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NONDISCOLORING, LIQUID ANTISEPTIC SOAP

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This invention relates to liquid, antiseptic soap, and more particularly to liquid, antiseptic toilet soap. This application is in part a continuation of our application Serial No. 100,037, filed September 9, 1936.

In the copending application of one of us, Louis J. Figg, Jr., Serial No. 186,099, filed Jan. 21, 1938, a liquid, antiseptic toilet soap has been described, which comprises soap, a hardwood oil, and a blending agent for the soap and the hardwood oil. The hardwood oil is purified either by distillation, only a fraction boiling between 180° C. and 240° C. being used, or by alkali treatment, only the caustic-soluble portion of the oil being used. Other substances, such, for instance, as pine tar oil and/or essential oils, may also be incorporated in the liquid soap. The hardwood oil may suitably amount to from 0.5% to 33%, by volume, of the liquid antiseptic soap. We prefer to use from 5% to 15% of the hardwood oil.

Such a soap has been found to darken in color in the light and air, because of some change in the hardwood oil, which presumably becomes oxidized to some extent. Although this darkening does not impair the usefulness of the antiseptic soap, it detracts from its appearance and hence from its salability.

One object of our invention is to provide a liquid, antiseptic soap containing hardwood oil, which will not darken in the light and air. Other objects will hereinafter appear.

We have discovered that if a small amount of a halide selected from the group consisting of the iodides and bromides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium is added to a liquid, antiseptic soap containing a hardwood oil, darkening of the oil, and consequently of the soap, on contact with light and air is prevented.

As examples of a liquid, antiseptic toilet soap containing a hardwood oil, we give the following formulae:

Example I

	Per cent by volume
Liquid saponified cocoanut oil soap	50.0
Hardwood oils	7.5
Pine-tar oil	7.5
Essential oils	3.0
Ethyl alcohol	11.0
Water	21.0

Example II

	Per cent by volume
Liquid saponified cocoanut oil soap	52
Hardwood oil-pine-tar oil mixture (1:1)	12
Essential oils	1
Ethyl alcohol	15
Water	20

Example III

	Per cent by volume
Liquid saponified cocoanut oil soap	50.0
Caustic-soluble hardwood oil	15.0
Essential oils	3.0
Ethyl alcohol	11.0
Water	21.0

Example IV

	Per cent by volume
Liquid saponified cocoanut oil soap	52
Caustic-soluble hardwood oil	12
Essential oils	1
Ethyl alcohol	15
Water	20

It will be understood that the proportions are by way of illustration only. Among the blending agents which we may use, we may mention, for example, in addition to ethyl alcohol: methanol, propyl alcohol, isopropyl alcohol, the butyl alcohols, the amyl alcohols, methyl acetate, ethyl acetate, propyl acetate, isopropyl acetate, the butyl acetates, the amyl acetates, acetone, methyl acetone, methyl ethyl ketone, methyl propyl ketone, diethyl ketone, methyl isobutyl ketone, dibutyl ketone, methyl amyl ketone, ethylene glycol, propylene glycol, diethylene glycol, ethylene glycol monomethyl ether, ethylene glycol monoethyl ether, ethylene glycol monobutyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, and diethylene glycol monobutyl ether.

To such a soap we add, to preserve it from darkening, from 0.20 gram to 0.30 gram, preferably 0.25 gram, of an iodide or bromide of potassium, sodium, caesium, lithium, barium, strontium, calcium or magnesium per 100 cc. We have found such amounts to be very effective. It is best to dissolve the halide in some of the water to be used in making up the soap composition, as it has only a limited solubility in the liquid antiseptic soap.

Hardwood oil whose boiling range is between 180° C. and 240° C. may be prepared as described in the Figg application referred to above. Namely, the heavy oils and tars which settle out of the raw pyroligneous acid resulting from the destructive distillation of hardwood, which have boiling ranges from 170° C. to 310° C., may be charged into a vacuum still heated by circulating oil, and fractionated through a plate column of approximately 15 plates. The fraction whose boiling range at atmospheric pressure is 180°-240° C., approximately, is collected and re-distilled in a vacuum still heated by steam coils, the fraction which, at atmospheric pressure, boils above 180° C. being collected.

Caustic-soluble hardwood oil may be prepared

from the same starting materials, for instance in the manner described in the Figg application referred to above. Namely, a 5–15% solution of sodium hydroxide is added to the hardwood oil, with stirring, until the mixture becomes alkaline. The neutral oils separate out, and sodium salts of the acidic components of the wood oil are formed. The greater portion of the neutral oils is removed mechanically, and the remainder by steam disillation. These neutral oils may be discarded, or separately stored. The solution of sodium salts is then treated with carbon dioxide gas to liberate the acidic components as oils, and to convert any free sodium hydroxide present to sodium carbonate and bicarbonate. The oils are then steam distilled from the mixture.

While carbon dioxide liberates a satisfactory quality of caustic-soluble wood oil, which does not possess certain of the disadvantageous characteristics of caustic-soluble wood oil liberated by sulfuric acid, the use of carbon dioxide is relatively expensive. We have found that the use of acetic acid in place of carbon dioxide produces a wood oil at least as satisfactory as that produced by the carbon dioxide treatment, and is considerably more economical. Acetic acid is relatively cheap, and can be recovered, because upon reacting with the sodium salt of the caustic-soluble wood oil, it forms sodium acetate, which can later be decomposed by sulfuric acid to form acetic acid.

By way of illustration of the process in which we use acetic acid to replace either sulfuric acid or carbon dioxide, we give the following example.

To 20 gallons of wood oil, resulting from the destructive distillation of wood and having a caustic solubility of from 50 to 60%, are added 12 gallons of 56% sodium hydroxide solution and 16 gallons of water. The mixture is allowed to stand for one hour. The greater portion of the neutral oil separates, and is withdrawn mechanically. The remainder of the neutral oil is removed from the solution of caustic-soluble oil by steam distillation. The neutral oil may be discarded or separately stored. To liberate the caustic-soluble oil from the aqueous solution of its sodium salts, 250 lbs. of 56% acetic acid is added. The greater portion of the oil which separates can be withdrawn mechanically, and the remainder by steam distillation. It will be understood that another caustic alkali may be used instead of sodium hydroxide. The alkali acetate remaining in the aqueous solution may be recovered by means of sulfuric acid.

What we claim as our invention and desire to be secured by Letters Patent of the United States is:

1. A liquid, antiseptic toilet soap comprising soap, water, hardwood oil whose boiling range is between 180° C. and 240° C. in a proportion which would otherwise cause substantial darkening thereof, a blending agent for the soap and the hardwood oil, and a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium, and magnesium, in sufficient quantity to prevent the wood oil from darkening in the light and air.

2. A liquid, antiseptic toilet soap comprising soap, water, from 0.5% to 33% by volume of hardwood oil whose boiling range is between 180° C. and 240° C., a blending agent for the soap and the hardwood oil, and from 0.20 to 0.30 gram, per 100 cubic centimeters, of a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium.

3. A liquid, antiseptic toilet soap comprising soap, water, caustic-soluble hardwood oil in a proportion which would otherwise cause substantial darkening thereof, a blending agent for the soap and the hardwood oil, and a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium, in sufficient quantity to prevent the wood oil from darkening in the light and air.

4. A liquid, antiseptic toilet soap comprising soap, water, from 0.5% to 33% by volume of caustic-soluble hardwood oil, a blending agent for the soap and the hardwood oil, and from 0.20 to 0.30 gram, per 100 cubic centimeters, of a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium.

5. A liquid, antiseptic toilet soap comprising soap, water, ethyl alcohol, from 0.5% to 33% by volume of hardwood oil whose boiling range is between 180° C. and 240° C., and from 0.20 to 0.30 gram, per 100 cubic centimeters, of a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium.

6. A liquid, antiseptic toilet soap comprising soap, water, ethyl alcohol, from 0.5% to 33% by volume of caustic-soluble hardwood oil, and from 0.20 to 0.30 gram, per 100 cubic centimeters, of a halide selected from the group consisting of the bromides and iodides of potassium, sodium, caesium, lithium, barium, strontium, calcium and magnesium.

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