EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent: 12.10.2005 Bulletin 2005/41

(21) Application number: 98957750.7

(22) Date of filing: 10.11.1998

(54) WET WIPES CONTAINING A MONO ALKYL PHOSPHATE
FEUCHTTÜCHER ENTHALTEND EIN MONO-ALKYLPHOSPHAT
SERVIETTE HUMIDE CONTENANT UN MONOPHOSPHATE D’ALKYLE

(84) Designated Contracting States: DE ES FR GB IT NL

(30) Priority: 10.11.1997 US 966812

(43) Date of publication of application: 30.06.2000 Bulletin 2000/35

(73) Proprietor: KIMBERLY-CLARK WORLDWIDE, INC.
Neenah, Wisconsin 54956 (US)

(72) Inventors:
• COLE, Douglas, Bryan
  Hortonville, WI 54944 (US)

• STAHL, Katherine, Denise
  Neenah, WI 54956 (US)

(74) Representative: Beacham, Annabel Rose et al
  Frank B. Dehn & Co.,
  European Patent Attorneys,
  179 Queen Victoria Street
  London EC4V 4EL (GB)

(56) References cited:
EP-A- 0 442 701
GB-A- 2 283 755
WO-A- 97/09033
US-A- 4 139 485

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

Background of the Invention

Field of the Invention

[0001] The present invention relates to fibrous sheet materials which are premoistened with a solution for improved cleansing without excessive skin irritation. The invention particularly concerns wet wipes, such as baby wipes, which include a mono alkyl phosphate.

Description of the Related Art

[0002] Wet wipes are well known commercial consumer products which have been available in many forms. Perhaps the most common form of wet wipes has been a stack of moistened sheets which have been packaged in a plastic container. The wet wipes have been made from a variety of materials which have been moistened with a variety of suitable wiping solutions. Typically, the wet wipes have been available in either folded or unfolded configurations. For example, stacks of wet wipes have been available wherein each of the wet wipes in the stack has been arranged in a folded configuration such as a c-folded, z-folded or quarter-folded configuration as are well known to those skilled in the art. Each folded wet wipe has also been interfolded with the wet wipes immediately above and below in the stack of wet wipes. In an alternative configuration, the wet wipes have been in the form of continuous webs of material which include perforations to separate the individual wet wipes and which are wound into rolls and packaged in plastic containers. Such wet wipes have been used for baby wipes, hand wipes, household cleaning wipes, industrial wipes and the like.

[0003] The solutions incorporated into conventional wet wipes have usually included a number of ingredients intended to enhance or impart particular properties to the wipe. These properties have related to, for example, cleaning efficacy, fragrance, medication, reduced irritation, skin health, aesthetics of the product and the like. For baby wipes in particular, a solution providing a gentle soothing feeling without excessive irritation or foam while maintaining cleaning and antimicrobial efficacy is highly desirable for product performance. Suitable ingredients used to provide such properties have included water, emollients, surfactants, preservatives, chelating agents, pH buffers or combinations thereof. The solutions have also contained lotions and/or medicaments.

[0004] However, the conventional solutions and, in particular, the surfactants in such solutions for wet wipes have not been completely satisfactory. For example, to reduce the level of skin irritation, conventional wet wipe solutions have included amphoteric surfactants which generally cause little or no skin irritation. Such amphoteric surfactants have included sodium cocamphodiacetate and disodium cocamphodiacetate. However, such amphoteric surfactants have typically not exhibited the high levels of cleaning efficacy associated with other surfactants such as anionic surfactants. Such amphoteric surfactants typically have also not provided the optimum silky feeling to the skin which is desired by consumers.

[0005] On the other hand, anionic surfactants, while exhibiting such cleaning efficacy, have generally caused excessive skin irritation such as dryness and scaling and, as a result, have not been suitable for use in wet wipe applications. The high level of skin irritation caused by such surfactants is particularly undesirable in baby wipe applications due to the tenderness of the infants skin. Moreover, most anionic surfactants are suitable for detergent compositions due to their high levels of foaming and detersive activity. However, such foaming is generally undesirable in wet wipe applications and, in particular, in baby wipe applications. Consumers who use wet wipes prefer that the solution from the wet wipes not leave any soapy or bubbly residue on the surface of the skin since the solution is usually not wiped off the skin after the wet wipe is used.

[0006] Accordingly, it remains desirable to provide solutions for wet wipes which include surfactants which exhibit improved cleaning efficacy while not causing excessive skin irritation or foaming.

Summary of the Invention

[0007] In response to the difficulties and problems discussed above, new wet wipes which have improved solutions have been discovered.

[0008] In one aspect, the present invention relates to a wet wipe which includes a fibrous sheet material and a solution that is low foaming and can be left on a human’s skin after wiping which includes from about 0.01 to 5 weight percent based on a total weight of the solution of a phosphate ester surfactant which includes a mono alkyl phosphate having the following structural formula:

$$\text{O} \quad || \quad \text{R(OCH}_{2}_{CH}_{2})_{x}\text{O-P-OY} \quad || \quad \text{OZ}$$

wherein R represents a saturated or unsaturated hydrocarbon group having an average of from 8 to 22 carbon atoms, x represents a number of 1 to 3, and each of Y and Z represents hydrogen, an alkali metal, ammonium or an alkanol amine.

[0009] Preferably, the phosphate ester surfactant includes from 50 to 100 weight percent of a mono alkyl phosphate defined above, and from 0 to 50 weight percent of a dialkyl phosphate having the following struc-
The present invention relates to fibrous materials and, in particular, wet wipes which have improved cleaning efficacy without excessive skin irritation or foaming. The wet wipes of the present invention can be used for baby wipes, hand wipes, face wipes, cosmetic wipes, household wipes, industrial wipes and the like. Each wet wipe may also be interfolded with the wet wipes immediately above and below in the stack of wet wipes. The wet wipes generally define an unfolded width and an unfolded length. The wet wipes may have any suitable unfolded width and length. For example, the wet wipes may have an unfolded length of from about 2.0 to about 80.0 centimeters. The wet wipes of the different aspects of the present invention also contain a solution which is absorbed into the wet wipes. The amount of solution contained within each wet wipe may vary depending upon the type of material being used to provide the wet wipe, the type of solution being used, the type of container being used to store the wet wipes, and the desired end use of the wet wipes. Generally, each wet wipe can contain from 150 to 600 weight percent and desirably from about 250 to about 450 weight percent solution based on the dry weight of the wipe for improved wiping. In a particular aspect, wherein the wet wipes are made from a coform material comprising from about 20 to about 40 weight percent polymeric microfibers based on the dry weight of the wet wipe: is from about 300 to about 400 weight percent and desirably about 330 weight percent based on the dry weight of the wet wipe. If the amount of solution is greater than the above-identified range, the wet wipe may be too dry and may not adequately perform. If the amount of solution is less than the above-identified range, the coform basesheet being used to provide the wet wipes.
identified range, the wet wipe may be oversaturated and soggy and the solution may pool in the bottom of the container.

[0020] To provide improved tactile properties and cleaning efficacy without excessive foaming or skin irritation, the solution in the wet wipes of the present invention includes a phosphate ester surfactant. In particular, the solution in the wet wipes of the present invention includes a phosphate ester surfactant which includes a mono alkyl phosphate having the following structural formula:

\[
\text{R(OCH}_2\text{CH}_3\text{)}_0\text{P(}O\text{Yz)}
\]

wherein R represents a saturated or unsaturated hydrocarbon group having an average of from 8 to 22 carbon atoms, x represents a number of 0 to 20, and each of Y and Z represents hydrogen, an alkali metal, ammonium or an alkanol amine.

[0021] The phosphate ester surfactant in the solution for the wet wipes of the present invention may further include a dialkyl phosphate having the following structural formula:

\[
\text{R(OCH}_2\text{CH}_3\text{)}_0\text{PO\text{Yz}}
\]

wherein R represents a saturated or unsaturated hydrocarbon group having an average of from B to 22 carbon atoms, x represents a number of 0 to 20, and each of Y and Z represents hydrogen, an alkali metal, ammonium or an alkanol amine.

[0022] To provide the improved tactile and cleansing properties to the wet wipe of the present invention without excessive foaming or skin irritation, the weight ratio of the mono alkyl phosphate to the dialkyl phosphate in the solution should be at least about 50:50 and desirably at least about 80:20. Solutions having a mono alkyl phosphate to dialkyl phosphate ratio less than those described above are generally undesirable because of undesirable tactile properties such as tackiness and loss of silky after feel, reduced detergency and increased skin irritation.

[0023] The saturated or unsaturated hydrocarbon groups having an average of from 8 to 22 carbon atoms can be straight chain, branched or alicyclic hydrocarbons as are known to those skilled in the art. Desirably, the saturated or unsaturated hydrocarbon groups have an average of from 10 to 18 carbon atoms for improved cleaning. For example, in a particular embodiment the saturated or unsaturated hydrocarbon groups have an average of 12 carbon atoms and are derived from coconut oil.

[0024] Alkali metals and amines for use in the present invention are known to those skilled in the art. For example, suitable alkali metals include, for example, lithium, sodium, potassium, and the like. Suitable amines include dimethylmonoethanolamine, methyldiethanolamine, trimethylamine, triethanolamine, dibutylamine, butyldimethylamine, monoethanolamine, diethanolamine, triethanolamine, isopropylidimethylamine and isopropylethanolamine.

[0025] The phosphate ester surfactant in the wet wipes of the present invention also includes ethylene oxide. The phosphate ester includes from 1 to 3 moles of ethoxylation. The higher the level of ethoxylation, the more hydrophilic the surfactant becomes which can be undesirable.


[0027] For example, suitable phosphate ester surfactants can include sodium mono lauryl phosphate, sodium dioctyl phosphate, potassium mono lauryl phosphate, potassium dioctyl phosphate, diethanolamine mono lauryl phosphate, diethanolamine dioctyl phosphate, triethanolamine mono lauryl phosphate, triethanolamine dioctyl phosphate, sodium mono coco phosphate, sodium dicoco phosphate, potassium mono coco phosphate, potassium dicoco phosphate, sodium mono capric phosphate, sodium dicapric phosphate, potassium mono capric phosphate, potassium dicapric phosphate, triethanolamine mono capric phosphate, triethanolamine dicapric phosphate, and the like and combinations thereof. In a particular embodiment, a suitable phosphate ester surfactant is a potassium laureth mono alkyl phosphate surfactant commercially available from Rhone-Poulenc, a business having offices located in Cranbury, New Jersey, under the trade designation RHODAFAC.

[0028] The solution includes any amount of the phosphate ester surfactant between 0.01 to 5 weight percent based on a total weight of the solution which provides the desired properties.

[0029] The solution contained within the wet wipes of the present invention may define a pH from 5 to 8 and desirably from 5 to about 6. A pH level below 5 is gen-
eraly undesirable because the phosphate surfactant precipitates. Whereas, a pH level greater than 8 is also undesirable and can lead to skin irritation.

[0030] The solution may also include a variety of other components which may assist in providing the desired wiping and cleaning properties. For example, the components may include water, emollients, other surfactants, preservatives, chelating agents, pH buffers, fragrances or combinations thereof. The solution may also contain lotions and/or medicaments. To provide reduced skin irritation, the solution desirably includes at least about 80 weight percent water and more desirably at least about 90 weight percent water based on a total weight of the solution.

[0031] For example, the solution may include an effective amount of preservative to inhibit the growth of microorganisms. Suitable preservatives are well known to those skilled in the art and may include, for example, parabens, sodium hydroxymethylglycininate, organic acids such as benzoic and malic acid. DMDM hydantoin and the like and combinations thereof. In a particular embodiment the preservative is sodium hydroxymethylglycininate which is commercially available from Sutton Laboratories under the trade designation SUTTOCIDE A. The solution may include any amount of the preservatives which provides the desired antimicrobial effect. For example, the solution may include from about 0.1 to about 1.0 weight percent of the preservative based on a total weight of the solution.

[0032] The solution may further include additional surfactants which can act as an emulsifier or provide additional cleansing properties. Suitable surfactants include, for example, anionic surfactants such as acyl glutamates and acyl isethionates, alkanelamids, amphoteric surfactants, nonionic surfactants and the like or combinations thereof. For example, a suitable acyl glutamate anionic surfactant is potassium cocoyl glutamate, a suitable acyl isethionate anionic surfactant is ammonium cocoyl isethionate, and suitable amphoteric surfactants include disodium capryloamphdipropionate and disodium cocamphodiacetate. Suitable nonionic surfactants include diethanolamidies having an average of from 12 to 16 carbon atoms, alkylphenol ethoxylates, alcohol ethoxylates, sorbitan esters, glycerol esters and the like. The solution may include any amount of the surfactant which provides the improved cleaning or tactile properties. For example, the solution may include from 0.01 to 5.0 weight percent of the surfactant based on a total weight of the solution.

[0033] In a particular embodiment, the solution of the present invention includes from 0.01 to 5.0 and desirably from about 0.1 to about 1.0 weight percent of a nonionic surfactant commercially available from Rhone-Poulenc under the trade designation AKAMULS PSML-20. The addition of such a surfactant provides reduced skin irritation and reduced foaming. Such a surfactant also acts as a coemulsifier in conjunction with the phosphate.

[0034] In another specific embodiment, it has been discovered that the addition of certain cosurfactants such as Lauramide DEA or Cocamide DEA may provide a broader range of acceptable pH. For example, the addition of Lauramide DEA allowed the acceptable pH range to expand from a range of 6.5 to 8 to a range of from 5 to 8. Such an expansion of the acceptable pH range provides improved processability and provides a clear, homogeneous solution. For example, the solution may include Lauramide DEA which is commercially available from Rhone-Poulenc, under the trade designation ALKAMIDE LE. Such a solution may include from 0.01 to 5.0 and desirably from about 0.1 to about 1.0 weight percent of said cosurfactant based on a total weight of the solution.

[0035] Applicants have discovered that, when compared to conventional wet wipes which have included other types of surfactants, the wet wipes according to the different aspects of the present invention include a mono alkyl phosphate surfactant have improved tactile properties and cleaning efficacy without excessive levels of skin irritation. Moreover, the wet wipes of the present invention desirably exhibit low levels of foaming for improved performance. The wet wipes also exhibit a lubricious, silky feeling to the user for improved consumer acceptance. The wipes of the present invention further exhibited unexpectedly low levels of eye irritation when subjected to standard product safety tests. This was particularly unexpected since most anionic surfactants generally irritate the eyes.

[0036] The wet wipes of the different aspects of the present invention may be manufactured using several different processes well known to those skilled in the art. The particular method and sequence of steps described herein is not a limitation to the present invention, but is disclosed only as one method of producing a wet wipe and stack of wet wipes. Initially, a supply roll of the material being converted into the wet wipes is unwound to provide a continuously moving web of material. The web of material is saturated or otherwise impregnated with the solution of the present invention by any suitable means such as spraying, dipping, or the like as are well known to those skilled in the art. In a particular aspect, the web of material is passed over several perforated tubes which exude the solution into the material.

[0037] The web of material is slit in the machine direction into multiple ribbons, each of which may be folded into the type of fold desired for the individual wet wipe. The web of material is slit using a cutter as are well known to those skilled in the art. For example, the web of material can be slit into eight individual ribbons. The ribbons of material are then be folded into a folded configuration such as a z-folded configuration. For example, each ribbon of material may define a top flap portion, a central portion and a bottom flap portion. The top and bottom flap portions are connected to and folded over and under the central portion, respectively to provide the z-folded configuration.
Each folded ribbon may then be combined, one ribbon on top of the other, with the other seven folded ribbons from the same web of material to form a continuous "sausage." The sausage is then cut into "clips" of eight wet wipes apiece and the clips of wet wipes are arranged in a stacked configuration. The number of clips in a stack depends on the desired number of stacks and the number of wet wipes in the final package. For example, for an 80-count package having one stack, ten clips of eight wet wipes apiece would be required to form a single stack of 80 wet wipes. After the stack of wet wipes is properly configured, it may be placed in the interior of a container, such as a plastic tub, to provide a package of wet wipes. The container provides a substantially hermetically sealed environment for the wet wipes to minimize the escape of any solution therefrom.

Accordingly, the different aspects of the present invention can advantageously provide wet wipes which, when compared to conventional wet wipes, have improved tactile properties and cleaning while maintaining low levels of skin irritation and foaming. Such wet wipes can advantageously be used for baby wipes, hand wipes, face wipes, cosmetic wipes, household wipes, industrial wipes and the like.

Examples

The following examples are presented to provide a more detailed understanding of the invention. The particular materials and parameters are exemplary and are not intended to limit the scope of the invention.

Example 1

A particularly suitable solution for the wet wipes of the present invention was prepared according to the following formulation:

<table>
<thead>
<tr>
<th>Ingredient CTFA Designation</th>
<th>wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>98.52</td>
</tr>
<tr>
<td>Potassium Laureth mono alkyl phosphate</td>
<td>0.6</td>
</tr>
<tr>
<td>Glycerin</td>
<td>0.29</td>
</tr>
<tr>
<td>Polysorbate-20</td>
<td>0.30</td>
</tr>
<tr>
<td>Sodium hydroxymethylglycinate</td>
<td>0.20</td>
</tr>
<tr>
<td>Propylparaben</td>
<td>0.1</td>
</tr>
<tr>
<td>Fragrance</td>
<td>0.05</td>
</tr>
</tbody>
</table>

The potassium laureth mono alkyl phosphate was commercially available from Rhone-Poulenc under the trade designation RHODAFAC. The sodium hydroxymethylglycinate was commercially available from Sutton Labs, a business having offices located in Chatham, New Jersey, under the trade designation SUTTOCIDE A. Malic acid was then added to the solution to bring the pH level to 5.5. The solution exhibited a silky, lubricious feel and was relatively nonirritating to the skin.

Example 2

A suitable solution for the wet wipes of the present invention was prepared according to the following formulation:

<table>
<thead>
<tr>
<th>Ingredient CTFA Designation</th>
<th>wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>97.02</td>
</tr>
<tr>
<td>Potassium Coco mono alkyl phosphate</td>
<td>0.4</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>0.5</td>
</tr>
<tr>
<td>Polysorbate-20</td>
<td>0.30</td>
</tr>
<tr>
<td>Sodium hydroxymethylglycinate</td>
<td>0.15</td>
</tr>
<tr>
<td>Fragrance</td>
<td>0.03</td>
</tr>
</tbody>
</table>

The potassium coco mono alkyl phosphate was commercially available from Rhone-Poulenc under the trade designation RHODAFAC. The Polysorbate-20 was commercially available from Rhone-Poulenc under the trade designation ALKAMULS PSML-20. The sodium hydroxymethylglycinate was commercially available from Sutton Labs, a business having offices located in Chatham, New Jersey, under the trade designation SUTTOCIDE A. Malic acid was then added to the solution to bring the pH level to 5.5. The solution was cloudy, exhibited a slight silky after feel and precipitated.

Example 3

A suitable solution for the wet wipes of the present invention was prepared according to the following formulation:

<table>
<thead>
<tr>
<th>Ingredient CTFA Designation</th>
<th>wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>96.85</td>
</tr>
<tr>
<td>Potassium Ceteth mono alkyl phosphate</td>
<td>0.5</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td>0.5</td>
</tr>
<tr>
<td>Sodium hydroxymethylglycinate</td>
<td>0.15</td>
</tr>
</tbody>
</table>

The potassium ceteth mono alkyl phosphate was commercially available from Rhone-Poulenc under the trade designation RHODAFAC. The sodium hydroxymethylglycinate was commercially available from Sutton Labs, a business having offices located in Chatham, New Jersey, under the trade designation SUTTOCIDE A. Malic acid was then added to the solution to bring the pH level to 5.5. The solution was hazy, and exhibited a slight silky after feel.

Example 4

A suitable solution for the wet wipes of the present invention was prepared according to the following formulation:
ing formulation:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CTFA Designation</th>
<th>wt. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td>95.0</td>
</tr>
<tr>
<td>Potassium Behenyl mono alkyl phosphate</td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>Propylene Glycol</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>Polysorbate-20</td>
<td></td>
<td>0.30</td>
</tr>
<tr>
<td>Sodium hydroxymethylglycinate</td>
<td></td>
<td>0.20</td>
</tr>
<tr>
<td>Propylparaben</td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Fragrance</td>
<td></td>
<td>0.05</td>
</tr>
</tbody>
</table>

[0048] The potassium behenyl mono alkyl phosphate was commercially available from Rhone-Poulenc under the trade designation RHODAFAC. The Polysorbate-20 was commercially available from Rhone-Poulenc under the trade designation ALKAMULS PSML-20. The sodium hydroxymethylglycinate was commercially available from Sutton Labs, a business having offices located in Chatham, New Jersey, under the trade designation SUTTOCIDE A. Malic acid was then added to the solution to bring the pH level to 5.5. The solution was white, cloudy, nonfoaming and lacked a silky after feel.

[0049] While the invention has been described in detail with respect to the specific aspects thereof, it will be appreciated that those skilled in the art, upon attaining an understanding of the foregoing, may readily conceive of alterations to, variations of, and equivalents to these aspects. Accordingly, the scope of the present invention should be assessed as that of the appended claims and any equivalents thereto.

Claims

1. A wet wipe comprising a fibrous sheet material and a solution that is low foaming and can be left on a human’s skin after wiping which includes from about 0.01 to 5 weight percent based on a total weight of said solution of a phosphate ester surfactant having the following structural formula:

   ![Structural formula image]

   wherein R represents a saturated or unsaturated hydrocarbon group having an average of from 8 to 22 carbon atoms, x represents a number of 1 to 3, and each of Y and Z represents hydrogen, an alkali metal, ammonium or an alkanol amine.

2. A wet wipe according to claim 1 wherein said fibrous sheet material includes a nonwoven material.

3. A wet wipe according to claim 1 or claim 2 wherein said wet wipe includes from 150 to 600 weight percent of said solution based on a dry weight of said wet wipe.

4. A wet wipe according to any one of claims 1 to 3 wherein R represents a saturated or unsaturated hydrocarbon group having an average of from 10 to 18 carbon atoms.

5. A wet wipe according to any one of claims 1 to 4 wherein R has an average of 12 carbon atoms and is derived from coconut oil.

6. A wet wipe according to any one of claims 1 to 5 wherein Y is potassium and Z is hydrogen.

7. A wet wipe according to any one of claims 1 to 5 wherein Y is a triethanolamine and Z is hydrogen.

8. A wet wipe according to any one of claims 1 to 7 wherein said solution defines a pH of from 5 to 8.

9. A wet wipe according to any one of claims 1 to 8 wherein said solution includes at least about 80 weight percent water based on a total weight of said solution.

10. A wet wipe according to claim 9 wherein said solution further includes from 0.01 to 5 weight percent based on a total weight of said solution of a nonionic cosurfactant.

11. A wet wipe according to any one of claims 1 to 10 wherein said phosphate ester surfactant comprises:

   a) from 50 to 100 weight percent of said mono alkyl phosphate; and

   b) from 0 to 50 weight percent of a dialkyl phosphate having the following structural formula:

   ![Dialkyl phosphate structural formula image]

   wherein R represents a saturated or unsaturated hydrocarbon group having an average of from B to 22 carbon atoms, x represents a number of 0 to 20, and Y represents hydrogen, an alkali metal, ammonium or an alkanol amine.
12. A wet wipe according to claim 11 wherein the ratio of said mono alkyl phosphate to said dialkyl phosphate is at least about 80:20.

13. A wet wipe according to any one of claims 1 to 10 wherein said solution comprises:

- from 0.01 to 5 weight percent based on a total weight of said solution of a diethanolamide.

14. A wet wipe according to claim 13 wherein the ratio of said mono alkyl phosphate to a dialkyl phosphate in said phosphate ester surfactant is at least about 50:50.

15. A wet wipe according to claim 13 or claim 14 wherein said diethanolamide is Lauramide DEA.

16. A wet wipe according to claim 13 or claim 14 wherein said diethanolamide is Cocamide DEA.

17. A wet wipe according to any one of claims 1 to 16 wherein said fibrous sheet material is nonwoven and which includes from 0.01 to 10 weight percent based on a dry weight of said sheet material of said phosphate ester surfactant.

18. A wet wipe according to claim 17 wherein said phosphate ester surfactant is present in an amount of from 0.01 to 5 weight percent based on a dry weight of said sheet material.

19. Use of a wet wipe as defined in any one of claims 1 to 18 for cleaning human skin.

**Patentansprüche**

1. Feuchtes Wischtuch, das umfasst ein Faserbahnmaterial und eine Lösung, die wenig schäumt und nach dem Abwischen auf menschlicher Haut verbleiben kann, das enthält etwa 0,01 bis 5 Gew.-%, bezogen auf das Gesamtgewicht der Lösung, eines Phosphatester-Tensids, das ein Monoalkylphosphat mit der folgenden Strukturformel umfasst:

\[
R(OCH_2CH_2)_xO-P-OY \quad \text{und} \quad OZ
\]

- x steht für eine Zahl von 1 bis 3 und jeder der Reste Y und Z steht für Wasserstoff, ein Alkalimetall, Ammonium oder ein Alkanolamin.

2. Feuchtes Wischtuch nach Anspruch 1, worin das Faserbahnmaterial ein Vliesstoffmaterial umfasst.

3. Feuchtes Wischtuch nach Anspruch 1 oder 2, das 150 bis 600 Gew.-% der genannten Lösung, bezogen auf das Trockengewicht des feuchten Wischtuchs, enthält.

4. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 3, worin R steht für eine gesättigte oder ungesättigte Kohlenwasserstoffgruppe mit durchschnittlich 10 bis 18 Kohlenstoffatomen.

5. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 4, worin R durchschnittlich 12 Kohlenstoffatome enthält und von Kokosnußöl abgeleitet ist.

6. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 5, worin Y steht für Kalium und Z steht für Wasserstoff.

7. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 5, worin Y steht für ein Triethanolamin und Z steht für Wasserstoff.

8. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 7, worin die genannte Lösung einen pH-Wert von 5 bis 8 aufweist.


10. Feuchtes Wischtuch nach Anspruch 9, worin die Lösung außerdem 0,01 bis 5 Gew.-% eines nicht-ionischen Cotensids, bezogen auf das Gesamtgewicht der Lösung, enthält.

11. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 10, worin das Phosphatester-Tensid umfasst:

- a) 50 bis 100 Gew.-% des Monoalkylphosphats
- b) 0 bis 50 Gew.-% eines Dialkylyphosphats mit der folgenden Strukturformel:

\[
R(OCH_2CH_2)_xO-P-OY \quad \text{und} \quad OZ
\]

worin R steht für eine gesättigte oder ungesättigte Kohlenwasserstoffgruppe mit durchschnittlich 8 bis 22 Kohlenstoffatomen.
worin:

R steht für eine gesättigte oder ungesättigte Kohlenwasserstoffgruppe mit durchschnittlich 8 bis 22 Kohlenstoffatomen,
x steht für eine Zahl von 0 bis 20 und
Y steht für Wasserstoff, ein Alkalimetall, Ammonium oder ein Alkanolamin.


13. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 10, worin die Lösung 0,01 bis 5 Gew.-% eines Diethanolamidis, bezogen auf das Gesamtgewicht der Lösung, umfasst.


15. Feuchtes Wischtuch nach Anspruch 13 oder 14, worin das Diethanolamid Lauramide DEA ist.

16. Feuchtes Wischtuch nach Anspruch 13 oder 14, worin das Diethanolamid Cocamide DEA ist.

17. Feuchtes Wischtuch nach einem der Ansprüche 1 bis 16, worin das Faserbahnmaterial ein Vliesstoff ist und 0,01 bis 10 Gew.-%, bezogen auf das Trockengewicht des Bahnmaterials, des Phosphatester-Tensids enthält.

18. Feuchtes Wischtuch nach Anspruch 17, worin das Phosphatester-Tensid in einer Menge von 0,01 bis 5 Gew.-%, bezogen auf das Trockengewicht des Bahnmaterials, vorliegt.


Revendications

1. Lingette humide comprenant un matériau de feuille fibreuse et une solution qui est faiblement mous-

2. Lingette humide selon la revendication 1, dans laquelle ledit matériau de feuille fibreuse comprend un matériau non-tissé.

3. Lingette humide selon la revendication 1 ou 2, dans laquelle ladite lingette humide comprend de 150 à 600% en poids de ladite solution par rapport au poids sec de ladite lingette humide.

4. Lingette humide selon l'une quelconque des revendications 1 à 3, dans laquelle R représente un groupe hydrocarboné saturé ou insaturé ayant une moyenne de 8 à 22 atomes de carbone, x représente un nombre compris entre 1 et 3, et chacun de Y et Z représente l'hydrogène, un métal alcalin, un ammonium ou une alcanolamine.

5. Lingette humide selon l'une quelconque des revendications 1 à 4, dans laquelle R a, en moyenne, 12 atomes de carbone et dérive de l'huile de coprah.

6. Lingette humide selon l'une quelconque des revendications 1 à 5, dans laquelle Y représente le potassium et Z représente l'hydrogène.

7. Lingette humide selon l'une quelconque des revendications 1 à 5, dans laquelle Y représente une triéthanolamine et Z représente l'hydrogène.

8. Lingette humide selon l'une quelconque des revendications 1 à 7, dans laquelle ladite solution définit un pH compris entre 5 et 8.

9. Lingette humide selon l'une quelconque des revendications 1 à 8, dans laquelle ladite solution comprend au moins environ 80% en poids d'eau par rapport au poids total de ladite solution.
10. lingette humide selon la revendication 9, dans laquelle ladite solution comprend, en outre, de 0,01 à 5% en poids, par rapport au poids total de ladite solution, d'un co-tensioactif non ionique.

11. Lingette humide selon l'une quelconque des revendications 1 à 10, dans laquelle ledit tensioactif formé d'un ester de phosphate comprend :
   a) de 50 à 100% en poids dudit phosphate de monoalkyle ; et
   b) de 0 à 50% en poids d'un phosphate de dialkyle ayant la formule structurelle suivante :

\[
R(OCH_2CH_2)_xO \rightarrow \text{P} \rightarrow OY
\]

\[
R(OCH_2CH_2)_xO
\]

dans laquelle R représente un groupe hydrocarboné saturé ou insaturé ayant, en moyenne, 8 à 22 atomes de carbone, x représente un nombre compris entre 0 et 20, et Y représente l'hydrogène, un métal alcalin, un ammonium ou une alcanolamine.

12. Lingette humide selon la revendication 11, dans laquelle le rapport dudit phosphate de monoalkyle sur ledit phosphate de dialkyle est d'au moins environ 80 : 20.

13. Lingette humide selon l'une quelconque des revendications 1 à 10, dans laquelle ladite solution comprend :

de 0,01 à 5% en poids, par rapport au poids total de ladite solution, d'un diéthanolamide.

14. Lingette humide selon la revendication 13, dans laquelle, dans ledit tensioactif formé d'un ester de phosphate, le rapport dudit phosphate de monoalkyle sur un phosphate de dialkyle est d'au moins environ 50 : 50.

15. Lingette humide selon la revendication 13 ou 14, dans laquelle ledit diéthanolamide est le Lauramide DEA.

16. Lingette humide selon la revendication 13 ou 14, dans laquelle ledit diéthanolamide est le Cocamide DEA.

17. Lingette humide selon l'une quelconque des revendications 1 à 16, dans laquelle ledit matériau de feuille fibreuse est un non-tissé et comprend de 0,01 à 10% en poids, par rapport au poids sec dudit matériau de feuille fibreuse, dudit tensioactif formé d'un ester de phosphate.

18. Lingette humide selon la revendication 17, dans laquelle ledit tensioactif formé d'un ester de phosphate est présent en une quantité comprise entre 0,01 et 5% en poids par rapport au poids sec dudit matériau de feuille.

19. Utilisation d'une lingette humide, telle que définie selon l'une quelconque des revendications 1 à 18, pour nettoyer la peau humaine.