

631784
CONVENTION

AUSTRALIA

Patents Act

APPLICATION FOR A STANDARD PATENT

☒ We The Procter & Gamble Company

of One Procter & Gamble Plaza,
Cincinnati,
Ohio 45202,
UNITED STATES OF AMERICA.

hereby apply for the grant of a standard patent for an invention
entitled:

COSMETIC AND HOUSEHOLD PRODUCTS

which is described in the accompanying complete specification.

Details of basic application

Number of basic application: 168,725

Convention country in which
basic application was filed: UNITED STATES OF AMERICA

Date of basic application : 16 March 1988

Address for Service:

PHILLIPS ORMONDE & FITZPATRICK
Patent and Trade Mark Attorneys
367 Collins Street
Melbourne 3000 AUSTRALIA

Dated: 20 February 1989

PHILLIPS ORMONDE & FITZPATRICK
Attorneys for 14/03/89
The Procter & Gamble Company

By:

David B. Fitzpatrick

Our Ref : 124789
POF Code: 44135/44135

COMMONWEALTH OF AUSTRALIA

Patents Act

DECLARATION FOR A PATENT APPLICATION

▼ INSTRUCTIONS

- (a) Insert "Convention" if applicable
(b) Insert FULL name(s) of applicant(s)

In support of the (a) Convention application made by

(b)

THE PROCTER & GAMBLE COMPANY

- (c) Insert "of addition" if applicable
(d) Insert TITLE of invention

(hereinafter called "applicant(s)") for a patent (c)
invention entitled (d)

for an

COSMETIC AND HOUSEHOLD PRODUCTS

- (e) Insert FULL name(s) AND address(es) of declarant(s)
(See headnote*)

I/~~WE~~ (e) Richard Charles Witte, Assistant Secretary of
THE PROCTER & GAMBLE COMPANY
One Procter & Gamble Plaza
Cincinnati, Ohio 45202, U.S.A.

do solemnly and sincerely declare as follows:

1. ~~I am/We are the applicant(s).~~
(or, in the case of an application by a body corporate)
1. I am/~~WE are~~ authorized to make this declaration on behalf of the applicant(s).
2. ~~I am/We are the actual inventor(s) of the invention.~~
(or, where the applicant(s) is/are not the actual inventor(s))

- (f) Insert FULL name(s) AND address(es) of actual inventor(s)

2. (f) Raymond Edward Bolich, Jr.
7201 Striker Road
Maineville, Ohio 45039
USA

- (g) Recite how applicant(s) derive(s) title from actual inventor(s)
(See headnote**)

is/~~are~~ the actual inventor(s) of the invention and the facts upon which the applicant(s) is/~~are~~ entitled to make the application are as follows:

(g)

Applicant is the assignee of the invention from the actual inventor(s).

(Note: Paragraphs 3 and 4 apply only to Convention applications)

- (h) Insert country, filing date, and basic applicant(s) for the/or EACH basic application

3. The basic application(s) for patent or similar protection on which the application is based is/~~are~~ identified by country, filing date, and basic applicant(s) as follows:

(h)

U.S.S.N. 07/168,725 filed March 16, 1988; Raymond Edward Bolich, Jr.

in United States of America

4. The basic application(s) referred to in paragraph 3 hereof was/~~were~~ the first application(s) made in a Convention country in respect of the invention the subject of the application.

Declared at (k) Cincinnati, Ohio, U.S.A.

Dated (l) March 15, 1989

Richard Charles Witte

Assistant Secretary

THE PROCTER & GAMBLE COMPANY

To: The Commissioner of Patents

- (k) Insert PLACE of signing

- (l) Insert DATE of signing

- (m) Signature(s) of declarant(s)

Note: No legalization or other witness required

ME: JUNE 8/04

10 MAY 89

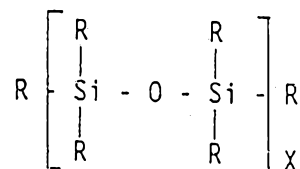
(12) PATENT ABRIDGMENT (11) Document No. AU-B-31409/89
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 631784

- (54) Title
COSMETIC AND HOUSEHOLD PRODUCTS
- (51)⁴ International Patent Classification(s)
A61K 007/075 A61K 007/00 A61K 007/08 A61K 007/09
A61K 007/11 A61K 007/32 A61K 007/48 C11D 007/26
- (21) Application No. : 31409/89 (22) Application Date : 16.03.89
- (30) Priority Data
- (31) Number (32) Date (33) Country
168725 16.03.88 US UNITED STATES OF AMERICA
- (43) Publication Date : 21.09.89
- (44) Publication Date of Accepted Application : 10.12.92
- (71) Applicant(s)
THE PROCTER & GAMBLE COMPANY
- (72) Inventor(s)
RAYMOND EDWARD BOLICH JR.
- (74) Attorney or Agent
PHILLIPS ORMONDE & FITZPATRICK, 367 Collins Street, MELBOURNE VIC 3000
- (56) Prior Art Documents
US 4355062
US 4207424
- (57) Claim

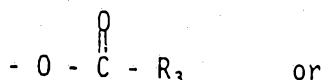
1. A cosmetic or household composition characterized in that it comprises:

- 1) a suitable carrier selected from a hair care product, an antiperspirant or a household cleaning product; and
- 2) from 0.1% to 86% by weight of a volatile silicon compound,

a) linear siloxanes

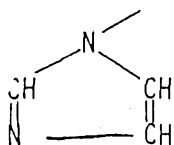
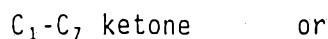
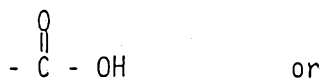
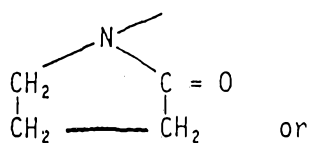
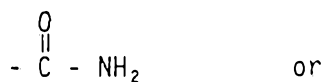
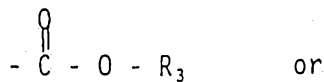


where 1) X = 1 to 4, 2) total carbons ≤ 14 , 3) R can be independently C₁-C₁₀ alkyl, trialkyl siloxy and 4) at least one R per molecule must be aryl, alkylaryl or aryl alkyl or C₁-C₇ hydroxyalkyl or -R₁ R₂ wherein R₁ = C₁-C₄ alkylene and R₂ = -O-R₃ wherein R₃ = C₁-C₅ alkyl or



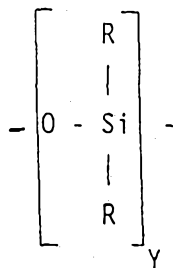
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wherein $\text{R}_3 = \text{C}_1 - \text{C}_5$ alkyl

b) cyclic siloxanes

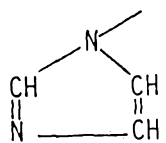
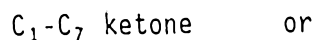
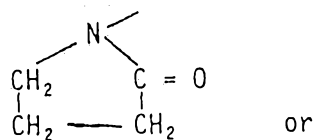
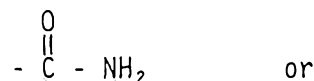
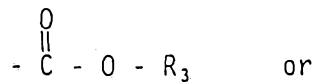
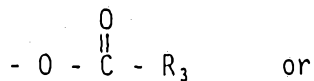


wherein 1) $Y = 1$ to 4 , 2) total carbons ≤ 14 , 3) R can be independently $\text{C}_1\text{-C}_{10}$ alkyl, trialkyl siloxy and 4) at least one R per molecule must be $\text{C}_1\text{-C}_7$ hydroxyalkyl or $-\text{R}_1 \text{ R}_2$ wherein $\text{R}_1 = \text{C}_1\text{-C}_4$ alkylene and $\text{R}_2 = -\text{O-R}_3$ wherein $\text{R}_3 = \text{C}_1\text{-C}_5$

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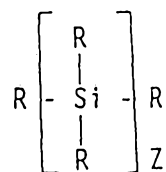
-3-

~~alkyl~~ or



wherein $R_3 = C_1-C_5$ alkyl

c) silanes

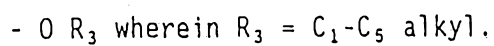
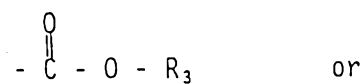
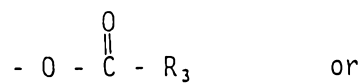
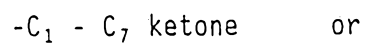
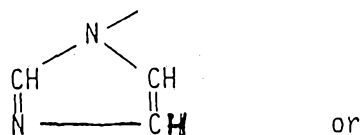
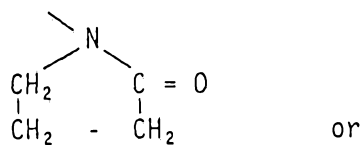
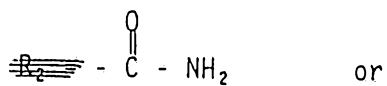


where 1) $Z = 1$ to 4, 2) total carbons ≤ 14 , 3) R can be independently C_1-C_{10} alkyl, trialkyl (C_1-C_3) siloxy and 4) at least one R per molecule must be selected from aryl, alkyl-aryl, aroalkyl or C_1-C_{10} alkyl or $-R_1 R_2$ where $R_1 = C_1-C_4$ alkylene and $R_2 =$

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COMPLETE SPECIFICATION
(ORIGINAL)

- 1 -

COSMETIC AND HOUSEHOLD PRODUCTS

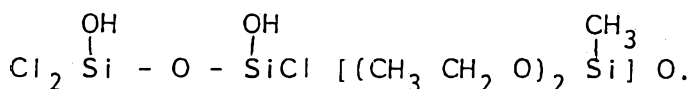
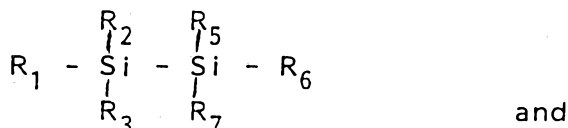
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Raymond Edward Bolich, Jr.

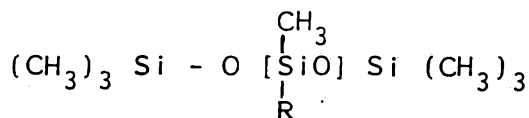
BACKGROUND OF THE INFORMATION

Volatile silicones have found wide acceptance in a number of different types of products ranging from cosmetics to antifreeze formulations. Such silicones are good solvents for a variety of materials and serve to give excellent feel on skin and hair.

The most common types of volatile silicones are linear and cyclic siloxanes having from one to about seven siloxane groups. While these are the most common, there are other types which have been disclosed. Included among such other silicones are those in U.S. Patent 4,207,424, June 10, 1980 to Winnick -



Additional disclosures of volatile silicones are in U.S. Patent 4,355,062, October 19, 1982 to Wang et al. Certain alkyl linear siloxanes such as



are disclosed in U.S. Patent 4,376,087, March 8, 1983 to Poliniak et al. Cyclic silicones different from those mentioned above are disclosed in U.S. Patent 4,364,837, December 21, 1982 to Pader. Still other volatile silicones are disclosed in Japanese unexamined applications JP 9108-046, October 14, 1974; JP 1102-019, September 7, 1976; JP 607-824, June 15, 1981; JP 6139-527, October 31, 1981; and JP 7035-526, February 26, 1982.

Although the references discussed above disclose a variety of volatile silicones in a variety of compositions, there is still the need for cosmetic and household products which incorporate volatile silicones.

It is therefore an object of the present invention to provide cosmetic and household products containing silicon materials which provide improved solvency and compatibility with other composition components.

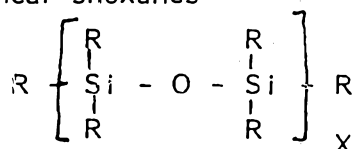
This and other objectives will become readily available from the detailed disclosure below.

All percentages and ratios herein are by weight unless otherwise specified. Additionally, all measurements are made at 25°C unless otherwise specified.

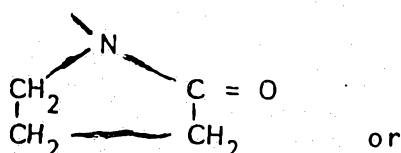
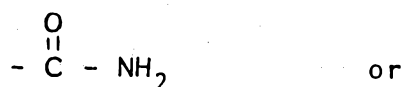
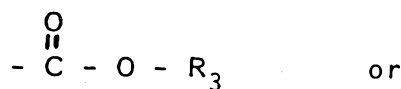
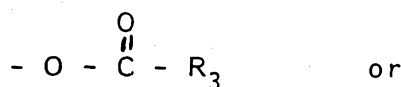
SUMMARY OF THE INVENTION

The present invention relates to cosmetic and household products containing volatile silicones of the following structures:

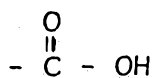
a) Linear siloxanes



where 1) X = 1 to 4, 2) total carbons ≤ 14 , 3) R can be independently C₁ - C₁₀ alkyl, trialkyl siloxy and 4) at least one R per molecule must be aryl, alkylaryl or aryl alkyl or C₁ - C₇ hydroxyalkyl or - R₁ R₂ wherein R₁ = C₁ - C₄ alkylene and R₂ = - O - R₃ wherein R₃ = C₁ - C₅ alkyl or R₂ =



- 3 -



or

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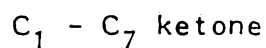


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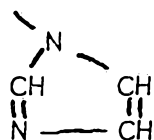
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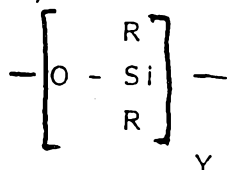
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wherein $\text{R}_3 = \text{C}_1 - \text{C}_5$ alkyl

b) Cyclic siloxanes

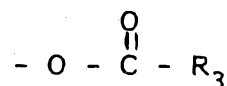
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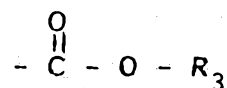
where 1) $\text{X} = 1$ to 4, 2) total carbons ≤ 14 , 3) R can be independently $\text{C}_1 - \text{C}_{10}$ alkyl, trialkyl siloxy and 4) at least one R per molecule must be $\text{C}_1 - \text{C}_7$ hydroxyalkyl or $-\text{R}_1 \text{R}_2$ wherein $\text{R}_1 = \text{C}_1 - \text{C}_4$ alkylene and $\text{R}_2 = -\text{O}-\text{R}_3$ ~~wherein $\text{R}_3 = \text{C}_1 - \text{C}_5$ alkyl or~~

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or

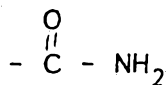
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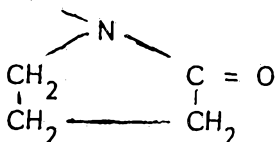


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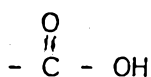
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or

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or

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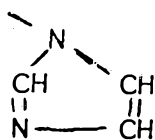
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$\text{C}_1 - \text{C}_7$ ketone

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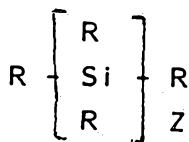
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wherein $\text{R}_3 = \text{C}_1 - \text{C}_5$ alkyl

c) Silanes

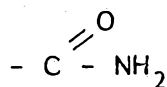
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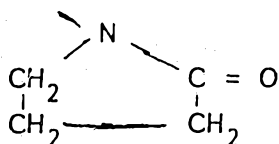
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where 1) $\text{Z} = 1$ to 4, 2) total carbons ≤ 14 , 3) R can be independently $\text{C}_1 - \text{C}_{10}$ alkyl, trialkyl ($\text{C}_1 - \text{C}_3$) siloxy and 4) at least one R per molecular must be selected from aryl, alkylaryl, araalkyl or $\text{C}_1 - \text{C}_7$ hydroxyalkyl or $\text{C}_2 - \text{C}_{10}$ alkyl or $-\text{R}_1 \text{R}_2$ where $\text{R}_1 = \text{C}_1 - \text{C}_4$ alkylene and $\text{R}_2 =$

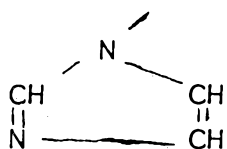




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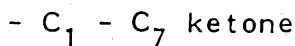
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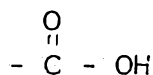
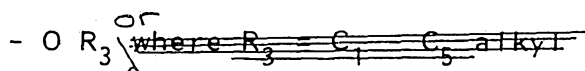
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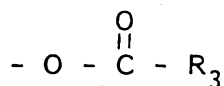
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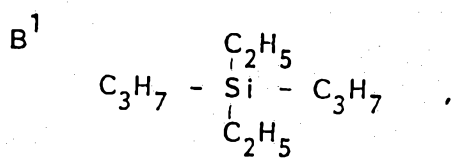
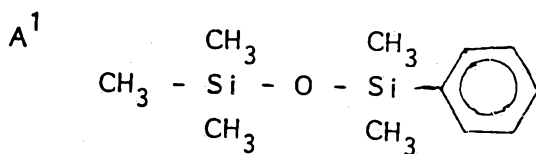
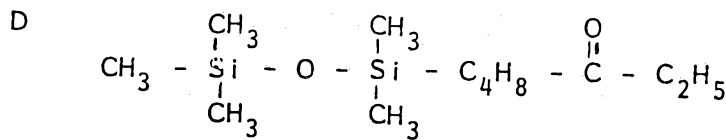
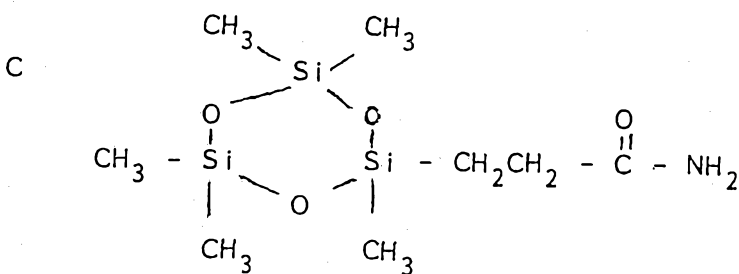
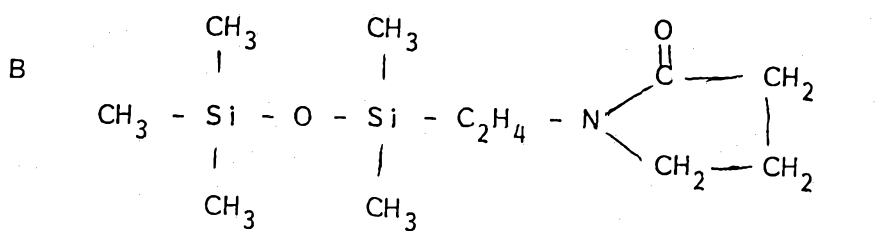
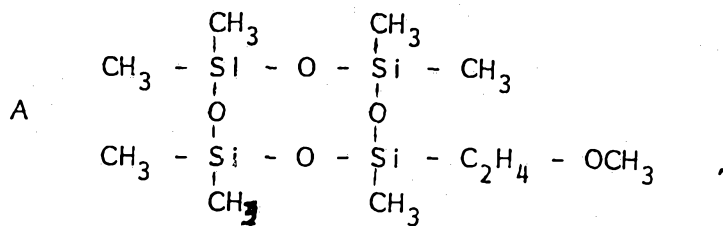
The boiling point of all of these silicon compounds at 760mm is $\leq 260^\circ\text{C}$.

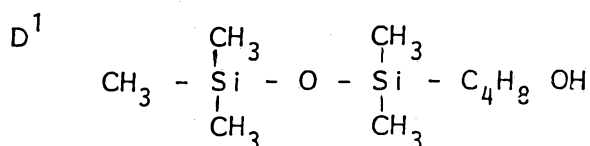
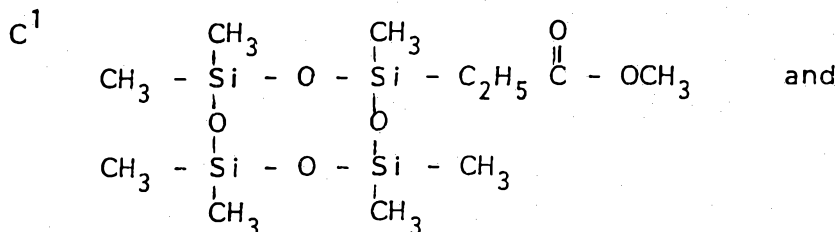
DETAILED DESCRIPTION OF THE INVENTION

The present invention as summarized above relates to cosmetic and household products containing from 0.1% to 86% by weight of volatile silicon compounds.

Examples of these materials include, among many others, the following:







Cosmetic and Household Products

The volatile silicones described above find use in a number of different products. These include hair care products such as hairsprays, shampoos, mousses, styling gels and lotions, cream rinses/conditioners, hair tonics, hair dyes and colorants, home permanents and bleaches. Also included are skin care products such as cleansers, conditioners, lipsticks, eye makeup, fingernail polish, suntan products, antiperspirant/deodorant products and depilatories. Also included are household products such as waxes, polishes, heavy and light duty liquids, fabric softeners and window cleaners.

Given below are several detailed descriptions of suitable products of the type mentioned above.

Hair Care Products

The hair care products of the present invention contain the volatile silicon agents described above along with a carrier benefiting from the silicon. The term "carrier", as used herein, means one or more compatible vehicles which are suitable for administration to the hair of a human or lower animal. The term "compatible", as used herein, means that the components of the carrier are capable of being commingled with the silicones of the present invention, and with each other, in a manner such that there is no interaction which would substantially reduce the ability of the hair care products to provide its benefit under ordinary use situation.

Carriers suitable for use with the volatile silicon agents such as shampoos and cream rinse conditioners to hair are well known in the art, and their selection can be made without difficulty by a person skilled in the art. For example, carriers which are
5 suitable are described in more detail in U.S. Patent 3,577,517, to Kubot et al, issued May 4, 1971; U.S. Patent 3,907,984, to Calvert et al, issued September 23, 1975; U.S. Patent 4,012,501, to Farber, issued March 15, 1977; U.S. Patent 4,223,009, to Chakrabarti, issued September 16, 1980; and U.S. Patent
10 4,283,384, to Jacquet et al, issued August 11, 1981; the disclosures of all these patents being incorporated herein by reference in their entirety.

Shampoo compositions useful with the silicones of this invention utilize conventional components. The shampoos comprise
15 from about 0.1% to about 20% of the volatile silicon; from about 5% to about 60% of a synthetic surfactant; and the balance water. Suitable surfactants include ammonium lauryl sulfate, ammonium laureth sulfate, triethylamine lauryl sulfate, triethylamine laureth sulfate, triethanolamine lauryl sulfate, triethanolamine laureth sulfate, monoethanolamine lauryl sulfate, monoethanolamine laureth sulfate, diethanolamine lauryl sulfate, diethanolamine laureth sulfate, lauric monoglyceride sodium sulfate, sodium lauryl sulfate, sodium laureth sulfate, potassium lauryl sulfate, potassium laureth sulfate, lauryl sarcosine, cocoyl sarcosine,
20 ammonium cocoyl sulfate, ammonium lauryl sulfate, sodium cocoyl sulfate, sodium lauryl sulfate, potassium cocoyl sulfate, potassium lauryl sulfate, triethanolamine lauryl sulfate, triethanolamine lauryl sulfate, monoethanolamine cocoyl sulfate, monoethanolamine lauryl sulfate, sodium tridecyl benzene sulfonate and sodium dodecyl benzene sulfonate.
25
30

Shampoos can also contain a variety of nonessential optional components. Such conventional optional ingredients are well known to those skilled in the art, e.g., preservatives, such as benzyl alcohol, ethyl paraben, propyl paraben and imidazolidinyl urea; hair styling/setting polymers such as acrylate polymers and copolymers; cationic surfactants, such as cetyl trimethyl
35

ammonium chloride, lauryl trimethyl ammonium chloride, tricetyl methyl ammonium chloride, stearyldimethyl benzyl ammonium chloride, and di(partially hydrogenated tallow) dimethylammonium chloride; thickeners and viscosity modifiers such as a
5 diethanolamide of a long-chain fatty acid (e.g. PEG 3 lauramide), block polymers of ethylene oxide and propylene oxide sodium chloride, sodium sulfate, polyvinyl alcohol, ethyl alcohol and water-soluble polymers such as xanthan gum, hydroxyethyl cellulose, guar gum and starch; pH adjusting agents, such as
10 citric acid, succinic acid, phosphoric acid, sodium hydroxide, sodium carbonate; perfumes; dyes; and, sequestering agents, such as disodium ethylenediamine tetraacetate. Such agents generally are used individually at a level of from about 0.01% to about 10%, preferably from about 0.5% to about 5.0% by weight of
15 the composition.

Another carrier useful with the present silicones are creme rinses/conditioners. Creme rinses/conditioners comprise from 2% to 10% by weight of volatile silicon compound. Such a carrier preferably comprises two essential components: a lipid vehicle material and generally a cationic surfactant vehicle material. Such
20 carriers are generally described in the following, all incorporated by reference herein: Barry, "The Self Bodying Action of the Mixed Emulsifier Sodium Dodecyl Sulfate/Cetyl Alcohol", 28 J. of Colloid and Interface Science 82-91 (1968); Barry, et al., "The Self-Bodying Action of Alkyltrimethylammonium Bromides/Cetostearyl Alcohol Mixed Emulsifiers; Influence of Quaternary Chain Length",
25 35 J. of Colloid and Interface Science 689-708 (1971); and Barry, et al., "Rheology of Systems Containing Cetomacrogol 1000 - Cetostearyl Alcohol, I. Self Bodying Action", 38 J. of Colloid and Interface Science 616-625 (1972).
30

Lipid materials include naturally or synthetically-derived acids, acid derivatives, alcohols, esters, ethers, ketones, and amides with carbon chains of from 12 to 22, preferably from 16 to 18, carbon atoms in length. Fatty alcohols and fatty esters are
35 preferred; fatty alcohols are particularly preferred.

Lipid materials among those useful herein are disclosed in Bailey's Industrial Oil and Fat Products, (3d edition, D. Swern,

ed. 1979) (incorporated by reference herein). Fatty alcohols included among those useful herein are disclosed in the following documents, all incorporated by reference herein: U.S. Patent 3,155,591, Hilfer, issued November 3, 1964; U.S. Patent 4,165,369, Watanabe, et al., issued August 21, 1979; U.S. Patent 4,269,824, Villamarin, et al., issued May 26, 1981; British Specification 1,532,585, published November 15, 1978; and Fukushima, et al., "The Effect of Cetostearyl Alcohol in Cosmetic Emulsions", 98 Cosmetics & Toiletries 89-102 (1983). Fatty esters included among those useful herein are disclosed in U.S. Patent 3,341,465, Kaufman, et al., issued September 12, 1967 (incorporated by reference herein).

Preferred esters for use herein include cetyl palmitate and glycerylmonostearate. Cetyl alcohol and stearyl alcohol are preferred alcohols. A particularly preferred lipid vehicle material is comprised of a mixture of cetyl alcohol and stearyl alcohol containing from about 55% to about 65% (by weight of mixture) of cetyl alcohol.

Deodorant/Antiperspirants

Deodorant/antiperspirant compositions utilizing the volatile silicones include a variety of components. Deodorant/antiperspirant compositions comprise from 1% to 70% by weight of volatile silicon compound.

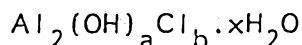
Antiperspirant Actives

Antiperspirant compositions comprise at least one antiperspirant active. Antiperspirant actives useful in the present invention are well known in the art, and are disclosed generally in Miller and Hoag, "Personal Care Products", Handbook of Nonprescription Drugs, 8th Edition, Chapter 19, pages 397-417 (American Pharmaceutical Association; 1986), the disclosures of which are incorporated herein by reference in their entirety. Antiperspirant actives useful herein are also more specifically disclosed in European Patent Application Publication No. 28,853, published May 20, 1981, by Beckmeyer et al.; and European Patent Application Publication No. 117,070, published August 29, 1984, by May, the disclosures of both these patent specifications being incorporated herein by reference in their entirety. Antiperspirant actives include, for example, aluminum chlorohydrates,

aluminum chloride, sodium aluminum chlorohydroxy lactate, buffered aluminum sulfate, and aluminum zirconium chlorohydrates.

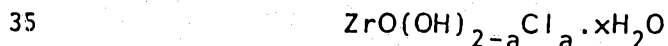
5 Preferred are astringent metallic salts including the inorganic and organic salts of aluminum, zirconium and zinc, and mixtures thereof. Particularly preferred are the aluminum and zirconium salts, such as aluminum halides, aluminum hydroxyhalides, zirconyl oxyhalides, zirconyl hydroxyhalides, and mixtures thereof. Such metal salts, and complexes thereof, are described
10 in European Patent Specification Publication No. 117,070, to May, published August 29, 1984, and U.S. Patent 4,137,306, to Rubino et al., issued January 30, 1979, the disclosures of both these patent specifications being incorporated herein by reference in their entirety.

15 Preferred aluminum salts include those of the formula:



wherein a is from about 2 to about 5; $a + b = 6$; x is from about 1 to about 6; and wherein a, b, and x may have non-integer values. Particularly preferred are aluminum chlorhydroxides referred to as "5/6 basic chlorhydroxide", wherein $a = 5$; and
20 "2/3 basic chlorhydroxide", wherein $a = 4$. Processes for preparing aluminum salts are disclosed in the following documents, all incorporated by reference herein in their entirety: U.S. Patent 3,887,692, to Gilman, issued June 3, 1975; U.S. Patent 3,904,741, to Jones et al., issued September 9, 1975; U.S. Patent 4,359,456, to Gosling et al., issued November 16, 1982; and
25 British Patent Specification 2,048,229, to Fitzgerald et al., published December 10, 1980. Mixtures of aluminum salts are described in British Patent Specification 1,347,950, to Shin et al., published February 27, 1974, the disclosures of which are
30 incorporated herein by reference in their entirety.

Zirconium salts are also preferred for use in antiperspirant compositions of the present invention. Such salts are of the general formula:



wherein a is from about 1 to about 2, preferably from about 1.5 to about 1.87; x is from about 1 to about 7; and wherein a and x may have non-integer values. These zirconium salts are disclosed in Belgium Patent Specification 825,146, to Schmitz, issued August 4, 1975, the disclosures of which are incorporated herein by reference in their entirety. Particularly preferred zirconium salts are those complexes also containing aluminum and glycine, commonly known as "ZAG complexes". Such ZAG complexes contain aluminum chlorhydroxide and zirconyl hydroxychloride of the formulae detailed above. These compounds in ZAG complexes are disclosed in the following patent documents, all incorporated by reference herein in their entirety: U.S. Patent 2,814,585 to Daley, issued November 26, 1957; U.S. Patent 3,679,068, to Luedders et al., issued February 12, 1974; U.S. Patent 4,017,599, to Rubino, issued April 12, 1977; U.S. Patent 4,120,948, to Shelton, issued October 17, 1978; and British Patent Specification 2,144,992, to Callaghan et al., published March 20, 1985.

The antiperspirant actives in total typically comprise from about 1% to about 50% by weight of the composition of the present invention, more preferably from about 5% to about 40%, and most preferably from about 5% to about 30%.

Deodorant/Antiperspirant Carrier

The selection of carriers for use with the volatile silicones of the present invention is readily made by one skilled in the art based on the form of the composition being prepared, for example, aerosol spray, roll-on lotion, or stick. Antiperspirant carriers are described in detail in European Patent Application Publication No. 28,853, published May 20, 1981, by Beckmeyer et al.; and European Patent Application Publication No. 117,070, published August 29, 1984, by May; the disclosures of both these patent specifications being incorporated herein by reference in their entirety. Carrier materials suitable for use for various composition forms are also described in detail as follows:

(i) Stick Antiperspirant Carriers

Antiperspirant compositions in stick form contain the volatile silicon, which may function as a liquid emollient and preferably

contain one or more non-volatile emollients. Such materials include fatty acid and fatty alcohol esters, water-insoluble ethers and alcohols, polyorganosiloxanes, and mixtures thereof. Emollients among those useful herein are described in 1
5 Cosmetics, Science and Technology 27-104 (M. Balsam and E. Sagarin ed. 1972), and U.S. Patent "2,02,879", to Shelton, issued May 13, 1980 (both incorporated by reference herein).

The present compositions in stick form preferably contain a non-volatile silicone oil as an emollient material. Such silicone oils
10 include polyalkylsiloxanes, polyalkylarylsiloxanes, and polyether-siloxane copolymers. The essentially non-volatile polyalkyl siloxanes useful herein include, for example, polydimethyl siloxanes with viscosities of from about 5 to about 100,000 centi-
15 stokes at 25°C. Among the preferred non-volatile emollients useful in the present compositions are the polydimethyl siloxanes having viscosities from about 10 to about 400 centistokes at 25°C. Such polyalkyl siloxanes include the Vicasil series (sold by General Electric Company) and the Dow Corning 200 series (sold by Dow Corning Corporation). Polyalkylaryl siloxanes include
20 poly methylphenyl siloxanes having viscosities of from about 15 to about 65 centistokes at 25°C. These are available, for example, as SF 1075 methylphenyl fluid (sold by General Electric Company) and 556 Cosmetic Grade Fluid (sold by Dow Corning Corporation). Useful polyether siloxane copolymers include, for example, a poly-
25 oxyalkylene ether copolymer having a viscosity of about 1200 to 1500 centistokes at 25°C. Such a fluid is available as SF-1066 organosilicone surfactant (sold by General Electric Company). Polysiloxane ethylene glycol ether copolymers are preferred copolymers for use in the present compositions.

30 Antiperspirant compositions in stick form further preferably contain one or more materials having wax-like characteristics and having a melting point of from about 65°C to about 102°C. Such waxes include beeswax, spermaceti, carnauba, baysberry, candelilla, montan, ozokerite, ceresin, paraffin, hydrogenated
35 castor oil (castor wax), synthetic waxes such as Fisher-Tropsch waxes, microcrystalline wax, and mixtures thereof. Castor wax is

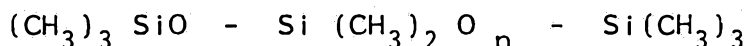
a preferred high-melting point wax useful herein. Such high-melting point waxes among those useful herein are disclosed in U.S. Patent 4,049,792, to Elsnau, issued September 20, 1977 (incorporated by reference herein).

5 (ii) Aerosol Spray Deodorant/Antiperspirant Carriers

Compositions in aerosol spray form preferably contain one or more volatile materials, herein "aerosol propellants", which in a gaseous state, carry the other components of the spray composition in particulate or droplet form. The aerosol propellants useful in the present invention typically have a boiling point within the range of from about -45°C to about 5°C . The aerosol propellants are liquified when packaged in conventional aerosol containers under pressure. The rapid boiling of the aerosol propellant upon leaving the aerosol container aids in the atomization of the other components of the present invention.

Aerosol propellants useful in the compositions of the present invention in spray form include those well known in the art. Such aerosol propellants include the chemically-inert hydrocarbons such as propane, n-butane, isobutane and cyclopropane, and mixtures thereof, as well as halogenated hydrocarbons such as dichlorodifluoromethane (propellant 12), 1,1-dichloro-1,1,2,2-tetrafluoroethane (propellant 114), 1-chloro-1,1-difluoro-2,2-trifluoroethane (propellant 115), 1-chloro-1,1-difluoroethylene (propellant 142B), 1,1-difluoroethane (propellant 152A), and monochlorodifluoromethane, and mixtures thereof. Isobutane, used singly or admixed with other hydrocarbons, is preferred for use in the present aerosol spray antiperspirants.

Another preferred material for use in the aerosol compositions in aerosol spray form is a silicone gum. As referred to herein, "silicone gum" materials useful in the present compositions are those non-functionalized siloxanes having a viscosity of from about 500,000 to about 100,000,000 centistokes at 25°C . These materials are incorporated in the present compositions at a level of from about 0.05% to about 5.0%, preferably from about 0.10% to about 2.0%. Preferred silicone gums include linear and branched polydimethyl siloxanes, of the following general formula:



wherein n is from about 2,000 to about 15,000, preferably from about 2,000 to about 7,000. The silicone gums useful herein may also be substituted with non-electronegative substituents. Silicone gums among those useful herein are available from a variety of commercial sources, including X2-1346 and Dow Corning 200 Fluid (manufactured by Dow Corning Corporation), PS240 (manufactured by Petrarch Systems, Inc.), and SE76, SE30 and SE32 Silicone Gums (manufactured by General Electric Company).

The aerosol compositions may also contain a bulking or suspending agent, at levels of from about 0.1% to about 7%, preferably from about 0.4% to about 3.5%. Such bulking/suspending agents include talc, colloidal silicas, clays and mixtures thereof. Clays and colloidal silicas are particularly preferred. Clay bulking/suspending agents include montmorillonite clays and hydrophobically treated montmorillonites, e.g., bentonites, hectorites and colloidal magnesium aluminum silicates. These materials are available from a variety of sources, including Laponite hectorite (sold by Laponite Industries, Ltd.) and Veegum magnesium aluminum silicate (sold by R. T. Vanderbilt Co.). A preferred clay bulking/suspending agent is hydrophobically-treated montmorillonite, such as the Bentone bentonites (sold by NL Industries, Inc.). Colloidal silicas are also readily available, such as Cab-O-Sil pyrogenic colloidal silica (sold by Cabot Corporation).

(iii) Roll-on Lotion Deodorant/Antiperspirant Carriers

Antiperspirant/deodorant compositions of the present invention in roll-on lotion form typically comprise carrier materials similar to those utilized in aerosol spray forms except that no aerosol propellant is required. Antiperspirant/deodorant compositions in roll-on lotion form, and carrier materials useful therein, are described in detail in European Patent Application Publication No. 28,853, published May 20, 1981, by Beckmeyer et al., the disclosures of which are incorporated herein by reference in their entirety.

Additional active components include bacteriostats and fungistats. The particular non-active components that may be useful will depend upon the form of application that is desired. Such components include, for example, emollients, colorants, perfumes, and emulsifiers. Optional components useful herein are described in the following documents, all incorporated by reference herein: U.S. Patent 4,049,792, to Elsnau, issued September 20, 1977; Canadian Patent 1,164,347, to Beckmeyer, et al., issued March 27, 1984; European Patent Specification 117,070, to May, published August 29, 1984; and Geria, "Formulation of Stick Antiperspirants and Deodorants," 99 Cosmetics & Toiletries 55-60 (1984).

Generally, the deodorant/antiperspirant carriers in total comprise from about 40% to about 99% by weight of the compositions of the present invention, preferably from about 55% to about 95%, and most preferably from about 67% to about 94%.

Other cosmetic and household product compositions are disclosed in U.S. Patent 4,687,592, August 18, 1987 to Collins et al; U.S. Patent 4,663,157, May 5, 1987 to Brock; U.S. Patent 4,631,064, December 23, 1986 to Juneja; and U.S. Patent 4,130,121, December 19, 1978 to Wetzel. All of these references are incorporated herein by reference.

METHOD OF MANUFACTURE OF VOLATILE SILICONS

The compositions of the present invention can be prepared by methods which are well known in the art.

The following nonlimiting examples of the present invention are given solely for illustration and are not to be construed as limitations of this invention, many variations are possible without departing from the spirit and scope thereof. The silicones in the various examples are identified on pages 4 - 6.

EXAMPLE I

The following is a highlighting rinse representative of the present invention.

<u>Component</u>	<u>Weight %</u>
D&C Red #17	0.10
Volatile Silicone A	5.00
Cetyl Alcohol	2.00

Ditallow Dimethyl Ammonium Chloride	1.00
Ceteareth-20	1.00
Kathon CG	.04
Double Reverse Osmosis Water	q.s.

5

EXAMPLE II

The following is a shampoo representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
10	Ammonium Lauryl Sulfate	15.00
	Jaguar HP-60 ¹	1.00
	G.E. SE 30 ²	1.00
	Volatile Silicone D	1.00
	Kathon CG ³	.04
15	Double Reverse Osmosis Water	q.s.

- 1: Hydroxypropyl guar gum offered by Hi-tek Polymers Inc.
2: Silicone gum offered by General Electric.
3: Offered by Rohm and Haas.

20

EXAMPLE III

The following is a men's grooming aid representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
	Volatile Silicone C	86.00
25	Dow Corning X2-2G13 ¹	8.00
	Perfume	1.00
	Ethanol	5.00

- 1: A copolymer of methyl-phenyl and diphenyl siloxane offered by Dow Corning.

30

EXAMPLE IV

The following is a hair styling mousse representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
35	Gafquat 755	2.00
	Cocamine oxide	0.50

Kathon CG	0.04
Volatile Silicone C	2.00
Isobutane	6.00
Distilled Water	q.s.

5

EXAMPLE V

The following is a hair conditioning rinse representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
10	Stearalkonium Chloride	2.00
	Stearyl Alcohol	0.90
	Cetyl Alcohol	1.10
	Volatile Silicone B	4.00
	G.E. SE 30 Silicone Gum	1.00
15	Kathon CG ¹	0.04
	Distilled Water	q.s.

¹: Offered by Rohm and Haas.

EXAMPLE VI

20 The following is a hairspray composition representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
	Amphomer ¹	3.00
	Aminomethyl propanol	.50
25	Volatile Silicone C	1.00
	Ethanol	70.5
	Isobutane Propellant	25.00

EXAMPLE VII

30 The following is a cold-wave hair perm representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
	Thioglycolic Acid	7.00
	Monoethanolamine	9.00
35	Volatile Silicone C	3.00
	Polyethylene Glycol 400 Monostearate	0.50
	Distilled Water	q.s.

EXAMPLE VIII

The following is a cologne representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
5	Volatile Silicone A	45.00
	Propylene Glycol	2.00
	Perfume	2.00
	Polydimethylsiloxane 350 cs.	1.00
	Isobutane	50.00

10

EXAMPLE IX

The following is an antiperspirant stick representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
15	Crodomol PMP ¹	15.00
	Syncrowax BB4 ¹	1.50
	Incroquat Behenyl TMS ²	12.00
	Incromide BEM ²	12.00
	Volatile Silicone D	37.00
20	Rezel 36q Superultrafine ³	20.00
	Talc	1.00
	Cab-O-Sil M-5 ⁴	1.50

- 1: Offered by Croda, Inc.
2: Offered by Croda Surfactants, Inc.
3: Offered by Reheis Chemical Company.
4: Offered by Cabot Corporation.

25

EXAMPLE X

The following is a solid deodorant representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
30	Volatile Silicone B	39.00
	Sodium Stearate	9.00
	Propylene Glycol	15.00
35	Ethanol	q.s.

PPG-10 Cetyl Ether	10.00
Isostearyl Alcohol	3.00
Perfume	0.50

5

EXAMPLE XI

The following is a roll-on antiperspirant representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
	Volatile Silicone A	64.60
10	Isopropyl Myristate	5.00
	Tixogel VP ¹	3.00
	Aluminum Zirconium Trichlorohydrate	25.00
	Ethanol (95%/5% water)	2.00
	Perfume	0.10
15	Cab-O-Sil M-5 ²	0.30

¹: Offered by United Catalysts Inc.

²: Offered by Cabot.

EXAMPLE XII

20 The following is a hand lotion representative of the present invention.

	<u>Component</u>	<u>Weight %</u>
	Volatile Silicone D	3.00
	Mineral Oil	1.00
25	Polydimethylsiloxane, 350C	1.00
	Stearic Acid	3.00
	Cetyl Alcohol	2.00
	Triethanolamine	1.00
	Glydant ¹	.35
30	Glycerine	5.00
	Carbopol 941 ²	0.20
	Distilled Water	q.s.

¹: Offered by

35 ²: Offered by B. F. Goodrich.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A cosmetic or household composition characterized in that it comprises:

- 1) a suitable carrier selected from a hair care product, an antiperspirant or a household cleaning product; and
- 2) from 0.1% to 86% by weight of a volatile silicon compound,

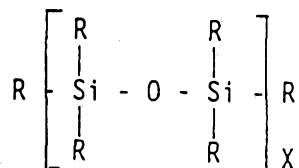


The claims defining the invention are as follows:

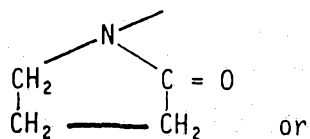
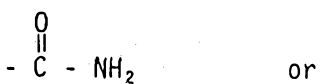
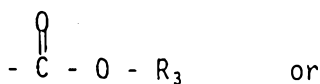
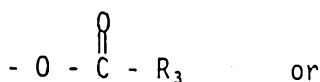
1. A cosmetic or household composition characterized in that it comprises:

- 1) a suitable carrier; and
- 2) from 0.1% to 70% by weight of a volatile silicon compound, having a boiling point of no greater than about 260°C at 760mm, selected from:

a) linear siloxanes



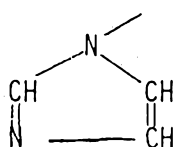
where 1) $X = 1$ to 4, 2) total carbons ≤ 14 , 3) R can be independently $\text{C}_1\text{-C}_{10}$ alkyl, trialkyl siloxy and 4) at least one R per molecule must be aryl, alkylaryl or aryl alkyl or $\text{C}_1\text{-C}_7$ hydroxyalkyl or $-\text{R}_1\text{R}_2$ wherein $\text{R}_1 = \text{C}_1\text{-C}_4$ alkylene and $\text{R}_2 = -\text{O-R}_3$ wherein $\text{R}_3 = \text{C}_1\text{-C}_5$ alkyl or



- CN or

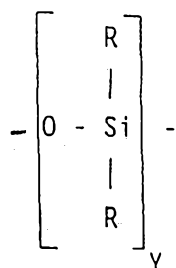
- Cl or

C₁-C₇ ketone or

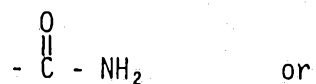
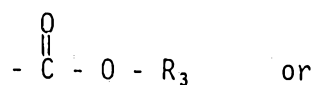
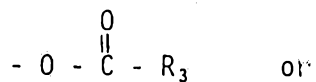


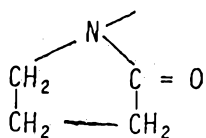
wherein R₃ = C₁ - C₅ alkyl

b) cyclic siloxanes

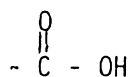


wherein 1) Y = 1 to 4, 2) total carbons ≤ 14, 3) R can be independently C₁-C₁₀ alkyl, trialkyl siloxy and 4) at least one R per molecule must be C₁-C₇ hydroxyalkyl or -R₁ R₂ wherein R₁ = C₁-C₄ alkylene and R₂ = -O-R₃ ~~wherein R₃ = C₁-C₃ alkyl or~~





or



or



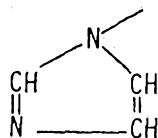
or



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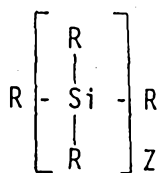
C₁-C₇ ketone

or

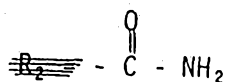


wherein R₃ = C₁-C₅ alkyl

c) silanes

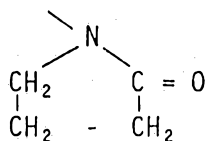


where 1) Z = 1 to 4, 2) total carbons ≤ 14 , 3) R can be independently C₁-C₁₀ alkyl, trialkyl (C₁-C₃) siloxy and 4) at least one R per molecule must be selected from aryl, alkyl-aryl, aroalkyl or C₁-C₁₀ alkyl or - R₁ R₂ where R₁ = C₁-C₄ alkylene and R₂ =

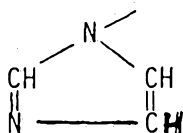


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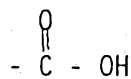
or

-CN

or

-C₁ - C₇ ketone

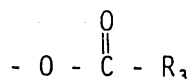
or



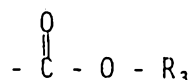
or

- Cl

or



or



or

- O R₃ wherein R₃ = C₁-C₅ alkyl.

2. A composition according to Claim 1 wherein the carrier is a hair care product.

3. A composition according to Claim 1 wherein the carrier is a stick, roll-on or aerosol antiperspirant.

4. A composition according to Claim 1 wherein the carrier is a household cleaning product.



2. A composition according to claim 1 selected from the group consisting of hairsprays, shampoos, mousses, styling gels, styling lotions, cream rinses, conditioners, hair tonics, hair dyes, hair colorants, home permanents, and hair bleaches.

3. A composition according to claim 1 selected from the group of a stick, roll-on or aerosol antiperspirant.

4. A composition according to claim 1 selected from the group of waxes, polishes, heavy duty liquid cleaners, fabric softeners, and window cleaners.

5. A composition according to claim 2 in the form of a shampoo which comprises from 0.1 to 20% of said volatile silicon compound, from about 5% to about 60% of a synthetic surfactant, and the balance water.

6. A composition according to claim 2 in the form of a hair conditioner which comprises from 0.5% to 12% of said volatile silicon compound, from about 0.5% to 3% of a lipid vehicle material, and from 0.2% to 4% of a cationic surfactant vehicle material.

7. A composition according to claim 6 which in addition contains from 0.01% to about 10% of a hair styling polymer.

8. A composition according to claim 2 wherein the volatile silicon compound is methoxy ethyl heptamethyl cyclotetrasiloxane.

9. A composition according to claim 3 in the form of a stick antiperspirant which comprises from 1% to 50% of said volatile silicon compound, from 1% to 50% of an antiperspirant active and the remainder selected from the group consisting of non-volatile emollients, waxes, perfume, colorants, and mixtures thereof.



10. A composition according to claim 3 in the form of a roll-on antiperspirant which comprises from 1% to 50% of said volatile silicon compound, from 1% to 50% of an antiperspirant active and the remainder selected from the group consisting of emollients, colorants, perfume, emulsifiers, and mixtures thereof.

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