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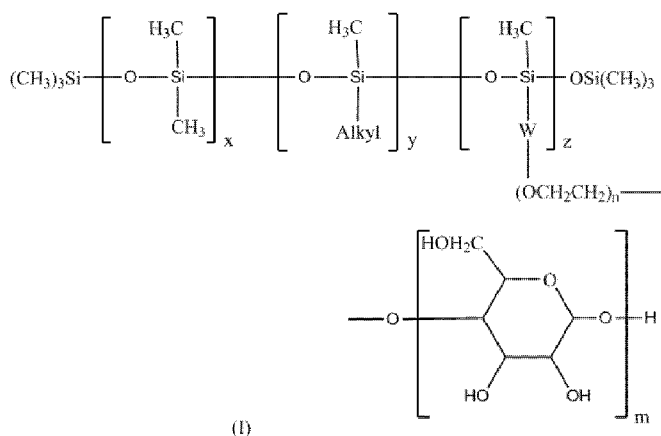
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(54) Title: USE OF ALKYL GLYCOSIDE MODIFIED POLYSILOXANES IN PURE OIL-BASED PERSONAL CARE PRODUCTS



(57) Abstract: Use of alkyl glycoside modified polysiloxanes in pure oil-based personal care products, wherein the pure oil-based products comprise less than or equal to 1 wt% of water, preferably less than or equal to 0.1 wt% of water, and the structure of the alkyl glycoside modified polysiloxanes is as shown in Formula (I), where x, y and z respectively represent positive integers between 1 and 10,000, preferably between 1 and 5,000; n and m respectively represent positive integers between 1 and 20, preferably between 1 and 15; Alkyl represents a linear or branched C<sub>2</sub>-C<sub>20</sub> hydrocarbon chain; preferably at least one alkyl group selected from a group of, ethyl, propyl, butyl, pentyl, hexyl, heptyl and octyl; W represents a linear or branched C<sub>2</sub>-C<sub>20</sub> alkylene selected from a group of ethylene, propylene, butylene, pentylene, hexylene, heptylene and octylene.

WO 2017/148827 A1

**Use of Alkyl Glycoside Modified Polysiloxanes in Pure Oil-Based  
Personal Care Products**

**Field of the Invention**

5 The invention relates to applications of alkyl glycoside modified polysiloxanes in pure oil-based personal care products.

**Background of the Invention**

10 WO 03/075864 A1 discloses applications of a polyglycerol modified polysiloxane in oily cosmetics, claiming that it is free of stickiness, soft and smooth. The application examples in oily cosmetics include lip sticks, roll-on antiperspirants and oily liquid foundations. In oily liquid foundations  
15 therein, however, emulsifiers based on fatty acid esters are needed to help the powder suspend in the systems.

US6066326 discloses a cosmetic composition comprising at least one co-emulsifier and one polydimethylsiloxane containing  
20 glucoside groups. In Examples 1-4 disclosed therein, the polydimethylsiloxane containing glucoside groups is used in water-in-oil emulsions.

US6881416B2 discloses a process for the preparation of water-  
25 in-oil emulsions used as foundations by mixing WACKER BELSIL SPG 128 VP and WACKER BELSIL RG 100 with powders.

US5831080 describes a process for preparing a glycoside modified polysiloxane.

30

US6919071 discloses a water-in-oil sunscreen emulsion, where glycoside modified siloxane(s) is/are used as emulsifier(s).

WO2015091378A discloses a novel alkyl glycoside polysiloxane elastomer gel, whose crosslinked molecular chains contain silicone resin segments.

5 **Summary of the Invention**

The invention surprisingly discovers that alkyl glycoside modified polysiloxanes can be employed in pure oil-based personal care products to significantly reduce the stickiness of the pure oil-based products, in pure oil-based hair  
10 conditioner compositions to significantly improve the smoothness of hairs, and in pure oil-based skin care compositions and containing powders to significantly enhance the stability of compositions having a high powder content and to impart them with an excellent powder suspensibility.

15

The pure oil-based personal care products in the invention include pure oil-based hair conditioner compositions (including leave-on hair conditioner compositions), pure oil-based skin care compositions (including facial skin care compositions,  
20 particularly those having a high powder content).

"Pure oil-based" in this invention means that the pure oil-based products comprise less than or equal to 1 wt% of water, preferably less than or equal to 0.1 wt% of water. It could be  
25 a composition mainly containing oils ingredients and water content less than or equal to 1 wt%, preferably less than or equal to 0.1 wt% of water.

The leave-on hair conditioner compositions in the invention  
30 refer to the hair conditioner compositions that, after applied to the hairs, have a retention time greater than or equal to 1 hour. Preferably, "Leave-on" means that the hair is not rinsed until 8 hours after applying the hair conditioner.

The volatile hydrophobic solvents in the invention refer to hydrophobic solvents whose evaporation rate is greater than or equal to 0.1 wt%/min tested at 23°C according to DIN53249: 2007-05 and which are typically suitable for personal care products, including cyclopentasiloxane, isododecane and isohehexadecane. "Hydrophobic" means that the solubility of the solvent in water is equal or less than 1 wt% at 25°C at 1013 hPa.

The nonvolatile oils in the invention refer to the oils whose evaporation rate is less than 0.1 wt%/min tested at 23°C according to DIN53249, including organosilicon oils such as dimethiconols (INCI name), which are  $\alpha,\omega$ -dihydroxy-terminated polydimethylsiloxanes, preferably with a viscosity of from 0.1 to 2,000 mPas at 25°C (according to DIN 53019), dimethicones (INCI name), which are dimethyl polysiloxanes, preferably with a viscosity of from 0.1 to 2,000 mPas at 25°C (according to DIN 53019), and phenyl modified dimethicones (INCI name), which are phenyl modified dimethyl polysiloxanes, preferably with a viscosity of from 0.1 to 2,000 mPas at 25°C (according to DIN 53019); hydrocarbon oils such as white spirit (a mixture of aliphatic and alicyclic C7 to C12 hydrocarbons), liquid paraffin, micro-crystalline wax, beeswax, C12-15 benzoate, palmitic acid, panthenol, cetanol, myristyl alcohol, isopropyl palmitate, sorbitan stearate, cetareth-3, glyceryl laurates and ethylhexyl methoxycinnamate; vegetable oils such as sunflower oil, castor oil, jojoba oil, shea butter, avocado and grape seed oils; and animal fats such as lanolin and mink oils.

INCI names are described in the „International Cosmetic Ingredient Dictionary & Handbook“, 16<sup>th</sup> Edition, from the Personal Care Product Council (ed.).

The powders for personal care products in the invention refer to inorganic and polymeric powders with nano-or micron-level particle size used to adjust colors or block UV in the field of

personal care products, including silica, talc, mica, titanium dioxide, color pigment powders (such as iron oxide yellow, iron oxide black, iron oxide red, etc.), kaolin, zinc oxide and polymethacrylate.

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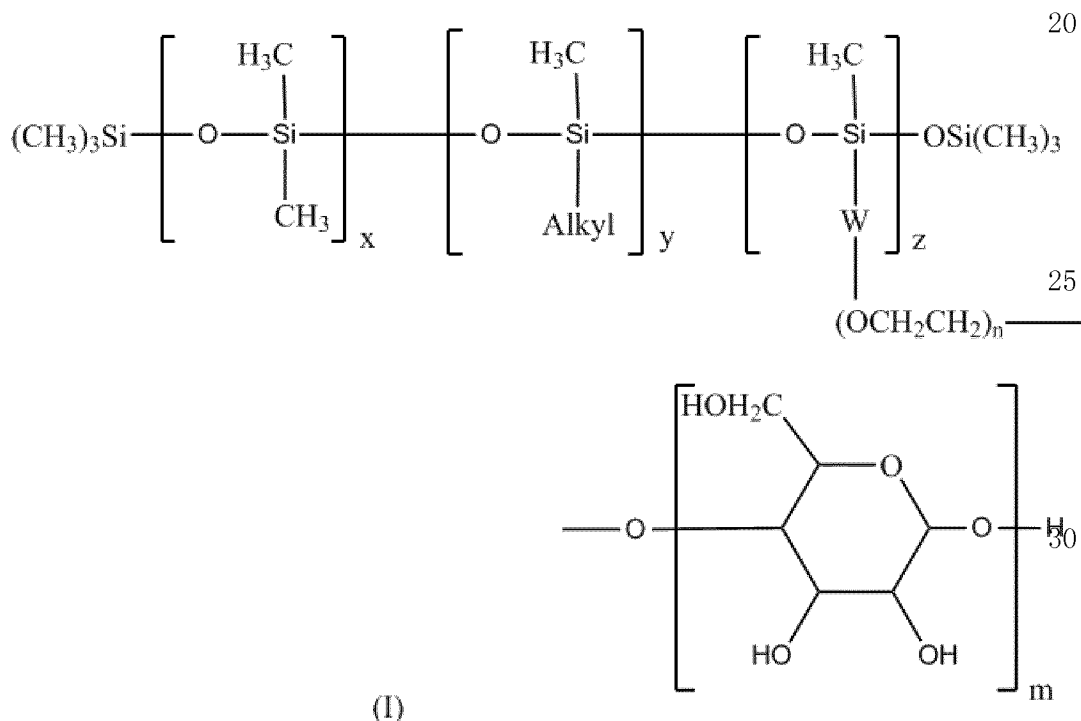
The alkyl glycoside modified polysiloxanes in the invention can be prepared by the method as described in CN102492147B. The alkyl glycoside modified polysiloxanes in the invention are not crosslinked polymers and have a linear polysiloxane backbone with part of side groups being substituted by alkyl and glycoside groups.

10

The invention can be realized as follows:

The invention provides for the use of alkyl glycoside modified polysiloxanes in pure oil-based personal care products, wherein the pure oil-based products comprise less than or equal to 1 wt% of water, preferably less than or equal to 0.1 wt% of water, and the structure of the alkyl glycoside modified polysiloxanes is as shown in Formula (I)

15



where x, y and z are the same or different and respectively represent positive integers between 1 and 10,000, preferably positive integers between 1 and 5,000;

n and m are the same or different and respectively represent  
5 positive integers between 1 and 20, preferably positive integers between 1 and 15;

Alkyl represents a linear or branched C<sub>2</sub>-C<sub>20</sub> hydrocarbon chain; and preference is given to at least one alkyl group selected from a group of ethyl, propyl, butyl, pentyl, hexyl, heptyl and  
10 octyl;

W represents a linear or branched C<sub>2</sub>-C<sub>20</sub> alkylene selected from a group of ethylene, propylene, butylene, pentylene, hexylene, heptylene and octylene.

15 According to the use as mentioned above, the alkyl glycoside modified polysiloxanes are used preferably in amounts of from 0.1 to 50 wt% in pure oil-based personal care products.

As in the application as mentioned above, the pure oil-based  
20 personal care products are preferably leave-on hair conditioner compositions having a turbidity of less than 80 NTU (Nephelometric Turbidity Unit), preferably less than 30 NTU, tested according to ISO 7027-1:2016 standard, measured preferably by the turbidimeter HACH-2100Q and its user  
25 instructions at room temperature.

According to the use as mentioned above, the pure oil-based hair conditioner compositions preferably contain:

- (a) 0.1-50 wt% of alkyl glycoside modified polysiloxanes;
  - 30 (b) 0-85 wt% of volatile hydrophobic solvents;
  - (c) 0-20 wt% of non-volatile oils;
  - (d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer
- where the amount of components (b) and (c) cannot be zero at the same time and the percentage in each case is based on the  
35 total weight of the pure oil-based compositions.

Dimethicone/vinyl dimethicone crosspolymer (INCI name) is a crosslinked dimethyl siloxane polymer, preferably a silicone elastomer, formed by the reaction between a dimethyl  
5 polysiloxane having Si-bonded hydrogen and a dimethyl polysiloxane having Si-bonded vinyl groups, for example by the reaction of hydrogen dimethicone (INCI name; dimethyl polysiloxane having Si-bonded hydrogen) or bis-hydrogen  
10 dimethicone (INCI name;  $\alpha,\omega$ -dihydrogen dimethyl polysiloxane), and vinyl dimethicone (INCI name, dimethyl polysiloxane having Si-bonded vinyl groups) or bis-vinyldimethicone (INCI name,  $\alpha,\omega$ -divinyl dimethyl polysiloxane).

According to the use as mentioned above, the pure oil-based  
15 hair conditioner compositions preferably contain:

- (a) 0.1-30 wt% of alkyl glycoside modified polysiloxanes;
- (b) 20-85 wt% of volatile hydrophobic solvents;
- (c) 5-35 wt% of non-volatile oils containing 0.5-35 wt% of dimethiconols;

20 where the percentage in each case is based on the total weight of the pure oil-based composition.

According to the use as mentioned above, the pure oil-based  
hair conditioner compositions preferably contain:

- 25 (a) 0.1-30 wt% of alkyl glycoside modified polysiloxanes;
- (b) 30-85 wt% of volatile hydrophobic solvents;
- (c) 5-30 wt% of non-volatile oils containing 0.5-30 wt% of dimethiconols;

(d) 0.5-10 wt% of dimethicone/vinyl dimethicone crosspolymer  
30 where the percentage in each case is based on the total weight of the pure oil-based composition.

According to the use as mentioned above, the pure oil-based  
personal care products are preferably skin care compositions,  
35 more preferably facial skin care compositions.

According to the use as mentioned above, the pure oil-based skin care compositions preferably contain:

- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;
  - 5 (b) 10-90 wt% of volatile hydrophobic solvents;
  - (c) 5-80 wt% of non-volatile oils containing 0.5-10 wt% of dimethiconols;
  - (d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer
- where the percentage in each case is based on the total weight  
10 of the pure oil-based composition.

According to the use as mentioned above, the pure oil-based skin care compositions preferably contain:

- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;
  - 15 (b) 10-70 wt% of volatile hydrophobic solvents;
  - (c) 19-80 wt% of non-volatile oils containing 0.5-10 wt% of dimethiconols;
  - (d) 0-10 wt% of dimethicone/vinyl dimethicone crosspolymer
  - (e) 0.5-50 wt% of powders that can be used in the skin care
- 20 compositions;
- where the percentage in each case is based on the total weight  
of the pure oil-based composition.

According to the use as mentioned above, the pure oil-based skin care compositions preferably contain:

- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;
  - (b) 10-70 wt% of volatile hydrophobic solvents;
  - (c) 19-75 wt% of non-volatile oils containing 0.5-10 wt% of dimethiconols;
  - 30 (d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer
  - (e) 10-50 wt% of powders that can be used in the skin care compositions;
- where the percentage in each case is based on the total weight  
of the pure oil-based composition.



The components (a), optionally (b), optionally (c) and optionally (d) and optionally (e) are used in each case in such amounts that they add up to 100 wt %.

## 5 **Description of the Preferred Embodiments**

The information on the products herein is as follows:

BELSIL® GB 1020 by Wacker Chemie AG, comprising 12 wt% of dimethiconols and 88 wt% of dimethicones, wherein the viscosity  
10 of dimethicones is 5 mPa.s (at 25°C according to DIN 53019).

BELSIL® EG 2 by Wacker Chemie AG, comprising 14 wt% of dimethicone/vinyl dimethicone crosspolymers and 86 wt% of cyclopentasiloxane.

15

BELSIL® SPG 128 VP by Wacker Chemie AG, comprising 20 wt% of caprylyl dimethicone ethoxy glucoside and 80 wt% of cyclopentasiloxane.

20 BELSIL® WO 5000 by Wacker Chemie AG, comprising 30 wt% of caprylyl dimethicone ethoxy glucoside and 70 wt% of dimethicones, wherein the viscosity of dimethicone is 5 mPa.s (at 25°C according to DIN 53019).

25 BELSIL® DM 5 by Wacker Chemie AG, comprising 100 wt% of dimethicones having a viscosity of 5 mPa.s (at 25°C according to DIN 53019).

BELSIL® CM 040 CN by Wacker Chemie AG, comprising 100 wt% of  
30 cyclopentasiloxane.

Wacker Chemie AG's alkyl glycoside polysiloxane elastomer gel samples, whose polysiloxane molecular chains contain silicone resin segments, and which are prepared in reference to Sample 14 in Table 5 of WO2015091378A and contain alkyl glycoside  
35 polysiloxane elastomers.

KF-6104 by ShinEtsu, comprising polyglyceryl-3 polydimethylsiloxylethyl dimethicone.

5 BELSIL® PDM 20 by Wacker Chemie AG, comprising 100 wt% of trimethylsiloxylethyl dimethicone

Landpowder Si BB88231 by Shanghai Kingland Fine Chemistry's Co., Ltd., a mixture of titanium dioxide and color pigment  
10 powders.

**Pure oil-based hair conditioner compositions**

The following ingredients were mixed and stirred at a medium rotating speed of 200-300 rpm at room temperature to obtain  
15 Examples 1-3 (abbreviation Ex. 1-3) and Comparative Examples 1-3 (abbreviation C. Ex. 1-3).

**Table 1**

Pure oil-based hair conditioner compositions		Ex. 1	C. Ex. 1	Ex. 2	C. Ex. 2	C. Ex. 3	Ex. 3
INCI Names	Material from	wt%	wt%	wt%	wt%	wt%	wt%
Dimethicone	BELSIL® DM 5	70	70	15.0	15.0	23.0	15.0
Polyglyceryl-3 polydimethyl-siloxyethyl dimethicone	KF-6104	/	30.0	/	/	/	/
Alkyl glycoside polysiloxane elastomer	Alkyl glycoside polysiloxane elastomer gel sample	/	/	/	/	2.0	/
Dimethiconol	BELSIL® GB 1020	/	/	1.2	/	/	1.2
Cyclopenta-siloxane	BELSIL® CM 040 CN	/	/	81.8	83.0	75.0	79.0
dimethicone/vinyl dimethicone crosspolymer	BELSIL® EG 2	/	/	/	/	/	2.8
Caprylyl dimethicone ethoxy glucoside	BELSIL® SPG 128 VP	/	/	2.0	2.0	/	2.0
Caprylyl dimethicone ethoxy glucoside	BELSIL® WO 5000	30.0	/	/	/	/	/

Tested according to ISO7027 standard, each of the 3 compositions prepared in Examples 1-3 herein had a turbidity of less than 30NTU.

Naturally straight Chinese hair, never dyed or permed, was used for experimental purposes in the invention, and each hair tress measured 26 cm long and weighed 12 g.

1.4 ml of Pantene Pure Nourish (product number 98573610) Shampoo commercially available in 2015 was used to wash each straight hair tress, which was then air dried.

5 In Examples 1-3 and Comparative Examples 1-3, 0.7 ml of individual care products was evenly applied to the corresponding hair tress which has been cleaned and dried as above. The period of 10 seconds starting from applying the care products on the hair tress was defined as the early stage of application. The period following 60 seconds after the care products were applied on the hair tress was defined as the later stage of application.

A rating system is as follows:

Performance rating	1	2	3	4	5
Hair smoothness in the early stage of application	Not smooth at all; typical effect with no care product being used; significant resistance when touching hair tresses following the growth direction of hair cuticles	Not very smooth	Average	Smooth in reference to the effect from using the same amount of L'ORÉAL Extraordinary Oil 2K060	Very smooth
Hair stickiness in the later stage of application	Very sticky in reference to the effect from using the same amount of lanolin wax	Sticky	Average	Not very sticky in reference to the effect from using the same amount of L'ORÉAL Extraordinary Oil 2K060	Not sticky

Hair fluffiness in the later stage of application	Not fluffy in reference to the effect from using the same amount of lanolin wax	Slightly fluffy	Average	Fluffy in reference to the effect from using the same amount of L'ORÉAL Extraordinary Oil 2K060	Very fluffy
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Property values of the pure oil-based hair conditioner compositions of the examples and comparative examples are listed in Table 2.

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**Table 2**

	Ex. 1	C. Ex. 1	Ex. 2	C. Ex. 2	C. Ex. 3	Ex. 3
Hair smoothness in the early stage of application	5	3	5	4	3	5
Hair stickiness in the later stage of application	5	3	5	5	5	5
Hair fluffiness in the later stage of application	1	1	1	1	2	4

The hair tress was not smooth after treated with the product prepared in Comparative Example 3. The reason for this is that the alkyl glycoside polysiloxane elastomer has nonlinear polysiloxane molecular chains, and the silicone segments cannot contribute to smoothness effect. In addition, the product obtained in Example 3 by the addition of dimethicone/vinyl dimethicone crosspolymer significantly increased the fluffiness of hair.

15

**Example 4**

Phase	Trade names of ingredients and substances contained	Suppliers	wt%
A	BELSIL® SPG 128 VP containing 20 wt% of caprylyl dimethicone ethoxy glucoside	Wacker Chemie	10.0
	BELSIL® GB 1020 containing 12 wt% of dimethiconol	Wacker Chemie	30.0
	BELSIL® PDM 20 containing 100 wt% of trimethylsiloxyphenyl dimethicone	Wacker Chemie	5.0
	IDD containing 100 wt% of isododecane	DowPol	50.0
	IPP containing 100 wt% of ethylhexyl palmitate	BASF	5.0

In Example 4, the smoothness effect of the product was significantly improved by the addition of 3.6 wt% of dimethiconol, based on the total amount of composition.

**Pure oil-based skin/face care compositions**

To prepare the skin massage oils of Example 5 and Comparative Example 5, oil phase ingredients were mixed one by one and stirred at a medium speed of 200-300 rpm at room temperature. To prepare the oily liquid foundations of Examples 6 and 7 and Comparative Examples 6 and 7, oil phase ingredients were mixed one by one and stirred well at a medium speed at room temperature. Afterwards, the powder was added to and stirred with the mixture of oils at a medium speed of 200-300 rpm for 2 minutes and then homogenized at 10,000 rpm for 3 minutes.

**Table 3**

Pure oil-based skin care compositions		Ex.5	C. Ex.5	Ex.6	C. Ex.6	C. Ex.7	Ex.7
INCI Names	Material from	wt%	wt%	wt%	wt%	wt%	wt%
Dimethicone	BELSIL® DM 5	10.0	10.0	10.0	10.0	18.0	10.0
Polyglyceryl-3 polydimethyl-siloxylethyl dimethicone	KF-6104	/	0.2	/	2.0	/	/
Alkyl glycoside polysiloxane elastomer	Alkyl glycoside polysiloxane elastomer gel sample	/	/	/	/	2.0	/
Dimethiconol	BELSIL® GB 1020	/	/	0.5	0.5	0.5	0.5
Cyclopentasiloxane	BELSIL® CM 040 CN	89.8	89.8	72.5	72.5	64.5	69.7
0-10 wt% of dimethicone/vinyl dimethicone crosspolymer	BELSIL® EG 2	/	/	/	/	/	2.8
Caprylyl dimethicone ethoxy glucoside	BELSIL® SPG 128 VP	0.2	/	2.0	/	/	2.0
Titanium dioxide powder	SiBB2231	/	/	15.0	15.0	15.0	15.0

The skin and face care compositions prepared in Examples 5-7 and Comparative Examples 5-7 herein were applied to the inside of the arm with gentle massage in circular motions using the middle finger until absorbed completely, and evaluated for their stickiness or smoothness 5 minutes later.

The stickiness (hand feel) was evaluated in reference to the following:

The stickiness of lanolin wax was given 10 points (very sticky);

Jergens Aloe and Lanolin (commercial product) oil-in-water lotion was given 5 points (moderately sticky);  
The stickiness of baby oil (pure mineral oil) was given 0 point (not significantly sticky).

5

The smoothness was evaluated in reference to the following:  
Talcum powder as a reference was given 10 points (significantly smooth);  
Jergens Aloe and Lanolin (commercial product) was given 5  
10 points (moderately smooth);  
Water as a reference was given 0 point (not significantly smooth);

The compositions were evaluated for their storage stabilities, especially powder suspensibility, in reference to the following:

Fully suspended powder having no layering or phase separation after letting stand for 4 hours at room temperature was given 10 points;  
20 Moderately suspended powder having slight layering without any clear interface after letting standing for 4 hours at room temperature was given 5 points;  
Non-suspended powder having a clear layered interface within 1 hour after letting stand at room temperature was given  
25 0 point.

Property values of the pure oil-based face-care compositions of examples and comparative examples are listed in Table 4. The experiments showed that polyglyceryl-3 polydimethylsiloxylethyl dimethicone and alkyl glycoside polysiloxane elastomer did not  
30 show the ability to help with powder suspensibility in Comparative Example 6 and 7. In Examples 6 and 7, 2 wt% of caprylyl dimethicone ethoxy glucoside was used to obtain a homogeneous and stable pure oil-based liquid foundation having



no layering or phase separation and a power content up to 15 wt%.

**Table 4**

	Ex. 5	C. Ex. 5	Ex. 6	C. Ex. 6	C. Ex. 7	Ex. 7
Stickiness	6	7	5	6	5	5
Smoothness	7	6	7	5	7	8
Powder suspensibility	/	/	10	0	0	10

5

**Example 8: massage oil for skin care**

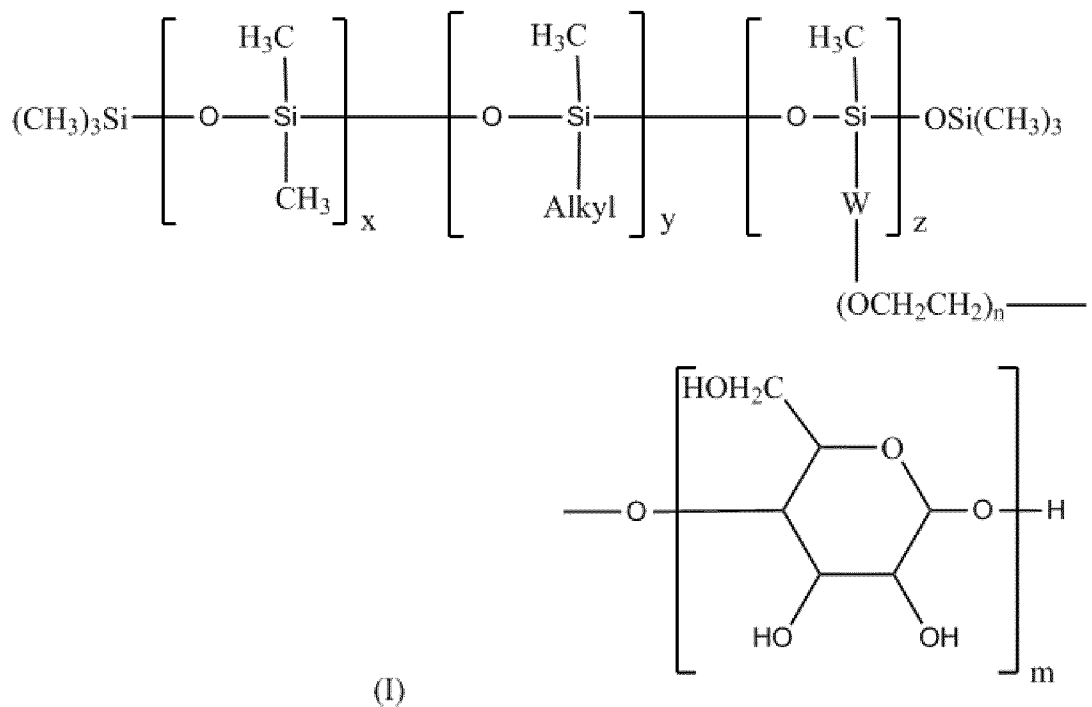
Phase	Trade names of ingredients and substances contained	suppliers	wt%
A	IDD containing 100 wt% of isododecane	DowPol	50.0
	BELSIL® GB 1020 containing 12 wt% of dimethiconol	Wacker Chemie	25.0
	BELSIL® SPG 128 VP containing 20 wt% of caprylyl dimethicone ethoxy glucoside	Wacker Chemie	10.0
	Olive oil	Lipo Chemicals	5.00
	Jojoba oil	Blue Star	5.00
	Macadamia oil	Lipo Chemicals	5.00

The product prepared in Example 8 contained 3 wt% of dimethiconol and scored 8 points for its smoothness, which was significantly improved.

10

CLAIMS

1. Use of alkyl glycoside modified polysiloxanes in pure oil-based personal care products, wherein the pure oil-based products comprise less than or equal to 1 wt% of water, preferably less than or equal to 0.1 wt% of water, and the structure of the alkyl glycoside modified polysiloxanes is as shown in Formula (I)



where

x, y and z are the same or different and respectively represent positive integers between 1 and 10,000, preferably between 1 and 5,000;

n and m are the same or different and respectively represent positive integers between 1 and 20, preferably between 1 and 15;

Alkyl represents a linear or branched C<sub>2</sub>-C<sub>20</sub> hydrocarbon chain; preferably at least one alkyl group selected from a group of, ethyl, propyl, butyl, pentyl, hexyl, heptyl and octyl;

W represents a linear or branched C<sub>2</sub>-C<sub>20</sub> alkylene selected from a group of ethylene, propylene, butylene, pentylene, hexylene, heptylene and octylene.

5

2. Use according to Claim 1, wherein the alkyl glycoside modified polysiloxanes is used in an amount of from 0.1 to 50 wt% in pure oil-based personal care products.

10

3. Use according to Claim 1 or 2, wherein the pure oil-based personal care products are leave-on hair conditioner compositions having a turbidity of less than 80 NTU (Nephelometric Turbidity Unit) tested according to ISO 7027-1:2016 standard, preferably less than 30 NTU.

15

4. Use according to Claim 3, the pure oil-based hair conditioner compositions containing:
  - (a) 0.1-50 wt% of alkyl glycoside modified polysiloxanes;
  - (b) 0-85 wt% of volatile hydrophobic solvents;
  - (c) 0-20 wt% of non-volatile oils;
  - (d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer

20

25

where the amount of components (b) and (c) cannot be zero at the same time and the percentage in each case is based on the total weight of the pure oil-based compositions.

30

5. Use according to Claim 3, the pure oil-based hair conditioner compositions containing:
  - (a) 0.1-30 wt% of alkyl glycoside modified polysiloxanes;
  - (b) 20-85 wt% of volatile hydrophobic solvents;
  - (c) 5-35 wt% of non-volatile oils containing 0.5-35 wt% of dimethiconols;

35

where the percentage in each case is based on the total weight of the pure oil-based composition.

- 5 6. Use according to any of Claims 3, the pure oil-based hair conditioner compositions containing:
- (a) 0.1-30 wt% of alkyl glycoside modified polysiloxanes;
  - (b) 30-85 wt% of volatile hydrophobic solvents;
  - (c) 5-30 wt% of non-volatile oils containing 0.5-30 wt% of  
10 dimethiconols;
  - (d) 0.5-10 wt% of dimethicone/vinyl dimethicone crosspolymer;

where the percentage in each case is based on the total weight of the pure oil-based composition.

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7. Use according to Claim 1 or 2, the pure oil-based personal care products are skin care compositions, preferably facial skin care compositions.

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8. Use according to Claim 7, the pure oil-based skin care compositions containing:
- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;
  - (b) 10-90 wt% of volatile hydrophobic solvents;
  - (c) 5-80 wt% of non-volatile oils containing 0.5-10 wt% of  
25 dimethiconols;
  - (d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer;

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where the percentage in each case is based on the total weight of the pure oil-based composition.

9. Use according to Claim 7, the pure oil-based skin care  
35 compositions containing:

- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;  
(b) 10-70 wt% of volatile hydrophobic solvents;  
(c) 19-80 wt% of non-volatile oils containing 0.5-10 wt% of dimethiconols;  
5 (d) 0-10 wt% of dimethicone/vinyl dimethicone crosspolymer;  
(e) 0.5-50 wt% of powders that can be used in the skin care compositions;

where the percentage in each case is based on the total weight of the pure oil-based composition.

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10. Use according to Claim 7, the pure oil-based skin care compositions containing:

- (a) 0.1-10 wt% of alkyl glycoside modified polysiloxanes;  
15 (b) 10-70 wt% of volatile hydrophobic solvents;  
(c) 19-75 wt% of non-volatile oils containing 0.5-10 wt% of dimethiconols;  
(d) 0.1-10 wt% of dimethicone/vinyl dimethicone crosspolymer;  
20 (e) 10-50 wt% of powders that can be used in the skin care compositions;

where the percentage in each case is based on the total weight of the pure oil-based composition.

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INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2017/054384

A. CLASSIFICATION OF SUBJECT MATTER  
 INV. A61K8/58 A61Q5/12 A61Q19/00 A61K8/891 A61K8/893  
 A61K8/894  
 ADD.  
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED  
 Minimum documentation searched (classification system followed by classification symbols)  
 A61K A61Q

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

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE GNPD [Online] MINTEL; January 2015 (2015-01), "rose super damage repair serum", XP002769028, Database accession no. 2926889	1-3,5,7
Y	paragraph [ingredients] -----	1-10
X	DATABASE GNPD [Online] MINTEL; October 2012 (2012-10), "Hair Multi Vitamin & Nutrients Capsules", XP002769029, Database accession no. 1896691 paragraph [ingredients] -----	1-3,5,7
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Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search  7 April 2017	Date of mailing of the international search report  22/05/2017
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer  Krattinger, B
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## INTERNATIONAL SEARCH REPORT

International application No  
PCT/EP2017/054384

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	wacker: "Silicone Polyglycosides : BELSIL WO 5000 and BELSIL SPG 128 VP", 2014 SCC Supplier's day  2014, XP002769030, Retrieved from the Internet: URL:https://www.ulprospector.com/documents/1277029.pdf?bs=5139&b=215730&st=20&r=eu&ind=personalcare [retrieved on 2017-04-06]	1-3,5,7
Y	pages 4-6 pages 17-18	1-10
X	----- Anonymous: "Belsil SPG 128 VP", Wacker Silicones  1 December 2011 (2011-12-01), XP002769031, Retrieved from the Internet: URL:http://www.brenntag.com/media/document s/bsi/product_data_sheets/life_science/wac ker_silicones_pc/belsil_spg_128_vp_pds.pdf [retrieved on 2017-04-06]	1-3,5,7
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Y	----- JP H07 41414 A (SHISEIDO CO LTD) 10 February 1995 (1995-02-10) abstract	1-10
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# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2017/054384

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