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Applicant: **THE PROCTER & GAMBLE
COMPANY**
One Procter & Gamble Plaza
Cincinnati Ohio 45202(US)

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71

Applicant: **Procter & Gamble European
Technical Center (Naamloze Vennootschap)**
Temselaan 100
B-1820 Strombeek-Bever(BE)

84

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72

Inventor: **Culshaw, Stephen**
A. de Gasperilaan 4
B-1860 Meise(BE)

74

Representative: **Suslic, Lydia et al**
**Procter & Gamble European Technical
Center N.V. Temselaan 100**
B-1820 Strombeek-Bever(BE)

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Creamy scouring compositions containing saturated terpene solvent.

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Stable, viscous creamy scouring compositions are disclosed, which are substantially free of unsaturated terpenes and contain a saturated terpene solvent.

The compositions of the invention show excellent cleaning and shine performance, and are not aggressive to cleansed surfaces and packaging materials.

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CREAMY SCOURING COMPOSITIONS CONTAINING SATURATED TERPENE SOLVENTTechnical Field

5 The present invention relates to viscous abrasive-containing scouring compositions, which show excellent stability, exhibit very good cleaning and shine performance, and are not aggressive towards surfaces to be cleansed therewith, and towards packaging materials.

The compositions are substantially free of unsaturated terpene solvents, but contain a saturated terpene solvent.

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Background

It is well-known to formulate scouring compositions, in liquid or creamy form, containing solvents.

15 In particular, creamy scouring compositions containing an abrasive and a binary solvent system constituted of unsaturated terpenes and polar solvents have been disclosed in European Patent Application 0,126,545, published on November 28, 1984. In these compositions, the terpenes both provide cleaning benefits and exhibit desirable emulsification properties during the making process thus enhancing product viscosity.

20 It has become desirable, however, to replace unsaturated terpenes by solvents which are fully compatible with all types of surfaces to be cleansed therewith, and packaging materials, and at the same time exhibit good cleaning and emulsification properties.

It has now been found that the use of saturated terpene solvents in replacement of the unsaturated counterparts, provides the desired compatibility with packaging material, while maintaining very good cleaning, shine performance, and product viscosity.

25 In addition, the use of saturated terpene solvents brings improvements in terms of product stability and odor quality.

U.S. Patent 4,576,738 discloses liquid hard-surface compositions containing saturated terpenes in combination with a water-soluble solvent.

30 The prior art, however, fails to disclose or suggest the formulation of viscous, abrasive-containing, scouring compositions containing saturated terpenes.

It is an object of the present invention to provide viscous creamy cleanser compositions which are fully compatible with surfaces to be cleansed therewith and with packaging materials. It is a further object of the present invention to provide a cleanser composition with excellent cleaning and shine performance.

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Summary of the Invention

40 The present invention relates to a viscous creamy scouring compositions containing a surface-active agent, an abrasive, and an organic solvent and if desired conventional additives, characterized in that said cleanser is substantially free of unsaturated terpene solvents and that the organic solvent contains a saturated terpene hydrocarbon.

Detailed Description of the Invention

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The surface-active agents, the abrasives, the solvent and the optional ingredients are described in more detail hereinafter.

Unless indicated to the contrary, the %-indications stand for "% by weight".

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Surface-active Agents

Water-soluble deterative surfactants useful herein include well-known synthetic anionic, nonionic, amphoteric and zwitterionic surfactants and mixtures thereof. Typical of these are the alkyl benzene sulfates and sulfonates, paraffin sulfonates, olefin sulfonates, alkoxyated (especially ethoxyated) alcohols and alkyl

phenols, amine oxides, sulfonates of fatty acids and of fatty acid esters, and the like, which are well-known in the detergency art. In general, such deterative surfactants contain an alkyl group in the C_{10} - C_{18} range; the anionic deterative surfactants are most commonly used in the form of their sodium, potassium or triethanolammonium salts. The nonionics generally contain from 3 to 17 ethylene oxide groups per mole of hydrophobic moiety. Especially preferred in the compositions of the present invention are: C_{12} - C_{16} alkyl benzene sulfonates, C_{12} - C_{18} paraffin-sulfonates and the ethoxylated alcohols of the formula $RO(CH_2CH_2O)_n$, with R being a C_{12} - C_{15} alkyl chain and n being a number from 6 to 10.

Anionic surfactants are frequently present at levels from 0.3 to 8%, preferably 2 to 4%, of the composition. Nonionic surfactants, are used at levels between 0.1% to 6% by weight of the composition. Mixtures of the like surfactants can also be used. The total level of surface-active agents is preferably from 3% to 5%.

Abrasive

-The abrasive types employed herein are selected from water-insoluble, non-gritty materials well-known in the literature for their relatively mild abrasive properties. It is highly preferred that the abrasives used herein not be undesirably "scratchy". Abrasive materials having a Mohs hardness in the range of about 7, or below, are typically used; abrasives having a Mohs hardness of 3, or below, can be used to avoid scratches on aluminum or stainless steel finishes. Suitable abrasives herein include inorganic materials, especially such materials as calcium carbonate and diatomaceous earth, as well as materials such as Fuller's earth, magnesium carbonate, China clay, attapulgit, calcium hydroxyapatite, calcium orthophosphate, dolomite and the like. The aforesaid inorganic materials can be qualified as "strong abrasives". Synthetic organic abrasives such as urea-formaldehyde, methyl methacrylate melamine-formaldehyde resins, polyethylene spheres and polyvinylchloride can be advantageously used in order to avoid scratching on certain surfaces, especially plastic surfaces. When such "soft abrasives" are used, strong builders can be incorporated in the composition.

Typically, abrasives have a particle size range of 10-200 microns and are used at concentrations of 5% to 30% in the compositions. Thickeners are frequently added to suspend the abrasives.

The organic solvent

-The organic solvent to be used in the present composition contains saturated terpene hydrocarbons.

Saturated terpenes for use herein include the hydrogenated species corresponding to well-known mono-or sesquiterpenes, which can be acyclic or cyclic.

Preferred materials for use herein are the hydrogenated mono-and bicyclic monoterpenes, selected from hydrogenated terpinenes, terpinolenes, limonenes, and pinenes.

A highly preferred material is hydrogenated pinene, also known as pinane or 2,6,6-trimethyl bicyclo (3.1.1.) heptane.

The saturated terpene hydrocarbon herein is used at levels of from 1% to 10% by weight of the composition, preferably 1.5% to 5% by weight.

The solvent system can optionally contain polar solvents in combination with the saturated terpene component, in order to further improve cleaning performance. This includes polar solvents with low water solubility, like benzyl alcohol, and diols such as 2-ethyl-1,3-hexanediol and 2,2,4-trimethyl-1,3-pentanediol, and solvents with high water-solubility, like water-soluble CARBITOL® solvents or water-soluble CELLOSOLVE® solvents. Water-soluble CARBITOL® solvents are compounds of the 2-(2-alkoxyethoxy)ethanol class wherein the alkoxy group is derived from ethyl, propyl or butyl; a preferred water-soluble carbitol is 2-(2-butoxyethoxy)ethanol also known as butyl carbitol. Water-soluble CELLOSOLVE® solvents are compound of the 2-alkoxyethoxy ethanol class, with 2-butoxyethoxyethanol being preferred.

Preferred for use herein is benzyl alcohol.

The above-described polar solvents can be used in levels ranging from 0.5 to 10% of the composition, preferably 0.5% to 5%, the weight ratio of saturated terpene to polar solvent being in the range from 5:1 to 1:5, preferably 2:1 to 1:2.

The composition herein are substantially free of unsaturated terpene-solvents. Inasmuch as solvents are

generally used at levels exceeding about 2%, unsaturated terpenes cannot be incorporated in the claimed compositions in such proportions. It is understood, however, that relatively minor sub-additive levels of unsaturated terpenes, e.g., below about 0.6% (calculated on the total cleanser composition), can be present originating from conventional ingredients such as perfumes.

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Optional Ingredients

-In addition to the essential ingredients listed hereinbefore, the present composition can contain additional components, which can be highly desirable.

For example, the compositions herein can contain a detergent builder and/or metal ion sequestrant. Compounds classifiable and well-known in the art as detergent builders include the nitrilotriacetates, (NTA), ethylene diamine tetracetate (EDTA), amino-polyphosphonates (DEQUEST), water-soluble phosphates such as tri-polyphosphate and sodium ortho-and pyro-phosphates, silicates, and mixtures thereof. These builders are preferably not used in combination with strong abrasives like calcium carbonate, but are recommended in combination with soft organic abrasives like polyvinylchloride or soft inorganic abrasives like talc.

Metal ion sequestrants of lower metal sequestration constant can advantageously be used in combination with strong or soft abrasives. Those metal ion sequestrants include polycarboxylates and citrates. Preferred builders/sequestrants for use in the present invention are NTA, EDTA, citrates and mixtures thereof. The builders/sequestrant will be present at levels of from 1% to 15%.

It is highly preferred, to include soaps in the compositions of the invention. Soaps prepared from coconut oil fatty acids are preferred.

Soaps are used in amounts ranging from 0.05% by 3% by weight of the composition.

Thickeners should preferably be included in the compositions of the invention, in order to suspend the abrasive. However the level will be kept under 2%, preferably from 0.2% to 1.5%. Common thickeners such as the polyacrylates, xanthan gums, carboxymethyl celluloses, swellable smectite clays, and the like, can be used herein.

Optional components are also represented by ingredients typically used in commercial products to provide aesthetic or additional product performance benefits. Typical ingredients include pH regulants, perfumes, dyes, optical brighteners, bleaches, soil suspending agents, deterative enzymes, gel-control agents, freeze-thaw stabilizers, bactericides, preservatives, and the like.

Another optional ingredient for use herein is represented by conventional detergent hydrotropes. Examples of suitable hydrotropes are urea, monoethanolamine, diethanolamine, triethanolamine and the sodium potassium, ammonium and alkanol ammonium salts of xylene-, toluene-, ethylbenzene-and isopropyl-benzene sulfonates. It is a particular feature of the present invention, however, that stable formulations can be prepared without the need for hydrotropic materials of this kind.

The composition herein typically contain up to about 60% water as a carrier. By way of example the water-level can vary in the range from e.g. 50% to 80%. Water-alcohol (e.g., ethanol, isopropanol, butanol, etc.) mixtures can also be used. Alkylated polysaccharides can be used to increase the stability and performance characteristics of the compositions.

The compositions herein are preferably formulated in the alkaline pH range, generally in the range of pH 8-11, preferably about 10-10.8. Caustics such as sodium hydroxide and sodium carbonate can be used to adjust and buffer the pH as desired.

The following examples are given by way of illustrating the compositions herein, but are not intended to be limiting of the scope of the invention.

Abbreviations

- NaPS Sodium C₁₃ to C₁₆ paraffin sulfonate
- LAS Sodium salt of linear C₁₁-C₈ alkyl benzene sulfonate
- LAB Linear C₁₀₋₂₂ alkyl benzene
- Lutensol® A07 Condensate of 1 mole C₁₂-C₁₄ fatty alcohol with 7 moles of ethylene oxide
- Dobanol® 45/7 C₁₄-C₁₅ oxoalcohol with 7 moles of ethylene oxide per mole of alcohol
- HC_nFA Narrow cut, hardened, coconut fatty acid
- NTA Sodium nitrilotriacetate
- EDTA Ethylene diamine tetraacetate
- CaCO₃ Calcium carbonate

Sokolan®PHC 25 Crosslinked polyacrylate thickener

ETHD 2-Ethyl-1,3-hexanediol

TMPD 2,2,4-trimethyl-1-3-pentanediol

PVC Polyvinylchloride

- 5 A creamy cleanser was prepared by mixing the listed ingredients in the stated proportions (% by weight).

	<u>Ingredients</u>	<u>Ex. I</u>
10	LAS	0.5
	NaPS	3.0
	Lutensol® A07	0.3
15	Na ₂ CO ₃	3.0
	HC _n FA	0.2
	Benzyl alcohol	1.5
20	Pinane	2.0
	CaCO ₃	30.0
	Sokolan® PHC25	0.5
25	Water + minors	up to 100

The above composition showed a good product stability and a satisfactory compatibility with polyethylene-packaging material.

In addition, the following compositions are prepared:

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	<u>Ingredients</u>	<u>Ex. II</u>	<u>Ex. III</u>	<u>Ex. IV</u>	<u>Ex. V</u>	<u>Ex. VI</u>	<u>Ex. VII</u>	<u>Ex. VIII</u>
5	LAS	4.0	4.0	0.5	3.0	0.5	3.0	4.0
	NaPS	-	-	3.0	1.0	3.0	1.0	-
	Lutensol ^R A07	-	-	0.3	-	0.2	-	-
	NaCO ₃	3.0	-	3.0	-	3.0	3.0	-
10	HChFA	1.2	1.2	1.2	1.5	1.5	1.2	1.2
	Benzyl alcohol	-	-	-	1.0	-	-	-
	Butyl carbitol	1.0	-	-	-	1.0	-	-
15	ETHD	-	-	1.0	-	-	-	-
	TMPD	-	-	-	-	1.0	1.0	-
	Pinane	-	-	2.0	2.0	3.0	2.0	4.0
20	Paramentan *	3.0	4.0	-	-	-	-	-
	STPP	4.0	-	-	-	-	-	-
	NTA	-	4.0	-	2.0	2.0	-	-
	EDTA	-	-	-	1.0	1.0	-	2.0
25	Citrate	-	-	3.0	-	-	3.0	-
	CaCO ₃	30.0	-	30.0	-	-	30.0	-
	PVC	-	10.0	-	10.0	10.0	-	10.0
30	Sokolan ^R PHC25	0.5	0.4	0.5	0.4	0.4	0.4	0.4
	Water + minors	u p t o 1 0 0						

* Paramenthan = hydrogenated limonene

Claims

1. A viscous, creamy scouring cleanser containing a surface-active agent, an organic solvent, an abrasive, and if desired conventional additives, characterized in, that said cleanser is substantially free of unsaturated terpenes and that the organic solvent contains a saturated terpene.
2. A composition in accordance with Claim 1 wherein the saturated terpene is selected from the group of hydrogenated monocyclic and bicyclic monoterpenes.
3. A composition in accordance with Claim 1 wherein the saturated terpene is 2,6,6-trimethyl bicyclo-(3,11)heptane.
4. A composition in accordance with Claims 1-3 wherein the saturated terpene is present at levels of from 0.5% to 10% by weight.
5. A composition in accordance with Claims 1-4, wherein the organic solvent contains, in addition to the unsaturated terpene, a polar solvent having a water solubility at 25°C of at least 0.5%.
6. A composition in accordance with Claim 5 wherein said polar solvent is present at levels of from 0.5 to 10% by weight.
7. A composition in accordance with Claims 5 and 6 wherein said polar solvent is benzyl alcohol.
8. A viscous creamy scouring cleanser containing
 - from 3% to 5% by weight of organic surface-active agent;
 - from 5% to 30% of an abrasive material having a Mohl hardness equal to or below 7;
 - from 1.5 to 5% by weight of pinane;
 - from 0.5 to 5% by weight of benzyl alcohol.