AB Biotek is a business of AB Mauri, the global yeast and bakery ingredients division of the international group Associated British Foods (ABF).

The ingredients businesses of ABF are comprised of our two specialty ingredients businesses, AB Mauri and ABF Ingredients.

AB Mauri has a global presence in yeast with significant market positions in the Americas, Europe, and Asia. We are a technology leader in yeast and ingredients, supplying bread improvers, dough conditioners and bakery mixes to industrial and craft bakers across the globe.

ABF Ingredients is a global leader in specialty ingredients, offering innovative, differentiated and value-added products to the food, nutrition, pharmaceutical, animal feed and industrial sectors. Our ingredients are an essential part of products that are equally likely to be found in the kitchen and medicine cabinet, as in production units and research laboratories.

For further information on ABF please visit www.ABF.co.uk

AB Biotek’s business within AB Mauri is one focused on solutions for the alcohol beverage, bioethanol, pharmaceutical, human nutrition and animal nutrition sectors.

Our alcohol beverage solutions business has been developed over many years and we are a leading global producer specialising in serving the wine, distilled spirits and brewing sectors where we are a supplier and developer of value-add yeast and associated fermentation products.

Our heritage in the wine industry began as a result of our global capability in fermentation know-how, yeast science & technology and production expertise. We have pioneered wine yeast product development and have created a successful international business supplying some of the world’s leading winemakers. AB Biotek provides winemakers with an extensive portfolio of wine ingredient solutions and applications expertise. Our historical global leadership in yeast and fermentation science has expanded to include a wide range of oenological technologies such as enzymes, yeast, fermentation aids, polysaccharides, tannins and bacteria. Our scientists, in partnership with our own wine experts and external partners, constantly strive to develop new and better choices for winemakers that enable them to create the style and quality of wines their customers enjoy consistently.

As a primary technology producer, our business and reputation with our customers is of great importance and our development and production facilities meet the highest global quality standards required. We have a very clear approach to work closely with our customers and aim to be the preferred supplier for their wine ingredients requirements. Additionally, as part of the ABF group we have direct access to the wider technology portfolios of our sister companies in the ABF Ingredients family and their technology portfolios.
What we do

AB Biotek invests heavily in research and development working with research institutes and universities around the world. This ongoing investment ensures we continue to deliver new and innovative products to our customers across our platforms of wine ingredients.

AB Biotek’s Global Technology Centre (Sydney, Australia) is our own specialist hub for wine yeast and fermentation know-how. Our talented team of microbiologists, fermentation scientists, researchers, analytical specialists and oenologists provide valuable service to AB Biotek operations, the net result being the ongoing development of superior multi-technology solutions for the wine industry. As part of our expanding investment in wine ingredient technologies our new applications centres in St Louis (USA) and Etten Leur (Netherlands) have extended our capability in supporting winemakers with innovative products to address some of the key challenges facing our customers today.

Product Development & Innovation

AB Biotek R&D teams understand the necessity to deliver to the wine industry cutting edge solutions via new improved products that can make a difference.

Our historical success as a yeast producer has been built on a mindset of continuous improvement in what we do and how we do it with a strong focus on delivering consistently meaningful and empowering solutions to our customers. This philosophy extends to our wider portfolio. Ultimately, we aim to be the preferred supplier of wine ingredients for our customers.

Technology Partnerships

As a global leader in the production of wine yeast technologies and their application we believe that AB Biotek can be a strong partner to the independent biotech community, biotech industry operators and national/international institutes working in the wine sector.

We continue to work on developing new products via our own R&D teams but recognise that the pace and breadth of consumer demand requires product development in a wider research and development community and at a faster pace than ever before. At AB Biotek we actively encourage technology partnering for wine customer solutions and work on a global basis with renowned institutes and universities.

Our Portfolio

Each of our wine ingredient product ranges is introduced in this catalogue. Further detail and specific product information sheets can be found online at pinnaclewineingredients.com

Technical Research

Our wine technologists undertake ongoing applied research on our products (current and new) to gain further insights on how our ingredients influence fermentation in the surrounding grape juice environment and post-fermentation how they can help deliver organoleptic and colour improvement.

In yeast, for example, this research includes the discovery of which strains utilise assimilable nitrogen more rapidly during fermentation, the ethanol production from each of our strains and which strains are more efficient at converting malic acid toward the end of fermentation (hence lowering malolactic bacteria fermentation times) if required at all.

AB Biotek Quality Commitment

All Pinnacle wine ingredients supplied by AB Biotek are produced to specifications to ensure the highest standards in terms of:

- quality
- reproducibility
- reliability
- traceability

Our ingredients are developed and tested with renowned research institutes and validated by some of the best wineries from around the globe.

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Our ingredients are developed and tested with renowned research institutes and validated by some of the best wineries from around the globe on a commercial scale to ensure relevance in all different wine regions.
Pinnacle Enzymes

Enzymes play a definitive role in the ancient and complex process of winemaking. From a scientific and technical point of view, wine can be seen as the product of enzymatic transformation of grape juice. From the pre-fermentation stage, through fermentation, post-fermentation and aging, enzymes are the major driving forces catalysing various biotransformation reactions.

Imagine a pair of scissors cutting a piece of paper again and again and again, resulting in many smaller pieces of paper; that is exactly how enzymes work in grapes and wine. Whether it be for clarification, extraction, filtration or other purpose, enzymes are simply a natural ingredient to accelerate reactions, leading enzyme manufacturers to identify the most efficient and highly active enzymes available in the wine market today.

Dosage rate, time and temperature are the three critical parameters to consider when adding enzymes to grape juice or wine.

Pectin test 1:2

1 part of juice + 2 parts of acidified ethanol

Evaluation after 8 - 10 minutes

Positive: Gel formation and flocculation (all samples except the right)

Negative: Homogen cloudy - no flocculation (right)

Pectin is a gel-like substance that keeps fruit cells and fibers together and if pectin is not completely broken down during fermentation winemakers can end up with a pectin haze in their wines.

Normally a winemaker use pectinolytic enzymes (pectinases) to degrade these pectins. A winemaker can perform a quick and easy pectin test to see how successful these pectinases were in degrading the pectin and if their wines would be safe from these pectin hazes. A positive test indicates that not all pectin was degraded and the winemaker will need to repeat the enzymatic step. A negative test indicates that the enzymatic degradation was successful and the wines are safe from pectin hazes.

Wine Yeast and Ingredients

Consumers are constantly looking for new experiences and this trend in wine is increasing demand for bold and improved flavours and aroma complexity – but without negative characteristics.

The focus of the Pinnacle range is to offer winemakers a premium standard of fermentation performance to produce the wines their customers love, more consistently than before, in this new age.

The experience and knowledge which has created the Pinnacle range has been gathered over 150 years of operations in fermentation and multiple ingredients technologies worldwide with support from world-renowned wine research institutions.

More at pinnaclewineingredients.com

Wine Yeast

For premium winemakers to produce their styles of wine they need a yeast portfolio that has been researched and selected to deliver the technical depth to produce aromas and flavours consistent with the terroir, the capability to deliver premium wine styles, and the resilience to withstand the greater stress tolerance encountered in today’s winemaking environment.

Wine Ingredients

Winemakers are looking for consistency of performance in fermentation, and post-fermentation phases including process efficiency, colour development, and organoleptic delivery to meet the new trends in wine for improved flavour and aroma.

The Pinnacle wine ingredients range of enzymes, yeast, fermentation aids, polysaccharides tannins and bacteria, has been created to enhance, correct, and improve fermentation and post-fermentation activity so that the resulting desired wine styles are of premium quality for consumers to enjoy and value. AB Biotek has specifically developed the Pinnacle wine ingredients range to be the winemaker’s choice for complete formulations for premium wines with minimal fuss and ease of use in the winery.

Enzymes are the major driving forces catalysing various biotransformation reactions dependent on dose, temperature and time.

Wine Yeast Ingredients

The Pinnacle range is an innovative and enabling source of complete solutions tailored for today’s taste trends.

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### Attributes of Pinnacle Enzymes

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
<th>Application</th>
<th>Dosage</th>
<th>Packaging (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zym White Extract</td>
<td>Liquid Pectinase</td>
<td>Rapid juice extraction</td>
<td>3-5 ml/100kg</td>
<td>1kg 25kg</td>
</tr>
<tr>
<td>Zym Red Extract</td>
<td>Liquid Pectinase</td>
<td>Aroma and colour extraction</td>
<td>3-5 ml/100kg</td>
<td>1kg 25kg</td>
</tr>
<tr>
<td>Zym Clar</td>
<td>Liquid Pectinase</td>
<td>Settling</td>
<td>2-4 ml/L</td>
<td>1kg 25kg</td>
</tr>
<tr>
<td>Zym Clar+</td>
<td>Liquid Pectinase</td>
<td>Clarification</td>
<td>1.5-4 ml/L</td>
<td>1kg 25kg</td>
</tr>
<tr>
<td>Zym Flot</td>
<td>Liquid Pectinase</td>
<td>Flotation</td>
<td>3-6 ml/L</td>
<td>1kg 25kg</td>
</tr>
<tr>
<td>Zym Color</td>
<td>Granulated Pectinase; cellulase and β-glucanase side activity</td>
<td>Colour and polyphenol extraction</td>
<td>3g/100kg</td>
<td>25kg</td>
</tr>
</tbody>
</table>

### Pinnacle Enzymes product information

The tables that follow provide an overview of the Pinnacle enzymes range.

Detailed information sheets can be found online at pinnaclewineingredients.com

#### Enzyme Product information overview

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Applications</th>
<th>Advantages</th>
<th>Pack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinnacle Zym Clar</td>
<td>Enables quick depectinisation, reduces viscosity and turbidity of must during settling.</td>
<td>For fast and compact settling of juice – less juice and wine losses.</td>
<td>1kg bottle 25kg canister</td>
</tr>
<tr>
<td>Pinnacle Zym Clar+</td>
<td>Enables quick depectinisation of the must.</td>
<td>For fast clarification of juice – clean, elegant white wines.</td>
<td>1kg bottle 25kg canister</td>
</tr>
<tr>
<td>Pinnacle Zym Red Extract</td>
<td>Breaks down grape pectin chains, enabling a quicker extraction of aroma precursors contained in red grape skins.</td>
<td>For fast colour and polyphenol extraction – can lead to earlier drinkable wines.</td>
<td>25kg bottle in carton</td>
</tr>
<tr>
<td>Zym Flot</td>
<td>Enables faster flotation of solid particles to the top of the vessel.</td>
<td>For fast flotation of white and rosé wines in earlier finished wines.</td>
<td>1kg bottle 25kg canister</td>
</tr>
<tr>
<td>Zym Color</td>
<td>Enables fast and easy flotation of floating particles, thus increasing flotation yields.</td>
<td>For faster mashing and reduction in floating solids.</td>
<td>1kg bottle 25kg canister</td>
</tr>
<tr>
<td>Zym White Extract</td>
<td>Reduces maceration time and increases free-run juice yields.</td>
<td>For faster mashing and reduction in floating solids.</td>
<td>1kg bottle 25kg canister</td>
</tr>
<tr>
<td>Zym Red Extract</td>
<td>Reduces maceration time and increases free-run juice yields.</td>
<td>For faster mashing and reduction in floating solids.</td>
<td>1kg bottle 25kg canister</td>
</tr>
</tbody>
</table>

### Characteristics
- **Pinnacle Zym Clar**
  - Enables quick depectinisation, reduces viscosity and turbidity of must during settling.
  - Enables faster flotation of solid particles to the top of the vessel.
  - Improves clarification of the must with more compact sediments.
- **Pinnacle Zym Clar+**
  - Enables quick depectinisation of the must.
  - Reduces viscosity and turbidity of must even when settling conditions are difficult.
  - speeds up clarification of all white and rosé musts, as well as lactic thermo-treated red musts and red press wines.
  - Settling step is shortened: delivering more compact lees and a clearer must.
- **Pinnacle Zym Red Extract**
  - Breaks down grape pectin chains, enabling a quicker extraction of aroma precursors contained in red grape skins.
  - Reduces maceration and tannin extraction.
  - Facilitates colour extraction and stability.
  - Enables faster flotation of solid particles to the top of the vessel.
  - For fast colour and polyphenol extraction – can lead to earlier drinkable wines.
- **Zym Flot**
  - Enables faster flotation of solid particles to the top of the vessel.
  - Improves clarification of the must.
  - Reduces the viscosity of the mash, which allows easier pressing.
  - Using Pinnacle Zym Flot eases juice extraction with shorter pressing cycles and higher juice yields.
- **Zym Color**
  - Limits punchdowns & racking thus improves clarification of the must.
  - Clarifies juices and reduces flotation losses.
  - Enables faster flotation of solid particles to the top of the vessel.
  - Improves colour extraction and stability.
  - Maximises juice and aroma extraction – more aromatic wines in earlier finished wines.
Pinnacle Wine Yeast

Yeast is the critical instrument in converting grape juice into wine. These unicellular fungi have the capability to utilise grape sugars mainly glucose and fructose and turn them into alcohol, carbon dioxide and flavour compounds. Yeast has incredible survival instincts and have evolved and adapted to changing winemaking practices over many centuries.

As a result, there is a large and diverse range of wine yeast strains from across the world that have specific and favourable attributes for making the desired wine style.

In addition, the changing trends to bolder fruit flavours, higher alcohol wines and the ever-present threat of climate change have led to the need for more robust and stress-tolerant wine yeast strains. With this in mind, AB Biotek has spent years isolating, screening, developing and manufacturing a wine yeast strain portfolio that meets the current winemaking trends of the 21st century.

Yeast Growth Process

The aim of the growth process is to ensure yeast cells in the final dry product are:

- nutritionally sound and well supplied with essential nutrients that may be limited in grape juice
- robust to withstand the drying process to perform optimally in wine making applications.

Nutrition is the foundation building block for a high performing dry yeast product. This ensures SO₂ resistance, stress tolerance and sufficient vitamins and minerals to prevent negative aromas developing during fermentation.

Next is the growth profile. Each wine yeast strain is unique in its ability to grow on different sugar and nitrogen sources, as well as its optimal vitamin and mineral requirements. Controlled parameters such as: growth rate, pH, temperature, and dissolved oxygen profiles all affect the fitness of the final yeast in the grape juice fermentation process.

Yeast is grown aerobically i.e. in a high oxygen environment. This is important to winemaking in that it prepares the yeast with essential cellular materials such as steroids and unsaturated fatty acids. The AB Biotek growth process is designed to trigger and maximise the natural content of these key cell components.

Growth protocols are also designed to finish the yeast in a stage of the yeast cell-cycle that allows maximum cell robustness, together with maximum trehalose content. All these properties are essential to preserve high cell viability and vitality during drying, and to maintain dry yeast stability in storage.

Drying

Production of dry wine yeast is essential to provide the convenience of a stable starting culture to winemakers globally in the quantities required locally. However, it is critical the drying process is designed to optimise yeast viability and vitality.

Viability is the ability of each yeast cell to replicate during winemaking, given that at least 4-5 doublings in cell number are required to ensure adequate wine fermentation kinetics and sugar exhaustion.

Vitality on the other hand means the metabolic capability (minimum lag phase) to consume grape sugars and establish a fermentation rate typical of that yeast strain. The drying process needs to follow the water release phases inherent to yeast cells.

It is important to remember that yeast cells are adapted to drying out since they dry naturally in the environment. Time, drying temperature profile, and inlet air humidity and airflow form a comprehensive design to allow passage of the yeast from approximately 30% solids when entering the dryer, to a final dry solids content of >93%. The high final solids guarantee dry yeast stability in storage.

An essential part of the AB Biotek process design is to dry slowly in the critical phases, but to also minimise overall drying time to prevent membrane lipid oxidation. Low and controlled inlet air humidity is vital to speed up the drying process and to ensure batch to batch repeatability.

Attributes of Pinnacle Wine Yeast

<table>
<thead>
<tr>
<th>Strain</th>
<th>Wine Style</th>
<th>Alcohol Tolerance (v/v)</th>
<th>Log Phase</th>
<th>Fermentation Speed</th>
<th>Nitrogen Requirements</th>
<th>Optimal Temperature</th>
<th>MLF Compatibility</th>
<th>Opulent Production</th>
<th>VA Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robust</td>
<td>All</td>
<td>18%</td>
<td>Very short</td>
<td>Fast</td>
<td>Moderate</td>
<td>50-85°F / 10-35°C</td>
<td>Inhibiting</td>
<td>High</td>
<td>Average</td>
</tr>
<tr>
<td>Torica</td>
<td>White</td>
<td>14.5%</td>
<td>Short</td>
<td>Fast</td>
<td>Moderate*</td>
<td>55-61°F / 13-16°C</td>
<td>N/A</td>
<td>Moderate</td>
<td>Average*</td>
</tr>
<tr>
<td>Cryo</td>
<td>White/Rosé</td>
<td>14%</td>
<td>Short</td>
<td>Fast</td>
<td>Low</td>
<td>54-75°F / 12-24°C</td>
<td>N/A</td>
<td>Moderate</td>
<td>Very low</td>
</tr>
<tr>
<td>White Select</td>
<td>White</td>
<td>15%</td>
<td>Medium</td>
<td>Moderate</td>
<td>Low to moderate</td>
<td>59-68°F / 15-20°C</td>
<td>Recommended</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Fruit Red</td>
<td>Red/Rosé</td>
<td>15%</td>
<td>Short</td>
<td>Moderate</td>
<td>Low to moderate</td>
<td>65-84°F / 18-29°F</td>
<td>Recommended</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Complex</td>
<td>Red</td>
<td>15%</td>
<td>Long</td>
<td>Slow</td>
<td>Moderate</td>
<td>68-85°F / 20-29°C</td>
<td>Highly recommended</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Red Select</td>
<td>Red</td>
<td>16%</td>
<td>Short</td>
<td>Moderate</td>
<td>Moderate to high</td>
<td>68-79°F / 20-26°C</td>
<td>Not recommended</td>
<td>Moderate</td>
<td>Average</td>
</tr>
<tr>
<td>Red</td>
<td>Red</td>
<td>16%</td>
<td>Very short</td>
<td>Moderate</td>
<td>Moderate to high</td>
<td>65-85°F / 18-29°C</td>
<td>Recommended</td>
<td>High</td>
<td>Average</td>
</tr>
<tr>
<td>Fructo</td>
<td>Red</td>
<td>19%</td>
<td>Very short</td>
<td>Fast</td>
<td>Moderate</td>
<td>57-95°F / 14-35°C</td>
<td>Recommended</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Fructo</td>
<td>Red/Restart</td>
<td>18%</td>
<td>Very short</td>
<td>Fast</td>
<td>Low</td>
<td>55-95°F / 13-35°C</td>
<td>Highly recommended</td>
<td>High</td>
<td>Average*</td>
</tr>
<tr>
<td>Bubbly</td>
<td>Sparkling/ Restart</td>
<td>16%</td>
<td>Very short</td>
<td>Moderate</td>
<td>Low</td>
<td>50-90°F / 10-32°C</td>
<td>N/A</td>
<td>Moderate</td>
<td>Low</td>
</tr>
</tbody>
</table>

* Consult your AB Biotek technical representative regarding low nutrient, highly clarified and high sugar juices.
To achieve an effective fermentation it’s important to have a population of 1.2-1.5x10^8 viable cells/ml present at the end of yeast growth (a third to half way through fermentation). Therefore, a minimum starting population of 5x10^6 viable cells/ml is required.

For reds, dosage can be lower due to the presence of nutrients (via skins), but for highly clarified whites and historically difficult juices, 30-40g/100L (2.5-4.2lbs/1000gals) is recommended.

Using **Pinnacle Active Dry Wine Yeast**

The proper preparation of Active Dry Wine Yeast (ADWY) is crucial for a successful fermentation.

A simple process, done properly, can save a lot of time and anxiety down the track.

Having an active starter culture minimises the lag phase (an important factor in achieving a healthy ferment) and decreases the chance of sluggish or stuck fermentations.

### Inoculation Rates

Rehydrating 25g of ADWY in 100L (2lbs/1000gals) of juice/must will achieve a minimum 5x10^6 viable cells/ml.

- To achieve an effective fermentation it’s important to have a population of 1.2-1.5x10^7 viable cells/ml present at the end of yeast growth (a third to half way through fermentation).
- Therefore, a minimum starting population of 5x10^6 viable cells/ml is required.
- For reds, dosage can be lower due to the presence of nutrients (via skins), but for highly clarified whites and historically difficult juices, 30-40g/100L (2.5-4.2lbs/1000gals) is recommended.

1. **Rehydrate ADWY** by slowly sprinkling it into 5-10 times its weight into clean water, pre-heated to between 35-40°C/95-104°F
   - Any toxins or chemicals present in the water can harm/kill the yeast cells during rehydration.
   - Rehydrating at a lower temperature will result in essential cytoplasmic material leaking from the cells (e.g. micronutrients), thus reducing cell viability.
   - It’s best when first adding the yeast to water to mix very gently, exposing all the yeast to the water.

2. **Allow the yeast to stand for 15 MINUTES without stirring.**
   - Allows the cell membranes to regain maximum fluidity; without this step, if stirring too quickly it can physically damage the yeast cell membranes.
   - Stirring will also disperse micro-nutrients that had first escaped the cells upon contact with the water. These important micro-nutrients can be reabsorbed by the cells if within the immediate vicinity.

3. **Adjust the temperature of the rehydrated yeast solution to within 5°C/9°F of the juice/must (sulphite-free) to be inoculated by adding sufficient volumes to give successive 5°C/9°F reductions in temperature.**
   - Acclimatise the yeast to the juice/must. This should be done over a 15 minute period.
   - Use the yeast within 30 MINUTES of rehydration.
   - After 30 minutes, the activity of the yeast can start to decline due to lack of nutrients.
   - This time can be extended if the yeast was acclimatised with juice or water containing nutrients.

4. **Use the yeast within 30 MINUTES of rehydration.**
   - **18°C/64°F or higher**
     - An important factor for the cell population to reach 1.2-1.5x10^7 viable cells/ml is for the temperature to remain above 18°C/64°F for the initial stage of fermentation.
     - Within 10-20% of the sugar being metabolised (1-3 days), the temperature of the ferment can be reduced.

5. **It’s recommended the juice/must to be inoculated is 18°C/64°F or higher to avoid extended lag time.**
   - After 30 minutes, the activity of the yeast can start to decline due to lack of nutrients.
   - This time can be extended if the yeast was acclimatised with juice or water containing nutrients.

---

**Pinnacle Wine Ingredients**

**Pinnacle Active Dry Wine Yeast**

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**Pinnacle Wine Ingredients**

**How we manufacture**

**Pinnacle Wine Yeast...**

**Preparation of Raw Materials**

- **The Pure Yeast Culture**
  - The production process begins with a pure wine yeast culture, grown on nutrient slopes and vacuum conditions at a scientific and technical centre. This pure culture is then transferred to the quality control laboratory at an AB Biotek wine yeast factory.

**Production of Seed Yeast**

- **The Inoculum**
  - The pure culture is inoculated into the seed fermenter containing sterilised wort and other nutrients. The wort, a rich source of sugars essential for cell growth, is derived from clarified sugar cane molasses. Once the inoculum has grown to the desired cell number it is transferred to the main fermenter.

**Fermentation**

- Once in the main fermenter the yeast is fed sterile molasses, nutrients and oxygen at a regulated rate to ensure optimum growth.

**Separation & Washing**

- At the end of fermentation the yeast is harvested and washed using centrifugal separators, then chilled to 4°C. The yeast is now a light cream coloured suspension at ~20% solids referred to as cream yeast.

**Dewatering & Drying**

- The cream yeast is first dewatered into a ‘crumble’ of about 30-34% solids using a conditioned air and a rotary vacuum filter drum. The yeast crumble is then extruded and dried in a fluidised bed dryer using dehumidified air.

**Packaging & Storage**

- Dry yeast >93% solids is cooled after drying then packed as quickly as possible into vacuum packs to minimise oxygen contact and moisture exposure. Vacuum packs guarantee oxygen and moisture impermeability throughout the shelf life of the product.

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**Pinnacle Yeast**

**product information**

The tables that follow provide an overview of the Pinnacle wine yeast range.

Detailed information sheets can be found online at pinnaclewineingredients.com

**Bubbly**

- **Applications**
  - Due to its inherent stress tolerance characteristics, Bubbly is the ideal yeast for producing sparkling wine styles using either the methode champagne or Charmat method.
  - With very low total SO2 production, Bubbly can be used as the primary and secondary fermenter and produces some subtle but positive fruity aromas consistent with high quality sparkling wines.

- **Advantages**
  - High stress tolerant strain good for sparkling wine production.

- **Pack**
  - 500g
  - 10kg

**Cryo**

- **Applications**
  - Cryo should be used for cold fermentations 10-13°C (50-55°F) in white grape varietals such as Sauvignon Blanc, Chenin Blanc, Semillon and Chardonnay. It can be used in tank or barrel fermentations as it produces a low level of foam during fermentation.
  - The result is a varietal white wine with enhanced ester expression as the aromas are trapped under cold fermentation conditions. For less fruity white wines we recommend fermenting warmer at 16-18°C (61-64°F).

- **Advantages**
  - A High cryophilic strain good for cold fermentations.

- **Pack**
  - 500g
  - 10kg

**Fruit Red**

- **Applications**
  - Fruit Red has a small lag phase with a fast fermentation speed at temperatures of 18-29°C (64-84°F).
  - Alcohol tolerance of this yeast is high at approximately 15.5% v/v.
  - Fruit Red is a low to medium foaming yeast; while ideal for tank fermentation, it must be monitored in barrel fermentation at higher temperatures.

- **Advantages**
  - Firmly rooted in the art of varietal winemaking, this yeast is best suited to the extraction of the grape juice.
  - Good for cold fermentations in red grape varietals such as Cabernet Sauvignon, Merlot and Shiraz/Syrah.

- **Pack**
  - 500g
  - 10kg

**Red**

- **Applications**
  - Red is a strong fermenter at temperatures of 18-30°C (65-85°F) with a short lag phase.
  - Cooler temperatures below 17°C (63°F) result in a more moderate fermentation rate.
  - Alcohol tolerance of this yeast can reach up to 15.5-16% v/v.
  - Red is a low foaming yeast and hence suitable for barrel fermentations.

- **Advantages**
  - Don’t bind anthocyanins. Intense red colour wines.

- **Pack**
  - 500g
  - 10kg

**Red Select**

- **Applications**
  - Red Select has a short lag phase with a medium fermentation speed at temperatures of 16-28°C (61-82°F).
  - This yeast requires nutrient supplementation to perform at its best; a complex nutrient with a high amino acid content released from such ingredients as inactive yeast is essential.
  - Alcohol tolerance of this yeast can reach up to 15-16% v/v.
  - Red Select is a low to medium foaming yeast.

- **Advantages**
  - Red Select is a good fermenter with the ability to enhance colour and mouthfeel in red wines through the extraction of phenolic compounds in the grape juice.
  - Red Select is best suited for varietal winemaking in red grape varietals such as Cabernet Sauvignon, Merlot and Shiraz/Syn. This yeast is best suited to the production of premium, superpremium and iconic red wines.

- **Pack**
  - 500g
  - 10kg

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Pinnacle Wine Ingredients
Yeast Product information overview continued

**Characteristics** | **Applications** | **Advantages** | **Pack** |
--- | --- | --- | --- |
**Fructo Select** | A fast fermenter with a rapid fermentation speed at temperatures of 16-32°C (61-89°F). | **Can add structure to high alcohol wines – well balanced structured wines.** | 500g 10kg |
| Fructo Select has a low lag phase with a wide fermentation temperature range between 9-30°C (48-86°F). | **Robust should be used for neutral grape varietals such as Sauvignon Blanc, Chenin Blanc and Colombard.** | **10kg** |
| Alcohol tolerance of up to 16% v/v. | **Reliable fermentations – good for fermenting in extreme conditions with good ester production.** | **100g** |
| Only small amounts of foam are produced with this yeast, thus allowing tanks or barrels to be filled. | **500g** |
| This yeast has a short lag phase with a wide temperature range between 9-30°C (48-86°F). | **0.75** |
| Alcohol tolerance of up to 15% v/v. | **0.25** |
| Fructo Select has a low foaming strain. | **Saccharomyces cerevisiae** |

**White Select** | A reliable fermenter with the ability to enhance varietal characters of the fruit while still producing fruity and floral aromas suited to high quality white wines. | **Promote autolysis – produce complex/balanced white wines.** | 500g 10kg |
| White Select is a medium rate fermenter at temperatures of 12-24°C (54-75°F) with a longer lag phase than other commercial yeasts. | **Brown spice aroma** |
| **Tropica** | A versatile red wine fermenter that will lead to high potential alcohol yields. | **Glycerol production** |
| Tropica should be used to increase tropical fruit aromas in white wines. It releases guava, passion fruit and pineapple aromas on the nose, with a distinctive guava-like character on the palate. | **Sulfur dioxide production** |
| High thiol producer – for tropical white wines. | **17** |
| **Complex** | A low foaming yeast suitable for barrel fermentation. | **3MH Odour Activity Value is 60 /L.** |
| Complex should be used for tropical fruit aromas in white wines. | **Results are from two different varietals assessed by a sensory panel of 15 producers** |
| Complex has a medium lag phase with a slow to medium fermentation speed at temperatures of 20-29°C (68-84°F). | **Grape** |
| **Tropica Select** | **Volatiles** |
| • Robust should be used for neutral grape varietals such as Sauvignon Blanc, Chenin Blanc and Colombard. | **Isoamyl acetate Ethyl isobutyrate** |
| • Alcohol tolerance can reach up to 14% v/v without a fermentation aid, although higher alcohol can be achieved with improved nutrition, particularly toward the end of fermentation. | **-0.5** |
| • This yeast has a short lag phase with a wide fermentation temperature range between 14-18°C (57-68°F). | **-0.5** |
| • Alcohol tolerance of up to 19% v/v, with the ability to inoculate in high alcohol conditions to restart fermentation. | **-0.5** |
| • This yeast is a low foaming strain. | **-0.5** |
| • Fructo is an excellent yeast to use in conjunction with high sugar grape juices that will lead to high potential alcohol yields. | **-0.5** |
| • With an extremely high alcohol tolerance of >19% v/v, Fructo can also be used for stuck and sluggish fermentations of both red and white wines when fructose concentrations are elevated toward the end of fermentation. | **-0.5** |
| • Fructo Select is a strong fermenter with a high capacity to add structure to high alcohol potential wines in the range of 16-18% v/v. | **-0.5** |
| • Fructo Select is best suited for varietal winemaking in red grape varietals such as Zinfandel and Shiraz/Syrah. This yeast is best suited to the production of high alcohol red wines when there is a desire to minimise volatile acidity and store the wine for a long time. | **-0.5** |
| Can add structure to high alcohol wines – well balanced structured wines. | **-0.5** |
| **Robust** | **Glycerol production** |
| • This yeast has a short lag phase with a wide fermentation temperature range between 9-30°C (48-86°F). | **Sulfur dioxide production** |
| • Alcohol tolerance of up to 16% v/v. | **100,000** |
| • Only small amounts of foam are produced with this yeast, thus allowing tanks or barrels to be filled. | **1000** |
| • Robust should be used for neutral grape varieties when there is a need for the yeast to increase aroma and flavoured production. | **1000** |
| • In white wines it produces fruity aromas (banana, pineapple) as well as floral notes (rose petals, violets). | **1000** |
| • In red wines the aromas are more subdued and in line with varietal characteristics of the wine. Most importantly, Robust will reliably ferment difficult juices in extreme conditions, thus adding security of fermentation for the winemaker. | **1000** |
| • Saccharomyces cerevisiae | **1000** |
| **Tropical** | **Glycerol production** |
| • Strong fermenter at temperatures ranging between 14-18°C (57-68°F). | **Sulfur dioxide production** |
| • A fermentation aid is strongly recommended for low nutrient juices and for fermenting below 14°C (57°F). | **1000** |
| • Alcohol tolerance can reach up to 14% v/v without a fermentation aid, although higher alcohol can be achieved with improved nutrition, particularly toward the end of fermentation. | **1000** |
| • This yeast is a low foaming strain. | **1000** |
| • Fructo should be used on ripe Zinfandel, Durif, Shiraz/Syrah and other high alcohol wines. | **1000** |
| • Fructo Select is a strong fermenter with a medium potential alcohol tolerance – for balanced wine production. | **1000** |
| • Red is a reliable and robust fermenter in red grape varietals such as Shiraz/ Syrah, and hence suitable for barrel fermentation. | **1000** |
| • Red is a low foaming yeast suitable for barrel fermentation. | **1000** |
| • Red is a strong fermenter at temperatures below 17°C (63°F). | **1000** |
| • Cooler temperatures below 14°C (57°F) can be achieved with improved nutrition, particularly toward the end of fermentation. | **1000** |
| • Red is a reliable and robust fermenter in red grape varietals such as Shiraz/Syrah, and hence suitable for barrel fermentation. | **1000** |

Download detailed information sheets for our full range online at: pinnaclewineingredients.com
Pinnacle Wine Ingredients

Grape juice composition is highly variable and heavily dependent on the terroir, vintage climate conditions and viticultural practices. Consequently, the concentration of sugars, acids, vitamins, minerals, and other elements in the grapes will change year on year.

Furthermore, vineyard spray programs can radically affect the levels of pesticides and fungicides within a grape juice. These factors combined can lead to imbalanced grape juices that result in difficult conditions for the yeast to operate efficiently and effectively.

AB Biotek’s leading research scientists have identified various inactivated yeast and blends thereof that when added to grape juice minimise the annual variation of grape juice composition. Ultimately, this reduces the chances of stuck and sluggish fermentations, thus leading to better overall wine quality.

**Attributes of Pinnacle Fermentation Aids**

<table>
<thead>
<tr>
<th>Product</th>
<th>Ingredients</th>
<th>Application</th>
<th>N %</th>
<th>OIV Approved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Inactivated Yeast</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cell walls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Enriched yeast extract</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cellulose</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FermiFresh</td>
<td></td>
<td>Antioxidant – improved colour and flavour</td>
<td>7.1</td>
<td>✔</td>
</tr>
<tr>
<td>FermiSafe</td>
<td>✅</td>
<td>Detoxifies grape juice; reduced sluggish and stuck fermentations</td>
<td>6.5</td>
<td>✔</td>
</tr>
<tr>
<td>FermiTop</td>
<td>✅</td>
<td>Enhancing aroma and complexity</td>
<td>8.7</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Fermentation Aids explained**

Inactivated yeast normally consists of the whole yeast killed by heat and it contains the cell walls, the cell membranes, and the inside of the yeast.

Yeast hulls is the insoluble yeast cell wall fractions and play an important role by absorbing toxins from the juice but it is also an important source of sterols and unsaturated fatty acids. Yeast hulls and cellulose can help diminish sluggish fermentations in over-clarified juices by increasing the surface area for the yeast and provide adhesion points for the yeast.

Yeast extract consists of all the cell components without the cell walls and cell membrane parts. Yeast extract is a good source of amino acids.

Amino acids play an essential role in winemaking because it is an important nutritional factor for yeast and due to its important role it play in protein synthesis and sugar transport. Amino acid metabolism is directly related to many flavour compounds and therefore very important for the quality of wine.

**Yeast cell breakdown**

1. Bud
2. Cell wall
3. Cell membrane
4. Cytoplasm
5. Nucleus
6. Bud scar
7. Vacuole
8. Cytoskeleton
9. Golgi apparatus
10. Ribosomes
11. Mitochondrion
12. Lysosome
13. Peroxisome
### Pinnacle Fermentation Aids

**Product information**

The tables that follow provide an overview of the Pinnacle fermentation aids range. Detailed information sheets can be found online at pinnaclewineingredients.com

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Applications</th>
<th>Advantages</th>
<th>Pack</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FermiFresh</strong></td>
<td>- Wines fermented with Pinnacle FermiFresh show a better resistance to oxidation during aging, with fresher aromas, brighter colour and enhanced complexity.</td>
<td>Wine protection - For longer lasting aromatic white and rose wines.</td>
<td>1kg bag</td>
</tr>
<tr>
<td></td>
<td>- When used in white reductive winemaking conditions, Pinnacle FermiFresh preserves the original varietal aromas of Sauvignon Blanc, Riesling, Pinot Grigio and Chardonnay Blanc, thus enhancing a fresher, varietal, aromatic bouquet.</td>
<td></td>
<td>15kg bag</td>
</tr>
<tr>
<td></td>
<td>- In rosé winemaking the antioxidant components of Pinnacle FermiFresh allow the optimal stabilisation of colour through the interaction of anthocyanins with polyphenols, thus inhibiting the browning effect.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- To optimise the preservative effect of Pinnacle FermiFresh it is recommended to complement yeast nutrition with ammonium salts.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FermiSafe</strong></td>
<td>- Pinnacle FermiSafe provides physical support elements for the inoculated yeast to better disperse into the medium thus shortening fermentation lag-phase.</td>
<td>Yeast cell walls adsorb medium-chain fatty-acids and residual pesticides.</td>
<td>1kg bag</td>
</tr>
<tr>
<td></td>
<td>- Inactivated yeast contained in Pinnacle FermiSafe provides survival factors (sterols) and gradually releases amino acids during fermentation.</td>
<td>Yeast cell walls adsorb medium-chain fatty-acids and residual pesticides.</td>
<td>15kg bag</td>
</tr>
<tr>
<td></td>
<td>- Cellulose contained in Pinnacle FermiSafe also creates nucleation sites which avoid the toxicity effect of CO₂ accumulation in the bottom of fermenting vessels.</td>
<td>Yeast cell walls adsorb medium-chain fatty-acids and residual pesticides.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- By using Pinnacle FermiSafe you assures a complete, safe fermentation with enhanced aromatic complexity of your wine.</td>
<td>Yeast cell walls adsorb medium-chain fatty-acids and residual pesticides.</td>
<td></td>
</tr>
<tr>
<td><strong>FermiTop</strong></td>
<td>- Pinnacle FermiTop is an organic (ammonium salt-free) nutrient for white and red wines.</td>
<td>Complete food source – For aromatic full body wines.</td>
<td>1kg bag</td>
</tr>
<tr>
<td></td>
<td>- Gradual release of amino acids, unsaturated fatty acids, sterols and other growth factors enable complete and safe fermentation.</td>
<td>Complete food source – For aromatic full body wines.</td>
<td>15kg bag</td>
</tr>
<tr>
<td></td>
<td>- Wines fermented with Pinnacle FermiTop show a better resistance to oxidation during aging, with fresher aromas, brighter colour and enhanced complexity.</td>
<td>Complete food source – For aromatic full body wines.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- When used in white reductive winemaking conditions, Pinnacle FermiTop preserves the original varietal aromas of Sauvignon Blanc, Riesling, Pinot Grigio and Chardonnay Blanc, thus enhancing a fresher, varietal, aromatic bouquet.</td>
<td>Complete food source – For aromatic full body wines.</td>
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<td>- In rosé winemaking the antioxidant components of Pinnacle FermiTop allow the optimal stabilisation of colour through the interaction of anthocyanins with polyphenols, thus inhibiting the browning effect.</td>
<td>Complete food source – For aromatic full body wines.</td>
<td></td>
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<tr>
<td></td>
<td>- To optimise the preservative effect of Pinnacle FermiTop it is recommended to complement yeast nutrition with ammonium salts.</td>
<td>Complete food source – For aromatic full body wines.</td>
<td></td>
</tr>
</tbody>
</table>

### Pinnacle Polysaccharides

There have been substantial changes to wine consumption trends in the last two decades. While some wines are cellared for long periods, most wine purchased from retailers these days is consumed very quickly. Many winemakers are thus seeking ingredients that can speed up the aging process and add mouthfeel and complexity many years in advance.

Certain long-chain molecules called polysaccharides that are made up of many sugar units have this capability. AB Biotek has seen this increasing trend in rapid consumption and as such we have identified a set of polysaccharides that add enormous value to the winemaking process.

### Polysaccharides explained

Polysaccharides are carbohydrates consisting of numbers of sugar molecules bonded together. The three main polysaccharide groups in the external layer of yeast cell walls are: beta-glucans, polymers of mannose and chitin. Yeast mannoproteins for example can consist of 20% protein and 80% D-mannose. These mannoproteins have interactions with polyphenols in wine but also with salivary proteins in your mouth. These interactions help to make the wine taste softer and can also improve the mouthfeel. Using a scientific approach, fractions of these molecules can be isolated with a precise length that contributes a designated flavour profile in wine. AB Biotek researchers have identified the optimum length polysaccharides that add carrying layers of mouthfeel and flavour enhancement to wine.

### Attributes of Pinnacle Polysaccharides

- **Polysaccharides** are carbohydrates consisting of numbers of sugar molecules bonded together.
- **Beta-glucans** are a Scientific approach, fractions of these molecules can be isolated with a precise length that contributes a designated flavour profile in wine.
The tables that follow provide an overview of the Pinnacle polysaccharides range. Detailed information sheets can be found online at pinnaclewineingredients.com

### Pinnacle Polysaccharides

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Applications</th>
<th>Advantages</th>
<th>Pack</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Absolute MP</strong></td>
<td>- Pinnacle Absolute MP is a pure yeast mannanprotein extracted from yeast cell walls and is completely soluble. - Pinnacle Absolute MP has a clear smoothing effect by reducing astringency of aggressive grape and wood tannins.</td>
<td>- Pinnacle Absolute MP is a solution to improve mouthfeel and complexity of white and red wines aged in oak or stainless steel. - Pinnacle Absolute MP contributes to protein and tannin stabilization of the wine. - Pinnacle Absolute MP has an immediate and obvious sensorial effect, improving mouthfeel and flavour of the wine. - Requires 12 to 48 hours (depending on temperature) to be 100% dissolved into wine, ready for bottling</td>
<td>Yeast mannanproteins – can lead to complex wines with improved mouthfeel. 500g plastic can</td>
</tr>
<tr>
<td><strong>Ferm MP</strong></td>
<td>- Pinnacle Ferm MP is an organic (ammonium salt-free) yeast derivate. - Slow release of amino acids regulates fermentation and gives a fresher aromatic profile (floral). - The lysis of yeast cell walls releases mannanproteins. High molecular weight mannanproteins interact with polyphenols and form stable soluble complexes which preserve colour and increase mouthfeel. - Pinnacle Ferm MP provides mouthfeel, colour stabilization and nutrition at the same time.</td>
<td>- Pinnacle Ferm MP is a great tool for all red wines to: - Stabilise the colour - Round green/harsh tannins - Integrate the structure of fully bodied red wines. - Pinnacle Ferm MP does not interfere with the varietal aromatic expression of the wine and provides a brighter red colour. - Pinnacle Ferm MP is ideal for high quality wine to be aged in wood, or to shorten the wine ageing step (e.g. early bottled wines or large volumes in bulk).</td>
<td>Inactive yeast – can lead to aromatics, colour stable full-bodied wines. 1kg bag 15kg bag</td>
</tr>
<tr>
<td><strong>Wine MP</strong></td>
<td>- Pinnacle Wine MP is a blend of specific hydrolysed yeast cell walls that have a high concentration of naturally occurring mannanproteins. - Pinnacle Wine MP is odourless and there are no dying cells thus no risk of off-flavour. - Pinnacle Wine MP generates clean, pure endogenic non-reductive lees with no risk of contamination from its addition. - Aging wine with Pinnacle Wine MP – Smoothes grape and wood tannins of red wines. - Contributes to aromatic complexity. - Enhances flavour and roundness of the wine.</td>
<td>- Pinnacle Wine MP is the solution to build structure in the wine after alcoholic fermentation. - Pinnacle Wine MP contributes to protein and tannin stabilization of the wine. - Pinnacle Wine MP provides the advantages of a long “batonnage” with shortened time (15 days vs 15 months) thus optimises cost. - Pinnacle Wine MP preserves and stabilises the colour of top quality red wines aged in stainless-steel or wood.</td>
<td>Yeast cell walls – for well preserved, stable long-lasting wine. 500g plastic can</td>
</tr>
</tbody>
</table>

### Pinnacle Tannins

Tannins are polyphenolic compounds that constitute condensed and hydrolysable tannins. The condensed tannins are generally isolated from grape skins and seeds, as well as quebracho and mimosa plants. The hydrolysable tannins are either elagic or gallic and are mainly derived from oak or chestnut trees.

All Biotek has selected tannins with a wide range of properties to suit winemakers’ requirements. Commercially available tannin products fall into three categories:

- Fermentation tannins
- Aging tannins
- Finishing tannins

#### Tannins explained

Tannins play a fundamental role in defining the taste and colour of wine. Tannins help to stabilise the colour in wine. During fermentation anthocyanins can bind with proteins and sediment out. If tannins are present, they will bind with the proteins instead of the anthocyanins, these types of tannins are often called sacrificial tannins.

Tannins can also directly bind with anthocyanins to form stable dissolved pigments and this help to preserve the colour of wine. Apart from this tannin can also act as an antioxidant (chemical and enzymatic oxidation) and preservative in wine.

Tannins bind to protein surfaces and can inhibit enzymatic activity, including that of laccase at concentrations less than it takes to actually facilitate precipitation and removal.

---

**Pinnacle Tannins**

- **Hydrolyzable Tannins**
  - Gallic
  - Gallic-ellagic
  - Prorobentinidinic
  - Procyanidinic

- **Condensed Tannins**
  - Tara
  - Turks Gall
  - Chinese Gall
  - Chestnut Oak
  - Green Tea
  - Quebracho
  - Mimosa
  - Grape skin
  - Grape seed
### Tannins Product Information Overview

**Pinnacle Structure Tan**

- **Characteristics**: Promotes polymerisation and stabilisation of polyphenolanthocyanin by ethyl bridge mechanism. It also removes vegetal and geosmin unpleasant aromas, ethanethiol, methanethiol and their precursors (ethyl-thioacetate, methyl-thioacetate).
- **Applications**: Removes vegetal notes while enhancing aromatic red wines with more complex and persistent bouquet and drinkability of red wine.
- **Advantages**: Contributes to a balanced polyphenolic structure and aromatic stability, improving bouquets and drinkability of red wine.
- **Pack**: 1kg bags, 15kg bags

**Seed Tan**

- **Characteristics**: Releases natural grape tannin deficiency and decreases astringency of the wine.
- **Applications**: Increases ellagic tannins concentration in wine.
- **Advantages**: Enhances the wine ageing – for complex wood contact effect, thus improving bouquet and drinkability of red wine.
- **Pack**: 1kg bags, 15kg bags

**HT Tan**

- **Characteristics**: Natura Tan provides a stable anti-oxidative environment to the wine for a quality ageing process.
- **Applications**: High tannin complex for complex wooded well-balanced wines.
- **Advantages**: Improves the wine ageing – for complex wood contact effect, thus improving bouquet and drinkability of red wine.
- **Pack**: 1kg bags, 15kg bags

**Colour Tan**

- **Characteristics**: Protects aromatic profile of the wine, enhancing a brighter and more stable colour.
- **Applications**: PX and PX based wines – for soft, ripper, drinkable aromatic wines.
- **Advantages**: Protects the wine from oxidation thus contributes to aromatic complexity.
- **Pack**: 1kg bags, 15kg bags

**Natura Tan**

- **Characteristics**: Seed Tan improves low body red wines made from unique grapes with a more balanced polyphenolic structure and greater palate length.
- **Applications**: Seed tannin mixture for premium red wines – for complex wood contact effect, thus improving bouquet and drinkability of red wine.
- **Advantages**: Protects the wine from oxidation thus contributes to aromatic complexity.
- **Pack**: 1kg bags, 15kg bags

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**Attributes of Pinnacle Tannins**

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
<th>Application</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color Tan</td>
<td>Condensed &amp; ellagic tannin (no quebracho)</td>
<td>Red wine – colour stabilisation &amp; protection</td>
<td>10-30g/L</td>
</tr>
<tr>
<td>Structure Tan</td>
<td>Condensed &amp; ellagic tannin (no quebracho)</td>
<td>Red wine – removes green/vegetal characters</td>
<td>10-30g/L</td>
</tr>
<tr>
<td>Natura Tan</td>
<td>Ellagic tannin (limousine)</td>
<td>White &amp; Rosé wine – antioxidant</td>
<td>1-10g/L</td>
</tr>
<tr>
<td>HT Tan</td>
<td>Ellagic tannin (oak)</td>
<td>Red wine – increased wood/vanilla aroma</td>
<td>1-5g/L</td>
</tr>
<tr>
<td>Seed Tan</td>
<td>Condensed tannin (grape seeds)</td>
<td>Red wine – colour stability</td>
<td>1-15g/L</td>
</tr>
</tbody>
</table>

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**Pinnacle Tannins Product Information**

The tables that follow provide an overview of the Pinnacle tannins range. Detailed information sheets can be found online at pinnaclewineingredients.com

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**Characteristics**

- **Pinnacle Natural Tan** provides a stable anti-oxidative environment to the wine for a quality ageing process.
- **Pinnacle Natural Tan** can be added at any time. When used during aging, after malolactic and/or pre-bottling, it reinforces white, red and rosé wines with pleasant, sweet and persistent tannic notes.
- **Pinnacle Natural Tan** maximizes wood contact effect, thus optimising ageing conditions in new or used barrels.
- **Pinnacle Natural Tan** adjusts and prevents oxidation and colour loss of all red wines.
- **Pinnacle Natural Tan** can be added early in maceration. Pinnacle Structure Tan inactivates oxidative enzymes, precipitates grape proteins and preserves endogenous tannins.
- **Pinnacle Natural Tan** can be added late in maceration. Pinnacle Structure Tan promotes polymerisation and stabilisation of polyphenolanthocyanin by ethyl bridge mechanism. It also removes vegetal and geosmin unpleasant aromas, thus enhancing fruity notes.
- **Pinnacle Natural Tan** can be used to support the ageing process of red wines or to add immediate structure and concentration at pre-bottling.
- **Pinnacle Natural Tan** can be added at any time (aging, after MLF or pre-bottling) and it reinforces red wines with sweet and well-balanced tannic notes.

**Applications**

- **Applications**: Seed tannin mixture for premium red wines – for complex wood contact effect, thus improving bouquet and drinkability of red wine.
- **Applications**: PX and PX based wines – for soft, ripper, drinkable aromatic wines.
- **Applications**: HT Tan can be used to support the ageing process of red wines or to add immediate structure and concentration at pre-bottling.
- **Applications**: HT Tan improves barrel effect and mimics ageing in new highly toasted barrel.
- **Applications**: HT Tan is a great tool to get richer aromatic red wines with more complex and persistent palate.
- **Applications**: HT Tan is the perfect tool to support micro-oxygenation as it promotes polymerisation and stabilisation of polyphenolanthocyanin by ethyl bridge mechanism.
- **Applications**: HT Tan stabilises colour by naturally integrating the polyphenolic structure of wines while reversing the oxidation process.
- **Applications**: HT Tan is very reactive with sulphured compounds and removes ethanethiol, methanethiol and their precursors (ethyl-thioacetate, methyl-thioacetate).
- **Applications**: HT Tan compensates natural grape tannin deficiency and decreases astringency of the wine.

**Advantages**

- **Advantages**: Protects the wine from oxidation – for complex wooded well-balanced wines.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
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**Pack**

- **Pack**: 1kg bags, 15kg bags
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**Natura Tan**

- **Characteristics**: Pinnacle Structure Tan particularly contributes to structure and aromatic stability, improving bouquet and drinkability of red wine.
- **Applications**: Complex tannin mixture for premium red wines – for soft, ripper, drinkable aromatic wines.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
- **Pack**: 1kg bags, 15kg bags

**Colour Tan**

- **Characteristics**: Pinnacle Colour Tan protects aromatic profile of the wine, enhancing a brighter and more stable colour.
- **Applications**: Pinnacle Colour Tan contributes to a more stable tannin structure with high anthocyanin content.
- **Applications**: Pinnacle Colour Tan is a powerful antioxidative tool that inhibits tyrosinase and laccase enzymatic activities (e.g. in botrytised grapes) and completes action of SO2, thus avoiding overdoses of sulphites in wine.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
- **Pack**: 1kg bags, 15kg bags

**Structure Tan**

- **Characteristics**: Pinnacle Structure Tan is the perfect tool to support micro-oxygenation as it promotes polymerisation and stabilisation of polyphenolanthocyanin by ethyl bridge mechanism.
- **Applications**: Pinnacle Structure Tan is useful when you cannot remove the seeds from the wine as it removes vegetal notes while enhancing varietal aromas.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
- **Pack**: 1kg bags, 15kg bags

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**Seed Tan**

- **Characteristics**: Seed Tan improves low body red wines made from unique grapes with a more balanced polyphenolic structure and greater palate length.
- **Applications**: Complex tannin mixture for premium red wines – for soft, ripper, drinkable aromatic wines.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
- **Pack**: 1kg bags, 15kg bags

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**HT Tan**

- **Characteristics**: HT Tan can be used to support the ageing process of red wines or to add immediate structure and concentration at pre-bottling.
- **Applications**: HT Tan decreases reductive notes that can occur in case of late racking.
- **Applications**: HT Tan improves low body red wines made from unique grapes with a more balanced polyphenolic structure and greater palate length.
- **Advantages**: Protects aromatic red wines from oxidation – for complex wooded well-balanced wines.
- **Pack**: 1kg bags, 15kg bags
Pinnacle Bacteria

Malolactic bacteria can play an essential role in winemaking. Malolactic fermentation (MLF) not only converts tart-tasting malic acid, naturally present in grape must, into softer-tasting lactic acid, but also has a direct impact on wine quality. MLF is also crucial to microbiologically stabilise most red wines. It is predominantly strains within the *Oenococcus oeni* family, that conduct malolactic fermentation.

AB Biotek has undertaken multiple applications trials on many bacteria strains and identified strains that are temperature tolerant, pH tolerant and resistant to multiple stresses that are encountered post-alcoholic fermentation. Further strains will be available once commercial production trials are successful.

There are a few risks associated with doing spontaneous malolactic fermentation. There is a high probability that an undesirable strain could do the malolactic fermentation and could cause off-flavours, but more importantly spontaneous malolactic fermentation can produce toxic metabolites like biogenic amines. The safer option is to inoculate with a commercial starter culture specifically selected for their beneficial properties.

### Attributes & product information

<table>
<thead>
<tr>
<th>Product</th>
<th>Type</th>
<th>Application</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaloSafe</td>
<td>Pinnacle MaloSafe is a pure, concentrated and freeze-dried culture of <em>Oenococcus oeni</em> sp</td>
<td>low pH white wines to high-alcohol red wines</td>
<td>1g/L</td>
</tr>
</tbody>
</table>

### Characteristics

- Thanks to its **high concentration formula and high purity standards.** Pinnacle MaloSafe can adapt to many different conditions: high alcohol, high concentration in polyphenols, low pH, etc.
- Pinnacle MaloSafe is **fast, SO₂ resistant** and does not produce detectable biogenic amines.

### Applications

- It covers a wide spectrum of wine applications: from low pH white wines to high-alcohol red wines rich in polyphenols.
- It ensures stability of the wine and provides softness and aromatic complexity to the wine.
- Pinnacle MaloSafe is suitable for sequential or co-inoculation (except Pinnacle Robust).

### Advantages

- Yeast mannoproteins — can lead to complex wines with improved mouthfeel.

### Pack

- 25g sachets

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**The winemaker’s choice for a premium wine with minimal fuss in the winery.**

Discover more at: [pinnaclewineingredients.com](http://pinnaclewineingredients.com)