maurivin™

by AB Biotek

Inspired by excellence and innovation

"Our yeasts and ingredients offer **significantly different oenological advantages** in terms of aroma, complexity and reduction of hydrogen sulphide"

Discover our range of products on:

www.abbiotek.com

next generation by maurivin™

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MAURIVIN™ WINE YEAST RANGE

The Maurivin™ range offers winemakers a consistent fermentation profile and the creation of aroma and flavour characteristics of ‘New World wine styles’ which have become increasingly popular globally.

The Maurivin™ range has been specifically developed by AB Biotek’s own oenologists in conjunction with our research partners, such as The Australian Wine Research Institute (AWRI) and the University of Adelaide, to benefit our customers working with modern-day wine practices.

The experience and knowledge that created the Maurivin™ yeast range has been gained from **over 150 years experience** in ingredients technologies and in fermentation, with support from world-renowned wine research institutions and our own customers.

The Maurivin™ product portfolio is produced in our own facilities globally, our sister ingredients companies within **Associated British Foods (ABF)** and with external strategic partners. As a primary producer, we have world-leading technology know-how for fermentation and associated technologies, innovation and development.

Our expertise in producing value-added ingredients is recognised worldwide in many industries.

Scan here for more information

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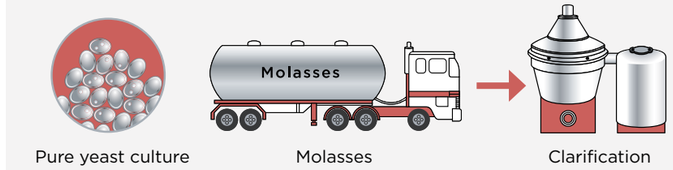
wineinfo@abbiotek.com

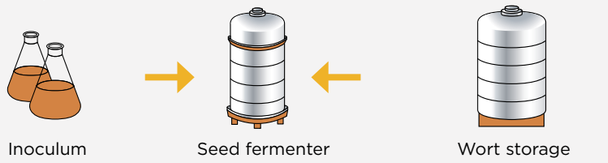
HOW WINE YEAST IS MADE

AB Biotek
PARTNERS IN FERMENTATION™

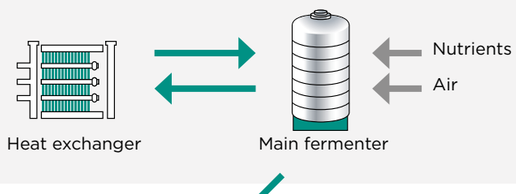
Quality System
Quality Endorsed Company
AS/NZS ISO 9001:1994
Lic No 2844
Standards Australia



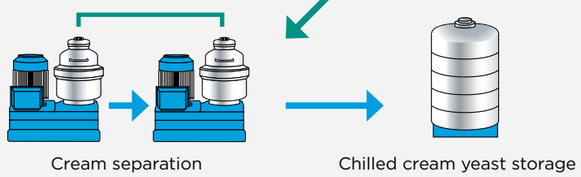
STEP 1
Preparation of Raw Materials
The Pure Yeast Culture
The production process begins with a pure wine yeast culture, grown on nutrient slopes under sterile conditions at AB Biotek's Scientific & Global Technology Group. This pure culture is then transferred to the quality control laboratory at an AB Biotek wine yeast factory.



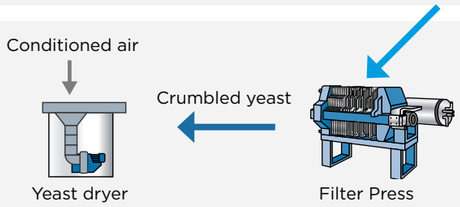
STEP 2
Production of Seed Yeast
The Inoculum
The pure culture is inoculated into the seed fermenter containing sterilised wort and other nutrients. The wort, a rich source of sugars essential for cell growth, is derived from clarified sugar cane molasses. Once the inoculum has grown to the desired cell number it is transferred to the main fermenter.



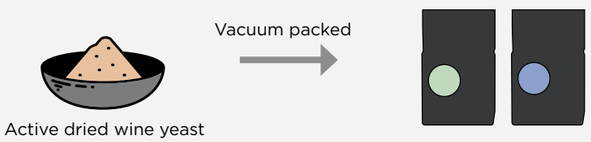
STEP 3
Fermentation
Once in the main fermenter the yeast is fed sterile molasses, nutrients and oxygen at a regulated rate to ensure optimum growth.



STEP 4
Separation & Washing
At the end of fermentation the yeast is harvested from the brew using centrifugal separators. The yeast cells are then washed with sterile water to remove unwanted fermentation products. The yeast is now a light creamy-coloured suspension referred to as cream yeast.



STEP 5
Dehydration/Drying Phase
The cream yeast is "dewatered" using a continuous filter press or rotary vacuum filter drum and then dried.



STEP 6
Packaging & Storage
The active dried wine yeast is vacuum packed into foil laminate and stored under cool dry conditions. The final product is then chemically, microbially and physically tested to guarantee our product meets specifications. Retention samples held at the factory are routinely tested for quality assurance purposes.

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Or email at:
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ATTRIBUTES OF MAURIVIN™ YEAST

CLASSIC

Strains	Wine Style	Varietal Character	Fermentation Rate	Nitrogen Requirement	Alcohol Tolerance	Ethanol Yield	Glycerol/ Mouthfeel	Esters	Flocculation	Killer Activity
Cru-Blanc	W	●●●	●●●	●●●	●●●	●●	●●●●	●●●	●●●●	K
Sauvignon	W	●●●●●	●●●	●●	●●●	●●	●●	●●	●●●	N
UOA Maxithiol	S/W	●●●●	●●●●	●●●	●●●●	●	●●●●	●●●	●	K
Elegance	S/W/Rosè	●●●●	●●●●	●●●	●●●●	●●●	●●●●	●●●	●●●	K
EP2	W/Rosè/R	●●●	●●	●	●●●	●●●	●●	●●●●	●●●	S
AWRI 796	W/Rosè/R	●●●●●	●●●●	●●●●	●●●●	●	●●●●●	●●	●●●●	K
Primeur	W/Rosè/R	●●	●●●	●●●●	●●●	●●	●●●	●●●●	●●●●	S
Maurivin™ PDM	S/W/Rosè/R	●●●	●●●●●	●●	●●●●●	●●●●	●●	●	●●●●	K
POP	S/W/Rosè	●●●●	●●●●●	●●	●●●●●	●●●●	●●	●	●●●●	K
AWRI 350	W/Rosè/R	●●	●●	●●●	●●●	●●●●	●●●	●●●●●	●●●●●	S
AWRI R2	W	●●	●●●	●●●●	●●●	●●●	●●●	●●●●	●●●●	K
UCD 522	W/R	●●●	●●●	●●	●●●	●●●●●	●●●●●	●●●●	●●●	S
BP 725	R	●●●●●	●●●●	●●●●	●●●●	●●●●	●●●●	●	●●●●	S
Maurivin™ B	R	●●●●	●●	●	●●●●	●	●●	●	●●●●	S

next generation by maurivin™

Strains	Wine Style	Varietal Character	Fermentation Rate	Nitrogen Requirement	Alcohol Tolerance	Ethanol Yield	Glycerol/ Mouthfeel	Esters	Flocculation	Killer Activity
AWRI Paragon	W	●●●●●	●●●●	●●●	●●●●	●●●●	●●●●●	●●●●	●●●●	K
AWRI Rosa	S/W/Rosè	●●	●●●●	●●●●	●●●●	●	●●●●●	●●●●	●●●●	K
Platinum	W/Rosè/R	●●●●●	●●●●	●●	●●●●	●●●●	●●●	●	●●●●	K
AWRI Fusion	W/Rosè/R	●●●●	●●●●	●●●	●●●●	●●●●	●●●●●	●●●	●●●●	K
AWRI Celebrate	S/W	●●●●	●●●●	●●●	●●●●	●●●	●●●●	●●	●●●●	K
AWRI Zevii	W/R	●●●●	●●●●	●●●	●●●●	●●●●	●●●●●	●●	●●●●	K
AWRI UVAmaX	W/R	●●●●	●●●●	●●●	●●●●●	●●●●	●●●	●●●	●●●●	K

R	Red winemaking	K	Killer	●	Low
W	White winemaking	S	Sensitive	●●●●●	High
S	Sparkling	N	Neutral		

CLASSIC RANGE

Active dry wine yeast comes in a convenient and easy-to-handle granulated form that offers a long shelf life when stored under vacuum at ambient temperatures. Winemakers across the industry prefer this form of yeast, as it induces the onset of rapid, reliable and consistent fermentation.

Experience has shown that wine and beverage quality is significantly affected by the strain of yeast conducting the fermentation. Thus, important quality parameters such as volatile acidity, hydrogen sulphide production, aromatic character and dryness of fermentation can be determined by the strain used. Proven selections of active dry wine and beverage yeast strains of high purity and quality reduce the risk of uncertainty associated with indigenous fermentation.

We recognise the quality and reliability of our active dry yeast strains are essential to the customer; hence, quality and suitability are the defining features of our wine and beverage yeasts. AB Biotek uses proprietary yeast technology for the production of our yeast products.

Below you will find the product information sheets for the Classic range.

Scan here for more information
Or email at:
wineinfo@abbiotek.com

CRU-BLANC

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its aromatic characters	*Saccharomyces cerevisiae*	Cru-Blanc was first isolated from a vineyard in the Côtes du Rhône, France

APPLICATIONS

Cru-Blanc is ideally suited for varietal white wine making, in particular, for use in barrel fermenting Chardonnay. This strain also has notable success with neutral grape varieties such as Chenin Blanc and Trebbiano (Ugni Blanc), where the addition of yeast aromatics is favoured. **Cru-Blanc** exhibits a very low capacity to consume malic acid during fermentation *(see Malic acid Research Information sheet, page 30)* and should be considered for applications where the conservation of malic acid is desirable.

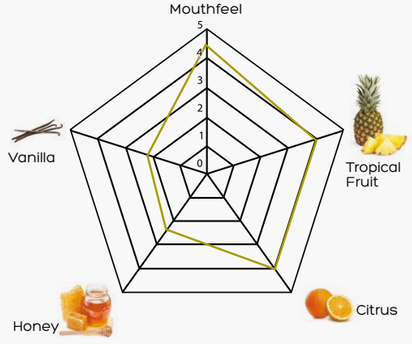
CONTRIBUTION TO WINE

Cru-Blanc is noted for its ability to enhance mouthfeel, particularly for barrel fermented Chardonnay and during yeast lees maturation. This strain can also contribute fruity aromatics during fermentation such as tropical fruit, pear and grapefruit, as well as honey and vanilla. Malolactic fermentation by lactic acid bacteria proceeds well following alcoholic fermentation with this yeast.

NITROGEN REQUIREMENT

Cru-Blanc is considered a moderate nitrogen consumer. When fermenting highly clarified juice (low solids) of high alcohol potential a nitrogen supplement (100 mg DAP/L) or Mauriferm™ fermentation aid is recommended to ensure a healthy fermentation.

CONTRIBUTION TO WINE



SAUVIGNON

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its ability to enhance the varietal aromas of Sauvignon Blanc	*Saccharomyces cerevisiae*	Isolated from France

APPLICATIONS

Sauvignon is highly recommended for Sauvignon Blanc and other white varietals displaying similar aromatic profiles. This strain has also had notable success with Riesling, Viognier, Semillon and Cabernet Sauvignon.

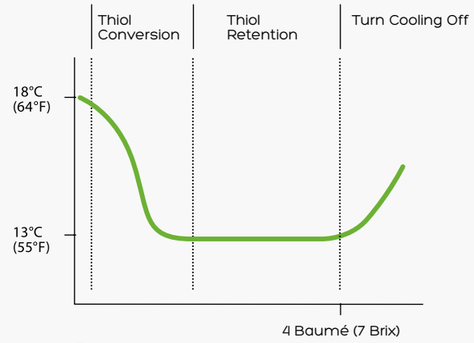
CONTRIBUTION TO WINE

Sauvignon has the ability to enhance the varietal aromas of Sauvignon Blanc by converting odourless, non-volatile precursors into aromatic thiols. This release of fruity aromatics is attributed to the high activity of the β-lyase enzyme specific to this yeast strain. Common descriptors for these released aromatics include 'passion fruit' and 'tropical fruit'.

NITROGEN REQUIREMENT

Sauvignon is considered a low to moderate consumer of nitrogen. When fermenting highly clarified juice (low solids) of high alcohol potential, a nitrogen supplement (100 mg DAP/L) or Mauriferm™ fermentation aid is recommended to ensure a healthy fermentation.

RECOMMENDED FERMENTATION TEMPERATURES



Sugar Utilisation

Data representative of globally obtained AB Biotek industry data.

UOA MAXITHIOL

suitable for **DIRECT PITCH**

Product	Type	Origin
A unique Active Dry Wine Yeast selected for its ability to enhance the aromas of white wines	*Saccharomyces cerevisiae*	A novel strain from the Wine Science Group at the University of Auckland, New Zealand

APPLICATIONS

For primary fermentation in sparkling wine, **UOA MaxiThiol** is highly recommended for Sauvignon Blanc to enhance the aromatic profile. The high aromatic thiol production combined with being POF negative ensures strong varietal characteristics for this varietal. **UOA MaxiThiol** can also be used in other white grape varietals such as Colombard, Chenin Blanc and Chardonnay when there is a need for a strong contribution from the yeast toward aromatics. **UOA MaxiThiol** can also increase varietal thiol levels in red and rosé wines leading to an increase of red fruit and blackcurrant aromas.

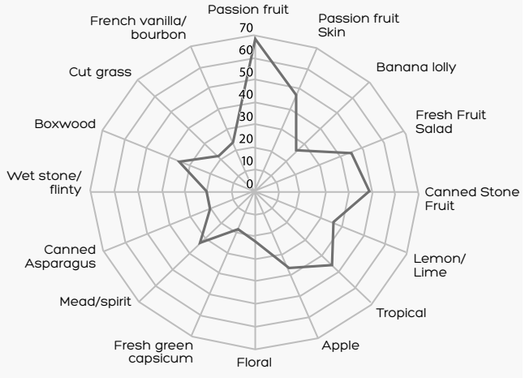
CONTRIBUTION TO WINE

UOA MaxiThiol has the ability to produce aromatic thiols which contribute significant fruity esters of 'tropical fruit' and 'passion fruit' to the finished wine. The extra fruit aromas add a depth of complexity to the wine.

NITROGEN REQUIREMENT

UOA MaxiThiol is considered a moderate user of nitrogen. A nitrogen supplement is strongly recommended when fermenting juice exhibiting low nitrogen levels and/or a high initial sugar level.

CONTRIBUTION TO WINE



Results are the average of seven wines made from different New Zealand Marlborough Sauvignon Blanc juices and assessed in duplicate by 12 trained sensory panellists. Research undertaken in the laboratory of Professor Richard Gardner at the University of Auckland, New Zealand (2012).

ELEGANCE

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its ability to enhance the varietal aromas of white wines	*Saccharomyces cerevisiae*	First isolated from Portugal

APPLICATIONS

This can be used for primary fermentation in sparkling wine. With its ability to ferment clarified juices at cooler temperatures and its capacity to lift varietal aromas from increased β-glucosidase activity, **Elegance** has become a popular strain for a range of fruit-driven white varietals such as Semillon, Riesling, Sauvignon Blanc, Chardonnay and Pinot Gris/Grigio. **Elegance** is highly suited to restarting stuck fermentations containing high residual sugar levels.

CONTRIBUTION TO WINE

Elegance is noted for its ability to impart fragrant, perfume like aromas to the wine. This strain has the capacity also to express high β-glucosidase activity, resulting in the release of fruity varietal aromas of terpene origin.

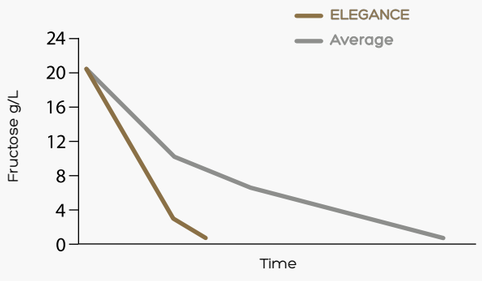
NITROGEN REQUIREMENT

Elegance is considered a low to moderate nitrogen consumer, displaying good fermentation characters when fermenting clarified musts. A nitrogen supplement may be required when fermenting musts with low levels of nitrogen.

FRUCTOSE CONSUMPTION

Elegance favours the consumption of fructose toward the end of fermentation. It can be used to restart stuck fermentations with higher fructose: glucose ratios.

FRUCTOSE CONSUMPTION OVER FINAL STAGE OF FERMENTATION



EP2

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its aromatic characters	*Saccharomyces cerevisiae*	First isolated from Épernay, France

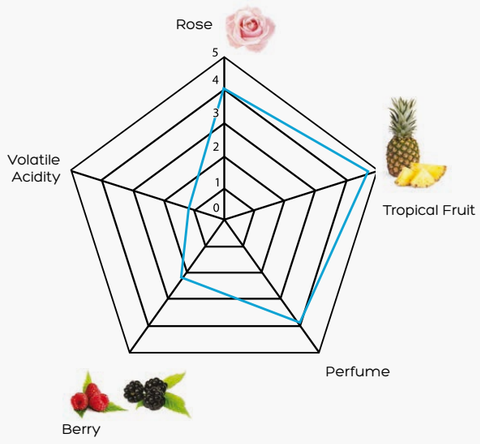
APPLICATIONS

EP2 is recommended for 'fruity, sweet' wine styles containing a higher level of residual sugar. **EP2** is susceptible to cooler temperatures (<15°C; 59°F) making this yeast easy to arrest during fermentation. With its floral aromatics **EP2** is a popular yeast for Rosé, White Zinfandel and similar fruity wine styles.

NITROGEN REQUIREMENT

EP2 is considered a low to moderate nitrogen consumer. When fermenting highly clarified juice (low solids) of high alcohol potential a nitrogen supplement (100 mg DAP/L) or Mauriferm™ fermentation aid is recommended to ensure a healthy fermentation.

CONTRIBUTION TO AROMA



AWRI 796

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its neutral characteristics	*Saccharomyces cerevisiae*	AWRI 796 was first isolated in South Africa

APPLICATIONS

AWRI 796 is generally recommended for red wine production, particularly varietal wines such as Shiraz/Syrah, Cabernet, Merlot and Pinot Noir. For successful white wine fermentations, such as Chardonnay, Sauvignon Blanc, Semillon and Riesling, it is advisable to carefully acclimatise the yeast to low temperatures prior to and during fermentation, and supplement the ferment with additions of nitrogen as required. Agitation and/or increasing the temperatures during the final stages of fermentation will assist to maintain the yeast in suspension.

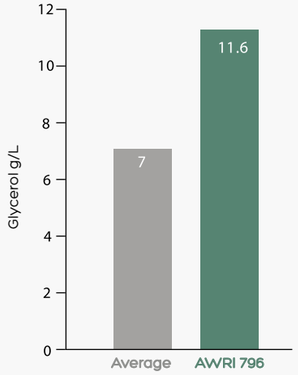
CONTRIBUTION TO WINE

AWRI 796 produces low levels of aroma and flavour compounds and is considered to be reasonably neutral. It is a highly desirable yeast strain for the fermentation of distinctly varietal wines where the oenologist desires little or no interference from the yeast strain over the natural varietal character of the grapes. In red grape juices, AWRI 796 produces blackberry, plum and raisin aromas (*see Yeast & Shiraz Aromas research information sheet, page 31*).

NITROGEN REQUIREMENT

AWRI 796 is technically a low nitrogen consumer and normally completes fermentation of low YAN musts of moderate maturity (<13 Bé) without nitrogen addition.

GLYCEROL PRODUCTION



PRIMEUR

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its aromatic characters	*Saccharomyces cerevisiae*	INRA Narbonne, France

APPLICATIONS

Primeur is ideal for Rosé and white wine making, in particular, for 'young, fruity' varietal blends made for early consumption. It is also successful in producing nouveau red wine styles. **Primeur's** capacity to consume malic acid also makes this yeast popular for cool climate winemaking, where high acidity can be common. Due to the reduction in acid levels wines made with this strain are less bitey, displaying a more balanced palate.

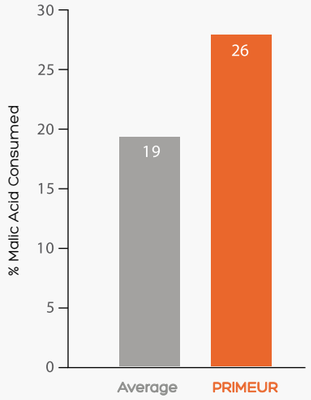
NITROGEN REQUIREMENT

Primeur is considered a moderate consumer of nitrogen. When fermenting highly clarified juice (low solids) of high alcohol potential a nitrogen supplement (100 mg DAP/L) or Mauriferm™ fermentation aid is recommended to ensure a healthy fermentation.

MALIC ACID CONSUMPTION

Primeur has the capacity to consume up to 20-30% malic acid during primary fermentation. Trials undertaken by Professor Aline Lonvaud of the Bordeaux Wine Institute (Université Victor Segalen Bordeaux) confirmed this strain has the capacity to consume up to 32% malic acid in red must during fermentation.

MALIC ACID CONSUMPTION



Results obtained from research conducted by Professor A. Lonvaud, Bordeaux Wine Institute, France.

MAURIVIN™ PDM

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its medium aromatic characters and robust fermentations	*Saccharomyces cerevisiae (var. bayanus)*	First isolated in France

APPLICATIONS

A general purpose yeast strain recommended for white and red wine production, particularly varietal wines such as Chardonnay, Chenin Blanc, Sauvignon Blanc, Semillon, Riesling, Cabernet, Merlot and Shiraz/Syrah. **Maurivin™ PDM** is also suitable for the production of méthode champenoise wine styles.

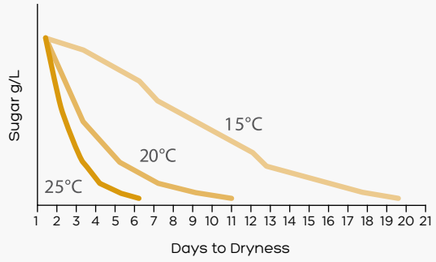
CONTRIBUTION TO WINE

Maurivin™ PDM produces moderate to low levels of aroma and flavour compounds to the wine. It is a highly desirable yeast strain when the Oenologist requires a subtle but positive aromatic contribution from the yeast.

NITROGEN REQUIREMENT

Fermentation at high temperatures may result in accelerated depletion of free amino nitrogen in the must/juice. In these situations it may be necessary to add free or available nitrogen.

FERMENTATION RATES OF PDM AT DIFFERENT FERMENTATION TEMPERATURES



MAURIVIN™ POP

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its robustness and secondary fermentation properties	*Saccharomyces cerevisiae*	Isolated in Italy and purified by AB BIOTEK Global Technology Group

APPLICATIONS

Maurivin™ Pop is well suited to making primary base wines due to its strong fermentation characteristics. It then has the capability to undertake the secondary fermentation using both méthode champenoise and Charmat methods to produce sparkling wine styles such as Prosecco and Cava.

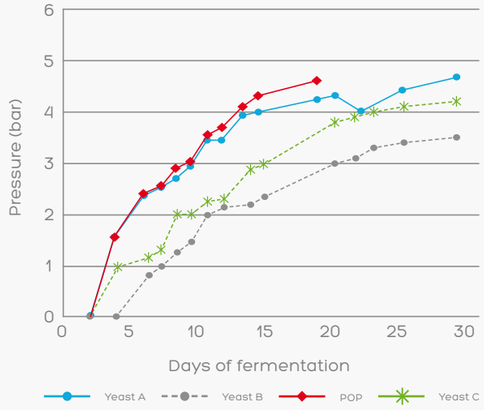
Being such a robust yeast, it also has the ability to act as a restart yeast for stuck and sluggish fermentations. **Maurivin™ Pop** can also be used for rebate wines due to its inherently low total SO_2 production.

CONTRIBUTION TO WINE

Maurivin™ Pop produces clean and subtle aromas that are consistent with good wine production. Classified as a neutral yeast, **Maurivin™ Pop** allows the grape varietal characteristics to shine through.

NITROGEN REQUIREMENT

Maurivin™ Pop has a relatively low nitrogen requirement.



Trials conducted at the University of Padova during the 2016 vintage using Prosecco base DOCG and fermenting at 16°C after 2 bar.

AWRI 350

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its aromatic characteristics	*Saccharomyces cerevisiae*	The Australian Wine Research Institute culture collection

APPLICATIONS

A general purpose yeast strain recommended for white wine production from neutral grape varieties where the Oenologist requires a positive and obvious aromatic contribution from the yeast. Due to its flocculation characteristics, **AWRI 350** is suitable for the production of naturally sweet wines produced from arrested fermentations. **AWRI 350** is also suitable for the production of highly aromatic wines from grape varieties such as Gewürztraminer and Muscat where the aromatic esters of the yeast are complimentary. **AWRI 350** is also suitable for the production of nouveau red wine styles and Rosé from grape varieties such as Gamay and Grenache.

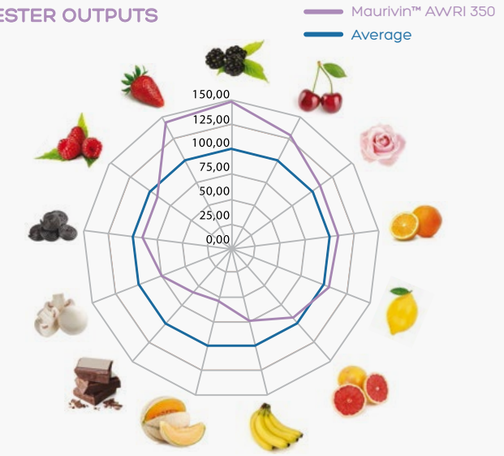
CONTRIBUTION TO WINE

AWRI 350 produces high levels of aroma and flavour compounds to the wine with the contributing characters often described as 'fruity esters', such as pineapple and banana. It is a highly desirable yeast strain when the Oenologist requires a positive and obvious contribution from the yeast.

NITROGEN REQUIREMENT

AWRI 350 is considered a low nitrogen consumer.

ESTER OUTPUTS



Values representative of globally obtained AB Biotek industry data.

AWRI R2

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its aromatic characteristics	*Saccharomyces cerevisiae (var. bayanus)*	Bordeaux, France. Deposited with The Australian Wine Research Institute culture collection

APPLICATIONS

AWRI R2 is ideally suited for white wine making, in particular Riesling, Semillon and Gewürztraminer. Its ability to contribute fruity aromatics also makes this yeast popular for neutral varieties such as Colombard and Chenin Blanc.

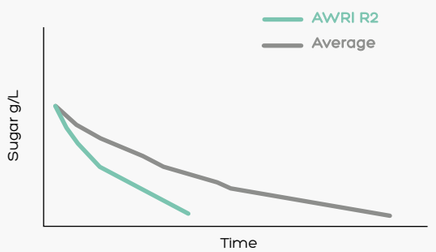
CONTRIBUTION TO WINE

AWRI R2 is noted for its high levels of fruity yeast aromatics such as tropical fruit, grapefruit, guava, lychee and pineapple. AWRI R2 is popular for white wine making when there is need for a strong contribution of fruity aromas.

NITROGEN REQUIREMENT

AWRI R2 is considered a moderate to high user of nitrogen. A nitrogen supplement is strongly recommended when fermenting musts or juice exhibiting low nitrogen levels (*see Yeast Assimilable Nitrogen Research Information sheet, page 28*).

FERMENTATION CURVE AT 12°



Reflective of fermentation curves under typical Australian conditions, at 12°C and using high quality grape juice.

UCD 522

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its complex aromatic characters	*Saccharomyces cerevisiae*	First isolated from the University of California, Davis Campus

APPLICATIONS

UCD 522 is a general purpose yeast recommended for both red and white wine making, but popular more so for the production of complex, varietal red wines such as Shiraz/Syrah, Zinfandel, Merlot and Grenache.

CONTRIBUTION TO WINE

UCD 522 exhibits complex aromatics during fermentation whilst still respecting the varietal characters of the fruit. The yeast aromatics of UCD 522 are often described as 'old wine world', reminiscent of the complexity of good indigenous 'natural' fermentations. This yeast is popular with winemakers wanting to produce a complex wine or requiring another blending option.

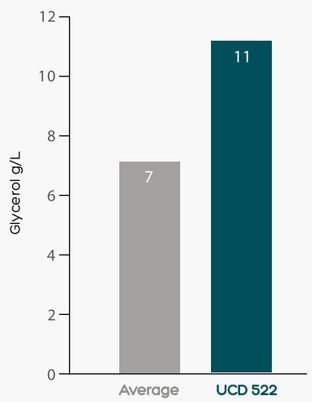
NITROGEN REQUIREMENT

UCD 522 is technically a moderate nitrogen consumer, displaying a nitrogen requirement similar to Maurivin™ strain **AWRI 796.** For potentially high alcohol, low solids fermentations, two to three additions of nitrogen supplement (100 mg DAP/L) or a Mauriferm™ fermentation aid will help produce a high population of healthy yeast.

MALIC ACID CONSUMPTION

UCD 522 has the capacity to consume up to 30% malic acid during primary fermentation.

GLYCEROL PRODUCTION



Research conducted by Dr Vladimir Jiranek and Dr Paul Grbin, University of Adelaide, Australia (2005).

BP 725

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its ability to enhance the varietal flavours and aromas of red wines	*Saccharomyces cerevisiae*	France

APPLICATIONS

BP 725 is ideally suited for varietal red wine making. With its ability to enhance colour and possessing a high alcohol tolerance, BP 725 is often used for fruit driven red varietals such as Shiraz/Syrah, Zinfandel, Cabernet Sauvignon, Grenache and Merlot.

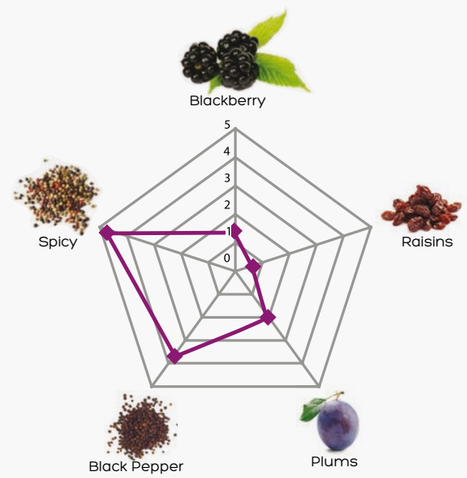
CONTRIBUTION TO WINE

BP 725 is noted for its ability to enhance the varietal flavour of red wines through increased colour extraction and minimal colour loss during fermentation. BP 725 can also contribute yeast aromatics, although subtle in nature, allowing the varietal fruit to make a strong contribution.

NITROGEN REQUIREMENT

BP 725 is considered a moderate to high nitrogen consumer. When fermenting highly clarified juice (low solids) of high alcohol potential a nitrogen supplement (100 mg DAP/L) or Mauriferm™ fermentation aid is recommended to ensure a healthy fermentation.

CONTRIBUTION TO WINE



Research undertaken by Professor G. Skurray & T. Walsh, of University of Western Sydney, Australia (2006).

MAURIVIN™ B

suitable for **DIRECT PITCH**

Product	Type	Origin
A pure Active Dry Wine Yeast selected for its neutral characteristics	*Saccharomyces cerevisiae*	First isolated in France

APPLICATIONS

Due to its ability to enhance varietal aroma, flavour and colour, **Maurivin™ B** is recommended for red varieties such as Shiraz/Syrah, Cabernet Sauvignon, Zinfandel, Pinotage, Grenache and Pinot Noir. **Maurivin™ B** is highly recommended when wanting to lower a wine's ethanol content. **Maurivin™ B** is popular also with winemakers wanting to reduce malic acid levels during primary fermentation.

CONTRIBUTION TO WINE

Maurivin™ B produces low levels of aroma and flavour compounds, allowing the full expression of varietal characters. It is also noted for its ability to enhance colour extraction of red varieties during fermentation. The ethanol content is, on average, lower in wines fermented with **Maurivin™ B**, as are the levels of malic acid.

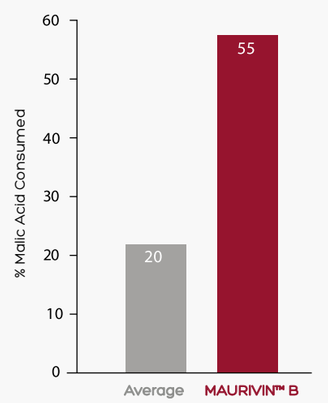
NITROGEN REQUIREMENT

Maurivin™ B is considered a low nitrogen consumer.

MALIC ACID CONSUMPTION

Maurivin™ B has the capacity to consume up to 56% malic acid during primary fermentation (*see Malic Acid Research Information sheet, page 30*).

MALIC ACID CONSUMPTION



Results obtained from research conducted by Professor A. Lonvaud, Bordeaux Wine Institute, France.

AWRI PARAGON

Hybrid yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Hybrid Wine Yeast used to enhance the tropical fruit characters and mouthfeel in high quality Chardonnay	*Saccharomyces cerevisiae x Saccharomyces paradoxus (non-GMO hybrid)*	The Australian Wine Research Institute and produced under licence by AB Biotek. Also known as AWRI 1501

APPLICATIONS

In winemaking trials in the USA and Australia, **AWRI Paragon** was shown to be a reliable and steady fermenter in tank Chardonnay. This yeast should be used when there is a desire to add value to Chardonnay wines, but also Colombard, Semillon and other white varieties. Caution should be used with barrel fermentations as this yeast can produce some foam in some juices.

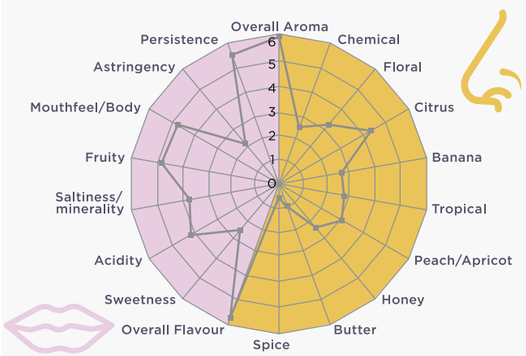
CONTRIBUTION TO WINE

The resultant wine using **AWRI Paragon** has intense tropical fruit aromas as well as ester and floral notes that remain in the finished wine. The balance of all aroma compounds generates a synergistic effect that is only seen in premium quality Chardonnay. **AWRI Paragon** also impacts the palate, producing wines with increased palate weight, complexity and mouthfeel which is consistent across the AWRI hybrid yeast series.

RATE OF FERMENTATION

AWRI Paragon has a short lag phase with a medium to fast fermentation speed at temperatures of 13–26°C (55–79°F).

CONTRIBUTION TO WINE



Descriptive analysis data from nine wine experts of a 2017 Chardonnay produced at UC Davis research winery. Good quality fruit was sourced from the Yolo region and picked at 24.6 Brix. Fermentations were conducted in triplicate at 15°C for 8 days when residual sugar was <1 g/L.

AWRI ROSA

Floral aroma yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Wine Yeast that intensifies the rose/floral compounds of 2-phenylethanol and 2-phenylethyl acetate in wine	*Saccharomyces cerevisiae*	The Australian Wine Research Institute and produced under licence by AB Biotek. Also known as AWRI 2965

APPLICATIONS

This can be used for primary fermentation in sparkling wine. Following years of extensive commercial winemaking trials by Dr Toni Cordente at The Australian Wine Research Institute funded by Wine Australia, the best grape varieties suitable for this yeast appear to be white varietals when there is a need for a strong contribution from the yeast. Pinot Gris, Riesling, Chardonnay, Colombard and Semillon are well suited. **AWRI Rosa** has been trialled on red grape varietals such as Grenache and Shiraz, however red fruit and berry notes were masked when using this yeast, suggesting that this yeast is more suitable for white grape varietals.

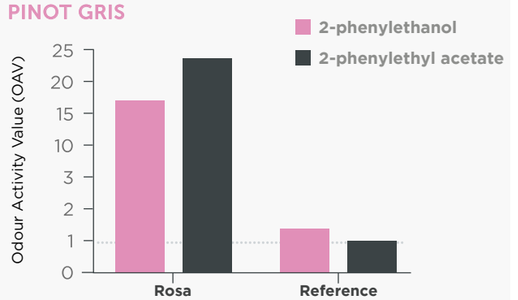
CONTRIBUTION TO WINE

AWRI Rosa was selected due to its inherent capability to produce elevated levels of 2-phenylethanol and 2-phenylethyl acetate in all wine styles. These compounds are well known for their rose petal and floral aromas and are present in high concentrations in finished wines made with this yeast.

RATE OF FERMENTATION

AWRI Rosa has a short to medium lag phase with a medium to fast fermentation speed at temperatures of 15–28°C (59-82°F). At cooler temperatures we advise to turn the cooling off toward the end of fermentation to allow the yeast to ferment dry.

PINOT GRIS



Odour activity value of 2-phenylethanol and 2-phenylethyl acetate relative to the odour threshold of each compound. Fermentations were conducted at the Hickinbotham Roseworthy Wine Science Laboratory in Adelaide, Australia.

PLATINUM

Low hydrogen sulphide yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Wine Yeast that enhances varietal aromas and flavours via the elimination of reductive characters such as hydrogen sulphide	*Saccharomyces cerevisiae*	Developed by Maurivin™ and The Australian Wine Research Institute

APPLICATIONS

Platinum is recommended for the production of fruit-driven wines with only a small contribution from the yeast. Most noticeable is the absence of any reductive characters, thus increasing the positive varietal characters of the wine. **Platinum** is ideal for all varieties and wine styles. This yeast is also recommended when fermenting fruit sourced from vineyards whose wines have traditionally been reductive in character.

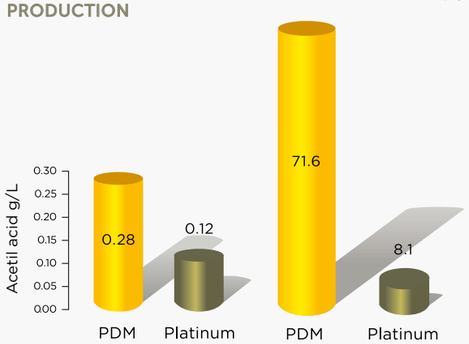
CONTRIBUTION TO WINE

Platinum is a unique wine yeast that cannot produce any detectable hydrogen sulphide. The use of this yeast eliminates any potential yeast–derived reductive characters, even when fermenting juices deficient in nitrogen. The resultant wines have increased varietal aromatics favourable for high quality wine production.

RATE OF FERMENTATION

At warmer temperatures of 20–30°C (68–86°F) **Platinum** exhibits a short lag phase and a rapid fermentation rate. **Platinum** is ideal for fermenting at lower temperatures of 12–16°C (53–61°F) due to its inherent vigour.

ACETIC ACID PRODUCTION



Research was undertaken at The Australian Wine Research Institute (2007).

PRODUCTION OF H_2S [µg/L]

Research was undertaken at The Australian Wine Research Institute (2007). The sensory threshold for H_2S in wine is 50-80 µg/L (Wenzel et al., 1980).

AWRI FUSION

Hybrid yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Hybrid Wine Yeast selected for its ability to increase aroma and palate complexity	*Saccharomyces cerevisiae x Saccharomyces cariocanus (non-GMO hybrid)*	The Australian Wine Research Institute. Also known as AWRI 1502

APPLICATIONS

AWRI Fusion is highly recommended when there is a need to increase the complexity of both the aroma and the palate of the wine. For white varieties such as Pinot Gris/Grigio, Chardonnay, Semillon, Chenin Blanc and Colombard, this hybrid strain contributes positively to the aroma. **AWRI Fusion** is perfect for red wines such as Pinot Noir and Pinotage and was the most popular yeast in Pinot Noir tastings at the 8th International Cool Climate Symposium (Ref: S. Logan, Twitter, 2012). For other red varieties such as Cabernet, Merlot and Malbec, this hybrid will improve complexity, mouthfeel and fruit intensity.

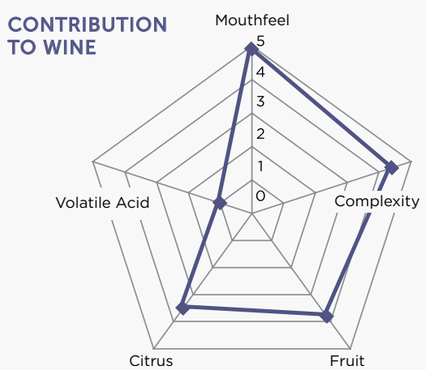
CONTRIBUTION TO WINE

This hybrid imparts a major contribution to mouthfeel and texture of the wine, with increased complexity and aromatics including peach, nectarine, lemon zest and floral notes for white wines. In red varietals, aromas include cherries, red berries, perfume and crushed violets.

RATE OF FERMENTATION

AWRI Fusion has a short lag phase and exhibits a rapid fermentation rate at temperatures of 18–30°C (64–86°F). At cooler temperatures of 15°C (59°F) this strain has a relatively moderate fermentation rate.

CONTRIBUTION TO WINE



Data obtained from the 13th Australian Wine Industry Technical Conference, Workshop 29, (2007).

AWRI CELEBRATE

Hybrid yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure active dry hybrid yeast used to enhance the aroma and mouthfeel in sparkling wines and premium white wines	*Saccharomyces cerevisiae x Saccharomyces mikatae (non-GMO hybrid)*	The Australian Wine Research Institute and produced under licence by AB Biotek. Also known as AWRI 2526

APPLICATIONS

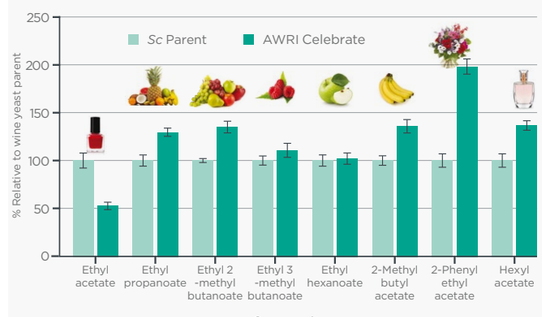
In winemaking trials around the world, **AWRI Celebrate** was successful in the UK for secondary fermentation of sparkling wines and has also been used in premium Chardonnay trials in Australia with excellent results. This yeast is perfect for intensifying fruity characters and brioche-like notes in premium wines.

CONTRIBUTION TO WINE

AWRI Celebrate has a wide range of novel attributes that change the aroma and palate of sparkling and premium white wines. The primary fermentation characters have greater fruity, strawberry and floral characters, as well as pleasant biscuit and brioche aromas. Furthermore, this yeast exhibits reduced ethyl acetate (nail polish) aroma.

RATE OF FERMENTATION

AWRI Celebrate has a short lag phase with a medium to fast fermentation speed at temperatures of 13–26°C (55–79°F).



Sensory analysis for Shiraz wines during the 2018 vintage. Ferments were conducted at The Australian Wine Research Institute trial winery at 20°C with **AWRI Obsession** wines sequentially inoculated with **AWRI 796**.

AWRI ZEVII

Hybrid yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Hybrid Wine Yeast selected for its ability to increase aroma and palate complexity	*Saccharomyces cerevisiae x Saccharomyces kudriavzevii (non-GMO hybrid)*	The Australian Wine Research Institute. Also known as AWRI 1503

APPLICATIONS

AWRI Zevii is recommended for increasing the complexity and fruit concentration of wines. The aromatics produced from this hybrid are particularly suited to white grape varieties such as Pinot Gris/Grigio, Viognier and Verdelho. AWRI Zevii is very popular for increasing the palate weight and mouthfeel of red grape varieties, such as Cabernet, Shiraz/Syrah, Malbec and Merlot.

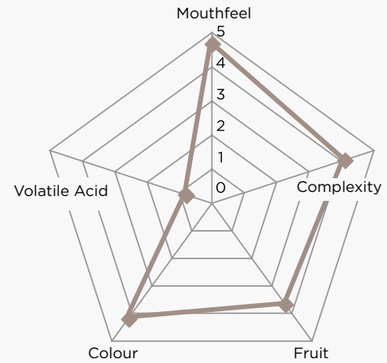
CONTRIBUTION TO WINE

AWRI Zevii has the capacity to significantly enhance the complexity of the wine whilst maintaining strong varietal characters. This hybrid imparts a richness to the palate, with increased fruit flavours, complexity and texture. Enhanced varietal fruit aromatics in white wine include apricot, peach and pear. In red wines, the aromatics are less subtle, allowing the varietal aromas to come through.

RATE OF FERMENTATION

AWRI Zevii displays a short lag phase and is a rapid fermenter at temperatures of 18-30°C (64-86°F). This hybrid yeast is a moderate fermenter at cooler temperatures of 15°C (59°F).

CONTRIBUTION TO WINE



Research conducted on six grape varietals, over six wine regions by Professor Zironi at the University of Udine, Italy (2006).

AWRI UVAmaX

Hybrid yeast

suitable for **DIRECT PITCH**

Product	*Type*	*Origin*
A pure Active Dry Hybrid Wine Yeast used to lower volatile acidity in wine, particularly late harvest, dessert-style wines	*Saccharomyces cerevisiae x Saccharomyces uvarum (non-GMO hybrid)*	The Australian Wine Research Institute and produced under licence by AB Biotek. Also known as AWRI 1505

APPLICATIONS

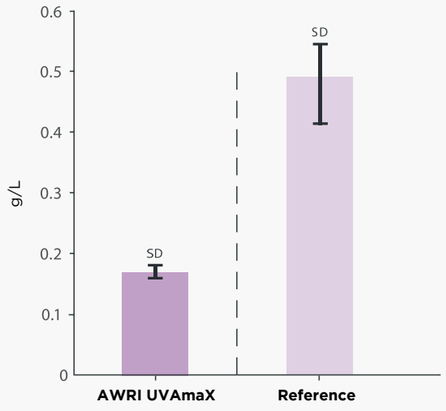
In winemaking trials in Australia and the USA, **AWRI UVAmaX** was shown to clearly reduce the volatile acidity as observed by chemical and sensory analysis in Chardonnay, Merlot, Zinfandel and Semillon trials. We recommend using this yeast when there is a desire to reduce volatile acidity levels which can be elevated in dessert, late harvest-style wines; the alcohol tolerance of this yeast makes it suitable for such applications.

CONTRIBUTION TO WINE

AWRI UVAmaX has the natural capability to reduce the level of volatile acidity in wine. The resultant wine made with this yeast makes it more pleasant due to the decrease in acetic acid (vinegar) and ethyl acetate (nail polish) aromas.

RATE OF FERMENTATION

AWRI UVAmaX has a short lag phase with a medium to fast fermentation speed at temperatures of 12–26°C (54–79°F).



VA (as acetic acid) production from **AWRI UVAmaX** and a reference strain in a 30.8 Brix Sonoma Zinfandel. Fermentations were conducted in triplicate at 25°C at the UC Davis research winery.

SUMMARY INFORMATION

AWRI

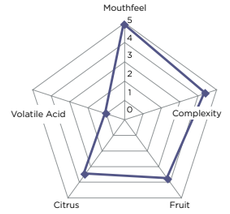
Hybrid yeast

CREATE VALUE WITH HYBRID YEAST

Hybrid yeast developed by The Australian Wine Research Institute have novel and diverse aroma and flavour characteristics, with palate complexity and mouthfeel enhancement a noticeable improvement.

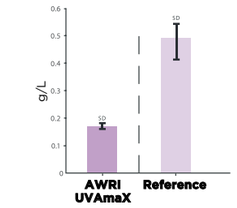
AWRI FUSION

- *S. cerevisiae x S. cariocanus* (AWRI 1502).
- Contributes stonefruit and floral notes in whites; cherries and perfume in reds.
- Best for aromatic whites and light red varietals.



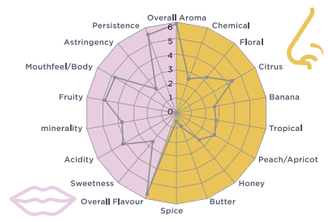
AWRI UVAmaX

- *S. cerevisiae x S. uvarum* (AWRI 1505).
- Produces low VA with high alcohol tolerance.
- Best for high sugar juices and late harvest, dessert-style wines.



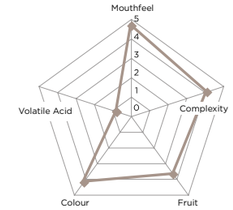
AWRI PARAGON

- *S. cerevisiae x S. paradoxus* (AWRI 1501).
- Contributes tropical fruit, esters and floral notes.
- Best for premium Chardonnay.



AWRI ZEVII

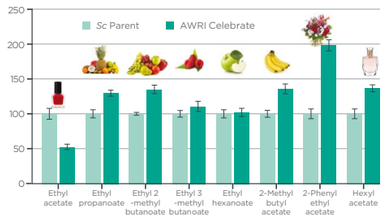
- *S. cerevisiae x S. kudriavzevii* (AWRI 1503).
- Increases palate weight and complexity in white and red grape varietals.



AWRI CELEBRATE

NEW

- *S. cerevisiae x S. mikatae (AWRI 2526)*
- Intensifies fruity characters and brioche-like notes in premium wines.
- Best for aromatic sparkling and white wines.



MAURIVIN™ WINE INGREDIENTS PORTFOLIO

The Maurivin™ Wine Ingredients Portfolio represents the latest addition to our capability in providing a full range of solutions for winemakers.

The Maurivin™ range of wine yeast and Mauriferm™ fermentation aids are renowned for their **high quality, purity and performance** and are preferred by winemakers across the globe for the production of quality wines. To enhance our customers experience, we have complemented the product range with an array of tannins, enzymes and fermentation aids to simplify our customers purchasing process.

Each of these **high quality biotechnologies** has a strong contribution to producing improved wine styles. While tannins are generally used as an antioxidant, they can also reduce herbaceous and under-ripe characters in wine. Our range of enzymes has been carefully chosen to be the benchmark as a **cost-effective method of increasing yield, flavour and colour in different varieties and styles of wine**.

To assist you in identifying which wine ingredient is most suitable for your desired application, please see our product information sheets below.

Scan here for more information
Or email at:
wineinfo@abbiotek.com

TANNINS

As 'New World wine styles' are normally fruit driven, approachable, riper and rounder they are more likely to have smoother tannins.

The **Mauritan™** range of tannins enable wines to show a good balance of fruit, structure, alcohol, and mouthfeel. We strive to enable winemakers to produce quality wines that are opulent, rich, lush and dense. Our tannins have been carefully selected to work with our specialist yeast and ingredient ranges. Tannins have been added to wine for over a century to enhance complexity and texture while also reducing browning effects in wines stored for long periods of time.

Our tannins are carefully selected with two key targets in mind: antioxidation and mouthfeel. Some tannins are far more effective as an antioxidant than others and the stoichiometry of our 100 % chestnut (ellagic) tannins are perfect for use as a sacrificial tannin. With regards to mouthfeel, our R&D team have selected a blend of hydrolysable and condensed tannins that remove green, herbaceous characters from wine, enhance the volume and mouthfeel, as well as generating bonds to stabilise colour in red wines.

Below you will find the product information sheets.

MAURITAN™ VINI
product information

Complex tannin for Red Wines

A blend of tannins which early in fermentation inactivates oxidative enzymes, precipitates grape proteins and preserves endogenous tannins. When added later during fermentation this tannin promotes polymerisation and stabilisation through the formation of ethanol bridges.

APPLICATIONS
Mauritan™ Vini can be used for the following wine applications:
- Enhancing the tannin structure and volume in mouthfeel.
- Removing herbaceous and reduced aromas in red wines, thus highlighting fresh notes which are typical of young red wines.
- Increasing a wines resistance against oxidation.
- Inhibiting oxidative enzymes such as laccase and tyrosinase.
- Creating tannin-anthocyanin binding for the stabilisation of colour in musts and red wines.

INSTRUCTIONS FOR USE
Prepare a 20-30 % solution dissolving the tannin into warm water between 40-50°C (104-122°F) with vigorous stirring. Let the solution cool at room temperature. Then add the tannin solution whilst stirring. For handling purposes, we suggest the use of the following materials: stainless steel, plastic, glass or ceramic.
Note: If using enzymes, give them the opportunity to work on the skins for 6-8 hours prior to adding any tannins to the must.

INDICATIVE DOSAGE RATES
Structural improvement 10-20 g/hL (100-200 ppm).
Colour stabilisation 5-50 g/hL (50-500 ppm).
Botrytis inhibition 20-80 g/hL (200-800 ppm).

FORMULATION
A blend of hydrolysable and condensed tannins.

Product approved for winemaking in accordance with Reg. (EC) N. 606/2009 International Code of Oenological Practices.

MAURITAN™ SACRI
product information

A sacrificial tannin for red winemaking

APPLICATIONS
Mauritan™ Sacri can be used for the following wine applications:
- Removing herbaceous and reduced aromas in red wines, thus enhancing fruity notes.
- Enhancing the antimicrobial properties of sulphur dioxide, inhibiting the growth of microorganisms.
- Increasing a wines resistance against oxidation.
- Inhibiting oxidative enzymes such as laccase and tyrosinase.
- Removing unstable proteins through precipitation (sacrificial effect).
- Assisting with the formation of stable bonds with all the polyphenols, in particular, anthocyanins.

INSTRUCTIONS FOR USE
Prepare a 20-30 % solution dissolving the tannin into warm water between 40-50°C (104-122°F) with vigorous stirring. Let the solution cool at room temperature. Then add the tannin solution whilst stirring. For handling purposes, we suggest the use of the following materials: stainless steel, plastic, glass or ceramic.
Note: If using enzymes, give them the opportunity to work on the skins for 6-8 hours prior to adding any tannins to the must.

INDICATIVE DOSAGE RATES
Alcoholic fermentation 3-20 g/hL (30-200 ppm).
Colour stabilisation 5-50 g/hL (50-500 ppm).
Finishing 5-20 g/hL (50-200 ppm).

FORMULATION
Chestnut derived tannins (100 % ellagic).

Product approved for winemaking in accordance with Reg. (EC) N. 606/2009 International Code of Oenological Practices.

ENZYMES

Enzymes are just like scissors, with each enzyme having a different specificity and function.

The **Maurizym™** range has been **developed to be ultra-efficient for each function** they are required to do. One of the main enzymes required by winemakers is a pectinase that increases juice yield from grapes, and we have a **range of strong pectinases that require a low dosage yet are extremely effective**. AB Biotek also has **developed enzymes combinations that are multifunctional** and hence can be used in the flotation and clarification processes while improving juice yields. Furthermore, we are developing colour enzymes that provide increased pigment and hue to red wines, and just as importantly the enzyme assists in stability over time.

Below you will find the product information sheets.

MAURIZYM™ WHITE XP

product information

APPLICATIONS

Maurizym™ White XP should be used to reduce juice viscosity, improve flotation efficiency and in compacting the lees during the clarification phase. It is very efficient and can be used on difficult, high viscosity grape juices such as Muscat and Ugni Blanc.

INSTRUCTIONS FOR USE

Add to grapes at the crusher or in the press. Dilute into water (1:10) to maximise distribution of the enzyme into crushed grapes.

DOSAGE RATES

Dosage depends on grape variety, contact time and temperature as follows:

White & Red maceration:

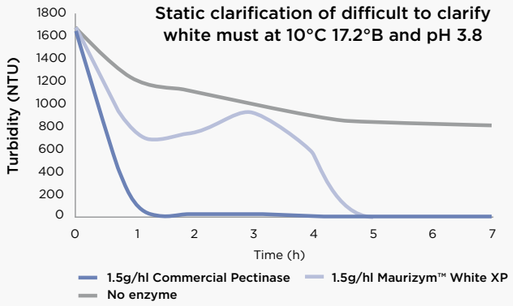
For highly viscous grape juices, we recommend a dosage rate of 3-3.5 ml/hL (114-133 ml/1000 gallons) for 2-4 hours at ambient or cool temperatures.
Alternatively, for juices > 24˚C (75˚F) a reduced dosage of 2-2.5 ml/hL (76-95 ml/1000 gallons) can be used.

Flotation & Clarification:

Maurizym™ White XP should be added at the crusher at 1-2 ml/hL (38-76 ml/1000 gallons).

TYPE

A stable and extremely efficient liquid pectinase with side activities.



Enzymatic clarification of difficult to clarify white must at 10°C - 17°B and pH 3.8 using **Maurizym™ White XP**.

MAURIZYM™ PECTINASE

product information

APPLICATIONS

Maurizym™ Pectinase is a multi-purpose pectinase for white and red grape juice to increase yield. It also has clarification and flotation capabilities. This enzyme does not contain significant cellulase activities that could extract bitter components.
Maurizym™ Pectinase also has high thermal stability for thermovinification processes such as thermoflash, thus allowing it to work longer in such processes.

INSTRUCTIONS FOR USE

Add to grapes at the crusher or in the press. Dilute into water (1:10) to maximise distribution of the enzyme into crushed grapes.

DOSAGE RATES

Dosage depends on grape variety, contact time and temperature as follows:

White & Red maceration:

Chardonnay generally requires 0.5-1 ml/hL (19-38 ml/1000 gallons) for 30-60 minutes at ambient temperature. Higher viscosity juices such as Sauvignon Blanc, Semillon, Merlot and Shiraz need higher doses of 1-1.5 ml/hL (38-57 ml/1000 gallons) in the same conditions. For high viscosity juices such as Muscat, we recommend to use **Maurizym™ White XP**. **Maurizym™ Pectinase** does not contain significant colour degrading activities.

White depectinization/clarification/flotation:

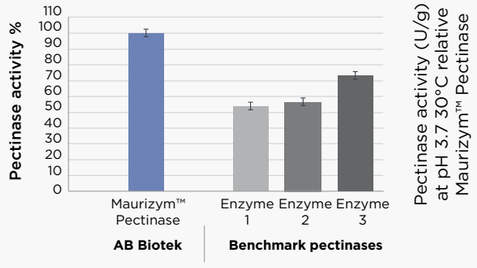
Maurizym™ Pectinase will effectively and rapidly remove pectin in any juice. Doses of 1 ml/hL (38 ml/1000 gallons) to achieve a pectin negative test after 60 min at 15-21˚C (60-70˚F)are possible, with increases to 2 ml/hL (76 ml/1000 gallons) required for cloudier juices with a higher pectin content.

High temperature maceration:

Due to its inherent temperature tolerance, **Maurizym™ Pectinase** is effective up to 65˚C (150˚F) and should be added at the crusher.

TYPE

A stable and tolerant liquid pectinase.



ENZYMES (cont.)

MAURIZYM™ PECTINASE 4X

product information

Following trials in the heart of **New Zealand's Marlborough** region using Sauvignon Blanc juice, in collaboration with the highly regarded **Bragato Research Institute**, we have demonstrated the ability of concentrated **Maurizym™ Pectinase 4X** to enable improved juice extraction times and yield.

This **concentrated Pectinase** assists winemakers to either reduce their dosage rate with the same juice processing times, or retain the same dosage rate and reduce the time of juice processing by **up to 30%**.

Other added **benefits** to winemakers include, reducing the amount of water being shipped unnecessarily by reducing cold storage requirements for enzymes at the winery, and allows wineries to become more flexible during vintage, by adjusting the **Maurizym™ Pectinase 4X** addition rates to the speed of grape intake.

APPLICATIONS

Maurizym™ Pectinase 4X is a concentrated multi-purpose pectinase for white and red grape juice to increase yield.

- It also has clarification and flotation capabilities.
- This enzyme does not contain significant cellulase activities that could extract bitter components.
- **Maurizym™ Pectinase 4X** also has high thermal stability for thermovinification processes such as thermoflash, allowing it to work longer in such processes.

Trial Results - Pectic Enzyme Trial

Treatment	Rate (ml/L)	1 Hour	2 Hour	3 Hour	4 Hour	5 Hour	6 Hour	7 Hour	8 Hour
Control	n/a	x	x	x	x	x	x	x	x
Enzyme 1	0.03	x	x	x	x	x	x	x	x
Enzyme 2	0.02	x	x	x	x	x	x	✓	✓
Pectinase 4X	0.0075	x	x	x	x	✓	✓	✓	✓

INSTRUCTIONS FOR USE

- Add to grapes at the crusher or in the press.
- Dilute into water (1:10) to optimal distribution of the enzyme into crushed grapes.

TYPE

A stable and tolerant liquid pectinase.

DOSAGE RATES

Dosage varies based on grape variety, contact time and temperature.

White & Red maceration:

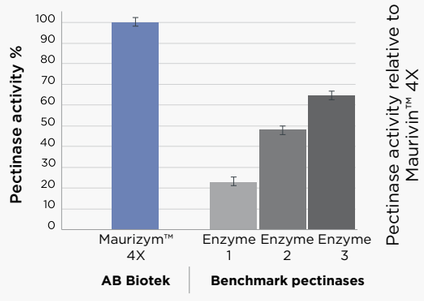
- Chardonnay: 0.25-0.5 ml/hL (10-20 ml/1000 gallons) for 30-60 minutes at ambient temperature.
- Higher viscosity juices (Sauvignon Blanc, Semillon, Merlot, Shiraz): 0.5-0.75 ml/hL (20-30 ml/1000 gallons) in the same conditions.
- For high viscosity juices such as Muscat, use **Maurizym™ White XP**.
- **Maurizym™ Pectinase 4X** does not contain significant colour degrading activities.

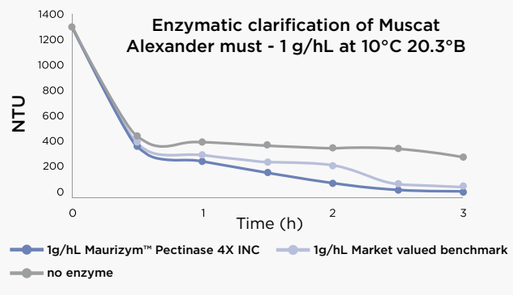
White depectinisation/clarification/flotation:

- Concentrated Pectinase rapidly removes pectin in any juice.
- Doses: 0.5 ml/hL (20 ml/1000 gallons) for a pectin negative test after 60 minutes at 15-21˚C (60-70˚F). Increase to 1 ml/hL (40 ml/1000 gallons) for cloudier juices with higher pectin content.

High temperature maceration:

- Effective up to 65˚C (150˚F), should be added at the crusher due to its temperature tolerance.





MAURIFERM™ ACTIVATOR

product information

Mauriferm™ Activator supplements essential ingredients for yeast fermentation, promoting strong yeast growth and reducing the chance of stuck and sluggish fermentations. Mauriferm™ Activator also has a positive impact on the wine's sensory profile by minimising off-aromas and flavours and by enhancing the wine's texture and mouthfeel.

MAURIFERM™ ACTIVATOR IMPROVES FERMENTATION BY REMOVING TOXIC FATTY ACIDS

The inactive yeast cell walls in **Mauriferm™ Activator** absorb toxic medium-length chain saturated fatty acids. These toxic fatty acids can accumulate during fermentation, inhibiting sugar transport into the yeast cell and resulting in a slow or stuck fermentation.

MAURIFERM™ ACTIVATOR PROVIDES STEROLS AND UNSATURATED FATTY ACIDS

The inactivated yeast cell walls release sterols and unsaturated fatty acids that act as oxygen substitutes in an anaerobic environment. This promotes cell wall growth and durability, resulting in a more reliable and consistent fermentation.

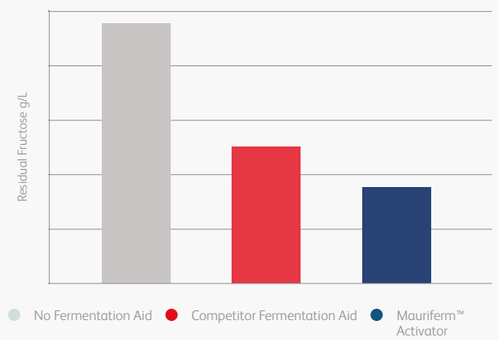
MAURIFERM™ ACTIVATOR ENHANCES THE SENSORY PROFILE OF THE WINE

Mauriferm™ Activator supplements essential vitamins and trace minerals ensuring the yeast remain viable and healthy during the course of fermentation. This ensures that the yeast are not producing off-aromas or flavours. The increased polysaccharide levels in **Mauriferm™ Activator** can also have a positive effect on the texture and mouthfeel of the wine.

DOSAGE

Add 30 g/hL direct to the juice/must at the beginning of fermentation.

Mauriferm™ Activator	
Contents	Inactivated yeast
% Nitrogen from IY	7.9%
DAP added	None
Dosage	30 g/hL
When	During rehydration, at start of fermentation. During sluggish ferments,m can add 10g/hL during the last 1/3.
Total Nitrogen content added at max dosage	Contains some nitrogen (amino acids) but is not a significant source of YAN.



Trials undertaken with UOA MaxiThiol in a nutrient deficient Chardonnay juice at pH 3.37 and an initial sugar concentration of 240 g/L (glucose/ fructose). Fermentation temperature 15°C. Results shown at day 21 at which time glucose was 0.0 g/L. Same ratios were noted with three other wine yeasts. Results may vary for different juices/must.

MAURIFERM™ PLUS

product information

Mauriferm™ Plus is a unique fermentation aid containing inactive dry yeast, thiamin and di-ammonium phosphate. Developed in Australia by AB Mauri's Global Technology Group, this product is recommended for improving fermentation and reducing the risk of stuck and sluggish fermentations. The products used in this fermentation aid are approved by the OIV.

MAURIFERM™ PLUS IMPROVES FERMENTATION BY REMOVING TOXIC FATTY ACIDS

The inactive yeast cell walls in **Mauriferm™ Plus** adsorb toxic medium-length chain saturated fatty acids. These toxic fatty acids can accumulate during fermentation, inhibiting sugar transport into the yeast cell and resulting in a slow or stuck fermentation. Yeast cell walls also provide a source of sterols and other components essential for yeast cell division.

MAURIFERM™ PLUS IMPROVES FERMENTATION WITH THE PROVISION OF NITROGEN

Nitrogen is essential for protein synthesis and sugar transportation. Nitrogen deficiency can also result in the production of undesirable compounds such as hydrogen sulphide. The yeast assimilable nitrogen (YAN) content of **Mauriferm™ Plus** is 37 mgN/L.

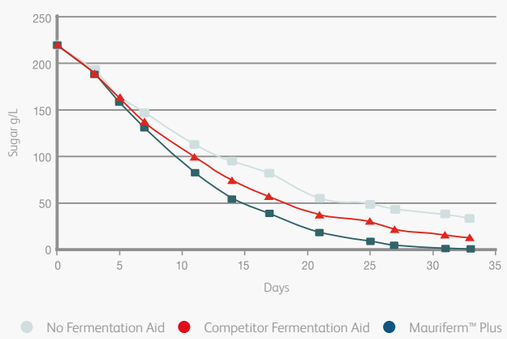
MAURIFERM™ PLUS IMPROVES FERMENTATION WITH THE ADDITION OF THIAMIN (VITAMIN B1)

Thiamin is important for cellular metabolic activities such as protein synthesis, sugar metabolism, enzyme activity and cell wall synthesis. The addition of thiamin can also reduce the levels of acetic, pyruvic and ketoglutaric acids, as well as reducing the amount of hydrogen sulphide that may be present.

DOSAGE

Add 30 g/hL direct to the juice/must when 1/3 of fermentation is complete.

Mauriferm™ Plus	
Contents	Inactivated yeast, DAP, Thiamine (B1)
% Nitrogen from IY	5.51%
DAP added	Yes
Dosage	30 g/hL
When	After 1/3 fermentation
Total Nitrogen content added at max dosage	37 mgN/L



Trials undertaken with strain **Maurivin™ B** in a nutrient deficient grape juice medium at pH 3.5 with an initial sugar concentration of 220 g/L (glucose/fructose). Mauriferm™ Plus added at Day 6. Results may vary for different juice/must.

MAURIFERM™ GOLD

product information

Mauriferm™ Gold is designed for improving fermentation and reducing the risk of stuck and sluggish fermentations. This unique fermentation aid contains inactive yeast extract and cell walls, diammonium phosphate, vitamins and trace elements. Mauriferm™ Gold was developed by AB Mauri's Global Technology Group in Sydney, Australia.

MAURIFERM™ GOLD IMPROVES FERMENTATION BY REMOVING TOXIC FATTY ACIDS

The inactive yeast cell walls in **Mauriferm™ Gold** absorb toxic medium-length chain saturated fatty acids. These toxic fatty acids can accumulate during fermentation, inhibiting sugar transport into the yeast cell and resulting in a slow or stuck fermentation.

MAURIFERM™ GOLD IMPROVES FERMENTATION BY PROVIDING NUTRIENTS FOR YEAST CELL DIVISION AND HEALTH

The yeast cell walls in **Mauriferm™ Gold** also provide a source of sterols and other components essential for yeast cell division while the yeast extract and additional vitamins improve yeast cell health and vitality.

MAURIFERM™ GOLD IMPROVES FERMENTATION WITH THE PROVISION OF NITROGEN

Yeast assimilable nitrogen (YAN) is essential for protein synthesis and sugar transportation. Nitrogen deficiency can also result in the production of undesirable compounds such as hydrogen sulphide. The YAN content of **Mauriferm™ Gold** is 37 mgN/L.

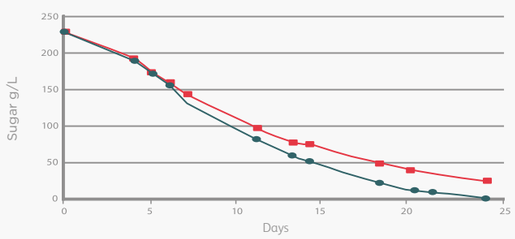
MAURIFERM™ GOLD IMPROVES FERMENTATION WITH THE SUPPLEMENTATION OF VITAMINS AND TRACE ELEMENTS

Vitamins and trace elements from the yeast extract are essential for protein synthesis, sugar metabolism, enzyme activity and cell wall synthesis.

DOSAGE

Add 30 g/hL direct to the fermentation vessel when 1/3 of fermentation is complete.

Mauriferm™ Gold	
Contents	Inactivated yeast, DAP, Thiamine (B1), Calcium Pantothenate (B5), Nicotinamide (B3)
% Nitrogen from IY	5.5%
DAP added	Yes
Dosage	30 g/hL
When	After 1/3 fermentation
Total Nitrogen content added at max dosage	37 mgN/L



Trials undertaken with strain Maurivin™ B in a nutrient deficient grape juice medium at pH 3.5 with an initial sugar concentration of 220 g/L (glucose/fructose). Mauriferm™ Gold added at Day 6. Results may vary for different juice/must.

MAURIVIT™

product information

Low vitamin concentrations in grape juice can lead to fermentation difficulties. Vitamin deficiency can result naturally due to adverse conditions that lead to stress in the vineyard and can also occur as a result of winemaking processes prior to fermentation and include juice heating and pasteurisation, sulphur dioxide additions and fining.

Maurivit™ is a mixture of pure vitamins free from amino acids and inorganic nitrogen. The concentration of vitamins is optimal for the promotion of yeast growth and rate of fermentation.

OENOLOGICAL CHARACTERISTIC

Low levels of vitamins in grape juice, must or wine can be a limiting factor on yeast growth rate and cell numbers leading to reduced or slower rates of fermentation. The conditions can be pre-cursors to stuck fermentations. The risk of slow or stuck fermentations can be reduced by the addition of **Maurivit**™ at the time of yeast inoculation.

The production of hydrogen sulphide during alcoholic fermentation is generally associated with low levels of available amino acids and inorganic nitrogen. While vitamin additions alone may not prevent this occurrence, due to the synergistic effect of vitamins, **Maurivit**™ additions in conjunction with inorganic nitrogen can reduce the risk of hydrogen sulphide production.

Maurivit™ contains thiamin, which can be deactivated by the presence of sulphur dioxide. For this reason we suggest that **Maurivit™** additions are made after sulphur dioxide adjustments.

USE

Maurivit™ can be added to must, juice, fermentations or to yeast propagators to supplement low vitamins levels in order to maximise yeast cell numbers and fermentation activity. Add 5 grams of **Maurivit™** per 1000 litres of must, juice, fermentation or starter culture.

COMPOSITION

Maurivit™ contains calcium pantothenate, pyridoxine hydrochloride, thiamin hydrochloride, biotin and nicotinamide.

Maurivit™	
Contents	Biotin (B7), Pridoxinehydrochloride (B6), Thiamine (B1), Calcium Pantothenate (B5), Nicotinaminde (B3)
% Nitrogen from IY	0%
DAP added	None
Dosage	0.5 g/hL
When	Yeast propagation Secondary nutrient.
Total Nitrogen content added at max dosage	Significant source of YAN.

Scan here for more information

Or email at: wineinfo@abbiotek.com

MAURIFERM™ RANGE OF PRODUCTS

product information

Different countries have specific rules and regulations regarding the production of wine. There are certain additives allowed in some countries but not in other countries, and this needs to be taken into consideration when making wine for export.

This particularly applies to some of the B Vitamins in relation to OIV regulations and wines being exported to the European Union.

The table below provides information for each product in relation to the OIV requirements.

Product Name	Activator	Plus	Gold	Maurivit™
Primary Activity	**Workhouse yeast nutrient** for clean, steady ferments with enhanced aroma production. Can also improve the mouthfeel of wines.	**Complex yeast nutrient** for improved yeast performance. Used for nitrogen addition.	**Superior yeast nutrient** for improving fermentation and reducing risk of stuck and sluggish fermentations. Can also be used for YAN additions.	**Nutrient** to promote yeast growth. Also good for restarting stuck fermentations.
Best used in	All wines.	Wines with low starting YAN.	Wines with challenging fermentation conditions.	Can be used in yeast propagators and for wine made from grape concentrate.
Formulation	Inactivated yeast rich in amino acids, vitamins, minerals, sterols, and unsaturated fatty acids.	Inactivated dry yeast, thiamine and di-ammonium phosphate.	Inactive yeast extract, cell walls, di-ammonium phosphate, calcium pantothenate, thiamine and nicotinamide.	Mixture of pure vitamins (calcium pantothenate, pyridoxine hydrochloride, thiamine hydrochloride, biotin and nicotinamide).
Recommended Dosage	30 g/hL	30 g/hL	30 g/hL	5 g/1000L
Measurable YAN at 30 g/hL	Contains some nitrogen (amino acids) but is not a significant source of YAN.	YAN = 26 mg N/L or 86.7 mg N/g PLUS.	YAN = 20 mg N/L or 66.7 mg N/g GOLD.	Contains some nitrogen (amino acids) but is not a significant source of YAN.
OIV Compliant	Yes	Yes	No	No

YEAST ASSIMILABLE NITROGEN

Research information

YEAST ASSIMILABLE NITROGEN (YAN)

Wine yeast utilise ammonia and alpha-amino nitrogen during fermentation, known collectively as yeast assimilable nitrogen (YAN).

YAN is required for the synthesis of proteins, cell wall components and enzymes. Insufficient YAN in the juice/must can result in sluggish or stuck fermentations and the production of hydrogen sulphide.

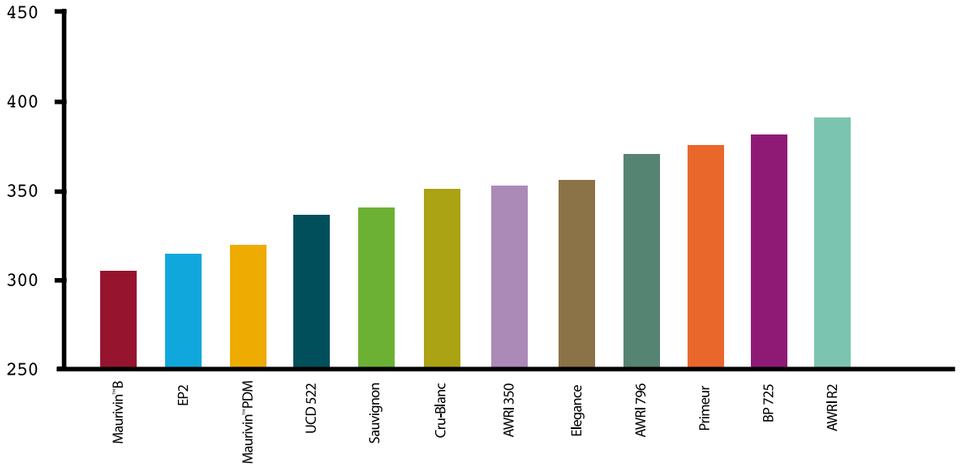
OVERCOMING INSUFFICIENT YAN

To avoid such problems, di-ammonium phosphate (DAP) is added to the juice/must prior to and during fermentation. Yeast strains differ in the amount of YAN they require, hence the volume of DAP added depends partly on the strains of choice.

Research undertaken at the University of Adelaide revealed the amount of YAN required differs significantly between Maurivin™ strains. The average YAN requirement was 350 mg N/L. Strains such as **Maurivin™ B** and **EP2** have a lower than average YAN requirement during fermentation. Interestingly, **Maurivin™ B** also produces lower yields of ethanol and consumes higher levels of malic acid compared to other strains (*see Ethanol Yield and Malic Acid Research Information sheets*).

Conversely, **BP 725** and **AWRI 796**, which are popular strains of varietal red winemaking, have a higher than average YAN requirement; likewise with **Elegance**, **Primeur** and **AWRI R2**, which are ideal for producing aromatic white wines. Increased quantities of DAP, as well as the use of Mauriferm™ fermentation aids, are recommended when fermenting with strains such as these that exhibit higher YAN requirements.

YAN REQUIREMENT (mgN/L)



Research was undertaken by Dr Vladimir Jiranek and Dr Paul Grbin from the Discipline of Wine and Horticulture, The University of Adelaide (2005). Fermentation was undertaken in chemically defined grape juice medium (CDGJM) as defined by the Australian Wine Research Institute with an initial sugar concentration of 200 g/L (glucose/fructose) and 750 mgN/L as ammonium sulphate. All ferments went to dryness within 7 days. All ferments were carried out in triplicate with mean values provided. YAN requirements of each strain may differ for different juice/must.

ETHANOL YIELD

Research information

ETHANOL YIELD VARIES BETWEEN STRAINS

Different wine yeast strains can generate different amounts of ethanol during fermentation. Some strains are highly efficient at converting sugar to ethanol, whereas other strains convert sugar to metabolites other than ethanol, thus resulting in wines with a lower percentage of alcohol.

STRAINS WITH A LOWER ETHANOL YIELD

Research undertaken by the University of Adelaide confirms selected Maurivin™ strains have a lower ethanol yield. During fermentation, both **Maurivin™ B** and **AWRI 796** use higher amounts of sugar to produce 1% ethanol, 18.2 g and 17.1 g of sugar, respectively. This makes these strains ideal when there is a need to minimise a wine's alcohol content. **AWRI 796** is a popular yeast for both varietal red and white winemaking due to its strong fermentation capacity and high glycerol output. **Maurivin™ B** is used for varietal red winemaking and is favoured by many winemakers for its capacity to consume high levels of malic acid (see Malic Acid Research Information sheet). Sauvignon, popular for its ability to enhance the varietal characters of Sauvignon Blanc, is another strain that exhibits a lower ethanol yield.

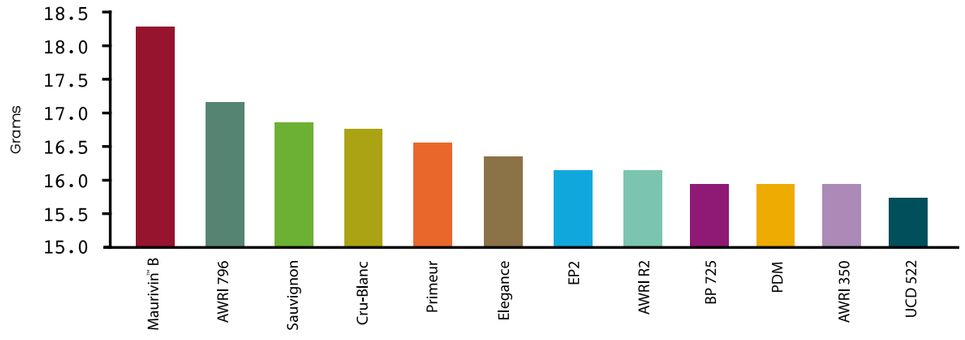
STRAINS WITH A HIGHER ETHANOL YIELD

Conversely, **UCD 522**, **AWRI 350**, **BP 725** and **PDM** are more efficient in converting sugar to ethanol during fermentation. These strains require on average less than 16 g of sugar to produce 1% of ethanol, making these strains ideal when there is need to maximise ethanol yield.

APPLICATION TO WINEMAKING

The strain chosen for fermentation can play an important role in determining a wine's alcohol content. Whilst some strains have a high alcohol yield, other strains can be used to minimise the amount of alcohol in the wine.

GRAMS OF SUGAR UTILISED PER 1% ETHANOL YIELD



Research was undertaken by Dr Vladimir Jiranek and Dr Paul Grbin from the Discipline of Wine and Horticulture, The University of Adelaide (2005). Fermentation was undertaken in chemically defined grape juice medium (CDGJM) as defined by the Australian Wine Research Institute with an initial sugar concentration of 200 g/L (glucose/fructose). All ferments went to dryness within 7 days and the ethanol measured by HPLC. All ferments were carried out in triplicate with mean values provided. Ethanol yield may differ for different juice/must.

MALIC ACID CONSUMPTION BY WINE YEAST

Research information

1 g/L MALIC ACID = 0.03% ALCOHOL

Wine yeasts have the capacity to metabolise malic acid during fermentation. This consumption first starts with the diffusion of malic acid into the cell. Once inside the cell, the acid is decarboxylated to pyruvate and then to acetaldehyde. This acetaldehyde is then reduced to ethanol. The consumption of 1 g/L of malic acid yields only a very small increase in ethanol of 0.03% (v/v). The amount of malic acid consumed during fermentation is strain specific.

YEAST WITH A HIGH CAPACITY TO CONSUME MALIC ACID

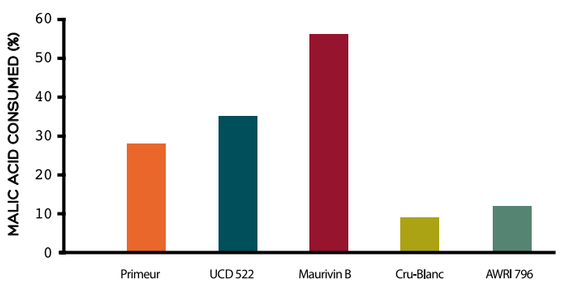
Trials undertaken at the Bordeaux Wine Institute showed **Maurivin™ B** consumes on average, up to 56% of malic acid during fermentation. **Maurivin™ B** is a popular yeast for red winemaking, recognised for its ability to enhance colour and varietal fruit characters as well as producing a lower ethanol yield (see Ethanol Yield Research Information sheet). Maurivin™ strains **UCD 522** and **Primeur** also show a high capacity to degrade malic acid, consuming 35% and 28%, respectively. **Primeur**, recognised for its fruity aromatics, is a popular yeast for the production of "young, fruity" varietal blends. **UCD 522** is recognised for its complex aromatics, reminiscent of good 'indigenous' ferments.

ACHIEVING A MORE BALANCED PALATE

Wines made from cool climate fruit can suffer from overtly high acid, resulting in a 'sharp, bitey' palate. Reducing this high acid level using **Maurivin™ B**, **Primeur** or **UCD 522** can achieve a more balanced palate. Degrading malic acid during alcoholic fermentation can also reduce the time required to complete malolactic fermentation.

YEAST WITH A LOW CAPACITY TO CONSUME MALIC ACID

There is a growing need for yeast strains that consume only small amounts of malic acid during fermentation. The application of such yeast should be considered when fermenting juice/must with low acid levels. Maurivin™ yeast **AWRI 796** and **Cru-Blanc** both exhibit a low capacity to consume malic acid. **Cru-Blanc**, with its yeast aromatics and ability to increase mouthfeel, is popular for the production of barrel fermented Chardonnay. **AWRI 796** is widely used for both varietal red and white wines. The information presented here should be considered when there is a need to reduce or conserve a wine's content of malic acid.



Experiments were conducted by Professor Aline Lonvaud of the Bordeaux Wine Institute. The trials were undertaken in commercial grape juice (red and white) with an initial sugar concentration of 200-210 g/L. Yeast inoculation rate was 20 g/L. Juice was sterile filtered to remove all microbial contaminants including lactic acid bacteria. Values were obtained in specific musts and should not be considered as absolute values. Consumption of malic acid may differ for different juice/must.

YEAST & SHIRAZ AROMAS

Research information

YEAST STRAINS & SHIRAZ AROMAS

Yeast strains fermenting Shiraz/Syrah can have a significant impact on the wine's aroma. Trials undertaken with **Maurivin™ strains BP 725** and **AWRI 796** fermenting several batches of Hunter Valley Shiraz varied in their ability to enhance different varietal aromas.

FRUITY AROMAS & AWRI 796

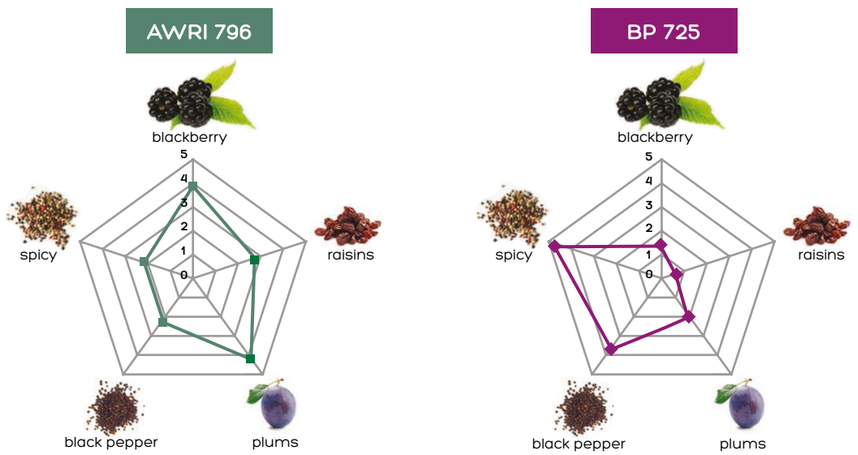
Shiraz fruit fermented with **AWRI 796** resulted in wines with higher fruit aromas such as blackberry and plum (see graph below). These wines were also noted for their enhanced mouthfeel. **AWRI 796** is a popular yeast for varietal red winemaking, exhibiting a strong fermentation capacity, higher alcohol tolerance and higher glycerol levels (see Attributes of Maurivin™ Yeast data sheet). **AWRI 796** also has the capacity to yield lower levels of ethanol (see Ethanol Yield Research Information sheet).

SPICY AROMAS & BP 725

In contrast to **AWRI 796**, Shiraz fruit fermented with the popular red winemaking strain **BP 725** resulted in higher levels of black pepper and spicy aromas (see graph below). These wines were also noted for their deep purple colour, indicative of **BP 725**, a strain known for its ability to enhance colour extraction and minimise colour loss during fermentation.

UNLOCKING THE VARIETAL AROMAS OF SHIRAZ

The chosen yeast strain can play an important role in determining the wine's aromas and flavour. **AWRI 796** has the capacity to enhance fruity varietal aromas such as blackberry and plums, whilst **BP 725** results in wines with spicy and black pepper aromatics.



Research undertaken by Thomas Walsh and Professor Geoff Skurray of the University of Western Sydney. Fermentations were carried out at 25°C (77°F) with Hunter Valley Shiraz with a starting sugar concentration of 23°Brix (12.8°Baume) at pH 3.5. Juices were filter sterilised to ensure fermentation took place with the inoculated strain. Wines were assessed for common Shiraz aroma descriptors by a panel of 13 expert wine judges. Results may vary depending on the grape juice/must.

AWRI 350 AND ROSÉ WINES

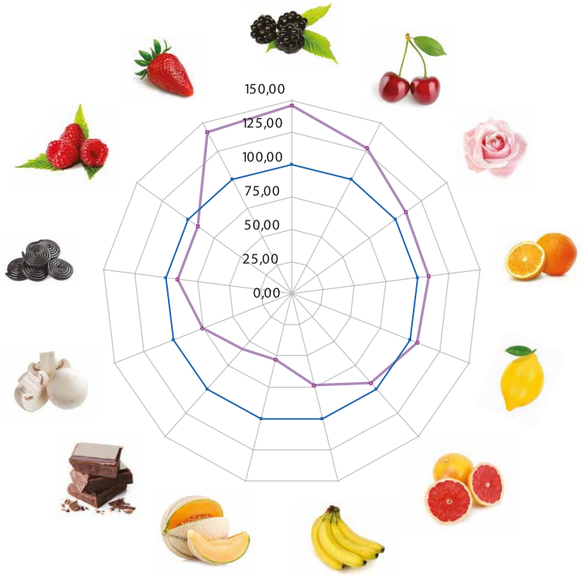
Research information

AWRI 350: AN AROMATIC YEAST STRAIN

Maurivin™ AWRI 350 is well-known for its capacity to produce aromatic compounds (esters and higher alcohols) during alcoholic fermentation. This yeast is recommended to make fruity wines (both red and Rosé) from varieties such as Syrah, Grenache, Merlot and Cabernet Sauvignon. With a medium fermentation rate and low consumption of nitrogen, **AWRI 350** must be used at temperatures above 15°C when taking into account its flocculation properties.

AWRI 350: A STRAIN ADAPTED TO THE PRODUCTION OF ROSÉ WINES

Maurivin™ AWRI 350 is used at the moment in numerous wineries for the production of Rosé wines. AB Biotek wanted to compare the strain **Maurivin™ AWRI 350** in microvinifications made in Centre du Rosé with six other yeast strains. Two expert tasting panels carried out sensorial analysis of the wines obtained, evaluating the intensity of the main aromatic descriptors of Rosé wines of Provence.



Intensity of the olfactory descriptors (from the expert panels)

Maurivin™ **AWRI 350**

Average of the other six strains

This trial carried out by Centre du Rosé confirms the capacity of **Maurivin™ AWRI 350** to produce fruity aromas (red fruits) in Rosé wines, which supports the results obtained in numerous wineries.

CENTRE DU ROSÉ
RECHERCHE & EXPÉRIMENTATION

Protocol: Seven yeast strains were used to ferment a must comprised of a combination of Grenache/Syrah/Vermentino (50/45/5), with a pH of 3.23 and a potential alcohol of 12.2% v/v at a constant temperature of 16.5°C. An evaluation of the yeast at the end of fermentation using DNA technology allowed us to verify that the inoculated yeasts carried out the fermentation. The trained expert panels (30 people) tasted the wines. The variance analyses indicate **Maurivin™ AWRI 350** is significantly different with respect to the descriptor "cherry" and was comparable only to one other of the other six strains.

Legend: The "average" value corresponds with the average (expressed from 1 to 100) of marks obtained for the other six yeast strains. The value "AWRI 350" is calculated (in percentage) with respect to the average.

AWRI 350 IS THE LOWEST SO_2 PRODUCING STRAIN

Research information

AWRI 350: MAURIVIN'S™ LOWEST SO_2 PRODUCER

During alcoholic fermentation yeast naturally produce sulphur dioxide (SO_2) as a metabolic intermediate of the sulphate reduction pathway. Twenty commercial wine yeast strains (from different yeast manufacturers) known as being low SO_2 producers have been compared in laboratory trials done in triplicate in a Riesling must fermented at 18°C. The graph below shows average results of triplicates. **Maurivin™ AWRI 350** (2.0 mg/L) is the lowest SO_2 producer among the 20 tested wine yeast strains.

Total SO_2 (mg/L) after fermentation
Flow Injection Analysis (FIA Star 5000, Foss)

Please note that SO_2 production may differ according to the grape varieties and composition of grape must. Even a yeast strain that is considered as a low SO_2 producer can produce higher concentrations in certain grape juices for certain vineyards/vintages.

INCREASING FRUIT AND COLOUR INTENSITY IN MERLOT GRAPES

Research information

CAN YEAST STRAINS EFFECT FRUIT AND COLOUR INTENSITY IN MERLOT?

There is some conjecture globally about the impact of yeast strains to make high quality Merlot wines, with some believing it is all determined by the vineyards and the grape quality. Trials have been conducted at Vinopôle Bordeaux-Aquitaine (Chambre d'Agriculture de la Gironde) under the control of Mr. Jean-Christophe Crachereau to investigate if this is true or false.

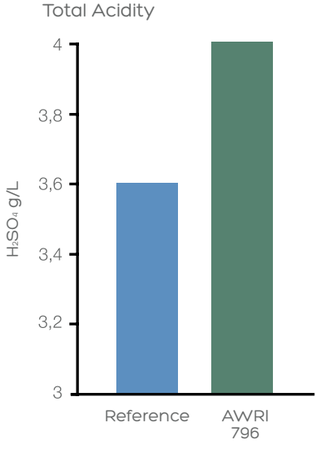
Maurivin™ AWRI 796 was compared against a popular reference yeast used extensively in the region in a traditional vinification of black Merlot grapes of Bordeaux appellation (Entre-deux-Mers) during the 2016 vintage.

YEAST STRAIN CHOICE HAS AN IMPACT ON THE CHEMISTRY OF MERLOT WINE

The finished wines were assessed for basic chemistry with some notable differences between the yeast strains. Total acidity was higher for **Maurivin™ AWRI 796** (Figure 2) and is most likely generated from higher succinic acid which this yeast is known to produce. This has positive flow-on effects for the wine and may become very important with global warming and the lower acidity being seen in many wine regions globally.

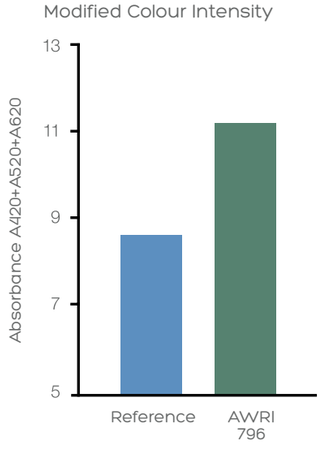
There was also a substantial and significant difference in the perception of colour between the yeast strains. Using the OIV Colour resolution methods, it was determined that **Maurivin™ AWRI 796** had much higher colour intensity compared to the reference strain (Figure 3).

Figure 2



Total acidity differences between **Maurivin™ AWRI 796** and the reference yeast strain in Merlot grapes of Bordeaux appellation. This was the most significant chemistry difference between the yeast strains (other data not shown).

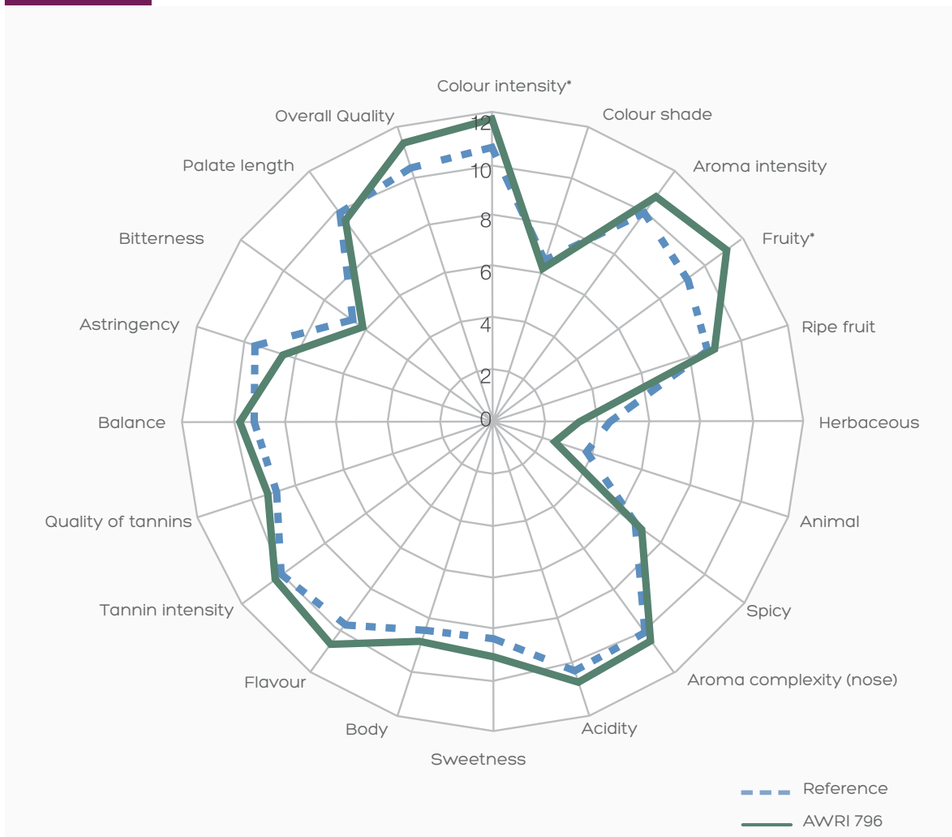
Figure 3



Colour intensity of **Maurivin™ AWRI 796** and the reference yeast as determined by the OIV Colour resolution method using absorbance of A420+A520+A620.

MAURIVIN™ AWRI 796 PRODUCES MORE FRUITY AND COLOUR INTENSE WINES

Figure 4



Aroma descriptor wheel showing the different aroma and flavour characteristics of black Merlot wines of Bordeaux appellation made with Maurivin™ AWRI 796 and the reference yeast.

*Statistically different (Newman Keuls 5%)

Researchers: Olivier Pageault (AB Biotek France), Anthony Heinrich (AB Biotek Australia)

NOVEL YEASTS THAT IMPART 'FLORAL' AROMAS IN WINE

Research information

AB Biotek, The Australian Wine Research Institute (AWRI) and Wine Australia (WA) together bring a new solution for floral aroma and flavour in the Maurivin™ Next Generation wine yeast range: **Maurivin™ AWRI Rosa (AWRI 2965)**.

STOP AND SMELL THE ROSES: NOVEL YEAST THAT IMPART 'FLORAL' AROMAS IN WINE

Across the wide range of commercial yeast strains available to winemakers, there is substantial variation in their production of aroma compounds. Some desirable compounds are not typically produced at high enough concentrations to make a difference to wine aroma and flavour. Examples include the yeast-derived compounds 2-phenylethanol (2-PE) and 2-phenylethyl acetate (2-PEA), which are associated with 'rose' and 'floral' aromas in wine, as well as in other fermented foods and beverages (Cordente 2012). Generally, the concentrations of these 'rose' aroma compounds in wines are below their aroma sensory thresholds, particularly in white wines, so their potential contribution to wine aroma is considered to be minimal (de-la-Fuente-Blanco 2016; Vilanova 2013).

TRIALLING YEAST THAT OVERPRODUCE 'FLORAL'/'ROSE' AROMA COMPOUNDS

By using classical yeast strain development techniques, more than forty non-genetically modified (non-GM) yeasts that produce high concentrations of both 'rose' aroma compounds 2-PE and 2-PEA were generated at the AWRI (Cordente 2018). These 'rose' yeasts were isolated from three different parent *Saccharomyces cerevisiae* strains, with each having different fermentation volatile profiles and competitive fitness characteristics that might suit different winemaking styles. Three of these 'rose' yeasts were extensively trialled at pilot scale over the last four vintages to assess wine styles that may be compatible with enhanced 'rose' aroma characteristics, including white, rosé, red and sparkling wines. In addition, by selecting 'rose' yeast that produce different amounts of 2-PE and 2-PEA (moderate and high), it was possible to fine tune concentrations for specific wine styles.

The figure shows the 2-PE concentration produced by two of these 'rose' yeasts after alcoholic fermentation of different grape cultivars, after cellaring in bottle between 3 and 15 months. Regardless of the style of wine, the 'rose' yeast produced significantly higher concentrations of 2-PE than commercially available strains (trial controls) widely used in the wine industry. Depending on the variety assessed, these 'rose' yeasts produced between 2 and 12 times more 2-PE than the controls (Figure 1), and well above its sensory threshold (10 mg/L). Similar increases were also observed for 2-PEA, which has an even lower detection threshold (0.25 mg/L).

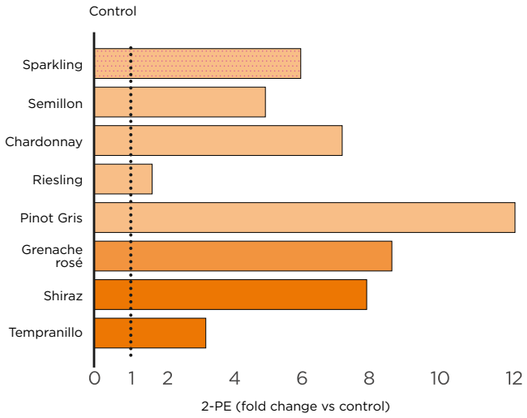


Figure 1 - Fold change in 2-PE production between 'rose' yeasts and a control strain in different wine styles. The relative amount of 2-PE produced by the control strain was normalised to 1. The scale of the pilot-scale winemaking trials was 20 litres for the white and rosé wines, and 50 kg for the red wines. White, sparkling and rosé wines were fermented with strain AWRI Rosa; while AWRI 2940 was used for the red wines.

LOW HYDROGEN SULPHIDE YEAST

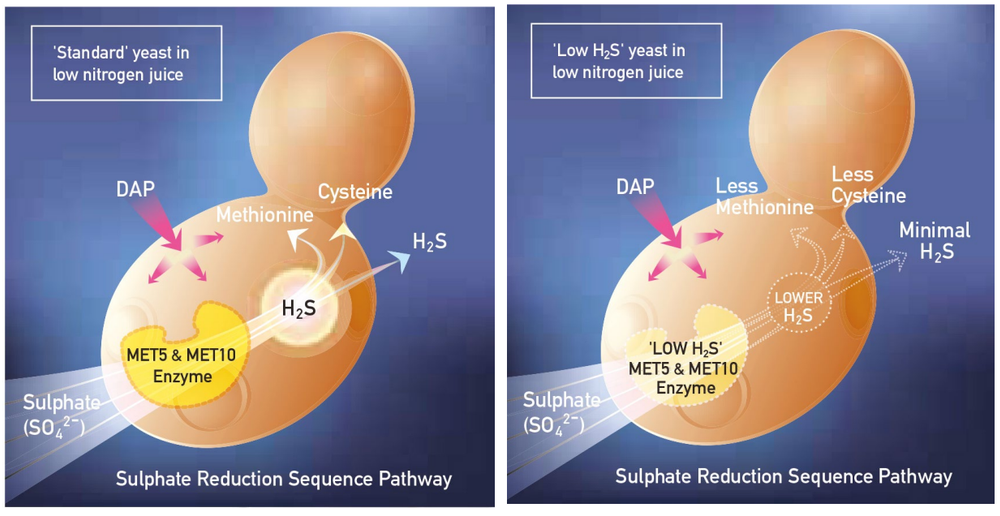
Research information

HYDROGEN SULPHIDE IN WINE

The production of hydrogen sulphide (H_2S) during grape juice fermentation is a negative attribute for wine quality. It can be produced by yeast when there are inadequate sources of available nitrogen for the yeast to metabolise. H_2S-containing wines are unpleasant, resemble a rotten-egg odour and require copper fining. To overcome this problem, winemakers add diammonium phosphate (DAP) during fermentation, and even then they may have to use copper to remove H_2S from the final wine. Not only does H_2S reduce wine quality, but just as importantly it masks all the positive aromatics in the wine. What is the optimal solution?

YEAST ELIMINATES H_2S DETECTION IN WINE

The Australian Wine Research Institute (AWRI), together with Maurivin™, have now developed a wine yeast strain that produce undetectable amounts of H_2S to the human nose. This non-GMO, patented Next Generation™ yeast called **Platinum** has distinct variations in genes encoding the sulphate reductase protein complex, resulting in a yeast strain with a reduced capacity to produce H_2S. This is illustrated below.



It is noted that these yeast strains have a reduced capacity to produce the amino acids methionine and cysteine. However, grape juice contains sufficient quantities of these amino acids to undertake normal growth and metabolism during fermentation.

LOW HYDROGEN SULPHIDE YEAST

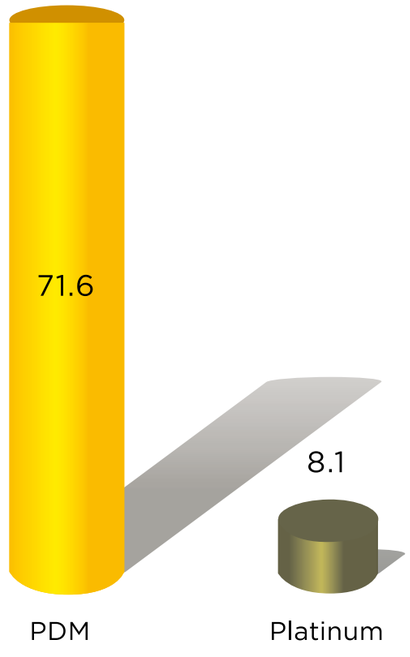
Research information

THIS STRAIN IS UNIQUE

This 'Low H_2S' yeast strain has its own unique properties. There is the generic benefit to the winemaker for eliminating the H_2S aroma from wine and possibly even reducing the requirement for copper fining (depending on the sulphur-compound composition of the juice).

MAURIVIN™ PLATINUM

Platinum is a robust strain that has the unique ability to eliminate H_2S from detection by the human nose and decrease other reductive characters from winemaking. The result is an increase in the detection of positive aromatic compounds in the final wine. **Platinum** has not produced elevated levels of bound or free SO_2 in any grape juice evaluated. **Platinum** is therefore suitable for all grape varieties and wine styles and is compatible with malolactic fermentation. **Platinum** may also have the propensity to produce lower VA levels compared to **Maurivin™ PDM.**



Production of H_2S [µg/L]

Research was undertaken at The Australian Wine Research Institute (2007). Fermentations were carried out with a filter sterilised low YAN (145 mgN/L) Riesling with an initial sugar concentration of 197 g/L (glucose/fructose). All ferments were done in triplicate and H_2S measured using the sensitive cadmium-trap method. The typical sensory threshold concentration for H_2S in wine is 50-80 µg/L (Wenzel et al., 1980). Results may vary for different juice/must.

HYBRID YEAST

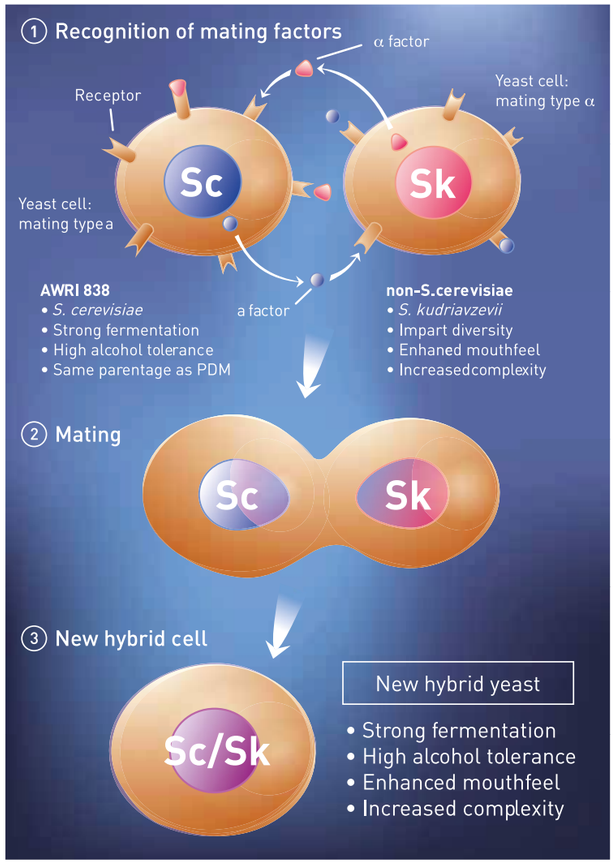
Research information

INCREASING WINE COMPLEXITY AND MOUTHFEEL

Winemakers globally are seeking tools to add complexity and mouthfeel to wine. There are different ways of acquiring these desired characters in wine, such as adding pressings back to the wine or ageing on yeast lees. These processes can be time consuming and require careful monitoring. There is also the opportunity to use additives such as tannins and mannoproteins. This is, however, incorporating more additives to the winemaking process that most winemakers are already trying to reduce. What is the optimal solution?

HYBRID YEAST ADDS COMPLEXITY AND MOUTHFEEL TO WINE

The Australian Wine Research Institute (AWRI) have developed novel hybrid wine yeast strains that promote increased mouthfeel and complexity in wine. These non-GMO hybrid strains, called **AWRI Zevii** and **AWRI Fusion**, have been generated by using conventional breeding techniques similar to those used for generating new plant varieties. A simplified example of this process used for **AWRI Zevii** is illustrated on the below.



HYBRID YEAST

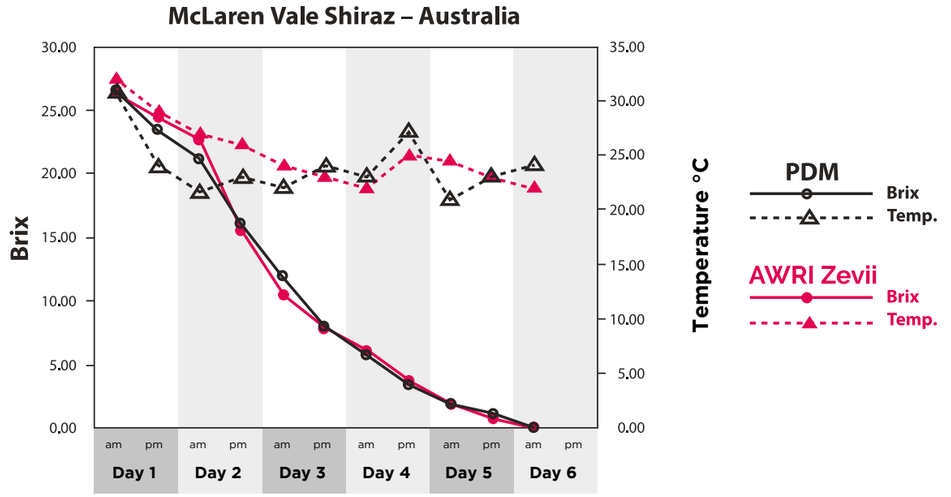
Research information

EACH STRAIN IS UNIQUE

Each of these hybrid strains has unique properties, but both of them bring increased complexity and improved mouthfeel to wine.

AWRI ZEVII *(Saccharomyces cerevisiae x Saccharomyces kudriavzevii)*

AWRI Zevii was originally promoted as a Chardonnay strain due to the production of estery, floral, tropical, citrus, nutty and waxy characters, with the palate showing a creamy texture with complex acid and a late mineral character. More recently, **AWRI Zevii** has been successfully used in red wine fermentation trials with Shiraz/Syrah and Cabernet Sauvignon in which enhanced mouthfeel and increased fruit concentration was observed. This hybrid yeast appears to be well suited for building aroma and palate complexity, particularly in young red wines. A fermentation aid such as **Mauriferm™ Gold** is recommended in low YAN and highly clarified juices.



AWRI FUSION *(Saccharomyces cerevisiae x Saccharomyces cariocanus)*

The aroma profile of **AWRI Fusion** has been described as peach, pear, nectarine, violets, lemon fruit/zest, creamy, mineral and matchstick, based on wines made in a barrel and tank-fermented Chardonnay trial. The palate is described as complex, full flavoured, tight, leaner, phenolic and having flavour persistence. This hybrid yeast appears to be well suited for building flavour complexity in white wines such as Chardonnay, Colombard, Pinot Gris/Grigio and Semillon.

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