

ENARTIS NEWS

THE IMPORTANCE OF FINING

Fining is often considered an obsolete practice that can be replaced by sophisticated wine technologies which are respectful of wine quality. Even though this is partially true, fining remains the only and most effective solution to reach wine stability and sensory balance in the most difficult circumstances. Choosing the right fining agent and using the correct dosage so as not to lose quality is crucial.

OBJECTIVES OF FINING

Fining can have multiple objectives:

Improve Wine Clarity

Haziness is produced by solids in suspension. Solids can have different origins including:

- Grape fragments produced by mechanical actions during harvest
- Yeast or bacteria responsible for fermentation or contaminating wine
- Wine compounds such as salts, polyphenols and proteins that, by chemical reactions, form aggregates which become large enough to precipitate

Filtration and centrifugation can be good alternatives to fining for improving wine clarity.

Fining agents that are the most effective for this application are gelatin (especially high molecular weight gelatin), isinglass and egg albumin.

Gelatin is not just one product but a large family of products that differ in molecular weight, charge density and isoelectric point. High molecular weight gelatins are most effective in improving wine clarity.

Isinglass does not require the use of co-fining agents such as bentonite and silica sol unless they are necessary to accelerate sedimentation. It is not sensitive to colloids and, for this reason, it is recommended for the clarification of wine containing glucans or neutral pectins.

Egg albumin is mainly used for red wine clarification because it respects wine structure. At pH above 3.6, its charge is significantly reduced and consequently its effectiveness.

Plant proteins are a good choice when producing vegetarian and vegan friendly wines.

Enartis Products for Wine Clarification

GOLDENCLAR INSTANT: High molecular weight gelatin soluble in room temperature water

PULVICLAR S: Hot soluble gelatin

FINECOLL: Isinglass

PLANTIS PQ: An allergen free and vegan friendly fining agent made of potato protein and chitosan. It is effective in improving wine clarification, filterability, aromatic cleanliness and in removing oxidized and oxidable compounds. In red wine, it reduces the perception of astringency and dryness while respecting balance and structure.

CLARIL ZW: Plant protein enhanced with chitosan and sodium activated bentonite

Improve Wine Filterability

Wine filtration can be made difficult by the presence of visible and invisible particles.

Visible particles (solids or compounds out of solution) affect wine filterability but their removal is not a big issue. They can be eliminated through good clarification as mentioned above, or directly by filtration choosing a filtration material with the appropriate porosity and surface.

Invisible particles are the real enemy of filtration. Low turbidity is naively considered synonymous with filterability, but often that is not the case. Wine is rich in colloids, particles that are small enough (size between 1 nm and 1 mm) to be invisible but are able to interact with filtration membranes throughout various mechanisms and clog

filters. When dealing with a low turbidity wine with a high fouling index, the problem arises from polysaccharides, proteins and color compounds in colloidal form. The correct preparation of wine for filtration, especially in the case of cross flow filtration and microfiltration, requires clarification to reduce colloid content and prevent membrane fouling.

Clogging Factor	Recommended Enartis Products
Proteins	PHARMABENT: Bentonite of pharmaceutical quality PLUXBENTON N: Natural sodium bentonite in granulated form BENTOLIT SUPER: Sodium activated bentonite CLARIL ZW: Plant protein enhanced with chitosan and sodium activated bentonite
Color Compounds	PLUXCOMPACT: Sodium-calcium bentonite CLARIL ZR: Plant protein enhanced with chitosan and bentonite
Polysaccharides (pectins and glucans)	EnartisZym EZFILTER: Liquid enzymatic preparation with betaglucanase, pectolytic and hemicellulase activities. It improves clarification and filterability of must and wine due to its ability to hydrolyze pectins and polysaccharides produced by grapes and microorganisms.

Reach Wine Stability

Fining agents can be used to remove elements that can cause haziness and sediment formation or the appearance of sensory defects after bottling, which cause loss of value and disputes from customers. Fining agent selection depends on the nature of the instability factor. Determining the correct dosage requires performing laboratory trials and specific tests to evaluate the outcome of the treatment.

Instability Factor	Possible Effects	Recommended Enartis Products
Proteins	Haziness and sediment when white and rosé wine is exposed to hot temperatures.	CLARIL ZW: Vegan fining agent made from plant protein enhanced with chitosan and sodium activated bentonite. It is designed for the clarification of white and rosé wines that will be tartrate stabilized with colloid addition (Zenith or CMC). It is effective in improving protein stability and eliminating unstable colloids that can affect wine clarification and filterability. PHARMABENT: Bentonite of pharmaceutical quality. PLUXBENTON N: Natural sodium bentonite in granulated form. PLUXCOMPACT: Sodium-calcium bentonite. BENTOLIT SUPER: Sodium activated bentonite.
Color Compounds	Haziness and sediment in bottle especially when wine is exposed to low temperatures.	CLARIL ZR: Vegan fining agent made from plant protein enhanced with chitosan and bentonite. It is designed for the clarification of red wines that will be tartrate stabilized with colloid addition (Zenith). It removes unstable color compounds, improves wine clarification and filterability, reduces sulfur off-flavors and increases shelf-life. PLUXCOMPACT: Sodium-calcium bentonite.
Microorganisms	Haziness, sediment, presence of CO ₂ and off-flavors.	ENARTISSTAB MICRO and MICRO M: Activated chitosan.
Copper	Haziness and sediment when wine is in bottle (reductive environment).	CLARIL HM: This blend of activated chitosan and PVI/PVP is very effective at reducing the concentration of metals (iron and copper), hydroxycinnamic acids and catechins which are key players in the oxidation process. It produces wines with a longer shelf life and greater stability. STABYL MET: PVI/PVP and silica.

Instability Factor	Possible Effects	Recommended Enartis Products
Iron	Haziness and sediment appearance when wine is exposed to oxygen (opened bottle).	STABYL MET: A blend of PVI/PVP and silica. It removes pro-oxidant metals (copper and mainly iron), hydroxycinnamic acids and catechins thus preventing haze formation, oxidation, browning and pinking. CLARIL HM: Activated chitosan and PVI/PVP. PLANTIS AFQ: Pea protein enhanced with activated chitosan.
Riboflavin	Light-struck	ENOBLOCK SUPER: Decolorizing carbon in powder form. ENOBLOCK PERLAGE: Decolorizing carbon in pellets. PHARMABENT: Bentonite of pharmaceutical quality. PLUXCOMPACT: Sodium-calcium bentonite.
Phenolic Compounds	Pinking and browning	PROTOCLAR: Potassium caseinate. STABYL: PVPP COMBISTAB AF: PVPP and plant protein. PLANTIS AF: Pea protein. PLANTIS PQ: Potato protein enhanced with activated chitosan.

Removing Compounds Dangerous to Human Health

To safeguard the health of consumers and as knowledge advances, regulations impose limits on the composition of wine. Today, it is well known that ochratoxin A (OTA) and biogenic amines can be present in wine in quantities that can have negative effects on human health and, in the future, new substances may be added to the list of the unwanted compounds. Fining agents can help in reducing the content of these dangerous substances, thereby complying with legal limits.

Unwanted Component	Possible Effects	Recommended Enartis Products
Ochratoxin A (OTA)	Mycotoxin produced by fungi such as <i>Aspergillus</i> and <i>Penicillium</i> . OTA, considered a carcinogen, is a nephrotoxic substance leading to irreversible kidney damage.	ENOBLOCK SUPER: Decolorizing carbon in powder form.
Biogenic Amines	Produced by spoilage microorganisms, they can affect wine aroma and cause health problems such as headache, hives and nausea.	PLUXBENTON N: Natural sodium bentonite in granulated form. PHARMABENT: Bentonite of pharmaceutical quality. BENTOLIT SUPER: Sodium activated bentonite. PLUXCOMPACT: Sodium-calcium bentonite.



Improve Wine Sensory Quality

Today, correcting wine sensory imperfection can be done in a less invasive method with the help of yeast polysaccharides and tannins. Nevertheless, in the most severe situations, fining agents are still the best solution.

Effect	Recommended Enartis Products	Active Ingredients
Treat Oxidation	STABYL	PVPP
	PROTOCLAR, CLARIL SP	Potassium Caseinate
	PROTOMIX AF, COMBISTAB AF CLARIL AF	PVPP + Plant Protein
	PLANTIS AF	Plant Protein
	PLANTIS AFQ, PLANTIS PQ	Plant Protein + Chitosan
Reduce Astringency	HYDROCLAR 30, HYDROCLAR 45, PULVICLAR S, GOLDENCLAR INSTANT	Gelatin
	PLANTIS PQ, CLARIL ZR, PLANTIS AFQ	Plant Protein
	CLARIL QY	Yeast Derivative
Reduce Bitterness	STABYL	PVPP
	FINECOLL	Isinglass
	COMBISTAB AF, CLARIL AF, PROTOMIX AF	PVPP + Plant Protein
	PLANTIS AF, PLANTIS AFQ, PLANTIS PQ, CLARIL ZR	Plant Protein
Treat Microbial Taint	FENOL FREE	Carbon
	ENARTISTAB MICRO and MICRO M	Chitosan
Eliminate Sulfur Off-aroma	REVELAROM	Copper
	ENARTISTAB and MICRO M, CLARIL ZR	Chitosan
	NEOCLAR AF	Carbon
Remove Herbaceous Notes	STABYL, COMBISTAB AF	PVPP
	PROTOCLAR K, CLARIL SP	Potassium Caseinate
	NEOCLAR AF	Carbon
Treat Smoke Taint	FENOL FREE	Carbon
	ENARTISTAB MICRO and MICRO M	Chitosan

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