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(54) Title: CLEANSING AND SANITIZING COMPOSITION FOR SANITARY APPLIANCES

(57) Abstract: A cleansing and sanitizing composition for sanitary appliances is described, comprising 10 to 80% by weight of at least one anionic surfactant, 0.5 to 25% by weight of at least one first non ionic surfactant substantially free from water and having a viscosity at 70°C of from 200 to 1000 mPa*s, 0.5 to 35% by weight of an oxidizing agent including at least one peroxide bond adapted to decompose in the presence of water and an efective amount of at least a pH adjusting agent adapted to maintain the pH of the composition at such a value so as to stabilize the oxidizing agent. Advantagously, such composition may be conformed by extrusion and has excellent cleansing and scales removing properties and an effective bactericidal activity, which remains substantially unaltered over the time.

Title: Cleansing and sanitizing composition for sanitary appliances

DESCRIPTION

Background of the invention

According to a general aspect thereof, the present invention relates to a cleansing and sanitizing composition for sanitary appliances.

More particularly, the present invention relates to a cleansing and sanitizing composition in the form of rim-block for sanitary appliances, adapted to be suspended from the rim of the water closet bowl, and as such to be partly and periodically brought into contact with the flush water, or in the form of in-cistern blocks, adapted to be entirely immersed in the flush water stored in a cistern or in a container interlocked with a water closet.

In the field of WC rim-blocks or in-cistern blocks for sanitary appliances, the need of using cleansing and sanitizing compositions having high cleansing and scales removing properties as well as a good bactericidal activity, is from long time felt. Such cleansing and sanitizing compositions in the form of rim-blocks or in-cistern blocks must also as much as possible maintain unaltered their characteristics over the time, both during the storage of the finished product and its use.

Further, from a practical point of view, it is desirable that the various ingredients of the composition may be mixed to give a mixture having viscosity and plasticity characteristics that allow the mixture to be formed into blocks or rim-blocks by extrusion, which is a technique that allows to obtain a high productive capacity together with a reduction in productive costs.

Prior art

In order to increase the sanitizing action of the rim-blocks and blocks, the prior art of this field has proposed, for instance, to include in the formulations a halogen-based bleaching agent, in particular chlorine obtained from the decomposition of dichloroisocyanurate-based compounds.

However, the inclusion of such halogen-based bleaching agent involved problems of compatibility between the various ingredients of the composition of the rim-blocks or blocks, both during their producing step and during their use, because of the intrinsic reactivity of the bleaching agent which tends to destabilize itself, on the one hand by reacting with the surfactant included in the composition, and on the other hand by releasing the halogen, causing thereby a reduction in the bleaching activity of the composition.

As described, for instance, in European patent EP 0 672 103, in order to solve said compatibility problem between the various ingredients of the composition, it has been proposed to incorporate in the same composition a suitable amount of a non-oxidizable liquid material, selected from liquid ketones, liquid tertiary alcohols, liquid complex esters of glycerol and propylene glycol, triethylene glycol esters of C_8-C_{10} fatty acids and/or succinic acid.

In particular, the addition of such non-oxidizable liquid material allows, during the rim-block or block producing step, to create a protective film made of said material around the individual grains of bleaching agent, preventing thereby their reactivity. Although substantially in accordance with the intended purpose, nevertheless the Applicant has found that cleansing/sanitizing compositions including dichloroisocyanurates do not allow to entirely solve the problem of the compatibility between the

ingredients, which leads to a reduction of the cleansing and/or sanitizing power of the composition over the time.

Summary of the invention

The technical problem underlying the present invention is therefore that of devising and providing a cleansing and sanitizing compositions which may be conformed by extrusion, has excellent cleansing and scales removing properties and an effective bactericidal activity, and which is capable at the same time of keeping as much as possible constant both its cleansing and sanitizing characteristics over the time, both during the producing step of the finished product and during its subsequent storage, or during the use of the composition.

According to the invention, said technical problem is solved by a cleansing and sanitizing composition for sanitary appliances comprising:

a) 10 to 80% by weight of at least one anionic surfactant;

b) 0.5 to 25% by weight of at least one first non ionic surfactant substantially free from water and having a viscosity at 70°C of from 200 to 1000 mPa*s;

c) 0.5 to 35% by weight of an oxidizing agent including at least one peroxide bond adapted to decompose in the presence of water;

d) an effective amount of at least one pH adjusting agent, adapted to maintain the composition pH at such a value as to stabilize said oxidizing agent.

Surprisingly, the Applicant has in fact found that, thanks to the combination of the aforementioned ingredients and in spite of the use of an oxidizing agent including at least one peroxide bond which is *per se* strongly unstable in the presence of even minor amounts of moisture and highly

reactive in the presence of oxidable substances, such as for instance the surfactants included in the composition, it is possible to ensure both an adequate workability of the mixture obtained starting from said ingredients and an adequate stability of the composition so obtained over the time.

More particularly, by using an anionic surfactant, and preferably an anionic surfactant with a moisture content not higher than 3% by weight, a non ionic surfactant substantially free from water and having a viscosity at 70°C of from 200 to 1000 mPa*s and a suitable pH adjusting agent, it is possible both to obtain a mixture of ingredients having viscosity and plasticity characteristics such as to allow the mixture to be formed in continuous by extrusion, and to achieve the desired stability of the cleansing/sanitizing activity of the final composition over the time.

Detailed description of the preferred embodiments

As noted above and in order to maximize the stability characteristics of the composition, the anionic surfactant preferably has a moisture content not higher than 3% by weight and, still more preferably, not higher than 1.5% by weight.

For the purposes of the invention, the anionic surfactant may be selected from the surfactants suitable for use in a rim-block or block for sanitary appliances, and is preferably selected from the group comprising: sodium alkylarylsulfonate, sulfonated sodium paraffins, sodium alkylsulfate, sulfonated α-olefins, and mixtures thereof. Such surfactants are available on the market and sometimes may include small amounts of inert fillers, such as sodium sulfate or sodium phosphate.

In the composition of the invention, the anionic surfactant

performs the function of cleansing agent and foaming product, whose effects are proportional to the amount of surfactant included in the composition.

For this purpose, the anionic surfactant may be used in an amount of from 10 to 80% by weight, preferably of from 40 to 60% by weight.

According to the invention, the Applicant has surprisingly found that by using in the composition at least one non ionic surfactant substantially free from water and having a viscosity at 70°C of from 200 to 1000 mPa*s, it is possible to achieve some important advantages.

Within the present description and the appended claims, with the terms: "non ionic surfactant substantially free from water", it is intended to indicate a surfactant comprising a moisture amount not higher than 0.5% by weight.

Thanks to the use of a non ionic surfactant having the aforementioned characteristics it is, in fact, possible to obtain a mixture of ingredients having viscosity, plasticity and mechanical stability characteristics, which are thought to be ascribable to the binding action performed by the same surfactant, such as to allow the mixture to be formed by extrusion.

Besides, the use of such non ionic surfactant imparts to the finished product the consistency and hardness required for the use, when the product is either in the form of a water closet rim-block or a in-cistern block for sanitary appliances.

Lastly, said non ionic surfactant during the use acts as a booster of the foaming effect, allowing a persistency of the foam generated for several minutes after each flushing.

For the purposes of the invention, the first non ionic

surfactant substantially free from water is preferably selected from the group comprising: alkanolamides of C_8-C_{18} saturated and unsaturated fatty acids, ethoxylated fatty alcohols, and mixtures thereof.

Among them, alkanolamides of fatty acids, and in particular coco mono- and di-ethanolamide, are preferred.

Advantageously, the oxidizing agent of the invention, including at least one peroxide bond, is highly reactive and is capable *per se* of decomposing - generating nascent oxygen by a mechanism known *per se* - when it gets into contact with water in the use conditions of the sanitary appliances considered herein. In particular, such oxidizing agent can decompose each time its gets in contact with water having a temperature of from 13° to 20°C, which generally is just the temperature of flush water in sanitary appliances.

Preferably, the oxidizing agent is selected from the salts of an alkali metal of a peroxy-acid and, still more preferably, it is potassium monopersulfate.

Potassium monopersulfate of preferred use is that in the form of a triple salt with potassium bisulfate and potassium sulfate, which is particularly stable in the manufacture and use conditions of the composition. A triple salt having ratios between monopersulfate, bisulfate and sulfate of 2:1:1 respectively is available on the market under the trade name of OXONE® (E. DuPont De Nemours & Co., Inc.).

As said above, the composition of the invention comprises an effective amount of at least one pH adjusting agent adapted to maintain the pH of the composition at a value such as to stabilize said oxidizing agent, i.e. values at which the peroxide bond of the oxidizing agent has been found to be stable in the storage and use conditions of the

composition.

Preferably, the pH adjusting agent is included in an amount of from 0.5 to 3% by weight, more preferably of from 1 to 2% by weight.

Advantageously, when the rim-block or the block are not in contact with water, i.e. throughout the storage period or, during the use, between subsequent water flushings, the presence of a pH adjusting agent allows to maintain within the composition pH values such as to substantially make stable the peroxide oxidizing agent in the same composition.

In this way, the pH adjusting agent prevent losses of oxidizing agent when the rim-block or block is not in contact with water, while when the rim-block or block is in contact with water, the outermost layer of the rim-block or block in contact with water reaches a pH value approaching neutrality, so as to destabilize the composition through the release of nascent oxygen.

For the purposes of the invention, the pH adjusting agent may be selected from any compounds adapted to maintain the pH of the composition either in an acid field, i.e. at pH values lower than 7 and preferably lower than 6, or in a basic field, i.e. at pH values higher than 7 and preferably higher than 9.

Preferably, the pH adjusting agent is an acid adapted to maintain the composition pH in an acid field and in particular at a pH value lower than 5 and, more preferably lower than 3: in this case, in fact, it is easier to minimize the risk of reaching pH value approaching neutrality and therefore the risk of decomposition of the oxidizing agent, during the various working and/or storing steps of the composition.

Advantageously, besides, the use of an acid as pH adjusting

agent allows to prevent limestone from depositing on the internal walls of the sanitary appliance, and to remove possible existing limestone deposits on the same walls.

In this embodiment, the acid used as pH adjusting agent preferably is an organic or inorganic weak acid.

Organic or inorganic acids suitable for the purposes of the invention are protic acids selected from weak acids having a first ionization constant (pK_i) at 25°C of from 3 to 5, such as for instance phosphoric, sulfamic, citric, tartaric or malic acids, individually or combined with one another.

Still more preferably, the pH adjusting agent is an organic α-hydroxyacid, such as for instance, citric acid, malic acid, and mixtures thereof.

If one desires to stabilize the composition in the basic field, the pH adjusting agent may instead be selected from any substances that can bring the solution pH into the basic field, such as for instance sodium carbonate.

Preferably, the cleansing and sanitizing composition of the invention further comprises 0.2 to 14% by weight, preferably 6 to 12% by weight, of a halogen releasing agent by reacting with the oxidizing agent comprising a metal halide, preferably of an alkali metal.

Preferably, the halogen releasing agent of the oxidizing agent is selected from the group comprising sodium chloride, sodium bromide, and mixtures thereof.

In particular, the halogen releasing agent of preferred use is sodium chloride which, by reacting with potassium monopersulfate, originates, through a mechanism known *per se*, sodium hypochlorite which, in its turn, allows to increase the antibacterial activity of the composition.

In fact, a part of the oxygen released by the peroxide

oxidizing agent following the contact with water, reacts with sodium chloride to form, in the presence of water, sodium hypochlorite. In this way, the disinfecting action of the composition is carried out at the same time by both the nascent oxygen and sodium hypochlorite, which results in an increase in the sanitizing activity.

Preferably, the cleansing and sanitizing composition further comprises 0.3 to 10% by weight, preferably 2 to 8% by weight, of at least one second non ionic surfactant substantially free from water and having a viscosity at 70°C of from 50 to 500 mPa*s and more preferably of from 100 to 150 mPa*s.

Advantageously, the addition of such a second non ionic surfactant allows to reduce the working time of the mixture of ingredients with respect to that required in case of a composition having no such second surfactant.

The latter, in fact, advantageously acts as lubricant and diluent and therefore allows to amalgamate the ingredients of the composition in a time markedly shorter than that which may be obtained only with the first non ionic surfactant.

In this way, the composition of the invention may be manufactured in full compliance with the producing times required by the modern technologies of manufacturing by extrusion which are adopted for large scale production.

Besides, thanks to its high oxidization resistance and its chemical affinity for water, the second non ionic surfactant advantageously allows to chemically and mechanically stabilize the composition and to adjust its use life.

For the purposes of the invention, the second non ionic surfactant is preferably selected from the group comprising polyalkylene glycols, for instance polyethylene glycol or

polypropylene glycol, complex liquid esters of glycerol with C_{12}-C_{18} fatty acids, and mixtures thereof.

Among them, polyethylene glycols having an average molecular weight of from 200 to 6000, and in particular polyethylene glycol 400, are preferred.

In a formulation particularly suitable for use as water closet rim-block, the composition preferably comprises 0.5 to 10% by weight of polyethylene glycol 400, and 0.5 to 10% by weight of coco diethanolamide, and still more preferably, 1 to 7% by weight of polyethylene glycol 400 and 1 to 5% by weight of coco diethanolamide.

In a formulation particularly suitable for use as in-cistern block, the composition preferably comprises 0.3 to 5% by weight of polyethylene glycol 400 and 5 to 25% by weight of coco monoethanolamide, and still more preferably, 0.5 to 3% by weight of polyethylene glycol 400 and 10 to 20% by weight of coco monoethanolamide.

Preferably, the cleansing and sanitizing composition of the invention further comprises 0.003 to 1% by weight of at least one suitable dyestuff adapted to impart to the rim-block or block an homogeneous color, preferably white, for a more pleasant and uniform appearance.

Besides, thanks to the stabilization of the oxidizing system (oxidizing agent and possibly halogen release agent) of the remaining ingredients, the composition of the invention may advantageously comprise a greater amount of perfume with respect to the amount allowed in the known composition including dichloroisocyanurates as halogen-based bleaching agents described, for instance, in European Patent EP 0 672 103.

In particular, the perfume is preferably added in an amount of from 0.0002 to 5% by weight, still more preferably of from 2 to 4% by weight for conventional perfumes, and of

from 0.001 to 0.005% by weight in case of essences. Of course, those skilled in the art can easily dose the amount of perfume to obtain the effect desired.

In a preferred embodiment, the composition of the invention may further comprise 0.25 to 3% by weight of at least one suitable solubility control agent, adapted to control the velocity of dissolution of the composition in water.

Preferably, such adjusting agent is a carboxymethylcellulose sodium salt. Thanks to its high affinity for water, the carboxymethylcellulose sodium salt is, in fact, advantageously capable of reducing the amount of free moisture within the composition, thus reducing the risk of a premature destabilization of the oxidizing agent.

The preparation of a water closet rim-block or in-cistern block for sanitary appliances according to the present invention is carried out by means of conventional methods and apparatuses and without particular precautions other than those for handling and storing raw materials.

In particular, in a first step, the ingredients of the composition in the form of powders and liquids, are mixed at a temperature selected in the range of from 30 to 70°C, so as to facilitate the blending of the ingredients (melting, if necessary, those that are solid at room temperature), and to obtain a mixture having viscosity and plasticity characteristics such as to allow the subsequent forming by extrusion.

During the subsequent extrusion operations, the mixture is drawn through a drawplate maintained at a temperature of about 70°C and afterward subdivided with a special cutter into rim-blocks or blocks having the shape and size appropriate for the use.

Advantageously and thanks to the stability characteristics of the composition of the invention, the drawing operation

may be carried out also at a temperature of 70°C, without adversely affecting the chemical-physical characteristics of the same composition.

The rim-blocks or blocks come out from the drawplate at a temperature of about 50°C and are allowed to cool at room temperature.

Further characteristics and advantages of the present invention will be more apparent from the following description of some embodiments of cleansing and sanitizing compositions according to the invention.

Example 1

(Invention)

In a Z double arm mixer, conventional *per se*, the following ingredients were charged:

- anionic surfactant = sodium alkylaryl sulfonate;

- non ionic surfactants = coco diethanolamide and polyethylene glycol 400;

- oxidizing agent = potassium monopersulfate, available on the market under the trade name of OXONE® (E. DuPont de Nemours & Co., Inc.);

- halogen release agent = sodium chloride;

- pH adjusting agent = citric acid;

- dissolution velocity adjusting agent = carboxymethylcellulose sodium salt;

- dyestuff = titanium dioxide.

After about 30 minutes of mixing carried out at a temperature of about 50°C, a homogeneous mixture was obtained which was afterwards submitted to extrusion and

drawing in known apparatuses conventional *per se*, at a pressure of from 20 to 30 bar, at a drawing speed of about 100 kg/h and by maintaining the drawplate at a temperature of about 70°C.

Once drawn, the composition was subdivided into water closet rim-blocks.

The composition of the mixture is shown in Table I, below.

The tests carried out by the Applicant showed that the rim-blocks had a homogeneous appearance and a high mechanical resistance to impacts and deformations, coupled with a good foam persistency (about 15 minutes).

Example 2

(Invention)

In accordance with the procedures described in the preceding Example 1, a second mixture was prepared comprising the same ingredients as Example 1, except that the amount of coco diethanolamide was reduced and that of polyethylene glycol was increased.

In this case, the time required to obtain a homogeneous mixture of the ingredients was reduced to about 20 minutes.

In accordance with the procedures described in the preceding Example 1, the mixture was then extruded, drawn and subdivided into water closet rim-blocks.

The composition of the mixture is shown in Table I, below.

The subsequent tests carried out on the rim-blocks so obtained showed after each flushing a foam duration substantially similar to that of the composition of Example 1 (about 15 minutes).

Example 3

(Invention)

In accordance with the procedures described in the preceding Example 1, a third mixture was prepared comprising the same ingredients as Example 1 except for polyethylene glycol 400, and additionally including:

- inert filler = anhydrous sodium sulfate;

- perfume.

After about 50 minutes of mixing, a homogeneous mixture was obtained which was then extruded, drawn and subdivided into water closet rim-blocks similarly to the preceding Example 1.

The composition of the mixture is shown in Table I, below.

Example 4

(Invention)

In accordance with the procedures described in the preceding Example 1, a fourth mixture was prepared comprising the same ingredients as Example 1 except for polyethylene glycol 400 and for carboxymethylcellulose sodium salt, and additionally including:

- inert filler = anhydrous sodium sulfate.

After about 50 minutes of mixing, a homogeneous mixture was obtained which was then extruded, drawn and subdivided into water closet rim-blocks similarly to the preceding Example 1.

The composition of the mixture is shown in Table I, below.

Example 5

(Invention)

In accordance with the procedures described in the preceding Example 1, a fifth mixture was prepared comprising the same ingredients as Example 1, and additionally including perfume.

In this case, the time required to obtain a homogeneous mixture of the ingredients was of about 20 minutes.

Similarly to the preceding Example 1, the mixture was then extruded, drawn and subdivided into water closet rim-blocks.

The composition of the mixture is shown in Table I, below.

Example 6

(Invention)

In accordance with the procedures described in the preceding Example 1, a sixth mixture was prepared comprising the same ingredients as Example 1, except that coco monoethanolamide replaced coco diethanolamide.

In this case, coco monoethanolamide was heated to a temperature of about 70°C to obtain its melting and then was mixed in the liquid state with the other ingredients. The time required to obtain a homogeneous mixture of the ingredients was of about 30 minutes.

Similarly to the preceding Example 1, the mixture was then extruded and drawn, but was subdivided into in-cistern blocks for sanitary appliances.

The composition of the mixture is shown in Table II, below.

Example 7

(Invention)

In accordance with the procedures described in the preceding Example 1, a seventh mixture was prepared

comprising the same ingredients as Example 6, except that the amounts of sodium alkylarylsulfonate, sodium chloride, carboxymethylcellulose and OXONE® were changed.

The time required to obtain a homogeneous mixture of the ingredients was of about 30 minutes.

Similarly to the preceding Example 6, the mixture was then extruded, drawn and subdivided into in-cistern blocks for sanitary appliances.

The composition of the mixture is shown in Table II, below.

Example 8

(Invention)

In accordance with the procedures described in the preceding Example 1, an eighth mixture was prepared comprising the same ingredients as Example 1, except for sodium chloride.

In this case, the time required to obtain a homogeneous mixture of the ingredients was of about 20 minutes.

Similarly to the preceding Example 1, the mixture was then extruded, drawn and subdivided into water closet rim-blocks.

The composition of the mixture is shown in Table I, below.

Example 9

(Comparison)

A water closet rim-block available on the market was selected as comparison composition, including the following ingredients:

- chlorine-based bleaching agents (dihydrated dichloroisocyanurate) in an amount of from 15 to 30%;

- anionic surfactants > 30%.

Example 10

(Determination of the stability of the oxidizing agents of the compositions over the time)

A sample of each of the rim-blocks or blocks of Examples 1, 3, 4, 6, 8 and 9 was submitted to a set of tests in order to evaluate the stability of the oxidizing agent thereof over the time, i.e. to evaluate the amount of non-decomposed oxidizing agent that was still present after a given time.

In particular, some rim-blocks or blocks just produced (invention) were placed within a stove, conventional *per se*, at the temperature of 42.5°C for a time of about 10 days.

Afterwards, these samples, including those withdrawn from the stove, were evaluated for the stability of the oxidizing agent. Some of the samples withdrawn were then conventionally packed within packages made of paper and plastics similar to those that are available on the market. On set times, also the stability of the oxidizing agent of the packed samples (invention and comparison) was evaluated.

The evaluation of the stability of the oxidizing agent of the rim-blocks and blocks compositions over the time was carried out as described below.

From each sample an amount equal to 1 g of product was withdrawn, which was diluted with 100 ml of a solution prepared by mixing 5 g of potassium iodide and 10 ml glacial acetic acid in 1 liter of distilled water.

The solution containing the cleansing and sanitizing product was mechanically stirred until the dissolution of

the product was complete. The solution obtained was then titrated with sodium thiosulfate 0,1 N until the color disappeared.

The values of sodium thiosulfate added are indicative of the amount of oxidizing agent still present within the composition.

For convenience of reading, such values of sodium thiosulfate are expressed as percent values, i.e. they are referred to the amount of sodium thiosulfate employed for the titration of a solution containing the theoretical amount of oxidizing agent and halogen release agent (if it is present) in 1 g of rim-block or block.

The data so obtained are shown in Table III, below, for the compositions of the invention and the comparison composition.

The analysis of values of said Table III shows that after three months from the producing date, the compositions of the invention include an amount of oxidizing agent comparable to that of the known comparison composition.

Example 11

(Determination of the sanitizing activity of the compositions)

A sample of each of the rim-blocks of the preceding Examples 2, 8 and 9 and a sample of a rim-block of standard formulation including:

- alkylarylsulfonate = 47% by weight,
- sodium sulfate = 47% by weight,
- perfume = 3% by weight,
- non ionic surfactant = 2.5% by weight,

- dyestuff = 0.5% by weight,

were submitted to a set of tests in order to evaluate their sanitizing (antimicrobial) power.

In particular, each sample, separately from the other, was dipped in 1 liter of water containing the selected micro-organism, in the case in point *Escherichia coli* ATCC8739, at the concentration of 10^9 c.f.u. per milliliter. The dipping procedure included 10 dipping with 3 sec intervals from one another.

The controls of microbial surviving in water were performed before dipping, after dipping at zero time and after 10 minutes, by the counting method in agarized medium indicated in the book "La microbiologia nell'industria cosmetica", chap. IV, pp. 73-77, UNIPRO 1990.

The results of the tests are shown in Table IV, below.

An examination of such results shows that the compositions of the invention (Examples 2 and 8) can reduce to a substantial extent the microbial surviving already at zero time with respect to both the standard composition free from antimicrobial agent and the known comparison composition (Example 9).

More particularly, even though the latter comprises an amount of oxidizing agent theoretically active and capable of exercising its sanitizing power comparable to that of Example 8 (see Table III), it actually has a substantially null sanitizing power, similar to the one of the standard rim-block, probably because of an insufficient reactivity of the oxidizing agent in the test conditions.

Also the results obtained after 10 minutes of dipping confirm that the compositions of the invention (Examples 2 and 8) exercise a markedly effective sanitizing action than that of the comparison composition (Example 9).

TABLE 1

Ingredients	Ex. 1	Ex. 2	Ex. 3	Ex. 4	Ex. 5	Ex. 8
Sodium alkyl aryl sulfonate	53.65	53.65	58.625	58.625	52.65	53.65
Carboxy methyl cellulose	1	1	1	-	1	1
Sodium chloride	10	10	8	8	10	-
OXONE®	25	25	20	20	25	25
Citric acid	2	2	2	2	2	2
Coco di-ethanolamide	6	3	6.5	8	2	2.5
Polyethylene glycol 400	2	5	-	-	4	5,5
Titanium dioxide	0.35	0.35	0.375	0.375	0.35	0.35
Perfume	-	-	2	-	3	-
Anhydrous sodium sulfate	-	-	1.5	3	-	10

TABLE II

Ingredients	Ex. 6	Ex. 7
Sodium alkylarylsulfonate	54.15	47.45
Sodium chloride	8	10
OXONE®	20	25
Citric acid	2	2
Coco monoethanolamide	12.5	12.5
Carboxymethylcellulose	1	0.7
Polyethylene glycol 400	2	2
Titanium dioxide	0.35	0.35

TABLE III

	Ex. 1 (Inv.)	Ex. 3 (Inv.)	Ex. 4 (Inv.)	Ex. 6 (Inv.)	Ex. 8 (Inv.)	Ex. 9 (Com)
10 days (45°C stove)	97.8	95.5	-	98.7	-	-
3 weeks	-	-	-	-	100	-
6 weeks (Tamb)	-	100	100	94.7	-	-
2 months (Tamb)	-	-	-	91.1	-	-
3 months (Tamb)	-	-	91.5	-	91	92

- = non available datum

TABLE IV

	ZERO TIME CONTROL	10 MINUTES CONTROL
Standard rim-block	$>10^8$ c.f.u.	$>10^8$ c.f.u.
Ex. 2 (Inv.)	10^2 c.f.u.	<10 c.f.u.
Ex. 8 (Inv.)	<10 c.f.u.	<10 c.f.u.
Ex. 9 (Comp.)	$>10^8$ c.f.u.	$>10^8$ c.f.u.

c.f.u. = colony forming units

CLAIMS

1. A cleansing and sanitizing composition for sanitary appliances, comprising:

a) 10 to 80% by weight of at least one anionic surfactant;

b) 0.5 to 25% by weight of at least one first non ionic surfactant substantially free from water and having a viscosity at 70°C of from 200 to 1000 mPa*s;

c) 0.5 to 35% by weight of an oxidizing agent including at least one peroxide bond adapted to decompose in the presence of water;

d) an effective amount of at least one pH adjusting agent, adapted to maintain the composition pH at such a value so as to stabilize said oxidizing agent.

2. The cleansing and sanitizing composition according to claim 1, wherein said anionic surfactant is selected from the group comprising: sodium alkylarylsulfonate, sulfonated sodium paraffin, sodium alkylsulfate, sulfonated α-olefins, and mixtures thereof.

3. The cleansing and sanitizing composition according to claim 1, wherein the first non ionic surfactant is selected from the group comprising alkanolamides of C_8-C_{18} saturated and unsaturated fatty acids, ethoxylated fatty alcohols, and mixtures thereof.

4. The cleansing and sanitizing composition according to claim 1, wherein the oxidizing agent is potassium monopersulfate.

5. The cleansing and sanitizing composition according to claim 1, wherein the pH adjusting agent comprises a weak acid selected from organic or inorganic acids having a first ionization constant (pK_i) at 25°C of from 3 to 5.

6. The cleansing and sanitizing composition according to claim 5, wherein said weak acid is selected from the group comprising: phosphoric acid, sulfamic acid, citric acid, tartaric acid, malic acid and mixtures thereof.

7. The cleansing and sanitizing composition according to claim 1, further comprising 0.2 to 14% by weight of a halogen release agent by reacting with the oxidizing agent.

8. The cleansing and sanitizing composition according to claim 7, wherein said halogen release agent comprises a metal halide selected from the group comprising sodium chloride, sodium bromide, and mixtures thereof.

9. The cleansing and sanitizing composition according to anyone of the preceding claims, further comprising 0.3 to 10% by weight of at least one second non ionic surfactant substantially free from water and having a viscosity at 70°C of from 50 to 500 mPa*s.

10. The cleansing and sanitizing composition according to claim 9, wherein the second non ionic surfactant is selected from the group comprising polyalkylene glycols, liquid complex esters of glycerol, and mixtures thereof.

11. The cleansing and sanitizing composition according to anyone of the preceding claims, further comprising 0.003 to 1% by weight of at least one dyestuff and/or 0.0002 to 5% by weight of perfume.

12. The cleansing and sanitizing composition according to anyone of the preceding claims, further comprising 0.25 to 3% by weight of at least one solubility control agent adapted to control the dissolution velocity of the composition in water.

13. The cleansing and sanitizing composition according to claim 12, wherein the solubility control agent is a carboxymethylcellulose sodium salt.

14. The cleansing and sanitizing composition according to anyone of the preceding claims, in the form of a water closet rim-block or a in-cistern block of sanitary appliances.

INTERNATIONAL SEARCH REPORT

Inter onal Application No
PCT/IT 99/00181

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C11D17/00 C11D1/83 C11D3/39 C11D3/395 //C11D1:14, C11D1:22,C11D1:66,C11D1:72

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C11D A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 619 366 A (PROCTER & GAMBLE) 12 October 1994 (1994-10-12) claims examples page 3, line 34 -page 4, line 27	1-6, 9-11,14
A	MCCUTCHEON'S DIRECTORIES.: "Emulsifiers & Detergents" 1994 , MC PUBLISHING. , GLEN ROCK , USA XP002130407 page 91	1,3
A	GB 1 538 857 A (CIBA GEIGY) 24 January 1979 (1979-01-24) claims page 2, line 26 - line 103 examples page 3, line 18 - line 40	1-4,7,8, 11,14

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[X] Further documents are listed in the continuation of box C. [X] Patent family members are listed in annex.

° Special categories of cited documents :

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 February 2000	02/03/2000

Name and mailing address of the ISA	Authorized officer
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Inter nal Application No
PCT/IT 99/00181

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 98 37171 A (RECKITT & COLMANN) 27 August 1998 (1998-08-27) claims examples -----	1-3, 11-14

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INTERNATIONAL SEARCH REPORT

information on patent family members

Inter nal Application No
PCT/IT 99/00181

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		WO 9423002 A	13-10-1994
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