



WHITE WINEMAKING WITH GRAPES AFFECTED BY SMOKE TAIN

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. White wines tend to be less prone to smoke taint issues due to the abbreviated skin contact during fermentation. There is no known cure for smoke taint, but the below winemaking suggestions can help to minimize the smoky character in the finished wine.

1. SO₂ Management at Fruit Reception

- As long as the fruit is not compromised (berries damaged via rot or pest), follow your standard SO₂ protocol.
- For compromised fruit please see rot protocol on our website (www.scottlab.com).

2. Enzymes

- Use Scottzyme® Cinn-Free at the low range of dosage recommendations at grape reception or at crusher to maximize juice yields.
- If possible, allow at least two hours of contact time with enzymes before pressing.

3. Pressing

- Pressing with the lowest possible pressure is critical.
- Pre-treatment of fruit with enzymes such as Scottzyme Cinn-Free helps to achieve greater yield with less pressure.
- Consider eliminating press wine or treating separately.

4. Conducting Fining Trials Pre-Fermentation.

- Caseine Soluble is generally used in both wine and juice for the treatment of oxidized phenolics and bitter compounds, but many customers had success in 2008 in removing some of the smoky characters in the juice.
- Bentolact S is a blend of activated bentonite and soluble casein. An addition during settling can help compact the lees. It may also reduce the overall amount of bentonite needed for protein stability. Bench trials are recommended with typical dosages in juice of 20-100 g/hL (1.7-8.4 lb/1000 gallons). Product preparation takes about 3 hours.
Note: Some winemakers use bentonite alone.
- A 10-20 ppm addition of Polycl (PVPP) may also be used to potentially remove some of the smoky character in the juice. One hour preparation time required.
- Inocolle is a liquid gelatin which is normally used to improve aromas. Bench trials are recommended at dosage levels between 30-60 mL/hL (1.1-2.2 L/1000 gallons).
- Cristalline Plus is a blend of isinglass and citric acid stabilized with potassium metabisulfite. Isinglass has been shown to have variable effectiveness in reducing smoky characteristics.
- Viniprotect is a blend of PVPP and bentonite. An addition during settling can help minimize problems associated with oxidation of polyphenols including color, bitterness, and herbaceousness. One hour preparation time with dosage at 20-100 g/hL (1.7-8.3 lb/1000 gallons).
- Cold Mix Sparkolloid at a dosage of 12-24 g/hL (1.0-2.0 lb/1000 gallons) can be used on its own or in conjunction with other fining agents to help settle and compact the juice lees.

Bench trials with all seven of these products will determine the best result for each lot of juice.

- Rack and inoculate immediately.

5. Yeast

- Select yeast strains that express good fruit character and build mouthfeel (e.g. Cross-Evolution®, Lalvin ICV GRE™, Lalvin ICV D47™, Lalvin Rhône 4600®, Lalvin ICV-Opale® or VIN13).

6. Yeast Inoculation

- Inoculate yeast at 25 g/hL (2 lb/1000 gallons).
- Rehydrate yeast with Go-Ferm® or Go-Ferm Protect®.

7. Yeast Derivatives

- Additions of natural yeast derivatives such as Opti-WHITE®, Booster Blanc®, OptiMUM WHITE® or Noblesse® can have a positive impact on the colloidal balance of the wine. An addition of 25-50 g/hL of Opti-WHITE, Booster Blanc, or OptiMUM WHITE at the onset of fermentation provides early polysaccharide availability that can increase mouthfeel, improve fresh aromas and help avoid browning from oxidation. A second addition of Opti-WHITE, Booster Blanc or Noblesse towards the end of fermentation can bind up some of the smoky aromas.

8. Fermentation Nutrient Additions

- Measure yeast assimilable nitrogen (YAN) in the must.
- Use Fermaid K™ and/or Fermaid O™ (depending on your Brix and YAN levels).
- Exercise caution with diammonium phosphate (DAP). DAP may favor the formation of sulfide off-flavors which can, in turn, emphasize smoky characters. In very low nitrogen must, DAP should only be used in association with a complete yeast nutrient (e.g. Fermaid K).
- Yeast cell walls are highly absorptive so an addition of 2 lb/1000 gal of Nutrient Vit End™ or SIY Cell Hulls™ during fermentation can potentially bind some of the smoky aromas.

9. Temperature Control

- Temperature management is important. Keep the juice at 61-64°F (16.5-18°C) to promote fruit-driven aromas and maintain healthy yeast.

10. End of Alcoholic Fermentation

- When the wine is at 1-2°Brix, an application of 1 g/hL of Redules® can help reduce some of the excessive smoky characters. Rack after 72 hours.
- Treat wine with 10-15 g/hL of Noblesse.
- Rack again 2 days later.

11. Malolactic Bacteria Selection

- If conducting malolactic fermentation, choose strains noted for mouthfeel enhancement such as MBR VP41® or Enoferm Alpha™ and rehydrate using Acti-ML® or use in conjunction with Opti-Malo Plus® nutrient. Using 1-Step strains like 1-Step® VP41 or 1-Step® Alpha works very well and may improve success.
- Inoculate as soon as possible either following a co-inoculation protocol or inoculate as soon as alcoholic fermentation has completed.

12. SO₂ Levels Post Fermentation

- Increase SO₂ levels once MLF is finished. Do not leave the wine unprotected!

13. Additional Tools

- Avoid toasted barrels and other toasted oak products, as they can increase the smoky characteristics.

If you still have unwanted smoke character, bench trials with the following products are worth trying:

- ICV Noblesse
- Redules
- Nutrient Vit End
- Caseine Soluble (better for whites)
- Polycacel (better for whites/can destabilize color)
- Polycel (better for whites/can destabilize color)
- Deodorizing carbon (not available from Scott Laboratories)

Many customers have also had success treating the wines with reverse osmosis followed with a Noblesse application to rebuild structure.

Note: Smoke related characteristics can evolve over time, so early consumption is recommended whenever possible.