

# ALIEN PROPERTY CUSTODIAN

## PROCESS FOR OBTAINING MOISTENING, FROTHING, EMULSIFYING AGENTS AND DETERGENTS FROM COCOA-NUT OIL, PALMISTIC OIL, PALM OIL, ETC.

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For a long time past, use has been made, in the most varied industries, of moistening, frothing, emulsifying agents and detergents, for instance, in mining industries (flotation) textile industries (cleaning agents, adjuvants), dyeing, bleaching, tanning industries (impregnating agents), beauty products (emulsifying agents), insecticides for agriculture (moistening agents) etc. constituted by sulphonated fatty alcohols or other fatty alcohols compound prepared from natural oils, such as cocoa-nut oil, palmiste oil, palm oil, etc.

For that purpose, the product are usually employed such as they are; sometimes, however, a rough fractionation is effected which eliminates the tops and bottoms, for instance for obtaining technical lauric alcohol, but, in all cases, more or less varied compounds of a more or less large number of products are obtained.

Now it has been found, according to the present invention, that it is possible to obtain from cocoa-nut oil, palmiste oil, palm oil, and other natural or artificial oils, much more valuable moistening, frothing, emulsifying agents and detergents by effecting, for instance, a systematic fractionation, so as to obtain definite products instead of a mixture of various bodies.

This supplementary operation which is effected according to the present invention, is obviously costly and requires suitable apparatus, but the supplementary expenses resulting therefrom are amply compensated by the result obtained; in fact with the usual practice, the moistening agents obtained are constituted by various definite bodies which sometimes have clearly antagonistic properties; furthermore, their composition varies according to the climate, the soil of the country in which the oil treated was produced, and even according to years. It is therefore necessary to use, for obtaining the desired result, quantities of products greater than is strictly indispensable, which quantities can moreover vary from one sample of the product to another. On the contrary, by using definite products, that one can be chosen which possesses to the maximum the required properties, more or less high solubility at the temperature of operation, more or less high moistening power at said temperature, etc.

Also, according to the present invention, starting from the definite products obtained, well defined mixtures of said definite products can be made, so as to use to the maximum the properties of each of them for the result to be obtained, or to improve certain mixtures by the ad-

dition of definite products possessing to the maximum the desired properties.

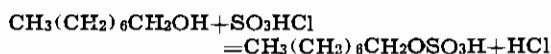
A preferred method for carrying out the invention consists in effecting in the usual manner, a reduction of the oils treated, so as to obtain a mixture of fatty alcohols, usually hexylic, octylic, decylic, dodecylic or lauric, tetradecylic or myristic, hexadecylic or cetylic, octodecylic or stearic and oleic alcohols, in various proportions according to the nature of the body treated, and in separating each of said well defined fatty alcohols by using for that purpose a sufficiently powerful column.

The following examples, show simply as an indication and not in a limiting sense, some of the possibilities offered by the invention:

### Example 1

Pure octylic alcohol is etherified by sulphuric hydrochlorine in the following manner:

In a fluid-tight enamelled cast iron apparatus, provided with stirring means and cooled by a circulation of brine, is poured: Pure octylic alcohol, 130 kgs. Then, gradually and without exceeding a temperature of 10°, is added chlorosulphonic acid, 116 kgs. 5. The following reaction takes place:



The hydrochloric acid which evolves is sent into an absorbing plant. When all the hydrochlorine has been poured, the remainder of the hydrochloric acid is driven off by a current of inert gas such as nitrogen.

210 kgs. of acid octyl sulphate are obtained which are neutralized by pouring them into 133 kgs. of caustic soda lye at 30%. without exceeding the temperature of +5°. This can be effected in a double bottom vessel made of enamelled cast iron also cooled by a circulation of brine.

343 kgs. of a solution of octylsulphate of soda are this obtained titrating 37,5% of combined octylic alcohol. Said solution is in the form of a fine very pale yellow oil having a remarkable moistening, frothing and penetrating power, even at a very low temperature.

### Example 2

158 kgs. of decylic alcohol are treated with 80 kgs. of pure sulphur trioxide gradually introduced in the alcohol without exceeding the temperature of +5° and by using an apparatus similar to that used in Example 1.

The sulphur trioxide is preferably used as a liquid or sent in the state of vapour, drawn along

or not by an inert gas, such as nitrogen. It is advantageous to provide a very thorough stirring so that at no moment is there an excess of sulphur trioxide in contact with the alcohol.

238 kgs. of acid sulphate are thus obtained which are neutralized with 17 kgs. of anhydrous ammonia, or with ammonia at 30%, or with 168-170 kgs. of triethanolamine, while the temperature during neutralization must not exceed 10-15°.

The decylsulphates obtained are yellow brown oils, clearly soluble in water and also having a remarkable moistening, frothing and dampening power, even in a very diluted solution.

#### Example 3

186 kgs. of pure lauric alcohol are treated with 110 kgs. of ordinary sulphuric acid at 66° Bé. The water from the reaction is eliminated by azeotropic drying by using as draining liquid 100 to 200 kgs. of benzene, petroleum ether, methyl ethyl ether, ethyl ether, trichlorethylene, carbon tetrachloride, etc.

The temperature of the liquid during the reaction is maintained between 10 and 20°. For that purpose, the boiling point is adjusted by producing a suitable vacuum if the liquid chosen boils at a temperature higher than 10-20° C.

When there is no longer any water given off, which requires several hours, the operation is stopped, then the solvent is distilled under vacuum and 266 kgs. of lauryl sulphuric acid are thus obtained which are neutralized with 133 kgs. of soda lye at 30% without exceeding the temperature of 10°.

A cream coloured paste is obtained which can be used as such, or dried in an atomising drier for obtaining a white powder of anhydrous lauryl sulphate of soda.

Said product is in the form of a white powder very soluble in water having a very high frothing, moistening and detergent power, even when highly diluted.

Its efficiency is at least double that of technical lauryl sulphate of soda which contains high doses

of decylic, tetradecylic and even cetylic alcohols.

#### Example 4

Each time that it is desired to increase the solubility in the cold state and stability in hard waters of a definite moistening product, it will be advantageous to add a small quantity of pure hexyl or octyl sulphate of soda.

#### Example 5

Certain sulphonated alcoyl aryl condensation products give a fine froth but which does not last, that is to say it is not stable and rapidly falls. Said stability is greatly increased by adding a small quantity of triethanolamine tetradecylsulphonate.

#### Example 6

For obtaining, in certain detergent preparations for liquid or pasty cosmetic products, a fine pearly aspect, it suffices to introduce a certain quantity of a sulphonated derivative of cetylic or stearic alcohols.

#### Example 7

The viscosity of preparations containing solvents in the emulsified state is considerably increased by passing from the lower terms to the higher terms of the sulphonated fatty alcohols utilised as emulsifying agents.

These few examples show some of the numerous possibilities offered by the invention, owing to which, starting from raw materials currently used at the present day, but in a different manner, products can be obtained which are much more valuable than those obtained up to now, or said products can be greatly improved. In the foregoing, as raw material, coconut oil, palmiste oil, palm oil, etc. have only been cited because they are the most commonly used in France, but of course use can be made of the process according to the invention, without modifying the principle thereof for the treatment of other raw materials capable of yielding fatty alcohols.

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