VINIFICATION GUIDE

WHITE AND ROSÉ FERMENTATION MANAGEMENT FOR GRAPES AFFECTED BY SMOKE TAINT

Smoke taint is the result of absorption of guaiacol, 4-methylguaiacol and a host of other compounds into the grape skins, vines and leaves. Wines that have been produced from smoke tainted grapes can have aroma descriptors such as ashy, burnt bacon, wet ashtray and campfire. Even though red wines tend to be more prone to smoke taint issues due to the prolonged skin contact during fermentation, this guide will help you if your whites or roses are affected.

Smoke taint is present in the grape berry in the free volatile form and also bound as non volatile glycosylated conjugates (eg. guaiacol glycoconjugates), hence may not be detected by aroma assessment of grape juice alone. These bound precursors can be released into volatile components during and after fermentation.

There is no known total remedial action or product that can eliminate this taint, but there are some winemaking procedures or products that may help minimize the smoky character of finished wine.

The University of Adelaide completed and published an investigation – Ristic et al. 'The effect of winemaking techniques on the intensity of smoke taint in wine'. The Australian Journal of Grape and Wine Research, 2011. Although this trial was conducted on red fruit varieties (Grenach and Shiraz) it may provide some useful information.

- The study was undertaken to investigate the efficacy of various winemaking techniques in reducing the intensity of smoke-related attributes whilst maintaining acceptable wine quality. The varieties included Grenache and Shiraz.
- Previous studies have shown that guaiacol and guaiacol glycoconjugates accumulate preferentially in the skins, so winemaking techniques that minimize skin contact should reduce the extraction, therefore the intensity of smoke taint in finished wines.
- Given that guaiacol glycoconjugate pool remained in the wines after fermentation, it is likely that guaiacol (and thus smoke taint) will continue to evolve slowly in the bottle with age.
- Quantification of guaiacol glycoconjugates in wine highlighted Lalvin ICV GRE[™] as the only yeast where high precursor levels did not correspond to high guaiacol levels.
- Based on the expression of various wine parameters Lalvin ICV GRE[™] was regarded as the preferred yeast.

The AWRI have various pieces of information on their website, in particular information related to the vineyard. Visit www.awri.com.au for more information. The AWRI suggest performing a small lot ferment, conducted 2-3 weeks before official harvest to assess the grapes for smoke taint. This method can be found on the AWRI website and is titled "Small-Lot Fermentation Method".



- **1. SO**₂ **management at fermentation** As long as the fruit is not compromised, follow your standard SO₂ protocol.
- 2. Enzymes most of the smoky character is found in the grape skins so skin contact should be as brief as possible.

Use Lallzyme Cuvee Blanc^m (0.5g - 1.0g/L of estimated juice yield) or Rapidase Expression Aroma^m (2-3g/100 kg fruit) at grape reception to maximise juice yields.

- 3. Pressing consider keeping free-run and pressing wines separate. Press with the lowest pressure possible.
- 4. Yeast selection Choose a yeast that increases fruit expression and/or mouthfeel depending on the variety and the desired winestyle. Use the recommended dose of 250ppm

IOC Be FruitsTM - High ester production. Low to no SO₂ production. Lalvin ICV GRETM – This yeast tends to favour upfront expression of fruity aromatics. It produces a high level of glycerol so contributes a round palate structure – **HIGHLY RECOMMENDED**.

Lalvin Rhone 4600^m – Gives full round fruit driven wines. Ester production is evident.

5. Detoxification.

Nutrient Vit End[™] is a specific inactivated yeast that has high bio-absorptive properties. Whether this product can absorb these smoke taints is unknown, but could be considered as an option given its highly absorptive properties.

6. Fermentation nutrients - Good fermentation nutrition management is always recommended to produce optimal fruit expression and reliable fermentation.

GoFerm[™] Protect Evolution, a yeast rehydration product, provides the yeast with sterols, vitamins and minerals. High quality and quantity of sterols aids aroma precursor assimilation into the yeast wall. Essential survival factors contribute to clean, smooth and complete fermentation.

Fermaid[®] AT – blend of organic and inorganic nitrogen. This product is recommended in low YAN conditions.

Fermaid[®] 0 - 100% Yeast derived organic nitrogen composed of amino acids and peptides and micro-nutrients used in moderate - high YAN conditions. Excellent for highly clarified juices.

(It is well understood that the amino acids in Fermaid® 0 and Fermaid® AT are precursors to volatile aromatic compounds such as higher alcohols and esters, hence contribute positively to fruit expression).

Specific Inactivated Yeast used during fermentation can help build palate weight, colour intensity and fruit expression

Glutastar[™] (300ppm) - this product has the highest level of glutathione of all SIY. Contributes some mouthfeel but largely it is used to preserve freshness and aromatic intensity.

8. MLF selection – use a wine bacteria that promotes fruit expression and mouthfeel.

Use a co-inoculation MLF strategy to drive fruit expression and efficient MLF. The wine should be racked off ML lees as soon as it is completed.

Enoferm Alpha^ ${\scriptscriptstyle\mathsf{M}}$ is recommended for its contribution to mouthfeel.

Lalvin VP41[®] is recommend for its fruit driven sensory profile. BETA - COINOC[™] has the highest level of berry ester formation in the Lallemand portfolio.

For further information on co-inoculation refer to the Lallemand website: www.lallemandwine.com

9. Fermentation temperature control

Maintain $16.5^{\circ}C-18^{\circ}C - promote$ fresh fruit + maintains healthy yeast.

10. End of alcoholic fermentation treatment with certain Specific Inactivated Yeast is suggested.

Post-alcoholic fermentation, if a taint exists, an application of a Specific Inactivated Yeast could help to reduce some of the smoky characters. Bench trials can be conducted with Reskue^M (10-40 g/hL) or IOC Flavoclean^M deodorising Carbon (50-150 g/hL). Following treatment with SIY or carbon, rack after 72 hours. Treat wine with Noblesse^M (10-30 g/hL), rack again 2 days later.

PLEASE NOTE: Smoke related characteristics can evolve over time, so early consumption is recommended if possible.

The information herein is true and accurate to the best of our knowledge; however, this data sheet is not to be considered as a guarantee, expressed or implied, or as a condition of sale of this product.



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