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Cleaning composition and method for cleaning outdoor surfaces.

A composition comprising : (A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution ; (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with a concentrated chlorinated bleach solution ; (C) about 0.025 to about 0.35 percent by volume of a 100 percent chlorinated bleach solution optionally with a caustic override ; and (D) the balance being water. The composition is useful as a cleaning composition for various outdoor surfaces including wood, composition for various outdoor surfaces including wood, vinyl, fiberglass, ceramic tile, concrete, brick, canvas, stone, and plastics. The composition is especially effective for cleaning wood surfaces.

The present invention relates to cleaning compositions, and more particularly, the present invention relates to a cleaning composition that cleans mold, mildew, algae, grease, and stains from a variety of surfaces including natural wood, stucco, concrete, and other hard surfaces.

Numerous cleaning products are currently being marketed in order to clean different types of wood which are used to make decks, fences, siding, and so forth. Examples of products on the market which are sold for these purposes include MILDEW CHEK, DECK BRIGHT, JOMAR, CEDAR CLEAN, and WOLMAN DECK BRIGHTENER. All of the these products require some type of scrubbing or brushing in order to achieve the stated purpose. Further, many of these products require mixing or measuring of some sort and therefore are very susceptible to being mixed improperly and being ineffective or being an environmental and safety hazard. Many of the products also harm plants, fish, animals, or birds which can destroy the landscaping around and/or wild life around the structure being cleaned.

As further background to the present invention, several different acids can be used to clean various types of wood, concrete, and other outside surfaces. However, no single acid will clean mold, mildew, algae, organic stains, and remove dirt without harming one or all of a variety of surfaces to be cleaned.

Also, any one of several products currently being marketed to clean outside surfaces recommend brushing, scrubbing, mixing with other ingredients and/or mention incompatibility with some surfaces.

Additionally, chlorine bleach is often used to clean outside surfaces. However, although it will do a good job, even the manufacturers of chlorine bleach do not recommend it for this use because used alone, the bleach will dry wood too much and cause the knots to shrink and fall out. It will also cause wood to cup when exposed to direct sunlight.

Finally, there are many products that consist of poisonous petroleum based chemicals that will kill mold, mildew, fungus, and algae, but there are none with a combination and compatibility of chemicals that are safe and environmentally degradable.

The invention seeks to reduce at least some of the problems.

At least some embodiments of the present invention provide cleaning compositions that will clean a variety of outdoor surfaces in addition to wood with absolutely no scrubbing or brushing.

At least some embodiments of this invention provide a cleaning composition that can be sold full strength, so that mixing or measuring is not required, thereby leaving room for improper mixing resulting in ineffectiveness or being an environmental and safety hazard.

At least some embodiments of this invention provide a cleaning composition which can be sold full

strength and maintain maximum performance while at the same time being so mild that when used as directed will effectively clean without harming the environment such as plants, fish, animals, or birds.

At least some embodiments of the present invention provide a cleaning composition for outdoor surfaces which is degradable and quickly breaks down into inert materials.

According to the invention there is provided

(A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with chlorinated bleach solutions;

(B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with chlorinated bleach solutions;

(C) up to about 5 percent by volume of a 100 percent chlorinated bleach solution; and

(D) the balance being water.

In a preferred embodiment, the alcohol is isopropyl alcohol and the bleach solution is a 100 percent solution of sodium hypochlorite or potassium hydrochlorite.

A preferred composition comprises

(A) about 0.1 to about 10 percent by volume of a surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions;

(B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with concentrated chlorinated bleach solutions;

(C) about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount needed to maintain chlorine stability in the composition; and

(D) the balance being water.

Also provided is a method for cleaning soiled outdoor surfaces comprising the steps of:

I. applying the above-described cleaning composition to the soiled surfaces, and

II. after a period of time sufficient to remove the soil, rinsing the surface by spraying with water.

In a preferred embodiment, the alcohol is isopropyl alcohol and the bleach solution is a 100 percent solution of sodium hypochlorite or potassium hydrochlorite, and especially preferably sodium hypochlorite.

The above-described composition is new in the industry because it is the only composition formulated with a combination of chemicals that are considered to be mild household cleaners but works as fast as most dangerous acids and has no disadvantages such as raising the nap of wood, causing some outside surfaces to deteriorate more rapidly than normal, or leaving a white scum. In actual field tests, the pre-

sently claimed composition dramatically out-performed every product that could be found available in and was sold in major hardware, paint, and marine stores in the United States.

Further, the combination of ingredients is unique in that the chlorinated bleach solution will clean mold, mildew, fungus, algae, and other stains on outdoor surfaces, but at the same time the surfactant or surfactants act as a buffer in that they combine with and retard the harshness of the chlorinated bleach solution and enhance the action of the chlorinated bleach solution by emulsifying organic oils and any animal fatty acids and dirt residue. The surfactants are also penetrants that will actually penetrate porous surfaces and help lift the foreign matter to the surface for easy removal. The alcohol serves two purposes: first, it helps the chlorinated bleach to slightly raise the grain in wood so the wood will more easily release the foreign matter and cleaning action can take place with no labor, and second, it also acts a drying agent on the emulsified organic oils so that they tend to thicken and stick together for easier removal. With this combination of ingredients, the pressure from the average garden hose is all that is needed to cause the surface to be cleaned. This action is unsurpassed in cleaning and preparing surfaces and especially wood, for painting, staining, or sealing.

The composition described above with a caustic override importantly and unexpectedly does not cause the nap of wood to raise, does not cause premature deterioration of other materials such as some fabrics, and does not form a white scum on cleaned surfaces, as did its commercialized forerunner, which used about 5 percent by volume of a 100 percent chlorinated bleach solution.

According to the present invention, the surfactant can be any surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions. The phrase "compatible with concentrated chlorinated bleach solutions" means that the surfactant and chlorinated bleach solutions are soluble in each other without reacting or changing their chemical composition. The surfactant must be suitable for storage with hypochlorite solutions without loss of its cleaning ability and without reaction.

The surfactant emulsifies the oils and dirt impregnated in the wood or surfaces being cleaned as well as any perfume or odorant oils added to the inventive composition. Further, the surfactant emulsifies undesirable materials in and on the surface being cleaned and helps remove these undesirable materials such as oxidized oils and dirt. The surfactant also serves as a buffer to prevent raising the wood grain by the hypochlorite solution.

Preferably, the surfactant is an amine oxide, a lauryl betaine, an ethoxylated carbon chain compound and/or a sulfonated carbon chain compound.

Specific examples of such surfactants suitable

for use in the present composition include a lauryl dimethyl amine oxide, a lauryl betaine, an ethoxylated hydrogenated tallow amine, a hypochlorite solutions without loss of its cleaning ability and without reaction.

The surfactant emulsifies the oils and dirt impregnated in the wood or surface being cleaned as well as any perfume or odorant oils added to the inventive composition. Further, the surfactant emulsifies undesirable materials in and on the surface being cleaned and helps remove these undesirable materials such as oxidized oils and dirt. The surfactant also serves as a buffer to prevent raising the wood grain by the hypochlorite solution.

Preferably, the surfactant is an ethoxylated and/or sulfonated carbon chain and an amine oxide and/or lauryl betaine.

Specific examples of such surfactants suitable for use in the present composition include a lauryl dimethyl amine oxide, a lauryl betaine, an ethoxylated hydrogenated tallow amine, a nonylphenol ethoxylated or triethanol amine salt of an alkyl lauryl sulfonate or an octylphenoxy polyethoxy ethanol. An amine oxide, a lauryl betaine, or an octylphenoxy polyethoxy ethanol are preferred.

The surfactant can be one or a combination of surfactants and the total percent by volume ranges from about 0.1 to about 20. Where the override is present the surfactant ranges from about 0.1 to 10 vol %. The preferred amount of surfactant is about 1 percent by volume.

According to the present invention, the alcohol can be any of a primary, secondary or tertiary alcohol, as long as it is compatible with concentrated chlorinated bleach solutions. The phrase "compatible with chlorinated bleach solutions" means that the alcohol and chlorinated bleach solutions are soluble in each other without reacting or changing their chemical composition.

Specific examples of suitable alcohols that are useful in the present composition, on a 100 percent basis, include methyl alcohol, ethyl alcohol and its denatured counterparts, and isopropyl alcohol.

Isopropyl alcohol and/or methyl alcohol are preferred. Ethyl alcohol and its denatured counterparts are less desirable because of high cost and the complexity of the denaturant formulas. High alcohols such as butyl, octyl, and decyl alcohol are not desirable because they dry too slowly.

The alcohol aids the penetration of the surfactant and bleach (hypochlorite) into the surface and helps emulsify undesirable oils. The alcohols can be used alone or in combination.

The alcohol is used in an amount of from about 0.1 to about 8 percent by volume, and an amount of about 0.5 to 1.2 percent by volume is preferred. Where an override is not present an amount of about 0.5 to 1.0 volume percent is preferred.

According to the present invention, the chlorinated bleach solution can be any of sodium hydrochlorite, potassium hypochlorite or calcium hypochlorite. Calcium hypochlorite is less preferred because the calcium ion is relatively insoluble and causes surfactants, soaps or detergents to become inactive.

In the present composition, hypochlorite removes the stains caused by mold, mildew, fungus and algae usually associated with dampness and moisture. The chlorinating and oxidizing action of the hypochlorite solution whitens and brightens the surface cleaned and returns it to a stain and dirt free surface as when new.

Where an override is present the bleach solution is used in an amount of from about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution, and about 3 percent by volume is preferred.

The present inventors have unexpectedly found that compositions with greater than about 4.0 percent bleach cause the nap of wood to raise and compositions with less than about 1.0 percent bleach are cleaners in themselves. However cleaning time is excessively long. The inventive composition cleans effectively in minutes whereas concentrations of less than 1.0 percent bleach require hours, thereby making the job labor intensive. Concentrations less than 1.0 percent may require repeated applications of the solution to match the effective cleaning of the inventive composition.

Bleach solutions are stabilized by the addition of excess alkali, usually sodium hydroxide (sometimes referred to as caustic or alkali or lye) in the manufacturing process in order to prevent loss of chlorine. This practice is commonly referred to as an "override" of caustic, e.g., sodium hydroxide. The present inventors have found that excess alkali, e.g., sodium hydroxide, in the bleach solution causes raising of the nap of wood and deterioration of fabrics and products sensitive to sodium hydroxide. The present inventors have also found that excessive alkali, e.g., sodium hydroxide, causes a white scum to form on some hard surfaces such as wood. Reducing the "override" of the caustic reduces this effect and also reduces the pH of the solution. The "override" is sometimes on the order of 1.5 percent by volume of alkali, e.g., sodium hydroxide, with 0.7 percent being the norm. This results in a pH of 11.5 to 11.7. Reducing the "override" to about 0.4 to about 0.6 percent in the final composition maintains the chlorine stability yet reduces the pH to 11.25. Thus, the lower the alkali content of the bleach solution the less the deleterious effect.

According to the present invention, the caustic override in the final composition is an approximate amount needed to maintain chlorine stability and yet avoid the deleterious effects of the bleach. The amount is an approximate amount, because a slightly higher amount than is needed to maintain chlorine stability can be tolerated without producing the dele-

terious effects. The skilled artisan can readily determine the approximate amount of caustic suitable for use in the composition of the present invention.

Where an override is not present the bleach solution is used in an amount of from about 0.025 to about 0.35 percent by volume of a 100 percent chlorinated bleach solution, and about 5 percent by volume is preferred. Further, in practice, the stock solution is a 5 percent solution. Therefore, 0.025 percent by volume of a 100 percent chlorinated bleach solution would actually involve using 0.5 percent by volume of a 5 percent stock solution. Satisfactory results with up to about 5 percent bleach on a 100 percent basis can be achieved.

The balance of the composition is water or water and other additives which do not affect the efficacy of the composition. The water can be tap water, deionized water or distilled water.

Examples of other ingredients that can be used in the composition include perfumes, odorants and/or masking agents for the odors of the hypochlorites and colorants. In addition certain silicones such as those used in the car wash industry commonly called amino-functional may be added to leave the wood water proofed for a short period of time after cleaning. The silicone must be compatible with the oil or solvent based final water proofing applied after using the composition of the present invention. Suitable perfumes, odorants and/or masking agents as well as suitable silicones can be readily selected by those skilled in the art of manufacturing silicones and their emulsions. Examples of suitable silicones include the aminofunctional type such as those sold under the trade names "DOW 531" and "DOW 536" and amino-functional silicones which are offsets to the DOW materials such as those manufactured by General Electric, Waccker Silicones, P.P.G. and others, both foreign and domestic.

The silicone additives are used in an amount of from 1 to 5 percent by volume of the final composition, which will be an emulsion.

Suitable amounts of the other additives can be readily determined by those skilled in the art.

The composition according to the present invention can be used to clean a broad range of surfaces. The composition is unusual in that it can be used on such a wide range of materials. Any kind of wood (pine, cedar, redwood, mahogany, salt treated, juniper, cypress, etc.) can be treated, with the exception of teak. Other surfaces which can be cleaned with the inventive composition include vinyl, fiberglass, ceramic tile, concrete, brick, canvas, stone, roof shingles made of asphalt, wood, tile, or fiberglass, plastics, and aluminum. The composition has been used on houses, decks, boats, trailers, roofs, driveways, walkways, stonewalls, fences, and lawn furniture. In all cases, the same ultra-fast amazing results were obtained.

The most appealing aspect of the inventive composition to the consumer is that it can be applied by virtually any method, including brushing, pouring, brooming, or spraying, including high pressure or low pressure as obtained, for example, from a garden hose. The most efficient method of application is spraying. The composition is then let to stand for 15 minutes or until visually clean eg about 10 minutes and washed off with water, usually by spraying the water from a garden hose.

The coverage of the inventive composition ranges from about 5m²/l to 7.5 m²/l (about 200 square feet to about 300 square feet per gallon). The difference depends upon the type and constitution (e.g. dryness) of the surface. Thus a smooth hard surface, such as fiberglass, will require less than an old dried out wood surface. The necessary coverage can readily be determined by first testing a small area of the surface to be cleaned.

The newly cleaned wood will last for many months and if unprotected will simply age as it did before. Other surfaces such as ceramic tile, concrete, brick, fiberglass, stone, and canvass will collect dirt and stains as they did before and over a period of months will require recleaning.

The present invention will now be described by means of examples, which are not meant to be limiting. Unless otherwise specified, all percents, parts, and ratios are by volume.

EXAMPLES

In all of the examples 1 to 4, the cleaning composition had the following composition (all percents are by volume):

- (A) 1 percent lauryl betaine,
- (B) 0.5 percent isopropyl alcohol,
- (C) 5 percent sodium hypochlorite, and
- (D) remainder water.

Further, all of the tests were followed over an eight-month period and absolutely no damage or detrimental effects to the cleaned materials or their surroundings were found.

EXAMPLE 1

A blackened portion of a house with two different styles of wood siding, horizontal lap siding above and split shakes below, was treated as described below. Both materials were fashioned from white cedar wood. The treated area included an "ANDERSON" window with a vinyl clad exterior. A well-kept flower garden was located immediately below the test area.

- (1) A standard low pressure garden pump-up type sprayer was used to apply the composition to the surfaces while dry.
- (2) The initial cleaning action was very dramatic and visually lightened and cleaned the wood in

approximately ten seconds. But upon close inspection some of the mold, mildew, algae, and dirt stain areas were found to be slightly lighter and cleaner than others. The composition was allowed to soak in for fifteen minutes, and the entire area blended into one clean surface at that point.

(3) The test area was thoroughly rinsed with water sprayed through the nozzle of a standard garden hose hooked to the home's standard city water supply.

(4) No other cleaners, chemicals, objects, or materials of any description were used to brush, scrub, clean or in any way touch the surface.

(5) After approximately four hours of drying time, the surface was cleaned and free of all mold, mildew, algae, and stains.

(6) The black stains and dirt were also removed from the "ANDERSON" window exterior vinyl surface.

(7) A second inspection concluded seven days later found the results to be very satisfactory. Also, no damage to any plants was observed even though absolutely no precautions were taken to protect the plants from the composition.

EXAMPLE 2

A blackened portion of a chemically treated yellow pine wooden deck was treated as described below. The wood of the deck was of the type that is pretreated and sold for outdoor use and is very persistent to the outdoor elements. It is the most widely used product to build wooden decks, walkways and fences. The industry commonly refers to the product as salt treated lumber.

(1) A low pressure pump-up garden sprayer was used to apply the composition to a dry test area of the deck.

(2) The initial cleaning action that lightened the wood took place in about ten seconds. The composition was allowed to soak in for fifteen minutes. No other materials of any description to aid or assist the cleaning action were used. The test area was thoroughly rinsed with water sprayed through the nozzle of a standard garden hose hooked to the home's city water system.

(4) The surface was allowed to dry to the touch. (Approximately four hours.)

(5) The test area was inspected and the results were found to be very satisfactory. In addition to the initial lightening of the wood, nearly all of the mold, mildew, and algae had been removed.

EXAMPLE 3

A greyed portion of a standard concrete walkway leading to a residence was treated as described be-

low. This walkway was located among oak trees.

(1) A low pressure pump-up garden sprayer was used to apply the composition to the dry test area of the concrete walkway.

(2) The initial cleaning action that lightened the walkway took place in about ten seconds. The composition was allowed to soak in for fifteen minutes. No other materials of any descriptions were used to aid or assist the cleaning action.

(3) The test area was thoroughly rinsed with water sprayed through the nozzle of a standard garden hose hooked to the home's city water system.

(4) The surface was allowed to dry to the touch. (Approximately four hours.)

(5) The test area was inspected and the results were found to be very satisfactory. In addition to the initial lightening of the concrete, nearly all of the mold, mildew, algae, and stains had been removed.

EXAMPLE 4

A portion of a weathered deck lounge constructed of a painted aluminum frame with fiberglass webbing was treated as described below.

(1) A low pressure pump-up garden sprayer was used to apply the composition to the dry test area of the deck lounge.

(2) The initial cleaning action that returned the frame and webbing to its original color took place in about 30 seconds. The composition was allowed to remain for fifteen minutes. No other materials of any description to aid or assist the cleaning action were used. The test area was thoroughly rinsed with water sprayed through the nozzle of a standard garden hose hooked to the home's city water system.

(4) The surface was allowed to dry to the touch. (Approximately thirty minutes.)

(5) The test area (aluminum and fiberglass webbing) was inspected and the results were found to be very satisfactory as nearly all of the mold, mildew, algae, and stains had been removed.

In all of the examples 5 to 8, the cleaning composition had the following components (all percents are by volume):

- (A) 1.0 percent lauryl betaine,
- (B) 0.5 percent isopropyl alcohol,
- (C) 3.0 percent sodium hypochlorite with a caustic override of 0.35 and a pH of approximately 11.2,
- (D) 95.0 percent water, and
- (E) 0.5 percent perfume.

EXAMPLE 5

A deck made of southern yellow pine, commonly

referred to as "pressure treated" lumber was treated as described below. Pressure treated lumber is the most widely used type of lumber to build outside decks and docks. The deck was approximately ten years old. It also was surrounded by flowers and a small vegetable garden.

(1) A low pressure standard pump-up type garden sprayer was used to apply the composition to a large test area while the surface was dry.

(2) The surface started to change to a lighter cleaner look within twenty seconds. However, upon close inspection some spots were found that were not uniformly cleaned so the composition was allowed to remain on the surface for a total of ten minutes. At the end of ten minutes the deck was uniformly clean and nearly all mildew, algae and direct stains had been removed. No other chemicals or cleaning methods were used to brush, scour, rub or agitate the applied composition in any manner.

(3) The house water system and a garden hose equipped with a standard pressure nozzle was used to rinse and wash away the residue. The test area was left to dry for three hours. Inspection of the dried test area of the deck showed that it had been thoroughly cleaned and was visually free of any mildew, algae, and dirt stains.

(4) The deck was inspected several times over a thirty day period and no problems were found whatsoever. The cleaning job was very satisfactory and there was no damage to the wood, nails or surrounding vegetation.

(5) An inspection was performed about 105 days after the initial application, and no problems were apparent.

EXAMPLE 6

A house with horizontal lap siding was treated as described below. The siding was white cedar wood which is a commonly used wood for sliding houses, particularly along coastal areas. The wood is usually not painted or stained and is applied in its natural state. This house had the original siding and was approximately six years old. It was surrounded by flowers and a nice green grass lawn.

(1) A low pressure standard pump-up type garden sprayer was used to apply the composition to a large test area while the surface was dry.

(2) The surface started to change color and appear cleaner within twenty seconds. Some of the more dense wood fibers reacted slower but the entire surface was visually cleaned in ten minutes. Inspection of the cleaned test area showed that the surface was clear of all visual mildew, algae and stains. No other chemicals or cleaning methods were used to clean the surface.

(3) The house water system and a garden hose

equipped with a standard pressure nozzle was used to rinse and wash away the residue. The end result was a dramatically clean looking surface that was visually free of all mildew, algae and stains.

(4) The house was inspected monthly for more than eight months and no adverse effects to the surface or surrounding areas were found.

EXAMPLE 7

A concrete walkway was treated as described below. The residence was located in a heavily wooded area and the walkway exhibited the typical black residue that builds up on surfaces located in wooded areas.

(1) A low pressure standard pump-up type garden sprayer was used to apply the composition to a large test area while the surface was dry.

(2) The initial cleaning action was clearly visible in thirty seconds and the cleaning was complete in approximately ten minutes. No other chemicals, scrubbing or any other type of cleaning action was used.

(3) The house water system and a garden hose that was equipped with a standard pressure nozzle was used to rinse the surface and wash away the residue and stains from the concrete test area.

(4) The test area was allowed to dry (two hours) and the results were then inspected. The concrete surface was visually cleaned and free from mildew, algae, tree and dirt stains.

(5) An inspection fourteen days later showed that the surface was still clean and had no damage to the surface or surrounding areas. The area was reinspected several times over a six month period and each time the inspection found the results still to be very satisfactory.

EXAMPLE 8

A vinyl sided house which is typical of the vinyl siding used by the housing industry nationwide was treated as described below.

(1) A low pressure standard pump-up type garden sprayer was used to apply the composition to a large test area while the surface was dry.

(2) The initial cleaning action was visible in less than thirty seconds. The surface appeared to be totally cleaned at the end of ten minutes. No other chemicals or cleaning action of any description were used.

(3) The house water system and a garden hose that was equipped with a standard pressure nozzle was used to rinse the test surface.

(4) The test area was then left to dry for one hour. Inspection of the dried surface found it to be thor-

oughly cleaned and free from all visible mildew, algae, tree and dirt stains.

(5) The test area was inspected three more times in the following thirty days and no adverse effects or damage to the surface or surrounding painted surfaces or vegetation were found.

While the invention has been described in detail and with reference to specific embodiments thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein.

The following numbered paragraphs set out features of some embodiments.

1. A composition consisting essentially of:

(A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution;

(B) about 0.1 to about 8 percent by volume of isopropyl alcohol;

(C) about 0.025 to about 0.35 percent by volume of a 100 percent chlorinated bleach solution; and

(D) the balance being water,

wherein said cleaning composition is a liquid.

2. The composition of paragraph 1, wherein:

(A) said surfactant is present in an amount of about 1 percent by volume; and

(B) said isopropyl alcohol is present in an amount of about 0.5 to 1 percent by volume

3. The composition of paragraph 1, wherein:

(A) said surfactant is lauryl betaine; and

(B) said bleach solution is sodium hypochlorite or potassium hypochlorite.

4. The composition of paragraph 2, wherein:

(A) said surfactant is lauryl betaine; and

(B) said bleach solution is sodium hypochlorite or potassium hypochlorite.

5. The composition of paragraph 1, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.

6. The composition of paragraph 2, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.

7. The composition of paragraph 1 which additionally contains and odorant, perfume, and/or masking agent.

8. The composition of paragraph 1 which additionally contains an odorant, perfume, and/or masking agent.

9. A method for cleaning soiled outdoor surfaces comprising the steps of:

- I. applying to said surfaces a composition consisting essentially of:
- (A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution; 5
 - (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary, tertiary, and quaternary alcohol which is compatible with a concentrated chlorinated bleach solution; 10
 - (C) about 0.025 to about 0.35 percent by volume of a 100 percent chlorinated bleach solution; 15
 - (D) the balance being water; and
- II. after a period of time sufficient to remove the soil, rinsing said surface by spraying with water.
10. The method of paragraph 9, wherein: 20
- (A) said surfactant is present in an amount of about 1 percent by volume; and
 - (B) said alcohol is present in an amount of about 0.5 to 1 percent by volume.
11. The method of paragraph 9, wherein: 25
- (A) said surfactant is lauryl betaine;
 - (B) said alcohol is isopropyl alcohol; and
 - (C) said bleach solution is sodium hypochlorite or potassium hypochlorite.
12. The method of paragraph 10, wherein: 30
- (A) said surfactant is lauryl betaine;
 - (B) said alcohol is isopropyl alcohol; and
 - (C) said bleach solution is sodium hypochlorite or potassium hypochlorite.
13. The method of paragraph 9, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, a lauryl betaine, and a mixture of an amine oxide and lauryl betaine. 35
14. The method of paragraph 10, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine. 40
15. The method of paragraph 9, wherein said composition additionally contains an odorant, perfume, and/or masking agent. 45
16. The method of paragraph 10, wherein said composition additionally contains an odorant, perfume, and/or masking agent. 50
17. A composition consisting essentially of: 55
- (A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution;
 - (B) about 0.1 to about 8 percent by volume of isopropyl alcohol;
 - (C) about 5 percent by volume of a 100 percent chlorinated bleach solution; and
 - (D) the balance being water, wherein said cleaning composition is a liquid.
18. The composition of paragraph 17, wherein:
- (A) said surfactant is present in an amount of about 1 percent by volume; and
 - (B) said isopropyl alcohol is present in an amount of about 0.5 to 1 percent by volume.
19. The composition of paragraph 17, wherein:
- (A) said surfactant is lauryl betaine; and
 - (B) said bleach solution is sodium hypochlorite or potassium hypochlorite.
20. The composition of paragraph 18, wherein:
- (A) said surfactant is lauryl betaine; and
 - (B) said bleach solution is sodium hypochlorite or potassium hypochlorite.
21. The composition of paragraph 17, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
22. The composition of paragraph 18, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
23. The composition of paragraph 17 which additionally contains an odorant, perfume, and/or masking agent.
24. The composition of paragraph 18 which additionally contains an odorant, perfume, and/or masking agent.
25. A method for cleaning soiled outdoor surfaces comprising the steps of:
- I. applying to said surfaces a composition consisting essentially of:
- (A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution;
 - (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary, tertiary, and quaternary alcohol which is compatible with a concentrated chlorinated bleach solution;
 - (C) about 5 percent by volume of a 100 percent chlorinated bleach solution;
 - (D) the balance being water; and
- II. after a period of time sufficient to remove the soil, rinsing said surface by spraying with

- water.
26. The method of paragraph 25, wherein:
 (A) said surfactant is present in an amount of about 1 percent by volume; and
 (B) said alcohol is present in an amount of about 0.5 to 1 percent by volume. 5
27. The method of paragraph 25, wherein:
 (A) said surfactant is lauryl betaine;
 (B) said alcohol is isopropyl alcohol; and
 (C) said bleach solution is sodium hypochlorite or potassium hypochlorite. 10
28. The method of paragraph 26, wherein:
 (A) said surfactant is lauryl betaine;
 (B) said alcohol is isopropyl alcohol; and
 (C) said bleach solution is sodium hypochlorite or potassium hypochlorite. 15
29. The method of paragraph 25, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine. 20
30. The method of paragraph 26, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine. 25
31. The method of paragraph 25, wherein said composition additionally contains an odorant, perfume, and/or masking agent.
32. The method of paragraph 26, wherein said composition additionally contains an odorant, perfume, and/or masking agent. 35
33. A composition comprising:
 (A) about 0.1 to about 10 percent by volume of a surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions; 40
 (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with concentrated chlorinated bleach solutions; 45
 (C) about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount needed to maintain chlorine stability in the composition; and 50
 (D) the balance being water.
34. The composition of paragraph 33, wherein:
 (i) said surfactant is present in an amount of about 1 percent by volume; 55
 (ii) said alcohol is present in an amount of about 0.5 to 1.2 percent by volume; and
 (iii) said bleach solution is present in an amount of about 3 percent by volume.
35. The composition of paragraph 33, wherein said alcohol is isopropyl alcohol.
36. The composition of paragraph 34, wherein said alcohol is isopropyl alcohol.
37. The composition of paragraph 33, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine and a mixture of an amine oxide and lauryl betaine.
38. The composition of paragraph 34, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
39. The composition of paragraph 33, wherein said bleach solution is sodium hypochlorite.
40. The composition of paragraph 34, wherein said bleach solution is sodium hypochlorite.
41. The composition of paragraph 33, which additionally contains an odorant, perfume and/or masking agent.
42. The composition of paragraph 34, which additionally contains an odorant, perfume and/or masking agent.
43. The composition of paragraph 41, wherein:
 (i) said alcohol is isopropyl alcohol; and
 (ii) said bleach solution is sodium hypochlorite.
44. The composition of paragraph 42, wherein:
 (i) said alcohol is isopropyl alcohol; and
 (ii) said bleach solution is sodium hypochlorite.
45. A method for cleaning soiled outdoor surfaces comprising the steps of:
 I. applying to said surfaces a composition comprising:
 (A) about 0.1 to about 10 percent by volume of a surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions;
 (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with concentrated chlorinated bleach solutions;
 (C) about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount needed to maintain chlorine stability in the composition; and
 (D) the balance being water; and
 II. after a period of time sufficient to remove

- the soil, rinsing said surface by spraying with water.
46. The method of paragraph 45, wherein:
- (i) said surfactant is present in an amount of about 1 percent by volume;
 - (ii) said alcohol is present in an amount of about 0.5 to 1.2 percent by volume; and
 - (iii) said bleach solution is present in an amount of about 3 percent by volume.
47. The method of paragraph 45, wherein said alcohol is isopropyl alcohol.
48. The method of paragraph 46, wherein said alcohol is isopropyl alcohol.
49. The method of paragraph 45, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
50. The method of paragraph 46, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
51. The method of paragraph 45, wherein said bleach solution is sodium hypochlorite.
52. The method of paragraph 46, wherein said bleach solution is sodium hypochlorite.
53. The method of paragraph 45, wherein said composition additionally contains an odorant, perfume, and/or masking agent.
54. The method of paragraph 46, wherein said composition additionally contains an odorant, perfume, and/or masking agent.
55. The method of paragraph 53, wherein:
- (i) said alcohol is isopropyl alcohol; and
 - (ii) said bleach solution is sodium hypochlorite.
56. The method of paragraph 54, wherein:
- (i) said alcohol is isopropyl alcohol; and
 - (ii) said bleach solution is sodium hypochlorite.
57. A composition consisting essentially of:
- (A) about 0.1 to about 10 percent by volume of a surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions;
 - (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible with concentrated chlorinated bleach solutions;
 - (C) about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount
- needed to maintain chlorine stability in the composition; and
- (D) the balance being water.
58. The composition of paragraph 57, wherein:
- (i) said surfactant is present in an amount of about 1 percent by volume;
 - (ii) said alcohol is present in an amount of about 0.5 to 1 percent by volume; and
 - (iii) said bleach solution is present in an amount of about 3 by volume.
59. The composition of paragraph 57, wherein said alcohol is isopropyl alcohol.
60. The composition of paragraph 58, wherein said alcohol is isopropyl alcohol.
61. The composition of paragraph 57, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
62. The composition of paragraph 58, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
63. The composition of paragraph 57, wherein said bleach solution is sodium hypochlorite.
64. The composition of paragraph 58, wherein said bleach solution is sodium hypochlorite.
65. The composition of paragraph 57, which additionally contains an odorant, perfume, and/or masking agent.
66. The composition of paragraph 58, which additionally contains an odorant, perfume, and/or masking agent.
67. The composition of paragraph 65, wherein:
- (i) said alcohol is isopropyl alcohol; and
 - (ii) said bleach solution is sodium hypochlorite.
68. The composition of paragraph 66, wherein:
- (i) said alcohol is isopropyl alcohol; and
 - (ii) said bleach solution is sodium hypochlorite.
69. A method for cleaning soiled outdoor surfaces comprising the steps of:
- I. applying to said surfaces a composition consisting essentially of:
 - (A) about 0.1 to about 10 percent by volume of a surfactant that is miscible with water and compatible with concentrated chlorinated bleach solutions;
 - (B) about 0.1 to about 8 percent by volume of one or more alcohols selected from the group consisting of a primary, secondary and tertiary alcohol which is compatible

- with concentrated chlorinated bleach solutions;
- (C) about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount needed to maintain chlorine stability in the composition;
- (D) the balance being water; and
- II. after a period of time sufficient to remove the soil, rinsing said surface by spraying with water.
70. The method of paragraph 69, wherein:
- (i) said surfactant is present in an amount of about 1 percent by volume;
- (ii) said alcohol is present in an amount of about 0.5 to 1.2 percent by volume; and
- (iii) said bleach solution is present in an amount of about 3 percent by volume.
71. The method of paragraph 69, wherein said alcohol is isopropyl alcohol.
72. The method of paragraph 69, wherein said alcohol is isopropyl alcohol.
73. The method of paragraph 68, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, a lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
74. The method of paragraph 69, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine, and a mixture of an amine oxide and lauryl betaine.
75. The method of paragraph 68, wherein said bleach solution is sodium hypochlorite.
76. The method of paragraph 69, wherein said bleach solution is sodium hypochlorite.
77. The method of paragraph 68, wherein said composition additionally contains an odorant, perfume, and/or masking agent.
78. The method of paragraph 69, wherein said composition additionally contains an odorant, perfume, and/or masking agent.
79. The method of paragraph 77, wherein:
- (i) said alcohol is isopropyl alcohol; and
- (ii) said bleach solution is sodium hypochlorite.
80. The method of paragraph 78, wherein:
- (i) said alcohol is isopropyl alcohol; and
- (ii) said bleach solution is sodium hypochlorite.

Claims

1. A liquid cleaning composition comprising:
 - (A) about 0.1 to about 20 percent by volume of a surfactant that is miscible with water and compatible with a chlorinated bleach solution;
 - (B) about 0.1 to about 8 percent by volume of an alcohol which is compatible with a chlorinated bleach solution;
 - (C) up to 5 percent by volume of a 100 percent chlorinated bleach solution, and
 - (D) the balance being water.
2. A liquid cleaning composition as claimed in claim 1, wherein the alcohol comprises isopropyl alcohol.
3. A composition as claimed in claim 1 or claim 2, wherein component A comprises about 0.1 to about 10 percent by volume, and component C comprises about 1 to about 4 percent by volume of a 100 percent chlorinated bleach solution with a caustic override in an approximate amount needed to maintain chlorine stability in the composition.
4. A composition as claimed in claims 1 or 2 comprising at least about 0.025 volume percent bleach.
5. A composition as claimed in any one of the preceding claims, wherein the surfactant is selected from the group consisting of a carbon chain ethoxylated surfactant, a sulfonated surfactant, a mixture of a carbon chain ethoxylated and a sulfonated surfactant, an amine oxide, lauryl betaine and a mixture of an amine oxide and lauryl betaine.
6. A composition as claimed in any one of the preceding claims, wherein the chlorinated bleach solution is sodium hypochlorite.
7. A composition as claimed in any one of the preceding claims which additionally contains an odorant perfume and/or masking agent.
8. A method of cleaning a soiled outdoor surface comprising the steps of:
 - I applying to the surface a composition as claimed in any one of the preceding claims, and
 - II after a period of time sufficient to remove the soil rinsing the surface by spraying with water.



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

DOCUMENTS CONSIDERED TO BE RELEVANT			EP 93300263.6
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	DERWENT ACCESSION NO. 90-257 666 (34), Questel Telesystems (WPIL) DERWENT PUBLICATIONS LTD., London & JP-A-02-180 998 (MIZUTANI K) --	1-6	C 11 D 3/395
Y	US - A - 5 075 025 (WAIBERG et al.) * Examples; claims 1,7 *	1,3-6	
Y	US - A - 4 229 313 (JOY) * Claims 1,7 *	1,3-6	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			C 11 D
The present search report has been drawn up for all claims			
Place of search VIENNA		Date of completion of the search 01-04-1993	Examiner SEIRAFI
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document			

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