
NO/LOW SO₂ WINEMAKING – WHITE/ROSE WINES

SO₂ is one of the most controversial additives currently used in the wine industry. Lamothe-Abiet offers options able to replace SO₂ for its antioxidant, antioxidasic and antimicrobial activities and produce quality, low or SO₂ –free wines. The entire process of winemaking must be review, especially sanitation and oxygen protection, using appropriate equipment and sanitation protocols. Critical steps for reducing use of SO₂ in white and rose wines:

- **pH management:** Bacteria are pH sensitive and will be under better control in a low pH environment.
 - Work with healthy grapes.
 - **Dissolved oxygen management is essential:** limit transfer, use inert gas and work with appropriate equipment.
- Be proactive:** prevent microbial contamination from grapes stages, preserve and build up antioxidant wine potential.

ALTERNATIVES TO SO₂ - PRODUCT INFO

Tanin gallique a l'alcool – pure gallic tannin, developed for whites and roses, to scavenge oxygen radicals and inhibit oxidative enzymes such as laccase and PPO. It protects grapes and juice from oxidation. It has strong affinity with proteins, improving protein stability, thus reducing the needs of bentonite on wine. Tannin Gallique a l'alcool can be added directly on grapes or in juice. Simply sprinkle it on the top of the grapes at picking.

Excellence B-Nature – non-Saccharomyces yeast, pure *Metschnikovia pulcherrima*, non fermentative. It inhibits the development of spoilage microbes such as other non-Saccharomyces, and bacteria on grapes and juice. Excellence® B-Nature® is an organic anti-microbial solution, used as alternative to SO₂ on grapes. It protects grapes/juice from microbial contamination during transport and processing, does not inhibit Saccharomyces cerevisiae, and reduces SO₂ combining compounds production, thus increasing SO₂ efficiency. Excellence B-nature can be added directly to grapes, without rehydration. Simply sprinkle the yeast on the top of the grapes at picking.

Polymix Natur' – PVPP, Yeast extracts, Bentonite. Vegan, allergen free fining agent focused on removing oxidized and easily oxidizable phenolic compounds. Polymix Natur' treats and prevents oxidation, improves oxidative stability, wine expression and elongates wine shelf life. We recommend using Polymix Natur' at juice stage, in prevention. It can also be used during fermentation and on wine during ageing.

Aroma Protect - inactivated yeasts, naturally rich in glutathione, a natural antioxidant, sulfurous tripeptide with great reductive power. When used during ageing, Aroma Protect® gives immediate protection against the oxidative mechanisms, releasing glutathione (GSH) into the wine, significantly slowing down oxidation phenomena.

KillBrett – pure chitosan, wide spectrum anti-microbial agent. KillBrett eliminates and inhibits Brettanomyces, Lactic Acid Bacteria and Acetic Acid Bacteria. It can be used during the entire process of winemaking, we recommend using it as preventive, post MLF, at 4 g/hL.

Tan&Sense Volume – pure untoasted oak tannins, with high capacity to scavenge oxygen radicals, buffer redox potential and maintain wine freshness. Tan&Sense Volume, is a gentle tannin, increasing sweetness and roundness perception. We recommend using 0.5 – 1 g/hL every transfer, racking or movement of the wine to protect from oxidation.

ALTERNATIVES TO SO₂ – WINEMAKING GUIDELINES

HARVEST AND GRAPE TRANSPORT	<p>Work fast, at low temperature and protect from oxygen with inert gas.</p> <p>Tanin gallique a l'alcool, 50 g/ton, at picking or during fruit processing.</p> <p>Excellence B-Nature at 30-50 g/ton, sprinkle directly on grapes, as soon as possible after picking to prevent any microbial contamination and spoilage.</p>
MACERATION / PRESSING	<p><i>Optional:</i> Oenozym Crush White at 25 mL/ton, on grapes, at press filling to improve aromas and polysaccharides extraction, increase free run yield, improve clarification, and wine filterability.</p> <p>Press program should allow a slow increase in pressure with minimum rotations. Press fractions separation: press cut to be decided by tasting, conductivity or pH increase.</p>
CLARIFICATION	<p>Fining is essential to eliminate oxidized and oxidable phenolic compounds and stabilize wine.</p> <ul style="list-style-type: none"> ○ Low pressure fractions: Polymix Natur' at 15 g/hL ○ Hard press fractions: Polymix Natur' at 40 g/hL
ALCOHOLIC FERMENTATION	<p><u>Tropical, Complex, Round</u></p> <ul style="list-style-type: none"> - Turbidity: 250-300 NTU - Temperature: 64-70°F - Excellence TXL at 20 g/hL to produce complex aromatic profile with round mouthfeel. - OptiThiols® at 30 g/hL to stimulate thiolic compounds production and increase wine's antioxidant potential. <p><u>Fresh, Citrus, Thiolic</u></p> <ul style="list-style-type: none"> - Turbidity: 200-250 NTU - Temperature: 62-68°F - Excellence FTH at 20 g/hL to produce thiolic, citrus, fresh wines with linear mouthfeel. - OptiThiols® at 30 g/hL to stimulate thiolic compounds production and increase wine's antioxidant potential. <p><u>Terpenes, Fruity, Floral</u></p> <ul style="list-style-type: none"> - Turbidity: 100 NTU - Temperature: 55-58°F - Excellence STR at 20 g/hL to produce fruity, floral, fresh wines with complexity. - OptiEsters at 20-30 g/hL to promote the production of ethylesters and enhance floral characters. <p>Rehydrate yeast with OenoStim at 25 g/hL to reinforce yeast activity, increase aromatic production and optimize grape expression.</p> <p>Ensure good yeast nutrition and limit off-flavors production with Optiflore O® at 40 g/hL (complete organic nutrient based on inactivated yeast).</p>
MLF (if desired)	<p>AT 1/3 FERMENTATION</p> <p>If low initial YAN (<150), add 20-30 g/hL of OptiFerm (ammonium salts and vitamin B1).</p> <p>For protein stability: 10-40 g/hL of Bentosol Poudre</p>
MLF (if desired)	<p>Co-inoculation: add Oeno1 at 1g/hL, 1 day after AF starts to keep fresh, fruity profile.</p> <p>Sequential inoculation: add Oeno1 at 1g/hL after AF is completed for more complex profile.</p>
AGEING	<p>Once AF and MLF completed: rack off gross lees after fermentation. Use inert gas during transfer.</p> <p>Aroma Protect at 10-20 g/hL to reduce redox potential and increase natural wine resistance to oxidation.</p> <p>Tan&Sense Volume at 1 g/hL every racking to protect from oxidation and scavenge oxygen radicals.</p> <p>KillBrett at 4 g/hL to prevent any microbial development and protect wine from spoilage.</p>