

## WINEMAKING GUIDELINES

# SMOKE-AFFECTED GRAPES: WHITE WINES

### How are grapes and vines affected by wildfire smoke?

Numerous volatile phenols are present in wildfire smoke and can be absorbed by grape berries and vine leaves during a smoke event. Vineyard and grape exposure to smoke may result in wines with undesirable aromatic characteristics such as smoky, burnt, bacon, medicinal and/or ash, as well as distinct bitterness and drying sensation in the throat.

### What compounds are responsible for smoke effect?

The known compounds which contribute to smoke effect are free form volatile phenols (guaiacol, 4-methylguaiacol, o-cresol, p-cresol, m-cresol, etc) which are produced when lignin in wood is burnt. These compounds are absorbed by the vine and are bound to one or more sugars. These sugar-bound smoke compounds are released in the mouth by enzymes in saliva, which leads to an ashy aftertaste.

### Key winemaking steps when dealing with smoke-affected grapes:

1. **Hand harvest** and sort out **leaf material** that can release smoke-related compounds.
2. Process fruit **cold** to limit extraction.
3. **Limit skin contact** to reduce extraction of smoke from the skins: Whole cluster press, no crushing, no destemming.
4. **Separate press fractions.** Hard pressed juices can have higher smoke taint compounds.
5. **Fast and strong clarification.** Solids can have residual smoke compounds attached to them; remove them ASAP.
6. **Treat juice with activated carbon.** Treating juice with activated carbon is a more effective method to remove glycosylated smoke compounds than treating the resulting wine. **BE SURE TO USE A SETTLING AGENT TO REMOVE AS MUCH OF THE CARBON AS POSSIBLE BEFORE FERMENTATION.** This will limit any residual carbon from stripping aromas or flavors during fermentation.
7. **Select** an aromatic and complex yeast strain.
8. **Boost** aromas by enhancing aromatic precursors via yeast nutrition.
9. **Rack off lees early.** Some off-aromas bound to lees and can be eliminated by racking off early.
10. **Mask** smoke related off-aromas with untoasted oak chips or tannins with aromatic precursors. Oak chips can reduce intensity of smoke characteristics through increased wine complexity.
11. **Balance wine mouthfeel** with mannoproteins.

WINEMAKING STAGE	OBJECTIVE	ENARTIS RECOMMENDATIONS	DOSAGE
<b>Harvest/ Vineyard</b>	Antioxidant	<b>AST</b> is a blend of ascorbic acid, gallic tannins and SO <sub>2</sub> for complete antioxidant protection. 100ppm of AST = 28 ppm SO <sub>2</sub> .	100-200 g/ton or 10-20 g/hL
<i>Reduce skin contact - keep low temperature – gentle press cycle – limit rotation - separate press fractions.</i>			
<b>Settling and Clarification</b>	Settling Enzyme	<b>Enartis Zym RS:</b> Pectinase and hemicellulase developed for difficult settling. Rapid settling and intense clarification.	2-3 mL/hL
	Fining Agent	<b>Fenol Free:</b> Activated carbon fining agent with high affinity for volatile phenols responsible for smoke effect. Recommended for press fractions.  Or  <b>Claril SMK:</b> NEW blend of activated carbon, pre-activated chitosan and pea protein. This blend was created for glycosylated smoke taint removal and rapid settling. *Requires letter to TTB for approval. Call your Enartis rep for more details.	100-200 g/hL
	Settling Aid	<b>Hydroclar 30 &amp; Pluxcompact:</b> Aids the settling and compaction of activated carbon in the juice prior to fermentation.	10 mL/hL & 15 g/hL
<i>Recommended turbidity &lt; 100 NTU</i>			
<b>Inoculation</b>	Nutrients	<i>At inoculation, adjust YAN &gt; 150 ppm with complex nutrient</i> <b>Nutrifer Arom Plus</b> provides essential nutrients for proper yeast development: amino acids, vitamins and mineral salts and aromatic precursors to enhance fermentation aromas.	20 g/hL
	Yeast (select one)	<b>Enartis Ferm ES181:</b> <i>S.cerevisiae</i> strain with a short lag phase, fast fermenter and low nitrogen need that produces a large amount of secondary aromas.	20 g/hL
	Polysaccharides	<b>Enartis Pro Blanco:</b> Yeast cell wall polysaccharides rich in sulfur-containing peptides. Promotes varietal aromas production, balances mid-palate and reduce green characters.	40 g/hL
<i>Fermentation temperature: 14-18°C (57-64°F) – not higher than 20°C (68°F) Rack wine from gross lees early toward end of fermentation</i>			
<b>1/3 Fermentation</b>	Yeast Nutrients	<b>Nutrifer Advance:</b> Organic and inorganic nitrogen, yeast cell walls rich in sterols and fatty acids and cellulose. Helps yeast with stress resistance, detoxifies wine, ensures complete fermentation and reduces production of H <sub>2</sub> S.	20-30 g/hL
<b>1/2 Fermentation</b>	Yeast Protection	<b>Nutrifer No Stop:</b> Yeast cell walls rich in fatty acids and sterols to improve yeast cell membrane fluidity, yeast resistance and fermentation activity. Highly recommended in high temperature fermentations.	20 g/hL
<i>Rack from fermentation lees + add SO<sub>2</sub> For ageing, use 20 g/hL of <b>Surli One</b></i>			