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(54) Method of solid-liquid extraction applied to cork products

(57) The invention relates to a method of solid-liquid extraction applied to cork products for the decontamination thereof, comprising the following steps:

a. Introduction of the cork product in a airtight recipient,
b. Filling the airtight recipient with an appropriated decontamination liquid so that the cork product is completely immersed in that liquid,
c. Applying a relative pressure of 0 to 10 bar on the liquid surface, for a time period of 1 to 3600 seconds, using an appropriated gas,
d. Release of the pressurising gas until the pressure within the recipient reaches atmospheric pressure,
e. Reduction of the pressure within the recipient, by means of an appropriated vacuum pump, until a relative pressure of 0 bar to - 1 bar is reached, during a time period of 1 to 3600 seconds,
f. Returning the recipient to atmospheric pressure.

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Description

1 - OBJECT OF INVENTION

[0001] The invention relates to the decontamination of cork products by means of a solid-liquid extraction method based on the successive application of pressure changes on a liquid surface in which the cork is immersed, which causes cork contraction and expansion, thereby causing the release of contaminants entrapped within the cork.

2 - STATE OF THE ART

[0002] As cork is a natural porous product that contains in its surface, and within it, a variety of contaminants derived from its life experience in the forest which, when in contact with liquids, can cause organoleptic changes in those liquids.

[0003] During the last years, a variety of methods have been developed and applied in an attempt to eliminate said contaminants. The existing methods are based on the immersion of cork in disinfectant baths, alternate with centrifugation steps. Due to the operating conditions, these methods do not eliminate all contaminants, namely those entrapped within the cork which can, subsequently, originate organoleptic changes in the liquids with which the cork product will contact.

3 - DETAILED DESCRIPTION OF THE INVENTION

[0004] The applicant has found that this problem of incomplete decontamination of cork products could be solved through an hydrodynamic method through which the cork to be treated is put in an airtight recipient and, subsequently, immersed in a liquid that can be an aqueous solution or the water itself, or organic solvents, that should be placed at a temperature ranging from-20°C to 200°C.

[0005] Then, a relative pressure ranging from 0 to 10 bar is applied on the surface of the liquid, for 1 to 3600 seconds, using any kind of gas or gas mixture. Then, the gas is released until the recipient pressure reaches the atmospheric pressure again. Thereafter the pressure is reduced by means of an appropriate vacuum pump until a relative pressure of 0 to -1 bar is reached. After being under this reduced pressure for 1 to 3600 seconds the system is caused to return to the atmospheric pressure.

[0006] These cycles of differential pressure are repeated several times until the desired cork purity is reached. A simple experimentation will set the number of cycles required.

[0007] Those skilled in the art will understand that changes can be made to the method of the invention, which should be understood, as being encompassed within the scope of the appended claims.

Claims

1. Method of solid-liquid extraction applied to cork products for the decontamination thereof, characterised in that it comprises the following steps:

   a. Putting the cork product in a airtight recipient,
   b. Filling the airtight recipient with an appropriated decontamination liquid so that the cork product is completely immersed in that liquid,
   c. Applying a relative pressure of 0 to 10 bar on the liquid surface, for 1 to 3600 seconds, using an appropriated gas,
   d. Release of the pressurising gas until the pressure within the recipient reaches the atmospheric pressure,
   e. Reduction of the pressure within the recipient, by means of an appropriated vacuum pump, until a relative pressure of 0 bar to -1 bar is reached, during a time period of 1 to 3600 seconds,
   f. Causing the recipient to return to the atmospheric pressure.

2. Method according to claim 1, characterised in that the decontamination liquid is as an aqueous solution or as a mixture of water and an organic solvent.

3. Method according to claim 1 and claim 2, characterised in that the decontamination liquid is water.

4. Method according to claim 1, characterised in that the decontamination liquid is an organic solvent or a mixture of organic solvents.

5. Method according to the preceding claims, characterised in that the pressure applied on the surface of the decontamination liquid is up to 10 bar.

6. Method according to the preceding claims, characterised in that the gas used to apply pressure on the surface of the decontamination liquid is air, another gas or gas mixture.

7. Method according to the preceding claims, characterised in that the treatment cycle is repeated up to 100 times.