Inspiring innovation.

ENARTIS NEWS
THE RELEVANCE OF FINING

Fining is often considered an obsolete practice that can be replaced by sophisticated wine technologies that are respectful of wine quality. Even though this is partially true, fining remains the only and the 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 different purposes.

Improve wine clarity

Haziness is produced by solids in suspension. Solids can have different origins, they can be:

- 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 that become large enough to precipitate.

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

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

Gelatine is not just one product but a big family of products that differ in molecular weight, charge density, isoelectric point. High molecular weight gelatines are the most effective in improving wine clarity.

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

Enartis specialties for wine clarification
GOLDENCLAR INSTANT: high molecular-weight gelatin soluble in room temperature water.
EnartisGreen GELATINA: organic certified hot soluble gelatine.
PULVICLAR S: hot soluble gelatine.
PLANTIS PQ: is 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 with a good clarification that improves wine clarity, as mentioned above, or directly by filtration choosing the 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 it is not like that. Wine is rich in colloids, particles that are small enough (size between 1 nm and 1 µm) to be invisible but that are able to interact with filtration membrane throughout various mechanisms and clog the filter. When dealing with a low turbidity wine with a high colmatation index, the problem arises from polysaccharides, proteins and color compounds in colloidal form. The correct preparation of the wine for filtration, especially in the case of cross flow filtration and microfiltration, requires a clarification to reduce colloid content and prevent membrane fouling.

Clogging factor	Recommended Enartis product
Proteins	CLARIL ZW: plant protein enhanced with chitosan and sodium activated bentonite.
	PHARMABENT: bentonite of pharmaceutical quality.
	PLUXBENTON N: natural sodium bentonite in granulated form.
Colour 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 agent can be used to remove elements that can cause haziness and sediment formation or the appearance of sensory defects after bottling thus causing loss of wine value and disputes from customers. Choice of the fining agent used depends on the nature of the instability factor. Choice of the correct dosage requires running laboratory bench trials and the application of specific tests for evaluating the outcome of the treatment.

Instability factor	Possible effects	Recommended Enartis product
Proteins	Haziness and sediment appearance when white and rosé wine is exposed to hot temperature.	**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 are meant to be tartrate stabilized with colloid addition (Zenith and 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.
Colour compounds	Haziness and sediment appearance in bottle especially when wine is exposed to low temperature.	**CLARIL ZR:** vegan fining agent made from plant protein enhanced with chitosan and bentonite. It is designed for the clarification of red wines meant to be tartrate stabilized with colloid addition of Zenith. It removes unstable colour compounds, improves wine clarification and filterability, reduces sulphur off-flavours and makes wines with longer shelf-life.
		PLUXCOMPACT: sodium-calcium bentonite.
Microorganisms	Haziness and sediment appearance, presence of CO_2 and off-flavours.	EnartisStab MICRO: activated chitosan.
Copper	Haziness and sediment appearance when wine is in bottle (reductive environment).	**CLARIL HM:** this blend of activated chitosan and PVI-PVP is very effective to reduce the concentration of metals, iron and mainly copper, hydroxycinnamic acids and catechins, which are key players in the process of oxidation. Therefore, it allows the production of wines with a longer shelf life and greater stability.
Iron	Haziness and sediment appearance when wine is exposed to oxygen (opened bottle).	CLARIL HM: activated chitosan and PVI-PVP. PLANTIS AFQ: pea protein enhanced with activated chitosan.
Riboflavin	Light struck	**BLACK PF:** enological activated carbon in damp form. Highly effective in decolorizing wines and juice and in removing ochratoxin A (OTA) and riboflavin. The controlled moisture present in BLACK PF greatly reduces the spread of carbon dust in the atmosphere and makes it easier to use.
		PHARMABENT: bentonite of pharmaceutical quality.
Phenolic compounds	Pinking and browning	STABYL: PVPP COMBISTAB AF: PVPP and plant protein

Remove compounds that are dangerous for human health

To safeguard the health of consumers, regulation imposes limits on the composition of wine. Nowadays 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. In the coming 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 to legal limit.

Unwanted element	Possible effects	Recommended Enartis product
Ochratoxin A (OTA)	Mycotoxin produced by fungi such as *Aspergillus* and *Penicillium*. OTA, considered a carcinogen, is a nephrotoxic substance leading to irreversible kidney damage.	BLACK PF: enological activated carbon in damp form. EnartisStab MICRO: activated chitosan.
Biogenic amines	Produced by spoilage microorganisms, they can affect wine aroma and cause health problems such as headache, hives, nausea.	**PHARMABENT:** bentonite of pharmaceutical quality. Thanks to its large surface, it is particularly effective in removing unstable protein also of lower molecular weight, unstable color, riboflavin and biogenic amines.
		PLUXBENTON N: natural sodium bentonite in granulated form. PLUXCOMPACT: sodium-calcium bentonite.

Improve wine sensory

Nowadays, 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 PRODUCT	ACTIVE INGREDIENT
Treat oxidation	STABYL	PVPP
	PROTOMIX AF COMBISTAB AF CLARIL AF	PVPP + plant protein
	PLANTIS AF	Plant protein
	PLANTIS AFQ PLANTIS PQ	Plant protein + chitosan
	BLACK PF	Carbon
Reduce astringency	ATOCLAR M HYDROCLAR 45 PULVICLAR S GOLDENCLAR INSTANT EnartisGreen GELATINA	Gelatin
	PLANTIS PQ CLARIL ZR PLANTIS AFQ	Plant protein
	CLARIL QY	Yeast derivative
Reduce bitterness	STABYL	PVPP
	COMBISTAB AF CLARIL AF	PVPP + plant protein
	PLANTIS AF PLANTIS AFQ PLANTIS PQ CLARIL ZR	Plant protein
Treat microbial taint	FENOL FREE	Carbon
	EnartisStab MICRO	Chitosan
Eliminate sulphur off-aroma	REVELAROM	Copper
	EnartisStab MICRO CLARIL ZR	Chitosan
	NEOCLAR AF	Carbon
Remove the herbaceous notes	STABYL COMBISTAB AF	PVPP
	NEOCLAR AF	Carbon
Treat smoke taint	FENOL FREE	Carbon
	EnartisStab MICRO	Chitosan

Australia Branch - 69 Chadstone Road, Malvern East, Victoria, 3145, Australia - Phone: + 61 (03) 9428 0037
New Zealand Branch - PO Box 4304, Marewa, Napier - Phone: + 64 (06)8434 413
www.enartis.com