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(54) Detergent composition containing performance additive and copolymeric compatibilizing agent therefor.

(57) Detergent compositions containing surface-active agents, builders, performance additives and a narrowly defined class of carboxylic copolymers are disclosed. Preferred copolymers contain maleic acid and (meth)acrylic acid monomers. Preferred detergent additives are hydrocarbon detergent suds regulants, photoactivators, amine or oxidized amine soil release agents, silicone detergent suds regulants and bleach activators/peracids.

EP 0 066 915 A2

DETERGENT COMPOSITION CONTAINING PERFORMANCE ADDITIVE
AND COPOLYMERIC COMPATIBILIZING AGENT THEREFORE

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5 This invention relates to the detergent utilization of
certain copolymeric ingredients in a compatibilizing func-
tionality in conjunction with performance additives. The
copolymeric ingredient is prepared from an ethylenicly
unsaturated carboxylic acid and an ethylenicly unsaturated
10 dicarboxylic acid. Preferred monomers are acrylic and
methacrylic acids on one hand and maleic and citraconic
acids on the other hand. The copolymeric agent was found
to be especially suitable for enhancing the compatibility
of detergent additives which are known to be sensitive to
15 various conditions inclusive of prolonged storage, tempera-
ture, alkalinity, and/or laundry conditions. In more detail,
the copolymeric compatibilizing agent is capable of
procuring, in contradistinction to their art-established
functionality, unexpected transfer properties in relation
20 to specific detergent additives. These transfer properties
go against the prevailing opinion according to which compa-
rable copolymeric adjuvants serve as deposition inhibitors,
and consequently diminish the physical contact between
detergent ingredients and e.g. the fiber.

25 The use of low levels of (co)polymeric additives for
detergent application has been known for a long time and has

0066915

found application in commercial detergent products. European Patent Application 0009171, BASF AG, published April 2, 1980 relates to the incorporation of polymaleic acid as a builder ingredient and/or as an incrustation inhibitor in detergents. European Patent Application 0025551, BASF AG, published March 25, 1981 discloses the utilization of (meth)-acrylic acid - maleic acid copolymeric ingredients as incrustation inhibitors in detergent compositions. The copolymer comprises a large majority of the (meth)-acrylic acid monomer. French Patent Application 78-11917, The Procter & Gamble Company, published November 17, 1978, pertains to detergent compositions containing surface-active agents, builders and a binary system based on not more than 4% of a polyphosphonate and not more than 4% of a polymeric ingredient which can be represented by the copolymers obtained from the polymerization of (meth)-acrylic acid and maleic anhydride.

German Patent Application DOS 19 59 272, Procter & Gamble European Technical Center, published July 23, 1970, relates to solid oxygen-bleach detergent compositions containing a copolymeric ingredient based on vinyl methylether and maleic anhydride. The copolymeric ingredient is claimed to provide effective active oxygen regulation.

It has now been discovered that the particular copolymeric ingredient of the invention herein can be used beneficially with a view to secure very desirable performance benefits upon use in combination with particular detergent additives with the proviso that the copolymeric ingredient is preferably used in excess levels in relation to a given performance additive.

It is an object of this invention to formulate detergent compositions having desirable performance characteristics containing specific detergent additives.

It is a further object of this invention to formulate laundry products capable of providing superior overall performance in presence of specific additives.

BRIEF DESCRIPTION OF THE INVENTION

It has now been discovered that markedly improved detergent compositions can be formulated containing a conventional detergent matrix in combination with detergent performance additives and a copolymeric ingredient. The performance additives are normally present in an amount from 0.002% to 5% by weight. The copolymeric ingredient is prepared from an ethylenically unsaturated carboxylic acid monomer and from an ethylenically unsaturated dicarboxylic acid monomer, whereby these monomers are copolymerized in a molar proportion of 1:4 to 4:1. Preferably, the weight ratio of the copolymeric ingredient to the performance additives is from 500:1 to 1:5. Preferred additives for use in combination with the copolymeric ingredients include water-soluble photoactivators such as mixtures of sulfonated metal phthalocyanines; composite detergent suds regulants containing water-insoluble solid hydrocarbons, liquid hydrocarbons and hydrophobic silicium dioxide; silicone detergent suds regulants as such or in combination with a laundry releasable carrier ingredient, e.g., a polyphosphate salt; renewable soil release agents such as substituted and/or oxidized polyamines and monoamines; and/or organic bleaches or the precursors therefore.

DETAILED DESCRIPTION OF THE INVENTION

The invention herein comprises at least three major parameters, namely: a conventional detergent matrix comprising surface-active agents, and/or water-soluble or water-insoluble builders and/or sequestrants; a detergent performance additive; and a specific copolymeric ingredient. The major parameters of the invention are described in more detail hereinafter.

Unless indicated to the contrary, the "percent" indications represent "percent by weight" indications.

The detergent matrix comprises frequently a surface-active agent and/or a builder ingredient.



0066915

Qualitatively and quantitatively suitable surface-active agents for use herein are disclosed in U.S. Patent 4,192,761, column 3, line 49 to column 5, line 42, this passage being incorporated herein by reference. Qualitatively and quantitatively suitable detergent builder materials can also be taken from U.S. Patent 4,192,761, column 8, line 56 to column 9, line 68, this passage being also incorporated herein by reference.

It goes without saying that the detergent matrix of the compositions of this invention can also contain other major components according to the particular needs and/or the physical state of the invention. In this respect, the compositions herein can be solid, pasty or liquid. Major amounts of pH regulants, inert fillers like sodium sulfate, water and/or organic solvents like hydrocarbons and/or lower alcohols can be applied as is well-known in the art. The detergent matrix can also contain major levels of bleaching agents, for example, oxygen bleach agents such as perborate, percarbonate, perpyrophosphate, persilicate or, more in general, all oxygen-bleach agents which are known to be suitable for use in detergent compositions in the established levels.

The copolymeric ingredient consists of an ethylenically unsaturated monocarboxylic acid monomer having not more than 5, preferably 3 or 4, carbon atoms, and an ethylenically unsaturated dicarboxylic acid monomer having not more than 6, preferably 4 carbon atoms, whereby the molar ratio of the monomers is in the range from 1:4 to 4:1 (i.e., monocarboxylic acid:dicarboxylic acid). Suitable examples of the monocarboxylic acid monomer are : acrylic acid, methacrylic acid and vinyl acetic acid. Acrylic and methacrylic acids are preferred. Suitable examples of the dicarboxylic acid monomers are : maleic acid; fumaric acid; citraconic acid; and mesaconic acid. Preferred dicarboxylic acids are maleic acid and citraconic acid.

The copolymeric ingredient can be further defined with

the aid of the calcium sequestration value. These values can be measured by nephelometric titration methods (as described in literature

- S. Chaberek and A.E. Martell, Organic Sequestering Agents, Wiley, New York, 1959;

- R.L. Smith, The Sequestration of Metals, Chapman and Hall, London, 1959):

a calcium nitrate solution is added to a solution containing sequestrant and sodium oxalate until turbidity is produced; the titration is being carried out at constant pH = 10 and room temperature.

The sequestration value is expressed in $\text{mgCaCO}_3/\text{gram}$ of copolymeric ingredient.

The calcium sequestration value of the copolymeric ingredient is preferably in the range from 300-900 mgCaCO_3/g .

The performance additives herein are frequently present in an amount from 0.002% to 5%. Depending upon the particular functionality of the additive and the planned use of the final detergent composition, the preferred usage ranges for the individual additives vary from additive to additive.

The term performance additive as used herein is meant to express that the specific ingredient is added either to cure a deficiency of the general detergent matrix and/or to provide special laundry and cleaning benefits.

A class of preferred additives for use herein is represented by the suds regulant systems of U.S. Patent 4,192,761, said reference being incorporated herein by reference. The use of the suds regulant in conjunction with the copolymeric ingredient was found to procure uniform regulant activity and stabilize this suds regulant during the laundry operation at temperatures up to 60°C or up to the boil. While not being bound as to an explanation of the peculiar benefits it is thought that the copolymeric ingredient promotes and enhances the adjacency and efficacy of the suds regulant to sensitive interfaces in this respect.

As an example the suds regulant of U.S. Patent 4,192,761 can be present in an amount from 0.01% to 2% and it is

0066915

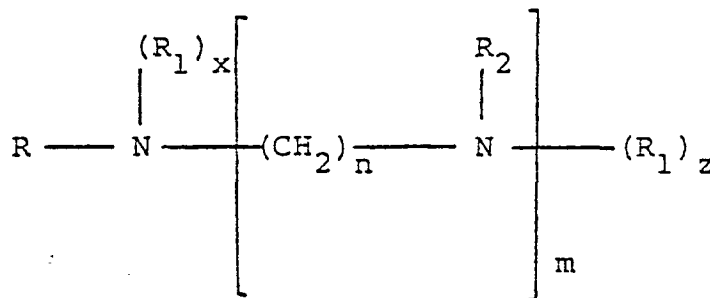
represented by a suds regulant agglomerate consisting of a water-insoluble liquid, at room temperature and atmospheric pressure, hydrocarbon; a water-insoluble solid hydrocarbon having a melting point in the range from 35°C to 110°C; and a hydrophobic silica, and is present in combination with the copolymer such that the weight ratio of copolymer to performance additive is in the range from 3:1 to 10:1.

Another detergent additive that can be utilized beneficially in combination with the copolymeric agent is represented by a photoactivator, also frequently termed a photosensitizer. The photoactivator can be a porphine as described in the European Patent Application 0003149, The Procter & Gamble Company, published on July 25, 1979 incorporated herein by reference. Preferred metal-ions for the photoactivator are zinc and aluminum. The photoactivator is frequently used in low levels, e.g., in the level from about 20 ppm to 2000 ppm. In solid detergent compositions, the photoactivator is generally used in combination with a carrier material such as polyphosphates, sulfates, a.s.o. Generally, the level of such photoactivator particles (containing a carrier material) represents from 0.1% to 1% of the detergent composition. The photoactivator is believed to exhibit its activity in the direct environment of the fiber possibly in combination with perborate. The copolymeric ingredient favors this transfer of photoactivator to the fiber in presence of the other components in the laundry liquor at the applicable temperatures, e.g., laundry temperatures in the range from up to about 60°C or up to the boil.

As an example, a water-soluble photoactivator used in the specified levels can be represented by the porphine activators of European Patent Application 0003149, namely: a porphine or a mono-, di-, tri-, or tetraaza porphine solubilized with anionic, nonionic, and/or cationic substituent groups and metal free or metallated with Zn(II), Ca(II), Cd(II), Mg(II), Sc(III), Al(III), or Sn(IV). The weight ratio of copolymer to photoactivator performance

The copolymeric ingredient was also found to be effective in combination with additive levels of renewable soil release agents as described in British Patent Applications 80-19680, filed June 17, 1980 and 80-38306, filed November 28, 1980, these documents being incorporated herein by reference. The copolymeric ingredient enhances and contributes to a more quantitative deposition of the renewable soil release agent, specifically the polyamines oxidized or not and/or the oxidized monoamines.

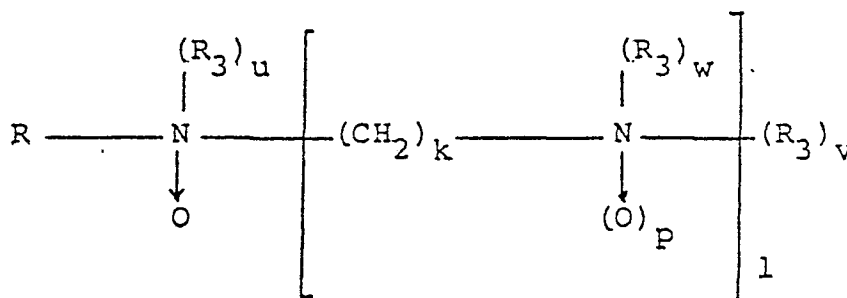
The renewable soil release agent which frequently is used in levels from 0.1% to 1.5% can be represented by polyamines having the formula :



wherein R is an alkyl or alkenyl group having 10 to 22 carbon atoms, the R_1 's, which are identical or different, are ethylene oxide or propylene oxide, R_2 is hydrogen, C_{1-4} alkyl or $(R_1)_y$, where x, y, and z are numbers such that the sum $(x+y+z)$ is in the range from 2 to 25, n is a number from 1 to 6 and m is a number from 1 to 9;

or

amine oxides having the formula:



0066915

wherein R is an alkyl or alkenyl group having 10 to 22 carbon atoms, the R_3 's which are identical or different are selected from C_{1-4} alkyl, ethylene oxide and propylene oxide, k is an integer from 1 to 6, l is an integer from 0 to 6, p is 0 or 1, u, v, and w are each 1 for alkyl substituents, and integers in the range from 1 to 10 for ethylene oxide or propylene oxide substituents such that the sum of (u+v+w) is not greater than 25, with the proviso that a 1% aqueous solution of the detergent composition has an alkaline pH (20°C).

A preferred polyamine for use herein is N-hydrogenated tallow $C_{16}-C_{18}$ -N,N',N'-tri-(2-hydroxyethyl)-propylene-1,3-diamine. Preferred amine oxide species are N- C_{12-14} -coconut alkyl-N,N-dimethyl N-amine oxide; N-tallow C_{16-18} -alkyl-N,N',N'-tri-(2-hydroxyethyl)-propylene-1,3-diamine-N,N'-dioxide; N- C_{12-14} -alkyl-N,N',N'-tri-(2-hydroxyethyl)-propylene-1,3-diamine-N,N'-dioxide; N- C_{16-18} -tallow-alkyl-N,N-dimethyl-N-amine oxide; N- C_{12-14} -coconut alkyl-N,N-di-(2-hydroxyethyl)-N-amine oxide; or N- C_{16-18} -tallow alkyl-N,N-di-(2-hydroxyethyl)-N-amine oxide. The weight ratio of copolymer to soil release additive is preferably in the range from 10:1 to 1:1.

Another detergent additive that can be used advantageously together with the copolymeric agent is represented by a silicone detergent suds regulant. Suitable detergent silicones are well-known in the art and are, for example, described in German Patent Application DOS 23 38 468 to The Procter & Gamble Company, incorporated herein by reference. Preferred silicone suds regulants for use in solid detergent compositions are comprised of a suds control amount, preferably between 0.01% and 0.8% of a poly-dimethyl siloxane (fluid) or a mixture of a silicone and a hydrophobic silica. The preferred silicone suds controlling agents are frequently releasably incorporated in a water-soluble or water-dispersible, substantially non-surface-active, detergent-impermeable carrier as described in DOS 23 38 468, incorporated herein by reference. Preferred silicone suds regulants

0066915

for use in non-solid detergent compositions are frequently oil in water emulsions comprising e.g. from 4% to 15% of poly-dimethyl siloxane, from 0.5 to 3% of amorphous hydrophobic silica, from 3 to 10% of C₁₀-C₂₀ fatty acid ethoxylated with from 3 to 11 moles of ethylene oxide and balance to 100% water. The copolymeric agent is used in a weight ratio of copolymer:performance additive of from 50:1 to 3:1.

The copolymeric ingredient enhances and facilitates the built up of effective silicone regulant concentrations, during use, at the suds-generating interface.

Still another detergent additive that can be utilized beneficially in combination with the copolymeric ingredient is represented by peroxygenbleaches, frequently termed peracid bleaches. Suitable species include all those which have found application and/or are known to be suitable for use in detergent technology. These peracids are usually organic in nature. Well-known detergent peracids are aliphatic diperoxyacids having from 8 to 16 carbon atoms as disclosed in European Patent Application 0000970, The Procter & Gamble Company, published March 7, 1979, said reference being incorporated herein by reference. Di-peroxydodecanedioic acid is an example of the like aliphatic diperoxyacids. The peracids can also be formed in situ with the aid of a suitable peroxygen bleach activator. The source of active oxygen is a current oxygen bleach agent such as perborate percarbonate and so on. Suitable peractivators --peracid precursors-- are eminently well-known in this domain of technology. Mechanistically the like activators are frequently organic molecules which carry acyl groups which acyl groups will undergo conversion to peracids. The peracids subsequently are capable of providing the bleaching power. A well-known peractivator species is tetraacetylenediamine, TAED. It goes without saying that in lieu of the acetyl groups other short-chain acyl groups such as isopropyl, butyl and pentyl can be utilized. The selection of activator for use in detergents is well-known and consequently

0066915

routine practice.

The peracids are frequently used in normal bleach levels, i.e., in between 1% and 20%. If the peracid is formed in situ, however, then the precursor can possibly be used repeatedly, i.e., generate more than 1 molecule of peracid per mole of activator. Accordingly, the precursor is frequently used in submolar proportions in relation to the perbleach, i.e., in the range from 0.5% to 5%. The weight ratio of the copolymer to the precursor is preferably in the range from 4:1 to 1:5.

In addition to the essential components described hereinbefore, the compositions of this invention can comprise a series of supplementary components to perfect and complement the performance advantages derived from the compositions. These additional components include brighteners, dyes, perfumes, bactericides, and antioxidants, processing aids, corrosion inhibitors, enzymes and so on. These further ingredients are used for their known functionality in the art established levels, i.e., frequently in the range from 0.1% to 5%.

The following examples illustrate the invention and facilitate its understanding.

The abbreviations for the individual ingredients have the following meaning:

- LAS : Sodium salt of linear dodecyl benzene sulfonate
- TAS : Sodium salt of tallow alcohol sulfate
- α -OS : Sodium salt of α -olefin (C₁₂₋₁₈) sulfonate
- FAE₃S : Sodium salt of fatty alcohol (C₁₂₋₁₈) (ethoxy)₃ sulfate
- AO : C₁₂₋₁₄ alkyl dimethylamine oxide
- HLAS : Linear dodecyl benzene sulfonic acid
- TAE₁₁ : Tallow alcohol ethoxylated with about 11 moles of ethylene oxide
- FA₂₅E₇ : Fatty alcohol (C₁₂-C₁₅) ethoxylated with about 7 moles of ethylene oxide

0066915

- FA₂₅E₄ : Fatty alcohol (C₁₂-C₁₅) ethoxylated with about 4 moles of ethylene oxide
- DTDMAC : Ditalow dimethyl ammonium chloride
- CFA : C₁₂₋₁₄ coconut fatty acid
- 5 HFA : Hydrogenated C₁₆₋₂₂ fatty acid
- STPP : Sodium tripolyphosphate
- Zeolite A : Sodium salt of zeolite 4A (average particle size between 2-6 microns)
- NTA : Sodium salt of nitrilotriacetate
- 10 Copolymer : AA⁴⁰/MA⁶⁰ = copolymer of acrylic acid 40 mol-% and maleic acid 60 mol-%
MAA⁵⁰/MA⁵⁰ = copolymer of methacrylic acid 50 mol-% and maleic acid 50 mol-%
- CMC : Sodium salt of carboxymethyl cellulose
- 15 MHPC : Sodium salt of methyl hydroxypropyl cellulose
- Clay : Sodium montmorillonite
- Silicate 1.6 : Sodium silicate SiO₂/Na₂O = 1.6
- Silicate 1.0 : Sodium metasilicate
- TEA : triethanolamine
- 20 STS : Sodium salt of toluene sulfonate
- EDTA : Sodium salt of ethylene diamine tetra-acetate
- Perborate : NaBO₂·H₂O₂·3H₂O
- TAED : Tetraacetyl ethylene diamine
- P.A. : Photoactivator sulfonated Zn phthalocyanine
- 25 Antioxidant : 4,4'-thiobis(6-tertiary butyl-3-m-cresol)
- SRS I : Prilled suds regulating system consisting of:
- a) 77.5% STPP
 - b) 22.5% active { 13.5% paraffin oil
6% paraffin wax (m.p. 70°C)
3% amorphous hydrophobic silica
- 30 SRS II : Prilled suds regulating system consisting of:
- a) 85% STPP
 - b) 15% active - 12.7% polydimethylsiloxane
- 2.3% amorphous hydrophobic silica

0066915

SRS III : oil in water emulsion

- 9% polydimethylsiloxane
- 1% amorphous hydrophobic silica
- 5% coconut fatty acid ethoxylated with 7 moles
of ethylene oxide
- 85% water

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The following granular detergent compositions are prepared by conventional spray-drying of a slurry of individual ingredients and subsequent dry-mixing of this base powder with spray-drying sensitive ingredients.

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0066915

		COMPOSITION (% by weight)			
INGREDIENT		I	II	III	IV
	LAS	5.0	15.0	-	5.0
5	TAS	3.0	-	2.5	3.0
	α-OS	-	-	5.0	-
	FAE ₃ S	-	5.0	-	-
	TAE ₁₁	1.0	2.5	-	1.0
	FA ₂₅ E ₇	-	-	4.0	-
10	DTDMAC	-	1.5	-	-
	CFA	-	-	4.0	-
	HFA	-	0.5	-	-
	STPP	20.0	20.0	16.0	28.0
	Zeolite A	-	-	16.0	-
15	NTA	6.0	-	-	-
	Na ₃ Citrate	-	5.0	-	-
	Copolymer AA ⁵⁰ /MA ⁵⁰	1.3	-	1.5	-
	AA ³⁵ /MA ⁶⁵	-	-	-	1.2
	MAA ⁵⁵ /MA ⁴⁵	-	2.0	-	-
20	CMC	0.8	-	1.0	0.8
	Clay	-	8.0	-	-
	Silicate 1.6	6.0	-	2.0	6.0
	MgSO ₄	0.5	-	0.5	1.0
	Na ₂ SO ₄	13.1	28.0	8.3	14.6
25	NaOH	0.8	13.3	0.95	0.75
	EDTA	0.2	0.2	0.3	0.2
	Perborate	32.0	-	28.0	28.0
	SRS I	1.0	2.7	1.5	1.2
	Enzyme (proteolytic)	0.2	0.6	0.3	0.2
30	Brightener, perfume, water		balance	to	100

0066915

Additional solid detergent compositions are prepared having the following formulae.

5	INGREDIENTS	COMPOSITION (% by weight)		
		V	VI	VII
	LAS	10.0	5.0	7.0
	TAS	-	3.0	-
	FAE ₃ S	3.0	-	-
	TAE ₁₁	1.0	1.0	2.7
10	HFA	-	4.0	3.5
	STPP	-	60.0	28.0
	NTA	-	-	4.0
	Na ₂ CO ₃	20.0	-	-
	Copolymer MAA ⁴⁰ /MA ⁶⁰	1.7	1.4	0.3
15	CMC	1.0	1.0	0.8
	MHPC	-	0.5	-
	Silicate 1.6	18.0	3.0	8.0
	MgSO ₄	1.0	-	0.5
	Na ₂ SO ₄	5.2	9.5	4.2
20	NaOH	1.1	0.9	0.2
	STS	1.4	-	-
	EDTA	0.2	0.3	0.3
	Perborate	25.0	-	30.0
	P.A.	0.007	0.003	0.002
25	Enzyme (proteolytic)	0.3	0.6	0.2
	Brightener, perfume, H ₂ O		Balance to 100	

0066915

	INGREDIENT	COMPOSITION (% by weight)			
		VIII	IX	X	XI
5	LAS	7.0	4.5	7.0	4.5
	TAS	-	2.5	-	2.5
	A.O.	0.5	0.3	0.8	1.0
	TAE ₁₁	2.7	-	2.7	-
	FA ₂₅ E ₇	-	2.0	-	2.0
10	CFA	-	2.0	-	2.0
	HFA	3.5	4.0	3.5	4.0
	STPP	31.0	24.0	16.0	8.0
	Zeolite A	-	-	16.0	16.0
	NTA	-	4.0	-	6.0
15	Copolymer AA ⁴⁰ /MA ⁶⁰	-	1.5	-	1.5
	MAA ⁵⁵ /MA ⁴⁵	-	-	1.3	-
	AA ⁵⁰ /MA ⁵⁰	2.0	-	-	-
	CMC	0.8	0.8	1.0	1.0
	Silicate 1.6	5.0	5.0	2.0	2.0
	MgSO ₄	-	0.5	0.5	1.0
	Na ₂ SO ₄	7.4	10.5	8.5	11.6
	NaOH	1.3	1.0	0.8	1.0
20	EDTA	0.2	0.3	0.3	0.2
	Perborate	32.0	28.0	30.0	28.0
	Enzyme (proteolytic)	0.2	0.2	0.3	0.2
25	Brightener, perfume, water		balance	to	100

0066915

A liquid detergent composition is made by mixing the following individual ingredients.

5	<u>INGREDIENT</u>	<u>COMPOSITION</u>
		(% by weight)
		<u>XII</u>
	HLAS	13.5
	TAE ₁₁	20.0
	FA ₂₅ E ₄	10.0
	Copolymer MAA ⁵⁰ /MA ⁵⁰	0.5
10	TEA	7.7
	P.A.	0.002
	Enzyme (proteolytic)	0.8
	SRS IIII	1.0
	1-2 propylene glycol	2.0
15	Ethanol	11.0
	Brightener, perfume, dye, H ₂ O	balance to 100

0066915

	INGREDIENTS	COMPOSITION (% by weight)		
		XIII	XIV	XV
5	LAS	4.0	4.0	-
	α-OS	-	-	4.5
	FA ₂₅ E ₇	12.0	10.0	6.0
	CFA	-	2.0	6.0
	HFA	0.5	-	0.5
10	STPP	32.0	40.0	18.0
	Zeolite A	-	-	20.0
	Na ₃ Citrate	-	10.0	-
	Copolymer AA ⁵⁰ /MA ⁵⁰	2.0	-	1.3
	AA ³⁵ /MA ⁶⁵	-	1.2	-
15	CMC	0.8	1.0	0.8
	MHPC	-	0.5	-
	Silicate 1.6	6.0	6.0	2.0
	MgSO ₄	0.5	-	1.0
	Na ₂ SO ₄	7.1	4.5	2.5
20	NaOH	1.3	0.8	0.8
	EDTA	0.2	0.2	0.3
	Perborate	24.0	10.0	28.0
	Antioxidant	0.012	0.01	0.01
	SRS II	1.6	2.1	1.3
25	Brightener, perfume, H ₂ O	balance to 100		

0066915

A liquid detergent composition is made by mixing the following individual ingredients.

5	<u>INGREDIENT</u>	<u>COMPOSITIONS</u>	
		<u>(% by weight)</u>	
		<u>XVI</u>	
	H LAS	15.0	
	FA ₂₅ E ₄	15.0	
	Lauric acid	15.0	
	Copolymer AA ⁴⁵ /MA ⁵⁵	0.8	
10	TEA	8.7	
	Enzyme (proteolytic)	0.6	
	SRS III	0.4	
	1-2 propylene glycol	3.0	
	Ethanol	9.0	
15	Brightener, perfume, dye, H ₂ O	Balance to 100	

0066915

Peracids containing detergent compositions are prepared having the composition hereinafter.

5	INGREDIENT	COMPOSITION (% by weight)			
		XVII	XVIII	XIX	XX
	LAS	7.0	5.0	15.0	4.0
	TAS	-	3.0	-	-
	TAE ₁₁	2.7	-	2.5	-
	FA ₂₅ E ₇	-	2.0	-	12.0
10	CFA	-	2.0	-	-
	HFA	3.5	-	0.5	0.5
	STPP	31.0	16.0	25.0	24.0
	Zeolite A	-	16.0	-	-
	Copolymer MAA ³⁵ /MA ⁶⁵	-	0.8	-	-
15	AA ⁵⁰ /MA ⁵⁰	1.2	-	1.5	-
	AA ⁴⁰ /MA ⁶⁰	-	-	-	1.7
	CMC	0.8	1.2	1.0	1.0
	Silicate 1.6	5.0	2.0	5.0	6.0
	Silicate 1.0	1.0	-	-	-
20	MgSO ₄	0.5	1.0	0.5	1.0
	Na ₂ SO ₄	9.0	13.6	18.1	12.4
	NaOH	0.75	0.50	0.95	1.1
	TAED	3.0	2.5	4.0	2.5
	Perborate	24.0	20.0	8.0	2.0
25	Antioxidant	-	-	-	0.012
	Enzyme (proteolytic)	0.3	0.6	0.6	0.3
	SRS I	-	0.5	1.3	-
	SRS II	-	-	-	0.16
	Brightener, perfume, water		balance	to	100

A composition suitable for impregnation on to a substrate is made by mixing together the following ingredients in the proportions specified (parts by weight):-

<u>INGREDIENT</u>	<u>COMPOSITION</u> (% by weight)	
	XXI	
5 FA ₄₅ E ₇	5.0	
C ₁₄ TMAB	2.0	
TAED	5.0	
EDTMP	0.5	
Copolymer MAA ⁵⁰ /MA ⁵⁰	1.0	
10 Polyethylene glycol 6000	5.0	
SRS III	0.25	

The fatty alcohol ethoxylate and polyethylene glycol are mixed together and heated to 80°C to form a melt after which the remaining materials are added and the mixture stirred to form a homogeneous dispersion. The dispersion is then applied to a flexible non woven apertured sheet of 100% non bleached rayon fibre bonded with ethyl acrylate builder (70% fibre 30% binder) of basis weight 25 grs/sq. metre and dimensions 25 cm by 30 cm. The application is controlled so as to apply approximately 19 g of composition to the sheet.

The quaternary ammonium salt can be replaced by any of the salts specified in U.S. Patent no. 4,220,562 column 7 lines 46-68 and column 8 lines 1-8 with satisfactory results. Similarly satisfactory compositions are obtained if the EDTMP is replaced by the ethylene triamine penta methylene phosphonic acid (DETPMP).

CLAIMS

1. A detergent composition with a conventional matrix on basis of surface-active agents, builders and a copolymeric ingredient, characterized in, that a performance additive is present in an amount from 0.002% to 5% by weight, the copolymeric ingredient consists of an ethylenicly unsaturated monocarboxylic acid monomer having not more than 5, preferably 3 or 4, carbon atoms, and an ethylenicly unsaturated dicarboxylic acid monomer having not more than 6, preferably 4, carbon atoms, whereby the molar ratio of the monomers is in the range from 1:4 to 4:1; and whereby the weight ratio of the copolymer to the performance additive is in the range of from 500:1 to 1:5.

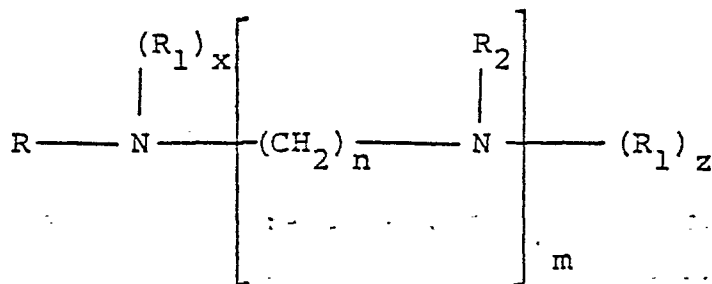
2. The detergent composition in accordance with Claim 1 wherein the copolymeric ingredient is comprised of (meth)acrylic acid and maleic acid monomers.

3. The detergent composition in accordance with Claim 1 wherein the performance additive, present in an amount from 0.01% to 2% by weight, is a suds regulant agglomerate consisting of a water-insoluble liquid, at room temperature and atmospheric pressure, hydrocarbon; a water-insoluble solid hydrocarbon having a melting point in the range from 35°C to 110°C; and a hydrophobic silica; and wherein the weight ratio of copolymer to performance additive is in the range from 3:1 to 10:1.

4. The detergent composition in accordance with Claim 1 wherein the performance additive, present in an amount from 20 ppm to 2000 ppm, is a water-soluble photoactivator from the group of porphine or mono-, di-, tri-, or tetraaza porphine solubilized with anionic, nonionic, and/or cationic substituent groups and metal free or metallated with Zn(II), Ca(II), Cd(II), Mg(II), Sc(III), Al(III) or Sn(IV); and wherein the

weight ratio of copolymer to performance additive is in the range from 500:1 to 7:1.

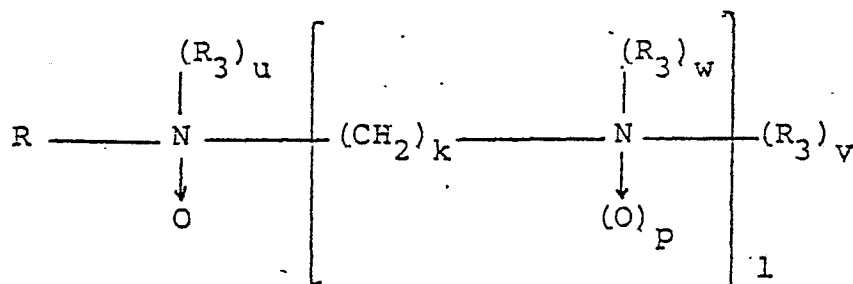
5. The detergent composition in accordance with Claim 1 wherein the performance additive, present in an amount from 0.1% to 1.5% by weight, is a polyamine having the formula:



wherein R is an alkyl or alkenyl group having 10 to 22 carbon atoms, the R₁'s, which are identical or different, are ethylene oxide or propylene oxide, R₂ is hydrogen, C₁₋₄ alkyl or (R₁)_y, where x, y, and z are numbers such that the sum (x+y+z) is in the range from 2 to 25, n is a number from 1 to 6 and m is a number from 1 to about 9;

or

an amine oxide having the formula:



wherein R is an alkyl or alkenyl group having 10 to 22 carbon atoms, the R₃'s which are identical or different are selected from C₁₋₄ alkyl, ethylene oxide and propylene oxide, k is an integer from 1 to about 6, l is an integer from 0 to 6, p is 0 or 1, u, v, and w are each 1 for alkyl substituents, and integers in the range from 1 to 10 for ethylene oxide or propylene oxide substituents

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such that the sum of (u+v+w) is not greater than 25, whereby a 1% aqueous solution of the detergent composition has an alkaline pH (20°C) and wherein the weight ratio of copolymer to performance additive is in the range from 10:1 to 1:1.

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6. The detergent composition in accordance with Claim 1 wherein the performance additive, present in an amount from 0.01% to 0.8% by weight, is a silicone, preferably in admixture with a hydrophobic silica, and wherein the weight ratio of copolymer to performance additive is in the range from 50:1 to 3:1.

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7. The detergent composition in accordance with Claim 1 wherein the performance additive, present in an amount from 0.5% to 5% by weight, is represented by a detergent peracid precursor, and wherein the weight ratio of copolymer to performance additive is in the range from 4:1 to 1:5.

15