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(71) Applicant: **DOW CORNING S.A.**
B-7180 Seneffe (BE)

(72) Inventors:
- **Germain, Pierre Andre Georges Gustave**
  6001 Marcinelle (BE)
- **Hoogland, Jan Sybren**
  1170 Brussels (BE)
- **Mendels, Francois**
  1030 Brussels (BE)

(74) Representative: **Vandamme, Luc Johan Roger**
Dow Corning Limited,
Cardiff Road
Barry, South Glamorgan CF63 2YL, Wales (GB)

(54) Particulate foam control agents

(57) Disclosed are particulate foam control agents and powdered detergents containing these agents. The foam control agents comprise a silicone antifoam and an alkyl saccharide deposited on a solid carrier. These materials are stable on extended storage in the detergent composition.

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Description

This invention relates to particulate silicone based foam control agents, and especially those which are intended for incorporation in powdered detergent compositions.

Foam control agents based on silicone antifoams and foam control agents which are in particulate form are known in the art. It is also known in the art that there is a problem of diminishing foam control ability when a silicone based foam control agent is stored in powder detergents for prolonged periods of time.

Solutions to overcome the storage problem have been suggested. They include the use of a variety of materials in conjunction with the silicone antifoam. Examples of such materials are given in the art. EP 013 028 suggests a non-ionic surfactant such as ethoxylated aliphatic C_{12-20} alcohols with 4 to 20 oxyethylene groups and ethoxylated alkylphenols, fatty acids, amides of fatty acids, thio alcohols and diols, all having 4 to 20 carbons atoms in the hydrophobic part and 5 to 15 oxyethylene groups.

EP 142 910 discloses the use of a water soluble or water dispersible organic carrier comprising a first organic carrier component having a melting point of from 38 to 90°C and a second organic carrier selected from ethoxylated non-ionic surfactants having a HLB of from 9.5 to 13.5 and a melting point from 5 to 36°C. Examples of the second organic carrier materials include ethoxylated tallow alcohol, fatty esters, amides and polyvinylpyrrolidone.

EP 206 522 describes the use of a material which is impervious to oily antifoam active substances when in a dry state, yet capable of disruption on contact with water. Examples include materials with a waxy nature which form an interrupted coating that allows water to pass through under wet conditions.

EP 210 721 discloses a fatty acid or a fatty alcohol having a carbon chain of from 12 to 20 carbon atoms and a melting point from 45 to 80°C. Examples include stearic acid or stearyl alcohol.

One theory as to why the above approaches overcome the storage stability problem in silicone antifoams is that encapsulation or binding of the antifoam counteracts the spreading of the silicone polymers in the antifoam onto the surrounding detergent powder. Such spreading reduces the concentration of the silicone polymer in the foam control agent and, in extreme cases, totally depletes the silicone polymer. This depletion deactivates the foam control agent.

A carrier material is also often used to make the foam control agents solid particles which are easier to handle and which can be postblended as a powder with the rest of the powder detergent composition.

Materials suggested in the prior art as useful for carriers comprise water soluble, water insoluble and water dispersible materials such as sulphates, carbonates, phosphates, polyphosphates, silicas, silicates, clays, starches, aluminosilicates.

If the carrier materials do not contribute to the efficiency or activity of the powder detergents, however, they are seen as additional components which will, in effect, constitute an additional soil which has to be removed during the laundering process. As a result, it is preferred to use carriers which are standard components in detergent powder compositions. Particularly preferred carriers are those which generate a basic pH in water. They include, for example, calcium carbonate, sodium tripolyphosphate, silicate , aluminosilicate, sodium citrate, sodium hydrogen carbonate and sodium carbonate.

It has been observed that the use of a carrier material which generates a basic pH in water in combination with a silicone antifoam in a detergent powder composition causes the antifoam to lose its efficiency on storage. This is particularly so when the silicone antifoam is based on branched silicone polymers. It is believed that the carrier contributes to the antifoam degradation and this degradation increases with prolonged time of storage.

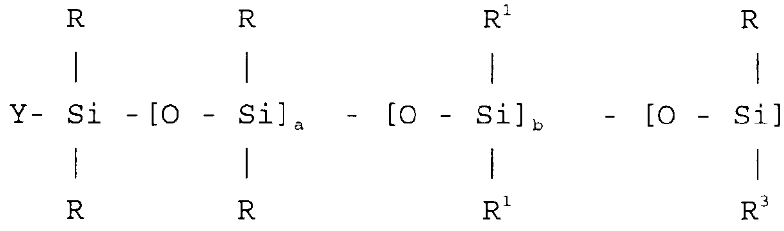
It is desirable to provide foam control agents which have improved stability during storage in powder detergent compositions, particularly where materials which provide a basic pH in water are used as carrier materials.

The present invention provides in one of its aspects a particulate foam control agent comprising a silicone antifoam adsorbed on particles of a solid carrier which generates a basic pH when contacted with water, characterized in that the particulate foam control agent also comprises an alkyl saccharide.

The silicone antifoams used herein are known materials and many have been described in patent specifications. These antifoams generally comprise a liquid organopolysiloxane polymer and a filler particle, the surface of which has been rendered hydrophobic.

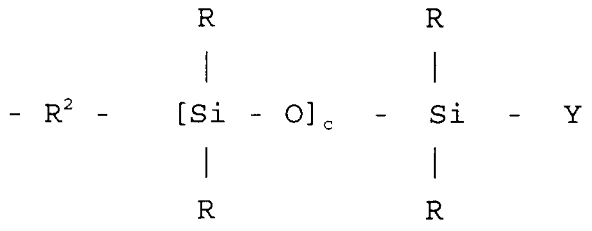
The liquid organopolysiloxane polymers which are useful in silicone antifoams are also known and have been described in many patent specifications. Full description of all options is, therefore, not included but can be found in many publications including European application EP 0578424.

The liquid organopolysiloxane can be linear or branched and can have a structure according to the general formula:



$$Y-\overset{R}{\underset{R}{\overset{|}{\underset{|}{Si}}}}-[O-\overset{R}{\underset{R}{\overset{|}{\underset{|}{Si}}}}]_a-[O-\overset{R^1}{\underset{R^1}{\overset{|}{\underset{|}{Si}}}}]_b-[O-\overset{R}{\underset{R^3}{\overset{|}{\underset{|}{Si}}}}]_d-Y \qquad (I)$$

wherein R denotes a monovalent hydrocarbon group having from 1 to 8 carbon atoms , R^1 denotes a group R, a hydroxyl group or a group



$$-R^2-[\overset{R}{\underset{R}{\overset{|}{\underset{|}{Si}}}}-O]_c-\overset{R}{\underset{R}{\overset{|}{\underset{|}{Si}}}}-Y$$

wherein R^2 denotes a divalent hydrocarbon, hydroxycarbonoxy or siloxane group or oxygen and Y denotes a group R or a hydroxyl group, R^3 denotes a C_{9-35} alkyl group , a, b, c, and d, have a value of 0 or an integer, provided that at least one of a and b is an integer and the total of a+b+c+d has a value such that the viscosity of the organopolysiloxane polymer is at least 50mm²/s at 25°C, preferably at least 500mm²/s.

The preferred linear organopolysiloxanes is one having the above formula in which R^1 denotes R or a hydroxyl group. The preferred non-linear organopolysiloxanes are those having branching in the siloxane chain and have the above structure in which b has a value of at least 1 and R^2 is preferably a divalent siloxane group or an oxygen atom. Particularly preferred siloxane groups R^2 are small three-dimensional siloxane resin particles which may have a number of pendant siloxane polymer units.

Suitable branched siloxanes and methods for their manufacture are known in the art and examples have been described in a number of patent specifications such as GB 639 673, EP 031 352, EP 217 501, EP 273 448, DE 38 05 661 and GB 2 257 709.

The most preferred liquid organopolysiloxanes are branched siloxanes because they show an improved ability to control foam in many aqueous surfactant solutions.

Filler particles which are useful in the antifoams of the present invention are also well known and have been described in many publications. They are finely divided particulate materials including, for example, silica, fumed TiO_2, Al_2O_3, zinc oxide, magnesium oxide, salts of aliphatic carboxylic acids, reaction products of isocyanates with certain materials such as cyclohexylamine, alkyl amides such as ethylene or methylene bis stearamide.

The most preferred fillers are silica particles with a surface area of at least 50m²/g as measured by BET. Suitable silica particles may be made according to any of the standard manufacturing techniques, for example, thermal decomposition of a silicon halide, decomposition and precipitation of a metal salt of silicic acid, e.g. sodium silicate and a gel formation method. Suitable silicas for use in the antifoams include, therefore, fumed silica, precipitated silica and gel formation silica.

The average particle size of the fillers in this invention may range from 0.1 to 20 micrometers, but preferably is from 0.5 to 2.5 micrometers.

If the filler particles are not hydrophobic by nature, their surface is rendered hydrophobic to make the antifoam sufficiently effective in aqueous systems. The surface of the filler may be rendered hydrophobic either prior to or after dispersing the filler particles in the liquid organopolysiloxane.

To render the fillers hydrophobic, they are treated with treating agents such as reactive silanes or siloxanes. Examples of treating agents include dimethyldichlorosilane, trimethylchlorosilane, hexamethyldisilazane, hydroxyl end-blocked and methyl end-blocked polydimethylsiloxanes, siloxane resins, fatty acids or a mixture of one or more of these.

Fillers which have been treated with such treating agents are commercially available from many companies e.g. Sipernat® D10 from Degussa.

If the surface of the filler is to be rendered hydrophobic in situ, i.e. after the filler has been dispersed in the liquid organopolysiloxane component, it is accomplished by adding the appropriate amount of treating agent to the liquid organopolysiloxane prior to, during or after the dispersion of the filler therein and heating the mixture to a temperature above 40°C.

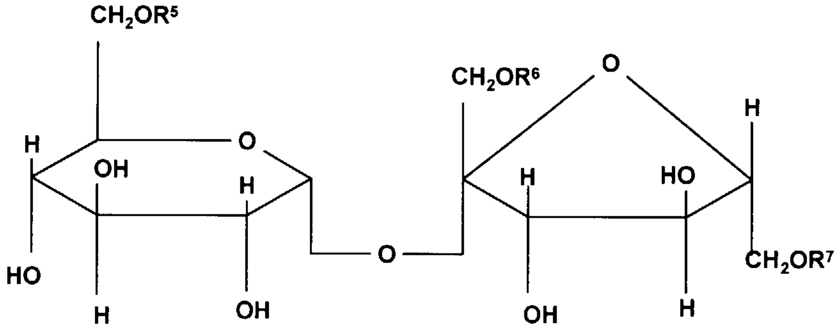
The quantity of treating agent to be employed will depend, for example, on the nature of the agent and the filler. This amount will be evident or ascertainable by those skilled in the art. Sufficient should be employed to endow the filler with at least a discernible degree of hydrophobicity.

The filler particles are added to the organopolysiloxane in an amount of from 1 to 25% by weight of the antifoam, preferably from 1 to 20%, most preferably from 2 to 8%.

Alkylsaccharides are known in the art. They comprise an alkyl chain linked to a sugar through an ether group according to the general formula Z -O -R^4, where R^4 is the alkyl chain having from 8 to 20 carbon atoms and Z is the sugar.

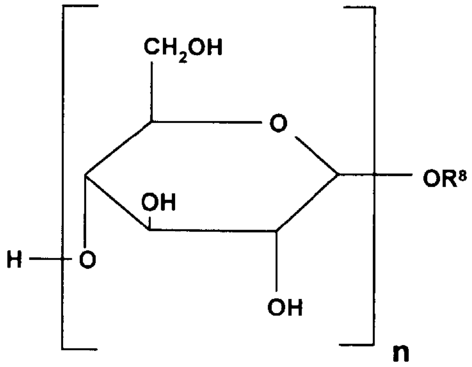
The sugar may be a mono-, oligo- or polysaccharide. Monosaccharides are known in the art and include groups comprising glucose, mannose, galactose, fructose. Oligosaccharides comprise, for example, sucrose, maltose, cellobiose, isomaltose, and lactose. Polysaccharides comprise, for example, amylose, amylopectin and polyglucamide.

Preferred alkylsaccharides are material made of pentose or hexose units or a combination of both. The most preferred alkylsaccharides are made of sucrose, for example, alkylsucrose according to a general formula:



where R^5, R^6, R^7 are the same or different alkyl chains having from 8 to 20 carbon atoms, preferably 8-18 or a hydrogen.

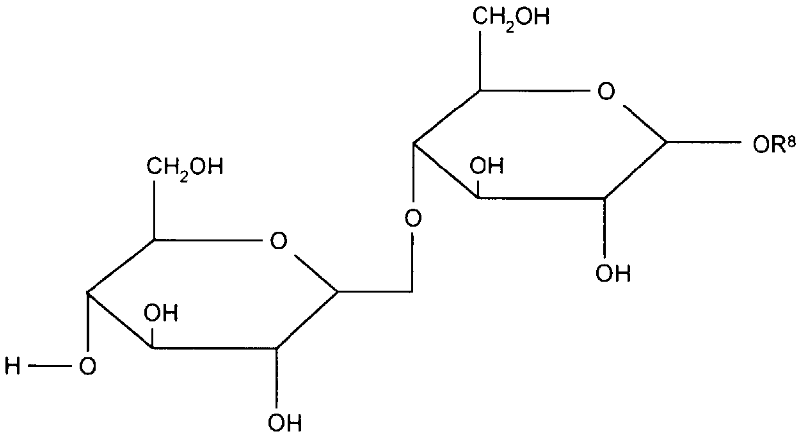
The alkylsaccharides herein are preferably made of glucose units according to the general formula:



where R^8 is an alkyl chain as already defined, preferably having 8 to 18 carbon atoms, more preferably 12 to 18 carbon atoms, most preferably 12 to 14 or 16 to 18 carbon atoms and n= 1, 2 or 3.

Commercial alkylpolyglucoside can also include geometrical isomers. Mixtures of alkylpolyglucoside with n=1.1 to 3 are commonly available.

Preferred alkylpolyglucoside for use in the present invention have preferably 2 glucose units according to the general formula



where R^8 is as already defined.

The carriers herein are known in the art and many are standard components in detergent powder compositions. Particularly preferred carriers are those which generate a basic pH in water. They include, for example, calcium carbonate, sodium tripolyphosphate, silicate , aluminosilicate, sodium citrate, sodium hydrogen carbonate and sodium carbonate

A foam control agent according to the invention exhibits the advantages of high dispersibility in water and good storage stability.

The invention provides in another of its aspects a detergent composition in powder form comprising 100 parts by weight of a detergent component and sufficient particulate foam control agent described above to give 0.01 to 20 parts by weight silicone antifoam in the detergent composition.

Suitable detergent components are well known in the art and have been described in numerous publications. These comprise active detergents, organic and/or inorganic builder salts and other additives and diluents.

The active detergent may comprise organic detergent surfactants of the anionic, cationic, non-ionic or amphoteric type, or mixtures thereof. Suitable anionic organic detergent surfactants include alkali metal soaps of higher fatty acids, alkyl aryl sulphonates, for example sodium dodecyl benzene sulphonate, long chain (fatty) alcohol sulphates, olefine sulphates and sulphonates, sulphated monoglycerides, sulphated esters, sulphosuccinates, alkane sulphonates, phosphate esters, alkyl isothionates, sucrose esters and fluoro-surfactants.

Suitable cationic organic detergent surfactants include alkylamine salts, quaternary ammonium salts, sulphonium salts and phosphonium salts.

Suitable non-ionic detergent surfactants include condensates of ethylene oxide with a long chain (fatty) alcohol or (fatty) acid, for example, C_{14-15} alcohol, condensed with 7 moles of ethylene oxide (Dobanol® 45-7), condensates of ethylene oxide with an amine or an amide, condensation products of ethylene and propylene oxides, fatty acid alkylol amide and fatty amine oxides.

Suitable amphoteric organic detergent surfactants include imidazoline compounds, alkylaminoacid salts and betaines.

Examples of inorganic components are phosphates, polyphosphates, silicates, carbonates, sulphates, oxygen releasing compounds such as sodium perborate and other bleaching agents and alumino-silicates, e.g. zeolites.

Examples of organic components are anti-redeposition agents such as carboxymethylcellulose (CMC), brighteners, chelating agents such as ethylene diamine tetra-acetic acid (EDTA) and nitrilotriacetic acid (NTA), enzymes and bacteriostats.

Other optional components include colorants, dyes, perfumes, softeners, and clays, some of which may be encapsulated.

Materials suitable for the detergent component are well known to the person skilled in the art and are described in many text books as well as other publications.

There is also provided in a third aspect of the present invention a method of making a particulate foam control agent comprising a silicone antifoam absorbed on particles of a solid carrier which generates a basic pH when contacted with water, characterized in that the method comprises a step of depositing an alkylsaccharide onto the carrier not later than depositing the silicone antifoam onto the carrier.

A fourth aspect of the present invention is to provide a use of alkylsaccharide as a stabilising additive in a particulate foam control agent which comprises a silicone antifoam absorbed on particles of a solid carrier which generates a basic pH when contacted with water.

The foam control agents made according to the invention are useful in any powdered surfactant composition where foam levels need to be controlled, e.g. in laundry detergents and in dishwasher detergents.

The foam control agent according to the invention has effects on the detersive activity when added to the final composition of a detergent powder. No spotting due to the carrier on the laundered fabrics is observed.

There now follow a number of examples to illustrate the invention in which all parts and percentages are given by weight unless otherwise indicated.

EXAMPLES 1-15

1. Preparation of foam control agents.

Foam control agent FCA1 to FCA15 were prepared by mixing x parts of sodium carbonate manufactured by Solvay SODASOLV®L with a mixture of y parts of a silicone antifoam A and z parts of ingredient Z .

Silicone antifoam A comprised a branched polydimethyl siloxane polymer and 5% hydrophobic silica, and was prepared according to the teaching of EP 217 501.

A mixture was prepared by pure mechanical mixing of the silicone antifoam and ingredient Z and pouring the mixture very slowly into a drum mixer in which the carbonate of sodium was placed. The mixture was stirred continuously until a particulate material was obtained. The particulate material was subsequently passed through an Aeromatic® spray granulator over a period of 20 minutes at 80°C.

Ingredient Z was selected from a polycarbonate copolymer (maleic/acrylic acid) supplied as a 40% aqueous solution under the name Sokalan® CP5 referred to as CP5, a hydroxypropylcellulose prepared as a 20% aqueous solution, and supplied under the name Klucel®, a polyvinylpyrrolidone prepared as a 50% aqueous dispersion, called PVP below, a secondary alkyl sulphonate supplied by Hoechst under the name Hostopur® SAS60 referred to as SAS60, an alkylpolyglucoside with a degree of polymerisation of from 1.1 to 3 and a C_{8-18} hydrocarbon tail supplied as a 50% dispersion in water by Henkel under the name Glucopon® 600 CS UP referred to as Glucopon, a di-fatty acyloxyethyl ammonium methosulphate sold as a 70% dispersion in water under the name HOE S4039 and an alkyl amidodimethyl amine betaine, supplied as a 30% dispersion in water under the name Empigen BS/F.

Details of the foam control agents FCA1 to FCA15 are given below in table 1.

Table 1:

Foam control agent composition				
FCA	Z	z	x	y
FCA1	---	-	90	10
FCA2	CP5	14	76	10
FCA3	PVP	10	80	10
FCA4	Klucel	8	82	10
FCA5	Hoe S4039	16	74	10
FCA6	Empigen BS/F	6.5	82.5	11
FCA7	SAS60	13	77	10
FCA8	Glucopon	7	83	10
FCA9	Glucopon	11	79	10
FCA10	Glucopon	15	75	10
FCA11	Glucopon	11	70	10
	CP5	9		
FCA12	SAS60	10	79	8
	CP5	3		
FCA13	Glucopon	3	84	10
	CP5	3		
FCA14	Glucopon	7	69	10
	CP5	14		
FCA15	Glucopon	9	81	9
	Klucel	1		

2. Preparation of powder detergent composition.

A powder detergent composition was prepared by mixing together 30 parts of zeolite Wessalith® CD, 20 parts of sodium carbonate, 7.5 parts of sodium sulphate, 12.5 parts of dodecyl benzene sulphonate, 10 parts of a non-ionic surfactant made by the condensation of a C_{14-15} alcohol with 7 moles of ethylene oxyde and 20 parts of sodium perborate monohydrate. To 100g lots of the detergent composition was added sufficient foam control agent of examples 1 to 15 to give 0.1 g of antifoam, thus forming Lot 1 to Lot 15.

3. Testing of the release in the washing cycle

A conventional automatic front-loading washing machine, having a transparent loading door, was loaded with 3.5kg of clean cotton fabric. A wash cycle with a main wash (90°C) was carried out with each of the lots prepared above. The door of the washing machine was indicated with four measures at 25, 50, 75 and 100% of its height respectively indicated below as 1, 2, 3 or 4, 0 indicating there is no foam present, 5 indicating the drum is filled with foam and 6 that liquour escapes from the washing machine through an opening at the top of the machine. The foam height during the wash cycle was recorded when the rotation drum of the washing machine was stationary. Higher values indicate a higher foam level in the machine and thus worse performance of the foam control agent.

Table 2 shows the foam levels for each of the lots for the first 20 minutes of the washing cycle. Lower levels in this part indicate better release of the antifoam in the washing liquor.

Table 2:

test results					
Foam height at	0	5	10	15	20 minutes
Lot 1	0	2	2	3	3
Lot 2	2	2	2	2	2
Lot 3	2	2	2	2	2
Lot 4	2	2	2	2	2
Lot 5	0	2	2	2	2
Lot 6	0	0	0	1	1
Lot 7	0	2	2	2	2
Lot 8	0	2	2	2	2
Lot 9	0	2	2	2	2
Lot 10	0	2	2	2	3
Lot 11	0	2	4	6	5
Lot 12	2	2	2	2	2
Lot 13	0	2	2	2	2
Lot 14	0	2	2	2	2
Lot 15	0	0	0	1	1

It is evident from these results that there is a benefit in the release of the antifoam during the initial stages of the wash cycle when the foam control agent according to the invention is used.

A detergent composition identical to lot 1-15 were also stored at 40°C for 4 weeks prior to testing. Tests results are given in Table 3.

Table 3:

Tests results after storage at 40°C							
Foam height at	0	5	10	20	30	40	50 minutes
Lot 1	0	6	6	6	6	6	6
Lot 2	6	6	6	6	6	6	6
Lot 3	0	5	6	4	5	5	6
Lot 4	0	2	6	6	6	6	6
Lot 5	0	2	4	6	6	6	6
Lot 6	0	3	3	3	4	4	4

Table 3: (continued)

Tests results after storage at 40°C							
Foam height at	0	5	10	20	30	40	50 minutes
Lot 7	0	2	4	6	6	6	6
Lot 8	0	2	2	2	2	2	3
Lot 9	0	2	2	2	2	2	2
Lot 10	0	2	2	3	3	3	2
Lot 11	0	2	2	2	3	3	3
Lot 12	0	2	6	6	6	6	6
Lot 13	0	2	2	2	3	2	3
Lot 14	0	2	3	3	3	3	3
Lot 15	0	1	2	2	2	2	3

It is clear from the results that the storage stability of the foam control agent is improved by using alkyl polyglucoside as surfactant in the FCA.

EXAMPLES 16-26 use sodium hydrogen carbonate as the solid carrier

1. Preparation of foam control agents.

Foam control agent FCA16 to FCA26 were prepared by mixing x parts of sodium hydrogen carbonate manufactured by Solvay with a mixture of y parts of a silicone antifoam A and z parts of one of the ingredient Z.

The mixture was prepared as in examples 1-15 except that carbonate of sodium is replaced by sodium hydrogen carbonate.

The ingredient Z is as described above for examples 1-15. Details of the foam control agents FCA16 to FCA26 are given below in table 4.

Table 4:

FCA	Z	z	x	y
FCA1 6	---	-	90	10
FCA17	PVP	6	88	6
FCA18	Klucel	2	92	6
FCA19	Hoe S4039	10	84	6
FCA20	Empigen BS/F	4	90	6
FCA21	SAS60	7	87	6
FCA22	Glucopon	5	90	5
FCA23	SAS60	6	88	5
	CP5	1		
FCA24	Glucopon	4.5	89	4.5
	CP5	2		
FCA25	Glucopon	5	89	5
	Klucel	1		
FCA26	Glucopon	4.5	90	4.5
	CP5	1		

2. Preparation of powder detergent composition.

A powder detergent composition was prepared as in Examples 1-15, giving Lot 16 to Lot 26.

3. Testing of the release in the washing cycle

Table 5 shows the foam levels for each of the lots for the first 20 minutes of the washing cycle. Lower levels in this part indicate better release of the antifoam in the washing liquor.

Table 5:

test results					
Foam height at	0	5	10	15	20 minutes
Lot 16	0	2	2	2	2
Lot 17	0	2	2	2	2
Lot 18	0	2	2	2	2
Lot 19	0	2	2	2	2
Lot 20	0	0	1	1	2
Lot 21	0	2	2	2	2
Lot 22	0	1	1	2	2
Lot 23	0	2	2	2	2
Lot 24	0	2	2	2	2
Lot 25	0	2	2	2	2
Lot 26	0	2	2	2	2

It is evident from these results that there is an improvement in the release of the antifoam during the initial stages of the wash cycle when the foam control agent is used with alkylpolyglucoside only (Lot 22).

Detergent compositions identical to Lots 16-26 were also stored at 40°C for 4 weeks prior to testing. Tests results are given in Table 6.

Table 6:

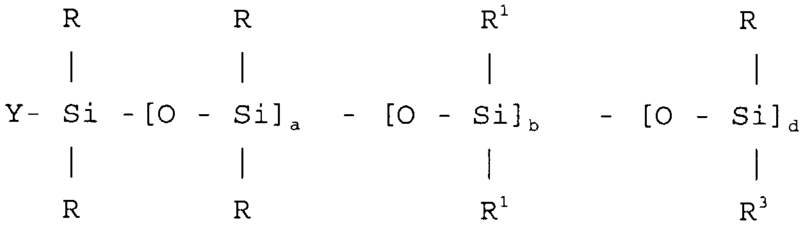
tests results after storage at 40°C							
Foam height at	0	5	10	20	30	40	50
Lot 16	0	4	6	6	6	6	6
Lot 17	0	4	6	6	6	6	6
Lot 18	0	4	6	6	6	6	6
Lot 19	0	3	4	5	3	5	3
Lot 20	2	2	3	4	4	4	6
Lot 21	0	6	6	6	6	6	6
Lot 22	0	1	1	2	2	3	3
Lot 23	0	6	6	6	6	6	6
Lot 24	0	2	2	2	2	2	3
Lot 25	0	2	3	3	3	3	3
Lot 26	0	2	2	2	3	3	3

It is clear that the storage stability of the foam control agent is improved by using alkyl polyglucoside as the surfactant in the FCA.

Claims

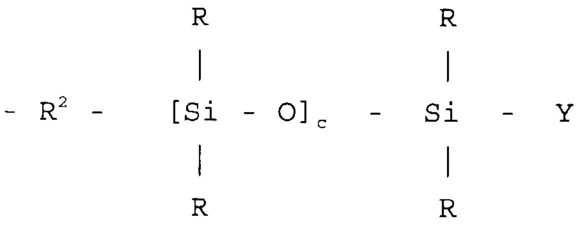
1. A particulate foam control agent comprising a silicone antifoam adsorbed on particles of a solid carrier which generates a basic pH when contacted with water, characterized in that the particulate foam control agent also comprises an alkyl saccharide.

2. A particulate foam control agent according to Claim 1 further characterized in that the silicone antifoam comprises an organopolysiloxane according to the general formula:



$$Y-\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}-[O-\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}]_a-[O-\overset{\overset{R^1}{|}}{\underset{\underset{R^1}{|}}{Si}}]_b-[O-\overset{\overset{R}{|}}{\underset{\underset{R^3}{|}}{Si}}]_d-Y \qquad (I)$$

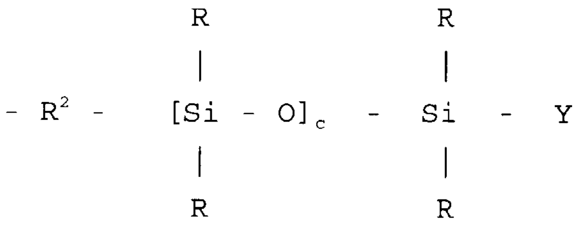
wherein R denotes a monovalent hydrocarbon group having from 1 to 8 carbon atoms, R^1 denotes a group R, a hydroxyl group or a group



$$-R^2-[\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}-O]_c-\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}-Y$$

wherein R^2 denotes a divalent hydrocarbon, hydroxycarbonoxy or siloxane group or oxygen and Y denotes a group R or a hydroxyl group, R^3 denotes a C_{9-35} alkyl group , a, c, and d, have a value of 0 or an integer, b is an integer with a value at least 1 and the total of a+b+c+d has a value such that the viscosity of the organopolysiloxane polymer is at least 50mm^2/s at 25°C.

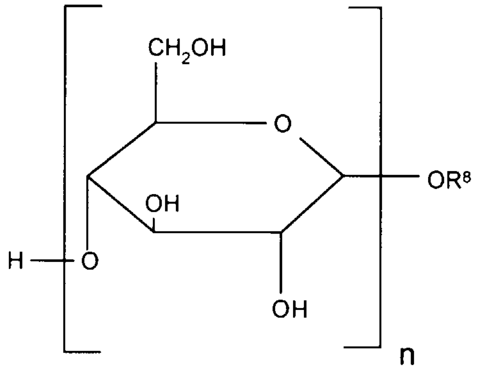
3. A particulate form control agent according to Claim 2 further characterized in that at least one R^1 is a group



$$-R^2-[\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}-O]_c-\overset{\overset{R}{|}}{\underset{\underset{R}{|}}{Si}}-Y$$

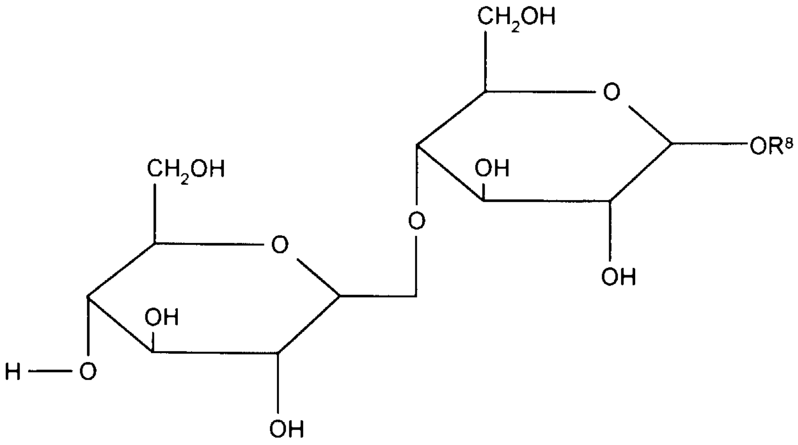
wherein R^2 is a divalent siloxane group or an oxygen atom.

4. A particulate foam control agent according to Claims 1, 2 or 3 further characterized in that the alkyl saccharide is an alkyl polyglucoside according to the formula:



wherein R^8 is an alkyl group having from 8 to 20 carbon atoms and n is from 1 to 3.

5. A particulate foam control agent according to Claim 4 further characterized in that the alkylpolyglucoside has a formula:



wherein R^8 is an alkyl group having from 8 to 20 carbon atoms.

6. A particulate foam control agent according to Claim 5 further characterized in that R^8 is an alkyl group having from 8 to 18 carbon atoms.

7. A particulate foam control agent according to any of Claims 1 to 6 further characterized in that the carrier is selected from the group consisting of sodium carbonate and sodium hydrogen carbonate.

8. A method of making a particulate foam control agent comprising a silicone antifoam absorbed on particles of a solid carrier which generates a basic pH when contacted with water, characterized in that the method comprises a step of depositing an alkylsaccharide onto the carrier not later than depositing the silicone antifoam onto the carrier.

9. A method of making a particulate foam control agent comprising a branched silicone antifoam absorbed on particles of a solid carrier which generates a basic pH when contacted with water, characterized in that the method comprises a step of depositing an alkylsaccharide onto the carrier not later than depositing the silicone antifoam onto said carrier.

10. Use of alkylsaccharide as a stabilising additive in a particulate foam control agent which comprises a silicone antifoam absorbed on particles of a solid carrier which generates a basic pH when contacted with water.

11. A detergent composition in powder form comprising 100 parts by weight of a detergent component and sufficient particulate foam control agent according to any one of the preceding claims to give 0.01 to 20 parts by weight silicone antifoam in the detergent composition.