

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P41405596PCT00		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/SE2015/050024	International filing date (<i>day/month/year</i>) 14.01.2015	Priority date (<i>day/month/year</i>)	
International Patent Classification (IPC) or national classification and IPC INV. A61F13/511			
Applicant SCA HYGIENE PRODUCTS AB			
1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of <u>10</u> sheets, including this cover sheet. 3. This report is also accompanied by ANNEXES, comprising: a. ☒ (<i>sent to the applicant and to the International Bureau</i>) a total of <u>8</u> sheets, as follows: ☒ sheets of the description, claims and/or drawings which have been amended and/or sheets containing rectifications authorized by this Authority, unless those sheets were superseded or cancelled, and any accompanying letters (see Rules 46.5, 66.8, 70.16, 91.2, and Section 607 of the Administrative Instructions). ☐ sheets containing rectifications, where the decision was made by this Authority not to take them into account because they were not authorized by or notified to this Authority at the time when this Authority began to draw up this report, and any accompanying letters (Rules 66.4bis, 70.2(e), 70.16 and 91.2). ☐ superseded sheets and any accompanying letters, where this Authority either considers that the superseding sheets contain an amendment that goes beyond the disclosure in the international application as filed, or the superseding sheets were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in item 4 of Box No. I and the Supplemental Box (see Rule 70.16(b)). b. ☐ (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing, in the form of an Annex C/ST.25 text file, as indicated in the Supplemental Box Relating to Sequence Listing (see paragraph 3ter of Annex C of the Administrative Instructions).			
4. This report contains indications relating to the following items: ☒ Box No. I Basis of the report ☐ Box No. II Priority ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability ☐ Box No. IV Lack of unity of invention ☒ Box No. V Reasoned conclusion under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement ☐ Box No. VI Certain documents cited ☐ Box No. VII Certain defects in the international application ☐ Box No. VIII Certain observations on the international application			
Date of submission of the demand 27.09.2016		Date of completion of this report 13.04.2017	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Fax: +49 89 2399 - 4465		Authorized officer Schmitt-Humbert, C Telephone No. +49 89 2399-7351	



**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/SE2015/050024

Box No. I Basis of the report

1. With regard to the **language**, this report is based on
- ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a) and (b))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-22 as published

Claims, Numbers

1-22 filed in electronic form on 27-09-2016

Drawings, Sheets

1/9-9/9 as published

- ☐ a sequence listing - see Supplemental Box Relating to Sequence Listing.
3. ☒ The amendments have resulted in the cancellation of:
- ☐ the description, pages
 - ☒ the claims, Nos. 23-25
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since either they are considered to go beyond the disclosure as filed, or they were not accompanied by a letter indicating the basis for the amendments in the application as filed, as indicated in the Supplemental Box (Rules 70.2(c) and (c-bis)):
- ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
5. ☐ This report has been established:
- ☐ taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rules 66.1(d-bis) and 70.2(e)).
 - ☐ without taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91(Rules 66.4bis and 70.2(e)).

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/SE2015/050024

6. ☒ With regard to top-up searches (Rules 66.1 *ter* and 70.2(f)):
- ☐ A top-up search was carried out by this Authority on (all discovered documents are listed in the Supplemental Box Relating to Top-up Search).
 - ☐ Additional relevant documents have been discovered during the top-up search.
 - ☒ No top-up search was carried out by this Authority because it would serve no useful purpose.
7. ☐ Supplementary international search report(s) from Authority(ies) has/have been received and taken into account in establishing this report (Rule 45bis.8(b) and (c)).

* If item 4 applies, some or all of those sheets may be marked "superseded".

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	<u>1-22</u>
	No: Claims	
Inventive step (IS)	Yes: Claims	<u>4, 11, 12, 20-22</u>
	No: Claims	<u>1-3, 5-10, 13-19</u>
Industrial applicability (IA)	Yes: Claims	<u>1-22</u>
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Reference is made to the following documents:

- D1 EP 1 444 970 A1 (KAO CORP) 11 August 2004 (2004-08-11)
- D2 US 5 951 535 A (FUJIWARA TOSHIKATSU [JP] ET AL) 14 September
 1999 (1999-09-14)

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial
applicability; citations and explanations supporting such statement**

1

1.1 Independent claim 1 reads as follow:

"Absorbent product (8; 12; 16; 22; 25) comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product, wherein the nonwoven material (1) comprises non-absorbent and absorbent fibres, the absorbent fibres are present in an amount of 2-30% by weight, wherein the fibres (2) at least on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25) have a coarseness of from 0.1 to 10 dtex, preferably from 0.5 to 7 dtex, wherein the fibres (2) and/or the nonwoven material (1) is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product."

The claim precises that the nonwoven material is coated with a composition that is only functionally defined namely that it is "lubricating coating composition". For the assessment of novelty and/or inventive step, any composition that is suitable to reduce friction between "surfaces" in proximity is considered to fall under this definition, e.g. silicone oils, epoxy/acrylic/urethane-modified silicones, phosphoric acid esters, fluorine-based graft polymers or polyoxyethylene alkyl esters.

1.2 Independent claim 20 reads as follow:

"Use of a nonwoven material (1) in an absorbent or hygiene product to reduce wet friction between the nonwoven material (1) and skin of a user, the nonwoven material (1) comprising non-absorbent and absorbent fibres, the

absorbent fibres being present in an amount of 2-30% by weight, wherein the fibres (2) have a coarseness of from 0.1 to 10 dtex, preferably from 0.5 to 7 dtex and the fibres (2) and/or the nonwoven material (1) is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25)."

This claim is interpreted as referring to a method of reducing wet friction between a nonwoven material (1) and the skin of a user.

2 Novelty

Claims 1-22 are considered new in the sense of Art. 33(2) PCT as their features are not disclosed in any available prior art.

3 Inventive step

- 3.1 D1 discloses an absorbent product comprising a skin-care agent which is fixed to a surface of a nonwoven fabric (claim 1). The skin care agent is fixed to hydrophobic fibers that constitute the nonwoven fabric (par. [0049] to [0052]). The skin-care agent is e.g. silicone oil (par. [0058]), and is applied on e.g. a gather portion. The coarseness of the fabric on the surface layer is from 0.5 to 8.9 dtex (par. [0081]). The basis weight of the surface nonwoven layer is 30 g/m² (see example 1 [0107] and example 4 [0121]). D1 discloses the problem of rash being caused to skin.

Claim 1 differs from the disclosure of document D1 in that D1 does not disclose a mixture of non-absorbent and absorbent fibres.

3.2

- 3.2.1 Document D2 discloses a surface material comprising a combined nonwoven fabric comprising at least two layers of a long fibre nonwoven and a short fibre nonwoven joined together.

The material is used in an absorptive article, such as a disposable diaper and a sanitary napkin, that is superior in the permeation-absorption and spot-absorption of a body fluid and in dryish feeling, and in the property of small back flow of the permeated body fluid. The nonwoven material disclosed in document D2 reduces the wetness of the surface in contact with the wearer, it has superior permeation-absorption and spot-absorption of body fluids.

The hydrophobic long fibers have a denier of 0.5 to 6 d/f (0,45 to 5,4 dtex) (column 5, lines 20-23). The material may contain short fibers of different deniers and the short fibres may have a denier of 0.5 to 6 d/f (0,45 to 5,4 dtex) (column 8, lines 15-16). The hydrophilic short fibres may be present in an amount of 0 to 70%, preferably 0-30% (column 9, lines 16-22).

Hydrophilic property is required of the topsheet or the second sheet/acquisition layer (col. 13, lines 45-57). Imparting of hydrophilic property to the combined non-woven fabrics can be achieved according to known procedures such as coating, adhesion, or incorporation of a chemical agent. A detailed description of hydrophilyzing agents is given at col. 16, lines 20-61 for the body fluid diffusing layer. Among the agents imparting hydrophilic properties/surfactants listed are the nonionic surfactants such as alcohol alkyl esters, PEG or polyoxyethylene alkyl esters which are well know surfactants having lubricating properties (col. 16, lines 46-53).

- 3.2.2 Example 6 discloses a material composed of long hydrophobic bi-component fibres with a coarseness of 2 denier (2.22 dtex) and short hydrophilic fibres (rayon) with a coarseness of 3 denier (3.33 dtex) in an amount of 30% by weight. This material is used as a topsheet. Example 11 discloses a material formed from polypropylene resin an having 20% by weight of a hydrophilic resin incorporated therein, and having a fineness of 3 denier (3.33 dtex) mixed with fibers from PET resin having 0.3% surfactant adhered onto the surface thereof and having a fineness of 10 denier (11,1 dtex). This material is used a body fluid diffusing layer.
- 3.2.3 Taken as a whole, document D2 discloses a nonwoven material that is used as top sheet and is made out of a mixture of non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of at least 20%, more particularly a nonwoven material used as a topsheet, the nonwoven material comprising a mixture of non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 30% by weight, and the hydrophobic fibres having a coarseness of 2 denier (2.22 dtex) and the hydrophilic fibres having a coarseness of 3 denier (3.33 dtex).

- 3.2.4 Claim 1 differs from the disclosure of document D2 in that the fibres or the nonwoven material arranged to be in contact with the skin of a user during use, i.e the topsheet, of the absorbent product are/is coated with a coating composition having lubricating properties; i.e. that is suitable to reduce friction.

3.3

- 3.3.1 D1 discloses the (subjective) problem of rash being caused to skin. D2 discloses the (subjective) problem of providing absorbent articles having good permeation-absorption and spot-absorption of body fluids.

Document D2 discloses that the combined non-woven fabrics used as topsheet can be treated with a lubricating/surfactant agent to impart hydrophilic property to the material.

The application deals with the subjective problem of reducing wet friction of clinging of absorbent articles.

3.3.2

- 3.3.2.1 Starting from the disclosure of D2, the objective problem to be solved by independent claim 1 may be defined as article imparting hydrophilic property to the combined non woven fabric used as a topsheet in an absorbent article by treating the surface of the top sheet with a surfactant agent.

More particularly, the objective problem to be solved may be defined as imparting hydrophilic property to the nonwoven material used as a topsheet in an absorbent article, said nonwoven material comprising a mixture of non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 30% by weight, and the hydrophobic fibres having a coarseness of 2 denier (2.22 dtex) and the hydrophilic fibres having a coarseness of 3 denier (3.33 dtex) by treating the surface of the top sheet with a surfactant agent.

- 3.3.2.2 The skilled person confronted with the above problem would choose a specific surfactant among the list provided in D2. Any of the surfactant listed is equally suitable. By choosing alcohol alkyl ester, PEG or polyoxyethylene alkyl ester among the single list of adequate surfactant agents/hydrophilizing agents; the skilled person would arrive to an absorbent product comprising a nonwoven material arranged to be in contact with skin of a user during use of the absorbent product, wherein the nonwoven material comprises a mixture of

non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 30% by weight, and the hydrophobic fibres having a coarseness of 2 denier (2.22 dtex) and the hydrophilic fibres having a coarseness of 3 denier (3.33 dtex), wherein the nonwoven material is coated with polyoxyethylene alkyl ester, PEG or an alcohol alkyl ester in an obvious way. These surfactants have not only an hydrophilizing property but also a lubricating property.

The absorbent product thus obtained falls under the definition of present claim 1 as the surfactant polyoxyethylene alkyl ester is also a lubricating agent.

3.3.2.3 It is to be noted that claim 1 only precises that the fibres (2) and/or the nonwoven material (1) is coated with a lubricating coating composition. The intended effect of the coating composition, i.e. reducing wet friction or clinging, i.e. increasing the contact angle thereby reducing menisci and the wet friction between the skin and the nonwoven (see page 4 of the application) is not precised in independent claim 1.

Furthermore, a lubricating agent is generally defined as an agent having the property of reducing friction between "surfaces" in proximity, friction being not itself a fundamental force. The fact that the agent has the capability of reducing friction does not imply that the agent must necessarily increase the contact angle thereby reducing menisci; i.e. increasing hydrophobicity. Indeed, some surfactants with lubricating property are hydrophilizing agent.

Wet friction or clinging properties are not discussed in either D1 or D2. Each of the two document D1 or D2 differ from independent claim 1 in respect of just a single feature; i.e. mixture of absorbent and non-absorbent fibres for D1 or a lubricating agent for D2.

In deciding whether document D1 or D2 has to be regarded as the closest prior art, the closest prior art is that which provides the skilled person with the most promising springboard to the invention, i.e. the one starting from which the subject-matter of the invention is rendered most obvious. In the present case, it is considered to be document D2, as starting from this document, the subject-matter of present claim 1 is considered obvious over the disclosure of D2 taken alone.

Independent claim 1 is therefore not considered inventive in the sense of Art. 33(3) PCT.

- 3.3.3 Furthermore, the additional features set out in dependent claims 2, 8-10, 13-16, 18 and 19 are already known from document D2.

The additional features set out in dependent claims 5-7 and 17 are considered to represent standard procedure in the art.

The choice of silicone oils as claimed in claim 3 is seen as a suitable alternative surfactant agent having hydrophilizing property.

The subject-matter of claims 2, 3 and 5-19 is therefore not considered inventive in the sense of Art. 33(3) PCT.

- 3.3.4 Dependent claim 4 specifies that the lubricating coating composition is polydimethylsiloxane (PDMS or dimethicone).

Starting from document D2, the skilled person would not have any incentive to use PDMS as surfactant to impart hydrophilizing properties to the topsheet as PDMS is hydrophobic.

Dependent claim 4 is therefore considered inventive in the sense of Art. 33(3) PCT.

- 3.4 Dependent claim 11 specifies that the nonwoven material comprises a mixture of absorbent and non-absorbent fibres and that the absorbent fibres are present in an amount of 2-10% by weight. These features are not disclosed in document D1 as said document does not generally disclose nonwoven material made out of a mixture of absorbent and non-absorbent fibres.

In document D2, a nonwoven material in which the absorbent fibres are present in an amount of 70% or 30% by weight is disclosed (see above). The specific range of 2 to 10% as claimed in present claim 11 is not disclosed. Furthermore, a topsheet with absorbent fibres in the range of 2 to 10% in combination with a lubricating coating composition is not disclosed.

It appears that a nonwoven material made out of a mixture of absorbent and non-absorbent fibres, the nonwoven material comprising between 2 and 10% wherein the fibres and/or the nonwoven material is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product has improved wet friction and/or clinging properties in comparison to a corresponding nonwoven material made out of 100% non-absorbent fibres or non-coated nonwoven material.

The wet friction properties are not discussed in either D1 or D2. Starting from D1 or D2, the problem to be solved may be defined as providing an absorbent article with better comfort.

The solution provided by claim 11 is to reduce the moisture content of the nonwoven material in contact with the skin by reducing the wet contact points with skin of the user using as a topsheet a nonwoven material comprising between 2 and 10% wherein the fibres and/or the nonwoven material is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product.

This solution is not rendered obvious over the prior art.

Claim 11 and claim 12 depending thereon are therefore considered to involve an inventive step in the sense of art. 33(3) PCT.

3.5 Wet friction or clinging properties are not discussed in any of documents D1 or D2.

As wet friction is not discussed at all in documents D1 or D2, the skilled person would not have any incentive to provide a method of reducing wet friction between a nonwoven material (1) and the skin of a user or use the nonwoven material as defined in claim 20 to reduce the wet friction between said nonwoven material and the skin of a user.

Claims 20-22 are therefore considered to involve an inventive step (Art. 33(3) PCT).

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European Patent Office
D-80298 MUNICH
Germany

Date: 27 September 2016
Our ref: P41405596PCT00 TRH/TRH

Appl./Reg.No.: PCT/SE2015/050024
Applicant: SCA HYGIENE PRODUCTS AB

Dear Sirs,

Reference is made to the International Search Report (ISR) and the accompanying Written Opinion (WO) in connection with the above-identified International PCT-application. We hereby file Demand and a response to the Written opinion with amended claims and arguments as specified below.

Amendments

Claims 1 and 22, now 20, have been amended by inserting the feature that the nonwoven material comprises non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 2-30% by weight. The amendment is supported by claim 11.

Claims 20, 21 and 23 have been deleted. The remaining claims have been renumbered accordingly.

Unsearchable subject matter

The unsearched claims 20-21 and 23 have been deleted.

Cited document

The following document was cited in the WO:

D1: EP1444970

Novelty

D1 discloses an absorbent product comprising a skin-care agent which is fixed to a surface of a nonwoven fabric. The skin care agent is fixed to hydrophobic fibers that constitute the nonwoven fabric (paragraphs 0049 to 0052). The coarseness of the fabric on the surface layer is from 0.5 to 8.9 dtex (0081). D1 discloses the problem of rash being caused to skin. In D1 in paragraph [0061] it is stated that an oily skin care agent plays mainly a role that it reduces friction of a gather portion and the skin of a wearer. The oily

skin care agent can be silicone oil [0058]. However, D1 does not disclose a mixture of non-absorbent and absorbent fibres, and thus claims 1 and 20 are novel over D1.

Inventive step

The technical effect obtained by the difference above, i.e. that the nonwoven comprises a mixture of non-absorbent and absorbent fibres, and wherein the amount of absorbent fibres in the nonwoven material is from 2 to 30% by weight, is that the moisture content of the nonwoven material in contact with the skin can be decreased, whereby wet contact points with skin of the user can be reduced. Therefore, the risk for chafing is reduced. The decreased amount of wet contact points and the lubricant composition together thus considerably increase the comfort of the absorbent product.

D1 alone does not give any suggestion of incorporating absorbent fibres to the non-woven layer. Quite the opposite, in paragraph [0052] it is stated that the water-soluble skin care agent is fixed to a region formed of hydrophobic fiber, as also illustrated in Fig. 1A. Since there is no suggestion towards the present solution, the claimed invention according to claims 1 and 20 involves an inventive step over the cited document. Therefore, also the dependent claims 2-18 and 21 and 22 are novel and involve an inventive step over the cited documents D1.

In case the IPEA would still be of the opinion that the requirements of the PCT are not fulfilled, a second written opinion is kindly requested.

Yours faithfully,
Zacco Sweden AB



Teija Rasch

Encl.: Marked amended; Clean copy amended claims

CLAIMS

1. Absorbent product (8; 12; 16; 22; 25) comprising a nonwoven material (1) arranged to be in contact with skin of a user during use of the absorbent product, wherein the nonwoven material (1) comprises non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 2-30% by weight, wherein the fibres (2) at least on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25) have a coarseness of from 0.1 to 10 dtex, preferably from 0.5 to 7 dtex, wherein the fibres (2) and/or the nonwoven material (1) is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product.
2. Absorbent product (8; 12; 16; 22; 25) according to claim 1, wherein the fibres at least on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25) have a coarseness of from 0.5 to 3 dtex.
3. Absorbent product (8; 12; 16; 22; 25) according to claim 1 or 2, wherein the lubricating coating composition is chosen from silicone oils.
4. Absorbent product (8; 12; 16; 22; 25) according to claim 1, 2 or 3, wherein the lubricating coating composition is polydimethylsiloxane.
5. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the lubricating coating composition has a water content less than 5.0 weight percent, preferably less than 1.0 weight percent.
6. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the lubricating coating composition is coated in an amount of 10 ppm to 10%-by weight, based on the total weight of the nonwoven.
7. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the coating is applied by means of printing or kiss rolling, where the coating is applied to 20-100% of the total surface area.

8. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the nonwoven is spunbond, air laid, wet laid, electro spun, carded or meltblown nonwoven.
- 5 9. Absorbent product (8; 12; 16; 22; 25) according to claim 8, wherein the nonwoven comprises spunbond and meltblown nonwoven in a combination and form a layered product spunbond – meltblown – spunbond (SMS) or spunbond-meltblown-meltblown-spunbond (SMMS).
- 10 10. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the nonwoven has a basis weight from 8 to 80 g/m².
11. Absorbent product (8; 12; 16; 22; 25) according to anyone of the preceding claims, wherein the nonwoven comprises absorbent fibres in an amount of 2-10% by weight, based on the total weight of the fibres in the nonwoven material (1).
12. Absorbent product (8; 12; 16; 22; 25) according to claim 11, wherein the absorbent fibres have a coarseness from 1.1 to 7 dtex or from 1.2 to 3 dtex.
- 15 13. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the absorbent product is a diaper, incontinence protection garment, sanitary napkin or panty shield.
14. Absorbent product (16; 22; 25) according to claim 13, wherein the absorbent product (16; 22; 25) comprises a chassis having a front and rear panel and an absorbent body (11) having a wetting zone for receiving urine and other bodily fluids wherein the nonwoven material (1) at least is comprised in a region outside the wetting zone in the absorbent body (11).
- 20 15. Absorbent product (16; 22; 25) according to claim 14, wherein the nonwoven material (1) at least is comprised in a region outside the absorbent body (11).
- 25 16. Absorbent product (16; 22; 25) according to claim 13-15, wherein the absorbent product (16; 22; 25) comprises a waist region, hip region, standing gathers and leg openings and the nonwoven material (1) is comprised in at least one of the waist region, hip region, standing gathers and leg openings.

17. Absorbent product (25) according to any one of claims 13-16, wherein the absorbent product (25) comprises a belt attached to the chassis or a belt being separate from the chassis arranged to be attachable to the chassis, wherein the nonwoven is comprised in the belt on a side of the belt arranged to be in contact with skin.
- 5 18. Absorbent product (8; 12; 16; 22; 25) according to any one of claims 13-17, wherein the absorbent product (8; 12; 16; 22; 25) comprises a topsheet (9), an absorbent body (11) and a backsheet (10), and wherein the nonwoven material (1) is comprised in the topsheet (9) and/or the backsheet (10) of the absorbent product (8; 12; 16; 22; 25).
- 10 19. Absorbent product (8; 12; 16; 22; 25) according to any one of the preceding claims, wherein the nonwoven material (1) has lower friction values in presence of moisture than a nonwoven material (1) comprising fibres (2) and/or nonwoven without a coating with a lubricating coating composition and/or fibres having a finer coarseness than 0.1 dtex on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25), measured by means of a curve obtained in
15 repeated runs with measurements according to a method stick and slip described in the description, wherein the friction values in the curve are obtained in repeated runs and wherein the curve comprises a first slope having a positive coefficient illustrating increase in the friction values, a plateau, and a second slope having a negative coefficient illustrating decrease in the friction values.
- 20 20. Use of a nonwoven material (1) in an absorbent or hygiene product to reduce wet friction between the nonwoven material (1) and skin of a user, the nonwoven material (1) comprising non-absorbent and absorbent fibres, the absorbent fibres being present in an amount of 2-30% by weight, wherein the fibres (2) have a coarseness of from 0.1 to 10 dtex, preferably from 2 to 7 dtex and the fibres (2) and/or the
25 nonwoven material (1) is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user during use of the absorbent product (8; 12; 16; 22; 25).
- 30 21. Use according to claim 20, wherein the nonwoven material (1) is used in an absorbent product (8; 12; 16; 22; 25) chosen from a diaper, incontinence protection garment, sanitary napkin or panty shield.

22. Use according to claim 22, wherein the nonwoven material (1) is used in substantially non-absorbent regions of the absorbent product (8; 12; 16; 22; 25).

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European Patent Office
D-80298 MUNICH
Germany

Via epoline

Date: 21 March 2017
Our ref: P41405596PCT00 TRH/LDN

Appl.No.: PCT/SE2015/050024
Applicant: SCA HYGIENE PRODUCTS AB

Dear Sirs,

With reference to the second Written Opinion of the International Preliminary Examining Authority (WO/IPEA) dated 28 February 2017, the applicant hereby submits arguments in support of the patentability of the claims on file.

We respectfully maintain that D1 (EP 1444970 A1) is the closest prior art since D1 discloses an absorbent article comprising an oily skin care agent. The inventiveness of claim 1 over the prior art when taking D1 as the closest prior art is established by our response of 10 February 2017 to the first WO/IPEA. Therefore, claim 1 is in possession of an inventive step when taking D1 as the closest prior art.

If D2 (US 5951535 A) is taken as the closest prior art, as suggested by the Examiner in the second WO/IPEA (dated 28 February 2017), the difference between claim 1 and D2 is at least that the fibers and/or the nonwoven material is coated with a lubricating coating composition suitable for use in absorbent and/or hygiene products at least on a surface arranged to be in contact with skin of a user. From this difference arises the effect of increasing the contact angle of water in contact with such a coated surface, thereby reducing menisci and the wet friction between the skin and the nonwoven (page 4, lines 14-15 of application). The objective technical problem to be solved by the skilled person with knowledge of D2 is therefore to provide an absorbent product having reduced wet friction or clinging.

This stands in contrast to the problem formulated by the Examiner in above mentioned second WO/IPEA, which is defined as imparting hydrophilic property to the combined nonwoven fabric, such as the ones used as topsheet, using a lubricating/surfactant agent. The impartment of hydrophilic property to the nonwoven is not discussed or disclosed in the present application, neither explicitly nor implicitly. Indeed, the technical effect of increasing the contact angle of water in contact with such a coated surface implies that a hydrophobic property is imparted to the nonwoven, since increased contact angle with water is a measure of hydrophobicity. Thus, the problem that present application seeks to solve is more or less the opposite to the problem posited by the Examiner. Thus, we respectfully request that the objective problem to be solved is the one that has a basis in the application as filed, and is defined as the provision of an absorbent product having reduced wet friction or clinging.

The skilled person finds no solution to this problem in D2, since as noted above D2 teaches the use of surfactants to increase hydrophilicity, which decreases the contact angle of water and thus increase wetting and wet friction.

The skilled person would not seek a solution to the problem in D1 since D1 does not address the problem above, i.e. clinging or wet friction. However, even if the skilled person was to consider D1, they would not arrive at the solution as defined by claim 1. This is because D1 teaches the use of a crystalline or particulate friction reducing agent in order to reduce friction (see D1 paragraph [0082]), not a lubricant coating composition as in claim 1. A skilled person seeking to reduce wet friction and/or clinging would, from the teachings of D1, inevitably use a crystal or particulate friction reducing agent and would not arrive at the subject-matter of claim 1.

Thus, the invention as defined by claim 1 is in possession of an inventive step over the cited prior art.

Yours faithfully
Zacco Sweden AB

A handwritten signature in dark ink, appearing to read 'Teija Rasch', written in a cursive style.

Teija Rasch

REIVINDICACIONES

1. Producto absorbente (8; 12; 16; 22; 25) que comprende un material no tejido (1) colocado para estar en contacto con la piel de un usuario durante el uso del producto absorbente, caracterizado porque el material no tejido (1) comprende fibras no absorbentes y absorbentes, las fibras absorbentes estando presentes en una cantidad de 2-30% en peso, en donde las fibras (2) al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25) tienen un grosor de desde 0.1 a 10 dtex, preferentemente de 0.5 a 7 dtex, en donde las fibras (2) y/o el material no tejido (1) se reviste con una composición de revestimiento lubricante adecuada para utilizarse en productos absorbentes y/o de higiene al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente.

2. Producto absorbente (8; 12; 16; 22; 25) de conformidad con la reivindicación 1, caracterizado porque las fibras al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25) tienen un grosor de desde 0.5 a 3 dtex.

3. Producto absorbente (8; 12; 16; 22; 25) de conformidad con la reivindicación 1 o 2, caracterizado

porque la composición de revestimiento lubricante se elige de aceites de silicona.

4. Producto absorbente (8; 12; 16; 22; 25) de conformidad con la reivindicación 1, 2 o 3, caracterizado
5 porque la composición de revestimiento lubricante es polidimetilsiloxano.

5. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque la composición de
10 revestimiento lubricante tiene un contenido de agua menor a 5.0 por ciento en peso, preferentemente menor a 1.0 por ciento en peso.

6. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones
15 precedentes, caracterizado porque la composición de revestimiento lubricante se reviste en una cantidad de 10 ppm a 10% en peso, en base al peso total del no tejido.

7. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones
20 precedentes, caracterizado porque el revestimiento se aplica por medio de impresión o laminado, donde el revestimiento se aplica a 20-100% del área de superficie total.

8. Producto absorbente (8; 12; 16; 22; 25) de
25 conformidad con cualquiera de las reivindicaciones

precedentes, caracterizado porque el no tejido es no tejido spunbond, producido por vía aérea, por vía húmeda, electrohilado, por vía carda o soplado.

9. Producto absorbente (8; 12; 16; 22; 25) de
5 conformidad con la reivindicación 8, caracterizado porque el no tejido comprende no tejido spunbond y soplado en una combinación y forma un producto en capas spunbond-sopladas-spunbond (SMS) o spunbond-sopladas-sopladas-spunbond (SMMS).

10 10. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el no tejido tiene un peso base de 8 a 80 g/m².

15 11. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el no tejido comprende también fibras absorbentes en una cantidad de 2-10% en peso, en base al peso total de las fibras en el material no tejido (1).

20 12. Producto absorbente (8; 12; 16; 22; 25) de conformidad con la reivindicación 11, caracterizado porque las fibras absorbentes tienen un grosor de 1.1 a 7 dtex o de 1.2 a 3 dtex.

25 13. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones

precedentes, caracterizado porque el producto absorbente es un pañal, prenda de protección contra incontinencia, toalla femenina o pantiprotector.

14. Producto absorbente (8; 12; 16; 22; 25) de
5 conformidad con la reivindicación 13, caracterizado porque el producto absorbente (16; 22; 25) comprende un armazón que tiene un panel frontal y uno posterior y un cuerpo absorbente (11) que tiene una zona humectante para recibir orina y otros fluidos corporales, en donde el material no
10 tejido (1) al menos se comprende en una región fuera de la zona humectante en el cuerpo absorbente (11).

15. Producto absorbente (16; 22; 25) de conformidad con la reivindicación 14, caracterizado porque el material no tejido (1) al menos se comprende en una
15 región fuera del cuerpo absorbente (11).

16. Producto absorbente (16; 22; 25) de conformidad con la reivindicación 13 a 15, caracterizado porque el producto absorbente (16; 22; 25) comprende una región de cintura, región de cadera, pliegues verticales y
20 aberturas para piernas y el material no tejido (1) se comprende en al menos una de la región de cintura, región de cadera, pliegues verticales y aberturas para piernas.

17. Producto absorbente (25) de conformidad con cualquiera de las reivindicaciones 13 a 16, caracterizado
25 porque el producto absorbente (25) comprende un cinturón

unido al armazón o un cinturón que se separa del armazón colocado para unirse al armazón, en donde el no tejido se comprende en el cinturón en un lado del cinturón colocado para estar en contacto con la piel.

5 18. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones 13 a 17, caracterizado porque el producto absorbente (8; 12; 16; 22; 25) comprende una hoja superior (9), un cuerpo absorbente (11) y una hoja posterior (10), y en donde el material no
10 tejido se comprende en la hoja superior y/o la hoja posterior del producto absorbente (8; 12; 16; 22; 25).

 19. Producto absorbente (8; 12; 16; 22; 25) de conformidad con cualquiera de las reivindicaciones precedentes, caracterizado porque el material no tejido (1)
15 tiene valores de fricción inferiores en presencia de humedad, que un material no tejido (1) que comprende fibras (2) y/o no tejido sin un revestimiento con una composición de revestimiento lubricante y/o fibras que tienen un grosor más fino que 1.0 dtex o una superficie colocada para estar
20 en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25), medidos por medio de una curva obtenida en pruebas repetidas con mediciones de acuerdo a un método de pegar y deslizar descrito en la descripción, en donde los valores de fricción en la curva
25 se obtienen en pruebas repetidas y en donde la curva

comprende una primera inclinación que tiene un coeficiente positivo que ilustra el incremento en los valores de fricción, una meseta, y una segunda inclinación que tiene un coeficiente negativo que ilustra la disminución en los valores de fricción.

20. Uso de un material no tejido (1) en un producto de higiene o absorbente para reducir la fricción húmeda entre el material no tejido (1) y la piel de un usuario, el material no tejido (1) comprendiendo fibras no absorbentes y absorbentes, las fibras absorbentes estando presentes en una cantidad de 2-30% en peso, en donde las fibras (2) tienen un grosor de desde 0.1 a 10 dtex, preferentemente de 2 a 7 dtex y las fibras y/o el material no tejido (1) se reviste con una composición de revestimiento lubricante adecuada para utilizarse en productos absorbentes y/o de higiene al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25).

21. Uso de conformidad con la reivindicación 20, en donde el material no tejido (1) se utiliza en un producto absorbente (8; 12; 16; 22; 25) elegido de un pañal, prenda de protección contra incontinencia, toalla femenina o pantiprotector.

22. Uso de conformidad con la reivindicación 21,

caracterizado porque el material no tejido (1) se utiliza en regiones sustancialmente no absorbentes del producto absorbente (8; 12; 16; 22; 25).

RESUMEN DE LA INVENCIÓN

Producto absorbente (8; 12; 16; 22; 25) que comprende un material no tejido (1) colocado para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25), en donde el material no tejido (1) comprende fibras no absorbentes y/o fibras absorbentes, en donde las fibras (2) al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25) tienen un grosor de desde 0.1 a 10 dtex, preferentemente de 0.5 a 7 dtex, en donde las fibras (2) y/o el material no tejido (1) se reviste con una composición de revestimiento lubricante adecuada para utilizarse en productos absorbentes y/o de higiene al menos en una superficie colocada para estar en contacto con la piel de un usuario durante el uso del producto absorbente (8; 12; 16; 22; 25). Por el producto que comprende el no tejido, la fricción húmeda puede reducirse entre el no tejido y la piel del usuario.