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DISINFECTING CLEANSING PAD

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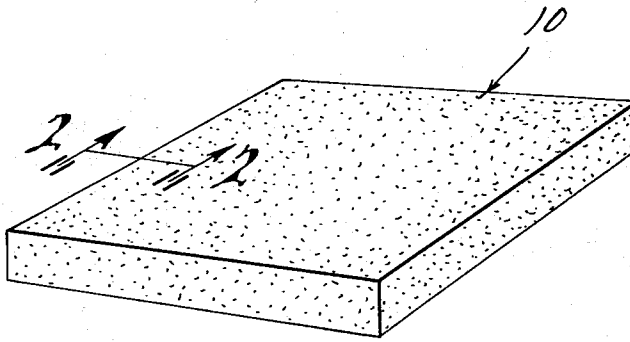


FIG. 1.

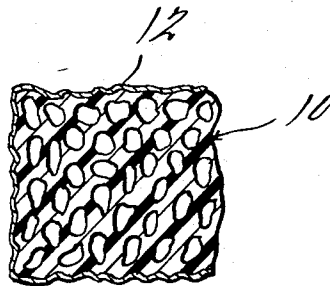


FIG. 2.

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DISINFECTING CLEANSING PAD

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The present invention broadly relates to a disinfecting cleaning aid, and more particularly to a novel disposable pad at least a portion of which is impregnated with a germicidal and cleaning agent. More specifically, the present invention is directed to a novel disposable pad or sponge which incorporates a substantially dry water-soluble impregnant consisting of a germicidal quaternary ammonium compound and a controlled proportion of and amphoteric detergent which are activated by simply moistening the pad or sponge immediately prior to use.

Various disinfecting and cleaning formulations and techniques have heretofore been in use or proposed for use in connection with general medicinal, industrial, agricultural, institutional, and residential disinfecting uses. The general difficulty and inconvenience necessitated with the use of such formulations in addition to the care required to assure proper disinfecting of the surfaces cleaned has somewhat detracted from a more widespread use and acceptance of such chemical germicidal cleaning formulations. The high antimicrobial activities of quaternary ammonium compounds are well recognized in the art, but the incompatibility thereof with many cleaning and detergent materials has occasioned a limitation on their more widespread use in formulations embodying a combined disinfecting and cleaning action.

In order to overcome the foregoing problems and disadvantages inherent in disinfecting cleaning compositions heretofore known, a scrubbing pad, in accordance with the present invention, has been devised which incorporates on at least a portion of the surfaces thereof an impregnant consisting of germicidal quaternary ammonium compounds in combination with controlled proportions of amphoteric and nonionic detergents which, upon moistening immediately prior to use, are effective to provide a high degree of antimicrobial and cleaning action on the surfaces scrubbed therewith. The disinfecting cleansing pad comprising the present invention incorporates a premeasured amount of germicide and detergent which are present in a substantially dry form and enables simple use thereof without encountering any leakage, drippage or waste frequently associated with the use of various detergent and germicidal formulations of the types heretofore known. Additionally, the mechanical abrasion of the sponge or pad incorporating the impregnant with the surface being cleaned thereby assures an intimate contact and removal of dirt and a substantially complete destruction of any microbial contamination on the surface. The disinfecting cleansing pad comprising the present invention, in view of its improved biocidal activity and cleaning action in combination with the extreme convenience in its use, provides for distinct advantages over the various germicidal cleaning formulations heretofore known.

It is accordingly a principal object of the present invention to provide a novel disposable disinfecting cleansing pad which can be stored indefinitely and which incorporates a premeasured quantity of a germicidal agent and a cleansing agent that are activated simply by moistening the pad immediately prior to use.

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Another object of the present invention is to provide novel disinfecting cleansing pad or sponge which is of low cost, enabling it to be disposed of after one use and avoiding thereby any possibility of microbial contamination with subsequent surfaces coming in contact therewith.

Still another object of the present invention is to provide a novel disposable disinfecting cleansing pad which is particularly effective in connection with the cleansing and disinfecting of human and animal skin tissues as is required in general medical practice or the like, providing for greater convenience than has heretofore been possible.

A further object of the present invention is to provide a novel disposable disinfecting cleansing pad or sponge which possesses excellent biocidal and cleaning activities, is simple to prepare, extremely convenient in use, and is of low cost, enabling it to be disposed of after a single use.

The foregoing and other objects and advantages of the present invention are achieved by providing a porous absorbent pad or sponge at least a portion of which is coated with a germicidal quaternary ammonium compound in combination with an amphoteric detergent which may additionally include a nonionic detergent in controlled proportions such that the total detergent present ranges from at least about 50 parts up to about 150 parts per part of the germicidal quaternary ammonium compound present. The total quantity of coating on the pad or sponge will vary consistent with its intended end use. Ordinarily the quantity of the germicidal quaternary ammonium compound is controlled to provide at least about a 50 parts per million (p.p.m.) concentration thereof in the water employed for moistening the sponge during its use.

Other objects and advantages of the present invention will become apparent on the reading of the following description taken in conjunction with the accompanying drawing, wherein:

FIGURE 1 is a perspective view of a typical disposable sponge made of a cellular plastic material, and

FIGURE 2 is a fragmentary transverse sectional view through the cellular sponge, illustrating a coating of the combined germicidal and cleaning composition on a portion of the surfaces thereon.

For the purposes of the present invention, the disposable pad or sponge 10 may comprise any suitable fibrous or cellular structure comprised of a material which is compatible with and chemically resistant to the germicidal and cleaning agent coated on at least a portion of the surfaces 12 thereof. Pads comprised of fibrous materials including synthetic fibers such as acetate, polyester, nylon, or the like, as well as natural fibers such as cotton, wool, etc., can be satisfactorily employed for this purpose. Preferably, the pad material is comprised of a resilient cellular structure such as provided by a natural sponge material, latex foam, or various resilient synthetic foam materials, of which a polyurethane foam pad is preferred. When cellular pad materials are employed, it is preferred that the cells thereof are closed to avoid a significant penetration of the germicidal cleaning agent into the interior of the pad, causing entrapment thereof within the interstices of the pad and retarding its availability at time of use. Particularly satisfactory results have been obtained by employing flexible polyurethane foam pads of a close cell structure, the outer surfaces of which have been coated and/or impregnated with the

germicidal cleaning agent of a composition as hereinafter provided.

The germicidal agent employed in the disinfecting and cleaning agent comprises a quaternary ammonium compound which may be structurally represented by the general formula $R_1R_2R_3R_4NX$ wherein R_1 , R_2 , R_3 and R_4 are hydrocarbon radicals and X is an inorganic anion forming the salt. The salt-forming anion may comprise, for example, a chloride, bromide, sulfate, nitrate, or iodine anion of which the chloride salt constitutes the preferred material. Quaternary ammonium compounds corresponding to the foregoing structural formula are typified by two commercially available classes, one of which is characterized by a structure in which R_1 and R_2 are alkyl radicals containing 1 to 4 carbon atoms while R_3 is an aryl or aralkyl radical of which the alkyl substituent may contain from 0 to 4 carbon atoms and R_4 is an aliphatic hydrocarbon radical having a carbon content ranging from C_{12} up to about C_{18} . This class may be generally described as an alkyl di-R benzyl ammonium halide compound, of which dimethyl benzyl ammonium chloride and dimethyl ethylbenzyl ammonium chloride are typical. A second commercially available and useful class within the general formula as hereinabove set forth includes quaternary ammonium compounds in which R_1 and R_2 are alkyl radicals containing 1 to 4 carbon atoms while R_3 and R_4 are long-chain aliphatic hydrocarbon radicals conventionally derived from fatty acids containing a carbon content ranging from about C_{12} up to about C_{18} . A satisfactory material within the general description of this second class comprises dicoco dimethyl ammonium chloride in which the radicals R_3 and R_4 are derived from the fatty acids of coconut oil.

In each of the aforementioned two typical quaternary ammonium compound classes, the long-chain aliphatic hydrocarbon radicals incorporated thereon may range as low as C_8 to as high as C_{22} . However, it has been found that, when the carbon content of the long-chain alkyl radicals is less than about C_{12} , only minimal antimicrobial activity is provided, while similar results are obtained when the carbon content of the alkyl radical is greater than C_{18} . Alkyl radicals, on the other hand, having carbon contents of C_{12} , C_{14} , and C_{16} , when combined in quaternary ammonium compounds of the aforementioned types, possess the most effective antimicrobial activity, while the C_{18} alkyl derivative has a lower but also appreciable germicidal activity. Conventionally, the quaternary ammonium compounds employed may be mixtures of compounds within each of the two mentioned classes, and wherein each class may include mixtures of the C_{12} , C_{14} , C_{16} and C_{18} alkyl radicals.

The quaternary ammonium compounds, in addition to possessing high antimicrobial activity, are further characterized as having excellent wetting characteristics and surface-active properties providing for a substantial reduction in the surface and interfacial tension of water, enhancing the penetration of the germicidal cleaning formulation into the surfaces being cleansed, thereby assuring substantially complete killing of all harmful bacteria.

In addition to the quaternary ammonium compound, the germicidal cleansing agent impregnated in the cleansing pad further includes an amphoteric detergent or surface-active agent comprising the condensation product of acrylic monomers and fatty primary means producing mono- and di-propionate compounds which are characterized in that they contain both carboxyl and amino functionality in their molecular structure. The general formula of a mono-propionate salt which may conventionally be designated as an n-fatty beta aminopropionate is as follows:



A di-propionate compound conventionally designated as

an n-fatty beta iminodipropionate can be graphically represented by the following formula:



In the structural formulas of the amphoteric detergent as hereinabove set forth, R comprises an aliphatic hydrocarbon radical containing about 8 to 22 carbon atoms such as derived from long-chain fatty acids, of which lauric acid and myristic acid are typical. The radical X may comprise any salt-forming cation or hydrogen such as, for example, any of the alkali metals including sodium or potassium. It is important, in order to achieve the benefits of the present invention, that the germicidal cleaning agent employed for impregnating the pad include an amphoteric detergent of the aforementioned type, either singly or in combination with suitable nonionic detergents of the type subsequently to be described wherein the amphoteric detergent is present in an amount of at least 20% by weight of the total detergent present.

The use of the amphoteric detergent, or mixtures of the amphoteric detergent and suitable nonionic detergents, is carefully controlled with respect to the total quantity of quaternary ammonium compound present in the germicidal cleaning agent. In order to achieve the benefits of the present invention, it has been found necessary, in order to achieve satisfactory cleaning action, that the total detergent present should range from as low as about 4 parts detergent per part quaternary ammonium compound up to about 25 parts detergent per part quaternary ammonium compound, and preferably from about 7 parts to about 10 parts detergent per part quaternary ammonium compound. When the detergent is employed in amounts less than about 4 parts detergent per part quaternary ammonium compound, insufficient cleansing action is provided by the cleansing pad, whereas amounts of detergent in excess of about 25 parts per part quaternary ammonium compound tend to cause skin irritation due to the leaching of skin fats during the use of the cleansing pad and, accordingly, are undesirable. Particularly satisfactory results have been achieved when the ratio of total detergent present is controlled within about 7 parts to about 10 parts per part of quaternary ammonium compound present.

As hereinbefore mentioned, suitable nonionic detergents can be satisfactorily employed as a substitute for a portion of the amphoteric detergent, provided that the amphoteric detergent comprises at least about 20% of the total detergent present. The inclusion of at least 20% of the amphoteric detergent based on the total detergent is essential in order to achieve a synergistic antimicrobial action of the resultant germicidal cleaning formulation and to provide a cleaning agent which is stable and compatible without encountering an adverse reduction in its germicidal activity. The suitable nonionic detergents which can be satisfactorily employed may be either of low, intermediate, or high foaming characteristics in accordance with the specific chemical structure of the molecule and consistent with the desired end use of the cleansing pad. Typical nonionic detergents of the types which can be satisfactorily employed may be of either one or mixtures of the general classes as set forth below:

TABLE I

	Fatty alkanolamides
65	Fatty alcohol ethylene oxide
	Polyoxyethylene fatty acid ester
	Polyethylene glycol oleate
	Polyoxyethylene alkyl phenol
	Ethanolamide fatty acid condensate
70	Polyoxyethylene propylene glycol monostearate
	Iso-octyl phenoxy polyoxyethylene ethanol
	Nonylphenol polyglycol ether alcohol
	Alkylphenol ethylene oxide condensate
	Alkyl aryl polyether alcohol
75	Aromatic polyglycol ether condensate

Polyethylene glycol esters of fatty acids
 Aliphatic polyoxyethylene ether alcohol
 Alkoxy polyoxyethylene ethanol
 Polyoxyethylene ester
 Alkylaryl polyethylene glycol ether
 Alkyl aryl ether
 Isooctyl phenyl polyethoxy ethanol
 Nonyl phenoxy polyoxyethylene ethanol

In addition to the quaternary ammonium germicidal compound and the detergent component, the impregnant for the disinfecting cleansing pad may also include suitable humectants or emollients such as polyethylene glycol, sorbitol, glycerine or the like in amounts sufficient to enhance the soothing of the skin tissues against which the disinfecting cleansing pad is applied during use. The quantity of emollient employed will vary depending on the particular size of the disinfecting pad, as well as the nature of the skin tissues to be contacted therewith and the quantity and/or concentration of the germicidal cleansing impregnant contained in the pad. Conventionally, the emollient can be employed in amounts up to about 5 parts per part of the quaternary ammonium compound present, depending on the particular characteristics of the pad employed. Amounts generally in excess of about 5 parts emollient per part quaternary ammonium compound detract from the seemingly dry characteristics of the disinfecting cleansing pad prior to contact with water before use.

The total quantity of the quaternary ammonium compound and detergent impregnated in the porous pad will also vary depending on the specific size of the pad, the contemplated dilution of the impregnant with water during use, and the germicidal cleansing action desired. Conventionally, concentrations of the quaternary ammonium compound are employed such that the resultant wash solution when employed in the anticipated amount will include a concentration in the aqueous solution formed of at least about 400 p.p.m. of the quaternary ammonium germicidal constituent. It has been found that concentrations of the quaternary ammonium compound as low as about 50 p.p.m. in the resultant aqueous wash solution with which the cleansing pad is moistened provides sanitizing of the skin tissues exposed to contact with the cleaning solution and cleansing pad. Generally, however, it is preferred to incorporate sufficient impregnant in the cleansing pad to provide a concentration of the quaternary ammonium compound in the aqueous cleaning solution of from at least about 200 p.p.m. up to about 1000 p.p.m., assuring a substantially complete killing of all harmful bacteria. Excessive impregnation of the porous disinfecting pad is to be avoided since inadequate quantities of water employed for moistening the sponge or pad, resulting in concentrations of the quaternary ammonium compound substantially above about 1000 p.p.m., have been found to cause some human skin irritation with certain individuals. In view of the foregoing, and further in view of the fact that concentrations above about 1000 p.p.m. of the quaternary ammonium compound do not provide any appreciable germicidal benefits above that attained by concentrations in the range of about 400 p.p.m. to about 1000 p.p.m. the use of excessive quantities of impregnated constitutes an uneconomical utilization of the germicidal cleansing agent.

It can generally be anticipated that approximately one liter of water is employed for moistening the disinfecting cleansing pad prior and during use for cleansing and disinfecting skin tissues. Under such conditions, it has been found that, when employing a porous pad comprised of a closed-cell polyurethane foam of a size 3 inches by 3 inches by 1/4 inch thick, satisfactory antiseptic and cleansing characteristics are achieved by utilizing a germicidal cleansing agent distributed substantially uniformly over the outer surfaces of the pad in an amount of 600 milligrams (mg.) of the quaternary ammonium compound

and about 10,800 mg. total detergent. Excellent germicidal cleansing action is achieved by a similar pad impregnated with a disinfecting cleaning agent comprising 800 mg. quaternary ammonium compound and 10,600 mg. of total detergent. As a surgical scrub, a cellular polyurethane sponge of the aforementioned size and configuration has provided exceptionally satisfactory results when impregnated with a germicidal cleansing composition consisting of 2500 mg. quaternary ammonium compound and 10,100 mg. of total detergent. In each of the foregoing instances, approximately one liter of wash water was employed for moistening the sponge and for contacting the human skin tissues to be cleansed and disinfected. It will be apparent from the foregoing that modifications in the total impregnant present on the surfaces of the disinfecting cleansing pad will vary consistent with the intended end use of the pad and the contemplated dilution of the germicidal cleansing agent on becoming dissolved in the wash water.

It is further contemplated within the scope of the present invention that the impregnant on at least a portion of the surfaces of the porous pad may also include, in addition to the quaternary ammonium compound, the detergent compound, and the emollient, a suitable buffering agent such as triethanolamine or potassium acid phosphate in an amount sufficient to control the pH of the resultant wash solution at a substantially neutral or slightly alkaline range. The inclusion of a buffering agent, however, does not constitute a necessary constituent to the germicidal cleaning impregnant as herein disclosed. The impregnant may also include, if desired, a suitable dye or pigment or, alternatively, the pad itself can be provided with a distinct color to visually apprise the user of the concentration of the impregnant in accordance with a preselected color code.

The application and impregnation or coating of at least a portion of the surfaces of a suitable porous pad or sponge can be conveniently achieved by forming a concentrated solution of the active constituent and thereafter applying it to the pad such as by means of spray coating, roller coating, dipping, floating the pad on a bath of the solution, or the like.

The resultant coated or impregnated pad thereafter is dried to remove the water or solvent from the solution, leaving thereby a residuary precipitate of the active constituents on the surfaces of the pad. These precipitated constituents are readily soluble in the subsequent wash water by simply immersing the sponge and placing it in rubbing contact with the skin tissues to be cleansed. While an aqueous concentrated solution of the germicidal cleansing formulation can be employed for impregnating the pad, it is usually preferred to employ suitable organic solvents such as alcohol, of which isopropyl alcohol constitutes a preferred material for admixture with a suitable quantity of water, thereby facilitating evaporation of the solvent at the completion of the impregnating operation. By virtue of including a volatile solvent such as isopropyl alcohol, for example, in the concentrate solution, relatively rapid and efficient drying at relatively low temperatures of the impregnated pad can be achieved such as by employing recirculating heated air, infrared heating, or the like.

In order to further illustrate the novel disinfecting cleansing pad comprising the present invention, the following example is provided. It will be understood, however, that the example is provided for illustrative purposes and it is not intended to be limiting of the scope of the invention as set forth in the subjoined claims.

Example 1

A series of surgical pads having a germicidal efficiency were prepared, employing a flexible resilient cellular polyurethane foam material which was cut to sizes of 3 inches by 3 inches by 1/4 inch thick. The pads were impregnated with a concentrate of a germicidal cleaning formulation

providing for a residuary precipitate of about 800 mg. of the quaternary ammonium compound and 10,600 mg. of a mixed amphoteric and nonionic detergent. The specific composition of the germicidal cleaning formulation is set forth in Table 2.

TABLE 2

Constituent:	Amount, mg.
Germicidal agent—	
n-C ₁₂ dimethyl benzyl ammonium chloride	18
n-C ₁₄ dimethyl benzyl ammonium chloride	216
n-C ₁₆ dimethyl benzyl ammonium chloride	108
n-C ₁₈ dimethyl benzyl ammonium chloride	18
n-C ₁₂ dimethyl ethylbenzyl ammonium chloride	220
n-C ₁₄ dimethyl ethylbenzyl ammonium chloride	132
n-C ₁₆ dimethyl ethylbenzyl ammonium chloride	75
n-C ₁₈ dimethyl ethylbenzyl ammonium chloride	13
Detergent—	
n-Lauryl, myristyl beta-aminopropionic acid	9,420
Sterox NJ (alkyl aryl polyoxyethylene ether of ethylene oxide-nonyl phenol condensate)	1,180

As will be noted in Table 2, the germicidal agent employed comprised a mixture of the C₁₂, C₁₄, C₁₆ and C₁₈ alkyl quaternary ammonium salt of di-methyl benzyl ammonium chloride and di-methyl ethylbenzyl ammonium chloride. The detergent component employed comprised a blend of an amphoteric surface-active agent comprising a mixture of n-lauryl and n-myristyl beta-aminopropionic acid and a nonionic detergent commercially available as Sterox NJ in the proportions of about 88.9% by weight amphoteric detergent and 11.1% by weight of the nonionic detergent. The ratio of the total detergent present to the germicidal agent employed was approximately 5.6:1 corresponding to 10,600 mg. detergent per 800 mg. of the mixed quaternary ammonium germicidal compounds.

The precipitated germicidal cleaning formulation of the composition as specified in Table 2 was applied to the surfaces of the cellular pad material in the form of a fine spray employing a concentrate solution of the constituents in isopropyl alcohol as a solvent. The isopropyl alcohol and residuary water in the concentrated solution was thereafter evaporated by exposing the wet impregnated sponge to heated recirculating air. The resultant dried sponge or pad incorporating the substantially dry and water soluble precipitate of the germicidal cleaning composition is illustrated in FIGURES 1 and 2 of the drawings. As will be noted in FIGURE 1, the cellular pad material indicated at 10, consisting of a flexible and pliable polyurethane foam of a closed cell structure, is provided with a substantially dry water-soluble coating indicated at 12 in FIGURE 2 over substantially all of the exterior surfaces thereof and the exposed cell walls such that, on exposure of the pad to water immediately prior to use, a rapid solution of the precipitated material is effected, forming an aqueous disinfecting cleaning solution for cleansing and disinfecting human skin tissues or the like.

In order to evaluate the germicidal activity of the disinfecting cleansing pad, a series of the pads, as prepared, were subjected to tests for a determination of their germicidal activity in accordance with the A.O.A.C. method, 10th Edition, employing a tween-lecithin neutralizer. In accordance with the test procedure, two microbial organ-

isms were employed, namely *Staphylococcus aureus* and *Escherichia coli* which were subjected to a 100 milliliter sample of an aqueous solution in which each of the pads had been soaked for a period of 10 minutes. The quantity of water in which the pads were soaked was varied, providing thereby a variation in the net concentration of the germicidal cleansing agent dissolved in the tap water. The results of these tests are tabulated in Table 3 in which the percent kill is provided of the two microorganisms at exposure times of 30 seconds and 60 seconds respectively, to 100 milliliter samples of the tap solution in which the pads were soaked:

TABLE 3

Exposure.....	Percent Kill	
	30 sec.	60 sec.
Organism: <i>Staphylococcus Aureus</i> :		
Pad+100 ml. tap water.....	100.0	100.0
Pad+600 ml. tap water.....	100.0	100.0
Pad+1,000 ml. tap water.....	100.0	100.0
Pad+2,000 ml. tap water.....	99.999	100.0
Organism: <i>Escherichia Coli</i> :		
Pad+100 ml. tap water.....	100.0	100.0
Pad+600 ml. tap water.....	99.974	99.979
Pad+1,000 ml. tap water.....	99.976	99.990

The test data as set forth in Table 3 comprises the average of two separate tests conducted at each of the dilution ratios and at each of the two exposure times of 30 seconds and 60 seconds, respectively, for each of the two organisms. As will be noted, a substantially complete killing of the organisms was achieved even when concentrations of the wash water employed were as high as two liters in the case of the tests on the *Staphylococcus aureus* and one liter on *Escherichia coli*. These test data clearly establish the effectiveness in the germicidal and cleansing action of the disinfecting cleansing pads comprising the present invention.

While it will be apparent that the preferred embodiments of the invention disclosed are well calculated to fulfill the objects above stated, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope or fair meaning of the subjoined claims.

What is claimed is:

1. A disinfecting cleansing pad comprising a pliable pad of a substantially closed cellular foam of a compatible material, a coating of a water-soluble germicidal cleaning agent on at least a portion of the exterior surfaces of said pad and consisting essentially of a germicidal quaternary ammonium compound and a detergent present in an amount of from about 4 parts to about 25 parts per part said quaternary ammonium compound, said detergent consisting essentially of an amphoteric detergent selected from the group consisting of n-fatty beta-aminopropionic acid, n-fatty beta iminodipropionic acid, as well as salts and mixtures thereof.

2. A disinfecting cleansing pad comprising a pliable pad of a substantially closed cell cellular foam of a compatible material, a coating of a water-soluble germicidal cleaning agent on at least a portion of the exterior surfaces of said pad and consisting essentially of a germicidal quaternary ammonium compound and a detergent present in an amount of from about 4 parts to about 25 parts per part said quaternary ammonium compound, said detergent consisting essentially of an amphoteric detergent selected from the group consisting of n-fatty beta-aminopropionic acid, n-fatty beta iminodipropionic acid, as well as salts and mixtures thereof, and an emollient selected from the group consisting of polyethylene glycol, corbitol, glycerine, and mixtures thereof present in an amount up to about 5 parts emollient per part said quaternary ammonium compound.

3. A disinfecting cleansing pad comprising a resilient substantially closed-type polyurethane foam pad, a coat-

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ing of a water soluble germicidal cleaning agent on at least a portion of the exterior surface of said pad and consisting essentially of a germicidal quaternary ammonium compound and a detergent, said detergent present in an amount of from about 4 parts to about 25 parts of said quaternary ammonium compound, said detergent consisting essentially of a mixture of an amphoteric detergent selected from the group consisting of n-fatty beta aminopropionic acid, n-fatty beta iminodipropionic acid, as well as salts and mixtures thereof, and a nonionic detergent wherein said amphoteric detergent comprises at least 20% by weight of the total said detergent present.

4. A disinfecting cleansing pad comprising a resilient substantially closed cell-type polyurethane cellular pad, a coating of a water soluble germicidal cleaning agent on at least a portion of the exterior surface of said pad and consisting essentially of a germicidal quaternary ammonium compound and a detergent, said detergent present in an amount of from about 4 parts to about 25 parts of said quaternary ammonium compound, said detergent consisting essentially of a mixture of an amphoteric de-

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tergent selected from the group consisting of n-fatty beta aminopropionate acid, n-fatty beta iminodipropionic acid, as well as salts and mixtures thereof, and a nonionic detergent wherein said amphoteric detergent comprises at least 20% by weight of the total said detergent present, and an emollient selected from the group consisting of polyethylene glycol, sorbitol, glycerine, and mixtures thereof present in an amount up to about 5 parts emollient per part said quaternary ammonium compound.

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