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SULPHURIC ESTER OF HIGHER ALCOHOLS

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9 Claims. (Cl. 260—99.12)

This invention is concerned with the production of substances which may be used in the textile, leather and allied industries as wetting, cleaning, dispersing and like agents.

Water soluble sulphuric esters produced by converting fatty acids or esters of fatty acids, particularly such as contain either a double linkage or a hydroxyl group, into said sulphuric esters, are widely employed as wetting, cleaning and impregnating agents in the textile industry. Thus by the addition of sulphuric acid, the sulphuric ester of hydroxystearic acid may be produced from oleic acid or by treatment with sulphuric acid the sulphuric ester of a di-hydroxystearic acid may be obtained from ricinoleic acid, and so forth. Oils heretofore treated with sulphuric acid to produce these agents include castor oil, cottonseed oil, arachis oil, and olive oil. All these substances are attended by the defect that they contain a carboxyl group which is free or combined with an alkali metal, and as a result they are capable, by reaction at the carboxyl group, of forming salts which, as in particular in the case of alkaline earth salts, are water insoluble. Consequently these aforementioned esters have a low resistance to lime, which is very deleterious in the textile industry, this objectionable property being ascribed in great part to the fact that the saturation of the carboxyl group may result in salts which are difficultly soluble.

This defect is avoided if, in accordance with the present invention, instead of the fatty acids or fatty acid esters, corresponding alcohols more specifically, higher unsaturated normal-primary alcohols are subjected to the sulphation, that is the corresponding alcohols are esterified with for example, sulphuric acid. For instance oleyl alcohol is converted to its sulphuric ester. Similarly stearyl alcohol may be esterified directly with sulfuric acid.

The esterification may, for example, be effected with concentrated or fuming sulphuric acid or other sulphonating agents which have strongly water-binding properties as for instance chlorosulphonic acid in the cold, that is at temperatures round about 0° C. The resultant sulphuric esters are readily soluble in water and are strongly wetting and foaming substances which may be employed for manifold textile purposes. Since they contain no carboxyl groups they are not precipitated by the hardness-forming constituents in the water and are thus far superior in their properties to the ordinary sulphuric esters of the fats and fatty acids. The reaction may be illustrated by the following sulphation procedure:

$$CH_3.(CH_2)_7CH{=}CH.(CH_2)_7CH_2OH + 2H_2SO_4 =$$

$$CH_3.(CH_2)_7.CH_2.CH.OSO_3H.(CH_2)_7CH_2.OSO_3H$$

sulphuric ester of 1,9 octodecandiol.

I claim:—

1. The process of producing agents of the class described, consisting in converting higher unsaturated normal-primary alcohols into sulphuric acid esters by subjecting them to the action of a sulphating medium.

2. The process of producing agents of the class described, consisting in converting higher unsaturated normal-primary alcohols into sulphuric acid esters by subjecting them to the action of a sulphating medium in the cold.

3. The process of producing agents of the class described, consisting in converting higher unsaturated normal-primary alcohols into sulphuric acid esters by subjecting them to the action of a sulphating medium at a temperature of about 0° C.

4. The process of producing agents of the class described, consisting in converting higher unsaturated normal-primary alcohols into sulphuric acid esters by subjecting them to the action of a sulphating medium having water binding properties.

5. The process of producing the sulphuric ester of 1,9-octodecanediol for use as an agent of the kind described, consisting in esterifying oleyl alcohol by subjecting the same to the action of concentrated or fuming sulphuric acid at a temperature of about 0° C.

6. A wetting, cleaning, foaming and dispersing agent of the class described comprising a sulphuric ester of a higher unsaturated normal-primary alcohol.

7. The compound comprising the sulphuric ester of oleyl alcohol.

8. A compound for use in the treatment of fibrous materials comprising a sulphuric ester of a higher unsaturated normal primary alcohol corresponding in number of carbon atoms with the fatty acid radicals of the fatty acids and fatty acid esters heretofore employed in the form of their sulphuric derivatives as wetting, cleaning and impregnating agents in the textile industry.

9. A wetting, cleaning, foaming and dispersing agent comprising a sulphuric ester of a higher unsaturated normal primary alcohol in which the alcohol is esterified both at the double bond and at the end of the chain.

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