentonite additions may alter tartrate stability. It is important to use a bentonite that has good protein removal capacity. Sodium based bentonites have better protein removal capacity than calcium based bentonites, while calcium based bentonites compact lees better. Sometimes a blend of the two can produce the best results. Bench trials for stability and compaction can save time and money.

Bentonite is an effective adsorption tool that is also indiscriminate between desired and undesired proteins. Strategies can be employed to mitigate large bentonite adds. Small additions (2 g/hL) of FT Blanc help form tannin protein complexes (which can reduce instability). Colloidal silica, such as Gelocolle, works on high molecular weight proteins while bentonite works on low molecular weight proteins. Colloidal silica/Gelocolle can be used to reduce total bentonite requirements. Bentonite 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 clearer product to stabilize. For rough filtration we recommend using a 3–10 micron range depth filter media.

Stabilization by Removal

Traditional tartrate stabilization involves removal of the unstable crystals and their precursors. The common methods used are cellar chilling, electrodialysis 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 HT^+ . 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.

Tartrate Stabilization by Inhibition

Claristar is a mannoprotein 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 mannoprotein to a protein unstable wine may only further exacerbate the protein instability.

CMC is a well known synthesized chemical for food products. It is a etherified 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 color in red and rosé 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 lysozyme as it will cause a protein precipitation haze. Bench trials should always be done for color loss and filterability.

Tartrate 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.

Colloidal Stabilization

Gum arabic products act as colloidal stabilizers by using electrical charge attraction and repulsion. Gum arabic is only effective in conditions of very low to no tartrate instability. They are often more effective at color 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.

Bottled Wine

Stabilizing your wine before bottling reduces the chance of haze or precipitation in the bottle. Wines that drop tartrates are subject to colloidal precipitation and vice versa. This can leave bottled wine prone to oxidation and microbial problems if filtration is not performed. For the final filtration, we recommend a .45 micron membrane filter.

FILTRATION



Scott Laboratories' expertise in wine filtration dates back to the 1940s. Though it began with filter sheets, today it extends to virtually every stage in filtration — from juice clarification to membranes for bottling lines.

FILTER SHEETS

Simple to use and inexpensive, filter sheets are still useful for achieving different levels of retention. Available in a large selection of grades, we offer 40 x 40 cm and 60 x 60 cm. Most grades have a cellulose backing along with diatomaceous earth, perlite, or resin substrate. Depending upon the application, the sheets can be utilized to remove light or very heavy solids.



Available grades

EKS, EK1, EK, KS50, KS80, K100, K150, K200, K250, K300, K700, K800, K900, T1500

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" (1.8m²) & 16" (5m²)

EK, .5um, 1um, 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.



On Pall

30" .20, .45, .65, 1um

20" .45

10" .45, 1um



On Scott Cart

30" .20, .45, .65, 1um

FILTRATION EQUIPMENT

See page 123 for a full list of our filtration equipment from sheet filter assemblies to completely automated, crossflow filtration systems.

CROSSFLOW

Utilizing crossflow filtration offers continual cost savings by reducing wine loss, consumables, and labor. Furthermore, with a DE-free process and no solid waste for the landfill, both environmental and operator safety are improved. We offer several different size crossflow filters to meet the needs of wineries large and small.

Celluflux

Cellulose based filter aids

CelluFluxx® products are filter aids from cellulose, available in various degrees of fineness. Celluflux is a vegetable product, is 100% organic substance, thus fully biodegradable and therefore best suited for soil cultivation.

Usage

CelluFluxx®-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 CelluFluxx®-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

CelluFluxx® is entirely biodegradable, and thus filter cakes can be disposed of ecologically.

Storage

Store CelluFluxx® 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, P30, P50

Call for pricing

Variofluxx

Filter aid blend consisting of both Perlite and Cellulose

VarioFluxx® products combine the specific properties of perlites and cellulose and thus improve filtration results.

Usage

See the product technical data sheet at www.scottlabsltd.com.

Disposal

VarioFluxx® consists of mineral and biological/organic components. The products are **free from kieselguhr (diatomaceous earth)**. Dispose of in accordance with current local, provincial or federal regulations.

Storage

VarioFluxx® 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

Variofluxx P/F

Call for pricing

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 a environmentally friendly manner.

31-15255 10kg \$92.50



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 μ = rough 1–5 μ = polish < 1 μ = 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 (quantity 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 (120–135°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 if they have not been properly settled out and racked off the lees prior to filtration. For example, a relatively small amount of fining lees can immediately clog depth media. Also, products like bentonite and carbon can disable hollow fiber crossflow filters by jamming capillaries. Clean rackings 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. If not 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 out 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.scottlабsltd.com and click on the Resources section.

FINING AGENTS

Fining agents 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.

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.

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.

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. 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 fining products are shown as below.

Product	Estimated Minimum Contact Time*	Estimated Maximum Contact Time
Bentolact S	7 days	2 weeks
Caséinate de Potassium	2 days	15 days
Colle Perle, Inocolle, Inocolle Extra N1	7 days	3 weeks
Cristalline Plus	2 weeks	4 weeks
Freshprotect	7 days	2 weeks
Polycacel	10 days	3 weeks
Polycel	7 days	2 weeks
Reduless	3 days	5 days
Sparkolloid, Hot and Cold Mix	2–7 days	2 weeks

*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.

Choosing the Right Fining Agent

◆ Highly Recommended

◊ Recommended

*Hot Mix is for wine only.

Page	Granucol - GE/FA/BI	Activated Carbon					Isinglass	Gelatin	PVPP	Polycacel	Polycel	Gelocolle	Silica Gel	Sparkolloid*	
		Bentolact S	Casénate de Potassium	Polycacel	Pure-Lees Longevity Plus	Reducless									
108	108	108	108	112	112	113	109	109	110	112	112	110	110	110	
Reds						◆		◆	◆			◆	◆	◆	◆
Whites and Rosé	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Fruit, Cider and Mead	◆	◆	◆	◆	◆	◆	◊	◊	◆	◆	◊	◆	◆	◆	◆
Treat moldy juice (<i>Botrytis</i>)	◆	◆	◊	◆				◆	◆	◆	◆	◆	◆	◆	◆
Remove bitterness or off-flavours	◆	◆	◆	◊				◊	◊	◆	◊	◊			
Prevention/Treatment of oxidation in juice		◆	◆	◆						◆	◆	◆			
Prevention/Treatment of oxidation in wines			◆	◆	◆					◆	◆	◆			
Promote protein stability	◆														
Wine clarification	◆		◆				◆	◆	◆	◆	◆	◆	◆	◆	◆
Diminish bitterness	◊	◆	◆	◆			◊	◊	◆	◆	◆	◆			
Diminish harsh tannins and astringency								◆							
Diminish greenness							◊	◆	◊	◆					
Soften hard-pressed wine								◆							
Help reduce microbial populations via settling								◆	◆						
Enhance aromatics	◆			◊	◆	◆		◆			◊				
Promote a uniform gentle tannin fining prior to aging									◊						
Help unmask hidden aromatics				◊	◊	◆		◊	◊			◊			
Improve wine filterability							◆				◆		◆	◆	◆
Inhibit browning or pinking	◆	◊	◆	◆	◆	◆				◊	◆	◆			
Help compact lees	◊							◊					◊	◊	
Remove haze left by other fining agents													◊	◊	
Reduces sulfur defects		◆				◆						◊	◊		
Preserve wine colour				◊	◆							◊	◊		

ACTIVATED CARBON

Granucol BI

Activated carbon pellets for adsorption of undesirable off-characters

Granucol BI is for the reduction of tannins and polyphenols, and the elimination of brownish colour.

Recommended Dosage

10–50 g/hL 0.8–4.2 lb/1000 gal

31-15034	1kg	\$17.80
31-15034B	10kg	\$147.00

Granucol FA

Activated carbon pellets for adsorption of undesirable off-characters

Granucol FA is for the elimination of reddish off-colors due to browning.

Recommended Dosage

10–30 g/hL 0.8–2.5 lb/1000 gal

31-15032	1kg	\$17.80
31-15032B	10kg	\$147.00

Granucol GE

Activated carbon pellets for adsorption of undesirable off-characters

Granucol GE is for the absorption of undesired off-taste and off-aromas.

Recommended Dosage

10–60 g/hL 0.8–5 lb/1000 gal

31-15031	1kg	\$17.80
31-15031B	10kg	\$147.00

ALL Activated Carbons

Usage

Add directly to the must, wine, juice or to other beverages. The pellets immediately disintegrate after addition to the wine. Stir intensively for several minutes. Afterwards, stir again 2-3 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

Store in a dry, odor-free and well-ventilated environment. Reseal opened packaging immediately.

Bentolact S

Casein and bentonite blend for the preventative treatment of must prone to oxidation

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). It helps prevent formation of undesirable off-characters.

Recommended Dosage *Bench trials recommended*

Juice

200–1000 ppm 20–100 g/hL 1.7–8.4 lb/1000 gal

Wine

1000–2000 ppm 100–200 g/hL 8.4–16.7 lb/1000 gal

Usage

Dissolve in 10 times its weight in cold water and mix vigorously to avoid any lumps. Allow the mixture to stand for 3 hours. Add to the juice or wine during a pump-over or a good mixing. Depending upon the wine, a Bentolact S addition may take up to 7 days to settle. Once hydrated, Bentolact S should not be stored for more than 24 hours.

Storage

Dated expiration. Store in a dry, well-ventilated environment at a temperature below 25°C(77°F).

38-12010 1kg \$25.90

Caséinate de Potassium

To help prevent oxidation and for the removal of oxidized wine components

White, Rosé, Fruit, Cider

Caséinate de Potassium is used in both juice and wine for the treatment of oxidized phenolics and bitter compounds.

Recommended Dosage *Bench trials recommended*

Juice

500–1000 ppm 50–100 g/hL 4.2–8.4 lb/1000 gal

Wine

200–1000 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 fining connection. Mix vigorously after adding the Caséinate de Potassium solution. Minimum contact time is 2 days, maximum is 15 days. Once hydrated, Caséinate de Potassium will not keep for more than 48 hours.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12015 1kg \$35.80

Clear up BIO

Is a highly-purified yeast cell wall product whose special washing and production process ensures a high absorption capacity of various substances which can have inhibitory or negative sensory impact on the wine. It is also useful in making sensory corrections in the presence of volatile phenols, notably brettanomyces. The third application is Clear Up's ability to increase the inner surface in heavily pre-clarified musts, which results in better yeast dynamics and higher final fermentation gravity in sugar-rich juices.

Recommended Dosage

Bench Trials Recommended

Application Dosage

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.

37-13455 1kg \$61.50

Colle Perle

Gelatin for treatment of astringent wines

Red, White, Fruit

Colle Perle is a hydrolyzed gelatin solution at a concentration of 150 g/L.

Recommended Dosage Bench trials recommended

Juice, Wine

800–1500 ppm 80–150 mL/hL 3.0–5.7 L/1000 gal

Usage

Juice

Add at the beginning of cold settling and mix evenly and completely throughout the juice. When used in juice Colle Perle should be used in conjunction with bentonite or Gelocolle to improve settling. Racking should be done after 1 week.

Wine in Barrels

Stir vigorously into the wine to ensure thorough distribution. Racking should be done after 1 week. Filtration is possible 48–72 hours after fining with Colle Perle.

Wine in Tanks

Add gradually to the wine during a pump-over to ensure even distribution. Alternatively add through a racking valve while using a tank agitator for even distribution. Racking should be done after 1 week.

Filtration is possible 48–72 hours after fining with Colle Perle.

Note: Maximum clarification is achieved after 1 week. This is when filtration is most productive. For wines intended for aging, a second racking 1 week after the first racking will produce the best results. It is not recommended to leave gelatins in wine for more than 30 days.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12025 1L \$8.90

Cristalline Plus

Isinglass clarification treatment

White, Rosé, Fruit

Cristalline Plus is a blend of isinglass and citric acid stabilized with potassium metabisulfite. It has a high positive charge and can improve clarity and filterability even in very difficult wines (such as wines made with botrytised grapes). Cristalline Plus is not sensitive to cold temperatures and may be slow to complete settling.

Recommended Dosage Bench trials recommended

15–30 ppm 1.5–3 g/hL 0.12–0.25 lb/1000 gal

Usage

Dissolve Cristalline Plus in 150–200 times its weight in water, 15–20°C(59–68°F). Allow to swell for 3 hours. Add additional water if solution is too viscous. Add homogenized solution to wine, taking care to mix well. Rack once lees are well settled.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12030 100g \$18.50

Erbigel BIO

Organic Gelatin

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 grape 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 trials highly recommended

Fining Flotation

5–10 g/hL 10–15 g/hL

Usage

Dissolve in water at rate of 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 are added and the organic gelatin is dissolved by stirring intensively. The organic gelatin dissolved at a temperature of 40–50°C (104–122°F) must be used up quickly.

Storage

Protect from foreign odours and humidity. Reseal opened packaging immediately and tightly.

31-15053 1kg \$36.60

31-15053B 25kg \$887.50

110 Erbigel Flot

Gelatin for flotation

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. 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 until the gelatin is dissolved. Use up the dissolved gelatin as quickly as possible.

Storage

Protect from humidity and foreign odours. Reseal tightly after opening.

31-15051	1kg	\$13.50
31-15051	25kg	\$318.75

Freshprotect

PVPP blend for treatment of oxygen sensitive juice and wine
White, Rosé, Fruit

Freshprotect is a proprietary IOC blend of polyvinylpolypyrrolidone (PVPP), bentonite and arabic gum.

Recommended Dosage *Bench trials recommended*

Juice

200–1000 ppm 20–100 g/hL 1.7–8.3 lb/1000 gal

Usage

Mix Freshprotect into 10 times its weight in cool water (do not mix in juice or wine). Allow to soak for 1 hour. Then add the mixture into the tank slowly; making sure the solution is thoroughly blended into the juice. PVPP is intended as a processing aid. Wines made with it must be racked or filtered afterwards.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12110	1kg	\$39.90
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Gelocolle

Silica 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 overfining. It is also useful for hard-to-filter wines where it helps chelate proteins and other compounds.

Recommended Dosage *Bench trials recommended*

200–1000 ppm 20–100 mL/hL 0.75–3.8 L/1000 gal

Note: Use 1.0 mL of Gelocolle to 1.0 mL of gelatin.

Usage

Gelocolle should be added directly into the wine 1 hour after fining with organic fining agents. Mix thoroughly.

Note: Gelocolle solidifies at temperatures of less than 0°C(32°F). This process is irreversible.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12040	1L	\$13.80
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Hot Mix Sparkolloid

For superior clarification of wine
White, Red, Rosé, Fruit, Cider, Mead

Hot Mix Sparkolloid® 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 Sparkolloid can be helpful in removing haze left by other fining agents and enhances filterability.

Recommended Dosage *Bench trials recommended*

Wine

125–500 ppm 12–48 g/hL 1.0–4.0 lb/1000 gal

Usage

Heat water to boiling [1–2 gallons of water per pound Hot Mix Sparkolloid (8–15 L/kg)]. Slowly stir in the Hot Mix Sparkolloid. Maintain temperature above 82°C(180°F) while agitating the mixture constantly until all of the translucent globules of clarifier have been dissolved and the mixture is smooth and creamy (approximately 20–30 minutes). While still hot, slowly add the mixture to the wine. This is easily accomplished by adding to a tank being mixed by a tank agitator or by introducing the hot mixture into the line during a tank circulation. Let the wine settle 1 week or more, depending somewhat on the volume of wine involved. Then filter, preferably from the top of the tank.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

30-15009	25lb	\$205.00
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Inocolle

Gelatin to enhance the bouquet of finished wines or for the treatment of moldy must
White, Rosé, Red, Fruit, Cider

Inocolle is a partially hydrolyzed gelatin solution at a concentration of 100 g/L. It softens wine while improving aromas and flavours. It can help clarify wine by removing both colloidal and unstable materials.

Recommended Dosage Bench trials recommended

White Wines, Rosé, Ciders or Light Coloured Fruit Wines

300–600 ppm 30–60 mL/hL 1.1–2.2 L/1000 gal

Red Wines

500–1000 ppm 50–100 mL/hL 1.9–3.8 L/1000 gal

When used with Gelocolle

250–500 ppm 25–50 mL/hL 0.95–1.9 L/1000 gal

Usage

Juice

Introduce into juice gradually while mixing vigorously to ensure even treatment. Racking should be done after 1 week. Do not adjust juice acidity with either tartaric or citric acid prior to treatment with Inocolle.

Whites/Rosés

For enhanced settling and gentler fining introduce into wine 1 hour before adding Gelocolle. Mix vigorously to ensure even treatment. Racking should be done after 1 week. Filtration is possible 48–72 hours after treating with Inocolle.

Reds

Introduce gradually while mixing vigorously to ensure even treatment. Racking should be done after 1 week. Filtration is possible 48–72 hours after treating with Inocolle.

Note: Maximum clarification is achieved after 1 week. This is when filtration is most productive. For wines intended for aging, a second racking 1 week after the first racking will produce the best results. It is not recommended to leave gelatins in wine for more than 30 days.

38-12075 1L \$9.10

Inocolle Extra N1

Gelatin for gentle fining of structured red wines
Red

Inocolle Extra N1 is a powdered proprietary formulation of high molecular weight gelatin protein. It can rapidly reduce turbidity, removing colloids which otherwise might precipitate later in the wine.

Recommended Dosage Bench trials recommended

Wine

50–100 ppm 5–10 g/hL 0.4–0.84 lb/1000 gal

Usage

Mix Inocolle Extra N1 in 5 times its weight in warm water (35–40°C/95–104°F). Mix thoroughly. Introduce gradually into the wine making sure the temperature of the solution is maintained throughout the transfer. Mix vigorously to ensure even treatment. Racking should be done after 1 week.

Note: Maximum clarification is achieved after 1 week. This is when filtration is most productive. For wines to be aged, a second racking 1 week after the first racking will produce the best results. It is not recommended to leave gelatins in wine for more than 30 days.

Storage

Dated expiration. Store in a dry, odor-free environment below 25°C(77°F).

38-12080P 1kg \$26.50

IsingClair-Hausenpaste

Isinglass gel for mild clarification

IsingClair-Hausenpaste executes a gentle fining on wine. IsingClair-Hausenpaste is extremely efficient with regard to all beverages with a high content of colloidal sediment particles. For instance wines from heated mash/crushed grapes, wines from pasteurized musts/grape juice and wines especially rich in extract (e.g. Auslese, Beerenauslese). IsingClair-Hausenpaste leads to a relatively quick flocculation of the sediment particles after it has been evenly distributed in the beverage. Due to the compactness of the precipitated sediment it can be easily removed by filtration or separation.

Usage

Dissolve in an 10x quantity of wine. Add to the vessel and store to ensure even distribution. As a rule, fining is complete after 48 hours. Low doses are sufficient and should always be applied in combination with acidic silica sol. The following ratios should be observed.

Klar-Sol Super : IsingClair-Hausenpaste 1 : 4

Bench trials are recommended to determine optimal dose rates.
25–75 mL/hL of wine for normal cloudiness 100 mL/hL of wine for colloidal haze.

It is absolutely important to ensure IsingClair-Hausenpaste is always the final fining agent used when combined with other fining agents.

Storage

Dry and cool place, ideally between 8–12°C (46–54°F). Protect from foreign odours and reseal opened packaging tightly.

31-15150A 1kg \$18.20

31-15150 10kg \$143.00

Klar Sol 30

Alkaline Silica Gel

Klar-Sol 30 is a transparent alkaline silica sol for clarification/fining. The transparency of Klar-Sol 30 is due to an especially small particle size which is responsible for the good clarifying effect on wine and fruit juice. When applied in young wine, the wine should already be separated from the yeast and racked off, as the stirred up yeast inhibits an otherwise thorough settling. Klar-Sol 30 shows excellent clarifying properties and leads to a low volume of lees. Fining flocculation is effected with the negatively charged silica sol particles of Klar-Sol.

Recommended Dosage Bench trials recommended

20–50 mL/hL

Usage

Shake well before use.

Storage

Store absolutely frost protected.

31-15061 10kg \$95.00

Kupzit

Copper citrate preparation for the treatment of sulphide off odours
An innovative copper citrate preparation developed for the elimination of sulphide off-flavours, including hydrogen sulphide odours in wine and fruit wine. Kupzit® contains 2 % copper citrate and reacts quickly and specifically with sulphurous, disagreeably smelling compounds such as hydrogen sulphide and mercaptans. These compounds are precipitated out, and when dosed accurately, insignificantly increase the copper content of the beverage.

Recommended Dosage *Bench trials and pretests are highly recommended*

Generally dose rates are 5–20 g/100 L; however in some cases up to 50g/hL can be applied.

Usage

Prepare a slurry of Kupzit® and wine in a ratio of 1:10. Then mix into wine and stir thoroughly for even distribution. The reaction is completed within a few minutes after addition. Separation of the lees/sediments is conducted by filtration within 1–2 days.

When applied properly, the copper content is not, or only slightly increased, which means in most cases after the Kupzit® treatment blue fining is not required. Application can be conducted either separately or combined with clarification/fining. In case of a combined fining Kupzit® is added as first component.

Storage

Store in a dry and light-protected environment. Protect from foreign odours. Reseal opened packaging tightly.

31-15135 1kg \$31.60

Polycacel

PVPP and casein for treatment of oxidized must or wine or for preventative treatment of browning and pinking
White, Rosé, Fruit

Polycacel is an IOC blend of polyvinylpolypyrrolidone (PVPP), micro-pulverized cellulose and casein for use on problem phenols associated with browning and pinking.

Recommended Dosage *Bench trials recommended*

For Oxidized Juice

300–700 ppm 30–70 g/hL 2.5–5.8 lb/1000 gal

For Protection of Wine

150–300 ppm 15–30 g/hL 1.25–2.5 lb/1000 gal

Usage

Several hours prior to use mix Polycacel into 20 times its weight in cool water (do not mix in juice or wine). Mix well and allow to sit for 2 hours. Add the mixture into the tank slowly; making sure the addition is thoroughly blended into the juice or wine being treated.

Storage

Dated expiration. Store in a dry, odour-free environment below 25°C(77°F).

38-12100 1kg \$49.40

Polycel

PVPP for treatment of pinking or browning
White, Rosé

Polycel is formulated to help prevent and/or treat compounds which cause pinking and browning.

Recommended Dosage *Bench trials recommended*

For Oxidized Juice

400–800 ppm 40–80 g/hL 3.3–6.7 lb/1000 gal

For Preventative Treatment of Wine

150–300 ppm 15–30 g/hL 1.25–2.5 lb/1000 gal

For Curative Treatment of Wine

300–500 ppm 30–50 g/hL 2.5–4.2 lb/1000 gal

Usage

Mix Polycel into 20 times its weight in cool water (do not use wine or juice). Mix well and allow to sit for 1 hour. Add the mixture to the tank slowly, making sure the addition is thoroughly blended into the juice or wine being treated. Depending upon the wine, Polycel may take up to a week to settle out. PVPP is intended as a processing aid. Wines made with it must be racked or filtered afterwards.

Storage

Dated expiration. Store in a dry, odour-free environment below 25°C(77°F).

38-12095 1kg \$76.50

Pure-Lees Longevity Plus

Inactivated yeast blend for a very gentle fining and oxidation protection
White, Rosé, Cider

Pure-Lees Longevity Plus™ is a proprietary blend of inactivated yeast for use immediately after alcoholic fermentation on wines susceptible to oxidation. Pure-Lees Longevity Plus is the result of work done in collaboration with INRA with different inactivated yeast fractions to evaluate the impact on oxidation. The result is a product with high dissolved oxygen uptake capacity. Oxidation can be responsible for the loss of fruit character. Use of Pure-Lees Longevity Plus helps protect color and aromas. It was more efficient than SO₂ at preserving color and thiols during 5-month aging trials.

Recommended Dosage

200–400 ppm 20–40 g/hL 1.7–3.4 lb/1000 gal

Usage

Suspend Pure-Lees Longevity Plus in 10 times its weight in water, gently mix then add to wine. Mix thoroughly. Contact time depends on aging time (1–9 months).

Storage

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

35-15102 1kg \$47.60

Reduless

Reduces sulfur off-aromas
Red, White, Rosé, Cider

Reducless 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.

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.

35-15083 2.5kg \$200.50

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.

31-15105 1kg \$55.00

FAQ

FREQUENTLY ASKED QUESTIONS

Do I need to run bench trials before I use a fining agent?

Yes, bench trials are essential to determine proper dosing and efficiency. Each fining product works under a different mechanism and will react to each wine differently. Bench trials and cellar additions should be prepared and used the same way (same temperature, same mixing style, etc.). If bench trials are not performed, the winemaker may risk under or over fining and could harm the wine. Take the time to find the right dose; your wine will thank you.

What are the main factors that influence how well fining works?

Fining can be a delicate operation. Product preparation and addition, product concentration, temperature, product age, pH, metal content and previous fining treatments are all factors that can influence the effectiveness of fining. It is important to follow the manufacturer's instructions and maintain accuracy when using fining products.

Which fining agents react with lysozyme?

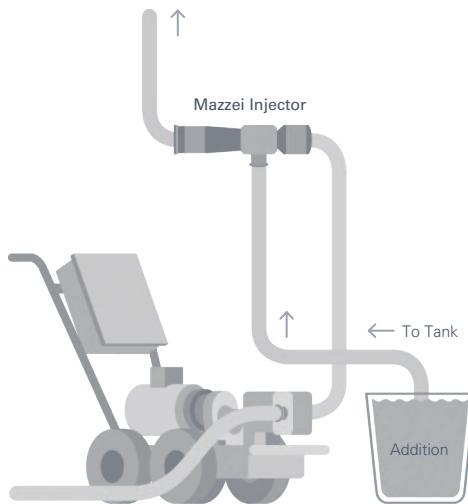
Carbon, silica sol, oak chips and tannin will bind and precipitate lysozyme with a resulting decrease in activity. Bentonite will bind with and inactivate lysozyme.

Which fining agents do not 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.

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.



Mazzei Injector

The Mazzei injector is a simple venturi device which makes it easy to aerate fermenting musts and can also be used for liquid injection.

Usage

To energize a red fermentation with a healthy dose of oxygen, connect the Mazzei injector on the discharge side of your pump which is set to pump-over a red fermenter. The injector will draw large amounts of air and mix it well during the process.

To add liquids to a process, connect the Mazzei injector on the discharge side of your pump which is set to recirculate a tank (as you would for a pump-over). Then drop a short suction hose connected to the suction port of the Mazzei into the vessel containing your mixed addition (fining agent, carbon, tannin, anything liquid).

 Please visit www.scottlабsltd.com for a video of the Mazzei injector in action.



Inoxpa RVN Helicoidal Pump

The Inoxpa RVN Helicoidal Pump features a unique helicoidal impeller design which provides exceptionally gentle must transfers. Due to its unique shape and flow, the Inoxpa RVN Helicoidal Pump is best-in-class for pump-over applications by providing gentle handling of solid particles without any damage, and without clogging.

RVN pumps are widely used in wineries for the pump-over process where the high capacity and minimum destruction of the solid parts (seeds, skins, etc.) is required. The design of the pump contributes to a better extraction of tannins, and reduction of lees formation, therefore achieving higher quality wines. The RVN is the standard for automated tank pump-overs. It works very well in conjunction with the Mazzei Injector.

 Please visit www.scottlабsltd.com for more information and pricing.



**David Akiyoshi,
Winemaker
LangeTwins Wine Estates
Acampo, CA**

“The unique helicoidal pumphead on the Inoxpa pump is a true mainstay at LangeTwins. The gentle, low shear screw impeller is ideal for red pump-overs and operates without any worry of clogging with skins, seeds or excess solids generation. During the off-season, we use the Inoxpa for tank mixing and wine additions. Our repair rate for replacing pump seals is around 4-6% per annum and most importantly, the repair can easily be done by our cellar crew. Versatile as well as reliable, we will continue to grow our processing pump needs with Inoxpa.”

HYBRIDS AND NON-VINIFERA

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 White Yeast Strains

- Yeast Strain Type
- Highly Recommended
- △ Recommended

	58W3	71B	Alchemy I	CVW5	CY3079	ICV Opale 2.0	Elixir	Exotics Mosaic	Lalvin C	QA23	Steinberger	SVG	VIN 13	VIN 2000
Page														
<i>S. cerevisiae cerevisiae</i>	○	○		○	○	○				○	○	○		
<i>S. cerevisiae bayanus</i>			○						○	○				
A hybrid yeast strain							○	○					○	○
A blend of yeast strains		○												
Aromella	●	△				●				●			●	
Blanc du Bois				●	●	●	●	●		●	●	●	●	●
Chardonnay			●	●	●	●				●	●	●	●	●
Frontenac Blanc		●					●			●	●	●	●	●
Frontenac Gris	△	●		●	●	●		●	●	●	●			
Itasca		●		●						●	●	●	●	●
La Crescent	●	●	●				●	●	●	●	●	●	●	●
Muscadine	△			●					●	●				●
Rosé		●		●		●	●	●			●	●	●	●
Seyval Blanc			●				●			●	●	●	●	●
Traminette	●	●					●	●		●	●	●	●	●
Vidal Blanc			●	●		●	●							●
Vignoles	●	●			●	●				●	●	●	●	●
Enhances grapefruit and/or tropical aromas, aromatic thiol converter			●				●	●		●	●	●	●	
Vigorous; temperature control is advised			●										●	
Barrel fermentation	●			●	●				●					●
Sur lie aging					●									
Accentuates citrus aromas														
Enhances mouthfeel					●	●		●						
Reduces malic content			●			●		●	●		●	●	●	
Brings out floral notes	●										●	●	●	●
Enhances aromas in high-terpene varieties	●						●			●	●	●		
High ester producer	●		●	●									●	●
Enhances varietal character								●	●				●	
MLF Compatibility	Average	Very Good	Good	Average	Good	Poor	Average	Very Good	Very Good	Very Good	Average	Good	Good	Good

Hybrid Red Yeast Strains

- Yeast Strain Type
- Highly Recommended
- Recommended

Page	3001	71B	Alchemy III	Alchemy IV	BM 4X4	BRL 97	CLOS	CSM	ICV D254	Exotics Mosaic	Lalvin C	NT 202	RBS 133	RC212	
	○	○				○	○	○	○		○	○		○	○
<i>S. cerevisiae cerevisiae</i>	○	○													
<i>S. cerevisiae bayanus</i>															
A hybrid yeast strain										○		○			
A blend of yeast strains		○	○	○											
Black Spanish					●		●					●			
Chambourcin	●			●	●	●	●	●	●		●	●	●	●	●
Crimson Pearl			○	●					●				●	●	●
Frontenac		●		●	●				●		●	●	●	●	●
Maréchal 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	Average	Very Good	Good	Good	Below Average	Average	Very Good	Average	Very Good	Very Good	Very Good	Very Good	Good	Good	Good

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/hL 152 g/1000gal

10–12°C(50–54°F) 2 g/hL 76 g/1000gal

Above 12°C(54°F) 1 g/hL 38 g/1000gal

Settling time less than 6 hours

Above 10°C(50°F) 3 g/hL 114 g/1000gal

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).

40-16325 100g \$34.00

Lalvin C

S. cerevisiae • bayanus

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 [may go down to 12–14°C(54–63°F)]
Lag phase	Very short
Nitrogen needs	Low
SO ₂ production	Low
Fermentation speed	Moderate
Vigor	High
Alcohol tolerance	17% (v/v)
Volatile acidity	Very low
Competitive factor	Sensitive
Sensory contribution	Neutral

33-15119 500g \$49.25

Scottzyme KS + KS Plus

Enzyme blends for enhanced settling and filtration.

See descriptions and pricing on page 69.

FRUIT WINES + MEAD

Making wine from sources other than grapes can be quite different and can pose many challenges. Numerous tools used in grape fermentation can also be utilized in fruit or mead fermentation.

These tools can help the winemaker create a better product and ultimately enhance product longevity. The following information has been compiled to highlight our recommendations.

Basics

YEAST

Using a selected yeast strain can maximize the positive attributes that come with a "known" strain (e.g. mouthfeel, complexity, flavour profile, fermentation kinetics), while avoiding off-flavours, bad aromas and poor fermentation characteristics that may come with a "wild", unknown strain. The key to strain choice is matching the right strain to the chosen wine style and fermentation conditions. *See pages 8–13 for specific strain attributes.* Proper rehydration of the selected yeast strain is essential. *See page 7 for details.*

NUTRIENTS

Fruit wines and mead are notorious for having low nutrient content. Proper nutrition for both yeast and malolactic bacteria is essential to ensure good flavour and aroma profiles. It can also help to avoid stuck or prolonged fermentations and H₂S and VA problems.

MALOLACTIC BACTERIA

Malolactic fermentation can help soften wines made from fruit with high malic acid content. Using a "known" strain can again maximize chosen attributes. If the winemaker's goal is to reduce acid without adding flavour/aroma characteristics, then a neutral strain should be used. If flavour enhancement and complexity are desired, then the choice might be MBR 31. Many fruit wines have unbalanced acid profiles and can lean toward a low pH. Be sure to choose a strain that falls within the parameters of your wine.

ENZYMES

All fresh fruits contain pectin in varying amounts. Pectin can hold small particles in suspension and create a cloudy wine if the excess pectin is not removed. Pectolytic enzymes (Scottzyme Pec5L) can break up the large pectin molecules into smaller, less troublesome ones. Some enological enzymes can also help improve fruit yield, filterability, pressability and settling in wine. Try Scottzyme Pec5L alone or in conjunction with Scottzyme HC on berries, stone and pome fruits to enhance pressability and to improve clarity and settling. Scottzyme HC provides hemicellulase activity to help increase yield, reduce solids and improve filtration. If you are experiencing a nightmare filtration or have compromised fruit, consider using Scottzyme KS or Scottzyme KS Plus. Use Scottzyme KS or Scottzyme KS Plus only after pressing. Try Scottzyme BG or Lallzyme Beta to release bound terpenes. Use them only after the residual sugar level is below 0.5%. Bench trials are essential to determine the correct dosage. Two weeks after enzyme addition, it is acceptable to ameliorate the wine to the desired sugar level.

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 to help stabilize wine colour. 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 colour. Addition of FT Rouge Berry will allow for the development of enhanced red berry characters. 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

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 astringency or to enhance wine bouquet, try the gelatins Colle Perle or Inocolle. 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 (isinglass) to brighten and clarify both red and white wine. Caséinate de Potassium (casein) can treat oxidation and help prevent further browning. Reduless 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. Inodose SO₂ Granules and Tablets are easy to use and are already measured into specific doses for your convenience. *See page 86 for dosing information.*

YEAST DERIVATIVE NUTRIENTS

Opti-WHITE, OptiMUM White and Booster Blanc are natural yeast derivatives. Use them at the onset of fermentation to increase mouthfeel, help avoid browning and protect natural fresh aromas during aging. Add near the end of fermentation to simulate extended lees aging. Opti-RED, Opti-MUM Red and Booster Rouge are natural yeast derivatives high in polyphenol reactive polysaccharides. Add at the onset of fermentation to enhance mouthfeel and to help stabilize colour. Noblesse can be used to improve the perception of fruit and roundness and softness in the finish. It may be added at the onset of fermentation or near the end of fermentation. *See pages 45–47 for more information.*

Please contact us for a copy of our Cider Handbook for a complete offering of products and protocols useful in cidermaking.

Choosing the Right Product for Fruit Wines and Mead

◆ Highly Recommended
◊ Recommended

Yeast	Fruit	Mead	Page
71B	◆		14
ICV D47	◆		17
DV10	◆	◊	18
EC1118	◆	◊	18
K1 (V1116)	◆	◊	20
Lalvin C	◆		20
M2	◆		20
OKAY	◆		32
QA23	◆	◊	23
R2	◆		23
Sensy	◆		33
VIN 13	◆	◊	25
W15	◆	◊	27

Nutrients

Nutrients	Fruit	Mead	Page
Fermaid K	◆	◊	46
Fermaid O	◆	◊	47
Go-Ferm	◆	◊	44
Go-Ferm Protect Evolution	◆	◊	44

Malolactic Bacteria

Malolactic Bacteria	Fruit	Mead	Page
Alpha	◆		81
IB (Inobacter)	◆		84
MBR 31	◆		81
PN4	◆		82

Enzymes

Enzymes	Fruit	Mead	Page
Beta	◆		71
BG	◆		73
HC	◆		74
KS	◆		74
KS Plus	◆		75
Pec5L	◆		75

Tannins	Fruit	Mead	Page
FT Blanc	◆		57
FT Blanc Citrus	◆		57
FT Blanc Soft	◆	◊	57
FT Rouge	◆		58
FT Rouge Berry	◆		58
FT Rouge Soft	◆		58
Radiance	◆		62

Fining Agents/Stability

Bentolact S	◆		108
Caséinate de potassium	◆		108
Colle Perle	◆		109
Cristalline Plus	◆		109
Freshprotect	◆	◊	110
Flashgum R Liquide	◆	◊	98
Gelocolle	◆		110
Hot Mix Sparkolloid NF	◆	◊	110
Inocolle	◆		111
Inogum 300	◆	◊	98
Polycacel	◆		112
Reducless	◆	◊	113

Yeast Derivative Nutrients

Booster Blanc	◆	◊	50
Booster Rouge	◆		50
ICV Noblesse	◆	◊	50
OptiMUM White	◆	◊	51
Opti-MUM Red	◆		51
Opti-Red	◆		51
Opti-WHITE	◆	◊	51

LAB + TEST KITS

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



BentoTEST



Erbslöh EasyKrista Test

OTHER OFFERINGS

VACUUM PRESSURE GAUGES

ML TEST KITS

PH METER

REFRACTOMETER

EBULLIOMETER

CARBODOSEUR

RD80

SO₂ APPARATUS

HYDROMETERS

Please contact Ken Yee at kyee@scottlabsltd.com for more information.

CRUSH EQUIPMENT

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.



Willmes Sigma 12



Willmes Merlin



Armbruster Graoesort Optical Sorter



Armbruster Rotovib

FILTRATION EQUIPMENT

FILTRATION EQUIPMENT

Whether you are a small or large producer, Scott Laboratories has a full range of filtration equipment to suit your needs. Manufactured to the highest level of quality, we are proud to offer the following filtration equipment.

Sheet Filter

Standard and combination/recessed models available for either low or high solids. Available in 40 x 40 cm and 60 x 60 cm with a capability to receive a varying number of plates. Stainless steel, Noryl plastic, or Rislan plates are available.

Lenticular Housings

Available in 12" and 16" diameter and are modular to allow for up to four high.

Cartridge Housings

Multiple round, cartridge housings are available in 1, 3, 7, 12, and 15.

Pressure Leaf

Considered the work horses of the wine and brewing industry, they are available in vertical or horizontal format. From 2 meters of surface area up 100, no other filtration system can offer as much flow and versatility for the price.

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.

We are the proud exclusive distributor to of Pall crossflow and high solids recovery units to the Canadian wine industry.

PLUMA Selective Depth Media Filtration

New from Velo Acciai is the PLUMA which offers the power of crossflow automation but 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 gentler and requires less power.

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 results that were previously difficult to achieve. Available in semi and fully automatic versions.

CLOSURES

NATURAL CORKS

Scott Labs started to be involved in the cork market more than 40 years ago and is now the senior North American vendor of cork closures.

Scott Labs sources cork directly from independent, medium sized producers in Portugal. Scott's buying arm in Portugal is very selective, and requires stringent quality protocols on the part of the producers. Every lot from every supplier is kept separate in Portugal. Discrete lots remain discrete. Incoming lots are never re-washed or blended. Traceability is maximized. Quality controls (including SPME testing for TCA) are done on every lot. A second quality testing (including SPME) is done in North America. No corks are accepted until they pass testing here.

Scott Labs' independence works entirely in favor of our customers by allowing us to optimize Quality and Value without the pressure of offloading sub-par product. Try ScottCork with your next bottling and experience the Quality of Independence firsthand.

Sterisun Wash Corks

These natural corks have received a light hydrogen peroxide and water wash followed by neutralizing rinses. Corks are then dried to a moisture level between 5 and 8%.



Lengths: 54 mm (2 1/4"), 49 mm (2"),
45 mm (1 3/4"), 38 mm (1 1/2")

Diameter: 24 mm (± 0.5)

Qualities: USS, US+, US, UFS, UF, UFB, UFB1, UFBB, UFB4

Minimum Order Quantity: 1000

Branding options available

Natural Wash Corks



Lengths: 54 mm (2 1/4"), 49 mm (2"),
45 mm (1 3/4"), 38 mm (1 1/2")

Diameter: 24 mm (± 0.5)

Qualities: USS, US+, US, UFS, UF, UFB, UFB1, UFBB, UFB4

Minimum Order Quantity: 1000

Branding options available

TECHNICAL CORKS

One + One Corks

Combining natural cork ends with an agglomerated middle makes this cork an economic alternative.



Lengths: 45 mm (1 3/4"), 38 mm (1 1/2")

Diameter: 23.5 mm

Qualities: US (A), UF (B), UFB1 (C)

Minimum Order Quantity: 1000

Scott Micro-Agglo Corks

The Scott Micro-Agglo stopper is the latest in new-generation technical stoppers, developed from natural cork using cutting-edge technology. Scott Micro-Agglo corks are available in two separate grades: Scott Micro and Scott Micro Plus. Ideal for early-to-drink wines, the structural stability of this cork provides value and security.



Scott Micro
Plus Scott Micro

Standard Dimensions: 44 mm (± 1) x 24 mm (± 0.4)

Ovalization: 0.3 mm

Moisture: 4%–9%

Specific Weight: 240–320 kg/m³

Extraction Force: 20–40 daN

Peroxide Content: 0.1 mg/stopper

Dust Content: 3 mg/stopper

Oxygen Transfer Rate: (12 months): 1.2 mg/stopper

Oxygen Transfer Rate: (24 months): 1.3 mg/stopper

TCA: \leq 1 ppt (Scott Micro) / \leq 0.5 ppt (Scott Micro Plus)

Minimum Order Quantity: 1000

Branding options available

SPARKLING WINE CLOSURES

Champagne Corks

Our Champagne corks are produced by Relvas Cortiças, a family company dedicated to quality. From the cork forest to the bottle, Relvas Cortiças controls each factor in champagne cork manufacture.

Relvas Cortiças purchases and stores its own raw material in the Alentejo region of Portugal. Raw cork processing is done at Relvas' state of the art facility in the region. Moistures are tightly controlled at this stage to minimize any potential for problems later.

Discs are punched between 24 and 48 hours after boiling the raw materials. This dramatically reduces the potential for mold and consequential TCA. Using a battery of Relvas designed machines, over 150 million pieces are produced annually. All stoppers are individually molded, while quality control occurs at each step of the process. Customers include the most prestigious houses on five continents.



Length: 47 mm

Diameter: 28 mm, 30 mm

Qualities: 2S, 2F

Minimum Order Quantity: 1000

Branding options available for a minimal order of 10 000 pieces

Wirehoods

Standard wirehoods with free belt and a traditional twist finish. These wirehoods are only for use with natural Champagne corks. The wire is galvanized to protect against corrosion.



Availabilities: 38CL, gold disc & silver wire, finished disc size: 26.5 mm; 38CL, black disc & black wire, finished disc size: 26.5 mm

Minimum Order Quantity: 2700 wirehoods

Branding options available

Stelvin® Screwcaps



Scott Labs has very recently partnered with Amcor to offer you their global best-in-class Stelvin® brand of screwcaps. Stelvin®, the original screwcap developed more than 40 years ago, is the market reference.

The Stelvin® screwcap uses specific liners that respect the ageing process and deliver uncompromised flavours and aromas. It is TCA-free and guarantees no leakage. A wide range of colors and customization options are available.



Characteristics: 30x60 mm

Diameter: 29.7 mm ± 0.2

Height: 59.9 mm + 0.2, -0.3

Bottle Specifications

BVS finish European Standard BVP - GME 30.13

BVS finish US Standard - GPI - 1680-03

Liners

SaranTin: low permeability

Saranex: high permeability

Pressure: can withstand up to 6 bars internal pressure

Minimum Order Quantity

Stock screwcaps: 1 box (1350 closures)

Customized screwcaps: 3 pallets (101 250 closures)

T-Top

ScottCork Standard Black Bartop



Size: 19.5 mm natural cork shaft with plastic top

Minimal Order Quantity: 1000

GENERAL TOOLS

Calculations and Conversions

Volume Conversions

mL = milliliter
fl oz = fluid ounce
gal = gallon
L = liter
hL = hectoliter
1 mL = 0.035 fl oz
1 fl oz = 30 mL
1 L = 1000 mL
1 L = 0.2642 gal
1 gal = 3785 mL
1 gal = 3.785 L
1 hL = 100 L
1 hL = 26.4 gal

Mass Conversions

mg = milligram
g = gram
kg = kilogram
lb = pound
1 kg = 1000 g
1 kg = 2.205 lb
1 g = 1000 mg
1 lb = 453.6 g
1 lb = 0.4536 kg
1 metric ton = 1000 kg
1 metric ton = 2205 lb
1 US ton = 2000 lb
1 US ton = 907 kg

Internet Conversion Tools

www.onlineconversion.com
www.wineadds.com
www.winebusiness.com/tools

Temperature Conversions

F° = Degree Fahrenheit C° to F° = (C° x 9/5) + 32	F°	0	32	40	50	60	70	80	90	100	110	120
C° = Degree Celsius F° to C° = (F° - 32) x (5/9)	C°	-18	0	4	10	16	21	27	32	38	44	49

Other Conversions

1 lb/1000 gal = 454 g/1000 gal = 0.454 kg/1000 gal = 120 mg/L = 27.2 g/barrel* = 0.120 g/L
1 kg/hL = 1000 g/hL = 10,000 mg/L = 2.271 kg/barrel* = 10 g/L
1 ppm = 1 mg/L *barrel = 60 gal = 227.1 L
1°Brix = 1% sugar (wt/vol)
1 g/100 mL = 1%
1 g/L = 0.1%

Bench Trial Calculator

We recommend performing bench trials with many of our products including lysozyme, tannins, enzymes and fining agents. This calculator will help determine the amount of any given stock solution to achieve a range of concentrations in various-sized sample bottles.

For Powdered Products (Lysovin, Tannins, Fining Agents, etc.)

$$\text{mLs of stock solution to add per sample bottle} = \frac{(\text{sample size in mLs}) \times (\text{desired concentration in ppm}) \times (0.0001)}{\% \text{ concentration (w/v) of stock solution}}$$

For Liquid Products (Scottzymes, Gelatins, etc.)

$$\text{mLs of stock solution to add per sample bottle} = \frac{(\text{sample size in mLs}) \times (\text{desired concentration in mLs/1000 gal}) \times (0.000026)}{\% \text{ concentration (w/v) of stock solution}}$$

For example: If you have a 10% stock solution of Color Pro and wish to create a 150 mL/1000 gal dose in a 375 mL sample bottle you would calculate:

$$\text{mLs of stock solution to add per sample bottle} = \frac{(375) \times (150) \times (0.000026)}{10} = 0.146 \text{ mL}$$

Therefore, you would need to add 0.146 mL of a 10% Color Pro stock solution to a 375 mL bottle to represent a concentration of 150 mL/1000 gal.

Product Storage and Stability Guidelines

Product	Recommended Storage (once opened)	Optimal Storage Temperature
Active Dried Yeast	Use immediately	20°C(68°F)
Bactiless	Dry, odour-free environment	Below 25°C(77°F)
Bentolact S	Dry: Tightly sealed; dry Rehydrated: should not be stored more than 24 hours.	25°C(77°F)
Biodiva	Use immediately	4°C(39°F)
Caséinate de potassium	Dry: Tightly sealed; dry Rehydrated: should not be stored more than 48 hours.	25°C(77°F)
Claristar	Use immediately	10°C(50°F)
Cleaning Products (AiRD)	Dry, odour-free environment away from sunlight.	10–20°C(50–68°F)
Colle Perle	Tightly sealed	25°C(77°F)
Cristalline Plus	Tightly sealed; dry	25°C(77°F)
Exotics Mosaic	Use immediately	5–15°C(41–59°F)
Freshprotect	Tightly sealed; dry	25°C(77°F)
Gaia	Use immediately	4°C(39°F)
Gelocolle	Use immediately	10–20°C(50–68°F)
Gum Arabics	Tightly sealed	25°C(77°F)
Inocolle	Tightly sealed	25°C(77°F)
Inocolle Extra N1	Tightly sealed; dry	25°C(77°F)
Inodose Granules & Tablets	Use immediately	25°C(77°F)
Ionyx _{WF}	Use immediately	4°C(39°F)
Lallzymes	Dry: General Storage Rehydrated: Use within a few hours	25°C(77°F)
Lyo-Easy	Use immediately	18°C(65°F)
Lysovin	Dry: General Storage Once opened, use immediately.	Dry: 5–10 years @ 18°C(65°F) Rehydrated: use immediately.
Malolactic Bacteria	Use immediately	Short term: @ 4°C(39°F) Long term: @ -18°C(0°F)
Mannoproteins	Tightly sealed	25°C(77°F)
No Brett Inside	Dry, odour-free environment	Below 25°C(77°F)
Polycacel	Tightly sealed; dry	25°C(77°F)
Polycel	Tightly sealed; dry	25°C(77°F)
ProDessert	Use immediately	4°C(39°F)
ProElif	Use immediately	4°C(39°F)
ProRestart	Use immediately	4°C(39°F)
Pure-Lees Longevity Plus	Tightly sealed; dry	Below 25°C(77°F)
Rapidase Enzymes	Tightly sealed; refrigerate.	4–8°C(39–45°F)
Scottzymes	Liquid: Tightly sealed; refrigerate Dry: Tightly sealed; dry environment	1–2 years: Store liquid forms: @ 4°C(39°F) Store dry forms: @ 18–24°C(60–77°F)
Sparkolloid NF (Hot & Cold Mix)	Tightly sealed; dry	4 years @ 18°C(65°F)
Tannins	Tightly sealed; dry	18°C(65°F)
Velcorin	Not recommended	20–30°C(68–86°F)
Yeast Nutrients, Yeast Derivative Nutrients, ML Nutrients	Tightly sealed; dry	18°C(65°F)

Note: Most products have an expiration date on the package. Please check the product and then use storage guidelines above.

HOW TO ORDER

www.scottlabsltd.com

Our easy-to-use website makes planning and submitting your harvest orders easier than ever. Try one, or all, of these convenient features this season:



PDF Order Planner

Order Planner at scottlabsltd.com/order-planner to easily plan and organize your full harvest season list in one place.



Reorder

Head to the **My Account** section of the site and you can search back through your past **Invoices** and **Shipments**. If you have an order that you want to re-create, click the handy "**Reorder**" button to load the items from that invoice or shipment into your shopping cart.



Quick-Order Shopping Cart

Our website's shopping cart allows you to quickly enter orders without navigating to every item page. Simply open the site directly to scottlabsltd.com/shop/basket and start entering search terms or item numbers.



Order Upload

Do you love spreadsheets as much as our web team? Assemble your order in a spreadsheet and you can load a CSV file directly as a shopping cart. Head to scottlabsltd.com/upload-cart to learn more and download the CSV template.

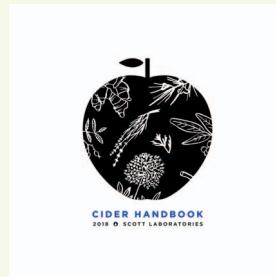
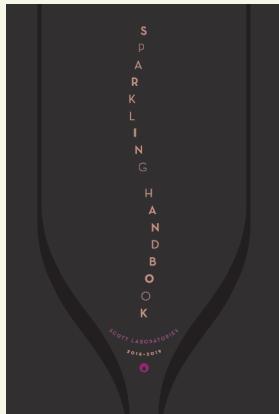


Order Templates

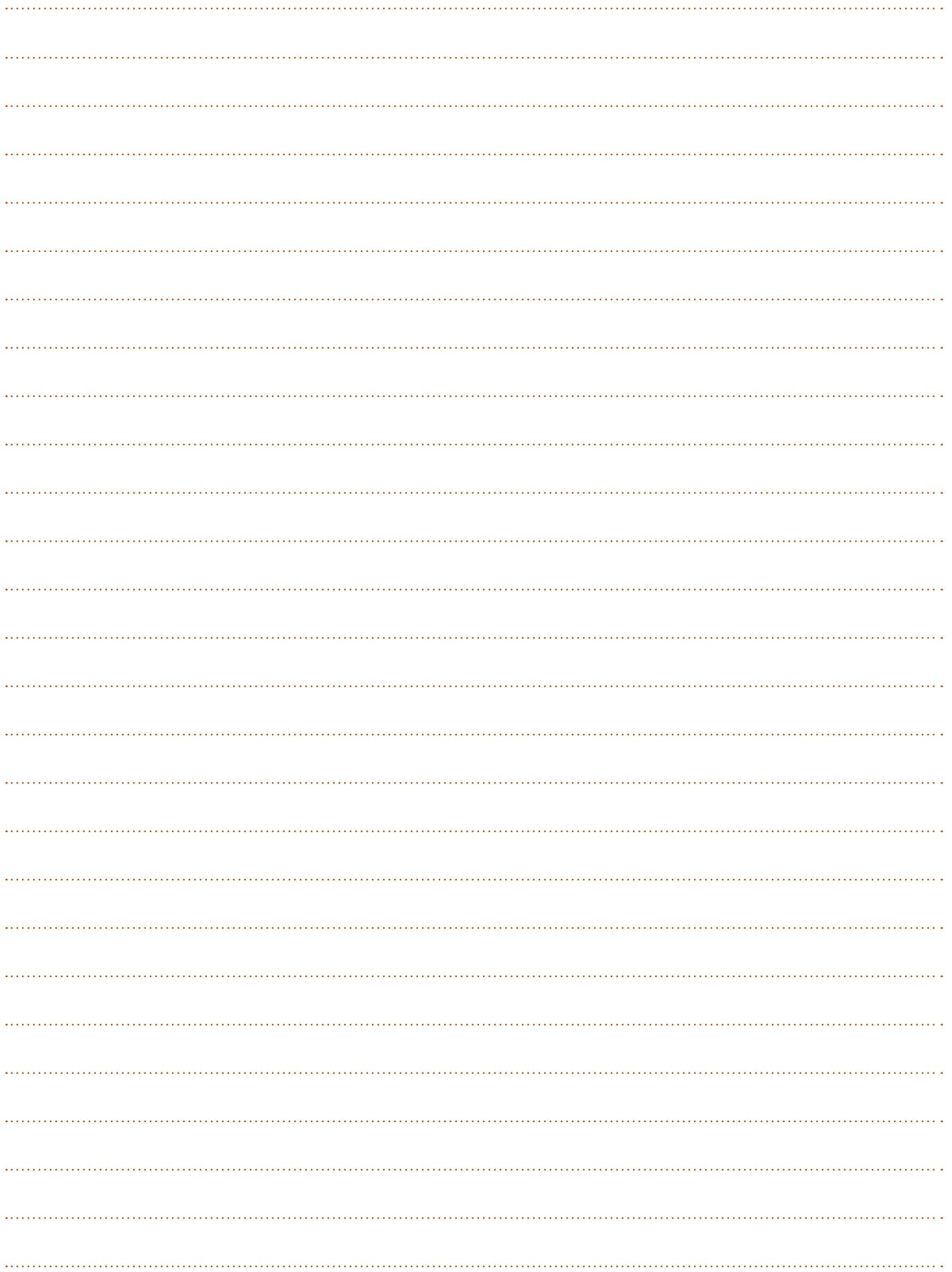
If you have groups of items that you order regularly or want to save for quick re-ordering, nothing beats our **Order Templates** feature. Just assemble a shopping cart by browsing the site or using any of the handy tools listed above, and from the **Shopping Cart** page choose "Save as OrderTemplate." Next time you want to start an order from this list of items you can load it from either your "My Account" section of the site, or directly from the **Shopping Cart** page. Great for filter media and other recurring purchases.

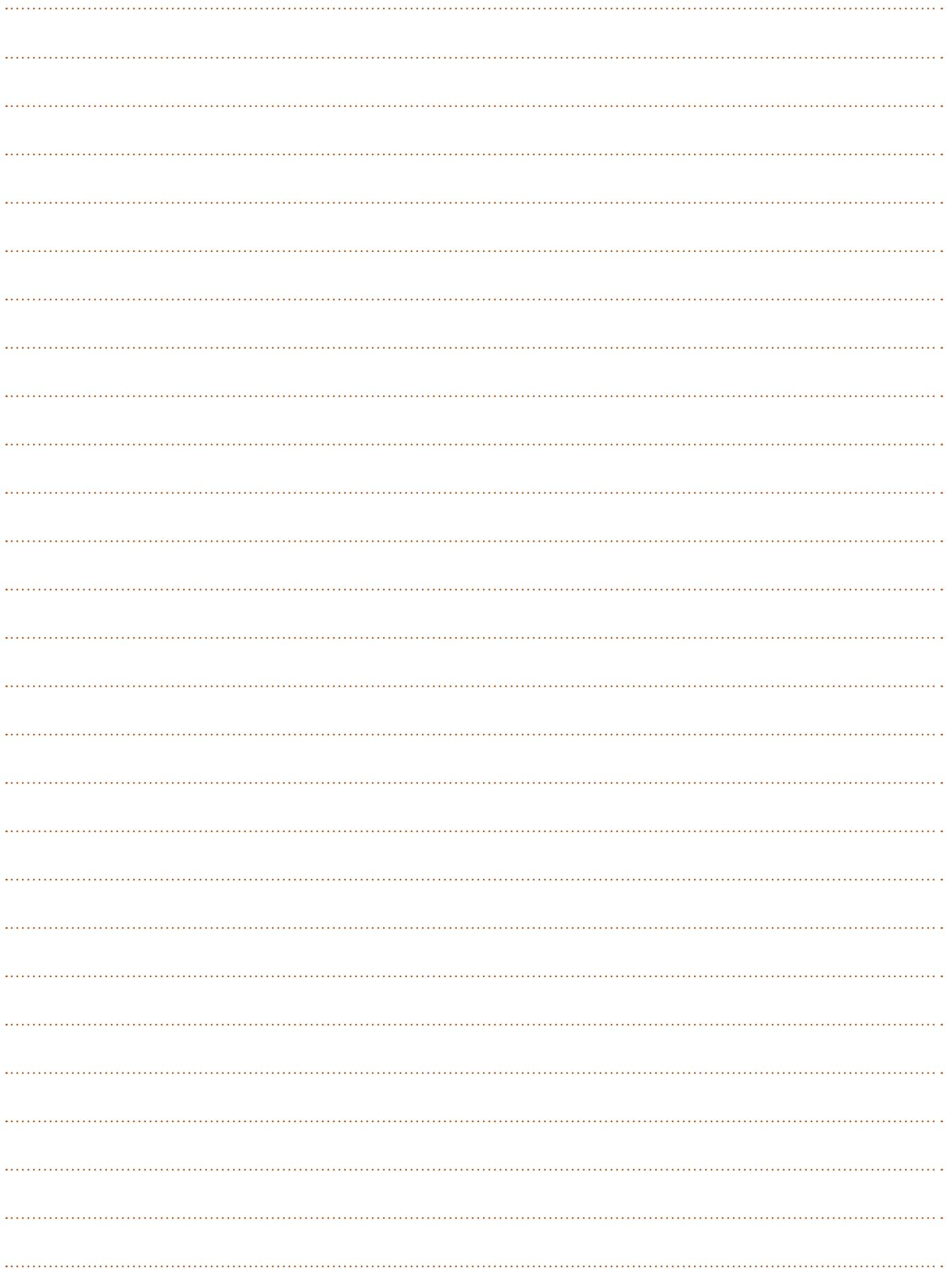
CIDER + SPARKLING BOOKS

Scott Laboratories is proud to provide trusted resources for all of your fermentation endeavors. For a copy of our Sparkling or Cider Handbook, please contact us.



Notes





SCOTT LABS CANADA

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