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2,746,932

SYNTHETIC DETERGENT COMPOSITIONS

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No Drawing. Application October 8, 1949,
Serial No. 120,409

8 Claims. (Cl. 252—138)

The present invention relates to new synthetic detergent compositions and, more particularly, to compositions of the type of the alkyl aromatic sulfonates having improved detergency, and to a process for washing therewith, as hereinafter described and claimed.

Broadly, detergency is a complex and dynamic phenomenon, and consists essentially of the removal of soil from an object or substrate and segregation of the soil, usually by suspension or emulsification in the bath. The overall deterative efficiency, however, is dependent upon a number of factors involving such considerations as the structure of the essential detergent material (which may hereinafter be referred to as the active ingredient) and various additives, type of soil and substrate, etc. The necessity for consideration of such a multiple number of factors and their relative significance renders the improvement in detergency of a given detergent composition difficult and complex.

One of the most important factors is considered to be the composition of the detergent mixture. The chemical structure and physical properties of the active ingredient and the effect of various additives in such mixtures is of prime concern. Thus the type of hydrophilic groups (e. g. sulphate, sulfonate, amide, etc.), variances in the hydrophobic portion of the molecule (e. g. aliphatic, aromatic), and the steric relationship of the hydrophilic groups to the hydrophobic groups in the active ingredient, and solubility differences influence the mechanisms and/or results of detergency in a given system.

The incorporation in various detergent mixtures of different additives or even of the same additives in various concentrations to modify the properties of synthetic detergent compositions in a desired manner may affect one or more of the following mechanisms including dispersion, suspension, interfacial tension, sequestration of harmful ions, modification of micellar structure, etc. In view of the varied nature of the synthetic detergents, additives in general exhibit a certain degree of specificity of action. Thus, there has been a considerable amount of experimentation to discover substances which aid the efficiency of known detergent compositions. In general, most testing conditions to determine the suitability of additives in synthetic detergents have revolved around the use of concentrations of detergent compositions of the order of 0.15, 0.2 and 0.25%.

It has been suggested that a mixture of unsulfated alcohols of 8 to 14 carbon atoms with sulfated fatty alcohols may be useful as a detergent composition.

It has now been discovered, however, that the incorporation of minor amounts of fatty alcohols of at least 14, and preferably about 16–18 carbon atoms, with alkyl aromatic sulphonate detergents are effective to achieve a significant and synergistic increase in deterative efficiency at certain selected washing concentrations. More particularly, the present invention relates to a cleansing and laundering composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl aryl sulfonate detergent salt, about ½ to 10% by weight of a

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primary saturated fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salts, said composition exhibiting improved soil removal upon washing of textile materials at a concentration of 0.4–0.75% in water.

The novel compositions of the present invention containing the selected fatty alcohols as additives do not show any significant increase in detergency and may even exhibit decreased detergency when employed in certain concentrations, in comparison to the use of these detergent compositions without the alcohol additives. It has been found however, that within certain selected washing concentrations a marked and synergistic increase in detergency results from the use of the alcohol additives. It may be noted that the total washing power of any composition is necessarily the result of the amount of soil removal and soil suspension or redeposition. Additives in general may increase both soil removal and redeposition, or may improve one such factor. It has been ascertained that this marked increase in total deterative power due to the selected fatty alcohol additives is the unitary result of both an increase in soil removal by the detergent composition and a concurrent inhibition in the redeposition of the soil, though the former factor appears by far to be the more significant.

The alkyl aromatic sulfonate detergents referred to are well known in the art. They may be mononuclear or polynuclear in structure. More particularly the aromatic nucleus may be derived from benzene, toluene, xylene, phenol, cresols, phenol ethers, naphthalene, derivatives of phenanthrene nuclei, etc. It has also been found that the alkyl group may vary similarly. Thus, for example, the alkyl group may consist of such radicals as dodecyl, hexyl, octyl, nonyl, decyl, keryl, mixed alkyls derived from fatty materials, cracked paraffin wax olefins, and polymers of lower mono olefins, etc. While the number of sulfonic acid groups present on the nucleus may vary, it is usual to have only one such group present in order to preserve as much as possible a balance between hydrophilic and hydrophobic portions of the molecule.

Typical examples of this class are the sulfonated and alkylated benzene type compounds wherein the alkyl group is at least about 8 and preferably about 10 to about 16 carbon atoms. The benzene ring may possess other substituents including lower alkyl and hydroxy groups.

These detergents are commonly used in the form of their water soluble salts. Of these, the alkali metal (e. g. sodium, potassium) and ammonium salts are preferred though other salts such as the amine, alkylolamine, alkaline earth metal (e. g. calcium, magnesium) salts may be used if desired. Their concentration in the detergent compositions of the present invention is generally at least about 20% by weight of total solids. With built compositions however, it is preferred to use an active ingredient content of about 20 to about 50% concentration.

The fatty alcohols used as additives in the present invention are the saturated primary fatty alcohols of at least about 14 and preferably of about 16 to 18 carbon atoms. Examples of suitable alcohols falling within this classification are cetyl, stearyl, myristyl, palmityl alcohols, etc. It is not necessary to use the pure substances themselves as the commercial mixtures of these substances are also operable and are preferred from the viewpoint of economy. Thus, commercial mixtures of fatty alcohols containing predominantly the alcohols of 14 to 18 carbon atoms are included within the scope of this invention, even though such mixtures may contain minor amounts of fatty alcohols of different chain length. Analyses of various suitable commercial mixtures are set forth infra.

The fatty alcohols may be derived either from natural or synthetic sources. Many naturally occurring wax esters are an important source of higher aliphatic alcohols.

Certain animal oils, chiefly those of marine origin such as sperm oil, also contain a high proportion of recoverable alcohols occurring as esters. The most plentiful and economic sources for their production however are their preparation from fatty acids or aldehydes by reduction, or their recovery from oxidized petroleum stocks, etc., by processes known in the art.

These fatty alcohols may be incorporated with the active ingredient at any point during the manufacturing process at which subsequent operations will not adversely modify the properties of the detergent composition. In general, this addition may be accomplished by adding the alcohols to the active ingredient either in liquid form, or by mixing those mixtures which are solid under normal conditions in comminuted form. The best results are not achieved by mechanically intermixing comminuted solid components. A variety of procedures which have proven to be convenient, and productive of the best results are:

(1) The addition of the fatty alcohols in a molten state to a hot aqueous slurry of the active ingredient of about 40 to 50% concentration with vigorous stirring to form a smooth, uniform, and homogeneous paste.

(2) The fatty alcohols may be dissolved in a suitable solvent, e. g. ethanol, and added to a slurry of the active ingredient.

(3) A cream emulsion of the fatty alcohols in water with a minor proportion of the active ingredient may be prepared and incorporated into the slurry of active ingredient in the manner set forth above.

Thereafter, these compositions may be made up in the form of solutions, pastes, or as dry or partially hydrated solid products preferably in a finely divided condition.

The amount of these added fatty alcohols is generally minor in proportion to the weight of the total detergent composition and sufficient to produce a synergistic increase in deterative power. Generally, the amount varies within rather definite proportions of the order of about ½ to about 10% by weight since it has been determined that within these somewhat critical limits the desirable effects appear to be attained to a maximum degree. For built compositions it is preferred to use a fatty alcohol concentration of about 1-5%. This increase in detergency is evident in both hard and soft water solutions. It has likewise been ascertained that these additives perform the dual function of increasing the soil removal power and of inhibiting the soil redeposition factor of the detergent compositions referred to herein in both hard water and soft water. The more pronounced improvement is in the soil removal factor however. One of the most significant aspects of the improved results is the fact that it may be noted only when used in a particular manner. The compositions of the present invention containing the free fatty alcohols in general do not show any significant increase in detergency and even may exhibit decreased detergency when employed in washing concentrations of the order of 0.15-0.25%. It has been found, however, that under washing concentrations such as 0.4-0.75% a marked increase in detergency results from the use of these alcohols as additives.

These various results are evident from a consideration of the following data and examples which are merely illustrative of the present invention and it will be understood that the invention is not limited thereto.

Tables I and II indicate the changes in washing power at various bath concentrations in soft and hard water of a detergent composition containing 23% sodium salts of mixed higher alkyl (9-14 carbon atoms) benzene sulfonates as the active ingredient, 2% of a 90:10 mixture of cetyl and stearyl alcohol, 50% tetrasodium pyrophosphate, 3% sodium silicate and 22% sodium sulfate.

The washing procedure involves the uniform soiling, washing at 110° F.±2° F. and drying of a large number of cotton swatches. The whiteness of the various test swatches are measured by a Hunter reflectometer. The

units of soil removed may be calculated by subtracting the average reflectivity of the unwashed control samples from the washed swatches. The effect on redeposition of soil in the fabric is determined by placing unsoiled samples in the detergent bath together with the soiled samples and measuring the brightness after washing. The numbers in the tables represent the change in units of soil removed and redeposited with the use of the above detergent composition with and without the fatty alcohol additives. A + value indicates an increase in soil removal and redeposition; a - value indicates a decrease in soil removal and lesser redeposition of soil.

TABLE I.—HARD WATER (300 P. P. M.) SOLUTIONS

Percent Concentration	Soil Removal	Soil Rede-position
0.15	-7	+2.9
0.25	-5	+2.5
0.4	+10	-0.5
0.75	+21	-0.7

TABLE II.—SOFT WATER SOLUTIONS

Percent Concentration	Soil Removal	Soil Rede-position
0.15	-9	-1.8
0.25	-10	-2.8
0.5	+14	-2.1
0.75	+14	-0.7

It may be noted from the above data that no improvement in total washing power is attained either in hard or soft water using concentrations of 0.15 and 0.25%. In fact, decreased deterative power results from the use of the detergent compositions containing the alcohol additives at these concentrations. At higher concentrations however a marked and synergistic increase in detergency results from the use of the alcohol additives, particularly due to improved soil removal power. It is not completely understood why these additives in the relationship set forth should exhibit this unique specificity of action.

Tables III and IV indicate the changes in washing power of an alkyl aryl sulfonate detergent composition in which cetyl alcohol varies from 0-5%. The standard composition used is as follows:

	Percent
Active ingredient	35
Tetrasodium pyrophosphate	25
Sodium sulphate	37
Silicate	3
Cetyl alcohol	0-5

Wherever cetyl alcohol is used as indicated in the tables it replaces a corresponding amount of active ingredient in the formula. The active ingredient referred to is the sodium salts of the mixed higher alkyl benzene sulfonates, the alkyl substituent averaging about twelve carbon atoms in length.

The effect on soil removal due to variance in the amount of cetyl alcohol is set forth in Table III. The testing procedure is employed which is used to determine the results set forth above. The percent deterative efficiency tabulated in Table II is expressed by the fraction:

$$\frac{\text{Units of Soil Removed by Experimental Formula}}{\text{Units of Soil Removed by Standard Soap}} \times 100$$

As indicated in Table III, the hard water tests are conducted at 0.4% and 0.75% solution of the detergent composition in water containing 300 parts per million (p. p. m.) of hardness. For the soft water tests, Jersey City, N. J., tap water of about 50 p. p. m. hardness is used to make up test solutions of 0.5% and 0.75% concentrations.

TABLE III.—SOIL REMOVAL

Percent Cetyl Alcohol	300 p. p. m. Solutions				Soft Water Solutions			
	0.4%		0.75%		0.5%		0.75%	
	Det. Eff.	Per- cent Inc.	Percent Det. Eff.	Per- cent Inc.	Percent Det. Eff.	Per- cent Inc.	Percent Det. Eff.	Per- cent Inc.
0.....	79.5		78.0		96.0		98.5	
1/2.....	81.5	2.5	82.5	5.5	100.0	4.0	102.0	3.5
1.....	84.0	5.4	88.0	11.3	100.5	4.5	105.0	6.2
1 1/2.....	85.5	7.0	90.0	13.3	101.0	5.0	108.5	9.2
2.....	91.0	12.6	89.0	12.4	104.5	8.1	112.0	12.1
3.....	98.5	19.2	98.0	20.4	116.0	17.2	124.0	20.5
4.....	96.0	17.1	106.5	26.8	115.5	16.9	125.5	21.5
5.....	93.0	14.5	105.5	26.1	114.0	15.8	123.5	20.2

Referring to Table III, the column marked "Percent Inc." indicates the percentage increase in deterative efficiency for detergent mixtures containing from 0-5% cetyl alcohol. It will be noted that in both hard and soft water at the indicated bath compositions an increase in soil removal is effected when the detergent contains from about 1/2% to 5% higher fatty alcohol. This added deterative efficiency appears to be most prominent in compositions having about 3% to about 4% free cetyl alcohol whereby the increase in soil removal may be of the order of about 20%.

Table IV discloses the effect of the added higher fatty alcohols on the soil redeposition factor or whiteness retention. The testing procedure to determine the amount of redeposition is the same as described above.

TABLE IV.—SOIL REDEPOSITION

Percent Cetyl Alcohol	300 p. p. m. Solutions				Soft Water Solutions			
	0.4%		0.75%		0.5%		0.75%	
	Units Redep.	Change	Units Redep.	Change	Units Redep.	Change	Units Redep.	Change
0.....	13.8		15.5		15.2		15.4	
1/2.....	12.8	-1.0	15.3	-0.2	13.6	-1.6	14.3	-1.1
1.....	12.8	-1.0	14.9	-0.6	13.0	-2.2	14.2	-0.1
1 1/2.....	11.7	-2.1	15.0	-0.5	12.6	-2.6	14.7	-0.7
2.....	12.4	-1.5	14.5	-1.0	12.0	-3.2	16.0	+0.6
3.....	11.1	-2.7	14.8	-0.7	11.4	-3.8	14.0	-1.4
4.....	12.8	-1.0	15.2	-0.3	11.7	-3.5	14.1	-1.3
5.....	11.6	-2.2	14.4	-1.1	10.9	-4.3	13.3	-2.1

Examination of Table IV indicates that the addition of cetyl alcohol in an amount from 1/2% to 5% in the mixtures referred to gives consistently a lessened degree of soil redeposition in both hard and soft water at the indicated concentrations. This improved effect however is of a more moderate degree than the more marked improvements effected in soil removal.

As set forth supra, it is not necessary to use pure fatty alcohols of at least about 16 carbon atoms. In practice, commercial mixtures of these fatty alcohols may be employed satisfactorily even though these preparations may have minor amounts of other constituents, including fatty alcohols of lesser chain length than about 14 carbon atoms. The properties and compositions of various commercial fatty alcohol mixtures arbitrarily designated as formulas A, B, C, and D, are as follows:

Commercial fatty alcohol mixtures

PROPERTIES

	A	B	C	D
Melting Point.....	45	51.5	55.5	
Iodine Value.....	8-10	2.6	2.9	57.8
Acetyl Value.....	193	193.7	180.3	187.0
Saponification Value.....	0-1	0.52	0.15	3.46

PERCENT COMPOSITION

Cetyl Alcohol.....	90	56.7	21.0	26.5
Stearyl Alcohol.....	10	37.8	77.0	11.3
Myristyl Alcohol.....		3.0		3.0
Palmitylolol.....		0.5	0.5	30.5
Oleyl.....		1.5	1.5	26.0
Lanoleyl.....				2.3
Catadonyl.....				0.4

10 Using an original composition of:

	Percent
Sodium higher alkyl benzene sulfonate.....	40
Trisodium phosphate.....	12.5
N-silicate.....	12.5
15 Sodium sulphate.....	35

and substituting from 1% to 4% of the above commercial fatty alcohol mixtures for a corresponding amount of active ingredient, the soil removal test described supra is repeated at a concentration of 0.4% in water of 300 p. p. m. hardness.

TABLE V.—INCREASE IN PERCENT DETERGIVE EFFICIENCY

Percent fatty alcohol

Fatty Alcohol Mixture	1%	2%	3%	4%
A.....	+2	+13	+24	+23
B.....	+6	+11	+18	+19
C.....	+4	+5	+4	+8
D.....	0	+13	+16	+20

It is evident from the results set forth in Table V that the presence of minor amounts of commercial mixtures of fatty alcohols containing predominantly alcohols of at least about 14 carbon atoms in the alkyl aryl sulfonate compositions results in improved detergency consistently.

In the above tests, the soiled samples are prepared artificially under carefully controlled conditions to insure that each sample receives an equal amount of soil distributed uniformly throughout the fabrics as far as possible. It is thus that the margin of error is restricted to a minimum.

It is significant, however, that the improved results obtained by the compositions of the present invention in the above tests are corroborated by and consistent with the results obtained by similar testing involving the use of natural soil on cotton textile items commonly used in the household.

70 Using the original composition (described supra) as a standard, and substituting 2% of fatty alcohol mixture D for an equivalent amount of active ingredient in this composition for comparison, the following results are achieved in the washing of cotton fabrics containing 75 natural soil:

TABLE VI.—AVERAGE VALUES OF TESTS

	Percent improvement
Improvement in soil removal using composition containing fatty alcohols	25.9
Decrease in soil redeposition using composition containing fatty alcohols	8.6

It is evident from Table VI that the soil removal power is improved markedly, and that the soil redeposition power is inhibited slightly when the fatty alcohols are used as additives in these aromatic sulphonate detergent compositions.

From the inspection of the various data given, the following facts will be evident:

(1) The detergency of said alkyl aryl sulfonate type detergent compositions may be markedly improved by the addition of a minor amount of fatty alcohols containing predominantly fatty alcohols of at least about 14 carbon atoms.

(2) Such detergent mixtures containing the alcohols and a lowered active ingredient content have washing power greater than the mixtures without the fatty alcohols and having a proportionately increased active ingredient concentration.

(3) The improved detergency is the unitary result of both a marked increase in soil removal, and a concurrent inhibition in soil redeposition.

(4) The improved results are evident only at selected washing concentrations of the detergent composition.

Various adjuvant materials may be employed in synthetic detergent compositions. These builders or additives may be inorganic or organic in structure and may be admixed with the active ingredient in any suitable manner. Such adjuvant materials may include any of the substances employed by the art in admixture with sulfonated organic detergents generally, provided the use of any such material does not neutralize or remove the effectiveness of the higher fatty alcohols. It has been found that these additives may vary greatly both in structure and in concentration without impairing the improved detergency of the compositions referred to herein. Thus, such conventional inorganic builders or additives as the silicates, the various alkali metal phosphates (e. g. hexametaphosphate, tetrapyrophosphate), the alkali metal sulfates, carbonates, etc., may be employed. Organic materials such as carboxymethyl-cellulose salts, esters (e. g. ethylene glycol monostearate, methyl palmitate), and the like may also be used under suitable conditions.

In addition to the various formulations of suitable compositions set forth previously, the following mixtures are additional illustrations of the variations permissible both as to the type and concentrations of builders or additives in the detergent compositions referred to herein. These compositions having a minor proportion of added higher fatty alcohols of at least about 14 carbon atoms exhibit improved detergency under the specified washing conditions.

EXAMPLE I

	Percent
Sodium alkyl aryl sulfonate	35
Sodium tetrapyrophosphate	25
Sodium silicate	3
Sodium sulfate	35
Cetyl alcohol	2

EXAMPLE II

	Percent
Sodium alkyl aryl sulfonate	23
Tetrasodium pyrophosphate	50
Sodium silicate	3
Cetyl alcohol	2
Sodium sulfate	22

EXAMPLE III

	Percent
Sodium alkyl aryl sulfonate	40
Sodium silicate	12.5
Trisodium phosphate	12.5
Cetyl alcohol	2.5
Sodium carboxymethylcellulose	0.5
Sodium sulfate	32

Of the indicated vast variety of known builders and additives which may be employed in detergent compositions, it has now been found that the water soluble polyphosphates in conjunction with the higher fatty alcohols of at least about 14 carbon atoms have remarkable effects on the alkyl aryl sulfonate detergent compositions. The polyphosphates are preferably the water soluble inorganic tri-polyphosphates of the formula $M_3P_3O_{10}$, M representing an alkali metal or ammonium group.

The actions of the tri-polyphosphate and the higher fatty alcohols in these detergent compositions are not antagonistic, but mutually contribute to a balanced detergency system such that a unitary result of vastly improved detergency is achieved thereby.

As previously indicated, the effect of the fatty alcohols referred to herein is primarily one of activation of the soil removal power of aromatic sulfonate detergent compositions and, to a much lesser degree, an inhibition of the amount of soil redeposition. It has been determined, however, that the tri-polyphosphates appear to exert beneficial results in an opposite direction in these detergency systems. The tri-polyphosphates exhibit their greatest effect on soil suspension or prevention of soil redeposition, and only to a minor extent on the soil removal factor. Since the total washing efficiency is due to a combination of both soil removal and soil suspension, it is apparent that the mixed additives of the organic higher fatty alcohols and the inorganic water soluble tri-polyphosphates mutually contribute to produce a somewhat balanced effect since both the two factors of soil removal and lessened soil redeposition are activated concurrently to a significant degree.

These unexpected results are not achieved to the same degree when other phosphate compounds, such as tetrasodium pyrophosphate ($Na_4P_2O_7$) or trisodium phosphate (Na_3PO_4) are substituted for the tri-polyphosphates. It is not known at this time why the indicated washing mixtures with the tri-polyphosphates should yield a markedly superior cleaning performance compared to mixtures with other phosphates in the detergent systems referred to herein.

The tri-polyphosphates may be used in any desired proportion. To some extent the degree of improvement appears to be proportional to its content in the composition. In general, the greater the percentage of tri-polyphosphate, the better the result where the active ingredient has been maintained constant. It has been found that best results are attainable when the ratio of tri-polyphosphate to the active ingredient is at least about 1:1. A proportion of active ingredient and tri-polyphosphates from about 20% to about 50% each, the ratio of polyphosphates to active ingredient being preferably at least 1:1, and a minor amount of the higher fatty alcohols produces sufficient detergent properties for even heavily-soiled laundry; and such composition is economical to prepare and convenient for use in the home or commercially.

The tri-polyphosphates may be incorporated with the active ingredient in any suitable manner. It is possible to mechanically intermix these constituents in the form of small solid particles. It is preferred however to apply the techniques set forth above for the introduction of the higher alcohols. Thus the tri-polyphosphate may be added to a slurry of the active ingredient before, during or after incorporation of the alcohols. The resulting mixture may be dried in any convenient manner, e. g. roll or

spray dried. Excessively high temperatures during drying should be avoided however to prevent substantial decomposition of the polyphosphates.

The following formulations are additional examples of compositions containing the added higher fatty alcohols and tri-polyphosphates productive of the improved deterging properties:

EXAMPLE IV

	Percent
Sodium alkyl aryl sulfonate -----	20
Cetyl alcohol -----	2
Sodium tri-polyphosphate -----	55
Sodium sulfate -----	18
Water -----	5

EXAMPLE V

	Percent
Sodium alkyl aryl sulfonate -----	35
Commercial fatty alcohol (mixture B) -----	3
Sodium tri-polyphosphate -----	50
Sodium silicate -----	3
Sodium sulfate -----	9

EXAMPLE VI

	Percent
Sodium alkyl aryl sulfonate -----	35
Commercial fatty alcohol (mixture A) -----	2
Sodium tri-polyphosphate -----	40
Sodium silicate -----	3
Sodium sulfate -----	20

Certain general conclusions are apparent from the many tests which have been conducted to determine the effect of these fatty alcohol additives in the relationship set forth. The most appropriate fatty alcohol of at least 14 carbon atoms and its optimum concentration for each specific detergent composition may be determined suitably by routine controls, taking into consideration whether a specific alkyl aryl sulfonate composition with the fatty alcohol additives and with or without the tri-polyphosphates is designed for general home or commercial use; or for specialized uses such as machine washing, etc. For example, it has been determined that these fatty alcohol additives have an adverse effect on the foaming properties of alkyl aryl sulfonate detergents. Accordingly, where some foam stability is desired, it would generally be preferable to use lower concentrations of alcohol, e. g. about 1-5%. The beneficial action on detergency resulting from the incorporation of the alcohol additives in these detergent compositions is so significant, however, as to render their use highly desirable, even though no positive effects are attained on the foaming properties of the detergents. In general, where detergency alone is of prime concern less care need be taken in the selection of the optimum concentration, and proportions of fatty alcohols of above about 5% to about 10% may be employed satisfactorily.

The term "consisting essentially of" as used in the definition of the ingredients present in the composition claimed is intended to exclude the presence of other materials in such amounts as to interfere substantially with the properties and characteristics possessed by the composition set forth but to permit the presence of other materials in such amounts as not substantially to affect said properties and characteristics adversely.

Although the present invention has been described with reference to particular embodiments and examples, it will be apparent to those skilled in the art that variations and modifications of this invention can be made and that equivalents can be substituted therefor without departing from the principles and true spirit of the invention.

Having described the invention, what is desired to be secured by Letters Patent is:

1. A process of cleansing and laundering textile materials which comprises washing said textile materials in water in the presence of a detergent composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl aryl sulfonate detergent salt, about ½ to 10% by weight of a primary saturated higher fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salts, the concentration of said detergent composition in the washing water being from 0.4 to 0.75% by weight.

2. A process of cleansing and laundering textile materials which comprises washing said textile materials in water containing from 0.4-0.75% by weight of a detergent composition consisting essentially of about 20 to 50% by weight of sodium higher alkyl benzene sulfonate detergent, about 1 to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms and the balance being primarily a mixture of sodium sulphate and sodium phosphate salts having about 20 to 55% by weight of sodium tripolyphosphate.

3. A cleansing and laundering composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl aryl sulfonate detergent salt, about ½ to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salts, said composition exhibiting improved soil removal upon washing of textile materials at a concentration of 0.4-0.75% in water.

4. A cleansing and laundering composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl benzene sulfonate detergent salt, about 1 to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salts, said composition exhibiting improved soil removal upon washing of textile materials at a concentration of 0.4-0.75% in water.

5. A cleansing and laundering composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl mononuclear aryl sulfonate detergent salt, about ½ to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salt having about 20 to 55% by weight of sodium tripolyphosphate, said composition exhibiting improved soil removal power upon washing of textile materials at a concentration of 0.4-0.75% in water.

6. A cleansing and laundering composition consisting essentially of about 20 to 50% by weight of sodium higher alkyl benzene sulfonate detergent, about 1 to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms, and the balance being primarily a mixture of sodium sulfate and sodium phosphate salts having about 20 to 55% by weight of sodium tripolyphosphate, said composition exhibiting improved soil removal power upon washing of textile materials at a concentration of 0.4-0.75% in water.

7. A cleansing and laundering composition consisting essentially of about 20 to 50% by weight of water-soluble higher alkyl benzene sulfonate detergent salt, about ½ to 10% by weight of a primary saturated fatty alcohol of 14 to 18 carbon atoms and the balance being primarily a mixture of water-soluble inorganic sulfate and phosphate salts having about 20 to 55% by weight of sodium tripolyphosphate, said composition exhibiting improved soil removal upon washing of textile materials at a concentration of 0.4-0.75% in water.

8. A detergent composition in accordance with claim 6 wherein the fatty alcohol is cetyl alcohol.

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