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METHOD OF PREVENTING RANCIDITY IN SOAPS AND PRODUCT

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It is well know that pure soaps, that is to say soaps made without rosin and finished without admixture of alkaline salts (e. g. alkali metal carbonates, phosphates, silicates, etc.) exhibit a marked tendency to deteriorate in course of time, acquiring a rancid and offensive odor accompanied by loss of efficiency as detergents, and often becoming discolored. Even soaps containing some admixture of alkaline salts sometime become rancid on keeping.

Rancidity in soaps apparently is caused by oxidation of unsaturated fatty acid constituents of the soaps as is indicated by the facts that; all soaps contain unsaturated fatty acid constituents; the unsaturated fatty acid constituents are the most readily oxidized constituents of the soaps; the oxidation of each molecule of unsaturated fatty acid produces two smaller molecules of fatty acid which theoretically will give rise to an excess of fatty acid in the soap; and all rancid soaps, including those developed from initially neutral and even initially alkaline soaps, contain free fatty acids. Moreover, the development of rancidity is promoted by elevated temperatures and the presence of moisture, i. e., conditions favoring oxidation. In effect, therefore, rancidity may be said to be due to oxidation and/or the development of a free fatty acid content in the soap. As is apparent, free alkali in a soap will combine with the fatty acid liberated by the oxidation of the unsaturated fatty acid constituents of the soap and thus, until the free alkali is consumed, counteract this effect of the oxidation.

It is the object of my invention to prevent those chemical changes in soap which manifest themselves by the phenomena of rancidity, and thus to promote and prolong the keeping qualities which are in every way desirable in a commercial product.

In my United States Letters Patent No. 1,542,438 I have described the use of diphenyl-amine and related bodies as catalysts or agents for preventing the type of reaction or decomposition in soaps referred to.

I have now found that the amino acid compounds i. e., the free amino acids as well as their salts of both the aliphatic and aromatic series and including both sulfonic acids and carboxylic acids, for example, sulfanilic acid, naphthionic acid, the aminobenzoic acids—anthranilic acid, amino acetic acid—glycocoll and their sodium salts, possess the property of preventing the development of rancidity in soaps to a degree which will permit their use for this purpose in a practical way.

The sodium salt of sulfanilic acid is particularly well adapted for use as a preservative for soaps in accordance with my invention on account of the fact that it is a staple chemical obtainable in a sufficiently pure form in large quantities. The color of soap preserved by the use of sulfanilic acid when subjected to conditions calculated to develop rancidity is less affected than when the soap is preserved by means of other of the amino acids. The sodium salts of anthranilic acid and naphthionic acid also are excellent preservatives.

The quantities of these preserving agents, required in any particular instance, depend upon the character of the soap to be preserved. For instance, if the soap to be preserved has been made from impure materials a greater quantity of preservative material will, in general, be required than for a soap made from pure materials. The variation, however, ordinarily is not great. A variation from ½ pound to 10 pounds of the preservative to 1000 pounds of soap will cover all practical requirements. As a rule about 2 pounds of preservative to each 1000 pounds of soap gives a satisfactory preserving action for commercial soaps.

In practice the preservative amino acid compounds usually are applied in the form of their sodium salts, for instance, the sodium salt of naphthionic acid or the sodium salt of amino benzoic acid or the sodium salt of amino acetic acid this being the most convenient form of the compounds. If the free acids are applied, they combine partially or completely with the free alkali always present in freshly prepared soap giving the salts so that the results when applying the free acids are essentially the same as when the salts are applied. The expression "amino acid com-

pound" as used herein is intended to embrace the free acids and the salts of the acids.

In applying the preservative amino acid compounds they are simply intimately mixed with or incorporated in the soap in any suitable manner, for instance, by adding the preservative compound to the soap while it is still in the liquid state and mixing or by sprinkling the preservative compound preferably in the form of an aqueous solution thereof over the solidified soap prior to milling it.

Soaps so treated are preserved against the development of rancidity and the indicative presence of the free fatty acids above referred to.

I claim:

1. As a new product a soap comprising in admixture a relatively small amount of an amino sulfonic acid compound.

2. As a new product a soap comprising in admixture a relatively small amount of an aliphatic amino sulfonic acid compound.

3. As a new product a soap comprising in admixture a relatively small amount of an aromatic amino sulfonic acid compound.

4. As a new product a soap comprising in admixture a relatively small amount of the sodium salt of sulfanilic acid.

5. As a new product a soap comprising in admixture a relatively small amount of the sodium salt of naphthionic acid.

6. As a new product, a soap comprising in admixture a relatively small amount of an aliphatic amino carboxylic acid compound.

7. As a new product, a soap comprising in admixture a relatively small amount of the sodium salt of an aliphatic amino carboxylic acid.

In testimony whereof, I affix my signature.

ROBERT E. DIVINE.