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PATENT REQUEST: STANDARD PATENT/PATENT OF ADDITION

We, being the person(s) identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification.

Full application details follow.

[71] Applicant: DOW CORNING CORPORATION

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[70] Nominated Person: DOW CORNING CORPORATION

Address: MIDLAND, MICHIGAN 48686-0994, UNITED STATES OF AMERICA.

[54] Invention Title: SILICONE CONTAINING PERSONAL CARE PRODUCTS

[72] Name(s) of actual inventor(s): KENNETH ALFRED KASPRZAK

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BASIC CONVENTION APPLICATION(S) DETAILS

[31] Application Number	[33] Country	Country Code	[32] Date of Application
071,730	UNITED STATES OF AMERICA	US	3rd June, 1993

Basic Applicant(s): KENNETH ALFRED KASPRZAK

Drawing number recommended to accompany the abstract .....

By our Patent Attorneys,
WATERMARK PATENT & TRADEMARK ATTORNEYS

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Ian A. Scott
Registered Patent Attorney

DATED this 1st day of June, 1994

M056508 010694

P/00/008b 12/11/91
Section 29 (1)
Regulation 3.1 (2)

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NOTICE OF ENTITLEMENT

We, DOW CORNING CORPORATION of, MIDLAND, MICHIGAN 48686-0994, UNITED STATES OF AMERICA being the applicant in respect of Application No. 63480/94 state the following:-

The Person nominated for the grant of the patent has entitlement from the actual inventor by assignment.

The person nominated for the grant of the patent has entitlement from the applicant of the basic application listed on the patent request form by assignment.

The basic application listed on the request form is the first application made in a Convention country in respect of the invention.

DOW CORNING CORPORATION

By our Patent Attorneys,
WATERMARK PATENT & TRADEMARK ATTORNEYS

.....

Ian A. Scott

19 June 1996

Registered Patent Attorney

AU9463480

(12) PATENT ABRIDGMENT (11) Document No. AU-B-63480/94
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 671540

(54) Title
SILICONE CONTAINING PERSONAL CARE PRODUCTS

International Patent Classification(s)
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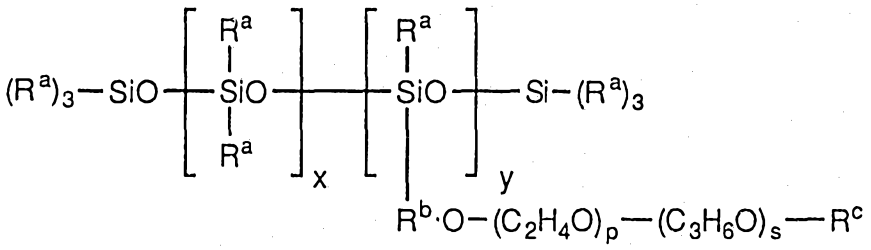
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(57) Claim

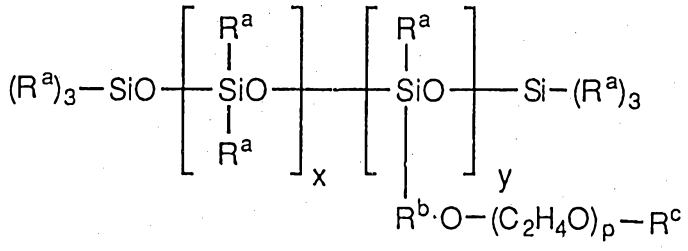
1. A method of making a stable emulsified personal care product having as an ingredient thereof a silicone skin conditioning agent, comprising (i) forming an anhydrous silicone mixture which includes a silicone selected from volatile cyclopolysiloxanes having the formula $[(CH_3)_2SiO]_x$ in which x has a value of 3 to 10 and non-volatile linear polysiloxanes having a viscosity of 5 to 10,000 mm^2/s (centistokes) and a silicone gum, the mixture further including a first silicone oxyalkylene copolymer and a second silicone oxyalkylene copolymer; (ii) forming a pre-emulsified aqueous based personal care product; and (iii) adding the anhydrous silicone mixture directly to the pre-emulsified personal care product without further emulsification, the first silicone oxyalkylene copolymer in the anhydrous silicone mixture is a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}$; R^c is a terminating radical selected from hydrogen, an alkyl group of

.../2

one to six carbon atoms and an aryl group; m has a value of two to eight; p and s each have values between 18 to 28; x has a value of 80 to 120; and y has a value of 2 to 10; and in which the second silicone oxyalkylene copolymer (iii) in the anhydrous silicone mixture is a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical selected from hydrogen, an alkyl group of one to six carbon atoms or an aryl group; m has a value of two to eight; p has a value of 8 to 16; x has a value of 6 to 12; and y has a value of 1 to 8.

P/00/011 28/5/91
Regulation 3.2(2)

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ORIGINAL
COMPLETE SPECIFICATION
STANDARD PATENT

Application Number:

Lodged:

Invention Title: SILICONE CONTAINING PERSONAL CARE PRODUCTS

The following statement is a full description of this invention, including the best method of performing it known to US :-

SILICONE CONTAINING PERSONAL CARE PRODUCTS

This invention is directed to personal care products for application to the skin which contain certain silicone conditioning agents in combination with certain silicone surfactants. When blended together, the silicone conditioning agents and the silicone surfactants can be added directly to aqueous based pre-emulsified personal care products without further emulsification.

The use of silicones in personal care products for the skin has been increasing dramatically since about 1976. Because of their unique properties, silicones have become a major ingredient in such products. This growth can be attributed to several factors, among which are (i) their ability in providing excellent emolliency and lubricity which softens and moisturizes the skin; (ii) their provision of water repellency; and (iii) their capability in allowing the formation of thin films on the skin in order that no greasy or sticky feeling is imparted to the skin from the personal care product.

However, one of the principal hindrances to the use of silicones is their limited solubility in water and other polar media. This has been viewed as a problem by some formulators who require higher solubility. One solution has been to produce an emulsion of water and silicone. This solution, however, has certain disadvantages in that an emulsifier with the proper solubility has to be found, the oil and water phases of the emulsion have to be prepared in separate containers and then the two phases must be combined under high shear using Eppenbach mixers or colloid mills. This emulsion procedure entails what has been viewed by some

to be unnecessary added time and expense, which ideally could be avoided.

The present invention provides a more simplified approach to the problem, wherein emulsification of the silicone prior to its addition into the personal care product is not required and yet stable personal care products are obtained.

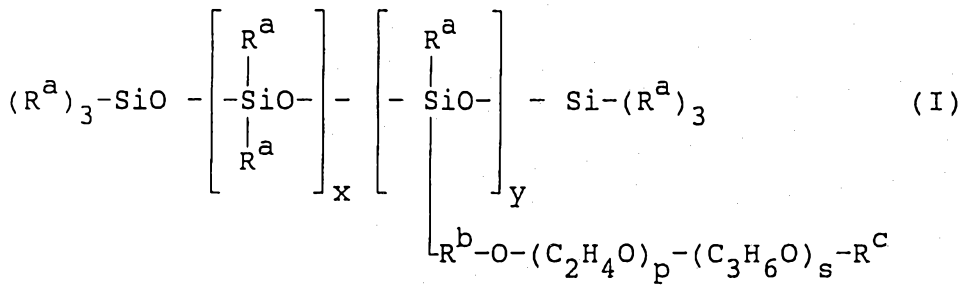
The invention provides an anhydrous silicone mixture containing certain silicone oxyalkylene copolymers, certain skin conditioning agents including silicone oils which are volatile and non-volatile, silicone gums or mixtures of silicone oils and gums.

What is unexpected about the present invention is that the anhydrous silicone mixture can be added directly to an aqueous based pre-emulsified personal care product without further emulsification. The personal care product containing the claimed anhydrous silicone mixture has been found to possess good stability in terms of shelf life and freeze/thaw characteristics.

The anhydrous silicone mixture of the present invention typically contains (i) a silicone fluid such as a volatile cyclic silicone or a volatile short chain linear silicone, a linear non-volatile silicone fluid, a silicone gum (preferably an ultra high viscosity silicone gum), or mixtures of silicone fluids and gums; (ii) an ethylene oxide/propylene oxide silicone copolymer which will be referred to hereinafter as an "EO/PO Silicone Surfactant"; and (iii) an ethylene oxide silicone copolymer which will be referred to hereinafter as an "EO Silicone Surfactant".

The "EO/PO Silicone Surfactant" is a siloxane polyether having the formula:

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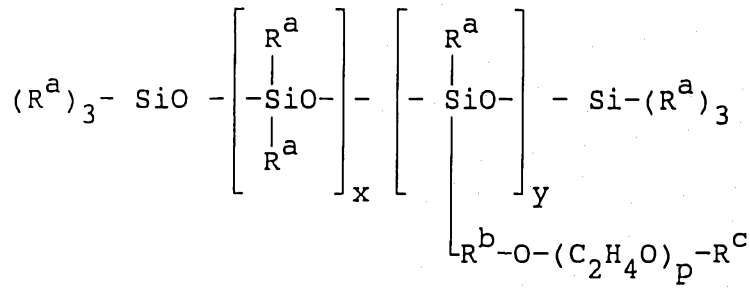


(I)

wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical which can be hydrogen, an alkyl group of one to six carbon atoms or an aryl group such as phenyl; m has a value of two to eight; p and s have values such that the oxyalkylene segment $-(C_2H_4O)_p-(C_3H_6O)_s-$ has a weight average molecular weight in the range of 400 to 5,000; the segment preferably having fifty to one hundred mole percent of oxyethylene units $-(C_2H_4O)_p-$ and one to fifty mole percent of oxypropylene units $-(C_3H_6O)_s-$; x has a value of 80 to 120; and y has a value of 2 to 10.

Preferably R^a and the terminating radical R^c are methyl groups; m is preferably three or four whereby the group R^b is most preferably the radical $-(CH_2)_3-$; and the values of p and s are such as to provide a weight average molecular weight of the oxyalkylene segment $-(C_2H_4O)_p-(C_3H_6O)_s-$ of between 1,000 to 3,000. Most preferably, p and s should each have a value of about 18 to 28.

The "EO Silicone Surfactant" is a siloxane polyether having the formula:



(II)

wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical which can be hydrogen, an alkyl group of one to six carbon atoms or an aryl group such as phenyl; m has a value of two to eight; p has a value of 8 to 16; x has a value of 6 to 12; and y has a value of 1 to 8.

In both Formulas (I) and (II), the siloxane-oxyalkylene copolymers of the present invention may, in alternate embodiments, take the form of endblocked polyethers in which the linking group R^b, the oxyalkylene segments and the terminating radical R^c occupy positions bonded to the ends of the siloxane chain, rather than being bonded to a silicon atom in the siloxane chain. Thus, one or more of the R^a substituents which are attached to the two terminal silicon atoms at the end of the siloxane chain can be substituted with the segment $-R^b-O-(C_2H_4O)_p-(C_3H_6O)_s-R^c$ or with the segment $-R^b-O-(C_2H_4O)_p-R^c$. In some instances, it may be desirable to provide the segment $-R^b-O-(C_2H_4O)_p-(C_3H_6O)_s-R^c$ or the segment $-R^b-O-(C_2H_4O)_p-R^c$ at locations which are in the siloxane chain as well as at locations at one or both of the siloxane chain ends.

Methods of making such siloxane-oxyalkylene copolymers are known in the art and are described in detail, for example, in "Chemistry and Technology of Silicones", Walter Noll, Academic Press Inc., 1968, Pages 373-376.

For the sake of brevity, the siloxane polyether of Formula (I) shall be referred to in the examples as the "EO/PO Silicone Surfactant A" and the siloxane polyether of Formula (II) shall be referred to as the "EO Silicone Surfactant". It should be understood that where reference is made to "EO/PO Silicone Surfactant A" in the examples, that this particular material constitutes a mixture containing about thirteen percent by weight of the EO/PO silicone surfactant as active ingredient and about eighty-seven percent by weight of a volatile cyclic silicone. Where reference is made to an "EO/PO Silicone Surfactant B", the "B" material is essentially the same as "EO/PO Silicone Surfactant A", except that material "B" does not contain the volatile cyclic silicone.

The HLB value of "EO/PO Silicone Surfactant A" is about 1.8. The HLB value of the "EO Silicone Surfactant" is about 13.2. The value of the "EO/PO Silicone Surfactant B" is about 5.9.

The volatile silicone used in the "EO/PO Silicone Surfactant A" and the volatile silicone which may be used as a component of the anhydrous silicone mixture is a low viscosity methylsilicone fluid. These volatile low viscosity methylsilicone fluids correspond to the formula $(CH_3)_aSiO_{(4-a/2)}$ wherein a is an integer having an average value of from two to three. The methylsilicone fluid contains siloxane units joined by Si-O-Si bonds. Representative units are $(CH_3)_3SiO_{1/2}$, $(CH_3)_2SiO_{2/2}$, $(CH_3)SiO_{3/2}$ and $SiO_{4/2}$. These units are present in molar amounts such that there is provided an average of from two to three methyl groups per silicon atom in the methyl-silicone fluid; whereby the methylsilicone fluid has a viscosity of less than one hundred mm^2/s (centistokes) measured at 25°C., preferably less than five mm^2/s (centistokes).

The volatile low viscosity methylsilicone fluid contains dimethylsiloxane units and optionally trimethylsiloxane units. Representative compounds are cyclopolysiloxanes of the formula $[(CH_3)_2SiO]_x$ and linear short chain siloxane compounds of the formula $(CH_3)_3SiO[(CH_3)_2SiO]_ySi(CH_3)_3$, in which x is an integer having a value of from three to ten and y is an integer having a value of from zero to four.

The volatile low viscosity methylsilicones have boiling points generally less than 250°C. and, as noted above, preferably possess viscosities less than ten centistokes. Most preferably, the viscosity is between 0.65 to 5.0 centistokes.

The cyclopolysiloxanes have been assigned the adopted name "CYCLOMETHICONE" by The Cosmetics, Toiletries and Fragrance Association, Inc., Washington, D.C. (CTFA). Both the cyclopolysiloxanes and the volatile linear siloxanes are clear fluids which are essentially odorless, nontoxic, nongreasy and nonstinging. Cosmetically, these methylsilicone fluids are nonirritating to the skin and exhibit enhanced spreadability and ease of rub-out when applied to the skin. Once applied to the skin, the materials evaporate leaving behind no residue.

Methylsilicone fluids which are operable in accordance with the present invention leave substantially no residue after thirty minutes at room temperature when one gram of the fluid is placed at the center of a No. 1 circular filter paper having a diameter of 185 mm supported at its perimeter in open room atmosphere.

By methylsilicone fluid is meant a composition containing two or more silicon atoms, all of which are bonded by way of at least one oxygen atom to at least one other silicon atom and at least one methyl radical, each silicon

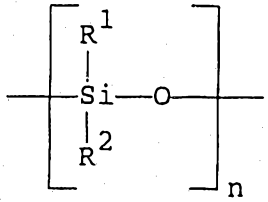
valence not satisfied by oxygen being satisfied by a methyl radical.

Representative methylsilicone fluids found to be especially useful in accordance with the present invention are hexamethyldisiloxane which has a boiling point of 99.5°C. and the formula $Me_3SiOSiMe_3$; octamethyltrisiloxane which has a boiling point of 152°C. and the formula $Me_3SiOMe_2SiOSiMe_3$; hexamethylcyclotrisiloxane which has a boiling point of 133°C. and the formula $[(Me_2)SiO]_3$; octamethylcyclotetrasiloxane which has a boiling point of 171°C. and the formula $[(Me_2)SiO]_4$; and decamethylcyclopentasiloxane which has a boiling point of 205°C. and the formula $[(Me_2)SiO]_5$.

These methylsilicone fluids may be used alone or as mixtures in combinations of two or more. Mixtures of the methylsilicone fluids will result in a volatile material having an evaporating behavior different from any one of the individual methylsilicone fluids.

In some instances, it may be desirable to replace one or more of the methyl groups in the methylsilicone fluid with other groups. Thus, there may be substituted alkyl radicals having two to twelve carbon atoms; or aryl radicals having six to ten carbon atoms.

The anhydrous silicone mixture may also contain a linear non-volatile silicone component which can be a polysiloxane film former having a viscosity in excess of 5 to 25,000,000 mm^2/s (centistokes), preferably within a range of 5 to 10,000 mm^2/s (centistokes). A mixture of non-volatile polysiloxanes having relatively higher and relatively lower viscosities may also be employed. Such polysiloxanes contain the repeating unit



wherein n is an integer having a value greater than one; R^1 is an alkyl radical containing 1 to 40 carbon atoms or a phenyl group; R^2 is an alkyl radical containing 1 to 7 carbon atoms or a phenyl group. Illustrative polysiloxanes encompassed by the above formula are polydimethylsiloxane, polydiethylsiloxane, polymethylethylsiloxane, polymethylphenylsiloxane, polydiphenylsiloxanes and copolymers of two or more of the foregoing siloxanes. Alkylmethylsilicone waxes such as polymethylstearylsiloxane may also be employed.

The anhydrous silicone mixture may additionally contain an ultra-high viscosity silicone gum. These silicone gums typically have the structure $HOMe_2SiO-(Me_2SiO)_nSiMe_2OH$ in which Me is methyl and n is an integer having a value of at least one and which can be as much as 10,000. These silicone gums are known in the art and detailed descriptions of such gums can be found, for example, in EP 0 460 683 A2 published on December 11, 1991. Another suitable type of ultra-high viscosity silicone gum which may be employed is a material of the formula $Me_3SiO(Me_2SiO)_nSiMe_3$ in which Me is methyl and n has a value of at least one to 10,000.

Because of the high viscosity of the silicone gum and for the purpose of facilitating its handling and processing, these materials are generally provided as blends with another volatile or non-volatile low viscosity silicone such as CYCLOMETHICONE or a non-volatile linear silicone fluid having a viscosity of 5 to 350 mm^2/s (centistokes). Such dimethyl silicone polymers terminated with hydroxyl groups have been assigned the adopted name "DIMETHICONOL" by

The Cosmetics, Toiletries and Fragrance Association, Inc., Washington, D.C. (CTFA). Blends of such silicone gums with a volatile low viscosity cyclic silicone have been assigned the adopted name "CYCLOMETHICONE (and) DIMETHICONOL" by the CTFA. Other blends of such silicone gums with a non-volatile low viscosity linear silicone have been assigned the adopted name "DIMETHICONE (and) DIMETHICONOL" by the CTFA. The DIMETHICONOL content of such blends is typically in the range of 12 to 14 percent by weight and the blend viscosity may range from 500 to 20,000 mm^2/s (centistokes), generally in the range of 4,000 to 5,000 mm^2/s (centistokes).

In some instances, it may be desirable to replace one or more of the hydroxy or methyl groups in the silicone gum with other substituents such as ethyl or vinyl, for example.

In addition, it may be desirable to include in the anhydrous silicone mixture other compatible materials such as waxes. Waxes which may be employed include carnauba, beeswax, ceresin, paraffin, candelilla, bayberry, montan, spermaceti, castor wax, ozokerite, microcrystalline waxes, alkylmethylsiloxane waxes and Fisher-Tropsch waxes. Ester waxes may also be employed such as those products sold by Croda Surfactants, Ltd., North Humberside, England, under the tradename SYNCHROWAX AW1, BB, BE, BSE14, ERL, HGL, HR, HRS, RLS and SE.

Emollient oils may also be included in the anhydrous silicone mixture and among those oils which can be employed in the present invention include mineral oil, peanut oil, sesame oil, avocado oil, coconut oil, cocoa butter, almond oil, safflower oil, corn oil, cotton seed oil, castor oil, olive oil, jojoba oil, paraffin oil, cod liver oil, palm oil, soybean oil, wheat germ oil, linseed oil and sunflower seed oil; fatty acid esters such as isopropyl myristate,

isopropyl palmitate, isopropyl stearate, butyl stearate, cetyl stearate, diisopropyl adipate, isodecyl oleate, diisopropyl sebacate and lauryl lactate; fatty acids such as lauric, myristic, palmitic, stearic, oleic, linoleic and behenic, acid; fatty alcohols such as lauryl, myristyl, cetyl, stearyl, isostearyl, oleyl, ricinoleyl, erucyl and 2-octyl dodecanol, alcohols; lanolin and its derivatives such as lanolin, lanolin oil, lanolin wax, lanolin alcohols, lanolin fatty acids, isopropyl lanolate, ethoxylated lanolin and acetylated lanolin alcohols such as ACETULAN®, a trademark and product of Amerchol Corporation, Edison, New Jersey and hydrocarbons such as petrolatum and squalane.

The anhydrous silicone mixture of the present invention is prepared by simply mixing together the various silicone ingredients until a uniform blend is obtained. The anhydrous silicone mixture is then capable of being added directly to any aqueous based pre-emulsified personal care product and without the necessity of any further emulsification in order to disperse the silicones in the personal care product. Preferably, the anhydrous silicone mixture contains 2-35 percent by weight of the "EO/PO Silicone Surfactant"; 0.1-10.0 percent by weight percent of the "EO Silicone Surfactant"; and 1-65 percent by weight of an ultra-high viscosity silicone gum; based on the total weight of the anhydrous silicone mixture.

The anhydrous silicone mixture is preferably added to the pre-emulsified personal care product in an amount of 0.5 to 10.0 percent by weight based on the weight of the personal care product. About one percent by weight of the anhydrous silicone mixture will generally be sufficient.

Example I

Into a container there was added and blended together 10.0 grams of the "EO/PO Silicone Surfactant A" and

2.0 grams of the "EO Silicone Surfactant". The "EO/PO Silicone Surfactant" contained 87 percent by weight of the ethylene oxide/propylene oxide silicone copolymer and 13 percent by weight of a volatile cyclic silicone. There was then added to the container 35.0 grams of a hydroxy terminated silicone gum which had been blended with 87.0 percent by weight of a linear non-volatile silicone fluid having a viscosity of 5.0 mm^2/s (centistokes) measured at 25°C. The two surfactants and the gum-blend were mixed together in the container until a uniform mixture was obtained. One gram of this anhydrous silicone mixture was added to 49.0 grams of a commercially available personal care skin cleansing product.

The personal care skin cleansing product selected was the OIL OF OLAY® Foaming Cleanser, a trademark and product of the Olay Company, Inc., Shelton, Connecticut USA, a Procter & Gamble company. This aqueous based pre-emulsified foaming face wash composition contained water, potassium cocoyl hydrolyzed collagen, glycerin, sodium lauriminodiproprionate, sodium acrylate/steareth-20 methacrylate copolymer, sodium lauroyl sarcosinate, disodium cocoamphodiacetate, sodium lauryl sulfate, hexylene glycol, Polyquaternium-10, a fragrance, phenoxyethanol, DMDM hydantoin, tetrasodium EDTA, mica and titanium dioxide. It should be understood, however, that the present invention is applicable to other aqueous based pre-emulsified personal care products for general application to the skin.

Example II

The personal care skin cleansing product prepared in accordance with the teaching in Example I was tested by a group of at least two and as many as four sensory panel trained individuals. One-half gram of the product was applied to a small pre-dampened facial sponge and the test

material was applied to the volar forearm in a small circular motion of two circular strokes per second. Fifty light strokes were used by the volunteers to apply the product.

A rinse was used by the volunteers with 40°C. tap water and the rinse was carried out by placing the arm under tap water for fifteen seconds. The arm was pat dried with a paper towel and allowed to completely dry for 2-5 minutes. Evaluations were made by the volunteers by lightly rubbing the treated area and comparing to a "control" area, which had been treated with unaltered OIL OF OLAY® Foaming Cleanser. The volunteers were asked to determine if the treatments were significantly different from one another. The volunteers almost without exception indicated that a smoother, silkier feel, was deposited on the skin with the silicone containing product than with the unaltered OIL OF OLAY® Foaming Cleanser and that the silicone containing product looked good from the standpoint of uniformity.

Example III

The personal care skin cleansing product prepared in Example I was tested for its shelf life by subjecting the product to a freeze-thaw cycling from +20 to -20°C. Five complete cycles were completed. The product was evaluated as stable at the end of five days.

Example IV

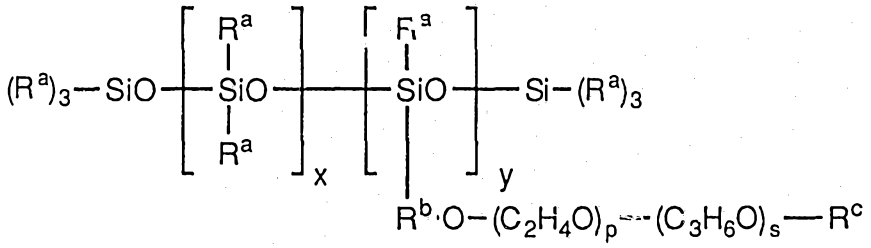
Examples I-III were repeated except that to the container in Example I there was added 35.0 grams of a hydroxy terminated silicone gum blended with 60.0 percent of a linear non-volatile silicone fluid having a viscosity of 350 mm^2/s (centistokes) measured at 25°C. The results reported were identical to the results obtained in Examples I-III.

Other variations and modifications may be made in the compounds, compositions and methods described herein

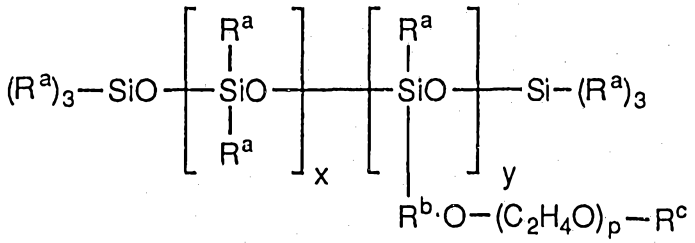
without departing from the essential features and concepts of the present invention. The forms of the invention described herein are exemplary only and are not intended as limitations on the scope of the invention which is defined in the appended claims.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A method of making a stable emulsified personal care product having as an ingredient thereof a silicone skin conditioning agent, comprising (i) forming an anhydrous silicone mixture which includes a silicone selected from volatile cyclopolysiloxanes having the formula $[(CH_3)_2SiO]_x$ in which x has a value of 3 to 10 and non-volatile linear polysiloxanes having a viscosity of 5 to 10,000 mm^2/s (centistokes) and a silicone gum, the mixture further including a first silicone oxyalkylene copolymer and a second silicone oxyalkylene copolymer; (ii) forming a pre-emulsified aqueous based personal care product; and (iii) adding the anhydrous silicone mixture directly to the pre-emulsified personal care product without further emulsification, the first silicone oxyalkylene copolymer in the anhydrous silicone mixture is a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}$; R^c is a terminating radical selected from hydrogen, an alkyl group of one to six carbon atoms and an aryl group; m has a value of two to eight; p and s each have values between 18 to 28; x has a value of 80 to 120; and y has a value of 2 to 10; and in which the second silicone oxyalkylene copolymer (iii) in the anhydrous silicone mixture is a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical selected from hydrogen, an alkyl group of

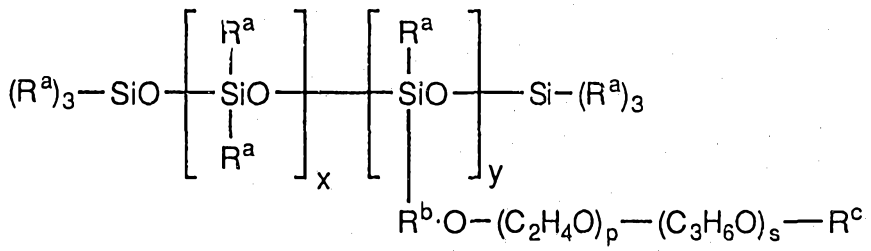
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one to six carbon atoms or an aryl group; m has a value of two to eight; p has a value of 8 to 16; x has a value of 6 to 12; and y has a value of 1 to 8.

2. A method according to claim 1 in which the silicone in the anhydrous silicone mixture is an ultra-high viscosity silicone gum of the structure $HOMe_2SiO\text{-}(Me_2SiO)_nSiMe_2OH$ in which Me is methyl and n is an integer having a value of from one to 10,000.

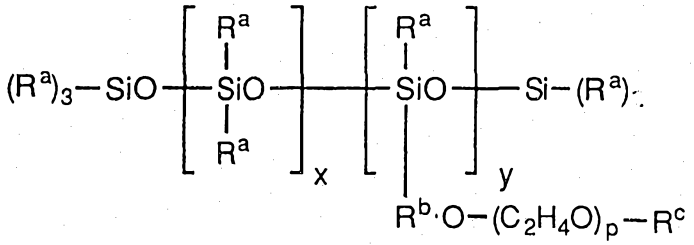
3. A stable emulsified personal care product prepared according to the method defined in Claim 1.

4. A composition including an anhydrous silicone mixture which includes (i) a silicone selected from a silicone oil and a silicone gum, the mixture further including (ii) a first silicone oxyalkylene copolymer and (iii) a second silicone oxyalkylene copolymer; the silicone (i) in the anhydrous mixture being a compound selected from volatile cyclopolysiloxanes having the formula $[(CH_3)_2SiO]_x$ in which x has a value of 3 to 10 and non-volatile linear polysiloxanes having a viscosity of 5 to 25,000,000 mm^2/s (centistokes); the first silicone oxyalkylene copolymer (ii) in the anhydrous silicone mixture being a siloxane polyether of the formula:



wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical selected from hydrogen, an alkyl group of one to six carbon atoms and an aryl group; m has a value of two to eight; p and s each have values between 18 to 28; x has a value of 80 to 120; and y has a value of 2 to 10; and in which the second silicone oxyalkylene copolymer (iii) in the anhydrous silicone mixture is a siloxane polyether of the formula:

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wherein R^a is an alkyl group of one to six carbon atoms; R^b is the radical $-C_mH_{2m}-$; R^c is a terminating radical selected from hydrogen, an alkyl group of one to six carbon atoms or an aryl group; m has a value of two to eight; p has a value of 8 to 16; x has a value of 6 to 12; and y has a value of 1 to 8.

5. A composition according to claim 4 in which the silicone in the anhydrous silicone mixture is an ultra-high viscosity silicone gum of the structure $HOMe_2SiO-(Me_2SiO)_nSiMe_2OH$ in which Me is methyl and n is an integer having a value of from one to 10,000.

6. A composition according to claim 5 in which the silicone gum is blended with a non-volatile linear silicone fluid having a viscosity of 5 to 350 mm^2/s (centistokes).

DATED this 6th day of June, 1996.

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SILICONE CONTAINING PERSONAL CARE PRODUCTS

ABSTRACT

A method of making a stable emulsified personal care product by (i) forming an anhydrous silicone mixture which includes a silicone such as a silicone oil or a silicone gum, the mixture further including a first silicone oxyalkylene copolymer and a second silicone oxyalkylene copolymer; (ii) forming an aqueous based pre-emulsified personal care product; and (iii) adding the anhydrous silicone mixture directly to the pre-emulsified personal care product without further emulsification.