Patented May 27, 1941

2,243,544

UNITED STATES PATENT OFFICE

2,243,544

COMPOSITION OF MATTER

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No Drawing. Application April 12, 1939, Serial No. 267,519

8 Claims. (Cl. 167—22)

This invention relates to new compositions of matter, and manners of preparing, and using the same.

It is known that cocoanut oil, which is composed of a mixture of the glycerides of certain monocarboxylic acids, will react with zinc oxide or carbonate to form a product comprising a mixture of the zinc salts of the cocoanut oil fatty acids, and that such unseparated mixture of salts (hereinafter called the zinc soap of cocoanut oil) has a restricted use because of its limited solubility in many of the common non-polar solvents such as gasoline, solvent naphtha, kerosene, acetone, benzol, xylol, carbon tetrachloride, etc. An object of the present invention is to overcome this deficiency of the zinc soap of cocoanut oil. A further object is to provide a composition therefrom which is compatible with various substances and which is capable of use in a wide variety of fields.

According to the invention the zinc soap of cocoanut oil is "solubilized," i. e. rendered capable of solution in many organic solvents including acetone, benzol, xylol, solvent naphtha, gasoline, kerosene, carbon tetrachloride, etc. This is best done by treatment of the soap with an amine, preferably morpholine, monobenzylamine, or mixtures containing the same, whereby the solubility of the soap is multiplied more than ten times. The mechanism of the combination or reaction is unknown. Amines in general do not give the "solubilizing" effect with respect to organic solvents; negative results obtain with aniline, diphenylamine, and dibenzylamine. Pyridine, ethylene diamine, piperidine, monocyclohexylamine, mono-, di- or triethanolamine or triamylamine may be used, although they are less effective than morpholine or monobenzylamine.

Another unusual aspect is that the effect of the amines seems to be specific to the zinc soap of the cocoanut oil and does not take place with chemically pure zinc laurate. The presence of the salts of fatty acids other than lauric, viz: caproic, myristic, and caprylic seems to be essential.

The following examples illustrate the production of "solubilized" zinc soap of cocoanut oil, the parts being by weight:

Example 1.—When 1 part morpholine is added to 2 parts of the zinc soap of cocoanut oil, a viscous liquid product results which is soluble in acetone, benzol, xylol, kerosene, carbon tetrachloride, etc.

Similar results may be obtained by adding to one part of the zinc soap, one part of monobenzylamine or 2 parts of a mix composed of 25% monobenzylamine and 75% dibenzylamine by weight.

If desired, the zinc soap may be suspended in the desired solvent, and the amine added until solution of the zinc soap occurs.

The proportions of the zinc soap and the amine may be varied widely depending upon the results desired. Generally, at least one molecular proportion of the zinc soap may be used for each molecular proportion of the amine.

It has also been found that "solubilized" zinc soap of cocoanut oil can be usefully employed in various fields as the examples below illustrate.

A is the complex compound obtained by mixing 2 parts of the zinc soap with 1 part of morpholine; B is the complex compound obtained by combining 1 part of the zinc soap with 2 parts of a mix comprising 25% monobenzylamine and 75% dibenzylamine.

Example 2.—Production of highly transparent rubber: The following recipes were used:

	Parts	Parts
Pale crepe	100	100
Zinc dimethyl dithiocarbamate	.4	.4
Zinc salt of Captax	.1	.1
Sulfur	1.0	1.0
A	1.5	------
Sunproof wax	.5	.5
B	------	3.0

The compounded stocks were vulcanized by heating in water at 210° F. for 10 minutes. Excellent transparency was obtained as shown by the fact that these stocks transmitted 85% of direct sunlight. Distant objects or those nearby can be seen clearly through the cured rubber. These remarkable results are believed to be due to the increased solubility of the zinc soap composition in the rubber.

It is thus apparent that "solubilized" or "soluble" zinc soap of cocoanut oil is a most useful rubber compounding ingredient.

Example 3.—As a plasticizer for rubber hydrochloride, with which the "soluble" zinc soap is compatible: To one of two solutions of rubber hydrochloride in benzol was added 15% of A. Films were cast and exposed to ultra-violet light in the Fade-O-Meter. The "soluble" zinc soap not only plasticized the rubber hydrochloride film but also prolonged its useful life. After approximately 24 hrs. in the Fade-O-Meter the untreated rubber hydrochloride film had turned

brittle whereas the film containing the "solubilized" zinc soap was still in excellent condition.

Example 4.—As an ingredient for nitrocellulose compositions, with which the "soluble" soap is also compatible, and serves as a plasticizer and/or water repellent: 30% by weight of A and B, respectively, were incorporated into 10% solution of nitrocellulose of ½ second viscosity in ethyl acetate. Cast films made from the above solution remained clear and transparent.

Example 5.—As a waterproofing and moth-proofing agent: This application or use is of particular merit because treatment of material with the "solubilized" zinc soap of cocoanut oil followed by treatment with water, results in the retention on the material of the insoluble zinc soap, whereas the water soluble amine component is removed with the water. Thus a permanent insoluble deposit of the insoluble zinc soap is obtainable on any textile material such as cotton, linen, rayon, natural silk, weighted silk, wool, as well as on paper. For example, a cotton fabric was impregnated with a 2% solution of A in acetone. A funnel was made of the so-treated fabric and water was poured into it. After two weeks' time not one drop of water had passed through, indicating the excellent water resistance of the fabric.

Instead of applying the soluble zinc soap of cocoanut oil fatty acids dissolved in an organic solvent, aqueous dispersions may be used which can readily be prepared by adding the zinc soap, with vigorous agitation to water containing small amounts of morpholine, benzylamine, pyridine, ethanolamine, dimethylamine and the like. In this manner a concentrated paste, containing approximately 30–50% of the zinc soap is obtained which can readily be dispersed in water just prior to use. A suitable dispersing agent, such as "Alphasol," a commercial product, may be incorporated to render the dispersion more stable.

The materials treated with 2–6% dispersion of zinc soap in water show excellent waterproofing characteristics, and remain substantially waterproof in dry cleaning. Moreover, fabrics so treated are substantially mothproof.

"Solubilized" zinc soap of cocoanut oil may be used as an insect repellent to treat and protect fabrics that are normally attacked by moths and other insects.

Other uses of the "solubilized" product are as an activator in connection with vulcanization accelerators, in rubber cements or natural or artificially-prepared latices of rubber as a water repellent or mildew preventative, in paints and varnishes, in lubricating oils (to impart oiliness to extreme pressure lubricants), etc., and as a mildew preventative in textile and the like.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. Zinc soap of cocoanut oil fatty acids combined with an amine selected from the class consisting of morpholine, monobenzylamine, pyridine, ethylene diamine, piperidine, monocyclohexylamine, monoethanolamine, diethanolamine, triethanolamine, triamylamine.

2. Zinc soap of cocoanut oil combined with morpholine.

3. Zinc soap of cocoanut oil combined with a mix consisting of monobenzylamine and dibenzylamine.

4. As an improved moth-proofing agent, a zinc soap of cocoanut oil combined with an amine selected from the class consisting of morpholine, monobenzylamine, pyridine, ethylene diamine, piperidine, monocyclohexylamine, monoethanolamine, diethanolamine, triethanolamine, triamylamine.

5. A process of water-proofing and moth-proofing textile material which comprises treating the same with a zinc soap of cocoanut oil combined with an amine selected from the class consisting of morpholine, monobenzylamine, pyridine, ethylene diamine, piperidine, monocyclohexylamine, monoethanolamine, diethanolamine, triethanolamine, triamylamine.

6. Textile material which has been treated with the composition set forth in claim 1.

7. Textile material which has been treated with a zinc soap of cocoanut oil fatty acids in combination with diethanolamine.

8. Zinc soap of cocoanut oil combined with diethanolamine.

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