

SPECIFICATION

Surfactant compositions

5 *Background of the invention*

The present invention relates to surfactant compositions. More particularly, this invention relates to conditioning and cleansing surfactant compositions which are mild and, if used as cosmetic formulations, non-irritating to the skin and eyes.

The cleaning or shampooing of hair is known to cause difficulty in its after-shampoo arrangement and management. That is, shampooing can produce tangled hair and can cause the buildup of static electricity on the hair, thus causing generally unattractive appearance and "flyaway" hair.

In order to combat these problems in the shampooing of hair, many conditioning products have been introduced for application to the hair after shampooing. These products generally facilitate detangling of the hair and reduce static charge, thus making the hair more manageable and attractive. While these after-shampoo conditioners are effective in their conditioning of hair, they also have several disadvantages. It is necessary to apply the after-shampoo conditioner in a separate step from the shampooing operation itself, which is both expensive and time consuming. Furthermore, these prior art after-shampoo conditioners cover the hair shaft with a thick sticky coating and thus greatly decrease the perceived cleanliness of the hair. As a result of this latter disadvantage, it is necessary to shampoo hair conditioned in this fashion more often than unconditioned hair.

There are also a number of prior art conditioning shampoos, which combine the washing and conditioning steps a single shampooing operation. While these conditioning shampoos do simplify the process of obtaining clean, conditioned hair, the resulting hair is still thickly coated with a sticky material and still has a low degree of perceived cleanliness. Moreover, these conditioning shampoos are often irritating to the eyes. A typical prior art conditioning shampoo is that shown on page 112 of the September 1974 issue of Soap, Cosmetics, Chemical Specialties.

It should be noted that it has been found that perceived cleanliness and conditioning are not obtainable simultaneously, either from separate shampooing and conditioning products or from products which perform both functions immediately.

It is thus an object of the present invention to provide surfactant compositions which are effective for the cleansing and/or conditioning of the hair in a single application.

It is another object of the present invention to provide surfactant compositions which are mild and non-irritating to the skin and eyes.

It is a still further object of the present invention to provide surfactant compositions which are mild and can be utilized as textile cleansers and softeners.

These and other objects of the present invention will become apparent to one skilled in the art from the detailed description given hereinafter.

Summary of the invention

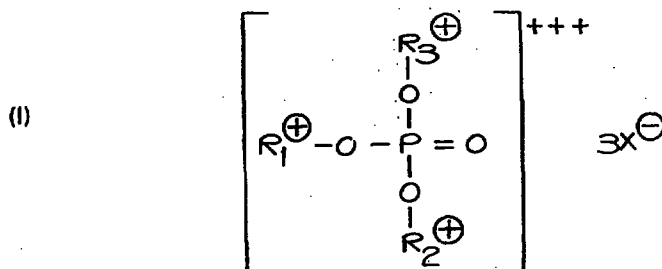
This invention encompasses surfactant compositions comprising as the active ingredient a cationic triester of phosphoric acid as a surfactant, and preferably at least one other surfactant selected from anionic, nonionic, cationic and amphoteric detergents. The balance of the compositions can comprise various detergency and cleansing adjuncts, fillers, carriers and the like which are well known in the art.

45 *Detailed description of the invention*

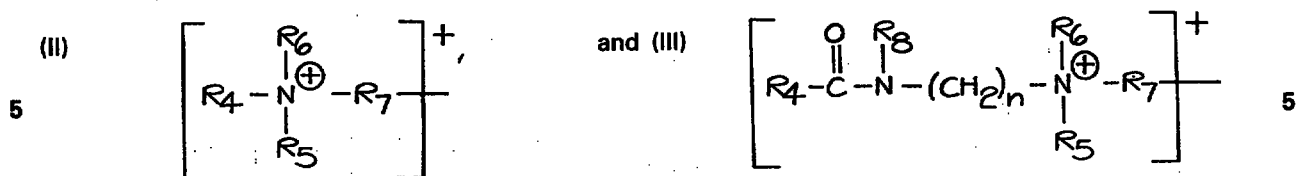
The cleansing and conditioning surfactant compositions of the present invention comprise as the active ingredient a cationic triester of phosphoric acid and preferably at least one other surfactant.

The cationic triesters of phosphoric acid which are used in the present invention are novel compounds described and claimed in copending patent application serial no. filed

These compounds are of the formula:



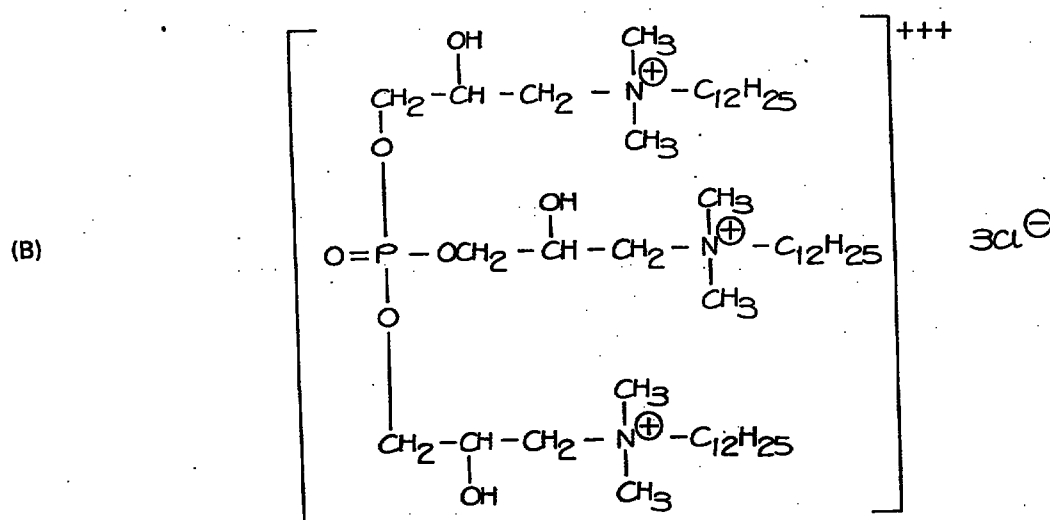
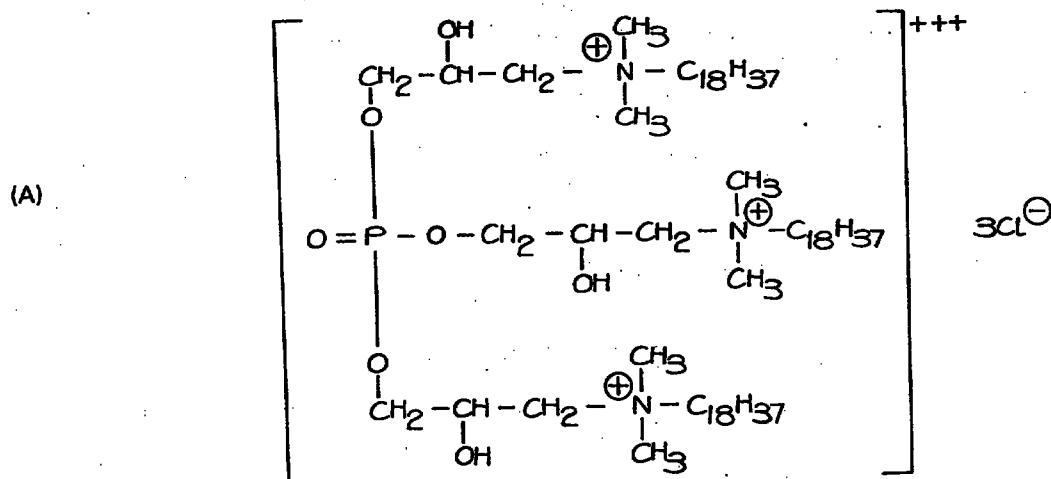
wherein R_1 , R_2 and R_3 are the same or different and can be represented by the following formulae:



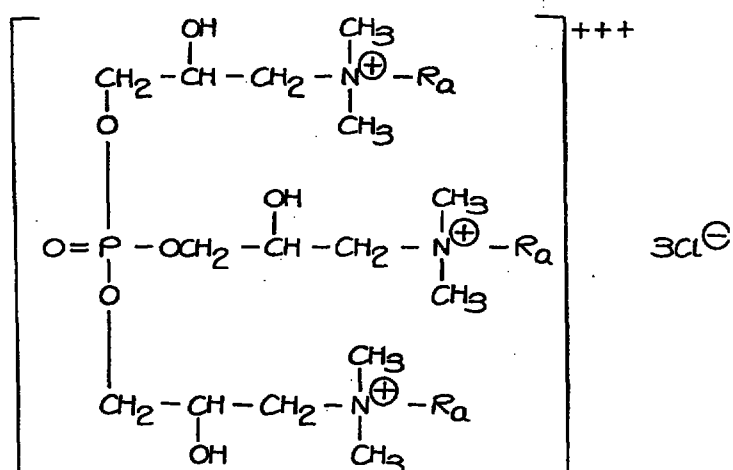
- wherein R_4 , R_5 and R_6 are the same or different and are alkyl, alkenyl, hydroxyalkyl, arylalkyl or polyoxyalkylated ether, containing from 1 to about 22 carbon atoms with the proviso that at least one of R_4 , R_5 and R_6 contains at least 6, e.g. at least 8 carbon atoms. Further, R_5 and R_6 taken with the nitrogen to which they are attached can form a heterocyclic structure such as morpholine, thiomorpholine, indole and the like; R_7 is alkylene or mono- or polyoxyalkylene of from 2 to 12 carbon atoms which may be substituted with alkyl, alkoxy, hydroxy or hydroxyalkyl groups of up to 10 carbon atoms; R_8 is hydrogen, alkyl, hydroxyalkyl, alkenyl or cycloalkyl, of up to 7 carbon atoms or polyoxyalkylated hydroxyalkyl of up to 10 carbon atoms; n is an integer from about 1 to 10 and X is an anion such as Cl^- , Br^- or the like. 10 15

The triesters of phosphoric acid described above can be prepared in accordance with the processes described in copending application Serial No. , filed , the teachings of which are incorporated herein by reference.

- Representative triesters of phosphoric acid useful in the present invention include compounds having the following structures: 20

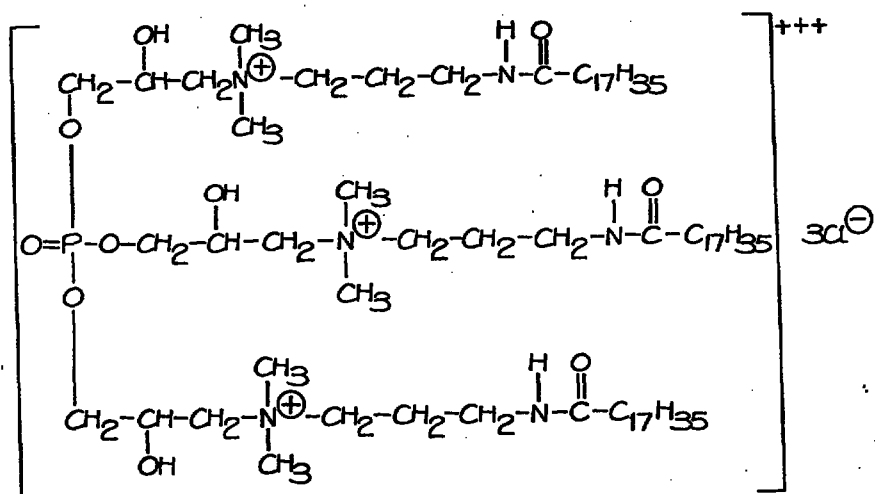


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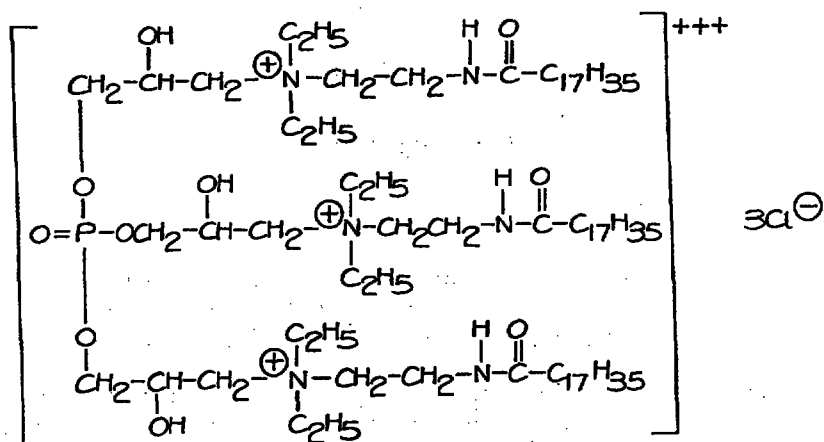


wherein R_a is a mixture of $\text{C}_{20}\text{H}_{41}$ and $\text{C}_{22}\text{H}_{45}$ in a 1:1 ratio.

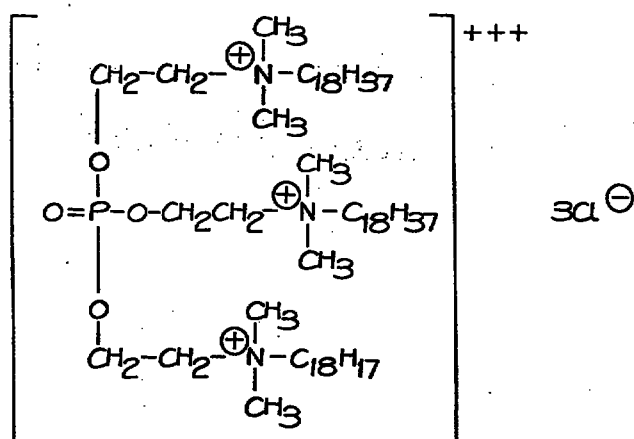
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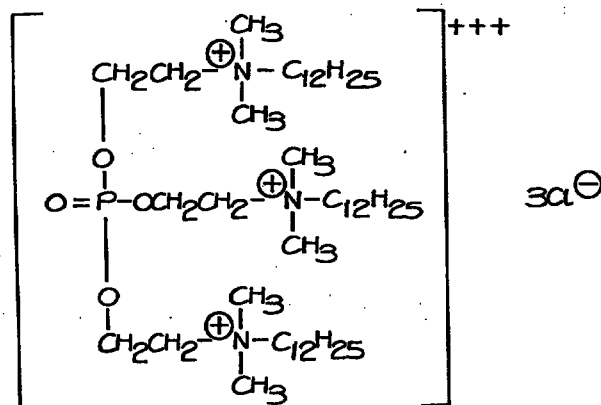
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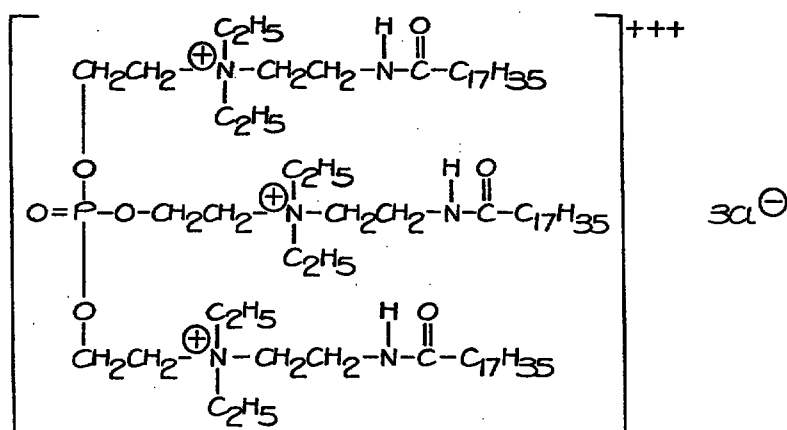
(F)



(G)



(H)



The cationic triesters of formula "(I)" can be present in the detergent compositions of the present invention in a range of from 0.5 to 10% by weight of the total composition when such compositions are utilized as cleansing and conditioning compositions and from 1 to 5% when such compositions are utilized as textile softeners.

The cationic triesters of phosphoric acid disclosed above have been found to be compatible with other known surfactants. The fact that the cationic triesters of phosphoric acid are readily compatible with other surfactants in general and the anionic surfactants in particular to form various detergent compositions is unexpected since cationics are generally not readily compatible with other surfactants and processing difficulties would be expected. Such is, however, not the case with the triesters of phosphoric acid disclosed hereinabove and in copending application serial no. , filed . This unexpected compatibility between the specific triesters of phosphoric acid disclosed herein and the anionic surfactants results in very desirable conditioning and cleansing compositions since the anionic surfactants are good cleansing and foaming compounds.

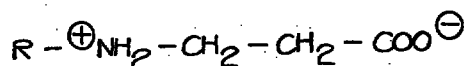
Preferred embodiments of the present invention relate to cleansing and conditioning detergent compositions containing a triester of phosphoric acid and at least one other surfactant selected from amphoteric, nonionic, anionic and cationic detergents. The amphoteric surfactants which may be used in the present invention include betaines, sultaines, phosphobetaines, phosphitaines, n-alkylamino propionates and n-alkylimino dipropionates. The betaine and sultaine surfactants useful in this invention are described in U.S. Patent No. 3,950,417 issued April 13, 1976, which is incorporated herein by reference.

The phosphobetaines and phosphitaines useful in this invention are described in copending applications Serial Nos. 965,461 and 965,462 filed November 30, 1978 and November 30, 1978, respectively, which are incorporated herein by reference. The n-alkylamino propionates and n-alkylimino dipropionates are sold under the tradename Deriphats (Registered Trade Mark) by General Mills.

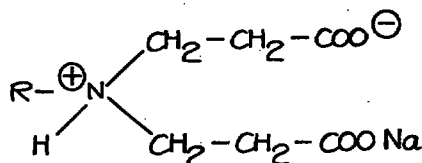
The preferred betaine amphoteric surfactants include the alkylbetaines such as cocodimethylcarboxymethylbetaine, lauryldimethylcarboxymethylbetaine, lauryldimethyl- α -carboxyethylbetaine, cetyldimethylcarboxymethylbetaine, lauryl-bis-(2-hydroxyethyl) carboxymethylbetaine, oleyldimethyl- γ -carboxypropylbetaine, lauryl-bis-(2-hydroxypropyl) α -carboxyethylbetaine, and the like; the sultaines such as cocodimethylpropylsultaine, stearyldimethylpropylsultaine, lauryl-bis-(2-hydroxyethyl) propylsultaine and the like; and the amidosultaines such as cocoamidodimethylpropylsultaine, stearylamidodimethylpropylsultaine, laurylamido-bis-(2-hydroxyethyl) propylsultaine, and the like.

The preferred phosphobetaines include lauric myristic amido 3-hydroxypropyl phosphobetaine, cocamido disodium 3-hydroxypropyl phosphobetaine, lauric myristic amido disodium 3-hydroxypropyl phosphobetaine, lauric myristic amido glyceryl phosphobetaine, lauric myristic amido carboxy disodium 3-hydroxypropyl phosphobetaine, and the like. The preferred phosphitaines include cocoamido propyl monosodium phosphitaine, lauric myristic amido propyl monosodium phosphitaine and the like.

The preferred n-alkylamino propionates and n-alkylimino dipropionates include those of the following structures:



and



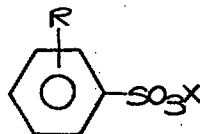
wherein R is from about 8 to 22 carbon atoms and mixtures thereof. The amphoteric detergents may be present in an amount from 2 to 10% by weight of the total composition.

It is envisioned that any anionic surfactant may be used in the compositions of the invention such as, for example, an alkyl sulfate of the formula $R-CH_2-OSO_3X$, an alkylether sulfate of the formula $R(OCH_2CH_2)-OSO_3X$, an alkylmonoglyceryl ether sulfonate of the formula $R-OCH_2-CH(OH)-CH_2-OSO_3X$,

an alkylmonoglyceride sulfate of the formula $RCOOCH_2-CH(OH)-CH_2-OSO_3X$,

an alkylmonoglyceride sulfonate of the formula $RCOOCH_2-CH(OH)-CH_2-SO_3X$, an alkyl sulfonate of the

formula RSO_3X , an alkylaryl sulfonate of the formula



an alkyl sulfosuccinate of the formula $R-CH_2-O-C(=O)-CH(SO_3X)-C(=O)-O-X$,

an alkyl sarcosinate of the formula
$$\begin{array}{c} \text{O CH}_3 \\ || \\ \text{R}-\text{C}-\text{N}-\text{CH}_2-\text{COOX}, \end{array}$$

an acyl isethionate of the formula
$$\begin{array}{c} \text{O} \\ || \\ \text{R}-\text{C}-\text{O}-\text{CH}_2\text{CH}_2\text{SO}_3\text{X}, \end{array}$$

an alkyl methyl tauride of the formula
$$\begin{array}{c} \text{O CH}_3 \\ || \\ \text{R}-\text{C}-\text{N}-\text{CH}_2-\text{CH}_2-\text{SO}_3\text{X}, \end{array}$$

a fatty acid protein condensate of the formula
$$\begin{array}{c} \text{O} \quad \text{R}' \quad \text{O} \quad \text{R}'' \\ || \quad | \quad || \quad | \\ \text{RC}-(\text{NH}-\text{CH}-\text{C}-\text{NH}-\text{CH})_r-\text{COOX}, \end{array}$$

an alcohol ether carboxylate of the formula $\text{RO}(\text{CH}_2\text{CH}_2\text{O})_q-\text{CH}_2\text{CO}_2\text{X}$ and the like; wherein R is higher alkyl having from 7 to 17 carbon atoms; R' and R'' are members each selected from the group consisting of hydrogen, lower alkyl, hydroxyloweralkyl, thioloweralkyl, carboxyloweralkyl, aminoloweralkyl, benzyl, and p-hydroxybenzyl; X is a member selected from the group consisting of alkali metal ions, alkaline earth metal ions, ammonium ions, and ammonium ions substituted with from 1 to 3 lower alkyls; p is an integer from about 3 to about 6; q is an integer from 2 to 6 and r is an integer from 2 to 10.

The preferred type of anionic surfactant is an alkyl ether sulfate, more preferably sodium tridecylalcohol ether sulfate in which p is 1 to 5. The anionic detergent may be present in an amount of from 2 to 10% by weight of the total composition.

Nonionic detergents which are useful include the alkylene oxide ethers of phenols, fatty alcohols, and alkyl mercaptans; the alkylene oxide esters of fatty acid amides; the condensation products of ethylene oxide with partial fatty acid esters, and mixtures thereof. The polyoxyalkylene chain in such agents may contain from 5 to 100 alkylene oxide units in which each alkylene unit has from 2 to 3 carbon atoms.

The preferred nonionic surfactant in the compositions of the invention is a water-soluble polyoxyethylene derivative of a hydrophobic base, said derivative being a member of the group consisting of the reaction products of 9-20 carbon atom fatty acid monoesters of aliphatic polyhydric alcohols, which polyhydric alcohols contain at least 3 hydroxyls, with at least 10 moles of ethylene oxide, and preferably with from about 10 to about 100 moles of ethylene oxide.

The nonionic surfactant may be present in an amount of from 2 to 30% by weight of the total composition.

Cationic surfactants suitable in these compositions include mono- and bis-quaternary ammonium halides such as stearyltrimethylbenzylammonium chloride, cetyltrimethylammonium chloride, N,N-dioctadecyl-N,N,N',N'-tetramethyl-1,5 (3 oxapentylene)di-ammonium bromide; tertiary amine salts such as cocamidopropyltrimethylamine hydrochloride stearylamidopropyltrimethylamine citrate; cationic polymers such as hydroxyethyl cellulose reacted with epichlorohydrin and then quaternized with trimethylamine. (Polymers of this type are sold by Union Carbide under the tradename Polymer JR.) The cationic surfactants should be present in an amount of from 1 to 5% by weight of the total composition.

The total amount of the active surfactant ingredients in the present invention should not be greater than about 50% by weight of the total composition in order to avoid ocular irritation problems, preferably from about 10 to 30% by weight of the total composition with the proviso that the total amount of anionic surfactant and amphoteric surfactant should not exceed 15% by weight of the total composition.

In addition, other ingredients conventionally added to surfactant compositions for personal use, such as dyes, preservatives, perfumes, thickeners, opacifiers, conditioners, emollients, buffering agents, and the like, may be added in minor amounts. Ingredients such as dyes, preservatives and perfumes together usually constitute less than 2% by weight of the total composition and thickeners may be added to the composition in an amount of from about 1 to about 3% by weight of the total composition.

The cleansing and conditioning surfactant compositions of the present invention may be concentrate compositions which are subsequently modified by dilution with water or other diluents to provide the ultimate compositions for use or they may be the ultimate cleansing compositions to be employed without modification. The compositions of the present invention are useful in conditioning compositions, shampoo and conditioning formulations and creme rinses and they may also be used as liquid soaps and cleansers such as baby bath compositions, in bubble bath compositions, as well as in compositions suitable for cleansing animals and inanimate objects.

The aforementioned cleansing and conditioning surfactant compositions are prepared by admixing the triesters of phosphoric acid with the other surfactant(s), if utilized, at room temperature or slightly elevated temperatures (about 50°C) and then sufficient deionized water is added to bring the composition to about three-quarters of its intended weight. The pH is adjusted to within the range of 4 to 9, preferably 6 to 8, by adding strong acid, e.g., HCl, or strong base, e.g., NaOH, as needed.

Other ingredients such as viscosity builders, preservatives, dyes, perfumes and the like are incorporated prior to adjusting the pH and adding the remainder of the water.

The cleansing and conditioning surfactant compositions of the present invention can be tested for ocular irritation by the following modified Draize Test (J.H. Draize et al., Toilet Goods Assn. No. 17, May 1952, No. 1. Proc. Sci. Sect.).

An 0.1 ml. sample of a neutral composition under test is dropped into one eye of an albino rabbit, the other eye serving as a control. Six rabbits are employed for each composition. Observations are made after 1, 24, 48, 72 and 96 hours and 7 days after initial instillation; second and third instillations are made after the 24 and 48 hour readings. Results may vary from substantially no change or only a slight irritation in the appearance of the rabbit's eye after 7 days to severe irritation and/or complete corneal opacity. Ocular lesions are scored for the cornea, iris and conjunctiva with a higher number indicating greater ocular irritation and the scores are added to give a total numerical value for each reading for six rabbits and averaged. The averaged score is an indication of the irritation potential of the composition under test. Based on the averaged score, descriptive irritation evaluation may be given, e.g., none, slight, moderate, severe, as the case may be.

The conditioning properties of wet comb out, hair manageability, luster, body and dry hair feel can be evaluated in salon studies of the following nature.

A panelist's hair is rinsed and divided into two equal parts starting from the center of the forehead to the center of the nape of the neck. A specific amount of the test composition is applied to one portion of the hair and an equal amount of a control composition is applied to the other portion of the hair. The compositions are worked into the hair and characteristics noted and the carefully rinsed insuring that the water from one portion of the hair does not mix with the other portion of the hair. The rinseability characteristics are noted. The wet combability is evaluated by passing a separate comb through each portion of the hair from the center part to the ends of the hair shafts. After the hair is dried, dry combability, flyaway control, hair manageability, lustre, body and dry hair feel are all evaluated.

All of these properties are subjectively evaluated on a scale of 1 (very poor) to 7 (excellent) by trained and experienced evaluators.

Specific embodiments of the cleansing and conditioning compositions prepared in accordance with the present invention are illustrated by the following representative examples. It will be understood, however, that the invention is not confined to the specific limitations set forth in the individual examples, but rather to the scope of the appended claims.

Example I

A conditioning creme rinse composition is prepared by charging 200 grams of deionized water to a vessel equipped with a mechanical stirrer to which 10 grams of hydroxyethyl cellulose are then added and the mixture is then heated to 70°C. 20 grams of Compound A are then added followed by 5 grams of stearyl alcohol and 0.2 grams of dye. The mixture is cooled to 35°C and the pH is adjusted to 5.0 with citric acid. 2 grams of fragrance and sufficient deionized water to bring the total mixture to 1000 grams are then added resulting in a composition consisting of the following ingredients:

	% w/w	
	Compound A	2.00
	stearyl alcohol	.50
45	hydroxyethyl cellulose	1.00
	dye	.02
	fragrance	.20
	deionized water	q.s. to 100%

50 pH adjusted to 5.0 with citric acid

Salon studies show this composition to be a good conditioning creme rinse composition with enhanced wet comb-out.

Example II

A conditioning shampoo composition is prepared in accordance with the general procedure of Example I and consists of the following ingredients:

5		% wt/wt	5
	Compound B	0.10	
	Compound A	2.00	
	sodium lauryl ether sulfate	12.00	
10	lauric diethanolamide	4.00	10
	dye	.01	
	fragrance	.20	
	deionized water	q.s. to 100%	

15 pH adjusted to 7.5 with HCl
Salon studies show this composition to be a good conditioning shampoo composition exhibiting good foaming, cleansing and conditioning. 15

Example III

20 A creme rinse shampoo composition is prepared in accordance with the general procedure of Example I and consists of the following ingredients: 20

		% w/w	
	Compound C	3.00	
25	Polymer JR-400 (Union Carbide's trademark for water soluble cationic cellulose ethers having a chain of anhydro glucose units with side groups containing quaternary ammonium substituents)	.50	25
30	amidobetaine	5.00	30
	sodium tridecyl (4) ether sulfate	5.00	
	dye	.02	
	Dowicil (Registered Trade Mark) 200 (Dow Chemical Company's tradename for the cis isomer of 1-(3-chloroalkyl)-3,5,7-triaza-1-azonoadamantine chloride)	.20	
35	fragrance	.20	35
	deionized water	q.s. to 100%	
40			40

pH adjusted to 6.5 with citric acid.
Salon studies show this composition to provide good cleansing and detangling of the hair.

Example IV

45 A pour-on creme rinse conditioner composition is prepared in accordance with the general procedure of Example I and consists of the following ingredients: 45

		% w/w	
	Compound C	1.10	
50	ethyl, n,n-dihydroxypropyl-4-aminobenzoate	0.55	50
	benzyl alcohol	0.55	
	stearyl alcohol	0.88	
	isostearyl alcohol	0.33	
	hydroxyethyl cellulose	0.88	
55	sodium hydroxide	0.02	55
	deionized water	q.s. to 100%	

The above composition when tested for ocular irritation in accordance with the previously described modified Draize test is found to be a slight irritant.

Example V

A fine fabric detergent and softener composition is prepared consisting of the following ingredients:

		% w/w	
5	linear dodecylbenzene sulfonate	8.00	5
	Compound C	3.00	
	coconut monoethanolamide	2.00	
	citric acid	10.00	
10	optical brightener	.50	10
	isopropanol	1.00	
	dye	.02	
	fragrance	.10	
	deionized water	q.s. to 100%	

15 pH adjusted to 5.0 with citric acid. 15

The composition of Example V is evaluated for detergency and softening properties utilizing the following procedure:

20 Standard soiled wool fabric, from Test Fabrics, Inc., is used to evaluate the relative cleansing ability of a given composition. A Terg-O-Tometer, Model 7243, is used to simulate the cleansing action. The conditions are controlled as follows: 20

- | | | |
|----|---------------------------------------|----|
| | 1. washing time (5 minutes) | |
| | 2. washing speed (100 rpm.) | |
| 25 | 3. rinsing time (5 minutes) | 25 |
| | 4. rinsing speed (100 rpm) | |
| | 5. wash and rinse temperature (105°F) | |

30 The test cloth is made from wool challis and comes in ten-yard rolls. A soil mixture, consisting mainly of lamp black, oils and commercial solvents, is applied to the cloth with a printing roll so that only half of the 8-inch wide cloth becomes soiled. 30

This test cloth is cut into 4 × 8 inch strips so that half of each strip is soiled and half unsoiled. A Gardner Color Difference Meter is used to obtain the initial color value (degree of whiteness) for both the soiled and unsoiled portion of each strip. Three of these strips along with three 4 × 8 inch cotton filler strips are placed in the Terg-O-Tometer beaker containing 1000 ml. of a 10% aqueous solution of the test composition. Prior to this, the solution is agitated for two minutes and allowed to equilibrate at 105°F. The samples are agitated for five minutes, removed, squeezed out, and returned to the agitating beaker containing 1000 ml. of clean 105°F tap water. After five minutes of agitating, the strips are removed, squeezed out and laid flat to dry. When dry, they are again evaluated using the Color Difference Meter to determine how much soil has been removed as well as how much soil has been deposited on the unsoiled portion of the cloth. The relative cleansing effectiveness is indicated by the spread between the initial and final whiteness measurements which is characterized as ΔR . A ΔR of two units is considered significant. To determine softness, panelists are asked to choose the fabrics which are softer to the hand from paired groups containing fabrics treated with the test composition and fabrics treated with the control composition. 40

45 When the composition of this example is evaluated as above, it is found to provide good cleaning and softening to the test fabrics. 45

Example VI

A mild shampoo and conditioning composition is prepared consisting of the following ingredients:

		% w/w	
50	Compound E	1.00	50
	Polymer JR-400	.20	
55	betaine	5.00	55
	sodium lauryl (3) ether sulfate	5.00	
	polyoxyethylene 80 SML	10.00	
	Dowicil 200	.10	
	dye	.02	
60	fragrance	.30	60
	deionized water	q.s. to 100%	

pH adjusted to 7.0 with citric acid

The above composition is found to be a good shampoo and conditioning composition.

Example VII

A mild gel shampoo and conditioning composition is prepared consisting of the following ingredients:

		% w/w	
5	amido sultaine	5.0	5
	betaine	5.0	
	tridecyl (4) ether sulfate	10.0	
	polyoxyethylene (80) sorbitan		
10	monopalmitate	20.0	10
	dye, preservative		
	Compound A	1.0	
	Compound D	1.0	
	Dowicil 200	.10	
15	dye	.02	15
	fragrance	.20	
	deionized water	q.s. to 100%	

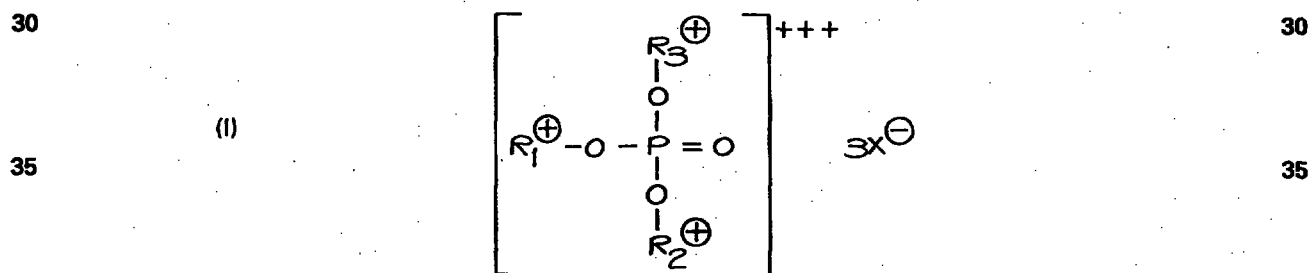
pH adjusted to 7.0 with citric acid

20 The above composition is found to be a good shampoo and conditioning composition.

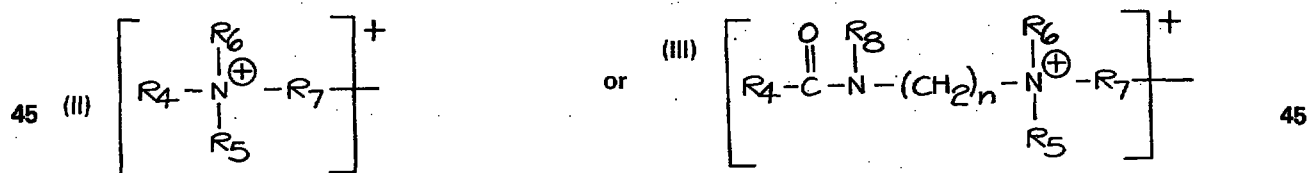
Various other features and embodiments of the present invention not specifically enumerated will be obvious to those skilled in the art, all of which may be achieved without departing from the scope of the invention as defined by the following claims.

25 CLAIMS

1. A surfactant composition wherein the active ingredient comprises from 0.5 to 10 % by weight of the total composition of a triester of phosphoric acid of the formula



40 wherein R_1 , R_2 and R_3 are the same or different and are selected from the following formulae:



wherein R_4 , R_5 and R_6 are the same or different and are alkyl, alkenyl, hydroxyalkyl, arylalkyl or

50 polyoxyalkylated ether, containing from 1 to 22 carbon atoms with the proviso that at least one of R_4 , R_5 and R_6 contains at least 6 carbon atoms, in addition, R_5 and R_6 taken with the nitrogen to which they are attached can form a heterocyclic structure; R_7 is alkylene or mono- or polyoxyalkylene of from 2 to 12 carbon atoms which may be substituted with alkyl, alkoxy, hydroxy or hydroxyalkyl groups of up to 10 carbon atoms; R_8 is hydrogen, alkyl hydroxyalkyl, alkenyl or cycloalkyl, of up to 7 carbon atoms or polyoxyalkylated hydroxyalkyl of up to 10 carbon atoms; n is an integer from 1 to 10 and X is an anion.

2. The composition of claim 1 containing in addition at least one surfactant selected from anionic nonionic, cationic and amphoteric surfactants wherein the total active level of surfactants shall not exceed 50% by weight of the total composition with the proviso that the total amount of anionic and amphoteric surfactants should not exceed 15% by weight of the total composition.

60 3. The composition of claim 2 containing from 2 to 10% by weight of the total composition of an anionic surfactant selected from alkylsulfate, alkylether sulfate, alkylmonoglyceryl ether sulfonate, alkylmonoglyceride sulfate, alkylmonoglyceride sulfonate, alkyl sulfonate, alkylaryl sulfonate, alkyl sulfosuccinate, alkyl sarcosinate, acyl isothionate, alkyl methyl tauride, fatty acid protein condensate and an alcohol ether carboxylate.

**Example VII**

A mild gel shampoo and conditioning composition is prepared consisting of the following ingredients:

		% w/w	
5	amido sultaine	5.0	5
	betaine	5.0	
	tridecyl (4) ether sulfate	10.0	
10	polyoxyethylene (80) sorbitan monopalmitate	20.0	10
	dye, preservative		
	Compound A	1.0	
	Compound D	1.0	
	Dowicil 200	.10	
15	dye	.02	15
	fragrance	.20	
	deionized water	q.s. to 100%	

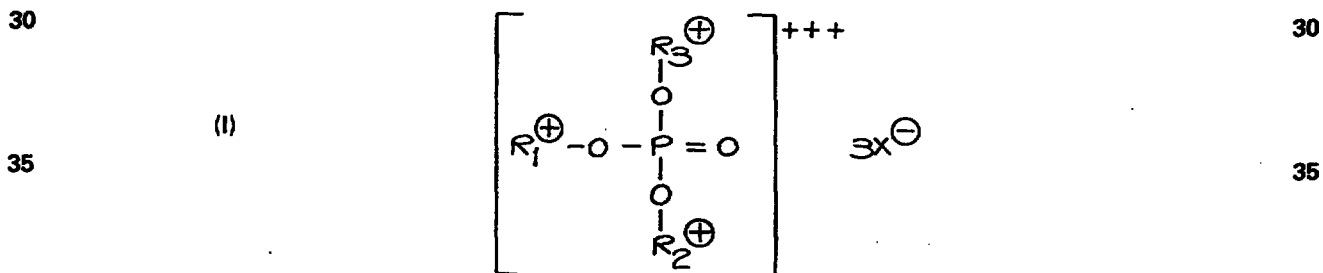
pH adjusted to 7.0 with citric acid

20 The above composition is found to be a good shampoo and conditioning composition. 20

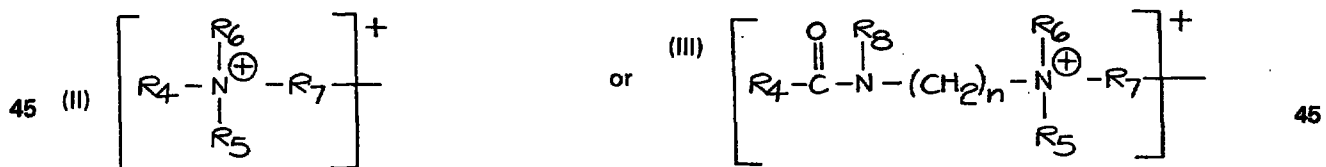
Various other features and embodiments of the present invention not specifically enumerated will be obvious to those skilled in the art, all of which may be achieved without departing from the scope of the invention as defined by the following claims.

25 CLAIMS 25

1. A surfactant composition wherein the active ingredient comprises from 0.5 to 10 % by weight of the total composition of a triester of phosphoric acid of the formula



40 wherein R_1 , R_2 and R_3 are the same or different and are selected from the following formulae: 40



wherein R_4 , R_5 and R_6 are the same or different and are alkyl, alkenyl, hydroxyalkyl, arylalkyl or polyoxyalkylated ether, containing from 1 to 22 carbon atoms with the proviso that at least one of R_4 , R_5 and R_6 contains at least 6 carbon atoms, in addition, R_5 and R_6 taken with the nitrogen to which they are attached can form a heterocyclic structure; R_7 is alkylene or mono- or polyoxyalkylene of from 2 to 12 carbon atoms which may be substituted with alkyl, alkoxy, hydroxy or hydroxyalkyl groups of up to 10 carbon atoms; R_8 is hydrogen, alkyl hydroxyalkyl, alkenyl or cycloalkyl, of up to 7 carbon atoms or polyoxyalkylated hydroxyalkyl of up to 10 carbon atoms; n is an integer from 1 to 10 and X is an anion. 55

2. The composition of claim 1 containing in addition at least one surfactant selected from anionic nonionic, cationic and amphoteric surfactants wherein the total active level of surfactants shall not exceed 50% by weight of the total composition with the proviso that the total amount of anionic and amphoteric surfactants should not exceed 15% by weight of the total composition.

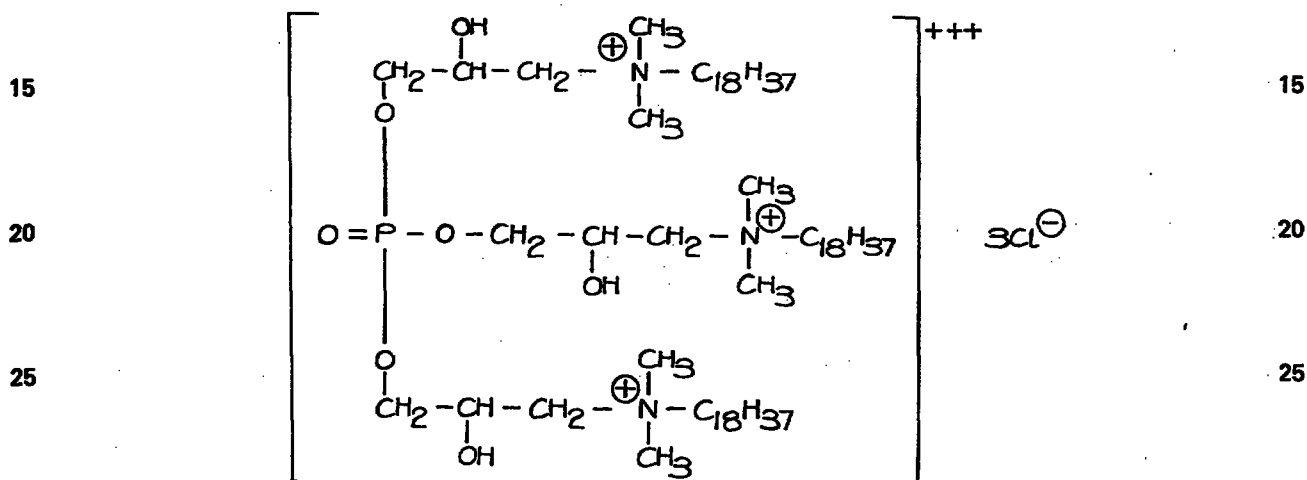
60 3. The composition of claim 2 containing from 2 to 10% by weight of the total composition of an anionic surfactant selected from alkylsulfate, alkylether sulfate, alkylmonoglyceryl ether sulfonate, alkylmonoglyceride sulfate, alkylmonoglyceride sulfonate, alkyl sulfonate, alkylaryl sulfonate, alkyl sulfosuccinate, alkyl sarcosinate, acyl isothionate, alkyl methyl tauride, fatty acid protein condensate and an alcohol ether carboxylate. 65

4. The composition of claim 2 containing from 2 to 30% by weight of the total composition of a nonionic surfactant selected from alkylene oxide ethers of phenols, mono- or polyhydric alcohols, and alkyl mercaptans; alkylene oxide esters of fatty acid amides; condensation products of ethylene oxide with partial fatty acid esters and mixtures thereof.

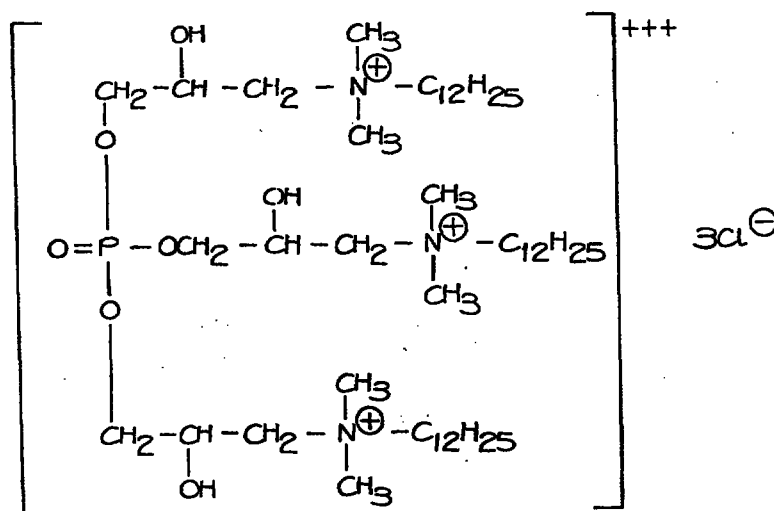
5. The composition of claim 2 containing from 1 to 5% by weight of the total composition of a cationic surfactant selected from mono- and bis-quaternary ammonium halides, tertiary amine salts and cationic polymers.

6. The composition of claim 2 containing from 2 to 10% by weight of the total composition of an amphoteric surfactant selected from betaines, sultaines, phosphobetaines, phosphitaines, n-alkylamino-propionates and n-alkylimino-dipropionates.

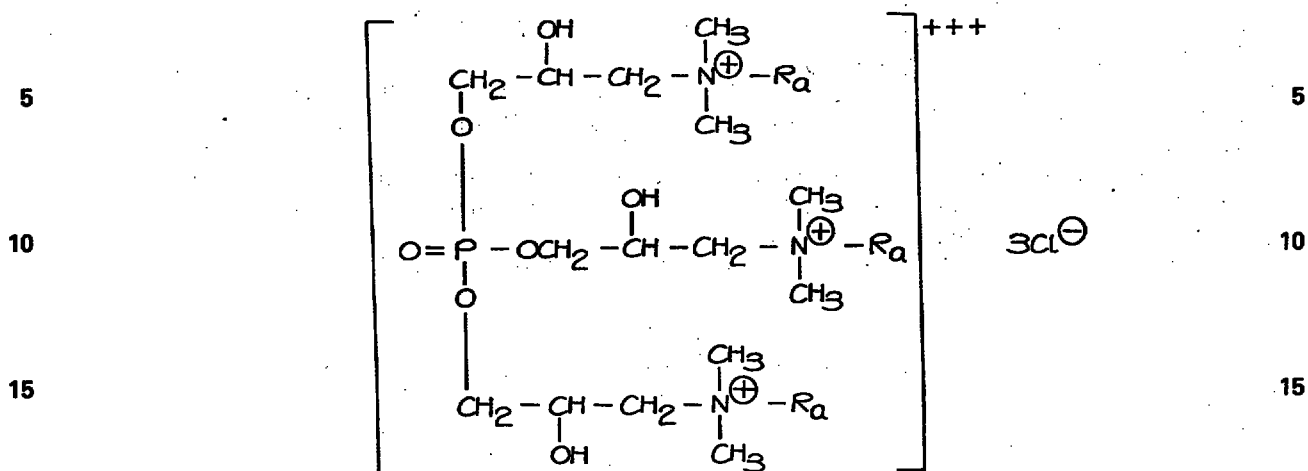
7. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



8. The composition of claim 1 wherein the triester of phosphoric acid is of the formula

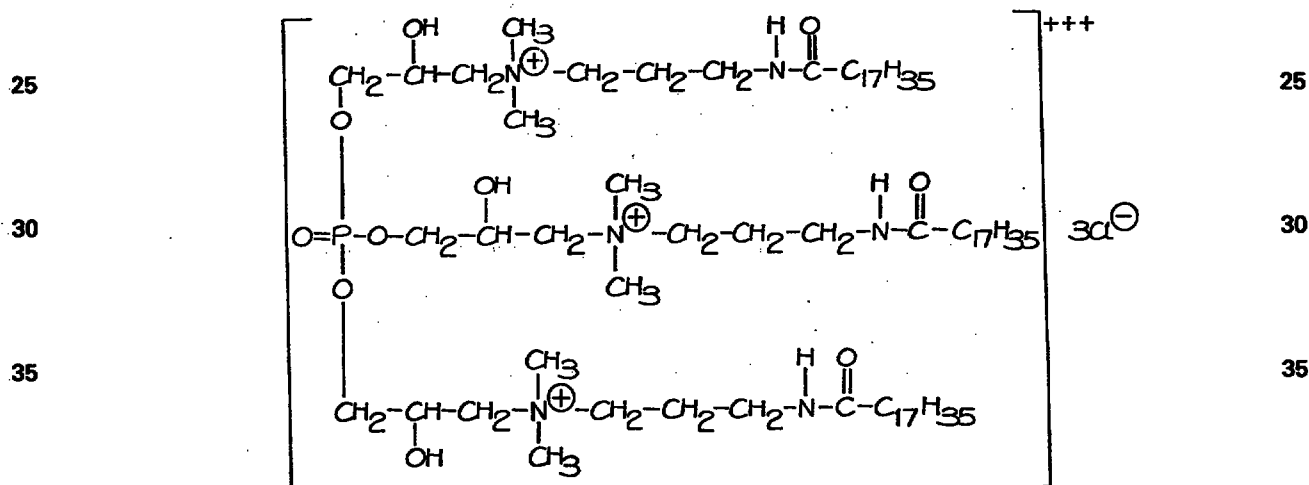


9. The composition of claim 1 wherein the triester of phosphoric acid is of the formula

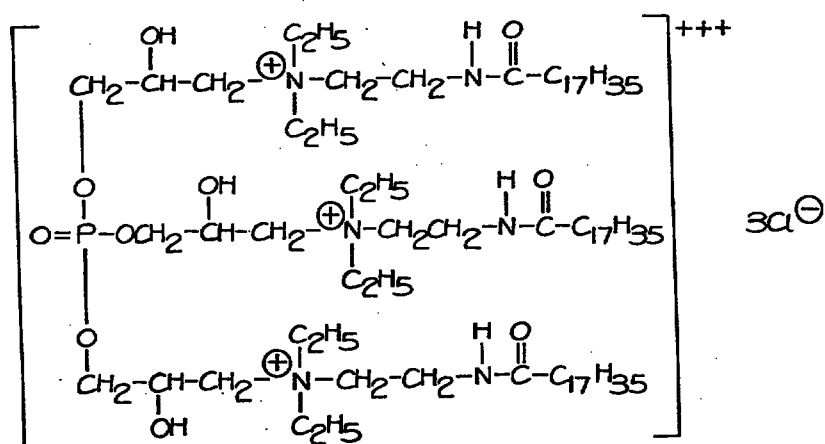


20 wherein R_a is a mixture of $\text{C}_{20}\text{H}_{41}$ and $\text{C}_{22}\text{H}_{45}$ in a substantially 1:1 ratio.

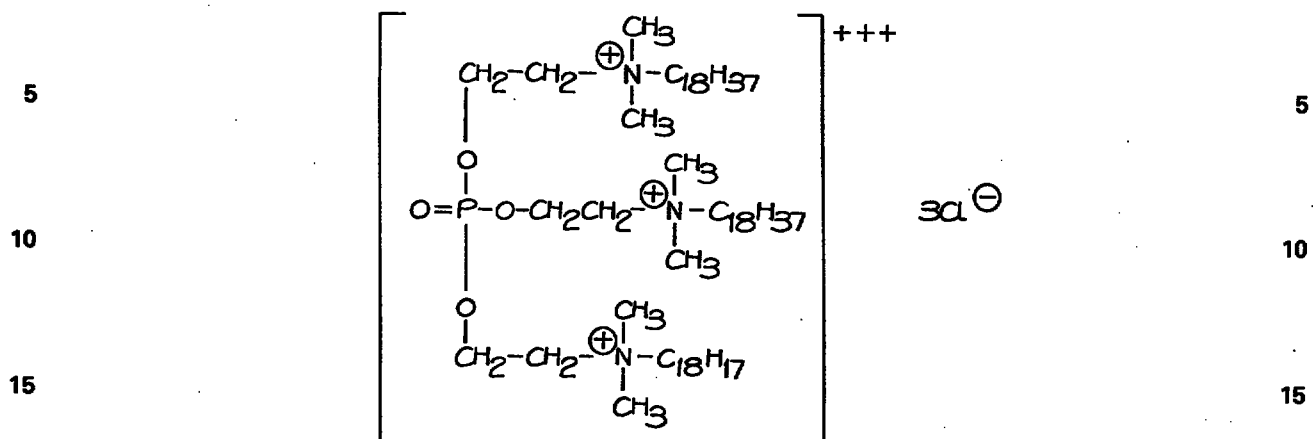
10. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



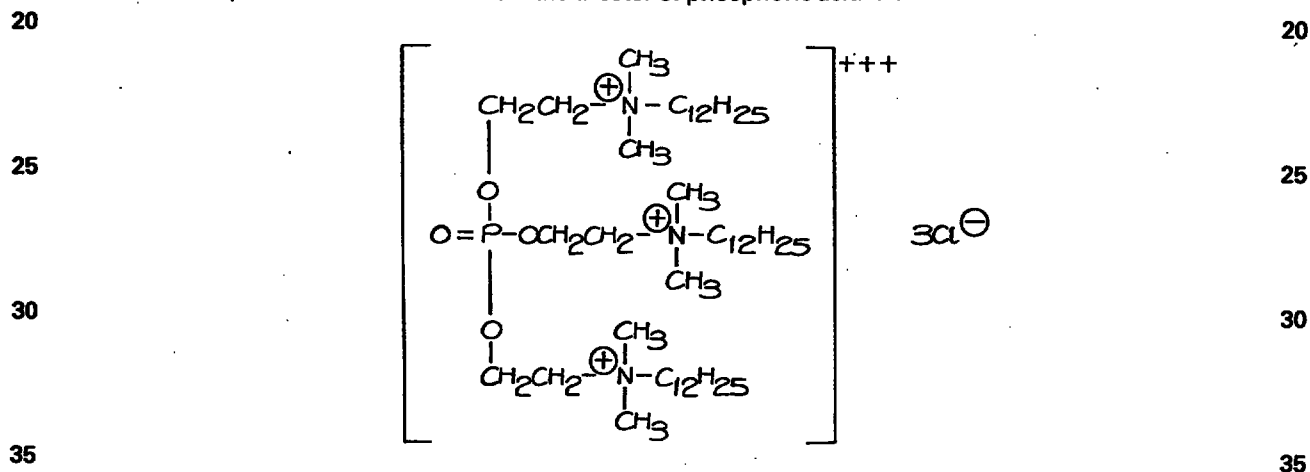
11. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



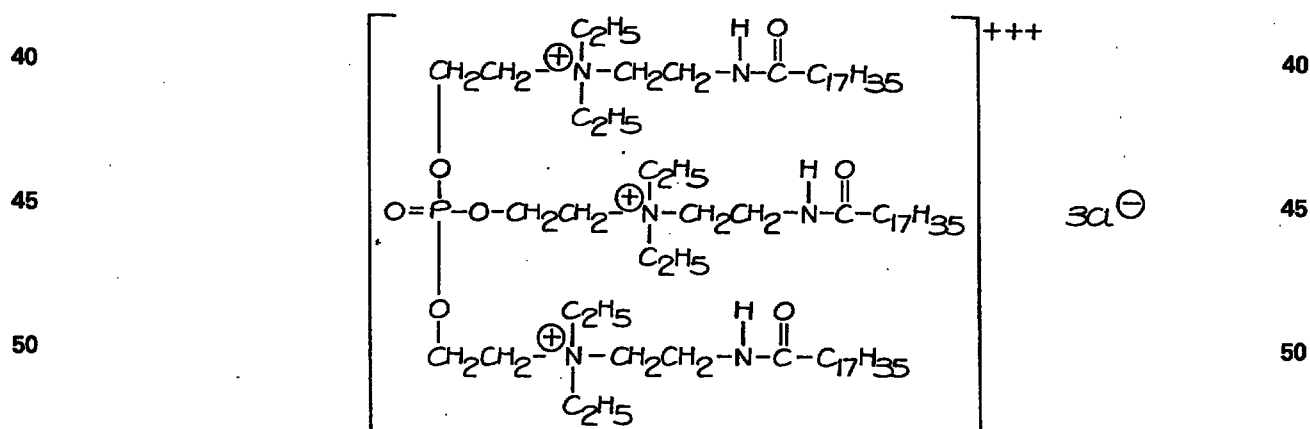
12. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



13. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



14. The composition of claim 1 wherein the triester of phosphoric acid is of the formula



15. A composition as claimed in claim 1 substantially as described in any of the foregoing Examples I to VII.

