Inspiring innovation.

ENARTIS NEWS
WHAT'S YOUR PRIMARY AIM FOR USING OAK?

Use of oak in winemaking is always very popular. Technological progress has led to the creation of tools that can be more convenient alternatives to the traditional barrel. What is the main driver for using oak? Sensory impact? Color stability? Are we sure that what we are using achieves the intended purpose?

WHAT ARE THE AVAILABLE OAK ALTERNATIVES?

There are several tools that in various ways can be used as an alternative to barrels. The choice depends on the purpose and timing of the application, time availability and ease of use.

Oak tannins

Tannins are completely soluble and once added to wine are immediately effective. Oak tannins have two main impacts:

- Help color stability. In synergy with oxygen, they promote ethanol oxidation to acetaldehyde that form ethyl bridges between condensed tannins and anthocyanins creating stable pigments. Due to the positive effect on color stability, tannins also increase wine structure. More stable color means increased dry extract. More stable color means more tannins in solution which, being bound to anthocyanins, contribute to a softer structure.
- Improve aromatic cleanliness. Ellagic tannins react with sulfur compounds such as mercaptans forming odorless complexes. This cleaning activity can be very useful for enhancing the oaky aroma in wines aged in barrel or treated with oak alternatives.

Oak powder

Oak powder is typically used during alcoholic fermentation.
It claims to have many qualities, not all are true. Certainly, it has a strong impact on wine aroma due to its wide surface area and it is very fast in releasing the aromatic compounds. Depending on oak origin and level of toasting, it can be used to increase aroma complexity or to mask herbaceous notes. Released tannins can combine sulfur compounds avoiding the appearance of sulfur off-aroma.
There are claims that oak powder has antioxidant effects when used in the juice phase, this is a myth.
The reason being is tannin can only be extracted from the oak powder in the presence of alcohol.
That said, the addition of oak powder in juice renders it incapable of providing tannins for antioxidant effects.
Only once fermentation has begun and alcohol is being produced will the tannin be released, however at this stage the wine/juice is saturated with CO_2 and the antioxidant effect is no longer necessary.
Using oak powder or oak wood additions in the juice is not helpful in the pre-fermentation phase of winemaking as an antioxidant.
Oak powder supposed contribution to color stability will be explored later on when we discuss the use of oak alternatives for this application. What is most certainly true, is that 1 or 2 grams per liter of oak powder creates a huge surface area that adsorbs free anthocyanins thereby decreasing wine color intensity.

Incanto NC range, an alternative to oak powder.

The Incanto NC products are completely soluble formulations containing only the active molecules that make oak powder application during fermentation interesting: ellagic tannins and polysaccharides.
Incanto NC products offer the efficacy of oak powder while providing many advantages:

- 10 times smaller dosage
- consistent quality
- no burnt or green wood notes
- no solids that could damage the mechanical parts of harvest machinery or render cleaning difficult
- ease of use for winery staff
- zero loss of color by solids absorption

	Main Effect
Incanto NC Cherry	• Mimics cherry wood treatment. • Enhances fresh red fruit notes.
Incanto NC Dark Chocolate	• Mimics French heavy toasted oak powder treatment. • Increases wine aroma complexity.
Incanto NC Red	• Mimics the effect of medium-plus toasted oak powder or chips. • Increases oak aroma.
Incanto NC White	• Mimics untoasted oak treatment. • Increases wine fruitiness.

Chips

Due to their big surface, they can be conveniently used to provide oak aroma to wine rapidly. During wine ageing, they have a positive effect on color stabilization when used in conjunction with micro-oxygenation.

	Oak powder	Chips
Average dimensions	< 2 mm	2 mm – 20 mm
Average dosage	0.5-2 g/L	0.5-5 g/L
Average needed contact time	10-15 days	4-6 weeks

Enartis Incanto Chips

	DESCRIPTION	CHIPS
Incanto Black Spice	Heavy toasted French oak	✓
Incanto Caramel	Medium toasted French oak	✓
Incanto Cream	Medium toasted French oak	✓
Incanto Dark Chocolate	Heavy toasted French oak	✓
Incanto Special Fruit	French & American oak, various toast levels	✓
Incanto Spice	French & American oak, various toast levels	✓
Incanto Toffee	Medium-strong toasted French oak	✓
Incanto Vanilla	Medium toasted American oak	✓

TECHNICAL REASONS FOR USING OAK ALTERNATIVES

Aromatic contribution

When the goal of using oak alternative is increasing wine aroma complexity, all oak alternatives work quite well. With the same wood and toasting level, the rule is that the greater the surface the faster the effect.

The kind of aroma that oak contributes to wine depends on wood selection to some degree, but primarily on the toasting process. Toasting modifies the structure and chemical properties of wood. Increasing temperature and length of toasting reduces oak lactone content that contributes to "fresh oak" and coconut aromas when lightly toasted. Medium toasting increases "vanilla", "caramel-like" and "roasted coffee" aromas. At heavy toast levels these sweet notes decrease and are replaced by "spicy" and "smoky" characters.

Among oak alternative, tannins are the least impactful, whilst their effect of brightening wine aroma is a consequence of their ability to eliminate off-flavors and change the wine redox potential.

How to choose the right oak alternative

Chips	Tannins & Incanto NC
• Use a 0.750 L bottle for each sample. • Select desired dosages (2-5 g/L). • Write the date, wine lot, Incanto Oak Chip name and dosage on a label for each sample. Prepare a control sample bottle without oak chips. • Calculate the amount of Incanto Oak Chips for each 0.750 L wine sample: (dosage g/L) x 0.750 L = g of Incanto Oak Chips. • Weigh Incanto Oak Chips, add to sample bottle and fill with wine up to 0.750 L. • To prevent potential oxidation, add 5 mg/L SO_2 at this time. • After 3-4 weeks contact, the samples are ready to be tasted. Tip: Consider blending samples to determine the optimum Incanto Oak Chip blend.	• Dissolve 1 g product in 100 mL neutral alcohol-water solution (~ 13%v/v). • Write the date, wine lot, Incanto or EnartisTan name and dosage on a label for each sample. Prepare a control sample bottle with untreated wine. • Fill samples with wine up to 80% of final volume, leaving space for the addition. • Add the treatment solution: 0.1 mL of solution in 100 mL of wine corresponds to the addition of 1 g of tannin or polysaccharide in 1 hL of wine. • Fill with wine to the final volume. • Mix homogenously. • Tasting can be done immediately after addition.

REQUEST AND TEST THE KIT

Color stability: attention to what and when

Barrel stabilizing effect on color is the result of the combined action of two elements: the ellagic tannins released by the wood and the oxygen that dissolves into the wine through the bung. The lack of one of the two components shatters the mechanism. What does it mean practically?

When using oak alternatives such as oak chips in fermentation, the release of tannins is slow and mainly happens because of the extracting ability of alcohol in the second half of AF, when there is no dissolved oxygen. Tannin released by oak will help color stability only if the post-fermentation phase is correctly managed by providing oxygen and controlling SO_2 addition. In conclusion, the use of these oak alternatives in fermentation has a great impact on wine aroma but little on wine color. In this phase, tannin is much more valuable.

Whilst during ageing the use of oak alternatives is very effective for color stabilization if used together with microoxygenation. Similarly to what happens during barrel ageing, a controlled addition of oxygen causes ethanol oxidation to acetaldehyde, a reaction that is boosted by the ellagic tannins released by oak. Acetaldehyde forms bridges between grape condensed tannins and anthocyanins creating stable pigments that are not susceptible to sulfur dioxide bleaching or changes in wine pH and contribute positively to wine mouthfeel with a bigger and soft structure.

	STRUCTURE	ASTRIGENCY	SOFTNESS	AROMA	AROMA DESCRIPTION
Coeur de Chêne	♦♦	♦♦	♦♦♦	♦♦♦♦	Vanilla, caramel, spices
DC (ex Dark Chocolate)	♦♦♦	♦	♦♦♦♦	♦♦♦♦♦	Cocoa, toasted hazelnut, vanilla
Elevage	♦♦♦	♦♦♦	♦♦	♦♦♦	Caramel, licorice, vanilla
Napa	♦♦♦	♦	♦♦♦♦	♦♦♦♦♦	Coconut, caramel, coffee, cocoa
Superoak	♦♦	♦	♦♦	♦♦	Vanilla, caramel, hay
TOF (ex Toffee)	♦♦♦♦	♦♦	♦♦♦	♦♦♦♦	Coffee, caramel, toast
VNL (ex Vanilla)	♦♦♦♦	♦♦	♦♦♦	♦♦♦♦	Vanilla, coconut, cream

Enartis WIN-IQ OX

The Enartis WIN-IQ OX, our latest version of micro-oxygenator is now available for our Australia and New Zealand customers. WIN-IQ OX comes with an innovative micro-oxygenation control system, which allows the user to operate the system both onsite and remotely, and its highly accurate and easy-to-use interface creates a robust platform of complete analytical data points for increasing consistency across vintages. Compared to previous models of micro-oxygenator, WIN-IQ OX is:

- More portable and lightweight (with a polycarbonate impact resistant enclosure, the lightweight alternative to stainless steel which leads to 30% weight reduction).
- Dust and moisture resistant (with an IP6x rating).
- Compatible to network, Wi-Fi network and ethernet network, allowing user remote operation.
- Equipped with a touch interface and capacitive multi-touch display, providing easier user experience.
- Programmed to allow user defined access, ensuring better security of operational control, and allowing multiple users to operate the system.
- Equipped with a stainless-steel sintered diffusion sparging stone (0.5 µm), ensuring precise applications.
- Capable of displaying visual dosing graphing and generating downloadable data, to assist with database collection for cross-vintage consistency.
- Formulated with a broader dosing application range, from 3,800L to 2,270,000L.
- Formulated with a broader oxygen dosing rate, ranges from 0.1 to 8 mg/L, allowing both micro- and macro-oxygenation to be carried out as various stages of the winemaking process.

The use of WIN-IQ OX allows wineries to remain competitive and cost effective, by transitioning away from barrel ageing to tank maturation, combined with tannins and oak alternatives. This creates opportunity to increase production volume, have better control over the wine's aging process through consistent maturation, reduce maturation time, as well as last minute sensory refinement prior to packaging, therefore enhancing overall winemaking productivity, reducing labour and cost.

To learn more about Enartis WIN-IQ OX or request an onsite trial of the machinery, please contact your respective regional sales manager.

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