

UNITED STATES PATENT OFFICE

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SOAP MANUFACTURE

No Drawing.

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This invention relates to an improved soap composition and to the method of preparing the same. The composition comprises in addition to soap a stabilizer which retards, prevents or inhibits the ageing of the soap or certain of the results which ordinarily accompany the ageing of soap.

According to this invention, soap is stabilized by the addition of a small amount of phenolate prepared from a phenyl phenol and a base, the base itself being a stabilizer for soap. The stabilizers include the phenolates resulting from the interaction of a phenyl phenol such as 2-hydroxy-diphenyl or 4-hydroxy-diphenyl with diphenyl-guanidine or triethanol amine or an alkylene diaryl diamine such as ethylene diphenyl diamine. Mixtures of such phenolates may be employed as stabilizers.

I do not claim as my invention the stabilization of soap by the addition of either a phenyl phenol or a base such as those mentioned. I claim as my invention the stabilization of soap by the addition of a phenolate prepared by interacting a phenyl phenol with such a base. I have found that by adding to soap a small amount of a phenolate of this type, for example, a few tenths of a percent, the soap will be stabilized against oxidation to some extent or rancidity will be prevented or retarded or the formation of free fatty acids within the soap will be prevented or retarded when the soap is subjected to the action of air or sunlight, or more particularly that by adding such a phenolate to soap, the soap may be prevented from becoming dark on ageing or the change in color will be retarded.

The stabilizers contemplated by this invention prepared by the interaction of a phenyl phenol with a base, exert a different stabilizing effect from a mixture of the phenyl phenol and the base, and they have melting points, etc. distinct from both the phenyl phenol and the base. These identify the stabilizers as distinct chemical compounds and they are referred to herein as phenolates. The phenolates can be prepared by causing either 2-hydroxy-diphenyl or 4-hydroxy-diphenyl to react with diphenyl-

guanidine or triethanol amine or an alkylene diaryl diamine such as ethylene, propylene, trimethylene, tetramethylene or pentamethylene diaryl diamine of which the aryl groups may be phenyl or substitute phenyl such as tolyl or naphthyl, etc.

I have found that a soap stabilized by a small amount of the phenolate prepared by the interaction of 4-hydroxy-diphenyl and an alkylene diaryl diamine such as ethylene diphenyl diamine discolors to a less extent on ageing than a soap stabilized by the addition of a small amount of the phenolate prepared from 2-hydroxy-diphenyl and ethylene diphenyl diamine.

The stabilizer may be incorporated in the soap in various ways. It may be added to the soap stock during saponification in an amount equivalent to about 2/10 of a percent calculated on the weight of the soap stock. The desired amount of the phenolate is dissolved in the soap and the saponification is carried on in the usual manner. This method may be employed with stabilizers which are sufficiently insoluble in water and caustic so that they do not go into solution in the "spent lyes", but will be present in the finished soap.

As an alternative method, a solution of the desired amount of phenolate, for example, two tenths of a percent of the phenolate prepared from 4-hydroxy-diphenyl and ethylene diphenyl diamine, dissolved in some volatile organic solvent, such as alcohol or benzol, etc., is added to the soap while it is being milled and the stabilizer is thus incorporated into the soap. On milling the heat of the rolls volatilizes the solvent and leaves the stabilizer dispersed throughout the soap.

Soap prepared from cotton seed oil to which a small amount of a phenolate such as that described has been added, has been found to discolor less readily than soaps not so treated. Soaps stabilized with the phenolates also remain sweet longer and have less tendency to become rancid and to decompose with the formation of free fatty acids than soap not so treated.

I claim:—

1. Stabilized soap comprising phenyl

- phenolate prepared by reacting a phenyl phenol with an organic chemical base having alkaline properties which itself stabilizes soap.
2. Stabilized soap comprising a phenyl phenolate prepared by reacting an hydroxy-diphenyl with an alkylene diaryl diamine.
3. Stabilized soap comprising a fraction of a percent of a phenyl phenolate prepared from an ortho phenyl phenol and an organic chemical base having alkaline properties which of itself stabilizes soap.
4. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting a phenyl phenol with an organic chemical base having alkaline properties, which itself serves to stabilize soap.
5. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting an hydroxy-diphenyl with an organic chemical base having alkaline properties which itself serves to stabilize soap.
6. In the process of making soap, the step which comprises adding to the soap during the milling process a small amount of a phenol phenolate prepared by reacting a phenyl phenol with an organic chemical base having alkaline properties, which itself serves to stabilize soap.
7. In the process of making soap, the steps which comprise dissolving in an organic solvent phenyl phenolate prepared by reacting any hydroxy-diphenyl with an alkylene diaryl diamine; adding the solution to the soap during the milling process and volatilizing the solvent during the milling operation by the heat of the rolls.
8. Stabilized soap comprising a phenyl phenolate prepared by reacting a phenyl phenol with diphenylguanidine.
9. Stabilized soap comprising a phenyl phenolate prepared by reacting a phenyl phenol with triethanolamine.
10. Stabilized soap comprising a fraction of a percent of a phenyl phenolate prepared from a para phenyl phenol and an organic chemical base having alkaline properties which of itself stabilizes soap.
11. Stabilized soap comprising the phenyl phenolate of para phenyl phenol and an alkylene diaryldiamine.
12. Stabilized soap comprising phenyl phenolate prepared by reacting a phenyl phenol with a base which is a member of the group comprising diphenylguanidine, triethanol amine and the alkylene diaryl diamines.
13. Stabilized soap comprising a phenyl phenolate prepared by reacting an hydroxy diphenyl with an alkylol amine.
14. Stabilized soap comprising a phenyl phenolate prepared by reacting 4-hydroxy-diphenyl with ethylene diphenyl diamine.
15. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting a phenyl phenol with an alkylene diaryl diamine.
16. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting a phenyl phenol with an alkylol amine.
17. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting a phenyl phenol with ethylene diphenyl diamine.
18. In the process of making soap, the step which comprises adding to the soap stock a fraction of a percent of a phenyl phenolate prepared by reacting a phenyl phenol with triethanol amine.
19. In the process of making soap, the step which comprises adding to the soap during the milling process a small amount of a phenyl phenolate prepared by reacting a phenyl phenol with an alkylene diaryl diamine.
20. In the process of making soap, the step which comprises adding to the soap during the milling process a small amount of a phenyl phenolate prepared by reacting a phenyl phenol with an alkylol amine.
21. In the process of making soap, the step which comprises adding to the soap during the milling process a small amount of a phenyl phenolate prepared by reacting a phenyl phenol with ethylene diphenyl diamine.
22. In the process of making soap, the step which comprises adding to the soap during the milling process a small amount of a phenyl phenolate prepared by reacting a phenyl phenol with diphenylguanidine.
23. In the process of making soap, the step which comprises adding to the soap during the milling process a small of amount of a phenyl phenolate prepared by reacting a phenyl phenol with triethanol amine.
- In testimony whereof I affix my signature.
- PAUL I. MURRILL.

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CERTIFICATE OF CORRECTION.**Patent No. 1,852,820.****Granted April 5, 1932, to****PAUL I. MURRILL.**

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, lines 29 and 30, claim 6, for "phenol" read phenyl, and line 37, claim 7, for "any" read an; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 17th day of May, A. D. 1932.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.