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DETERGENT COMPOSITION

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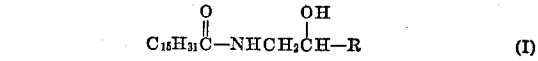
15 Claims. (Cl. 252—137)

The present invention relates to detergent compositions comprising as a detergent a higher N-substituted β-amino propionate or α-amino acetate and a palmitic alkanolamide.

The higher N-substituted β-amino propionates are disclosed in U.S. Patent No. 2,619,467 to Isbell, alone and in admixture with one or more detergents such as the alkyl aryl sulfonates, ethylene oxide derivatives of phenols, and salts of sulfated lauryl alcohol. The compositions are described as having detergent and surface active properties, but those in which the alkyl substituent on the nitrogen atom has from fourteen to eighteen carbon atoms are said to be less effective as foaming agents. Moreover, such suds as are produced by these compounds alone or in detergent compositions are to a certain extent destroyed by chlorine bleaches such as the hypochlorites commonly used in household laundering. It is, of course, desirable that detergents suds satisfactorily in the presence of a bleach, particularly with relation to stability of the active components and maintenance of suds, because bleaches are widely used.

In the Richardson Patent No. 2,383,737 there are described combinations of the ethanolamides and glycerolamides of fatty acids having twelve to fourteen carbon atoms with sulfate and sulfonate synthetic detergents, and these compounds are said to build or improve the cleansing efficiency of the detergents. The Richardson and McAllister Patent No. 2,383,738 describes similar detergent combinations with lower alkyl substituted amides of fatty acids having from ten to fourteen carbon atoms; these amides do not contain hydroxyl groups. Both of these patents refer only to combinations of these materials with sulfate and sulfonate detergents. The detergent higher N-substituted β-amino propionates are not mentioned, nor are the palmitic alkanolamides.

In accordance with the present invention, a palmitic alkanolamide having the general formula



$$C_{15}H_{31}\overset{O}{\overset{\|}{C}}-NHCH_2\overset{OH}{\overset{|}{C}}H-R \qquad (I)$$

wherein R is selected from the group consisting of hydrogen and methyl, is used in a small amount in admixture with N-substituted β-amino propionates and α-amino acetates to overcome the destructive effect of bleach upon the sudsing thereof. The β-amino propionates and α-amino acetates whose sudsing is improved in accordance with the invention can be defined by the following general formula:

$$R—NH[CH_2]_n—COOX \qquad (II)$$

wherein R is an aliphatic hydrocarbon radical or mixed aliphatic hydrocarbon radicals having from six to eighteen carbon atoms and an iodine value (average) of less than about twenty, n is one or two and X is a salt-forming cation whose salt with the amino acid is water-soluble, such as an alkali metal cation, for instance, sodium, potassium, and ammonium, or an organic amine such as ethanolamine, diethanolamine, triethanolamine, monoethanolamine, butylamine, monoisopropanolamine, mixed isopropanolamines, diethylene glycol amine, aminoethylethanolamine, ethylenediamine, diethylenetriamine, tetraethanol ammonium hydroxide, and morpholine. Accordingly, the invention relates to a detergent composition comprising an aliphatic hydrocarbon amino acid salt of Formula II and a small amount of a palmitic alkanolamide of Formula I in proportion to the amino acid.

The beneficial effect of the palmitic alkanolamide is realized in any detergent composition which contains about 1% or more of the N-aliphatic amino acid salt. Thus, the beneficial effect of the palmitic alkanolamide is realized in compositions which consist entirely of the N-aliphatic amino acid salt and palmitic alkanolamide as well as in compositions in which the N-aliphatic amino acid salt is a minor ingredient.

The amount of palmitic alkanolamide needed to lessen the destructive action of bleach is widely variable. Improvement is generally obtained when the palmitic alkanolamide is present in an amount as low as 0.2% by weight of the total composition. Optimum benefits are obtained within the range of about 2 to about 10% by weight of the total composition.

It is significant that the ability of the palmitic alkanolamide to lessen the destructive action of a bleach upon detergent compositions containing the N-aliphatic amino acid salt is not shared by homologous alkanolamides. For example, the myristic and lauric ethanolamides and isopropanolamides fail almost completely to counteract the destructive action of bleach on the suds of a detergent composition containing 4.5% of the sodium salt of N-coconut oil fatty alkyl β-alanine, whereas the palmitic isopropanolamide is effective, and wholly counteracts the destructive action on sudsing at these concentrations.

Those skilled in the art will recognize the N-aliphatic amino acid salts defined above to be N-alkyl or N-alkenyl β-alanine and glycine salts. Because of the low iodine value, the extent of unsaturation is low enough to refer to these as N-alkyl salts, and this usage hereinafter will be understood to be inclusive of the small proportion of N-alkenyl radicals that is permissible. It is preferred that the alkyl radicals attached to the nitrogen have from twelve to eighteen carbon atoms. However, in the case of alkyl mixtures, at least 75% of the alkyls can have from twelve to eighteen carbon atoms, and a small amount of alkyls having from six to ten carbon atoms is permissible, up to about 25% being satisfactory. Such mixtures are conveniently available as the mixed fatty alkyl radicals derived from coconut oil and palm kernel oil, both hydrogenated and unhydrogenated, but they can also be made up synthetically. Lauryl, capryl, myristyl, palmityl, stearyl, palmitolyl and oleyl alkyl radicals also can be used, alone or in admixture. Typical of such compounds are the sodium, potassium and triethanolamine salts of N-coconut oil fatty alkyl β-alanine (the aliphatic radicals substituted on the nitrogen atoms being derived from coconut oil fatty acids), N-coconut oil fatty alkyl α-glycine, N-dodecyl β-alanine, N-octadecyl β-alanine, N-dodecylmethyl β-aminopropionate, N-diamyl β-aminopropionate, and N-oleylmethyl β-aminopropionate, N-dodecyl glycine, N-octadecyl glycine, N-methyldodecyl glycine and N-dihexyl glycine.

In addition to the active ingredients specified above, the compositions of the invention can include other ingredients, both active and inert, that are commonly used in the formulation of detergent compositions. Examples of such ingredients are the anionic sulfated and sulfonated detergents containing at least about six and preferably from about twelve to about twenty-six carbon atoms to the molecule. As suitable examples of aliphatic detergents there are mentioned the sulfuric acid esters of polyhydric alcohols incompletely esterified with higher

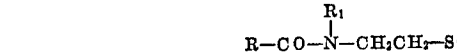
fatty acids, e.g., coconut oil monoglyceride monosulfate; the long-chain pure or mixed higher alkyl and alkenyl sulfates, e.g., lauryl sulfate, cetyl sulfate, tallow sulfate, higher fatty alcohol sulfates derived from reduced coconut oil fatty acids; the hydroxy sulfonated fatty acids, e.g., higher fatty acid esters of dihydroxypropane sulfuric acid; the higher fatty acid esters of lower molecular weight alkylol sulfonic acids, e.g., oleic acid ester of isethionic acid; and the like.

The alkyl aryl sulfonate detergents can also be employed as ingredients of the composition of the present invention. These may be mononuclear or polynuclear in structure. The aromatic nucleus may be derived from benzene, toluene, xylene, phenol, cresols, naphthalene, etc. The alkyl substituent on the aromatic nucleus may vary widely as long as the desired detergent power of the active ingredient is preserved. While the number of sulfonic acid groups present on the nucleus may vary, it is usual to have one such group present in order to preserve as much as possible a balance between the hydrophilic and hydrophobic portions of the molecule.

Specific examples of suitable alkyl aromatic sulfonate detergents are the higher alkyl aromatic sulfonates. The higher alkyl substituent on the aromatic nucleus may be branched or straight-chain in structure. It comprises such groups as decyl, dodecyl, keryl, pentadecyl and the like. Preferred examples of this class are the higher alkyl mononuclear aryl sulfonates wherein the alkyl group contains from about eight to about twenty-two, and preferably from about twelve to eighteen, carbon atoms. It is preferred to use the higher alkyl benzene or toluene sulfonates wherein the higher alkyl group contains from about twelve to sixteen carbon atoms. For example, propylene may be polymerized to the tetramer and condensed with benzene or toluene in the presence of a Friedel-Crafts catalyst to yield essentially the dodecyl benzene or toluene derivative which is suitable for sulfonation to the desired sulfonate compounds. The various anionic detergents are usually used in the form of their water-soluble salts such as the organic amine and alkali metal, including ammonium, salts, as defined by X in Formula II.

A preferred composition according to the present invention can be prepared by incorporating the palmitic alkanolamide into a detergent composition comprising, in addition to the N-aliphatic amino acid salt, an N-acyl tauride and an aliphatic alcohol sulfate.

The higher N-acyl taurides should have the formula:



$$R{-}CO{-}\underset{\displaystyle R_1}{\underset{|}{N}}{-}CH_2CH_2{-}SO_4X \qquad (III)$$

where R is an aliphatic radical or mixed aliphatic radicals of a higher fatty acid or mixture thereof such as alkyl or alkenyl, having from thirteen to seventeen carbon atoms, R_1 is hydrogen or methyl, and X is a salt-forming cation as set forth in the definition of Formula II. Examples of taurides and methyl taurides are palmitic, oleic, and stearic taurides and methyl taurides, and the mixed fatty alkyl (from tallow and coconut oil) taurides and methyl taurides. A mixture of palmitic and oleic methyl taurides in which the palmitic and oleic radicals are in the proportion of about 4:1 is also suitable as seen in subsequent examples.

The aliphatic alcohol sulfate RSO_4X in the preferred composition should contain an aliphatic hydrocarbon radical of from six to eighteen carbon atoms and an iodine value (average) of less than about twenty although in the case of fatty alcohol mixtures at least 75% can have from twelve to eighteen carbon atoms and the remaining alcohols from six to ten carbon atoms, and X can be as in Formula II above. For example, lauryl sulfate, stearyl sulfate and cetyl sulfate, or sulfated mixtures of fatty alcohols obtained from coconut oil, are typical.

In all of the preceding general formulae, suitable changes may be necessary, depending on the valence of X, as will be obvious to one skilled in the art. In addition, in the above formulae R and R_1 have been defined as hydrocarbon radicals, but it will be obvious that the substitutions in these radicals which do not render the products unsuitable for the use described would give equivalent results.

In the preferred composition, the N-aliphatic amino acid salt, the N-acyl tauride and the aliphatic alcohol sulfate comprise the active detergents and are preferably present in the proportions of approximately 5 to 80% of the amino acid salt, 10 to 50% of the N-acyl tauride and 10 to 85% of the aliphatic alcohol sulfate, by weight of the active detergent. The relative proportions of the above detergents will be selected depending somewhat on the chain length of the aliphatic radical in the compounds or mixtures thereof and the exact use properties desired.

The active detergents of our composition also may be compounded with builders such as phosphates, silicates, carbonates, and other conventional ingredients used in formulating detergent compositions. The ingredients may be slurried together and spray or drum dried in the conventional manner and may be marketed in any dry or solid form, as flakes, chips, powders, granules, or as liquid solutions, etc.

The phosphates may be any of those conventionally used in detergents. While trisodium phosphate may be employed, it is preferred to utilize the so-called polyphosphates, such as tetrasodium pyrophosphate, pentasodium tripolyphosphate and sodium tetraphosphate, or mixtures thereof in any proportion. For example, a typical composition contains 7.5 to 25% of active detergents and may contain from 25% upwards of the phosphates, preferably about 40 to 55%. These may comprise, for instance, 45% tripolyphosphate or a mixture of 30% pyrophosphate and 15% tripolyphosphate.

The silicate present in the composition may be any of those forms of sodium silicate conventionally employed in detergent formulations, but preferably has a ratio of sodium oxide to silica as represented by the formula $Na_2O:2.4SiO_2$. This may be present in an amount up to 10% and preferably about 4 to 8%. The silicate functions as a corrosion inhibitor. In order to maintain the silicate in its corrosion inhibiting form, a small amount of sodium carbonate may be present, and amounts of 1 to 5%, preferably about 3% may be included. A small amount of carboxymethylcellulose, generally less than 1%, may also be included together with smaller amounts of perfume, dyes, and optical bleaches. The balance can be water and inert diluents and fillers, such as sodium sulfate and other inert salts.

In order to more fully describe the invention, the following examples are presented.

EXAMPLES 1 TO 8

A base detergent composition of the following composition was prepared:

	Percent
Sodium salt of N-coconut oil fatty alkyl β-alanine	4.5
Sodium palmitic-oleic methyl tauride [1]	5.0
Sodium lauryl sulfate	2.5
Sodium tripolyphosphate	45.0
Sodium silicate ($Na_2O:2.4SiO_2$)	6.0
Sodium carbonate	3.0
Sodium carboxymethylcellulose	0.5
Sodium sulfate and misc. to 97.0%.	

[1] Made from a mixture of 80% palmitic and 20% oleic acid chloride.

To individual portions of the base detergent composition, there was added 3% of an alkanolamide to evaluate the effect of different alkanolamides upon the composition. The alkanolamides tested included the

ethanolamides and isopropanolamides of lauric, myristic, palmitic and stearic acids.

The effect of bleach upon each of the resultant detergent compositions was evaluated using a Terg-O-Tometer in two tests with a washing temperature of 120° F., and a paddle oscillation rate of 90 complete cycles per minute. The paddles operate through a 320° arc. One liter of water (50 p.p.m. hardness) was added at a temperature slightly above the washing temperature to compensate for the temperature drop in the Terg-O-Tometer cup.

Test A.—1.32 grams of the detergent composition was dissolved in the water and 1.76 grams of vacuum cleaner soil was added and agitated 1 minute. Twelve pieces of clean desized cotton sheeting approximately 4½" x 6" were next added one by one. The agitation was re-started and the amount of suds was estimated after 10 minutes and again after 15 minutes of agitation according to the following system:

Grade 0—No suds
Grade 1—Trace of suds
Grade 2—More than trace, but not over ⅛ coverage of surface
Grade 3—⅛ to ¼ coverage
Grade 4—¼ to ½ coverage
Grade 5—½ to ¾ coverage
Grade 6—¾ to full coverage

At the end of 15 minutes there was added 3.5 ml. of Clorox (sodium hypochlorite) and a suds rating was made again 5 minutes after the addition of the bleach.

Test B.—This test was identical with Test A except that only 0.44 gram of composition and 0.20 gram of vacuum cleaner dust were added to the water and the bleach was added after 10 minutes operation instead of after 15 minutes.

The results of both tests were as follows:

Table I

TERG-O-TOMETER SUDS VALUES

Ex. No.	Alkanolamide	Test A			Test B	
		10 min.	15 min.	20 min.	10 min.	15 min.
	Control (no alkanolamide)	3	3	0	2	1
1	Lauric ethanolamide	3	4	0	3	1
2	Myristic ethanolamide	4	4	0	3	0
3	Palmitic ethanolamide	4	4	2	3	3
4	Stearic ethanolamide	3	4	2	2	1
5	Lauric isopropanolamide	3	4	0	2	0
6	Myristic isopropanolamide	3	4	1	2	1
7	Palmitic isopropanolamide	3	4	3	3	3
8	Stearic isopropanolamide	2	3	1	3	0

The results show that of the compounds tested only the palmitic alkanolamides prevented substantial destruction of the suds by the bleach under both of the conditions tested.

EXAMPLES 9 AND 10

A base detergent composition of the following formulation was prepared:

	Percent
Sodium salt of N-coconut oil fatty alkyl β-alanine	4.5
Sodium lauryl sulfate	2.5
Pentasodium tripolyphosphate	45.0
Sodium silicate (Na_2O:2.4SiO_2)	6.0
Sodium carbonate	3.0
Sodium carboxymethylcellulose	0.5
Sodium sulfate and misc. to 97.0%.	

The base composition was divided into three equal portions. To one portion there was added 3% of palmitic ethanolamide and to another portion there was added 3% of palmitic isopropanolamide. The resultant three compositions were then evaluated under the conditions specified for Test A. The results are as follows:

Table II

TERG-O-TOMETER SUDS VALUES

Ex. No.	Alkanolamide	Test A		
		10 min.	15 min.	20 min.
	Control (no alkanolamide)	3	3	0
9	Palmitic ethanolamide	4	4	2
10	Palmitic isopropanolamide	3	6	2

It is evident that the palmitic alkanolamides have a beneficial effect and considerably lessen the destructive action of the bleach.

EXAMPLES 11 AND 12

A base detergent composition of the following formulation was prepared:

	Percent
Sodium salt of N-coconut oil fatty alkyl β-alanine	4.5
Sodium palmitic-oleic methyl tauride[1]	5.0
Sodium tripolyphosphate	45.0
Sodium silicate (Na_2O:2.4 SiO_2)	6.0
Sodium carbonate	3.0
Sodium carboxymethylcellulose	0.5
Sodium sulfate and misc. to 97.0%.	

[1] Same as Example 1.

This base detergent composition was separated into three equal portions and tested according to the procedure of Test A.

To one of the portions there was added 3% of palmitic ethanolamide and to another portion, 3% of palmitic isopropanolamide. The results are as follows:

Table III

TERG-O-TOMETER SUDS VALUES

Ex. No.	Alkanolamide	Test A		
		10 min.	15 min.	20 min.
	Control (no alkanolamide)	2	3	0
11	Palmitic ethanolamide	4	4	2
12	Palmitic isopropanolamide	3	4	2

The results again show the beneficial effect derived from the palmitic alkanolamides in lessening the destructive action of the bleach.

EXAMPLES 13 TO 18

A series of detergent compositions of the following formulations were prepared:

	Percent Composition					
Example No.	13	14	15	16	17	18
Sodium salt of N-coconut oil fatty alkyl β-alanine	9.5	9.5	4.5	4.5	4.5	4.5
Sodium palmitic-oleic methyl tauride[1]	------	------	5.0	5.0	4.75	4.75
Sodium palmitate	------	------	------	------	0.25	0.25
Palmitic isopropanolamide	------	3.0	------	3.0	------	3.0
Pentasodium tripolyphosphate	45.0	45.0	45.0	45.0	45.0	45.0
Sodium silicate (Na_2O:2.4SiO_2)	6.0	6.0	6.0	6.0	6.0	6.0
Sodium carbonate	3.0	3.0	3.0	3.0	3.0	3.0
Sodium sulfate and misc.	36.5	36.5	36.5	36.5	36.5	36.5

[1] Same as Example 1.

Each of the compositions was tested by the procedure of Test A using a concentration of 2.64 grams per liter. The results of these tests are as follows:

Table IV

TERG-O-TOMETER SUDS VALUES

Example No.	13	14	15	16	17	18
10 min.	6	6	5	5	5	5
15 min.	6	6	5	6	5	6
20 min.	0	4	0	6	0	5

Again the results show that the palmitic isopropanolamide present in Examples 14, 16 and 18 materially lessens the destructive effect of the bleach on suds.

EXAMPLES 19 TO 29

A series of detergent compositions of the following formulations were prepared:

Example No.	19	20	21	22	23	24	25	26	27	28	29
Sodium salt of N-coconut oil fatty alkyl β-alanine		0.1	0.2	0.3	1.0	4.5	7.0	8.0	10.0	4.5	
Sodium methyl tauride derivative of tallow fatty acids	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0
Stepanol D (sodium lauryl sulfate)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5		2.5
Sodium alkylbenzene sulfonate [1]										7.5	
Sodium salt of N-coconut oil fatty alkyl glycine											4.5
Penta sodium tripolyphosphate	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
Sodium silicate	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Sodium carbonate	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Sodium carboxymethyl cellulose	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Sodium sulfate and misc.	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance	Balance

[1] Polypropylene alkyl of 12 to 15 carbon atoms attached to benzene nucleus.

Each of the above compositions was tested by the procedure of Test A with and without the addition of palmitic isopropanolamide, and with palmitic ethanolamide in the case of Example 29. The following results were obtained.

Table V

WITHOUT PALMITIC ISOPROPANOLAMIDE

[1 Terg-O-Tometer suds ratings, 120° F., 50 p.p.m. water]

Example No.	19	20	21	22	23	24	25	26	27	28	29
10 min.	2	2	2	3	3	5	5	5	6	5	5
15 min.[1]	3	3	2	3	3	5	6	6	6	5	5
20 min.	2	2	1	1	0	0	0	3	4	2	2

WITH 3.0% PALMITIC ISOPROPANOLAMIDE

10 min.	3	4	4	4	5	5	5	----	5	4	5
15 min.[1]	4	6	6	6	5	6	5	----	6	5	5
20 min.	4	6	6	6	6	6	6	----	6	5	5

WITH 3.0% PALMITIC ETHANOLAMIDE

10 min.	----	----	----	----	----	----	----	----	----	----	5
15 min.[1]	----	----	----	----	----	----	----	----	----	----	4
20 min.	----	----	----	----	----	----	----	----	----	----	4

[1] Bleach added after the 15 minute reading.

Again the results show that the palmitic isopropanolamide and the palmitic ethanolamide overcome the destructive effect of the bleach on suds.

EXAMPLES 30 TO 36

A series of detergent compositions were made up to demonstrate the effectiveness of various concentrations of the palmitic isopropanolamide, using the formulation of Example 24. The amount of palmitic isopropanolamide added is shown in the following table, together with the suds ratings as obtained by Test A above.

Table VI

TERG-O-TOMETER SUDS RATINGS

Example No.	30	31	32	33	34	35	36
Palmitic Isopropanolamide, Percent	0	0.25	0.50	1.0	2.0	3.0	10.0
10 min.	5	5	5	5	5	5	5
15 min.[1]	5	5	5	5	6	6	6
20 min.	0	2	4	4	6	6	6

[1] Bleach added after the 15 minute reading.

The above results show that the palmitic isopropanolamide has a lessening effect on the destructive action of bleach starting at a 0.25% concentration, and that optimum results are obtained at a concentration ranging from 2.0 to 10% by weight of the detergent composition.

It is intended to cover all changes and modifications in the examples of the invention, herein given for purposes of disclosure, which do not constitute departure from the spirit and scope of the appended claims.

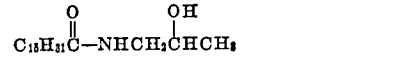
Percentages throughout the specification and claims are by weight of the total composition.

We claim:

1. A detergent composition consisting essentially of a water-soluble N-aliphatic hydrocarbon amino acid salt of the formula:

$$R—NH[CH_2]_n—COOX$$

wherein R is at least one aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, n is a whole number selected from the group consisting of one and two, and X is a salt-forming cation, and a small amount within the range from about 0.2 to about 10% of palmitic isopropanolamide of the formula:



2. A composition according to claim 1 in which the N-aliphatic hydrocarbon amino acid salt is sodium N-coconut oil fatty alkyl β-alanine.

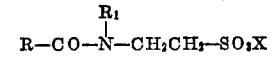
3. A detergent composition in accordance with claim 1 which includes at least about 25% of a polyphosphate.

4. A detergent composition consisting essentially of from about 5% to about 80% of a water-soluble N-aliphatic hydrocarbon amino acid salt of the formula:

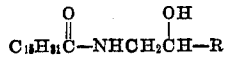
$$R—NH[CH_2]_n—COOX$$

wherein R is at least one aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, n is a whole number selected from the group consisting of one and two, and X is a

salt-forming cation, from about 10% to about 50% of a water-soluble N-acyl tauride of the formula:



in which R is at least one aliphatic hydrocarbon radical having from thirteen to seventeen carbon atoms, R_1 is selected from the group consisting of hydrogen and methyl and X is a salt-forming cation, from about 10% to about 85% of a water-soluble aliphatic alcohol sulfate of the formula RSO_4X where R is an aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, and X is a salt-forming cation, and a small amount within the range from about 0.2 to about 10% of a palmitic alkanolamide of the formula:



wherein R is selected from the group consisting of hydrogen and methyl.

5. The composition of claim 4 in which the amino acid is primarily sodium N-coconut oil fatty alkyl β-alanine.

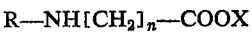
6. The composition of claim 4 in which the N-acyl tauride is primarily a mixture of sodium palmitic and oleic methyl taurides.

7. The composition of claim 4 in which the sulfate is primarily sodium lauryl sulfate.

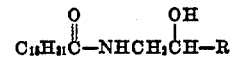
8. The composition of claim 4 in which the amino acid is primarily sodium N-coconut oil fatty alkyl β-alanine, the N-acyl tauride is primarily a mixture of sodium palmitic and oleic methyl taurides, and the sulfate is primarily sodium lauryl sulfate.

9. The composition of claim 4 including an inorganic builder constituent comprising at least 25% of phosphate.

10. A detergent composition consisting essentially of from about 5% to about 80% of a water-soluble N-aliphatic hydrocarbon amino acid salt of the formula:



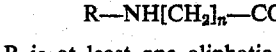
where R is at least one aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, n is a whole number selected from the group consisting of one and two, and X is a salt-forming cation from about 10% to about 85% of a water-soluble aliphatic alcohol sulfate of the formula RSO_4X where R is an aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, and X is a salt-forming cation, and a small amount within the range from about 0.2 to about 10% of a palmitic alkanolamide of the formula:



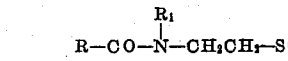
where R is selected from the group consisting of hydrogen and methyl.

11. A detergent composition in accordance with claim 10 which includes at least about 25% of a polyphosphate.

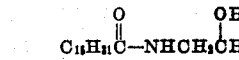
12. A detergent composition consisting essentially of from about 5% to about 80% of a water-soluble N-aliphatic hydrocarbon amino acid salt of the formula:



wherein R is at least one aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, n is a whole number selected from the group consisting of one and two, and X is a salt-forming cation, from about 10% to about 50% of a water-soluble N-acyl tauride of the formula:



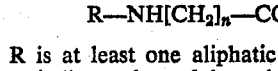
in which R is at least one aliphatic hydrocarbon radical having from thirteen to seventeen carbon atoms, R_1 is selected from the group consisting of hydrogen and methyl and X is a salt-forming cation, and a small amount within the range from about 0.2 to about 10% of a palmitic alkanolamide of the formula:



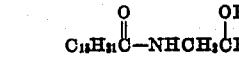
wherein R is selected from the group consisting of hydrogen and methyl.

13. A detergent composition in accordance with claim 12 which includes at least about 25% of a polyphosphate.

14. A detergent composition consisting essentially of from about 5% to about 80% of a water-soluble N-aliphatic hydrocarbon amino acid salt of the formula:



wherein R is at least one aliphatic hydrocarbon radical having an iodine value of less than about twenty, of which from 75 to 100% has from twelve to eighteen carbon atoms and the remainder, if any, has from six to eighteen carbon atoms, n is a whole number selected from the group consisting of one and two, and X is a salt-forming cation, from about 10% to about 85% of a water-soluble alkyl aromatic sulfonate having at least one alkyl radical having from eight to twenty-two carbon atoms attached to the aromatic nucleus, and a small amount within the range from about 0.2 to about 10% of a palmitic alkanolamide of the formula:



wherein R is selected from the group consisting of hydrogen and methyl.

15. A detergent composition in accordance with claim 14 which includes at least about 25% of a polyphosphate.

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