

ANNEX XI

Requirements for electro dialysis treatment (Article 18 of this Regulation)

The purpose is to obtain tartaric stability of the wine with regard to potassium hydrogen tartrate and calcium tartrate (and other calcium salts) by extraction of ions in supersaturation in the wine under the action of an electrical field and using membranes that are either anion-permeable or cation-permeable.

1. MEMBRANE REQUIREMENTS

- 1.1. The membranes shall be arranged alternately in a 'filter-press' type system or any other appropriate system separating the treatment (wine) and concentration (waste water) compartments.
- 1.2. The cation-permeable membranes must be designed to extract cations only, in particular K^+ and Ca^{++} .
- 1.3. The anion-permeable membranes must be designed to extract anions only, in particular tartrate anions.
- 1.4. The membranes must not excessively modify the physicochemical composition and sensory characteristics of the wine. They must meet the following requirements:
 - they must be manufactured according to good manufacturing practice from substances authorised for the manufacture of plastic materials intended to come into contact with foodstuffs as listed in Annex II to Commission Directive 2002/72/EC⁽¹⁾,
 - the user of the electro dialysis equipment must show that the membranes used meet the above requirements and that any replacements have been made by specialised personnel,
 - they must not release any substance in quantities endangering human health or affecting the taste or smell of foodstuffs and must meet the criteria laid down in Directive 2002/72/EC,
 - their use must not trigger interactions between their constituents and the wine liable to result in the formation of new compounds that may be toxic in the treated product.

The stability of fresh electro dialysis membranes is to be determined using a simulant reproducing the physicochemical composition of the wine for investigation of possible migration of certain substances from them.

The experimental method recommended is as follows:

The simulant is a water-alcohol solution buffered to the pH and conductivity of the wine. Its composition is as follows:

- absolute ethanol: 11 l,
- potassium hydrogen tartrate: 380 g,
- potassium chloride: 60 g,
- concentrated sulphuric acid: 5 ml,
- distilled water: to make up 100 litres.

This solution is used for closed circuit migration tests on an electro dialysis stack under tension (1 volt/cell), on the basis of 50 l/m² of anionic and cationic membranes, until 50 % demineralisation of the solution. The effluent circuit is initiated by a 5 g/l potassium chloride solution. Migrating substances are tested for in both the simulant and the effluent.

Organic molecules entering into the membrane composition that are liable to migrate into the treated solution will be determined. A specific determination will be carried out for each of these constituents by an approved laboratory. The content in the simulant of all the determined compounds must be less than 50 g/l.

The general rules on controls of materials in contact with foodstuffs must be applied to these membranes.

2. MEMBRANE UTILISATION REQUIREMENTS

The membrane pair is formulated so that the following conditions are met:

- the pH reduction of the wine is to be no more than 0,3 pH units,
- the volatile acidity reduction is to be less than 0,12 g/l (2 meq expressed as acetic acid),
- treatment must not affect the non-ionic constituents of the wine, in particular polyphenols and polysaccharides,
- diffusion of small molecules such as ethanol is to be reduced and must not cause a reduction in alcoholic strength of more than 0,1 % vol.,
- the membranes must be conserved and cleaned by approved methods with substances authorised for use in the preparation of foodstuffs,
- the membranes are marked so that alternation in the stack can be checked,
- the equipment is to be run using a command and control mechanism that will take account of the particular instability of each wine so as to eliminate only the supersaturation of potassium hydrogen tartrate and calcium salts,
- the treatment is to be carried out under the responsibility of an oenologist or qualified technician.

The treatment is to be recorded in the register referred to in Article 70(2) of Regulation (EC) No 1493/1999.

(1) [OJ L 220, 15.8.2002, p. 18.](#)