

Mitigation and Remediation Guidelines:

For grapes where a risk of smoke taint has been identified, we recommend the following techniques to minimize the potential impact and help protect your wine.

Mitigation:

1. Treat with Flash Détente.

In addition to the more traditional techniques outlined below, treating red grapes with a Flash Détente like the TMCi Padovan “Red Hunter” Thermovinification/Flash Détente system* can significantly reduce the presence of smoke-related compounds. Studies have shown that reduction of smoke volatile phenols by flash détente can reach 50% or greater depending on the grapes and the specific protocols used, giving winemakers further flexibility in treating smoke-affected grapes.

2. Minimize damage to skins pre-press.

- Hand harvest where possible
- Harvest cold
- Partially fill picking bins
- Minimize travel time between vineyard and winery
- Whole cluster press white grapes
- Destem but do not crush red grapes
- NO skin contact or pre-press maceration enzymes

Note: washing the fruit is helpful to remove ash but will NOT impact extractable compounds in the berries.

3. Exclude “MOG” from the press/fermentation tank to minimize potential extraction from leaves and stems.

4. Separate press fractions (free-run has lower smoke compounds).

5. Conduct fining trials pre-fermentation with fining agents including:

- Deodorizing carbon at 0.5–3 g/L (4–25 lb/1000 gallons) or higher
- **Phenol-Fine Plus NF** at 10–90 g/hL (0.8–7.5 lb/1000 gallons)
- **PVPP**
- Protein/Chitosan or Chitin-Glucan blends
 - **ClarMix** at 0.1–0.25 g/L (0.8–2 lb/1000 gallons)
- **Bentonite** (added last to speed settling)
- In white juice:
 - **ClarPure** at 0.4 g/L (3.3 lb/1000 gallons) and hyper-oxygenate the juice (min. 20 mg/L/day for 2–3 hours)
 - **Zyme-O-Clear Plus** at 16 mL/ton

6. Select a robust and reliable yeast that emphasizes fruit and minimizes phenol production.

- Examples: **SafOEno™ CK S102**, **SafOEno™ FV 19**, **SafOEno™ HD A54**, or **SafOEno™ HD S 135**

7. Minimize the potential of other off-character development by using proper nutrition from a yeast-derived nitrogen source to ensure a clean fermentation to dryness.

- Wines that are fermented to complete dryness have significantly less potential of residual bound smoke precursors.

8. Minimize the maceration time of reds.

- While threshold levels of free volatile phenols are present by day 3, minimizing maceration time will minimize the free and bound volatile phenols that must be remediated later.

*Available from our equipment partner Omnia Technologies

9. Consider tannins and/or oak chips.

- Fermentation tannins and/or oak chips can help reduce the perception of smoke taint
- In red fermentations, **Color-Tan** and **Color-Tan NT** will help with mouthfeel, balance and color stability, allowing shorter macerations (avoid tannin use in white fermentations).
- Use untoasted or light-toast oak chips, as heavy toast characteristics might emphasize smoke taint.

Remediation:

When choosing a remediation strategy for handling smoke taint, it is important to recall that not every treatment will be effective in a given wine, and it might require multiple techniques and possibly multiple applications of those techniques to significantly reduce the perception of smoke.

1. Reverse Osmosis

- Highly effective at removing free volatile phenols
- Not effective at removing bound volatile phenols, so smoke characteristics might return
- Sensory analysis of the wine is critical before and after treatment. Because MLF has a large sensory impact, any RO treatment should be considered 5–6 weeks after MLF is complete. Wines treated with reverse osmosis for smoke taint should NOT be barreled down. For oak complexity and palate resolution, consider tannins and/or oak blocks with micro-oxygenation in tank.

2. Fining

In addition to pre-fermentation fining, it might be necessary to fine during and after fermentation. Trials are always recommended. For mild smoke character, start with fining trials at 6 weeks post- MLF. For stronger smoke taint:

- End of Fermentation or MLF:
 1. Add **ClarMix** at up to 0.1 g/L (0.8 lb/1000 gallons) for 3 days.
 2. Follow with **ClarPure** at up to 40 g/hL (3.3 lb/1000 gal) for 3–6 days contact.
 3. Rack wine off fining lees.
- During aging (or beginning 6 weeks after the completion of MLF):
 1. Add **ClarPure** at up to 40 g/hL (3.3 lb/1000 gallons) for up to 6 days.
 2. Rack wine off fining lees.
- Finished Blend Fining
 1. Add **ClarMix** at up to 0.1 g/hL (0.8 lb/1000 gal) for 3–6 days.
 2. Follow with **ClarPure** at up to 40 g/hL (3.3 lb/1000 gal) for 48 hours contact.
 3. Rack wine off fining lees.

3. Tannins & Oak Chips/Blocks

As with use in fermentation, certain tannins and oak chips or blocks might help reduce the perception of smoke taint. Trials are highly recommended, as certain options can actually increase smoke perception. Tannins that enhance fresh aromatics or increase complexity, such as **Tannica Bouquet**, **Tannica Rosso**, **Tannica Lyon**, or **Tannica Fresco**, might be helpful in reducing perception of smoke characteristics. For wines pressed early, **Querca-Tan UT**, **Tani-Grape**, **Tani-Structure** and **Tani-Complete** can help enhance a wine's mouthfeel and structure.

Please contact your ATPGroup Enological Products Specialist for more information and help selecting the right solutions for your wines or visit our website at **ATPGroup.com**.