RESOLUTION OIV-SECSAN 520-2014

CODE OF GOOD FINING PRACTICES FOR WINE TO BE APPLIED IN THE USE OF PROTEINACEOUS WINE FINING AGENTS WITH ALLERGENIC POTENTIAL (CASEIN AND EGG WHITE)

THE GENERAL ASSEMBLY,

In view of article 2, paragraph 2 letter b subletter ii of the Agreement establishing the International Organisation of Vine and Wine dated 3rd April 2001,

Considering that the regulations of certain countries impose the mention of allergens if used during production, when they can be detected in the finished food product. Regarding the implementation of this labelling legislation for wine:

Considering that food allergens must be declared on the label when allergenic protein(s) from food is/are present and detectable in the finished wine product,

Taking note of the works of the group of experts “Food Safety” and the advice of the group of experts "Technology",

Considering the proposal made by Commission II “Enology” and Commission IV "Safety and Health"

Decides to adopt the following Code of good fining practices, and

Recommends that this Code be regularly updated taking into consideration the development of available data.

Code of good fining practices for wine to be applied in the use of proteinaceous wine fining agents with allergenic potential (casein and egg white)

Good fining practices guidelines for wine

Fining involves the addition of absorbent/adsorbent or reactive material to must or wine in order to reduce or eliminate the presence of certain less desirable components. Fining agents are added to modify a wine’s clarity, colour, texture or flavour and especially to ensure a wine remains in a particular stable state for the longest possible period of time. The fining process is designed so that the fining agents added do not remain in the musts or wines that have had to be fined.

The effectiveness of a given fining agent depends on the agent, the levels of addition,

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its method of preparation and addition, together with the characteristics of the wine such a s pH value, the presence of substances able to interact with proteins (tannins), metal content, temperature, presence of CO2 and prior wine treatments (see Annex 1 for further details on technical aspects of fining agents).

In addition to the steps outlined below for good fining practices, winemakers should pay attention to maintaining traceability throughout the winemaking and storage process by recording the batch from which each sample of fining material is taken and obtaining documented evidence from suppliers of the fining agents used, attesting to their compliance with the International Oenological Codex.

Steps

1. Fining agents shall be free from undesirable taints and must conform to all applicable regulations. They should be stored in a cool, dry environment in sealed containers, or in other recommended storage conditions as advised by the manufacturers.
2. It is recommended that laboratory scale trial runs be conducted prior to treatment of wine in the winery.
3. The laboratory trial runs are conducted in order to reproduce, as far as possible, the treatment conditions to be used in the winery; special attention should be paid to the batch of fining agent to be used, the method of its preparation and addition to the wine, and the temperature of the laboratory sample with respect tothe total volume of wine normally fined in a winery . Preparative protocols (hydration, concentration, etc.) for protein fining agents used in the laboratory and winery should be similar, if not identical.
4. The volume of distilled, de-ionised or other potable water used to dissolve or disperse the fining agent should be minimised so as to avoid overly diluting the wine (applicable regulations must be met).
5. The quantity of fining agent used is the smallest amount needed to achieve the desired result as stipulated by the winemaker’s sensory and/or analytical evaluation, and in no case shall the amount exceed that which is specified in the applicable standards and regulations.
6. Thorough and adequate mixing of the fining agent into the juice or wine should be ensured, and sufficient contact time should be observed for the material to react prior to subsequent racking and/or filtration.

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7. Industry recognized best practice filtration methods (including fine filtration using diatom powder and cellulose fibres and/or pre-bottling filtration through a 0.65 μm or smaller membrane filter, or performing treatments of equivalent effect) should be used to remove insoluble protein fining agents. If the treated wine is simply racked off the lees remaining from the fining treatment and bottled without filtration, or if a less rigorous filtration or other technique for removal of the lees is applied, an analysis must always be conducted prior to bottling. However, even in the case of filtration, it is recommended to analyse filtered or unfiltered wines to confirm that no residual of fining potential allergenic agent(s) can be detected.
8. The fining process shall be routinely monitored after it has been carried out and following the removal of residues. In general, this will entail analysis of a sample of fined wine, using a sufficiently sensitive method of analysis, for the fining agent in question. The sampling should be adequate to ensure that the fining processes are being conducted in such a way that no detectable residue of allergen remains in the treated wine.

Appropriate corrective action (e.g. appropriate filtration) must be taken where the analysis of such wines indicates the presence of residual fining agents, or without appropriate corrective action the product labels must reflect the presence pf allergens.

9. Verification should be conducted at regular intervals, in the form of a review of the means of monitoring the fining processes, at a frequency that is adequate to ensure that these processes are being conducted in such a way as not to leave detectable fining agent residues. Verification should also ensure that adequate and timely corrective actions are taken where evidence is obtained that indicates the potential for the presence of residual fining agents in a treated wine (e.g. through false positive results).

While regulations do not provide a specific threshold level, typical analytical methods for food allergens can detect residues in the low parts per million (ppm) range. If these methods do not detect any allergenic protein in the wine, then it could be considered that no residue above the detection limit is present.

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ANNEX 1: FINING AGENTS – TECHNICAL ASPECTS

The purpose of adding a fining agent to wine can be three-fold: to "soften" or reduce its astringency and/or bitterness; to clarify and remove proteins capable of haze formation; and/or to stabilize and reduce the colour by the adsorption and precipitation of polymerised phenolic compounds and tannins. The fining agent reacts with wine components either physically or chemically, to form a new complex that can be separated from the wine.

Fining agents may bind with substances through:

- electrical interaction – the fining agent and substance(s) to be removed are of opposite charge and come together forming larger particles which settle in the wine,
- bond formation – a chemical bond is formed between the substance(s) to be removed and the fining agent,
- absorption and adsorption – the substance(s) to be removed are either caught within the structure of the fining agent, or bind onto the surface of the fining agent.

Test Sampling

Fining should be carried out only when necessary and using lower rather than higher levels of fining agent addition, as it is possible to remove desirable aroma and flavour characteristics from the wine with excessive additions. It is important, however, that sufficient fining agent is added when the prime purpose of fining is to achieve stability and/or to remove undesirable sensory characteristics.

Different fining agents react differently with different wines[1] , and even with the same wine. Therefore, sample testing, which involves adding varying amounts of a fining agent to small wine samples, is strongly recommended to determine the outcome of the specific fining material used in the wine production process and the optimum dosage to avoid over- or under-fining. The test samples are assessed for organoleptic quality, and the treatment is scaled up proportionately for the larger production batch of wine.

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Addition of Fining Agents to White and Red Wine

Type of Wine	*Fining Agent*	*Typical Addition (mg/L)*	*Characteristics*	*Limit of detection for casein and ovalbumin (OIV established analysis methods)*[2],
White Wine	Milk[3], Casein, Casein blended with potassium carbonate or bicarbonate, potassium caseinate.	50-500[4]	Good clarification. Treats and prevents oxidation. No over-fining. Mainly used before alcoholic fermentation	0.25 mg /L
Red Wine	Egg derived products	30-150[5]	Very good fining agent for tannic wines with some ageing. Tends not to remove protective colloids.	0.25 mg/L
	Milk, Casein, Casein blended with potassium carbonate or bicarbonate, potassium caseinate.	50-250[6]	Good clarification. Treats and prevents oxidation. No over-fining.	0.25 mg/L

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Milk, casein, sodium and potassium caseinates

Since musts and wines differ in their composition and level of oxidation, there is no set recommendation on the amount of casein to be used in fining. From the winemaker's perspective, it is important that little to none of the protein remains in the wine after the fining/clarification. The presence of relatively large amounts of residual fining agent will lead to visual protein precipitates that necessitate further remedial processes. Excessive casein fining could impart the aroma of dairy products to wines.

Casein is difficult to mix into the juice/wine as it is insoluble in acidic solutions and should be mixed in water with a pH value above 8, or made alkaline prior to its addition to the must or wine. Potassium caseinate, or a blend of acid casein with potassium carbonate or bicarbonate, is usually used in preference to casein itself, as it can be dissolved directly in water. The concentration of casein in water should not exceed 10% in order to have a low viscosity and, consequently, a good homogenization in the wine or must. Solutions of casein have to be introduced very progressively into the flowing wine or musts by a Venturi system with a pump. Then maintain the pumping until all of the casein binds to the material to be removed from the wine or musts before coagulating and precipitating quickly in the acidic environment of the wine. Strong and thorough mixing is important so that the best possible distribution of casein is achieved and to avoid clumps forming on the surface of the must or wine. After the fining agent has settled (very quickly: 2 days), the wine is filtered. Casein is most often used in must. In this case, the must has to be separated from its lees before alcoholic fermentation.

Egg-derived products

Egg white is used as a fining agent (if necessary) when the wine is in the barrel or several days prior to bottling. Egg white in liquid form should be diluted 1:3 in water while egg white in powder form should be dissolved in 10 times its weight of water. The solutions prepared should be added to the wine while it is flowing, for example, through the use of a Venturi system. The particles formed settle over the days following treatment (5-7 days) and should be separated from the wine by filtration. A particular characteristic of egg white fining is that it produces light particles which stick to the barrel wall. Thorough cleaning of the barrels should be carried out soon after racking and filtration of wines fined using egg white.

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[1] Every wine is different in composition and will react differently to the same fining agent. The effetiviness of a fining agent will depend on the agent used, the preparations, the method of addition to the wine, the dosage, the wine's pH and metal content, the temperature, the dissolved CO_2 level, and any previous wine treatment.

[2] OIV resolution OENO 427-2010 rev 2012

[3] In case of the use of milk, the determination of allergens is recommended for both casein and □ lactoglobulin

[4] Results of new studies to evaluate the potential allergenicity of wine made using proteinaceous processing aids (OIV 2010)

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