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54 **Liquid detergent product.**

57 A non-aqueous liquid detergent comprises a liquid phase which preferably includes a nonionic surfactant and a dispersed particulate phase which includes a carbonate, or mixed carbonate/bicarbonate builder and a carboxylic acid polymer, such as a maleic/acrylic copolymer, as a calcium carbonate crystal growth inhibitor. The compositions exhibit good physical stability and performance. Other ingredients such as an oxygen bleach system and lipase enzymes may also be present.

EP 0 381 261 A2

LIQUID DETERGENT PRODUCT

This invention relates to a liquid detergent product, in particular to a non-aqueous product of the type comprising a liquid surfactant phase and a particulate solid detergency builder suspended in the liquid phase. Such products are suitable, for example, for the washing of fabrics.

Non-aqueous liquid products have been described in the literature in which the suspended solid builder is a phosphate material, such as sodium tripolyphosphate. While technically such products can provide successful cleaning results, there has been pressure in recent years to reduce the level of phosphate in detergent products. Crystalline aluminosilicates or zeolites have been proposed as replacement materials for phosphate builders and their use in powder products has already been wide-spread. The incorporation of zeolites in non-aqueous liquids however is not without difficulties.

Many zeolite materials appear to be capable of catalysing the breakdown of any bleach materials that may be present in the product. Since one of the major advantages of non-aqueous liquids as a product form is the possibility of including various water-sensitive materials such as bleaches, this is a serious problem.

Alkalimetal carbonates have also been proposed as phosphate replacers. Their use in powders has necessitated taking steps to avoid or suppress the effect of calcium carbonate crystal growth inhibitors which would otherwise act to retard the reaction between the hardness ions of the wash liquor and the carbonate ions from the alkalimetal carbonate, with a resulting loss in detergency. Thus GB 1437950, (Unilever Case C720) teaches the use of high surface area calcite (ie. having a surface area above 10m²/g) to suppress this effect and encourage crystal growth. We have now surprisingly found however, that in the case of such non-aqueous liquids in which the liquid phase comprises a surfactant, improved results can be obtained if the product contains an inhibiting agent in the form of a water-soluble salt of a carboxylic acid polymer.

Thus, according to the invention there is provided a substantially non-aqueous liquid detergent composition comprising a liquid surfactant phase and a solid particulate phase dispersed therein, the particulate phase comprising a detergency builder which is predominantly a water-soluble carbonate material, characterised in that the composition further comprises a calcium carbonate crystal growth inhibiting agent in the form of a water-soluble alkalimetal salt of a carboxylic acid polymer.

The liquid phase of the product contains a surfactant. The surfactant may make up all or only part of the liquid phase, the remainder being constituted by a liquid non-surfactant material such as a solvent.

In general, the surfactant may be chosen from the liquid surfactants described "Surface Active Agents" Vol. 1, by Schwartz & Perry, Interscience 1949, Vol. 2 by Schwartz, Perry & Berch, Interscience 1958, in the current edition of "McCutcheon's Emulsifiers and Detergents" published by Manufacturing Confectioners Company or in "Tenside-Taschenbuch", H. Stache, 2nd Edn., Carl Hanser Verlag, 1981.

In this respect nonionic surfactants are especially suitable, most preferably liquid polyalkoxylated nonionic surfactants.

Nonionic detergent surfactants are well-known in the art. They normally consist of a water-solubilizing polyalkoxylene or a mono- or di-alkanolamide group in chemical combination with an organic hydrophobic group derived, for example, from alkylphenols in which the alkyl group contains from about 6 to about 12 carbon atoms, dialkylphenols in which each alkyl group contains from 6 to 12 carbon atoms, primary, secondary or tertiary aliphatic alcohols (or alkyl-capped derivatives thereof), preferably having from 8 to 20 carbon atoms, monocarboxylic acids having from 10 to about 24 carbon atoms in the alkyl group and polyoxypropylenes. Also common are fatty acid mono- and dialkanolamides in which the alkyl group of the fatty acid radical contains from to about 20 carbon atoms and the alkyloyl group having from 1 to 3 carbon atoms. In any of the mono- and di-alkanolamide derivatives, optionally, there may be a polyoxyalkylene moiety joining the latter groups and the hydrophobic part of the molecule. In all polyalkoxylene containing surfactants, the polyalkoxylene moiety preferably consists of from 2 to 20 groups of ethylene oxide or of ethylene oxide and propylene oxide groups. Amongst the latter class, particularly preferred are those described in the applicants' published European specification EP-A-225,654, especially for use as all or part of the liquid phase. Also preferred are those ethoxylated nonionics which are the condensation products of fatty alcohols with from 9 to 15 carbon atoms condensed with from 3 to 11 moles of ethylene oxide. Examples of these are the condensation products of C₁₁₋₁₃ alcohols with (say) 3 to 7 moles of ethylene oxide. These may be used as the sole nonionic surfactants or in combination with those of the described in the last-mentioned European specification, especially as all or part of the liquid phase.

Another class of suitable nonionics which may be incorporated, preferably at most in minor quantities, comprise the alkyl polysaccharides (polyglycosides/oligosaccharides) such as described in any of specifica-

tions US 3,640,998; US 3,346,558; US 4,223,129; EP-A-92,355; EP-A-99,183; EP-A-70,074, '75, '76, '77; EP-A-75,994, '95, '96.

Nonionic detergent surfactants normally have molecular weights of up to about 11,000. When mixtures of different nonionic detergent surfactants are used, it is preferred that the mixture is liquid at room temperature.

Mixtures of nonionic detergent surfactants with other detergent surfactants such as anionic, cationic or ampholytic detergent surfactants and soaps may also be used.

Examples of suitable anionic detergent surfactants, which may be used, preferably at most, in minor quantities, are alkali metal, ammonium or alkylamine salts of alkylbenzene sulphonates having from 10 to 18 carbon atoms in the alkyl group, alkyl and alkylether sulphates having from 10 to 24 carbon atoms in the alkyl group, the alkylether sulphates having from 1 to 5 ethylene oxide groups, olefin sulphonates prepared by sulphonation of C₁₀-C₂₄ alpha-olefins and subsequent neutralization and hydrolysis of the sulphonation reaction product.

Other surfactants which may be used, preferably at most in minor quantities, include alkali metal soaps of a fatty acid, preferably one containing 12 to 18 carbon atoms. Typical such acids are oleic acid, ricinoleic acid and fatty acids derived from castor oil, rapeseed oil, groundnut oil, coconut oil, palmkernel oil or mixtures thereof. The sodium or potassium soaps of these acids can be used. As well as fulfilling the role of surfactants, soap can act as further detergency builders or fabric conditioners, other examples of which will be described in more detail hereinbelow. It can also be remarked that the oils mentioned in this paragraph may themselves constitute all or part of the liquid phase, whilst the corresponding low molecular weight fatty acids (triglycerides) can be dispersed as solids or function as structurants.

Yet again, it is also possible to utilise small amounts of cationic, zwitterionic and amphoteric surfactants such as referred to in the general surfactant texts referred to hereinbefore. Examples of cationic detergent surfactants are aliphatic or aromatic alkyl-di(alkyl) ammonium halides and examples of soaps are the alkali metal salts of C₁₂-C₂₄ fatty acids. Ampholytic detergent surfactants are eg. the sulphobetaines. Combinations of surfactants from within the same, or from different classes may be employed to advantage for optimising structuring and/or cleaning performance.

Non-surfactants which are suitable for inclusion in the liquid phase include ethers, polyethers, alkylamines and fatty amines, (especially di- and tri-alkyl- and/or fatty- N- substituted amines), alkyl (or fatty) amides and mono- and di- N-alkyl substituted derivatives thereof, alkyl (or fatty) carboxylic acid lower alkyl esters, ketones, aldehydes, and glycerides. Specific examples include di-alkyl ethers, polyethylene glycols, polyethylene oxides, glymes alkyl ketones (such as acetone), glycerol, glycerol triacetate, propylene glycol, and sorbitol.

The compositions of the invention may contain the liquid phase in an amount of at least 10% by weight of the total composition. The amount of the liquid phase present in the composition may be as high as about 90%, but in most cases the practical amount will lie between 20 and 70% and preferably between 35 and 50% by weight of the composition. The dispersed particulate solid phase preferably makes up the remainder of the composition.

The water-soluble carbonate material used is preferably an alkali metal carbonate such as lithium, sodium or potassium carbonate or a mixture thereof, for reasons of cost and efficiency, although ammonium or substituted ammonium carbonates can be used instead. The amount of the carbonate material in the product can be varied widely but the amount is desirably at least about 10% by weight, preferably not more than 65% by weight. It should be mentioned within this range the higher levels tend to be required under conditions of use at low product concentration, as is usually the practice in North America, and the converse applies at higher product concentrations as tend to be used in Europe. It may also be desirable to limit the carbonate content to a lower figure to decrease the risk of internal damage following any accidental oral ingestion. Mixtures of carbonates with the corresponding bicarbonates may advantageously be used as a means of introducing more carbonate ions without excessively raising the pH of the product when added to a wash liquor. Compared with compositions which contain only phosphate builders, the compositions of the present invention show improved physical stability.

The compositions according to the present invention preferably also contain one or more other functional ingredients, for example selected from minor amounts of other detergency builders, bleaches, non-building electrolytes such as sodium sulphate and (for hard surface cleaners) abrasives.

The other detergency builders, like the water-soluble carbonate material, are materials which counteract the effects of calcium, or other ion, water hardness, by precipitation, by an ion sequestering or ion-exchange effect. They comprise both inorganic and organic builders. They may also be sub-divided into the phosphorus-containing and non-phosphorus types, the latter being preferred in the present invention for environmental reasons.

Inorganic builders comprise the various silicate-, borate- and aluminosilicate-type materials, particularly the alkali-metal salt forms. Mixtures of these may also be used.

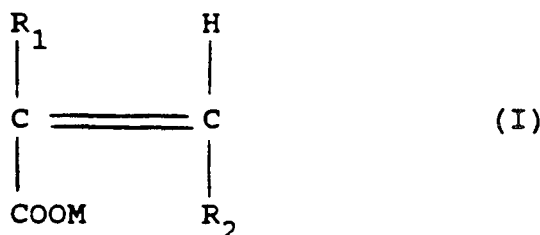
Examples of other non-phosphorus-containing inorganic builders, when present, include water-soluble alkali metal borates, silicates, metasilicates, and crystalline and amorphous aluminosilicates. Specific examples include sodium and potassium silicates and zeolites.

Examples of organic builders include the alkali metal, ammonium and substituted, citrates, succinates, malonates, fatty acid sulphonates, carboxymethoxy succinates, ammonium polyacetates, carboxylates, polycarboxylates, aminopolycarboxylates, polyacetyl carboxylates and polyhydroxysulphonates. Specific examples include sodium, potassium, lithium, ammonium and substituted ammonium salts of ethylenediaminetetraacetic acid, nitrilotriacetic acid, oxydisuccinic acid, melitic acid, benzene polycarboxylic acids and citric acid. Other, less preferred, examples are organic phosphonate type sequestering agents such as those sold by Monsanto under the tradename of the Dequest range and alkanehydroxy phosphonates.

It will be usual for the water-soluble carbonate material to make up the major part of the total detergent builder in the product.

The carboxylic acid polymer may be a homopolymer or a copolymer having a molecular weight of at least 500 and should be water-soluble. It may be derived from a mono-carboxylic acid or from a di- or polycarboxylic acid. The polymer will be used in its water-soluble alkali metal salt form. The level of polymer in the composition is advantageously at least 0.5% by weight up to 15% by weight, most preferably from 1% to 10% by weight.

One group of polymer materials found to be of value in the present invention comprises homopolymers derived from a monomer of the formula (I)



where R_1 is hydrogen, hydroxyl, $\text{C}_1 - \text{C}_4$ alkyl or alkoxy, acetoxy or $-\text{CH}_2\text{COOM}$, R_2 is hydrogen, $\text{C}_1 - \text{C}_4$ alkyl, or $-\text{COOM}$ and M is an alkali metal. Examples of this group include the sodium and potassium salts of polyacrylic, polymethacrylic, polyitaconic, polymaleic and polyhydroxyacrylic acids and also the hydrolysis products of the corresponding polymerised acid anhydrides. Thus the polymer obtained by hydrolysis of maleic anhydride falls within this group.

A second group of polymeric materials comprises the copolymers of two or more carboxylic monomers of the above formula. Examples of this group include the sodium and potassium salts of copolymers of maleic anhydride with acrylic acid, methacrylic acid, crotonic acids, itaconic acid and its anhydride, aconitic acid.

A third group of polymeric materials comprises the copolymers of one or more carboxylic monomers of the above formula with one or more non-carboxylic acid monomers such as ethylene, propylene, styrene, α -methyl styrene, acrylonitrile, acrylamide, vinylacetate, methyl vinyl ketone, acrolein and esters of carboxylic acid monomers such as ethyl acrylate and methacrylate.

In order to obtain maximum benefit from the presence of the crystal growth inhibiting polymer, it is preferred that no materials be present in the product which would act as an absorbent for such polymers. In particular particulate calcium carbonate should be absent from the product. More specifically the product should contain no more than about 5%, preferably less than 2%, most preferably less than 1% of high surface area calcite.

Suitable bleaches include the halogen, particularly chlorine bleaches such as are provided in the form of alkalimetal hypohalites, e.g. hypochlorites. In the application of fabrics washing, the oxygen bleaches are preferred, for example in the form of an inorganic persalt, preferably with an precursor, or as a peroxy acid compound.

In the case of the inorganic persalt bleaches, the precursor makes the bleaching more effective at lower temperatures, i.e. in the range from ambient temperature to about 60°C , so that such bleach systems are commonly known as low-temperature bleach systems and are well known in the art. The inorganic persalt

such as sodium perborate, both the monohydrate and the tetrahydrate, acts to release active oxygen in solution, and the precursor is usually an organic compound having one or more reactive acyl residues, which cause the formation of peracids, the latter providing for a more effective bleaching action at lower temperatures than the peroxybleach compound alone. The ratio by weight of the peroxy bleach compound to the precursor is from about 15:1 to about 2:1, preferably from about 10:1 to about 3.5:1. Whilst the amount of the bleach system, i.e. peroxy bleach compound and precursor, may be varied between about 5% and about 35% by weight of the total liquid, it is preferred to use from about 6% to about 30% of the ingredients forming the bleach system. Thus, the preferred level of the peroxy bleach compound in the composition is between about 5.5% and about 27% by weight, while the preferred level of the precursor is between about 0.5% and about 14%, most preferably between about 1% and about 5% by weight.

Typical examples of the suitable peroxybleach compounds are alkalimetal perborates, both tetrahydrates and monohydrates, alkali metal percarbonates, persilicates and perphosphates, of which sodium perborate is preferred.

Precursors for peroxybleach compounds have been amply described in the literature, including in British patent specifications 836,988, 855,735, 907,356, 907,358, 907,950, 1,003,310, and 1,246,339, US patent specifications 3,332,882, and 4,128,494, Canadian patent specification 844,481 and South African patent specification 68/6,344.

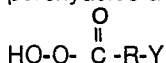
The exact mode of action of such precursors is not known, but it is believed that peracids are formed by reaction of the precursors with the inorganic peroxy compound, which peracids then liberate active-oxygen by decomposition.

They are generally compounds which contain N-acyl or O-acyl residues in the molecule and which exert their activating action on the peroxy compounds on contact with these in the washing liquor.

Typical examples of precursors within these groups are polyacylated alkylene diamines, such as N,N,N',N'-tetraacetylene diamine (TAED) and N,N,N',N'-tetraacetylmethylene diamine (TAMD); acylated glycolurils, such as tetraacetyl glycoluril (TAGU); triacetylcyanurate and sodium sulphophenyl ethyl carbonic acid ester.

A particularly preferred precursor is N,N,N',N'-tetra- acetylene diamine (TAED).

The organic peroxyacid compound bleaches are preferably those which are solid at room temperature and most preferably should have a melting point of at least 50 ° C. Most commonly, they are the organic peroxyacids and water-soluble salts thereof having the general formula



wherein R is an alkylene or substituted alkylene group containing 1 to 20 carbon atoms or an arylene group containing from 6 to 8 carbon atoms, and Y is hydrogen, halogen, alkyl, aryl or any group which provides an anionic moiety in aqueous solution.

Another preferred class of peroxygen compounds which can be incorporated to enhance dispensing/dispersibility in water are the anhydrous perborates described for that purpose in the applicants' European patent specification EP-A-217,454.

If the liquid phase comprises an ester formed from an organic acid and an alkoxyated alcohol nonionic detergent, the ester can act as a precursor for a persalt bleach included in the composition, thus obviating the need for any other conventional precursor. These esters can also lower the pour point of the composition.

When the composition contains abrasives for hard surface cleaning (i.e. is a liquid abrasive cleaner), these will inevitably be incorporated as particulate solids. They may be those of the kind which are water insoluble. Water soluble abrasives may also be used.

The compositions of the invention optionally may also contain one or more minor ingredients such as fabric conditioning agents, enzymes, perfumes (including deoperfumes), micro-biocides, colouring agents, fluorescers, soil-suspending agents (anti-redeposition agents), corrosion inhibitors, enzyme stabilizing agents, and lather depressants.

It has surprisingly been found that the activities of enzymes and in particular lipase are well supported in the use of such detergent formulations. Enzymes other than lipase that may be present include protease, amylase, oxidase and/or cellulase.

The lipolytic enzyme can usefully be added in the form of a granular composition of lipolytic enzyme with carrier material (eg. as in EP 0258068 and Savinase and Lipolase products of Novo).

The added amount of lipolytic enzyme can be chosen within wide limits, for example 50 to 30,000 LU/g of detergent composition, eg. often at least 100 LU/g, very usefully at least 500 LU/g, sometimes preferably above 1000, above 2000 LU/g or above 4000 LU/g or more, thus very often within the range 50-4000 LU/g and possibly within the range 200-1000 LU/g.

The lipolytic enzyme can be chosen from among a wide range of lipases: in particular the lipases described in for example the following patent specifications, EP 0214761 (Novo), EP 0258068 (Novo) and especially lipases showing immunological cross-reactivity with antisera raised against lipase from *Thermomyces lanuginosus* ATCC 22070, EP 0205208 (Unilever) and EP 0206390 (Unilever), and especially
 5 lipases showing immunological cross-reactivity with antisera raised against lipase from *Chromobacter viscosum* var *lipolyticum* NRRL B-3673, or against lipase from *Alcaligenes* PL-679, ATCC 31371 and FERM-P 3783, also the lipases described in specifications WO 87/00859 (Gist-Brocades) and EP 0204284 (Sapporo Breweries). Suitable in particular are for example the following commercially available lipases preparations: Novo Lipolase, Amano lipases CE, P, B, AP, M-AP, AML, CES, and Meito lipases MY-30, OF,
 10 and PL, also esterase MM, Lipolzym, SP225, SP285, Saiken lipase, Enzeco lipase, Toyo Jozo lipase and Diosynth lipase (Trade Marks).

Genetic engineering of the enzymes can be achieved by extraction of an appropriate lipase gene, eg. the gene for lipase from *Thermomyces lanuginosus* or from a mutant thereof, and introduction and expression of the gene or derivative thereof in a suitable producer organism such as an *Aspergillus*. The
 15 techniques described in WO 88/02775 (Novo), EP 0243338 (Labofina) and EP 0268452 (Genencor) may be applied and adapted.

Similar considerations apply mutatis mutandis in the case of the other enzymes. Without limitation: Amylase can for example be used when present in an amount in the range about 1 to about 100 MU (maltose units) per gram of detergent composition, (or 0.014-1.4, eg. 0.07-0.7, KNU/g (Novo units)).
 20 Cellulase can for example be used when present in an amount in the range about 0.3 to about 35 CEVU units per gram of the detergent composition. Protease can for example be used when present in an amount in the range about 0.0002 to about 0.05 Anson units per gram of the detergent composition.

In general, the solids content of the product may be within a very wide range, for example from 10-90%, usually from 30-80% and preferably from 50-65%, by weight of the final composition. The solids
 25 should be in particulate form and ideally should have an average particle size of less than 300 microns, preferably less than 200 microns, more preferably less than 100 microns, especially less than 10 microns. The particle size may even be of sub-micron size. The proper particle size can be obtained by using materials of the appropriate size or by milling the total product in a suitable milling apparatus.

The solid phase may be dispersed in the products of the present invention by any means known in the
 30 art.

Preferably, the products of the present invention also contain one or more dispersants for modifying the rheology of the dispersion. Most preferred are the deflocculants described in European patent specification EP-A-266 199 (Unilever PLC), for example dodecyl benzene sulphonic acid or lecithin.

Alternatively or additionally, other known dispersants which may be used are the highly voluminous
 35 inorganic carrier materials described in GB patent specifications 1 205 711 and 1 270 040, chain structure-type clays as described in EP-A-34 387 cationic quaternary amine salt surfactants, urea, a substituted-urea or -guanidine according to GB 2 179 346 or J 61 227 829, or substituted urethanes, according to J 61 227 830.

The compositions are substantially non-aqueous, i.e. they little or no free water, preferably no more
 40 than 5%, preferably less than 3%, especially less than 1% by weight of the total composition. It has been found by the applicants that the higher the water content, the more likely it is for the viscosity to be too high, or even for setting to occur. However, this may at least in part be overcome by use of higher amounts of, or more effective deflocculants or other dispersants.

Since the objective of a non-aqueous liquid will generally be to enable the formulator to avoid the
 45 negative influence of water on the components, e.g. causing incompatibility of functional ingredients, it is clearly necessary to avoid the accidental or deliberate addition of water to the product at any stage in its life. For this reason, special precautions are necessary in manufacturing procedures and pack designs for use by the consumer.

Thus during manufacture, it is preferred that all raw materials should be dry and (in the case of
 50 hydratable salts) in a low hydration state, e.g. anhydrous carbonate builder and sodium perborate monohydrate, where the latter is employed in the composition. In a preferred process, the dry, substantially anhydrous solids are blended with the liquid phase in a dry vessel. In order to minimise the rate of sedimentation of the solids, this blend is passed through a grinding mill or a combination of mills, e.g. a colloid mill, a corundum disc mill, a horizontal or vertical agitated ball mill, to achieve a particle size of 0.1
 55 to 100 microns, preferably 0.5 to 50 microns, ideally 1 to 10 microns. A preferred combination of such mills is a colloid mill followed by a horizontal ball mill since these can be operated under the conditions required to provide a narrow size distribution in the final product. Of course particulate material already having the desired particle size need not be subjected to this procedure and if desired, can be incorporated during a

later stage of processing.

During this milling procedure, the energy input results in a temperature rise in the product and the liberation of air entrapped in or between the particles of the solid ingredients. It is therefore highly desirable to mix any heat sensitive ingredients into the product after the milling stage and a subsequent cooling step.

It may also be desirable to de-aerate the product before addition of these (usually minor) ingredients and optionally, at any other stage of the process. Typical ingredients which might be added at this stage are perfumes and enzymes, but might also include highly temperature sensitive bleach components or volatile solvent components which may be desirable in the final composition. However, it is especially preferred that volatile material be introduced after any step of aeration. Suitable equipment for cooling (e.g. heat exchangers) and de-aeration will be known to those skilled in the art.

It follows that all equipment used in this process should be completely dry, special care being taken after any cleaning operations. The same is true for subsequent storage and packing equipment.

The invention will now be illustrated by the following non-limiting example.

EXAMPLE

The following liquid products were prepared.

Composition :		
Ingredients (wt%)	A	B
Nonionic surfactant ¹	27.5	30.0
Glyceryl triacetate	12.5	13.0
ABS acid ²	4.0	4.0
Soap	2.0	-
Silica ³	0.3	0.3
Sodium carbonate	27.5	18.0
Sodium bicarbonate	-	12.4
Sodium disilicate	3.5	-
Sodium perborate monohydrate	11.0	10.5
TAED	4.0	3.0
CP5 polymer ⁴	4.0	4.0
Minor ingredients	balance	balance

Notes

1 - Such as PLURAFAC RA30 which is a C_{13/15} fatty alcohol alkoxylated with an average of 4 to 5 moles ethylene oxide and 2 to 3 moles propylene oxide (ex ICI) or LIALET 111 - 7EO (ex Enichem, Italy) which is approximately a C₁₁ fatty alcohol alkoxylated with an average of 7 moles ethylene oxide.

2 - Alkyl (ie. dodecyl) benzene sulphonic acid (as free acid).

3 - Highly voluminous silica (Aerosil).

4 - SOKALAN CP5 which is an acrylic acid/maleic acid copolymer in the sodium salt form with an average molecular weight of 70,000 and an acrylic acid : maleic acid ratio of 1:1 (ex BASF). This may be successfully replaced by VERSA TL3 which is the sodium salt of a 3:1 sulphonated styrene/maleic anhydride copolymer with a molecular weight of 34,000.

Claims

1. A substantially non-aqueous liquid detergent composition comprising a liquid surfactant phase and a solid particulate phase dispersed therein, the particulate phase comprising a detergency builder which is predominantly a water-soluble carbonate material, characterised in that the composition further comprises a

calcium carbonate crystal growth inhibiting agent in the form of a water soluble alkali metal salt of a carboxylic acid polymer.

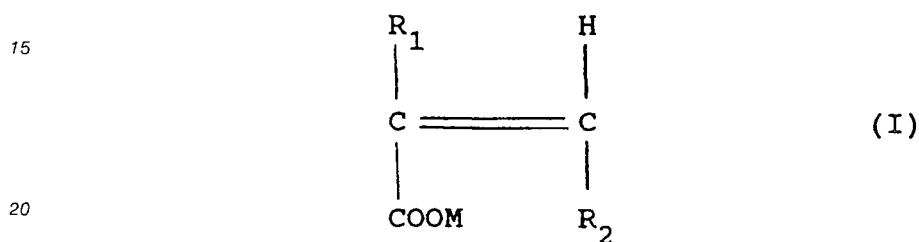
2. A composition according to Claim 1, wherein the liquid surfactant phase comprises a nonionic surfactant.

5 3. A composition according to Claim 1, wherein the liquid surfactant phase is present at a level of at least 10% by weight of the total composition.

4. A composition according to Claim 1, wherein the water-soluble carbonate material comprises a mixture of an alkali metal carbonate with an alkali metal bicarbonate.

5. A composition according to Claim 1, wherein the level of water-soluble carbonate material is at least 10% by weight of the composition.

6. A composition according to Claim 1, wherein the calcium carbonate crystal growth inhibiting agent is selected from homopolymers derived from a monomer of the formula (I)



wherein R_1 is hydrogen, hydroxyl, C_1 - C_4 alkyl or alkoxy, acetoxy or $-CH_2COOM$, R_2 is hydrogen, C_1 - C_4 alkyl, or $-COOM$ and M is an alkali metal, copolymers thereof with other monomers of formula (I) and copolymers thereof with one or more non-carboxylic acid monomers.

7. A composition according to Claim 1, wherein the level of polymer is from 0.5% to 15% by weight of the composition.

8. A composition according to Claim 1, containing not more than 5% by weight of calcite having a surface area of more than $10m^2/g$.

9. A composition according to Claim 1, further comprising a lipase enzyme.