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FATTY MIXTURE CAPABLE OF BEING EMULSIFIED

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8 Claims. (Cl. 87—12)

The present invention relates to a process of partially sulfiting unsaturated fatty acids and/or their esters or substances containing these fatty acids and/or esters thereof, and to the partially sulfited products thus obtainable.

By partially sulfitated products we mean the compounds which are obtainable by treating unsaturated fatty acids or their esters with an aqueous solution of sulfurous acid salts in an amount unsufficient for the exhaustive sulfitation or by interrupting the sulfitation before exhaustive sulfitation has taken place while simultaneously reacting with oxidizing agents upon the unsaturated fatty acids or their esters with or without catalysts.

These products are obtainable by treating an unsaturated fatty acid or an ester thereof with an aqueous solution of less than a molecular quantity of a sulfurous acid salt, such as sodium sulfite and sodium bisulfite and simultaneously causing oxidizing agents to take part in the reaction with or without catalysts. As catalysts especially heavy metal compounds are used, for instance, the siccatives generally employed in the drying of oils, such as lead-naphthenate and the soaps of cobalt, manganese or zinc. This partial sulfitation can be achieved, for instance, by reacting upon one mol of an unsaturated fatty compound with less than a molecular quantity of a sulfitation agent, at elevated temperature, say at temperatures of between about 50 and 100° C. for a prolonged time, say 10 to 30 hours and simultaneously passing oxygen or a gas containing oxygen, especially air, through the reaction mixture. For example, when the process is started with train oil one mol of a fatty acid group is used to about one third to two thirds of a mol of bisulfite.

It is to be understood that the process can also be carried out with molecular quantities or with an excess of the sulfitating agent, but in this case the process is to be interrupted before the whole quantity of the sulfurous acid salts has reacted.

The products obtainable by the processes described above are heterogeneous mixtures consisting apparently of some initial fatty acids and esters thereof and mainly of hydroxy-carboxylic acids and their esters, polymerization products of the initial and the hydroxylated fatty acid substances and especially of sulfonic acids of all the said fatty acid materials.

The new mixtures obtained according to the present invention are generally yellowish or brownish colored substances, possessing a valuable emulsifying capacity in weakly acid and alkaline reaction and are valuable stuffing and reviving agents. By stirring with hot water valuable emulsions are obtained the dispersing degree of which can be varied corresponding to the use, for instance, by a suitable proportion of sulfitating agents. Train oils which belong to the cheapest fats can be subjected best to the new process. These products can easily be brought into a milky emulsion which is quickly absorbed by the leather without further additions. The stuffing value is much higher than that of a train oil sulfonated in the usual manner. This property depends on the gentle treatment during the process which maintains the fatty properties to a high degree on one hand and the dispersing degree of the emulsions is particularly suitable for the stuffing of leather on the other hand.

The following example serves to illustrate our invention but without limiting it thereto. The parts are by weight.

Example:—100 parts of train oil are mixed with 50 parts of an aqueous sodium bisulfite lye of 40° Bé. and then heated with air at 60 to 80° C. while violently stirring until the solubility in water does no more increase. The duration depends on the kind of the apparatus, stirrer, the distributing degree of the air blown in. The reaction is mostly finished after 15 to 20 hours. A sample of the oily product is then clearly soluble when diluted with water in a proportion of 1:1. After a further dilution with hot water a milky stable and weakly acid reacting emulsion is formed. Working up is not necessary. The reaction product represents a valuable stuffing agent for leather.

The following illustrates a use of the product produced according to the above example: 100 parts of a neutralized, dyed chrome calf are introduced into a drum containing 100 parts of water of 60° C. Then an emulsion of 3 parts of a sulfitated train oil prepared in accordance with the example and 30 parts of water of 60 to 70° C. are entered through the hollow axis of the drum. After about 30 to 45 minutes the fat has been completely absorbed. The skins are finished in the usual manner.

By the expression "unsaturated fatty acid compound" as used in the appended claims we mean to include unsaturated fatty acids per se and esters of such acids.

We claim:

1. The process for preparing mixtures capable of being emulsified in water comprising partially

sulfitating one molecular proportion of train oil with about ⅓ to ⅔ mols of aqueous sodium bisulfite of 40° Bé. at from about 60 to about 80° C. with simultaneous oxidation with air.

2. A process for preparing mixtures capable of being emulsified in water, which comprises heating a starting material containing an unsaturated compound selected from the group consisting of unsaturated fatty acids and their esters, as such, with an aqueous solution of about a molecular quantity of a sulfurous acid salt at a temperature between about 50° C. and about 100° C. while simultaneously causing an oxidizing agent to react upon the starting material, the treatment being continued until the solubility of the reaction products in water no longer increases, whereby the starting material is partially sulfitated and converted into a product which forms a stable emulsion with water.

3. Process as defined in claim 2, in which the sulfurous acid salt is an alkali metal salt of sulfurous acid.

4. Process as defined in claim 2, in which the oxidizing agent is an oxygen-containing gas.

5. Process as defined in claim 2, in which from one-third to less than one molecular quantity of the sulfurous acid salt is reacted with the unsaturated compound.

6. Process as defined in claim 2, in which the partial sulfitation is effected in the presence of a catalyst.

7. As new products, yellowish to brownish mixtures consisting essentially of partially sulfitated unsaturated fatty acid compounds, said mixtures being capable of being emulsified in water to form stable weakly acid to alkaline emulsions and adapted for use as stuffing and reviving agents, said products being obtainable by heating a starting material containing an unsaturated fatty acid compound, as such, with an aqueous solution of about a molecular quantity of a sulfurous acid salt at a temperature between about 50° C. and about 100° C. while simultaneously causing an oxidizing agent to react upon the starting material, the treatment being continued until the solubility of the reaction products in water no longer increases.

8. As a new product, a yellowish to brownish mixture consisting essentially of partially sulfitated train oil, said mixture being capable of being emulsified in water to form a stable weakly acid to alkaline emulsion and adapted for use as a stuffing and reviving agent, said mixture being obtainable by sulfitating one molecular proportion of train oil with about ⅓ to ⅔ mols of an aqueous solution of a sulfurous acid salt at from about 60° to about 80° C. while simultaneously causing an oxidizing agent to react upon the starting material, the treatment being continued until the solubility of the reaction products in water no longer increases.

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