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LIQUID SOAP COMPOSITION

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This invention relates to surface active compositions of matter. More particularly, the invention is especially concerned with providing liquid soap compositions having new and greatly improved properties.

An object of the invention is to provide cleansing compositions which dissolve readily with grease dissolving properties even in cold or lukewarm water, which foam readily and which excel because of their good washing and cleansing powers and more particularly to produce such results through the use of certain commonly used soaps which do not now possess such combinations of properties.

A further object is to provide soap compositions which dissolve clearly in water to furnish aqueous solutions which even when dilute will have a pH not substantially greater than 7, i. e. substantially neutral.

A still further object of the invention is to provide soap compositions having the neutrality and other desirable properties hitherto characteristic only of alkanolamine soaps, but without the use of any alkanolamines at all or by use of much smaller quantities of alkanolamines than would be required for ordinary alkanolamine soaps. This phase of the invention contemplates maintaining neutrality in aqueous solution while substituting either completely or partially for expensive alkanolamines, relatively inexpensive alkali metal hydroxides, as for example, sodium or potassium hydroxide.

A still further object of the invention is to provide a clear liquid alkali metal soap composition having the lathering properties hitherto associated in liquid soaps only with coconut oil soaps but without the use of any coconut oil whatsoever. Such liquid soaps of the invention are blander and possess better detergent and other properties than coconut oil liquid soaps. In this phase of the invention there is also contemplated either partial or complete substitution of the potassium hydroxide alkali hitherto deemed necessary for liquid soaps by the less expensive sodium hydroxide.

In one of its most preferred aspects a further object of the invention is to provide soap compositions which are clearly soluble in both water and organic solvents of the "dry cleaning type," e. g. petroleum solvents and chlorinated solvents and which possess strong detergent properties in either type of media. By the use of a composition of this phase of the invention there is provided in a single material (1) an additive material imparting detergent properties to dry cleaning solvents and permitting the incorporation in them of substantial beneficial amounts of water and (2) a water soluble soap for use in aqueous solutions. Such a water soluble soap may be used by a dry cleaner for "wet" spotting as well as for an additive to his dry cleaning solvents.

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While the additives of this phase of the invention are applicable to all types of customarily used dry cleaning solvents, such as petroleum distillates and chlorinated hydrocarbons, they are especially suited as additives to Stoddard solvent. Stoddard solvent in a petroleum distillate widely used as a dry cleaning solvent. The U. S. Bureau of Standards specifies that it is a petroleum distillate conforming to a number of standards including a flash point of not less than 100° F. In regard to distillation range it is specified that not less than 50% shall be recovered in the receiver when the thermometer reads 350° F. The dry or end point shall be not higher than 410° F. No tolerance shall be allowed above 410° F.

The compositions of the invention have unusual properties making them very effective for general cleansing purposes as well as for more specialized purposes, as wetting, penetrating, emulsifying and detergent materials. Among the important uses, they may be used as general cleansing agents for such materials as painted surfaces, linoleum, concrete, leather, glass, etc. In addition they are valuable for such specialized purposes as dry cleaning soaps, "wet" spotting agents for use in conjunction with "dry cleaning" and as wetting, detergent and emulsifying agents in industrial textile operations, as dyeing assistants, etc. They may be used in place of soap powder in washing clothes and in general used where soap or soap-like compositions have been heretofore used or are capable of being used. The invention contemplates the provision of various preparations and compositions comprising the materials for such uses.

I have found that by using soaps of a type hereinafter more fully specified in conjunction with isopropanol and certain glycol ether modifying agents strikingly new results obtain. Said glycol ether modifying agents which for brevity I will refer to herein as "glycol ether modifying agents" are compounds with the formula:

$$R—(OCH_2CH_2)_xOH$$

where R is an alkyl radical with from 1 to 4 carbon atoms and x is an integer of from 1 to 2.

The soaps I use are all salts of oleic acid. More specifically the soaps used are of four types:

1. Salts of a lower alkanolamine and oleic acid.
2. Salts of a lower alkyl amine and oleic acid.
3. The salt of ammonia and oleic acid.
4. Salts of a caustic alkali and oleic acid.

As used herein the term "alkanolamine," refers to an ammonia molecule substituted by at least one hydroxyalkyl group, any remaining valences being satisfied by hydrogen and/or alkyl radicals. By "lower alkanolamine" is meant an alkanolamine in which the carbon groups attached to the nitrogen have 1 to 7 carbon atoms.

Also as used herein the term "alkyl amine" refers to an ammonia molecule substituted by at least one alkyl group, any remaining valences being satisfied by hydrogen radicals. The alkyl amines used may be either primary, secondary or tertiary. Further by "lower alkyl amine" is meant an alkylamine in which the carbon groups attached to the nitrogen have from 1 to 7 carbon atoms.

By "caustic alkali" as used herein is meant the hydroxide bases of the monovalent elements of group IA of the periodic table. Most practically there will be used the more readily available bases, potassium and sodium hydroxide.

To secure the advantages of the invention the glycol ether modifying agents must be used in conjunction with the specified soaps in proportions of substantially one mole or more of glycol ether modifying agent per mole of oleic acid. More specifically by "substantially one mole or more of glycol ether modifying agent" is meant at least 0.90 mole of glycol ether modifying agent per mole of oleic acid. While there is no upper limit for the proportion of glycol ether modifying agent the most preferred range is 1.20–2.40 moles of glycol ether modifying agent per mole of oleic acid.

Conjointly with the glycol ether modifying agent there must be used at least 1.5 moles and preferably at least 2.0 moles of isopropanol per mole of oleic acid.

Soaps of nitrogenous bases such as lower alkanolamines, lower amines and ammonia have in the past been known to have considerable detergent power and to yield relatively neutral aqueous solutions. Such soaps in water, however, are very largely hydrolyzed so that their aqueous solutions are extremely turbid.

Soaps of the caustic alkalies on the other hand, while yielding much less turbid aqueous solutions than soaps of nitrogenous bases, nevertheless have an alkaline reaction in aqueous solution. Thus even though a caustic alkali (such as sodium or potassium hydroxide) be compounded with a soap forming fatty acid in theoretical proportions, in dilute aqueous solution the soap, due to hydrolysis will react quite definitely alkaline.

Stating broadly and generally but briefly and therefore incompletely, my novel discovery concerns the use of soaps of oleic acid and a cation derived from one of four types of bases (lower alkanolamines, lower amines, ammonia and caustic alkalies), said soaps being used in conjunction with per mole of fatty acid, (1) at least 1.5 moles and preferably at least 2.0 moles of isopropanol and (2) at least 0.90 and more preferably at least 1.20 moles of glycol ether modifying agent of the formula:

$$R—(OCH_2CH_2)_xOH$$

where R is an alkyl radical with 1 to 4 carbon atoms and x is an integer from 1 to 2.

In general there is no upper limit for the amounts of isopropanol and glycol ether modifying agents. Additional amounts of either of isopropanol or glycol ether modifying agents over the actual minimum or preferred lower limits may be added as diluents.

In addition to the above enumerated essential ingredients I generally add, for beneficial or improved results, water in variable quantities according to the purpose for which the soap composition is to be used and as is more fully explained later. Where the soap composition is to be used to clean paint or other materials dissolved by glycol ethers or isopropanol, water is added for the practical purpose of preventing attack by the organic solvents. For such purposes the additions of water are relatively large, i. e., at least 1 to 2 volumes of water per volume of the anhydrous or substantially anhydrous soap compositions. In most cases of actual use by the consumer the soap composition of my invention will be diluted down with many volumes of water but even with only 1 to 2 volumes of water there will be no attack on paint. Even in dilute solutions, however, the organic solvents will impart grease dissolving or dispersing properties to the solutions. Obviously the soap compositions could be manufactured and sold in a substantially anhydrous condition and diluted down to quite dilute solutions by the ultimate user. To render use foolproof and more convenient, however, and to avoid any possibility of attack upon paint by misuse I prefer to manufacture a product with at least 1 to 2 volumes of water per volume of anhydrous soap composition. Such a soap composition is safe for all uses but for most purposes may be further greatly diluted with water at the time of use by the consumer.

Some of the soap compositions of my discovery, as will be later more fully described, are soluble in solvents of the petroleum type and are useful as additives to "dry cleaning" solvents. I also prefer to add water to these soap compositions in order to increase the detergent properties of the dry cleaning solutions. To soap compositions intended for use in dry cleaning I add appreciable smaller amounts of water than the products intended for use in aqueous solutions. For use in "dry cleaning" solvents there is an upper limit for the water additions in that the soap composition must remain soluble in the organic solvent. In practice I can readily use amounts of water up to 2.25 moles per mole of fatty acid though I prefer to add about 1.75–2.0 moles per mole of fatty acid.

The novel soap compositions of my invention yield aqueous solutions which are completely clear and which have a pH of almost exactly 7 or in some cases even slightly less than 7.

A stock solution in which the anhydrous soap solution of my invention or discovery has already been diluted with two parts of water for use in general cleaning may be further greatly diluted with water for many purposes. These concentrated stock solutions or greatly diluted solutions are ideal for cleaning painted and varnished surfaces, upholstery, clothing, rugs, linoleum, tile, porcelain, bath tub rings, shoes, automobiles, comforters, quilts, dishes, greasy pots and pans, grease, tar and pitch from hands, and anything which requires a grease removing solvent. The soap compositions are also ideal for "spotting" grease, oil, pitch, tar, chewing gum, lipstick, grass stains, also some inks on textile fabrics.

Other specific procedures for use which have given especially good results are given below:

For general cleaning.—Mix eight ounces stock solution to one gallon of water. Saturate a clean cloth, brush, or wool sponge in the solution, wash surface, then rinse with clean water.

Spotting textile fabrics.—Saturate spot or soiled area with water, apply concentrated stock solution full strength, or a solution of one part stock solution and one part water. Tap with spotting brush or work the spot or soiled area with blunt object to loosen foreign material. Rinse with clear water. For this procedure best results are obtained by first placing a towel or

cheese cloth under the soiled area to take up the water. Then absorb surplus water on top with another clean cloth—thus avoid a deposit of soil and a ring on material.

Washing machine cleaning.—Fill washer with the required amount of water, add enough stock solution to create a lasting suds (approximately one pint) and wash in usual manner.

Most unusual results will be obtained by soaking the most soiled garments several hours or over-night before running in machine.

The extreme neutrality of the novel soap compositions when caustic alkali soaps are used as whole or partial soap components is particularly surprising. It is well known of course that ordinary soaps do not hydrolyze when in solution in organic solvents as for example in alcohol solution. Thus any soap which is free from excess alkali over the theoretical will react neutral when dissolved in alcohol.

It is a wholly novel and unpredictable result, however, that the soap compositions of the invention would react neutral in dilute aqueous solution where the amount of glycol ether modifying agent would be present in only a very minute proportion in relation to the water present.

Sodium and potassium soaps have been the most generally used of all detergents. As regards use for a number of purposes, however, these materials have had the drawback that they react alkaline in aqueous. To avoid such alkalinity, in some cases nitrogenous bases have been used in place of sodium and potassium hydroxide in making soaps. The use of nitrogenous bases, however, has been accompanied by other disadvantages. For example, with ammonium soaps there is the objection that they tend to lose ammonia due to hydrolysis and the voltatile nature of the base. The alkanolamines on the other hand, are substantially non-volatile and produce relatively neutral soaps. Such soaps, however, are expensive and in the case of the use of the more readily available alkanolamines such as triethanolamine, the soaps formed tend to become dark colored on standing. By using certain other alkanolamines instead of triethanolamine the soaps formed show less tendency to darken on ageing. Such soaps, however, are even more expensive than triethanolamine soaps.

Also, soaps formed from nitrogenous bases, whether lower alkanolamines, lower amines or ammonia all largely hydrolyze in water and yield very turbid solutions.

In many cases where effective detergent action has been required along with absolute neutrality it has been necessary to forego the use of soaps entirely. In such scaes it has been necessary to resort to the use of synthetic detergents built up by complicated reactions.

By the methods of the invention, however, it is possible to provide by very simple procedures, soap compositions which dissolve absolutely clearly in water and which react almost absolutely neutral in water solution. These soap compositions, moreover, even in cold dilute aqueous solution, lather readily, form stable lathers and readily disperse even heavy greases without the use of heat.

The advantages of the invention enumerated above may be obtained when using as the soap forming bases, nitrogenous bases, i. e., lower alkanolamines, lower amines and ammonia. The invention also, however, comprises the discovery that these bases may be wholly or partially substituted by caustic potash or caustic soda without loss of neutrality or the other advantages. This is of great value from the standpoint of cost and from such other standpoints as those of stability and color of the soaps and non-volatility of the caustic alkalies as compared to lower amines and ammonia.

Again in the past, in order to make clear, high lathering liquid soaps it has generally been necessary to use coconut oil fatty acids for at least part of the fatty acid components. The soap compositions of the invention, however, contain no coconut oil fatty acids but are clearly soluble in water, lather readily and form stable lathers.

Again with liquid alkali metal soap compositions it has generally been considered necessary to use as the alkali, potassium hydroxide rather than sodium hydroxide. In the liquid soap compositions of the invention, however, potassium hydroxide may be partially or wholly substituted by sodium hydroxide while maintaining the clarity and other desirable features. This is obviously of considerable economic advantage.

As heretofore stated, the glycol ether modifying agents used in the soap compositions of the invention are compounds with the formula:

$$R—(OCH_2CH_2)_xOH$$

where R is an alkyl radical with from 1 to 4 carbon atoms and x is an integer of from 1 to 2. In the most preferred cases, however, R will have 4 carbon atoms, i. e., will be a butyl radical. In other words the most preferred glycol ether modifying agents will be compounds having the formula:

$$C_4H_9—(OCH_2CH_2)_xOH$$

where x is an integer of from 1 to 2.

By the use of these preferred glycol ether modifying agents together with isopropanol, the soap compositions have all the hitherto mentioned advantages enumerated for the soap compositions using with the isopropanol the more general class of glycol ether modifying agents. With the use of these preferred glycol ether modifying agents, however, the soaps have the additional advantage of being not only clearly soluble in water but also being clearly soluble in petroleum solvents or other dry cleaning type solvents. By their presence they also permit the incorporation in the dry cleaning solvents of substantial amounts of water and impart to the dry cleaning solvents marked detergent properties in regard to removal of dirt, stains, etc., from fabrics.

The ingredients of my preferred soap compositions which I may use either as dry cleaning soaps in organic solvents or in aqueous solutions are described in more detail below.

ESSENTIAL INGREDIENTS OF PREFERRED SOAP COMPOSITIONS USABLE EITHER IN DRY CLEANING SOLVENTS OR IN WATER

1. One mole of oleic acid.

2. A total of substantially one mole of base which may be either a single base or a mixture of bases selected from lower alkanolamines, lower amines, ammonia and caustic alkalies.

3. At least 1.5 and preferably at least 2.0 moles of isopropanol per mole of oleic acid.

4. At least 0.90 and preferably at least 1.20 moles, per mole of oleic acid, of a glycol ether modifying agent having the formula:

$$C_4H_9—(OCH_2CH_2)_xOH$$

where x is an integer of from 1 to 2.

In addition to the above enumerated essential ingredients I prefer to add water in amounts up to 2.25 moles per mole of oleic acid and more preferably from 1.75 to 2.0 moles per mole of oleic acid. This added water greatly increases the detergency when the soap compositions are added to dry cleaning solvents and markedly aids the removal of stains particularly those having as a base water soluble or dispersible materials such as sugars or starches.

Instead of, or in addition to, adding water to the dry cleaning soap composition, water may be added to the dry cleaning solvent at the time of use in the dry cleaning machine. Such water additions may be either made as such or in the form of aqueous ammonia which aids in the detergency. When water is added while the clothes are actually being cleaned it may be added in surprisingly large amounts without visible separation of water.

I am of course well aware that oleic acid soaps, both of potash and of triethanolamine, have been used before as dry cleaning soaps. Such previously used dry cleaning soaps, however, have been "superfatted soaps," i. e., contained a large excess of fatty acid. This large excess of fatty acid was necessary in order to secure solubility in the dry cleaning solvents. While previously used superfatted soaps did impart some detergent properties to the dry cleaning solvents their use was accompanied by certain marked disadvantages. In particular the content of free fatty acid was objectionable in that in practice, small amounts of fatty acid would usually be retained by the fabric after solvent washing with the result that disagreeable rancidity odors would tend to develop.

The dry cleaning soap compositions of my invention on the other hand do not contain "superfatted" soaps. My novel dry cleaning soap compositions contain theoretically neutral soaps, i. e., soaps in which there is substantially one mole of base per mole of fatty acid. Accordingly even if traces of these soaps should not be removed by the solvents from the fabrics there will be substantially no tendency for any rancidity odors to develop.

Also, the previously used superfatted soaps were strictly dry cleaning soaps in that they were not substantially soluble in water except as emulsions. My preferred soap compositions are completely soluble in both petroleum solvents and in water, forming completely neutral solutions in the latter. When added to dry cleaning solvents in particular they aid the removal of water soluble or water dispersible materials. When added to water they particularly aid the removal of greases and other materials soluble in organic solvents. This double action in a single material is strikingly novel.

While it is to be understood that the invention is not to be construed as being limited to any specific examples of compounds set forth, some of the bases which are especially suitable for use in the soap compositions of the invention are given below. These bases fall under four classes, i. e., lower alkanolamines, lower amines, ammonia and caustic alkalies, all of which classes have been found to be operative.

A. *Lower alkanolamines*

Monoethanolamine, diethanolamine, triethanolamine, mixtures of monoethanolamine, diethanolamine, and triethanolamine, methylethanolamine, morpholine - ethanol, diethylaminoethanol, triisopropylamine, 2-amino-1-butanol, 2 - amino - 2 -methyl - 1 - propanol, 2-amino - 2 - ethyl-1, 3-propanediol, 2-amino-2-methyl-1, 3-propanediol, tris (hydroxymethyl) aminomethane dibutylethanolamine, diethanolethylamine, cyclohexylethanolamine, diethanolcyclohexylamine, diethylethanolamine, isobutanolamine, mixtures of monoisopropanolamine, diisopropanolamine and triisopropanolamine.

B. *Lower amines*

Methylamine, ethylamine, diethylamine, triethylamine, n-dibutylamine, n-tributylamine, triamylamine-morpholine, dimethylcyclohexylamine, diethylcyclohexylamine, n-butylamine, n-amylamine, isopropylamine.

C. *Ammonia*

Ammonia.

D. *Caustic alkalies*

Potassium hydroxide, sodium hydroxide.

The glycol ether modifying agents which are used in the invention may be divided into two classes:

1. *Glycol ether modifying agents used in liqud soap compositions soluble in water only*

Glycol monomethyl ether, glycol monoethyl ether, glycol monopropyl ether, diethyiene glycol monomethyl ether, diethylene glycol monethyl ether, diethylene glycol monopropyl ether.

2. *Glycol ether modifying agents used in liquid soap compositions soluble in botn Stoddard solvent and water*

These compounds which represent a special subclass under the general formula are glycol monobutyl ether and diethylene glycol monobutyl ether.

Ten examples of preferred liquid soap compositions of my invention soluble both in Stoddard solvent and in water are given in the table following:

Examples of liquid soap compositions soluble in both Stoddard solvent and water

Chemicals	1	2	3	4	5
Oleic Acid (gms.)	67.75	67.75	67.75	67.75	67.75
Glycol Monobutyl Ether (gms.)	34.1	34.1	34.1	25.6	34.1
99% Isopropanol (gms.)	29.7	29.7	29.7	29.7	22.3
90% Potassium Hydroxide (gms.)	5.89		14.95		
98% Sodium Hydroxide (gms.)		3.86			
26% Ammonia (gms.)	3.42	3.42			15.65
Triethanolamine (gms.)	10.66	10.66		26.0	
Water (gms.)	30.3	30.3	33	33	17

Examples of liquid soap compositions soluble in both Stoddard solvent and water—Continued

Chemicals	6	7	8	9	10
Oleic Acid (gms.)	67.75	67.75	67.75	67.75	67.75
Glycol Monobutyl Ether (gms.)					34.1
Diethylene Glycol Monobutyl Ether (gms.)	35.01	46.7	46.7	46.7	
99% Isopropanol (gms.)	29.7	29.7	29.7	29.7	29.7
90% Potassium Hydroxide (gms.)				14.95	5.89
26% Ammonia (gms.)					3.42
2-amino-2-methyl-1, 3-propanediol (gms.)	25.21				7.8
2-amino-2-methyl-1-propanol (gms.)		21.4			
Isopropylamine (gms.)			14.2		
Water (gms.)	33	33	33	33	30.3

Where the solutions of the compositions shown in the preceding table are to be used solely in

aqueous solutions, I prefer as hereinabove explained to prepare stock solutions which are still relatively concentrated but which have been diluted with at least one volume (and more generally one to two volumes) of water. This water addition is not only convenient but also precludes any possibility of attack when used on sensitive painted surfaces. Also as heretofore described these concentrated stock solutions may be greatly diluted with water by the consumer for actual use in most cleansing operations.

Also where the liquid soap compositions are to be used solely in aqueous solutions the glycol ether modifying agents are not limited to the glycol monobutyl ether and diethylene glycol monobutyl ether illustrated in the table. While these compounds are preferred there may be used for aqueous cleaning solutions instead: Glycol monomethyl ether, glycol monoethyl ether, glycol monopropyl ether, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monopropyl ether.

Obviously also instead of a single glycol ether modifying agent there may be used a mixture of more than one glycol ether modifying agent. Where, however, the liquid soap compositions are to be soluble in both Stoddard solvent and water, such mixtures would be limited to mixtures of glycol monobutyl ether and diethylene glycol monobutyl ether.

Also obviously in place of neutralizing the oleic acid with a single base, the oleic acid may if desired be neutralized with one equivalent of a mixture of bases. I have obtained especially good results by using a mixture of potassium hydroxide, a lower alkanolamine and ammonia. (One preferred mixture would contain potassium hydroxide, a lower alkanolamine and ammonia in approximate molar ratios of 0.40, 0.35 and 0.25, respectively.) Preferred alkanolamines very suitable for such mixtures are triethanolamine, and 2-amino-2-methyl-1, 3-propanediol. The latter alkanolamine is especially preferred where very light colored liquid soap solutions are desired.

The soap compositions of the invention are not to be construed as being limited to any particular order of adding the materials. Practically, however, I prefer to add the isopropanol and glycol ether modifying agent to the oleic acid prior to adding the base or mixture of bases. In this way the formation of a solid soap composition is avoided and the preparation much simplified. If a solid soap is first formed it usually requires considerable agitation and/or heating to dissolve it in the isopropanol and glycol ether modifying agent.

Generally, I prefer to incorporate during the mixing of the ingredients water in the proportions heretofore described. Where solid bases such as potassium hydroxide, sodium hydroxide or 2-amino-2-methyl-1, 3-propanediol are used it is most convenient to dissolve these in all or a portion of the water to be incorporated in the liquid soap composition.

I claim:

1. A non-superfatted liquid soap composition soluble in water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising (*a*) the reaction product of oleic acid and a base selected from the group consisting of the lower alkanolamines, the lower amines, and ammonia, and (*b*) a substantial proportion of the reaction product of oleic acid and a base selected from the group consisting of solium hydroxide and potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, and (3) at least 0.9 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$R(OCH_2CH_2)_xOH$$

where R is an alkyl radical with 1 to 4 carbon atoms and x is an integer from 1 to 2.

2. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising (a) the reaction product of oleic acid and a base selected from the group consisting of the lower alkanolamines, the lower amines, and ammonia, and (*b*) a substantial proportion of the reaction product of oleic acid and a base selected from the group consisting of sodium hydroxide and potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, and (3) at least 0.9 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$C_4H_9(OCH_2CH_2)_xOH$$

where x is an integer from 1 to 2.

3. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising (*a*) the reaction product of oleic acid and a base selected from the group consisting of the lower alkanolamines, the lower amines, and ammonia, and (*b*) a substantial proportion of the reaction product of oleic acid and a base selected from the group consisting of sodium hydroxide and potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, and (3) at least 0.9 mole per mole of oleic acid of ethylene glycol monobutyl ether.

4. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising the reaction products of oleic acid and a mixture of bases consisting of potassium hydroxide, triethanolamine and ammonia, said potassium hydroxide constituting a substantial proportion of the total base, and said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, and (3) at least 0.9 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$C_4H_9(OCH_2CH_2)_xOH$$

where x is an integer from 1 to 2.

5. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a soap consisting of the reaction products of oleic acid and a mixture of bases consisting of triethanolamine, am-

monia and a substantial proportion of potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, and (3) at least 0.9 mole per mole of oleic acid of ethylene glycol monobutyl ether.

6. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a soap consisting of the reaction products of oleic acid and a mixture of bases consisting of triethanolamine, ammonia and a substantial proportion of potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, (3) at least 0.9 mole per mole of oleic acid of ethylene glycol monobutyl ether, and (4) water not exceeding 2.25 moles per mole of oleic acid.

7. A non-superfatted liquid soap composition soluble in both Stoddard solvent and water to produce optically clear substantially neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising (*a*) the reaction product of oleic acid and a base selected from the group consisting of the lower alkanolamines, the lower amines and ammonia, and (*b*) a substantial proportion of the reaction product of oleic acid and a base selected from the group consisting of sodium hydroxide and potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, (3) at least 0.9 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$C_4H_9(OCH_2CH_2)_xOH$$

where x is an integer from 1 to 2, and (4) water not exceeding 2.25 moles per mole of oleic acid.

8. A non-superfatted aqueous liquid soap composition harmless to painted surfaces and textile fabrics and characterized by being soluble in water to produce clear neutral solutions having marked detergent properties, said composition comprising (1) a mixed soap comprising (*a*) the reaction product of oleic acid and a base selected from the group consisting of the lower alkanolamines, the lower amines and ammonia, and (*b*) a substantial proportion of the reaction product of oleic acid and a base selected from the group consisting of sodium hydroxide and potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, (3) at least 0.9 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$R(OCH_2CH_2)_xOH$$

where R is an alkyl radical with 1 to 4 carbon atoms and x is an integer from 1 to 2, and (4) at least one volume of water per volume of anhydrous liquid soap composition.

9. A non-superfatted aqueous liquid soap composition harmless to painted surfaces and textile fabrics and characterized by being soluble in water to produce clear neutral solutions having marked detergent properties, said composition comprising (1) a soap consisting of the reaction products of oleic acid and a mixture of bases consisting of triethanolamine, ammonia and a substantial proportion of potassium hydroxide, said soap consisting of substantially theoretical equivalents of oleic acid and total base, (2) at least 1.5 moles of isopropanol per mole of oleic acid, (3) at least 0.90 mole per mole of oleic acid of a glycol ether modifying agent having the formula

$$R(OCH_2CH_2)_xOH$$

where R is an alkyl radical with 1 to 4 carbon atoms and x is an integer from 1 to 2, and (4) at least one volume of water per volume of anhydrous liquid soap composition.

10. The method of making a non-superfatted liquid soap composition soluble in water to produce clear substantially neutral solutions having marked detergent properties, comprising mixing one mole of oleic acid with at least 1.5 moles of isopropanol per mole of oleic acid, and at least 0.90 mol per mole of oleic acid of a glycol ether modifying agent having the formula

$$R(OCH_2CH_2)_xOH$$

where R is an alkyl radical with 1 to 4 carbon atoms and x is an integer from 1 to 2, and adding to said mixture one equivalent based on said oleic acid of total base consisting of a base selected from the group consisting of the lower alkanolamines, the lower amines and ammonia, and a substantial proportion of a base selected from the group consisting of potassium hydroxide and sodium hydroxide.

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